SPORTON International Inc.
No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, TaoYuan Hsien, Taiwan, R.O.C.
Ph: 886-3-327-3456 / FAX: 886-3-327-0973 / www.sporton.com.tw

FCC RADIO TEST REPORT

Applicant's company	**Fisher-Price, Inc.**
Applicant Address	636 Girard Ave., East Aurora, New York, 14052
FCC ID	**CCTT4256T-10**
Manufacturer's company	**Wynnewood Toys Industrial (Shenzhen) Co., Ltd.**
Manufacturer Address	Guan Guang Road, Fuanlan Baoan District, Shenzhen, China

Product Name	Digital Video monitor (Baby unit)
Brand Name	Fisher-Price, Inc.
Model Name	T4256 (transmitter)
Test Rule	47 CFR FCC Part 15 Subpart C § 15.247 (2007/10/08)
Test Freq. Range	2409 ~ 2473MHz
Received Date	Mar. 23, 2010
Final Test Date	Jul. 05, 2010
Submission Type	Original Equipment

Statement

The test result in this report refers exclusively to the presented test model / sample.
Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.4-2003** and
47 CFR FCC Part 15 Subpart C (2007/10/08) and FCC Public Notice DA00-705.
The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Testing Laboratory
1190

ILAC MRA

Table of Contents

History of This Test Report

Original Issue Date: Jul. 09, 2010

Report No.: FR032316

■ No additional attachment.

□ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

Certificate No.: CB9904014

1. CERTIFICATE OF COMPLIANCE

Product Name	:	**Digital Video monitor (Baby unit)**
Brand Name	:	**Fisher-Price, Inc.**
Model Name	:	**T4256 (transmitter)**
Applicant	:	**Fisher-Price, Inc.**
Test Rule Part(s)	:	**47 CFR FCC Part 15 Subpart C § 15.247 (2007/10/08)**

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Mar. 23, 2010 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Jordan Hsiao

Jordan Hsiao

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C (2007/10/08)				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	11.69 dB
4.2	15.247(b)(1)	Maximum Peak Conducted Output Power	Complies	3.49 dB
4.3	15.247(a)(1)	Hopping Channel Separation	Complies	-
4.4	15.247(b)(1)	Number of Hopping Frequency	Complies	-
4.5	15.247(a)(1)	Dwell Time	Complies	-
4.6	15.247(d)	Radiated Emissions	Complies	1.34 dB
4.7	15.247(d)	Band Edge Emissions	Complies	2.17 dB
4.8	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Peak Conducted Output Power	±0.8dB	Confidence levels of 95%
Hopping Channel Separation	$\pm 8.5\times10^{-8}$	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7℃	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

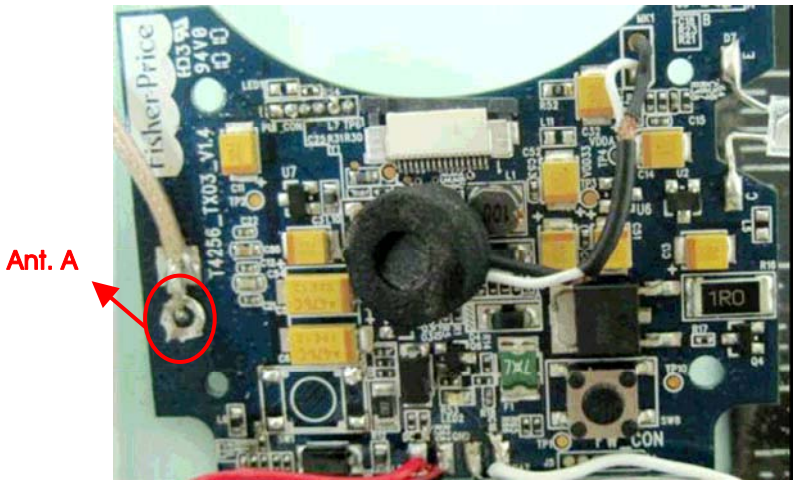
Items	Description
Power Type	From Power Adapter, NI-MH Battery
Modulation	FHSS
Frequency Range	2409 ~ 2473 MHz
Channel Number	17
Channel Band Width (99%)	6000 kHz
Conducted Output Power	17.51 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

3.2. Accessories

Power	Brand	Model	Rating
Adapter	PROTRONICS INDUSTRIAL CO., LTD.	PS15A-0751100U	Input: 100-240VAC, 50/60Hz,20W Output: 7.5VDC, 1100mA
Others			
NI-MH Battery, 6.0V, 1500mAh			
Cradle			

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
A	MY-CHANCE ELECTRONIC CO., LTD	00W-2.73-178Y-63 T4256-TX	Dipole Antenna	NA	3.50



3.4. Table for Carrier Frequencies

Frequency Band	Channel No.	Frequency
2400~2483.5MHz	1	2409 MHz
	2	2413 MHz
	:	:
	8	2437 MHz
	9	2441 MHz
	10	2445 MHz
	:	:
	16	2469 MHz
	17	2473 MHz

3.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Channel	Antenna
AC Power Conducted Emissions	Hopping	-	A
Max. Conducted Output Power	Hopping	1/9/17	NA
Hopping Channel Separation	Hopping	1~2/9~10/16~17	NA
Number of Hopping Frequency	Hopping	Hopping 1~17	NA
Dwell Time	Hopping	Hopping 1~17	NA
Radiated Emissions Below 1GHz	Hopping	-	A
Radiated Emissions Above 1GHz	Hopping	1/9/17	A
Band Edge Emissions	Hopping	1/9/17	A

3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH03-HY	SAC	Hwa Ya	879474	IC 4086	-
CO04-HY	Conduction	Hwa Ya	879474	IC 4086	-
TH01-HY	OVEN Room	Hwa Ya	-	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

Please refer section 6 for Test Site Address.

3.7. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Digital Video monitor (Parent unit)	Fisher-Price, Inc.	T4256 (receiver)	CCTT4256R-10

3.8. Table for Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

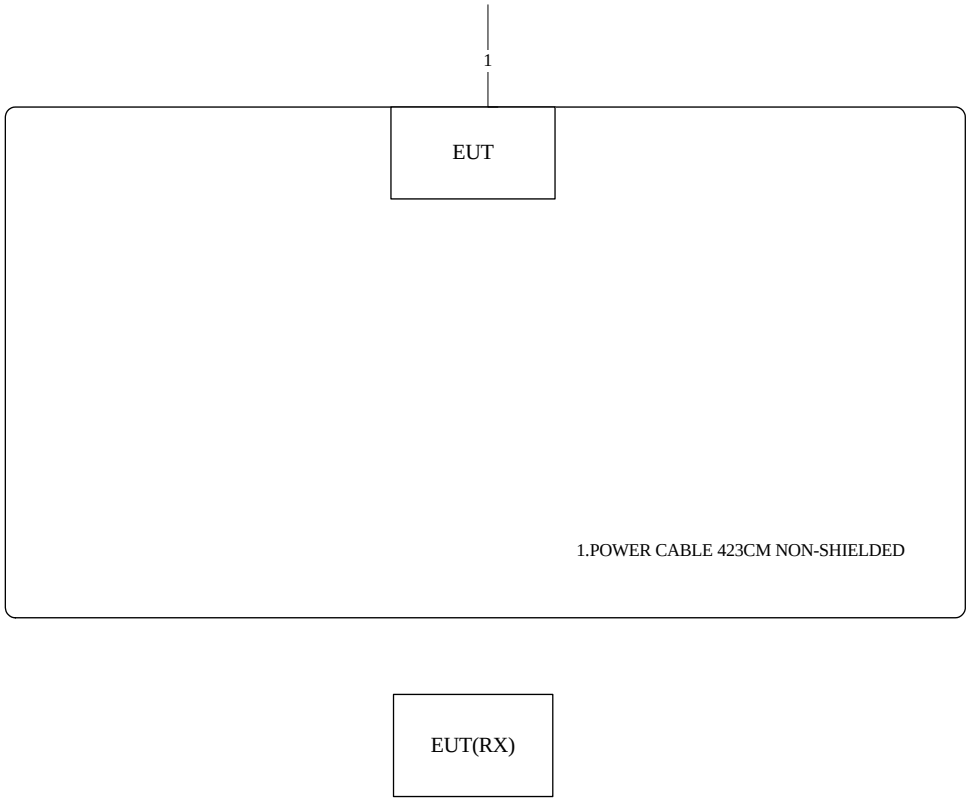
Power Parameters

Test Software Version	N/A		
Frequency	2409 MHz	2441 MHz	2473 MHz
Power Parameters	DEFAULT	DEFAULT	DEFAULT

