

**RADIATED EMISSIONS**

**DATA**

**FOR**

**KYOCERA WIRELESS  
10300 Campus Point Drive  
San Diego, CA 92121**

**Prepared by**

**TÜV AMERICA  
10040 Mesa Rim Road  
San Diego, CA 92121-2912**

Measurement Requirements (CFR 47 Part 22, Paragraph 22.917(b)(2) and Part 24, Paragraph 24.238(a))

The following measurements were performed by TÜV America. To the best of my knowledge these tests were conducted in accordance with the procedures outlined in Part 2 of the Commission's Rules and Regulations. The data presented below demonstrates compliance with the appropriate technical standards.



---

Floyd R. Fleury  
EMC Manager

## Emissions Test Conditions: SPURIOUS RADIATED EMISSIONS

Roof (small open area test site)

**The *Spurious Radiated Emissions* measurements were performed using the following equipment:**

### Test Equipment Used:

| Model No.            | Prop. No. | Description               | Manufacturer         | Serial No. | Cal Date |
|----------------------|-----------|---------------------------|----------------------|------------|----------|
| HP8566B              | 743       | Spectrum Analyzer         | Hewlett Packard      | 2618A02913 | 09/02    |
| AMF-5D-010180-35-10P | 719       | PreAmplifier              | Miteq                | 549460     | NCR*     |
| 3115                 | 251       | Double Ridge Horn Antenna | EMCO                 | 2495       | 12/02    |
| 3146                 | 243       | Log Periodic Antenna      | EMCO                 | 106X       | 04/02    |
| Cable 1              | 6789      | 30' cable                 | United Microwave Pro | --         | NCR*     |
| Cable 2              | 6767      | 3' Cable                  | United Microwave Pro | --         | NCR*     |
| FF 6549-1            | 781       | 2000 MHz High Pass Filter | Sage                 | 004        | NCR*     |
| FF6548-2             | 777       | 900 MHz High Pass Filter  | Sage                 | 006        | NCR*     |
| 3115                 | 798       | Horn Antenna              | EMCO                 | 9908-5927  | 05/02    |
| Cable 3              | 6790      | 40' Cable                 | United Microwave Pro | --         | NCR*     |
| 8350B                | 6706      | Sweep Signal Generator    | Hewlett Packard      | 2749A09420 | NCR*     |
| HP437B               | 572       | Power Meter               | Hewlett Packard      | 3125O19308 | 12/01    |
| HP8566B              | 721       | Spectrum Analyzer         | Hewlett Packard      | 2542A12099 | 07/02    |
| CBL6111              | 461       | Bilog Antenna             | Chase Electronics    | 1291       | NCR*     |

