

FCC PART 15.249
EMI MEASUREMENT AND TEST REPORT

For

Shenzhen Highstar Electrical Co.,Ltd

Building 6, Highstar Industrial zone, Gangtou, Bantian Street, Longgang District, ShenZhen

FCC ID: 2AAZRHSD8012D

September 24, 2013

| | |
|--|--|
| This Report Concerns: Original Report | Equipment Type: ICUBE BLUETOOTH SPEAKER |
| Test Engineer: | Lisa Chen <i>Lisa Chen</i> |
| Report No.: | BSL13094750Y-1ER-3 |
| Receive EUT Date/Test Date: | Sep. 13, 2013 / Sep 03-24, 2013 |
| Reviewed By: | Sky Zhang <i>Sky Zhang</i> |
| Prepared By: | BSL Testing Co.,LTD. NO. 24, ZH Park, Nantou, Shenzhen, 518000 China Tel: 86- 755-26508703 Fax: 86- 755-26508703 |

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endorsement by NVLAP, NIST or any agency of the US Government.

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1. GENERAL INFORMATION

1.1. Report information

- 1.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BSL approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BSL in any way guarantees the later performance of the product/equipment.
- 1.1.2. The sample/s mentioned in this report is/are supplied by Applicant, BSL therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.
- 1.1.3. Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BSL, unless the applicant has authorized BSL in writing to do so.

Test Facility -

The test site used to collect the radiated data is located on the address of BSL Testing Co.,LTD.

(FCC Registered Test Site Number: 191509) on

NO. 24, ZH Park, Nantou, Shenzhen, 518000 China

The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, 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 %.

| No. | Item | Uncertainty |
|-----|-------------------------------|-------------|
| 1 | Conducted Emission Test | +/-1.25dB |
| 2 | RF Power, Conducted | +/-0.20dB |
| 3 | Spurious emissions, conducted | +/-0.33dB |
| 4 | All emissions, radiated (<1G) | +/-3.47dB |
| 5 | All emissions, radiated (>1G) | +/-3.82dB |
| 6 | Temperature | +/-0.5°CdB |
| 7 | Humidity | +/-2% |

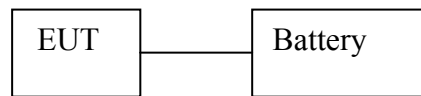
2. PRODUCT DESCRIPTION

2.1. EUT Description

| | |
|--------------------|---|
| Description | : ICUBE BLUETOOTH SPEAKER |
| Applicant | : Shenzhen Highstar Electrical Co.,Ltd Building 6, Highstar Industrial zone, Gangtou, Bantian Street, Longgang District, ShenZhen |
| Manufacturer | : Shenzhen Highstar Electrical Co.,Ltd Building 6, Highstar Industrial zone, Gangtou, Bantian Street, Longgang District, ShenZhen |
| Model Number | : HSD8012D |
| Modulation type | : GFSK |
| Antenna gain | : 0dBi |
| Frequency | : 2402-2480MHz |
| Number of Channels | : 79 Channels |
| Power Supply | : DC 3.7V By battery or DC 5V (Powered by PC) |
| Antenna type | : PCB |

2.2. Block Diagram of EUT Configuration

Radiated emissions test



Conducted emissions Test

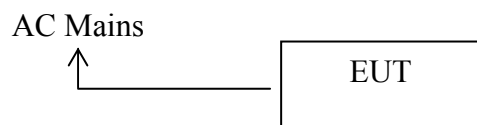


Figure 1 EUT Setup

2.3. Support Equipment List

| Name | Model No | S/N | Manufacturer | Used “Yes/No” |
|---------|---------------|-----|--------------|------------------|
| Adapter | CYSK05-050100 | N/A | Yulong | Y |

2.4. Test Conditions

| Items | Required (IEC 68-1) | Actual |
|----------------------------|---------------------|----------|
| Temperature (°C) | 15-35 | 20-25 |
| Humidity (%RH) | 25-75 | 50-63 |
| Barometric pressure (mbar) | 860-1060 | 950-1000 |

3. TEST RESULTS SUMMARY

FCC 15 Subpart C, Paragraph 15.249

| FCC Rules | Description of Test | Result |
|-------------------------------------|--|-----------|
| Section 15.207 | Conducted Emission | Compliant |
| Section 15.249(a) | The fundamental field strength and the harmonics | Compliant |
| Section 15.209 Section 15.249(d) | Radiated Emission | Compliant |
| Section 15.249(d) | Band Edge | Compliant |
| Section 15.203 | Antenna Requirement | Compliant |
| Section 15.249 | 20dB Bandwidth | Compliant |

Remark: "N/A" means "Not applicable".

Statement: All testing was performed using the test procedures found in ANSI C63.4-2003.

Standard:

FCC Part 15: 2012

Modifications

No modification was made.

4. TEST EQUIPMENT USED

| EQUIPMENT/FACILITIES | MANUFACTURER | MODEL | SERIAL NO. | DATE OF CAL. | CAL. INTERVAL |
|-------------------------------|------------------|--------------------|------------|--------------|---------------|
| 3m Semi-Anechoic Chamber | Chengyu Electron | 9 (L)*6 (W)* 6 (H) | BSL086 | Aug. 22 2013 | 1 Year |
| EMI Test Receiver | Rohde & Schwarz | ESCI3 | BSL001 | Sep. 28 2012 | 1 Year |
| BiConiLog Antenna | Rohde & Schwarz | HL562 | BSL009 | Sep. 28 2012 | 1 Year |
| Double -ridged waveguide horn | Rohde & Schwarz | 9120D | BSL008 | Aug. 26 2013 | 1 Year |
| Horn Antenna | ETS-LINDGREN | 3160 | BSL072 | Dec. 28 2012 | 1 Year |
| Cable | Rohde & Schwarz | N/A | BSL045 | Aug. 26 2013 | 1 Year |
| Cable | Rohde & Schwarz | N/A | BSL046 | Aug. 26 2013 | 1 Year |
| Cable | Rohde & Schwarz | N/A | BSL047 | Aug. 26 2013 | 1 Year |
| Amplifier(100kHz-40G Hz) | R&S | SMR40 | BSL007 | Sep. 28 2012 | 1 Year |
| Band filter | Amindeon | 82346 | BSL049 | Aug. 26 2013 | 1 Year |
| Active Loop Antenna | EMTES | EM15 | BSL011 | Sep. 28 2012 | 1 Year |
| Coaxial Switch | YUANFANG | TA218B | BSL004 | Aug. 26 2013 | 1 Year |
| Spectrum analyzer | Rohde & Schwarz | FSP40 | BSL049 | Sep. 28 2012 | 1 Year |

5. ANTENNA REQUIREMENT

5.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

5.2. Antenna Connected Construction

According to § 15.203, An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The antenna used in this product is PCB antenna. The antenna is permanently attached. Refer to the product photo.

5.3. Result

Compliance

6. CONDUCTED POWER LINE TEST

6.1. Test Equipment

Please refer to section 4 this report.

6.2. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uh coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uh coupling impedance with 50ohm termination.

Both sides of A.C. Line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ASIN C63.4:2003 on conducted measurement. Conducted emissions were measured over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

6.3. Test Setup



For the actual test configuration, Please refer to the related items-Photos of testing

6.4. Conducted Power line Emission Limits

| FCC Part 15 Paragraph 15.207 (dBuV) | | |
|-------------------------------------|---------------|---------------|
| Frequency Range (MHZ) | Class A QP/AV | Class B QP/AV |
| 0.15-0.5 | 79/66 | 65-56/56-46 |
| 0.5-5.0 | 73/60 | 56-46 |
| 5.0-3.0 | 73/60 | 60-50 |

Note: In the above table, the tighter limit applies at the band edges.

