# Test Report

**Industry Canada RSS-210 / FCC Part15.225**

| | | |
|---|---|---|
| Product Name | : | Sonim XPand NFC |
| Model No. | : | Sonim XPand NFC (B01V008AA) |
| FCC ID | : | WYPP25B005AN |
| IC | : | 8090A-P25B005AN |

| | | |
|---|---|---|
| Applicant | : | Sonim Technologies Inc |
| Address | : | 1875 S. Grant Street, Suite 620, San Mateo, CA 94402 USA |

| | | |
|---|---|---|
| Date of Receipt | : | 14/11/2011 |
| Test Date | : | 29/06/2011 ~ 08/07/2011 |
| Issued Date | : | 16/11/2011 |
| Report No. | : | 11BS039R-RF-US-P09V01 |
| Report Version | : | V1.0 |

This report was based on Quietek report No: 116S087R

# Test Report Certification

Issued Date : 16/11/2011
Report No. : 11BS039R-RF-US-P09V01

QuieTek

| | | |
|---|---|---|
| Product Name | : | Sonim XPand NFC |
| Applicant | : | Sonim Technologies Inc |
| Address | : | 1875 S. Grant Street, Suite 620, San Mateo, CA 94402 USA |
| Manufacturer | : | Baracoda Hong Kong Ltd |
| Address | : | Suite 1601, 16/F, The Centre Mark, 287-299 Queen's Road Central, Hong Kong |
| Factory | : | Shenzhen G-Link Co Ltd |
| Factory Address | : | 4/F, E Building, Huachuangda Technology Park, Hangcheng Road, Gushu, Xixinang |
| Model No. | : | Sonim XPand NFC (B01V008AA) |
| FCC ID | : | WYPP25B005AN |
| IC | : | 8090A-P25B005AN |
| Brand Name | : | Sonim |
| Applicable Standard | : | FCC CFR Title 47 Part 15 Subpart C: 2008<br>ANSI C63.4: 2009; ANSI C63.10: 2009<br>Industry Canada RSS-210 Issue 8<br>Industry Canada RSS-GEN Issue 3 |
| Test Result | : | Complied |
| Performed Location | : | Suzhou EMC Laboratory<br>No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou, China<br>TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098<br>FCC Registration Number: 800392; IC Lab Code: 4075B |

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(Senior Engineer: Jame Yuan)

Approved By : Marlin Chen
(Engineering Manager: Marlin Chen)

## Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

| | | |
|---|---|---|
| **Taiwan R.O.C.** | **:** | **BSMI, NCC, TAF** |
| **Germany** | **:** | **TUV Rheinland** |
| **Norway** | **:** | **Nemko, DNV** |
| **USA** | **:** | **FCC, NVLAP** |
| **Japan** | **:** | **VCCI** |

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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NVLAP Lab Code : 200347-0

1313

**LinKou Testing Laboratory :**
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NVLAP Lab Code: 200533-0

0914

**Suzhou (China) Testing Laboratory :**
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NVLAP Lab Code : 200743-0

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# 1. General Information

## 1.1. EUT Description

| | |
|---|---|
| Product Name | Sonim XPand NFC |
| Model No. | Sonim XPand NFC (B01V008AA) |
| Working Frequency | 13.56MHz |
| Antenna Type | Loop Antenna (PCB) |

## 1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in Mode 1: Transmit, which was shown in this test report and defined as:

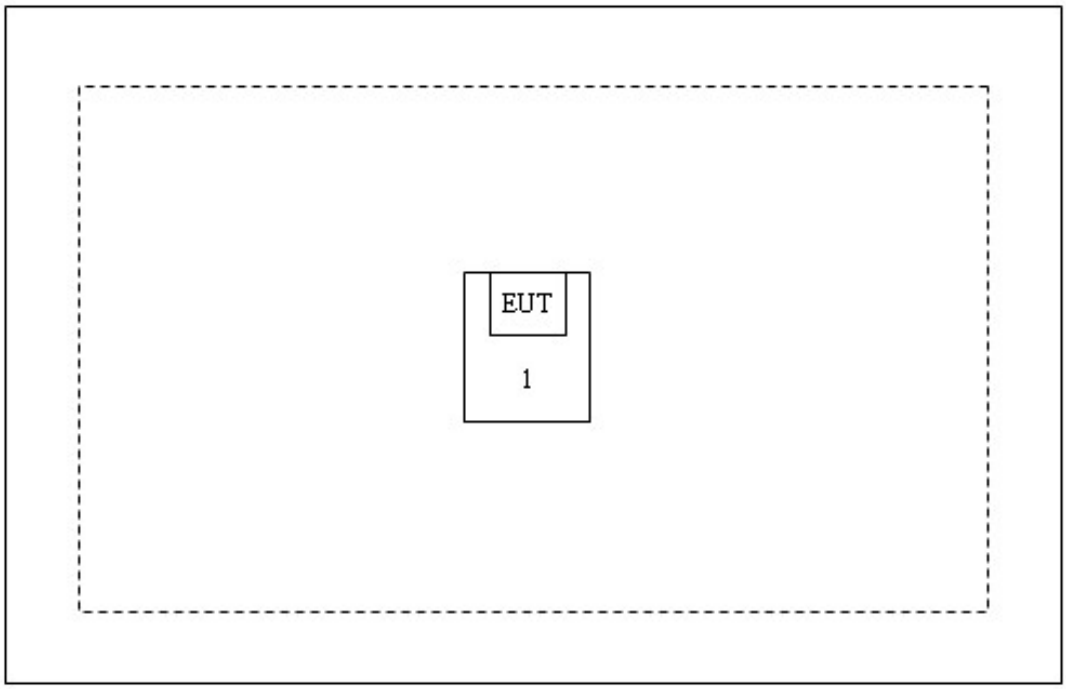
| Test Mode |
| --- |
| Mode 1: NFC Transmit |

## 1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

| Product | | Manufacturer | Model No. | Serial No. | Power Cord |
|---|---|---|---|---|---|
| 1 | GSM/UMTS mobile phone | Sonim | XP1301 | N/A | N/A |

## 1.4. Configuration of Tested System

| Connection Diagram |
|---|
|  |



| Signal Cable Type | | Signal cable Description |
|---|---|---|
| N/A | N/A | N/A |

## 1.5. EUT Exercise Software

| | |
|---|---|
| 1 | Setup the EUT and simulators as shown on above. |
| 2 | Turn on the power of equipment. |
| 3 | Make the EUT work on “NFC” mode. |

# 2. Technical Test

## 2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

| Performed Test Item | Normative References | Test Performed | Deviation |
|---|---|---|---|
| Conducted Emission | FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.207 | Yes | No |
| In-Band Emission | FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.225(a),(b),(c) | Yes | No |
| Out-Band Emission | FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.225(d) | Yes | No |
| 20dB Bandwidth | FCC CFR Title 47 Part 2 Subpart J: 2008 2.1049 | Yes | No |
| Frequnecy Stability Tolerance | FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.225(e) | Yes | No |

| Performed Test Item | Normative References | Test Performed | Deviation |
|---|---|---|---|
| Conducted Emission | RSS-GEN Issue 3 December 2010 Section 7.2.2 | Yes | No |
| In-Band Emission | RSS-210 Issue 8 December 2010 Section A2.6(a),(b),(c) | Yes | No |
| Out-Band Emission | RSS-210 Issue 8 December 2010 Section A2.6(d) | Yes | No |
| 20dB Bandwidth | RSS-210 Issue 8 December 2010 Section A8.5 | Yes | No |
| Frequnecy Stability Tolerance | RSS-210 Issue 8 December 2010 Section A2.6 | Yes | No |

