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Report On

Radio Testing of the
Advanced Bionics
Naida CI Q70

FCC Part 15 Subpart C §15.209
IC RSS-210 Issue 8 December 2010

Report No. SC1211094A Rev.1

November 2012



America

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REPORT ON Radio Testing of the
Advanced Bionics
CI Q70

TEST REPORT NUMBER SC1211094A Rev.1

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DATED November 12 2012



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Revision History

| SC1211094A Rev.1 Advanced Bionics Naida CI Q70 | | | | | |
|--|-----------------|--------------|--|----------------|--------------------|
| DATE | OLD REVISION | NEW REVISION | REASON | PAGES AFFECTED | APPROVED BY |
| 11/12/12 | Initial Release | | | | Ferdinand Custodio |
| 03/05/13 | Initial Release | 1.0 | <ul style="list-style-type: none">Provided FCC ID and IC NumberUpdated model name from "Pantera Behind the Ear Sound Processor" to Naida CI Q70 | All | Ferdinand Custodio |
| 03/05/13 | Initial Release | 1.0 | Update Equipment List from Loop Antenna to Active Loop Antenna | 28 | Ferdinand Custodio |
| | | | | | |
| | | | | | |

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SECTION 1

REPORT SUMMARY

Radio Testing of the
Advanced Bionics
CI Q70

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Advanced Bionics CI Q70 to the requirements of FCC Part 15 Subpart C §15.209 and IC RSS-210 Issue 8 December 2010.

| | |
|---|---|
| Objective | To perform Radio Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out. |
| Manufacturer | Advanced Bionics |
| Model Number(s) Verified | CI-5245, CI-5523, CI-5415 and CI-5835 |
| Model(s) covered under this Test Report | CI-5245, CI-5523, CI-5517, CI-5511, CI-5500, CI-5415, CI-5710 and CI-5835 |
| FCC ID Number | S2B-ABBTE |
| IC Number | 10870A-ABBTE |
| Serial Number(s) | N/A |
| Number of Samples Tested | 1 |
| Test Specification/Issue/Date | <ul style="list-style-type: none">• FCC Part 15 Subpart C §15.209 (October 1, 2011).• RSS-210 - Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment (Issue 8, December 2010).• RSS-Gen - General Requirements and Information for the Certification of Radio Apparatus (Issue 3, December 2010). |
| Start of Test | November 05, 2012 |
| Finish of Test | November 11, 2012 |
| Name of Engineer(s) | Ferdinand S. Custodio |
| Related Document(s) | None. Supporting documents for EUT certification are separate exhibits. |

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC Part 15 Subpart C §15.209 with cross-reference to the corresponding IC RSS standard is shown below.

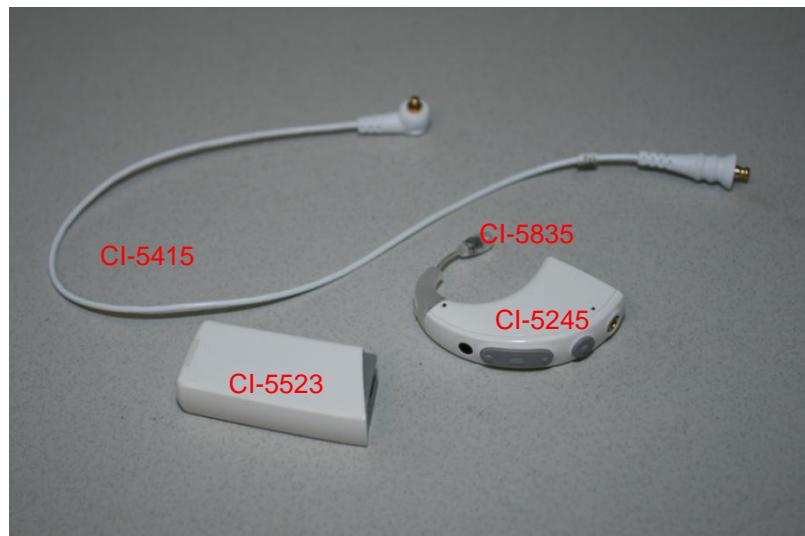
| Section | Spec Clause | RSS | Test Description | Result | Comments/Base Standard |
|---------|-------------------|------------------------------|--|-----------|------------------------|
| - | §15.207(a) | RSS-Gen 7.2.4 | Conducted Emissions | N/A* | |
| 2.1 | | RSS-Gen 4.6.1 | 99% Emission Bandwidth | Compliant | |
| 2.2 | §15.209(a) to (f) | RSS-210 2.5 RSS-Gen 7.2.5 | Radiated Emission Limits; General Requirements (Fundamental Field Strength Measurement). | Compliant | |
| 2.3 | §15.209(a) to (f) | RSS-210 2.5 RSS-Gen 7.2.5 | Radiated Emission Limits; General Requirements (Spurious Radiated Emissions). | Compliant | |
| - | | RSS-Gen 4.10 | Receiver Spurious Emissions | Compliant | |

* Not applicable. EUT is battery powered.

1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) was an Advanced Bionics Naida CI Q70 as shown in the photograph below. The model verified was the Pantera Sound processor (CI-5245)+Pantera 230 mAh battery (CI-5523)+Pantera UHP RF cable (CI-5415)+Pantera T-mic (CI-5835). Models CI-5517, CI-5511 and CI-5500 are different power sources covered under this test report and represented by CI-5523 (worst case). These models are different battery models with different capacity with identical physical attributes. Model CI-5710 (Earhook) is the mechanical assembly version (no electrical connectivity) of Model CI-5835 (T-mic) also covered under this test report.



Equipment Under Test

1.3.2 EUT General Description

| | |
|---------------------------------------|--|
| EUT Description | Behind the ear sound processor |
| Model Name | Naida CI Q70 |
| Model Number(s) | CI-5245 with CI-5523 CI-5415 and CI-5835 |
| Rated Voltage | 4.2VDC from custom detachable battery |
| Output Power | -14.374 dB μ V/m @ 30 meters |
| Frequency Range | 10.20 MHz – 10.84 MHz base from 20 dB BW measurement. EUT is a single channel transmitter. |
| Number of Operating Frequencies | 1 |
| Channels Verified | 10.5 MHz |
| 20dB BW | 635.461 kHz |
| 99% OBW | 596.821 kHz |
| Antenna Type (used during evaluation) | Integral (Complies with Part 15.203 requirements) |
| Modulation Used | FSK |
| Emission Designator | 597kF1D |

1.3.3 Reference Dimensions



1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

| Test Configuration | Description |
|--------------------|---|
| Default | Test mode: Standalone operation , M=T=400, RF=4 |

1.4.2 EUT Exercise Software

Software installed during evaluation is SoundWave 2.2. It is a SoundWave fitting software and speech processor firmware.

1.4.3 Support Equipment and I/O cables

| Manufacturer | Equipment/Cable | Description |
|--------------|-----------------|-------------|
| N/A | N/A | N/A |

1.4.4 Simplified Test Configuration Diagram

Not applicable. EUT was verified in a stand-alone configuration

1.4.5 Worst Case Configuration

The EUT is a portable device. For radiated measurements X, Y and Z orientations were verified. Worst case position is "Z".



1.5 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.6 MODIFICATION RECORD

| Description of Modification | Modification Fitted By | Date Modification Fitted |
|-----------------------------|------------------------|--------------------------|
| Serial Number N/A | | |
| N/A | | |

The table above details modifications made to the EUT during the test programme. The modifications incorporated during each test (if relevant) are recorded on the appropriate test pages.

1.7 TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

For conducted and radiated emissions the equipment under test (EUT) was configured to measure its highest possible emission level. This level was based on the maximized cable configuration from exploratory testing per ANSI C63.4-2009. The test modes were adapted according to the Operating Instructions provided by the manufacturer/client.

1.8 TEST FACILITY

1.8.1 FCC – Registration No.: US5296

TUV SUD America Inc. (San Diego), is an accredited test facility with the site description report on file and has met all the requirements specified in §2.498 of the FCC rules. The acceptance letter from the FCC is maintained in our files and the Registration is US5296.

1.8.2 Industry Canada (IC) Registration No.: 3067A

The 10m Semi-anechoic chamber of TUV SUD America Inc. (San Diego), has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No. 3067A.



SECTION 2

TEST DETAILS

Radio Testing of the
Advanced Bionics
CI Q70

2.1 99% EMISSION BANDWIDTH

2.1.1 Specification Reference

RSS-Gen Clause 4.6.1

2.1.2 Standard Applicable

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual.

