FCC TEST REPORT

UCS Co., Ltd.

#702, Megavalley, 799 Kwanyang-dong, Dongan-gu, Anyang-city, Kyunggi-do, 431-767, Korea
Tel : 82-31-420-5680/Fax :82-31-420-5685, Open Site : 82-31-355-2666

FCC Test Report

Report Number	UCSFR-1204-003			
Applicant	Company Name	NEUROSYS Co., Ltd.		
	Address	#621~8 Gyoungin-Center, 562-3 sipjeong-dong, Bupyeong-gu, Incheon, Korea		
Product	Product Name	Real-time Temperature Monitoring System		
	Model Name	PIZM	Manufacturer	NEUROSYS Co., Ltd.
	Serial No.	-	Country of origin	Korea
Other	Receipt Date	2012-02-09	Receipt Number	UCS-R-2012-042
	Issued Date	2012-04-02	Tested Date	2012/02/09 ~ 2012/02/14
Test Result	**Pass**			
Standard	**FCC CFR 47 Part 15.247 Subpart C**			
Test Method	**ANSI C63.4:2003**			
Tested by	Y. R. JO (sign)			
Approved by	K. T. Kim (sign)			

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Contents

1. Applicant Information

Applicant Name	:	NEUROSYS Co., Ltd.
Address	:	#621~8 Gyoungin-Center, 562-3 sipjeong-dong, Bupyeong-gu, Incheon, Korea
Manufacturer	:	NEUROSYS Co., Ltd.
Country of Origin	:	Korea

2. Test Result Certification

2.1 Applicable standards

Standard	Test Item	CFR 47 Section	Result
FCC CFR 47 Part 15.247 Subpart C	Antenna Requirement	15.203, 15.247(b)(4)	PASS
	6dB Bandwidth	15.247(a)(2)	PASS
	Maximum Peak Output Power	15.247(b)(3)	PASS
	Peak Power Spectral Density	15.247(e)	PASS
	Spurious Emission, Band Edge, and Restricted bands	15.247(d)	PASS
	AC Power Line Conducted Emissions	15.207	PASS
	Receiver Spurious Emissions	-	PASS

3. EUT Information

3.1 RF specification

Product name	Real-time Temperature Monitoring System
Model name	PIZM
Power source	DC 5.0 V (Adapter)
Output Power	MAX 0.068 W
Ferquency range	2.4GHz(2405MHz ~ 2480MHz)
Number of channels	16CH
Modulation Technique	QPSK
Antenna specification	2.5 dBi gain (Max)
USB interface	USB 2.0, Plug & Play
Weight	70(L)mm X 110(W)mm X 22(H)mm
Dimension	50 g

4. Laboratory Information

4.1. General

UCS Co., Ltd. established 1999 as the International agreed upon laboratory(CBTL, KOLAS) for Standard. Internally, UCS Co., Ltd. is the designated test laboratory from Radio Research Laboratory of Korea Communications Commission and Korea Food & Drug Administration.

Based on its extensive experience and expertise, UCS Co., Ltd. is the Global test laboratory that has best professionalism in this field.

4.2. Test Site

- UCS Co., Ltd. (Universal Certification Solution)
- FCC Registration Number : 803225
- This test site is in compliance with ISO/IEC 17025 for general requirements for the competence of testing and calibration laboratories.

4.3 Location

UCS Co., Ltd.

- #702, Anyang Megavalley799, Gwanyang2-dong, Dongan-gu, Anyang-si, Gyeonggi-do, 431-767, Korea

ER Center

- #476-4, Hwalcho-dong, Hwaseong-si, Gyeonggi-do, 445-150, Korea

5. Measurement conditions

5.1 Scope

This test report certifies that the NEUROSYS Co., Ltd. PIZM, as tested, meets the FCC Part 15, Subpart C requirements. The scope of this test report is limited to the test sample provided by the client, only in as much as that sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required.

5.2 Measurement Procedure

- Test measurements were made in accordance FCC Part 15.247: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz. The test methods used to generate the data in this test report is in accordance with ANSI C63.4: 2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 26.5 GHz and FCC Publication KDB 558074: Measurement of Digital Transmission Systems Operating under Section 15.247 March 23, 2005.

5.3 Choice of Equipment for Test Suits

5.3.1 Choice of Model

- This test report is based on the test samples supplied by the manufacturer and are reported by the manufacturer to be equivalent to the production units.

5.3.2 Presentation

- This test sample was tested complete with all required ancillary equipment.

5.3.3 Choice of Operating Frequencies

- The PIZM operates on a total of 16 channels, from channel 11 to channel 26.
- In accordance with ANSI C63.4-2009, section 13.2.1, the choice of operating frequencies selected for the testing detailed in this report was based on the lowest, middle and highest operating frequencies. The frequencies selected were 2405 MHz (Channel 11), 2445 MHz (Channel 19) and 2480 MHz (Channel 26).

5.3.4 Channel Table

Ch.	Frequency	Ch.	Frequency
11	2405 MHz	19	2445 MHz
12	2410 MHz	20	2450 MHz
13	2415 MHz	21	2455 MHz
14	2420 MHz	22	2460 MHz
15	2425 MHz	23	2465 MHz
16	2430 MHz	24	2470 MHz
17	2435 MHz	25	2475 MHz
18	2440 MHz	26	2480 MHz

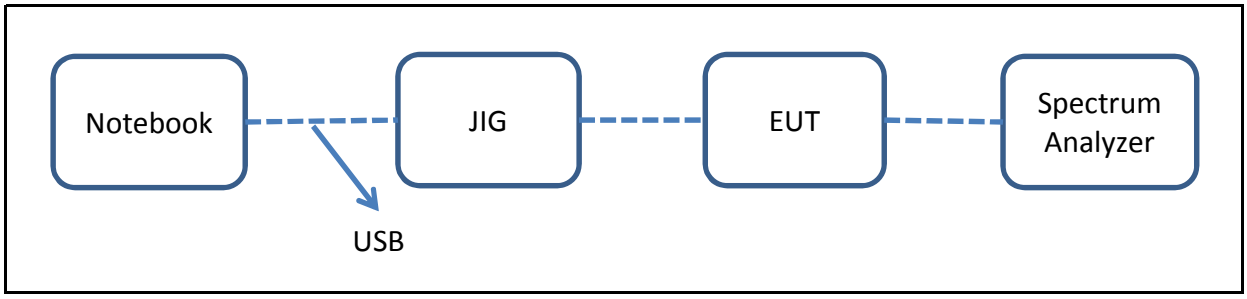
5.4 Description of test modes

- The EUT had been tested under the operating condition.
- There are three channels have been tested as following:
- Channel Low and Channel High with higher data rate were chosen for full testing.

Channel	Frequency (MHz)
LOW	2405
MIDDLE	2445
HIGH	2480

5.5 Description of test configuration

- The measurements were taken in continuous transmitting mode using the TEST MODE. For controlling the EUT as TEST MODE, the test program and the cable assembly were provided by the applicant.



[System Block Diagram of Test Configuration]

5.6. Setup of equipmet under test

5.6.1. Description of support units

- The EUT has been tested as an independent unit along with the following necessaryaccessories or support units, which are adopted to form a representative test configuration.

No	Equipment	Manufacturer	Model	S/N
1	Notebook**	HP	PSMDCK-06L001	-
-	TEST JIG**	NEUROSYS Co., Ltd.	-	-

Notes:

** For control of the RF module via USB interface in the EUT. For radiated spurious emission measurements, the EUT was tested as stand-alone equipment without TEST JIG, setting the EUT to TEST MODE.

