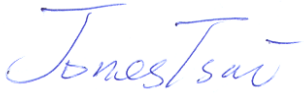
FCC RF Test Report

APPLICANT	:	Unitech Electronics Co., Ltd.
EQUIPMENT	:	Rugged Handheld Computer
BRAND NAME	:	unitech
MODEL NAME	:	PA692
FCC ID	:	HLEPA692BTNP
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Jan. 04, 2013 and completely tested on Apr. 11, 2013. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR310457B	Rev. 01	Initial issue of report	May 09, 2013
FR310457B	Rev. 02	Update report for correcting the output power in Watt	May 14, 2013

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	RSS-210 A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	RSS-210 A8.4	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	RSS-210 A8.2(b)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	RSS-210 A8.5	Conducted Band Edges	≤ 20dBc	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.15 dB at 2389.470 MHz
3.6	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 16.90 dB at 0.158 MHz
3.7	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Unitech Electronics Co., Ltd.
5Fl., No. 136, Lane 235, Pao-Chiao Rd. Hsin-Tien Area, New Taipei City, Taiwan 231, R.O.C.

1.2 Manufacturer

Unitech Electronics Co., Ltd.
5Fl., No. 136, Lane 235, Pao-Chiao Rd. Hsin-Tien Area, New Taipei City, Taiwan 231, R.O.C.

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Rugged Handheld Computer
Brand Name	unitech
Model Name	PA692
FCC ID	HLEPA692BTNP
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/ WLAN 11abgn/Bluetooth 2.1
HW Version	V2
SW Version	V0.7
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz 802.11a/n: 5745~5825MHz.
Maximum Output Power to Antenna	**<2412 MHz ~ 2462 MHz>** 802.11b : 18.79 dBm (0.0757 W) 802.11g : 21.98 dBm (0.1578 W) 802.11n HT20 : 21.16 dBm (0.1306 W) **<5745 MHz ~ 5825 MHz>** 802.11a : 15.86 dBm (0.0385 W) 802.11n HT20 : 15.75 dBm (0.0376 W)
Antenna Type	802.11b/g/n : PIFA Antenna type with gain -1.50 dBi 802.11a/n : PIFA Antenna type with gain -3.50 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Testing Site

Test Site	SPORTON INTERNATIONAL INC.			
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978			
Test Site No.	Sporton Site No.			FCC/IC Registration No.
	TH02-HY	CO05-HY	03CH06-HY	722060/4086B-1

The test site complies with ANSI C63.4 2003 requirement.

1.6 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
- ANSI C63.10-2009

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 KHz to 30 MHz) and radiated emission (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4	149	5745	159	5795
	151	5755	161	5805
	153	5765	165	5825
	157	5785	-	-

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and antenna configurations as following table and the highest power data rates were chosen for full test in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	18.79	18.77	18.73	18.76

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.98	21.73	21.72	21.32	21.08	21.04	20.96	20.84

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.16	20.83	20.85	21.15	20.63	20.78	20.61	20.49

5GHz 802.11a mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	15.86	15.82	15.79	15.76	15.84	15.79	15.48	15.38

5GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	15.75	15.71	15.72	15.74	15.71	15.72	15.46	15.51

2.3 Test Mode

Final results of test modes, data rates and test channels are shown as following table.

<2.4GHz>

Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB and 99% BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
	Conducted Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11

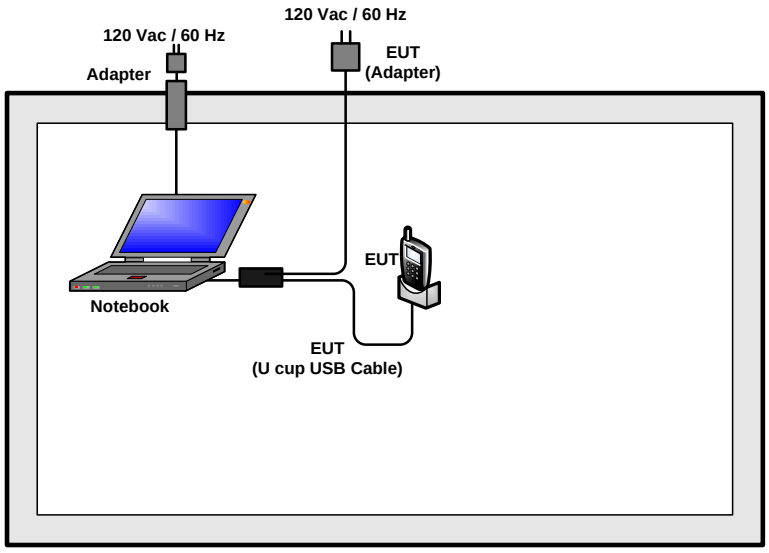
<5GHz>

Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	6dB and 99% BW Power Spectral Density	802.11a	6 Mbps	149/157/165
		802.11n HT20	6.5 Mbps	149/157/165
	Output Power	802.11a	6 Mbps	149/157/165
		802.11n HT20	6.5 Mbps	149/157/165
	Conducted Band Edge	802.11a	6 Mbps	149/165
		802.11n HT20	6.5 Mbps	149/165
	Conducted Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20	6.5 Mbps	149/157/165
Radiated TCs	Radiated Band Edge	802.11a	6 Mbps	149/165
		802.11n HT20	6.5 Mbps	149/165
	Radiated Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20	6.5 Mbps	149/157/165

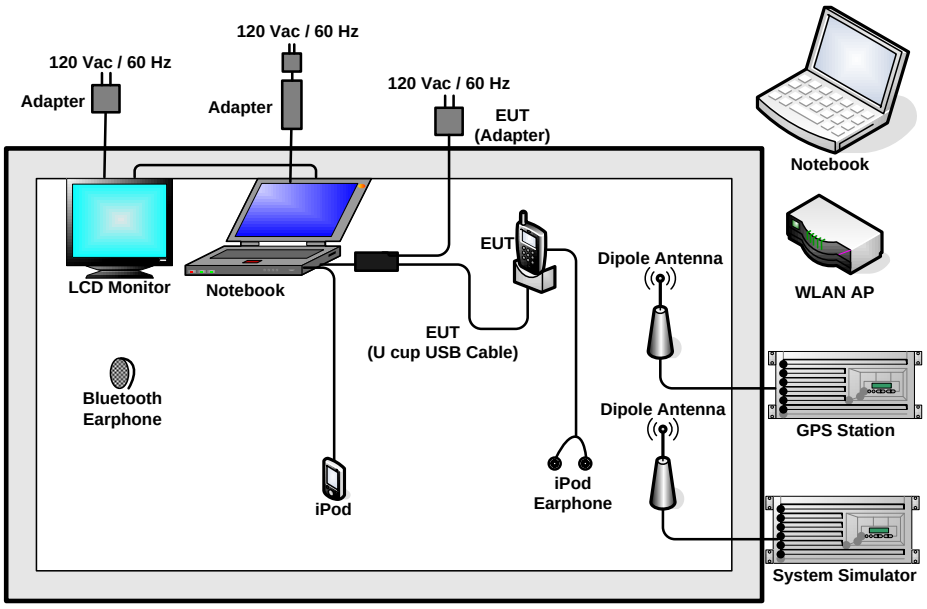
Test Cases	
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + GPS Rx + Earphone + U cup USB Cable (Data Link with Notebook) + U cup USB Cable Charging with AC Power

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
5.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
7.	LCD Monitor	DELL	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
8.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
9.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
10.	iPod Earphone	Apple	N/A	FCC DoC	Unshielded, 1.0 m	N/A

2.6 Description of RF Function Operation Test Setup

The programmed RF utility “SRU.exe”, is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. 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.

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 KHz.

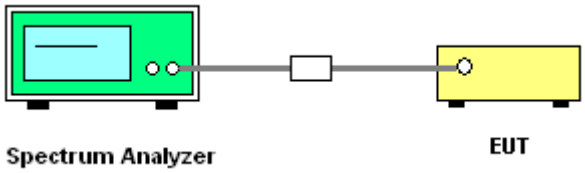
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r01.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
5. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	8.04	0.5	Pass
06	2437	8.04	0.5	Pass
11	2462	8.04	0.5	Pass

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.12	0.5	Pass
06	2437	15.08	0.5	Pass
11	2462	15.44	0.5	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.16	0.5	Pass
06	2437	15.10	0.5	Pass
11	2462	15.12	0.5	Pass

Test Mode :	802.11a	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

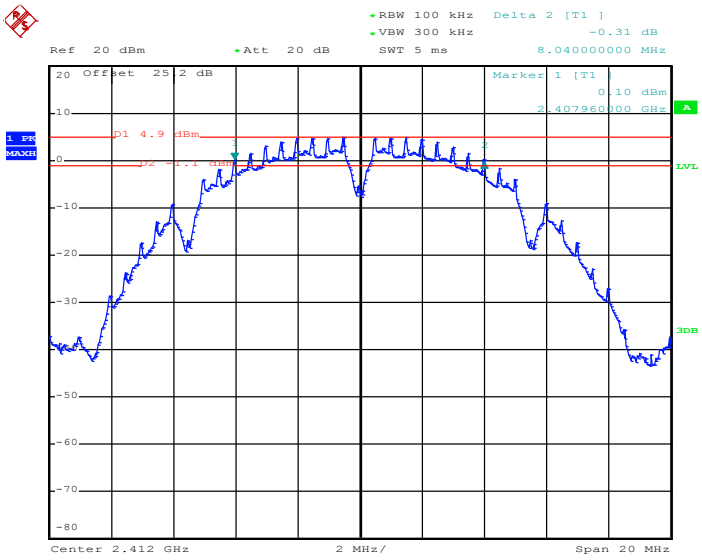
Channel	Frequency (MHz)	802.11a 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
149	5745	15.08	0.5	Pass
157	5785	15.12	0.5	Pass
165	5825	15.08	0.5	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
149	5745	15.12	0.5	Pass
157	5785	15.12	0.5	Pass
165	5825	15.12	0.5	Pass

3.1.6 Test Result of 6dB Bandwidth Plots

6 dB Bandwidth Plot on 802.11b Channel 01



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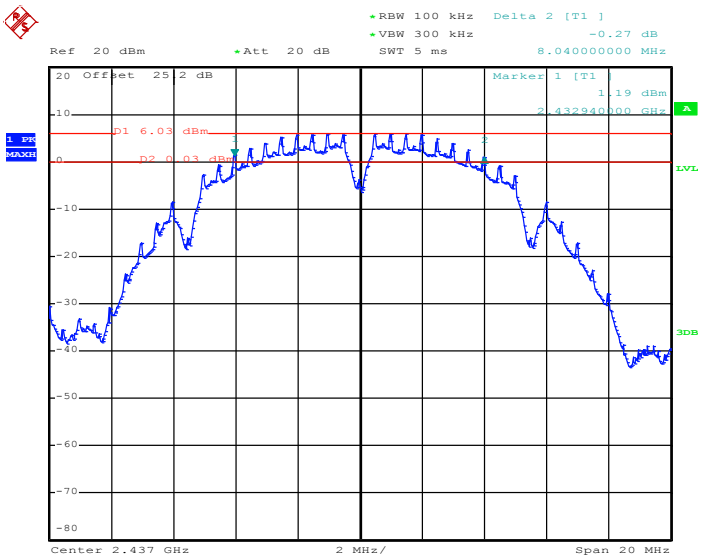
6 dB Bandwidth Plot on 802.11b Channel 06



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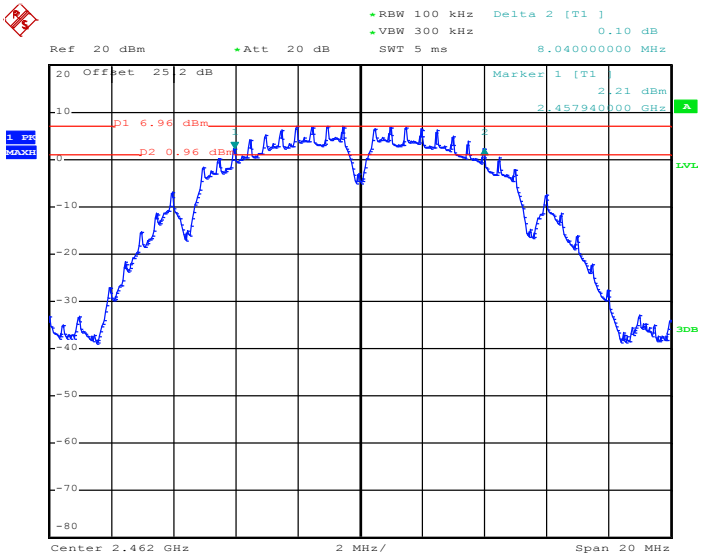
6 dB Bandwidth Plot on 802.11b Channel 11



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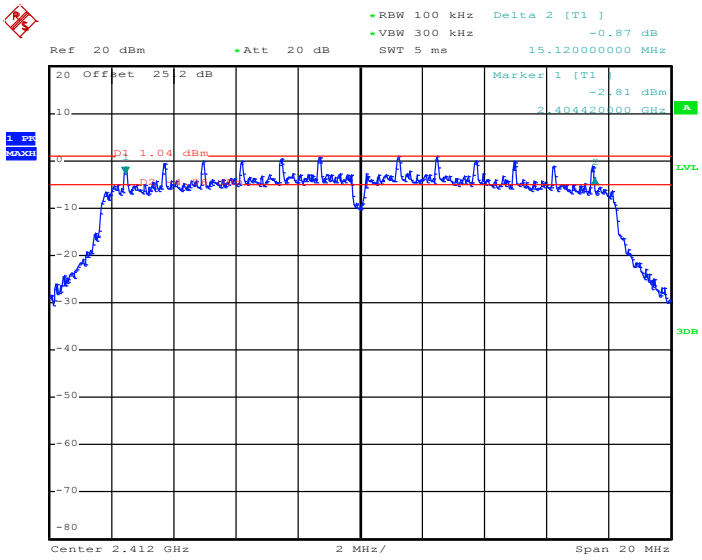
6 dB Bandwidth Plot on 802.11g Channel 01



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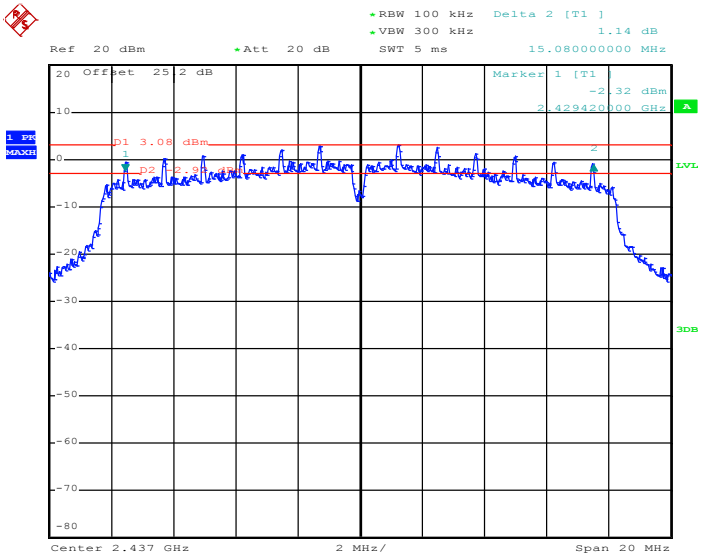
6 dB Bandwidth Plot on 802.11g Channel 06



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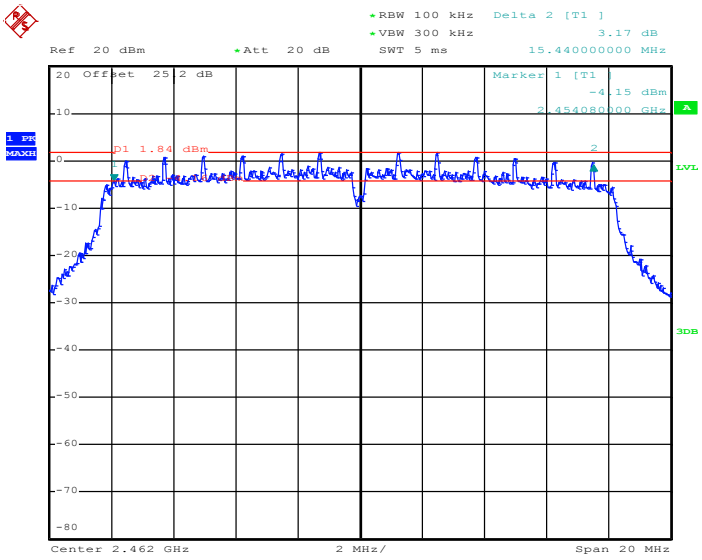
6 dB Bandwidth Plot on 802.11g Channel 11



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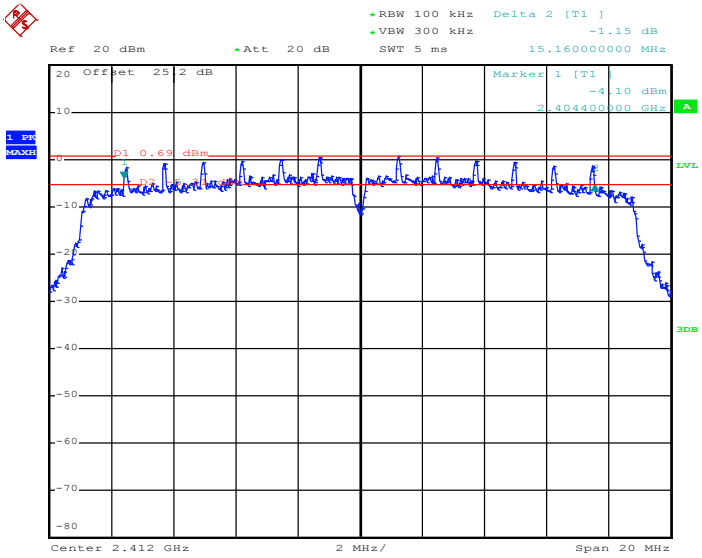
6 dB Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 01



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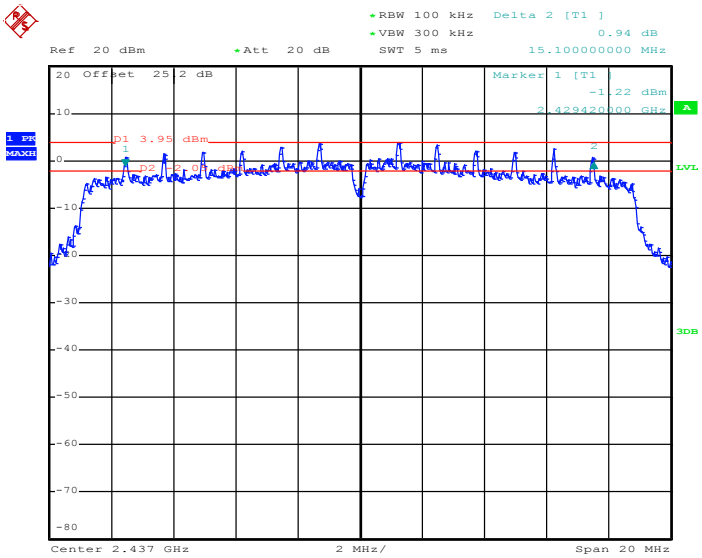
6 dB Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 06



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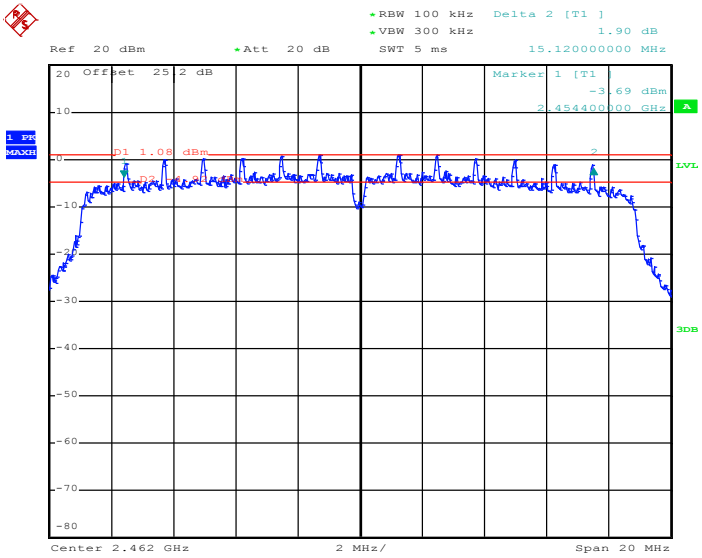
6 dB Bandwidth Plot on 2.4GHz 802.11n HT20 Channel 11



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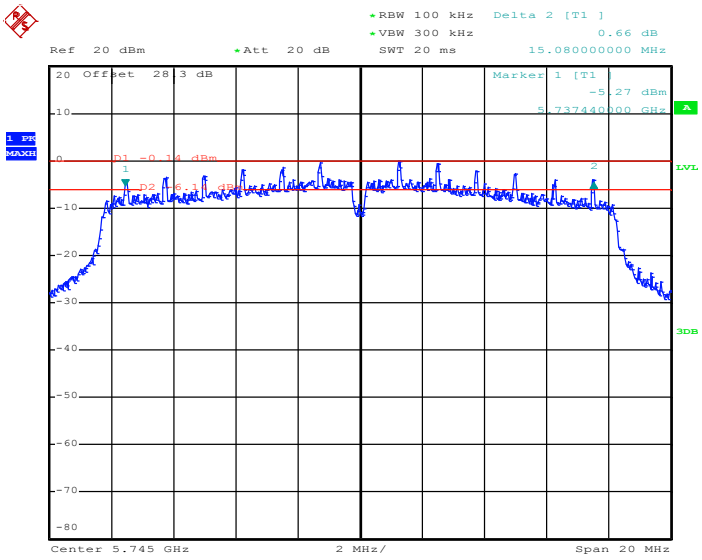
6 dB Bandwidth Plot on 802.11a Channel 149