The trace data points are recovered and directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

2.1.3 Equipment Under Test and Modification State

Serial No: N/A / Default Test Configuration

2.1.4 Date of Test/Initial of test personnel who performed the test

November 05, 2012/FSC

2.1.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.6 Environmental Conditions

| | |
|---------------------|----------|
| Ambient Temperature | 22.2°C |
| Relative Humidity | 43.2% |
| ATM Pressure | 99.2 kPa |

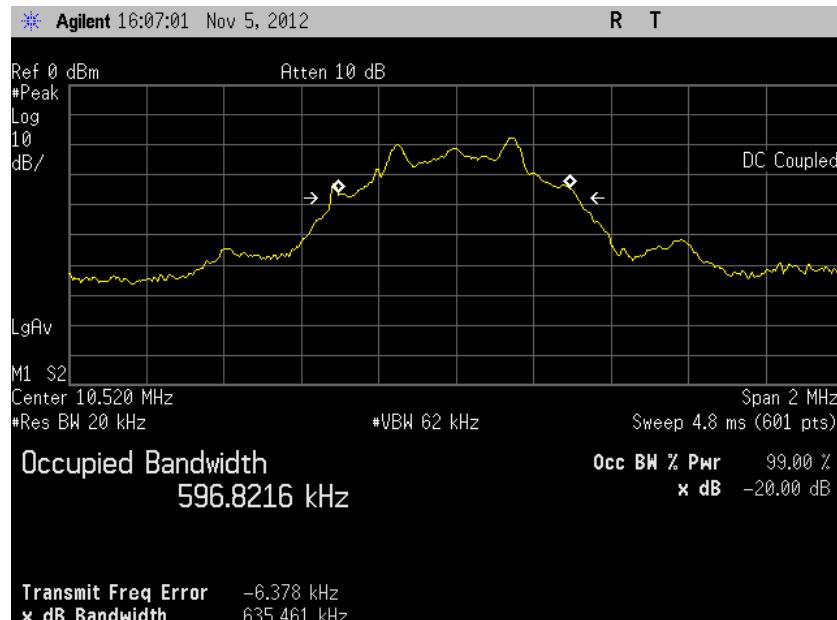
2.1.7 Additional Observations

- This is a radiated test.
- Span is wide enough to capture the channel transmission.
- RBW is 1% of the span.
- VBW is 3X RBW.
- Sweep is auto.
- Detector is peak.

- The % Power Bandwidth setting in the spectrum analyzer was set to 99% (default).
- The Channel Bandwidth measurement function of the spectrum analyzer was used for this test.

2.1.8 Test Results (For reporting purposes only)

| 99% OBW (10.52 MHz) | 20dB BW (10.52 MHz) |
|------------------------|------------------------|
| 596.821 kHz | 635.461 kHz |



99% OBW Plot

2.2 RADIATED EMISSION LIMITS; GENERAL REQUIREMENTS (FUNDAMENTAL FIELD STRENGTH MEASUREMENT)

2.2.1 Specification Reference

Part 15 Subpart C §15.209(a)

2.2.2 Standard Applicable

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100 ** | 3 |
| 88-216 | 150 ** | 3 |
| 216-960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

*** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.*

2.2.3 Equipment Under Test and Modification State

Serial No: N/A / Default Test Configuration

2.2.4 Date of Test/Initial of test personnel who performed the test

November 09, 2012/FSC

2.2.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.6 Environmental Conditions

| | |
|---------------------|----------|
| Ambient Temperature | 23.1°C |
| Relative Humidity | 43.5% |
| ATM Pressure | 99.0 kPa |

2.2.7 Additional Observations

- This is a radiated test at one (1) meter measurement distance.
- RBW is 9kHz while VBW is 100kHz.
- Offset of 19.8 is from antenna factor and cable used.
- The spectrum analyzer built-in preamp was used for this test.
- The EUT was maximized along its axis (See Section 1.4.5 for details)
- Using a peak detector and a span encompassing the entire fundamental emission, the highest peak emission was determined.
- The peak emission was centered and the setting changed to zero span.
- Final measurement was performed using quasi-peak detector.
- The measured level is corrected to 30 meters using 40dB/decade correction factor.

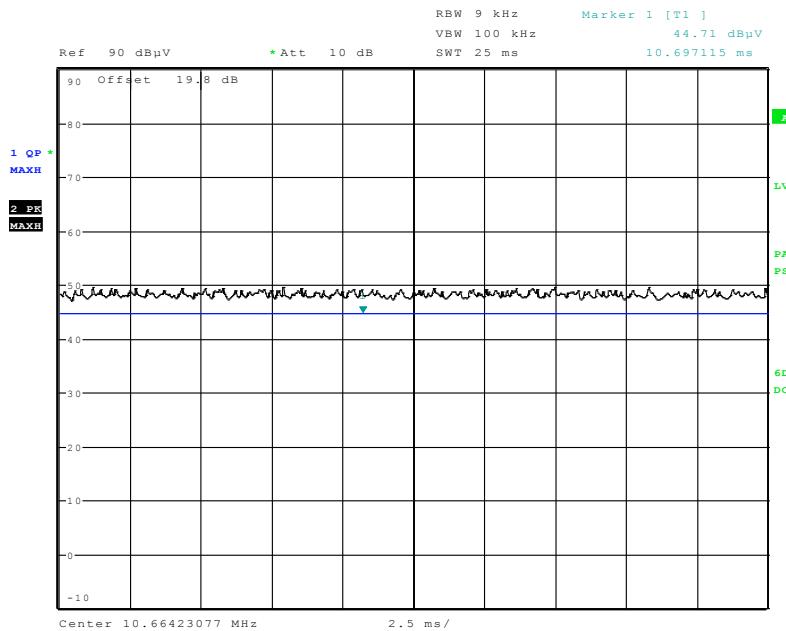
$$= 44.71 \text{ dB}\mu\text{V/m} + 40\log(1\text{meter}/30\text{meters})$$

$$= 44.71 \text{ dB}\mu\text{V/m} + (-59.084)$$

$$= -14.374 \text{ dB}\mu\text{V/m}$$

2.2.8 Test Results

| Frequency | Measured level @ 1 meter | Calculated level at 30 meters |
|---|--------------------------|-------------------------------|
| 10.66 MHz | 44.71 dB μ V/m | -14.374 dB μ V/m |
| Complies with the limit of 29.54 dB μ V/m @ 30 meters | | |



Date: 9.NOV.2012 15:48:14

2.3 RADIATED EMISSION LIMITS; GENERAL REQUIREMENTS (SPURIOUS RADIATED EMISSIONS).

2.3.1 Specification Reference

Part 15 Subpart C §15.209(a)

2.3.2 Standard Applicable

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100 ** | 3 |
| 88-216 | 150 ** | 3 |
| 216-960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

*** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.*

2.3.3 Equipment Under Test and Modification State

Serial No: N/A / Default Test Configuration

2.3.4 Date of Test/Initial of test personnel who performed the test

November 11, 2012/FSC

2.3.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.6 Environmental Conditions

| | |
|---------------------|----------|
| Ambient Temperature | 22.4°C |
| Relative Humidity | 44.7% |
| ATM Pressure | 99.6 kPa |

2.3.7 Additional Observations

- This is a radiated test. The spectrum was searched beyond the 10th harmonic (106 MHz) because of the incorporation of a digital device.
- Radiated measurements from 9 kHz to 30MHz were performed at 3 meters distance. The limit was corrected from 30 meters to 3 meters using 40dB/decade distance correction factor.
- Measurement was done using EMC32 V8.53 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only. See Section 2.3.8 for sample computation.

