Certificate of Test

March 2008

Sunrex Technology Corp

Product Type	**: Wireless Dongle**
Model Number	**: RX713A**
Test Report Number	**: 0801075R-01**
Date of Test	**: January 10, 2008- February 23, 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

Sharon Chang, President

Date: March 13, 2008

GesTek EMC Lab
N0. 3, Pau-Tou-Tsuo Valley, Chia-Pau Tsuen,
Lin Kou Hsiang, Taipei County, Taiwan, R.O.C.
TEL:886-2-2603-5321
FAX:886-2-2603-5325

NVLAP LAB CODE 200085-0

Test Report
Application for Certification
On Behalf Of

Sunrex Technology Corp

EUT:
Wireless Dongle

Model Number:
RX713A

FCC ID:
J75RX713A

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

Report By :Global EMC Standard Tech. Corp.
No.3 Pau-Tou-Tsuo Valley, Chia-Pau Tsuen, Lin Kou Hsiang, Taipei County, Taiwan, R.O.C.
Tel : 886-2-2603-5321
Fax : 886-2-2603-5325

TABLE OF CONTENTS

1. CERTIFICATION

Applicant : Sunrex Technology Corp

EUT Description	: Wireless Dongle
Model Number	: RX713A
Serial Number	: N/A
Brand Name	: HP
FCC ID	: J75RX713A
Tested Power Supply	: AC 120V/60Hz
Manufacturer	: Sunrex Technology (Jiang Su) Co., Ltd.
Manufacturer Address	: Fen Hu Economic Development Zone, Wujiang, P.R. China

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 Test : **Janaury 10, 2008 – February 23, 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 :

Rini Chen / adm. Dept. Supervisor

Tested By :

John Wu / eng. Dept. Engineer

Approved By :

Tonny 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 Dongle
Model Number	: RX713A
Serial Number	: N/A
Brand Name	: HP
FCC ID	: J75RX713A
Modulation Type	: DSSS, GFSK
Antenna Type	: Printed on PCB
Antenna Gain	: 0 dBi
Frequencg Range	: 2402MHz~2479MHz
Channel Number	: 78 Channel
Channel Control	: Control by Software
Working Voltage	: DC 5V

Frequency of Each Channel:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2402	28	2429	55	2456
2	2403	29	2430	56	2457
3	2404	30	2431	57	2458
4	2405	31	2432	58	2459
5	2406	32	2433	59	2460
6	2407	33	2434	60	2461
7	2408	34	2435	61	2462
8	2409	35	2436	62	2463
9	2410	36	2437	63	2464
10	2411	37	2438	64	2465
11	2412	38	2439	65	2466
12	2413	39	2440	66	2467
13	2414	40	2441	67	2468
14	2415	41	2442	68	2469
15	2416	42	2443	69	2470
16	2417	43	2444	70	2471
17	2418	44	2445	71	2472
18	2419	45	2446	72	2473
19	2420	46	2447	73	2474
20	2421	47	2448	74	2475
21	2422	48	2449	75	2476
22	2423	49	2450	76	2477
23	2424	50	2451	77	2478
24	2425	51	2452	78	2479
25	2426	52	2453		
26	2427	53	2454		
27	2428	54	2455		

Note:

1. This device is transceiver of Wireless Dongle. The test report is for transmit function.
2. This device is 78 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 receiver to accordance with Part 15 regulations and under Declaration of Conformity and record of measurment in test report that the report number is 0801075F-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 or mouse and revice signal form wireless keyboard or mouse.
The device have 78 channel and operated in 2.402 to 2.479GHz with DSSS and GFSK modulation.
Another information please refer to users manual.

2.3 TEST MODES & EUT COMPONENTS DESCRIPTION

EUT: Wireless Dongle, M/N: KM713A	
Test Mode	**Mode 1**
	Transmitter

2.4 SUMMARY OF TEST PROCEDURE AND TEST RESULTS

Test Item	Applied Standard Section	Test Resut
Conduction Emission	15.109, ANSI C63.4 Section 7	Pass (refer to section 3.7)
Radistion 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)	**M01-045**	Manufacturer : CMV Model Number : CT-723D Serial Number : N/A BSMI ID : R63126 FCC ID : N/A DVI&D-SUB Cable : Shielded, Detachable, 2m,cord Adapter Manufacturer :POTRANS Adapter Model Number : UP060B1190 POWER:AC INPUT :100-240V,50/60HZ ,OUTPUT:DC19V,3.16A Adapter Power Cord : Non-Shielded, Detachable, 3Pin, 1.8m
Modem	**M03-028**	Manufacturer : ACEEX Model Number : 1414V Serial Number : 0046183 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	**E01-167**	Manufacturer : Good Vision Model Number : LY-MIC02 Serial Number : N/A Data Cable : Non-Shielded, Undetachable, 1.8 m Power Cord : N/A
USB Mouse	**M02-326**	Manufacturer : Microsoft Model Number : X800898-106 BSMI ID : R31264 FCC ID : N/A 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

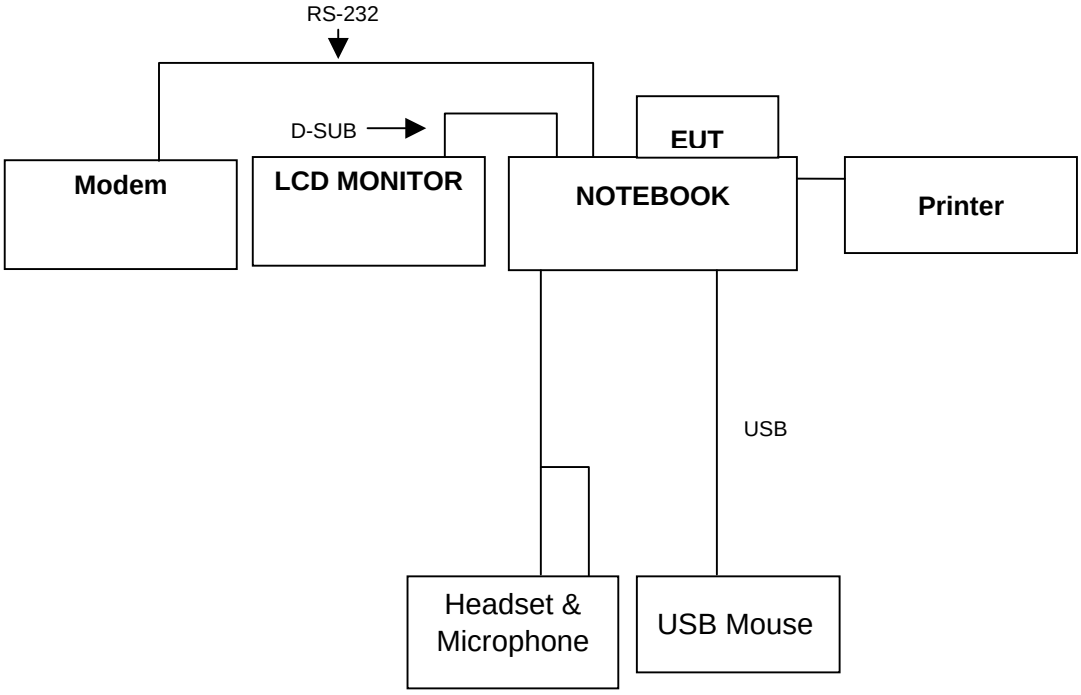
Device	No.	Configuration
NOTEBOOK	**DELL NB 1**	Model Number : Latitude D600 PPO5L BSMI ID : R33002 FCC ID E2K24CLNS Serial Number : 10826163280 C.P.U : Intel Pentium M 1.4G HZ DDR : PC2100 256MB WIRELESS LAN : Manufacturer :INTEL CARD M/N:WM3A2100 FCC ID: E2K24CLNS F.D.D : N/A H.D.D. : Manufacturer : 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 Stated 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 reveive signal continue.
5. Repeat the above steps.

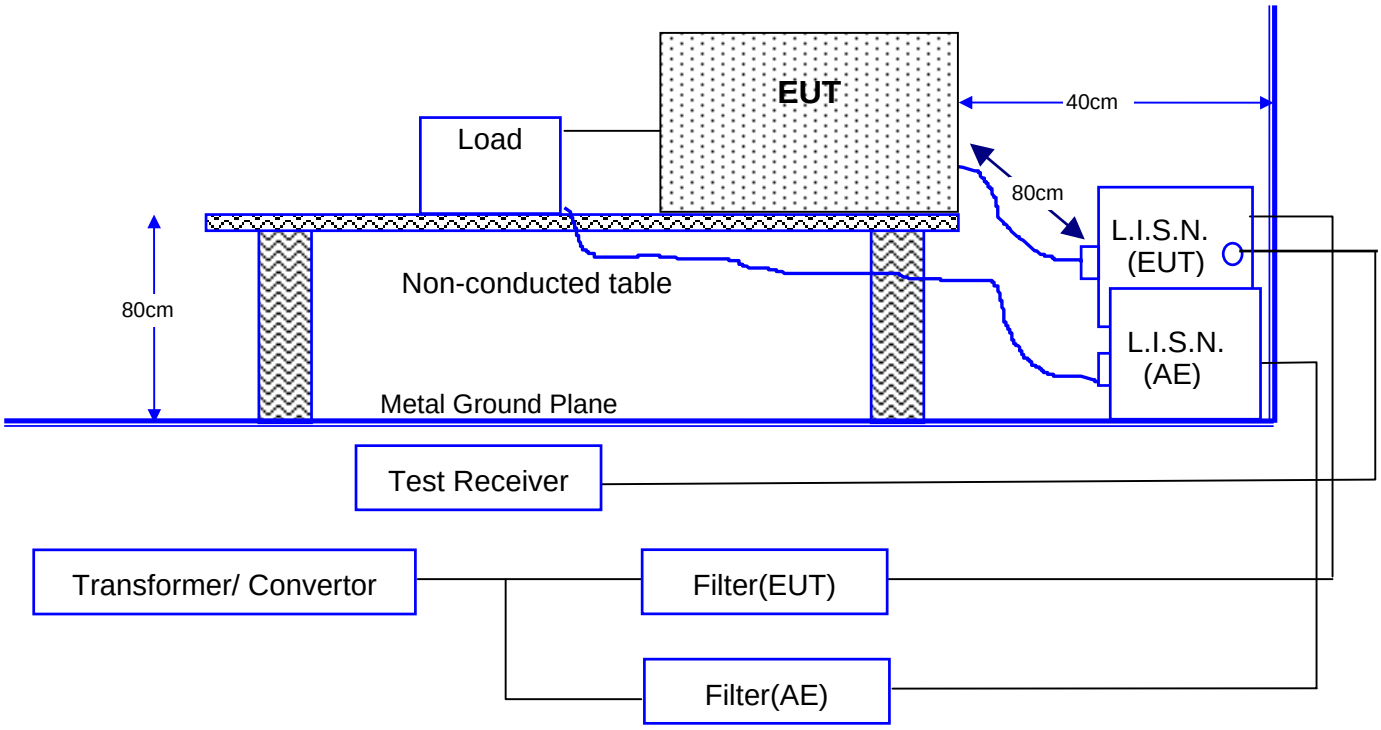
3. CONDUCTION EMISSION DATA

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	RF CABLE	GesTek	N/A	GTK-E-A152-01	2008.12.13
5	50 Ohm Terminator	GesTek	N/A	GTK-E-A124-01	N/A
6	Shielded Room	GesTek	N/A	B5	N/A

3.2 BLOCK DIAGRAM OF TEST SETUP



Note: This is a representative 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 15.207

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 2.8.

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	February 16, 2008	**Temperature**	26 ℃
EUT	Wireless Dongle	**Humidity**	60 %
Test Mode	Mode 1		

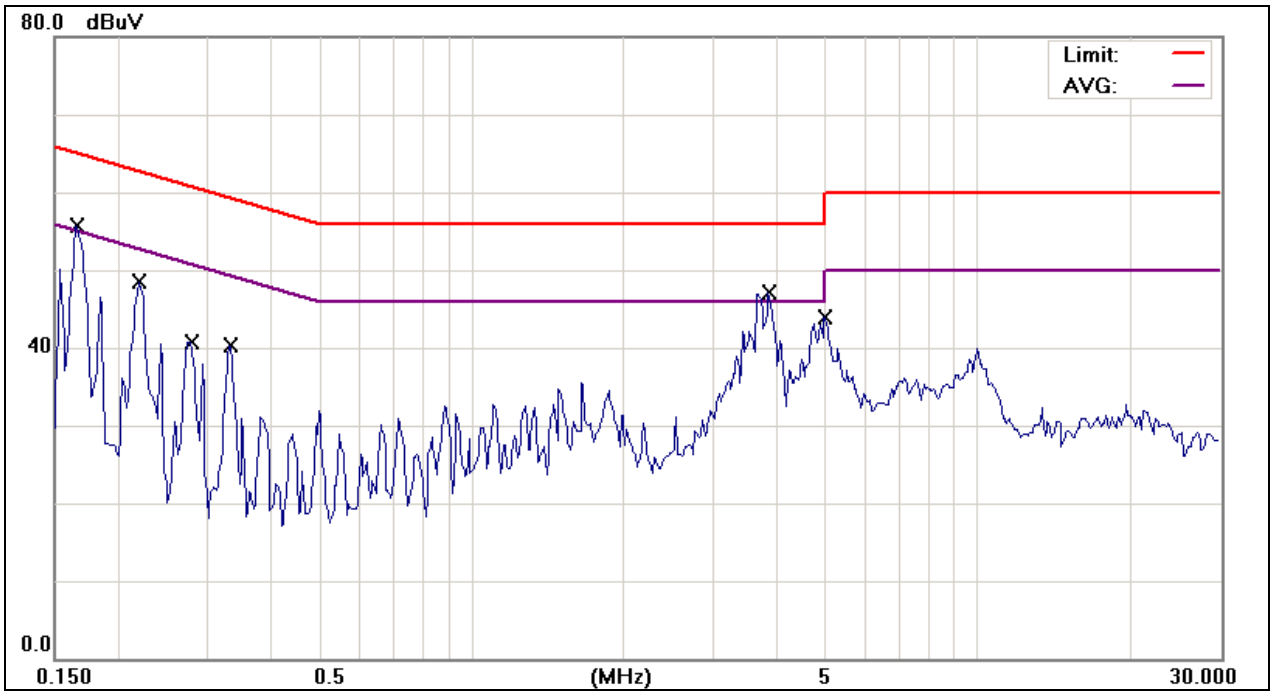
Line

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV	Limit dBµV	Over Limit dB	Detector
1	0.1651	44.48	9.63	54.11	65.20	-11.09	QP
2	★0.1651	37.46	9.63	47.09	55.20	-8.11	AVG
3	0.2200	37.64	9.63	47.27	62.82	-15.55	QP
4	0.2200	33.07	9.63	42.70	52.82	-10.12	AVG
5	0.2772	30.65	9.64	40.29	60.90	-20.61	QP
6	0.2772	26.24	9.64	35.88	50.90	-15.02	AVG
7	0.3326	29.64	9.64	39.28	59.39	-20.11	QP
8	0.3326	24.59	9.64	34.23	49.39	-15.16	AVG
9	3.8641	30.35	9.65	40.00	56.00	-16.00	QP
10	3.8641	15.35	9.65	25.00	46.00	-21.00	AVG
11	5.0036	28.56	9.66	38.22	60.00	-21.78	QP
12	5.0036	17.79	9.66	27.45	50.00	-22.55	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	February 16, 2008	**Temperature**	26 ℃
EUT	Wireless Dongle	**Humidity**	60 %
Test Mode	Mode 1		

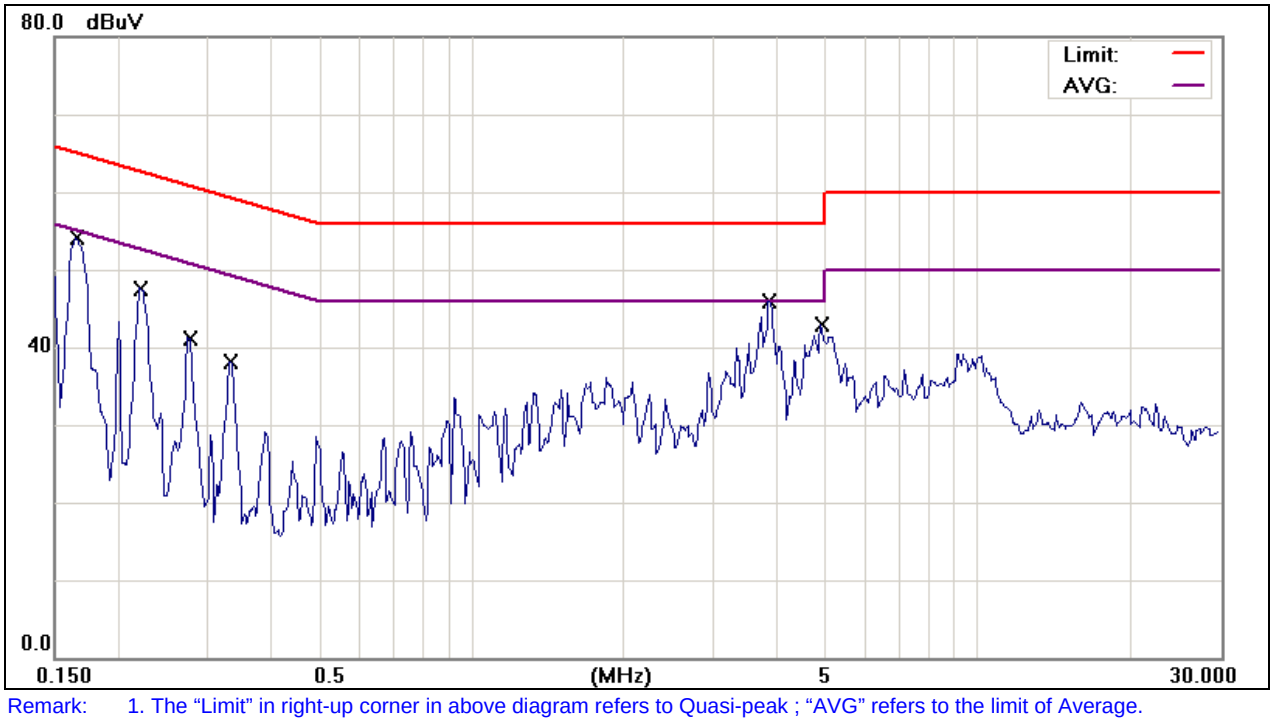
Neutral

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV	Limit dBµV	Over Limit dB	Detector
1	0.1666	43.12	9.63	52.75	65.13	-12.38	QP
2	★0.1666	36.77	9.63	46.40	55.13	-8.73	AVG
3	0.2237	37.54	9.63	47.17	62.68	-15.51	QP
4	0.2237	33.33	9.63	42.96	52.68	-9.72	AVG
5	0.2796	29.35	9.64	38.99	60.83	-21.84	QP
6	0.2796	24.59	9.64	34.23	50.83	-16.60	AVG
7	0.3339	27.62	9.64	37.26	59.35	-22.09	QP
8	0.3339	23.48	9.64	33.12	49.35	-16.23	AVG
9	3.8609	27.81	9.65	37.46	56.00	-18.54	QP
10	3.8609	16.37	9.65	26.02	46.00	-19.98	AVG
11	4.9038	27.96	9.67	37.63	56.00	-18.37	QP
12	4.9038	18.19	9.67	27.86	46.00	-18.14	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

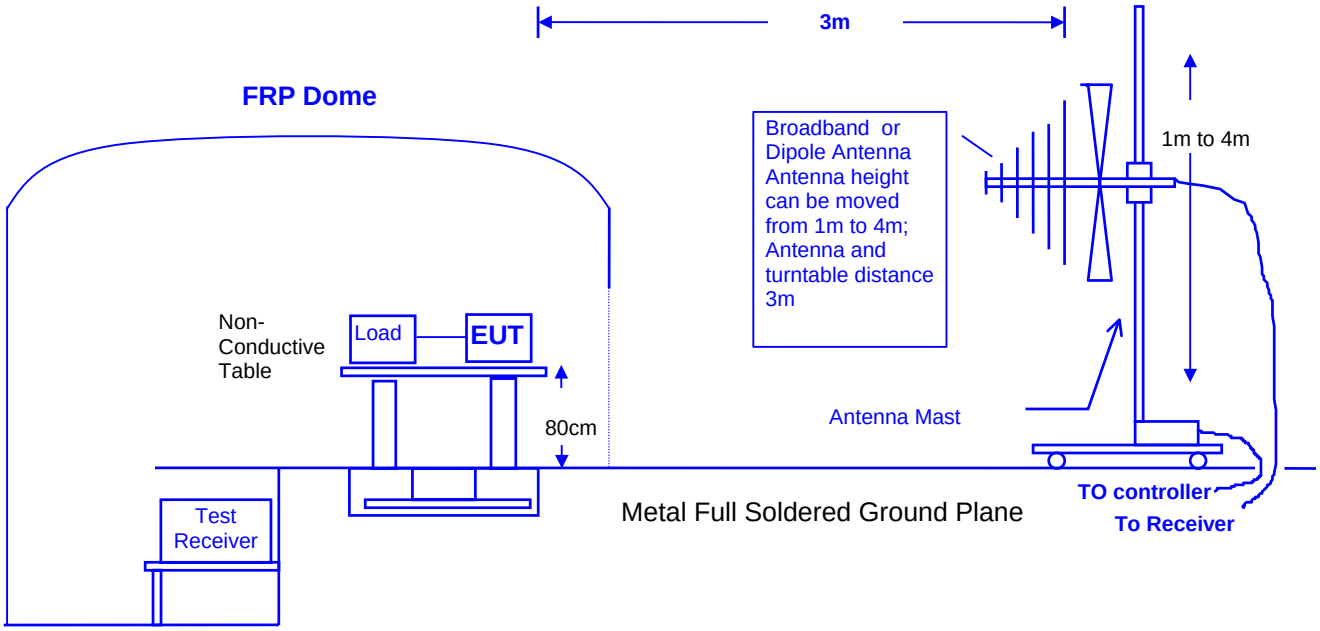
4.1 TEST EQUIPMENT

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	2009.01.29
3	Spectrum	HP	E4407B	US39240339	2008.08.06
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-A344-01	2008.04.17
11	CHAMBER	GTK	N/A	A6	2008.11.30
12	Test Program Software	GesTek	N/A	GTK-E-S001-01	N/A

4.2 OPEN TEST SITE SETUP DIAGRAM

Note: This is a representative setup diagram for Table-top EUT.
For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



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	μV/M	dBμV/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 (dBuV/m) = 20 log RF Voltage (uV/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	mV/M	dBμV/M	μV/M	dBμV/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 (dBuV/m) = 20 log RF Voltage (uV/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 10th harminic of fundamental,** 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

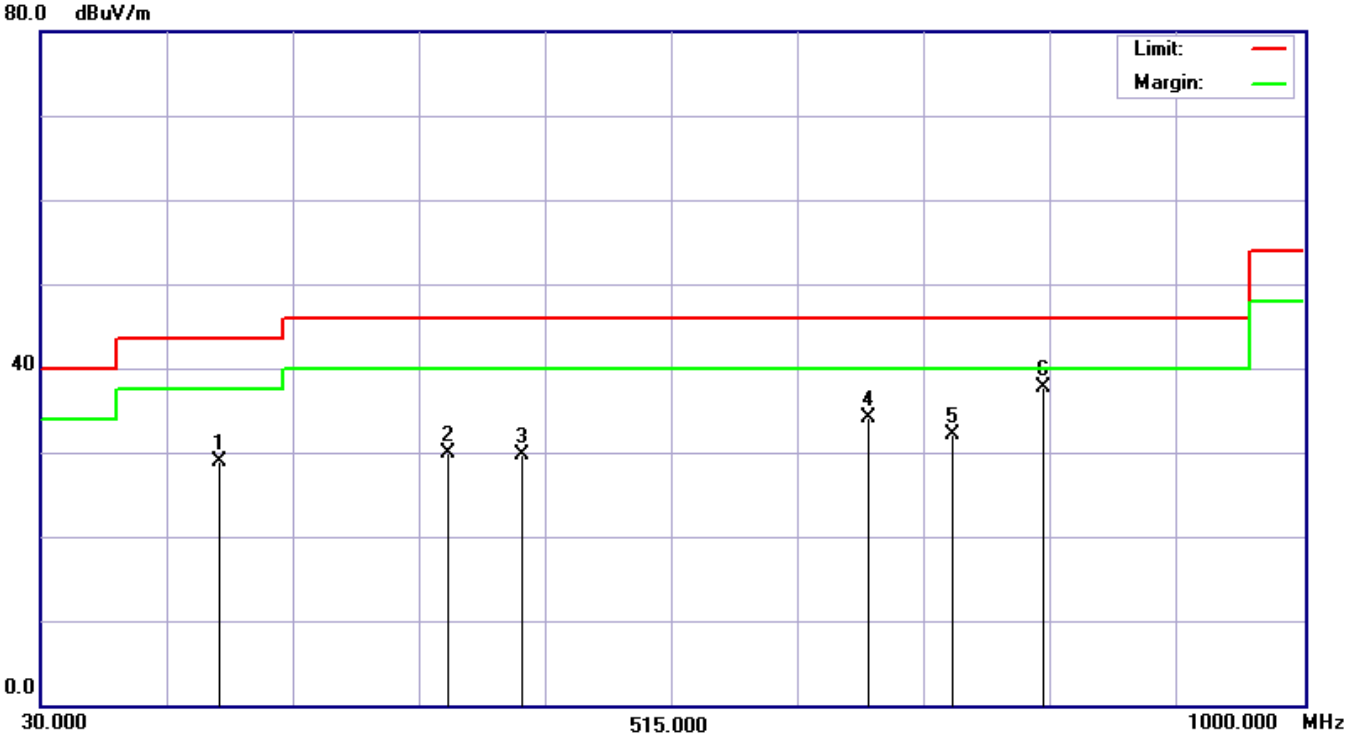
4.7.1 HARMONIC RADIATED EMISSIONS

Date of Test	February 23, 2008	**Temperature**	26 deg/C
EUT	Wireless Dongle	**Humidity**	60 %RH
Working Cond.	Mode 1-CH 01 (2402MHz)	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	167.7400	43.60	-14.62	28.98	43.50	-14.52	QP
2	343.3100	42.00	-12.02	29.98	46.00	-16.02	QP
3	400.5400	40.00	-10.30	29.70	46.00	-16.30	QP
4	667.2900	38.40	-4.36	34.04	46.00	-11.96	QP
5	731.3100	35.60	-3.40	32.20	46.00	-13.80	QP
6	★801.1500	40.00	-2.24	37.76	46.00	-8.24	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.



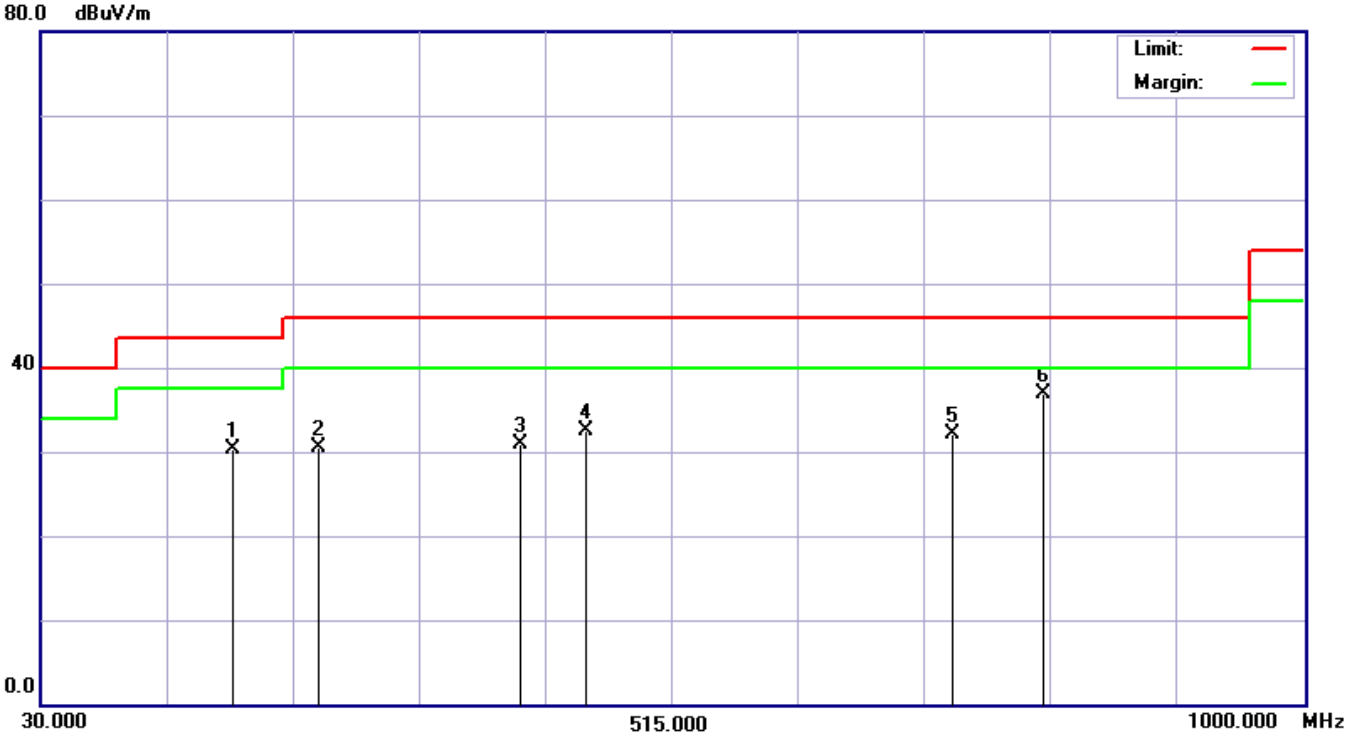
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	February 23, 2008	**Temperature**	26 deg/C
EUT	Wireless Dongle	**Humidity**	60 %RH
Working Cond.	Mode 1-CH 01 (2402MHz)	**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	178.4100	45.60	-15.25	30.35	43.50	-13.15	QP
2	244.3700	46.00	-15.50	30.50	46.00	-15.50	QP
3	399.5700	41.20	-10.32	30.88	46.00	-15.12	QP
4	450.0100	41.60	-9.02	32.58	46.00	-13.42	QP
5	731.3100	35.60	-3.40	32.20	46.00	-13.80	QP
6	★801.1500	39.20	-2.24	36.96	46.00	-9.04	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.



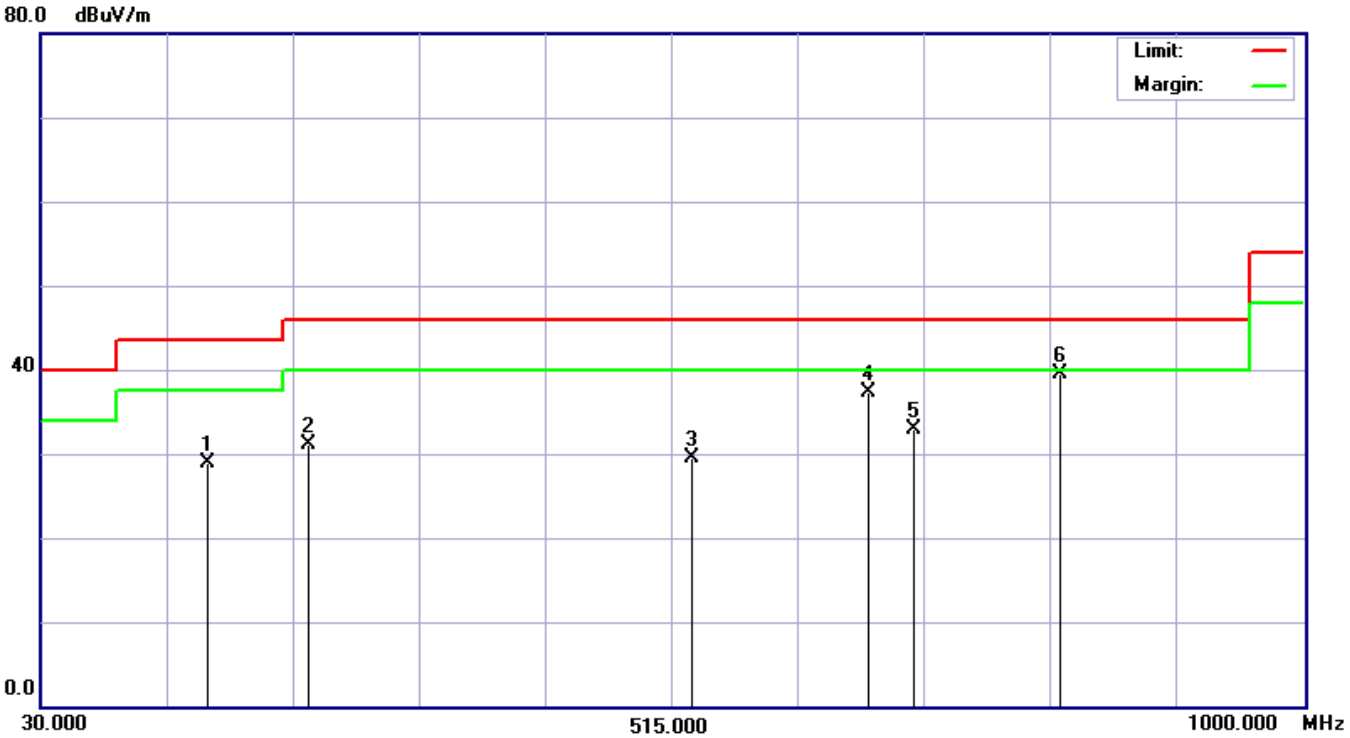
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	February 23, 2008	**Temperature**	26 deg/C
EUT	Wireless Dongle	**Humidity**	60 %RH
Working Cond.	Mode 1-CH 38 (2439MHz)	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	159.0100	43.20	-14.20	29.00	43.50	-14.50	QP
2	235.6400	46.80	-15.65	31.15	46.00	-14.85	QP
3	531.4900	36.40	-6.97	29.43	46.00	-16.57	QP
4	666.3200	41.60	-4.38	37.22	46.00	-8.78	QP
5	702.2100	36.80	-3.88	32.92	46.00	-13.08	QP
6	★813.7600	41.60	-2.06	39.54	46.00	-6.46	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.



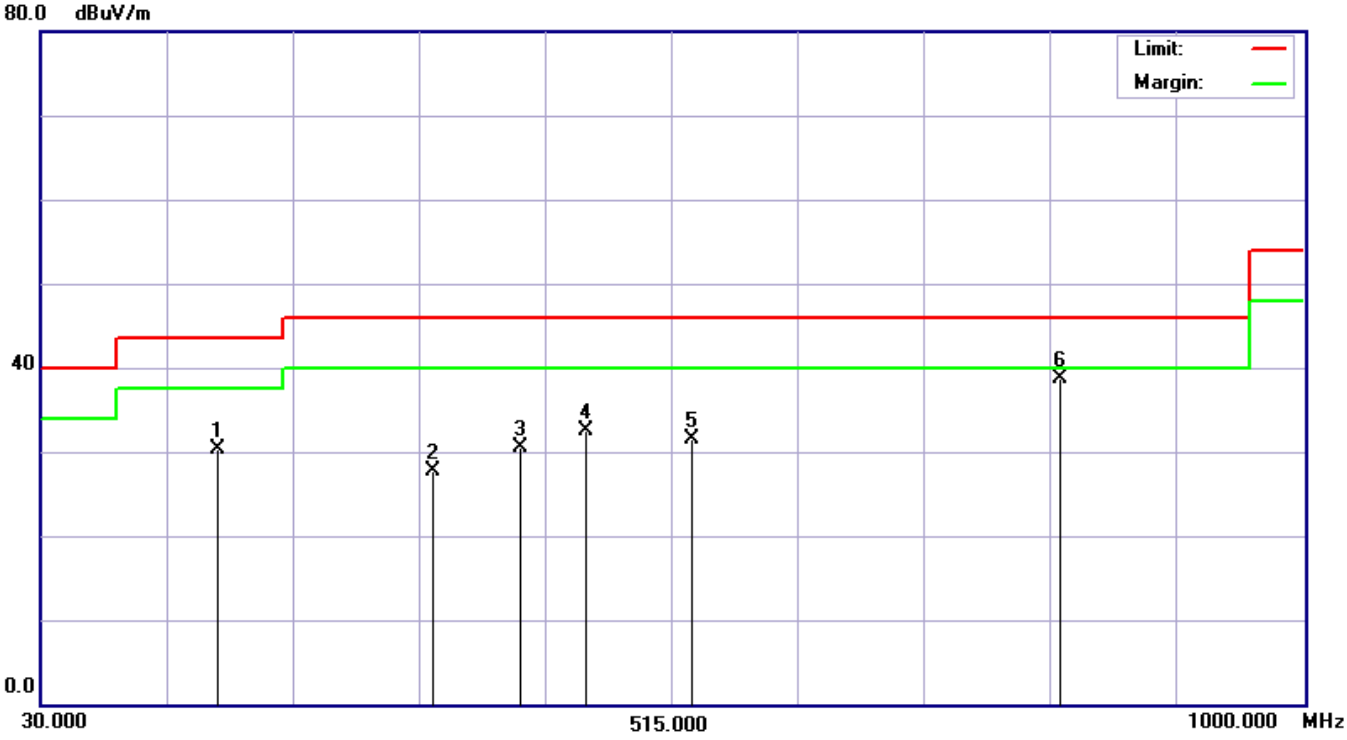
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	February 23, 2008	**Temperature**	26 deg/C
EUT	Wireless Dongle	**Humidity**	60 %RH
Working Cond.	Mode 1-CH 38 (2439MHz)	**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	166.7700	44.80	-14.56	30.24	43.50	-13.26	QP
2	331.6700	40.00	-12.37	27.63	46.00	-18.37	QP
3	399.5700	40.80	-10.32	30.48	46.00	-15.52	QP
4	450.0100	41.60	-9.02	32.58	46.00	-13.42	QP
5	531.4900	38.40	-6.97	31.43	46.00	-14.57	QP
6	★813.7600	40.80	-2.06	38.74	46.00	-7.26	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.



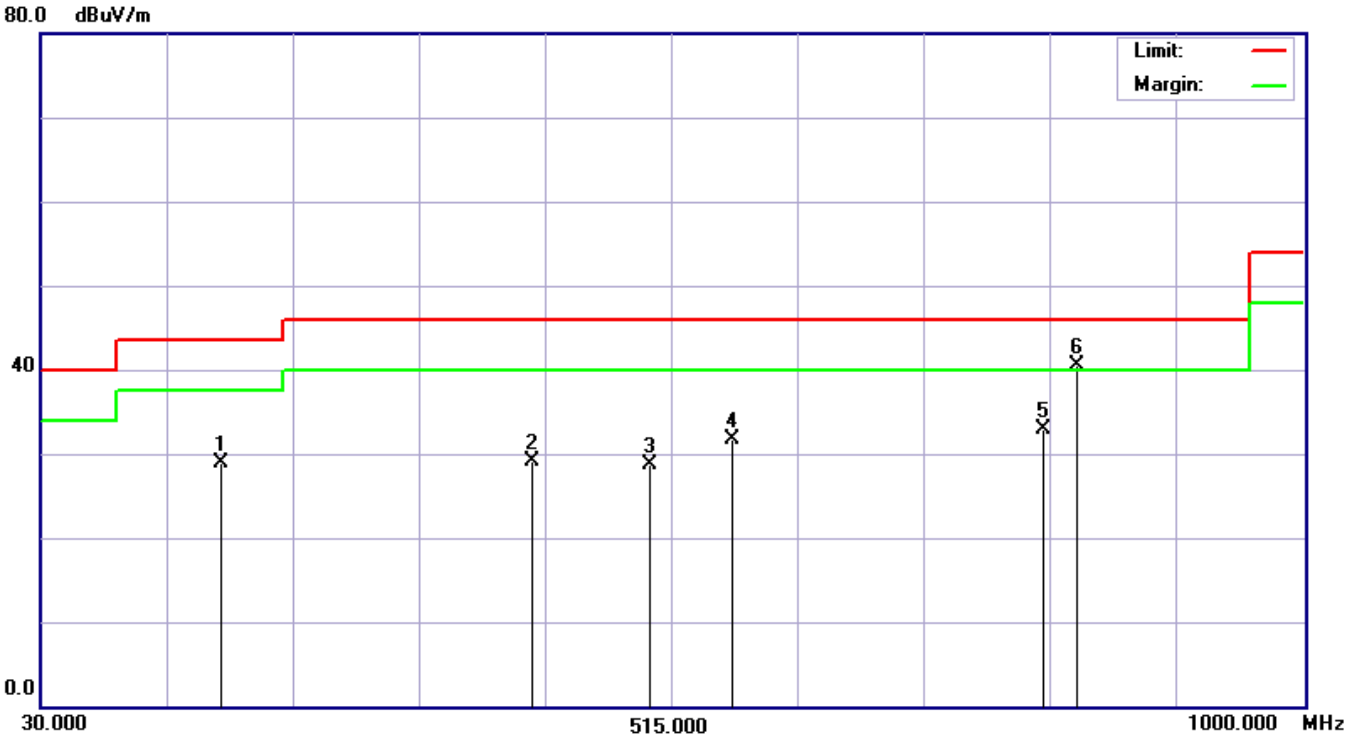
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	February 23, 2008	**Temperature**	26 deg/C
EUT	Wireless Dongle	**Humidity**	60 %RH
Working Cond.	Mode 1-CH 78 (2479MHz)	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	168.7100	43.60	-14.67	28.93	43.50	-14.57	QP
2	408.3000	39.20	-10.10	29.10	46.00	-16.90	QP
3	498.5100	36.40	-7.78	28.62	46.00	-17.38	QP
4	562.5300	38.00	-6.20	31.80	46.00	-14.20	QP
5	801.1500	35.20	-2.24	32.96	46.00	-13.04	QP
6	★827.3400	42.40	-1.87	40.53	46.00	-5.47	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.



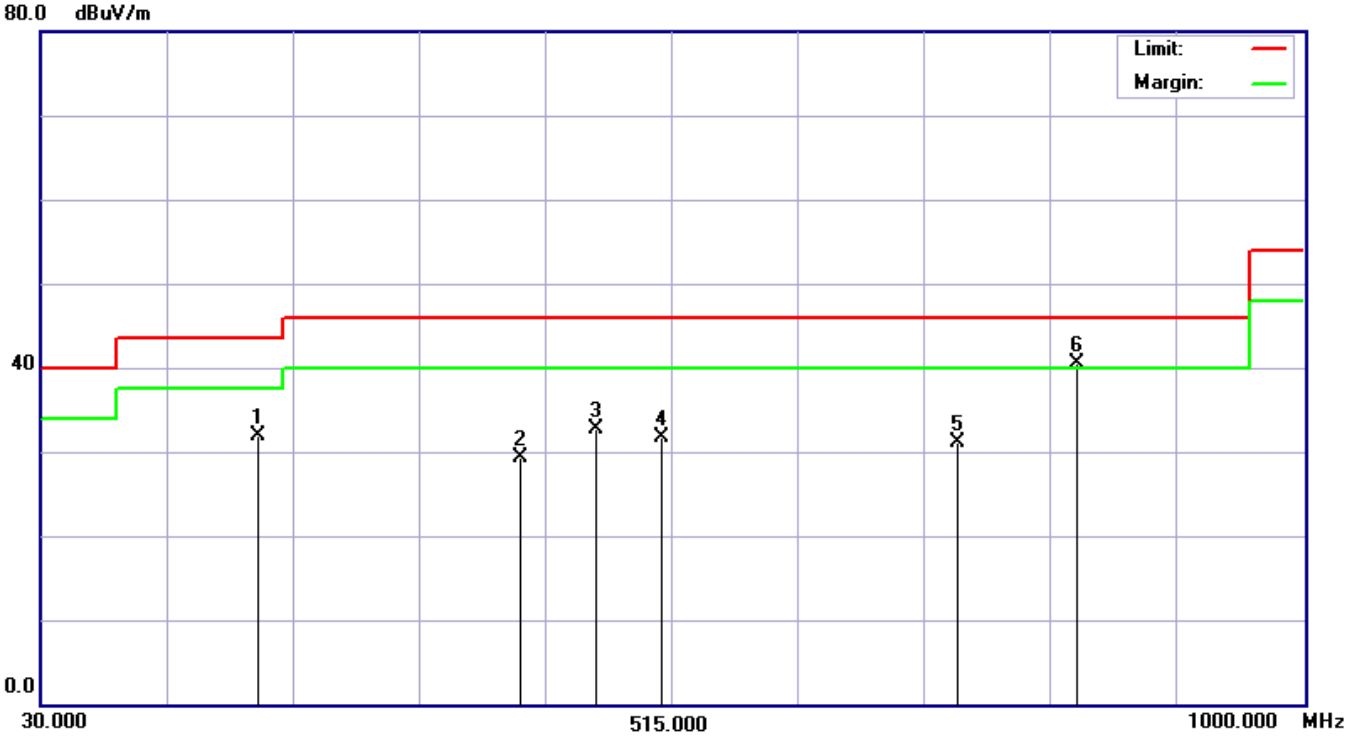
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	February 23, 2008	**Temperature**	26 deg/C
EUT	Wireless Dongle	**Humidity**	60 %RH
Working Cond.	Mode 1-CH 78 (2479MHz)	**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	197.8100	48.00	-16.16	31.84	43.50	-11.66	QP
2	399.5700	39.60	-10.32	29.28	46.00	-16.72	QP
3	456.8000	41.60	-8.85	32.75	46.00	-13.25	QP
4	508.2100	39.20	-7.54	31.66	46.00	-14.34	QP
5	735.1900	34.40	-3.34	31.06	46.00	-14.94	QP
6	★827.3400	42.40	-1.87	40.53	46.00	-5.47	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.



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 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1-CH 01 (2402MHz)	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4803.9000	51.10	1.46	52.56	74.00	-21.44
2	7205.6000	44.70	9.04	53.74	74.00	-20.26
3	9608.0000	43.06	6.54	49.60	74.00	-24.40
4	12010.0000	38.38	14.91	53.29	74.00	-20.71
5	14412.0000	42.16	9.22	51.38	74.00	-22.62
6	16814.0000	43.69	5.32	49.01	74.00	-24.99

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1-CH 01 (2402MHz)	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4803.8000	47.90	1.45	49.35	74.00	-24.65
2	7206.0000	44.56	8.72	53.28	74.00	-20.72
3	9608.0000	42.77	10.18	52.95	74.00	-21.05
4	12010.0000	36.20	17.38	53.58	74.00	-20.42
5	14412.0000	42.43	7.84	50.27	74.00	-23.73
6	16814.0000	43.95	5.66	49.61	74.00	-24.39

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1-CH 38 (2439MHz)	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4878.0000	50.03	1.41	51.44	74.00	-22.56
2	7316.8000	43.87	9.27	53.14	74.00	-20.86
3	9756.0000	43.16	6.91	50.07	74.00	-23.93
4	12195.0000	42.27	11.52	53.79	74.00	-20.21
5	14634.0000	42.39	9.02	51.41	74.00	-22.59
6	17073.0000	43.89	7.16	51.05	74.00	-22.95

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1-CH 38 (2439MHz)	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4877.8000	47.98	2.03	50.01	74.00	-23.99
2	7316.9000	45.05	8.57	53.62	74.00	-20.38
3	9756.0000	43.38	9.81	53.19	74.00	-20.81
4	12195.0000	39.63	13.96	53.59	74.00	-20.41
5	14634.0000	42.84	7.28	50.12	74.00	-23.88
6	17073.0000	44.35	7.15	51.50	74.00	-22.50

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1-CH 78 (2479MHz)	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4957.8000	48.53	1.34	49.87	74.00	-24.13
2	7436.8000	44.54	8.80	53.34	74.00	-20.66
3	9916.0000	44.06	4.67	48.73	74.00	-25.27
4	12395.0000	43.43	7.35	50.78	74.00	-23.22
5	14874.0000	43.01	8.20	51.21	74.00	-22.79
6	17353.0000	43.51	7.88	51.39	74.00	-22.61

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1-CH 78 (2479MHz)	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4958.0000	47.14	2.63	49.77	74.00	-24.23
2	7436.5000	43.90	8.37	52.27	74.00	-21.73
3	9916.0000	43.96	9.77	53.73	74.00	-20.27
4	12395.0000	42.36	10.06	52.42	74.00	-21.58
5	14874.0000	42.96	6.65	49.61	74.00	-24.39
6	17353.0000	42.83	10.92	53.75	74.00	-20.25

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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 FUNDAMEDTAL RADIATED EMISSIONS

Date of Test	Janaury 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1- CH 01 (2402MHz)		
Antenna distance	3m at **Horizontal**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2402.000	63.53	31.49	95.02	114.00	-18.98

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	2402.000	95.02	-11.15	83.87	94.00	-10.13

Date of Test	Janaury 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1- CH 01 (2402MHz)		
Antenna distance	3m at **Vertical**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2402.000	57.42	24.60	82.02	114.00	-31.98

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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	Janaury 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1- CH 38 (2439MHz)		
Antenna distance	3m at **Horizontal**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2438.900	64.64	31.41	96.05	114.00	-17.95

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	2438.900	96.05	-11.15	84.90	94.00	-9.10

Date of Test	Janaury 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1- CH 38 (2439MHz)		
Antenna distance	3m at **Vertical**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2439.000	58.58	24.00	82.58	114.00	-31.42

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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	Janaury 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1- CH 78 (2479MHz)		
Antenna distance	3m at **Horizontal**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2479.000	64.04	31.32	95.36	114.00	-18.64

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	2479.000	95.36	-11.15	84.21	94.00	-9.79

Date of Test	Janaury 10, 2008	**Temperature**	24.4 deg/C
EUT	Wireless Dongle	**Humidity**	61 %RH
Working Cond.	Mode 1-CH 78 (2479MHz)		
Antenna distance	3m at **Vertical**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2479.000	58.73	23.35	82.08	114.00	-31.92

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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.

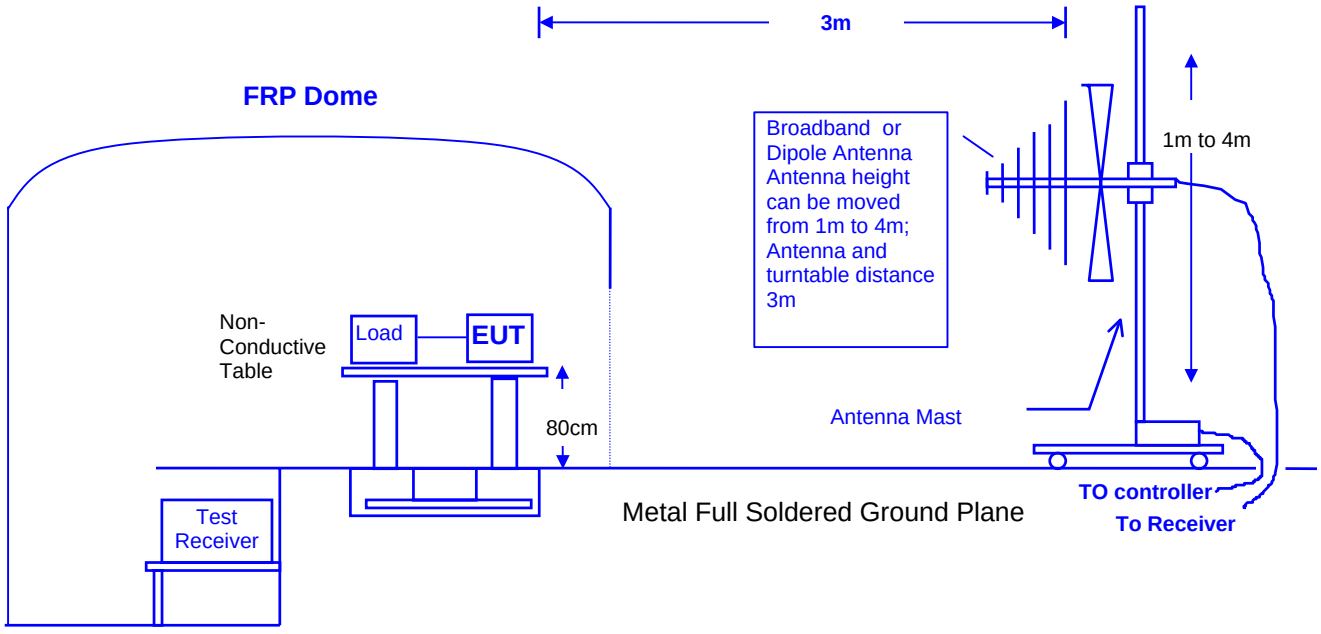
5. BAND EDGE

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	8568B	N/A	2009.01.29
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	EMV-Technik	PA303	N/A	2008.04.18
6	Pre-Amplifier	HP	8449B	3008A01263	2008.03.21
7	Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-251	2008.03.09
8	HORN ANTENNA	SCHWARZBECK	BBHA 9120	D243	2008.12.24
9	CABLE	GTK	N/A	GTK-E-A344-01	2008.04.17
10	CHAMBER	GTK	N/A	A6	2008.11.30
11	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	February 01, 2008	**Temperature**	20.9 deg/C
EUT	Wireless Dongle	**Humidity**	51 %RH
Working Cond.	Mode 1-CH 01 (2402MHz)		
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)]
2402.00	63.53	31.49	95.02

Remark:
1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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 (35.92)dB delta between carry power and maximum emission in restrict band 2400 MHz.

The above tables are list of fundamental emission test result.

Besides, the compare peak power level of RBW=1MHz with RBW=100kHz in (2402)MHz is (2.20)dB.

Therefore, peak field strength of 2400 MHz is 95.02 dBuV/m – 35.92dB +2.20dB= 61.30dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength ╳ Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

20logDuty Cycle = (-11.15)dB

Average field strength of (2400)MHz is

(61.30) dBuV/m + (-11.15)dB = (50.15)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	February 01, 2008	**Temperature**	20.9 deg/C
EUT	Wireless Dongle	**Humidity**	51 %RH
Working Cond.	Mode 1-CH 01 (2402MHz)		
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)]
2402.00	57.42	24.60	82.02

Remark:
1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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 (35.92)dB delta between carry power and maximum emission in restrict band 2400 MHz.

The above tables are list of fundamental emission test result.

Besides, the compare peak power level of RBW=1MHz with RBW=100kHz in (2402)MHz is (2.20)dB.

Therefore, peak field strength of 2400 MHz is 82.02 dBuV/m – 35.92dB +2.20dB= 48.30dBuV/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	February 01, 2008	**Temperature**	20.9 deg/C
EUT	Wireless Dongle	**Humidity**	51 %RH
Working Cond.	Mode 1-CH 78 (2479MHz)		
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)]
2479.00	64.04	31.32	95.36

Remark:
1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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 (41.87)dB delta between carry power and maximum emission in restrict band 2483.5 MHz.

The above tables are list of fundamental emission test result.

Besides, the compare peak power level of RBW=1MHz with RBW=100kHz in (2479)MHz is (2.40)dB.

Therefore, peak field strength of 2483.5 MHz is 95.36 dBuV/m – 41.87dB +2.40dB= 55.89dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength ╳ Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

20logDuty Cycle = (-11.15)dB

Average field strength of (2483.5)MHz is

(55.89) dBuV/m + (-11.15)dB = (44.74)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	February 01, 2008	**Temperature**	20.9deg/C
EUT	Wireless Dongle	**Humidity**	51 %RH
Working Cond.	Mode 1-CH 78 (2479MHz)		
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)]
2479.00	58.73	23.35	82.08

Remark:
1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer 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 (41.87)dB delta between carry power and maximum emission in restrict band 2483.5 MHz.

The above tables are list of fundamental emission test result.

Besides, the compare peak power level of RBW=1MHz with RBW=100kHz in (2479)MHz is (2.40)dB.

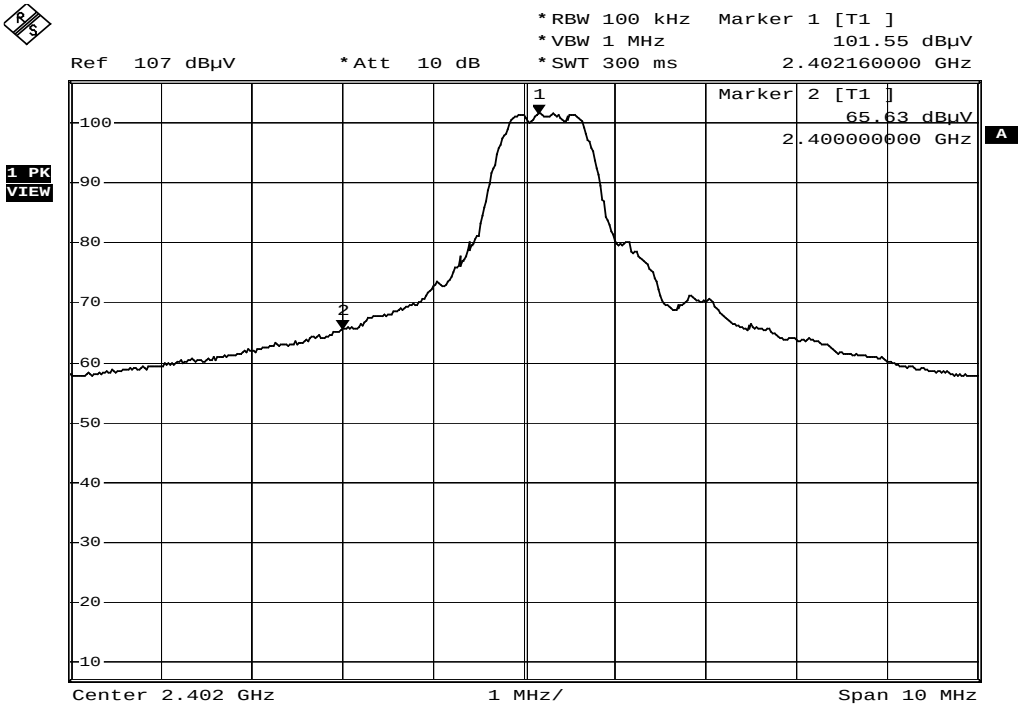
Therefore, peak field strength of 2483.5 MHz is 82.08 dBuV/m – 41.87dB +2.40dB= 42.61dBuV/m which is under 74dBuV/m.

