

Certificate of Test

January 2008

Sunrex Technology Corp.

Product Type : Wireless Receiver

Model Number : RX504B

Test Report Number : 0711102R-01

Date of Test : January 02, 2008- January 03, 2008

This Product was tested to the following standards at the laboratory of Global EMC Standard Tech. Corp., and found Compliance.

Standards:

FCC Part 15 Subpart C Paragraph 15.249

ANSI C63.4: 2003

[http : //www.gestek.com.tw](http://www.gestek.com.tw)



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Date: January 08, 2008



NVLAP LAB CODE 200085-0





**Test Report
Application for
Certification
On Behalf Of**

Sunrex Technology Corp.

**EUT:
Wireless Receiver**

**Model Number:
RX504B**

**FCC ID:
J75504B**

**Prepared for:
Sunrex Technology Corp.
No. 188-1, Chung Cheng Rd., Ta Ya Shiang, Taichung Hsien,
Taiwan, R.O.C.**

**Report By :Global EMC Standard Tech. Corp.
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1. CERTIFICATION

Applicant : Sunrex Technology Corp

EUT Description : Wireless Receiver
Model Number : RX504B
Serial Number : N/A
Brand Name : Sunrex
FCC ID : J75504B
Tested Power Supply : DC 5V
Manufacturer : Sunrex Technology Corp
Manufacturer Address : No. 188-1, Chung Cheng Rd., Ta Ya Shiang, Taichung Hsien,
Taiwan, R.O.C.

MEASUREMENT PROCEDURES USED:

- ☒ **CFR 47, Part 15** Radio Frequency Device Subpart C Intentional Radiators :2007
☒ **ANSI C63.4** Methods of Measurements of Radio-Noise Emissions from Low- Voltage
Electrical and Electronic Equipment in the range of 9kHz To 40GHz.
2003

THE MEASUREMENT SHOWN IN THE ATTACHMENT WAS MADE IN ACCORDANCE WITH THE PROCEDURES INDICATED, AND THE MAXIMUM ENERGY EMITTED BY THE EQUIPMENT WAS FOUND TO BE WITHIN THE ABOVE LIMITS APPLICABLE.



NVLAP LAB CODE 200085-0

Date of est : **January 02, 2008 – January 03, 2008**

In order to ensure the quality and accuracy of this document, the contents have been thoroughly reviewed by the following qualified personnel from GesTek Lab.

Documented By :

A handwritten signature in blue ink, appearing to read 'Rini Chen', is written over a horizontal blue line.

Rini Chen / adm. Dept. Supervisor

Tested By :

A handwritten signature in blue ink, appearing to read 'John Wu', is written over a horizontal blue line.

John Wu / eng. Dept. Engineer

Approved By :

A handwritten signature in blue ink, appearing to read 'Tony Lin', is written over a horizontal blue line.

Tony Lin / General Manager

This test data shown below is traceable to National or international standard such as NIST/USA, etc. The laboratory's NVLAP accreditation in no way constitutes or implies product certification, approval, or endorsement by NVLAP or the United States government.

2. GENERAL INFORMATION

2.1 PRODUCTION DESCRIPTION

Product Name : Wireless Receiver
Model Number : RX504B
Serial Number : N/A
Brand Name : Sunrex
FCC ID : J75504B
Modulation Type : GFSK
Antenna Type : Printed on PCB
Antenna Gain : 0 dBi
Frequencg Range : 2.407~2.477GHz
Channel Number : 5 Channel
Working Voltage : DC 5V

Frequency of Each Channel:

Channel	Frequency (MHz)
1	2477
2	2438
3	2407
4	2472
5	2430

Note:

1. This device is transceiver of Wireless Receiver included transmit and receive function.
The test report is for transmitter.
2. This device is 5 channel and perform the test, then record on this report.
3. The antenna of EUT is printer on PCB and conform to FCC 15.203.
4. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249.
5. The device of receive function to accordance with Part 15 regulations and under Declaration of Conformity and record of measurment in test report that the report number is 0711102F-01.

2.2 OPERATIONAL DESCRIPTION

This device is transceiver of wireless USB dongle included transmit and receive function. The device can transmit signal to associate wireless keyboard and receive signal from wireless keyboard.

The device have 5 channel and operated in 2.407 to 2.477GHz with GFSK modulation.

Another information please refer to users manual.

2.3 TEST MODES & EUT COMPONENTS DESCRIPTION

EUT: Wireless Receiver, M/N: RX504B	
Test Mode	Mode 1
	Transmitter

2.4 SUMMARY OF TEST PROCEDURE AND TEST RESULTS

Test Item	Applied Standard Section	Test Result
Conduction Emission	15.109, ANSI C63.4 Section 7	Pass (refer to section 3.7)
Radiation Emission	15.209, ANSI C63.4 Section 8	Pass (refer to section 4.7)
Peak Power Output	15.249(a), ANSI C63.4 Section 13 & Annex I	Pass (refer to section 4.7)
Band Edge	15.249(d), ANSI C63.4 Section 13 & Annex I	Pass (refer to section 5.6)

2.5 CONFIGURATION OF THE TESTED SYSTEM

The FCC IDs/Types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

Device	No.	Configuration
LCD MONITOR (DVI&D-SUB)	M01-062	Manufacturer : SONY Model Number : SDM-HS75P Serial Number : N/A BSMI ID : R33037 FCC ID : N/A DVI&D-SUB Cable : Non-Shielded, Detachable, 1.8m,cord POWER:AC INPUT :100-240V,50/60HZ Adapter Power Cord : Non-Shielded, Detachable, 3Pin, 1.8m
Modem	M03-022	Manufacturer : ACEEX Model Number : 1414V Serial Number : 0046175 BSMI ID : N/A FCC ID : IFAXDM1414 Data Cable : T Type:RS232, Shielded, Detachable, 1.2m Power Cord : Non-Shielded, Detachable, 1.5m Line : Type:RJ11(4P2C), Detachable, 1.8m Phone : Type:RJ11(4P2C), Detachable, 1.8m
Headset & Earphone	E01-078	Manufacturer : TOKYO Model Number : SX-M1 Serial Number : N/A Data Cable : Non-Shielded, Undetachable, 1.8 m Power Cord : N/A Purchase Date : 2/22/1999
USB Mouse	M02-281	Manufacturer : Logitech Model Number : M-U48A BSMI ID : 4882A177 FCC ID : JNZ211360 Data Cable : Shielded, Undetachable, 1.5m
Printer	P01-015	Manufacturer : Hewlett Packard Model Number : 2225C Serial Number : 2512S40942 BSMI ID : 3892A957 FCC ID : BS46XU2225C Data Cable : Shielded, Detachable, 1.2m, Parallel Cable Power Cord : Non-Shielded, Detachable, 1.8m

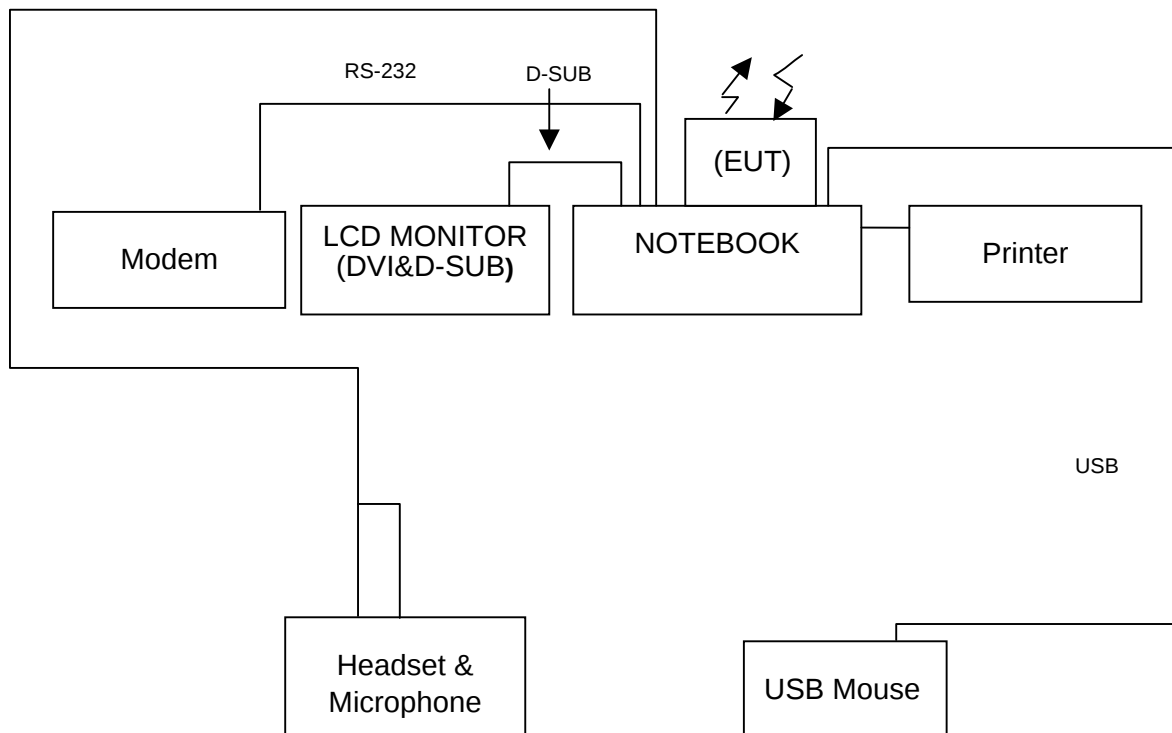
Device	No.	Configuration
NOTEBOOK	DELL NB 1	Model Number : Latitude D600 PPO5L BSMI ID : R33002 FCC ID : E2K24CLNS Serial Number : 10826163280 C.P.U : Intel Pentium M 1.4G HZ DDR : PC2100 256MB WIRELESS LAN : Manufacturer :INTEL CARD : M/N:WM3A2100 FCC ID: E2K24CLNS F.D.D : N/A H.D.D. : Manufacturer : FUJITSU 30G M/N: MHT2030AT S/N:NN15T421E09C BSMI ID:D33073 DVD-ROM : Manufacturer :DELL M/N:5W299-A01 BATTERY : Manufacturer :DELL Li-ion MODULE : M/N:6Y270 RATING:14.8V 220mAh AC ADAPTOR : Manufacturer :DELL M/N: PA-1650-05D S/N:CN-05U092-48010-39N-227C INPUT:AC 100-240 V~1.5A 50-60HZ Shielded, Undetachable, 2.5m

2.6 TEST FACILITY

Ambient conditions in the laboratory:

ITEMS	Requirement
TEMPERATURE (°C)	10-40
HUMIDITY (%RH)	10-90
BAROMETRIC PRESSURE (mbar)	860-1060
FCC SITE DESCRIPTION	Aug. 10, 1995 /Aug. 25, 1998 File on FCC Engineering Laboratory Federal Communication Commission 7435 Oakland Mills Road Columbia, MD 21046 Reference 31040/SIT1300F2
NVLAP LAB. CODE	200085-0 United States Department of commerce National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program Accreditation on NVLAP effective through Sep. 30, 2008 For CISPR 22, FCC Method and AS/NZS CISPR 22 Measurement.
Taiwan Accreditation Foundation (TAF)	Recognized by the Council of Taiwan Accreditation Foundation and confirmed to meet the requirements of ISO/IEC 17025. Registration No.: 1082 Registration on TAF effective through Sep. 19, 2009

2.7 TEST SETUP



2.8 EUT OPERATING CONDITIONS

The EUT exercise program used during conducted testing was designed to exercise the EUT in a manner similar to a typical use. The exercise sequence is listed as below:

1. Setup the EUT and simulators as shown on 2.7.
2. Turn on the power of all equipments.
3. The transmitter will transmit the signal continue.
4. Confirm the receiver is receive signal continue.
5. Repeat the above steps.

