FCC RF TEST REPORT

ISSUED BY Shenzhen BALUN Technology Co., Ltd.



FOR

X1 MAX FDD-LTE Smartphone

ISSUED TO TP-LINK Technologies Co., Ltd.

Building 24-1F/3F/4F/5F, 28-1F/2F/3F/4F Science and Technology Park, Shennan Road, Nanshan District, Shenzhen City, Guangdong Province, P.R. China



Tested by: ThengMan EUT Name: X1 MAX FDD-LTE Smartphone **TP903C** Model Name: Zheng Mulyi Brand Name: (Engineer) neffos Date /M 47 CFR Part 15 Subpart C Test Standard: TE7X1MAXV1 FCC ID: Approved by: Pass Test conclusion: Liao Jianming Apr. 14, 2017 ~ Apr. 21, 2017 Test Date: (Technical Director) Date May 15. 2017 May 15, 2017 Date of Issue:

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Revision History

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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,
Address	Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

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,		
Address	Nanshan District, Shenzhen, Guangdong Province, P. R. China		
	The laboratory has been listed by Industry Canada to perform		
	electromagnetic emission measurements. The recognition numbers of		
	test site are 11524A-1.		
Approditation	The laboratory has been listed by US Federal Communications		
Accreditation	Commission to perform electromagnetic emission measurements. The		
Certificate	recognition numbers of test site are 832625.		
	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.		
	All measurement facilities used to collect the measurement data are		
Description	located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi		
Description	Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China		
	518055		

1.3 Laboratory Condition

Ambient Temperature	20 to 25°C
Ambient Relative Humidity	45% - 55%
Ambient Pressure	100 kPa - 102 kPa

1.4 Announce

- (1) The test report reference to the report template version v5.9.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (5) 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.
- (6) 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 Information

Applicant	TP-LINK Technologies Co., Ltd.
	Building 24-1F/3F/4F/5F, 28-1F/2F/3F/4F Science and Technology
Address	Park, Shennan Road, Nanshan District, Shenzhen City, Guangdong
	Province, P.R. China

2.2 Manufacturer Information

Manufacturer	TP-LINK Technologies Co., Ltd.
	Building 24-1F/3F/4F/5F, 28-1F/2F/3F/4F Science and Technology
Address	Park, Shennan Road, Nanshan District, Shenzhen City, Guangdong
	Province, P.R. China

2.3 Factory Information

Factory	NA
Address	NA

2.4 General Description for Equipment under Test (EUT)

EUT Type X1 MAX FDD-LTE Smartphone	
Model Name Under Test	TP903C
Series Model Name	TP903CXYZZ, TP903C
Description of Model name differentiation	The equipment model TP903C and TP903CXYZZ(X=2 or 4 (2 indicates Cloudy Grey, 4 indicates Sunrise Gold); Y=6 or A (A indicates the memory is 4G RAM + 64G Flash, 6 indicates the memory is 3G RAM + 32G Flash); ZZ indicates different national.) are the EUT model, the electrical parameters and internal structure of circuit are same. Only the model name, colors, memory versions and shipping country are different.
Hardware Version	NA
Software Version	NA
Dimensions (Approx.)	NA
Weight (Approx.)	NA
Network and Wireless connectivity	2G Network GSM 850/1900 MHz; 3G Network WCDMA HSDPA/HSUPA Band 2/4/8; 4G Network LTE FDD Band 1/4/7; Bluetooth 3.0, Bluetooth 4.0 Low Energy (BLE), WIFI 802.11a,802.11b, 802.11g and 802.11n (HT20/40); GPS, GLONASS, FM



2.5 Ancillary Equipment

	Battery	
	Brand Name	neffos
	Model No.	NBL-35A3000
Ancillary Equipment 1	Serial No.	N/A
	Capacitance	3000 mAh
	Rated Voltage	3.85 V
	Limited Voltage	4.40 V
	Adapter 1	
	Brand Name	neffos
Ancillary Equipment 2	Model No.	N090200-2B3 (US Plug)
	Serial No.	N/A
	Rated Input	100-240 V~, 0.3 A, 50/60 Hz
	Rated Output	5 V= 3 A or 9 V= 2 A, or 12 V= 1.5 A
Ancillary Equipment 3	USB Data Cable	
Andhary Equipment 3	Length (Approx.)	100 cm
Ancillary Equipment 4	Earphone	
Ancillary Equipment 4	Length (Approx.)	125 cm



2.6 Technical Information

The requirement for the following technical information of the EUT was tested in this report:

	802.11b/g/n(20 MHz): 2.412 GHz - 2.462 GHz		
	$f_c = 2412 \text{ MHz} + (N-1)*5 \text{ MHz}$, where		
	- fc = "Operating Frequency" in MHz,		
	- N = "Channel Number" with the range from 1 to 11.		
Frequency Range	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		
Product Type	Mobile and portable		
Antenna System (eg., MIMO,	N/A		
Smart Antenna)	N/A		
Categorization as Correlated	N/A		
or Completely Uncorrelated	N/A		
Antenna Type	DIEA Antonno		
Аптенна туре	PIFA Antenna		
Antenna Gain	2.6 dBi		
About the Product	Only the WIFI 802.11b, 802.11g and 802.11n (HT20/40) was		
	tested in this report.		

Modulation technology	Modulation Type	Transfer Rate (Mbps)
	DBPSK	1
DSSS (802.11b)	DQPSK	2
	ССК	5.5/ 11
	BPSK	6 / 9
OFDM (802.11g)	QPSK	12 / 18
OFDM (802.11g)	16QAM	24 / 36
	64QAM	48 / 54
	BPSK	6.5
OFDM	QPSK	13/19.5
(802.11n-20MHz)	16QAM	26/39
	64QAM	52/58.5/65
	BPSK	13.5
OFDM	QPSK	27/40.5
(802.11n-40MHz)	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		Innel
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

Note: The above EUT information in section 2.4 and 2.6 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.



2.7 Additional Instructions

EUT Software Settings:

	Special software is used.
Mode	The software provided by client to enable the EUT under
Mode	transmission condition continuously at specific channel
	frequencies individually.

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

EUT Software Settings:

Power level setup in software				
Test Osthurse Mension	Test software is set by engineer	ing instruction"*#*#3646633#*#*" in		
Test Software Version engineering mode				
Mode	Channel Soft Set			
802.11 b	All	17		
802.11 g	All	18		
802.11 n20	All	16		
802.11 n40 All 15				

Run software:

WIFL	Tx
Channet	Channel 1 (2412MHz)
Pict length	1024
Pixt enit:	0
Tx power (dBm):	16.0
Rate:	MCS0
Mode:	local leakage
Preamble:	802.11n mixed mode
Bandwidth:	20MHz
Guard Interval:	800ms
1	ð



3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title	
	47 CFR Part 15,		
1	Subpart C	Miscellaneous Wireless Communications Services	
	(10-1-15 Edition)		
2	KDB Publication	Guidance for Performing Compliance Measurements on Digital	
2	558074 D01v04	Transmission Systems (DTS) Operating Under §15.247	
0	ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of	
3	ANSI 063.10-2013	Unlicensed Wireless Devices	

3.2 Verdict

No.	Description	FCC PART No.	Test Result	Verdict	
1	Antenna Requirement	15.203; 15.247(b)	N/A	Pass ^{Note 1}	
2	Output Power	15.247(b)	ANNEX A.1	Pass	
3	6dB Bandwidth	15.247(a)	ANNEX A.2	Pass	
4	Conducted Spurious Emission	15.247(d)	ANNEX A.3	Pass	
5	Band Edge(Authorized-band	15.209; 15.247(d)	ANNEX A.4	Pass	
	band-edge)		,	1 400	
6	Conducted Emission	15.207	ANNEX A.5	Pass	
7	Radiated Spurious Emission	15.209; 15.247(d)	ANNEX A.6	Pass	
8	Band Edge(Restricted-band	15.209; 15.247(d)	ANNEX A.7	Pass	
0	band-edge)	10.200, 10.247 (u)		1 233	
9	Power spectral density (PSD)	15.247(e)	ANNEX A.8	Pass	
Note 1: P	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	100 kPa - 102 kPa		
Temperature	NT (Normal Temperature)	+22°C to +25°C	
Working Voltage of the EUT	NV (Normal Voltage)	3.85 V	

4.2Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-30	103118	2016.07.13	2017.07.12
Switch Unit with OSP- B157	ROHDE&SCHWARZ	OSP120	101270	2016.07.13	2017.07.12
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2016.09.09	2017.09.08
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2016.07.05	2017.07.04
LISN	SCHWARZBECK	NSLK 8127	8127-687	2016.07.05	2017.07.04
Bluetooth Tester	ROHDE&SCHWARZ	CBT	101005	2016.07.13	2017.07.12
Power Splitter	KMW	DCPD-LDC	1305003215		
Power Sensor	ROHDE&SCHWARZ	NRP-Z21	103971	2016.07.13	2017.07.12
Attenuator (20 dB)	KMW	ZA-S1-201	110617091		
Attenuator (6 dB)	KMW	ZA-S1-61	1305003189		
DC Power Supply	ROHDE&SCHWARZ	HMP2020	018141664	2016.07.13	2017.07.12
Temperature Chamber	ANGELANTIONI SCIENCE	NTH64-40A	1310	2016.07.13	2017.07.12
Test Antenna- Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2015.07.22	2017.07.21
Test Antenna- Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2015.07.22	2017.07.21
Test Antenna- Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2015.07.22	2017.07.21
Test Antenna- Horn(15-26.5 GHz)	SCHWARZBECK	BBHA 9170	9170-305	2015.07.22	2017.07.21
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2019.02.20
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60 *7.35m	N/A	2016.08.09	2018.08.08
Shielded Enclosure	ChangNing	CN-130701	130703		
Signal Generator	ROHDE&SCHWARZ	SMB100A	177746	2016.07.13	2017.07.12
Power Amplifier	OPHIR RF	5225F	1037	2017.02.17	2018.02.16
Power Amplifier	OPHIR RF	5273F	1016	2017.02.17	2018.02.16
Directional Coupler	Werlantone	C5982-10	109275	N/A	N/A
Directional Coupler	Werlantone	CHP-273E	S00801z-01	N/A	N/A
Feld Strength Meter	Narda	EP601	511WX51129	2017.02.23	2018.02.22



Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Mouth Simulator	B&K	4227	2423931	2016.11.15	2017.11.14
Sound Calibrator	B&K	4231	2430337	2016.11.09	2017.11.08
Sound Level Meter	B&K	NL-20	00844023	2016.11.11	2017.11.10
Ear Simulator	B&K	4185	2409449	2016.11.15	2017.11.14
Ear Simulator	B&K	4195	2418189	2016.11.15	2017.11.14
Audio analyzer	B&K	UPL 16	100129	2016.11.08	2017.11.07



4.3 Measurement Uncertainty

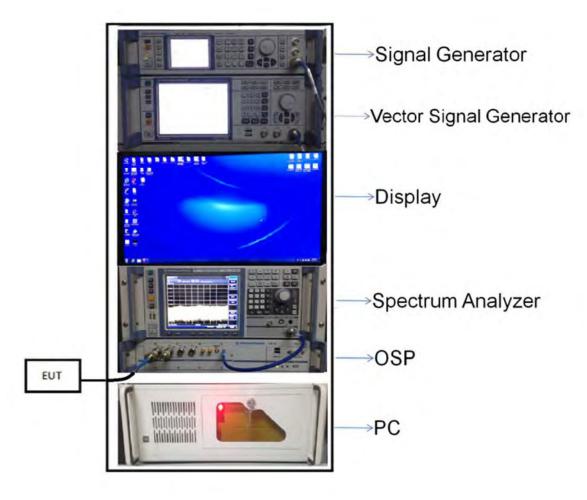
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Occupied Channel Bandwidth	±4%
RF output power, conducted	±1.4 dB
Power Spectral Density, conducted	±2.5 dB
Unwanted Emissions, conducted	±2.8 dB
All emissions, radiated	±5.4 dB
Temperature	±1°C
Humidity	±4%