6.5. Conducted Power Line Test Result

Pass

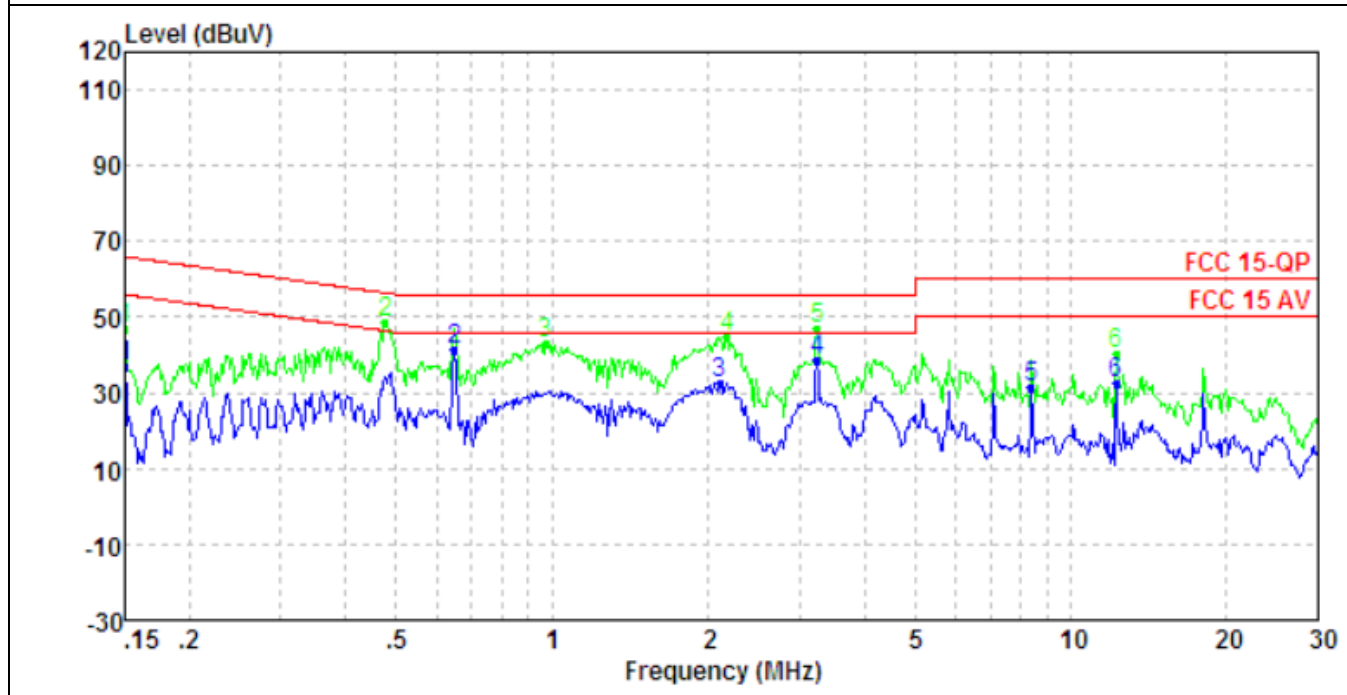
The worst test mode: Bluetooth TX 2402MHz

L line

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV) | Limits (dBμV) | Margin (dB) | Detector Type |
|--------------------|-------------------------|----------------|--------------------------|------------------|----------------|---------------|
| | | | | | | |
| 0.15 | 26.87 | 10.27 | 37.14 | 56.00 | -18.86 | AVG |
| 0.65 | 31.23 | 10.26 | 41.49 | 46.00 | -4.51 | AVG |
| 2.11 | 22.36 | 10.35 | 32.71 | 46.00 | -13.29 | AVG |
| 3.24 | 28.45 | 10.38 | 38.83 | 46.00 | -7.17 | AVG |
| 8.41 | 21.2 | 10.38 | 31.58 | 50.00 | -18.42 | AVG |
| 12.25 | 22.13 | 10.37 | 32.50 | 50.00 | -17.5 | AVG |
| 0.15 | 36.73 | 10.35 | 47.08 | 66.00 | -18.92 | QP |
| 0.48 | 38.39 | 10.35 | 48.74 | 56.41 | -7.67 | QP |
| 0.97 | 32.47 | 10.35 | 42.82 | 56.00 | -13.18 | QP |
| 2.18 | 34.24 | 10.37 | 44.61 | 56.00 | -11.39 | QP |
| 3.24 | 36.35 | 10.38 | 46.73 | 56.00 | -9.27 | QP |
| 12.25 | 29.98 | 10.29 | 40.27 | 60.00 | -19.73 | QP |

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



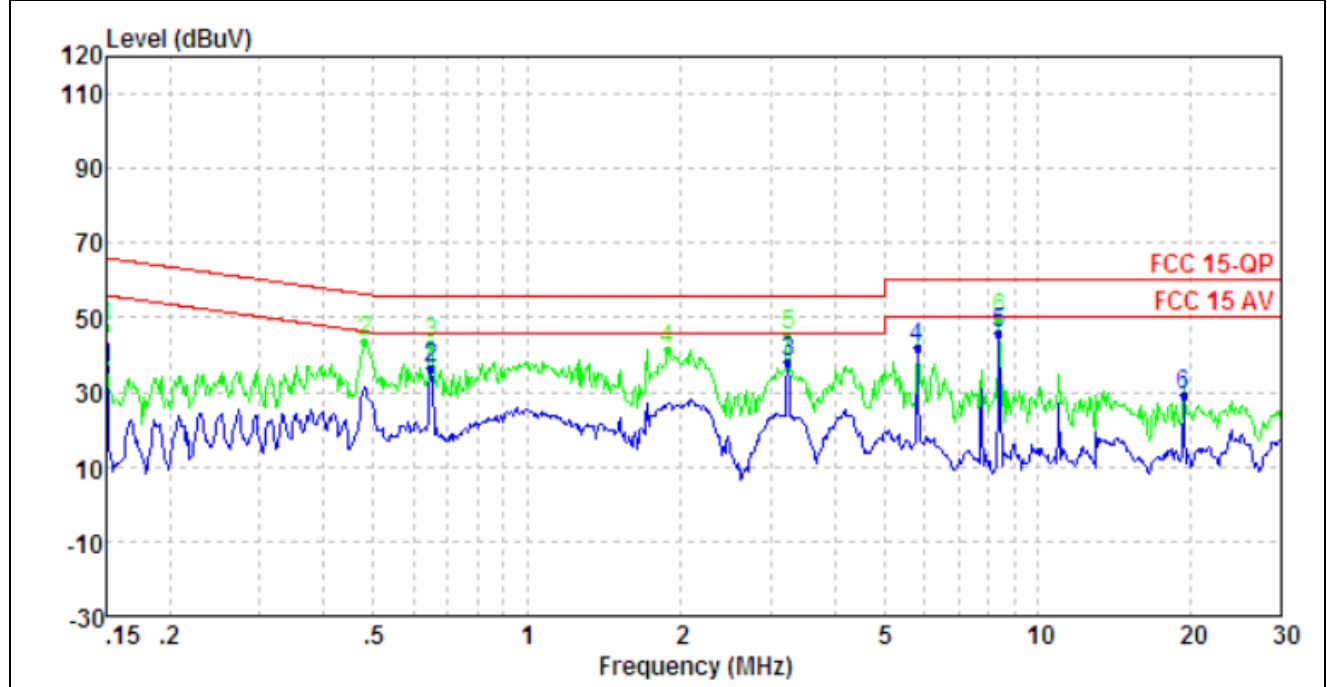
N line

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|---------------|--------|----------------|--------------|--------|---------------|
| (MHz) | (dB μ V) | (dB) | (dB μ V) | (dB μ V) | (dB) | |
| 0.15 | 19.43 | 10.27 | 36.57 | 56.00 | -19.43 | AVG |
| 0.65 | 9.51 | 10.38 | 36.49 | 46.00 | -9.51 | AVG |
| 3.24 | 7.9 | 10.38 | 38.10 | 46.00 | -7.9 | AVG |
| 5.80 | 7.91 | 10.37 | 42.09 | 50.00 | -7.91 | AVG |
| 8.41 | 4.32 | 10.38 | 45.68 | 50.00 | -4.32 | AVG |
| 19.33 | 20.98 | 10.29 | 29.02 | 50.00 | -20.98 | AVG |
| 0.15 | 18.65 | 10.38 | 47.35 | 66.00 | -18.65 | QP |
| 0.48 | 12.82 | 10.38 | 43.50 | 56.32 | -12.82 | QP |
| 0.65 | 12.74 | 10.40 | 43.26 | 56.00 | -12.74 | QP |
| 1.89 | 14.58 | 10.37 | 41.42 | 56.00 | -14.58 | QP |
| 3.24 | 10.95 | 10.38 | 45.05 | 56.00 | -10.95 | QP |
| 8.41 | 10.28 | 10.29 | 49.72 | 60.00 | -10.28 | QP |

Remark:

1. All readings are Quasi-Peak and Average values.

2. Factor = Insertion Loss + Cable Loss.



7. RADIATED EMISSION TEST

7.1. Test Equipment

Please refer to section 4 this report.

7.2. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level.

Calibrated Loop antenna is used as receiving antenna for frequencies below 30MHz, Calibrated Bilog antenna is used as receiving antenna for frequencies between 30 MHz and 1 GHz, Calibrated Horn antenna is used as receiving antenna for frequencies above 1000MHz. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver is set at 9kHz in below 30MHz. and set at 120kHz in 30-1000MHz, and 1MHz in above 1000MHz.