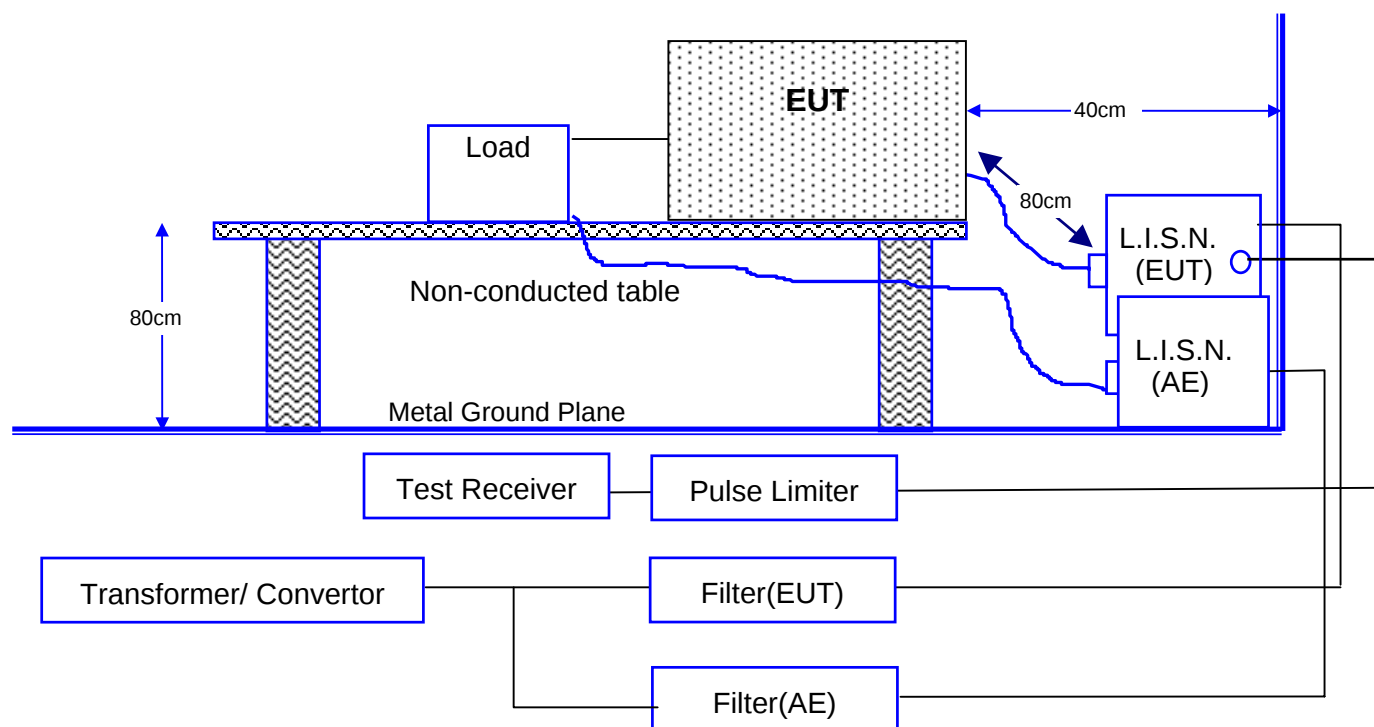
3. CONDUCTION EMISSION DATA

3.1 TEST EQUIPMENTS

The following test equipment are used during the conducted power line tests:

Item	Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
1	Test Receiver	R & S	ESCS30	825022/003	2008.05.25
2	LISN	R & S	ENV216	100006	2008.05.28
3	LISN	ROLF HEINE	NNB-2/16Z	98091	2008.07.22
4	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	357.8810.52	2008.08.01
5	RF CABLE	GesTek	N/A	GTK-E-A152-01	2008.12.13
6	50 Ohm Terminator	GesTek	N/A	GTK-E-A124-01	N/A
7	Shielded Room	GesTek	N/A	B5	N/A

3.2 BLOCK DIAGRAM OF TEST SETUP



Note: This is a comprehensive setup diagram for Table-top EUT.

For Floor-standing EUT, the table will be removed with all others setup condition remain the same.

3.3 CONDUCTED EMISSION LIMIT

☒FCC 15.107

Frequency	Conducted Limits dB(μV)			
	Class A		Class B	
MHz	QUASI-PEAK	AVERAGE	QUASI-PEAK	AVERAGE
0.15 to 0.50	79	66	66 to 56	56 to 46
0.50 to 5.0	73	60	56	46
5.0 to 30	60	60	60	50

Remarks : In the Above Table, the tighter limit applies at the band edges.

3.4 OPERATING CONDITION OF EUT

Same as section 2.5.

3.5 EUT CONFIGURATION ON MEASUREMENT

The equipment, which is listed 3.1, is installed on Conducted Power Line Test to meet the Commission requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

The device under test, installed in a representative system as described in section 3.2, was placed on a non-conductive table whose total height equal to 80cm. Powered from one L.I.S.N. which signal output to receiver, and the other peripherals was powered from another L.I.S.N. which signal output was terminated by 50Ω.

3.6 CONDUCTED EMISSION DATA

The measurement range of conducted emission from [0.15 MHz to 30 MHz](#) was investigated. All readings are quasi-peak and average values with a resolution Bandwidth of 9 KHz. The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range for all the test modes. Then the worst modes were reported the following data pages

3.7 CONDUCTED EMISSIONS MEASUREMENT RESULTS

Date of Test	January 03, 2008	Temperature	26
EUT	Wireless Receiver	Humidity	60 %
Test Mode	Mode 1		

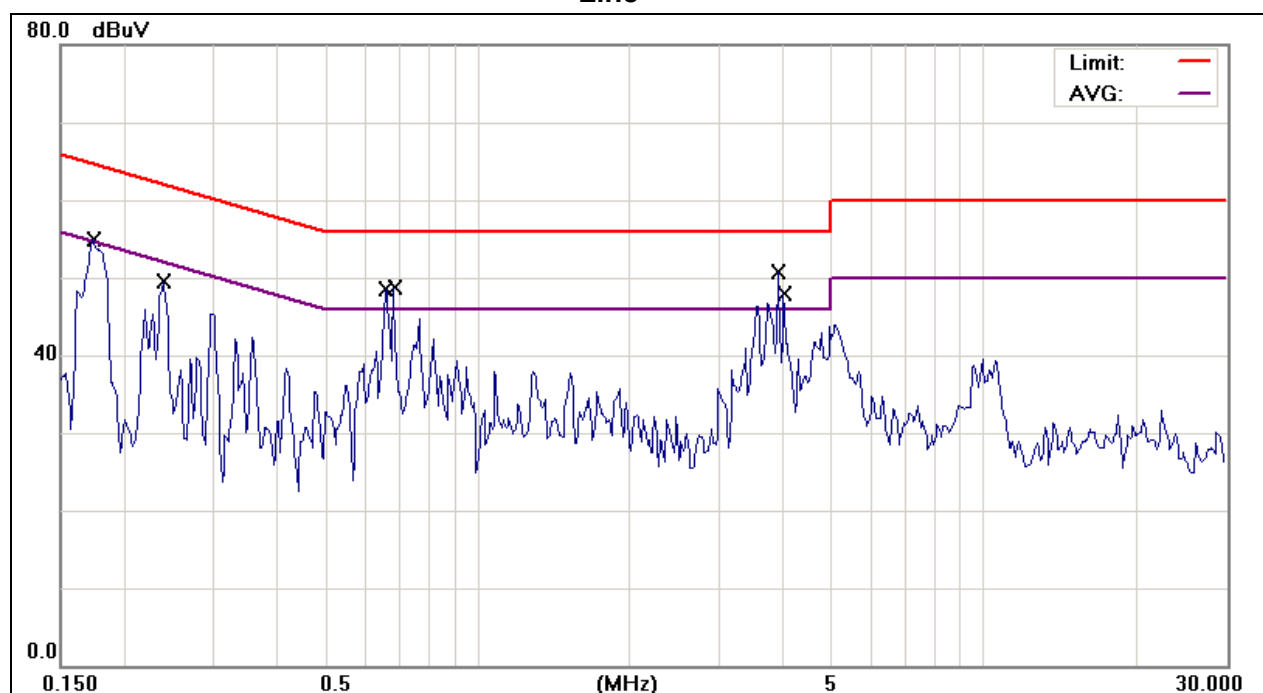
Line

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV	Limit dBμV	Over Limit dB	Detector
1	0.1745	39.88	9.67	49.55	64.74	-15.19	QP
2	0.1745	35.63	9.67	45.30	54.74	-9.44	AVG
3	0.2391	36.95	9.67	46.62	62.13	-15.51	QP
4	0.2391	35.75	9.67	45.42	52.13	-6.71	AVG
5	0.6573	37.53	9.68	47.21	56.00	-8.79	QP
6	0.6573	32.13	9.68	41.81	46.00	-4.19	AVG
7	0.6835	38.94	9.68	48.62	56.00	-7.38	QP
8	0.6835	32.12	9.68	41.80	46.00	-4.20	AVG
9	3.9199	31.88	9.72	41.60	56.00	-14.40	QP
10	3.9199	28.07	9.72	37.79	46.00	-8.21	AVG
11	4.0357	29.10	9.72	38.82	56.00	-17.18	QP
12	4.0357	26.92	9.72	36.64	46.00	-9.36	AVG

Remarks :

1. All readings are Quasi-peak and Average values.
2. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
3. Over Limit (Margin Value)=Measurement level-Limit value.
4. Factor = L.I.S.N. insertion loss + cable loss
5. " " means that this data is the worse case measurement level.

Line



Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "AVG" refers to the limit of Average.