4.4 Description of Test Setup

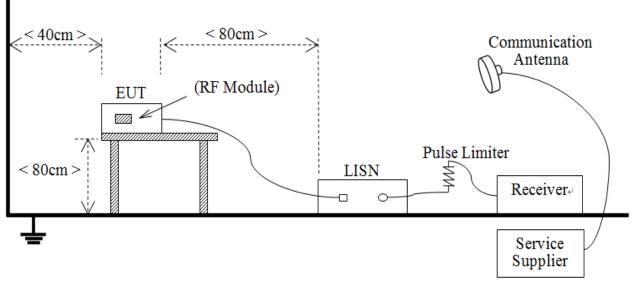
4.4.1 For Antenna Port Test





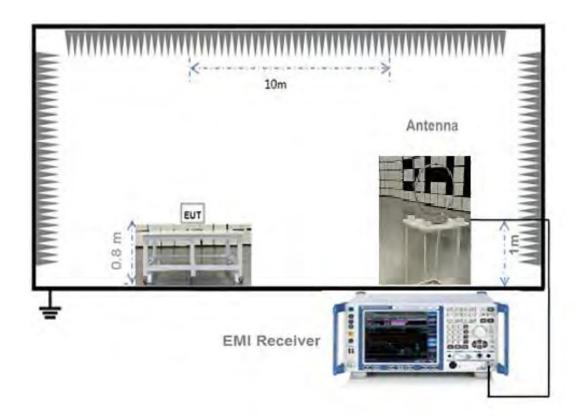


4.4.2 For AC Power Supply Port Test





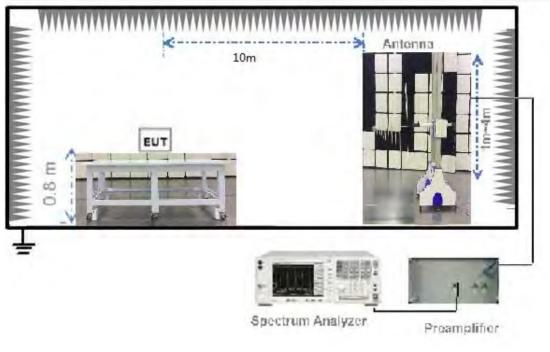
4.4.3 For Radiated Test (Below 30 MHz)



(Diagram 3)

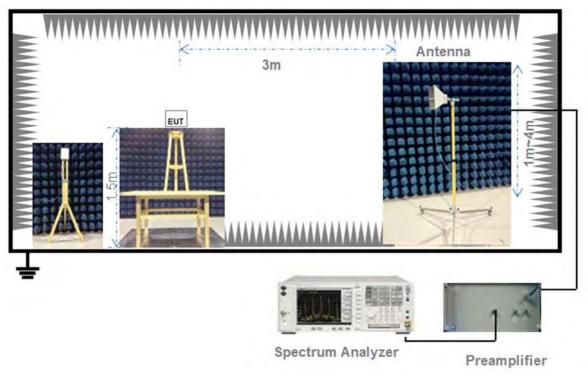


4.4.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.4.5 For Radiated Test (Above 1 GHz)







4.5 Measurement Results Explanation Example

4.5.1 For conducted test items:

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

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

Offset = RF cable loss + attenuator factor.

4.5.2 For radiated band edges and spurious emission test:

 $\mathsf{E} = \mathsf{EIRP} - 20\mathsf{log} \ \mathsf{D} + 104.8$

where:

 $E = electric field strength in dB\mu V/m$,

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)





5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Standard Applicable

FCC §15.203 & 15.247(b); RSS-247, 5.4 (6)

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 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. 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		
Compliance with 15.203, use of a				
standard antenna jack o	or electri	cal The antenna	a is the unique connector wit	th a wire antenna.
connector is prohibited.			_	
		PIFA Antenna	7	Unique connector
Reference Documents	Item	7		
Photo			RF Chip	



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); RSS-247, 5.4 (4)

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 antennas and antennas and antennas and antennas elements.

5.2.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.2.3 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 \geq OBW if possible; otherwise, set RBW to the largest available value.

Set VBW \geq 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 \leq 16.7 microseconds.)

5.2.4 Test Result

Please refer to ANNEX A.1.



5.36dB Bandwidth

5.3.1 Limit

FCC §15.247(a); RSS-GEN, 6.6

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 Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

Use the following spectrum analyzer settings:

Set RBW = 100 kHz.

Set the video bandwidth (VBW) \geq 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.

5.3.4 Test Result

Please refer to ANNEX A.2.



5.4 Conducted Spurious Emission

5.4.1 Limit

FCC §15.247(d); RSS-247, 5.5

In any 100 kHz 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 20 dB below that in the 100 kHz 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 Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 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 \geq 1.5 times the DTS bandwidth.

Set the RBW = 100 kHz.

Set the VBW \geq 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 \geq 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.

5.4.4 Test Result

Please refer to ANNEX A.3.





5.5 Band Edge (Authorized-band band-edge)

5.5.1 Limit

FCC §15.247(d); RSS-GEN, 8.9, RSS-247, 5.5

In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.5.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 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 \geq 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 \geq 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) \pm 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 \pm 0.5 MHz.

Standard method(The 99% OBW of the fundamental emission is without 2 MHz of the authorized band):

Span: Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products that fall outside of the authorized band of operation.



Reference level: As required to keep the signal from exceeding the maximum instrument input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

Attenuation: Auto (at least 10 dB preferred).

Sweep time: Coupled.

Resolution bandwidth: 100 kHz.

Video bandwidth: 300 kHz.

Detector: Peak.

Trace: Max hold.

5.5.4 Test Result

Please refer to ANNEX A.4.



5.6 Conducted Emission

5.6.1 Limit

FCC §15.207; 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 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μ H/50 Ω line impedance stabilization network (LISN).

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

5.6.2 Test Setup

See section 4.4.2 for test setup description for the AC power supply port. The photo of test setup please refer to ANNEX B.

5.6.3 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.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.6.4 Test Result

Please refer to ANNEX A.5.



5.7 Radiated Spurious Emission

5.7.1 Limit

FCC §15.209&15.247(c); RSS-247, 5.5

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

5.7.2 Test Setup

See section 4.4.3 to 4.4.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.7.3 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 \leq 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:

 $E = electric field strength in dB\mu V/m$,

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 \ge 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 freque	ncy
-------------------------------------	-----

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



a separate average measurement.

> 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

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 \geq 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 \geq 3 x RBW.

e) Detector = RMS, if span/(# of points in sweep) \leq (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 (\geq 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 30 MHz 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 $f \ge 1$ GHz, 100 kHz for f < 1 GHz VBW \ge RBW Sweep = auto Detector function = peak Trace = max hold

5.7.4 Test Result

Please refer to ANNEX A.6.



5.8 Band Edge (Restricted-band band-edge)

5.8.1 Limit

FCC §15.209&15.247(c); RSS-247, 5.5

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).

5.8.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.8.3 Test Procedure

The measurement frequency range is from 9 kHz 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 $f \ge 1$ GHz, 100 kHz for f < 1 GHz VBW \ge RBW Sweep = auto Detector function = peak Trace = max hold

For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported, Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

For transmitters operating above 1 GHz repeat the measurement with an average detector.

5.8.4 Test Result

Please refer to ANNEX A.7.



5.9 Power Spectral density (PSD)

5.9.1 Limit

FCC §15.247(d); RSS-247, 5.2 (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.

5.9.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.9.3 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 \leq RBW \leq 100 kHz.

Set the VBW \geq 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.

5.9.4 Test Result

Please refer to ANNEX A.8.



ANNEX A TEST RESULT

A.1 Output Power

Duty Cycle

Test Mode	Duty Cycle	T (ms)	1/T(kHz)
802.11b	0.99	8.37	0.12
802.11g	0.97	1.39	0.72
802.11n-20 MHz	0.97	1.30	0.77
802.11n-40 MHz	0.95	0.65	1.54

Peak Power Test Data

802.11b Mode:

Channel	Measured Output	Peak Power	Limit		Verdiet
Channel	dBm	mW	dBm	mW	Verdici
Low	13.43	22.03			Pass
Middle	14.42	27.67	30	1000	Pass
High	13.52	22.49			Pass

802.11g Mode:

Channel	Measured Output	Peak Power	Limit		Verdict
Channel	dBm	mW	dBm	mW	verdict
Low	14.27	26.73			Pass
Middle	15.37	34.43	30	1000	Pass
High	14.76	29.92			Pass

802.11n-20 MHz Mode:

Channel	Measured Output	Peak Power	Limit		Verdict
Channel	dBm	mW	dBm	mW	verdici
Low	12.39	17.34			Pass
Middle	13.48	22.28	30	1000	Pass
High	12.63	18.32			Pass

802.11n-40 MHz Mode:

Channel	Channel Measured Out		Lir	nit	Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	12.01	15.89			Pass
Middle	12.53	17.91	30	1000	Pass
High	11.90	15.49			Pass



A.2 Bandwidth

<u>Test Data</u>

802.11b Mode:

Channel	6 dB Bandwidth	99% Bandwidth	6 dB Bandwidth
Channel	(MHz)	(MHz)	Limits (kHz)
Low	9.6621	12.6194	≥500
Middle	9.6621	12.4457	≥500
High	8.7109	11.9247	≥500

802.11g Mode:

Channel	6 dB Bandwidth	99% Bandwidth	6 dB Bandwidth
Channel	(MHz)	(MHz)	Limits (kHz)
Low	14.5684	17.5398	≥500
Middle	16.0701	17.1925	≥500
High	13.9175	17.0188	≥500

802.11n-20MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	17.6719	18.1187	≥500
Middle	16.4204	17.8871	≥500
High	14.5181	17.5977	≥500

802.11n-40MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	35.5723	36.1000	≥500
Middle	35.4722	36.1000	≥500
High	36.1226	36.2000	≥500