## 2.2. Test Environment

| Items | Required (IEC 68-1) | Actual |
|---|---|---|
| Temperature (°C) | 15-35 | 21 |
| Humidity (%RH) | 25-75 | 50 |
| Barometric pressure (mbar) | 860-1060 | 950-1000 |

# 3. Conducted Emission

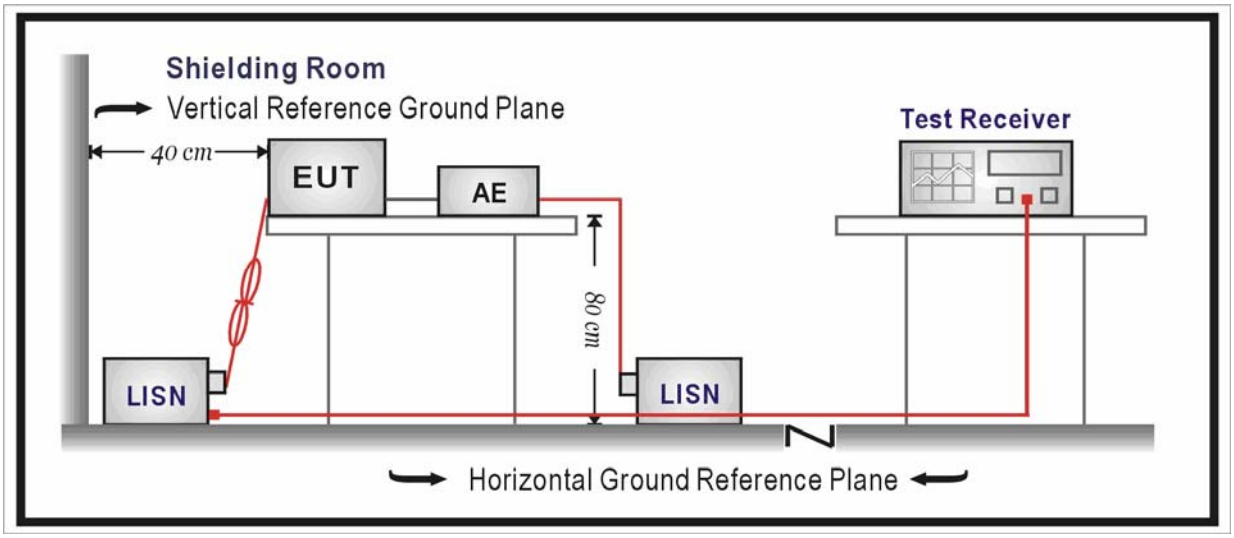
## 3.1. Test Equipment

Conducted Emission / TR-1

| Instrument | Manufacturer | Type No. | Serial No. | Cal. Due Date |
|---|---|---|---|---|
| EMI Test Receiver | R&S | ESCI | 100726 | 2012.04.23 |
| Two-Line V-Network | R&S | ENV216 | 100043 | 2012.04.29 |
| Two-Line V-Network | R&S | ENV216 | 100044 | 2011.09.07 |
| 50ohm Coaxial Switch | Anritsu | MP59B | 6200464462 | 2012.05.05 |
| 50ohm Termination | SHX | TF2 | 07081401 | 2011.09.27 |
| Temperature/Humidity Meter | zhicheng | ZC1-2 | TR1-TH | 2012.01.14 |

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

## 3.2. Test Setup



## 3.3. Limit

| FCC Part 15 Subpart C Paragraph 15.207 Limits | | |
|---|---|---|
| Frequency (MHz) | QP (dBuV) | AV (dBuV) |
| 0.15 - 0.50 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 56 | 46 |
| 5.0 - 30 | 60 | 50 |

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

## 3.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

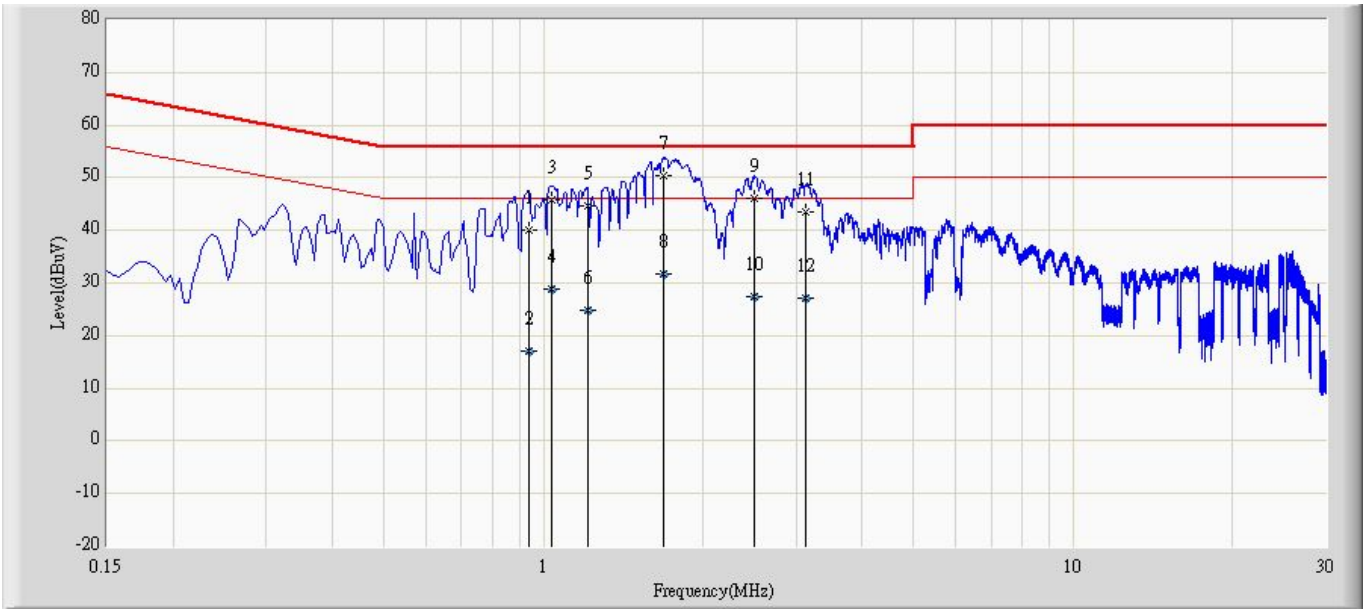
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

