

## EMC EMISSIONS - TEST REPORT (Full)

Test Report No. **3166782DEN-003a** Issue Date: Wednesday 19/Nov/08Model / Serial No. **MN: Homebase HB100 /SN: 6100021**Product Type **Alcohol Monitoring System**Client **BI Inc.**Manufacturer **BI Inc.**License holder **BI Inc.**Address **6400 Lookout Rd****Boulder CO 80301**

Test Criteria Applied

**FCC 47 CFR Part 15.249  
IC RSS-210 issue 7**Title 47 CFR 15: RADIO FREQUENCY  
DEVICES  
Subpart C – Intentional Radiators

Test Result

**PASS**Low-power License-exempt Radio  
Communication Devices  
(All Frequency Bands):  
Category I Equipment

Test Project Number

**3166782**

References

Total Pages

**35**

Including

Appendices:



Reviewed By : Ty Orosco



Reviewed By : Michael Spataro

### REVISION SUMMARY - The following changes have been made to this Report:

| Rev. | Revision Statement          | Author    | Revision Date | Reviewer |
|------|-----------------------------|-----------|---------------|----------|
|      | Initial Release of Document | See above | See above     |          |
|      |                             |           |               |          |

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## **STATEMENT OF MEASUREMENT UNCERTAINTY**

The data and results referenced in this document are true and accurate. The measurement uncertainty for Conducted Emissions in the frequency range of 150kHz – 30MHz is calculated to be  $\pm 3.14$ dB and for Radiated Emissions is calculated to be  $\pm 4.4$ dB in the frequency range of 10kHz – 1000MHz at 3m and  $\pm 4.9$ dB in the frequency range of 1 – 18GHz at 3m. For testing at 10m  $\pm 4.8$ dB in the frequency range of 30 – 1000MHz. For Disturbance Power,  $\pm 3.3$ dB in the frequency range of 30 – 1000MHz. For Flicker and Harmonics testing the equipment used is calibrated by the manufacturer and is within the tolerances specified in 61000-3-2/3. These uncertainties have been calculated using CISPR 16-4-2:2003 and represent a 95% confidence level (k=2).

EUT Received Date: 29-October-2008

Testing Start Date: 29-October-2008

Testing End Date: 31-October-2008

The tests were performed according to following regulations:

1. FCC CFR47 Part 15 subpart C
2. IC RSS-210e Issue 7 2007
3. IC RSS-GEN Issue 2 2007

Emission Test Results:

#### Conducted Emissions 15.207 - **PASS**

##### Test Result

Minimum limit margin -18.9 dB at 0.470 MHz

Remarks: \_\_\_\_\_

#### Radiated Unintentional and Spurious Emissions 15.249(D) /15.205/209 - **PASS**

##### Test Result

Minimum limit margin -8.1 dB at 1807.96 MHz

Remarks: Covers RSS-210 tables 1 and 2

#### Field Strength of the Fundamental 15.249(a) - **PASS**

##### Test Result

Minimum limit margin -1.7 dB at 904.07 MHz

Remarks: Covers RSS-210 A2.9(a).

#### Field Strength of Harmonics 15.249(a) - **PASS**

##### Test Result

Minimum limit margin -0.2 dB at 2712.22 MHz

Remarks: Covers RSS-210 A2.9(a).

#### Occupied Bandwidth RSS-GEN - **PASS**

##### Test Result

Remarks: The 99% emission bandwidth is 350kHz

**GENERAL REMARKS:**

The following remarks are to be considered as "where applicable" and are taken into account while completing any FCC/IC/ETSI radio tests at Intertek.

Testing was performed in 3 different orthogonal axis to determine the worst case emissions from the device. The worst case emissions measurements are shown in this report.

**FCC CFR47 Part 15.31: Measurement Standards:** In any case where the device is powered off a battery, a fresh battery was used during test. In cases where the device is powered off an AC supply, voltage was varied per Part 15.31 to find worst case emissions.

**FCC CFR47 Part 15.35: Measurement Detector Functions and Bandwidths:** FCC Part 15.35 was utilized when performing the measurements within this report.

Sample:

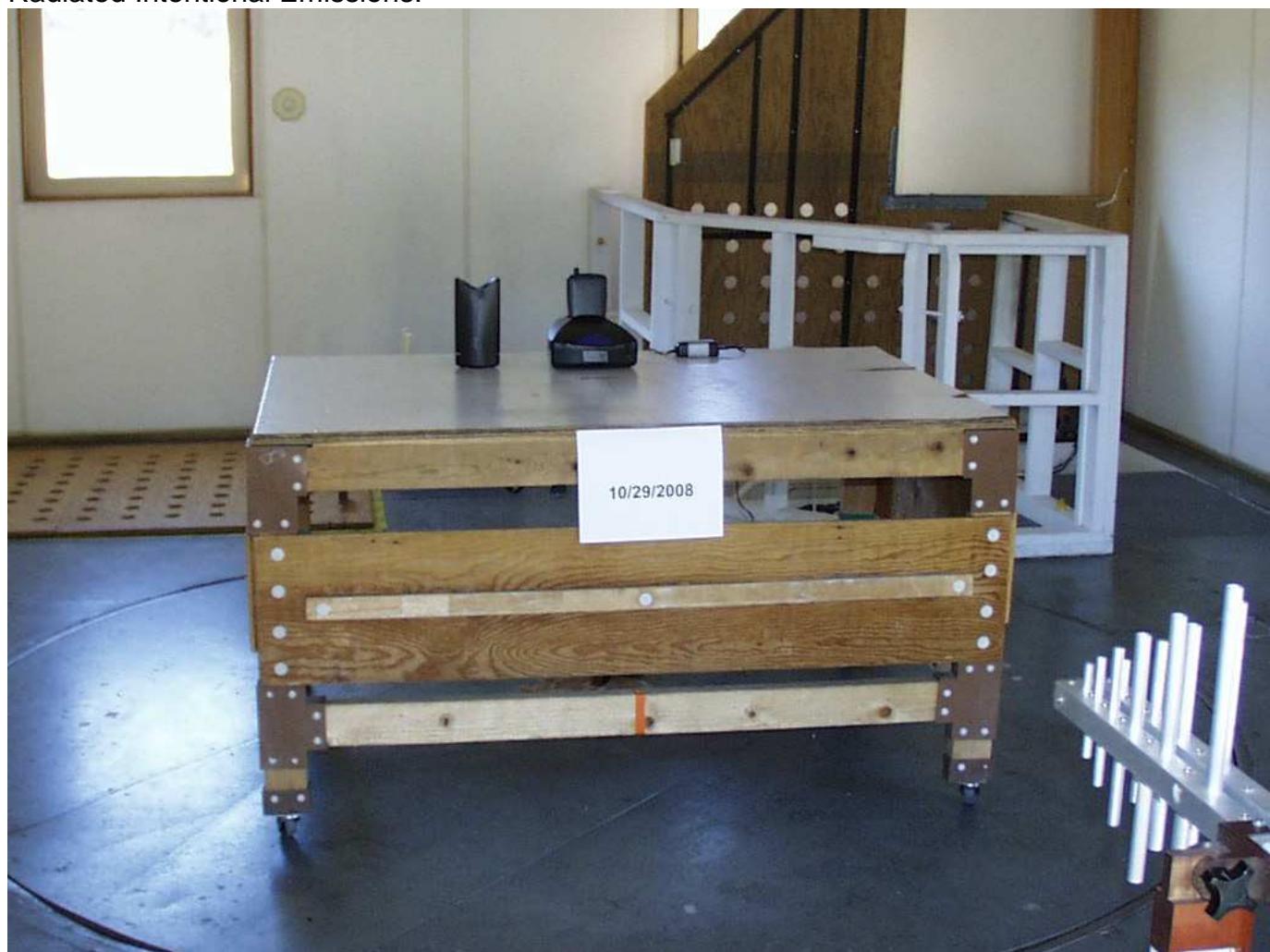
Production     Prototype     See RFQ

Modifications required to pass: None

Test Specification Deviations: Additions to or Exclusions from: None

Test-setup photo(s):

Radiated Intentional Emissions:



Test-setup photo(s):  
Radiated Intentional Emissions:



Test-setup photo(s):

Radiated Unintentional Emissions:



Test-setup photo(s):

Radiated Unintentional Emissions:



## **Appendix A**

Test Data Sheets

and

Test Equipment Used

## **Conducted Emissions**

**15.207**

# Conducted Electromagnetic Emissions

|                  |                           |            |                      |                    |      |     |
|------------------|---------------------------|------------|----------------------|--------------------|------|-----|
| Test Report #:   | 3166782                   | Test Area: | Pinewood Site 1 Cond | Temperature:       | 25.0 | °C  |
| Test Method:     | FCC Part 15.107 Class B   | Test Date: | 31-Oct-2008          | Relative Humidity: | 17.1 | %   |
| EUT Model #:     | Homebase HB100            | EUT Power: | 120VAC; 60Hz         | Air Pressure:      | 81   | kPa |
| EUT Serial #:    | 6100021                   |            |                      |                    |      |     |
| Manufacturer:    | BI                        |            |                      |                    |      |     |
| EUT Description: | Alcohol Monitoring System |            |                      |                    |      |     |
| Notes:           |                           |            |                      |                    |      |     |
| Level Key        |                           |            |                      |                    |      |     |
| Pk – Peak        |                           |            | Nb – Narrow Band     |                    |      |     |
| Qp – QuasiPeak   |                           |            | Bb – Broad Band      |                    |      |     |
| Av - Average     |                           |            |                      |                    |      |     |

