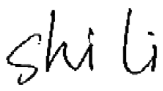



| | | | | |
|--|---|--|----------------------|---|
| Prüfbericht-Nr.: Test Report No.: | 15065379 001 | Auftrags-Nr.: Order No.: | 154035623 | Seite 1 von 39 Page 1 of 39 |
| Kunden-Referenz-Nr.: Client Reference No.: | 389925 | Auftragsdatum: Order date: | 2013.9.27 | |
| Auftraggeber: Client: | ACON Laboratories, Inc. 10125 Mesa Rim Road, San Diego, CA 92121, USA | | | |
| Prüfgegenstand: Test item: | On Call® Bluetooth® Adapter | | | |
| Bezeichnung / Typ-Nr.: Identification / Type No.: | Model Name : OGA-101 FCC ID : 2AA3P001 | | | |
| Auftrags-Inhalt: Order content: | Complete test | | | |
| Prüfgrundlage: Test specification: | FCC CFR47 Part 15, Subpart C, §15.247 ANSI C63.10-2009 KDB 558074 D01 DTS Meas Guidance v03 | | | |
| Wareneingangsdatum: Date of receipt: | 15.10.2013 |  | | |
| Prüfmuster-Nr.: Test sample No.: | N.A | | | |
| Prüfzeitraum: Testing period: | 15.10.2013 – 14.11.2013 | | | |
| Ort der Prüfung: Place of testing: | QuieTek Technology(Suzhou)Co., Ltd. | | | |
| Prüflaboratorium: Testing laboratory: | TÜV Rheinland (Shanghai) Co., Ltd. | | | |
| Prüfergebnis*: Test result*: | Pass | | | |
| geprüft von / tested by: | | kontrolliert von / reviewed by: | | |
| 14.11.2013 ShiLi / PE  | | 14.11.2013 Jesse huang / PM  | | |
| Datum Date | Name / Stellung Name / Position | Unterschrift Signature | Datum Date | Name / Stellung Name / Position |
| Sonstiges / Other: | | | | |
| Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery: | | Prüfmuster vollständig und unbeschädigt Test item complete and undamaged | | |
| * Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested | | | | |
| Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i> | | | | |

V04

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TEST SUMMARY

3.2.1 VOLTAGE REQUIREMENTS, FCC 15.31(E)

RESULT: PASS

3.2.2 ANTENNA REQUIREMENTS, FCC 15.203, FCC 15.204 AND RSS-GEN 7.1.4

RESULT: PASS

5.1.1 CONDUCTED OUTPUT POWER, FCC 15.247(B)(3) AND RSS-210 A8.4(2)

RESULT: PASS

5.1.2 6dB&99% BANDWIDTH, FCC 15.247(A)(2) AND RSS-210 A8.2(A)

5.1.3 POWER SPECTRAL DENSITY (PSD), FCC 15.247(E) AND RSS-210 A8.2

RESULT: PASS

5.1.4 CONDUCTED SPURIOUS EMISSION, FCC 15.247(D) AND RSS-210 A8.5

RESULT: PASS

5.1.5 BAND EDGE COMPLIANCE OF RF CONDUCTED EMISSION, FCC 15.247(D) AND RSS-210 A8.5

RESULT: PASS

6.1.1 BAND EDGE RADIATED EMISSION, FCC 15.205, FCC 15.209, FCC 15.247(D), RSS-210 2.2, RSS-210 2.6 AND RSS-210 A8.5

RESULT: Pass

6.1.2 RADIATED SPURIOUS EMISSION OF TRANSMITTER, FCC 15.205, FCC 15.209, FCC 15.247(D), RSS-210 2.2, RSS-210 2.6 AND RSS-210 A8.5

RESULT: PASS

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1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report.

2. Test Sites

2.1 Test Facilities

QuieTek Technology(Suzhou)Co.,Ltd.

No.99 Hongye RD.Suzhou Industnal Park Loufeng Hi-Tech Development
Zone.,Suzhou,China

The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

The Federal Communications Commission has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance with the requirements of section 2.948 of the FCC rules. The description of the test facility is listed under FCC registration number 800392.

The Industry Canada has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance. The description of the test facility is listed under chambers filing number 4075B.

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2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

| Equipment | Model | Serial no. | Cal. due date |
|--------------------------------------|-------------|------------|---------------|
| 3m modified semi-anechoic chamber | SAC | N/A | 10.12.2014 |
| EMI test receiver | ESCI | 100280 | 08.11.2014 |
| broadband antenna | BTA-H | 040005H | 28.07.2014 |
| Spectrum analyzer | FSP30 | 100192 | 21.07.2014 |
| Broadband coaxial preamplifier | BBV 9718 | 9718-012 | 04.07.2014 |
| Double ridged broadband horn antenna | BBHA 9120 D | 9120D-433 | 15.05.2014 |

2.3 Measurement Uncertainty

Table 2: Emission Measurement Uncertainty

| Measurement Type | Frequency | Uncertainty |
|---------------------------------|--------------|-------------|
| Antenna Port Conducted Emission | < 1GHz | ±0.39dB |
| | > 1GHz | ±0.68dB |
| Radiated Emission | 30MHz - 1GHz | ±5.34dB |
| | > 1GHz | ±5.40dB |

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3. General Product Information

3.1 Product Function and Intended Use

The EUT (Equipment Under Test) is a On Call® Bluetooth® Adapter

3.2 System Details

| | |
|-------------------------|-------------------|
| Radio standard: | Bluetooth 4.0 BLE |
| Specified output power: | 7.2dBm |
| Antenna gain: | 1dBi |
| Antenna type: | Ceramic antenna |
| Antenna cable length: | N/A |
| Frequency range: | 2402 – 2480MHz |
| Number of channels: | 40 |
| Channel spacing: | 2MHz |

| | |
|----------------|----|
| Rated voltage: | 3V |
| Test voltage: | 3V |

3.2.1 Voltage Requirements, FCC 15.31(e)

RESULT: **PASS**

All the tests were performed using steady DC 3V. Hence it complies with the power supply requirements.

3.2.2 Antenna Requirements, FCC 15.203, FCC 15.204 and RSS-Gen 7.1.4

RESULT: **PASS**

The EUT has an internal antenna which is not user accessible. Hence it complies with the requirements.

3.3 Independent Operation Modes

The EUT was tested on a stand-alone basis (only attached to the test jig) and the test system was configured in a typical fashion (as a customer would normally use it).

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in ANSI C63.4:2009. Testing was performed at the lowest operating frequency (2402MHz), at the operating frequency in the middle of the specified frequency band (2442MHz) and at the highest operating frequency (2480MHz) with different modulation types.

Each mode basic operation in :

- A. EUT transmits (TX mode), with full power, at lowest channel (2402MHz), a continuous modulated signal streaming with 100% duty cycle.
- B. EUT transmits (TX mode), with full power, at middle channel (2442MHz), a continuous modulated signal streaming with 100% duty cycle.
- C. EUT transmits (TX mode), with full power, at highest channel (2480MHz), a continuous modulated signal streaming with 100% duty cycle.
- D. EUT receives (RX mode), at lowest channel (2402MHz), continuously.
- E. EUT receives (RX mode), at middle channel (2442MHz), continuously.
- F. EUT receives (RX mode), at highest channel (2480MHz), continuously.

3.4 Noise Suppressing Parts

Refer to schematics and internal photos.

4. Test Set-up and Operation Modes

4.1 Test Methodology

The test methodology used is based on the requirements of 47 CFR Part 15, Sections 15.31, 15.33, 15.35, 15.205, 15.207, 15.209

The test methods, which have been used, are based on ANSI C63.10-2009 and KDB 558074 D01 DTS Meas Guidance v03

For details, see under each test item.

4.2 Physical Configuration for Testing

The EUT was designed to get into related working mode with the control of a laptop computer through RS 232 interface.

Notes:

Two test sample was available:

For antennas conducted measurements with 50Ω connector and radiated measurements.more details, refer to section: Photographs of the Test Set-Up.

4.3 Test Operation and Test Software

Software used for testing: InstalluEnergyTools_1_3_1by client.

This software was running on the laptop computer connected to the EUT. It was used to enable the test operation modes listed in section 3.3 as appropriate.

4.4 Special Accessories and Auxiliary Equipment

The product has been tested together with a PCB Development kit (Control the module).

4.5 Countermeasures to achieve EMC Compliance

No additional measures were employed to achieve compliance.

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5. Test Results of Conducted Measurements at Antenna Port

5.1 Transmitter Parameters

5.1.1 Conducted Output Power, FCC 15.247(b)(3)

RESULT:

PASS

Date of testing: 2013-11-4

Ambient temperature: 20°C

Relative humidity: 39.6%

Atmospheric pressure: 101.5hPa

Requirements:

For frequency hopping systems operating in the 2400-2483.5MHz band employing at least 75 non-overlapping hopping channels, the maximum peak output power shall be 1W (30dBm). For other hopping systems operating in the 2400-2483.5MHz band, the maximum peak output power shall be 0.125W (21dBm).

Test procedure:

ANSI C63.10-2009, RSS-Gen 4.8 and KDB 558074 D01 DTS Meas Guidance v03

The maximum peak output power (conducted) was measured at the antenna connector with a spectrum analyzer. The analyzer resolution bandwidth was set to 3MHz and the video bandwidth to 10MHz. The final measurement takes into account the loss generated by all the involved cables.