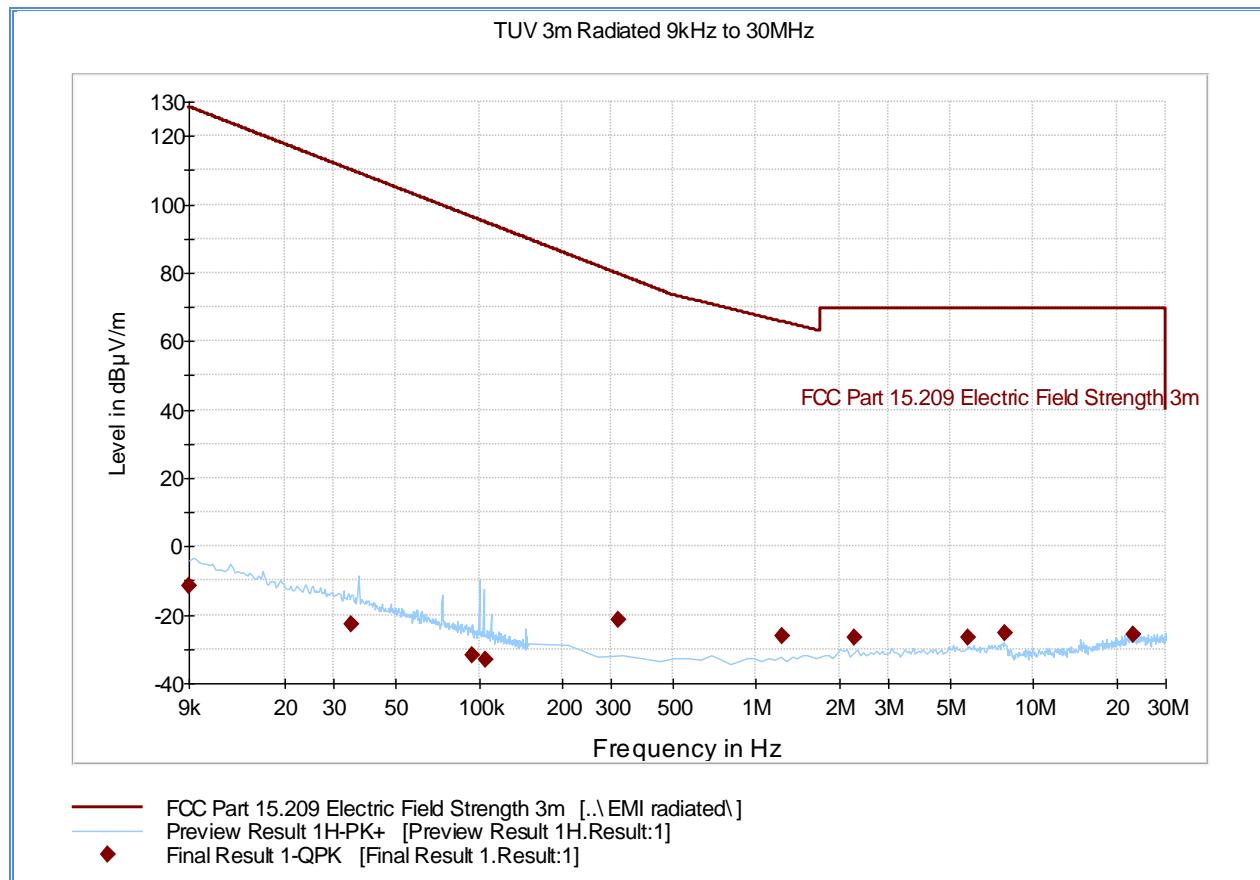
2.3.8 Sample Computation (Radiated Emission)

| Measuring equipment raw measurement (db μ V) @ 2400 MHz | | | 58.4 |
|---|----------------------------|-------|------|
| Correction Factor (dB) | Asset# 1153 (cable) | 3.3 | -4.8 |
| | Asset# 8628 (preamplifier) | -36.4 | |
| | Asset# 6669 (antenna) | 28.3 | |
| Reported Peak Final Measurement (db μ V/m) @ 2400 MHz | | | 53.6 |

2.3.9 Test Results

See attached plots.

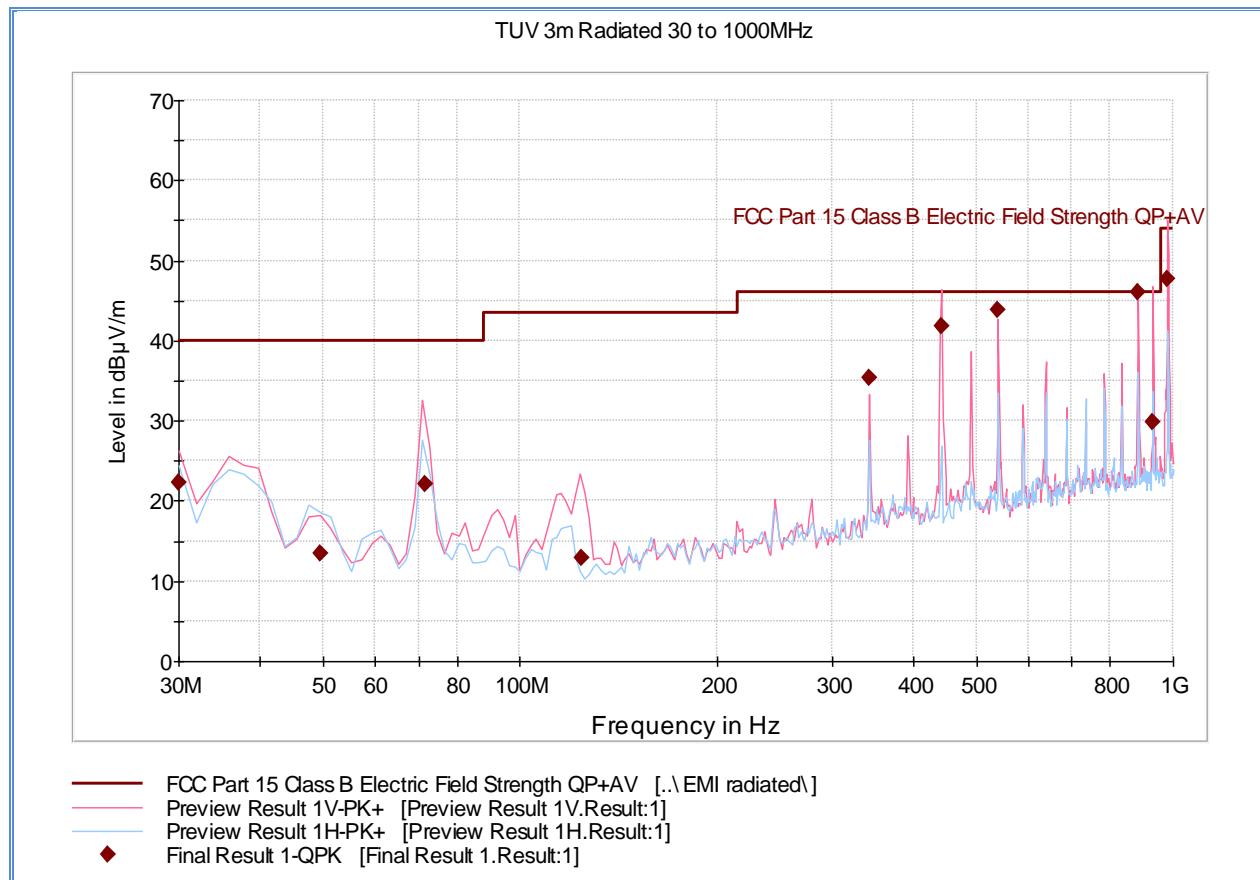
2.3.10 Test Results Radiated Emissions from 9kHz to 30MHz (3 meters)



Quasi Peak Data

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 0.009000 | -11.4 | 1000.0 | 0.200 | 100.0 | H | 176.0 | -26.7 | 139.9 | 128.5 |
| 0.034691 | -22.9 | 1000.0 | 0.200 | 100.0 | H | 10.0 | -30.6 | 133.0 | 110.0 |
| 0.094269 | -31.7 | 1000.0 | 0.200 | 100.0 | H | 14.0 | -31.9 | 128.0 | 96.4 |
| 0.105942 | -33.3 | 1000.0 | 0.200 | 100.0 | H | 308.0 | -32.1 | 128.1 | 94.8 |
| 0.318918 | -21.6 | 1000.0 | 9.000 | 100.0 | H | 148.0 | -32.5 | 101.3 | 79.7 |
| 1.237114 | -26.2 | 1000.0 | 9.000 | 100.0 | H | 168.0 | -31.9 | 92.0 | 65.8 |
| 2.253507 | -26.7 | 1000.0 | 9.000 | 100.0 | H | 216.0 | -31.9 | 96.2 | 69.5 |
| 5.802685 | -26.7 | 1000.0 | 9.000 | 100.0 | H | 188.0 | -31.6 | 96.2 | 69.5 |
| 7.896914 | -25.4 | 1000.0 | 9.000 | 100.0 | H | 340.0 | -31.7 | 94.9 | 69.5 |
| 22.890742 | -25.6 | 1000.0 | 9.000 | 100.0 | H | 88.0 | -28.5 | 95.1 | 69.5 |

