



# Sherwood Engineering Inc.

1268 South Ogden Street Denver, Colorado 80210 USA

**email** Phone: **303-722-2257** FAX: **303-744-8876**

9 a.m. - 5 p.m. MST Monday - Friday

|   |   |   |
|---|---|---|
| <a href="#">SE-3 Features</a>                       | <a href="#">Hear the Difference</a>           | <a href="#">Interface Shortwave Radio to SE-3</a> |
| <a href="#">Sherwood Engineering Inc. Home Page</a> | <a href="#">Short Wave Listener Catalogue</a> | <a href="#">Amateur Radio Products</a>            |

Look in on part of SEI's Laboratory

## Receiver Test Data

(Terms Explained: [DOC](#) [PDF](#))

*Sorted by Third-Order Dynamic Range Narrow Spaced - or- ARRL RMDR (Reciprocal Mixing Dynamic Range) if Phase Noise Limited*

*Note: The term blocking only applies to a superhet radio. For a direct sampling radio the value in the blocking column is the ADC overload point reference receiver noise floor.*

*Updated 1 November 2019. Added Kenwood TS-2000X 2m data. 70cm and 23cm available in long form report.*

| Device Under Test   | Noise Floor (dBm)                               | AGC Thrshld (uV)                              | dB  | 100kHz Blocking (dB) | Sensitivity (uV)                                | LO Noise (dBc/Hz) | Spacing kHz | Front End Selectivity | Filter Ultimate (dB) | Dynamic Range Wide Spaced (dB)        | kHz  | Dynamic Range Narrow Spaced (dB)      | kHz  |
|---|---|---|-----|----------------------|---|-------------------|-------------|-----------------------|----------------------|---------------------------------------|------|---------------------------------------|------|
| <i>LO Noise Corrected</i><br><i>05/10/19</i><br>Yaesu FTdx-101D   | -127<br>-136 <sup>b</sup><br>-141 <sup>6</sup>  | 4.5<br>1.6 <sup>b</sup><br>0.58 <sup>b1</sup> |     |                      | 0.60<br>0.20 <sup>b</sup><br>0.12 <sup>b1</sup> | 154<br>155        | 10<br>50    | A Trk Presel          | >115                 | 110                                   | 20   | 110                                   | 2    |
| <i>Added 9/29/14</i><br>FlexRadio Systems 6700 Hardware Updated   | -118<br>-135 <sup>b2</sup>                      | 3.0<br>1.0 <sup>b2</sup>                      | Var | 130 preamp Off       | 2.0<br>0.25 <sup>b2</sup>                       | 145<br>155        | 10<br>50    | B Band Pass           | 115                  | 99                                    | 20&2 | 108 <sup>y</sup>                      | 20&2 |
| <i>Added 02/11/18</i><br>Icom IC-R8600 Second sample S/N 02001177 | -131<br>-142 <sup>b</sup><br>-130 <sup>ab</sup> | 2.40<br>0.67 <sup>b</sup>                     | 3   | 125                  | 0.40<br>0.12 <sup>b</sup><br>0.49 <sup>ab</sup> | 144<br>148        | 10<br>50    | B Half Octave         | >100                 | 109 <sup>ab</sup><br>88 <sup>ac</sup> | 20   | 107 <sup>ab</sup><br>88 <sup>ac</sup> | 2    |
| <i>Added 11/10/15</i><br>Elecraft K3S                             | -135<br>-138 <sup>b</sup><br>-145 <sup>10</sup> | 1.5<br>0.45 <sup>b</sup>                      | 3   | 150                  | 0.27<br>0.20 <sup>b</sup><br>0.08 <sup>10</sup> | 144<br>146        | 10<br>50    | B Band Pass           | 110                  | 107 <sup>q</sup>                      | 20   | 106 <sup>p</sup><br>106 <sup>q</sup>  | 2    |
| <i>Added 3/17/17</i><br>Elecraft K3S 2nd Sample 10 meter data     | -135<br>-138 <sup>b</sup><br>-145 <sup>10</sup> | 1.5<br>0.45 <sup>b</sup>                      | 3   | 150                  | 0.27<br>0.20 <sup>b</sup><br>0.08 <sup>10</sup> | 144<br>146        | 10<br>50    | B Band Pass           | 110                  | 106 <sup>ah</sup>                     | 20   | 105 <sup>ah</sup>                     | 2    |

|  |  |  |           |                                     |   |  |            |                                  |                                     |   |            |  |            |
|--|--|--|-----------|-------------------------------------|---|--|------------|----------------------------------|-------------------------------------|---|------------|--|------------|
| <b>Added</b><br><b>02/23/15</b><br>Elecraft<br>K3 (RX<br>Gain<br>Recal)<br>New<br>Synthesizer      | -136<br>-139 <sup>bq</sup>                       | 1.0<br>0.3 <sup>b</sup>                        | 3         | 141                                 | 0.27<br>0.20 <sup>b</sup>                       | 145<br>147                                   | 10<br>50   | B Band<br>Pass                   | 108                                 | 105 <sup>q</sup>                                      | 20         | 107 <sup>p</sup><br>104 <sup>q</sup>                       | 2          |
| <b>Added</b><br><b>04/25/16</b><br>Icom<br>IC-7851   | -123<br>-135 <sup>b</sup><br>-141 <sup>b1</sup>  | 8.5<br>1.85 <sup>b</sup><br>1.16 <sup>b1</sup> | 3         | 149                                 | 0.65<br>0.16 <sup>b</sup><br>0.11 <sup>b1</sup> | 148<br>153                                   | 10<br>50   | A Trk<br>Presel                  | 100                                 | 110 <sup>aa</sup>                                     | 20         | 105 <sup>aa</sup>  | 2          |
| <b>Added</b><br><b>10/15/18</b><br>Kenwood<br>TS-890S  | -131<br>-140 <sup>b</sup><br>-141 <sup>6</sup>   | 2.1<br>0.53 <sup>b</sup><br>0.14 <sup>b1</sup> | 3         | >151                                | 0.39<br>0.13 <sup>b</sup><br>0.10 <sup>b1</sup> | 155<br>156                                   | 10<br>50   | B Half<br>Octave                 | >118                                | 106   | 20         | 105  | 2          |
| <b>Added</b><br><b>10/02/12</b><br>Hilberling<br>PT-8000A<br>Hardware<br>Rev 2.00                  | -128<br>-141 <sup>b</sup>                        | 5.4<br>1.0 <sup>b</sup>                        | 3         | 142                                 | 0.45<br>0.11 <sup>b</sup>                       | 144<br>149                                   | 10<br>50   | A Trk<br>Presel                  | 100                                 | 105   | 20         | 105 <sup>w</sup>   | 2          |
| <b>Added</b><br><b>08/10/12</b><br>Elecraft<br>KX3   | -123<br>-138 <sup>b2</sup>                       | 12<br>1.3 <sup>b2</sup>                        | 3         | 138                                 | 0.9<br>0.09 <sup>b2</sup>                       | 144  | 10         | B Band<br>Pass                   | 110                                 | 105   | 20         | 104 <sup>t</sup><br>96 <sup>u</sup><br>65 <sup>v</sup>     | 2          |
| <b>Added</b><br><b>02/22/18</b><br>Apache<br>ANAN-<br>7000DLE                                      | -131<br>-131 <sup>ad</sup><br>-140 <sup>6</sup>  | 1.0<br>adjustable<br>2.2 <sup>ae</sup>         | 3         | 126                                 | 0.43<br>0.43 <sup>ad</sup><br>0.16 <sup>6</sup> | 140<br>143                                   | 10<br>50   | B Band<br>Pass                   | >110                                | 103   | 20         | 103 <sup>ad</sup>  | 2          |
| <b>Added</b><br><b>12/01/10</b><br>Yaesu<br>FTdx-<br>5000D   | -123<br>-135 <sup>b</sup><br>-141 <sup>b1</sup>  | 4.6<br>1.2 <sup>b</sup><br>0.33 <sup>b1</sup>  | 3         | 127 <sup>s</sup>                    | 1.1<br>0.27 <sup>b</sup><br>0.13 <sup>b1</sup>  | 135  | 10         | B Band<br>Pass                   | 90 <sup>f</sup>                     | 104   | 20         | 101 <sup>f</sup>   | 2          |
| <b>Device<br/>Under<br/>Test</b>   | <b>Noise<br/>Floor<br/>(dBm)</b>                 | <b>AGC<br/>Thrsld<br/>(uV)</b>                 | <b>dB</b> | <b>100kHz<br/>Blocking<br/>(dB)</b> | <b>Sensitivity<br/>(uV)</b>                     | <b>LO<br/>Noise<br/>Spacing<br/>(dBc/Hz)</b> | <b>kHz</b> | <b>Front End<br/>Selectivity</b> | <b>Filter<br/>Ultimate<br/>(dB)</b> | <b>Dynamic<br/>Range<br/>Wide<br/>Spaced<br/>(dB)</b> | <b>kHz</b> | <b>Dynamic<br/>Range<br/>Narrow<br/>Spaced<br/>(dB)</b>    | <b>kHz</b> |
| <b>Added</b><br><b>2/15/08</b><br>Elecraft<br>K3   | -130<br>-138 <sup>b</sup>                        | 2.1<br>0.6 <sup>b</sup>                        | 3         | 140 <sup>s</sup>                    | 0.33<br>0.19 <sup>b</sup>                       | 138  | 10         | B Band<br>Pass                   | 105                                 | 104   | 20         | 101 <sup>p f</sup><br>96 <sup>q a</sup><br>95 <sup>r</sup> | 2          |
| <b>Added</b><br><b>03/27/19</b><br>FlexRadio<br>6400   | -112<br>-127 <sup>b3</sup><br>-136 <sup>b4</sup> | 9<br>1.4 <sup>b3</sup><br>0.44 <sup>b4</sup>   | 3         | 119                                 | 4.0<br>0.63 <sup>b3</sup><br>0.22 <sup>b4</sup> | 145<br>146                                   | 10<br>20   | B Band<br>Pass                   | 115                                 | 100 <sup>b3</sup>                                     | 20&2       | 100 <sup>b3</sup>  | 20&2       |
| <b>Added</b><br><b>05/14/18</b><br>FlexRadio<br>6600M<br>PLL<br>update & 2<br>Hardware<br>Upgrades | -111<br>-126 <sup>b3</sup><br>-136 <sup>b4</sup> | 13<br>2.0 <sup>b3</sup><br>0.35 <sup>b4</sup>  | 3         | 116                                 | 4.5<br>0.78 <sup>b3</sup><br>0.26 <sup>b4</sup> | 144<br>148                                   | 10<br>20   | A- Band<br>Pass                  | 115                                 | 102 <sup>b0</sup>                                     | 20&2       | 99 <sup>b3</sup><br>99 <sup>aj</sup>                       | 20&2       |
| <b>Added</b><br><b>08/31/16</b><br>Apache<br>ANAN-<br>200D<br>Tested<br>12/15/2015                 | -133<br>-132 <sup>ad</sup>                       | 1.0<br>adjustable<br>3.0 <sup>ae</sup>         | 3         | 123                                 | 0.30<br>0.37 <sup>ad</sup>                      | 131<br>137                                   | 10<br>50   | B Band<br>Pass                   | 95                                  | 99  | 20         | 99 <sup>af</sup><br>77 <sup>ad</sup><br>64 <sup>ac</sup>   | 2          |

