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FCC RADIO TEST REPORT

Applicant's company	**NETGEAR, Inc.**
Applicant Address	350 East Plumeria Drive, San Jose, CA 95134, USA
FCC ID	**PY311100159**
Manufacturer's company	**NETGEAR, Inc.**
Manufacturer Address	350 East Plumeria Drive, San Jose, California 95134, USA

Product Name	LTE Broadband 11n Wireless Router
Brand Name	NETGEAR
Model Name	MBR1515x (where "x" is an alphabet, The "x" for different marketing)
Test Rule	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz
Received Date	May 13, 2013
Final Test Date	May 16, 2013
Submission Type	Class II Change

Statement

Test result included in this report is for the IEEE 802.11n and IEEE 802.11b/g part of the product.

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 C63.10-2009** and **47 CFR FCC Part 15 Subpart C**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR260829-01	Rev. 01	Initial issue of report	May 22, 2013

Certificate No.: CB10205174

1. CERTIFICATE OF COMPLIANCE

Product Name	:	LTE Broadband 11n Wireless Router
Brand Name	:	NETGEAR
Model Name	:	MBR1515x (where "x" is an alphabet, The "x" for different marketing)
Applicant	:	NETGEAR, Inc.
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart C § 15.247

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on May 13, 2013 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.

Sam Chen
SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	16.63 dB
4.2	15.247(d)	Radiated Emissions	Complies	3.07 dB
4.3	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1GHz)	±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

IEEE 802.11n

Items	Description
Product Type	WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From Power Adapter
Modulation	see the below table for IEEE 802.11n
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	see the below table for IEEE 802.11n
Frequency Range	2400 ~ 2483.5MHz
Channel Number	11 for 20MHz bandwidth ; 7 for 40MHz bandwidth
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

IEEE 802.11b/g

Items	Description
Product Type	802.11b: WLAN (1TX, 1RX) 802.11g: WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From Power Adapter
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11g
Data Modulation	DSSS (BPSK / QPSK / CCK) ; OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	DSSS (1/ 2/ 5.5/11) ; OFDM (6/9/12/18/24/36/48/54)
Frequency Range	2400 ~ 2483.5MHz
Channel Number	11
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Antenna & Band width

Antenna	Single (TX)		Two (TX)	
Band width Mode	20 MHz	40 MHz	20 MHz	40 MHz
IEEE 802.11b	V	X	X	X
IEEE 802.11g	X	X	V	X
IEEE 802.11n	X	X	V	V

IEEE 802.11n spec

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Datarate(Mbps)			
									800nsGI		400nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.200	15
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.400	30
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.700	45
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.900	60
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.300	90
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.800	120
6	1	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.000	135
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.200	150
8	2	BPSK	1/2	1	104	216	52	108	13.0	27.0	14.444	30
9	2	QPSK	1/2	2	208	432	104	216	26.0	54.0	28.889	60
10	2	QPSK	3/4	2	208	432	156	324	39.0	81.0	43.333	90
11	2	16-QAM	1/2	4	416	864	208	432	52.0	108.0	57.778	120
12	2	16-QAM	3/4	4	416	864	312	648	78.0	162.0	86.667	180
13	2	64-QAM	2/3	6	624	1296	416	864	104.0	216.0	115.556	240
14	2	64-QAM	3/4	6	624	1296	468	972	117.0	243.0	130.000	270
15	2	64-QAM	5/6	6	624	1296	520	1080	130.0	270.0	144.444	300

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	guard interval

Note: The EUT contains an approved WWAN module (FCC ID: N7NMC7750), Granted Date: 01/21/2011. The EUT changes external dipole antenna to support LTE, CDMA and F/W opens CDMA band without the change of hardware part.

3.2. Accessories

Power	Brand	P/N	Model	Rating
Adapter 1	NETGEAR	332-10301-02	AD817F10	Input: 100-120VAC, 50/60Hz, 0.56A Output: 12VDC, 1.5A
Adapter 2	NETGEAR	332-10221-01	MT18-9120150-A1	Input: 120VAC, 60Hz, 0.5A Output: 12VDC, 1.5A
Others				
RJ-45 Cable, Non-shielded, 1.4m				
Cradle*1				

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Remark
1	Rayspan	-	WiFi Antenna	N/A	2.59	TX/RX
2	Rayspan	-	WiF Antenna	N/A	1.68	TX/RX

Note: The EUT has two antennas.