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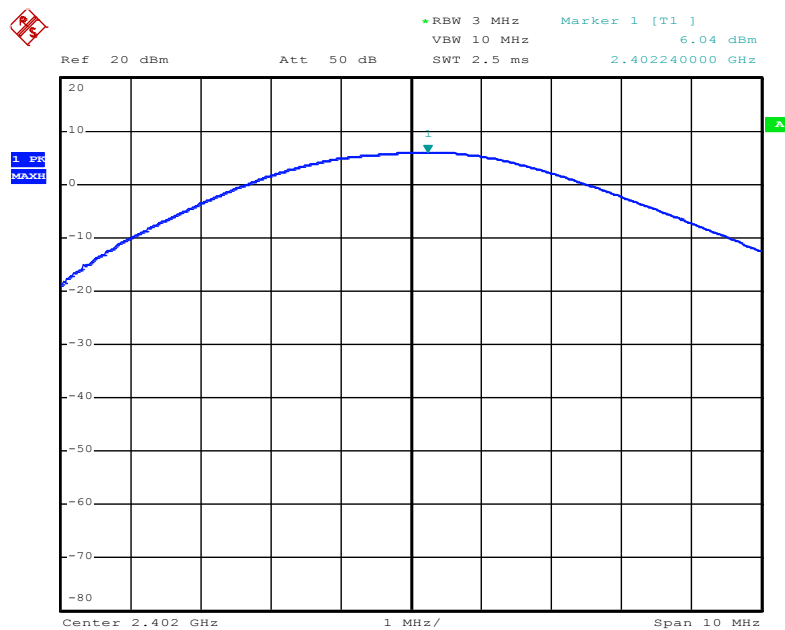
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Table 3: Conducted Output Power, Mode A (2402MHz)

| Reading [dBm] | RBW [MHz] | Output Power [dBm] | Limit [dBm] |
|---------------|-----------|--------------------|-------------|
| 6.04 | 3 | 6.04 | 30 |

Notes: Cable loss was included in reading as offset.

Figure 1: Conducted Output Power, Mode A



Date: 1.JAN.2000 02:13:13

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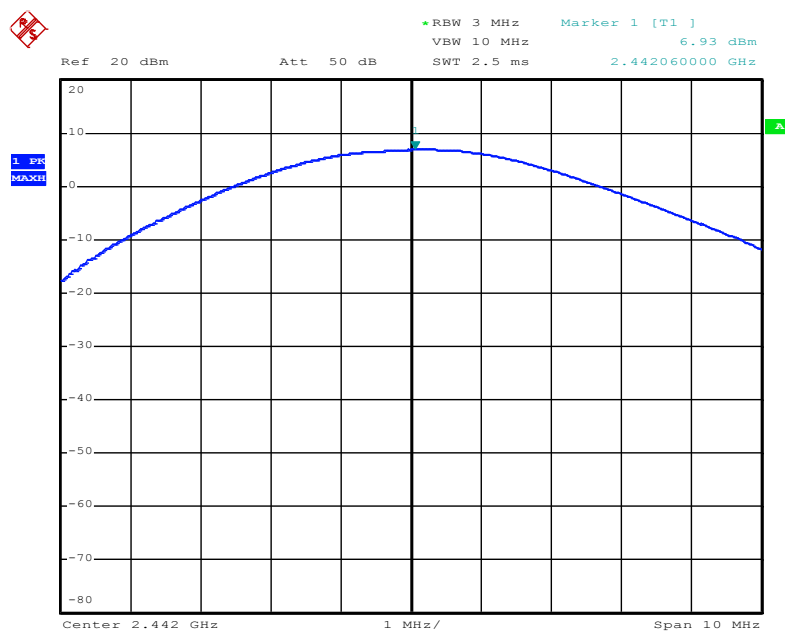
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Table 4: Conducted Output Power, Mode B (2442MHz)

| Reading [dBm] | RBW [MHz] | Output Power [dBm] | Limit [dBm] |
|---------------|-----------|--------------------|-------------|
| 6.93 | 3 | 5.07 | 30 |

Notes: Cable loss was included in reading as offset.

Figure 2: Conducted Output Power, Mode B



Date: 1.JAN.2000 02:58:47

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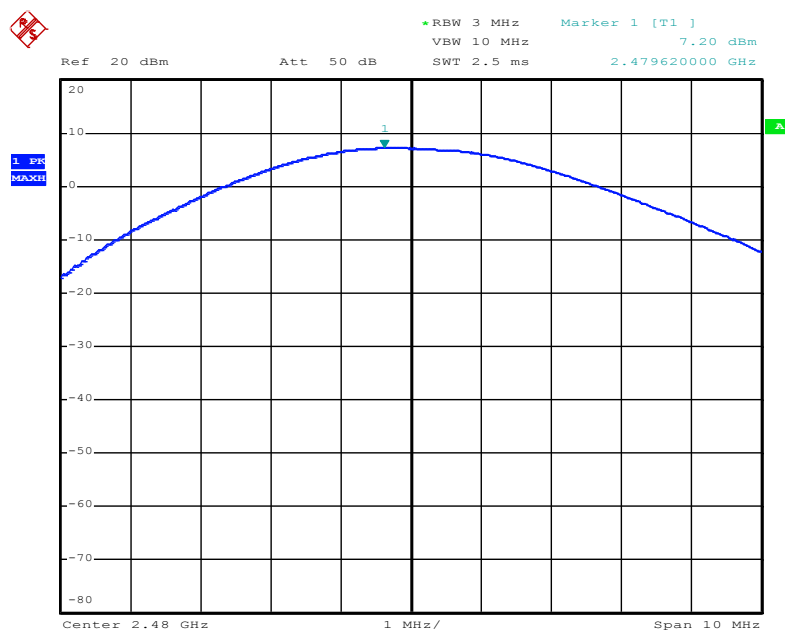
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Table 5: Conducted Output Power, Mode C (2480MHz)

| Reading [dBm] | RBW [MHz] | Output Power [dBm] | Limit [dBm] |
|---------------|-----------|--------------------|-------------|
| 7.20 | 3 | 5.19 | 30 |

Notes: Cable loss was included in reading as offset.

Figure 3: Conducted Output Power, Mode C



Date: 1.JAN.2000 02:59:28

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5.1.2 6dB Bandwidth, FCC 15.247(a)(2)

Date of testing: 2013-11-4

Ambient temperature: 20°C

Relative humidity: 39.6%

Atmospheric pressure: 101.5hPa

Requirements:

For frequency hopping systems operating in the 2400-2483.5MHz band, no bandwidth limit is specified. Test data is provided for reference.

Test procedure:

ANSI C63.10-2009 and KDB 558074 D01 DTS Meas Guidance v03

A spectrum analyzer was connected to the antenna port of the EUT. The spectrum analyzer resolution bandwidth was set to 100kHz, the video bandwidth to 300kHz and the span to 2MHz.

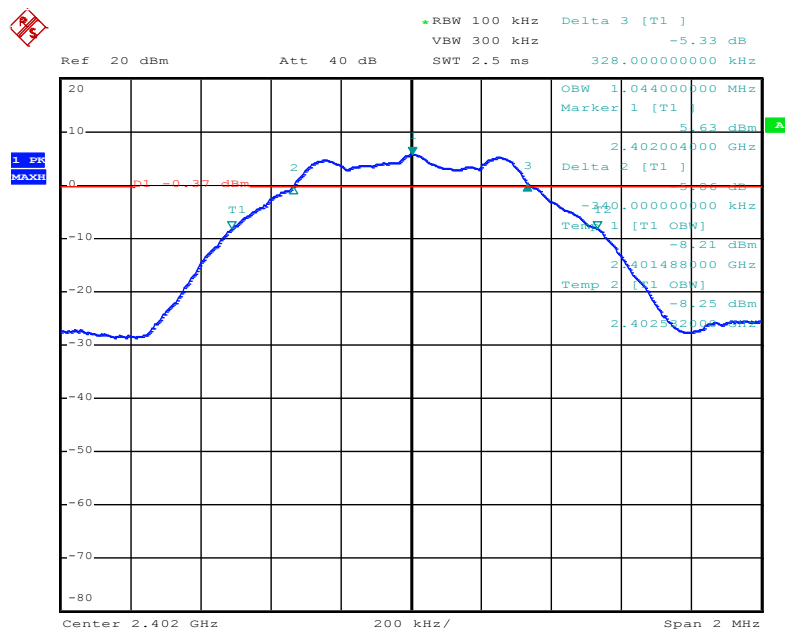
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Table 6: 6dB Bandwidth

| Operating Frequency [MHz] | 6dB Bandwidth[MHz] limit 500KHz |
|---------------------------|------------------------------------|
| 2402 | 0.668 |
| 2442 | 0.648 |
| 2480 | 0.642 |