|   |   |  |           |                                     |  |  |            |                                  |                                     |   |            |   |            |
|---|---|--|-----------|-------------------------------------|--|--|------------|----------------------------------|-------------------------------------|---|------------|---|------------|
| <b>Updated</b><br>7/2/09<br>Perseus   | -123<br>-125 <sup>b</sup>   | 0.15<br>0.1 <sup>b</sup>                       | 3         | 125                                 | 0.8<br>0.6 <sup>b</sup>  | 147  | 10         | B Band<br>Pass                   | 109 <sup>f</sup>                    | 99  | 20         | 99  | 2          |
| <b>Added</b><br>12/23/17<br>Icom<br>IC-7610<br>S/N<br>12001056                        | -132<br>-140 <sup>b</sup><br>-142 <sup>b1</sup><br>-129 <sup>ab</sup>     | 2.7<br>1.20 <sup>b</sup><br>1.16 <sup>b1</sup> | 3         | 122<br>119 <sup>ab</sup>            | 0.36<br>0.15 <sup>b</sup><br>0.125 <sup>b1</sup><br>0.51 <sup>ab</sup> | 146<br>>149                                  | 10<br>50   | A Trk<br>Presel                  | 110                                 | 98 <sup>ab</sup><br>90 <sup>ac</sup>                  | 20         | 98 <sup>ab</sup><br>90 <sup>ac</sup>                    | 2          |
| <b>Added</b><br>12/23/17<br>Icom<br>IC-R8600<br>S/N<br>04001188                       | -132<br>-142 <sup>b</sup><br>-130.5 <sup>ab</sup>                         | 2.40<br>0.67 <sup>b</sup>                      | 3         | 125                                 | 0.40<br>0.12 <sup>b</sup><br>0.49 <sup>ab</sup>                        | 144<br>148                                   | 10<br>50   | B Half<br>Octave                 | 105                                 | 98 <sup>ab</sup><br>78 <sup>ac</sup>                  | 20         | 98 <sup>ab</sup><br>78 <sup>ac</sup>                    | 2          |
| <b>Added</b><br>02/11/18<br>Icom<br>IC-7300<br>Second<br>Sample<br>S/N<br>02012272    | -133<br>-140.5 <sup>b</sup><br>-141.5 <sup>b1</sup><br>-132 <sup>ab</sup> | 1.9<br>0.85 <sup>b</sup><br>0.50 <sup>b1</sup> | 3         | 123                                 | 0.30<br>0.12 <sup>b</sup><br>0.11 <sup>b1</sup><br>0.35 <sup>ab</sup>  | 137<br>147                                   | 10<br>50   | B Band<br>Pass                   | >100                                | 106 <sup>ab</sup><br>84 <sup>ac</sup>                 | 20         | 97 <sup>ab</sup><br>84 <sup>ac</sup>                    | 2          |
| <b>Added</b><br>3/17/17<br>FlexRadio<br>Systems<br>6700<br>2nd<br>Sample 10<br>meters | -116<br>-134 <sup>b2</sup>  | 3.0<br>1.0 <sup>b2</sup>                       | Var       | 130<br>preamp<br>Off                | 2.0<br>0.25 <sup>b2</sup>  | 145<br>155                                   | 10<br>50   | B Band<br>Pass                   | 115                                 | 99  | 20&2       | 96 <sup>ag</sup>  | 20&2       |
| <b>Added</b><br>05/21/18<br>Icom<br>IC-7610<br>S/N<br>12001276<br>Second<br>Sample    | -132<br>-139 <sup>b</sup><br>-141 <sup>b1</sup><br>-128 <sup>ab</sup>     | 2.8<br>1.20 <sup>b</sup><br>1.12 <sup>b1</sup> | 3         | 122<br>119 <sup>ab</sup>            | 0.37<br>0.15 <sup>b</sup><br>0.13 <sup>b1</sup><br>0.53 <sup>ab</sup>  | 145<br>>148                                  | 10<br>50   | A Trk<br>Presel                  | 110                                 | 96 <sup>ab</sup><br>76 <sup>ac</sup>                  | 20         | 96 <sup>ab</sup><br>76 <sup>ac</sup>                    | 2          |
| <b>Added</b><br>2/15/08<br>FlexRadio<br>Systems<br>FLEX-<br>5000A                     | -123<br>-135 <sup>b</sup>   | 2.0<br>0.5 <sup>b</sup>                        | 3         | 123 <sup>s</sup>                    | 1.3<br>0.3 <sup>b</sup>  | 123  | 10         | B Band<br>Pass                   | 98                                  | 96  | 20         | 96  | 2          |
| <b>Added</b><br>4/16/06<br>Ten-Tec<br>Orion II  | -125<br>-133 <sup>b</sup>   | 2.7<br>0.65 <sup>b</sup>                       | 3         | 130                                 | 0.75<br>0.3 <sup>b</sup>   | 126  | 10         | B Band<br>Pass                   | 100 <sup>f</sup>                    | 95 <sup>f</sup>                                       | 20         | 95 <sup>i</sup>   | 2          |
| <b>Added</b><br>04/25/16<br>Icom<br>IC-7300<br>S/N<br>02001408                        | -133<br>-141 <sup>b</sup><br>-142 <sup>b1</sup><br>-122 <sup>ab</sup>     | 1.9<br>0.85 <sup>b</sup><br>0.50 <sup>b1</sup> | 3         | 123                                 | 0.27<br>0.11 <sup>b</sup><br>0.10 <sup>b1</sup><br>1.0 <sup>ab</sup>   | 137<br>147                                   | 10<br>50   | B Band<br>Pass                   | >100                                | 103 <sup>ab</sup><br>81 <sup>ac</sup>                 | 20         | 94 <sup>ab</sup><br>81 <sup>ac</sup>                    | 2          |
| <b>Device<br/>Under<br/>Test</b>  | <b>Noise<br/>Floor<br/>(dBm)</b>  | <b>AGC<br/>Thrshld<br/>(uV)</b>                | <b>dB</b> | <b>100kHz<br/>Blocking<br/>(dB)</b> | <b>Sensitivity<br/>(uV)</b>  | <b>LO<br/>Noise<br/>Spacing<br/>(dBc/Hz)</b> | <b>kHz</b> | <b>Front End<br/>Selectivity</b> | <b>Filter<br/>Ultimate<br/>(dB)</b> | <b>Dynamic<br/>Range<br/>Wide<br/>Spaced<br/>(dB)</b> | <b>kHz</b> | <b>Dynamic<br/>Range<br/>Narrow<br/>Spaced<br/>(dB)</b> | <b>kHz</b> |
| <b>Updated</b><br>4/17/06<br>Ten-Tec<br>Orion   | -127<br>-135 <sup>b</sup>   | 0.8  | 3         | 137                                 | 0.6<br>0.25 <sup>b</sup>   | 130  | 10         | B Band<br>Pass                   | 100 <sup>f</sup>                    | 96  | 20         | 93  | 2          |

