# FCC Radio Test Report

## FCC ID: OXM000087

**This report concerns: Original Grant**

| | | |
|---|---|---|
| **Project No.** | : | 1804T081 |
| **Equipment** | : | Wireless Presenter |
| **Test Model** | : | AMP30 |
| **Series Model** | : | N/A |
| **Applicant** | : | Targus International LLC |
| **Address** | : | 1211 North Miller Street Anaheim, CA 92806 USA |

| | | |
|---|---|---|
| **Date of Receipt** | : | Apr. 24, 2018 |
| **Date of Test** | : | Apr. 24, 2018 ~ Jun. 29, 2018 |
| **Issued Date** | : | Jun. 29, 2018 |
| **Tested by** | : | BTL Inc. |

**Testing Engineer** : Kay Wu
(Kay Wu)

**Technical Manager** :
(James Chiu)

**Authorized Signatory** :
(Andy Chiu)


**BTL INC.**

No.18, Ln. 171, Sec. 2, Jiuzong Rd.,
Neihu Dist., Taipei City 114, Taiwan (R.O.C.)
TEL: +886-2-2657-3299 FAX: +886-2-2657-3331


Testing Laboratory
0659

## Declaration

**BTL** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

**BTL**'s reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

**BTL**'s laboratory quality assurance procedures are in compliance with the **ISO Guide 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

**BTL** is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements in all the possible configurations as representative of its intended use.

## Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

**CONTENTS**

## REPORT ISSUED HISTORY

| Issue No. | Description | Issued Date |
|---|---|---|
| BTL-FCCP-1-1804T081 | Original Issue. | Jun. 29, 2018 |

# 1 CERTIFICATION

| | | |
|---|---|---|
| Equipment | : | Wireless Presenter |
| Brand Name | : | Targus |
| Test Model | : | AMP30 |
| Series Model | : | N/A |
| Applicant | : | Targus International LLC |
| Manufacturer | : | Targus International LLC |
| Address | : | 1211 North Miller Street Anaheim, CA 92806 USA |
| Factory | : | (1) Dongguan Shengyih Electronics Co., Ltd.<br>(2) Shengyih Technologies Co., Ltd. |
| Address | : | (1) The Second Industrial Park, Eaetern Industrial Park, Changping Town, Dongguan City, Guangdong Province, China<br>(2) 3F-2., No.13, Wu Chuan 1st Rd., Xinzhuang Dist., New Taipei City 24892, Taiwan |
| Date of Test | : | Apr. 24, 2018 ~ Jun. 29, 2018 |
| Test Sample | : | Engineering Sample |
| Standard(s) | : | FCC Part15, Subpart C (§15.247)<br>ANSI C63.10-2013 |

The above equipment has been tested and found in compliance with the requirement of the relative standards by BTL Inc.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-1-1804T081) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

## 2 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

| FCC Part15, Subpart C (§15.247) | | | | |
|---|---|---|---|---|
| **FCC Clause No** | **Description** | **Test Result** | **Judgement** | **Remark** |
| 15.207 | Conducted Emissions | ------ | N/A | NOTE (1)<br>NOTE (2) |
| 15.209/15.205 | Transmitter Radiated Emissions | APPENDIX A<br>APPENDIX B<br>APPENDIX C | Pass | ------ |
| 15.247(a)(2) | 6 dB Bandwidth | APPENDIX D | Pass | ------ |
| 15.247(b)(3) | Peak Output Power | APPENDIX E | Pass | ------ |
| 15.247(d) | Antenna Conducted Spurious Emissions | APPENDIX F | Pass | ------ |
| 15.247(e) | Power Spectral Density | APPENDIX G | Pass | ------ |
| 15.203 | Antenna Requirement | ------ | Pass | ------ |

NOTE:

(1) ”N/A” denotes test is not applicable in this Test Report.

(2) Input power is supplied by battery.

## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

**Radiated emission Test (Below 1 GHz):**
**CB15:** (VCCI RN: R-20020; FCC RN:674415; FCC DN:TW0659; ISED Assigned Code:20088-5)
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

**Radiated emission Test (Above 1 GHz):**
**CB15:** (VCCI RN: G-20031; FCC RN:674415; FCC DN:TW0659; ISED Assigned Code:20088-5)
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

## 2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 $U_{cispr}$ requirement.

The reported uncertainty of measurement y ± U, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

A. Radiated emission test:

| Test Site | Method | Measurement Frequency Range | U,(dB) |
|---|---|---|---|
| CB15 (3m) | CISPR | 9kHz ~ 150kHz | 2.82 |
| | | 150kHz ~ 30MHz | 2.58 |

| Test Site | Method | Measurement Frequency Range | Ant. | U,(dB) |
|---|---|---|---|---|
| CB15 (3m) | CISPR | 30MHz ~ 200MHz | V | 4.20 |
| | | 30MHz ~ 200MHz | H | 3.64 |
| | | 200MHz ~ 1,000MHz | V | 4.56 |
| | | 200MHz ~ 1,000MHz | H | 3.90 |

| Test Site | Method | Measurement Frequency Range | Ant. | U,(dB) |
|---|---|---|---|---|
| CB15 (3m) | CISPR | 1GHz ~ 6GHz | V | 4.46 |
| | | 1GHz ~ 6GHz | H | 4.40 |
| | | 6GHz ~ 18GHz | V | 3.88 |
| | | 6GHz ~ 18GHz | H | 4.00 |

| Test Site | Method | Measurement Frequency Range | U,(dB) |
|---|---|---|---|
| CB15 (1m) | CISPR | 18 ~ 26.5 GHz | 4.62 |
| | | 26.5 ~ 40 GHz | 5.12 |

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.
Our calculated Measurement Instrumentation Uncertainty is shown in the tables above.
These are our $U_{lab}$ values in CISPR 16-4-2 terminology.
Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called $U_{CISPR}$, as follows:
Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB
Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

# 3 GENERAL INFORMATION

## 3.1 DESCRIPTION OF EUT

| | |
|---|---|
| Equipment | Wireless Presenter |
| Brand Name | Targus |
| Test Model | AMP30 |
| Series Model | N/A |
| Model Difference | N/A |
| Power Source | Supplied from 1*AAA battery |
| Power Rating | DC 1.5 V |
| Operation Frequency | 2416 MHz, 2468 MHz |
| Modulation Type | GFSK |
| Bit Rate of Transmitter | 1 Mbps |
| Maximum Output Power | -7.15 dBm |

NOTE:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

(2) Channel List:

| Channel | Frequency (MHz) |
|---|---|
| 00 | 2416 |
| 01 | 2468 |

(3) Table for Filed Antenna:

| Ant. | Brand | Model | Type | Connector | Gain (dBi) |
|---|---|---|---|---|---|
| 1 | N/A | N/A | PCB | N/A | 3.00 |

## 3.2 TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.
The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

| Radiated Emissions Test | |
|---|---|
| Test Mode | Description |
| 1 | Transmitting |

| Conducted Test | |
|---|---|
| Test Mode | Description |
| 1 | Transmitting |

NOTE:
(1) The measurements are performed at the low, middle and high available channels.

## 3.3 PARAMETERS OF TEST SOFTWARE

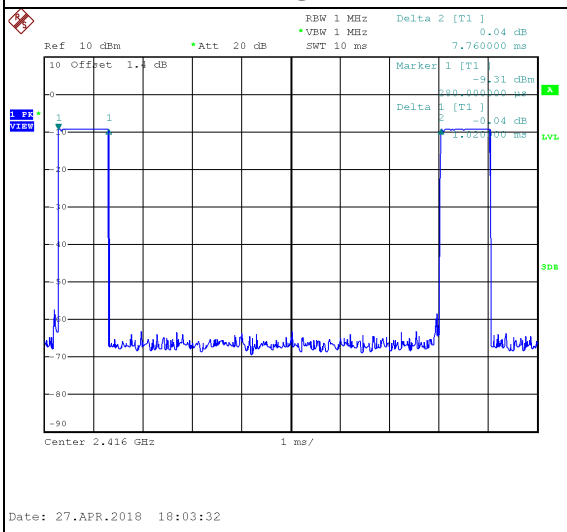
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

| Test Software Version | N/A | |
|---|---|---|
| Frequency (MHz) | 2416 | 2468 |
| Parameter | DEF | DEF |

## 3.4 DUTY CYCLE

If duty cycle is ≥ 98 %, duty factor is not required.
If duty cycle is < 98 %, duty factor shall be considered.

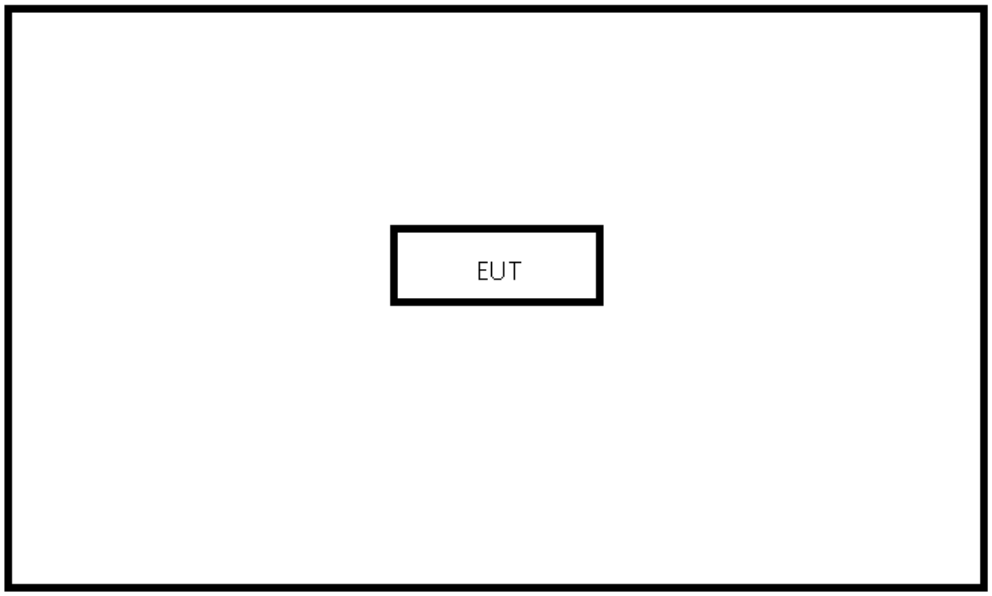
**SRD**




Duty cycle = 7.760 ms / 1.020 ms = 13.14 %
Duty Factor = 10 * log(1 / 0.1314) = 8.81

Note:
For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 2 kHz (Duty cycle < 98%).