## 3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

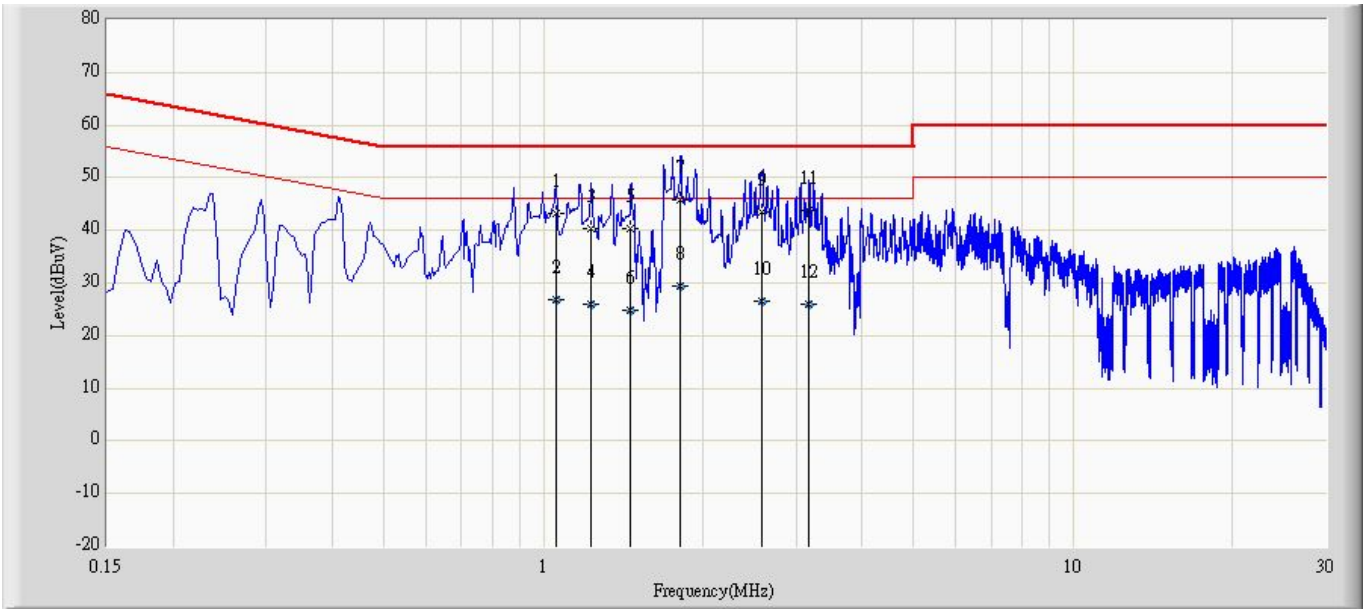
## 3.6. Test Result

| | |
|---|---|
| Profile: 116S087R | Page No.: 2 |
| Engineer: Jame | |
| Site: TR1 | Time: 2011/07/02 - 19:32 |
| Limit: FCC_Part15.207_CE_AC Power_ClassB | Margin: 0 |
| Probe: ENV216_101043(0.009-30MHz) | Polarity: Line |
| EUT: Sonim XPand NFC | Power: AC 120V/60Hz |
| Note: Mode 1: Transmit | |




| No | Mark | Frequency (MHz) | Measure Level (dBuV) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV) | Factor (dB) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0.938 | 40.007 | 30.323 | -15.993 | 56.000 | 9.684 | QP |
| 2 | | 0.938 | 17.143 | 7.459 | -28.857 | 46.000 | 9.684 | AV |
| 3 | | 1.034 | 45.674 | 35.993 | -10.326 | 56.000 | 9.681 | QP |
| 4 | | 1.034 | 28.765 | 19.084 | -17.235 | 46.000 | 9.681 | AV |
| 5 | | 1.210 | 44.747 | 35.061 | -11.253 | 56.000 | 9.686 | QP |
| 6 | | 1.210 | 24.946 | 15.259 | -21.054 | 46.000 | 9.686 | AV |
| 7 | * | 1.686 | 50.280 | 40.570 | -5.720 | 56.000 | 9.711 | QP |
| 8 | | 1.686 | 31.659 | 21.949 | -14.341 | 46.000 | 9.711 | AV |
| 9 | | 2.506 | 46.023 | 36.278 | -9.977 | 56.000 | 9.745 | QP |
| 10 | | 2.506 | 27.406 | 17.660 | -18.594 | 46.000 | 9.745 | AV |
| 11 | | 3.134 | 43.400 | 33.639 | -12.600 | 56.000 | 9.761 | QP |
| 12 | | 3.134 | 27.098 | 17.337 | -18.902 | 46.000 | 9.761 | AV |

| | |
|---|---|
| Profile: 116S087R | Page No.: 1 |
| Engineer: Jame | |
| Site: TR1 | Time: 2011/07/02 - 19:26 |
| Limit: FCC_Part15.207_CE_AC Power_ClassB | Margin: 0 |
| Probe: ENV216_101043(0.009-30MHz) | Polarity: Neutral |
| EUT: Sonim XPand NFC | Power: AC 120V/60Hz |
| Note: Mode 1: Transmit | |




| No | Mark | Frequency (MHz) | Measure Level (dBuV) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV) | Factor (dB) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 1.054 | 43.078 | 33.396 | -12.922 | 56.000 | 9.682 | QP |
| 2 | | 1.054 | 26.841 | 17.159 | -19.159 | 46.000 | 9.682 | AV |
| 3 | | 1.230 | 40.293 | 30.606 | -15.707 | 56.000 | 9.687 | QP |
| 4 | | 1.230 | 26.037 | 16.350 | -19.963 | 46.000 | 9.687 | AV |
| 5 | | 1.462 | 40.305 | 30.580 | -15.695 | 56.000 | 9.725 | QP |
| 6 | | 1.462 | 24.853 | 15.127 | -21.147 | 46.000 | 9.725 | AV |
| 7 | * | 1.814 | 45.742 | 36.027 | -10.258 | 56.000 | 9.714 | QP |
| 8 | | 1.814 | 29.487 | 19.772 | -16.513 | 46.000 | 9.714 | AV |
| 9 | | 2.582 | 43.615 | 33.869 | -12.385 | 56.000 | 9.746 | QP |
| 10 | | 2.582 | 26.619 | 16.873 | -19.381 | 46.000 | 9.746 | AV |
| 11 | | 3.178 | 43.874 | 34.112 | -12.126 | 56.000 | 9.762 | QP |
| 12 | | 3.178 | 26.054 | 16.292 | -19.946 | 46.000 | 9.762 | AV |