|  |   |  |           |                                     |  |  |            |                                  |                                     |   |            |   |            |
|--|---|--|-----------|-------------------------------------|--|--|------------|----------------------------------|-------------------------------------|---|------------|---|------------|
| <b>Added</b><br><b>12/09/14</b><br>Kenwood<br>TS-590SG<br>Down<br>Conversion<br>Mode   | -127<br>-135 <sup>b</sup>   | 2.2<br>0.65 <sup>b</sup>                     | 3         | 137                                 | 0.42<br>0.17 <sup>b</sup>                      | 139<br>141                                   | 10<br>50   | B<br>Bandpass                    | 100 <sup>f</sup>                    | 104   | 20         | 92 <sup>f</sup>   | 2          |
| <b>Added</b><br><b>06/22/13</b><br>Ten-Tec<br>Argonaut<br>VI   | -125<br>-135 <sup>b</sup>   | 3.2<br>0.75 <sup>b</sup>                     | 3         | 127                                 | 0.52<br>0.25 <sup>b</sup>                      | 127<br>134                                   | 10<br>50   | B Band<br>Pass                   | 95 <sup>f</sup>                     | 95  | 20         | 92 <sup>f</sup>   | 2          |
| <b>Added</b><br><b>08/15/19</b><br>Aerial-51<br>ALT-512  | -120<br>-136 <sup>b</sup>   | 9<br>0.75 <sup>b</sup>                       | 3         | 122                                 | 1.1<br>0.2 <sup>b</sup>                        | 133<br>131                                   | 10<br>50   | B Band<br>Pass                   | 100                                 | 91  | 20         | 91  | 2          |
| <b>Added</b><br><b>11/10/10</b><br>Ten-Tec<br>Eagle  | -124<br>-132 <sup>b</sup>   | 2.5<br>0.6 <sup>b</sup>                      | 3         | 129                                 | 0.7<br>0.3 <sup>b</sup>                        | 131<br>143                                   | 10<br>50   | B Band<br>Pass                   | 92 <sup>f</sup>                     | 93  | 20         | 90 <sup>f</sup>   | 2          |
| <b>Added</b><br><b>8/20/09</b><br>FlexRadio<br>Systems<br>FLEX-<br>3000  | -123<br>-139 <sup>b</sup>   | 2.1<br>0.13 <sup>b</sup>                     | 3         | 116 <sup>s</sup>                    | 1.35<br>0.16 <sup>b</sup>                      | 120  | 10         | B Band<br>Pass                   | 90 <sup>f</sup>                     | 90 <sup>f</sup>                                       | 20         | 90 <sup>f</sup>   | 2          |
| <b>Updated</b><br><b>3/21/17</b><br>FlexRadio<br>Systems<br>6300<br>Second<br>Sample<br>Preamp<br>Updated  | -117<br>-136 <sup>b2</sup>  | 3.0<br>1.0 <sup>b2</sup>                     | Var       | 125<br>preamp<br>Off                | 2.1<br>0.23 <sup>b2</sup>                      | 143<br>148                                   | 10<br>50   | D High &<br>Low Pass             | 110                                 | 89  | 20&2       | 89 <sup>ai</sup>  | 20&2       |
| <b>Added</b><br><b>12/30/10</b><br>Kenwood<br>TS-590S<br>on 20<br>meters<br>Down-<br>conversion<br>Mode<br>For Up-<br>Conversion<br>see Narrow<br>Spaced<br>at 76 dB | -128<br>-137 <sup>b</sup>   | 1.8<br>0.5 <sup>b</sup>                      | 3         | 144 <sup>s</sup>                    | 0.43<br>0.15 <sup>b</sup>                      | 140  | 10         | B Band<br>Pass                   | 92 <sup>f</sup>                     | 104   | 20         | 88 <sup>f</sup>   | 2          |
| <b>Device<br/>Under<br/>Test</b>   | <b>Noise<br/>Floor<br/>(dBm)</b>  | <b>AGC<br/>Thrshld<br/>(uV)</b>              | <b>dB</b> | <b>100kHz<br/>Blocking<br/>(dB)</b> | <b>Sensitivity<br/>(uV)</b>                    | <b>LO<br/>Noise<br/>Spacing<br/>(dBc/Hz)</b> | <b>kHz</b> | <b>Front End<br/>Selectivity</b> | <b>Filter<br/>Ultimate<br/>(dB)</b> | <b>Dynamic<br/>Range<br/>Wide<br/>Spaced<br/>(dB)</b> | <b>kHz</b> | <b>Dynamic<br/>Range<br/>Narrow<br/>Spaced<br/>(dB)</b> | <b>kHz</b> |
| <b>Added</b><br><b>02/26/11</b><br>FlexRadio<br>Systems<br>FLEX-<br>1500   | -112to-<br>116<br>-120to-<br>129 <sup>b</sup><br>-121to-<br>136 <sup>b1</sup> | 3.1<br>1.0 <sup>b</sup><br>0.4 <sup>b1</sup> | 3         | 108                                 | 2.8<br>1.4 <sup>b</sup><br>0.3 <sup>b1</sup>   | 131  | 10         | B Band<br>Pass                   | 95                                  | 88  | 20         | 88  | 2          |
| <b>Added</b><br><b>06/02/13</b><br>Kenwood<br>TS-990S<br>on 20   | -127<br>-138 <sup>b</sup><br>-138 <sup>6</sup>                                | 1.9<br>0.46 <sup>b</sup>                     | 3         | 145                                 | 0.75<br>0.17 <sup>b</sup><br>0.13 <sup>6</sup> | 138<br>150                                   | 10<br>50   | A Trk<br>Preselec                | 90 <sup>f</sup>                     | 111   | 20         | 87 <sup>x</sup>   | 2          |