Test plots

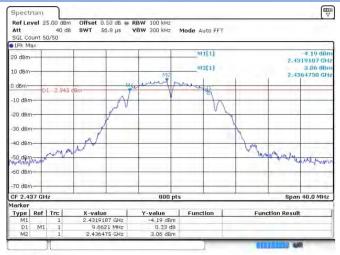
6dB Bandwidth

Date: 17 APR 2017 21:02:13

802.11b LOW CHANNEL

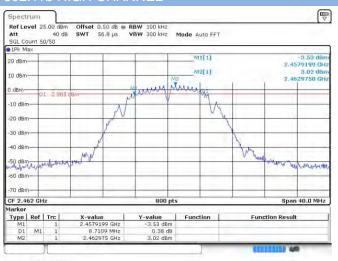


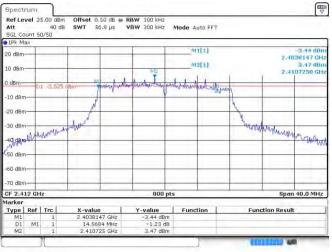
802.11b MIDDLE CHANNEL



Date: 17 APR 2017 21:04:40

802.11g LOW CHANNEL

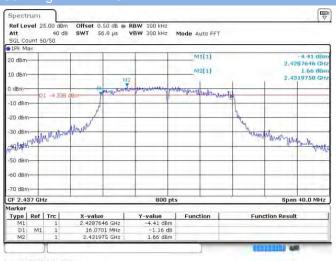




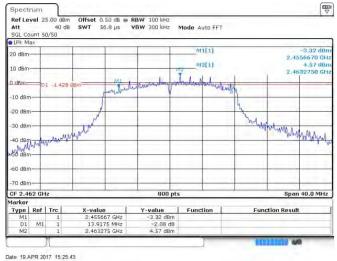
Date: 17 APR 2017 21:22:54

Date: 17 APR 2017 21:06:58

802.11g MIDDLE CHANNEL



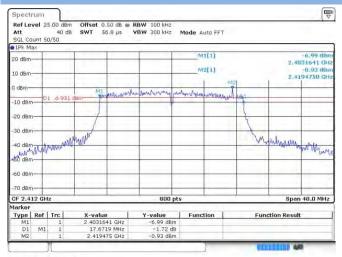
802.11g HIGH CHANNEL



Date: 19 APR 2017 15:23 27

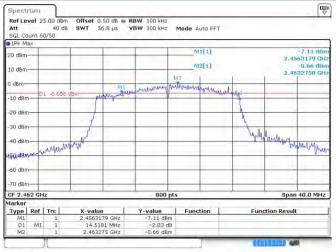


802.11n-20 MHz LOW CHANNEL

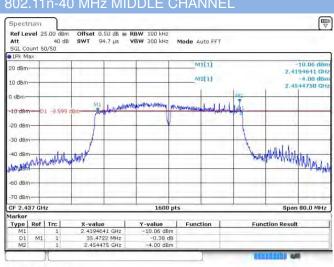


Date: 19.APR 2017 15:36:21

802.11n-20 MHz HIGH CHANNEL



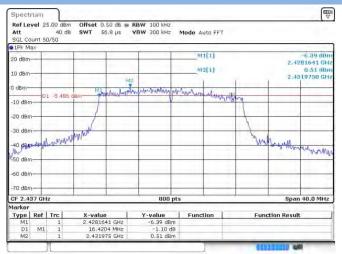
Date: 19 APR 2017 15:40:38



802.11n-40 MHz MIDDLE CHANNEL

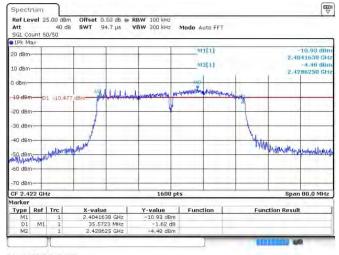
Date: 19 APR 2017 15:44:24

802.11 n-20 MHz MIDDLE CHANNEL



Date: 19.APR 2017 15:38:54

802.11n-40 MHz LOW CHANNEL



Date: 19.APR 2017 15:42:39



802.11n-40 MHz HIGH CHANNEL



99% Bandwidth

Date: 17 APR 2017 21 02:22

802.11b LOW CHANNEL

DIPIC M		00/500		_	-	Second Second		
10 dBm-					mount	MI[1]		-44,99 dBr 2.4320000 GH 12.619392185 MH
-10 d8m	+	_		2ª		C12	6	
-20 dBn	-	-		r"			7	
-30 dBn	-		1 al	-			the	
-40 dBm			n	-			- m	man
-50 dBn	1	_		-				
-60 dBm	-	-		-				
-70 dBm	-		-	_		_	-	
-90 dBm		-					-	
CF 2.4	12 GH	z			691 pts			Span 40.0 MHz
Marker Type	Ref	Trel	X-value	1	Y-value	Function	Fun	ction Result
M1		1		2 GHz	-44.99 dBm			
T1		1	2.405574		-6.87 dBm -7,46 dBm	Occ Bw		12.619392185 MHz

802.11b MIDDLE CHANNEL

10 d8m	-44:35 dB 2,4570000 G 12:445700025 Mb
10 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -50 dBm -50 dBm	
-20 dBm -30 dBm -40 dBm -50 dBm -50 dBm	m
30 dem	m
40 d8m	m
-50 d6m	my
-60.08m	
-70 d8m-	
-30 d8m-	
CF 2.437 GHz 691 pts	Span 40.0 MH
Marker Type Ref Trc X-value Y-value Function Func	ction Result
M1 1 2,457 GHz -44,35 dBm	aion Result
T1 1 2.4305745 GHz -6.20 dBm Occ Bw	12.445730825 MHz

Date: 17 APR 2017 21 04:49

802.11g LOW CHANNEL

Spectrum
 Ref Level
 14.09 dBm
 Offset
 0.50 dB
 RBW
 500 kHz

 Att
 35 dB
 SWT
 1 ms
 VBW
 2 MHz
 Mode
 Auto FFT
 SGL Count S00/500 1Pk Max 45.83 dB MITI 10 dBm-2,48200 U GH ma man 11-924746744 MH dBr Ang B TIS -10 dBm -20 dBm--30 dBm--40 dBm -50 dBm--60 dBm -70 dBm--SD dBm-CF 2.462 GH 691 pt Span 40.0 MHz larke Type Ref Trc X-value 2.482 GHz 2.4562113 GHz 2.468136 GHz | Function | Y-value -45.83 dBm Function Result Occ Bw -10.31 dBm -7,46 dBm 11.924746744 MHz T1 T2 TO AND

Date: 17 APR 2017 21:07:07

802.11g MIDDLE CHANNEL



Date: 19 APR 2017 15:23:36



Date: 17 APR 2017 21.23:03

802.11g HIGH CHANNEL

Spectrum Ref Level 17.01 d8m Offset 0.50 d8 RBW 500 kHz Att 35 d8 SWT 1 ms VBW 2 MHz 35 SGL Count S00/S0D 1Pk Max Mode Auto FFT -28.01 d0) 2,4820800 GH 17.018813314 MH M1[1] 10 dBm-OCC BM dBm 10 dBm 20 dBm 30 dBm 40 dBm -50 dBm--60 dBm-70 dBm

691 pts

Function

Occ Bw

Y-value -98.01 dBm

1.54 dBm 2.06 dBm

X-value 2.482 GHz 2.4536643 GHz 2.4706831 GHz Span 40.0 MHz

17.018813314 MHz

440

Function Result

-80 dBm CF 2.462 GHz

Type Ref Trc

Date: 19 APR 2017 15:25:52

Marke

T1 T2



802.11n-20 MHz LOW CHANNEL

DIPK M	ax.			-	-					
10 dBm E dBm—			Ty		-	M1[1]		-30.51 dBn 2.4320000 GH 18.118668596 MH		
-10 dBm	-	_								
-20 dBn	-	~	1	_						
-30.deir	4	_	-	-						
-40 dBm	-	-	-							
-50 dBn	+	-	-							
-60 dBm	-	-	-	-	-					
-70 dBm	-	_	-	-						
-90 dBm	-	_					-			
CF 2.4	12 GHz			-	691 pt	5		Span 40.0 MHz		
Marker										
Type M1	Ref	Trc 1	X-value	32 GHz	-30.51 dBm	Function	Fu	Function Result		
T1 T2		1	2.40291 2.42103	17 GHz	-1.18 dBm -1.91 dBm	Occ Bw		18.118668596 MHz		

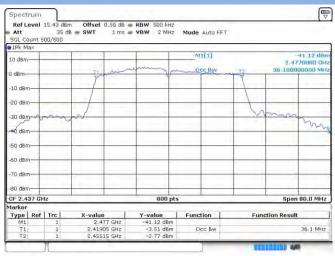
Date: 19.APR 2017 15:36:30

802.11n-20 MHz HIGH CHANNEL

IPk M	ax		19.000							
10 dBm	-		-73			MI[1]	0.70	-31.01 dB 2.4820800 G 17.597684515 MI		
0 dBm-		-	7			- CCC DIT -	T	Tridgriddidid		
-10 dBn	-		-/-	-					_	
-20 dBn				_	-		1		_	
-30 dBn	-	-	-	-			-	- m	4	
-40 dBn	1						-	11	_	
-50 dBn				-			-		_	
-60 dBn	-	-	-	-					_	
-70 dBn	-	-	-	-					_	
-80 dBn			-	_	-		-		_	
CF 2.4	62 GH	Iz		_	691 pts		-	Span 40.0 M	1Hz	
Marker									_	
Type M1	Ref	Trc 1	X-value	2 GHz	-31.01 dBm	Function	Fur	ction Result	-	
		1	2.453316		-1.44 dBm	Occ Bw		17.597684515 N		

Date: 19 APR 2017 15:40:47

802.11n-40 MHz MIDDLE CHANNEL



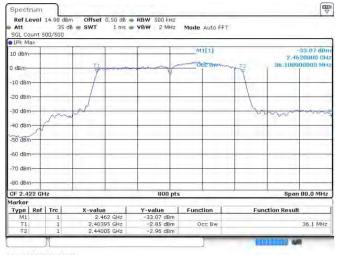
Date: 19.APR 2017 15:44:35

802.11 n-20 MHz MIDDLE CHANNEL



Date: 19 APR 2017 15:39:03

802.11n-40 MHz LOW CHANNEL



Date: 19.APR 2017 15:42:50



802.11n-40 MHz HIGH CHANNEL



A.3 Conducted Spurious Emissions

<u>Test Data</u>

802.11b Mode:

	Measured Max. Out of	Limit (dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-42.60	4.72	-15.28	Pass
Middle	-43.13	5.36	-14.64	Pass
High	-43.88	3.98	-16.02	Pass

802.11g Mode:

	Measured Max. Out of	Limit (dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-43.63	3.50	-16.50	Pass
Middle	-42.71	4.18	-15.82	Pass
High	-43.23	4.80	-15.20	Pass

802.11n-20MHz Mode:

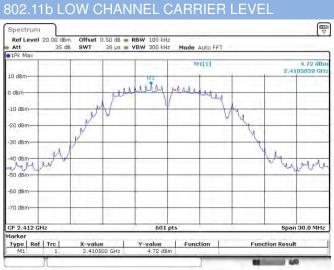
	Measured Max. Out of	Limit (dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-42.75	1.74	-18.26	Pass
Middle	-43.46	2.78	-17.22	Pass
High	-42.93	1.62	-18.38	Pass

802.11n-40MHz Mode:

	Measured Max. Out of	Limit (dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-43.72	-1.24	-21.24	Pass
Middle	-42.34	-0.35	-20.35	Pass
High	-41.81	-1.15	-21.15	Pass

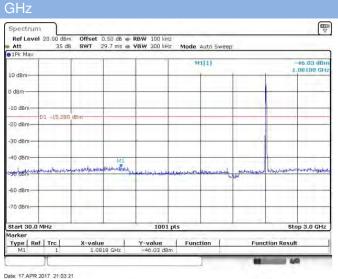


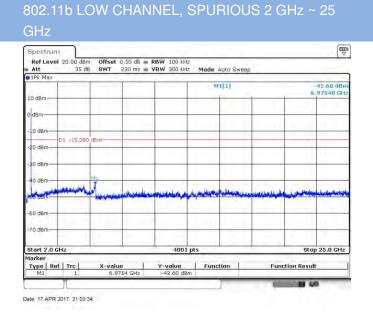
Test Plots



Date: 17 APR 2017 21:02:48

802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3





Spectrum Ref Level 20.00 dBm Att 35 dB 1Pk Max Offset 0.50 dB = RBW 100 kHz SWT 38 µs = VBW 300 kHz Mode Auto FFT 5.36 dBn 5020 GH 2.43 10 dBm J. M. Ins MAIN dB 1.1 -10 dBn 20 dBm 30 dBm M 40 dBm--50 dBm Au -60 dBm -70 dBm CF 2.437 GHz Span 30.0 MHz 501 pt Marker Type Ref Trc 2.435502 GHz Y-value 5.36 dBm Function **Function Result** 10