**Remarks:** (\*) No Calibration Required.

## **Technical Documentation**

**Test Data Sheets**

**and**

**Test Setups**

**Kyocera Substitution SC300807**

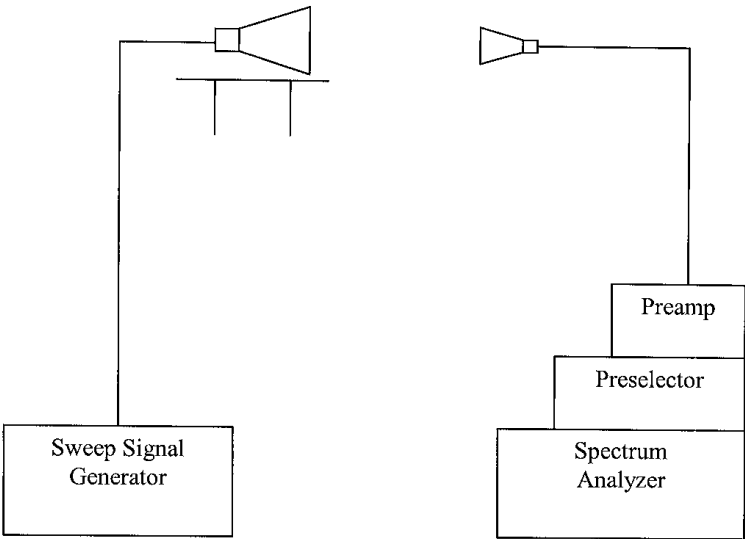
| Frequency<br>MHz | target<br>level<br>dBuV/m | Horn<br>Gain<br>dBi | cable<br>loss<br>dB | Signal<br>Generator<br>dBm | Total<br>(EIRP)<br>dBm | Spec<br>dBm | Margin<br>Subst.<br>dBm |
|------------------|---------------------------|---------------------|---------------------|----------------------------|------------------------|-------------|-------------------------|
| 2472.12          | 81.5                      | 10.2                | 5.8                 | -20.1                      | -15.7                  | -13         | -2.7                    |
| 2474.10          | 80.2                      | 10.2                | 5.8                 | -21.7                      | -17.3                  | -13         | -4.3                    |
| 2509.47          | 83.8                      | 10.3                | 5.9                 | -20.5                      | -16.1                  | -13         | -3.1                    |
| 2509.47          | 82.5                      | 10.3                | 5.9                 | -20.6                      | -16.2                  | -13         | -3.2                    |
| 2544.93          | 85.6                      | 10.3                | 5.9                 | -26.8                      | -22.4                  | -13         | -9.4                    |
| 2546.91          | 81.8                      | 10.3                | 5.9                 | -20                        | -15.6                  | -13         | -2.6                    |
| 3702.5           | 67.7                      | 9.6                 | 7.6                 | -31.2                      | -29.2                  | -13         | -16.2                   |
| 3760             | 72.5                      | 9.6                 | 8.0                 | -26                        | -24.4                  | -13         | -11.4                   |
| 3817.5           | 69.1                      | 9.6                 | 7.7                 | -28.5                      | -26.6                  | -13         | -13.6                   |
| 5553.75          | 67.1                      | 10.8                | 9.7                 | -27.5                      | -26.4                  | -13         | -13.4                   |
| 5640             | 72.1                      | 10.8                | 9.7                 | -21.5                      | -20.4                  | -13         | -7.4                    |
| 5726.25          | 61.9                      | 10.8                | 9.8                 | -32                        | -31.0                  | -13         | -18.0                   |

Input level verified with Power Meter 742: HP437B, Cal. Date due: 04/26/03  
 Location: TUV 3-meter roof site

Tested by A. Laudani  
 A. Laudani

Reviewed by J. Owen  
 J. Owen

Test setup for Substitution Method



REPORT No: SC300807      TESTER: Alan Laudani      SPEC: FCC Part 22 para 22.917(b)(2)

CUSTOMER: Kyocera Wireless

TEST DIST: 3 Meters

E U T: KWC 7135 sn W78G

TEST SITE: Roof

EUT MODE: Transmit FM

BICONICAL: N/A

DATE: Feb. 19, 2003      ERP/EIRP Factor      7      LOG: 243

HORN: 251

NOTES: RBW = 100 kHz below 1000 MHz, 1 MHz above 1000 MHz Preamp not used for fundamental