|   |   |  |           |                                     |   |  |            |                                  |                                     |   |            |   |            |  |
|---|---|--|-----------|-------------------------------------|---|--|------------|----------------------------------|-------------------------------------|---|------------|---|------------|--|
| meters<br>15 & 12<br>meters<br>RMDR<br>varies by<br>band<br>17 meters<br>is worst<br>band<br>30 meters<br>is best<br>band |   |  |           |                                     |   |  |            |                                  |                                     |   |            |   |            |  |
| <i>1/12/17</i><br>FlexRadio<br>Systems<br>6300<br>Preamp<br>Updated   | -117<br>-136 <sup>b2</sup>                      | 3.0<br>1.0 <sup>b2</sup>                       | Var       | 125<br>preamp<br>Off                | 2.2<br>0.24 <sup>b2</sup>                       | 143<br>148                                   | 10<br>50   | D High &<br>Low Pass             | 110                                 | 86  | 20&2       | 86 <sup>ak</sup>  | 20&2       |  |
| <i>Added</i><br><i>07/26/17</i><br>Elecraft<br>KX2  | -123<br>-136 <sup>b</sup>                       | 31<br>3.4 <sup>b</sup>                         | 3         | N.A.                                | 1.2<br>0.25 <sup>b</sup>                        | 132<br>129                                   | 10<br>50   | B<br>Bandpass                    | 90                                  | 93  | 20         | 86  | 3          |  |
| <i>Added</i><br><i>2/15/08</i><br>Icom<br>R9500   | -127<br>-130 <sup>b</sup><br>-135 <sup>b1</sup> | 1.1<br>0.25 <sup>b</sup><br>0.16 <sup>b1</sup> | 3         | 119                                 | 0.7<br>0.2 <sup>b</sup><br>0.11 <sup>b1</sup>   | 134  | 10         | B Band<br>Pass                   | 80                                  | 110 <sup>f</sup>                                      | 20         | 85 <sup>f</sup>   | 2          |  |
| Drake<br>R-4C/CF-<br>600/6  | -138  | 0.7  | 3         | 130                                 | 0.15  | 135  | 2.5        | A-<br>Preselector                | 130                                 | 85  | 20         | 84  | 2          |  |
| <i>Added</i><br><i>12/13/2012</i><br>Yaesu<br>FTdx-3000   | -127<br>-138 <sup>b</sup><br>-142 <sup>b1</sup> | 3.8<br>1.0<br>0.36                             | 3         | 132                                 | 0.57<br>0.15<br>0.11                            | 127  | 10         | B 0.5<br>Octave                  | 80                                  | 105 <sup>f</sup>                                      | 20         | 82 <sup>f</sup>   | 2          |  |
| AOR<br>AR-7030  | -122<br>-128 <sup>b</sup>                       | 2.2  | 3         | 130                                 | 0.5<br>0.22                                     | 130  | 10         | D Hi/Lo<br>Pass                  | 90                                  | 100   | 20         | 82  | 2          |  |
| <b>Device<br/>Under<br/>Test</b>  | <b>Noise<br/>Floor<br/>(dBm)</b>                | <b>AGC<br/>Thrshld<br/>(uV)</b>                | <b>dB</b> | <b>100kHz<br/>Blocking<br/>(dB)</b> | <b>Sensitivity<br/>(uV)</b>                     | <b>LO<br/>Noise<br/>Spacing<br/>(dBc/Hz)</b> | <b>kHz</b> | <b>Front End<br/>Selectivity</b> | <b>Filter<br/>Ultimate<br/>(dB)</b> | <b>Dynamic<br/>Range<br/>Wide<br/>Spaced<br/>(dB)</b> | <b>kHz</b> | <b>Dynamic<br/>Range<br/>Narrow<br/>Spaced<br/>(dB)</b> | <b>kHz</b> |  |
| <i>Added</i><br><i>4/16/06</i><br>Icom<br>IC-765  | -134<br>-140 <sup>b</sup>                       | 5.0<br>1.7 <sup>b</sup>                        | 3         | 143                                 | 0.26  | 130  | 10         | B Band<br>Pass                   | 95 <sup>f</sup>                     | 102   | 20         | 81 <sup>f j m</sup>                                     | 2          |  |
| <i>Added</i><br><i>10/03/14</i><br>Icom<br>IC-703+  | -126 <sup>a</sup><br>-135 <sup>a b</sup>        | 2.1<br>0.8 <sup>b</sup>                        | 3         | 128                                 | 0.33<br>0.125 <sup>b</sup>                      | 115<br>132                                   | 10<br>50   | B Band<br>Pass                   | 85 <sup>f</sup>                     | 96  | 20         | 81 <sup>a</sup>   | 5          |  |
| Atlas<br>350-XL   | -131  | 1.0  | 11        | 117                                 | 0.2   | 125  | 4          | C Band<br>Pass                   | 95                                  | 81  | 20         | 81  | 2          |  |
| Kenwood<br>TS-<br>830/YK88  | -129  | 1.5  | 3         | 122                                 | 0.1   | 114  | 2          | C<br>Preselector                 | 85 <sup>f</sup>                     | 84  | 20         | 81  | 2          |  |
| <i>Added</i><br><i>4/23/07</i><br>Ten-Tec<br>Omni VII   | -130<br>-140 <sup>b</sup>                       | 0.8<br>0.2 <sup>b</sup>                        | 3         | 130                                 | 0.45<br>0.17 <sup>b</sup>                       | 124  | 10         | B 0.5<br>Octave                  | 100 <sup>f</sup>                    | 92  | 20         | 80  | 2          |  |
| <i>Added</i><br><i>10/3/04</i><br>Icom<br>IC-7800   | -126<br>-136 <sup>b</sup><br>-139 <sup>b1</sup> | 4.5<br>1.2 <sup>b</sup><br>0.6 <sup>b1</sup>   | 3         | >135                                | 0.60<br>0.15 <sup>b</sup><br>0.10 <sup>b1</sup> | 130  | 10         | A Trk<br>Presel                  | 100 <sup>f</sup>                    | 102   | 20         | 80 <sup>f</sup>   | 2          |  |
| <i>Added</i>  | -129  | 10   | 15        | 123                                 | 0.35  | 123  | 10         | B Band                           | 80 <sup>f</sup>                     | 98  | 20         | 80 <sup>f</sup>   | 2          |  |

|   |   |  |           |                                     |   |  |            |                                  |                                     |   |            |   |            |
|---|---|--|-----------|-------------------------------------|---|--|------------|----------------------------------|-------------------------------------|---|------------|---|------------|
| <i>10/3/04</i><br>Elecraft K2<br>s/n:3170   | -136 <sup>g</sup>                               | 1.7 <sup>b</sup>                               |           | 134 <sup>h</sup>                    | 0.20  |  |            | Pass                             |                                     |   |            |   |            |
| <i>Added</i><br><i>2/27/04</i><br>Ten-Tec<br>Omni VI+   | -135  | 0.7  | 3         | 145                                 | 0.2   | 137  | 20         | B Band<br>Pass                   | 80                                  | 97  | 20         | 80  | 2          |
| <b>Device<br/>Under<br/>Test</b>  | <b>Noise<br/>Floor<br/>(dBm)</b>                | <b>AGC<br/>Threshld<br/>(uV)</b>               | <b>dB</b> | <b>100kHz<br/>Blocking<br/>(dB)</b> | <b>Sensitivity<br/>(uV)</b>                     | <b>LO<br/>Noise<br/>Spacing<br/>(dBc/Hz)</b> | <b>kHz</b> | <b>Front End<br/>Selectivity</b> | <b>Filter<br/>Ultimate<br/>(dB)</b> | <b>Dynamic<br/>Range<br/>Wide<br/>Spaced<br/>(dB)</b> | <b>kHz</b> | <b>Dynamic<br/>Range<br/>Narrow<br/>Spaced<br/>(dB)</b> | <b>kHz</b> |
| Yaesu<br>901-DM   | -135  | 1.6  | 3         | 124                                 | 0.15  | 109  | 2          | C<br>Preselector                 | 85                                  | 87  | 20         | 80 <sup>f</sup>   | 3          |
| <i>Added</i><br><i>8/10/12</i><br>Yaesu<br>FT-950   | -120<br>-132 <sup>b</sup><br>-138 <sup>b1</sup> | 4.5<br>1.2 <sup>b</sup><br>0.5 <sup>b1</sup>   | 3         | 125                                 | 1.1<br>0.31 <sup>b</sup><br>0.15 <sup>b1</sup>  | 125  | 10         | B                                | 80 <sup>f</sup>                     | 105   | 20         | 79 <sup>f</sup>   | 2          |
| Collins<br>R-390A   | -137  | N.A.   |           | 130                                 | 0.2   | 130  | 2          | A+ Trk<br>Presel                 | 85                                  | 81  | 20         | 79  | 2          |
| Ten-Tec<br>Corsair  | -131 <sup>a</sup>                               | 0.1  | 14        | 130                                 | 0.2   | 132  | 5          | C Band<br>Pass                   | 90                                  | 93  | 20         | 79  | 3          |
| <i>Added</i><br><i>12/13/2012</i><br>Icom<br>IC-7700  | -127<br>-140 <sup>b</sup><br>-143 <sup>b1</sup> | 6.5<br>1.6<br>0.8                              | 3         | 140                                 | 0.69<br>0.15<br>0.10                            | 129  | 10         | A Trk<br>Presel                  | 90                                  | 105   | 20         | 78 <sup>f</sup>   | 2          |
| <i>Added</i><br><i>9/3/09</i><br>Icom<br>IC-7600  | -130<br>-138 <sup>b</sup><br>-141 <sup>b1</sup> | 5.3<br>2.35 <sup>b</sup><br>1.13 <sup>b1</sup> | 3         | 126                                 | 0.43<br>0.16 <sup>b</sup><br>0.11 <sup>b1</sup> | 121  | 10         | B                                | 78 <sup>f</sup>                     | 100   | 20         | 78 <sup>f</sup>   | 2          |
| <i>Added</i><br><i>8/25/11</i><br>Icom<br>IC-7410   | -135<br>-142 <sup>b</sup><br>-144 <sup>b1</sup> | 2.9<br>1.35 <sup>b</sup><br>0.5 <sup>b1</sup>  | 3         | 135                                 | 0.3<br>0.12 <sup>b</sup><br>0.1 <sup>b1</sup>   | 121  | 10         | B                                | 75 <sup>f</sup>                     | 102   | 20         | 78 <sup>f</sup>   | 2          |
| Icom<br>IC-720A   | -137  | 1.6  | 3         | 138                                 | 0.15  | 117  | 10         | C 0.5<br>Octave                  | 80                                  | 93  | 50         | 78  | 3          |
| Kenwood<br>TS-820S  | -137  | 0.4  | 3         | 115                                 | 0.2   | 125  | 10         | C<br>Preselector                 | 80                                  | 79  | 20         | 78  | 3          |
| <i>Updated</i><br><i>4/17/06</i><br>Kenwood<br>TS-850<br>Inrad-400s                           | -128<br>-138 <sup>b</sup>                       | 2.2<br>0.5 <sup>b</sup>                        | 3         | 128                                 | 0.45<br>0.15 <sup>b</sup>                       |  |            |                                  |                                     | 90  | 20         | 77  | 2          |
| JRC<br>NRD-515  | -138  | 3.5  | 4         | 103                                 | 0.1   | 118  | 10         | C 0.8<br>Octave                  | 80                                  | 95  | 20         | 77 <sup>f</sup>   | 2          |
| <i>Added</i><br><i>12/30/10</i><br>Kenwood<br>Up-<br>conversion<br>TS-590S<br>on 17<br>meters | -132<br>-139 <sup>b</sup>                       | 1.4<br>0.42 <sup>b</sup>                       | 3         | 133 <sup>s</sup>                    | 0.28<br>0.13 <sup>b</sup>                       | N.A.   | 10         | B Band<br>Pass                   | N.A. <sup>f</sup>                   | 102   | 20         | 76 <sup>f</sup>   | 2          |
| Ten-Tec<br>Omni V   | -134  | 1.2  | 6         | 135                                 | 0.18  | 134  | 10         | C Band<br>Pass                   | 100                                 | 89  | 20         | 76  | 2          |
| Atlas<br>210/215X   | -120 <sup>a</sup>                               | N.A.   |           | 123                                 | 0.5   | N.A.   |            | C Band<br>Pass                   | 95                                  | 76  | 20         | 76  | 2          |
| <b>Device<br/>Under<br/>Test</b>  | <b>Noise<br/>Floor<br/>(dBm)</b>                | <b>AGC<br/>Threshld<br/>(uV)</b>               | <b>dB</b> | <b>100kHz<br/>Blocking<br/>(dB)</b> | <b>Sensitivity<br/>(uV)</b>                     | <b>LO<br/>Noise<br/>Spacing<br/>(dBc/Hz)</b> | <b>kHz</b> | <b>Front End<br/>Selectivity</b> | <b>Filter<br/>Ultimate<br/>(dB)</b> | <b>Dynamic<br/>Range<br/>Wide</b>                     | <b>kHz</b> | <b>Dynamic<br/>Range<br/>Narrow</b>                     | <b>kHz</b> |