Figure 4: 6dB Bandwidth, Mode A

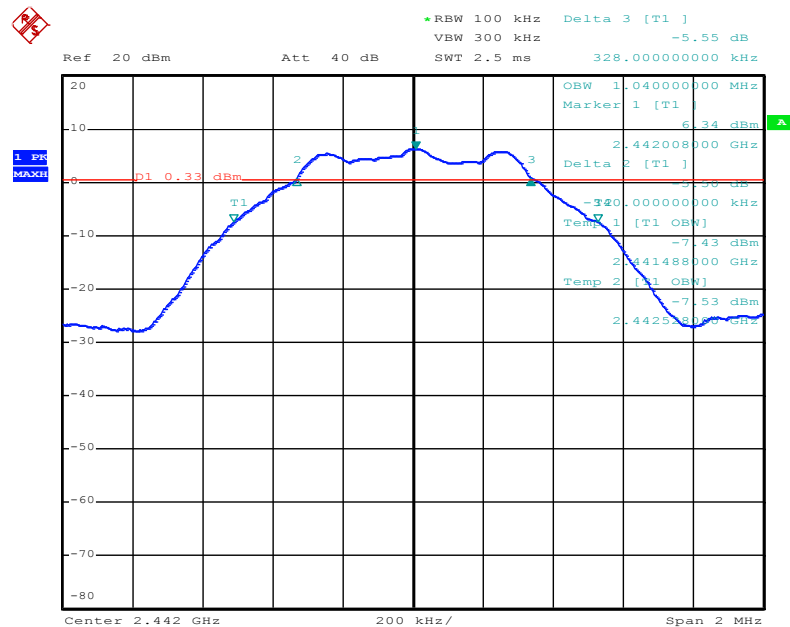


Date: 1.JAN.2000 03:05:51

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Figure 5: 6dB Bandwidth, Mode B

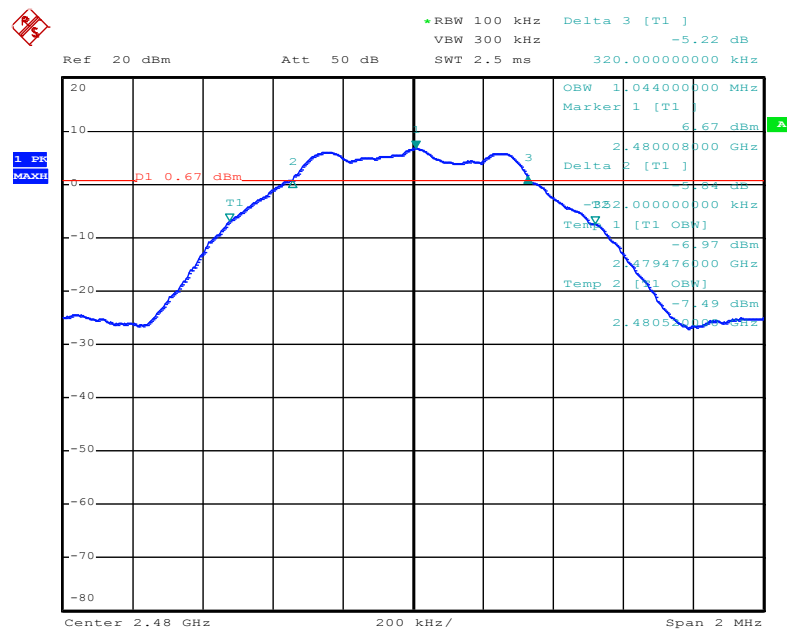


Date: 1.JAN.2000 03:04:23

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Figure 6: 6dB Bandwidth, Mode C



Date: 1.JAN.2000 03:02:28

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5.1.3 Power Spectral Density (PSD), FCC 15.247(e)

RESULT:

PASS

Date of testing: 2013-11-4

Ambient temperature: 20°C

Relative humidity: 39.6%

Atmospheric pressure: 101.5hPa

Requirements:

According to FCC section 15.247(e) , the same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output power is measured, then a peak power spectral density measurement is required. If an average output power is measured, then an average power spectral density measurement should be used.

Test procedure:

KDB 558074 D01 DTS Meas Guidance v03

A spectrum analyzer was connected to the antenna port of the EUT. The analyzer resolution bandwidth was set to 100kHz.

The final measurement takes into account the loss generated by all the involved cables.

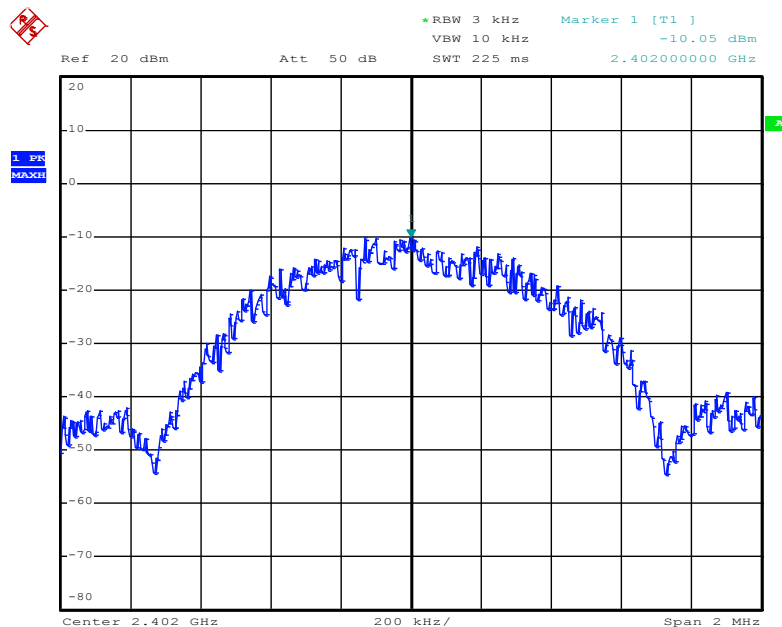
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Table 7: Power spectral density

| Frequency [MHz] | PSD [dBm/3KHz] | Limit [dBm/3kHz] |
|--------------------|-------------------|---------------------|
| Low | -10.05 | 8 |
| Middle | -9.20 | 8 |
| High | -8.72 | 8 |

Figure 7: Power spectral density, Mode A

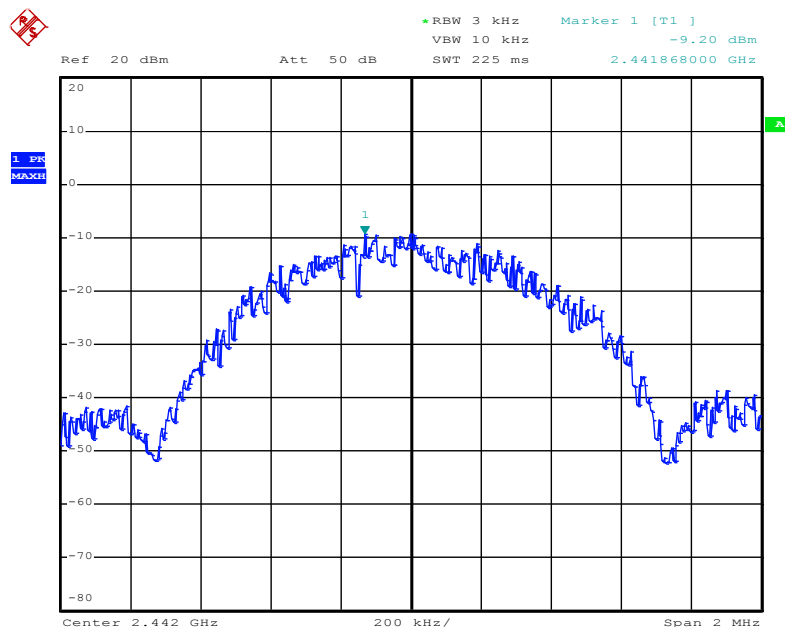


Date: 1.JAN.2000 03:28:42

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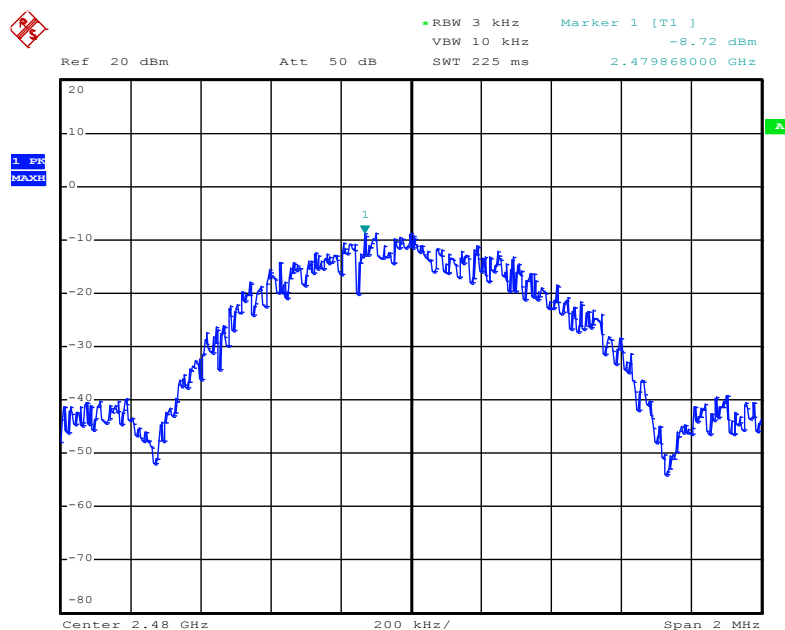
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Figure 8: Power spectral density, Mode B



Date: 1.JAN.2000 03:29:41

Figure 9: Power spectral density, Mode C



Date: 1.JAN.2000 03:32:08

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5.1.4 Conducted Spurious Emission, FCC 15.247(d)

RESULT:

PASS

Date of testing: 2013-11-4

Ambient temperature: 20°C

Relative humidity: 39.6%

Atmospheric pressure: 101.5hPa

Requirements:

In any 100kHz bandwidth outside the frequency band, the RF power shall be at least 20dB below that of the maximum in-band 100kHz emission.