| FREQ<br>(MHz) | LEVEL<br>(dBuV) | CABLE / LISN / ATTEN<br>(dB) | FINAL<br>(dBuV) | TEST POINT | DELTA1 (dB) | DELTA2 (dB) |
|---------------|-----------------|------------------------------|-----------------|------------|-------------|-------------|
| 0.150         | -0.9 Av         | 0.1 / -0.2 / -9.7            | 8.7             | Neutral    | N/A         | -47.3       |
| 0.150         | 17.4 Qp         | 0.1 / -0.2 / -9.7            | 27.0            | Neutral    | -39.0       | N/A         |
| 0.161         | 8.5 Av          | 0.1 / -0.2 / -9.7            | 18.1            | Neutral    | N/A         | -37.3       |
| 0.161         | 22.7 Qp         | 0.1 / -0.2 / -9.7            | 32.3            | Neutral    | -33.1       | N/A         |
| 0.470         | 10.2 Av         | 0.1 / -0.2 / -9.7            | 19.8            | Neutral    | N/A         | -26.7       |
| 0.470         | 22.5 Qp         | 0.1 / -0.2 / -9.7            | 32.1            | Neutral    | -24.4       | N/A         |
| 5.00          | 3.4 Av          | 0.4 / -0.2 / -9.7            | 13.3            | Neutral    | N/A         | -32.7       |
| 5.00          | 11.1 Qp         | 0.4 / -0.2 / -9.7            | 21.0            | Neutral    | -35.0       | N/A         |
| 17.52         | 18.7 Av         | 0.9 / -0.8 / -9.7            | 28.5            | Neutral    | N/A         | -21.5       |
| 17.52         | 25.3 Qp         | 0.9 / -0.8 / -9.7            | 35.1            | Neutral    | -24.9       | N/A         |
| 30.00         | 1.9 Av          | 1.2 / -2.2 / -9.9            | 10.8            | Neutral    | N/A         | -39.2       |
| 30.00         | 8.0 Qp          | 1.2 / -2.2 / -9.9            | 16.9            | Neutral    | -43.1       | N/A         |
|               |                 |                              |                 |            |             |             |
| 0.150         | -2.5 Av         | 0.1 / -0.2 / -9.7            | 7.1             | Line 1     | N/A         | -48.9       |
| 0.150         | 15.0 Qp         | 0.1 / -0.2 / -9.7            | 24.6            | Line 1     | -41.4       | N/A         |
| 0.161         | 9.1 Av          | 0.1 / -0.2 / -9.7            | 18.7            | Line 1     | N/A         | -36.7       |
| 0.161         | 21.1 Qp         | 0.1 / -0.2 / -9.7            | 30.7            | Line 1     | -34.7       | N/A         |
| 0.470         | 12.7 Av         | 0.1 / -0.2 / -9.7            | 22.3            | Line 1     | N/A         | -24.2       |
| 0.470         | 28.0 Qp         | 0.1 / -0.2 / -9.7            | 37.6            | Line 1     | -18.9       | N/A         |
| 5.00          | 6.5 Av          | 0.4 / -0.2 / -9.7            | 16.4            | Line 1     | N/A         | -29.6       |
| 5.00          | 15.8 Qp         | 0.4 / -0.2 / -9.7            | 25.7            | Line 1     | -30.3       | N/A         |
| 17.52         | 14.1 Av         | 0.9 / -0.8 / -9.7            | 23.9            | Line 1     | N/A         | -26.1       |
| 17.52         | 21.4 Qp         | 0.9 / -0.8 / -9.7            | 31.2            | Line 1     | -28.8       | N/A         |
| 30.00         | -1.4 Av         | 1.2 / -2.2 / -9.9            | 7.5             | Line 1     | N/A         | -42.5       |
| 30.00         | 4.5 Qp          | 1.2 / -2.2 / -9.9            | 13.4            | Line 1     | -46.6       | N/A         |
|               |                 |                              |                 |            |             |             |

| FREQ<br>(MHz)                          | LEVEL<br>(dBuV) | CABLE / LISN / ATTEN<br>(dB) | FINAL<br>(dBuV) | TEST POINT | DELTA1 (dB)<br>QP15.107B | DELTA2 (dB)<br>AV15.107B |
|--|-----------------|------------------------------|-----------------|------------|--------------------------|--------------------------|
| <b>***** Measurement Summary *****</b> |                 |                              |                 |            |                          |                          |
| 0.470                                  | 28.0 Qp         | 0.1 / -0.2 / -9.7            | 37.6            | Line 1     | -18.9                    | N/A                      |
| 17.52                                  | 18.7 Av         | 0.9 / -0.8 / -9.7            | 28.5            | Neutral    | N/A                      | -21.5                    |
| 5.00                                   | 6.5 Av          | 0.4 / -0.2 / -9.7            | 16.4            | Line 1     | N/A                      | -29.6                    |
| 0.161                                  | 22.7 Qp         | 0.1 / -0.2 / -9.7            | 32.3            | Neutral    | -33.1                    | N/A                      |
| 0.150                                  | 17.4 Qp         | 0.1 / -0.2 / -9.7            | 27.0            | Neutral    | -39.0                    | N/A                      |
| 30.00                                  | 1.9 Av          | 1.2 / -2.2 / -9.9            | 10.8            | Neutral    | N/A                      | -39.2                    |
|  |                 |                              |                 |            |                          |                          |

**Spurious Emissions  
And  
Unintentional Emissions**

**15.249(d) and 15.205/209**

# Radiated Electromagnetic Emissions

|                  |   |            |                      |  |                    |                |                  |
|------------------|---|------------|----------------------|--|--------------------|----------------|------------------|
| Test Report #:   | 3166782   | Test Area: | Pinewood Site 1 (3m) |  | Temperature:       | 24.9           | °C               |
| Test Method:     | FCC Part 15.209   | Test Date: | 30-Oct-2008          |  | Relative Humidity: | 17.3           | %                |
| EUT Model #:     | Homebase HB100; TAD                                     | EUT Power: | 120VAC; 60Hz; 3.3VDC |  | Air Pressure:      | 81             | kPa              |
| EUT Serial #:    | 6100021; 9800021  |            |                      |  |                    |                |                  |
| Manufacturer:    | BI  |            |                      |  |                    |                | Level Key        |
| EUT Description: | Alcohol Monitoring System; Transdermal Alcohol Detector |            |                      |  |                    | Pk – Peak      | Nb – Narrow Band |
| Notes:           | Both units were on the table at time of testing.        |            |                      |  |                    | Qp – QuasiPeak | Bb – Broad Band  |
|                  |   |            |                      |  | Av - Average       |                |                  |

| FREQ<br>(MHz)                | LEVEL<br>(dBuV) | CABLE / ANT / PREAMP<br>(dB) (dB\m) (dB) | FINAL<br>(dBuV) | POL / HGT / AZ<br>(m) (DEG) | DELTA1 (dB)<br>15.209 <1GHz | DELTA2 (dB)<br>15.209 >1GHz |
|------------------------------|-----------------|--|-----------------|-----------------------------|-----------------------------|-----------------------------|
| 200.00                       | 30.6 Qp         | 1.5 / 11.3 / 27.3                        | 16.0            | V / 1.0 / 0.0               | -27.5                       | N/A                         |
| 959.98                       | 25.8 Qp         | 3.7 / 22.4 / 27.3                        | 24.6            | V / 1.0 / 0.0               | -21.4                       | N/A                         |
| 224.29                       | 31.4 Qp         | 1.6 / 10.4 / 27.3                        | 16.0            | V / 1.0 / 0.0               | -30.0                       | N/A                         |
| 254.30                       | 35.0 Qp         | 1.8 / 11.8 / 27.1                        | 21.4            | V / 1.0 / 0.0               | -24.6                       | N/A                         |
| 408.26                       | 38.1 Qp         | 2.2 / 18.0 / 27.8                        | 30.5            | V / 1.0 / 0.0               | -15.5                       | N/A                         |
| 234.00                       | 34.0 Qp         | 1.7 / 10.6 / 27.2                        | 19.1            | V / 1.0 / 0.0               | -26.9                       | N/A                         |
| 313.57                       | 33.0 Qp         | 1.9 / 14.2 / 27.2                        | 22.1            | V / 1.0 / 0.0               | -23.9                       | N/A                         |
| 408.26                       | 39.2 Qp         | 2.2 / 18.0 / 27.8                        | 31.6            | V / 1.0 / 90.0              | -14.4                       | N/A                         |
| 959.98                       | 25.9 Qp         | 3.7 / 22.4 / 27.3                        | 24.7            | V / 1.0 / 90.0              | -21.3                       | N/A                         |
| 254.30                       | 35.6 Qp         | 1.8 / 11.8 / 27.1                        | 22.0            | V / 1.0 / 180.0             | -24.0                       | N/A                         |
| 250.00                       | 37.2 Qp         | 1.7 / 11.6 / 27.2                        | 23.4            | V / 1.0 / 180.0             | -22.6                       | N/A                         |
| 620.91                       | 30.5 Qp         | 2.9 / 18.9 / 28.2                        | 24.1            | V / 1.0 / 180.0             | -21.9                       | N/A                         |
| 818.47                       | 28.8 Qp         | 3.3 / 21.4 / 27.8                        | 25.7            | V / 1.0 / 180.0             | -20.3                       | N/A                         |
| 846.70                       | 32.2 Qp         | 3.4 / 21.7 / 27.7                        | 29.6            | V / 1.0 / 180.0             | -16.4                       | N/A                         |
| 620.91                       | 30.7 Qp         | 2.9 / 18.9 / 28.2                        | 24.3            | V / 1.0 / 270.0             | -21.7                       | N/A                         |
| 290.19                       | 34.2 Qp         | 1.9 / 13.3 / 27.0                        | 22.4            | V / 1.0 / 270.0             | -23.6                       | N/A                         |
| 299.82                       | 31.2 Qp         | 1.9 / 13.8 / 27.1                        | 19.7            | V / 1.0 / 270.0             | -26.3                       | N/A                         |
| 338.67                       | 31.5 Qp         | 2.0 / 14.1 / 27.2                        | 20.3            | V / 1.0 / 270.0             | -25.7                       | N/A                         |
| 339.81                       | 31.2 Qp         | 2.0 / 14.1 / 27.3                        | 20.0            | V / 1.0 / 270.0             | -26.0                       | N/A                         |
| 790.25                       | 27.3 Qp         | 3.3 / 20.6 / 27.8                        | 23.4            | V / 1.0 / 270.0             | -22.6                       | N/A                         |
| The following are maximized. |                 |  |                 |                             |                             |                             |
| 408.26                       | 38.8 Qp         | 2.2 / 18.0 / 27.8                        | 31.2            | V / 1.0 / 87.1              | -14.8                       | N/A                         |
| 818.47                       | 35.1 Qp         | 3.3 / 21.4 / 27.8                        | 32.1            | V / 1.1 / 49.1              | -13.9                       | N/A                         |
| 846.70                       | 39.6 Qp         | 3.4 / 21.7 / 27.7                        | 36.9            | V / 1.6 / 15.5              | -9.1                        | N/A                         |
| 278.92                       | 35.4 Qp         | 1.8 / 12.7 / 27.0                        | 22.9            | H / 1.6 / 0.0               | -23.1                       | N/A                         |
| 299.82                       | 32.6 Qp         | 1.9 / 13.8 / 27.1                        | 21.2            | H / 1.6 / 0.0               | -24.8                       | N/A                         |
| 339.81                       | 33.3 Qp         | 2.0 / 14.1 / 27.3                        | 22.1            | H / 1.6 / 0.0               | -23.9                       | N/A                         |
| 790.25                       | 28.3 Qp         | 3.3 / 20.6 / 27.8                        | 24.4            | H / 2.5 / 0.0               | -21.6                       | N/A                         |

