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FCC RADIO TEST REPORT

Applicant's company	**Hitron Technologies Inc.**
Applicant Address	No.1-8, Li-Hsin 1st Rd. Hsinchu Science Park, Hsinchu 300, Taiwan
FCC ID	**U4P-CGN31A**
Manufacturer's company	**Hitron Technologies (SIP) Inc.**
Manufacturer Address	Block 56, Dongjing Industrial Workshop, 2 Dongfu Road, Loufeng East Park, Suzhou Industrial Park, Suzhou, China

Product Name	CGN3 D3 WiFi Gateway
Brand Name	hitron
Model No.	CGN3
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	May 18, 2013
Final Test Date	Jun. 27, 2013
Submission Type	Original Equipment

Statement

Test result included is only for the IEEE 802.11n, IEEE 802.11b/g part and IEEE 802.11a (5725 ~ 5850MHz) 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**, **47 CFR FCC Part 15 Subpart C**, **KDB 558074 D01 v03** and **KDB 662911 D01 v02**.

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
FR351804AB	Rev. 01	Initial issue of report	Jul. 10, 2013

Certificate No.: CB10207026

1. CERTIFICATE OF COMPLIANCE

Product Name	:	CGN3 D3 WiFi Gateway
Brand Name	:	hitron
Model No.	:	CGN3
Applicant	:	Hitron Technologies 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 18, 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

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	3.16 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	3.64 dB
4.3	15.247(e)	Power Spectral Density	Complies	11.51 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	1.43 dB
4.6	15.247(d)	Band Edge Emissions	Complies	0.04 dB
4.7	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

IEEE 802.11n

Items	Description
Product Type	WLAN (3TX, 3RX)
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 / 5725 ~ 5850MHz
Channel Number	For 2.4GHz Band: 11 for 20MHz bandwidth ; 7 for 40MHz bandwidth For 5GHz Band: 5 for 20MHz bandwidth ; 2 for 40MHz bandwidth
Channel Band Width (99%)	For 2.4GHz Band: MCS0 (20MHz): 17.60 MHz ; MCS0 (40MHz): 35.84 MHz For 5GHz Band: MCS0 (20MHz): 17.84 MHz ; MCS0 (40MHz): 36.00 MHz
Maximum Conducted Output Power	For 2.4GHz Band: MCS0 (20MHz): 22.59 dBm ; MCS0 (40MHz): 22.80 dBm For 5GHz Band: MCS0 (20MHz): 22.60 dBm ; MCS0 (40MHz): 23.50 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

802.11a/b/g

Items	Description
Product Type	WLAN (1TX, 1RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11a/g
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 / 5725 ~ 5850MHz
Channel Number	11b/g: 11 ; 11a: 5
Channel Band Width (99%)	11b: 15.36 MHz ; 11g: 16.56 MHz ; 11a: 16.48 MHz
Maximum Conducted Output Power	11b: 26.36 dBm ; 11g: 22.75 dBm ; 11a: 18.77 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Antenna & Band width

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

IEEE 11n Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	3	MCS 0-23
802.11n (HT40)	3	MCS 0-23
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40. Note 2: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n		

3.2. Accessories

Power	Brand	Model	Rating
Adapter	AtechOEM	ADS0248-W 120200	Input: 100-240VAC, 50-60Hz, 0.6A Output: 12VDC, 2.0A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	
					2.4GHz	5GHz
1	Airgain	N2420M	PIFA Antenna	I-PEX	2.8	-
2	HITRON	-	PCB Antenna	I-PEX	4.48	-
3	Airgain	N2420S	PIFA Antenna	I-PEX	3.6	-
4	Airgain	N5X20SC	PIFA Antenna	I-PEX	-	2.1
5	Airgain	N5X20SC	PIFA Antenna	I-PEX	-	3.3
6	Airgain	N5X20SC	PIFA Antenna	I-PEX	-	3.5

Note: There are six antennas.

For 2.4GHz band:

For IEEE 802.11n mode (3TX/3RX)

Ant. 1, Ant. 2 and Ant. 3 could be used as transmitting/receiving antennas.

Ant. 1, Ant. 2 and Ant. 3 could transmit/receive simultaneously.

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

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

For 5GHz band:

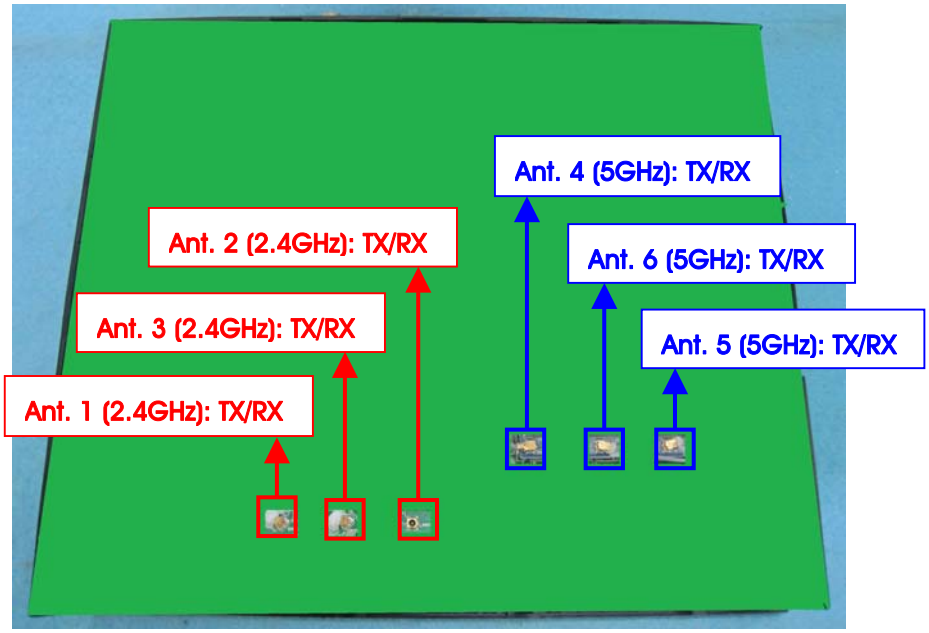
For IEEE 802.11n mode (3TX/3RX)

Ant. 4, Ant. 5 and Ant. 6 could be used as transmitting/receiving antennas.

Ant. 4, Ant. 5 and Ant. 6 could transmit/receive simultaneously.

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

Only Ant. 4 can be used as transmitting/receiving antenna.



3.4. Table for Carrier Frequencies

For 2.4GHz Band:

There are two bandwidth systems.

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

For 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	-	-

For 5GHz Band:

There are two bandwidth systems.

For 20MHz bandwidth systems, use Channel 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 151, 159.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5725~5850 MHz Band 4	149	5745 MHz	159	5795 MHz
	151	5755 MHz	161	5805 MHz
	153	5765 MHz	165	5825 MHz
	157	5785 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.

For 2.4GHz Band

Test Items	Mode	Data Rate	Channel	Antenna
AC Power Line Conducted Emissions	Normal Link	-	-	-
Maximum Conducted Output Power	11n 20MHz	MCS0	1/6/11	1+2+3
	11n 40MHz	MCS0	3/6/9	1+2+3
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Power Spectral Density	11n 20MHz	MCS0	1/6/11	1, 2 and 3
	11n 40MHz	MCS0	3/6/9	1, 2 and 3
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
6dB Spectrum Bandwidth	11n 20MHz	MCS0	1/6/11	1+2+3
	11n 40MHz	MCS0	3/6/9	1+2+3
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Radiated Emissions Below 1GHz	Normal Link	-	-	-
Radiated Emissions Above 1GHz	11n 20MHz	MCS0	1/6/11	1+2+3
	11n 40MHz	MCS0	3/6/9	1+2+3
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Band Edge Emissions	11n 20MHz	MCS0	1/6/11	1+2+3
	11n 40MHz	MCS0	3/6/9	1+2+3
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1

For 5GHz Band

Test Items	Mode	Data Rate	Channel	Antenna
AC Power Line Conducted Emissions	Normal Link	-	-	-
Maximum Conducted Output Power	11n 20MHz	MCS0	149/157/165	4+5+6
	11n 40MHz	MCS0	151/159	4+5+6
	11a/BPSK	6 Mbps	149/157/165	4
Power Spectral Density	11n 20MHz	MCS0	149/157/165	4, 5 and 6
	11n 40MHz	MCS0	151/159	4, 5 and 6
	11a/BPSK	6 Mbps	149/157/165	4
6dB Spectrum Bandwidth	11n 20MHz	MCS0	149/157/165	4+5+6
	11n 40MHz	MCS0	151/159	4+5+6
	11a/BPSK	6 Mbps	149/157/165	4
Radiated Emissions Below 1GHz	Normal Link	-	-	-
Radiated Emissions Above 1GHz	11n 20MHz	MCS0	149/157/165	4+5+6
	11n 40MHz	MCS0	151/159	4+5+6
	11a/BPSK	6 Mbps	149/157/165	4
Band Edge Emissions	11n 20MHz	MCS0	149/157/165	4+5+6
	11n 40MHz	MCS0	151/159	4+5+6
	11a/BPSK	6 Mbps	149/157/165	4

<For MPE and Co-location Test>:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN 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 5GHz WLAN function.

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
TH01-CB	OVEN Room	Hsin Chu	-	-

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

Please refer section 6 for Test Site Address.

3.7. Table for Supporting Units

For Test Site No: 03CH01-CB

Support Unit	Brand	Model	FCC ID
Flash Disk	Silicon	D33B01	DoC
Flash Disk	Silicon	D33B02	DoC
Notebook	DELL	M1330	E2K4965AGNM
Notebook	DELL	M1340	E2K4965AGNM
Notebook	DELL	E6430	QDS-BRCM1049LE
CMTS	Arris	C3	NA
EeeBox	ASUS	EB1501	NA

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
Flash disk	Silicon	I-Series	DoC
Flash disk	Silicon	I-Series	DoC
Notebook	DELL	E6430	QDS-BRCM1049LE
Notebook	DELL	E6430	QDS-BRCM1049LE
Notebook	DELL	E6430	QDS-BRCM1049LE
CMTS	Arris	C3	NA
EeeBox	ASUS	EB1501	NA

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	QDS-BRCM1049LE

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.

For 2.4GHz Band

Power Parameters of IEEE 802.11n MCS0 20MHz

Test Software Version	Ralink RT3593 QA Tool version:1.0.2.4		
Frequency	2412 MHz	2437 MHz	2462 MHz
MCS0 20MHz	0B/0E/09	0B/0E/09	10/15/0F

Power Parameters of IEEE 802.11n MCS0 40MHz

Test Software Version	Ralink RT3593 QA Tool version:1.0.2.4		
Frequency	2422 MHz	2437 MHz	2452 MHz
MCS0 40MHz	06/09/04	10/13/0E	0B/0F/0A

Power Parameters of IEEE 802.11b/g

Test Software Version	Ralink RT3593 QA Tool version:1.0.2.4		
Frequency	2412 MHz	2437 MHz	2462 MHz
IEEE 802.11b	12	1D	17
IEEE 802.11g	10	18	16

For 5GHz Band

Power Parameters of IEEE 802.11n MCS0 20MHz

Test Software Version	Ralink RT3593 QA Tool version:1.0.2.4		
Frequency	5745 MHz	5785 MHz	5825 MHz
MCS0 20MHz	0F/0B/0B	13/0C/0F	0F/07/07

Power Parameters of IEEE 802.11n MCS0 40MHz

Test Software Version	DUTAPICLIENT_PCI.EXE	
Frequency	5755 MHz	5795 MHz
MCS0 40MHz	13/0E/0F	15/0B/0F

Power Parameters of IEEE 802.11a

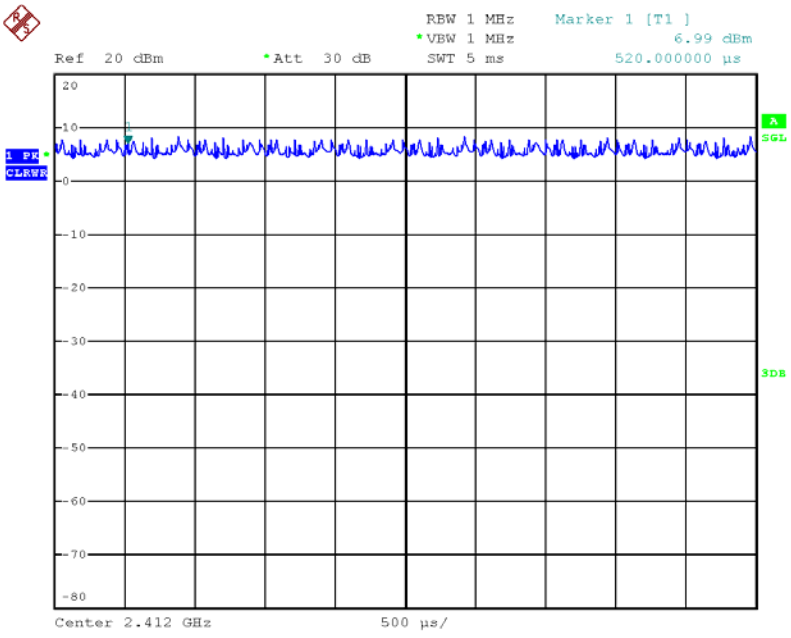
Test Software Version	Ralink RT3593 QA Tool version:1.0.2.4		
Frequency	5745 MHz	5785 MHz	5825 MHz
IEEE 802.11a	0F	0F	0F

3.9. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.10. Duty Cycle

IEEE 802.11n MCS0 20MHz / For 2.4GHz Band



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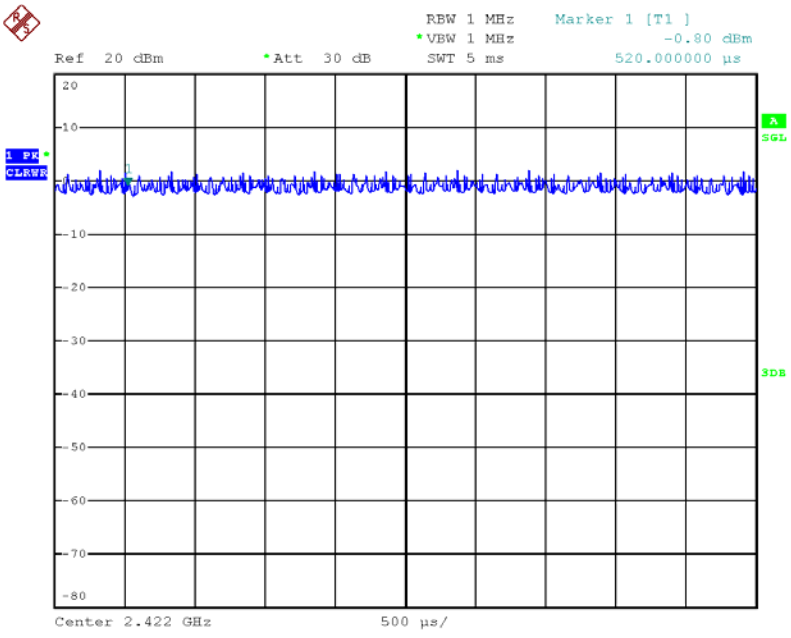
IEEE 802.11n MCS0 40MHz / For 2.4GHz Band



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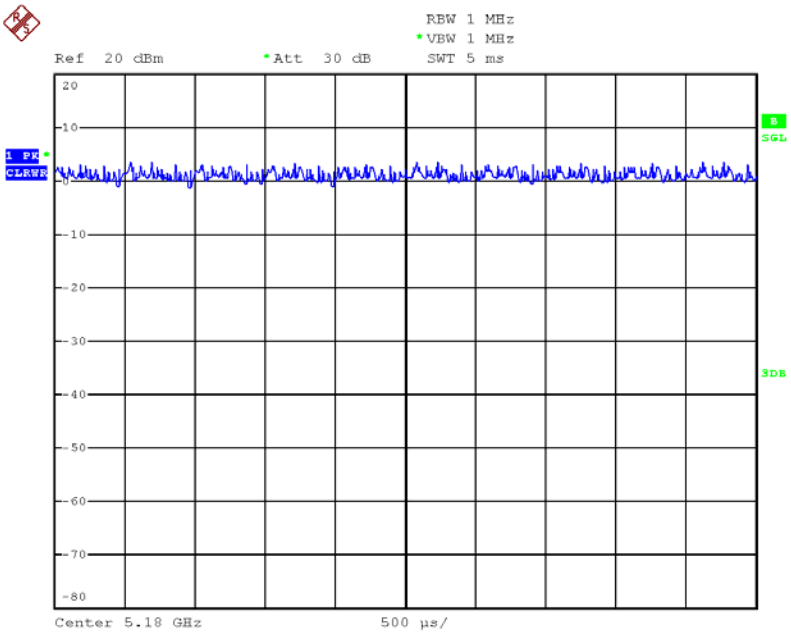
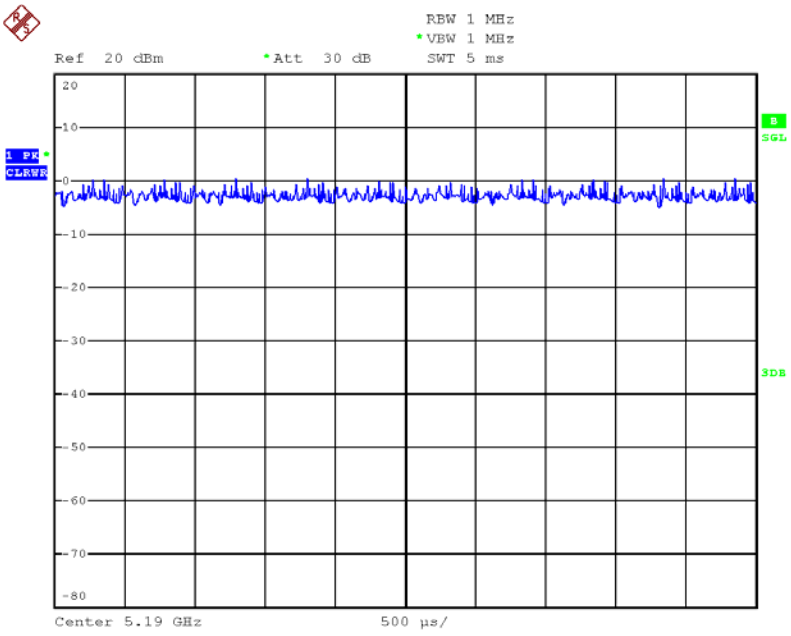
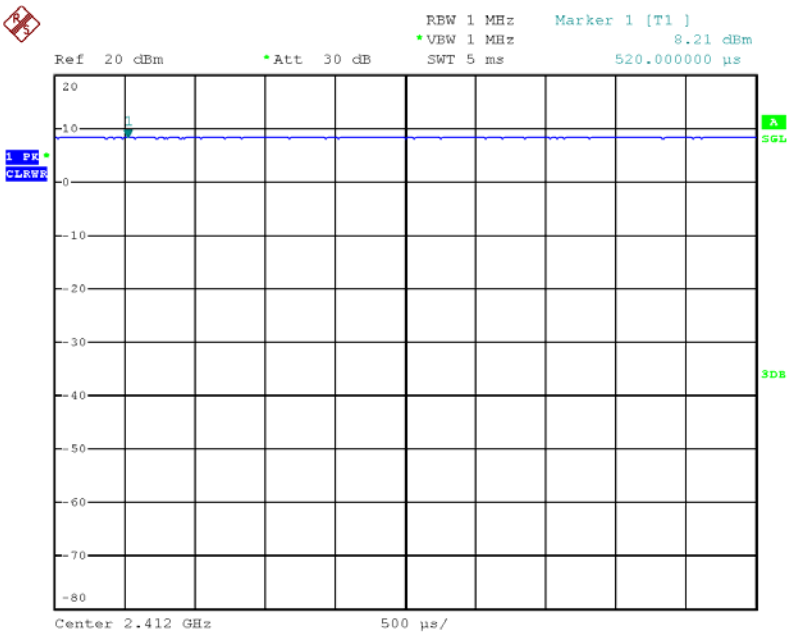
IEEE 802.11n MCS0 20MHz / For 5GHz Band



IEEE 802.11n MCS0 40MHz / For 5GHz Band



IEEE 802.11b



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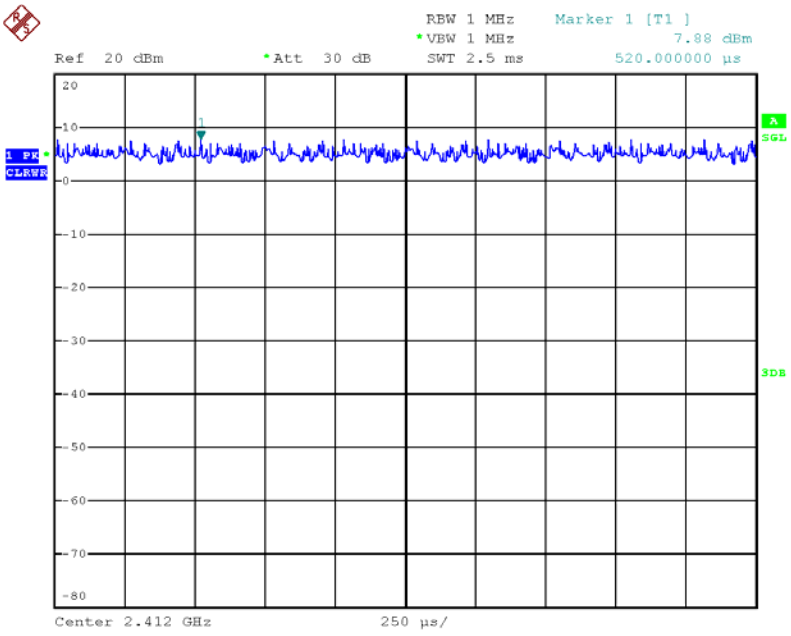
IEEE 802.11g



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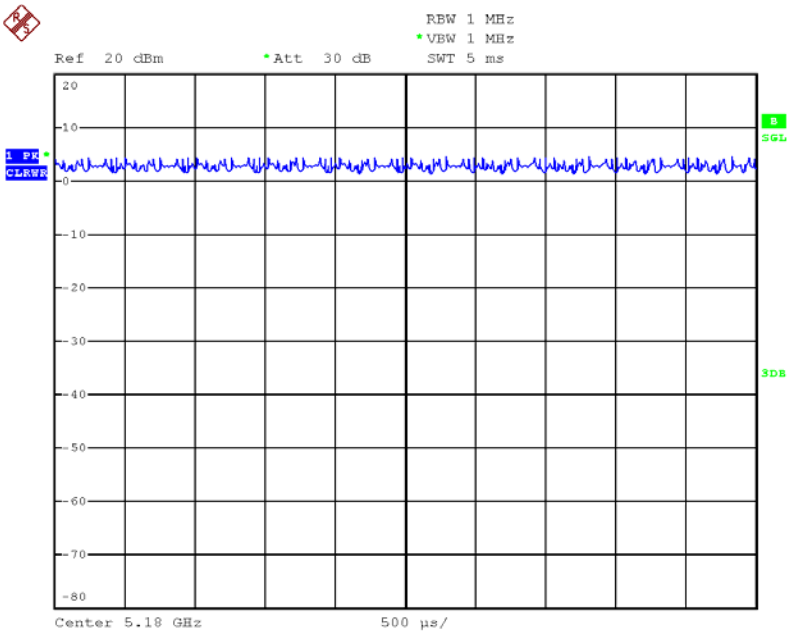
IEEE 802.11a



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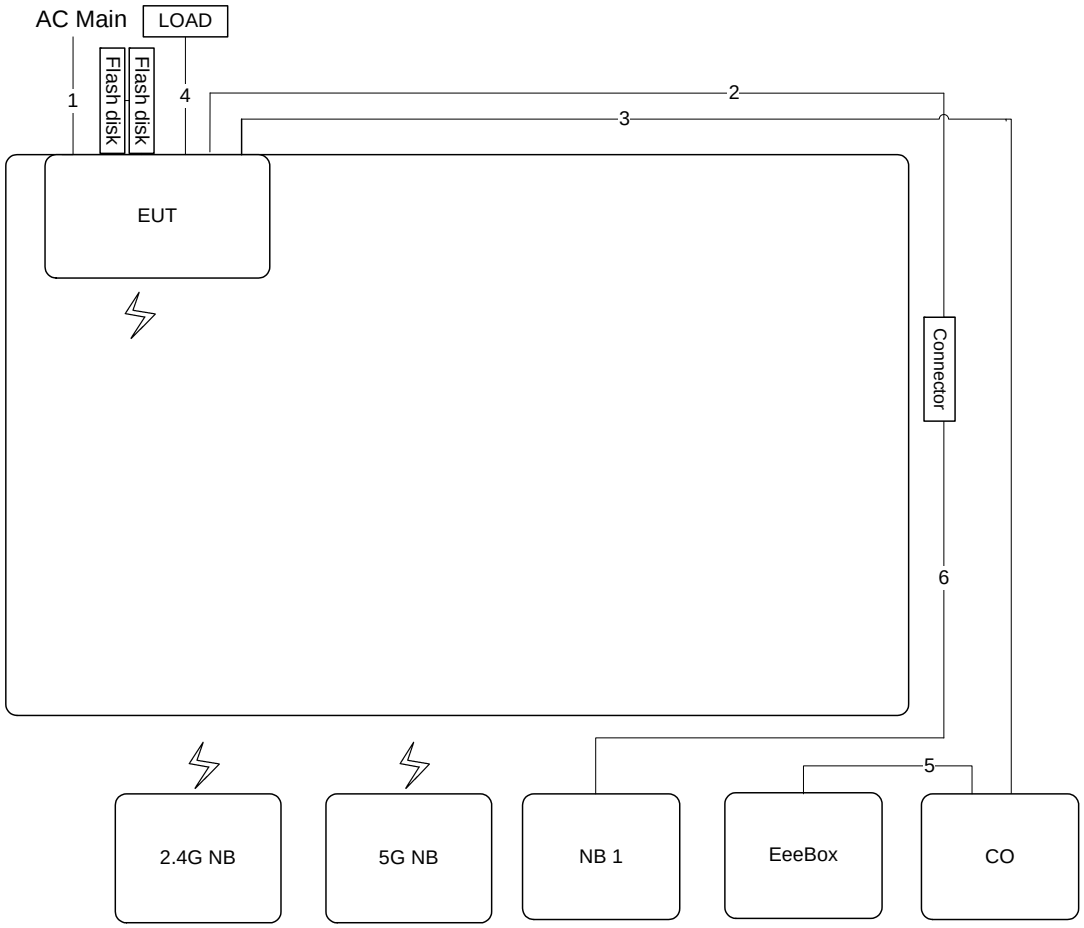
3.11. Test Configurations

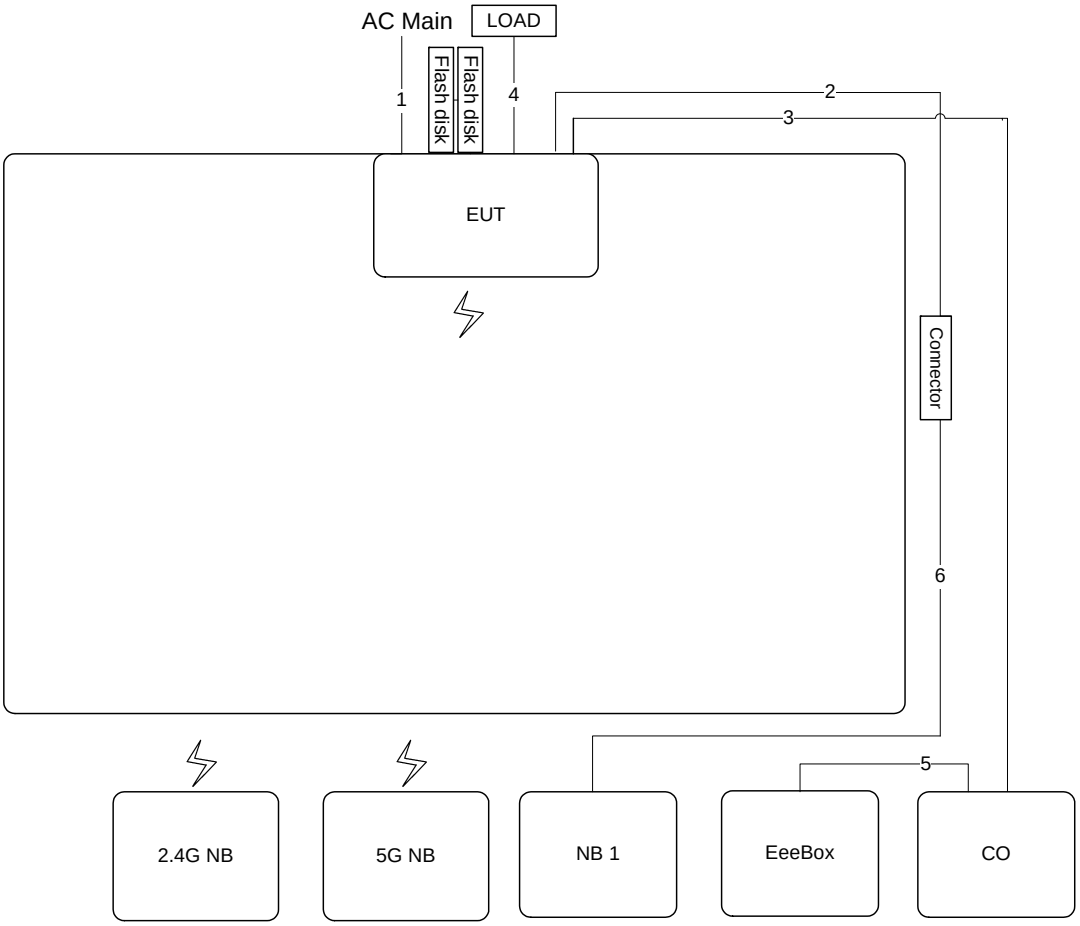
3.11.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shield	Length (m)	Remark
1	AC power cable	No	1.5m	-
2	RJ-45 cable	No	1.4m	-
3	Coaxial cable	Yes	10m	-
4	RJ-45 cable	No	1m	-
5	RJ-45 cable	No	1m	-
6	RJ-45 cable	No	10m	-

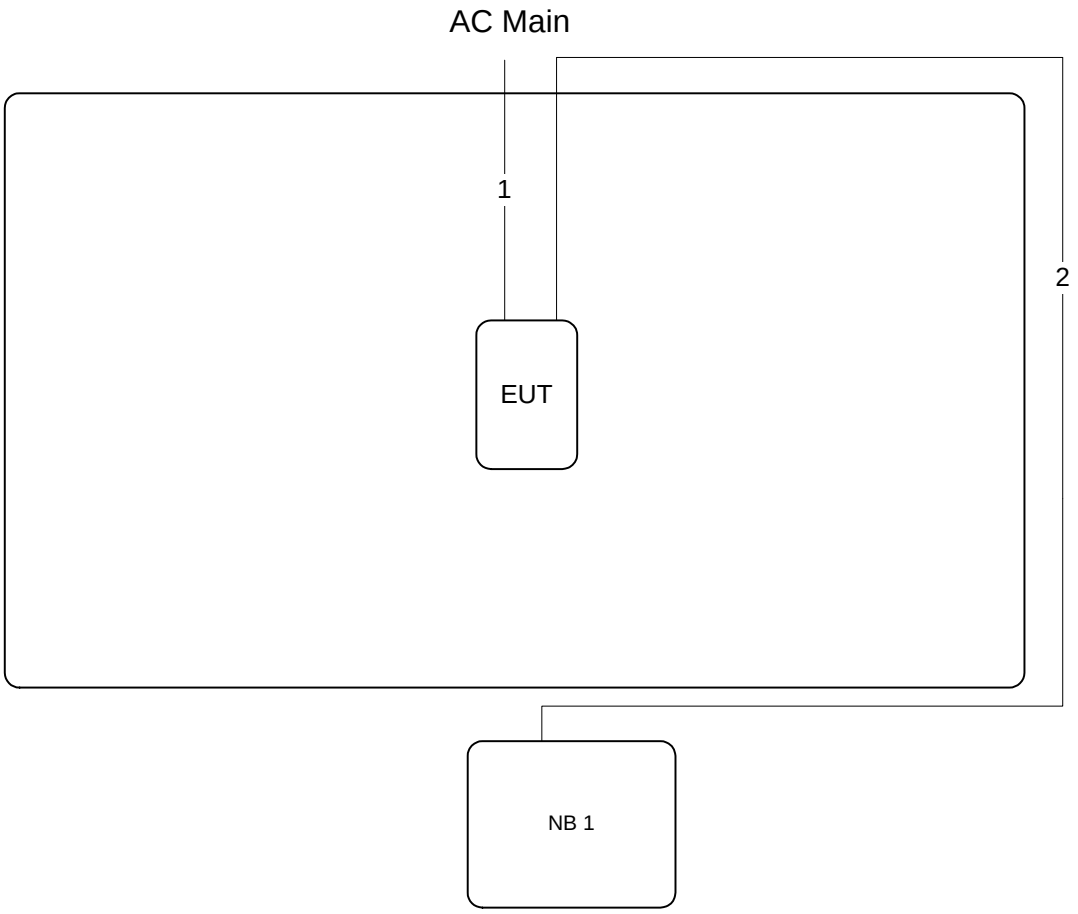
3.11.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



Item	Connection	Shield	Length (m)	Remark
1	Power cable	No	1.5m	-
2	RJ-45 cable	No	1.4m	-
3	Coaxial cable	Yes	10m	-
4	RJ-45 cable	No	1m	-
5	RJ-45 cable	No	1m	-
6	RJ-45 cable	No	10m	-

Test Configuration: above 1GHz



Item	Connection	Shield	Length (m)	Remark
1	Power cable	No	1.5m	-
2	RJ45 cable	No	10m	-

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

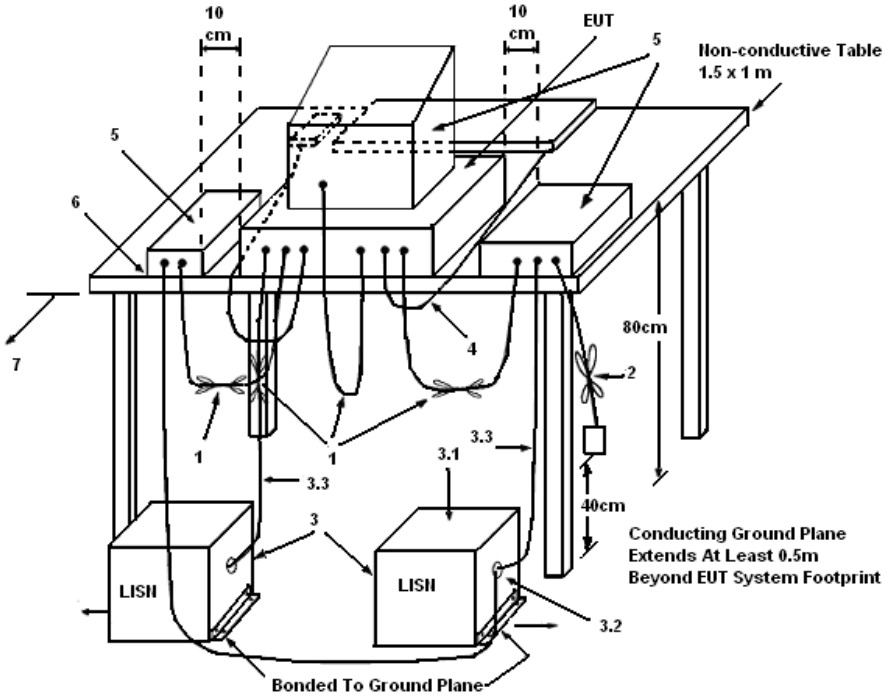
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

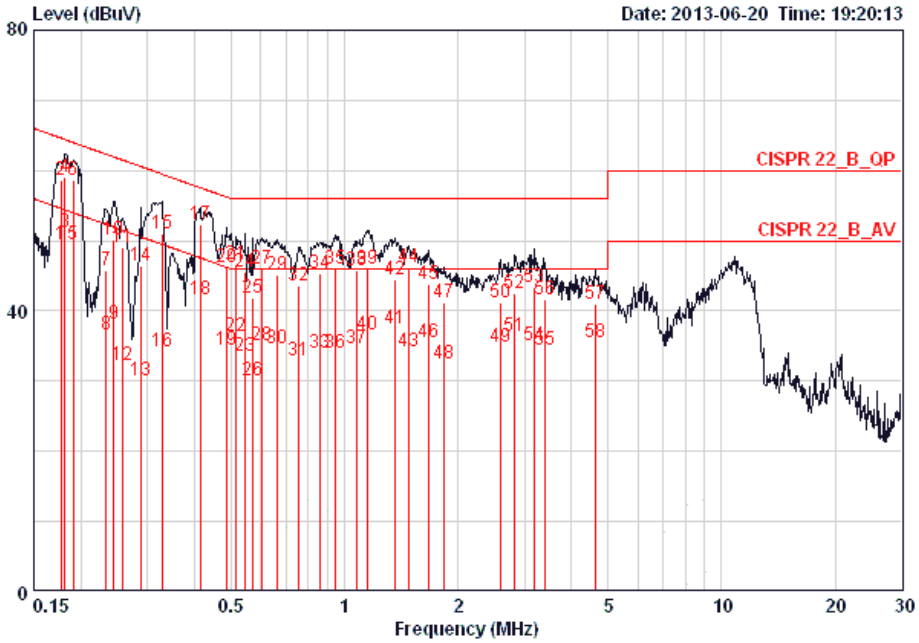
There is no deviation with the original standard.

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

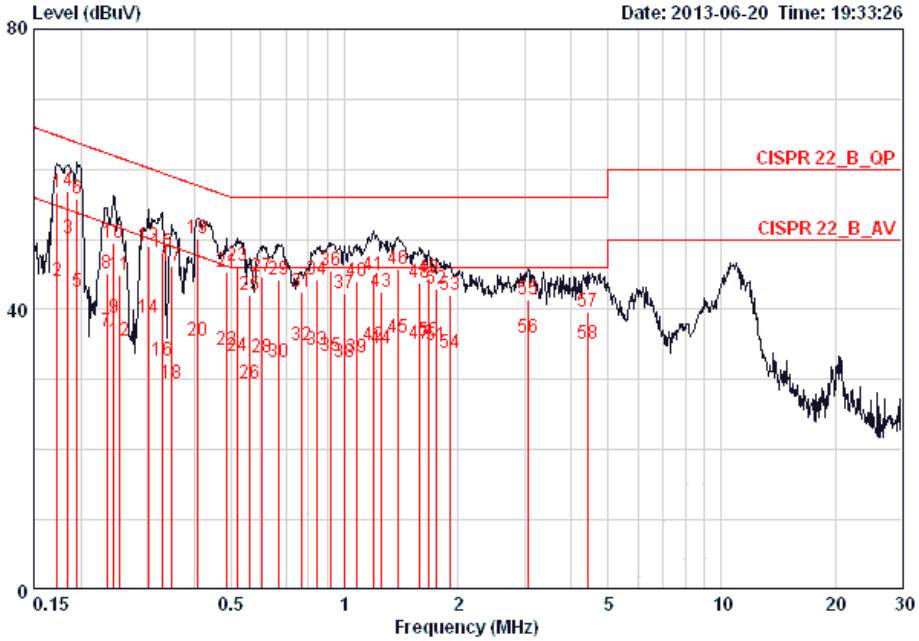
Temperature	24°C	Humidity	48%
Test Engineer	Simon Yang	Phase	Line
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.17678	49.49	-5.14	54.64	49.15	0.15	0.19	LINE	AVERAGE
2	0.17678	58.70	-5.93	64.64	58.36	0.15	0.19	LINE	QP
3 @	0.18152	51.25	-3.16	54.42	50.91	0.15	0.19	LINE	AVERAGE
4	0.18152	59.04	-5.37	64.42	58.70	0.15	0.19	LINE	QP
5	0.19039	49.43	-4.59	54.02	49.08	0.15	0.20	LINE	AVERAGE
6	0.19039	58.63	-5.39	64.02	58.28	0.15	0.20	LINE	QP
7	0.23285	45.85	-16.50	62.35	45.50	0.15	0.20	LINE	QP
8	0.23285	36.63	-15.72	52.35	36.28	0.15	0.20	LINE	AVERAGE
9	0.24422	38.19	-13.76	51.95	37.84	0.15	0.20	LINE	AVERAGE
10	0.24422	50.17	-11.78	61.95	49.82	0.15	0.20	LINE	QP
11	0.25751	49.13	-12.38	61.51	48.78	0.15	0.20	LINE	QP
12	0.25751	32.33	-19.18	51.51	31.98	0.15	0.20	LINE	AVERAGE
13	0.28782	30.15	-20.44	50.59	29.80	0.15	0.20	LINE	AVERAGE
14	0.28782	46.40	-14.19	60.59	46.05	0.15	0.20	LINE	QP
15	0.32858	51.07	-8.42	59.49	50.72	0.15	0.20	LINE	QP
16	0.32858	34.26	-15.23	49.49	33.91	0.15	0.20	LINE	AVERAGE
17	0.41485	52.31	-5.24	57.55	51.96	0.15	0.20	LINE	QP
18	0.41485	41.68	-5.87	47.55	41.33	0.15	0.20	LINE	AVERAGE
19	0.48632	34.53	-11.70	46.23	34.18	0.15	0.20	LINE	AVERAGE
20	0.48632	46.25	-9.98	56.23	45.90	0.15	0.20	LINE	QP
21	0.51550	46.67	-9.33	56.00	46.32	0.15	0.20	LINE	QP
22	0.51550	36.40	-9.60	46.00	36.05	0.15	0.20	LINE	AVERAGE
23	0.54644	33.62	-12.39	46.00	33.26	0.16	0.20	LINE	AVERAGE
24	0.54644	45.51	-10.50	56.00	45.15	0.16	0.20	LINE	QP
25	0.57010	41.89	-14.11	56.00	41.53	0.16	0.20	LINE	QP

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
26	0.57010	30.15	-15.85	46.00	29.79	0.16	0.20	LINE	AVERAGE
27	0.60112	46.10	-9.90	56.00	45.74	0.16	0.20	LINE	QP
28	0.60112	35.05	-10.95	46.00	34.69	0.16	0.20	LINE	AVERAGE
29	0.66127	45.15	-10.85	56.00	44.79	0.16	0.20	LINE	QP
30	0.66127	34.73	-11.27	46.00	34.37	0.16	0.20	LINE	AVERAGE
31	0.75493	32.91	-13.09	46.00	32.55	0.16	0.20	LINE	AVERAGE
32	0.75493	43.49	-12.51	56.00	43.13	0.16	0.20	LINE	QP
33	0.85730	34.08	-11.93	46.00	33.71	0.17	0.20	LINE	AVERAGE
34	0.85730	45.41	-10.60	56.00	45.04	0.17	0.20	LINE	QP
35	0.94809	46.08	-9.92	56.00	45.74	0.17	0.18	LINE	QP
36	0.94809	33.98	-12.02	46.00	33.64	0.17	0.18	LINE	AVERAGE
37	1.082	34.56	-11.44	46.00	34.18	0.17	0.20	LINE	AVERAGE
38	1.082	45.70	-10.30	56.00	45.32	0.17	0.20	LINE	QP
39	1.147	45.97	-10.03	56.00	45.59	0.17	0.21	LINE	QP
40	1.147	36.56	-9.44	46.00	36.18	0.17	0.21	LINE	AVERAGE
41	1.367	37.42	-8.58	46.00	37.03	0.18	0.21	LINE	AVERAGE
42	1.367	44.42	-11.58	56.00	44.03	0.18	0.21	LINE	QP
43	1.480	34.26	-11.74	46.00	33.86	0.18	0.22	LINE	AVERAGE
44	1.480	46.21	-9.79	56.00	45.81	0.18	0.22	LINE	QP
45	1.671	43.87	-12.13	56.00	43.46	0.18	0.22	LINE	QP
46	1.671	35.43	-10.57	46.00	35.02	0.18	0.22	LINE	AVERAGE
47	1.839	41.19	-14.81	56.00	40.78	0.19	0.23	LINE	QP
48	1.839	32.45	-13.55	46.00	32.04	0.19	0.23	LINE	AVERAGE
49	2.594	34.97	-11.03	46.00	34.53	0.20	0.24	LINE	AVERAGE
50	2.594	41.17	-14.83	56.00	40.73	0.20	0.24	LINE	QP
51	2.824	36.32	-9.68	46.00	35.87	0.20	0.25	LINE	AVERAGE
52	2.824	42.52	-13.48	56.00	42.07	0.20	0.25	LINE	QP
53	3.190	43.34	-12.66	56.00	42.87	0.21	0.26	LINE	QP
54	3.190	35.09	-10.91	46.00	34.62	0.21	0.26	LINE	AVERAGE
55	3.399	34.53	-11.47	46.00	34.05	0.21	0.27	LINE	AVERAGE
56	3.399	41.68	-14.32	56.00	41.20	0.21	0.27	LINE	QP
57	4.622	40.91	-15.09	56.00	40.36	0.23	0.31	LINE	QP
58	4.622	35.58	-10.42	46.00	35.03	0.23	0.31	LINE	AVERAGE

Temperature	24°C	Humidity	48%
Test Engineer	Simon Yang	Phase	Neutral
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.17307	56.61	-8.20	64.81	56.34	0.08	0.19	NEUTRAL	QP
2	0.17307	43.97	-10.84	54.81	43.70	0.08	0.19	NEUTRAL	AVERAGE
3 @	0.18443	50.03	-4.25	54.28	49.76	0.08	0.19	NEUTRAL	AVERAGE
4	0.18443	56.97	-7.31	64.28	56.70	0.08	0.19	NEUTRAL	QP
5	0.19550	42.53	-11.27	53.80	42.25	0.08	0.20	NEUTRAL	AVERAGE
6	0.19550	55.70	-8.10	63.80	55.42	0.08	0.20	NEUTRAL	QP
7	0.23409	36.94	-15.36	52.30	36.66	0.08	0.20	NEUTRAL	AVERAGE
8	0.23409	45.02	-17.28	62.30	44.74	0.08	0.20	NEUTRAL	QP
9	0.24422	38.75	-13.20	51.95	38.47	0.08	0.20	NEUTRAL	AVERAGE
10	0.24422	49.51	-12.44	61.95	49.23	0.08	0.20	NEUTRAL	QP
11	0.25345	44.97	-16.67	61.64	44.69	0.08	0.20	NEUTRAL	QP
12	0.25345	35.59	-16.05	51.64	35.31	0.08	0.20	NEUTRAL	AVERAGE
13	0.30188	49.06	-11.13	60.19	48.78	0.08	0.20	NEUTRAL	QP
14	0.30188	38.85	-11.34	50.19	38.57	0.08	0.20	NEUTRAL	AVERAGE
15	0.32858	48.28	-11.21	59.49	48.00	0.08	0.20	NEUTRAL	QP
16	0.32858	32.76	-16.73	49.49	32.48	0.08	0.20	NEUTRAL	AVERAGE
17	0.34646	46.15	-12.90	59.05	45.87	0.08	0.20	NEUTRAL	QP
18	0.34646	29.36	-19.69	49.05	29.08	0.08	0.20	NEUTRAL	AVERAGE
19	0.40615	50.20	-7.53	57.73	49.92	0.08	0.20	NEUTRAL	QP
20	0.40615	35.57	-12.16	47.73	35.29	0.08	0.20	NEUTRAL	AVERAGE
21	0.48632	45.24	-10.99	56.23	44.96	0.08	0.20	NEUTRAL	QP
22	0.48632	34.25	-11.98	46.23	33.97	0.08	0.20	NEUTRAL	AVERAGE
23	0.51824	46.19	-9.81	56.00	45.91	0.08	0.20	NEUTRAL	QP
24	0.51824	33.28	-12.72	46.00	33.00	0.08	0.20	NEUTRAL	AVERAGE
25	0.56111	42.17	-13.83	56.00	41.89	0.08	0.20	NEUTRAL	QP

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
26	0.56111	29.52	-16.48	46.00	29.24	0.08	0.20	NEUTRAL	AVERAGE
27	0.60112	44.68	-11.32	56.00	44.40	0.08	0.20	NEUTRAL	QP
28	0.60112	33.11	-12.89	46.00	32.83	0.08	0.20	NEUTRAL	AVERAGE
29	0.67187	44.34	-11.66	56.00	44.06	0.08	0.20	NEUTRAL	QP
30	0.67187	32.48	-13.52	46.00	32.20	0.08	0.20	NEUTRAL	AVERAGE
31	0.76702	42.56	-13.44	56.00	42.27	0.09	0.20	NEUTRAL	QP
32	0.76702	34.82	-11.18	46.00	34.53	0.09	0.20	NEUTRAL	AVERAGE
33	0.84378	34.19	-11.81	46.00	33.90	0.09	0.20	NEUTRAL	AVERAGE
34	0.84378	44.23	-11.77	56.00	43.94	0.09	0.20	NEUTRAL	QP
35	0.92330	33.36	-12.64	46.00	33.08	0.09	0.19	NEUTRAL	AVERAGE
36	0.92330	45.63	-10.37	56.00	45.35	0.09	0.19	NEUTRAL	QP
37	0.99968	42.28	-13.72	56.00	41.99	0.09	0.20	NEUTRAL	QP
38	0.99968	32.51	-13.49	46.00	32.22	0.09	0.20	NEUTRAL	AVERAGE
39	1.082	33.08	-12.92	46.00	32.78	0.09	0.20	NEUTRAL	AVERAGE
40	1.082	44.00	-12.00	56.00	43.70	0.09	0.20	NEUTRAL	QP
41	1.197	44.84	-11.16	56.00	44.54	0.09	0.21	NEUTRAL	QP
42	1.197	34.77	-11.23	46.00	34.47	0.09	0.21	NEUTRAL	AVERAGE
43	1.255	42.60	-13.40	56.00	42.29	0.10	0.21	NEUTRAL	QP
44	1.255	34.39	-11.61	46.00	34.08	0.10	0.21	NEUTRAL	AVERAGE
45	1.381	36.01	-9.99	46.00	35.70	0.10	0.21	NEUTRAL	AVERAGE
46	1.381	45.72	-10.28	56.00	45.41	0.10	0.21	NEUTRAL	QP
47	1.585	35.07	-10.93	46.00	34.75	0.10	0.22	NEUTRAL	AVERAGE
48	1.585	43.78	-12.22	56.00	43.46	0.10	0.22	NEUTRAL	QP
49	1.671	44.47	-11.53	56.00	44.14	0.10	0.22	NEUTRAL	QP
50	1.671	35.60	-10.40	46.00	35.27	0.10	0.22	NEUTRAL	AVERAGE
51	1.753	34.77	-11.23	46.00	34.44	0.11	0.22	NEUTRAL	AVERAGE
52	1.753	42.92	-13.08	56.00	42.59	0.11	0.22	NEUTRAL	QP
53	1.898	42.09	-13.91	56.00	41.75	0.11	0.23	NEUTRAL	QP
54	1.898	33.79	-12.21	46.00	33.45	0.11	0.23	NEUTRAL	AVERAGE
55	3.058	41.49	-14.51	56.00	41.12	0.12	0.25	NEUTRAL	QP
56	3.058	36.07	-9.93	46.00	35.70	0.12	0.25	NEUTRAL	AVERAGE
57	4.407	39.64	-16.36	56.00	39.19	0.14	0.31	NEUTRAL	QP
58	4.407	35.12	-10.88	46.00	34.67	0.14	0.31	NEUTRAL	AVERAGE

Note:

Level = Read Level + LISN Factor + Cable Loss

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for output power is 30dBm. 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. Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter output power.

4.2.2. Measuring Instruments and Setting

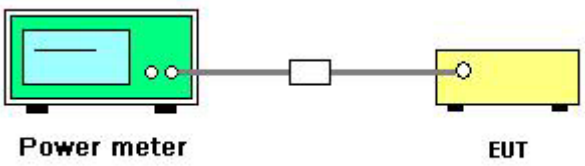
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
Detector	Average

4.2.3. Test Procedures

1. Test procedures refer KDB 558074 D01 v03 section 9.2.2 Measurement using a power meter (PM).
2. This procedure provides an alternative for determining the RMS output power using a broadband RF average power meter with a thermocouple detector.

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 continuously transmitting mode.

4.2.7. Test Result of Maximum Conducted Output Power

Temperature	25°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n
Test Date	Jun. 27, 2013		

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Total		
1	2412 MHz	17.76	17.86	17.83	22.59	30.00	Complies
6	2437 MHz	15.95	15.92	15.73	20.64	30.00	Complies
11	2462 MHz	17.32	17.81	17.41	22.29	30.00	Complies

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Total		
3	2422 MHz	14.72	14.03	14.54	19.21	30.00	Complies
6	2437 MHz	18.01	17.85	18.22	22.80	30.00	Complies
9	2452 MHz	15.21	15.59	15.42	20.18	30.00	Complies

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Ant. 4	Ant. 5	Ant. 6	Total		
149	5745 MHz	17.01	17.57	17.22	22.04	30.00	Complies
157	5785 MHz	17.91	17.56	17.99	22.60	30.00	Complies
165	5825 MHz	14.33	14.49	13.97	19.04	30.00	Complies

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Ant. 4	Ant. 5	Ant. 6	Total		
151	5755 MHz	18.45	18.94	18.79	23.50	30.00	Complies
159	5795 MHz	17.29	16.88	17.32	21.94	30.00	Complies

Temperature	25°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a/b/g
Test Date	Jun. 27, 2013		

Configuration IEEE 802.11b / Ant. 1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	22.23	30.00	Complies
6	2437 MHz	26.36	30.00	Complies
11	2462 MHz	22.95	30.00	Complies

Configuration IEEE 802.11g / Ant. 1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	20.11	30.00	Complies
6	2437 MHz	22.75	30.00	Complies
11	2462 MHz	21.01	30.00	Complies

Configuration IEEE 802.11a / Ant. 4

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
149	5745 MHz	18.77	30.00	Complies
157	5785 MHz	17.58	30.00	Complies
165	5825 MHz	16.52	30.00	Complies

4.3. Power Spectral Density Measurement

4.3.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

4.3.2. Measuring Instruments and Setting

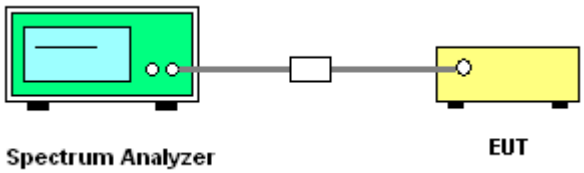
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS channel bandwidth.
RBW	3 kHz ≤ RBW ≤ 100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto couple

4.3.3. Test Procedures

1. Test procedures refer KDB 558074 D01 v03 section 10.2 Method PKPSD (peak PSD) & KDB 662911 D01 v02 section In-Band Power Spectral Density (PSD) Measurements option (2) Measure and add 10 log(NANT) dB.
2. Use this procedure when the maximum conducted output power in the fundamental emission is used to demonstrate compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
3. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
4. Use the peak marker function to determine the maximum level in any 3 kHz band segment within the fundamental EBW.
5. The resulting PSD level must be ≤ 8 dBm.

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 continuously transmitting mode.

4.3.7. Test Result of Power Spectral Density

Temperature	25°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Power Density (dBm/3kHz)			Single Port Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2	Ant. 3		
1	2412 MHz	-12.24	-9.96	-8.90	3.23	Complies
6	2437 MHz	-14.20	-11.88	-9.97	3.23	Complies
11	2462 MHz	-11.98	-9.68	-9.05	3.23	Complies

Note: PSD Limit = 8dBm/3kHz - (10log(3)) = 3.23dBm/3KHz

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Power Density (dBm/3kHz)			Single Port Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2	Ant. 3		
3	2422 MHz	-15.23	-13.77	-12.20	3.23	Complies
6	2437 MHz	-13.34	-9.97	-8.28	3.23	Complies
9	2452 MHz	-17.33	-12.84	-11.46	3.23	Complies

Note: PSD Limit = 8dBm/3kHz - (10log(3)) = 3.23dBm/3KHz

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Power Density (dBm/3kHz)			Single Port Limit (dBm/3kHz)	Result
		Ant. 4	Ant. 5	Ant. 6		
149	5745 MHz	-11.86	-12.84	-14.03	3.23	Complies
157	5785 MHz	-14.59	-13.91	-11.94	3.23	Complies
165	5825 MHz	-15.91	-15.46	-14.85	3.23	Complies

Note: PSD Limit = 8dBm/3kHz - (10log(3)) = 3.23dBm/3KHz

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Power Density (dBm/3kHz)			Single Port Limit (dBm/3kHz)	Result
		Ant. 4	Ant. 5	Ant. 6		
151	5755 MHz	-14.92	-12.66	-11.11	3.23	Complies
159	5795 MHz	-15.28	-16.64	-15.13	3.23	Complies

Note: PSD Limit = 8dBm/3kHz - (10log(3)) = 3.23dBm/3KHz

Temperature	25°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a/b/g

Configuration IEEE 802.11b / Ant. 1

Channel	Frequency	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
1	2412 MHz	-8.27	8.00	Complies
6	2437 MHz	-4.20	8.00	Complies
11	2462 MHz	-8.36	8.00	Complies

Configuration IEEE 802.11g / Ant. 1

Channel	Frequency	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
1	2412 MHz	-10.48	8.00	Complies
6	2437 MHz	-7.14	8.00	Complies
11	2462 MHz	-9.02	8.00	Complies

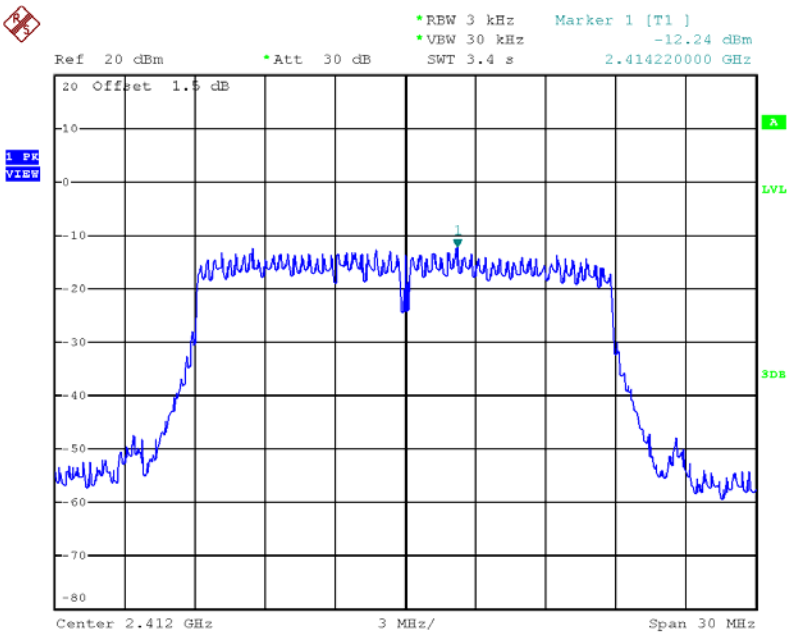
Configuration IEEE 802.11a / Ant. 4

Channel	Frequency	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
149	5745 MHz	-12.09	8.00	Complies
157	5785 MHz	-14.08	8.00	Complies
165	5825 MHz	-14.56	8.00	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 / 2412 MHz



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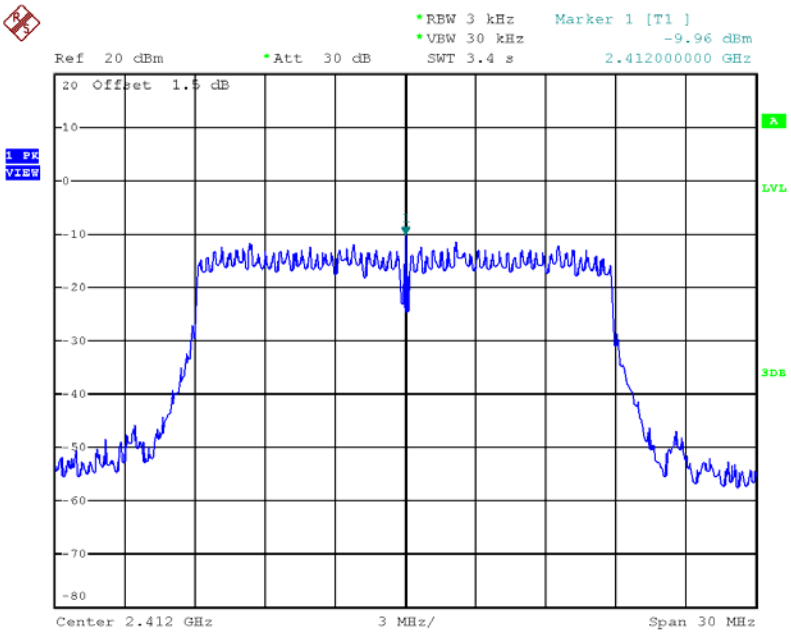
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 2 / 2412 MHz



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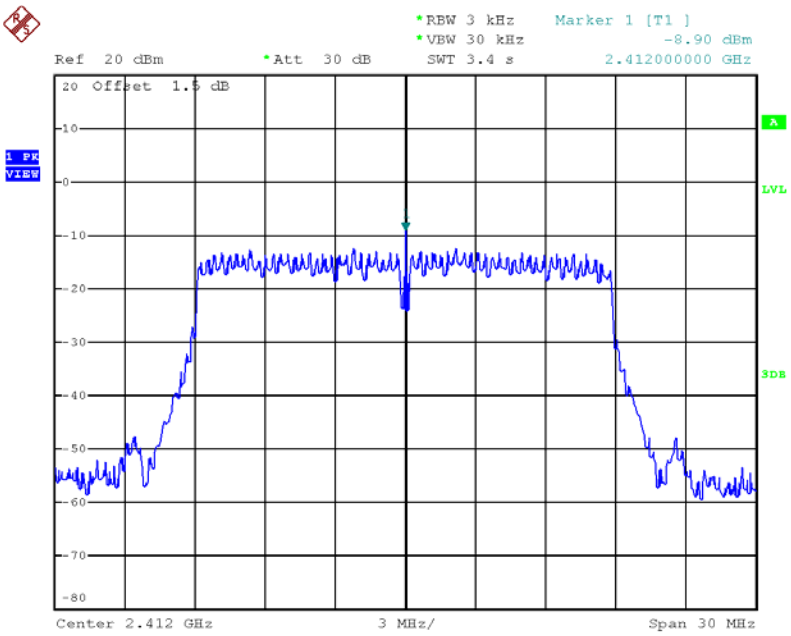
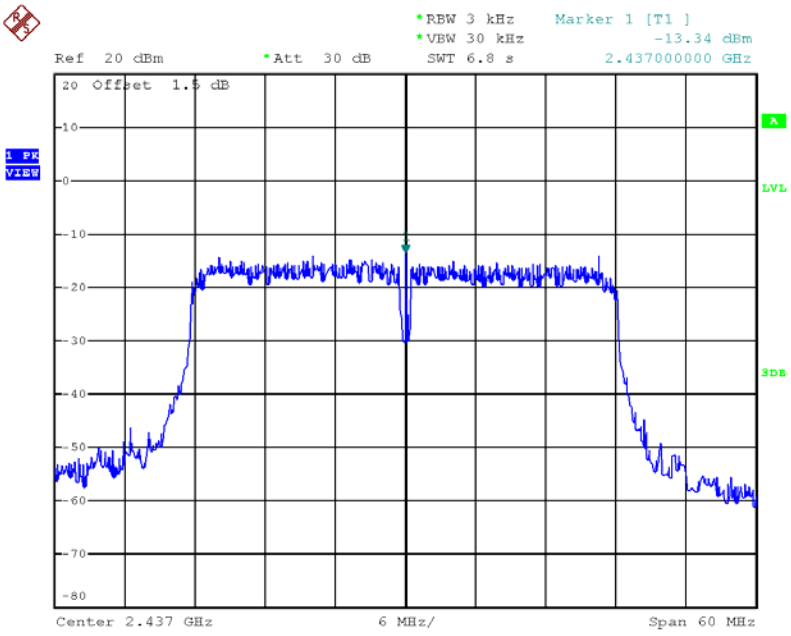
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 3 / 2412 MHz



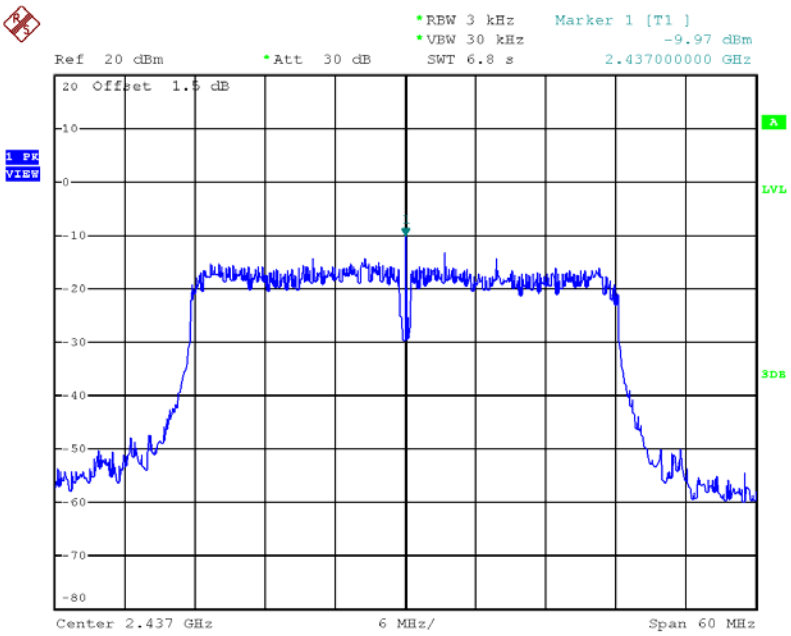
Date: 27.JUN.2013 18:45:57

Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 / 2437 MHz



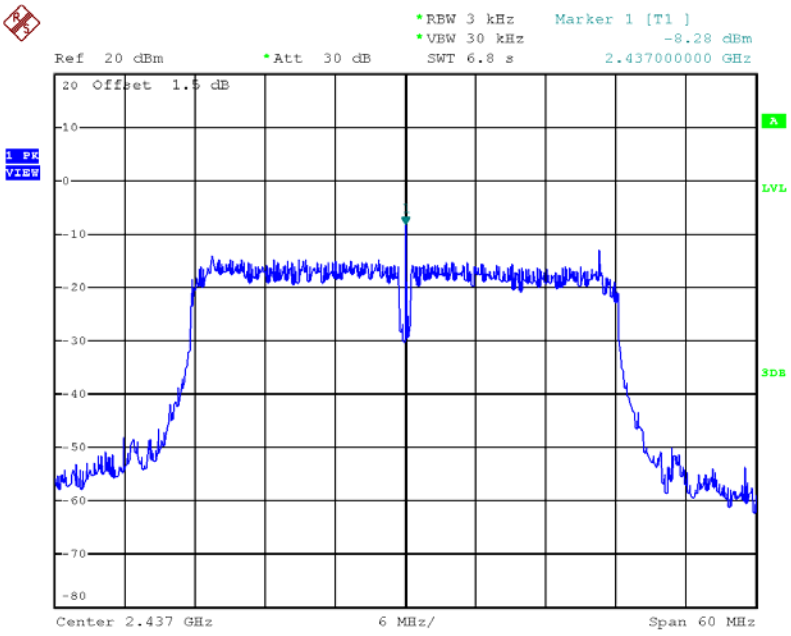
Date: 27.JUN.2013 19:01:04

Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 2 / 2437 MHz



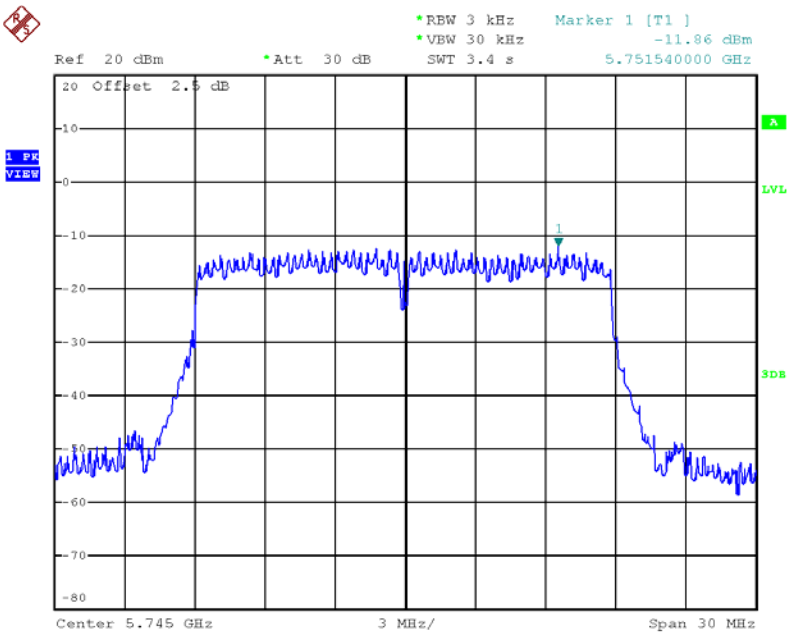
Date: 27.JUN.2013 19:02:17

Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 3 / 2437 MHz



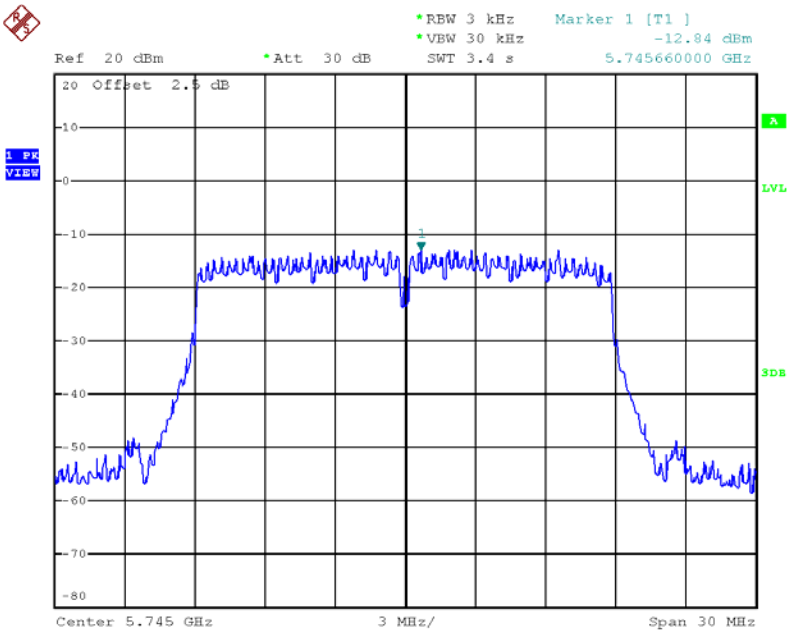
Date: 27.JUN.2013 19:03:30

Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 4 / 5745 MHz



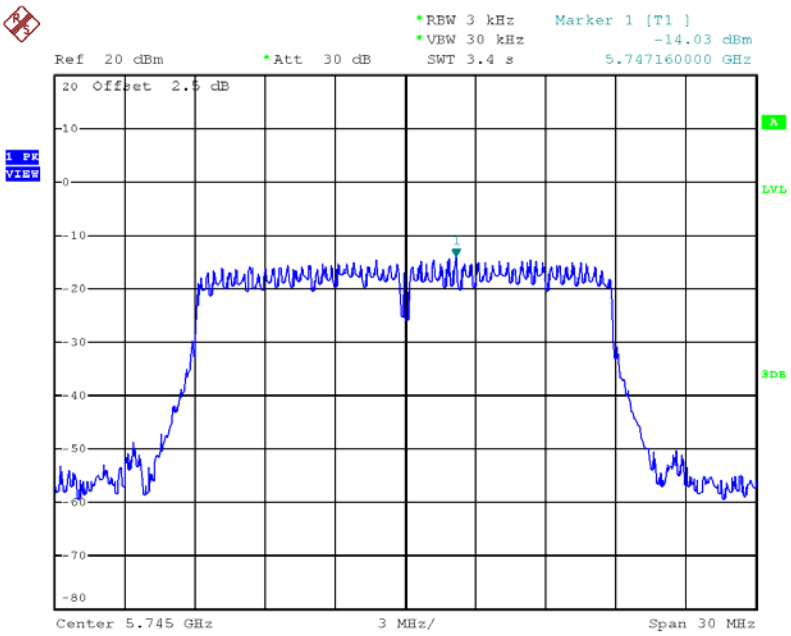
Date: 27.JUN.2013 20:07:32

Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 5 / 5745 MHz



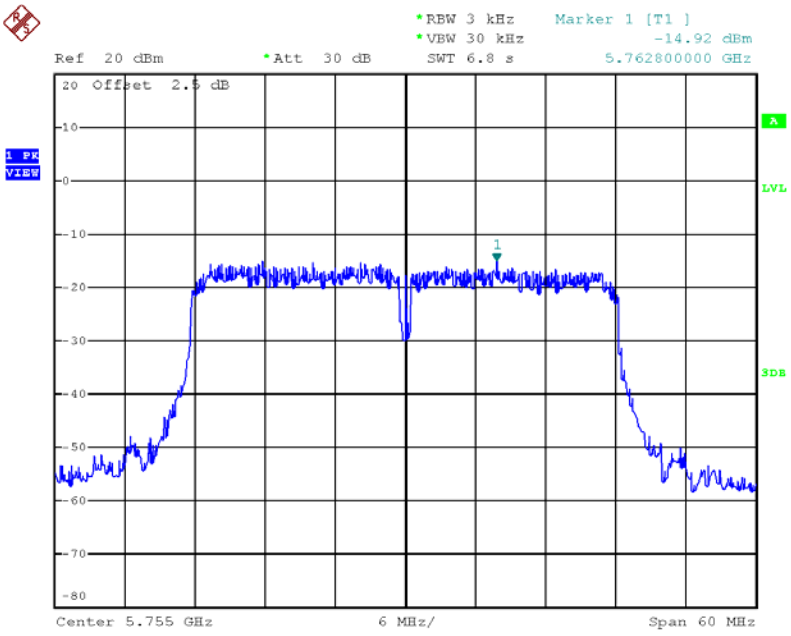
Date: 27.JUN.2013 20:09:02

Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 6 / 5745 MHz



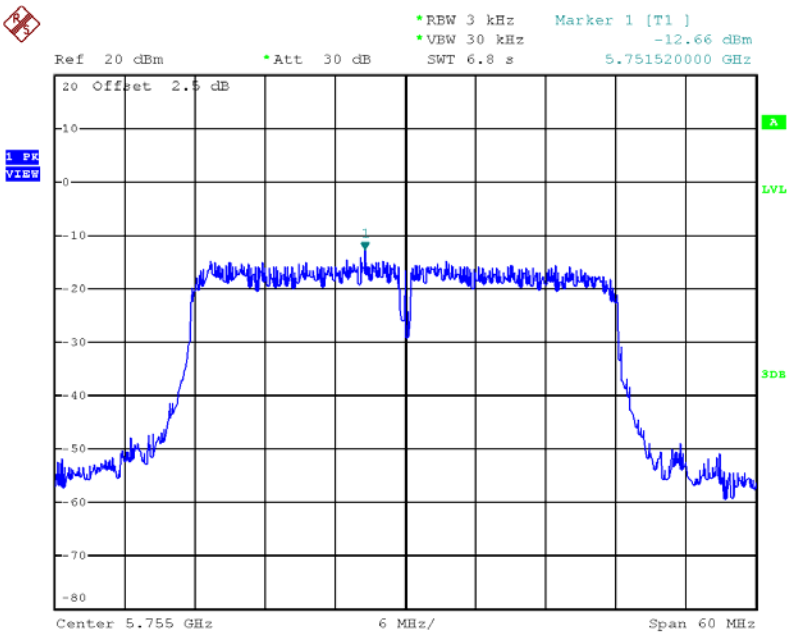
Date: 27.JUN.2013 20:09:51

Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 4 / 5755 MHz



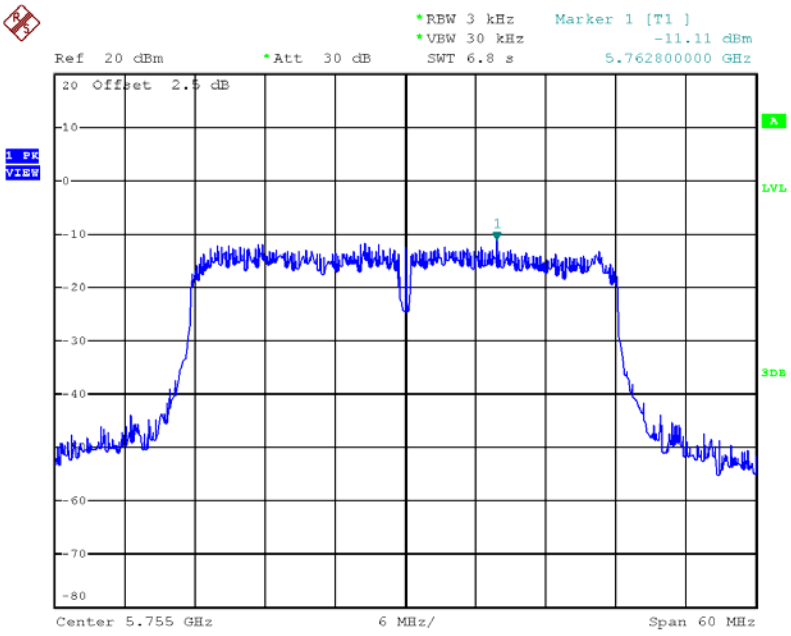
Date: 27.JUN.2013 20:46:13

Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 5 / 5755 MHz



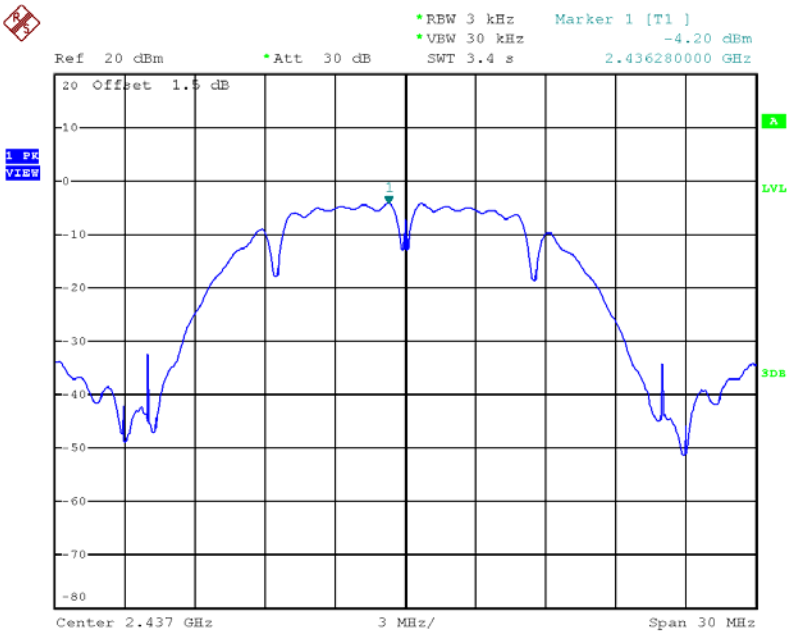
Date: 27.JUN.2013 20:45:19

Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 6 / 5755 MHz



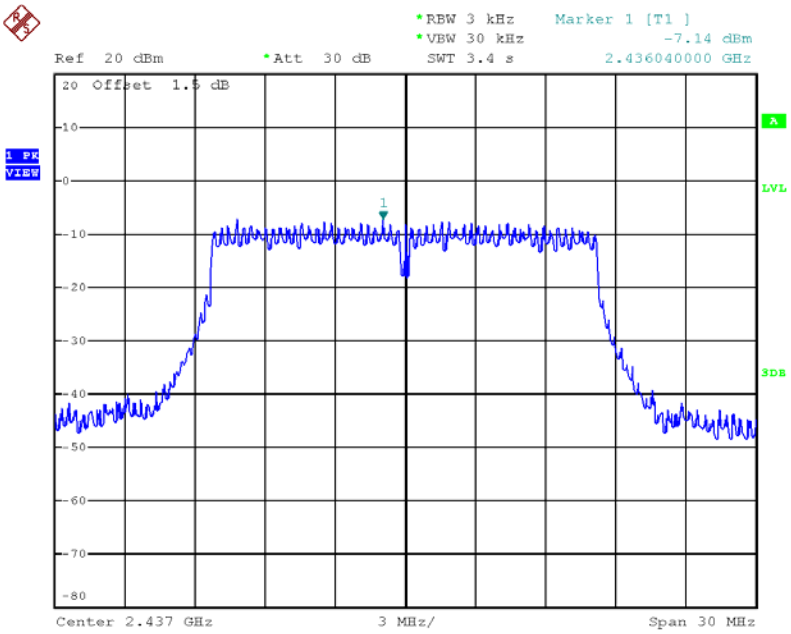
Date: 27.JUN.2013 20:44:02

Power Density Plot on Configuration IEEE 802.11b / Ant. 1 / 2437 MHz



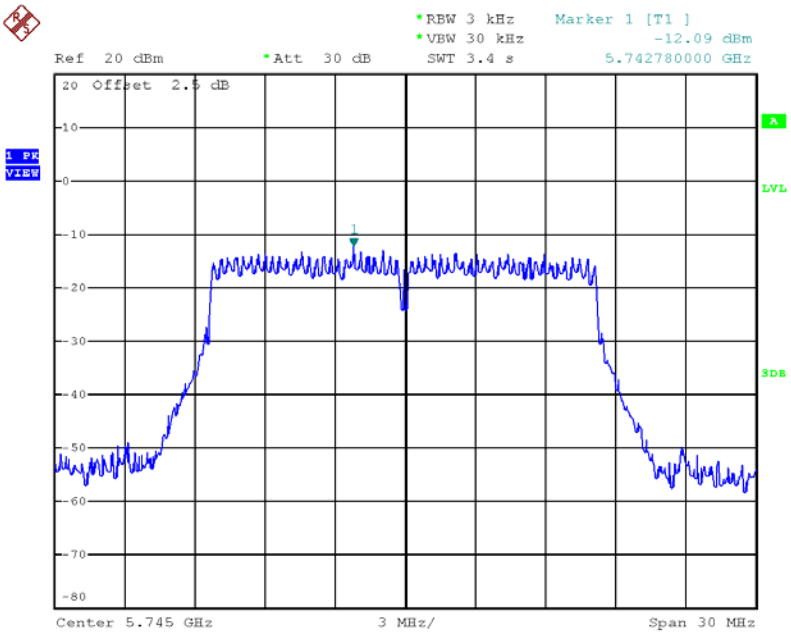
Date: 27.JUN.2013 18:30:39

Power Density Plot on Configuration IEEE 802.11g / Ant. 1 / 2437 MHz



Date: 27.JUN.2013 18:36:24

Power Density Plot on Configuration IEEE 802.11a / Ant. 4 / 5745 MHz



4.4. 6dB Spectrum Bandwidth Measurement

4.4.1. Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

4.4.2. Measuring Instruments and Setting

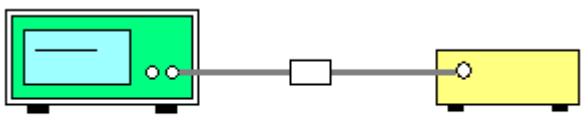
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB 558074 D01 v03 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 8.0 DTS 6-dB signal bandwidth option 1.
3. Multiple antenna system was performed in accordance with KDB 662911 D01 v02 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

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 continuously transmitting mode.

4.4.7. Test Result of 6dB Spectrum Bandwidth

Temperature	25°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 + Ant. 3

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	16.32	17.52	500	Complies
6	2437 MHz	12.56	17.60	500	Complies
11	2462 MHz	16.56	17.28	500	Complies

Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 + Ant. 3

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
3	2422 MHz	33.60	35.68	500	Complies
6	2437 MHz	27.52	35.84	500	Complies
9	2452 MHz	34.56	35.52	500	Complies

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Ant. 4 + Ant. 5 + Ant. 6

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	17.76	17.84	500	Complies
157	5785 MHz	17.36	17.60	500	Complies
165	5825 MHz	17.68	17.76	500	Complies

Configuration IEEE 802.11n MCS0 40MHz / Ant. 4 + Ant. 5 + Ant. 6

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
151	5755 MHz	27.20	36.00	500	Complies
159	5795 MHz	32.48	36.00	500	Complies

Temperature	25°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a/b/g

Configuration IEEE 802.11b / Ant. 1

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	12.08	15.20	500	Complies
6	2437 MHz	12.08	15.36	500	Complies
11	2462 MHz	12.16	15.12	500	Complies

Configuration IEEE 802.11g / Ant. 1

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	16.56	16.48	500	Complies
6	2437 MHz	16.56	16.56	500	Complies
11	2462 MHz	16.56	16.40	500	Complies

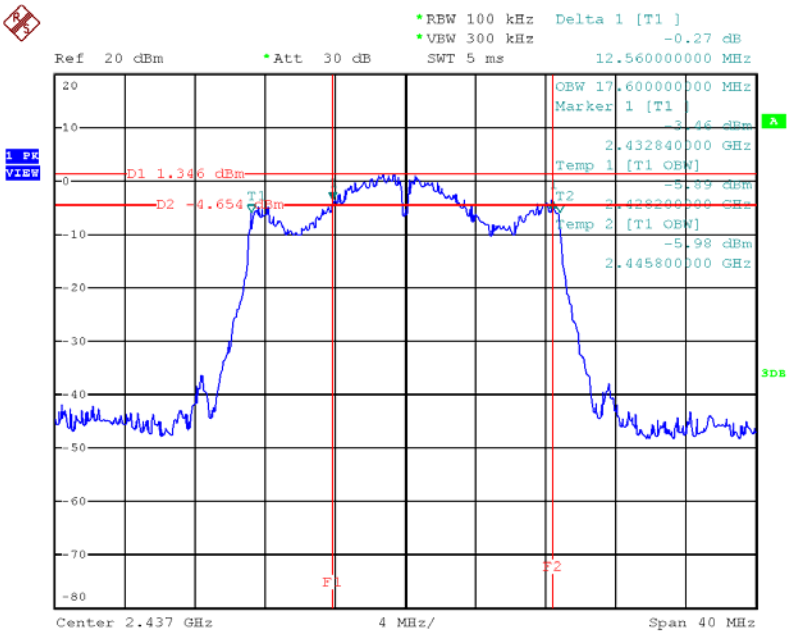
Configuration IEEE 802.11a / Ant. 4

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	16.56	16.48	500	Complies
157	5785 MHz	16.48	16.48	500	Complies
165	5825 MHz	16.56	16.48	500	Complies

Note: All the test values were listed in the report.

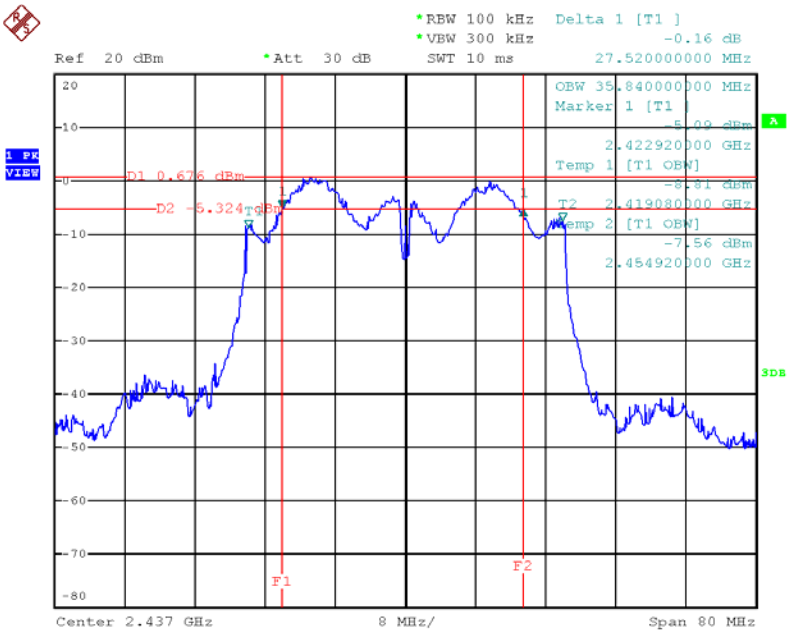
For plots, only the channel with maximum results was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 + Ant. 3 / 2437 MHz



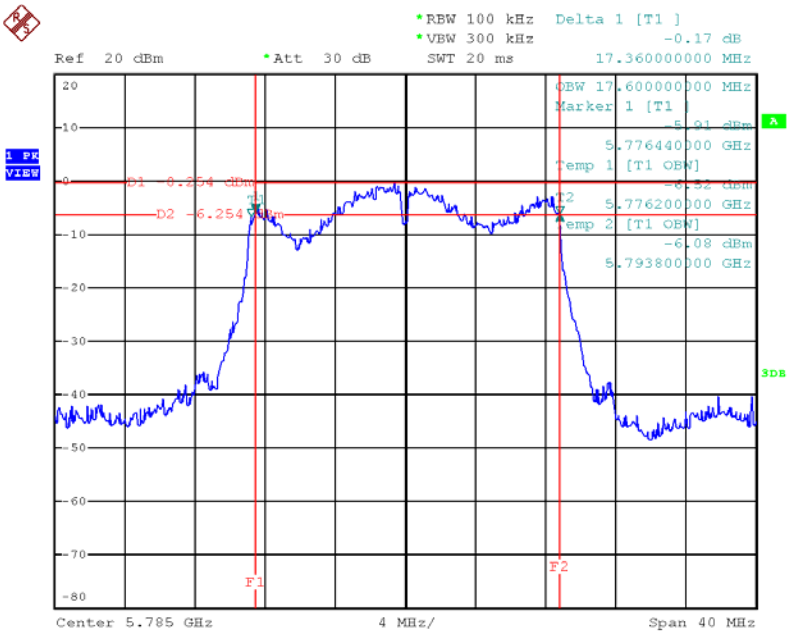
Date: 27.JUN.2013 19:25:12

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 + Ant. 3 / 2437 MHz



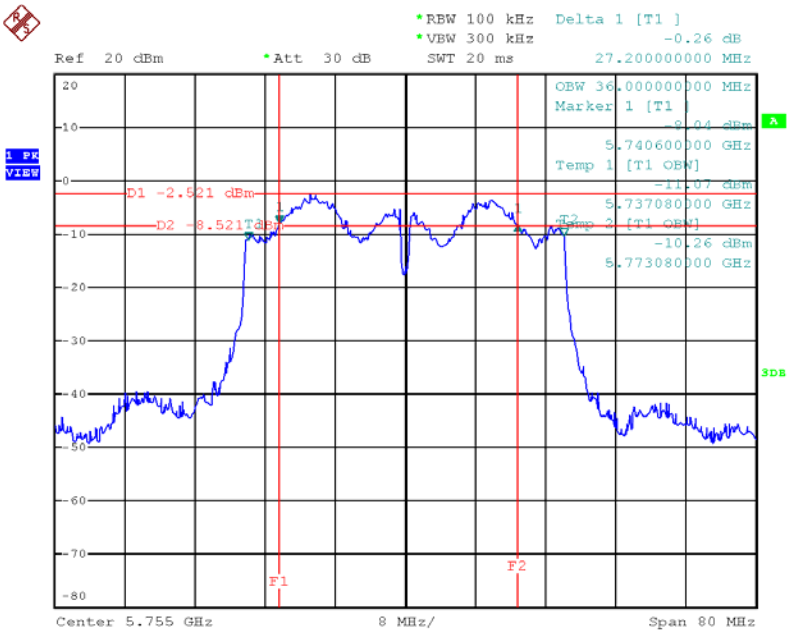
Date: 27.JUN.2013 19:19:31

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 4 + Ant. 5 + Ant. 6 / 5785MHz



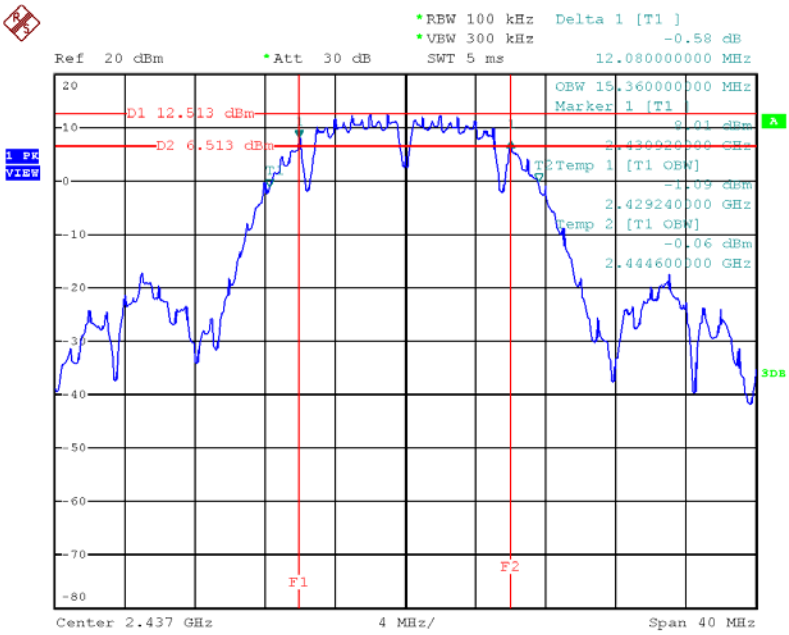
Date: 27.JUN.2013 21:02:32

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 4 + Ant. 5 + Ant. 6 / 5755MHz



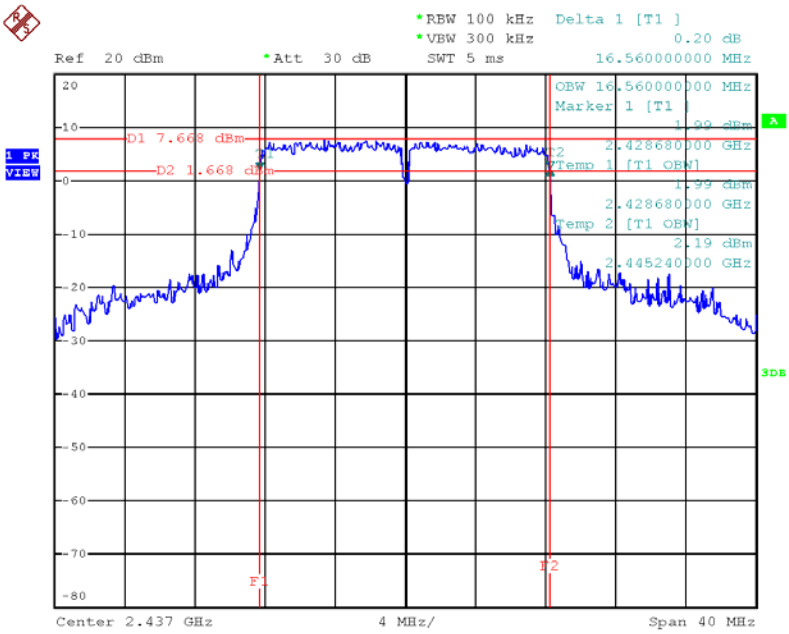
Date: 27.JUN.2013 20:57:47

6 dB Bandwidth Plot on Configuration IEEE 802.11b / Ant. 1 / 2437 MHz



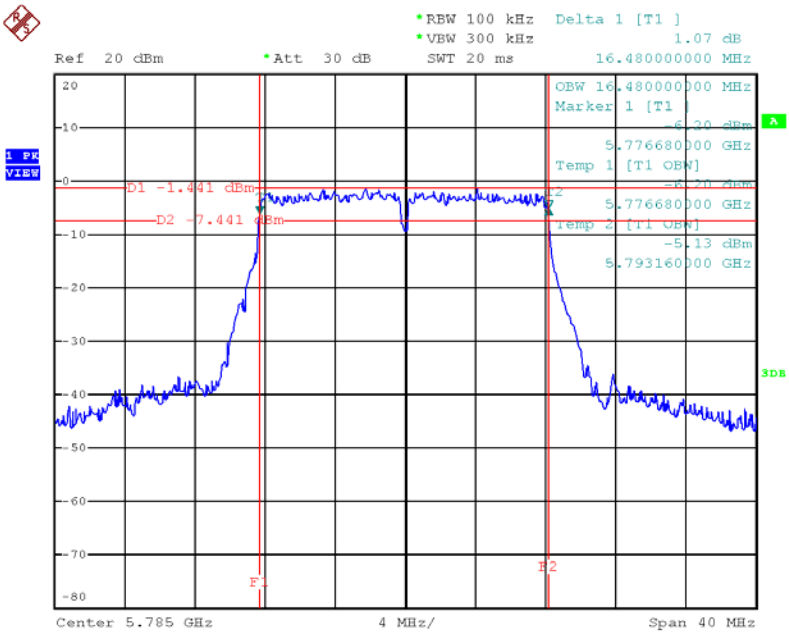
Date: 27.JUN.2013 19:30:09

6 dB Bandwidth Plot on Configuration IEEE 802.11g / Ant. 1 / 2437 MHz



Date: 27.JUN.2013 19:37:05

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Ant. 4 / 5785 MHz



4.5. Radiated Emissions Measurement

4.5.1. Limit

30dBc 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

4.5.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 10Hz for Average
RBW / VBW (Emission in non-restricted band)	100kHz / 300kHz for peak

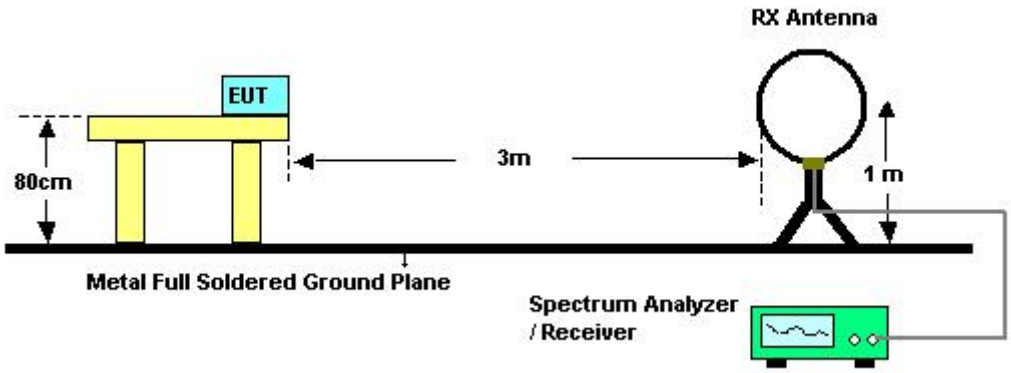
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.5.3. Test Procedures

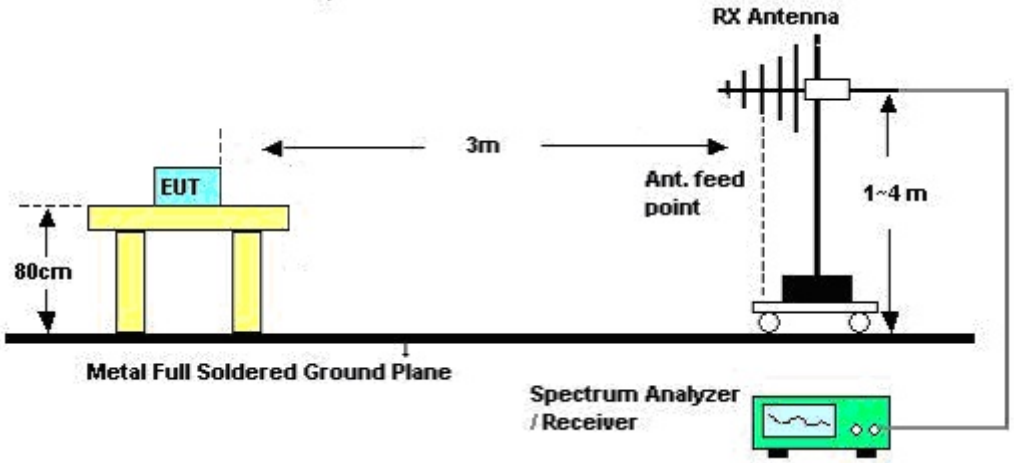
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

4.5.4. Test Setup Layout

For radiated emissions below 1GHz



For radiated emissions above 1GHz



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 continuously transmitting mode.

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

Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	Normal Link
Test Date	Jun. 27, 2013		

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

Note:

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

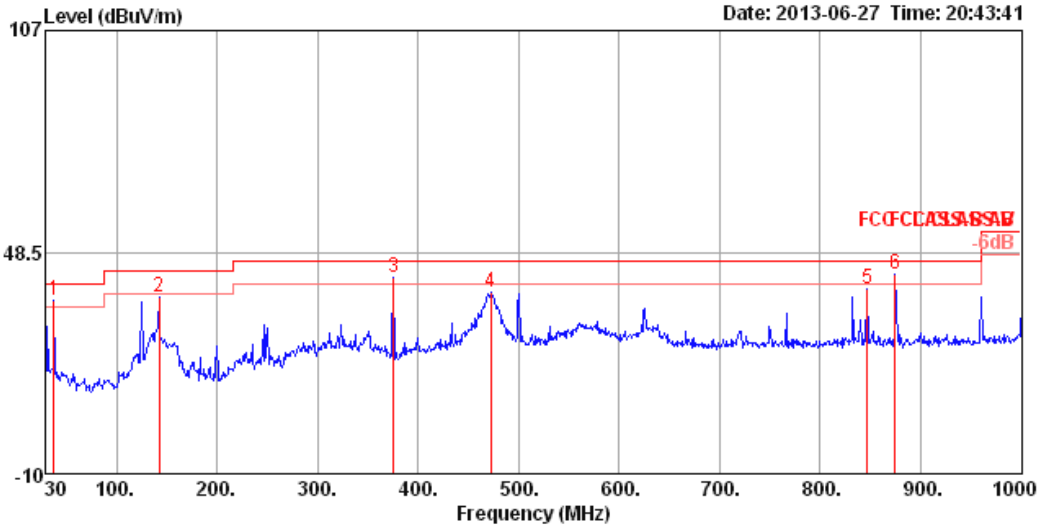
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

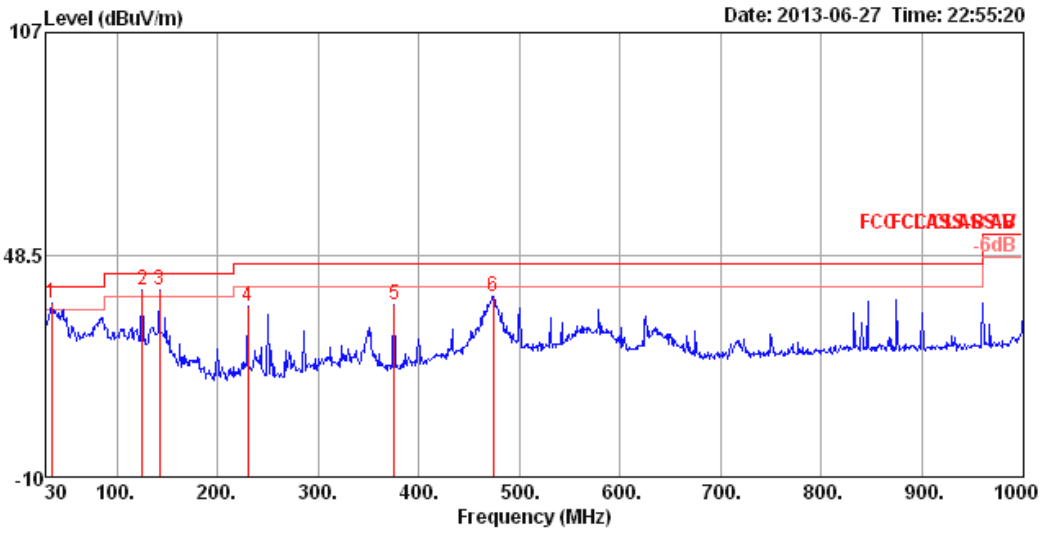
Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	Normal Link

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	!	37.76	35.81	40.00	-4.19	53.19	0.72	13.78	31.88	125	267	HORIZONTAL	Peak
2		142.52	36.58	43.50	-6.92	56.03	1.42	10.66	31.53	200	117	HORIZONTAL	Peak
3	!	375.32	41.85	46.00	-4.15	55.91	2.44	14.93	31.43	125	79	HORIZONTAL	Peak
4		472.32	37.72	46.00	-8.28	49.53	2.71	16.71	31.23	100	248	HORIZONTAL	Peak
5		846.74	38.87	46.00	-7.13	46.05	3.79	20.24	31.21	100	101	HORIZONTAL	Peak
6	pp	874.87	42.50	46.00	-3.50	49.52	3.89	20.24	31.15	125	282	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	!	34.85	35.70	40.00	-4.30	51.66	0.69	15.23	31.88	100	265	VERTICAL	Peak
2	pp	125.06	39.38	43.50	-4.12	57.89	1.33	11.73	31.57	100	190	VERTICAL	Peak
3	!	142.52	39.25	43.50	-4.25	58.70	1.42	10.66	31.53	100	355	VERTICAL	Peak
4		229.82	34.83	46.00	-11.17	54.72	1.83	9.73	31.45	100	315	VERTICAL	Peak
5		375.32	35.27	46.00	-10.73	49.33	2.44	14.93	31.43	125	30	VERTICAL	Peak
6		474.26	37.35	46.00	-8.65	49.12	2.71	16.74	31.22	100	231	VERTICAL	Peak

Note:

The amplitude of spurious emissions that 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.

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

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz Ch 1 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4821.71	32.42	54.00	-21.58	28.36	5.87	33.39	35.20	Average	100	207	HORIZONTAL
2	4824.86	45.53	74.00	-28.47	41.47	5.87	33.39	35.20	Peak	100	207	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4824.86	32.24	54.00	-21.76	28.18	5.87	33.39	35.20	Average	100	153	VERTICAL
2	4825.03	45.57	74.00	-28.43	41.51	5.87	33.39	35.20	Peak	100	153	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz Ch 6 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4871.60	46.01	74.00	-27.99	41.81	5.92	33.48	35.20	Peak	100	167	HORIZONTAL
2	4873.16	32.76	54.00	-21.24	28.56	5.92	33.48	35.20	Average	100	167	HORIZONTAL
3	7309.45	47.47	74.00	-26.53	39.26	7.13	36.51	35.43	Peak	100	193	HORIZONTAL
4	7310.53	35.38	54.00	-18.62	27.17	7.13	36.51	35.43	Average	100	193	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4875.42	32.92	54.00	-21.08	28.72	5.92	33.48	35.20	Average	100	245	VERTICAL
2	4876.10	46.29	74.00	-27.71	42.09	5.92	33.48	35.20	Peak	100	245	VERTICAL
3	7309.64	34.91	54.00	-19.09	26.70	7.13	36.51	35.43	Average	100	297	VERTICAL
4	7312.83	47.81	74.00	-26.19	39.60	7.13	36.51	35.43	Peak	100	297	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz Ch 11 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4921.96	32.58	54.00	-21.42	28.23	5.97	33.58	35.20	Average	100	191	HORIZONTAL
2	4925.21	46.04	74.00	-27.96	41.69	5.97	33.58	35.20	Peak	100	191	HORIZONTAL
3	7385.93	35.74	54.00	-18.26	27.42	7.17	36.61	35.46	Average	100	228	HORIZONTAL
4	7385.97	48.84	74.00	-25.16	40.52	7.17	36.61	35.46	Peak	100	228	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4922.61	45.46	74.00	-28.54	41.11	5.97	33.58	35.20	Peak	100	197	VERTICAL
2	4922.80	32.47	54.00	-21.53	28.12	5.97	33.58	35.20	Average	100	197	VERTICAL
3	7383.89	48.44	74.00	-25.56	40.12	7.17	36.61	35.46	Peak	100	162	VERTICAL
4	7388.50	35.72	54.00	-18.28	27.40	7.17	36.61	35.46	Average	100	162	VERTICAL

Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz Ch 3 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4843.53	44.94	74.00	-29.06	40.84	5.88	33.42	35.20	Peak	100	284	HORIZONTAL
2	4845.36	32.20	54.00	-21.80	28.10	5.88	33.42	35.20	Average	100	284	HORIZONTAL
3	7264.03	48.59	74.00	-25.41	40.47	7.10	36.43	35.41	Peak	100	328	HORIZONTAL
4	7266.97	35.70	54.00	-18.30	27.57	7.11	36.43	35.41	Average	100	328	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4844.87	32.29	54.00	-21.71	28.19	5.88	33.42	35.20	Average	100	229	VERTICAL
2	4845.47	44.39	74.00	-29.61	40.29	5.88	33.42	35.20	Peak	100	229	VERTICAL
3	7266.21	49.74	74.00	-24.26	41.61	7.11	36.43	35.41	Peak	100	190	VERTICAL
4	7266.76	35.30	54.00	-18.70	27.17	7.11	36.43	35.41	Average	100	190	VERTICAL

Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz Ch 6 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.30	45.15	74.00	-28.85	40.95	5.92	33.48	35.20	Peak	100	248	HORIZONTAL
2	4875.85	32.63	54.00	-21.37	28.43	5.92	33.48	35.20	Average	100	248	HORIZONTAL
3	7308.61	50.44	74.00	-23.56	42.23	7.13	36.51	35.43	Peak	100	196	HORIZONTAL
4	7311.18	34.75	54.00	-19.25	26.54	7.13	36.51	35.43	Average	100	196	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.58	45.20	74.00	-28.80	41.00	5.92	33.48	35.20	Peak	100	115	VERTICAL
2	4873.98	32.56	54.00	-21.44	28.36	5.92	33.48	35.20	Average	100	115	VERTICAL
3	7311.38	47.61	74.00	-26.39	39.40	7.13	36.51	35.43	Peak	100	131	VERTICAL
4	7312.91	35.21	54.00	-18.79	27.00	7.13	36.51	35.43	Average	100	131	VERTICAL

Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz Ch 9 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4904.84	32.86	54.00	-21.14	28.57	5.95	33.54	35.20	Average	100	167	HORIZONTAL
2	4905.50	45.79	74.00	-28.21	41.50	5.95	33.54	35.20	Peak	100	167	HORIZONTAL
3	7354.00	49.15	74.00	-24.85	40.87	7.16	36.56	35.44	Peak	100	216	HORIZONTAL
4	7354.82	35.73	54.00	-18.27	27.45	7.16	36.56	35.44	Average	100	216	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4904.95	46.46	74.00	-27.54	42.17	5.95	33.54	35.20	Peak	100	173	VERTICAL
2	4906.21	32.64	54.00	-21.36	28.35	5.95	33.54	35.20	Average	100	173	VERTICAL
3	7354.86	35.72	54.00	-18.28	27.44	7.16	36.56	35.44	Average	100	158	VERTICAL
4	7355.41	48.39	74.00	-25.61	40.11	7.16	36.56	35.44	Peak	100	158	VERTICAL

Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 149 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5446.36	51.73	54.00	-2.27	46.00	6.33	34.60	35.20	Average	100	279	HORIZONTAL
2	5455.82	63.91	74.00	-10.09	58.15	6.33	34.63	35.20	Peak	100	279	HORIZONTAL
3	10925.14	53.63	74.00	-20.37	40.04	8.88	39.57	34.86	Peak	100	314	HORIZONTAL
4	11004.34	40.98	54.00	-13.02	27.35	8.93	39.50	34.80	Average	100	314	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5456.70	51.94	54.00	-2.06	46.18	6.33	34.63	35.20	Average	100	35	VERTICAL
2	5456.92	64.04	74.00	-9.96	58.28	6.33	34.63	35.20	Peak	100	35	VERTICAL
3	10968.26	53.12	74.00	-20.88	39.51	8.90	39.53	34.82	Peak	100	255	VERTICAL
4	11003.24	41.34	54.00	-12.66	27.71	8.93	39.50	34.80	Average	100	255	VERTICAL

Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 157 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5387.18	51.79	54.00	-2.21	46.22	6.28	34.49	35.20	Average	100	264	HORIZONTAL
2	5389.82	63.23	74.00	-10.77	57.66	6.28	34.49	35.20	Peak	100	264	HORIZONTAL
3	11579.46	42.05	54.00	-11.95	28.40	9.26	39.47	35.08	Average	100	151	HORIZONTAL
4	11608.94	53.91	74.00	-20.09	40.26	9.27	39.46	35.08	Peak	100	151	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5357.04	52.31	54.00	-1.69	46.83	6.26	34.42	35.20	Average	100	281	VERTICAL
2	5383.66	64.99	74.00	-9.01	59.42	6.28	34.49	35.20	Peak	100	281	VERTICAL
3	11565.82	54.70	74.00	-19.30	41.05	9.26	39.48	35.09	Peak	100	108	VERTICAL
4	11569.34	44.52	54.00	-9.48	30.88	9.26	39.47	35.09	Average	100	108	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 165 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jun. 10, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5438.88	63.05	74.00	-10.95	57.33	6.32	34.60	35.20	Peak	100	287	HORIZONTAL
2	5449.44	49.87	54.00	-4.13	44.14	6.33	34.60	35.20	Average	100	287	HORIZONTAL
3	11621.18	53.55	74.00	-20.45	39.91	9.27	39.45	35.08	Peak	100	240	HORIZONTAL
4	11655.72	41.84	54.00	-12.16	28.19	9.28	39.44	35.07	Average	100	240	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5410.28	64.42	74.00	-9.58	58.80	6.29	34.53	35.20	Peak	100	34	VERTICAL
2	5456.48	52.57	54.00	-1.43	46.81	6.33	34.63	35.20	Average	100	34	VERTICAL
3	11648.46	54.33	74.00	-19.67	40.68	9.28	39.44	35.07	Peak	100	282	VERTICAL
4	11649.12	42.59	54.00	-11.41	28.94	9.28	39.44	35.07	Average	100	282	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 151 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jun. 10, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5449.22	63.94	74.00	-10.06	58.21	6.33	34.60	35.20	Peak	100	280	HORIZONTAL
2	5450.32	51.84	54.00	-2.16	46.08	6.33	34.63	35.20	Average	112	280	HORIZONTAL
3	10765.34	50.98	74.00	-23.02	37.48	8.75	39.74	34.99	Peak	100	149	HORIZONTAL
4	10799.88	41.54	54.00	-12.46	28.02	8.78	39.71	34.97	Average	100	149	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5358.36	52.11	54.00	-1.89	46.63	6.26	34.42	35.20	Average	100	280	VERTICAL
2	5388.72	63.91	74.00	-10.09	58.34	6.28	34.49	35.20	Peak	100	280	VERTICAL
3	10757.42	41.02	54.00	-12.98	27.52	8.75	39.74	34.99	Average	100	238	VERTICAL
4	10835.96	53.11	74.00	-20.89	39.56	8.82	39.66	34.93	Peak	100	238	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 159 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jun. 10, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5449.22	51.87	54.00	-2.13	46.14	6.33	34.60	35.20	Average	100	290	HORIZONTAL
2	5451.20	64.01	74.00	-9.99	58.25	6.33	34.63	35.20	Peak	100	290	HORIZONTAL
3	10800.10	41.09	54.00	-12.91	27.57	8.78	39.71	34.97	Average	100	193	HORIZONTAL
4	10852.68	53.34	74.00	-20.66	39.80	8.83	39.64	34.93	Peak	100	193	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5352.42	64.30	74.00	-9.70	58.82	6.26	34.42	35.20	Peak	100	284	VERTICAL
2	5356.16	52.55	54.00	-1.45	47.07	6.26	34.42	35.20	Average	100	284	VERTICAL
3	10769.52	40.96	54.00	-13.04	27.47	8.76	39.72	34.99	Average	100	274	VERTICAL
4	10819.24	52.90	74.00	-21.10	39.38	8.80	39.67	34.95	Peak	100	274	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11b CH 1 / Ant. 1
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.93	46.44	54.00	-7.56	42.38	5.87	33.39	35.20	Average	130	126	HORIZONTAL
2	4823.97	50.99	74.00	-23.01	46.93	5.87	33.39	35.20	Peak	130	126	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.91	43.54	54.00	-10.46	39.48	5.87	33.39	35.20	Average	100	265	VERTICAL
2	4824.01	49.04	74.00	-24.96	44.98	5.87	33.39	35.20	Peak	100	265	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11b CH 6 / Ant. 1
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.94	51.80	54.00	-2.20	47.60	5.92	33.48	35.20	Average	100	144	HORIZONTAL
2	4873.98	54.27	74.00	-19.73	50.07	5.92	33.48	35.20	Peak	100	144	HORIZONTAL
3	7309.05	35.38	54.00	-18.62	27.17	7.13	36.51	35.43	Average	100	308	HORIZONTAL
4	7311.74	47.64	74.00	-26.36	39.43	7.13	36.51	35.43	Peak	100	308	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.94	47.14	54.00	-6.86	42.94	5.92	33.48	35.20	Average	100	264	VERTICAL
2	4873.94	51.67	74.00	-22.33	47.47	5.92	33.48	35.20	Peak	100	264	VERTICAL
3	7309.28	47.78	74.00	-26.22	39.57	7.13	36.51	35.43	Peak	100	254	VERTICAL
4	7309.88	35.06	54.00	-18.94	26.85	7.13	36.51	35.43	Average	100	254	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11b CH 11 / Ant. 1
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4923.96	51.51	74.00	-22.49	47.16	5.97	33.58	35.20	Peak	111	145	HORIZONTAL
2	4923.97	47.07	54.00	-6.93	42.72	5.97	33.58	35.20	Average	45	145	HORIZONTAL
3	7386.44	35.47	54.00	-18.53	27.15	7.17	36.61	35.46	Average	100	238	HORIZONTAL
4	7388.23	49.10	74.00	-24.90	40.78	7.17	36.61	35.46	Peak	100	238	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4923.96	43.83	54.00	-10.17	39.48	5.97	33.58	35.20	Average	119	272	VERTICAL
2	4924.17	49.94	74.00	-24.06	45.59	5.97	33.58	35.20	Peak	119	272	VERTICAL
3	7386.29	35.74	54.00	-18.26	27.42	7.17	36.61	35.46	Average	100	226	VERTICAL
4	7386.53	48.62	74.00	-25.38	40.30	7.17	36.61	35.46	Peak	100	226	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11g CH 1 / Ant. 1
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.30	45.56	74.00	-28.44	41.50	5.87	33.39	35.20	Peak	100	360	HORIZONTAL
2	4823.79	33.41	54.00	-20.59	29.35	5.87	33.39	35.20	Average	100	360	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.64	45.97	74.00	-28.03	41.91	5.87	33.39	35.20	Peak	100	260	VERTICAL
2	4823.97	32.83	54.00	-21.17	28.77	5.87	33.39	35.20	Average	100	260	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11g CH 6 / Ant. 1
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4846.52	45.72	74.00	-28.28	41.62	5.88	33.42	35.20	Peak	100	162	HORIZONTAL
2	4848.18	32.37	54.00	-21.63	28.27	5.88	33.42	35.20	Average	100	162	HORIZONTAL
3	7260.58	49.02	74.00	-24.98	40.90	7.10	36.43	35.41	Peak	100	205	HORIZONTAL
4	7261.15	35.57	54.00	-18.43	27.45	7.10	36.43	35.41	Average	100	205	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4847.24	45.56	74.00	-28.44	41.46	5.88	33.42	35.20	Peak	100	185	VERTICAL
2	4847.34	32.08	54.00	-21.92	27.98	5.88	33.42	35.20	Average	100	185	VERTICAL
3	7261.32	48.33	74.00	-25.67	40.21	7.10	36.43	35.41	Peak	100	248	VERTICAL
4	7261.57	35.56	54.00	-18.44	27.44	7.10	36.43	35.41	Average	100	248	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11g CH 11 / Ant. 1
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4874.47	46.07	74.00	-27.93	41.87	5.92	33.48	35.20	Peak	100	224	HORIZONTAL
2	4876.46	32.84	54.00	-21.16	28.64	5.92	33.48	35.20	Average	100	224	HORIZONTAL
3	7283.94	35.64	54.00	-18.36	27.49	7.12	36.45	35.42	Average	100	190	HORIZONTAL
4	7286.68	48.49	74.00	-25.51	40.34	7.12	36.45	35.42	Peak	100	190	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4872.40	45.77	74.00	-28.23	41.57	5.92	33.48	35.20	Peak	100	212	VERTICAL
2	4874.78	32.72	54.00	-21.28	28.52	5.92	33.48	35.20	Average	100	212	VERTICAL
3	7283.65	35.63	54.00	-18.37	27.48	7.12	36.45	35.42	Average	100	212	VERTICAL
4	7284.72	48.46	74.00	-25.54	40.31	7.12	36.45	35.42	Peak	100	212	VERTICAL

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 149 / Ant. 4
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5394.44	57.33	74.00	-16.67	51.76	6.28	34.49	35.20	Peak	100	294	HORIZONTAL
2	5395.54	44.87	54.00	-9.13	39.29	6.29	34.49	35.20	Average	100	294	HORIZONTAL
3	11490.20	53.64	74.00	-20.36	39.98	9.24	39.50	35.08	Peak	100	209	HORIZONTAL
4	11500.20	41.63	54.00	-12.37	27.98	9.25	39.50	35.10	Average	100	209	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5440.86	65.44	74.00	-8.56	59.72	6.32	34.60	35.20	Peak	113	35	VERTICAL
2	5453.84	51.70	54.00	-2.30	45.94	6.33	34.63	35.20	Average	113	35	VERTICAL
3	11474.30	53.54	74.00	-20.46	39.89	9.23	39.50	35.08	Peak	100	138	VERTICAL
4	11493.00	42.98	54.00	-11.02	29.32	9.24	39.50	35.08	Average	100	138	VERTICAL

Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 157 / Ant. 4
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5387.84	56.31	74.00	-17.69	50.74	6.28	34.49	35.20	Peak	115	307	HORIZONTAL
2	5393.34	44.10	54.00	-9.90	38.53	6.28	34.49	35.20	Average	115	307	HORIZONTAL
3	11547.60	53.99	74.00	-20.01	40.33	9.26	39.49	35.09	Peak	100	275	HORIZONTAL
4	11562.30	41.54	54.00	-12.46	27.89	9.26	39.48	35.09	Average	100	275	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5411.38	64.08	74.00	-9.92	58.46	6.29	34.53	35.20	Peak	114	35	VERTICAL
2	5411.60	52.03	54.00	-1.97	46.39	6.31	34.53	35.20	Average	114	35	VERTICAL
3	11570.80	41.68	54.00	-12.32	28.04	9.26	39.47	35.09	Average	100	360	VERTICAL
4	11572.60	54.40	74.00	-19.60	40.75	9.26	39.47	35.08	Peak	100	360	VERTICAL

Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 165 / Ant. 4
Test Date	Jun. 08, 2013		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5439.98	54.59	74.00	-19.41	48.87	6.32	34.60	35.20	Peak	100	161	HORIZONTAL
2	5445.48	43.38	54.00	-10.62	37.66	6.32	34.60	35.20	Average	100	161	HORIZONTAL
3	11641.00	54.14	74.00	-19.86	40.49	9.28	39.44	35.07	Peak	100	171	HORIZONTAL
4	11645.00	41.58	54.00	-12.42	27.93	9.28	39.44	35.07	Average	100	171	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5446.80	51.89	54.00	-2.11	46.16	6.33	34.60	35.20	Average	114	35	VERTICAL
2	5458.02	64.31	74.00	-9.69	58.55	6.33	34.63	35.20	Peak	114	35	VERTICAL
3	11632.50	54.63	74.00	-19.37	40.98	9.27	39.45	35.07	Peak	100	230	VERTICAL
4	11648.80	41.54	54.00	-12.46	27.89	9.28	39.44	35.07	Average	100	230	VERTICAL

Note:

The amplitude of spurious emissions that 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. Emissions Measurement

4.6.1. Limit

30dBc 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 the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 10Hz for Average
RBW / VBW (Emission in non-restricted band)	100 kHz / 300 kHz for Peak

4.6.3. Test Procedures

For Radiated band edges Measurement:

1. The test procedure is the same as section 4.5.3, only the frequency range investigated is limited to 100MHz around band edges.

For Radiated Out of Band Emission Measurement:

1. Test was performed in accordance with KDB 558074 D01 v03 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 10.1 Unwanted Emissions into Non-Restricted Frequency Bands Measurement Procedure
2. The radiated emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit. Only worst data of each operating mode is presented.

4.6.4. Test Setup Layout

For Radiated band edges Measurement:

This test setup layout is the same as that shown in section 4.5.4.

For Radiated Out of Band Emission Measurement:

This test setup layout is the same as that shown in section 4.5.4.

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 continuously transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz Ch 1, 6, 11 / Ant. 1 + Ant. 2 + Ant. 3
Test date	Jun. 08, 2013 ~ Jun. 24, 2013		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	53.66	54.00	-0.34	21.52	4.09	28.05	0.00	Average	100	152	HORIZONTAL
2	2390.00	69.14	74.00	-4.86	37.00	4.09	28.05	0.00	Peak	100	152	HORIZONTAL
3	2413.60	103.50			71.30	4.11	28.09	0.00	Average	100	152	HORIZONTAL
4	2414.00	113.00			80.80	4.11	28.09	0.00	Peak	100	152	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2384.87	64.76	74.00	-9.24	34.38	2.21	28.17	0.00	Peak	103	360	VERTICAL
2	2385.19	53.79	54.00	-0.21	23.41	2.21	28.17	0.00	Average	103	360	VERTICAL
3	2444.05	100.89			70.36	2.24	28.29	0.00	Average	103	360	VERTICAL
4	2444.69	110.50			79.97	2.24	28.29	0.00	Peak	103	360	VERTICAL
5	2488.95	49.28	54.00	-4.72	18.61	2.26	28.41	0.00	Average	103	360	VERTICAL
6	2488.95	60.24	74.00	-13.76	29.57	2.26	28.41	0.00	Peak	103	360	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2459.80	115.44			83.08	4.14	28.22	0.00	Peak	106	348	VERTICAL
2	2460.40	105.58			73.22	4.14	28.22	0.00	Average	106	348	VERTICAL
3	2483.50	53.83	54.00	-0.17	21.41	4.16	28.26	0.00	Average	106	348	VERTICAL
4	2484.90	69.61	74.00	-4.39	37.19	4.16	28.26	0.00	Peak	106	348	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	24.5°C	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz Ch 3, 6, 9 / Ant. 1 + Ant. 2 + Ant. 3
Test date	Jun. 08, 2013 ~ Jun. 24, 2013		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2386.15	66.86	74.00	-7.14	36.48	2.21	28.17	0.00	Peak	119	228	VERTICAL
2	2390.00	53.75	54.00	-0.25	23.36	2.22	28.17	0.00	Average	119	228	VERTICAL
3	2408.22	107.86			77.43	2.22	28.21	0.00	Peak	119	228	VERTICAL
4	2408.54	98.17			67.74	2.22	28.21	0.00	Average	119	228	VERTICAL

Item 3, 4 are the fundamental frequency at 2422 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.80	66.72	74.00	-7.28	34.58	4.09	28.05	0.00	Peak	100	150	HORIZONTAL
2	2390.00	53.26	54.00	-0.74	21.12	4.09	28.05	0.00	Average	100	150	HORIZONTAL
3	2427.40	101.96			69.71	4.12	28.13	0.00	Average	100	150	HORIZONTAL
4	2429.40	111.64			79.39	4.12	28.13	0.00	Peak	100	150	HORIZONTAL
5	2483.50	48.80	54.00	-5.20	16.38	4.16	28.26	0.00	Average	100	150	HORIZONTAL
6	2483.50	61.22	74.00	-12.78	28.80	4.16	28.26	0.00	Peak	100	150	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2436.80	108.48			76.17	4.13	28.18	0.00	Peak	100	156	HORIZONTAL
2	2437.20	98.68			66.37	4.13	28.18	0.00	Average	100	156	HORIZONTAL
3	2483.50	53.34	54.00	-0.66	20.92	4.16	28.26	0.00	Average	100	156	HORIZONTAL
4	2483.50	64.93	74.00	-9.07	32.51	4.16	28.26	0.00	Peak	100	156	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2452 MHz.

Note:

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

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

Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11b CH 1, 6, 11 / Ant. 1
Test Date	Jun. 08, 2013		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2385.80	53.28	54.00	-0.72	21.14	4.09	28.05	0.00	Average	100	268	VERTICAL
2	2387.40	62.78	74.00	-11.22	30.64	4.09	28.05	0.00	Peak	100	268	VERTICAL
3	2413.00	108.85			76.65	4.11	28.09	0.00	Peak	100	268	VERTICAL
4	2413.80	105.16			72.96	4.11	28.09	0.00	Average	100	268	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.80	53.10	54.00	-0.90	20.96	4.09	28.05	0.00	Average	100	270	VERTICAL
2	2388.80	63.05	74.00	-10.95	30.91	4.09	28.05	0.00	Peak	100	270	VERTICAL
3	2434.60	112.57			80.27	4.12	28.18	0.00	Peak	100	270	VERTICAL
4	2435.40	108.89			76.59	4.12	28.18	0.00	Average	100	270	VERTICAL
5	2485.10	50.60	54.00	-3.40	18.14	4.16	28.30	0.00	Average	100	270	VERTICAL
6	2485.10	59.56	74.00	-14.44	27.10	4.16	28.30	0.00	Peak	100	270	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2460.20	104.77			72.41	4.14	28.22	0.00	Average	100	267	VERTICAL
2	2461.00	108.57			76.21	4.14	28.22	0.00	Peak	100	267	VERTICAL
3	2483.50	62.54	74.00	-11.46	30.12	4.16	28.26	0.00	Peak	100	267	VERTICAL
4	2487.70	53.69	54.00	-0.31	21.22	4.17	28.30	0.00	Average	100	267	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	24.5℃	Humidity	60%
Test Engineer	David Tseng	Configurations	IEEE 802.11g CH 1, 6, 11 / Ant. 1
Test Date	Jun. 08, 2013		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.00	69.34	74.00	-4.66	37.20	4.09	28.05	0.00	Peak	100	269	VERTICAL
2	2390.00	53.29	54.00	-0.71	21.15	4.09	28.05	0.00	Average	100	269	VERTICAL
3	2414.00	99.47			67.27	4.11	28.09	0.00	Average	100	269	VERTICAL
4	2416.60	108.84			76.64	4.11	28.09	0.00	Peak	100	269	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2384.40	53.96	54.00	-0.04	21.83	4.08	28.05	0.00	Average	100	269	VERTICAL
2	2384.40	64.09	74.00	-9.91	31.96	4.08	28.05	0.00	Peak	100	269	VERTICAL
3	2429.80	102.13			69.88	4.12	28.13	0.00	Average	100	269	VERTICAL
4	2430.60	111.42			79.17	4.12	28.13	0.00	Peak	100	269	VERTICAL
5	2489.50	50.11	54.00	-3.89	17.64	4.17	28.30	0.00	Average	100	269	VERTICAL
6	2489.90	60.47	74.00	-13.53	28.00	4.17	28.30	0.00	Peak	100	269	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

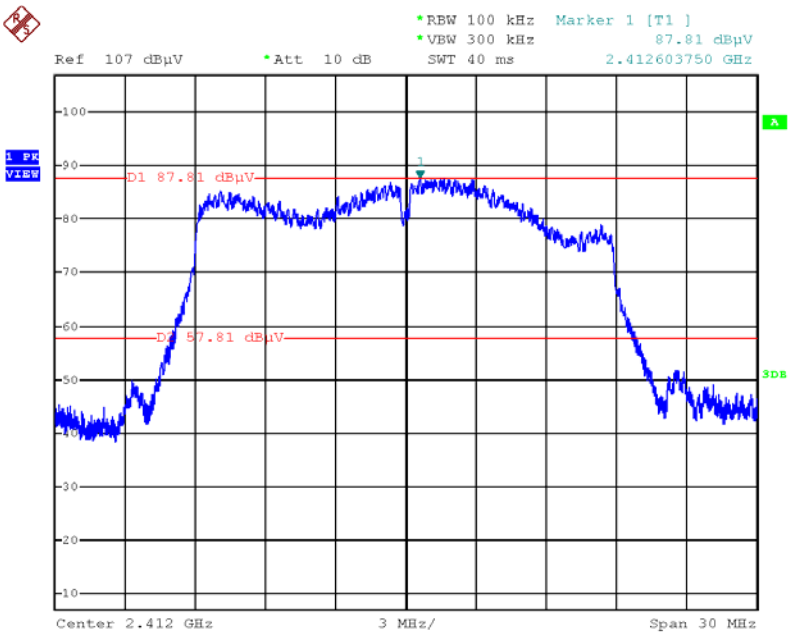
Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2460.60	99.11			66.75	4.14	28.22	0.00	Average	100	270	VERTICAL
2	2461.20	108.43			76.07	4.14	28.22	0.00	Peak	100	270	VERTICAL
3	2483.50	52.61	54.00	-1.39	20.19	4.16	28.26	0.00	Average	100	270	VERTICAL
4	2483.50	68.82	74.00	-5.18	36.40	4.16	28.26	0.00	Peak	100	270	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

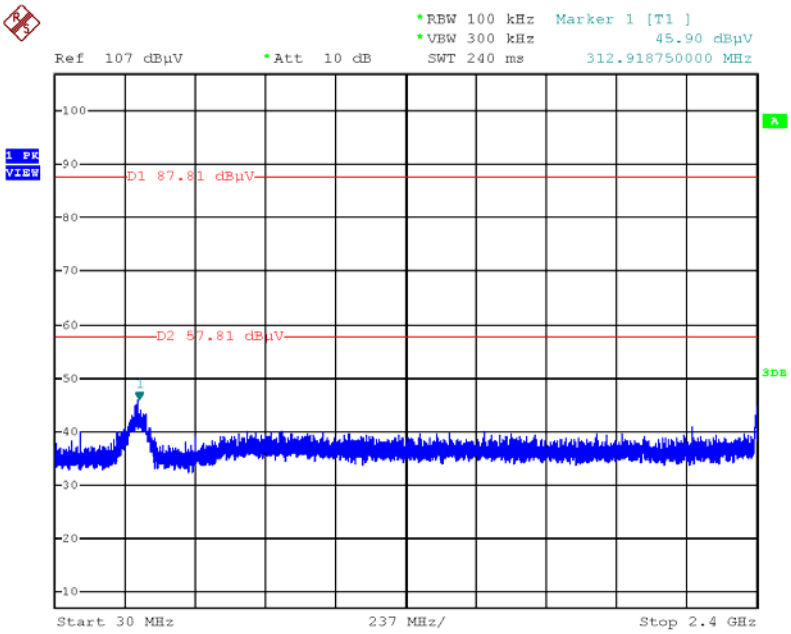
For Emission not in Restricted Band

Plot on Configuration IEEE 802.11n MCS0 20MHz / Reference Level



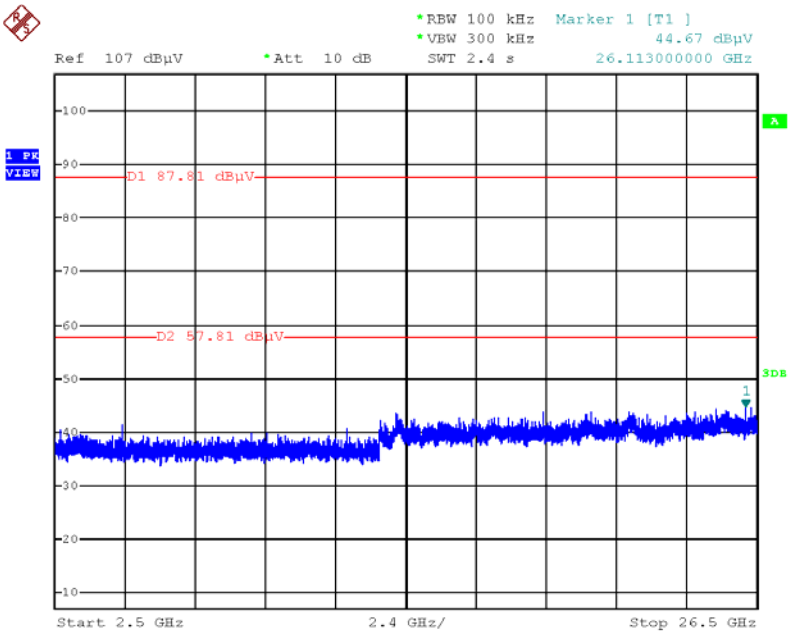
Date: 13.JUN.2013 12:16:52

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 1 / 30MHz~2400MHz (down 30dBc)



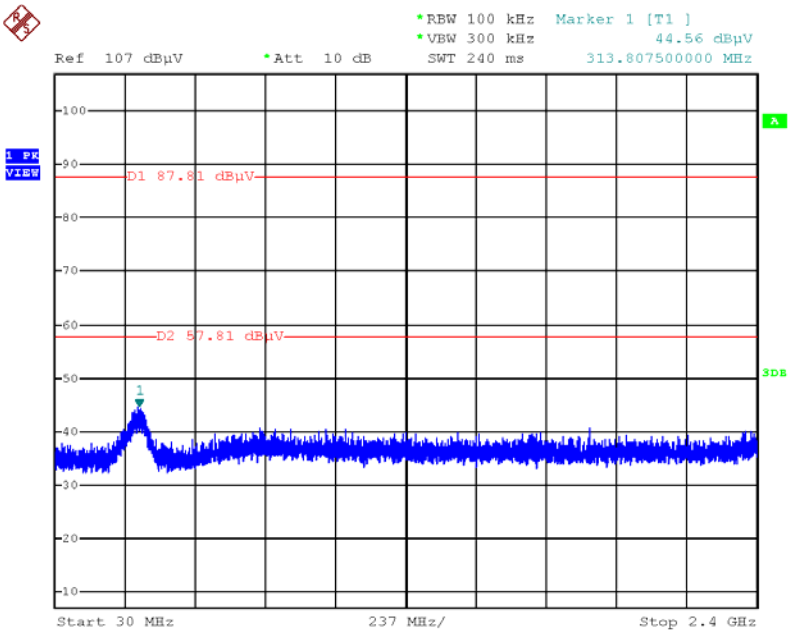
Date: 13.JUN.2013 12:17:25

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 1 / 2500MHz~26500MHz (down 30dBc)



Date: 13.JUN.2013 12:18:16

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 11 / 30MHz~2400MHz (down 30dBc)



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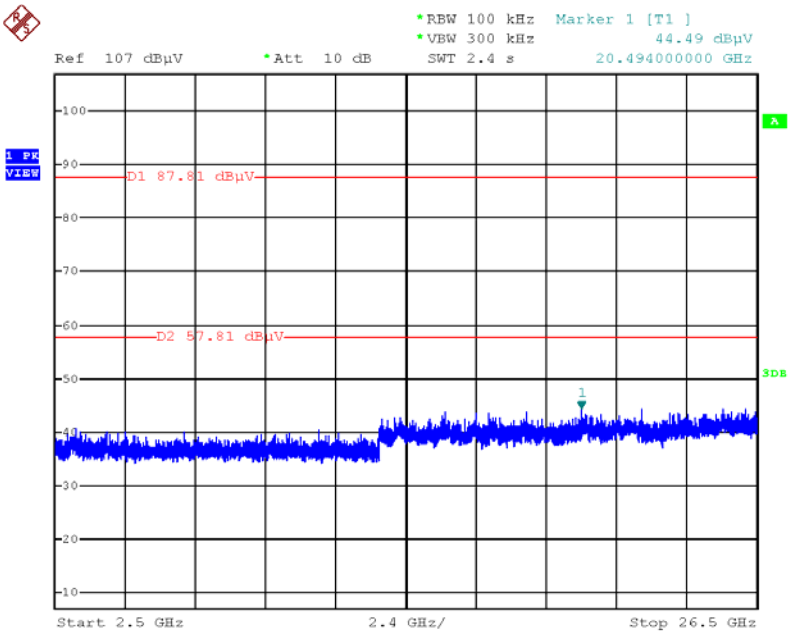
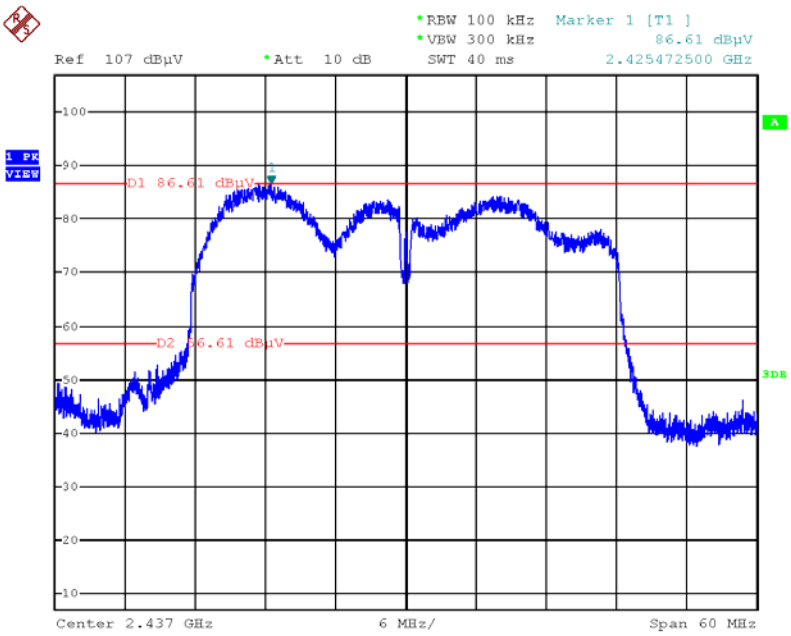
Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 11 / 2500MHz~26500MHz (down 30dBc)



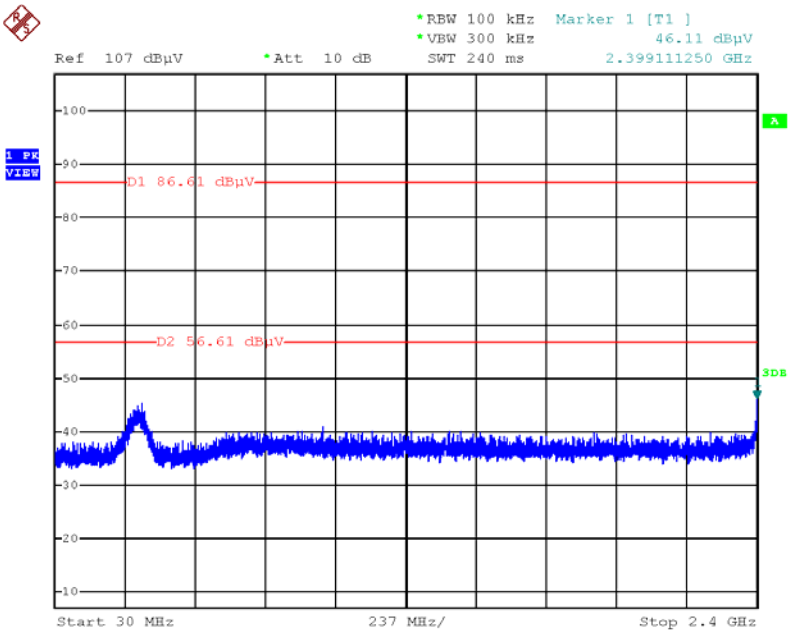
Date: 13.JUN.2013 12:22:12

Plot on Configuration IEEE 802.11n MCS0 40MHz / Reference Level



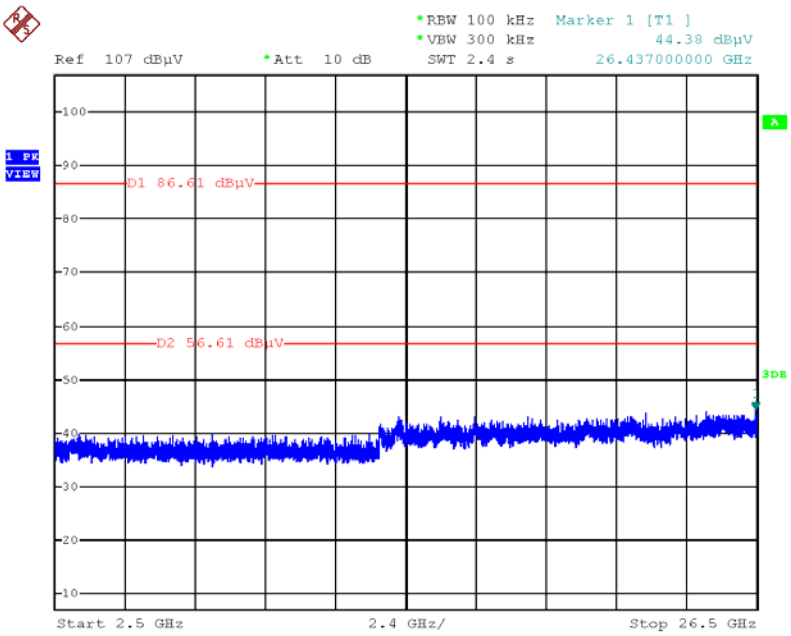
Date: 13.JUN.2013 12:25:29

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 3 / 30MHz~2400MHz (down 30dBc)



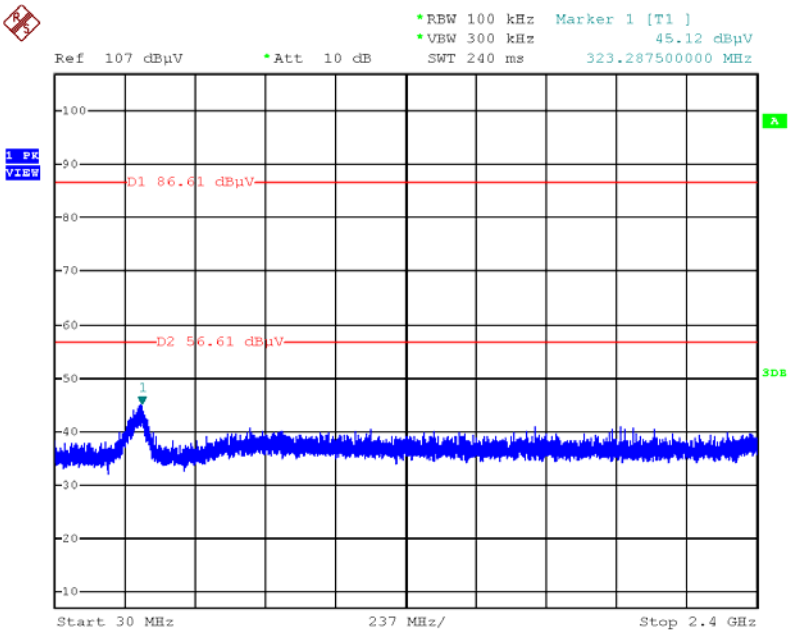
Date: 13.JUN.2013 12:28:10

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 3 / 2500MHz~26500MHz (down 30dBc)



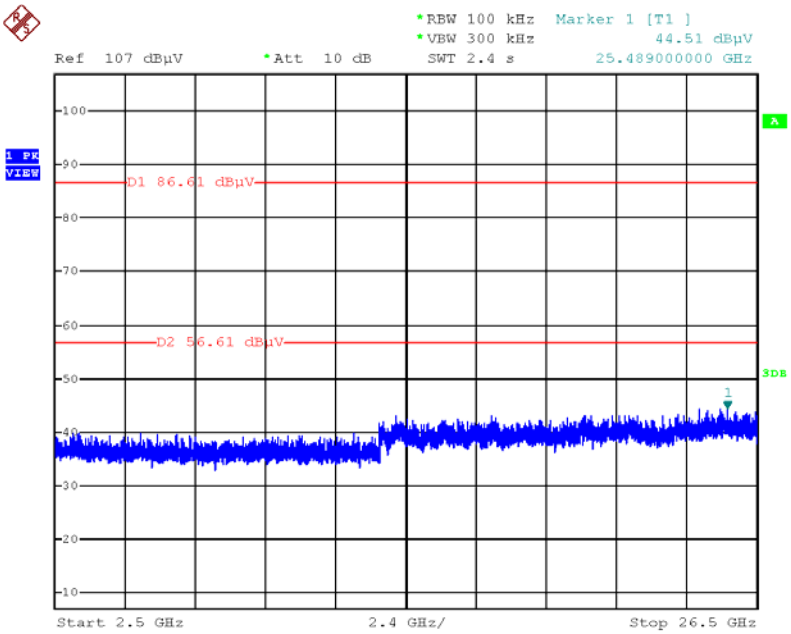
Date: 13.JUN.2013 12:28:49

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 9 / 30MHz~2400MHz (down 30dBc)



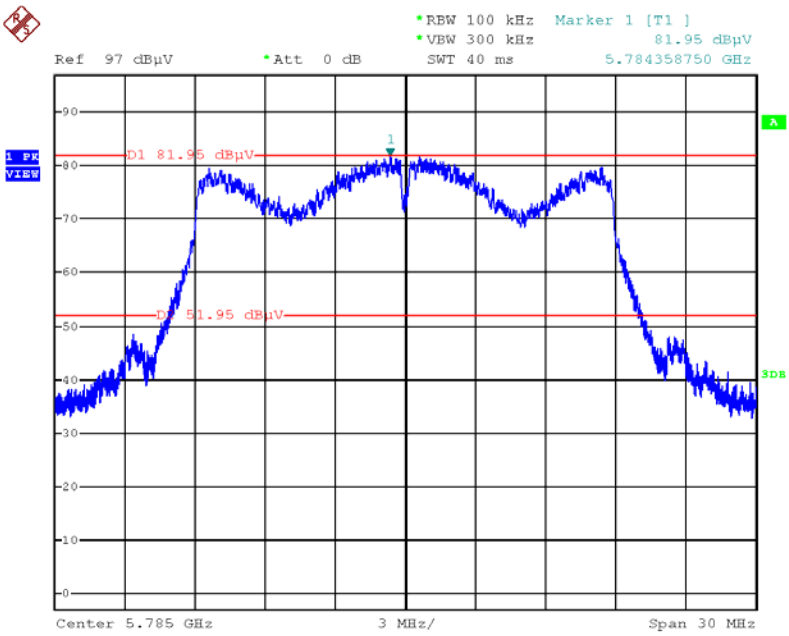
Date: 13.JUN.2013 12:32:27

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 9 / 2500MHz~26500MHz (down 30dBc)



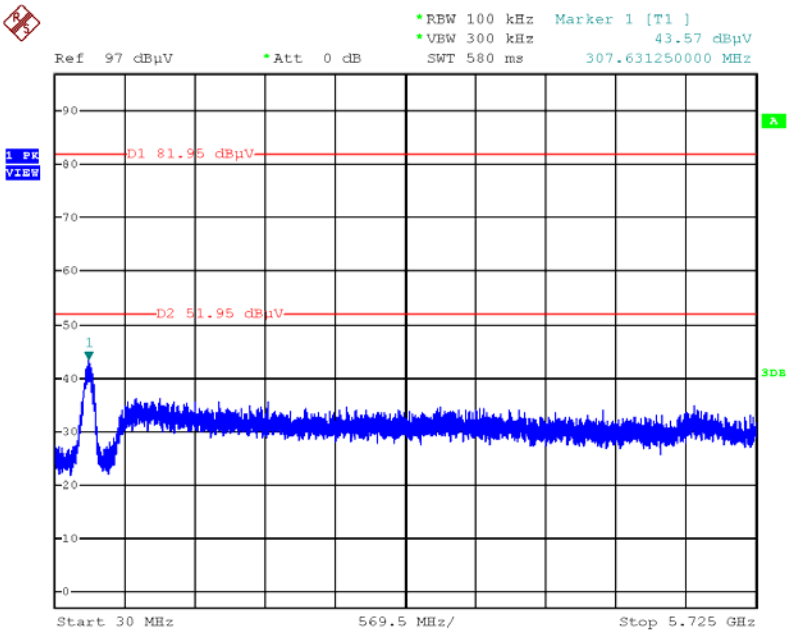
Date: 13.JUN.2013 12:33:00

Plot on Configuration IEEE 802.11n MCS0 20MHz / Reference Level



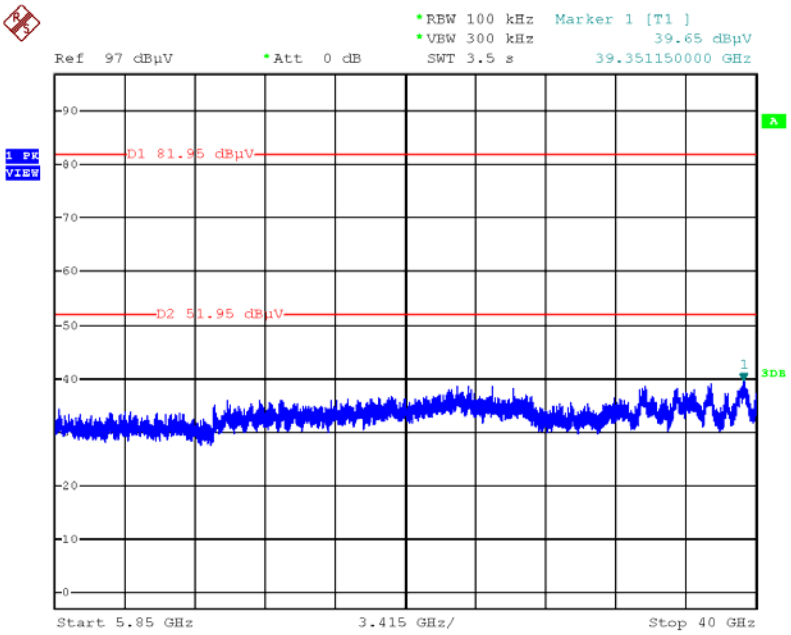
Date: 13.JUN.2013 13:09:26

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 149 / 30MHz~5725MHz (down 30dBc)



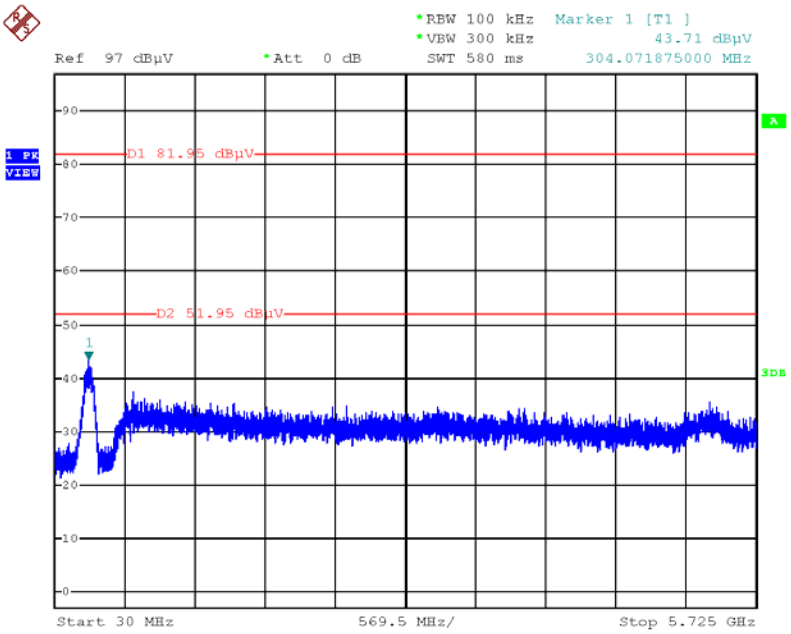
Date: 13.JUN.2013 13:12:44

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 149 / 5850MHz~40000MHz (down 30dBc)



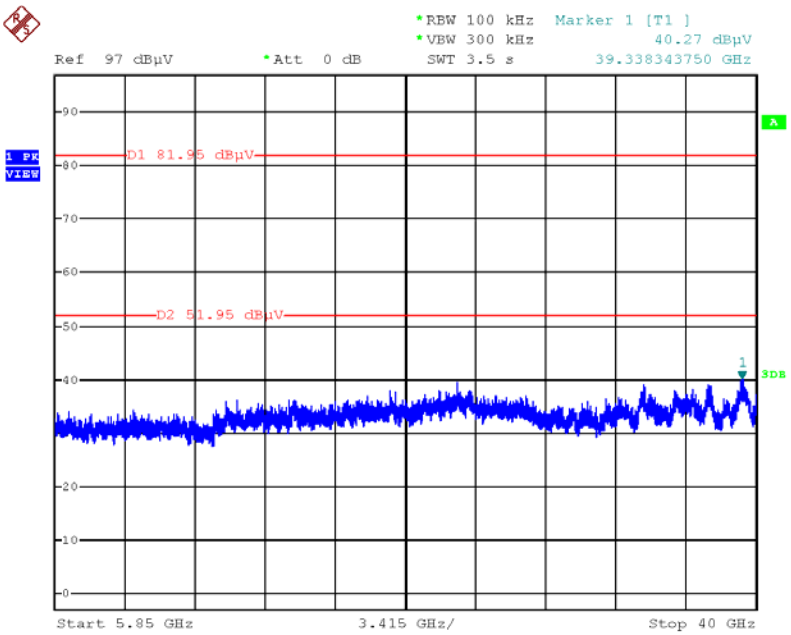
Date: 13.JUN.2013 13:13:18

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 165 / 30MHz~5725MHz (down 30dBc)



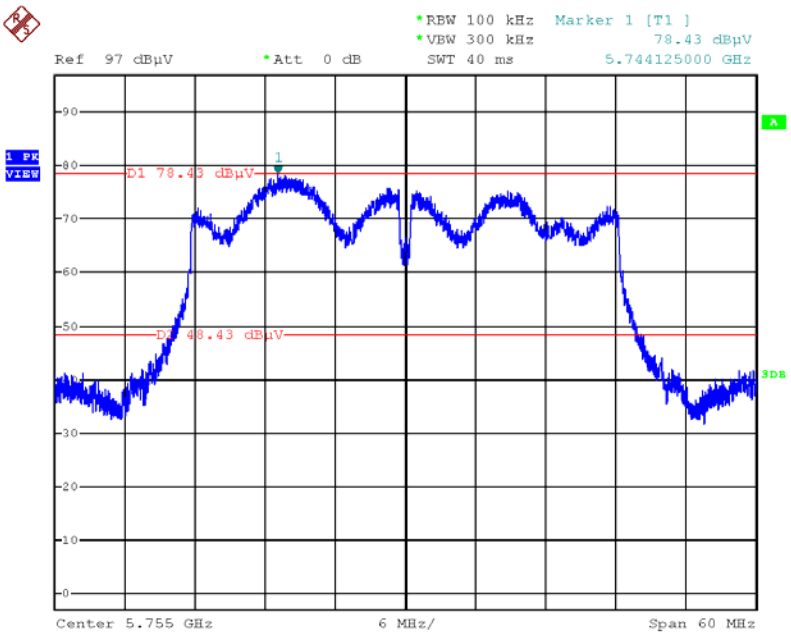
Date: 13.JUN.2013 13:16:12

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 165 / 5850MHz~40000MHz (down 30dBc)



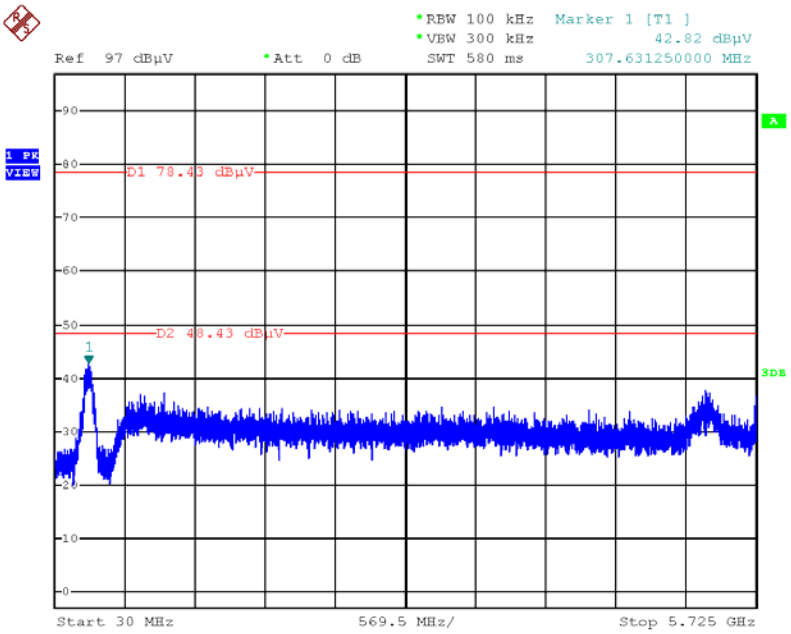
Date: 13.JUN.2013 13:16:41

Plot on Configuration IEEE 802.11n MCS0 40MHz / Reference Level



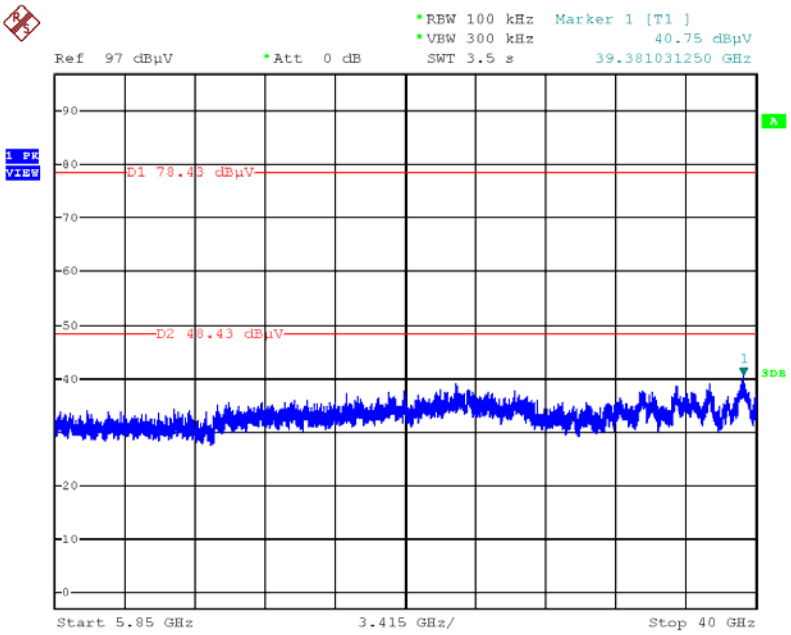
Date: 13.JUN.2013 13:22:09

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 151 / 30MHz~5725MHz (down 30dBc)



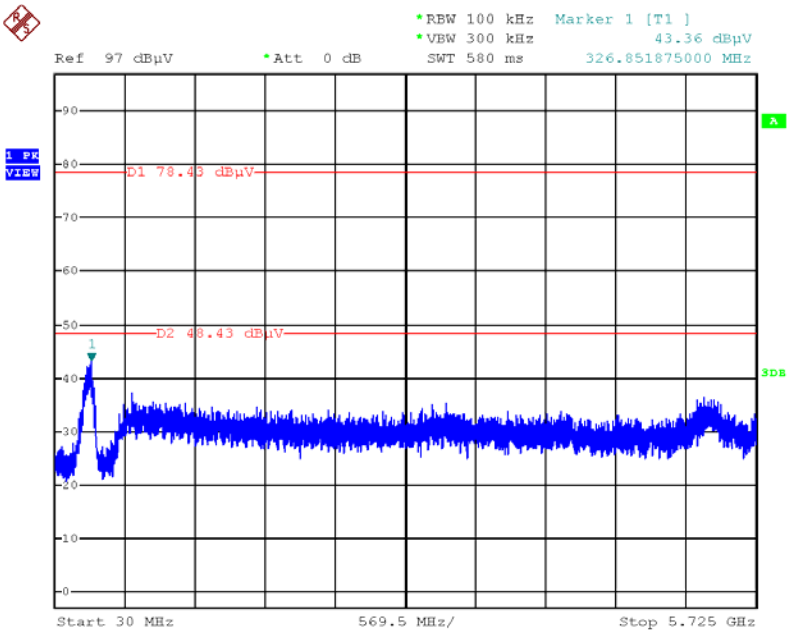
Date: 13.JUN.2013 13:22:58

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 151 / 5850MHz~40000MHz (down 30dBc)



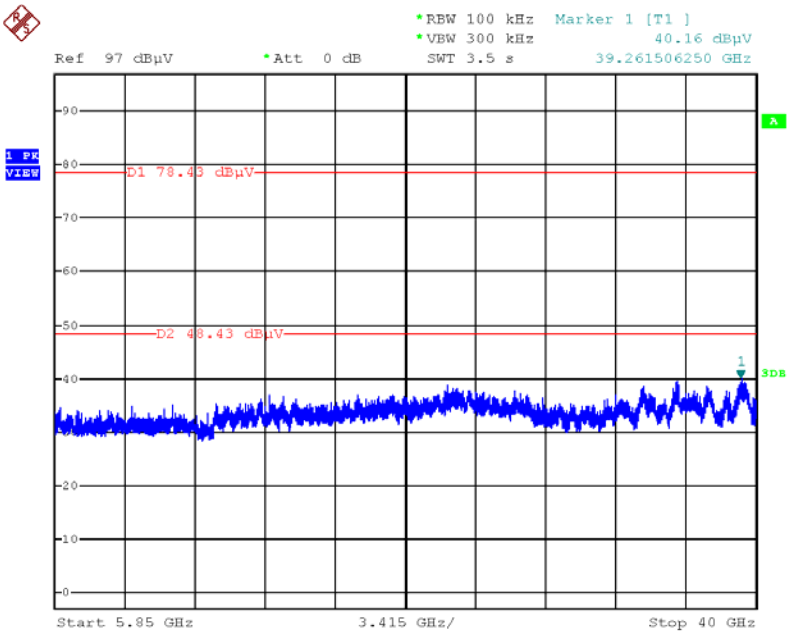
Date: 13.JUN.2013 13:23:37

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 159 / 30MHz~5725MHz (down 30dBc)



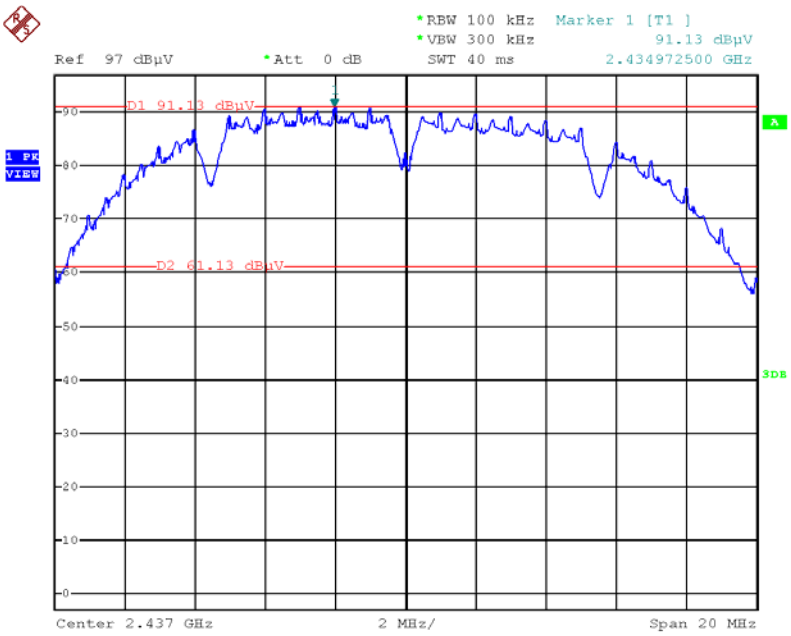
Date: 13.JUN.2013 13:26:29

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 159 / 5850MHz~40000MHz (down 30dBc)



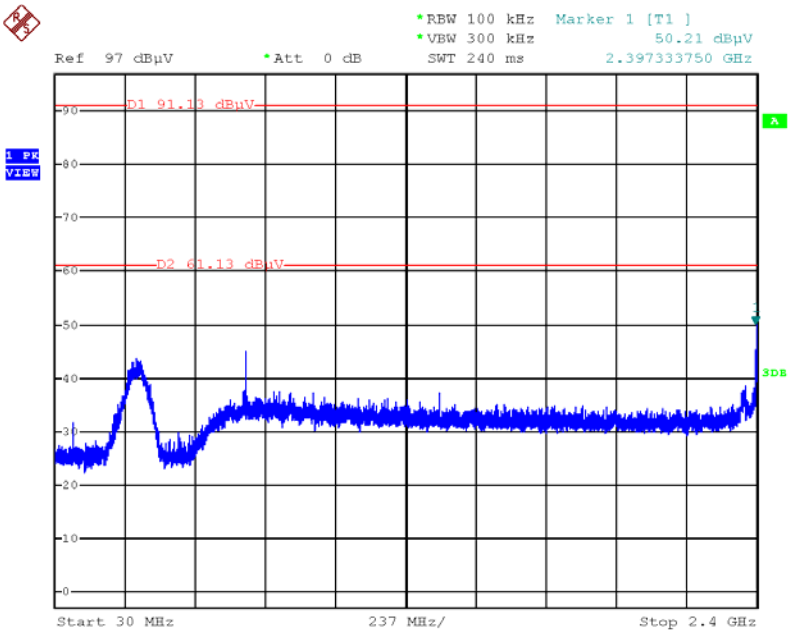
Date: 13.JUN.2013 13:27:04

Plot on Configuration IEEE 802.11b / Reference Level



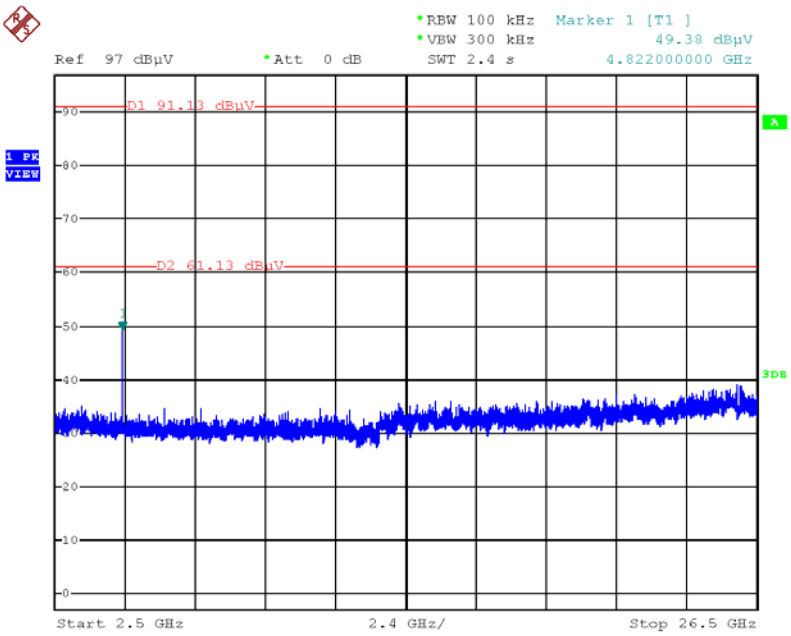
Date: 13.JUN.2013 11:56:14

Plot on Configuration IEEE 802.11b / CH 1 / 30MHz~2400MHz (down 30dBc)



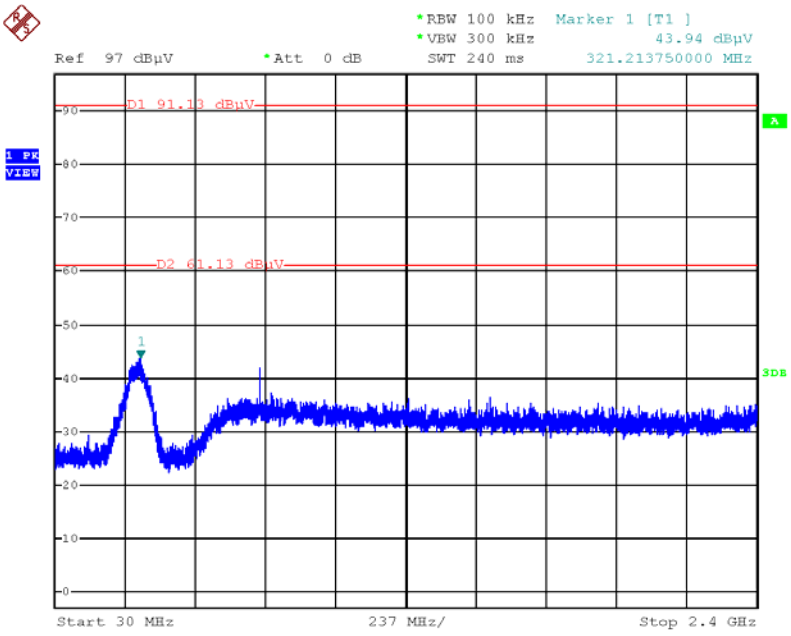
Date: 13.JUN.2013 11:59:29

Plot on Configuration IEEE 802.11b / CH 1 / 2500MHz~26500MHz (down 30dBc)



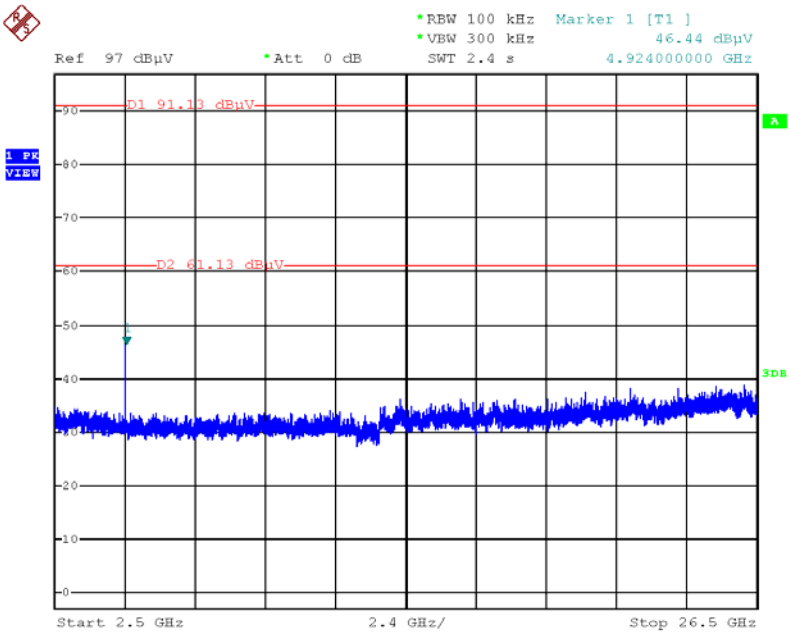
Date: 13.JUN.2013 12:00:17

Plot on Configuration IEEE 802.11b / CH 11 / 30MHz~2400MHz (down 30dBc)



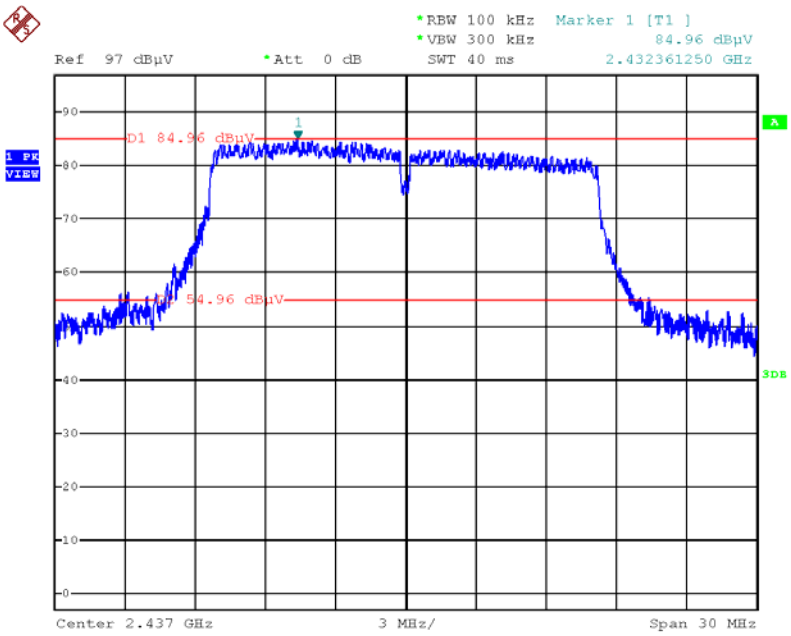
Date: 13.JUN.2013 12:02:43

Plot on Configuration IEEE 802.11b / CH 11 / 2500MHz~26500MHz (down 30dBc)



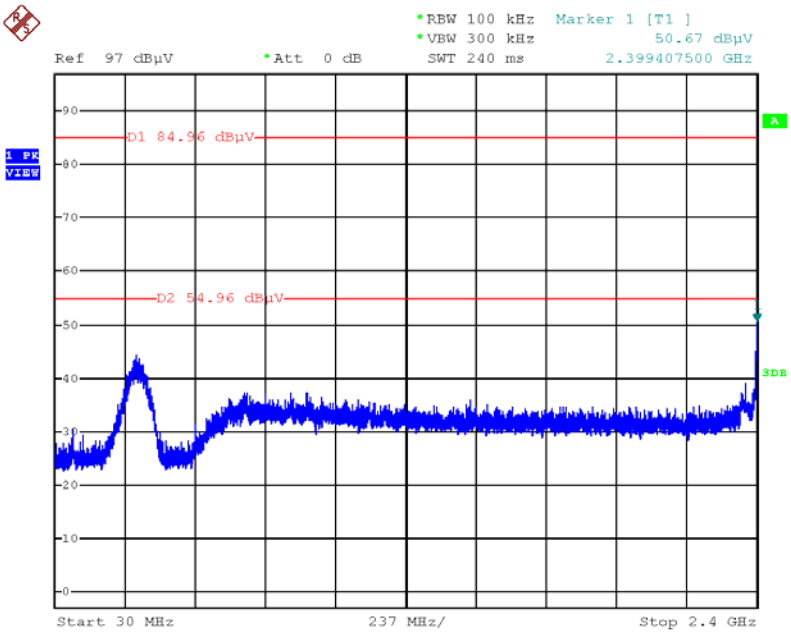
Date: 13.JUN.2013 12:03:31

Plot on Configuration IEEE 802.11g / Reference Level



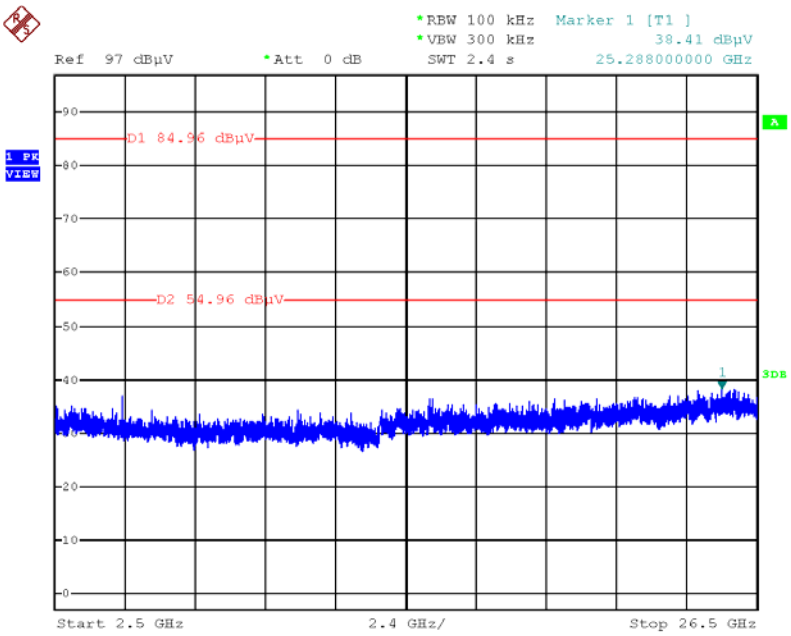
Date: 13.JUN.2013 12:06:27

Plot on Configuration IEEE 802.11g / CH 1 / 30MHz~2400MHz (down 30dBc)



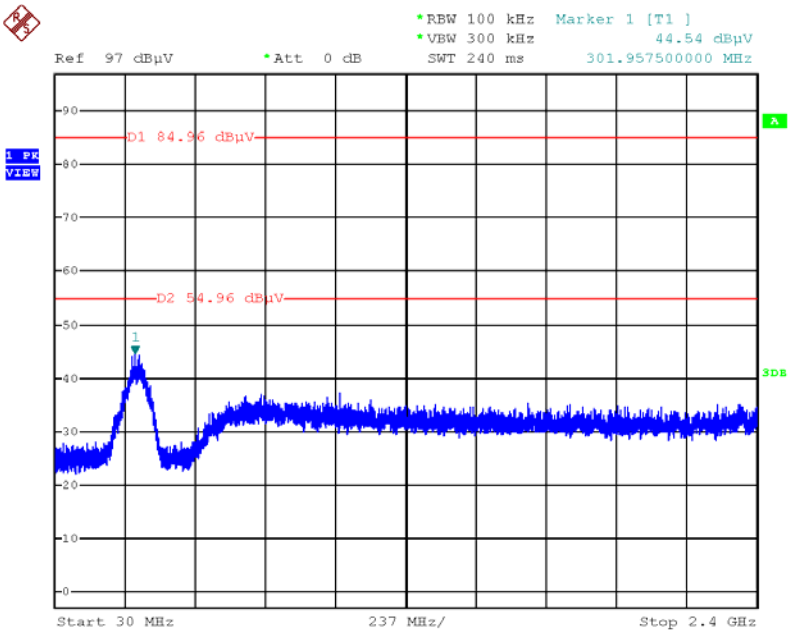
Date: 13.JUN.2013 12:08:57

Plot on Configuration IEEE 802.11g / CH 1 / 2500MHz~26500MHz (down 30dBc)



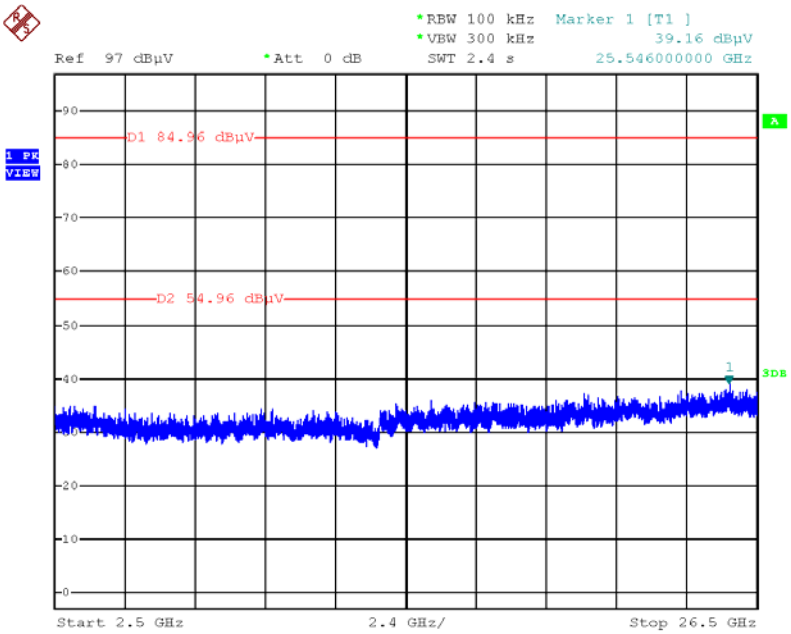
Date: 13.JUN.2013 12:09:33

Plot on Configuration IEEE 802.11g / CH 11 / 30MHz~2400MHz (down 30dBc)



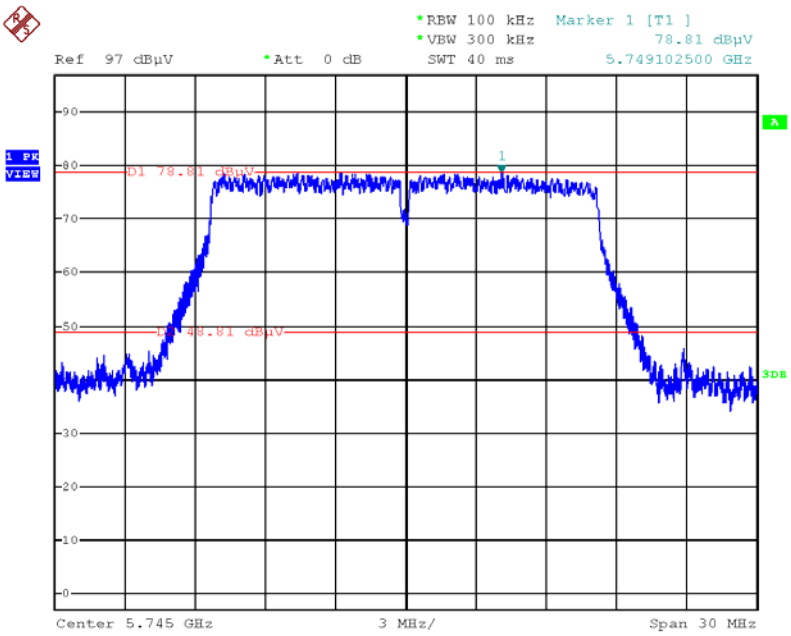
Date: 13.JUN.2013 12:11:50

Plot on Configuration IEEE 802.11g / CH 11 / 2500MHz~26500MHz (down 30dBc)



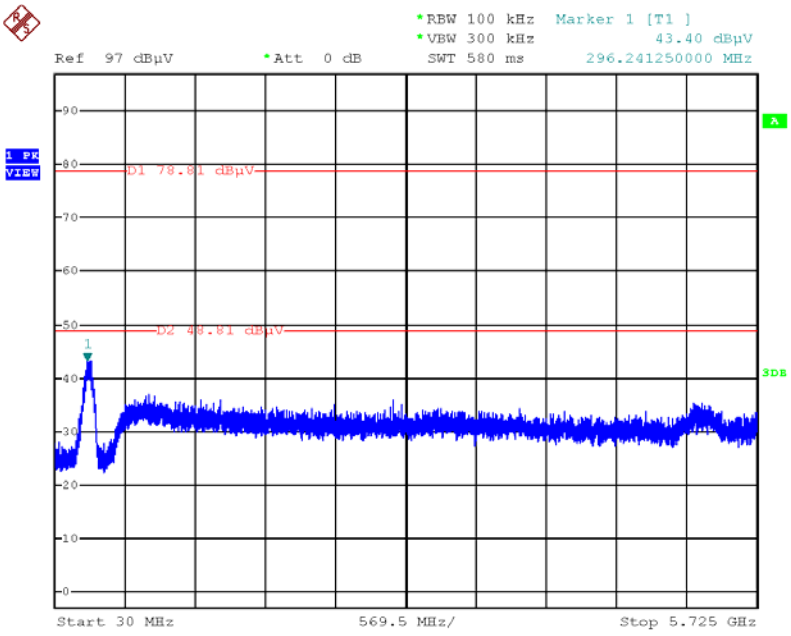
Date: 13.JUN.2013 12:12:29

Plot on Configuration IEEE 802.11a / Reference Level



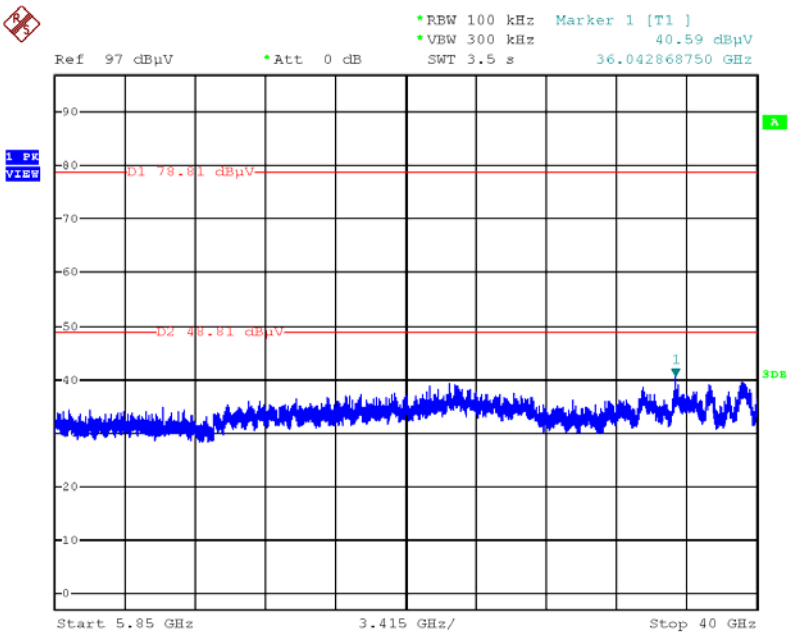
Date: 13.JUN.2013 12:59:02

Plot on Configuration IEEE 802.11a / CH 149 / 30MHz~5725MHz (down 30dBc)



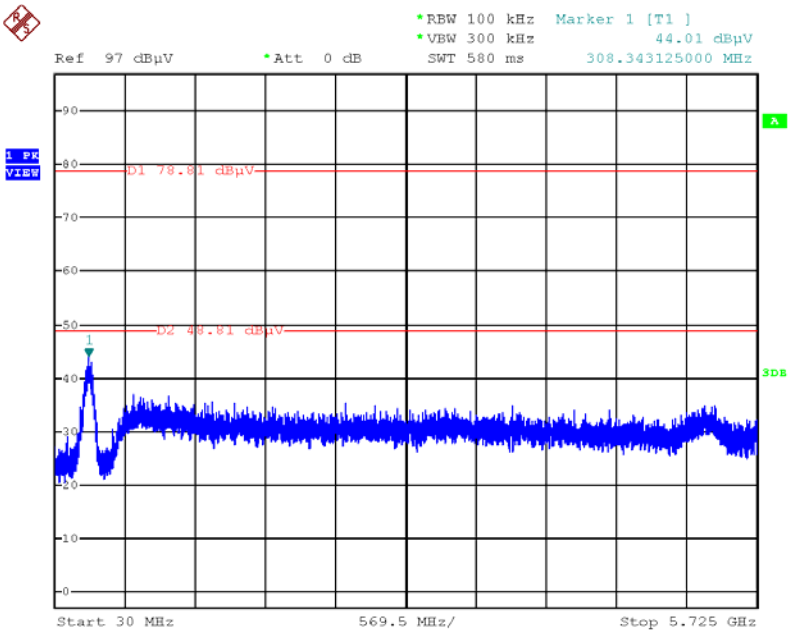
Date: 13.JUN.2013 12:59:33

Plot on Configuration IEEE 802.11a / CH 149 / 5850MHz~40000MHz (down 30dBc)



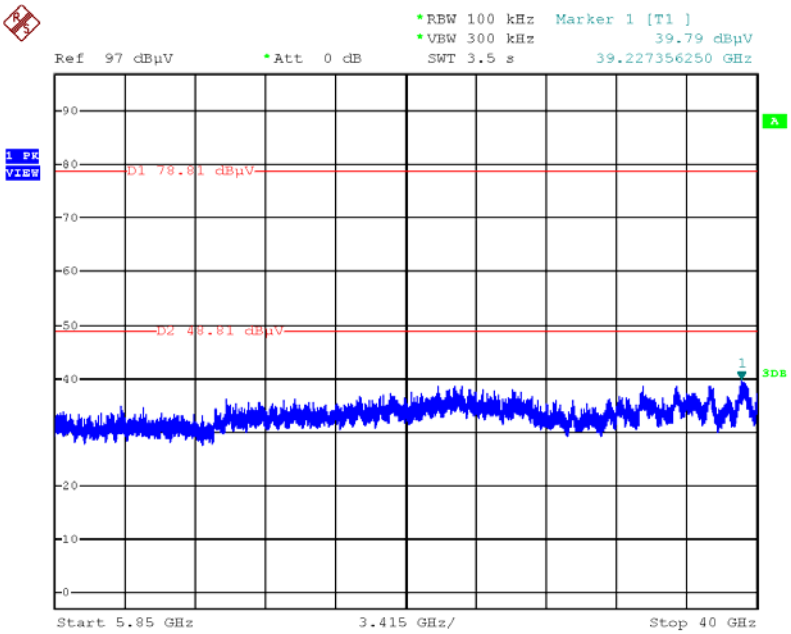
Date: 13.JUN.2013 13:00:11

Plot on Configuration IEEE 802.11a / CH 165 / 30MHz~5725MHz (down 30dBc)



Date: 13.JUN.2013 13:03:14

Plot on Configuration IEEE 802.11a / CH 165 / 5850MHz~40000MHz (down 30dBc)



Date: 13.JUN.2013 13:03:58

4.7. Antenna Requirements

4.7.1. 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.

4.7.2. 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	8127478	9kHz ~ 30MHz	Jun. 26, 2012	Conduction (CO01-CB)
Impulsbegrenzer Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz~30MHz	Feb. 21, 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)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 23, 2012	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Jul. 31, 2012	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100056	9KHz~40GHz	Nov. 16, 2012	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Apr. 12, 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)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	100979	9kHz~40GHz	Oct. 08, 2012	Conducted (TH01-CB)
RF Power Divider	Woken	2 Way	0120A02056002D	2GHz ~ 18GHz	Nov. 18, 2012	Conducted (TH01-CB)
RF Power Divider	Woken	3 Way	MDC2366	2GHz ~ 18GHz	Nov. 18, 2012	Conducted (TH01-CB)
RF Power Divider	Woken	4 Way	0120A04056002D	2GHz ~ 18GHz	Nov. 18, 2012	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Nov. 28, 2012	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Nov. 27, 2012	Conducted (TH01-CB)

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

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

7. MEASUREMENT UNCERTAINTY

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	0.026	dB	normal(k=2)	0.013
Cable loss	0.002	dB	normal(k=2)	0.001
AMN/LISN specification	1.200	dB	normal(k=2)	0.600
Mismatch Receiver VSWR 1= AMN/LISN VSWR 2=	-0.080	dB	U-shaped	0.060
combined standard uncertainty Ue(y)	1.2			
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	2.4			

Uncertainty of Conducted Emission Measurement

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Cable loss	0.038	dB	normal(k=2)	0.019
Attenuator	0.047	dB	normal(k=2)	0.024
Power Meter specification	0.300	dB	normal(k=2)	0.150
Power Sensor specification	0.300	dB	normal(k=2)	0.150
Mismatch Receiver VSWR 1= Antenna VSWR 2= Pre Amplifier VSWR 3=	-0.080	dB	U-shaped	0.060
combined standard uncertainty Ue(y)	0.403			
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	0.806			

Uncertainty of Radiated Emission Measurement (30MHz ~ 1,000MHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	0.1727	dB	normal(k=1)	0.1727
Cable loss	0.1736	dB	normal(k=2)	0.0868
Antenna gain	0.1687	dB	normal(k=2)	0.0843
Site imperfection	0.4898	dB	Triangular	0.2
Pre-amplifier gain	0.3661	dB	normal(k=2)	0.183
Transmitter antenna	1.7	dB	rectangular	0.9815
Signal generator	0.5	dB	rectangular	0.2887
Mismatch	0.08	dB	u-shape	0.244
Spectrum analyzer	0.5	dB	rectangular	0.2887
combined standard uncertainty Ue(y)	1.1434			
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	2.2869			

Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	0.1908	dB	normal(k=1)	0.1908
Cable loss	0.1685	dB	normal(k=2)	0.0843
Antenna gain	0.1912	dB	normal(k=2)	0.0956
Site imperfection	1.3091	dB	Triangular	0.5344
Pre-amplifier gain	0.3043	dB	normal(k=2)	0.1521
Transmitter antenna	1.7	dB	rectangular	0.9815
Signal generator	0.5	dB	rectangular	0.2887
Mismatch	0.08	dB	u-shape	0.244
Spectrum analyzer	0.8	dB	rectangular	0.4619
combined standard uncertainty Ue(y)	1.2965			
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	2.593			

Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	0.1864	dB	normal(k=1)	0.1864
Cable loss	0.1666	dB	normal(k=2)	0.0833
Antenna gain	0.1904	dB	normal(k=2)	0.0952
Site imperfection	0.4882	dB	Triangular	0.1993
Pre-amplifier gain	0.2688	dB	normal(k=2)	0.1344
Transmitter antenna	1.7	dB	rectangular	0.9815
Signal generator	0.5	dB	rectangular	0.2887
Mismatch	0.08	dB	u-shape	0.244
Spectrum analyzer	0.8	dB	rectangular	0.4619
combined standard uncertainty Ue(y)	1.1874			
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	2.3749			