5.6.2. Type of Used Cables

No	START		END		CABLE	
	NAME	I/O PORT	NAME	I/O PORT	LENGTH(m)	SHIELDED
1	Notebook	USB	TEST JIG	USB	1.0	Shielded
-	-	-	-	-	-	-

6. Limite And Result

6.1 Antenna requirement

6.1.1 Regulation

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

And according to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.1.2 Result : PASS

The transmitter has an Dipole antenna. The directional gain of the antenna is 2.5 dBi.
The antenna connector is the reverse polarity SMA connector.

6.2 6 dB BANDWIDTH MEASUREMENT

6.2.1 Regulation

According to §15.247(a)(2), 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.

6.2.2 Test Condition

- Set RBW of Spectrum analyzer to 100 kHz, Span=300kHz, Sweep=auto
- The 6dB bandwidth is defined as the frequency range where the power is higher than the peak power minus 6 dB

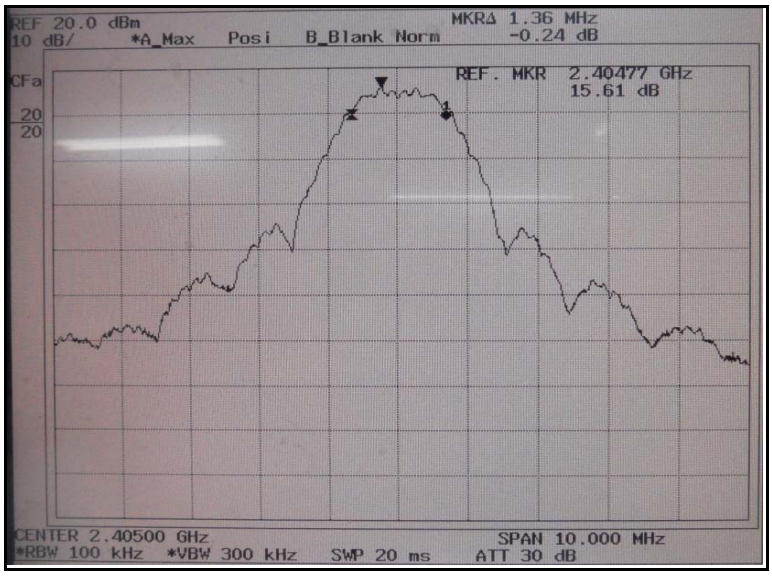
6.2.3 Test result : PASS

Table 1 : Measured values of the 6 dB Bandwidth

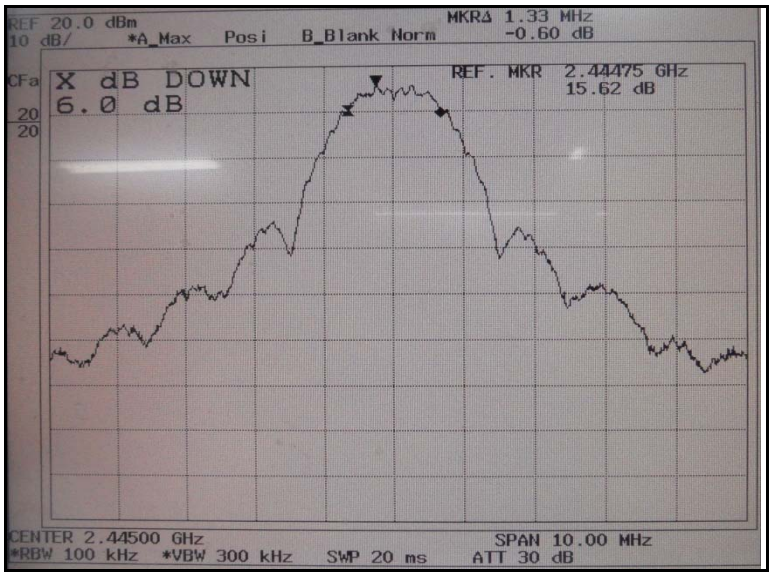
Frequency (MHz)	Result (kHz)	Limit (kHz)	Verdict
2405	1360	> 500	PASS
2445	1330	> 500	PASS
2480	1320	> 500	PASS

6.2.4 Plot of the 6dB Channel Bandwidth

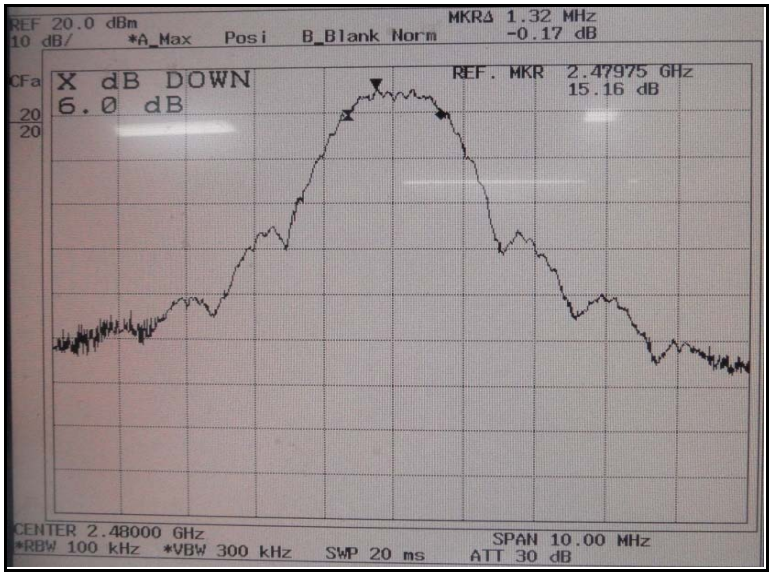
Lowest Channel



Middle Channel



Highest Channel



6.3 Maximum peak power

6.3.1 Regulation

According to §15.247(b), The maximum peak conducted output power of the intentional radiator shall not exceed the following:

§15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.

According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.3.2 Test Condition

- Set RBW of Spectrum analyzer to 1 MHz
- The Maximum Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level.

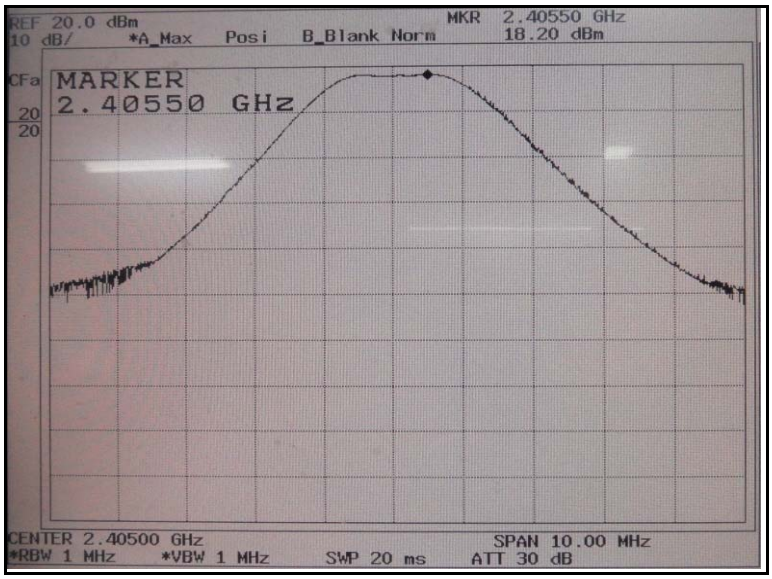
6.3.3 Test result : PASS

Table 2 : Measured values of the Maximum Peak Output Power(Conducted)