|   |   |                                 |           |                                     |                             |  |            |                                  |                                     | Spaced<br>(dB)  |            | Spaced<br>(dB)  |            |
|---|---|---------------------------------|-----------|-------------------------------------|-----------------------------|--|------------|----------------------------------|-------------------------------------|---|------------|---|------------|
| <i>Corrected</i><br>4/7/06<br>Icom<br>756 Pro III   | -132<br>-140 <sup>b</sup><br>-142 <sup>b1</sup> | 2.3<br>0.7<br>0.3               | 3         | 142                                 | 0.35<br>0.14<br>0.11        | 126  | 10         | B 0.5<br>Octave                  | 80                                  | 99  | 20         | 75  | 2          |
| <i>Added</i><br>4/7/06<br>Icom<br>756 Pro II        | -133<br>-138 <sup>b</sup><br>-141 <sup>b1</sup> | 2.1<br>0.65<br>0.26             | 3         | 138                                 | 0.32<br>0.15<br>0.11        | 124  | 10         | B 0.5<br>Octave                  | 80                                  | 98  | 20         | 75  | 2          |
| Drake<br>R-7  | -135<br>-140 <sup>b</sup>                       | 1.0<br>0.4 <sup>b</sup>         | 3         | 145                                 | 0.28<br>0.15 <sup>b</sup>   | 114  | 10         | B 0.5<br>Octave                  | 85                                  | 97  | 100        | 75  | 2          |
| Drake<br>TR-7                                       | -134  | 1.3                             | 3         | 146                                 | 0.5                         | 116  | 10         | B 0.5<br>Octave                  | 90                                  | 99  | 100        | 75  | 2          |
| Heath<br>SB-104                                     | -123  | N.A.                            |           | 92                                  | 0.5                         | N.A.   |            | C Band<br>Pass                   | 75                                  | 79  | 20         | 75  | 4          |
| WJ<br>HF-1000                                       | -129<br>-136 <sup>b</sup>                       | 0.11                            | 3         | 123                                 | 0.23<br>0.13 <sup>b</sup>   | 115  | 10         | D<br>Wideband                    | 80                                  | 99  | 20         | 75  | 5          |
| <i>Added</i><br>4/7/06<br>Icom<br>706MkIIG          | -135<br>-140 <sup>b</sup>                       | 1.9<br>0.6                      | 3         | 126                                 | 0.23<br>0.12                | 127  | 10         | C Octave                         | 80                                  | 87  | 20         | 74  | 2          |
| Ten-Tec<br>Omni-B                                   | -136  | 0.2                             | 25        | 129                                 | 0.15                        | 130  | 10         | C<br>Preselector                 | 80                                  | 87  | 20         | 74  | 2          |
| Icom<br>IC-730                                      | -140  | 1.5                             | 3         | 135                                 | 0.1                         | 118  | 10         | C 0.5<br>Octave                  | 80                                  | 92  | 50         | 74  | 3          |
| Kenwood<br>R-820S                                   | -125  | 4.0                             | 3         | 125                                 | 0.35                        | 123  | 10         | C<br>Preselector                 | 75                                  | 74  | 20         | 74  | 4          |
| <i>Added</i><br>04/11/19<br>Icom<br>IC-9700         | -131<br>-145 <sup>2</sup>                       | 0.7<br>0.18 <sup>b</sup>        | 3         | 111                                 | 0.35<br>0.082 <sup>b</sup>  | 130<br>138                                   | 10<br>50   | B<br>Bandpass                    | 100                                 | 74  | 20         | 74  | 2          |
| <b>Device<br/>Under<br/>Test</b>                    | <b>Noise<br/>Floor<br/>(dBm)</b>                | <b>AGC<br/>Thrshld<br/>(uV)</b> | <b>dB</b> | <b>100kHz<br/>Blocking<br/>(dB)</b> | <b>Sensitivity<br/>(uV)</b> | <b>LO<br/>Noise<br/>Spacing<br/>(dBc/Hz)</b> | <b>kHz</b> | <b>Front End<br/>Selectivity</b> | <b>Filter<br/>Ultimate<br/>(dB)</b> | <b>Dynamic<br/>Range<br/>Wide<br/>Spaced<br/>(dB)</b> | <b>kHz</b> | <b>Dynamic<br/>Range<br/>Narrow<br/>Spaced<br/>(dB)</b> | <b>kHz</b> |
| Collins<br>75-S3B                                   | -146  | 1.1                             | 15        | 122                                 | 0.1                         | 120  | 4          | B+<br>Preselector                | 85                                  | 88  | 20         | 74  | 2          |
| Icom<br>IC-781                                      | -127<br>-138 <sup>b</sup>                       | 2.0<br>0.5 <sup>b</sup>         | 3         |                                     | 0.5<br>0.18 <sup>b</sup>    | 129  | 10         | B 0.5<br>Octave                  | 90 <sup>f</sup>                     | 94  | 20         | 73  | 2          |
| <i>Updated</i><br>4/18/06<br>Stock 781              | -128<br>-135 <sup>b</sup>                       | 2.4<br>0.7 <sup>b</sup>         | 3         | 131                                 | 0.5<br>0.22 <sup>b</sup>    |  |            | B 0.5<br>Octave                  | 90                                  | 98  | 20         | 78  | 2          |
| <i>Updated</i><br>4/18/06<br>781 with<br>Pin Diodes | -126<br>-134 <sup>b</sup>                       | 3.6<br>1.15 <sup>b</sup>        | 3         | 134                                 | 0.54<br>0.21 <sup>b</sup>   |  |            | B 0.5<br>Octave                  | 90                                  | 98  | 20         | 72  | 2          |
| Kenwood<br>TS-930S                                  | -135  | 2.0                             | 3         | 143                                 | 0.15                        | 115  | 10         | B- 0.5<br>Octave                 | 80 <sup>f</sup>                     | 86  | 20         | 73  | 3          |
| Icom<br>IC-701                                      | -129  | 5.5                             | 6         | 130                                 | 0.3                         | 125  | 10         | C Band<br>Pass                   | 75                                  | 81  | 50         | 73  | 4          |
| Collins<br>75S-3C                                   | -141  | 1.3                             | 12        | 121                                 | 0.14                        | 120  | 4          | B+<br>Preselector                | 95                                  | 85 <sup>d</sup>                                       | 20         | 72  | 2          |
| Kenwood<br>TS-480HX<br>Without<br>CW Xtal<br>Filter | -135<br>-143 <sup>b</sup>                       | 3.0<br>0.6 <sup>b</sup>         | 3         | 142                                 | 0.28<br>0.11 <sup>b</sup>   | 121  | 10         | B 0.5<br>Octave                  | 80 <sup>f</sup>                     | 99  | 20         | 72  | 3          |