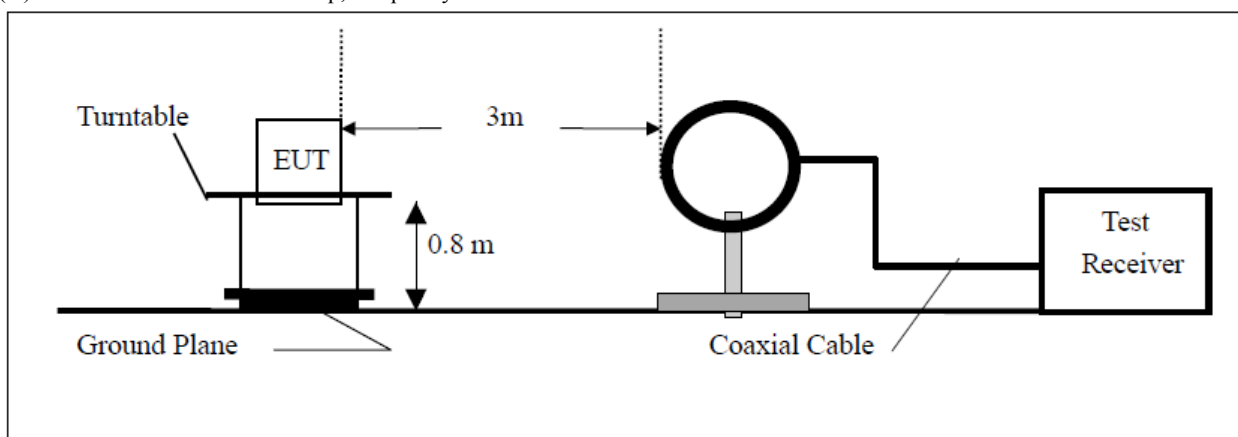
The frequency range from 9kHz to 25GHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Peak detector and Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

Through three orthogonal axes to determine which attitude and equipment arrangement produces the highest emission relative to the limit. And X direction is worst mode

7.3. Radiated Test Setup

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



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



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



7.4. Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below :

A. Fundamental and Harmonics Radiated Emissions 15.249(a) Limit

| Fundamental Frequency (MHZ) | Field as trength of Fundamental(3m) | | | Field as trength of Harmonics(3m) | | |
|-----------------------------|-------------------------------------|--------|-----------|-----------------------------------|--------|----------|
| | mV/m | dBuV/m | | uV/m | dBuV/m | |
| 902-928 | 50 | 94(AV) | 114(Peak) | 500 | 54(AV) | 74(Peak) |
| 2400-2483.5 | 50 | 94(AV) | 114(Peak) | 500 | 54(AV) | 74(Peak) |

Note: (1) RF Voltage (dBuV)=20 log Voltage(uV)

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

(3) The emission limit in this paragraph os based on measurement instrumentation employing an average detector.Measurement using instrumentation with a peak detector function,corresponding to 20dB above the maximum permitted average limit.

B. Spurious Radiated Emissions.

| Frequency (MHz) | Limit | | | |
|-----------------|---|---|--------------------------|--|
| | Field Strength of Quasi-peak Value (microvolts/m) | Field Strength of Quasi-peak Value (dBμV/m) | Measurement distance (m) | The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector. |
| 0.009 - 0.490 | 2400/F(kHz) | / | 300 | |
| 0.490 - 1.705 | 24000/F(kHz) | / | 30 | |
| 1.705-30 | 30 | 29.5 | 30 | |
| 30 - 88 | 100 | 40 | 3 | |
| 88 - 216 | 150 | 43.5 | 3 | |
| 216 - 960 | 200 | 46 | 3 | |
| Above 960 | 500 | 54 | 3 | |

Note: (1) RF Voltage (dBuV)=20 log Voltage(uV)

(2) In the Above Table,the tighter limit applies at the band edges.

(3) Distaqnce refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

7.5. Radiated Emission Test Result

Pass

A. Fundamental Radiated Emissions Data

CH Low

| Freq. (MHz) | Emission(dBuV/m) AV/PK | HORIZ/ VERT | Limits(dBuV/m) AV/PK | Margin (dB) |
|----------------|---------------------------|----------------|-------------------------|----------------|
| 2402 | 62.25/80.50 | VERT | 94/114 | -31.75/-33.5 |
| 2402 | 65.96/84.50 | HORIZ | 94/114 | -28.04/-29.5 |

CH Middle

| Freq. (MHz) | Emission(dBuV/m) AV/PK | HORIZ/ VERT | Limits(dBuV/m) AV/PK | Margin (dB) |
|----------------|---------------------------|----------------|-------------------------|----------------|
| 2441 | 60.47/80.03 | VERT | 94/114 | -33.53/-33.97 |
| 2441 | 62.36/81.92 | HORIZ | 94/114 | -31.64/-32.08 |

CH High

| Freq. (MHz) | Emission(dBuV/m) AV/PK | HORIZ/ VERT | Limits(dBuV/m) AV/PK | Margin (dB) |
|----------------|---------------------------|----------------|-------------------------|----------------|
| 2480 | 57.25/79.96 | VERT | 94/114 | -36.75/-34.04 |
| 2480 | 59.51/81.83 | HORIZ | 94/114 | -34.49/-32.17 |

B. General Radiated Emissions Data

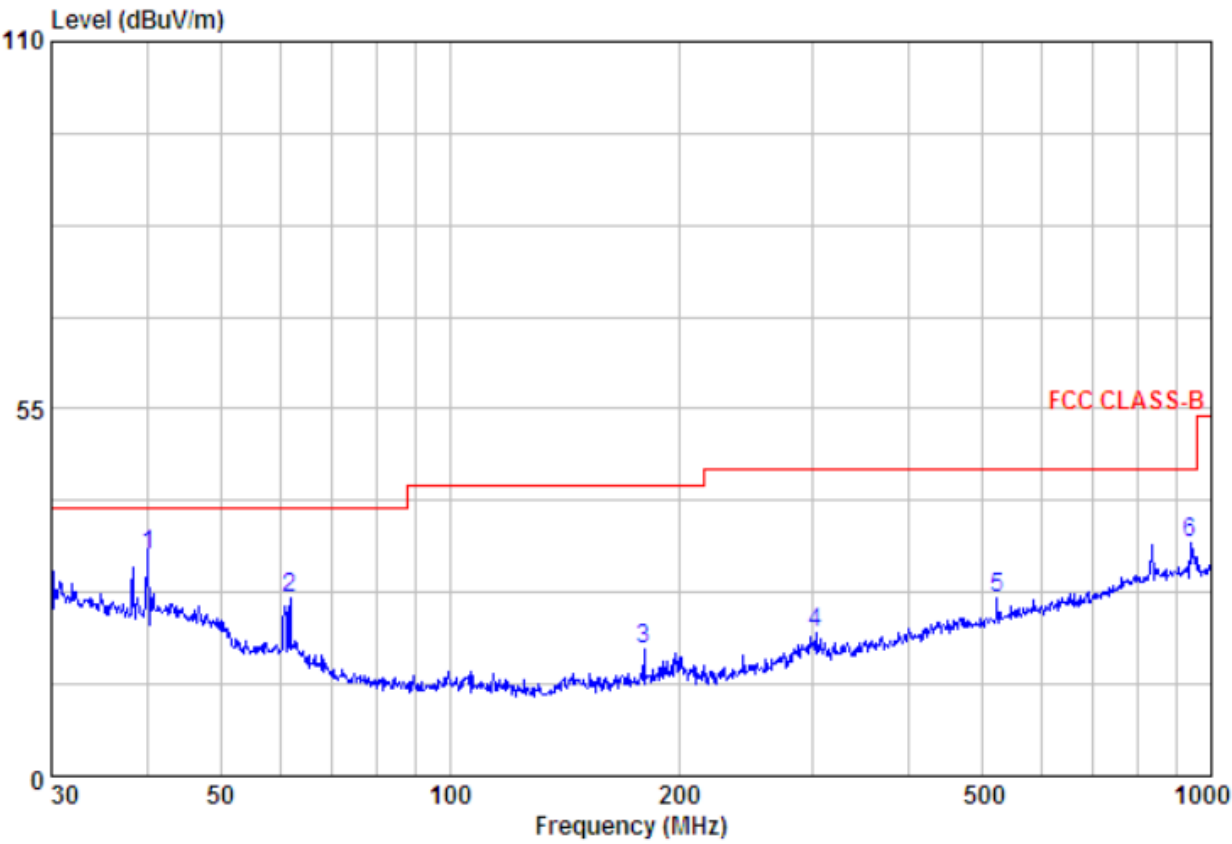
For below 9kHz-30MHz Spurious

| Freq. (MHz) | Emission(dBuV/m) AV/PK | HORIZ/ VERT | Limits(dBuV/m) AV/PK | Margin (dB) |
|----------------|---------------------------|----------------|-------------------------|----------------|
| - | - | HORIZ | - | - |
| - | - | VERT | - | - |

Note:

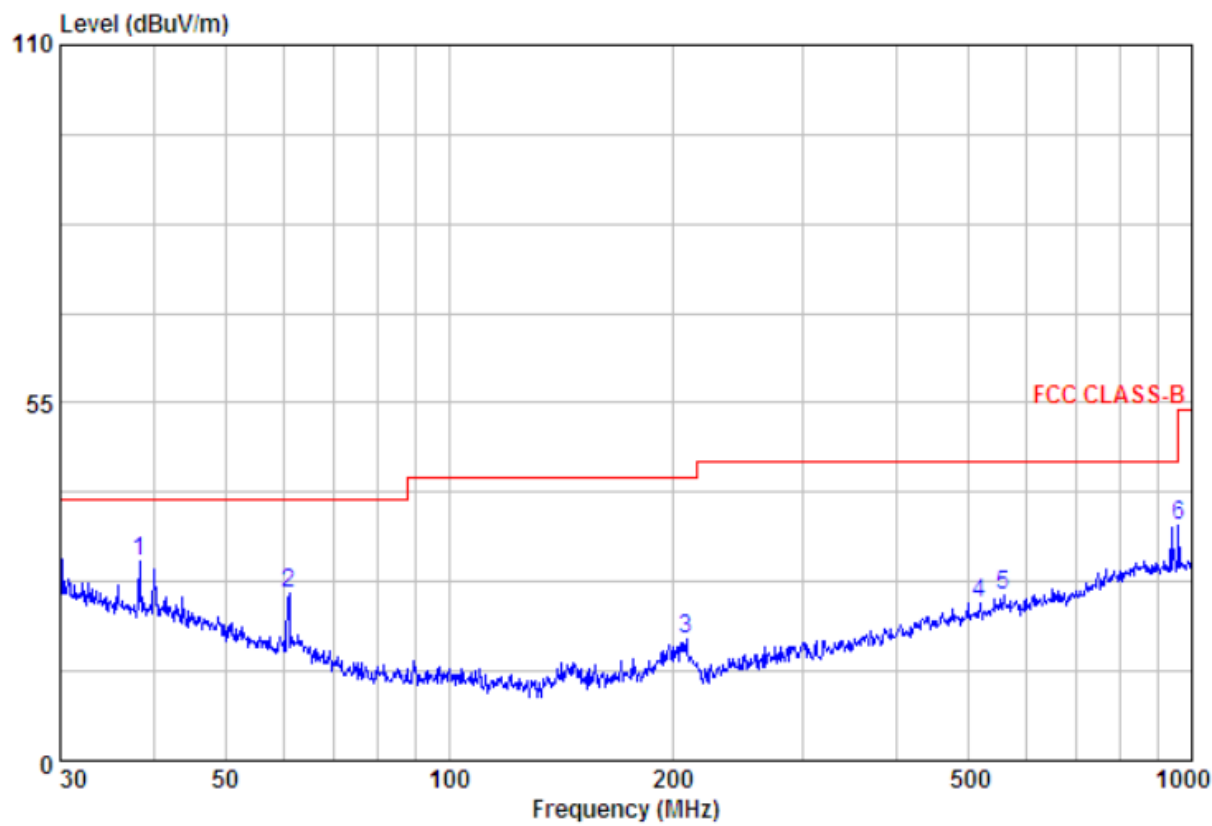
1. Emissions attenuated more than 20 dB below the permissible value are not reported.

For 30M-1000MHz Spurious
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain
Horizontal



| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limit (dBμV) | Margin (dB) | Detector |
|-----------------|----------------------|-------------|-------------------------|--------------|-------------|----------|
| 40.13 | 23.53 | 9.45 | 32.98 | 40.00 | -7.02 | QP |
| 61.78 | 16.61 | 10.00 | 26.61 | 40.00 | -13.39 | QP |
| 180.02 | 7.82 | 11.26 | 19.08 | 43.50 | -24.42 | QP |
| 302.48 | 11.07 | 10.47 | 21.54 | 46.00 | -24.46 | QP |
| 522.72 | 16.99 | 9.52 | 26.51 | 46.00 | -19.49 | QP |
| 938.83 | 24.80 | 10.02 | 34.82 | 46.00 | -11.18 | QP |

Vertical



| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limit (dBμV) | Margin (dB) | Detector |
|-----------------|----------------------|-------------|-------------------------|--------------|-------------|----------|
| 38.35 | 25.47 | 10.24 | 30.73 | 40.00 | -9.27 | QP |
| 60.92 | 12.69 | 10.26 | 25.79 | 40.00 | -14.21 | QP |
| 208.58 | 7.46 | 13.25 | 18.62 | 43.50 | -24.88 | QP |
| 519.06 | 7.53 | 14.41 | 24.29 | 46.00 | -21.71 | QP |
| 558.73 | 16.87 | 12.34 | 25.33 | 46.00 | -20.67 | QP |
| 958.79 | 25.13 | 11.32 | 36.07 | 46.00 | -9.93 | QP |

For 1000MHz-25000MHz Spurious**CH Low**

| Freq. (MHz) | Emission(dBuV/m) AV/PK | HORIZ/ VERT | Limits(dBuV/m) AV/PK | Margin (dB) |
|----------------|---------------------------|----------------|-------------------------|----------------|
| 4812.0 | 38.47/55.45 | VERT | 54.0/74.0 | -16.98/-18.55 |
| 7218.0 | 37.56/50.36 | | 54.0/74.0 | -12.80/-23.64 |
| 9624.0 | 36.42/50.01 | | 54.0/74.0 | -13.59/-23.99 |
| 4812.0 | 42.35/57.38 | HORIZ | 54.0/74.0 | -15.03/-16.62 |
| 7218.0 | 40.83/55.54 | | 54.0/74.0 | -14.71/-18.46 |
| 9624.0 | 40.27/52.36 | | 54.0/74.0 | -12.09/-21.64 |

CH Middle

| Freq. (MHz) | Emission(dBuV/m) AV/PK | HORIZ/ VERT | Limits(dBuV/m) AV/PK | Margin (dB) |
|----------------|---------------------------|----------------|-------------------------|----------------|
| 4894.0 | 39.87/53.47 | VERT | 54.0/74.0 | -13.60/-20.53 |
| 7341.0 | 37.05/50.82 | | 54.0/74.0 | -13.77/-23.18 |
| 9788.0 | 35.43/48.97 | | 54.0/74.0 | -13.54/-25.03 |
| 4894.0 | 41.59/56.45 | HORIZ | 54.0/74.0 | -14.86/-17.55 |
| 7341.0 | 40.68/52.69 | | 54.0/74.0 | -12.01/-21.31 |
| 9788.0 | 35.93/50.53 | | 54.0/74.0 | -14.60/-23.47 |

CH High

| Freq. (MHz) | Emission(dBuV/m) AV/PK | HORIZ/ VERT | Limits(dBuV/m) AV/PK | Margin (dB) |
|----------------|---------------------------|----------------|-------------------------|----------------|
| 4952.0 | 36.95/50.69 | VERT | 54.0/74.0 | -13.74/-23.31 |
| 7428.0 | 35.43/53.46 | | 54.0/74.0 | -18.03/-20.54 |
| 9904.0 | 36.48/48.39 | | 54.0/74.0 | -11.91/-25.61 |
| 4952.0 | 35.46/48.56 | HORIZ | 54.0/74.0 | -13.10/-25.44 |
| 7428.0 | 37.25/48.36 | | 54.0/74.0 | -11.11/-25.64 |
| 9904.0 | 36.59/49.52 | | 54.0/74.0 | -12.93/-24.48 |

Note:

1. The average measurement was not performed when the peak measured data under the limit of average detection.
2. Emissions attenuated more than 20 dB below the permissible value are not reported.

8. BAND EDGE

8.1. Test Equipment

Please refer to Section 4 this report.

8.2. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated measurement. The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz respectively.