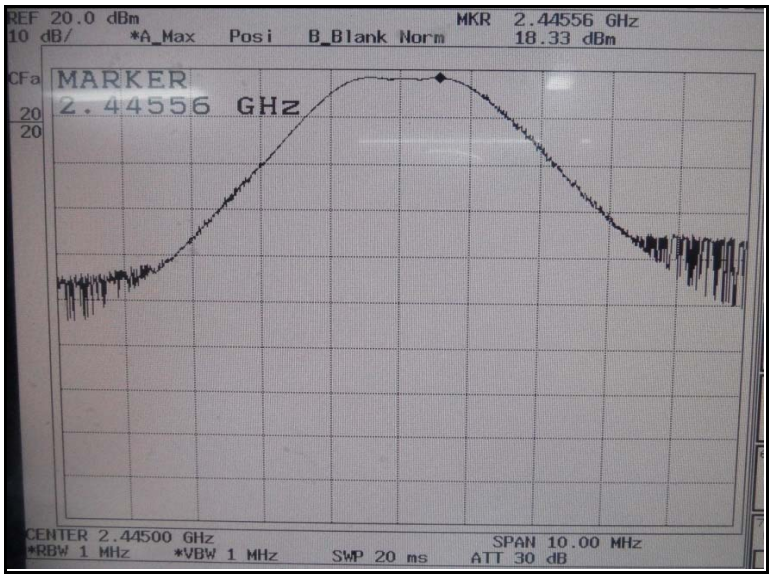
Frequency (MHz)	Reading Power (dBm)	Output Power (W)	Limit (W)	Verdict
2405	18.20	0.066	1	PASS
2445	18.33	0.068	1	PASS
2480	17.97	0.063	1	PASS

6.3.4 Plot of the Maximum Peak Output Power(Conducted)

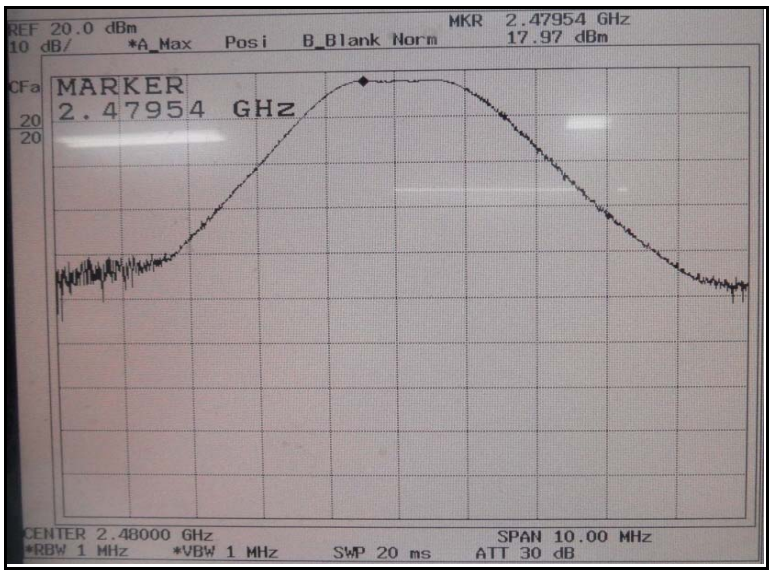
Lowest Channel



Middle Channel



Highest Channel



6.4 PEAK POWER SPECTRAL DENSITY

6.4.1 Regulation

According to §15.247(e), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

6.4.2 Test Condition

- Set RBW of Spectrum analyzer to 3 kHz, Span=1MHz, Sweep=Auto
- The transmitter output was connected to a spectrum analyzer and the maximum level in a 3kHz bandwidth was measured. A peak value was found over the full emission bandwidth and the frequency span reduced to obtain enhanced resolution. Sweep time ≥ span / 3kHz with video averaging turned off. The Peak Power Spectral Density is the highest level found across the emission in a 3kHz resolution bandwidth.

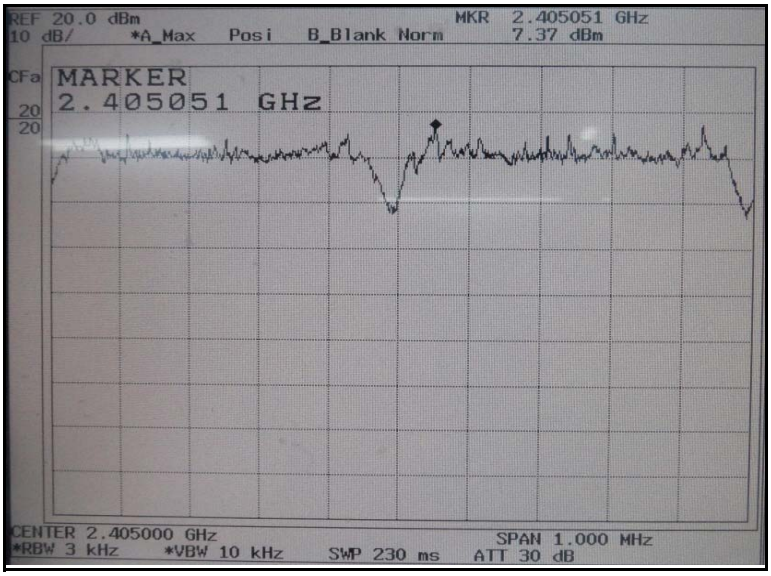
6.4.3 Test result : PASS

Table 3 : Measured values of the Peak power spectral density

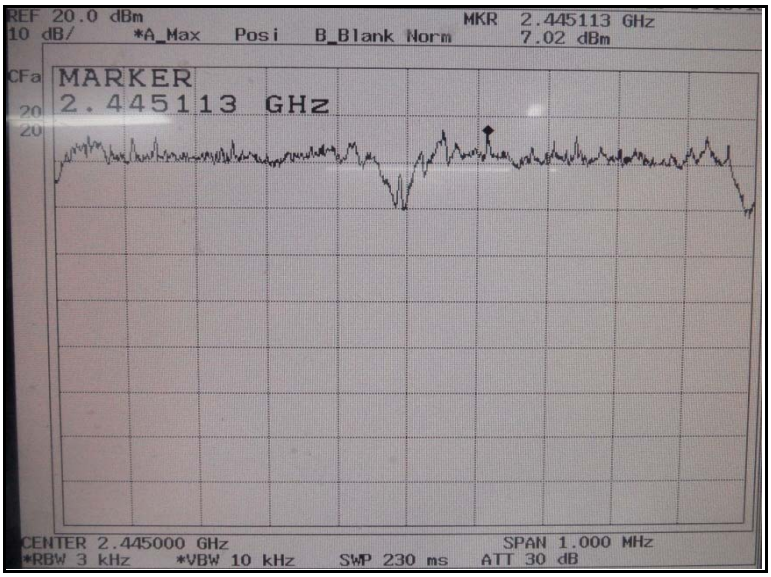
Frequency (MHz)	Peak frequency (MHz)	Peak power Spectral Density (dBm)	Limit (dBm)	Verdict
2405	2405.051	7.37	8	PASS
2445	2445.113	7.02	8	PASS
2480	2480.113	5.75	8	PASS