|   |   |   |           |                                     |   |  |            |                                  |                                     |   |            |   |            |
|---|---|---|-----------|-------------------------------------|---|--|------------|----------------------------------|-------------------------------------|---|------------|---|------------|
| JRC<br>NRD-525  | -132 <sup>a</sup>                               | 0.9   | 3         | 123                                 | 0.2   | 120  | 10         | B Trk<br>Presel                  | 65                                  | 95  | 50         | 72  | 5          |
| <i>Added</i><br><i>08/05/15</i><br>Yaesu<br>FT-991  | -123<br>-135 <sup>b</sup><br>-143 <sup>b1</sup> | 5<br>1.2 <sup>b</sup><br>0.33 <sup>b1</sup>   | 3         | 133                                 | 0.70<br>0.17 <sup>b</sup><br>0.08 <sup>b1</sup> | 120<br>137                                   | 10<br>50   | B<br>Bandpass                    | 80 <sup>f</sup>                     | 96  | 20         | 72  | 2          |
| <i>Updated</i><br><i>4/13/09</i><br>Yaesu FT-<br>1000<br>MP MKV<br>Field<br>Inrad roofing<br>filter mod | -133 <sup>b</sup>                               | 3.0 <sup>b</sup>                              | 3         | 135                                 | 0.2 <sup>b</sup>                                | 128  | 10         | B 0.5<br>Octave                  | 90 <sup>f</sup>                     | 89  | 20         | 71 <sup>k</sup>   | 2          |
| <i>Added</i><br><i>10/3/04</i><br>Icom<br>756 Pro   | -127<br>-136 <sup>b</sup><br>-139 <sup>b1</sup> | 3.5<br>1.0 <sup>b</sup><br>0.5 <sup>b1</sup>  | 3         | 132                                 | 0.55<br>0.21 <sup>b</sup><br>0.14 <sup>b1</sup> | 127  | 10         | B 0.5<br>Octave                  | 90                                  | 86  | 20         | 71  | 2          |
| Drake<br>R-8  | -128<br>-131 <sup>ab</sup>                      | 0.6<br>0.3                                    | 3         | 130                                 | 0.25<br>0.18 <sup>b</sup>                       | 115  | 10         | C 0.5<br>Octave                  | 75 <sup>f</sup>                     | 90<br>85 <sup>b</sup>                                 | 20         | 71  | 5          |
| <b>Device<br/>Under<br/>Test</b>  | <b>Noise<br/>Floor<br/>(dBm)</b>                | <b>AGC<br/>Thrshld<br/>(uV)</b>               | <b>dB</b> | <b>100kHz<br/>Blocking<br/>(dB)</b> | <b>Sensitivity<br/>(uV)</b>                     | <b>LO<br/>Noise<br/>Spacing<br/>(dBc/Hz)</b> | <b>kHz</b> | <b>Front End<br/>Selectivity</b> | <b>Filter<br/>Ultimate<br/>(dB)</b> | <b>Dynamic<br/>Range<br/>Wide<br/>Spaced<br/>(dB)</b> | <b>kHz</b> | <b>Dynamic<br/>Range<br/>Narrow<br/>Spaced<br/>(dB)</b> | <b>kHz</b> |
| Icom<br>IC-R72  | -127<br>-135 <sup>a</sup>                       | 3.1<br>1.2 <sup>b</sup>                       | 3         | 129                                 | 0.28<br>0.11 <sup>b</sup>                       | 122  | 10         | C 0.5<br>Octave                  | 75                                  | 87 <sup>b</sup>                                       | 20         | 71  | 5          |
| Icom<br>R-9000  | -131 <sup>a</sup>                               | 0.8   | 3         | 129                                 | 0.15  | 128  | 10         | B 0.5<br>Octave                  | 90                                  | 93  | 20         | 71  | 5          |
| <i>Added</i><br><i>04/25/16</i><br>Icom<br>IC-9100  | -133<br>-141 <sup>b</sup><br>-141 <sup>2</sup>  | 2.4<br>1.0 <sup>b</sup><br>0.39 <sup>b1</sup> | 3         | N.A.                                | 0.36<br>0.15 <sup>b</sup><br>0.130 <sup>2</sup> | 119<br>136                                   | 10<br>50   | B Band<br>Pass                   | N.A.                                | 101 <sup>f</sup>                                      | 20         | 71 <sup>f</sup><br>60 <sup>70</sup>                     | 2          |
| <i>Added</i><br><i>2/27/04</i><br>Elecraft K2<br>s/n: 1140  | -135  | 2.6   | 15        | 118                                 | 0.22  | 123  | 10         | B Band<br>Pass                   | 80 <sup>f</sup>                     | 95  | 20         | 70  | 2          |
| JRC<br>NRD-535  | -135 <sup>a</sup>                               | 0.9   | 3         | 114                                 | 0.1   | 117  | 10         | B Trk<br>Presel                  | 70                                  | 92  | 50         | 70  | 5          |
| Kenwood<br>TS-830S  | -136 <sup>a</sup>                               | 0.9   | 3         | 122                                 | 0.1   | 113  | 2          | C<br>Preselector                 | 80                                  | 84  | 20         | 70  | 3          |
| Icom<br>IC-761  | -131<br>-139 <sup>b</sup>                       | 2.0<br>0.7 <sup>b</sup>                       | 3         | 145                                 | 0.4<br>0.17 <sup>b</sup>                        | 129  | 10         | B- 0.5<br>Octave                 | 90 <sup>f</sup>                     | 87  | 20         | 70  | 2          |
| <i>Added</i><br><i>7/8/15</i><br>Yaesu<br>FTdx-1200   | -122<br>-134 <sup>b</sup><br>-140 <sup>b1</sup> | 5.5<br>1.4<br>0.4                             | 3         | 137                                 | 1.0<br>0.26<br>0.14                             | 123  | 10         | B 0.5<br>Octave                  | 83                                  | 102 <sup>f</sup>                                      | 20         | 70 <sup>z</sup>   | 2          |
| <i>Added</i><br><i>07/26/17</i><br>Yaesu<br>FT-891  | -129<br>-140 <sup>b</sup><br>-138 <sup>6</sup>  | 6.1<br>1.55 <sup>b</sup>                      | 3         | N.A.                                | 0.44<br>0.11 <sup>b</sup><br>0.15 <sup>6</sup>  | 116<br>N.A.                                  | 10<br>50   | B 0.5<br>Octave                  | 80 <sup>f</sup>                     | 92  | 20         | 70 <sup>f</sup>   | 2          |
| <i>Added</i><br><i>08/05/15</i><br>Kenwood<br>TS-570S   | -131<br>-139 <sup>b</sup>                       | 1.6<br>0.43 <sup>b</sup>                      | 3         | 143                                 | 0.40<br>0.16 <sup>b</sup>                       | 118<br>137                                   | 10<br>50   | B<br>Bandpass                    | 75                                  | 99  | 20         | 69 <sup>f</sup>   | 2          |
| <i>Added</i><br><i>4/16/06</i><br>Kenwood<br>TS-870S  | -127<br>-137 <sup>b</sup>                       | 1.9<br>0.44 <sup>b</sup>                      | 3         | 137                                 | 0.5   | 121  | 10         | C 0.5<br>Octave                  | 90 <sup>f</sup>                     | 95  | 20         | 69  | 2          |
| <b>Device</b>   | <b>Noise</b>                                    | <b>AGC</b>                                    |           | <b>100kHz</b>                       |   | <b>LO</b>                                    |            | <b>Front End</b>                 | <b>Filter</b>                       | <b>Dynamic</b>  |            | <b>Dynamic</b>  |            |



| Under Test   | Floor (dBm)                            | Thrshld (uV)             | dB | Blocking (dB)        | Sensitivity (uV)          | Noise Spacing (dBc/Hz)    | kHz      | Selectivity           | Ultimate (dB)        | Range Wide Spaced (dB)         | kHz | Range Narrow Spaced (dB)         | kHz            |
|--|--|--------------------------|----|----------------------|---------------------------|---------------------------|----------|-----------------------|----------------------|--------------------------------|-----|----------------------------------|----------------|
| <i>Added 10/3/04</i><br>Yaesu FT-1000 MP MKV Field     | -133 <sup>b</sup>                      | 3.0 <sup>b</sup>         | 3  | 135                  | 0.2 <sup>b</sup>          | 128                       | 10       | B 0.5 Octave          | 90 <sup>f</sup>      | 88                             | 20  | 69                               | 2              |
| <i>Added 10/3/04</i><br>Yaesu FT-1000 D                | -128 <sup>b1</sup>                     | 6.0 <sup>b1</sup>        | 3  | >131                 | 0.3 <sup>b1</sup>         | 121                       | 10       | B 0.5 Octave          | 90 <sup>f</sup>      | 90                             | 20  | 69                               | 2              |
| Lowe HF-150  | -126 <sup>a</sup>                      | 0.7                      | 3  | 126                  | 0.3                       | 113                       | 10       | F No Bandpass         | 75                   | 84                             | 20  | 69                               | 5              |
| Kenwood TS-430S  | -136 <sup>a</sup>                      | 0.6                      | 3  | 134                  | 0.1                       | 102                       | 10       | C 0.5 Octave          | 70                   | 78                             | 20  | 69                               | 5              |
| <i>Added 10/3/04</i><br>Yaesu FT-1000 MP               | -125<br>-134 <sup>b</sup>              | 3.8<br>1.1 <sup>b</sup>  | 3  | >135                 | 0.48<br>0.18 <sup>b</sup> | 128                       | 10       | B 0.5 Octave          | 90 <sup>f</sup>      | 97                             | 20  | 68                               | 2              |
| JRC NRD-545  | -130 <sup>a</sup>                      | 2.0                      | 6  | 127                  | 0.2                       | 118                       | 10       | B 0.5 Octave          | 65                   | 96                             | 100 | 68                               | 5              |
| Signal/One CX-11A                                      | -122 <sup>a</sup>                      | 0.6                      | 17 | 109                  | 0.6                       | 119                       | 50       | C 0.5 Octave          | 105                  | 90                             | 50  | 68                               | 5 <sup>f</sup> |
| Kenwood TS-180S  | -139                                   | 0.9                      | 3  | 115                  | 0.15                      | 120                       | 10       | C Preselector         | 80                   | 70                             | 20  | 68                               | 3              |
| Drake TR-4C  | -124 <sup>a</sup>                      | 1.2                      | 3  | 105                  | 0.4                       | 130                       | 10       | C Preselector         | 80                   | 74                             | 20  | 68                               | 2              |
| Icom IC-735  | -126<br>-133 <sup>b</sup>              | 1.5                      | 12 | 135                  | 0.35<br>0.18 <sup>b</sup> | 123                       | 10       | C 0.5 Octave          | 90 <sup>f</sup>      | 83                             | 20  | 68                               | 2              |
| <i>Added 1/21/04</i><br>Icom IC-R75                    | -123 <sup>a</sup><br>-130 <sup>b</sup> | 3.5<br>1.3 <sup>b</sup>  | 3  | 119                  | 0.5<br>0.2 <sup>b</sup>   | 109                       | 10       | B 0.5 Octave          | 80                   | 95                             | 50  | 67                               | 5              |
| Drake SW8  | -127 <sup>a</sup>                      | 0.9                      | 3  | 125                  | 0.32                      | 113                       | 10       | N.A.                  | 70                   | 92                             | 20  | 67                               | 5              |
| Racal 6790 GM  | -128                                   | 0.3                      | 1  | 145                  | 0.7                       | 130                       | 10       | D Broadband           | 85                   | 95                             | 20  | 66                               | 2              |
| Device Under Test                                      | Noise Floor (dBm)                      | AGC Thrshld (uV)         | dB | 100kHz Blocking (dB) | Sensitivity (uV)          | LO Noise Spacing (dBc/Hz) | kHz      | Front End Selectivity | Filter Ultimate (dB) | Dynamic Range Wide Spaced (dB) | kHz | Dynamic Range Narrow Spaced (dB) | kHz            |
| Yaesu FT-736R 2 meters                                 | -141                                   | 1.3                      | 3  | 125                  | 0.11                      | 128<br>143                | 10<br>50 | C Bandpass            | 80                   | 88                             | 20  | 66                               | 2              |
| Lowe HF-235  | -126 <sup>a</sup>                      | 0.8                      | 3  | 129                  | 0.35                      | 117                       | 10       | D Octave              | 80                   | 71                             | 20  | 66                               | 5              |
| AOR AR3030   | -131 <sup>a</sup>                      | 2.0                      | 10 | 130                  | 0.16                      | 117                       | 10       | C 0.5 Octave          | 85                   | 90                             | 20  | 66                               | 5              |
| <i>Added 11/01/19</i><br>Kenwood TS-2000X 2 meter data | -123<br>-140 <sup>b</sup>              | 2.8<br>0.45 <sup>b</sup> | 3  | 124                  | 1.0<br>0.15 <sup>b</sup>  | 113<br>131                | 10<br>50 | B Band Pass           | 75 <sup>f</sup>      | 87                             | 20  | 65 <sup>f</sup>                  | 2              |
| Yaesu  | -133 <sup>a</sup>                      | 0.9                      | 3  | 127                  | 0.13                      | 112                       | 10       | C 0.5                 | 70                   | 99                             | 50  | 65                               | 5              |

|                                       |   |  |           |                             |   |                                  |            |                              |                             |                                       |            |   |                |  |
|---------------------------------------|---|--|-----------|-----------------------------|---|----------------------------------|------------|------------------------------|-----------------------------|---------------------------------------|------------|---|----------------|--|
| FRG-100                               |   |  |           |                             |   |                                  |            |                              | Octave                      |                                       |            |   |                |  |
| Kenwood R-5000                        | -131 <sup>a</sup>                               | 0.4  | 3         | 134                         | 0.2   | 120                              | 10         | C 0.5 Octave                 | 80 <sup>f</sup>             | 86                                    | 20         | 65                                      | 5              |  |
| <i>Added 2/27/04</i><br>Palstar R-30  | -123  | 2.6  | 3         | 130                         | 0.35  | 116                              | 10         | C Octave                     | 90                          | 88                                    | 20         | 64                                      | 5              |  |
| Yaesu FRG-7700                        | -130 <sup>a</sup>                               | 1.3  | 3         | 123                         | 0.2   | 100                              | 10         | D Octave                     | 65                          | 83                                    | 50         | 64 <sup>f</sup>                         | 5 <sup>c</sup> |  |
| Kenwood R-1000                        | -130 <sup>a</sup>                               | 0.9  | 3         | 119                         | 0.2   | 107                              | 10         | D Octave                     | 70                          | 76                                    | 20         | 64 <sup>f</sup>                         | 3 <sup>c</sup> |  |
| Heath SB-303                          | -134  | N.A.                                       |           | 104                         | 0.5   | N.A.                             |            | C Preselector                | 70                          | 66                                    | 20         | 64                                      | 4              |  |
| Collins KWM-380                       | -127 <sup>a</sup>                               | 1.1  | 5         | 123                         | 0.3   | 99                               | 10         | B 0.5 Octave                 | 70 <sup>f</sup>             | 94                                    | 50         | 64 <sup>f</sup>                         | 2              |  |
| Icom IC-751                           | -127<br>-133 <sup>b</sup>                       | 6.3  | 3         | 138                         | 0.4<br>0.2 <sup>b</sup>                       | 127                              | 10         | B- 0.5 Octave                | 90 <sup>f</sup>             | 84                                    | 20         | 64                                      | 2              |  |
| <i>Added 3/27/06</i><br>Icom 7000     | -129<br>-139 <sup>b</sup>                       | 4.5<br>1.0                                 | 3         | 119                         | 0.45<br>0.13                                  | 122                              | 10         | C Octave                     | 65                          | 90                                    | 20         | 63                                      | 2              |  |
| <i>Added 9/22/07</i><br>Yaesu FT-2000 | -122<br>-132 <sup>b</sup><br>-140 <sup>b1</sup> | 5<br>1.3 <sup>b</sup><br>0.5 <sup>b1</sup> | 3         | 120                         | 1.0<br>0.3 <sup>b</sup><br>0.14 <sup>b1</sup> | 122                              | 10         | B+ Bandpass + Trk            | 80 <sup>f</sup>             | 81 <sup>n</sup><br>90 <sup>o</sup>    | 20         | 63 <sup>n</sup><br>61 <sup>o</sup>      | 2              |  |
| <b>Device Under Test</b>              | <b>Noise Floor (dBm)</b>                        | <b>AGC Thrshld (uV)</b>                    | <b>dB</b> | <b>100kHz Blocking (dB)</b> | <b>Sensitivity (uV)</b>                       | <b>LO Noise Spacing (dBc/Hz)</b> | <b>kHz</b> | <b>Front End Selectivity</b> | <b>Filter Ultimate (dB)</b> | <b>Dynamic Range Wide Spaced (dB)</b> | <b>kHz</b> | <b>Dynamic Range Narrow Spaced (dB)</b> | <b>kHz</b>     |  |
| Icom IC-275H 2 meters                 | -136 <sup>a</sup>                               | 0.25                                       | 3         | 122                         | 0.11  | 124<br>141                       | 10<br>50   | B Bandpass                   | 75                          | 85                                    | 20         | 63                                      | 2              |  |
| Kenwood TS-520                        | -139  | N.A.                                       |           | 116                         | 0.15  | N.A.                             |            | C Preselector                | 70                          | 63                                    | 20         | 63                                      | 3              |  |
| Yaesu FT-One                          | -135  | 1.0  | 3         | 130                         | 0.2   | 99                               | 10         | C 0.5 Octave                 | 80 <sup>f</sup>             | 91                                    | 50         | 63 <sup>f</sup>                         | 2              |  |
| Collins 75-S3 Wing                    | -145  | 1.0  | 14        | 105                         | 0.1   | N.A.                             |            | B Preselector                | 75                          | 75                                    | 20         | 63                                      | 3              |  |
| JRC NRD-93                            | -141  | 1.6  | 3         | 128                         | 0.15  | 133                              | 10         | A+ Trk Presel                | 80                          | 94                                    | 20         | 63                                      | 2              |  |
| Yaesu FT-980                          | -136  | 1.8  | 3         | 140                         | 0.12  | 106                              | 10         | C 0.5 Octave                 | 62 <sup>f</sup>             | 96                                    | 50         | 63                                      | 2              |  |
| Icom IC-R70/R-71A                     | -129<br>-135 <sup>b</sup>                       | 3.1<br>1.4 <sup>b</sup>                    | 3         | 132                         | 0.4<br>0.2 <sup>b</sup>                       | 128                              | 10         | B- 0.5 Octave                | 90 <sup>f</sup>             | 86                                    | 20         | 62                                      | 3              |  |
| Grundig Satellite 700                 | -127 <sup>a</sup>                               | 1.6  | 3         | 106                         | 0.3   | 118                              | 10         | N.A.                         | 85                          | 76                                    | 20         | 62                                      | 5              |  |
| KWZ-30                                | -130  | 1.0  | 3         | 120                         | 0.8   | 118                              | 10         | <b>d</b>                     | 80                          | 100                                   | 20         | 60                                      | 5              |  |
| Collins 51S1                          | -134  | 1.0  | 7         | 117                         | 0.13  | 146                              | 10         | A Trk Presel                 | 100                         | 84 <sup>e</sup>                       | 100        | 60                                      | 5              |  |
| Icom R-8500                           | -135 <sup>a</sup>                               | 0.45                                       | 3         | 132                         | 0.11  | 131                              | 10         | B 0.5 Octave                 | 75                          | 81                                    | 20         | 59                                      | 5              |  |
| Yaesu FT-101E                         | -141  | N.A.                                       |           | 102                         | 0.15  | N.A.                             |            | C Preselector                | 70                          | 60                                    | 20         | 59                                      | 3              |  |
| Drake                                 | -139  | 0.7  | 3         | 130                         | 0.15  | 144                              | 5          | A-                           | 70                          | 85                                    | 20         | 58                                      | 2              |  |

| R-4C Stock        |                            |                  |    |                      |                          |                           |     | Preselector           |                      |                                |     |                                  |     |
|-------------------|----------------------------|------------------|----|----------------------|--------------------------|---------------------------|-----|-----------------------|----------------------|--------------------------------|-----|----------------------------------|-----|
| Yaesu FT-757      | -120<br>-134 <sup>b</sup>  | 1.6              | 3  | 130                  | 0.7<br>0.15 <sup>b</sup> | 109                       | 10  | C 0.5<br>Octave       | 70 <sup>f</sup>      | 86                             | 20  | 56                               | 3   |
| Ten-Tec 340       | -123<br>-133 <sup>b</sup>  | 0.5<br>0.13      | 3  | 109                  | 0.4<br>0.14              | 113                       | 10  | B 0.5<br>Octave       | 70                   | 93                             | 100 | 46                               | 5   |
| Kenwood R-2000    | -130 <sup>a</sup>          | 1.4              | 3  | 115                  | 0.15                     | 105                       | 10  | D Octave              | 70                   | 71                             | 20  | 45                               | 5   |
| Kenwood R-600     | -130 <sup>a</sup>          | 0.8              | 3  | 109                  | 0.2                      | 99                        | 10  | D Octave              | 65                   | 68                             | 20  | <i>FL.</i>                       | 5   |
| Yaesu FRG-8800    | -132 <sup>a</sup>          | 0.6              | 3  | 122                  | 0.18                     | <i>N.A.</i>               |     | D Octave              | 70                   | 87                             | 20  | <i>FL.</i>                       | 5   |
| AOR 5000          | -124<br>-130 <sup>ab</sup> | 0.9<br>1.8       | 3  | 118                  | 0.2<br>0.35              | 103                       | 10  | B 0.5<br>Octave       | 60                   | 58                             | 50  | <b>f</b>                         | 5   |
| Device Under Test | Noise Floor (dBm)          | AGC Thrshld (uV) | dB | 100kHz Blocking (dB) | Sensitivity (uV)         | LO Noise Spacing (dBc/Hz) | kHz | Front End Selectivity | Filter Ultimate (dB) | Dynamic Range Wide Spaced (dB) | kHz | Dynamic Range Narrow Spaced (dB) | kHz |

## Receiver Table Legend:

**3 dB blocking (gain compression) test done at 100 kHz** to eliminate phase noise interaction  
*FL.* = Filter limited, no measurement was possible due to signal leakage around filter  
*N.A.* = Data not available

- a* Measured with SSB filter
- b0* No preamp actuated
- b* Built-in Preamp actuated
- b1* Built-in Preamp 2 actuated
- b2* Built-in Preamp set at 20 dB. Adjustable to 10, 20 or 30 dB
- b3* Built-in Preamp set at 16 dB
- b4* Built-in Preamp set at 32 dB
- c* Readings would have been lower if 2-kHz spacing had been possible
- d* Dynamic Range is 90-dB at 100-kHz spacing
- e* 20-kHz Dynamic Range is 66-dB
- f* Measurement was Phase-Noise Limited = ARRL RMDR (Reciprocal Mixing Dynamic Range)
- g* Audio DSP Enabled
- h* AGC Off
- i* At 1 kHz dynamic also 95 dB but with 300 Hz roofing filter enabled
- j* At 1 kHz, noise limited to 68 dB
- k* At 1 kHz dynamic range was 66 dB
- l* (lowercase L) Reserved
- m* Receiver was optimized by Malcom Technical Support for best dynamic range
- n* Measured with 3 kHz roofing filter
- o* Measured with 6 kHz roofing filter
- p* with 200 Hz 5-pole filter
- q* with 400 Hz 8-pole filter
- r* with 500 Hz 5-pole filter
- s* Using ARRL 3-Hz bandwidth blocking method
- t* with optional roofing filter
- u* without optional roofing filter
- v* At 1 kHz performance is opposite sideband rejection limited
- w*

At 1 kHz dynamic range is 104 dB

- x** "Long Form" report available by e-mail request.  
2-kHz RMDR: 6M=91dB, 10M=92dB, 12&15&20M=87dB, 17M=85dB, 30M=98dB, 40M=92dB, 80M=94dB & 160M=95dB
- y** DR3=108 dB with 20 dB preamp ON, and 99 dB with preamp OFF. Otherwise dynamic range independent of signal spacing.  
NOTE: Tests in 2017 of a second 6700, and by the ARRL of a 6500, no longer measured a dynamic-range increase with the preamp ON. The 108 dB value is no longer valid. 2 kHz dynamic range is 99 dB, same as 6600M. As with any radio, only use a preamp if it improves copy, and usually only on 15m and up.
- z** The low-side dynamic range was 76 dB, while the high-side dynamic range was 70.  
NOTE: This may imply the roofing filter was asymmetrical, and likely a sample variation.
- aa** Measured using 1.2 kHz roofing filter.
- ab** Measured with IP+ ON.
- ac** Measured with dither and random OFF  
NOTE: Icom calls "dither and random" IP+. Noise floor may be affected by dither and random.
- ad** Measured with Dither and Random ON  
NOTE: Dither and Random convert intermodulation products into broadband noise.
- ae** AGC threshold adjustable  
NOTE: AGC threshold should be set about 6 dB above band noise.
- af** Measured with third test tone.  
NOTE: ARRL may test dynamic range (DR3) of direct-sampling radios with a third test tone to approximate a crowded band. The validity of this test method is questionable.
- ag** DR3=96 dB with 20 dB Preamp ON. (99 dB Preamp OFF) Otherwise dynamic range independent of signal spacing.  
NOTE: Testing of 2nd sample made on 10 meters while investigating IFSS\* curves. Similar testing of 2nd sample of K3S, also made on 10 meters. \* IFSS = Interference free signal strength.
- ah** NOTE: Testing of 2nd sample made on 10 meters while investigating IFSS\* curves. Similar testing of 2nd sample of Flex Radio 6700, also made on 10 meters. \* IFSS = Interference free signal strength.
- ai** NOTE: Dynamic range testing of a second 6300 sample resulted in a modestly higher dyanmic range measurement.
- aj** NOTE: Test data for 6600M is after May 2018 PEN (Product Enhancement Notice). Due to the insertion loss of 7-pole bandpass filters on the contest bands, recommend +16 dB preamp during daytime on 80 -17 meters if in a quiet location. 15 - 6 meters may require +32dB preamp for an adequate noise floor. Tested with Alpha v. 2.2.7 software.
- ak** Some variation in dynamic range was noted after an extended warm-up.
- 6** 6 meter data, preamp ON
- 10** 10 meter data, preamp 2 ON
- 2** 2 meter data, preamp ON
- 70** 70cm, preamp ON. RMDR limited



## Sherwood Engineering Inc.

1268 South Ogden Street Denver, Colorado 80210 USA

**email** Phone: **303-722-2257** FAX: **303-744-8876**

9 a.m. - 5 p.m. MST Monday - Friday

Updated 23 October 2018 tac