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| FREQ<br>(MHz)  | LEVEL<br>(dBuV) | CABLE / ANT / PREAMP<br>(dB) (dB\m) (dB) | FINAL<br>(dBuV) | POL / HGT / AZ<br>(m) (DEG) | DELTA1 (dB)<br>15.209 <1GHz | DELTA2 (dB)<br>15.209 >1GHz |
|--|-----------------|--|-----------------|-----------------------------|-----------------------------|-----------------------------|
| 359.81   | 31.1 Qp         | 2.1 / 16.5 / 27.3                        | 22.4            | H / 2.5 / 0.0               | -23.6                       | N/A                         |
| 219.87   | 31.8 Qp         | 1.6 / 10.3 / 27.2                        | 16.5            | H / 2.5 / 0.0               | -29.5                       | N/A                         |
| 329.84   | 27.1 Qp         | 2.0 / 13.7 / 27.2                        | 15.6            | H / 2.5 / 0.0               | -30.4                       | N/A                         |
| 219.87   | 36.0 Qp         | 1.6 / 10.3 / 27.2                        | 20.6            | H / 2.5 / 90.0              | -25.4                       | N/A                         |
| 224.29   | 32.5 Qp         | 1.6 / 10.4 / 27.3                        | 17.1            | H / 2.5 / 90.0              | -28.9                       | N/A                         |
| 359.81   | 34.4 Qp         | 2.1 / 16.5 / 27.3                        | 25.7            | H / 2.5 / 90.0              | -20.3                       | N/A                         |
| 200.00   | 34.3 Qp         | 1.5 / 11.3 / 27.3                        | 19.7            | H / 1.6 / 90.0              | -23.8                       | N/A                         |
| 959.59   | 26.8 Qp         | 3.7 / 22.5 / 27.3                        | 25.6            | H / 1.6 / 90.0              | -20.4                       | N/A                         |
| 299.82   | 33.0 Qp         | 1.9 / 13.8 / 27.1                        | 21.6            | H / 2.5 / 180.0             | -24.4                       | N/A                         |
| 329.84   | 30.8 Qp         | 2.0 / 13.7 / 27.2                        | 19.3            | H / 2.5 / 180.0             | -26.7                       | N/A                         |
| 200.00   | 38.9 Qp         | 1.5 / 11.3 / 27.3                        | 24.3            | H / 1.6 / 270.0             | -19.2                       | N/A                         |
| 250.00   | 41.1 Qp         | 1.7 / 11.6 / 27.2                        | 27.2            | H / 1.6 / 270.0             | -18.8                       | N/A                         |
| 254.30   | 39.1 Qp         | 1.8 / 11.8 / 27.1                        | 25.5            | H / 1.6 / 270.0             | -20.5                       | N/A                         |
| 278.92   | 37.9 Qp         | 1.8 / 12.7 / 27.0                        | 25.4            | H / 1.6 / 270.0             | -20.6                       | N/A                         |
| 299.82   | 34.0 Qp         | 1.9 / 13.8 / 27.1                        | 22.5            | H / 1.6 / 270.0             | -23.5                       | N/A                         |
| 339.81   | 36.0 Qp         | 2.0 / 14.1 / 27.3                        | 24.8            | H / 1.6 / 270.0             | -21.2                       | N/A                         |
| 329.84   | 31.3 Qp         | 2.0 / 13.7 / 27.2                        | 19.8            | H / 2.5 / 270.0             | -26.2                       | N/A                         |
| The following are maximized.   |                 |  |                 |                             |                             |                             |
| 250.00   | 47.0 Qp         | 1.7 / 11.6 / 27.2                        | 33.1            | H / 1.0 / 86.4              | -12.9                       | N/A                         |
| 200.00   | 39.8 Qp         | 1.5 / 11.3 / 27.3                        | 25.2            | H / 1.7 / 274.9             | -18.3                       | N/A                         |
| 359.81   | 37.0 Qp         | 2.1 / 16.5 / 27.3                        | 28.3            | H / 2.5 / 44.1              | -17.7                       | N/A                         |
| 30.00  | 35.8 Qp         | 0.5 / 12.8 / 28.2                        | 20.9            | V / 1.0 / 0.0               | -19.1                       | N/A                         |
| 52.56  | 44.0 Qp         | 0.7 / 9.4 / 28.2                         | 25.9            | V / 1.0 / 0.0               | -14.1                       | N/A                         |
| 69.99  | 39.7 Qp         | 0.8 / 8.5 / 28.2                         | 20.8            | V / 1.0 / 0.0               | -19.2                       | N/A                         |
| 79.95  | 35.0 Qp         | 0.9 / 6.8 / 28.1                         | 14.6            | V / 1.0 / 0.0               | -25.4                       | N/A                         |
| 148.22   | 35.4 Qp         | 1.3 / 12.3 / 27.7                        | 21.3            | V / 1.0 / 0.0               | -22.2                       | N/A                         |
| 169.33   | 33.7 Qp         | 1.4 / 12.0 / 27.6                        | 19.5            | V / 1.0 / 0.0               | -24.0                       | N/A                         |
| 197.56   | 37.2 Qp         | 1.5 / 13.2 / 27.4                        | 24.5            | V / 1.0 / 0.0               | -19.0                       | N/A                         |
| 30.00  | 36.2 Qp         | 0.5 / 12.8 / 28.2                        | 21.3            | V / 1.0 / 90.0              | -18.7                       | N/A                         |
| 52.56  | 45.8 Qp         | 0.7 / 9.4 / 28.2                         | 27.8            | V / 1.0 / 90.0              | -12.2                       | N/A                         |
| 179.90   | 30.0 Qp         | 1.4 / 12.3 / 27.4                        | 16.3            | V / 1.0 / 90.0              | -27.2                       | N/A                         |
| 169.33   | 37.6 Qp         | 1.4 / 12.0 / 27.6                        | 23.4            | V / 1.0 / 180.0             | -20.1                       | N/A                         |
| 197.56   | 41.8 Qp         | 1.5 / 13.2 / 27.4                        | 29.0            | V / 1.0 / 180.0             | -14.5                       | N/A                         |
| No higher emissions found between 30 and 200MHz at 270 degrees vertical. |                 |  |                 |                             |                             |                             |
| The following are maximized.   |                 |  |                 |                             |                             |                             |
| 30.00  | 36.5 Qp         | 0.5 / 12.8 / 28.2                        | 21.6            | V / 1.0 / 105.3             | -18.4                       | N/A                         |
| 52.56  | 46.0 Qp         | 0.7 / 9.4 / 28.2                         | 27.9            | V / 1.0 / 144.8             | -12.1                       | N/A                         |
| 197.56   | 42.4 Qp         | 1.5 / 13.2 / 27.4                        | 29.6            | V / 1.0 / 175.1             | -13.9                       | N/A                         |