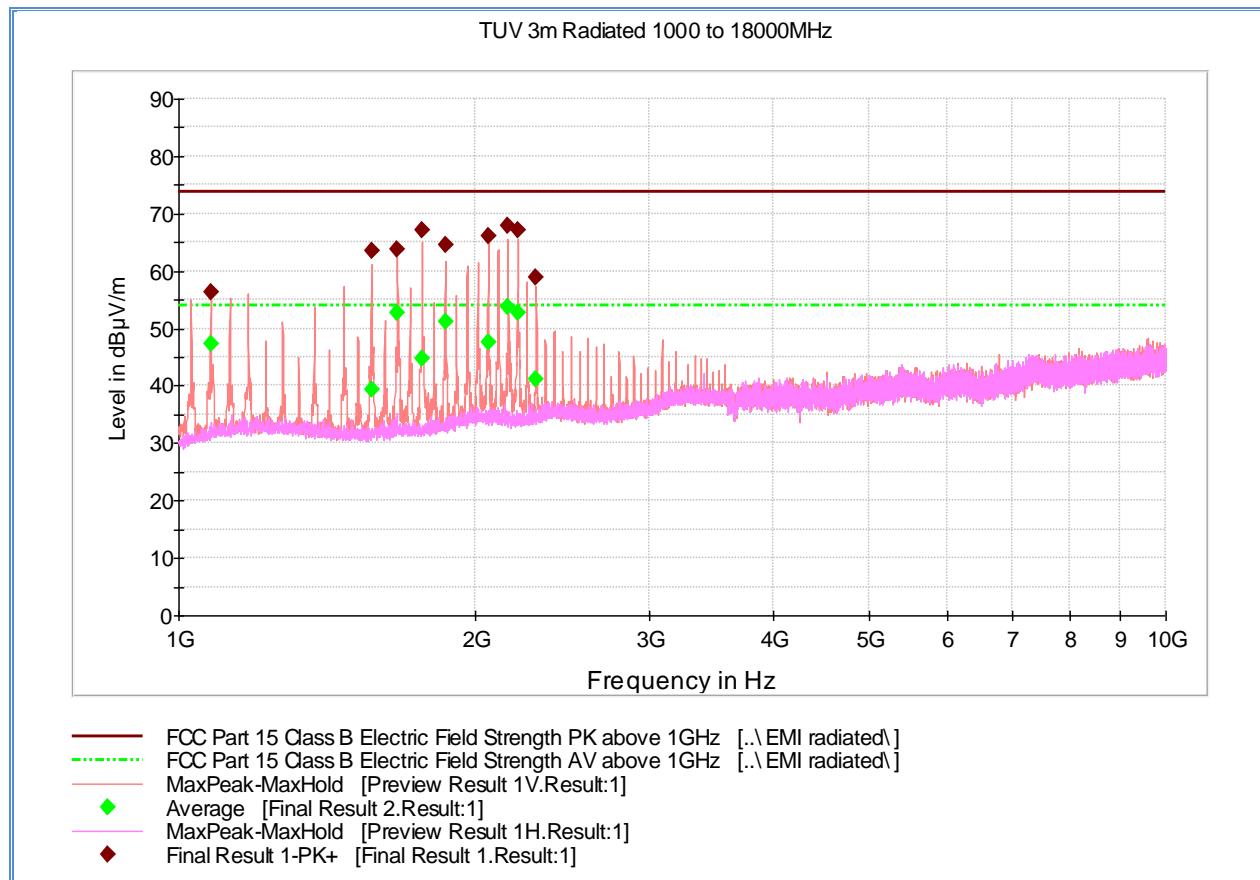
2.3.11 Test Results Radiated Emissions from 30kHz to 1000MHz (3 meters)



Quasi Peak Data

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 30.000000 | 22.4 | 1000.0 | 120.000 | 120.0 | V | 0.0 | -12.0 | 17.6 | 40.0 |
| 49.334990 | 13.5 | 1000.0 | 120.000 | 181.0 | H | 349.0 | -20.0 | 26.5 | 40.0 |
| 71.621643 | 22.2 | 1000.0 | 120.000 | 102.0 | V | 167.0 | -21.9 | 17.8 | 40.0 |
| 124.106613 | 12.9 | 1000.0 | 120.000 | 102.0 | V | 8.0 | -20.7 | 30.6 | 43.5 |
| 343.045932 | 35.3 | 1000.0 | 120.000 | 140.0 | V | 155.0 | -10.9 | 10.7 | 46.0 |
| 441.024208 | 41.9 | 1000.0 | 120.000 | 113.0 | V | 102.0 | -8.5 | 4.1 | 46.0 |
| 539.098597 | 43.9 | 1000.0 | 120.000 | 102.0 | V | 84.0 | -5.9 | 2.1 | 46.0 |
| 882.166733 | 46.0 | 1000.0 | 120.000 | 119.0 | V | 3.0 | -1.6 | 0.0 | 46.0 |
| 930.043928 | 29.8 | 1000.0 | 120.000 | 102.0 | V | 46.0 | -0.4 | 16.2 | 46.0 |
| 980.681122 | 47.6 | 1000.0 | 120.000 | 102.0 | V | 23.0 | 0.7 | 6.3 | 53.9 |

2.3.12 Test Results Radiated Emissions from 1GHz to 10GHz (3 meters)



Peak Data

| Frequency (MHz) | MaxPeak (dB μ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB μ V/m) |
|-----------------|------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|
| 1078.14000 | 56.2 | 1000.0 | 1000.000 | 102.0 | V | 326.0 | -10.6 | 17.7 | 73.9 |
| 1568.26000 | 63.4 | 1000.0 | 1000.000 | 102.0 | V | 270.0 | -8.9 | 10.5 | 73.9 |
| 1666.25333 | 63.7 | 1000.0 | 1000.000 | 102.0 | V | 265.0 | -8.4 | 10.2 | 73.9 |
| 1764.28666 | 67.1 | 1000.0 | 1000.000 | 131.0 | V | 300.0 | -7.4 | 6.9 | 73.9 |
| 1862.32000 | 64.5 | 1000.0 | 1000.000 | 120.0 | V | 314.0 | -6.8 | 9.4 | 73.9 |
| 2058.30666 | 66.2 | 1000.0 | 1000.000 | 102.0 | V | 169.0 | -6.2 | 7.8 | 73.9 |
| 2156.34000 | 67.9 | 1000.0 | 1000.000 | 102.0 | V | 292.0 | -6.1 | 6.0 | 73.9 |
| 2205.36000 | 67.0 | 1000.0 | 1000.000 | 102.0 | V | 32.0 | -6.1 | 6.9 | 73.9 |
| 2303.35333 | 58.9 | 1000.0 | 1000.000 | 102.0 | V | 33.0 | -5.6 | 15.0 | 73.9 |

Average Data

| Frequency (MHz) | Average (dB μ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB μ V/m) |
|-----------------|------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|
| 1078.14000 | 47.4 | 1000.0 | 1000.000 | 102.0 | V | 326.0 | -10.6 | 6.5 | 53.9 |
| 1568.26000 | 39.4 | 1000.0 | 1000.000 | 102.0 | V | 270.0 | -8.9 | 14.5 | 53.9 |
| 1666.25333 | 52.8 | 1000.0 | 1000.000 | 102.0 | V | 265.0 | -8.4 | 1.1 | 53.9 |
| 1764.28666 | 44.7 | 1000.0 | 1000.000 | 131.0 | V | 300.0 | -7.4 | 9.2 | 53.9 |
| 1862.32000 | 51.2 | 1000.0 | 1000.000 | 120.0 | V | 314.0 | -6.8 | 2.7 | 53.9 |



| | | | | | | | | | |
|------------|------|--------|----------|-------|---|-------|------|------|------|
| 2058.30666 | 47.6 | 1000.0 | 1000.000 | 102.0 | V | 169.0 | -6.2 | 6.3 | 53.9 |
| 2156.34000 | 53.8 | 1000.0 | 1000.000 | 102.0 | V | 292.0 | -6.1 | 0.1 | 53.9 |
| 2205.36000 | 52.8 | 1000.0 | 1000.000 | 102.0 | V | 32.0 | -6.1 | 1.1 | 53.9 |
| 2303.35333 | 41.1 | 1000.0 | 1000.000 | 102.0 | V | 33.0 | -5.6 | 12.8 | 53.9 |

Test Notes: All emissions above the Average limit during prescan were verified, only worst emissions per representative range are presented. There are no emissions observed above 4GHz.

2.4 RECEIVER SPURIOUS EMISSIONS

2.4.1 Specification Reference

RSS-Gen 4.10

2.4.2 Standard Applicable

The receiver shall be operated in the normal receive mode near the mid-point of the band in which the receiver is designed to operate.