CF = Antenna Factor + Cable Loss - Preamplifier Gain

| FREQ<br>(MHz) | VERTICAL<br>(dBuv)<br>pk | HORIZONTAL<br>(dBuv)<br>pk | CF (dBm)<br>pk | MAX LEVEL (dBm)<br>pk | SPEC LIMIT<br>(dBm)<br>pk | MARGIN<br>(dB)<br>pk | EUT<br>Rotation | Antenna<br>Height | Notes                   | dBuV/m | dBuV/m |
|---------------|--------------------------|----------------------------|----------------|-----------------------|---------------------------|----------------------|-----------------|-------------------|-------------------------|--------|--------|
| 824.04        | 99.5                     | 93.1                       | 22.9           | 25.0                  | -13.0                     | -24.5                | 240             | 1.2               | Fundamental (Low Band)  | 122.4  | 22.9   |
| 1648.08       | 69.1                     | 68.1                       | -9.3           | -37.5                 | -13.0                     | -7.49                | 231             | 1.6               |                         | 59.8   | -9.3   |
| 2472.12       | 77.5                     | 81.5                       | -4.6           | -20.5                 | -13.0                     | -27.5                | 234             | 1.7               |                         | 76.9   | -4.6   |
| 3296.16       | 57.4                     | 58.6                       | -1.7           | -40.5                 | -13.0                     | -32.4                | 271             | 1.6               |                         | 56.9   | -1.7   |
| 4120.2        | 49.3                     | 51.8                       | 0.2            | -45.4                 | -13.0                     | -32.4                | 291             | 1.3               |                         | 52.0   | 0.2    |
| 4944.24       | 56.7                     | 54                         | 0.6            | -40.1                 | -13.0                     | -32.8                | 223             | 1.2               |                         | 57.3   | 0.6    |
| 5768.28       | 45.3                     | 46.5                       | 5.1            | -45.8                 | -13.0                     | -35                  | 220             | 1.1               |                         | 51.6   | 5.1    |
| 6592.32       | 43.6                     | 43.5                       | 5.8            | -48.0                 | -13.0                     | -32.4                |                 |                   | noise floor             | 49.4   | 5.8    |
| 7416.36       | 43.7                     | 43.2                       | 8.2            | -45.4                 | -13.0                     | -30.7                |                 |                   | noise floor             | 51.9   | 8.2    |
| 8240.4        | 43.2                     | 44.2                       | 9.4            | -43.7                 | -13.0                     | -32.4                |                 |                   | noise floor             | 53.6   | 9.4    |
| 836.49        | 98.1                     | 90.1                       | 22.8           | 23.6                  | -13.0                     | -26.2                | 175             | 1.3               | Fundamental (Mid Band)  | 120.9  | 22.8   |
| 1672.98       | 66.9                     | 67.2                       | -9.1           | -39.2                 | -13.0                     | -6.33                | 266             | 1.5               |                         | 58.1   | -9.1   |
| 2508.47       | 76.7                     | 82.5                       | -4.5           | -19.3                 | -13.0                     | -24.1                | 226             | 1.7               |                         | 78.0   | -4.5   |
| 3345.96       | 57                       | 61.8                       | -1.6           | -37.1                 | -13.0                     | -26.2                | 205             | 1.4               |                         | 60.2   | -1.6   |
