Prüfbericht-Nr.: *Test Report No.:*	**15071093 001**	**Auftrags-Nr.:** *Order No.:*	154045996	Seite 1 von 41 *Page 1 of 41*
Kunden-Referenz-Nr.: *Client Reference No.:*	431732	**Auftragsdatum:** *Order date:*	2014.02.12	
Auftraggeber: *Client:*	NeuroSky Inc. 125 South Market Street, Suite 900, San Jose, CA, 95113, USA			
Prüfgegenstand: *Test item:*	Life Beat			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	80051-XXX FCC ID :XG9-LB001			
Auftrags-Inhalt: *Order content:*	Complete test			
Prüfgrundlage: *Test specification:*	FCC CFR47 Part 15, Subpart C ANSI C63.10-2009 KDB 558074 D01 DTS Meas Guidance v03r01			

Wareneingangsdatum: *Date of receipt:*	25.02.2014
Prüfmuster-Nr.: *Test sample No.:*	NA
Prüfzeitraum: *Testing period:*	04.05.2014 – 10.06.2014
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:* Adrian Shi

Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*
10.06.2014	Adrian Shi / PE	

kontrolliert von / *reviewed by:*

Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*
10.06.2014	Sam Lin / TC	

Sonstiges / *Other:* Series 80051 with the last 3 digits stands for only specific difference color

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *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.
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.

V04

TEST SUMMARY

3.2.1 VOLTAGE REQUIREMENTS, FCC 15.31(E)
RESULT: PASS

3.2.2 ANTENNA REQUIREMENTS, FCC 15.203, FCC 15.204
RESULT: PASS

5.1.1 CONDUCTED OUTPUT POWER, FCC 15.247(B)(1) & (3)
RESULT: PASS

5.1.2 6DB & 99% BANDWIDTH, FCC 15.247(A)(1) & (2)
RESULT: PASS

5.1.3 POWER SPECTRAL DENSITY (PSD), FCC 15.247(E)
RESULT: PASS

5.1.4 CONDUCTED SPURIOUS EMISSION, FCC 15.247(D)
RESULT: PASS

5.1.5 BAND EDGE COMPLIANCE OF RF CONDUCTED EMISSION, FCC 15.247(D)
RESULT: PASS

6.1.1 BAND EDGE RADIATED EMISSION, FCC 15.205, FCC 15.209, FCC 15.247(D)
RESULT: PASS

6.1.2 RADIATED SPURIOUS EMISSION OF TRANSMITTER, FCC 15.205, FCC 15.209, FCC 15.247(D)
RESULT: PASS

6.2.1 RADIATED SPURIOUS EMISSION OF RECEIVER, FCC 15.109
RESULT: PASS

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1. General Remarks

1.1 Complementary Materials

Null

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.

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
Spectrum analyzer	E4440A	MY42510355	28.04.2015
Broadband coaxial preamplifier	BBV 9718	9718-012	04.07.2014
Power Meter	E4416A	MY45101575	16.09.2014
Double ridged broadband horn antenna	BBHA 9120 D	9120D-433	21.04.2015

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

3. General Product Information

3.1 Product Function and Intended Use

The EUT (Equipment Under Test) is an activity tracker in a wrist band form factor.

3.2 System Details

Radio standard:	Bluetooth 4.0 single mode
Max output power:	2.92dBm
Antenna gain:	1.7dBi
Antenna type:	Ceramic Chip Antenna
Antenna Manufactory:	Pulse Finland Oy
Antenna cable length:	N/A
Frequency range:	2402 – 2480MHz
BLE Number of channels:	40
BLE Channel spacing:	2MHz
Modulation type:	BLE（GFSK）
Rated voltage:	DC 3.3V
Test voltage:	DC 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

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 C63.10:2009.

Bluetooth LE 4.0 mode:
Testing was performed at the lowest operating frequency (2402MHz), at the operating frequency in the middle of the specified frequency band (2440MHz) and at the highest operating frequency (2480MHz) with different modulation types.

Bluetooth 4.0 BLE 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 (2440MHz), 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 (2440MHz), 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 v03r01

4.2 Physical Configuration for Testing

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

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.

5. Test Results of Conducted Measurements at Antenna Port

5.1 Transmitter Parameters

5.1.1 Conducted Output Power, FCC 15.247(b)(1) & (3)

RESULT: **PASS**

Date of testing: 2014-5-5

Ambient temperature: 22.3°C
Relative humidity: 40.1%
Atmospheric pressure: 101.7hPa

Requirements:

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum peak conducted output power of the intentional radiator shall not exceed1 Watt.

Test procedure:

ANSI C63.10-2009 and KDB 558074 D01 DTS Meas Guidance v03r01.

The maximum peak output power was measured using a broadband peak RF power meter. The power meter has a video bandwidth that is greater than or equal to the 1MHz and utilize a fast-responding diode detector.

Table 3: Conducted Output Power

Operating Frequency [MHz]	Output Power [dBm]	Limit [dBm]
2402	2.92	30
2440	2.81	30
2480	2.69	30

5.1.2 6dB & 99% Bandwidth, FCC 15.247(a)(1) & (2)

RESULT: **PASS**

Date of testing: 2014-5-5

Ambient temperature: 22.3°C
Relative humidity: 40.1%
Atmospheric pressure: 101.7hPa

Requirements:

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test procedure:

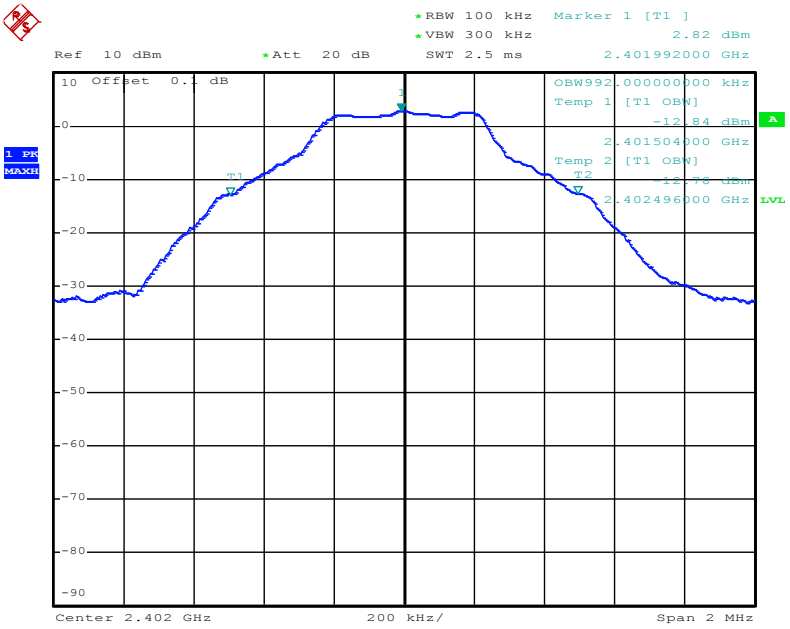
ANSI C63.10-2009 and KDB 558074 D01 DTS Meas Guidance v03r01

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.

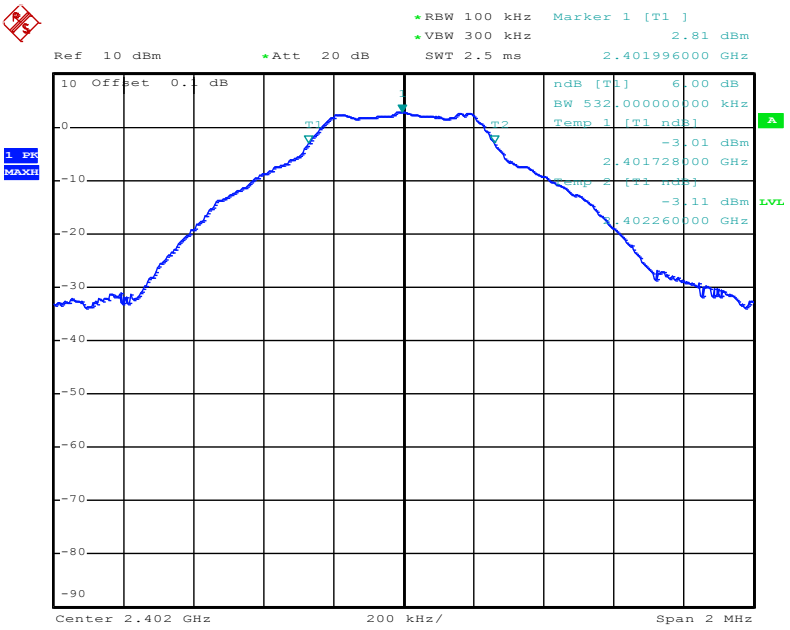
Table 4: 6dB & 99% Bandwidth

Operating Frequency [MHz]	99%dB Bandwidth [KHz]	6dB Bandwidth [KHz]	limit [KHz]
2402	992	532	500
2440	992	528	500
2480	976	544	500