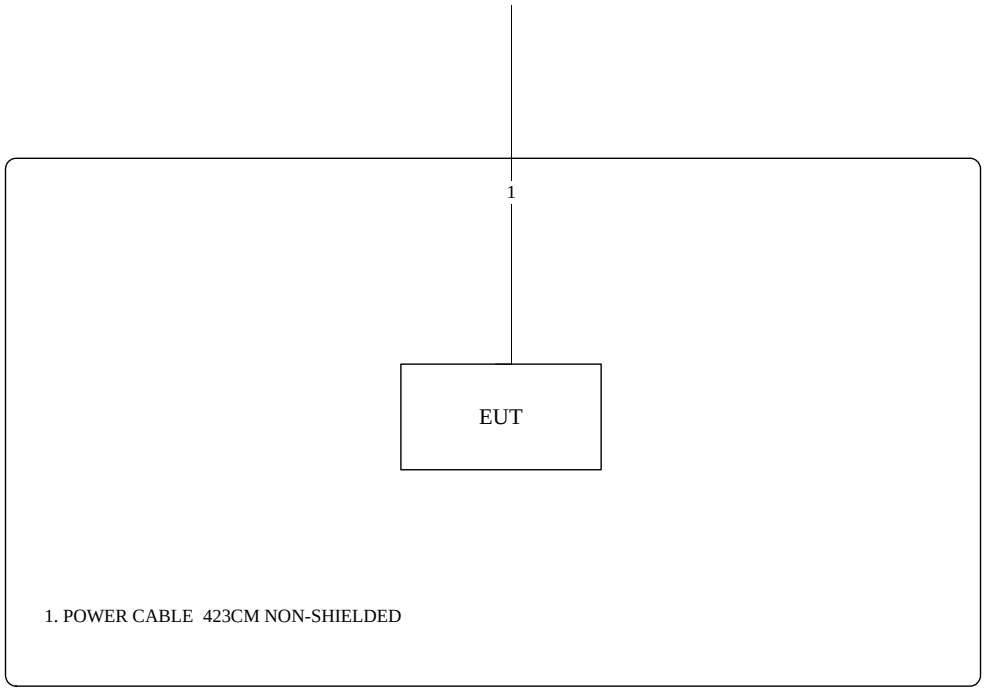
3.9. Test Configurations

3.9.1. Radiation Emissions Test Configuration

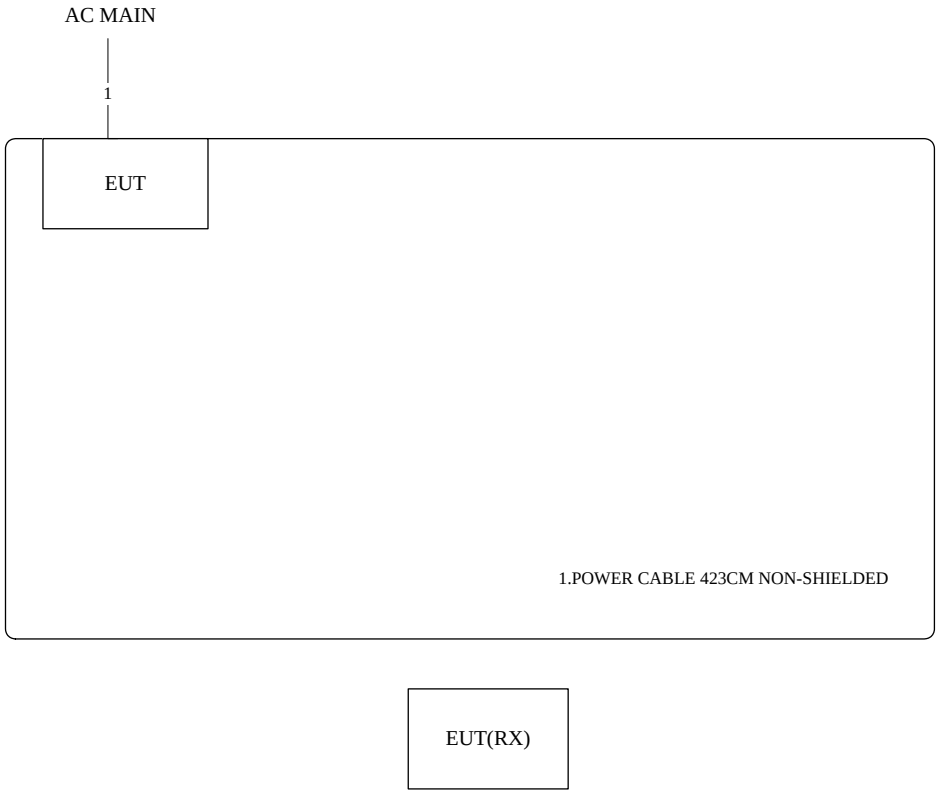
Test Configuration: 9kHz ~ 1GHz



Test Configuration: Above 1GHz



3.9.2. AC Power Line Conduction Emissions Test Configuration



4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For a Low-power Radio-frequency Device which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

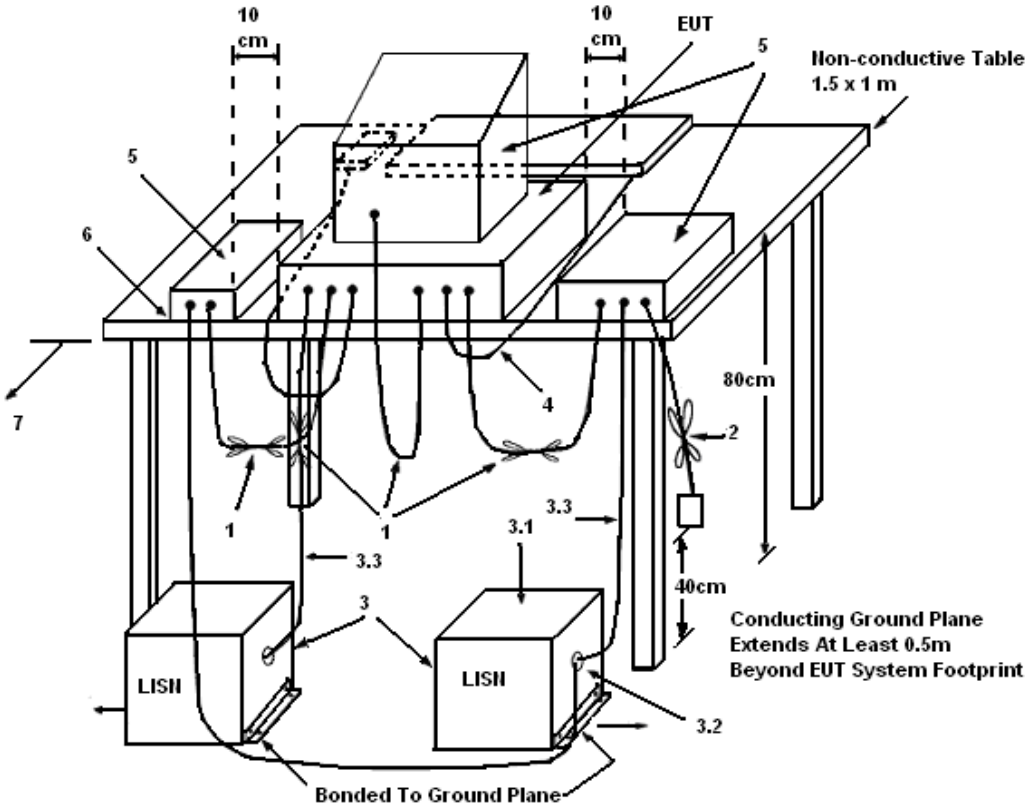
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.4. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 KHz to 30 MHz was searched.
5. Set the test-receiver system to Quasi-Peak and Average Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

(3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.

(3.1) All other equipment powered from additional LISN(s).

(3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

(3.3) LISN at least 80 cm from nearest part of EUT chassis.

(4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

(5) Non-EUT components of EUT system being tested.

(6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

(7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

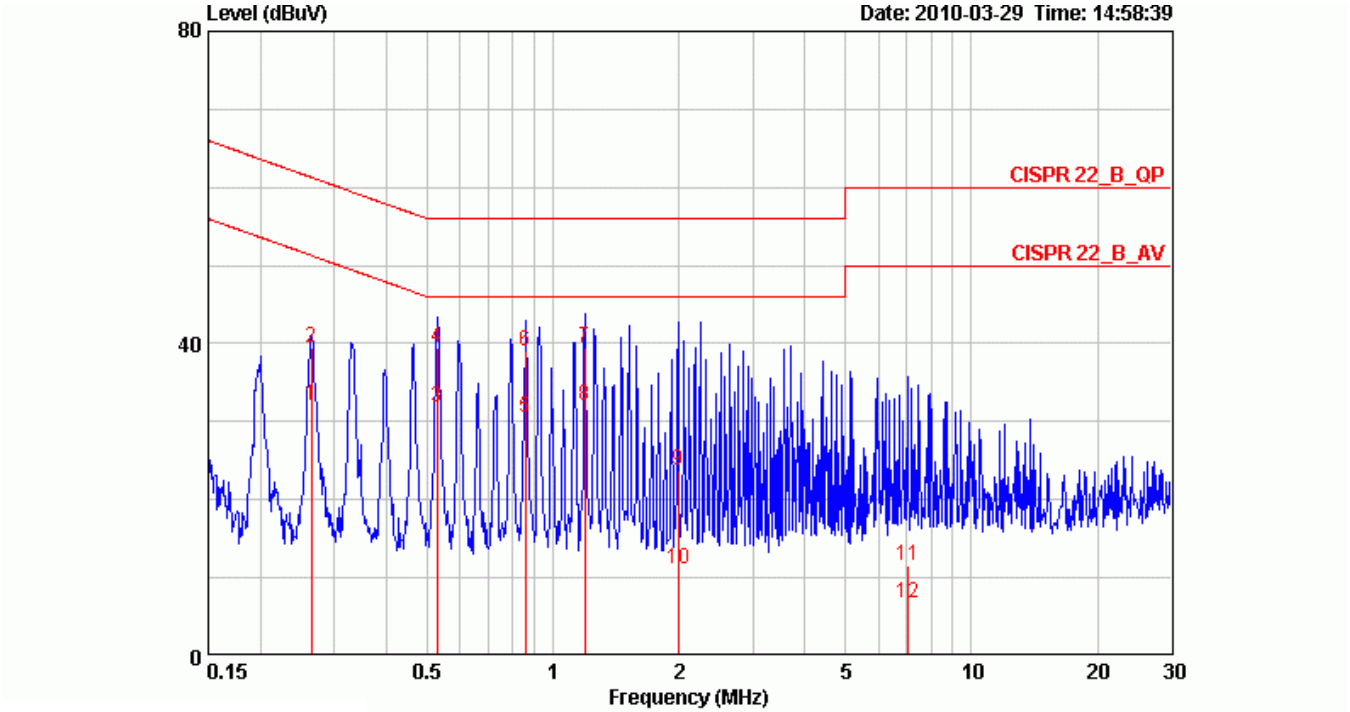
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