Test procedure:

ANSI C63.10-2009 and KDB 558074 D01 DTS Meas Guidance v03

A spectrum analyzer was connected to the antenna port of the EUT. The analyzer resolution bandwidth was set to 100kHz. For each channel investigated, the in-band and out-of-band emission measurements were performed. The out-of-band emissions were measured from 30MHz to 26GHz (10th harmonics).

The final measurement takes into account the loss generated by all the involved cables.

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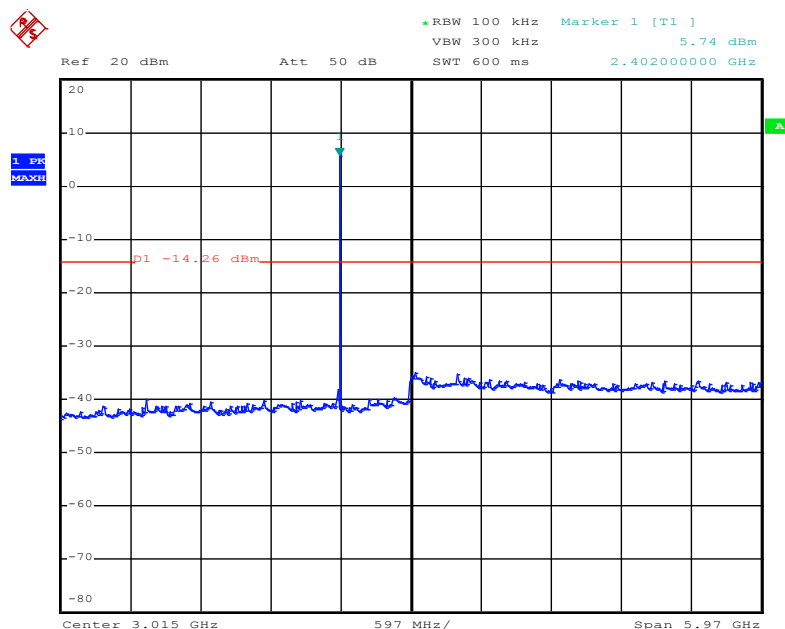
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Table 8: Conducted Spurious Emission, Mode A

| Frequency [MHz] | Reading [dBm] | Emission Level [dBm] | Limit [dBm] | Margin [dB] |
|-----------------|---------------|----------------------|-------------|-------------|
| 24430 | -21.60 | -21.60 | -14.26 | 7.34 |
| N/A | N/A | N/A | -14.26 | N/A |
| 2402 | 5.74 | 5.74 | N/A | N/A |

Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

Figure 10: Conducted Spurious Emission, 30MHz – 6GHz, Mode A

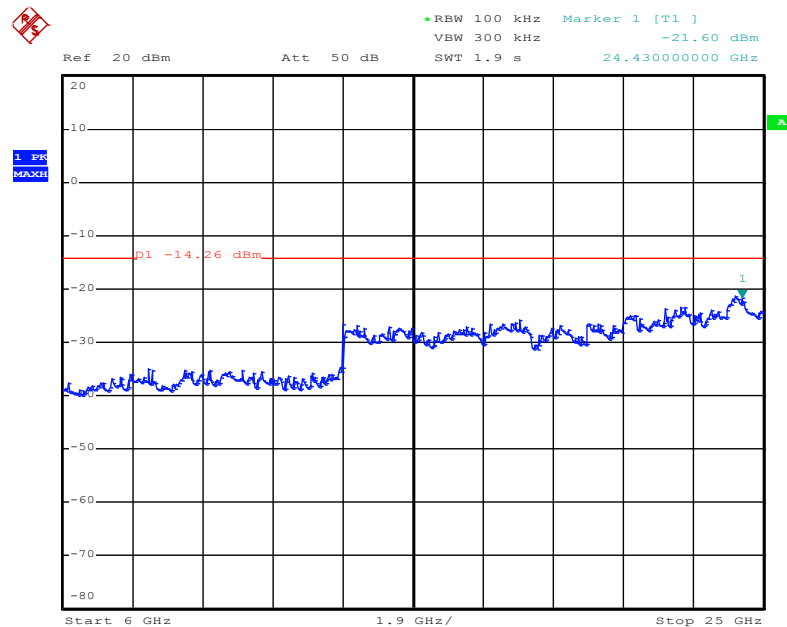


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Figure 11: Conducted Spurious Emission, 6 – 26GHz, Mode A



Date: 1.JAN.2000 03:59:16

Table 9: Conducted Spurious Emission, Mode B

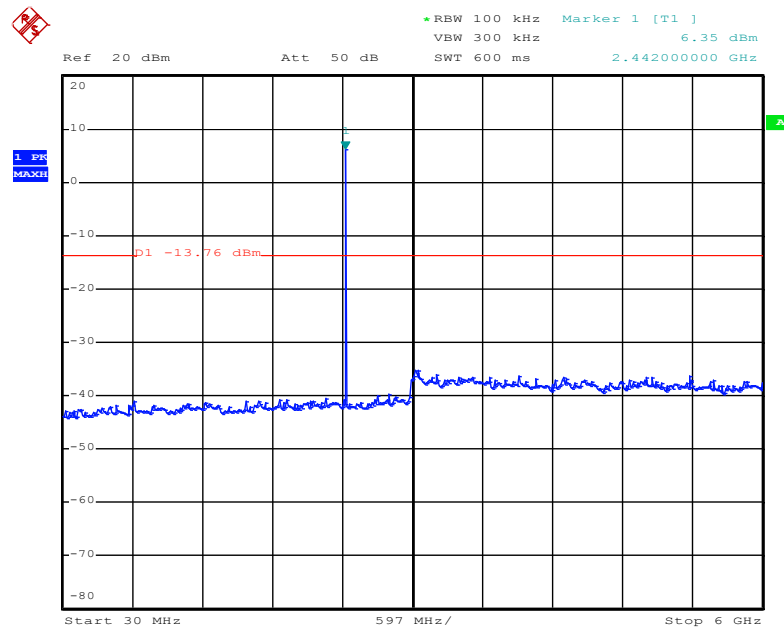
| Frequency [MHz] | Reading [dBm] | Emission Level [dBm] | Limit [dBm] | Margin [dB] |
|-----------------|---------------|----------------------|-------------|-------------|
| 24278 | -21.57 | -21.57 | -13.76 | 7.81 |
| NA | N/A | NA | N/A | NA |
| 2442 | 6.35 | 6.35 | NA | N/A |

Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

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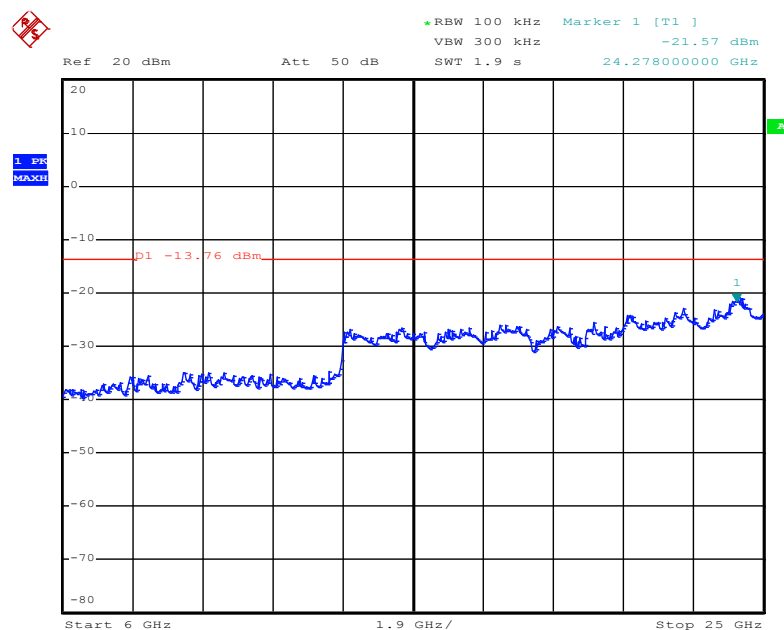
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Figure 12: Conducted Spurious Emission, 30MHz – 6GHz, Mode B



Date: 1.JAN.2000 03:38:01

Figure 13: Conducted Spurious Emission, 6 – 26GHz, Mode B



Date: 1.JAN.2000 03:38:47

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Test Report No.:

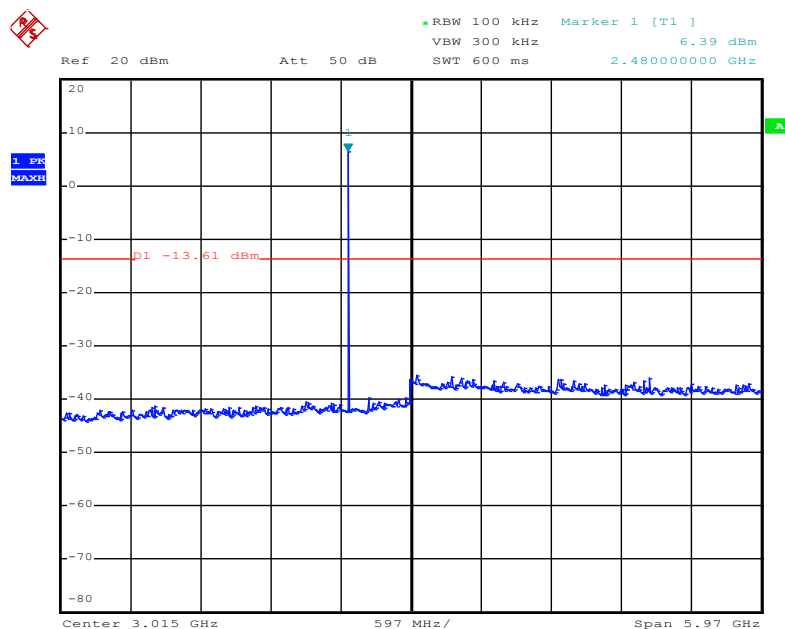
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Table 10: Conducted Spurious Emission, Mode C

| Frequency [MHz] | Reading [dBm] | Emission Level [dBm] | Limit [dBm] | Margin [dB] |
|-----------------|---------------|----------------------|-------------|-------------|
| 24278 | -21.31 | -21.31 | -13.61 | 7.7 |
| N/A | N/A | N/A | N/A | N/A |
| 2480 | 6.39 | 6.39 | N/A | N/A |

Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

Figure 14: Conducted Spurious Emission, 30MHz – 6GHz, Mode C

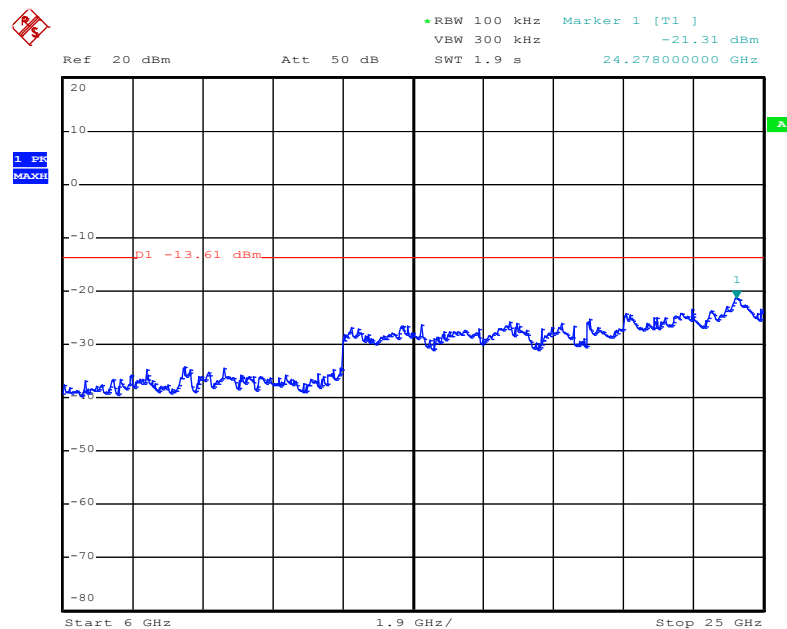


Date: 1.JAN.2000 03:34:39

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Figure 15: Conducted Spurious Emission, 6 – 26GHz, Mode C



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5.1.5 Band Edge Compliance of RF Conducted Emission, FCC 15.247(d)

RESULT:

PASS

Date of testing: 2013-11-4

Ambient temperature: 20°C

Relative humidity: 39.6%

Atmospheric pressure: 101.5hPa

Requirements:

In any 100kHz bandwidth outside the frequency band, the RF power shall be at least 20dB below that of the maximum in-band 100kHz emission.

Test procedure:

ANSI C63.10-2009 and KDB 558074 D01 DTS Meas Guidance v03

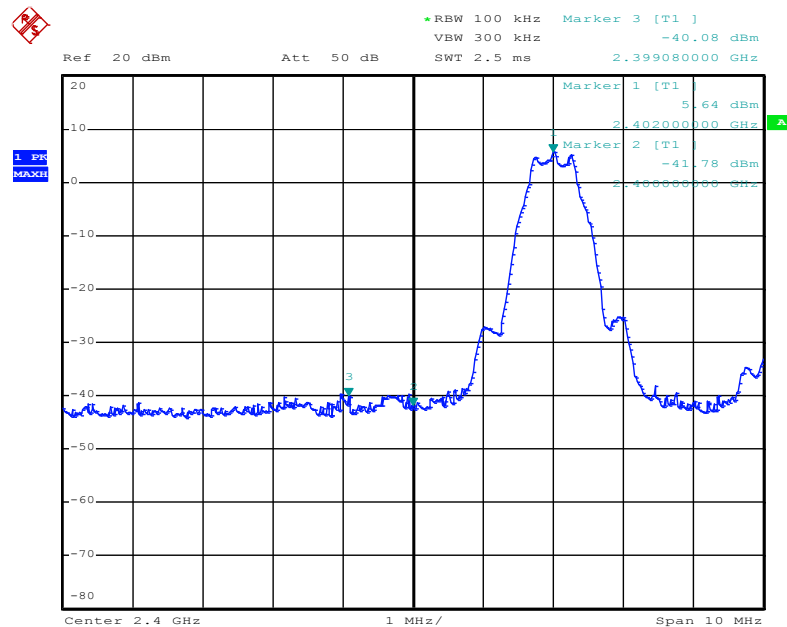
A spectrum analyzer was connected to the antenna port of the EUT. The analyzer resolution bandwidth was set to 100kHz and video bandwidth was set to 300kHz. Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, and then use the marker-to-peak function to move the marker to the peak of the in-band emission.

The final measurement takes into account the loss generated by all the involved cables.

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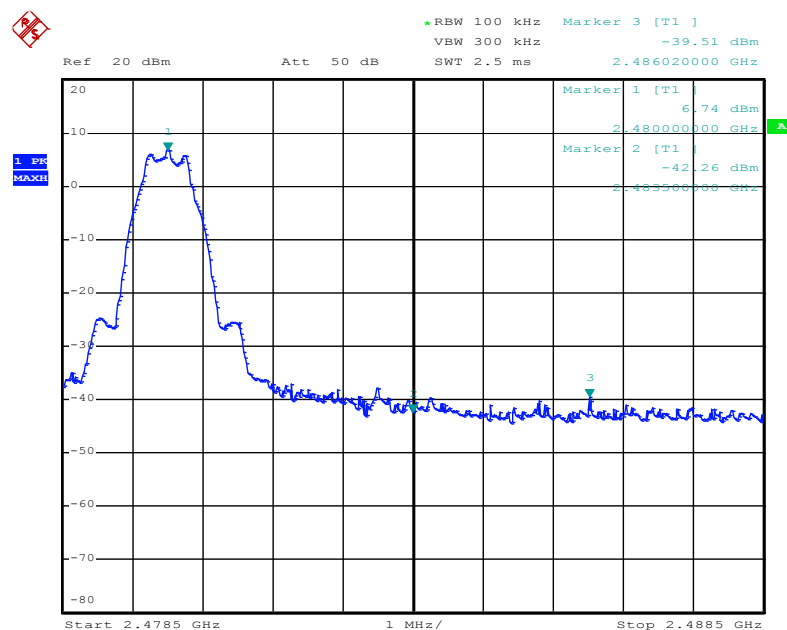
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Figure 16: Lower Band Edge Conducted



Date: 1.JAN.2000 04:00:25

Figure 17: Upper Band Edge Conducted



Date: 1.JAN.2000 04:01:50

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6. Test Results of Radiated Measurements

6.1 Transmitter Parameters

6.1.1 Band Edge Radiated Emission, FCC 15.205, FCC 15.209, FCC 15.247(d)

RESULT:

Pass

Date of testing: 2013-10-19

Ambient temperature: 23.5°C
Relative humidity: 45%
Atmospheric pressure: 101.5hPa

Measurement distance: 3m
Kind of test site: Semi Anechoic Chamber

Requirements:

Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a) and RSS-210 2.7 (Table 1), must comply with the radiated emission limits specified in FCC 15.209(a) (Table 2 and 3).

Test procedure:

ANSI C63.10-2009 and KDB 558074 D01 DTS Meas Guidance v03

The EUT was placed on a nonconductive turntable 0.8m above the ground plane. Measurements were made at 3m distance. The EUT was rotated 360° and the antenna was raised and lowered from 1 to 4m in order to determine the emission's maximum level.

Measurements were taken using both horizontal and vertical antenna polarization. The rotation through the three orthogonal axes is normally not needed for equipment that is not hand-held or body-worn. The EUT was pretested in floor-standing condition and in the table position and the worst case condition was table position which was used for the final measurements.

Measurements were performed using a spectrum analyzer with a suitable span to encompass the peak of the fundamental and using the following settings: Peak: RBW & VBW = 1MHz, Average: RBW = 1MHz, VBW = 10Hz.