6.4.4 Plot of the Peak power spectral density

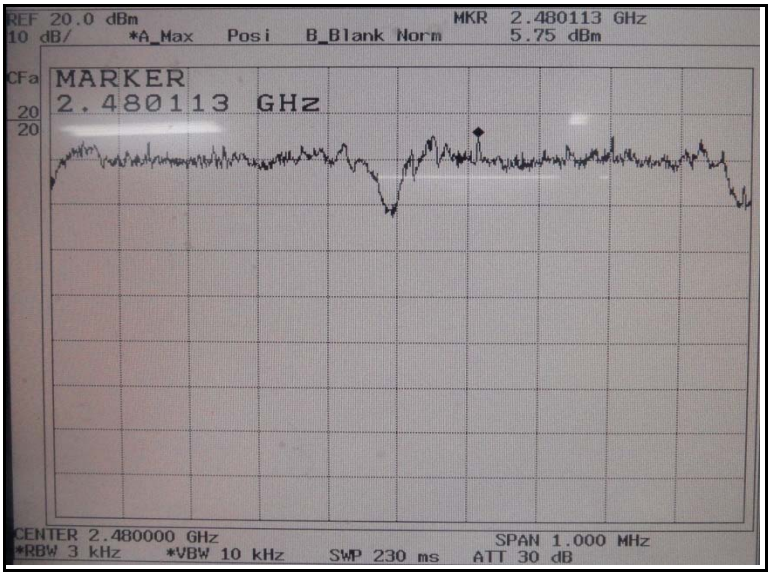
Lowest Channel



Middle Channel



Highest Channel



6.5 Spurious emissions, Band edge, and Restricted bands

6.5.1 Regulation

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

According to §15.209(a), for an intentional device, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the following values:

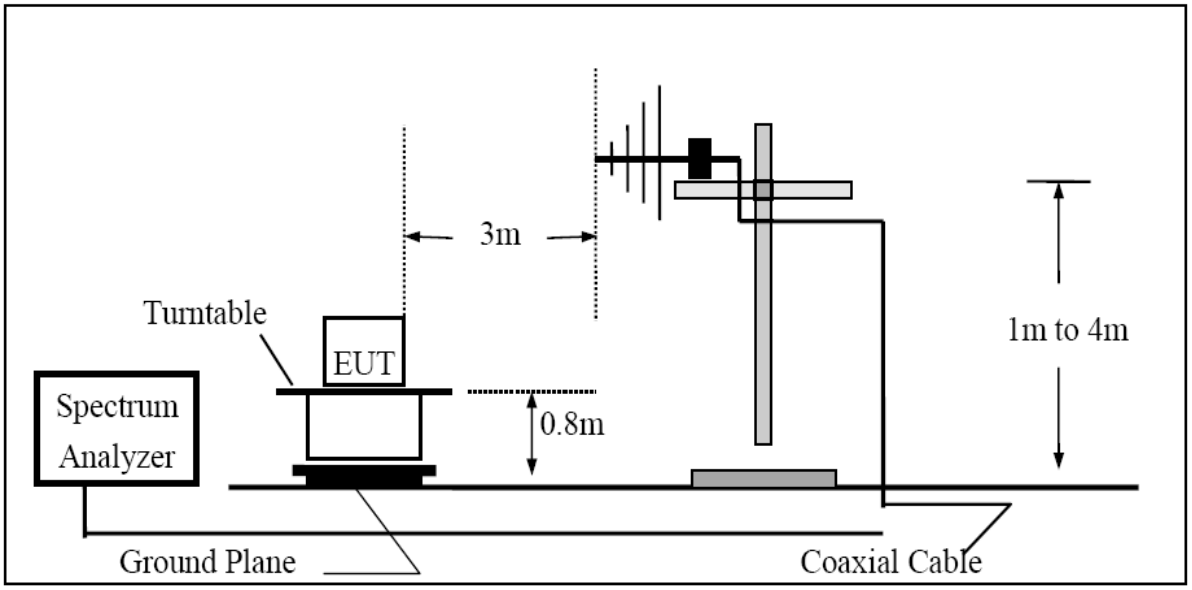
Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705-30	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
Above 960	300	54.0	3

According to §15.109(a), for an unintentional device, except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the above table.

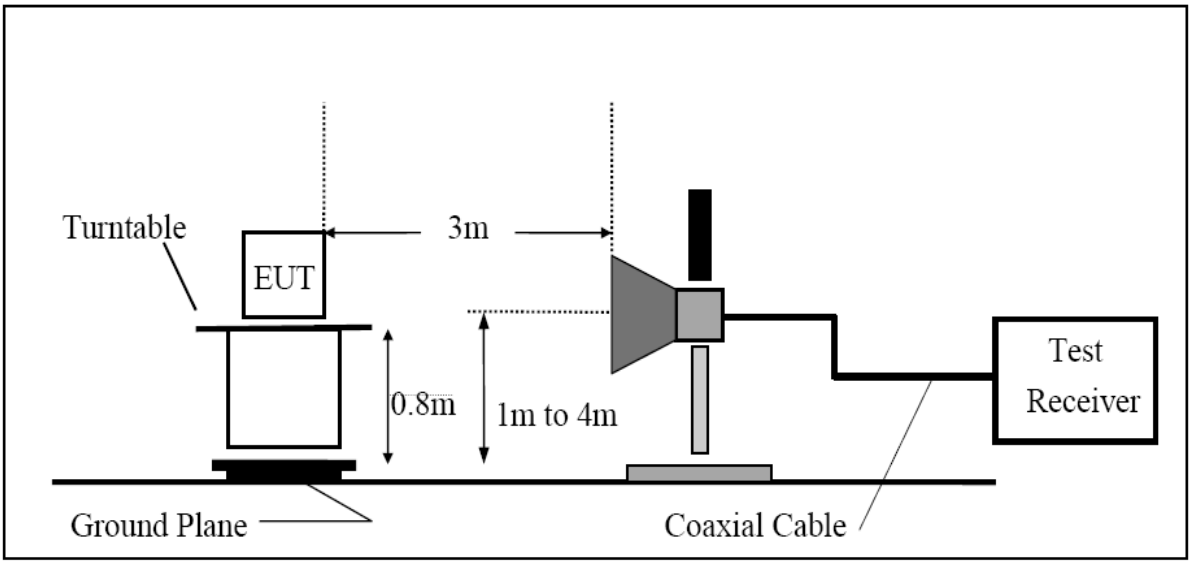
** The emission limits shown in the above table are based on measurement instrumentation employing a CISPR quasi-peak detector and above 1000 MHz are based on the average value of measured emissions.

6.5.2 Test Setup Layout

6.5.2.1 Radiated Emission Test Set-Up, Frequency Below 1000MHz



6.5.2.2 Radiated Emission Test Set-UP Frequency Over 1000MHz



6.5.3 Test Procedure

1) Band-edge Compliance of RF Conducted Emissions

1. Set the spectrum analyzer as follows:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation

RBW ≥ 1% of the span

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

2. 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.
3. Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.

2) Spurious RF Conducted Emissions:

1. Set the spectrum analyzer as follows:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

2. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.

3) Spurious Radiated Emissions:

1. The preliminary radiated measurements were performed to determine the frequency producing the maximum emissions in an anechoic chamber at a distance of 3 meters for above 30 MHz, and at 1 meter distance for below 30 MHz.
2. The EUT was placed on the top of the 0.8-meter height, 1 × 1.5 meter non-metallic table. To find the maximum emission levels, the height of a measuring antenna was changed and the turntable was rotated 360°.