| FREQ<br>(MHz)  | LEVEL<br>(dBuV) | CABLE / ANT / PREAMP<br>(dB) (dB\m) (dB) | FINAL<br>(dBuV) | POL / HGT / AZ<br>(m) (DEG) | DELTA1 (dB)<br>15.209 <1GHz | DELTA2 (dB)<br>15.209 >1GHz |
|--|-----------------|--|-----------------|-----------------------------|-----------------------------|-----------------------------|
| 159.99   | 33.4 Qp         | 1.4 / 12.0 / 27.7                        | 19.1            | H / 2.5 / 0.0               | -24.4                       | N/A                         |
| No higher emissions found between 30 and 200MHz at 90 degrees horizontal.  |                 |  |                 |                             |                             |                             |
| No higher emissions found between 30 and 200MHz at 180 degrees horizontal. |                 |  |                 |                             |                             |                             |
| No higher emissions found between 30 and 200MHz at 270 degrees horizontal. |                 |  |                 |                             |                             |                             |
| The following emission is maximized.                                       |                 |  |                 |                             |                             |                             |
| 159.99   | 42.0 Qp         | 1.4 / 12.0 / 27.7                        | 27.7            | H / 2.5 / 267.4             | -15.8                       | N/A                         |
| The following are noise floor between 30 and 200MHz horizontal.            |                 |  |                 |                             |                             |                             |
| 35.00  | 28.2 Qp         | 0.6 / 12.0 / 28.2                        | 12.6            | H / 2.5 / 0.0               | -27.4                       | N/A                         |
| 185.00   | 30.1 Qp         | 1.4 / 12.5 / 27.5                        | 16.6            | H / 2.5 / 0.0               | -26.9                       | N/A                         |
|  |                 |  |                 |                             |                             |                             |
| 1128.93  | 40.1 Av         | 2.1 / 23.7 / 38.3                        | 27.6            | V / 1.0 / 0.0               | N/A                         | -26.4                       |
| 1185.37  | 38.2 Av         | 2.2 / 23.9 / 38.3                        | 26.1            | V / 1.0 / 0.0               | N/A                         | -27.9                       |
| 1213.99  | 36.8 Av         | 2.2 / 24.2 / 38.2                        | 24.9            | V / 1.0 / 0.0               | N/A                         | -29.1                       |
| 1241.83  | 38.0 Av         | 2.2 / 24.3 / 38.1                        | 26.4            | V / 1.0 / 0.0               | N/A                         | -27.6                       |
| 1298.27  | 36.6 Av         | 2.3 / 24.2 / 37.9                        | 25.3            | V / 1.0 / 0.0               | N/A                         | -28.7                       |
| 1354.71  | 40.3 Av         | 2.4 / 24.1 / 37.7                        | 29.1            | V / 1.0 / 0.0               | N/A                         | -24.9                       |
| 1580.50  | 35.9 Av         | 2.6 / 24.6 / 37.4                        | 25.7            | V / 1.0 / 0.0               | N/A                         | -28.3                       |
| 1608.72  | 35.8 Av         | 2.6 / 24.8 / 37.4                        | 25.7            | V / 1.0 / 0.0               | N/A                         | -28.3                       |
| 1665.17  | 35.6 Av         | 2.7 / 25.3 / 37.5                        | 26.1            | V / 1.0 / 0.0               | N/A                         | -27.9                       |
| 1693.40  | 35.9 Av         | 2.7 / 25.5 / 37.6                        | 26.4            | V / 1.0 / 0.0               | N/A                         | -27.6                       |
| 1807.96  | 47.6 Av         | 2.8 / 26.5 / 38.1                        | 38.9            | V / 1.0 / 0.0               | N/A                         | -15.1                       |
| 2333.45  | 37.0 Av         | 3.2 / 27.4 / 38.4                        | 29.1            | V / 1.0 / 0.0               | N/A                         | -24.9                       |
| 2344.01  | 37.5 Av         | 3.2 / 27.5 / 38.5                        | 29.7            | V / 1.0 / 0.0               | N/A                         | -24.3                       |
| 2731.49  | 38.4 Av         | 3.5 / 28.2 / 38.1                        | 32.0            | V / 1.0 / 0.0               | N/A                         | -22.0                       |
|  |                 |  |                 |                             |                             |                             |
| 1693.40  | 36.2 Av         | 2.7 / 25.5 / 37.6                        | 26.8            | V / 1.0 / 90.0              | N/A                         | -27.2                       |
| 1072.48  | 38.2 Av         | 2.1 / 23.9 / 38.4                        | 25.8            | V / 1.0 / 90.0              | N/A                         | -28.2                       |
|  |                 |  |                 |                             |                             |                             |
| 1128.93  | 40.5 Av         | 2.1 / 23.7 / 38.3                        | 28.0            | V / 1.0 / 180.0             | N/A                         | -26.0                       |
| 1580.50  | 36.5 Av         | 2.6 / 24.6 / 37.4                        | 26.4            | V / 1.0 / 180.0             | N/A                         | -27.6                       |
| 1665.17  | 36.4 Av         | 2.7 / 25.3 / 37.5                        | 26.8            | V / 1.0 / 180.0             | N/A                         | -27.2                       |
| 1693.40  | 37.8 Av         | 2.7 / 25.5 / 37.6                        | 28.4            | V / 1.0 / 180.0             | N/A                         | -25.6                       |
| 1807.96  | 51.8 Av         | 2.8 / 26.5 / 38.1                        | 43.0            | V / 1.0 / 180.0             | N/A                         | -11.0                       |
| 1016.04  | 35.8 Av         | 2.0 / 23.4 / 38.2                        | 23.0            | V / 1.0 / 180.0             | N/A                         | -31.0                       |
| 1636.95  | 36.0 Av         | 2.6 / 25.1 / 37.5                        | 26.3            | V / 1.0 / 180.0             | N/A                         | -27.7                       |
| 1749.84  | 36.0 Av         | 2.7 / 26.3 / 37.9                        | 27.2            | V / 1.0 / 180.0             | N/A                         | -26.8                       |
| 1806.30  | 36.5 Av         | 2.8 / 26.5 / 38.1                        | 27.8            | V / 1.0 / 180.0             | N/A                         | -26.2                       |
|  |                 |  |                 |                             |                             |                             |
| No higher emissions found between 1 and 4GHz at 270 degrees vertical.      |                 |  |                 |                             |                             |                             |
| The following are maximized.   |                 |  |                 |                             |                             |                             |

| FREQ<br>(MHz)   | LEVEL<br>(dBuV) | CABLE / ANT / PREAMP<br>(dB) (dB\m) (dB) | FINAL<br>(dBuV) | POL / HGT / AZ<br>(m) (DEG) | DELTA1 (dB)<br>15.209 <1GHz | DELTA2 (dB)<br>15.209 >1GHz |
|---|-----------------|--|-----------------|-----------------------------|-----------------------------|-----------------------------|
| 1807.96   | 54.6 Av         | 2.8 / 26.5 / 38.1                        | 45.9            | V / 1.0 / 175.6             | N/A                         | -8.1                        |
| 2344.01   | 39.1 Av         | 3.2 / 27.5 / 38.5                        | 31.3            | V / 1.5 / 207.5             | N/A                         | -22.7                       |
| 2731.49   | 41.6 Av         | 3.5 / 28.2 / 38.1                        | 35.3            | V / 1.6 / 356.6             | N/A                         | -18.7                       |
| 1072.48   | 38.4 Av         | 2.1 / 23.9 / 38.4                        | 25.9            | H / 1.0 / 0.0               | N/A                         | -28.1                       |
| 2124.50   | 33.6 Av         | 3.1 / 26.7 / 38.2                        | 25.2            | H / 1.0 / 0.0               | N/A                         | -28.8                       |
| 2427.99   | 37.1 Av         | 3.2 / 27.6 / 38.6                        | 29.4            | H / 1.0 / 0.0               | N/A                         | -24.6                       |
| No higher emissions found between 1 and 4GHz at 90 degrees horizontal.  |                 |  |                 |                             |                             |                             |
| 1298.27   | 36.6 Av         | 2.3 / 24.2 / 37.9                        | 25.2            | H / 1.0 / 180.0             | N/A                         | -28.8                       |
| No higher emissions found between 1 and 4GHz at 270 degrees horizontal. |                 |  |                 |                             |                             |                             |
| The following are maximized.  |                 |  |                 |                             |                             |                             |
| 2427.99   | 41.2 Av         | 3.2 / 27.6 / 38.6                        | 33.5            | H / 1.8 / 346.3             | N/A                         | -20.5                       |
| 1072.48   | 39.0 Av         | 2.1 / 23.9 / 38.4                        | 26.5            | H / 1.1 / 16.6              | N/A                         | -27.5                       |
| 1298.27   | 37.2 Av         | 2.3 / 24.2 / 37.9                        | 25.9            | H / 1.0 / 220.7             | N/A                         | -28.1                       |
| No emissions found between 4 and 10GHz.                                 |                 |  |                 |                             |                             |                             |
| The following are noise floor.  |                 |  |                 |                             |                             |                             |
| 4500.00   | 34.4 Av         | 5.2 / 31.3 / 40.7                        | 30.2            | H / 1.0 / 0.0               | N/A                         | -23.8                       |
| 4000.00   | 32.6 Av         | 4.8 / 31.4 / 39.9                        | 28.9            | H / 1.0 / 0.0               | N/A                         | -25.1                       |
| 5000.00   | 33.6 Av         | 5.8 / 32.5 / 40.1                        | 31.8            | H / 1.0 / 0.0               | N/A                         | -22.2                       |
| 4100.00   | 33.5 Av         | 4.8 / 31.4 / 40.4                        | 29.3            | V / 1.0 / 0.0               | N/A                         | -24.7                       |
| 4600.00   | 34.0 Av         | 5.3 / 31.4 / 40.8                        | 30.0            | V / 1.0 / 0.0               | N/A                         | -24.0                       |
| 4900.00   | 33.6 Av         | 5.7 / 32.4 / 40.5                        | 31.2            | V / 1.0 / 0.0               | N/A                         | -22.8                       |
| 6500.00   | 31.5 Av         | 8.5 / 34.9 / 39.1                        | 35.8            | H / 1.0 / 0.0               | N/A                         | -18.2                       |
| 7900.00   | 32.1 Av         | 8.3 / 36.9 / 39.9                        | 37.3            | H / 1.0 / 0.0               | N/A                         | -16.7                       |
| 8000.00   | 41.0 Av         | 8.3 / 36.9 / 45.5                        | 40.7            | H / 1.0 / 0.0               | N/A                         | -13.3                       |
| 9500.00   | 42.4 Av         | 9.4 / 37.9 / 47.8                        | 41.9            | H / 1.0 / 0.0               | N/A                         | -12.1                       |
| 8500.00   | 42.0 Av         | 8.5 / 37.2 / 45.0                        | 42.7            | V / 1.0 / 0.0               | N/A                         | -11.3                       |
| 10000.0   | 42.3 Av         | 9.5 / 38.4 / 48.3                        | 41.9            | V / 1.0 / 0.0               | N/A                         | -12.1                       |
|   |                 |  |                 |                             |                             |                             |

| FREQ<br>(MHz)                          | LEVEL<br>(dBuV) | CABLE / ANT / PREAMP<br>(dB) (dB/m) (dB) | FINAL<br>(dBuV) | POL / HGT / AZ<br>(m) (DEG) | DELTA1 (dB)<br>15.209 <1GHz | DELTA2 (dB)<br>15.209 >1GHz |
|--|-----------------|--|-----------------|-----------------------------|-----------------------------|-----------------------------|
| <b>***** Measurement Summary *****</b> |                 |  |                 |                             |                             |                             |
| 1807.96                                | 54.6 Av         | 2.8 / 26.5 / 38.1                        | 45.9            | V / 1.0 / 175.6             | N/A                         | -8.1                        |
| 846.70                                 | 39.6 Qp         | 3.4 / 21.7 / 27.7                        | 36.9            | V / 1.6 / 15.5              | -9.1                        | N/A                         |
| 8500.00                                | 42.0 Av         | 8.5 / 37.2 / 45.0                        | 42.7            | V / 1.0 / 0.0               | N/A                         | -11.3                       |
| 52.56                                  | 46.0 Qp         | 0.7 / 9.4 / 28.2                         | 27.9            | V / 1.0 / 144.8             | -12.1                       | N/A                         |
| 10000.0                                | 42.3 Av         | 9.5 / 38.4 / 48.3                        | 41.9            | V / 1.0 / 0.0               | N/A                         | -12.1                       |
| 9500.00                                | 42.4 Av         | 9.4 / 37.9 / 47.8                        | 41.9            | H / 1.0 / 0.0               | N/A                         | -12.1                       |
| 250.00                                 | 47.0 Qp         | 1.7 / 11.6 / 27.2                        | 33.1            | H / 1.0 / 86.4              | -12.9                       | N/A                         |
| 8000.00                                | 41.0 Av         | 8.3 / 36.9 / 45.5                        | 40.7            | H / 1.0 / 0.0               | N/A                         | -13.3                       |
| 197.56                                 | 42.4 Qp         | 1.5 / 13.2 / 27.4                        | 29.6            | V / 1.0 / 175.1             | -13.9                       | N/A                         |
| 818.47                                 | 35.1 Qp         | 3.3 / 21.4 / 27.8                        | 32.1            | V / 1.1 / 49.1              | -13.9                       | N/A                         |
| 408.26                                 | 39.2 Qp         | 2.2 / 18.0 / 27.8                        | 31.6            | V / 1.0 / 90.0              | -14.4                       | N/A                         |
| 159.99                                 | 42.0 Qp         | 1.4 / 12.0 / 27.7                        | 27.7            | H / 2.5 / 267.4             | -15.8                       | N/A                         |
| 7900.00                                | 32.1 Av         | 8.3 / 36.9 / 39.9                        | 37.3            | H / 1.0 / 0.0               | N/A                         | -16.7                       |
| 359.81                                 | 37.0 Qp         | 2.1 / 16.5 / 27.3                        | 28.3            | H / 2.5 / 44.1              | -17.7                       | N/A                         |
| 6500.00                                | 31.5 Av         | 8.5 / 34.9 / 39.1                        | 35.8            | H / 1.0 / 0.0               | N/A                         | -18.2                       |
| 200.00                                 | 39.8 Qp         | 1.5 / 11.3 / 27.3                        | 25.2            | H / 1.7 / 274.9             | -18.3                       | N/A                         |
| 30.00                                  | 36.5 Qp         | 0.5 / 12.8 / 28.2                        | 21.6            | V / 1.0 / 105.3             | -18.4                       | N/A                         |
| 2731.49                                | 41.6 Av         | 3.5 / 28.2 / 38.1                        | 35.3            | V / 1.6 / 356.6             | N/A                         | -18.7                       |
| 69.99                                  | 39.7 Qp         | 0.8 / 8.5 / 28.2                         | 20.8            | V / 1.0 / 0.0               | -19.2                       | N/A                         |
| 169.33                                 | 37.6 Qp         | 1.4 / 12.0 / 27.6                        | 23.4            | V / 1.0 / 180.0             | -20.1                       | N/A                         |
| 959.59                                 | 26.8 Qp         | 3.7 / 22.5 / 27.3                        | 25.6            | H / 1.6 / 90.0              | -20.4                       | N/A                         |
| 254.30                                 | 39.1 Qp         | 1.8 / 11.8 / 27.1                        | 25.5            | H / 1.6 / 270.0             | -20.5                       | N/A                         |
| 2427.99                                | 41.2 Av         | 3.2 / 27.6 / 38.6                        | 33.5            | H / 1.8 / 346.3             | N/A                         | -20.5                       |
| 278.92                                 | 37.9 Qp         | 1.8 / 12.7 / 27.0                        | 25.4            | H / 1.6 / 270.0             | -20.6                       | N/A                         |
| 339.81                                 | 36.0 Qp         | 2.0 / 14.1 / 27.3                        | 24.8            | H / 1.6 / 270.0             | -21.2                       | N/A                         |
| 959.98                                 | 25.9 Qp         | 3.7 / 22.4 / 27.3                        | 24.7            | V / 1.0 / 90.0              | -21.3                       | N/A                         |
| 790.25                                 | 28.3 Qp         | 3.3 / 20.6 / 27.8                        | 24.4            | H / 2.5 / 0.0               | -21.6                       | N/A                         |
| 620.91                                 | 30.7 Qp         | 2.9 / 18.9 / 28.2                        | 24.3            | V / 1.0 / 270.0             | -21.7                       | N/A                         |
| 148.22                                 | 35.4 Qp         | 1.3 / 12.3 / 27.7                        | 21.3            | V / 1.0 / 0.0               | -22.2                       | N/A                         |
| 5000.00                                | 33.6 Av         | 5.8 / 32.5 / 40.1                        | 31.8            | H / 1.0 / 0.0               | N/A                         | -22.2                       |
| 2344.01                                | 39.1 Av         | 3.2 / 27.5 / 38.5                        | 31.3            | V / 1.5 / 207.5             | N/A                         | -22.7                       |
| 4900.00                                | 33.6 Av         | 5.7 / 32.4 / 40.5                        | 31.2            | V / 1.0 / 0.0               | N/A                         | -22.8                       |
| 299.82                                 | 34.0 Qp         | 1.9 / 13.8 / 27.1                        | 22.5            | H / 1.6 / 270.0             | -23.5                       | N/A                         |
| 290.19                                 | 34.2 Qp         | 1.9 / 13.3 / 27.0                        | 22.4            | V / 1.0 / 270.0             | -23.6                       | N/A                         |
| 4500.00                                | 34.4 Av         | 5.2 / 31.3 / 40.7                        | 30.2            | H / 1.0 / 0.0               | N/A                         | -23.8                       |
| 313.57                                 | 33.0 Qp         | 1.9 / 14.2 / 27.2                        | 22.1            | V / 1.0 / 0.0               | -23.9                       | N/A                         |
| 4600.00                                | 34.0 Av         | 5.3 / 31.4 / 40.8                        | 30.0            | V / 1.0 / 0.0               | N/A                         | -24.0                       |
| 4100.00                                | 33.5 Av         | 4.8 / 31.4 / 40.4                        | 29.3            | V / 1.0 / 0.0               | N/A                         | -24.7                       |
| 1354.71                                | 40.3 Av         | 2.4 / 24.1 / 37.7                        | 29.1            | V / 1.0 / 0.0               | N/A                         | -24.9                       |
| 2333.45                                | 37.0 Av         | 3.2 / 27.4 / 38.4                        | 29.1            | V / 1.0 / 0.0               | N/A                         | -24.9                       |
| 4000.00                                | 32.6 Av         | 4.8 / 31.4 / 39.9                        | 28.9            | H / 1.0 / 0.0               | N/A                         | -25.1                       |
| 79.95                                  | 35.0 Qp         | 0.9 / 6.8 / 28.1                         | 14.6            | V / 1.0 / 0.0               | -25.4                       | N/A                         |
| 219.87                                 | 36.0 Qp         | 1.6 / 10.3 / 27.2                        | 20.6            | H / 2.5 / 90.0              | -25.4                       | N/A                         |
| 1693.40                                | 37.8 Av         | 2.7 / 25.5 / 37.6                        | 28.4            | V / 1.0 / 180.0             | N/A                         | -25.6                       |

| FREQ<br>(MHz) | LEVEL<br>(dBuV) | CABLE / ANT / PREAMP<br>(dB) (dB\m) (dB) | FINAL<br>(dBuV) | POL / HGT / AZ<br>(m) (DEG) | DELTA1 (dB)<br>15.209 <1GHz | DELTA2 (dB)<br>15.209 >1GHz |
|---------------|-----------------|--|-----------------|-----------------------------|-----------------------------|-----------------------------|
| 338.67        | 31.5 Qp         | 2.0 / 14.1 / 27.2                        | 20.3            | V / 1.0 / 270.0             | -25.7                       | N/A                         |
| 1128.93       | 40.5 Av         | 2.1 / 23.7 / 38.3                        | 28.0            | V / 1.0 / 180.0             | N/A                         | -26.0                       |
| 329.84        | 31.3 Qp         | 2.0 / 13.7 / 27.2                        | 19.8            | H / 2.5 / 270.0             | -26.2                       | N/A                         |
| 1806.30       | 36.5 Av         | 2.8 / 26.5 / 38.1                        | 27.8            | V / 1.0 / 180.0             | N/A                         | -26.2                       |
| 1749.84       | 36.0 Av         | 2.7 / 26.3 / 37.9                        | 27.2            | V / 1.0 / 180.0             | N/A                         | -26.8                       |
| 185.00        | 30.1 Qp         | 1.4 / 12.5 / 27.5                        | 16.6            | H / 2.5 / 0.0               | -26.9                       | N/A                         |
| 234.00        | 34.0 Qp         | 1.7 / 10.6 / 27.2                        | 19.1            | V / 1.0 / 0.0               | -26.9                       | N/A                         |
| 179.90        | 30.0 Qp         | 1.4 / 12.3 / 27.4                        | 16.3            | V / 1.0 / 90.0              | -27.2                       | N/A                         |
| 1665.17       | 36.4 Av         | 2.7 / 25.3 / 37.5                        | 26.8            | V / 1.0 / 180.0             | N/A                         | -27.2                       |
| 35.00         | 28.2 Qp         | 0.6 / 12.0 / 28.2                        | 12.6            | H / 2.5 / 0.0               | -27.4                       | N/A                         |
| 1072.48       | 39.0 Av         | 2.1 / 23.9 / 38.4                        | 26.5            | H / 1.1 / 16.6              | N/A                         | -27.5                       |
| 1241.83       | 38.0 Av         | 2.2 / 24.3 / 38.1                        | 26.4            | V / 1.0 / 0.0               | N/A                         | -27.6                       |
| 1580.50       | 36.5 Av         | 2.6 / 24.6 / 37.4                        | 26.4            | V / 1.0 / 180.0             | N/A                         | -27.6                       |
| 1636.95       | 36.0 Av         | 2.6 / 25.1 / 37.5                        | 26.3            | V / 1.0 / 180.0             | N/A                         | -27.7                       |
| 1185.37       | 38.2 Av         | 2.2 / 23.9 / 38.3                        | 26.1            | V / 1.0 / 0.0               | N/A                         | -27.9                       |
| 1298.27       | 37.2 Av         | 2.3 / 24.2 / 37.9                        | 25.9            | H / 1.0 / 220.7             | N/A                         | -28.1                       |
| 1608.72       | 35.8 Av         | 2.6 / 24.8 / 37.4                        | 25.7            | V / 1.0 / 0.0               | N/A                         | -28.3                       |
| 2124.50       | 33.6 Av         | 3.1 / 26.7 / 38.2                        | 25.2            | H / 1.0 / 0.0               | N/A                         | -28.8                       |
| 224.29        | 32.5 Qp         | 1.6 / 10.4 / 27.3                        | 17.1            | H / 2.5 / 90.0              | -28.9                       | N/A                         |
| 1213.99       | 36.8 Av         | 2.2 / 24.2 / 38.2                        | 24.9            | V / 1.0 / 0.0               | N/A                         | -29.1                       |
| 1016.04       | 35.8 Av         | 2.0 / 23.4 / 38.2                        | 23.0            | V / 1.0 / 180.0             | N/A                         | -31.0                       |
|               |                 |  |                 |                             |                             |                             |

**Fundamental field strength  
And  
Harmonics of the Fundamental**

**15.249**

# Field Strength Measurements

## Fundamental and Spurious of the Transmitter

|                  |                           |            |                      |  |                    |                |                  |  |
|------------------|---------------------------|------------|----------------------|--|--------------------|----------------|------------------|--|
| Test Report #:   | 3166782                   | Test Area: | Pinewood Site 1 (3m) |  | Temperature:       | 23.9           | °C               |  |
| Test Method:     | FCC CFR47 Part 15.249     | Test Date: | 29-Oct-2008          |  | Relative Humidity: | 20.3           | %                |  |
| EUT Model #:     | Homebase HB100            | EUT Power: | 120VAC; 60Hz         |  | Air Pressure:      | 81             | kPa              |  |
| EUT Serial #:    | 6100021                   |            |                      |  |                    |                | Page:            |  |
| Manufacturer:    | BI                        |            |                      |  |                    |                | Level Key        |  |
| EUT Description: | Alcohol Monitoring System |            |                      |  |                    | Pk – Peak      | Nb – Narrow Band |  |
| Notes:           |                           |            |                      |  |                    | Qp – QuasiPeak | Bb – Broad Band  |  |
|                  |                           |            |                      |  | Av - Average       |                |                  |  |

| FREQ  | LEVEL  | CABLE / ANT /<br>PREAMP | FINAL  | POL / HGT / AZ | Duty Cycle<br>Correction | Final Corrected | Limit    | DELTA |
|-------|--------|-------------------------|--------|----------------|--------------------------|-----------------|----------|-------|
| (MHz) | (dBuV) | (dB) (dB\m) (dB)        | (dBuV) | (m) (DEG)      | (dB)                     | (dBuV/m)        | (dBuV/m) | (dB)  |

**Averaging method for pulsed signals and calculation in accordance to FCC CFR47 Part 15.35 utilized to calculate field strength emissions.**

The testing performed in accordance to FCC CFR47 Part 15.205 (restricted bands of operation) and 15.249 emissions and delta limits were calculated as follows:

Final Corrected Peak Measurement – Duty Cycle Correction Factor\* = Final Calculated Emission

The Final Calculated Emission was then compared to the Limits in CFR47 Part 15.209 and 15.249 and the emission/limit delta was calculated, the DTCF is calculated as follows  $20 * \log_{10}(\text{duty cycle in 100mS})$  "not to exceed 20dB"

EUT is flat on the table as specified by the manufacturer

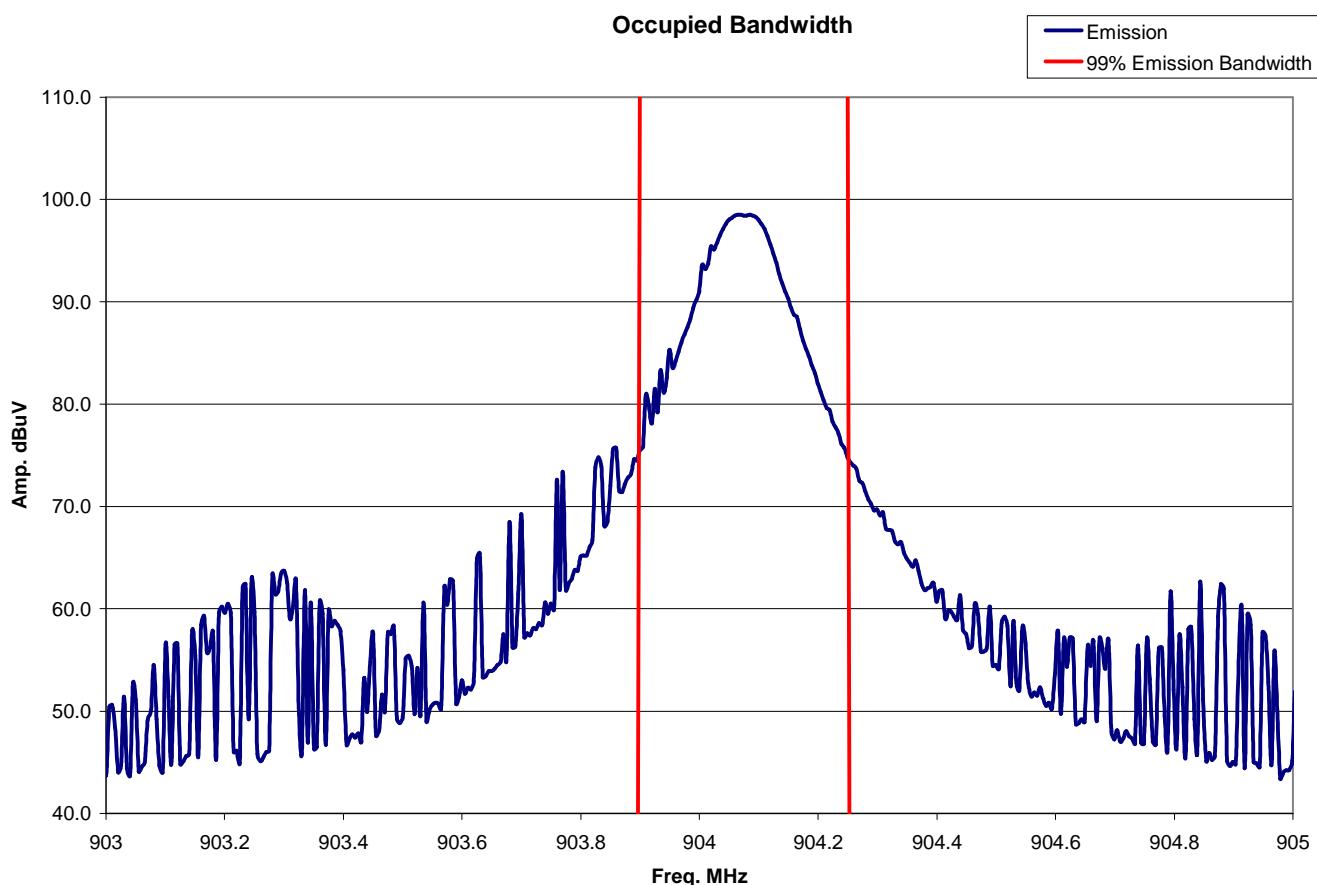
|         |         |                   |      |                 |     |      |    |       |
|---------|---------|-------------------|------|-----------------|-----|------|----|-------|
| 904.06  | 63.8 Pk | 3.6 / 22.2 / 0.0  | 89.5 | H / 1.6 / 120.0 | 0.0 | 89.5 | 94 | -4.5  |
| 904.07  | 66.6 Pk | 3.6 / 22.2 / 0.0  | 92.3 | V / 1.0 / 99.9  | 0.0 | 92.3 | 94 | -1.7  |
| 1808.15 | 52.0 Pk | 2.8 / 26.5 / 38.1 | 43.3 | V / 1.3 / 139.4 | 0.0 | 43.3 | 54 | -10.7 |
| 1808.2  | 54.2 Pk | 2.8 / 26.5 / 38.1 | 45.4 | H / 1.0 / 242.4 | 0.0 | 45.4 | 54 | -8.6  |
| 2712.22 | 60.2 Pk | 3.5 / 28.3 / 38.1 | 53.8 | V / 1.9 / 17.8  | 0.0 | 53.8 | 54 | -0.2  |
| 2712.23 | 56.0 Pk | 3.5 / 28.3 / 38.1 | 49.6 | H / 1.1 / 120.4 | 0.0 | 49.6 | 54 | -4.4  |
| 3616.3  | 49.2 Pk | 4.5 / 30.9 / 38.5 | 46.1 | V / 1.4 / 40.3  | 0.0 | 46.1 | 54 | -7.9  |
| 3616.36 | 47.8 Pk | 4.5 / 30.9 / 38.5 | 44.6 | H / 1.1 / 141.1 | 0.0 | 44.6 | 54 | -9.4  |
| 4520.38 | 43.5 Pk | 5.3 / 31.3 / 40.7 | 39.4 | H / 1.5 / 232.5 | 0.0 | 39.4 | 54 | -14.6 |
| 4520.45 | 44.6 Pk | 5.3 / 31.3 / 40.7 | 40.5 | V / 1.3 / 293.5 | 0.0 | 40.5 | 54 | -13.5 |
| 5424.53 | 47.5 Pk | 6.0 / 33.3 / 39.9 | 47   | H / 1.5 / 80.8  | 0.0 | 47.0 | 54 | -7.0  |
| 5424.56 | 49.4 Pk | 6.0 / 33.3 / 39.9 | 48.8 | V / 1.7 / 65.1  | 0.0 | 48.8 | 54 | -5.2  |
| 6328.53 | 39.2 Pk | 6.6 / 33.8 / 40.4 | 39.2 | V / 1.3 / 63.1  | 0.0 | 39.2 | 54 | -14.8 |
| 6328.65 | 36.6 Pk | 6.6 / 33.8 / 40.4 | 36.6 | H / 1.3 / 222.3 | 0.0 | 36.6 | 54 | -17.4 |
| 7232.57 | 44.9 Pk | 7.3 / 35.9 / 39.9 | 48.2 | H / 1.1 / 223.5 | 0.0 | 48.2 | 54 | -5.8  |
| 7232.58 | 43.8 Pk | 7.3 / 35.9 / 39.9 | 47.1 | V / 1.4 / 306.0 | 0.0 | 47.1 | 54 | -6.9  |
| 8136.72 | 44.4 Pk | 7.8 / 36.3 / 47.5 | 40.9 | H / 1.0 / 0.0   | 0.0 | 40.9 | 54 | -13.1 |
| 8136.72 | 41.5 Pk | 7.8 / 36.3 / 47.5 | 38   | V / 1.0 / 0.0   | 0.0 | 38.0 | 54 | -16.0 |
| 9040.79 | 46.1 Pk | 8.4 / 36.6 / 48.5 | 42.7 | H / 1.0 / 0.0   | 0.0 | 42.7 | 54 | -11.3 |
| 9040.79 | 43.6 Pk | 8.4 / 36.6 / 48.5 | 40.2 | V / 1.0 / 0.0   | 0.0 | 40.2 | 54 | -13.8 |

# Occupied Bandwidth

|                  |                           |            |                      |                    |      |     |
|------------------|---------------------------|------------|----------------------|--------------------|------|-----|
| Test Report #:   | 3166782                   | Test Area: | Pinewood Site 1 (3m) | Temperature:       | 23.7 | °C  |
| Test Method:     | RSS-GEN                   | Test Date: | 29-Oct-2008          | Relative Humidity: | 19.9 | %   |
| EUT Model #:     | Homebase HB100            | EUT Power: | 120VAC; 60Hz         | Air Pressure:      | 101  | kPa |
| EUT Serial #:    | 6100021                   |            |                      |                    |      |     |
| Manufacturer:    | BI                        |            |                      |                    |      |     |
| EUT Description: | Alcohol Monitoring System |            |                      |                    |      |     |
| Notes:           |                           |            |                      |                    |      |     |

Nb – Narrow Band  
 Qp – QuasiPeak      Bb – Broad Band  
 Av - Average

The 99% emission bandwidth is 350kHz



## **List of Equipment Utilized for Final Test**

# Project Report

**Begin Date:** 10/29/2008

**End Date:** 10/31/2008

**Technician** Ty Orosco

**Project** 3166782

| Capital Asset ID | Manufacturer      | Model #        | Serial #   | Description                             | Test Performed        | Service Type | Service Date | Service Due |
|------------------|-------------------|----------------|------------|---|-----------------------|--------------|--------------|-------------|
| 18730            | Hewlett-Packard   | 11947A         | 2820A00277 | Transient Limiter                       | C Conducted Emissions | For Ver      | 3/4/2008     | 3/4/2009    |
| 18890            | RHODE & SCHWARZ   | ESH2-Z5        | 830364/002 | LISN 50 ohm/50uH 3 line (1kHz - 30 MHz) | C Conducted Emissions | For Ver      | 3/6/2008     | 3/6/2009    |
| 18909            | RHODE & SCHWARZ   | ESHS 30        | 842806/001 | EMI Test Receiver                       | C Conducted Emissions | For Cal      | 2/20/2008    | 2/20/2009   |
| 18880            | Hewlett-Packard   | 85650A         | 2811A01300 | Q.P Adapter                             | R Radiated Emissions  | For Cal      | 11/15/2007   | 11/15/2008  |
| 18882            | Hewlett-Packard   | 8566B          | 2410A00154 | Spectrum Analyzer (dc-22 GHz)           | R Radiated Emissions  | For Cal      | 11/13/2007   | 11/13/2008  |
| 18886            | TENSOR            | 4105           | 2020       | Ridged Guide Antenna 1-18GHz            | R Radiated Emissions  | For Cal      | 3/6/2008     | 3/6/2009    |
| 18888            | EMCO              | 3146           | 9402-3775  | Log Periodic Antenna (200-1000MHz)      | R Radiated Emissions  | For Cal      | 11/8/2007    | 11/8/2008   |
| 18889            | EMC TEST SYSTEMS  | 3109           | 3142       | Biconical Antenna 30-300MHz             | R Radiated Emissions  | For Cal      | 11/11/2007   | 11/11/2008  |
| 18900            | Avantek           | AFT97-8434-10F | 1007       | RF Pre-Amplifier (4-8 GHz)              | R Radiated Emissions  | For Ver      | 5/2/2008     | 5/2/2009    |
| 18901            | Avantek           | AWT-18037      | 1002       | RF Pre-Amplifier (8-18 GHz)             | R Radiated Emissions  | For Ver      | 5/2/2008     | 5/2/2009    |
| 18906            | Mini-Circuits Lab | ZHL-42         | N052792-2  | Amplifier                               | R Radiated Emissions  | For Ver      | 5/2/2008     | 5/2/2009    |
| 18912            | Hewlett-Packard   | 8447F          | 3113A05545 | 9 kHz- 1.3GHz Pre Amp                   | R Radiated Emissions  | For Ver      | 5/2/2008     | 5/2/2009    |

## **Appendix B**

Test Plan

and

Constructional Data Form

# Request for Quotation and Test Plan (Non Medical Devices)

## Contact Information:

|                |  |
|----------------|--|
| Company:       | BI   |
| Address:       | 6400 Lookout Road, Boulder, CO 80301   |
| Contact:       | HIGHTec Consulting, Inc., Kevin J. Hight                                     |
| Title:         | President  |
| Phone Number:  | 303-633-5444   |
| Fax Number:    | 720-304-8724   |
| Email Address: | <a href="mailto:Kevin@HIGHTecConsulting.com">Kevin@HIGHTecConsulting.com</a> |

|   |  |                            |  |
|---|--|----------------------------|--|
| Date samples and documentation will be ready for testing: |  | Requested completion date: |  |
|---|--|----------------------------|--|

Please fill out the pertinent pages within this document and email this form to Bryant Hart at [Bryant.Hart@Intertek.com](mailto:Bryant.Hart@Intertek.com) for a quotation. Pages that do not pertain to your device can be left blank.

This document is compiled as a WORD FORM. To enable the FORM tool, right click on the tool bar and select FORMS. You will then be able to add attachments, drawings etc by clicking on the "Lock" Graphic to unlock the FORM document. To make all the check boxes work within the FORM, the "Lock" graphic must be selected.

## Estimates Requested:

|   |  |
|---|--|
| <b>EMC Testing and Services</b>                                     |  |
| <input checked="" type="checkbox"/> Compliance Testing              | <input type="checkbox"/> Compliance testing at your location     |
| <input type="checkbox"/> Pre-Compliance Scans / Engineering testing | <input type="checkbox"/> Pre-Compliance testing at your location |

## Radio Device Testing and Certification

|   |   |
|---|---|
| <input checked="" type="checkbox"/> FCC Certification | <input checked="" type="checkbox"/> Canada Certification (Transmitters and Receivers) |
| <input type="checkbox"/> Europe                       | <input checked="" type="checkbox"/> TCB Services                                      |

## Safety Testing and Certification

|  |  |
|--|--|
| <input type="checkbox"/> ETL Listing For US        | <input type="checkbox"/> ETL Listing for Canada    |
| <input type="checkbox"/> Preliminary Design Review | <input type="checkbox"/> CB Report and Certificate |
| <input type="checkbox"/> CE Testing for Europe     | <input type="checkbox"/> Other:                    |

## Additional Services

|   |  |
|---|--|
| <input type="checkbox"/> Global Market Access Program   | <input type="checkbox"/> Energy Star Compliance                                |
| <input type="checkbox"/> IntertekCheck Performance Mark | <input type="checkbox"/> Green Services (RoHS, WEEE, REACH, Prop. 65)          |
| <input type="checkbox"/> Environmental Testing          | <input type="checkbox"/> Hazardous Location (Intrinsic Safety, Ex-Proof, ATEX) |
| <input type="checkbox"/> Shock and Vibration Testing    | <input type="checkbox"/> Other:  |

## General Product Information: (Required for all Devices)

|  |  |                           |             |
|--|--|---------------------------|-------------|
| Product/Model Number(s):   | Dual Mode FMD (Fixed Monitoring Device) & TAD (Transthermic Alcohol Device)  |                           |             |
| Description of product(s):<br>Please provide product literature if available.  | <p>The Dual Mode FMD is the Home based box which interfaces with the TAD. The FMD receives data in the 310 MHz to 320 MHz range and in the 902 MHz to 928 MHz. The frequencies will operate at one fixed frequency within these ranges, depending on location.</p> <p>The TAD receives in the range of 902 MHz to 928 MHz. It also transmits data to the FMD in this same frequency range. The TAD also Transmits in the 310 MHz to 320 MHz range.</p> |                           |             |
| Intended Use:  | <input checked="" type="checkbox"/> Household/Office <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial   |                           |             |
| Intended Location:   | <input checked="" type="checkbox"/> Dry <input type="checkbox"/> Damp <input type="checkbox"/> Wet <input type="checkbox"/> Hazardous Location   |                           |             |
| Product Type:  | <input checked="" type="checkbox"/> Prototype <input type="checkbox"/> Production Sample <input type="checkbox"/> Revision of already listed product   |                           |             |
| If part of a system, please describe system parts and accessories:   |  |                           |             |
| If there is more than one product/model what are the differences?  |  |                           |             |
| Is the Product Enclosure: <input type="checkbox"/> Metal <input checked="" type="checkbox"/> Plastic <input type="checkbox"/> Both   |  |                           |             |
| Size:  | FMD is a desktop unit  | TAD is an ankle bracelet: | Weight: TBD |
| <input checked="" type="checkbox"/> AC Wall Adapter<br><input type="checkbox"/> AC Internal Power Supply<br><input checked="" type="checkbox"/> Battery<br><input type="checkbox"/> External DC Power Supply | Rated Voltage: 115 VAC<br>Rated Current: < 3A<br># of Phases/Conductors: single<br># of Power Cords: 1   |                           |             |
| Are there multiple suppliers of power supplies?  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No<br>If Yes Please Describe:   |                           |             |
| Are there Multiple Modes of Operation?   |  |                           |             |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes Please Describe:  |  |                           |             |
| Is there programmable software?  |  |                           |             |
| <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  |  |                           |             |
| Can all modes of operation be operated simultaneously?   |  |                           |             |
| <input type="checkbox"/> Yes <input type="checkbox"/> No Explain: TBD  |  |                           |             |
| In which countries will you be selling the product? USA and Canada   |  |                           |             |

## EMC Specific Information: (Required only if EMC work is requested)

What EMC certifications are desired?