## 3.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED




## 3.6 SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Brand | Model/Type No. | FCC ID | Series No. |
|---|---|---|---|---|---|
| - | - | - | - | - | - |

| Item | Shielded Type | Ferrite Core | Length | Note |
|---|---|---|---|---|
| - | - | - | - | - |

# 4 TRANSMITTER RADIATED EMISSIONS TEST

## 4.1 LIMIT

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

LIMITS OF RADIATED EMISSIONS MEASUREMENT (9 kHz to 1000 MHz)

| 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 |
| 960~1000 | 500 | 3 |

LIMITS OF RADIATED EMISSIONS MEASUREMENT (Above 1000 MHz)

| Frequency (MHz) | Radiated Emissions (dBuV/m) | | Measurement Distance (meters) |
|---|---|---|---|
| | Peak | Average | |
| Above 1000 | 74 | 54 | 3 |

NOTE:

(1) The limit for radiated test was performed according to FCC Part 15, Subpart C.
(2) The tighter limit applies at the band edges.
(3) Emission level (dBuV/m)=20log Emission level (uV/m).
(4) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10th carrier harmonic |
| RBW / VBW (Emission in restricted band) | 1MHz / 3MHz for Peak, 1MHz / 1/T for Average |

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9KHz~90KHz for PK/AVG detector |
| Start ~ Stop Frequency | 90KHz~110KHz for QP detector |
| Start ~ Stop Frequency | 110KHz~490KHz for PK/AVG detector |
| Start ~ Stop Frequency | 490KHz~30MHz for QP detector |
| Start ~ Stop Frequency | 30MHz~1000MHz for QP detector |

## 4.2 TEST PROCEDURE

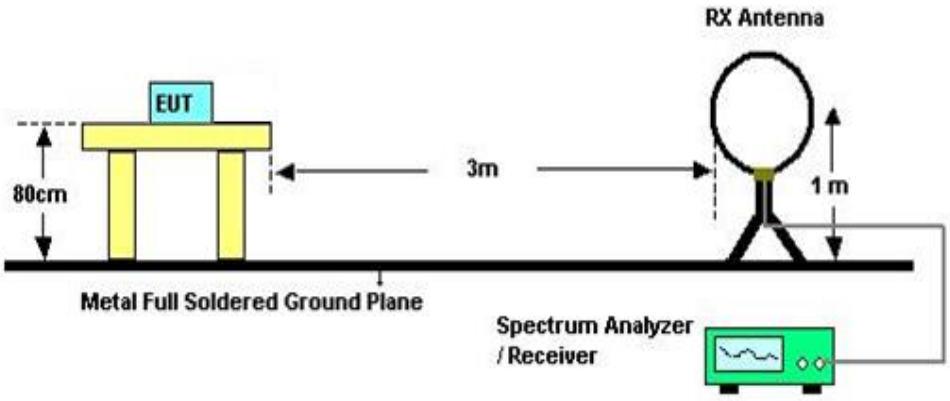
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
c. The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform. (below 1GHz)
h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn‘t perform. (above 1GHz)
i. For the actual test configuration, please refer to the related Item –EUT Test Photos.

## 4.3 DEVIATION FROM TEST STANDARD

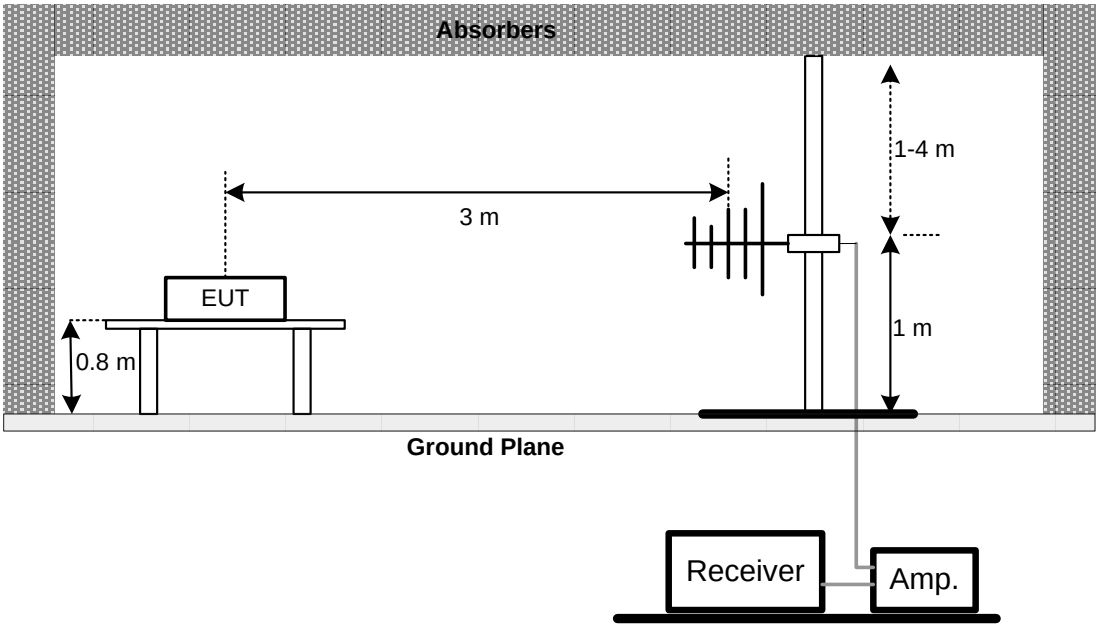
No deviation.

## 4.4 TEST SETUP

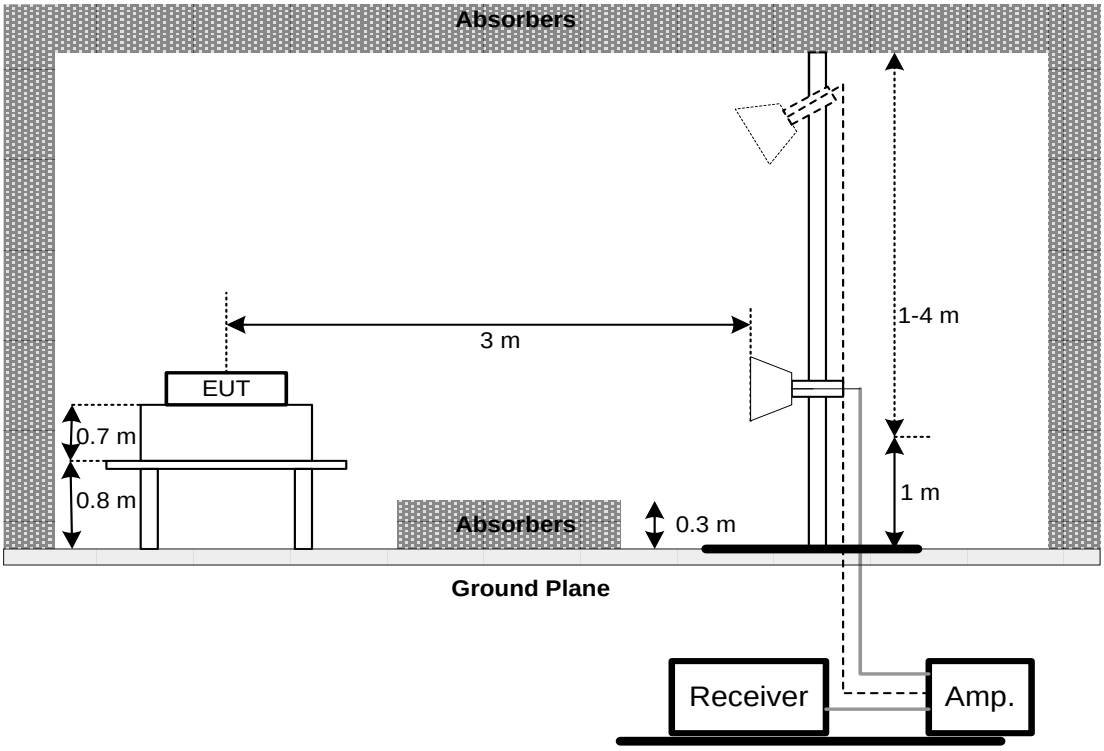
**Below 30 MHz**




**30 MHz to 1 GHz**



**Above 1 GHz**




## 4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

## 4.6 TEST RESULT – 9 KHZ TO 30 MHZ

Temperature: 23 °C Relative Humidity: 70 % Test Voltage: DC 1.5 V

Please refer to the APPENDIX A.

NOTE:

(1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
(2) Distance extrapolation factor = 40 log (specific distance / test distance) (dB).
(3) Limit line = specific limits (dBuV) + distance extrapolation factor.

## 4.7 TEST RESULT – 30MHZ TO 1000 MHZ

Temperature: 23 °C Relative Humidity: 70 % Test Voltage: DC 1.5 V

Please refer to the APPENDIX B.

## 4.8 TEST RESULT – ABOVE 1000 MHZ

Temperature: 23 °C  Relative Humidity: 70 %  Test Voltage: DC 1.5 V

Please refer to the APPENDIX C.

NOTE:

(1) No limit: This is fundamental signal, the judgment is not applicable.
For fundamental signal judgment was referred to Peak output test.

# 5 6 DB BANDWIDTH TEST

## 5.1 LIMIT

| FCC Part15, Subpart C (§15.247) | | | |
|---|---|---|---|
| Section | Test Item | Frequency Range (MHz) | Result |
| 15.247(a)(2) | Bandwidth | 2400-2483.5 | PASS |

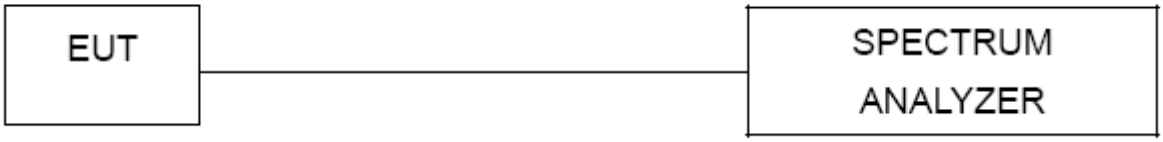
## 5.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Spectrum Setting: RBW= 100KHz, VBW=300KHz, Sweep time = 2.5 ms.

## 5.3 DEVIATION FROM TEST STANDARD

No deviation.

## 5.4 TEST SETUP




## 5.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

## 5.6 TEST RESULT

Please refer to the APPENDIX D.

# 6 PEAK OUTPUT POWER TEST

## 6.1 LIMIT

| FCC Part15, Subpart C (§15.247) | | | | |
|---|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247(b)(3) | Maximum Output Power | 1 Watt or 30dBm | 2400-2483.5 | PASS |

## 6.2 TEST PROCEDURE

a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.
b. The maximum peak conducted output power was performed in accordance with method 9.1.2 of FCC KDB 558074 D01 DTS Meas Guidance.

## 6.3 DEVIATION FROM TEST STANDARD

No deviation.

## 6.4 TEST SETUP


## 6.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

## 6.6 TEST RESULT

Please refer to the APPENDIX E.

# 7 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST

## 7.1 LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits.

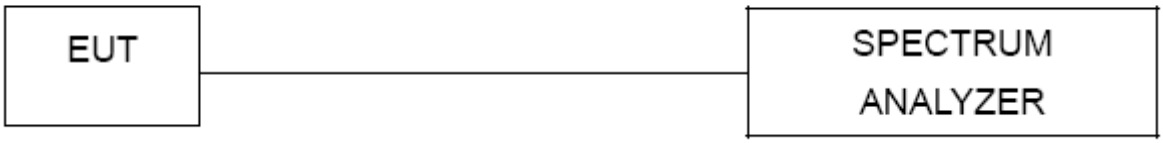
## 7.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Spectrum Setting: RBW = 100 kHz, VBW=300 kHz, Sweep time = Auto.
c. Offset = antenna gain + cable loss.

## 7.3 DEVIATION FROM TEST STANDARD

No deviation.

## 7.4 TEST SETUP




## 7.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

## 7.6 TEST RESULT

Please refer to the APPENDIX F.

# 8 POWER SPECTRAL DENSITY

## 8.1 LIMIT

| FCC Part15, Subpart C (§15.247) | | | | |
|---|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247(e) | Power Spectral Density | 8 dBm (in any 3KHz) | 2400-2483.5 | PASS |

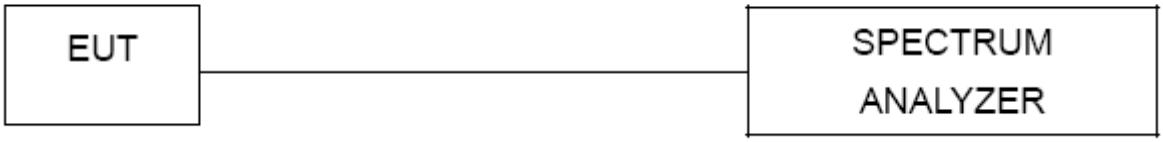
## 8.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Spectrum Setting: RBW=3KHz, VBW=10KHz, Sweep time = Auto.