Radiated emission measurements are to be performed on a test site registered with Industry Canada. As an alternative, the conducted measurement method may be used when the antenna is detachable. In such a case, the receiver spurious signal may be measured at the antenna port.

If the receiver is super-regenerative, stabilize it by coupling to it an unmodulated carrier on the receiver frequency (antenna conducted measurement) or by transmitting an unmodulated carrier on the receiver frequency from an antenna in the proximity of the receiver (radiated measurement). Taking care not to overload the receiver, vary the amplitude and frequency of the stabilizing signal to obtain the highest level of the spurious emissions from the receiver. For either method, the search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is higher, to at least 3 times the highest tuneable or local oscillator frequency, whichever is higher, without exceeding 40 GHz.

For emissions below 1000 MHz, measurements shall be performed using a CISPR quasi-peak detector and the related measurement bandwidth. As an alternative to CISPR quasi-peak measurement, compliance with the emission limit can be demonstrated using measuring equipment employing a peak detector function properly adjusted for factors such as pulse desensitization as required, with an equal or greater measurement bandwidth relative to the applicable CISPR quasi-peak bandwidth.

Above 1000 MHz, measurements shall be performed using an average detector with a minimum resolution bandwidth of 1 MHz

2.4.3 Equipment Under Test and Modification State

Serial No: N/A / Default Test Configuration

2.4.4 Date of Test/Initial of test personnel who performed the test

November 11, 2012/FSC

2.4.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.6 Environmental Conditions

| | |
|---------------------|----------|
| Ambient Temperature | 22.4°C |
| Relative Humidity | 44.7% |
| ATM Pressure | 99.6 kPa |

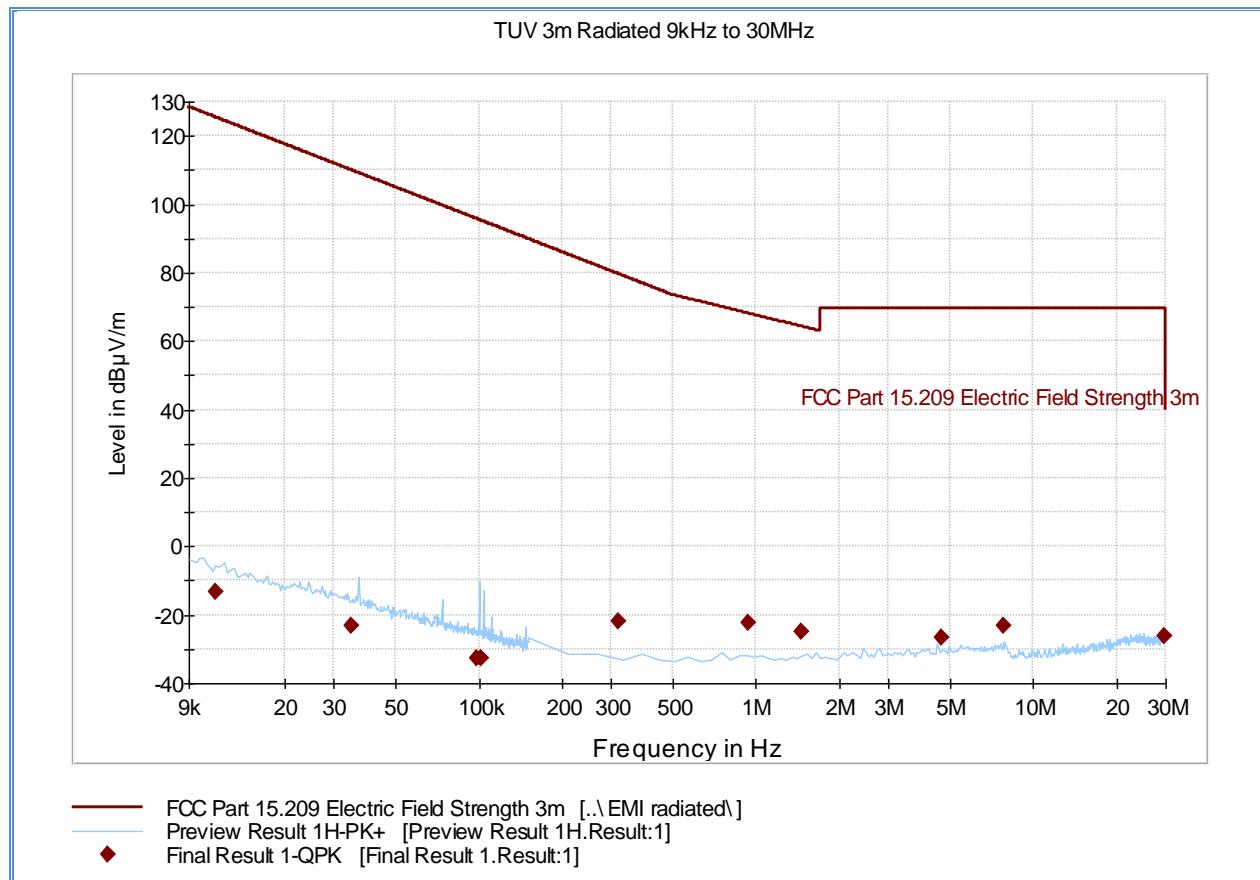
2.4.7 Additional Observations

- This is a radiated test. The spectrum was searched from 9kHz to the 18GHz (RSS-Gen requirement is from 30MHz to at least 3 times the highest tuneable or local oscillator frequency, whichever is higher – the highest frequency generated by the EUT is 49MHz, requirement is therefore up to 150MHz only).
- Limit used is from FCC §15.209 which is identical to RSS-Gen limits (>30MHz only).
- All emissions observed above 200MHz are noise floor measurements.
- Measurement was done using EMC32 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only.

2.4.8 Test Results

See attached plots.

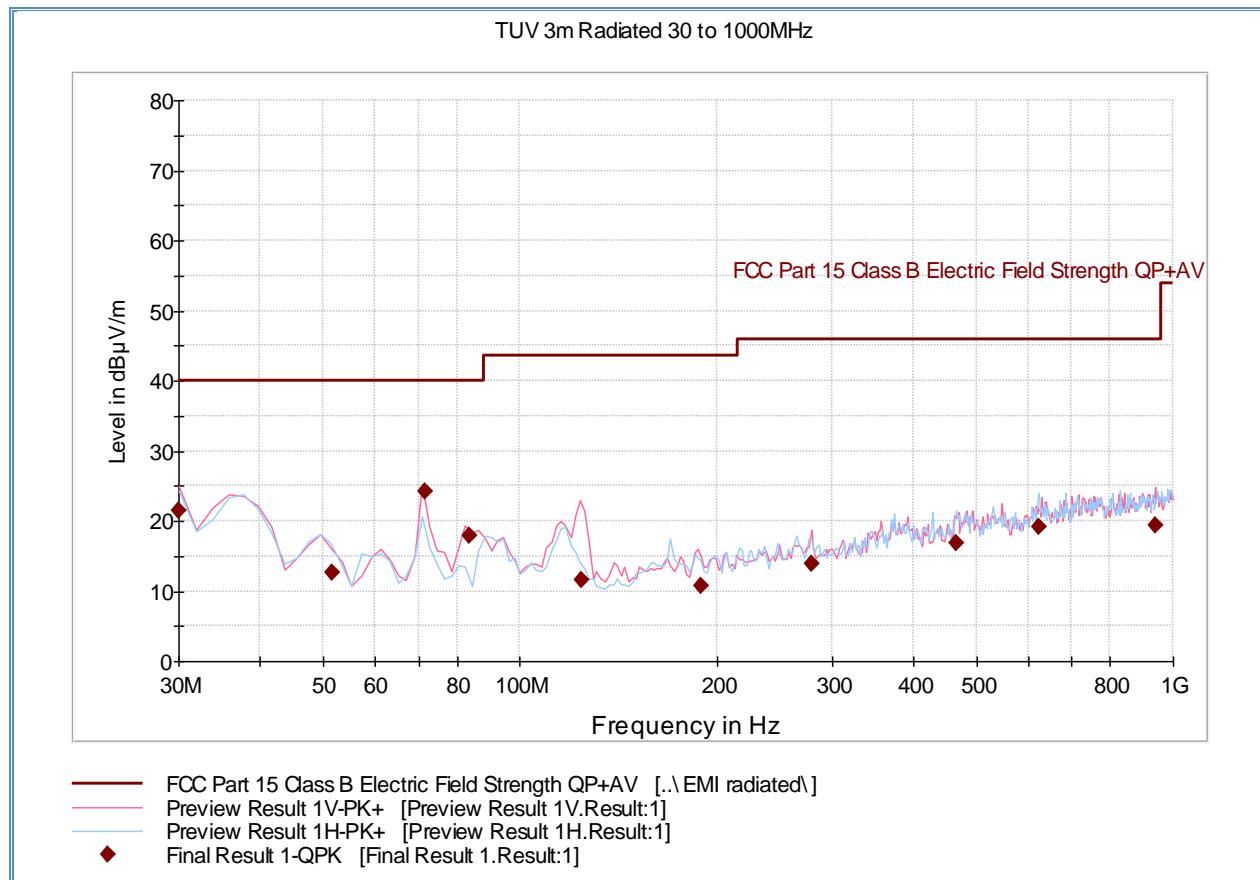
2.4.9 Test Results Radiated Emissions from 9kHz to 30MHz (3 meters)



