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Report No.: SZEM120500242403
Page: 1 of 38

FCC REPORT

Application No: SZEM1210005610RF
Applicant: Harman International Industries, Inc.
Manufacturer: Harman International Industries, Inc.
Factory: Dongguan Tai Sing Audio Technology Limited
Product Name: Docking speaker system
Model No.(EUT): JBL OnBeat Venue LT
FCC ID: APIOBVENUE
Standards: 47 CFR Part 15, Subpart C (2011)
Only for AC Power Line Conducted Emission, Conducted Peak
Output Power, Radiated Spurious emissions and Band Edge
(Radiated Emission)
Date of Receipt: 2012-10-12
Date of Test: 2012-10-16 to 2012-10-22
Date of Issue: 2012-10-25

| | |
|---------------------|---------------|
| Test Result: | PASS * |
|---------------------|---------------|

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Test Summary

| Test Item | Test Requirement | Test method | Result |
|---|---|--------------------|--------|
| AC Power Line Conducted Emission | 47 CFR Part 15, Subpart C Section 15.207 | ANSI C63.10 (2009) | PASS |
| Conducted Peak Output Power | 47 CFR Part 15, Subpart C Section 15.247 (b)(1) | ANSI C63.10 (2009) | PASS |
| Radiated Spurious emissions | 47 CFR Part 15, Subpart C Section 15.205/15.209 | ANSI C63.10 (2009) | PASS |
| Band Edge (Radiated Emission) | 47 CFR Part 15, Subpart C Section 15.205/15.209 | ANSI C63.10 (2009) | PASS |

Model No.: JBL OnBeat Venue LT

This test report (Ref. No.: SZEM120500242403) is only valid with the original test report (Ref. No.: SZEM120500242401).

Review this report and original report, this report just changing the Apple's 30-pin original pretext into Apple's new lightning connector, and the rear plate of the video interface is removed.

According to the declaration from the applicant, the models in this report and models in original report were identical, only difference with changing the Apple's 30-pin original pretext into Apple's new lightning connector, and the rear plate of the video interface is removed.

Considering to the difference, pre-scan were performed on the sample in this report to find the items which can be influential to the result in the original test report for fully retest.

Therefore in this report AC Power Line Conducted Emission, Conducted Peak Output Power, Radiated Spurious emissions and Band Edge (Radiated Emission) were fully retested on Model JBL OnBeat Venue LT and shown the data in this report, other tests please refer to original report SZEM120500242401.



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4 General Information

4.1 Client Information

| | |
|--------------------------|---|
| Applicant: | Harman International Industries, Inc |
| Address of Applicant: | 8500 Balboa Blvd, Northridge, CA 91329, UNITED STATES |
| Manufacturer: | Harman International Industries, Inc |
| Address of Manufacturer: | 8500 Balboa Blvd, Northridge, CA 91329, UNITED STATES |
| Factory: | Dongguan Tai Sing Audio Technology Limited |
| Address of Factory: | Tai Sing Industrial Road, Bai Zhou Bian Village, Dong Cheng, Dongguan City, Guangdong Province 523113, P.R. China |

4.2 General Description of EUT

| | |
|-----------------------|--|
| Name: | Docking speaker system |
| Model No.: | JBL OnBeat Venue LT |
| Trade Mark: | JBL |
| Operation Frequency: | 2402MHz~2480MHz |
| Bluetooth Version: | V2.1+EDR |
| Modulation Technique: | Frequency Hopping Spread Spectrum(FHSS) |
| Modulation Type: | GFSK, $\pi/4$ DQPSK, 8DPSK |
| Number of Channel: | 79 |
| Sample Type: | Fixed production |
| Test Software of EUT: | CSR blue suite (manufacturer declare) |
| Antenna Type | Integral |
| Antenna Gain | 1.11dBi |
| Power Supply: | SWITCHING ADAPTER MODEL: ADS-65SI-19-2 18045G INPUT: AC 100-240V 50/60Hz 1.5A max OUTPUT: DC 18V 2.5A |
| Test Voltage: | AC 120V 50Hz |



| Operation Frequency each of channel | | | | | | | |
|-------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 1 | 2402MHz | 21 | 2422MHz | 41 | 2442MHz | 61 | 2462MHz |
| 2 | 2403MHz | 22 | 2423MHz | 42 | 2443MHz | 62 | 2463MHz |
| 3 | 2404MHz | 23 | 2424MHz | 43 | 2444MHz | 63 | 2464MHz |
| 4 | 2405MHz | 24 | 2425MHz | 44 | 2445MHz | 64 | 2465MHz |
| 5 | 2406MHz | 25 | 2426MHz | 45 | 2446MHz | 65 | 2466MHz |
| 6 | 2407MHz | 26 | 2427MHz | 46 | 2447MHz | 66 | 2467MHz |
| 7 | 2408MHz | 27 | 2428MHz | 47 | 2448MHz | 67 | 2468MHz |
| 8 | 2409MHz | 28 | 2429MHz | 48 | 2449MHz | 68 | 2469MHz |
| 9 | 2410MHz | 29 | 2430MHz | 49 | 2450MHz | 69 | 2470MHz |
| 10 | 2411MHz | 30 | 2431MHz | 50 | 2451MHz | 70 | 2471MHz |
| 11 | 2412MHz | 31 | 2432MHz | 51 | 2452MHz | 71 | 2472MHz |
| 12 | 2413MHz | 32 | 2433MHz | 52 | 2453MHz | 72 | 2473MHz |
| 13 | 2414MHz | 33 | 2434MHz | 53 | 2454MHz | 73 | 2474MHz |
| 14 | 2415MHz | 34 | 2435MHz | 54 | 2455MHz | 74 | 2475MHz |
| 15 | 2416MHz | 35 | 2436MHz | 55 | 2456MHz | 75 | 2476MHz |
| 16 | 2417MHz | 36 | 2437MHz | 56 | 2457MHz | 76 | 2477MHz |
| 17 | 2418MHz | 37 | 2438MHz | 57 | 2458MHz | 77 | 2478MHz |
| 18 | 2419MHz | 38 | 2439MHz | 58 | 2459MHz | 78 | 2479MHz |
| 19 | 2420MHz | 39 | 2440MHz | 59 | 2460MHz | 79 | 2480MHz |
| 20 | 2421MHz | 40 | 2441MHz | 60 | 2461MHz | | |

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

| Channel | Frequency |
|---------------------|-----------|
| The Lowest channel | 2402MHz |
| The Middle channel | 2441MHz |
| The Highest channel | 2480MHz |

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4.3 Test Environment and Mode

| Operating Environment: | |
|------------------------|-----------|
| Temperature: | 26.0 °C |
| Humidity: | 50 % RH |
| Atmospheric Pressure: | 1010 mbar |

4.4 Description of Support Units

The EUT has been tested with associated equipment below

| Description | Manufacturer | Model No. |
|-------------|--------------|-----------|
| iPod | Apple | A1137 |
| iPhone5 | Apple | A1429 |

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,
No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.



4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**
CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.
- **VCCI**
The 3m Semi-anechoic chamber, Full-anechoic Chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197, G-416, T-1153 and C-2383 respectively.
- **FCC – Registration No.: 556682**
SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.
- **Industry Canada (IC)**
The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

4.7 Deviation from Standards

None.

4.8 Abnormalities from Standard Conditions

None.

4.9 Other Information Requested by the Customer

None.

4.10 Test Instruments List

| RE in Chamber | | | | | |
|---------------|------------------------------------|--|-----------|---------------|------------------------------|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Due date (yyyy-mm-dd) |
| 1 | 3m Semi-Anechoic Chamber | ETS-LINDGREN | N/A | SEL0017 | 2013-06-10 |
| 2 | EMI Test Receiver | Rohde & Schwarz | ESIB26 | SEL0023 | 2013-05-17 |
| 3 | EMI Test software | AUDIX | E3 | SEL0050 | N/A |
| 4 | BiConiLog Antenna (26-3000MHz) | ETS-LINDGREN | 3142C | SEL0015 | 2012-10-29 |
| 5 | Double-ridged horn (1-18GHz) | ETS-LINDGREN | 3117 | SEL0006 | 2012-10-29 |
| 6 | Horn Antenna (18-26GHz) | ETS-LINDGREN | 3160 | SEL0076 | 2012-10-29 |
| 7 | Pre-amplifier (0.1-1300MHz) | Agilent Technologies | 8447D | SEL0053 | 2013-05-17 |
| 8 | Pre-Amplifier (0.1-26.5GHz) | Compliance Directions Systems Inc. | PAP-0126 | SEL0168 | 2012-11-26 |
| 9 | Coaxial cable | SGS | N/A | SEL0027 | 2013-05-59 |
| 10 | Coaxial cable | SGS | N/A | SEL0189 | 2013-05-29 |
| 11 | Coaxial cable | SGS | N/A | SEL0121 | 2013-05-29 |
| 12 | Coaxial cable | SGS | N/A | SEL0178 | 2013-05-29 |
| 13 | Band filter | Amindeon | 82346 | SEL0094 | 2013-05-17 |
| 14 | Barometer | Chang Chun | DYM3 | SEL0088 | 2013-05-24 |
| 15 | DC Power Supply | Zhao Xin | RXN-305D | SEL0117 | 2012-10-23 |
| 16 | Humidity/ Temperature Indicator | Shanghai Qixiang | ZJ1-2B | SEL0103 | 2012-10-27 |
| 17 | Signal Generator (10M-27GHz) | Rohde & Schwarz | SMR27 | SEL0067 | 2013-05-17 |
| 18 | Signal Generator | Rohde & Schwarz | SMY01 | SEL0155 | 2012-10-23 |
| 19 | Loop Antenna | Beijing Daze | ZN30401 | SEL0203 | 2013-06-04 |



| Conducted Emission | | | | | |
|--------------------|---------------------------------|------------------------------------|-----------------|---------------|---------------------------|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Due date (yyyy-mm-dd) |
| 1 | Shielding Room | ZhongYu Electron | GB-88 | SEL0042 | 2013-06-10 |
| 2 | LISN | Rohde & Schwarz | ENV216 | SEL0152 | 2012-10-23 |
| 3 | LISN | ETS-LINDGREN | 3816/2 | SEL0021 | 2013-5-17 |
| 4 | 8 Line ISN | Fischer Custom Communications Inc. | FCC-TLISN-T8-02 | SEL0162 | 2012-11-11 |
| 5 | 4 Line ISN | Fischer Custom Communications Inc. | FCC-TLISN-T4-02 | SEL0163 | 2012-11-11 |
| 6 | 2 Line ISN | Fischer Custom Communications Inc. | FCC-TLISN-T2-02 | SEL0164 | 2012-11-11 |
| 7 | EMI Test Receiver | Rohde & Schwarz | ESCI | SEL0022 | 2013-5-17 |
| 8 | Coaxial Cable | SGS | N/A | SEL0025 | 2013-05-29 |
| 9 | DC Power Supply | Zhao Xin | RXN-305D | SEL0117 | 2012-10-23 |
| 10 | Humidity/ Temperature Indicator | Shanghai Qixiang | ZJ1-2B | SEL0103 | 2012-10-27 |
| 11 | Barometer | Chang Chun | DYM3 | SEL0088 | 2013-05-24 |

| RF connected test | | | | | |
|-------------------|---------------------------------|----------------------|-----------|---------------|---------------------------|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Due date (yyyy-mm-dd) |
| 1 | DC Power Supply | Zhao Xin | RXN-305D | SEL0117 | 2012-10-23 |
| 2 | Humidity/ Temperature Indicator | HYGRO | ZJ1-2B | SEL0033 | 2012-10-27 |
| 3 | Spectrum Analyzer | Rohde & Schwarz | FSP | SEL0154 | 2012-10-23 |
| 4 | Coaxial cable | SGS | N/A | SEL0178 | 2013-05-29 |
| 5 | Coaxial cable | SGS | N/A | SEL0179 | 2013-05-29 |
| 6 | Barometer | ChangChun | DYM3 | SEL0088 | 2013-05-24 |
| 7 | Signal Generator | Rohde & Schwarz | SML03 | SEL0068 | 2013-05-17 |
| 8 | Band filter | amideon | 82346 | SEL0094 | 2013-05-17 |
| 9 | POWER METER | R & S | NRVS | SEL0144 | 2012-10-23 |
| 10 | Attenuator | Beijin feihang taida | TST-2-6dB | SEL0205 | 2013-05-17 |
| 11 | Power Divider(splitter) | Agilent Technologies | 11636B | SEL0130 | 2012-11-29 |

