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Auftraggeber: NovaComm technologies Inc.
Client: 902a,#560shengxia Rd.ZJ Innopark,shanghai,china

Gegenstand der Prüfung: Bluetooth Module 4.0 single mode
Test item:

Bezeichnung: NVC-MDCS71 **Serien-Nr.:** N/A
Identification: FCC ID :OC3BM1871 **Serial No.:**

Wareneingangs-Nr.: 154014968 **Eingangsdatum:**
Receipt No.: **Date of receipt:**

Zustand des Prüfgegenstandes bei Anlieferung: Test sample(s) is/are not damaged and
Condition of test item at delivery: suitable for testing.

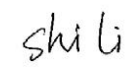
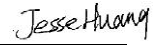
Prüfort: • TÜV Rheinland (Shanghai) Co., Ltd.
Testing location: • QuieTek Technology(Suzhou)Co., Ltd.
(Detailed address refer to clause 2.1)

Prüfgrundlage: FCC 47 CFR Part 15, Subpart C, § 15.247
Test specification: ANSI C63.4-2009
ANSI C63.10-2009
KDB 558074 D01 DTS Meas Guidance v02

Prüfergebnis: Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).
Test Result: The test item passed the test specification(s).

Prüflaboratorium: TÜV Rheinland (Shanghai) Co., Ltd.
Testing Laboratory: Building 2, No. 777 Guangzhong Road West, Shanghai 200072, P.R. China

geprüft/ tested by: **kontrolliert/ reviewed by:**

2013-03-19	Shili / Inspector		2013-03-19	Jesse Huang / Reviewer	
Datum	Name/Stellung	Unterschrift	Datum	Name/Stellung	Unterschrift
<i>Date</i>	<i>Name/Position</i>	<i>Signature</i>	<i>Date</i>	<i>Name/Position</i>	<i>Signature</i>

Sonstiges/ Other Aspects:

Abkürzungen:	P(ass) = entspricht Prüfgrundlage	Abbreviations:	P(ass) = passed
	F(ail) = entspricht nicht Prüfgrundlage		F(ail) = failed
	N/A = nicht anwendbar		N/A = not applicable
	N/T = nicht getestet		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.
This test report relates to the a. m. test item. 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 safety mark on this or similar products.

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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	08.11.2013
broadband antenna	BTA-H	040005H	28.07.2013
Spectrum analyzer	FSP30	100192	21.07.2013
Broadband coaxial preamplifier	BBV 9718	9718-012	04.07.2014
Double ridged broadband horn antenna	BBHA 9120 D	9120D-433	15.05.2013

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 Bluetooth module.

3.2 System Details

Radio standard:	Bluetooth 4.0 BLE
Specified output power:	5.19dBm
Antenna gain:	2dBi
Antenna type:	Ceramic antenna
Antenna cable length:	N/A
Frequency range:	2402 – 2480MHz
Number of channels:	40
Channel spacing:	2MHz
Modulation type:	

Rated voltage:	3.3V
Test voltage:	3.3V

3.2.1 Voltage Requirements, FCC 15.31(e)

RESULT: **PASS**

All the tests were performed using steady DC 3.3V. 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 (2442MHz), continuously.
- E. EUT receives (RX mode), at middle channel (2442MHz), continuously.
- F. EUT receives (RX mode), at highest channel (2442MHz), 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 v02

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) and RSS-210 A8.4(2)

RESULT:

PASS

Date of testing: 2013-3-5

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 v02

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.

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

Reading [dBm]	Correction Factor [dB]	RBW [MHz]	Output Power [dBm]	Limit [dBm]
4.73	0.63	3	4.73	30

Notes: Cable loss was included in reading as offset.

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

Reading [dBm]	Correction Factor [dB]	RBW [MHz]	Output Power [dBm]	Limit [dBm]
5.07	0.63	3	5.07	30

Notes: Cable loss was included in reading as offset.

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

Reading [dBm]	Correction Factor [dB]	RBW [MHz]	Output Power [dBm]	Limit [dBm]
5.19	0.63	3	5.19	30

Notes: Cable loss was included in reading as offset.

Remark:

The above results show that the worst case output power is found at the data rate of 1Mbps.

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5.1.2 6dB&99% Bandwidth, FCC 15.247(a)(2) and RSS-210 A8.2(a)

Date of testing: 2013-3-5

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, RSS-Gen 4.6.2 and KDB 558074 D01 DTS Meas Guidance v02

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.

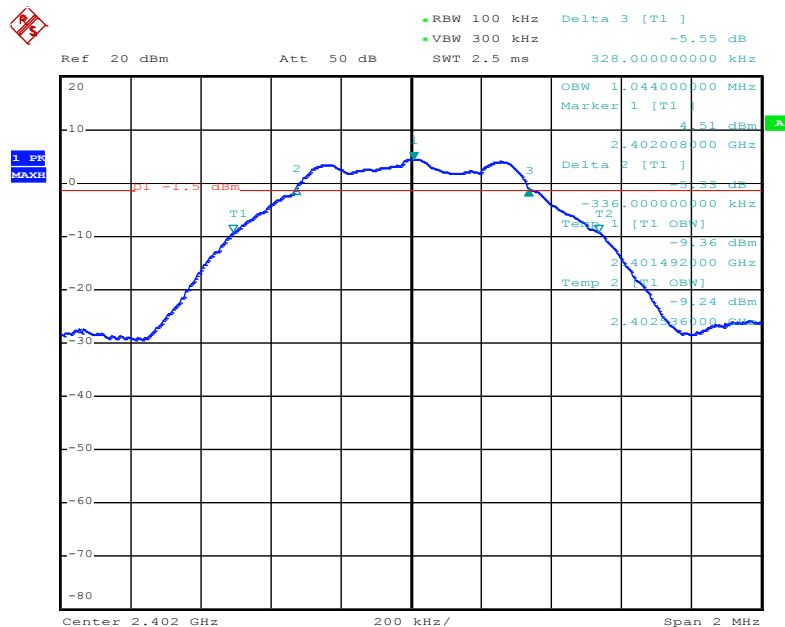
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Table 6: 6dB&99% Bandwidth

Operating Frequency [MHz]	99dB Bandwidth[MHz]	6dB Bandwidth[MHz] limit 500KHz
2402	1.044	0.664
2442	1.044	0.672
2480	1.044	0.672

Figure 1: 6dB & 99% Bandwidth, Mode A

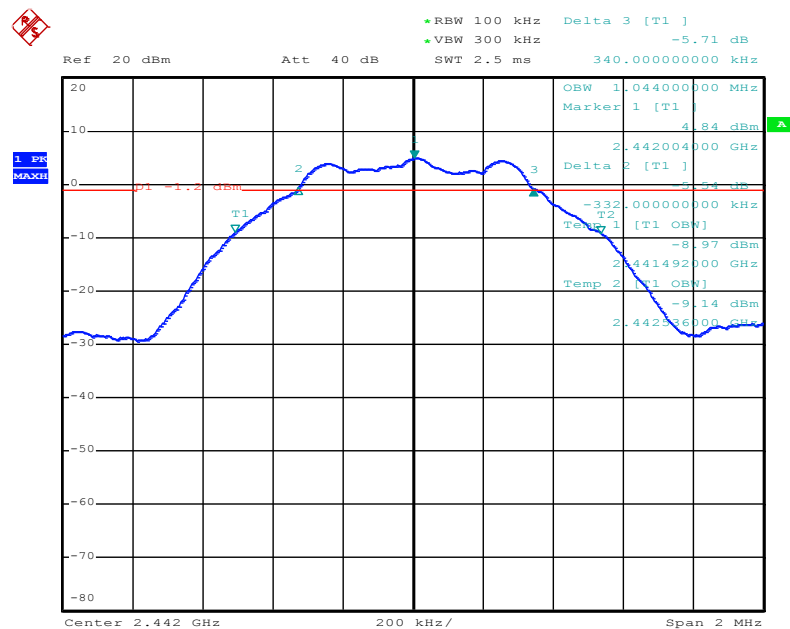


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Figure 2: 6dB & 99% Bandwidth, Mode B

