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www.waitingforfriday.com - FHT Library automatic testing (ATmega328P Arduino Uno Board) - (c)2013 Simon Inns
FHT library version 1_2


Running automated testing:
WFF_FHT Test: Pure sine wave with frequency = 2500 Hz and amplitude of +-16383
            FHT_LEN = 256, N_DB = 64

Test 1 - Rectangular window, linear output
Output from generateSample():

    0,  11585,  16383,  11585,     0, -11585, -16383, -11585,     0,  11585,  16383,  11585,     0, -11585, -16383, -11585,
    0,  11584,  16383,  11585,     0, -11584, -16383, -11585,     0,  11585,  16383,  11585,     0, -11585, -16383, -11585,
    0,  11585,  16383,  11584,     0, -11585, -16383, -11584,     0,  11585,  16383,  11584,     0, -11585, -16383, -11585,
    0,  11584,  16383,  11585,     0, -11584, -16383, -11585,     0,  11584,  16383,  11585,     0, -11584, -16383, -11585,
    0,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,
   -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,
   -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11586,
   -1,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     3, -11583, -16383, -11586,    -3,  11583,  16383,  11586,     3, -11583, -16383, -11587,
   -3,  11583,  16383,  11587,     3, -11582, -16383, -11587,    -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,
   -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,    -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,
   -3,  11582,  16383,  11587,     4, -11582, -16383, -11587,    -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,
   -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,    -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,
   -4,  11582,  16383,  11587,     4, -11581, -16383, -11588,    -4,  11581,  16383,  11588,     4, -11581, -16383, -11588

Output from fhtDitInt():

   -1,     -3,     -2,     -2,     -2,     -2,     -2,     -1,      0,     -2,     -2,     -2,     -2,     -2,     -2,     -2,
    0,     -2,     -2,     -2,     -2,     -2,     -2,     -2,      0,     -2,     -2,     -2,     -2,     -2,     -2,     -2,
 8065,     -1,      0,     -1,      0,     -1,      0,     -1,      0,     -1,      0,     -1,      0,     -1,      0,     -1,
    0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,      0,      0,     -1,     -1,     -1,     -1,     -1,      0,
   -1,     -2,     -2,     -2,     -2,     -2,     -2,      0,      0,     -2,     -2,     -2,     -2,     -2,     -2,     -2,
    0,     -2,     -1,     -2,     -1,     -2,     -1,     -2,      0,     -2,     -1,     -2,     -1,     -2,     -1,     -2,
 -222,     -1,     -1,     -1,     -1,     -1,     -1,     -1,      0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
    0,     -2,     -1,     -1,     -1,     -1,     -1,     -1,      0,     -2,     -1,     -1,     -1,     -1,     -1,     -1,
    0,      1,      0,      0,      0,      0,      0,      1,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
  125,      1,      0,      1,      0,      1,      0,      1,      0,      1,      0,      1,      0,      1,      0,      1,
    0,      1,      1,      1,      1,      1,      1,      1,      0,      0,      1,      1,      1,      1,      1,      0,
   -1,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,     -1,      0,     -1,      0,     -1,      0,      0,      0,     -1,      0,     -1,      0,     -1,      0,
-7972,      1,      1,      1,      1,      1,      1,      1,      0,      1,      1,      1,      1,      1,      1,      1,
    0,      2,      1,      1,      1,      1,      1,      1,      0,      2,      1,      1,      1,      1,      1,      1

Output from complexToReal():

    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
   62,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
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    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    1,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0

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Test 2 - Rectangular window, decibel output
Output from generateSample():

     0,  11585,  16383,  11585,      0, -11585, -16383, -11585,      0,  11585,  16383,  11585,      0, -11585, -16383, -11585,
     0,  11584,  16383,  11585,      0, -11584, -16383, -11585,      0,  11585,  16383,  11585,      0, -11585, -16383, -11585,
     0,  11585,  16383,  11584,      0, -11585, -16383, -11584,      0,  11585,  16383,  11584,      0, -11585, -16383, -11585,
     0,  11584,  16383,  11585,      0, -11584, -16383, -11585,      0,  11584,  16383,  11585,      0, -11584, -16383, -11585,
     0,  11584,  16383,  11585,      1, -11584, -16383, -11585,     -1,  11584,  16383,  11585,      1, -11584, -16383, -11585,
    -1,  11584,  16383,  11585,      1, -11584, -16383, -11585,     -1,  11584,  16383,  11585,      1, -11584, -16383, -11585,
    -1,  11584,  16383,  11585,      1, -11584, -16383, -11585,     -1,  11584,  16383,  11585,      1, -11584, -16383, -11586,
    -1,  11583,  16383,  11586,      2, -11583, -16383, -11586,     -2,  11583,  16383,  11586,      2, -11583, -16383, -11586,
    -2,  11583,  16383,  11586,      2, -11583, -16383, -11586,     -2,  11583,  16383,  11586,      2, -11583, -16383, -11586,
    -2,  11583,  16383,  11586,      2, -11583, -16383, -11586,     -2,  11583,  16383,  11586,      2, -11583, -16383, -11586,
    -2,  11583,  16383,  11586,      3, -11583, -16383, -11586,     -3,  11583,  16383,  11586,      3, -11583, -16383, -11587,
    -3,  11583,  16383,  11587,      3, -11582, -16383, -11587,     -3,  11582,  16383,  11587,      3, -11582, -16383, -11587,
    -3,  11582,  16383,  11587,      3, -11582, -16383, -11587,     -3,  11582,  16383,  11587,      3, -11582, -16383, -11587,
    -3,  11582,  16383,  11587,      4, -11582, -16383, -11587,     -4,  11582,  16383,  11587,      4, -11582, -16383, -11587,
    -4,  11582,  16383,  11587,      4, -11582, -16383, -11587,     -4,  11582,  16383,  11587,      4, -11582, -16383, -11587,
    -4,  11582,  16383,  11587,      4, -11581, -16383, -11588,     -4,  11581,  16383,  11588,      4, -11581, -16383, -11588

Output from fhtDitInt():

    -1,     -3,     -2,     -2,     -2,     -2,     -2,     -1,      0,     -2,     -2,     -2,     -2,     -2,     -2,     -2,
     0,     -2,     -2,     -2,     -2,     -2,     -2,     -2,      0,     -2,     -2,     -2,     -2,     -2,     -2,     -2,
  8065,     -1,      0,     -1,      0,     -1,      0,     -1,      0,     -1,      0,     -1,      0,     -1,      0,     -1,
     0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,      0,      0,     -1,     -1,     -1,     -1,     -1,      0,
    -1,     -2,     -2,     -2,     -2,     -2,     -2,      0,      0,     -2,     -2,     -2,     -2,     -2,     -2,     -2,
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       0,    -2,    -1,    -2,    -1,    -2,    -1,    -2,     0,    -2,    -1,    -2,    -1,    -2,    -1,    -2,
    -222,    -1,    -1,    -1,    -1,    -1,    -1,    -1,     0,    -1,    -1,    -1,    -1,    -1,    -1,    -1,
       0,    -2,    -1,    -1,    -1,    -1,    -1,    -1,     0,    -2,    -1,    -1,    -1,    -1,    -1,    -1,
       0,     1,     0,     0,     0,     0,     0,     1,     0,     0,     0,     0,     0,     0,     0,     0,
       0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
     125,     1,     0,     1,     0,     1,     0,     1,     0,     1,     0,     1,     0,     1,     0,     1,
       0,     1,     1,     1,     1,     1,     1,     1,     0,     0,     1,     1,     1,     1,     1,     0,
      -1,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
       0,     0,    -1,     0,    -1,     0,    -1,     0,     0,     0,    -1,     0,    -1,     0,    -1,     0,
   -7972,     1,     1,     1,     1,     1,     1,     1,     0,     1,     1,     1,     1,     1,     1,     1,
       0,     2,     1,     1,     1,     1,     1,     1,     0,     2,     1,     1,     1,     1,     1,     1

Output from complexToDecibel():

       0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
       0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
      63,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
       0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
       0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
       0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
       7,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
       0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0

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Test 3 - Hamming window, linear output
Output from generateSample():

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    0,  11585,  16383,  11585,     0, -11585, -16383, -11585,     0,  11585,  16383,  11585,     0, -11585, -16383, -11585,
    0,  11584,  16383,  11585,     0, -11584, -16383, -11585,     0,  11585,  16383,  11585,     0, -11585, -16383, -11585,
    0,  11585,  16383,  11584,     0, -11585, -16383, -11584,     0,  11585,  16383,  11584,     0, -11585, -16383, -11585,
    0,  11584,  16383,  11585,     0, -11584, -16383, -11585,     0,  11584,  16383,  11585,     0, -11584, -16383, -11585,
    0,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,
   -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,
   -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11586,
   -1,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     3, -11583, -16383, -11586,    -3,  11583,  16383,  11586,     3, -11583, -16383, -11587,
   -3,  11583,  16383,  11587,     3, -11582, -16383, -11587,    -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,
   -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,    -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,
   -3,  11582,  16383,  11587,     4, -11582, -16383, -11587,    -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,
   -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,    -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,
   -4,  11582,  16383,  11587,     4, -11581, -16383, -11588,    -4,  11581,  16383,  11588,     4, -11581, -16383, -11588
```

Output from applyHammingWindow():

```
    0,    928,   1318,    941,     0,   -967,  -1392,  -1006,     0,   1057,   1537,   1120,     0,  -1198,  -1754,  -1287,
    0,   1387,   2038,   1499,     0,  -1625,  -2391,  -1760,     0,   1905,   2804,   2062,     0,  -2231,  -3277,  -2407,
    0,   2592,   3803,   2787,     0,  -2992,  -4379,  -3203,     0,   3422,   4997,   3647,     0,  -3880,  -5655,  -4119,
    0,   4360,   6341,   4608,     0,  -4861,  -7054,  -5116,     0,   5372,   7782,   5633,     0,  -5895,  -8522,  -6158,
    0,   6419,   9263,   6682,     0,  -6943, -10003,  -7203,    -1,   7459,  10729,   7713,     0,  -7964, -11439,  -8212,
   -1,   8452,  12122,   8689,     0,  -8920, -12775,  -9145,    -1,   9360,  13388,   9571,     0,  -9772, -13958,  -9966,
   -1,  10148,  14478,  10323,     0, -10488, -14944, -10643,    -1,  10785,  15349,  10918,     0, -11040, -15694, -11152,
   -1,  11246,  15969,  11334,     1, -11406, -16178, -11470,    -2,  11514,  16313,  11552,     1, -11573, -16378, -11586,
   -2,  11578,  16368,  11565,     1, -11534, -16287, -11495,    -2,  11437,  16132,  11373,     1, -11291, -15908, -11202,
   -2,  11095,  15613,  10982,     1, -10852, -15255, -10717,    -2,  10564,  14832,  10408,     1, -10237, -14354, -10060,
   -2,   9867,  13819,   9673,     2,  -9466, -13239,  -9255,    -3,   9031,  12614,   8806,     2,  -8571, -11955,  -8335,
   -3,   8087,  11263,   7840,     1,  -7586, -10550,  -7333,    -2,   7071,   9818,   6814,     1,  -6549,  -9079,  -6290,
   -2,   6024,   8336,   5764,     1,  -5502,  -7599,  -5245,    -2,   4986,   6873,   4734,     1,  -4484,  -6168,  -4240,
   -2,   3997,   5486,   3763,     1,  -3534,  -4840,  -3313,    -2,   3095,   4230,   2889,     0,  -2690,  -3667,  -2500,
   -1,   2316,   3153,   2145,     0,  -1983,  -2695,  -1832,    -1,   1690,   2296,   1560,     0,  -1442,  -1962,  -1336,
   -1,   1239,   1693,   1157,     0,  -1088,  -1495,  -1030,    -1,    983,   1366,    952,     0,   -933,  -1313,   -927
```

Output from fhtDitInt():

```
   -2,     -5,     -4,     -3,    -3,     -3,     -2,     -2,    -2,     -2,     -2,     -2,    -2,     -2,     -2,     -2,
    0,     -3,     -2,     -2,    -2,     -2,     -1,     -1,     0,     -2,     -1,     -1,     0,      1,      4,  -1810,
 4340,  -1831,      2,      0,     0,      0,     -2,     -2,    -2,      0,     -2,     -2,    -2,     -2,     -2,     -2,
    0,     -1,     -1,     -2,    -2,     -2,     -2,     -2,    -1,     -1,     -2,     -2,    -2,     -2,     -2,     -1,
    0,     -1,     -1,     -1,    -1,     -1,     -1,      0,    -1,     -1,     -1,     -1,    -1,     -1,     -1,     -1,
    0,     -1,     -1,     -1,    -1,     -1,      0,     -1,    -1,     -1,     -1,     -1,    -1,     -1,      0,     55,
 -120,     41,     -2,     -1,     0,      0,     -2,     -1,    -1,      0,     -1,     -1,    -1,     -2,     -1,     -1,
    0,     -1,     -1,     -1,    -1,     -1,     -1,     -2,    -1,     -2,     -1,     -2,    -1,     -1,     -1,     -1,
    0,      1,      0,      1,     1,      1,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,     -1,      0,      0,     0,      1,     -1,      0,     0,      1,     -1,      0,    -1,      0,      0,     12,
   68,      9,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      1,     -1,      0,     0,      0,      0,      0,    -1,     -1,      0,      0,     0,      0,      0,     -1,
    0,      1,      1,      1,     1,      1,      1,      0,     1,      1,      1,      1,     1,      1,      1,     -1,
    0,      1,      1,      1,     1,      1,      0,     -1,     1,      1,      1,     -1,    -1,     -1,     -4,   1739,
-4290,   1781,     -4,     -1,     0,      0,      0,      1,     1,      0,      1,      1,     1,      0,      1,      1,
    0,      1,      1,      1,     1,      1,      1,      2,     1,      2,      3,      2,     1,      3,      1,      3
```

Output from complexToReal():

```
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,     14,
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   33,    13,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
    0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
    0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
    0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
    0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
    0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0
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Test 4 - Hamming window, decibel output with gain
Output from generateSample():

```
    0,  11585,  16383,  11585,     0, -11585, -16383, -11585,     0,  11585,  16383,  11585,     0, -11585, -16383, -11585,
    0,  11584,  16383,  11585,     0, -11584, -16383, -11585,     0,  11585,  16383,  11585,     0, -11585, -16383, -11585,
    0,  11585,  16383,  11584,     0, -11585, -16383, -11584,     0,  11585,  16383,  11584,     0, -11585, -16383, -11585,
    0,  11584,  16383,  11585,     0, -11584, -16383, -11585,     0,  11584,  16383,  11585,     0, -11584, -16383, -11585,
    0,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,
   -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,
   -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11586,
   -1,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     3, -11583, -16383, -11586,    -3,  11583,  16383,  11586,     3, -11583, -16383, -11587,
   -3,  11583,  16383,  11587,     3, -11582, -16383, -11587,    -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,
   -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,    -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,
   -3,  11582,  16383,  11587,     4, -11582, -16383, -11587,    -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,
   -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,    -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,
   -4,  11582,  16383,  11587,     4, -11581, -16383, -11588,    -4,  11581,  16383,  11588,     4, -11581, -16383, -11588
```

Output from applyHammingWindow():

```
    0,    928,   1318,    941,     0,   -967,  -1392,  -1006,     0,   1057,   1537,   1120,     0,  -1198,  -1754,  -1287,
    0,   1387,   2038,   1499,     0,  -1625,  -2391,  -1760,     0,   1905,   2804,   2062,     0,  -2231,  -3277,  -2407,
    0,   2592,   3803,   2787,     0,  -2992,  -4379,  -3203,     0,   3422,   4997,   3647,     0,  -3880,  -5655,  -4119,
    0,   4360,   6341,   4608,     0,  -4861,  -7054,  -5116,     0,   5372,   7782,   5633,     0,  -5895,  -8522,  -6158,
    0,   6419,   9263,   6682,     0,  -6943, -10003,  -7203,    -1,   7459,  10729,   7713,     0,  -7964, -11439,  -8212,
   -1,   8452,  12122,   8689,     0,  -8920, -12775,  -9145,    -1,   9360,  13388,   9571,     0,  -9772, -13958,  -9966,
   -1,  10148,  14478,  10323,     0, -10488, -14944, -10643,    -1,  10785,  15349,  10918,     0, -11040, -15694, -11152,
   -1,  11246,  15969,  11334,     1, -11406, -16178, -11470,    -2,  11514,  16313,  11552,     1, -11573, -16378, -11586,
   -2,  11578,  16368,  11565,     1, -11534, -16287, -11495,    -2,  11437,  16132,  11373,     1, -11291, -15908, -11202,
   -2,  11095,  15613,  10982,     1, -10852, -15255, -10717,    -2,  10564,  14832,  10408,     1, -10237, -14354, -10060,
   -2,   9867,  13819,   9673,     2,  -9466, -13239,  -9255,    -3,   9031,  12614,   8806,     2,  -8571, -11955,  -8335,
   -3,   8087,  11263,   7840,     1,  -7586, -10550,  -7333,    -2,   7071,   9818,   6814,     1,  -6549,  -9079,  -6290,
   -2,   6024,   8336,   5764,     1,  -5502,  -7599,  -5245,    -2,   4986,   6873,   4734,     1,  -4484,  -6168,  -4240,
   -2,   3997,   5486,   3763,     1,  -3534,  -4840,  -3313,    -2,   3095,   4230,   2889,     0,  -2690,  -3667,  -2500,
   -1,   2316,   3153,   2145,     0,  -1983,  -2695,  -1832,    -1,   1690,   2296,   1560,     0,  -1442,  -1962,  -1336,
   -1,   1239,   1693,   1157,     0,  -1088,  -1495,  -1030,    -1,    983,   1366,    952,     0,   -933,  -1313,   -927
```

Output from fhtDitInt():

```
   -2,     -5,     -4,     -3,    -3,     -3,     -2,     -2,    -2,     -2,     -2,     -2,    -2,     -2,     -2,     -2,
    0,     -3,     -2,     -2,    -2,     -2,     -1,     -1,     0,     -2,     -1,     -1,     0,      1,      4,  -1810,
 4340,  -1831,      2,      0,     0,      0,     -2,     -2,    -2,      0,     -2,     -2,    -2,     -2,     -2,     -2,
    0,     -1,     -1,     -2,    -2,     -2,     -2,     -2,    -1,     -1,     -2,     -2,    -2,     -2,     -2,     -1,
    0,     -1,     -1,     -1,    -1,     -1,     -1,      0,    -1,     -1,     -1,     -1,    -1,     -1,     -1,     -1,
    0,     -1,     -1,     -1,    -1,     -1,      0,     -1,    -1,     -1,     -1,     -1,    -1,     -1,      0,     55,
 -120,     41,     -2,     -1,     0,      0,     -2,     -1,    -1,      0,     -1,     -1,    -1,     -2,     -1,     -1,
    0,     -1,     -1,     -1,    -1,     -1,     -1,     -2,    -1,     -2,     -1,     -2,    -1,     -1,     -1,     -1,
    0,      1,      0,      1,     1,      1,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,     -1,      0,      0,     0,      0,      1,     -1,     0,      0,      1,     -1,     0,     -1,      0,     12,
   68,      9,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      1,     -1,      0,     0,      0,      0,      0,    -1,     -1,      0,      0,     0,      0,      0,     -1,
    0,      1,      1,      1,     1,      1,      1,      0,     1,      1,      1,      1,     1,      1,      1,     -1,
    0,      1,      1,      1,     1,      1,      0,     -1,     1,      1,      1,     -1,    -1,     -1,     -4,   1739,
-4290,   1781,     -4,     -1,     0,      0,      0,      1,     1,      0,      1,      1,     1,      0,      1,      1,
    0,      1,      1,      1,     1,      1,      1,      2,     1,      2,      3,      2,     1,      3,      1,      3
```

Output from complexToDecibelWithGain():

```
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,     63,
   63,     63,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
   24,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0
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Test 5 - Hann window, linear output
Output from generateSample():

```
    0,  11585,  16383,  11585,     0, -11585, -16383, -11585,     0,  11585,  16383,  11585,     0, -11585, -16383, -11585,
    0,  11584,  16383,  11585,     0, -11584, -16383, -11585,     0,  11585,  16383,  11585,     0, -11585, -16383, -11585,
    0,  11585,  16383,  11584,     0, -11585, -16383, -11584,     0,  11585,  16383,  11584,     0, -11585, -16383, -11585,
    0,  11584,  16383,  11585,     0, -11584, -16383, -11585,     0,  11584,  16383,  11585,     0, -11584, -16383, -11585,
    0,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,
   -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,
   -1,  11584,  16383,  11585,     1, -11584, -16383, -11585,    -1,  11584,  16383,  11585,     1, -11584, -16383, -11586,
   -1,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,    -2,  11583,  16383,  11586,     2, -11583, -16383, -11586,
   -2,  11583,  16383,  11586,     3, -11583, -16383, -11586,    -3,  11583,  16383,  11586,     3, -11583, -16383, -11587,
   -3,  11583,  16383,  11587,     3, -11582, -16383, -11587,    -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,
   -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,    -3,  11582,  16383,  11587,     3, -11582, -16383, -11587,
   -3,  11582,  16383,  11587,     4, -11582, -16383, -11587,    -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,
   -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,    -4,  11582,  16383,  11587,     4, -11582, -16383, -11587,
   -4,  11582,  16383,  11587,     4, -11581, -16383, -11588,    -4,  11581,  16383,  11588,     4, -11581, -16383, -11588
```

Output from applyHannWindow():

```
    0,      1,      8,     15,     0,    -44,    -89,    -86,     0,    141,    246,    211,     0,   -295,   -482,   -392,
    0,    500,    791,    622,     0,   -758,  -1174,   -906,     0,   1064,   1623,   1234,     0,  -1417,  -2138,  -1609,
    0,   1811,   2709,   2023,     0,  -2246,  -3336,  -2475,     0,   2712,   4007,   2957,     0,  -3211,  -4722,  -3469,
    0,   3732,   5468,   4002,     0,  -4276,  -6242,  -4553,     0,   4832,   7034,   5115,     0,  -5400,  -7838,  -5686,
    0,   5970,   8644,   6255,     0,  -6539,  -9448,  -6822,    -1,   7100,  10238,   7377,     0,  -7650, -11009,  -7919,
   -1,   8180,  11751,   8437,     0,  -8688, -12461,  -8932,    -1,   9167,  13127,   9395,     0,  -9615, -13748,  -9825,
   -1,  10023,  14312,  10213,     0, -10392, -14819, -10562,    -1,  10715,  15260,  10860,     0, -10993, -15634, -11114,
   -1,  11216,  15933,  11313,     1, -11390, -16160, -11459,    -2,  11508,  16307,  11549,     1, -11572, -16378, -11586,
   -2,  11578,  16367,  11564,     1, -11530, -16279, -11487,    -2,  11424,  16110,  11354,     1, -11265, -15866, -11169,
   -2,  11052,  15546,  10929,     1, -10790, -15156, -10642,    -2,  10476,  14697,  10306,     1, -10119, -14177,  -9927,
   -2,   9719,  13597,   9506,     2,  -9282, -12966,  -9052,    -3,   8809,  12287,   8564,     2,  -8309, -11570,  -8052,
   -3,   7783,  10818,   7515,     1,  -7239, -10042,  -6963,    -2,   6678,   9247,   6398,     1,  -6112,  -8444,  -5829,
   -2,   5540,   7636,   5258,     1,  -4974,  -6835,  -4694,    -2,   4412,   6046,   4139,     1,  -3867,  -5279,  -3602,
   -1,   3338,   4539,   3083,     1,  -2834,  -3836,  -2594,    -1,   2358,   3174,   2133,     0,  -1916,  -2562,  -1710,
   -1,   1511,   2002,   1324,     0,  -1149,  -1505,   -984,    -1,    829,   1071,    688,     0,   -560,   -708,   -445,
   -1,    340,    415,    251,     0,   -175,   -200,   -112,    -1,     62,     61,     27,     0,     -7,     -2,      0
```

Output from fhtDitInt():

```
   -2,     -4,     -3,     -4,    -3,     -3,     -2,     -2,    -2,     -2,     -3,     -2,    -2,     -2,     -2,     -2,
    0,     -4,     -1,     -2,    -2,     -2,     -1,     -2,    -1,     -2,      0,     -1,     0,      0,      4,  -1966,
 4016,  -1989,      2,      0,     0,     -2,     -1,     -2,    -1,     -1,      0,     -2,    -2,     -2,     -2,     -1,
    0,      0,     -2,     -2,    -2,     -2,     -1,     -2,    -1,     -2,     -2,     -1,    -2,     -2,     -2,     -2,
    0,     -1,     -1,      0,    -1,      0,     -1,     -1,    -1,     -1,     -1,     -1,    -1,     -1,     -1,     -2,
    0,     -1,     -1,     -1,    -1,     -1,     -1,     -1,    -1,     -1,      0,     -2,    -1,     -1,     -2,     59,
 -111,     45,     -2,     -1,     0,     -1,      0,     -1,    -1,     -1,     -1,     -1,     0,     -1,     -1,     -2,
    0,     -1,     -1,     -1,    -1,     -1,     -1,     -1,    -1,     -2,     -1,     -1,    -1,     -1,     -1,     -1,
    0,      0,      1,      0,     1,      1,      0,      0,     0,      0,      1,      0,     0,      0,      0,      0,
    0,      0,      1,      0,     0,      0,      1,      0,     1,      0,      0,     -1,     0,      0,      0,     12,
   62,      9,      0,      0,     0,      0,     -1,      0,    -1,      1,      0,      0,     0,      0,      0,     -1,
    0,      0,      0,      0,     0,      0,     -1,      0,    -1,      0,      0,     -1,     0,      0,      0,      0,
    0,      1,      1,      0,     1,      0,      1,      1,     1,      1,      1,      1,     1,      1,      1,      0,
    0,      1,      1,      1,     1,      1,      1,     -1,     1,      1,      0,      0,    -1,     -1,     -4,   1891,
-3969,   1937,     -4,     -1,     0,      1,      0,      1,     1,      1,      1,      1,     0,      1,      1,      2,
    0,      1,      1,      1,     1,      1,      1,      1,     1,      2,      3,      3,     1,      3,      1,      3
```

Output from complexToReal():

```
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,     15,
   31,     15,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0
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Test 6 - Hann window, decibel output with gain
Output from generateSample():
```

```
      0,  11585,  16383,  11585,      0, -11585, -16383, -11585,      0,  11585,  16383,  11585,      0, -11585, -16383, -11585,
      0,  11584,  16383,  11585,      0, -11584, -16383, -11585,      0,  11585,  16383,  11585,      0, -11585, -16383, -11585,
      0,  11585,  16383,  11584,      0, -11585, -16383, -11584,      0,  11585,  16383,  11584,      0, -11585, -16383, -11585,
      0,  11584,  16383,  11585,      0, -11584, -16383, -11585,      0,  11584,  16383,  11585,      0, -11584, -16383, -11585,
      0,  11584,  16383,  11585,      1, -11584, -16383, -11585,     -1,  11584,  16383,  11585,      1, -11584, -16383, -11585,
     -1,  11584,  16383,  11585,      1, -11584, -16383, -11585,     -1,  11584,  16383,  11585,      1, -11584, -16383, -11585,
     -1,  11584,  16383,  11585,      1, -11584, -16383, -11585,     -1,  11584,  16383,  11585,      1, -11584, -16383, -11586,
     -1,  11583,  16383,  11586,      2, -11583, -16383, -11586,     -2,  11583,  16383,  11586,      2, -11583, -16383, -11586,
     -2,  11583,  16383,  11586,      2, -11583, -16383, -11586,     -2,  11583,  16383,  11586,      2, -11583, -16383, -11586,
     -2,  11583,  16383,  11586,      2, -11583, -16383, -11586,     -2,  11583,  16383,  11586,      2, -11583, -16383, -11586,
     -2,  11583,  16383,  11586,      3, -11583, -16383, -11586,     -3,  11583,  16383,  11586,      3, -11583, -16383, -11587,
     -3,  11583,  16383,  11587,      3, -11582, -16383, -11587,     -3,  11582,  16383,  11587,      3, -11582, -16383, -11587,
     -3,  11582,  16383,  11587,      3, -11582, -16383, -11587,     -3,  11582,  16383,  11587,      3, -11582, -16383, -11587,
     -3,  11582,  16383,  11587,      4, -11582, -16383, -11587,     -4,  11582,  16383,  11587,      4, -11582, -16383, -11587,
     -4,  11582,  16383,  11587,      4, -11582, -16383, -11587,     -4,  11582,  16383,  11587,      4, -11582, -16383, -11587,
     -4,  11582,  16383,  11587,      4, -11581, -16383, -11588,     -4,  11581,  16383,  11588,      4, -11581, -16383, -11588

Output from applyHannWindow():

      0,      1,      8,     15,      0,    -44,    -89,    -86,      0,    141,    246,    211,      0,   -295,   -482,   -392,
      0,    500,    791,    622,      0,   -758,  -1174,   -906,      0,   1064,   1623,   1234,      0,  -1417,  -2138,  -1609,
      0,   1811,   2709,   2023,      0,  -2246,  -3336,  -2475,      0,   2712,   4007,   2957,      0,  -3211,  -4722,  -3469,
      0,   3732,   5468,   4002,      0,  -4276,  -6242,  -4553,      0,   4832,   7034,   5115,      0,  -5400,  -7838,  -5686,
      0,   5970,   8644,   6255,      0,  -6539,  -9448,  -6822,     -1,   7100,  10238,   7377,      0,  -7650, -11009,  -7919,
     -1,   8180,  11751,   8437,      0,  -8688, -12461,  -8932,     -1,   9167,  13127,   9395,      0,  -9615, -13748,  -9825,
     -1,  10023,  14312,  10213,      0, -10392, -14819, -10562,     -1,  10715,  15260,  10860,      0, -10993, -15634, -11114,
     -1,  11216,  15933,  11313,      1, -11390, -16160, -11459,     -2,  11508,  16307,  11549,      1, -11572, -16378, -11586,
     -2,  11578,  16367,  11564,      1, -11530, -16279, -11487,     -2,  11424,  16110,  11354,      1, -11265, -15866, -11169,
     -2,  11052,  15546,  10929,      1, -10790, -15156, -10642,     -2,  10476,  14697,  10306,      1, -10119, -14177,  -9927,
     -2,   9719,  13597,   9506,      2,  -9282, -12966,  -9052,     -3,   8809,  12287,   8564,      2,  -8309, -11570,  -8052,
     -3,   7783,  10818,   7515,      1,  -7239, -10042,  -6963,     -2,   6678,   9247,   6398,      1,  -6112,  -8444,  -5829,
     -2,   5540,   7636,   5258,      1,  -4974,  -6835,  -4694,     -2,   4412,   6046,   4139,      1,  -3867,  -5279,  -3602,
     -1,   3338,   4539,   3083,      1,  -2834,  -3836,  -2594,     -1,   2358,   3174,   2133,      0,  -1916,  -2562,  -1710,
     -1,   1511,   2002,   1324,      0,  -1149,  -1505,   -984,     -1,    829,   1071,    688,      0,   -560,   -708,   -445,
     -1,    340,    415,    251,      0,   -175,   -200,   -112,     -1,     62,     61,     27,      0,     -7,     -2,      0

Output from fhtDitInt():

     -2,     -4,     -3,     -4,     -3,     -3,     -2,     -2,     -2,     -2,     -3,     -2,     -2,     -2,     -2,     -2,
      0,     -4,     -1,     -2,     -2,     -2,     -1,     -2,     -1,     -2,      0,     -1,      0,      0,      4,  -1966,
   4016,  -1989,      2,      0,      0,     -2,     -1,     -2,     -1,     -1,      0,     -2,     -2,     -2,     -2,     -1,
      0,      0,     -2,     -2,     -2,     -2,     -1,     -2,     -1,     -2,     -2,     -1,     -2,     -2,     -2,     -2,
      0,     -1,     -1,      0,     -1,      0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -2,
      0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,      0,     -2,     -1,     -1,     -2,     59,
   -111,     45,     -2,     -1,      0,     -1,      0,     -1,     -1,     -1,     -1,      0,     -1,     -1,     -1,     -2,
      0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -2,     -1,     -1,     -1,     -1,     -1,     -1,
      0,      0,      1,      0,      1,      1,      0,      0,      0,      0,      1,      0,      0,      0,      0,      0,
      0,      0,      1,      0,      0,      0,      1,      0,      1,      0,      0,     -1,      0,      0,      0,     12,
     62,      9,      0,      0,      0,      0,     -1,      0,     -1,      1,      0,      0,      0,      0,      0,     -1,
      0,      0,      0,      0,      0,      0,     -1,      0,     -1,      0,      0,     -1,      0,      0,      0,      0,
      0,      1,      1,      0,      1,      0,      1,      1,      1,      1,      1,      1,      1,      1,      1,      0,
      0,      1,      1,      1,      1,      1,      1,     -1,      1,      1,      0,      0,     -1,     -1,     -4,   1891,
  -3969,   1937,     -4,     -1,      0,      1,      0,      1,      1,      1,      1,      1,      0,      1,      1,      2,
      0,      1,      1,      1,      1,      1,      1,      1,      2,      3,      3,      1,      3,      1,      3

Output from complexToDecibelWithGain():

      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,     63,
     63,     63,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0

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Tests completed...

WFF_FHT Test: Pure sine wave with frequency = 5000 Hz and amplitude of +-16383
            FHT_LEN = 256, N_DB = 64

Test 1 - Rectangular window, linear output
Output from generateSample():

    0,  16383,     0, -16383,     0,  16383,     0, -16383,     0,  16383,     0, -16383,     0,  16383,     0, -16383,
    0,  16383,     0, -16383,     0,  16383,     0, -16383,     0,  16383,     0, -16383,     0,  16383,     0, -16383,
    0,  16383,     0, -16383,     0,  16383,     0, -16383,     0,  16383,     0, -16383,     0,  16383,     0, -16383,
    0,  16383,     0, -16383,     0,  16383,     0, -16383,    -1,  16383,     1, -16383,    -1,  16383,     1, -16383,
   -1,  16383,     1, -16383,    -1,  16383,     1, -16383,    -1,  16383,     1, -16383,    -1,  16383,     1, -16383,
   -2,  16383,     2, -16383,    -2,  16383,     2, -16383,    -2,  16383,     2, -16383,    -2,  16383,     2, -16383,
   -2,  16383,     2, -16383,    -2,  16383,     3, -16383,    -2,  16383,     3, -16383,    -3,  16383,     3, -16383,
   -3,  16383,     3, -16383,    -3,  16383,     3, -16383,    -3,  16383,     3, -16383,    -3,  16383,     4, -16383,
   -4,  16383,     4, -16383,    -4,  16383,     4, -16383,    -4,  16383,     4, -16383,    -4,  16383,     4, -16383,
   -4,  16383,     4, -16383,    -4,  16383,     5, -16383,    -5,  16383,     5, -16383,    -5,  16383,     5, -16383,
   -5,  16383,     5, -16383,    -5,  16383,     5, -16383,    -5,  16383,     6, -16383,    -5,  16383,     5, -16383,
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    -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,
    -6,  16383,      6, -16383,     -7,  16383,      7, -16383,     -6,  16383,      7, -16383,     -7,  16383,      7, -16383,
    -7,  16383,      7, -16383,     -7,  16383,      7, -16383,     -7,  16383,      8, -16383,     -7,  16383,      8, -16383,
    -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,
    -8,  16383,      8, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383
```

Output from fhtDitInt():

```
    -1,     -2,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
    -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
    -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
     0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,      0,     -1,     -1,     -1,     -1,     -1,     -1,     -2,
  8189,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      1,      0,      0,      0,      0,      0,      0,      0,      1,      0,      0,      0,      0,      0,      0,
    -1,     -2,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
    -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
    -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
     0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,      0,     -1,     -1,     -1,     -1,     -1,     -1,     -2,
 -8194,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      1,      0,      0,      0,      0,      0,      0,      0,      1,      0,      0,      0,      0,      0,      0
```

Output from complexToReal():

```
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    63,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0
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```

Test 2 - Rectangular window, decibel output
Output from generateSample():

```
    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,
   -1,  16383,      1, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,
   -2,  16383,      2, -16383,     -2,  16383,      2, -16383,     -2,  16383,      2, -16383,     -2,  16383,      2, -16383,
   -2,  16383,      2, -16383,     -2,  16383,      3, -16383,     -2,  16383,      3, -16383,     -3,  16383,      3, -16383,
   -3,  16383,      3, -16383,     -3,  16383,      3, -16383,     -3,  16383,      3, -16383,     -3,  16383,      4, -16383,
   -4,  16383,      4, -16383,     -4,  16383,      4, -16383,     -4,  16383,      4, -16383,     -4,  16383,      4, -16383,
   -4,  16383,      4, -16383,     -4,  16383,      5, -16383,     -5,  16383,      5, -16383,     -5,  16383,      5, -16383,
   -5,  16383,      5, -16383,     -5,  16383,      5, -16383,     -5,  16383,      6, -16383,     -5,  16383,      5, -16383,
   -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,
   -6,  16383,      6, -16383,     -7,  16383,      7, -16383,     -6,  16383,      7, -16383,     -7,  16383,      7, -16383,
   -7,  16383,      7, -16383,     -7,  16383,      7, -16383,     -7,  16383,      8, -16383,     -7,  16383,      8, -16383,
   -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,
   -8,  16383,      8, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383
```

Output from fhtDitInt():

```
   -1,     -2,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
   -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
   -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
    0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,      0,     -1,     -1,     -1,     -1,     -1,     -1,     -2,
 8189,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      1,      0,      0,      0,      0,      0,      0,      0,      1,      0,      0,      0,      0,      0,      0,
   -1,     -2,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
   -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
   -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
    0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,      0,     -1,     -1,     -1,     -1,     -1,     -1,     -2,
-8194,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      1,      0,      0,      0,      0,      0,      0,      0,      1,      0,      0,      0,      0,      0,      0
```

Output from complexToDecibel():

```
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
   63,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0
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```

Test 3 - Hamming window, linear output
Output from generateSample():

```
    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,
   -1,  16383,      1, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,
   -2,  16383,      2, -16383,     -2,  16383,      2, -16383,     -2,  16383,      2, -16383,     -2,  16383,      2, -16383,
   -2,  16383,      2, -16383,     -2,  16383,      3, -16383,     -2,  16383,      3, -16383,     -3,  16383,      3, -16383,
   -3,  16383,      3, -16383,     -3,  16383,      3, -16383,     -3,  16383,      3, -16383,     -3,  16383,      4, -16383,
   -4,  16383,      4, -16383,     -4,  16383,      4, -16383,     -4,  16383,      4, -16383,     -4,  16383,      4, -16383,
   -4,  16383,      4, -16383,     -4,  16383,      5, -16383,     -5,  16383,      5, -16383,     -5,  16383,      5, -16383,
   -5,  16383,      5, -16383,     -5,  16383,      5, -16383,     -5,  16383,      6, -16383,     -5,  16383,      5, -16383,
   -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,
   -6,  16383,      6, -16383,     -7,  16383,      7, -16383,     -6,  16383,      7, -16383,     -7,  16383,      7, -16383,
   -7,  16383,      7, -16383,     -7,  16383,      7, -16383,     -7,  16383,      8, -16383,     -7,  16383,      8, -16383,
   -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,
   -8,  16383,      8, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383
```

Output from applyHammingWindow():

```
    0,   1312,      0,  -1331,      0,   1366,      0,  -1422,      0,   1494,      0,  -1585,      0,   1693,      0,  -1819,
    0,   1961,      0,  -2121,      0,   2296,      0,  -2488,      0,   2694,      0,  -2917,      0,   3153,      0,  -3404,
    0,   3666,      0,  -3943,      0,   4230,      0,  -4530,      0,   4839,      0,  -5159,      0,   5486,      0,  -5824,
    0,   6167,      0,  -6518,      0,   6873,      0,  -7235,     -1,   7598,      0,  -7967,     -1,   8336,      0,  -8708,
   -1,   9078,      0,  -9450,     -1,   9818,      0, -10186,     -1,  10549,      0, -10909,     -1,  11263,      0, -11613,
   -2,  11954,      1, -12289,     -2,  12614,      1, -12932,     -2,  13238,      1, -13536,     -2,  13819,      1, -14093,
   -2,  14353,      1, -14600,     -2,  14832,      2, -15051,     -2,  15254,      2, -15442,     -3,  15613,      2, -15769,
   -3,  15907,      2, -16029,     -3,  16132,      2, -16219,     -3,  16286,      2, -16337,     -3,  16368,      3, -16383,
   -4,  16377,      3, -16355,     -4,  16313,      3, -16255,     -4,  16177,      3, -16083,     -4,  15969,      3, -15840,
   -4,  15693,      3, -15530,     -4,  15349,      4, -15155,     -5,  14943,      4, -14719,     -5,  14478,      4, -14225,
   -5,  13957,      4, -13679,     -5,  13388,      4, -13087,     -4,  12774,      4, -12453,     -4,  12122,      3, -11785,
   -5,  11438,      4, -11087,     -4,  10729,      3, -10368,     -4,  10002,      3,  -9635,     -4,   9263,      3,  -8893,
   -4,   8521,      3,  -8151,     -4,   7782,      3,  -7416,     -3,   7053,      2,  -6695,     -3,   6341,      2,  -5995,
   -3,   5654,      2,  -5322,     -3,   4997,      2,  -4684,     -2,   4378,      2,  -4086,     -2,   3803,      1,  -3534,
   -2,   3276,      1,  -3034,     -2,   2804,      1,  -2590,     -2,   2390,      1,  -2207,     -2,   2038,      0,  -1888,
   -1,   1753,      0,  -1637,     -1,   1537,      0,  -1456,     -1,   1391,      0,  -1347,     -1,   1318,      0,  -1310
```

Output from fhtDitInt():

```
   -2,     -4,     -3,     -2,     -2,     -3,     -3,     -3,     -1,     -3,     -2,     -2,     -2,     -2,     -2,     -2,
   -1,     -2,     -2,     -2,     -1,     -2,     -2,     -2,     -1,     -2,     -1,     -2,     -2,     -2,     -2,     -1,
    0,     -2,     -1,     -2,     -1,     -2,     -1,     -2,     -1,     -2,     -1,     -2,     -1,     -1,     -1,     -1,
   -1,     -2,     -1,     -2,     -1,     -2,     -1,     -1,      0,     -2,      0,     -1,      1,      0,      4,  -1723,
 4407,  -1746,      2,      1,     -1,      0,     -1,     -1,      0,      0,     -2,     -1,     -2,     -1,     -2,     -1,
    0,      0,     -2,      0,     -1,     -1,     -2,     -1,     -1,     -1,     -1,     -1,     -2,     -1,     -2,     -1,
    0,     -1,     -1,     -1,     -1,     -1,     -2,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
   -1,      0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,      0,     -1,     -1,     -1,     -2,     -1,     -1,
    0,      2,      1,      0,      0,      1,      1,      1,      1,      1,      0,      0,      0,      0,      0,      0,
    1,      0,      0,      0,      1,      0,      0,      0,      1,      0,      1,      0,      0,      0,      0,     -1,
    0,      0,      1,      0,      1,      0,     -1,      0,      1,      0,      1,      0,      1,     -1,      1,     -1,
    1,      0,      1,      0,      1,      0,      1,     -1,      0,      0,      0,     -1,     -1,     -2,     -4,   1721,
-4410,   1748,     -4,     -1,     -1,      0,     -1,      1,      0,      0,      0,      1,      0,      1,      0,      1,
    0,      0,      0,      0,      1,      1,      0,      1,      1,      1,      1,      1,      0,      1,      0,      1,
    0,      1,      1,      1,      1,      1,      0,      1,      1,      1,      1,      1,      1,      1,      1,      1,
    1,      2,      1,      1,      1,      1,      1,      1,      1,      2,      1,      1,      1,      2,      1,      1
```

Output from complexToReal():

```
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,     13,
   34,     13,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0
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Test 4 - Hamming window, decibel output with gain
Output from generateSample():

    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,
   -1,  16383,      1, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,
   -2,  16383,      2, -16383,     -2,  16383,      2, -16383,     -2,  16383,      2, -16383,     -2,  16383,      2, -16383,
   -2,  16383,      2, -16383,     -2,  16383,      3, -16383,     -2,  16383,      3, -16383,     -3,  16383,      3, -16383,
   -3,  16383,      3, -16383,     -3,  16383,      3, -16383,     -3,  16383,      3, -16383,     -3,  16383,      4, -16383,
   -4,  16383,      4, -16383,     -4,  16383,      4, -16383,     -4,  16383,      4, -16383,     -4,  16383,      4, -16383,
   -4,  16383,      4, -16383,     -4,  16383,      5, -16383,     -5,  16383,      5, -16383,     -5,  16383,      5, -16383,
   -5,  16383,      5, -16383,     -5,  16383,      5, -16383,     -5,  16383,      6, -16383,     -5,  16383,      5, -16383,
   -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,
   -6,  16383,      6, -16383,     -7,  16383,      7, -16383,     -6,  16383,      7, -16383,     -7,  16383,      7, -16383,
   -7,  16383,      7, -16383,     -7,  16383,      7, -16383,     -7,  16383,      8, -16383,     -7,  16383,      8, -16383,
   -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,
   -8,  16383,      8, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383

Output from applyHammingWindow():

    0,   1312,      0,  -1331,      0,   1366,      0,  -1422,      0,   1494,      0,  -1585,      0,   1693,      0,  -1819,
    0,   1961,      0,  -2121,      0,   2296,      0,  -2488,      0,   2694,      0,  -2917,      0,   3153,      0,  -3404,
    0,   3666,      0,  -3943,      0,   4230,      0,  -4530,      0,   4839,      0,  -5159,      0,   5486,      0,  -5824,
    0,   6167,      0,  -6518,      0,   6873,      0,  -7235,     -1,   7598,      0,  -7967,     -1,   8336,      0,  -8708,
   -1,   9078,      0,  -9450,     -1,   9818,      0, -10186,     -1,  10549,      0, -10909,     -1,  11263,      0, -11613,
   -2,  11954,      1, -12289,     -2,  12614,      1, -12932,     -2,  13238,      1, -13536,     -2,  13819,      1, -14093,
   -2,  14353,      1, -14600,     -2,  14832,      2, -15051,     -2,  15254,      2, -15442,     -3,  15613,      2, -15769,
   -3,  15907,      2, -16029,     -3,  16132,      2, -16219,     -3,  16286,      2, -16337,     -3,  16368,      3, -16383,
   -4,  16377,      3, -16355,     -4,  16313,      3, -16255,     -4,  16177,      3, -16083,     -4,  15969,      3, -15840,
   -4,  15693,      3, -15530,     -4,  15349,      4, -15155,     -5,  14943,      4, -14719,     -5,  14478,      4, -14225,
   -5,  13957,      4, -13679,     -5,  13388,      4, -13087,     -4,  12774,      4, -12453,     -4,  12122,      3, -11785,
   -5,  11438,      4, -11087,     -4,  10729,      3, -10368,     -4,  10002,      3,  -9635,     -4,   9263,      3,  -8893,
   -4,   8521,      3,  -8151,     -4,   7782,      3,  -7416,     -3,   7053,      2,  -6695,     -3,   6341,      2,  -5995,
   -3,   5654,      2,  -5322,     -3,   4997,      2,  -4684,     -2,   4378,      2,  -4086,     -2,   3803,      1,  -3534,
   -2,   3276,      1,  -3034,     -2,   2804,      1,  -2590,     -2,   2390,      1,  -2207,     -2,   2038,      0,  -1888,
   -1,   1753,      0,  -1637,     -1,   1537,      0,  -1456,     -1,   1391,      0,  -1347,     -1,   1318,      0,  -1310

Output from fhtDitInt():

   -2,     -4,     -3,     -2,     -2,     -3,     -3,     -3,     -1,     -3,     -2,     -2,     -2,     -2,     -2,     -2,
   -1,     -2,     -2,     -2,     -1,     -2,     -2,     -2,     -1,     -2,     -1,     -2,     -2,     -2,     -2,     -1,
    0,     -2,     -1,     -2,     -1,     -2,     -1,     -2,     -1,     -2,     -1,     -2,     -1,     -1,     -1,     -1,
   -1,     -2,     -1,     -2,     -1,     -2,     -1,     -1,      0,     -2,      0,     -1,      1,      0,      4,  -1723,
 4407,  -1746,      2,      1,     -1,      0,     -1,     -1,      0,      0,     -2,     -1,     -2,     -1,     -2,     -1,
    0,      0,     -2,      0,     -1,     -1,     -2,     -1,     -1,     -1,     -1,     -1,     -2,     -1,     -2,     -1,
    0,     -1,     -1,     -1,     -1,     -1,     -2,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
   -1,      0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,      0,     -1,     -1,     -1,     -2,     -1,     -1,
    0,      2,      1,      0,      0,      1,      1,      1,      1,      1,      0,      0,      0,      0,      0,      0,
    1,      0,      0,      0,      1,      0,      0,      0,      1,      0,      1,      0,      0,      0,      0,     -1,
    0,      0,      1,      0,      1,      0,     -1,      0,      1,      0,      1,      0,      1,     -1,      1,     -1,
    1,      0,      1,      0,      1,      0,      1,     -1,      0,      0,      0,     -1,     -1,     -2,     -4,   1721,
-4410,   1748,     -4,     -1,     -1,      0,     -1,      1,      0,      0,      0,      1,      0,      1,      0,      1,
    0,      0,      0,      0,      1,      1,      0,      1,      1,      1,      1,      1,      0,      1,      0,      1,
    0,      1,      1,      1,      1,      1,      0,      1,      1,      1,      1,      1,      1,      1,      1,      1,
    1,      2,      1,      1,      1,      1,      1,      1,      1,      2,      1,      1,      1,      2,      1,      1

Output from complexToDecibelWithGain():

    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,     63,
   63,     63,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0

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Test 5 - Hann window, linear output
Output from generateSample():

      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
      0,  16383,      0, -16383,      0,  16383,      0, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,
     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,
     -2,  16383,      2, -16383,     -2,  16383,      2, -16383,     -2,  16383,      2, -16383,     -2,  16383,      2, -16383,
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```
      -2,  16383,      2, -16383,     -2,  16383,      3, -16383,     -2,  16383,      3, -16383,     -3,  16383,      3, -16383,
      -3,  16383,      3, -16383,     -3,  16383,      3, -16383,     -3,  16383,      3, -16383,     -3,  16383,      4, -16383,
      -4,  16383,      4, -16383,     -4,  16383,      4, -16383,     -4,  16383,      4, -16383,     -4,  16383,      4, -16383,
      -4,  16383,      4, -16383,     -4,  16383,      5, -16383,     -5,  16383,      5, -16383,     -5,  16383,      5, -16383,
      -5,  16383,      5, -16383,     -5,  16383,      5, -16383,     -5,  16383,      6, -16383,     -5,  16383,      5, -16383,
      -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,
      -6,  16383,      6, -16383,     -7,  16383,      7, -16383,     -6,  16383,      7, -16383,     -7,  16383,      7, -16383,
      -7,  16383,      7, -16383,     -7,  16383,      7, -16383,     -7,  16383,      8, -16383,     -7,  16383,      8, -16383,
      -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,
      -8,  16383,      8, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383
```

Output from applyHannWindow():

```
       0,      1,      0,    -22,      0,     61,      0,   -121,      0,    199,      0,   -299,      0,    415,      0,   -553,
       0,    707,      0,   -881,      0,   1071,      0,  -1280,      0,   1504,      0,  -1746,      0,   2002,      0,  -2275,
       0,   2561,      0,  -2862,      0,   3174,      0,  -3500,      0,   3835,      0,  -4183,      0,   4539,      0,  -4906,
       0,   5278,      0,  -5660,      0,   6046,      0,  -6439,     -1,   6834,      0,  -7235,     -1,   7636,      0,  -8040,
      -1,   8443,      0,  -8847,     -1,   9247,      0,  -9647,     -1,  10041,      0, -10433,     -1,  10818,      0, -11198,
      -2,  11569,      1, -11933,     -2,  12287,      1, -12632,     -2,  12965,      1, -13288,     -2,  13597,      1, -13894,
      -2,  14176,      1, -14445,     -2,  14697,      2, -14936,     -2,  15155,      2, -15360,     -3,  15546,      2, -15716,
      -3,  15865,      2, -15998,     -3,  16110,      2, -16204,     -3,  16278,      2, -16333,     -3,  16367,      3, -16383,
      -4,  16377,      3, -16353,     -4,  16307,      3, -16244,     -4,  16159,      3, -16057,     -4,  15933,      3, -15793,
      -4,  15633,      3, -15456,     -4,  15260,      4, -15048,     -5,  14818,      4, -14574,     -5,  14312,      4, -14037,
      -5,  13747,      4, -13444,     -5,  13127,      3, -12800,     -4,  12460,      4, -12111,     -4,  11751,      3, -11385,
      -5,  11008,      3, -10627,     -4,  10238,      3,  -9845,     -4,   9447,      3,  -9048,     -4,   8644,      3,  -8242,
      -3,   7837,      2,  -7436,     -4,   7034,      2,  -6637,     -3,   6241,      2,  -5853,     -3,   5468,      2,  -5092,
      -3,   4721,      1,  -4360,     -2,   4007,      1,  -3667,     -2,   3335,      1,  -3017,     -2,   2709,      1,  -2417,
      -2,   2137,      0,  -1873,     -1,   1623,      0,  -1391,     -1,   1173,      0,   -974,     -1,    791,      0,   -628,
      -1,    481,      0,   -355,     -1,    246,      0,   -158,     -1,     88,      0,    -39,     -1,      8,      0,      0
```

Output from fhtDitInt():

```
      -2,     -4,     -3,     -3,     -2,     -3,     -2,     -2,     -2,     -2,     -2,     -2,     -1,     -2,     -2,     -2,
      -1,     -2,     -2,     -2,     -1,     -2,     -2,     -2,     -1,     -2,     -2,     -2,     -1,     -1,     -1,     -1,
      -1,     -2,     -2,     -2,     -1,     -2,     -2,     -2,     -1,     -2,     -2,     -1,     -1,     -1,     -1,     -1,
       0,     -3,     -2,     -2,     -1,     -2,     -1,     -1,      0,     -2,     -1,     -1,      1,      0,      4,  -1873,
    4078,  -1898,      4,      1,      0,      0,      0,     -1,     -1,      0,     -1,     -1,     -1,     -1,     -1,     -1,
      -1,      0,     -1,      0,     -1,      0,     -1,     -1,     -1,      0,      0,     -1,     -1,     -1,     -1,     -1,
       0,      0,     -1,     -1,     -1,     -1,     -2,     -1,     -1,     -1,     -2,     -1,     -1,     -1,     -1,     -1,
      -1,      0,     -1,     -1,     -1,     -1,     -1,     -1,     -1,      0,     -2,     -1,     -1,     -2,     -2,     -1,
       0,      2,      1,      1,      2,      1,      0,      0,      0,      0,      0,      0,      1,      0,      0,      0,
       1,      0,      0,      0,      1,      0,      0,      0,      1,      0,      0,      0,      1,     -1,     -1,     -1,
       1,      0,      0,      0,      1,      0,      0,      0,      1,      0,      0,     -1,      1,     -1,      1,     -1,
       0,      1,      0,      0,      1,      0,      1,     -1,      0,      0,     -1,     -1,     -1,     -2,     -4,   1871,
   -4081,   1900,     -4,     -1,      0,      0,      0,      1,     -1,      0,      1,      1,      1,      1,      1,      1,
       1,      0,      1,      0,      1,      0,      1,      1,      1,      0,      0,      1,      1,      1,      1,      1,
       0,      0,      1,      1,      1,      1,      0,      1,      1,      1,      2,      1,      1,      1,      1,      1,
       1,      2,      1,      1,      1,      1,      1,      1,      1,      2,      2,      1,      1,      2,      2,      1
```

Output from complexToReal():

```
       0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
       0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
       0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
       0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,     14,
      31,     14,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
       0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
       0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
       0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0
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Test 6 - Hann window, decibel output with gain
Output from generateSample():

```
    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,      0,  16383,      0, -16383,
    0,  16383,      0, -16383,      0,  16383,      0, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,
   -1,  16383,      1, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,     -1,  16383,      1, -16383,
   -2,  16383,      2, -16383,     -2,  16383,      2, -16383,     -2,  16383,      2, -16383,     -2,  16383,      2, -16383,
   -2,  16383,      2, -16383,     -2,  16383,      3, -16383,     -2,  16383,      3, -16383,     -3,  16383,      3, -16383,
   -3,  16383,      3, -16383,     -3,  16383,      3, -16383,     -3,  16383,      3, -16383,     -3,  16383,      4, -16383,
   -4,  16383,      4, -16383,     -4,  16383,      4, -16383,     -4,  16383,      4, -16383,     -4,  16383,      4, -16383,
   -4,  16383,      4, -16383,     -4,  16383,      5, -16383,     -5,  16383,      5, -16383,     -5,  16383,      5, -16383,
   -5,  16383,      5, -16383,     -5,  16383,      5, -16383,     -5,  16383,      6, -16383,     -5,  16383,      5, -16383,
   -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,     -6,  16383,      6, -16383,
   -6,  16383,      6, -16383,     -7,  16383,      7, -16383,     -6,  16383,      7, -16383,     -7,  16383,      7, -16383,
   -7,  16383,      7, -16383,     -7,  16383,      7, -16383,     -7,  16383,      8, -16383,     -7,  16383,      8, -16383,
   -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,     -8,  16383,      8, -16383,
   -8,  16383,      8, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383,     -9,  16383,      9, -16383
```

Output from applyHannWindow():

```
    0,      1,      0,    -22,      0,     61,      0,   -121,      0,    199,      0,   -299,      0,    415,      0,   -553,
    0,    707,      0,   -881,      0,   1071,      0,  -1280,      0,   1504,      0,  -1746,      0,   2002,      0,  -2275,
    0,   2561,      0,  -2862,      0,   3174,      0,  -3500,      0,   3835,      0,  -4183,      0,   4539,      0,  -4906,
```

```
      0,   5278,     0,  -5660,     0,   6046,     0,  -6439,    -1,   6834,     0,  -7235,    -1,   7636,     0,  -8040,
     -1,   8443,     0,  -8847,    -1,   9247,     0,  -9647,    -1,  10041,     0, -10433,    -1,  10818,     0, -11198,
     -2,  11569,     1, -11933,    -2,  12287,     1, -12632,    -2,  12965,     1, -13288,    -2,  13597,     1, -13894,
     -2,  14176,     1, -14445,    -2,  14697,     2, -14936,    -2,  15155,     2, -15360,    -3,  15546,     2, -15716,
     -3,  15865,     2, -15998,    -3,  16110,     2, -16204,    -3,  16278,     2, -16333,    -3,  16367,     3, -16383,
     -4,  16377,     3, -16353,    -4,  16307,     3, -16244,    -4,  16159,     3, -16057,    -4,  15933,     3, -15793,
     -4,  15633,     3, -15456,    -4,  15260,     4, -15048,    -5,  14818,     4, -14574,    -5,  14312,     4, -14037,
     -5,  13747,     4, -13444,    -5,  13127,     3, -12800,    -4,  12460,     4, -12111,    -4,  11751,     3, -11385,
     -5,  11008,     3, -10627,    -4,  10238,     3,  -9845,    -4,   9447,     3,  -9048,    -4,   8644,     3,  -8242,
     -3,   7837,     2,  -7436,    -4,   7034,     2,  -6637,    -3,   6241,     2,  -5853,    -3,   5468,     2,  -5092,
     -3,   4721,     1,  -4360,    -2,   4007,     1,  -3667,    -2,   3335,     1,  -3017,    -2,   2709,     1,  -2417,
     -2,   2137,     0,  -1873,    -1,   1623,     0,  -1391,    -1,   1173,     0,   -974,    -1,    791,     0,   -628,
     -1,    481,     0,   -355,    -1,    246,     0,   -158,    -1,     88,     0,    -39,    -1,      8,     0,      0
```

Output from fhtDitInt():

```
     -2,     -4,    -3,     -3,    -2,     -3,    -2,     -2,    -2,     -2,    -2,     -2,    -1,     -2,    -2,     -2,
     -1,     -2,    -2,     -2,    -1,     -2,    -2,     -2,    -1,     -2,    -2,     -2,    -1,     -1,    -1,     -1,
     -1,     -2,    -2,     -2,    -1,     -2,    -2,     -2,    -1,     -2,    -2,     -1,    -1,     -1,    -1,     -1,
      0,     -3,    -2,     -2,    -1,     -2,    -1,     -1,     0,     -2,    -1,     -1,     1,      0,     4,  -1873,
   4078,  -1898,     4,      1,     0,      0,     0,     -1,    -1,      0,    -1,     -1,    -1,     -1,    -1,     -1,
     -1,      0,    -1,      0,    -1,      0,    -1,     -1,    -1,      0,     0,     -1,    -1,     -1,    -1,     -1,
      0,      0,    -1,     -1,    -1,     -1,    -2,     -1,    -1,     -1,    -2,     -1,    -1,     -1,    -1,     -1,
     -1,      0,    -1,     -1,    -1,     -1,    -1,     -1,    -1,      0,    -2,     -1,    -1,     -2,    -2,     -1,
      0,      2,     1,      1,     2,      1,     0,      0,     0,      0,     0,      0,     1,      0,     0,      0,
      1,      0,     0,      0,     1,      0,     0,      0,     1,      0,     0,      0,     1,     -1,    -1,     -1,
      1,      0,     0,      0,     1,      0,     0,      0,     1,      0,     0,     -1,     1,     -1,     1,     -1,
      0,      1,     0,      0,     1,      0,     1,     -1,     0,      0,    -1,     -1,    -1,     -2,    -4,   1871,
  -4081,   1900,    -4,     -1,     0,      0,     0,      1,    -1,      0,     1,      1,     1,      1,     1,      1,
      1,      0,     1,      0,     1,      0,     1,      1,     1,      0,     0,      1,     1,      1,     1,      1,
      0,      0,     1,      1,     1,      1,     0,      1,     1,      1,     2,      1,     1,      1,     1,      1,
      1,      2,     1,      1,     1,      1,     1,      1,     1,      2,     2,      1,     1,      2,     2,      1
```

Output from complexToDecibelWithGain():

```
      0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,
      0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,
      0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,
      0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,     63,
     63,     63,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,
      0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,
      0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,
      0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0,     0,      0
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Tests completed...

WFF_FHT Test: Pure sine wave with frequency = 7500 Hz and amplitude of +-16383
           FHT_LEN = 256, N_DB = 64

Test 1 - Rectangular window, linear output
Output from generateSample():

     0,  11585, -16383,  11585,     0, -11585,  16383, -11585,     0,  11585, -16383,  11584,     0, -11585,  16383, -11584,
     0,  11585, -16383,  11584,     0, -11585,  16383, -11584,     0,  11585, -16383,  11584,     0, -11585,  16383, -11585,
     0,  11584, -16383,  11585,     0, -11584,  16383, -11585,     0,  11584, -16383,  11585,     0, -11585,  16383, -11584,
     0,  11585, -16383,  11584,     1, -11585,  16383, -11584,    -1,  11585, -16383,  11584,     1, -11585,  16383, -11584,
    -1,  11586, -16383,  11584,     2, -11586,  16383, -11583,    -2,  11586, -16383,  11583,     2, -11586,  16383, -11583,
    -2,  11586, -16383,  11583,     3, -11586,  16383, -11583,    -3,  11587, -16383,  11582,     3, -11587,  16383, -11582,
    -3,  11587, -16383,  11582,     4, -11587,  16383, -11582,    -4,  11587, -16383,  11582,     4, -11587,  16383, -11581,
    -4,  11588, -16383,  11581,     5, -11588,  16383, -11581,    -5,  11588, -16383,  11581,     5, -11588,  16383, -11581,
    -5,  11588, -16383,  11581,     6, -11589,  16383, -11580,    -6,  11589, -16383,  11580,     6, -11589,  16383, -11580,
    -6,  11589, -16383,  11580,     7, -11589,  16383, -11580,    -7,  11590, -16383,  11580,     7, -11590,  16383, -11579,
    -7,  11590, -16383,  11579,     8, -11590,  16383, -11579,    -8,  11590, -16383,  11579,     8, -11591,  16383, -11579,
    -9,  11591, -16383,  11578,     9, -11591,  16383, -11578,    -9,  11591, -16383,  11578,     9, -11591,  16383, -11578,
    -9,  11592, -16383,  11578,    10, -11592,  16383, -11577,   -10,  11592, -16383,  11577,    10, -11592,  16383, -11577,
   -11,  11592, -16383,  11577,    11, -11592,  16383, -11577,   -11,  11592, -16383,  11577,    11, -11593,  16383, -11576,
   -11,  11593, -16383,  11576,    12, -11593,  16383, -11576,   -13,  11593, -16383,  11576,    12, -11593,  16383, -11575,
   -13,  11593, -16383,  11576,    13, -11594,  16383, -11575,   -13,  11594, -16383,  11575,    13, -11594,  16383, -11575

Output from fhtDitInt():

    -2,     -3,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,
    -1,     -2,     -1,     -1,     -2,     -2,     -1,     -2,     -2,     -2,     -1,     -2,     -1,     -1,     -1,     -1,
  -126,     -2,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
    -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
    -1,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,
    -1,     -2,     -2,     -2,     -2,     -3,     -2,     -2,     -2,     -2,     -3,     -2,     -2,     -2,     -2,     -3,
  7967,     -1,      0,      0,     -1,     -1,      0,     -1,     -1,     -1,      0,     -1,     -1,      0,      0,     -1,
    -1,     -2,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -2,     -1,     -1,     -1,     -1,     -1,     -1,
     0,      1,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     1,      0,     -1,     -1,      0,      0,     -1,      0,      0,      0,     -1,      0,     -1,     -1,     -1,     -1,
 -8070,      2,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,
     1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,
    -1,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     1,      0,      0,      0,      0,      1,      0,      0,      0,      0,      0,      1,      0,      0,      0,      1,
```

```
    221,       1,       0,       0,       1,       1,       0,       1,       1,       1,       0,       1,       1,       0,       0,       1,
      1,       2,       1,       1,       1,       1,       1,       1,       1,       2,       1,       1,       1,       1,       1,       1

Output from complexToReal():

      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      1,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     62,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0
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Test 2 - Rectangular window, decibel output
Output from generateSample():

```
     0,  11585, -16383,  11585,      0, -11585,  16383, -11585,      0,  11585, -16383,  11584,      0, -11585,  16383, -11584,
     0,  11585, -16383,  11584,      0, -11585,  16383, -11584,      0,  11585, -16383,  11584,      0, -11584,  16383, -11585,
     0,  11584, -16383,  11585,      0, -11585,  16383, -11584,      0,  11584, -16383,  11585,      0, -11585,  16383, -11584,
     0,  11585, -16383,  11584,      1, -11585,  16383, -11584,     -1,  11585, -16383,  11584,      1, -11585,  16383, -11584,
    -1,  11586, -16383,  11584,      2, -11586,  16383, -11583,     -2,  11586, -16383,  11583,      2, -11586,  16383, -11583,
    -2,  11586, -16383,  11583,      3, -11586,  16383, -11583,     -3,  11587, -16383,  11582,      3, -11587,  16383, -11582,
    -3,  11587, -16383,  11582,      4, -11587,  16383, -11582,     -4,  11587, -16383,  11582,      4, -11587,  16383, -11581,
    -4,  11588, -16383,  11581,      5, -11588,  16383, -11581,     -5,  11588, -16383,  11581,      5, -11588,  16383, -11581,
    -5,  11588, -16383,  11581,      6, -11589,  16383, -11580,     -6,  11589, -16383,  11580,      6, -11589,  16383, -11580,
    -6,  11589, -16383,  11580,      7, -11589,  16383, -11580,     -7,  11590, -16383,  11580,      7, -11590,  16383, -11579,
    -7,  11590, -16383,  11579,      8, -11590,  16383, -11579,     -8,  11590, -16383,  11579,      8, -11591,  16383, -11579,
    -9,  11591, -16383,  11578,      9, -11591,  16383, -11578,     -9,  11591, -16383,  11578,      9, -11591,  16383, -11578,
    -9,  11592, -16383,  11578,     10, -11592,  16383, -11577,    -10,  11592, -16383,  11577,     10, -11592,  16383, -11577,
   -11,  11592, -16383,  11577,     11, -11592,  16383, -11577,    -11,  11592, -16383,  11577,     11, -11593,  16383, -11576,
   -11,  11593, -16383,  11576,     12, -11593,  16383, -11576,    -13,  11593, -16383,  11576,     12, -11593,  16383, -11575,
   -13,  11593, -16383,  11576,     13, -11594,  16383, -11575,    -13,  11594, -16383,  11575,     13, -11594,  16383, -11575
```

Output from fhtDitInt():

```
    -2,     -3,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,
    -1,     -2,     -1,     -1,     -2,     -2,     -1,     -2,     -2,     -2,     -1,     -2,     -1,     -1,     -1,     -1,
  -126,     -2,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
    -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -1,
    -1,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,
    -1,     -2,     -2,     -2,     -2,     -3,     -2,     -2,     -2,     -2,     -2,     -3,     -2,     -2,     -2,     -3,
  7967,     -1,      0,      0,     -1,     -1,      0,     -1,     -1,     -1,      0,     -1,     -1,      0,      0,     -1,
    -1,     -2,     -1,     -1,     -1,     -1,     -1,     -1,     -1,     -2,     -1,     -1,     -1,     -1,     -1,     -1,
     0,      1,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     1,      0,     -1,     -1,      0,      0,     -1,      0,      0,     -1,      0,     -1,     -1,     -1,     -1,     -1,
 -8070,      2,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,
     1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,      1,
    -1,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     1,      0,      0,      0,      0,      1,      0,      0,      0,      0,      0,      1,      0,      0,      0,      1,
   221,      1,      0,      0,      1,      1,      0,      1,      1,      1,      0,      1,      1,      0,      0,      1,
     1,      2,      1,      1,      1,      1,      1,      1,      1,      2,      1,      1,      1,      1,      1,      1
```

Output from complexToDecibel():

```
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     7,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
    63,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0
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```

Test 3 - Hamming window, linear output
Output from generateSample():

```
    0,  11585, -16383,  11585,     0, -11585,  16383, -11585,     0,  11585, -16383,  11584,     0, -11585,  16383, -11584,
    0,  11585, -16383,  11584,     0, -11585,  16383, -11584,     0,  11585, -16383,  11584,     0, -11584,  16383, -11585,
    0,  11584, -16383,  11585,     0, -11584,  16383, -11585,     0,  11584, -16383,  11585,     0, -11585,  16383, -11584,
    0,  11585, -16383,  11584,     1, -11585,  16383, -11584,    -1,  11585, -16383,  11584,     1, -11585,  16383, -11584,
   -1,  11586, -16383,  11584,     2, -11586,  16383, -11583,    -2,  11586, -16383,  11583,     2, -11586,  16383, -11583,
   -2,  11586, -16383,  11583,     3, -11586,  16383, -11583,    -3,  11587, -16383,  11582,     3, -11587,  16383, -11582,
   -3,  11587, -16383,  11582,     4, -11587,  16383, -11582,    -4,  11587, -16383,  11582,     4, -11587,  16383, -11581,
   -4,  11588, -16383,  11581,     5, -11588,  16383, -11581,    -5,  11588, -16383,  11581,     5, -11588,  16383, -11581,
   -5,  11588, -16383,  11581,     6, -11589,  16383, -11580,    -6,  11589, -16383,  11580,     6, -11589,  16383, -11580,
   -6,  11589, -16383,  11580,     7, -11589,  16383, -11580,    -7,  11590, -16383,  11580,     7, -11590,  16383, -11579,
   -7,  11590, -16383,  11579,     8, -11590,  16383, -11579,    -8,  11590, -16383,  11579,     8, -11591,  16383, -11579,
   -9,  11591, -16383,  11578,     9, -11591,  16383, -11578,    -9,  11591, -16383,  11578,     9, -11591,  16383, -11578,
   -9,  11592, -16383,  11578,    10, -11592,  16383, -11577,   -10,  11592, -16383,  11577,    10, -11592,  16383, -11577,
  -11,  11592, -16383,  11577,    11, -11592,  16383, -11577,   -11,  11592, -16383,  11577,    11, -11593,  16383, -11576,
  -11,  11593, -16383,  11576,    12, -11593,  16383, -11576,   -13,  11593, -16383,  11576,    12, -11593,  16383, -11575,
  -13,  11593, -16383,  11576,    13, -11594,  16383, -11575,   -13,  11594, -16383,  11575,    13, -11594,  16383, -11575
```

Output from applyHammingWindow():

```
    0,    928,  -1319,    941,     0,   -967,   1391,  -1006,     0,   1057,  -1538,   1120,     0,  -1198,   1753,  -1287,
    0,   1387,  -2039,   1499,     0,  -1625,   2390,  -1760,     0,   1905,  -2805,   2062,     0,  -2230,   3276,  -2407,
    0,   2592,  -3804,   2788,     0,  -2992,   4378,  -3204,     0,   3422,  -4998,   3647,     0,  -3880,   5654,  -4118,
    0,   4361,  -6342,   4608,     0,  -4861,   7053,  -5116,    -1,   5373,  -7783,   5632,     0,  -5896,   8521,  -6157,
   -1,   6420,  -9264,   6681,     1,  -6944,  10002,  -7202,    -2,   7460, -10730,   7712,     1,  -7966,  11438,  -8211,
   -2,   8454, -12123,   8687,     2,  -8921,  12774,  -9143,    -3,   9362, -13389,   9568,     2,  -9774,  13957,  -9963,
   -3,  10151, -14479,  10320,     3, -10491,  14943, -10640,    -4,  10788, -15350,  10916,     3, -11043,  15693, -11147,
   -4,  11251, -15970,  11330,     4, -11411,  16177, -11465,    -5,  11519, -16314,  11547,     4, -11578,  16377, -11581,
   -5,  11583, -16369,  11560,     5, -11540,  16286, -11489,    -6,  11443, -16133,  11367,     5, -11297,  15907, -11196,
   -6,  11100, -15614,  10976,     6, -10858,  15254, -10712,    -7,  10571, -14833,  10403,     6, -10243,  14353, -10054,
   -7,   9873, -13820,   9667,     6,  -9472,  13238,  -9249,    -7,   9037, -12615,   8800,     6,  -8577,  11954,  -8329,
   -7,   8092, -11264,   7834,     5,  -7592,  10549,  -7327,    -6,   7076,  -9819,   6808,     5,  -6554,   9078,  -6285,
   -5,   6029,  -8337,   5760,     4,  -5507,   7598,  -5241,    -5,   4990,  -6874,   4730,     3,  -4488,   6167,  -4237,
   -4,   4001,  -5487,   3760,     3,  -3537,   4839,  -3310,    -4,   3098,  -4231,   2887,     2,  -2692,   3666,  -2497,
   -3,   2318,  -3154,   2143,     2,  -1985,   2694,  -1830,    -2,   1691,  -2297,   1559,     1,  -1443,   1961,  -1334,
   -2,   1241,  -1694,   1156,     1,  -1089,   1494,  -1029,    -2,    985,  -1367,    951,     1,   -934,   1312,   -926
```

Output from fhtDitInt():

```
   -2,     -4,     -4,     -3,    -3,     -2,     -2,     -2,    -2,     -2,     -2,     -2,    -2,     -2,     -2,     -2,
    0,     -3,     -1,     -2,    -2,     -2,     -2,     -2,    -1,     -2,     -2,     -1,    -1,     -2,     -1,    -14,
  -68,     -9,     -2,     -2,    -2,     -1,     -2,     -2,    -2,     -2,     -2,     -2,    -1,     -2,     -2,     -1,
    0,     -2,     -1,     -2,    -1,     -2,     -2,     -2,    -2,     -2,     -2,     -1,    -2,     -1,     -2,     -1,
    0,     -1,     -1,     -1,    -1,      0,     -1,     -1,    -1,     -1,     -1,     -1,    -1,     -1,     -1,     -1,
    0,     -3,     -1,     -1,    -1,     -1,      0,      0,    -1,     -1,     -1,      0,     1,      0,      4,  -1740,
 4287,  -1779,      3,      0,     1,      1,     -1,     -1,     0,      0,      0,     -1,    -1,     -1,     -1,     -1,
    0,      0,     -1,     -1,    -1,     -1,     -1,     -1,    -1,     -1,     -1,     -2,    -1,     -1,     -1,     -2,
    0,      2,      0,      1,     1,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      1,      1,      0,     0,      0,      0,      0,    -1,      0,      0,     -1,    -1,     -2,     -5,   1808,
-4342,   1831,     -4,     -2,     0,     -1,      0,      0,     0,      0,      0,      0,    -1,      0,      0,     -1,
    0,      0,     -1,      0,    -1,      0,      0,      0,     0,      0,      0,     -1,     0,     -1,      0,     -1,
    0,      1,      1,      1,     1,      0,      1,      1,     1,      1,      1,      1,     1,      1,      1,      1,
    0,      1,      1,      1,     1,      1,      0,      0,     1,      1,      1,      0,     1,      0,      0,    -56,
  119,    -41,      1,      2,     1,      1,      1,      1,     0,      2,      2,      1,     1,      1,      1,      1,
    0,      2,      1,      1,     1,      1,      1,      1,     1,      3,      3,      2,     1,      3,      1,      2
```

Output from complexToReal():

```
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,     13,
   33,     14,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,
    0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0,     0,      0,      0,      0
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```

Test 4 - Hamming window, decibel output with gain
Output from generateSample():

```
     0,  11585, -16383,  11585,      0, -11585,  16383, -11585,      0,  11585, -16383,  11584,      0, -11585,  16383, -11584,
     0,  11585, -16383,  11584,      0, -11585,  16383, -11584,      0,  11585, -16383,  11584,      0, -11584,  16383, -11585,
     0,  11584, -16383,  11585,      0, -11584,  16383, -11585,      0,  11584, -16383,  11585,      0, -11585,  16383, -11584,
     0,  11585, -16383,  11584,      1, -11585,  16383, -11584,     -1,  11585, -16383,  11584,      1, -11585,  16383, -11584,
    -1,  11586, -16383,  11584,      2, -11586,  16383, -11583,     -2,  11586, -16383,  11583,      2, -11586,  16383, -11583,
    -2,  11586, -16383,  11583,      3, -11586,  16383, -11583,     -3,  11587, -16383,  11582,      3, -11587,  16383, -11582,
    -3,  11587, -16383,  11582,      4, -11587,  16383, -11582,     -4,  11587, -16383,  11582,      4, -11587,  16383, -11581,
    -4,  11588, -16383,  11581,      5, -11588,  16383, -11581,     -5,  11588, -16383,  11581,      5, -11588,  16383, -11581,
    -5,  11588, -16383,  11581,      6, -11589,  16383, -11580,     -6,  11589, -16383,  11580,      6, -11589,  16383, -11580,
    -6,  11589, -16383,  11580,      7, -11589,  16383, -11580,     -7,  11590, -16383,  11580,      7, -11590,  16383, -11579,
    -7,  11590, -16383,  11579,      8, -11590,  16383, -11579,     -8,  11590, -16383,  11579,      8, -11591,  16383, -11579,
    -9,  11591, -16383,  11578,      9, -11591,  16383, -11578,     -9,  11591, -16383,  11578,      9, -11591,  16383, -11578,
```

```
    -9,  11592, -16383,  11578,   10, -11592,  16383, -11577,   -10,  11592, -16383,  11577,   10, -11592,  16383, -11577,
   -11,  11592, -16383,  11577,   11, -11592,  16383, -11577,   -11,  11592, -16383,  11577,   11, -11593,  16383, -11576,
   -11,  11593, -16383,  11576,   12, -11593,  16383, -11576,   -13,  11593, -16383,  11576,   12, -11593,  16383, -11575,
   -13,  11593, -16383,  11576,   13, -11594,  16383, -11575,   -13,  11594, -16383,  11575,   13, -11594,  16383, -11575
```

Output from applyHammingWindow():

```
    0,    928,  -1319,    941,    0,   -967,   1391,  -1006,    0,   1057,  -1538,   1120,    0,  -1198,   1753,  -1287,
    0,   1387,  -2039,   1499,    0,  -1625,   2390,  -1760,    0,   1905,  -2805,   2062,    0,  -2230,   3276,  -2407,
    0,   2592,  -3804,   2788,    0,  -2992,   4378,  -3204,    0,   3422,  -4998,   3647,    0,  -3880,   5654,  -4118,
    0,   4361,  -6342,   4608,    0,  -4861,   7053,  -5116,   -1,   5373,  -7783,   5632,    0,  -5896,   8521,  -6157,
   -1,   6420,  -9264,   6681,    1,  -6944,  10002,  -7202,   -2,   7460, -10730,   7712,    1,  -7966,  11438,  -8211,
   -2,   8454, -12123,   8687,    2,  -8921,  12774,  -9143,   -3,   9362, -13389,   9568,    2,  -9774,  13957,  -9963,
   -3,  10151, -14479,  10320,    3, -10491,  14943, -10640,   -4,  10788, -15350,  10916,    3, -11043,  15693, -11147,
   -4,  11251, -15970,  11330,    4, -11411,  16177, -11465,   -5,  11519, -16314,  11547,    4, -11578,  16377, -11581,
   -5,  11583, -16369,  11560,    5, -11540,  16286, -11489,   -6,  11443, -16133,  11367,    5, -11297,  15907, -11196,
   -6,  11100, -15614,  10976,    6, -10858,  15254, -10712,   -7,  10571, -14833,  10403,    6, -10243,  14353, -10054,
   -7,   9873, -13820,   9667,    6,  -9472,  13238,  -9249,   -7,   9037, -12615,   8800,    6,  -8577,  11954,  -8329,
   -7,   8092, -11264,   7834,    5,  -7592,  10549,  -7327,   -6,   7076,  -9819,   6808,    5,  -6554,   9078,  -6285,
   -5,   6029,  -8337,   5760,    4,  -5507,   7598,  -5241,   -5,   4990,  -6874,   4730,    3,  -4488,   6167,  -4237,
   -4,   4001,  -5487,   3760,    3,  -3537,   4839,  -3310,   -4,   3098,  -4231,   2887,    2,  -2692,   3666,  -2497,
   -3,   2318,  -3154,   2143,    2,  -1985,   2694,  -1830,   -2,   1691,  -2297,   1559,    1,  -1443,   1961,  -1334,
   -2,   1241,  -1694,   1156,    1,  -1089,   1494,  -1029,   -2,    985,  -1367,    951,    1,   -934,   1312,   -926
```

Output from fhtDitInt():

```
   -2,     -4,     -4,     -3,   -3,     -2,     -2,     -2,    -2,     -2,     -2,     -2,   -2,     -2,     -2,     -2,
    0,     -3,     -1,     -2,   -2,     -2,     -2,     -2,    -1,     -2,     -2,     -1,   -1,     -2,     -1,    -14,
  -68,     -9,     -2,     -2,   -2,     -1,     -2,     -2,    -2,     -2,     -2,     -2,   -1,     -2,     -2,     -1,
    0,     -2,     -1,     -2,   -1,     -2,     -2,     -2,    -2,     -2,     -2,     -1,   -2,     -1,     -2,     -1,
    0,     -1,     -1,     -1,   -1,      0,     -1,     -1,    -1,     -1,     -1,     -1,   -1,     -1,     -1,     -1,
    0,     -3,     -1,     -1,   -1,     -1,      0,      0,    -1,     -1,     -1,      0,    1,      0,      4,  -1740,
 4287,  -1779,      3,      0,    1,      1,     -1,     -1,     0,      0,      0,     -1,   -1,     -1,     -1,     -1,
    0,      0,     -1,     -1,   -1,     -1,     -1,     -1,    -1,     -1,     -1,     -2,   -1,     -1,     -1,     -2,
    0,      2,      0,      1,    1,      0,      0,      0,     0,      0,      0,      0,    0,      0,      0,      0,
    0,      1,      1,      0,    0,      0,      0,      0,    -1,      0,      0,     -1,   -1,     -2,     -5,   1808,
-4342,   1831,     -4,     -2,    0,     -1,      0,      0,     0,      0,      0,      0,   -1,      0,      0,     -1,
    0,      0,     -1,      0,   -1,      0,      0,      0,     0,      0,      0,     -1,    0,     -1,      0,     -1,
    0,      1,      1,      1,    1,      0,      1,      1,     1,      1,      1,      1,    1,      1,      1,      1,
    0,      1,      1,      1,    1,      1,      0,      0,     1,      1,      1,      0,    1,      0,      0,    -56,
  119,    -41,      1,      2,    1,      1,      1,      1,     0,      2,      2,      1,    1,      1,      1,      1,
    0,      2,      1,      1,    1,      1,      1,      1,     1,      3,      3,      2,    1,      3,      1,      2
```

Output from complexToDecibelWithGain():

```
    0,      0,      0,      0,    0,      0,      0,      0,     0,      0,      0,      0,    0,      0,      0,      0,
    0,      0,      0,      0,    0,      0,      0,      0,     0,      0,      0,      0,    0,      0,      0,      0,
   24,      0,      0,      0,    0,      0,      0,      0,     0,      0,      0,      0,    0,      0,      0,      0,
    0,      0,      0,      0,    0,      0,      0,      0,     0,      0,      0,      0,    0,      0,      0,      0,
    0,      0,      0,      0,    0,      0,      0,      0,     0,      0,      0,      0,    0,      0,      0,      0,
    0,      0,      0,      0,    0,      0,      0,      0,     0,      0,      0,      0,    0,      0,      0,     63,
   63,     63,      0,      0,    0,      0,      0,      0,     0,      0,      0,      0,    0,      0,      0,      0,
    0,      0,      0,      0,    0,      0,      0,      0,     0,      0,      0,      0,    0,      0,      0,      0
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```

Test 5 - Hann window, linear output
Output from generateSample():

```
     0,  11585, -16383,  11585,     0, -11585,  16383, -11585,     0,  11585, -16383,  11584,     0, -11585,  16383, -11584,
     0,  11585, -16383,  11584,     0, -11585,  16383, -11584,     0,  11585, -16383,  11584,     0, -11584,  16383, -11585,
     0,  11584, -16383,  11585,     0, -11584,  16383, -11585,     0,  11584, -16383,  11585,     0, -11585,  16383, -11584,
     0,  11585, -16383,  11584,     1, -11585,  16383, -11584,    -1,  11585, -16383,  11584,     1, -11585,  16383, -11584,
    -1,  11586, -16383,  11584,     2, -11586,  16383, -11583,    -2,  11586, -16383,  11583,     2, -11586,  16383, -11583,
    -2,  11586, -16383,  11583,     3, -11586,  16383, -11583,    -3,  11587, -16383,  11582,     3, -11587,  16383, -11582,
    -3,  11587, -16383,  11582,     4, -11587,  16383, -11582,    -4,  11587, -16383,  11582,     4, -11587,  16383, -11581,
    -4,  11588, -16383,  11581,     5, -11588,  16383, -11581,    -5,  11588, -16383,  11581,     5, -11588,  16383, -11581,
    -5,  11588, -16383,  11581,     6, -11589,  16383, -11580,    -6,  11589, -16383,  11580,     6, -11589,  16383, -11580,
    -6,  11589, -16383,  11580,     7, -11589,  16383, -11580,    -7,  11590, -16383,  11580,     7, -11590,  16383, -11579,
    -7,  11590, -16383,  11579,     8, -11590,  16383, -11579,    -8,  11590, -16383,  11579,     8, -11591,  16383, -11579,
    -9,  11591, -16383,  11578,     9, -11591,  16383, -11578,    -9,  11591, -16383,  11578,     9, -11591,  16383, -11578,
    -9,  11592, -16383,  11578,    10, -11592,  16383, -11577,   -10,  11592, -16383,  11577,    10, -11592,  16383, -11577,
   -11,  11592, -16383,  11577,    11, -11592,  16383, -11577,   -11,  11592, -16383,  11577,    11, -11593,  16383, -11576,
   -11,  11593, -16383,  11576,    12, -11593,  16383, -11576,   -13,  11593, -16383,  11576,    12, -11593,  16383, -11575,
   -13,  11593, -16383,  11576,    13, -11594,  16383, -11575,   -13,  11594, -16383,  11575,    13, -11594,  16383, -11575
```

Output from applyHannWindow():

```
     0,      1,     -9,     15,     0,    -44,     88,    -86,     0,    141,   -247,    211,     0,   -295,    481,   -391,
     0,    500,   -792,    622,     0,   -759,   1173,   -905,     0,   1064,  -1624,   1234,     0,  -1417,   2137,  -1609,
     0,   1811,  -2710,   2023,     0,  -2245,   3335,  -2475,     0,   2712,  -4008,   2957,     0,  -3211,   4721,  -3469,
     0,   3732,  -5469,   4001,     0,  -4276,   6241,  -4553,    -1,   4832,  -7035,   5115,     0,  -5401,   7837,  -5685,
    -1,   5971,  -8645,   6255,     1,  -6540,   9447,  -6821,    -2,   7101, -10239,   7375,     1,  -7651,  11008,  -7917,
    -2,   8181, -11752,   8436,     2,  -8690,  12460,  -8931,    -3,   9169, -13128,   9393,     2,  -9617,  13747,  -9822,
    -3,  10026, -14313,  10211,     3, -10395,  14818, -10559,    -4,  10718, -15261,  10858,     3, -10996,  15633, -11109,
    -4,  11221, -15934,  11308,     4, -11395,  16159, -11454,    -5,  11513, -16308,  11544,     4, -11577,  16377, -11581,
    -5,  11583, -16368,  11559,     5, -11536,  16278, -11482,    -6,  11430, -16111,  11348,     5, -11271,  15865, -11163,
```

```
  -6, 11058, -15547, 10924,     6, -10795, 15155, -10636,    -7, 10482, -14698, 10300,     6, -10125, 14176,  -9921,
  -6,  9725, -13598,  9501,     6,  -9287, 12965,  -9047,    -7,  8814, -12288,  8559,     5,  -8315, 11569,  -8047,
  -7,  7788, -10819,  7509,     5,  -7244, 10041,  -6958,    -6,  6684,  -9248,  6393,     4,  -6116,  8443,  -5825,
  -5,  5545,  -7637,  5254,     4,  -4978,  6834,  -4690,    -4,  4416,  -6047,  4135,     3,  -3870,  5278,  -3599,
  -4,  3340,  -4540,  3080,     2,  -2836,  3835,  -2592,    -3,  2360,  -3175,  2131,     1,  -1918,  2561,  -1708,
  -2,  1512,  -2003,  1323,     1,  -1150,  1504,   -983,    -2,   830,  -1072,   688,     0,   -561,   707,   -444,
  -1,   341,   -416,   250,     0,   -175,   199,   -112,    -1,    62,    -62,    27,     0,     -7,     1,      0,
```

Output from fhtDitInt():

```
  -2,    -4,    -4,    -3,    -3,    -3,    -3,    -2,    -2,    -2,    -2,    -2,    -2,    -2,    -2,    -2,
  -1,    -3,    -2,    -2,    -1,    -2,    -2,    -2,    -1,    -2,    -1,    -1,    -1,    -2,    -1,   -14,
 -63,   -10,    -3,    -2,    -1,    -1,    -2,    -2,    -1,    -1,    -2,    -2,    -1,    -2,    -2,    -1,
  -1,    -2,    -2,    -2,    -1,    -2,    -2,    -2,    -2,    -2,    -1,    -2,    -2,    -2,    -2,    -2,
   0,    -2,    -1,     0,    -1,     0,    -1,    -1,     0,    -2,    -1,    -1,    -1,    -1,    -1,    -1,
   0,    -3,    -1,    -1,     0,    -1,    -1,     0,     0,    -2,    -1,     0,     1,     0,     4, -1893,
3967, -1934,     3,     1,     1,     1,    -1,    -1,     0,     0,    -1,    -1,     0,    -1,    -1,    -1,
   0,     0,    -1,    -1,    -1,    -1,    -1,    -1,    -1,     0,    -1,    -2,    -1,    -2,    -1,    -2,
   0,     0,     0,     1,     1,     1,     1,     0,     0,     0,     0,     0,     0,     0,     0,     0,
  -1,     1,     0,     0,    -1,     0,     0,     0,    -1,     0,    -1,    -1,    -1,    -2,    -5,  1964,
-4019,  1990,    -5,    -2,    -1,    -1,     0,     0,    -1,    -1,     0,     0,    -1,     0,     0,    -1,
  -1,     0,     0,     0,    -1,     0,     0,     0,     0,     0,    -1,     0,     0,     0,     0,     0,
   0,     0,     1,     0,     1,     0,     1,     1,     0,     0,     1,     1,     1,     1,     1,     1,
   0,     1,     1,     1,     0,     1,     1,     0,     0,     0,     1,     0,     1,     0,     0,   -61,
 111,   -44,     1,     1,     1,     1,     1,     1,     0,     2,     1,     1,     0,     1,     1,     1,
   0,     2,     1,     1,     1,     1,     1,     1,     1,     2,     1,     2,     1,     2,     1,     2
```

Output from complexToReal():

```
   0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
   0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
   0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
   0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
   0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
   0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,    15,
  31,    15,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
   0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0
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```

Test 6 - Hann window, decibel output with gain
Output from generateSample():

```
      0,  11585, -16383,  11585,      0, -11585,  16383, -11585,      0,  11585, -16383,  11584,      0, -11585,  16383, -11584,
      0,  11585, -16383,  11584,      0, -11585,  16383, -11584,      0,  11585, -16383,  11584,      0, -11584,  16383, -11585,
      0,  11584, -16383,  11585,      0, -11584,  16383, -11585,      0,  11584, -16383,  11585,      0, -11585,  16383, -11584,
      0,  11585, -16383,  11584,      1, -11585,  16383, -11584,     -1,  11585, -16383,  11584,      1, -11585,  16383, -11584,
     -1,  11586, -16383,  11584,      2, -11586,  16383, -11583,     -2,  11586, -16383,  11583,      2, -11586,  16383, -11583,
     -2,  11586, -16383,  11583,      3, -11586,  16383, -11583,     -3,  11587, -16383,  11582,      3, -11587,  16383, -11582,
     -3,  11587, -16383,  11582,      4, -11587,  16383, -11582,     -4,  11587, -16383,  11582,      4, -11587,  16383, -11581,
     -4,  11588, -16383,  11581,      5, -11588,  16383, -11581,     -5,  11588, -16383,  11581,      5, -11588,  16383, -11581,
     -5,  11588, -16383,  11581,      6, -11589,  16383, -11580,     -6,  11589, -16383,  11580,      6, -11589,  16383, -11580,
     -6,  11589, -16383,  11580,      7, -11589,  16383, -11580,     -7,  11590, -16383,  11580,      7, -11590,  16383, -11579,
     -7,  11590, -16383,  11579,      8, -11590,  16383, -11579,     -8,  11590, -16383,  11579,      8, -11591,  16383, -11579,
     -9,  11591, -16383,  11578,      9, -11591,  16383, -11578,     -9,  11591, -16383,  11578,      9, -11591,  16383, -11578,
     -9,  11592, -16383,  11578,     10, -11592,  16383, -11577,    -10,  11592, -16383,  11577,     10, -11592,  16383, -11577,
    -11,  11592, -16383,  11577,     11, -11592,  16383, -11577,    -11,  11592, -16383,  11577,     11, -11593,  16383, -11576,
    -11,  11593, -16383,  11576,     12, -11593,  16383, -11576,    -13,  11593, -16383,  11576,     12, -11593,  16383, -11575,
    -13,  11593, -16383,  11576,     13, -11594, -16383, -11575,    -13,  11594, -16383,  11575,     13, -11594,  16383, -11575
```

Output from applyHannWindow():

```
      0,      1,     -9,     15,      0,    -44,     88,    -86,      0,    141,   -247,    211,      0,   -295,    481,   -391,
      0,    500,   -792,    622,      0,   -759,   1173,   -905,      0,   1064,  -1624,   1234,      0,  -1417,   2137,  -1609,
      0,   1811,  -2710,   2023,      0,  -2245,   3335,  -2475,      0,   2712,  -4008,   2957,      0,  -3211,   4721,  -3469,
      0,   3732,  -5469,   4001,      0,  -4276,   6241,  -4553,     -1,   4832,  -7035,   5115,      0,  -5401,   7837,  -5685,
     -1,   5971,  -8645,   6255,      1,  -6540,   9447,  -6821,     -2,   7101, -10239,   7375,      1,  -7651,  11008,  -7917,
     -2,   8181, -11752,   8436,      2,  -8690,  12460,  -8931,     -3,   9169, -13128,   9393,      2,  -9617,  13747,  -9822,
     -3,  10026, -14313,  10211,      3, -10395,  14818, -10559,     -4,  10718, -15261,  10858,      3, -10996,  15633, -11109,
     -4,  11221, -15934,  11308,      4, -11395,  16159, -11454,     -5,  11513, -16308,  11544,      4, -11577,  16377, -11581,
     -5,  11583, -16368,  11559,      5, -11536,  16278, -11482,     -6,  11430, -16111,  11348,      5, -11271,  15865, -11163,
     -6,  11058, -15547,  10924,      6, -10795,  15155, -10636,     -7,  10482, -14698,  10300,      6, -10125,  14176,  -9921,
     -6,   9725, -13598,   9501,      6,  -9287,  12965,  -9047,     -7,   8814, -12288,   8559,      5,  -8315,  11569,  -8047,
     -7,   7788, -10819,   7509,      5,  -7244,  10041,  -6958,     -6,   6684,  -9248,   6393,      4,  -6116,   8443,  -5825,
     -5,   5545,  -7637,   5254,      4,  -4978,   6834,  -4690,     -4,   4416,  -6047,   4135,      3,  -3870,   5278,  -3599,
     -4,   3340,  -4540,   3080,      2,  -2836,   3835,  -2592,     -3,   2360,  -3175,   2131,      1,  -1918,   2561,  -1708,
     -2,   1512,  -2003,   1323,      1,  -1150,   1504,   -983,     -2,    830,  -1072,    688,      0,   -561,    707,   -444,
     -1,    341,   -416,    250,      0,   -175,    199,   -112,     -1,     62,    -62,     27,      0,     -7,      1,      0
```

Output from fhtDitInt():

```
     -2,     -4,     -4,     -3,     -3,     -3,     -3,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,     -2,
     -1,     -3,     -2,     -2,     -1,     -2,     -2,     -2,     -1,     -2,     -1,     -1,     -1,     -2,     -1,    -14,
    -63,    -10,     -3,     -2,     -1,     -1,     -2,     -2,     -1,     -1,     -2,     -2,     -1,     -2,     -2,     -1,
     -1,     -2,     -2,     -2,     -1,     -2,     -2,     -2,     -2,     -1,     -2,     -2,     -2,     -2,     -2,     -2,
      0,     -2,     -1,      0,     -1,      0,     -1,     -1,      0,     -2,     -1,     -1,     -1,     -1,     -1,     -1,
      0,     -3,     -1,     -1,      0,     -1,     -1,      0,      0,     -2,     -1,      0,      1,      0,      4,  -1893,
```

```
 3967, -1934,    3,    1,    1,    1,   -1,   -1,    0,    0,   -1,   -1,    0,   -1,   -1,   -1,
    0,    0,   -1,   -1,   -1,   -1,   -1,   -1,   -1,    0,   -1,   -2,   -1,   -2,   -1,   -2,
    0,    0,    0,    1,    1,    1,    1,    0,    0,    0,    0,    0,    0,    0,    0,    0,
   -1,    1,    0,    0,   -1,    0,    0,    0,   -1,    0,   -1,   -1,   -1,   -2,   -5, 1964,
-4019, 1990,   -5,   -2,   -1,   -1,    0,    0,   -1,   -1,    0,    0,   -1,    0,    0,   -1,
   -1,    0,    0,    0,   -1,    0,    0,    0,    0,    0,   -1,    0,    0,    0,    0,    0,
    0,    0,    1,    0,    1,    0,    1,    1,    0,    0,    1,    1,    1,    1,    1,    1,
    0,    1,    1,    1,    0,    1,    1,    0,    0,    0,    1,    0,    1,    0,    0,  -61,
  111,  -44,    1,    1,    1,    1,    1,    1,    0,    2,    1,    1,    0,    1,    1,    1,
    0,    2,    1,    1,    1,    1,    1,    1,    1,    2,    1,    2,    1,    2,    1,    2
```

Output from complexToDecibelWithGain():

```
    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,
    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,
    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,
    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,
    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,
    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,   63,
   63,   63,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,
    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0,    0
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Tests completed...

WFF_FHT Test: Pure sine wave with frequency = 1990 Hz and amplitude of +-16383
            FHT_LEN = 256, N_DB = 64

Test 1 - Rectangular window, linear output
Output from generateSample():

```
     0,    9588,   15549,   15628,    9795,     257,   -9378,  -15466,  -15703,  -10001,    -515,    9166,   15379,   15775,   10203,     772,
  -8952,  -15289,  -15842,  -10403,   -1029,    8735,   15194,   15906,   10601,    1285,   -8516,  -15096,  -15966,  -10796,   -1542,    8295,
  14994,   16021,   10988,    1798,   -8072,  -14889,  -16073,  -11177,   -2053,    7847,   14780,   16121,   11364,    2308,   -7621,  -14667,
 -16165,  -11548,   -2563,    7392,   14550,   16205,   11729,    2817,   -7161,  -14430,  -16241,  -11908,   -3070,    6929,   14307,   16272,
  12083,    3323,   -6695,  -14179,  -16300,  -12255,   -3574,    6459,   14049,   16324,   12425,    3825,   -6221,  -13914,  -16344,  -12591,
  -4075,    5983,   13777,   16360,   12754,    4324,   -5742,  -13636,  -16371,  -12914,   -4571,    5500,   13491,   16379,   13071,    4818,
  -5257,  -13344,  -16383,  -13224,   -5064,    5013,   13193,   16382,   13375,    5308,   -4767,  -13039,  -16378,  -13522,   -5551,    4520,
  12881,   16369,   13665,    5792,   -4272,  -12720,  -16357,  -13806,   -6032,    4023,   12557,   16340,   13943,    6271,   -3773,  -12390,
 -16320,  -14076,   -6508,    3522,   12220,   16295,   14206,    6743,   -3270,  -12047,  -16266,  -14332,   -6977,    3018,   11871,   16234,
  14455,    7209,   -2764,  -11692,  -16197,  -14575,   -7439,    2510,   11510,   16156,   14691,    7668,   -2256,  -11326,  -16111,  -14803,
  -7894,    2000,   11138,   16063,   14911,    8119,   -1745,  -10948,  -16010,  -15016,   -8342,    1488,   10755,   15954,   15117,    8562,
  -1232,  -10560,  -15893,  -15214,   -8780,     975,   10362,   15829,   15308,    8997,    -718,  -10161,  -15760,  -15398,   -9211,     461,
   9958,   15688,   15484,    9422,    -203,   -9752,  -15612,  -15566,   -9632,     -54,    9544,   15532,   15644,    9839,     311,   -9334,
 -15448,  -15719,  -10043,    -569,    9121,   15360,   15789,   10246,     826,   -8906,  -15269,  -15856,  -10445,   -1083,    8689,   15174,
  15919,   10642,    1340,   -8470,  -15075,  -15978,  -10837,   -1596,    8248,   14972,   16033,   11028,    1852,   -8025,  -14866,  -16084,
 -11217,   -2108,    7799,   14756,   16131,   11404,    2363,   -7572,  -14642,  -16174,  -11587,   -2617,    7343,   14525,   16213,   11768
```

Output from fhtDitInt():

```
   189,     187,     188,     189,     193,     195,     195,     214,     216,     205,     240,     242,     253,     264,     282,     304,
   329,     362,     402,     455,     531,     639,     806,    1128,    1866,    5734,   -5062,   -1730,   -1038,    -736,    -570,    -465,
  -393,    -342,    -301,    -271,    -250,    -240,    -274,     -86,    -136,    -117,    -146,    -128,    -120,    -114,    -109,    -102,
  -100,     -94,     -89,     -85,     -83,     -80,     -80,     -69,     -69,     -59,     -77,     -69,     -66,     -64,     -62,     -61,
   -59,     -57,     -56,     -54,     -53,     -52,     -53,     -43,     -46,     -39,     -50,     -45,     -43,     -42,     -42,     -41,
   -40,     -38,     -37,     -36,     -34,     -32,     -31,     -19,     -10,      51,    -120,     -66,     -55,     -51,     -47,     -46,
   -37,     -43,     -43,     -44,     -45,     -50,     -80,      18,     -17,     -20,     -29,     -28,     -28,     -29,     -28,     -27,
   -29,     -28,     -28,     -27,     -27,     -28,     -29,     -23,     -26,     -25,     -29,     -28,     -27,     -27,     -27,     -27,
   -26,     -25,     -26,     -25,     -25,     -25,     -27,     -20,     -22,     -21,     -24,     -22,     -23,     -22,     -22,     -22,
   -21,     -20,     -20,     -19,     -17,     -15,     -14,      -2,      12,      94,    -136,     -66,     -50,     -44,     -40,     -39,
   -37,     -34,     -33,     -31,     -30,     -26,     -12,     -58,     -42,     -37,     -38,     -36,     -36,     -36,     -35,     -36,
   -36,     -36,     -37,     -37,     -37,     -38,     -38,     -37,     -39,     -41,     -41,     -41,     -42,     -42,     -42,     -45,
   -45,     -45,     -46,     -48,     -49,     -50,     -53,     -51,     -54,     -57,     -58,     -61,     -63,     -66,     -68,     -73,
   -76,     -80,     -85,     -90,     -94,    -100,    -103,    -119,    -118,    -113,    -180,    -178,    -191,    -209,    -233,    -274,
  -321,    -377,    -469,    -610,    -865,   -1458,   -4284,    4882,    1605,     968,     707,     560,     470,     403,     356,     327,
   301,     278,     260,     245,     233,     222,     207,     221,     202,     197,     207,     198,     195,     193,     191,     193
```

Output from complexToReal():

```
     1,       1,       1,       1,       1,       1,       1,       1,       1,       1,       1,       1,       1,       1,       2,       2,
     2,       2,       2,       3,       3,       4,       5,       8,      13,      41,      36,      12,       7,       5,       4,       3,
     2,       2,       2,       1,       1,       1,       1,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0
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Test 2 - Rectangular window, decibel output
Output from generateSample():

```
      0,    9588,   15549,   15628,    9795,     257,   -9378,  -15466,  -15703,  -10001,    -515,    9166,   15379,   15775,   10203,     772,
  -8952,  -15289,  -15842,  -10403,   -1029,    8735,   15194,   15906,   10601,    1285,   -8516,  -15096,  -15966,  -10796,   -1542,    8295,
  14994,   16021,   10988,    1798,   -8072,  -14889,  -16073,  -11177,   -2053,    7847,   14780,   16121,   11364,    2308,   -7621,  -14667,
 -16165,  -11548,   -2563,    7392,   14550,   16205,   11729,    2817,   -7161,  -14430,  -16241,  -11908,   -3070,    6929,   14307,   16272,
  12083,    3323,   -6695,  -14179,  -16300,  -12255,   -3574,    6459,   14049,   16324,   12425,    3825,   -6221,  -13914,  -16344,  -12591,
  -4075,    5983,   13777,   16360,   12754,    4324,   -5742,  -13636,  -16371,  -12914,   -4571,    5500,   13491,   16379,   13071,    4818,
  -5257,  -13344,  -16383,  -13224,   -5064,    5013,   13193,   16382,   13375,    5308,   -4767,  -13039,  -16378,  -13522,   -5551,    4520,
  12881,   16369,   13665,    5792,   -4272,  -12720,  -16357,  -13806,   -6032,    4023,   12557,   16340,   13943,    6271,   -3773,  -12390,
 -16320,  -14076,   -6508,    3522,   12220,   16295,   14206,    6743,   -3270,  -12047,  -16266,  -14332,   -6977,    3018,   11871,   16234,
  14455,    7209,   -2764,  -11692,  -16197,  -14575,   -7439,    2510,   11510,   16156,   14691,    7668,   -2256,  -11326,  -16111,  -14803,
  -7894,    2000,   11138,   16063,   14911,    8119,   -1745,  -10948,  -16010,  -15016,   -8342,    1488,   10755,   15954,   15117,    8562,
  -1232,  -10560,  -15893,  -15214,   -8780,     975,   10362,   15829,   15308,    8997,    -718,  -10161,  -15760,  -15398,   -9211,     461,
   9958,   15688,   15484,    9422,    -203,   -9752,  -15612,  -15566,   -9632,     -54,    9544,   15532,   15644,    9839,     311,   -9334,
 -15448,  -15719,  -10043,    -569,    9121,   15360,   15789,   10246,     826,   -8906,  -15269,  -15856,  -10445,   -1083,    8689,   15174,
  15919,   10642,    1340,   -8470,  -15075,  -15978,  -10837,   -1596,    8248,   14972,   16033,   11028,    1852,   -8025,  -14866,  -16084,
 -11217,   -2108,    7799,   14756,   16131,   11404,    2363,   -7572,  -14642,  -16174,  -11587,   -2617,    7343,   14525,   16213,   11768
```

Output from fhtDitInt():

```
    189,     187,     188,     189,     193,     195,     195,     214,     216,     205,     240,     242,     253,     264,     282,     304,
    329,     362,     402,     455,     531,     639,     806,    1128,    1866,    5734,   -5062,   -1730,   -1038,    -736,    -570,    -465,
   -393,    -342,    -301,    -271,    -250,    -240,    -274,     -86,    -136,    -117,    -146,    -128,    -120,    -114,    -109,    -102,
   -100,     -94,     -89,     -85,     -83,     -80,     -80,     -69,     -69,     -59,     -77,     -69,     -66,     -64,     -62,     -61,
    -59,     -57,     -56,     -54,     -53,     -52,     -53,     -43,     -46,     -39,     -50,     -45,     -43,     -42,     -42,     -41,
    -40,     -38,     -37,     -36,     -34,     -32,     -31,     -19,     -10,      51,    -120,     -66,     -55,     -51,     -47,     -46,
    -37,     -43,     -43,     -44,     -45,     -50,     -80,      18,     -17,     -20,     -29,     -28,     -28,     -29,     -28,     -27,
    -29,     -28,     -28,     -27,     -27,     -28,     -29,     -23,     -26,     -25,     -29,     -28,     -27,     -27,     -27,     -27,
    -26,     -25,     -26,     -25,     -25,     -25,     -27,     -20,     -22,     -21,     -24,     -22,     -23,     -22,     -22,     -22,
    -21,     -20,     -20,     -19,     -17,     -15,     -14,      -2,      12,      94,    -136,     -66,     -50,     -44,     -40,     -39,
    -37,     -34,     -33,     -31,     -30,     -26,     -12,     -58,     -42,     -37,     -38,     -36,     -36,     -36,     -35,     -36,
    -36,     -36,     -37,     -37,     -37,     -38,     -38,     -37,     -39,     -41,     -41,     -41,     -42,     -42,     -42,     -45,
    -45,     -45,     -46,     -48,     -49,     -50,     -53,     -51,     -54,     -57,     -58,     -61,     -63,     -66,     -68,     -73,
    -76,     -80,     -85,     -90,     -94,    -100,    -103,    -119,    -118,    -113,    -180,    -178,    -191,    -209,    -233,    -274,
   -321,    -377,    -469,    -610,    -865,   -1458,   -4284,    4882,    1605,     968,     707,     560,     470,     403,     356,     327,
    301,     278,     260,     245,     233,     222,     207,     221,     202,     197,     207,     198,     195,     193,     191,     193
```

Output from complexToDecibel():

```
      4,       9,       9,       9,       9,       9,       9,      11,      11,      11,      12,      12,      13,      13,      14,      16,
     17,      18,      19,      21,      24,      26,      30,      34,      41,      57,      56,      40,      33,      28,      24,      21,
     19,      16,      14,      13,      12,      11,      12,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0
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Test 3 - Hamming window, linear output
Output from generateSample():

```
     0,    9588,   15549,   15628,    9795,     257,   -9378,  -15466,  -15703,  -10001,    -515,    9166,   15379,   15775,   10203,     772,
 -8952,  -15289,  -15842,  -10403,   -1029,    8735,   15194,   15906,   10601,    1285,   -8516,  -15096,  -15966,  -10796,   -1542,    8295,
 14994,   16021,   10988,    1798,   -8072,  -14889,  -16073,  -11177,   -2053,    7847,   14780,   16121,   11364,    2308,   -7621,  -14667,
-16165,  -11548,   -2563,    7392,   14550,   16205,   11729,    2817,   -7161,  -14430,  -16241,  -11908,   -3070,    6929,   14307,   16272,
 12083,    3323,   -6695,  -14179,  -16300,  -12255,   -3574,    6459,   14049,   16324,   12425,    3825,   -6221,  -13914,  -16344,  -12591,
 -4075,    5983,   13777,   16360,   12754,    4324,   -5742,  -13636,  -16371,  -12914,   -4571,    5500,   13491,   16379,   13071,    4818,
 -5257,  -13344,  -16383,  -13224,   -5064,    5013,   13193,   16382,   13375,    5308,   -4767,  -13039,  -16378,  -13522,   -5551,    4520,
 12881,   16369,   13665,    5792,   -4272,  -12720,  -16357,  -13806,   -6032,    4023,   12557,   16340,   13943,    6271,   -3773,  -12390,
-16320,  -14076,   -6508,    3522,   12220,   16295,   14206,    6743,   -3270,  -12047,  -16266,  -14332,   -6977,    3018,   11871,   16234,
 14455,    7209,   -2764,  -11692,  -16197,  -14575,   -7439,    2510,   11510,   16156,   14691,    7668,   -2256,  -11326,  -16111,  -14803,
 -7894,    2000,   11138,   16063,   14911,    8119,   -1745,  -10948,  -16010,  -15016,   -8342,    1488,   10755,   15954,   15117,    8562,
 -1232,  -10560,  -15893,  -15214,   -8780,     975,   10362,   15829,   15308,    8997,    -718,  -10161,  -15760,  -15398,   -9211,     461,
  9958,   15688,   15484,    9422,    -203,   -9752,  -15612,  -15566,   -9632,     -54,    9544,   15532,   15644,    9839,     311,   -9334,
-15448,  -15719,  -10043,    -569,    9121,   15360,   15789,   10246,     826,   -8906,  -15269,  -15856,  -10445,   -1083,    8689,   15174,
 15919,   10642,    1340,   -8470,  -15075,  -15978,  -10837,   -1596,    8248,   14972,   16033,   11028,    1852,   -8025,  -14866,  -16084,
-11217,   -2108,    7799,   14756,   16131,   11404,    2363,   -7572,  -14642,  -16174,  -11587,   -2617,    7343,   14525,   16213,   11768
```

Output from applyHammingWindow():

```
       0,      768,     1251,     1269,      805,       21,     -797,    -1343,    -1396,     -913,      -49,      886,     1536,     1631,     1092,       85,
   -1032,    -1831,    -1972,    -1347,     -139,     1224,     2217,     2415,     1675,      211,    -1458,    -2688,    -2957,    -2079,     -309,     1723,
    3234,     3585,     2551,      432,    -2014,    -3845,    -4296,    -3091,     -587,     2318,     4508,     5076,     3691,      772,    -2631,    -5214,
   -5915,    -4348,     -993,     2940,     5945,     6798,     5049,     1243,    -3242,    -6693,    -7716,    -5791,    -1528,     3525,     7441,     8648,
    6558,     1841,    -3786,    -8179,    -9586,    -7345,    -2183,     4015,     8890,    10511,     8137,     2546,    -4210,    -9566,   -11412,    -8925,
   -2932,     4365,    10194,    12270,     9693,     3329,    -4478,   -10763,   -13077,   -10436,    -3736,     4543,    11263,    13815,    11135,     4144,
   -4565,   -11691,   -14479,   -11785,    -4550,     4538,    12033,    15049,    12371,     4942,    -4467,   -12290,   -15525,   -12887,    -5318,     4350,
   12453,    15893,    13319,     5666,    -4194,   -12526,   -16152,   -13667,    -5985,     3999,    12503,    16293,    13918,     6265,    -3772,   -12390,
  -16320,   -14071,    -6503,     3515,    12184,    16225,    14121,     6689,    -3238,   -11896,   -16017,   -14069,    -6826,     2941,    11526,    15694,
   13912,     6905,    -2635,   -11083,   -15266,   -13656,    -6927,     2321,    10573,    14736,    13300,     6888,    -2011,   -10010,   -14115,   -12853,
   -6791,     1703,     9394,    13410,    12319,     6634,    -1411,    -8745,   -12637,   -11709,    -6423,     1130,     8066,    11804,    11030,     6158,
    -874,    -7373,   -10927,   -10296,    -5847,      638,     6672,    10016,     9517,     5492,     -431,    -5976,    -9091,    -8707,    -5105,      250,
    5292,     8159,     7879,     4687,      -99,    -4633,    -7241,    -7046,    -4254,      -24,     4004,     6346,     6223,     3808,      117,    -3416,
   -5492,    -5426,    -3364,     -185,     2872,     4685,     4664,     2929,      228,    -2381,    -3944,    -3955,    -2514,     -252,     1944,     3273,
    3307,     2128,      257,    -1569,    -2684,    -2736,    -1783,     -253,     1252,     2184,     2247,     1485,      239,     -999,    -1781,    -1854,
   -1246,     -226,      806,     1474,     1560,     1070,      215,     -673,    -1271,    -1375,     -967,     -216,      596,     1169,     1299,      940
```

Output from fhtDitInt():

```
      13,       12,       11,       12,       13,       12,       10,       19,       14,        4,       24,       16,       18,       18,       19,       21,
      23,       25,       26,       30,       32,       34,       26,       -9,     -598,     3840,    -3629,      465,        4,      -29,      -35,      -31,
     -28,      -26,      -23,      -22,      -18,       -9,      -76,       44,      -23,       -1,      -23,      -11,      -11,      -10,      -10,       -9,
      -9,       -9,       -9,       -9,       -7,       -7,      -10,       -5,       -9,        1,      -13,       -6,       -6,       -6,       -7,       -6,
      -5,       -5,       -5,       -5,       -5,       -5,       -8,       -2,       -6,        0,       -8,       -4,       -4,       -5,       -5,       -4,
      -4,       -4,       -5,       -4,       -4,       -4,       -5,       -3,      -13,       55,      -65,        4,       -4,       -4,       -5,       -4,
      -4,       -4,       -4,       -4,       -3,        1,      -38,       29,       -8,        0,       -5,       -3,       -4,       -3,       -3,       -3,
      -3,       -3,       -3,       -3,       -2,       -2,       -4,       -1,       -3,        0,       -5,       -3,       -3,       -3,       -3,       -2,
      -2,       -2,       -1,       -2,       -1,       -2,       -4,        1,       -2,        0,       -2,       -2,       -2,       -2,       -1,       -1,
      -1,       -1,       -2,        0,        0,       -2,       -2,       -1,      -14,       78,      -81,        9,       -2,       -3,       -3,       -3,
      -2,       -2,       -3,       -2,       -2,       -5,       12,      -20,        1,       -1,       -3,       -3,       -3,       -2,       -2,       -3,
      -3,       -3,       -3,       -3,       -3,       -3,       -4,       -3,       -3,       -3,       -3,       -4,       -4,       -4,       -3,       -4,
      -4,       -3,       -3,       -3,       -3,       -3,       -4,       -2,       -4,       -4,       -4,       -4,       -4,       -5,       -3,       -6,
      -6,       -6,       -7,       -6,       -6,       -6,       -8,       -5,      -13,      -13,       11,      -29,      -10,      -14,      -16,      -13,
     -20,      -20,      -24,      -20,       13,      419,    -3114,     3229,     -480,       -4,       33,       35,       32,       31,       25,       27,
      23,       23,       21,       21,       20,       20,       12,       27,       19,       12,       23,       17,       17,       17,       15,       18
```

Output from complexToReal():

```
       0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,
       0,        0,        0,        0,        0,        0,        0,        0,        4,       27,       26,        3,        0,        0,        0,        0,
       0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,
       0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,
       0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,
       0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,
       0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,
       0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0,        0
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```

Test 4 - Hamming window, decibel output with gain
Output from generateSample():

```
     0,    9588,   15549,   15628,    9795,     257,   -9378,  -15466,  -15703,  -10001,    -515,    9166,   15379,   15775,   10203,     772,
 -8952,  -15289,  -15842,  -10403,   -1029,    8735,   15194,   15906,   10601,    1285,   -8516,  -15096,  -15966,  -10796,   -1542,    8295,
 14994,   16021,   10988,    1798,   -8072,  -14889,  -16073,  -11177,   -2053,    7847,   14780,   16121,   11364,    2308,   -7621,  -14667,
-16165,  -11548,   -2563,    7392,   14550,   16205,   11729,    2817,   -7161,  -14430,  -16241,  -11908,   -3070,    6929,   14307,   16272,
 12083,    3323,   -6695,  -14179,  -16300,  -12255,   -3574,    6459,   14049,   16324,   12425,    3825,   -6221,  -13914,  -16344,  -12591,
 -4075,    5983,   13777,   16360,   12754,    4324,   -5742,  -13636,  -16371,  -12914,   -4571,    5500,   13491,   16379,   13071,    4818,
 -5257,  -13344,  -16383,  -13224,   -5064,    5013,   13193,   16382,   13375,    5308,   -4767,  -13039,  -16378,  -13522,   -5551,    4520,
 12881,   16369,   13665,    5792,   -4272,  -12720,  -16357,  -13806,   -6032,    4023,   12557,   16340,   13943,    6271,   -3773,  -12390,
-16320,  -14076,   -6508,    3522,   12220,   16295,   14206,    6743,   -3270,  -12047,  -16266,  -14332,   -6977,    3018,   11871,   16234,
 14455,    7209,   -2764,  -11692,  -16197,  -14575,   -7439,    2510,   11510,   16156,   14691,    7668,   -2256,  -11326,  -16111,  -14803,
 -7894,    2000,   11138,   16063,   14911,    8119,   -1745,  -10948,  -16010,  -15016,   -8342,    1488,   10755,   15954,   15117,    8562,
 -1232,  -10560,  -15893,  -15214,   -8780,     975,   10362,   15829,   15308,    8997,    -718,  -10161,  -15760,  -15398,   -9211,     461,
  9958,   15688,   15484,    9422,    -203,   -9752,  -15612,  -15566,   -9632,     -54,    9544,   15532,   15644,    9839,     311,   -9334,
-15448,  -15719,  -10043,    -569,    9121,   15360,   15789,   10246,     826,   -8906,  -15269,  -15856,  -10445,   -1083,    8689,   15174,
 15919,   10642,    1340,   -8470,  -15075,  -15978,  -10837,   -1596,    8248,   14972,   16033,   11028,    1852,   -8025,  -14866,  -16084,
-11217,   -2108,    7799,   14756,   16131,   11404,    2363,   -7572,  -14642,  -16174,  -11587,   -2617,    7343,   14525,   16213,   11768
```

Output from applyHammingWindow():

```
     0,     768,    1251,    1269,     805,      21,    -797,   -1343,   -1396,    -913,     -49,     886,    1536,    1631,    1092,      85,
 -1032,   -1831,   -1972,   -1347,    -139,    1224,    2217,    2415,    1675,     211,   -1458,   -2688,   -2957,   -2079,    -309,    1723,
  3234,    3585,    2551,     432,   -2014,   -3845,   -4296,   -3091,    -587,    2318,    4508,    5076,    3691,     772,   -2631,   -5214,
 -5915,   -4348,    -993,    2940,    5945,    6798,    5049,    1243,   -3242,   -6693,   -7716,   -5791,   -1528,    3525,    7441,    8648,
  6558,    1841,   -3786,   -8179,   -9586,   -7345,   -2183,    4015,    8890,   10511,    8137,    2546,   -4210,   -9566,  -11412,   -8925,
 -2932,    4365,   10194,   12270,    9693,    3329,   -4478,  -10763,  -13077,  -10436,   -3736,    4543,   11263,   13815,   11135,    4144,
 -4565,  -11691,  -14479,  -11785,   -4550,    4538,   12033,   15049,   12371,    4942,   -4467,  -12290,  -15525,  -12887,   -5318,    4350,
 12453,   15893,   13319,    5666,   -4194,  -12526,  -16152,  -13667,   -5985,    3999,   12503,   16293,   13918,    6265,   -3772,  -12390,
-16320,  -14071,   -6503,    3515,   12184,   16225,   14121,    6689,   -3238,  -11896,  -16017,  -14069,   -6826,    2941,   11526,   15694,
 13912,    6905,   -2635,  -11083,  -15266,  -13656,   -6927,    2321,   10573,   14736,   13300,    6888,   -2011,  -10010,  -14115,  -12853,
 -6791,    1703,    9394,   13410,   12319,    6634,   -1411,   -8745,  -12637,  -11709,   -6423,    1130,    8066,   11804,   11030,    6158,
  -874,   -7373,  -10927,  -10296,   -5847,     638,    6672,   10016,    9517,    5492,    -431,   -5976,   -9091,   -8707,   -5105,     250,
  5292,    8159,    7879,    4687,     -99,   -4633,   -7241,   -7046,   -4254,     -24,    4004,    6346,    6223,    3808,     117,   -3416,
 -5492,   -5426,   -3364,    -185,    2872,    4685,    4664,    2929,     228,   -2381,   -3944,   -3955,   -2514,    -252,    1944,    3273,
  3307,    2128,     257,   -1569,   -2684,   -2736,   -1783,    -253,    1252,    2184,    2247,    1485,     239,    -999,   -1781,   -1854,
```

```
   -1246,   -226,    806,   1474,   1560,   1070,    215,   -673,  -1271,  -1375,   -967,   -216,    596,   1169,   1299,    940
```

Output from fhtDitInt():

```
     13,     12,     11,     12,     13,     12,     10,     19,     14,      4,     24,     16,     18,     18,     19,     21,
     23,     25,     26,     30,     32,     34,     26,     -9,   -598,   3840,  -3629,    465,      4,    -29,    -35,    -31,
    -28,    -26,    -23,    -22,    -18,     -9,    -76,     44,    -23,     -1,    -23,    -11,    -11,    -10,    -10,     -9,
     -9,     -9,     -9,     -9,     -7,     -7,    -10,     -5,     -9,      1,    -13,     -6,     -6,     -6,     -7,     -6,
     -5,     -5,     -5,     -5,     -5,     -5,     -8,     -2,     -6,      0,     -8,     -4,     -4,     -5,     -5,     -4,
     -4,     -4,     -5,     -4,     -4,     -4,     -5,     -3,    -13,     55,    -65,      4,     -4,     -4,     -5,     -4,
     -4,     -4,     -4,     -4,     -3,      1,    -38,     29,     -8,      0,     -5,     -3,     -4,     -3,     -3,     -3,
     -3,     -3,     -3,     -3,     -2,     -2,     -4,     -1,     -3,      0,     -5,     -3,     -3,     -3,     -3,     -2,
     -2,     -2,     -1,     -2,     -1,     -2,     -4,      1,     -2,      0,     -2,     -2,     -2,     -2,     -1,     -1,
     -1,     -1,     -2,      0,      0,     -2,     -2,     -1,    -14,     78,    -81,      9,     -2,     -3,     -3,     -3,
     -2,     -2,     -3,     -2,     -2,     -5,     12,    -20,      1,     -1,     -3,     -3,     -3,     -2,     -2,     -3,
     -3,     -3,     -3,     -3,     -3,     -3,     -4,     -3,     -3,     -3,     -3,     -4,     -4,     -4,     -3,     -4,
     -4,     -3,     -3,     -3,     -3,     -3,     -4,     -2,     -4,     -4,     -4,     -4,     -4,     -5,     -3,     -6,
     -6,     -6,     -7,     -6,     -6,     -8,     -5,    -13,    -13,     11,    -29,    -10,    -14,    -16,    -13,    -20,
    -20,    -20,    -24,    -20,     13,    419,  -3114,   3229,   -480,     -4,     33,     35,     32,     31,     25,     27,
     23,     23,     21,     21,     20,     20,     12,     27,     19,     12,     23,     17,     17,     17,     15,     18
```

Output from complexToDecibelWithGain():

```
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,     49,     63,     63,     46,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0
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Test 5 - Hann window, linear output
Output from generateSample():

```
     0,    9588,   15549,   15628,    9795,     257,   -9378,  -15466,  -15703,  -10001,    -515,    9166,   15379,   15775,   10203,     772,
 -8952,  -15289,  -15842,  -10403,   -1029,    8735,   15194,   15906,   10601,    1285,   -8516,  -15096,  -15966,  -10796,   -1542,    8295,
 14994,   16021,   10988,    1798,   -8072,  -14889,  -16073,  -11177,   -2053,    7847,   14780,   16121,   11364,    2308,   -7621,  -14667,
-16165,  -11548,   -2563,    7392,   14550,   16205,   11729,    2817,   -7161,  -14430,  -16241,  -11908,   -3070,    6929,   14307,   16272,
 12083,    3323,   -6695,  -14179,  -16300,  -12255,   -3574,    6459,   14049,   16324,   12425,    3825,   -6221,  -13914,  -16344,  -12591,
 -4075,    5983,   13777,   16360,   12754,    4324,   -5742,  -13636,  -16371,  -12914,   -4571,    5500,   13491,   16379,   13071,    4818,
 -5257,  -13344,  -16383,  -13224,   -5064,    5013,   13193,   16382,   13375,    5308,   -4767,  -13039,  -16378,  -13522,   -5551,    4520,
 12881,   16369,   13665,    5792,   -4272,  -12720,  -16357,  -13806,   -6032,    4023,   12557,   16340,   13943,    6271,   -3773,  -12390,
-16320,  -14076,   -6508,    3522,   12220,   16295,   14206,    6743,   -3270,  -12047,  -16266,  -14332,   -6977,    3018,   11871,   16234,
 14455,    7209,   -2764,  -11692,  -16197,  -14575,   -7439,    2510,   11510,   16156,   14691,    7668,   -2256,  -11326,  -16111,  -14803,
 -7894,    2000,   11138,   16063,   14911,    8119,   -1745,  -10948,  -16010,  -15016,   -8342,    1488,   10755,   15954,   15117,    8562,
 -1232,  -10560,  -15893,  -15214,   -8780,     975,   10362,   15829,   15308,    8997,    -718,  -10161,  -15760,  -15398,   -9211,     461,
  9958,   15688,   15484,    9422,    -203,   -9752,  -15612,  -15566,   -9632,     -54,    9544,   15532,   15644,    9839,     311,   -9334,
-15448,  -15719,  -10043,    -569,    9121,   15360,   15789,   10246,     826,   -8906,  -15269,  -15856,  -10445,   -1083,    8689,   15174,
 15919,   10642,    1340,   -8470,  -15075,  -15978,  -10837,   -1596,    8248,   14972,   16033,   11028,    1852,   -8025,  -14866,  -16084,
-11217,   -2108,    7799,   14756,   16131,   11404,    2363,   -7572,  -14642,  -16174,  -11587,   -2617,    7343,   14525,   16213,   11768
```

Output from applyHannWindow():

```
     0,       1,       8,      20,      23,       0,     -51,    -115,    -152,    -123,      -8,     167,     333,     400,     300,      26,
  -344,    -661,    -766,    -560,     -62,     571,    1088,    1242,     900,     118,    -845,   -1609,   -1826,   -1320,    -202,    1151,
  2211,    2505,    1817,     314,   -1487,   -2886,   -3273,   -2388,    -460,    1837,    3615,    4115,    3024,     639,   -2197,   -4392,
 -5024,   -3721,    -856,    2553,    5197,    5980,    4468,    1107,   -2901,   -6020,   -6974,   -5259,   -1394,    3229,    6844,    7985,
  6078,    1712,   -3533,   -7657,   -9002,   -6918,   -2061,    3803,    8441,   10005,    7764,    2435,   -4036,   -9188,  -10983,   -8606,
 -2832,    4225,    9882,   11915,    9427,    3243,   -4368,  -10514,  -12790,  -10220,   -3663,    4460,   11070,   13593,   10968,    4085,
 -4504,  -11547,  -14313,  -11659,   -4505,    4497,   11932,   14934,   12284,    4910,   -4441,  -12225,  -15451,  -12832,   -5297,    4335,
 12416,   15851,   13289,    5655,   -4187,  -12509,  -16134,  -13655,   -5981,    3997,   12498,   16289,   13916,    6264,   -3772,  -12390,
-16320,  -14071,   -6502,    3515,   12181,   16219,   14114,    6685,   -3235,  -11883,  -15995,  -14046,   -6813,    2935,   11495,   15648,
 13865,    6878,   -2623,  -11030,  -15185,  -13576,   -6882,    2305,   10492,   14612,   13179,    6820,   -1990,   -9895,  -13941,  -12683,
 -6695,    1678,    9244,   13180,   12093,    6505,   -1381,   -8554,  -12344,  -11421,   -6257,    1099,    7833,   11443,   10675,    5949,
  -843,   -7096,  -10495,   -9869,   -5591,     609,    6351,    9511,    9013,    5188,    -406,   -5612,   -8511,   -8125,   -4748,     231,
  4886,    7505,    7217,    4276,     -90,   -4188,   -6513,   -6306,   -3786,     -21,    3522,    5548,    5404,    3284,     100,   -2901,
 -4626,   -4531,   -2783,    -152,    2328,    3757,    3696,    2293,     176,   -1814,   -2959,   -2920,   -1825,    -180,    1358,    2238,
  2210,    1388,     163,    -969,   -1607,   -1584,    -996,    -136,     644,    1072,    1049,     655,      99,    -388,    -643,    -617,
  -379,     -63,     198,     319,     294,     171,      28,     -74,    -109,     -88,     -44,      -7,       9,       7,       1,       0
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Output from fhtDitInt():

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    -2,      -4,      -4,      -3,      -2,      -4,      -7,       3,      -5,     -13,       5,      -4,      -3,      -2,      -4,      -3,
    -4,      -4,      -6,      -7,     -10,     -18,     -42,    -107,    -812,    3675,   -3504,     655,      96,      31,      13,       6,
     4,       2,       1,       0,       1,      10,     -58,      54,     -13,      10,     -11,       0,      -1,      -2,      -2,      -1,
    -1,      -2,      -1,      -2,      -2,      -1,      -5,       1,      -4,       6,      -8,       0,      -2,       0,      -2,      -2,
     0,      -1,      -2,      -1,      -1,      -1,      -4,       2,      -2,       3,      -5,       0,      -1,      -1,      -2,      -1,
    -1,      -2,      -2,      -2,      -1,      -1,      -4,      -1,     -13,      56,     -60,      10,       1,      -1,      -2,      -2,
    -1,      -1,      -1,      -1,       1,       5,     -34,      31,      -7,       2,      -3,      -1,      -1,      -1,      -1,      -1,
    -1,      -1,      -1,      -1,      -1,       0,      -4,       1,      -1,       1,      -3,      -1,      -1,      -1,      -1,      -2,
     0,       0,       0,       1,       0,       0,      -3,       3,      -1,       1,      -1,       0,       1,       0,       0,      -1,
     0,       0,       0,       1,       0,       0,      -2,      -1,     -16,      77,     -76,      15,       2,       1,       1,       0,
     0,       0,      -1,       0,      -1,      -2,      14,     -16,       3,       2,      -1,       0,       1,       0,       0,      -1,
    -1,       0,      -1,       0,       0,      -1,      -1,       1,       0,       0,       0,       0,       0,       0,       0,       0,
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     0,     1,     0,     1,     1,     1,     0,     2,     0,     1,     1,     0,     1,     1,     2,    -1,
     1,     2,     0,     2,     1,     1,     4,    -3,    -3,    20,   -16,     4,     3,     1,     6,     2,
     5,     9,    15,    31,    89,   583, -3012,  3085,  -663,   -88,   -25,   -11,    -5,    -1,    -5,     1,
    -1,     1,     1,     1,     1,     2,    -4,    11,     3,    -5,     7,     1,     1,     3,     1,     2

Output from complexToReal():

     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
     0,     0,     0,     0,     0,     0,     0,     0,     5,    26,    25,     4,     0,     0,     0,     0,
     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,
     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0,     0
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Test 6 - Hann window, decibel output with gain
Output from generateSample():

```
      0,    9588,   15549,   15628,    9795,     257,   -9378,  -15466,  -15703,  -10001,    -515,    9166,   15379,   15775,   10203,     772,
  -8952,  -15289,  -15842,  -10403,   -1029,    8735,   15194,   15906,   10601,    1285,   -8516,  -15096,  -15966,  -10796,   -1542,    8295,
  14994,   16021,   10988,    1798,   -8072,  -14889,  -16073,  -11177,   -2053,    7847,   14780,   16121,   11364,    2308,   -7621,  -14667,
 -16165,  -11548,   -2563,    7392,   14550,   16205,   11729,    2817,   -7161,  -14430,  -16241,  -11908,   -3070,    6929,   14307,   16272,
  12083,    3323,   -6695,  -14179,  -16300,  -12255,   -3574,    6459,   14049,   16324,   12425,    3825,   -6221,  -13914,  -16344,  -12591,
  -4075,    5983,   13777,   16360,   12754,    4324,   -5742,  -13636,  -16371,  -12914,   -4571,    5500,   13491,   16379,   13071,    4818,
  -5257,  -13344,  -16383,  -13224,   -5064,    5013,   13193,   16382,   13375,    5308,   -4767,  -13039,  -16378,  -13522,   -5551,    4520,
  12881,   16369,   13665,    5792,   -4272,  -12720,  -16357,  -13806,   -6032,    4023,   12557,   16340,   13943,    6271,   -3773,  -12390,
 -16320,  -14076,   -6508,    3522,   12220,   16295,   14206,    6743,   -3270,  -12047,  -16266,  -14332,   -6977,    3018,   11871,   16234,
  14455,    7209,   -2764,  -11692,  -16197,  -14575,   -7439,    2510,   11510,   16156,   14691,    7668,   -2256,  -11326,  -16111,  -14803,
  -7894,    2000,   11138,   16063,   14911,    8119,   -1745,  -10948,  -16010,  -15016,   -8342,    1488,   10755,   15954,   15117,    8562,
  -1232,  -10560,  -15893,  -15214,   -8780,     975,   10362,   15829,   15308,    8997,    -718,  -10161,  -15760,  -15398,   -9211,     461,
   9958,   15688,   15484,    9422,    -203,   -9752,  -15612,  -15566,   -9632,     -54,    9544,   15532,   15644,    9839,     311,   -9334,
 -15448,  -15719,  -10043,    -569,    9121,   15360,   15789,   10246,     826,   -8906,  -15269,  -15856,  -10445,   -1083,    8689,   15174,
  15919,   10642,    1340,   -8470,  -15075,  -15978,  -10837,   -1596,    8248,   14972,   16033,   11028,    1852,   -8025,  -14866,  -16084,
 -11217,   -2108,    7799,   14756,   16131,   11404,    2363,   -7572,  -14642,  -16174,  -11587,   -2617,    7343,   14525,   16213,   11768
```

Output from applyHannWindow():

```
      0,       1,       8,      20,      23,       0,     -51,    -115,    -152,    -123,      -8,     167,     333,     400,     300,      26,
   -344,    -661,    -766,    -560,     -62,     571,    1088,    1242,     900,     118,    -845,   -1609,   -1826,   -1320,    -202,    1151,
   2211,    2505,    1817,     314,   -1487,   -2886,   -3273,   -2388,    -460,    1837,    3615,    4115,    3024,     639,   -2197,   -4392,
  -5024,   -3721,    -856,    2553,    5197,    5980,    4468,    1107,   -2901,   -6020,   -6974,   -5259,   -1394,    3229,    6844,    7985,
   6078,    1712,   -3533,   -7657,   -9002,   -6918,   -2061,    3803,    8441,   10005,    7764,    2435,   -4036,   -9188,  -10983,   -8606,
  -2832,    4225,    9882,   11915,    9427,    3243,   -4368,  -10514,  -12790,  -10220,   -3663,    4460,   11070,   13593,   10968,    4085,
  -4504,  -11547,  -14313,  -11659,   -4505,    4497,   11932,   14934,   12284,    4910,   -4441,  -12225,  -15451,  -12832,   -5297,    4335,
  12416,   15851,   13289,    5655,   -4187,  -12509,  -16134,  -13655,   -5981,    3997,   12498,   16289,   13916,    6264,   -3772,  -12390,
 -16320,  -14071,   -6502,    3515,   12181,   16219,   14114,    6685,   -3235,  -11883,  -15995,  -14046,   -6813,    2935,   11495,   15648,
  13865,    6878,   -2623,  -11030,  -15185,  -13576,   -6882,    2305,   10492,   14612,   13179,    6820,   -1990,   -9895,  -13941,  -12683,
  -6695,    1678,    9244,   13180,   12093,    6505,   -1381,   -8554,  -12344,  -11421,   -6257,    1099,    7833,   11443,   10675,    5949,
   -843,   -7096,  -10495,   -9869,   -5591,     609,    6351,    9511,    9013,    5188,    -406,   -5612,   -8511,   -8125,   -4748,     231,
   4886,    7505,    7217,    4276,     -90,   -4188,   -6513,   -6306,   -3786,     -21,    3522,    5548,    5404,    3284,     100,   -2901,
  -4626,   -4531,   -2783,    -152,    2328,    3757,    3696,    2293,     176,   -1814,   -2959,   -2920,   -1825,    -180,    1358,    2238,
   2210,    1388,     163,    -969,   -1607,   -1584,    -996,    -136,     644,    1072,    1049,     655,      99,    -388,    -643,    -617,
   -379,     -63,     198,     319,     294,     171,      28,     -74,    -109,     -88,     -44,      -7,       9,       7,       1,       0
```

Output from fhtDitInt():

```
     -2,      -4,      -4,      -3,      -2,      -4,      -7,       3,      -5,     -13,       5,      -4,      -3,      -2,      -4,      -3,
     -4,      -4,      -6,      -7,     -10,     -18,     -42,    -107,    -812,    3675,   -3504,     655,      96,      31,      13,       6,
      4,       2,       1,       0,       1,      10,     -58,      54,     -13,      10,     -11,       0,      -1,      -2,      -2,      -1,
     -1,      -2,      -1,      -2,      -2,      -1,      -5,       1,      -4,       6,      -8,       0,      -2,       0,      -2,      -2,
      0,      -1,      -2,      -1,      -1,      -1,      -4,       2,      -2,       3,      -5,       0,      -1,      -1,      -2,      -1,
     -1,      -2,      -2,      -2,      -1,      -1,      -4,      -1,     -13,      56,     -60,      10,       1,      -1,      -2,      -2,
     -1,      -1,      -1,      -1,       1,       5,     -34,      31,      -7,       2,      -3,      -1,      -1,      -1,      -1,      -1,
     -1,      -1,      -1,      -1,      -1,       0,      -4,       1,      -1,       1,      -3,      -1,      -1,      -1,      -1,      -2,
      0,       0,       0,       1,       0,       0,      -3,       3,      -1,       1,      -1,       0,       1,       0,       0,      -1,
      0,       0,       0,       1,       0,       0,      -2,      -1,     -16,      77,     -76,      15,       2,       1,       1,       0,
      0,       0,      -1,       0,      -1,      -2,      14,     -16,       3,       2,      -1,       0,       1,       0,       0,      -1,
     -1,       0,      -1,       0,       0,      -1,      -1,       1,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       1,       0,       1,       1,       1,       0,       2,       0,       1,       1,       0,       1,       1,       2,      -1,
      1,       2,       0,       2,       1,       1,       4,      -3,      -3,      20,     -16,       4,       3,       1,       6,       2,
      5,       9,      15,      31,      89,     583,   -3012,    3085,    -663,     -88,     -25,     -11,      -5,      -1,      -5,       1,
     -1,       1,       1,       1,       1,       2,      -4,      11,       3,      -5,       7,       1,       1,       3,       1,       2
```

Output from complexToDecibelWithGain():

```
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,      24,      54,      63,      63,      51,      24,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
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Tests completed...

WFF_FHT Test: Pure sine wave with frequency = 9490 Hz and amplitude of +-16383
           FHT_LEN = 256, N_DB = 64

Test 1 - Rectangular window, linear output
Output from generateSample():

     0,    2614,   -5160,    7575,   -9795,   11765,  -13433,   14757,  -15703,   16247,  -16375,   16083,  -15379,   14281,  -12818,   11026,
  -8951,    6648,   -4174,    1593,    1029,   -3624,    6127,   -8472,   10601,  -12458,   13996,  -15175,   15966,  -16347,   16310,  -15855,
  14994,  -13749,   12152,  -10244,    8073,   -5695,    3171,    -566,   -2053,    4620,   -7068,    9336,  -11364,   13101,  -14503,   15533,
 -16165,   16383,  -16181,   15565,  -14550,   13162,  -11437,    9420,   -7160,    4718,   -2154,    -464,    3071,   -5599,    7984,  -10164,
  12084,  -13694,   14953,  -15830,   16300,  -16354,   15988,  -15213,   14048,  -12523,   10677,   -8558,    6220,   -3722,    1129,    1493,
  -4077,    6556,   -8868,   10952,  -12756,   14232,  -15345,   16064,  -16371,   16260,  -15732,   14800,  -13490,   11834,   -9874,    7663,
  -5254,    2711,     -99,   -2517,    5067,   -7488,    9716,  -11697,   13377,  -14715,   15675,  -16234,   16378,  -16101,   15413,  -14329,
  12878,  -11098,    9033,   -6737,    4267,   -1690,    -932,    3529,   -6037,    8389,  -10527,   12395,  -13945,   15138,  -15944,   16341,
 -16319,   15879,  -15033,   13801,  -12216,   10318,   -8155,    5784,   -3265,     661,    1959,   -4529,    6983,   -9258,   11296,  -13044,
  14458,  -15502,   16149,  -16382,   16196,  -15594,   14594,  -13219,   11505,   -9497,    7246,   -4809,    2248,     370,   -2978,    5510,
  -7901,   10089,  -12020,   13642,  -14914,   15805,  -16291,   16359,  -16008,   15248,  -14096,   12584,  -10749,    8639,   -6307,    3814,
  -1223,   -1399,    3985,   -6470,    8788,  -10881,   12696,  -14185,   15311,  -16045,   16368,  -16271,   15758,  -14840,   13543,  -11899,
   9950,   -7746,    5344,   -2805,     193,    2423,   -4976,    7404,   -9640,   11630,  -13322,   14673,  -15647,   16221,  -16380,   16119,
 -15445,   14375,  -12937,   11167,   -9112,    6823,   -4359,    1784,     838,   -3437,    5948,   -8307,   10454,  -12333,   13895,  -15102,
  15922,  -16334,   16327,  -15902,   15070,  -13852,   12279,  -10391,    8238,   -5872,    3357,    -756,   -1864,    4438,   -6897,    9179,
 -11227,   12987,  -14413,   15471,  -16133,   16381,  -16210,   15623,  -14636,   13275,  -11572,    9574,   -7331,    4900,   -2342,    -275

Output from fhtDitInt():

    -2,      -5,      -5,      -6,      -8,     -12,     -29,      30,       8,       5,       1,       1,       2,       1,       1,       1,
     1,       1,       0,       1,       1,       1,      -2,       4,       0,       1,       1,       1,       1,       2,       2,       2,
     2,       3,       2,       2,       2,       2,       0,       6,       4,       4,       3,       3,       4,       4,       4,       3,
     4,       5,       3,       4,       4,       3,       2,       7,       4,      -1,      12,       9,       7,       9,       8,       9,
    10,      10,       9,       9,       9,       9,       4,      21,      15,      12,      17,      16,      16,      16,      17,      17,
    18,      19,      18,      19,      20,      21,      21,      24,      23,      18,      35,      32,      33,      34,      37,      38,
    43,      45,      47,      51,      54,      59,      62,      70,      76,      69,     102,     103,     113,     127,     141,     159,
   184,     214,     251,     304,     376,     484,     658,     963,    1733,    5736,   -5485,   -2039,   -1339,   -1045,    -897,    -829,
  -796,    -803,    -849,    -958,   -1190,   -1766,   -4605,    4680,    1376,     769,     475,     347,     264,     205,     163,     141,
   117,      99,      84,      73,      63,      53,      40,      58,      42,      47,      23,      25,      23,      20,      18,      18,
    16,      15,      12,      12,      10,       8,       4,      16,      10,      16,       3,       5,       6,       6,       4,       5,
     4,       5,       3,       4,       4,       3,       0,      11,       8,      25,     -16,      -5,      -3,      -3,      -2,      -1,
    -1,       0,      -1,      -1,      -3,      -5,     -18,      25,       7,       8,       1,       2,       2,       2,       1,       1,
     2,       1,       0,       1,       2,       1,      -3,       6,       1,       4,      -1,       0,       1,       0,      -1,       0,
    -1,       1,       1,       1,       0,      -1,      -2,       6,       2,       5,       0,       1,       1,       1,       1,       1,
     0,       2,       1,       2,       2,       2,       0,       7,       5,      12,      -7,      -1,      -1,       1,       1,       1

Output from complexToReal():

     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       1,
     1,       1,       1,       2,       2,       3,       4,       6,      12,      40,      39,      14,       9,       7,       6,       6

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Test 2 - Rectangular window, decibel output
Output from generateSample():

     0,    2614,   -5160,    7575,   -9795,   11765,  -13433,   14757,  -15703,   16247,  -16375,   16083,  -15379,   14281,  -12818,   11026,
 -8951,    6648,   -4174,    1593,    1029,   -3624,    6127,   -8472,   10601,  -12458,   13996,  -15175,   15966,  -16347,   16310,  -15855,
 14994,  -13749,   12152,  -10244,    8073,   -5695,    3171,    -566,   -2053,    4620,   -7068,    9336,  -11364,   13101,  -14503,   15533,
-16165,   16383,  -16181,   15565,  -14550,   13162,  -11437,    9420,   -7160,    4718,   -2154,    -464,    3071,   -5599,    7984,  -10164,
 12084,  -13694,   14953,  -15830,   16300,  -16354,   15988,  -15213,   14048,  -12523,   10677,   -8558,    6220,   -3722,    1129,    1493,
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  -4077,    6556,   -8868,   10952,  -12756,   14232,  -15345,   16064,  -16371,   16260,  -15732,   14800,  -13490,   11834,   -9874,    7663,
  -5254,    2711,     -99,   -2517,    5067,   -7488,    9716,  -11697,   13377,  -14715,   15675,  -16234,   16378,  -16101,   15413,  -14329,
  12878,  -11098,    9033,   -6737,    4267,   -1690,    -932,    3529,   -6037,    8389,  -10527,   12395,  -13945,   15138,  -15944,   16341,
 -16319,   15879,  -15033,   13801,  -12216,   10318,   -8155,    5784,   -3265,     661,    1959,   -4529,    6983,   -9258,   11296,  -13044,
  14458,  -15502,   16149,  -16382,   16196,  -15594,   14594,  -13219,   11505,   -9497,    7246,   -4809,    2248,     370,   -2978,    5510,
  -7901,   10089,  -12020,   13642,  -14914,   15805,  -16291,   16359,  -16008,   15248,  -14096,   12584,  -10749,    8639,   -6307,    3814,
  -1223,   -1399,    3985,   -6470,    8788,  -10881,   12696,  -14185,   15311,  -16045,   16368,  -16271,   15758,  -14840,   13543,  -11899,
   9950,   -7746,    5344,   -2805,     193,    2423,   -4976,    7404,   -9640,   11630,  -13322,   14673,  -15647,   16221,  -16380,   16119,
 -15445,   14375,  -12937,   11167,   -9112,    6823,   -4359,    1784,     838,   -3437,    5948,   -8307,   10454,  -12333,   13895,  -15102,
  15922,  -16334,   16327,  -15902,   15070,  -13852,   12279,  -10391,    8238,   -5872,    3357,    -756,   -1864,    4438,   -6897,    9179,
 -11227,   12987,  -14413,   15471,  -16133,   16381,  -16210,   15623,  -14636,   13275,  -11572,    9574,   -7331,    4900,   -2342,    -275
```

Output from fhtDitInt():

```
     -2,      -5,      -5,      -6,      -8,     -12,     -29,      30,       8,       5,       1,       1,       2,       1,       1,       1,
      1,       1,       0,       1,       1,       1,      -2,       4,       0,       1,       1,       1,       1,       2,       2,       2,
      2,       3,       2,       2,       2,       2,       0,       6,       4,       4,       3,       3,       4,       4,       4,       3,
      4,       5,       3,       4,       4,       3,       2,       7,       4,      -1,      12,       9,       7,       9,       8,       9,
     10,      10,       9,       9,       9,       9,       4,      21,      15,      12,      17,      16,      16,      16,      17,      17,
     18,      19,      18,      19,      20,      21,      21,      24,      23,      18,      35,      32,      33,      34,      37,      38,
     43,      45,      47,      51,      54,      59,      62,      70,      76,      69,     102,     103,     113,     127,     141,     159,
    184,     214,     251,     304,     376,     484,     658,     963,    1733,    5736,   -5485,   -2039,   -1339,   -1045,    -897,    -829,
   -796,    -803,    -849,    -958,   -1190,   -1766,   -4605,    4680,    1376,     769,     475,     347,     264,     205,     163,     141,
    117,      99,      84,      73,      63,      53,      40,      58,      42,      47,      23,      25,      23,      20,      18,      18,
     16,      15,      12,      12,      10,       8,       4,      16,      10,      16,       3,       5,       6,       6,       4,       5,
      4,       5,       3,       4,       4,       3,       0,      11,       8,      25,     -16,      -5,      -3,      -3,      -2,      -1,
     -1,       0,      -1,      -1,      -3,      -5,     -18,      25,       7,       8,       1,       2,       2,       2,       1,       1,
      2,       1,       0,       1,       2,       1,      -3,       6,       1,       4,      -1,       0,       1,       0,      -1,       0,
     -1,       1,       1,       1,       0,      -1,      -2,       6,       2,       5,       0,       1,       1,       1,       1,       1,
      0,       2,       1,       2,       2,       2,       0,       7,       5,      12,      -7,      -1,      -1,       1,       1,       1
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Output from complexToDecibel():

```
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
      0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       4,
      4,       9,      11,      14,      17,      21,      26,      32,      40,      57,      57,      43,      37,      34,      32,      31
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Test 3 - Hamming window, linear output
Output from generateSample():

```
     0,    2614,   -5160,    7575,   -9795,   11765,  -13433,   14757,  -15703,   16247,  -16375,   16083,  -15379,   14281,  -12818,   11026,
 -8951,    6648,   -4174,    1593,    1029,   -3624,    6127,   -8472,   10601,  -12458,   13996,  -15175,   15966,  -16347,   16310,  -15855,
 14994,  -13749,   12152,  -10244,    8073,   -5695,    3171,    -566,   -2053,    4620,   -7068,    9336,  -11364,   13101,  -14503,   15533,
-16165,   16383,  -16181,   15565,  -14550,   13162,  -11437,    9420,   -7160,    4718,   -2154,    -464,    3071,   -5599,    7984,  -10164,
 12084,  -13694,   14953,  -15830,   16300,  -16354,   15988,  -15213,   14048,  -12523,   10677,   -8558,    6220,   -3722,    1129,    1493,
 -4077,    6556,   -8868,   10952,  -12756,   14232,  -15345,   16064,  -16371,   16260,  -15732,   14800,  -13490,   11834,   -9874,    7663,
 -5254,    2711,     -99,   -2517,    5067,   -7488,    9716,  -11697,   13377,  -14715,   15675,  -16234,   16378,  -16101,   15413,  -14329,
 12878,  -11098,    9033,   -6737,    4267,   -1690,    -932,    3529,   -6037,    8389,  -10527,   12395,  -13945,   15138,  -15944,   16341,
-16319,   15879,  -15033,   13801,  -12216,   10318,   -8155,    5784,   -3265,     661,    1959,   -4529,    6983,   -9258,   11296,  -13044,
 14458,  -15502,   16149,  -16382,   16196,  -15594,   14594,  -13219,   11505,   -9497,    7246,   -4809,    2248,     370,   -2978,    5510,
 -7901,   10089,  -12020,   13642,  -14914,   15805,  -16291,   16359,  -16008,   15248,  -14096,   12584,  -10749,    8639,   -6307,    3814,
 -1223,   -1399,    3985,   -6470,    8788,  -10881,   12696,  -14185,   15311,  -16045,   16368,  -16271,   15758,  -14840,   13543,  -11899,
  9950,   -7746,    5344,   -2805,     193,    2423,   -4976,    7404,   -9640,   11630,  -13322,   14673,  -15647,   16221,  -16380,   16119,
-15445,   14375,  -12937,   11167,   -9112,    6823,   -4359,    1784,     838,   -3437,    5948,   -8307,   10454,  -12333,   13895,  -15102,
 15922,  -16334,   16327,  -15902,   15070,  -13852,   12279,  -10391,    8238,   -5872,    3357,    -756,   -1864,    4438,   -6897,    9179,
-11227,   12987,  -14413,   15471,  -16133,   16381,  -16210,   15623,  -14636,   13275,  -11572,    9574,   -7331,    4900,   -2342,    -275
```

Output from applyHammingWindow():

```
     0,     209,    -416,     615,    -806,     981,   -1142,    1280,   -1396,    1482,   -1538,    1555,   -1537,    1476,   -1373,    1224,
 -1032,     796,    -520,     206,     138,    -509,     894,   -1287,    1675,   -2050,    2396,   -2702,    2956,   -3147,    3262,   -3295,
  3234,   -3078,    2821,   -2466,    2013,   -1471,     847,    -157,    -587,    1364,   -2157,    2939,   -3692,    4387,   -5006,    5521,
 -5915,    6167,   -6264,    6192,   -5946,    5522,   -4925,    4159,   -3241,    2188,   -1024,    -226,    1527,   -2850,    4152,   -5403,
  6559,   -7589,    8454,   -9131,    9585,   -9802,    9761,   -9458,    8889,   -8064,    6992,   -5699,    4209,   -2559,     788,    1058,
 -2933,    4783,   -6562,    8214,   -9696,   10958,  -11965,   12679,  -13077,   13138,  -12857,   12227,  -11263,    9982,   -8412,    6591,
 -4562,    2375,     -88,   -2243,    4552,   -6780,    8862,  -10746,   12373,  -13702,   14685,  -15301,   15524,  -15345,   14763,  -13792,
 12450,  -10776,    8804,   -6592,    4188,   -1665,    -921,    3493,   -5990,    8339,  -10483,   12359,  -13921,   15124,  -15939,   16340,
-16319,   15873,  -15020,   13776,  -12181,   10273,   -8107,    5738,   -3233,     652,    1928,   -4446,    6831,   -9025,   10967,  -12611,
 13915,  -14850,   15390,  -15529,   15264,  -14610,   13588,  -12228,   10568,   -8663,    6560,   -4321,    2003,     326,   -2610,    4783,
 -6797,    8595,  -10139,   11389,  -12322,   12915,  -13164,   13067,  -12636,   11889,  -10854,    9564,   -8063,    6392,   -4603,    2743,
  -867,    -977,    2739,   -4379,    5851,   -7127,    8175,   -8977,    9518,   -9797,    9809,   -9569,    9088,   -8391,    7504,   -6459,
  5288,   -4030,    2719,   -1396,      93,    1151,   -2308,    3351,   -4257,    5007,   -5590,    5995,   -6225,    6278,   -6167,    5898,
 -5491,    4961,   -4333,    3627,   -2870,    2081,   -1288,     510,     231,    -919,    1536,   -2072,    2515,   -2864,    3109,   -3258,
  3308,   -3267,    3143,   -2945,    2683,   -2372,    2019,   -1643,    1250,    -857,     470,    -102,    -242,     552,    -826,    1057,
 -1247,    1390,   -1491,    1545,   -1561,    1537,   -1480,    1388,   -1271,    1127,    -966,     787,    -596,     394,    -188,     -22
```

Output from fhtDitInt():

```
    -3,      -4,      -5,      -4,      -4,      -1,     -21,      20,      -7,      -2,      -3,      -2,      -3,      -3,      -2,      -1,
    -2,      -1,      -3,      -2,      -2,      -1,      -3,       1,      -1,      -2,      -2,      -1,      -2,      -2,      -1,      -1,
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    -1,     -2,     -1,     -1,     -2,     -1,     -3,      2,     -2,     -2,     -1,     -2,     -2,     -1,      0,     -1,
     0,     -1,     -2,     -1,      0,     -1,     -1,      1,      1,     -7,      4,     -1,      0,      0,      0,      0,
     0,     -1,     -1,      0,      0,      0,     -6,      6,     -1,     -2,      2,      0,      0,      0,      0,      1,
     0,      1,      0,      1,      0,      1,      0,      2,      2,     -5,      5,      1,      1,      2,      3,      2,
     3,      3,      3,      4,      3,      4,      3,      5,      5,     -4,     14,      6,      7,      8,     11,     11,
    13,     14,     16,     18,     20,     22,     20,    -32,   -632,   3967,  -3789,    467,    -14,    -52,    -54,    -58,
   -55,    -54,    -53,    -46,    -12,    403,  -3177,   3238,   -503,     -8,      3,     18,     15,     15,      8,     11,
     8,      7,      5,      6,      4,      5,     -3,     13,      1,     10,     -4,      3,      2,      2,      1,      1,
     1,      2,      1,      1,      0,      1,     -3,      6,      0,      6,     -3,      2,      0,      1,      0,      1,
     0,     -1,      0,     -1,      0,      1,     -3,      3,     -3,     15,    -12,      1,      0,      0,      0,      0,
     0,      1,     -1,      0,      0,      2,    -12,     18,     -3,      4,     -2,      0,      0,      0,      0,      1,
     0,      1,      0,      1,      0,      1,     -2,      4,      0,      3,     -1,      1,      1,      0,      1,      0,
     1,      1,      1,      0,      1,      2,     -1,      5,      1,      4,      0,      2,      1,      2,      1,      1,
     1,      2,      2,      2,      2,      2,      0,      4,      0,      9,     -3,      3,      2,      2,      2,      2

Output from complexToReal():

     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
     0,      0,      0,      0,      0,      0,      0,      0,      4,     28,     27,      3,      0,      0,      0,      0