The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

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Table 11: Band Edge Radiated Emission

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1 | Horizontal | 2390.000 | 51.883 | 14.236 | -22.117 | 74.000 | 37.648 | PK |
| 2 | Horizontal | 2402.073 | 76.417 | 38.661 | N/A | N/A | 37.756 | PK |
| 3 | Horizontal | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1 | Horizontal | 2390.000 | 39.594 | 1.947 | -14.406 | 54.000 | 37.648 | AV |
| 2 | Horizontal | 2402.073 | 63.469 | 25.713 | N/A | N/A | 37.756 | AV |
| 3 | Horizontal | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|----------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1 | Vertical | 2390.000 | 53.208 | 16.221 | -20.792 | 74.000 | 36.988 | PK |
| 2 | Vertical | 2402.120 | 75.475 | 38.427 | N/A | N/A | 37.048 | PK |
| 3 | Vertical | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|----------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1 | Vertical | 2390.000 | 38.984 | 1.997 | -15.016 | 54.000 | 36.988 | AV |
| 2 | Vertical | 2402.073 | 61.918 | 24.871 | N/A | N/A | 37.047 | AV |
| 3 | Vertical | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1 | Horizontal | 2480.046 | 78.317 | 39.873 | N/A | N/A | 38.444 | PK |
| 2 | Horizontal | 2483.500 | 53.794 | 15.319 | -20.206 | 74.000 | 38.475 | PK |
| 3 | Horizontal | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1 | Horizontal | 2479.969 | 65.113 | 26.669 | N/A | N/A | 38.443 | AV |
| 2 | Horizontal | 2483.500 | 40.684 | 2.209 | -13.316 | 54.000 | 38.475 | AV |
| 3 | Horizontal | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|----------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1 | Vertical | 2479.738 | 73.592 | 36.169 | N/A | N/A | 37.423 | PK |
| 2 | Vertical | 2483.500 | 52.520 | 15.079 | -21.480 | 74.000 | 37.441 | PK |
| 3 | Vertical | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|----------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1 | Vertical | 2480.002 | 61.095 | 23.671 | N/A | N/A | 37.424 | AV |
| 2 | Vertical | 2483.500 | 39.587 | 2.146 | -14.413 | 54.000 | 37.441 | AV |
| 3 | Vertical | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

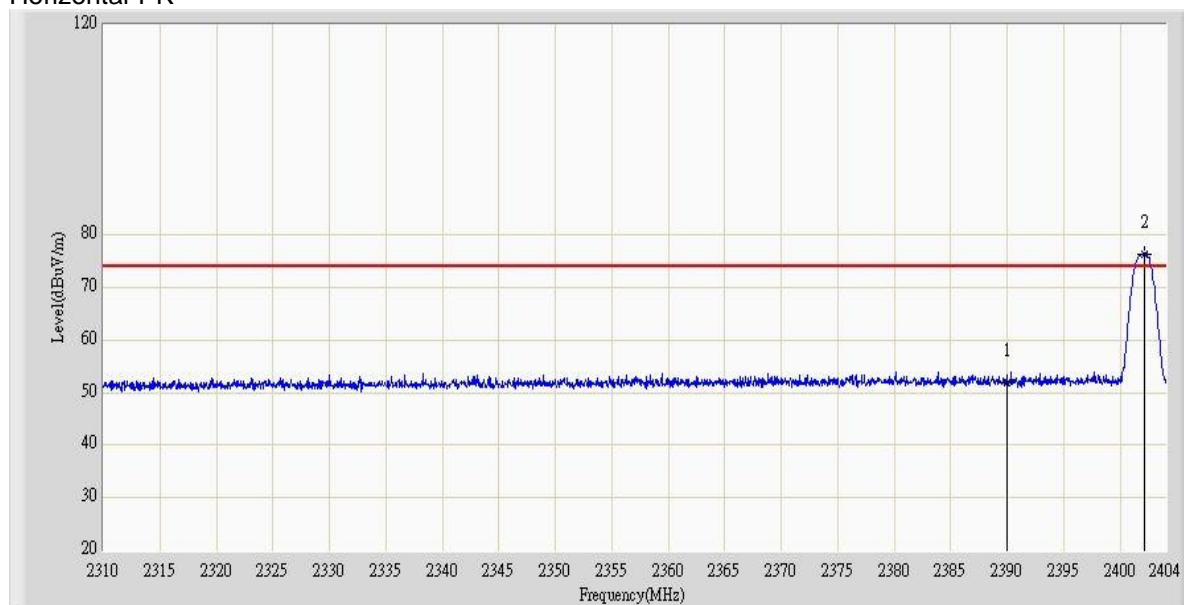
Notes: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBuV/m is calculated as follows: Average limit = 20 x log(500uV/m).
Peak limit in dBuV/m is calculated as follows: Peak limit = Average limit + 20dB.

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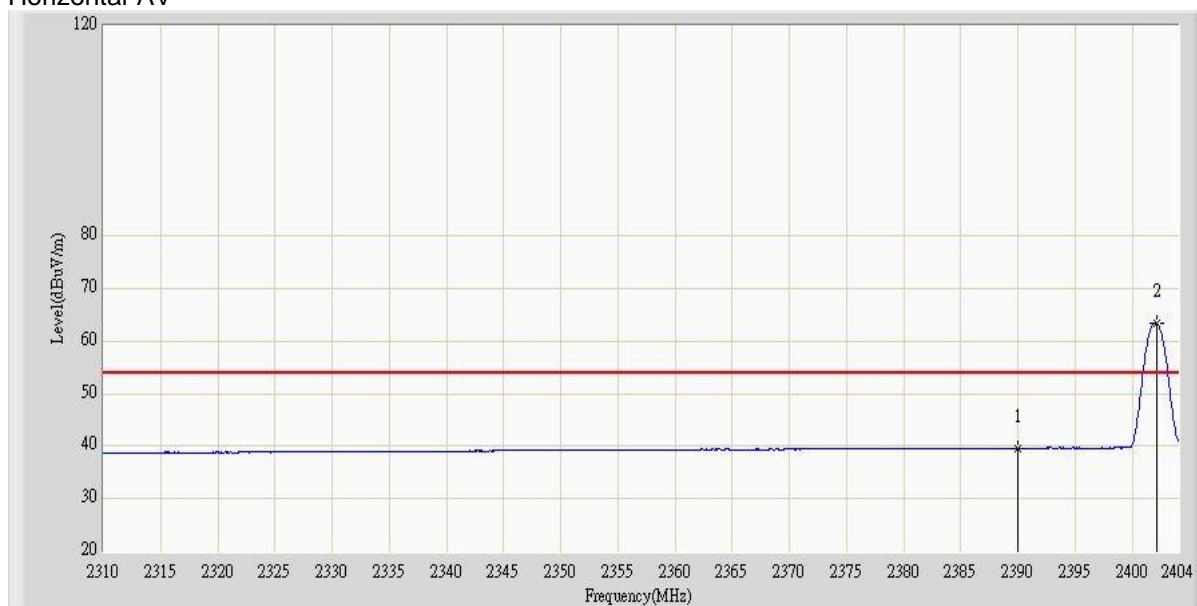
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Figure 18: Band Edge Radiated Emission, Spectral Diagram, Mode A (2402MHz)

Horizontal-PK



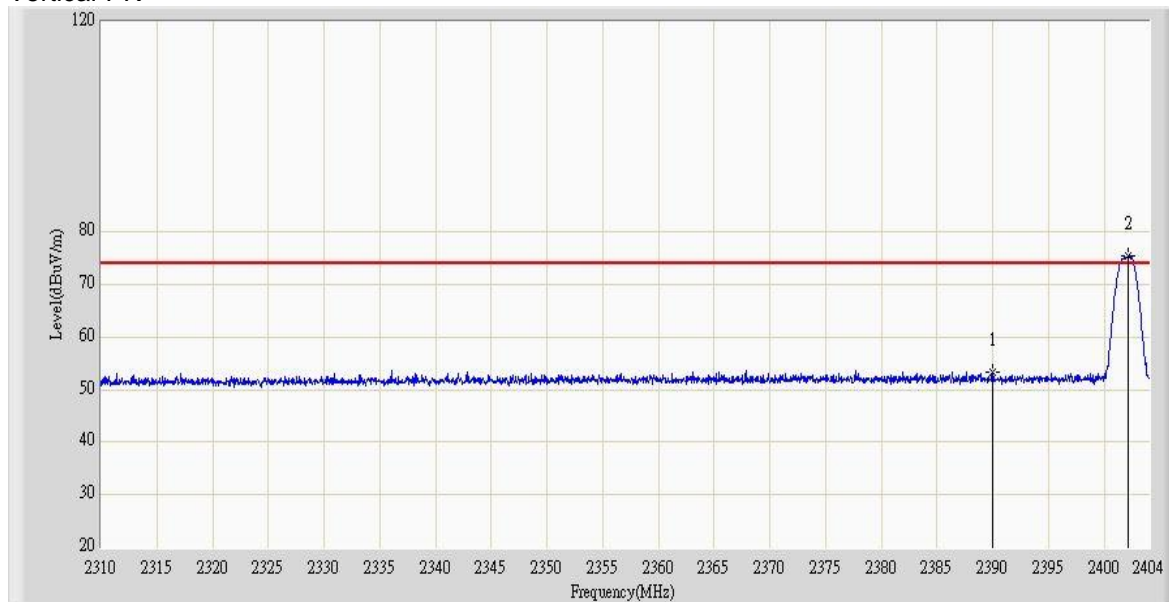
Horizontal-AV



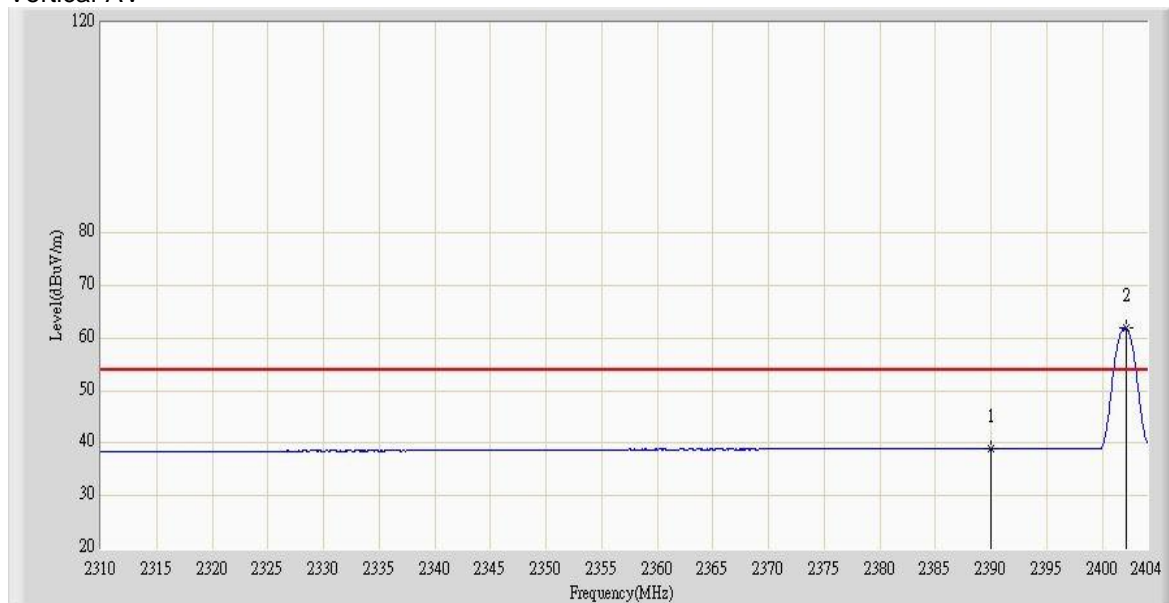
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Vertical-PK



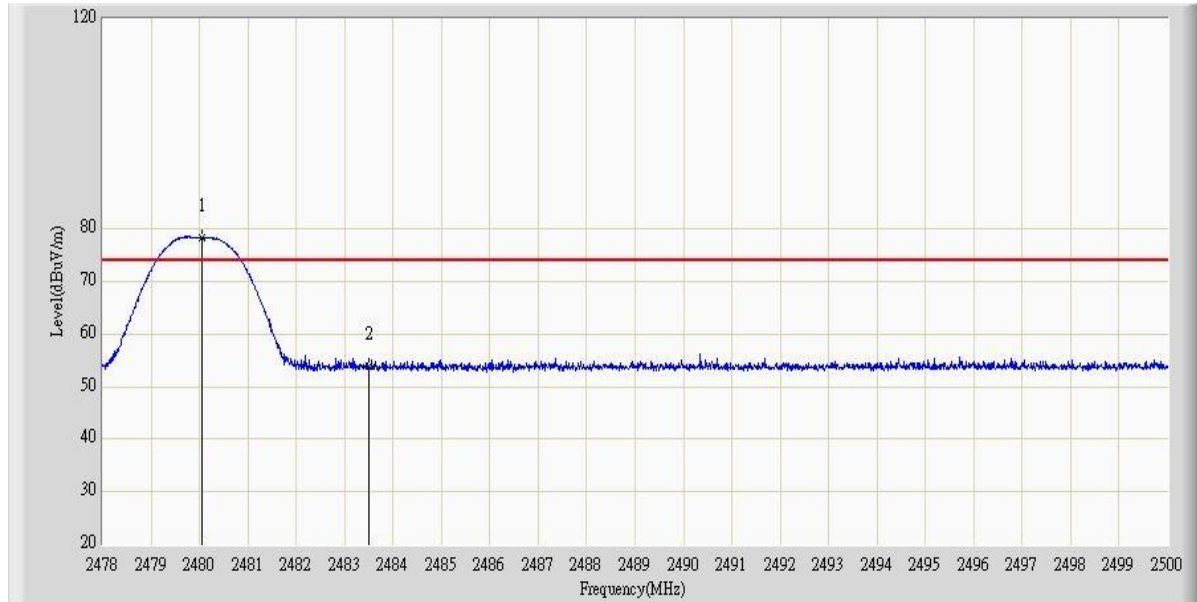
Vertical-AV



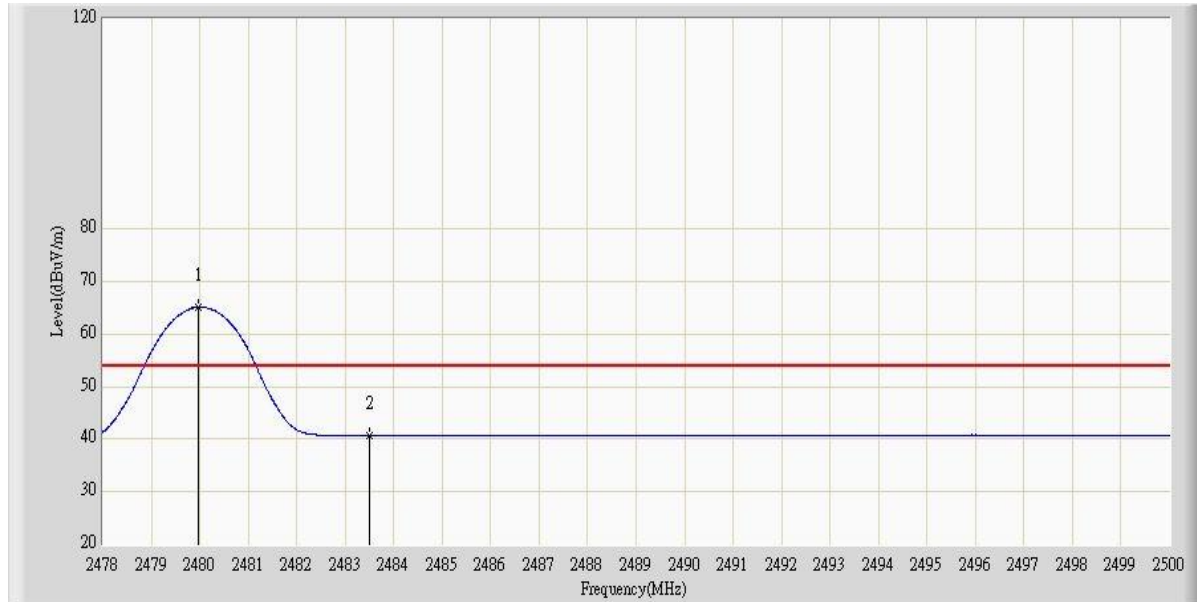
Note: The upper diagram shows the vertical peak value and the lower diagram shows the horizontal value.

Figure 19: Band Edge Radiated Emission, Spectral Diagram, Mode C (2402MHz)

Horizontal-PK



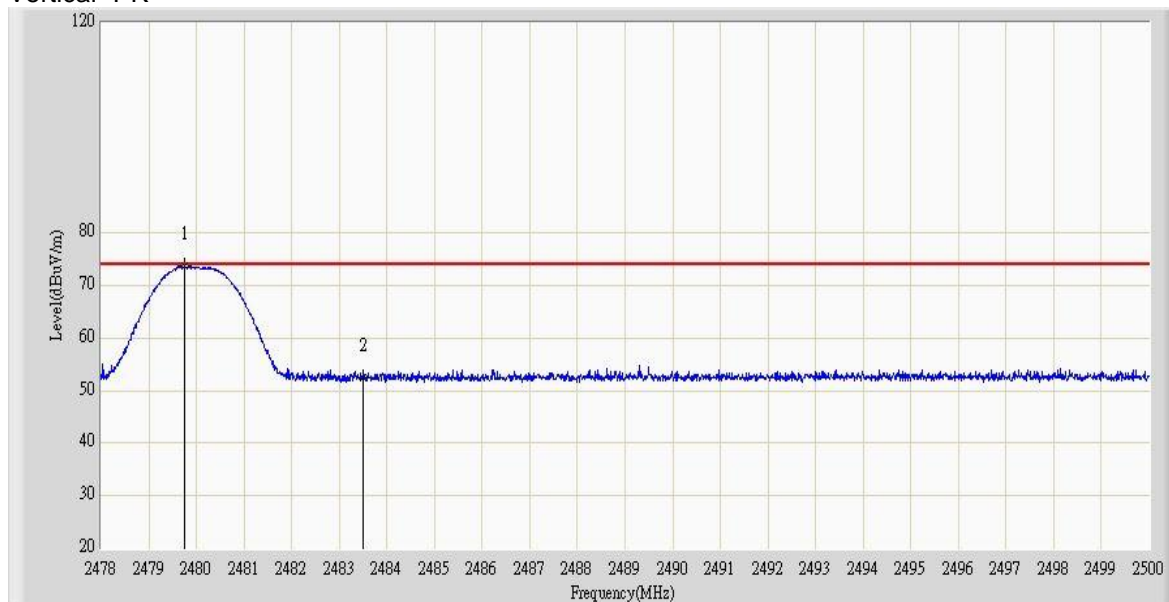
Horizontal-AV



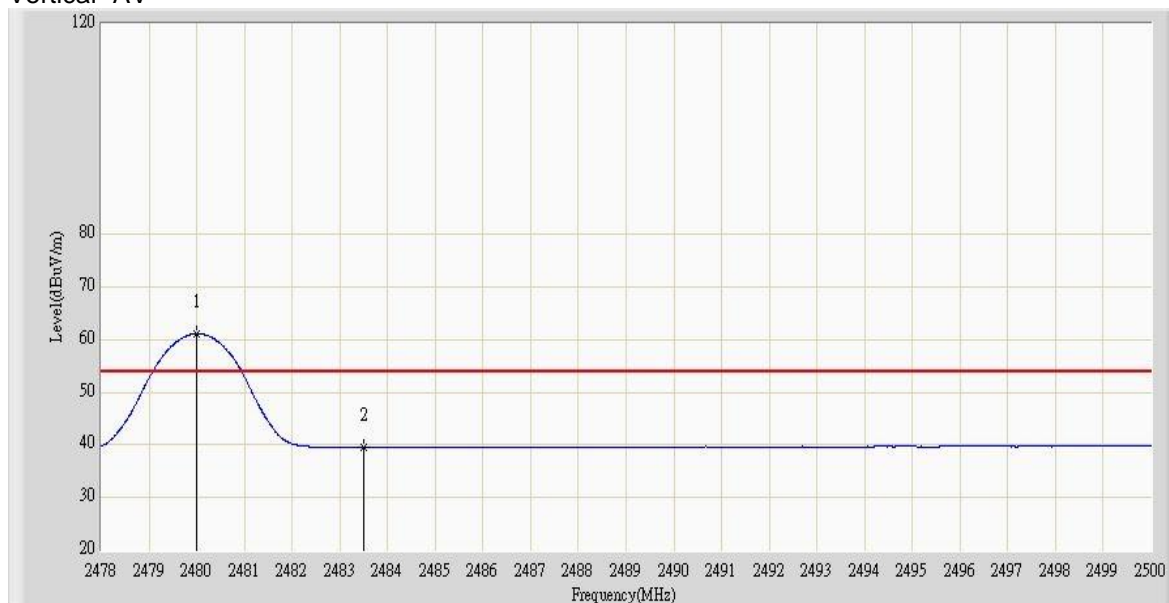
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Vertical -PK



Vertical -AV



Note: The upper diagram shows the vertical peak value and the lower diagram shows the horizontal value.

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6.1.2 Radiated Spurious Emission of Transmitter, FCC 15.205, FCC 15.209, FCC 15.247(d)

RESULT:

PASS

| | |
|-----------------------|-----------------------|
| Date of testing: | 2013-10-19 |
| Ambient temperature: | 23.5°C |
| Relative humidity: | 45% |
| Atmospheric pressure: | 101.5hPa |
| Frequency range: | 30MHz – 25GHz |
| Measurement distance: | 3m |
| Kind of test site: | Semi Anechoic Chamber |

Requirements:

Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a) and RSS-210 2.7 (Table 1), must comply with the radiated emission limits specified in FCC 15.209(a) (Table 2 and 3).

Test procedure:

ANSI C63.10-2009, RSS-Gen 4.9 and KDB 558074 D01 DTS Meas Guidance v03

The EUT was placed on a nonconductive turntable 0.8m above the ground plane. Before final measurements of radiated emissions were performed, the EUT was scanned to determine its emission spectrum profile. The EUT was pretested in floor-standing condition and in the table position and the worst case condition was table position which was used for the final measurements. The rotation through the three orthogonal axes is normally not needed for equipment that is not hand-held or body-worn.

The spectrum was examined from 30MHz to the 10th harmonic of the highest fundamental transmitter frequency (25GHz). Final radiated emission measurements were made at 3m distance.

At each frequency where a spurious emission was found, the EUT was rotated 360° and the antenna was raised and lowered from 1 to 4m in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations.

For frequencies between 30MHz and 1GHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1GHz, measurements were performed using the following settings: Peak: RBW & VBW = 1MHz, Average: RBW = 1MHz, VBW = 10Hz.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Emissions other than those mentioned are small or not detectable.

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Table 12: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, Mode A (2402MHz)

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1 | Horizontal | 4804.000 | 38.165 | 44.336 | -35.835 | 74.000 | -6.171 | PK |
| 2 | Horizontal | 7206.000 | 40.584 | 42.272 | -33.416 | 74.000 | -1.687 | PK |
| 3 | Vertical | 4808.000 | 43.946 | 50.224 | -30.054 | 74.000 | -6.278 | PK |
| 4 | Vertical | 7206.000 | 39.527 | 41.250 | -34.473 | 74.000 | -1.722 | PK |

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.

Table 13: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, Mode B (2442MHz)

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1 | Horizontal | 4884.000 | 38.935 | 45.106 | -35.065 | 74.000 | -6.171 | PK |
| 2 | Horizontal | 7326.000 | 41.981 | 43.318 | -32.019 | 74.000 | -1.337 | PK |
| 3 | Vertical | 4884.500 | 44.212 | 50.369 | -29.788 | 74.000 | -6.157 | PK |
| 4 | Vertical | 7326.000 | 41.813 | 43.150 | -32.187 | 74.000 | -1.337 | PK |

Table 14: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, Mode B (2442MHz)

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1 | Horizontal | 4960.000 | 37.957 | 44.212 | -36.043 | 74.000 | -6.255 | PK |
| 2 | Horizontal | 7440.000 | 43.985 | 44.801 | -30.015 | 74.000 | -0.816 | PK |
| 3 | Vertical | 4960.000 | 40.707 | 46.826 | -33.293 | 74.000 | -6.119 | PK |
| 4 | Vertical | 7440.000 | 44.300 | 45.116 | -29.700 | 74.000 | -0.816 | PK |

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values. Above 18 GHz emission far below limit

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7. Photographs of the Test Setup

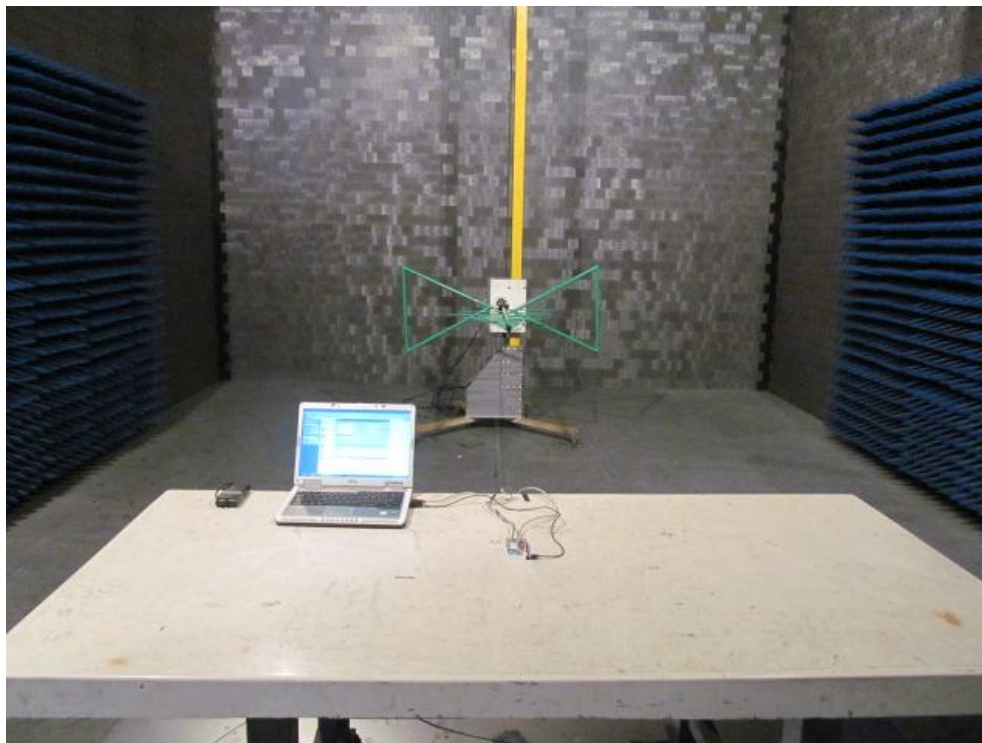
Photograph 1: Set-up for Conducted RF test at Antenna Port



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Photograph 2: Set-up for Radiated Emission, 30MHz-1000MHz



Photograph 3: Set-up for Radiated Emission, above 1GHz



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