Date of Test	January 03, 2008	Temperature	26
EUT	Wireless Receiver	Humidity	60 %
Test Mode	Mode 1		

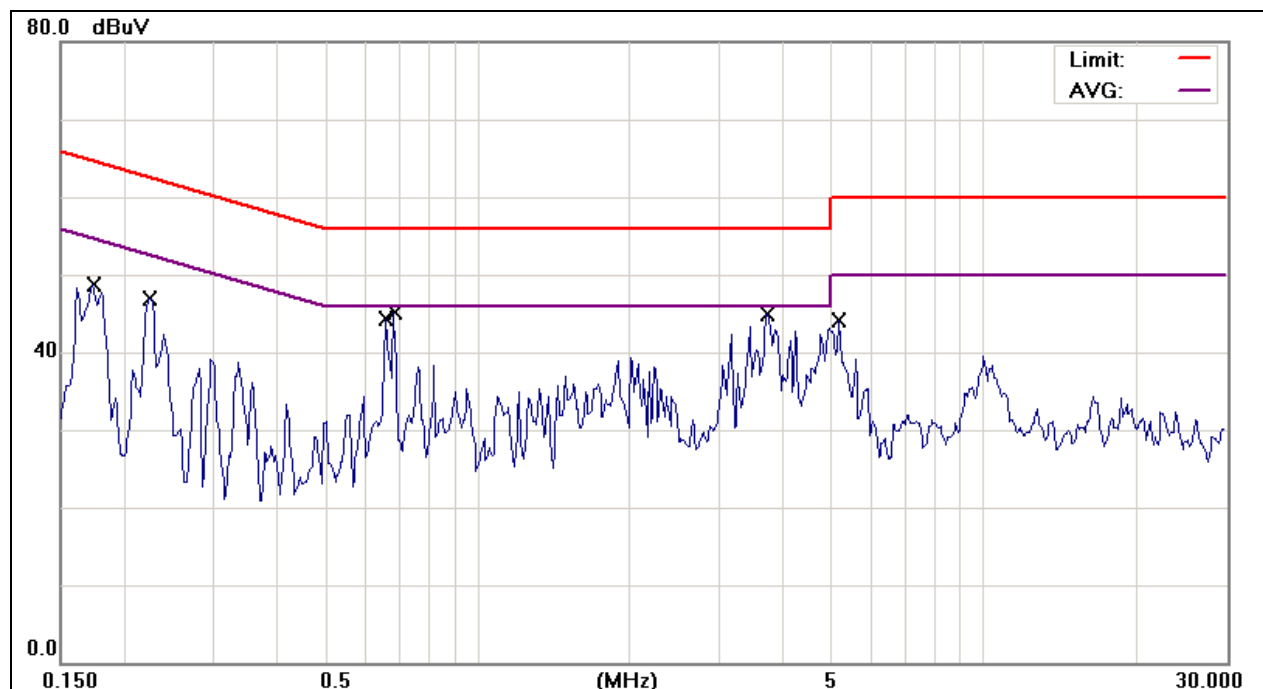
Neutral

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V	Limit dB μ V	Over Limit dB	Detector
1	0.1733	40.08	9.67	49.75	64.80	-15.05	QP
2	0.1733	32.90	9.67	42.57	54.80	-12.23	AVG
3	0.2277	34.60	9.67	44.27	62.53	-18.26	QP
4	0.2277	28.86	9.67	38.53	52.53	-14.00	AVG
5	0.6580	32.29	9.68	41.97	56.00	-14.03	QP
6	0.6580	29.63	9.68	39.31	46.00	-6.69	AVG
7	0.6841	33.72	9.68	43.40	56.00	-12.60	QP
8	0.6841	31.08	9.68	40.76	46.00	-5.24	AVG
9	3.7401	28.35	9.71	38.06	56.00	-17.94	QP
10	3.7401	26.30	9.71	36.01	46.00	-9.99	AVG
11	5.1763	26.55	9.74	36.29	60.00	-23.71	QP
12	5.1763	24.65	9.74	34.39	50.00	-15.61	AVG

Remarks :

1. All readings are Quasi-peak and Average values.
2. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
3. Over Limit (Margin Value)=Measurement level-Limit value.
4. Factor = L.I.S.N. insertion loss + cable loss
5. " " means that this data is the worse case measurement level.

Neutral



Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "AVG" refers to the limit of Average.

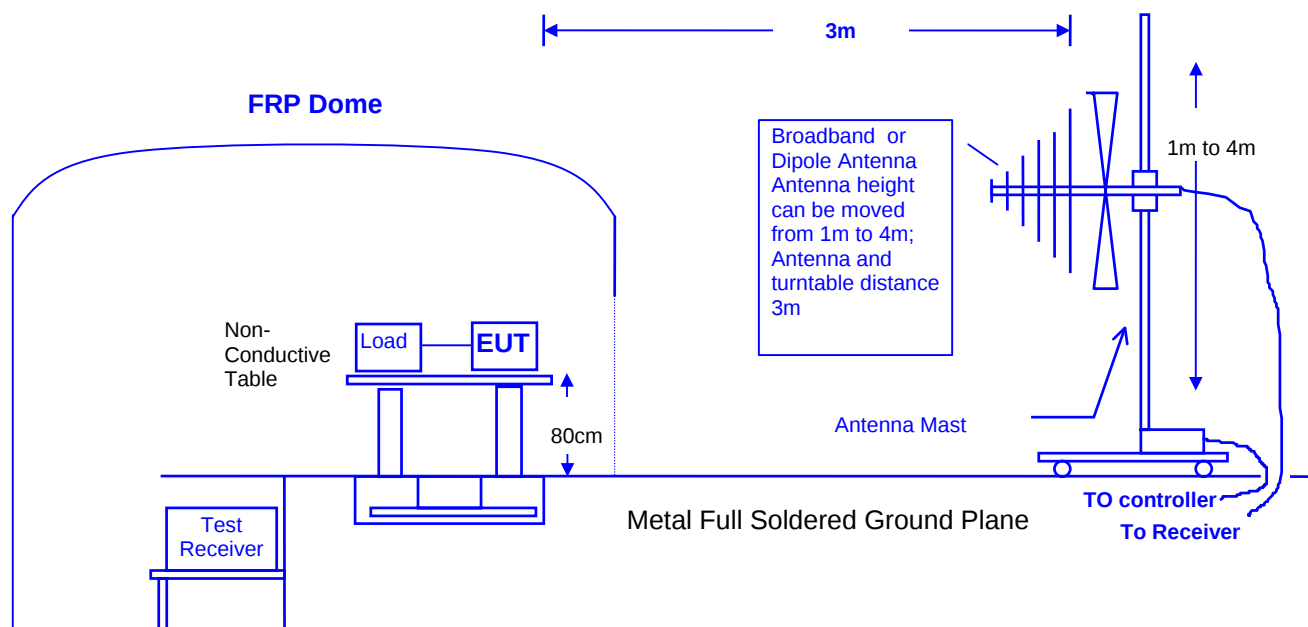
4. RADIATION EMISSION DATA

4.1 TEST EQUIPMENT

The following test equipments are used during the radiated emission tests:

Item	Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
1	Test Receiver	R & S	ESCS30	825022/003	2008.05.25
2	Spectrum Analyzer	HP	8568B	N/A	2008.01.23
3	Spectrum Analyzer	R & S	FSP40	100061	2008.04.08
4	Power Meter	Rohde & Schwarz	NRVS	100666	2008.04.03
5	Peak Power Sensor	Rohde & Schwarz	NRV-Z32	836019-058	2008.04.03
6	Pre-Amplifier	EMV-Technik	PA303	N/A	2008.04.18
7	Pre-Amplifier	HP	8449B	3008A01263	2008.03.21
8	Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-251	2008.03.09
9	HORN ANTENNA	SCHWARZBECK	BBHA 9120	D243	2008.12.24
10	CABLE	GTK	N/A	GTK-E-A152-01	2008.12.13
11	OPEN SITE	GTK	N/A	B1	2008.11.18
12	CHAMBER	GTK	N/A	A6	2008.11.30
13	Test Program Software	GesTek	N/A	GTK-E-S001-01	N/A

4.2 OPEN TEST SITE SETUP DIAGRAM



4.3 RADIATED EMISSION LIMIT

☒ General Radiated Emission Limits

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

Frequency	Distance	Field Strength	
MHz	Meter	$\mu\text{V/M}$	$\text{dB}\mu\text{V/M}$
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
Above 960	3	500	54.0

Remarks :

1. RF Voltage ($\text{dB}\mu\text{V/m}$) = $20 \log \text{RF Voltage } (\mu\text{V/m})$
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

☒ Fundamental and Harmonics Emission Limits

Frequency	Distance	Field Strength of Fundamental		Field Strength of Harmonics	
MHz	Meter	$\mu\text{V/M}$	$\text{dB}\mu\text{V/M}$	$\mu\text{V/M}$	$\text{dB}\mu\text{V/M}$
902-928	3	50	94	500	54
2400-2483.5	3	50	94	500	54
5725-5875	3	50	94	500	54

Remarks :

1. RF Voltage ($\text{dB}\mu\text{V/m}$) = $20 \log \text{RF Voltage } (\mu\text{V/m})$
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4 EUT CONFIGURATION

The equipment which is listed 2.6 are installed on Radiated Emission Test to meet the Commission requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

The device under test, installed in a representative system as described in section 3.2, was placed on a non-conductive table whose total height equaled 80 cm. This table can be rotated 360 degree. The measurement antenna was mounted to a non-conductive mast capable of moving the antenna vertically. Antenna height was varied from 1 meter to 4 meters and the system under test was rotated from 0 degree through 360 degrees relative to the antenna position and polarization (Horizontal and Vertical). Also the I/O cable position was investigated to find the maximum emission condition.

4.5 OPERATING CONDITION OF EUT

Same as section 2.7.

4.6 RADIATED EMISSION DATA

The measurement range of radiated emission, which is from [30 MHz to 10 Harminics](#), was investigated. All readings below 1GHz are quasi-peak values with a resolution bandwidth of 120 KHz. Above 1GHz are peak and avg. values with a resolution bandwidth of 1MHz. The initial step in collecting radiated emission data is a spectrum analyzer peak scans of the measurement range for all the test modes and then use test receiver for final measurement. Then the worst modes were reported the following data pages.

4.7 RADIATED EMISSIONS MEASUREMENT RESULTS

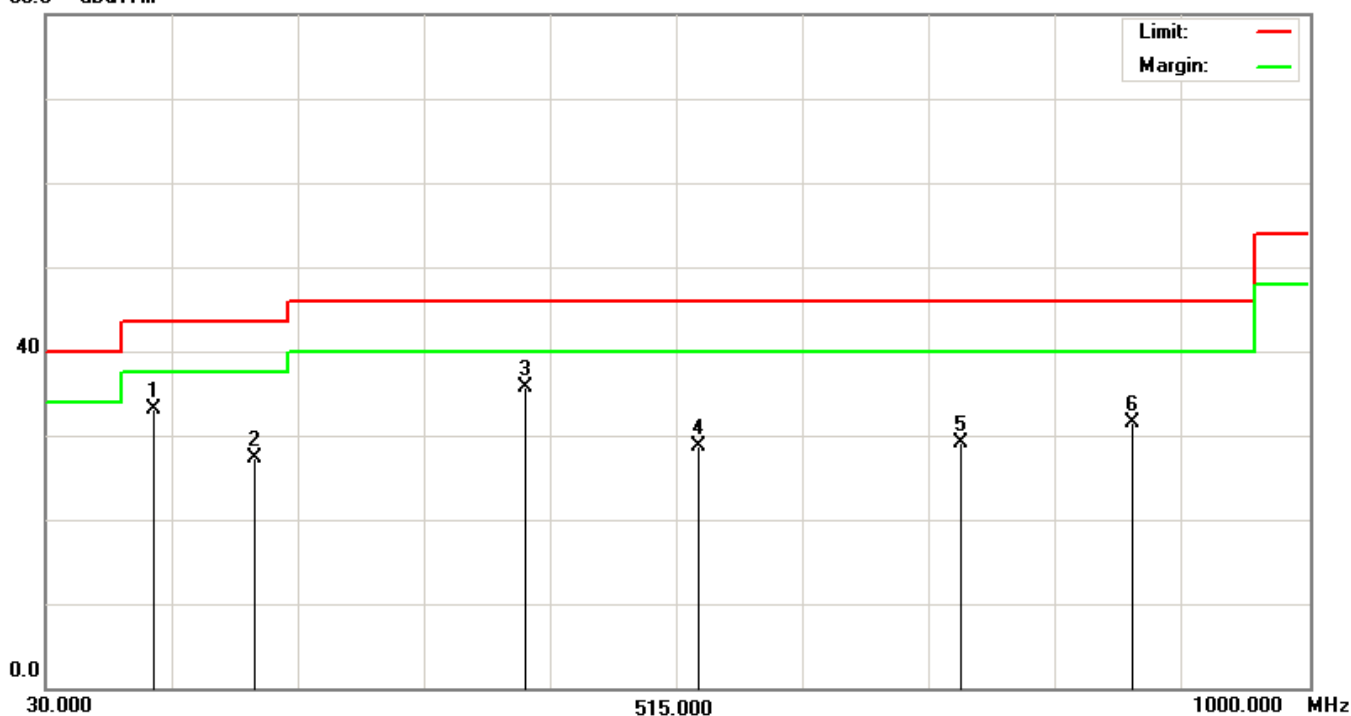
4.7.1 HARMONIC RADIATED EMISSIONS

Date of Test	January 03, 2008	Temperature	19.7 deg/C
EUT	Wireless Receiver	Humidity	45 %RH
Working Cond.	Mode 1-Channel 3	Display Pattern	H Pattern
Antenna distance	3m at Horizontal	Frequency Range	30-1000MHz

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB	Detector
1	113.4200	52.00	-18.88	33.12	43.50	-10.38	QP
2	191.0200	43.20	-15.85	27.35	43.50	-16.15	QP
3	398.6000	46.00	-10.35	35.65	46.00	-10.35	QP
4	532.4600	35.60	-6.94	28.66	46.00	-17.34	QP
5	734.2200	32.40	-3.35	29.05	46.00	-16.95	QP
6	866.1400	32.80	-1.31	31.49	46.00	-14.51	QP

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
3. Over Limit (Margin Value)=Measurement level-Limit value.
4. Factor = antenna factor + cable loss – amplifier gain.
5. “ ” means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.