# 4. In-band Emission

## 4.1. Test Equipment

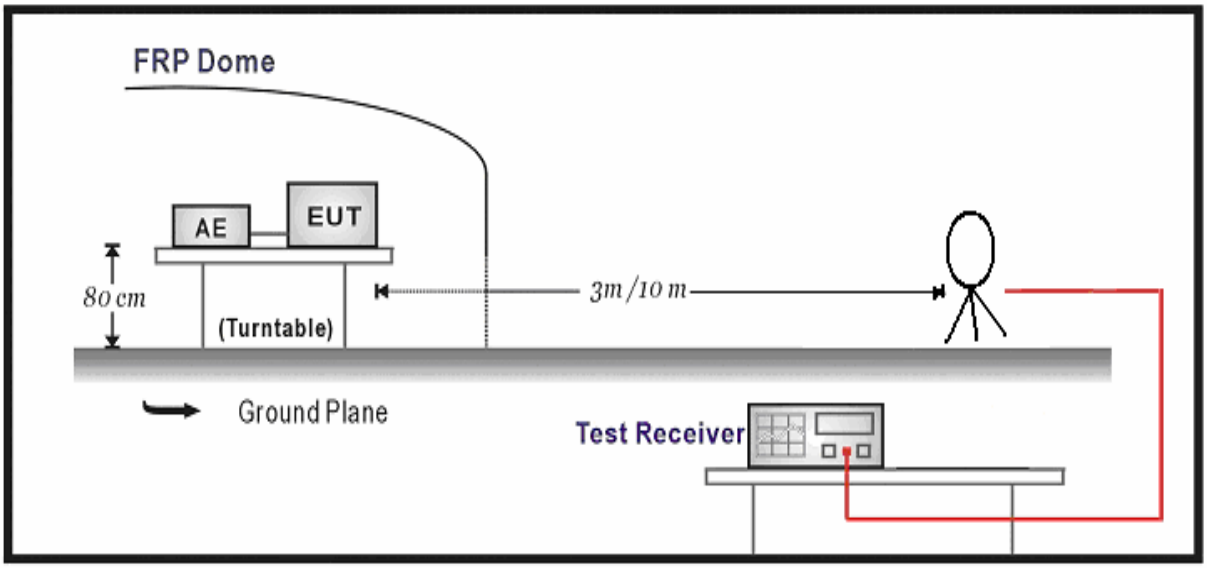
☒In-band Emission / AC-2

| Instrument | Manufacturer | Type No. | Serial No. | Cal. Due Date |
|---|---|---|---|---|
| EMI Test Receiver | R&S | ESCI | 100573 | 2012.04.23 |
| Bilog Antenna | Teseq GmbH | CBL6112D | 27611 | 2011.10.18 |
| Loop Antenna | R&S | HFH2-Z2 | 833799/003 | 2011.11.22 |
| Broad-Band Horn Antenna | Schwarzbeck | BBHA9120D | 499 | 2012.06.11 |
| Coaxial Cable | Huber+Suhner | SUCOFLEX 106 | AC2-C | 2012.03.08 |
| Temperature/Humidity Meter | Zhicheng | ZC1-2 | AC2-TH | 2012.01.14 |

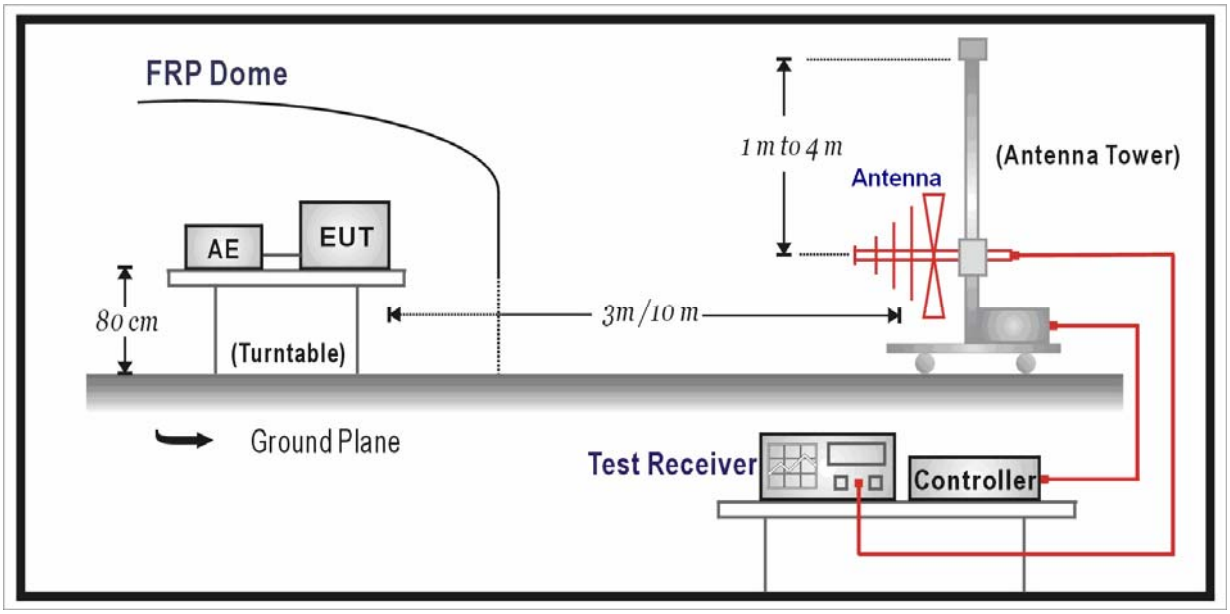
Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

## 4.2. Test Setup

Below 30MHz Test Setup:




Below 1GHz Test Setup:



## 4.3. Limit

| FCC Part 15 Subpart C Paragraph 15.225 | | |
|---|---|---|
| Frequency (MHz) | Distance (m) | Level (uV/m) |
| 13.553 ~13.567 | 30 | 15,848 |
| 13.410 ~13.553<br>13.567 ~13.710 | 30 | 334.5 |
| 13.110 ~13.410<br>13.710 ~14.010 | 30 | 106 |

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

## 4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2009 on radiated measurement.

The EUT should be operate in transmission mode.

## 4.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB

below 1G is defined as ± 3.8 dB

## 4.6. Test Result

All of the test result shown indicates the worst case.
Frequency: 13.56MHz
Measurement Distance: 3 Meters

| Face On | | | | | |
|---|---|---|---|---|---|
| Frequency | Reading Level(dBuV/m) | Factor | Measure Level(dBuV/m) | Limit(3m) [dBuV/m] | Margin [dB] |
| 13.130 | 9.82 | 20.11 | 29.93 | 80.51 | -50.58 |
| 13.462 | 6.94 | 20.15 | 27.09 | 90.47 | -63.38 |
| 13.56012 | 29.34 | 20.16 | 49.50 | 123.99 | -74.49 |
| 13.605 | 21.86 | 20.16 | 42.02 | 90.47 | -48.45 |
| 13.930 | 7.80 | 20.12 | 27.92 | 80.51 | -52.59 |
| Face Off | | | | | |
| Frequency | Reading Level(dBuV/m) | Factor | Measure Level(dBuV/m) | Limit(3m) [dBuV/m] | Margin [dB] |
| 13.195 | 8.50 | 20.12 | 28.62 | 80.51 | -51.89 |
| 13.495 | 7.21 | 20.15 | 27.36 | 90.47 | -63.11 |
| 13.56011 | 28.71 | 20.16 | 48.87 | 123.99 | -75.12 |
| 13.615 | 25.42 | 20.17 | 45.59 | 90.47 | -44.88 |
| 13.792 | 7.88 | 20.19 | 28.07 | 80.51 | -52.44 |

Notes:

1. All measurements were performed using a loop antenna. The antenna was positioned in two orthogonal (face on and face off) and the position with the highest emission level was recorded.
2. Measurements were perfored at 3m and the data was extrapolated to the specified measurement distance of 30m using the square of an inverse linear extrapolation factor (40 dB/decade) as specified in &15.31(f)(2).
   Extrapolation Factor = 40 * LOG(30/3) = 40 dB
3. All measurements were recorded using a EMI test receiver employing a peak detector.