8.3. Band Edge FCC 15.249(d) Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

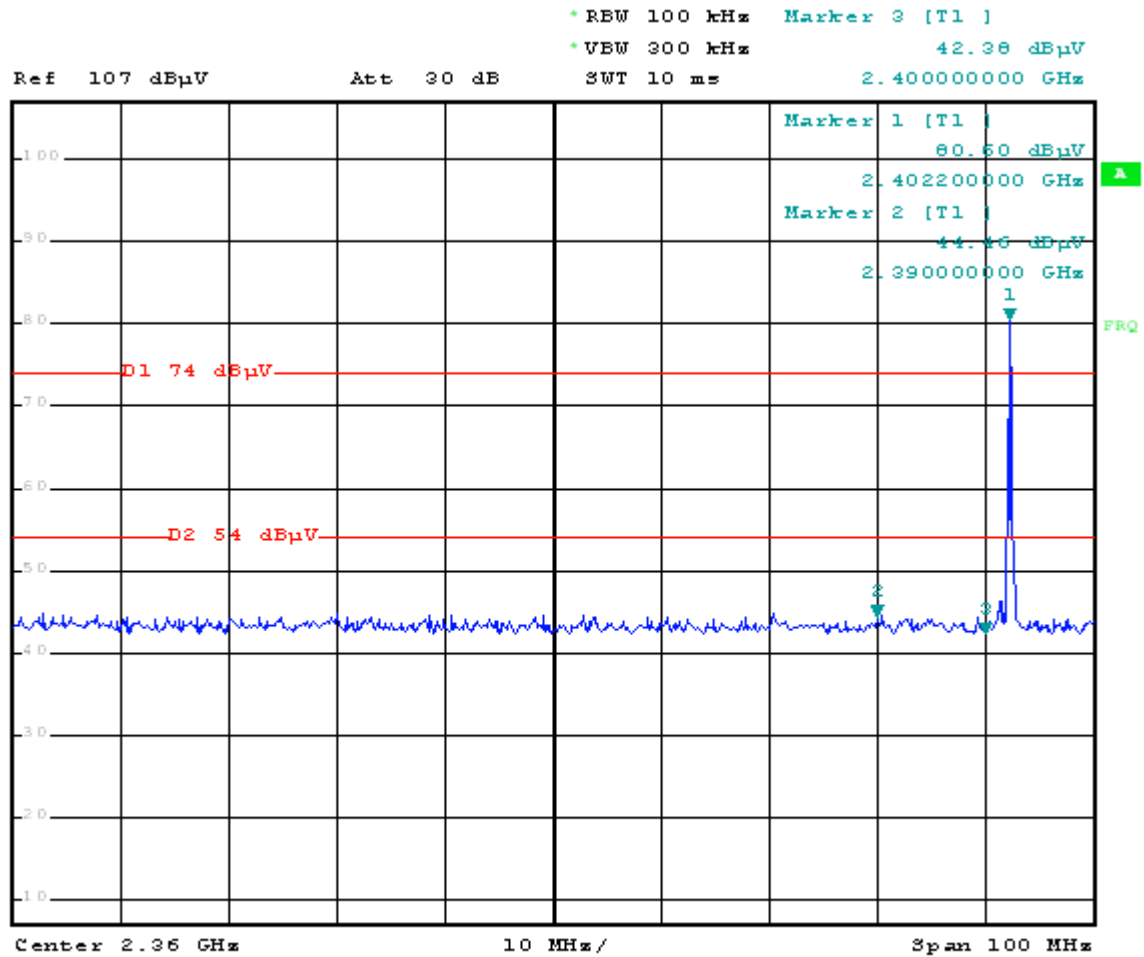
8.4. Band Edge Test Result

Pass

Vertical Low channel PK

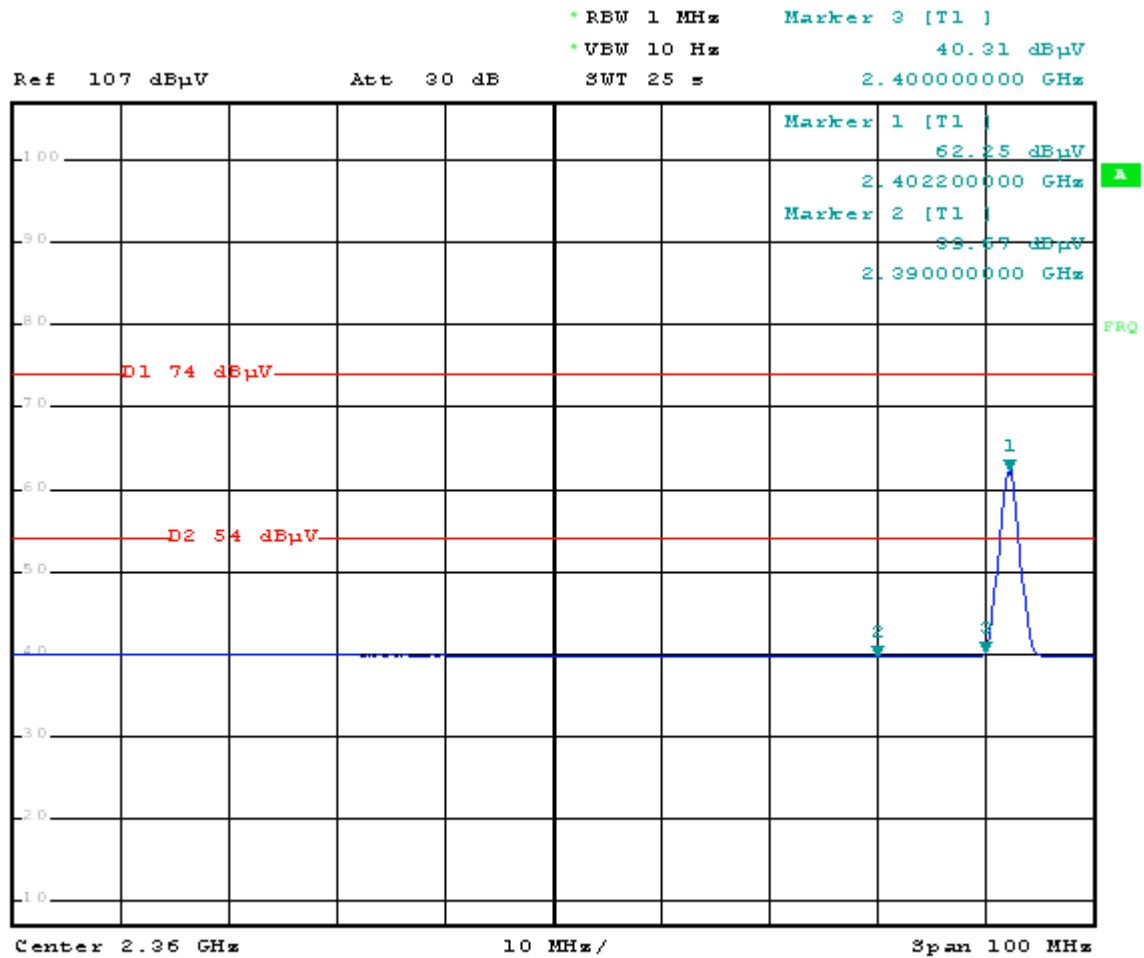


1 PK
VIEW



Date: 11.SEP.2013 13:56:36

Vertical Low channel AV

1 PE
VIEW

Date: 11.SEP.2013 13:52:04

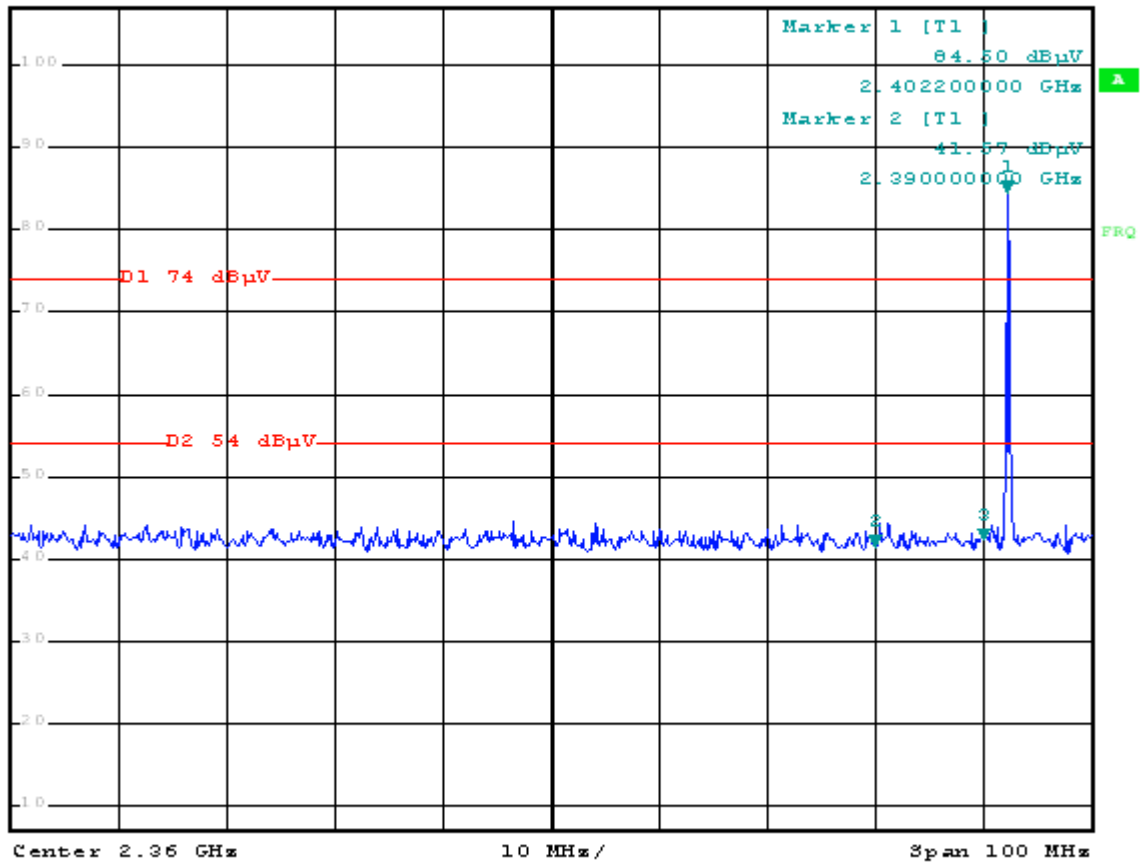
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Horizontal Low channel PK