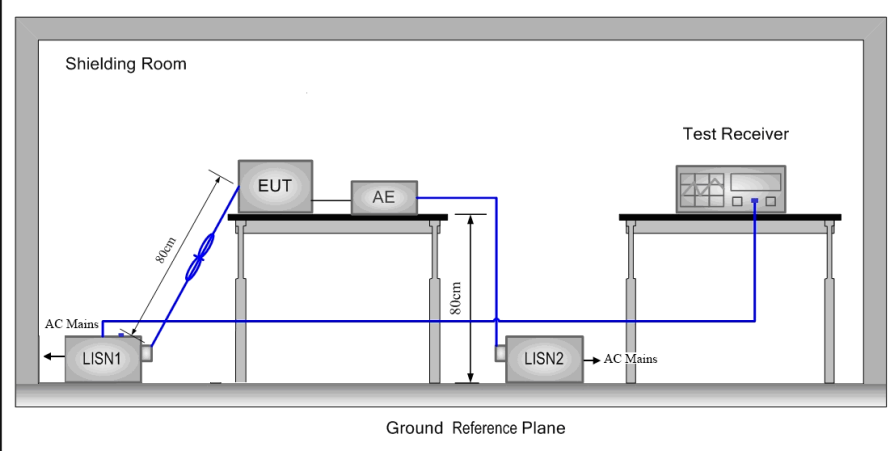
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5 Test results and Measurement Data

5.1 Conducted Emissions

| | | | |
|--|---|--------------|-----------|
| Test Requirement: | 47 CFR Part 15C Section 15.207 | | |
| Test Method: | ANSI C63.10: 2009 | | |
| Test Frequency Range: | 150kHz to 30MHz | | |
| Limit: | Frequency range (MHz) | Limit (dBuV) | |
| | | Quasi-peak | Average |
| | 0.15-0.5 | 66 to 56* | 56 to 46* |
| | 0.5-5 | 56 | 46 |
| | 5-30 | 60 | 50 |
| * Decreases with the logarithm of the frequency. | | | |
| Test Procedure: | <ol style="list-style-type: none"> 1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2009 on conducted measurement. | | |



| | |
|-------------------|--|
| Test Setup: |  |
| Test Mode: | Transmitting mode |
| Instruments Used: | Refer to section 4.10 for details |
| Test Results: | Pass |

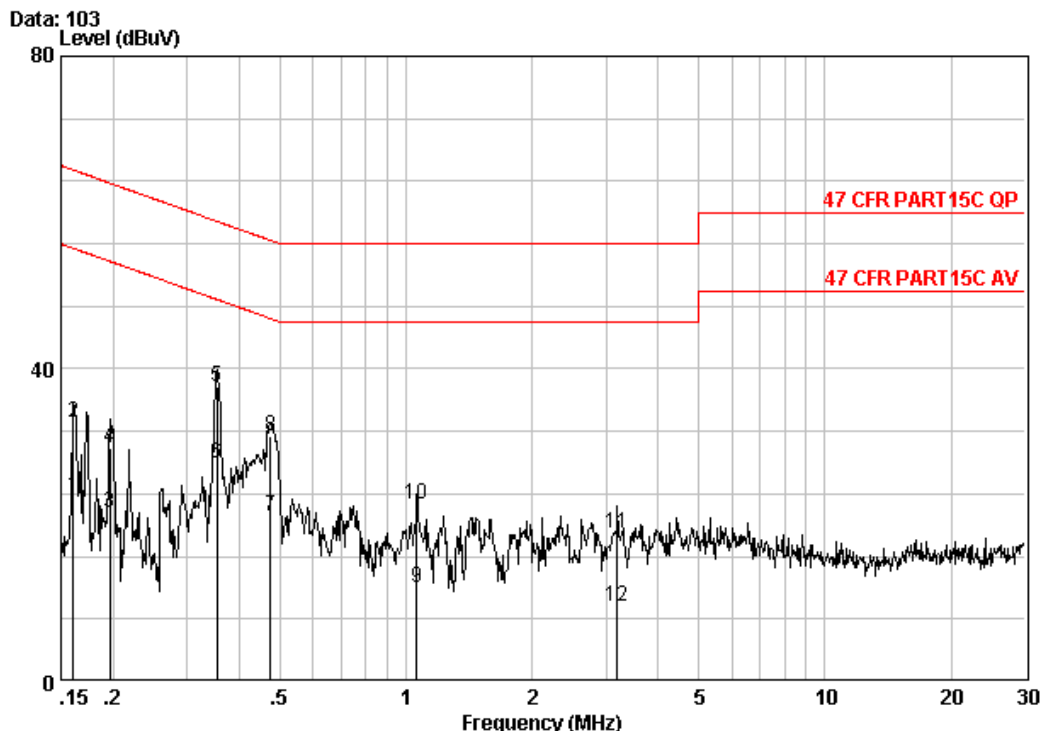
Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.



Live line:



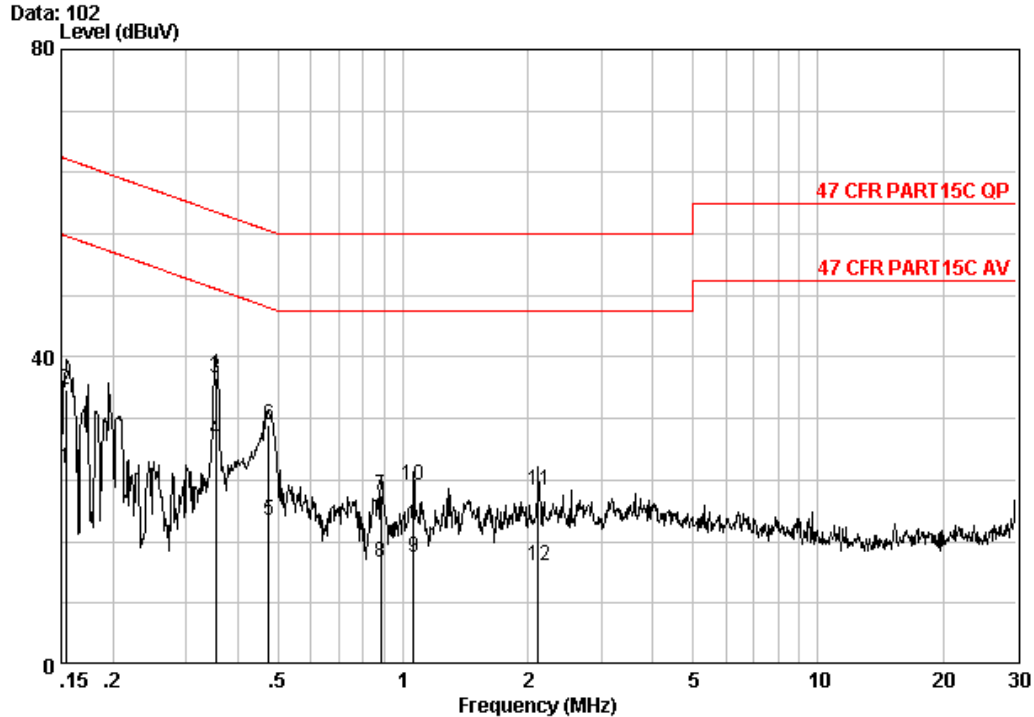
Site : Shielding Room
Condition : 47 CFR PART15C QP CE LINE
Job.No : 5610RF
mode : TX mode

| | Freq | Cable Loss | LISN Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|-----|---------|------------|-------------|------------|-------|------------|------------|---------|
| | MHz | dB | dB | dBuV | dBuV | dBuV | dB | |
| 1 | 0.16070 | 0.02 | 9.70 | 14.11 | 23.83 | 55.43 | -31.60 | Average |
| 2 | 0.16070 | 0.02 | 9.70 | 23.33 | 33.05 | 65.43 | -32.38 | QP |
| 3 | 0.19654 | 0.02 | 9.70 | 11.94 | 21.66 | 53.76 | -32.10 | Average |
| 4 | 0.19654 | 0.02 | 9.70 | 20.05 | 29.77 | 63.76 | -33.99 | QP |
| 5 | 0.35388 | 0.01 | 9.76 | 27.93 | 37.70 | 58.87 | -21.17 | QP |
| 6 @ | 0.35388 | 0.01 | 9.76 | 18.08 | 27.85 | 48.87 | -21.02 | Average |
| 7 | 0.47360 | 0.01 | 9.80 | 11.42 | 21.23 | 46.45 | -25.22 | Average |
| 8 | 0.47360 | 0.01 | 9.80 | 21.66 | 31.47 | 56.45 | -24.98 | QP |
| 9 | 1.060 | 0.02 | 9.80 | 2.20 | 12.02 | 46.00 | -33.98 | Average |
| 10 | 1.060 | 0.02 | 9.80 | 12.79 | 22.61 | 56.00 | -33.39 | QP |
| 11 | 3.190 | 0.02 | 9.85 | 9.04 | 18.91 | 56.00 | -37.09 | QP |
| 12 | 3.190 | 0.02 | 9.85 | -0.31 | 9.56 | 46.00 | -36.44 | Average |

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Neutral line:



Site : Shielding Room
Condition : 47 CFR PART 15C QP CE NEUTRAL
Job No : 5610RF
mode : TX mode

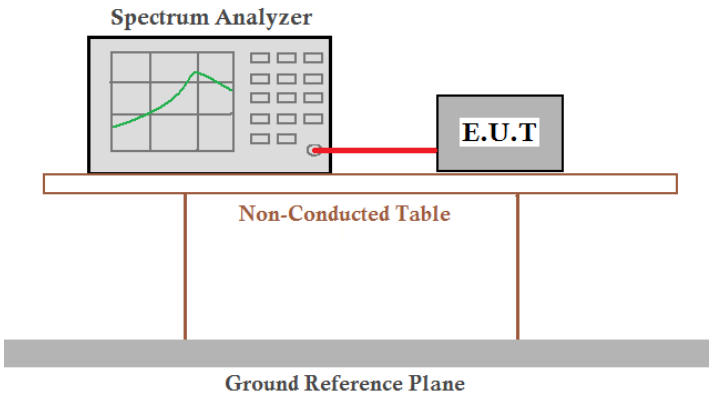
| | Freq | Cable Loss | LISN Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|-----|---------|------------|-------------|------------|-------|------------|------------|---------|
| | MHz | dB | dB | dBuV | dBuV | dBuV | dB | |
| 1 | 0.15403 | 0.02 | 9.70 | 15.86 | 25.58 | 55.78 | -30.20 | Average |
| 2 | 0.15403 | 0.02 | 9.70 | 26.12 | 35.84 | 65.78 | -29.94 | QP |
| 3 | 0.35388 | 0.01 | 9.76 | 27.53 | 37.30 | 58.87 | -21.57 | QP |
| 4 @ | 0.35388 | 0.01 | 9.76 | 19.50 | 29.27 | 48.87 | -19.60 | Average |
| 5 | 0.47360 | 0.01 | 9.80 | 9.04 | 18.85 | 46.45 | -27.60 | Average |
| 6 | 0.47360 | 0.01 | 9.80 | 21.47 | 31.28 | 56.45 | -25.17 | QP |
| 7 | 0.88499 | 0.02 | 9.80 | 12.29 | 22.11 | 56.00 | -33.89 | QP |
| 8 | 0.88499 | 0.02 | 9.80 | 3.43 | 13.25 | 46.00 | -32.75 | Average |
| 9 | 1.060 | 0.02 | 9.80 | 4.21 | 14.03 | 46.00 | -31.97 | Average |
| 10 | 1.060 | 0.02 | 9.80 | 13.55 | 23.37 | 56.00 | -32.63 | QP |
| 11 | 2.121 | 0.02 | 9.81 | 12.89 | 22.72 | 56.00 | -33.28 | QP |
| 12 | 2.121 | 0.02 | 9.81 | 2.93 | 12.76 | 46.00 | -33.24 | Average |