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Test 4 - Hamming window, decibel output with gain
Output from generateSample():

```
     0,    2614,   -5160,    7575,   -9795,   11765,  -13433,   14757,  -15703,   16247,  -16375,   16083,  -15379,   14281,  -12818,   11026,
 -8951,    6648,   -4174,    1593,    1029,   -3624,    6127,   -8472,   10601,  -12458,   13996,  -15175,   15966,  -16347,   16310,  -15855,
 14994,  -13749,   12152,  -10244,    8073,   -5695,    3171,    -566,   -2053,    4620,   -7068,    9336,  -11364,   13101,  -14503,   15533,
-16165,   16383,  -16181,   15565,  -14550,   13162,  -11437,    9420,   -7160,    4718,   -2154,    -464,    3071,   -5599,    7984,  -10164,
 12084,  -13694,   14953,  -15830,   16300,  -16354,   15988,  -15213,   14048,  -12523,   10677,   -8558,    6220,   -3722,    1129,    1493,
 -4077,    6556,   -8868,   10952,  -12756,   14232,  -15345,   16064,  -16371,   16260,  -15732,   14800,  -13490,   11834,   -9874,    7663,
 -5254,    2711,     -99,   -2517,    5067,   -7488,    9716,  -11697,   13377,  -14715,   15675,  -16234,   16378,  -16101,   15413,  -14329,
 12878,  -11098,    9033,   -6737,    4267,   -1690,    -932,    3529,   -6037,    8389,  -10527,   12395,  -13945,   15138,  -15944,   16341,
-16319,   15879,  -15033,   13801,  -12216,   10318,   -8155,    5784,   -3265,     661,    1959,   -4529,    6983,   -9258,   11296,  -13044,
 14458,  -15502,   16149,  -16382,   16196,  -15594,   14594,  -13219,   11505,   -9497,    7246,   -4809,    2248,     370,   -2978,    5510,
 -7901,   10089,  -12020,   13642,  -14914,   15805,  -16291,   16359,  -16008,   15248,  -14096,   12584,  -10749,    8639,   -6307,    3814,
 -1223,   -1399,    3985,   -6470,    8788,  -10881,   12696,  -14185,   15311,  -16045,   16368,  -16271,   15758,  -14840,   13543,  -11899,
  9950,   -7746,    5344,   -2805,     193,    2423,   -4976,    7404,   -9640,   11630,  -13322,   14673,  -15647,   16221,  -16380,   16119,
-15445,   14375,  -12937,   11167,   -9112,    6823,   -4359,    1784,     838,   -3437,    5948,   -8307,   10454,  -12333,   13895,  -15102,
 15922,  -16334,   16327,  -15902,   15070,  -13852,   12279,  -10391,    8238,   -5872,    3357,    -756,   -1864,    4438,   -6897,    9179,
-11227,   12987,  -14413,   15471,  -16133,   16381,  -16210,   15623,  -14636,   13275,  -11572,    9574,   -7331,    4900,   -2342,    -275
```

Output from applyHammingWindow():

```
     0,     209,    -416,     615,    -806,     981,   -1142,    1280,   -1396,    1482,   -1538,    1555,   -1537,    1476,   -1373,    1224,
 -1032,     796,    -520,     206,     138,    -509,     894,   -1287,    1675,   -2050,    2396,   -2702,    2956,   -3147,    3262,   -3295,
  3234,   -3078,    2821,   -2466,    2013,   -1471,     847,    -157,    -587,    1364,   -2157,    2939,   -3692,    4387,   -5006,    5521,
 -5915,    6167,   -6264,    6192,   -5946,    5522,   -4925,    4159,   -3241,    2188,   -1024,    -226,    1527,   -2850,    4152,   -5403,
  6559,   -7589,    8454,   -9131,    9585,   -9802,    9761,   -9458,    8889,   -8064,    6992,   -5699,    4209,   -2559,     788,    1058,
 -2933,    4783,   -6562,    8214,   -9696,   10958,  -11965,   12679,  -13077,   13138,  -12857,   12227,  -11263,    9982,   -8412,    6591,
 -4562,    2375,     -88,   -2243,    4552,   -6780,    8862,  -10746,   12373,  -13702,   14685,  -15301,   15524,  -15345,   14763,  -13792,
 12450,  -10776,    8804,   -6592,    4188,   -1665,    -921,    3493,   -5990,    8339,  -10483,   12359,  -13921,   15124,  -15939,   16340,
-16319,   15873,  -15020,   13776,  -12181,   10273,   -8107,    5738,   -3233,     652,    1928,   -4446,    6831,   -9025,   10967,  -12611,
 13915,  -14850,   15390,  -15529,   15264,  -14610,   13588,  -12228,   10568,   -8663,    6560,   -4321,    2003,     326,   -2610,    4783,
 -6797,    8595,  -10139,   11389,  -12322,   12915,  -13164,   13067,  -12636,   11889,  -10854,    9564,   -8063,    6392,   -4603,    2743,
  -867,    -977,    2739,   -4379,    5851,   -7127,    8175,   -8977,    9518,   -9797,    9809,   -9569,    9088,   -8391,    7504,   -6459,
  5288,   -4030,    2719,   -1396,      93,    1151,   -2308,    3351,   -4257,    5007,   -5590,    5995,   -6225,    6278,   -6167,    5898,
 -5491,    4961,   -4333,    3627,   -2870,    2081,   -1288,     510,     231,    -919,    1536,   -2072,    2515,   -2864,    3109,   -3258,
  3308,   -3267,    3143,   -2945,    2683,   -2372,    2019,   -1643,    1250,    -857,     470,    -102,    -242,     552,    -826,    1057,
 -1247,    1390,   -1491,    1545,   -1561,    1537,   -1480,    1388,   -1271,    1127,    -966,     787,    -596,     394,    -188,     -22
```

Output from fhtDitInt():

```
    -3,      -4,      -5,      -4,      -4,      -1,     -21,      20,      -7,      -2,      -3,      -2,      -3,      -3,      -2,      -1,
    -2,      -1,      -3,      -2,      -2,      -1,      -3,       1,      -1,      -2,      -2,      -1,      -2,      -2,      -1,      -1,
    -1,      -2,      -1,      -1,      -2,      -1,      -3,       2,      -2,      -2,      -1,      -2,      -2,      -1,       0,      -1,
     0,      -1,      -2,      -1,       0,      -1,      -1,       1,       1,      -7,       4,      -1,       0,       0,       0,       0,
     0,      -1,      -1,       0,       0,       0,      -6,       6,      -1,      -2,       2,       0,       0,       0,       0,       1,
     0,       1,       0,       1,       0,       1,       0,       2,       2,      -5,       5,       1,       1,       2,       3,       2,
     3,       3,       3,       4,       3,       4,       3,       5,       5,      -4,      14,       6,       7,       8,      11,      11,
    13,      14,      16,      18,      20,      22,      20,     -32,    -632,    3967,   -3789,     467,     -14,     -52,     -54,     -58,
   -55,     -54,     -53,     -46,     -12,     403,   -3177,    3238,    -503,      -8,       3,      18,      15,      15,       8,      11,
     8,       7,       5,       6,       4,       5,      -3,      13,       1,      10,      -4,       3,       2,       2,       1,       1,
     1,       2,       1,       1,       0,       1,      -3,       6,       0,       6,      -3,       2,       0,       1,       0,       1,
     0,      -1,       0,      -1,       0,       1,      -3,       3,      -3,      15,     -12,       1,       0,       0,       0,       0,
     0,       1,      -1,       0,       0,       2,     -12,      18,      -3,       4,      -2,       0,       0,       0,       0,       1,
     0,       1,       0,       1,       0,       1,      -2,       4,       0,       3,      -1,       1,       1,       0,       1,       0,
     1,       1,       1,       0,       1,       2,      -1,       5,       1,       4,       0,       2,       1,       2,       1,       1,
     1,       2,       2,       2,       2,       2,       0,       4,       0,       9,      -3,       3,       2,       2,       2,       2
```

Output from complexToDecibelWithGain():

```
0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,      0,
0,      0,      0,      0,      0,      0,      0,      0,      50,     63,     63,     46,     0,      0,      0,      0
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Test 5 - Hann window, linear output
Output from generateSample():

```
     0,    2614,   -5160,    7575,   -9795,   11765,  -13433,   14757,  -15703,   16247,  -16375,   16083,  -15379,   14281,  -12818,   11026,
 -8951,    6648,   -4174,    1593,    1029,   -3624,    6127,   -8472,   10601,  -12458,   13996,  -15175,   15966,  -16347,   16310,  -15855,
 14994,  -13749,   12152,  -10244,    8073,   -5695,    3171,    -566,   -2053,    4620,   -7068,    9336,  -11364,   13101,  -14503,   15533,
-16165,   16383,  -16181,   15565,  -14550,   13162,  -11437,    9420,   -7160,    4718,   -2154,    -464,    3071,   -5599,    7984,  -10164,
 12084,  -13694,   14953,  -15830,   16300,  -16354,   15988,  -15213,   14048,  -12523,   10677,   -8558,    6220,   -3722,    1129,    1493,
 -4077,    6556,   -8868,   10952,  -12756,   14232,  -15345,   16064,  -16371,   16260,  -15732,   14800,  -13490,   11834,   -9874,    7663,
 -5254,    2711,     -99,   -2517,    5067,   -7488,    9716,  -11697,   13377,  -14715,   15675,  -16234,   16378,  -16101,   15413,  -14329,
 12878,  -11098,    9033,   -6737,    4267,   -1690,    -932,    3529,   -6037,    8389,  -10527,   12395,  -13945,   15138,  -15944,   16341,
-16319,   15879,  -15033,   13801,  -12216,   10318,   -8155,    5784,   -3265,     661,    1959,   -4529,    6983,   -9258,   11296,  -13044,
 14458,  -15502,   16149,  -16382,   16196,  -15594,   14594,  -13219,   11505,   -9497,    7246,   -4809,    2248,     370,   -2978,    5510,
 -7901,   10089,  -12020,   13642,  -14914,   15805,  -16291,   16359,  -16008,   15248,  -14096,   12584,  -10749,    8639,   -6307,    3814,
 -1223,   -1399,    3985,   -6470,    8788,  -10881,   12696,  -14185,   15311,  -16045,   16368,  -16271,   15758,  -14840,   13543,  -11899,
  9950,   -7746,    5344,   -2805,     193,    2423,   -4976,    7404,   -9640,   11630,  -13322,   14673,  -15647,   16221,  -16380,   16119,
-15445,   14375,  -12937,   11167,   -9112,    6823,   -4359,    1784,     838,   -3437,    5948,   -8307,   10454,  -12333,   13895,  -15102,
 15922,  -16334,   16327,  -15902,   15070,  -13852,   12279,  -10391,    8238,   -5872,    3357,    -756,   -1864,    4438,   -6897,    9179,
-11227,   12987,  -14413,   15471,  -16133,   16381,  -16210,   15623,  -14636,   13275,  -11572,    9574,   -7331,    4900,   -2342,    -275
```

Output from applyHannWindow():

```
     0,       0,      -3,      10,     -24,      44,     -73,     108,    -152,     198,    -247,     293,    -334,     362,    -378,     372,
  -344,     287,    -202,      85,      61,    -238,     439,    -662,     900,   -1145,    1387,   -1618,    1825,   -1999,    2128,   -2202,
  2211,   -2150,    2010,   -1790,    1486,   -1104,     645,    -121,    -460,    1081,   -1730,    2383,   -3025,    3630,   -4180,    4651,
 -5024,    5278,   -5402,    5377,   -5198,    4857,   -4358,    3702,   -2901,    1968,    -925,    -205,    1393,   -2610,    3819,   -4988,
  6078,   -7058,    7889,   -8548,    9001,   -9232,    9219,   -8958,    8441,   -7676,    6672,   -5450,    4034,   -2458,     758,    1020,
 -2834,    4629,   -6361,    7976,   -9430,   10674,  -11671,   12385,  -12790,   12867,  -12606,   12003,  -11070,    9821,   -8286,    6498,
 -4502,    2345,     -87,   -2220,    4507,   -6718,    8787,  -10664,   12286,  -13613,   14600,  -15220,   15450,  -15279,   14707,  -13745,
 12413,  -10748,    8784,   -6579,    4181,   -1662,    -920,    3490,   -5986,    8335,  -10479,   12356,  -13919,   15123,  -15939,   16340,
-16319,   15873,  -15019,   13774,  -12178,   10270,   -8103,    5734,   -3230,     651,    1926,   -4439,    6818,   -9004,   10938,  -12574,
 13868,  -14793,   15324,  -15455,   15183,  -14526,   13500,  -12142,   10488,   -8590,    6500,   -4278,    1981,     323,   -2577,    4720,
 -6701,    8465,   -9977,   11194,  -12096,   12664,  -12893,   12780,  -12343,   11597,  -10572,    9302,   -7829,    6196,   -4454,    2650,
  -836,    -941,    2631,   -4197,    5596,   -6800,    7781,   -8524,    9015,   -9253,    9238,   -8986,    8508,   -7831,    6979,   -5986,
  4882,   -3706,    2490,   -1274,      85,    1040,   -2076,    2999,   -3789,    4430,   -4917,    5241,   -5406,    5414,   -5278,    5009,
 -4625,    4142,   -3585,    2971,   -2327,    1669,   -1021,     399,     179,    -700,    1152,   -1530,    1826,   -2040,    2172,   -2228,
  2210,   -2132,    1996,   -1818,    1605,   -1374,    1127,    -883,     643,    -421,     219,     -45,    -101,     214,    -299,     351,
  -379,     382,    -366,     335,    -295,     246,    -198,     150,    -109,      72,     -44,      22,     -10,       2,      -1,       0
```

Output from fhtDitInt():

```
   -2,      -5,      -4,      -3,      -3,      -1,     -22,      18,      -8,      -3,      -4,      -3,      -2,      -2,      -3,      -2,
   -1,      -2,      -3,      -2,      -1,      -2,      -4,       0,      -2,      -2,      -2,      -2,      -2,      -2,      -1,      -2,
   -1,      -2,      -2,      -2,      -2,      -2,      -4,       1,      -2,      -2,      -2,      -2,      -2,      -2,      -1,      -2,
   -1,      -1,      -1,      -2,      -1,      -2,      -3,       0,       0,      -7,       2,      -2,       0,      -2,       0,      -2,
    0,      -1,      -1,      -1,      -1,       0,      -6,       4,      -3,      -3,       0,      -1,      -1,      -1,       0,      -1,
   -1,      -1,      -2,      -1,      -2,      -1,      -2,      -1,       1,      -7,       4,      -2,      -1,      -2,       0,      -1,
   -1,      -2,      -2,      -1,      -1,      -1,      -3,       0,      -2,     -10,       6,      -3,      -2,      -2,      -1,      -3,
   -3,      -3,      -5,      -6,     -10,     -18,     -35,    -118,    -837,    3813,   -3640,     685,     102,      34,      21,      10,
   10,      11,      16,      33,      91,     591,   -3052,    3112,    -666,     -75,     -38,     -11,      -6,      -2,      -5,       0,
   -1,      -2,      -1,       0,      -1,       0,      -6,       8,      -2,       8,      -6,       0,       0,       0,      -1,       0,
    1,       0,       0,       0,       0,       0,      -4,       5,      -2,       4,      -4,       0,       0,       0,      -1,       0,
   -1,       1,      -1,       0,       1,       0,      -3,       4,      -4,      15,     -12,       2,       0,       0,       0,       0,
    0,       1,       1,       1,       1,       2,     -12,      16,      -3,       3,      -2,       1,       1,       1,       0,       1,
    1,       1,       0,       1,       2,       1,      -2,       3,      -1,       3,       0,       0,       1,       0,       0,       1,
    1,       2,       2,       1,       1,       1,      -1,       4,       0,       2,       0,       1,       2,       2,       1,       1,
    1,       3,       1,       2,       2,       2,      -1,       4,      -1,       9,      -4,       3,       2,       2,       1,       2
```

Output from complexToReal():

```
    0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
    0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
    0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
    0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
    0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
    0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
    0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
    0,       0,       0,       0,       0,       0,       0,       0,       5,      27,      26,       4,       0,       0,       0,       0
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Test 6 - Hann window, decibel output with gain
Output from generateSample():

```
     0,    2614,   -5160,    7575,   -9795,   11765,  -13433,   14757,  -15703,   16247,  -16375,   16083,  -15379,   14281,  -12818,   11026,
 -8951,    6648,   -4174,    1593,    1029,   -3624,    6127,   -8472,   10601,  -12458,   13996,  -15175,   15966,  -16347,   16310,  -15855,
 14994,  -13749,   12152,  -10244,    8073,   -5695,    3171,    -566,   -2053,    4620,   -7068,    9336,  -11364,   13101,  -14503,   15533,
-16165,   16383,  -16181,   15565,  -14550,   13162,  -11437,    9420,   -7160,    4718,   -2154,    -464,    3071,   -5599,    7984,  -10164,
 12084,  -13694,   14953,  -15830,   16300,  -16354,   15988,  -15213,   14048,  -12523,   10677,   -8558,    6220,   -3722,    1129,    1493,
 -4077,    6556,   -8868,   10952,  -12756,   14232,  -15345,   16064,  -16371,   16260,  -15732,   14800,  -13490,   11834,   -9874,    7663,
 -5254,    2711,     -99,   -2517,    5067,   -7488,    9716,  -11697,   13377,  -14715,   15675,  -16234,   16378,  -16101,   15413,  -14329,
 12878,  -11098,    9033,   -6737,    4267,   -1690,    -932,    3529,   -6037,    8389,  -10527,   12395,  -13945,   15138,  -15944,   16341,
-16319,   15879,  -15033,   13801,  -12216,   10318,   -8155,    5784,   -3265,     661,    1959,   -4529,    6983,   -9258,   11296,  -13044,
 14458,  -15502,   16149,  -16382,   16196,  -15594,   14594,  -13219,   11505,   -9497,    7246,   -4809,    2248,     370,   -2978,    5510,
 -7901,   10089,  -12020,   13642,  -14914,   15805,  -16291,   16359,  -16008,   15248,  -14096,   12584,  -10749,    8639,   -6307,    3814,
 -1223,   -1399,    3985,   -6470,    8788,  -10881,   12696,  -14185,   15311,  -16045,   16368,  -16271,   15758,  -14840,   13543,  -11899,
  9950,   -7746,    5344,   -2805,     193,    2423,   -4976,    7404,   -9640,   11630,  -13322,   14673,  -15647,   16221,  -16380,   16119,
-15445,   14375,  -12937,   11167,   -9112,    6823,   -4359,    1784,     838,   -3437,    5948,   -8307,   10454,  -12333,   13895,  -15102,
 15922,  -16334,   16327,  -15902,   15070,  -13852,   12279,  -10391,    8238,   -5872,    3357,    -756,   -1864,    4438,   -6897,    9179,
-11227,   12987,  -14413,   15471,  -16133,   16381,  -16210,   15623,  -14636,   13275,  -11572,    9574,   -7331,    4900,   -2342,    -275,
```

Output from applyHannWindow():

```
     0,       0,      -3,      10,     -24,      44,     -73,     108,    -152,     198,    -247,     293,    -334,     362,    -378,     372,
  -344,     287,    -202,      85,      61,    -238,     439,    -662,     900,   -1145,    1387,   -1618,    1825,   -1999,    2128,   -2202,
  2211,   -2150,    2010,   -1790,    1486,   -1104,     645,    -121,    -460,    1081,   -1730,    2383,   -3025,    3630,   -4180,    4651,
 -5024,    5278,   -5402,    5377,   -5198,    4857,   -4358,    3702,   -2901,    1968,    -205,    1393,   -2610,    3819,   -4988,
  6078,   -7058,    7889,   -8548,    9001,   -9232,    9219,   -8958,    8441,   -7676,    6672,   -5450,    4034,   -2458,     758,    1020,
 -2834,    4629,   -6361,    7976,   -9430,   10674,  -11671,   12385,  -12790,   12867,  -12606,   12003,  -11070,    9821,   -8286,    6498,
 -4502,    2345,     -87,   -2220,    4507,   -6718,    8787,  -10664,   12286,  -13613,   14600,  -15220,   15450,  -15279,   14707,  -13745,
 12413,  -10748,    8784,   -6579,    4181,   -1662,    -920,    3490,   -5986,    8335,  -10479,   12356,  -13919,   15123,  -15939,   16340,
-16319,   15873,  -15019,   13774,  -12178,   10270,   -8103,    5734,   -3230,     651,    1926,   -4439,    6818,   -9004,   10938,  -12574,
 13868,  -14793,   15324,  -15455,   15183,  -14526,   13500,  -12142,   10488,   -8590,    6500,   -4278,    1981,     323,   -2577,    4720,
 -6701,    8465,   -9977,   11194,  -12096,   12664,  -12893,   12780,  -12343,   11597,  -10572,    9302,   -7829,    6196,   -4454,    2650,
  -836,    -941,    2631,   -4197,    5596,   -6800,    7781,   -8524,    9015,   -9253,    9238,   -8986,    8508,   -7831,    6979,   -5986,
  4882,   -3706,    2490,   -1274,      85,    1040,   -2076,    2999,   -3789,    4430,   -4917,    5241,   -5406,    5414,   -5278,    5009,
 -4625,    4142,   -3585,    2971,   -2327,    1669,   -1021,     399,     179,    -700,    1152,   -1530,    1826,   -2040,    2172,   -2228,
  2210,   -2132,    1996,   -1818,    1605,   -1374,    1127,    -883,     643,    -421,     219,     -45,    -101,     214,    -299,     351,
  -379,     382,    -366,     335,    -295,     246,    -198,     150,    -109,      72,     -44,      22,     -10,       2,      -1,       0,
```

Output from fhtDitInt():

```
    -2,      -5,      -4,      -3,      -3,      -1,     -22,      18,      -8,      -3,      -4,      -3,      -2,      -2,      -3,      -2,
    -1,      -2,      -3,      -2,      -1,      -2,      -4,       0,      -2,      -2,      -2,      -2,      -2,      -2,      -1,      -2,
    -1,      -2,      -2,      -2,      -2,      -2,      -4,       1,      -2,      -2,      -2,      -2,      -2,      -2,      -1,      -2,
    -1,      -1,      -1,      -2,      -1,      -2,      -3,       0,       0,      -7,       2,      -2,       0,      -2,       0,      -2,
     0,      -1,      -1,      -1,      -1,       0,      -6,       4,      -3,      -3,       0,      -1,      -1,      -1,       0,      -1,
    -1,      -1,      -2,      -1,      -2,      -1,      -2,      -1,       1,      -7,       4,      -2,      -1,      -2,       0,      -1,
    -1,      -2,      -2,      -1,      -1,      -1,      -3,       0,      -2,     -10,       6,      -3,      -2,      -2,      -1,      -3,
    -3,      -3,      -5,      -6,     -10,     -18,     -35,    -118,    -837,    3813,   -3640,     685,     102,      34,      21,      10,
    10,      11,      16,      33,      91,     591,   -3052,    3112,    -666,     -75,     -38,     -11,      -6,      -2,      -5,       0,
    -1,      -2,      -1,       0,      -1,       0,      -6,       8,      -2,       8,      -6,       0,       0,       0,      -1,       0,
     1,       0,       0,       0,       0,       0,      -4,       5,      -2,       4,      -4,       0,       0,       0,      -1,       0,
    -1,       1,      -1,       0,       1,       0,      -3,       4,      -4,      15,     -12,       2,       0,       0,       0,       0,
     0,       1,       1,       1,       1,       2,     -12,      16,      -3,       3,      -2,       1,       1,       1,       0,       1,
     1,       1,       0,       1,       2,       1,      -2,       3,      -1,       3,       0,       0,       1,       0,       0,       1,
     1,       2,       2,       1,       1,       1,      -1,       4,       0,       2,       0,       1,       2,       2,       1,       1,
     1,       3,       1,       2,       2,       2,      -1,       4,      -1,       9,      -4,       3,       2,       2,       1,       2
```

Output from complexToDecibelWithGain():

```
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,       0,
     0,       0,       0,       0,       0,       0,       0,      24,      54,      63,      63,      52,      24,       0,       0,       0
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Tests completed...