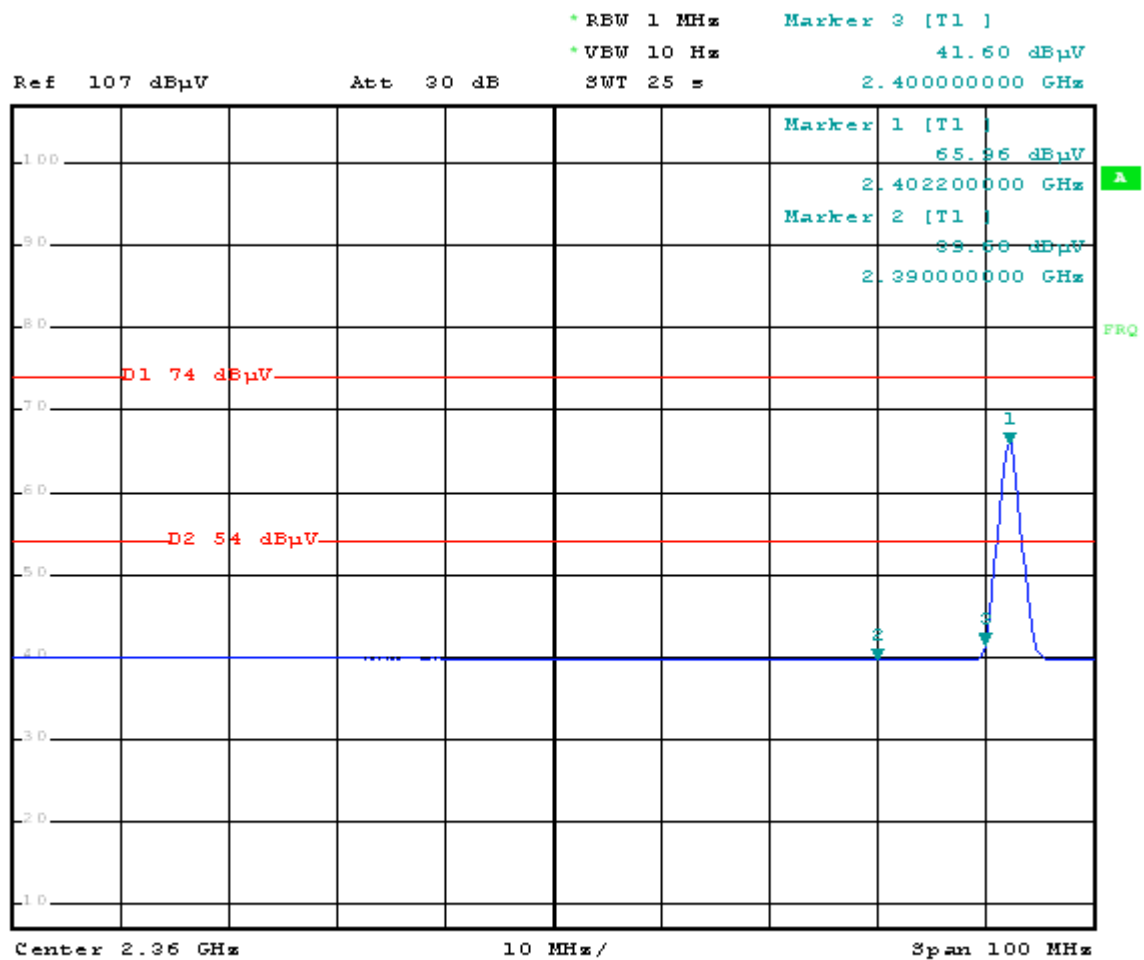


*RBW 100 kHz Marker 3 [T1]
 *VBW 300 kHz 42.34 dBμV
 Ref 107 dBμV Att 30 dB SWT 10 ms 2.400000000 GHz

1 ER
VIEW

Date: 11.SEP.2013 13:47:11

Horizontal Low channel AV

1 PK
VIEW

Date: 11.SEP.2013 13:53:50

Remark:

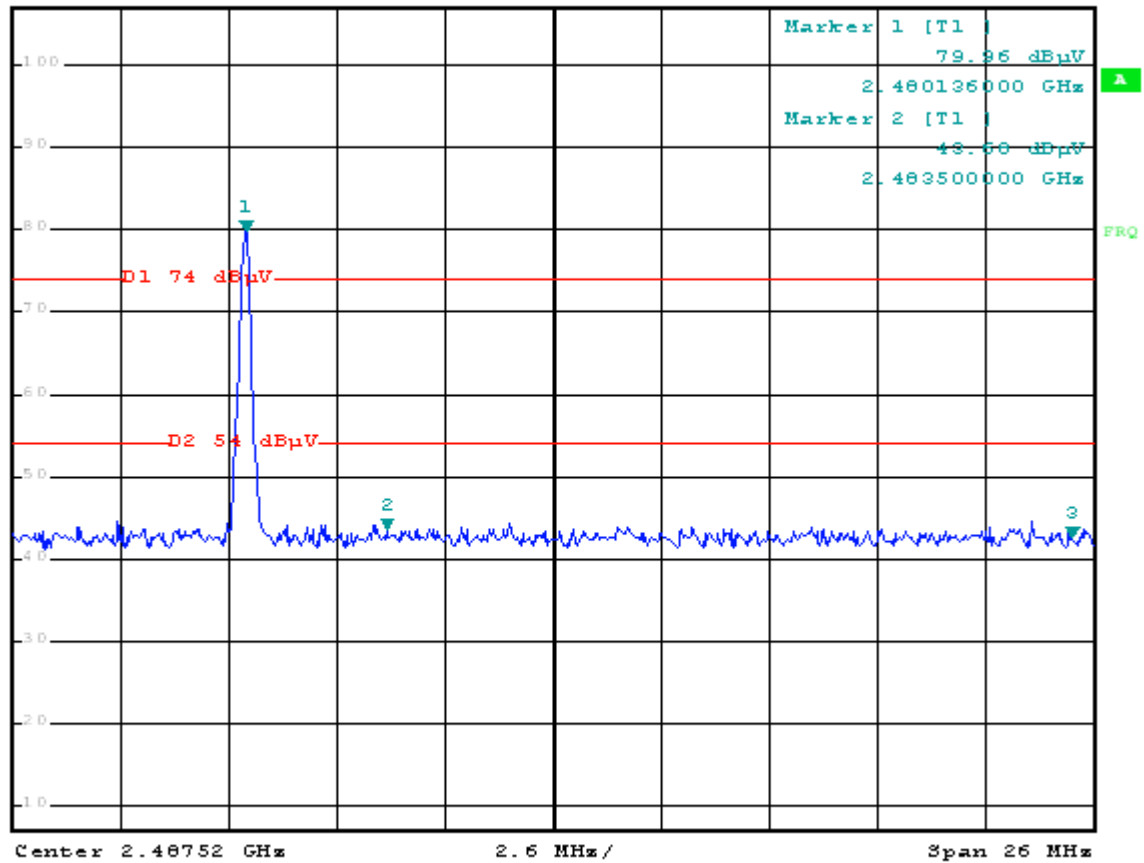
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical High channel PK



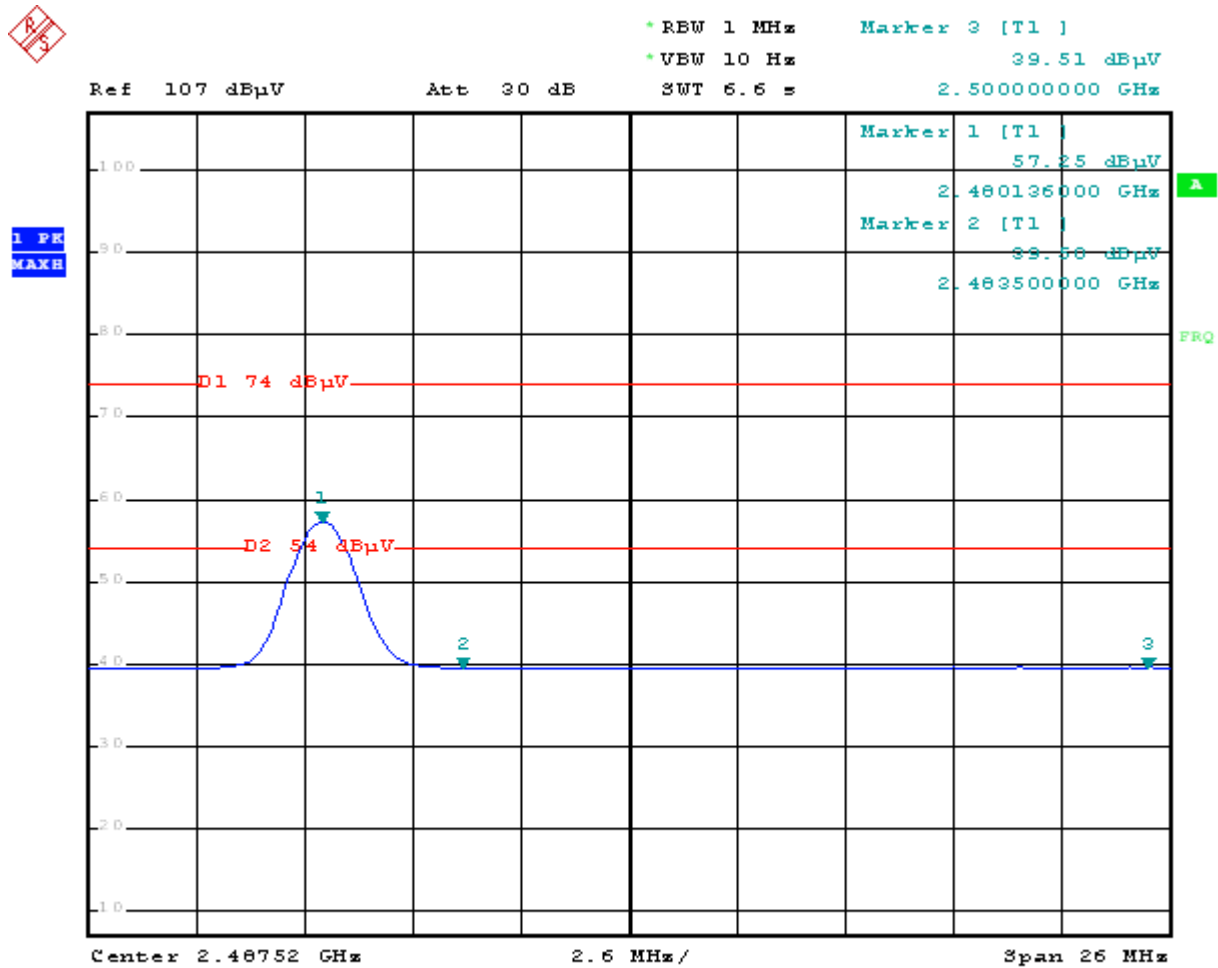
*RBW 100 kHz Marker 3 [T1]
 *VBW 300 kHz 42.53 dBμV
 Ref 107 dBμV Att 30 dB SWT 5 ms 2.500000000 GHz