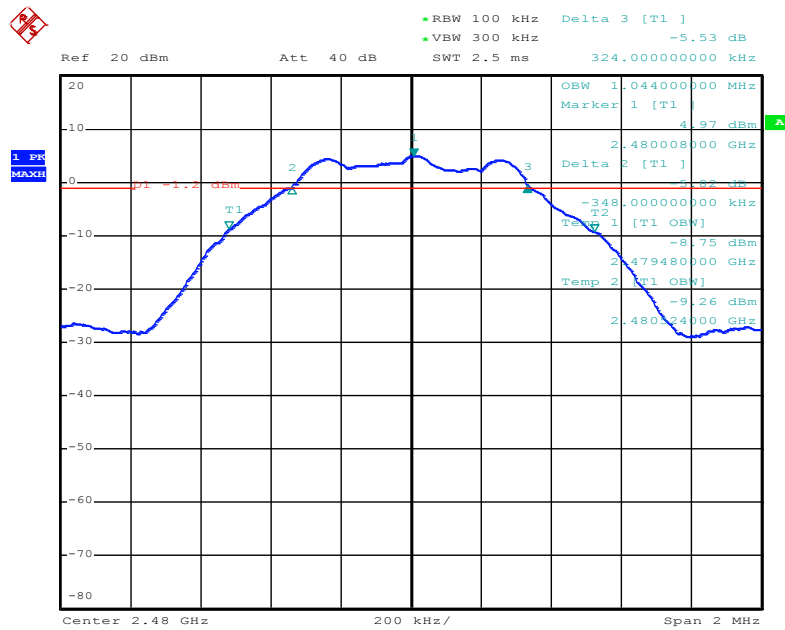


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Figure 3: 6dB & 99% Bandwidth, Mode C



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5.1.3 Power Spectral Density (PSD), FCC 15.247(e) and RSS-210 A8.2

RESULT:

PASS

Date of testing: 2013-3-5

Ambient temperature: 20°C

Relative humidity: 39.6%

Atmospheric pressure: 101.5hPa

Requirements:

According to FCC section 15.247(e) and RSS-A8.2(b), 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 v02

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.

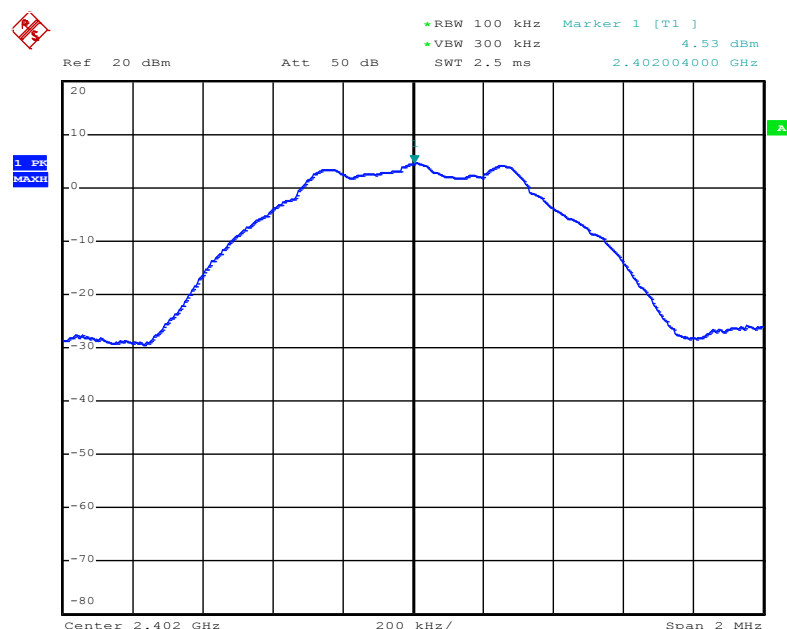
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Table 7: Power spectral density

Frequency [MHz]	Reading [dBm/100KHz]	PSD [dBm/3KHz]	Limit [dBm/3kHz]
Low	4.53	-10.67	8
Middle	4.90	-10.3	8
High	5.04	-10.16	8
Correction factor= $10\log(3\text{KHz}/100\text{KHz})=-15.2\text{dBm}$			

Figure 4: Power spectral density, Mode A

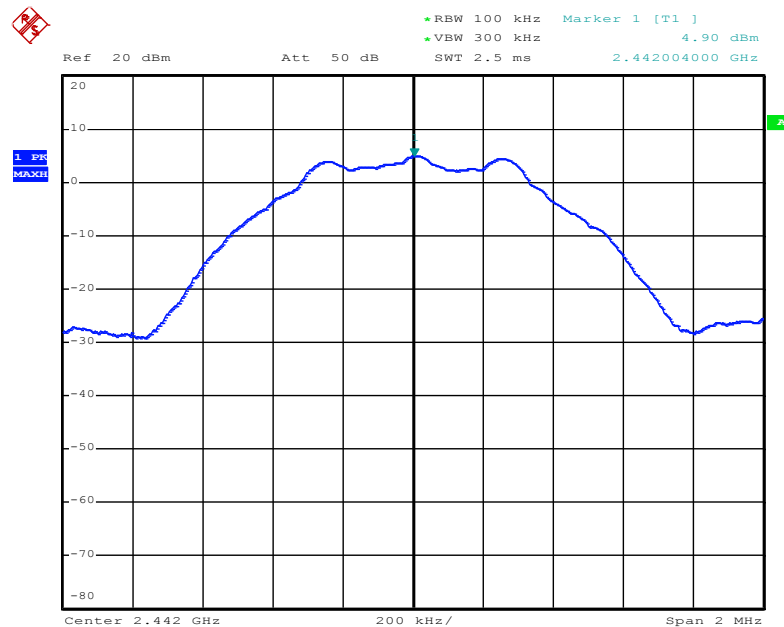


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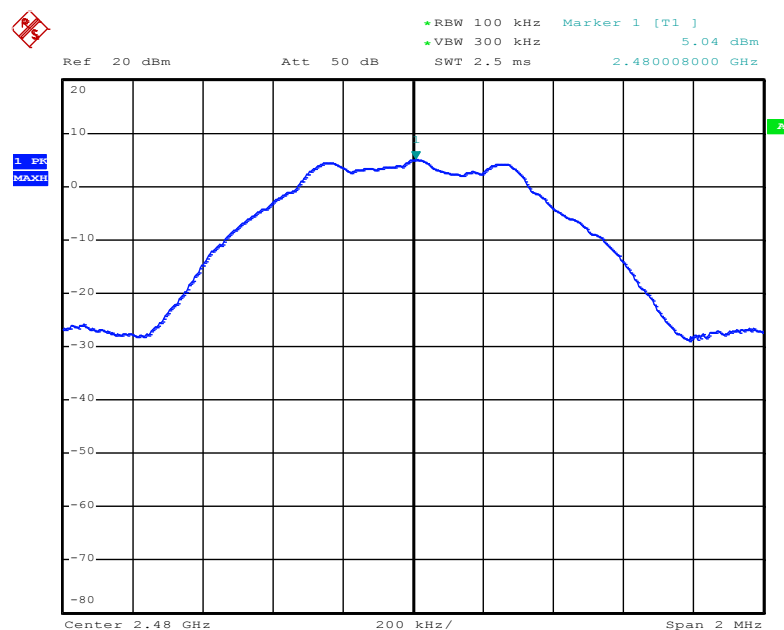
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Figure 5: Power spectral density, Mode B



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Figure 6: Power spectral density, Mode C



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5.1.4 Conducted Spurious Emission, FCC 15.247(d) and RSS-210 A8.5

RESULT:

PASS

Date of testing: 2013-3-5

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, RSS-Gen 4.9 and KDB 558074 D01 DTS Meas Guidance v02

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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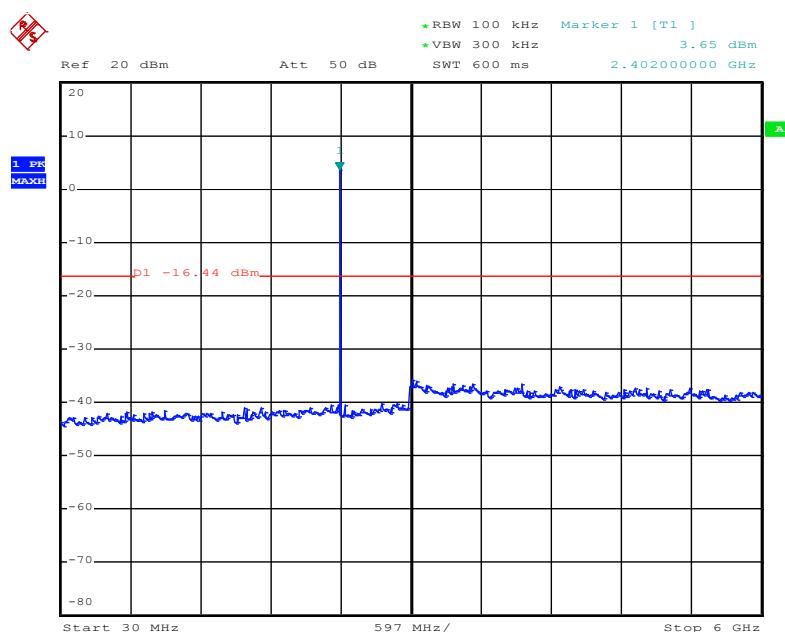
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Table 8: Conducted Spurious Emission, Mode A

Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
25520	-20.96	-20.96	-16.44	4.52
N/A	N/A	N/A	-16.44	N/A
2402	3.65	3.65	N/A	N/A

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

Figure 7: Conducted Spurious Emission, 30MHz – 6GHz, Mode A

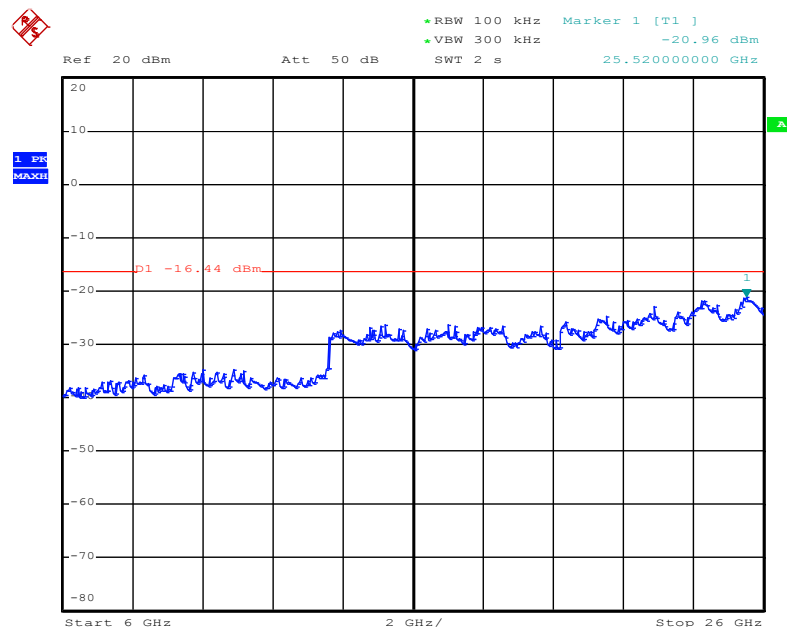


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Figure 8: Conducted Spurious Emission, 6 – 26GHz, Mode A



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Table 9: Conducted Spurious Emission, Mode B

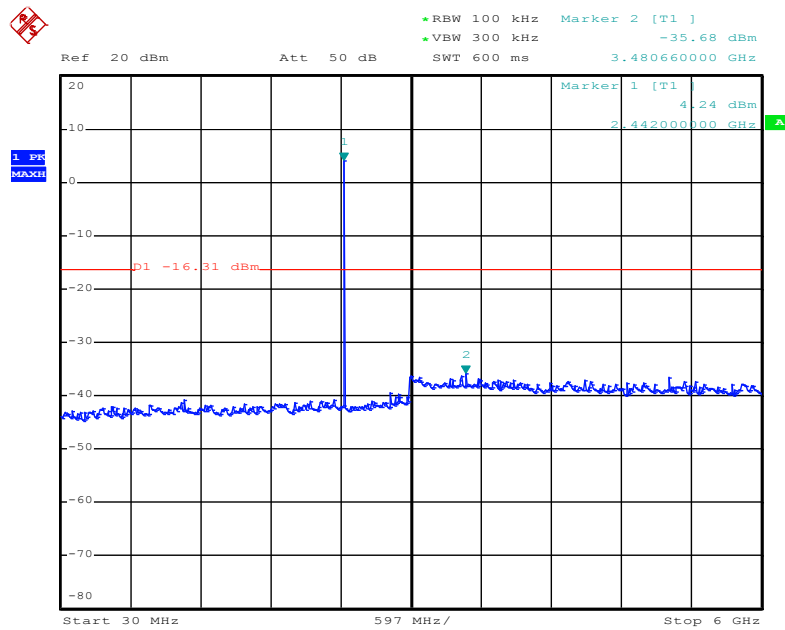
Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
25580	-21.11	-21.11	-16.31	4.8
3480	-35.68	-35.68	-16.31	19.37
2442	4.24	4.24	NA	N/A

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

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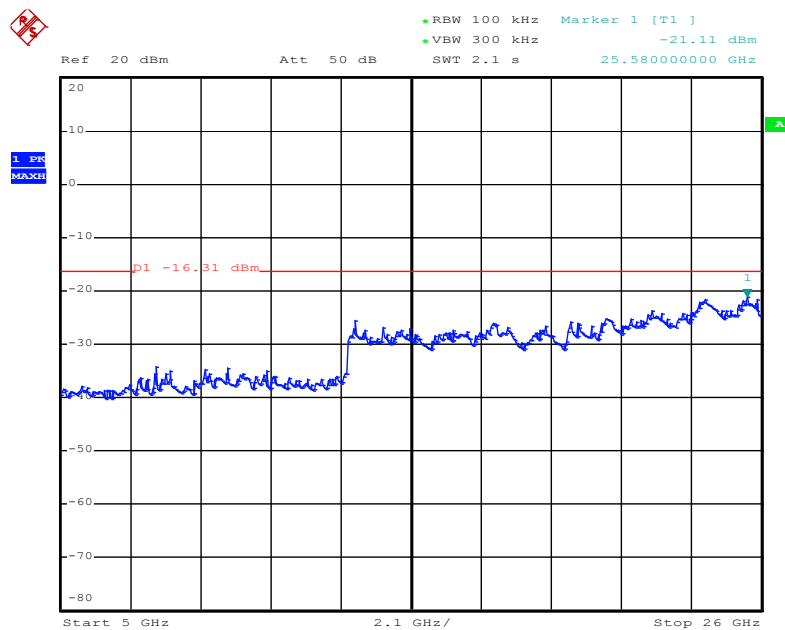
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Figure 9: Conducted Spurious Emission, 30MHz – 6GHz, Mode B



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Figure 10: Conducted Spurious Emission, 6 – 26GHz, Mode B



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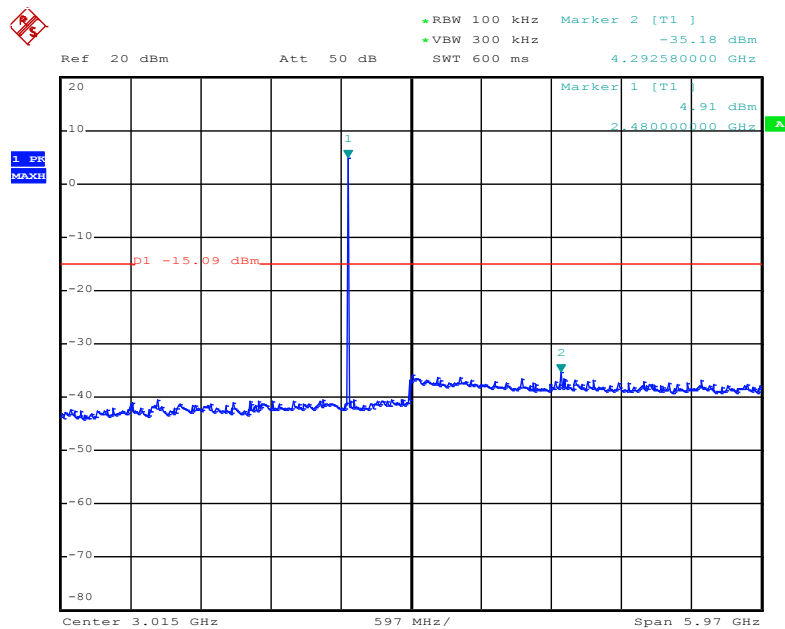
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Table 10: Conducted Spurious Emission, Mode C

Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
25600	-20.81	-20.81	-15.09	5.72
4292	-35.18	-35.18	-15.09	20.09
2480	4.91	4.91	N/A	N/A

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

Figure 11: Conducted Spurious Emission, 30MHz – 6GHz, Mode C

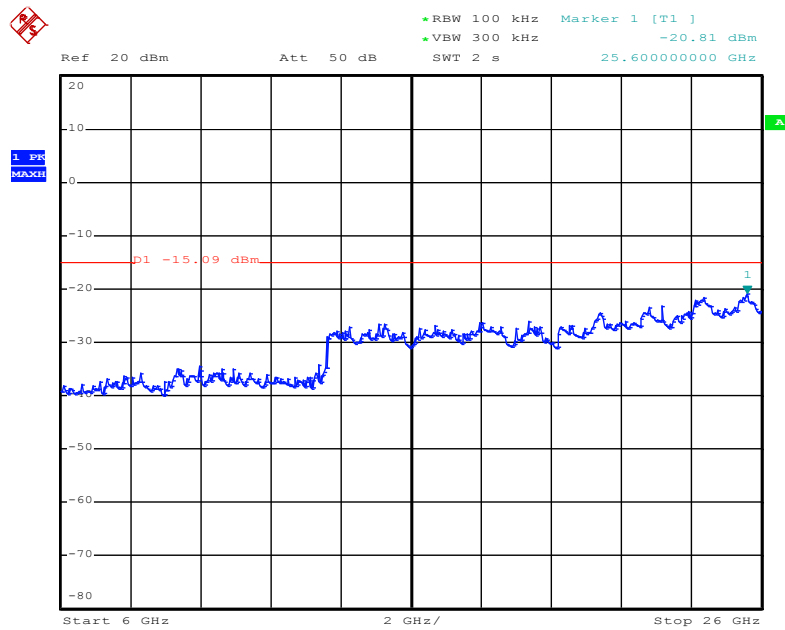


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Figure 12: Conducted Spurious Emission, 6 – 26GHz, Mode C



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5.1.5 Band Edge Compliance of RF Conducted Emission, FCC 15.247(d) and RSS-210 A8.5

RESULT:

PASS

Date of testing: 2013-3-5

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 v02

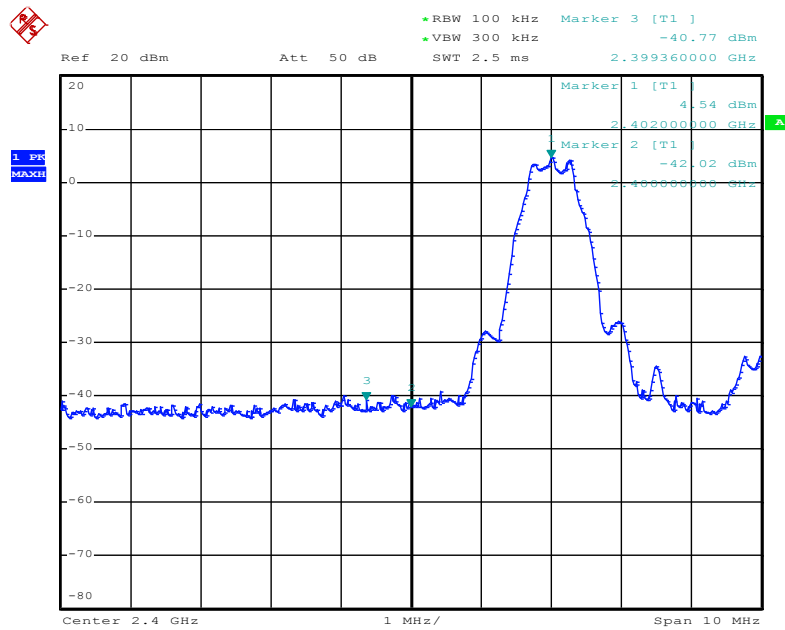
A spectrum analyzer was connected to the antenna port of the EUT. The analyzer resolution bandwidth was set to 100kHz and video bandwidth was set to 300kHz. Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this 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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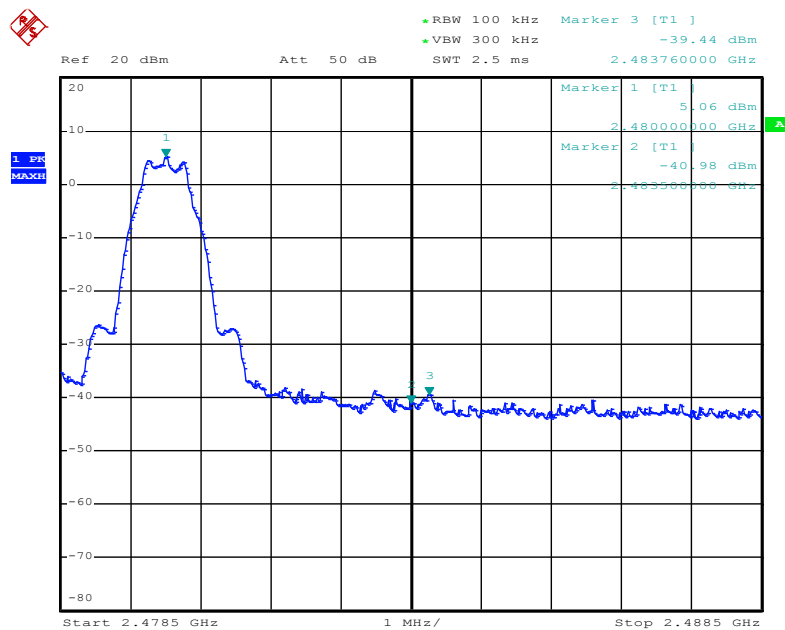
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Figure 13: Lower Band Edge Conducted



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Figure 14: Upper Band Edge Conducted



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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), RSS-210 2.2, RSS-210 2.6 and RSS-210 A8.5

RESULT:

Pass

Date of testing: 2013-3-5

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) and RSS-210 2.7 (Table 2 and 3).

Test procedure:

ANSI C63.10-2009, RSS-Gen 4.9 and KDB 558074 D01 DTS Meas Guidance v02

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	55.912	25.197	-18.088	74.000	30.715	PK
2	Horizontal	2399.898	56.621	25.911	-17.379	74.000	30.710	PK
3	Horizontal	2401.980	91.359	60.649	N/A	N/A	30.710	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2390.000	42.833	12.118	-11.167	54.000	30.715	AV
2	Horizontal	2399.898	42.911	12.201	-11.089	54.000	30.710	AV
3	Horizontal	2401.950	90.820	60.110	N/A	N/A	30.710	AV

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2390.000	56.746	26.031	-17.254	74.000	30.715	PK
2	Vertical	2399.898	56.894	26.184	-17.106	74.000	30.710	PK
3	Vertical	2402.020	98.830	68.120	N/A	N/A	30.710	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2390.000	42.873	12.158	-11.127	54.000	30.715	AV
2	Vertical	2399.898	43.303	12.593	-10.697	54.000	30.710	AV
3	Vertical	2401.950	98.767	68.057	N/A	N/A	30.710	AV

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2480.013	87.636	56.906	N/A	N/A	30.730	PK
2	Horizontal	2483.500	55.798	25.068	-18.202	74.000	30.730	PK
3	Horizontal	2484.900	55.458	24.728	-18.542	74.000	30.730	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2480.048	87.434	56.704	N/A	N/A	30.730	AV
2	Horizontal	2483.500	43.228	12.498	-10.772	54.000	30.730	AV
3	Horizontal	2484.900	43.144	12.414	-10.856	54.000	30.730	AV

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2480.013	94.660	63.930	N/A	N/A	30.730	PK
2	Vertical	2483.500	57.020	26.290	-16.980	74.000	30.730	PK
3	Vertical	2484.900	56.532	25.802	-17.468	74.000	30.730	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2480.013	94.547	63.817	N/A	N/A	30.730	AV
2	Vertical	2483.500	43.364	12.634	-10.636	54.000	30.730	AV
3	Vertical	2484.900	43.219	12.489	-10.781	54.000	30.730	AV

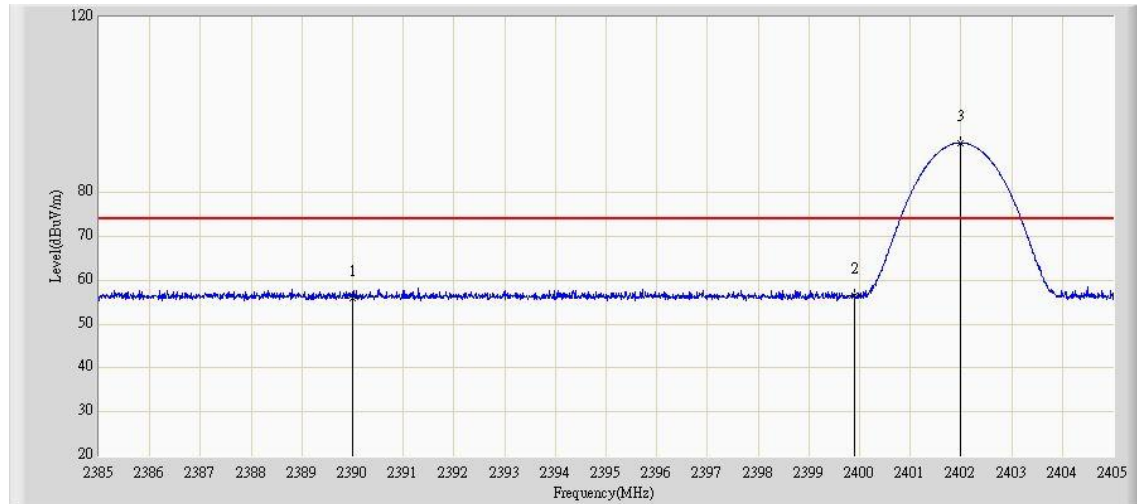
Notes: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBuV/m is calculated as follows: Average limit = $20 \times \log(500\mu\text{V/m})$.
Peak limit in dBuV/m is calculated as follows: Peak limit = Average limit + 20dB.