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

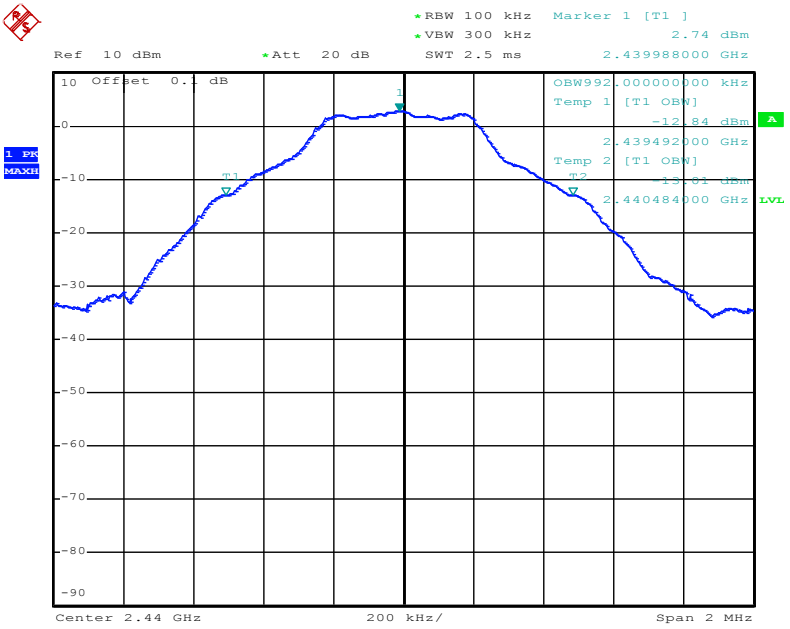


Date: 1.JAN.2000 02:13:10

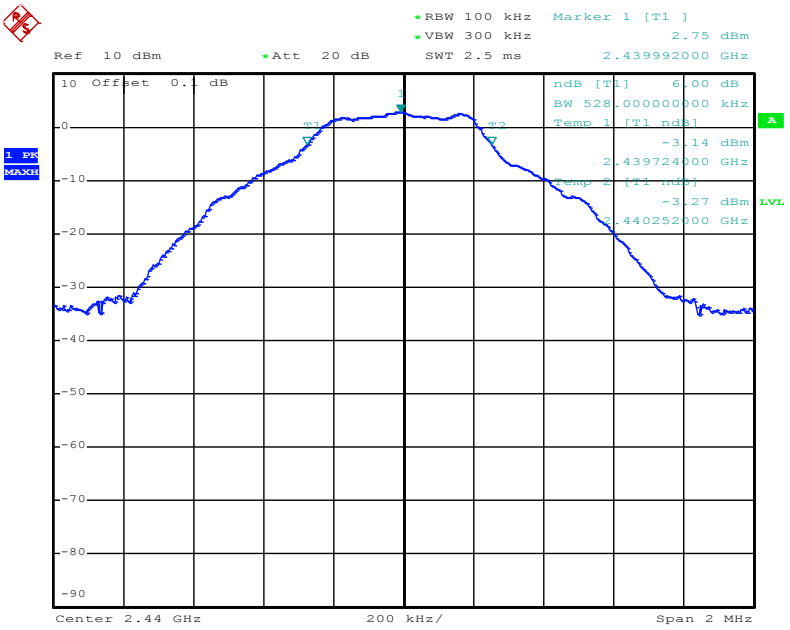


Date: 1.JAN.2000 02:16:45

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

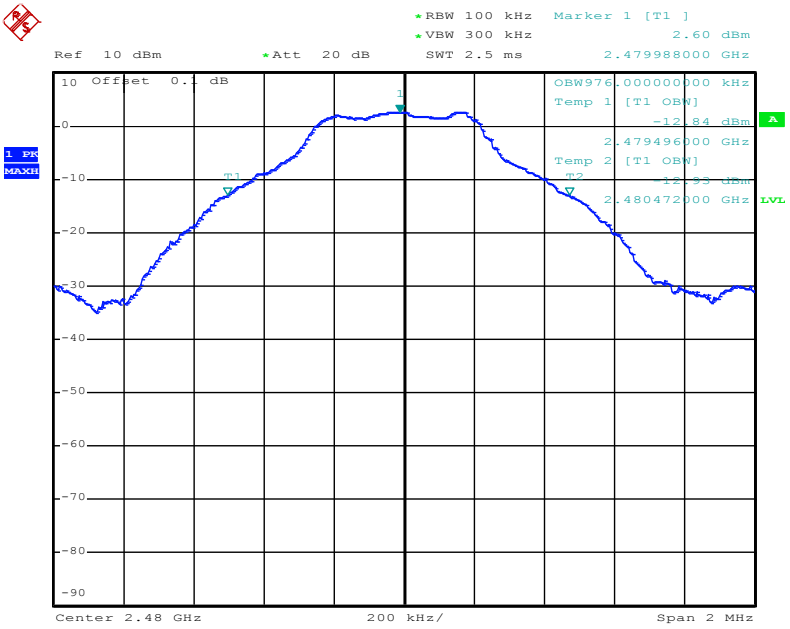


Date: 1.JAN.2000 02:13:58

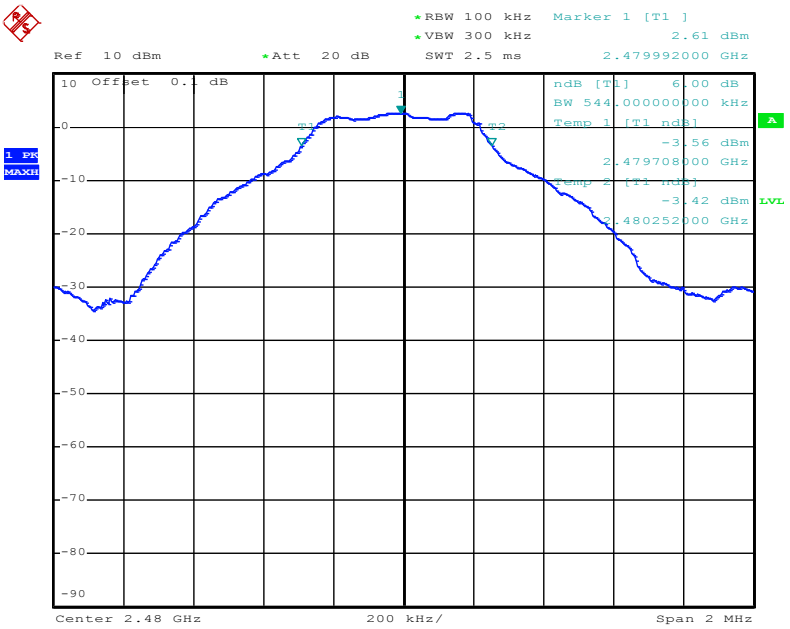


Date: 1.JAN.2000 02:15:58

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



Date: 1.JAN.2000 02:14:35



Date: 1.JAN.2000 02:15:23

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

RESULT: **PASS**

Date of testing:	2014-5-5
Ambient temperature:	22.3°C
Relative humidity:	40.1%
Atmospheric pressure:	101.7hPa

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 v03r01.

A spectrum analyzer was connected to the antenna port of the EUT. The analyzer resolution bandwidth was set to 3kHz.

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

Table 5: Power spectral density

Frequency [MHz]	PSD [dBm/3KHz]	Limit [dBm/3kHz]
Low	-6.98	8
Middle	-6.01	8
High	-7.71	8

Figure 4: Power spectral density, Mode A

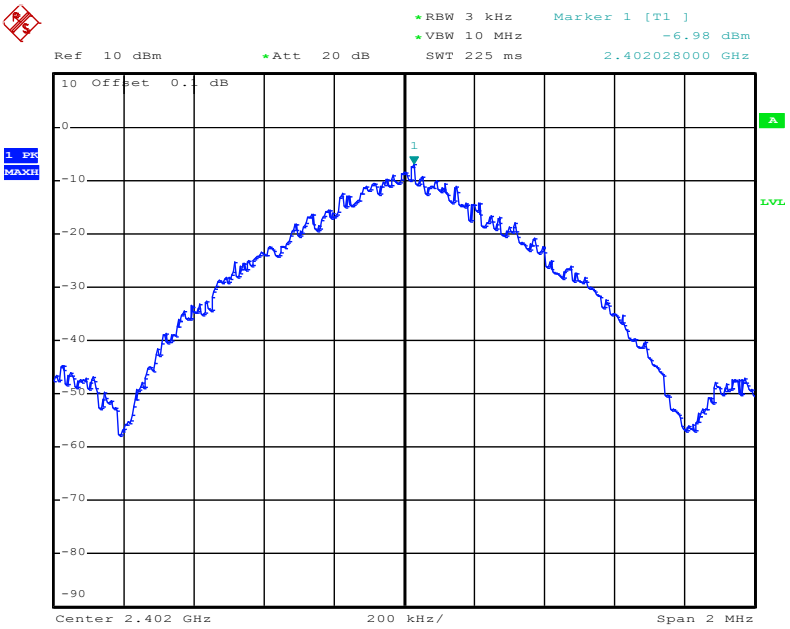


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Figure 5: Power spectral density, Mode B

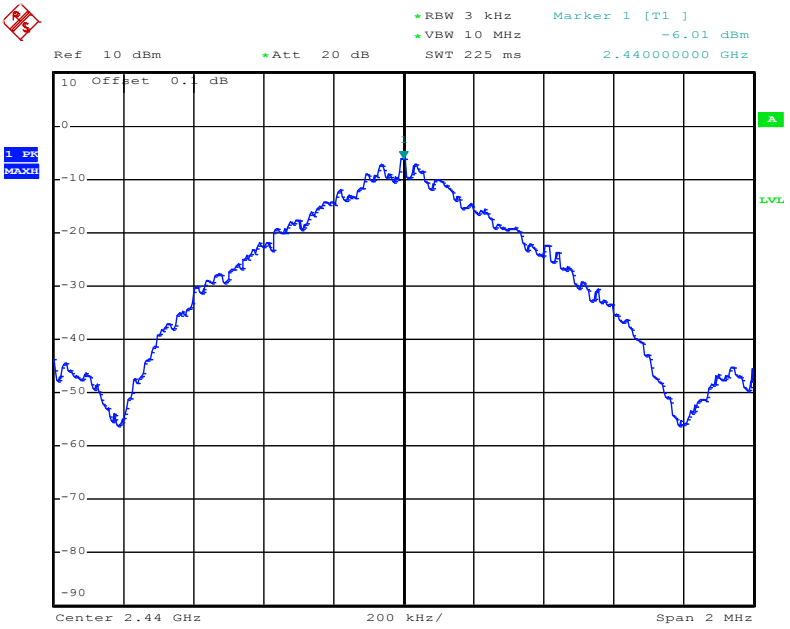

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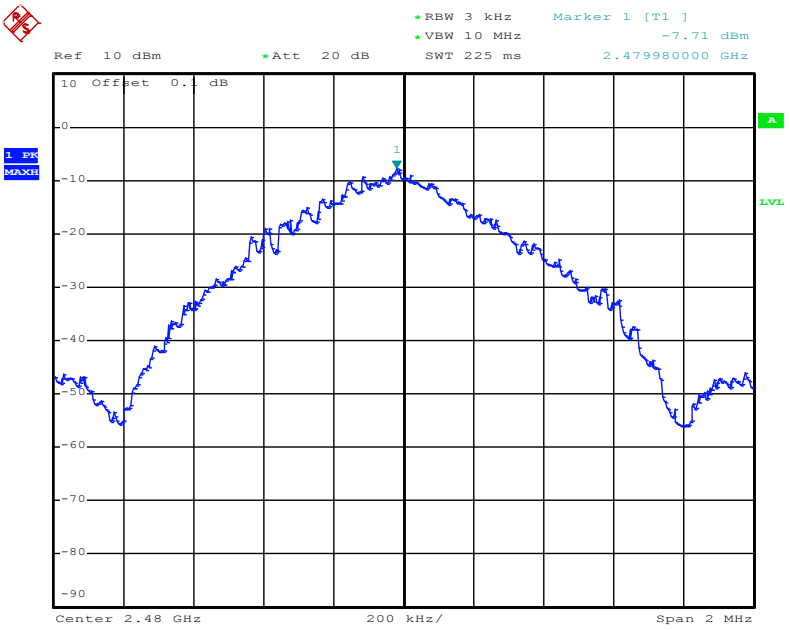
Figure 6: Power spectral density, Mode C



Date: 1.JAN.2000 02:40:48

5.1.4 Conducted Spurious Emission, FCC 15.247(d)

RESULT: **PASS**

Date of testing: 2014-5-5

Ambient temperature: 22.3°C
Relative humidity: 40.1%
Atmospheric pressure: 101.7hPa

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 v03r01.

.

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 25GHz (10th harmonics).

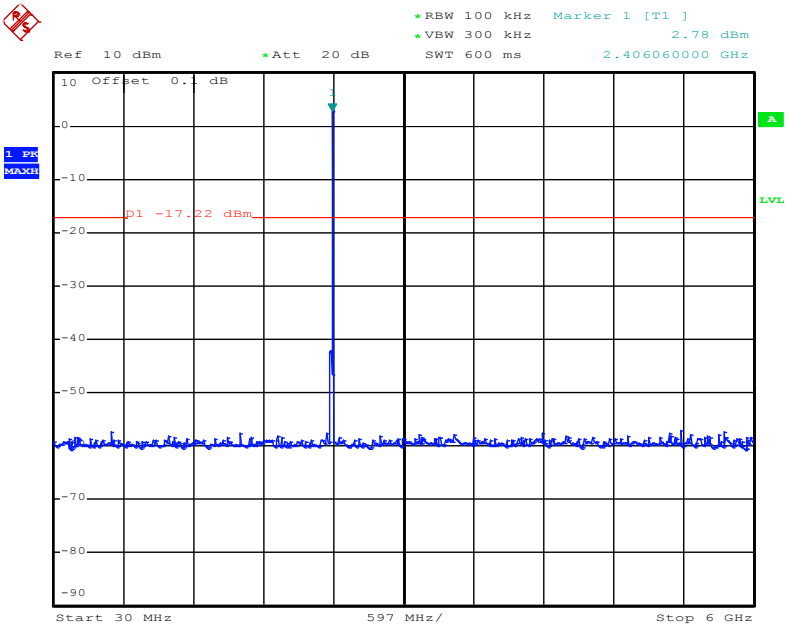
The final measurement takes into account the loss generated by all the involved cables.