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

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5.2 Conducted Peak Output Power

| | |
|------------------------|--|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (b)(1) |
| Test Method: | ANSI C63.10:2009 |
| Test Setup: |  <p><i>Remark:</i> Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</p> |
| Limit: | 30dBm |
| Exploratory Test Mode: | Non-hopping transmitting with all kind of modulation and all kind of data type |
| Final Test Mode: | Through Pre-scan, find the DH1 of date type is the worse case of GFSK modulation type, 2-DH1 of date type is worse case of $\pi/4$ DQPSK modulation type, 3-DH1 of date type is worse case of 8DPSK modulation type. |
| Instruments Used: | Refer to section 4.10 for details |
| Test Results: | Pass |

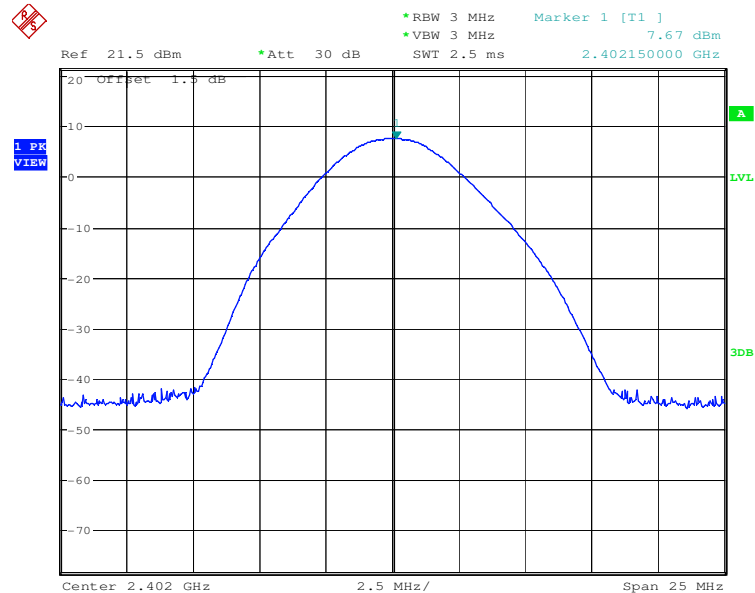
**Measurement Data**

| GFSK mode | | | |
|--------------------|-------------------------|-------------|--------|
| Test channel | Peak Output Power (dBm) | Limit (dBm) | Result |
| Lowest | 7.67 | 30.00 | Pass |
| Middle | 7.45 | 30.00 | Pass |
| Highest | 6.92 | 30.00 | Pass |
| $\pi/4$ DQPSK mode | | | |
| Test channel | Peak Output Power (dBm) | Limit (dBm) | Result |
| Lowest | 6.46 | 30.00 | Pass |
| Middle | 6.07 | 30.00 | Pass |
| Highest | 5.14 | 30.00 | Pass |
| 8DPSK mode | | | |
| Test channel | Peak Output Power (dBm) | Limit (dBm) | Result |
| Lowest | 6.68 | 30.00 | Pass |
| Middle | 6.34 | 30.00 | Pass |
| Highest | 5.54 | 30.00 | Pass |

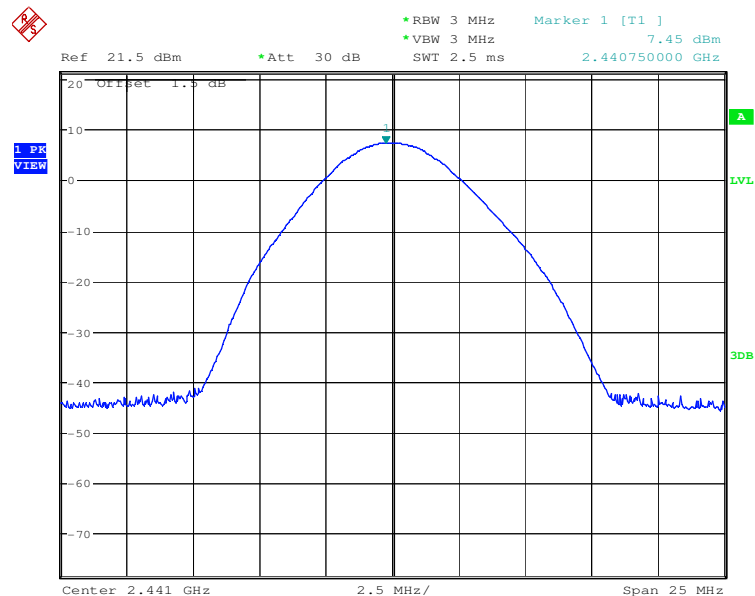


Test plot as follows:

| | | | |
|------------|------|---------------|--------|
| Test mode: | GFSK | Test channel: | Lowest |
|------------|------|---------------|--------|



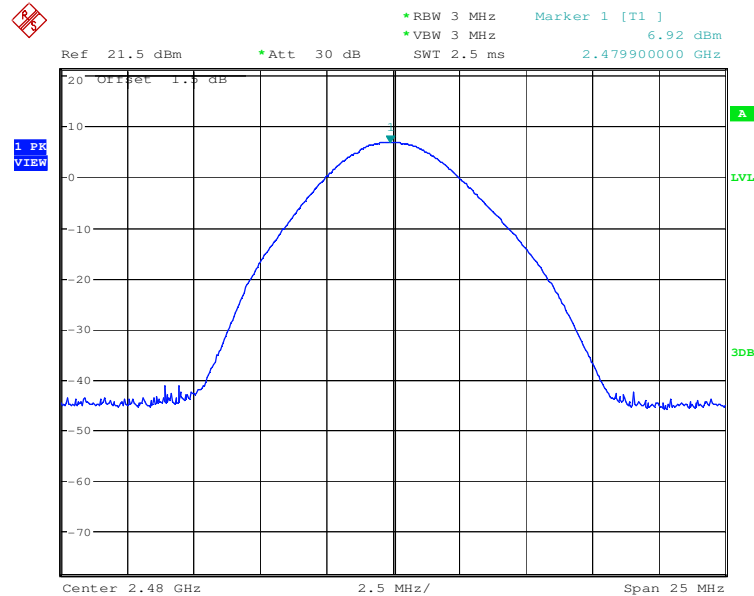
| | | | |
|------------|------|---------------|--------|
| Test mode: | GFSK | Test channel: | Middle |
|------------|------|---------------|--------|



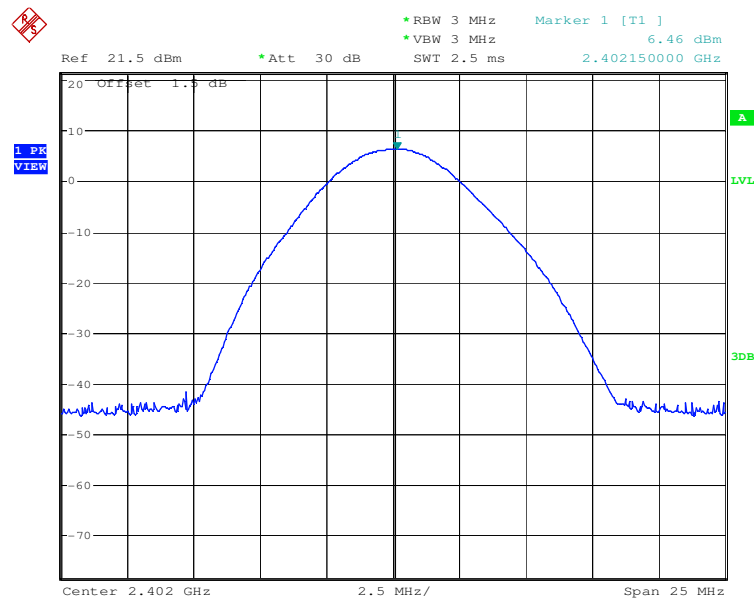
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| | | | |
|------------|------|---------------|---------|
| Test mode: | GFSK | Test channel: | Highest |
|------------|------|---------------|---------|



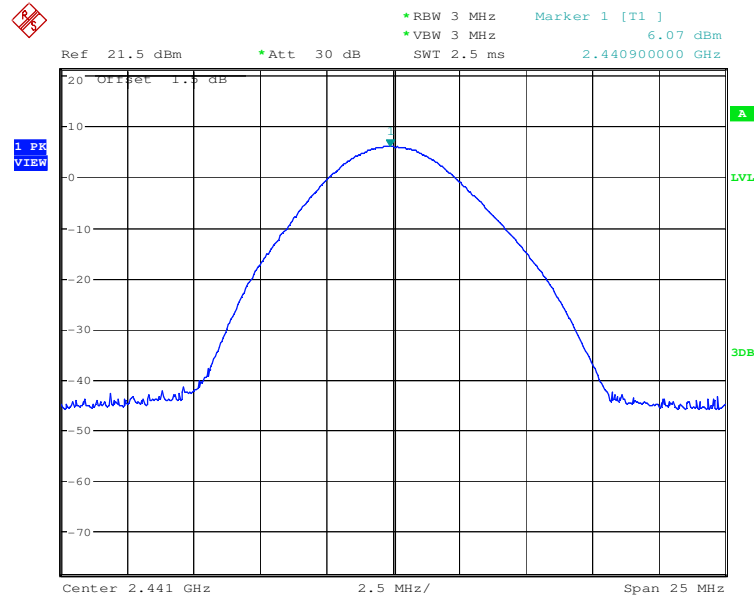
| | | | |
|------------|---------------|---------------|--------|
| Test mode: | $\pi/4$ DQPSK | Test channel: | Lowest |
|------------|---------------|---------------|--------|



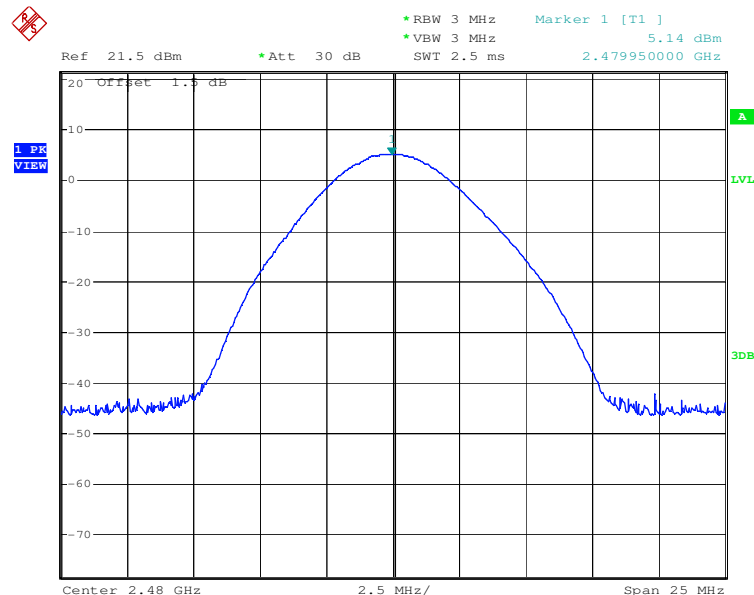
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| | | | |
|------------|---------------|---------------|--------|
| Test mode: | $\pi/4$ DQPSK | Test channel: | Middle |
|------------|---------------|---------------|--------|



