FCC/IC RF TEST REPORT

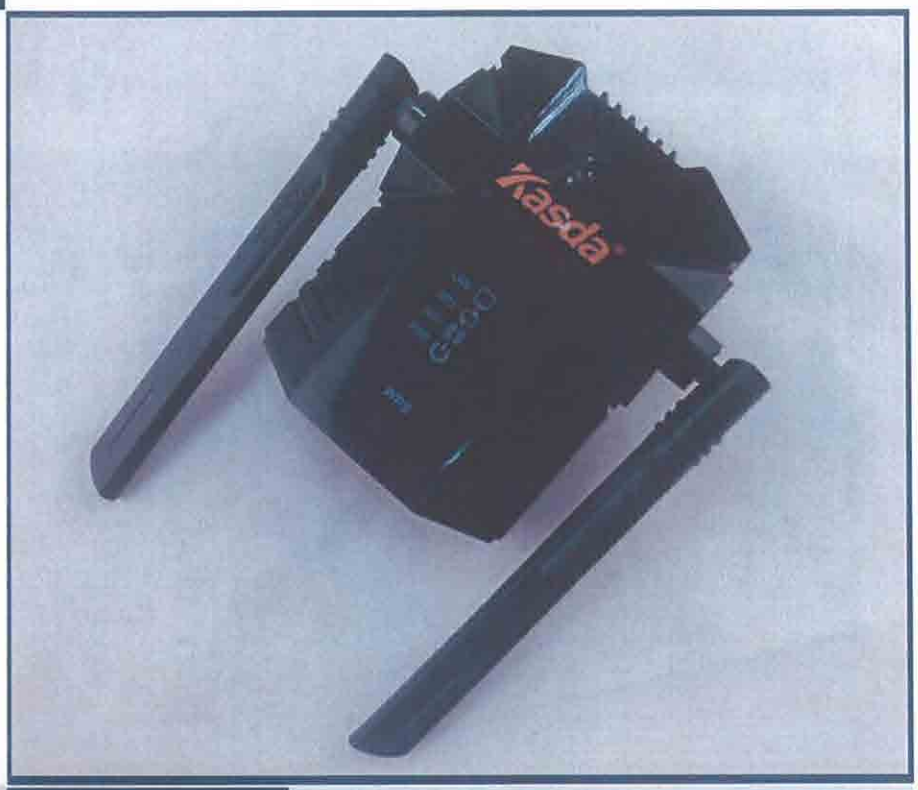
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

802.11b/g/n wireless repeater

ISSUED TO
Kasda Networks inc

B-31,Tanglang Industry Park, Xili, Nanshan District, Shenzhen, China



Report No.:	BL-SZ1530023-601
EUT Type:	802.11b/g/n wireless repeater
Model Name:	KW5583
Brand Name:	KASDA
Test Standard:	47 CFR Part 15 Subpart C
	IC RSS-Gen (Issue 4, November 2014)
	IC RSS-210 (Issue 8, December 2010)
FCC ID:	OWI-KW5583
IC Number:	12688A-KW5583
Test conclusion:	Pass
Test Date:	Mar. 10, 2015 ~ Mar. 30, 2015
Date of Issue:	Mar. 31, 2015

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Revision History

Version	Issue Date	Revisions
Rev. 01	Mar. 31, 2015	Initial Issue

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1 ADMINISTRATIVE DATA (GENERAL INFORMATION)

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province,P. R. China
Phone Number	+86 755 6683 3402
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province,P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory has been listed by US Federal Communications Commission to perform electromagnetic emission measurements. The recognition numbers of test site are 832625. The laboratory has met the requirements of the IAS Accreditation Criteria for Testing Laboratories (AC89), has demonstrated compliance with ISO/IEC Standard 17025:2005. The accreditation certificate number is TL-588. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Announce

(1) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

(2) The test report is invalid if there is any evidence and/or falsification.

(3) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.

(4) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.

(5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant

Applicant	Kasda Networks inc
Address	B-31,Tanglang Industry Park,Xili,Nanshan District, Shenzhen, China

2.2 Manufacturer

Applicant	Kasda Networks inc
Address	B-31,Tanglang Industry Park,Xili,Nanshan District, Shenzhen, China

2.3 General Description for Equipment under Test (EUT)

EUT Type	802.11b/g/n wireless repeater
Brand Name	KASDA
Model Name	KW5583
Hardware Version	V1.1
Software Version	N/A
Network and Wireless connectivity	WIFI 802.11b, 802.11g and 802.11n (HT20/40)
About the Product	The EUT is the wireless repeater with two Antennas, We define as Antenna 0 and Antenna 1, and two antennas can be fired at the same time, we test the two Antennas separately.

2.4 Technical Information

TX/ RX Operating Range		802.11b/g/n(20 MHz): 2.412 GHz - 2.462 GHz f_c = 2412 MHz + (N-1)*5 MHz, where - f_c = “Operating Frequency” in MHz, - N = “Channel Number” with the range from 1 to 11. 802.11n(40 MHz): 2.422 GHz - 2.452 GHz f_c = 2412 MHz + (N-1)*5 MHz, where - f_c = “Operating Frequency” in MHz, - N = “Channel Number” with the range from 3 to 9.
Modulation Type		DSSS, OFDM
Antenna Type	Antenna 0 (ANT 0)	Diploe Antenna
	Antenna 1 (ANT 1)	
Antenna Gain	Antenna 0 (ANT 0)	3 dBi (All involve the antenna gain test item, has been included in the final results)
	Antenna 1 (ANT 1)	

Modulation technology	Modulation Type	Transfer Rate (Mbps)	The Frequency Equal to the Transmission Rate of Modulation Signal
DSSS (802.11b)	DBPSK	1	1 MHz
	DQPSK	2	
	CCK	5.5/ 11	1.375 MHz
OFDM (802.11g)	BPSK	6 / 9	1 MHz
	QPSK	12 / 18	
	16QAM	24 / 36	
	64QAM	48 / 54	
OFDM (802.11n-20MHz)	BPSK	6.5	1 MHz
	QPSK	13/19.5	
	16QAM	26/39	
	64QAM	52/58.5/65	
OFDM (802.11n-40MHz)	BPSK	13.5	1 MHz
	QPSK	27/40.5	
	16QAM	54/81/108	
	64QAM	121.5/135	

Note: Preliminary tests were performed in different data rate in above table to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel	
Output Power	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
6dB Bandwidth	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Conducted Spurious Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Conducted Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Radiated Spurious Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Band Edge	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Power spectral density (PSD)	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Receiver Spurious Emissions	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9

Note: The above EUT information in section 2.3 and 2.4 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

2.5 Ancillary Equipment

N/A

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C (10-1-14 Edition)	Miscellaneous Wireless Communications Services
2	KDB Publication 558074 D01v03r02	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247
3	ANSI C63.4-2014	American National Standard for Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
4	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices
5	IC RSS-Gen (Issue 4, Nov. 2014)	General Requirements for Compliance of Radio Apparatus
6	IC RSS-210 (Issue 8, Dec. 2010)	Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

3.2 Test Parameter Settings

802.11b Mode	
wl down wl country ALL wl frameburst 1 wl interference 0 wl bi 65535 wl band b wl mimo_bw_cap 1 wl mimo_txbw 2 wl txant 0 wl rateset 11b wl nrate -r 1 -s 0	wl channel 1 wl pwr_percent 45 wl up wl join tw imode adhoc wl ssid "" wl pkteng_start 00:11:22:33:44:55:66 tx 100 1000 0 Note: wl channel 1: Change channel; wl txant 0: setting ant 0 or ant 1 Change the transmitting antenna

802.11g Mode	
wl down wl country ALL wl frameburst 1 wl interference 0 wl bi 65535 wl band b wl mimo_bw_cap 1 wl mimo_txbw 2 wl txant 0 wl rateset 11b wl nrate -r 6 -s 0	wl channel 1 wl pwr_percent 45 wl up wl join tw imode adhoc wl ssid "" wl pkteng_start 00:11:22:33:44:55:66 tx 100 1000 0 Note: wl channel 1: Change channel; wl txant 0: setting ant 0 or ant 1 Change the transmitting antenna

802.11n-20MHz Mode	
wl down	wl pwr_percent 45
wl country ALL	wl up
wl band b	wl join tw imode adhoc
wl frameburst 1	wl ssid ""
wl bi 65535	wl pkteng_start 00:11:22:33:44:55:66 tx 100 1000 0
wl mimo_bw_cap 1	
wl mimo_txbw 2	
wl txant 0	Note: wl channel 1: Change channel;
wl channel 1	wl txant 0: setting ant 0 or ant 1 Change the transmitting antenna
wl nrate -m 0 -s 0	

802.11n-40MHz Mode	
wl mpc 0	wl hw_txchain
wl legacylink 1	wl hw_rxchain
wl ap	wl hw_txchain
wl ssid ""	wl hw_rxchain
wl down	wl hw_txchain
wl isup	wl hw_rxchain
wl country ALL	wl antdiv 0
wl wsec 0	wl isup
wl stbc_tx 0	wl isup
wl stbc_rx 1	wl up
wl scansuppress 1	wl isup
wl ap	wl txant 0
wl ssid ""	wl ap
wl down	wl ssid ""
wl isup	wl down
wl band auto	wl isup
wl channels	wl hw_txchain
wl isup	wl hw_rxchain
wl up	wl hw_txchain
wl isup	wl hw_rxchain
wl ap	wl phy_watchdog
wl ssid ""	wl phy_watchdog 0
wl down	wl ap
wl isup	wl ssid ""
wl hw_txchain	wl down
wl hw_rxchain	wl isup
wl spect 0	wl ap
wl ibss_gmode -1	wl ssid ""
wl phytype	wl down
phy type:4	wl isup
wl bw_cap 5g 3	wl band b
wl bw_cap 2g 3	wl chanspec 4l

wl ap wl ap wl ssid "" wl down wl isup wl mbss 0 wl frameburst 0 wl ap wl ssid "" wl down wl isup wl ampdu 0 wl gmode wl gmode auto wl isup wl up wl isup wl PM 0 wl stbc_tx 0 wl ap wl ssid "" wl down wl isup wl bi 65535 wl mimo_txbw 4 wl ap wl ssid "" wl down wl isup rate is auto wl rate -1 wl ampdu 1 wl frameburst 1 wl hw_txchain wl txchain 3 wl rxchain 3	wl isup wl up wl isup wl phy_watchdog wl phy_forcecal 1 wl phy_activecal wait for check cal active: 100 wl phy_activecal wl phy_watchdog wl ap wl ssid "" wl isup wl ssid test2 wl ap wl ssid "" wl nmode This is a NPhy device. wl txstreams wl nrate -m 0 -s 0 wl phy_txpwrctrl 1 wl txpwr1 -q -o 45 wl nvget macaddr wl pkteng_stop rx wl pkteng_stop tx wl mpc 0 wl isup wl interference wl interference_override 0 wl pkteng_maxlen wl ap wl ssid "" wl pkteng_start 00:11:22:33:44:55 tx 100 1500 0 00:90:4c:01:37:0f Note: wl channel 1: Change channel; wl txant 0: setting ant 0 or ant 1 Change the transmitting antenna

3.3 Verdict

No.	Description	Section in CFR 47	Section in RSS-GEN, RSS-210	Test Result	Verdict
1	Antenna Requirement	15.203 15.247(b)	RSS-210, A8.4	Note1	Pass
2	Output Power	15.247(b)	RSS-210, A8.4 (2)	ANNEX A.1	Pass
3	6dB Bandwidth	15.247(a)	RSS-210, A8.2 (1)	ANNEX A.2	Pass
4	Conducted Spurious Emission	15.247(d)	RSS-210, A8.5	ANNEX A.3	Pass
5	Conducted Emission	15.207	RSS-GEN, 8.8	ANNEX A.4	Pass
6	Radiated Spurious Emission	15.209 15.247(d)	RSS-GEN, 8.9 RSS-210, A8.5	ANNEX A.5	Pass
7	Band Edge	15.209 15.247(d)	RSS-GEN, 8.9 RSS-210, A8.5	ANNEX A.6	Pass
8	Power spectral density (PSD)	15.247(e)	RSS-210, A8.2 (2)	ANNEX A.7	Pass
9	Receiver Spurious Emissions	--	RSS-210, 2.3 RSS-Gen, 7.1.2	ANNEX A.8	Pass
Note 1: Please refer to section 5.1					

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity (%)	45 - 55	
Atmospheric Pressure (kPa)	100 - 102	
Temperature	NT (Normal Temperature)	+22℃ to +25℃
Working Voltage of the EUT	NV (Normal Voltage)	AC 110V/60Hz

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV30	103118	2014.07.10	2015.07.09
Vector Signal Generator	ROHDE&SCHWARZ	SMBV100A	177746	2014.07.09	2015.07.08
Signal Generator	ROHDE&SCHWARZ	SMB100A	260592	2014.07.21	2015.07.20
Switch Unit with OSP-B157	ROHDE&SCHWARZ	OSP120	101270	2014.07.23	2015.07.22
Spectrum Analyzer	AGILENT	E4440A	MY45304434	2014.07.07	2015.07.06
Spectrum Analyzer	ROHDE&SCHWARZ	FSL3	103640/003	2014.07.07	2015.07.06
Bluetooth Tester	ROHDE&SCHWARZ	CBT	101005	2014.07.07	2015.07.06
Power Splitter	KMW	DCPD-LDC	1305003215	2014.07.07	2015.07.06
Power Sensor	ROHDE&SCHWARZ	NRP-Z21	103971	2014.07.07	2015.07.06
Attenuator (20dB)	KMW	ZA-S1-201	110617091	--	--
Attenuator (6dB)	KMW	ZA-S1-61	1305003189	--	--
DC Power Supply	ROHDE&SCHWARZ	HMP2020	018141664	2014.07.07	2015.07.06
Temperature Chamber	ANGELANTIONI SCIENCE	NTH64-40A	1310	2014.07.07	2015.07.06
Test Antenna-Loop(9kHz-30MHz)	SCHWARZBECK	FMZB 1519	1519-037	2013.07.03	2015.07.02
Test Antenna-Bi-Log(30MHz-3GHz)	SCHWARZBECK	VULB 9163	9163-624	2013.07.02	2015.07.01
Test Antenna-Horn(1-18GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2013.07.02	2015.07.01
Test Antenna-Horn(15-26.5GHz)	SCHWARZBECK	BBHA 9170	9170-305	2013.07.02	2015.07.01
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2014.10.07	2015.10.06

4.3 Test Configurations and Test Combination

4.3.1 Test Configurations

Test Configurations (TC) NO.	Description	
	Signal Description	Operating Frequency
Transmitter		
TC01	DSSS modulation, 802.11b	Ch No. 1/ 2412 MHz
TC02	DSSS modulation, 802.11b	Ch No. 6/ 2437 MHz
TC03	DSSS modulation, 802.11b	Ch No. 11/ 2462 MHz
TC04	OFDM modulation, 802.11g	Ch No. 1/ 2412 MHz
TC05	OFDM modulation, 802.11g	Ch No. 6/ 2437 MHz
TC06	OFDM modulation, 802.11g	Ch No. 11/ 2462 MHz
TC07	OFDM modulation, 802.11n (20 MHz)	Ch No. 1/ 2412 MHz
TC08	OFDM modulation, 802.11n (20 MHz)	Ch No. 6/ 2437 MHz
TC09	OFDM modulation, 802.11n (20 MHz)	Ch No. 11/ 2462 MHz
TC10	OFDM modulation, 802.11n (40 MHz)	Ch No. 3/ 2422 MHz
TC11	OFDM modulation, 802.11n (40 MHz)	Ch No. 6/ 2437 MHz
TC12	OFDM modulation, 802.11n (40 MHz)	Ch No. 9/ 2452 MHz
Receiver		
TC13	DSSS modulation, 802.11b	Ch No. 6/ 2437 MHz
TC14	OFDM modulation, 802.11g	Ch No. 6/ 2437 MHz
TC15	OFDM modulation, 802.11n (20 MHz)	Ch No. 6/ 2437 MHz
TC16	OFDM modulation, 802.11n (40 MHz)	Ch No. 6/ 2437 MHz

4.3.2 Test Combination

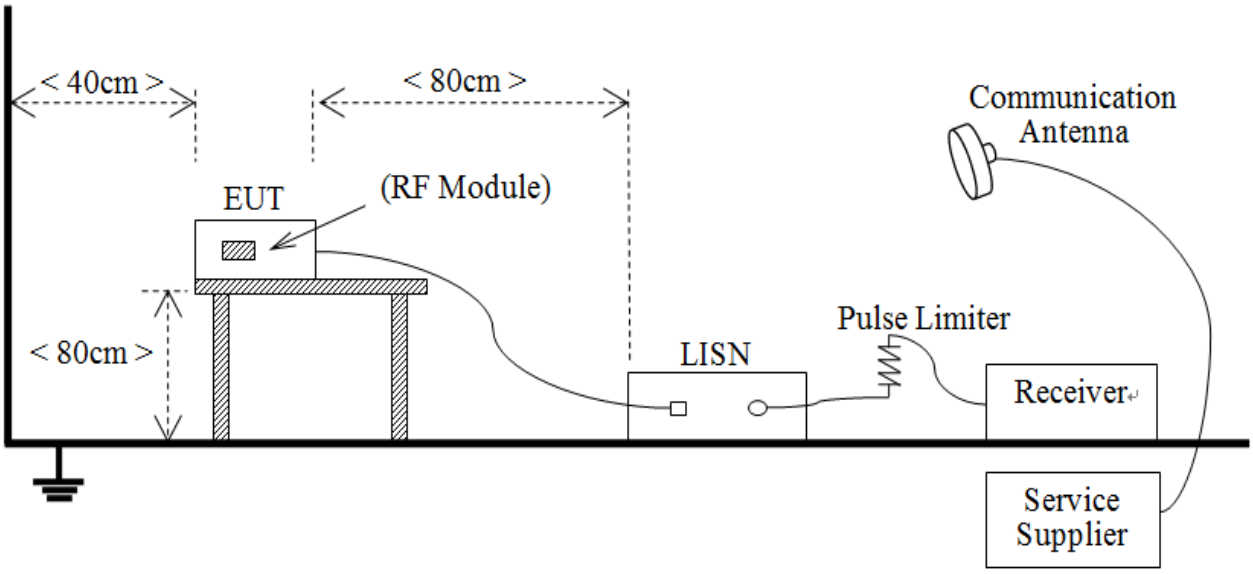
	Antenna 0	Antenna 1	Antenna 0 & Antenna 1
CASE 1	√	√	
CASE 2	√	√	
CASE 3			√

4.4 Description of Test Setup

4.4.1 For Antenna Port Test

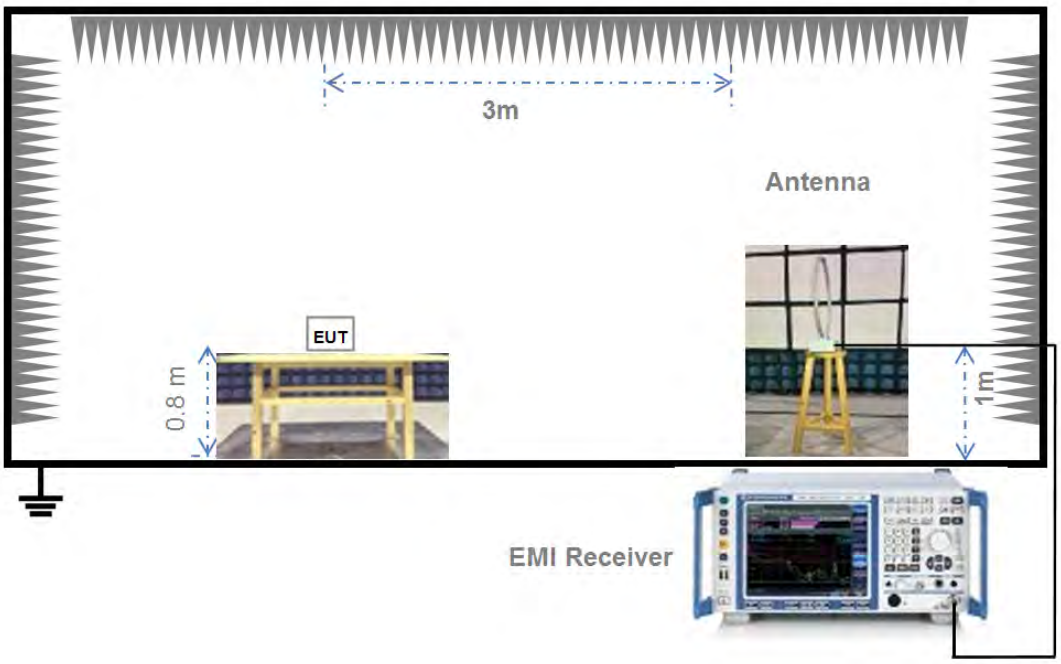
(Diagram 1)

4.4.2 For AC Power Supply Port Test



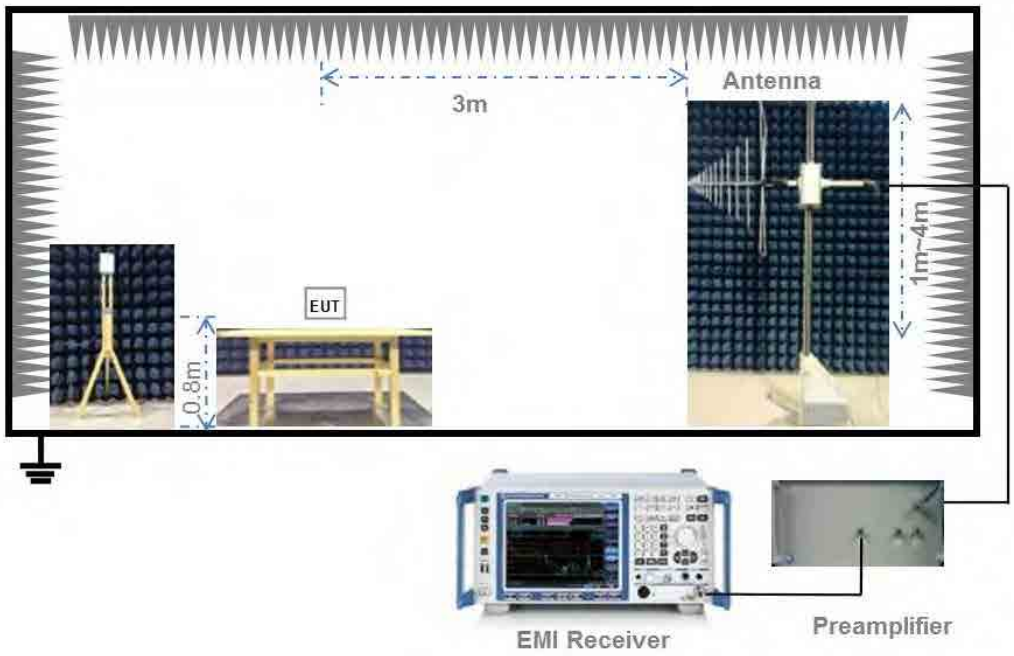
(Diagram 2)

4.4.3 For Radiated Test (Below 30MHz)



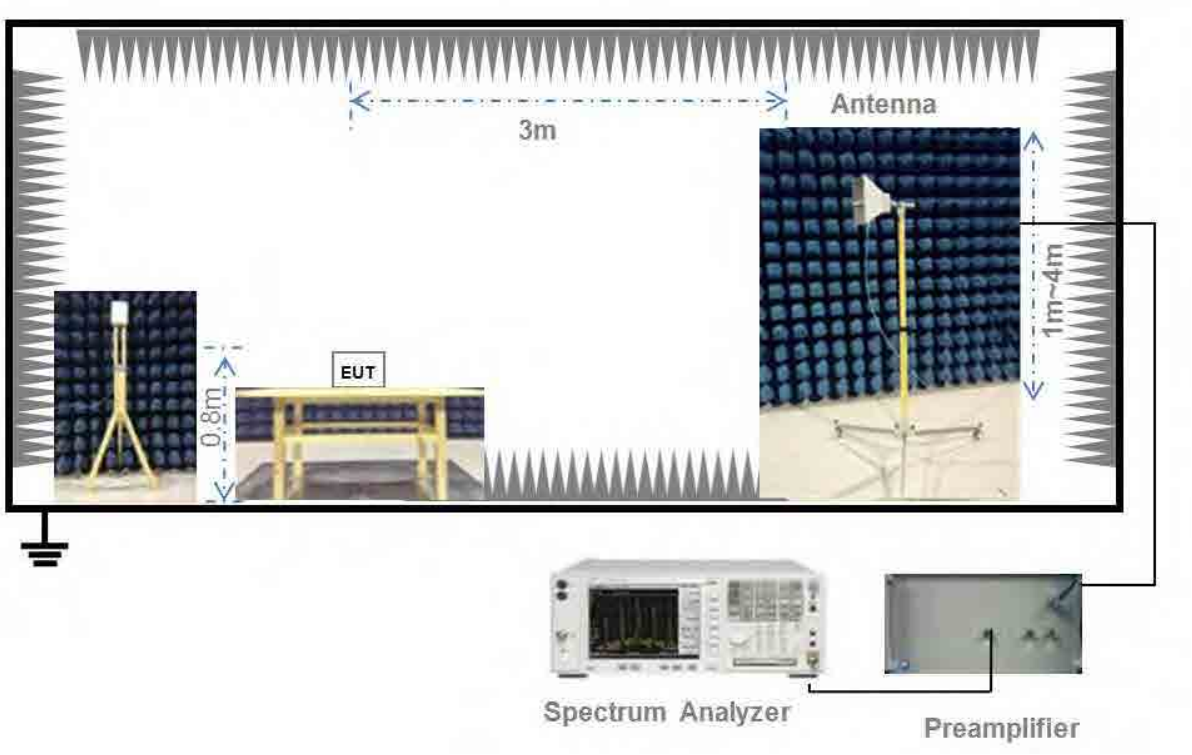
(Diagram 3)

4.4.4 For Radiated Test (30MHz-1GHz)



(Diagram 4)

4.4.5 For Radiated Test (Above 1GHz)



(Diagram 5)

4.5 Test Conditions

Test Case	Test Conditions		
	Test Env.	Test Setup Note 1	Test Configuration Note 2
Peak Output Power	NTNV	Test Setup 1	TC01~TC12
Occupied Bandwidth	NTNV	Test Setup 1	TC01~TC12
Conducted Spurious Emission	NTNV	Test Setup 1	TC01~TC12
Conducted Emission	NTNV	Test Setup 2	TC01~TC12
Radiated Spurious Emission	NTNV	Test Setup 3 Test Setup 4 Test Setup 5	TC01~TC12
Band Edge	NTNV	Test Setup 1	TC01, TC03, TC04, TC06, TC07, TC09, TC10, TC12
Power spectral density (PSD)	NTNV	Test Setup 2	TC01~TC12
Receiver Spurious Emissions	NTNV	Test Setup 3 Test Setup 4 Test Setup 5	TC13~TC16
Note: 1. Please refer to section 4.4 for test setup details. 2. Please refer to section 4.3 for test setup details.			

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Standard Applicable

FCC §15.203 & 15.247(b) and RSS-210, A8.4

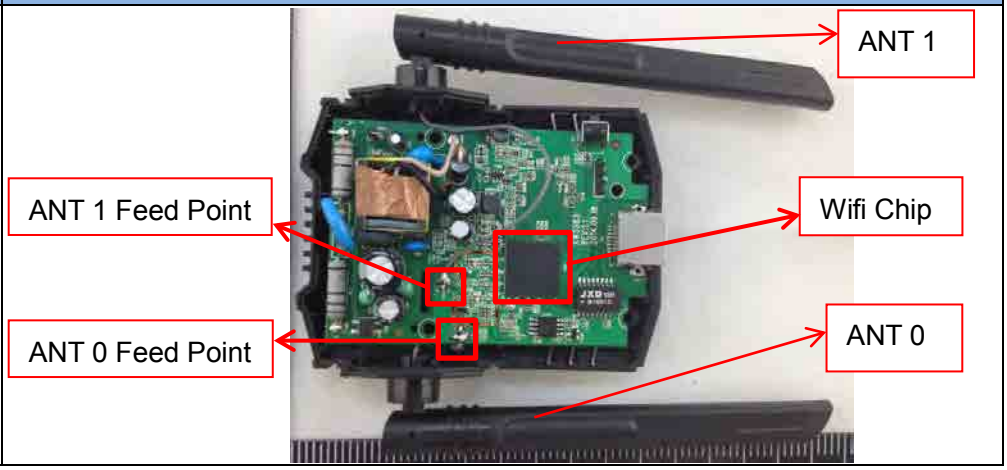
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

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.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
These two antennas are embedded-in.	These two antennas feed point are welded on the mainboard, and two antennas fixed on the shell, can't be replaced by the consumer.

Reference Documents	Item
Photo	

5.1.3 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.

5.2 Output Power

5.2.1 Test Limit

FCC § 15.247(b) and RSS-210, A8.4 (2)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements.

5.2.2 Test Procedure

Maximum peak conducted output power

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the *DTS bandwidth* and shall utilize a fast-responding diode detector.

Maximum conducted (average) output power (Reporting Only)

a) As an alternative to spectrum analyzer or EMI receiver measurements, measurements may be performed

using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.

1) The EUT is configured to transmit continuously, or to transmit with a constant duty factor.

2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.

3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a

factor of five.

b) If the transmitter does not transmit continuously, measure the duty cycle (x) of the transmitter output signal as

described in Section 6.0.

c) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

d) Adjust the measurement in dBm by adding 10log (1/x), where x is the duty cycle to the measurement result.

Measurements of duty cycle

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal.

Set the center frequency of the instrument to the center frequency of the transmission.

Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.

Set VBW ≥ RBW. Set detector = peak or average.

The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

5.3 6dB Bandwidth

5.3.1 Limit

FCC §15.247(a) and RSS-210, A8.2 (1)

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 kHz.

5.3.2 Test Procedure

Use the following spectrum analyzer settings:

Set RBW = 100 kHz.

Set the video bandwidth (VBW) ≥ 3 RBW.

Detector = Peak.

Trace mode = max hold.

Sweep = auto couple.

Allow the trace to stabilize.

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.4 Conducted Spurious Emission

5.4.1 Limit

FCC §15.247(d) and RSS-210, A8.5

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.4.2 Test Procedure

The DTS rules specify that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

a) If the maximum peak conducted output power procedure was used to demonstrate compliance as described in 9.1, then the peak output power 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 (i.e., 20 dBc).

b) If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).

c) In either case, attenuation to levels below the 15.209 general radiated emissions limits is not required.

The following procedures shall be used to demonstrate compliance to these limits. Note that these procedures can be used in either an antenna-port conducted or radiated test set-up. Radiated tests must conform to the test site requirements and utilize maximization procedures defined herein.

Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to DTS channel center frequency.

Set the span to ≥ 1.5 times the DTS bandwidth.

Set the RBW = 100 kHz.

Set the VBW ≥ 3 x RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum PSD level.

Emission level measurement

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

Set the RBW = 100 kHz.

Set the VBW ≥ 3 x RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in 11.1 a) or 11.1 b). Report the three highest emissions relative to the limit.

5.5 Conducted Emission

5.5.1 Limit

FCC §15.207 and RSS-GEN, 8.8

For an intentional radiator 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 within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.5.2 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

5.6 Radiated Spurious Emission

5.6.1 Limit

FCC §15.209&15.247(d) and RSS-GEN, 8.9, RSS-210, A8.5

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
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

Note:

1. For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

2. For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).

5.6.2 Test Procedure

Since the emission limits are specified in terms of radiated field strength levels, measurements performed to demonstrate compliance have traditionally relied on a radiated test configuration. Radiated measurements remain the principal method for demonstrating compliance to the specified limits; however antenna-port conducted measurements are also now acceptable to demonstrate compliance (see below for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are described in ANSI C63.10 shall be followed.

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

General Procedure for conducted measurements in restricted bands

a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).

b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see guidance on determining the applicable antenna gain)

c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB

for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).

d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).

e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

E = EIRP – 20log D + 104.8

where:

E = electric field strength in dBμV/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

f) Compare the resultant electric field strength level to the applicable limit.

g) Perform radiated spurious emission test.

Quasi-Peak measurement procedure

The specifications for measurements using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Frequency Interference (CISPR) of the International Electrotechnical Commission.

As an alternative to CISPR quasi-peak measurement, compliance can be demonstrated to the applicable emission limits using a peak detector.

Peak power measurement procedure

Peak emission levels are measured by setting the instrument as follows:

a) RBW = as specified in Table 1.

b) VBW ≥ 3 x RBW.

c) Detector = Peak.

d) Sweep time = auto.

e) Trace mode = max hold.

f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be longer for low duty cycle applications).

Table 1—RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Trace averaging across on and off times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT (i.e., duty cycle ≥ 98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then the following procedure shall be used:

a) The EUT shall be configured to operate at the maximum achievable duty cycle.

b) Measure the duty cycle, x, of the transmitter output signal as described in section 6.0.

c) RBW = 1 MHz (unless otherwise specified).

d) VBW ≥ 3 x RBW.

e) Detector = RMS, if span/(# of points in sweep) ≤ (RBW/2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.

f) Averaging type = power (i.e., RMS).

1) As an alternative, the detector and averaging type may be set for linear voltage averaging.

2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.

g) Sweep time = auto.

h) Perform a trace average of at least 100 traces.

i) A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:

1) If power averaging (RMS) mode was used in step f), then the applicable correction factor is 10 log(1/x), where x is the duty cycle.

2) If linear voltage averaging mode was used in step f), then the applicable correction factor is 20 log(1/x), where x is the duty cycle.

3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

NOTE: Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

Determining the applicable transmit antenna gain

A conducted power measurement will determine the maximum output power associated with a restricted band emission; however, in order to determine the associated EIRP level, the gain of the transmitting antenna (in dBi) must be added to the measured output power (in dBm).

Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the

maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

See KDB 662911 for guidance on calculating the additional array gain term when determining the effective antenna gain for a EUT with multiple outputs occupying the same or overlapping frequency ranges in the same band.

Radiated spurious emission test

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these cabinet radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in ANSI C63.10. All detected emissions shall comply with the applicable limits.

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

5.7 Band Edge

5.7.1 Limit

FCC §15.209&15.247(d) and RSS-GEN, 8.9, RSS-210, A8.5

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.7.2 Test Procedure

The following procedures may be used to determine the peak or average field strength or power of an unwanted emission that is within 2 MHz of the authorized band edge. If a peak detector is utilized, use the procedure described in 13.2.1. Use the procedure described in 13.2.2 when using an average detector and the EUT can be configured to transmit continuously (i.e., duty cycle ≥ 98%). Use the procedure described in 13.2.3 when using an average detector and the EUT cannot be configured to transmit continuously but the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent). Use the procedure described in 13.2.4 when using an average detector for those cases where the EUT cannot be configured to transmit continuously and the duty cycle is not constant (duty cycle variations equal or exceed 2 percent).

When using a peak detector to measure unwanted emissions at or near the band edge (within 2 MHz of the authorized band), the following integration procedure can be used.

Set instrument center frequency to the frequency of the emission to be measured (must be within 2 MHz of the authorized band edge).

Set span to 2 MHz

RBW = 100 kHz.

VBW ≥ 3 x RBW.

Detector = peak.

Sweep time = auto.

Trace mode = max hold.

Allow sweep to continue until the trace stabilizes (required measurement time may increase for low duty cycle applications)

Compute the power by integrating the spectrum over 1 MHz using the analyzer's band power measurement function with band limits set equal to the emission frequency (femission) ± 0.5 MHz. If the instrument does not have a band power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by femission ± 0.5 MHz.

5.8 Power Spectral density (PSD)

5.8.1 Limit

FCC §15.247(e) and RSS-210, A8.2 (2)

The same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output power is measured, then a peak power spectral density measurement is required. If an average output power is measured, then an average power spectral density measurement should be used.

5.8.2 Test Procedure

Set analyzer center frequency to DTS channel center frequency.

Set the span to 1.5 times the DTS bandwidth.

Set the RBW to: 3 kHz $\leqslant$ RBW $\leqslant$ 100 kHz.

Set the VBW $\geqslant$ 3 RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level within the RBW.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

5.9 Receiver Spurious Emissions

5.9.1 Limit

IC RSS-210, §2.3, IC RSS-Gen, 7.1.2

Radiated spurious emission measurements shall be performed with the receiver antenna connected to the receiver antenna terminals. Spurious emissions from receivers shall not exceed the radiated limits shown in the table below:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

5.9.2 Test Procedure

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

Test Plots for the Whole Measurement Frequency Range:

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

ANNEX A TEST RESULT

A.1 Output Power

Duty Cycle

Antenna	Mode	Duty Cycle (%)	T (ms)	1/T (kHz)
ANT 0	802.11b	98.9	8.418	0.119
	802.11g	64.6	0.178	5.618
	802.11n HT20	62.9	0.166	6.024
	802.11n HT40	78.2	0.346	2.890
ANT 1	802.11b	98.9	8.418	0.119
	802.11b	64.6	0.178	5.618
	802.11n HT20	62.9	0.166	6.024
	802.11n HT40	78.2	0.346	2.890

Peak Power Test Data

802.11b Mode:

Channel	Measured Output Peak Power Of ANT 0		Measured Output Peak Power Of ANT 1		Total of output power		Limit		Verdict
	dBm	mW	dBm	mW	dBm	mW	dBm	mW	
Low	15.00	31.62	13.30	21.38	17.24	53.00	30	1000	Pass
Middle	14.90	30.90	13.20	20.89	17.14	51.79			Pass
High	13.60	22.91	13.30	21.38	16.46	44.29			Pass

802.11g Mode:

Channel	Measured Output Peak Power Of ANT 0		Measured Output Peak Power Of ANT 1		Total of output power		Limit		Verdict
	dBm	mW	dBm	mW	dBm	mW	dBm	mW	
Low	14.10	25.70	12.70	18.62	16.47	44.32	30	1000	Pass
Middle	14.20	26.30	12.30	16.98	16.36	43.28			Pass
High	14.20	26.30	12.40	17.38	16.40	43.68			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power Of ANT 0		Measured Output Peak Power Of ANT 1		Total of output power		Limit		Verdict
	dBm	mW	dBm	mW	dBm	mW	dBm	mW	
Low	14.60	28.84	12.60	18.20	16.72	47.04	30	1000	Pass
Middle	14.00	25.12	12.40	17.38	16.28	42.50			Pass
High	13.10	20.42	12.60	18.20	15.87	38.62			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power Of ANT 0		Measured Output Peak Power Of ANT 1		Total of output power		Limit		Verdict
	dBm	mW	dBm	mW	dBm	mW	dBm	mW	
Low	14.70	29.51	13.30	21.38	17.07	50.89	30	1000	Pass
Middle	14.30	26.92	12.70	18.62	16.58	45.54			Pass
High	14.30	26.92	12.80	19.05	16.62	45.97			Pass

Average Power Test Data (Reporting Only)

802.11b Mode:

Channel	Duty Factor(10 log (1/x))		Measured Output Average Power Of ANT 0		Measured Output Average Power Of ANT 1		Total of output power		Verdict
	ANT 0	ANT 1	dBm	mW	dBm	mW	dBm	mW	
Low	0.05	0.05	14.48	28.05	12.16	16.44	16.48	44.49	Pass
Middle	0.05	0.05	14.16	26.06	12.13	16.33	16.27	42.39	Pass
High	0.05	0.05	13.47	22.23	11.97	15.74	15.79	37.97	Pass

802.11g Mode:

Channel	Duty Factor(10 log (1/x))		Measured Output Average Power Of ANT 0		Measured Output Average Power Of ANT 1		Total of output power		Verdict
	ANT 0	ANT 1	dBm	mW	dBm	mW	dBm	mW	
Low	1.90	1.90	13.76	23.77	11.95	15.67	15.96	39.44	Pass
Middle	1.90	1.90	13.69	23.39	10.39	10.94	15.36	34.33	Pass
High	1.90	1.90	13.71	23.50	10.53	11.30	15.42	34.80	Pass

802.11n-20 MHz Mode:

Channel	Duty Factor(10 log (1/x))		Measured Output Average Power Of ANT 0		Measured Output Average Power Of ANT 1		Total of output power		Verdict
	ANT 0	ANT 1	dBm	mW	dBm	mW	dBm	mW	
Low	2.01	2.01	13.96	24.89	11.66	14.66	15.97	39.55	Pass
Middle	2.01	2.01	13.79	23.93	11.54	14.26	15.82	38.19	Pass
High	2.01	2.01	12.97	19.82	11.63	14.55	15.36	34.37	Pass

802.11n-40 MHz Mode:

Channel	Duty Factor(10 log (1/x))		Measured Output Average Power Of ANT 0		Measured Output Average Power Of ANT 1		Total of output power		Verdict
	ANT 0	ANT 1	dBm	mW	dBm	mW	dBm	mW	
Low	1.07	1.07	14.33	27.10	12.72	18.71	16.61	45.81	Pass
Middle	1.07	1.07	14.22	26.42	12.55	17.99	16.47	44.41	Pass
High	1.07	1.07	14.12	25.82	12.69	18.58	16.47	44.40	Pass

A.2 Bandwidth

Test Data (ANT 0)

802.11b Mode:

Channel	6 dB Bandwidth (MHz)	Limits (kHz)	Verdict
Low	8.365	≥500	Pass
Middle	8.046	≥500	Pass
High	8.394	≥500	Pass

802.11g Mode:

Channel	6 dB Bandwidth (MHz)	Limits (kHz)	Verdict
Low	15.673	≥500	Pass
Middle	16.020	≥500	Pass
High	15.630	≥500	Pass

802.11n-20 MHz Mode:

Channel	6 dB Bandwidth (MHz)	Limits (kHz)	Verdict
Low	17.192	≥500	Pass
Middle	17.192	≥500	Pass
High	16.541	≥500	Pass

802.11n-40 MHz Mode:

Channel	6 dB Bandwidth (MHz)	Limits (kHz)	Verdict
Low	36.469	≥500	Pass
Middle	35.890	≥500	Pass
High	36.397	≥500	Pass

Test Data (ANT 1)

802.11b Mode:

Channel	6 dB Bandwidth (MHz)	Limits (kHz)	Verdict
Low	8.292	≥500	Pass
Middle	8.336	≥500	Pass
High	8.249	≥500	Pass

802.11g Mode:

Channel	6 dB Bandwidth (MHz)	Limits (kHz)	Verdict
Low	16.237	≥500	Pass
Middle	16.324	≥500	Pass
High	16.281	≥500	Pass

802.11n-20 MHz Mode:

Channel	6 dB Bandwidth (MHz)	Limits (kHz)	Verdict
Low	17.496	≥500	Pass
Middle	17.496	≥500	Pass
High	17.540	≥500	Pass

802.11n-40 MHz Mode:

Channel	6 dB Bandwidth (MHz)	Limits (kHz)	Verdict
Low	36.469	≥500	Pass
Middle	36.469	≥500	Pass
High	36.397	≥500	Pass

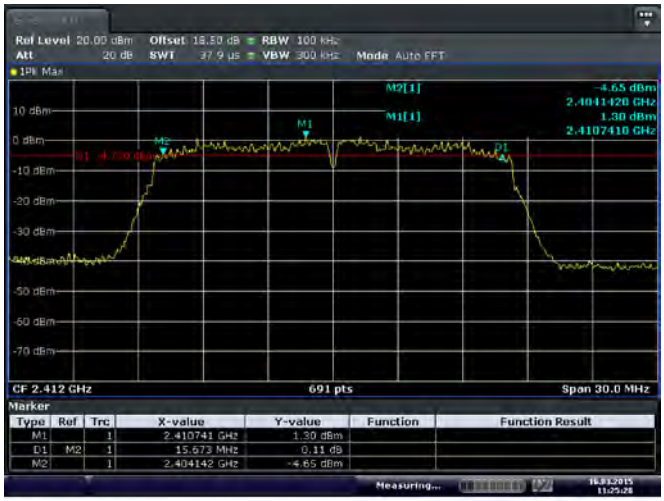
Test plots (ANT 0)

802.11b LOW CHANNEL

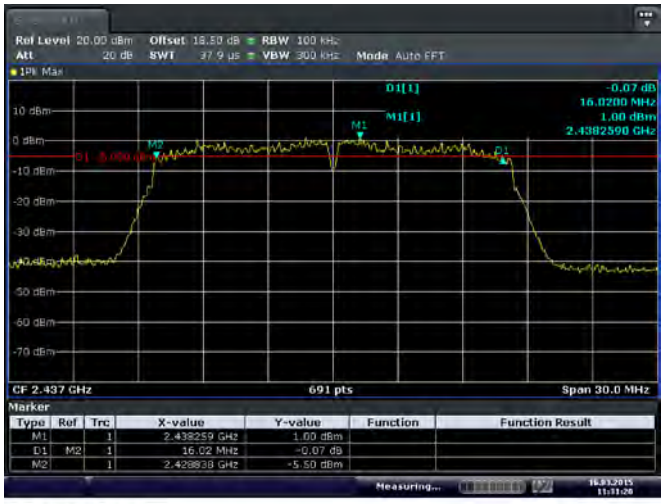
802.11b MIDDLE CHANNEL

802.11b HIGH CHANNEL

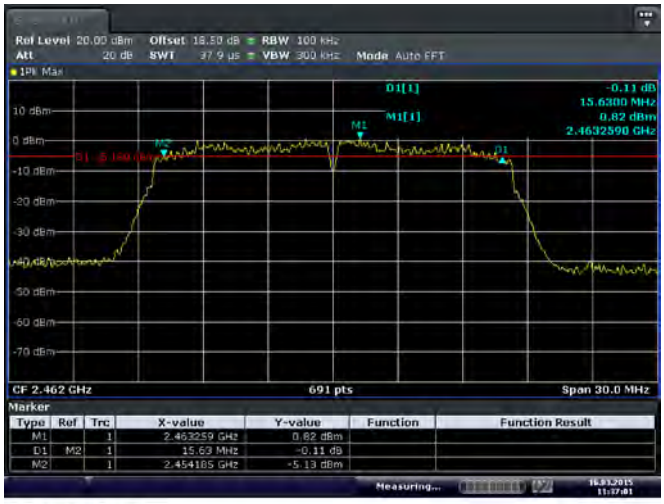
802.11g LOW CHANNEL



802.11g MIDDLE CHANNEL



802.11g HIGH CHANNEL



802.11n-20 MHz LOW CHANNEL

Date: 16.MAR.2015 11:43:06

802.11 n-20 MHz MIDDLE CHANNEL

Date: 16.MAR.2015 11:48:31

802.11n-20 MHz HIGH CHANNEL

Date: 16.MAR.2015 11:51:54

802.11n-40 MHz LOW CHANNEL

Date: 16.MAR.2015 11:57:52

802.11n-40 MHz MIDDLE CHANNEL

Date: 16.MAR.2015 12:03:00

802.11n-40 MHz HIGH CHANNEL

Date: 16.MAR.2015 12:09:06

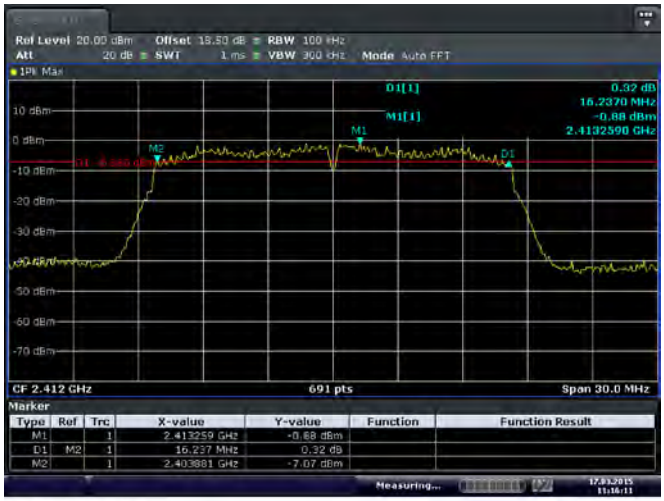
Test plots (ANT 1)

802.11b LOW CHANNEL

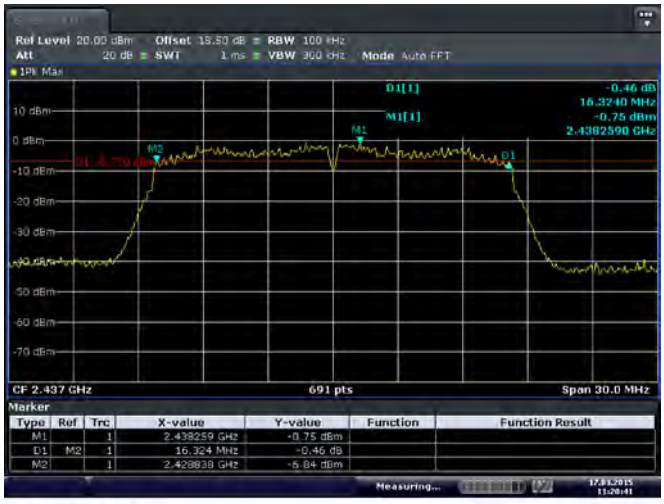
802.11b MIDDLE CHANNEL

802.11b HIGH CHANNEL

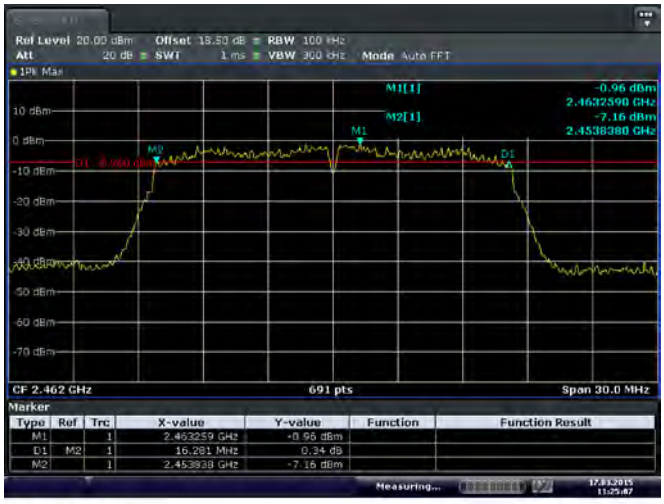
802.11g LOW CHANNEL



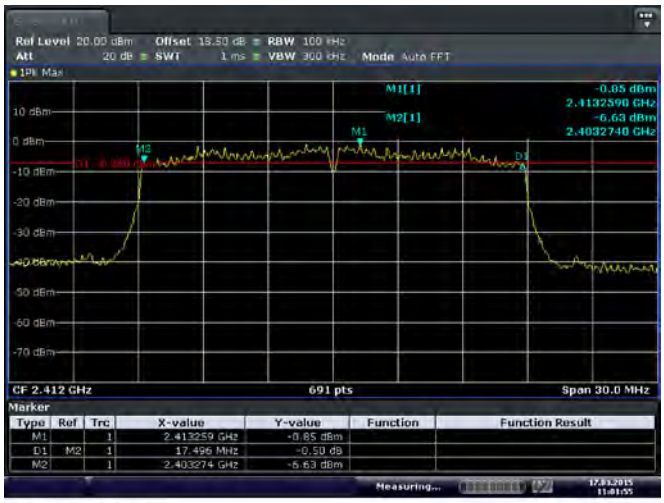
802.11g MIDDLE CHANNEL



802.11g HIGH CHANNEL



802.11n-20 MHz LOW CHANNEL

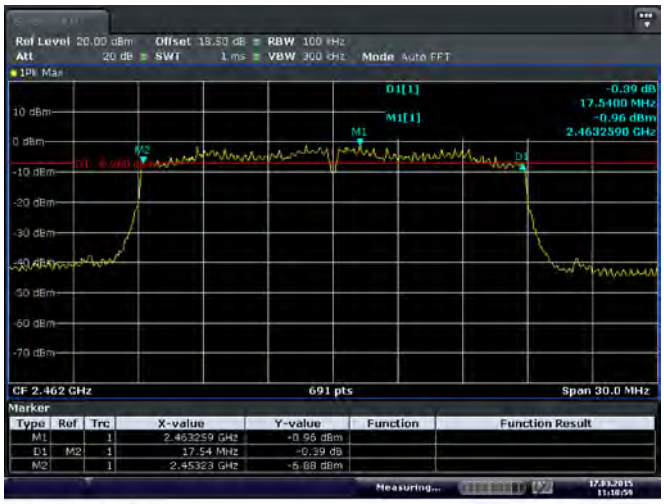


Date: 17.MAR.2015 11:01:55

802.11 n-20 MHz MIDDLE CHANNEL

Date: 17.MAR.2015 11:07:38

802.11n-20 MHz HIGH CHANNEL



Date: 17.MAR.2015 11:10:59

802.11n-40 MHz LOW CHANNEL

Date: 17.MAR.2015 10:43:59

802.11n-40 MHz MIDDLE CHANNEL

Date: 17.MAR.2015 10:35:28

802.11n-40 MHz HIGH CHANNEL

Date: 17.MAR.2015 10:49:46

A.3 Conducted Spurious Emissions

Test Data (ANT 0)

802.11b Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-39.66	3.96	-16.04	Pass
Middle	-39.83	3.30	-16.70	Pass
High	-39.63	3.26	-16.74	Pass

802.11g Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-38.41	1.63	-18.37	Pass
Middle	-39.19	1.31	-18.69	Pass
High	-39.76	0.40	-19.60	Pass

802.11n-20 MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-39.00	1.56	-18.44	Pass
Middle	-39.31	0.82	-19.18	Pass
High	-39.73	0.56	-19.44	Pass

802.11n-40 MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-39.36	-1.25	-21.25	Pass
Middle	-39.93	-1.56	-21.56	Pass
High	-39.52	-1.46	-21.46	Pass

Test Data (ANT 1)

802.11b Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-45.18	2.29	-17.71	Pass
Middle	-46.41	1.99	-18.01	Pass
High	-46.93	2.10	-17.90	Pass

802.11g Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-45.37	-0.76	-20.76	Pass
Middle	-44.13	-0.70	-20.70	Pass
High	-46.13	-0.73	-20.73	Pass

802.11n-20 MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-45.17	-0.71	-20.71	Pass
Middle	-45.84	-0.69	-20.69	Pass
High	-47.25	-0.41	-20.41	Pass

802.11n-40 MHz Mode:

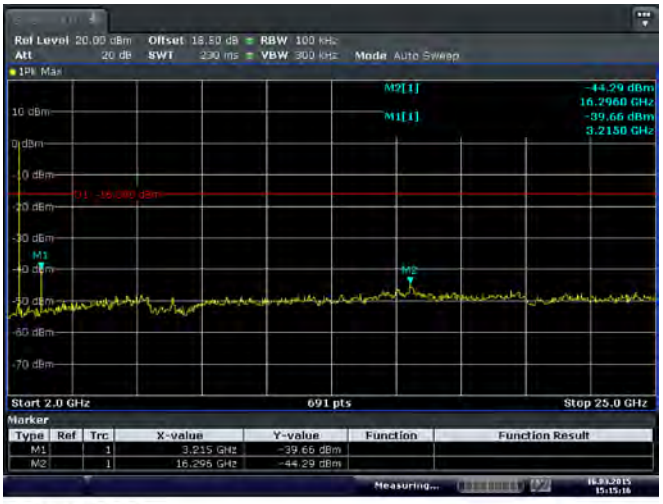
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-46.87	-2.88	-22.88	Pass
Middle	-47.19	-2.72	-22.72	Pass
High	-48.05	-3.25	-23.25	Pass

Test Plots (ANT 0)

802.11b LOW CHANNEL CARRIER LEVEL

802.11b LOW CHANNEL, SPURIOUS 30 MHz~3 GHz

802.11b LOW CHANNEL, SPURIOUS 2 GHz~25 GHz

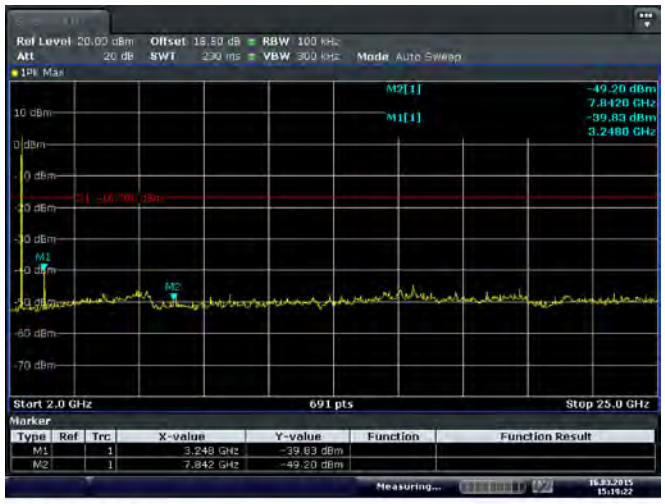


802.11b MIDDLE CHANNEL CARRIER LEVEL

802.11b MIDDLE CHANNEL, SPURIOUS 30 MHz~3 GHz

Date: 16.MAR.2015 15:18:41

802.11b MIDDLE CHANNEL, SPURIOUS 2 GHz~25 GHz



Date: 16.MAR.2015 15:19:23

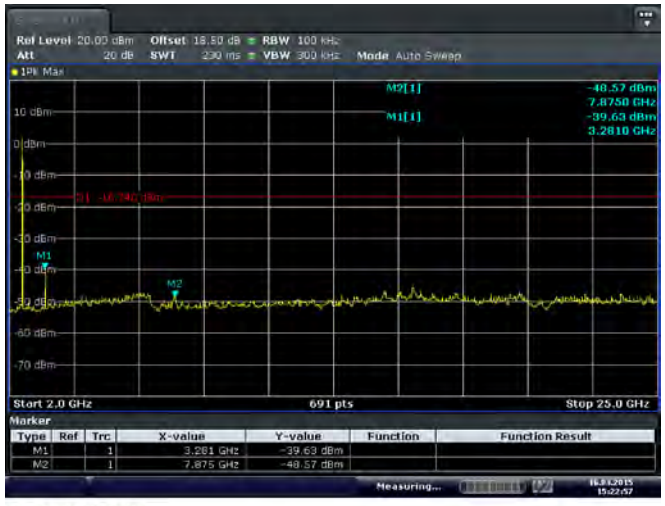
802.11b HIGH CHANNEL CARRIER LEVEL

Date: 16.MAR.2015 15:21:02

802.11b HIGH CHANNEL, SPURIOUS 30 MHz~3 GHz

Date: 16.MAR.2015 15:22:17

802.11b HIGH CHANNEL, SPURIOUS 2 GHz~25 GHz



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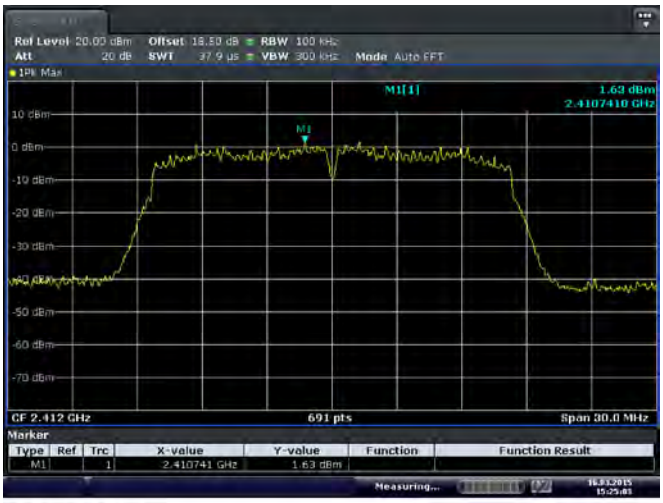
802.11g LOW CHANNEL CARRIER LEVEL



Date: 16.MAR.2015 15:25:03

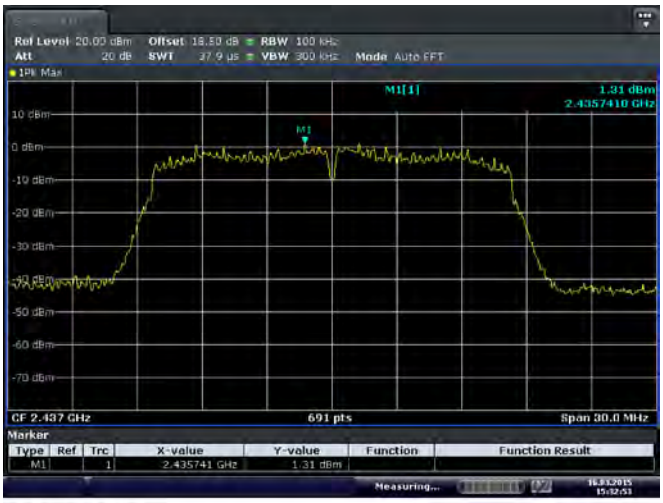
802.11g LOW CHANNEL, SPURIOUS 30 MHz~3 GHz

Date: 16.MAR.2015 15:26:22

802.11g LOW CHANNEL, SPURIOUS 2 GHz~25 GHz

Date: 16.MAR.2015 15:28:07

802.11g MIDDLE CHANNEL CARRIER LEVEL



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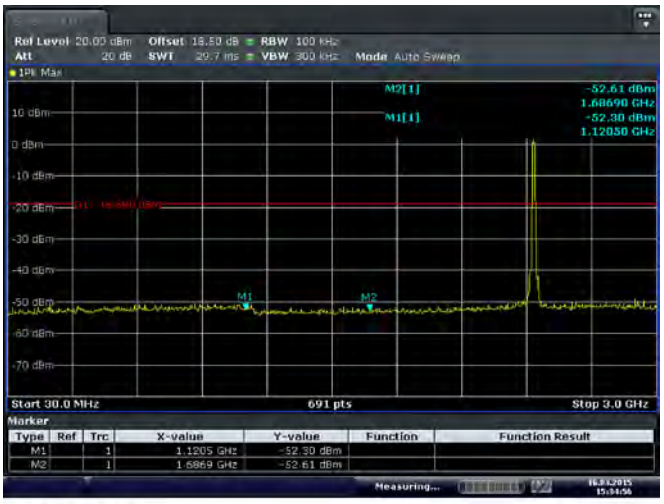
802.11g MIDDLE CHANNEL, SPURIOUS 30 MHz~3 GHz



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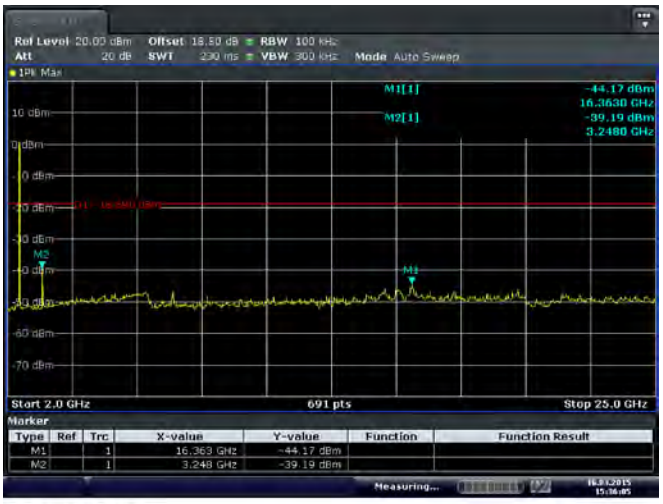
802.11g MIDDLE CHANNEL, SPURIOUS 2 GHz~25 GHz



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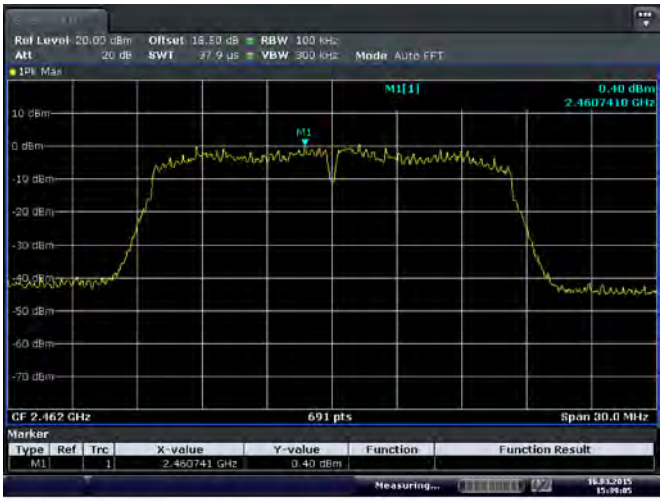
802.11g HIGH CHANNEL CARRIER LEVEL



Date: 16.MAR.2015 15:39:05

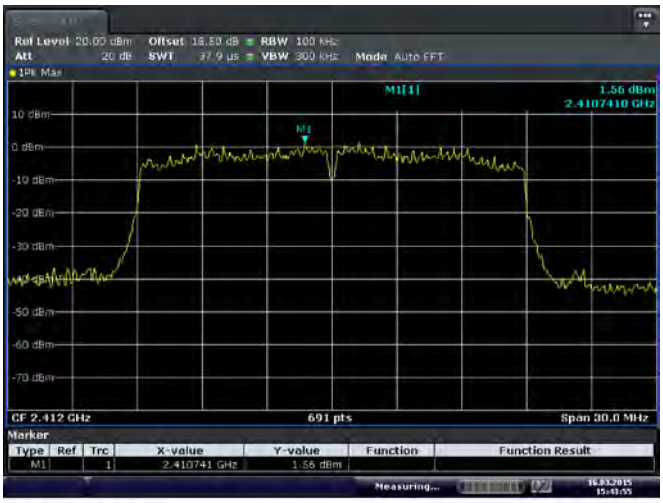
802.11g HIGH CHANNEL, SPURIOUS 30 MHz~3 GHz

Date: 16.MAR.2015 15:41:10

802.11g HIGH CHANNEL, SPURIOUS 2 GHz~25 GHz

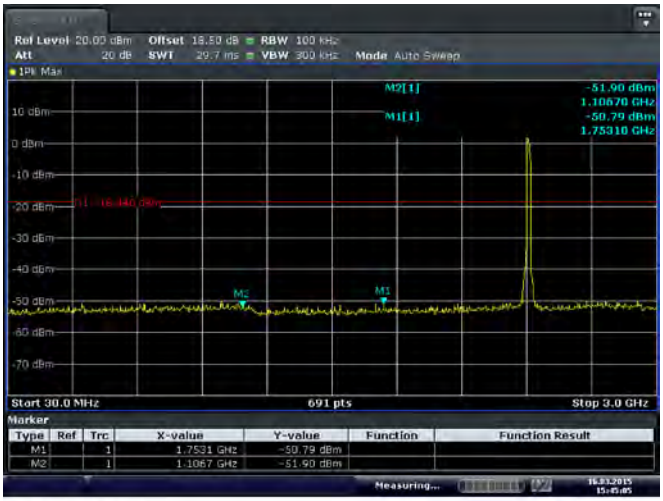
Date: 16.MAR.2015 15:42:08

802.11n-20 MHz LOW CHANNEL CARRIER LEVEL



Date: 16.MAR.2015 15:43:55

802.11n-20 MHz LOW CHANNEL, SPURIOUS 30 MHz~3 GHz

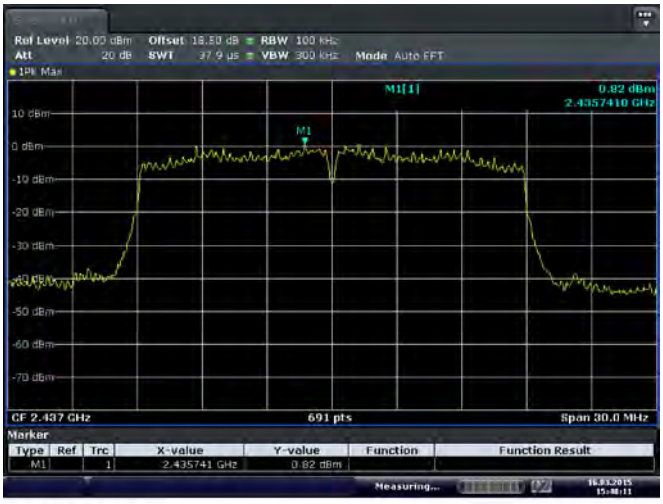


Date: 16.MAR.2015 15:45:05

802.11n-20 MHz LOW CHANNEL, SPURIOUS 2 GHz~25 GHz

Date: 16.MAR.2015 15:46:22

802.11n-20 MHz MIDDLE CHANNEL CARRIER LEVEL



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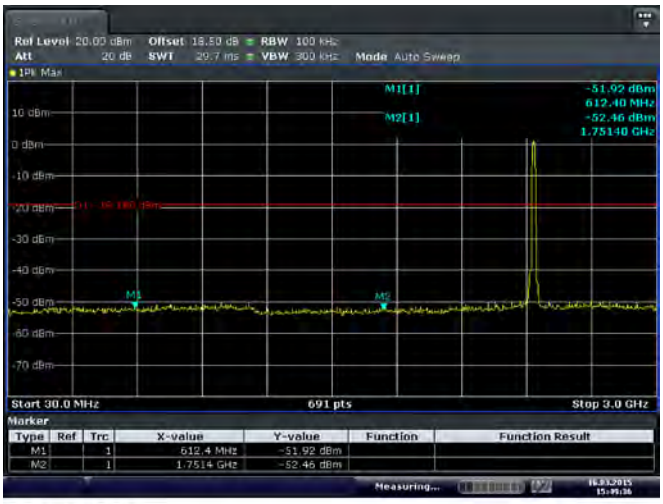
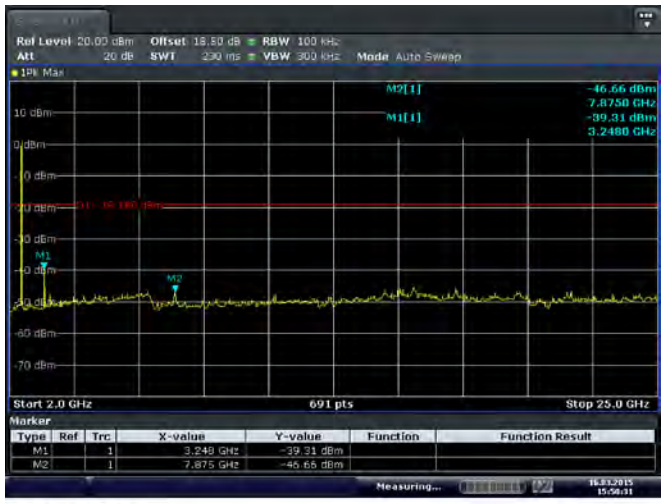
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz~3 GHz



802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz~25 GHz



802.11n-20 MHz HIGH CHANNEL CARRIER LEVEL

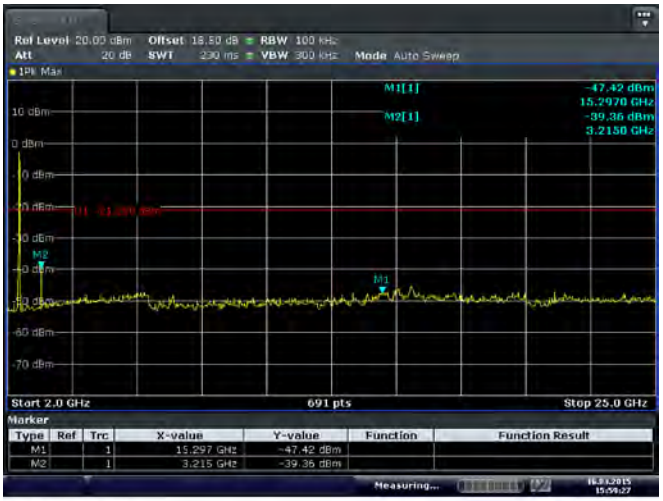
802.11n-20 MHz HIGH CHANNEL, SPURIOUS 30 MHz~3 GHz

802.11n-20 MHz HIGH CHANNEL, SPURIOUS 2 GHz~25 GHz

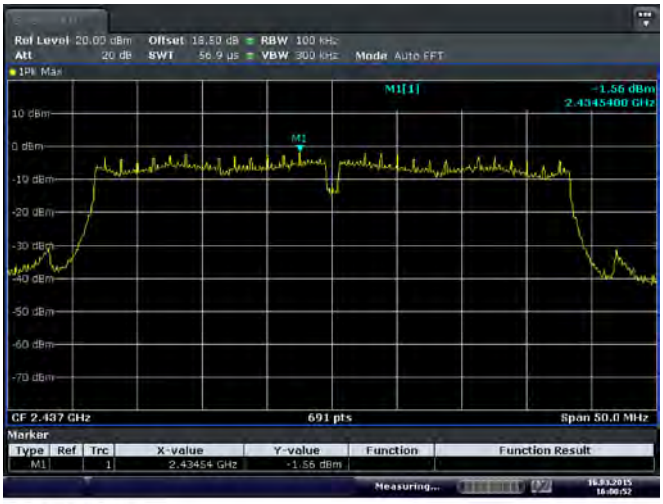
802.11n-40 MHz LOW CHANNEL CARRIER LEVEL

802.11n-40 MHz LOW CHANNEL, SPURIOUS 30 MHz~3 GHz

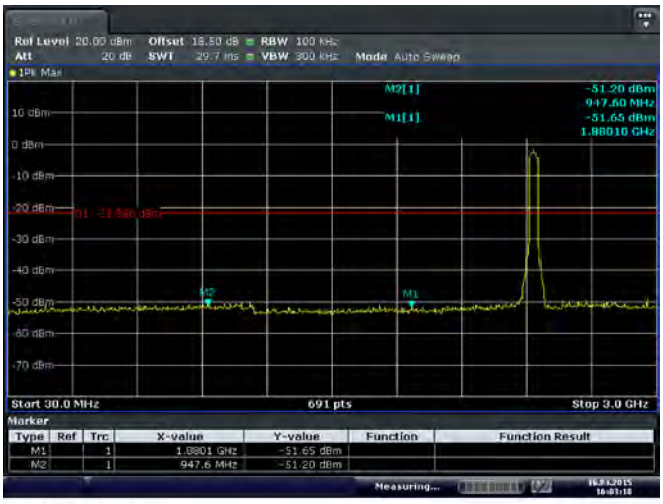
802.11n-40 MHz LOW CHANNEL, SPURIOUS 2 GHz~25 GHz



802.11n-40 MHz MIDDLE CHANNEL CARRIER LEVEL



802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz~3 GHz

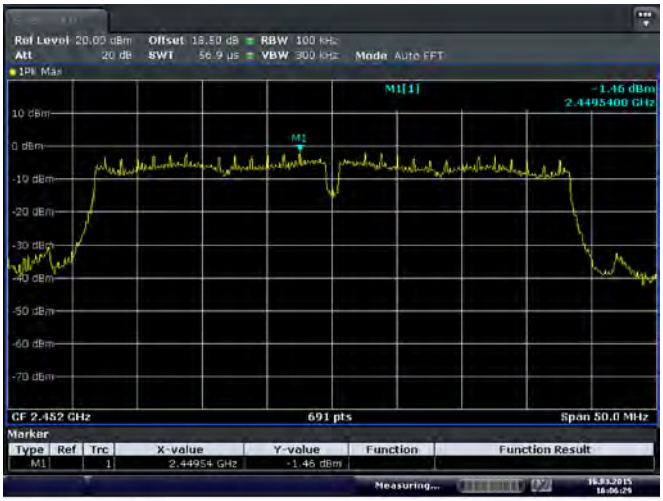


Date: 16.MAR.2015 16:03:18

802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz~25 GHz

Date: 16.MAR.2015 16:04:12

802.11n-40 MHz HIGH CHANNEL CARRIER LEVEL



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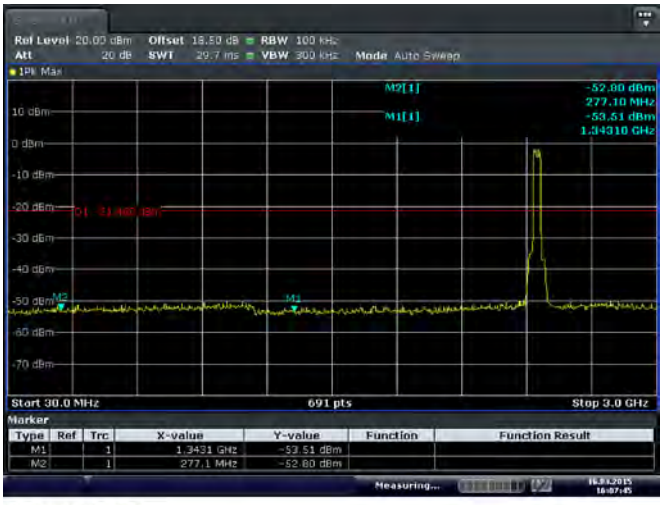
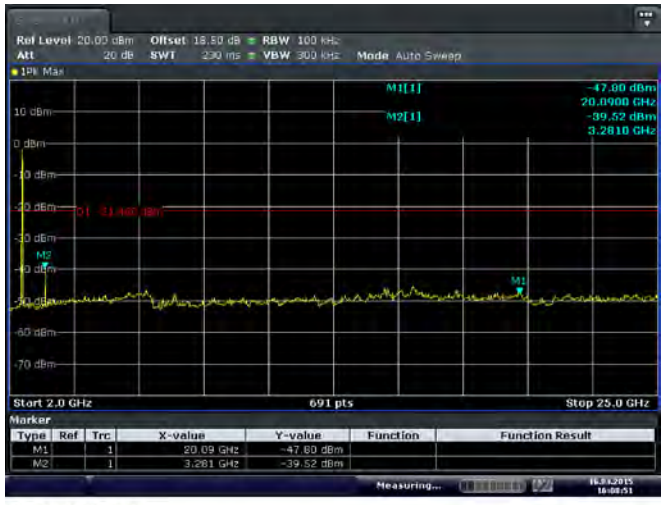
802.11n-40 MHz HIGH CHANNEL, SPURIOUS 30 MHz~3 GHz



Date: 16.MAR.2015 16:07:45

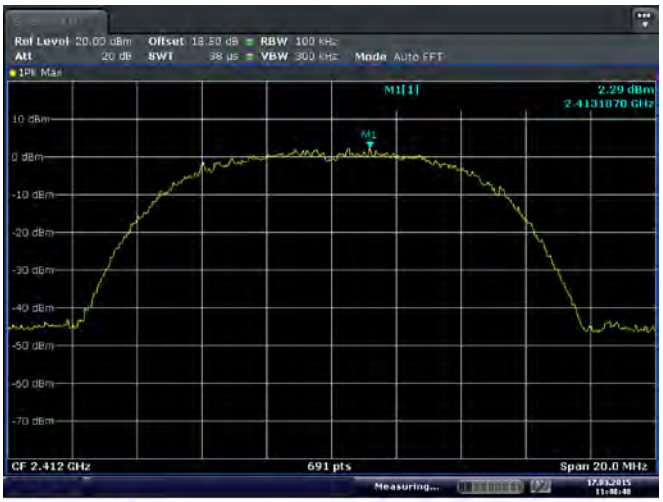
802.11n-40 MHz HIGH CHANNEL, SPURIOUS 2 GHz~25 GHz



Date: 16.MAR.2015 16:08:52

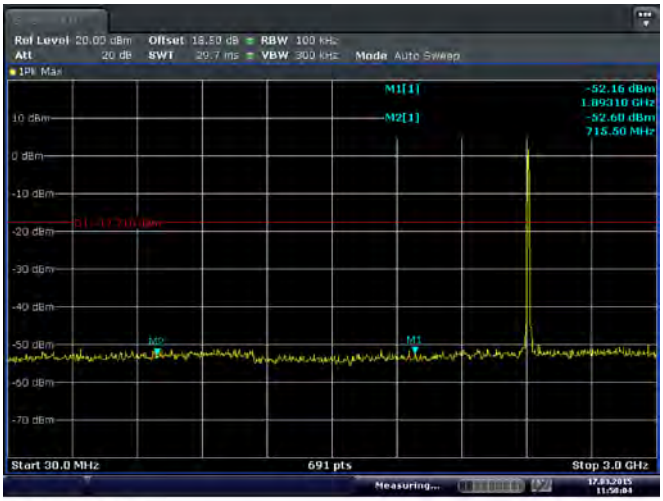
Test Plots (ANT 1)

802.11b LOW CHANNEL CARRIER LEVEL



Date: 17.MAR.2015 11:48:49

802.11b LOW CHANNEL, SPURIOUS 30 MHz~3 GHz

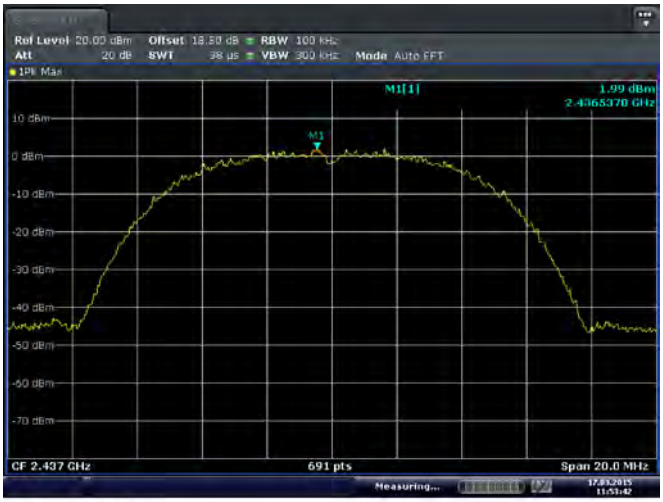


Date: 17.MAR.2015 11:50:04

802.11b LOW CHANNEL, SPURIOUS 2 GHz~25 GHz

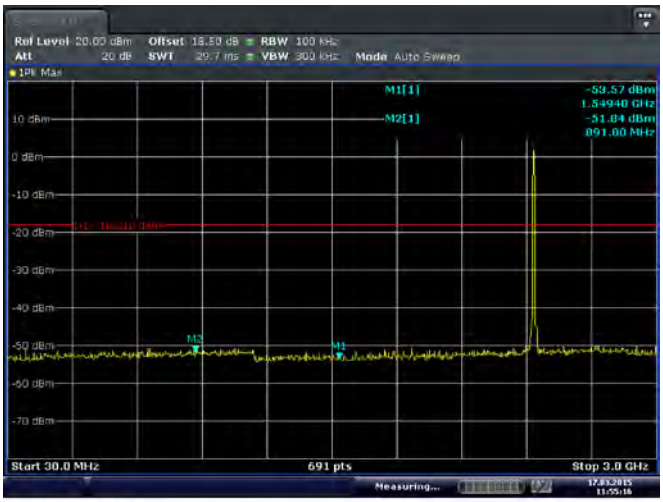
Date: 17.MAR.2015 11:50:52

802.11b MIDDLE CHANNEL CARRIER LEVEL



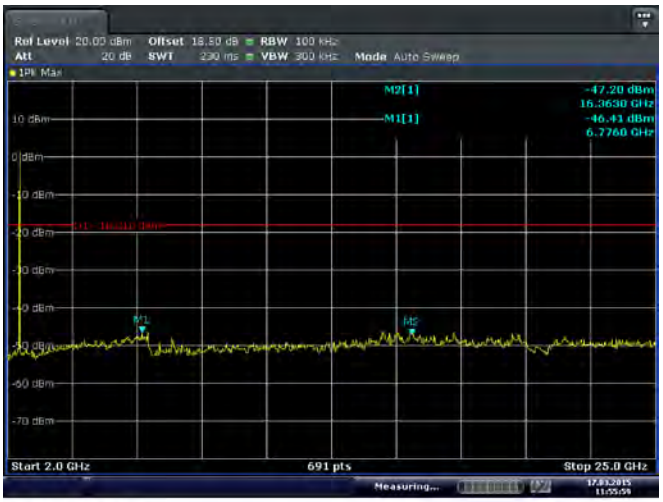
Date: 17.MAR.2015 11:53:43

802.11b MIDDLE CHANNEL, SPURIOUS 30 MHz~3 GHz



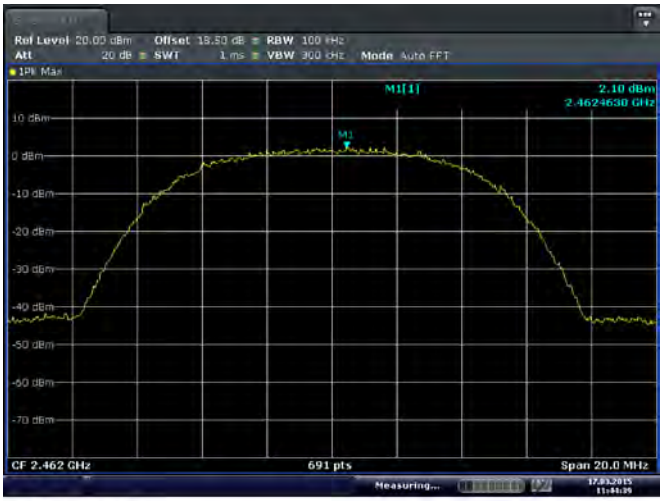
Date: 17.MAR.2015 11:55:16

802.11b MIDDLE CHANNEL, SPURIOUS 2 GHz~25 GHz



Date: 17.MAR.2015 11:55:59

802.11b HIGH CHANNEL CARRIER LEVEL



Date: 17.MAR.2015 11:44:39

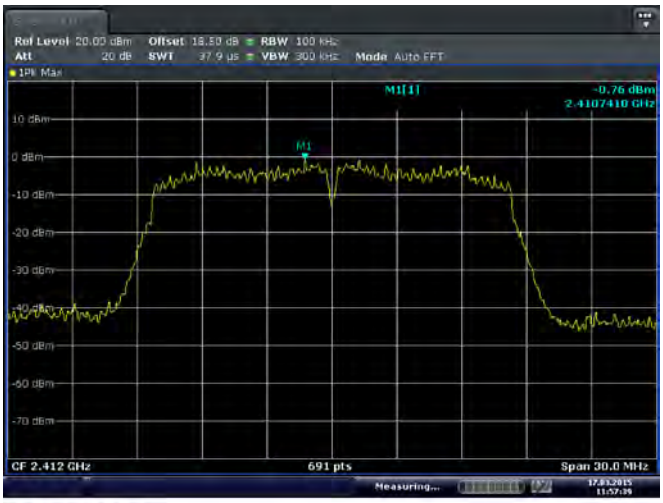
802.11b HIGH CHANNEL, SPURIOUS 30 MHz~3 GHz

Date: 17.MAR.2015 11:46:35

802.11b HIGH CHANNEL, SPURIOUS 2 GHz~25 GHz

Date: 17.MAR.2015 11:47:25

802.11g LOW CHANNEL CARRIER LEVEL



Date: 17.MAR.2015 11:57:39

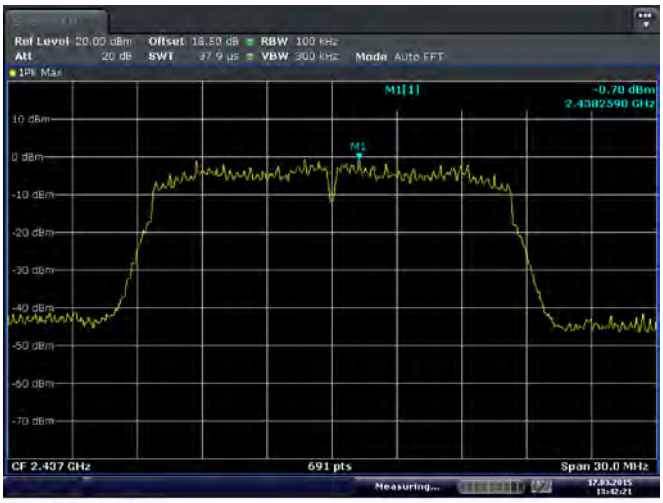
802.11g LOW CHANNEL, SPURIOUS 30 MHz~3 GHz

Date: 17.MAR.2015 11:58:29

802.11g LOW CHANNEL, SPURIOUS 2 GHz~25 GHz

Date: 17.MAR.2015 11:59:07

802.11g MIDDLE CHANNEL CARRIER LEVEL



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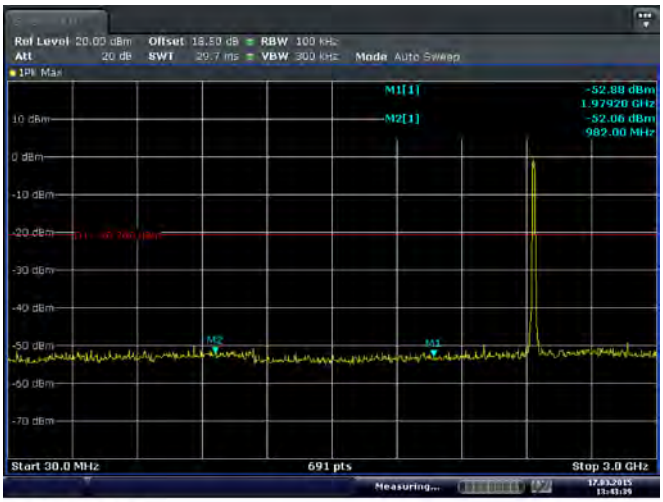
802.11g MIDDLE CHANNEL, SPURIOUS 30 MHz~3 GHz

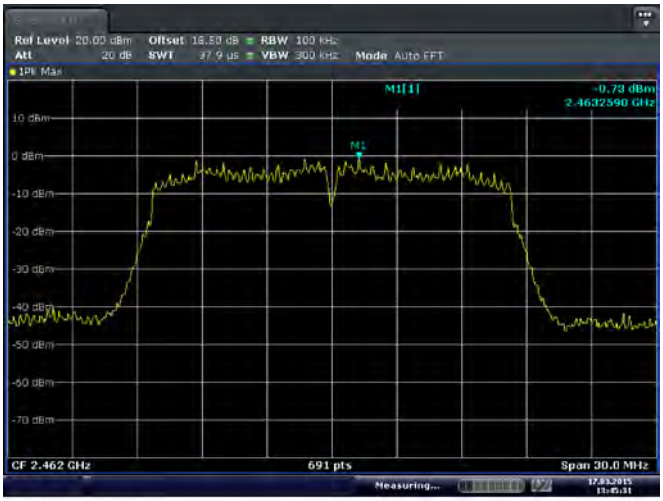


Date: 17.MAR.2015 13:43:40

802.11g MIDDLE CHANNEL, SPURIOUS 2 GHz~25 GHz

Date: 17.MAR.2015 13:44:25

802.11g HIGH CHANNEL CARRIER LEVEL



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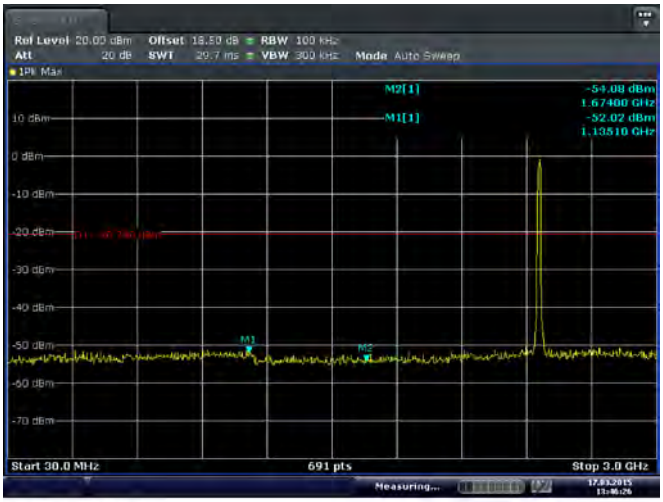
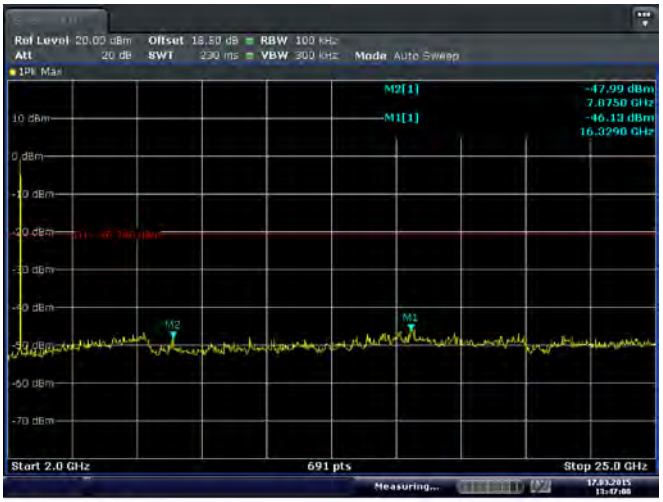
802.11g HIGH CHANNEL, SPURIOUS 30 MHz~3 GHz



Date: 17.MAR.2015 13:46:26

802.11g HIGH CHANNEL, SPURIOUS 2 GHz~25 GHz



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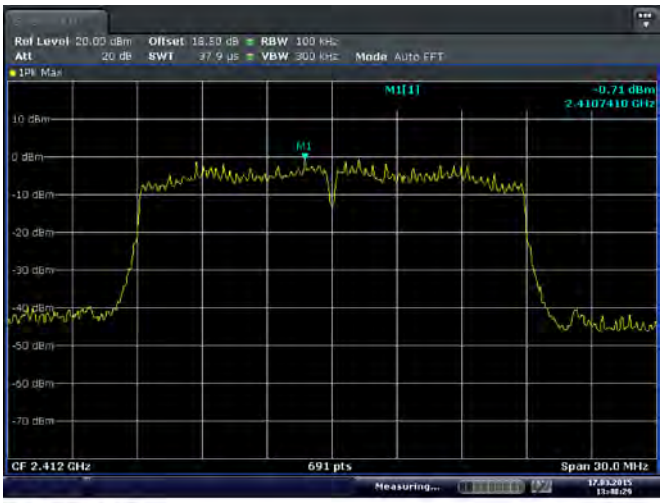
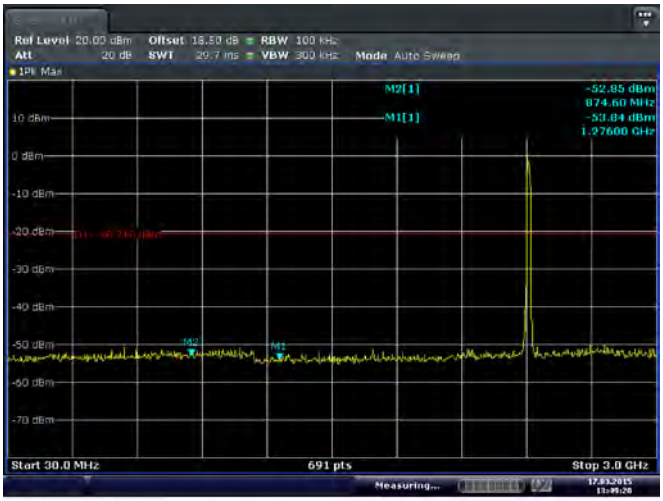
802.11n-20 MHz LOW CHANNEL CARRIER LEVEL



Date: 17.MAR.2015 13:48:30

802.11n-20 MHz LOW CHANNEL, SPURIOUS 30 MHz~3 GHz

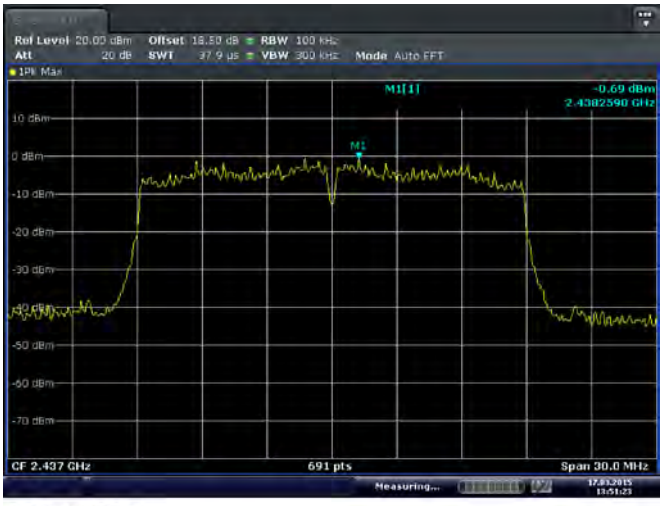


Date: 17.MAR.2015 13:49:21

802.11n-20 MHz LOW CHANNEL, SPURIOUS 2 GHz~25 GHz

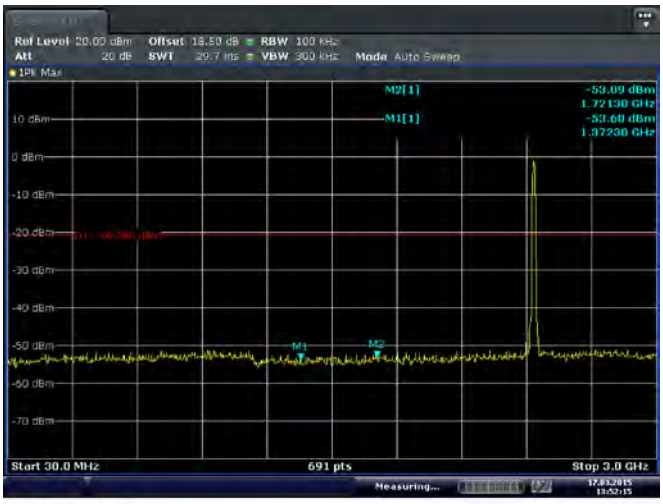
Date: 17.MAR.2015 13:50:04

802.11n-20 MHz MIDDLE CHANNEL CARRIER LEVEL

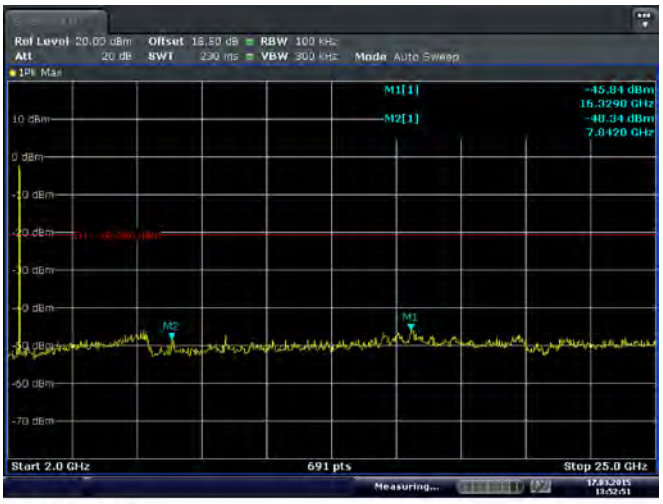


Date: 17.MAR.2015 13:51:23

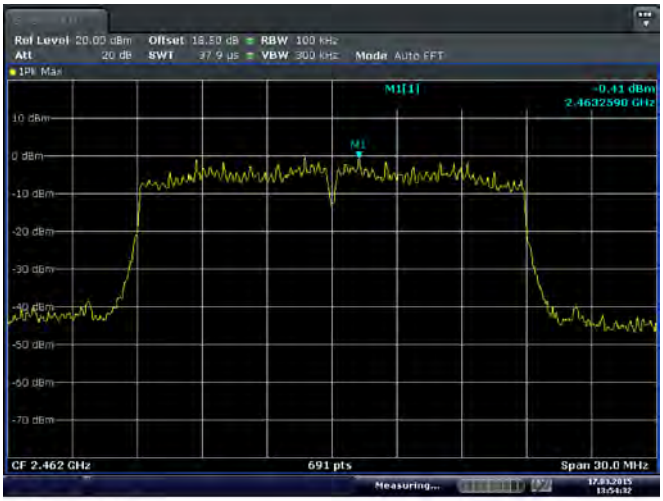
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz~3 GHz



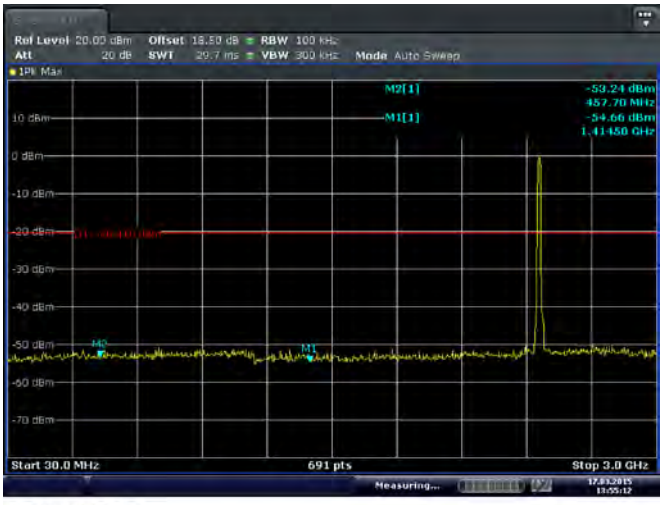
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz~25 GHz



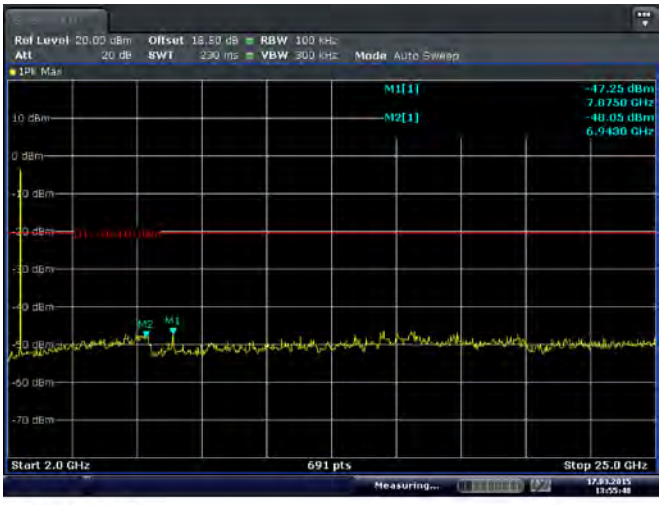
802.11n-20 MHz HIGH CHANNEL CARRIER LEVEL



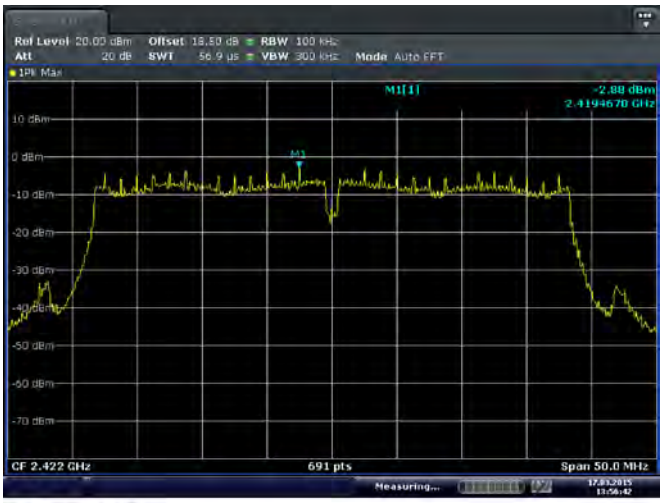
802.11n-20 MHz HIGH CHANNEL, SPURIOUS 30 MHz~3 GHz



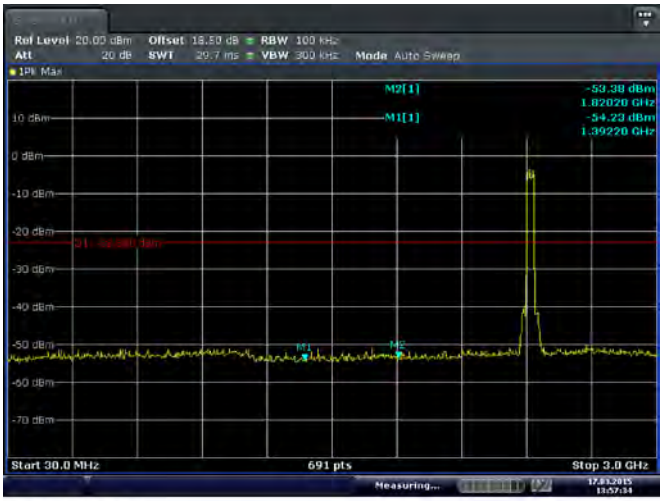
802.11n-20 MHz HIGH CHANNEL, SPURIOUS 2 GHz~25 GHz



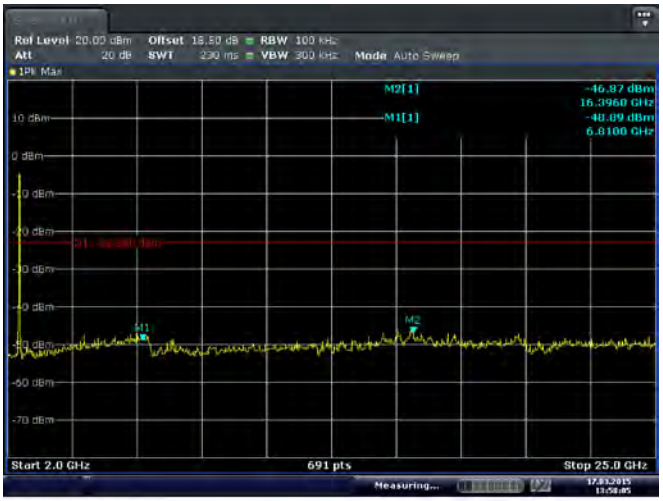
802.11n-40 MHz LOW CHANNEL CARRIER LEVEL



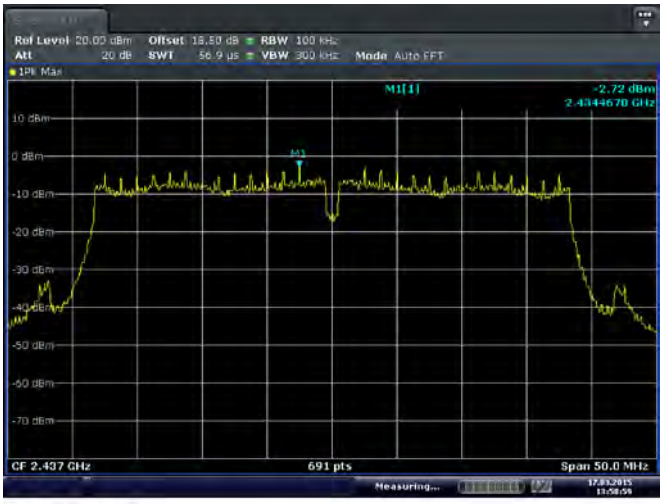
802.11n-40 MHz LOW CHANNEL, SPURIOUS 30 MHz~3 GHz



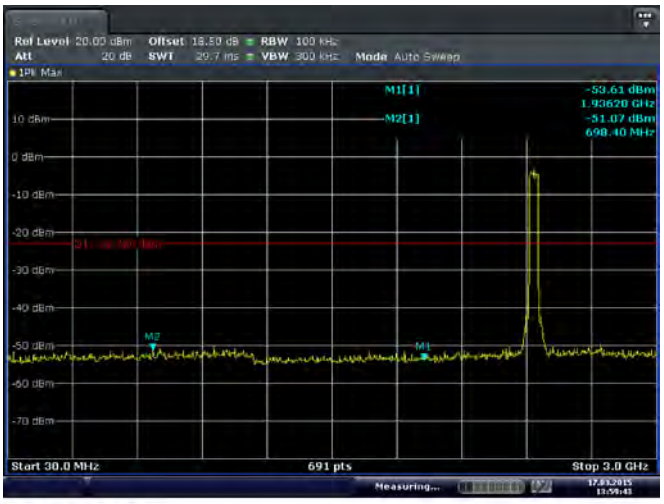
802.11n-40 MHz LOW CHANNEL, SPURIOUS 2 GHz~25 GHz



802.11n-40 MHz MIDDLE CHANNEL CARRIER LEVEL

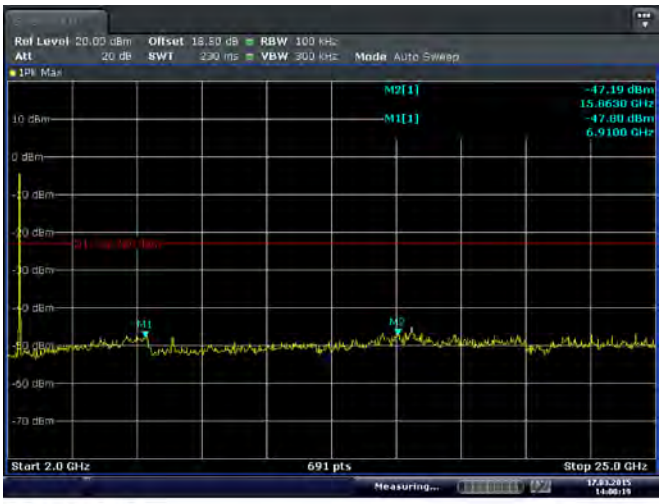


802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz~3 GHz



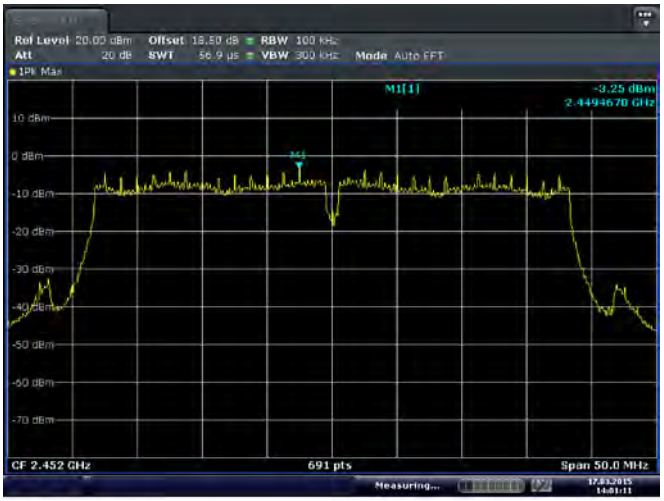
Date: 17.MAR.2015 13:59:43

802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz~25 GHz



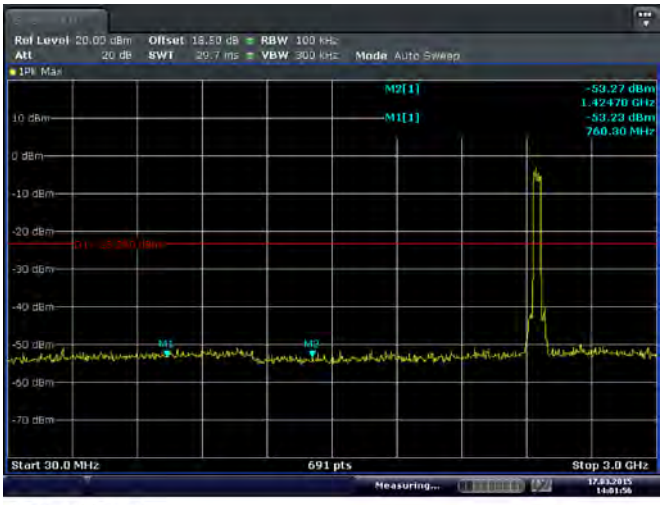
Date: 17.MAR.2015 14:00:19

802.11n-40 MHz HIGH CHANNEL CARRIER LEVEL



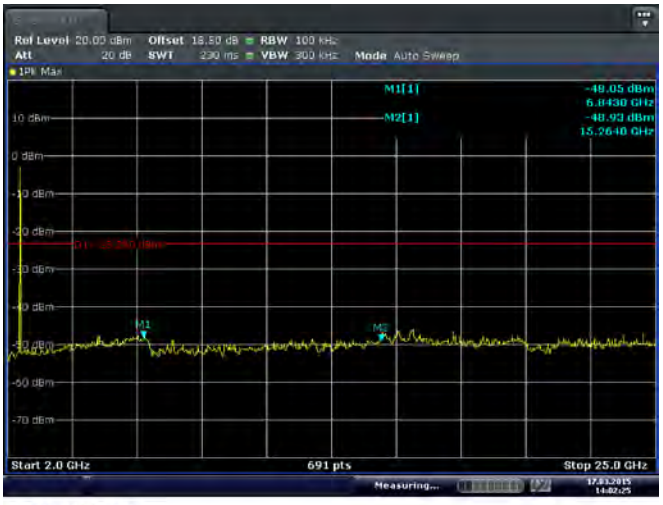
Date: 17.MAR.2015 14:01:11

802.11-n40 MHz HIGH CHANNEL, SPURIOUS 30 MHz~3 GHz



Date: 17.MAR.2015 14:01:56

802.11n-40 MHz HIGH CHANNEL, SPURIOUS 2 GHz~25 GHz



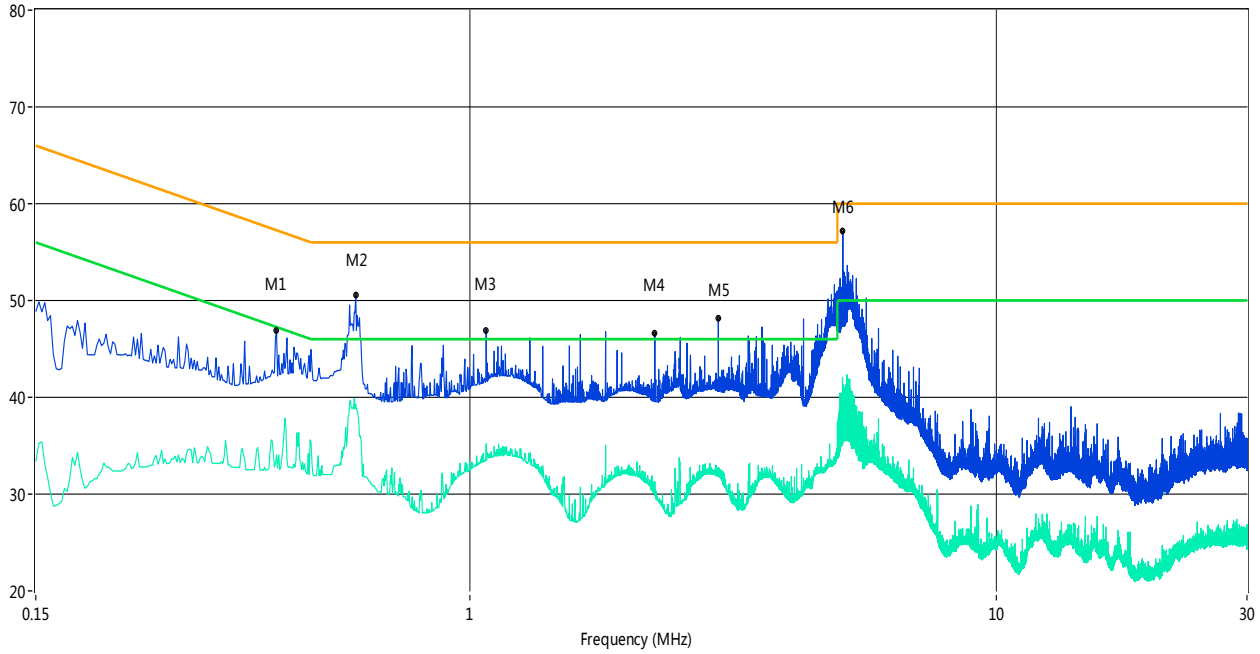
Date: 17.MAR.2015 14:02:25

A.4 Conducted Emissions

Note: All configurations have been tested, only the worst configuration (802.11b Low Channel) shown here.

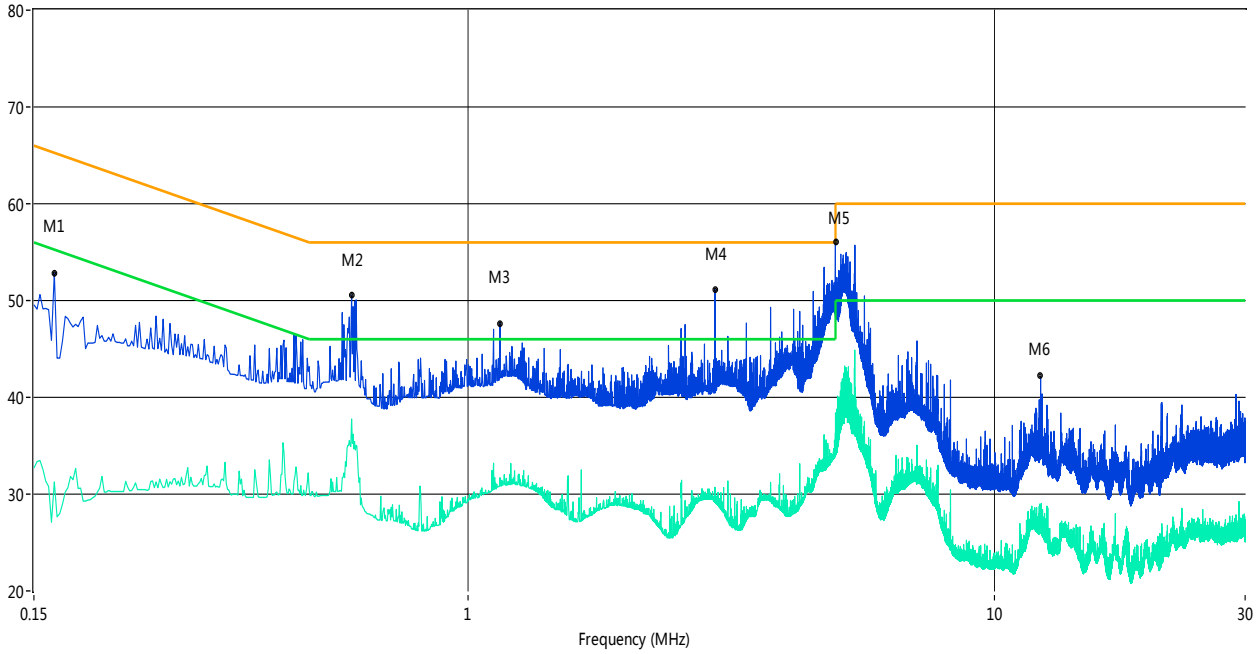
Test Data and Plots

PHASE L



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.43	46.9	13.00	58.0	11.10	Peak	L Line	Pass
1**	0.43	34.0	13.00	48.0	14.00	AV	L Line	Pass
2	0.61	50.5	13.00	56.0	5.50	Peak	L Line	Pass
2**	0.61	39.3	13.00	46.0	6.70	AV	L Line	Pass
3	1.08	47.0	13.00	56.0	9.00	Peak	L Line	Pass
3**	1.08	35.2	13.00	46.0	10.80	AV	L Line	Pass
4	2.25	46.6	13.00	56.0	9.40	Peak	L Line	Pass
4**	2.25	31.3	13.00	46.0	14.70	AV	L Line	Pass
5	2.97	48.1	13.00	56.0	7.90	Peak	L Line	Pass
5**	2.97	32.7	13.00	46.0	13.30	AV	L Line	Pass
6	5.12	56.7	13.00	60.0	3.30	Peak	L Line	Pass
6**	5.12	39.5	13.00	50.0	10.50	AV	L Line	Pass

PHASE N



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.16	52.8	13.00	65.6	12.80	Peak	N Line	Pass
1**	0.16	31.3	13.00	55.6	24.30	AV	N Line	Pass
2	0.60	50.5	13.00	56.0	5.50	Peak	N Line	Pass
2**	0.60	37.8	13.00	46.0	8.20	AV	N Line	Pass
3	1.15	47.6	13.00	56.0	8.40	Peak	N Line	Pass
3**	1.15	31.7	13.00	46.0	14.30	AV	N Line	Pass
4	2.95	51.2	13.00	56.0	4.80	Peak	N Line	Pass
4**	2.95	30.7	13.00	46.0	15.30	AV	N Line	Pass
5	5.00	55.9	13.00	60.0	4.10	Peak	N Line	Pass
5**	5.00	36.3	13.00	46.0	9.70	AV	N Line	Pass
6	12.26	42.2	13.00	60.0	17.80	Peak	N Line	Pass
6**	12.26	28.6	13.00	50.0	21.40	AV	N Line	Pass

A.5 Radiated Emission

Antenna-port Conducted test data

E = EIRP – 20log D + 104.8

where:

E = electric field strength in dBμV/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

EIRP= Measure Conducted output power Value (dBm) + Maximum transmit antenna gain (dBi) + The appropriate maximum ground reflection factor (dB)

Test Data and Plots (ANT 0)

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11b: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01604	-79.65	6	3	3	QP	24.61	88.73	64.12	Note 2	PASS
2.979	-56.49	6	3	3	QP	47.77	88.73	40.96	Note 2	PASS
618.9	-73.06	4.7	3	3	QP	29.90	88.73	58.83	Note 2	PASS
912.3	-72.1	4.7	3	3	QP	30.86	88.73	57.87	Note 2	PASS
3205	-36.01	0	3	3	PK	62.25	88.73	26.48	Note 2	PASS
	N/A		3	3	AV	N/A	68.73	N/A	Note 3	PASS
16334	-35.24	0	3	3	PK	63.02	88.73	25.71	Note 2	PASS
	N/A		3	3	AV	N/A	68.73	N/A	Note 3	PASS
2407	10.47	0	3	3	PK	108.73	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

LOW CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 16.MAR.2015 16:14:37

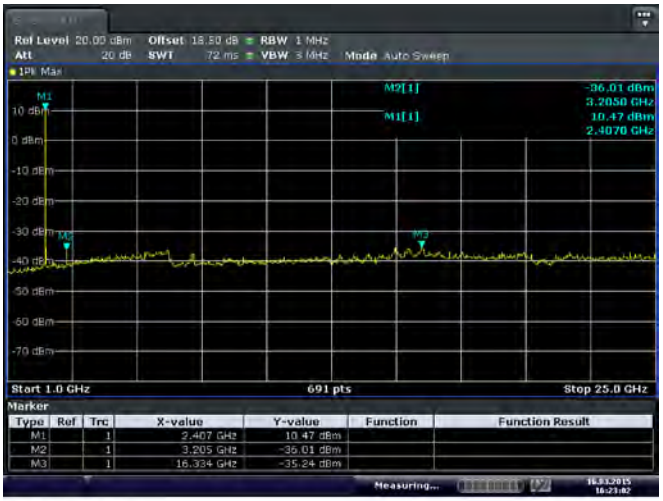
LOW CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 16.MAR.2015 16:16:22

LOW CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 16.MAR.2015 16:18:14

LOW CHANNEL, SPURIOUS 1 GHz~25 GHz



Date: 16.MAR.2015 16:23:02

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11b: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01502	-80.65	6	3	3	QP	23.61	88.25	64.64	Note 2	PASS
2.979	-57.91	6	3	3	QP	46.35	88.25	41.90	Note 2	PASS
654	-73.35	4.7	3	3	QP	29.61	88.25	58.64	Note 2	PASS
892.6	-73.16	4.7	3	3	QP	29.80	88.25	58.45	Note 2	PASS
3240	-36.73	0	3	3	PK	61.53	88.25	26.72	Note 2	PASS
	N/A		3	3	AV	N/A	68.25	N/A	Note 3	PASS
16300	-35.13	0	3	3	PK	63.13	88.25	25.12	Note 2	PASS
	N/A		3	3	AV	N/A	68.25	N/A	Note 3	PASS
2441	9.99	0	3	3	PK	108.25	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 16.MAR.2015 16:30:57

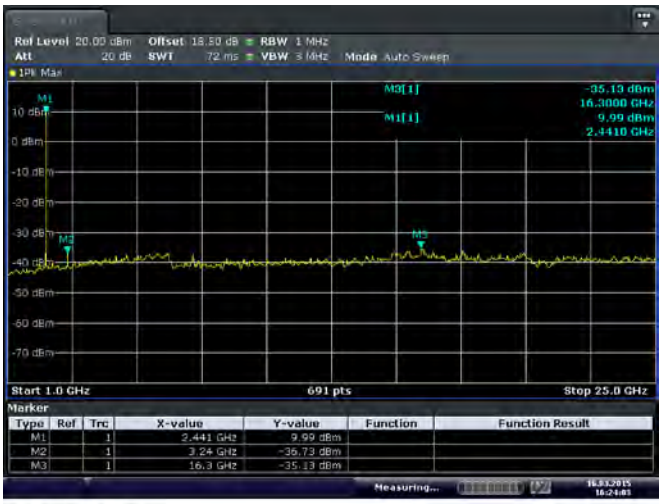
MIDDLE CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 16.MAR.2015 16:29:51

MIDDLE CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 16.MAR.2015 16:27:47

MIDDLE CHANNEL, SPURIOUS 1 GHz~25 GHz



Date: 16.MAR.2015 16:24:03

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11b: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01502	-80.21	6	3	3	QP	24.05	87.60	63.55	Note 2	PASS
2.979	-56.92	6	3	3	QP	47.34	87.60	40.26	Note 2	PASS
376	-73.38	4.7	3	3	QP	29.58	87.60	58.02	Note 2	PASS
968.4	-72.03	4.7	3	3	QP	30.93	74.00	43.07	--	PASS
3275	-36.17	0	3	3	PK	62.09	87.60	25.51	Note 2	PASS
	N/A		3	3	AV	N/A	67.60	N/A	Note 3	PASS
16300	-34.26	0	3	3	PK	64.00	87.60	23.60	Note 2	PASS
	N/A		3	3	AV	N/A	67.60	N/A	Note 3	PASS
2476	9.34	0	3	3	PK	107.60	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 16.MAR.2015 16:32:10

HIGH CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 16.MAR.2015 16:33:33

HIGH CHANNEL, SPURIOUS 30MHz~1GHz

Date: 16.MAR.2015 16:34:17

HIGH CHANNEL, SPURIOUS 1GHz~25GHz

Date: 16.MAR.2015 16:35:16

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

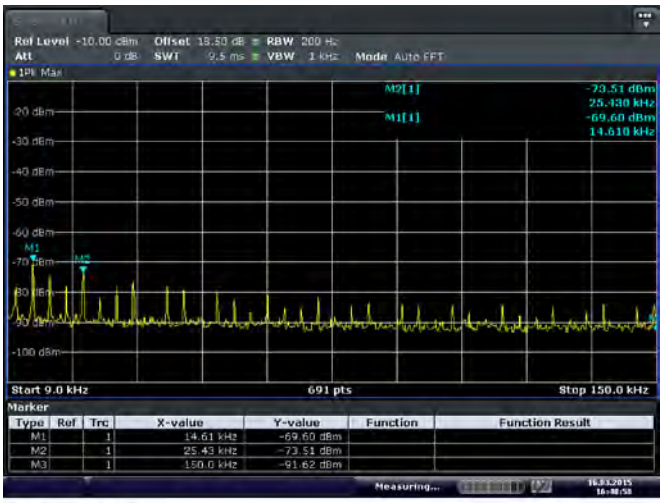
Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11g: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01461	-69.6	6	3	3	QP	34.66	89.16	54.50	Note 2	PASS
1.252	-67.17	6	3	3	QP	37.09	89.16	52.07	Note 2	PASS
630.1	-72.77	4.7	3	3	QP	30.19	89.16	58.97	Note 2	PASS
902.4	-49.55	4.7	3	3	QP	53.41	89.16	35.75	Note 2	PASS
3205	-34.82	0	3	3	PK	63.44	89.16	25.72	Note 2	PASS
	N/A		3	3	AV	N/A	69.16	N/A	Note 3	PASS
11819	-34.26	0	3	3	PK	64.00	74.00	10.00	--	PASS
	-52.61		3	3	AV	45.65	54.00	8.35	--	PASS
2407	10.9	0	3	3	PK	109.16	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

LOW CHANNEL, SPURIOUS 9 kHz~150 kHz

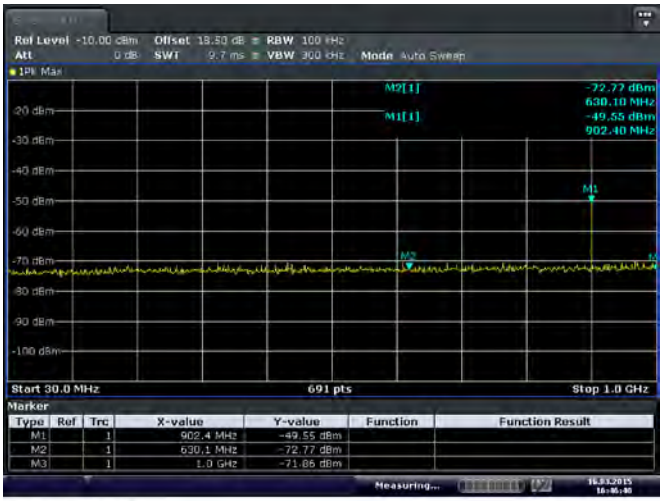


Date: 16.MAR.2015 16:48:58

LOW CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 16.MAR.2015 16:47:46

LOW CHANNEL, SPURIOUS 30 MHz~1 GHz



Date: 16.MAR.2015 16:46:40

LOW CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 16.MAR.2015 16:45:16

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11g: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01461	-72	6	3	3	QP	32.26	87.54	55.28	Note 2	PASS
0.949	-69.35	6	3	3	QP	34.91	87.54	52.63	Note 2	PASS
454.6	-72.15	4.7	3	3	QP	30.81	87.54	56.73	Note 2	PASS
902.4	-44.84	4.7	3	3	QP	58.12	87.54	29.42	Note 2	PASS
3240	-36.36	0	3	3	PK	61.90	87.54	25.64	Note 2	PASS
	N/A		3	3	AV	N/A	67.54	N/A	Note 3	PASS
7894	-38.78	0	3	3	PK	59.48	87.54	28.06	Note 2	PASS
	N/A		3	3	AV	N/A	67.54	N/A	Note 3	PASS
2441	9.28	0	3	3	PK	107.54	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 16.MAR.2015 16:40:47

MIDDLE CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 16.MAR.2015 16:41:46

MIDDLE CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 16.MAR.2015 16:42:58

MIDDLE CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 16.MAR.2015 16:44:09

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11g: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01461	-69.96	6	3	3	QP	34.30	87.22	52.92	Note 2	PASS
0.949	-68.59	6	3	3	QP	35.67	87.22	51.55	Note 2	PASS
470.1	-73.58	4.7	3	3	QP	29.38	87.22	57.84	Note 2	PASS
982.5	-72.08	4.7	3	3	QP	30.88	74.00	43.12	--	PASS
3275	-36.78	0	3	3	PK	61.48	87.22	25.74	Note 2	PASS
	N/A		3	3	AV	N/A	67.22	N/A	Note 3	PASS
15848	-35.64	0	3	3	PK	62.62	74.00	11.38	--	PASS
	-51.63		3	3	AV	46.63	54.00	7.37	--	PASS
2476	8.96	0	3	3	PK	107.22	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 16.MAR.2015 16:39:55

HIGH CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 16.MAR.2015 16:38:49

HIGH CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 16.MAR.2015 16:37:50

HIGH CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 16.MAR.2015 16:36:22

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

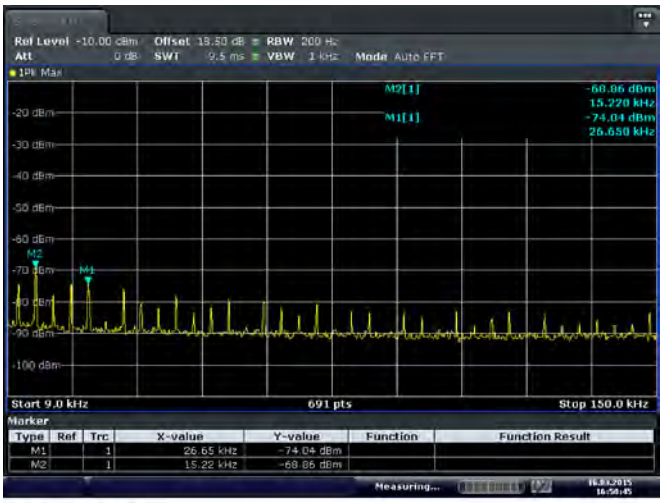
Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11n20: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01522	-68.86	6	3	3	QP	35.40	86.95	51.55	Note 2	PASS
1.554	-67.13	6	3	3	QP	37.13	86.95	49.82	Note 2	PASS
602	-72.28	4.7	3	3	QP	30.68	86.95	56.27	Note 2	PASS
913.7	-52.61	4.7	3	3	QP	50.35	86.95	36.60	Note 2	PASS
3205	-36.87	0	3	3	PK	61.39	86.95	25.56	Note 2	PASS
	N/A		3	3	AV	N/A	66.95	N/A	Note 3	PASS
16334	-36.21	0	3	3	PK	62.05	86.95	24.90	Note 2	PASS
	N/A		3	3	AV	N/A	66.95	N/A	Note 3	PASS
2407	8.69	0	3	3	PK	106.95	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

LOW CHANNEL, SPURIOUS 9 kHz~150 kHz



Date: 16.MAR.2015 16:50:45

LOW CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 16.MAR.2015 16:51:53

LOW CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 16.MAR.2015 16:53:08

LOW CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 16.MAR.2015 16:54:00

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11n20: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01522	-71.2	6	3	3	QP	33.06	87.87	54.81	Note 2	PASS
1.252	-70.78	6	3	3	QP	33.48	87.87	54.39	Note 2	PASS
541.7	-72.21	4.7	3	3	QP	30.75	87.87	57.12	Note 2	PASS
913.7	-53.69	4.7	3	3	QP	49.27	87.87	38.60	Note 2	PASS
3240	-36.36	0	3	3	PK	61.90	87.87	25.97	Note 2	PASS
	N/A		3	3	AV	N/A	67.87	N/A	Note 3	PASS
6123	-36.28	0	3	3	PK	61.98	87.87	25.89	Note 2	PASS
	N/A		3	3	AV	N/A	67.87	N/A	Note 3	PASS
2441	9.61	0	3	3	PK	107.87	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 16.MAR.2015 16:58:01

MIDDLE CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 16.MAR.2015 16:57:27

MIDDLE CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 16.MAR.2015 16:56:27

MIDDLE CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 16.MAR.2015 16:55:15

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11n20: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01522	-69.87	6	3	3	QP	34.39	86.20	51.81	Note 2	PASS
1.295	-68.47	6	3	3	QP	35.79	86.20	50.41	Note 2	PASS
602	-73.07	4.7	3	3	QP	29.89	86.20	56.31	Note 2	PASS
902.4	-50.45	4.7	3	3	QP	52.51	86.20	33.69	Note 2	PASS
3275	-37.4	0	3	3	PK	60.86	86.20	25.34	Note 2	PASS
	N/A		3	3	AV	N/A	66.20	N/A	Note 3	PASS
16404	-36.53	0	3	3	PK	61.73	86.20	24.47	Note 2	PASS
	N/A		3	3	AV	N/A	66.20	N/A	Note 3	PASS
2476	7.94	0	3	3	PK	106.20	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 16.MAR.2015 17:00:29

HIGH CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 16.MAR.2015 17:01:27

HIGH CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 16.MAR.2015 17:02:30

HIGH CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 16.MAR.2015 17:03:18

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

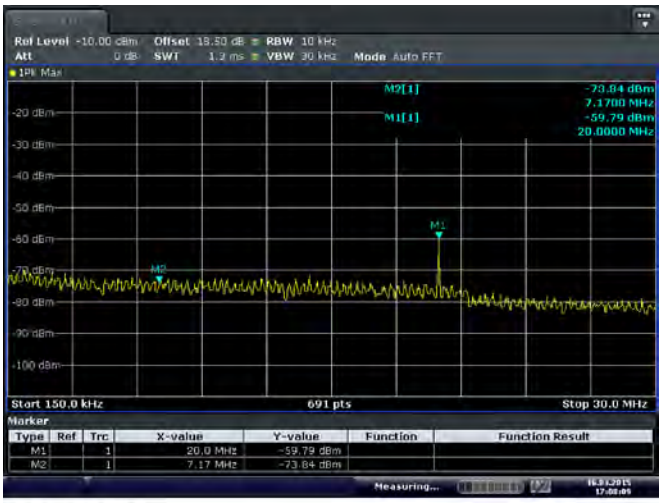
802.11n40: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01584	-74.09	6	3	3	QP	30.17	84.53	54.36	Note 2	PASS
20	-59.79	6	3	3	QP	44.47	84.53	40.06	Note 2	PASS
589.4	-72.3	4.7	3	3	QP	30.66	84.53	53.87	Note 2	PASS
895.4	-72.3	4.7	3	3	QP	30.66	84.53	53.87	Note 2	PASS
3240	-36.4	0	3	3	PK	61.86	84.53	22.67	Note 2	PASS
	N/A		3	3	AV	N/A	64.53	N/A	Note 3	PASS
16369	-34.24	0	3	3	PK	64.02	84.53	20.51	Note 2	PASS
	N/A		3	3	AV	N/A	64.53	N/A	Note 3	PASS
2407	6.27	0	3	3	PK	104.53	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

LOW CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 16.MAR.2015 17:09:10

LOW CHANNEL, SPURIOUS 150 kHz~30 MHz



Date: 16.MAR.2015 17:08:10

LOW CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 16.MAR.2015 17:07:05

LOW CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 16.MAR.2015 17:04:46

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

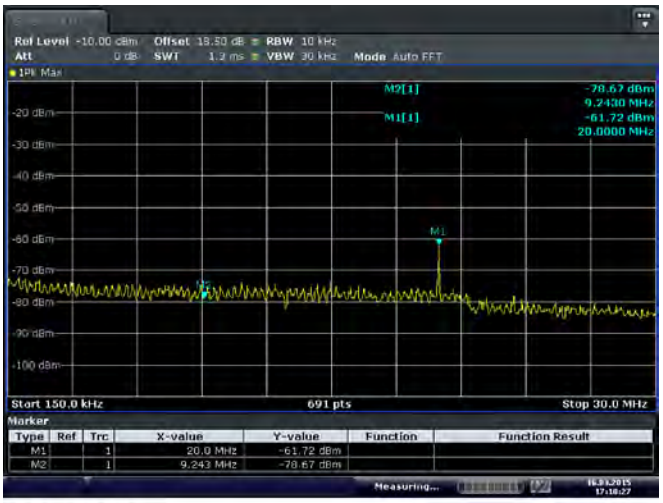
802.11n40: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01584	-75.28	6	3	3	QP	28.98	83.56	54.58	Note 2	PASS
20	-61.72	6	3	3	QP	42.54	83.56	41.02	Note 2	PASS
418.1	-73.43	4.7	3	3	QP	29.53	83.56	54.03	Note 2	PASS
913.7	-53.61	4.7	3	3	QP	49.35	83.56	34.21	Note 2	PASS
3240	-37.6	0	3	3	PK	60.66	83.56	22.90	Note 2	PASS
	N/A		3	3	AV	N/A	63.56	N/A	Note 3	PASS
16364	-35.85	0	3	3	PK	62.41	83.56	21.15	Note 2	PASS
	N/A		3	3	AV	N/A	63.56	N/A	Note 3	PASS
2441	5.3	0	3	3	PK	103.56	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 16.MAR.2015 17:09:48

MIDDLE CHANNEL, SPURIOUS 150 kHz~30 MHz

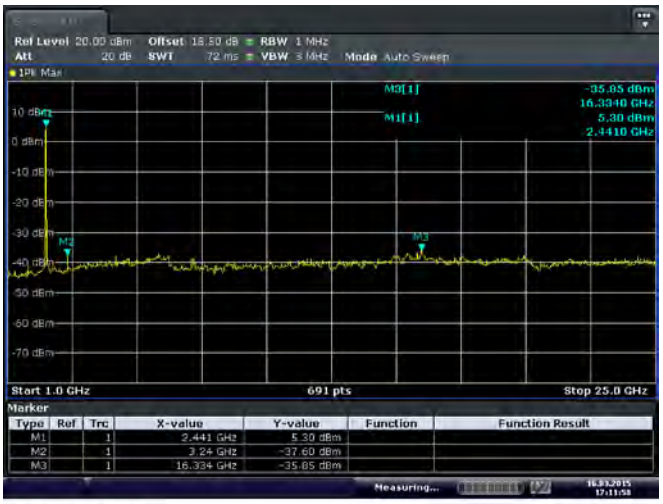


Date: 16.MAR.2015 17:10:27

MIDDLE CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 16.MAR.2015 17:11:03

MIDDLE CHANNEL, SPURIOUS 1 GHz~25 GHz



Date: 16.MAR.2015 17:11:58

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

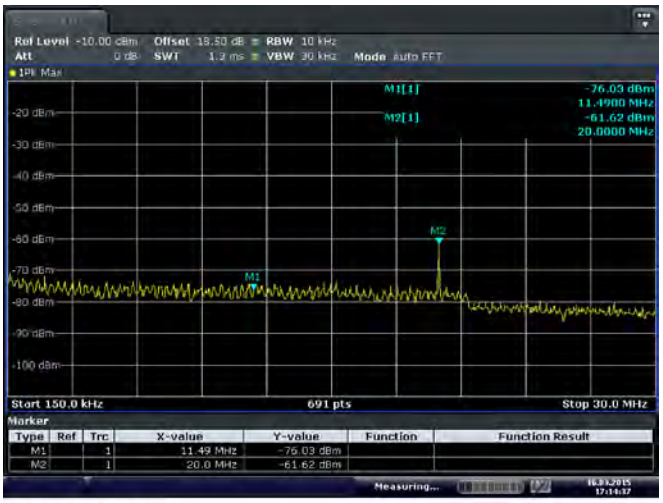
802.11n40: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01359	-75.57	6	3	3	QP	28.69	83.72	55.03	Note 2	PASS
20	-61.62	6	3	3	QP	42.64	83.72	41.08	Note 2	PASS
579.6	-72.11	4.7	3	3	QP	30.85	83.72	52.87	Note 2	PASS
913.7	-54.06	4.7	3	3	QP	48.90	83.72	34.82	Note 2	PASS
3275	-37.41	0	3	3	PK	60.85	83.72	22.87	Note 2	PASS
	N/A		3	3	AV	N/A	63.72	N/A	Note 3	PASS
16334	-35.78	0	3	3	PK	62.48	83.72	21.24	Note 2	PASS
	N/A		3	3	AV	N/A	63.72	N/A	Note 3	PASS
2441	5.46	0	3	3	PK	103.72	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 16.MAR.2015 17:15:24

HIGH CHANNEL, SPURIOUS 150 kHz~30 MHz



Date: 16.MAR.2015 17:14:37

HIGH CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 16.MAR.2015 17:13:41

HIGH CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 16.MAR.2015 17:12:48

Test Data and Plots (ANT 1)

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11b: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01604	-82.44	6	3	3	QP	21.82	86.05	64.23	Note 2	PASS
2.979	-60.52	6	3	3	QP	43.74	86.05	42.31	Note 2	PASS
394.3	-74.33	4.7	3	3	QP	28.63	86.05	57.42	Note 2	PASS
600.6	-67.8	4.7	3	3	QP	35.16	86.05	50.89	Note 2	PASS
7860	-39.25	0	3	3	PK	59.01	86.05	27.04	Note 2	PASS
	N/A		3	3	AV	N/A	66.05	N/A	Note 3	PASS
16369	-36.62	0	3	3	PK	61.64	86.05	24.41	Note 2	PASS
	N/A		3	3	AV	N/A	66.05	N/A	Note 3	PASS
2407	7.79	0	3	3	PK	106.05	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

LOW CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 17.MAR.2015 09:49:39

LOW CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 17.MAR.2015 09:40:45

LOW CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 17.MAR.2015 09:42:35

LOW CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 17.MAR.2015 09:43:39

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11b: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01604	-83.01	6	3	3	QP	21.25	86.78	65.53	Note 2	PASS
2.979	-59.74	6	3	3	QP	44.52	86.78	42.26	Note 2	PASS
394.3	-73.48	4.7	3	3	QP	29.48	86.78	57.30	Note 2	PASS
600.6	-67.61	4.7	3	3	QP	35.35	86.78	51.43	Note 2	PASS
7860	-37.87	0	3	3	PK	60.39	86.78	26.39	Note 2	PASS
	N/A		3	3	AV	N/A	66.78	N/A	Note 3	PASS
16334	-35.66	0	3	3	PK	62.60	86.78	24.18	Note 2	PASS
	N/A		3	3	AV	N/A	66.78	N/A	Note 3	PASS
2441	8.52	0	3	3	PK	106.78	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 17.MAR.2015 09:49:22

MIDDLE CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 17.MAR.2015 09:41:04

MIDDLE CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 17.MAR.2015 09:42:51

MIDDLE CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 17.MAR.2015 09:47:39

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

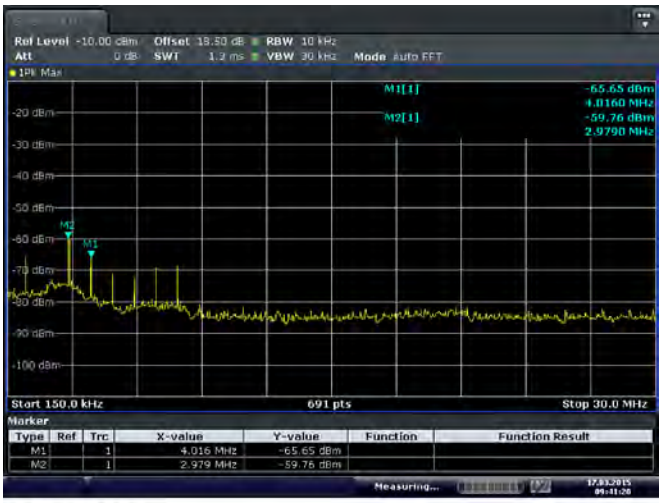
802.11b: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01604	-82.71	6	3	3	QP	21.55	86.53	64.98	Note 2	PASS
2.979	-59.76	6	3	3	QP	44.50	86.53	42.03	Note 2	PASS
394.3	-73.49	4.7	3	3	QP	29.47	86.53	57.06	Note 2	PASS
600.6	-67.62	4.7	3	3	QP	35.34	86.53	51.19	Note 2	PASS
7860	-38.81	0	3	3	PK	59.45	86.53	27.08	Note 2	PASS
	N/A		3	3	AV	N/A	66.53	N/A	Note 3	PASS
16334	-35.68	0	3	3	PK	62.58	86.53	23.95	Note 2	PASS
	N/A		3	3	AV	N/A	66.53	N/A	Note 3	PASS
2476	8.27	0	3	3	PK	106.53	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 17.MAR.2015 09:49:54

HIGH CHANNEL, SPURIOUS 150 kHz~30 MHz



Date: 17.MAR.2015 09:41:20

HIGH CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 17.MAR.2015 09:42:18

HIGH CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 17.MAR.2015 09:51:47

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

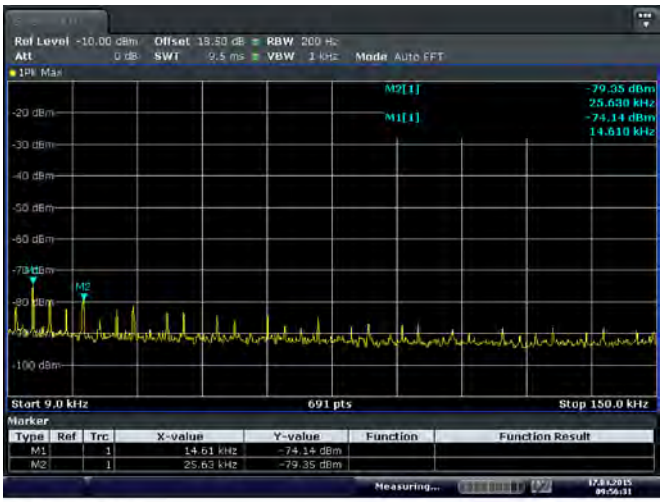
Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11g: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01461	-74.14	6	3	3	QP	30.12	85.50	55.38	Note 2	PASS
0.604	-73.26	6	3	3	QP	31.00	85.50	54.50	Note 2	PASS
265.1	-75.21	4.7	3	3	QP	27.75	46.00	18.25	--	PASS
600.6	-68.23	4.7	3	3	QP	34.73	85.50	50.77	Note 2	PASS
6609	-38.18	0	3	3	PK	60.08	85.50	25.42	Note 2	PASS
	N/A		3	3	AV	N/A	65.50	N/A	Note 3	PASS
16300	-35.35	0	3	3	PK	62.91	85.50	22.59	Note 2	PASS
	N/A		3	3	AV	N/A	65.50	N/A	Note 3	PASS
2407	7.24	0	3	3	PK	105.50	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

LOW CHANNEL, SPURIOUS 9 kHz~150 kHz



Date: 17.MAR.2015 09:56:31

LOW CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 17.MAR.2015 09:58:21

LOW CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 17.MAR.2015 10:02:31

LOW CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 17.MAR.2015 10:03:28

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11g: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01461	-74.32	6	3	3	QP	29.94	85.31	55.37	Note 2	PASS
0.344	-72.21	6	3	3	QP	32.05	85.31	53.26	Note 2	PASS
359.2	-71.74	4.7	3	3	QP	31.22	85.31	54.09	Note 2	PASS
600.6	-66.56	4.7	3	3	QP	36.40	85.31	48.91	Note 2	PASS
7825	-40.08	0	3	3	PK	58.18	85.31	27.13	Note 2	PASS
	N/A		3	3	AV	N/A	65.31	N/A	Note 3	PASS
16369	-36.14	0	3	3	PK	62.12	85.31	23.19	Note 2	PASS
	N/A		3	3	AV	N/A	65.31	N/A	Note 3	PASS
2441	7.05	0	3	3	PK	105.31	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 17.MAR.2015 09:56:16

MIDDLE CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 17.MAR.2015 09:55:05

MIDDLE CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 17.MAR.2015 10:00:00

MIDDLE CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 17.MAR.2015 10:01:03

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

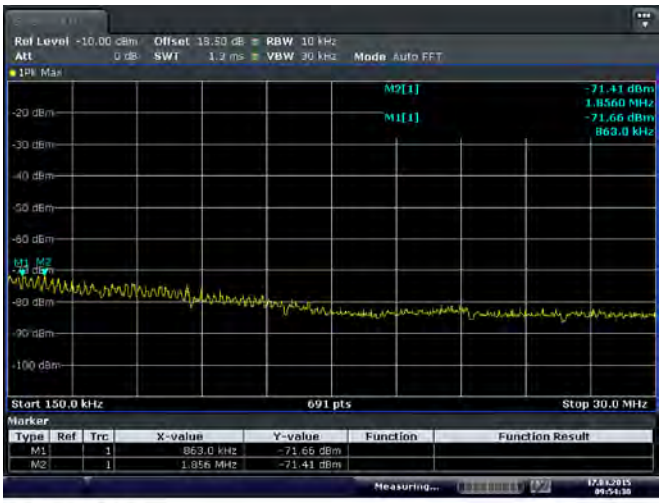
802.11g: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01461	-74.52	6	3	3	QP	29.74	84.25	54.51	Note 2	PASS
1.856	-71.41	6	3	3	QP	32.85	84.25	51.40	Note 2	PASS
286.2	-73.66	4.7	3	3	QP	29.30	84.25	54.95	Note 2	PASS
600.6	-67.68	4.7	3	3	QP	35.28	84.25	48.97	Note 2	PASS
7860	-38.44	0	3	3	PK	59.82	84.25	24.43	Note 2	PASS
	N/A		3	3	AV	N/A	64.25	N/A	Note 3	PASS
16334	-35.98	0	3	3	PK	62.28	84.25	21.97	Note 2	PASS
	N/A		3	3	AV	N/A	64.25	N/A	Note 3	PASS
2476	5.99	0	3	3	PK	104.25	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 17.MAR.2015 09:56:01

HIGH CHANNEL, SPURIOUS 150 kHz~30 MHz



Date: 17.MAR.2015 09:54:30

HIGH CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 17.MAR.2015 09:53:34

HIGH CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 17.MAR.2015 09:52:42

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11n20: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01522	-73.68	6	3	3	QP	30.58	85.26	54.68	Note 2	PASS
1.252	-73.13	6	3	3	QP	31.13	85.26	54.13	Note 2	PASS
332.5	-72.74	4.7	3	3	QP	30.22	46.00	15.78	--	PASS
600.6	-67.4	4.7	3	3	QP	35.56	85.26	49.70	Note 2	PASS
7860	-38.52	0	3	3	PK	59.74	85.26	25.52	Note 2	PASS
	N/A		3	3	AV	N/A	65.26	N/A	Note 3	PASS
15360	-37.55	0	3	3	PK	60.71	74.00	13.29	--	PASS
	-50.83		3	3	AV	47.43	54.00	6.57	--	PASS
2407	7	0	3	3	PK	105.26	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

LOW CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 17.MAR.2015 10:04:41

LOW CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 17.MAR.2015 10:05:54

LOW CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 17.MAR.2015 10:07:41

LOW CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 17.MAR.2015 10:08:55

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11n20: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01522	-73.8	6	3	3	QP	30.46	84.93	54.47	Note 2	PASS
1.252	-72.82	6	3	3	QP	31.44	84.93	53.49	Note 2	PASS
600.6	-66.56	4.7	3	3	QP	36.40	84.93	48.53	Note 2	PASS
791.5	-64.96	4.7	3	3	QP	38.00	84.93	46.93	Note 2	PASS
6887	-37.41	0	3	3	PK	60.85	84.93	24.08	Note 2	PASS
	N/A		3	3	AV	N/A	64.93	N/A	Note 3	PASS
16369	-35.22	0	3	3	PK	63.04	84.93	21.89	Note 2	PASS
	N/A		3	3	AV	N/A	64.93	N/A	Note 3	PASS
2441	6.67	0	3	3	PK	104.93	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 17.MAR.2015 10:05:00

MIDDLE CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 17.MAR.2015 10:06:26

MIDDLE CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 17.MAR.2015 10:08:05

MIDDLE CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 17.MAR.2015 10:09:45

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

802.11n20: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01522	-73.63	6	3	3	QP	30.63	83.69	53.06	Note 2	PASS
1.252	-72.52	6	3	3	QP	31.74	83.69	51.95	Note 2	PASS
332.5	-73.82	4.7	3	3	QP	29.14	46.00	16.86	--	PASS
600.6	-67.1	4.7	3	3	QP	35.86	83.69	47.83	Note 2	PASS
7860	-38.37	0	3	3	PK	59.89	83.69	23.80	Note 2	PASS
	N/A		3	3	AV	N/A	63.69	N/A	Note 3	PASS
16369	-36.07	0	3	3	PK	62.19	83.69	21.50	Note 2	PASS
	N/A		3	3	AV	N/A	63.69	N/A	Note 3	PASS
2476	5.43	0	3	3	PK	103.69	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 17.MAR.2015 10:05:13

HIGH CHANNEL, SPURIOUS 150 kHz~30 MHz

Date: 17.MAR.2015 10:06:48

HIGH CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 17.MAR.2015 10:07:25

HIGH CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 17.MAR.2015 10:10:46

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

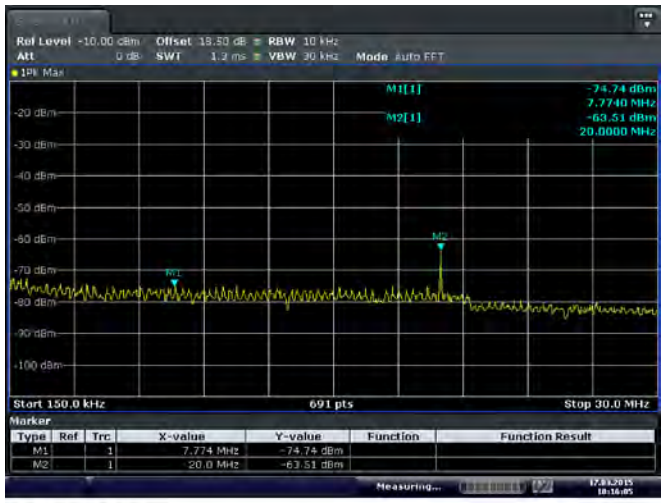
802.11n40: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01359	-77.77	6	3	3	QP	26.49	81.75	55.26	Note 2	PASS
20	-63.51	6	3	3	QP	40.75	81.75	41.00	Note 2	PASS
600.6	-67.56	4.7	3	3	QP	35.40	81.75	46.35	Note 2	PASS
892.6	-66.28	4.7	3	3	QP	36.68	81.75	45.07	Note 2	PASS
7860	-37.2	0	3	3	PK	61.06	81.75	20.69	Note 2	PASS
	N/A		3	3	AV	N/A	61.75	N/A	Note 3	PASS
16334	-36.27	0	3	3	PK	61.99	81.75	19.76	Note 2	PASS
	N/A		3	3	AV	N/A	61.75	N/A	Note 3	PASS
2407	3.49	0	3	3	PK	101.75	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

LOW CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 17.MAR.2015 10:13:45

LOW CHANNEL, SPURIOUS 150 kHz~30 MHz



Date: 17.MAR.2015 10:16:05

LOW CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 17.MAR.2015 10:17:04

LOW CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 17.MAR.2015 10:18:41

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

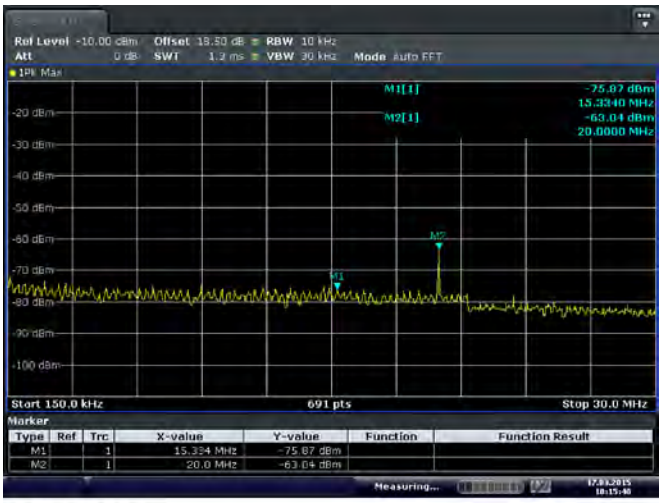
802.11n40: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01359	-77.41	6	3	3	QP	26.85	81.55	54.70	Note 2	PASS
20	-63.04	6	3	3	QP	41.22	81.55	40.33	Note 2	PASS
600.6	-68.29	4.7	3	3	QP	34.67	81.55	46.88	Note 2	PASS
837.9	-67.96	4.7	3	3	QP	35.00	81.55	46.55	Note 2	PASS
6923	-38.61	0	3	3	PK	59.65	81.55	21.90	Note 2	PASS
	N/A		3	3	AV	N/A	61.55	N/A	Note 3	PASS
16336	-36.28	0	3	3	PK	61.98	81.55	19.57	Note 2	PASS
	N/A		3	3	AV	N/A	61.55	N/A	Note 3	PASS
2441	3.29	0	3	3	PK	101.55	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 9 kHz~150 kHz

Date: 17.MAR.2015 10:14:08

MIDDLE CHANNEL, SPURIOUS 150 kHz~30 MHz



Date: 17.MAR.2015 10:15:40

MIDDLE CHANNEL, SPURIOUS 30 MHz~1 GHz

Date: 17.MAR.2015 10:17:28

MIDDLE CHANNEL, SPURIOUS 1 GHz~25 GHz

Date: 17.MAR.2015 10:27:19

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater. And the maximum in-band gain of the antenna is 3 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th, 3th, 4th, etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.

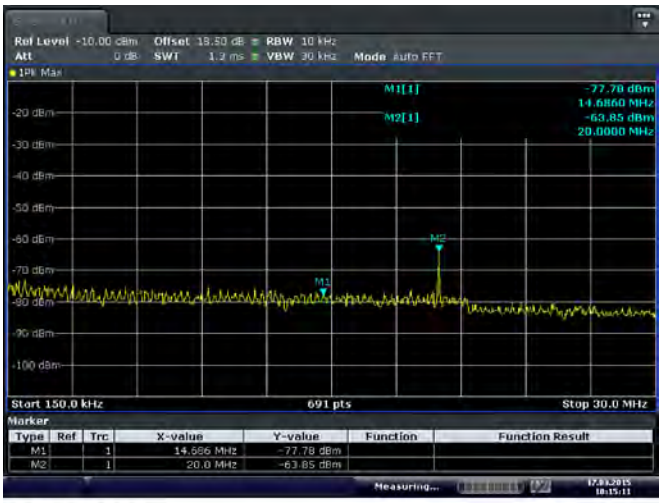
802.11n40: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.01359	-77.38	6	3	3	QP	26.88	80.62	53.74	Note 2	PASS
20	-63.85	6	3	3	QP	40.41	80.62	40.21	Note 2	PASS
600.6	-68.6	4.7	3	3	QP	34.36	80.62	46.26	Note 2	PASS
835.1	-68.98	4.7	3	3	QP	33.98	80.62	46.64	Note 2	PASS
7860	-38.79	0	3	3	PK	59.47	80.62	21.15	Note 2	PASS
	N/A		3	3	AV	N/A	60.62	N/A	Note 3	PASS
16369	-36.93	0	3	3	PK	61.33	80.62	19.29	Note 2	PASS
	N/A		3	3	AV	N/A	60.62	N/A	Note 3	PASS
2441	2.36	0	3	3	PK	100.62	N/A	N/A	Note 1	N/A
	N/A		3	3	AV	N/A	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 9 kHz~150 kHz

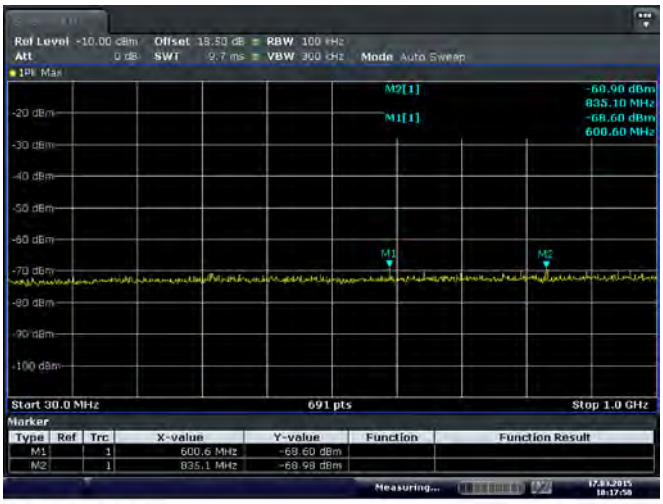
Date: 17.MAR.2015 10:14:21

HIGH CHANNEL, SPURIOUS 150 kHz~30 MHz



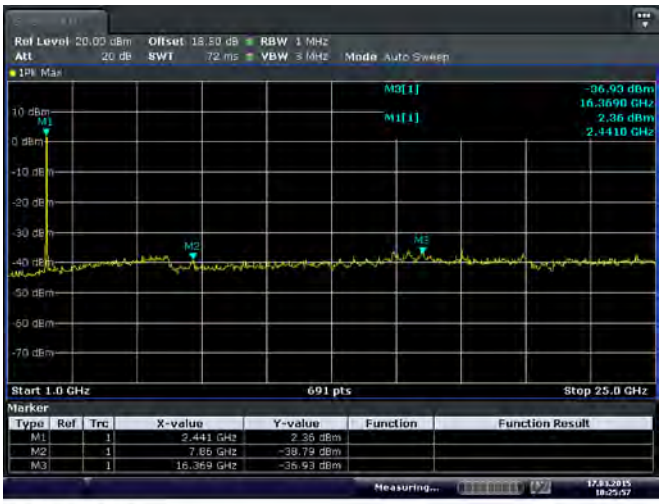
Date: 17.MAR.2015 10:15:10

HIGH CHANNEL, SPURIOUS 30 MHz~1 GHz



Date: 17.MAR.2015 10:17:50

HIGH CHANNEL, SPURIOUS 1 GHz~25 GHz



Date: 17.MAR.2015 10:25:57

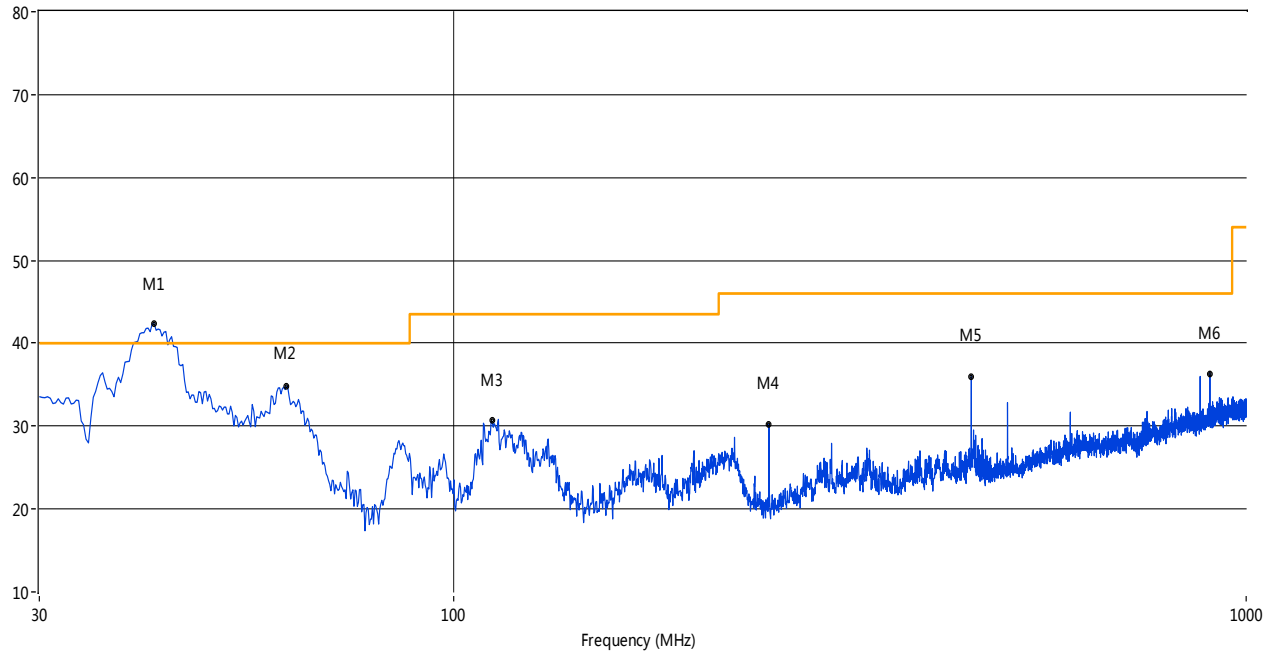
Cabinet Radiated spurious emission test

Note 1: The symbol of "--" in the table which means not application.

Note 2: For the test data above 1GHz，According the ANSI C63.4-2014, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

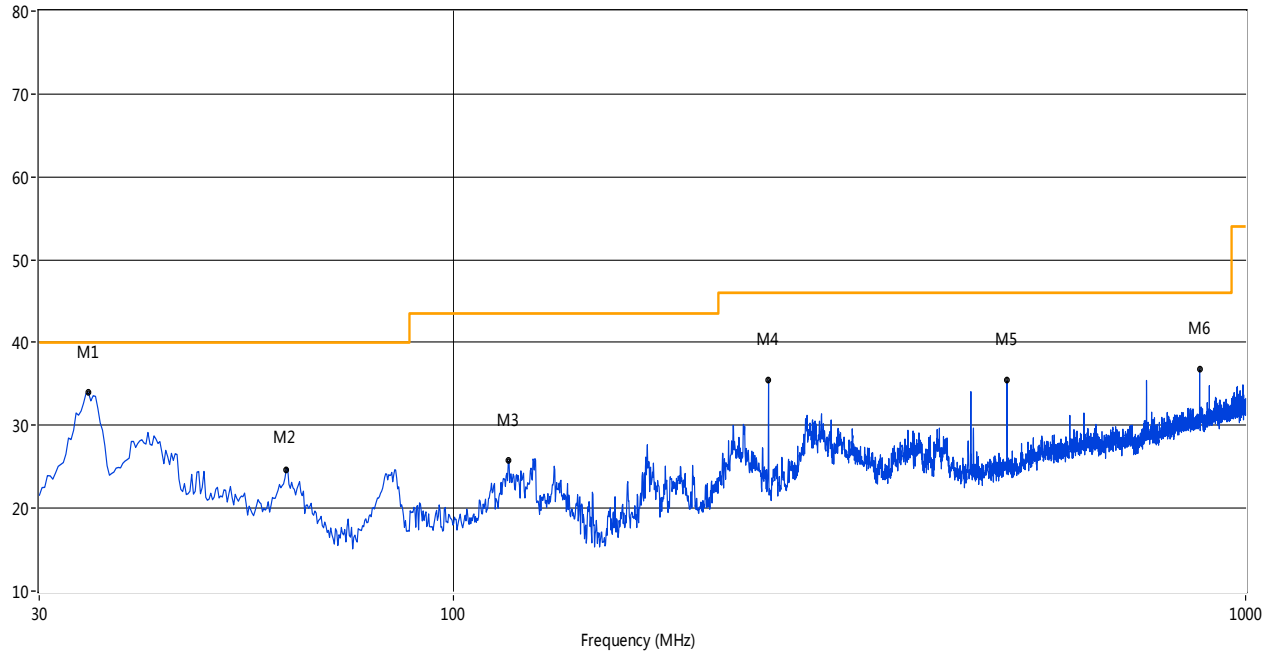
Note 3: The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

30 MHz to 1 GHz, ANT V



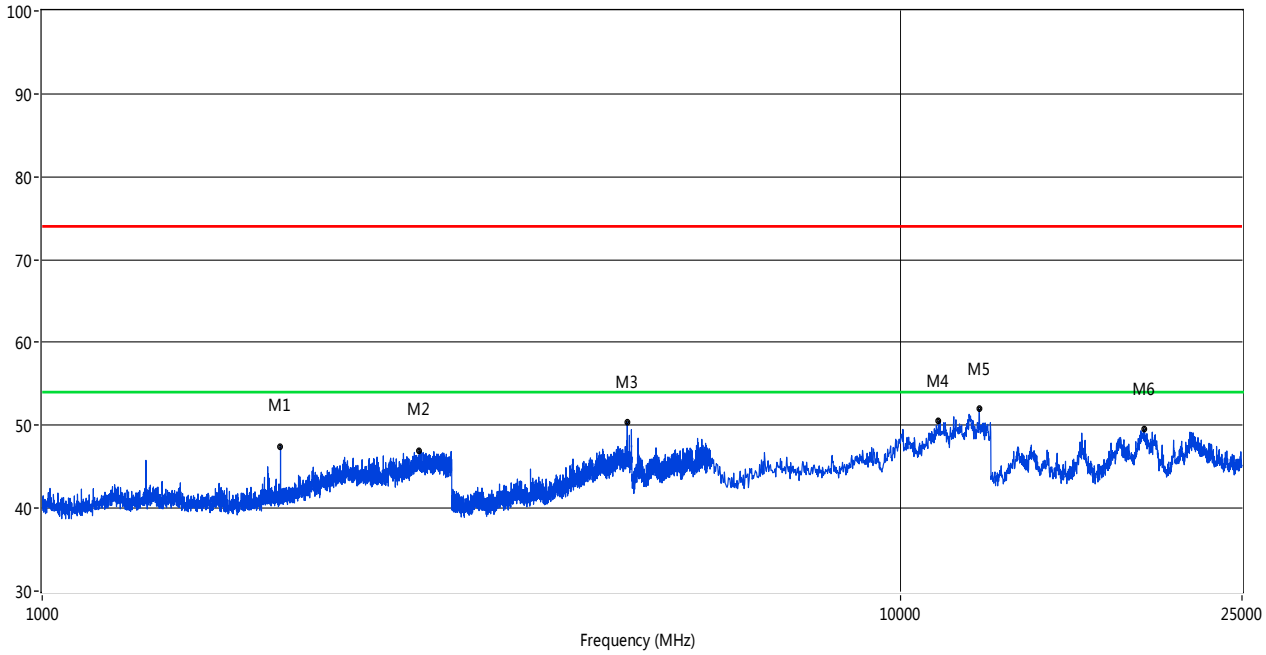
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	41.88	42.36	-19.06	40.0	-2.36	Peak	201.40	100	Vertical	N/A
1**	41.88	37.85	-19.06	40.0	2.15	QP	201.40	100	Vertical	Pass
2	61.52	34.79	-20.23	40.0	5.21	Peak	297.00	100	Vertical	Pass
3	111.70	30.64	-20.47	43.5	12.86	Peak	325.00	100	Vertical	Pass
4	249.89	30.24	-18.94	46.0	15.76	Peak	240.50	100	Vertical	Pass
5	449.90	35.98	-14.47	46.0	10.02	Peak	61.50	100	Vertical	Pass
6	899.87	36.35	-5.56	46.0	9.65	Peak	325.00	100	Vertical	Pass

30 MHz to 1 GHz, ANT H



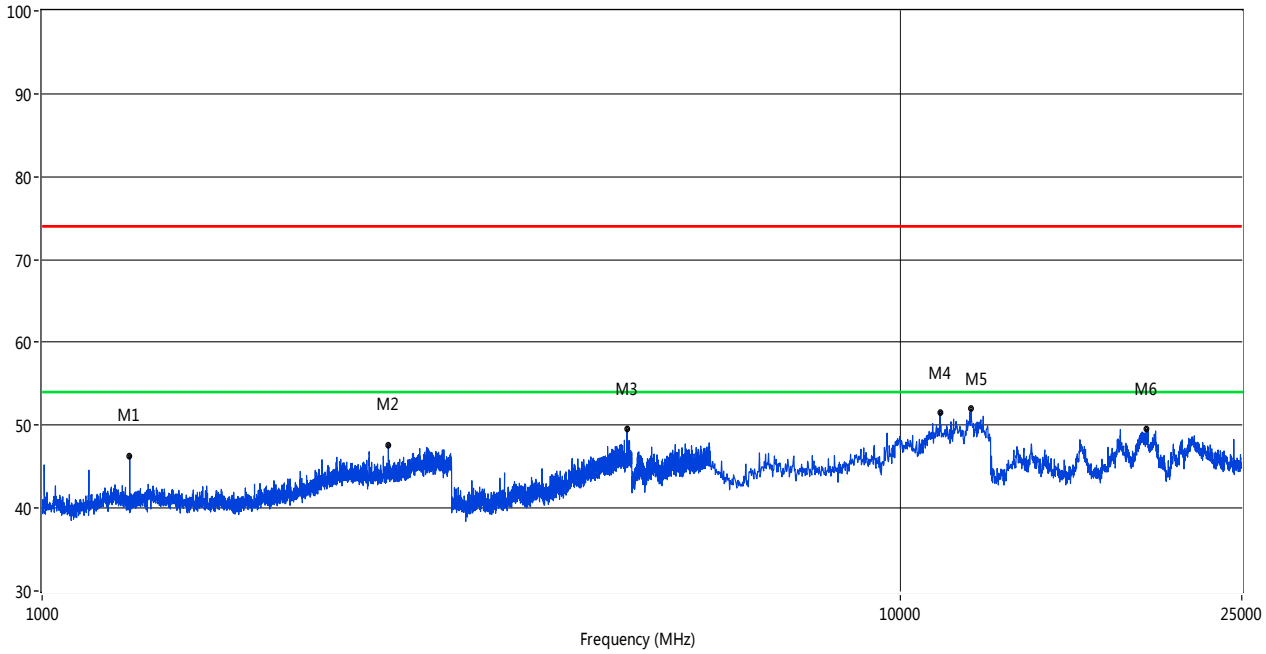
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	34.61	33.95	-21.38	40.0	6.05	Peak	152.60	100	Horizontal	Pass
2	61.52	34.79	-20.23	40.0	5.21	Peak	297.00	100	Horizontal	Pass
3	117.28	25.69	-21.30	43.5	17.81	Peak	304.40	100	Horizontal	Pass
4	249.89	30.24	-18.94	46.0	15.76	Peak	240.50	100	Horizontal	Pass
5	499.85	35.40	-13.17	46.0	10.60	Peak	315.50	100	Horizontal	Pass
6	874.90	36.75	-6.24	46.0	9.25	Peak	192.20	100	Horizontal	Pass

1 GHz to 25 GHz, ANT V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1895.28	47.44	-3.32	74.0	26.56	Peak	6.00	100	Vertical	PASS
2	2750.56	46.99	1.29	74.0	27.01	Peak	359.40	100	Vertical	PASS
3	4804.80	50.38	13.20	74.0	23.62	Peak	38.40	100	Vertical	PASS
4	11076.54	50.53	20.20	74.0	23.47	Peak	340.10	100	Vertical	PASS
5	12356.91	51.96	20.64	74.0	22.04	Peak	216.90	100	Vertical	PASS
6	19229.62	49.49	13.94	74.0	24.51	Peak	19.80	100	Vertical	PASS

1 GHz to 25 GHz, ANT H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1264.93	46.30	-5.43	74.0	27.70	Peak	204.80	100	Horizontal	PASS
2	2532.12	47.62	-0.55	74.0	26.38	Peak	359.60	100	Horizontal	PASS
3	4804.05	49.54	13.18	74.0	24.46	Peak	359.90	100	Horizontal	PASS
4	11121.46	51.55	20.22	74.0	22.45	Peak	176.00	100	Horizontal	PASS
5	12087.35	51.95	20.78	74.0	22.05	Peak	181.50	100	Horizontal	PASS
6	19349.42	49.47	13.21	74.0	24.53	Peak	211.50	100	Horizontal	PASS

A.6 Band Edge

The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

Test Data (ANT 0)

802.11b Mode：

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-33.50	3.96	-16.04	Pass
High Channel	-41.52	3.26	16.74	Pass

802.11g Mode：

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-29.58	1.63	-18.37	Pass
High Channel	-39.78	0.40	-19.60	Pass

802.11n-20MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-29.46	1.56	-18.44	Pass
High Channel	-39.40	0.56	-19.44	Pass

802.11n-40MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-22.51	-1.25	-21.25	Pass
High Channel	-28.63	-1.46	-21.46	Pass

Test Data (ANT 1)

802.11b Mode：

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-34.51	2.29	-17.71	Pass
High Channel	-41.64	2.10	-17.90	Pass

802.11g Mode：

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-30.94	-0.76	-20.76	Pass
High Channel	-40.95	-0.73	-20.73	Pass

802.11n-20 MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-31.46	-0.71	-20.71	Pass
High Channel	-40.84	-0.41	-20.41	Pass

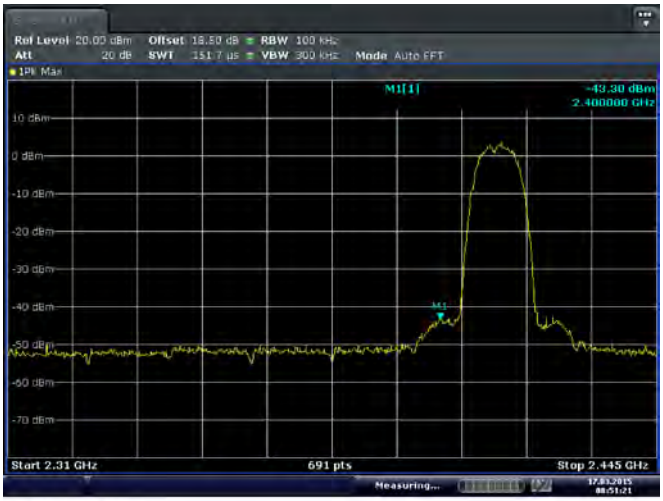
802.11n-40 MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-25.80	-2.88	-22.88	Pass
High Channel	-24.34	-2.72	-22.72	Pass

Test Plots (ANT 0)

802.11b LOW CHANNEL, Carrier level

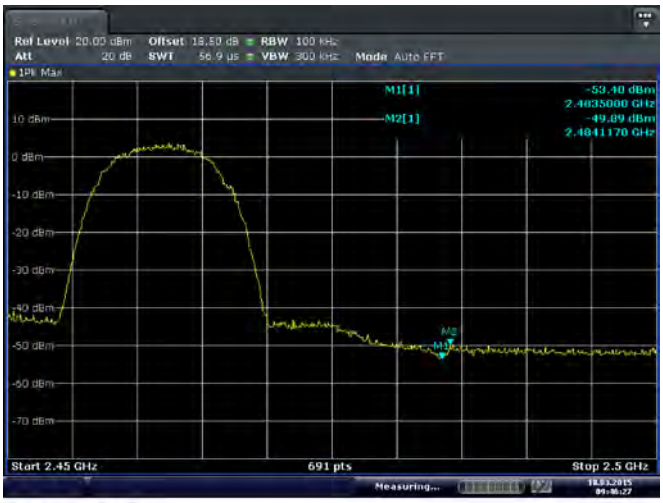
802.11b LOW CHANNEL, Reference level



802.11b LOW CHANNEL, Band Edge

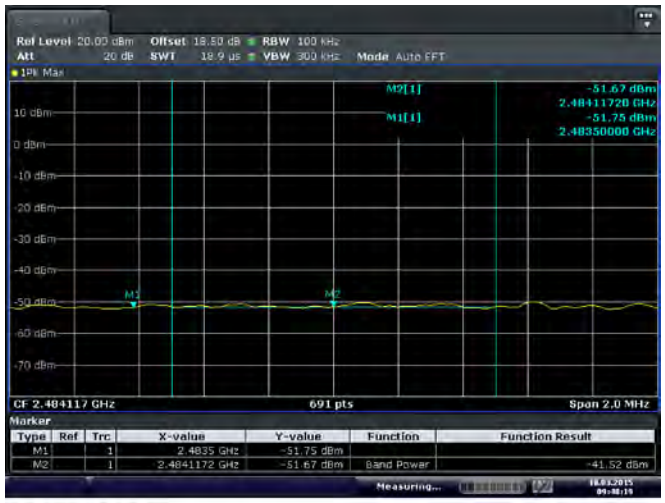
802.11b HIGH CHANNEL, Carrier level

802.11b HIGH CHANNEL, Reference level



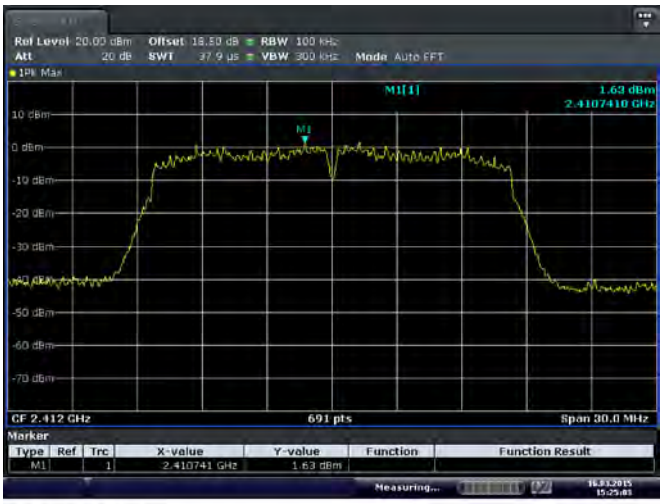
Date: 18.MAR.2015 09:46:28

802.11b HIGH CHANNEL, Band Edge



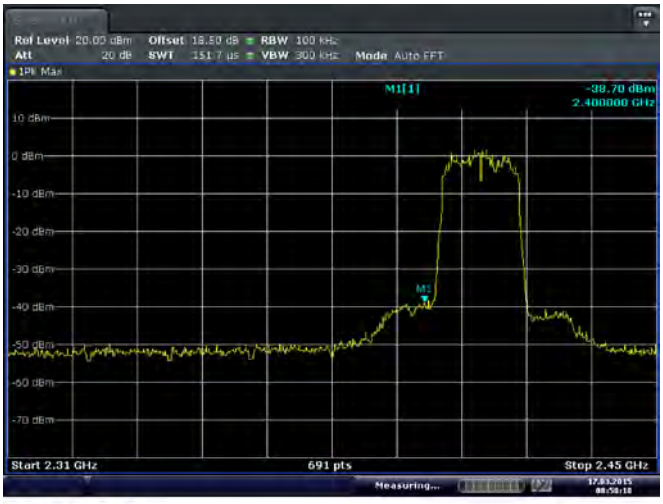
Date: 18.MAR.2015 09:48:19

802.11g LOW CHANNEL, Carrier level



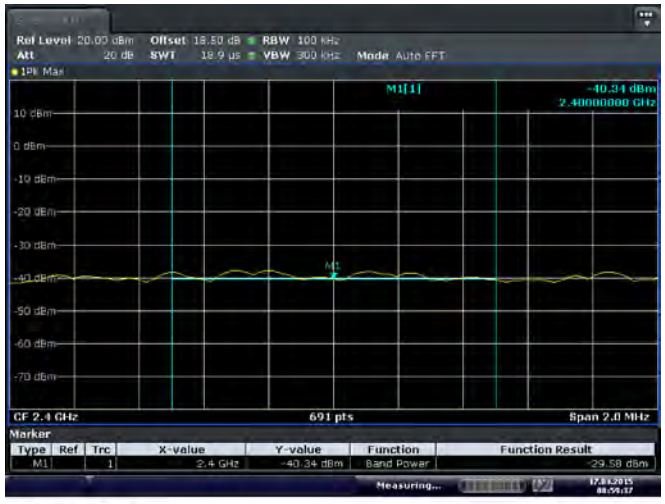
Date: 16.MAR.2015 15:25:03

802.11g LOW CHANNEL, Reference level



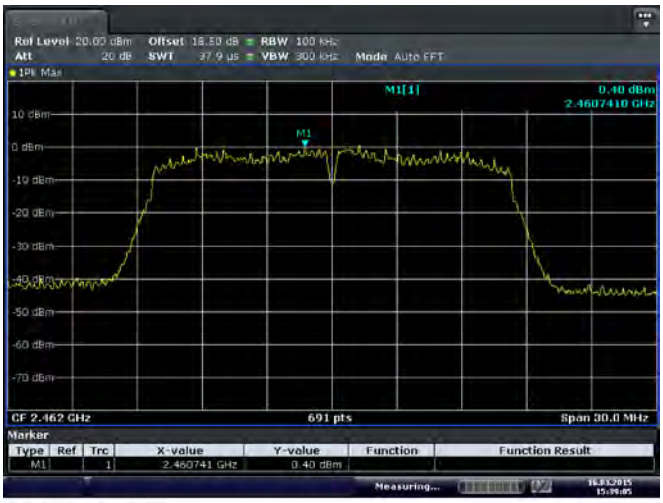
Date: 17.MAR.2015 08:58:18

802.11g LOW CHANNEL, Band Edge



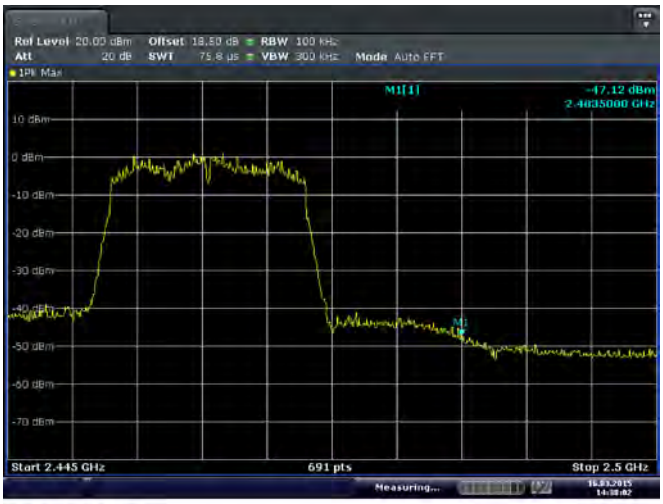
Date: 17.MAR.2015 08:59:37

802.11g HIGH CHANNEL, Carrier level



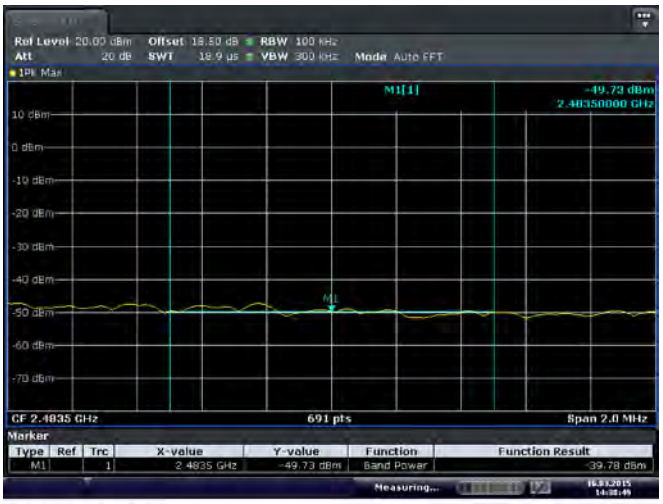
Date: 16.MAR.2015 15:39:05

802.11g HIGH CHANNEL, Reference level



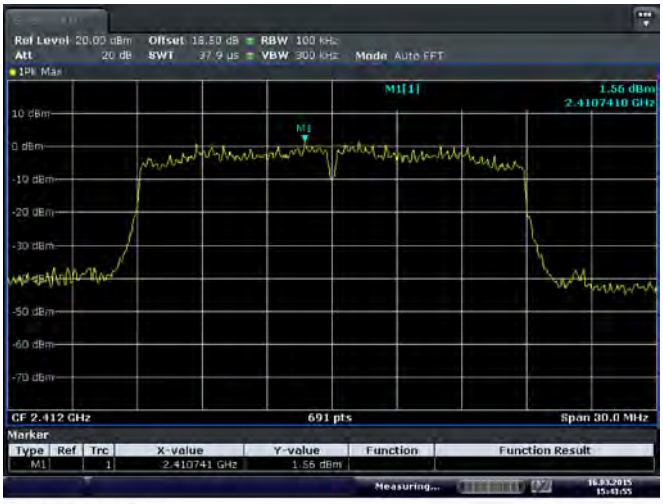
Date: 16.MAR.2015 14:38:02

802.11g HIGH CHANNEL, Band Edge



Date: 16.MAR.2015 14:38:49

802.11n-20 MHz LOW CHANNEL, Carrier level



Date: 16.MAR.2015 15:43:55

802.11n-20 MHz LOW CHANNEL, Reference level

Date: 17.MAR.2015 09:02:53

802.11n-20 MHz LOW CHANNEL, Band Edge

Date: 17.MAR.2015 09:03:24

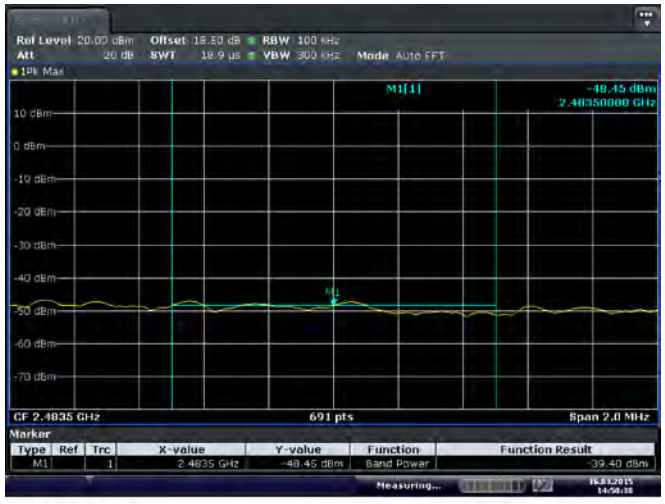
802.11n-20 MHz HIGH CHANNEL, Carrier level

Date: 16.MAR.2015 15:52:27

802.11n-20 MHz HIGH CHANNEL, Reference level

Date: 16.MAR.2015 14:49:57

802.11n-20 MHz HIGH CHANNEL, Band Edge



Date: 16.MAR.2015 14:50:38

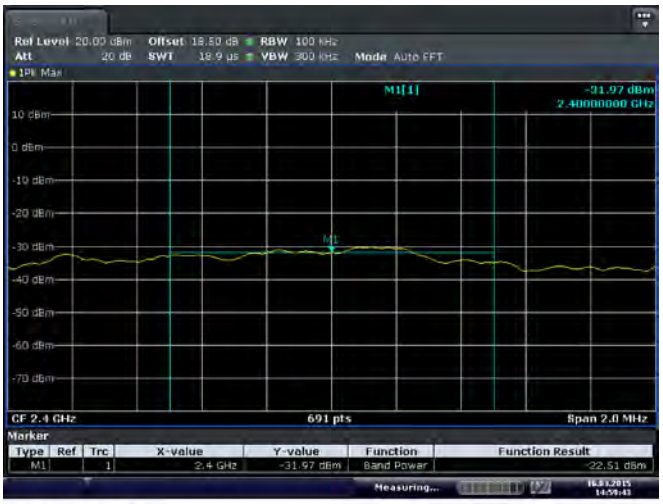
802.11n-40 MHz LOW CHANNEL, Carrier level

Date: 16.MAR.2015 15:56:51

802.11n-40 MHz LOW CHANNEL, Reference level

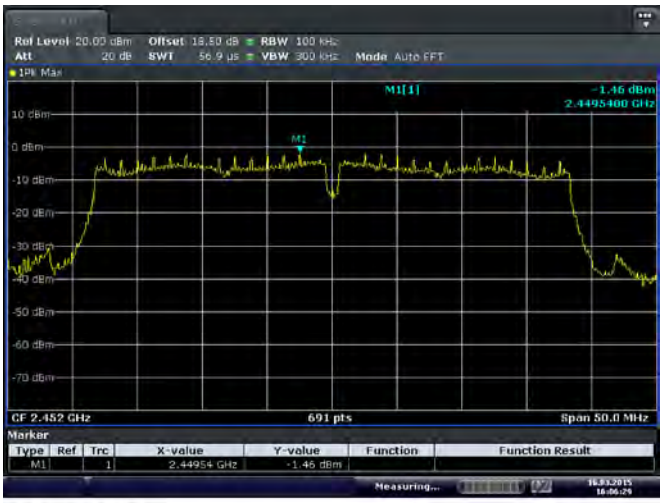
Date: 16.MAR.2015 14:58:51

802.11n-40 MHz LOW CHANNEL, Band Edge



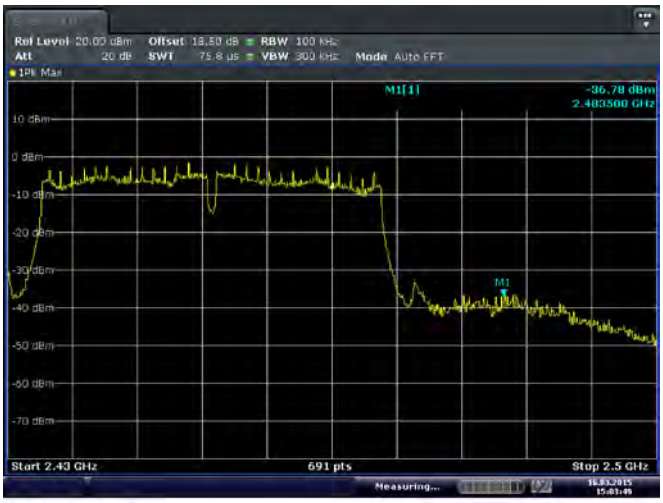
Date: 16.MAR.2015 14:59:43

802.11n-40 MHz HIGH CHANNEL, Carrier level



Date: 16.MAR.2015 16:06:29

802.11n-40 MHz HIGH CHANNEL, Reference level



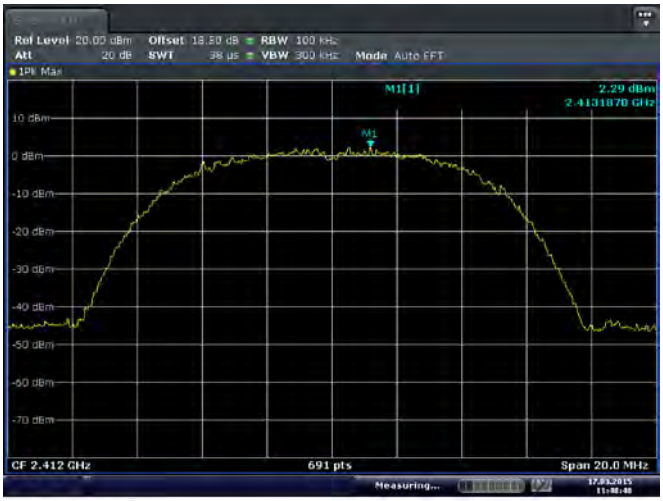
Date: 16.MAR.2015 15:03:50

802.11n-40 MHz HIGH CHANNEL, Band Edge

Date: 16.MAR.2015 15:05:39

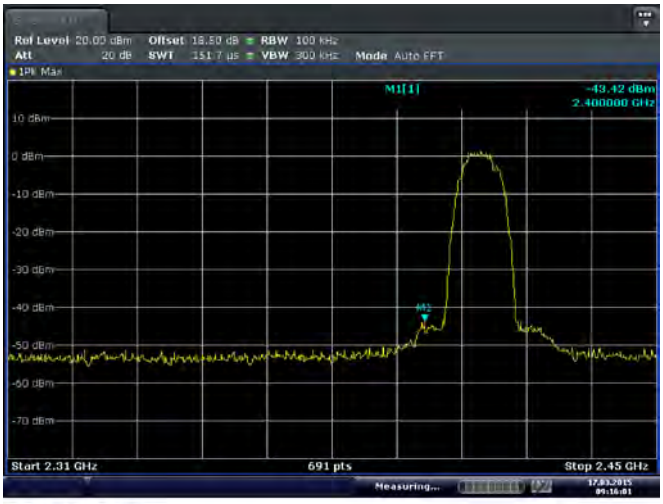
Test Plots (ANT 1)

802.11b LOW CHANNEL, Carrier level



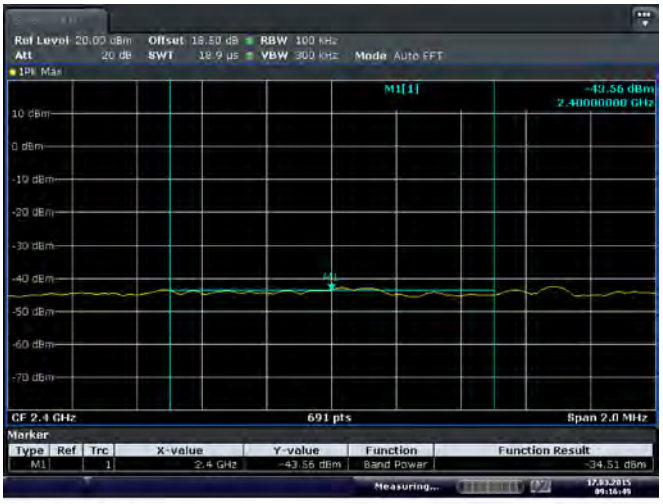
Date: 17.MAR.2015 11:48:49

802.11b LOW CHANNEL, Reference level



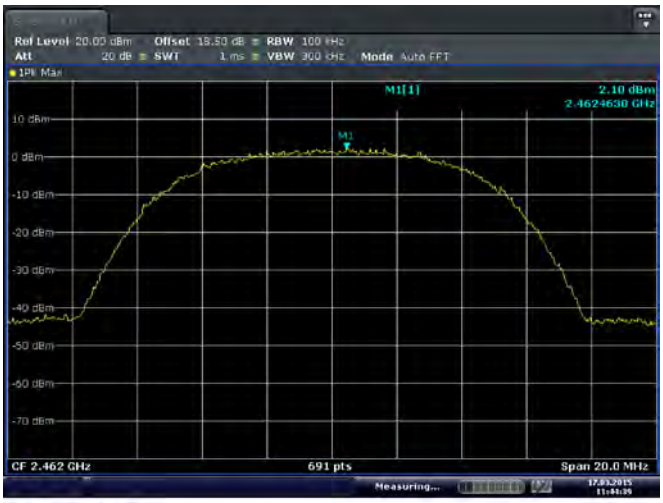
Date: 17.MAR.2015 09:16:01

802.11b LOW CHANNEL, Band Edge



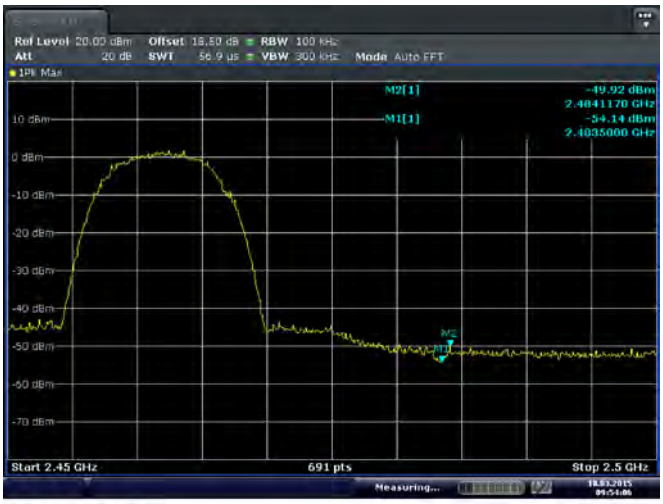
Date: 17.MAR.2015 09:16:50

802.11b HIGH CHANNEL, Carrier level



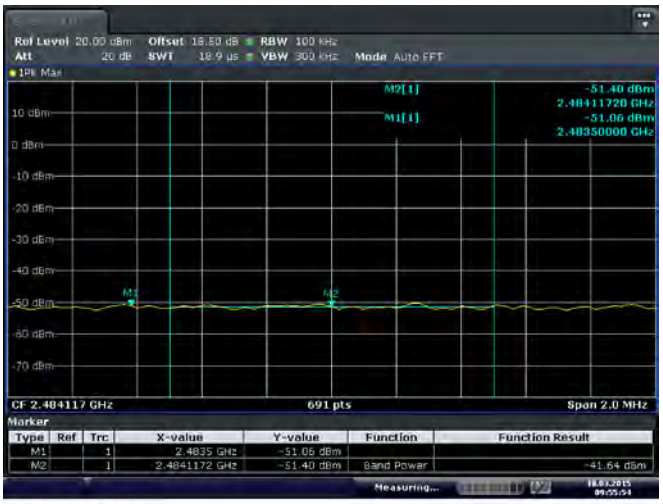
Date: 17.MAR.2015 11:44:39

802.11b HIGH CHANNEL, Reference level



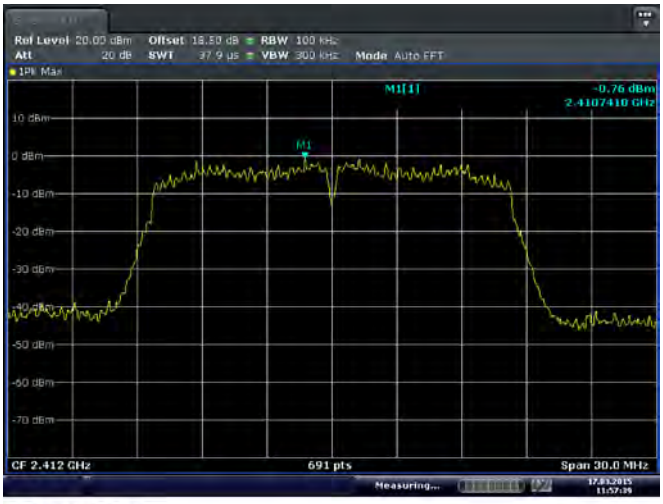
Date: 18.MAR.2015 09:54:06

802.11b HIGH CHANNEL, Band Edge



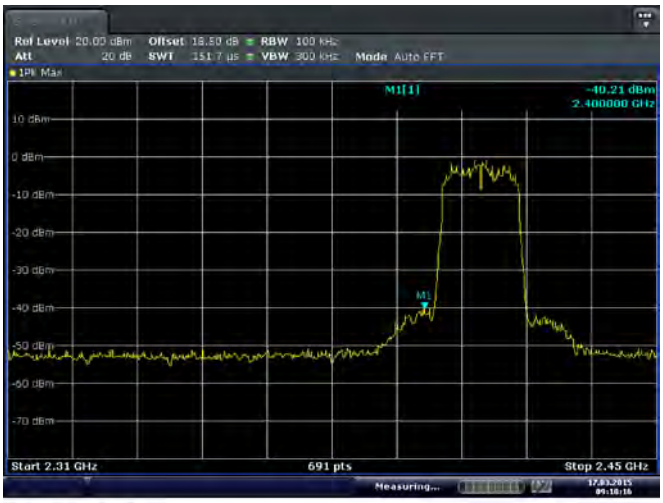
Date: 18.MAR.2015 09:55:55

802.11g LOW CHANNEL, Carrier level



Date: 17.MAR.2015 11:57:39

802.11g LOW CHANNEL, Reference level

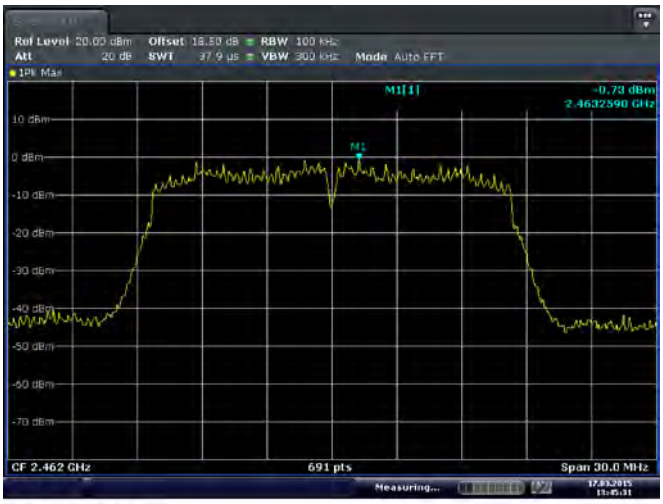


Date: 17.MAR.2015 09:10:17

802.11g LOW CHANNEL, Band Edge

Date: 17.MAR.2015 09:11:36

802.11g HIGH CHANNEL, Carrier level



Date: 17.MAR.2015 13:45:31

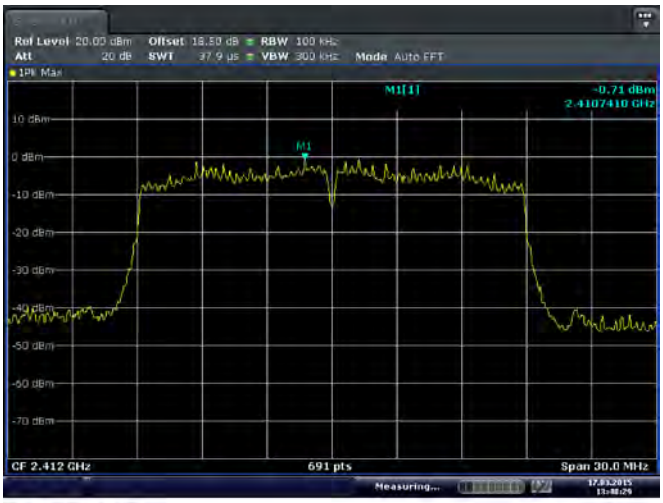
802.11g HIGH CHANNEL, Reference level

Date: 18.MAR.2015 09:59:30

802.11g HIGH CHANNEL, Band Edge

Date: 18.MAR.2015 10:00:44

802.11n-20 MHz LOW CHANNEL, Carrier level



Date: 17.MAR.2015 13:48:30

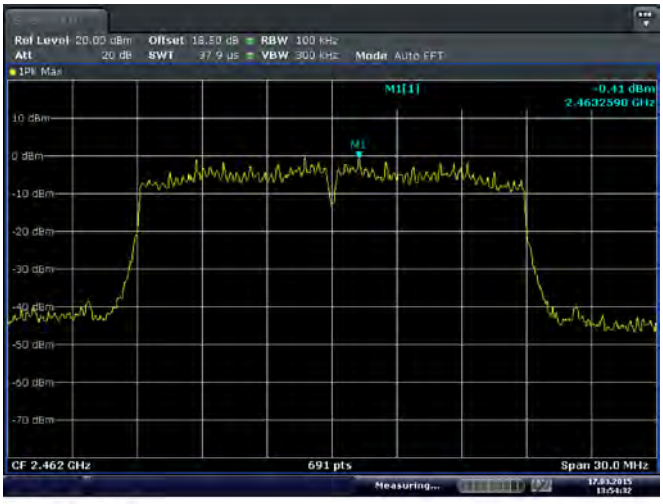
802.11n-20 MHz LOW CHANNEL, Reference level

Date: 18.MAR.2015 10:04:01

802.11n-20 MHz LOW CHANNEL, Band Edge

Date: 18.MAR.2015 10:05:27

802.11n-20 MHz HIGH CHANNEL, Carrier level

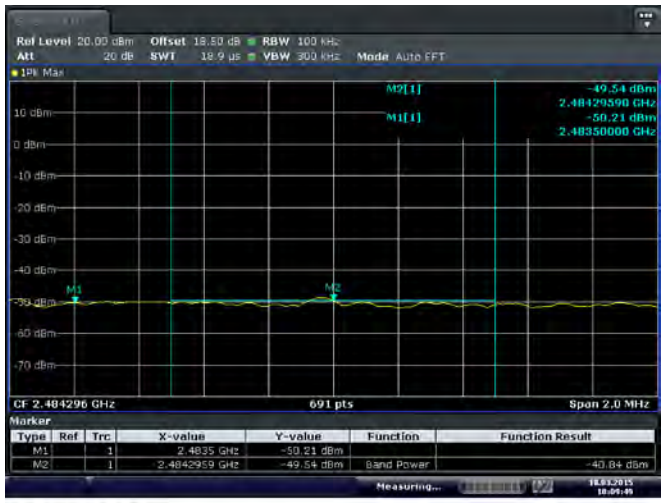


Date: 17.MAR.2015 13:54:32

802.11n-20 MHz HIGH CHANNEL, Reference level

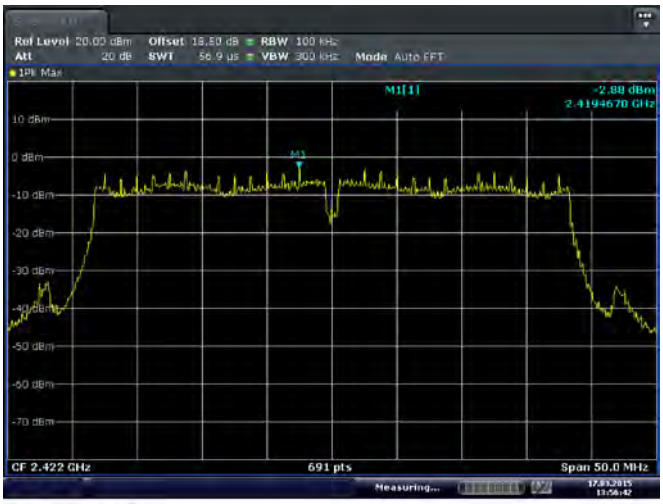
Date: 18.MAR.2015 10:08:52

802.11n-20 MHz HIGH CHANNEL, Band Edge



Date: 18.MAR.2015 10:09:49

802.11n-40 MHz LOW CHANNEL, Carrier level



Date: 17.MAR.2015 13:56:43

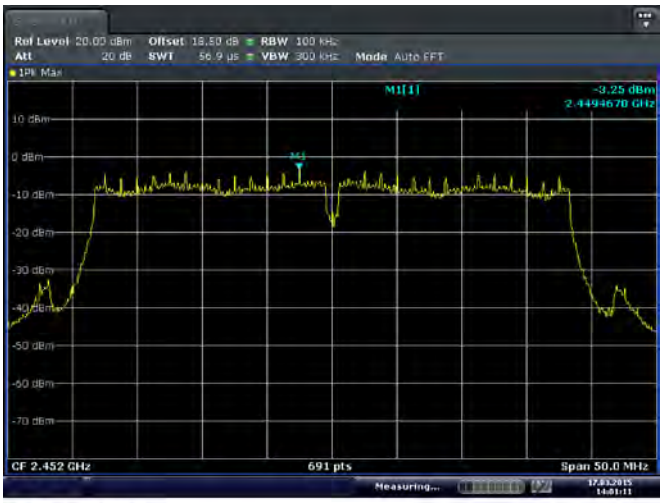
802.11n-40 MHz LOW CHANNEL, Reference level

Date: 17.MAR.2015 10:20:13

802.11n-40 MHz LOW CHANNEL, Band Edge

Date: 17.MAR.2015 10:20:42

802.11n-40 MHz HIGH CHANNEL, Carrier level

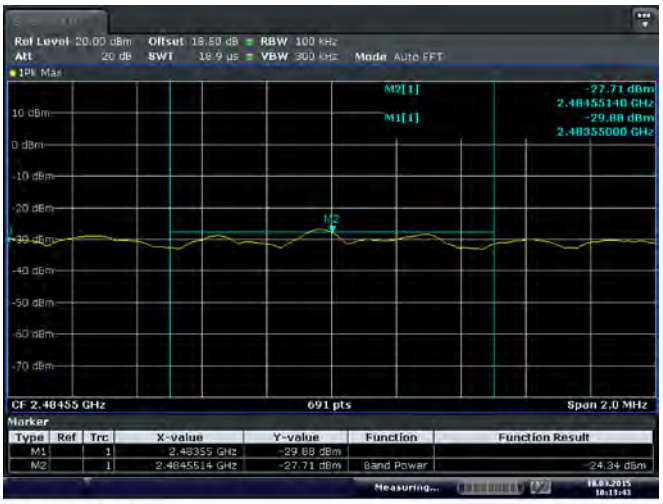


Date: 17.MAR.2015 14:01:11

802.11n-40 MHz HIGH CHANNEL, Reference level

Date: 18.MAR.2015 10:12:42

802.11n-40 MHz HIGH CHANNEL, Band Edge



Date: 18.MAR.2015 10:13:44

A.7 Power Spectral Density (PSD)

Test Data (ANT 0)

802.11b Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low	-9.35	8	Pass
Middle	-9.78	8	Pass
High	-9.97	8	Pass

802.11g Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low	-12.11	8	Pass
Middle	-12.03	8	Pass
High	-13.00	8	Pass

802.11n-20 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low	-12.68	8	Pass
Middle	-13.05	8	Pass
High	-13.35	8	Pass

802.11n-40 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low	-14.76	8	Pass
Middle	-14.44	8	Pass
High	-15.50	8	Pass

Test Data (ANT 1)

802.11b Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low	-17.16	8	Pass
Middle	-17.48	8	Pass
High	-17.78	8	Pass

802.11g Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low	-20.27	8	Pass
Middle	-20.45	8	Pass
High	-20.66	8	Pass

802.11n-20 MHz Mode:

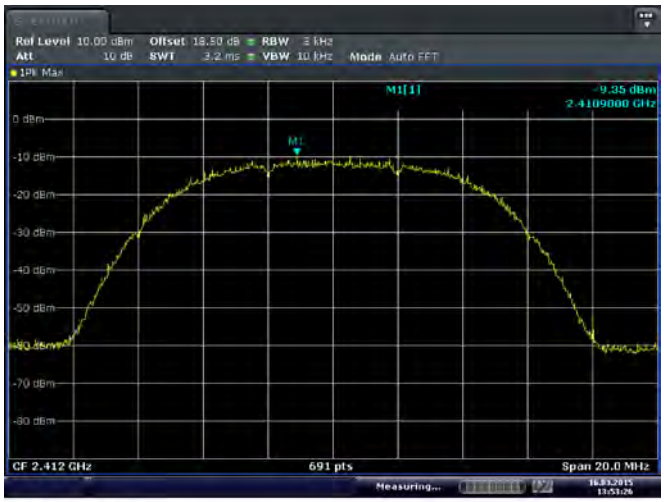
Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low	-20.84	8	Pass
Middle	-21.84	8	Pass
High	-21.45	8	Pass

802.11n-40 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low	-19.70	8	Pass
Middle	-19.85	8	Pass
High	-20.64	8	Pass

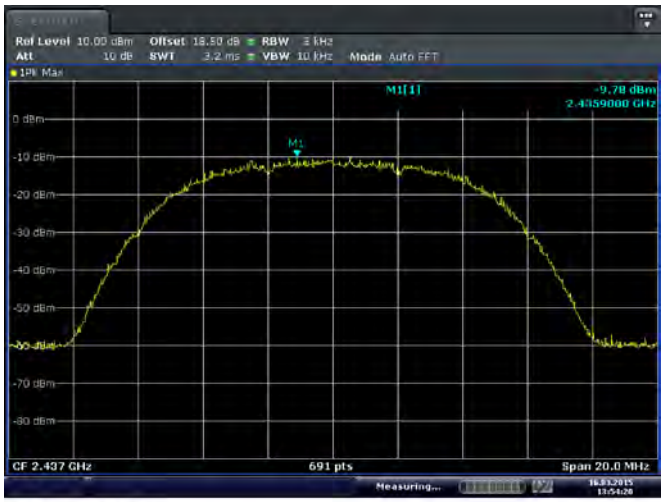
Test plots (ANT 0)

802.11b LOW CHANNEL



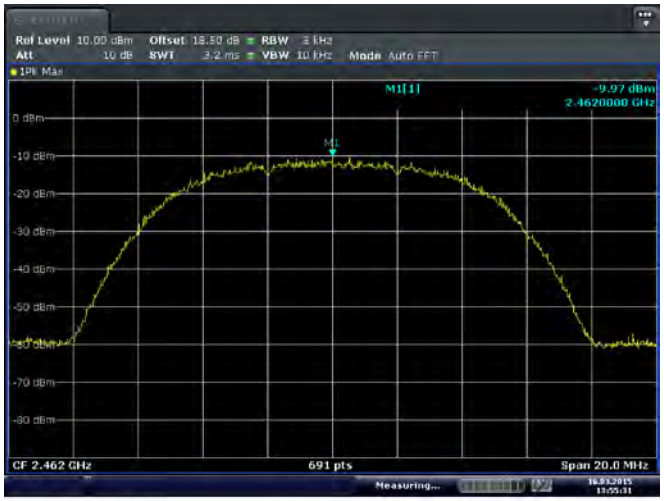
Date: 16.MAR.2015 13:53:26

802.11b MIDDLE CHANNEL



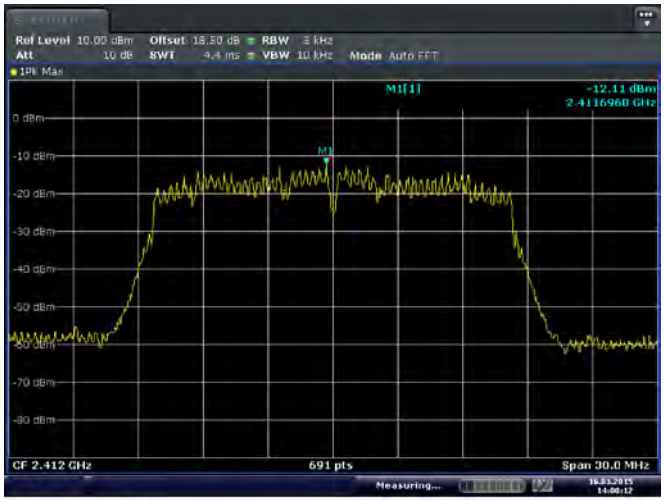
Date: 16.MAR.2015 13:54:20

802.11b HIGH CHANNEL



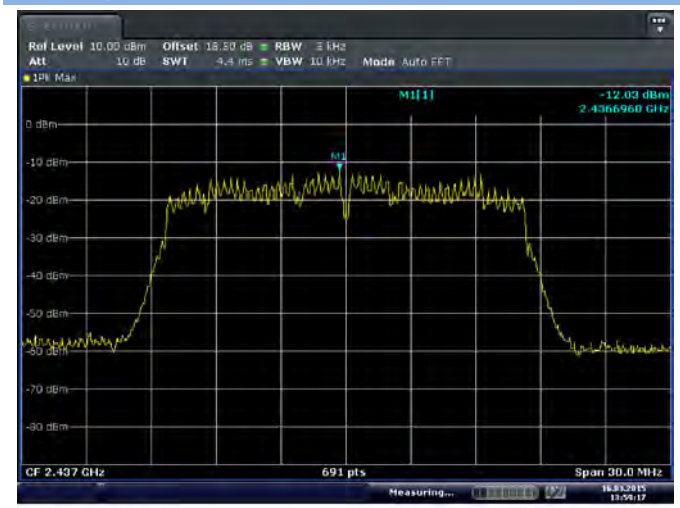
Date: 16.MAR.2015 13:55:31

802.11g LOW CHANNEL



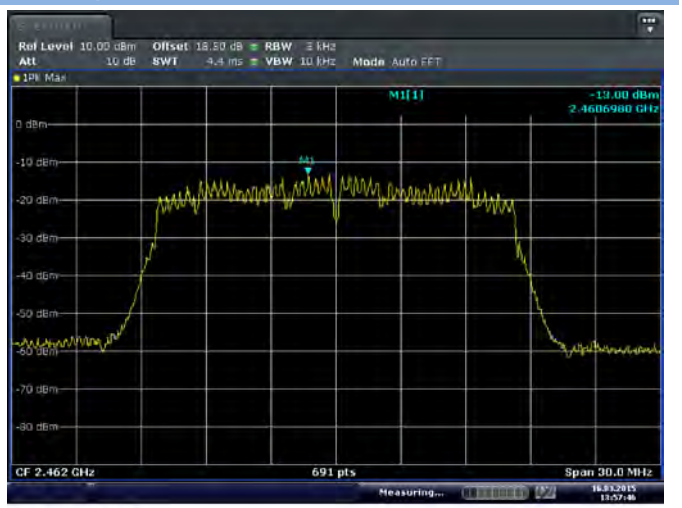
Date: 16.MAR.2015 14:00:12

802.11g MIDDLE CHANNEL



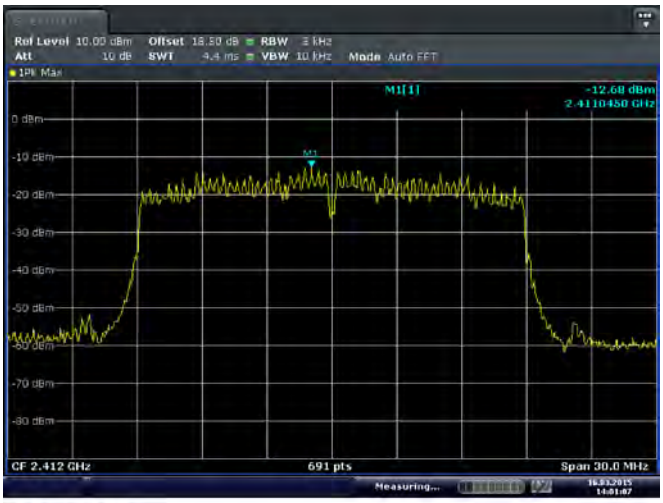
Date: 16.MAR.2015 13:59:17

802.11g HIGH CHANNEL



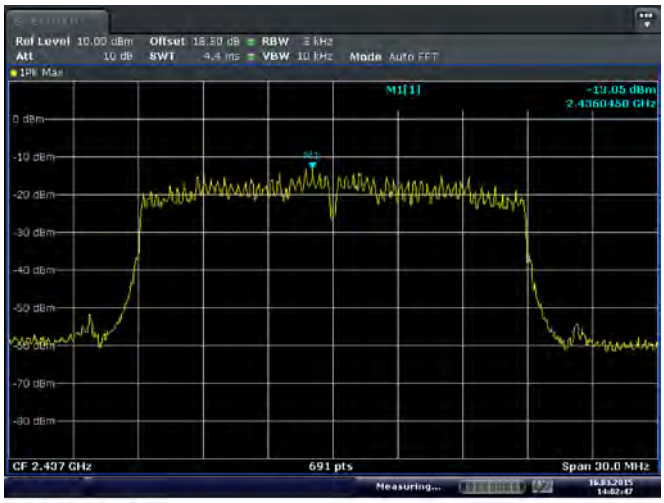
Date: 16.MAR.2015 13:57:46

802.11n-20 MHz LOW CHANNEL



Date: 16.MAR.2015 14:01:07

802.11n-20 MHz MIDDLE CHANNEL

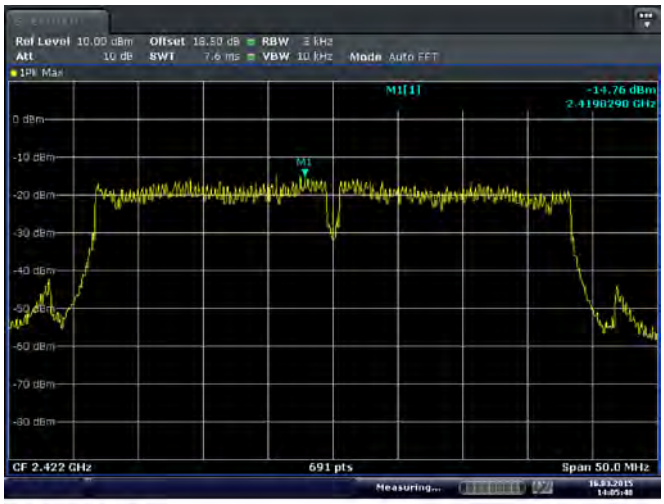


Date: 16.MAR.2015 14:02:47

802.11n-20 MHz HIGH CHANNEL

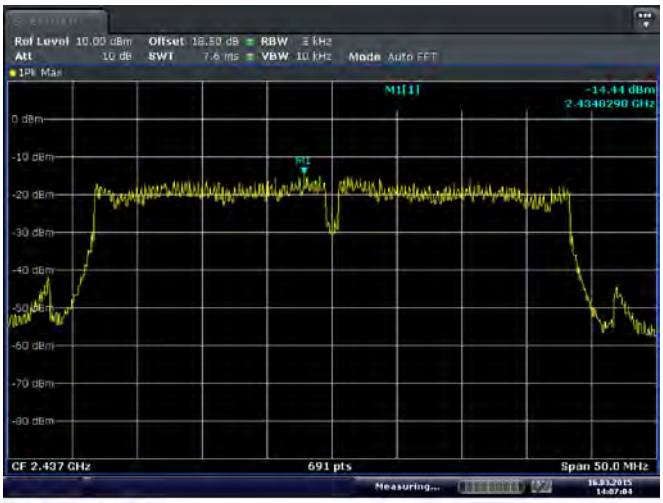
Date: 16.MAR.2015 14:04:34

802.11n-40 MHz LOW CHANNEL



Date: 16.MAR.2015 14:05:48

802.11n-40 MHz MIDDLE CHANNEL



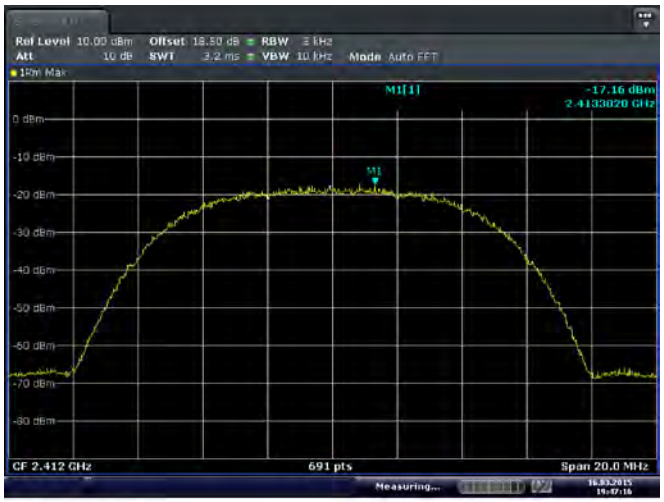
Date: 16.MAR.2015 14:07:05

802.11n-40 MHz HIGH CHANNEL

Date: 16.MAR.2015 14:08:21

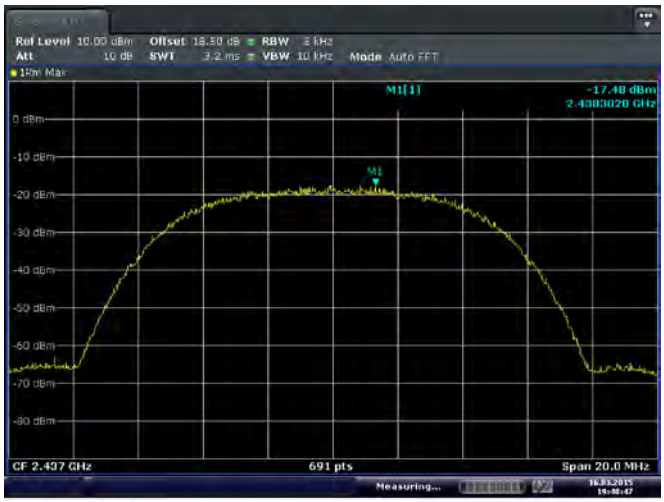
Test plots (ANT 1)

802.11b LOW CHANNEL



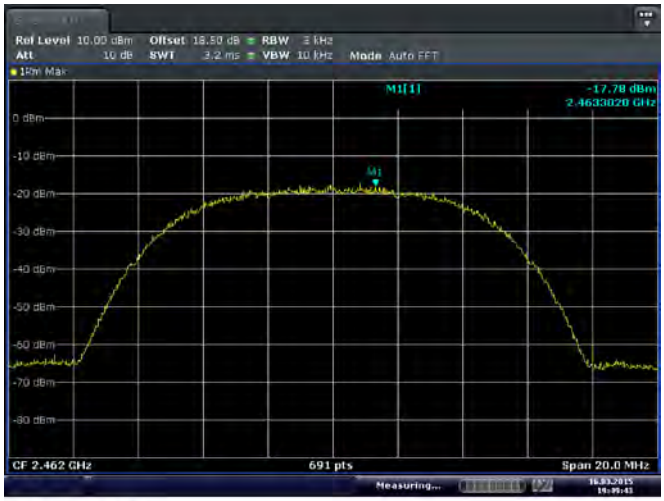
Date: 16.MAR.2015 19:47:17

802.11b MIDDLE CHANNEL



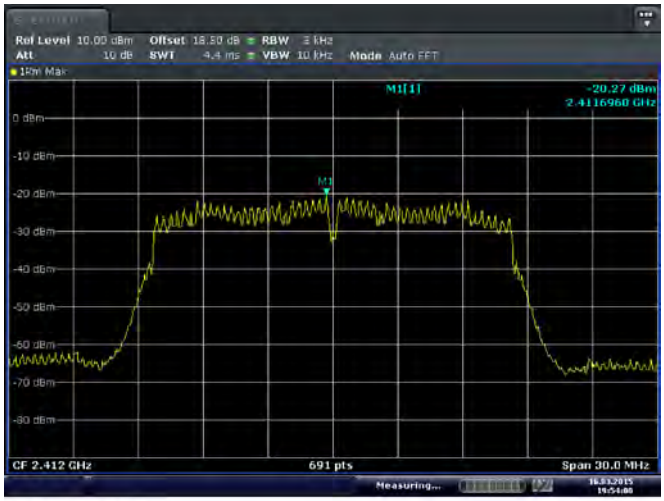
Date: 16.MAR.2015 19:48:47

802.11b HIGH CHANNEL



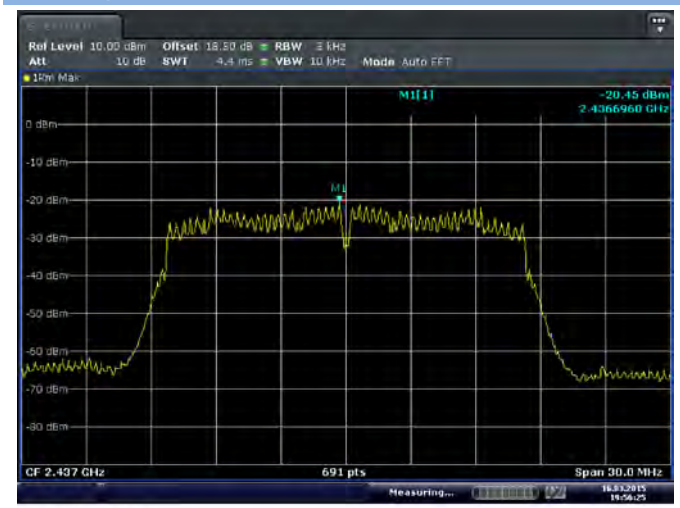
Date: 16.MAR.2015 19:49:44

802.11g LOW CHANNEL



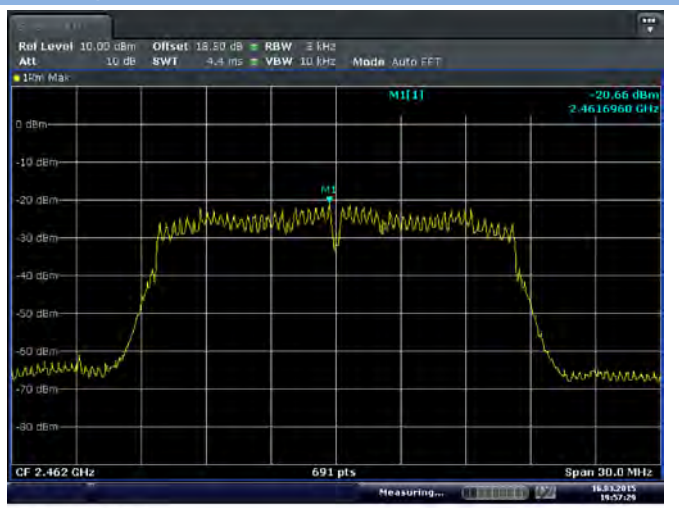
Date: 16.MAR.2015 19:54:00

802.11g MIDDLE CHANNEL



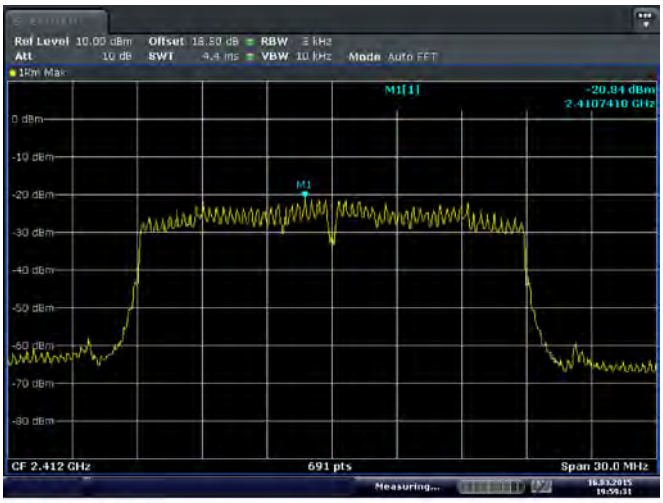
Date: 16.MAR.2015 19:56:25

802.11g HIGH CHANNEL



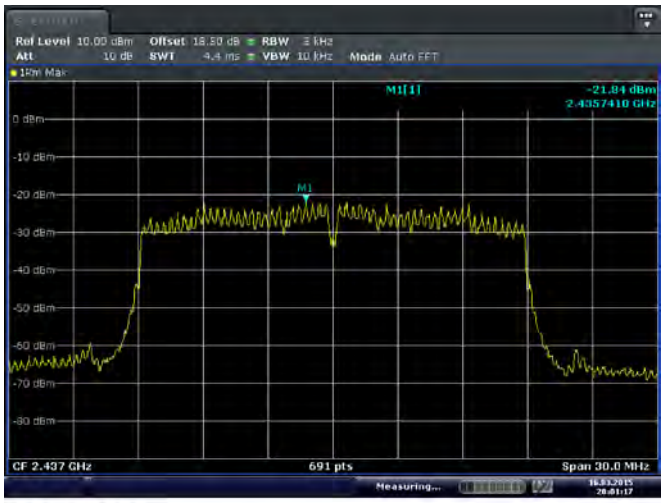
Date: 16.MAR.2015 19:57:29

802.11n-20 MHz LOW CHANNEL



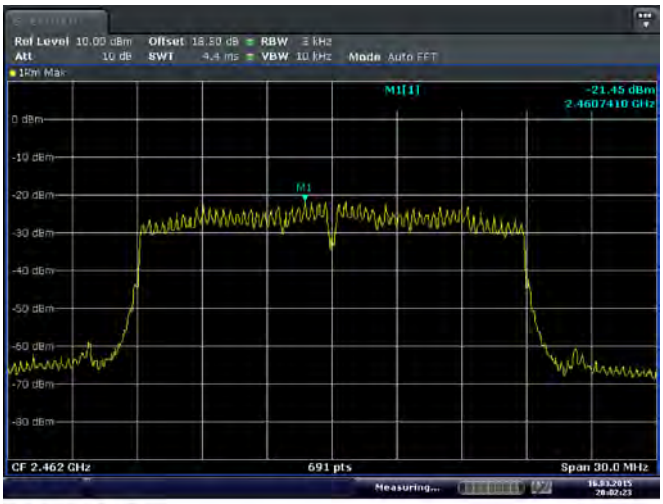
Date: 16.MAR.2015 19:59:31

802.11n-20 MHz MIDDLE CHANNEL



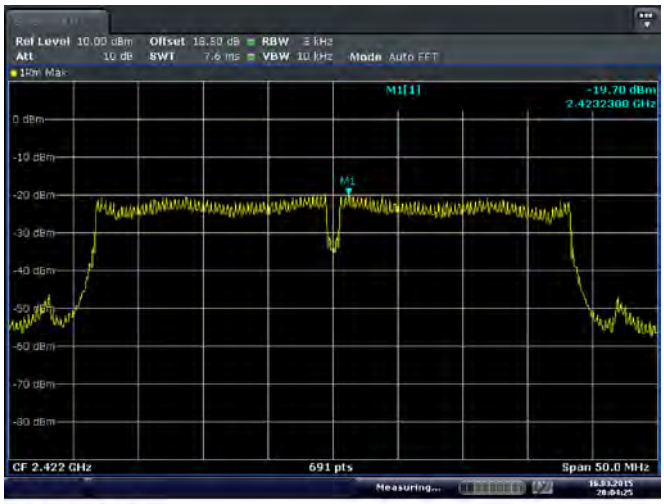
Date: 16.MAR.2015 20:01:17

802.11n-20 MHz HIGH CHANNEL



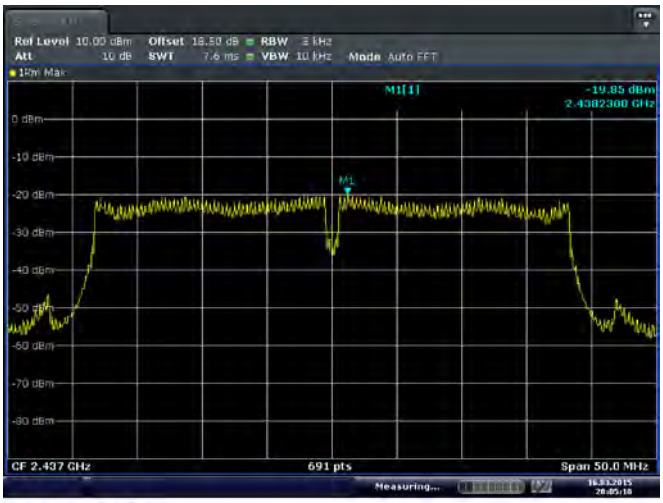
Date: 16.MAR.2015 20:02:23

802.11n-40 MHz LOW CHANNEL



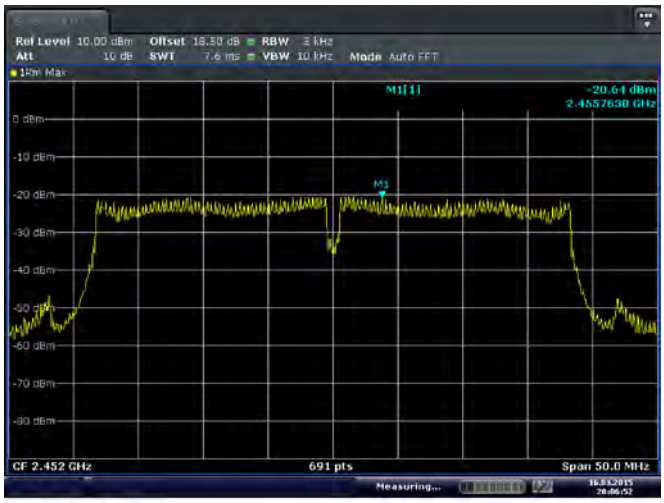
Date: 16.MAR.2015 20:04:25

802.11n-40 MHz MIDDLE CHANNEL



Date: 16.MAR.2015 20:05:10

802.11n-40 MHz HIGH CHANNEL



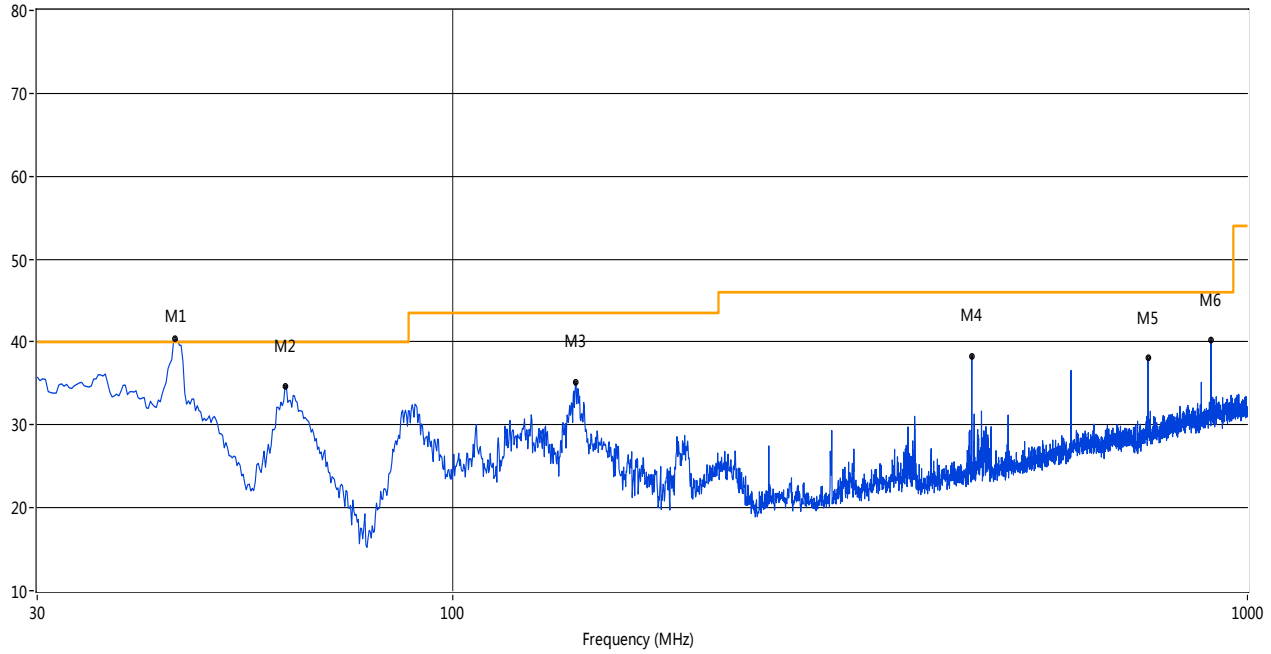
Date: 16.MAR.2015 20:06:52

A.8 Receiver Spurious Emissions

Note: All configurations have been tested, only the worst test results (802.11b Middle Channel) were recorded in this report.

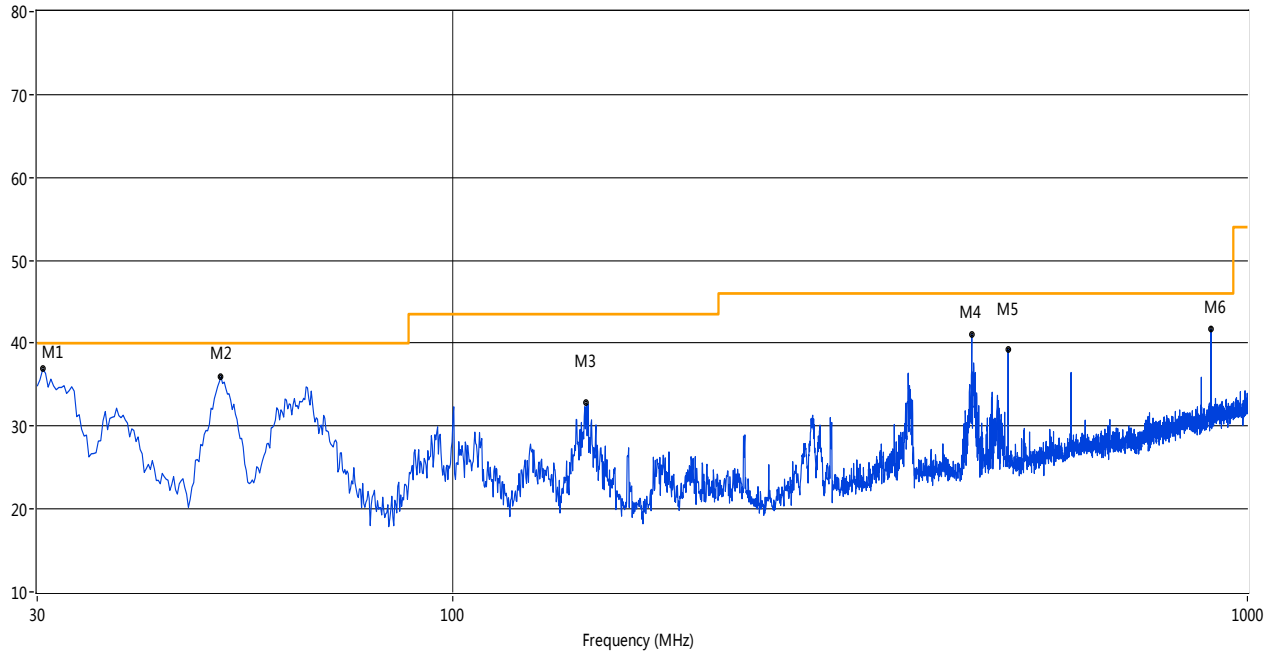
Test Data and Plots

30 MHz to 1 GHz, ANT V



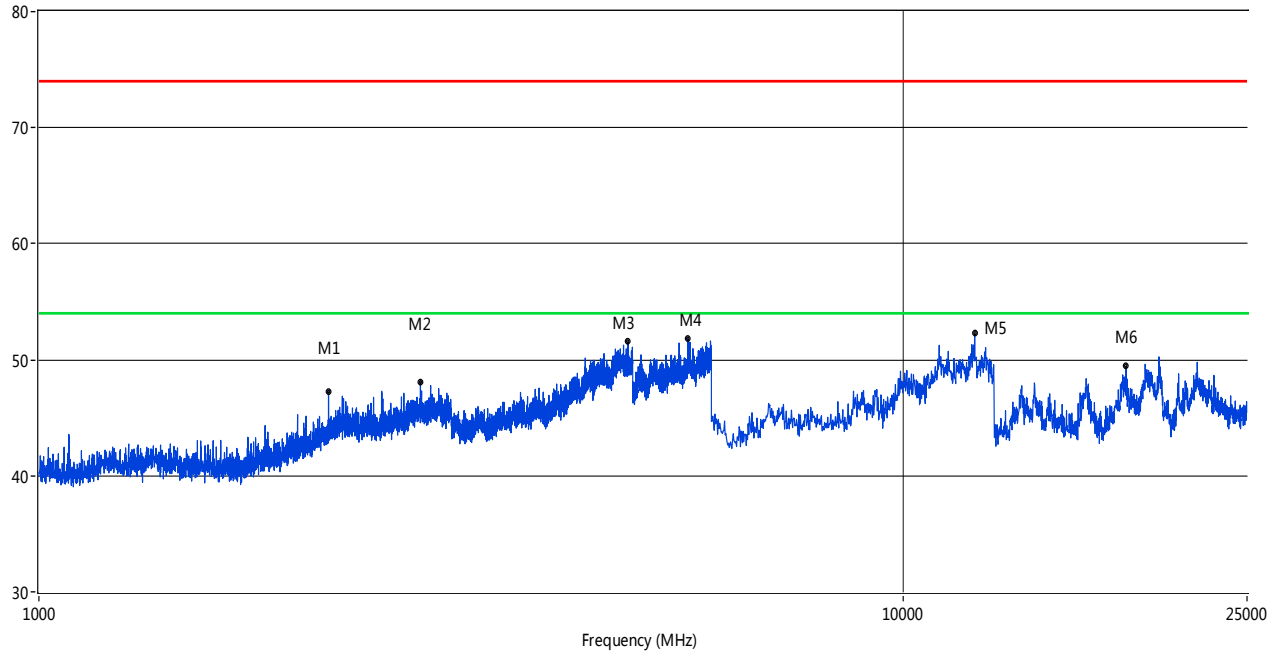
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	44.79	40.33	-18.88	40.0	-0.33	Peak	360.00	100	Vertical	N/A
1**	44.79	35.54	-18.88	40.0	4.46	QP	360.00	100	Vertical	Pass
2	61.52	34.65	-20.23	40.0	5.35	Peak	22.20	100	Vertical	Pass
3	142.73	35.17	-23.60	43.5	8.33	Peak	229.40	100	Vertical	Pass
4	449.90	38.34	-14.47	46.0	7.66	Peak	6.90	100	Vertical	Pass
5	749.80	38.06	-8.59	46.0	7.94	Peak	117.40	100	Vertical	Pass
6	899.87	40.22	-5.56	46.0	5.78	Peak	72.50	100	Vertical	Pass

30 MHz to 1 GHz, ANT H



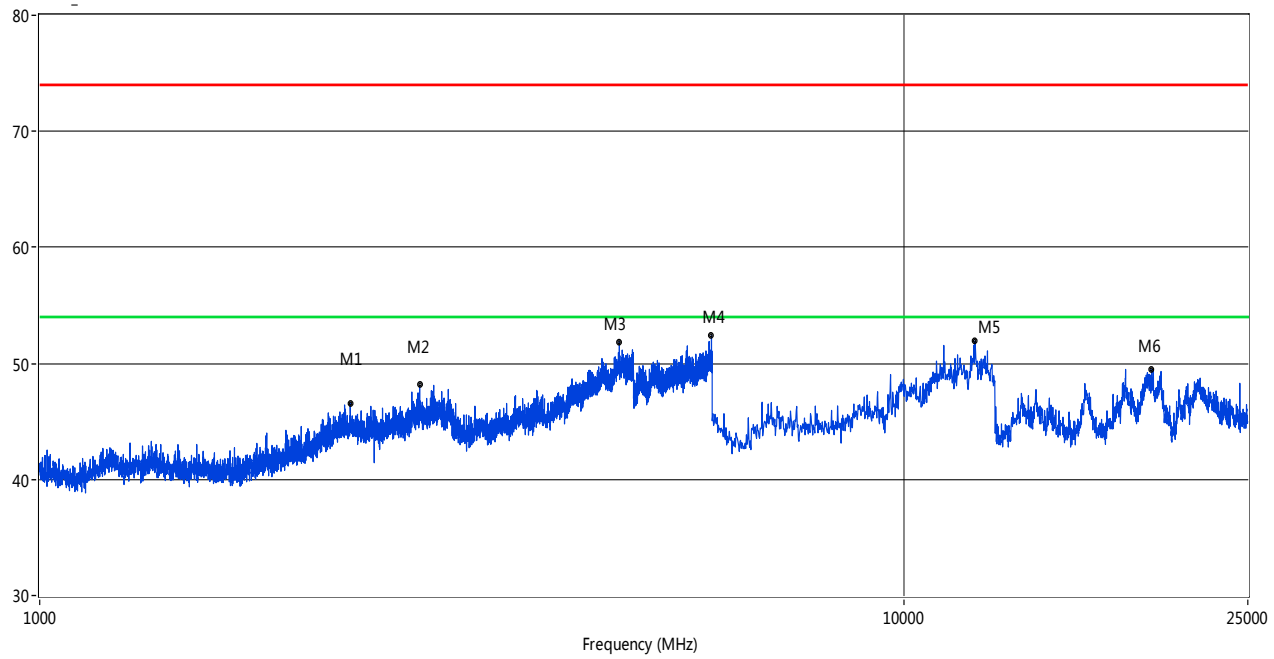
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	30.48	36.87	-21.72	40.0	3.13	Peak	145.00	100	Horizontal	Pass
2	51.09	35.96	-18.62	40.0	4.04	Peak	72.60	100	Horizontal	Pass
3	147.34	32.76	-23.54	43.5	10.74	Peak	346.10	100	Horizontal	Pass
4	449.90	38.34	-14.47	46.0	7.66	Peak	6.90	100	Horizontal	Pass
5	499.85	39.26	-13.17	46.0	6.74	Peak	7.10	100	Horizontal	Pass
6	899.87	40.22	-5.56	46.0	5.78	Peak	72.50	100	Horizontal	Pass

1 GHz to 25 GHz, ANT V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2163.21	47.26	-0.99	74.0	26.74	Peak	260.30	100	Vertical	PASS
2	2763.56	49.10	1.86	74.0	24.90	Peak	123.40	100	Vertical	PASS
3	4804.05	51.57	13.74	74.0	22.43	Peak	183.90	100	Vertical	PASS
4	5631.84	51.81	15.45	74.0	22.19	Peak	272.70	100	Vertical	PASS
5	12098.59	52.28	20.77	74.0	21.72	Peak	355.00	100	Vertical	PASS
6	18116.06	49.45	12.97	74.0	24.55	Peak	359.30	100	Vertical	PASS

1 GHz to 25 GHz, ANT H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2287.18	46.55	-0.46	74.0	27.45	Peak	260.60	100	Horizontal	PASS
2	2752.06	48.14	1.80	74.0	25.86	Peak	21.40	100	Horizontal	PASS
3	4685.58	51.88	13.22	74.0	22.12	Peak	225.40	100	Horizontal	PASS
4	5988.00	52.38	15.80	74.0	21.62	Peak	130.10	100	Horizontal	PASS
5	12087.35	51.95	20.78	74.0	22.05	Peak	181.50	100	Horizontal	PASS
6	19349.42	49.47	13.21	74.0	24.53	Peak	211.50	100	Horizontal	PASS

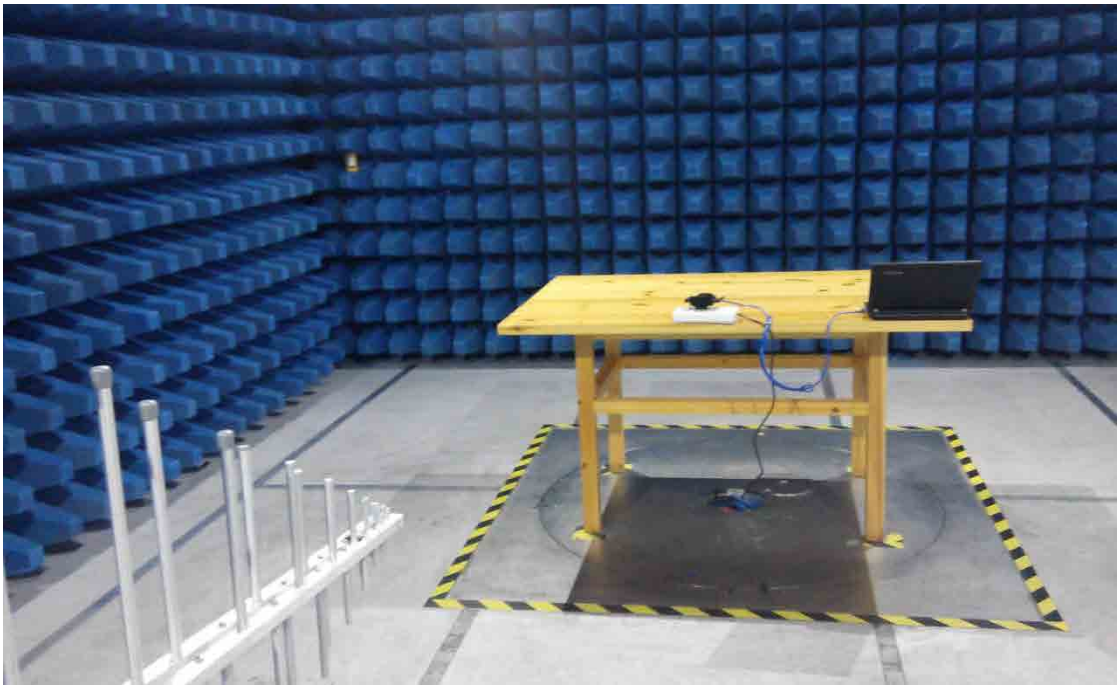
ANNEX B TEST SETUP PHOTOS

B.1. Conducted Test Photo

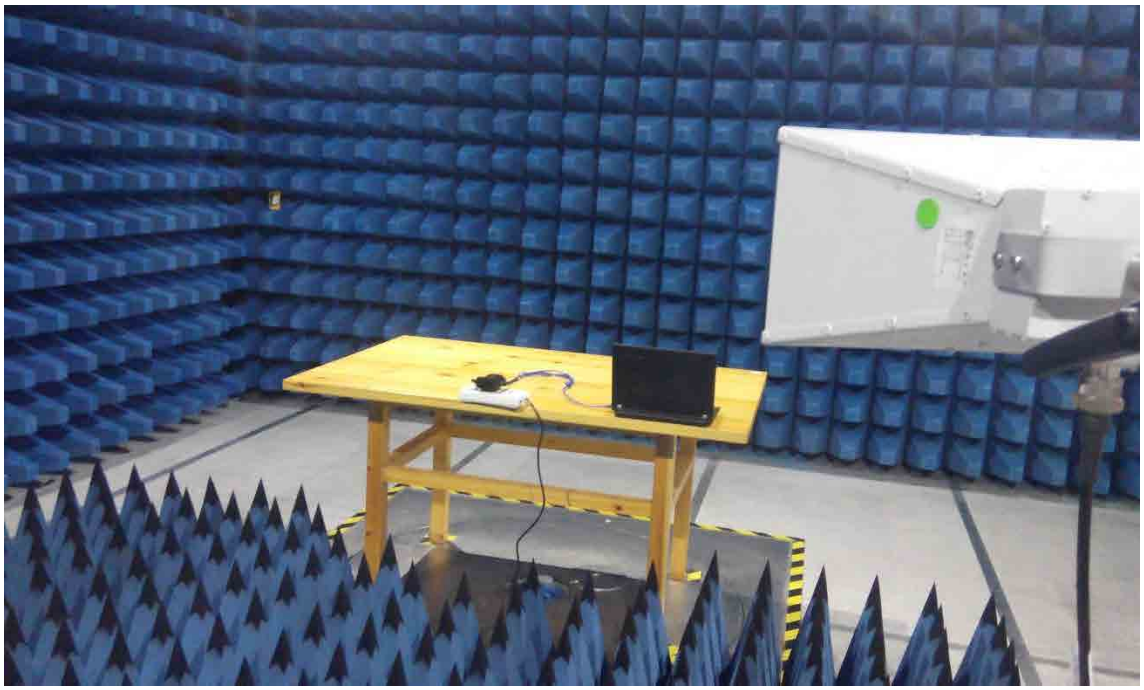
B.2. Conducted Emissions Test Photo

B.3. Radiated Test Photo

Below 30MHz



30MHz to 1GHz



Above 1GHz

ANNEX C EUT PHOTOS

C.1 Appearance of the EUT

THE FRONT OF EUT

THE BACK OF EUT

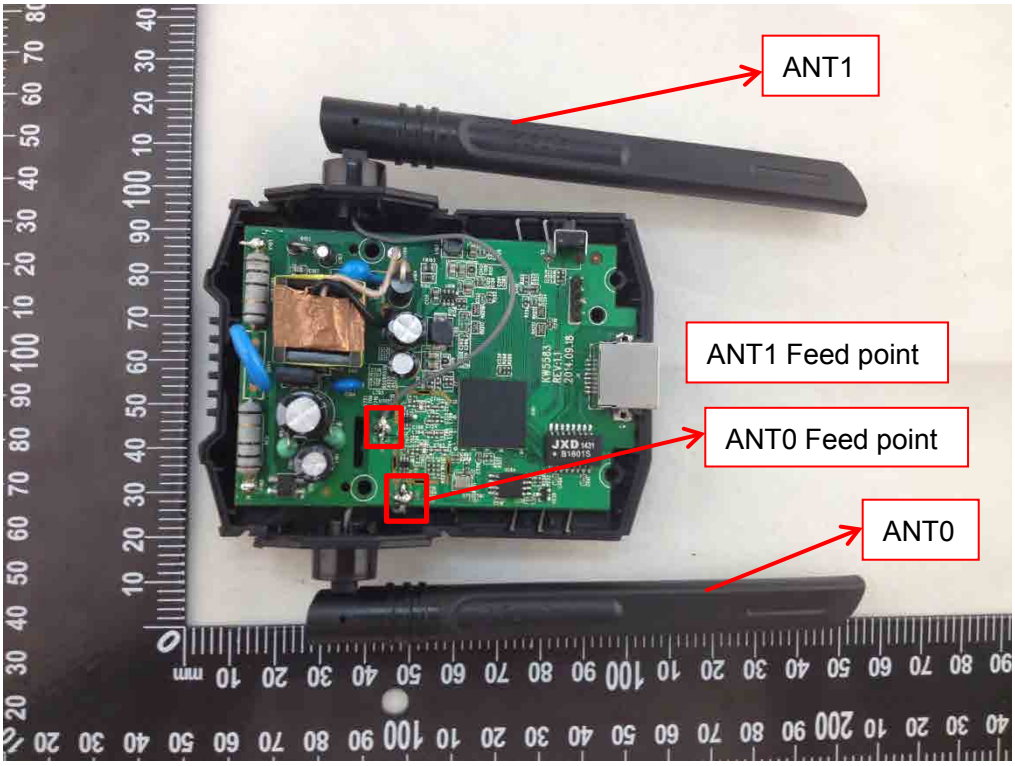
THE LEFT OF EUT

THE RIGHT OF EUT

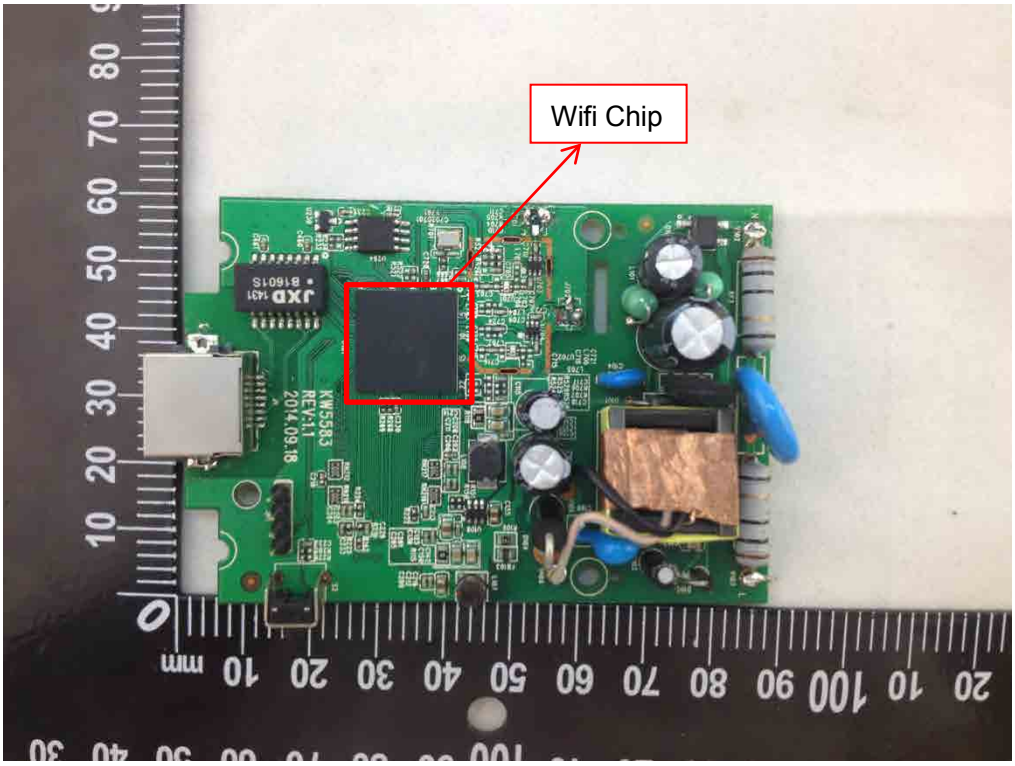
THE UP OF EUT

THE DOWN OF EUT

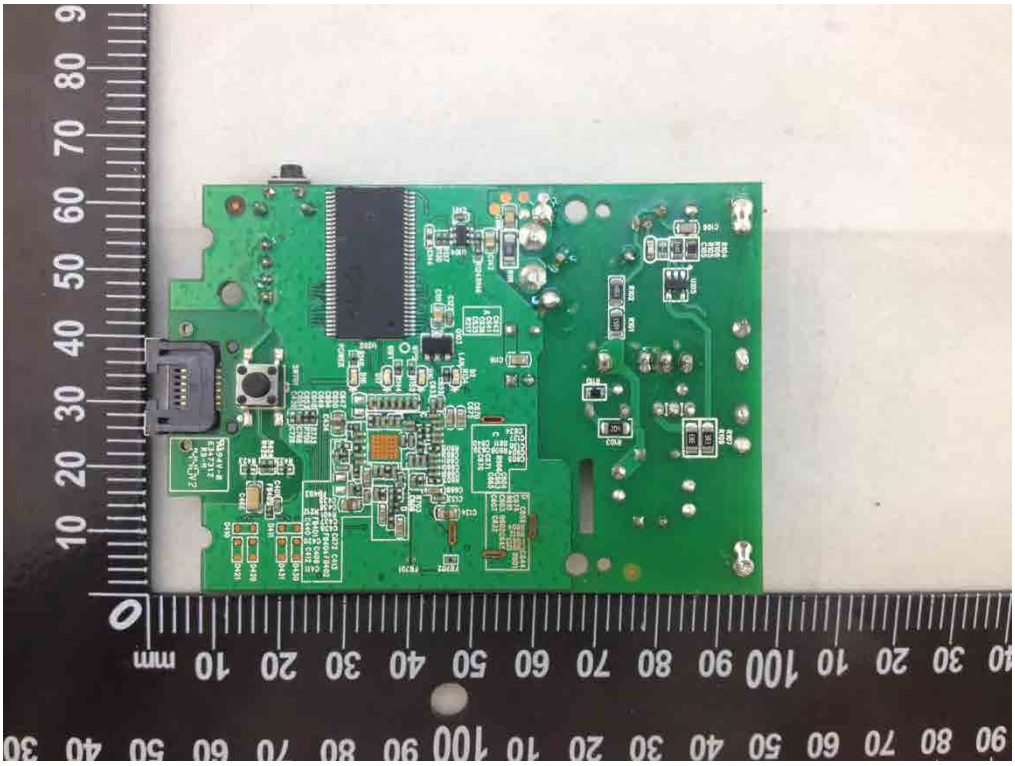
C.2 Inside of the EUT



EUT UNCOVER TOP VIEW 1



MAIN BOARD TOP VIEW 1



MAIN BOARD BACK VIEW 1

--END OF REPORT--