80.0 dB μ V/m

Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

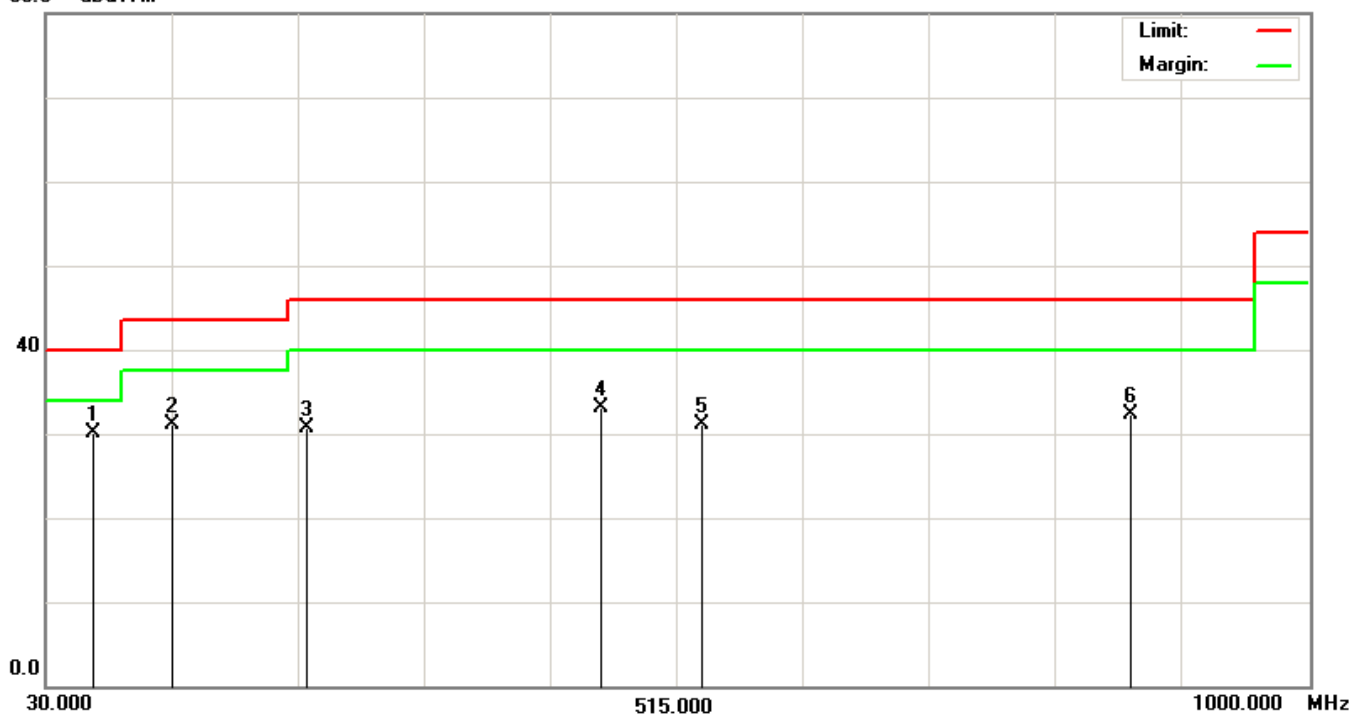
Date of Test	January 03, 2008	Temperature	19.7 deg/C
EUT	Wireless Receiver	Humidity	45 %RH
Working Cond.	Mode 1-Channel 3	Display Pattern	H Pattern
Antenna distance	3m at Vertical	Frequency Range	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	66.8600	47.20	-17.16	30.04	40.00	-9.96	QP
2	127.9700	48.00	-16.86	31.14	43.50	-12.36	QP
3	230.7900	46.40	-15.73	30.67	46.00	-15.33	QP
4	456.8000	42.00	-8.85	33.15	46.00	-12.85	QP
5	534.4000	38.00	-6.89	31.11	46.00	-14.89	QP
6	865.1700	33.60	-1.33	32.27	46.00	-13.73	QP

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
3. Over Limit (Margin Value)=Measurement level-Limit value.
4. Factor = antenna factor + cable loss – amplifier gain.
5. “ ” means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.

80.0 dBμV/m



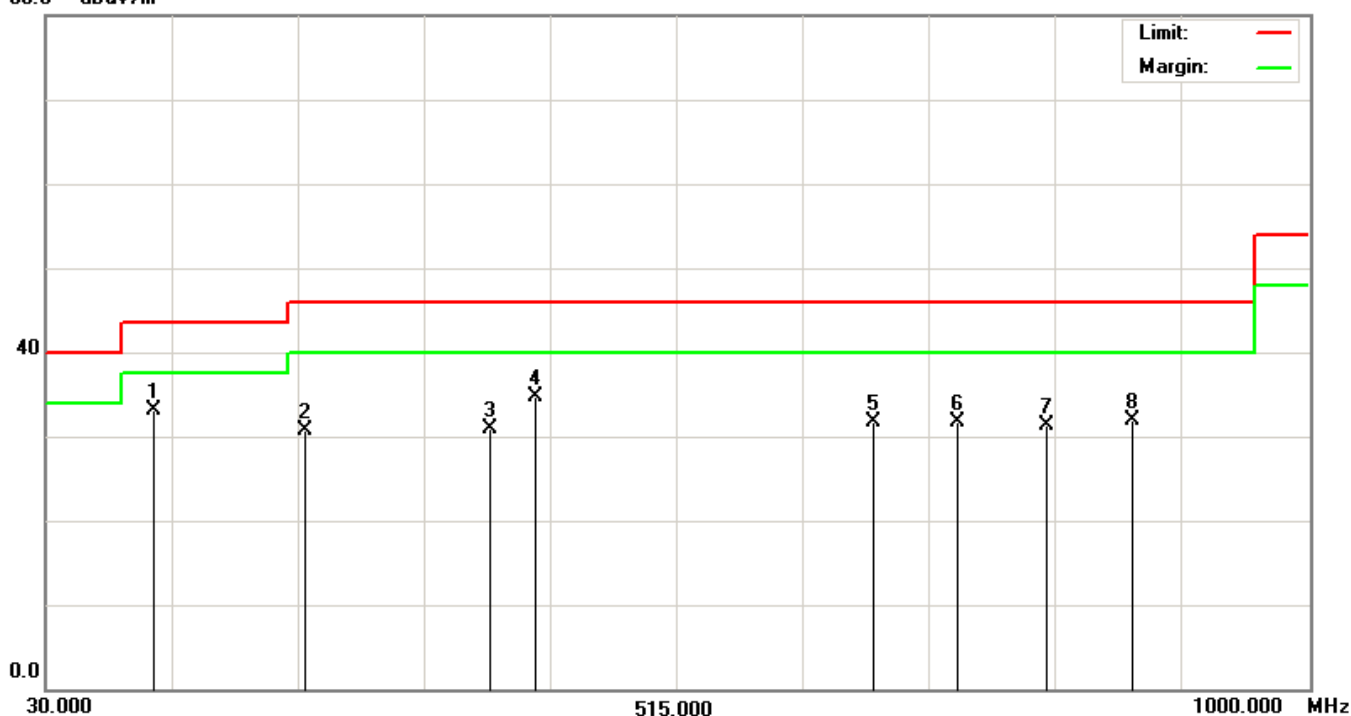
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	January 03, 2008	Temperature	19.7 deg/C
EUT	Wireless Receiver	Humidity	45 %RH
Working Cond.	Mode 1-Channel 2	Display Pattern	H Pattern
Antenna distance	3m at Horizontal	Frequency Range	30-1000MHz

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB	Detector
1	113.4200	52.00	-18.88	33.12	43.50	-10.38	QP
2	229.8200	46.40	-15.75	30.65	46.00	-15.35	QP
3	372.4100	42.00	-11.14	30.86	46.00	-15.14	QP
4	407.3300	44.80	-10.12	34.68	46.00	-11.32	QP
5	666.3200	36.00	-4.38	31.62	46.00	-14.38	QP
6	731.3100	35.20	-3.40	31.80	46.00	-14.20	QP
7	800.1800	33.60	-2.26	31.34	46.00	-14.66	QP
8	866.1400	33.20	-1.31	31.89	46.00	-14.11	QP

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
3. Over Limit (Margin Value)=Measurement level-Limit value.
4. Factor = antenna factor + cable loss – amplifier gain.
5. “ ” means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.