Table 6: Conducted Spurious Emission,

Channel	Frequency [MHz]	Reading [dBm]	Limit [dBm]	Margin [dB]
Low	25520	-50.00	-17.22	32.78
Middle	25520	-49.15	-17.60	31.55
High	25640	-49.21	-17.37	31.84

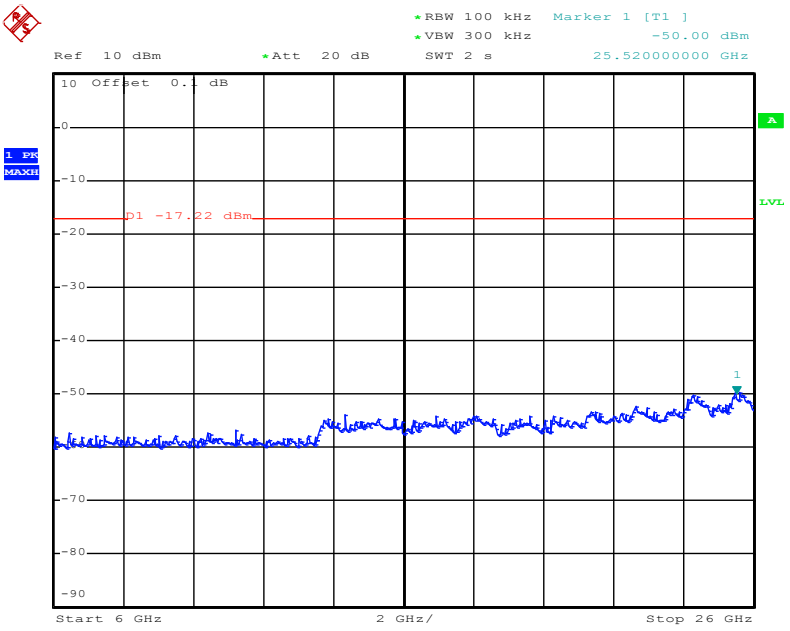
Notes: Limit = Reading of fundamental – 20dB

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



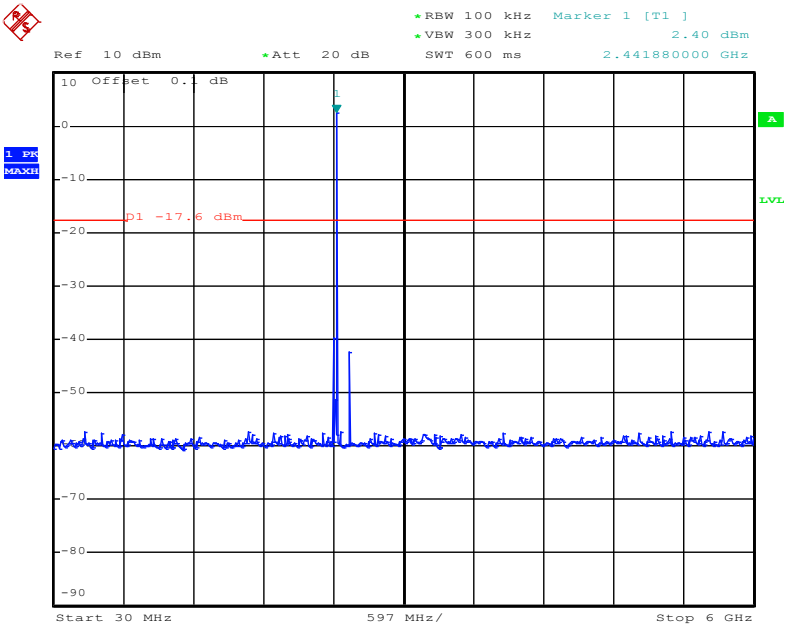
Date: 1.JAN.2000 02:34:17

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



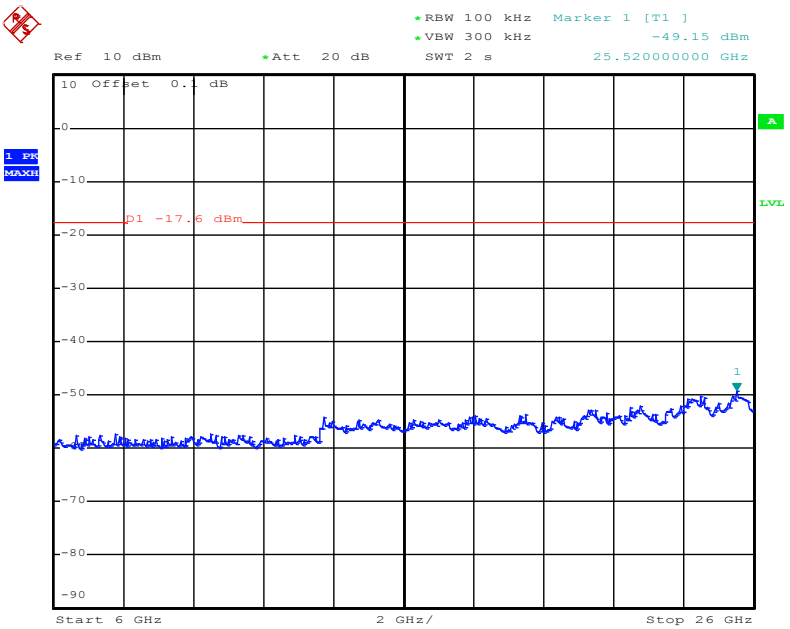
Date: 1.JAN.2000 02:35:21

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



Date: 1.JAN.2000 02:36:20

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



Date: 1.JAN.2000 02:36:57

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

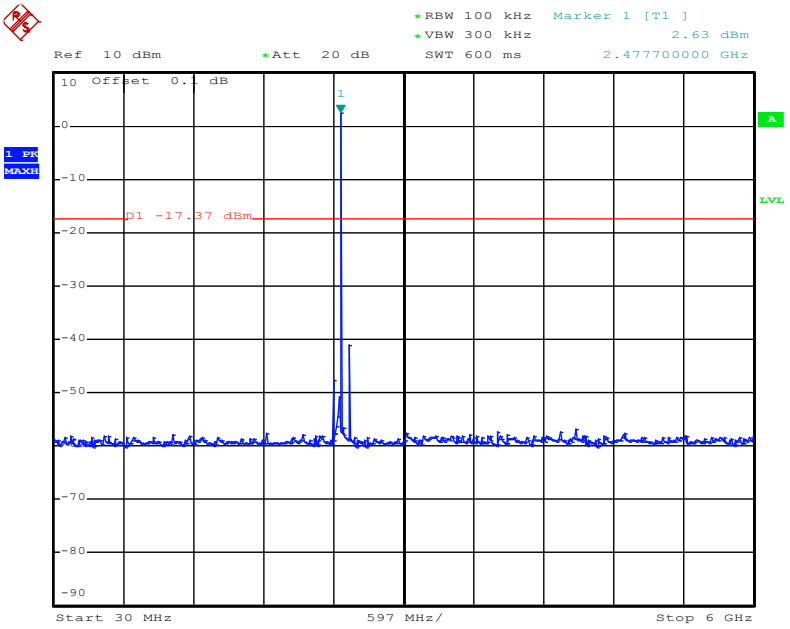


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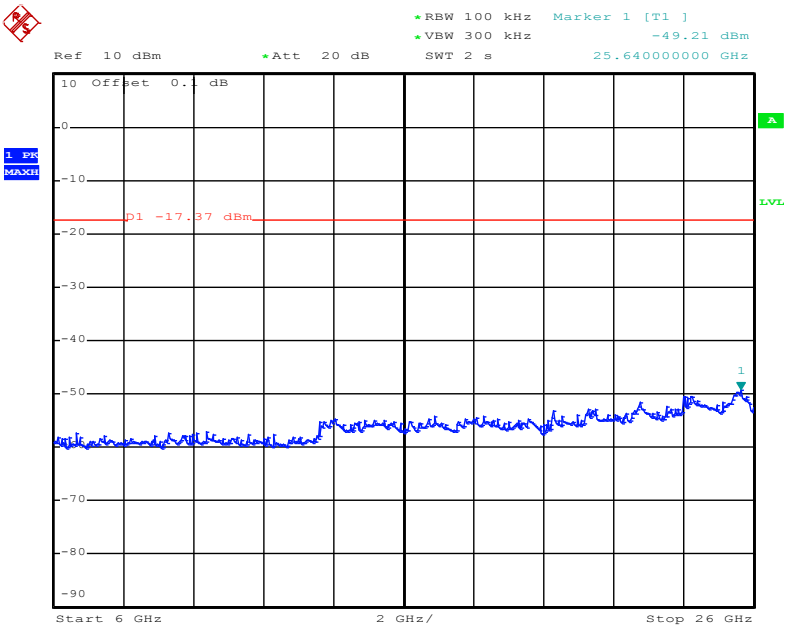
Figure 12: Conducted Spurious Emission, 6 – 26GHz, Mode C



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

RESULT: **PASS**

Date of testing:	2014-5-5
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 v03r01.

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.

Figure 13: Band Edge, Conducted, Mode A

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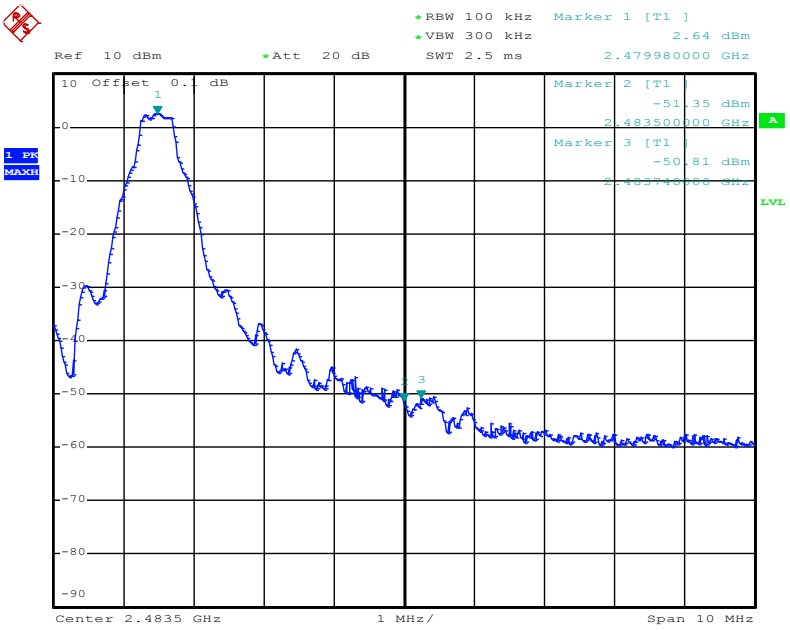
Figure 14: Band Edge, Conducted, Mode C



Date: 1.JAN.2000 02:20:27

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:	2014-6-10
Ambient temperature:	22.3°C
Relative humidity:	40.1%
Atmospheric pressure:	101.7hPa
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), must comply with the radiated emission limits specified in FCC 15.209(a).

Test procedure:

ANSI C63.10-2009 and KDB 558074 D01 DTS Meas Guidance v03r01.

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.