3. The antenna polarization was also changed from vertical to horizontal. The spectrum was scanned from 9 kHz to 30 MHz using the loop antenna, from 30 to 1000 MHz using the Trilog broadband antenna, and from 1 GHz to tenth harmonic of the highest fundamental frequency using the horn antenna.
4. To obtain the final measurement data, the EUT was arranged on a turntable situated on a 4 × 4 meter at the Open Area Test Site. The EUT was tested at a distance 3 meters.
5. Each frequency found during preliminary measurements was re-examined and investigated. The test-receiver system was set up to average, peak, and quasi-peak detector function with specified bandwidth.
6. The EUT is situated in three orthogonal planes (if appropriate)
7. The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT.
8. If the emission on which a radiated measurement must be made is located at the edge of the authorized band of operation, then the alternative “marker-delta” method may be employed.

4) Marker-Delta Method at the edge of the authorized band of operation:

1. Perform an in-band field strength measurement of the fundamental emission using the RBW and detector function as the above Spurious Radiated Emissions test procedure.
2. Choose a spectrum analyzer span that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set the analyzer RBW to 1% of the total span (but never less than 30 kHz) with a video bandwidth equal to or greater than the RBW. Record the peak levels of the fundamental emission and the relevant band-edge emission (i.e., run several sweeps in peak hold mode). Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not a field strength measurement; it is only a relative measurement to determine the amount by which the emission drops at the band-edge relative to the highest fundamental emission level.
3. Subtract the delta measured in step (2) from the field strengths measured in step (1). The resultant field strengths (CISPR QP, average, or peak, as appropriate) are then used to determine band-edge compliance as required by Section 15.205.
4. The above "delta" measurement technique may be used for measuring emissions that are up to two "standard" bandwidths away from the band-edge, where a "standard" bandwidth is the bandwidth specified by C63.4 for the frequency being measured. For example, for band-edge measurements in the restricted band that begins at 2483.5 MHz, C63.4 specifies a measurement bandwidth of at least 1 MHz. Therefore you may use the "delta" technique for measuring emissions up to 2 MHz removed from the band-edge. Radiated emissions that are removed by more than two “standard” bandwidths must be measured as the above Spurious Radiated Emissions test procedure.

6.5.4 Test Results: PASS

Band-edge compliance of RF conducted/radiated emissions was shown in the 6.5.5 and 6.5.6.

NOTE: We took the insertion loss of the cable loss into consideration within the measuring instrument.

Spurious RF conducted emissions were shown in the 6.5.7.

NOTE: We took the insertion loss of the cable loss into consideration within the measuring instrument.

Table 4 : Measured values of the Field strength of spurious emission (Transmit mode)

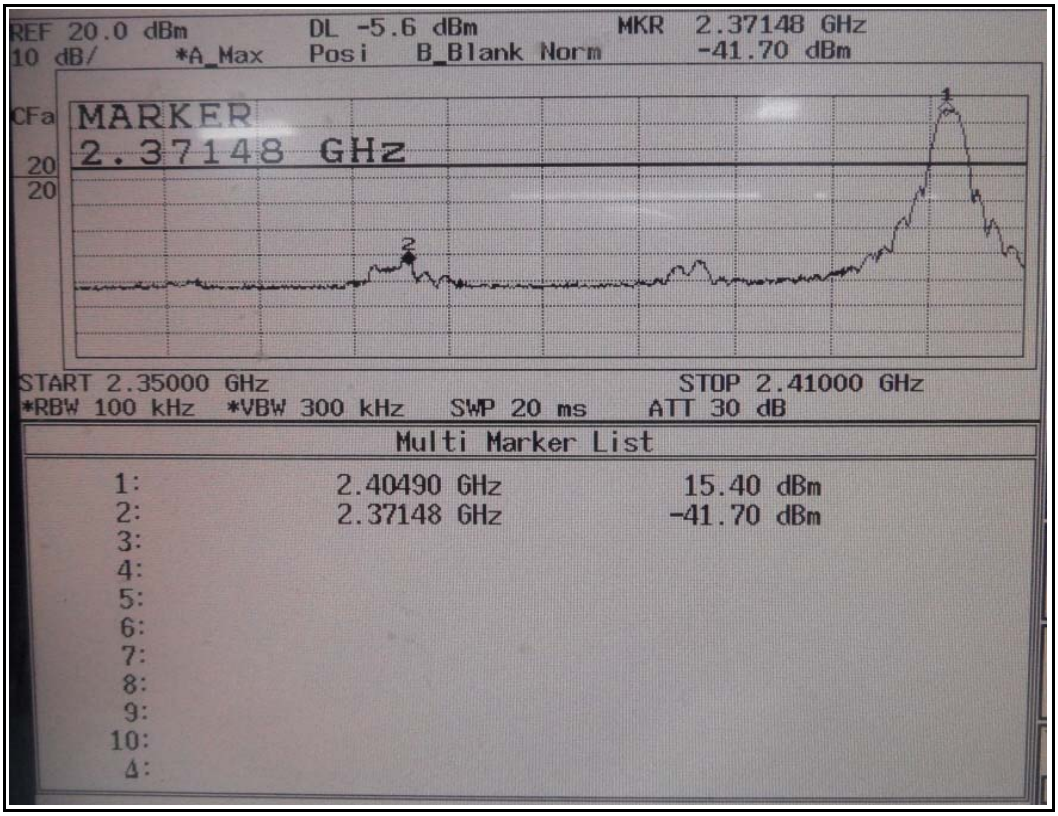
Frequency (MHz)		Detect Mode	Polarization (V/H)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2405	7240	Peak	V	46.00	74.00	28.00
	7240	Average	V	34.06	54.00	19.94
	9610	Peak	H	50.21	74.00	23.79
	9610	Average	H	39.33	54.00	14.67
2445	7400	Peak	V	46.51	74.00	27.49
	7400	Average	V	34.69	54.00	19.31
	9850	Peak	H	50.58	74.00	23.42
	9850	Average	H	39.08	54.00	14.92
2480	7510	Peak	V	47.17	74.00	26.83
	7510	Average	V	35.86	54.00	18.14
	9950	Peak	H	50.30	74.00	23.70
	9950	Average	H	36.05	54.00	17.95

Note.