## 8.3 DEVIATION FROM TEST STANDARD

No deviation.

## 8.4 TEST SETUP




## 8.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

## 8.6 TEST RESULT

Please refer to the APPENDIX G.

## 9 LIST OF MEASURING EQUIPMENTS

| Transmitter Radiated Emissions | | | | | |
|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | Preamplifier | EMCI | 012645B | 980267 | Feb. 27, 2019 |
| 2 | Preamplifier | EMCI | EMC02325 | 980217 | Dec. 27, 2019 |
| 3 | Preamplifier | EMCI | EMC2654045 | 980030 | Feb. 13, 2019 |
| 4 | Test Cable | EMCI | EMC104-SM-SM-8000 | 8m | Jan. 03, 2019 |
| 5 | Test Cable | EMCI | EMC104-SM-SM-800 | 150207 | Jan. 03, 2019 |
| 6 | Test Cable | EMCI | EEMC104-SM-SM-3000 | 151205 | Jan. 03, 2019 |
| 7 | MXE EMI Receiver | Agilent | N9038A | MY55420127 | Jan. 08, 2019 |
| 8 | Signal Analyzer | Agilent | N9010A | MY52220990 | Feb. 21, 2019 |
| 9 | Loop Ant | EMCI | LPA600 | 274 | May 03, 2019 |
| 10 | Horm Ant | SCHWARZBECK | BBHA 9120D | 9120D-1342 | Feb. 27, 2019 |
| 11 | Horm Ant | Schwarzbeck | BBHA 9170 | 187 | Dec. 05, 2018 |
| 12 | Trilog-Broadband Antenna | Schwarzbeck | VULB 9168 | 9168-548 | Jan. 15, 2019 |
| 13 | 5dB Attenuator | EMCI | EMCI-N-6-05 | AT-N0623 | Jan. 15, 2019 |

| 6 dB Bandwidth | | | | | |
|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | Spectrum Analyzer | R&S | R&S/FSP30 | 100854 | May 24, 2019 |

| Peak Output Power | | | | | |
|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | Power Meter | Anritsu | ML2495A | 1128008 | Aug. 16, 2018 |
| 2 | Power Sensor | Anritsu | MA2411B | 1126001 | Aug. 16, 2018 |

| Antenna Conducted Spurious Emissions | | | | | |
|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | Spectrum Analyzer | R&S | R&S/FSP30 | 100854 | May 24, 2019 |

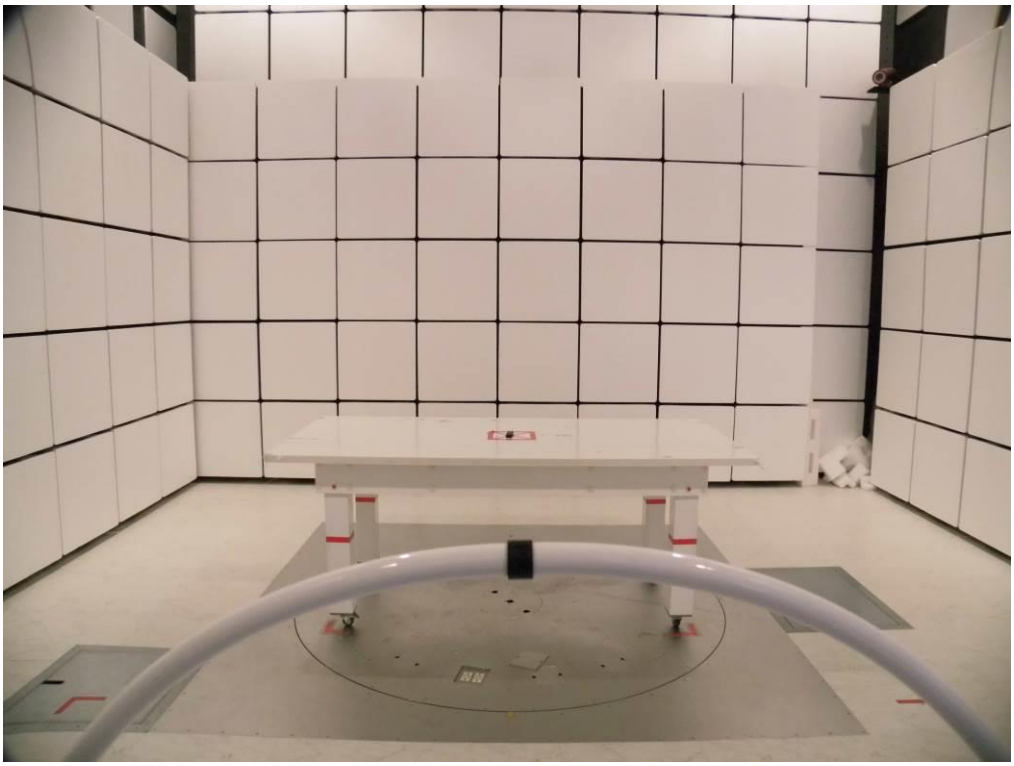
| Power Spectral Density | | | | | |
|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | Spectrum Analyzer | R&S | R&S/FSP30 | 100854 | May 24, 2019 |

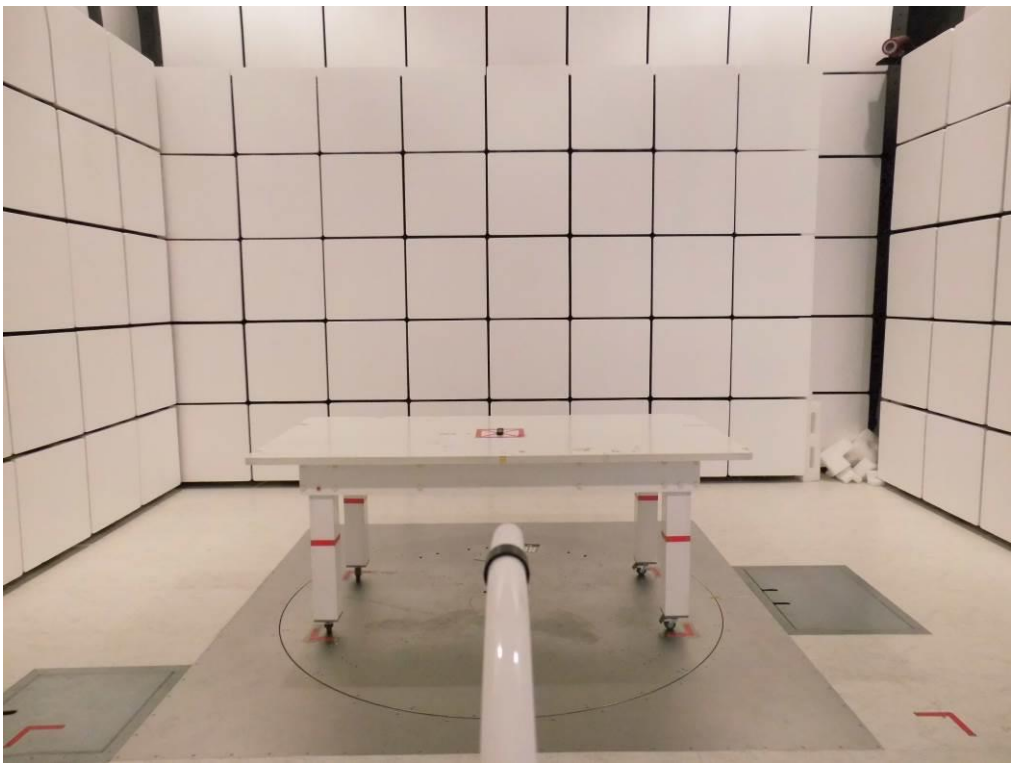
Remark: “N/A” denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