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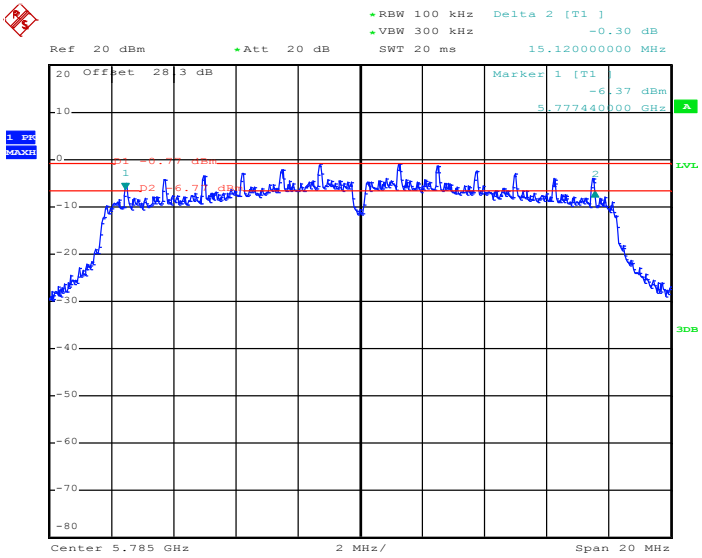
6 dB Bandwidth Plot on 802.11a Channel 157



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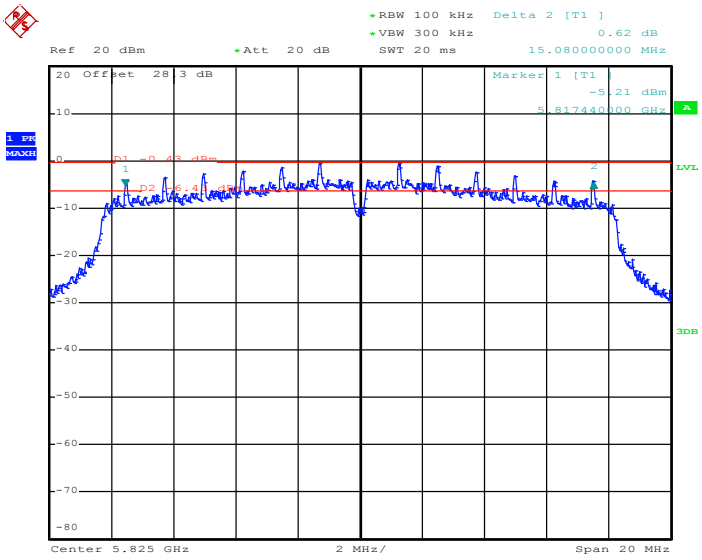
6 dB Bandwidth Plot on 802.11a Channel 165



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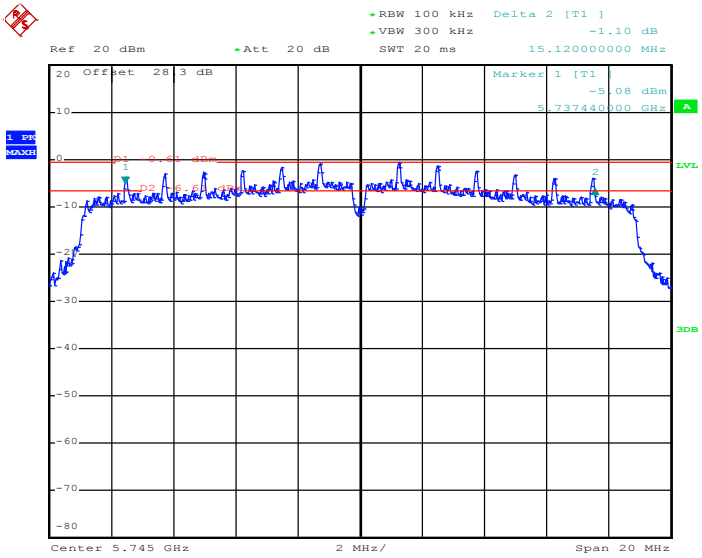
6 dB Bandwidth Plot on 5GHz 802.11n HT20 Channel 149



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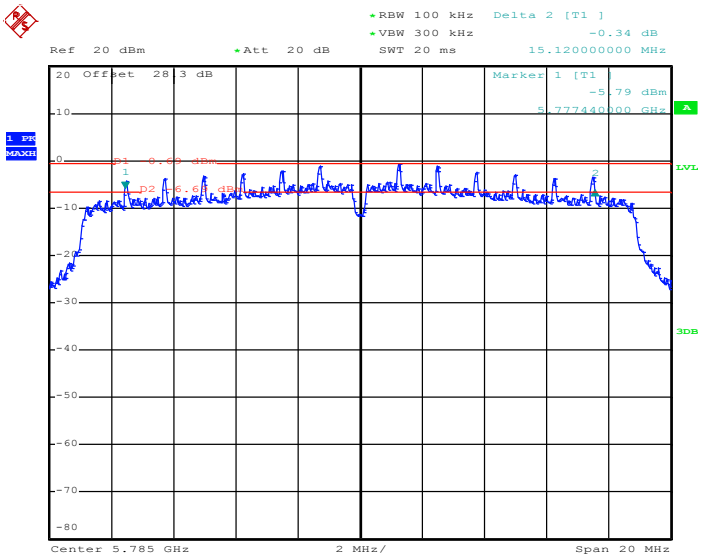
6 dB Bandwidth Plot on 5GHz 802.11n HT20 Channel 157



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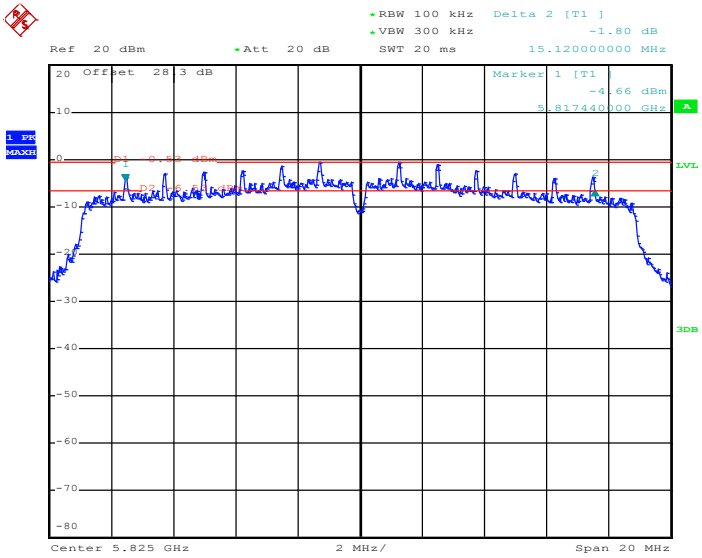
6 dB Bandwidth Plot on 5GHz 802.11n HT20 Channel 165



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3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz and 5725-5850MHz, the limit for peak output power is 30dBm. If transmitting Antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6 dBi. 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.

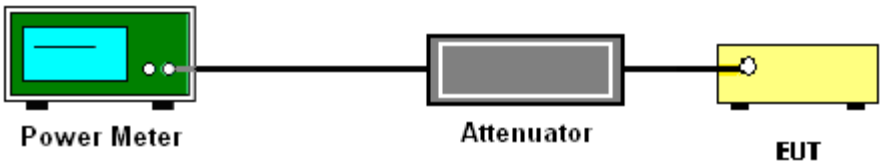
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r01.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	15.78	30	Pass
06	2437	17.59	30	Pass
11	2462	18.79	30	Pass

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.55	30	Pass
06	2437	21.04	30	Pass
11	2462	21.98	30	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.60	30	Pass
06	2437	21.16	30	Pass
11	2462	21.04	30	Pass

Test Mode :	802.11a	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11a Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	15.82	30	Pass
157	5785	15.32	30	Pass
165	5825	15.86	30	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	15.51	30	Pass
157	5785	15.27	30	Pass
165	5825	15.75	30	Pass

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3KHz band at any time interval of continuous transmission.

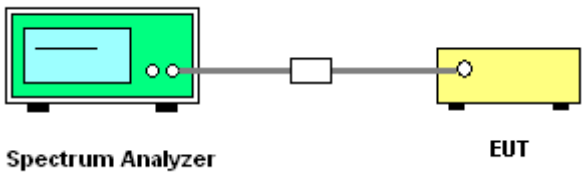
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. The Measured power density (dBm)/ 100KHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm/3kHz)	Pass/Fail
		PSD/100kHz (dBm)	PSD/3kHz (dBm)		
01	2412	4.77	-7.09	8	Pass
06	2437	5.72	-7.81	8	Pass
11	2462	7.05	-7.16	8	Pass

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm/3kHz)	Pass/Fail
		PSD/100kHz (dBm)	PSD/3kHz (dBm)		
01	2412	0.27	-14.73	8	Pass
06	2437	2.25	-11.97	8	Pass
11	2462	1.82	-14.09	8	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Power Density		Max. Limits (dBm/3kHz)	Pass/Fail
		PSD/100kHz (dBm)	PSD/3kHz (dBm)		
01	2412	0.34	-15.16	8	Pass
06	2437	3.91	-11.65	8	Pass
11	2462	1.20	-13.84	8	Pass

Test Mode :	802.11a	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11a Power Density		Max. Limits (dBm/3kHz)	Pass/Fail
		PSD/100kHz (dBm)	PSD/3kHz (dBm)		
149	5745	-0.24	-14.80	8	Pass
157	5785	-0.86	-15.18	8	Pass
165	5825	-0.34	-16.11	8	Pass

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

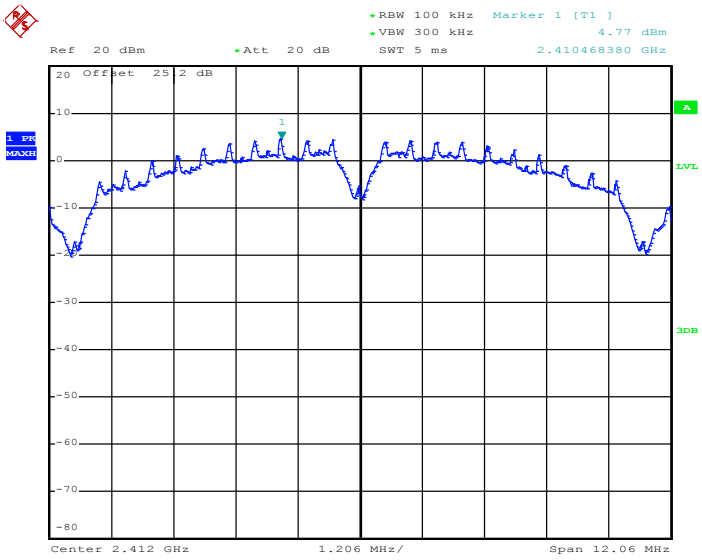
Channel	Frequency (MHz)	5GHz 802.11n HT20 Power Density		Max. Limits (dBm/3kHz)	Pass/Fail
		PSD/100kHz (dBm)	PSD/3kHz (dBm)		
149	5745	-0.83	-15.66	8	Pass
157	5785	-0.73	-16.34	8	Pass
165	5825	-0.96	-16.21	8	Pass

Note:

1. *Measured power density (dBm) has offset with cable loss.*
2. *The Measured power density (dBm)/ 100kHz is reference level and used as 20dBc down for Conducted Band Edges and Conducted Spurious Emission limit line.*

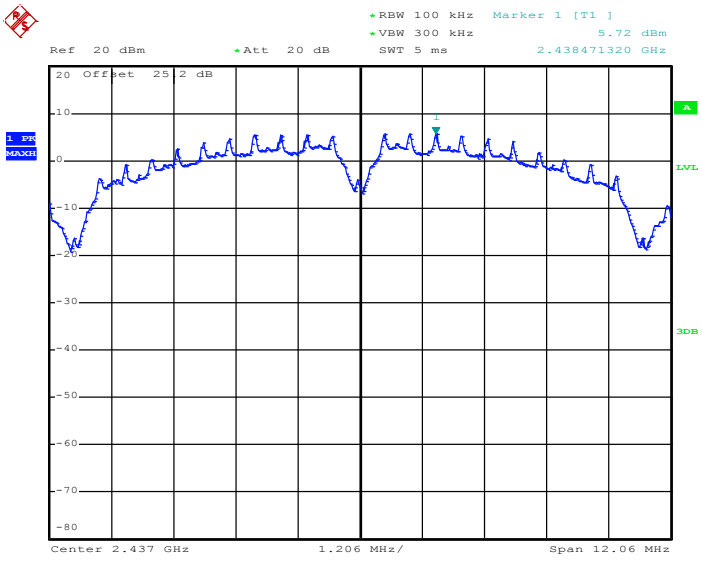
3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on 802.11b Channel 01



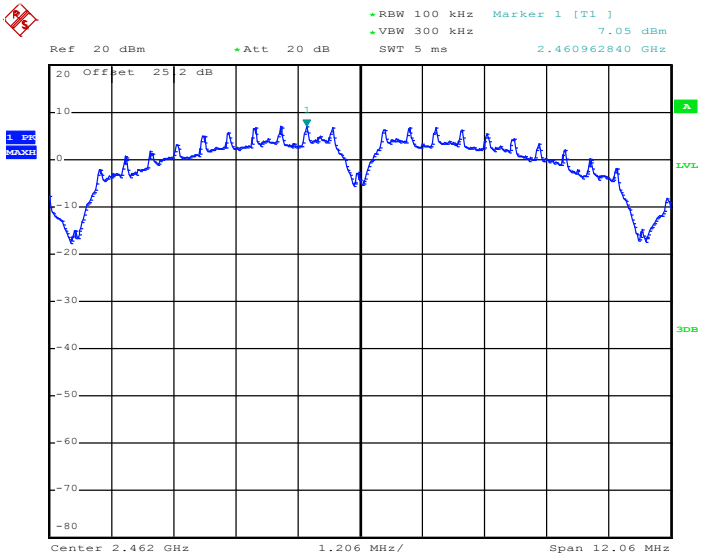
Date: 11.APR.2013 17:00:17

PSD 100kHz Plot on 802.11b Channel 06



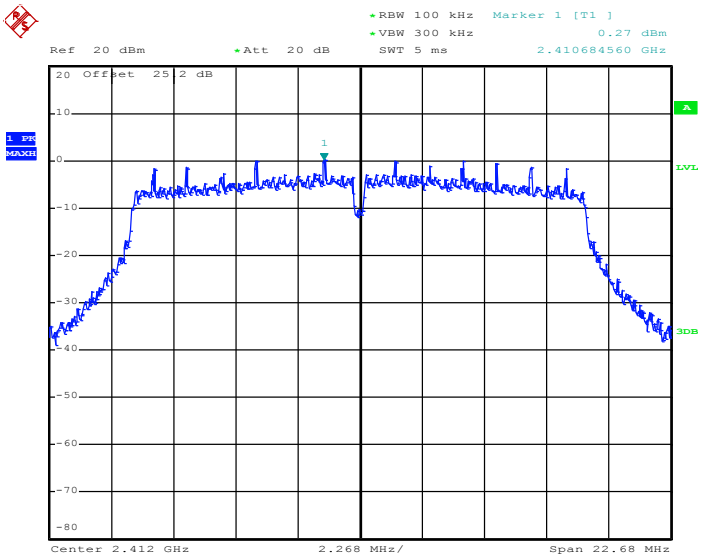
Date: 11.APR.2013 17:10:48

PSD 100kHz Plot on 802.11b Channel 11



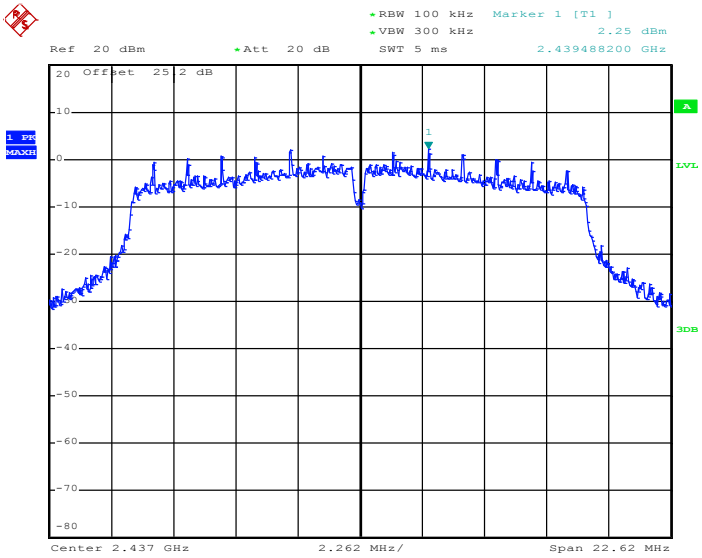
Date: 11.APR.2013 17:15:20

PSD 100kHz Plot on 802.11g Channel 01



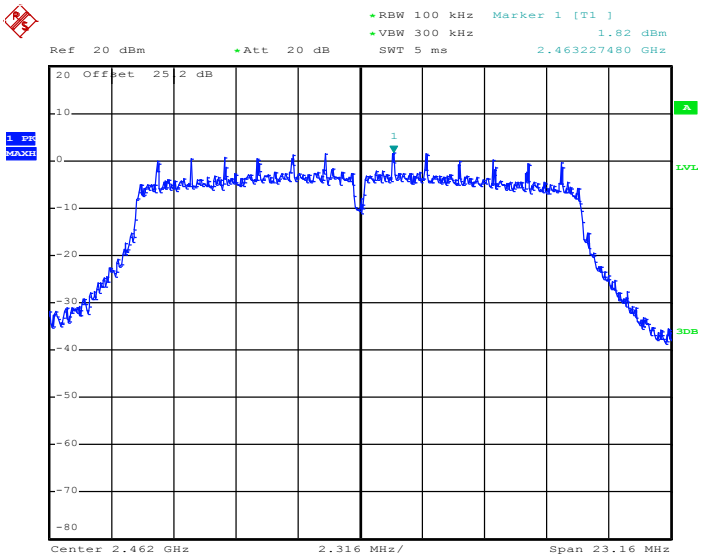
Date: 11.APR.2013 17:19:29

PSD 100kHz Plot 802.11g Channel 06



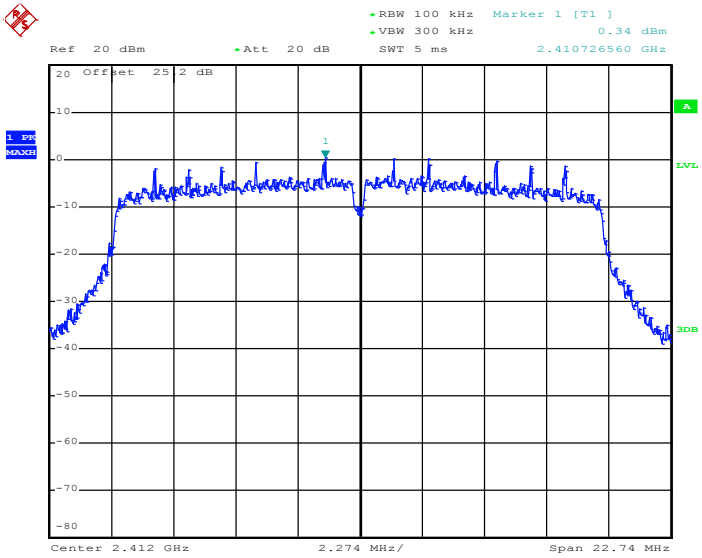
Date: 11.APR.2013 17:25:21

PSD 100kHz Plot 802.11g Channel 11



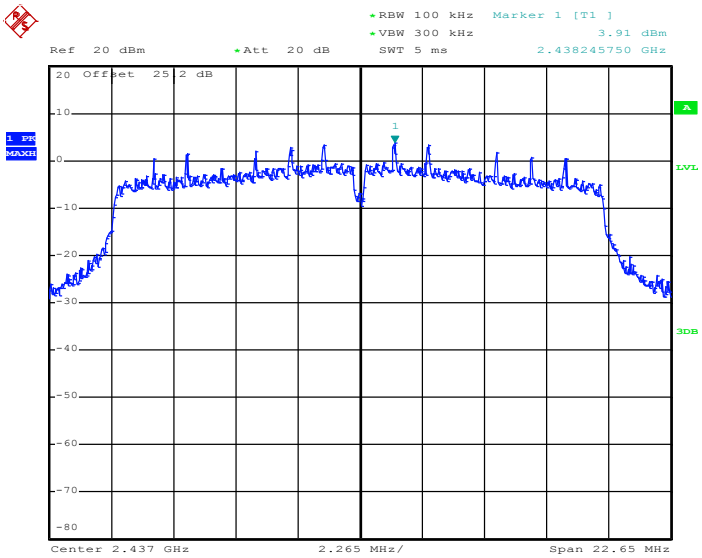
Date: 11.APR.2013 17:29:09

PSD 100kHz Plot on 2.4GHz 802.11n HT20 Channel 01



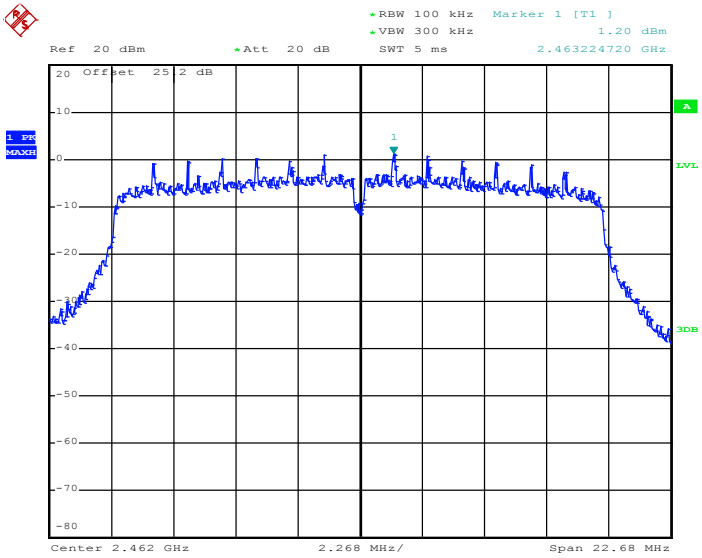
Date: 11.APR.2013 17:34:56

PSD 100kHz Plot on 2.4GHz 802.11n HT20 Channel 06



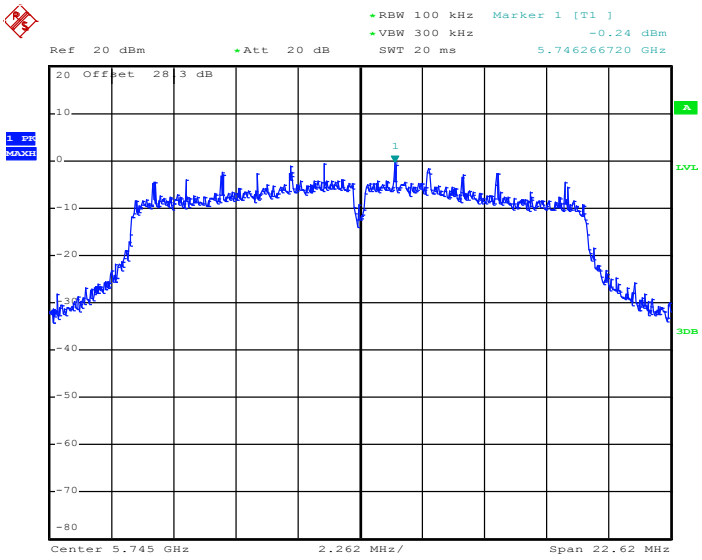
Date: 11.APR.2013 17:46:23

PSD 100kHz Plot on 2.4GHz 802.11n HT20 Channel 11



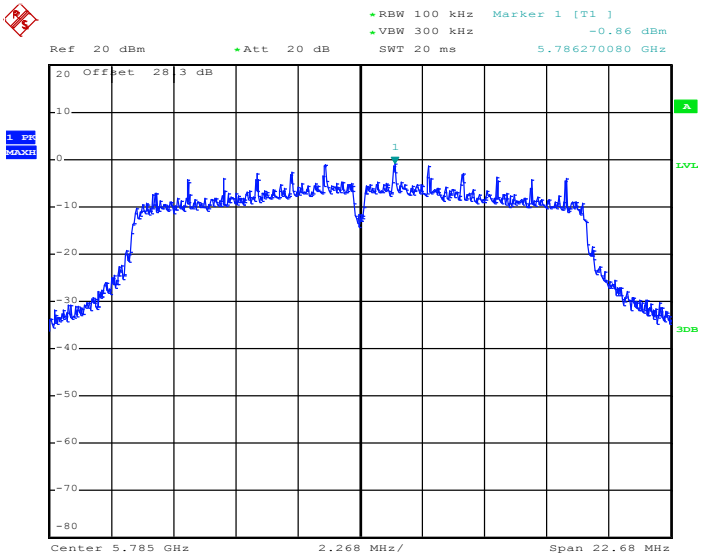
Date: 11.APR.2013 17:51:14

PSD 100kHz Plot on 802.11a Channel 149



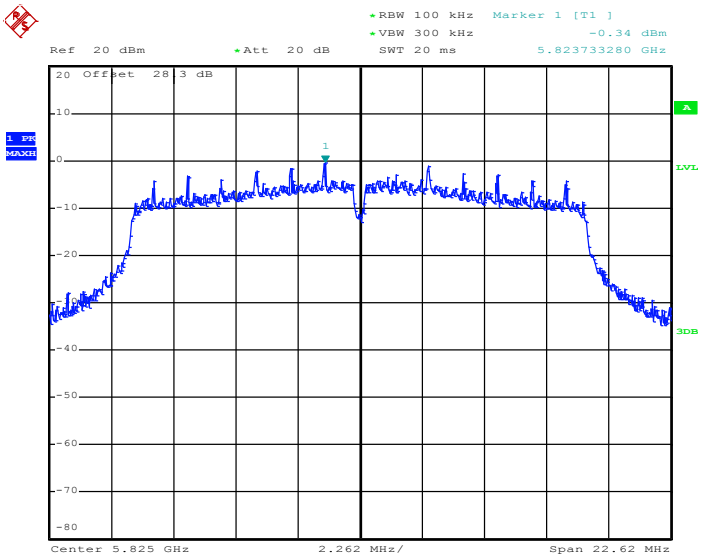
Date: 11.APR.2013 17:55:40

PSD 100kHz Plot on 802.11a Channel 157



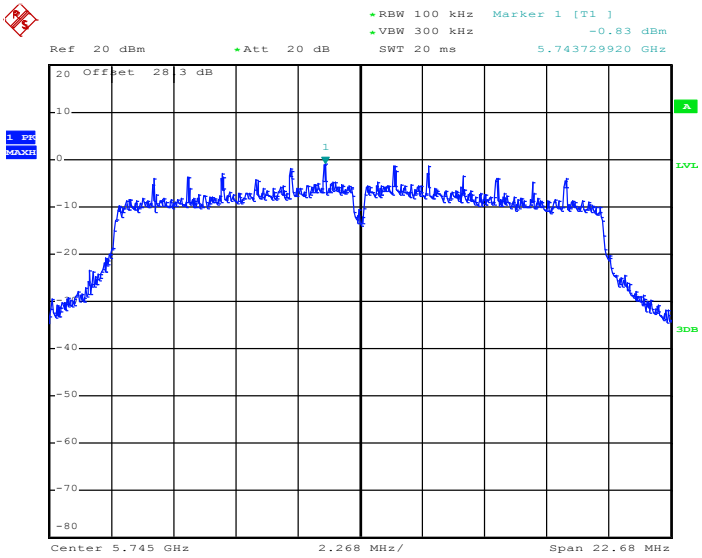
Date: 11.APR.2013 18:03:55

PSD 100kHz Plot on 802.11a Channel 165



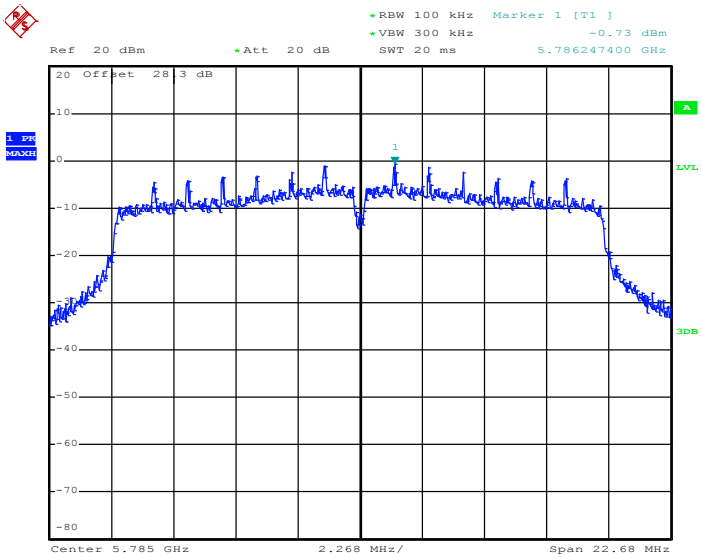
Date: 11.APR.2013 18:08:34

PSD 100kHz Plot on 5GHz 802.11n HT20 Channel 149



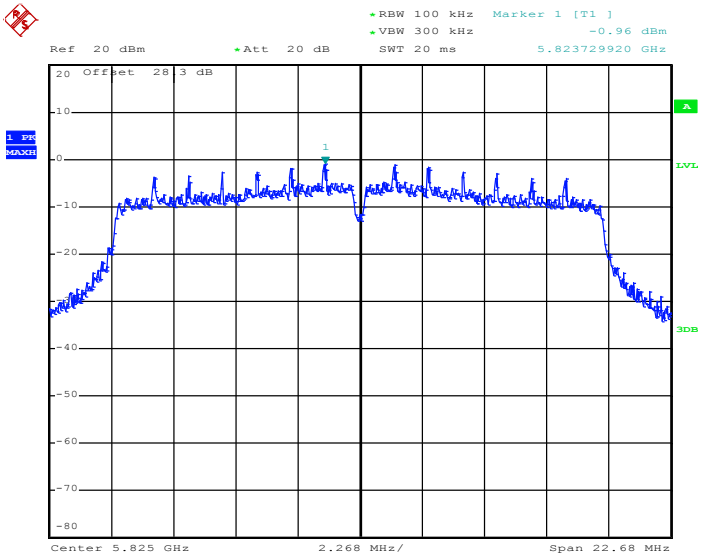
Date: 11.APR.2013 18:12:56

PSD 100kHz Plot on 5GHz 802.11n HT20 Channel 157



Date: 11.APR.2013 18:17:15

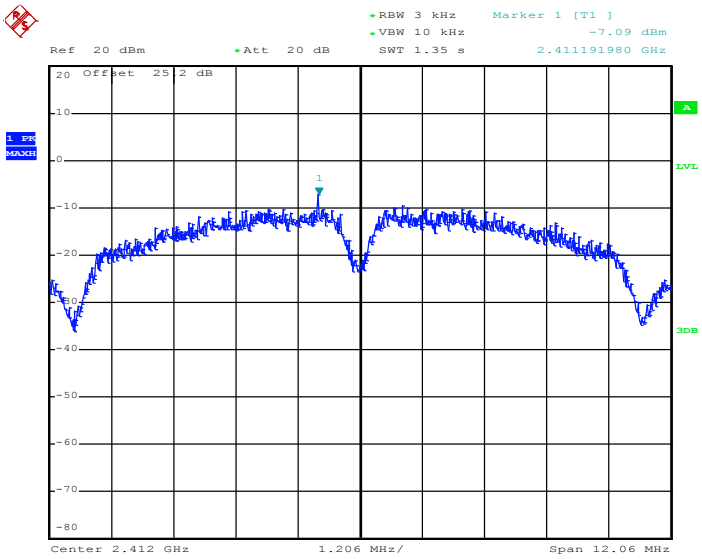
PSD 100kHz Plot on 5GHz 802.11n HT20 Channel 165



Date: 11.APR.2013 18:23:30

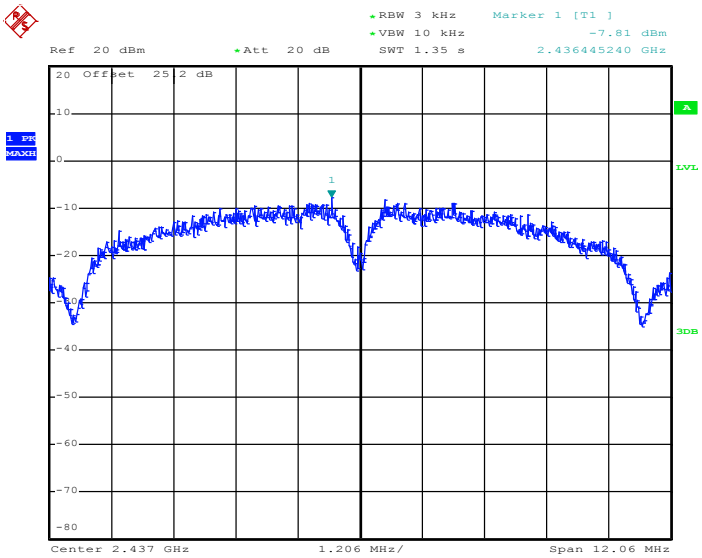
3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on 802.11b Channel 01



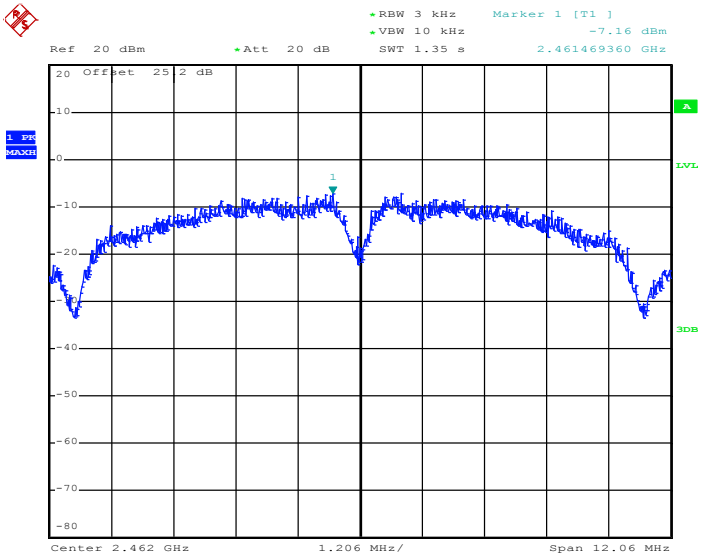
Date: 11.APR.2013 17:01:06

PSD 3kHz Plot on 802.11b Channel 06



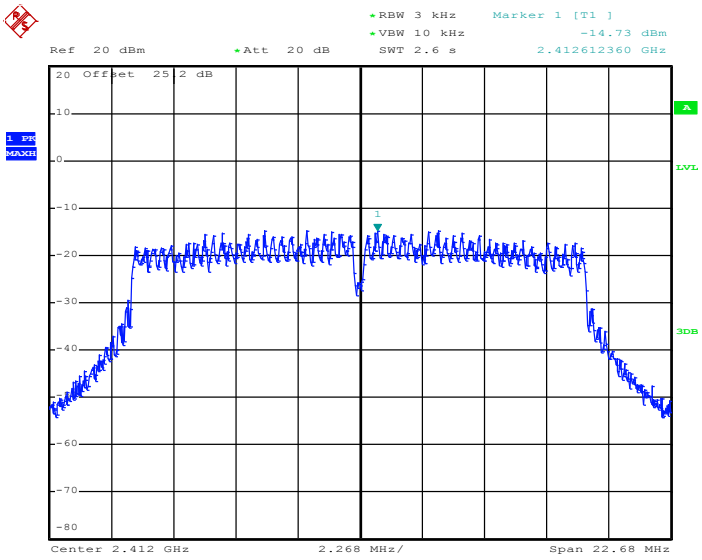
Date: 11.APR.2013 17:12:15

PSD 3kHz Plot on 802.11b Channel 11



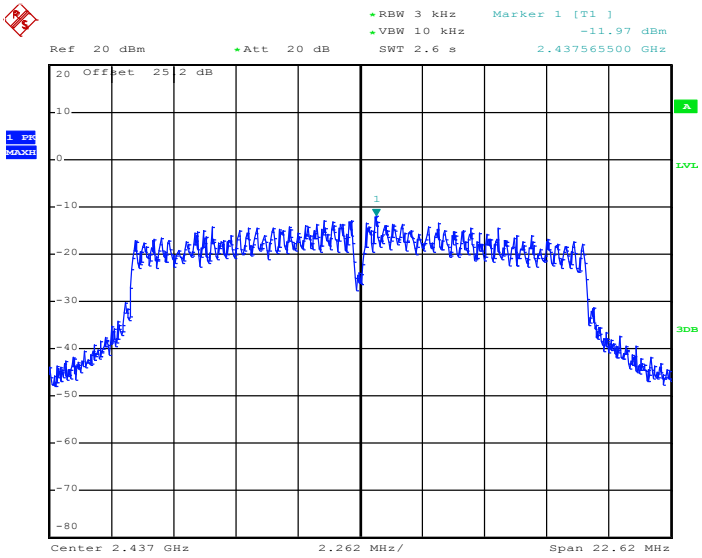
Date: 11.APR.2013 17:15:42

PSD 3kHz Plot on 802.11g Channel 01



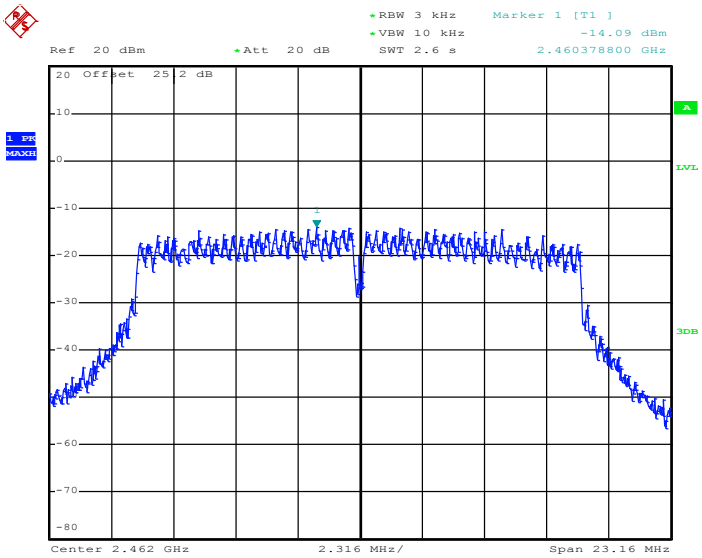
Date: 11.APR.2013 17:20:54

PSD 3kHz Plot on 802.11g Channel 06



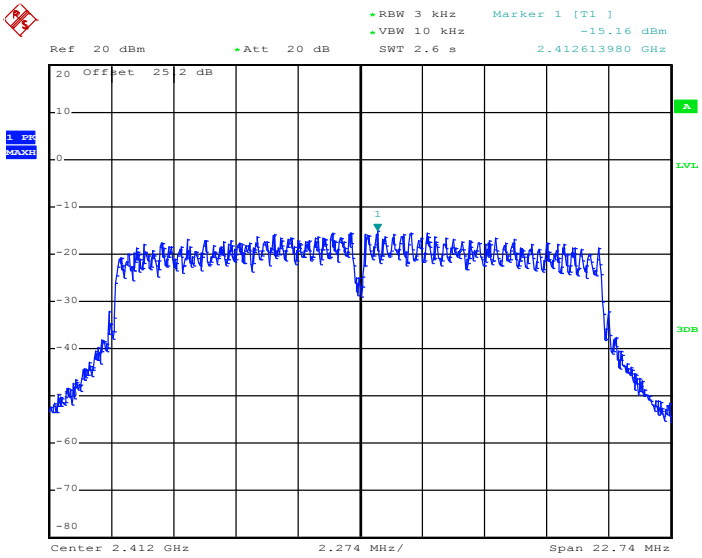
Date: 11.APR.2013 17:39:13

PSD 3kHz Plot on 802.11g Channel 11



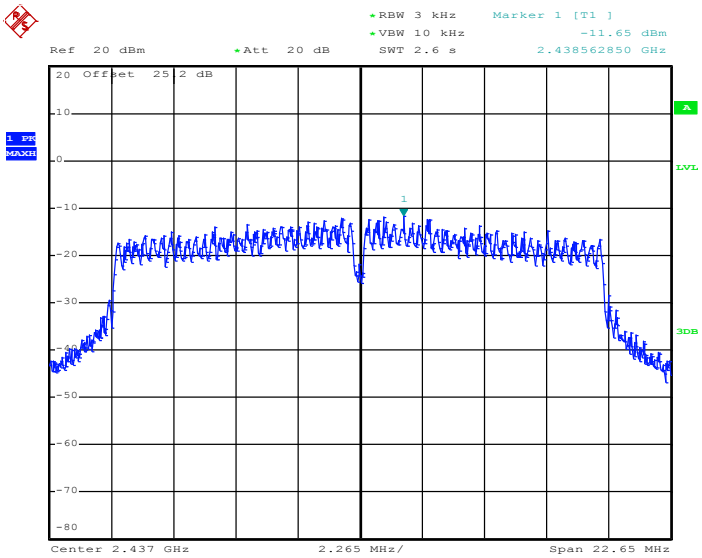
Date: 11.APR.2013 17:30:03

PSD 3kHz Plot on 2.4GHz 802.11n HT20 Channel 01



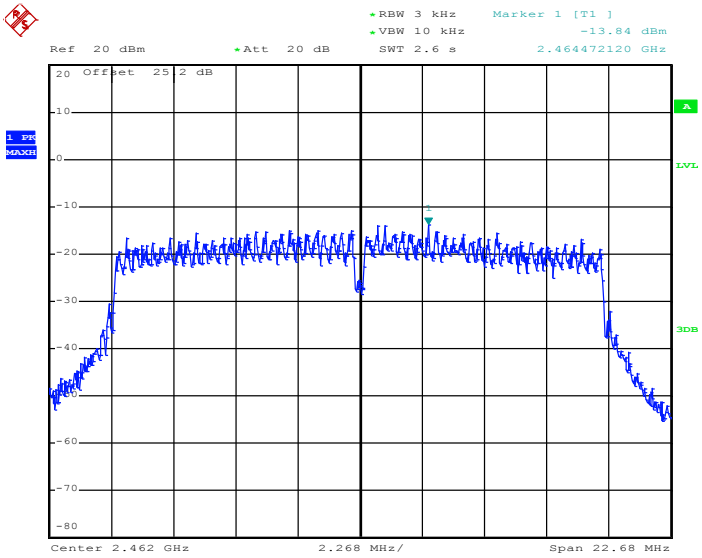
Date: 11.APR.2013 17:35:37

PSD 3kHz Plot on 2.4GHz 802.11n HT20 Channel 06



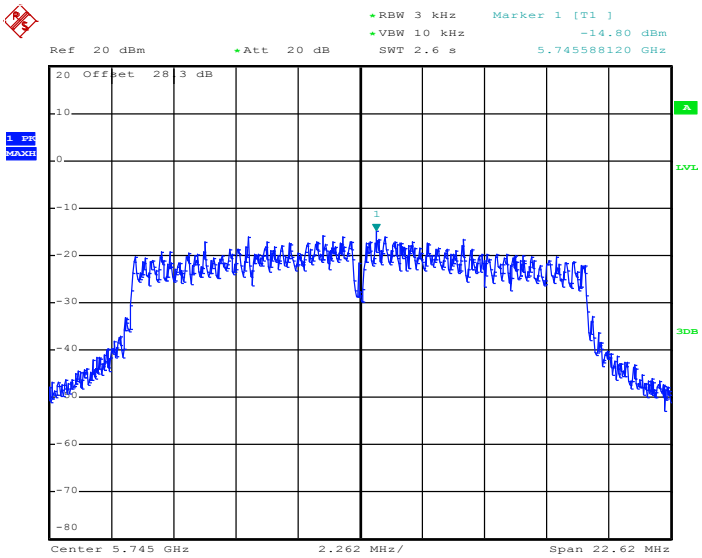
Date: 11.APR.2013 17:46:49

PSD 3kHz Plot on 2.4GHz 802.11n HT20 Channel 11



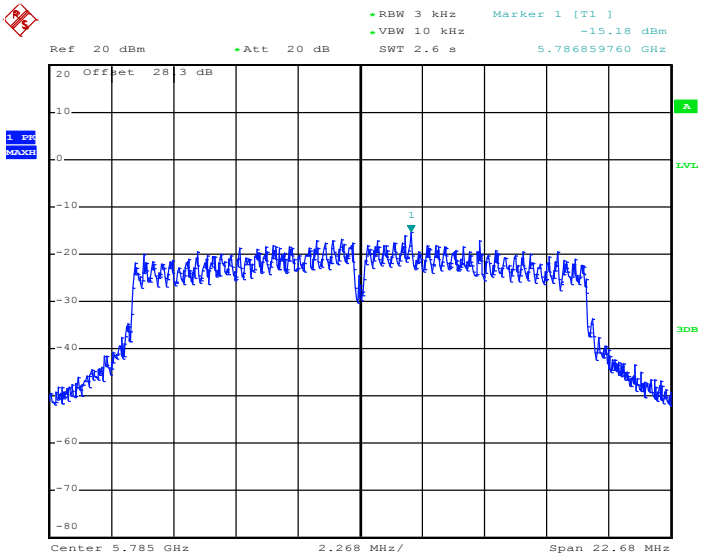
Date: 11.APR.2013 17:51:02

PSD 3kHz Plot on 802.11a Channel 149



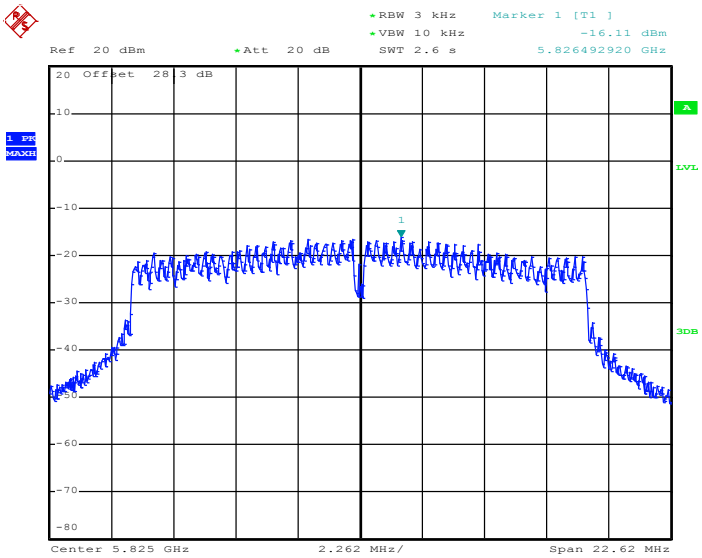
Date: 11.APR.2013 17:56:32

PSD 3kHz Plot on 802.11a Channel 157



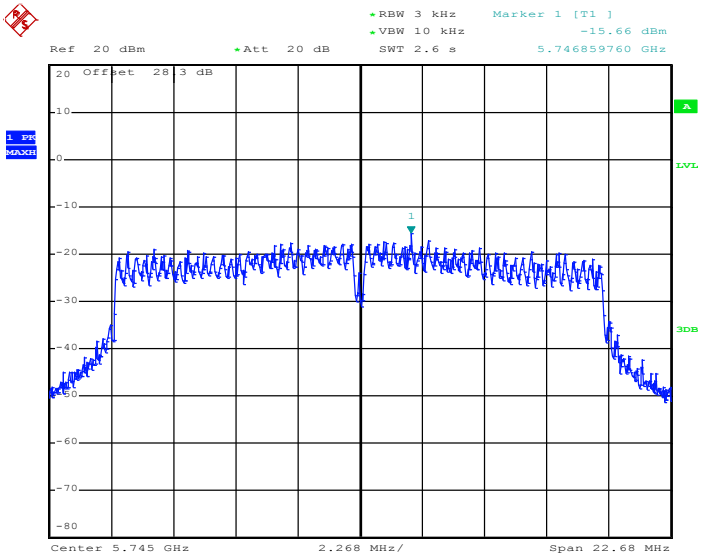
Date: 11.APR.2013 18:04:37

PSD 3kHz Plot on 802.11a Channel 165



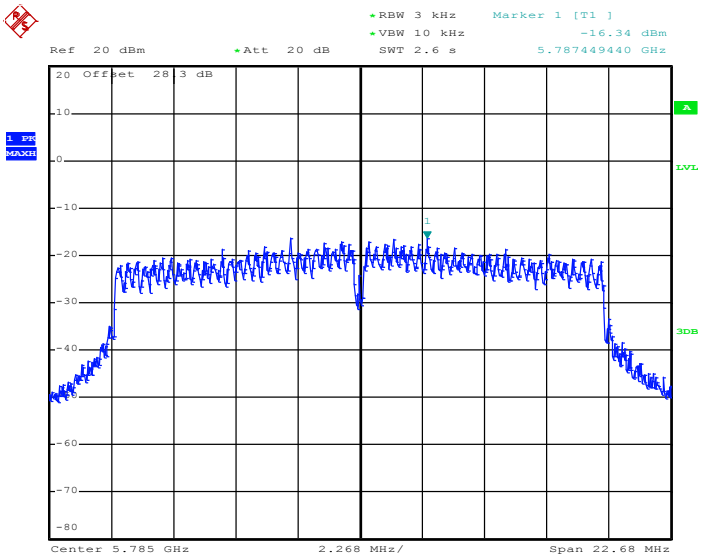
Date: 11.APR.2013 18:08:59

PSD 3kHz Plot on 5GHz 802.11n HT20 Channel 149



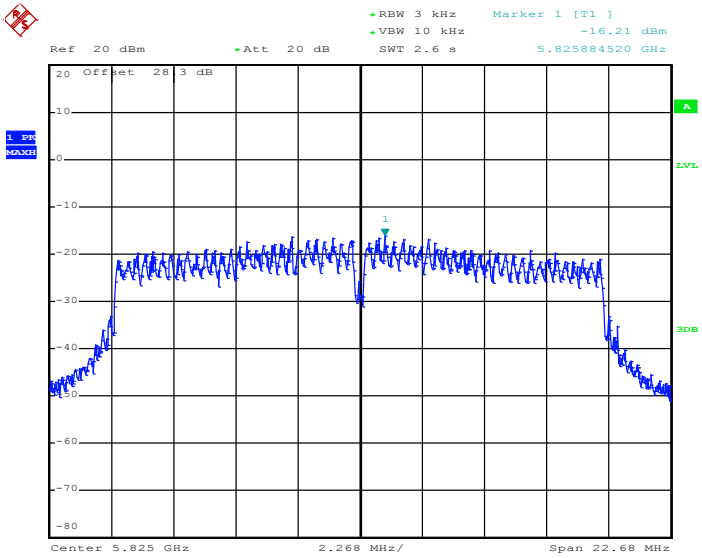
Date: 11.APR.2013 18:13:20

PSD 3kHz Plot on 5GHz 802.11n HT20 Channel 157



Date: 11.APR.2013 18:17:37

PSD 3kHz Plot on 5GHz 802.11n HT20 Channel 165



Date: 11.APR.2013 18:23:54

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

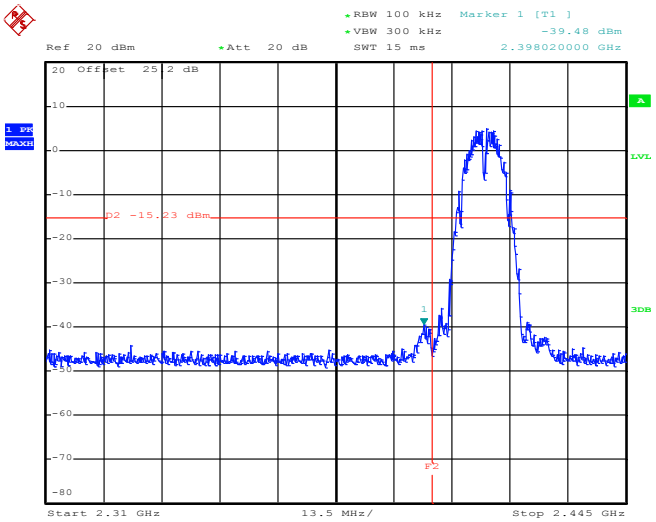
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup

2.4.5 Test Result of Conducted Spurious at Band Edges

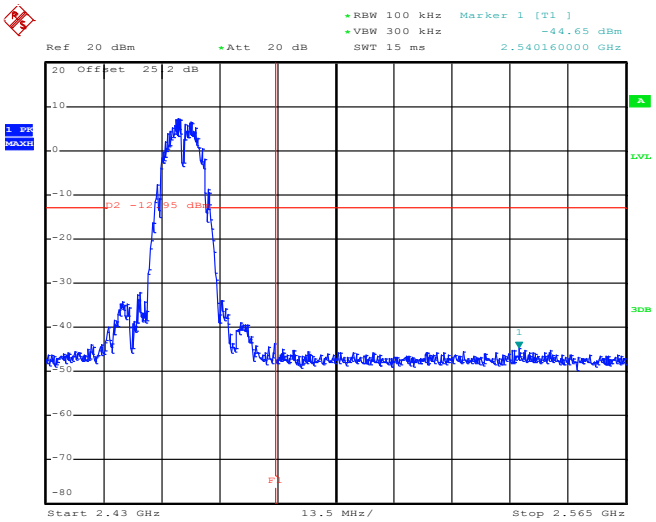
Test Mode :	802.11b	**Temperature :**	24~26℃
Test Band :	Low and High	**Relative Humidity :**	50~53%
Test Channel :	01 and 11	**Test Engineer :**	Coyote Lin

Low Band Edge Plot on 802.11b Channel 01



Date: 11.APR.2013 17:01:37

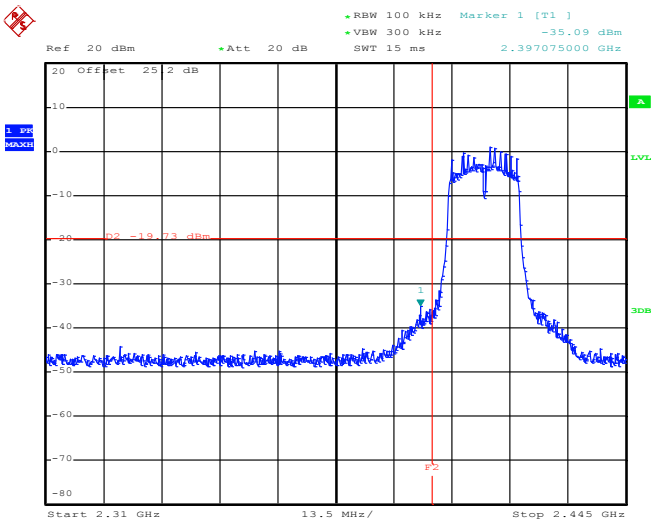
High Band Edge Plot on 802.11b Channel 11



Date: 11.APR.2013 17:16:00

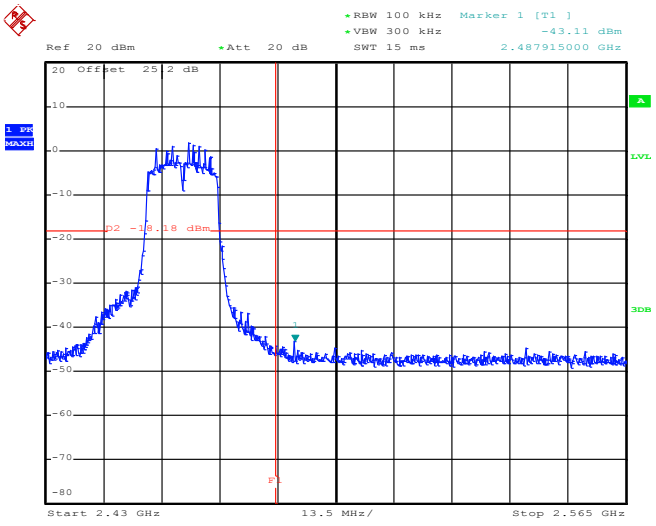
Test Mode :	802.11g	**Temperature :**	24~26℃
Test Band :	Low and High	**Relative Humidity :**	50~53%
Test Channel :	01 and 11	**Test Engineer :**	Coyote Lin

Low Band Edge Plot on 802.11g Channel 01



Date: 11.APR.2013 17:21:16

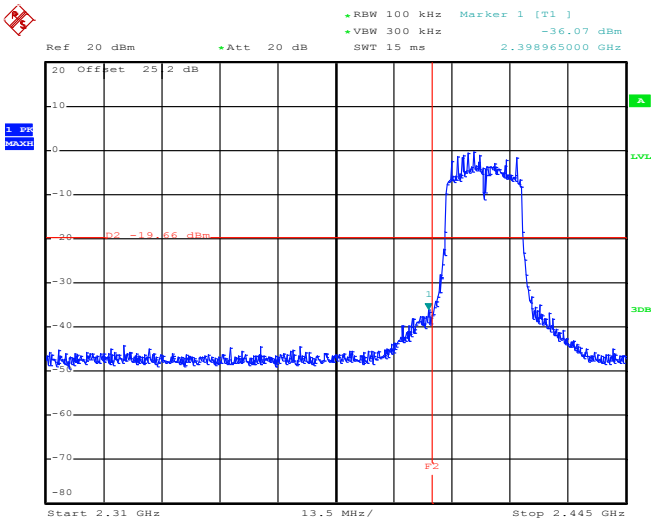
High Band Edge Plot on 802.11g Channel 11



Date: 11.APR.2013 17:31:00

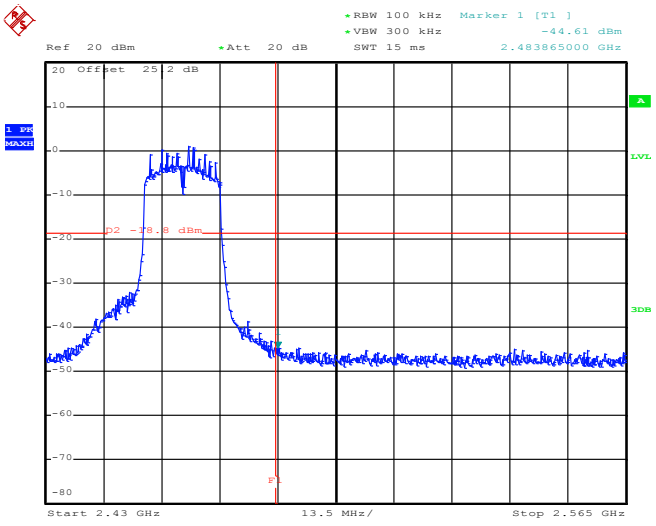
Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Coyote Lin

Low Band Edge Plot on 2.4GHz 802.11n HT20 Channel 01



Date: 11.APR.2013 17:36:25

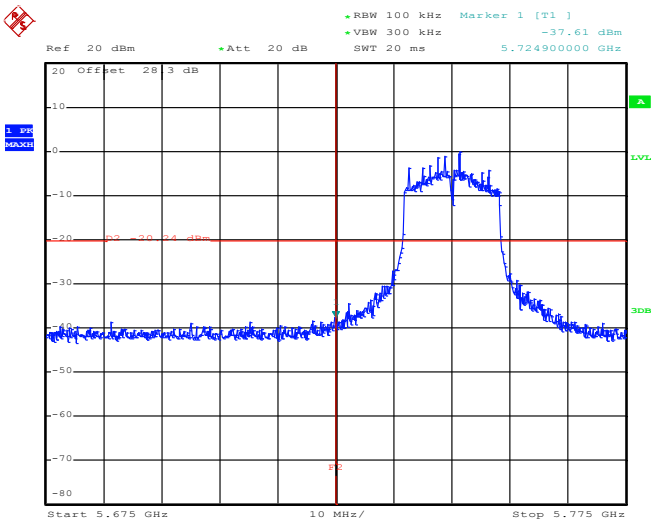
High Band Edge Plot on 2.4GHz 802.11n HT20 Channel 11



Date: 11.APR.2013 17:51:35

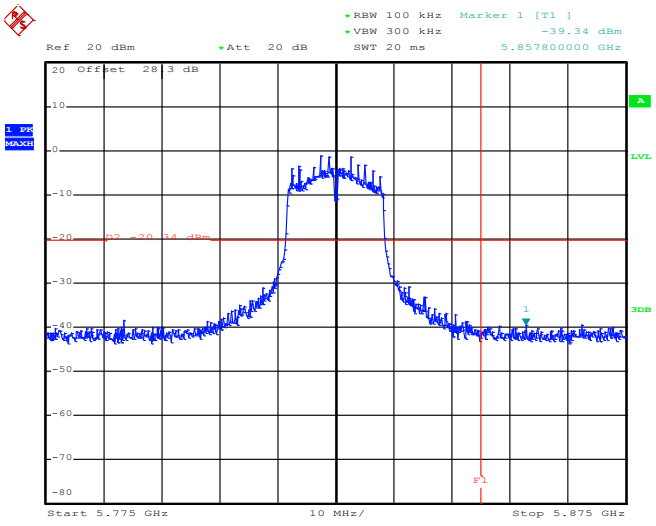
Test Mode :	802.11a	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	149 and 165	Test Engineer :	Coyote Lin

Low Band Edge Plot on 802.11a Channel 149



Date: 11.APR.2013 17:56:51

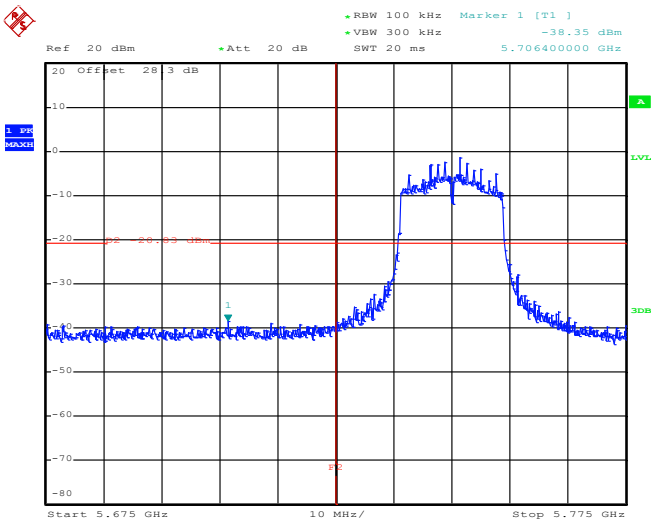
High Band Edge Plot on 802.11a Channel 165



Date: 11.APR.2013 18:09:18

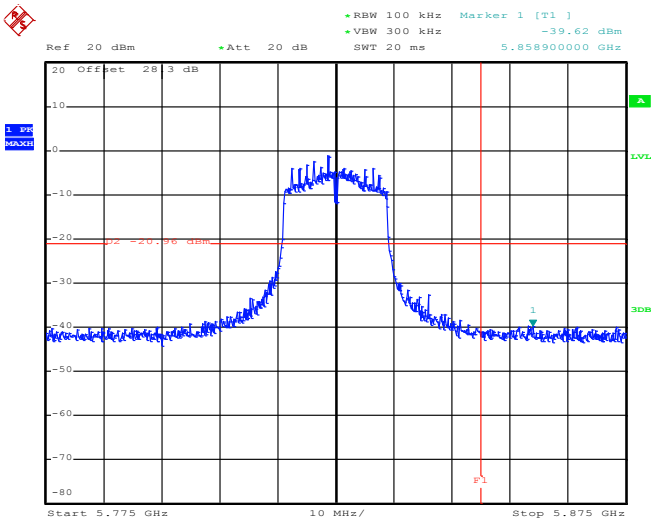
Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Band :	Low and High	Relative Humidity :	50~53%
Test Channel :	149 and 165	Test Engineer :	Coyote Lin

Low Band Edge Plot on 5GHz 802.11n HT20 Channel 149



Date: 11.APR.2013 18:13:36

High Band Edge Plot on 5GHz 802.11n HT20 Channel 165



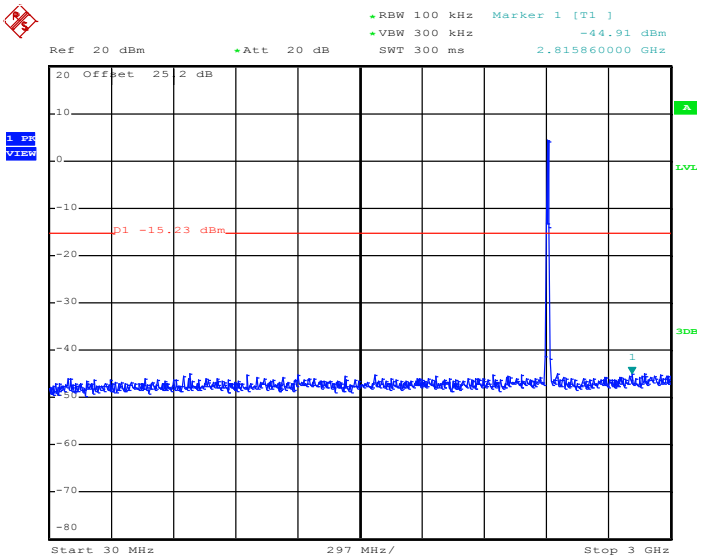
Date: 11.APR.2013 18:24:10

3.4.6 Test Result of Conducted Spurious Emission

Test Mode :	802.11b	Temperature :	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Coyote Lin

802.11b 30 MHz~3 GHz

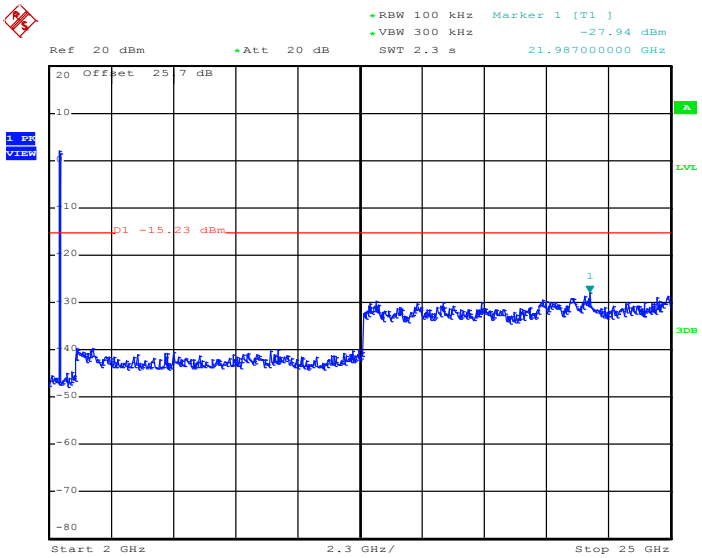
Conducted Spurious Emission Plot on Channel 01



Date: 11.APR.2013 17:02:24

802.11b 2 GHz~25 GHz

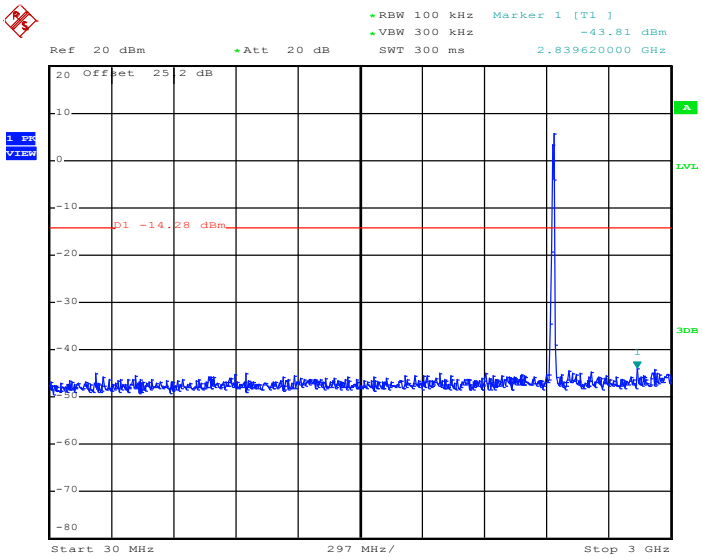
Conducted Spurious Emission Plot on Channel 01



Date: 11.APR.2013 17:02:42

802.11b 30 MHz~3 GHz

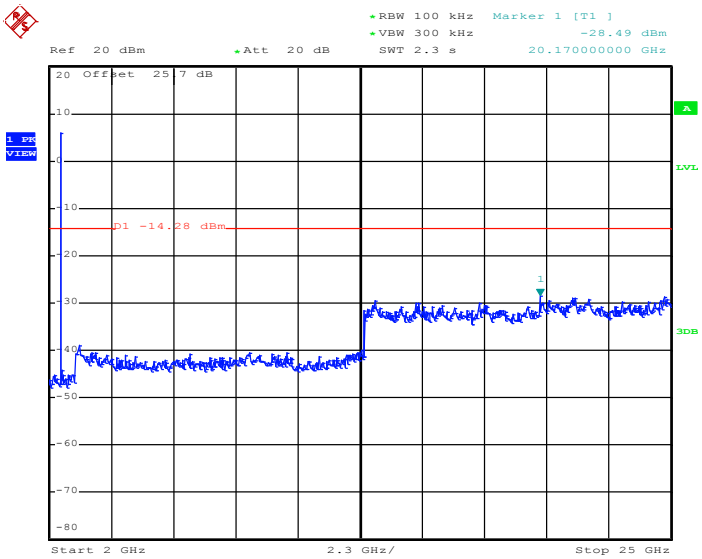
Conducted Spurious Emission Plot on Channel 06



Date: 11.APR.2013 17:12:48

802.11b 2 GHz~25 GHz

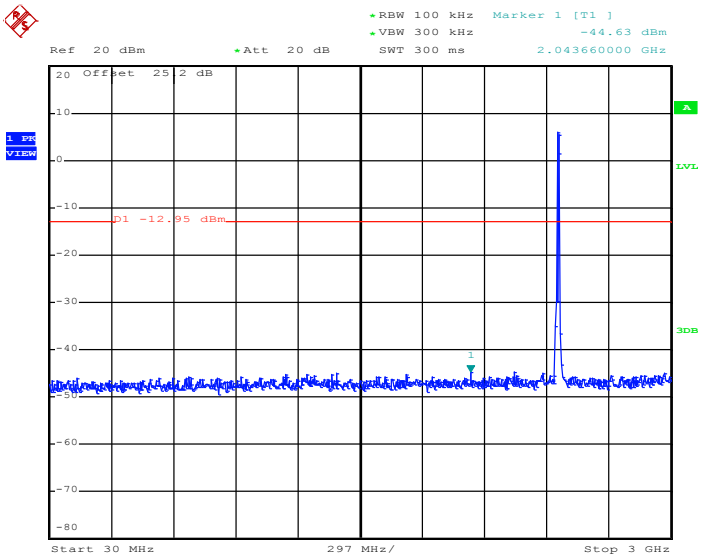
Conducted Spurious Emission Plot on Channel 06



Date: 11.APR.2013 17:13:07

802.11b 30 MHz~3 GHz

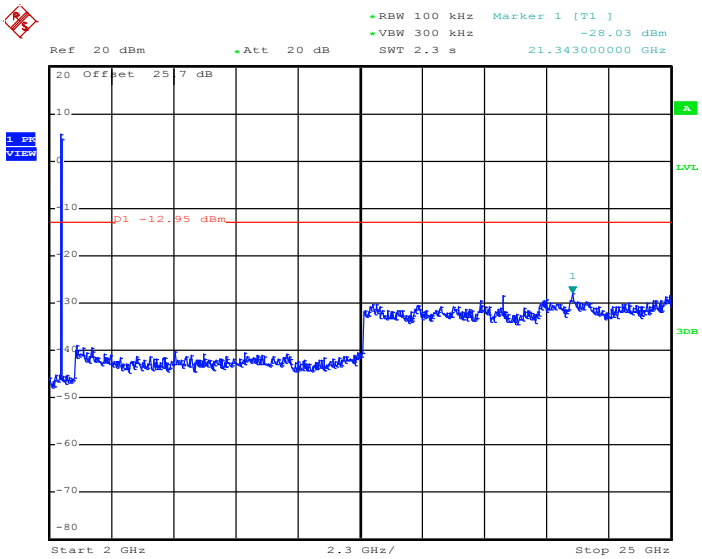
Conducted Spurious Emission Plot on Channel 11



Date: 11.APR.2013 17:16:32

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

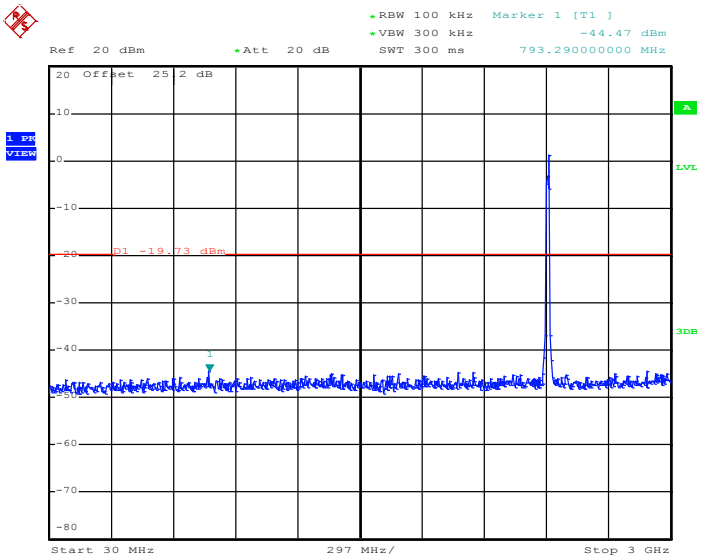


Date: 11.APR.2013 17:16:51

Test Mode :	802.11g	**Temperature :**	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	**Relative Humidity :**	50~53%
Test Channel :	01, 06, 11	**Test Engineer :**	Coyote Lin

802.11g 30 MHz~3 GHz

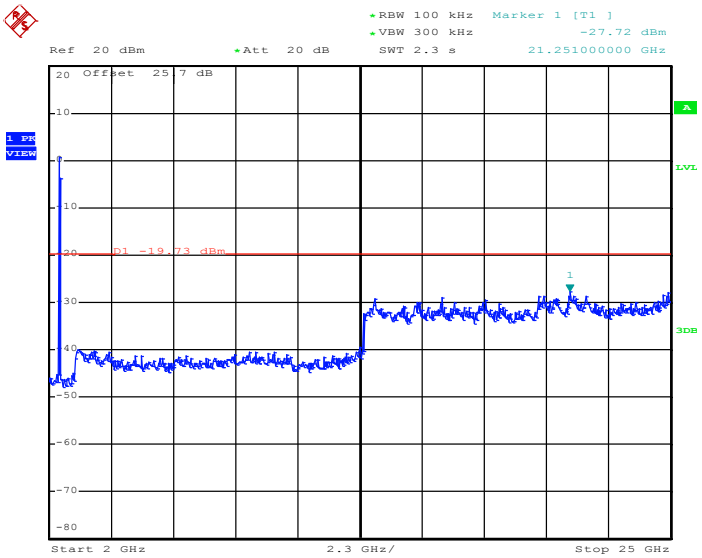
Conducted Spurious Emission Plot on Channel 01



Date: 11.APR.2013 17:22:00

802.11g 2 GHz~25 GHz

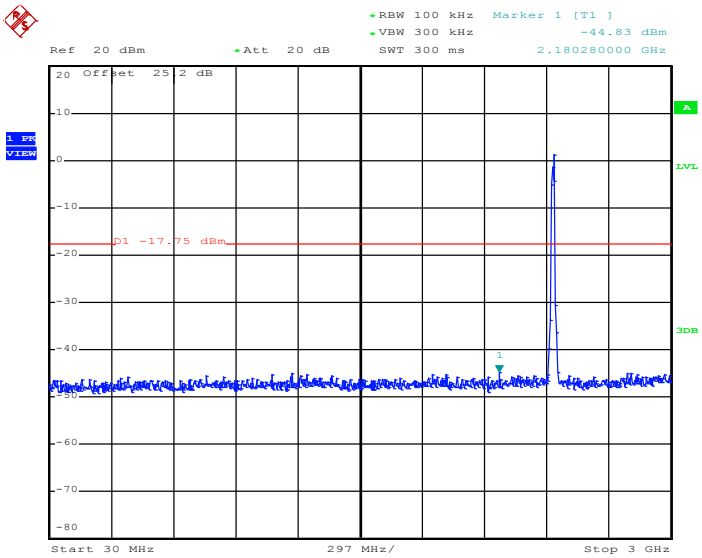
Conducted Spurious Emission Plot on Channel 01



Date: 11.APR.2013 17:22:19

802.11g 30 MHz~3 GHz

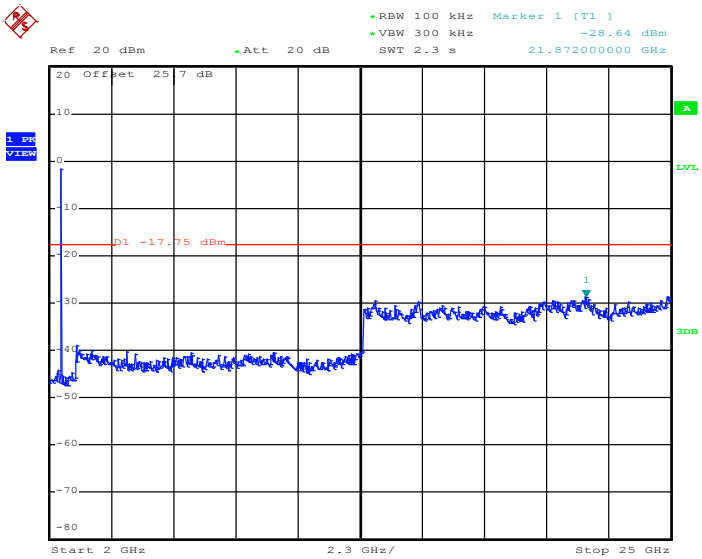
Conducted Spurious Emission Plot on Channel 06



Date: 11.APR.2013 17:25:53

802.11g 2 GHz~25 GHz

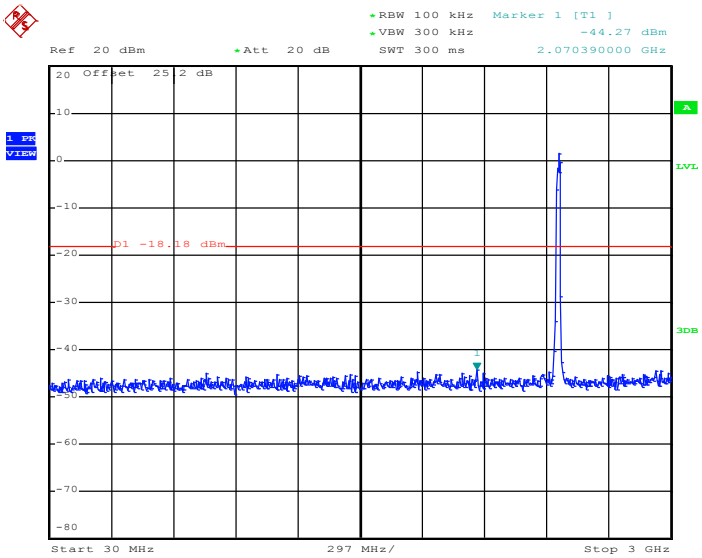
Conducted Spurious Emission Plot on Channel 06



Date: 11.APR.2013 17:26:12

802.11g 30 MHz~3 GHz

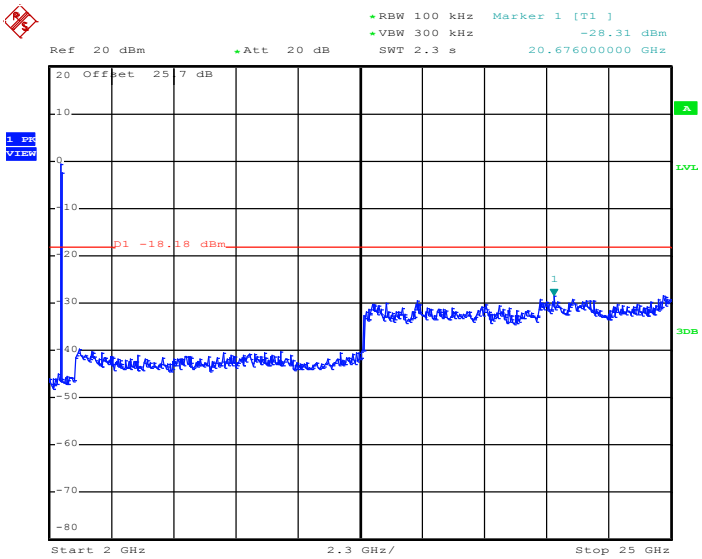
Conducted Spurious Emission Plot on Channel 11



Date: 11.APR.2013 17:31:30

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

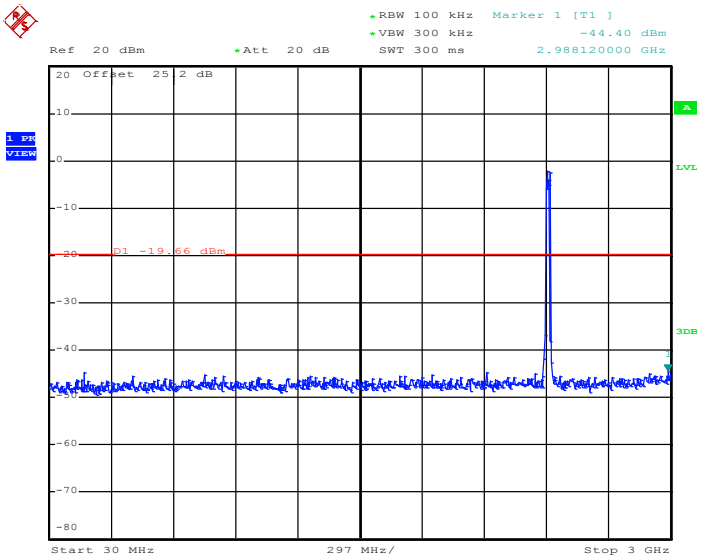


Date: 11.APR.2013 17:31:49

Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	30MHz-3GHz and 2G-25GHz	**Relative Humidity :**	50~53%
Test Channel :	01, 06, 11	**Test Engineer :**	Coyote Lin

2.4GHz 802.11n HT20 30 MHz~3 GHz

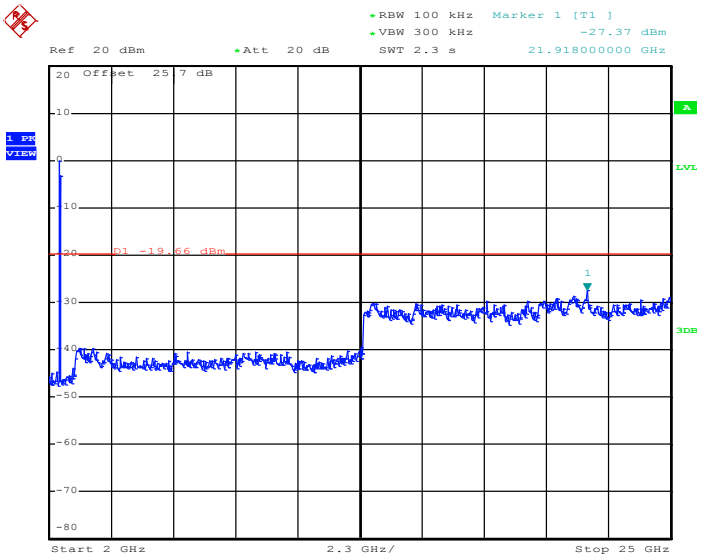
Conducted Spurious Emission Plot on Channel 01



Date: 11.APR.2013 17:36:56

2.4GHz 802.11n HT20 2 GHz~25 GHz

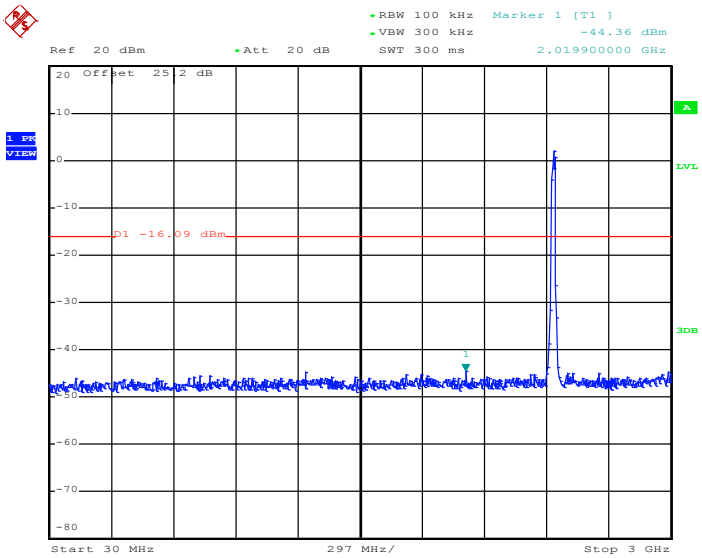
Conducted Spurious Emission Plot on Channel 01



Date: 11.APR.2013 17:37:14

2.4GHz 802.11n HT20 30 MHz~3 GHz

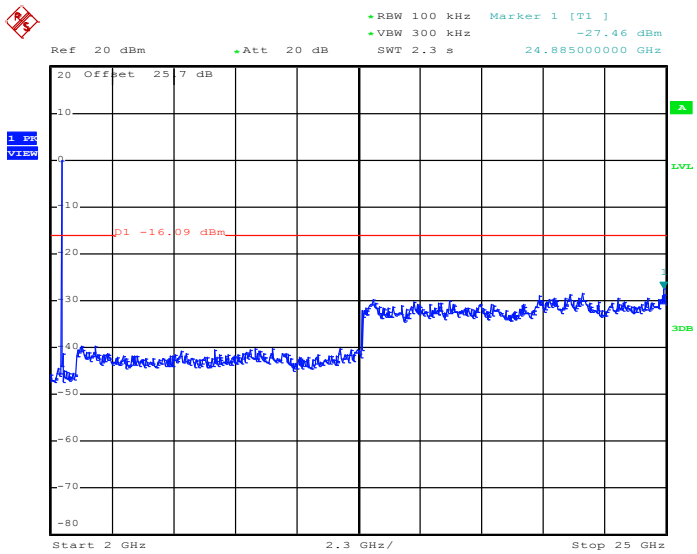
Conducted Spurious Emission Plot on Channel 06



Date: 11.APR.2013 17:47:11

2.4GHz 802.11n HT20 2 GHz~25 GHz

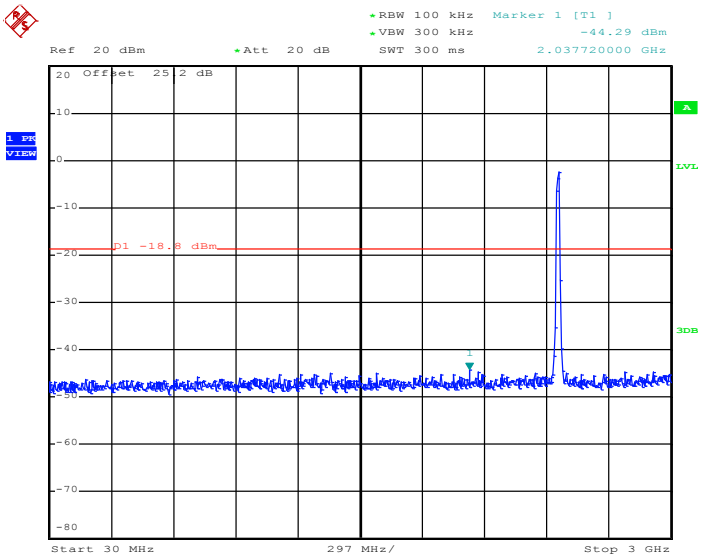
Conducted Spurious Emission Plot on Channel 06



Date: 11.APR.2013 17:47:29

2.4GHz 802.11n HT20 30 MHz~3 GHz

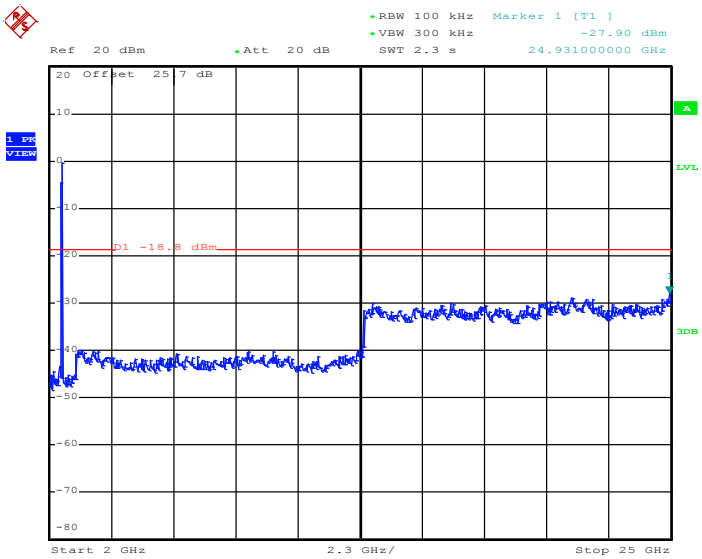
Conducted Spurious Emission Plot on Channel 11



Date: 11.APR.2013 17:52:02

2.4GHz 802.11n HT20 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11

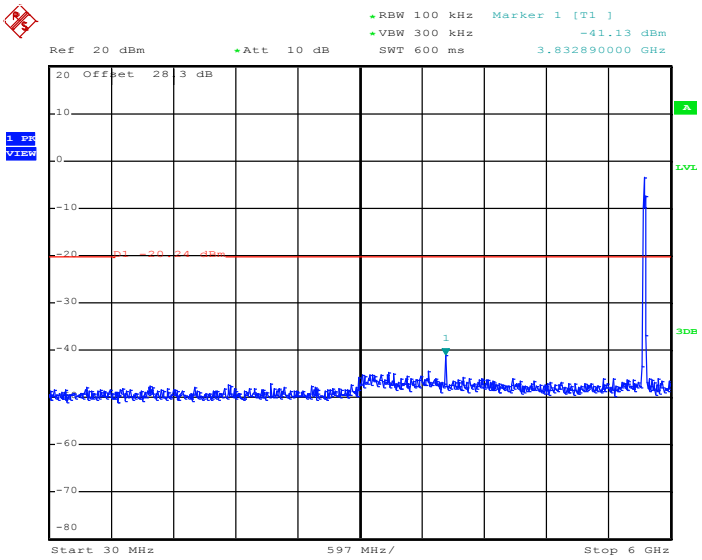


Date: 11.APR.2013 17:52:21

Test Mode :	802.11a	**Temperature :**	24~26℃
Test Band :	30MHz-6GHz and 5G-40GHz	**Relative Humidity :**	50~53%
Test Channel :	149, 157, 165	**Test Engineer :**	Coyote Lin

802.11a 30 MHz~6 GHz

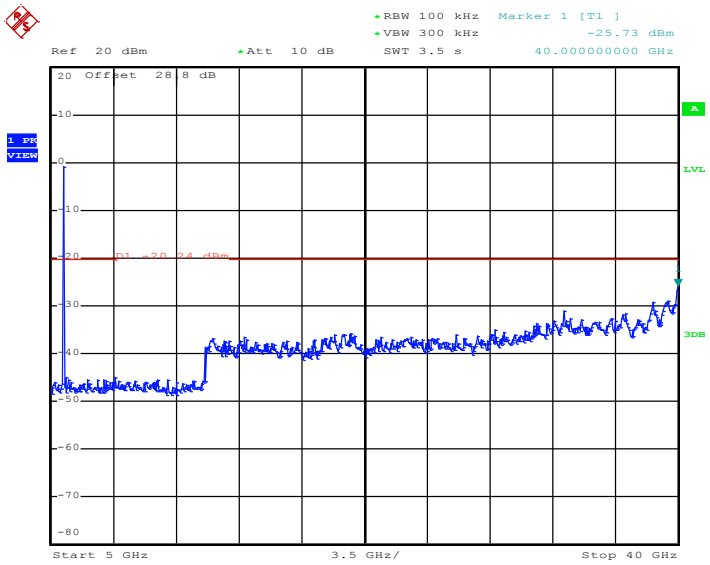
Conducted Spurious Emission Plot on Channel 149



Date: 11.APR.2013 17:58:57

802.11a 5 GHz~40 GHz

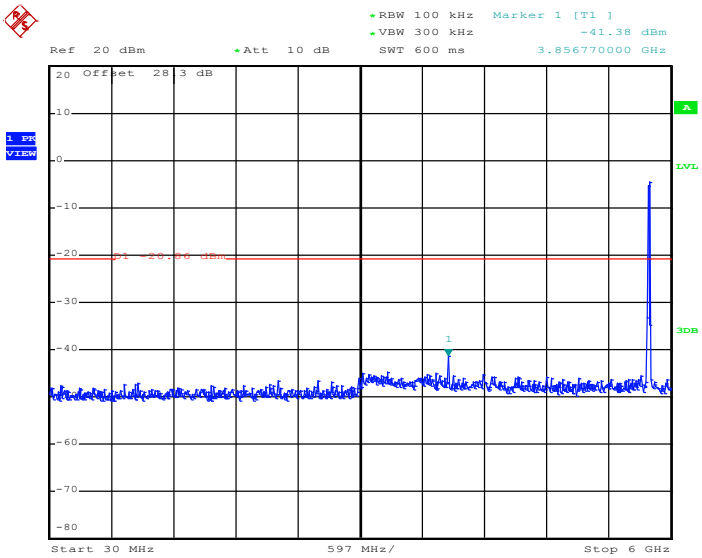
Conducted Spurious Emission Plot on Channel 149



Date: 11.APR.2013 17:59:15

802.11a 30 MHz~6 GHz

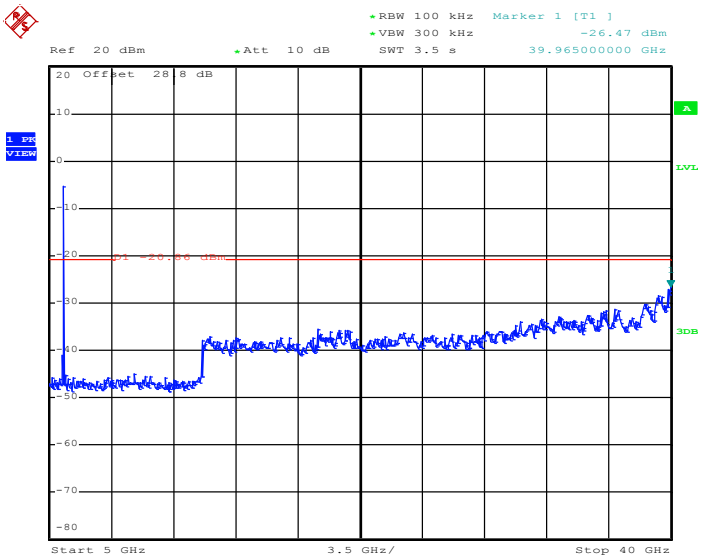
Conducted Spurious Emission Plot on Channel 157



Date: 11.APR.2013 18:05:06

802.11a 5 GHz~40 GHz

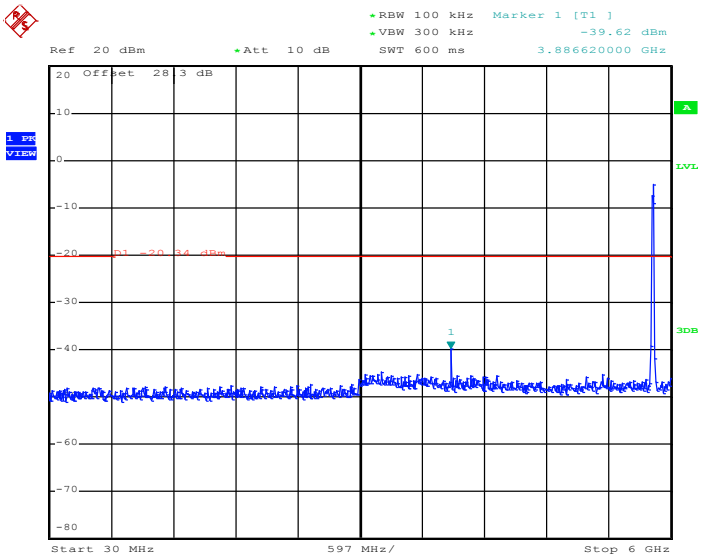
Conducted Spurious Emission Plot on Channel 157



Date: 11.APR.2013 18:05:25

802.11a 30 MHz~6 GHz

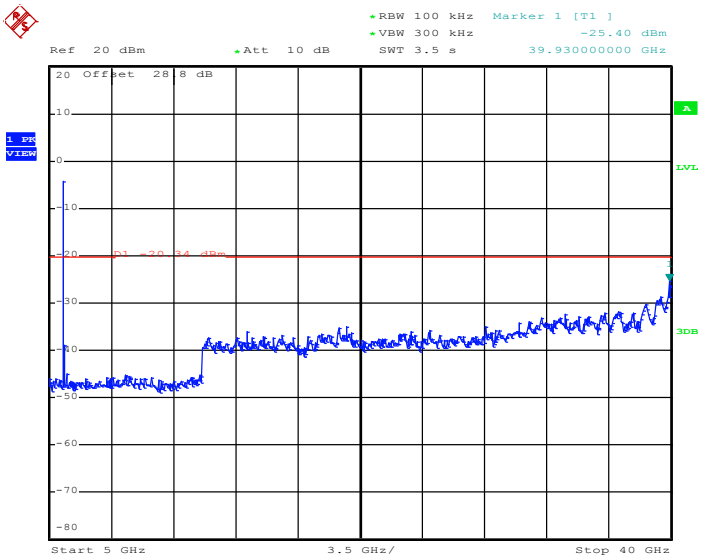
Conducted Spurious Emission Plot on Channel 165



Date: 11.APR.2013 18:09:48

802.11a 5 GHz~40 GHz

Conducted Spurious Emission Plot on Channel 165

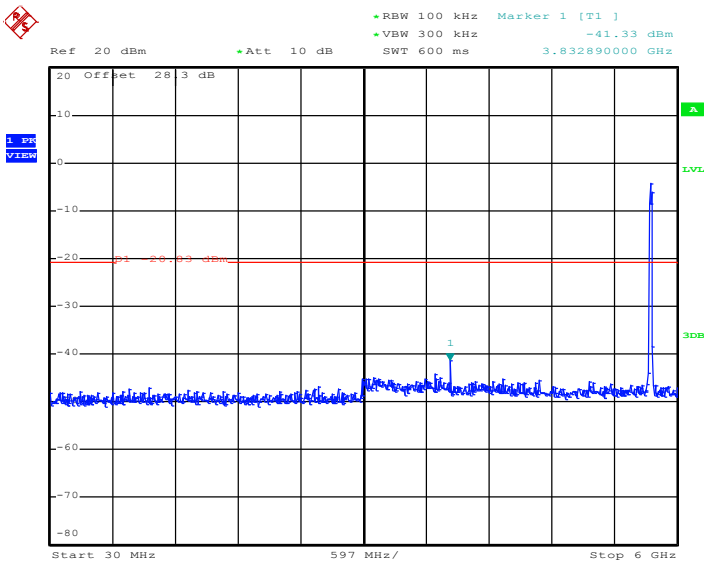


Date: 11.APR.2013 18:10:06

Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	30MHz-6GHz and 5G-40GHz	**Relative Humidity :**	50~53%
Test Channel :	149, 157, 165	**Test Engineer :**	Coyote Lin

5GHz 802.11n HT20 30 MHz~6 GHz

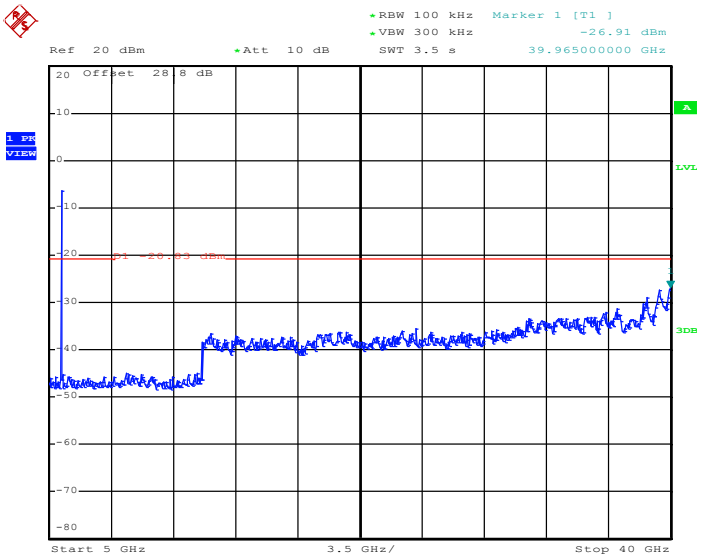
Conducted Spurious Emission Plot on Channel 149



Date: 11.APR.2013 18:13:58

5GHz 802.11n HT20 5 GHz~40 GHz

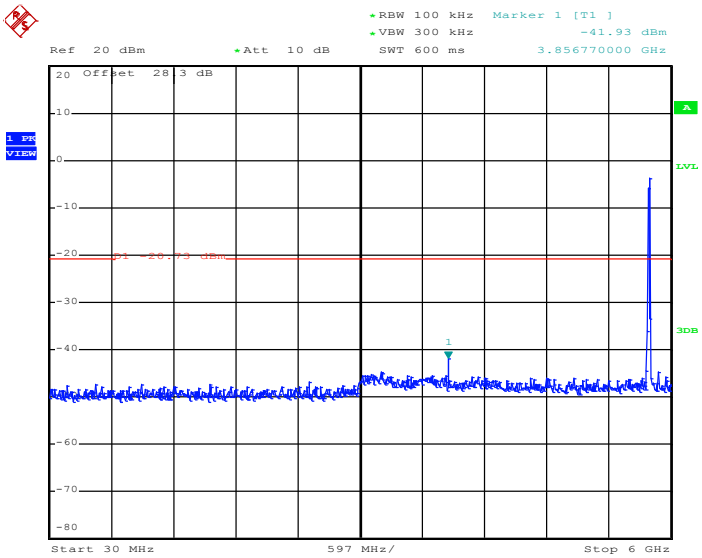
Conducted Spurious Emission Plot on Channel 149



Date: 11.APR.2013 18:14:17

5GHz 802.11n HT20 30 MHz~6 GHz

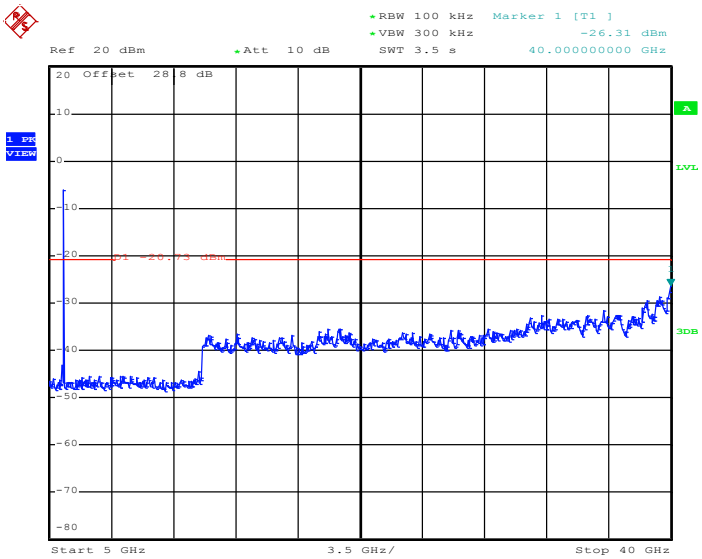
Conducted Spurious Emission Plot on Channel 157



Date: 11.APR.2013 18:17:59

5GHz 802.11n HT20 5 GHz~40 GHz

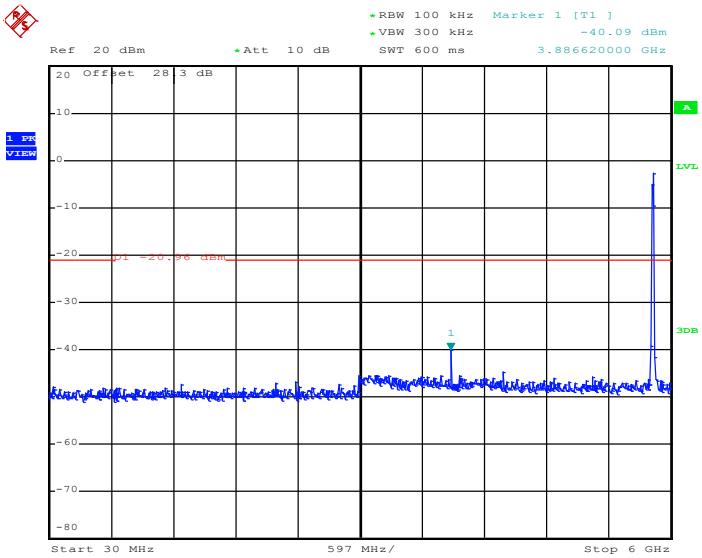
Conducted Spurious Emission Plot on Channel 157



Date: 11.APR.2013 18:18:17

5GHz 802.11n HT20 30 MHz~6 GHz

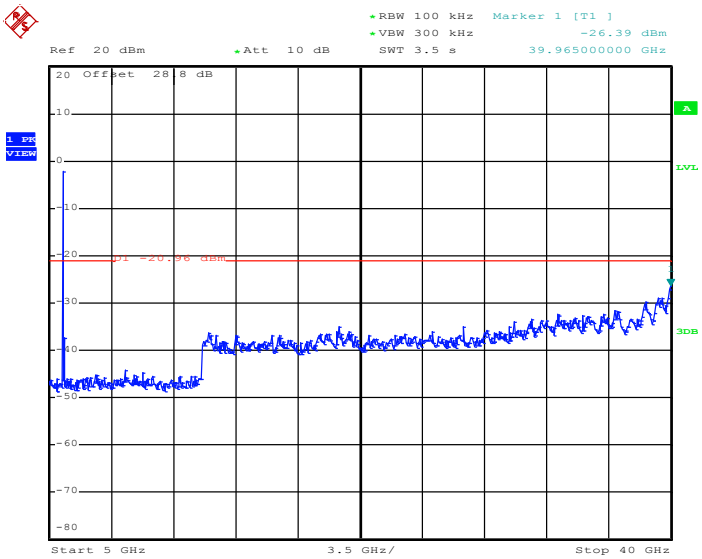
Conducted Spurious Emission Plot on Channel 165



Date: 11.APR.2013 18:24:32

5GHz 802.11n HT20 5 GHz~40 GHz

Conducted Spurious Emission Plot on Channel 165



Date: 11.APR.2013 18:24:50

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 KHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/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

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

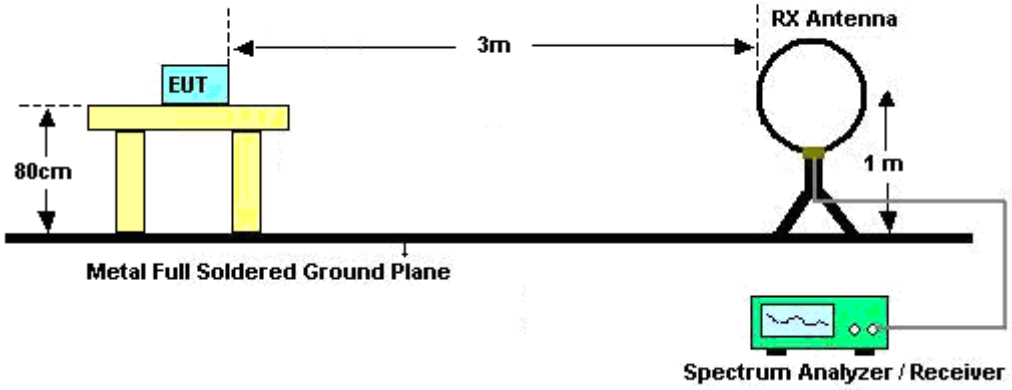
1. The testing follows the guidelines in ANSI C63.10-2009.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(μs)	1/T(kHz)	VBW Setting
802.11b	99.14	-	-	10Hz
802.11g	95.39	2070.000	0.483	1kHz
2.4GHz 802.11n HT20	95.07	1930.000	0.518	1kHz
802.11a	95.39	2070.000	0.483	1kHz
5GHz 802.11n HT20	95.07	1930.000	0.518	1kHz

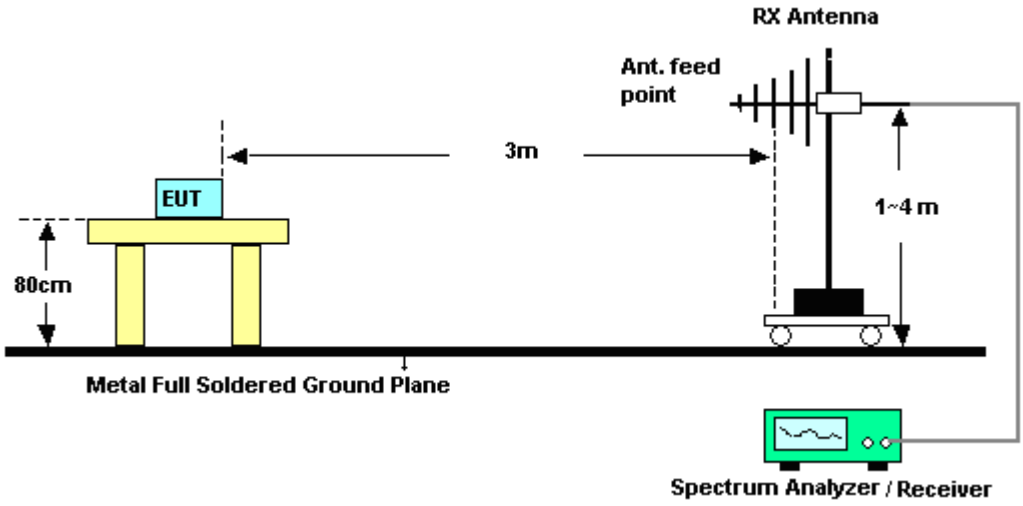
Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.5.4 Test Setup

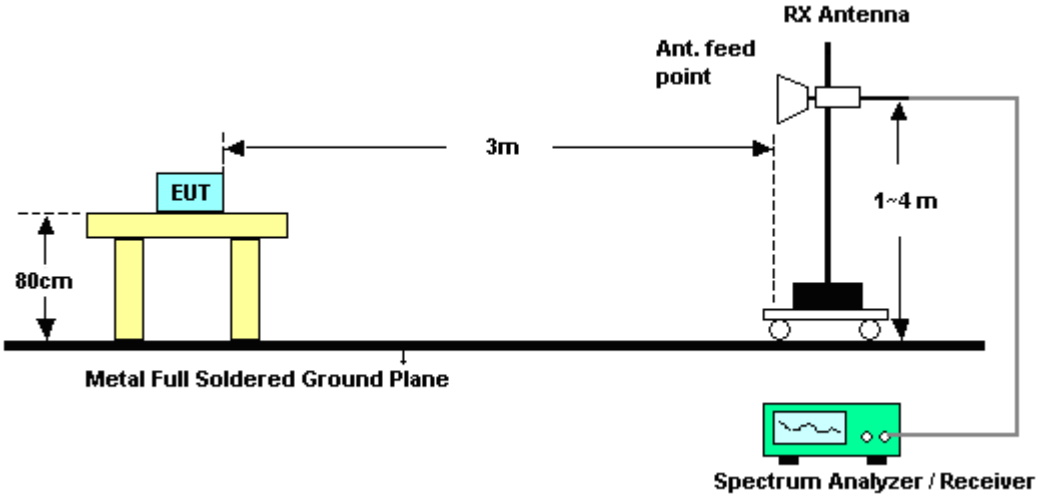
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Emissions (9KHz ~ 30MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.5.6 Test Result of Radiated Band Edges

Test Mode :	802.11b	**Temperature :**	27~28°C
Test Band :	Low	**Relative Humidity :**	45~46%
Test Channel :	01	**Test Engineer :**	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2385.6	53.27	-20.73	74	49.02	32.36	6.45	34.56	156	308	Peak
2390	41.85	-12.15	54	37.6	32.36	6.45	34.56	156	308	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2389.74	51.88	-22.12	74	47.63	32.36	6.45	34.56	119	66	Peak
2390	40.52	-13.48	54	36.27	32.36	6.45	34.56	119	66	Average

Test Mode :	802.11b	**Temperature :**	27~28°C
Test Band :	High	**Relative Humidity :**	45~46%
Test Channel :	11	**Test Engineer :**	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2483.53	57.98	-16.02	74	53.46	32.48	6.59	34.55	100	322	Peak
2483.5	47.96	-6.04	54	43.44	32.48	6.59	34.55	100	322	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2483.95	55.01	-18.99	74	50.49	32.48	6.59	34.55	114	79	Peak
2483.5	45.08	-8.92	54	40.56	32.48	6.59	34.55	114	79	Average

Test Mode :	802.11g	Temperature :	27~28°C
Test Band :	Low	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.47	73.85	-0.15	74	69.6	32.36	6.45	34.56	104	320	Peak
2390	53.79	-0.21	54	49.54	32.36	6.45	34.56	104	320	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.74	70.94	-3.06	74	66.69	32.36	6.45	34.56	114	82	Peak
2389.92	50.79	-3.21	54	46.54	32.36	6.45	34.56	114	82	Average

Test Mode :	802.11g	Temperature :	27~28°C
Test Band :	High	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.62	73.65	-0.35	74	69.13	32.48	6.59	34.55	100	323	Peak
2483.53	52.43	-1.57	54	47.91	32.48	6.59	34.55	100	323	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	68.25	-5.75	74	63.73	32.48	6.59	34.55	114	76	Peak
2483.5	47.22	-6.78	54	42.7	32.48	6.59	34.55	114	76	Average

Test Mode :	802.11n HT20	Temperature :	27~28°C
Test Band :	Low	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.83	73.34	-0.66	74	69.09	32.36	6.45	34.56	156	312	Peak
2390	53.25	-0.75	54	49	32.36	6.45	34.56	156	312	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.47	70.87	-3.13	74	66.62	32.36	6.45	34.56	172	87	Peak
2390	50.45	-3.55	54	46.2	32.36	6.45	34.56	172	87	Average

Test Mode :	802.11n HT20	Temperature :	27~28°C
Test Band :	High	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.65	73.17	-0.83	74	68.65	32.48	6.59	34.55	102	323	Peak
2483.5	52.33	-1.67	54	47.81	32.48	6.59	34.55	102	323	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.31	67.27	-6.73	74	62.75	32.48	6.59	34.55	115	80	Peak
2483.5	46.82	-7.18	54	42.3	32.48	6.59	34.55	115	80	Average

Test Mode :	802.11a	Temperature :	27~28°C
Test Band :	Low	Relative Humidity :	45~46%
Test Channel :	149	Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	74.63	-8.16	82.79	61.72	35.41	11.34	33.84	100	249	Peak
5744	92.72	-	-	79.73	35.44	11.39	33.84	100	249	Average
5744	102.79	-	-	89.8	35.44	11.39	33.84	100	249	Peak

5725 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.
For example, 102.79 dBµV/m - 20dB = 82.79 dBµV/m.

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	72.26	-10.91	83.17	59.35	35.41	11.34	33.84	101	273	Peak
5746	93.29	-	-	80.3	35.44	11.39	33.84	101	273	Average
5746	103.17	-	-	90.18	35.44	11.39	33.84	101	273	Peak

5725 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.

Test Mode :	802.11a	Temperature :	27~28°C
Test Band :	High	Relative Humidity :	45~46%
Test Channel :	165	Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5824	90.28	-	-	77.05	35.56	11.51	33.84	100	300	Average
5824	99.63	-	-	86.4	35.56	11.51	33.84	100	300	Peak
5850	63.58	-16.05	79.63	50.28	35.58	11.56	33.84	100	300	Peak

5850 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5824	91.38	-	-	78.15	35.56	11.51	33.84	142	268	Average
5824	101.07	-	-	87.84	35.56	11.51	33.84	142	268	Peak
5850	65.01	-16.06	81.07	51.71	35.58	11.56	33.84	142	268	Peak

5850MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.

Test Mode :	802.11n HT20	Temperature :	27~28°C
Test Band :	Low	Relative Humidity :	45~46%
Test Channel :	149	Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	74.79	-7.37	82.16	61.88	35.41	11.34	33.84	100	252	Peak
5746	92.31	-	-	79.32	35.44	11.39	33.84	100	252	Average
5746	102.16	-	-	89.17	35.44	11.39	33.84	100	252	Peak

5725 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	71.41	-11.02	82.43	58.5	35.41	11.34	33.84	101	274	Peak
5744	92.31	-	-	79.32	35.44	11.39	33.84	101	274	Average
5744	102.43	-	-	89.44	35.44	11.39	33.84	101	274	Peak

5725 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.

Test Mode :	802.11n HT20	**Temperature :**	27~28°C
Test Band :	High	**Relative Humidity :**	45~46%
Test Channel :	165	**Test Engineer :**	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
5826	90.84	-	-	77.61	35.56	11.51	33.84	100	299	Average
5826	100.27	-	-	87.04	35.56	11.51	33.84	100	299	Peak
5850	65.59	-14.68	80.27	52.29	35.58	11.56	33.84	100	299	Peak

5850MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
5824	91.07	-	-	77.84	35.56	11.51	33.84	179	265	Average
5824	101.05	-	-	87.82	35.56	11.51	33.84	179	265	Peak
5850	64.34	-16.71	81.05	51.04	35.58	11.56	33.84	179	265	Peak

5850MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.

3.5.7 Test Result of Radiated Emission (30MHz ~ 10th Harmonic)

Test Mode :	802.11b	**Temperature :**	27~28°C
Test Channel :	01	**Relative Humidity :**	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	**Polarization :**	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 111.37dBµV/m - 20dB = 91.37dBµV/m.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
87.24	27.67	-12.33	40	50.31	8.04	1.04	31.72	-	-	Peak
171.48	39.13	-4.37	43.5	59.48	9.72	1.6	31.67	100	25	Peak
247.62	41.48	-4.52	46	59.31	12.1	1.72	31.65	-	-	Peak
338.5	36.72	-9.28	46	52.52	13.76	2.01	31.57	-	-	Peak
451.9	35.71	-10.29	46	48.41	16.84	2.31	31.85	-	-	Peak
665.4	37.1	-8.9	46	47.1	19.15	2.83	31.98	-	-	Peak
2412	105.93	-	-	101.62	32.38	6.49	34.56	156	308	Average
2412	111.37	-	-	107.06	32.38	6.49	34.56	156	308	Peak
4824	47.45	-6.55	54	58	34.87	10.17	55.59	110	71	Average
4824	51.92	-22.08	74	62.47	34.87	10.17	55.59	110	71	Peak
7236	49.61	-41.76	91.37	58.92	36.15	10.96	56.42	100	0	Peak

Test Mode :	802.11b	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	29.94	-10.06	40	42.12	18.9	0.64	31.72	-	-	Peak
54.84	36.22	-3.78	40	60.45	6.6	0.84	31.67	-	-	Peak
85.08	36.7	-3.3	40	59.79	7.6	1.02	31.71	100	69	Peak
540.1	41.87	-4.13	46	52.4	18.8	2.53	31.86	-	-	Peak
664	35.06	-10.94	46	45.06	19.15	2.83	31.98	-	-	Peak
923	32.86	-13.14	46	40.18	20.7	3.36	31.38	-	-	Peak
2414	103.14	-	-	98.83	32.38	6.49	34.56	119	66	Average
2414	108.87	-	-	104.56	32.38	6.49	34.56	119	66	Peak
4824	48.87	-5.13	54	59.42	34.87	10.17	55.59	100	89	Average
4824	53.04	-20.96	74	63.59	34.87	10.17	55.59	100	89	Peak
7236	48.98	-39.89	88.87	58.29	36.15	10.96	56.42	100	0	Peak

Test Mode :	802.11b	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Horizontal
Remark :	1. 2438 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2438	106.9	-	-	102.51	32.43	6.52	34.56	128	324	Average
2438	112.64	-	-	108.25	32.43	6.52	34.56	128	324	Peak
4875	46.74	-7.26	54	57.39	34.85	10.18	55.68	120	87	Average
4875	51.23	-22.77	74	61.88	34.85	10.18	55.68	120	87	Peak
7311	49.16	-24.84	74	58.36	36.14	10.94	56.28	100	0	Peak

Test Mode :	802.11b	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 2438 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2438	105.24	-	-	100.85	32.43	6.52	34.56	117	82	Average
2438	110.54	-	-	106.15	32.43	6.52	34.56	117	82	Peak
4875	48.66	-5.34	54	59.31	34.85	10.18	55.68	102	109	Average
4875	53.5	-20.5	74	64.15	34.85	10.18	55.68	102	109	Peak
7311	49.05	-24.95	74	58.25	36.14	10.94	56.28	100	0	Peak

Test Mode :	802.11b	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Horizontal
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2464	106.7	-	-	102.25	32.45	6.56	34.56	100	322	Average
2464	112.34	-	-	107.89	32.45	6.56	34.56	100	322	Peak
4923	49.29	-24.71	74	60.04	34.83	10.2	55.78	100	0	Peak
7386	48.69	-25.31	74	57.76	36.12	10.92	56.11	100	0	Peak

Test Mode :	802.11b	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2464	105.2	-	-	100.75	32.45	6.56	34.56	114	79	Average
2464	110.74	-	-	106.29	32.45	6.56	34.56	114	79	Peak
4926	47.69	-6.31	54	58.43	34.83	10.21	55.78	103	94	Average
4926	52.45	-21.55	74	63.19	34.83	10.21	55.78	103	94	Peak
7386	49.08	-24.92	74	58.15	36.12	10.92	56.11	100	0	Peak

Test Mode :	802.11g	**Temperature :**	27~28°C
Test Channel :	01	**Relative Humidity :**	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	**Polarization :**	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
167.97	38.95	-4.55	43.5	59.14	9.88	1.6	31.67	132	269	Peak
246.81	41.1	-4.9	46	58.93	12.1	1.72	31.65	-	-	Peak
292.17	38.27	-7.73	46	55	13.04	1.87	31.64	-	-	Peak
327.3	38.38	-7.62	46	54.43	13.57	1.98	31.6	-	-	Peak
666.8	36.2	-9.8	46	46.21	19.14	2.83	31.98	-	-	Peak
884.5	31.68	-14.32	46	39.54	20.5	3.33	31.69	-	-	Peak
2412	101.06	-	-	96.75	32.38	6.49	34.56	104	320	Average
2412	113.47	-	-	109.16	32.38	6.49	34.56	104	320	Peak
4824	48.65	-25.35	74	59.2	34.87	10.17	55.59	100	0	Peak
7236	48.49	-44.98	93.47	57.8	36.15	10.96	56.42	100	0	Peak

Test Mode :	802.11g	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	30.48	-9.52	40	42.66	18.9	0.64	31.72	-	-	Peak
55.65	36	-4	40	60.23	6.6	0.84	31.67	-	-	Peak
85.08	36.44	-3.56	40	59.53	7.6	1.02	31.71	100	36	Peak
538.7	42.02	-3.98	46	52.68	18.67	2.53	31.86	-	-	Peak
666.1	36.78	-9.22	46	46.79	19.14	2.83	31.98	-	-	Peak
886.6	33.13	-12.87	46	40.98	20.5	3.33	31.68	-	-	Peak
2414	99.98	-	-	95.67	32.38	6.49	34.56	114	82	Average
2414	110.5	-	-	106.19	32.38	6.49	34.56	114	82	Peak
4824	38.46	-15.54	54	49.01	34.87	10.17	55.59	100	354	Average
4824	51.83	-22.17	74	62.38	34.87	10.17	55.59	100	354	Peak
7236	48.68	-41.82	90.5	57.99	36.15	10.96	56.42	100	0	Peak

Test Mode :	802.11g	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Horizontal
Remark :	1. 2438 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2438	101.25	-	-	96.86	32.43	6.52	34.56	154	314	Average
2438	113.92	-	-	109.53	32.43	6.52	34.56	154	314	Peak
4875	50.27	-23.73	74	60.92	34.85	10.18	55.68	100	0	Peak
7311	49.74	-24.26	74	58.94	36.14	10.94	56.28	100	0	Peak

Test Mode :	802.11g	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 2438 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2438	100.79	-	-	96.4	32.43	6.52	34.56	116	80	Average
2438	111.53	-	-	107.14	32.43	6.52	34.56	116	80	Peak
4875	38.21	-15.79	54	48.86	34.85	10.18	55.68	100	351	Average
4875	51.04	-22.96	74	61.69	34.85	10.18	55.68	100	351	Peak
7311	50.36	-23.64	74	59.56	36.14	10.94	56.28	100	0	Peak

Test Mode :	802.11g	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Horizontal
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	101.6	-	-	97.15	32.45	6.56	34.56	100	323	Average
2462	112.79	-	-	108.34	32.45	6.56	34.56	100	323	Peak
4926	49.43	-24.57	74	60.17	34.83	10.21	55.78	100	0	Peak
7386	49.45	-24.55	74	58.52	36.12	10.92	56.11	100	0	Peak

Test Mode :	802.11g	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	99.2	-	-	94.75	32.45	6.56	34.56	114	76	Average
2462	109.73	-	-	105.28	32.45	6.56	34.56	114	76	Peak
4926	38.18	-15.82	54	48.92	34.83	10.21	55.78	100	356	Average
4926	51.03	-22.97	74	61.77	34.83	10.21	55.78	100	356	Peak
7386	49.65	-24.35	74	58.72	36.12	10.92	56.11	100	0	Peak

Test Mode :	2.4GHz 802.11n-HT20	**Temperature :**	27~28°C
Test Channel :	01	**Relative Humidity :**	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	**Polarization :**	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
167.97	39.53	-3.97	43.5	59.72	9.88	1.6	31.67	106	254	Peak
246	40.96	-5.04	46	58.89	12	1.72	31.65	-	-	Peak
294.33	38.01	-7.99	46	54.68	13.1	1.88	31.65	-	-	Peak
442.1	36.1	-9.9	46	49.09	16.56	2.29	31.84	-	-	Peak
666.1	33.18	-12.82	46	43.19	19.14	2.83	31.98	-	-	Peak
883.1	32.41	-13.59	46	40.29	20.5	3.32	31.7	-	-	Peak
2412	100.34	-	-	96.03	32.38	6.49	34.56	156	312	Average
2412	112.26	-	-	107.95	32.38	6.49	34.56	156	312	Peak
4824	48.62	-25.38	74	59.17	34.87	10.17	55.59	100	0	Peak
7236	49.25	-43.01	92.26	58.56	36.15	10.96	56.42	100	0	Peak

Test Mode :	2.4GHz 802.11n-HT20	**Temperature :**	27~28°C
Test Channel :	01	**Relative Humidity :**	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	**Polarization :**	Vertical
Remark :	1. 2410 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	30.01	-9.99	40	42.19	18.9	0.64	31.72	-	-	Peak
55.38	36.09	-3.91	40	60.32	6.6	0.84	31.67	-	-	Peak
85.35	36.34	-3.66	40	59.43	7.6	1.02	31.71	100	56	Peak
528.9	42.04	-3.96	46	53.3	18.06	2.52	31.84	-	-	Peak
666.1	34.3	-11.7	46	44.31	19.14	2.83	31.98	-	-	Peak
953.1	33.45	-12.55	46	40.26	20.94	3.35	31.1	-	-	Peak
2410	99.1	-	-	94.79	32.38	6.49	34.56	172	87	Average
2410	109.39	-	-	105.08	32.38	6.49	34.56	172	87	Peak
4824	48.68	-25.32	74	59.23	34.87	10.17	55.59	100	0	Peak
7236	49.7	-39.69	89.39	59.01	36.15	10.96	56.42	100	0	Peak

Test Mode :	2.4GHz 802.11n-HT20	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Horizontal
Remark :	1. 2439 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2439	102.31	-	-	97.92	32.43	6.52	34.56	102	325	Average
2439	112.84	-	-	108.45	32.43	6.52	34.56	102	325	Peak
4875	48.81	-25.19	74	59.46	34.85	10.18	55.68	100	0	Peak
7311	49.54	-24.46	74	58.74	36.14	10.94	56.28	100	0	Peak

Test Mode :	2.4GHz 802.11n-HT20	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 2438 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2438	99.81	-	-	95.42	32.43	6.52	34.56	117	80	Average
2438	110.15	-	-	105.76	32.43	6.52	34.56	117	80	Peak
4875	38.21	-15.79	54	48.86	34.85	10.18	55.68	100	356	Average
4875	51.23	-22.77	74	61.88	34.85	10.18	55.68	100	356	Peak
7311	49.67	-24.33	74	58.87	36.14	10.94	56.28	100	0	Peak

Test Mode :	2.4GHz 802.11n-HT20	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Horizontal
Remark :	1. 2460 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2460	99.96	-	-	95.51	32.45	6.56	34.56	102	323	Average
2460	110.58	-	-	106.13	32.45	6.56	34.56	102	323	Peak
4926	48.2	-25.8	74	58.94	34.83	10.21	55.78	100	0	Peak
7386	49.19	-24.81	74	58.26	36.12	10.92	56.11	100	0	Peak

Test Mode :	2.4GHz 802.11n-HT20	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2464	97.47	-	-	93.02	32.45	6.56	34.56	115	80	Average
2464	107.94	-	-	103.49	32.45	6.56	34.56	115	80	Peak
4926	50.08	-23.92	74	60.82	34.83	10.21	55.78	100	0	Peak
7386	48.84	-25.16	74	57.91	36.12	10.92	56.11	100	0	Peak

Test Mode :	802.11a	Temperature :	27~28°C
Test Channel :	149	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Horizontal
Remark :	1. 5744 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
167.97	39.28	-4.22	43.5	59.47	9.88	1.6	31.67	100	325	Peak
246.81	41.39	-4.61	46	59.22	12.1	1.72	31.65	-	-	Peak
293.52	37.93	-8.07	46	54.61	13.08	1.88	31.64	-	-	Peak
337.1	37.43	-8.57	46	53.26	13.75	2	31.58	-	-	Peak
442.1	35.32	-10.68	46	48.31	16.56	2.29	31.84	-	-	Peak
664.7	32.55	-13.45	46	42.55	19.15	2.83	31.98	-	-	Peak
5744	92.72	-	-	79.73	35.44	11.39	33.84	100	249	Average
5744	102.79	-	-	89.8	35.44	11.39	33.84	100	249	Peak
11490	50.66	-23.34	74	55.06	38.39	11.04	53.83	100	0	Peak

Test Mode :	802.11a	Temperature :	27~28°C
Test Channel :	149	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 5746 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	30.47	-9.53	40	42.65	18.9	0.64	31.72	-	-	Peak
55.38	35.95	-4.05	40	60.18	6.6	0.84	31.67	-	-	Peak
84.54	36.85	-3.15	40	60.09	7.46	1.01	31.71	100	269	Peak
538	41.77	-4.23	46	52.43	18.67	2.53	31.86	-	-	Peak
666.1	35.68	-10.32	46	45.69	19.14	2.83	31.98	-	-	Peak
886.6	32.51	-13.49	46	40.36	20.5	3.33	31.68	-	-	Peak
5746	93.29	-	-	80.3	35.44	11.39	33.84	101	273	Average
5746	103.17	-	-	90.18	35.44	11.39	33.84	101	273	Peak
11490	50.17	-23.83	74	54.57	38.39	11.04	53.83	100	0	Peak

Test Mode :	802.11a	Temperature :	27~28°C
Test Channel :	157	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Horizontal
Remark :	1. 5784 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5784	91.98	-	-	78.9	35.49	11.43	33.84	100	297	Average
5784	101.88	-	-	88.8	35.49	11.43	33.84	100	297	Peak
11570	50.56	-23.44	74	54.72	38.51	11.09	53.76	100	0	Peak

Test Mode :	802.11a	Temperature :	27~28°C
Test Channel :	157	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 5784 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5784	92.14	-	-	79.06	35.49	11.43	33.84	146	267	Average
5784	102.79	-	-	89.71	35.49	11.43	33.84	146	267	Peak
11570	50.49	-23.51	74	54.65	38.51	11.09	53.76	100	0	Peak

Test Mode :	802.11a	Temperature :	27~28°C
Test Channel :	165	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Horizontal
Remark :	1. 5824 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5824	90.28	-	-	77.05	35.56	11.51	33.84	100	300	Average
5824	99.63	-	-	86.4	35.56	11.51	33.84	100	300	Peak
11650	50.04	-23.96	74	54	38.62	11.14	53.72	100	0	Peak

Test Mode :	802.11a	Temperature :	27~28°C
Test Channel :	165	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 5824 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5824	91.38	-	-	78.15	35.56	11.51	33.84	142	268	Average
5824	101.07	-	-	87.84	35.56	11.51	33.84	142	268	Peak
11650	50.91	-23.09	74	54.87	38.62	11.14	53.72	100	0	Peak

Test Mode :	5GHz 802.11n-HT20	**Temperature :**	27~28°C
Test Channel :	149	**Relative Humidity :**	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	**Polarization :**	Horizontal
Remark :	1. 5746 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
167.97	38.48	-5.02	43.5	58.67	9.88	1.6	31.67	-	-	Peak
246.81	41.25	-4.75	46	59.08	12.1	1.72	31.65	-	-	Peak
296.49	42.89	-3.11	46	59.51	13.14	1.89	31.65	100	236	Peak
337.8	37.44	-8.56	46	53.26	13.75	2	31.57	-	-	Peak
453.3	35.78	-10.22	46	48.45	16.86	2.32	31.85	-	-	Peak
666.8	32.74	-13.26	46	42.75	19.14	2.83	31.98	-	-	Peak
5746	92.31	-	-	79.32	35.44	11.39	33.84	100	252	Average
5746	102.16	-	-	89.17	35.44	11.39	33.84	100	252	Peak
11490	50.52	-23.48	74	54.92	38.39	11.04	53.83	100	0	Peak

Test Mode :	5GHz 802.11n-HT20	**Temperature :**	27~28°C
Test Channel :	149	**Relative Humidity :**	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	**Polarization :**	Vertical
Remark :	1. 5744 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	29.86	-10.14	40	42.04	18.9	0.64	31.72	-	-	Peak
55.38	36.18	-3.82	40	60.41	6.6	0.84	31.67	-	-	Peak
85.35	36.57	-3.43	40	59.66	7.6	1.02	31.71	100	35	Peak
529.6	42.16	-3.84	46	53.38	18.1	2.52	31.84	-	-	Peak
664.7	36.03	-9.97	46	46.03	19.15	2.83	31.98	-	-	Peak
906.2	33.84	-12.16	46	41.41	20.6	3.37	31.54	-	-	Peak
5744	92.31	-	-	79.32	35.44	11.39	33.84	101	274	Average
5744	102.43	-	-	89.44	35.44	11.39	33.84	101	274	Peak
11490	50.9	-23.1	74	55.3	38.39	11.04	53.83	100	0	Peak

Test Mode :	5GHz 802.11n-HT20	Temperature :	27~28°C
Test Channel :	157	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Horizontal
Remark :	1. 5786 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5786	90.4	-	-	77.3	35.51	11.43	33.84	100	302	Average
5786	100.12	-	-	87.02	35.51	11.43	33.84	100	302	Peak
11570	50.37	-23.63	74	54.53	38.51	11.09	53.76	100	0	Peak

Test Mode :	5GHz 802.11n-HT20	Temperature :	27~28°C
Test Channel :	157	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 5784 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5784	90.48	-	-	77.4	35.49	11.43	33.84	101	274	Average
5784	100.35	-	-	87.27	35.49	11.43	33.84	101	274	Peak
11571	50.4	-23.6	74	54.56	38.51	11.09	53.76	100	0	Peak

Test Mode :	5GHz 802.11n-HT20	Temperature :	27~28°C
Test Channel :	165	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Horizontal
Remark :	1. 5826 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5826	90.84	-	-	77.61	35.56	11.51	33.84	100	299	Average
5826	100.27	-	-	87.04	35.56	11.51	33.84	100	299	Peak
11650	50.76	-23.24	74	54.72	38.62	11.14	53.72	100	0	Peak

Test Mode :	5GHz 802.11n-HT20	Temperature :	27~28°C
Test Channel :	165	Relative Humidity :	45~46%
Test Engineer :	Kai Wang, Marlboro Hsu, Hayden Wu, and Luke Chang	Polarization :	Vertical
Remark :	1. 5824 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5824	91.07	-	-	77.84	35.56	11.51	33.84	179	265	Average
5824	101.05	-	-	87.82	35.56	11.51	33.84	179	265	Peak
11650	50.05	-23.95	74	54.01	38.62	11.14	53.72	100	0	Average

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (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 the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

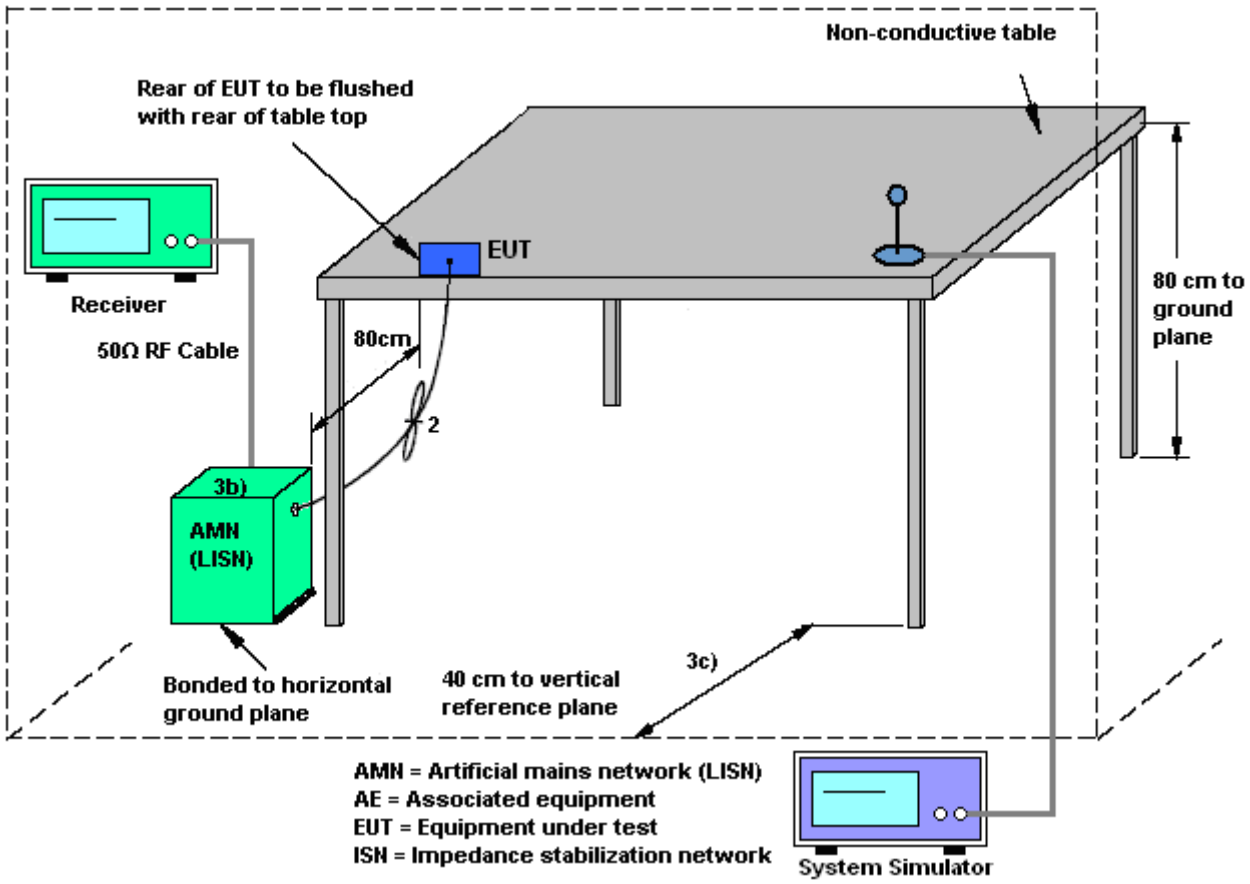
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

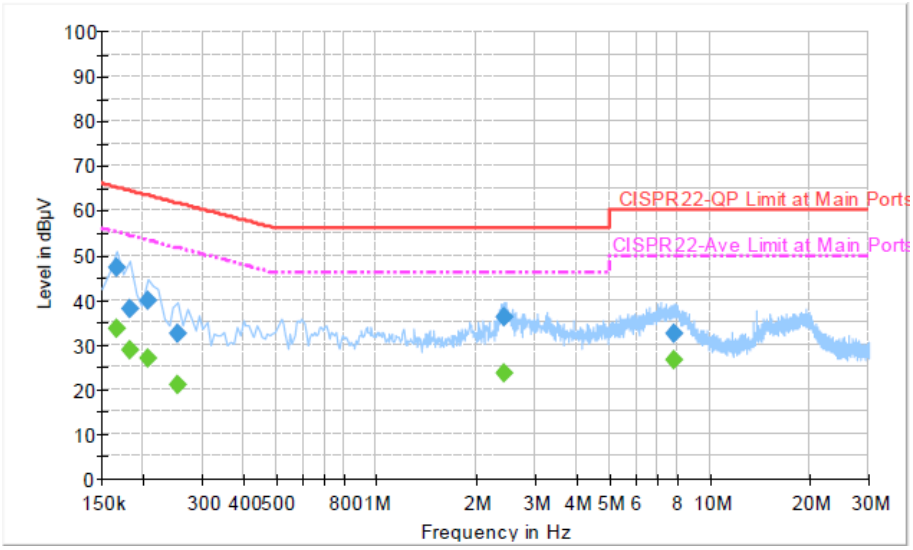
1. The testing follows the guidelines in ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 KHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~21℃
Test Engineer :	Slash Huang	Relative Humidity :	47~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + GPS Rx + Earphone + U cup USB Cable (Data Link with Notebook) + U cup USB Cable Charging with AC Power		



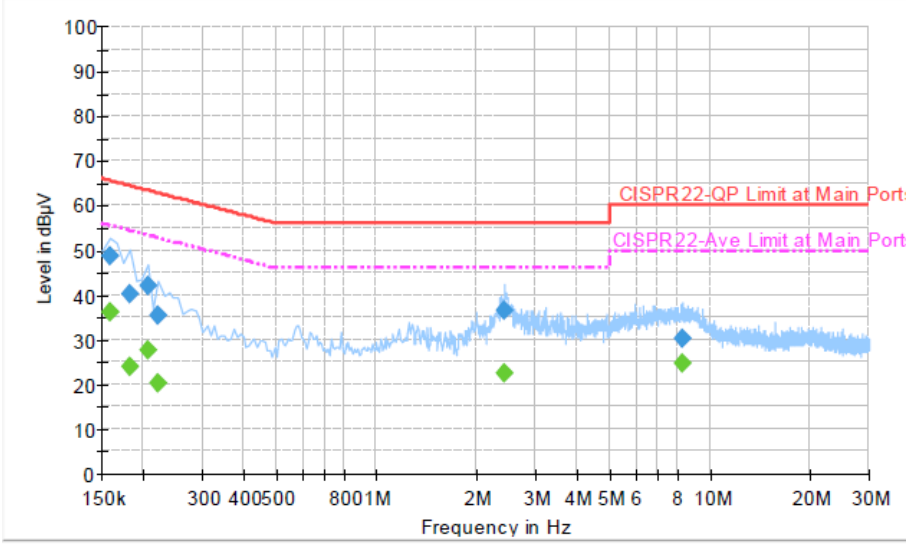
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	47.2	Off	L1	19.4	18.0	65.2
0.182000	37.9	Off	L1	19.4	26.5	64.4
0.206000	39.9	Off	L1	19.3	23.5	63.4
0.254000	32.3	Off	L1	19.4	29.3	61.6
2.414000	36.3	Off	L1	19.6	19.7	56.0
7.798000	32.3	Off	L1	19.6	27.7	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	33.4	Off	L1	19.4	21.8	55.2
0.182000	28.9	Off	L1	19.4	25.5	54.4
0.206000	27.1	Off	L1	19.3	26.3	53.4
0.254000	21.0	Off	L1	19.4	30.6	51.6
2.414000	23.6	Off	L1	19.6	22.4	46.0
7.798000	26.6	Off	L1	19.6	23.4	50.0

Test Mode :	Mode 1	**Temperature :**	20~21℃
Test Engineer :	Slash Huang	**Relative Humidity :**	47~48%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + GPS Rx + Earphone + U cup USB Cable (Data Link with Notebook) + U cup USB Cable Charging with AC Power		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	48.7	Off	N	19.4	16.9	65.6
0.182000	40.4	Off	N	19.4	24.0	64.4
0.206000	42.0	Off	N	19.3	21.4	63.4
0.222000	35.5	Off	N	19.4	27.2	62.7
2.414000	36.5	Off	N	19.7	19.5	56.0
8.246000	30.3	Off	N	19.8	29.7	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	36.0	Off	N	19.4	19.6	55.6
0.182000	23.9	Off	N	19.4	30.5	54.4
0.206000	27.5	Off	N	19.3	25.9	53.4
0.222000	20.2	Off	N	19.4	32.5	52.7
2.414000	22.7	Off	N	19.7	23.3	46.0
8.246000	24.8	Off	N	19.8	25.2	50.0

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

3.7.2 Antenna Connected Construction

Non-standard connector used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Feb. 01, 2013~ Apr. 11, 2013	Jun. 05, 2013	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Sep. 08, 2012	Feb. 01, 2013~ Apr. 11, 2013	Sep. 07, 2013	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Sep. 08, 2012	Feb. 01, 2013~ Apr. 11, 2013	Sep. 07, 2013	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP30	101352	9KHz~30GHz	Nov. 07, 2012	Apr. 04, 2013	Nov. 06, 2013	Radiation (03CH06-HY)
Spectrum Analyzer	Agilent	E4408B	MY44211030	9KHz ~ 26.5GHz	Nov. 26, 2012	Apr. 04, 2013	Nov. 25, 2013	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/0003	20MHz ~ 1000MHz	May 04, 2012	Apr. 04, 2013	May 03, 2013	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz ~ 2GHz	Oct. 06, 2012	Apr. 04, 2013	Oct. 05, 2013	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Aug. 01, 2012	Apr. 04, 2013	Jul. 31, 2013	Radiation (03CH06-HY)
Double Ridge Horn Antenna	COM-POWER	AH-118	071025	1GHz~18GHz	Aug. 09, 2012	Apr. 04, 2013	Aug. 08, 2013	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Sep. 28, 2012	Apr. 04, 2013	Sep. 27, 2013	Radiation (03CH06-HY)
Preamplifier	Agilent	8449B	3008A01917	1GHz ~ 26.5GHz	Apr. 13, 2012	Apr. 04, 2013	Apr. 12, 2013	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz ~ 1GHz	Apr. 11, 2012	Apr. 04, 2013	Apr. 10, 2013	Radiation (03CH06-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz ~ 18GHz	Jul. 21, 2012	Apr. 04, 2013	Jul. 20, 2013	Radiation (03CH06-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	159087	1GHz~18GHz	Feb. 26, 2013	Apr. 04, 2013	Feb. 25, 2014	Radiation (03CH06-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Apr. 04, 2013	Jul. 02, 2013	Radiation (03CH06-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9KHz – 2.75GHz	Nov. 13, 2012	Mar. 08, 2013	Nov. 12, 2013	Conduction (CO05-HY)
Two-LISN	Rohde & Schwarz	ENV216	100081	9KHz ~ 30MHz	Dec. 12, 2012	Mar. 08, 2013	Dec. 11, 2013	Conduction (CO05-HY)
Two-LISN	Rohde & Schwarz	ENV216	100080	9KHz ~ 30MHz	Dec. 06, 2012	Mar. 08, 2013	Dec. 05, 2013	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Mar. 08, 2013	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	117995	N/A	Jul. 28, 2011	Mar. 08, 2013	Jul. 27, 2013	Conduction (CO05-HY)
GPS Station	T&E	GS-50	N/A	N/A	N/A	Mar. 08, 2013	N/A	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**

Appendix A. Photographs of EUT

Please refer to Sporton report number EP310457 as below.