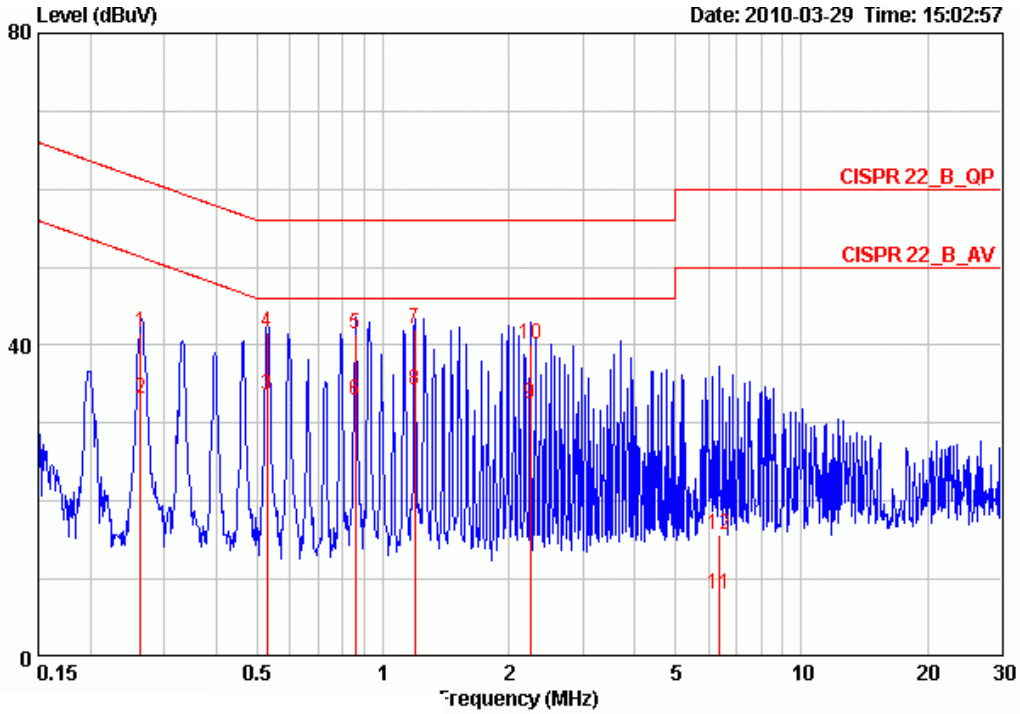
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24℃	Humidity	54%
Test Engineer	Aric Li	Phase	Line
Configuration	Hopping Mode		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.26442	31.96	-19.33	51.29	31.72	0.04	0.20	AVERAGE
2	0.26442	39.39	-21.90	61.29	39.15	0.04	0.20	QP
3	0.52934	31.77	-14.23	46.00	31.54	0.03	0.20	AVERAGE
4	0.52934	39.40	-16.60	56.00	39.17	0.03	0.20	QP
5	0.85730	30.54	-15.46	46.00	30.31	0.03	0.20	AVERAGE
6	0.85730	38.96	-17.04	56.00	38.73	0.03	0.20	QP
7	1.191	39.40	-16.60	56.00	39.21	0.04	0.16	QP
8	1.191	31.99	-14.01	46.00	31.80	0.04	0.16	AVERAGE
9	1.991	23.85	-32.15	56.00	23.60	0.05	0.20	QP
10	1.991	11.06	-34.94	46.00	10.81	0.05	0.20	AVERAGE
11	7.025	11.63	-48.37	60.00	11.07	0.25	0.31	QP
12	7.025	6.74	-43.26	50.00	6.18	0.25	0.31	AVERAGE

Temperature	24°C	Humidity	54%
Test Engineer	Aric Li	Phase	Neutral
Configuration	Hopping Mode		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.26303	41.64	-19.70	61.34	41.36	0.08	0.20	QP
2	0.26303	33.21	-18.13	51.34	32.93	0.08	0.20	AVERAGE
3	0.52934	33.50	-12.50	46.00	33.23	0.07	0.20	AVERAGE
4	0.52934	41.65	-14.35	56.00	41.38	0.07	0.20	QP
5	0.85730	41.41	-14.59	56.00	41.14	0.07	0.20	QP
6	0.85730	32.92	-13.08	46.00	32.65	0.07	0.20	AVERAGE
7	1.191	42.17	-13.83	56.00	41.94	0.08	0.16	QP
8	1.191	34.31	-11.69	46.00	34.08	0.08	0.16	AVERAGE
9	2.249	32.41	-13.59	46.00	32.11	0.10	0.20	AVERAGE
10	2.249	40.17	-15.83	56.00	39.87	0.10	0.20	QP
11	6.352	8.09	-41.91	50.00	7.45	0.27	0.37	AVERAGE
12	6.352	15.66	-44.34	60.00	15.02	0.27	0.37	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. Maximum Peak Output Power Measurement

4.2.1. Limit

For frequency hopping systems operating in the 2400~2483.5 MHz band employing at least 75 non-overlapping hopping channels, the limit for peak output power is 1Watt (30dBm). For all other frequency hopping systems in the 2400~2483.5 MHz band: 0.125 watts (21dBm). The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

4.2.2. Measuring Instruments and Setting

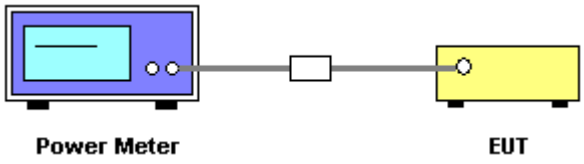
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Filter No.	Auto
Measurement time	0.135 s ~ 26 s
Used Peak Sensor	NRV-Z51

4.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Turn on the EUT and power meter and then record the peak power value.
3. Repeat above procedures on all channels needed to be tested.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in hopping mode.

4.2.7. Test Result of Maximum Peak Output Power

Temperature	18°C	Humidity	60%
Test Engineer	Sam Chen	Configurations	Hopping Mode
Test Date	Mar. 26, 2010		

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2409 MHz	17.10	21.00	Complies
9	2441 MHz	16.60	21.00	Complies
17	2473 MHz	17.51	21.00	Complies

4.3. Hopping Channel Separation Measurement

4.3.1. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400~2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

4.3.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer.

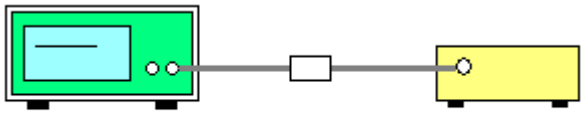
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	100 kHz (20dB Bandwidth) / 1 MHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 1 MHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were utilised for 20 dB bandwidth measurement.
3. The resolution bandwidth of 1 MHz and the video bandwidth of 1 MHz were utilised for channel separation measurement.

4. Test was performed in accordance with Measurement under FCC Public Notice DA00-705.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in hopping mode.

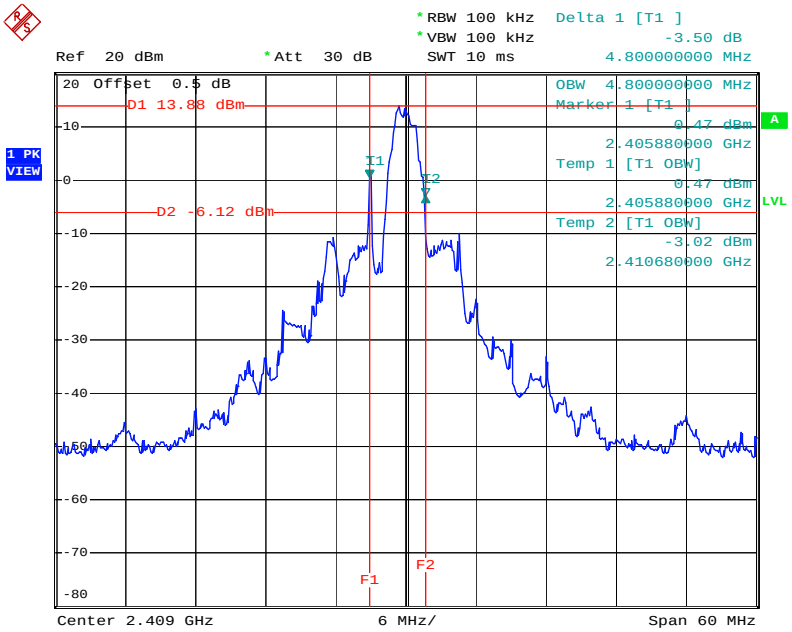
4.3.7. Test Result of Hopping Channel Separation

Temperature	18°C	Humidity	60%
Test Engineer	Sam Chen	Configurations	Hopping Mode

Frequency	20dB Bandwidth (kHz)	99% Occupied BW (kHz)	Channel Specing (kHz)	Channel Specing Min. Limits (kHz)	Result
2409 MHz	4800.00	4800.00	4000.00	3200.00	Complies
2441 MHz	4920.00	6000.00	4000.00	3280.00	Complies
2473 MHz	3240.00	5880.00	4000.00	2160.00	Complies

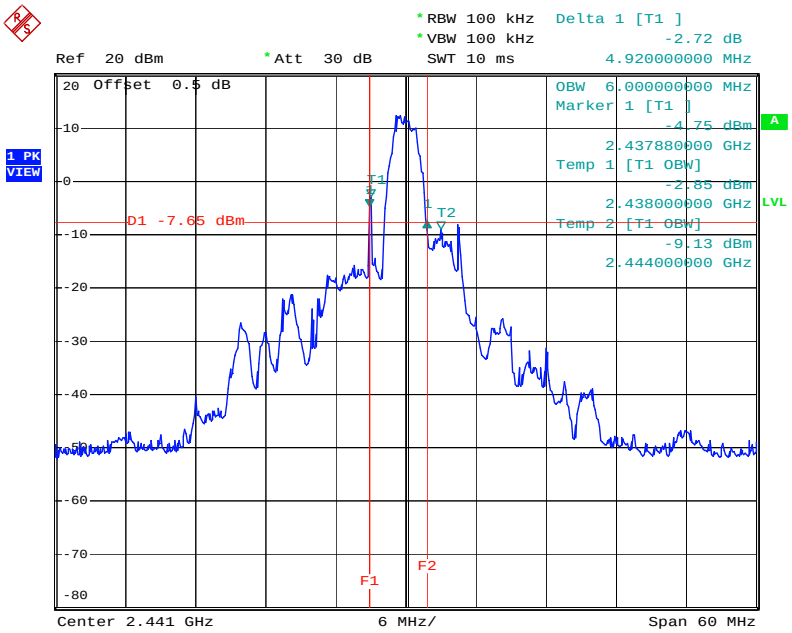
Note: The limit should be the greater of 25 kHz or 2/3 of 20 dB bandwidth for device operates with an output power not greater than 125 mW.