## 10 EUT TEST PHOTO

**Transmitter Radiated Emissions Test Photos**

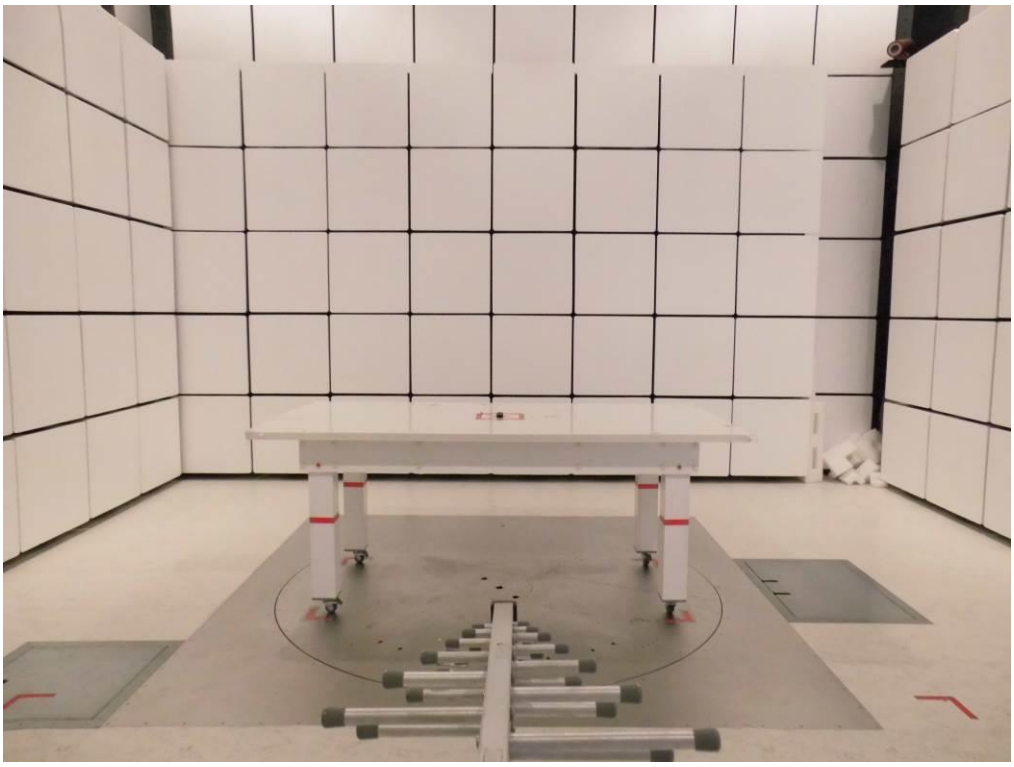
**9 kHz to 30 MHz**

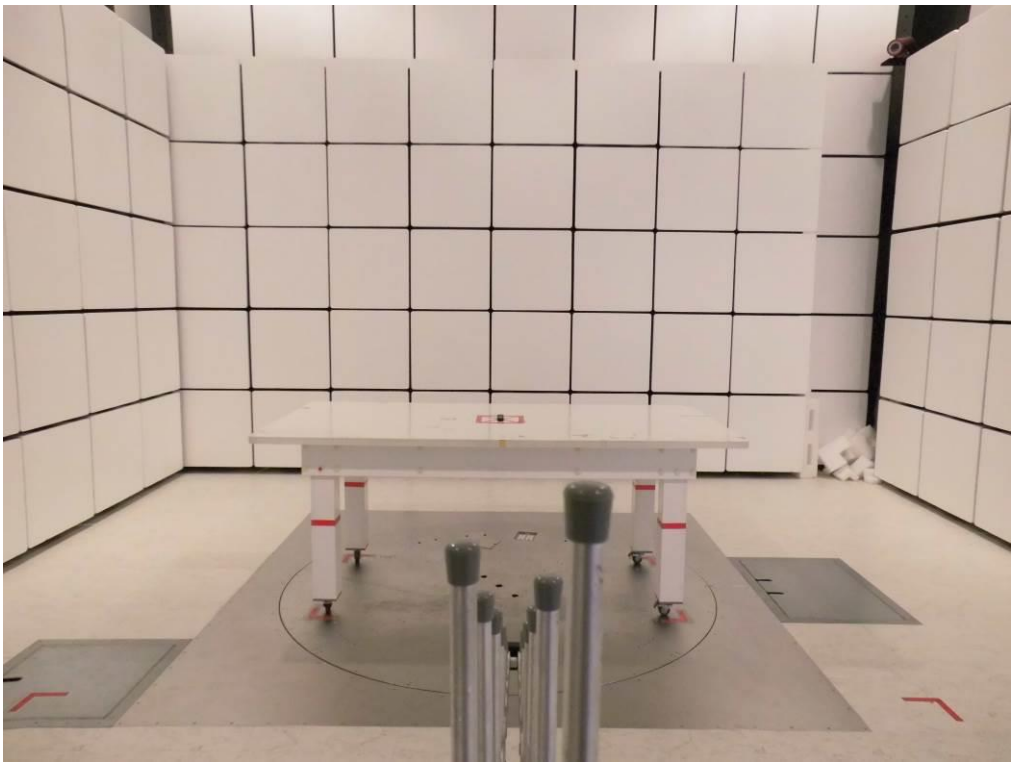




**Transmitter Radiated Emissions Test Photos**

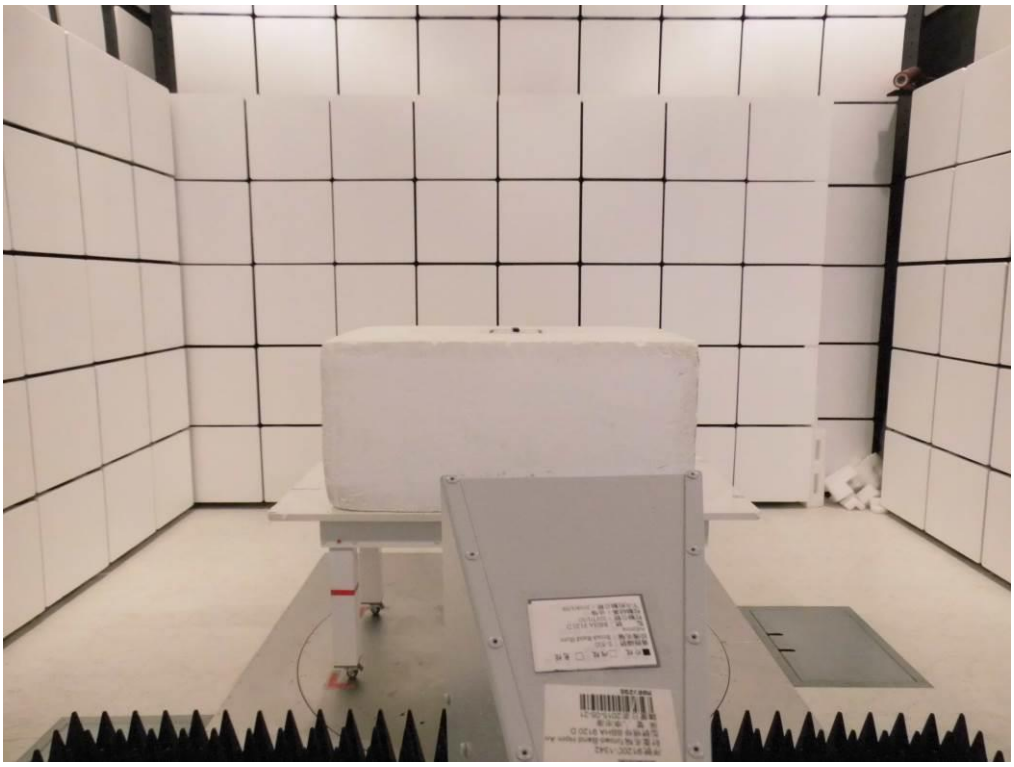
**30 MHz to 1000 MHz**

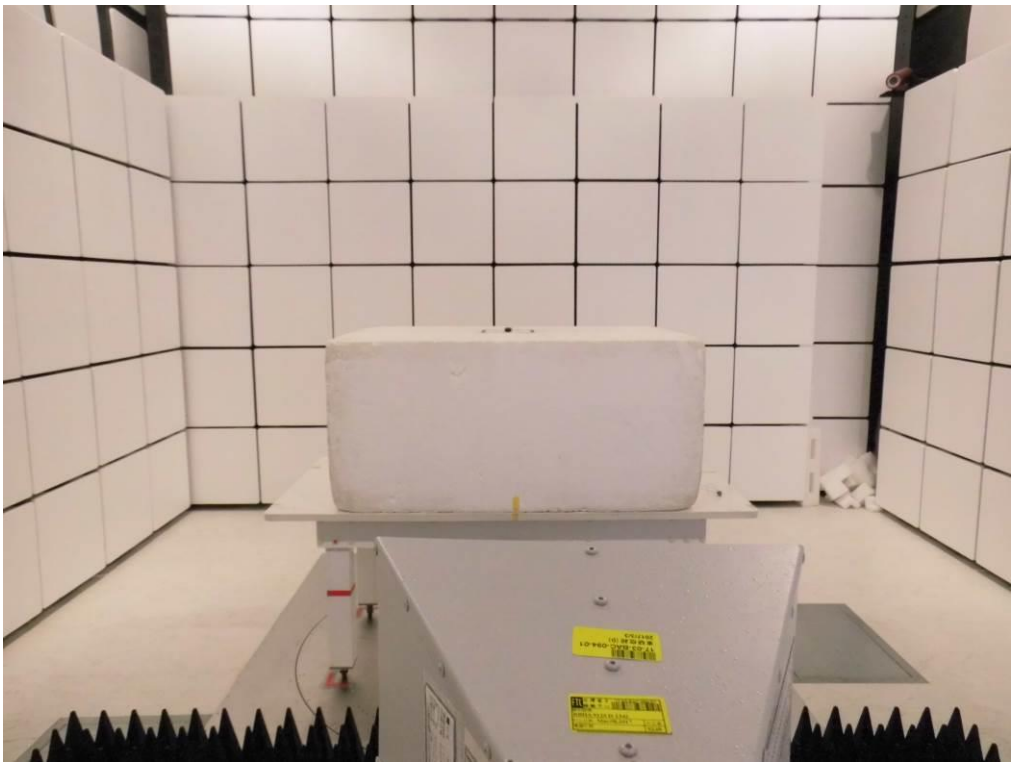




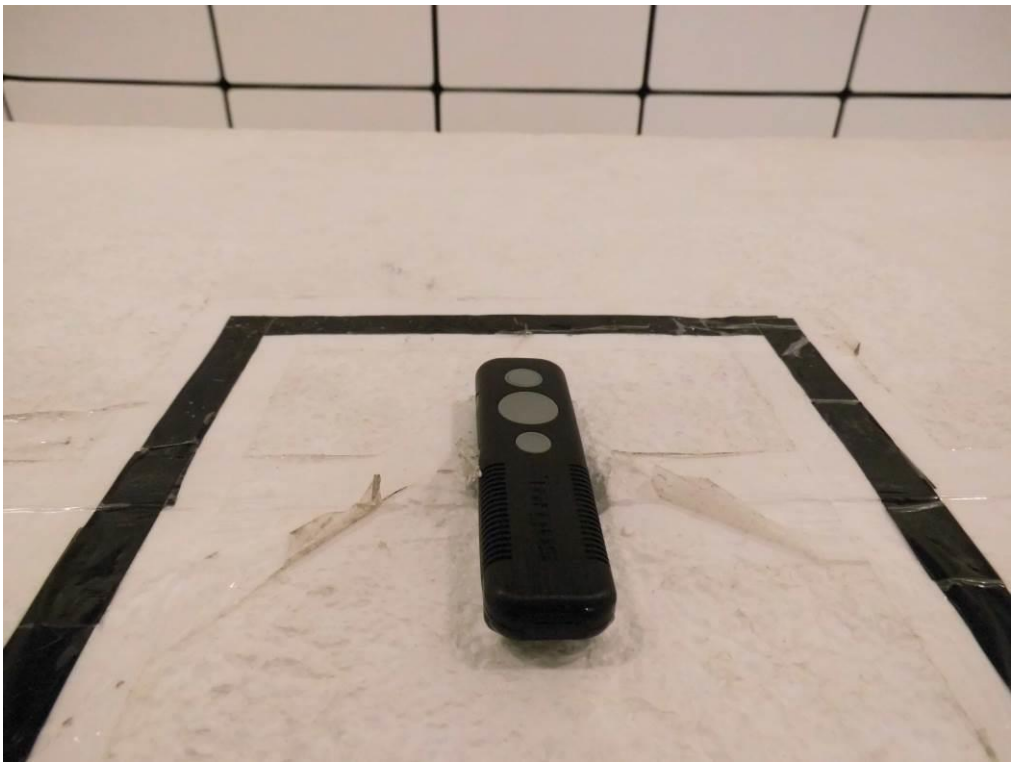
**Transmitter Radiated Emissions Test Photos**

**Above 1000 MHz**



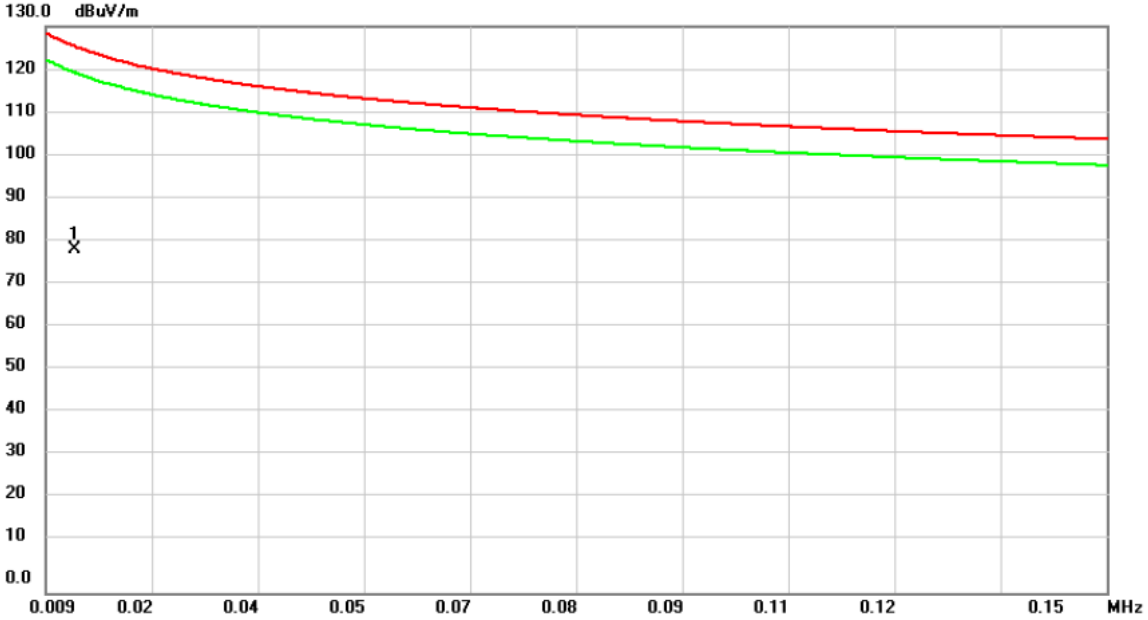


## Transmitter Radiated Emissions Test Photos



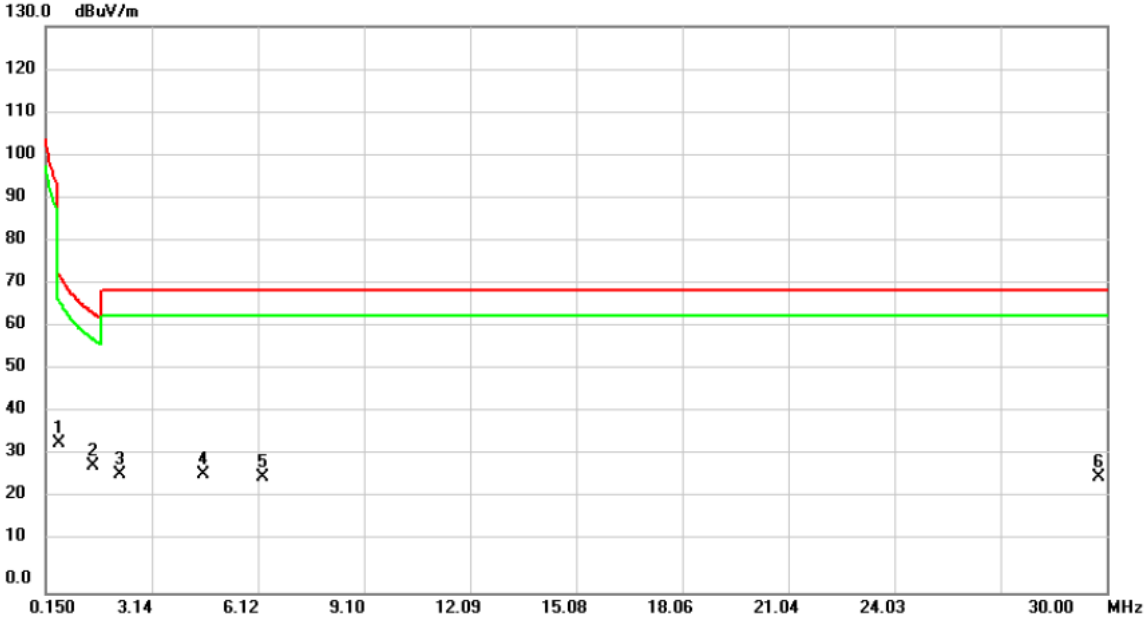
# APPENDIX A TRANSMITTER RADIATED EMISSIONS - 9 KHZ TO 30 MHZ

| Test Mode | Mode 1_90° | Polarization | Vertical |
|---|---|---|---|



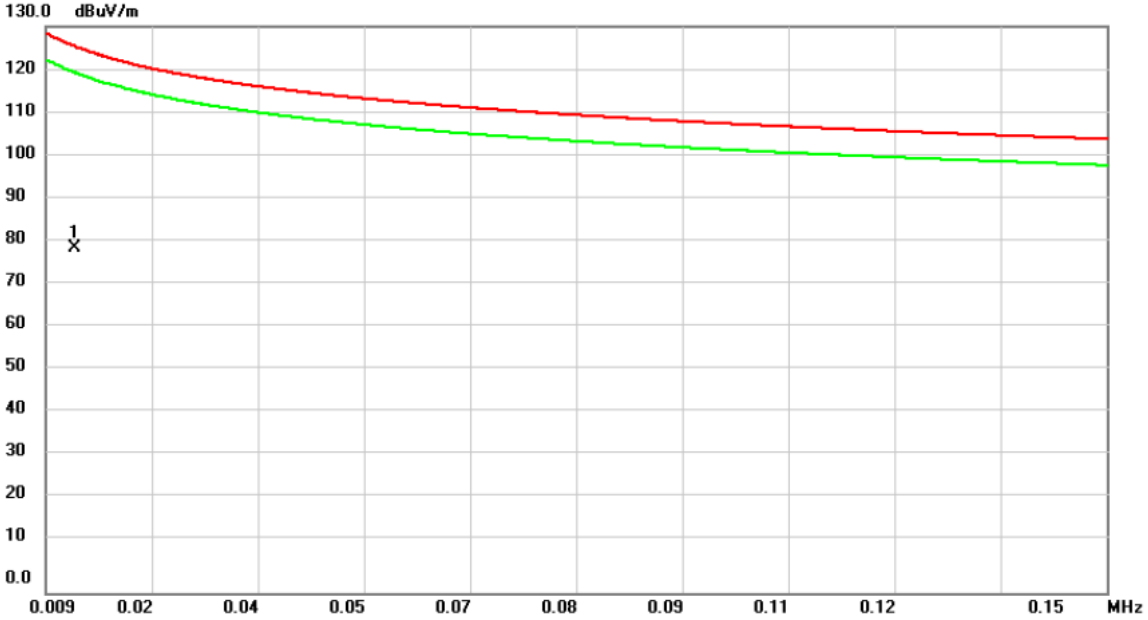

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | * | 0.0128 | 44.33 | 34.61 | 78.94 | 125.46 | -46.52 | peak | |

| Test Mode | Mode 1_90° | Polarization | Vertical |
|---|---|---|---|



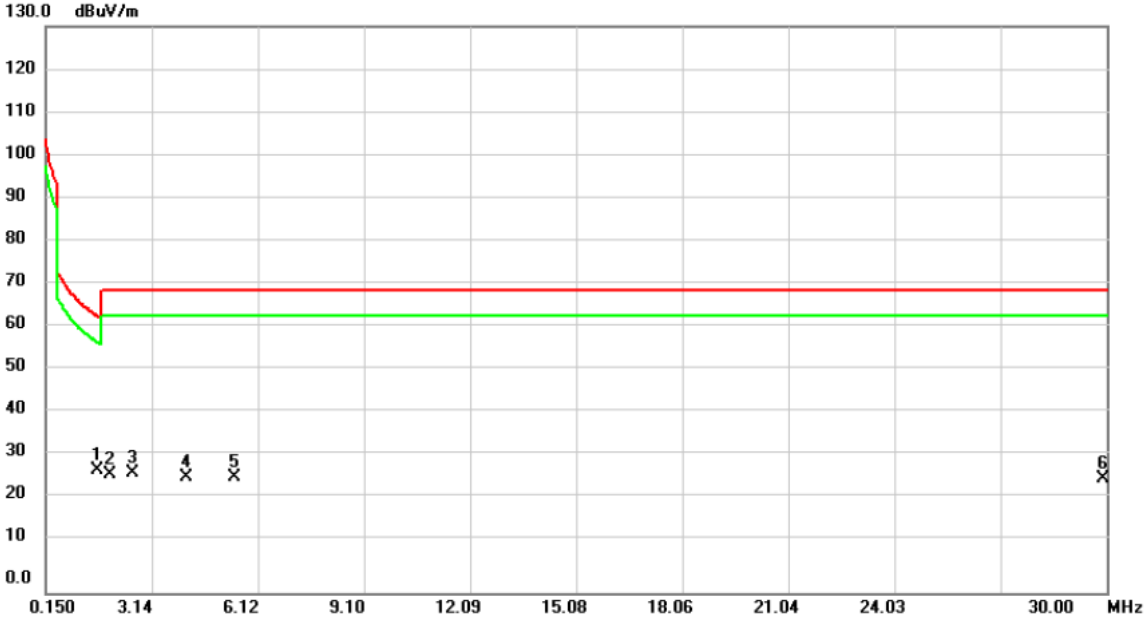

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 0.5082 | 30.86 | 3.43 | 34.29 | 73.48 | -39.19 | peak | |
| 2 | * | 1.4932 | 30.69 | -1.62 | 29.07 | 64.12 | -35.05 | peak | |
| 3 | | 2.2395 | 30.36 | -3.11 | 27.25 | 69.54 | -42.29 | peak | |
| 4 | | 4.5976 | 30.96 | -3.88 | 27.08 | 69.54 | -42.46 | peak | |
| 5 | | 6.2394 | 30.54 | -4.05 | 26.49 | 69.54 | -43.05 | peak | |
| 6 | | 29.7910 | 30.05 | -3.57 | 26.48 | 69.54 | -43.06 | peak | |

| Test Mode | Mode 1_0° | Polarization | Horizontal |
|---|---|---|---|




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | * | 0.0128 | 44.42 | 34.61 | 79.03 | 125.46 | -46.43 | peak | |

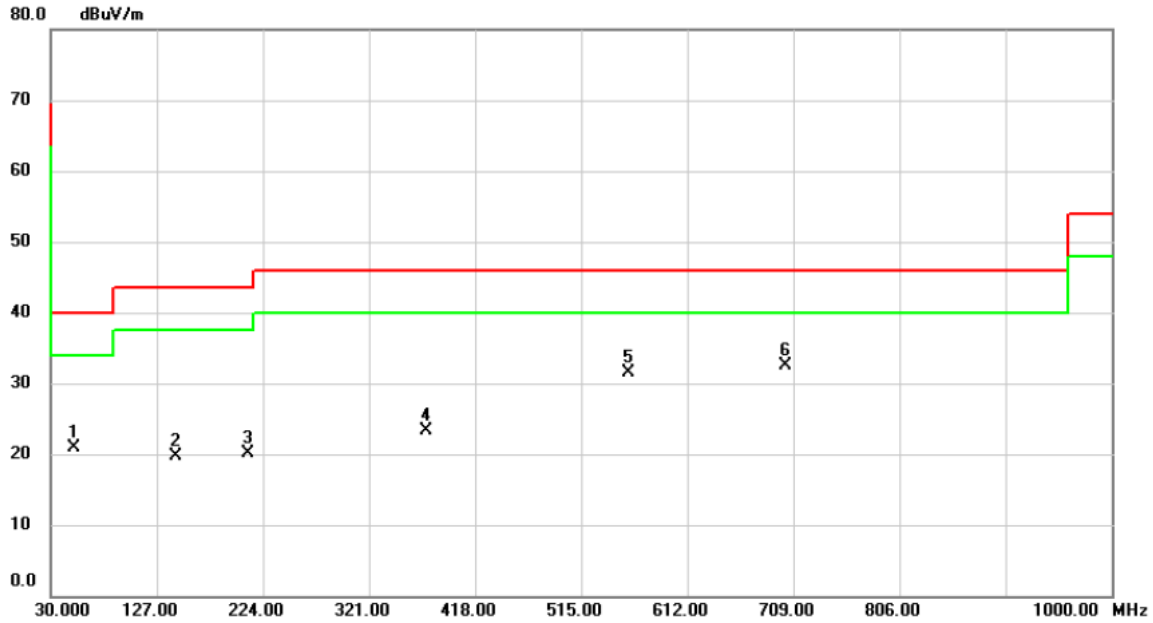
| Test Mode | Mode 1_0° | Polarization | Horizontal |
|---|---|---|---|




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | * | 1.6126 | 29.93 | -1.94 | 27.99 | 63.45 | -35.46 | peak | |
| 2 | | 1.9708 | 30.06 | -2.86 | 27.20 | 69.54 | -42.34 | peak | |
| 3 | | 2.5977 | 30.70 | -3.37 | 27.33 | 69.54 | -42.21 | peak | |
| 4 | | 4.1200 | 30.27 | -3.81 | 26.46 | 69.54 | -43.08 | peak | |
| 5 | | 5.4633 | 30.50 | -3.97 | 26.53 | 69.54 | -43.01 | peak | |
| 6 | | 29.8806 | 29.57 | -3.35 | 26.22 | 69.54 | -43.32 | peak | |

