

FCC RF Test Report

APPLICANT : Acer Incorporated
EQUIPMENT : Tablet Computer
BRAND NAME : acer
MODEL NAME : A1407
FCC ID : HLZA1407
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Jun 23, 2014 and testing was completed on Jul. 18, 2014. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been 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
FR462350C	Rev. 01	Initial issue of report	Jul. 24, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	RSS-210 A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	RSS-Gen 4.6.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	RSS-210 A8.4	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	RSS-210 A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	RSS-210 A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.36 dB at 2387.13 MHz
3.6	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 6.81 dB at 0.160 MHz
3.7	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Acer Incorporated

8F, 88, Sec. 1 Xintai 5th Rd., Xizhi, New Taipei City 221, Taiwan, R.O.C.

1.2 Manufacturer

Acer Incorporated

8F, 88, Sec. 1 Xintai 5th Rd., Xizhi, New Taipei City 221, Taiwan, R.O.C.

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Tablet Computer
Brand Name	acer
Model Name	A1407
FCC ID	HLZA1407
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40 Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
EUT Stage	Identical Prototype

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 subjective to this standard

Product Specification subjective to this standard	
Tx/Rx Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to Antenna	802.11b : 16.48 dBm (0.0445 W) 802.11g : 22.67 dBm (0.1849 W) 802.11n HT20 : 21.26 dBm (0.1337 W) 802.11n HT40 : 21.78 dBm (0.1507 W)
99% Occupied Bandwidth	802.11b : 12.35MHz 802.11g : 16.40MHz 802.11n HT20 : 17.65MHz 802.11n HT40 : 36.10MHz
Antenna Type	802.11b/g/n : loop antenna with gain 0 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/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/IC Registration No.
	TH01-SZ	03CH01-SZ	CO01-SZ
			831040//4086F-1

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 v03r02
- ANSI C63.4-2003
- IC RSS-210 Issue 8
- IC RSS-Gen Issue 3
- NOTICE 2012-DRS0126

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.
3. Per the section 2.2.3 of Notice of 2012-DRS0126, " Receivers Excluded from Industry Canada Requirements", only radiocommunication receivers operating in stand-alone mode within the band 30-960 MHz and scanner receivers are subject to Industry Canada requirements.

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 (X plane) were recorded in this report.

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

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

2.1 Carrier Frequency Channel

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



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.

2.4GHz 802.11b RF Output Power (dBm)						
Power vs. Channel			Power vs. Data Rate			
Channel	Frequency (MHz)	Data Rate 1Mbps	Channel	2Mbps	5.5Mbps	11Mbps
CH 01	2412 MHz	15.82	CH11	16.46	16.38	16.42
CH 06	2437 MHz	16.03				
CH 11	2462 MHz	16.48				

2.4GHz 802.11g RF Output Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	Data Rate	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
		6Mbps								
CH 01	2412 MHz	22.14	CH11	22.65	22.54	22.46	22.42	22.62	22.43	22.41
CH 06	2437 MHz	22.34								
CH 11	2462 MHz	22.67								

2.4GHz 802.11n HT20 RF Output Power (dBm)										
Power vs. Channel			Power vs. MCS Index							
Channel	Frequency (MHz)	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0								
CH 01	2412 MHz	20.38	CH11	20.83	20.94	20.82	20.67	21.03	20.92	20.76
CH 06	2437 MHz	20.94								
CH 11	2462 MHz	21.26								

2.4GHz 802.11n HT40 RF Output Power (dBm)										
Power vs. Channel			Power vs. MCS Index							
Channel	Frequency (MHz)	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0								
CH 03	2422 MHz	21.10	CH11	20.68	20.20	20.08	19.78	19.68	19.41	19.46
CH 06	2437 MHz	21.59								
CH 09	2452 MHz	21.78								

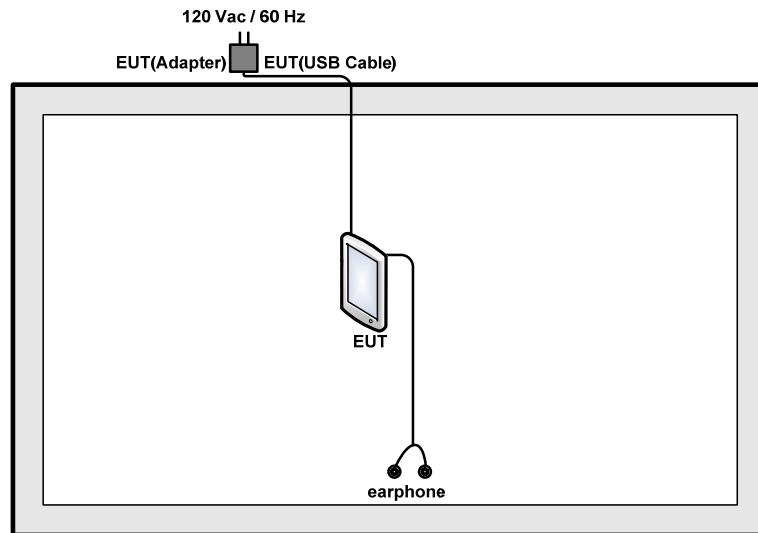
2.3 Test Mode

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

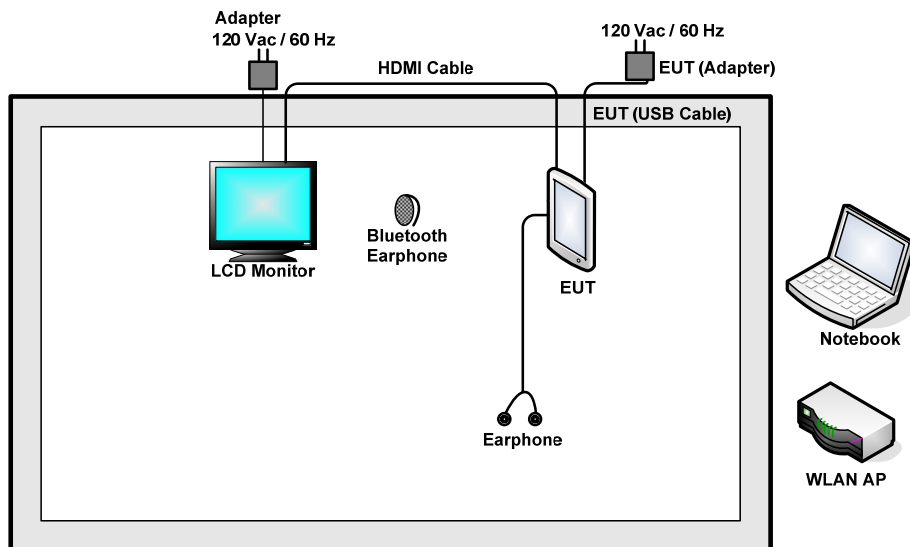
Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	6dB and 99% BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
		802.11n HT40	MCS0	3/6/9
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
		802.11n HT40	MCS0	3/6/9
	Conducted Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	MCS0	1/11
		802.11n HT40	MCS0	3/9
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
		802.11n HT40	MCS0	3/6/9
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	MCS0	1/11
		802.11n HT40	MCS0	3/9
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
		802.11n HT40	MCS0	3/6/9
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter 3) + Earphone + HDMI			
	Mode 2 : Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter 4) + Earphone + HDMI			
Remark:				
1. For Radiated TCs, all the test modes are performed with USB cable, HDMI, earphone and adapter 3, only the worst mode (802.11n HT40 CH03) based on adapter 3 need to verify adapter 4.				
2. The worst case of conducted emission is mode 2; only the test data of it was reported.				

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.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
2.	Notebook	Lenovo	G480	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	LCD Monitor	Changhong	N/A	N/A	Shielded, 1.6 m	Unshielded, 1.8 m
4.	SD Card	SanDisk	4G class 4	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	Bluetooth Earphone	Nokia	BH-108	PYAHS-107W	N/A	N/A
6.	iPod Earphone	Apple	MC690ZP/A	FCC DoC	Unshielded, 1.6m	N/A
7.	HDMI Cable	N/A	N/A	N/A	N/A	N/A

2.6 EUT Operation Test Setup

For WLAN function, the engineering test program was provided and enabled to make EUT continuous 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 and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

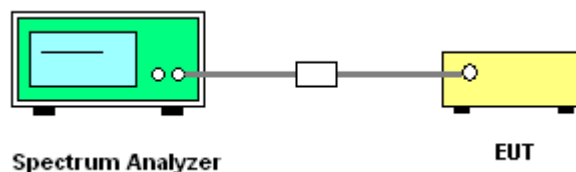
3.1.2 Measuring Instruments

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 v03r02.
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. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

3.1.4 Test Setup

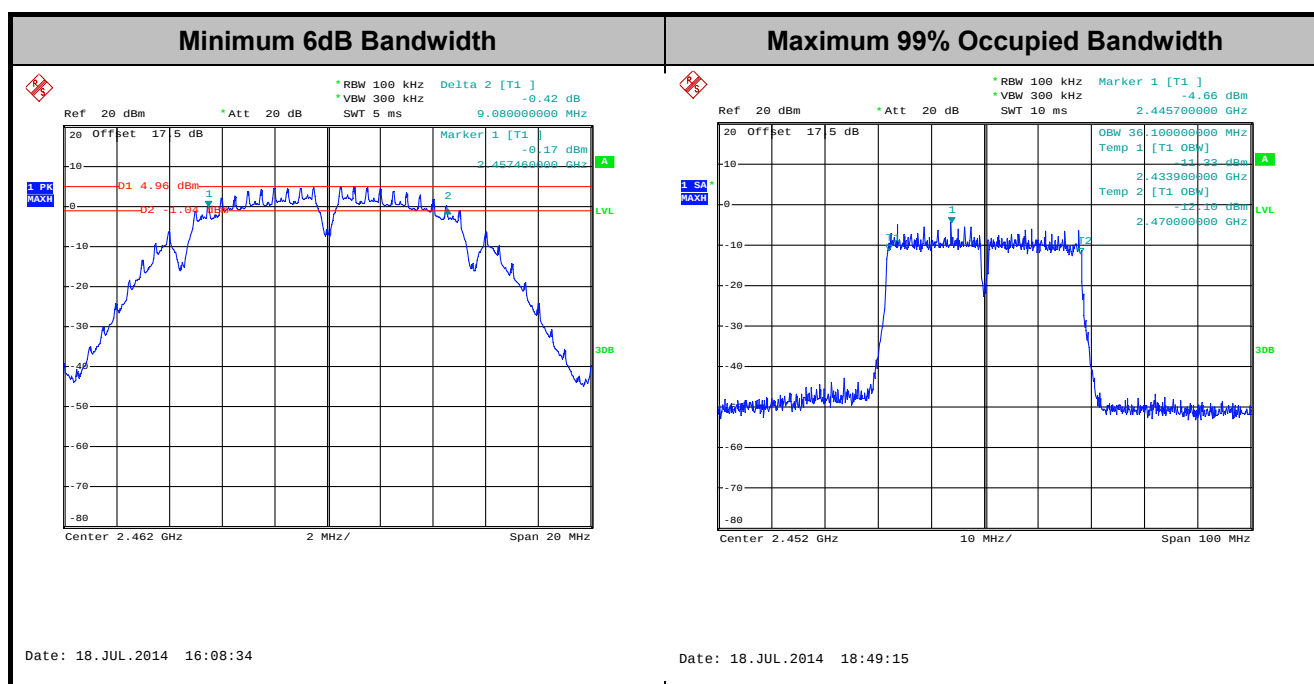




3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Test Band :	2.4GHz	Temperature :	24~26°C
Test Engineer :	Blithe Li	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	12.35	9.52	0.50	Pass
11b	1Mbps	1	6	2437	12.30	9.52	0.50	Pass
11b	1Mbps	1	11	2462	12.25	9.08	0.50	Pass
11g	6Mbps	1	1	2412	16.35	15.48	0.50	Pass
11g	6Mbps	1	6	2437	16.40	15.68	0.50	Pass
11g	6Mbps	1	11	2462	16.35	15.48	0.50	Pass
HT20	MCS0	1	1	2412	17.65	17.60	0.50	Pass
HT20	MCS0	1	6	2437	17.65	17.60	0.50	Pass
HT20	MCS0	1	11	2462	17.65	17.60	0.50	Pass
HT40	MCS0	1	3	2422	36.10	36.32	0.50	Pass
HT40	MCS0	1	6	2437	36.10	36.08	0.50	Pass
HT40	MCS0	1	9	2452	36.10	36.24	0.50	Pass



Note : The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, 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 v03r02.
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	Temperature :	24~26℃
Test Engineer :	Blithe Li	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	15.82	30	0.00	Pass
11b	1Mbps	1	6	2437	16.03	30	0.00	Pass
11b	1Mbps	1	11	2462	16.48	30	0.00	Pass
11g	6Mbps	1	1	2412	22.14	30	0.00	Pass
11g	6Mbps	1	6	2437	22.34	30	0.00	Pass
11g	6Mbps	1	11	2462	22.67	30	0.00	Pass
HT20	MCS0	1	1	2412	20.38	30	0.00	Pass
HT20	MCS0	1	6	2437	20.94	30	0.00	Pass
HT20	MCS0	1	11	2462	21.26	30	0.00	Pass
HT40	MCS0	1	3	2422	21.10	30	0.00	Pass
HT40	MCS0	1	6	2437	21.59	30	0.00	Pass
HT40	MCS0	1	9	2452	21.78	30	0.00	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	Temperature :	24~26℃
Test Engineer :	Blithe Li	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	0.11	13.06	30	0.00	Pass
11b	1Mbps	1	6	2437	0.11	13.33	30	0.00	Pass
11b	1Mbps	1	11	2462	0.11	13.78	30	0.00	Pass
11g	6Mbps	1	1	2412	0.49	12.02	30	0.00	Pass
11g	6Mbps	1	6	2437	0.49	12.56	30	0.00	Pass
11g	6Mbps	1	11	2462	0.49	13.01	30	0.00	Pass
HT20	MCS0	1	1	2412	0.56	9.53	30	0.00	Pass
HT20	MCS0	1	6	2437	0.56	9.79	30	0.00	Pass
HT20	MCS0	1	11	2462	0.56	10.38	30	0.00	Pass
HT40	MCS0	1	3	2422	1.02	9.44	30	0.00	Pass
HT40	MCS0	1	6	2437	1.02	9.58	30	0.00	Pass
HT40	MCS0	1	9	2452	1.02	9.94	30	0.00	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.

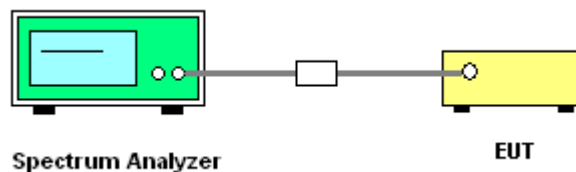
3.3.2 Measuring Instruments

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 v03r02
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



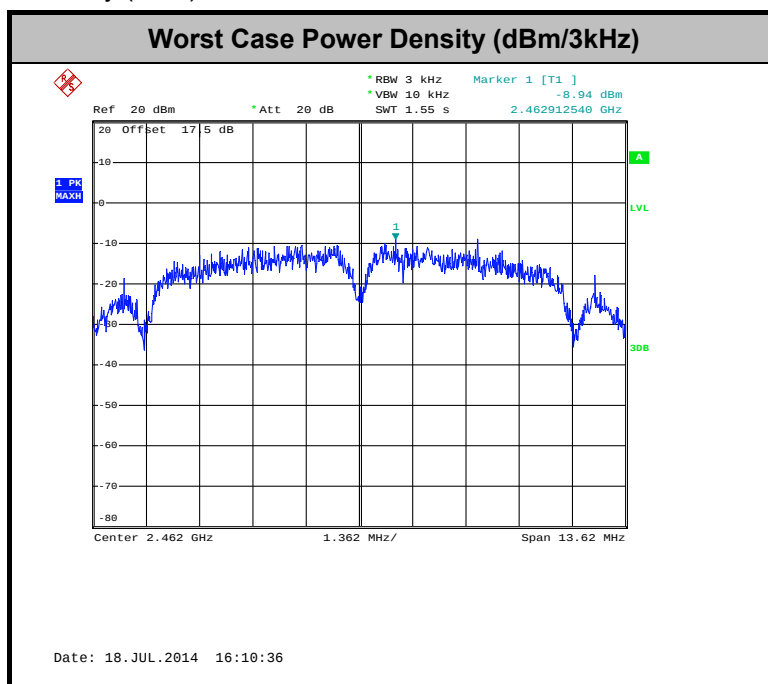


3.3.5 Test Result of Power Spectral Density

Test Mode :	2.4GHz	Temperature :	24~26°C
Test Engineer :	Blithe Li	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	-10.04	8	0.00	Pass
11b	1Mbps	1	6	2437	-9.47	8	0.00	Pass
11b	1Mbps	1	11	2462	-8.94	8	0.00	Pass
11g	6Mbps	1	1	2412	-12.53	8	0.00	Pass
11g	6Mbps	1	6	2437	-11.69	8	0.00	Pass
11g	6Mbps	1	11	2462	-11.67	8	0.00	Pass
HT20	MCS0	1	1	2412	-15.75	8	0.00	Pass
HT20	MCS0	1	6	2437	-15.44	8	0.00	Pass
HT20	MCS0	1	11	2462	-16.11	8	0.00	Pass
HT40	MCS0	1	3	2422	-18.53	8	0.00	Pass
HT40	MCS0	1	6	2437	-18.70	8	0.00	Pass
HT40	MCS0	1	9	2452	-18.98	8	0.00	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).

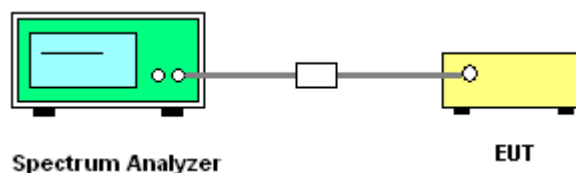
3.4.2 Measuring Instruments

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 v03r02.
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



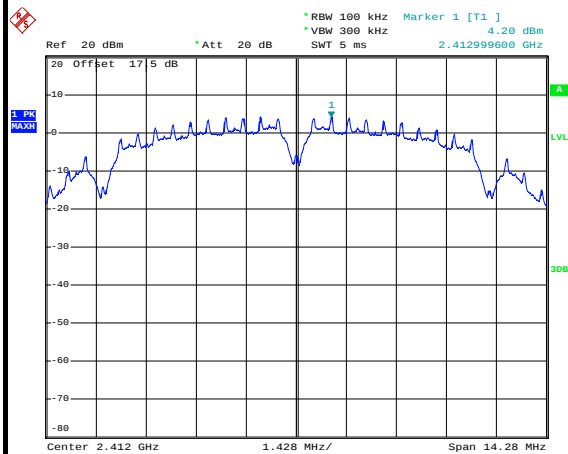


3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	24~26℃
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Blithe Li

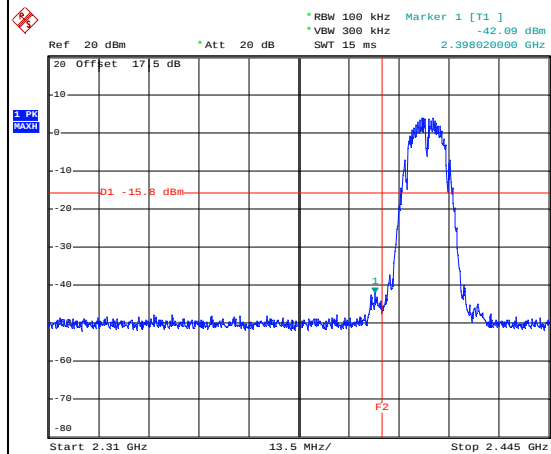
WLAN 802.11b Channel 01

100kHz PSD reference Level



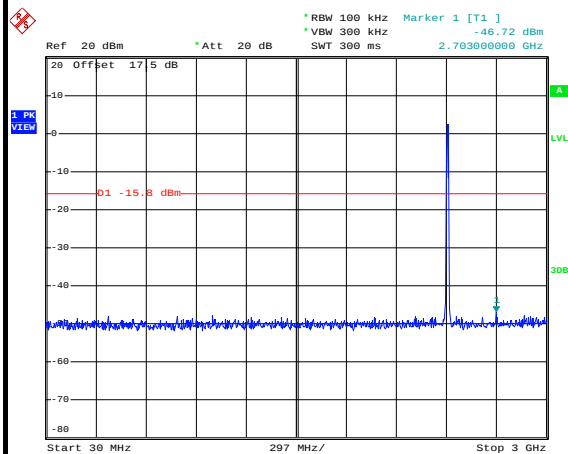
Date: 18.JUL.2014 16:22:18

Low Channel Plot



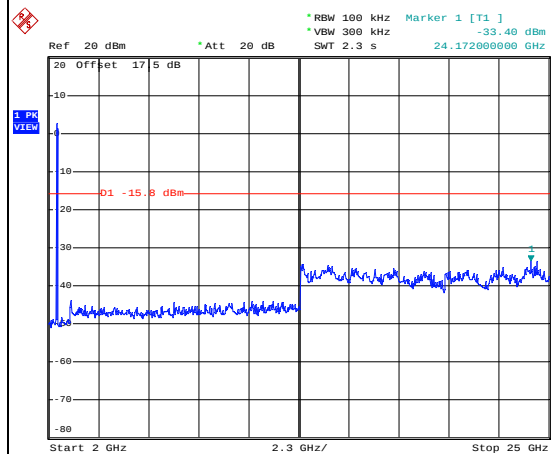
Date: 18.JUL.2014 16:22:39

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 16:23:05

Spurious Emission 2GHz~25GHz

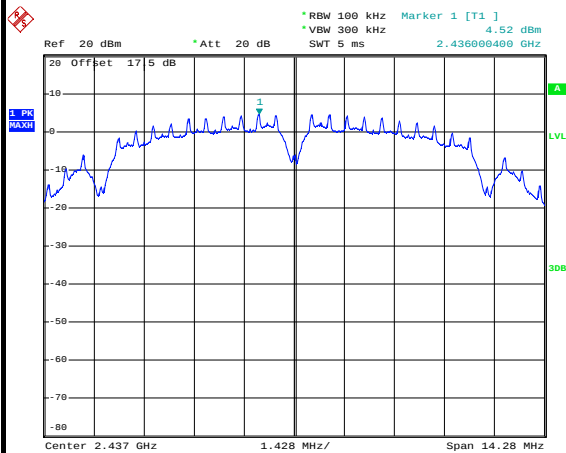


Date: 18.JUL.2014 16:23:23

Test Mode :	802.11b	Temperature :	24~26℃
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Blithe Li

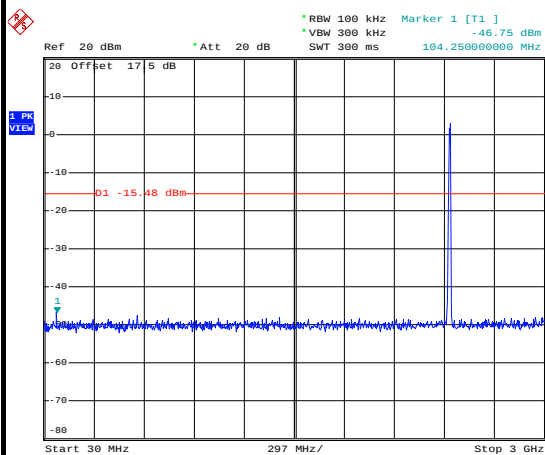
WLAN 802.11b Channel 06

100kHz PSD reference Level



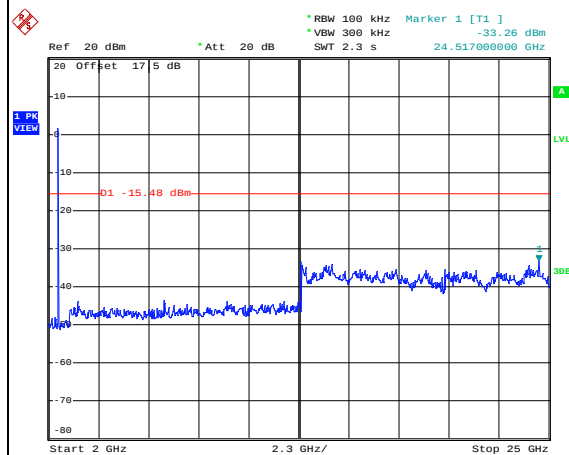
Date: 18.JUL.2014 15:57:27

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 15:59:04

Spurious Emission 2GHz~25GHz



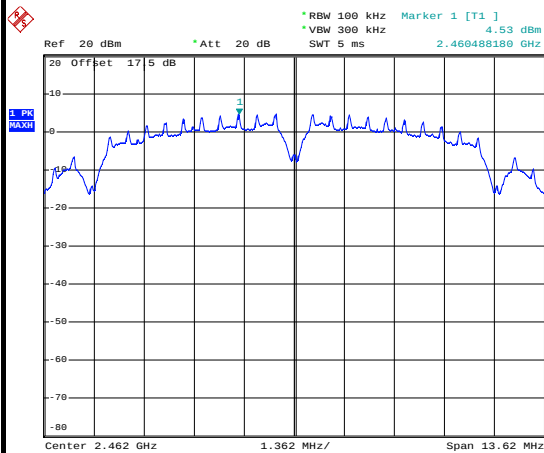
Date: 18.JUL.2014 15:59:22



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

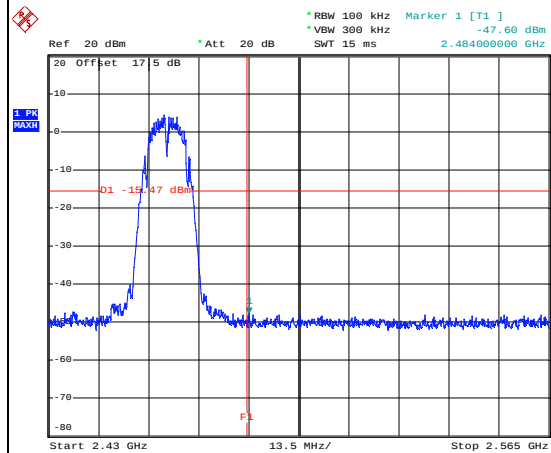
WLAN 802.11b Channel 11

100kHz PSD reference Level



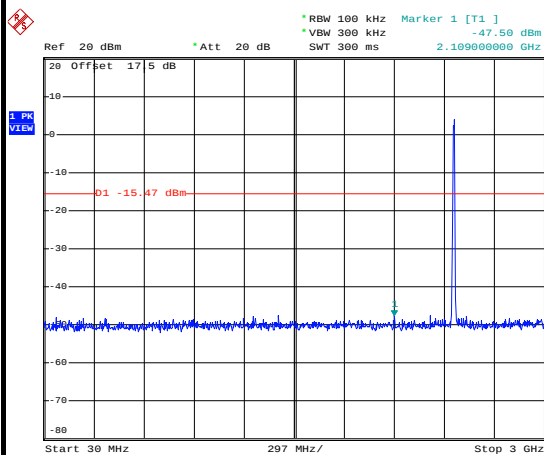
Date: 18.JUL.2014 16:11:42

High Channel Plot



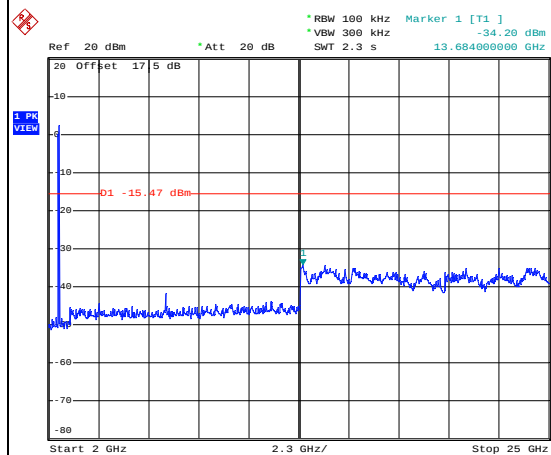
Date: 18.JUL.2014 16:12:06

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 16:12:48

Spurious Emission 2GHz~25GHz



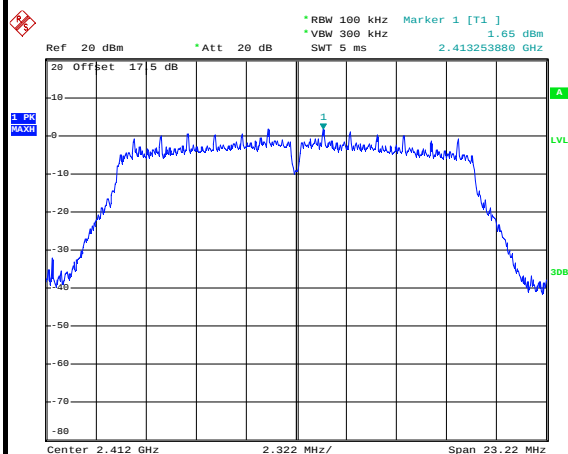
Date: 18.JUL.2014 16:13:06



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

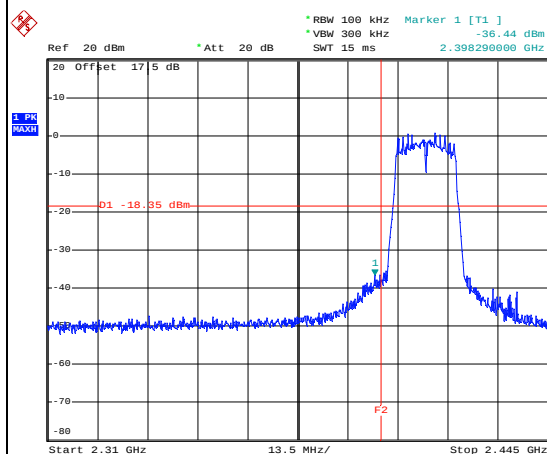
WLAN 802.11g Channel 01

100kHz PSD reference Level



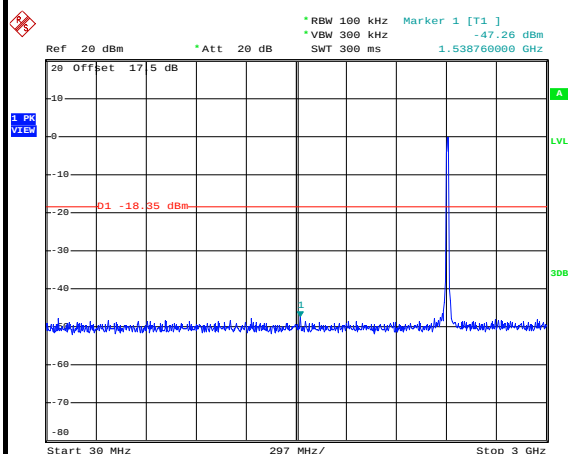
Date: 18.JUL.2014 17:13:04

Low Channel Plot



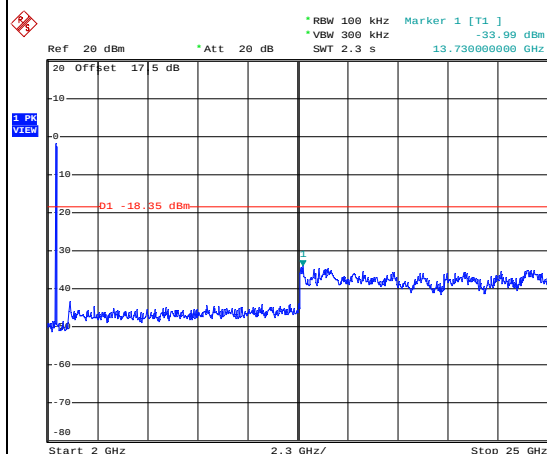
Date: 18.JUL.2014 17:16:08

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 17:17:43

Spurious Emission 2GHz~25GHz



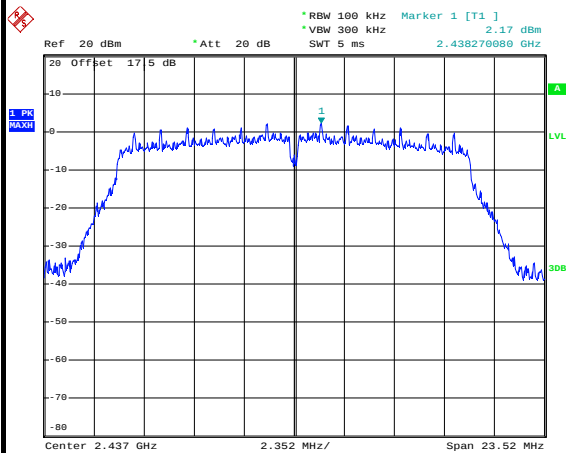
Date: 18.JUL.2014 17:18:01



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

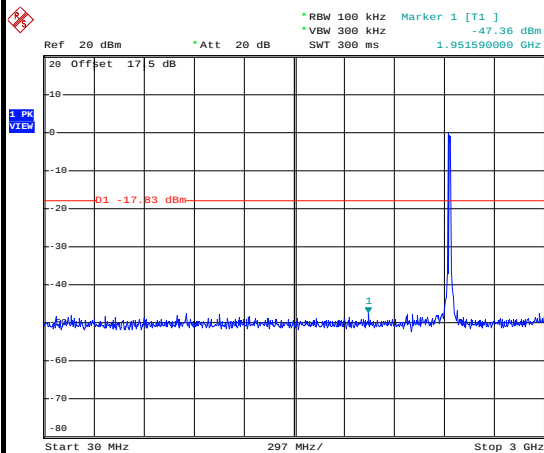
WLAN 802.11g Channel 06

100kHz PSD reference Level



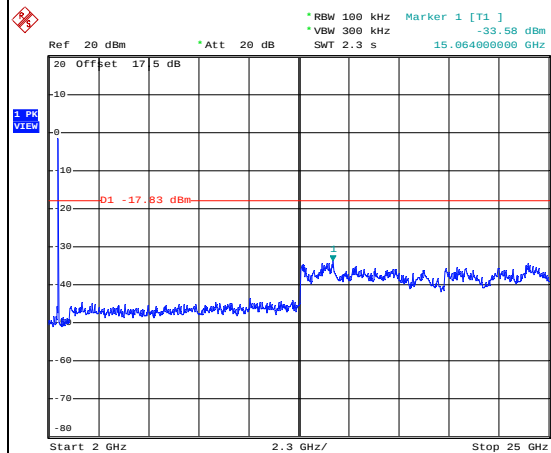
Date: 18.JUL.2014 16:57:05

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 16:59:24

Spurious Emission 2GHz~25GHz



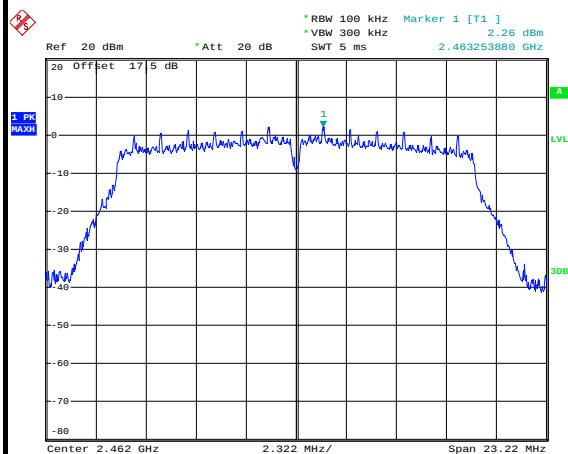
Date: 18.JUL.2014 16:59:42



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

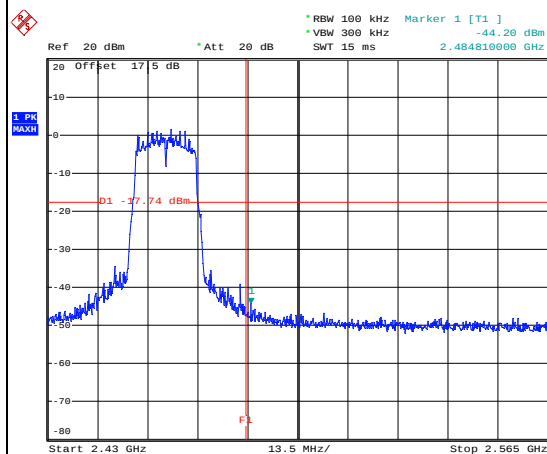
WLAN 802.11g Channel 11

100kHz PSD reference Level



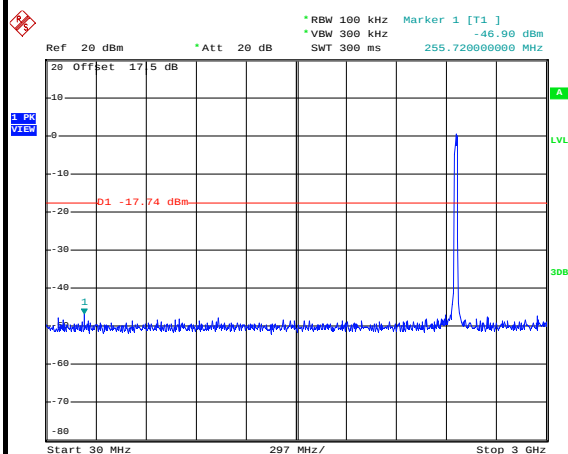
Date: 18.JUL.2014 16:33:02

High Channel Plot



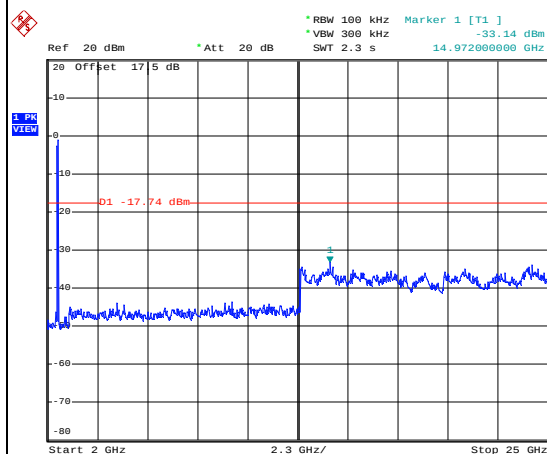
Date: 18.JUL.2014 16:33:36

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 16:36:16

Spurious Emission 2GHz~25GHz



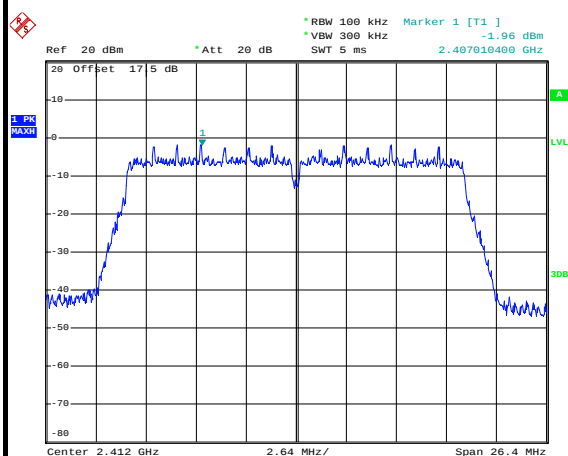
Date: 18.JUL.2014 16:36:34



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

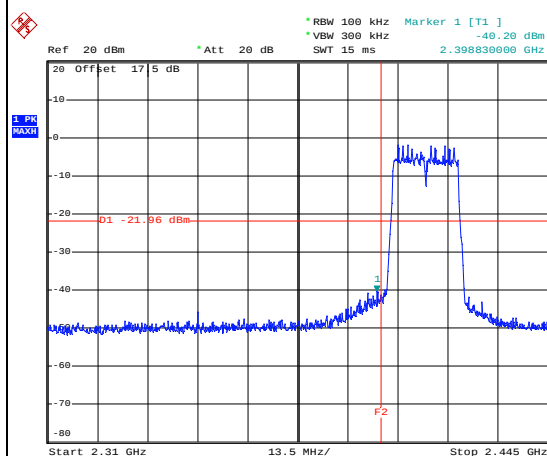
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



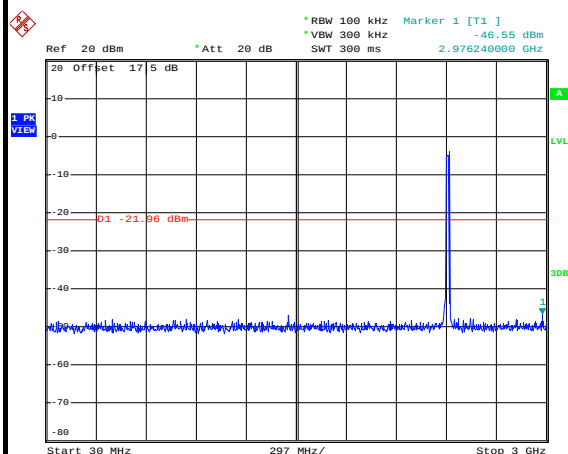
Date: 18.JUL.2014 17:37:32

Low Channel Plot



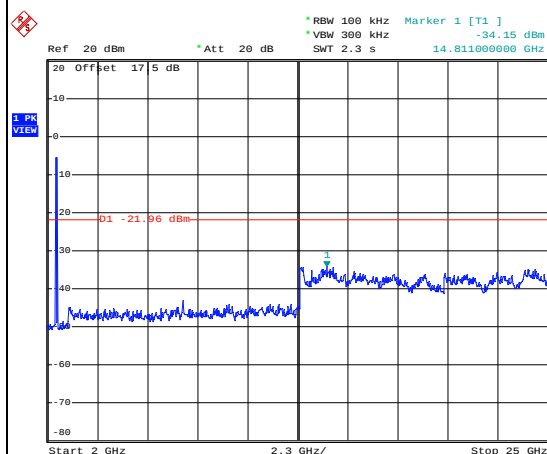
Date: 18.JUL.2014 17:37:58

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 17:38:22

Spurious Emission 2GHz~25GHz



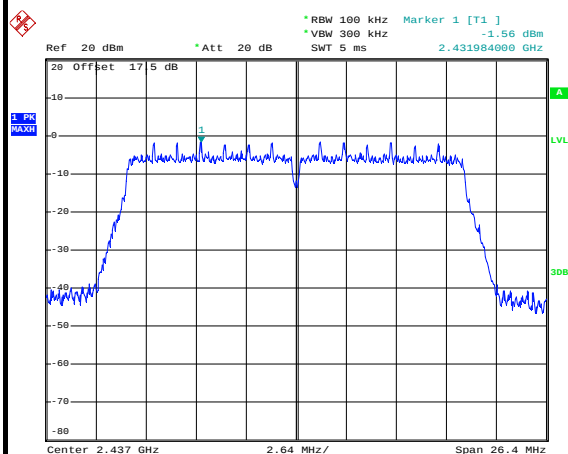
Date: 18.JUL.2014 17:38:40



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

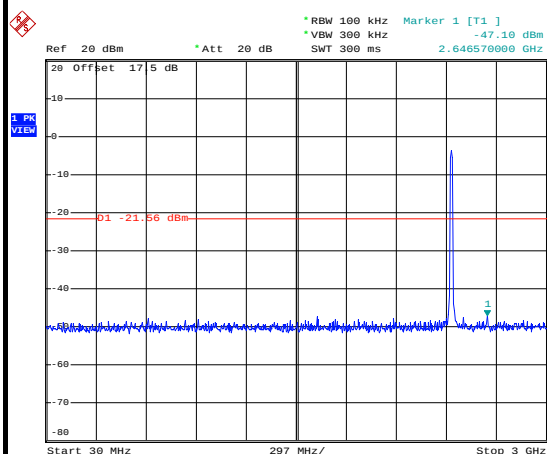
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



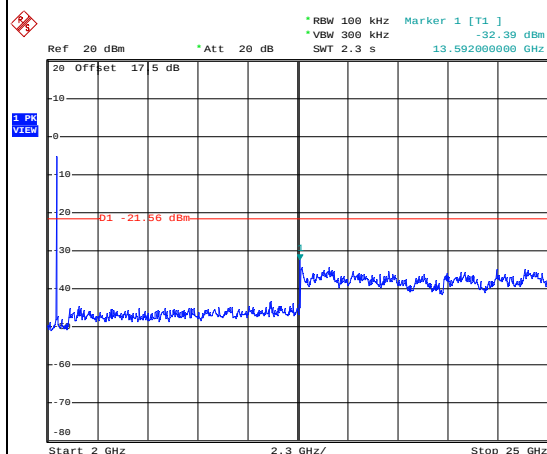
Date: 18.JUL.2014 17:42:42

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 17:44:02

Spurious Emission 2GHz~25GHz



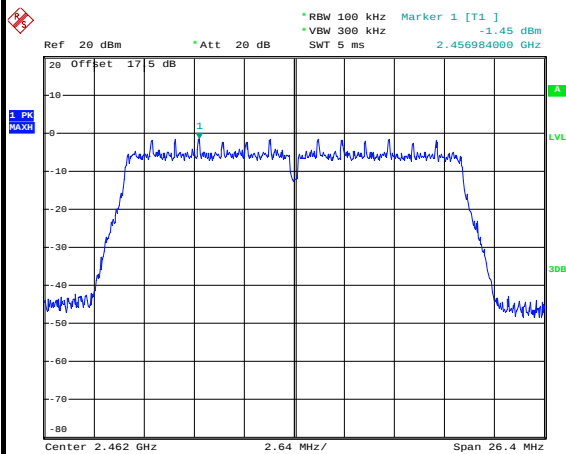
Date: 18.JUL.2014 17:44:20



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

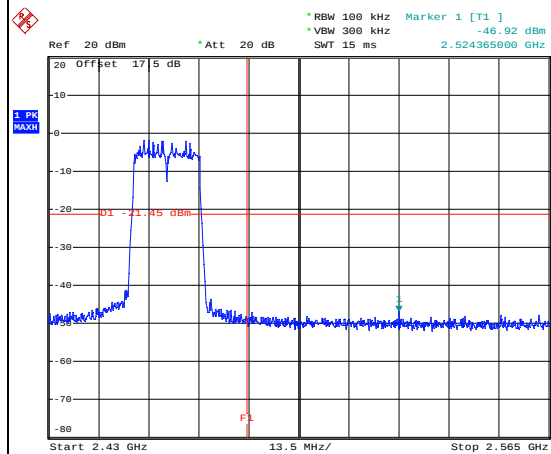
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



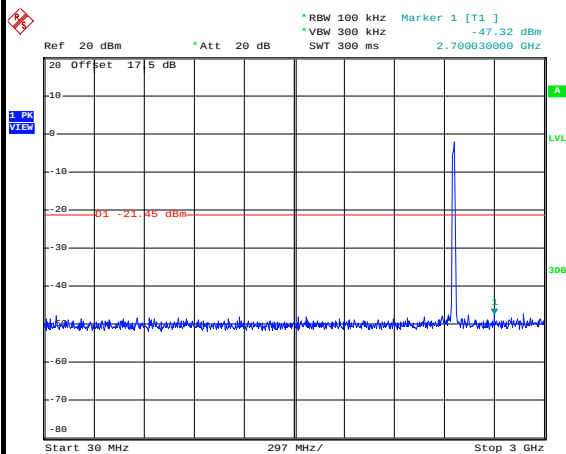
Date: 18.JUL.2014 17:51:29

High Channel Plot



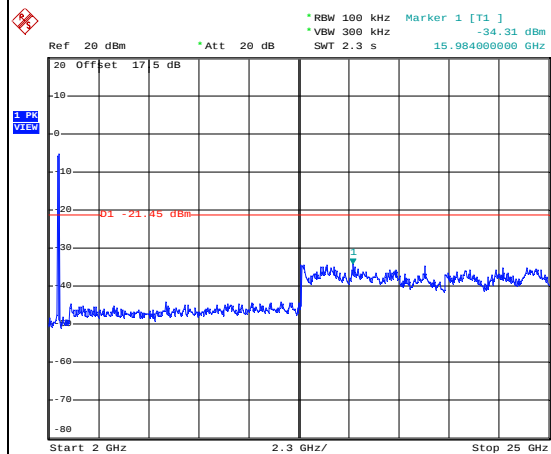
Date: 18.JUL.2014 17:52:28

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 17:52:51

Spurious Emission 2GHz~25GHz



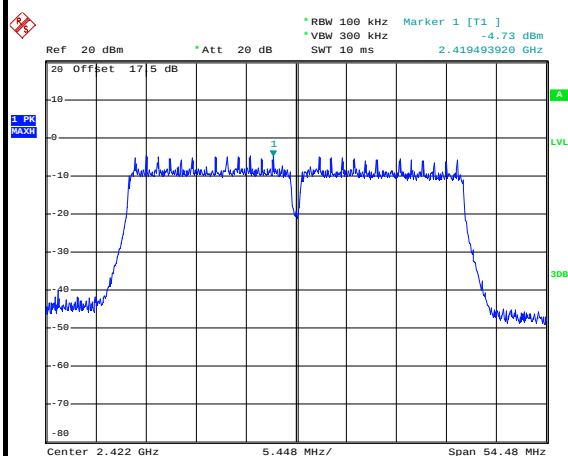
Date: 18.JUL.2014 17:53:09



Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	03	Test Engineer :	Blithe Li

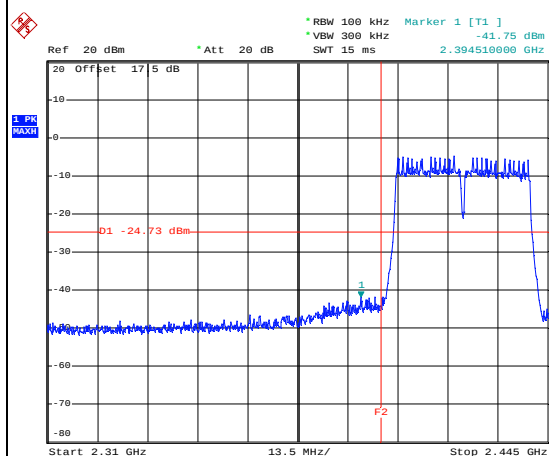
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



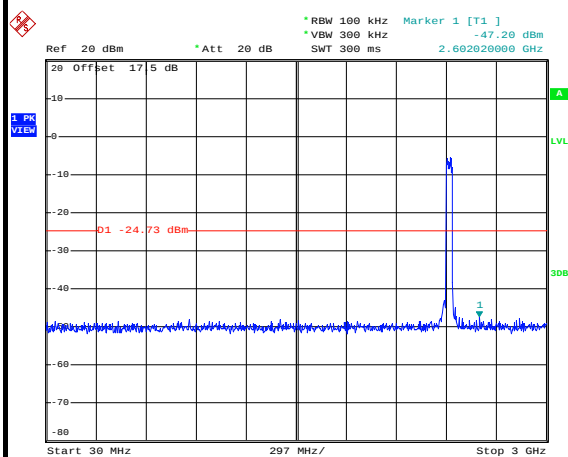
Date: 18.JUL.2014 18:02:16

Low Channel Plot



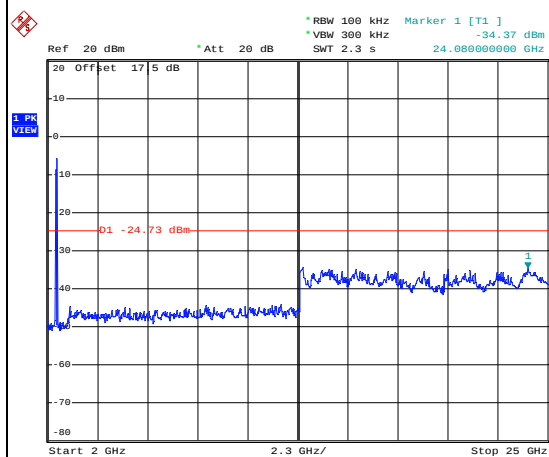
Date: 18.JUL.2014 18:02:55

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 18:03:24

Spurious Emission 2GHz~25GHz



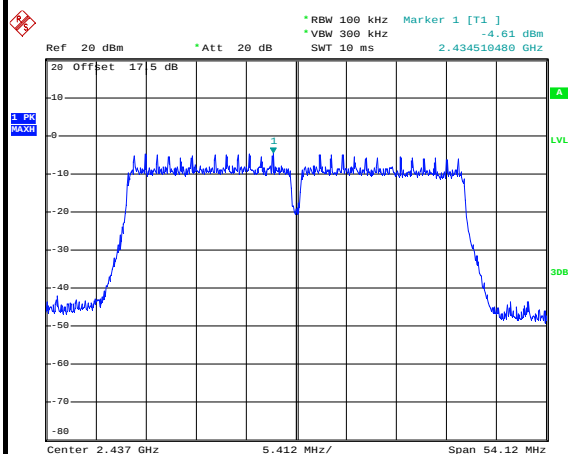
Date: 18.JUL.2014 18:03:42



Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Blithe Li

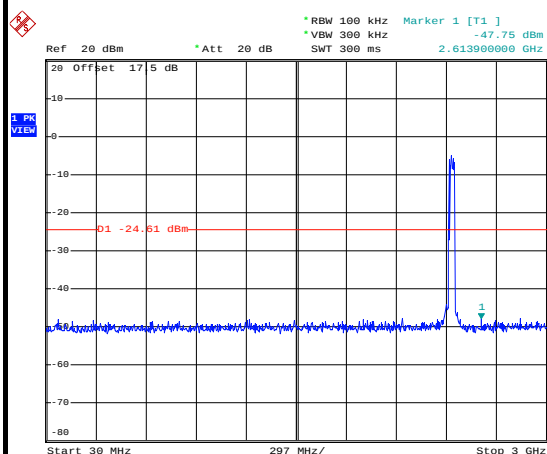
WLAN 802.11n HT40 Channel 06

100kHz PSD reference Level



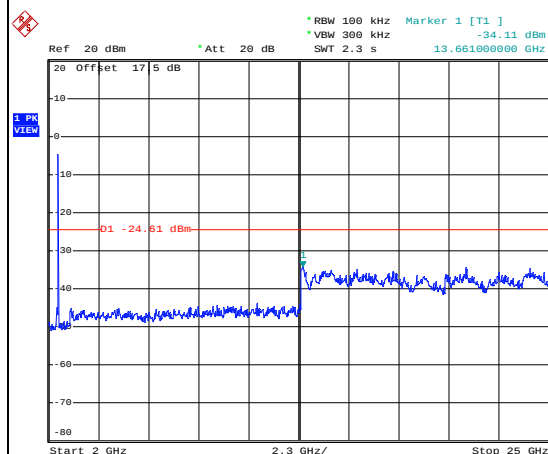
Date: 18.JUL.2014 18:08:52

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 18:13:21

Spurious Emission 2GHz~25GHz



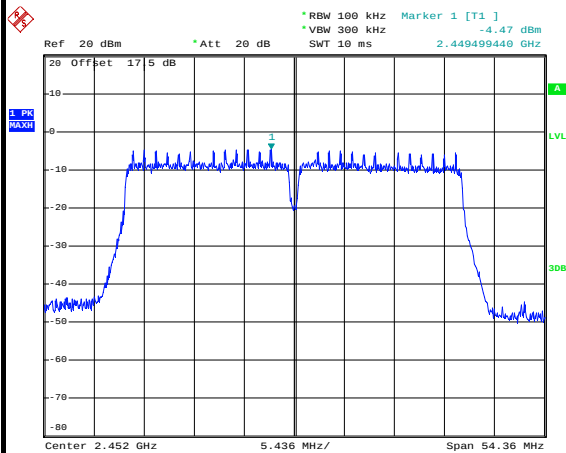
Date: 18.JUL.2014 18:13:39



Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	09	Test Engineer :	Blithe Li

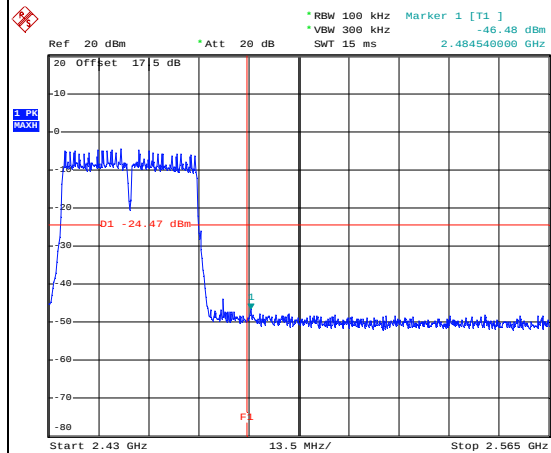
WLAN 802.11n HT40 Channel 09

100kHz PSD reference Level



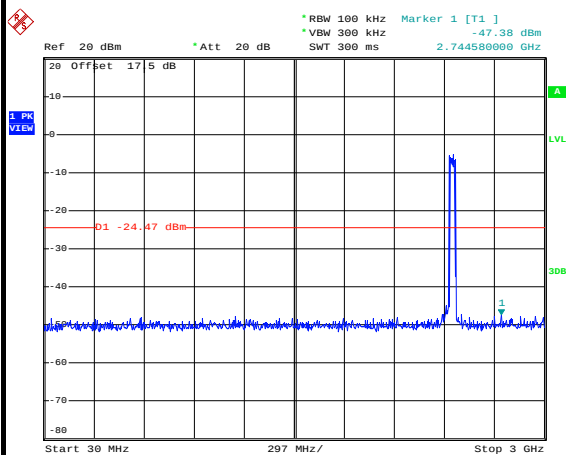
Date: 18.JUL.2014 18:37:32

High Channel Plot



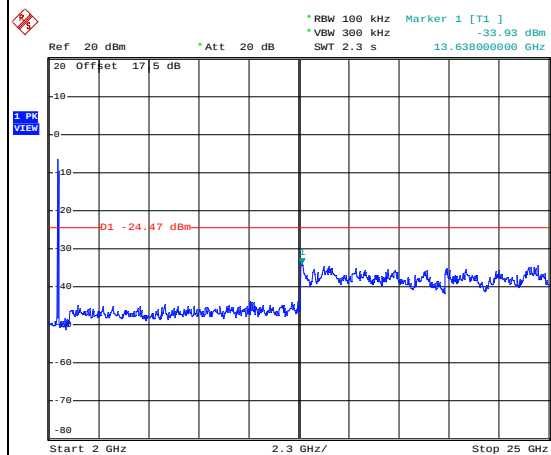
Date: 18.JUL.2014 18:37:52

Spurious Emission 30MHz~3GHz



Date: 18.JUL.2014 18:39:32

Spurious Emission 2GHz~25GHz



Date: 18.JUL.2014 18:39:50

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.5.2 Measuring Instruments

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 v03r02.
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.

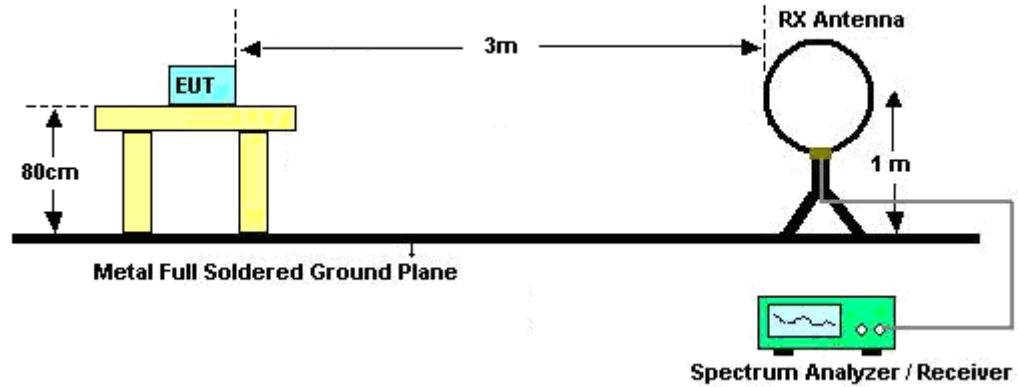
For average measurement:

 - 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.

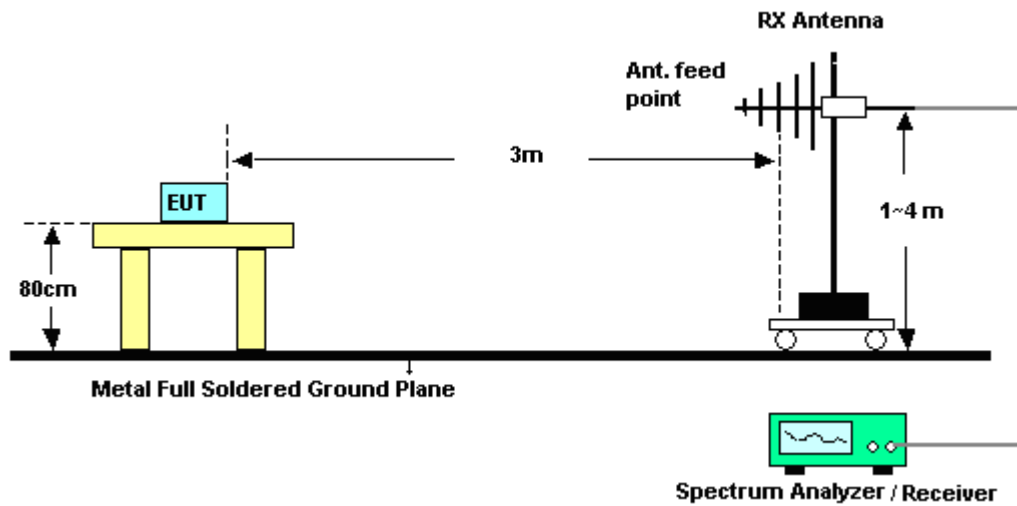
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	97.53	8.38	0.12	300Hz
802.11g	89.30	1.40	0.71	1kHz
2.4GHz 802.11n HT20	87.80	1.30	0.77	1kHz
2.4GHz 802.11n HT40	79.13	0.65	1.53	3kHz

3.5.4 Test Setup

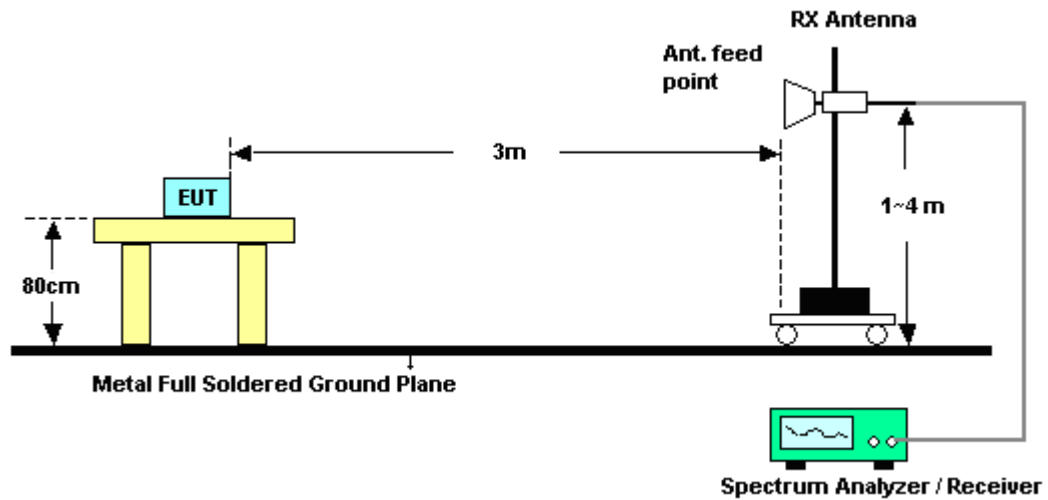
For radiated emissions below 30MHz



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

<Adapter 1>

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

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
2384.43	54.6	-19.4	74	44.85	31.9	5.59	27.74	100	217	Peak
2378.94	42.01	-11.99	54	32.26	31.9	5.59	27.74	100	217	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
2376.06	49.87	-24.13	74	40.12	31.9	5.59	27.74	159	311	Peak
2375.7	37.93	-16.07	54	28.18	31.9	5.59	27.74	159	311	Average

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

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
2486.74	54.82	-19.18	74	44.37	32.41	5.71	27.67	100	218	Peak
2486.05	42.8	-11.2	54	32.35	32.41	5.71	27.67	100	218	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
2493.04	50.5	-23.5	74	39.91	32.5	5.74	27.65	192	70	Peak
2485.93	38.9	-15.1	54	28.45	32.41	5.71	27.67	192	70	Average



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

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
2384.25	58.88	-15.12	74	49.13	31.9	5.59	27.74	100	210	Peak
2389.65	46.69	-7.31	54	36.86	31.98	5.59	27.74	100	210	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
2389.65	55.35	-18.65	74	45.52	31.98	5.59	27.74	162	100	Peak
2389.74	43.05	-10.95	54	33.22	31.98	5.59	27.74	162	100	Average

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

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
2485.63	67.1	-6.9	74	56.65	32.41	5.71	27.67	100	211	Peak
2484.46	48.26	-5.74	54	37.81	32.41	5.71	27.67	100	211	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
2487.16	59.06	-14.94	74	48.61	32.41	5.71	27.67	190	100	Peak
2487.37	42.11	-11.89	54	31.66	32.41	5.71	27.67	190	100	Average



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

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
2389.38	56.94	-17.06	74	47.11	31.98	5.59	27.74	100	208	Peak
2389.83	44.43	-9.57	54	34.55	31.98	5.62	27.72	100	208	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.47	52.71	-21.29	74	42.88	31.98	5.59	27.74	131	69	Peak
2389.83	41.91	-12.09	54	32.03	31.98	5.62	27.72	131	69	Average

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

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
2485.6	55.41	-18.59	74	44.96	32.41	5.71	27.67	104	117	Peak
2488.27	43.86	-10.14	54	33.32	32.5	5.71	27.67	104	117	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
2485.06	51.05	-22.95	74	40.6	32.41	5.71	27.67	188	101	Peak
2483.77	40.55	-13.45	54	30.1	32.41	5.71	27.67	188	101	Average



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	48~52%
Test Channel :	03	Test Engineer :	Kaer

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
2388.66	62.75	-11.25	74	52.92	31.98	5.59	27.74	126	219	Peak
2387.13	50.64	-3.36	54	40.81	31.98	5.59	27.74	126	219	Average
2490.04	52.99	-21.01	74	42.45	32.5	5.71	27.67	126	219	Peak
2489.14	42.67	-11.33	54	32.13	32.5	5.71	27.67	126	219	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
2388.3	57.31	-16.69	74	47.48	31.98	5.59	27.74	129	86	Peak
2388.48	44.56	-9.44	54	34.73	31.98	5.59	27.74	129	86	Average
2488.15	50.85	-23.15	74	40.31	32.5	5.71	27.67	129	86	Peak
2487.79	39.83	-14.17	54	29.29	32.5	5.71	27.67	129	86	Average



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	48~52%
Test Channel :	09	Test Engineer :	Kaer

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
2381.91	52.52	-21.48	74	42.77	31.9	5.59	27.74	100	209	Peak
2387.31	41.89	-12.11	54	32.06	31.98	5.59	27.74	100	209	Average
2484.07	56.54	-17.46	74	46.09	32.41	5.71	27.67	100	209	Peak
2484.22	45.84	-8.16	54	35.39	32.41	5.71	27.67	100	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
2388.66	48.98	-25.02	74	39.15	31.98	5.59	27.74	187	66	Peak
2382.72	38.47	-15.53	54	28.72	31.9	5.59	27.74	187	66	Average
2483.89	51.92	-22.08	74	41.47	32.41	5.71	27.67	187	66	Peak
2485.21	41.71	-12.29	54	31.26	32.41	5.71	27.67	187	66	Average



<Adapter 2>

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	48~52%
Test Channel :	03	Test Engineer :	Kaer

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
2388.3	62.39	-11.61	74	52.56	31.98	5.59	27.74	100	214	Peak
2388.66	48.67	-5.33	54	38.84	31.98	5.59	27.74	100	214	Average
2484.4	52.36	-21.64	74	41.91	32.41	5.71	27.67	100	214	Peak
2484.7	41.57	-12.43	54	31.12	32.41	5.71	27.67	100	214	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
2387.94	58.07	-15.93	74	48.24	31.98	5.59	27.74	131	67	Peak
2387.76	44.31	-9.69	54	34.48	31.98	5.59	27.74	131	67	Average
2499.31	50.06	-23.94	74	39.47	32.5	5.74	27.65	131	67	Peak
2499.97	39.36	-14.64	54	28.77	32.5	5.74	27.65	131	67	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.

<Adapter 1>

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	105.2	-	-	95.23	32.07	5.62	27.72	100	217	Peak
2412	104.47	-	-	94.5	32.07	5.62	27.72	100	217	Average
4824	31.36	-42.64	74	46.7	33.82	8.36	57.52	105	198	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	98.52	-	-	88.55	32.07	5.62	27.72	159	311	Peak
2412	97.17	-	-	87.2	32.07	5.62	27.72	159	311	Average
4824	29.65	-44.35	74	44.99	33.82	8.36	57.52	105	198	Peak



Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	105.64	-	-	95.46	32.24	5.65	27.71	100	217	Peak
2437	104.32	-	-	94.14	32.24	5.65	27.71	100	217	Average
4874	29.83	-44.17	74	44.91	33.93	8.41	57.42	145	265	Peak
7311	33.37	-40.63	74	46.66	33.89	9.99	57.17	174	321	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	99.95	-	-	89.77	32.24	5.65	27.71	128	91	Peak
2437	97.79	-	-	87.61	32.24	5.65	27.71	128	91	Average
4874	29.29	-44.71	74	44.37	33.93	8.41	57.42	145	265	Peak
7311	33.31	-40.69	74	46.6	33.89	9.99	57.17	174	321	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	106.19	-	-	95.87	32.33	5.68	27.69	100	218	Peak
2462	104.16	-	-	93.84	32.33	5.68	27.69	100	218	Average
4924	31.42	-42.58	74	46.24	34.05	8.46	57.33	146	347	Peak
7386	32.53	-41.47	74	45.66	33.94	10.02	57.09	145	274	Peak

Test Mode :	802.11b	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	101.11	-	-	90.79	32.33	5.68	27.69	192	70	Peak
2462	99.12	-	-	88.8	32.33	5.68	27.69	192	70	Average
4924	31.1	-42.9	74	45.92	34.05	8.46	57.33	146	347	Peak
7386	33.4	-40.6	74	46.53	33.94	10.02	57.09	145	274	Peak



Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	107.13	-	-	97.16	32.07	5.62	27.72	100	210	Peak
2412	97.75	-	-	87.78	32.07	5.62	27.72	100	210	Average
4824	30.75	-43.25	74	46.09	33.82	8.36	57.52	105	198	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	102.34	-	-	92.37	32.07	5.62	27.72	162	100	Peak
2412	94.09	-	-	84.12	32.07	5.62	27.72	162	100	Average
4824	30.16	-43.84	74	45.5	33.82	8.36	57.52	105	198	Peak



Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	107.75	-	-	97.57	32.24	5.65	27.71	100	210	Peak
2437	99.23	-	-	89.05	32.24	5.65	27.71	100	210	Average
4874	31.7	-42.3	74	46.78	33.93	8.41	57.42	145	265	Peak
7311	35.18	-38.82	74	48.47	33.89	9.99	57.17	174	321	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	103.28	-	-	93.1	32.24	5.65	27.71	127	97	Peak
2437	94.51	-	-	84.33	32.24	5.65	27.71	127	97	Average
4874	30.09	-43.91	74	45.17	33.93	8.41	57.42	145	265	Peak
7311	33.5	-40.5	74	46.79	33.89	9.99	57.17	174	321	Peak



Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	107.54	-	-	97.22	32.33	5.68	27.69	100	211	Peak
2462	99.14	-	-	88.82	32.33	5.68	27.69	100	211	Average
4924	31.09	-42.91	74	45.91	34.05	8.46	57.33	146	347	Peak
7386	33.49	-40.51	74	46.62	33.94	10.02	57.09	145	274	Peak

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	103.92	-	-	93.6	32.33	5.68	27.69	190	100	Peak
2462	94.85	-	-	84.53	32.33	5.68	27.69	190	100	Average
4924	30.41	-43.59	74	45.23	34.05	8.46	57.33	146	347	Peak
7386	34.14	-39.86	74	47.27	33.94	10.02	57.09	145	274	Peak



Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	103.07	-	-	93.1	32.07	5.62	27.72	100	208	Peak
2412	93.4	-	-	83.43	32.07	5.62	27.72	100	208	Average
4824	30.76	-43.24	74	46.1	33.82	8.36	57.52	105	198	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	98.17	-	-	88.2	32.07	5.62	27.72	131	69	Peak
2412	89.59	-	-	79.62	32.07	5.62	27.72	131	69	Average
4824	30.01	-43.99	74	45.35	33.82	8.36	57.52	105	198	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	104.84	-	-	94.66	32.24	5.65	27.71	102	115	Peak
2437	96	-	-	85.82	32.24	5.65	27.71	102	115	Average
4874	30.24	-43.76	74	45.32	33.93	8.41	57.42	145	265	Peak
7311	34.78	-39.22	74	48.07	33.89	9.99	57.17	174	321	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	99.61	-	-	89.43	32.24	5.65	27.71	190	75	Peak
2437	90.36	-	-	80.18	32.24	5.65	27.71	190	75	Average
4874	30.41	-43.59	74	45.49	33.93	8.41	57.42	145	265	Peak
7311	33.47	-40.53	74	46.76	33.89	9.99	57.17	174	321	Peak



Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	105.58	-	-	95.26	32.33	5.68	27.69	104	117	Peak
2462	96.32	-	-	86	32.33	5.68	27.69	104	117	Average
4924	31.85	-42.15	74	46.67	34.05	8.46	57.33	146	347	Peak
7386	34.63	-39.37	74	47.76	33.94	10.02	57.09	145	274	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	48~52%
Test Engineer :	Kaer	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2462	99.88	-	-	89.56	32.33	5.68	27.69	188	101	Peak
2462	90.64	-	-	80.32	32.33	5.68	27.69	188	101	Average
4924	30.92	-43.08	74	45.74	34.05	8.46	57.33	146	347	Peak
7386	33.34	-40.66	74	46.47	33.94	10.02	57.09	145	274	Peak



Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	03	Relative Humidity :	48~52%
Test Engineer :	Kaer	Polarization :	Horizontal
Remark :	1. 2422 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
140.58	21.8	-21.7	43.5	39.43	10.88	1.43	29.94	-	-	Peak
164.83	21.64	-21.86	43.5	41.32	8.7	1.56	29.94	-	-	Peak
234.67	21.53	-24.47	46	38.8	10.85	1.81	29.93	-	-	Peak
379.2	20.61	-25.39	46	32.9	15.4	2.24	29.93	-	-	Peak
666.32	24.29	-21.71	46	32.82	18.5	2.9	29.93	-	-	Peak
854.5	24.77	-21.23	46	30.68	20.75	3.27	29.93	100	20	Peak
2422	102.11	-	-	92.01	32.16	5.65	27.71	126	219	Peak
2422	93.58	-	-	83.48	32.16	5.65	27.71	126	219	Average
4844	31.24	-42.76	74	46.49	33.86	8.38	57.49	126	248	Peak
7266	33.97	-40.03	74	47.33	33.87	9.98	57.21	185	252	Peak



Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	03	Relative Humidity :	48~52%
Test Engineer :	Kaer	Polarization :	Vertical
Remark :	1. 2422 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
31.94	26.23	-13.77	40	37.48	17.9	0.78	29.93	120	50	Peak
103.72	28.19	-15.31	43.5	45.33	11.52	1.28	29.94	-	-	Peak
163.86	18.07	-25.43	43.5	37.71	8.74	1.56	29.94	-	-	Peak
332.64	20.52	-25.48	46	34.14	14.2	2.11	29.93	-	-	Peak
666.32	23.88	-22.12	46	32.41	18.5	2.9	29.93	-	-	Peak
939.86	25.16	-20.84	46	30.55	21.1	3.45	29.94	-	-	Peak
2422	95.27	-	-	85.17	32.16	5.65	27.71	129	86	Peak
2422	86.89	-	-	76.79	32.16	5.65	27.71	129	86	Average
4844	30.86	-43.14	74	46.11	33.86	8.38	57.49	126	248	Peak
7266	34.65	-39.35	74	48.01	33.87	9.98	57.21	185	252	Peak



Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	101.7	-	-	91.52	32.24	5.65	27.71	100	216	Peak
2437	93.18	-	-	83	32.24	5.65	27.71	100	216	Average
4874	31.04	-42.96	74	46.12	33.93	8.41	57.42	132	224	Peak
7311	34.37	-39.63	74	47.66	33.89	9.99	57.17	119	347	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	48~52%
Test Engineer :	Kaer	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	97.53	-	-	87.35	32.24	5.65	27.71	194	72	Peak
2437	89.28	-	-	79.1	32.24	5.65	27.71	194	72	Average
4874	31.6	-42.4	74	46.68	33.93	8.41	57.42	132	224	Peak
7311	34.08	-39.92	74	47.37	33.89	9.99	57.17	119	347	Peak



Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	09	Relative Humidity :	48~52%
Test Engineer :	Kaer	Polarization :	Horizontal
Remark :	1. 2452 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
2452	102.04	-	-	91.81	32.24	5.68	27.69	100	209	Peak
2452	93.36	-	-	83.13	32.24	5.68	27.69	100	209	Average
4904	31.47	-42.53	74	46.38	34.01	8.44	57.36	125	214	Peak
7356	34.92	-39.08	74	48.11	33.92	10.01	57.12	127	315	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	09	Relative Humidity :	48~52%
Test Engineer :	Kaer	Polarization :	Vertical
Remark :	1. 2452 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
2452	97.43	-	-	87.2	32.24	5.68	27.69	187	66	Peak
2452	88.57	-	-	78.34	32.24	5.68	27.69	187	66	Average
4904	30.97	-43.03	74	45.88	34.01	8.44	57.36	125	214	Peak
7356	34.96	-39.04	74	48.15	33.92	10.01	57.12	127	315	Peak



<Adapter 2>

Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	03	Relative Humidity :	48~52%
Test Engineer :	Kaer	Polarization :	Horizontal
Remark :	1. 2422 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
2422	100.44	-	-	90.34	32.16	5.65	27.71	100	214	Peak
2422	93.46	-	-	83.36	32.16	5.65	27.71	100	214	Average
4844	31.24	-42.76	74	46.49	33.86	8.38	57.49	100	230	Peak
7266	33.97	-40.03	74	47.33	33.87	9.98	57.21	114	215	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	03	Relative Humidity :	48~52%
Test Engineer :	Kaer	Polarization :	Vertical
Remark :	1. 2452 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
2422	95.89	-	-	85.79	32.16	5.65	27.71	131	67	Peak
2422	86.89	-	-	76.79	32.16	5.65	27.71	131	67	Average
4844	31.86	-42.14	74	47.11	33.86	8.38	57.49	100	254	Peak
7266	35.65	-38.35	74	49.01	33.87	9.98	57.21	100	230	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.

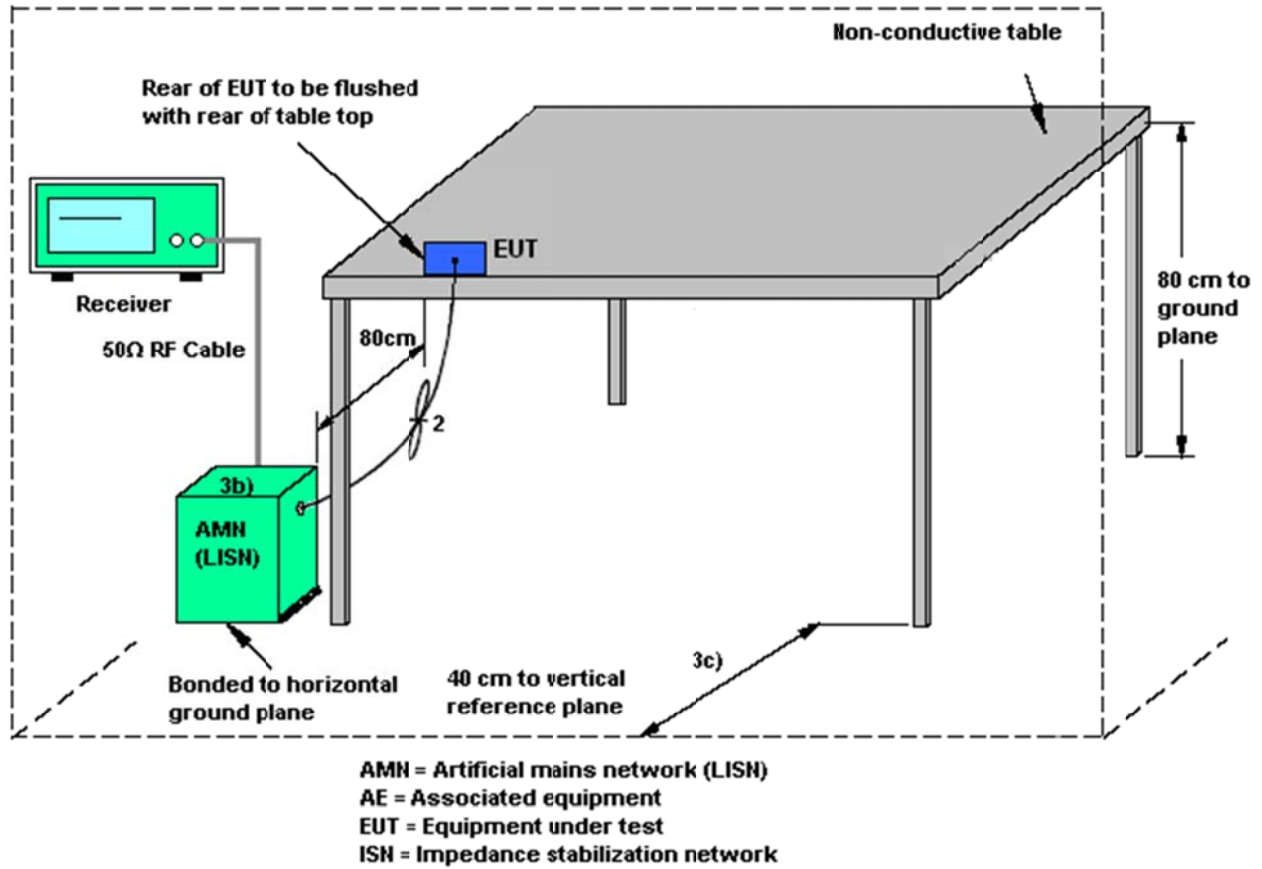
3.6.2 Measuring Instruments

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.

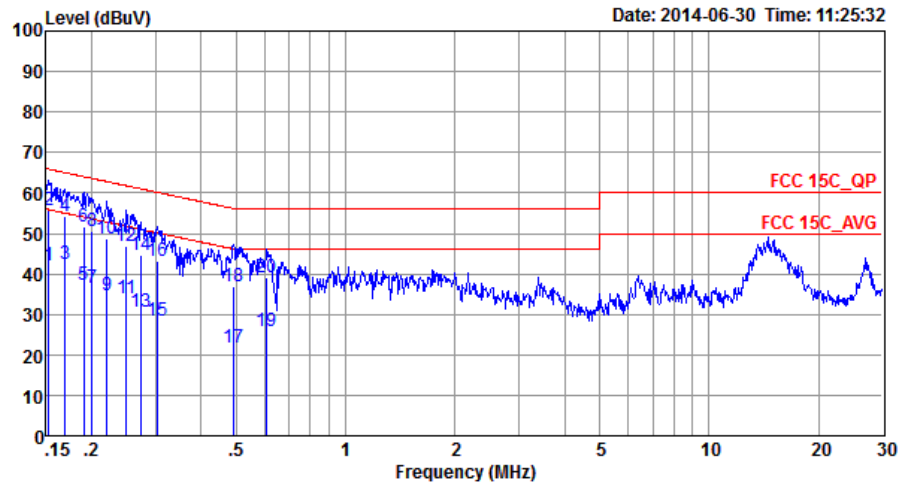
3.6.4 Test Setup





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 :	Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter 4) + Earphone + HDMI		

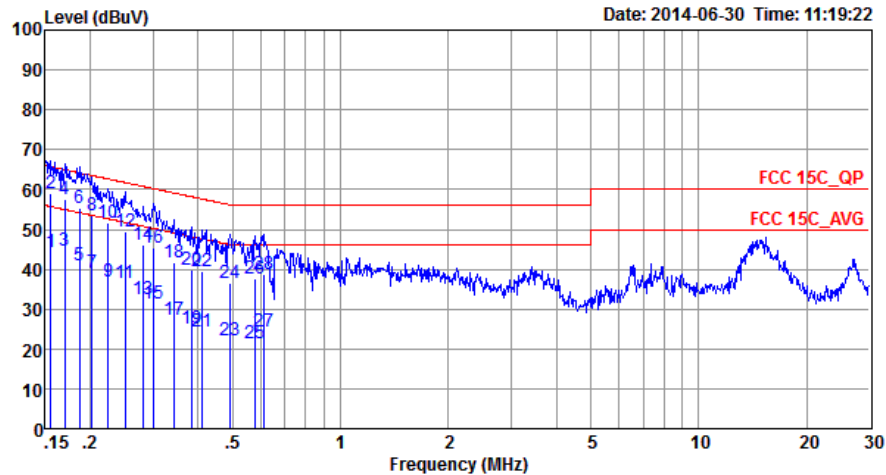


Site : C001-SZ
Condition: FCC 15C_QP LISN_L_20140304 LINE
Mode : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	42.18	-13.69	55.87	31.60	0.22	10.36	Average
2 *	0.15	55.58	-10.29	65.87	45.00	0.22	10.36	QP
3	0.17	42.25	-12.74	54.99	31.70	0.22	10.33	Average
4	0.17	54.35	-10.64	64.99	43.80	0.22	10.33	QP
5	0.19	37.43	-16.59	54.02	26.90	0.22	10.31	Average
6	0.19	51.83	-12.19	64.02	41.30	0.22	10.31	QP
7	0.20	36.51	-17.07	53.58	26.00	0.22	10.29	Average
8	0.20	50.61	-12.97	63.58	40.10	0.22	10.29	QP
9	0.22	34.60	-18.19	52.79	24.10	0.23	10.27	Average
10	0.22	48.60	-14.19	62.79	38.10	0.23	10.27	QP
11	0.25	33.98	-17.80	51.78	23.50	0.24	10.24	Average
12	0.25	46.78	-15.00	61.78	36.30	0.24	10.24	QP
13	0.27	30.77	-20.26	51.03	20.30	0.25	10.22	Average
14	0.27	44.57	-16.46	61.03	34.10	0.25	10.22	QP
15	0.30	28.56	-21.59	50.15	18.10	0.26	10.20	Average
16	0.30	43.26	-16.89	60.15	32.80	0.26	10.20	QP
17	0.49	21.76	-24.38	46.14	11.30	0.30	10.16	Average
18	0.49	36.76	-19.38	56.14	26.30	0.30	10.16	QP
19	0.61	25.68	-20.32	46.00	15.30	0.23	10.15	Average
20	0.61	39.08	-16.92	56.00	28.70	0.23	10.15	QP



Test Mode :	Mode 2	Temperature :	21~22℃
Test Engineer :	Jack Tian	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter 4) + Earphone + HDMI		



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

Mode : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	44.38	-11.31	55.69	33.70	0.33	10.35	Average
2 *	0.16	58.88	-6.81	65.69	48.20	0.33	10.35	QP
3	0.17	44.76	-10.18	54.94	34.10	0.33	10.33	Average
4	0.17	57.56	-7.38	64.94	46.90	0.33	10.33	QP
5	0.19	40.83	-13.37	54.20	30.20	0.32	10.31	Average
6	0.19	55.43	-8.77	64.20	44.80	0.32	10.31	QP
7	0.20	39.21	-14.28	53.49	28.60	0.32	10.29	Average
8	0.20	53.61	-9.88	63.49	43.00	0.32	10.29	QP
9	0.22	36.80	-15.86	52.66	26.20	0.33	10.27	Average
10	0.22	51.60	-11.06	62.66	41.00	0.33	10.27	QP
11	0.25	36.58	-15.15	51.73	26.00	0.34	10.24	Average
12	0.25	49.38	-12.35	61.73	38.80	0.34	10.24	QP
13	0.28	32.57	-18.19	50.76	22.01	0.35	10.21	Average
14	0.28	46.17	-14.59	60.76	35.61	0.35	10.21	QP
15	0.30	31.26	-18.93	50.19	20.70	0.36	10.20	Average
16	0.30	45.46	-14.73	60.19	34.90	0.36	10.20	QP
17	0.34	27.46	-21.63	49.09	16.90	0.37	10.19	Average
18	0.34	41.86	-17.23	59.09	31.30	0.37	10.19	QP
19	0.38	24.96	-23.25	48.21	14.40	0.38	10.18	Average
20	0.38	39.76	-18.45	58.21	29.20	0.38	10.18	QP
21	0.41	24.36	-23.23	47.59	13.80	0.39	10.17	Average
22	0.41	39.36	-18.23	57.59	28.80	0.39	10.17	QP
23	0.49	21.97	-24.17	46.14	11.40	0.41	10.16	Average
24	0.49	36.47	-19.67	56.14	25.90	0.41	10.16	QP
25	0.58	21.49	-24.51	46.00	11.00	0.34	10.15	Average
26	0.58	37.59	-18.41	56.00	27.10	0.34	10.15	QP
27	0.61	24.36	-21.64	46.00	13.90	0.31	10.15	Average
28	0.61	38.86	-17.14	56.00	28.40	0.31	10.15	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	FSV40	101078	10Hz~40GHz	May 08, 2014	Jul. 18, 2014	May 07, 2015	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	13dBm~-20dBm	Mar. 03, 2014	Jul. 18, 2014	Mar. 02, 2015	Conducted (TH01-SZ)
Power Sensor	Anritsu	MA2411B	1207253	0.3GHz~40GHz	Mar. 03, 2014	Jul. 18, 2014	Mar. 02, 2015	Conducted (TH01-SZ)
Thermal Chamber	Hongzhan	LP-150U	HD20120425	-40℃~150℃	Feb. 21, 2014	Jul. 18, 2014	Feb. 20, 2015	Conducted (TH01-SZ)
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	Jul. 04, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	May 26, 2014	Jul. 04, 2014	May 25, 2015	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 09, 2014	Jul. 04, 2014	May 08, 2015	Radiation (03CH01-SZ)
Bilog Antenna	TESEQ	CBL 6112D	23188	30MHz~2GHz	Oct. 26, 2013	Jul. 04, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 26, 2013	Jul. 04, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridged Horn Antenna	COM-POWER	AH-840	101073	18GHz~40GHz	Jan. 27, 2014	Jul. 04, 2014	Jan. 26, 2015	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz	Feb. 21, 2014	Jul. 04, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	May 08, 2014	Jul. 04, 2014	May 07, 2015	Radiation (03CH01-SZ)
AC Source(AVR)	Chroma	61601	616010001985	100Vac~250Vac	Mar. 25, 2014	Jul. 04, 2014	Mar. 24, 2015	Radiation (03CH01-SZ)
Turn Table	EM Electronics	EM 1000	N/A	0~360 degree	NCR	Jul. 04, 2014	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM Electronics	EM 1000	N/A	1 m~4 m	NCR	Jul. 04, 2014	NCR	Radiation (03CH01-SZ)
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	Jun. 30, 2014	Feb. 20, 2015	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Mar. 04, 2014	Jun. 30, 2014	Mar. 03, 2015	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Mar. 04, 2014	Jun. 30, 2014	Mar. 03, 2015	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Dec. 17, 2013	Jun. 30, 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% ($U = 2Uc(y)$)	2.3
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.9
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