# 5. Out-band Spurious

## 5.1. Test Equipment

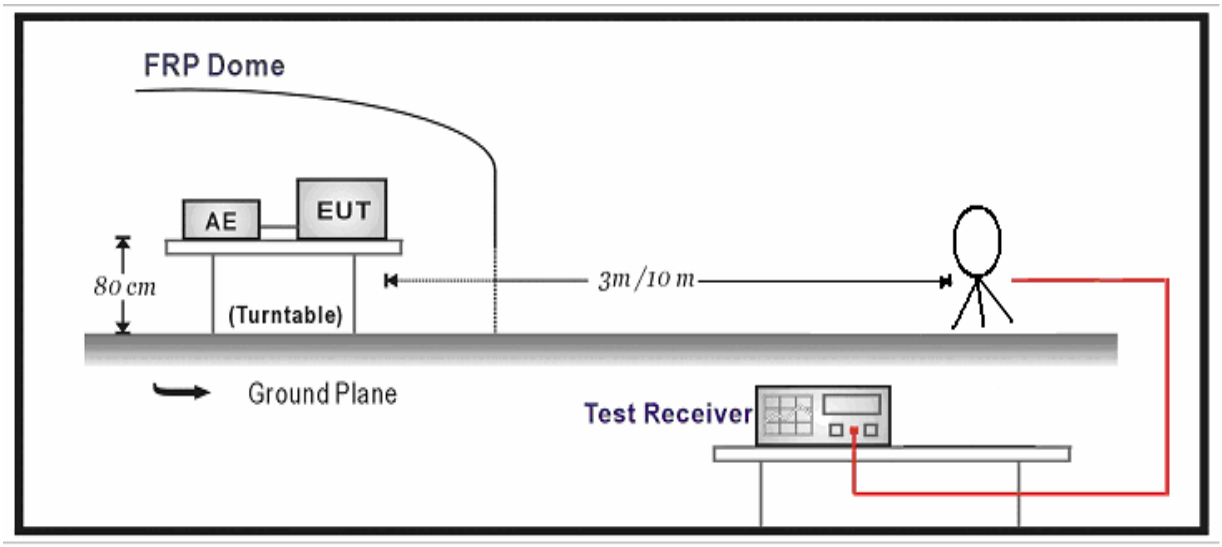
☒Out-band Emission / AC-2

| Instrument | Manufacturer | Type No. | Serial No. | Cal. Due Date |
|---|---|---|---|---|
| EMI Test Receiver | R&S | ESCI | 100573 | 2012.04.23 |
| Bilog Antenna | Teseq GmbH | CBL6112D | 27611 | 2011.10.18 |
| Loop Antenna | R&S | HFH2-Z2 | 833799/003 | 2011.11.22 |
| Broad-Band Horn Antenna | Schwarzbeck | BBHA9120D | 499 | 2012.06.11 |
| Coaxial Cable | Huber+Suhner | SUCOFLEX 106 | AC2-C | 2012.03.08 |
| Temperature/Humidity Meter | Zhicheng | ZC1-2 | AC2-TH | 2012.01.14 |

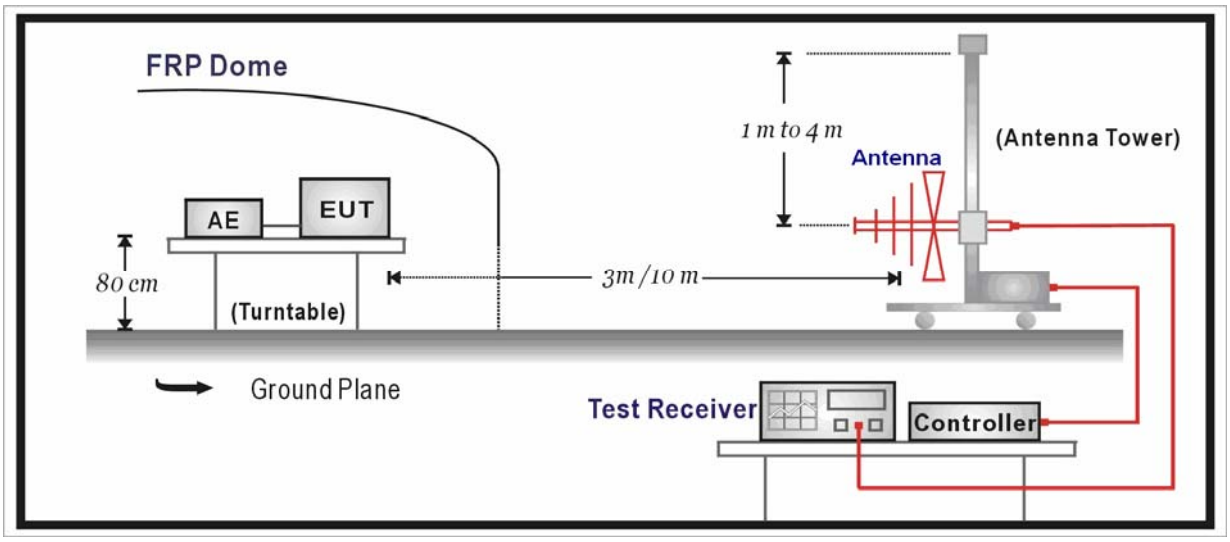
Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

## 5.2. Test Setup

Below 30MHz Test Setup:




Below 1GHz Test Setup:



## 5.3. Limit

| FCC Part 15 Subpart C Paragraph 15.209 | | |
|---|---|---|
| Frequency (MHz) | Distance (m) | Level (uV/m) |
| 0.009 – 0.490 | 300 | 2400/F (kHz) |
| 0.490 – 1.705 | 30 | 2400/F (kHz) |
| 1.705 – 30 | 30 | 30 |
| 30 - 88 | 3 | 100 |
| 88 - 216 | 3 | 150 |
| 216 - 960 | 3 | 200 |
| Above 960 | 3 | 500 |

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

## 5.4. Test Procedure

The EUT was tested from 9kHz up to the 1GHz excluding the band 13.110-14.010 MHz. All measurements were recorded with a spectrum analyzer employing an average detector for emissions below 30MHz. Above 30MHz a Quasi-peak detector was used. All out-of-band emissions must not exceed the limits shown as stated per Section 15.209. A loop antenna was used for searching for emissions below 30MHz.

## 5.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

## 5.6. Test Result

All of the test result shown indicates the worst case.

Measure Level = Reading Level +Factor.

| Frequency (MHz) | Reading Level (dBuV/m) | Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|
| Face On | | | | | | |
| 27.12 | 4.93 | 20.09 | 25.02 | 69.54 | -44.52 | QP |
| Face Off | | | | | | |
| 27.12 | 5.77 | 20.09 | 25.86 | 69.54 | -43.68 | QP |

| Antenna | Frequency (MHz) | Reading Level (dBuV/m) | Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| H | 40.30 | 4.57 | 12.55 | 17.12 | 40 | -22.88 | QP |
| H | 54.25 | 4.50 | 7.16 | 11.66 | 40 | -28.34 | QP |
| H | 56.79 | 5.01 | 6.60 | 11.61 | 40 | -28.39 | QP |
| H | 68.70 | 4.75 | 5.85 | 10.60 | 40 | -29.40 | QP |
| H | 91.11 | 3.56 | 9.89 | 13.45 | 43.5 | -30.05 | QP |
| V | 40.30 | 12.28 | 12.55 | 24.83 | 40 | -15.17 | QP |
| V | 54.25 | 11.11 | 7.16 | 18.27 | 40 | -21.73 | QP |
| V | 56.79 | 10.05 | 6.60 | 16.65 | 40 | -23.35 | QP |
| V | 68.07 | 9.63 | 5.83 | 15.46 | 40 | -24.54 | QP |
| V | 91.11 | 9.65 | 9.89 | 19.54 | 43.5 | -23.96 | QP |
| V | 94.74 | 9.38 | 10.63 | 20.01 | 43.5 | -23.49 | QP |