Table 7: Band Edge Radiated Emission, Mode A

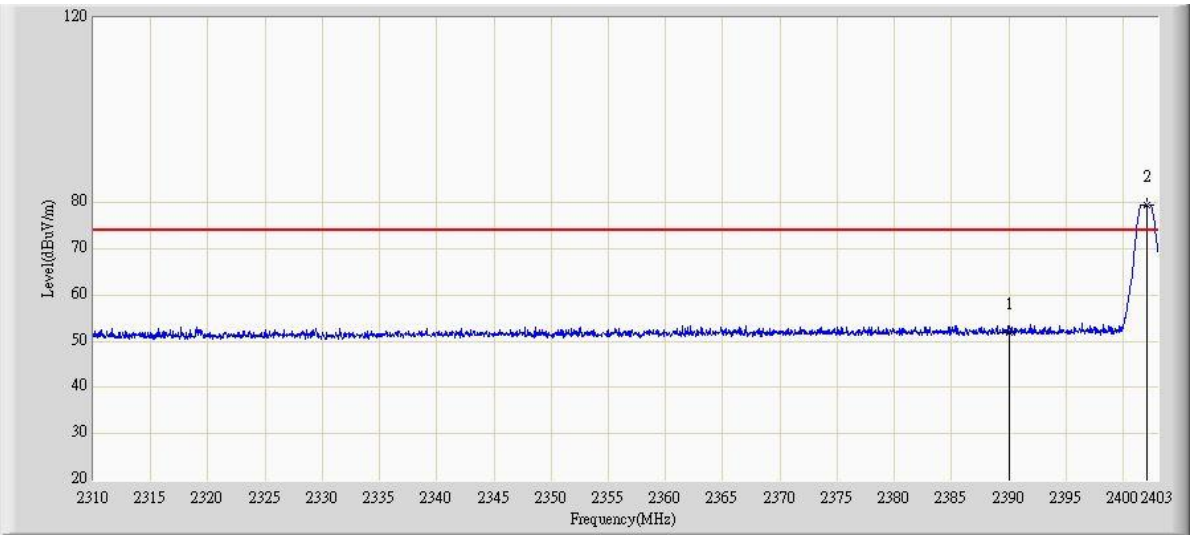
Freq. [MHz]	Measure Leve [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor	Detector Type	Polarization
2390.000	51.941	13.688	-22.059	74.000	38.253	PK	HORIZONTAL
2402.023	79.502	41.142	N/A	N/A	38.360	PK	
2390.000	40.330	2.077	-13.670	54.000	38.253	AV	
2401.930	75.283	36.924	N/A	N/A	38.360	AV	
2390.000	51.106	13.513	-22.894	74.000	37.593	PK	VERTICAL
2401.652	76.182	38.532	N/A	N/A	37.650	PK	
2390.000	39.595	2.002	-14.405	54.000	37.593	AV	
2401.930	73.763	36.111	N/A	N/A	37.652	AV	

Table 8: Band Edge Radiated Emission, Mode C

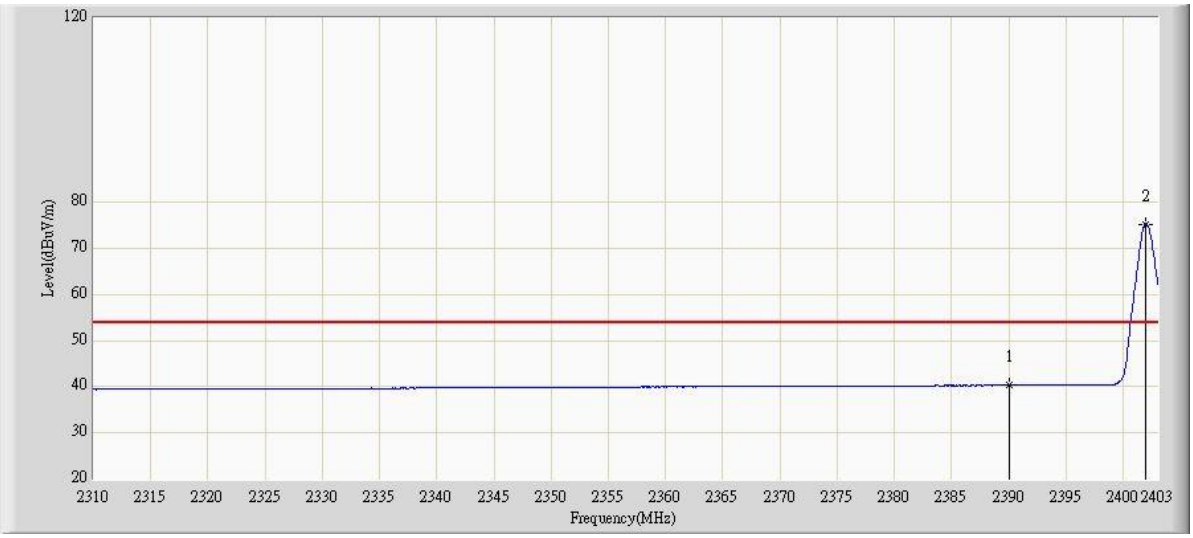
Freq. [MHz]	Measure Leve [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor	Detector Type	Polarization
2480.310	77.941	38.884	N/A	N/A	39.057	PK	HORIZONTAL
2483.500	52.979	13.894	-21.021	74.000	39.084	PK	
2479.980	76.059	37.005	N/A	N/A	39.053	AV	
2483.500	41.235	2.150	-12.765	54.000	39.084	AV	
2479.639	73.599	35.567	N/A	N/A	38.032	PK	VERTICAL
2483.500	51.317	13.266	-22.683	74.000	38.050	PK	
2480.002	70.848	32.814	N/A	N/A	38.034	AV	
2483.500	40.195	2.144	-13.805	54.000	38.050	AV	

Figure 15: Band Edge, Radiated Emission, Mode A

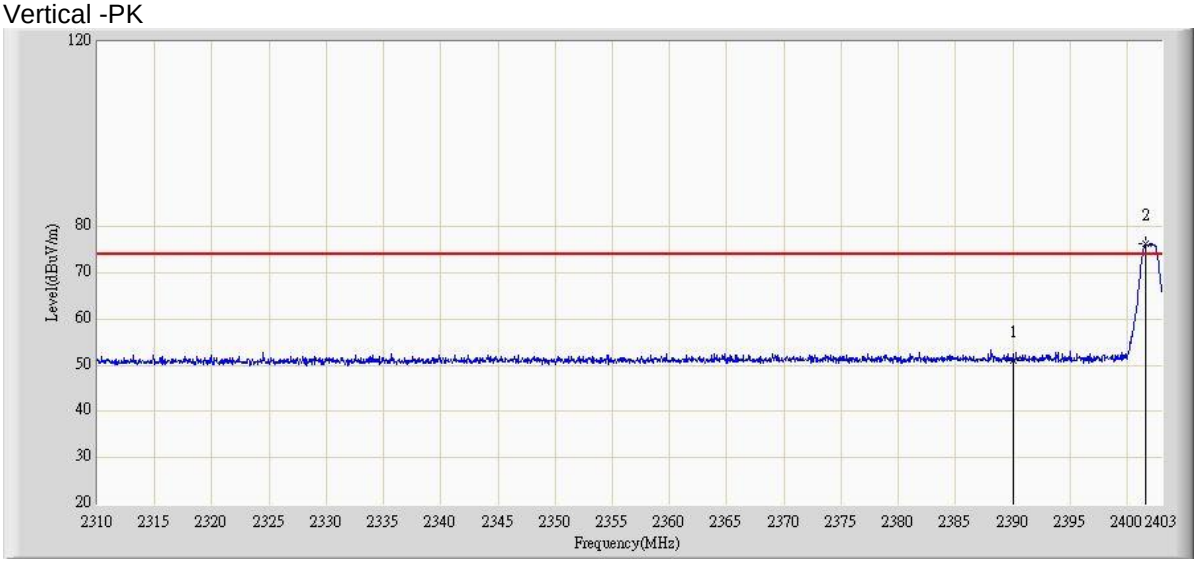
Horizontal-PK



Horizontal-AV



Vertical -PK



Vertical -AV

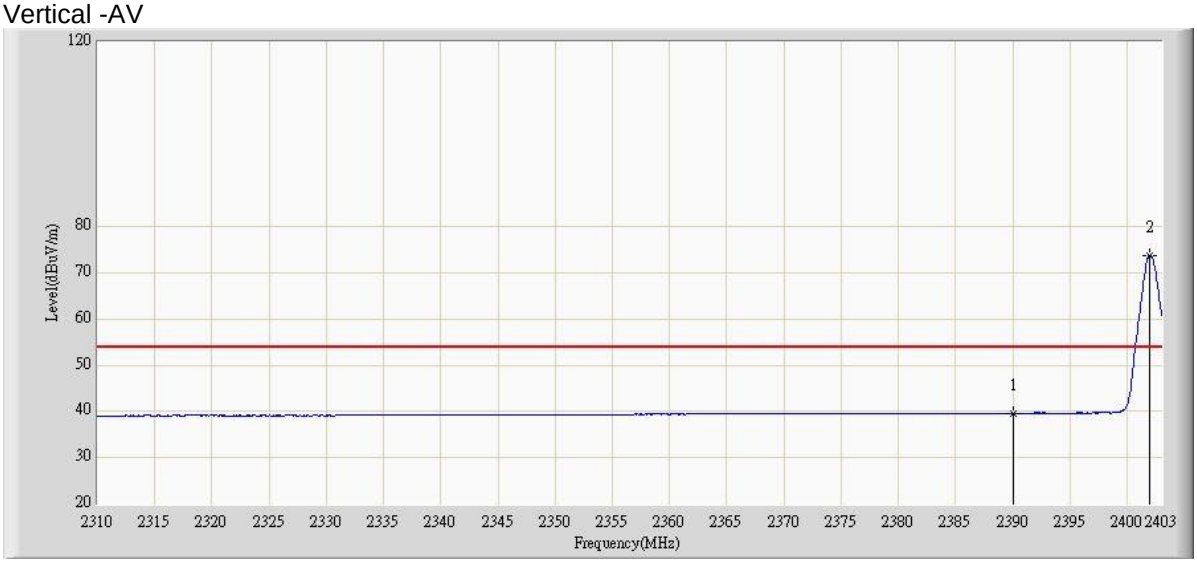
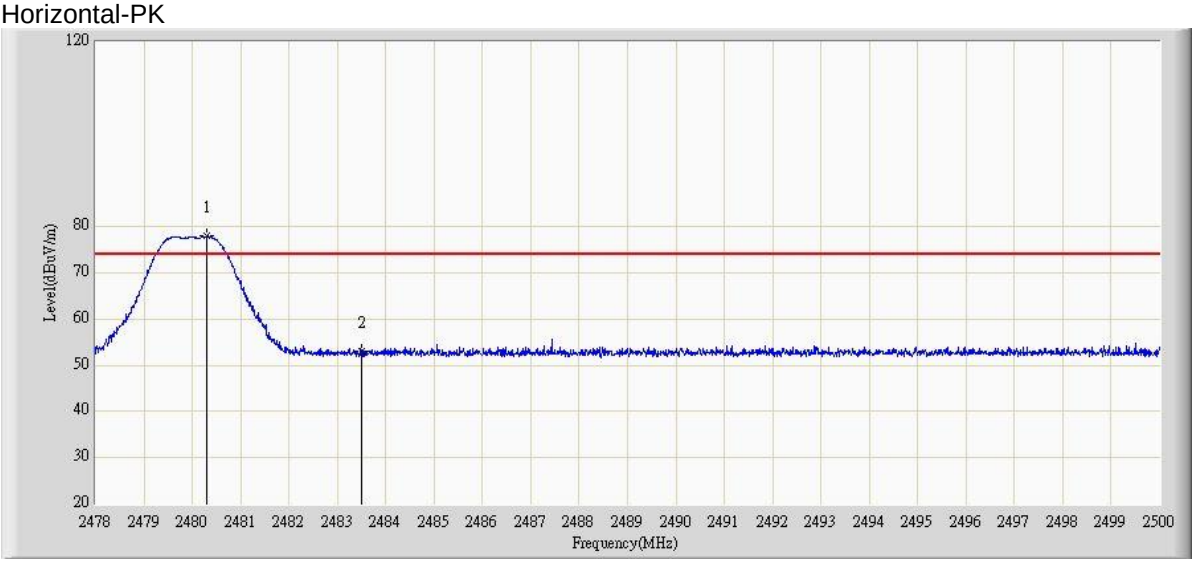
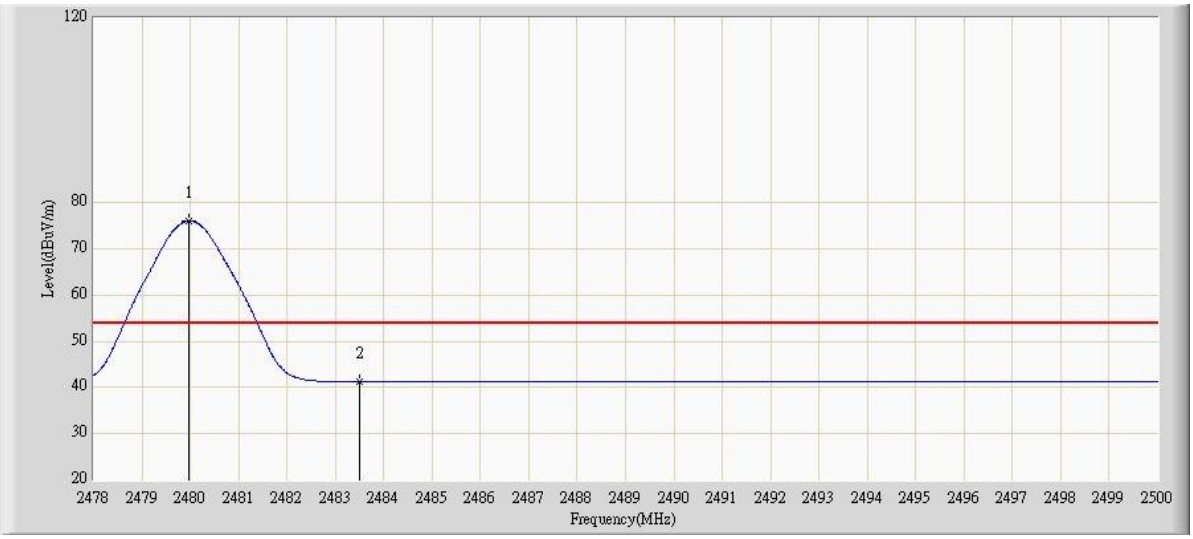