1 PK
 VIEW



Date: 11.SEP.2013 13:59:57

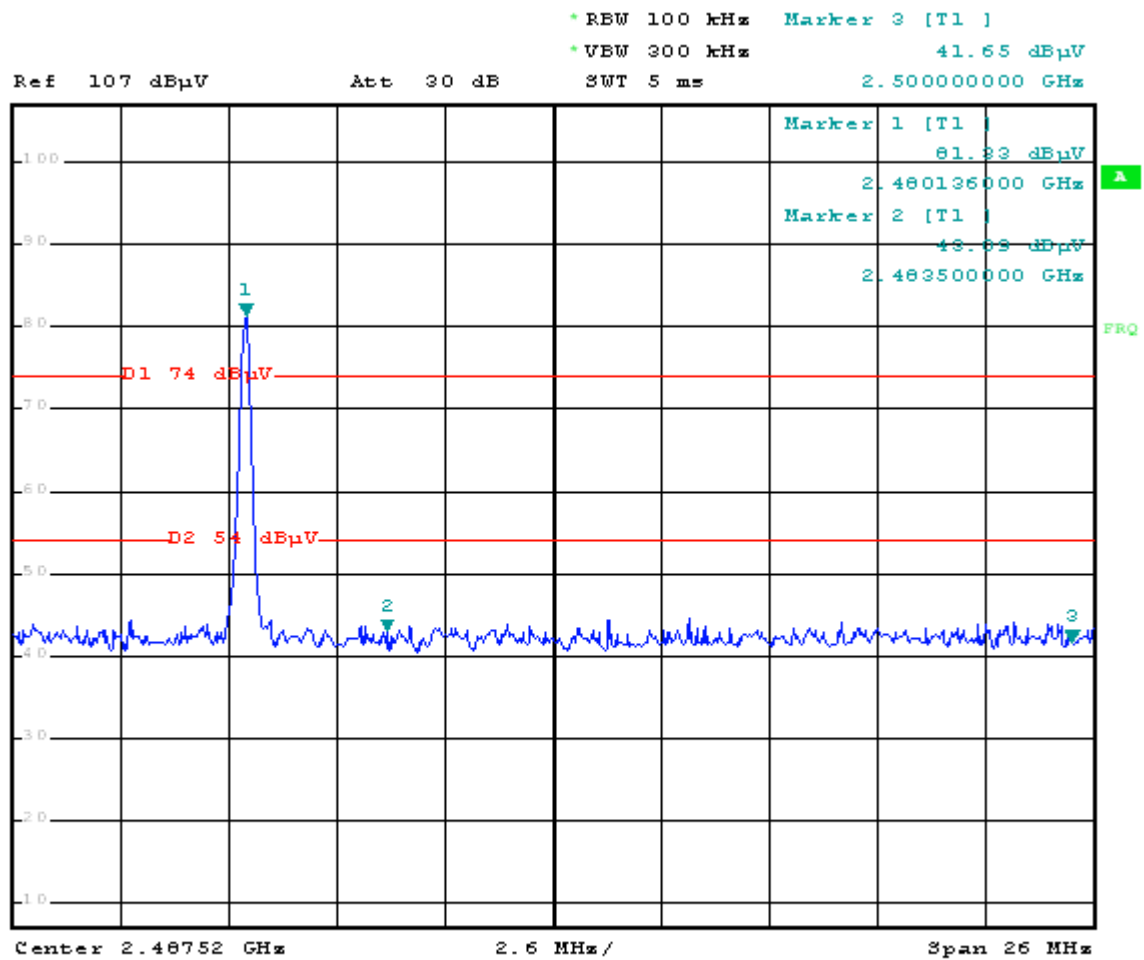
Vertical High channel AV



Date: 11.SEP.2013 14:04:45

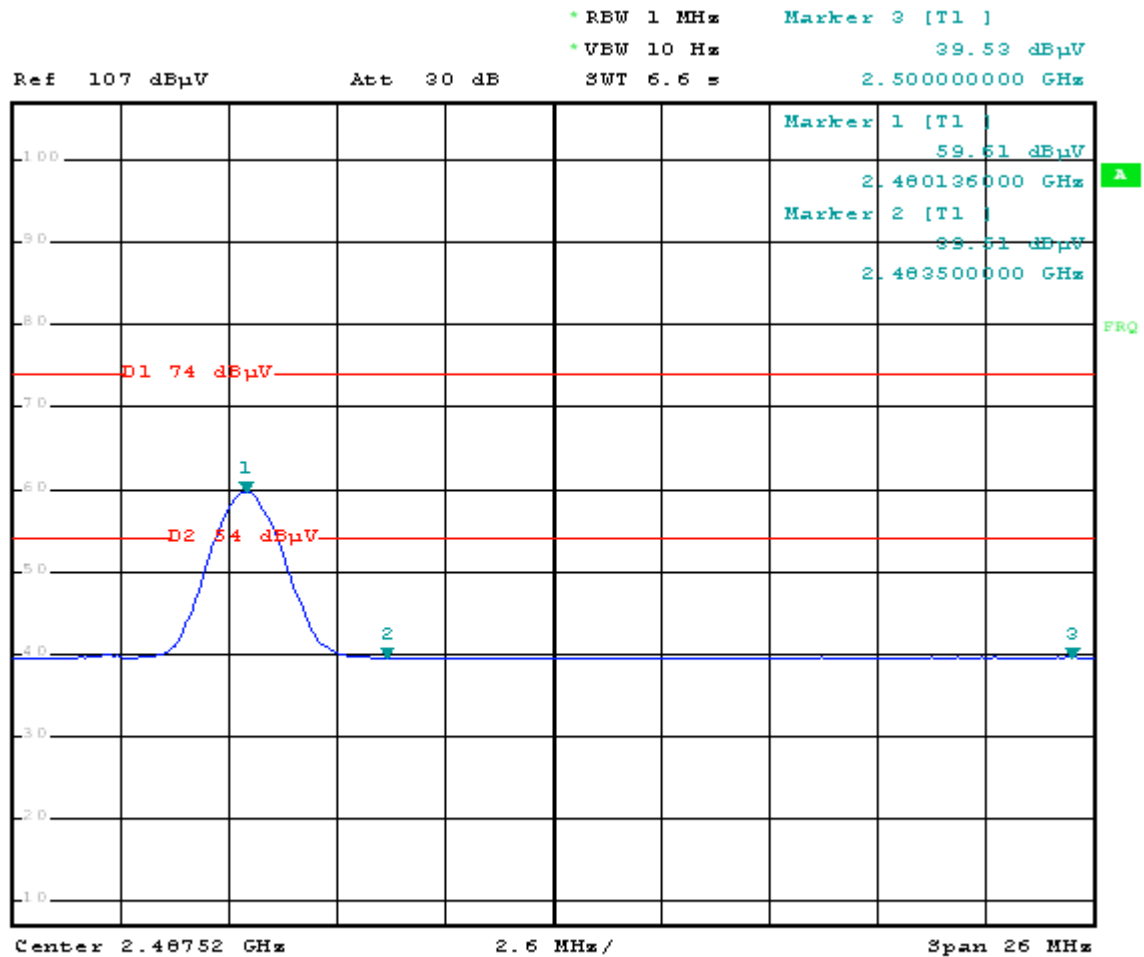
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Horizontal High channel PK

1 PK
MAXH

Date: 11.SEP.2013 14:00:34

Horizontal High channel AV

1 PE
MAXH

Date: 11.SEP.2013 14:07:08

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

9. 20-DB BANDWIDTH

9.1. Test Equipment

Please refer to Section 4 this report.

9.2. Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. The spectrum analyzer as RBW=30 KHz, VBW=100 KHz, Sweep=auto
4. Mark the peak frequency and -20dB (upper and lower) frequency.

