

FCC RF Test Report

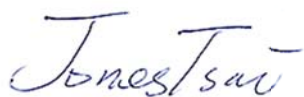
APPLICANT : Samsung Electronics Co., Ltd.
EQUIPMENT : Phonblet
BRAND NAME : SAMSUNG
MODEL NAME : SM-T2519
FCC ID : A3LSMT2519
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was testing completed on May 23, 2014. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and the testing has shown the tested sample to be in 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 (SHENZHEN) INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (SHENZHEN) INC.

No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District,
Shenzhen, Guangdong, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR441601C	Rev. 01	Initial issue of report	May 26, 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 4.78 dB at 41.640 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 5.56 dB at 0.480 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Samsung Electronics Co., Ltd.

416 Maetan-3dong, Yeongtong-gu, Suwon-City, Gyeonggi-do, 443-742, Korea

1.2 Manufacturer

Samsung Electronics Co., Ltd.

416 Maetan-3dong, Yeongtong-gu, Suwon-City, Gyeonggi-do, 443-742, Korea

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Phonblet
Brand Name	SAMSUNG
Model Name	SM-T2519
FCC ID	A3LSMT2519
GSM Operating Band(s)	GSM 900/1800/1900MHz
GPRS/EGPRS Multi-slot Class	GPRS Class 10, EGPRS Class 10
WCDMA Operating Band(s)	FDD Band I / II / V
Wi-Fi Specification	2.4GHz 802.11b/g/n HT20/ 5GHz 802.11a/n HT20/HT40
Bluetooth Version	Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
NFC Specification	Type A/B
HW Version	T2519.02
SW Version	T2519KEUANC2
EUT Stage	Pre-Production

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 (Peak) Output Power to Antenna	<2412 MHz ~ 2462 MHz> 802.11b : 17.66 dBm (0.0583 W) 802.11g : 19.11 dBm (0.0815 W) 802.11n HT20 : 18.61 dBm (0.0726 W) <5745 MHz ~ 5825 MHz> 802.11a : 18.14 dBm (0.0652 W) 802.11n HT20 : 18.05 dBm (0.0638 W) 802.11n HT40 : 17.67 dBm (0.0585 W)
Antenna Type	802.11b/g/n : Integrated Antenna with gain 0.70 dBi 802.11a/n : Integrated Antenna with gain 0.50 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 Location

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.			
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755-3320-2398			
Test Site No.	Sporton Site No.			FCC Registration No.
	TH01-SZ	03CH01-SZ	CO01-SZ	831040

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

1.7 Applicable 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: 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 (Y plane for 2.4GHz, Z plane for 5GHz) 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 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	16.25	16.20	16.21	16.21
CH 06	2437 MHz	15.07	15.06	15.06	15.05
CH 11	2462 MHz	17.66	17.64	17.65	17.64

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 01	2412 MHz	18.95	18.91	18.93	18.91	18.84	18.89	18.91	18.82
CH 06	2437 MHz	18.28	18.25	18.19	18.19	18.24	18.22	18.24	18.20
CH 11	2462 MHz	19.11	19.07	19.02	19.02	19.08	19.06	19.05	19.02

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	18.51	18.21	18.16	18.17	18.20	18.07	18.06	18.11
CH 06	2437 MHz	17.53	17.25	17.23	17.19	17.21	17.22	17.16	17.20
CH 11	2462 MHz	18.61	18.33	18.31	18.30	18.32	18.31	18.29	18.30

Channel	Frequency	5GHz 802.11a RF Power (dBm)							
		OFDM Data Rate							
		6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 149	5745 MHz	17.67	17.65	17.61	17.63	17.60	17.58	17.56	17.59
CH 157	5785 MHz	18.14	18.10	18.02	18.06	18.04	17.96	17.98	18.00
CH 165	5825 MHz	18.05	18.01	17.96	18.00	17.96	17.92	17.91	17.92

Channel	Frequency	5GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 149	5745 MHz	17.36	17.28	17.20	17.27	17.31	17.25	17.24	17.29
CH 157	5785 MHz	18.05	17.98	17.94	17.92	17.99	17.91	17.94	17.96
CH 165	5825 MHz	17.94	17.84	17.85	17.84	17.87	17.83	17.82	17.87

Channel	Frequency	5GHz 802.11n HT40 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 151	5755 MHz	17.16	17.01	16.99	16.95	16.96	16.95	16.97	16.95
CH 159	5795 MHz	17.67	17.53	17.51	17.50	17.50	17.47	17.49	17.50

2.3 Test Mode

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

<2.4GHz>

Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	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

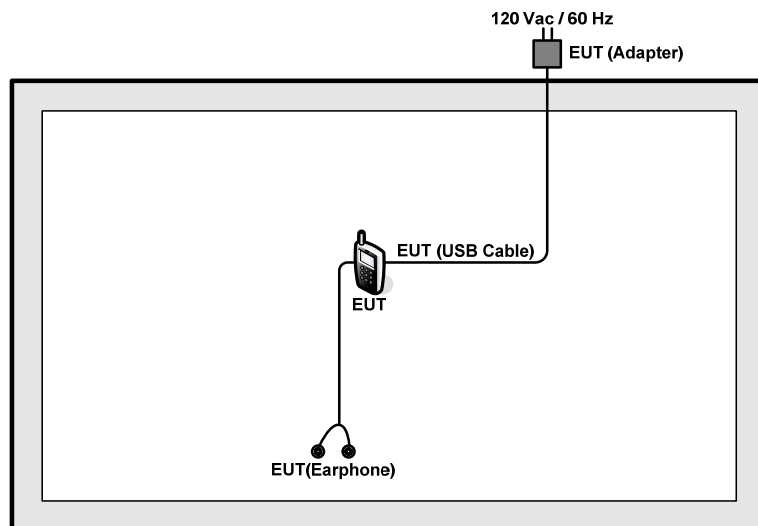
<5GHz>

Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	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

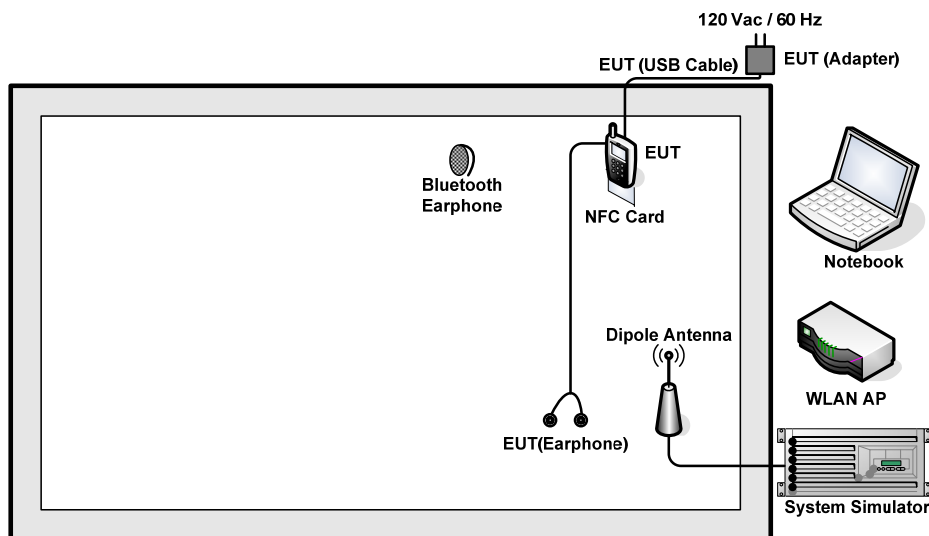
Test Cases	
AC Conducted Emission	Mode 1 : WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + USB Cable (Charging from Adapter) + Earphone + NFC Tx
	Mode 2 : WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + USB Cable (Charging from Adapter) + Earphone + NFC Tx
Remark: 1. The worst case of conducted emission is mode 2; only the test data of it is reported. 2. For radiated TCs, the tests were performed with adapter, earphone and USB cable.	

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	CMW 500	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-815	KA2DIR815A1	N/A	Unshielded, 1.8 m
3.	Notebook	Lenovo	G480	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
5.	NFC Card	N/A	N/A	N/A	N/A	N/A

2.6 EUT Operation Test Setup

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

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

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 7.5 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset (dB)} &= \text{RF cable loss (dB)} + \text{attenuator factor (dB)} \\ &= 7.5 + 10 = 17.5 \text{ (dB)}\end{aligned}$$

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.

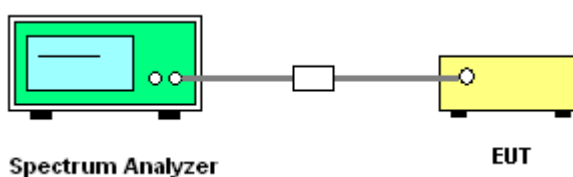
3.1.2 Measuring Instruments

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

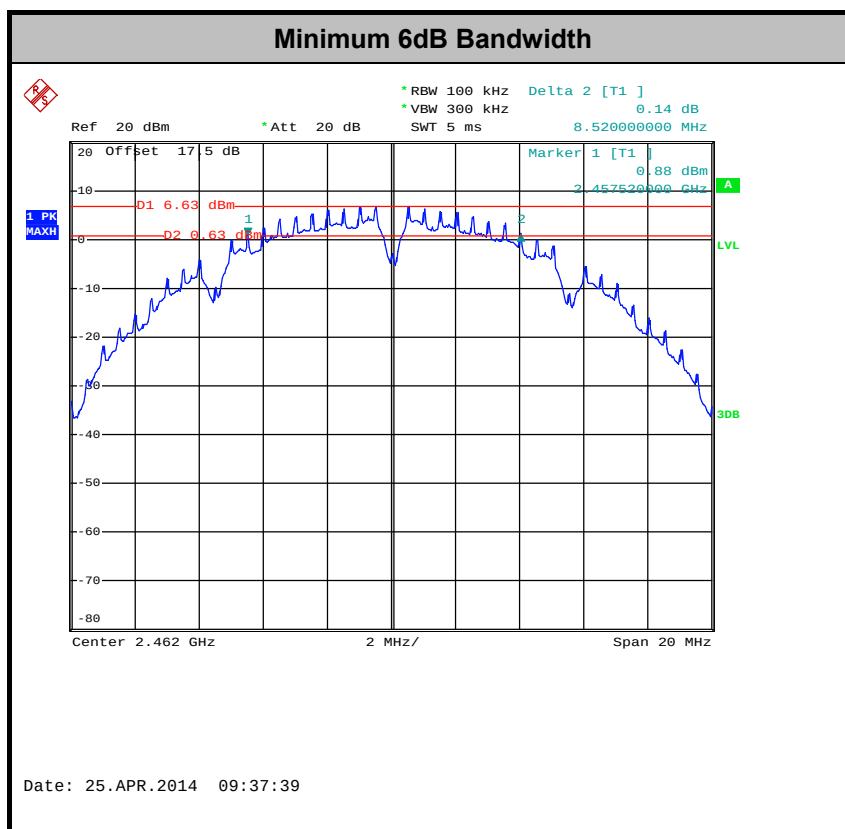


3.1.5 Test Result of 6dB Bandwidth

Test Band :	2.4GHz + 5GHz band 4	Temperature :	24~26℃
Test Engineer :	Ting You	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	9.06	0.5	Pass
11b	1Mbps	1	6	2437	9.04	0.5	Pass
11b	1Mbps	1	11	2462	8.52	0.5	Pass
11g	6Mbps	1	1	2412	15.96	0.5	Pass
11g	6Mbps	1	6	2437	16.10	0.5	Pass
11g	6Mbps	1	11	2462	16.32	0.5	Pass
HT20	MCS0	1	1	2412	16.66	0.5	Pass
HT20	MCS0	1	6	2437	16.72	0.5	Pass
HT20	MCS0	1	11	2462	17.04	0.5	Pass

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
11a	6Mbps	1	149	5745	16.36	0.5	Pass
11a	6Mbps	1	157	5785	16.34	0.5	Pass
11a	6Mbps	1	165	5825	16.36	0.5	Pass
HT20	MCS0	1	149	5745	17.56	0.5	Pass
HT20	MCS0	1	157	5785	17.58	0.5	Pass
HT20	MCS0	1	165	5825	17.56	0.5	Pass
HT40	MCS0	1	151	5755	35.48	0.5	Pass
HT40	MCS0	1	159	5795	35.68	0.5	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.

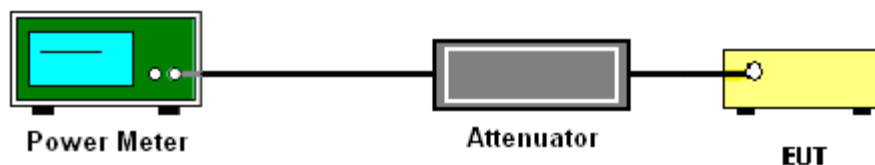
3.2.2 Measuring Instruments

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 :	24~26℃
Test Engineer :	Ting You	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	RF Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	16.25	30	0.70	Pass
11b	1Mbps	1	6	2437	15.07	30	0.70	Pass
11b	1Mbps	1	11	2462	17.66	30	0.70	Pass
11g	6Mbps	1	1	2412	18.95	30	0.70	Pass
11g	6Mbps	1	6	2437	18.28	30	0.70	Pass
11g	6Mbps	1	11	2462	19.11	30	0.70	Pass
HT20	MCS0	1	1	2412	18.51	30	0.70	Pass
HT20	MCS0	1	6	2437	17.53	30	0.70	Pass
HT20	MCS0	1	11	2462	18.61	30	0.70	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	17.67	30	0.50	Pass
11a	6Mbps	1	157	5785	18.14	30	0.50	Pass
11a	6Mbps	1	165	5825	18.05	30	0.50	Pass
HT20	MCS0	1	149	5745	17.36	30	0.50	Pass
HT20	MCS0	1	157	5785	18.05	30	0.50	Pass
HT20	MCS0	1	165	5825	17.94	30	0.50	Pass
HT40	MCS0	1	151	5755	17.16	30	0.50	Pass
HT40	MCS0	1	159	5795	17.67	30	0.50	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 :	24~26℃
Test Engineer :	Ting You	Relative Humidity :	50~53%

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	0.06	13.71	30	0.70	Pass
11b	1Mbps	1	6	2437	0.06	12.64	30	0.70	Pass
11b	1Mbps	1	11	2462	0.06	15.14	30	0.70	Pass
11g	6Mbps	1	1	2412	0.32	10.08	30	0.70	Pass
11g	6Mbps	1	6	2437	0.32	9.08	30	0.70	Pass
11g	6Mbps	1	11	2462	0.32	10.94	30	0.70	Pass
HT20	MCS0	1	1	2412	0.33	9.30	30	0.70	Pass
HT20	MCS0	1	6	2437	0.33	8.08	30	0.70	Pass
HT20	MCS0	1	11	2462	0.33	9.91	30	0.70	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	0.32	11.40	30	0.50	Pass
11a	6Mbps	1	157	5785	0.32	12.66	30	0.50	Pass
11a	6Mbps	1	165	5825	0.32	12.04	30	0.50	Pass
HT20	MCS0	1	149	5745	0.34	9.89	30	0.50	Pass
HT20	MCS0	1	157	5785	0.34	11.30	30	0.50	Pass
HT20	MCS0	1	165	5825	0.34	10.32	30	0.50	Pass
HT40	MCS0	1	151	5755	0.63	8.94	30	0.50	Pass
HT40	MCS0	1	159	5795	0.63	9.42	30	0.50	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.

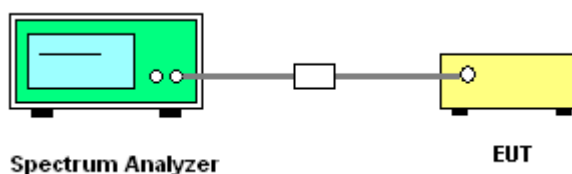
3.3.2 Measuring Instruments

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



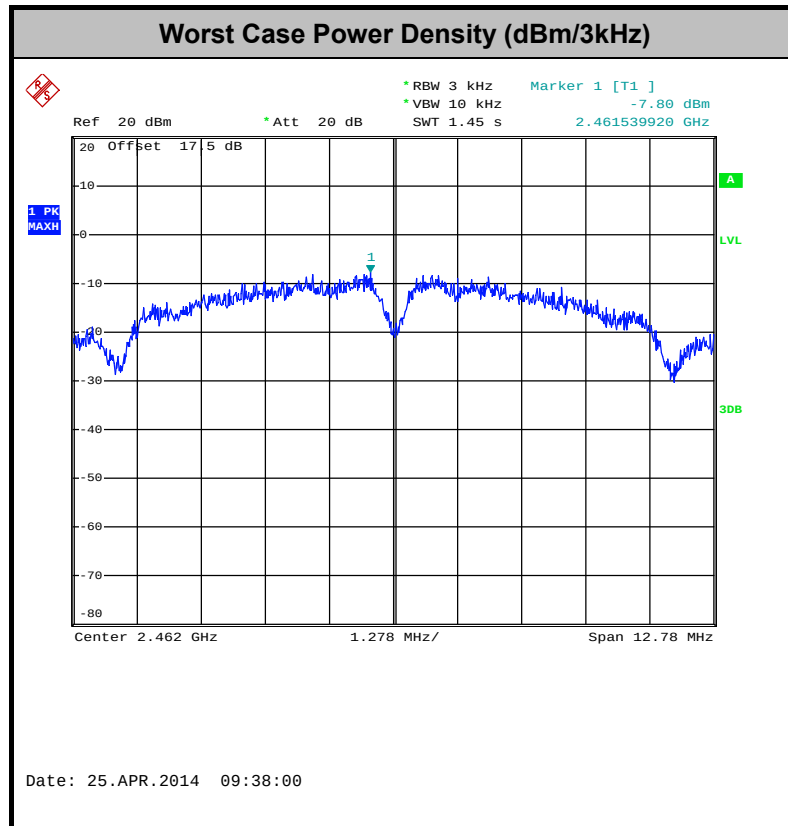
3.3.5 Test Result of Power Spectral Density

Test Mode :	2.4GHz + 5GHz band 4	Temperature :	24~26℃
Test Engineer :	Ting You	Relative Humidity :	50~53%

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	-9.90	8	0.70	Pass
11b	1Mbps	1	6	2437	-10.23	8	0.70	Pass
11b	1Mbps	1	11	2462	-7.80	8	0.70	Pass
11g	6Mbps	1	1	2412	-14.54	8	0.70	Pass
11g	6Mbps	1	6	2437	-15.73	8	0.70	Pass
11g	6Mbps	1	11	2462	-15.20	8	0.70	Pass
HT20	MCS0	1	1	2412	-16.07	8	0.70	Pass
HT20	MCS0	1	6	2437	-16.68	8	0.70	Pass
HT20	MCS0	1	11	2462	-15.77	8	0.70	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	-14.60	8	0.50	Pass
11a	6Mbps	1	157	5785	-13.82	8	0.50	Pass
11a	6Mbps	1	165	5825	-12.94	8	0.50	Pass
HT20	MCS0	1	149	5745	-16.12	8	0.50	Pass
HT20	MCS0	1	157	5785	-14.91	8	0.50	Pass
HT20	MCS0	1	165	5825	-15.29	8	0.50	Pass
HT40	MCS0	1	151	5755	-19.95	8	0.50	Pass
HT40	MCS0	1	159	5795	-19.10	8	0.50	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).

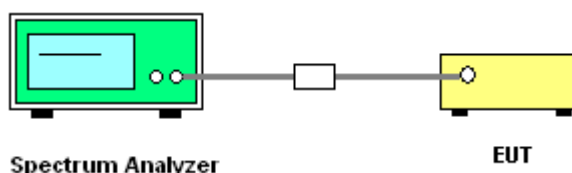
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

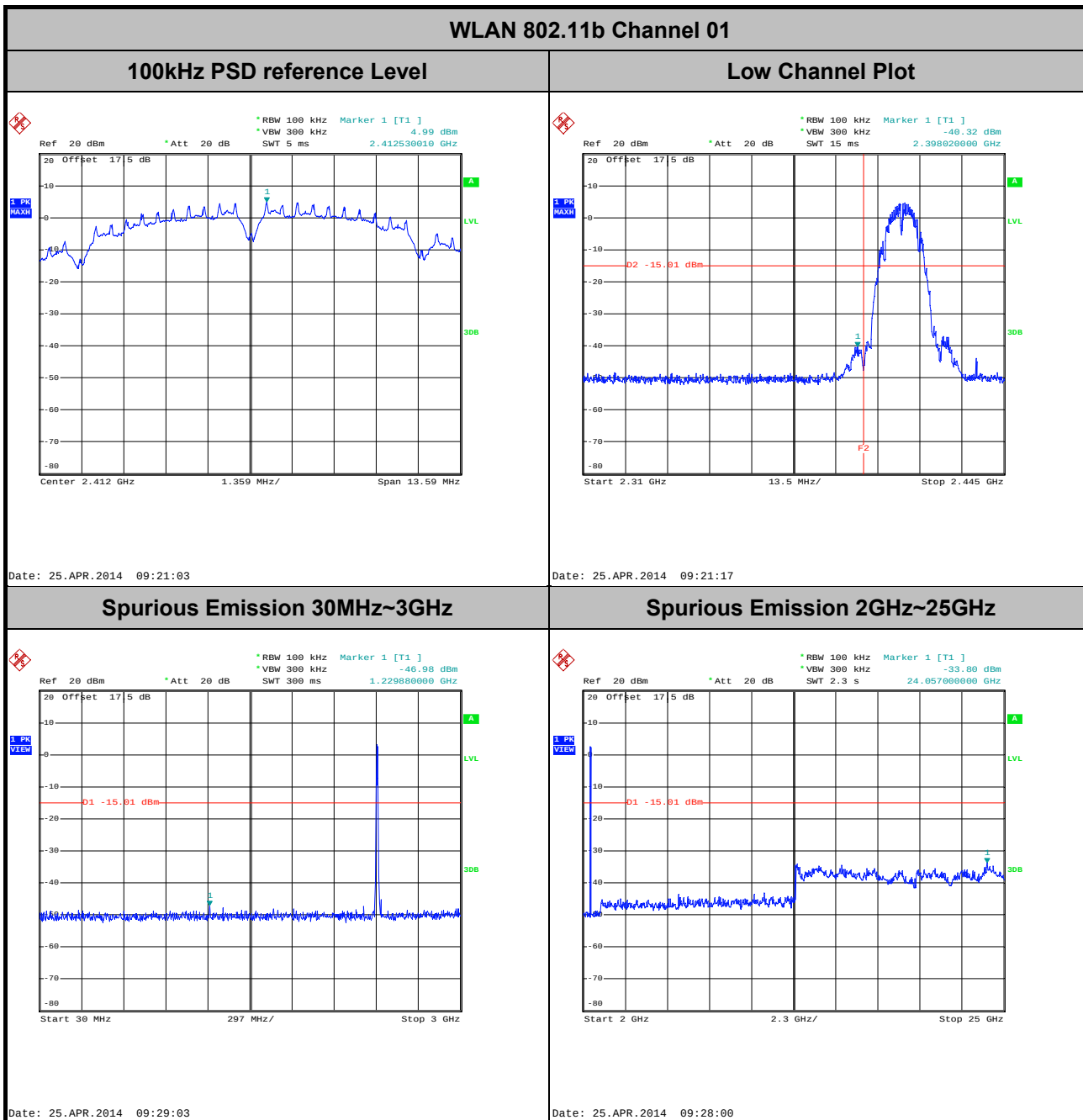
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit 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 :	24~26℃
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Ting You

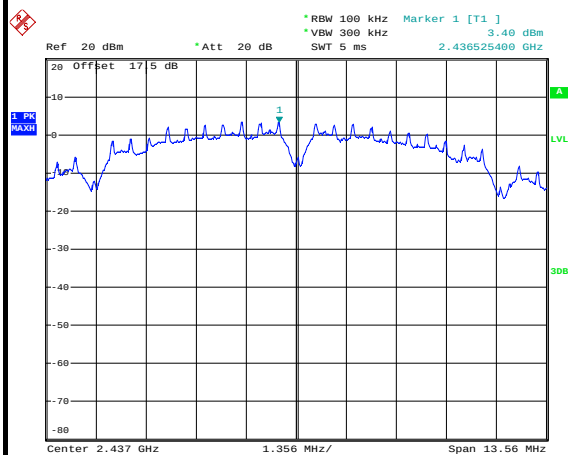




Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Ting You

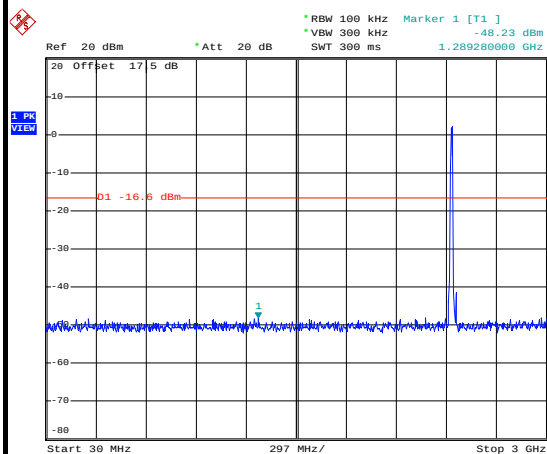
WLAN 802.11b Channel 06

100kHz PSD reference Level



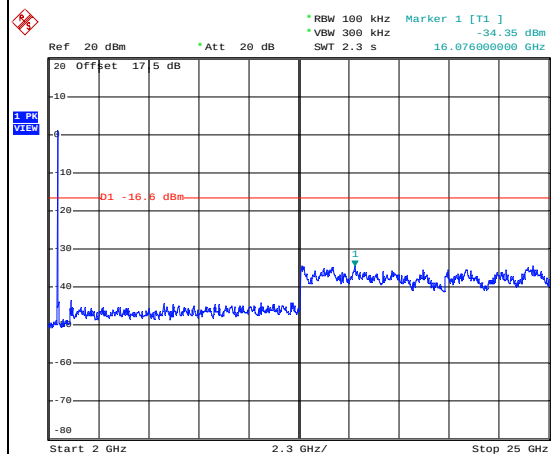
Date: 25.APR.2014 09:31:22

Spurious Emission 30MHz~3GHz



Date: 25.APR.2014 09:36:03

Spurious Emission 2GHz~25GHz



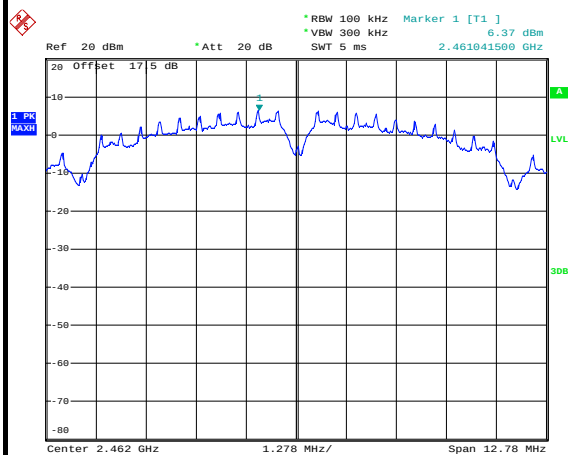
Date: 25.APR.2014 09:33:58



Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Ting You

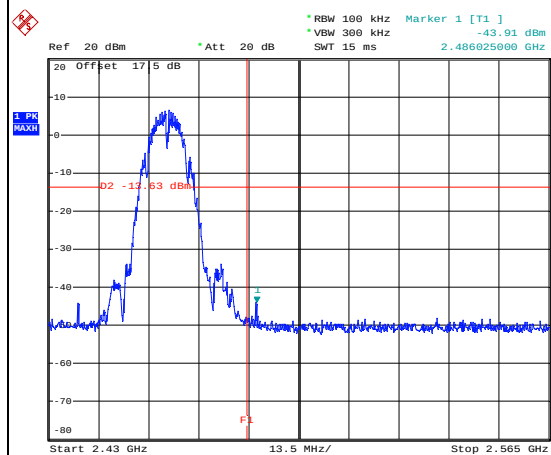
WLAN 802.11b Channel 11

100kHz PSD reference Level



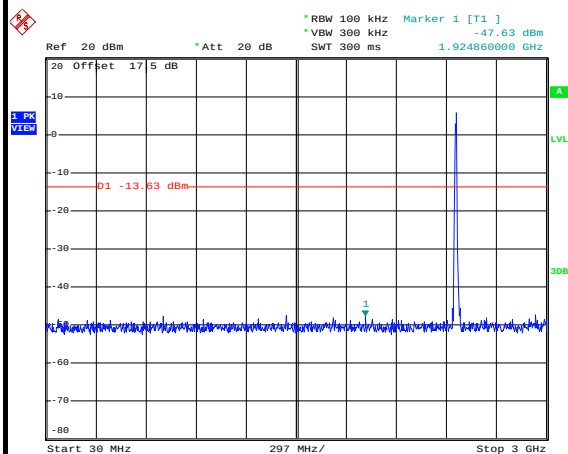
Date: 25.APR.2014 09:38:09

High Channel Plot



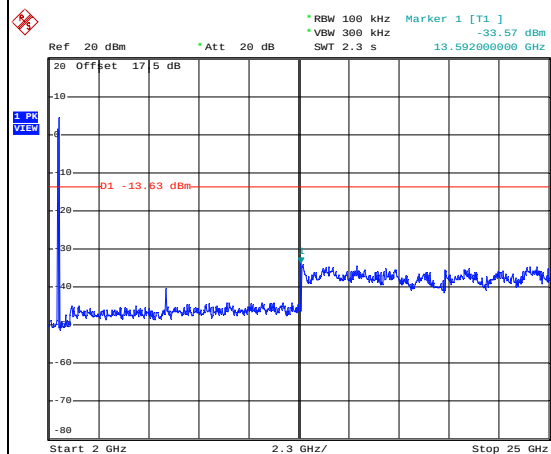
Date: 25.APR.2014 09:38:23

Spurious Emission 30MHz~3GHz



Date: 25.APR.2014 09:41:13

Spurious Emission 2GHz~25GHz



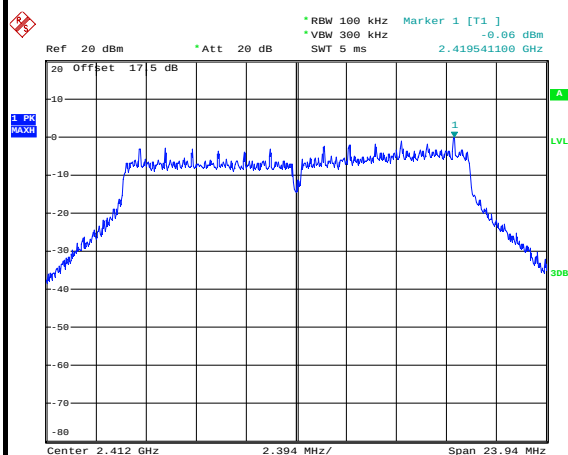
Date: 25.APR.2014 09:39:59



Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Ting You

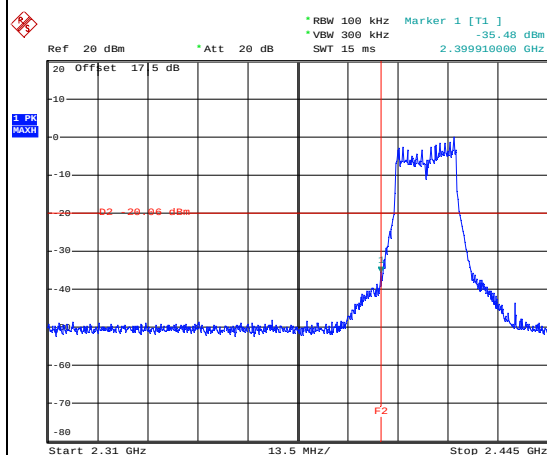
WLAN 802.11g Channel 01

100kHz PSD reference Level



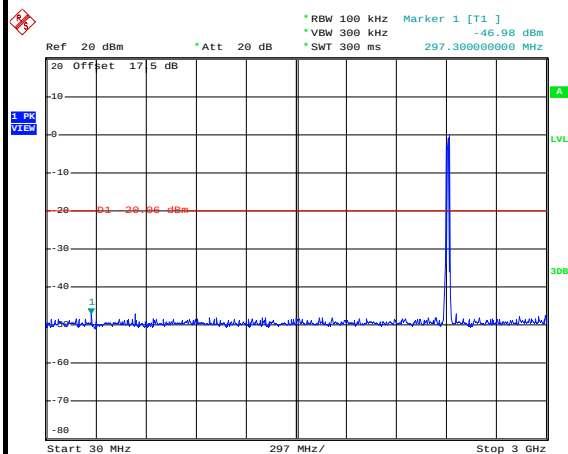
Date: 25.APR.2014 09:44:30

Low Channel Plot



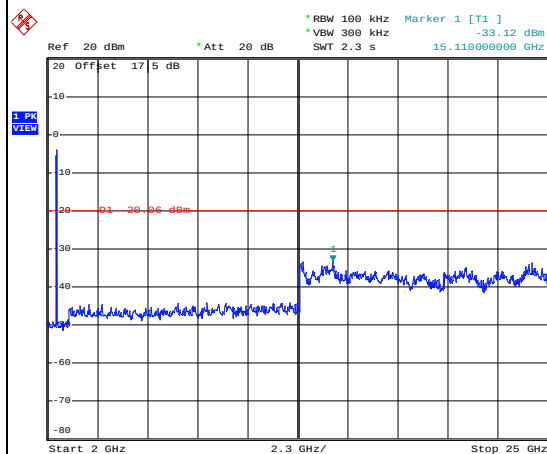
Date: 25.APR.2014 09:44:44

Spurious Emission 30MHz~3GHz



Date: 25.APR.2014 14:17:51

Spurious Emission 2GHz~25GHz



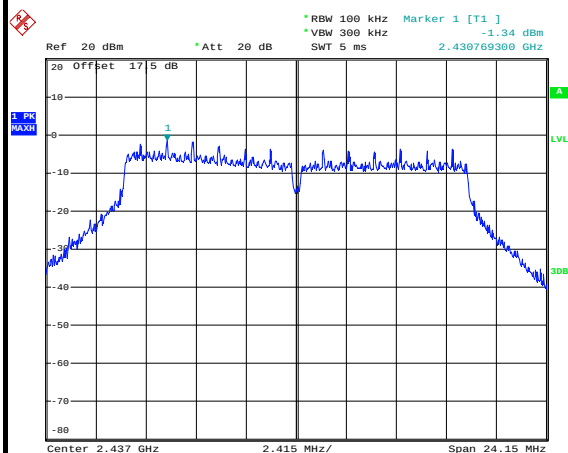
Date: 25.APR.2014 09:45:22



Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Ting You

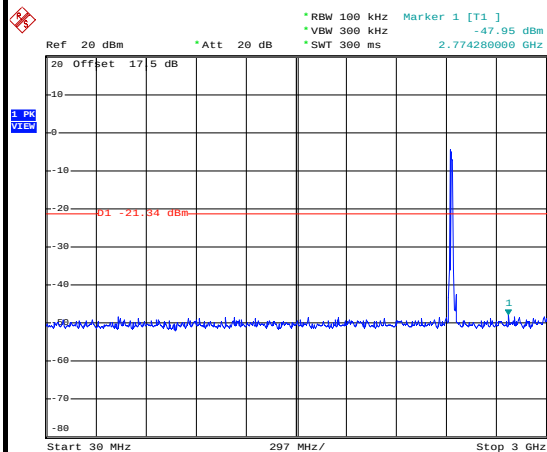
WLAN 802.11g Channel 06

100kHz PSD reference Level



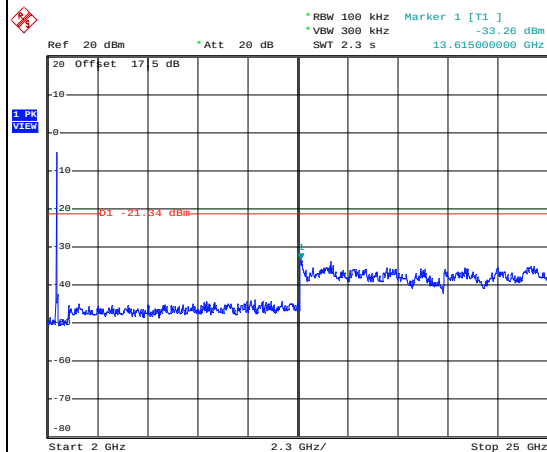
Date: 25.APR.2014 09:48:44

Spurious Emission 30MHz~3GHz



Date: 25.APR.2014 14:21:18

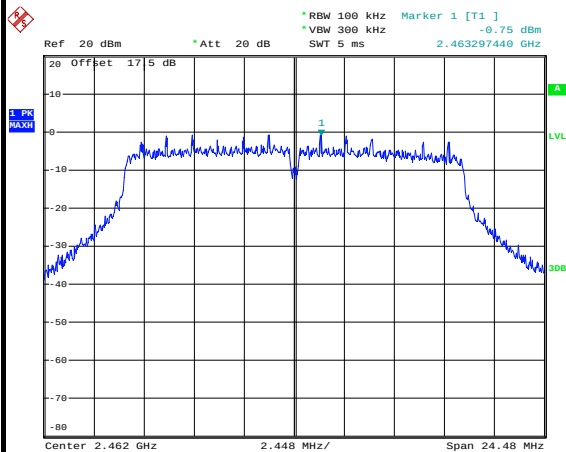
Spurious Emission 2GHz~25GHz



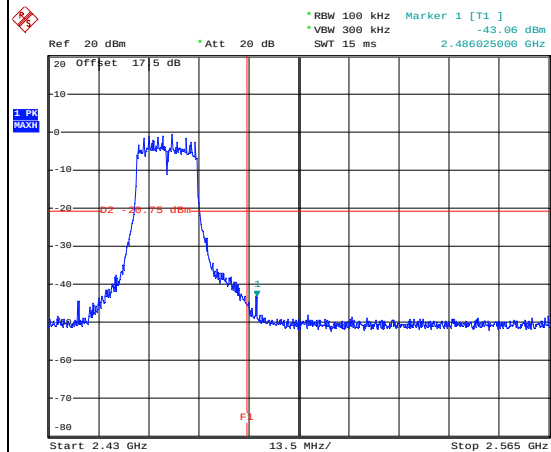
Date: 25.APR.2014 09:50:32



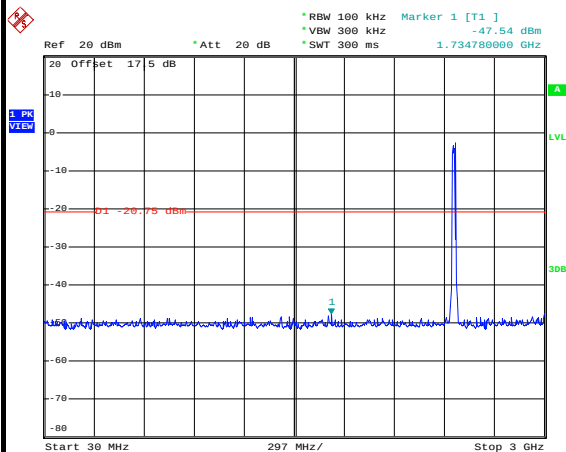
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Ting You

WLAN 802.11g Channel 11**100kHz PSD reference Level**

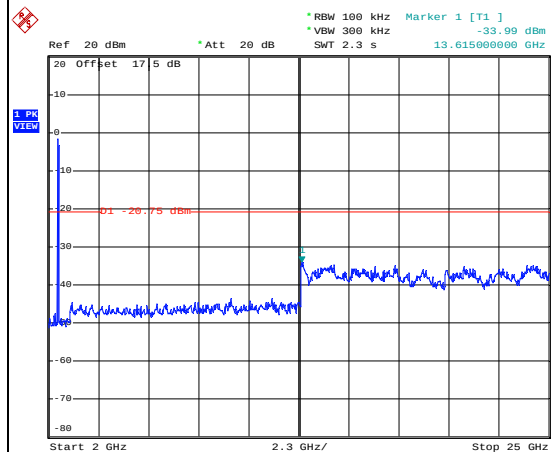
Date: 25.APR.2014 09:54:06

High Channel Plot

Date: 25.APR.2014 09:54:20

Spurious Emission 30MHz~3GHz

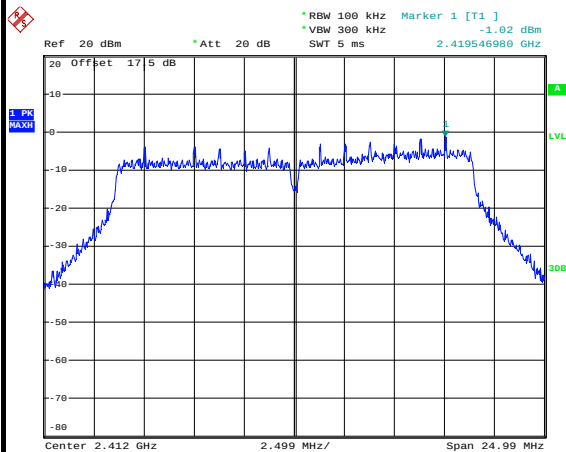
Date: 25.APR.2014 14:23:26

Spurious Emission 2GHz~25GHz

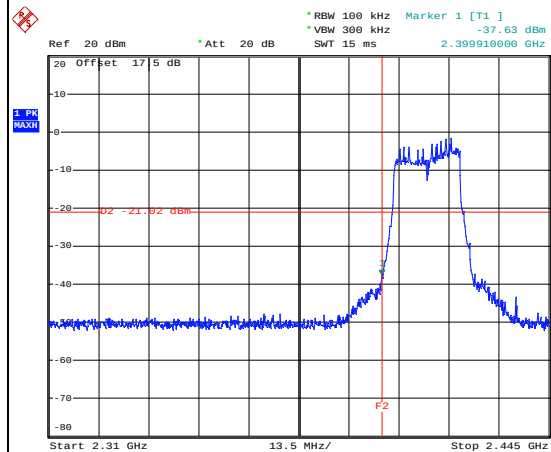
Date: 25.APR.2014 09:54:58



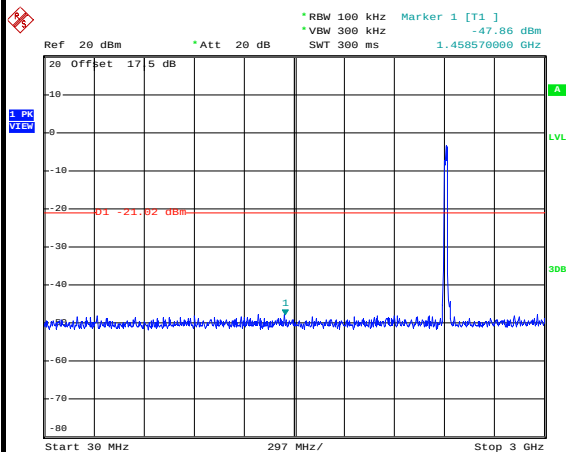
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Ting You

WLAN 802.11n HT20 Channel 01**100kHz PSD reference Level**

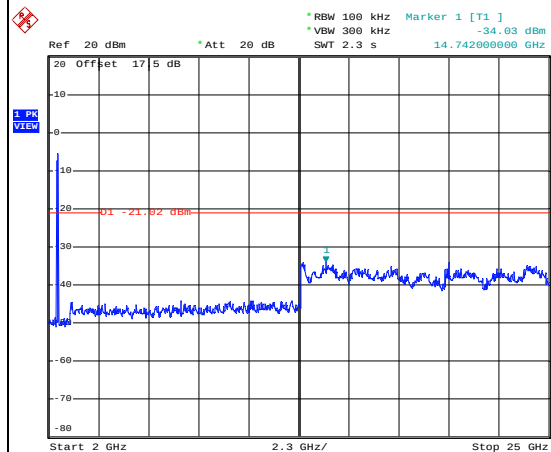
Date: 25.APR.2014 09:57:48

Low Channel Plot

Date: 25.APR.2014 09:59:13

Spurious Emission 30MHz~3GHz

Date: 25.APR.2014 09:58:21

Spurious Emission 2GHz~25GHz

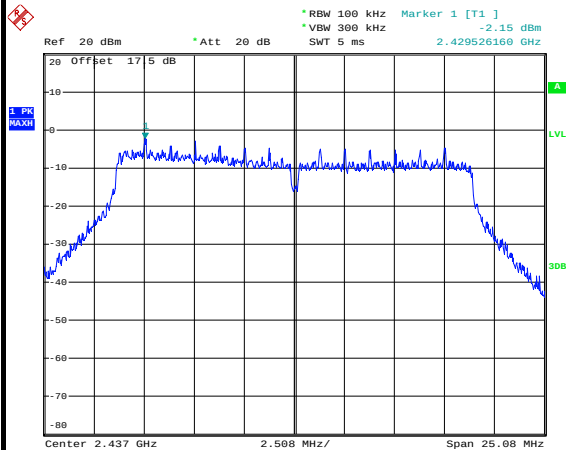
Date: 25.APR.2014 09:58:40



Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Ting You

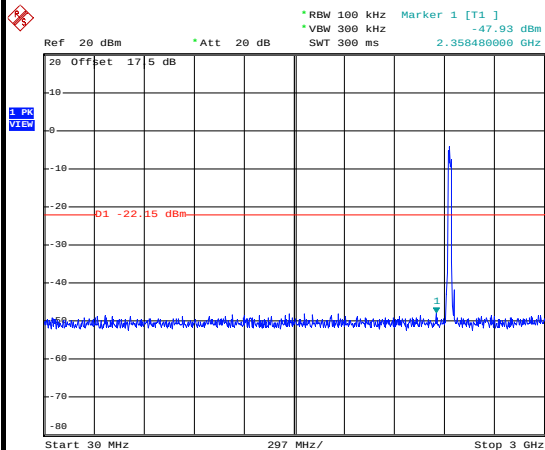
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



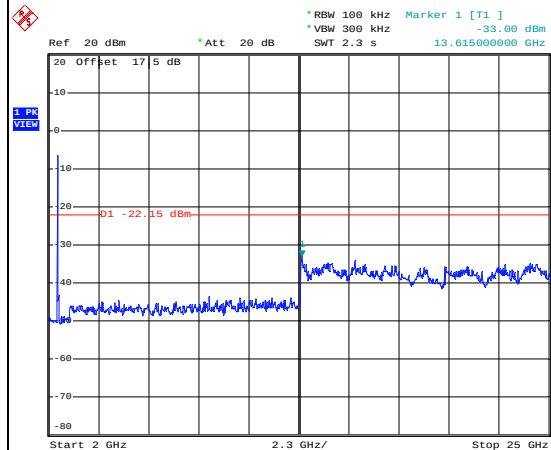
Date: 25.APR.2014 10:04:34

Spurious Emission 30MHz~3GHz



Date: 25.APR.2014 10:08:24

Spurious Emission 2GHz~25GHz



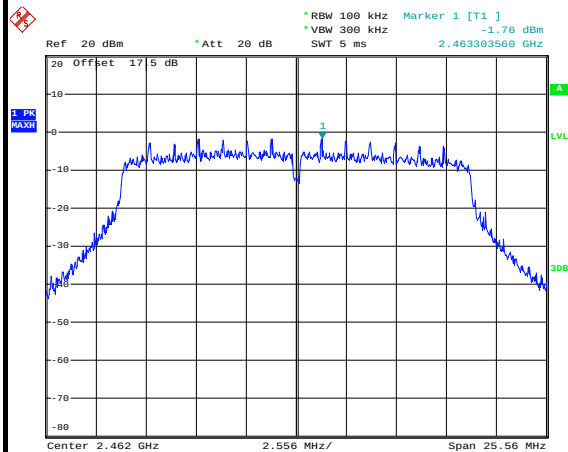
Date: 25.APR.2014 10:06:54



Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Ting You

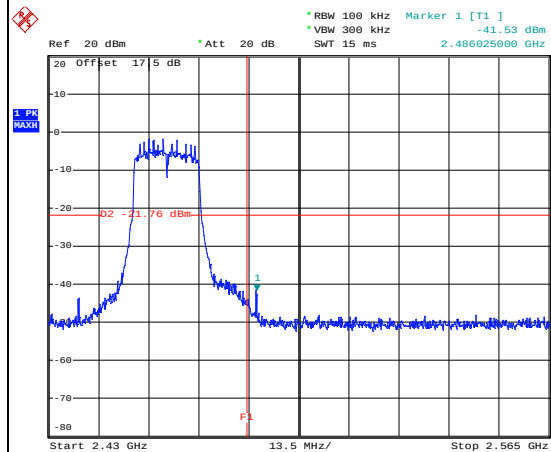
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



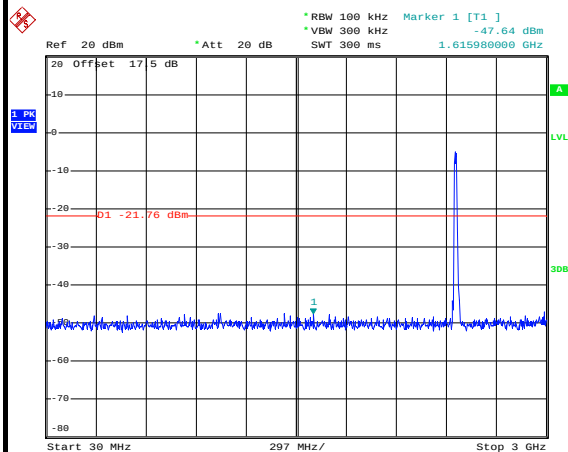
Date: 25.APR.2014 10:10:45

High Channel Plot



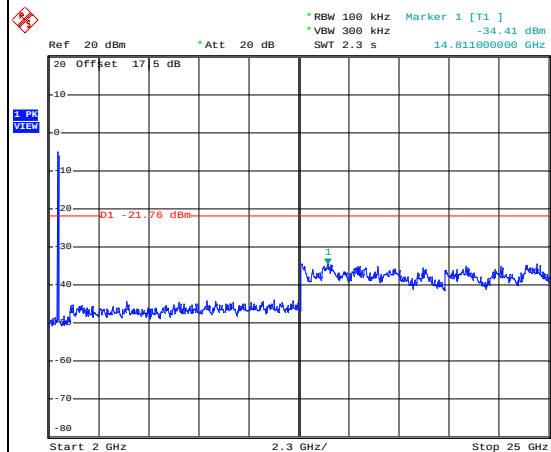
Date: 25.APR.2014 10:10:59

Spurious Emission 30MHz~3GHz



Date: 25.APR.2014 10:14:33

Spurious Emission 2GHz~25GHz



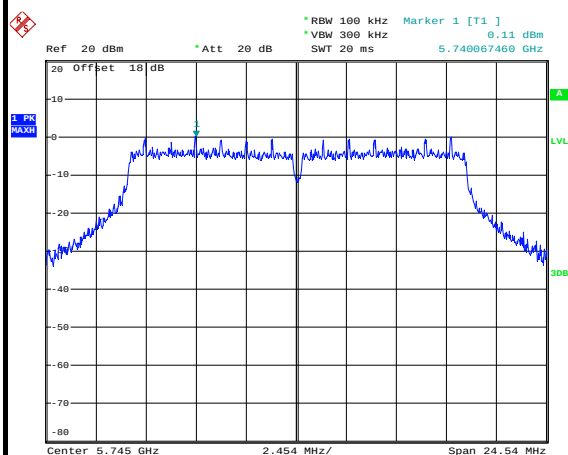
Date: 25.APR.2014 10:12:47



Test Mode :	802.11a	Temperature :	24~26°C
Test Band :	5GHz Low	Relative Humidity :	50~53%
Test Channel :	149	Test Engineer :	Ting You

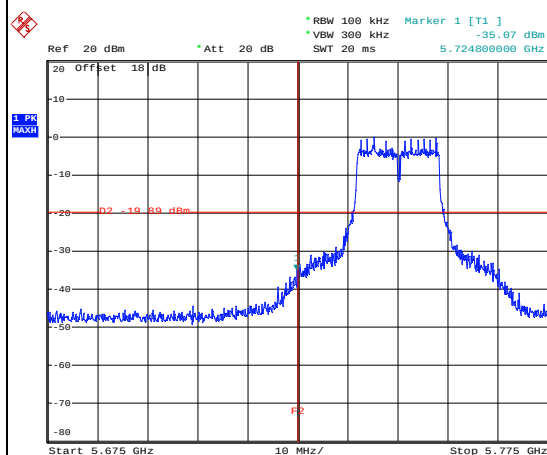
WLAN 802.11a Channel 149

100kHz PSD reference Level



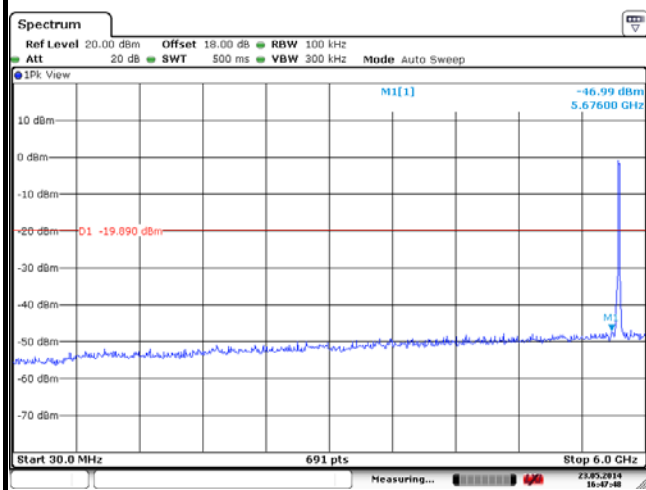
Date: 9.MAY.2014 09:18:47

Low Channel Plot



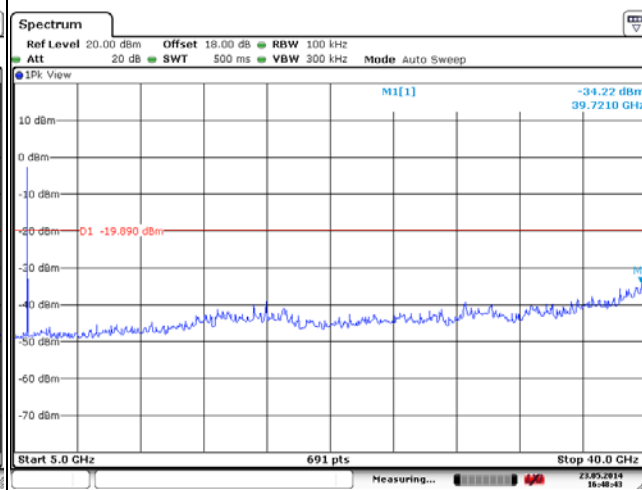
Date: 9.MAY.2014 09:19:01

Spurious Emission 30MHz~6GHz



Date: 23.MAY.2014 16:47:49

Spurious Emission 5GHz~40GHz



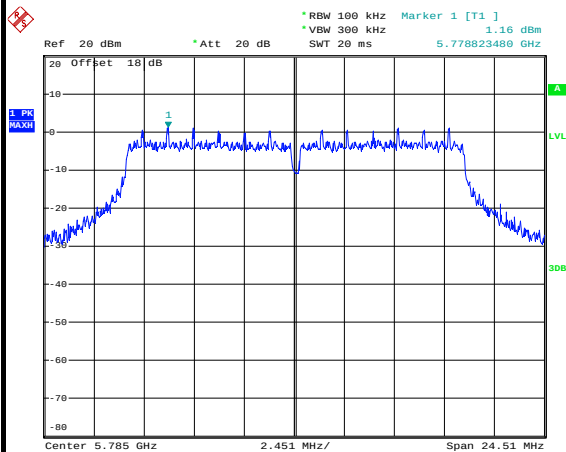
Date: 23.MAY.2014 16:48:43



Test Mode :	802.11a	Temperature :	24~26°C
Test Band :	5GHz Mid	Relative Humidity :	50~53%
Test Channel :	157	Test Engineer :	Ting You

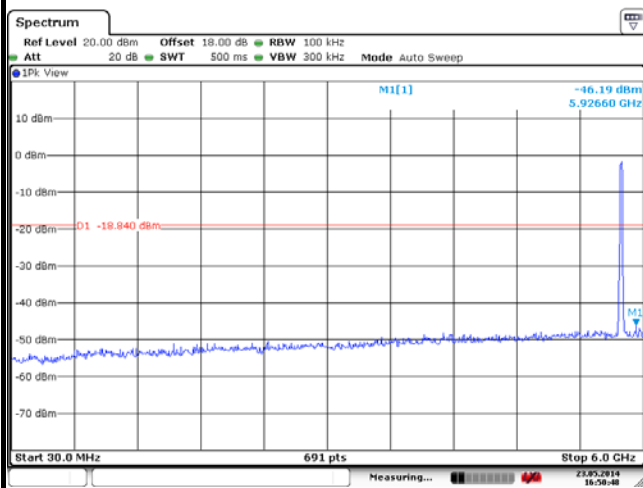
WLAN 802.11a Channel 157

100kHz PSD reference Level



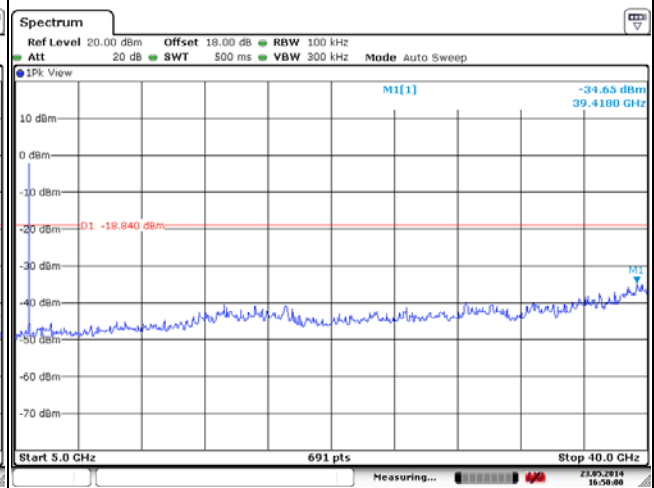
Date: 9.MAY.2014 09:30:31

Spurious Emission 30MHz~6GHz



Date: 23.MAY.2014 16:50:49

Spurious Emission 5GHz~40GHz



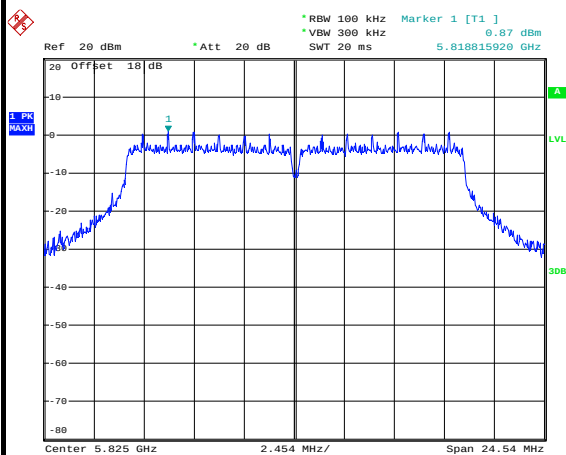
Date: 23.MAY.2014 16:50:00



Test Mode :	802.11a	Temperature :	24~26°C
Test Band :	5GHz High	Relative Humidity :	50~53%
Test Channel :	165	Test Engineer :	Ting You

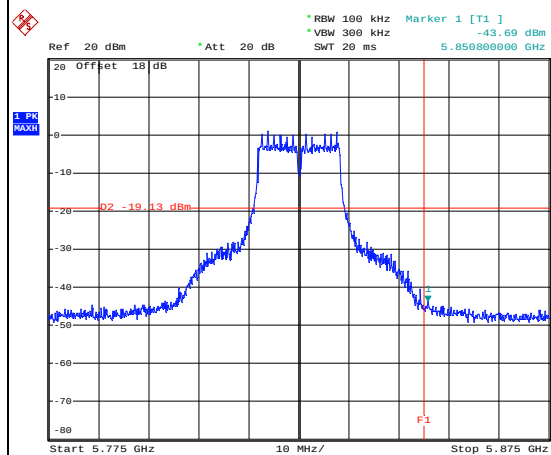
WLAN 802.11a Channel 165

100kHz PSD reference Level



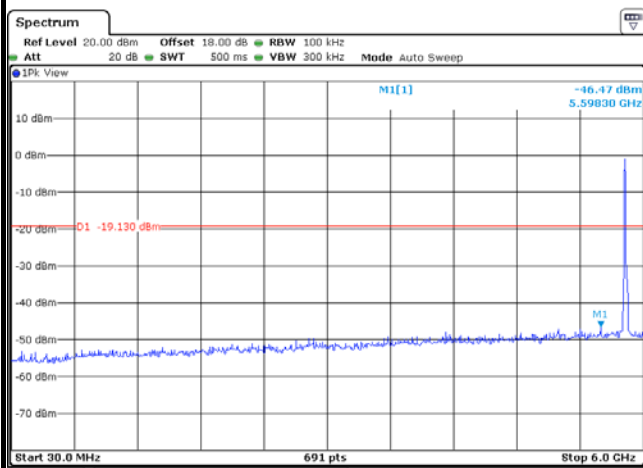
Date: 9.MAY.2014 09:40:03

High Channel Plot



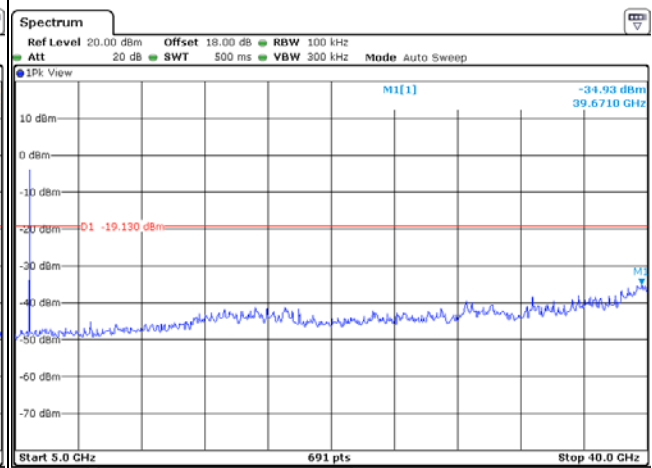
Date: 9.MAY.2014 09:40:17

Spurious Emission 30MHz~6GHz



Date: 23.MAY.2014 16:52:09

Spurious Emission 5GHz~40GHz



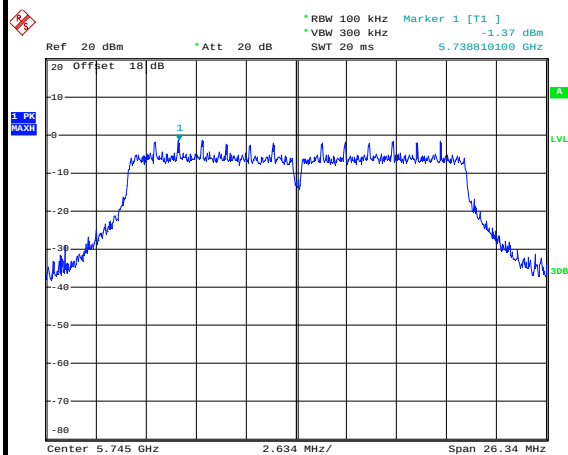
Date: 23.MAY.2014 16:52:55



Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	5GHz Low	Relative Humidity :	50~53%
Test Channel :	149	Test Engineer :	Ting You

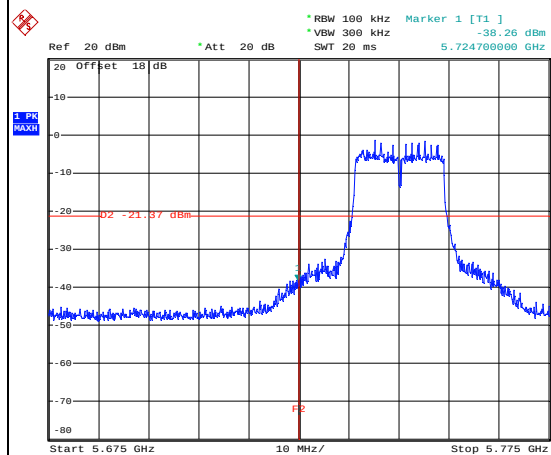
WLAN 802.11n HT20 Channel 149

100kHz PSD reference Level



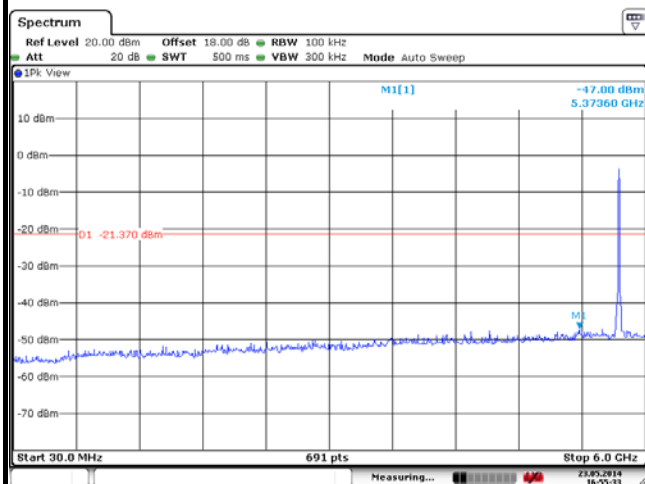
Date: 9.MAY.2014 09:47:11

Low Channel Plot



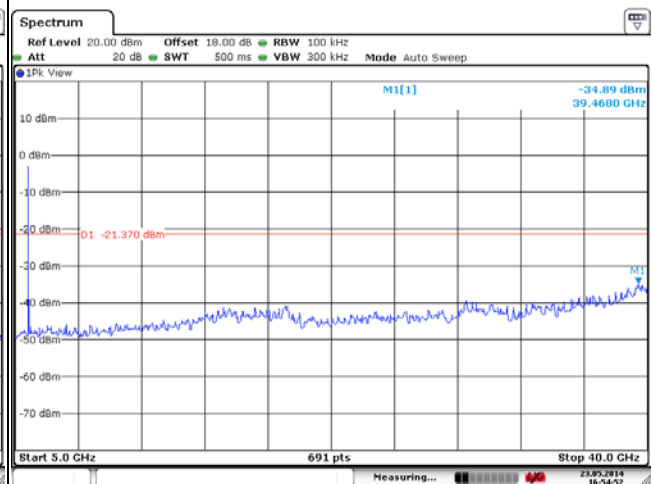
Date: 9.MAY.2014 09:47:25

Spurious Emission 30MHz~6GHz



Date: 23.MAY.2014 16:55:33

Spurious Emission 5GHz~40GHz



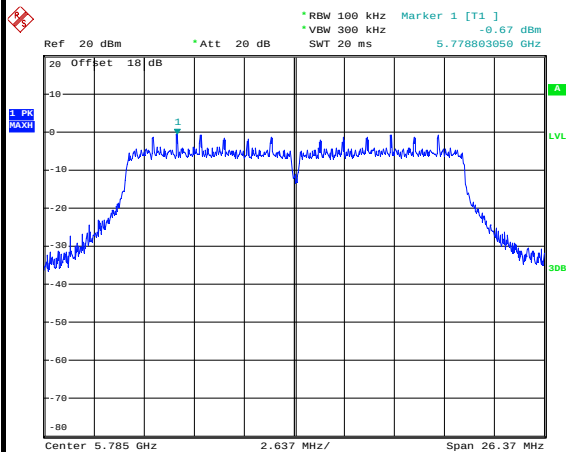
Date: 23.MAY.2014 16:54:52



Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	5GHz Mid	Relative Humidity :	50~53%
Test Channel :	157	Test Engineer :	Ting You

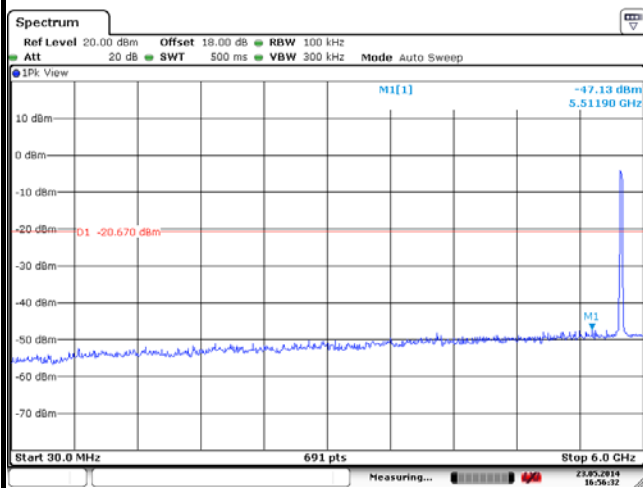
WLAN 802.11n HT20 Channel 157

100kHz PSD reference Level



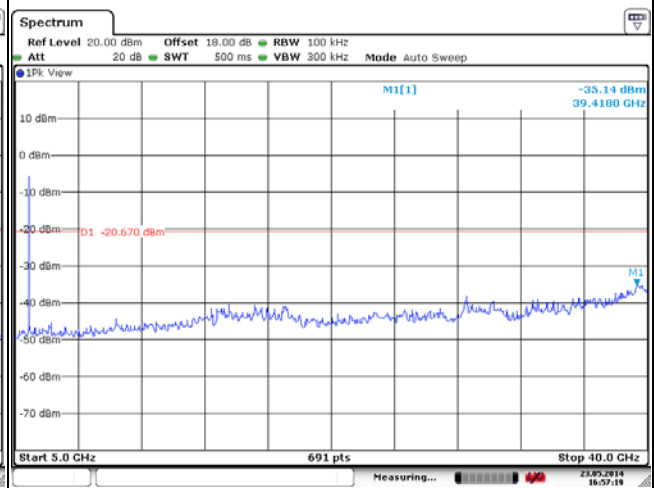
Date: 9.MAY.2014 09:57:20

Spurious Emission 30MHz~6GHz



Date: 23.MAY.2014 16:56:32

Spurious Emission 5GHz~40GHz



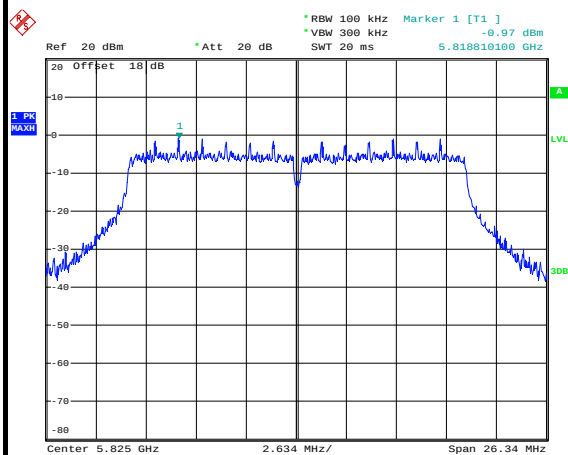
Date: 23.MAY.2014 16:57:19



Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	5GHz High	Relative Humidity :	50~53%
Test Channel :	165	Test Engineer :	Ting You

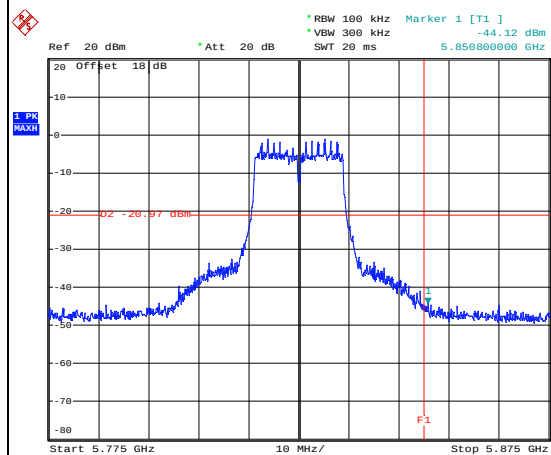
WLAN 802.11n HT20 Channel 165

100kHz PSD reference Level



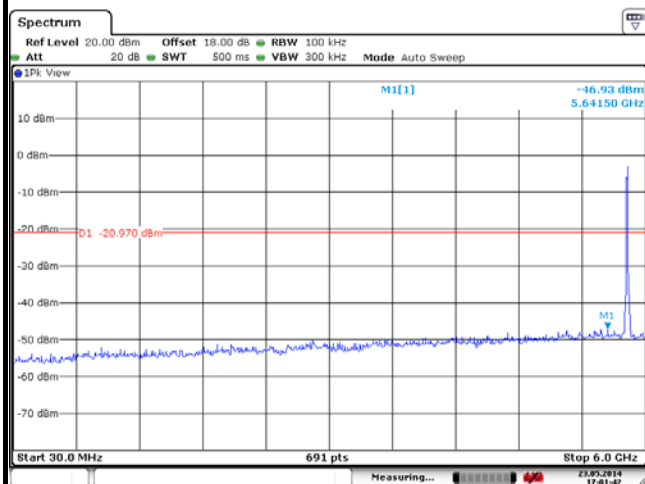
Date: 9.MAY.2014 10:19:19

High Channel Plot



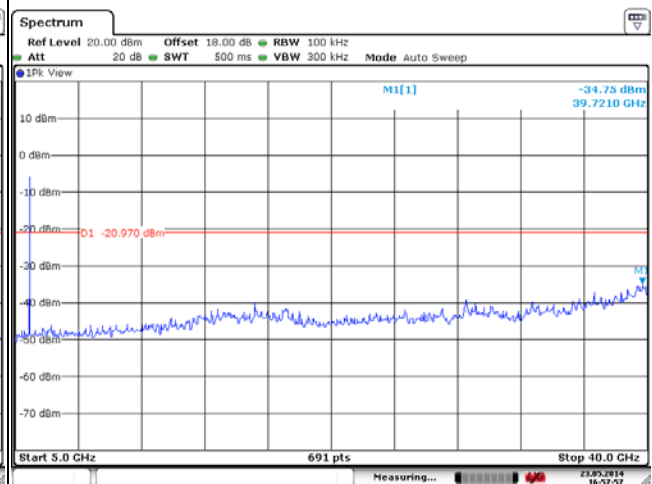
Date: 9.MAY.2014 10:19:33

Spurious Emission 30MHz~6GHz



Date: 23.MAY.2014 17:01:42

Spurious Emission 5GHz~40GHz



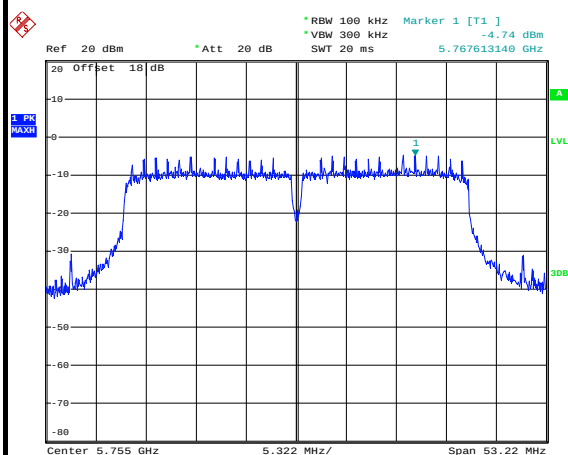
Date: 23.MAY.2014 16:57:57



Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	5GHz Low	Relative Humidity :	50~53%
Test Channel :	151	Test Engineer :	Ting You

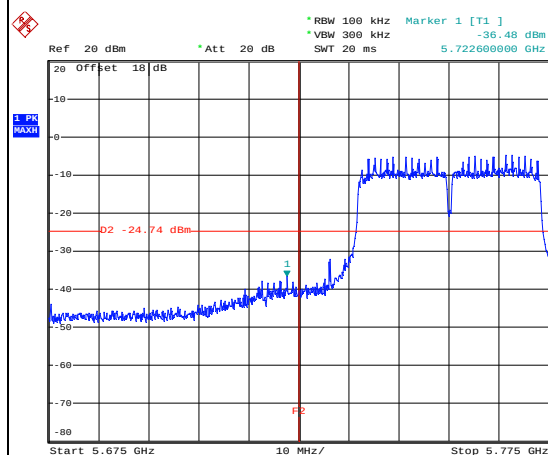
WLAN 802.11n HT40 Channel 151

100kHz PSD reference Level



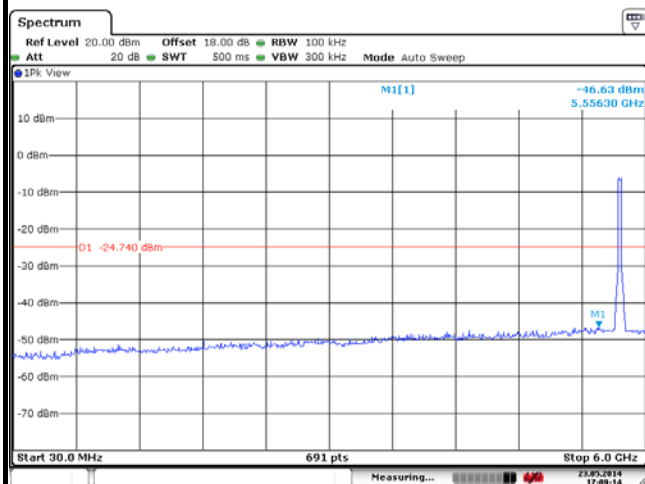
Date: 9.MAY.2014 10:32:15

Low Channel Plot



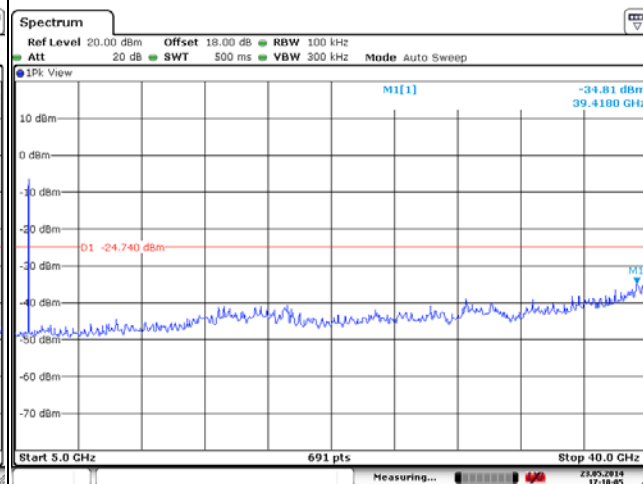
Date: 9.MAY.2014 10:32:29

Spurious Emission 30MHz~6GHz



Date: 23.MAY.2014 17:09:14

Spurious Emission 5GHz~40GHz



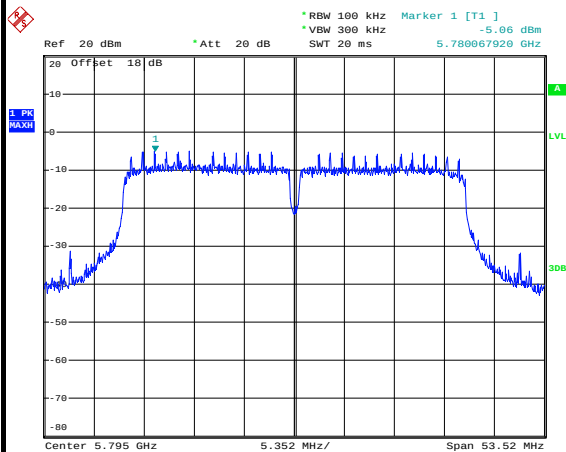
Date: 23.MAY.2014 17:10:06



Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	5GHz High	Relative Humidity :	50~53%
Test Channel :	159	Test Engineer :	Ting You

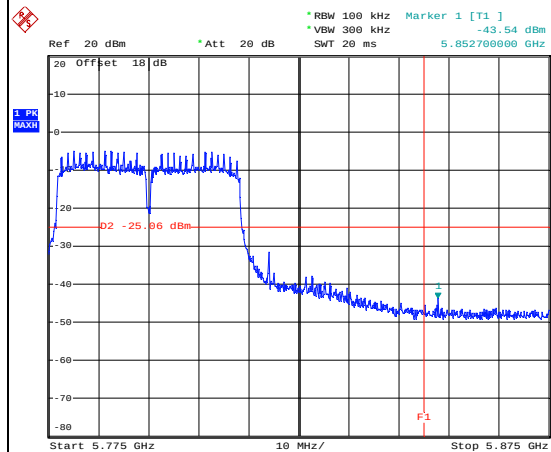
WLAN 802.11n HT40 Channel 159

100kHz PSD reference Level



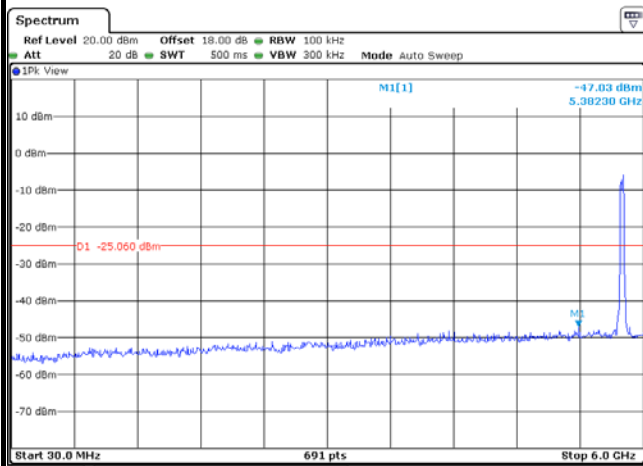
Date: 9.MAY.2014 10:36:03

High Channel Plot



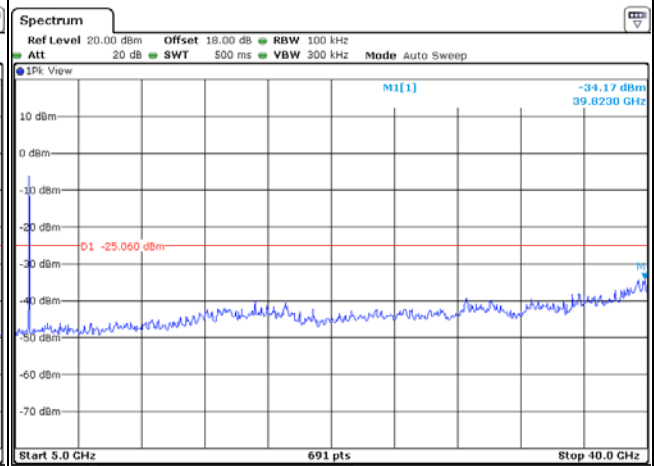
Date: 9.MAY.2014 10:36:17

Spurious Emission 30MHz~6GHz



Date: 23.MAY.2014 17:11:35

Spurious Emission 5GHz~40GHz



Date: 23.MAY.2014 17:18:54

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, $VBW = 3$ MHz for $f \geq 1$ GHz for peak measurement.

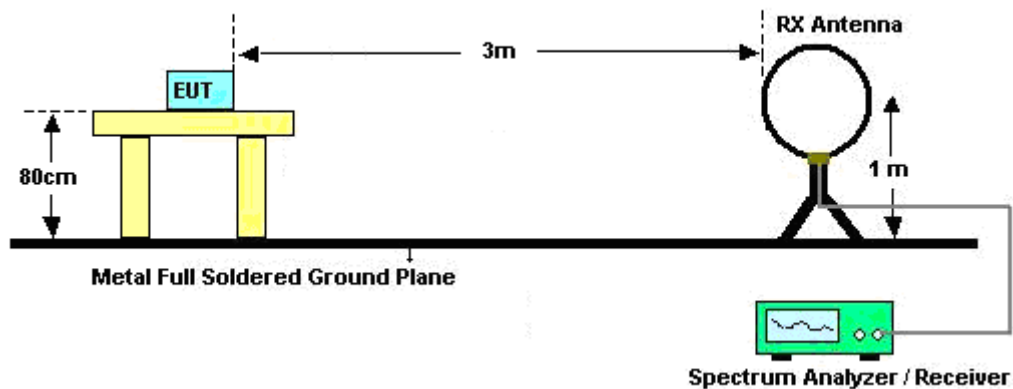
For average measurement:

 - $VBW = 10$ 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.

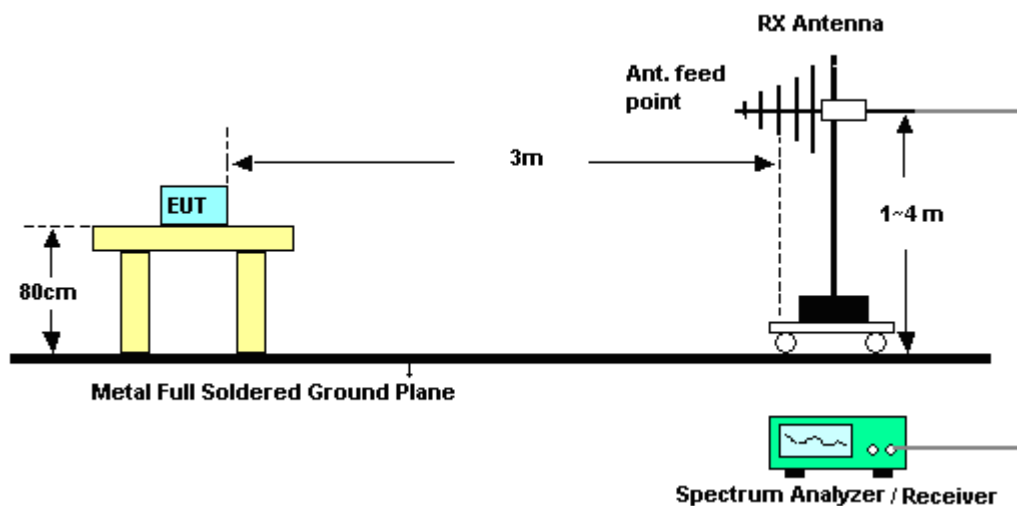
Band	Duty Cycle (%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	98.60	-	-	10Hz
802.11g	92.84	1.400	0.714	1kHz
2.4GHz 802.11n HT20	92.61	1.304	0.767	1kHz
802.11a	92.93	1.394	0.717	1kHz
5GHz 802.11n HT20	92.47	1.302	0.768	1kHz
5GHz 802.11n HT40	86.49	0.640	1.563	3kHz

3.5.4 Test Setup

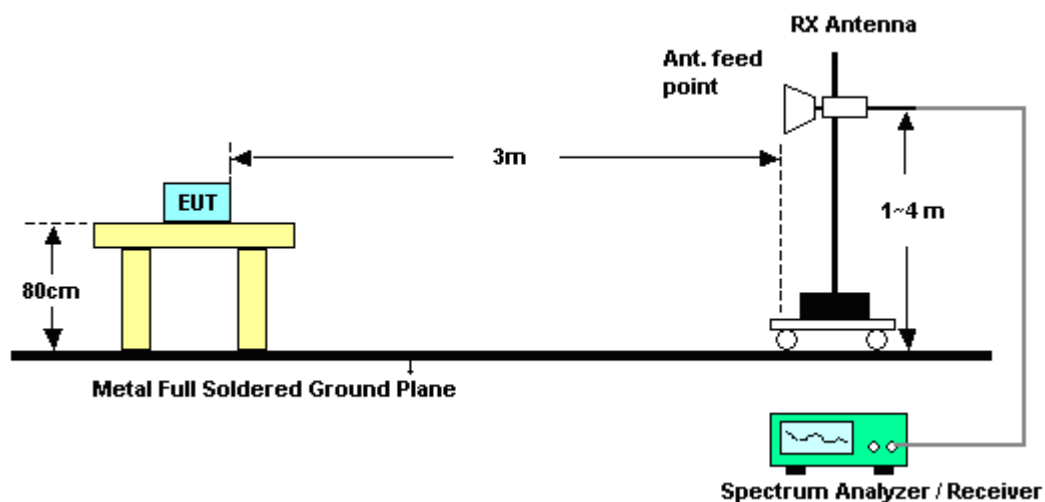
For radiated emissions below 30MHz



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 :	23~25°C
Test Band :	Low	Relative Humidity :	48~52%
Test Channel :	01	Test Engineer :	Kaer Huang

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
2388.12	52.34	-21.66	74	42.51	31.98	5.59	27.74	117	209	Peak
2388.03	41.89	-12.11	54	32.06	31.98	5.59	27.74	117	209	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
2358.06	52.2	-21.8	74	42.59	31.81	5.56	27.76	100	266	Peak
2388.12	41.47	-12.53	54	31.64	31.98	5.59	27.74	100	266	Average

Test Mode :	802.11b	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	48~52%
Test Channel :	11	Test Engineer :	Kaer Huang

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
2486.17	55.26	-18.74	74	44.81	32.41	5.71	27.67	115	222	Peak
2486.02	46.06	-7.94	54	35.61	32.41	5.71	27.67	115	222	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
2486.38	54.12	-19.88	74	43.67	32.41	5.71	27.67	100	128	Peak
2486.11	45.09	-8.91	54	34.64	32.41	5.71	27.67	100	128	Average

Test Mode :	802.11g	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	48~52%
Test Channel :	01	Test Engineer :	Kaer Huang

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	51.69	-22.31	74	41.81	31.98	5.62	27.72	141	207	Peak
2388.21	41.78	-12.22	54	31.95	31.98	5.59	27.74	141	207	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
2389.92	53.63	-20.37	74	43.75	31.98	5.62	27.72	100	279	Peak
2388.03	41.89	-12.11	54	32.06	31.98	5.59	27.74	100	279	Average

Test Mode :	802.11g	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	48~52%
Test Channel :	11	Test Engineer :	Kaer Huang

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
2483.5	58.22	-15.78	74	47.77	32.41	5.71	27.67	103	166	Peak
2483.62	43.94	-10.06	54	33.49	32.41	5.71	27.67	103	166	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
2483.74	59.6	-14.4	74	49.15	32.41	5.71	27.67	100	278	Peak
2486.02	45.46	-8.54	54	35.01	32.41	5.71	27.67	100	278	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	48~52%
Test Channel :	01	Test Engineer :	Kaer Huang

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	53.92	-20.08	74	44.09	31.98	5.59	27.74	162	205	Peak
2388.12	41.45	-12.55	54	31.62	31.98	5.59	27.74	162	205	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
2389.92	53.13	-20.87	74	43.25	31.98	5.62	27.72	100	277	Peak
2387.94	42.05	-11.95	54	32.22	31.98	5.59	27.74	100	277	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	48~52%
Test Channel :	11	Test Engineer :	Kaer Huang

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
2485.03	59.64	-14.36	74	49.19	32.41	5.71	27.67	156	162	Peak
2483.65	45.04	-8.96	54	34.59	32.41	5.71	27.67	156	162	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
2484.19	62.54	-11.46	74	52.09	32.41	5.71	27.67	100	93	Peak
2485.96	47.49	-6.51	54	37.04	32.41	5.71	27.67	100	93	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 :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	103.88	-	-	93.91	32.07	5.62	27.72	117	209	Peak
2412	101.56	-	-	91.59	32.07	5.62	27.72	117	209	Average
4824	43.94	-30.06	74	59.02	33.82	8.36	57.26	110	115	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	101.23	-	-	91.26	32.07	5.62	27.72	100	266	Peak
2412	98.89	-	-	88.92	32.07	5.62	27.72	100	266	Average
4824	45.99	-28.01	74	61.07	33.82	8.36	57.26	110	115	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	98.75	-	-	88.57	32.24	5.65	27.71	117	225	Peak
2437	96.64	-	-	86.46	32.24	5.65	27.71	117	225	Average
4874	41.5	-32.5	74	56.33	33.93	8.41	57.17	125	223	Peak
7311	36.87	-37.13	74	50.15	33.89	9.99	57.16	146	312	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	99.05	-	-	88.87	32.24	5.65	27.71	100	265	Peak
2437	96.69	-	-	86.51	32.24	5.65	27.71	100	265	Average
4874	45.59	-28.41	74	60.42	33.93	8.41	57.17	125	223	Peak
7311	35.98	-38.02	74	49.26	33.89	9.99	57.16	146	312	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	102.71	-	-	92.39	32.33	5.68	27.69	115	222	Peak
2462	100.4	-	-	90.08	32.33	5.68	27.69	115	222	Average
4924	36.52	-37.48	74	51.09	34.05	8.46	57.08	178	139	Peak
7386	38.23	-35.77	74	51.32	33.94	10.02	57.05	150	220	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	101.48	-	-	91.16	32.33	5.68	27.69	100	128	Peak
2462	99.32	-	-	89	32.33	5.68	27.69	100	128	Average
4924	36.75	-37.25	74	51.32	34.05	8.46	57.08	178	139	Peak
7386	40.03	-33.97	74	53.12	33.94	10.02	57.05	150	220	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	101.54	-	-	91.57	32.07	5.62	27.72	141	207	Peak
2412	93.39	-	-	83.42	32.07	5.62	27.72	141	207	Average
4824	37.16	-36.84	74	52.24	33.82	8.36	57.26	110	115	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	101.34	-	-	91.37	32.07	5.62	27.72	100	279	Peak
2412	92.55	-	-	82.58	32.07	5.62	27.72	100	279	Average
4824	37.36	-36.64	74	52.44	33.82	8.36	57.26	110	115	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	99.87	-	-	89.69	32.24	5.65	27.71	138	208	Peak
2437	92.02	-	-	81.84	32.24	5.65	27.71	138	208	Average
4874	37.86	-36.14	74	52.69	33.93	8.41	57.17	125	223	Peak
7311	36.5	-37.5	74	49.78	33.89	9.99	57.16	146	312	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	98.69	-	-	88.51	32.24	5.65	27.71	100	277	Peak
2437	90.2	-	-	80.02	32.24	5.65	27.71	100	277	Average
4874	36.82	-37.18	74	51.65	33.93	8.41	57.17	125	223	Peak
7311	36.89	-37.11	74	50.17	33.89	9.99	57.16	146	312	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	95.58	-	-	85.26	32.33	5.68	27.69	103	166	Peak
2462	86.99	-	-	76.67	32.33	5.68	27.69	103	166	Average
4924	35.11	-38.89	74	49.68	34.05	8.46	57.08	178	139	Peak
7386	36.64	-37.36	74	49.73	33.94	10.02	57.05	150	220	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	98.57	-	-	88.25	32.33	5.68	27.69	100	278	Peak
2462	90.1	-	-	79.78	32.33	5.68	27.69	100	278	Average
4924	36.02	-37.98	74	50.59	34.05	8.46	57.08	178	139	Peak
7386	35.79	-38.21	74	48.88	33.94	10.02	57.05	150	220	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	101.14	-	-	91.17	32.07	5.62	27.72	162	205	Peak
2412	92.66	-	-	82.69	32.07	5.62	27.72	162	205	Average
4824	35.76	-38.24	74	50.84	33.82	8.36	57.26	110	115	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	99.79	-	-	89.82	32.07	5.62	27.72	100	277	Peak
2412	91.34	-	-	81.37	32.07	5.62	27.72	100	277	Average
4824	35.71	-38.29	74	50.79	33.82	8.36	57.26	110	115	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	91.91	-	-	81.73	32.24	5.65	27.71	100	46	Peak
2437	83.5	-	-	73.32	32.24	5.65	27.71	100	46	Average
4874	38.98	-35.02	74	53.81	33.93	8.41	57.17	125	223	Peak
7311	37.25	-36.75	74	50.53	33.89	9.99	57.16	146	312	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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	96.98	-	-	86.8	32.24	5.65	27.71	121	278	Peak
2437	88.44	-	-	78.26	32.24	5.65	27.71	121	278	Average
4874	38.1	-35.9	74	52.93	33.93	8.41	57.17	125	223	Peak
7311	37.33	-36.67	74	50.61	33.89	9.99	57.16	146	312	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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
115.36	25.99	-17.51	43.5	42.64	11.95	1.34	29.94	100	245	Peak
161.92	21.04	-22.46	43.5	40.61	8.82	1.55	29.94	-	-	Peak
291.9	20.51	-25.49	46	36.07	12.38	1.99	29.93	-	-	Peak
607.15	22.86	-23.14	46	31.41	18.6	2.77	29.92	-	-	Peak
806.97	24.98	-21.02	46	31.45	20.28	3.18	29.93	-	-	Peak
874.87	24.93	-21.07	46	30.89	20.7	3.28	29.94	-	-	Peak
2462	96.43	-	-	86.11	32.33	5.68	27.69	156	162	Peak
2462	87.08	-	-	76.76	32.33	5.68	27.69	156	162	Average
4924	36.22	-37.78	74	50.79	34.05	8.46	57.08	178	139	Peak
7386	36.94	-37.06	74	50.03	33.94	10.02	57.05	150	220	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	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
41.64	35.22	-4.78	40	52.38	11.9	0.87	29.93	145	236	Peak
117.3	25.19	-18.31	43.5	41.86	11.93	1.34	29.94	-	-	Peak
254.07	20.33	-25.67	46	36.27	12.12	1.87	29.93	-	-	Peak
530.52	21.85	-24.15	46	31.52	17.62	2.63	29.92	-	-	Peak
636.25	25.7	-20.3	46	34.21	18.6	2.82	29.93	-	-	Peak
825.4	25.49	-20.51	46	31.66	20.51	3.25	29.93	-	-	Peak
2462	100	-	-	89.68	32.33	5.68	27.69	100	93	Peak
2462	92.15	-	-	81.83	32.33	5.68	27.69	100	93	Average
4924	36.57	-37.43	74	51.14	34.05	8.46	57.08	178	139	Peak
7386	36.08	-37.92	74	49.17	33.94	10.02	57.05	150	220	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	149	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Horizontal
Remark :	1. 5745 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
5745	93.91	-	-	77.58	34	9.14	26.81	100	360	Peak
5745	85.23	-	-	68.9	34	9.14	26.81	100	360	Average
11490	44.71	-29.29	74	49.97	37.77	13.39	56.42	145	265	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	149	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Vertical
Remark :	1. 5745 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
5745	90.45	-	-	74.12	34	9.14	26.81	100	31	Peak
5745	80.53	-	-	64.2	34	9.14	26.81	100	31	Average
11490	42.59	-31.41	74	47.85	37.77	13.39	56.42	145	265	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	157	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Horizontal
Remark :	1. 5785 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
5785	94.25	-	-	77.92	34	9.16	26.83	100	355	Peak
5785	84.36	-	-	68.03	34	9.16	26.83	100	355	Average
11570	44.24	-29.76	74	49.33	37.86	13.41	56.36	105	198	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	157	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Vertical
Remark :	1. 5785 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
5785	89.79	-	-	73.46	34	9.16	26.83	100	33	Peak
5785	80.56	-	-	64.23	34	9.16	26.83	100	33	Average
11570	44.24	-29.76	74	49.33	37.86	13.41	56.36	105	198	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	165	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Horizontal
Remark :	1. 5825 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
5825	91.51	-	-	75.18	34	9.17	26.84	114	360	Peak
5825	82.71	-	-	66.38	34	9.17	26.84	114	360	Average
11650	46	-28	74	50.98	37.91	13.42	56.31	146	347	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	165	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Vertical
Remark :	1. 5825 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
5825	90.64	-	-	74.31	34	9.17	26.84	100	7	Peak
5825	82.25	-	-	65.92	34	9.17	26.84	100	7	Average
11650	45.05	-28.95	74	50.03	37.91	13.42	56.31	146	347	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	149	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Horizontal
Remark :	1. 5745 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
5745	91.31	-	-	74.98	34	9.14	26.81	100	4	Peak
5745	82.46	-	-	66.13	34	9.14	26.81	100	4	Average
11490	46.07	-27.93	74	51.33	37.77	13.39	56.42	145	265	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	149	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Vertical
Remark :	1. 5745 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
5745	91.75	-	-	75.42	34	9.14	26.81	100	157	Peak
5745	83.47	-	-	67.14	34	9.14	26.81	100	157	Average
11490	42.42	-31.58	74	47.68	37.77	13.39	56.42	145	265	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	157	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Horizontal
Remark :	1. 5785 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
5785	92.68	-	-	76.35	34	9.16	26.83	105	4	Peak
5785	83.27	-	-	66.94	34	9.16	26.83	105	4	Average
11570	44.61	-29.39	74	49.7	37.86	13.41	56.36	105	198	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	157	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Vertical
Remark :	1. 5785 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
5785	91.08	-	-	74.75	34	9.16	26.83	126	155	Peak
5785	82.53	-	-	66.2	34	9.16	26.83	126	155	Average
11570	43.04	-30.96	74	48.13	37.86	13.41	56.36	105	198	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	165	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Horizontal
Remark :	1. 5825 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
41.64	34.9	-5.1	40	52.06	11.9	0.87	29.93	100	20	Peak
96.93	25.46	-18.04	43.5	43.53	10.63	1.24	29.94	-	-	Peak
416.06	20.71	-25.29	46	32.19	16.1	2.34	29.92	-	-	Peak
727.43	23.53	-22.47	46	31.14	19.3	3.02	29.93	-	-	Peak
826.37	23.99	-22.01	46	30.13	20.53	3.26	29.93	-	-	Peak
967.02	25.64	-28.36	54	30.83	21.3	3.45	29.94	-	-	Peak
5825	90.91	-	-	74.58	34	9.17	26.84	104	2	Peak
5825	81.98	-	-	65.65	34	9.17	26.84	104	2	Average
11650	46.63	-27.37	74	51.61	37.91	13.42	56.31	146	347	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	165	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Vertical
Remark :	1. 5825 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
41.64	35.03	-4.97	40	52.19	11.9	0.87	29.93	120	50	Peak
97.9	24.85	-18.65	43.5	42.72	10.82	1.25	29.94	-	-	Peak
409.27	20.76	-25.24	46	32	16.35	2.33	29.92	-	-	Peak
623.64	23.95	-22.05	46	32.45	18.6	2.82	29.92	-	-	Peak
792.42	24.95	-21.05	46	31.82	19.92	3.14	29.93	-	-	Peak
925.31	24.74	-21.26	46	30.19	21.1	3.39	29.94	-	-	Peak
5825	92.32	-	-	75.99	34	9.17	26.84	100	356	Peak
5825	84.55	-	-	68.22	34	9.17	26.84	100	356	Average
11650	43.99	-30.01	74	48.97	37.91	13.42	56.31	146	347	Peak

Test Mode :	5GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	151	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Horizontal
Remark :	1. 5755 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
5755	86.56	-	-	70.23	34	9.14	26.81	100	210	Peak
5755	78.36	-	-	62.03	34	9.14	26.81	100	210	Average
11510	44.61	-29.39	74	49.81	37.8	13.4	56.4	174	321	Peak

Test Mode :	5GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	151	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Vertical
Remark :	1. 5755 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
5755	85.76	-	-	69.43	34	9.14	26.81	118	259	Peak
5755	77.69	-	-	61.36	34	9.14	26.81	118	259	Average
11510	42.15	-31.85	74	47.35	37.8	13.4	56.4	174	321	Peak

Test Mode :	5GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	159	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Horizontal
Remark :	1. 5795 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
5795	87.55	-	-	71.22	34	9.16	26.83	100	113	Peak
5795	78.67	-	-	62.34	34	9.16	26.83	100	113	Average
11590	44.05	-29.95	74	49.12	37.87	13.41	56.35	145	265	Peak

Test Mode :	5GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	159	Relative Humidity :	48~52%
Test Engineer :	Kaer Huang	Polarization :	Vertical
Remark :	1. 5795 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
5795	90.6	-	-	74.27	34	9.16	26.83	101	10	Peak
5795	81.82	-	-	65.49	34	9.16	26.83	101	10	Average
11590	44.25	-29.75	74	49.32	37.87	13.41	56.35	145	265	Peak

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 (dB μ V)	
	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.

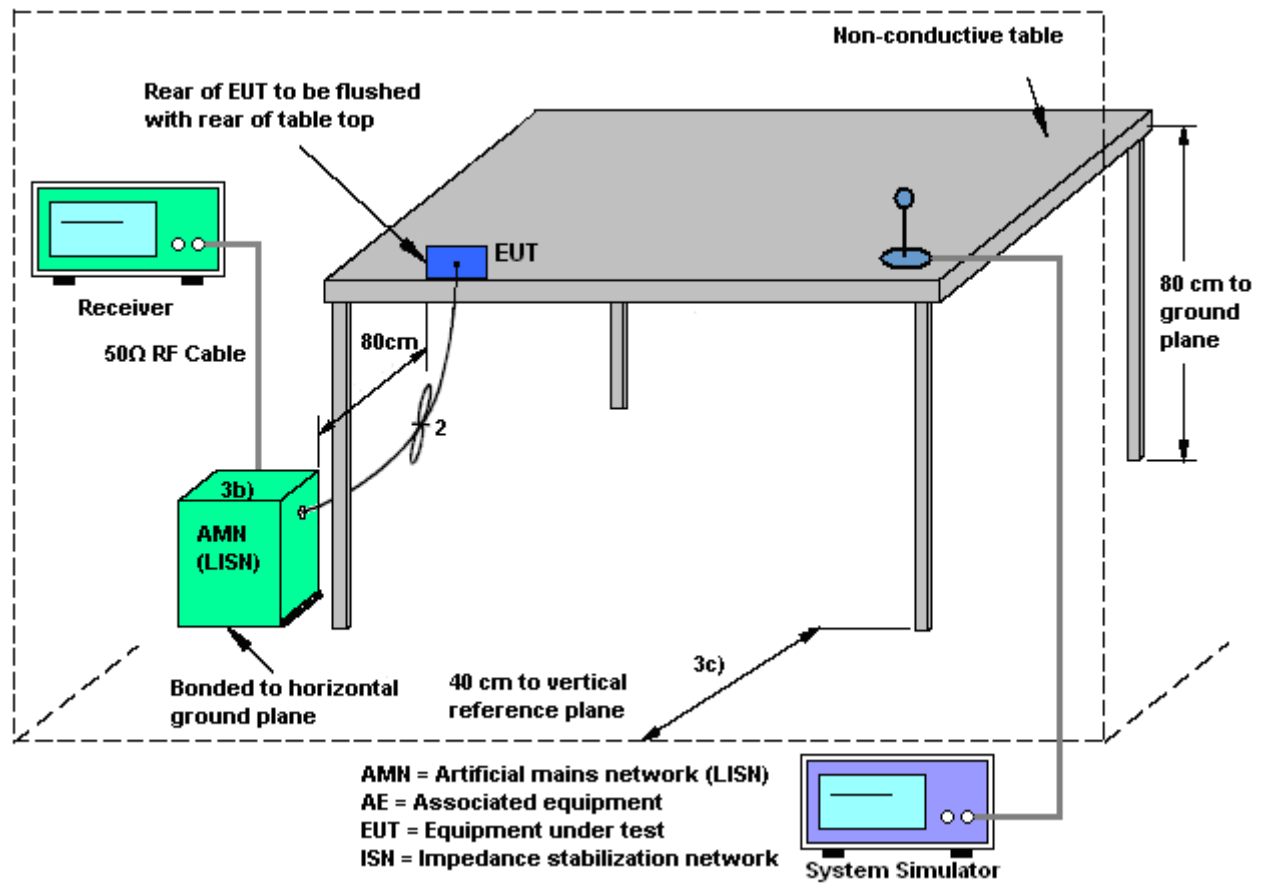
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. 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.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

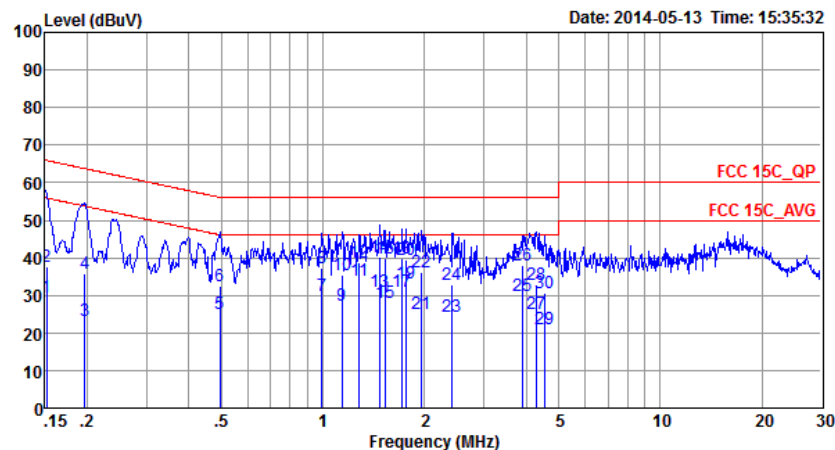
3.6.4 Test Setup





3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	21~22℃
Test Engineer :	Jack Tian	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + USB Cable (Charging from Adapter) + Earphone + NFC Tx		

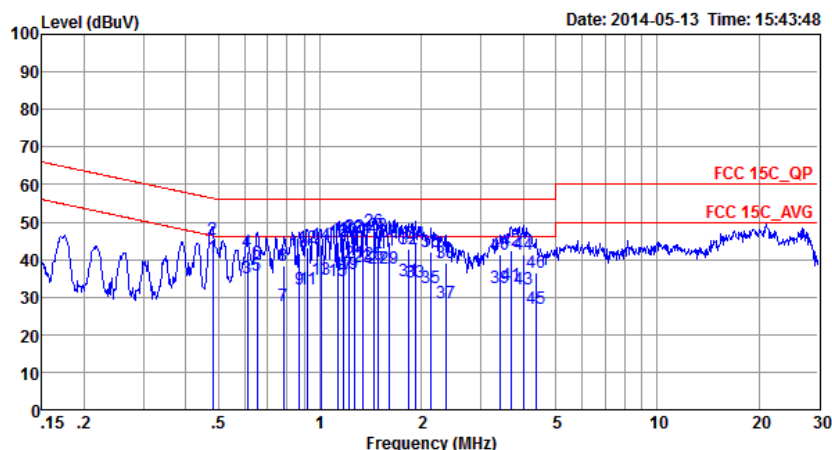


Site : C001-SZ
Condition: FCC 15C_QP LISN_L_20140304 LINE
Mode : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.15	29.68	-26.23	55.91	19.10	0.22	10.36	Average
2	0.15	37.58	-28.33	65.91	27.00	0.22	10.36	QP
3	0.20	23.12	-30.64	53.76	12.60	0.22	10.30	Average
4	0.20	35.92	-27.84	63.76	25.40	0.22	10.30	QP
5	0.49	25.06	-21.04	46.10	14.60	0.30	10.16	Average
6	0.49	32.36	-23.74	56.10	21.90	0.30	10.16	QP
7	0.99	29.91	-16.09	46.00	19.50	0.26	10.15	Average
8	0.99	37.21	-18.79	56.00	26.80	0.26	10.15	QP
9	1.14	27.31	-18.69	46.00	16.90	0.25	10.16	Average
10	1.14	35.31	-20.69	56.00	24.90	0.25	10.16	QP
11	1.28	34.11	-11.89	46.00	23.70	0.25	10.16	Average
12	1.28	38.71	-17.29	56.00	28.30	0.25	10.16	QP
13	1.48	30.91	-15.09	46.00	20.50	0.24	10.17	Average
14	1.48	40.21	-15.79	56.00	29.80	0.24	10.17	QP
15	1.53	27.91	-18.09	46.00	17.50	0.24	10.17	Average
16	1.53	39.91	-16.09	56.00	29.50	0.24	10.17	QP
17	1.72	31.11	-14.89	46.00	20.70	0.23	10.18	Average
18	1.72	39.71	-16.29	56.00	29.30	0.23	10.18	QP
19	1.76	33.21	-12.79	46.00	22.80	0.23	10.18	Average
20	1.76	39.41	-16.59	56.00	29.00	0.23	10.18	QP
21	1.95	24.91	-21.09	46.00	14.50	0.22	10.19	Average
22	1.95	36.31	-19.69	56.00	25.90	0.22	10.19	QP
23	2.42	24.36	-21.64	46.00	13.90	0.26	10.20	Average
24	2.42	32.86	-23.14	56.00	22.40	0.26	10.20	QP
25	3.90	29.79	-16.21	46.00	19.19	0.37	10.23	Average
26	3.90	37.99	-18.01	56.00	27.39	0.37	10.23	QP
27	4.29	25.02	-20.98	46.00	14.40	0.39	10.23	Average
28	4.29	32.82	-23.18	56.00	22.20	0.39	10.23	QP
29	4.53	21.03	-24.97	46.00	10.40	0.40	10.23	Average
30	4.53	30.53	-25.47	56.00	19.90	0.40	10.23	QP



Test Mode :	Mode 2	Temperature :	21~22℃
Test Engineer :	Jack Tian	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + USB Cable (Charging from Adapter) + Earphone + NFC Tx		

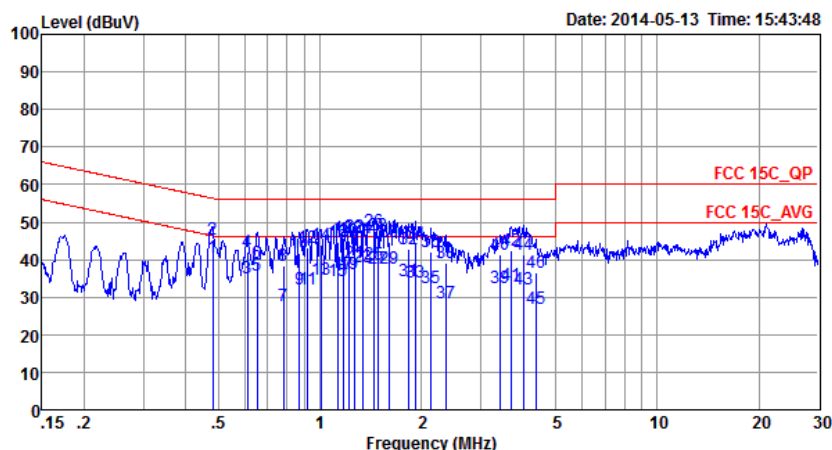


Site : CO01-SZ
Condition: FCC 15C_QP LISN_N_20140304 NEUTRAL
Mode : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.48	40.76	-5.56	46.32	30.19	0.41	10.16	Average
2	0.48	45.26	-11.06	56.32	34.69	0.41	10.16	QP
3	0.61	34.96	-11.04	46.00	24.50	0.31	10.15	Average
4	0.61	41.96	-14.04	56.00	31.50	0.31	10.15	QP
5	0.65	35.73	-10.27	46.00	25.30	0.28	10.15	Average
6	0.65	39.13	-16.87	56.00	28.70	0.28	10.15	QP
7	0.78	27.72	-18.28	46.00	17.30	0.27	10.15	Average
8	0.78	38.22	-17.78	56.00	27.80	0.27	10.15	QP
9	0.87	31.95	-14.05	46.00	21.50	0.30	10.15	Average
10	0.87	41.65	-14.35	56.00	31.20	0.30	10.15	QP
11	0.92	31.96	-14.04	46.00	21.50	0.31	10.15	Average
12	0.92	43.16	-12.84	56.00	32.70	0.31	10.15	QP
13	1.00	34.58	-11.42	46.00	24.10	0.33	10.15	Average
14	1.00	43.98	-12.02	56.00	33.50	0.33	10.15	QP
15	1.13	34.49	-11.51	46.00	23.99	0.34	10.16	Average
16	1.13	44.69	-11.31	56.00	34.19	0.34	10.16	QP
17	1.18	36.00	-10.00	46.00	25.50	0.34	10.16	Average
18	1.18	45.70	-10.30	56.00	35.20	0.34	10.16	QP
19	1.22	36.00	-10.00	46.00	25.50	0.34	10.16	Average
20	1.22	45.10	-10.90	56.00	34.60	0.34	10.16	QP
21	1.26	39.01	-6.99	46.00	28.51	0.34	10.16	Average
22	1.26	46.31	-9.69	56.00	35.81	0.34	10.16	QP
23	1.34	37.91	-8.09	46.00	27.39	0.35	10.17	Average
24	1.34	45.71	-10.29	56.00	35.19	0.35	10.17	QP
25	1.44	38.62	-7.38	46.00	28.10	0.35	10.17	Average
26	1.44	47.72	-8.28	56.00	37.20	0.35	10.17	QP
27	1.49	37.63	-8.37	46.00	27.11	0.35	10.17	Average
28	1.49	46.53	-9.47	56.00	36.01	0.35	10.17	QP
29	1.61	37.53	-8.47	46.00	26.99	0.36	10.18	Average



Test Mode :	Mode 2	Temperature :	21~22℃
Test Engineer :	Jack Tian	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + USB Cable (Charging from Adapter) + Earphone + NFC Tx		



Site : C001-SZ
Condition: FCC 15C_QP LISN_N_20140304 NEUTRAL

Mode : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
30	1.61	44.63	-11.37	56.00	34.09	0.36	10.18	QP
31	1.83	34.45	-11.55	46.00	23.91	0.36	10.18	Average
32	1.83	42.95	-13.05	56.00	32.41	0.36	10.18	QP
33	1.93	34.05	-11.95	46.00	23.49	0.37	10.19	Average
34	1.93	44.45	-11.55	56.00	33.89	0.37	10.19	QP
35	2.13	32.57	-13.43	46.00	22.00	0.38	10.19	Average
36	2.13	42.17	-13.83	56.00	31.60	0.38	10.19	QP
37	2.36	28.49	-17.51	46.00	17.90	0.39	10.20	Average
38	2.36	39.19	-16.81	56.00	28.60	0.39	10.20	QP
39	3.44	32.36	-13.64	46.00	21.70	0.44	10.22	Average
40	3.44	41.36	-14.64	56.00	30.70	0.44	10.22	QP
41	3.68	33.37	-12.63	46.00	22.70	0.45	10.22	Average
42	3.68	42.57	-13.43	56.00	31.90	0.45	10.22	QP
43	4.01	32.09	-13.91	46.00	21.40	0.46	10.23	Average
44	4.01	41.19	-14.81	56.00	30.50	0.46	10.23	QP
45	4.36	26.80	-19.20	46.00	16.10	0.47	10.23	Average
46	4.36	36.60	-19.40	56.00	25.90	0.47	10.23	QP

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 Anti-Replacement Construction

An embedded-in antenna design is 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	FSP30	101400	9kHz~30GHz	Mar. 03, 2014	Apr. 11, 2014~ May 23, 2014	Mar. 02, 2015	Conducted (TH01-SZ)
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Jun. 17, 2013	Apr. 11, 2014~ May 23, 2014	Jun. 16, 2014	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	13dBm~20dBm	Mar. 03, 2014	Apr. 11, 2014~ May 23, 2014	Mar. 02, 2015	Conducted (TH01-SZ)
Power Sensor	Anritsu	MA2411B	1207253	0.3GHz~40GHz	Mar. 03, 2014	Apr. 11, 2014~ May 23, 2014	Mar. 02, 2015	Conducted (TH01-SZ)
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	Apr. 24, 2014~ May 05, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Signal Analyzer	R&S	FSV40	101078	10Hz~40GHz	Jun. 17, 2013	Apr. 24, 2014~ May 05, 2014	Jun. 16, 2014	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 29, 2013	Apr. 24, 2014~ May 05, 2014	May 28, 2014	Radiation (03CH01-SZ)
Bilog Antenna	TESEQ	CBL 6112D	23188	30MHz~2GHz	Oct. 26, 2013	Apr. 24, 2014~ May 05, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 26, 2013	Apr. 24, 2014~ May 05, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridged Horn Antenna	COM-POWER	AH-840	101073	18GHz~40GHz	Jan. 27, 2014	Apr. 24, 2014~ May 05, 2014	Jan. 26, 2015	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz	Feb. 21, 2014	Apr. 24, 2014~ May 05, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Amplifier	Agilent	83017A	MY39501302	3Hz~26.5GHz	Mar. 03, 2014	Apr. 24, 2014~ May 05, 2014	Mar. 02, 2015	Radiation (03CH01-SZ)
AC Source(AVR)	Chroma	61601	616010001985	100Vac~250Vac	Mar. 25, 2014	Apr. 24, 2014~ May 05, 2014	Mar. 24, 2015	Radiation (03CH01-SZ)
Turn Table	EM Electronics	EM 1000	N/A	0~360 degree	NCR	Apr. 24, 2014~ May 05, 2014	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM Electronics	EM 1000	N/A	1 m~4 m	NCR	Apr. 24, 2014~ May 05, 2014	NCR	Radiation (03CH01-SZ)
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	May 13, 2014	Feb. 20, 2015	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Mar. 04, 2014	May 13, 2014	Mar. 03, 2015	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Mar. 04, 2014	May 13, 2014	Mar. 03, 2015	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Dec. 17, 2013	May 13, 2014	Dec. 16, 2014	Conduction (CO01-SZ)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.31
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.90
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