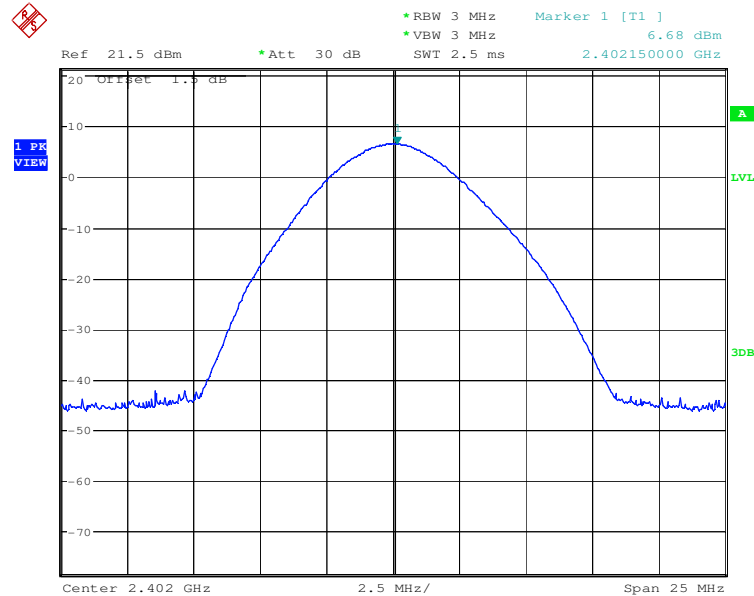
| | | | |
|------------|---------------|---------------|---------|
| Test mode: | $\pi/4$ DQPSK | Test channel: | Highest |
|------------|---------------|---------------|---------|



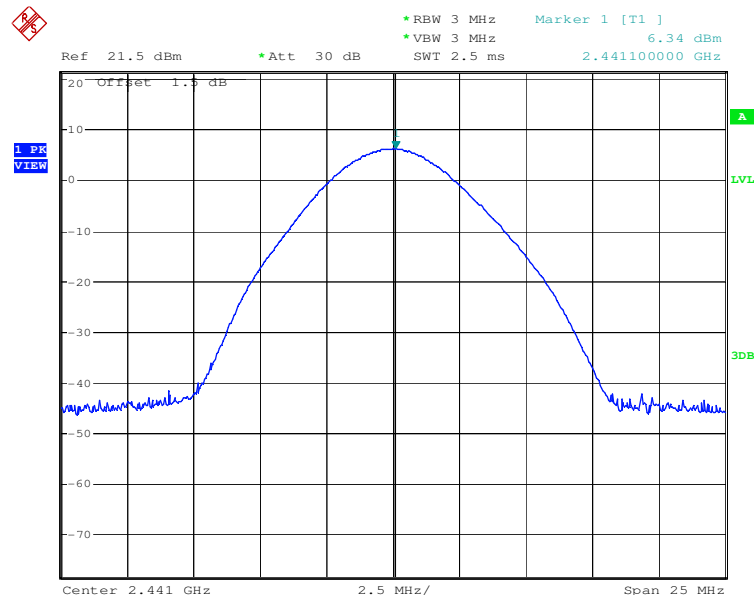
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| | | | |
|------------|-------|---------------|--------|
| Test mode: | 8DPSK | Test channel: | Lowest |
|------------|-------|---------------|--------|



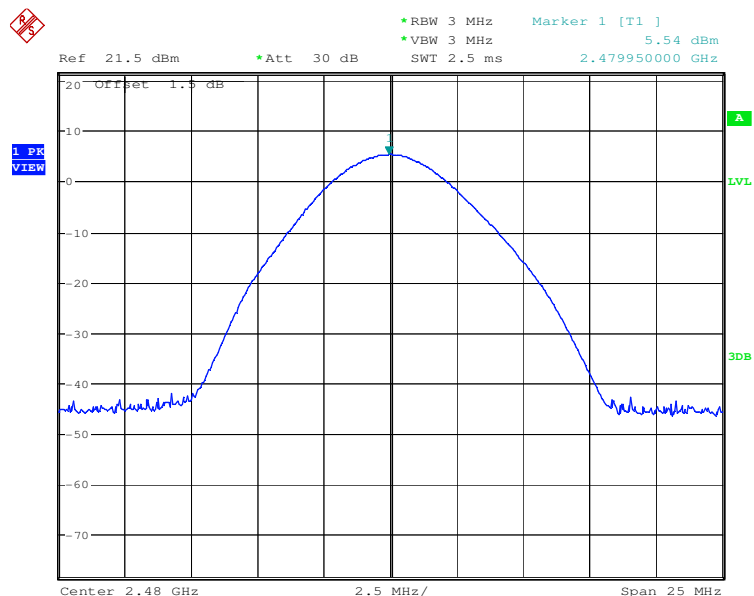
| | | | |
|------------|-------|---------------|--------|
| Test mode: | 8DPSK | Test channel: | Middle |
|------------|-------|---------------|--------|



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| | | | |
|------------|-------|---------------|---------|
| Test mode: | 8DPSK | Test channel: | Highest |
|------------|-------|---------------|---------|



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5.3 Radiated Spurious Emission

| | | | | | |
|-------------------|---|----------------------------------|----------------|------------|--------------------------|
| Test Requirement: | 47 CFR Part 15C Section 15.209 and 15.205 | | | | |
| Test Method: | ANSI C63.10: 2009 | | | | |
| Test Site: | Measurement Distance: 3m (Semi-Anechoic Chamber) | | | | |
| Receiver Setup: | Frequency | Detector | RBW | VBW | Remark |
| | 0.009MHz-0.090MHz | Peak | 10kHz | 30kHz | Peak |
| | 0.009MHz-0.090MHz | Average | 10kHz | 30kHz | Average |
| | 0.090MHz-0.110MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak |
| | 0.110MHz-0.490MHz | Peak | 10kHz | 30kHz | Peak |
| | 0.110MHz-0.490MHz | Average | 10kHz | 30kHz | Average |
| | 0.490MHz -30MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak |
| | 30MHz-1GHz | Quasi-peak | 100 kHz | 300kHz | Quasi-peak |
| | Above 1GHz | Peak | 1MHz | 3MHz | Peak |
| | | Peak | 1MHz | 10Hz | Average |
| Limit: | Frequency | Field strength (microvolt/meter) | Limit (dBuV/m) | Remark | Measurement distance (m) |
| | 0.009MHz-0.490MHz | 2400/F(kHz) | - | - | 300 |
| | 0.490MHz-1.705MHz | 24000/F(kHz) | - | - | 30 |
| | 1.705MHz-30MHz | 30 | - | - | 30 |
| | 30MHz-88MHz | 100 | 40.0 | Quasi-peak | 3 |
| | 88MHz-216MHz | 150 | 43.5 | Quasi-peak | 3 |
| | 216MHz-960MHz | 200 | 46.0 | Quasi-peak | 3 |
| | 960MHz-1GHz | 500 | 54.0 | Quasi-peak | 3 |
| | Above 1GHz | 500 | 54.0 | Average | 3 |
| | Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. | | | | |

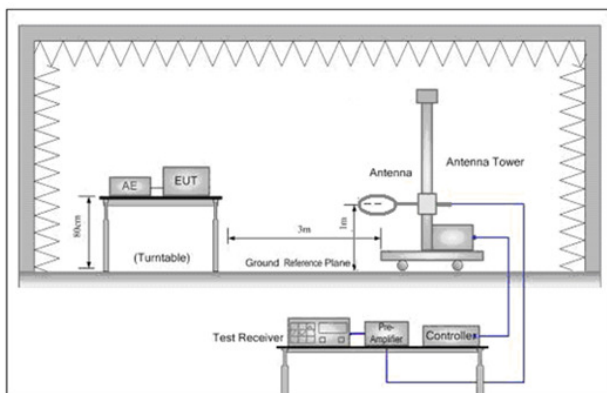
Test Setup:


Figure 1. Below 30MHz

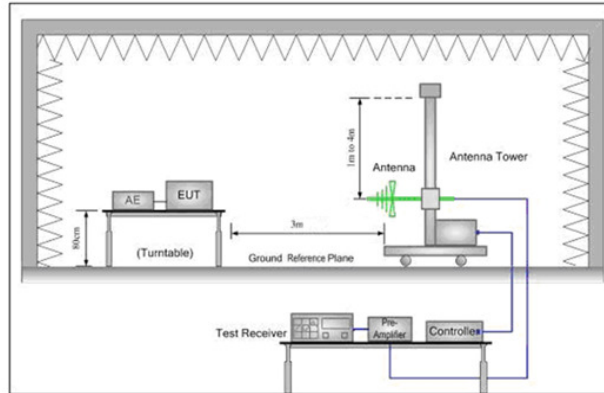


Figure 2. 30MHz to 1GHz

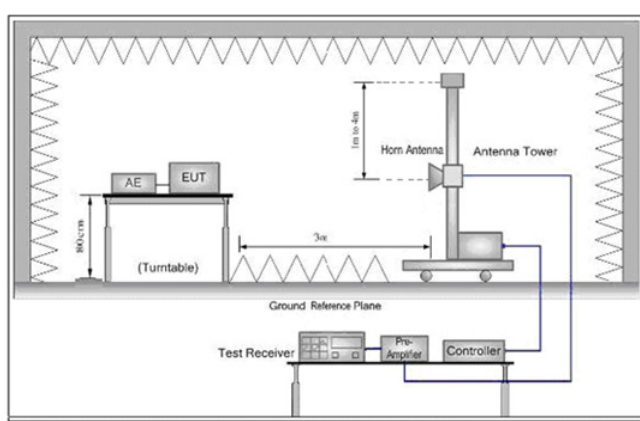


Figure 3. Above 1 GHz

Test Procedure:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the

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SGS-CSTC Standards Technical Services Ltd.

Report No.: SZEM120500242403

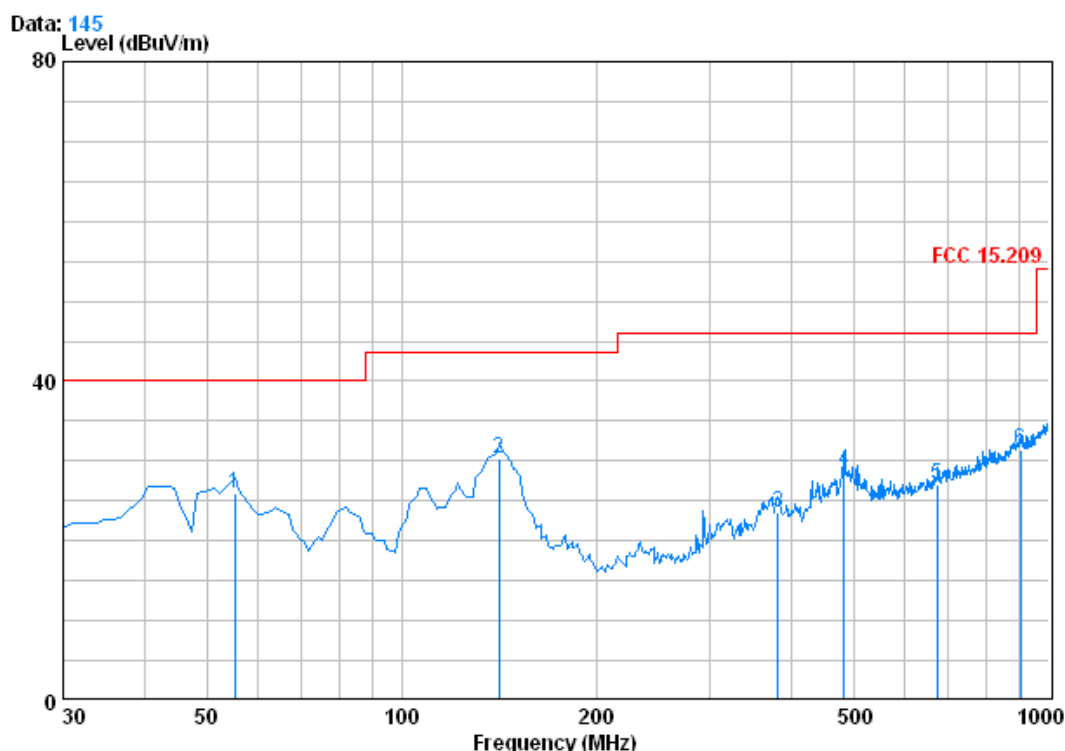
Page: 23 of 38

| | |
|------------------------|--|
| | EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel (2402MHz), the middle channel (2441MHz), the Highest channel (2480MHz) h. Repeat above procedures until all frequencies measured was complete. |
| Exploratory Test Mode: | Non-hopping transmitting mode with all kind of modulation and all kind of data type |
| Final Test Mode: | Through Pre-scan, find the DH1 of data type is the worse case of GFSK modulation type |
| Instruments Used: | Refer to section 4.10 for details |
| Test Results: | Pass |