Figure 16: Band Edge, Radiated Emission, Mode C

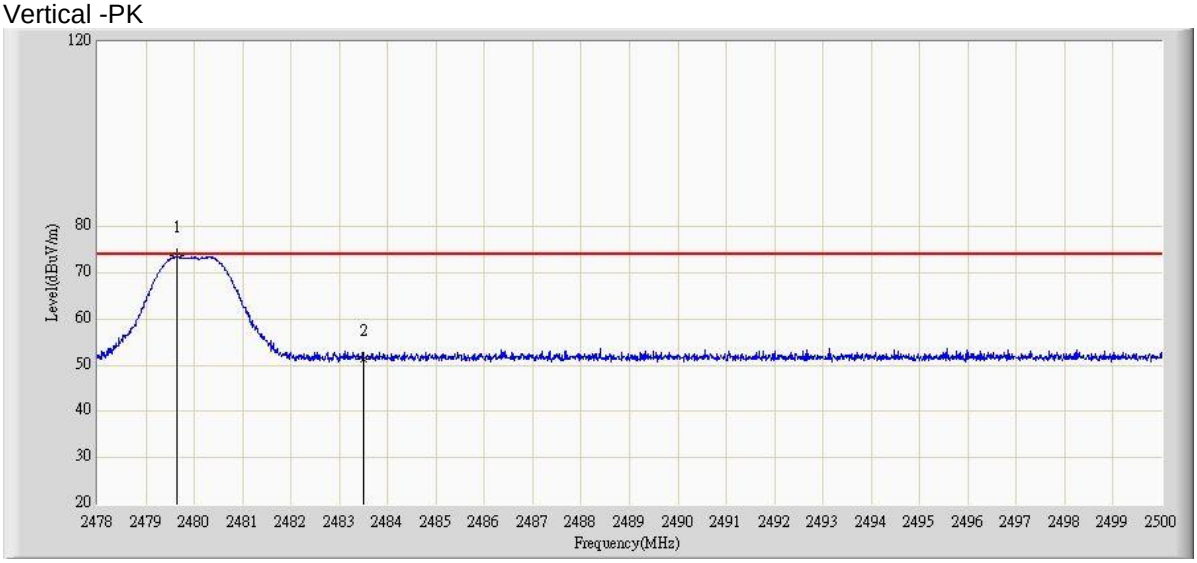
Horizontal-PK



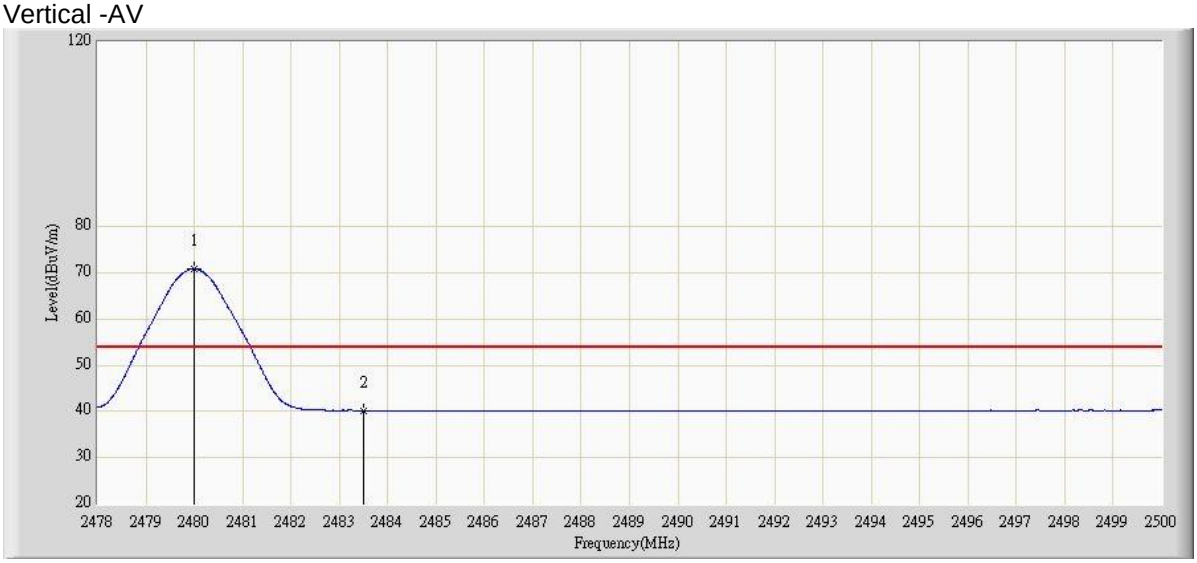
Horizontal-AV



Vertical -PK



Vertical -AV



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

RESULT: **PASS**

Date of testing:	2014-6-10
Ambient temperature:	22.3°C
Relative humidity:	40.1%
Atmospheric pressure:	101.7hPa
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), must comply with the radiated emission limits specified in FCC 15.209(a).

Test procedure:

ANSI C63.10-2009and KDB 558074 D01 DTS Meas Guidance v03r01.

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.

Table 9: Radiated Emission, QP and PK Data, 30MHz – 25GHz, Mode A

Freq. [MHz]	Measure Leve [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor	Detector Type	Polarization
167.982	26.517	10.112	-16.983	43.500	16.405	QP	HORIZONTAL
663.895	34.084	6.549	-11.916	46.000	27.535	QP	
4799.500	48.369	39.084	-25.631	74.000	9.285	PK	
7206.000	41.097	29.541	-32.903	74.000	11.556	PK	
9608.000	43.106	29.616	-30.894	74.000	13.491	PK	
191.990	32.398	16.458	-11.102	43.500	15.940	QP	VERTICAL
665.229	39.646	12.125	-6.354	46.000	27.521	QP	
4799.500	51.513	42.349	-22.487	74.000	9.165	PK	
7206.000	41.604	30.083	-32.396	74.000	11.521	PK	
9608.000	45.660	32.127	-28.340	74.000	13.533	PK	

Table 10: Radiated Emission, QP and PK Data, 30MHz – 25GHz, Mode B

Freq. [MHz]	Measure Leve [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor	Detector Type	Polarization
191.990	26.837	10.897	-16.663	43.500	15.940	QP	HORIZONTAL
600.845	32.979	6.069	-13.021	46.000	26.910	QP	
4876.000	49.049	39.262	-24.951	74.000	9.787	PK	
7320.000	41.930	30.227	-32.070	74.000	11.703	PK	
9760.000	43.332	29.759	-30.668	74.000	13.574	PK	
167.982	25.747	9.342	-17.753	43.500	16.405	QP	VERTICAL
532.581	31.460	5.421	-14.540	46.000	26.038	QP	
4876.000	52.516	42.727	-21.484	74.000	9.789	PK	
7320.000	42.113	30.410	-31.887	74.000	11.703	PK	
9760.000	44.044	30.375	-29.956	74.000	13.670	PK	

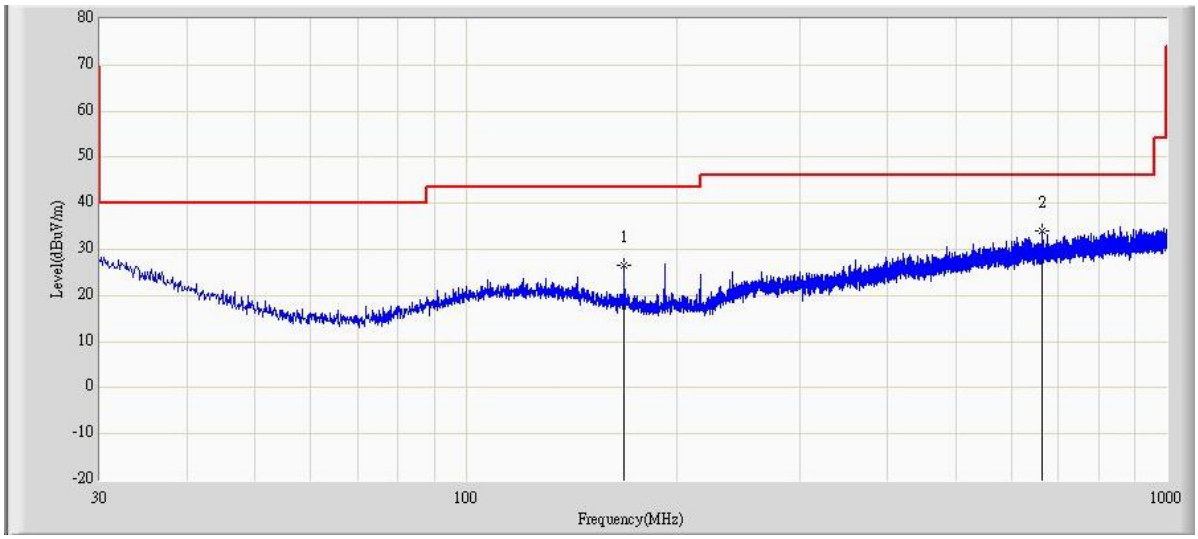
Table 11:Radiated Emission, QP and PK Data, 30MHz – 25GHz, Mode C