FCC/ICES (US & Canada)  
 CE (Europe)  
 BSMI (Taiwan)  
 VCCI (Japan)

SII (Israel)  
 AS/NZS (Australia/New Zealand)  
 Korea MIC Certification / RRL  
 Other: Please Specify

Highest frequency utilized for device operation:

928 MHz

List of Clock Frequencies: unknown

For each mode of operation, please list the amount of time required to notice degradation of performance (cycle time) immediate/realtim

Total Number of I/O Cables:

1

# Greater than 3m (9.75 feet) in Length

\_\_\_\_\_

# Greater than 30m (97.5 feet) in Length

\_\_\_\_\_

# of cables at a longer length (specify)

\_\_\_\_\_

Number of Earth Ground Connections (Do NOT include AC Mains Ground):

Please list all Ethernet, USB, Parallel and/or Telecommunications Ports and their function

One TELCO RG68 and One Cellular Module.

When the device is a compilation of subsystems (in separate chassis) how many interconnecting I/O cables are greater than 1 meter in length between the Subsystem chassis?

Please list any specific test requirements or standards:

Unknown

## General Safety Information: (Required only if Safety Listing/Certification/Testing is requested)

Please provide product literature or photos if possible.

What Safety certifications are desired?

- Listing US/Canada
- CB Certification (Worldwide outside of US/Canada)
- EU Investigation (EU – LVD/MDD)
- Field Label (Onsite Inspection)

- Limited Production Certification
- S Mark
- GS Mark
- Other: Please Specify

Please list all applicable safety standards that you would like your device certified under:

Has the device been tested and certified for product safety before?

- A. If it has been previously tested, to which standard and by which organization?
- B. Can you provide the test report?

Yes  No Standard tested to:

Tested by:

Yes  No

Can you provide manuals, installation instructions or data sheets at this time?

Yes  No

Power Supply Safety Information:

- A. Is the Power Supply Listed or Recognized?
- B. Can you provide the test report/CB Report?

Yes  No Standard tested to:

Tested by:

Yes  No

Does the device contain batteries?

Yes  No

What Type?

How Many?

What technology is used? (i.e., lasers, X Ray, resistance heating, etc.)

If Laser:

Class:

Output Power:

Beam Divergence Angle:

Wavelength:

Preferred testing location:

Intertek Local Lab  Customer site

First Available Intertek Lab

NEMA Rating:

IP Rating:

**Radio Specific Information:** (Required only if the device contains an intentional transmitter)

What Radio certifications are desired?

 FCC (USA)  
 Industry Canada  
 ETSI (R&TTE) Notified or Competent Body TCF Review  
 Other: Please Specify

Please list the particular radio standards that apply.

|   |  |                             |                     |
|---|--|-----------------------------|---------------------|
| Operating Frequency:  | 314 MHz and 904 MHz  |                             |                     |
| RF Output Power:  | unknown  |                             |                     |
| Is there an RF Conducted Port?  | <input checked="" type="checkbox"/> Yes                          | <input type="checkbox"/> No | Description:Antenna |
| Number of Antennas & Description:<br>(Internal, External, Known Gain, etc.) | Three internal   |                             |                     |
| Modulation Technique:   | Half-Duplex FSK  |                             |                     |
| Number of Channels/Number of Discrete frequencies per Channel:              | Only one will be used in each range and approved cellular module |                             |                     |
| Can the device be operated in CW Mode?                                      | <input type="checkbox"/> Yes                                     | <input type="checkbox"/> No | Unknown             |
| What is the lowest utilized frequency within the device?                    | Unknown  |                             |                     |

**Notes: Please ensure to bring a notch filter covering your fundamental operating frequency.**

## **Appendix C**

Measurement Protocol  
And  
Test Procedures

## MEASUREMENT PROTOCOL

### GENERAL INFORMATION

#### Test Methodology

Conducted and radiated emission testing is performed according to the procedures in ANSI C63.4 & CNS13438.

#### Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

### CONDUCTED EMISSIONS

The final level, expressed in dB $\mu$ V, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the applicable limit.

To convert between dB $\mu$ V and  $\mu$ V, the following conversions apply:

- $\text{dB}\mu\text{V} = 20(\log \mu\text{V})$
- $\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$

### RADIATED EMISSIONS

The final level, expressed in dB $\mu$ V/m, is arrived at by taking the reading from the spectrum analyzer (Level dB $\mu$ V) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has the applicable limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets in Attachment B.

*Example: At a Test Frequency of 30 MHz, with a peak reading on the spectrum analyzer or measuring receiver of 14 dB $\mu$ V:*

| Measured Level<br>(dB $\mu$ V) | + | Transducer & Cable Loss factor<br>(dB) | = | Corrected Reading<br>(dB $\mu$ V/m) | Specification Limit<br>(dB $\mu$ V/m) | - | Corrected Reading<br>(dB $\mu$ V/m) | = | Delta Specification<br>-11.1 |
|--------------------------------|---|--|---|-------------------------------------|---------------------------------------|---|-------------------------------------|---|------------------------------|
| 14.0                           |   | 14.9                                   |   | 28.9                                | 40.0                                  |   | 28.9                                |   |                              |

## DETAILS OF TEST PROCEDURES

### *General Standard Information*

The test methods used comply with ANSI C63.4-2003 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

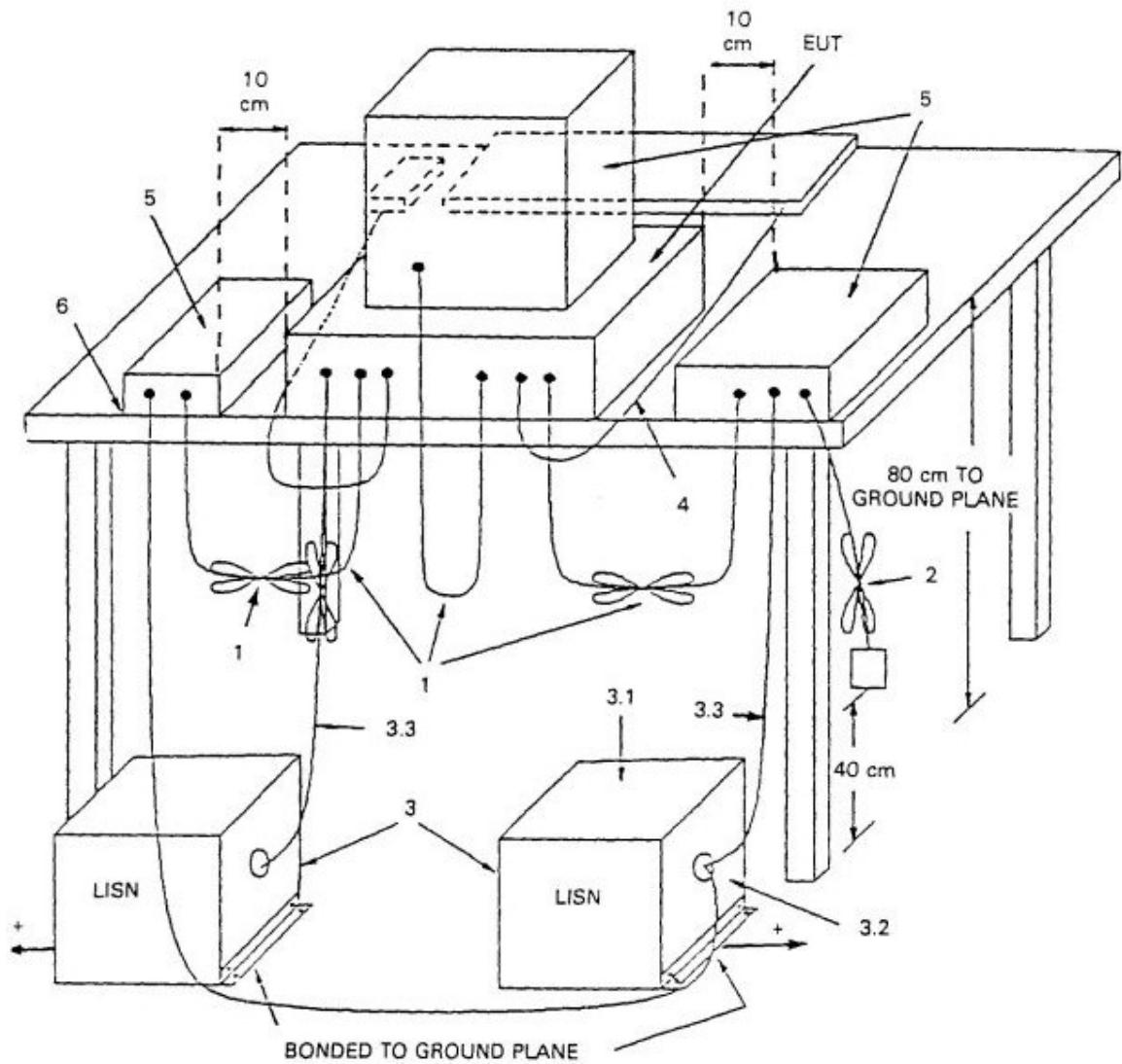
### **Conducted Emissions**

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω/50 µH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters from the vertical ground plane (wall) of the screen room. In some cases, a pre-scan using a spectrum analyzer is initially performed on the units comprising the system under test to locate the highest emissions. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are re-measured using a tuned receiver or spectrum analyzer with quasi-peak and average detection and recorded on the data sheets.

### **Radiated Emissions**

Radiated emissions from the EUT are measured in the frequency range of 30 to 22GHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees.

## Conducted Emissions Diagram:



## Radiated Emissions Diagram:

