# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT AND INDUSTRY CANADA RSS 210

*OF*

| | |
|---|---|
| **Product Name:** | **Here One** |
| **Brand Name:** | **HERE01011** |
| **Model No.:** | **HERE01011L** |
| **Model Difference:** | **N/A** |
| **FCC ID:** | **2AF9A01011L** |
| **IC:** | **20747-01011L** |
| **Report No.:** | **ER/2016/C0077** |
| **Issue Date:** | **Jan. 11, 2017** |
| **FCC Rule Part:** | **§15.209** |
| **IC Rule Part:** | **RSS-210 issue 9 Aug.2016 Annex B** |
| **Prepared for** | **Doppler Labs Inc.**<br>**611 Broadway, Suite 523, New York, NY USA 10012** |
| **Prepared by** | **SGS Taiwan Ltd.**<br>**Electronics & Communication Laboratory**<br>**No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803** |

Testing Laboratory
0513

# VERIFICATION OF COMPLIANCE

| | |
|---|---|
| **Applicant:** | Doppler Labs Inc.<br>611 Broadway, Suite 523, New York, NY USA 10012 |
| **Product Name:** | Here One |
| **Brand Name:** | HERE01011 |
| **Model No.:** | HERE01011L |
| **Model Difference:** | N/A |
| **FCC ID:** | 2AF9A01011L |
| **IC:** | 20747-01011L |
| **File Number:** | ER/2016/C0077 |
| **Date of test:** | Dec. 20, 2016 ~ Jan. 04, 2017 |
| **Date of EUT Received:** | Dec. 20, 2016 |

## We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4:2014 & ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

| | | | |
|---|---|---|---|
| ***Test By:*** | Marcus Tseng | ***Date:*** | Jan. 11, 2017 |
| | ***Marcus Tseng / Engineer*** | | |
| ***Prepared By:*** | Yuri Tsai | ***Date:*** | Jan. 11, 2017 |
| | ***Yuri Tsai / Clerk*** | | |
| ***Approved By*** | Jim Chang | ***Date:*** | Jan. 11, 2017 |
| | ***Jim Chang / Asst. Manager*** | | |

# Revision History

| Report Number | Revision | Description | Issue Date |
|---|---|---|---|
| ER/2016/C0077 | Rev.00 | Initial creation of document | Jan. 11, 2017 |
| | | | |
| | | | |

# Contents

# 1. GENERAL INFORMATION

## 1.1. Product Description

| | | |
|---|---|---|
| Product Name: | Here One | |
| Brand Name: | HERE01011 | |
| Model No.: | HERE01011L | |
| Model Difference: | N/A | |
| Hardware Version: | 102 | |
| Software Version: | 1.0 | |
| USB Cable: | Model No.: C712 10M008 266 6, Supplier: Amphenol Mobile Connector Solution | |
| Charging Case: | Model No.: P0788-LF (842326 1S1P), Supplier: EVE | |
| Power Supply: | 3.7Vdc from Rechargeable Li-Ion Battery or 5V from USB Cable | |
| | Battery: | Model No.: CP1254 A3, Supplier: Varta |

| | |
|---|---|
| Operating Frequency | 10.6MHz |
| Transmit Power | < 69.54dBuV/m at 3m. |
| Number of Channels | 1 |
| Modulation Type: | 8-DPSK |
| Antenna: | coil antenna |
| Type of Emission: | 501KG1D |

The signal is very weak and not able to be capture at all

## 1.2. Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.209

IC RSS 210 issue 9 Aug.2016 Annex B

RSS-Gen. issue 4 Nov. 2014

ANSI C63.10:2013

Note:

All test items have been performed and record as per the above standards.

## 1.3. Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan (TAF code 0513)

FCC Registration Numbers are: 735305
Canada Registration Number: 4620A-5 .

## 1.4. Special Accessories

There are no special accessories used while test was conducted.

## 1.5. Equipment Modifications

There was no modification incorporated into the EUT.

# 2. System Test Configuration

## 2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

## 2.2. EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

## 2.3. Test Procedure

### 2.3.1 Conducted Emissions (Not apply in the report)

The EUT is a placed on as turn table which is 0.8 m above ground plan. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz,. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plan. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna.

## 2.4. Limitation

### (1) Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

| Frequency range MHz | Limits dB (uV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 to 0.50 | 66 to 56 | 56 to 46 |
| 0.50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |
| Note<br>1.The lower limit shall apply at the transition frequencies<br>2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. | | |

### (2) Radiated Emission

(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:

(b) In the emission table above, the tighter limit applies at the band edges.

(c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other Sections within this Part and which are required to reduce their nwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

| Frequency (MHz) | Field strength μV/m | Distance (m) |
|---|---|---|
| 0.009-0.490 | 2400/F(KHz) | 300 |
| 0.490-1.705 | 24000/F(KHz) | 30 |
| 1.705-30 | 30 | 30 |
| 30-88 | 100 | 3 |
| 88-216 | 150 | 3 |
| 216-960 | 200 | 3 |
| Above 960 | 500 | 3 |

## 2.5. Configuration of Tested System

### Fig. 2-1 Configuration of Tested System


### Table 2-1 Equipment Used in Tested System

| Item | Equipment | Mfr/Brand | Model/ Type No. | Series No. | Data Cable | Power Cord |
|---|---|---|---|---|---|---|
| 1. | N/A | | | | | |

## 3. Summary of Test Results

| FCC / IC Rules | Description Of Test | Result |
|---|---|---|
| §15.207 | Conducted Emission | N/A |
| §15.209 (a) / RSS-GEN Issue 4 | Fieldstrength of harmonics and spurious | Compliant |
| §15.35 (c) / RSS-GEN Issue 4 § 6.10 | Timing of the transmitter (Duty cycle correction factor ) | Compliant |
| § 15.209 / RSS-Gen issue 4 §6.6 | Bandwidth of the modulated carrier | Compliant |

## 4. Description of test modes

The EUT has been tested under continuous operating condition. The Frequency 10.6MHz was chosen for testing.

# 5. Conducted Emissions Test

## 5.1. Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

## 5.2. Test SET-UP (Block Diagram of Configuration)

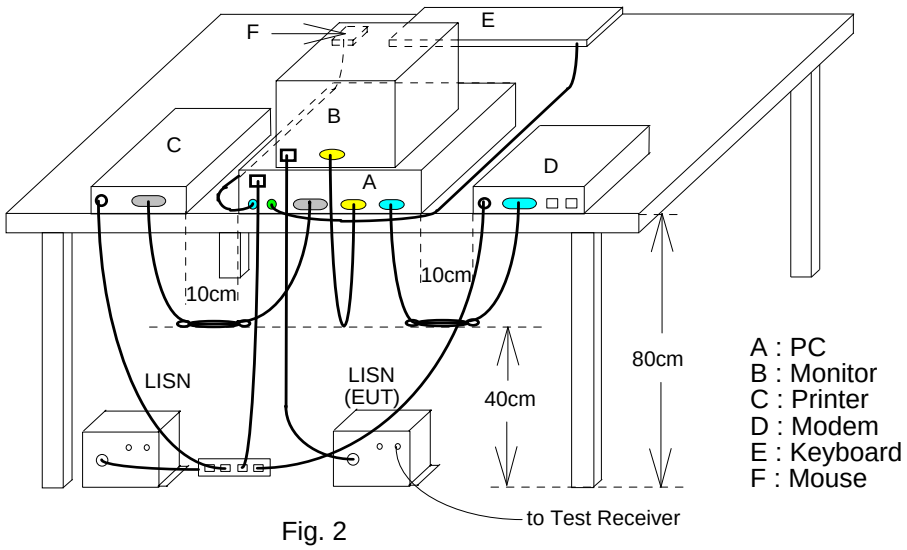



Fig. 2

## 5.3. Measurement Equipment Used:

| Conducted Emission Test Site | | | | | |
|---|---|---|---|---|---|
| **EQUIPMENT TYPE** | **MFR** | **MODEL NUMBER** | **SERIAL NUMBER** | **LAST CAL.** | **CAL DUE.** |
| EMI Test Receiver | R&S | ESCI7 | 100760 | 05/10/2016 | 05/09/2017 |
| LISN | Rolf-Heine | NNB-2/16Z | 99012 | 05/16/2016 | 05/15/2017 |
| LISN | FCC | FCC-LISN-50/250-25-2-01 | 04034 | 05/16/2016 | 05/15/2017 |
| Coaxial Cables | N/A | WK CE Cable | N/A | 11/26/2016 | 11/25/2017 |

## 5.4. Measurement Result:

Note: Refer to next page for measurement data and plots.

# AC POWER LINE CONDUCTED EMISSION TEST DATA

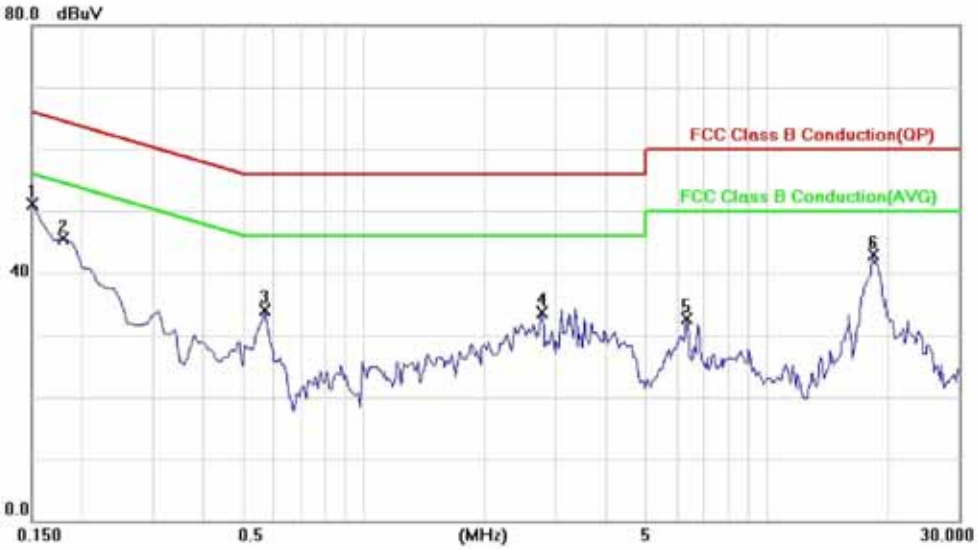
| Operation Mode: | Operation mode | | | Test By: | Nick |
|---|---|---|---|---|---|
| Temperature: | 20 ℃ | Humidity: | 58 % | | |

Site ConductionRoom
Limit: FCC Class B Conduction(QP)
Mode: Operationmode
Note:

Phase: L1
Power: AC 120V/60Hz

Temperature: 28 ℃
Humidity: 60%

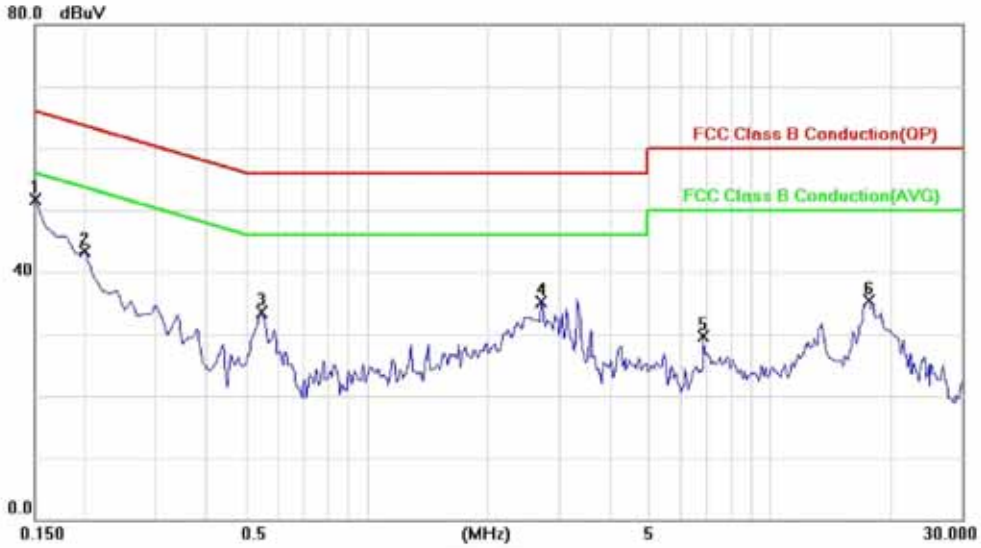
**ConductedEmission**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | * | 0.1500 | 51.04 | 0.16 | 51.20 | 66.00 | -14.80 | peak | |
| 2 | | 0.1800 | 45.39 | 0.16 | 45.55 | 64.49 | -18.94 | peak | |
| 3 | | 0.5700 | 33.88 | 0.17 | 34.05 | 56.00 | -21.95 | peak | |
| 4 | | 2.7700 | 33.54 | 0.23 | 33.77 | 56.00 | -22.23 | peak | |
| 5 | | 6.3400 | 32.40 | 0.30 | 32.70 | 60.00 | -27.30 | peak | |
| 6 | | 18.3600 | 42.58 | 0.42 | 43.00 | 60.00 | -17.00 | peak | |

| | | | |
|---|---|---|---|
| Site ConductionRoom | Phase: | N | Temperature: 26 ℃ |
| Limit: FCC Class B Conduction(QP) | Power: | AC 120V/60Hz | Humidity: 60% |
| Mode: Operationmode | | | |
| Note: | | | |

## ConductedEmission




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | * | 0.1500 | 51.58 | 0.18 | 51.76 | 66.00 | -14.24 | peak | |
| 2 | | 0.2000 | 43.19 | 0.19 | 43.38 | 63.61 | -20.23 | peak | |
| 3 | | 0.5500 | 33.39 | 0.21 | 33.60 | 56.00 | -22.40 | peak | |
| 4 | | 2.7200 | 34.87 | 0.27 | 35.14 | 56.00 | -20.86 | peak | |
| 5 | | 6.8600 | 29.43 | 0.36 | 29.79 | 60.00 | -30.21 | peak | |
| 6 | | 17.6400 | 34.82 | 0.53 | 35.35 | 60.00 | -24.65 | peak | |

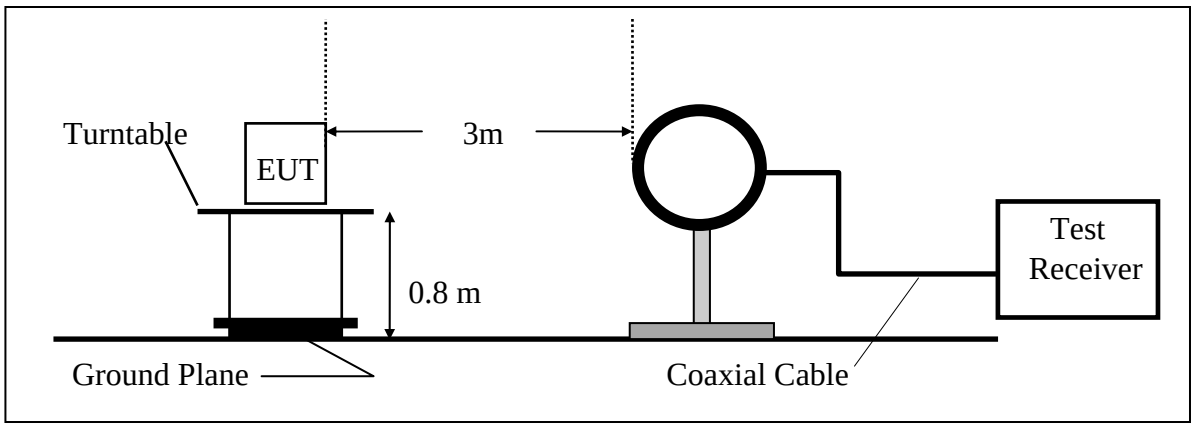
# 6. Radiated Emission Test

## 6.1. Measurement Procedure

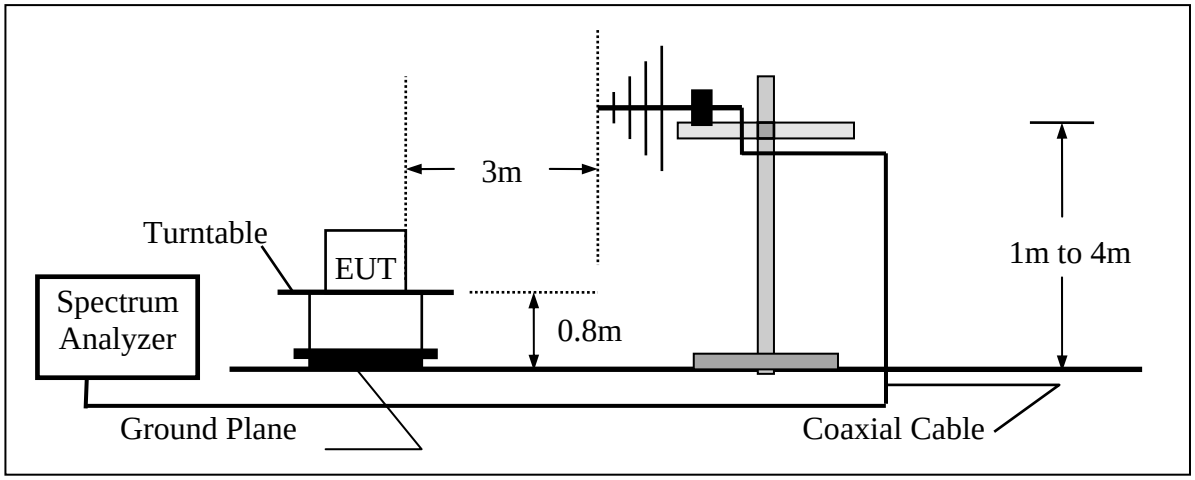
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

## 6.2. Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz




(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



## 6.3. Measurement Equipment Used:

| 966 Chamber | | | | | |
|---|---|---|---|---|---|
| EQUIPMENT TYPE | MFR | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
| EMI Test Receiver | R&S | ESCI7 | 100760 | 05/10/2016 | 05/09/2017 |
| Spectrum Analyzer | Agilent | E4446A | MY51100003 | 01/29/2016 | 01/28/2017 |
| Loop Antenna | ETS-Lindgren | 6502 | 143303 | 09/20/2016 | 09/19/2017 |
| Bilog Antenna | SCHWAZBECK | VULB9168 | 378 | 12/19/2016 | 12/18/2017 |
| Horn Antenna | Schwarzbeck | BBHA9120D | 1441 | 08/01/2016 | 07/31/2017 |
| Pre-Amplifier | Agilent | 8447D | 2944A07676 | 01/02/2016 | 01/01/2017 |
| Pre-Amplifier | EMC Instruments Corp. | EMC012653 0 | 980038 | 01/02/2016 | 01/01/2017 |
| Turn Table | HD | DT420 | N/A | N.C.R | N.C.R |
| Antenna Tower | ChamPro | AM-BS-4500 -B | 060776-ABS | N.C.R | N.C.R |
| Controller | ChamPro | EM1000 | 60776 | N.C.R | N.C.R |
| Low Loss Cable | Huber Suhner | 966_RX | 9 | 01/02/2016 | 01/01/2017 |
| 3m Site NSA | SGS | 966 chamber | N/A | 07/01/2016 | 06/30/2017 |
| Low Loss Cable | Huber Suhner | 966 TX | 1 | 01/02/2016 | 01/01/2017 |
| Horn Antenna | Schwarzbeck | BBHA9170 | 184 | 12/12/2016 | 12/11/2017 |
| Pre-Amplifier | EMC Instruments Corp. | EMC184045 | 980135 | 01/02/2016 | 01/01/2017 |

## 6.4. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

**FS = RA + AF + CL - AG**

| | |
|---|---|
| Where FS = Field Strength | CL = Cable Attenuation Factor (Cable Loss) |
| RA = Reading Amplitude | AG = Amplifier Gain |
| AF = Antenna Factor | |

## 6.5. Measurement Result

### Below 30MHz:

| | | | |
|---|---|---|---|
| Operation Mode : | IFMI | Test Date : | 12/27/2016 |
| Fundamental Frequency : | 10.6 MHz | Temp. / Humi. : | 22 deg_C / 61 RH |
| Operation Band : | Tx | Test Engineer : | Kane |
| EUT Pol. : | E2 Plane | Measurement Antenna Pol. : | VERTICAL |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

| Freq. | Note | Decetor Mode | Actual Reading Level | Spectrum FS | Factor | Limit @3m | Margin |
|---|---|---|---|---|---|---|---|
| MHz | F/H/E/S | QP/AV/PK | dBμV/m | dBμV/m | dB | dBuV/m | dB |
| 10.64 | F | Peak | 34.62 | 23.27 | 11.36 | 69.54 | -34.92 |
| 11.60 | S | Peak | 22.27 | 10.89 | 11.38 | 69.54 | -47.27 |
| 13.22 | S | Peak | 21.14 | 9.72 | 11.43 | 69.54 | -48.40 |
| 17.54 | S | Peak | 21.10 | 9.57 | 11.52 | 69.54 | -48.44 |
| 20.54 | S | Peak | 19.35 | 7.94 | 11.41 | 69.54 | -50.19 |
| 24.34 | S | Peak | 19.12 | 8.76 | 10.36 | 69.54 | -50.42 |
| 26.78 | S | Peak | 19.51 | 9.74 | 9.78 | 69.54 | -50.03 |

| | | | |
|---|---|---|---|
| Operation Mode : | IFMI | Test Date : | 12/27/2016 |
| Fundamental Frequency : | 10.6 MHz | Temp. / Humi. : | 22 deg_C / 61 RH |
| Operation Band : | Tx | Test Engineer : | Kane |
| EUT Pol. : | E2 Plane | Measurement Antenna Pol. : | HORIZONTAL |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

| Freq. | Note | Decetor Mode | Actual Reading Level | Spectrum FS | Factor | Limit @3m | Margin |
|---|---|---|---|---|---|---|---|
| MHz | F/H/E/S | QP/AV/PK | dBμV/m | dBμV/m | dB | dBuV/m | dB |
| 10.50 | F | Peak | 35.51 | 24.16 | 11.35 | 69.54 | -34.03 |
| 12.04 | S | Peak | 22.27 | 10.87 | 11.40 | 69.54 | -47.27 |
| 14.50 | S | Peak | 21.39 | 9.93 | 11.46 | 69.54 | -48.15 |
| 18.36 | S | Peak | 21.59 | 10.04 | 11.55 | 69.54 | -47.95 |
| 21.76 | S | Peak | 20.21 | 9.16 | 11.05 | 69.54 | -49.33 |
| 26.44 | S | Peak | 19.93 | 10.07 | 9.86 | 69.54 | -49.61 |
| 28.10 | S | Peak | 20.66 | 11.18 | 9.48 | 69.54 | -48.88 |

## Above 30MHz:

| | | | |
|---|---|---|---|
| Operation Mode : | IFMI | Test Date : | 12/27/2016 |
| Fundamental Frequency : | 10.6 MHz | Temp. / Humi. : | 22 deg_C / 61 RH |
| Operation Band : | Tx | Test Engineer : | Kane |
| EUT Pol. : | E2 Plane | Measurement Antenna Pol. : | VERTICAL |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

| Freq. | Note | Decetor Mode | Actual Reading Level | Spectrum FS | Factor | Limit @3m | Margin |
|---|---|---|---|---|---|---|---|
| MHz | F/H/E/S | QP/AV/PK | dBμV/m | dBμV/m | dB | dBuV/m | dB |
| 54.25 | S | Peak | 19.83 | 27.65 | -7.82 | 40.00 | -20.17 |
| 160.95 | S | Peak | 20.07 | 27.51 | -7.44 | 43.50 | -23.43 |
| 306.45 | S | Peak | 21.51 | 27.18 | -5.68 | 46.00 | -24.49 |
| 478.14 | S | Peak | 26.28 | 28.71 | -2.43 | 46.00 | -19.72 |
| 667.29 | S | Peak | 28.66 | 28.23 | 0.43 | 46.00 | -17.34 |
| 832.19 | S | Peak | 30.80 | 27.36 | 3.44 | 46.00 | -15.20 |

| | | | |
|---|---|---|---|
| Operation Mode : | IFMI | Test Date : | 12/27/2016 |
| Fundamental Frequency : | 10.6 MHz | Temp. / Humi. : | 22 deg_C / 61 RH |
| Operation Band : | Tx | Test Engineer : | Kane |
| EUT Pol. : | E2 Plane | Measurement Antenna Pol. : | HORIZONTAL |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

| Freq. | Note | Decetor Mode | Actual Reading Level | Spectrum FS | Factor | Limit @3m | Margin |
|---|---|---|---|---|---|---|---|
| MHz | F/H/E/S | QP/AV/PK | dBμV/m | dBμV/m | dB | dBuV/m | dB |
| 52.31 | S | Peak | 19.71 | 27.48 | -7.77 | 40.00 | -20.29 |
| 153.19 | S | Peak | 19.10 | 26.80 | -7.70 | 43.50 | -24.40 |
| 350.10 | S | Peak | 22.13 | 27.10 | -4.97 | 46.00 | -23.87 |
| 547.01 | S | Peak | 26.91 | 28.58 | -1.67 | 46.00 | -19.09 |
| 752.65 | S | Peak | 30.20 | 27.54 | 2.66 | 46.00 | -15.80 |
| 856.44 | S | Peak | 31.85 | 27.37 | 4.48 | 46.00 | -14.15 |

# 7. Timing of the transmitter (Duty cycle correction factor)

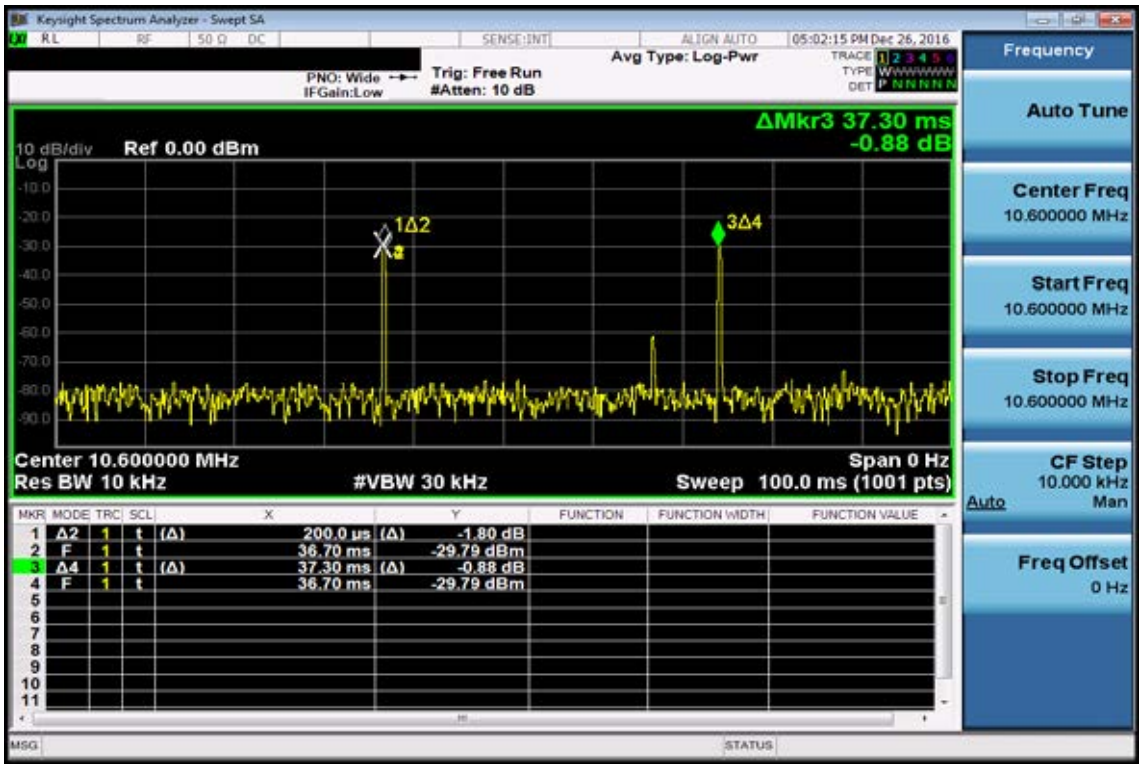
## 7.1. Limits:

FCC CFR Part SUBCLAUSE § 15.35 (c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

IC RSS-GEN Issue 4 Section 6.10 When the field strength (or envelope power) is not constant or it is in pulses, and an average detector is specified to be used, the value of field strength or power shall be determined by averaging over one complete pulse train, including blanking intervals within the pulse train, as long as the pulse train does not exceed 0.1 seconds. In cases where the pulse train exceeds 0.1 second, the average value of field strength or output power shall be determined during a 0.1 second interval during which the field strength or power is at its maximum value.
The exact method of calculating the average field strength shall be submitted with any application for
certification or shall be retained in the measurement data file for equipment subject to notification or
verification.

## 7.2. Measurement Result

Refer to next page for measurement chart.



# 8. Bandwidth of the modulated carrier

## 8.1. Standard Applicable:

For 99% Bandwidth

RSS-Gen issue 4 §6.6, 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 (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

**Note:** Video averaging is not permitted.

A peak, or peak hold, may be used in place of the sampling detector as this may produce a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold may be necessary to determine the occupied bandwidth if the device is not transmitting continuously.

The trace data points are recovered and are directly summed in linear power level 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 (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded.

The difference between the two recorded frequencies is the 99% occupied bandwidth.

## 8.2. Measurement Equipment Used:

Refer to section 7.2 for details.

## 8.3. Test Set-up:

Refer to section 7.3 for details.

## 8.4. Measurement Procedure:

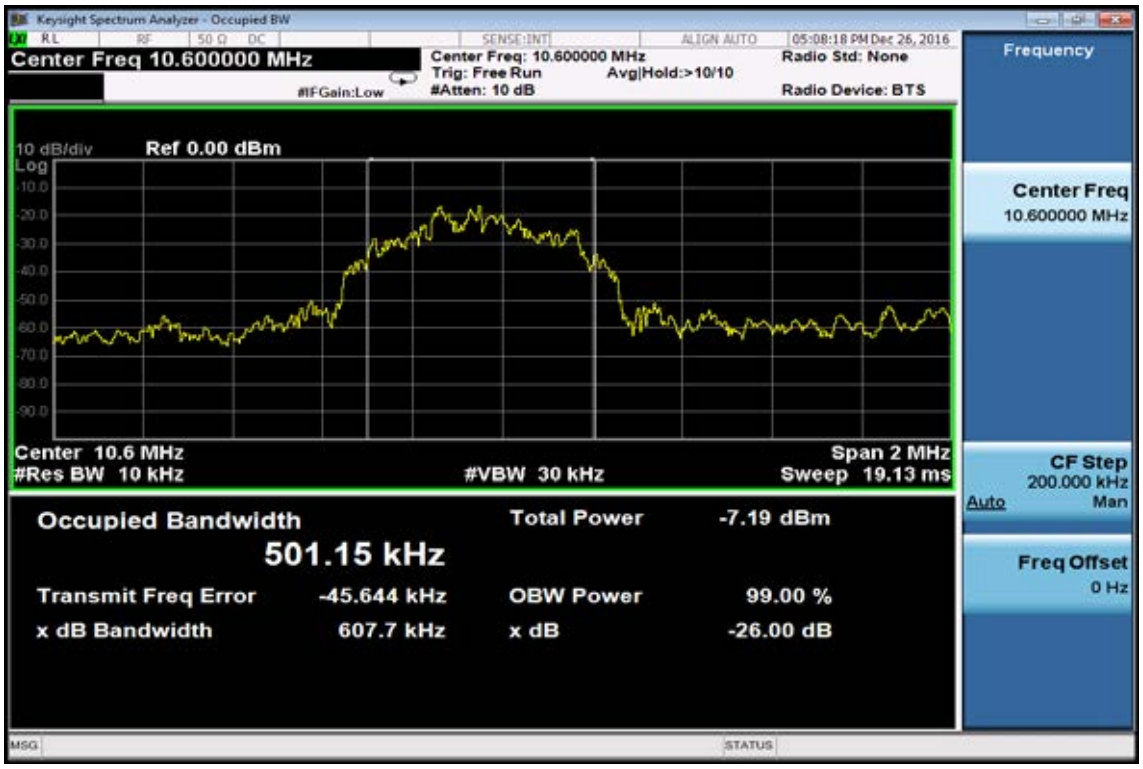
1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=10 kHz (1 % of 20 dB Bandwidth.), VBW = 30 kHz, Span= 3MHz, Sweep=auto, Detector = Peak, and Max hold for 20dB Bandwidth test.
4. Mark the peak frequency and –20dB (upper and lower) frequency and Turn on the 99% bandwidth function, max reading.
5. Repeat above procedure for 99% Bandwidth, but set RBW to 1% of the span, and detector = peak.
6. Repeat above procedures until all test default channel is completed

## 8.5. Measurement Result:

**99% Bandwidth:**

| Frequency MHz | 99%Bandwidth (MHz) |
|---|---|
| 10.6 | **0.501** |

## 99% Band Width Test Data




***~ End of Report***