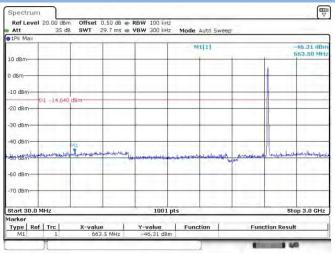
802.11b MIDDLE CHANNEL CARRIER LEVEL

Date: 17 APR 2017 21:05:15



802.11b MIDDLE CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



Date: 17 APR 2017 21:05:35

802.11b HIGH CHANNEL CARRIER LEVEL



Date: 17.APR 2017 21:07:17

30 MHz ~ 3 GHz (₩) Spectrum 00 dBm Offset 0.50 dB - RBW 100 kHz 35 dB SWT 29.7 ms - VBW 300 kHz Ref Level 20.00 dBm Mode Auto Sweep Att 1Pk Ma -45.81 dBn 1.00170 GH N1[1] 10 dBm dBn 10 dBr -16.0 -20 dBm -30 dBr 40 dBm manu No share the munited: Autor -60 dBr 70 dBr Start 30.0 1001 pt Stop 3.0 GHz Type Ref Trc X-value 1.0017 GHz 1 Y-value -45.81 dB Function Function Result Date: 17 APR 2017 21:07:38

802.11b HIGH CHANNEL, SPURIOUS

802.11b MIDDLE CHANNEL, SPURIOUS

2 GHz ~ 25 GHz

Att	35 d	B SWT	230 ms 🖷	VBW 300 kHz	Mode	Auto Sweep	-		
				1	151	1111			13.13 dBn 96110 GH
10 dBm								_	-
dBm	_				-			-	
10 dBm-	1 -14.640	-			-				
20 dBm-	21 -14/040	UBIN							
30 d8m	-			+ +					
40 dBm		T	-		-		-		1.00
-branner and	-the man	-Mainten	- HARANA	-	the state of the s	-	-	and the second second	waith the
-60 d8m	_	-			_				-
70 dBm-									
Start 2.0 G	Hz			4001	ots			Stop	25.0 GHz
larker	Trc	X-val		Y-value	Func			tion Result	
Type Ref M1	1		9811 GHz	-43.13 dBm		tion	Fund	tion Result	

Date: 17 APR 2017 21:05:43

802.11b HIGH CHANNEL, SPURIOUS

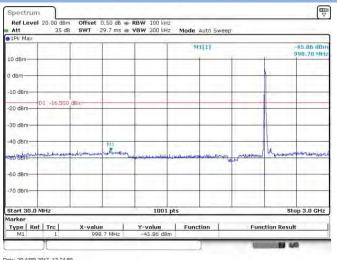


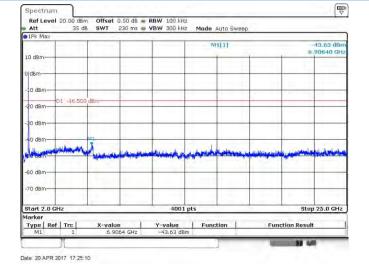


802.11g LOW CHANNEL CARRIER LEVEL

1Pk Max										
					M1[1]				2.50 dBn 107520 GH	
10 dBm				MI	-	-	1	2,41075200		
0 dBm		Marthaut	antonalo	motion	partient	antrut	anthrally.			
-10 dBm	_	1	-			-				
-20 dBm	N	(-		2		
-20 dBm-	MAN					-		magan	month	
40 dBm							-	-		
-50 dBm					_		-		-	
-60 d8m	_		-	-	_	-	-			
-70 dBm			-		-					
CF 2.412 GH	z			601	pts	1		Spar	30.0 MHz	
larker								1	/	
Type Ref M1	Trc 1	X-value 2.41075	2.645	Y-value 3.50 dB	Func	tion	Fune	tion Resul	t	

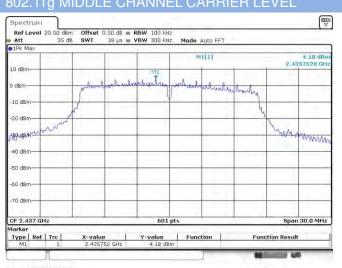
802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz





802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25

Date: 20 APR 2017 17 24:59



802.11g MIDDLE CHANNEL CARRIER LEVEL

Date: 19 APR 2017 15:23:46

GHz

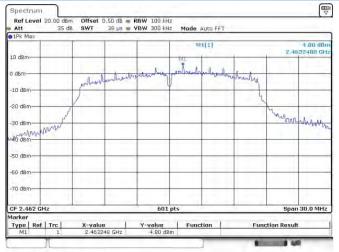


802.11g MIDDLE CHANNEL, SPURIOUS

Att	el 20.00 dBr 35 di			RBW 100 kHz VBW 300 kHz		Auto Sweep	0		-	
1Pk Max	-			1 7						
			-		IV1	1[1]		-45.41 dBn 829,60 MH		
10 dBm-	-	-		+ +		-	1	029	au ana	
0 dBm-	-			1 1			-			
-10 dBm-	111 - 11	1.1					1	1		
-10 dBm-										
-20 dBm-	01 -19.020) dem								
au dum										
-30 d8m-		-		+ +				4		
-40 dBm-		111		+					_	
. Jube	Almen best days and	and and the second	under		and for	in the second	and with and	humanenaline	anti-see als	
-50 dBm-	a p and t o a lago		W	and the second s	In the state of the second	and pre-name	With	1001.		
-60 dBm-										
-00 0011-			-							
-70 dBm-							_		_	
Start 30	0 MHz			1001	ats		-	Stop 3	.0 GHz	
larker			_	1001	103			otop a	to drie	
	tef Trc	X-value	1	Y-value	Fund			tion Result		

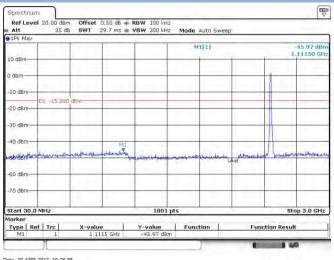
Date: 19.APR 2017 15:24:06

802.11g HIGH CHANNEL CARRIER LEVEL



Date: 19 APR 2017 15:26:02

802.11g HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



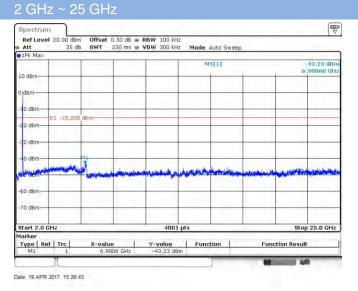
Date: 19 APR 2017 15:26:35

802.11g MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

P1Pk M	av	35 d	B SWT	230 ms	VBW 300 kHz	Mode	Auto Sweep	-		
			1	1		N	1[1]			42.71 dBn 89490 GH
10 dBm										
0 dBm-	-			-						
-10 dBr									-	
-20 dBm		-15.020) dam							
-30 dBm	+			-	-					
-40 dBm	-		Wa V			-	-		-	
A MARK	and the second	inest we	-	weinster and the second	hand a start and a start a star	he and the second	A HALL HALL	a have been been	المياديه المنصجير بمالال ين	-
-60 dBm	-	_								
-70 dBm	-	-								
	.0 GH	z		-	4001	pts	-		Stop	25.0 GHz
Start 2 Marker	.0 GH	2		-	4001	pts	-		Stop	25.0 GHz
Type M1	Ref	Trc	X-val	1949 GHz	-42.71 dB	Func	tion	Func	tion Result	5

Date: 19 APR 2017 15:24:15

802.11g HIGH CHANNEL, SPURIOUS





802.11n-20 MHz LOW CHANNEL CARRIER LEVEL

1Pk Max		-				
	11			M1[1]		1.74 dBr 2.4107520 GH
10 dBm		-		1	1	2.4107520 01
	1		IMI			
0 dBm	and man	Multimetter	when him .	when had not	And A.	
-10 dBm	priese and	100000			monorenored	
10 ubm			4		- 1	
-20 dBm	1	-			_	
	T					1
-30 d8m	16	-	+ +		-	1 10
30 dBm						man white was
40 dBm			1 1			
-50 dBm	1.1	1.				
-50 (dbin-						
-60 d8m						
	11.1					
-70 dBm		-	-		-	
1000	1	1.00			_	
CF 2.412 GHz		1	601 p	ts	-	Span 30.0 MHz
1arker						
Type Ref Trc		752 GHz	Y-value 1.74 dBm	Function	Fund	tion Result

Date: 19 APR 2017 15:36:45

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

Att	35 de	SWT	29.7 ms 🖷	VBW 300 kHz	Mode	Auto Swee	p		
DIPK Max		1	1	Í Í	63	1[1]			46.12 dBn
1.000			-			1111			02250 GH:
10 dBm	_			1			1		
0 dBm						_			
-10 dBm-	_		-				-		
-20 dBm-	01 -10.260	dem		_		-			
-zo ubili									
-30 d8m		-	-	-					
-40 dBm									
		1.0	MI				1	1 and	
-96/ashindan	What is the	U kratnikihwah	Mulandam	- Harten de Alter	at the section of the	al muther	phin Mountal	Marinte	Arthurk-shou
			1						
-60 dBm			-	1					
-70 dBm	1								
/ C COM			-	-					
Start 30.0	MHz		-	1001	ots		-	Sto	p 3.0 GHz
Marker									
Type Ref M1	Trc	X-valu	225 GHz	-46.12 dBm	Func	tion	Fund	tion Result	
1412	1 4	1.0	ceo anc	40.12 UBI	(L	-		-	_

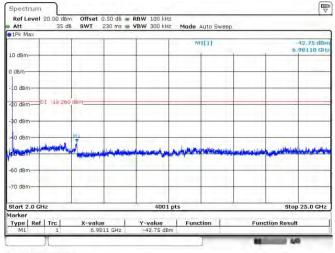
Date: 19 APR 2017 15:37:08

Att		20.00 dBm 35 dB			RBW 100 kHz VBW 300 kHz	Mode Auto	FFT		
1Pk M	ax	-	-	-	T T	M1[1]			2.78 dBn
10 dBm		_				-	1	2.	4357520 GH
				10.1	AND A				1
0 dBm-			analant	arthart	appresenting to	Maral marily	walkanter	1	
-10 dBm	+		(Y			un l	_
-20 dBm		1	1					N	
-20 060		J						1	
-30 dBm	- hD	INN			+ +				
-30 dBm	-							- Inity	winnsweight
10 001									
-50 dBm	-							-	-
-60 dBm	-	_						-	
			1.000	1.1					111 - 1
-70 dBm				-					1
CF 2.4	37 GH	z			601 pt	s		Sp	an 30.0 MHz
Marker									
Type M1	Ref	1 1	2.4357		Y-value 2.78 dBm	Function	F	unction Res	ult

802.11n-20 MHz MIDDLE CHANNEL CARRIER LEVEL

Date: 19 APR 2017 15:39:14

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

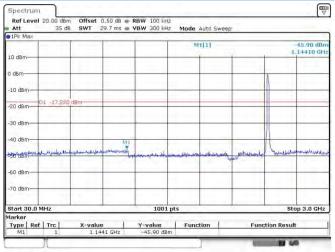


Date: 19 APR 2017 15:37:17



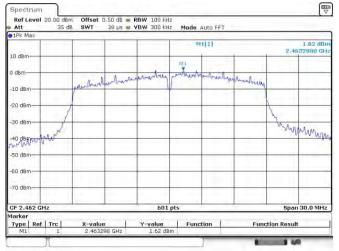
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