Freq. [MHz]	Measure Leve [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor	Detector Type	Polarization
167.982	25.864	9.459	-17.636	43.500	16.405	QP	HORIZONTAL
665.229	36.040	8.519	-9.960	46.000	27.521	QP	
4961.000	47.890	37.899	-26.110	74.000	9.992	PK	
7440.000	40.734	28.902	-33.266	74.000	11.832	PK	
9920.000	43.019	29.071	-30.981	74.000	13.948	PK	
215.876	25.291	9.642	-18.209	43.500	15.649	QP	VERTICAL
504.573	31.505	5.992	-14.495	46.000	25.513	QP	
4961.000	54.016	43.887	-19.984	74.000	10.130	PK	
7440.000	41.739	29.907	-32.261	74.000	11.832	PK	
9920.000	43.461	29.481	-30.539	74.000	13.980	PK	

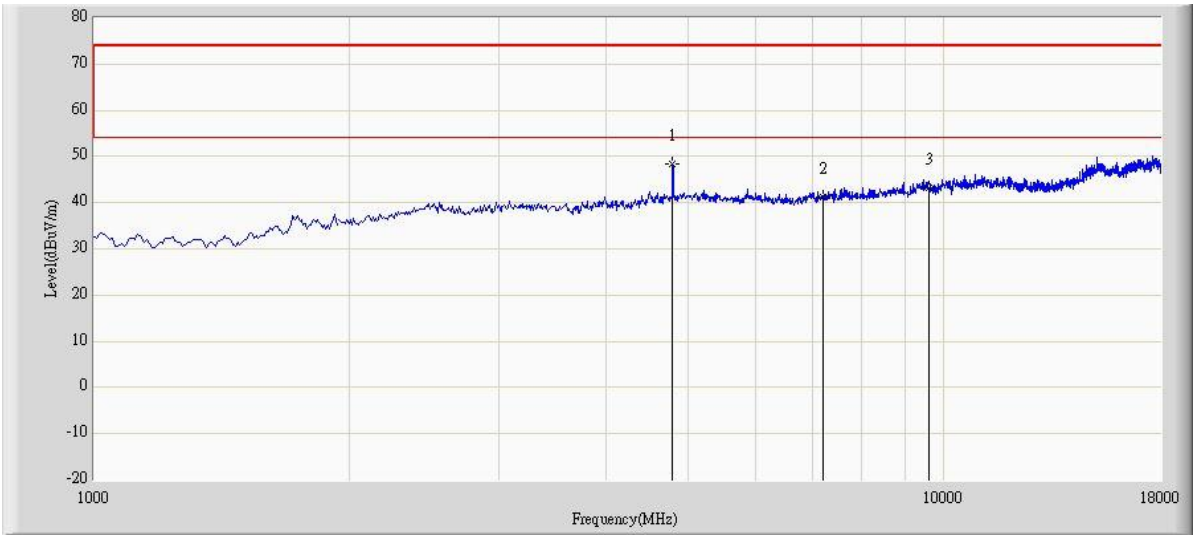
Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values. Above 18 GHz emission far below limit

Figure 17: Radiated Emission, 30MHz – 25GHz, Mode A

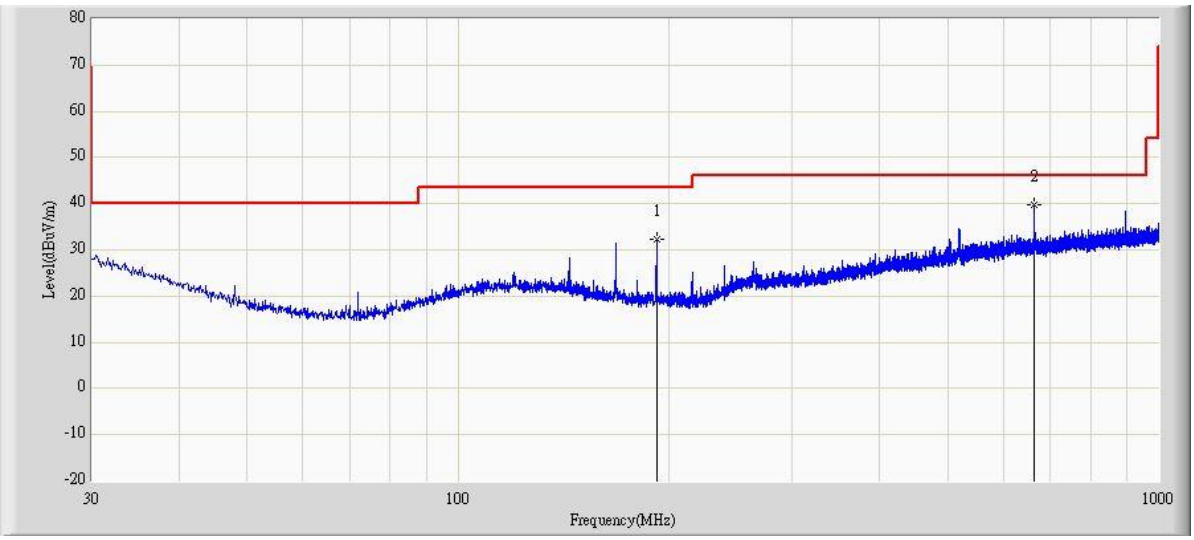
Horizontal 30MHz – 1GHz



Horizontal Above 1GHz



Vertical 30MHz – 1GHz



Vertical Above 1GHz

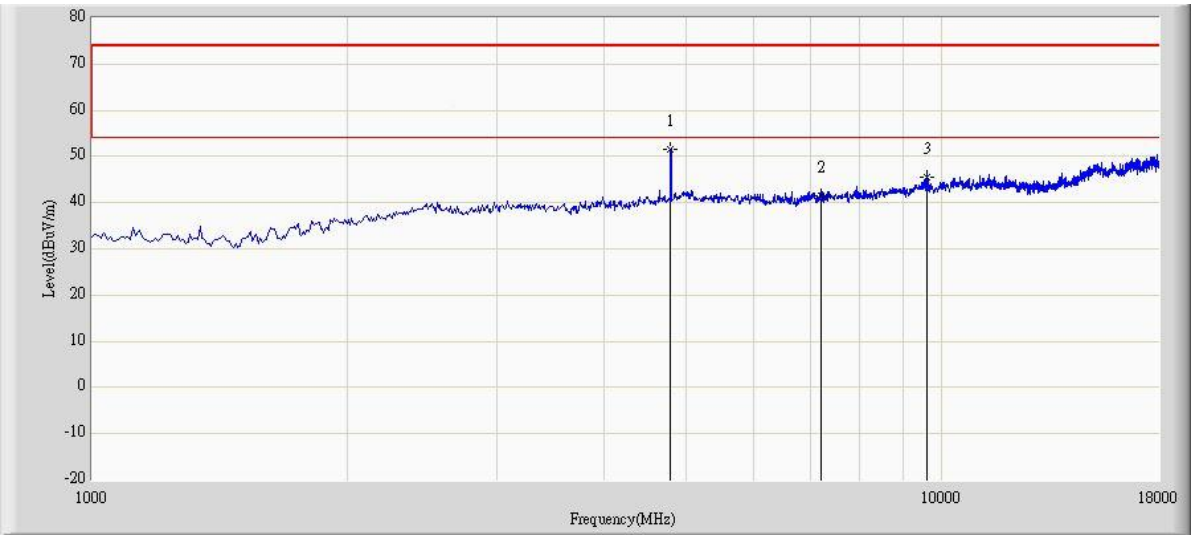
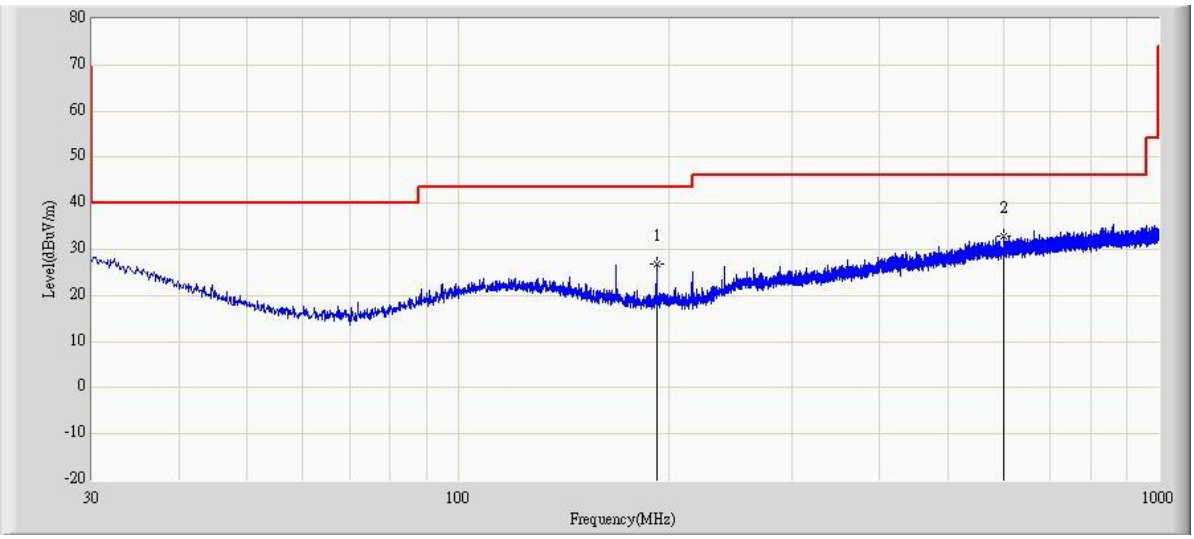
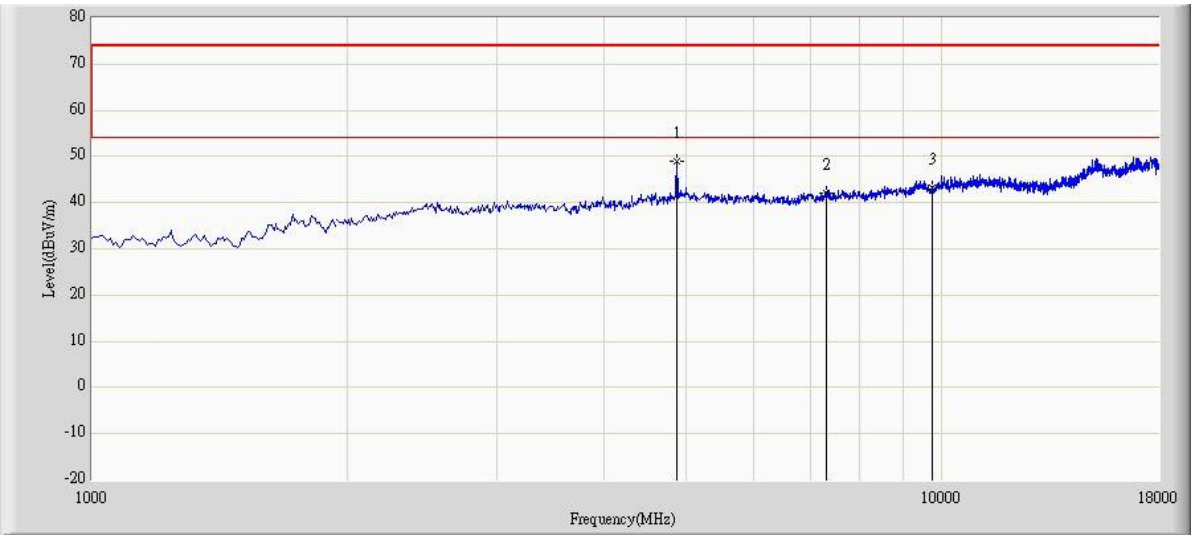