9.3. Limit

Please refer section15.249

9.4. Test Result /Plots

| Limit | Channel Frequency (MHz) | 20dB Bandwidth (MHz) |
|-------|-------------------------|----------------------|
| / | 2402 | 1.044 |
| / | 2441 | 1.038 |
| / | 2480 | 0.996 |

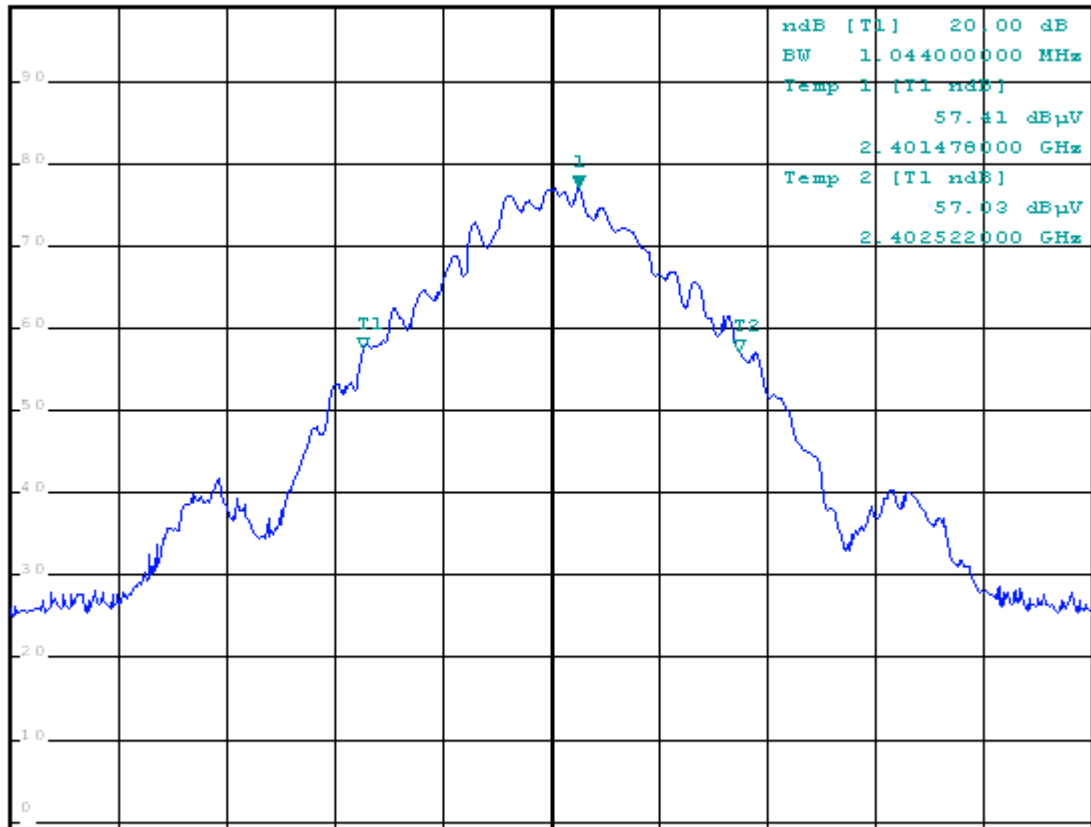


*RBW 30 kHz Marker 1 [T1]
 *VBW 100 kHz 77.16 dBμV
 *SWT 3 s 2.402078000 GHz

Ref 99 dBμV

*Att 10 dB

1 PK
VIEW



Center 2.402 GHz

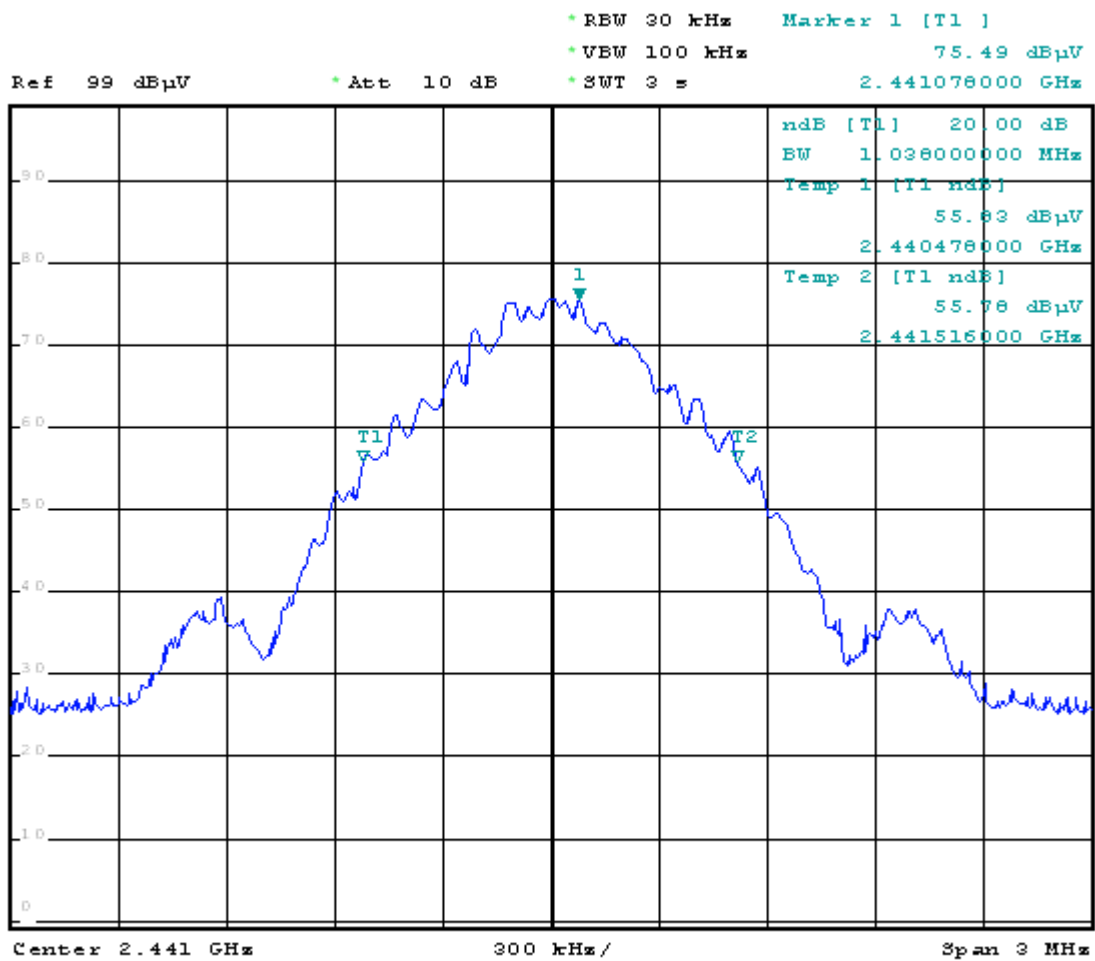
300 kHz/

Span 3 MHz

Date: 24.SEP.2013 10:17:25



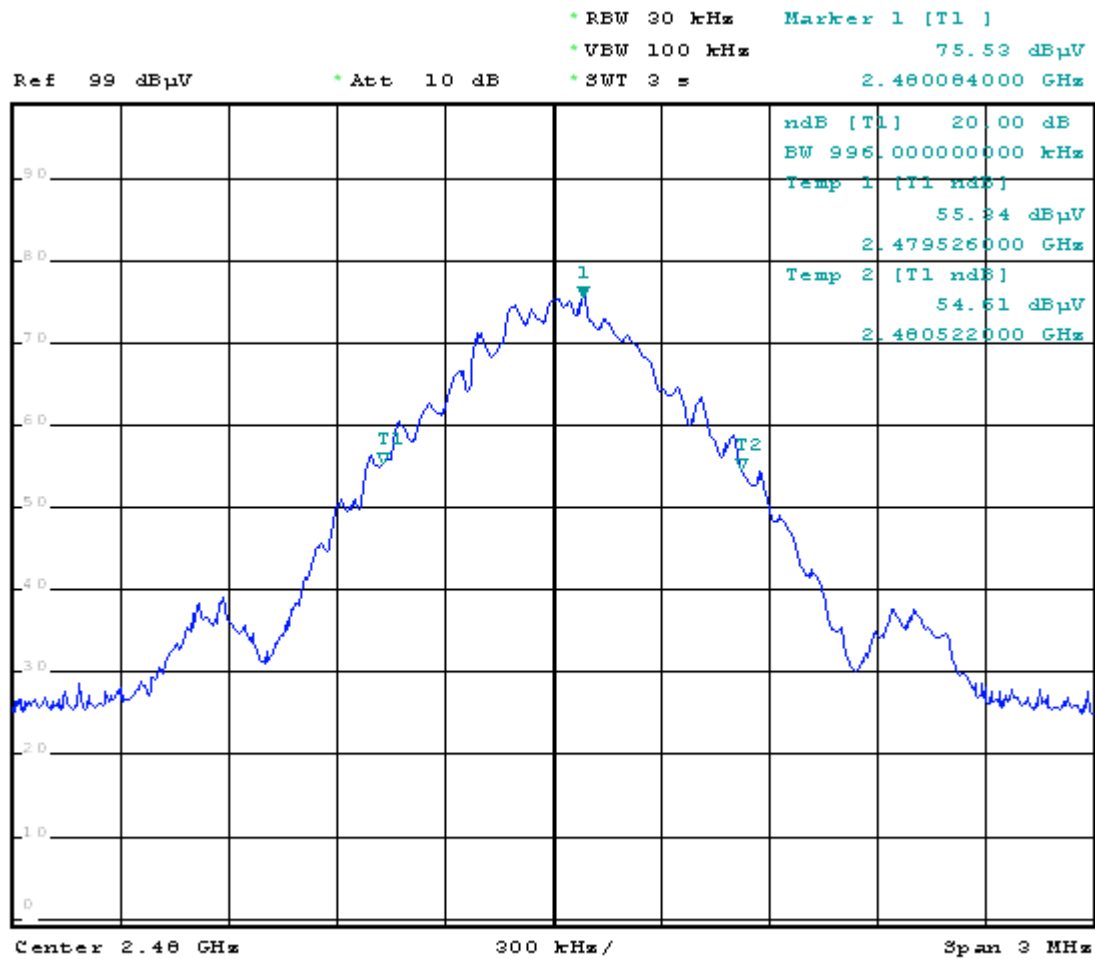
1 PR
VIEW



Date: 24.SEP.2013 10:16:38



1 PR
MAX



Date: 24.SEP.2013 10:19:36