| 4182.45       | 58.1                     | 51.7                       | 0.0            | -39.2                 | -13.0                     | -27.4                | 187             | 1.2               |                         | 58.1   | 0.0    |
| 5018.94       | 56.1                     | 55.1                       | 0.8            | -40.4                 | -13.0                     | -34                  | 196             | 1.1               |                         | 56.9   | 0.8    |
| 5855.43       | 45.1                     | 44                         | 5.3            | -47.0                 | -13.0                     | -35.5                |                 |                   | noise floor             | 50.4   | 5.3    |
| 6691.92       | 42.4                     | 42.7                       | 6.1            | -48.5                 | -13.0                     | -31.9                |                 |                   | noise floor             | 48.8   | 6.1    |
| 7528.41       | 44                       | 42.2                       | 8.4            | -44.9                 | -13.0                     | -32                  |                 |                   | noise floor             | 52.4   | 8.4    |
| 8364.9        | 42.7                     | 42.2                       | 9.7            | -45.0                 | -13.0                     | -32.4                |                 |                   | noise floor             | 52.4   | 9.7    |
| 848.97        | 98.2                     | 96.1                       | 23.2           | 24.0                  | -13.0                     | -23.2                | 238             | 1.3               | Fundamental (High Band) | 121.4  | 23.2   |
| 1697.94       | 66.4                     | 70.1                       | -8.9           | -36.2                 | -13.0                     | -6.9                 | 182             | 1.9               |                         | 61.2   | -8.9   |
| 2546.91       | 76.5                     | 81.8                       | -4.3           | -19.9                 | -13.0                     | -23.1                | 228             | 1.8               |                         | 77.5   | -4.3   |
| 3395.88       | 59.3                     | 62.6                       | -1.4           | -36.1                 | -13.0                     | -25.2                | 255             | 1.4               |                         | 61.2   | -1.4   |
| 4244.85       | 57.8                     | 59.2                       | -0.1           | -38.2                 | -13.0                     | -25.3                | 204             | 1.4               |                         | 59.1   | -0.1   |
| 5093.82       | 57.7                     | 56                         | 1.4            | -38.3                 | -13.0                     | -25.3                | 194             | 1.3               |                         | 59.1   | 1.4    |
| 5942.79       | 44.2                     | 44.5                       | 5.5            | -47.3                 | -13.0                     | -34.3                | 200             | 1                 |                         | 50.0   | 5.5    |
| 6791.76       | 43                       | 43.1                       | 6.5            | -47.8                 | -13.0                     | -32.9                | 200             | 1                 | noise floor             | 49.6   | 6.5    |
| 7640.73       | 42.6                     | 42.9                       | 8.5            | -45.9                 | -13.0                     | -32.9                |                 |                   | noise floor             | 51.4   | 8.5    |
| 8489.7        | 41.8                     | 42                         | 10.0           | -45.4                 | -13.0                     | -32.4                |                 |                   | noise floor             | 52.0   | 10.0   |

v.betela

REPORT No: SC300807 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)