20 dB Bandwidth Plot on Channel 1 / 2409 MHz



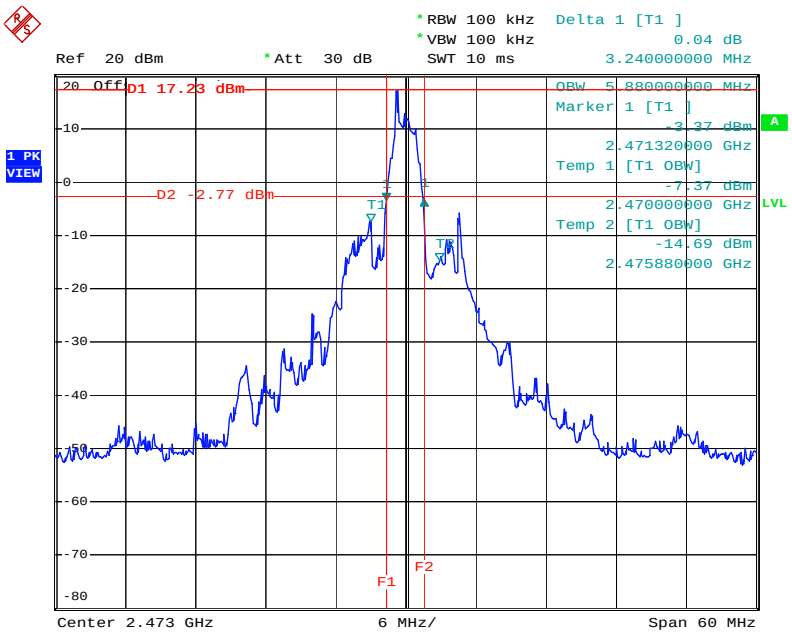
Date: 12.MAY.2010 15:58:40

20 dB Bandwidth Plot on Channel 9 / 2441 MHz



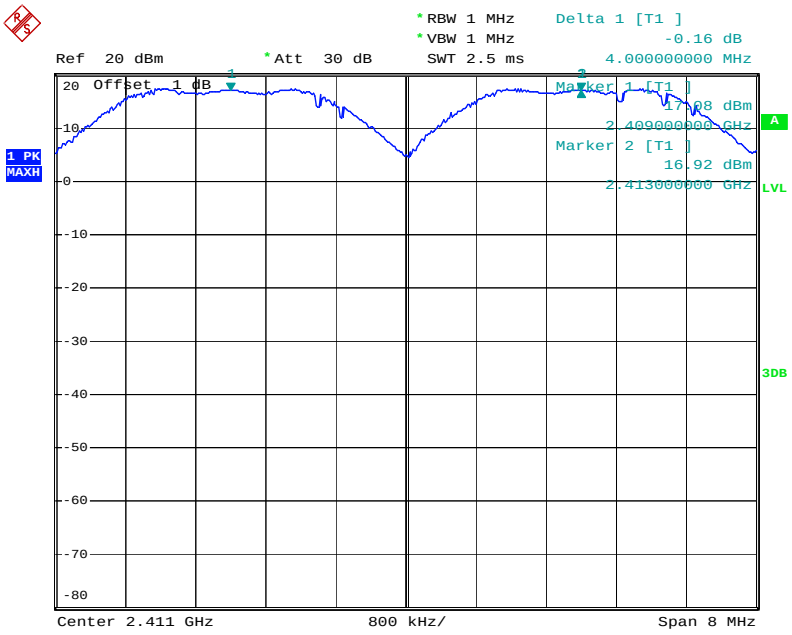
Date: 12.MAY.2010 16:11:49

20 dB Bandwidth Plot on Channel 17 / 2473 MHz



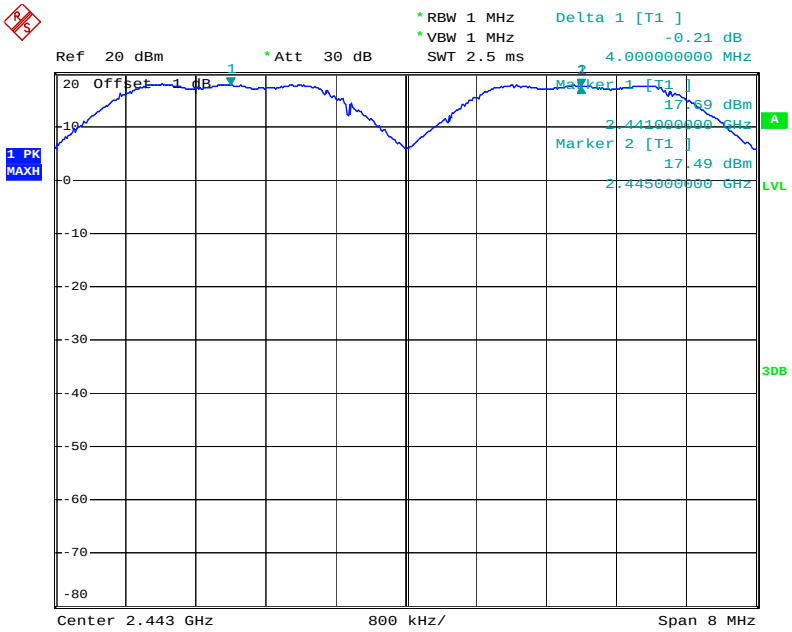
Date: 12.MAY.2010 16:17:18

Channel Separation Plot on Channel 1~2 / 2409 MHz ~ 2413 MHz



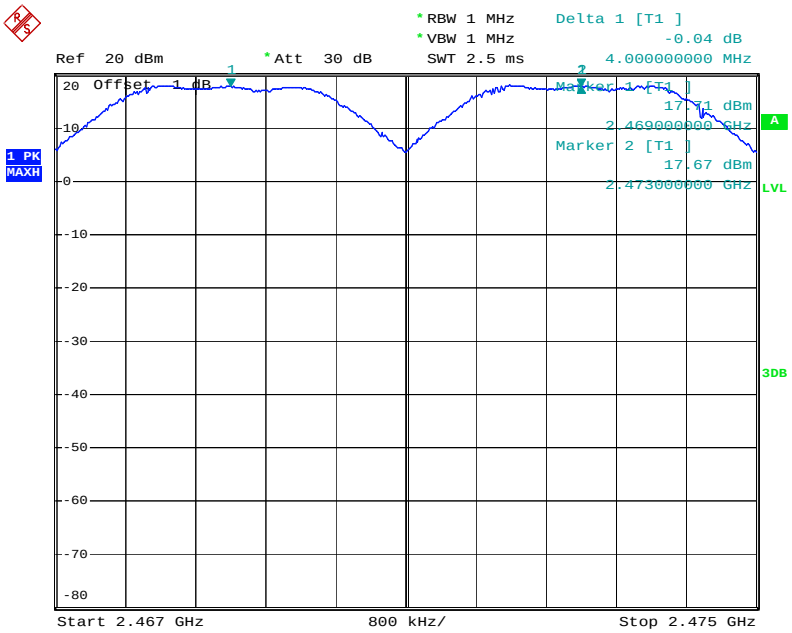
Date: 25.MAR.2010 13:52:39

Channel Separation Plot on Channel 9~10 / 2441 MHz ~ 2445 MHz



Date: 25.MAR.2010 13:56:49

Channel Separation Plot on Channel 16~17 / 2469MHz ~ 2473 MHz



Date: 25.MAR.2010 14:00:14

4.4. Number of Hopping Frequency Measurement

4.4.1. Limit

For frequency hopping systems operating in the 2400~2483.5 MHz band employing at least 15 non-overlapping hopping channels.

4.4.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RB	1 MHz
VB	1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 1 MHz and the video bandwidth of 1 MHz were utilised.
3. Observe frequency hopping in 2409 ~ 2473MHz, there are at least 15 non-overlapping channels.