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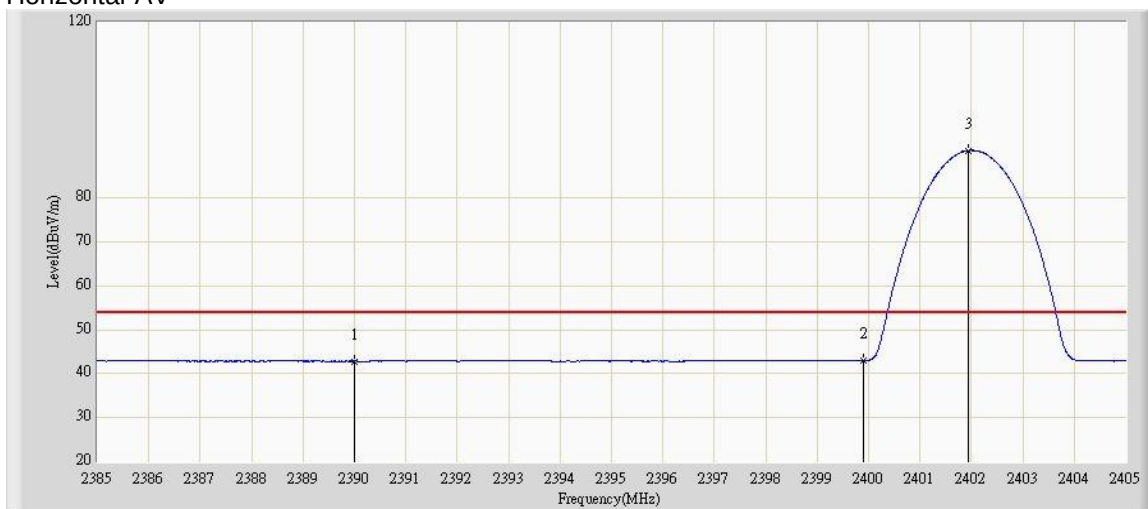
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Figure 15: Band Edge Radiated Emission, Spectral Diagram, Mode A (2402MHz)

Horizontal-PK



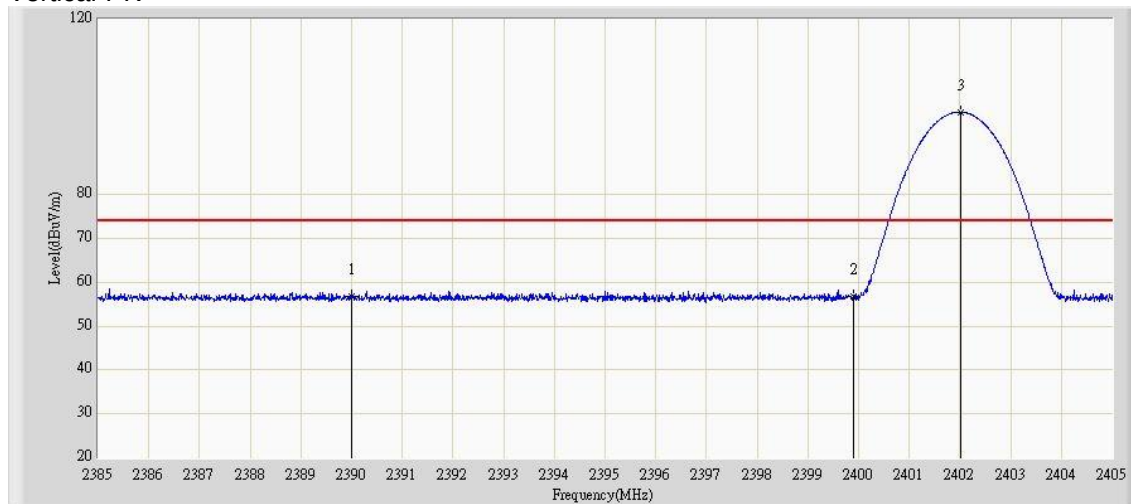
Horizontal-AV



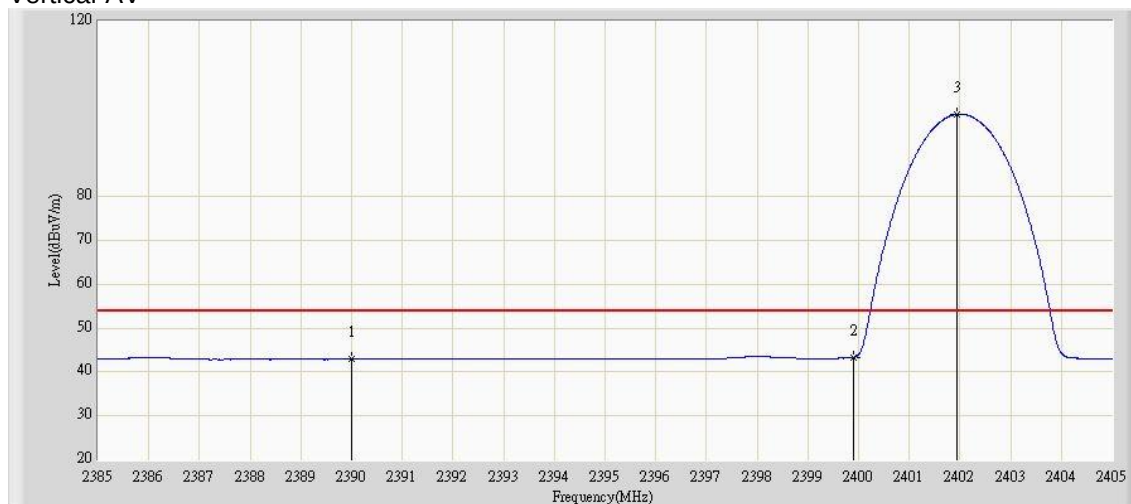
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Vertical-PK



Vertical-AV



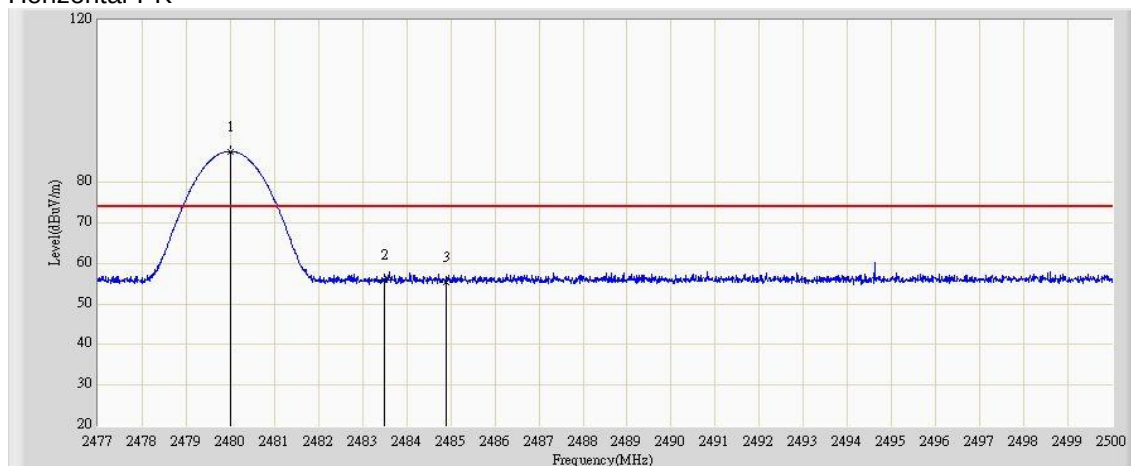
Note: The upper diagram shows the vertical peak value and the lower diagram shows the horizontal value.

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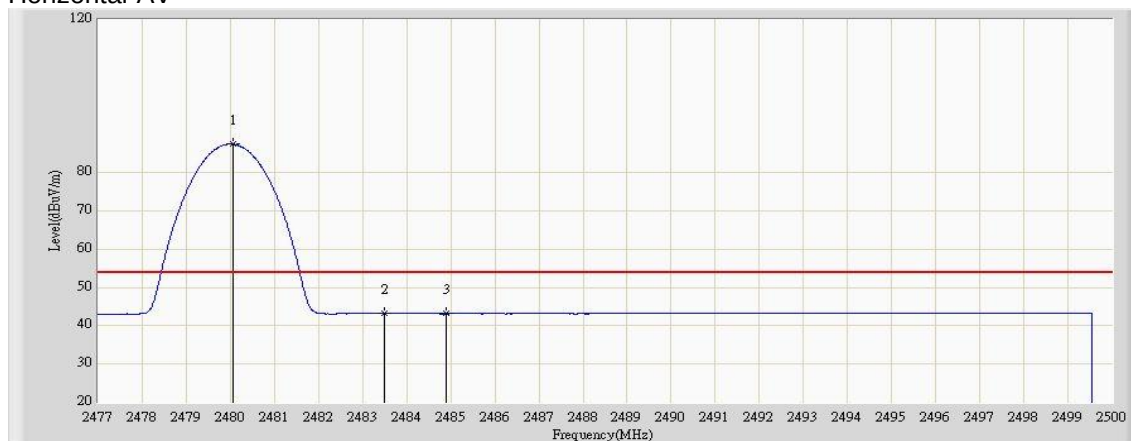
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Figure 16: Band Edge Radiated Emission, Spectral Diagram, Mode C (2402MHz)

Horizontal-PK



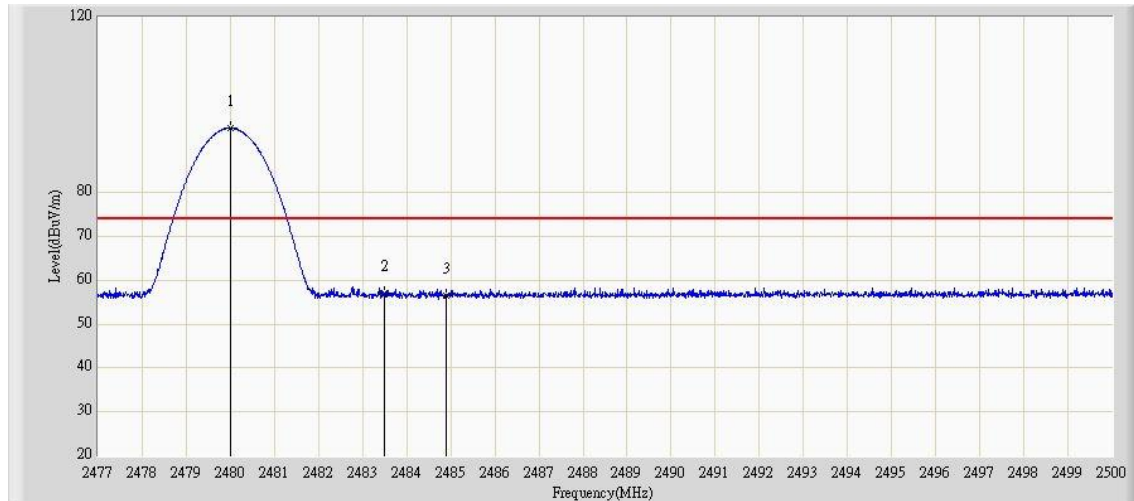
Horizontal-AV



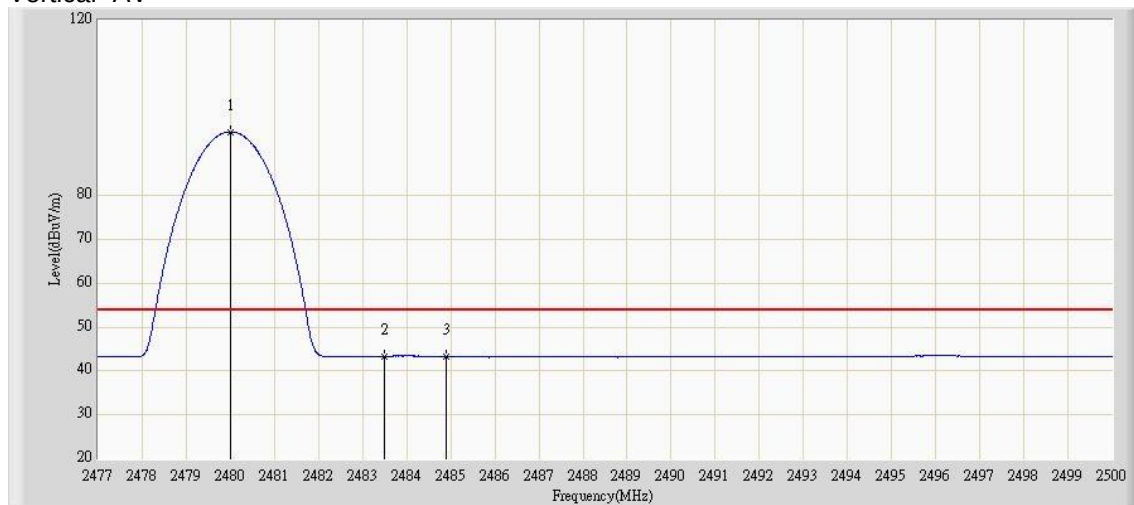
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Vertical -PK



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), RSS-210 2.2, RSS-210 2.6 and RSS-210 A8.5

RESULT:

PASS

Date of testing:	2013-3-12
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) and RSS-210 2.7 (Table 2 and 3).

Test procedure:

ANSI C63.10-2009, RSS-Gen 4.9 and KDB 558074 D01 DTS Meas Guidance v02

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	42.127	53.3	-31.873	74	-11.173	PK
2	Horizontal	7206.000	47.638	50.684	-26.362	74	-3.046	PK
3	Vertical	4804.000	42.178	53.351	-31.822	74	-11.173	PK
4	Vertical	7206.000	47.021	50.067	-26.979	74	-3.046	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	42.424	53.465	-31.576	74	-11.041	PK
2	Horizontal	7326.000	45.365	48.048	-28.635	74	-2.683	PK
3	Vertical	4884.500	43.566	54.606	-30.434	74	-11.04	PK
4	Vertical	7326.000	48.462	51.145	-25.538	74	-2.683	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	43.468	54.41	-30.532	74	-10.942	PK
2	Horizontal	7440.000	45.468	47.786	-28.532	74	-2.318	PK
3	Vertical	4995.000	43.345	54.265	-30.655	74	-10.92	PK
4	Vertical	7440.000	44.365	46.683	-29.635	74	-2.318	PK

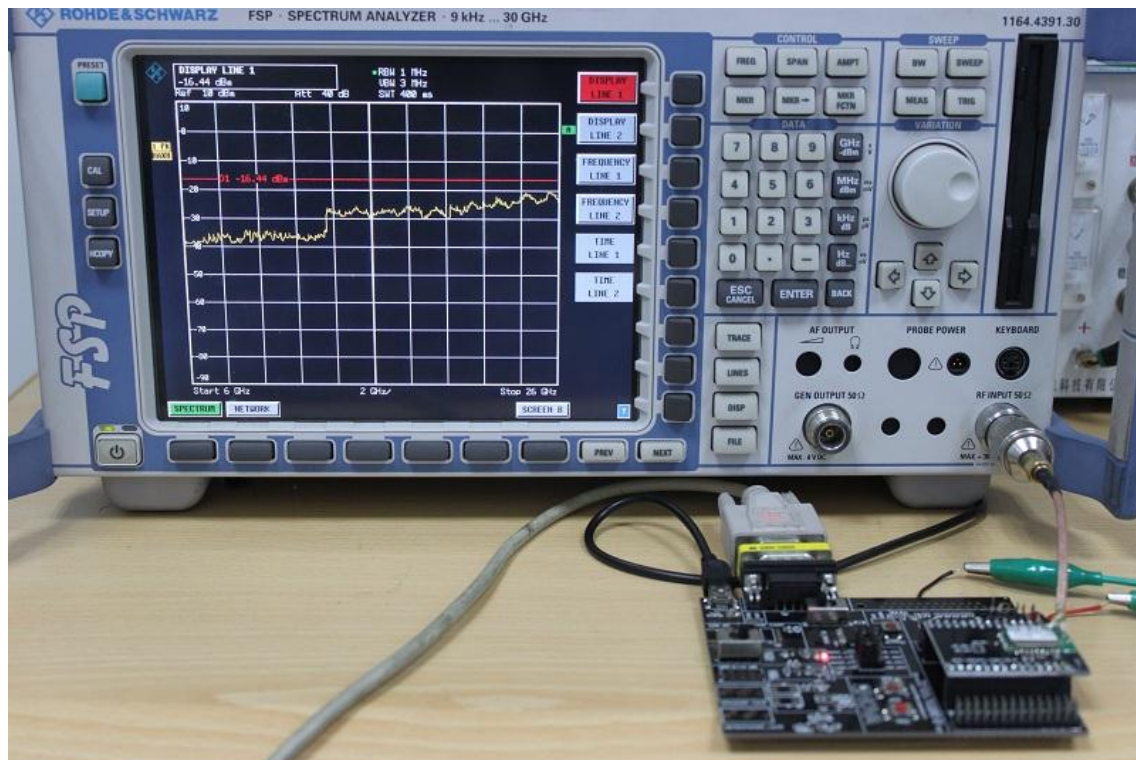
Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values. Above 18 GHz emission far below limit

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7. Photographs of the Test Setup

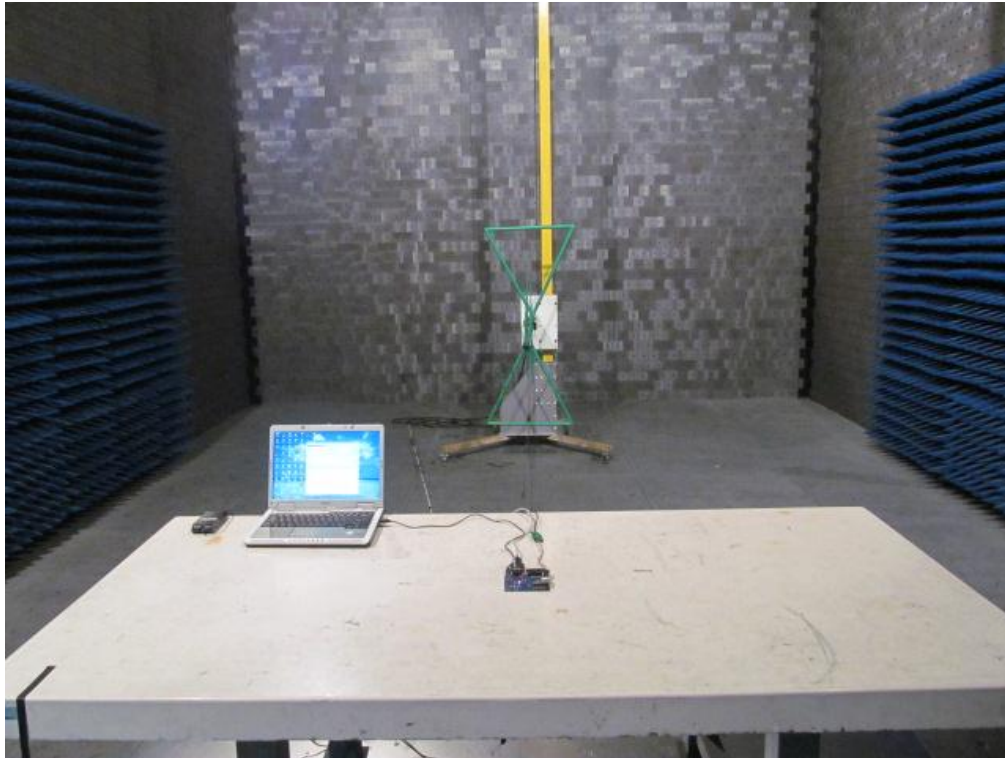
Photograph 1: Set-up for Conducted RF test at Antenna Port



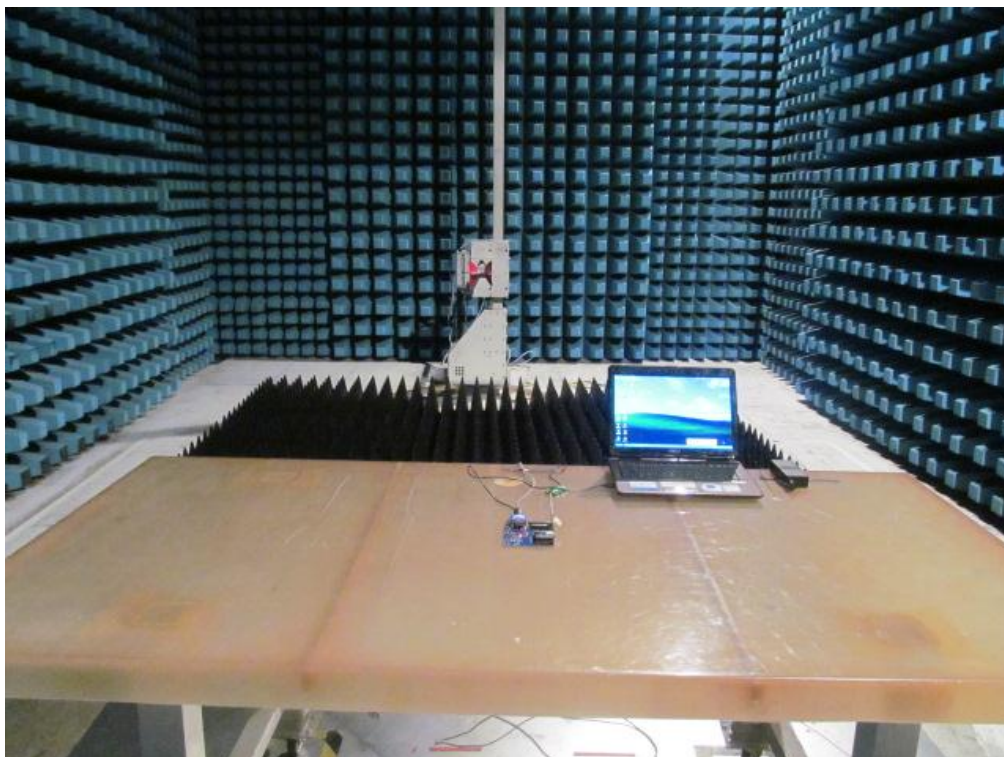
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Photograph 2: Set-up for Radiated Emission, 30MHz-1000MHz



Photograph 3: Set-up for Radiated Emission, 1G-18GHz



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