# 6. 20dB Bandwidth

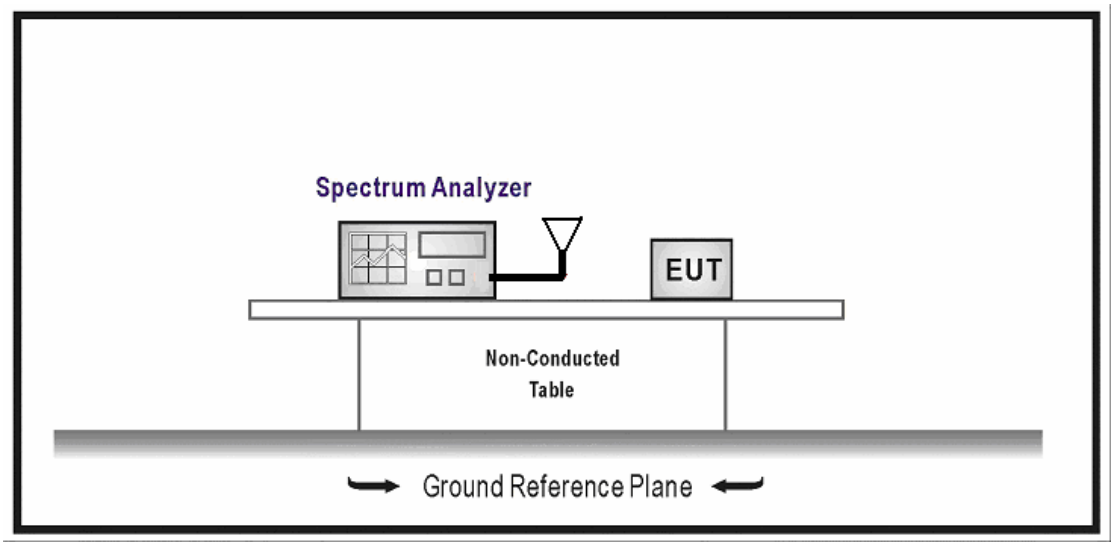
## 6.1. Test Equipment

20dB Bandwidth / TR-8

| Instrument | Manufacturer | Type No. | Serial No. | Cal. Due Date |
|---|---|---|---|---|
| Spectrum Analyzer | Agilent | E4446A | MY45300103 | 2012.04.30 |
| Temperature/Humidity Meter | zhicheng | ZC1-2 | TR8-TH | 2012.05.04 |

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

## 6.2. Test Setup




## 6.3. Limit

N/A

## 6.4. Test Procedure

The 20dB bandwidth is measured with a spectrum analyzer connected via a receive antenna placed near the EUT while the EUT is operating in transmission mode.

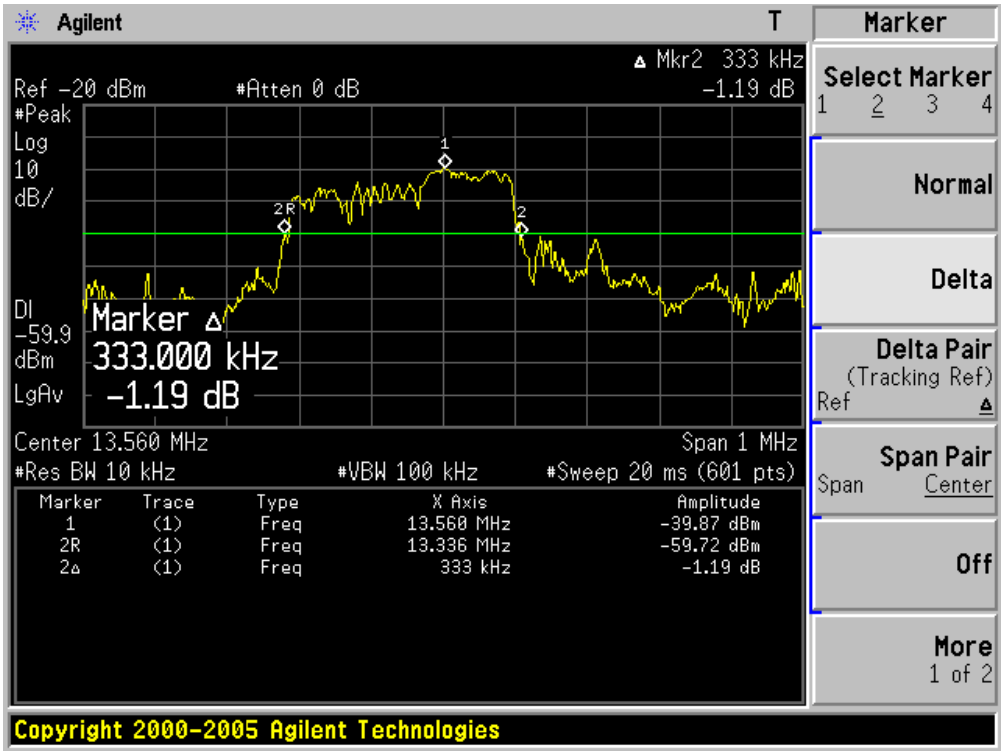
## 6.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB

## 6.6. Test Result

| | | |
|---|---|---|
| Product | : | Sonim XPand NFC |
| Test Item | : | 20dB Bandwidth |
| Test Site | : | TR-8 |
| Test Mode | : | Mode 1: Transmit |

| Frequency (MHz) | Occupied Bandwidth (kHz) |
|---|---|
| 13.56 | 333 |



# 7. Frequency Tolerance

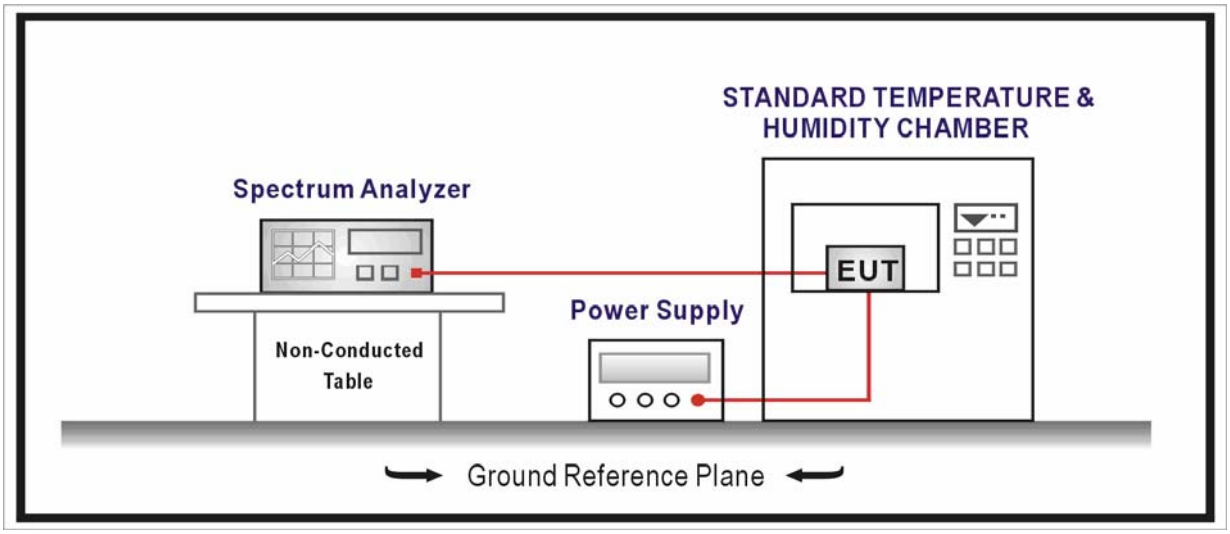
## 7.1. Test Equipment

Frequency Tolerance / TR-8

| Instrument | Manufacturer | Type No. | Serial No. | Cal. Due Date |
|---|---|---|---|---|
| Spectrum Analyzer | Agilent | E4446A | MY45300103 | 2012.04.30 |
| AC Power Supply | IDRC | CF-500TP | 979422 | 2011.09.27 |
| DC Power Supply | IDRC | CD-035-020PR | 977272 | 2011.09.27 |
| Programmable Temperature & Humidity Chamber | Gaoyu | TH-1P-B | WIT-05121302 | 2012.01.19 |
| Temperature/Humidity Meter | zhicheng | ZC1-2 | TR8-TH | 2012.05.04 |

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

## 7.2. Test Setup




## 7.3. Limit

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency.