Quasi Peak Data

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 0.011194 | -13.5 | 1000.0 | 0.200 | 100.0 | H | 338.0 | -27.9 | 139.0 | 125.5 |
| 0.034691 | -23.2 | 1000.0 | 0.200 | 100.0 | H | 132.0 | -30.6 | 133.2 | 110.0 |
| 0.098269 | -32.9 | 1000.0 | 0.200 | 100.0 | H | 330.0 | -32.0 | 128.7 | 95.8 |
| 0.102224 | -32.8 | 1000.0 | 0.200 | 100.0 | H | 44.0 | -32.1 | 128.0 | 95.3 |
| 0.318918 | -22.0 | 1000.0 | 9.000 | 100.0 | H | 88.0 | -32.5 | 101.7 | 79.7 |
| 0.937295 | -22.4 | 1000.0 | 9.000 | 100.0 | H | 199.0 | -32.2 | 90.6 | 68.2 |
| 1.455491 | -24.7 | 1000.0 | 9.000 | 100.0 | H | 286.0 | -31.9 | 89.0 | 64.3 |
| 4.646834 | -26.7 | 1000.0 | 9.000 | 100.0 | H | 133.0 | -31.6 | 96.3 | 69.5 |
| 7.797094 | -23.1 | 1000.0 | 9.000 | 100.0 | H | 221.0 | -31.7 | 92.6 | 69.5 |
| 29.810000 | -26.3 | 1000.0 | 9.000 | 100.0 | H | 218.0 | -27.7 | 95.9 | 69.5 |

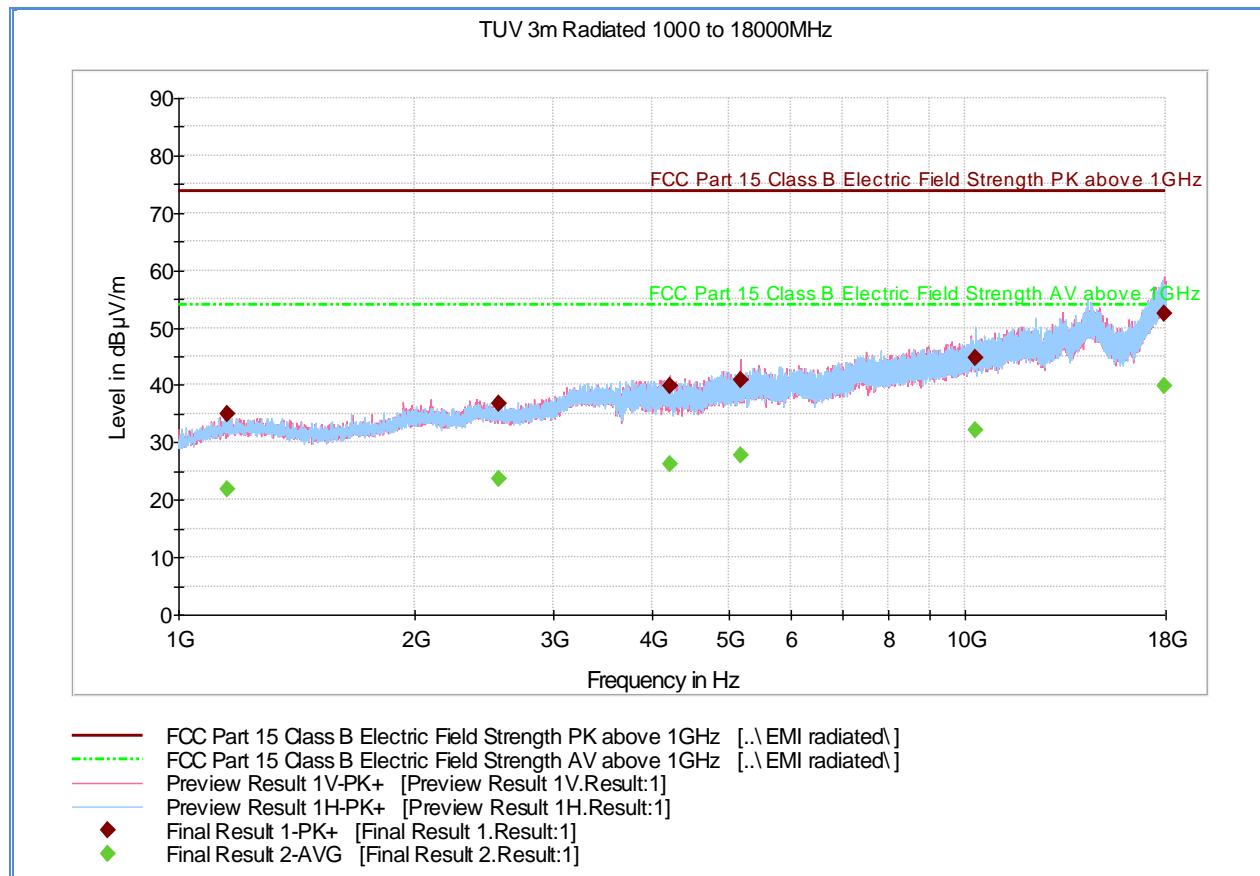
2.4.10 Test Results Radiated Emissions from 30kHz to 1000MHz (3 meters)



Quasi Peak Data

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 30.000000 | 21.5 | 1000.0 | 120.000 | 100.0 | V | 96.0 | -12.0 | 18.5 | 40.0 |
| 51.438878 | 12.7 | 1000.0 | 120.000 | 230.0 | V | 162.0 | -20.4 | 27.3 | 40.0 |
| 71.461643 | 24.1 | 1000.0 | 120.000 | 204.0 | V | 340.0 | -21.9 | 15.9 | 40.0 |
| 83.812745 | 17.9 | 1000.0 | 120.000 | 324.0 | V | 217.0 | -21.3 | 22.1 | 40.0 |
| 124.146613 | 11.6 | 1000.0 | 120.000 | 100.0 | V | 161.0 | -20.7 | 31.9 | 43.5 |
| 189.454910 | 10.7 | 1000.0 | 120.000 | 143.0 | V | 9.0 | -16.2 | 32.8 | 43.5 |
| 279.817635 | 13.9 | 1000.0 | 120.000 | 185.0 | V | 300.0 | -12.4 | 32.1 | 46.0 |
| 464.950862 | 16.9 | 1000.0 | 120.000 | 381.0 | H | 176.0 | -7.3 | 29.1 | 46.0 |
| 621.645772 | 19.1 | 1000.0 | 120.000 | 241.0 | H | 267.0 | -3.1 | 26.9 | 46.0 |
| 937.275591 | 19.4 | 1000.0 | 120.000 | 350.0 | V | 311.0 | 0.0 | 26.6 | 46.0 |

2.4.11 Test Results Radiated Emissions from 1GHz to 10GHz (3 meters)



Peak Data

| Frequency (MHz) | MaxPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1154.68000 | 35.0 | 1000.0 | 1000.000 | 182.0 | H | 338.0 | -10.0 | 38.9 | 73.9 |
| 2557.01333 | 36.9 | 1000.0 | 1000.000 | 183.0 | V | 15.0 | -4.4 | 37.0 | 73.9 |
| 4210.43333 | 39.9 | 1000.0 | 1000.000 | 196.0 | V | 67.0 | 0.6 | 34.0 | 73.9 |
| 5195.58000 | 40.8 | 1000.0 | 1000.000 | 284.0 | V | 299.0 | 3.5 | 33.1 | 73.9 |
| 10291.9733 | 44.9 | 1000.0 | 1000.000 | 374.0 | H | 261.0 | 10.4 | 29.0 | 73.9 |
| 17954.9666 | 52.4 | 1000.0 | 1000.000 | 102.0 | V | 37.0 | 21.6 | 21.5 | 73.9 |

Average Data

| Frequency (MHz) | Average (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1154.68000 | 21.8 | 1000.0 | 1000.000 | 182.0 | H | 338.0 | -10.0 | 32.1 | 53.9 |
| 2557.01333 | 23.7 | 1000.0 | 1000.000 | 183.0 | V | 15.0 | -4.4 | 30.2 | 53.9 |
| 4210.43333 | 26.3 | 1000.0 | 1000.000 | 196.0 | V | 67.0 | 0.6 | 27.6 | 53.9 |
| 5195.58000 | 27.7 | 1000.0 | 1000.000 | 284.0 | V | 299.0 | 3.5 | 26.2 | 53.9 |
| 10291.9733 | 32.2 | 1000.0 | 1000.000 | 374.0 | H | 261.0 | 10.4 | 21.7 | 53.9 |
| 17954.9666 | 39.9 | 1000.0 | 1000.000 | 102.0 | V | 37.0 | 21.6 | 14.0 | 53.9 |

FCC ID S2B-ABBTE
IC: 10870A-ABBTE
Report No. SC1211094A Rev.1



SECTION 3

TEST EQUIPMENT USED

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

| ID Number (SDGE/SDRB) | Test Equipment | Type | Serial Number | Manufacturer | Cal Date | Cal Due Date |
|-----------------------|--------------------------------------|--------------------|---------------|----------------------------|---------------------------|--------------|
| 6628 | ActiveLoop Antenna | HFH 2 -Z2 | 880 458/25 | Rhode & Schwarz | 05/09/12 | 05/09/13 |
| 1033 | Bilog Antenna | 3142C | 00044556 | EMCO | 05/23/12 | 05/23/13 |
| 1040 | EMI Test Receiver | ESIB40 | 100292 | Rhode & Schwarz | 08/10/12 | 08/10/13 |
| 1049 | EMI Test Receiver | ESU | 100133 | Rhode & Schwarz | 06/13/12 | 06/13/13 |
| 6815 | 2.4GHz Band Notch Filter | BRM50702 | 008 | Micro-Tronics | Verified by 1040 | |
| 1051 | Double-ridged waveguide horn antenna | 3115 | 9408-4329 | EMCO | 01/04/12 | 01/04/13 |
| 1016 | Pre-amplifier | PAM-0202 | 187 | PAM | 09/24/12 | 09/24/13 |
| 7546 | Signal Generator | SMP-02 | 1035.5005.02 | Rhode & Schwarz | 06/15/12 | 06/15/13 |
| 1150 | Horn antenna | RA42-K-F-4B-C | 012054-004 | CMT | Verified by 7546 and 1049 | |
| 1151 | Pre-amplifier | TS-PR26 | 100026 | Rhode & Schwarz | Verified by 7546 and 1049 | |
| 8628 | Pre-amplifier | QLJ 01182835-JO | 8986002 | QuinStar Technologies Inc. | 09/21/12 | 09/21/13 |
| 8543 | High-frequency cable | Micropore 19057793 | N/A | United Microwave Products | 09/21/12 | 09/21/13 |
| 6452 | Multimeter | 3478A | 2911A52177 | Hewlett Packard | 07/16/12 | 07/16/13 |
| | Test Software | EMC32 | V8.52 | Rhode & Schwarz | N/A | |

3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:

3.2.1 Radiated Emission Measurements (Below 1GHz)

| Contribution | | Probability Distribution Type | Probability Distribution x_i | Standard Uncertainty $u(x_i)$ | $[u(x_i)]^2$ |
|--------------|----------------------------|---------------------------------|--------------------------------|-------------------------------|--------------|
| 1 | Receiver/Spectrum Analyzer | Rectangular | 0.45 | 0.26 | 0.07 |
| 2 | Cables | Rectangular | 0.50 | 0.29 | 0.08 |
| 3 | Preamp | Rectangular | 0.50 | 0.29 | 0.08 |
| 4 | Antenna | Rectangular | 0.75 | 0.43 | 0.19 |
| 5 | Site | Rectangular | 3.55 | 2.05 | 4.20 |
| 6 | EUT Setup | Rectangular | 1.00 | 0.58 | 0.33 |
| | | Combined Uncertainty (u_c): | | 2.23 | |
| | | Coverage Factor (k): | | 2 | |
| | | Expanded Uncertainty: | | 4.45 | |

3.2.2 Radiated Emission Measurements (Above 1GHz)

| Contribution | | Probability Distribution Type | Probability Distribution x_i | Standard Uncertainty $u(x_i)$ | $[u(x_i)]^2$ |
|--------------|----------------------------|---------------------------------|--------------------------------|-------------------------------|--------------|
| 1 | Receiver/Spectrum Analyzer | Rectangular | 0.57 | 0.33 | 0.11 |
| 2 | Cables | Rectangular | 0.70 | 0.40 | 0.16 |
| 3 | Preamp | Rectangular | 0.50 | 0.29 | 0.08 |
| 4 | Antenna | Rectangular | 0.37 | 0.21 | 0.05 |
| 5 | Site | Rectangular | 3.55 | 2.05 | 4.20 |
| 6 | EUT Setup | Rectangular | 1.00 | 0.58 | 0.33 |
| | | Combined Uncertainty (u_c): | | 2.22 | |
| | | Coverage Factor (k): | | 2 | |
| | | Expanded Uncertainty: | | 4.44 | |

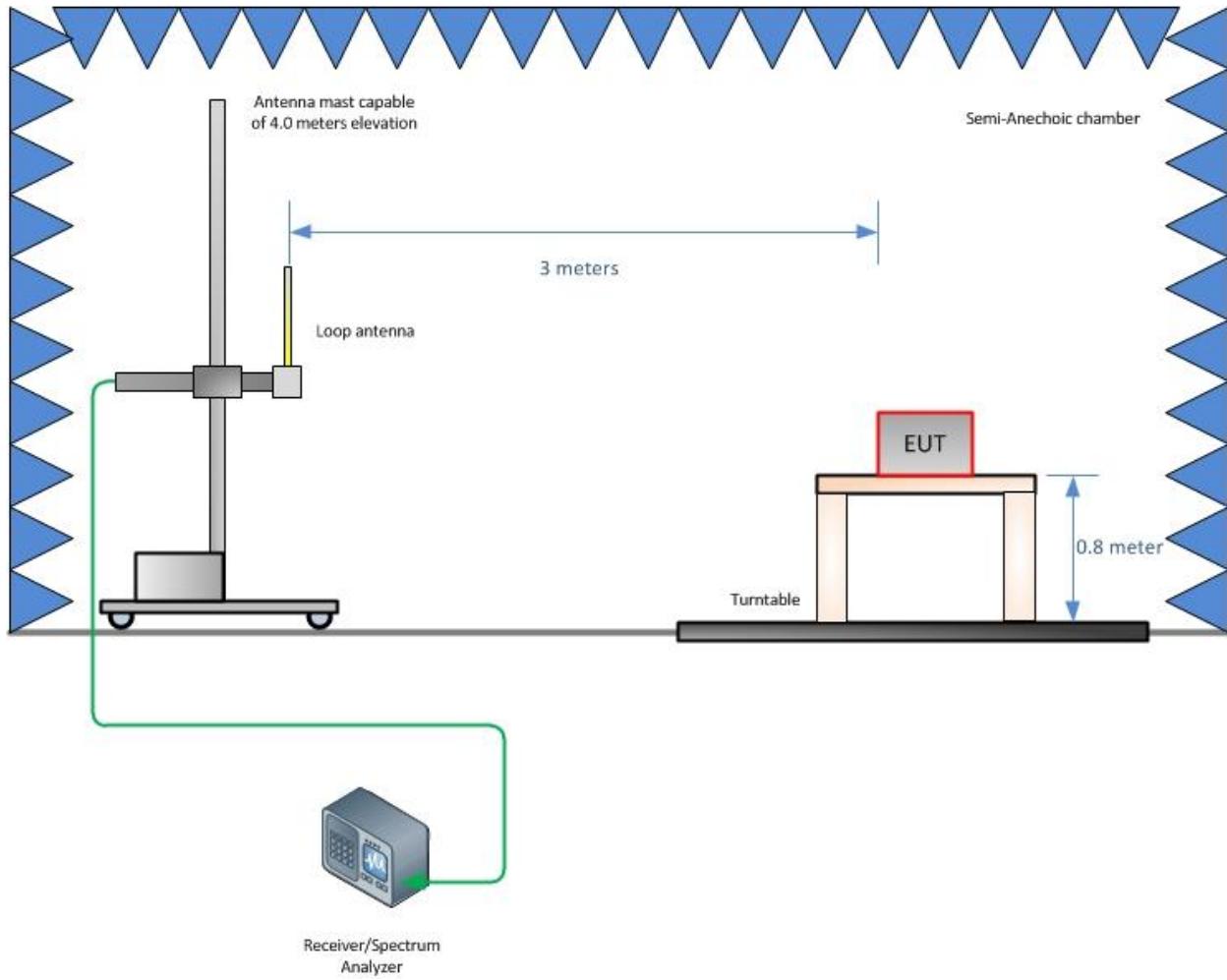
FCC ID S2B-ABBTE
IC: 10870A-ABBTE
Report No. SC1211094A Rev.1