4.4.4. Test Setup Layout

4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

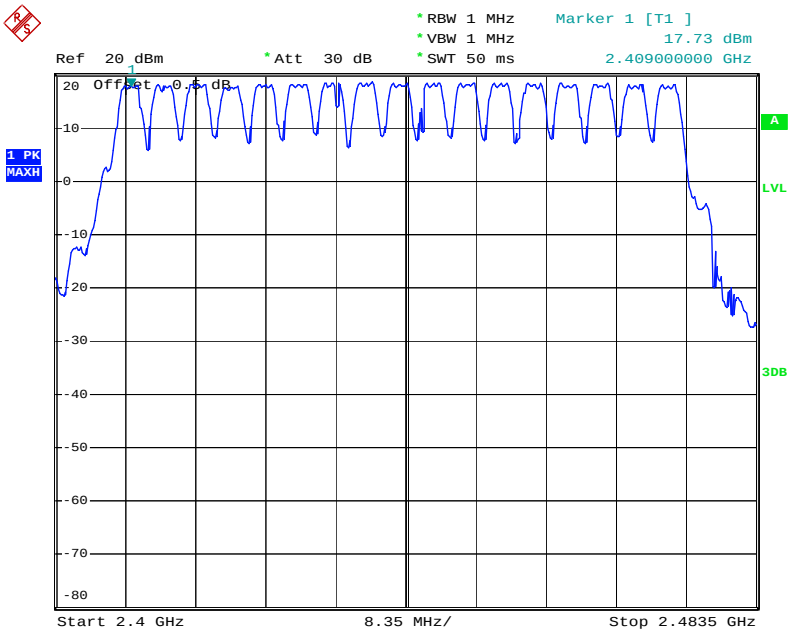
The EUT was programmed to be in hopping mode.

4.4.7. Test Result of Number of Hopping Frequency

Temperature	18℃	Humidity	60%
Test Engineer	Sam Chen	Configurations	Hopping Mode

Channel No.	Frequency (MHz)	Hopping Ch. (Channels)	Min. Limit (Channels)	Test Result
1~17	2409 MHz ~ 2473 MHz	17	15	Complies

Number of Hopping Channel Plot on Channel 1~17 / 2409 MHz ~ 2473 MHz



Date: 25.MAR.2010 13:15:08

4.5. Dwell Time Measurement

4.5.1. Limit

Frequency hopping systems in the 2400~2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

4.5.2. Measuring Instruments and Setting

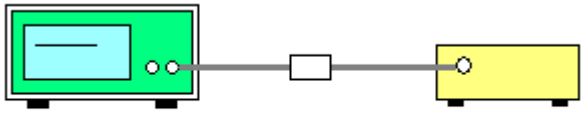
Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	0 MHz
RB	1 MHz
VB	1 MHz
Detector	Peak
Trace	Single Trigger

4.5.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer
2. Set RBW of spectrum analyzer to 1 MHz and VBW to 1 MHz.
3. Use a video trigger with the trigger level set to enable triggering only on full pulses.
4. Sweep Time is more than once pulse time.
5. Set the center frequency on any frequency would be measure and span to zero span.
6. Measure the maximum time duration of one single pulse.
7. Count the number of pulses in the dwell time duration (0.4 seconds multiplied by the number of hopping channels).
8. Dwell time=pulse duration x number of pulses / measure time x dwell time duration.

4.5.4. Test Setup Layout



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in hopping mode.

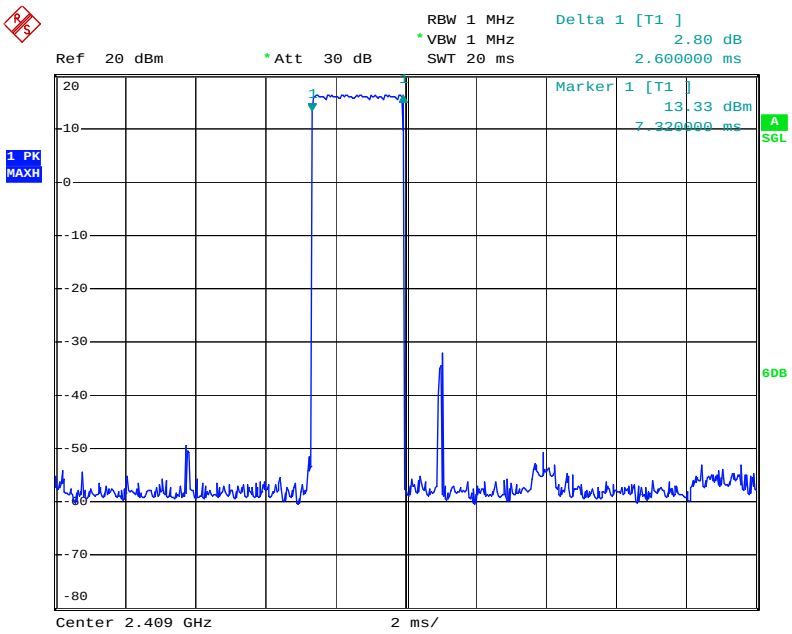
4.5.7. Test Result of Dwell Time

Temperature	18°C	Humidity	60%
Test Engineer	Sam Chen	Configurations	Hopping Mode

Frequency	Pulse Duration (s)	Number of Pulses	Measure Time (s)	Dwell time duration (s)	Dwell Time (s)	Limits (s)	Test Result
2409 MHz	0.0026	128	6.80	6.8	0.3328	0.4000	Complies
2441 MHz	0.0026	132	6.80	6.8	0.3432	0.4000	Complies
2473 MHz	0.0026	126	6.80	6.8	0.3276	0.4000	Complies

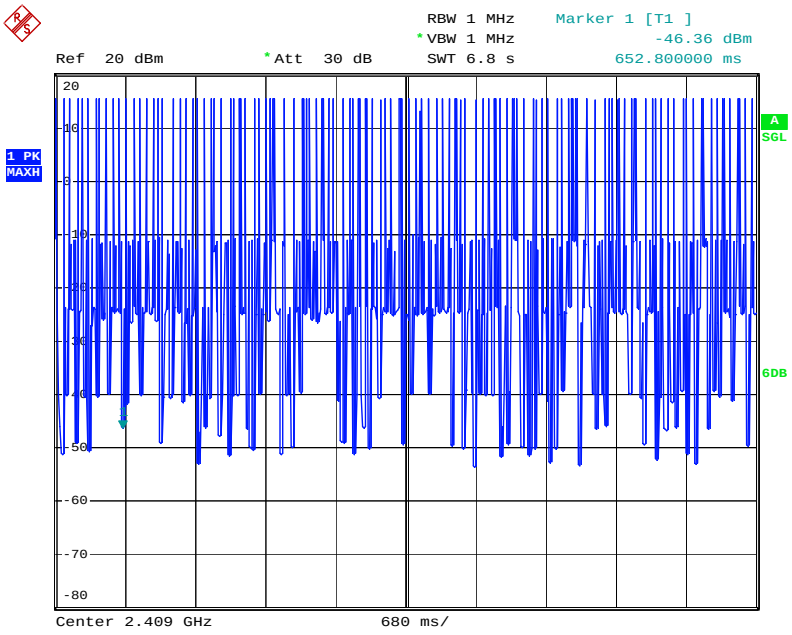
Note: Dwell time=pulse duration x number of pulses / measure time x dwell time duration