80.0 dB μ V/m

Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

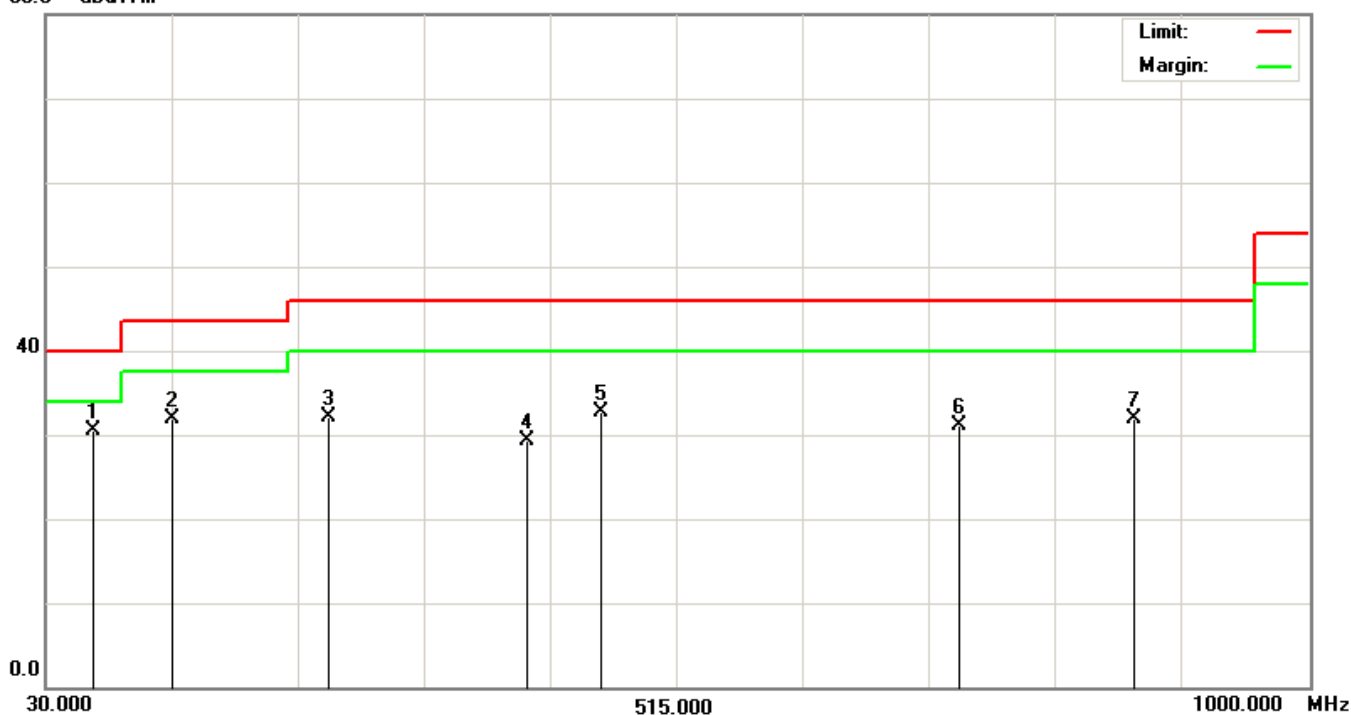
Date of Test	January 03, 2008	Temperature	19.7 deg/C
EUT	Wireless Receiver	Humidity	45 %RH
Working Cond.	Mode 1-Channel 2	Display Pattern	H Pattern
Antenna distance	3m at Vertical	Frequency Range	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	66.8600	47.60	-17.16	30.44	40.00	-9.56	QP
2	127.9700	48.80	-16.86	31.94	43.50	-11.56	QP
3	247.2800	47.60	-15.45	32.15	46.00	-13.85	QP
4	400.5400	39.60	-10.30	29.30	46.00	-16.70	QP
5	456.8000	41.60	-8.85	32.75	46.00	-13.25	QP
6	733.2500	34.40	-3.37	31.03	46.00	-14.97	QP
7	867.1100	33.20	-1.30	31.90	46.00	-14.10	QP

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
3. Over Limit (Margin Value)=Measurement level-Limit value.
4. Factor = antenna factor + cable loss – amplifier gain.
5. “ ” means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.

80.0 dBμV/m



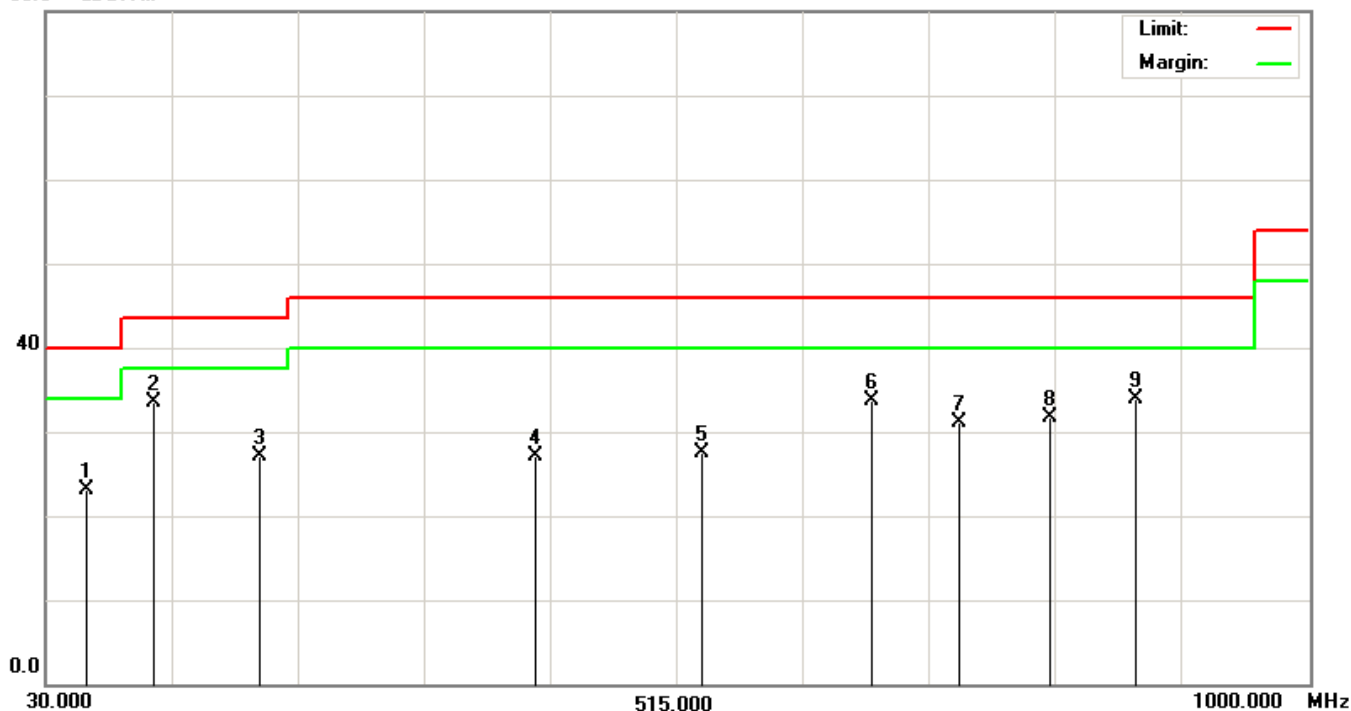
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	January 03, 2008	Temperature	19.7 deg/C
EUT	Wireless Receiver	Humidity	45 %RH
Working Cond.	Mode 1-Channel 1	Display Pattern	H Pattern
Antenna distance	3m at Horizontal	Frequency Range	30-1000MHz

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB	Detector
1	62.0100	39.20	-16.12	23.08	40.00	-16.92	QP
2	113.4200	52.40	-18.88	33.52	43.50	-9.98	QP
3	194.9000	43.20	-16.03	27.17	43.50	-16.33	QP
4	406.3600	37.20	-10.15	27.05	46.00	-18.95	QP
5	534.4000	34.40	-6.89	27.51	46.00	-18.49	QP
6	665.3500	38.00	-4.39	33.61	46.00	-12.39	QP
7	733.2500	34.40	-3.37	31.03	46.00	-14.97	QP
8	803.0900	34.00	-2.22	31.78	46.00	-14.22	QP
9	868.0800	35.20	-1.29	33.91	46.00	-12.09	QP

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
3. Over Limit (Margin Value)=Measurement level-Limit value.
4. Factor = antenna factor + cable loss – amplifier gain.
5. “ ” means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.

80.0 dB μ V/m

Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

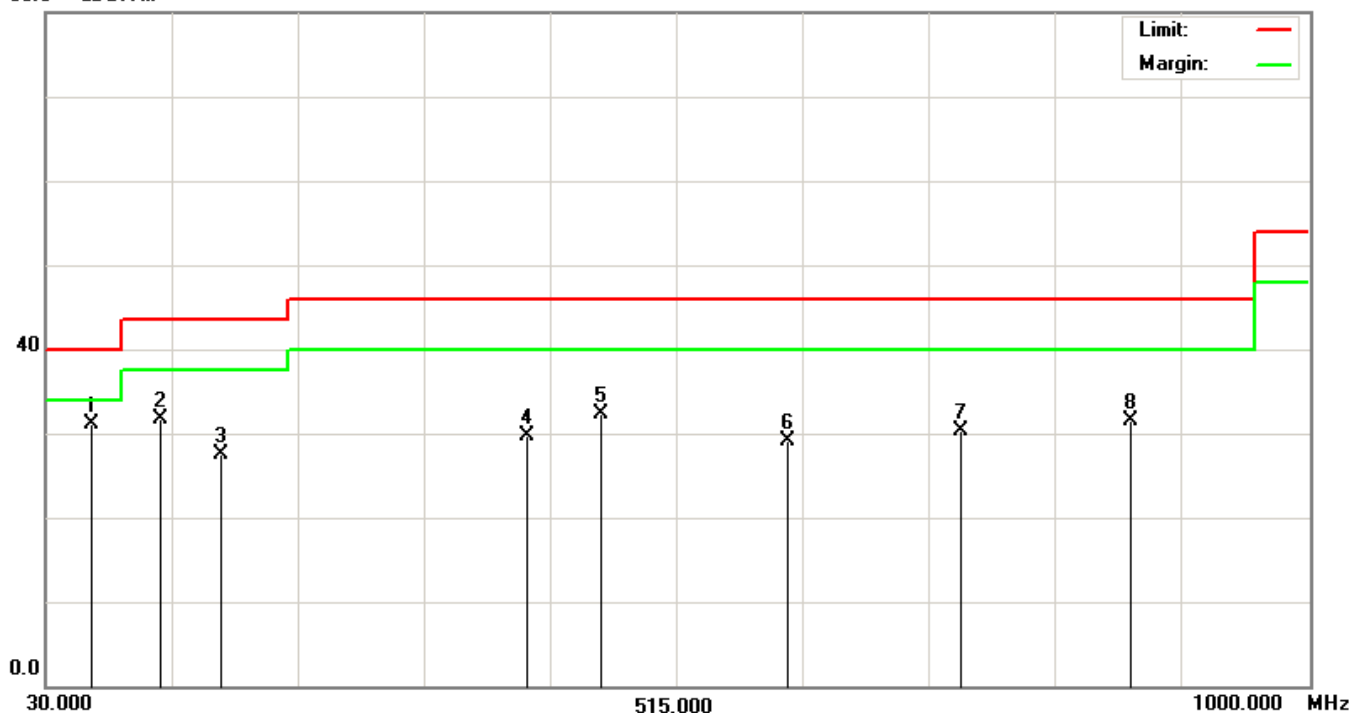
Date of Test	January 03, 2008	Temperature	19.7 deg/C
EUT	Wireless Receiver	Humidity	45 %RH
Working Cond.	Mode 1-Channel 1	Display Pattern	H Pattern
Antenna distance	3m at Vertical	Frequency Range	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	65.8900	48.00	-16.95	31.05	40.00	-8.95	QP
2	118.2700	50.00	-18.32	31.68	43.50	-11.82	QP
3	164.8300	42.00	-14.44	27.56	43.50	-15.94	QP
4	400.5400	40.00	-10.30	29.70	46.00	-16.30	QP
5	456.8000	41.20	-8.85	32.35	46.00	-13.65	QP
6	600.3600	34.40	-5.28	29.12	46.00	-16.88	QP
7	734.2200	33.60	-3.35	30.25	46.00	-15.75	QP
8	865.1700	32.80	-1.33	31.47	46.00	-14.53	QP

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
3. Over Limit (Margin Value)=Measurement level-Limit value.
4. Factor = antenna factor + cable loss – amplifier gain.
5. “ ” means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.

80.0 dBμV/m



Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 3	Display Pattern	H Pattern
Antenna distance	3m at Horizontal	Frequency Range	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB
1	4813.5000	61.23	1.46	62.69	74.00	-11.31
2	7221.1000	55.71	9.21	64.92	74.00	-9.08
3	9628.1000	45.58	6.62	52.20	74.00	-21.80
4	12035.1000	39.27	14.53	53.80	74.00	-20.20

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	4813.50	62.69	-12.26	50.43	54.00	-3.57
2	7221.10	64.92	-12.26	52.66	54.00	-1.34

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. AVG Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.
8. The Duty Cycle is refer to section 5.
9. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.
10. The emission level of other frequencies are very lower than the limit.