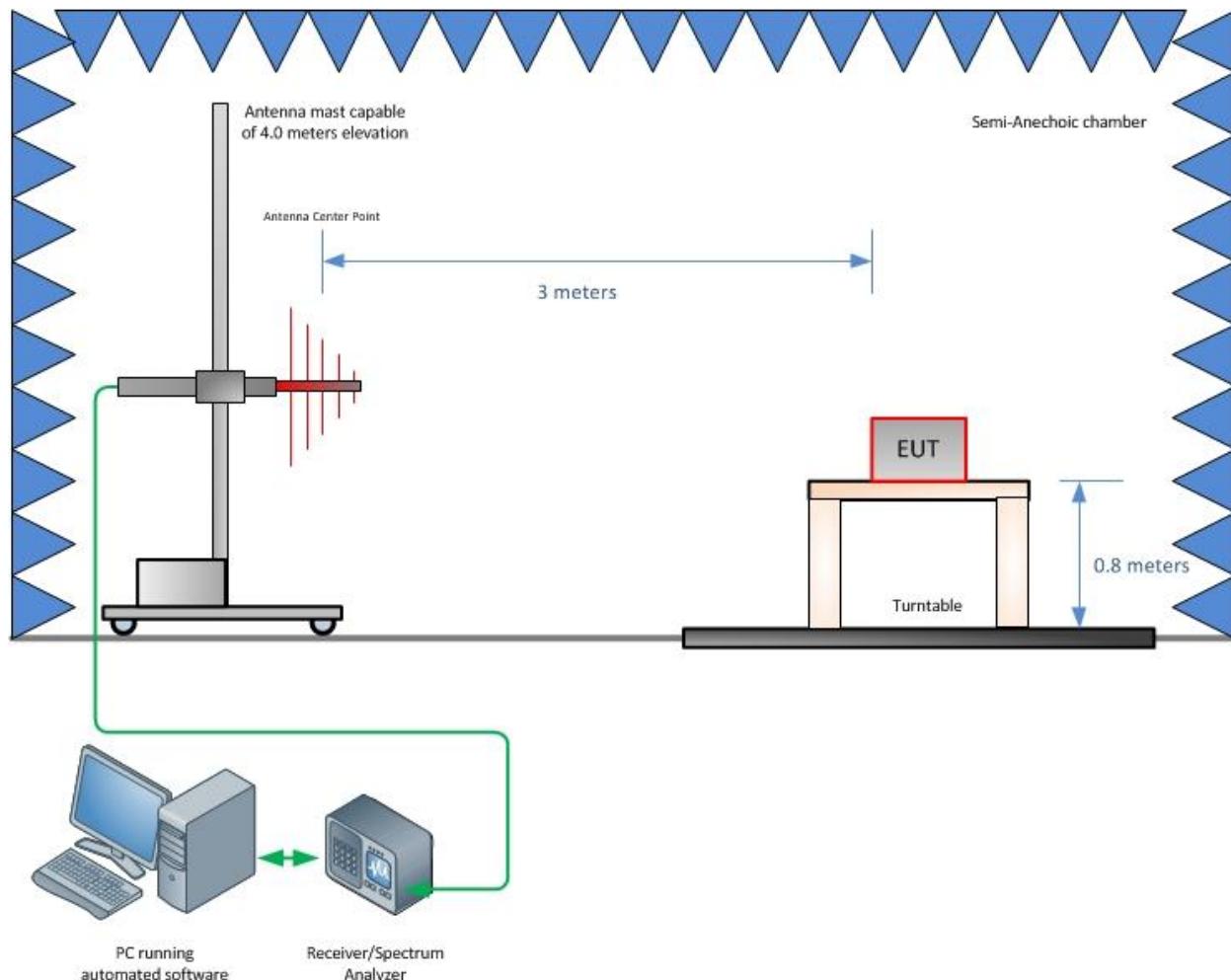
SECTION 4

DIAGRAM OF TEST SETUP

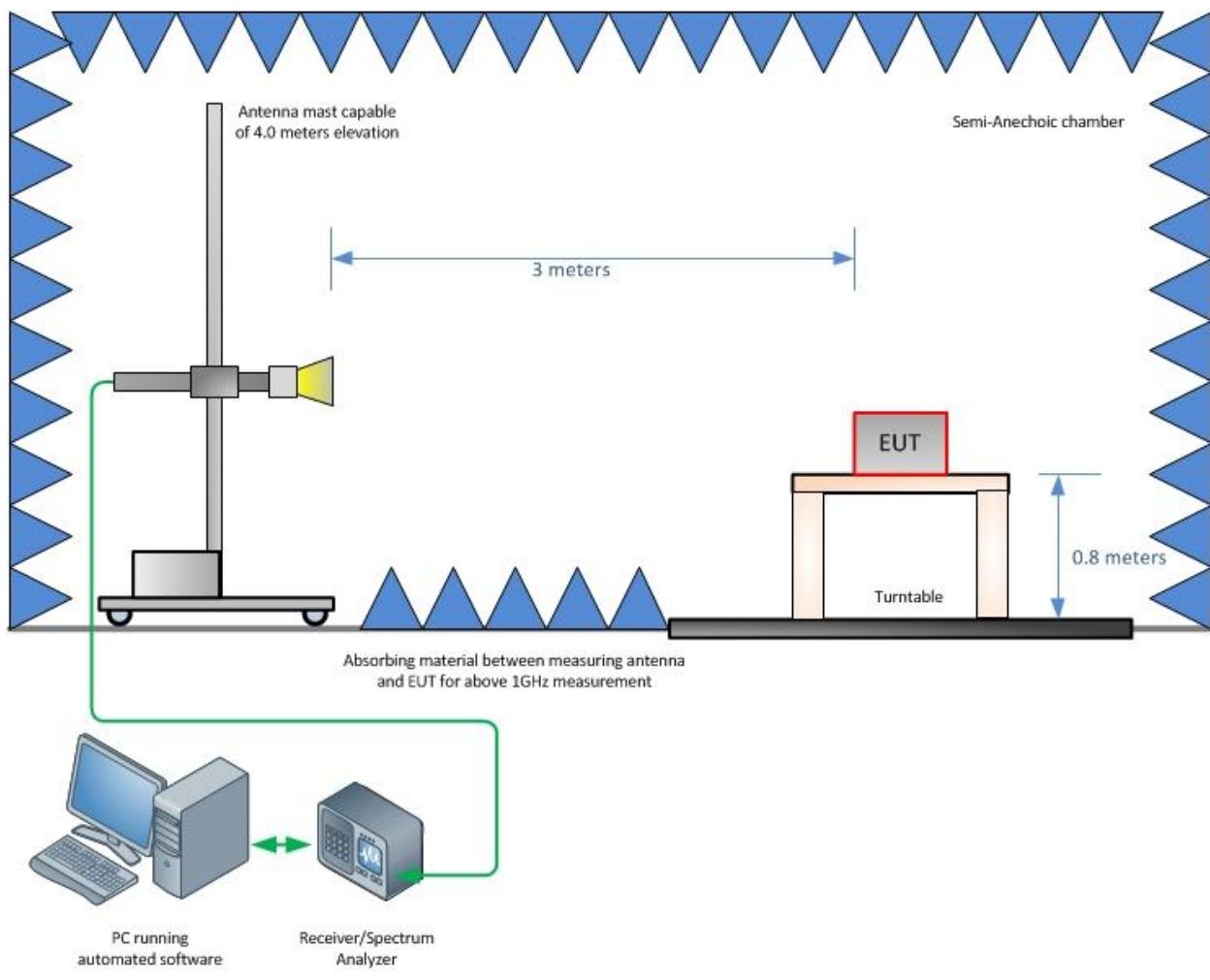
4.1 TEST SETUP DIAGRAM



Test Notes: Verification performed at both 1 meter and 3 meters.



Radiated Emission Test Setup (Between 30MHz and 1GHz)



Radiated Emission Test Setup (Above 1GHz)



SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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