Date: 19 APR 2017 15:39:36

802.11n-20 MHz HIGH CHANNEL CARRIER LEVEL



Date: 19.APR 2017 15:41:01

₽ Spectrum 0 d8m Offset 0.50 d8 • R8W 100 kHz 35 d8 SWT 29.7 ms • V8W 300 kHz Ref Level 20.00 dBm Mode Auto Swee Att 1Pk Ma M1[1] 16-14 dBr 868,20 MH 10 dBm dBn -10 dB 1 -18.3 20 dBm -30 d8r 40 dBm HIL I www.hun Horseller -60 dBr 70 dBr 1001 pt Stop 3.0 GHz Start 30.0 Type Ref Trc X-value 868.2 MHz 1 Y-value Function **Function Result** Date: 19.APR 2017 15:41:23

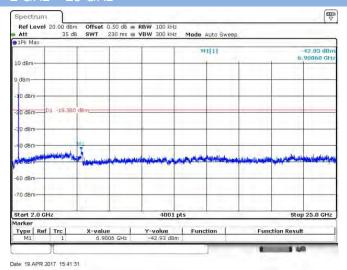
802.11n-20 MHz HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS

Att	20.00 dBr 35 di			88W 100 kHz 78W 300 kHz	Made	Auto Sweep	-		
1Pk Max			1	1	M	1[1]		5	43.46 dBn
10 dBm		-	-	+ +					
dBm								_	
10 dBm					_				
20 dBm	1 -17.220	dam							-
0 dBm		-	-						
0 dBm	Mar Mar	I.			1.0	and a			in a second
de de Martin		history	the state of the second	an weather the second	and white such	Matthe and an and a	had been and the se	New York	
60 d8m					-				
70 dBm			-		1				
tart 2.0 GH	łz	1		4001	pts			Stop	25.0 GHz
arker	Trc	X-val		Y-value	Func			tion Result	

Date: 19.APR 2017 15:39:44

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



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802.11n-40 MHz LOW CHANNEL CARRIER LEVEL

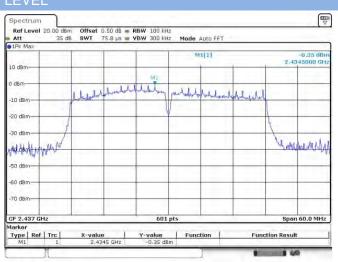
1Pk Max										
					M1[1] -1.24 2,4269900					
10 dBm-			-	-			1		-	
0 dBm			-		MI	L. L. 1	1.1		-	
-10 dBm		Malahah	Monthele	put when how y	finddah	a number (man)	and solubrished		-	
-20 dBm			-		4				-	
-30 d8m				-				1		
MARRIER	MAN							- Montha	Antornalia	
-50 dBm				-			-		. 10.1	
-60 dBm										
-70 dBm				-						
CF 2.422 G	Hz			601	pts		-	Spa	n 60.0 MHz	
Marker	1 - 1			dans a co	1					
Type Ref	Trc	X-value	99 GHz	Y-value -1.24 di	Func	tion	Fund	tion Resu	tt.	

Date: 19 APR 2017 15:43:01

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

Att	-	35 de	SWT :	29.7 ms 🖷	VBW 300 kHz	Mode	Auto Swee	p		_
					1	N	1[1]			-16.94 dBn .75240 GH:
10 dBm				-						
0 dBm-	-	_				_			4	
-10 dBr	1-					-			1	
-20 dBr	-0	1 -21.246	dam	-	-		-			
-30 d8r	-	_			-				-	
-40 dBr			-			M3	-		1	
an an	yet-logh	معديداني الرياس	ogialdoscapille. Jackie	errorade-under des	A MARANA	w. marchu	an an all and the start	appresence	Ingeliaint	allertha-functional and
-60 dBr	+					-				
-70 dBr	-									
Start 3	0.0 M	IHz	1		1001	pts		-	Ste	op 3.0 GHz
1arker Type	Pof	Trel	x-value		Y-value	Func	tion 1	Fum	tion Resul	
MI	1401	1		24 GHz	-46.94 dBn		cion -	1 1011	Alon regati	

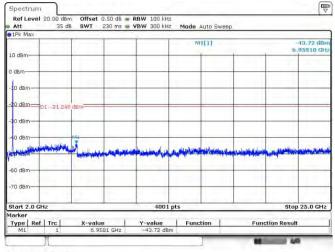
Date: 19 APR 2017 15:43:19



802.11n-40 MHz MIDDLE CHANNEL CARRIER LEVEL

Date: 19 APR 2017 15:44:48

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

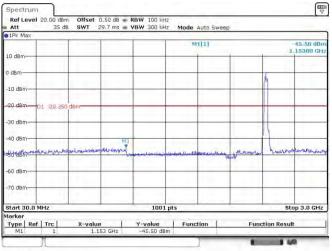


Date: 19.APR 2017 15:43:26



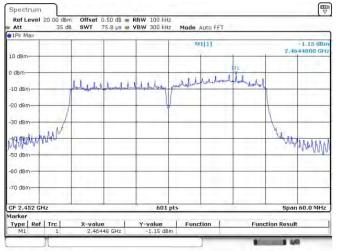
802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS





Date: 19.APR 2017 15:45:09

802.11n-40 MHz HIGH CHANNEL CARRIER LEVEL



Date: 19 APR 2017 15:46:34

Spectrum 00 dBm Offset 0.50 dB - RBW 100 kHz 35 dB SWT 29.7 ms - VBW 300 kHz Ref Level 20.00 dBm Mode Auto Swee Att 1Pk Ma -45.91 dBr 862,30 MH M1[1] 10 dBm d dBn -10 dB 20 dBr 01 -21,15 -30 dBr 40 dBm July In un persident Hants -60 dBm 70 dBr 1001 pt Stop 3.0 GHz Start 30.0 X-value 862.3 MHz Type Ref Trc 1 Y-value -45.91 di Function Function Result

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

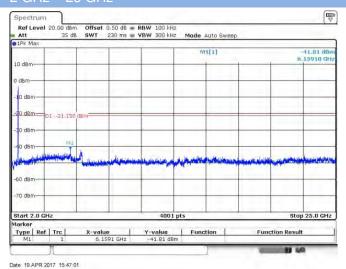
Date: 19.APR 2017 15:46:53

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

-42.34 dB 5.90060 GF
والمدرجور والمروم المعادة المحسور والمحمد المعركين

Date: 19 APR 2017 15:45:17

802.11n-40 MHz HIGH CHANNEL, SPURIOUS



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A.4 Band Edge (Authorized-band band-edge)

Test Data

Note: The 99% OBW of the fundamental emission is without 2 MHz of the authorized band. 802.11b Mode:

	Measured Max. Band	Limit	(dBm)	
Channel	Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-45.25	4.72	-15.28	Pass
High Channel	-53.51	3.98	-16.02	Pass

802.11g Mode:

	Measured Max. Band	Limit	(dBm)	
Channel	Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-28.09	3.50	-16.50	Pass
High Channel	-42.30	4.80	-15.20	Pass

802.11n-20 MHz Mode:

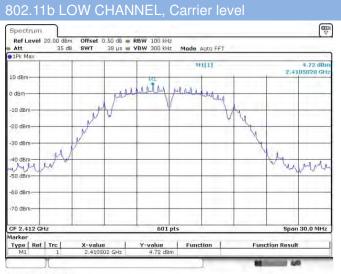
	Measured Max. Band	Limit	(dBm)	
Channel	Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-35.70	1.74	-18.26	Pass
High Channel	-45.51	1.62	-18.38	Pass

802.11n-40 MHz Mode:

	Measured Max. Band	Limit	(dBm)	
Channel	Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-40.63	-1.24	-21.24	Pass
High Channel	-45.50	-1.15	-21.15	Pass



Test Plots



802.11b LOW CHANNEL, Reference level



Date: 17 APR 2017 21 03:41

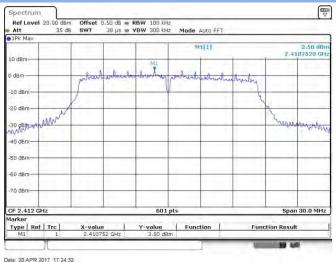
Date: 17 APR 2017 21:02:48

802.11b HIGH CHANNEL, Carrier level

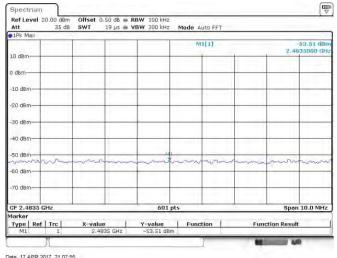


Date: 17 APR 2017 21:07:17

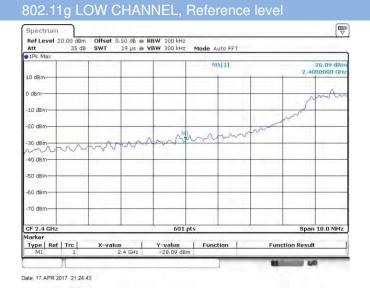
802.11g LOW CHANNEL, Carrier level



802.11b HIGH CHANNEL, Reference level

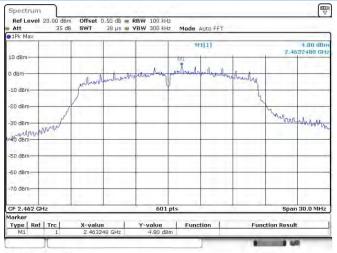


Date: 17.APR 2017 21:07:55





802.11g HIGH CHANNEL, Carrier leve



Date: 19 APR 2017 15:26:02

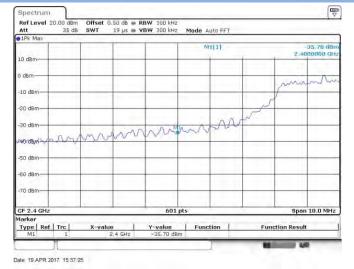
802.11n-20 MHz LOW CHANNEL, Carrier level

Att	35 df	SWT	30 ps =	VBW 300 kH	Mode A	atu PP I			_
					DI1	[1]			1.74 dBn
10 dBm-	_					-	1	2.4	107520 GH
				IMIE -					
0 dBm		- and - and	fartreally	whenthing	whenter	al cales	1. Aug		
-10 dBm-	_	1 car					manuated		
			-						12
-20 dBm	f							1	
-30 d8m-	, t		1					1	
AnanA	min							"unas	Mahan
-30 d8m									
-50 dBm-			-				-		
-50 0600				1					
-60 d8m	_			-	-	_	-		
		1.0.00	1.1						12 6 3
-70 dBm-		1.0							1.0
CF 2.412 G	Hz	-		601	pts	-	-	Spar	1 30.0 MHz
Marker	1				1		-		
Type Ref M1	1 Trc	2.4107		Y-value 1.74 dB	Functi	on	Fund	tion Resul	



Date: 19.APR 2017 15:26:52

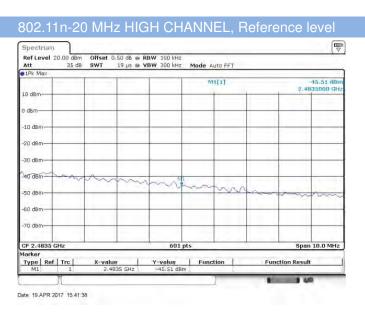
802.11n-20 MHz LOW CHANNEL, Reference level