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 3	Display Pattern	H Pattern
Antenna distance	3m at Vertical	Frequency Range	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB
1	4814.2000	59.74	1.54	61.28	74.00	-12.72
2	7220.5000	49.87	8.71	58.58	74.00	-15.42
3	9603.0000	43.23	10.20	53.43	74.00	-20.57
4	12010.2000	36.22	17.37	53.59	74.00	-20.41

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	4814.20	61.28	-12.26	49.02	54.00	-4.98
2	7220.50	58.58	-12.26	46.32	54.00	-7.68

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. AVG Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.
8. The Duty Cycle is refer to section 5.
9. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.
10. The emission level of other frequencies are very lower than the limit.

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 2	Display Pattern	H Pattern
Antenna distance	3m at Horizontal	Frequency Range	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB
1	4876.4000	60.52	1.42	61.94	74.00	-12.06
2	7314.7000	55.58	9.28	64.86	74.00	-9.14
3	9752.2000	45.16	6.93	52.09	74.00	-21.91
4	12190.0000	41.65	11.61	53.26	74.00	-20.74

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	4876.40	61.94	-12.26	49.68	54.00	-4.32
2	7314.70	64.86	-12.26	52.60	54.00	-1.40

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. AVG Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.
8. The Duty Cycle is refer to section 5.
9. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.
10. The emission level of other frequencies are very lower than the limit.

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 2	Display Pattern	H Pattern
Antenna distance	3m at Vertical	Frequency Range	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB
1	4876.0000	57.96	2.02	59.98	74.00	-14.02
2	7314.7000	48.44	8.57	57.01	74.00	-16.99
3	9752.1000	44.07	9.81	53.88	74.00	-20.12
4	12190.1000	39.17	14.05	53.22	74.00	-20.78

Average

No.	Frequency MHz	Peak Measurement dB(μ V/m)	Duty Cycle dB	Measurement dB(μ V/m)	Limit dB(μ V/m)	Margin dB
1	4876.00	59.98	-12.26	47.72	54.00	-6.28
2	7314.70	57.01	-12.26	44.75	54.00	-9.25

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. AVG Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.
8. The Duty Cycle is refer to section 5.
9. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.
10. The emission level of other frequencies are very lower than the limit.

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 1	Display Pattern	H Pattern
Antenna distance	3m at Horizontal	Frequency Range	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB
1	4954.0000	59.74	1.35	61.09	74.00	-12.91
2	7431.6000	53.42	8.82	62.24	74.00	-11.76
3	9908.1000	44.76	4.79	49.55	74.00	-24.45
4	12385.1000	45.38	7.56	52.94	74.00	-21.06

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	4954.00	61.09	-12.26	48.83	54.00	-5.17
2	7431.60	62.24	-12.26	49.98	54.00	-4.02

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. AVG Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.
8. The Duty Cycle is refer to section 5.
9. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.
10. The emission level of other frequencies are very lower than the limit.

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 1	Display Pattern	H Pattern
Antenna distance	3m at Vertical	Frequency Range	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB
1	4953.8000	56.76	2.60	59.36	74.00	-14.64
2	7430.3000	47.35	8.38	55.73	74.00	-18.27
3	9908.1000	44.10	9.77	53.87	74.00	-20.13
4	12385.1000	43.50	10.25	53.75	74.00	-20.25

Average

No.	Frequency MHz	Peak Measurement dB(μ V/m)	Duty Cycle dB	Measurement dB(μ V/m)	Limit dB(μ V/m)	Margin dB
1	4953.80	59.36	-12.26	47.10	54.00	-6.90
2	7430.30	55.73	-12.26	43.47	54.00	-10.53

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. AVG Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.
8. The Duty Cycle is refer to section 5.
9. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.
10. The emission level of other frequencies are very lower than the limit.

4.7.2 FUNDAMENTAL RADIATED EMISSIONS

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 3		
Antenna distance	3m at Horizontal		

Peak

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB
1	2406.660	63.12	31.48	94.60	114.00	-19.40

Average

No.	Frequency MHz	Reading Level dB μ V	Duty Cycle dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB
1	2406.66	94.60	-12.26	82.34	94.00	-11.66

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 3		
Antenna distance	3m at Vertical		

Peak

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB
1	2406.840	58.83	24.52	83.35	114.00	-30.65

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. AVG Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.
8. The Duty Cycle is refer to section 5.
9. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 2		
Antenna distance	3m at Horizontal		

Peak

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB
1	2438.160	62.89	31.41	94.30	114.00	-19.70

Average

No.	Frequency MHz	Reading Level dBμV	Duty Cycle dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB
1	2438.16	94.30	-12.26	82.04	94.00	-11.96

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 2		
Antenna distance	3m at Vertical		

Peak

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB
1	2438.160	58.70	24.01	82.71	114.00	-31.29

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. AVG Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.
8. The Duty Cycle is refer to section 5.
9. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 1		
Antenna distance	3m at Horizontal		

Peak

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB
1	2477.220	62.57	31.32	93.89	114.00	-20.11

Date of Test	January 02, 2008	Temperature	24.4 deg/C
EUT	Wireless Receiver	Humidity	61 %RH
Working Cond.	Mode 1-Channel 1		
Antenna distance	3m at Vertical		

Peak

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V/m	Limit dB μ V/m	Over Limit dB
1	2477.040	59.17	23.38	82.55	114.00	-31.45

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. AVG Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.
8. The Duty Cycle is refer to section 5.
9. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

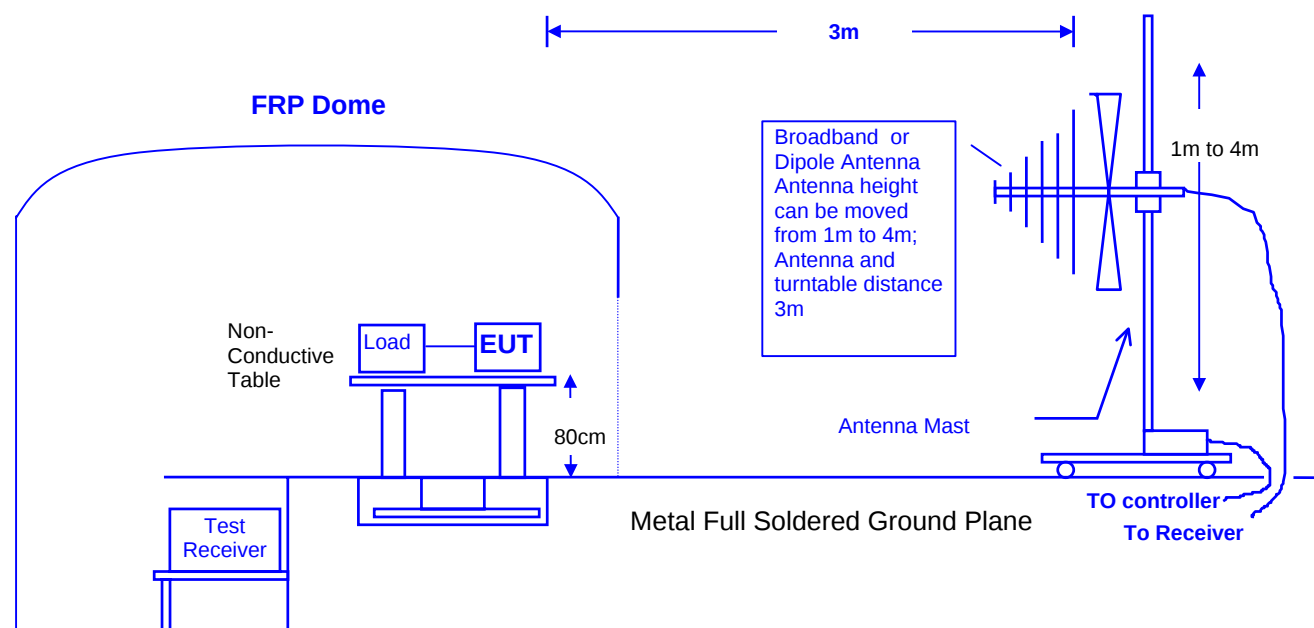
5. BAND EDGE

5.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
1	Test Receiver	R & S	ESCS30	825022/003	2008.05.25
2	Spectrum Analyzer	HP	E4407B	US39240339	2008.08.06
3	Power Meter	Rohde & Schwarz	NRVS	100666	2008.04.03
4	Peak Power Sensor	Rohde & Schwarz	NRV-Z32	836019-058	2008.04.03
5	Pre-Amplifier	HP	8449B	3008A01263	2008.03.21
6	HORN ANTENNA	SCHWARZBECK	BBHA 9120	D243	2008.12.24
7	CABLE	GTK	N/A	GTK-E-A152-01	2008.12.13
8	OPEN SITE	GTK	N/A	B1	2008.11.18
9	Test Program Software	GesTek	N/A	GTK-E-S001-01	N/A

5.2 BLOCK DIAGRAM OF TEST SETUP

◎ RF Radiated Measurement: ◎



5.3 BAND EDGE LIMIT

In any 100KHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 50dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. 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)).

5.4 EUT CONFIGURATION

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2000 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120KHz, above 1GHz are 1MHz.

5.5 OPERATING CONDITION OF EUT

Same as section 2.7.

5.6 TEST RELULT

Date of Test	January 02, 2008	Temperature	18.8 deg/C
EUT	Wireless Receiver	Humidity	38 %RH
Working Cond.	Mode 1-Channel 3		
Antenna distance	3m at Horizontal	Test Band	Lower

Radiation Emission of Fundamental Peak

Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]
2406.66	63.12	31.48	94.60

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Emission Level= Reading + Correction Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
4. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor

TEST Result

The band edge emission plot on next page are Peak and Average. The polt for peak is appear (31.04)dB delta between carry power and maximum emission in 2399.80 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2399.80 MHz is 94.60 dBuV/m – 31.04dB = 63.56dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength × Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

20logDuty Cycle = (-12.26)dB

Average field strength of (2399.80)MHz is

(63.56) dBuV/m + (-12.26)dB = (51.30)dBuV/m which is under 54dBuV/m.

Remark:

If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test	January 02, 2008	Temperature	18.8 deg/C
EUT	Wireless Receiver	Humidity	38 %RH
Working Cond.	Mode 1-Channel 3		
Antenna distance	3m at Vertical	Test Band	Lower

Radiation Emission of Fundamental Peak

Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]
2406.84	58.83	24.52	83.35

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz.
3. Emission Level= Reading + Correction Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
4. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor

TEST Result

The band edge emission plot on next page are Peak and Average. The polt for peak is appear (31.04)dB delta between carry power and maximum emission in 2399.80 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2399.80 MHz is 83.35 dBuV/m – 31.04dB = 52.31dBuV/m which is under 74dBuV/m.

Remark:

If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test	January 02, 2008	Temperature	18.8 deg/C
EUT	Wireless Receiver	Humidity	38 %RH
Working Cond.	Mode 1-Channel 1		
Antenna distance	3m at Horizontal	Test Band	Higher

Radiation Emission of Fundamental Peak

Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]
2477.22	62.57	31.32	93.89

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz.
3. Emission Level= Reading + Correction Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
4. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor

TEST Result

The band edge emission plot on next page are Peak and Average. The polt for peak is appear (30.00)dB delta between carry power and maximum emission in restrict band 2483.50 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2483.50 MHz is 93.89 dBuV/m – 30.00dB = 63.89dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength $\times$ Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

20logDuty Cycle = (-12.26)dB

Average field strength of (2483.50)MHz is

(63.89) dBuV/m + (-12.26)dB = (51.63)dBuV/m which is under 54dBuV/m.