Figure 18: Radiated Emission, 30MHz – 25GHz, Mode B

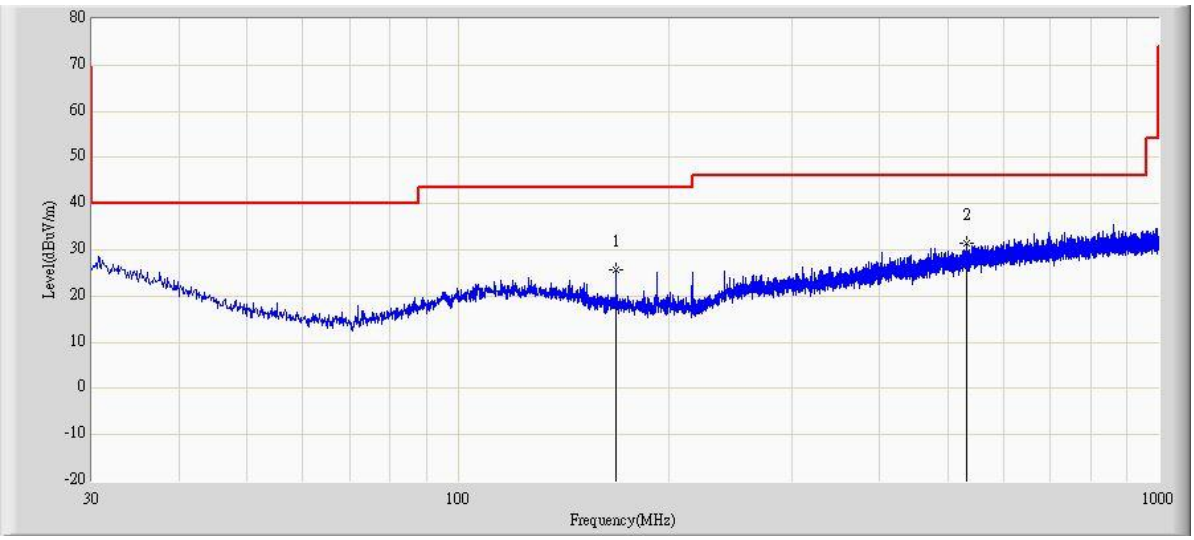
Horizontal 30MHz – 1GHz



Horizontal Above 1GHz



Vertical 30MHz – 1GHz



Vertical Above 1GHz

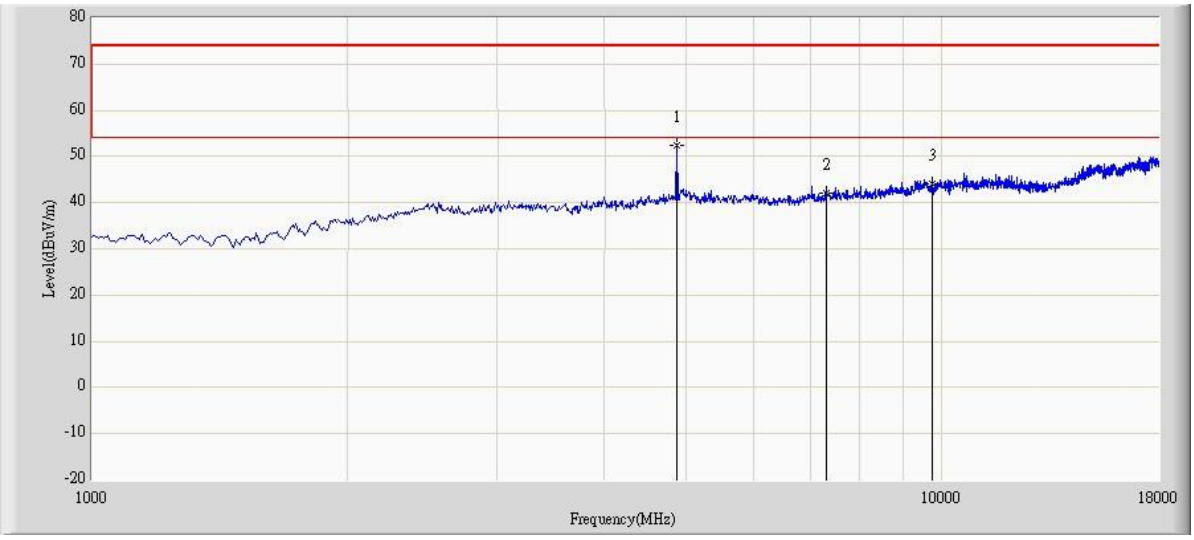
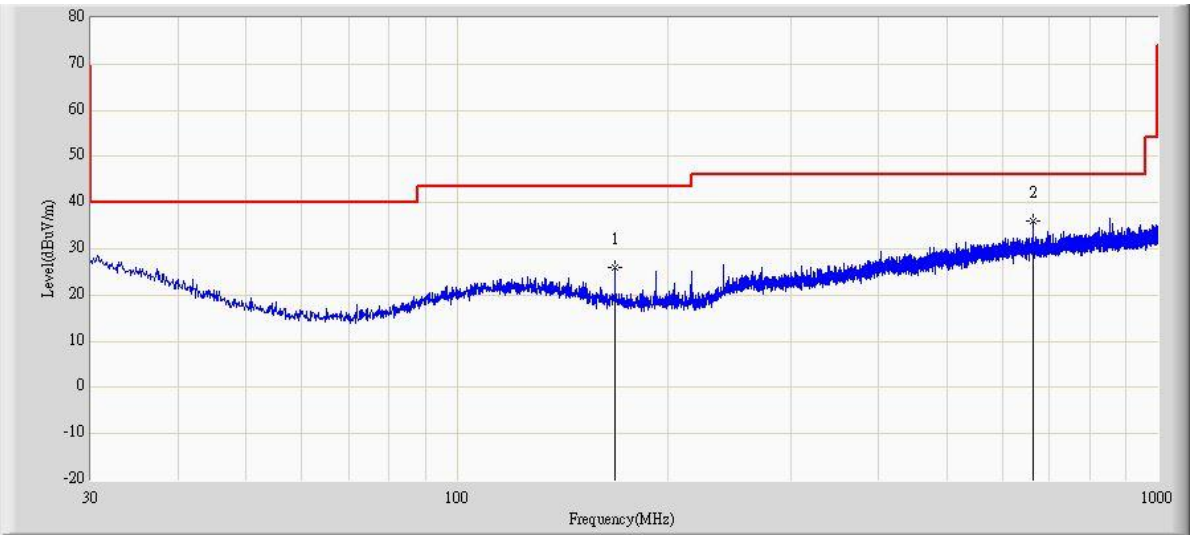
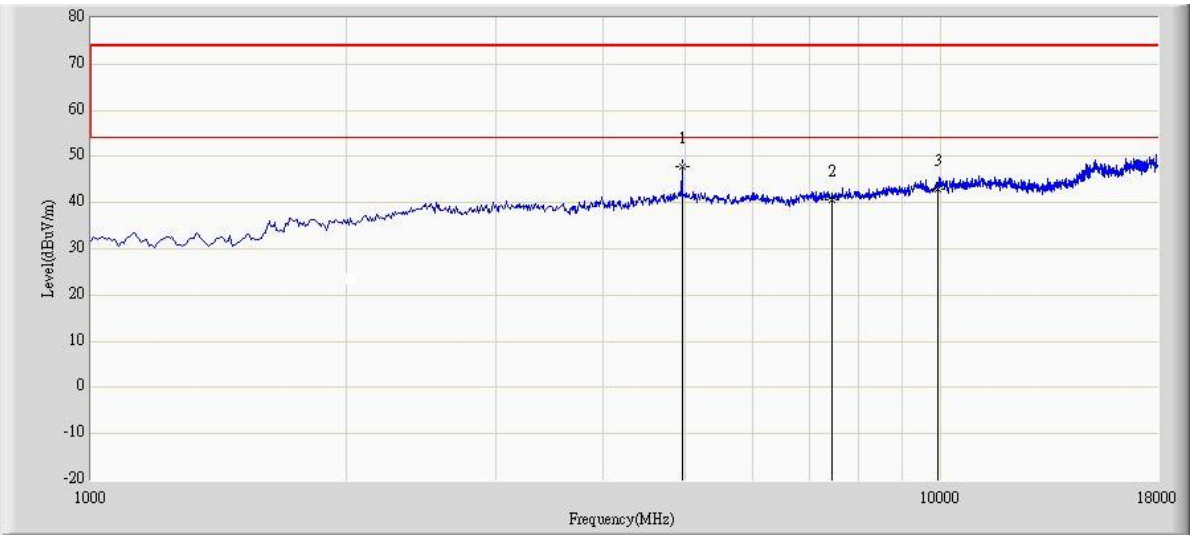