For IEEE 802.11b mode (1TX/1RX):

Only Ant. 1 can be used as transmitting antenna and receiving antenna.

For IEEE 802.11g/n mode (2TX/2RX):

Ant. 1 and Ant. 2 will transmit/receive the same signal simultaneously.

Ant. 1

Ant. 2

3.4. Table for Carrier Frequencies

For IEEE 802.11b/g, use Channel 1~Channel 11.

There are two bandwidth systems for IEEE 802.11n.

For both 20MHz bandwidth systems, use Channel 1~Channel 11.

For both 40MHz bandwidth systems, use Channel 3~Channel 9.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400~2483.5MHz	1	2412 MHz	7	2442 MHz
	2	2417 MHz	8	2447 MHz
	3	2422 MHz	9	2452 MHz
	4	2427 MHz	10	2457 MHz
	5	2432 MHz	11	2462 MHz
	6	2437 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	Data Rate	Channel	Antenna
AC Power Line Conducted Emissions	Normal Link	-	-	-
Radiated Emissions 9kHz~1GHz	Normal Link	-	-	-

For Conducted Emission test:

Mode 1. WiFi + CDMA with Adapter 1

Mode 2. WiFi + LTE with Adapter 1

Mode 3. WiFi + WAN with Adapter 1

Mode 2 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow this same test mode.

Mode 4. WiFi + LTE with Adapter 2

Mode 4 is the worst case, so it was selected to record in this test report.

For Radiated Emission test:

Mode 1. Laying of EUT + WiFi + CDMA with Adapter 1

Mode 2. Stand of EUT + WiFi + CDMA with Adapter 1

Mode 2 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 ~ 4 will follow this same test mode.

Mode 3. Stand of EUT + WiFi + LTE with Adapter 1

Mode 4. Stand of EUT + WiFi + WAN with Adapter 1

Mode 4 has been evaluated to be the worst case among Mode 1~4, thus measurement for Mode 5 will follow this same test mode.

Mode 5. Stand of EUT + WiFi + WAN with Adapter 2

Mode 4 generated the worst test result, so it was recorded in this report.

<For MPE and Co-location Test>:

The EUT could be applied with 2.4GHz WLAN function and LTE function; therefore Maximum Permissible Exposure (Please refer to Appendix B) and Co-location (please refer to Appendix C) tests are added for simultaneously transmit between 2.4GHz WLAN function and LTE function.

Note: After evaluating, the polarization of external antenna has been evaluated to be the worst case.

3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D

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 Class II Change

This product is an extension of original report under Sporton project number: FR260829

Description	Performance Checking
1. It changes the model name to “MBR1515x” from “MBR1515”. 2. It changes Power Adapter to “AD817F10” from “AD661F”.	1. AC Conducted Emissions 2. Radiated Emissions 9KHz~1GHz

3.8. Table for Supporting Units

Test Site No.: CO01-CB

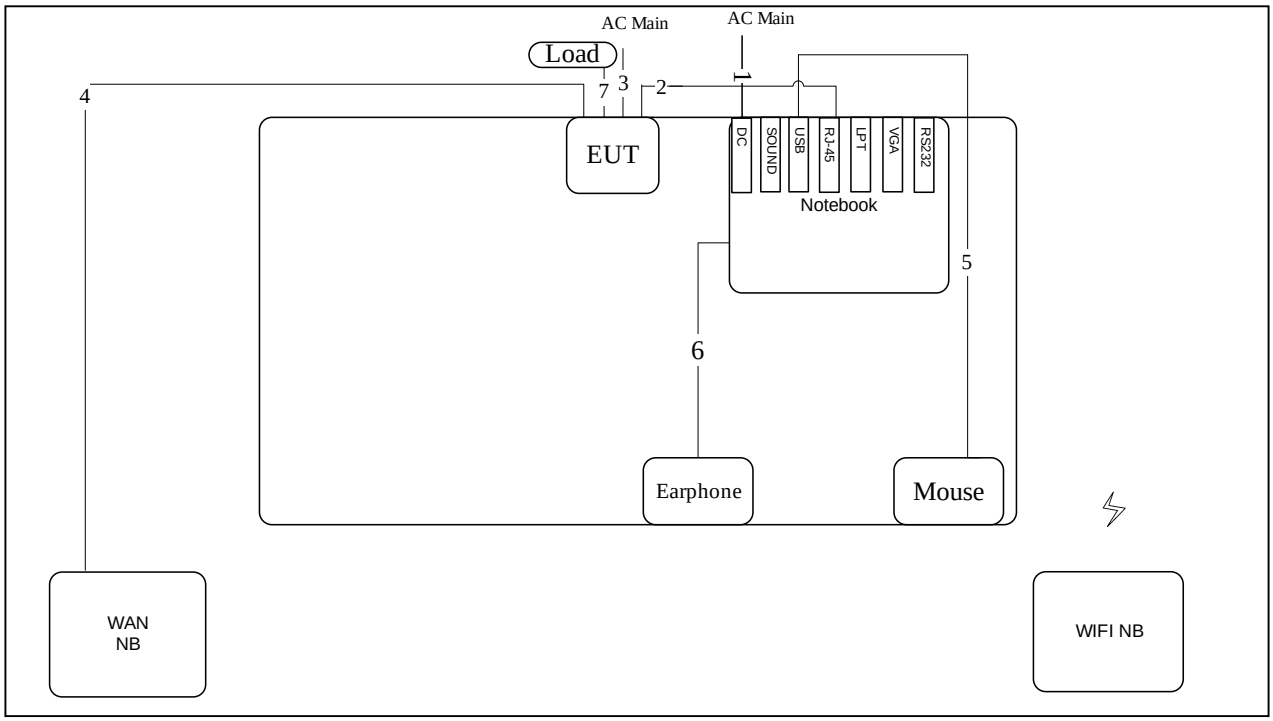
Support Unit	Brand	Model	FCC ID
Notebook*3	DELL	E6430	QDS-BRCM1049LE
Mouse	Logitech	M-U0026	DoC
Earphone	SHYARO CHI	MIC-04	N/A
LTE Base Station	Anritsu	MT8820C	N/A

Test Site No.: 03CH01-CB

Support Unit	Brand	Model	FCC ID
Notebook*3	DELL	E6430	QDS-BRCM1049LE
Mouse	Logitech	M-U0026	DoC
Earphone	SHYARO CHI	MIC-04	N/A

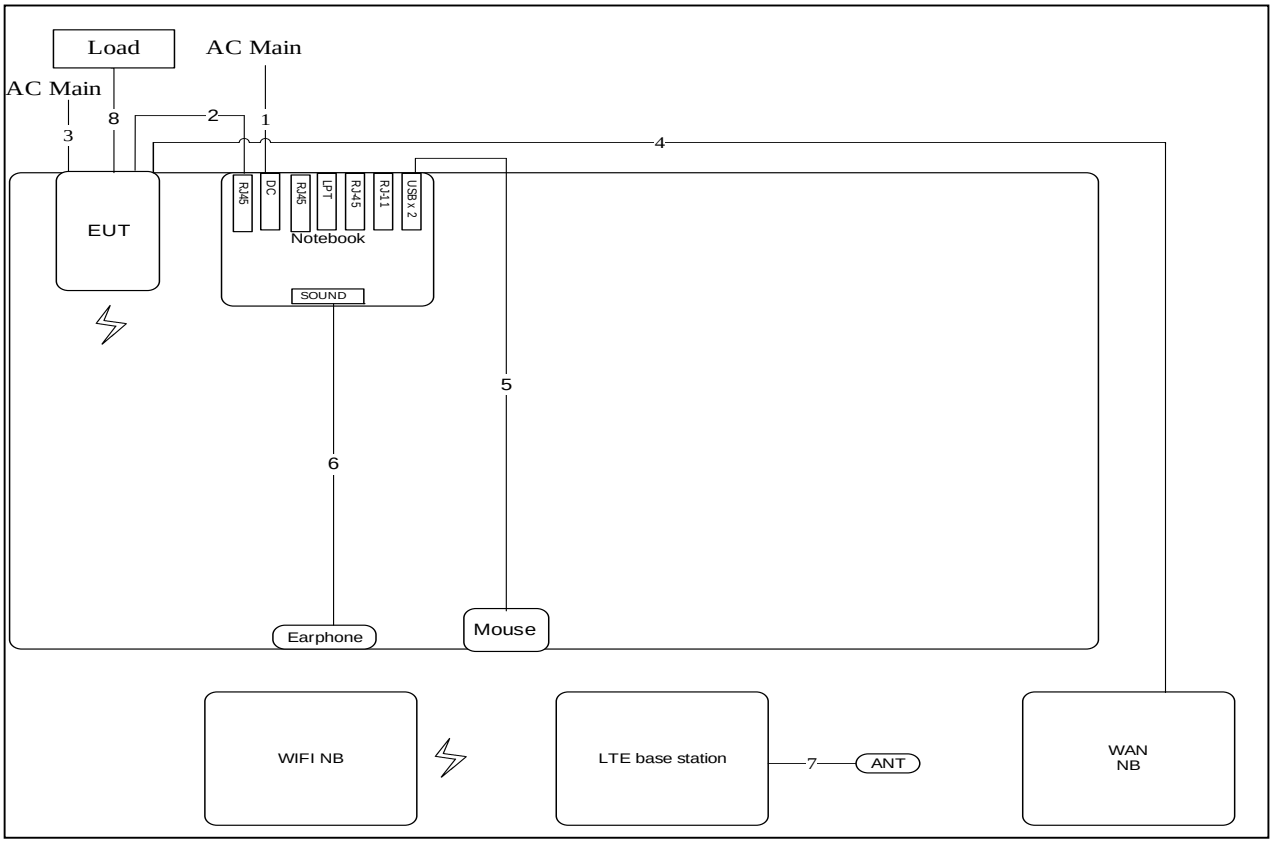
3.9. Test Configurations

3.9.1. Radiation Emissions Test Configuration



Item	Connection	Shield	Length
1	Power cable	No	2.6m
2	RJ-45	No	1.4m
3	Power cable	No	1.8m
4	RJ-45	No	10m
5	MOUSE Cable	Yes	1.8m
6	Earphone Cable	No	1.2m
7	RJ-45	No	1.5m

3.9.2. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shield	Length(m)
1	Power cable	No	2.6m
2	RJ-45 cable	No	1.4m
3	Power cable	No	1.8m
4	RJ-45 cable	No	10m
5	USB cable	Yes	1.8m
6	Audio cable	No	1.1m
7	RF cable	Yes	1m
8	RJ-45 cable*3	No	1m

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product 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

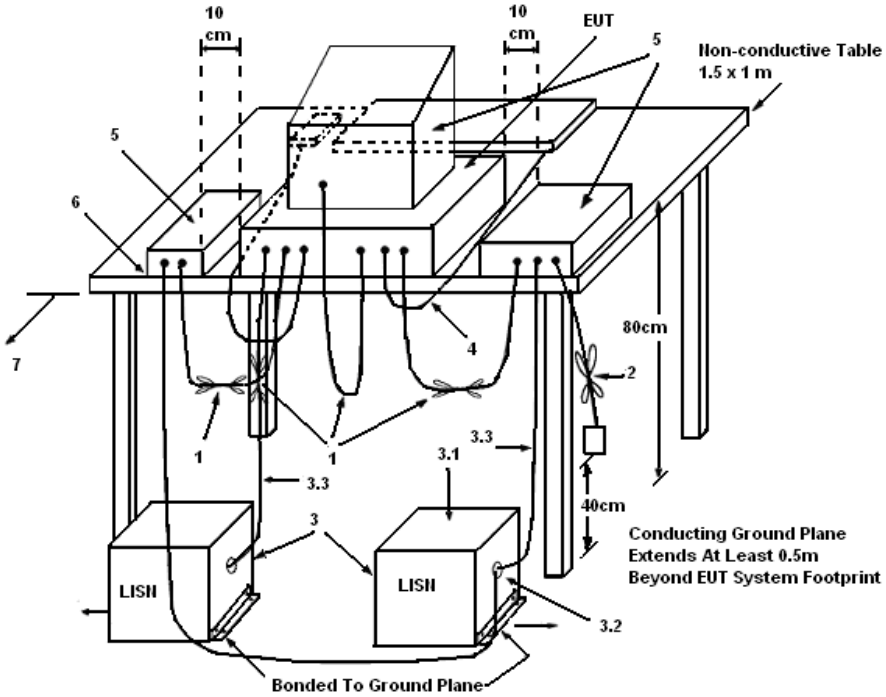
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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 C63.10. 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 Peak 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

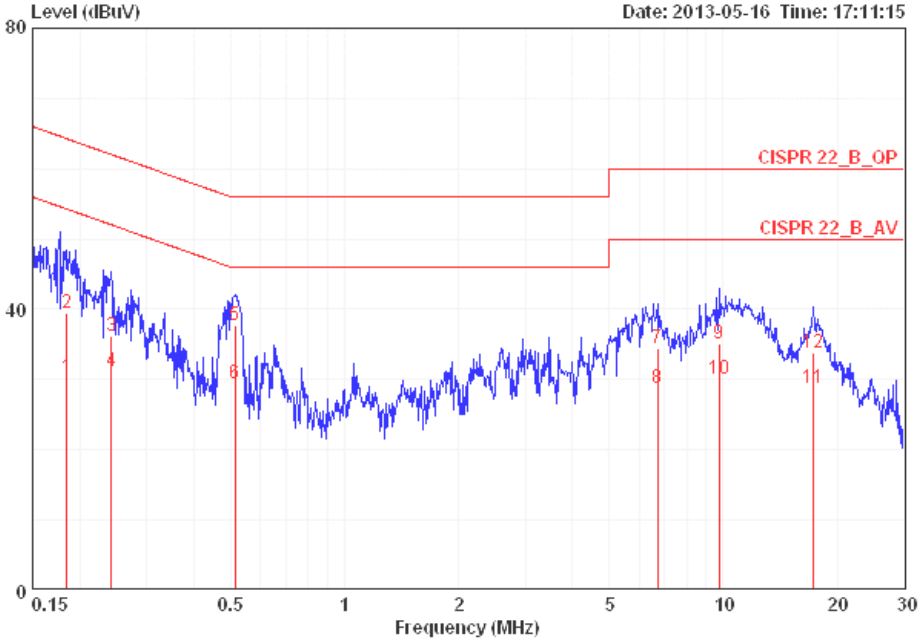
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

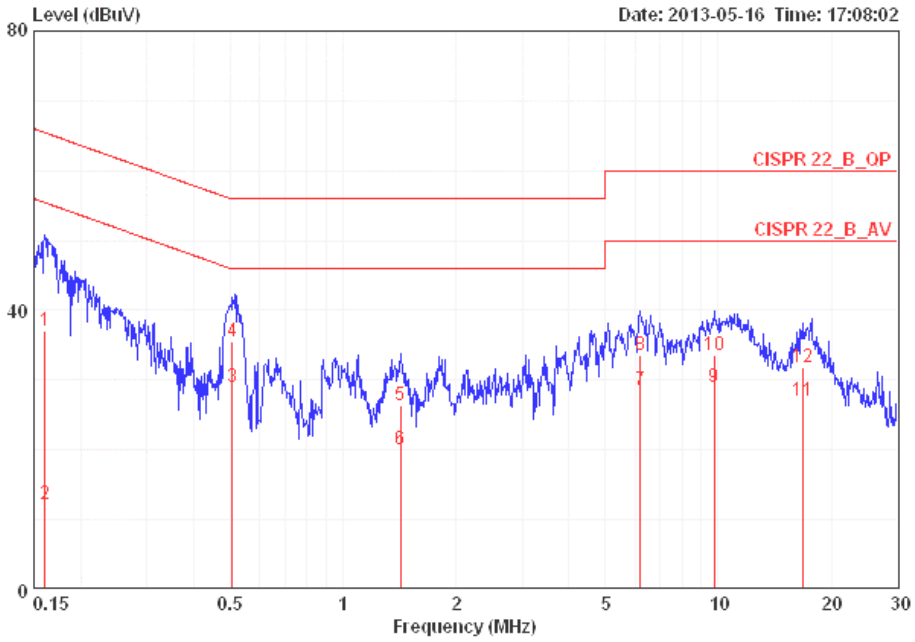
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	25°C	Humidity	56%
Test Engineer	Simon Yang	Phase	Line
Configuration	Normal Link	Test Mode	Mode 4



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.18443	30.33	-23.95	54.28	29.99	0.15	0.19	LINE	AVERAGE
2	0.18443	39.40	-24.88	64.28	39.06	0.15	0.19	LINE	QP
3	0.24165	36.29	-25.75	62.04	35.94	0.15	0.20	LINE	QP
4	0.24165	31.18	-20.86	52.04	30.83	0.15	0.20	LINE	AVERAGE
5	0.51278	37.73	-18.27	56.00	37.38	0.15	0.20	LINE	QP
6 @	0.51278	29.37	-16.63	46.00	29.02	0.15	0.20	LINE	AVERAGE
7	6.698	34.36	-25.64	60.00	33.78	0.27	0.31	LINE	QP
8	6.698	28.69	-21.31	50.00	28.11	0.27	0.31	LINE	AVERAGE
9	9.757	35.09	-24.91	60.00	34.42	0.34	0.34	LINE	QP
10	9.757	30.09	-19.91	50.00	29.42	0.34	0.34	LINE	AVERAGE
11	17.291	28.87	-21.13	50.00	27.98	0.44	0.45	LINE	AVERAGE
12	17.291	33.75	-26.25	60.00	32.86	0.44	0.45	LINE	QP

Temperature	25°C	Humidity	56%
Test Engineer	Simon Yang	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 4



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.16070	36.95	-28.47	65.43	36.69	0.08	0.18	NEUTRAL	QP
2	0.16070	12.26	-43.16	55.43	12.00	0.08	0.18	NEUTRAL	AVERAGE
3	0.50737	29.08	-16.92	46.00	28.80	0.08	0.20	NEUTRAL	AVERAGE
4	0.50737	35.61	-20.39	56.00	35.33	0.08	0.20	NEUTRAL	QP
5	1.426	26.42	-29.58	56.00	26.11	0.10	0.22	NEUTRAL	QP
6	1.426	20.02	-25.98	46.00	19.71	0.10	0.22	NEUTRAL	AVERAGE
7	6.186	28.53	-21.47	50.00	28.04	0.17	0.32	NEUTRAL	AVERAGE
8	6.186	33.64	-26.36	60.00	33.15	0.17	0.32	NEUTRAL	QP
9	9.757	29.03	-20.97	50.00	28.46	0.24	0.34	NEUTRAL	AVERAGE
10	9.757	33.50	-26.50	60.00	32.93	0.24	0.34	NEUTRAL	QP
11	16.750	27.06	-22.94	50.00	26.29	0.34	0.42	NEUTRAL	AVERAGE
12	16.750	31.89	-28.11	60.00	31.12	0.34	0.42	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. Radiated Emissions Measurement

4.2.1. 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

4.2.2. 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	1GHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 3MHz for peak

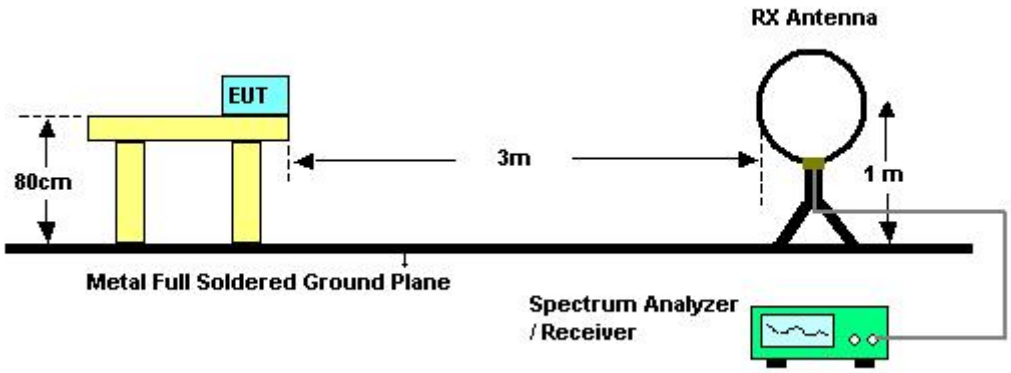
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RB 120kHz for QP

4.2.3. Test Procedures

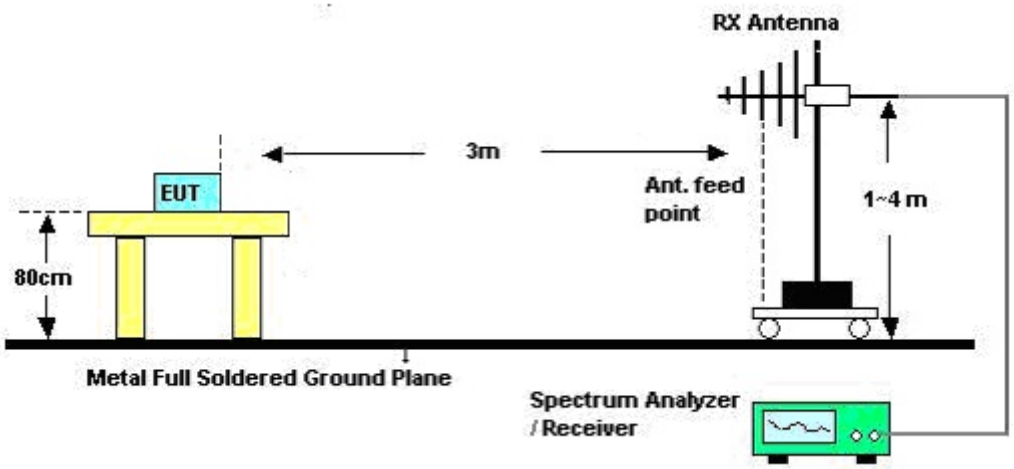
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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 3MHz 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.

4.2.4. Test Setup Layout

For Radiated Emissions below 1GHz



For Radiated Emissions above 1GHz



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 continuously transmitting mode.

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

Temperature	22°C	Humidity	60%
Test Engineer	David Tseng	Configurations	Normal Link
Test Date	May 16, 2012		

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 20 dB below the permissible value has no need to be reported.

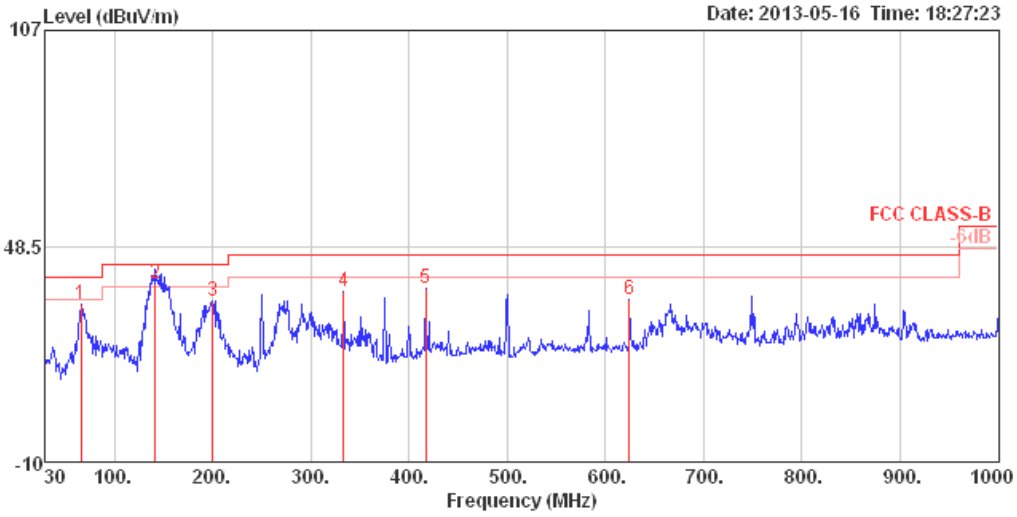
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

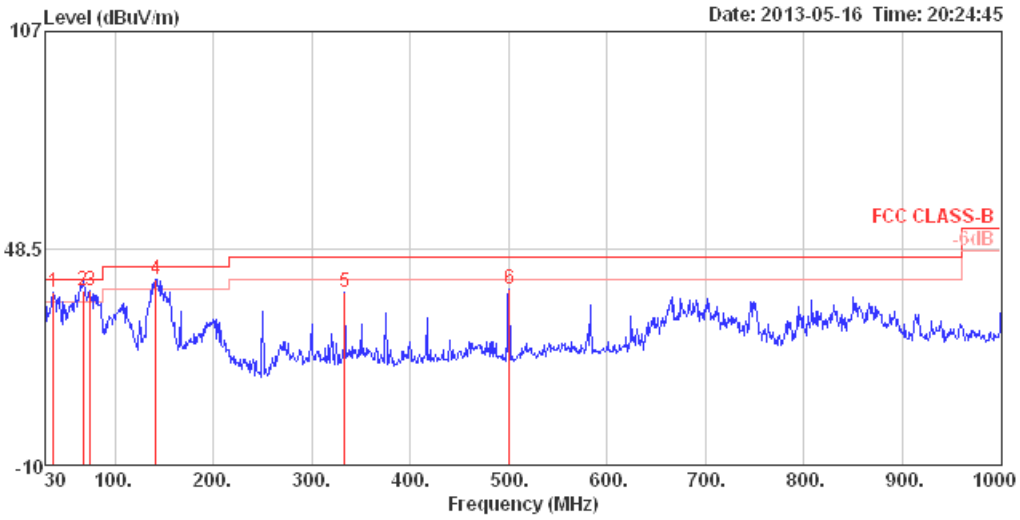
Temperature	22°C	Humidity	60%
Test Engineer	David Tseng	Configurations	Normal Link
Test Mode	Mode 4		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 pk	65.89	32.59	40.00	-7.41	58.55	0.96	4.90	31.82	400	168	HORIZONTAL	Peak
2 pp	141.55	38.46	43.50	-5.04	57.84	1.41	10.74	31.53	197	189	HORIZONTAL	QP
3	199.75	33.57	43.50	-9.93	54.63	1.70	8.75	31.51	125	173	HORIZONTAL	Peak
4	333.61	36.04	46.00	-9.96	51.34	2.26	13.83	31.39	100	176	HORIZONTAL	Peak
5	417.03	37.17	46.00	-8.83	49.51	2.55	16.41	31.30	100	90	HORIZONTAL	Peak
6	624.61	34.10	46.00	-11.90	43.71	3.18	18.61	31.40	125	119	HORIZONTAL	Peak

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 !	37.76	36.80	40.00	-3.20	54.18	0.72	13.78	31.88	100	165	VERTICAL	Peak
2 qp	67.83	36.90	40.00	-3.10	62.65	0.98	5.08	31.81	178	286	VERTICAL	QP
3 pp	74.62	36.93	40.00	-3.07	61.64	1.02	5.95	31.68	150	191	VERTICAL	Peak
4 !	141.55	40.19	43.50	-3.31	59.57	1.41	10.74	31.53	125	168	VERTICAL	Peak
5	333.61	36.57	46.00	-9.43	51.87	2.26	13.83	31.39	125	191	VERTICAL	Peak
6	500.45	37.46	46.00	-8.54	49.13	2.82	16.92	31.41	100	179	VERTICAL	Peak

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB 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.

4.3. Antenna Requirements

4.3.1. 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.

4.3.2. 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
EMI Test Receiver	R&S	ESCS 30	100377	9kHz ~ 2.75GHz	Oct. 23, 2012	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Nov. 26, 2012	Conduction (CO01-CB)
V- LISN	Schwarzbeck	NSLK 8127	8127-478	9kHz ~ 30MHz	Jun. 22, 2012	Conduction (CO01-CB)
Capacitive Voltage Probe	SCHAFFNER	CVP2200A	18697	150kHz~30MHz	Oct. 23, 2012	Conduction (CO01-CB)
RF Current Probe	SOLAR.	9208-1	041039	9kHz~30MHz	Sep. 18, 2012	Conduction (CO01-CB)
Impulsbegrenzer Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz~30MHz	Feb. 21, 2013	Conduction (CO01-CB)
Impedance stabilization network	TESEQ	ISN T400A	24854	150kHz ~ 230MHz	Oct. 22, 2012	Conduction (CO01-CB)
Impedance stabilization network	TESEQ	ISN T800	24557	150kHz ~ 230MHz	Oct. 22, 2012	Conduction (CO01-CB)
Coupling Decoupling Network	TESEQ	ST08	24348	150kHz ~ 230MHz	Dec. 03, 2012	Conduction (CO01-CB)
Current Probe	Kyoritsu	KCT-2504	8S-2773-6	0.1MHz~30MHz	Feb. 19, 2013	Conduction (CO01-CB)
T-ISN	Kyoritsu	KNW-2242	8S-2802-5	0.15MHz~30MHz	Sep. 18, 2012	Conduction (CO01-CB)
EM Koppelzange	TESEQ	KEMZ 801	17029	0.15MHz~30MHz	Sep. 19, 2012	Conduction (CO01-CB)
Coupling and Decoupling Network	TESEQ	ISN PLC 25-30	23390	0.15MHz~30MHz	Sep. 18, 2012	Conduction (CO01-CB)
Coupling and Decoupling Network	TESEQ	ISN PLC 25-25	26476	0.15MHz~30MHz	Feb. 19, 2013	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	0.15MHz~30MHz	Dec. 04, 2012	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	-	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Apr. 16, 2013	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Nov. 05, 2012*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 27, 2012	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Nov. 23, 2012	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 27, 2012	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100056	9KHz~40GHz	Nov. 16, 2012	Radiation (03CH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Apr. 15, 2013	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N.C.R	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 18, 2012	Radiation (03CH01-CB)

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

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

N.C.R. means Non-Calibration required.

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 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.
	TEL	:	886-3-656-9065
	FAX	:	886-3-656-9085