Pulse Duration Plot on Channel 1 / 2409 MHz



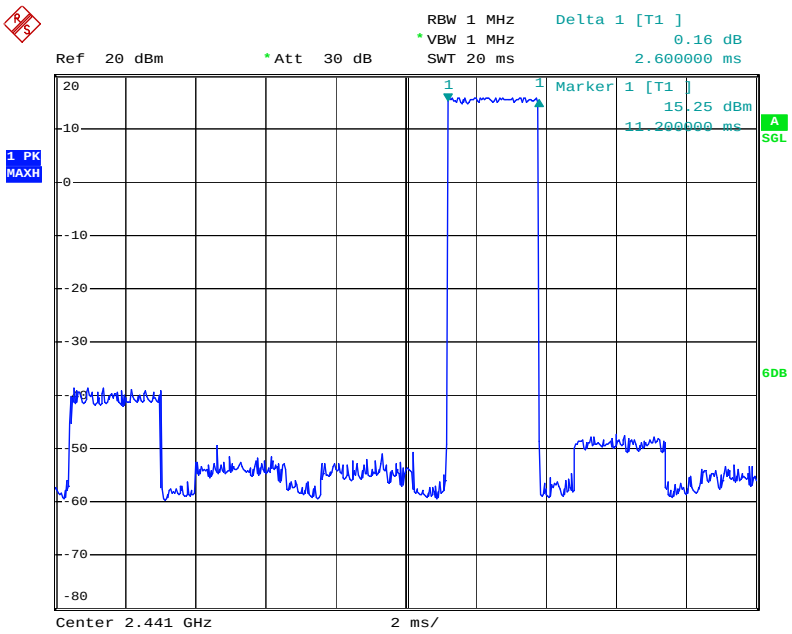
Date: 5.JUL.2010 12:29:39

Number of Pulses Plot on Channel 1 / 2409 MHz



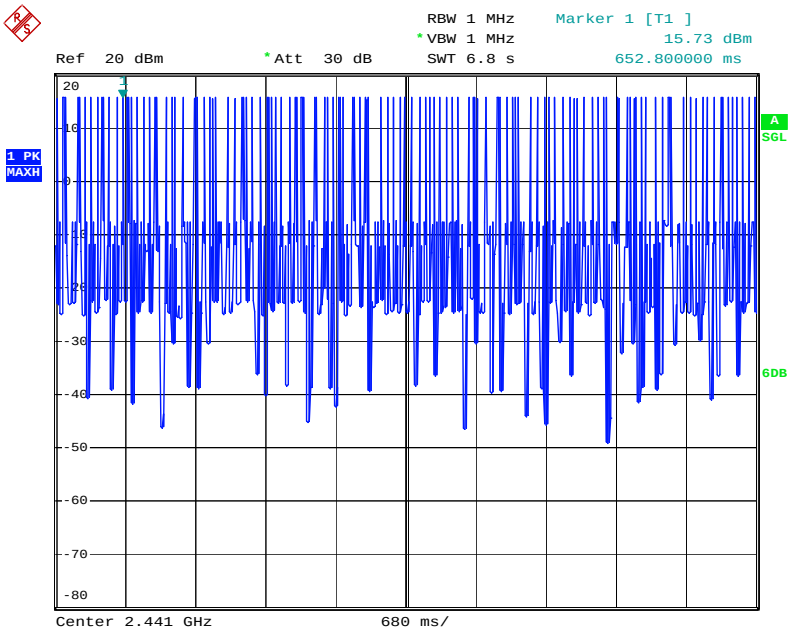
Date: 5.JUL.2010 13:27:31

Pulse Duration Plot on Channel 9 / 2441 MHz



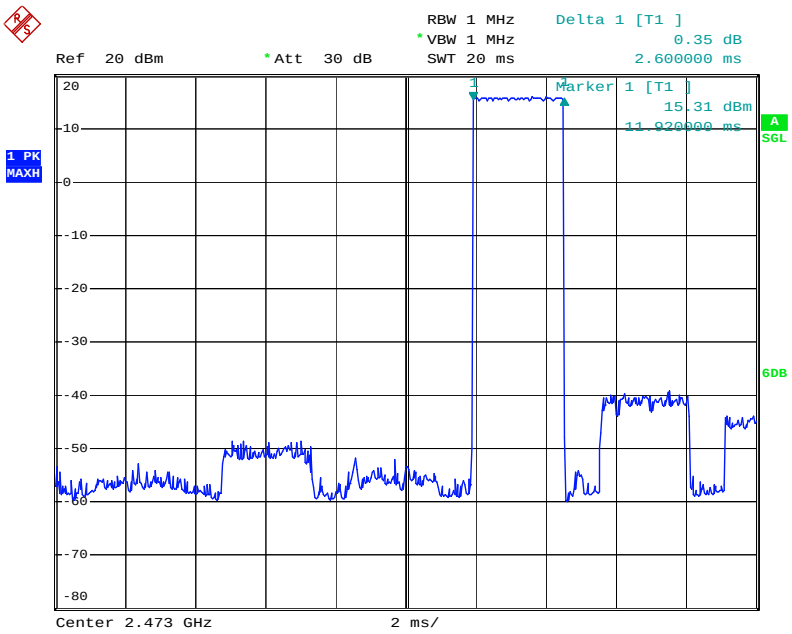
Date: 5.JUL.2010 12:54:28

Number of Pulses Plot on Channel 9 / 2441 MHz



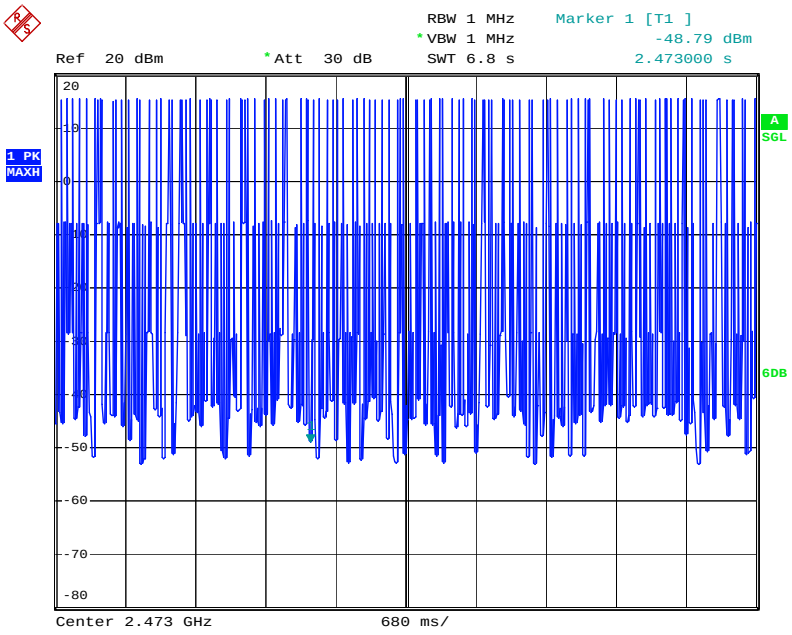
Date: 5.JUL.2010 13:24:51

Pulse Duration Plot on Channel 17 / 2473 MHz



Date: 5.JUL.2010 12:31:21

Number of Pulses Plot on Channel 17 / 2473 MHz



Date: 5.JUL.2010 13:28:49

4.6. Radiated Emissions Measurement

4.6.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.6.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1000KHz / 1000KHz for peak

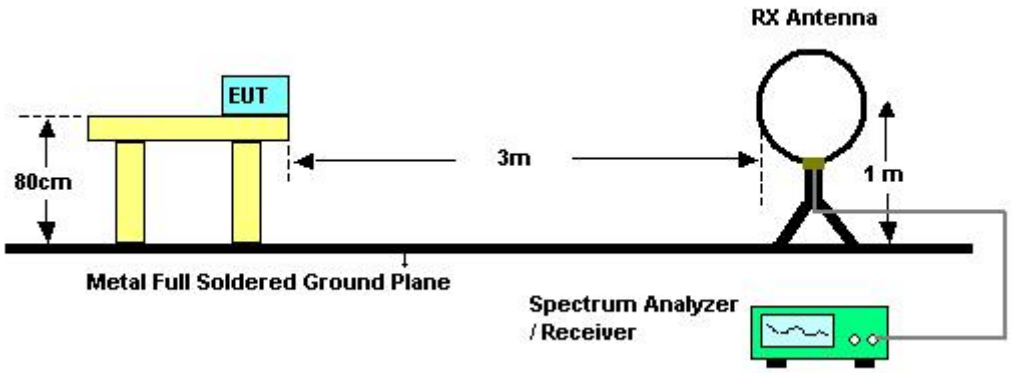
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.6.3. Test Procedures

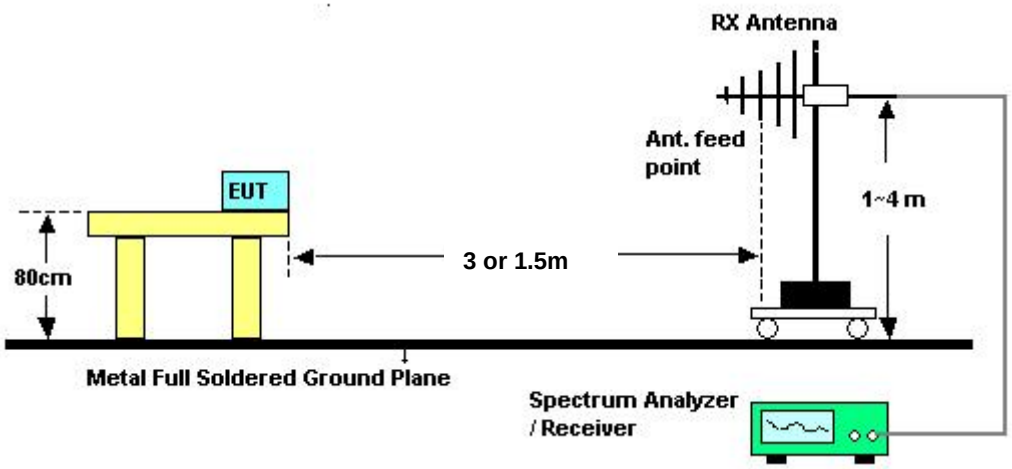
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.6.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in hopping mode.

4.6.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu		
Evaluating Date	Mar. 23, 2010		

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

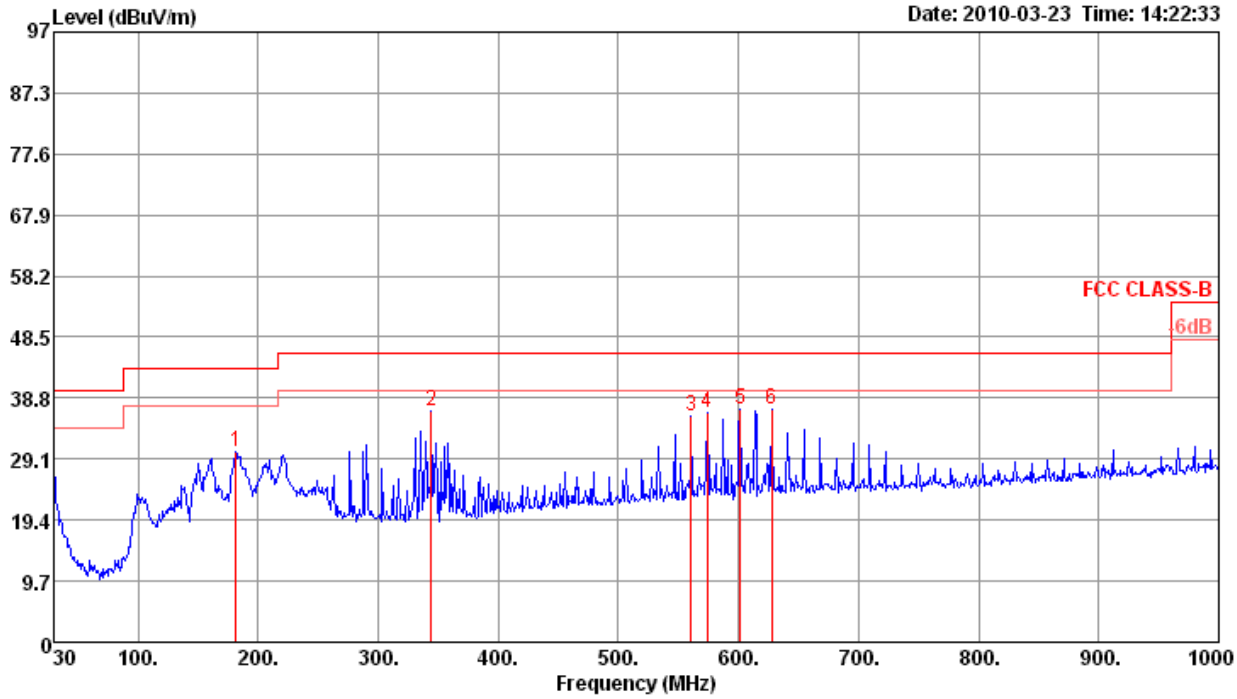
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.6.8. Results of Radiated Emissions (30MHz~1GHz)