Figure 19: Radiated Emission, 30MHz – 25GHz, Mode C

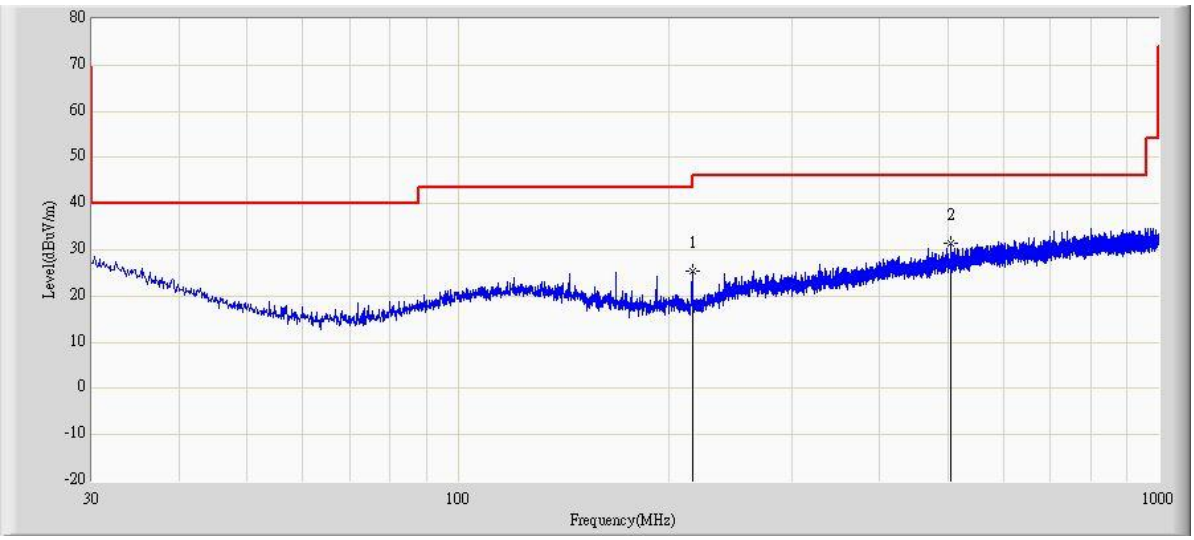
Horizontal 30MHz – 1GHz



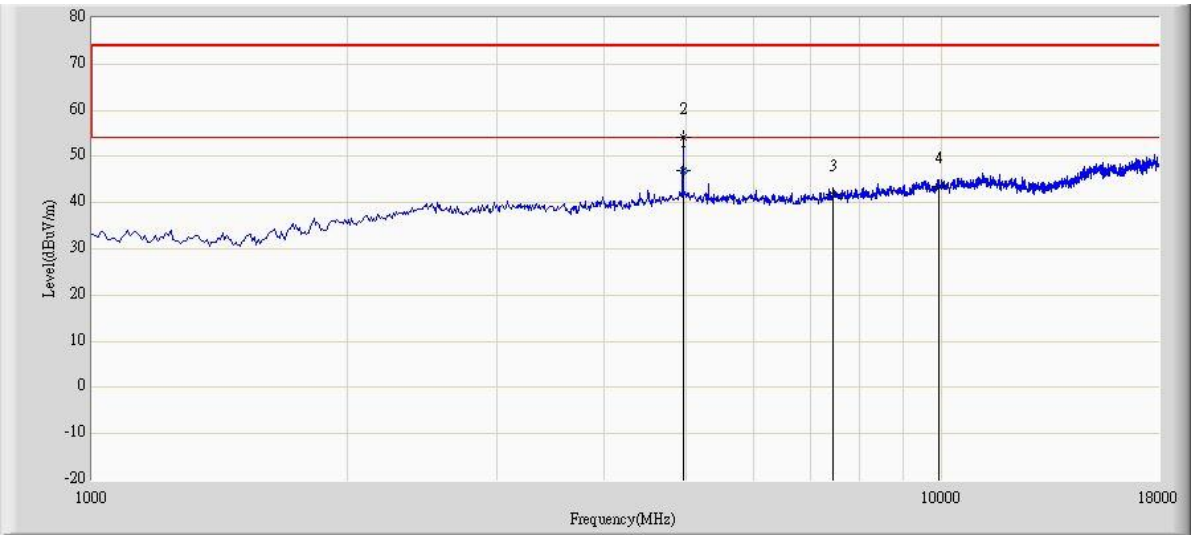
Horizontal Above 1GHz



Vertical 30MHz – 1GHz



Vertical Above 1GHz



6.2 Receiver Parameters

6.2.1 Radiated Spurious Emission of Receiver, FCC 15.109

RESULT: **PASS**

Date of testing:	2014-5-5
Ambient temperature:	22.3°C
Relative humidity:	40.1%
Atmospheric pressure:	101.7hPa
Frequency range:	30MHz – 12.5GHz
Measurement distance:	3m
Kind of test site:	Semi Anechoic Chamber

Requirements:

The emissions from the unintentional radiator shall not exceed the field strength specified in 15.109(a).

Test procedure:

ANSI C63.4-2009.

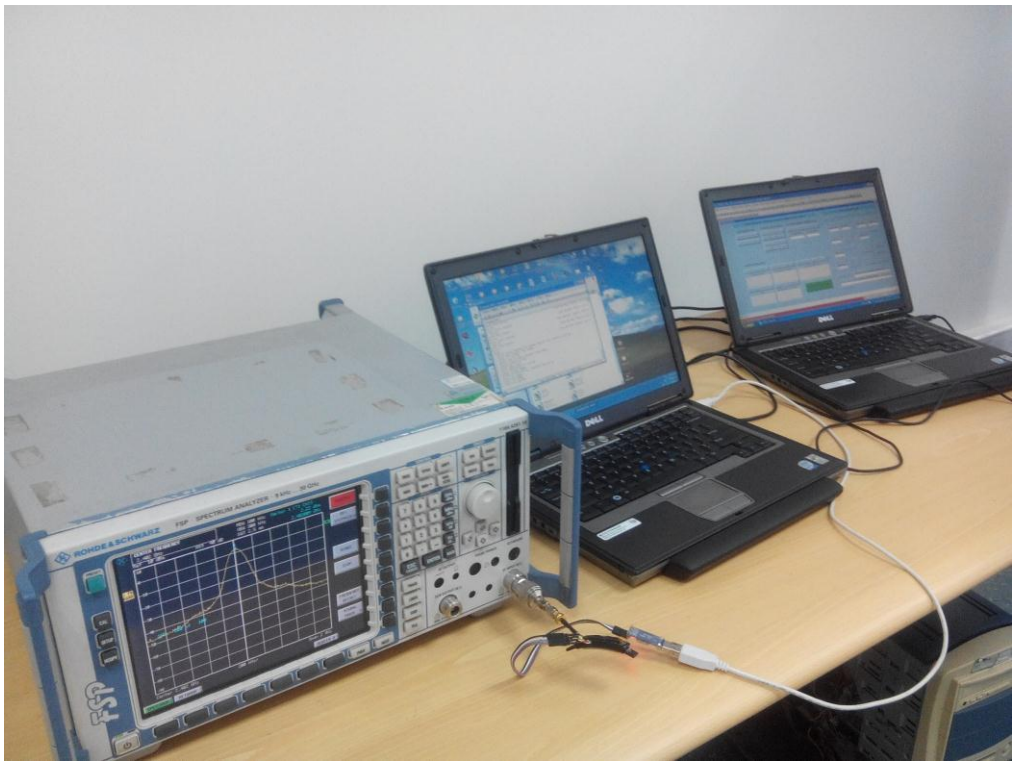
The EUT was placed on a nonconductive turntable 0.8m above the ground plane. Before final measurements of radiated emissions were performed, the EUT was scanned to determine its emission spectrum profile. The EUT was pretested in floor-standing condition and in the table position and the worst case condition 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 5th harmonic of the highest fundamental operation frequency (12.5GHz). Final radiated emission measurements were made at 3m distance.

Measurements were taken using both horizontal and vertical antenna polarizations.

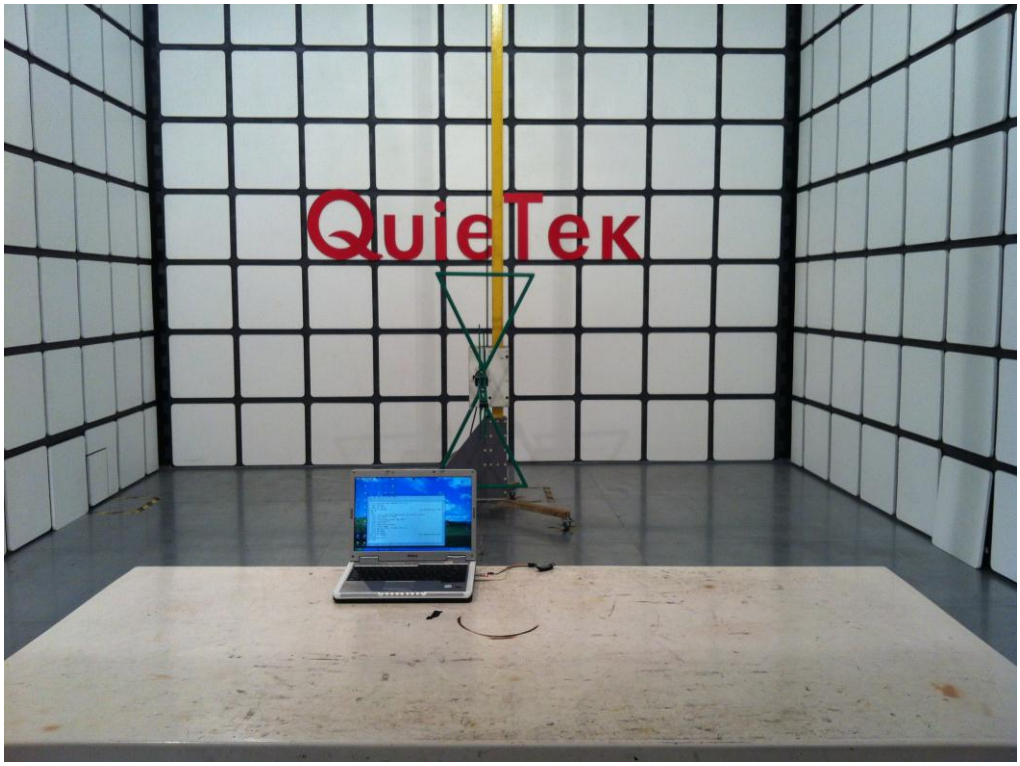
For frequencies between 30MHz and 1GHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1GHz, measurements were performed using the following settings: Peak: RBW & VBW = 1MHz, Average: RBW = 1MHz, VBW = 10Hz.The highest emission amplitudes relative to the appropriate limit were recorded in this report. No spurious emission was found in the range 30MHz – 12500MHz. emission in mode D, E, F. All signals found in the pre-testing were more than 20 dB below the limit .

7. Photographs of the Test Setup

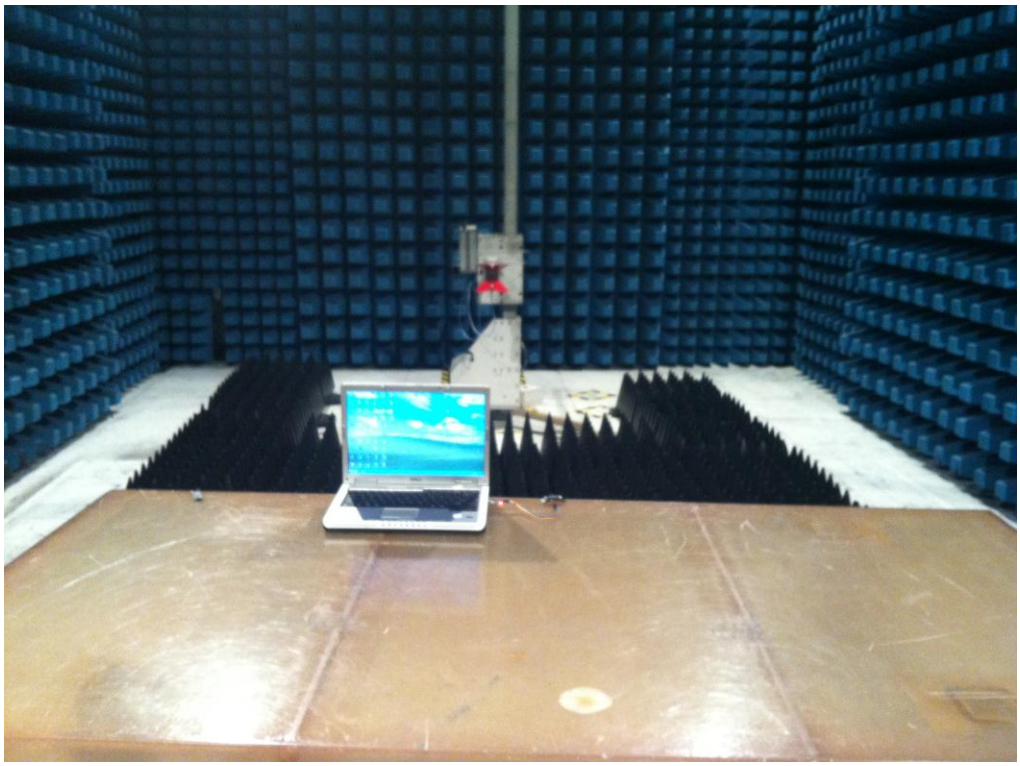
Photograph 1: Set-up for Conducted RF test at Antenna Port



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



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



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