CUSTOMER: Kyocera Wireless

TEST DIST: 3 Meters

E U T: KWC 7135 sn W78G

TEST SITE: Roof

EUT MODE: Transmit CDMA

BICONICAL: N/A

DATE: Feb. 19, 2003 ERP Factor 7

LOG: 243

NOTES: RBW = 30 kHz below 1000 MHz, 1 MHz above 1000 MHz Preamp not used for fundamental

HORN: 251

CF = Antenna Factor + Cable Loss - Preamp/plier Gain

| FREQ (MHz) | VERTICAL (dBuV) pk | HORIZONTAL (dBuV) pk | CF (dB/m) pk | MAX LEVEL (dBm) pk | SPEC LIMIT (dBm) pk | MARGIN (dB) pk | EUT Rotation | Antenna Height | Notes                   | dBuV/m | dBuV/m |
|------------|--------------------|----------------------|--------------|--------------------|---------------------|----------------|--------------|----------------|-------------------------|--------|--------|
| 824.7      | 98.2               | 91.5                 | 22.9         | 23.7               | -13.0               | -23.5          | 186          | 1.3            | Fundamental (Low Band)  | 121.1  | 22.9   |
| 1649.4     | 69.9               | 70.1                 | -9.3         | -36.5              | -13.0               | -8.78          | 206          | 2              |                         | 60.8   | -9.3   |
| 2474.1     | 72                 | 80.2                 | -4.6         | -21.8              | -13.0               | -24.3          | 182          | 1.6            |                         | 75.6   | -4.6   |
| 3298.8     | 59.6               | 61.8                 | -1.7         | -37.3              | -13.0               | -24.3          | 180          | 1.3            |                         | 60.1   | -1.7   |
| 4123.5     | 59.9               | 51                   | 0.2          | -37.3              | -13.0               | -24.3          | 199          | 1.5            |                         | 60.1   | 0.2    |
| 4948.2     | 54.5               | 53.5                 | 0.6          | -42.3              | -13.0               | -29.3          | 227          | 1.3            |                         | 55.1   | 0.6    |
| 5772.9     | 46.1               | 47.6                 | 5.1          | -44.7              | -13.0               | -31.7          | 155          | 1.5            |                         | 52.7   | 5.1    |
| 6597.6     | 44.4               | 43.4                 | 5.8          | -47.2              | -13.0               | -34.2          |              |                | noise floor             | 50.2   | 5.8    |
| 7422.3     | 42.3               | 42.7                 | 8.2          | -46.4              | -13.0               | -33.4          |              |                | noise floor             | 50.9   | 8.2    |
| 8247       | 42.3               | 41.8                 | 9.4          | -45.6              | -13.0               | -32.6          |              |                | noise floor             | 51.7   | 9.4    |
| 836.49     | 98.4               | 91.7                 | 22.8         | 23.9               | -13.0               | -27.9          | 232          | 1.3            | Fundamental (Mid Band)  | 121.2  | 22.8   |
| 1672.98    | 65.5               | 64.2                 | -9.1         | -40.9              | -13.0               | -5.03          | 230          | 1.4            |                         | 56.4   | -9.1   |
| 2509.47    | 79.2               | 83.8                 | -4.5         | -18.0              | -13.0               | -23.5          | 252          | 1.6            |                         | 79.3   | -4.5   |
| 3345.96    | 58.1               | 62.4                 | -1.6         | -36.5              | -13.0               | -23.5          | 186          | 1.5            |                         | 60.8   | -1.6   |
| 4182.45    | 61                 | 54.4                 | 0.0          | -36.3              | -13.0               | -23.3          | 184          | 1.4            |                         | 61.0   | 0.0    |
| 5018.94    | 55.8               | 54.3                 | 0.8          | -40.7              | -13.0               | -27.7          | 161          | 1.4            |                         | 56.6   | 0.8    |
| 5855.43    | 44.3               | 44.7                 | 5.3          | -47.4              | -13.0               | -34.4          |              |                | noise floor             | 50.0   | 5.3    |
| 6691.92    | 43.3               | 43.1                 | 6.1          | -47.9              | -13.0               | -34.9          |              |                | noise floor             | 49.4   | 6.1    |
| 7528.41    | 43.6               | 43                   | 8.4          | -45.3              | -13.0               | -32.3          |              |                | noise floor             | 52.0   | 8.4    |
| 8364.9     | 42.4               | 42.4                 | 9.7          | -45.3              | -13.0               | -32.3          |              |                | noise floor             | 52.1   | 9.7    |
| 848.31     | 98.4               | 90.5                 | 23.1         | 24.2               | -13.0               | -23.1          | 207          | 1.3            | Fundamental (High Band) | 121.5  | 23.1   |
| 1696.62    | 70.2               | 70                   | -8.9         | -36.1              | -13.0               | -3.11          | 211          | 1              |                         | 61.3   | -8.9   |
| 2544.93    | 80.6               | 85.6                 | -4.3         | -16.1              | -13.0               | -3.11          | 222          | 1.6            |                         | 81.3   | -4.3   |
| 3393.24    | 58.1               | 64.4                 | -1.4         | -34.3              | -13.0               | -21.3          | 189          | 1.5            |                         | 63.0   | -1.4   |
| 4241.55    | 62                 | 54.4                 | -0.1         | -35.4              | -13.0               | -22.4          | 170          | 1.2            |                         | 61.9   | -0.1   |
| 5089.86    | 60.2               | 58.4                 | 1.3          | -35.8              | -13.0               | -22.8          | 203          | 1.3            |                         | 61.5   | 1.3    |
| 5938.17    | 43.9               | 43.4                 | 5.5          | -47.9              | -13.0               | -34.9          |              |                | noise floor             | 49.6   | 5.5    |
| 6786.48    | 43.1               | 42.5                 | 6.5          | -47.8              | -13.0               | -34.8          |              |                | noise floor             | 49.6   | 6.5    |
| 7634.79    | 42.5               | 42.2                 | 8.5          | -46.3              | -13.0               | -33.3          |              |                | noise floor             | 51.0   | 8.5    |
| 8483.1     | 42.6               | 42.4                 | 10.0         | -44.8              | -13.0               | -31.8          |              |                | noise floor             | 52.6   | 10.0   |