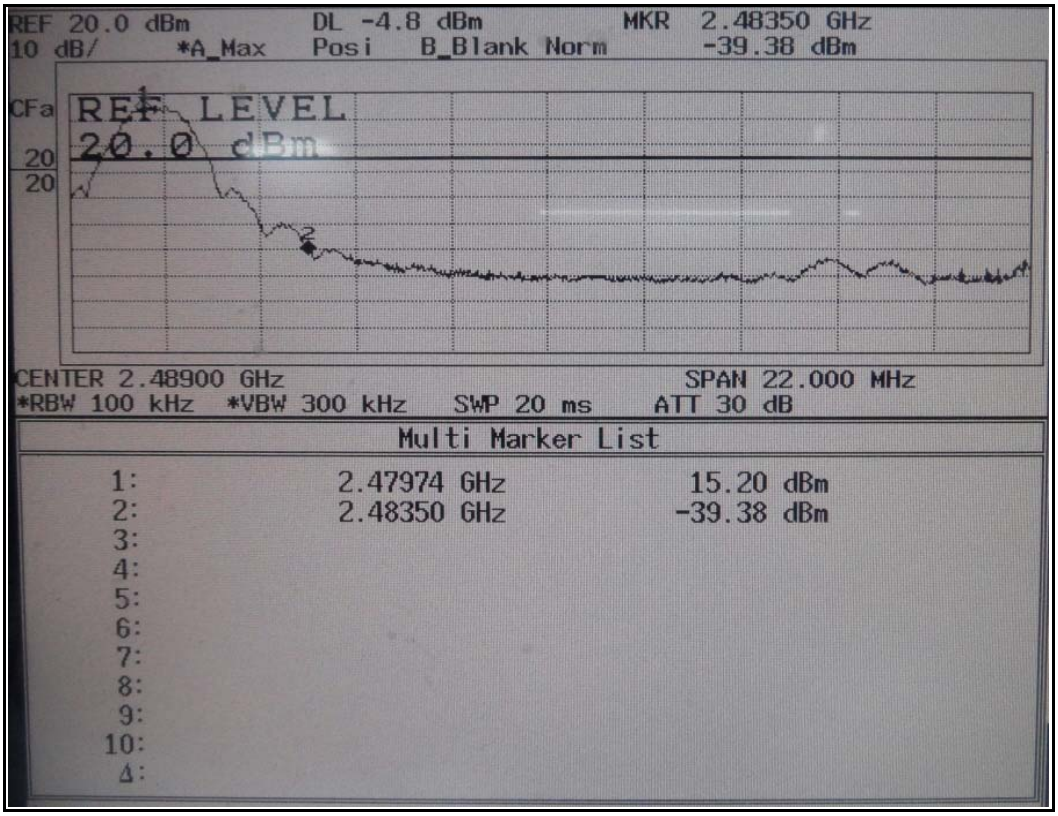
1. No other emissions were detected at a level greater than 20dB below limit.
2. Margin (dB) = Limit – Emission Level
3. H = Horizontal, V = Vertical Polarization

6.5.5 Plot of the Band Edge (Conducted)

Lowest Channel



Highest Channel

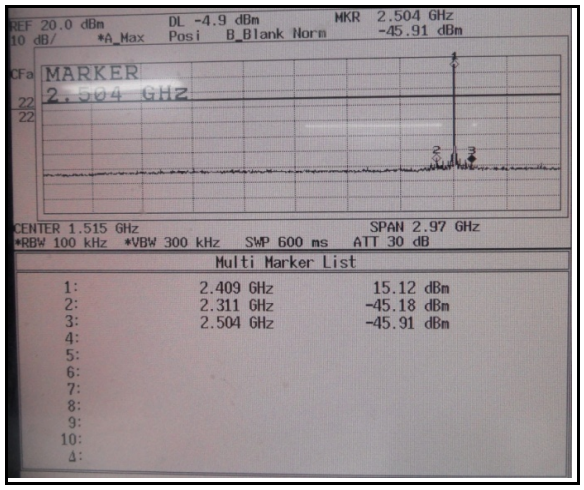


6.5.6 Plot of the Band Edge (Radiated)

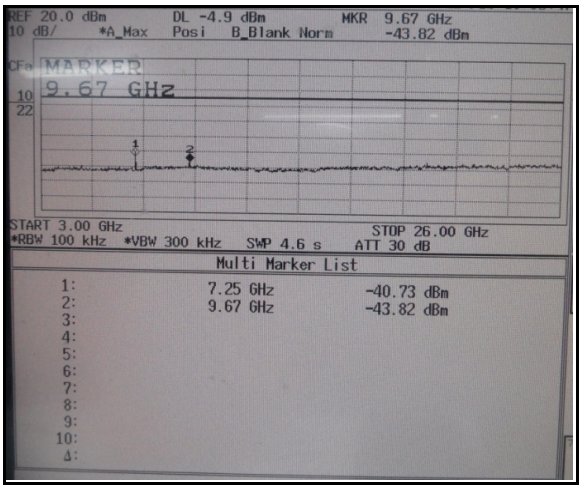
Table 5 : Measured values of the Band Edge(Radiated)					
Frequency (MHz)		Detect Mode	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2405	2358.70	Peak	45.34	74	28.66
	2378.90	Average	32.72	54	21.28
2480	2329.50	Peak	45.18	74	28.82
	2340.80	Average	32.41	54	21.59

6.5.7 Plot of the Spurious RF conducted emissions

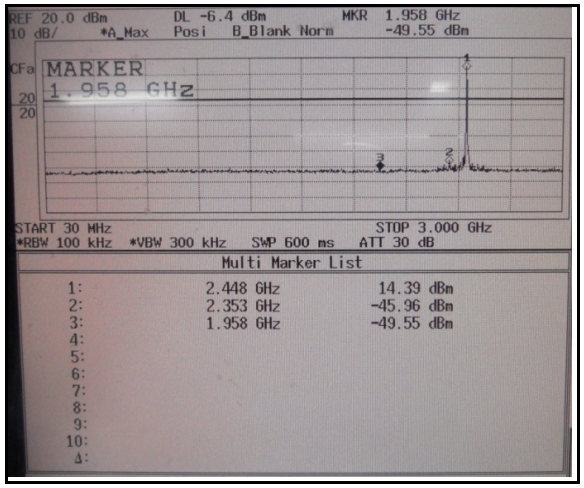
Lowest Channel : 30MHz ~ 3GHz



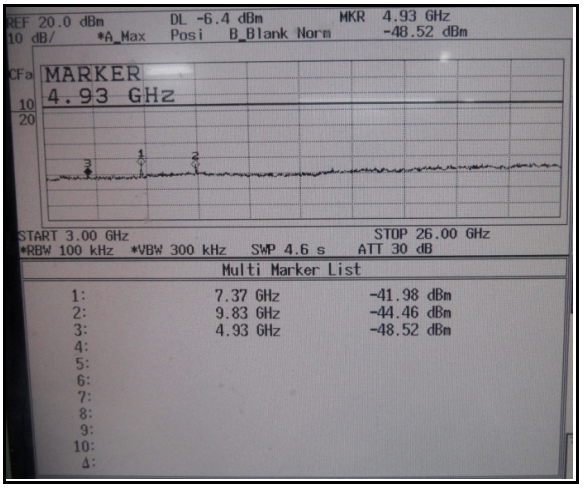
Lowest Channel : 3GHz ~ 26GHz



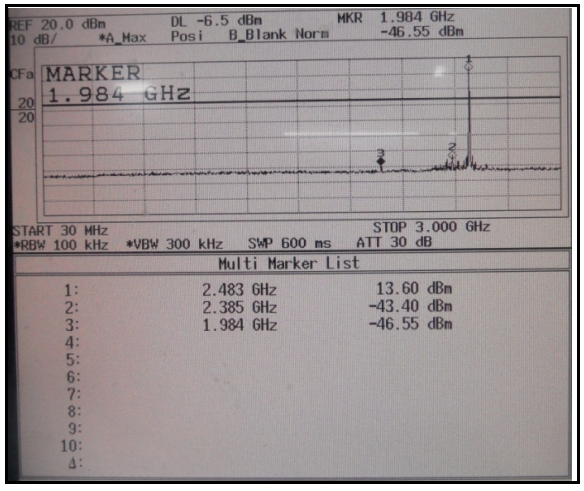
Middle Channel : 30MHz ~ 3GHz



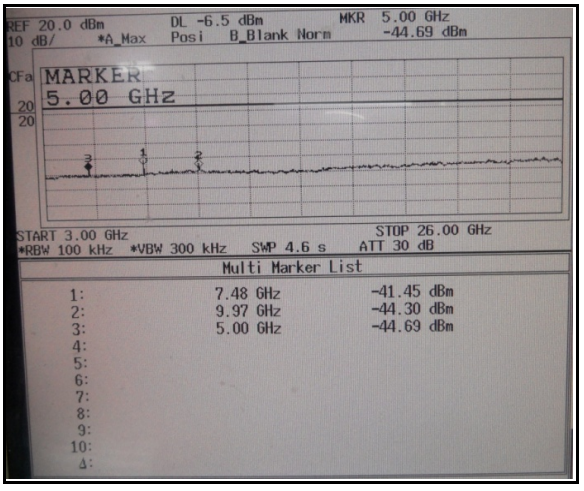
Middle Channel : 3GHz ~ 26GHz



Highest Channel : 30MHz ~ 3GHz



Highest Channel : 3GHz ~ 26GHz



6.6 AC Power Line Conducted Emissions

6.6.1 Regulation

According to §15.207(a), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Qausi-peak	Average
0.15 – 0.5	66 to 56 *	56 to 46 *
0.5 – 5	56	46
5 – 30	60	50

* Decreases with the logarithm of the frequency.

According to §15.107(a), for unintentional device, except for Class A digital devices, line conducted emission limits are the same as the above table.

6.6.2 Test Procedure

1. The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 cm in which is located 40 cm away from the vertical wall and 1.5m away from the side wall of the shielded room.
2. Each current-carrying conductor of the EUT power cord was individually connected through a 50Ω/50μH LISN, which is an input transducer to a Spectrum Analyzer or an EMI/Field Intensity Meter, to the input power source.
3. Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 MHz to 30 MHz.
5. The measurements were made with the detector set to PEAK amplitude within a bandwidth of 10 kHz or to QUASI-PEAK and AVERAGE within a bandwidth of 9 kHz. The EUT was in trans--mitting mode during the measurements.

6.6.3 Test Results:

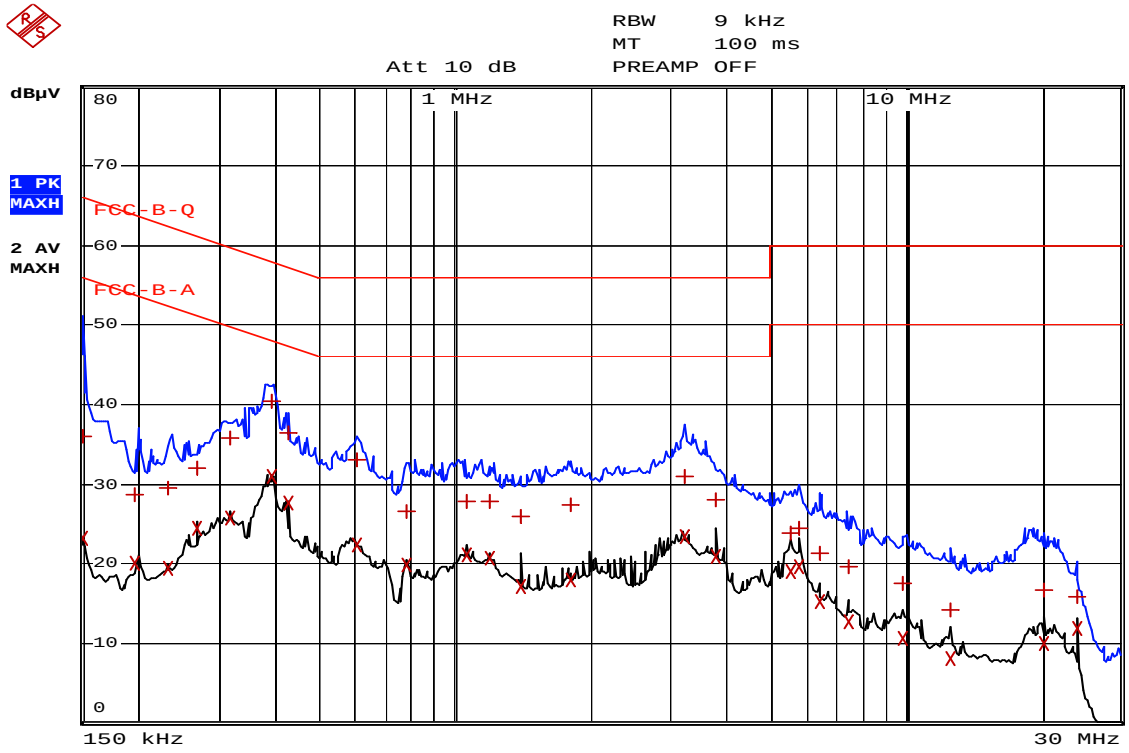
Table 6 : Measured values of the AC Power Line Conducted Emissions

Frequency (MHz)	Mode	Hot/Neutral (H/N)	Measured Value (dBμV)	Correction Factor (dB)	Cable Loss (dB)	Emission Level (dBμV)	Limit (dBμV)	Margin (dB)
0.15	Qausi-peak	N	39.86	0.03	0.04	39.93	66.00	26.07
	Average		32.20			32.27	56.00	23.73
0.18	Qausi-peak	N	36.47	0.03	0.06	36.56	64.49	27.93
	Average		29.17			29.26	54.49	25.23
0.30	Qausi-peak	N	37.49	0.03	0.07	37.59	60.24	22.65
	Average		31.34			31.44	50.24	18.80
0.31	Qausi-peak	N	38.19	0.03	0.07	38.29	59.97	21.68
	Average		33.09			33.19	49.97	16.78
0.38	Qausi-peak	H	38.77	0.04	0.08	38.89	58.28	19.39
	Average		32.75			32.87	48.28	15.41
0.39	Qausi-peak	N	40.47	0.03	0.08	40.58	58.06	17.48
	Average		33.52			33.63	48.06	14.43
0.58	Qausi-peak	N	30.26	0.03	0.06	30.35	56.00	25.65
	Average		23.17			23.26	46.00	22.74
0.60	Qausi-peak	H	33.63	0.04	0.06	33.73	56.00	22.27
	Average		26.48			26.58	46.00	19.42
0.69	Qausi-peak	N	29.15	0.04	0.04	29.23	56.00	26.77
	Average		21.31			21.39	46.00	24.61
1.21	Qausi-peak	H	30.53	0.04	0.07	30.64	56.00	25.36
	Average		22.55			22.66	46.00	23.34
2.91	Qausi-peak	H	30.01	0.07	0.19	30.27	56.00	25.73
	Average		24.46			24.72	46.00	21.28
3.64	Qausi-peak	H	29.27	0.08	0.22	29.57	56.00	26.43
	Average		-			-	-	-
5.45	Qausi-peak	N	20.49	0.09	0.29	20.87	60.00	39.13
	Average		16.05			16.43	50.00	33.57
5.51	Qausi-peak	H	20.35	0.10	0.29	20.74	60.00	39.26
	Average		15.41			15.80	50.00	34.20
6.05	Qausi-peak	H	21.88	0.11	0.31	22.30	60.00	37.70
	Average		14.97			15.39	50.00	34.61
6.75	Qausi-peak	N	18.72	0.11	0.34	19.17	60.00	40.83
	Average		-			-	-	-
7.47	Qausi-peak	N	17.85	0.12	0.36	18.33	60.00	41.67
	Average		-			-	-	-
7.48	Qausi-peak	H	19.52	0.13	0.36	20.01	60.00	39.99
	Average		-			-	-	-

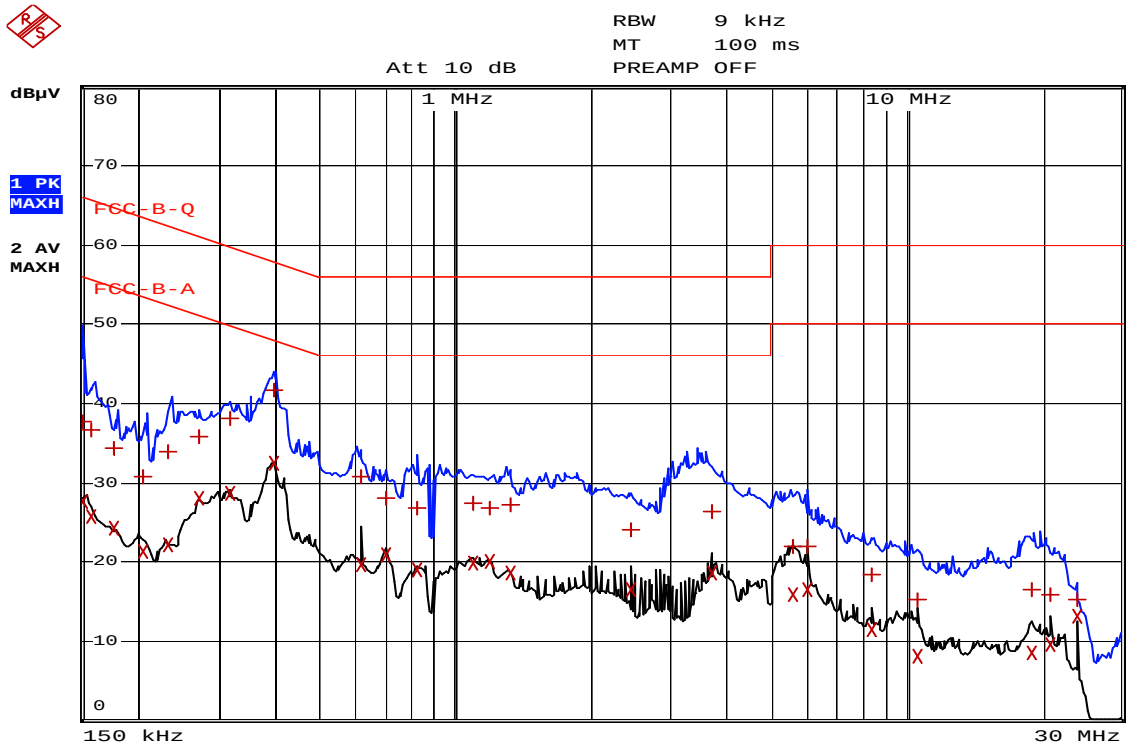
1. Margin (dB) = Limit – Emission Level
2. Emission Level = Measured Value + CF + CL

6.6.4 Plot of the AC Power Line Conducted Emissions

HOT LINE



NEUTRAL LINE



6.7 RECEIVER SPURIOUS EMISSIONS

6.7.1 Regulation

According to §15.209(a), for an intentional device, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Field strength (μV/m @ 3m)	Field strength (dBμV/m @ 3m)
30–88	100.0	40.0
88–216	150.0	43.5
216–960	200.0	46.0
Above 960	500.0	54.0

According to §15.109(a), for an unintentional device, except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the above table.

** The emission limits shown in the above table are based on measurement instrumentation employing a CISPR quasi-peak detector and above 1000 MHz are based on the average value of measured emissions.

6.7.2 Test Condition

- Detector mode : CISPR Quasi - Peak mode (6dB Bandwidth : 120 kHz)
- The following table shows the highest levels of radiated emissions on both polarization of horizontal and vertical.

6.7.3 Test Results : PASS

Table 7 : Measured values of the Field strength of spurious emission (Receiver mode)

Frequency (MHz)	Detect Mode	Polarization (V/H)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Quasi-peak data, emissions below 1000 MHz					
	All radiated results are exist under 20dB below than the limit				
Peak/Average data, emissions above 1000 MHz					
	All radiated results are exist under 20dB below than the limit				

1. Margin (dB) = Limit – Emission Level
2. H = Horizontal, V = Vertical Polarization

7.Test Equipment Used For Test

Used equipment	Description	Manufacturer	Model Name	Serial Number	Specifications	Next Cal. Data
■	Spectrum Analyzer	ADVANTEST	R3273	101102518	100Hz ~ 26.5GHz	2012-10-13
□	MICROWAVE FREQUENCY COUNTER	ANRITSU	MF2414B	6200003197	10Hz ~ 26.5GHz	2012-10-04
□	EPM-P SERIES POWER METER	Agilent	E4416A	GB38272722	1CH 100-240VAC	2012-10-04
□	Power Sensor	Agilent	8481A	US41030240	MAX.23dBm AVG, 18GHz	2012-10-14
□	Signal Generator	ROHDE&SCHWARZ	SMIQ03B	832870/056	300kHz ~ 3.3GHz	2012-10-04
□	Signal Generator	AGILENT	83732B	US37101885	10MHz ~ 20GHz	2013-01-16
□	Modulation Analyzer	HP	8901B	3028A02980	150kHz-1.3GHz	2012-10-13
□	Audio Analyzer	HP	8903B	3729A17164	20Hz-100kHz	2012-10-04
□	Attenuator	Weinschel	41-6-12	21644	6dB, 10W	2012-10-13
□	Attenuator	Weinschel	41-10-12	13218	10dB, 10W	2012-10-13
□	Dual Directional Coupler	HP	778D	15923	20dB Coupler	2012-10-04
□	Dual Directional Coupler	AGILENT	11691D	1212A01281	18GHz 20dB	2013-02-29
□	BT SIMULATOR	TESCOM CO. LTD	TC-3000A	3000A4C0158	100-240VAC 50/60Hz 40W	2012-10-06
□	Power Divider	H.P	11636B	07317	DC-26.5GHz	2012-10-13
□	Power Divider	H.P	11636B	07412	DC-26.5GHz	2012-10-13
■	Test receiver	ROHDE&SCHWARZ	ESPI3	101171	9kHz~3GHz	2012-08-12
■	BI-LOG ANT	SCHWARZBECK	VULB9163	398	30MHz~1GHz	2013-10-03
□	Loop Antenna	EMCO	6502	9801-3191	9KHz~30MHz	2014-02-02
■	Horn antenna	Schwarzbeck	BBHA 9120D	769	1GHz ~ 18GHz	2013-03-22
■	Horn antenna	Schwarzbeck	BBHA 9120D	768	1GHz ~ 18GHz	2013-03-22
■	Spectrum Analyzer	ROHDE&SCHWARZ	FSPI3	100640	9kHz ~ 13.6GHz	2013-01-04
■	Amplifier	TESTEK	TS-PA2	120005	500MHz~18GHz	2013-03-01
□	DC Power Supply	ODA Tech	OPE-505S	oda-01-0923-03430	1CH 50V 5A	-
□	Slidacs	Daekwang	-	-	5KVA, OUTPUT:AC:0~300	-
■	DC Power Supply	Maynuo	M8811	080010960011103046	30V 5A	2012-08-16
□	Digital Mutil Meter	UTI	DMSC 683A	06086830042	750V 10A	-
□	Digital Mutil Meter	FLUKE	8842A	5126272	1000V 2A	2012-08-11
□	Continuous operation tester	-	-	-	MAX 9990시간	2013-03-11
□	Vibration Tester	Gana	GNV-500	-	0~60Hz/50Kg	2012-10-04
□	HUMIDITY CHAMBER	BUM JIN Eng.	-	-	-40~120°C 95%	2012-09-16
□	Drop Tester	JUNG JIN Eng.	-	-	0-120Cm	-

8. EUT Photographs

8.1 Front view

8.2 Back view