## 7.4. Test Procedure

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ decreased per stage until the lowest temperature reached.

## 7.5. Uncertainty

The measurement uncertainty is defined as ± 1 kHz

## 7.6. Test Result

| | | |
|---|---|---|
| Product | : | Sonim XPand NFC |
| Test Item | : | Transmitter carrier output levels |
| Test Site | : | AC-1 |
| Test Mode | : | Mode 1: Transmit |

| Operating Frequency: 13.56MHz | | | | | |
|---|---|---|---|---|---|
| Reference Voltage: 3.7Vdc | | | | | |
| Deviation Limit: +/- 0.01% = 1356Hz | | | | | |
| Voltage (%) | Power Battery | TEMP (℃) | FREQ. (Hz) | FREQ.Dev. (Hz) | Deviation (%) |
| 100% | 3.70 | +20(Ref) | 13,560,106 | 106 | 0.000782 |
| 100% | | -20 | 13,560,113 | 113 | 0.000833 |
| 100% | | -10 | 13,560,122 | 122 | 0.000900 |
| 100% | | 0 | 13,559,940 | -60 | -0.000442 |
| 100% | | +10 | 13,560,096 | 96 | 0.000708 |
| 100% | | +20 | 13,559,926 | -74 | -0.000546 |
| 100% | | +30 | 13,560,085 | 85 | 0.000627 |
| 100% | | +40 | 13,560,119 | 119 | 0.000878 |
| 100% | | +50 | 13,559,913 | -87 | -0.000642 |

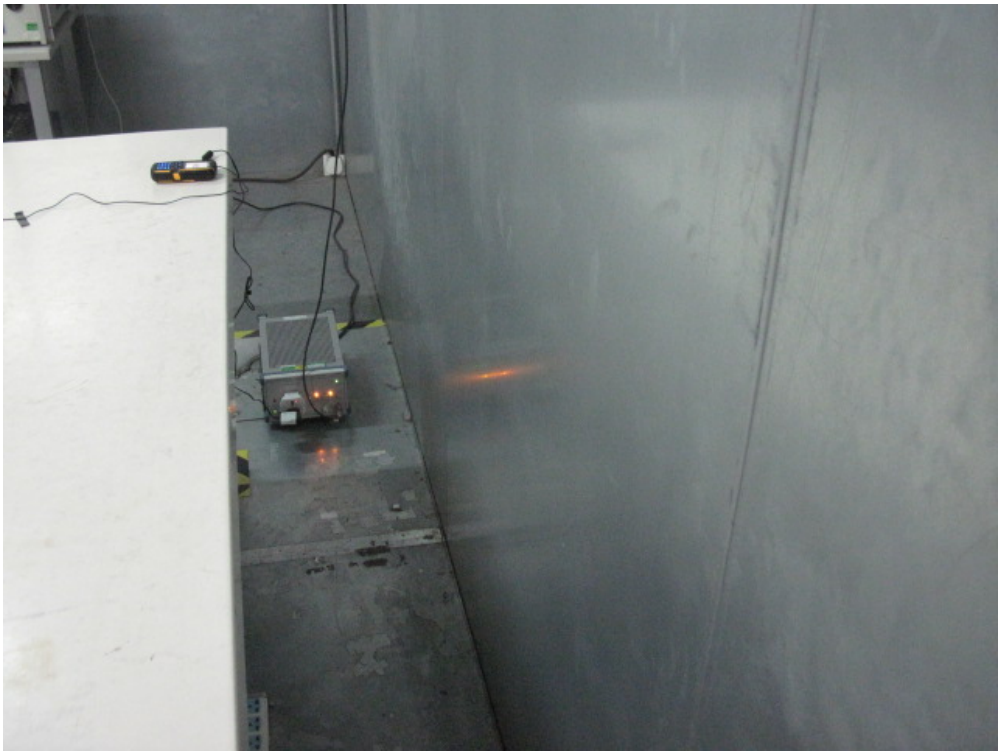
## 8. Appendix 1 – Test Setup Photograph