REPORT No: SC300807      TESTER: Alan Laudani      SPEC: FCC Part 24 para 24.238(a)  
 CUSTOMER: Kyocera Wireless      TEST DIST: 3 Meters  
 E U T: KWC 7135 sn W78G      TEST SITE: Roof  
 EUT MODE: Transmit PCS      BICONICAL: N/A  
 DATE: Feb. 19, 2003      EIRP Factor: 5.5      LOG: N/A  
 NOTES:      HORN: 251

Part 24 - RBW 1 MHz (Fundamental does not use Pre-amplifier)  
 CF = Antenna Factor + Cable Loss - Pre-amplifier Gain

| FREQ<br>(MHz) | VERTICAL<br>(dBuV)<br>pk | HORIZONTAL<br>(dBuV)<br>pk | CF (dB/m)<br>pk | MAX LEVEL (dBm)<br>pk | SPEC LIMIT<br>(dBm)<br>pk | MARGIN<br>(dB)<br>pk | EUT<br>Rotation | Antenna<br>Height | Notes                   | dBuV/m | dBuV/m |
|---------------|--------------------------|----------------------------|-----------------|-----------------------|---------------------------|----------------------|-----------------|-------------------|-------------------------|--------|--------|
| 1851.25       | 92                       | 88.9                       | 32.0            | 28.7                  | -13.0                     | -15.0                | 170             | 1.4               | Fundamental (Low Band)  | 124.0  | 32.0   |
| 3702.5        | 67.7                     | 64.0                       | -0.4            | -28.0                 | -13.0                     | -10.7                | 184             | 1.4               |                         | 67.3   | -0.4   |
| 5553.75       | 67.1                     | 53.6                       | 4.5             | -23.7                 | -13.0                     | -30.2                | 250             | 1.2               |                         | 71.6   | 4.5    |
| 7405          | 43.9                     | 43.5                       | 8.2             | -43.2                 | -13.0                     | -29.0                | 235             | 1                 | noise floor             | 52.1   | 8.2    |
| 9256.25       | 42.4                     | 42.9                       | 10.4            | -42.0                 | -13.0                     | -26.5                |                 |                   | noise floor             | 53.3   | 10.4   |
| 11107.5       | 42.1                     | 42.6                       | 13.1            | -39.5                 | -13.0                     | -20.1                |                 |                   | noise floor             | 55.7   | 13.1   |
| 12958.75      | 49.4                     | 49.3                       | 12.7            | -33.1                 | -13.0                     | -16.3                |                 |                   | noise floor             | 62.1   | 12.7   |
| 14810         | 49.8                     | 49.3                       | 16.1            | -29.3                 | -13.0                     | -14.6                |                 |                   | noise floor             | 65.9   | 16.1   |
| 16661.25      | 49.2                     | 49.0                       | 18.5            | -27.6                 | -13.0                     |                      |                 |                   | noise floor             | 67.7   | 18.5   |
| 1880          | 94.3                     | 90.7                       | 32.2            | 31.2                  | -13.0                     | -10.0                | 170             | 1.1               | Fundamental (Mid Band)  | 126.5  | 32.2   |
| 3760          | 72.5                     | 66.8                       | -0.3            | -23.0                 | -13.0                     | -5.5                 | 189             | 1.4               |                         | 72.2   | -0.3   |
| 5640          | 72.1                     | 65.8                       | 4.7             | -18.5                 | -13.0                     | -28.2                | 214             | 1.2               |                         | 76.8   | 4.7    |
| 7520          | 43.2                     | 45.6                       | 8.4             | -41.2                 | -13.0                     | -28.1                | 220             | 1                 | noise floor             | 54.0   | 8.4    |
| 9400          | 42.2                     | 44.2                       | 10.0            | -41.1                 | -13.0                     | -26.4                |                 |                   | noise floor             | 54.2   | 10.0   |
| 11280         | 42.4                     | 42.7                       | 13.2            | -39.4                 | -13.0                     | -19.3                |                 |                   | noise floor             | 55.9   | 13.2   |
| 13160         | 49.8                     | 49.0                       | 13.2            | -32.3                 | -13.0                     | -15.1                |                 |                   | noise floor             | 63.0   | 13.2   |
| 15040         | 50                       | 50.1                       | 17.0            | -28.1                 | -13.0                     | -12.5                |                 |                   | noise floor             | 67.1   | 17.0   |
| 16920         | 50.3                     | 49.2                       | 19.5            | -25.5                 | -13.0                     |                      |                 |                   | noise floor             | 69.8   | 19.5   |
| 1908.75       | 91.3                     | 87.3                       | 32.4            | 28.4                  | -13.0                     | -13.3                | 211             | 1.2               | Fundamental (High Band) | 123.7  | 32.4   |
| 3817.5        | 69.1                     | 66.6                       | -0.1            | -26.3                 | -13.0                     | -15.4                | 174             | 1.3               |                         | 69.0   | -0.1   |
| 5726.25       | 61.9                     | 60.3                       | 4.9             | -28.4                 | -13.0                     | -29.6                | 231             | 1.6               |                         | 66.8   | 4.9    |
| 7635          | 43.2                     | 44.1                       | 8.5             | -42.6                 | -13.0                     | -28.6                | 220             | 1                 | noise floor             | 52.6   | 8.5    |
| 9543.75       | 43.9                     | 42.8                       | 9.8             | -41.6                 | -13.0                     | -24.8                |                 |                   | noise floor             | 53.7   | 9.8    |
| 11452.5       | 44.2                     | 43.1                       | 13.3            | -37.8                 | -13.0                     | -19.5                |                 |                   | noise floor             | 57.5   | 13.3   |
| 13361.25      | 48.8                     | 48.8                       | 14.0            | -32.5                 | -13.0                     | -14.5                |                 |                   | noise floor             | 62.8   | 14.0   |
| 15270         | 50.4                     | 49.3                       | 17.3            | -27.5                 | -13.0                     | -10.8                |                 |                   | noise floor             | 67.7   | 17.3   |
| 17176.75      | 50.3                     | 50.3                       | 21.1            | -23.8                 | -13.0                     |                      |                 |                   | noise floor             | 71.4   | 21.1   |

Photograph of Test Setup