Date: 19 APR 2017 15:36:45

802.11n-20 MHz HIGH CHANNEL, Carrier level

Ref Level Att	20.00 dBr 35 d			RBW 100 kHz VBW 300 kHz	Mode	Auto FFT			
1Pk Max	_								
					(V)	1111		2,46	1.62 dBi 32980 GH
10 dBm					1111	-			
0 dBm	_		A 0.	mentally		montrente	mahires		
-10 dBm		ydenthard	northand	T V			monaticity		
-20 dBm								1	
-30 d8m	1							1	-
-40 dBm	Mart							and a	www.
40 dBmort	1.40								
-50 dBm		-							
-60 d8m				+ +	-	-	-		
		1.000	1.1						11
-70 dBm			-						
CF 2.462 G	Hz	1	1	601 p	ots		-	Span	30.0 MHz
Marker	1				1				
Type Ref M1	1 Trc	2.4632		Y-value 1.62 dBn	Func	tion	Fund	tion Result	
	N							8 44	

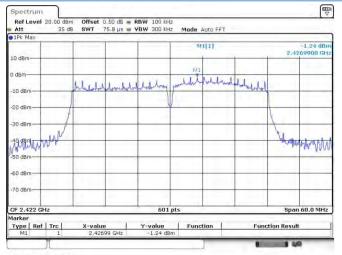


802.11g HIGH CHANNEL, Reference leve



1.44

802.11n-40 MHz LOW CHANNEL, Carrier level



802.11n-40 MHz LOW CHANNEL, Reference level Spectrum Ref Level 20.00 dBm Att 35 dB Offset 0.50 dB = RBW 100 kHz SWT 19 µs = VBW 300 kHz 35 dB SWT Mode Auto FFT 40.63 dB M1[1] 2.4 10 dBm dBm N -10 dBn -20 dBn 30 d8m m AD dBm WI N -50 dBm--60 dBm -70 dBm GF 2.4 GHz Marker Type Ref Trc 601 pt Span 10.0 MHz X-value 2.4 GHz Y-value Function Function Result T

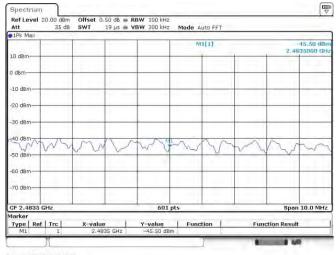
Date: 19.APR 2017 15:43:01

802.11n-40 MHz HIGH CHANNEL, Carrier level

91Pk M	ах						-			-
						151	1[1]			-1.15 dBn 544800 GH:
10 dBm	-						-	1	2 (*)	SHHOUL GET.
0 dBm-								11		
			11.14	1 11	111	matulate	Antihor	-halad shall al		
-10 dBm	1	-	the logication	-thurstanilard	buller Mus werter	1				
-20 dBm	-		-					-	1	
		1								
-30 d8m		a ht		1					k.	
19.99.00	WAY	MAR		-	-	-		-	"Lenth	MULLING
-50 dBr		-								n A New York
-Su dan										
-60 dBm	-									
-70 dBm	-									
										1
CF 2.4	52 GH	z			601	pts	-	1	Spar	60.0 MHz
Marker					1000 A	1				
Type M1	Ref	1 1	X-value 2,464		Y-value -1.15 dB	Func	tion	Fund	tion Resul	t

Date: 19 APR 2017 15:46:34

802.11n-40 MHz HIGH CHANNEL, Reference level



Date: 19.APR 2017 15:47:09

Date: 19.APR 2017 15:43:34



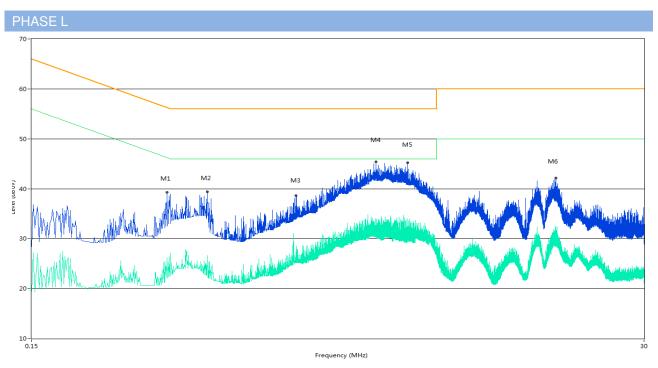


A.5 Conducted Emissions

Note ¹: The EUT is working in the Normal link mode.

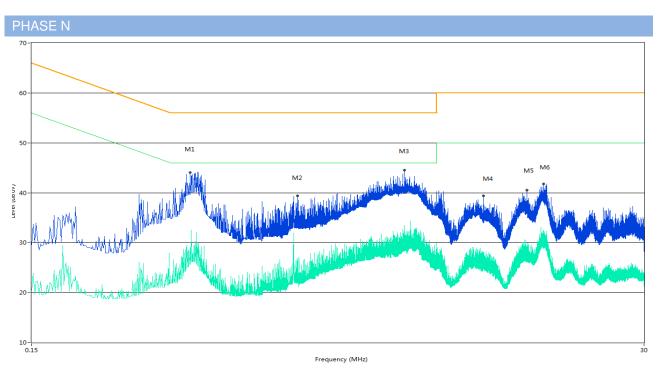
Note ²: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

Test Data and Plots



No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Line	Verdict
	(MHz)	(dBuV)		(dBuV)	(dB)			
1	0.484	39.2	10.85	56.3	17.10	Peak	L Line	Pass
1**	0.484	26.1	10.85	46.3	20.20	AV	L Line	Pass
2	0.686	39.4	9.59	56.0	16.60	Peak	L Line	Pass
2**	0.686	26.6	9.59	46.0	19.40	AV	L Line	Pass
3	1.474	38.6	9.79	56.0	17.40	Peak	L Line	Pass
3**	1.474	27.4	9.79	46.0	18.60	AV	L Line	Pass
4	2.948	45.3	10.71	56.0	10.70	Peak	L Line	Pass
4**	2.948	31.0	10.71	46.0	15.00	AV	L Line	Pass
5	3.876	45.2	10.09	56.0	10.80	Peak	L Line	Pass
5**	3.876	32.4	10.09	46.0	13.60	AV	L Line	Pass
6	14.014	42.1	11.33	60.0	17.90	Peak	L Line	Pass
6**	14.014	29.9	11.33	50.0	20.10	AV	L Line	Pass





No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Line	Verdict
	(MHz)	(dBuV)		(dBuV)	(dB)			
1	0.590	44.0	10.04	56.0	12.00	Peak	N Line	Pass
1**	0.590	27.1	10.04	46.0	18.90	AV	N Line	Pass
2	1.494	39.4	10.18	56.0	16.60	Peak	N Line	Pass
2**	1.494	26.3	10.18	46.0	19.70	AV	N Line	Pass
3	3.772	44.5	10.95	56.0	11.50	Peak	N Line	Pass
3**	3.772	33.4	10.95	46.0	12.60	AV	N Line	Pass
4	7.482	39.4	10.26	60.0	20.60	Peak	N Line	Pass
4**	7.482	28.0	10.26	50.0	22.00	AV	N Line	Pass
5	10.870	40.5	10.53	60.0	19.50	Peak	N Line	Pass
5**	10.870	29.1	10.53	50.0	20.90	AV	N Line	Pass
6	12.556	41.7	11.00	60.0	18.30	Peak	N Line	Pass
6**	12.556	32.5	11.00	50.0	17.50	AV	N Line	Pass



A.6 Radiated Emission

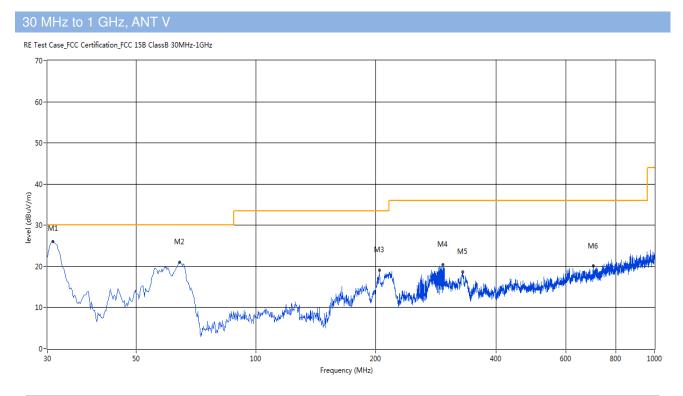
Note ¹: The symbol of "--" in the table which means not application.

Note ²: For the test data above 1 GHz, According the ANSI C63.10-2013, 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 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Note ⁴: The EUT is working in the Normal link mode below 1 GHz.

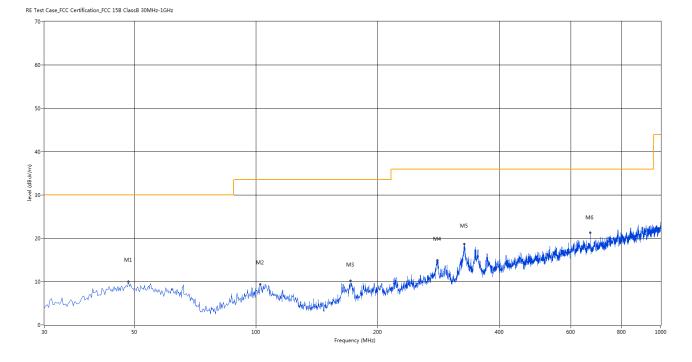
Test Data and Plots



No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	30.970	26.07	-16.82	30.0	3.93	Peak	22.00	200	Vertical	Pass
2	64.426	21.04	-15.63	30.0	8.96	Peak	223.00	200	Vertical	Pass
3	204.071	19.14	-14.92	33.5	14.36	Peak	193.00	100	Vertical	Pass
4	294.501	20.45	-12.48	36.0	15.55	Peak	148.00	100	Vertical	Pass
5	330.382	18.68	-11.39	36.0	17.32	Peak	131.00	100	Vertical	Pass
6	701.072	20.07	-4.16	36.0	15.93	Peak	210.00	100	Vertical	Pass



30 MHz to 1 GHz, ANT H



No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	48.425	10.03	-13.30	30.0	19.97	Peak	352.00	300	Horizontal	Pass
2	102.489	9.38	-15.17	33.5	24.12	Peak	295.00	400	Horizontal	Pass
3	171.100	10.20	-17.48	33.5	23.30	Peak	61.00	300	Horizontal	Pass
4	280.440	14.90	-12.82	36.0	21.10	Peak	249.00	300	Horizontal	Pass
5	326.988	18.63	-11.64	36.0	17.37	Peak	61.00	400	Horizontal	Pass
6	669.070	21.31	-4.46	36.0	14.69	Peak	69.00	100	Horizontal	Pass



Note 1: Only 1 GHz~18 GHz test data were seen in this report, 18 GHz ~ 40 GHz is noise floor.

Note 2: The device was evaluated/tested in XYZ orientation for radiated spurious emissions. And only the worst orientation of EUT was reported, which is the Horizontal orientation.