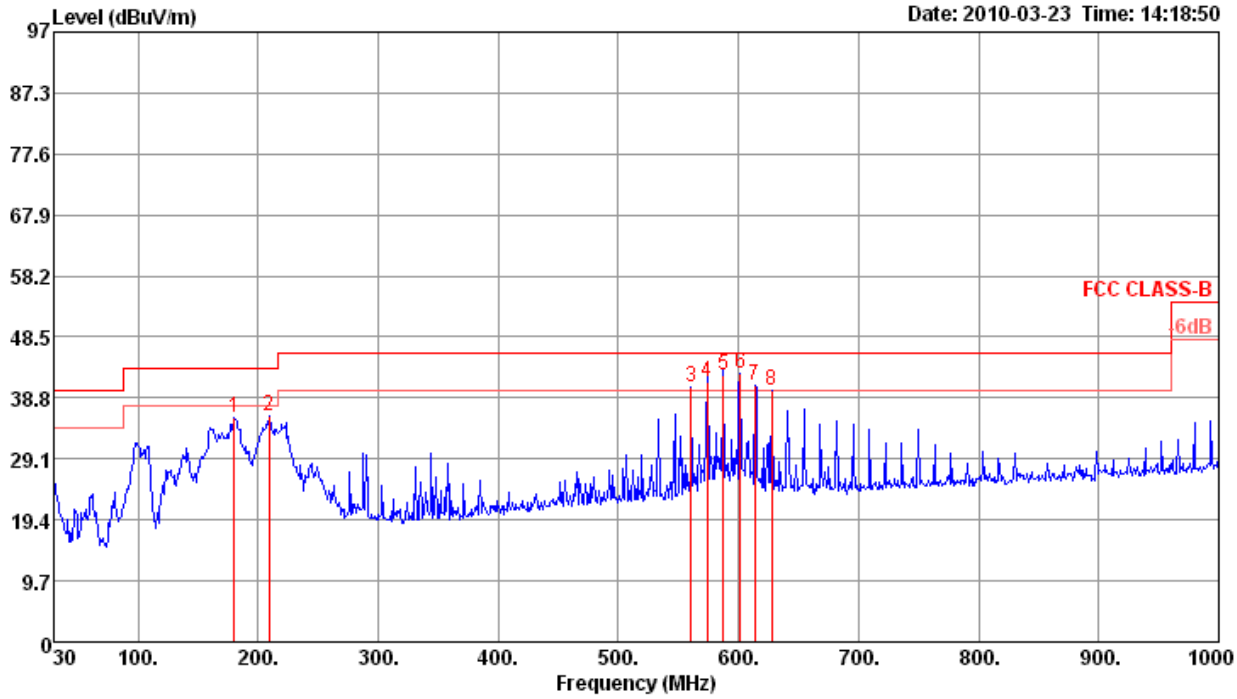
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Hopping Mode

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	181.32	30.29	43.50	-13.21	42.94	1.60	27.19	12.94	0	400	Peak	HORIZONTAL
2	344.28	36.65	46.00	-9.35	47.10	2.19	27.21	14.57	0	400	Peak	HORIZONTAL
3	560.59	35.83	46.00	-10.17	42.79	2.82	28.10	18.32	0	400	Peak	HORIZONTAL
4	574.17	36.39	46.00	-9.61	43.17	2.85	28.10	18.47	0	400	Peak	HORIZONTAL
5	601.33	36.96	46.00	-9.04	43.38	2.91	28.10	18.77	0	400	Peak	HORIZONTAL
6 p	627.52	37.02	46.00	-8.98	43.17	3.06	28.07	18.86	0	400	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	180.35	35.67	43.50	-7.83	48.13	1.60	27.20	13.14	0	100	Peak	VERTICAL
2	209.45	35.97	43.50	-7.53	51.54	1.74	27.08	9.77	0	100	Peak	VERTICAL
3	560.59	40.51	46.00	-5.49	47.47	2.82	28.10	18.32	0	100	Peak	VERTICAL
4	574.17	41.42	46.00	-4.58	48.20	2.85	28.10	18.47	226	100	QP	VERTICAL
5	587.75	42.50	46.00	-3.50	49.09	2.88	28.10	18.63	248	100	QP	VERTICAL
6	601.33	42.73	46.00	-3.27	49.15	2.91	28.10	18.77	0	100	Peak	VERTICAL
7	613.94	40.82	46.00	-5.18	47.12	2.98	28.09	18.81	0	200	Peak	VERTICAL
8	627.52	39.90	46.00	-6.10	46.05	3.06	28.07	18.86	0	200	Peak	VERTICAL

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.6.9. Results for Radiated Emissions (1GHz~10th Harmonic)

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Channel 1
Test Date	Mar. 25, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4818.72	42.44	54.00	-11.56	42.24	3.00	35.26	32.46	31	157	Average	HORIZONTAL
2 p	4819.48	54.57	74.00	-19.43	54.37	3.00	35.26	32.46	31	157	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4816.29	62.80	74.00	-11.20	62.64	3.00	35.26	32.42	173	102	Peak	VERTICAL
2 a	4818.65	40.40	54.00	-13.60	40.20	3.00	35.26	32.46	173	102	Average	VERTICAL

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Channel 9
Test Date	Mar. 25, 2010		

Horizontal

		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1		4883.41	37.71	54.00	-16.29	37.29	3.01	35.15	32.56	20	140	Average	HORIZONTAL
2		4883.95	51.91	74.00	-22.09	51.49	3.01	35.15	32.56	20	140	Peak	HORIZONTAL
3	p	7320.50	61.72	74.00	-12.28	56.21	3.75	34.93	36.69	172	104	Peak	HORIZONTAL
4	a	7321.16	48.64	54.00	-5.36	43.13	3.75	34.93	36.69	172	104	Average	HORIZONTAL

Vertical

		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	p	4880.46	65.62	74.00	-8.38	65.20	3.01	35.15	32.56	218	100	Peak	VERTICAL
2		4882.65	38.93	54.00	-15.07	38.51	3.01	35.15	32.56	218	100	Average	VERTICAL
3	a	7320.96	48.19	54.00	-5.81	42.68	3.75	34.93	36.69	31	100	Average	VERTICAL
4		7325.44	60.68	74.00	-13.32	55.17	3.75	34.93	36.69	31	100	Peak	VERTICAL

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Channel 17
Test Date	Mar. 25, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	4944.23	55.36	74.00	-18.64	54.60	3.03	34.97	32.70	323	152	Peak	HORIZONTAL
2	4946.54	38.64	54.00	-15.36	37.88	3.03	34.97	32.70	323	152	Average	HORIZONTAL
3 p	7416.28	64.80	74.00	-9.20	59.11	3.77	34.88	36.80	173	160	Peak	HORIZONTAL
4 a	7416.62	50.20	54.00	-3.80	44.51	3.77	34.88	36.80	173	160	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4944.33	69.17	74.00	-4.83	68.41	3.03	34.97	32.70	194	105	Peak	VERTICAL
2	4946.47	43.34	54.00	-10.66	42.58	3.03	34.97	32.70	194	105	Average	VERTICAL
3	7416.52	68.20	74.00	-5.80	62.51	3.77	34.88	36.80	19	154	Peak	VERTICAL
4 a	7416.96	52.66	54.00	-1.34	46.97	3.77	34.88	36.80	19	154	Average	VERTICAL

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.7. Band Edge Emissions Measurement

4.7.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.7.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	100 KHz /100 KHz for Peak

4.7.3. Test Procedures

1. The test procedure is the same as section 4.5.3, only the frequency range investigated is limited to 100MHz around bandedges.
2. In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

4.7.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

The EUT was programmed to be in hopping mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Channel 1, 9, 17
Test Date	Mar. 25, 2010		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	2384.00	56.75	74.00	-17.25	26.82	2.04	0.00	27.89	50	127	Peak	VERTICAL
2	2385.00	46.53	54.00	-7.47	16.60	2.04	0.00	27.89	50	127	Average	VERTICAL
3 p	2408.30	115.95	74.00			2.05	0.00	27.84	50	127	Peak	VERTICAL
4 a	2409.00	94.19	54.00			2.05	0.00	27.84	50	127	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 2409MHz.

Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	2440.20	113.08	74.00			2.07	0.00	27.78	132	100	Peak	VERTICAL
2 a	2441.00	90.50	54.00			2.08	0.00	27.78	132	100	Average	VERTICAL

Item 1, 2 are the fundamental frequency at 2441MHz.

Channel 17

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	2472.30	113.44	74.00			2.10	0.00	27.73	49	100	Peak	VERTICAL
2 a	2472.90	91.77	54.00			2.10	0.00	27.73	49	100	Average	VERTICAL
3	2484.10	51.83	54.00	-2.17	22.00	2.10	0.00	27.73	49	100	Average	VERTICAL
4	2484.90	67.06	74.00	-6.94	37.23	2.10	0.00	27.73	49	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 2473MHz.