Remark:

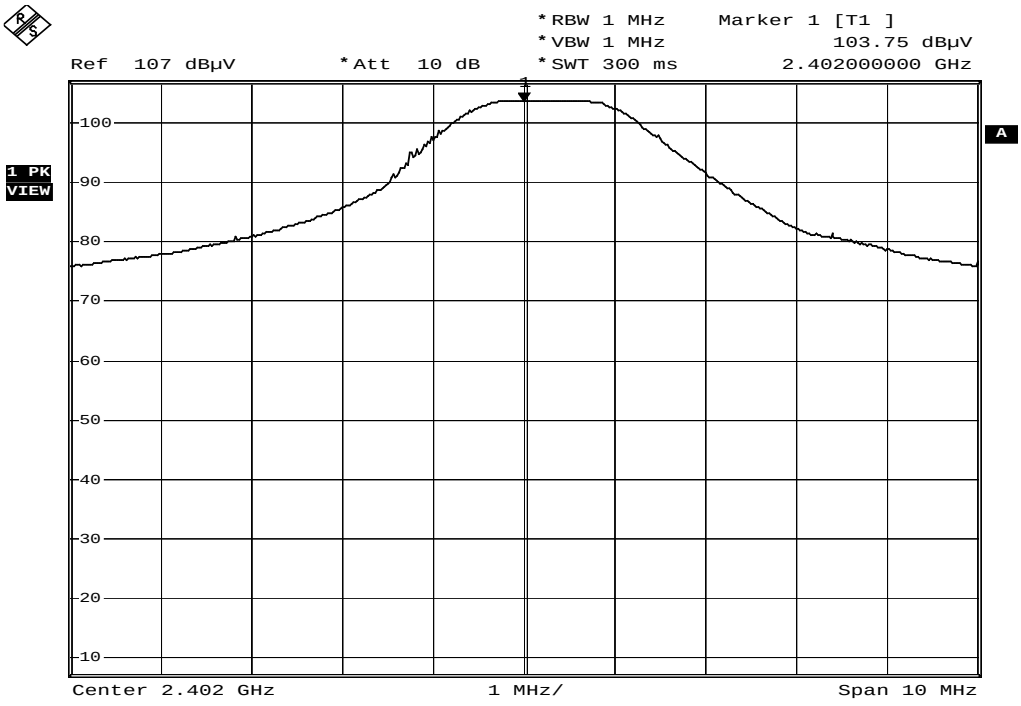
If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

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

Lower Band

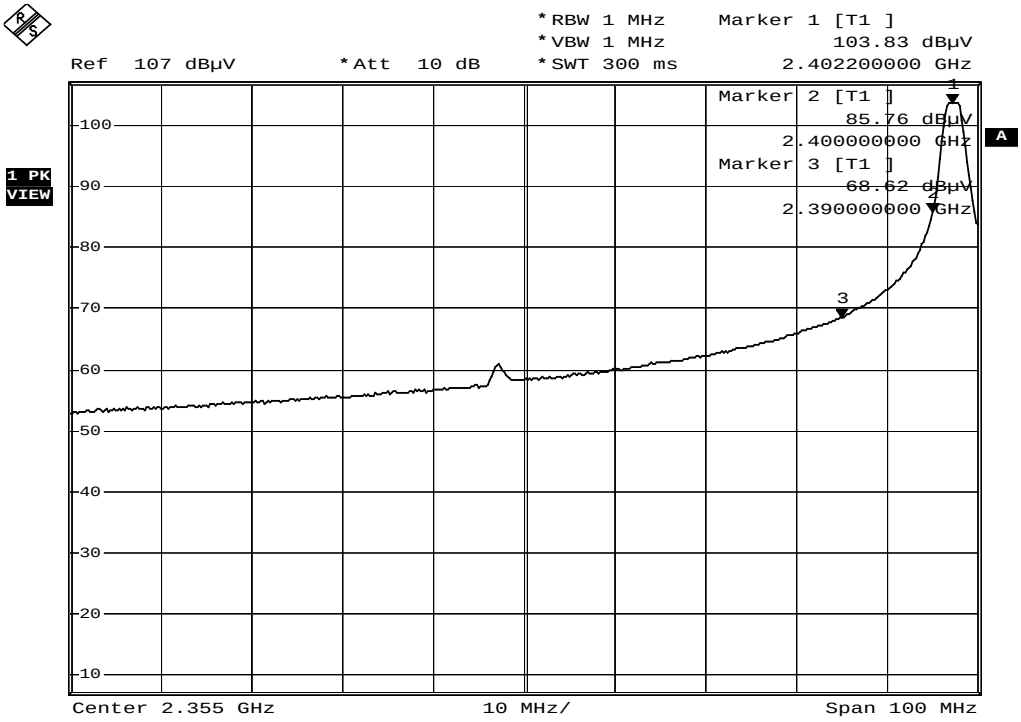


Date: 1.FEB.2008 10:26:31



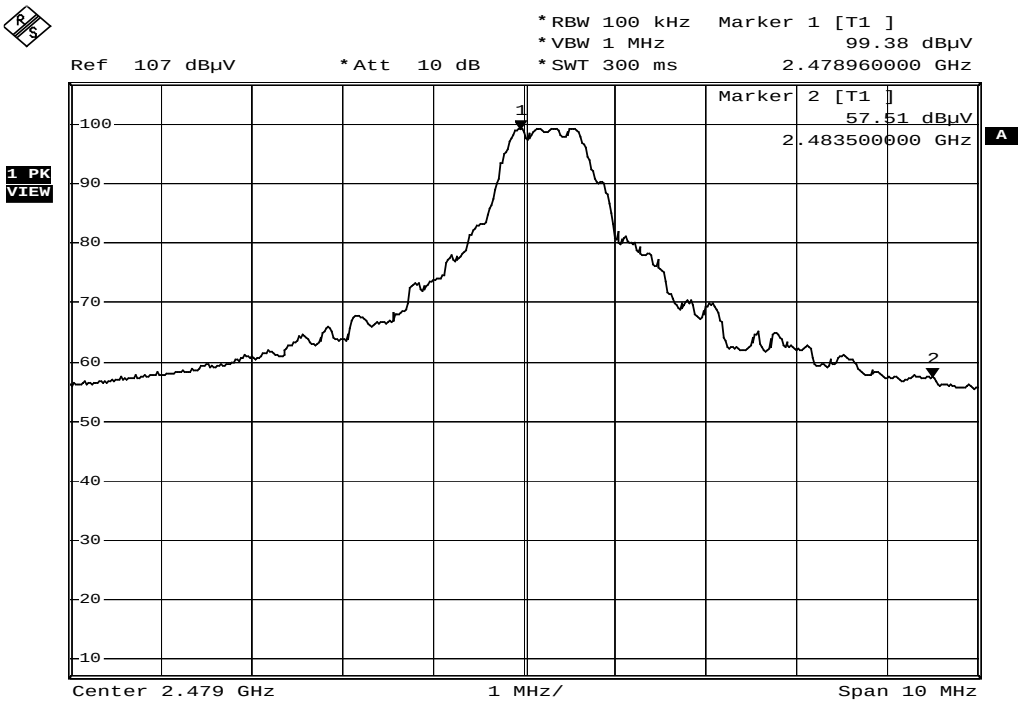
Date: 1.FEB.2008 10:23:27

Lower Band

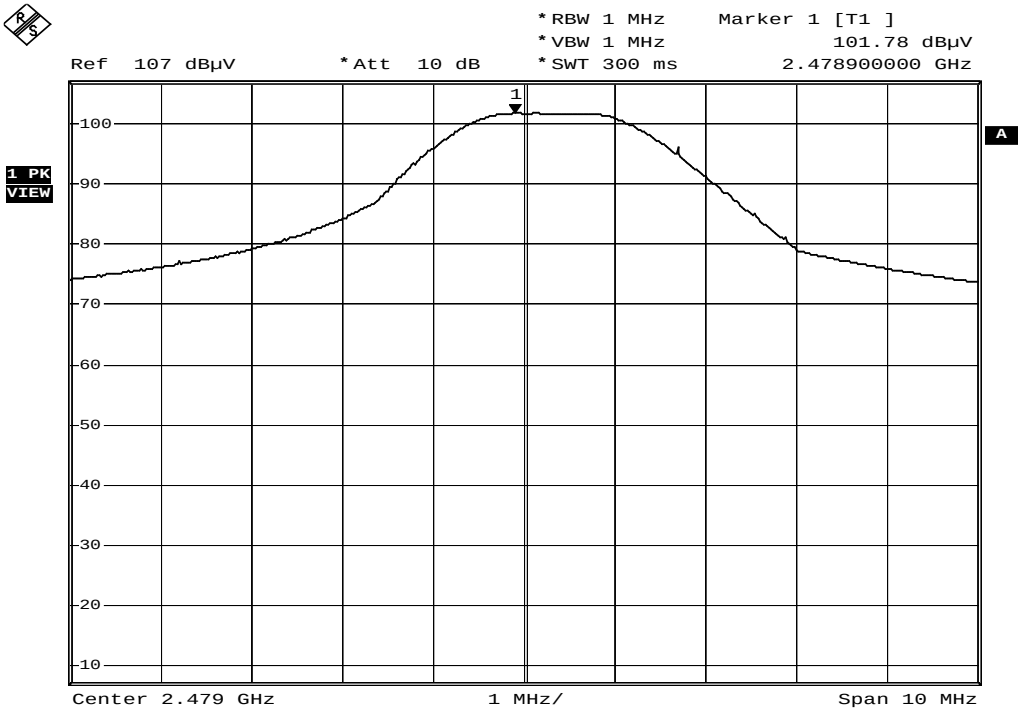


Date: 1.FEB.2008 10:21:21

Higher Band

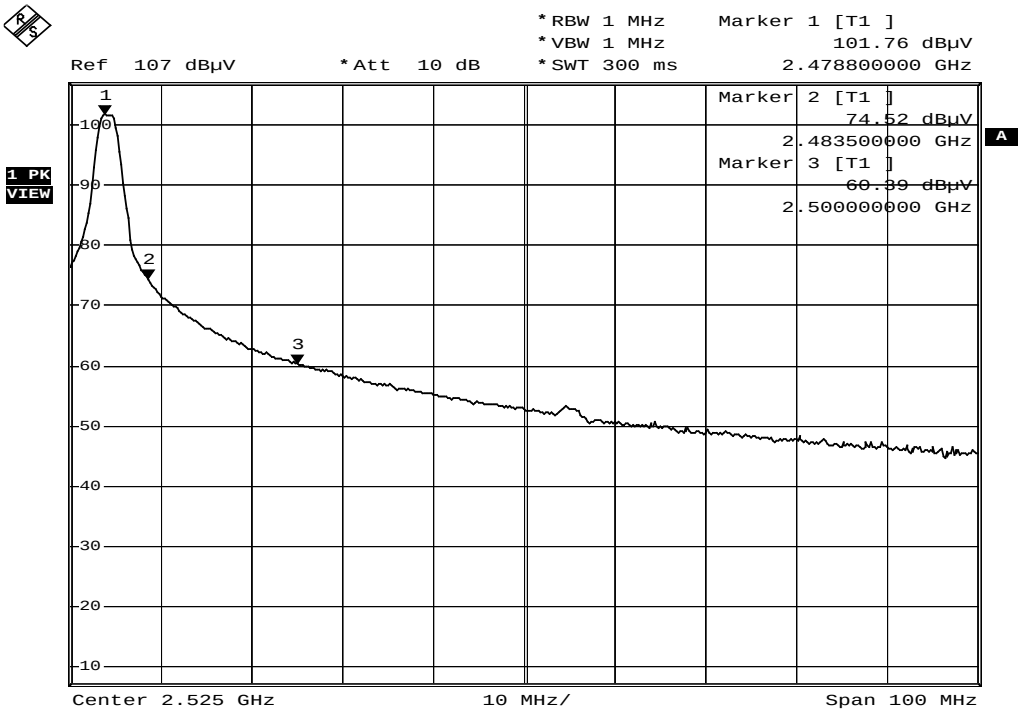


Date: 1.FEB.2008 10:29:46



Date: 1.FEB.2008 10:31:28

Higher Band



Date: 1.FEB.2008 10:33:29

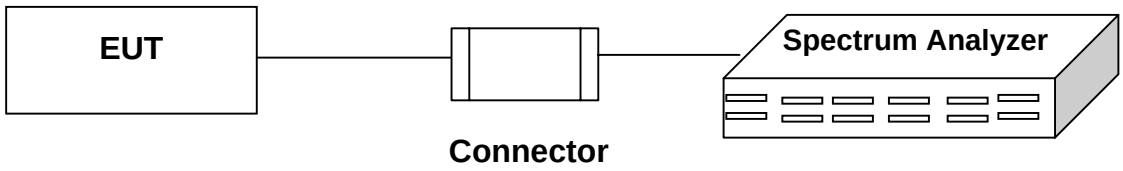
6. DUTY CYCLE

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

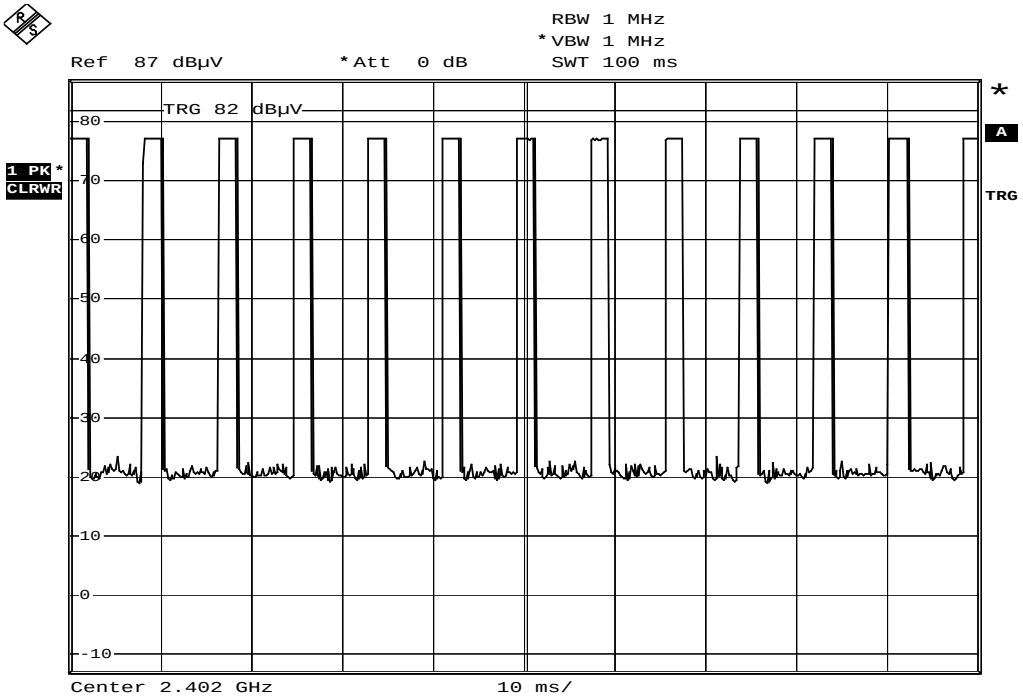
Date of Test	Janaury 10, 2008	**Temperature**	21.8 deg/C
EUT	Wireless Dongle	**Humidity**	48 %RH
Working Cond.	Mode 1-CH 01 (2402MHz)		

Duty Cycle＝Time on of 100msec / 100 msec

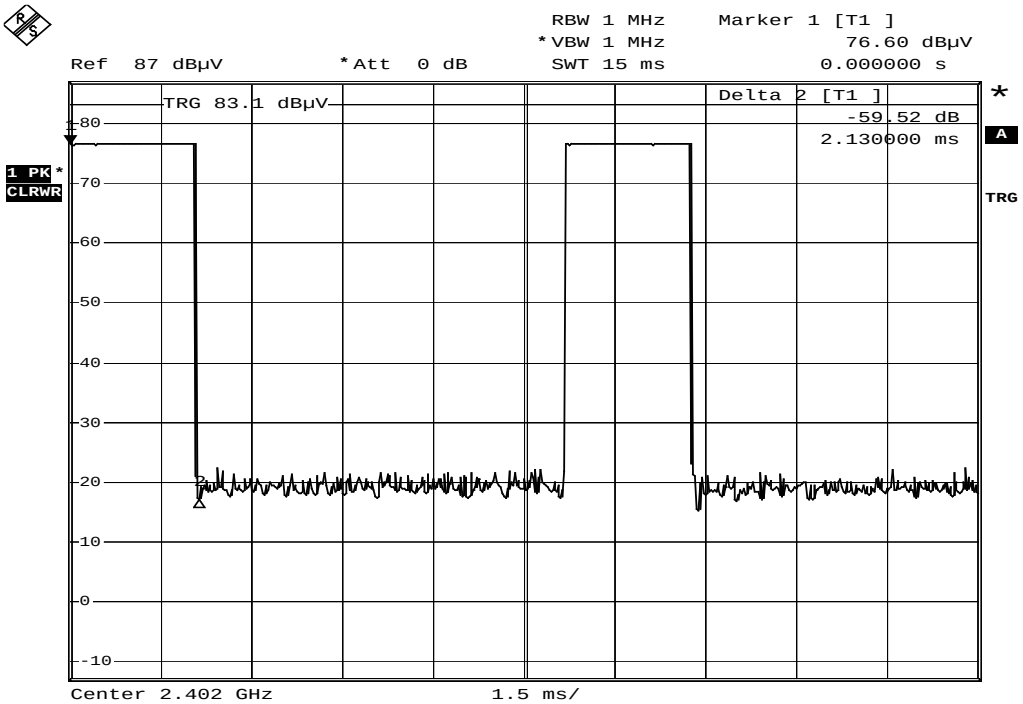
Frequency _2402_ MHz
Time on of one slot length＝ _2130_ (μs)＝ _2.13_ (msec)
Time on of 100ms＝ _2.13_ ˇ 13 = 27.69 _ (msec)
Duty Cycle ＝ _27.69_ / 100msec ＝ _0.2769_
_20_ log 0.2769 _ = _-11.15_ dB

Remark:

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



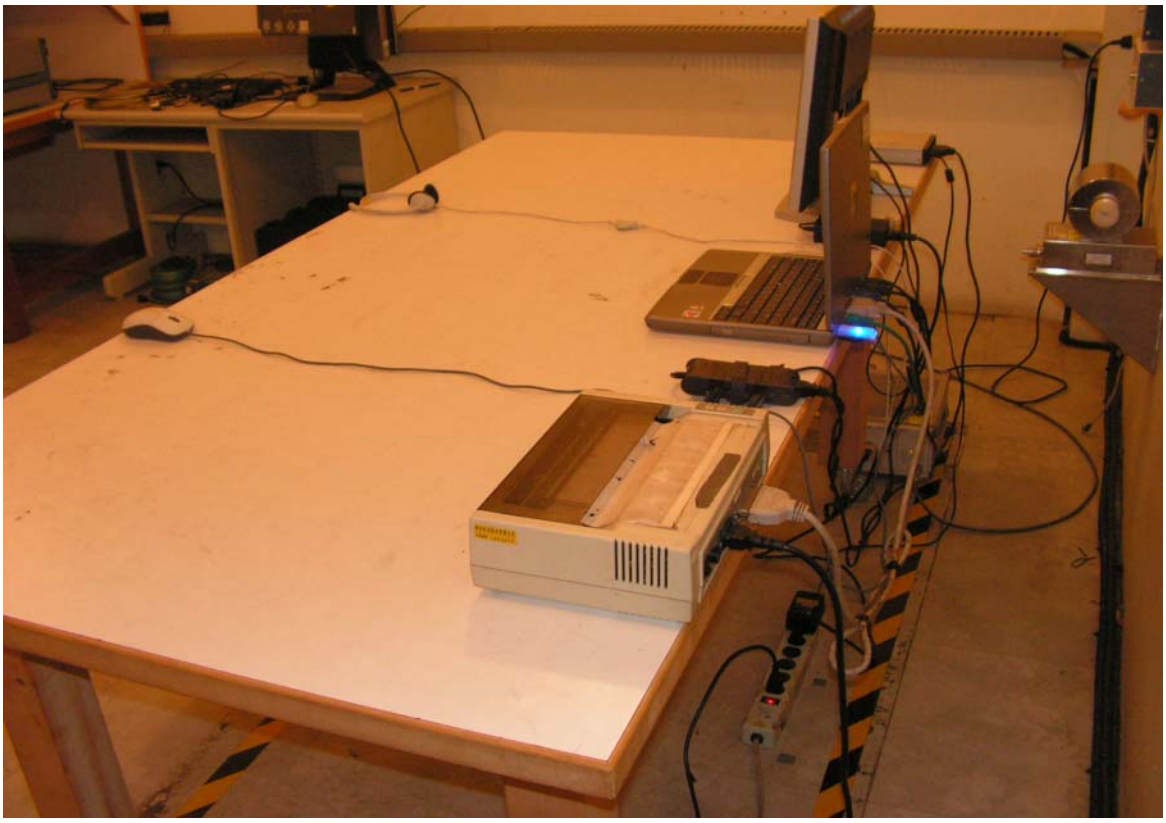
Date: 10.JAN.2008 16:36:04



Date: 10.JAN.2008 16:35:17

7. PHOTOGRAPHS FOR TEST

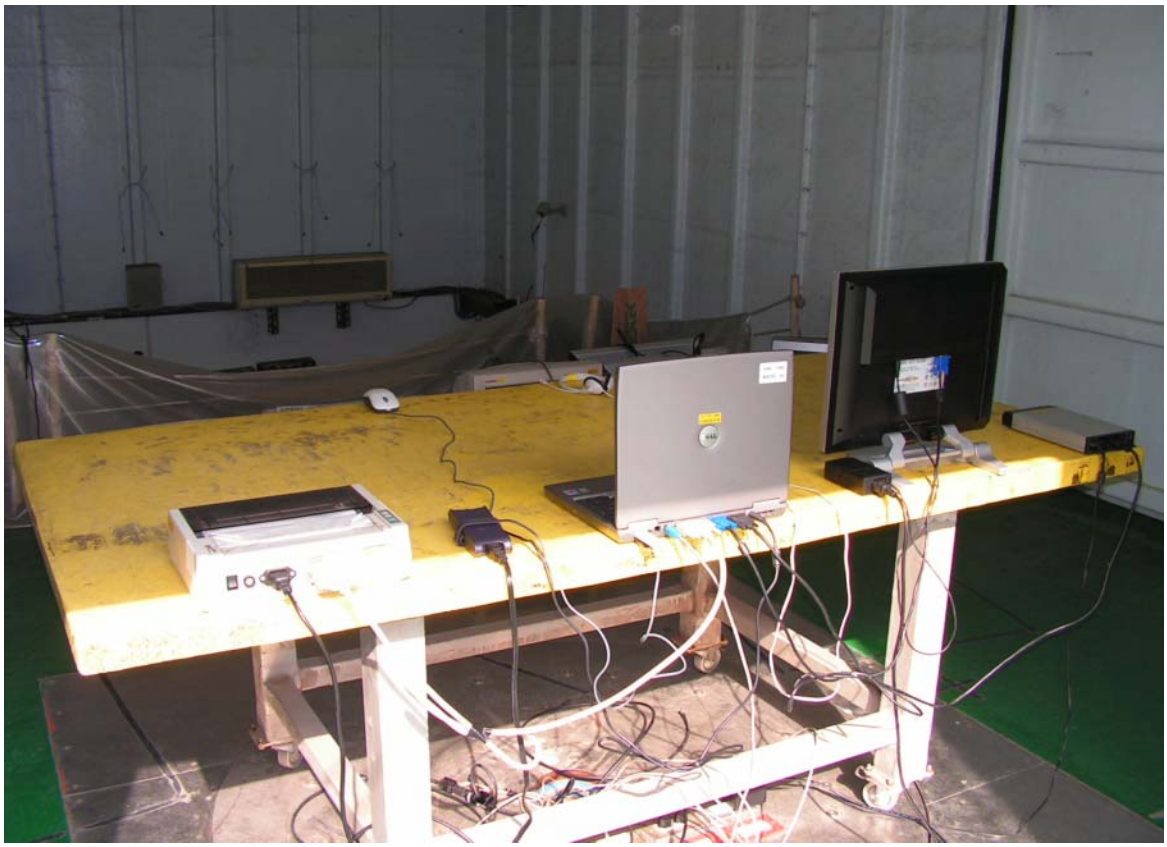
7.1 TEST PHOTOGRAPHS FOR CONDUCTION



7.2 TEST PHOTOGRAPHS FOR RADIATION

30-1000MHz

Above 1GHz

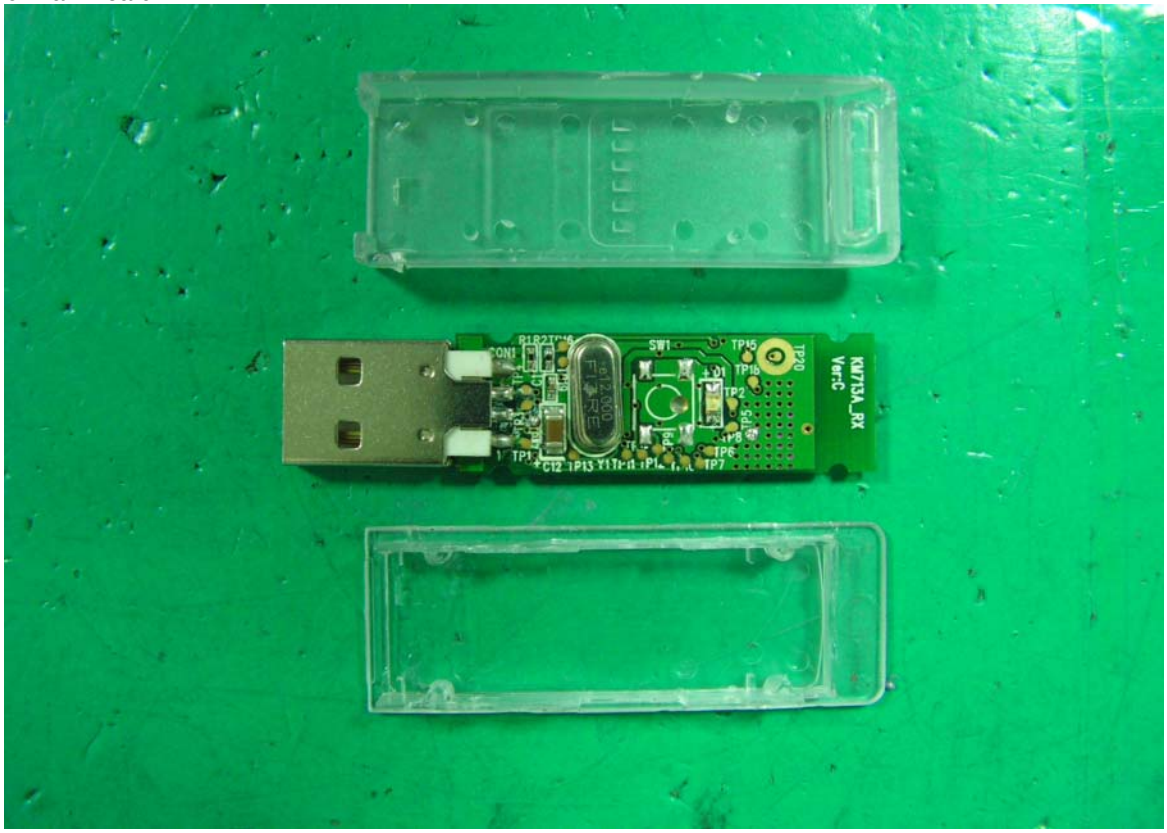


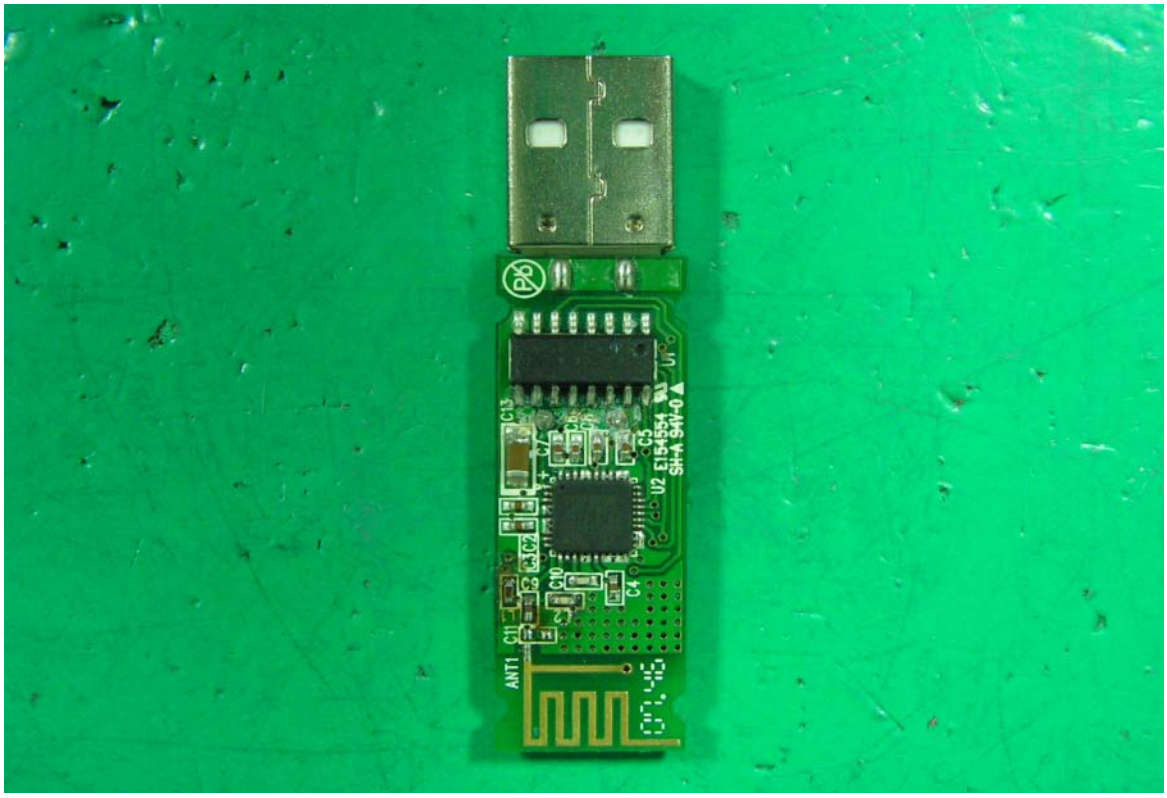
8. PHOTOGRAPHS FOR PRODUCT

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

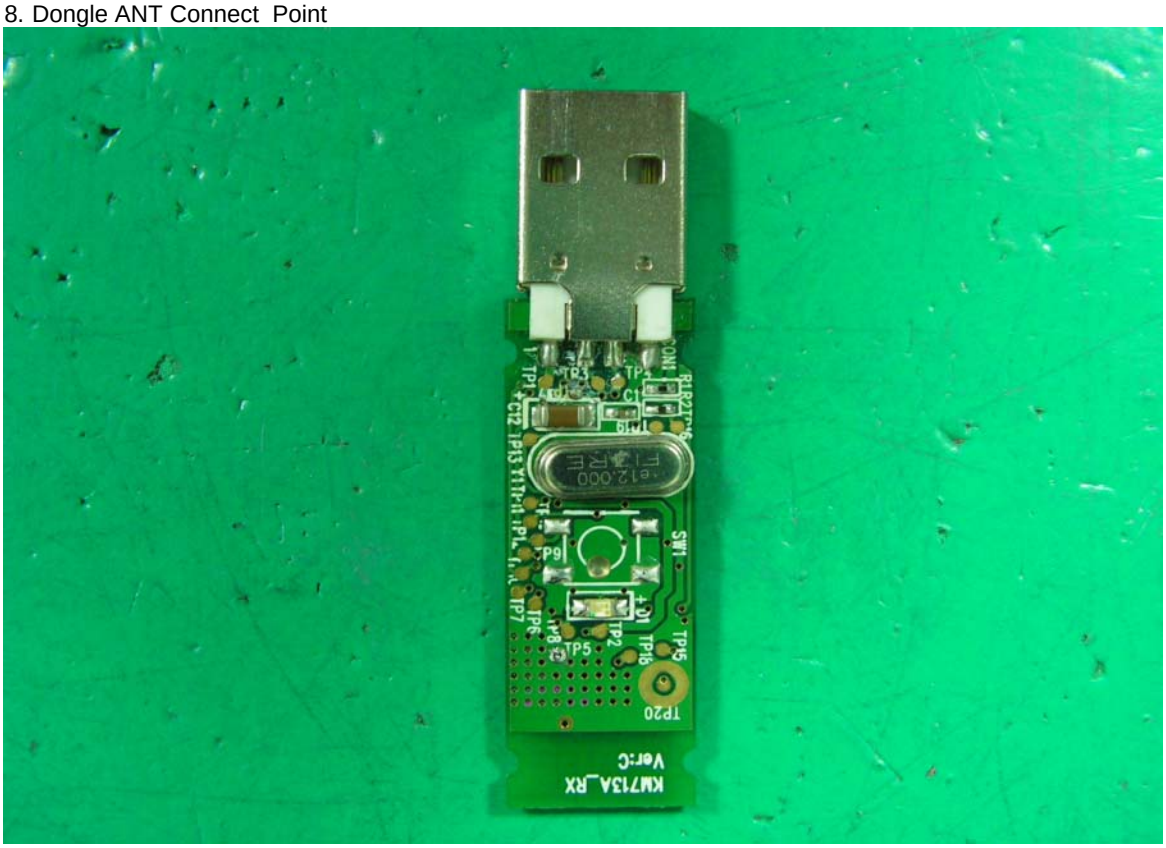
3.
4. Label Here

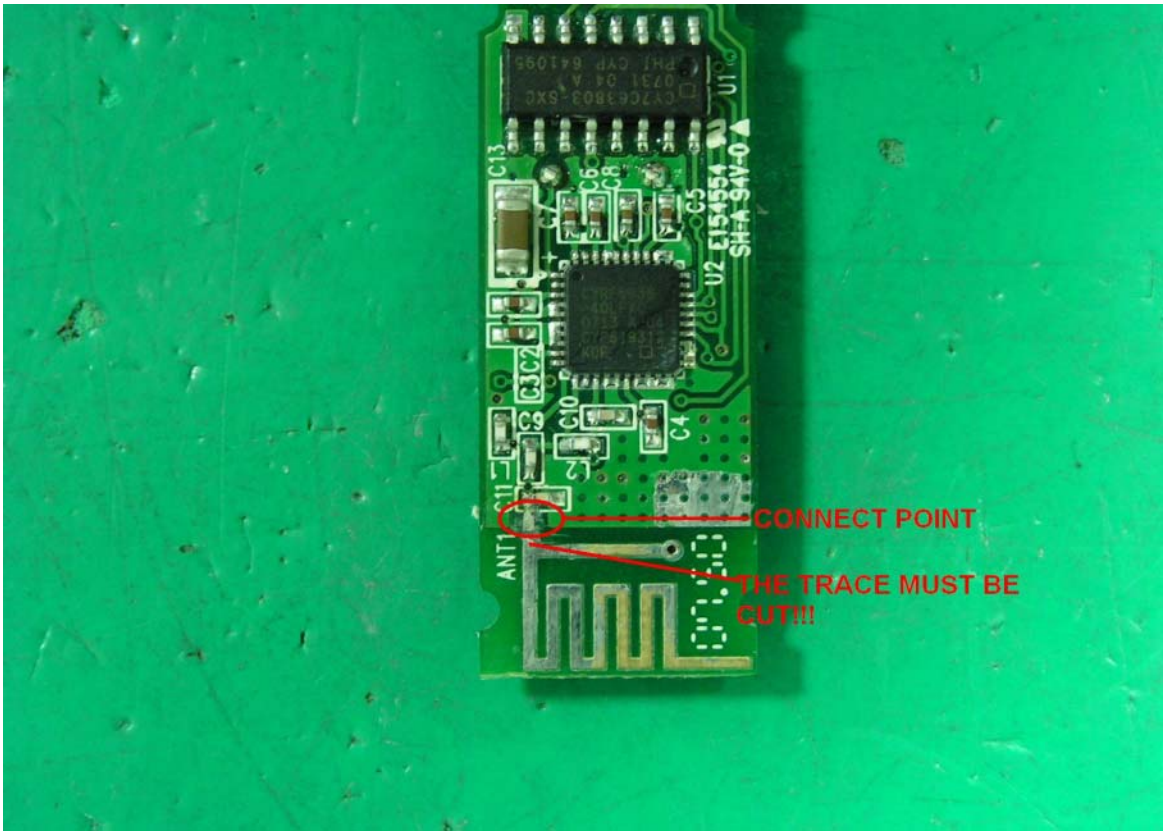
5.
6. Main Board+





7. Main Board-
8. Dongle ANT Connect Point





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)