1	GHz to	o 7 GHz, Al	NT H 802.1	1b Low cha	annel						
	No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
	1	1284.500	42.72	-6.24	74.0	31.28	Peak	327.00	150	Horizontal	Pass
	2	1753.000	42.10	-5.98	74.0	31.90	Peak	291.00	150	Horizontal	Pass
	3	2410.500	103.95	-2.60	74.0	-29.95	Peak	141.80	150	Horizontal	N/A
	4	3307.000	44.45	5.26	74.0	29.55	Peak	51.10	150	Horizontal	Pass
	5	4824.000	49.84	9.40	74.0	24.16	Peak	3.80	150	Horizontal	Pass
	6	6105.000	49.91	10.77	74.0	24.09	Peak	7.30	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11b Low channel

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	8828.750	46.54	14.59	74.0	27.46	Peak	34.60	150	Horizontal	Pass
2	10660.250	47.04	16.22	74.0	26.96	Peak	274.80	150	Horizontal	Pass
3	12480.750	49.84	17.87	74.0	24.16	Peak	27.50	150	Horizontal	Pass
4	14174.750	51.97	20.65	74.0	22.03	Peak	267.70	150	Horizontal	Pass
5	15975.999	56.36	22.44	74.0	17.64	Peak	69.40	150	Horizontal	Pass
6	16968.750	58.99	25.63	74.0	15.01	Peak	190.70	150	Horizontal	Pass

1 GHz to 7 GHz, ANT H 802.11b Middle channel

-	,					-				
No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	1427.500	42.96	-6.76	74.0	31.04	Peak	97.90	150	Horizontal	Pass
2	2002.000	43.24	-4.79	74.0	30.76	Peak	230.80	150	Horizontal	Pass
3	2434.000	104.64	-3.35	74.0	-30.64	Peak	141.90	150	Horizontal	N/A
4	2990.500	46.53	-0.51	74.0	27.47	Peak	230.80	150	Horizontal	Pass
5	3931.000	44.63	7.02	74.0	29.37	Peak	1.90	150	Horizontal	Pass
6	4874.000	49.37	9.00	74.0	24.63	Peak	0.10	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11b Middle channel

	0 10 01 12,7									
No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	8273.250	45.50	13.81	74.0	28.50	Peak	270.00	150	Horizontal	Pass
2	10143.250	47.07	16.69	74.0	26.93	Peak	142.80	150	Horizontal	Pass
3	12293.750	49.21	18.05	74.0	24.79	Peak	353.00	150	Horizontal	Pass
4	13919.000	51.32	19.30	74.0	22.68	Peak	311.60	150	Horizontal	Pass
5	15904.500	55.04	22.03	74.0	18.96	Peak	7.50	150	Horizontal	Pass
6	16977.000	58.77	25.54	74.0	15.23	Peak	100.80	150	Horizontal	Pass



1 GHz to 7 GHz, ANT H 802.11b High channel

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	1342.500	42.36	-6.22	74.0	31.64	Peak	111.30	150	Horizontal	Pass
2	1838.500	43.01	-5.52	74.0	30.99	Peak	16.50	150	Horizontal	Pass
3	2463.500	104.26	-3.32	74.0	-30.26	Peak	137.80	150	Horizontal	N/A
4	3058.000	46.47	5.94	74.0	27.53	Peak	83.80	150	Horizontal	Pass
5	3916.000	44.48	6.86	74.0	29.52	Peak	83.80	150	Horizontal	Pass
6	4924.000	49.17	9.37	74.0	24.83	Peak	355.00	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11b High channel

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No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	7701.250	45.59	13.39	74.0	28.41	Peak	48.30	150	Horizontal	Pass
2	9389.750	46.53	16.56	74.0	27.47	Peak	209.90	150	Horizontal	Pass
3	11939.000	49.10	17.37	74.0	24.90	Peak	297.00	150	Horizontal	Pass
4	13932.750	50.99	19.32	74.0	23.01	Peak	325.00	150	Horizontal	Pass
5	15277.500	54.10	21.19	74.0	19.90	Peak	41.30	150	Horizontal	Pass
6	17054.000	59.11	26.05	74.0	14.89	Peak	247.20	150	Horizontal	Pass

1 GHz to 7 GHz, ANT H 802.11g Low channel

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No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	1470.000	43.00	-6.35	74.0	31.00	Peak	75.90	150	Horizontal	Pass
2	2131.500	44.08	-3.47	74.0	29.92	Peak	356.50	150	Horizontal	Pass
3	2405.500	103.43	-2.83	74.0	-29.43	Peak	136.80	150	Horizontal	N/A
4	2918.500	46.28	-0.68	74.0	27.72	Peak	327.20	150	Horizontal	Pass
5	4333.000	45.36	8.11	74.0	28.64	Peak	50.20	150	Horizontal	Pass
6	5735.000	49.82	10.12	74.0	24.18	Peak	331.40	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11g Low channel

		r		1	1	1	1	1		
No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	8806.750	47.00	14.62	74.0	27.00	Peak	126.80	150	Horizontal	Pass
2	9895.750	47.09	16.19	74.0	26.91	Peak	98.30	150	Horizontal	Pass
3	12103.999	48.94	16.95	74.0	25.06	Peak	266.90	150	Horizontal	Pass
4	14128.000	52.65	21.02	74.0	21.35	Peak	230.80	150	Horizontal	Pass
5	16069.500	55.20	22.51	74.0	18.80	Peak	98.30	150	Horizontal	Pass
6	17832.249	60.91	28.40	74.0	13.09	Peak	344.30	150	Horizontal	Pass



1 GHz to 7 GHz, ANT H 802.11g Middle channel

-	-			3							
	No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
	1	1414.500	41.92	-6.36	74.0	32.08	Peak	65.30	150	Horizontal	Pass
:	2	1812.500	42.92	-5.79	74.0	31.08	Peak	76.00	150	Horizontal	Pass
;	3	2429.000	107.23	-3.25	74.0	-33.23	Peak	147.00	150	Horizontal	N/A
	4	2886.500	46.42	0.27	74.0	27.58	Peak	97.10	150	Horizontal	Pass
	5	3965.000	45.11	6.94	74.0	28.89	Peak	290.50	150	Horizontal	Pass
	6	5357.000	49.14	9.96	74.0	24.86	Peak	271.10	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11g Middle channel

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	8036.750	45.32	13.92	74.0	28.68	Peak	163.20	150	Horizontal	Pass
2	9706.000	46.92	16.32	74.0	27.08	Peak	233.30	150	Horizontal	Pass
3	11182.750	47.22	17.00	74.0	26.78	Peak	19.80	150	Horizontal	Pass
4	13116.000	49.47	17.58	74.0	24.53	Peak	26.60	150	Horizontal	Pass
5	14537.750	52.89	21.90	74.0	21.11	Peak	191.40	150	Horizontal	Pass
6	16971.500	59.39	25.60	74.0	14.61	Peak	3.20	150	Horizontal	Pass

1 GHz to 7 GHz, ANT H 802.11g High channel

			3 3 -							
No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	1325.000	41.61	-6.76	74.0	32.39	Peak	11.20	150	Horizontal	Pass
2	1872.500	43.14	-5.17	74.0	30.86	Peak	46.70	150	Horizontal	Pass
3	2461.000	107.54	-3.29	74.0	-33.54	Peak	150.60	150	Horizontal	N/A
4	2932.500	46.42	-0.47	74.0	27.58	Peak	139.90	150	Horizontal	Pass
5	4029.000	45.40	7.40	74.0	28.60	Peak	360.50	150	Horizontal	Pass
6	4920.000	50.38	9.14	74.0	23.62	Peak	360.50	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11g High channel

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No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	8718.750	45.90	14.64	74.0	28.10	Peak	223.80	150	Horizontal	Pass
2	10137.750	47.66	16.58	74.0	26.34	Peak	104.00	150	Horizontal	Pass
3	11595.250	47.72	16.69	74.0	26.28	Peak	146.20	150	Horizontal	Pass
4	12527.500	49.56	18.92	74.0	24.44	Peak	174.50	150	Horizontal	Pass
5	14510.250	53.24	20.91	74.0	20.76	Peak	238.00	150	Horizontal	Pass
6	17092.500	58.32	25.49	74.0	15.68	Peak	344.10	150	Horizontal	Pass



1 GHz to 7 GHz, ANT H 802.11n20 Low channel

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	No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
	1	1382.500	42.49	-6.59	74.0	31.51	Peak	281.10	150	Horizontal	Pass
	2	1863.500	43.32	-5.43	74.0	30.68	Peak	180.90	150	Horizontal	Pass
	3	2410.500	104.42	-2.60	74.0	-30.42	Peak	148.50	150	Horizontal	N/A
	4	2888.000	46.02	0.18	74.0	27.98	Peak	247.70	150	Horizontal	Pass
	5	3636.000	44.65	6.66	74.0	29.35	Peak	360.50	150	Horizontal	Pass
	6	4829.000	47.30	9.46	74.0	26.70	Peak	360.50	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11n20 Low channel

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	7393.250	45.11	12.77	74.0	28.89	Peak	309.80	150	Horizontal	Pass
2	9084.500	46.47	14.84	74.0	27.53	Peak	78.80	150	Horizontal	Pass
3	10575.000	47.46	15.13	74.0	26.54	Peak	172.70	150	Horizontal	Pass
4	12527.500	49.88	18.92	74.0	24.12	Peak	244.70	150	Horizontal	Pass
5	14172.000	52.23	20.71	74.0	21.77	Peak	1.00	150	Horizontal	Pass
6	16421.500	56.84	23.39	74.0	17.16	Peak	165.40	150	Horizontal	Pass

1 GHz to 7 GHz, ANT H 802.11n20 Middle channel

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	1302.500	42.08	-6.43	74.0	31.92	Peak	217.20	150	Horizontal	Pass
2	1789.500	41.30	-5.84	74.0	32.70	Peak	123.30	150	Horizontal	Pass
3	2429.000	105.58	-3.25	74.0	-31.58	Peak	134.30	150	Horizontal	N/A
4	2991.000	46.12	-0.46	74.0	27.88	Peak	178.70	150	Horizontal	Pass
5	4032.000	44.95	7.38	74.0	29.05	Peak	89.30	150	Horizontal	Pass
6	5058.000	48.66	9.61	74.0	25.34	Peak	67.30	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11n20 Middle channel

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No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	7176.000	43.28	13.03	74.0	30.72	Peak	0.60	150	Horizontal	Pass
2	9398.000	47.22	16.45	74.0	26.78	Peak	1.50	150	Horizontal	Pass
3	10852.750	47.75	16.09	74.0	26.25	Peak	113.10	150	Horizontal	Pass
4	12662.250	49.21	17.08	74.0	24.79	Peak	63.50	150	Horizontal	Pass
5	14548.750	52.66	21.87	74.0	21.34	Peak	127.10	150	Horizontal	Pass
6	15951.250	55.58	22.15	74.0	18.42	Peak	35.00	150	Horizontal	Pass



1 GHz to 7 GHz, ANT H 802.11n20 High channel

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No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	1283.500	42.80	-6.14	74.0	31.20	Peak	352.80	150	Horizontal	Pass
2	1807.500	42.14	-5.69	74.0	31.86	Peak	286.10	150	Horizontal	Pass
3	2463.000	105.89	-3.38	74.0	-31.89	Peak	147.80	150	Horizontal	N/A
4	3291.000	45.81	5.22	74.0	28.19	Peak	13.10	150	Horizontal	Pass
5	4217.000	45.80	8.17	74.0	28.20	Peak	183.40	150	Horizontal	Pass
6	5169.000	49.69	9.79	74.0	24.31	Peak	0.80	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11n20 High channel

(MHz) (dBuV/m) (dBuV/m) (dB) (o) (cm)	ANT Vero	rdict
	4 I	
1 7742.500 45.53 13.36 74.0 28.47 Peak 2.70 150 H		
	Horizontal Pas	SS
2 10019.500 47.88 15.22 74.0 26.12 Peak 274.20 150 H	Horizontal Pas	SS
3 11045.250 47.37 16.11 74.0 26.63 Peak 209.10 150 H	Horizontal Pas	SS
4 12524.750 49.73 18.91 74.0 24.27 Peak 202.00 150 H	Horizontal Pas	SS
5 14543.250 52.64 22.00 74.0 21.36 Peak 246.40 150 H	Horizontal Pas	SS
6 16963.250 58.31 25.68 74.0 15.69 Peak 180.90 150 H	Horizontal Pas	SS

1 GHz to 7 GHz, ANT H 802.11n40 Low channel

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	1293.500	42.38	-6.28	74.0	31.62	Peak	360.00	150	Horizontal	Pass
2	1907.500	42.74	-5.02	74.0	31.26	Peak	240.90	150	Horizontal	Pass
3	2427.000	104.20	-3.17	74.0	-30.20	Peak	136.50	150	Horizontal	N/A
4	2926.500	46.64	-0.92	74.0	27.36	Peak	113.90	150	Horizontal	Pass
5	3772.000	44.83	6.63	74.0	29.17	Peak	359.80	150	Horizontal	Pass
6	5206.000	48.98	9.58	74.0	25.02	Peak	102.70	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11n40 Low channel

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No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	7541.750	45.71	12.89	74.0	28.29	Peak	235.50	150	Horizontal	Pass
2	9029.500	45.94	14.97	74.0	28.06	Peak	7.80	150	Horizontal	Pass
3	10924.250	47.55	16.20	74.0	26.45	Peak	87.90	150	Horizontal	Pass
4	12527.500	50.07	18.92	74.0	23.93	Peak	87.90	150	Horizontal	Pass
5	14573.500	52.92	21.19	74.0	21.08	Peak	0.40	150	Horizontal	Pass
6	16446.250	56.79	23.49	74.0	17.21	Peak	0.00	150	Horizontal	Pass



1 GHz to 7 GHz, ANT H 802.11n40 Middle channel

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	No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
	1	1281.000	42.53	-6.11	74.0	31.47	Peak	347.80	150	Horizontal	Pass
	2	1913.500	42.41	-5.25	74.0	31.59	Peak	191.50	150	Horizontal	Pass
	3	2429.000	104.37	-3.25	74.0	-30.37	Peak	141.80	150	Horizontal	N/A
	4	3003.000	46.73	5.59	74.0	27.27	Peak	132.40	150	Horizontal	Pass
	5	3925.000	44.33	7.09	74.0	29.67	Peak	107.00	150	Horizontal	Pass
	6	5185.000	49.30	9.72	74.0	24.70	Peak	296.60	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11n40 Middle channel

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	7748.000	46.17	13.39	74.0	27.83	Peak	128.70	150	Horizontal	Pass
2	9725.250	46.84	15.93	74.0	27.16	Peak	332.20	150	Horizontal	Pass
3	11903.250	48.90	17.12	74.0	25.10	Peak	339.30	150	Horizontal	Pass
4	14161.000	51.82	20.94	74.0	22.18	Peak	178.30	150	Horizontal	Pass
5	16011.750	55.97	22.48	74.0	18.03	Peak	37.00	150	Horizontal	Pass
6	17840.501	60.42	28.37	74.0	13.58	Peak	248.60	150	Horizontal	Pass

1 GHz to 7 GHz, ANT H 802.11n40 High channel

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	1285.500	42.64	-6.34	74.0	31.36	Peak	360.10	150	Horizontal	Pass
2	1900.000	42.23	-5.18	74.0	31.77	Peak	218.30	150	Horizontal	Pass
3	2460.500	103.67	-3.28	74.0	-29.67	Peak	135.90	150	Horizontal	N/A
4	2905.000	46.29	-0.70	74.0	27.71	Peak	360.60	150	Horizontal	Pass
5	3998.000	44.44	7.00	74.0	29.56	Peak	25.30	150	Horizontal	Pass
6	5079.000	48.57	9.73	74.0	25.43	Peak	37.60	150	Horizontal	Pass

7 GHz to 18 GHz, ANT H 802.11n40 High channel

<u></u>										
No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	7781.000	45.43	13.48	74.0	28.57	Peak	266.00	150	Horizontal	Pass
2	9450.250	47.19	15.48	74.0	26.81	Peak	236.70	150	Horizontal	Pass
3	11251.500	48.23	17.30	74.0	25.77	Peak	337.60	150	Horizontal	Pass
4	12533.000	50.20	18.83	74.0	23.80	Peak	258.70	150	Horizontal	Pass
5	14188.500	52.16	20.47	74.0	21.84	Peak	273.30	150	Horizontal	Pass
6	16388.500	56.78	23.73	74.0	17.22	Peak	229.30	150	Horizontal	Pass



A.7 Band Edge (Restricted-band band-edge)

<u>Test Data</u>Note ¹: The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

Note ²: The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have shown the worst case.

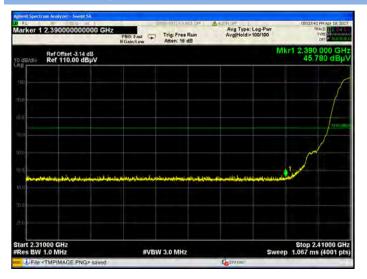
Note ³: According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Test Mode	Test Channel	Frequency (MHz)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Remark	Verdict
	Low	2390	45.78	74	28.22	PEAK	Pass
802.11b	Low	2390	N/A	54	N/A	AVERAGE	Pass
002.110	HIGH	2483.5	47.97	74	26.03	PEAK	Pass
	пісп	2483.5	N/A	54	N/A	AVERAGE	Pass
	Low	2390	51.11	74	22.89	PEAK	Pass
902 11 a	LOW	2390	N/A	54	N/A	AVERAGE	Pass
802.11g	HIGH	2483.5	69.14	74	4.86	PEAK	Pass
		2483.5	50.77	54	3.23	AVERAGE	Pass
	Low	2390	57.35	74	16.65	PEAK	Pass
802.11n20	Low	2390	38.50	54	15.50	AVERAGE	Pass
002.11120	HIGH	2483.5	72.48	74	1.52	PEAK	Pass
	пісп	2483.5	50.00	54	4.00	AVERAGE	Pass
	Low	2390	48.05	74	25.95	PEAK	Pass
902 11 - 40	Low	2390	N/A	54	N/A	AVERAGE	Pass
802.11n40		2483.5	63.01	74	10.99	PEAK	Pass
	HIGH	2483.5	47.04	54	6.96	AVERAGE	Pass



802.11b Mode:

LOW CHANNEL, PEAK

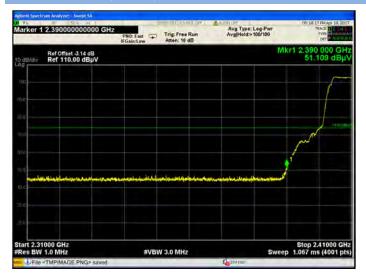


HIGH CHANNEL, PEAK



802.11g Mode:

LOW CHANNEL, PEAK,



HIGH CHANNEL, PEAK

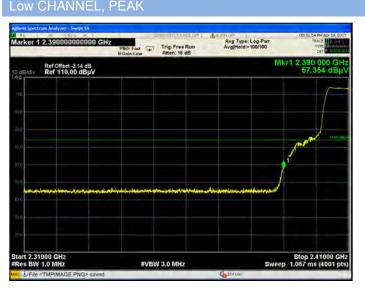


HIGH CHANNEL, AV,





802.11n-20 MHz Mode:



.ow CHANNEL, AV



High CHANNEL, PEAK

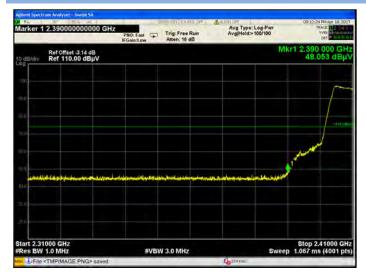


High CHANNEL, AV



802.11n-40 MHz Mode:

Low CHANNEL, PEAK





High CHANNEL, PEAK

High CHANNEL, AV







A.8 Power Spectral Density (PSD)

<u>Test Data</u>

802.11b Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)		
Low	-12.92	8		
Middle	-14.82	8		
High	-15.87	8		

802.11g Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-17.30	8
Middle	-16.31	8
High	-16.07	8

802.11n-20 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-19.58	8
Middle	-18.35	8
High	-18.04	8

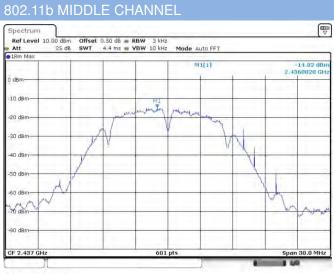
802.11n-40 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-23.06	8
Middle	-23.80	8
High	-23.90	8



Test plots



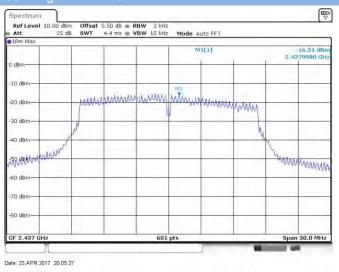


802.11g LOW CHANNEL





802.11g MIDDLE CHANNEL



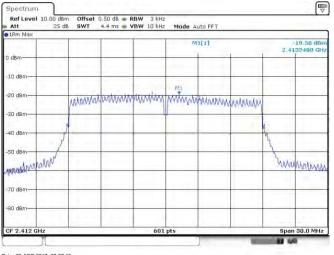
802.11g HIGH CHANNEL

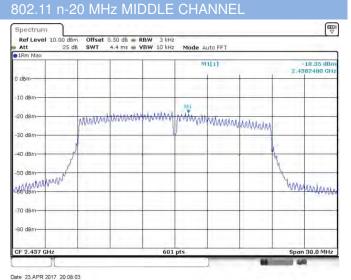


Date: 23.APR 2017 20:02:16

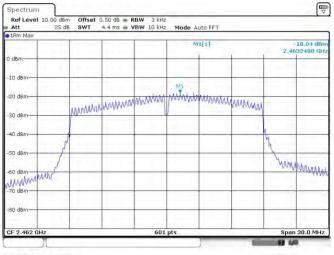


802.11n-20 MHz LOW CHANNEL

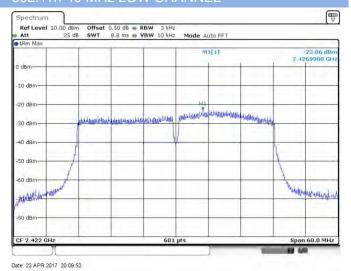




Date: 23.APR 2017 20:07:19

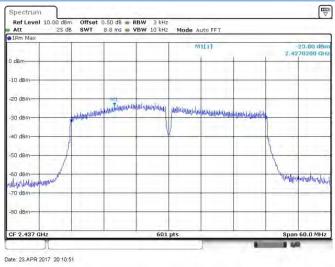


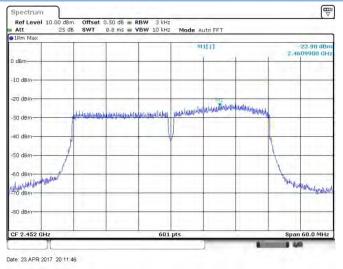
802.11n-40 MHz LOW CHANNEL



Date: 23.APR 2017 20:08:42

802.11n-40 MHz MIDDLE CHANNEL







ANNEX B TEST SETUP PHOTOS

Please refer the document "BL-SZ1730238-AR.pdf".

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document "BL- SZ1730238-AW.pdf".

ANNEX D EUT INTERNAL PHOTOS

Please refer the document "BL- SZ1730238-AI.pdf".

--END OF REPORT--