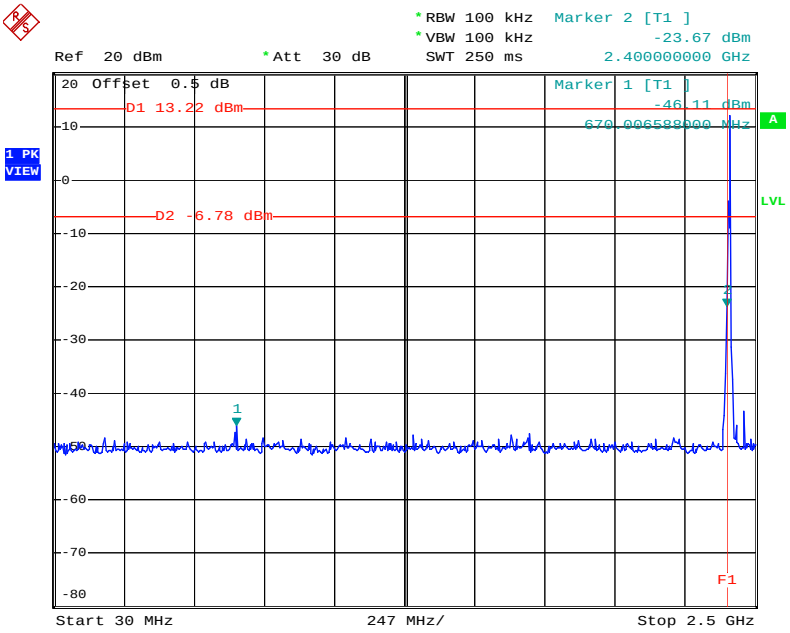
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

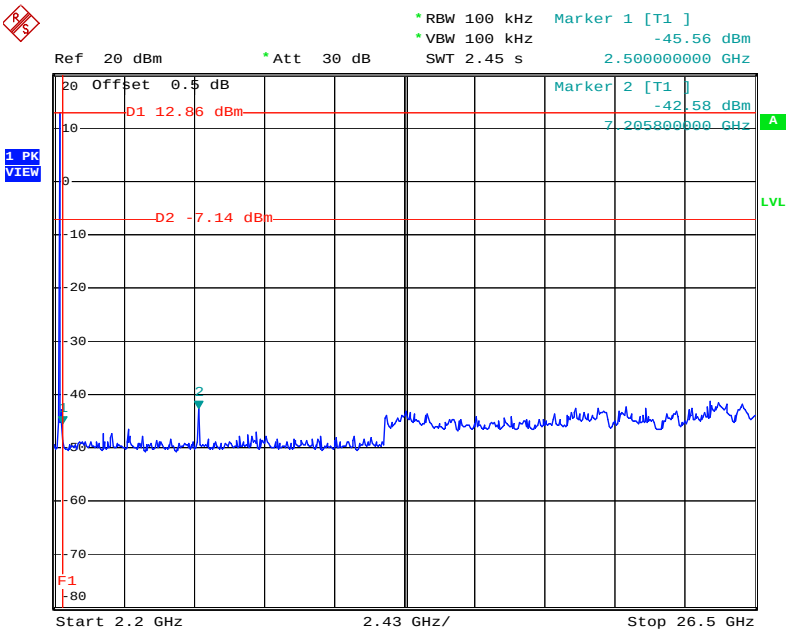
For Emission not in Restricted Band

Low Band Edge Plot on Channel 1 / 2409 MHz



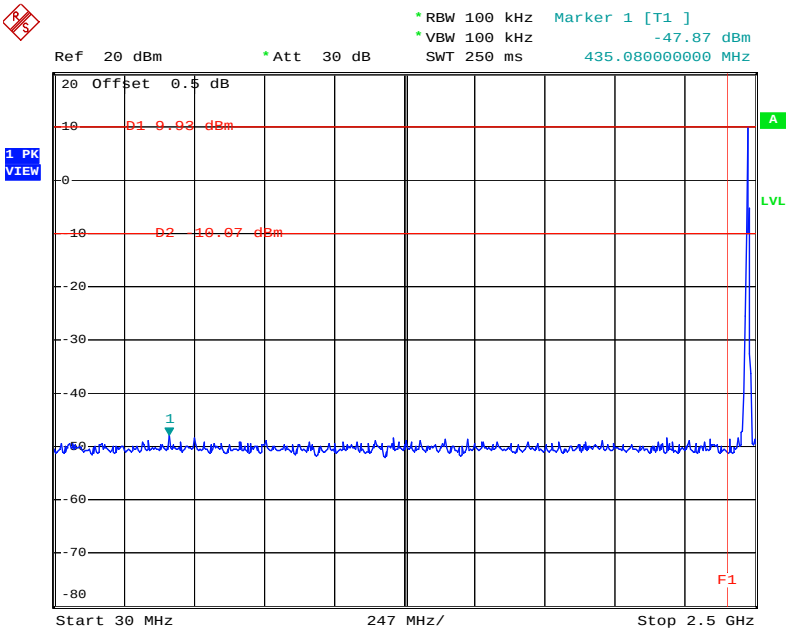
Date: 12.MAY.2010 16:07:48

High Band Edge Plot on Channel 1 / 2409 MHz



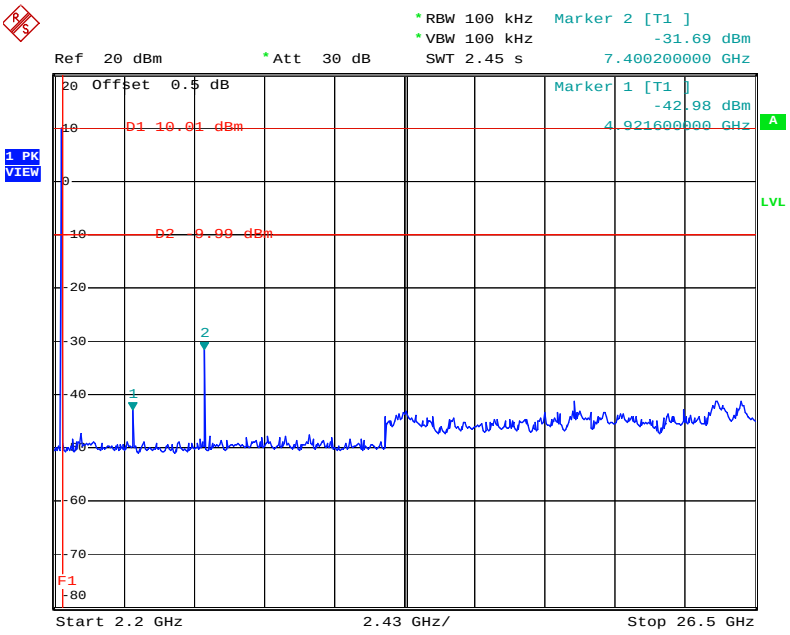
Date: 12.MAY.2010 16:10:23

Low Band Edge Plot on Channel 17 / 2473 MHz



Date: 12.MAY.2010 16:20:01

High Band Edge Plot on Channel 17 / 2473 MHz



Date: 12.MAY.2010 16:24:00

4.8. Antenna Requirements

4.8.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.8.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Apr. 15, 2009	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Mar. 23, 2010	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz – 30MHz	Apr. 29, 2009	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2009	Conduction (CO04-HY)
ISN	SCHAFFNER	ISN T400	21653	9kHz –30MHz	Jun. 11, 2009	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30 MHz - 1 GHz 3m	Jun. 07, 2009	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	COA9231A	18667	9 kHz - 2 GHz	Jan. 24, 2010	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1 GHz - 26.5 GHz	Jul. 21, 2009	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5 GHz - 40 GHz	Apr. 06, 2009*	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP30	100305	9 kHz - 40 GHz	Feb. 03, 2010	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	Jul. 28, 2008*	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30 MHz – 1 GHz	Sep. 26, 2009	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	Apr. 28, 2009	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	Jan.11, 2010	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Jan. 05, 2010	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Jan. 05, 2010	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 – 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSU26.5	100015	20Hz ~ 26.5GHz	Oct. 29, 2009	Conducted (TH01-HY)
Power Meter	R&S	NRVS	100444	DC ~ 40GHz	Jul. 31, 2009	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100666	DC ~ 30GHz	Aug. 05, 2009	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Jul. 31, 2009	Conducted (TH01-HY)
AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Jul. 12, 2009*	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Mar. 13, 2010	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-S	MAB0103-001	N/A	Aug. 06, 2009	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 02, 2009	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 02, 2009	Conducted (TH01-HY)
Vector Signal Generator	R&S	SMU200A	102098	100kHz ~ 6GHz	Feb. 13, 2010	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 24, 2010	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz~40GHz	Dec. 03, 2009	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz~40GHz	Dec. 03, 2009	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is one year.

Note: For "*" Calibration Interval of instruments listed above is two years.

6. TEST LOCATION

SHIJR	ADD	:	6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C.
	TEL	:	886-2-2696-2468
	FAX	:	886-2-2696-2255
HWA YA	ADD	:	No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL	:	886-3-327-3456
	FAX	:	886-3-318-0055
LINKOU	ADD	:	No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL	:	886-2-2601-1640
	FAX	:	886-2-2601-1695
DUNGHU	ADD	:	No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL	:	886-2-2631-4739
	FAX	:	886-2-2631-9740
JUNGHE	ADD	:	7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL	:	886-2-8227-2020
	FAX	:	886-2-8227-2626
NEIHU	ADD	:	4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL	:	886-2-2794-8886
	FAX	:	886-2-2794-9777
JHUBEI	ADD	:	No.8, Lane 728, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.
	TEL	:	886-3-656-9065
	FAX	:	886-3-656-9085

7. TAF CERTIFICATE OF ACCREDITATION

Certificate No.：L1190-091230

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	：	ISO/IEC 17025:2005
Accreditation Number	：	1190
Originally Accredited	：	December 15, 2003
Effective Period	：	January 10, 2010 to January 09, 2013
Accredited Scope	：	Testing Field, see described in the Appendix
Specific Accreditation Program	：	Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangment with Foreign Authorities

Jay-San Chen
President, Taiwan Accreditation Foundation
Date：December 30, 2009

P1, total 22 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix