

FCC RF Test Report

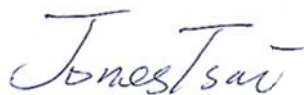
APPLICANT : Wistron NeWeb Corporation
EQUIPMENT : Mini board wi-fi edition
BRAND NAME : WNC
MODEL NAME : PW8Q7
FCC ID : NKR-PW8Q7A
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Dec. 09, 2013 and testing was completed on Dec. 19, 2013. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown to be compliant with the applicable technical standards.

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



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



Testing Laboratory
2627

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR3D0929C	Rev. 01	Initial issue of report	Jan. 03, 2014



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.61 dB at 2483.920 MHz
3.6	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Wistron NeWeb Corporation

20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C

1.2 Manufacturer

Wistron NeWeb Corporation

20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Mini board wi-fi edition
Brand Name	WNC
Model Name	PW8Q7
FCC ID	NKR-PW8Q7A
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n (HT20), WLAN 5GHz 802.11a/n (HT20/HT40) Bluetooth v3.0 + EDR/Bluetooth v4.0
HW Version	B1
SW Version	msm8960-eng 4.3 test-keys Px8Q7_v10.00.140040_2310025.20140102.034452
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 : 18.96 dBm (0.0787 W) 802.11g : 22.86 dBm (0.1932 W) 802.11n HT20 : 22.86 dBm (0.1932 W) <5745 MHz ~ 5825 MHz> 802.11a : 22.81 dBm (0.1910 W) 802.11n HT20 : 22.79 dBm (0.1901 W) 802.11n HT40 : 22.20 dBm (0.1660 W)
Antenna Type	802.11b/g/n : Monopole Antenna with gain 0 dBi 802.11a/n : Monopole Antenna with gain 1.80 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC Registration No.
	TH01-KS	03CH01-KS	149928

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

1.7 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 C63.4-2003

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: radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

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 data rate associated with the highest power were chosen for full test shown in the following tables.

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	18.66	18.58	18.50	18.58
CH 06	2437 MHz	18.96	18.72	18.74	18.90
CH 11	2462 MHz	18.72	18.56	18.49	18.60

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	20.44	20.42	20.96	20.69	20.86	20.80	20.71	20.61
CH 06	2437 MHz	22.86	22.62	22.66	22.80	22.63	22.34	22.02	21.44
CH 11	2462 MHz	20.78	20.68	20.66	20.61	20.69	21.11	20.85	20.65

Channel	Frequency	2.4GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	20.98	20.66	20.96	20.86	20.70	20.61	20.67	20.95
CH 06	2437 MHz	22.86	22.78	22.71	22.45	22.12	22.18	21.64	21.52
CH 11	2462 MHz	20.89	20.92	20.80	20.68	20.62	20.43	20.86	20.57



Channel	Frequency	5GHz 802.11a RF Power (dBm)							
		OFDM Data Rate							
		6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 149	5745 MHz	22.29	22.31	22.33	22.19	22.19	22.22	22.27	21.85
CH 157	5785 MHz	21.64	21.61	21.66	21.62	21.65	21.61	21.67	21.44
CH 165	5825 MHz	22.81	22.77	22.76	22.80	22.78	22.73	22.71	22.51

Channel	Frequency	5GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 149	5745 MHz	22.37	22.34	22.29	22.17	22.08	22.02	21.99	21.81
CH 157	5785 MHz	21.68	21.62	21.63	21.65	21.61	21.67	21.61	21.57
CH 165	5825 MHz	22.79	22.72	22.68	22.78	22.73	22.71	22.62	22.69

Channel	Frequency	5GHz 802.11n HT40 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH151	5755MHz	22.20	22.11	22.07	22.02	22.09	22.10	22.01	21.75
CH159	5795MHz	22.14	22.01	22.03	21.92	22.00	21.99	21.88	21.52



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 BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
	Conducted Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	MCS0	1/11
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	MCS0	1/11
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11

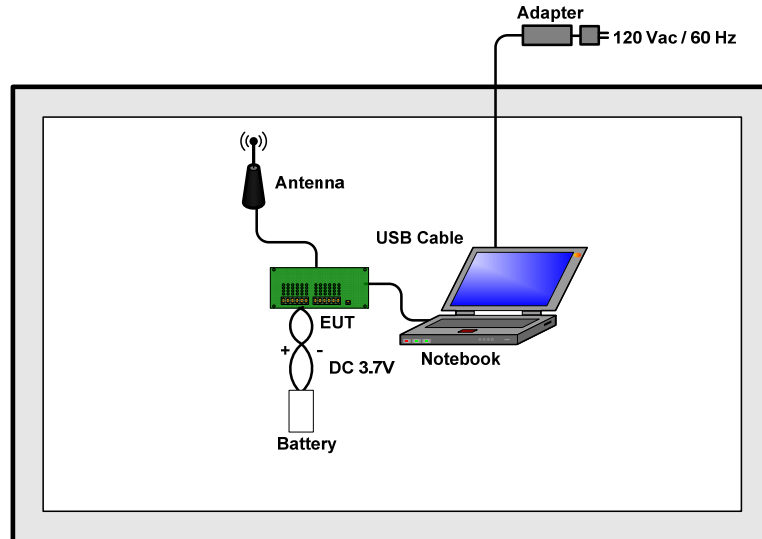


<5GHz>

Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB BW Power Spectral Density	802.11a	6 Mbps	149/157/165
		802.11n HT20	MCS0	149/157/165
		802.11n HT40	MCS0	151/159
	Output Power	802.11a	6 Mbps	149/157/165
		802.11n HT20	MCS0	149/157/165
		802.11n HT40	MCS0	151/159
	Conducted Band Edge	802.11a	6 Mbps	149/165
		802.11n HT20	MCS0	149/165
		802.11n HT40	MCS0	151/159
	Conducted Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20	MCS0	149/157/165
		802.11n HT40	MCS0	151/159
Radiated TCs	Radiated Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20	MCS0	149/157/165
		802.11n HT40	MCS0	151/159

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
2.	Test Jig	N/A	N/A	N/A	N/A	N/A
3.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.6 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit/receive.

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.

Example :

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 5.6 dB and 10dB attenuator.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 5.6 + 10 = 15.6 \text{ (dB)} \end{aligned}$$

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.

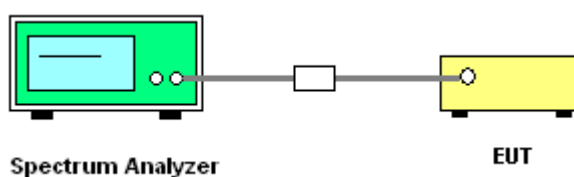
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 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



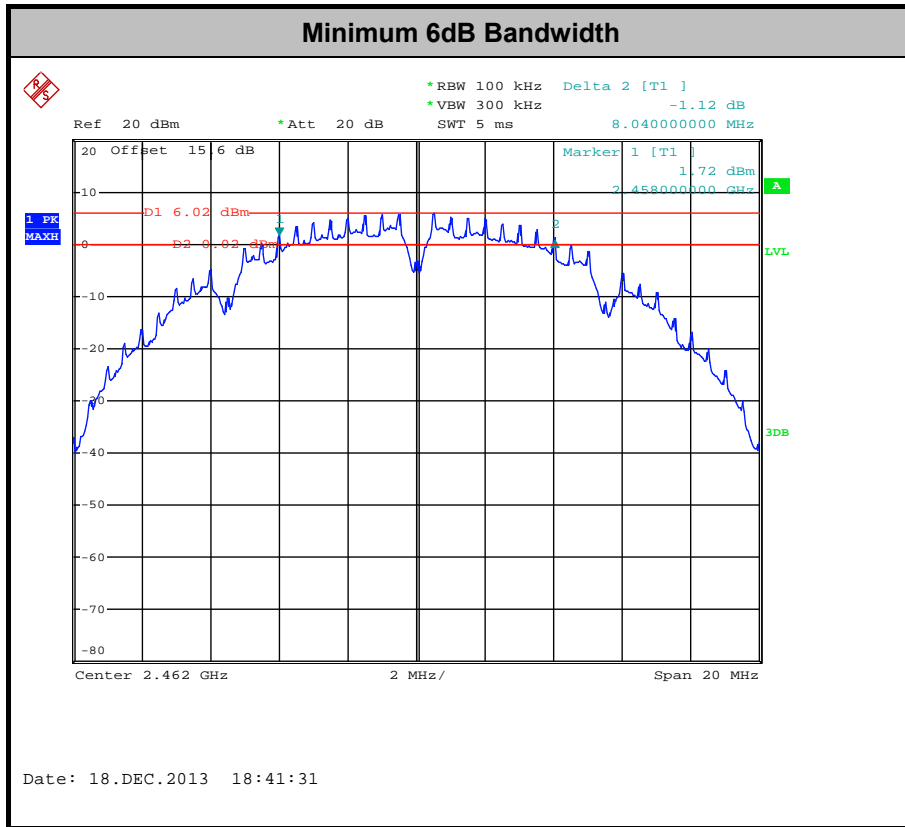


3.1.5 Test Result of 6dB Occupied Bandwidth

Test Band :	2.4GHz + 5GHz band 4	Temperature :	23~24°C
Test Engineer :	Adonis Li	Relative Humidity :	47~48%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	8.08	0.50	Pass
11b	1Mbps	1	6	2437	8.52	0.50	Pass
11b	1Mbps	1	11	2462	8.04	0.50	Pass
11g	6Mbps	1	1	2412	16.36	0.50	Pass
11g	6Mbps	1	6	2437	16.36	0.50	Pass
11g	6Mbps	1	11	2462	16.32	0.50	Pass
HT20	MCS0	1	1	2412	17.60	0.50	Pass
HT20	MCS0	1	6	2437	17.56	0.50	Pass
HT20	MCS0	1	11	2462	17.56	0.50	Pass

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
11a	6Mbps	1	149	5745	16.32	0.50	Pass
11a	6Mbps	1	157	5785	16.36	0.50	Pass
11a	6Mbps	1	161	5805	16.36	0.50	Pass
HT20	MCS0	1	149	5745	17.56	0.50	Pass
HT20	MCS0	1	157	5785	17.56	0.50	Pass
HT20	MCS0	1	161	5805	17.56	0.50	Pass
HT40	MCS0	1	151	5755	35.52	0.50	Pass
HT40	MCS0	1	159	5795	35.12	0.50	Pass



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.

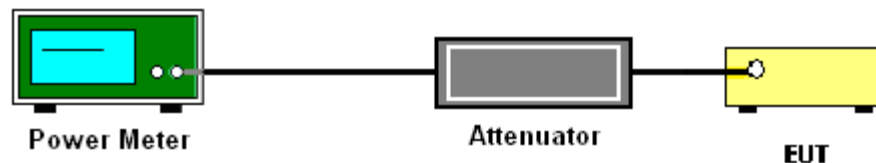
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 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 :	2.4GHz + 5GHz band 4	Temperature :	23~24°C
Test Engineer :	Adonis Li	Relative Humidity :	47~48%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	RF Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	18.66	30	0	Pass
11b	1Mbps	1	6	2437	18.96	30	0	Pass
11b	1Mbps	1	11	2462	18.72	30	0	Pass
11g	6Mbps	1	1	2412	20.44	30	0	Pass
11g	6Mbps	1	6	2437	22.86	30	0	Pass
11g	6Mbps	1	11	2462	20.78	30	0	Pass
HT20	MCS0	1	1	2412	20.98	30	0	Pass
HT20	MCS0	1	6	2437	22.86	30	0	Pass
HT20	MCS0	1	11	2462	20.89	30	0	Pass

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	RF Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11a	6Mbps	1	149	5745	22.29	30	1.80	Pass
11a	6Mbps	1	157	5785	21.64	30	1.80	Pass
11a	6Mbps	1	165	5825	22.81	30	1.80	Pass
HT20	MCS0	1	149	5745	22.37	30	1.80	Pass
HT20	MCS0	1	157	5785	21.68	30	1.80	Pass
HT20	MCS0	1	165	5825	22.79	30	1.80	Pass
HT40	MCS0	1	151	5755	22.20	30	1.80	Pass
HT40	MCS0	1	159	5795	22.14	30	1.80	Pass

Note: Measured power (dBm) has offset with cable loss.

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	2.4GHz + 5GHz band 4	Temperature :	23~24°C
Test Engineer :	Adonis Li	Relative Humidity :	47~48%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	0.10	16.00	30	0	Pass
11b	1Mbps	1	6	2437	0.10	16.31	30	0	Pass
11b	1Mbps	1	11	2462	0.10	15.89	30	0	Pass
11g	6Mbps	1	1	2412	0.59	11.97	30	0	Pass
11g	6Mbps	1	6	2437	0.59	17.31	30	0	Pass
11g	6Mbps	1	11	2462	0.59	12.33	30	0	Pass
HT20	MCS0	1	1	2412	0.64	12.42	30	0	Pass
HT20	MCS0	1	6	2437	0.64	17.21	30	0	Pass
HT20	MCS0	1	11	2462	0.64	12.16	30	0	Pass

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11a	6Mbps	1	149	5745	0.61	17.29	30	1.80	Pass
11a	6Mbps	1	157	5785	0.61	16.90	30	1.80	Pass
11a	6Mbps	1	165	5825	0.61	16.99	30	1.80	Pass
HT20	MCS0	1	149	5745	0.60	17.51	30	1.80	Pass
HT20	MCS0	1	157	5785	0.60	16.91	30	1.80	Pass
HT20	MCS0	1	165	5825	0.60	17.02	30	1.80	Pass
HT40	MCS0	1	151	5755	0.65	16.89	30	1.80	Pass
HT40	MCS0	1	159	5795	0.65	16.91	30	1.80	Pass

Note: Measured power (dBm) has offset with cable loss and duty factor.

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.

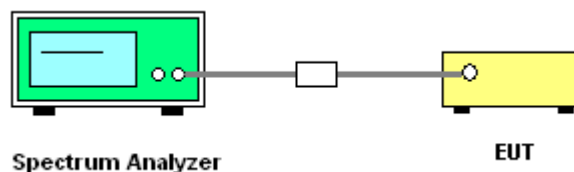
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 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.

3.3.4 Test Setup



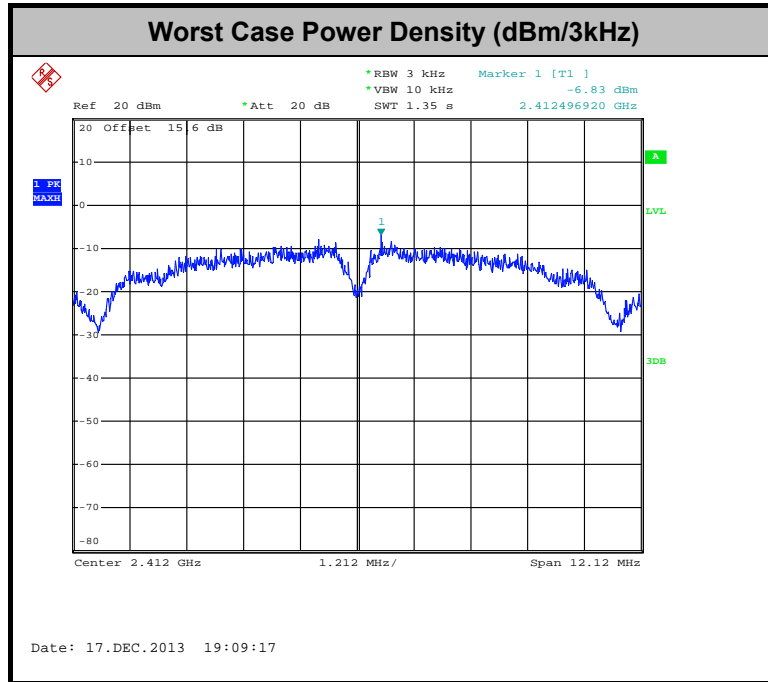
3.3.5 Test Result of Power Spectral Density

Test Mode :	2.4GHz + 5GHz band 4	Temperature :	23~24°C
Test Engineer :	Adonis Li	Relative Humidity :	47~48%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Peak Power Density (dBm/3kHz)	Max. Limits (dBm/3kHz)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	-6.83	8	0	Pass
11b	1Mbps	1	6	2437	-8.99	8	0	Pass
11b	1Mbps	1	11	2462	-8.02	8	0	Pass
11g	6Mbps	1	1	2412	-13.76	8	0	Pass
11g	6Mbps	1	6	2437	-9.13	8	0	Pass
11g	6Mbps	1	11	2462	-14.47	8	0	Pass
HT20	MCS0	1	1	2412	-15.02	8	0	Pass
HT20	MCS0	1	6	2437	-9.32	8	0	Pass
HT20	MCS0	1	11	2462	-13.91	8	0	Pass

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Peak Power Density (dBm/3kHz)	Max. Limits (dBm/3kHz)	DG (dBi)	Pass/Fail
11a	6Mbps	1	149	5745	-7.63	8	1.80	Pass
11a	6Mbps	1	157	5785	-7.87	8	1.80	Pass
11a	6Mbps	1	165	5825	-8.49	8	1.80	Pass
HT20	MCS0	1	149	5745	-7.88	8	1.80	Pass
HT20	MCS0	1	157	5785	-8.60	8	1.80	Pass
HT20	MCS0	1	165	5825	-8.97	8	1.80	Pass
HT40	MCS0	1	151	5755	-11.10	8	1.80	Pass
HT40	MCS0	1	159	5795	-11.95	8	1.80	Pass

Note: Measured power density (dBm) has offset with cable loss.



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).

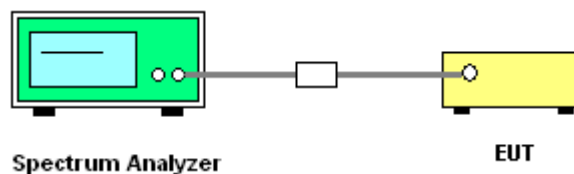
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 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.

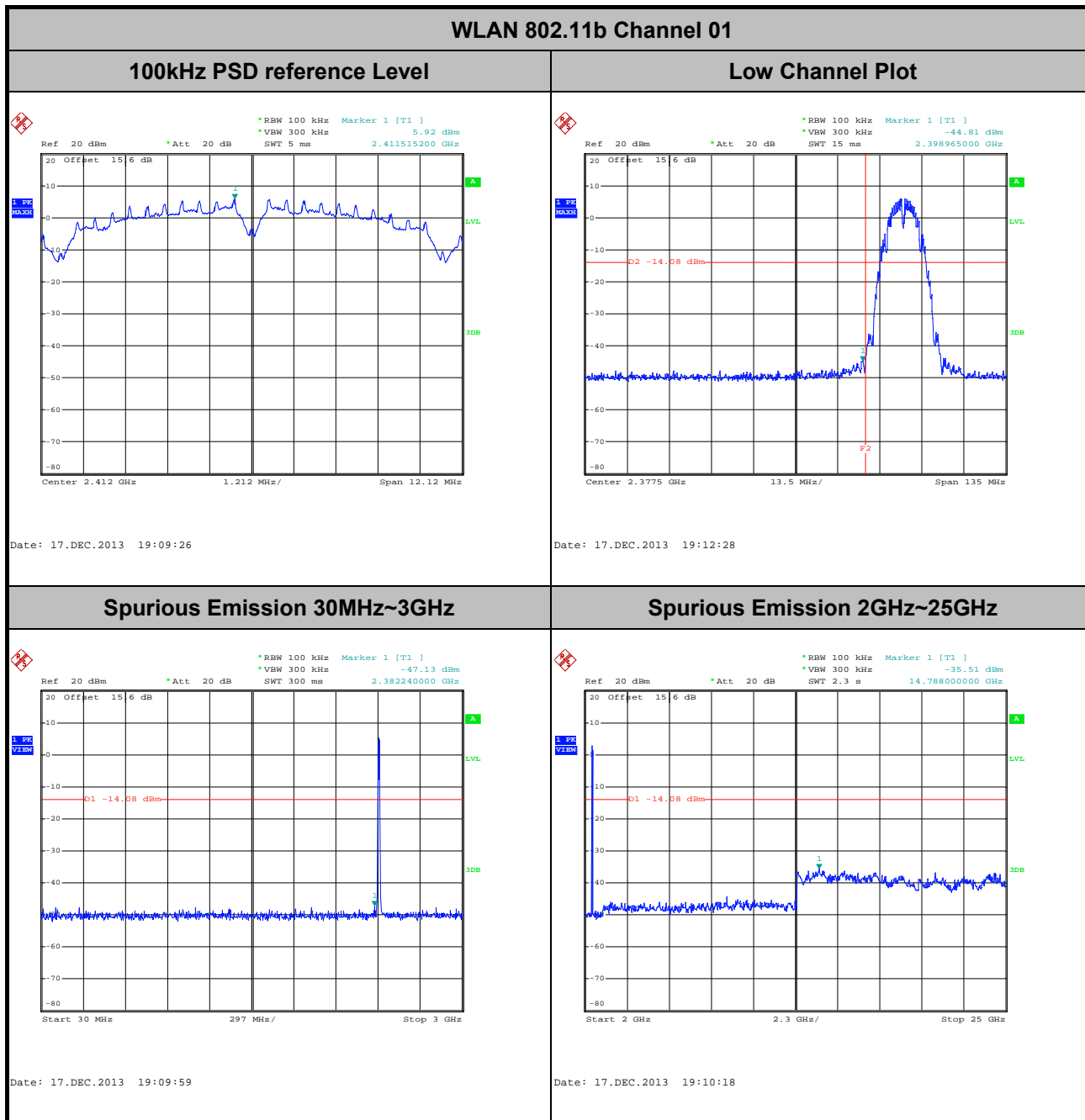
3.4.4 Test Setup





3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	23~24°C
Test Band :	2.4GHz Low	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Adonis Li

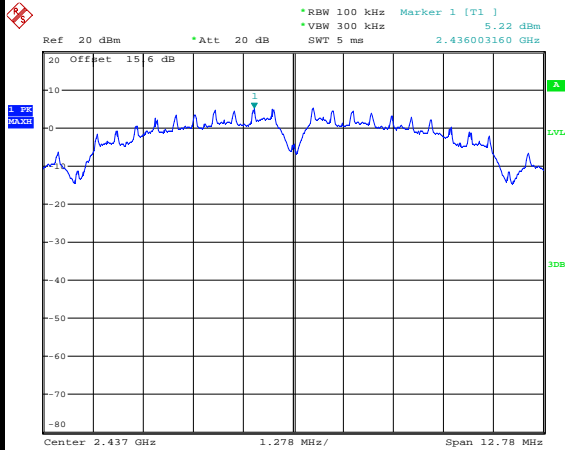




Test Mode :	802.11b	Temperature :	23~24°C
Test Band :	2.4GHz Mid	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Adonis Li

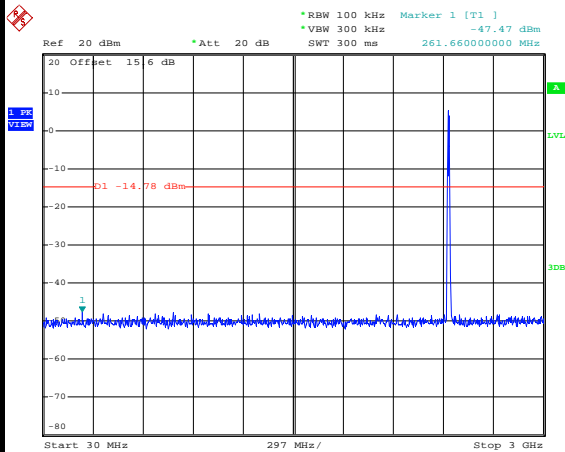
WLAN 802.11b Channel 06

100kHz PSD reference Level



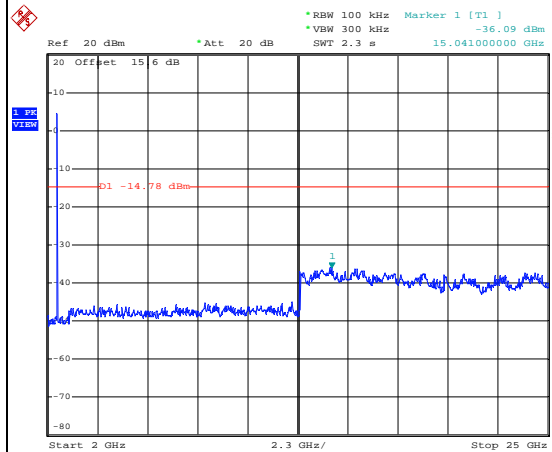
Date: 18.DEC.2013 12:09:30

Spurious Emission 30MHz~3GHz



Date: 18.DEC.2013 12:09:50

Spurious Emission 2GHz~25GHz



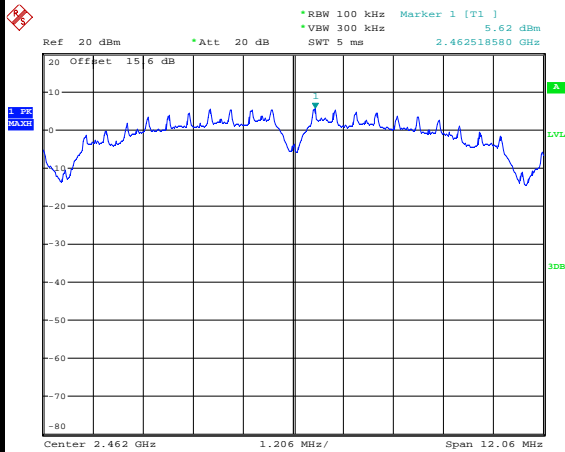
Date: 18.DEC.2013 12:10:08



Test Mode :	802.11b	Temperature :	23~24°C
Test Band :	2.4GHz High	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Adonis Li

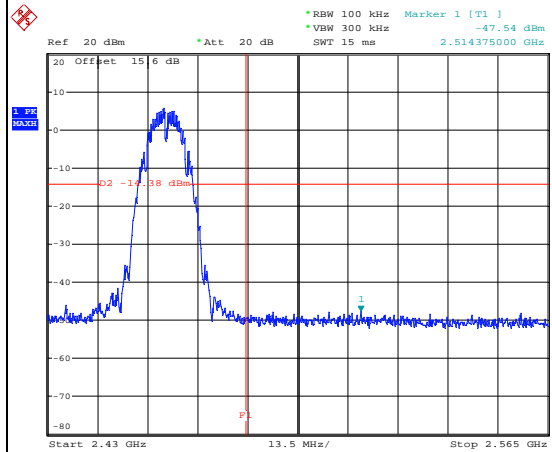
WLAN 802.11b Channel 11

100kHz PSD reference Level



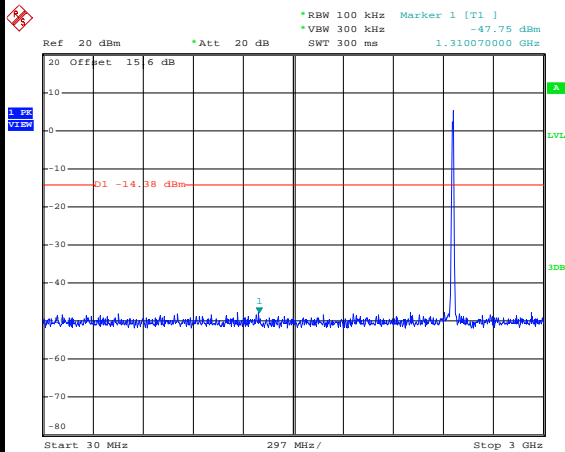
Date: 18.DEC.2013 18:42:36

High Channel Plot



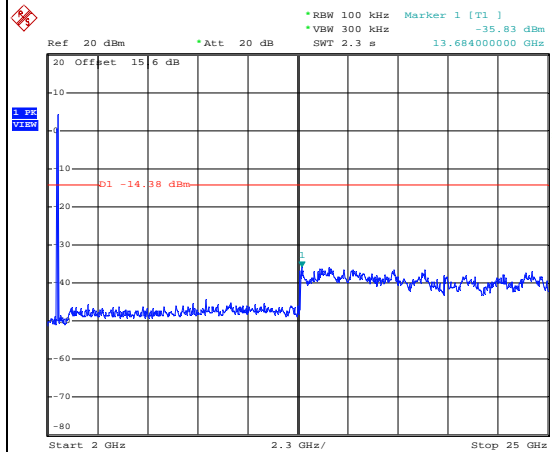
Date: 18.DEC.2013 18:42:56

Spurious Emission 30MHz~3GHz



Date: 18.DEC.2013 18:44:02

Spurious Emission 2GHz~25GHz



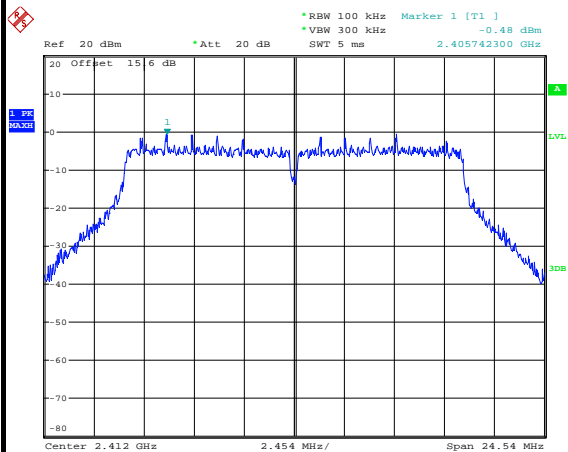
Date: 18.DEC.2013 18:44:20



Test Mode :	802.11g	Temperature :	23~24°C
Test Band :	2.4GHz Low	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Adonis Li

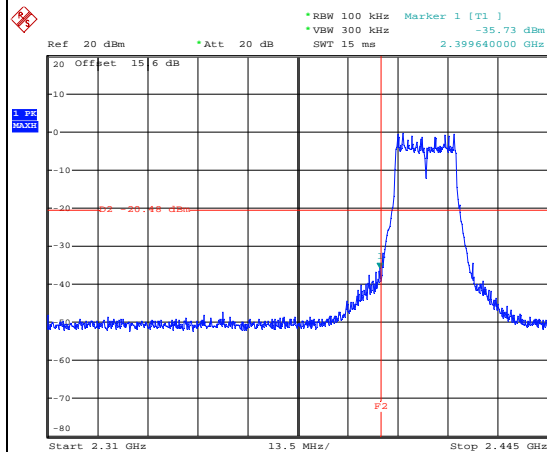
WLAN 802.11g Channel 01

100kHz PSD reference Level



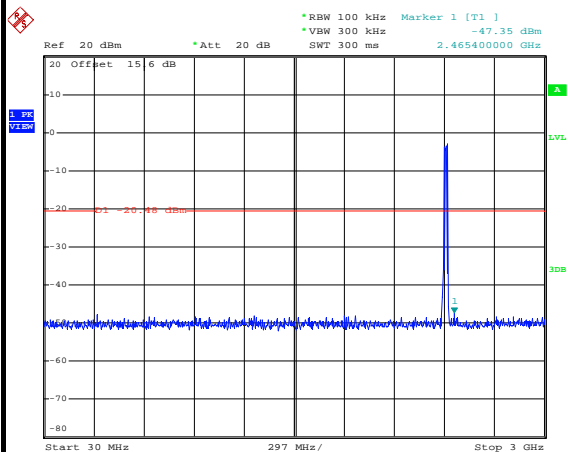
Date: 17.DEC.2013 19:42:57

Low Channel Plot



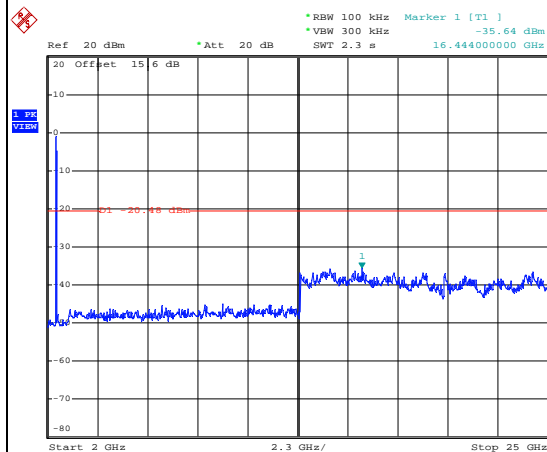
Date: 17.DEC.2013 19:43:11

Spurious Emission 30MHz~3GHz



Date: 17.DEC.2013 19:43:30

Spurious Emission 2GHz~25GHz



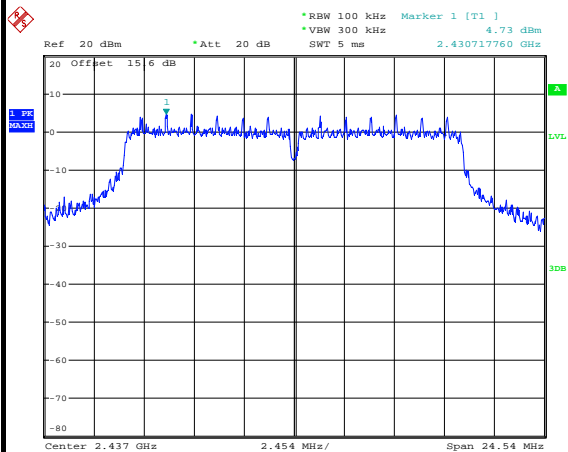
Date: 17.DEC.2013 19:43:49



Test Mode :	802.11g	Temperature :	23~24°C
Test Band :	2.4GHz Mid	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Adonis Li

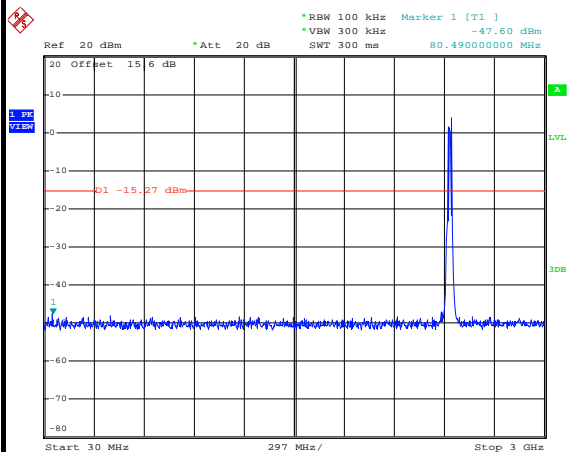
WLAN 802.11g Channel 06

100kHz PSD reference Level



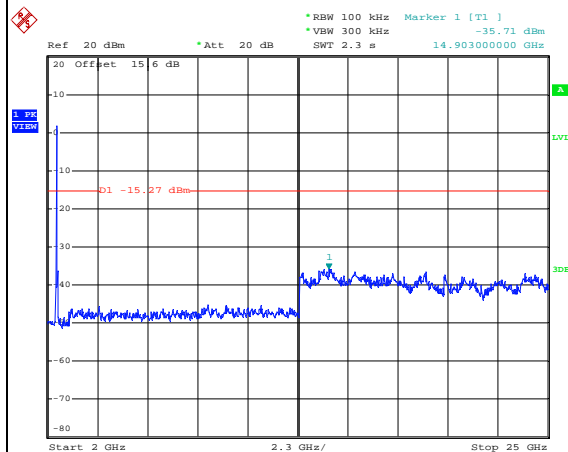
Date: 17.DEC.2013 19:45:40

Spurious Emission 30MHz~3GHz



Date: 17.DEC.2013 19:46:57

Spurious Emission 2GHz~25GHz



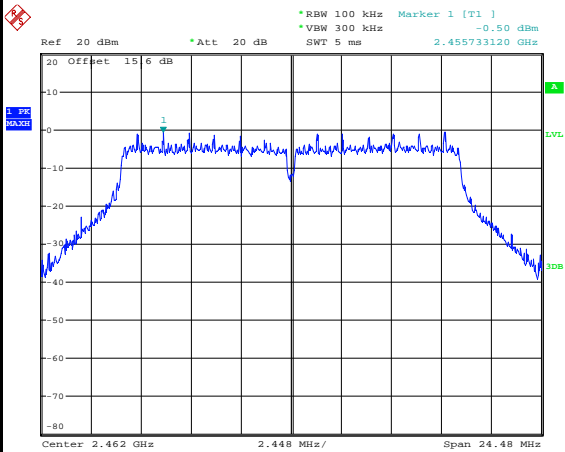
Date: 17.DEC.2013 19:47:16



Test Mode :	802.11g	Temperature :	23~24°C
Test Band :	2.4GHz High	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Adonis Li

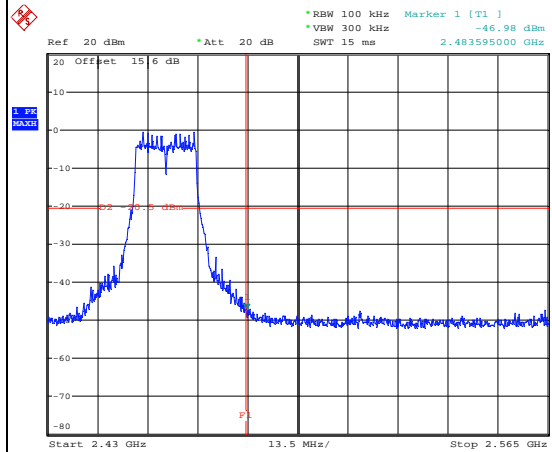
WLAN 802.11g Channel 11

100kHz PSD reference Level



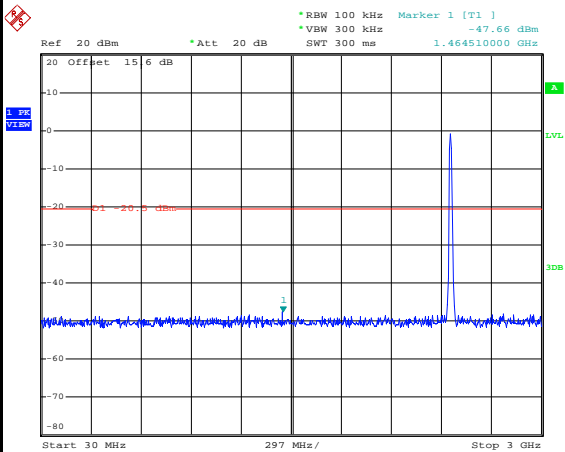
Date: 17.DEC.2013 19:48:48

High Channel Plot



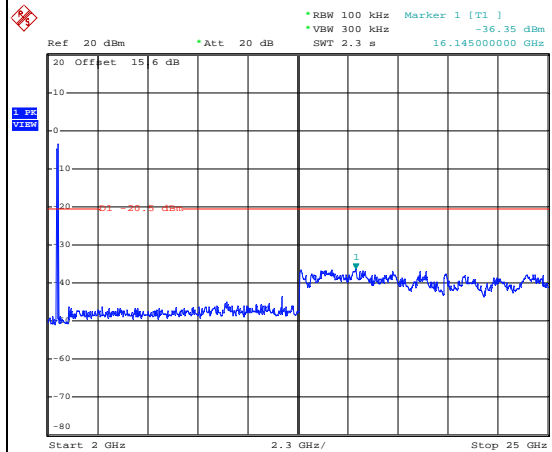
Date: 17.DEC.2013 19:49:02

Spurious Emission 30MHz~3GHz



Date: 17.DEC.2013 19:49:21

Spurious Emission 2GHz~25GHz



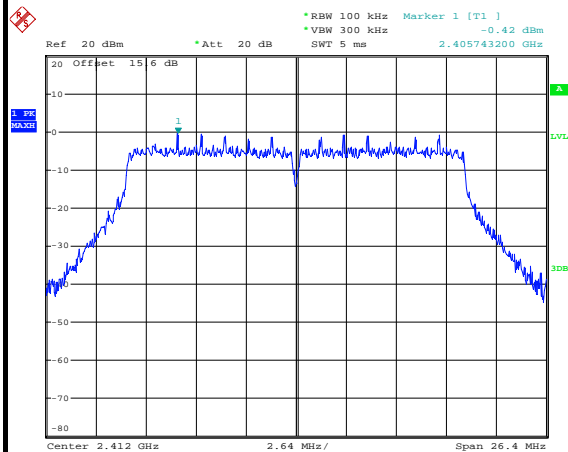
Date: 17.DEC.2013 19:49:40



Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Band :	2.4GHz Low	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Adonis Li

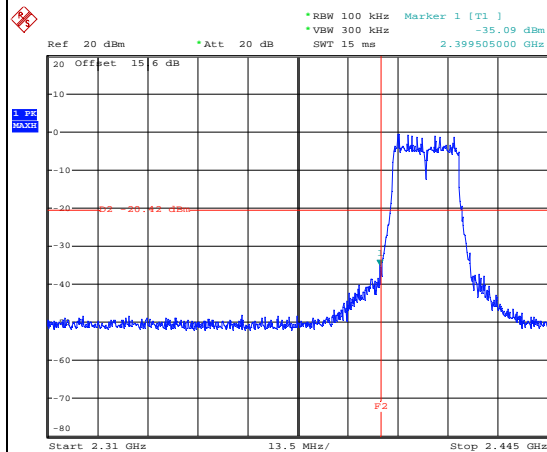
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



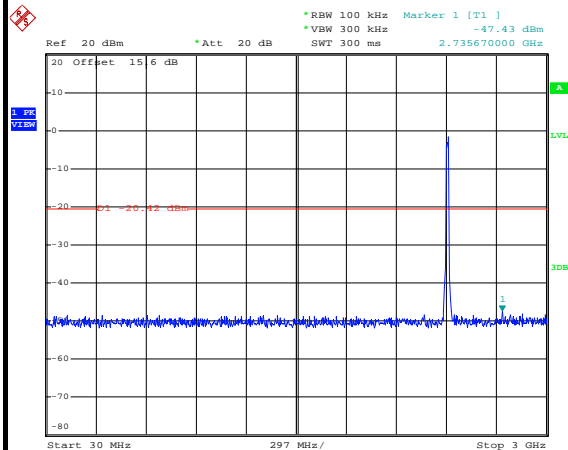
Date: 17.DEC.2013 19:52:12

Low Channel Plot



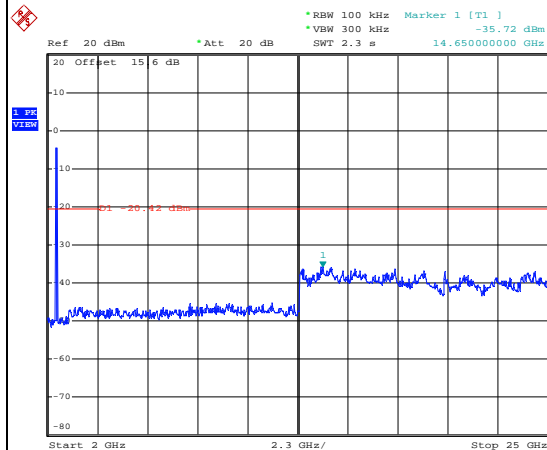
Date: 17.DEC.2013 19:52:25

Spurious Emission 30MHz~3GHz



Date: 17.DEC.2013 19:52:45

Spurious Emission 2GHz~25GHz



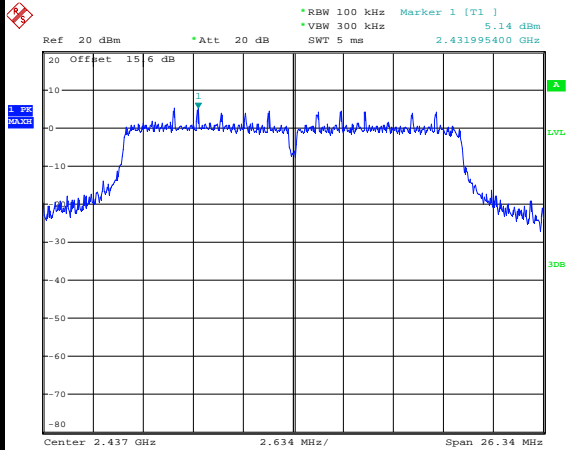
Date: 17.DEC.2013 19:53:03



Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Band :	2.4GHz Mid	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Adonis Li

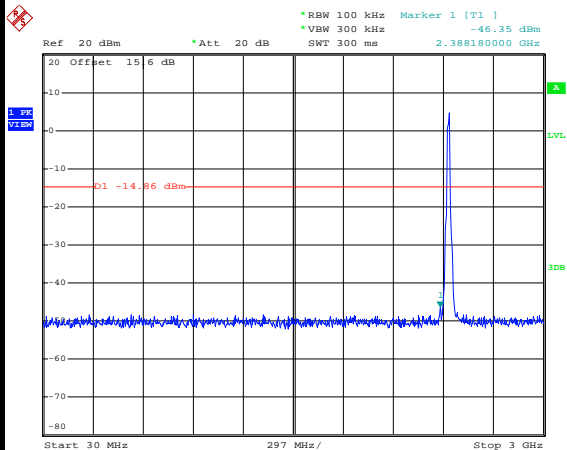
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



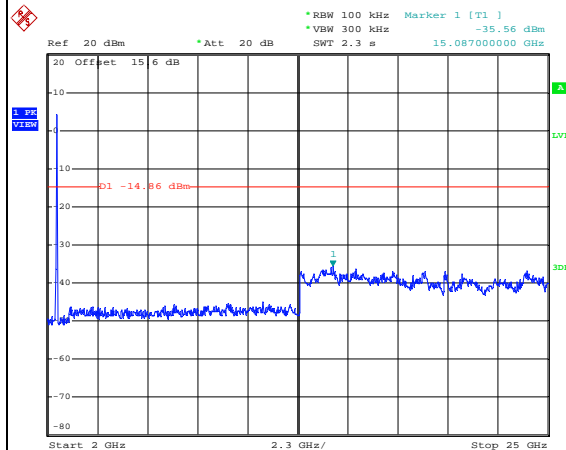
Date: 17.DEC.2013 19:54:54

Spurious Emission 30MHz~3GHz



Date: 17.DEC.2013 19:55:58

Spurious Emission 2GHz~25GHz



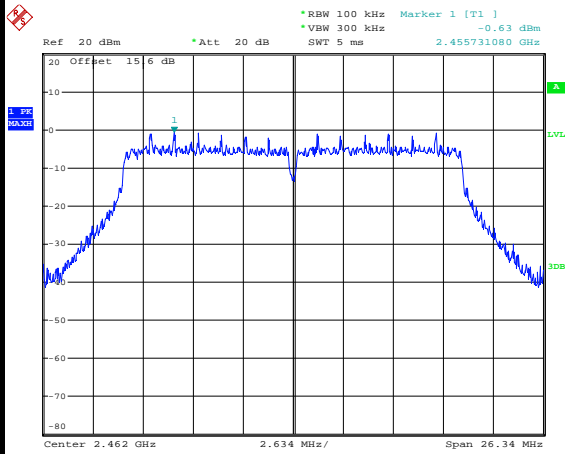
Date: 17.DEC.2013 19:56:16



Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Band :	2.4GHz High	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Adonis Li

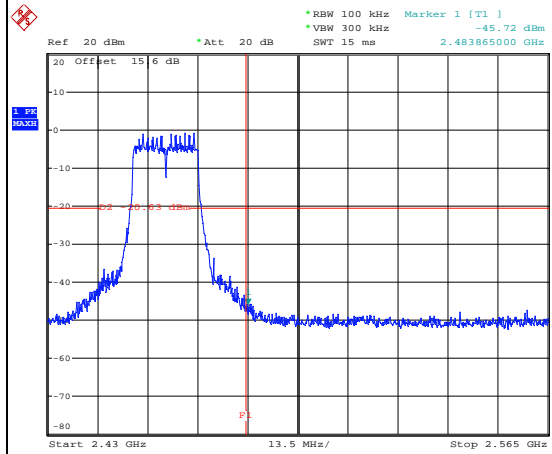
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



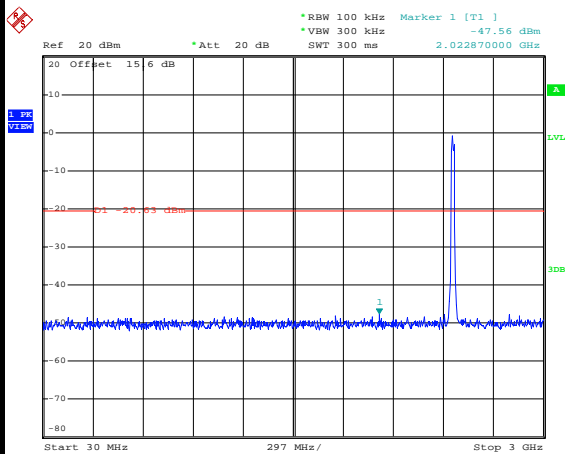
Date: 17.DEC.2013 19:57:43

High Channel Plot



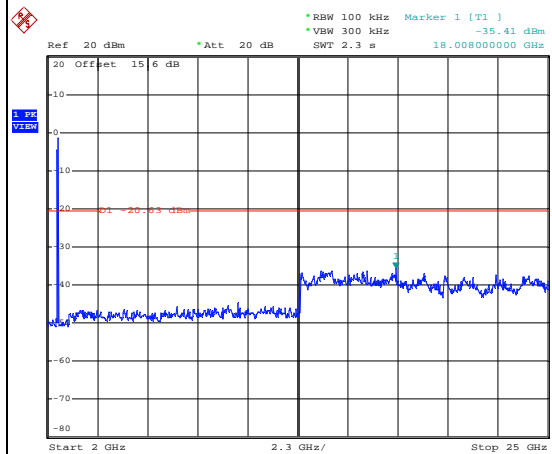
Date: 17.DEC.2013 19:57:57

Spurious Emission 30MHz~3GHz



Date: 17.DEC.2013 19:58:16

Spurious Emission 2GHz~25GHz



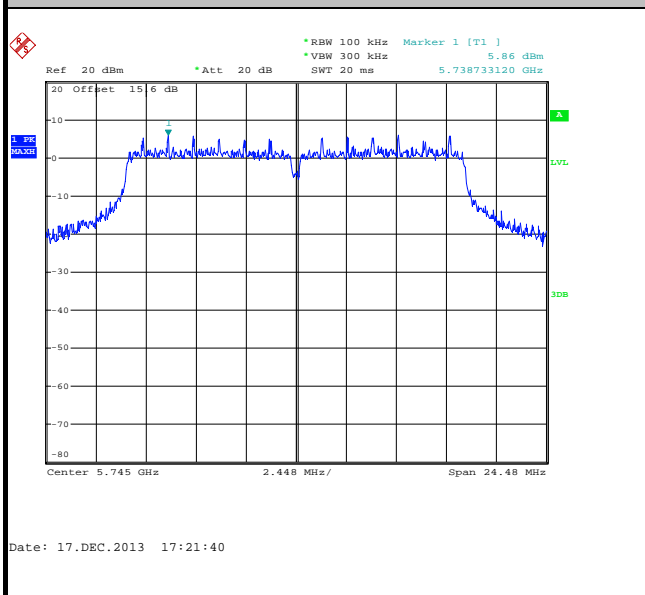
Date: 17.DEC.2013 19:58:34



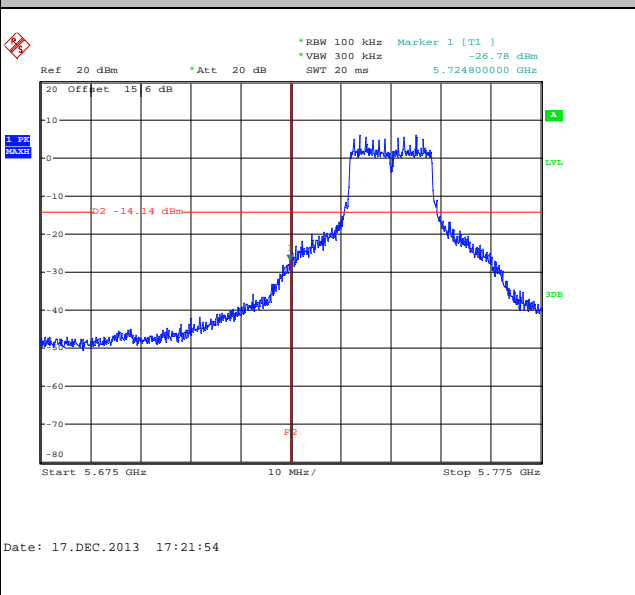
Test Mode :	802.11a	Temperature :	23~24°C
Test Band :	5GHz Low	Relative Humidity :	47~48%
Test Channel :	149	Test Engineer :	Adonis Li

WLAN 802.11a Channel 149

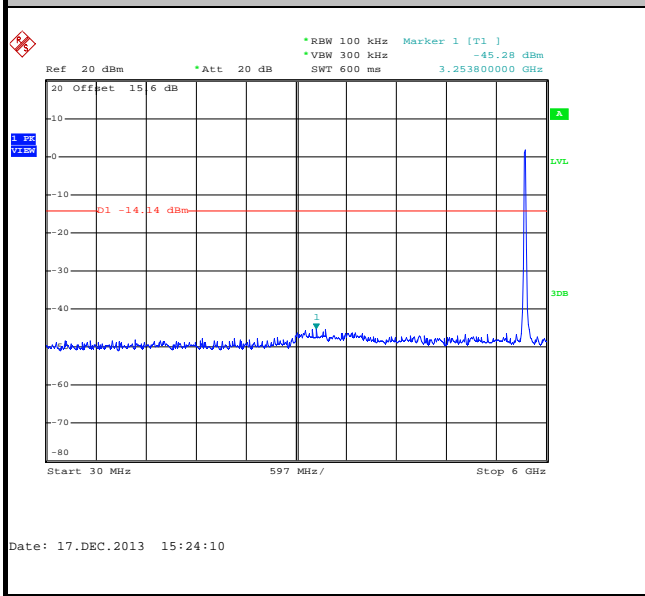
100kHz PSD reference Level



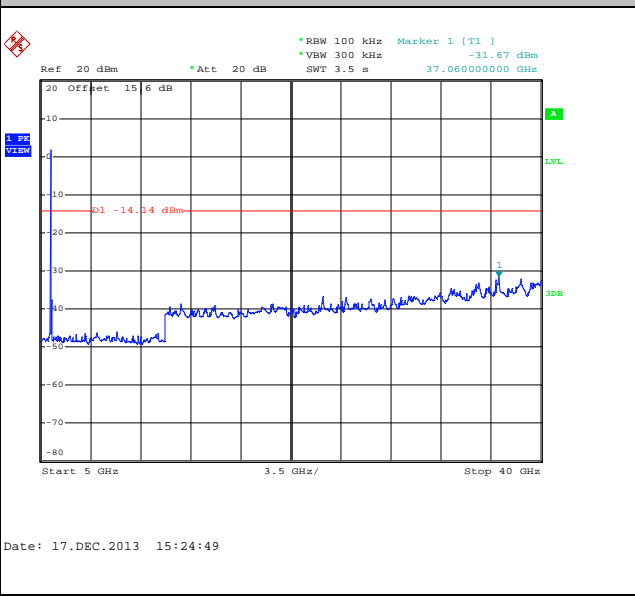
Low Channel Plot



Spurious Emission 30MHz~6GHz



Spurious Emission 5GHz~40GHz

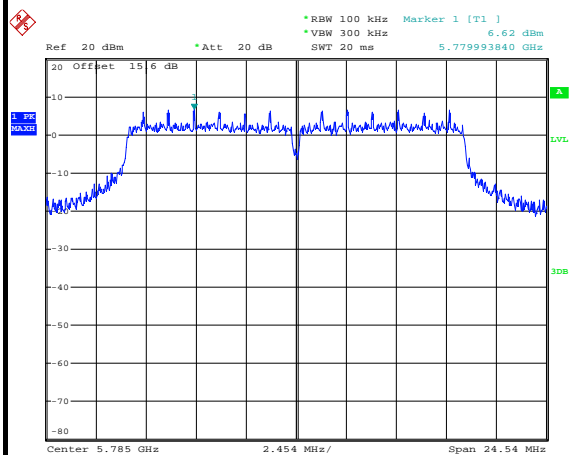




Test Mode :	802.11a	Temperature :	23~24°C
Test Band :	5GHz Mid	Relative Humidity :	47~48%
Test Channel :	157	Test Engineer :	Adonis Li

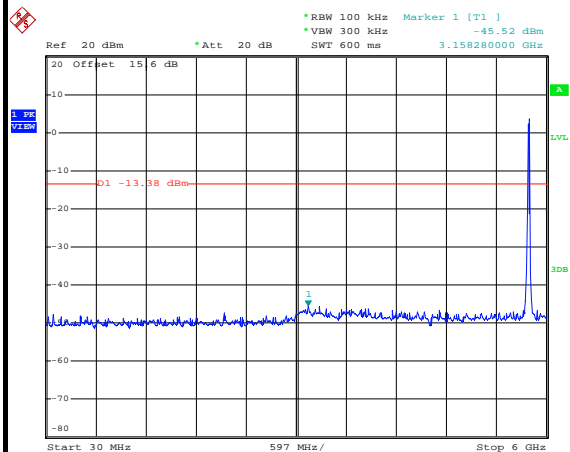
WLAN 802.11a Channel 157

100kHz PSD reference Level



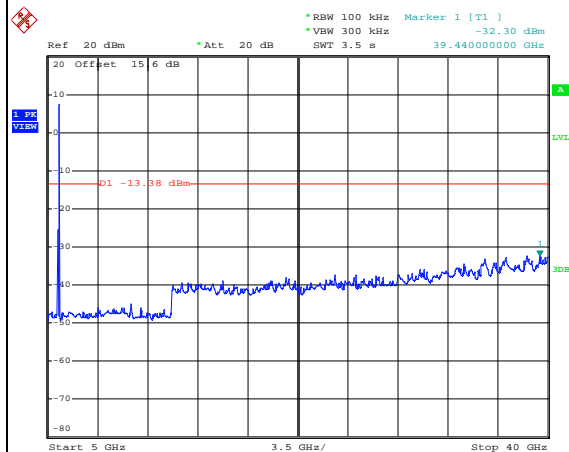
Date: 17.DEC.2013 17:25:20

Spurious Emission 30MHz~6GHz



Date: 17.DEC.2013 15:26:17

Spurious Emission 5GHz~40GHz



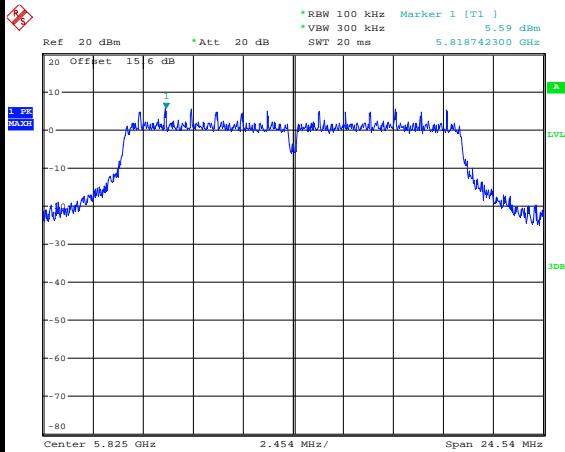
Date: 17.DEC.2013 15:26:51



Test Mode :	802.11a	Temperature :	23~24°C
Test Band :	5GHz High	Relative Humidity :	47~48%
Test Channel :	165	Test Engineer :	Adonis Li

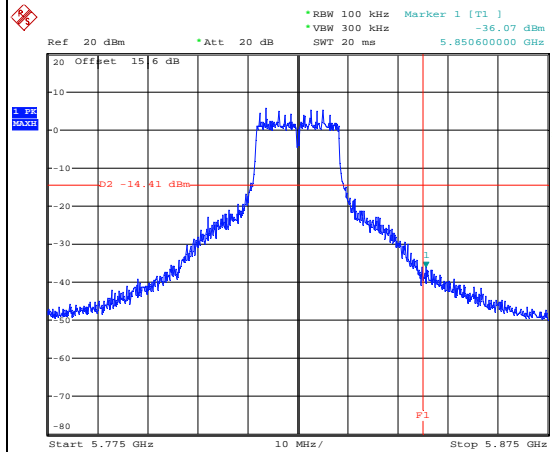
WLAN 802.11a Channel 165

100kHz PSD reference Level



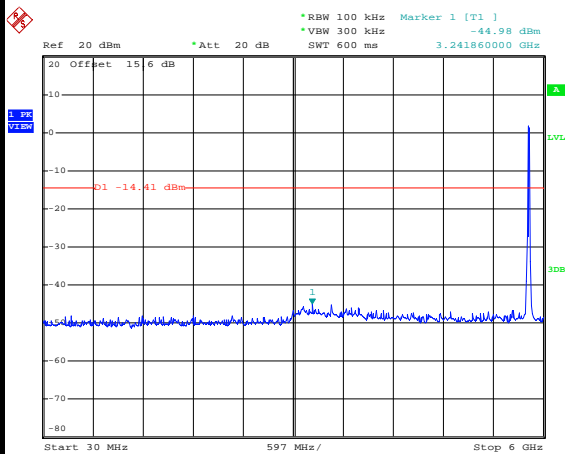
Date: 17.DEC.2013 17:27:10

High Channel Plot



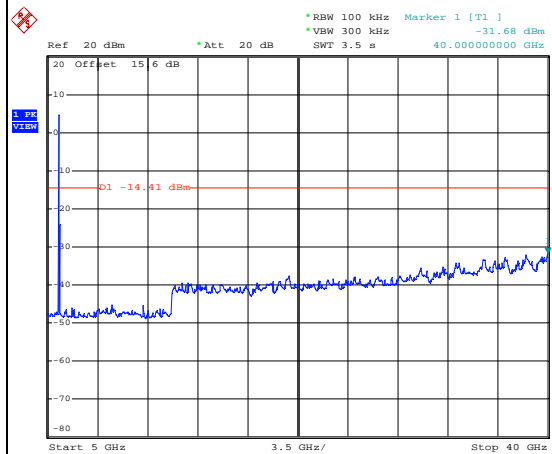
Date: 17.DEC.2013 17:27:24

Spurious Emission 30MHz~6GHz



Date: 17.DEC.2013 15:28:13

Spurious Emission 5GHz~40GHz



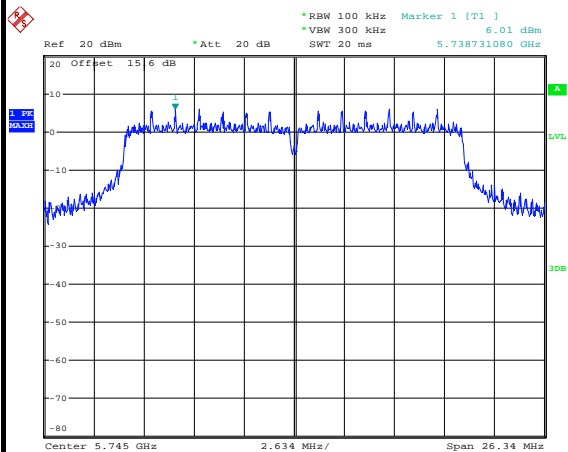
Date: 17.DEC.2013 15:27:42



Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Band :	5GHz Low	Relative Humidity :	47~48%
Test Channel :	149	Test Engineer :	Adonis Li

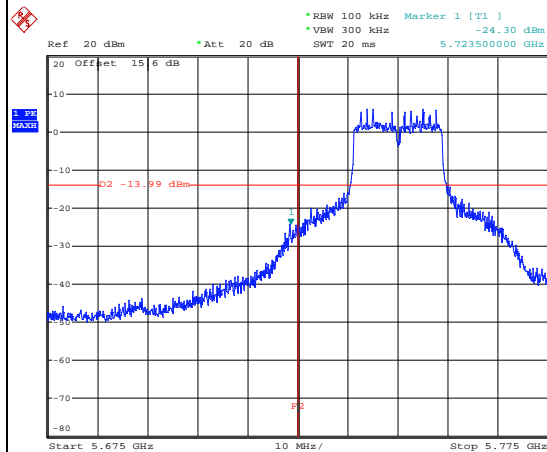
WLAN 802.11n HT20 Channel 149

100kHz PSD reference Level



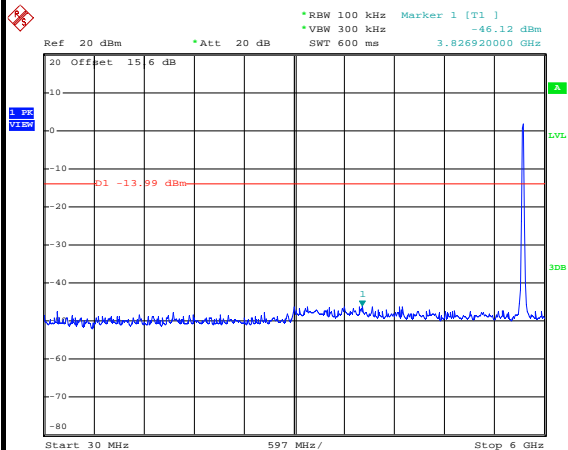
Date: 17.DEC.2013 17:29:58

Low Channel Plot



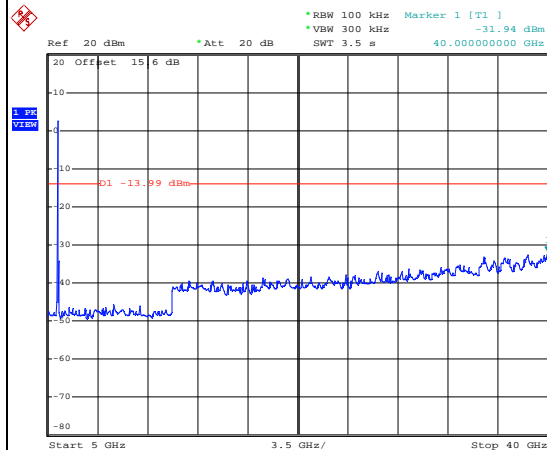
Date: 17.DEC.2013 17:30:12

Spurious Emission 30MHz~6GHz



Date: 17.DEC.2013 15:30:41

Spurious Emission 5GHz~40GHz



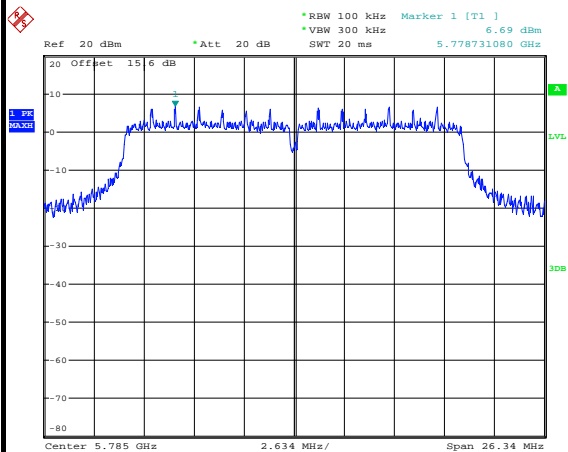
Date: 17.DEC.2013 15:31:12



Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Band :	5GHz Mid	Relative Humidity :	47~48%
Test Channel :	157	Test Engineer :	Adonis Li

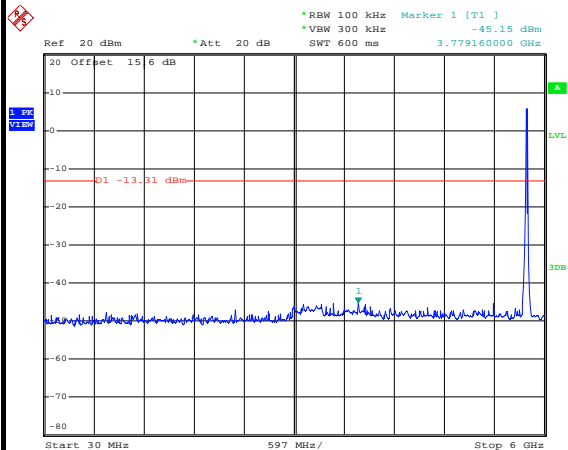
WLAN 802.11n HT20 Channel 157

100kHz PSD reference Level



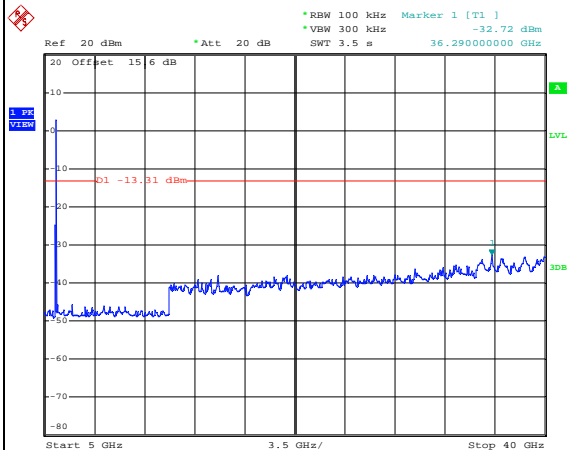
Date: 17.DEC.2013 17:31:55

Spurious Emission 30MHz~6GHz



Date: 17.DEC.2013 15:32:35

Spurious Emission 5GHz~40GHz



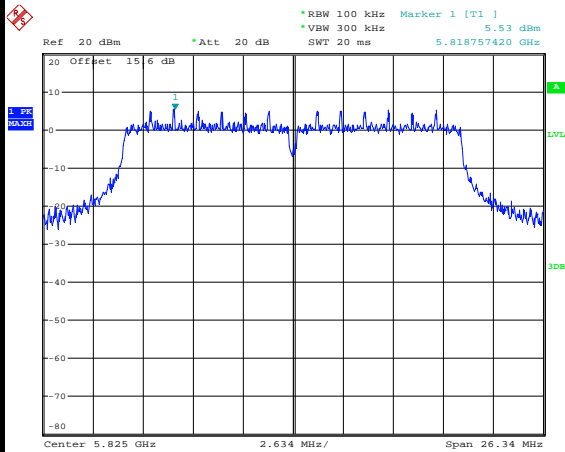
Date: 17.DEC.2013 15:31:55



Test Mode :	802.11n HT20	Temperature :	23~24°C
Test Band :	5GHz High	Relative Humidity :	47~48%
Test Channel :	165	Test Engineer :	Adonis Li

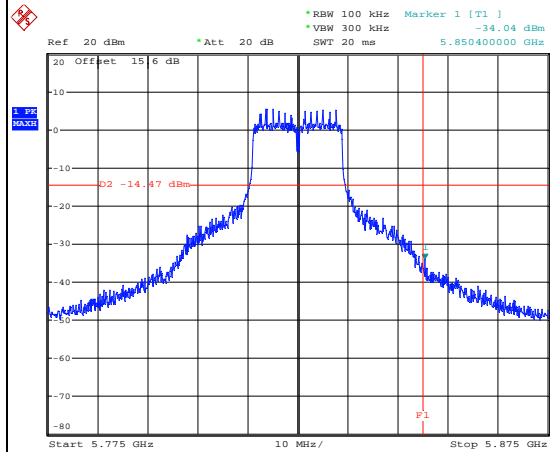
WLAN 802.11n HT20 Channel 165

100kHz PSD reference Level



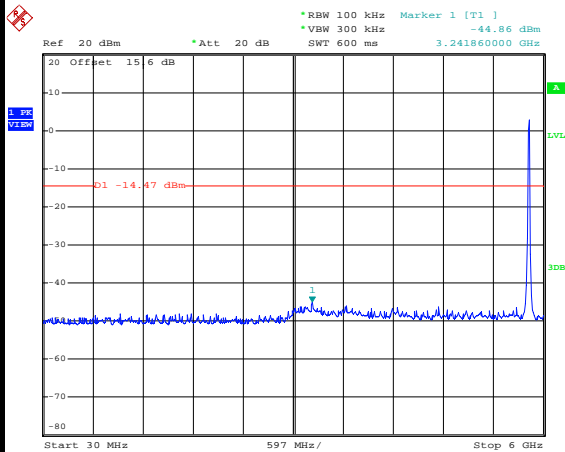
Date: 17.DEC.2013 17:34:54

High Channel Plot



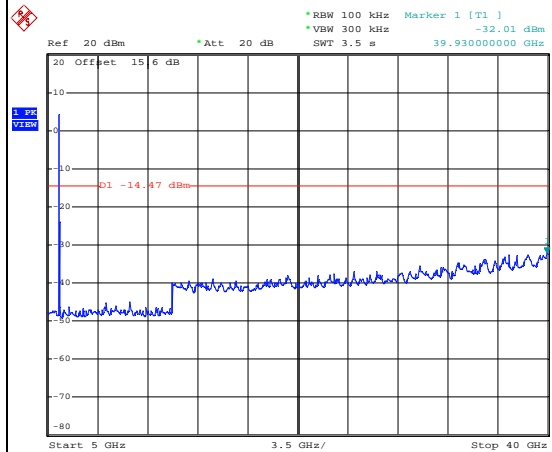
Date: 17.DEC.2013 17:35:08

Spurious Emission 30MHz~6GHz



Date: 17.DEC.2013 15:33:22

Spurious Emission 5GHz~40GHz



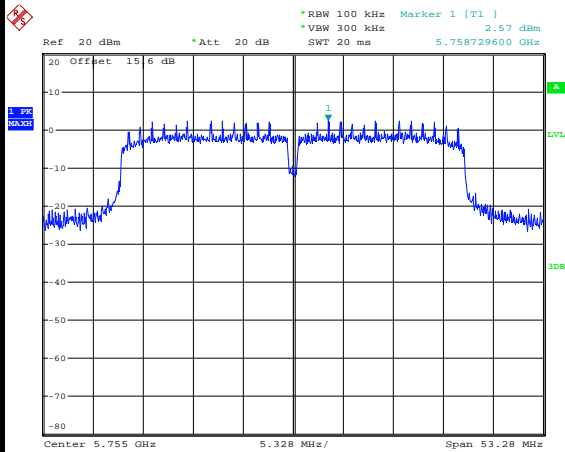
Date: 17.DEC.2013 15:34:08



Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Band :	5GHz Low	Relative Humidity :	47~48%
Test Channel :	151	Test Engineer :	Adonis Li

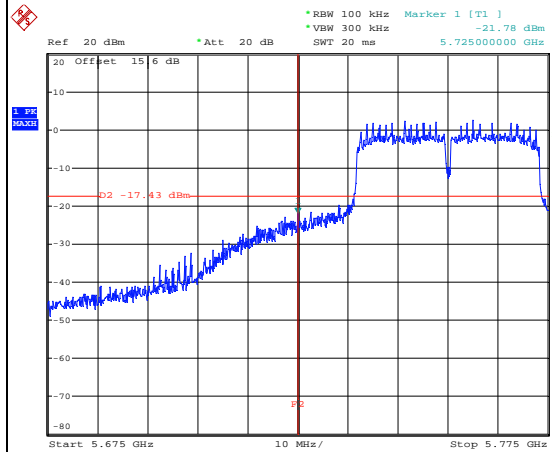
WLAN 802.11n HT40 Channel 151

100kHz PSD reference Level



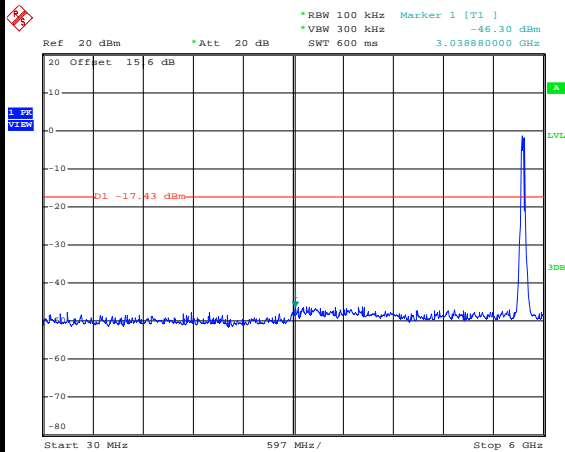
Date: 17.DEC.2013 17:40:44

Low Channel Plot



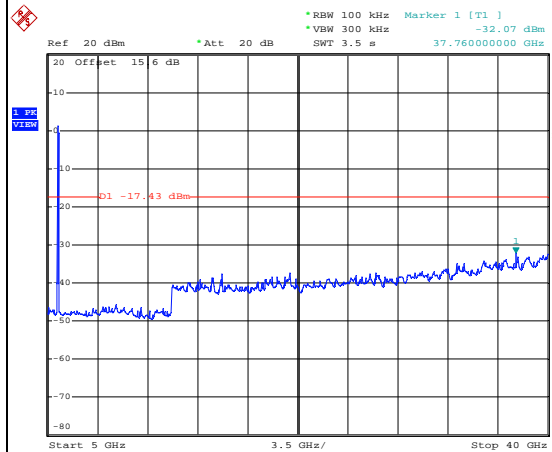
Date: 17.DEC.2013 17:40:58

Spurious Emission 30MHz~6GHz



Date: 17.DEC.2013 15:36:50

Spurious Emission 5GHz~40GHz



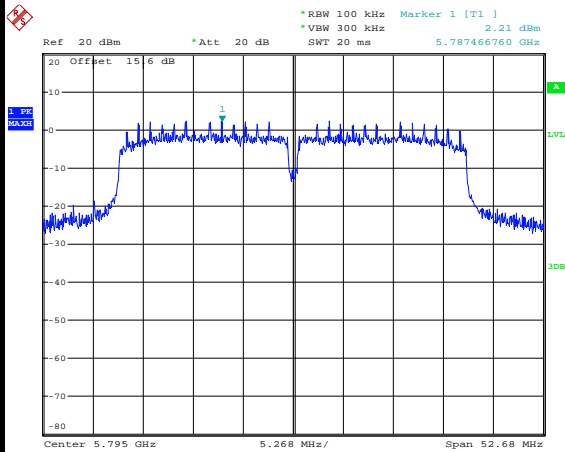
Date: 17.DEC.2013 15:36:18



Test Mode :	802.11n HT40	Temperature :	23~24°C
Test Band :	5GHz High	Relative Humidity :	47~48%
Test Channel :	159	Test Engineer :	Adonis Li

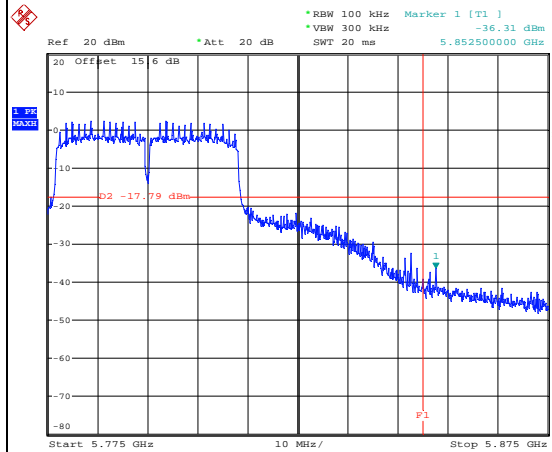
WLAN 802.11n HT40 Channel 159

100kHz PSD reference Level



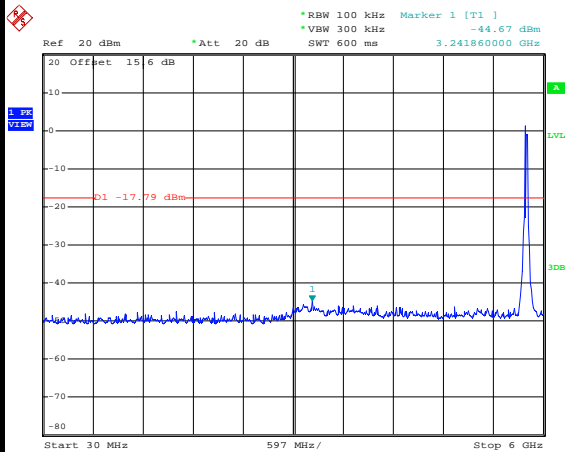
Date: 17.DEC.2013 17:44:38

High Channel Plot



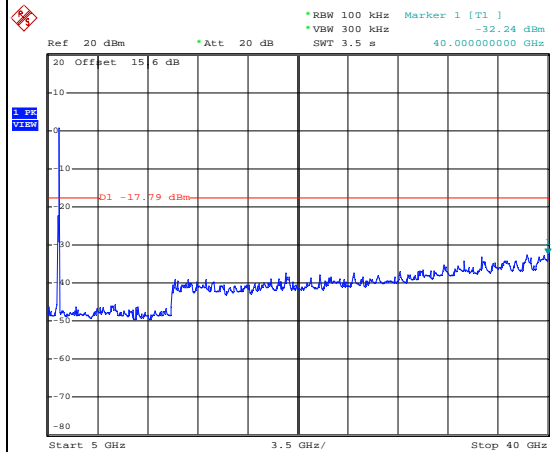
Date: 17.DEC.2013 17:44:52

Spurious Emission 30MHz~6GHz



Date: 17.DEC.2013 15:37:35

Spurious Emission 5GHz~40GHz



Date: 17.DEC.2013 15:38:14

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

The measuring equipment is listed in the section 4 of this test report.

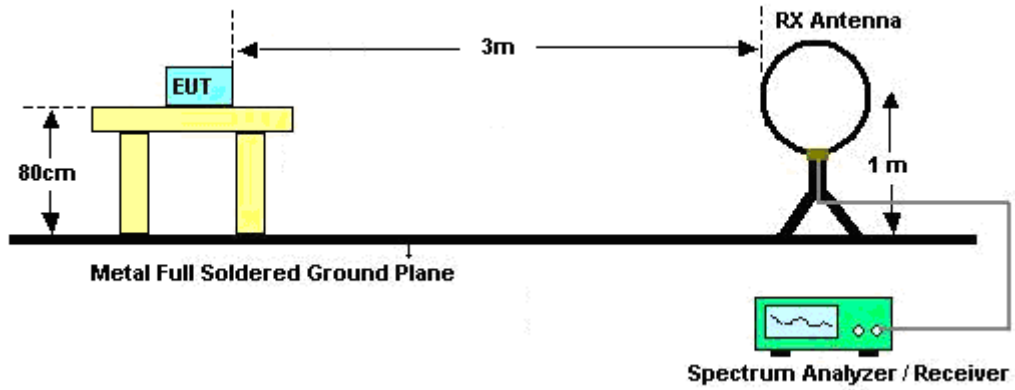
3.5.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
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; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.
 For average measurement:
 - $VBW = 10$ Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, 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.

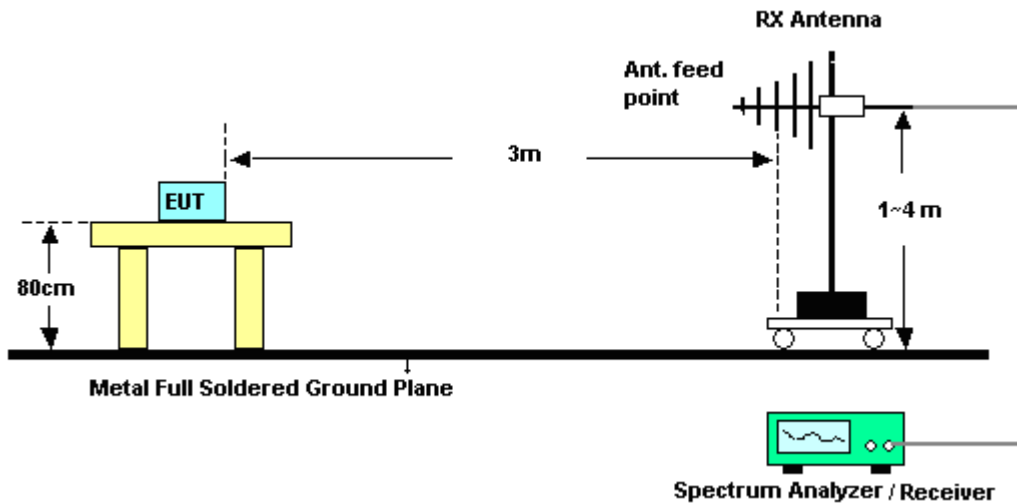
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	97.64	8.280	0.121	300Hz
802.11g	87.26	1.370	0.730	1kHz
2.4GHz 802.11n HT20	86.39	1.282	0.780	1kHz
802.11a	86.95	1.372	0.729	1kHz
5GHz 802.11n HT20	87.03	1.288	0.776	1kHz
5GHz 802.11n HT40	86.02	0.640	1.563	3kHz

3.5.4 Test Setup

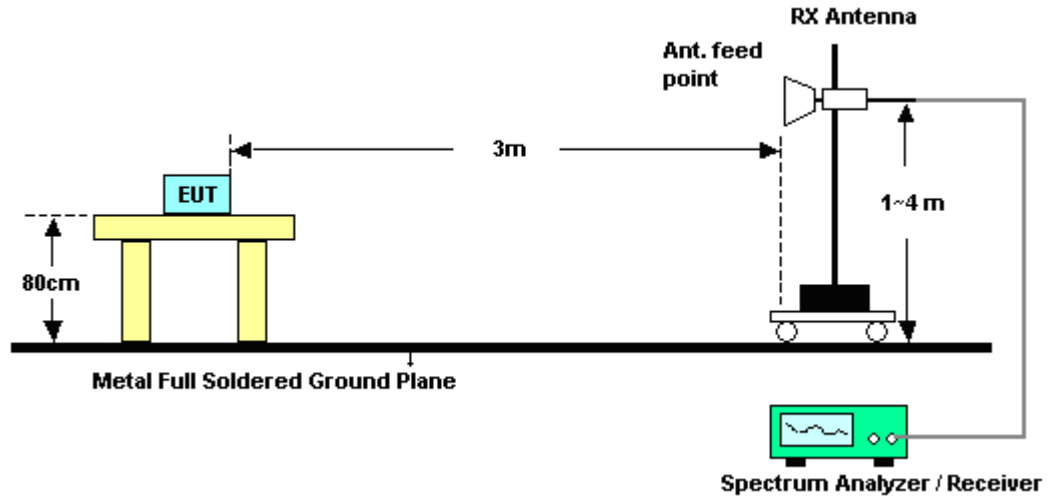
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Spurious 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 Spurious at Band Edges

Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Stone Gu

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
2378.94	51.05	-22.95	74	47.9	32.83	3.58	33.26	130	0	Peak
2390	37.27	-16.73	54	34.08	32.86	3.59	33.26	113	0	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
2389.83	52.03	-21.97	74	48.84	32.86	3.59	33.26	122	339	Peak
2390	40.24	-13.76	54	37.05	32.86	3.59	33.26	122	339	Average

Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Stone Gu

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
2491.93	52	-22	74	48.59	33.05	3.66	33.3	100	281	Peak
2483.74	37.45	-16.55	54	34.08	33.01	3.65	33.29	100	281	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
2485.84	56.36	-17.64	74	52.99	33.01	3.65	33.29	165	31	Peak
2483.68	43.77	-10.23	54	40.4	33.01	3.65	33.29	165	31	Average



Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Stone Gu

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
2390	55.38	-18.62	74	52.19	32.86	3.59	33.26	166	242	Peak
2390	37.96	-16.04	54	34.77	32.86	3.59	33.26	166	0	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
2389.38	70.27	-3.73	74	67.08	32.86	3.59	33.26	120	0	Peak
2389.92	47.32	-6.68	54	44.13	32.86	3.59	33.26	118	360	Average

Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Stone Gu

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
2484.25	57.66	-16.34	74	54.29	33.01	3.65	33.29	170	36	Peak
2484.61	38.57	-15.43	54	35.2	33.01	3.65	33.29	170	0	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
2483.92	71.39	-2.61	74	68.02	33.01	3.65	33.29	117	0	Peak
2483.53	47.47	-6.53	54	44.1	33.01	3.65	33.29	117	0	Average



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Stone Gu

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
2389.92	57.08	-16.92	74	53.89	32.86	3.59	33.26	112	31	Peak
2389.92	39.48	-14.52	54	36.29	32.86	3.59	33.26	112	25	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	69.29	-4.71	74	66.1	32.86	3.59	33.26	122	0	Peak
2390	46.69	-7.31	54	43.5	32.86	3.59	33.26	122	0	Average

Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Stone Gu

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
2484.1	57.91	-16.09	74	54.54	33.01	3.65	33.29	135	26	Peak
2483.59	38.61	-15.39	54	35.24	33.01	3.65	33.29	105	29	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
2484.28	69.91	-4.09	74	66.54	33.01	3.65	33.29	114	360	Peak
2483.56	45.37	-8.63	54	42	33.01	3.65	33.29	114	206	Average

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

Note: Pre-scanned all test modes and only choose the worst case mode recorded in the test report for radiated spurious emission below 1GHz.

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	1. 2412 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
2412	98.32	-	-	95.09	32.89	3.61	33.27	106	28	Peak
2412	93.76	-	-	90.53	32.89	3.61	33.27	106	28	Average
4824	47.07	-26.93	74	40.45	35.17	5.25	33.8	100	200	Peak

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	1. 2412 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
2412	107.61	-	-	104.38	32.89	3.61	33.27	122	339	Peak
2412	103.11	-	-	99.88	32.89	3.61	33.27	122	339	Average
4824	47.4	-26.6	74	40.78	35.17	5.25	33.8	100	145	Peak

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	1. 2437 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
2437	100.19	-	-	96.89	32.95	3.63	33.28	186	246	Peak
2437	95.66	-	-	92.36	32.95	3.63	33.28	186	246	Average
4874	47.07	-26.93	74	40.41	35.18	5.28	33.8	120	0	Peak
7312	46.83	-27.17	74	38.15	36.2	6.61	34.13	120	100	Peak

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	1. 2437 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
2437	106.78	-	-	103.48	32.95	3.63	33.28	148	269	Peak
2437	102.06	-	-	98.76	32.95	3.63	33.28	148	269	Average
4874	47.03	-26.97	74	40.37	35.18	5.28	33.8	200	0	Peak
7312	48.47	-25.53	74	39.79	36.2	6.61	34.13	100	308	Peak



Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	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	100.04	-	-	96.71	32.98	3.64	33.29	100	14	Peak
2462	95.37	-	-	92.04	32.98	3.64	33.29	100	14	Average
4924	46.1	-27.9	74	39.4	35.19	5.31	33.8	121	151	Peak
7386	48.91	-25.09	74	40.13	36.24	6.7	34.16	100	0	Peak

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	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	107.86	-	-	104.53	32.98	3.64	33.29	136	161	Peak
2462	103.5	-	-	100.17	32.98	3.64	33.29	136	161	Average
4924	47.86	-26.14	74	41.16	35.19	5.31	33.8	100	145	Peak
7386	49.31	-24.69	74	40.53	36.24	6.7	34.16	100	155	Peak



Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	1. 2412 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
2412	94.95	-	-	91.72	32.89	3.61	33.27	166	69	Peak
2412	83.67	-	-	80.44	32.89	3.61	33.27	166	69	Average
4824	46.72	-27.28	74	40.1	35.17	5.25	33.8	100	151	Peak

Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	1. 2412 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
2412	107.09	-	-	103.86	32.89	3.61	33.27	118	289	Peak
2412	96	-	-	92.77	32.89	3.61	33.27	118	289	Average
4824	46.99	-27.01	74	40.37	35.17	5.25	33.8	100	212	Peak



Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	1. 2437 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
2437	101.48	-	-	98.18	32.95	3.63	33.28	138	24	Peak
2437	90.09	-	-	86.79	32.95	3.63	33.28	138	24	Average
4874	44.11	-29.89	74	37.45	35.18	5.28	33.8	100	0	Peak
7312	47.61	-26.39	74	38.93	36.2	6.61	34.13	120	54	Peak

Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	1. 2437 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
2437	111.01	-	-	107.71	32.95	3.63	33.28	116	215	Peak
2437	99.48	-	-	96.18	32.95	3.63	33.28	116	215	Average
4874	44.15	-29.85	74	37.49	35.18	5.28	33.8	200	305	Peak
7312	48.39	-25.61	74	39.71	36.2	6.61	34.13	200	103	Peak



Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	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
156.1	28.9	-14.6	43.5	51.58	9.76	1.14	33.58	100	236	Peak
298.69	30.75	-15.25	46	49.54	12.99	1.6	33.38	-	-	Peak
332.64	27.73	-18.27	46	45.37	14.05	1.67	33.36	-	-	Peak
480.08	31.24	-14.76	46	45.53	16.87	2	33.16	-	-	Peak
720.64	29.65	-16.35	46	40.53	19.53	2.43	32.84	-	-	Peak
809.88	28.56	-17.44	46	38.65	19.95	2.6	32.64	-	-	Peak
2462	94.56	-	-	91.23	32.98	3.64	33.29	170	29	Peak
2462	84.27	-	-	80.94	32.98	3.64	33.29	170	29	Average
4924	46.55	-27.45	74	39.85	35.19	5.31	33.8	100	145	Peak
7386	48.73	-25.27	74	39.95	36.24	6.7	34.16	100	145	Peak



Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	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
46.49	32.46	-7.54	40	56.55	8.88	0.64	33.61	-	-	Peak
100.81	28.41	-15.09	43.5	50.47	10.62	0.93	33.61	-	-	Peak
201.69	37.53	-5.97	43.5	60.7	9.08	1.31	33.56	145	236	Peak
331.67	27.64	-18.36	46	45.31	14.02	1.67	33.36	-	-	Peak
482.02	27.26	-18.74	46	41.5	16.91	2	33.15	-	-	Peak
724.52	26.97	-19.03	46	37.76	19.6	2.44	32.83	-	-	Peak
2462	106.87	-	-	103.54	32.98	3.64	33.29	117	165	Peak
2462	95.13	-	-	91.8	32.98	3.64	33.29	117	165	Average
4924	46.5	-27.5	74	39.8	35.19	5.31	33.8	151	225	Peak
7386	48.92	-25.08	74	40.14	36.24	6.7	34.16	101	226	Peak



Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	1. 2412 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
2412	96.56	-	-	93.33	32.89	3.61	33.27	112	35	Peak
2412	85.62	-	-	82.39	32.89	3.61	33.27	112	35	Average
4824	44.53	-29.47	74	37.91	35.17	5.25	33.8	120	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	1. 2412 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
2412	105.74	-	-	102.51	32.89	3.61	33.27	122	0	Peak
2412	93.67	-	-	90.44	32.89	3.61	33.27	122	0	Average
4824	44.7	-29.3	74	38.08	35.17	5.25	33.8	200	185	Peak



Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	1. 2437 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
2437	101.45	-	-	98.15	32.95	3.63	33.28	137	22	Peak
2437	90.02	-	-	86.72	32.95	3.63	33.28	137	22	Average
4874	46.95	-27.05	74	40.29	35.18	5.28	33.8	200	0	Peak
7312	47.83	-26.17	74	39.15	36.2	6.61	34.13	100	285	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	1. 2437 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
2437	110.99	-	-	107.69	32.95	3.63	33.28	117	237	Peak
2437	99.71	-	-	96.41	32.95	3.63	33.28	117	237	Average
4874	49	-25	74	42.34	35.18	5.28	33.8	200	0	Peak
7312	48.16	-25.84	74	39.48	36.2	6.61	34.13	200	103	Peak



Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	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	97.2	-	-	93.87	32.98	3.64	33.29	135	25	Peak
2462	85.55	-	-	82.22	32.98	3.64	33.29	135	25	Average
4924	44.72	-29.28	74	38.02	35.19	5.31	33.8	200	0	Peak
7386	48.29	-25.71	74	39.51	36.24	6.7	34.16	110	200	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	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	106.03	-	-	102.7	32.98	3.64	33.29	114	164	Peak
2462	94.21	-	-	90.88	32.98	3.64	33.29	114	164	Average
4924	43.99	-30.01	74	37.29	35.19	5.31	33.8	200	0	Peak
7386	47.94	-26.06	74	39.16	36.24	6.7	34.16	200	0	Peak



Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	5745 MHz is fundamental signal which can be ignored.		

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
5745	104.71	-	-	97.22	35.52	5.67	33.7	121	178	Peak
5745	92.89	-	-	85.4	35.52	5.67	33.7	121	178	Average
11490	51.63	-22.37	74	72.32	4.47	8.84	34	100	276	Peak
11490	38.99	-15.01	54	59.68	4.47	8.84	34	100	276	Average

Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	5745 MHz is fundamental signal which can be ignored.		

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
5745	114.92	-	-	107.43	35.52	5.67	33.7	107	265	Peak
5745	103.3	-	-	95.81	35.52	5.67	33.7	107	265	Average
11490	61.74	-12.26	74	82.43	4.47	8.84	34	100	183	Peak
11490	45.06	-8.94	54	65.75	4.47	8.84	34	100	183	Average



Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	157	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	5785 MHz is fundamental signal which can be ignored.		

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
5785	103.59	-	-	96.06	35.53	5.7	33.7	160	201	Peak
5785	91.94	-	-	84.41	35.53	5.7	33.7	160	201	Average
11570	53.71	-20.29	74	74.55	4.38	8.8	34.02	100	261	Peak
11570	39.3	-14.7	54	60.14	4.38	8.8	34.02	100	261	Average

Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	157	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	5785 MHz is fundamental signal which can be ignored.		

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
5785	115.04	-	-	107.51	35.53	5.7	33.7	105	126	Peak
5785	103.78	-	-	96.25	35.53	5.7	33.7	105	126	Average
11570	61.79	-12.21	74	82.63	4.38	8.8	34.02	100	184	Peak
11570	45.22	-8.78	54	66.06	4.38	8.8	34.02	100	184	Average



Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	165	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	5825 MHz is fundamental signal which can be ignored.		

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
5825	100.81	-	-	93.2	35.55	5.76	33.7	100	241	Peak
5825	89.75	-	-	82.14	35.55	5.76	33.7	100	241	Average
11650	49	-25	74	70.12	4.2	8.73	34.05	100	269	Peak
11650	37.03	-16.97	54	58.15	4.2	8.73	34.05	100	269	Average

Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	165	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	5825 MHz is fundamental signal which can be ignored.		

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
5825	113.91	-	-	106.3	35.55	5.76	33.7	103	127	Peak
5825	102.44	-	-	94.83	35.55	5.76	33.7	103	127	Average
11650	60.69	-13.31	74	81.81	4.2	8.73	34.05	100	21	Peak
11650	44.67	-9.33	54	65.79	4.2	8.73	34.05	100	21	Average



Test Mode :	5GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	5745 MHz is fundamental signal which can be ignored.		

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
5745	104.35	-	-	96.86	35.52	5.67	33.7	120	176	Peak
5745	93.26	-	-	85.77	35.52	5.67	33.7	120	176	Average
11490	49.2	-24.8	74	69.89	4.47	8.84	34	100	32	Peak
11490	36.99	-17.01	54	57.68	4.47	8.84	34	100	32	Average

Test Mode :	5GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	5745 MHz is fundamental signal which can be ignored.		

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
5745	114.61	-	-	107.12	35.52	5.67	33.7	103	130	Peak
5745	103.15	-	-	95.66	35.52	5.67	33.7	103	130	Average
11490	62.47	-11.53	74	83.16	4.47	8.84	34	100	183	Peak
11490	45.05	-8.95	54	65.74	4.47	8.84	34	100	183	Average



Test Mode :	5GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	157	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	5785 MHz is fundamental signal which can be ignored.		

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
5785	104.48	-	-	96.95	35.53	5.7	33.7	108	175	Peak
5785	93.24	-	-	85.71	35.53	5.7	33.7	108	175	Average
11570	54.41	-19.59	74	75.25	4.38	8.8	34.02	100	42	Peak
11570	40.33	-13.67	54	61.17	4.38	8.8	34.02	100	42	Average

Test Mode :	5GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	157	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	5785 MHz is fundamental signal which can be ignored.		

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
5785	114.47	-	-	106.94	35.53	5.7	33.7	104	132	Peak
5785	103.24	-	-	95.71	35.53	5.7	33.7	104	132	Average
11570	60.8	-13.2	74	81.64	4.38	8.8	34.02	100	3	Peak
11570	43.29	-10.71	54	64.13	4.38	8.8	34.02	100	3	Average



Test Mode :	5GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	165	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	5825 MHz is fundamental signal which can be ignored.		

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
5825	104.21	-	-	96.6	35.55	5.76	33.7	107	179	Peak
5825	92.46	-	-	84.85	35.55	5.76	33.7	107	179	Average
11650	53.51	-20.49	74	74.63	4.2	8.73	34.05	100	32	Peak
11650	39.57	-14.43	54	60.69	4.2	8.73	34.05	100	32	Average

Test Mode :	5GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	165	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	5825 MHz is fundamental signal which can be ignored.		

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
5825	114.42	-	-	106.81	35.55	5.76	33.7	125	126	Peak
5825	102.87	-	-	95.26	35.55	5.76	33.7	125	126	Average
11650	59.31	-14.69	74	80.43	4.2	8.73	34.05	100	37	Peak
11650	42.59	-11.41	54	63.71	4.2	8.73	34.05	100	37	Average



Test Mode :	5GHz 802.11n HT40	Temperature :	24~25°C
Test Channel :	151	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	5755 MHz is fundamental signal which can be ignored.		

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
5755	106.1	-	-	98.59	35.53	5.68	33.7	108	177	Peak
5755	94.6	-	-	87.09	35.53	5.68	33.7	108	177	Average
11510	55.65	-18.35	74	76.26	4.53	8.86	34	100	261	Peak
11510	42.85	-11.15	54	63.46	4.53	8.86	34	100	261	Average

Test Mode :	5GHz 802.11n HT40	Temperature :	24~25°C
Test Channel :	151	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	5755 MHz is fundamental signal which can be ignored.		

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
5755	116.76	-	-	109.25	35.53	5.68	33.7	107	284	Peak
5755	104.68	-	-	97.17	35.53	5.68	33.7	107	284	Average
11510	63.85	-10.15	74	84.46	4.53	8.86	34	100	28	Peak
11510	50.81	-3.19	54	71.42	4.53	8.86	34	100	28	Average



Test Mode :	5GHz 802.11n HT40	Temperature :	24~25°C
Test Channel :	159	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	5795 MHz is fundamental signal which can be ignored.		

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
5795	105.26	-	-	97.7	35.54	5.72	33.7	107	172	Peak
5795	94.21	-	-	86.65	35.54	5.72	33.7	107	172	Average
11590	57.72	-16.28	74	78.63	4.34	8.78	34.03	100	261	Peak
11590	44.38	-9.62	54	65.29	4.34	8.78	34.03	100	261	Average

Test Mode :	5GHz 802.11n HT40	Temperature :	24~25°C
Test Channel :	159	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	5795 MHz is fundamental signal which can be ignored.		

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
5795	116.46	-	-	108.9	35.54	5.72	33.7	103	130	Peak
5795	104.76	-	-	97.2	35.54	5.72	33.7	103	130	Average
11590	64.38	-9.62	74	85.29	4.34	8.78	34.03	100	0	Peak
11590	51.04	-2.96	54	71.95	4.34	8.78	34.03	100	0	Average



3.6 Antenna Requirements

3.6.1 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.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.6.3 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	100319	9kHz~40GHz	Dec. 29, 2012	Dec. 17, 2013~ Dec. 18, 2013	Dec. 28, 2013	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	N/A	Feb. 28, 2013	Dec. 17, 2013~ Dec. 18, 2013	Feb. 27, 2014	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	N/A	Feb. 28, 2013	Dec. 17, 2013~ Dec. 18, 2013	Feb. 27, 2014	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz / Max-input 30dBm	Nov. 05, 2013	Dec. 19, 2013	Nov. 04, 2014	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101399	9kHz~30GHz; Ma x-intput 30dBm	May 23, 2013	Dec. 19, 2013	May 22, 2014	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 09, 2013	Dec. 19, 2013	Oct. 08, 2014	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 06, 2013	Dec. 19, 2013	Dec. 05, 2014	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Dec. 06, 2013	Dec. 19, 2013	Dec. 05, 2014	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA17024 9	15GHz~40GHz	Nov. 22, 2013	Dec. 19, 2013	Nov. 21, 2014	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz /AMP 25dB +/- 2	Nov. 18, 2013	Dec. 19, 2013	Nov. 17, 2014	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1GHz /32 dB	May 23, 2013	Dec. 19, 2013	May 22, 2014	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz >23dB	Dec. 29, 2012	Dec. 19, 2013	Dec. 28, 2013	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Dec. 19, 2013	NCR	Radiation (03CH01-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Dec. 19, 2013	NCR	Radiation (03CH01-KS)



5 Uncertainty of Evaluation

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

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