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5.3.1 Radiated Emission below 1GHz

| | | |
|-----------------|--------------|----------|
| 30MHz~1GHz (QP) | | |
| Test mode: | Transmitting | Vertical |



Condition : FCC 15.209 3m 3142C VERTICAL

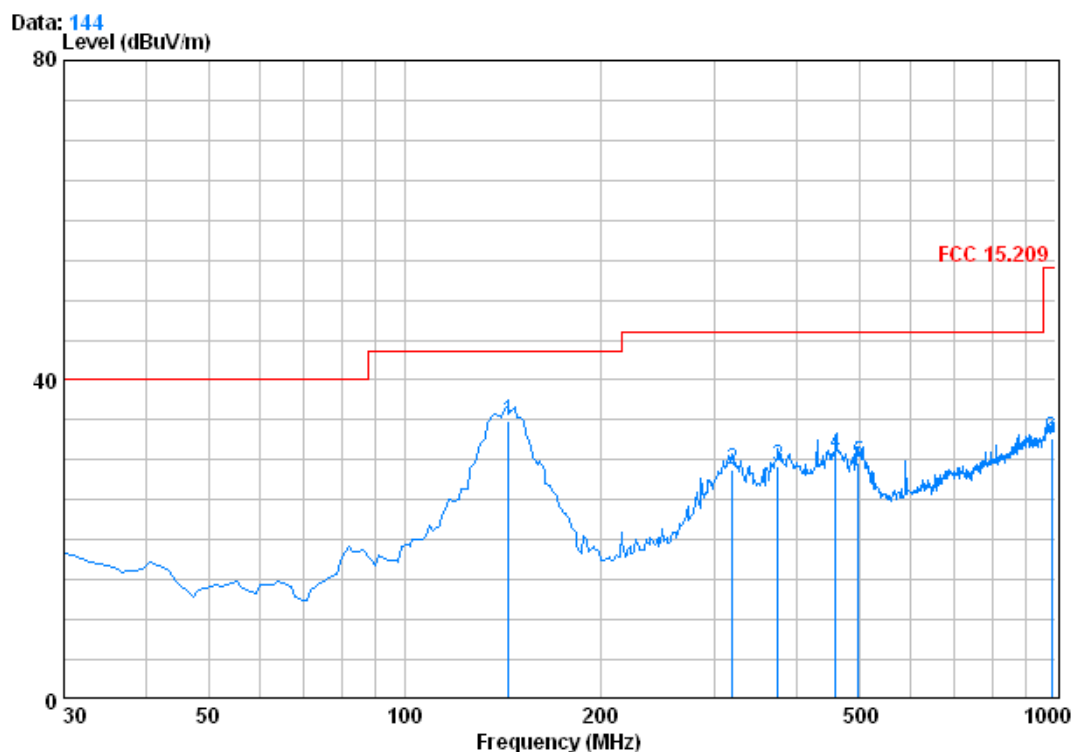
Job No. : 5610RF

test mode : TX mode

| | Freq | Cable&Antenna Loss Factor | Preamp Factor | Read Level | Level | Limit Line | Over Limit |
|---|---------|---------------------------|---------------|------------|-------|------------|--------------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dB |
| 1 | 55.220 | 0.80 | 7.56 | 27.28 | 44.76 | 25.84 | 40.00 -14.16 |
| 2 | 141.550 | 1.30 | 8.24 | 26.95 | 47.72 | 30.31 | 43.50 -13.19 |
| 3 | 381.140 | 2.15 | 16.08 | 27.01 | 32.33 | 23.55 | 46.00 -22.45 |
| 4 | 482.990 | 2.54 | 17.80 | 27.62 | 35.98 | 28.70 | 46.00 -17.30 |
| 5 | 673.110 | 2.85 | 21.40 | 27.45 | 30.32 | 27.12 | 46.00 -18.88 |
| 6 | 904.940 | 3.61 | 23.23 | 26.75 | 31.32 | 31.40 | 46.00 -14.60 |



| | | |
|------------|--------------|------------|
| Test mode: | Transmitting | Horizontal |
|------------|--------------|------------|



Condition : FCC 15.209 3m 3142C HORIZONTAL
Job No. : 5610RF
test mode : TX mode

| | Freq | Cable Loss | Antenna Factor | Preamplifier Factor | Read Level | Level | Limit | Over |
|-----|---------|------------|----------------|---------------------|------------|--------|--------|--------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 @ | 144.460 | 1.31 | 8.53 | 26.93 | 52.04 | 34.94 | 43.50 | -8.56 |
| 2 | 319.060 | 1.96 | 14.59 | 26.54 | 38.78 | 28.78 | 46.00 | -17.22 |
| 3 | 374.350 | 2.13 | 16.00 | 26.97 | 38.14 | 29.30 | 46.00 | -16.70 |
| 4 | 459.710 | 2.45 | 17.22 | 27.50 | 38.48 | 30.65 | 46.00 | -15.35 |
| 5 | 497.540 | 2.59 | 17.80 | 27.70 | 36.94 | 29.63 | 46.00 | -16.37 |
| 6 | 986.420 | 3.69 | 24.13 | 26.37 | 31.34 | 32.78 | 54.00 | -21.22 |

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5.3.2 Transmitter Emission above 1GHz

| Worse case mode: | | GFSK(DH1) | | Test channel: | | Lowest | | Remark: | Peak |
|------------------|-----------------|-----------------------|--------------------|-------------------|----------------|---------------------|-----------------|--------------|------|
| Frequency (MHz) | Cable Loss (dB) | Antenna Factor (dB/m) | Preamp Factor (dB) | Read Level (dBuV) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization | |
| 3903.444 | 6.33 | 33.70 | 40.97 | 48.99 | 48.05 | 74 | -25.95 | Vertical | |
| 4785.075 | 7.42 | 34.73 | 41.61 | 54.94 | 55.48 | 74 | -18.52 | Vertical | |
| 6283.164 | 8.07 | 36.04 | 40.68 | 49.25 | 52.68 | 74 | -21.32 | Vertical | |
| 7547.013 | 9.14 | 36.00 | 39.57 | 49.15 | 54.72 | 74 | -19.28 | Vertical | |
| 9275.160 | 9.65 | 36.93 | 38.08 | 47.23 | 55.73 | 74 | -18.27 | Vertical | |
| 11027.980 | 10.59 | 38.49 | 37.88 | 47.26 | 58.46 | 74 | -15.54 | Vertical | |
| 3552.582 | 5.83 | 33.26 | 40.70 | 49.20 | 47.59 | 74 | -26.41 | Horizontal | |
| 4785.075 | 7.42 | 34.73 | 41.61 | 56.82 | 57.36 | 74 | -16.64 | Horizontal | |
| 6032.401 | 7.99 | 35.74 | 40.89 | 49.68 | 52.52 | 74 | -21.48 | Horizontal | |
| 7470.558 | 9.05 | 35.99 | 39.64 | 49.01 | 54.41 | 74 | -19.59 | Horizontal | |
| 9441.913 | 9.66 | 37.14 | 37.94 | 47.33 | 56.19 | 74 | -17.81 | Horizontal | |
| 12210.020 | 11.37 | 39.11 | 38.36 | 47.81 | 59.93 | 74 | -14.07 | Horizontal | |

| Worse case mode: | | GFSK(DH1) | | Test channel: | | Lowest | | Remark: | Average |
|------------------|-----------------|------------------------|--------------------|----------------------|-------------------------|----------------|-----------------|--------------|---------|
| Frequency (MHz) | Cable loss (dB) | Antenna factors (dB/m) | Preamp factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Over Limit (dB) | Polarization | |
| 3903.444 | 6.33 | 33.70 | 40.97 | 35.31 | 34.37 | 54 | -19.63 | Vertical | |
| 4785.075 | 7.42 | 34.73 | 41.61 | 46.65 | 47.19 | 54 | -6.81 | Vertical | |
| 6283.164 | 8.07 | 36.04 | 40.68 | 35.72 | 39.15 | 54 | -14.85 | Vertical | |
| 7547.013 | 9.14 | 36.00 | 39.57 | 36.62 | 42.19 | 54 | -11.81 | Vertical | |
| 9275.160 | 9.65 | 36.93 | 38.08 | 32.89 | 41.39 | 54 | -12.61 | Vertical | |
| 11027.980 | 10.59 | 38.49 | 37.88 | 33.50 | 44.70 | 54 | -9.30 | Vertical | |
| 3552.582 | 5.83 | 33.26 | 40.70 | 36.41 | 34.80 | 54 | -19.20 | Horizontal | |
| 4785.075 | 7.42 | 34.73 | 41.61 | 48.17 | 48.71 | 54 | -5.29 | Horizontal | |
| 6032.401 | 7.99 | 35.74 | 40.89 | 35.90 | 38.74 | 54 | -15.26 | Horizontal | |
| 7470.558 | 9.05 | 35.99 | 39.64 | 35.66 | 41.06 | 54 | -12.94 | Horizontal | |
| 9441.913 | 9.66 | 37.14 | 37.94 | 33.93 | 42.79 | 54 | -11.21 | Horizontal | |
| 12210.020 | 11.37 | 39.11 | 38.36 | 35.66 | 47.78 | 54 | -6.22 | Horizontal | |



| Worse case mode: | | GFSK(DH1) | | Test channel: | | Middle | | Remark: | Peak |
|------------------|-----------------|-----------------------|--------------------|-------------------|----------------|---------------------|-----------------|--------------|------|
| Frequency (MHz) | Cable Loss (dB) | Antenna Factor (dB/m) | Preamp Factor (dB) | Read Level (dBuV) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization | |
| 3662.775 | 5.98 | 33.41 | 40.79 | 48.13 | 46.73 | 74 | -27.27 | Vertical | |
| 4883.519 | 7.48 | 34.59 | 41.68 | 55.60 | 55.99 | 74 | -18.01 | Vertical | |
| 6283.164 | 8.07 | 36.04 | 40.68 | 49.86 | 53.29 | 74 | -20.71 | Vertical | |
| 7566.249 | 9.17 | 36.00 | 39.56 | 48.55 | 54.16 | 74 | -19.84 | Vertical | |
| 9636.161 | 9.68 | 37.34 | 37.76 | 46.39 | 55.65 | 74 | -18.35 | Vertical | |
| 12303.620 | 11.41 | 39.21 | 38.40 | 47.98 | 60.20 | 74 | -13.80 | Vertical | |
| 3709.691 | 6.05 | 33.45 | 40.83 | 48.48 | 47.15 | 74 | -26.85 | Horizontal | |
| 4547.561 | 7.14 | 35.12 | 41.44 | 51.21 | 52.03 | 74 | -21.97 | Horizontal | |
| 5850.919 | 7.91 | 35.45 | 41.06 | 49.42 | 51.72 | 74 | -22.28 | Horizontal | |
| 7413.726 | 8.99 | 35.97 | 39.69 | 48.74 | 54.01 | 74 | -19.99 | Horizontal | |
| 9514.293 | 9.66 | 37.22 | 37.88 | 46.44 | 55.44 | 74 | -18.56 | Horizontal | |
| 12055.600 | 11.31 | 38.95 | 38.30 | 48.10 | 60.06 | 74 | -13.94 | Horizontal | |

| Worse case mode: | | GFSK(DH1) | | Test channel: | | Middle | | Remark: | Average |
|------------------|-----------------|------------------------|--------------------|----------------------|-------------------------|----------------|-----------------|--------------|---------|
| Frequency (MHz) | Cable loss (dB) | Antenna factors (dB/m) | Preamp factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Over Limit (dB) | Polarization | |
| 3662.775 | 5.98 | 33.41 | 40.79 | 33.79 | 32.39 | 54 | -21.61 | Vertical | |
| 4883.519 | 7.48 | 34.59 | 41.68 | 47.35 | 47.74 | 54 | -6.26 | Vertical | |
| 6283.164 | 8.07 | 36.04 | 40.68 | 35.62 | 39.05 | 54 | -14.95 | Vertical | |
| 7566.249 | 9.17 | 36.00 | 39.56 | 37.34 | 42.95 | 54 | -11.05 | Vertical | |
| 9636.161 | 9.68 | 37.34 | 37.76 | 32.66 | 41.92 | 54 | -12.08 | Vertical | |
| 12303.620 | 11.41 | 39.21 | 38.40 | 34.59 | 46.81 | 54 | -7.19 | Vertical | |
| 3709.691 | 6.05 | 33.45 | 40.83 | 34.89 | 33.56 | 54 | -20.44 | Horizontal | |
| 4547.561 | 7.14 | 35.12 | 41.44 | 43.48 | 44.30 | 54 | -9.70 | Horizontal | |
| 5850.919 | 7.91 | 35.45 | 41.06 | 35.07 | 37.37 | 54 | -16.63 | Horizontal | |
| 7413.726 | 8.99 | 35.97 | 39.69 | 36.38 | 41.65 | 54 | -12.35 | Horizontal | |
| 9514.293 | 9.66 | 37.22 | 37.88 | 32.76 | 41.76 | 54 | -12.24 | Horizontal | |
| 12055.600 | 11.31 | 38.95 | 38.30 | 34.72 | 46.68 | 54 | -7.32 | Horizontal | |

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| Worse case mode: | | GFSK(DH1) | | Test channel: | | Highest | | Remark: | | Peak |
|------------------|-----------------|------------------------|--------------------|----------------------|-------------------------|---------------------|-----------------|--------------|--|---------|
| Frequency (MHz) | Cable Loss (dB) | Antenna Factor (dB/m) | Preamp Factor (dB) | Read Level (dBuV) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization | | |
| 3709.691 | 6.05 | 33.45 | 40.83 | 47.96 | 46.63 | 74 | -27.37 | Vertical | | |
| 4629.319 | 7.22 | 35.01 | 41.50 | 48.00 | 48.73 | 74 | -25.27 | Vertical | | |
| 5850.919 | 7.91 | 35.45 | 41.06 | 49.73 | 52.03 | 74 | -21.97 | Vertical | | |
| 7547.013 | 9.14 | 36.00 | 39.57 | 48.31 | 53.88 | 74 | -20.12 | Vertical | | |
| 9538.543 | 9.67 | 37.23 | 37.86 | 46.26 | 55.30 | 74 | -18.70 | Vertical | | |
| 11933.470 | 11.24 | 38.83 | 38.24 | 47.91 | 59.74 | 74 | -14.26 | Vertical | | |
| 3634.910 | 5.95 | 33.37 | 40.77 | 48.33 | 46.88 | 74 | -27.12 | Horizontal | | |
| 4629.319 | 7.22 | 35.01 | 41.50 | 48.70 | 49.43 | 74 | -24.57 | Horizontal | | |
| 6156.505 | 8.03 | 35.88 | 40.79 | 49.88 | 53.00 | 74 | -21.00 | Horizontal | | |
| 7413.726 | 8.99 | 35.97 | 39.69 | 48.67 | 53.94 | 74 | -20.06 | Horizontal | | |
| 9562.854 | 9.67 | 37.27 | 37.83 | 46.43 | 55.54 | 74 | -18.46 | Horizontal | | |
| 12055.600 | 11.31 | 38.95 | 38.30 | 47.68 | 59.64 | 74 | -14.36 | Horizontal | | |
| Worse case mode: | | GFSK(DH1) | | Test channel: | | Highest | | Remark: | | Average |
| Frequency (MHz) | Cable loss (dB) | Antenna factors (dB/m) | Preamp factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Over Limit (dB) | Polarization | | |
| 3709.691 | 6.05 | 33.45 | 40.83 | 34.18 | 32.85 | 54 | -21.15 | Vertical | | |
| 4629.319 | 7.22 | 35.01 | 41.50 | 35.25 | 35.98 | 54 | -18.02 | Vertical | | |
| 5850.919 | 7.91 | 35.45 | 41.06 | 36.56 | 38.86 | 54 | -15.14 | Vertical | | |
| 7547.013 | 9.14 | 36.00 | 39.57 | 35.87 | 41.44 | 54 | -12.56 | Vertical | | |
| 9538.543 | 9.67 | 37.23 | 37.86 | 33.52 | 42.56 | 54 | -11.44 | Vertical | | |
| 11933.470 | 11.24 | 38.83 | 38.24 | 33.35 | 45.18 | 54 | -8.82 | Vertical | | |
| 3634.910 | 5.95 | 33.37 | 40.77 | 33.95 | 32.50 | 54 | -21.50 | Horizontal | | |
| 4629.319 | 7.22 | 35.01 | 41.50 | 36.26 | 36.99 | 54 | -17.01 | Horizontal | | |
| 6156.505 | 8.03 | 35.88 | 40.79 | 35.50 | 38.62 | 54 | -15.38 | Horizontal | | |
| 7413.726 | 8.99 | 35.97 | 39.69 | 35.90 | 41.17 | 54 | -12.83 | Horizontal | | |
| 9562.854 | 9.67 | 37.27 | 37.83 | 33.76 | 42.87 | 54 | -11.13 | Horizontal | | |
| 12055.600 | 11.31 | 38.95 | 38.30 | 33.82 | 45.78 | 54 | -8.22 | Horizontal | | |

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 2) The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

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5.4 Band edge (Radiated Emission)

| | | | |
|-------------------|--|--------------------|------------------|
| Test Requirement: | 47 CFR Part 15C Section 15.209 and 15.205 | | |
| Test Method: | ANSI C63.10: 2009 | | |
| Test Site: | Measurement Distance: 3m (Semi-Anechoic Chamber) | | |
| Limit: | Frequency | Limit (dBuV/m @3m) | Remark |
| | 30MHz-88MHz | 40.0 | Quasi-peak Value |
| | 88MHz-216MHz | 43.5 | Quasi-peak Value |
| | 216MHz-960MHz | 46.0 | Quasi-peak Value |
| | 960MHz-1GHz | 54.0 | Quasi-peak Value |
| | Above 1GHz | 54.0 | Average Value |
| | | 74.0 | Peak Value |
| Test Setup: | | | |

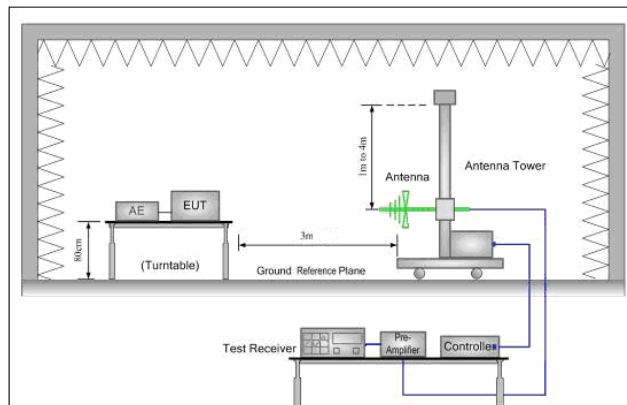


Figure 1. 30MHz to 1GHz

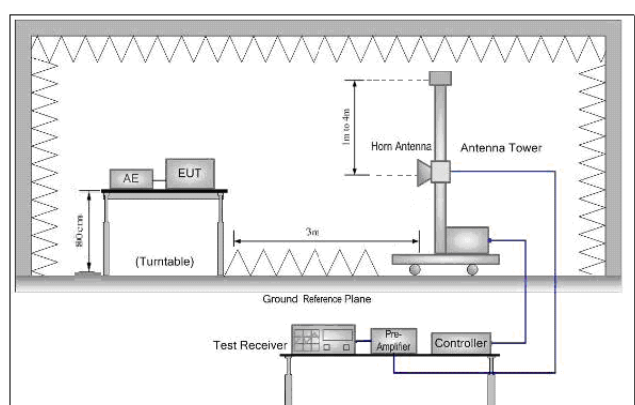


Figure 2. Above 1 GHz



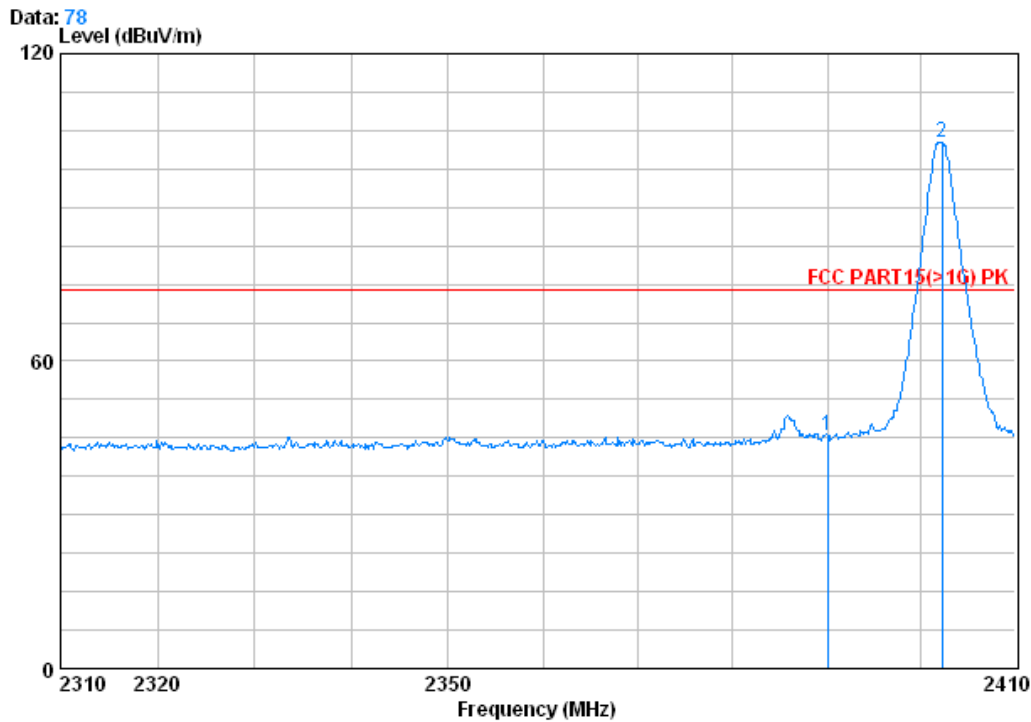
| | |
|------------------------|--|
| Test Procedure: | <ul style="list-style-type: none">a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. 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 from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channelg. Test the EUT in the lowest channel , the Highest channelh. Repeat above procedures until all frequencies measured was complete. |
| Exploratory Test Mode: | Non-hopping transmitting mode with all kind of modulation and all kind of data type |
| Final Test Mode: | Through Pre-scan, find the DH5 of data type is the worse case of GFSK modulation type |
| Instruments Used: | Refer to section 4.10 for details |
| Test Results: | Pass |





Test plot as follows:

| | | | | | | |
|------------------|------------|---------------|--------|---------|------|----------|
| Worse case mode: | GFSK (DH5) | Test channel: | Lowest | Remark: | Peak | Vertical |
|------------------|------------|---------------|--------|---------|------|----------|



Condition : FCC PART15(>1G) PK 3m VERTICAL

Job No. : 5610RF

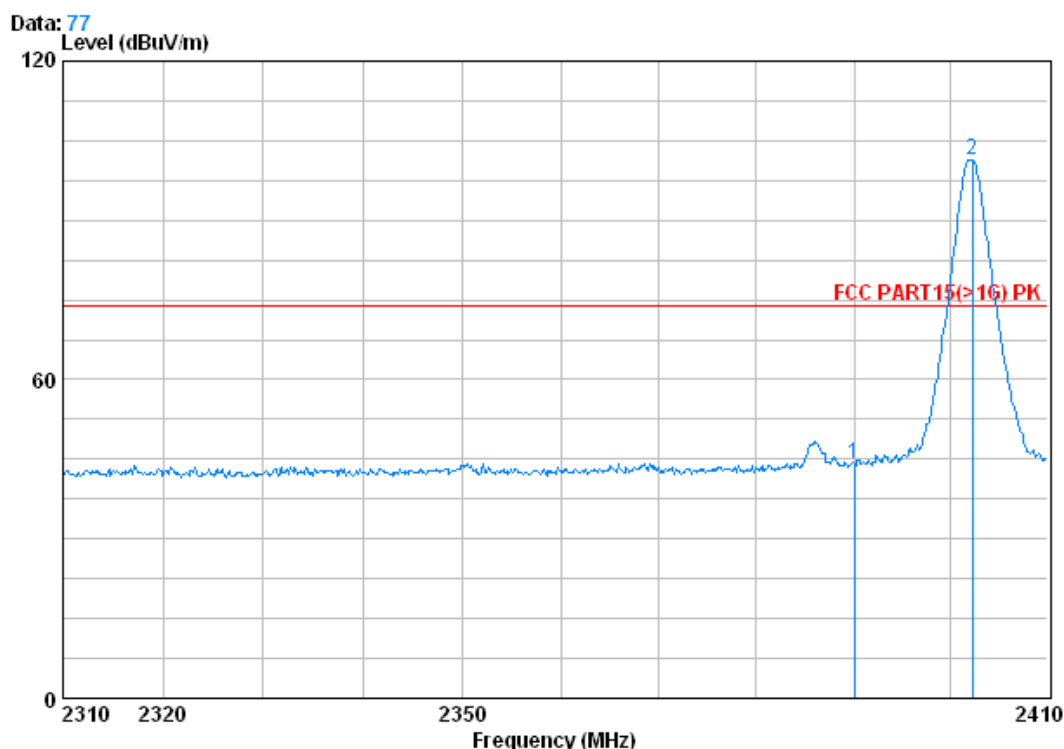
test Mode : 2402 Bandedge PK

| | Freq | Cable | Antenna | Preamp | Read | | Limit | Over |
|-----|----------|-------|---------|--------|--------|--------|--------|--------|
| | | Loss | Factor | Factor | Level | Level | Line | Limit |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 2390.000 | 2.98 | 32.51 | 39.85 | 49.91 | 45.55 | 74.00 | -28.45 |
| 2 @ | 2402.200 | 2.98 | 32.51 | 39.86 | 107.05 | 102.69 | 74.00 | 28.69 |

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| | | | | | | |
|------------------|------------|---------------|--------|---------|------|------------|
| Worse case mode: | GFSK (DH5) | Test channel: | Lowest | Remark: | Peak | Horizontal |
|------------------|------------|---------------|--------|---------|------|------------|



Condition : FCC PART15(>16) PK 3m HORIZONTAL

Job No. : 5610RF

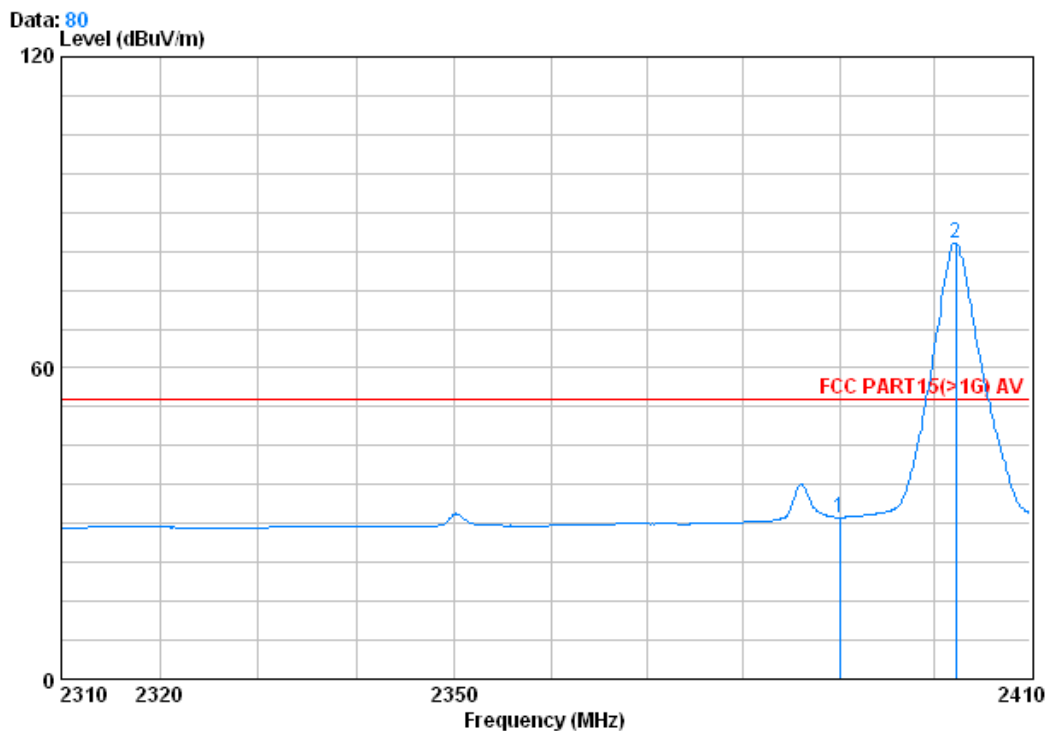
test Mode : 2402 Bandedge PK

| | Freq | Cable | Antenna | Preamp | Read | Limit | Over |
|-----|----------|-------|---------|--------|--------|--------|--------------|
| | | Loss | Factor | Factor | Level | Line | Limit |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dB |
| 1 | 2390.000 | 2.98 | 32.51 | 39.85 | 48.55 | 44.20 | 74.00 -29.80 |
| 2 @ | 2402.200 | 2.98 | 32.51 | 39.86 | 105.68 | 101.31 | 74.00 27.31 |

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| | | | | | | |
|------------------|------------|---------------|--------|---------|---------|----------|
| Worse case mode: | GFSK (DH5) | Test channel: | Lowest | Remark: | Average | Vertical |
|------------------|------------|---------------|--------|---------|---------|----------|



Condition : FCC PART15(>1G) AV 3m VERTICAL

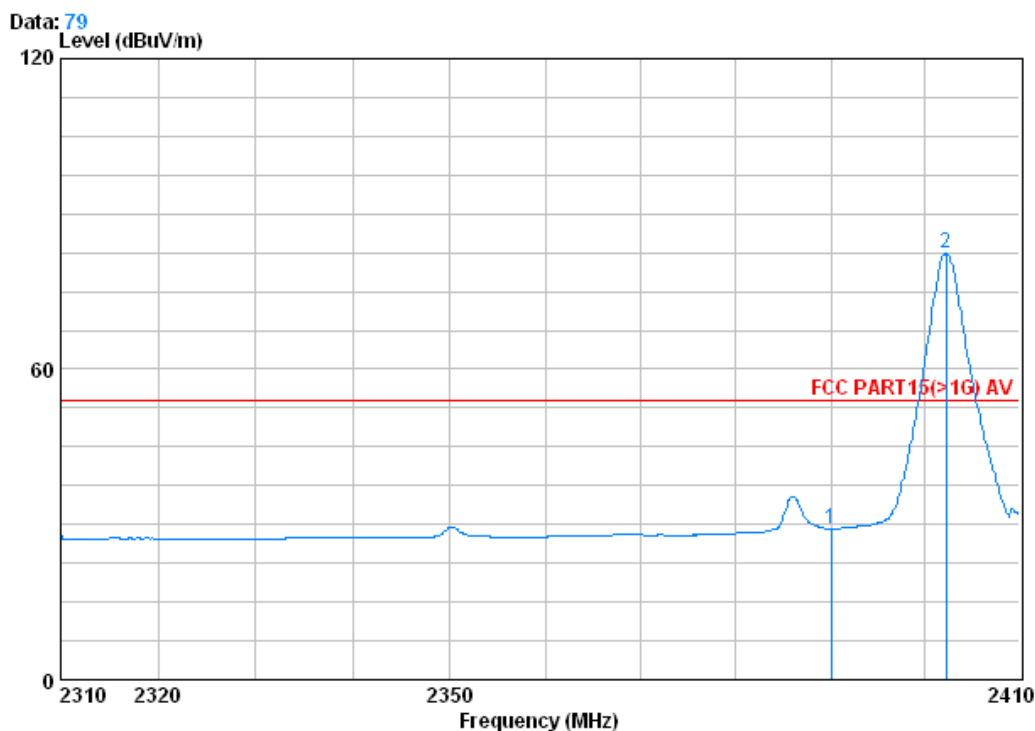
Job No. : 5610RF

test Mode : 2402 Bandedge AV

| | Freq | Cable Loss | Antenna Factor | Preamplifier | Read Level | Limit | Over |
|-----|----------|------------|----------------|--------------|------------|--------|--------------|
| | MHz | dB | dB/m | Factor | Level | Line | Limit |
| | | | | | dBuV | dBuV/m | dB |
| 1 | 2390.000 | 2.98 | 32.51 | 39.85 | 35.51 | 31.15 | 54.00 -22.85 |
| 2 @ | 2402.200 | 2.98 | 32.51 | 39.86 | 88.47 | 84.10 | 54.00 30.10 |



| | | | | | | |
|------------------|------------|---------------|--------|---------|---------|------------|
| Worse case mode: | GFSK (DH5) | Test channel: | Lowest | Remark: | Average | Horizontal |
|------------------|------------|---------------|--------|---------|---------|------------|

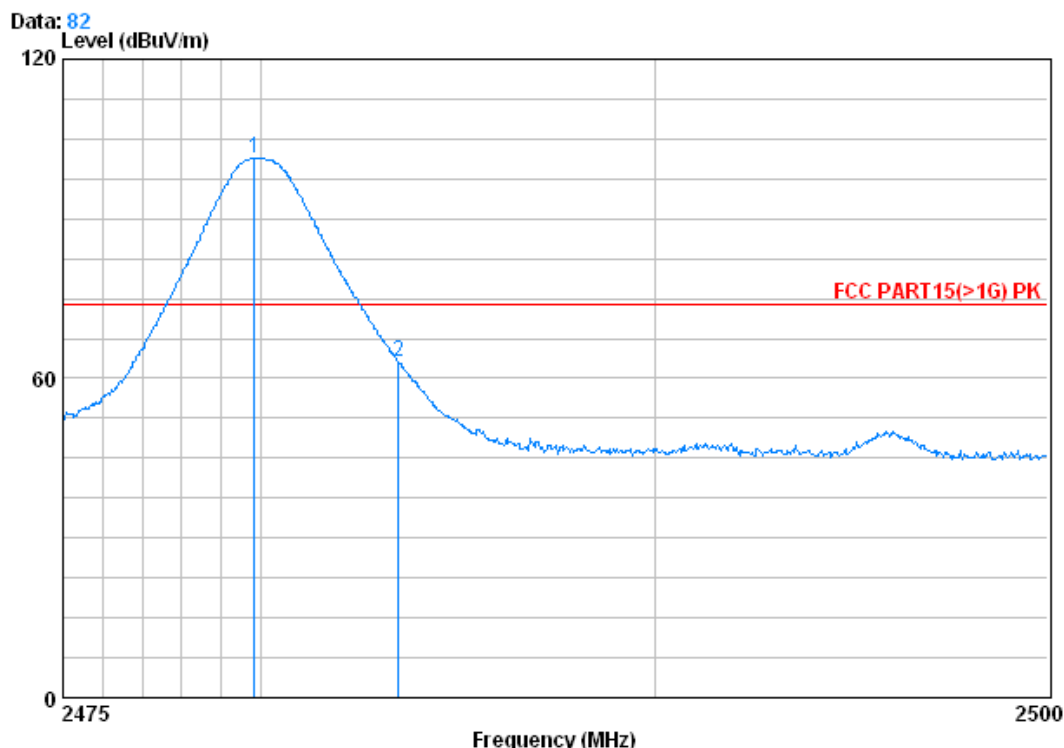


Condition : FCC PART15(>1G) AV 3m HORIZONTAL
Job No. : 5610RF
test Mode : 2402 Bandedge AV

| | Freq | Cable | Antenna | Preamplifier | Read | Limit | Over |
|---|----------|-------|---------|--------------|-------|--------|--------------|
| | MHz | Loss | Factor | Factor | Level | Line | Limit |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dB |
| 1 | 2390.000 | 2.98 | 32.51 | 39.85 | 33.52 | 29.17 | 54.00 -24.83 |
| 2 | 2402.200 | 2.98 | 32.51 | 39.86 | 86.70 | 82.33 | 54.00 28.33 |



| | | | | | | |
|------------------|------------|---------------|---------|---------|------|----------|
| Worse case mode: | GFSK (DH5) | Test channel: | Highest | Remark: | Peak | Vertical |
|------------------|------------|---------------|---------|---------|------|----------|



Condition : FCC PART15(>1G) PK 3m VERTICAL

Job No. : 5610RF

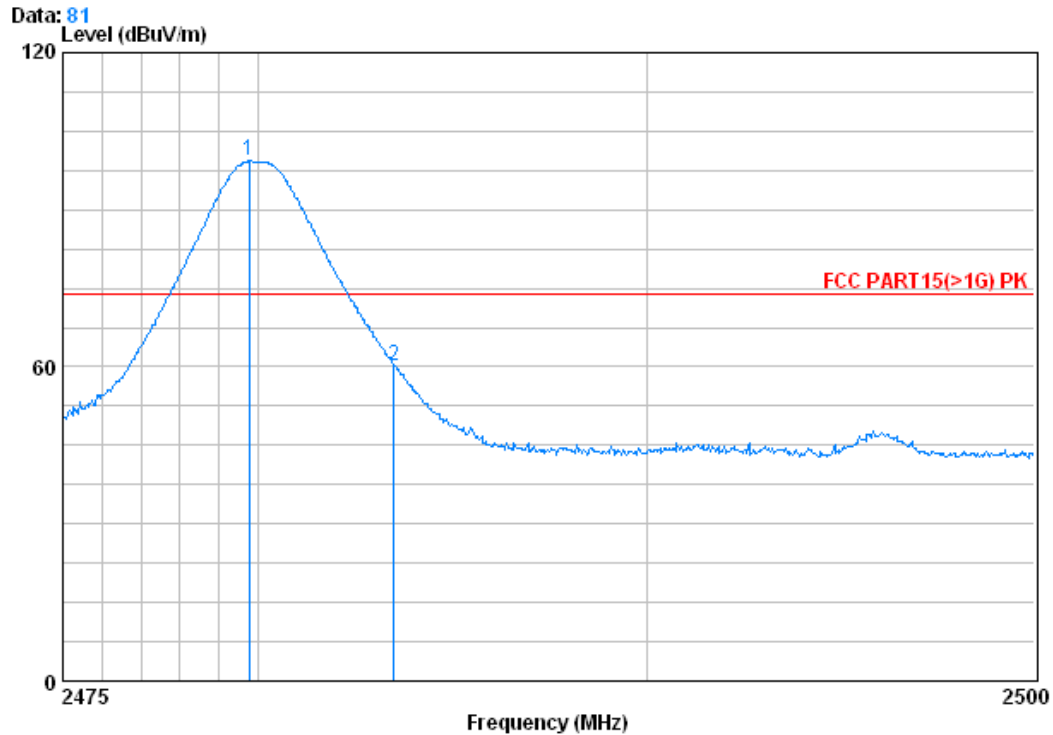
test Mode : 2480 Bandedge PK

| | | Cable | Antenna | Preamp | Read | | Limit | Over |
|-----|----------|-------|---------|--------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 X | 2479.850 | 3.03 | 32.67 | 39.92 | 105.51 | 101.29 | 74.00 | 27.29 |
| 2 | 2483.500 | 3.03 | 32.67 | 39.92 | 67.29 | 63.07 | 74.00 | -10.93 |

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| | | | | | | |
|------------------|------------|---------------|---------|---------|------|------------|
| Worse case mode: | 8DPSK(DH3) | Test channel: | Highest | Remark: | Peak | Horizontal |
|------------------|------------|---------------|---------|---------|------|------------|



Condition : FCC PART15(>1G) PK 3m HORIZONTAL

Job No. : 5610RF

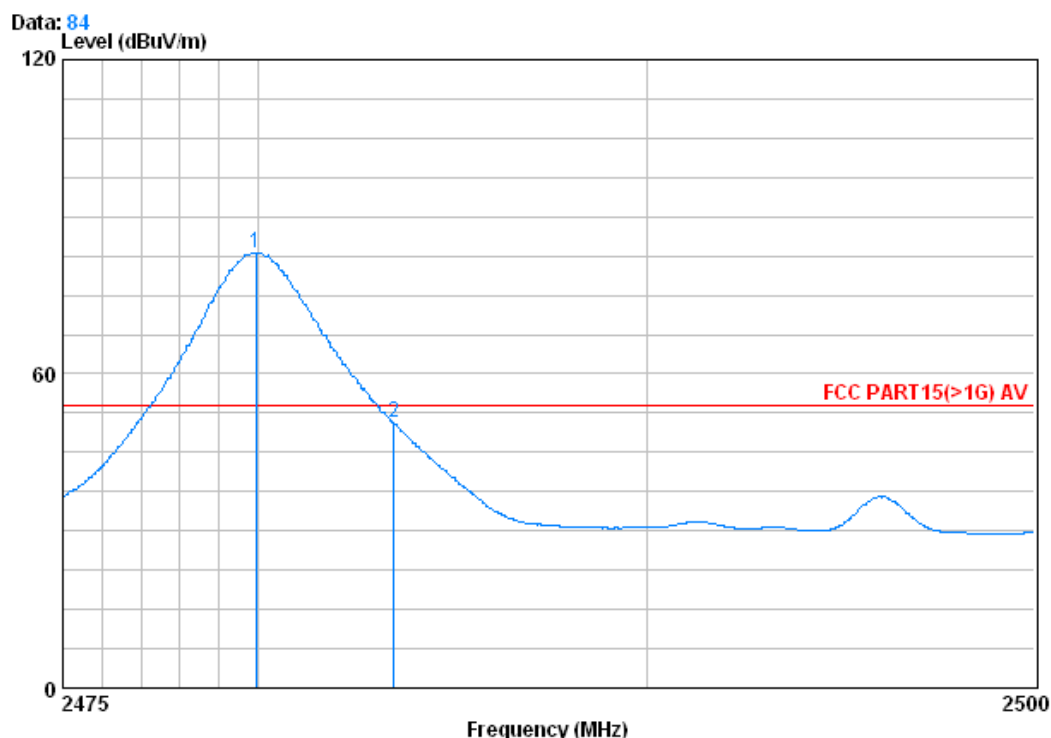
test Mode : 2480 Bandedge PK

| | | CableAntenna | | Preamp | Read | | Limit | Over |
|-----|----------|--------------|--------|--------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 X | 2479.775 | 3.03 | 32.67 | 39.92 | 103.50 | 99.28 | 74.00 | 25.28 |
| 2 | 2483.500 | 3.03 | 32.67 | 39.92 | 64.55 | 60.33 | 74.00 | -13.67 |

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| | | | | | | |
|------------------|------------|---------------|---------|---------|---------|----------|
| Worse case mode: | GFSK (DH5) | Test channel: | Highest | Remark: | Average | Vertical |
|------------------|------------|---------------|---------|---------|---------|----------|



Condition : FCC PART15(>1G) AV 3m VERTICAL

Job No. : 5610RF

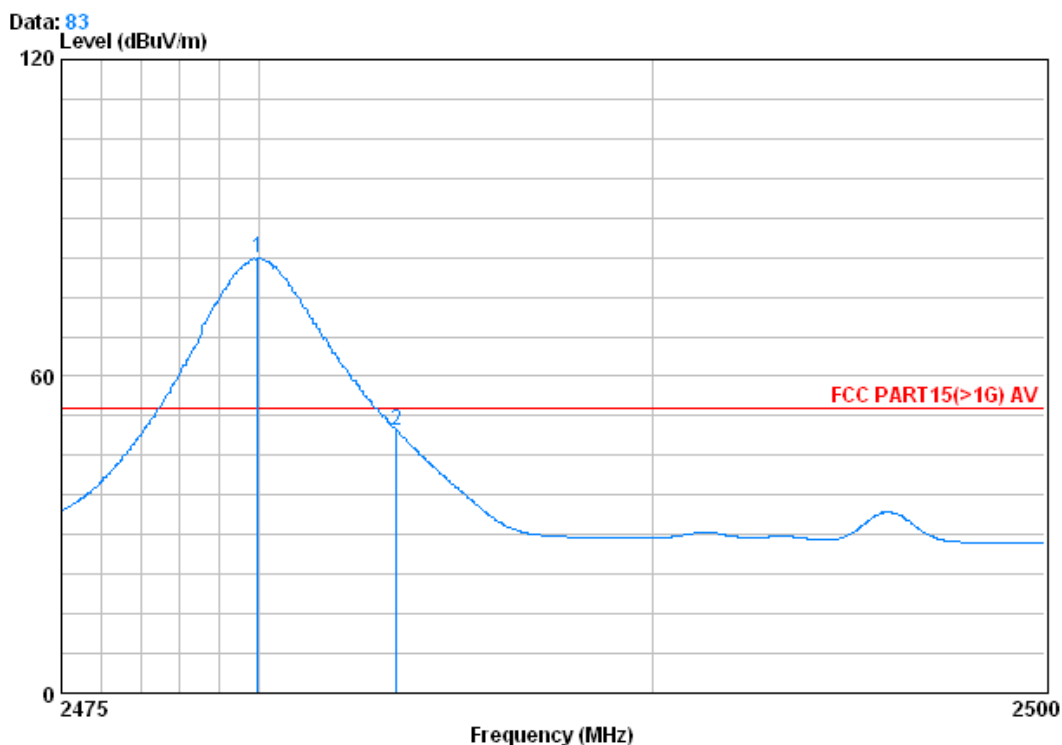
test Mode : 2480 Bandedge AV

| | Freq | Cable | Antenna | Preamp | Read | Limit | Over |
|-----|----------|-------|---------|--------|-------|--------|-------|
| | | Loss | Factor | Factor | Level | Line | Limit |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dB |
| 1 0 | 2479.950 | 3.03 | 32.67 | 39.92 | 87.36 | 83.14 | 54.00 |
| 2 | 2483.500 | 3.03 | 32.67 | 39.92 | 54.84 | 50.62 | 54.00 |

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| | | | | | | |
|------------------|------------|---------------|---------|---------|---------|------------|
| Worse case mode: | GFSK (DH5) | Test channel: | Highest | Remark: | Average | Horizontal |
|------------------|------------|---------------|---------|---------|---------|------------|



Condition : FCC PART15(>1G) AV 3m HORIZONTAL
Job No. : 5610RF
test Mode : 2480 Bandedge AV

| | Freq | Cable Loss | Antenna Factor | Preamp Factor | Read Level | Level | Limit Line | Over Limit |
|-----|----------|------------|----------------|---------------|------------|--------|------------|------------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 @ | 2479.975 | 3.03 | 32.67 | 39.92 | 86.52 | 82.30 | 54.00 | 28.30 |
| 2 | 2483.500 | 3.03 | 32.67 | 39.92 | 54.00 | 49.78 | 54.00 | -4.22 |

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$