Remark:

If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test	January 02, 2008	Temperature	18.8 deg/C
EUT	Wireless Receiver	Humidity	38 %RH
Working Cond.	Mode 1-Channel 1		
Antenna distance	3m at Vertical	Test Band	Higher

Radiation Emission of Fundamental Peak

Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]
2477.04	59.17	23.38	82.55

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz.
3. Emission Level= Reading + Correction Factor (Could have ± 0.01 tolerance due to computer automatically round off calculation).
4. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor

TEST Result

The band edge emission plot on next page are Peak and Average. The polt for peak is appear (30.00)dB delta between carry power and maximum emission in restrict band 2483.50 MHz.

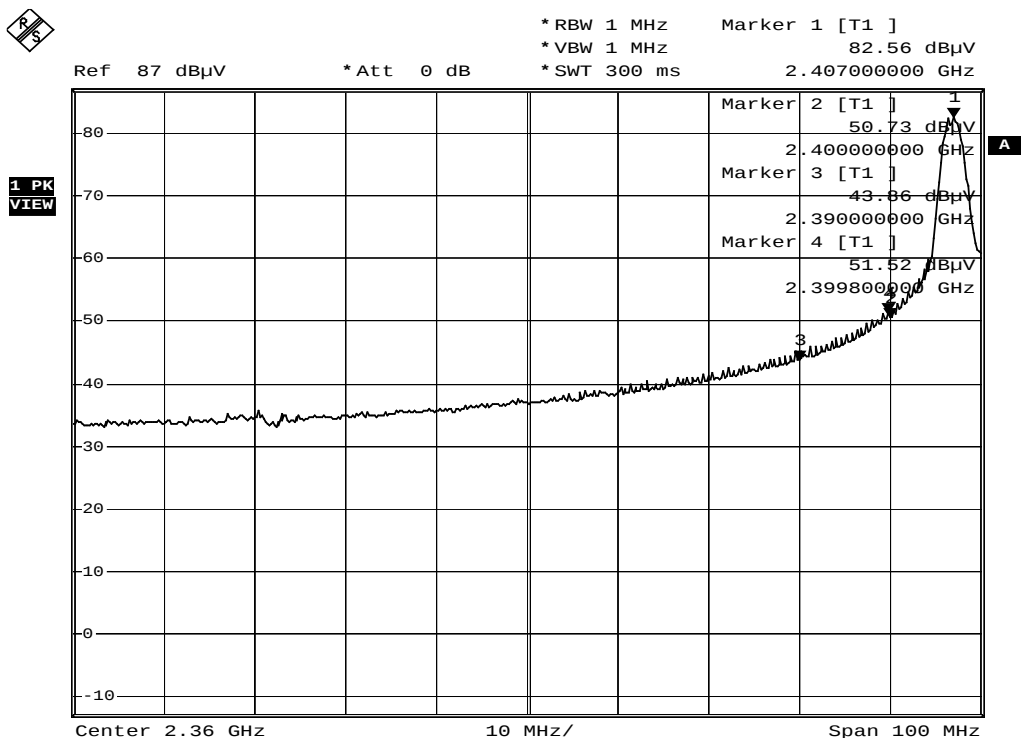
The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2483.5 MHz is 82.55 dBuV/m – 30.00dB = 52.55dBuV/m which is under 74dBuV/m.

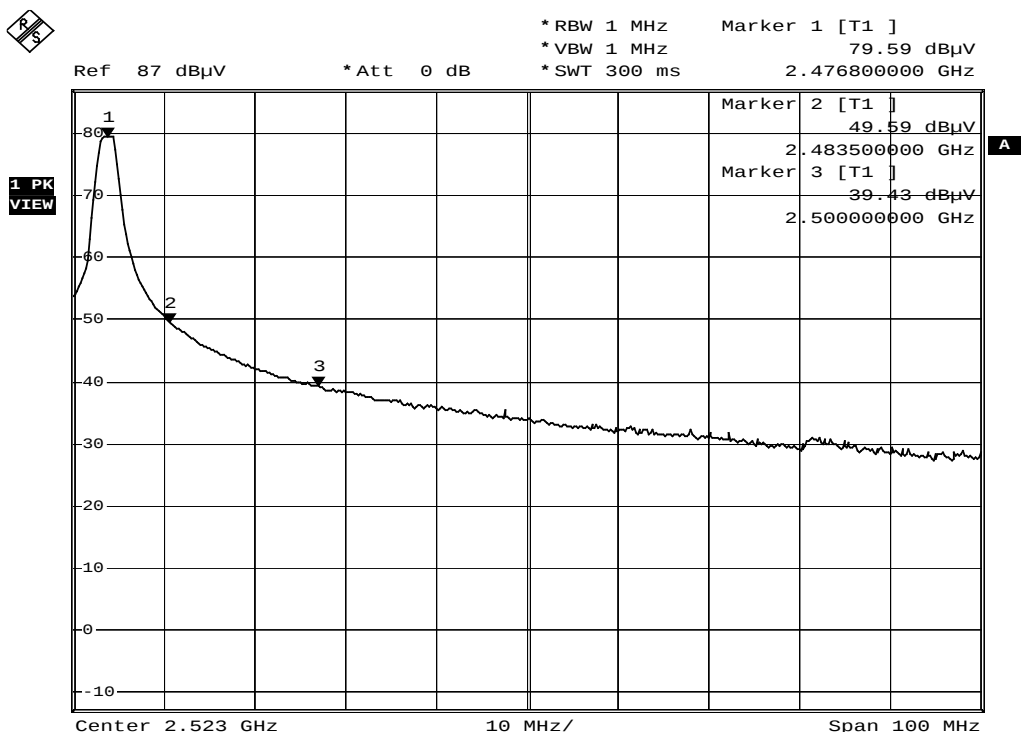
Remark:

If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

The average measurement was not performed when the peak measured data under the limit of average detection.



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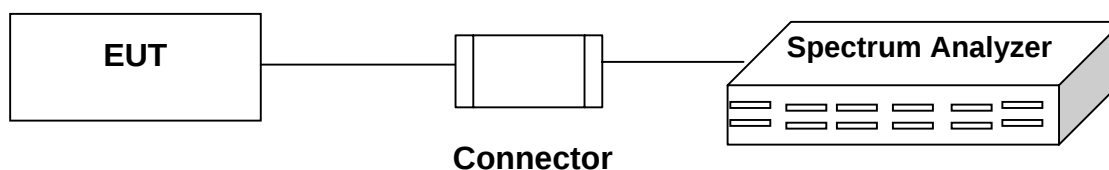
6. DUTY CYCLE

6.1 TEST EQUIPMENT

The following test equipments are used during the radiated emission tests:

Item	Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
1	Spectrum Analyzer	Rohde & Schwarz	FSP40	100061	2008.04.08
2	Spectrum Analyzer	HP	E4407B	US39240339	2008.08.06

6.2 BLOCK DIAGRAM OF TEST SETUP



6.3 TEST RESULT

Date of Test	January 02, 2008	Temperature	18.8 deg/C
EUT	Wireless Receiver	Humidity	38 %RH
Working Cond.	Mode 1-Channel 1		

Duty Cycle = Time on of 100msec / 100 msec

Frequency 2407 MHz

Time on of one slot length = 420 (μs) = 0.42 (msec)

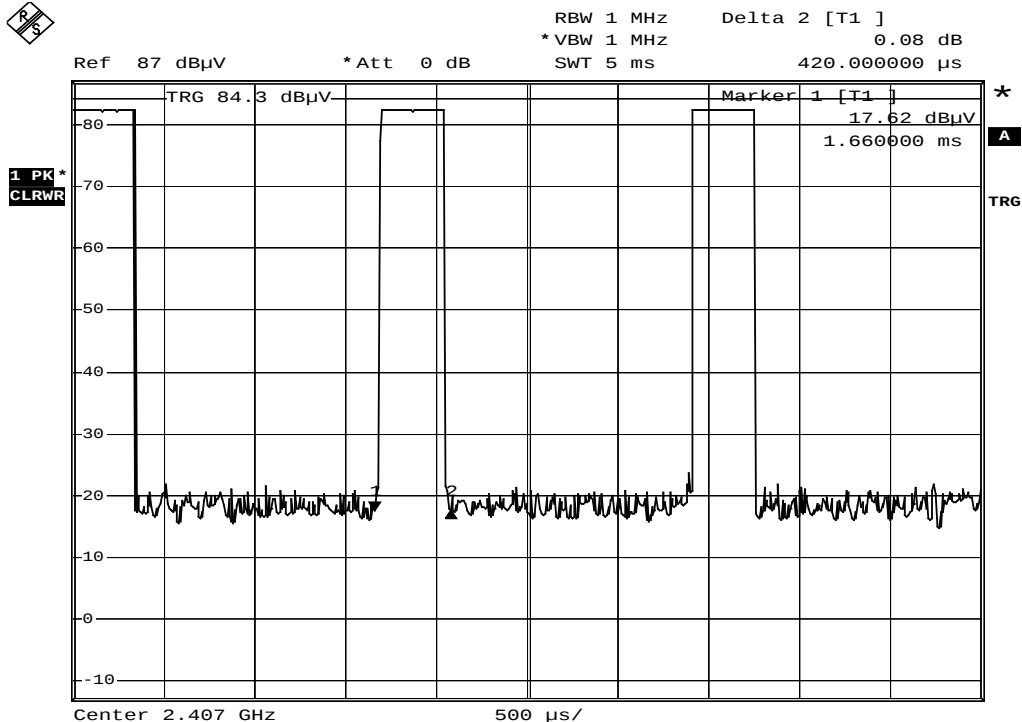
Time on of 100ms = 58 × 0.42 = 24.36 (msec)

Duty Cycle = 24.36 / 100msec = 0.2436

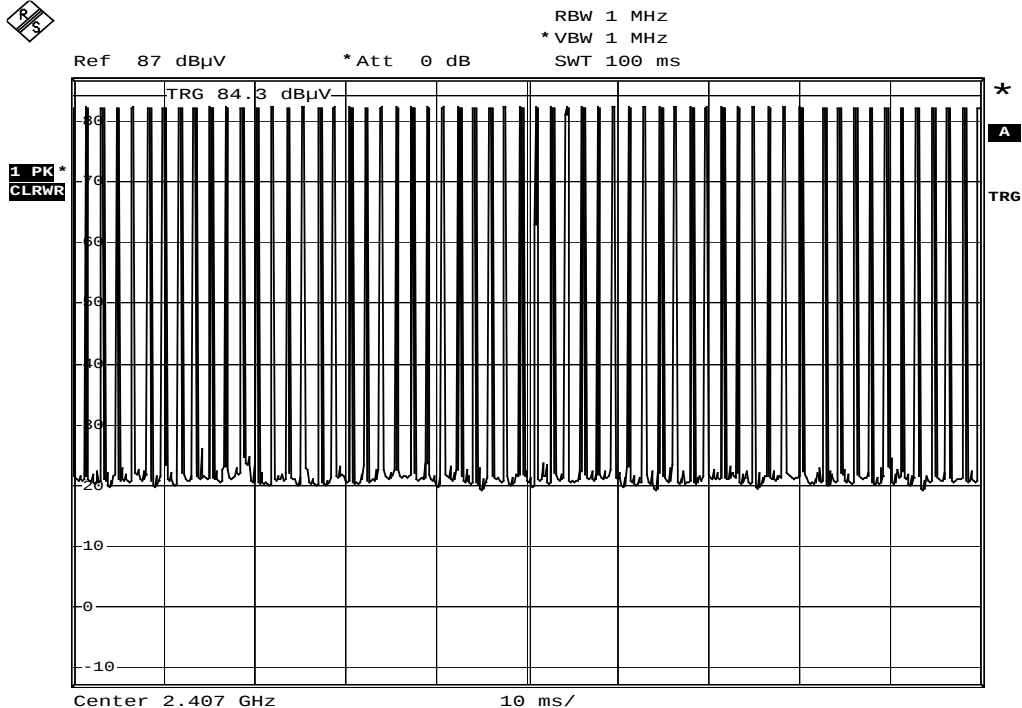
20 log 0.2436 = -12.26 dB

Remark:

If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.