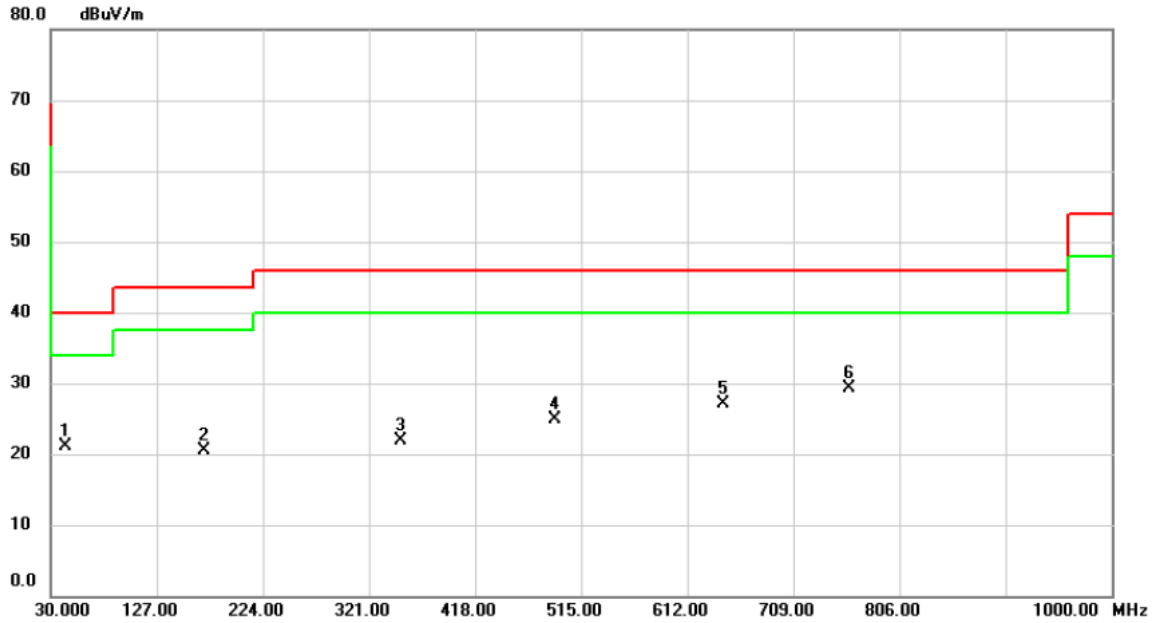
# APPENDIX B TRANSMITTER RADIATED EMISSIONS - 30 MHZ TO 1000 MHZ

| Test Mode | Mode 1_2468 MHz | Polarization | Vertical |
|---|---|---|---|




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 51.3400 | 29.99 | -9.01 | 20.98 | 40.00 | -19.02 | peak | |
| 2 | | 144.4600 | 29.74 | -10.02 | 19.72 | 43.50 | -23.78 | peak | |
| 3 | | 210.4200 | 32.34 | -12.21 | 20.13 | 43.50 | -23.37 | peak | |
| 4 | | 373.3800 | 30.86 | -7.57 | 23.29 | 46.00 | -22.71 | peak | |
| 5 | | 558.6500 | 35.61 | -4.03 | 31.58 | 46.00 | -14.42 | peak | |
| 6 | * | 701.2400 | 33.69 | -1.27 | 32.42 | 46.00 | -13.58 | peak | |

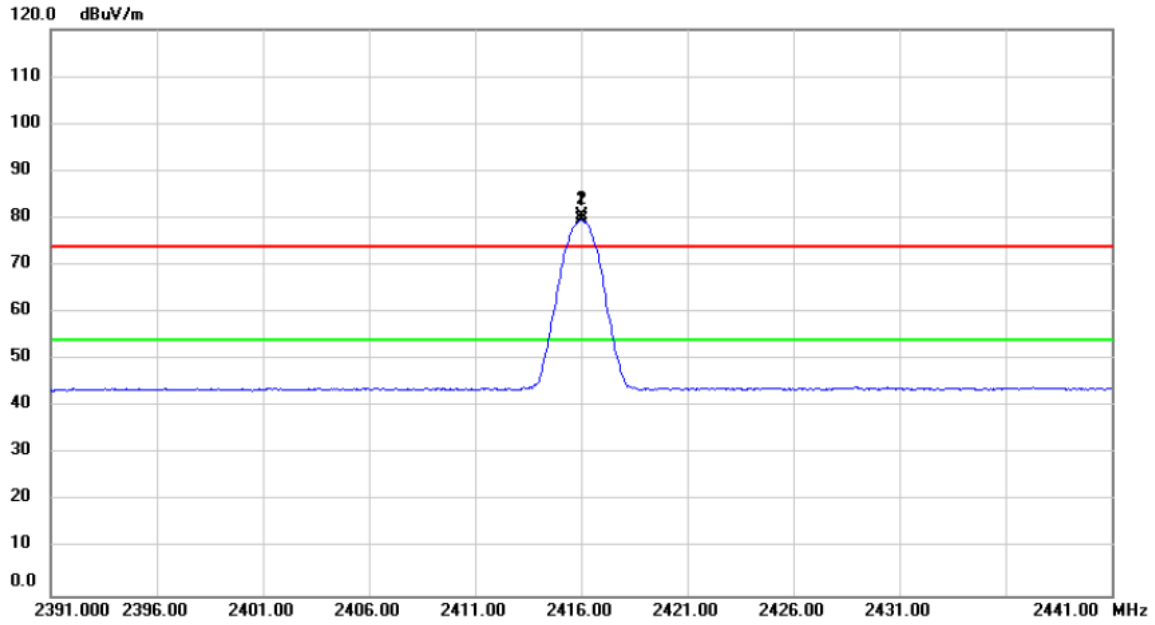
| Test Mode | Mode 1_2468 MHz | Polarization | Horizontal |
|---|---|---|---|




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 43.5800 | 30.23 | -9.15 | 21.08 | 40.00 | -18.92 | peak | |
| 2 | | 169.6800 | 30.70 | -10.23 | 20.47 | 43.50 | -23.03 | peak | |
| 3 | | 350.1000 | 29.95 | -8.06 | 21.89 | 46.00 | -24.11 | peak | |
| 4 | | 490.7500 | 30.15 | -5.25 | 24.90 | 46.00 | -21.10 | peak | |
| 5 | | 644.9800 | 29.52 | -2.34 | 27.18 | 46.00 | -18.82 | peak | |
| 6 | * | 760.4100 | 29.56 | -0.21 | 29.35 | 46.00 | -16.65 | peak | |

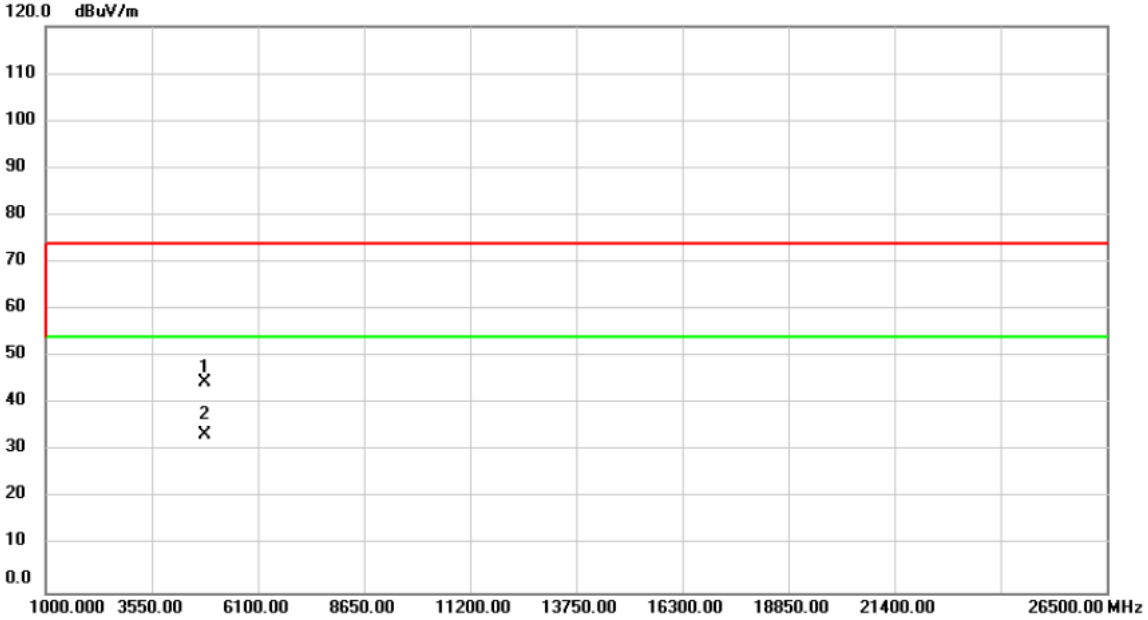
# APPENDIX C TRANSMITTER RADIATED EMISSIONS - ABOVE 1000 MHZ

| Test Mode | Mode 1_2416 MHz | Polarization | Vertical |
|---|---|---|---|



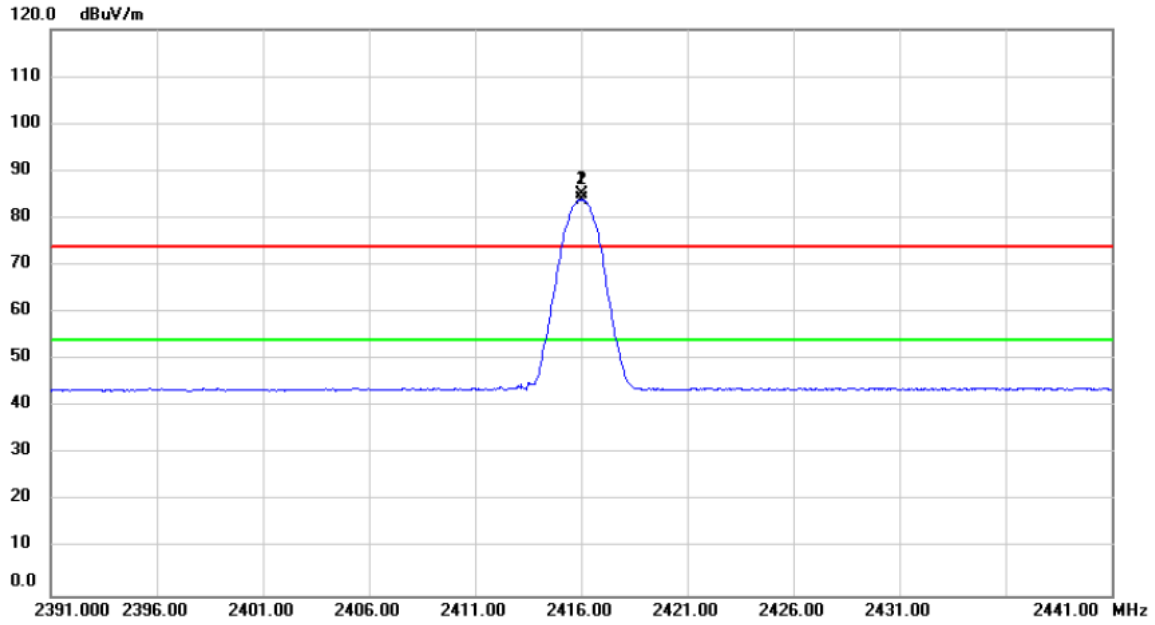

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | X | 2416.000 | 49.65 | 30.93 | 80.58 | 74.00 | 6.58 | peak | No Limit |
| 2 | * | 2416.000 | 48.62 | 30.93 | 79.55 | 54.00 | 25.55 | AVG | No Limit |

| Test Mode | Mode 1_2416 MHz | Polarization | Vertical |
|---|---|---|---|



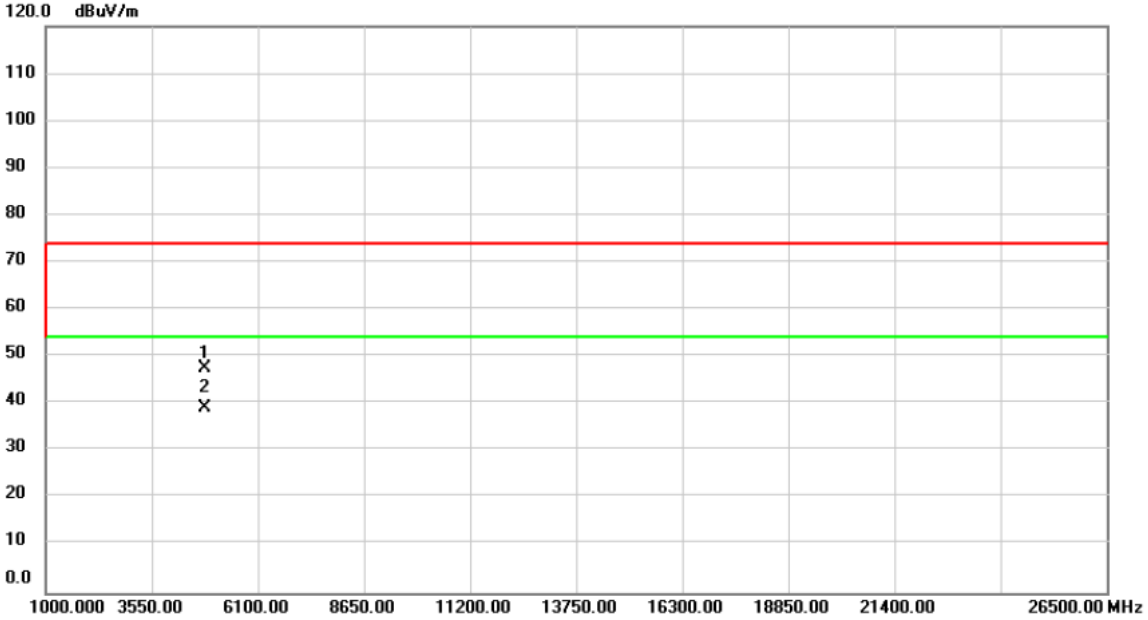

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 4832.000 | 56.13 | -11.47 | 44.66 | 74.00 | -29.34 | peak | |
| 2 | * | 4832.000 | 44.82 | -11.47 | 33.35 | 54.00 | -20.65 | AVG | |

| Test Mode | Mode 1_2416 MHz | Polarization | Horizontal |
|---|---|---|---|



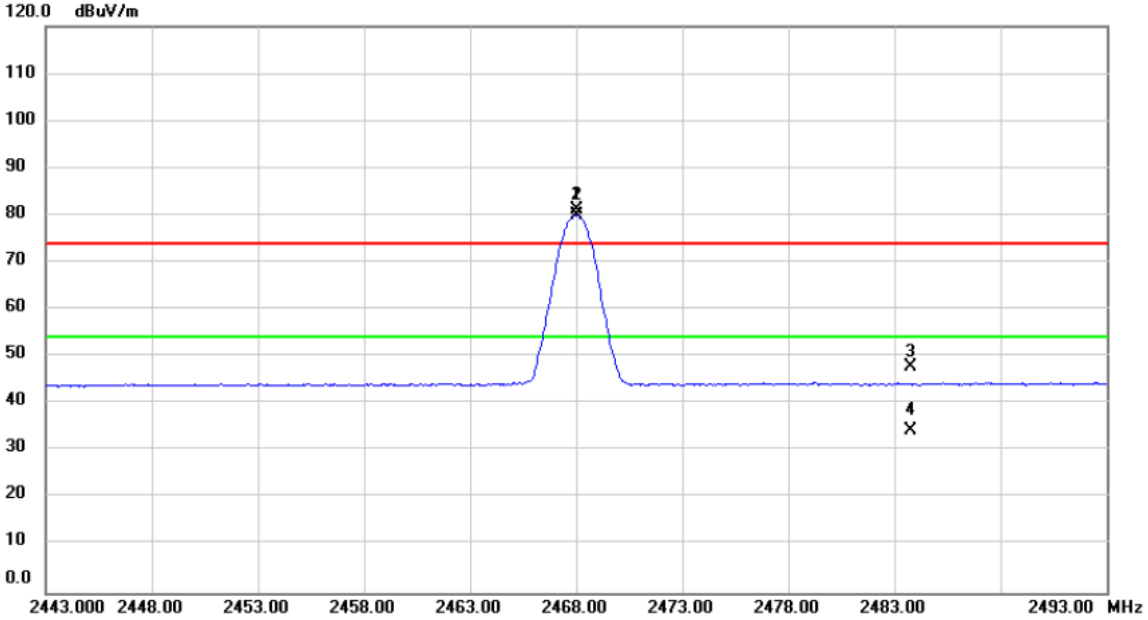

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | X | 2416.000 | 53.98 | 30.93 | 84.91 | 74.00 | 10.91 | peak | No Limit |
| 2 | * | 2416.000 | 53.03 | 30.93 | 83.96 | 54.00 | 29.96 | AVG | No Limit |

| Test Mode | Mode 1_2416 MHz | Polarization | Horizontal |
|---|---|---|---|



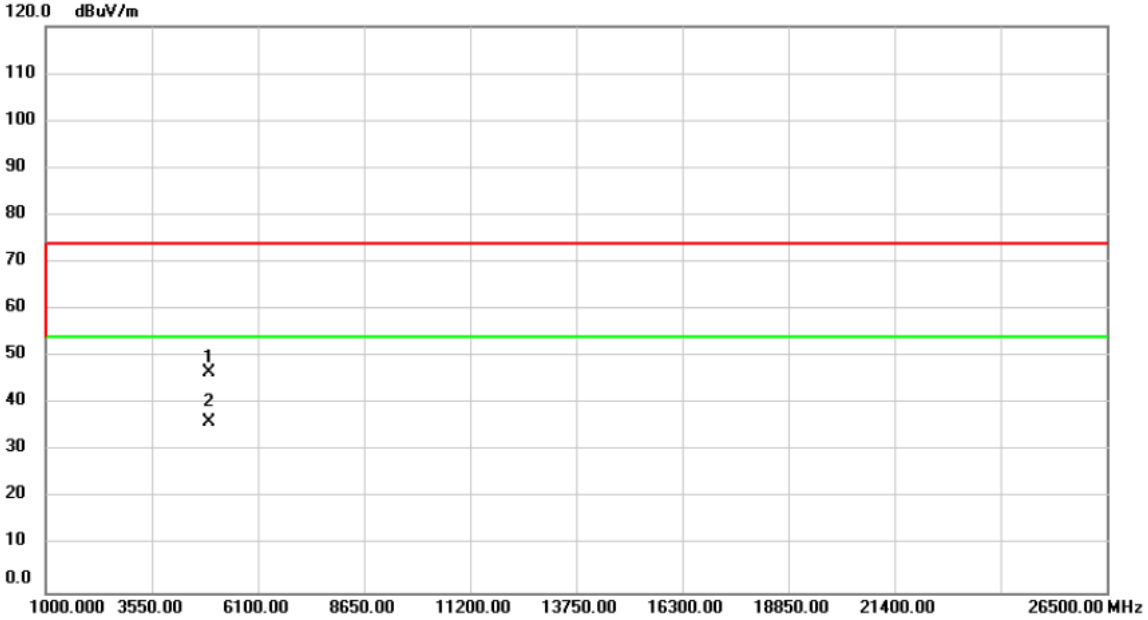

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 4832.000 | 59.04 | -11.47 | 47.57 | 74.00 | -26.43 | peak | |
| 2 | * | 4832.000 | 50.53 | -11.47 | 39.06 | 54.00 | -14.94 | AVG | |

| Test Mode | Mode 1_2468 MHz | Polarization | Vertical |
|---|---|---|---|



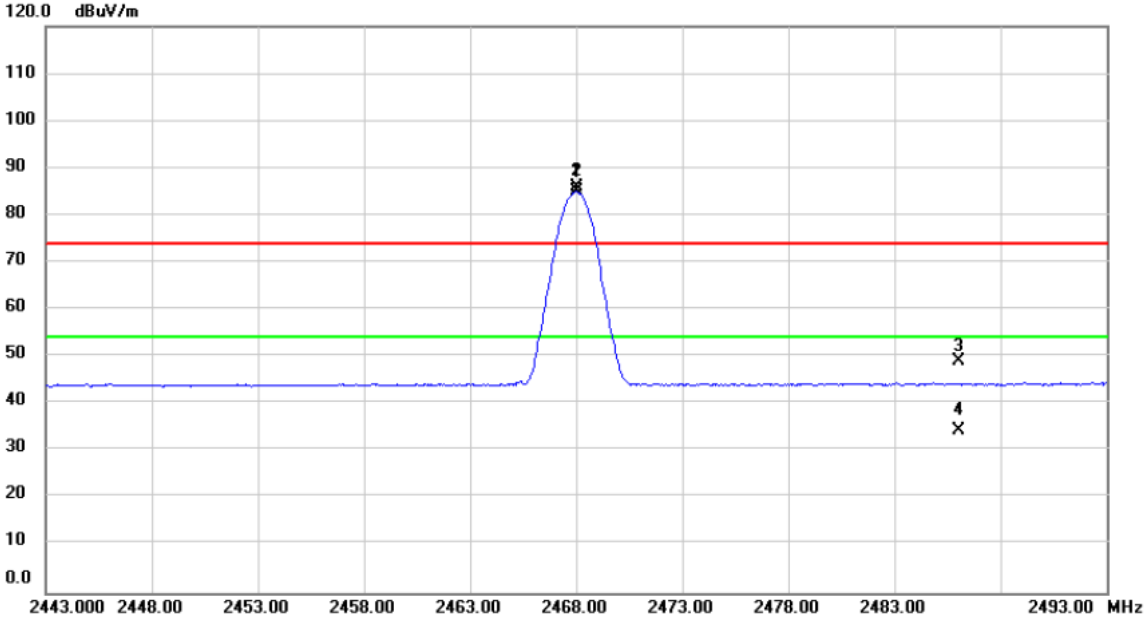

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | X | 2468.000 | 49.91 | 31.12 | 81.03 | 74.00 | 7.03 | peak | No Limit |
| 2 | * | 2468.000 | 48.82 | 31.12 | 79.94 | 54.00 | 25.94 | AVG | No Limit |
| 3 | | 2483.747 | 16.75 | 31.17 | 47.92 | 74.00 | -26.08 | peak | |
| 4 | | 2483.747 | 3.26 | 31.17 | 34.43 | 54.00 | -19.57 | AVG | |

| Test Mode | Mode 1_2468 MHz | Polarization | Vertical |
|---|---|---|---|



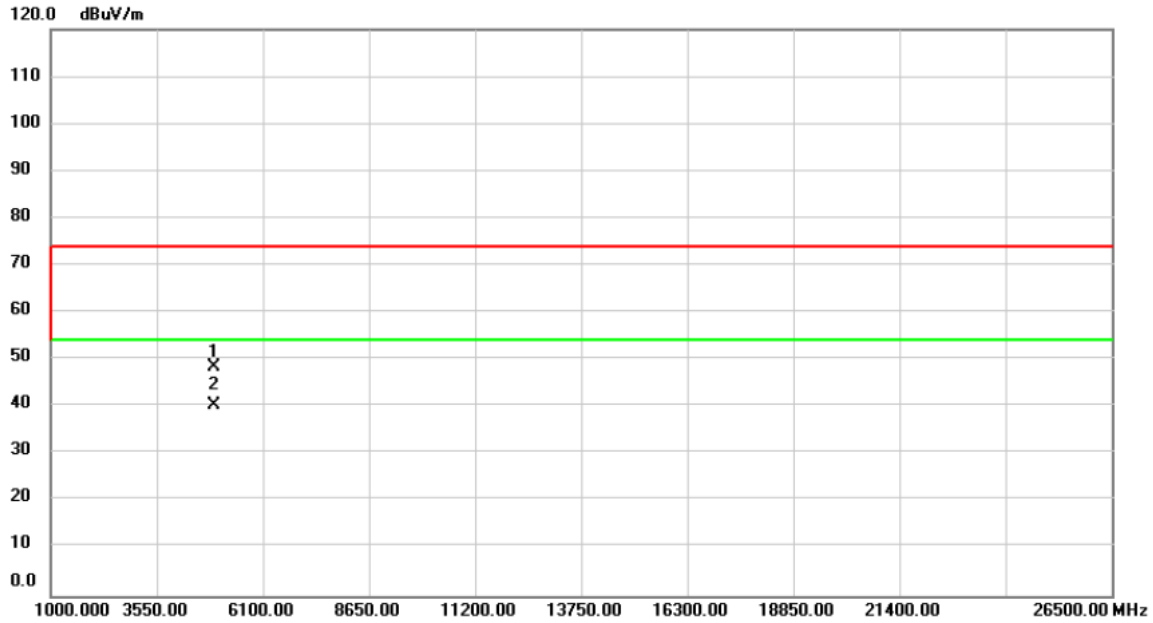

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 4936.000 | 58.09 | -11.36 | 46.73 | 74.00 | -27.27 | peak | |
| 2 | * | 4936.000 | 47.55 | -11.36 | 36.19 | 54.00 | -17.81 | AVG | |

| Test Mode | Mode 1_2468 MHz | Polarization | Horizontal |
|---|---|---|---|




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | X | 2468.000 | 54.82 | 31.12 | 85.94 | 74.00 | 11.94 | peak | No Limit |
| 2 | * | 2468.000 | 53.81 | 31.12 | 84.93 | 54.00 | 30.93 | AVG | No Limit |
| 3 | | 2486.008 | 17.99 | 31.18 | 49.17 | 74.00 | -24.83 | peak | |
| 4 | | 2486.008 | 3.20 | 31.18 | 34.38 | 54.00 | -19.62 | AVG | |

| Test Mode | Mode 1_2468 MHz | Polarization | Horizontal |
|---|---|---|---|

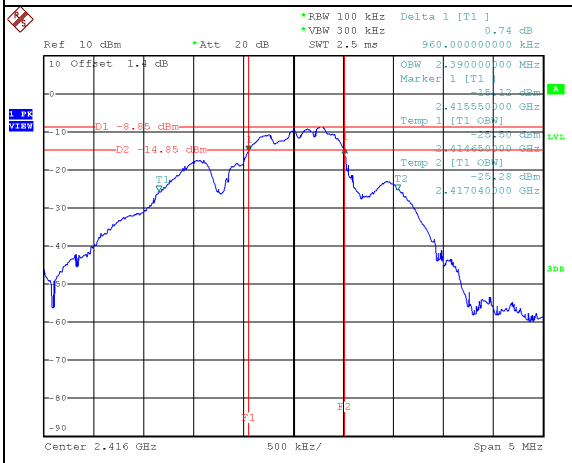



| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 4936.000 | 59.67 | -11.36 | 48.31 | 74.00 | -25.69 | peak | |
| 2 | * | 4936.000 | 51.72 | -11.36 | 40.36 | 54.00 | -13.64 | AVG | |

# APPENDIX D 6 DB BANDWIDTH

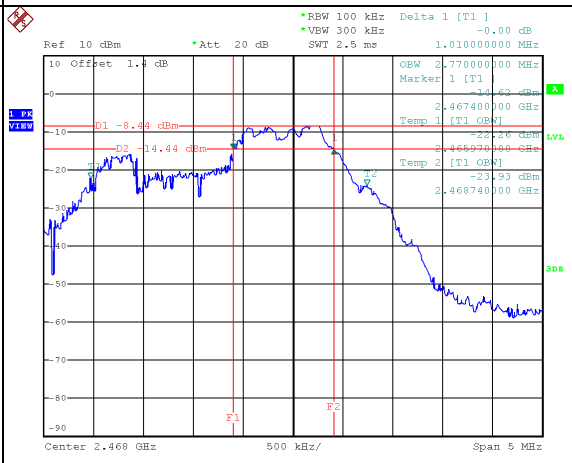
| Frequency (MHz) | 6 dB Bandwidth (MHz) | 99 % Occupied BW (MHz) | 6 dB BW Min. Limit (kHz) | Result |
|---|---|---|---|---|
| 2416 | 0.96 | 2.39 | 500 | Complies |
| 2468 | 1.01 | 2.77 | 500 | Complies |

**2416 MHz**




Date: 27.APR.2018 17:12:24

**2468 MHz**

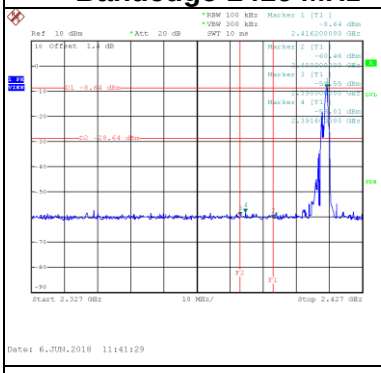
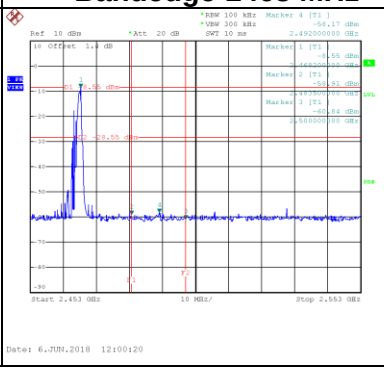
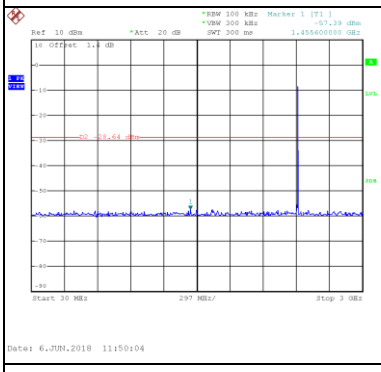
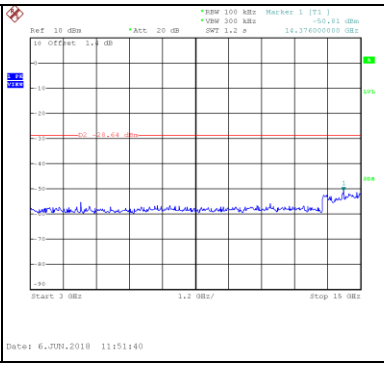
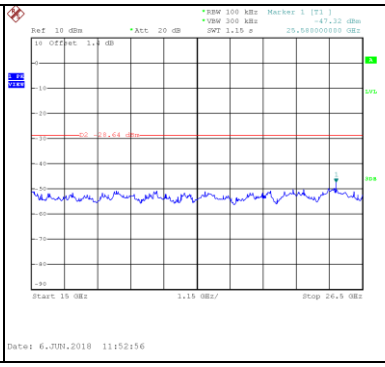
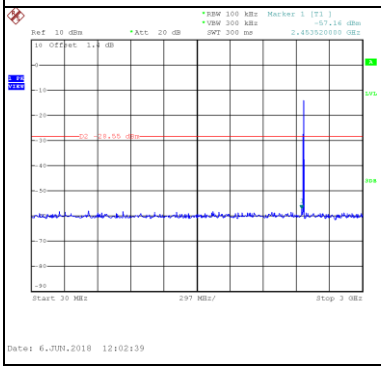
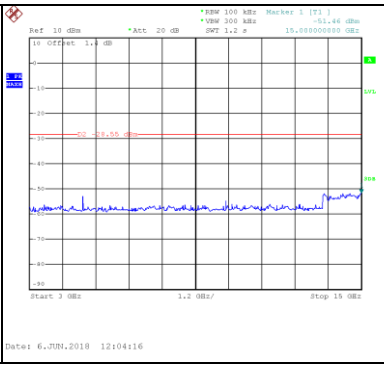
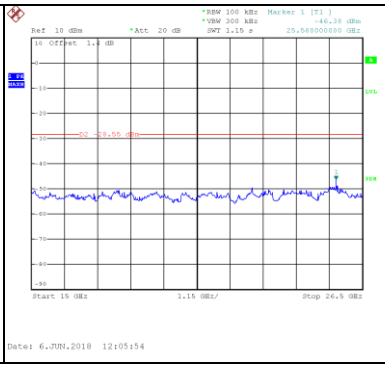



Date: 27.APR.2018 17:25:39

# APPENDIX E PEAK OUTPUT POWER

| Frequency (MHz) | Conducted Power (dBm) | Conducted Power (W) | Max. Limit (dBm) | Max. Limit (W) | Result |
|---|---|---|---|---|---|
| 2416 | -7.46 | 0.0002 | 30.00 | 1.0000 | Complies |
| 2468 | -7.15 | 0.0002 | 30.00 | 1.0000 | Complies |

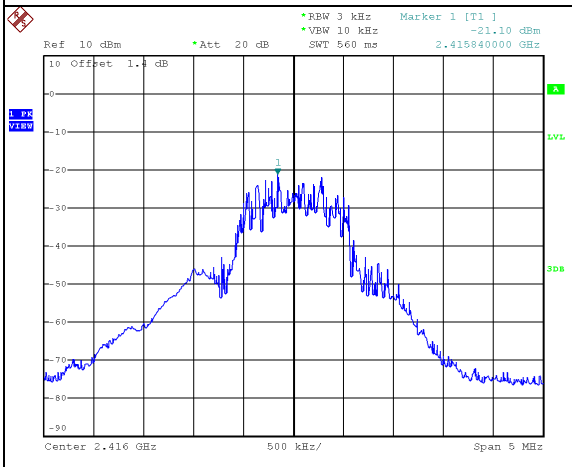
# APPENDIX F ANTENNA CONDUCTED SPURIOUS EMISSIONS

| Bandedge-2416 MHz | Bandedge-2468 MHz | |
|---|---|---|
|  |  | |
| **2416 MHz – 10 Harmonics** | | |
|  |  |  |
| **2468 MHz – 10 Harmonics** | | |
|  |  |  |

# APPENDIX G POWER SPECTRAL DENSITY

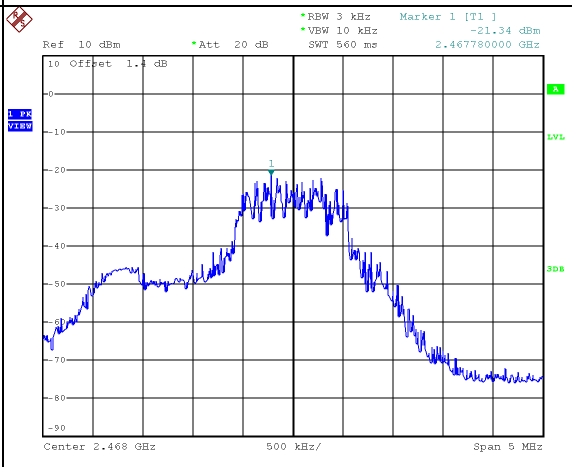
| Frequency | Power Density (dBm) | Max. Limit (dBm) | Result |
|---|---|---|---|
| 2416 | -21.10 | 8 | Complies |
| 2468 | -21.34 | 8 | Complies |

**2416 MHz**




Date: 27.APR.2018 17:15:21

**2468 MHz**




Date: 27.APR.2018 17:18:06