Test Mode: Mode 1: Transmit

Description: Front View of Conducted Emission Test Setup

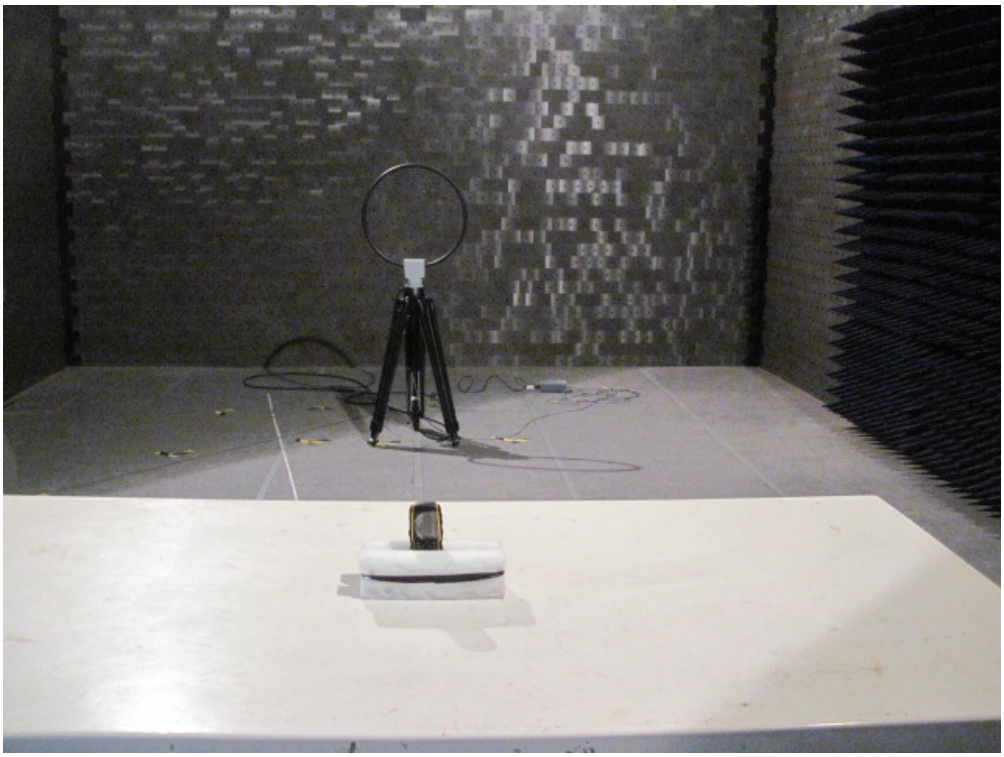
Test Mode: Mode 1: Transmit

Description: Back View of Conducted Emission Test Setup



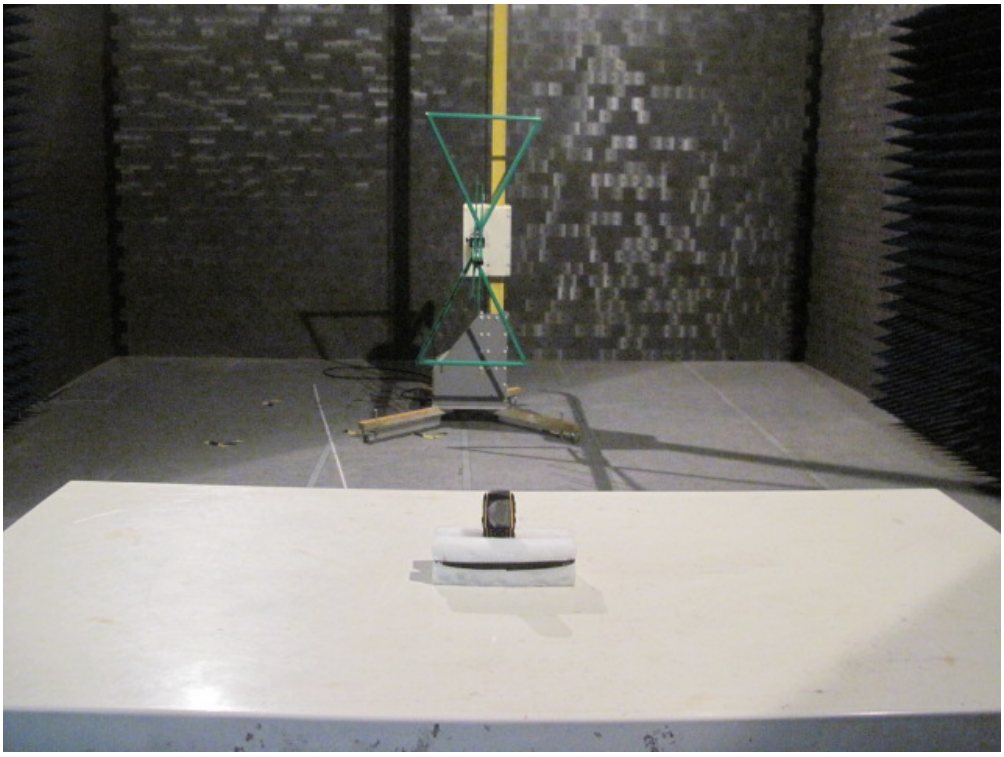
Test Mode : Mode 1: Transmit

Description : Radiated Emission Test Setup for Below 30MHz



Test Mode : Mode 1: Transmit

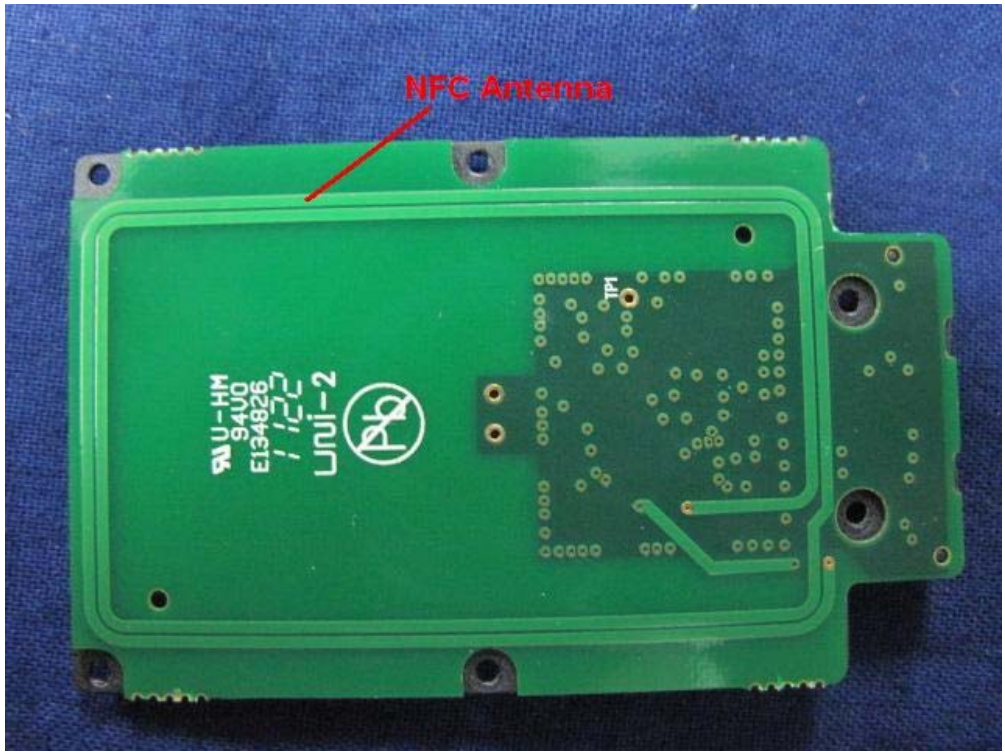
Description : Radiated Emission Test Setup for Below 1GHz



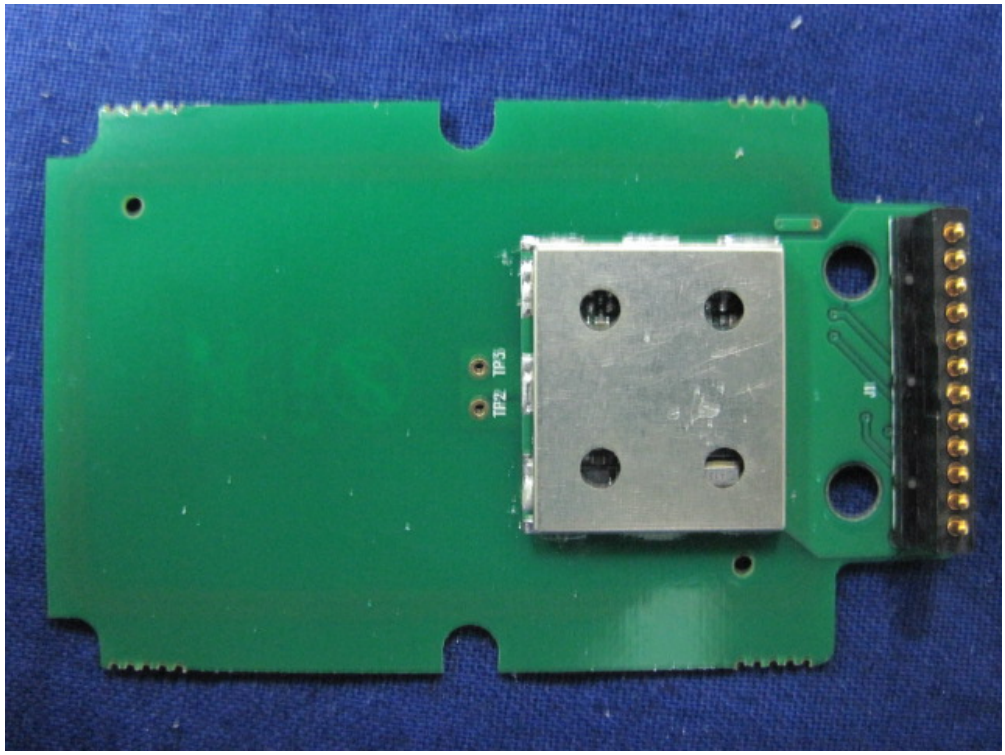
## 9. Appendix 2 – EUT Photograph

(1) EUT Photo

(2) EUT Photo



(3) EUT Photo




(4) EUT Photo