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7. PHOTOGRAPHS FOR TEST

7.1 TEST PHOTOGRAPHS FOR CONDUCTION



7.2 TEST PHOTOGRAPHS FOR RADIATION

30-1000MHz



Above 1GHz

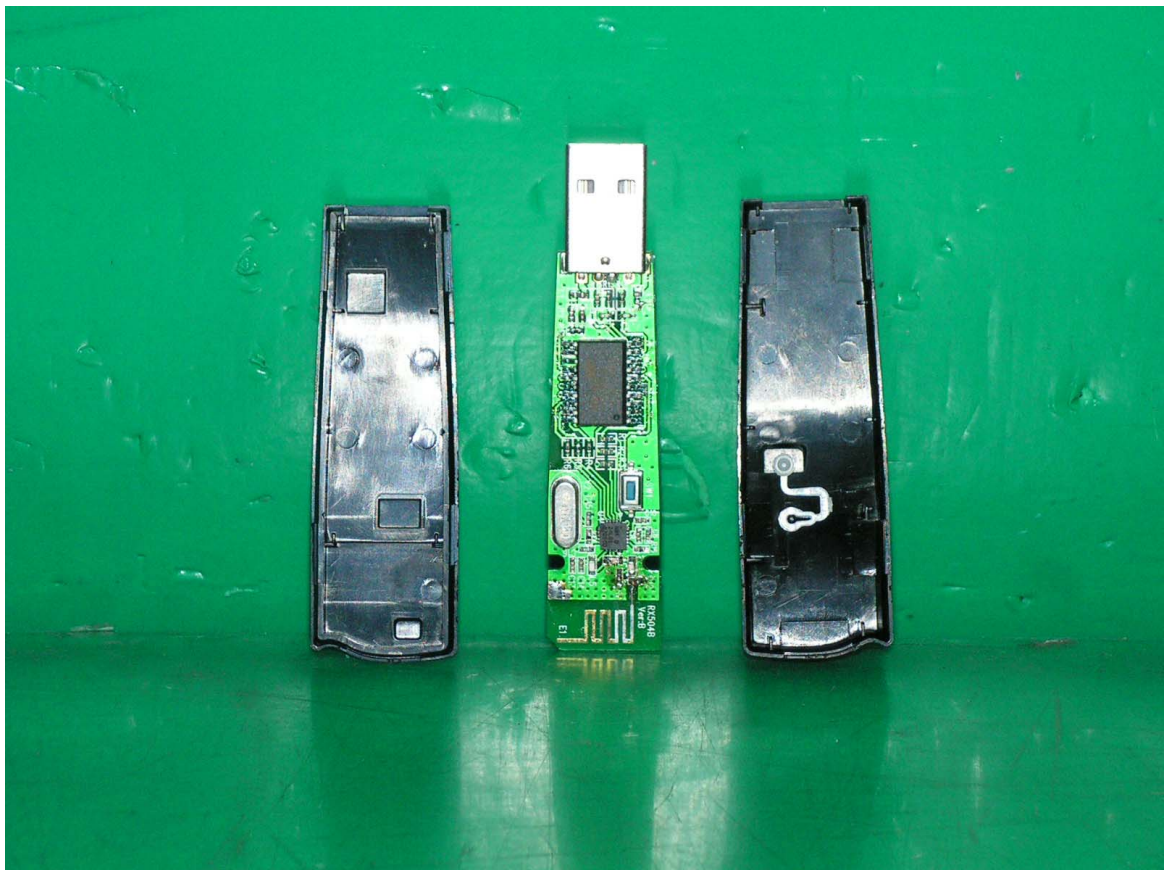
8. PHOTOGRAPHS FOR PRODUCT

1. Front View Of Wireless Receiver (EUT)
2. Back View Of Wireless Receiver (EUT)



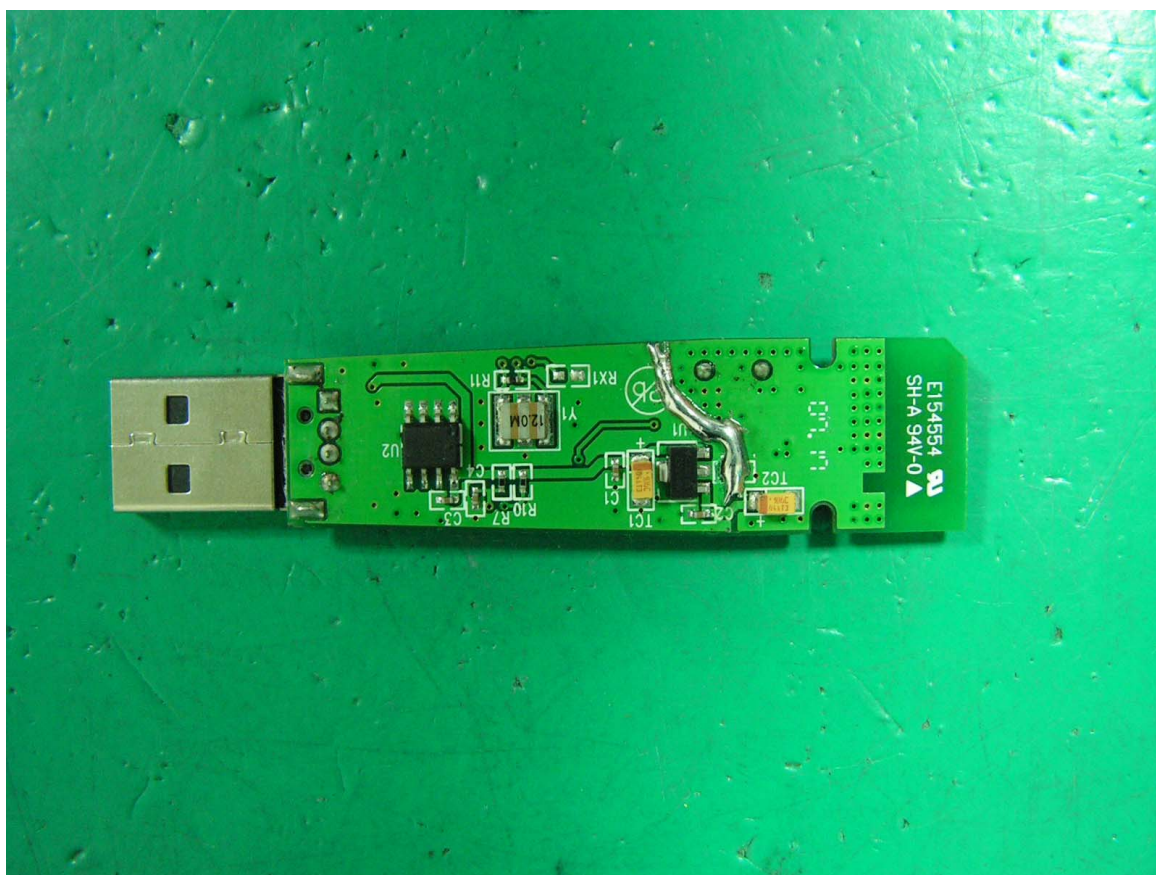
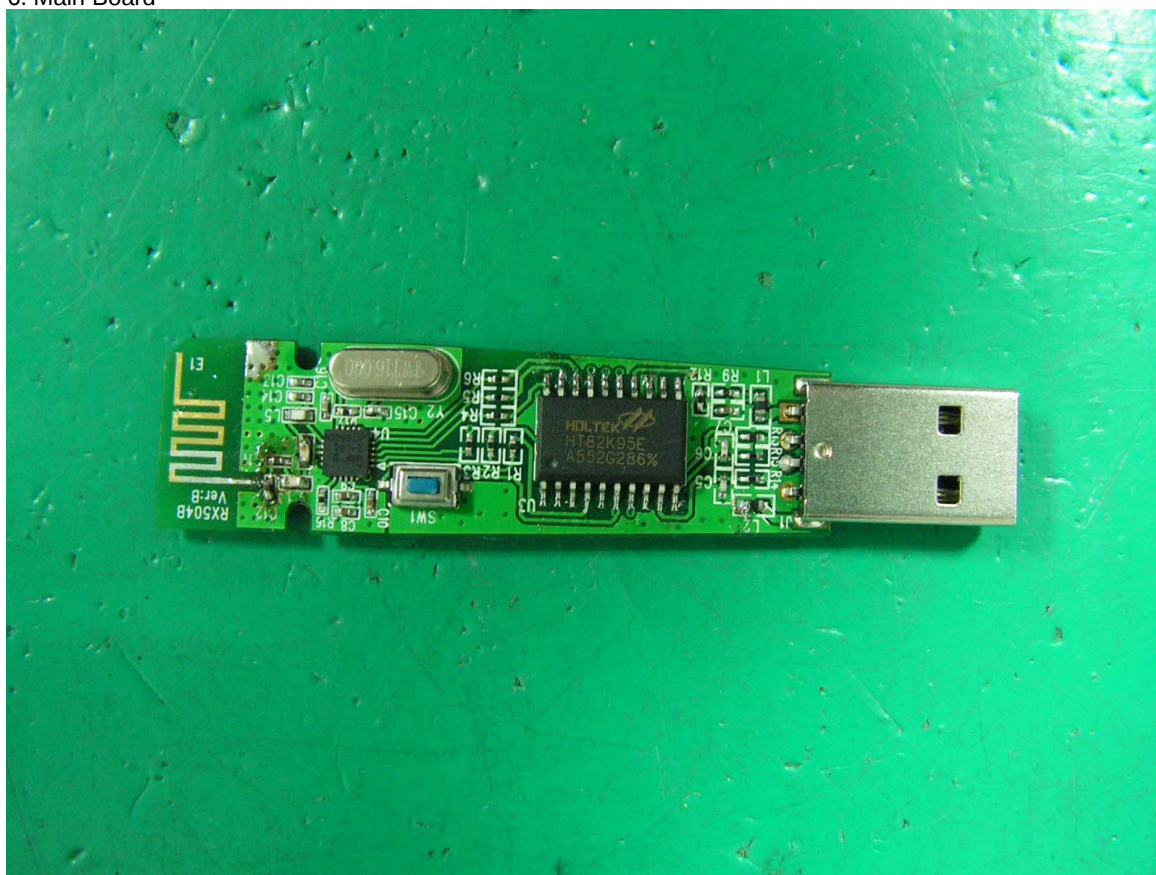
3. Label Here

4.



5. Main Board+

6. Main Board-



7. Connect point of conductive Measurement



9. EMI REDUCTION METHOD DURING COMPLIANCE TESTING

No modification was made during testing.

Appendix A

Circuit (Block) Diagram

(Shall be added by Applicant)

Appendix B

User Manual

(Shall be added by Applicant)