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	Report No.:	BL-SZ16B0385-601
	EUT Name:	Garage Security Camera
	Model Name:	GDM610
Tested by: Charof	Brand Name:	RYOBI
Cao Shaodong	Test Standard:	47 CFR Part 15 Subpart C
(Engineer)		RSS-Gen (Issue 4, November 2014)
Date Dec. 26, 2016		RSS-247 (Issue 1, May 2015)
	FCC ID:	VMZGDM610
Approved by BABLIN In	ISED Number:	9880A-GDM610
Liao Jianming		
(Technical Director)	Test conclusion:	Pass
Date Der. 26, 2016	Test Date:	Dec. 10, 2016 ~ Dec. 14, 2016
Vec. 20, Cold	Date of Issue:	Dec. 26, 2016
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## **Revision History**

Version <u>Rev. 01</u> Issue Date Dec. 26, 2016 Revisions Content Initial Issue

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# **1 ADMINISTRATIVE DATA (GENERAL INFORMATION)**

## **1.1 Identification of the Testing Laboratory**

Company Name	Shenzhen BALUN Technology Co., Ltd.	
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road,	
	Nanshan District, Shenzhen, Guangdong Province, P. R. China	
Phone Number +86 755 6685 0100		
Fax Number	+86 755 6182 4271	

## **1.2 Identification of the Responsible Testing Location**

Test Location	Shenzhen BALUN Technology Co., Ltd.	
A debre e e	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.	
Accreditation	The laboratory has been listed by US Federal Communications	
	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 v5.6.
- (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	One World Technologies, Inc.
Address	1428 Pearman Dairy Road, Anderson, SC 29625, U.S.A.

## 2.2 Manufacturer Information

Manufacturer	Shenzhen Top-Tek Electronics Co., Ltd.	
Address	Jufa Industrial Park, Liaokeng Village, Shiyan Town, Baoan	
	District, Shenzhen, China.	

## 2.3 Factory Information

Factory	Techtronic Industries (Dongguan) Co., Ltd.
Address	No. 1 Chuangke Road, Houjie Town Industrial Park, Houjie Town,
	Donggguan City, Guangdong, 523945 China.

## 2.4 General Description for Equipment under Test (EUT)

EUT Name	Garage Security Camera
Model Name Under Test	GDM610
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	V06
Software Version	V08
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A
Network and Wireless connectivity	WIFI 802.11b, 802.11g and 802.11n (HT20/40)

## 2.5 Ancillary Equipment

N/A



## 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 - 2.472 GHz
	$f_c = 2412 \text{ MHz} + (N-1)*5 \text{ MHz}$ , where
	- fc = "Operating Frequency" in MHz,
<b>F</b>	- N = "Channel Number" with the range from 1 to 13.
Frequency Range	802.11n(40 MHz): 2.422 GHz - 2.462 GHz
	$f_c = 2412 \text{ MHz} + (N-1)*5 \text{ MHz}$ , where
	- f <sub>c</sub> = "Operating Frequency" in MHz,
	- N = "Channel Number" with the range from 3 to 11.
Modulation Type	DSSS, OFDM
Product Type	Mobile and portable
Antenna System (eg., MIMO,	N/A
Smart Antenna)	N/A
Categorization as Correlated or	N/A
Completely Uncorrelated	N/A
Antenna Type	Dipole Antenna
Antenna Gain	2 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
	CCK	5.5/ 11
	BPSK	6 / 9
	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 (802.11n-40MHz)	QPSK	27/40.5
	16QAM	54/81/108
	64QAM	121.5/135

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



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

## **2.7 Additional Instructions**

EUT Software Settings:

manual.

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

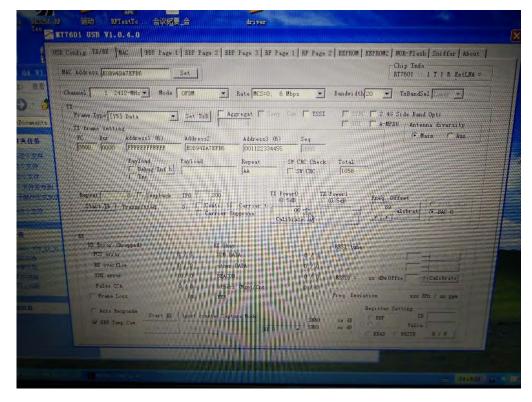
During testing Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final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

#### EUT Software Settings:

Power level setup in software		
Test Software Version	Enter the fixed frequency emission model by MT7601 USB QA	
Test Software Version V1.0.4.0 (0108).		
Mode	Channel Soft Set	
802.11 b	All	19
802.11 g	All	17
802.11 n20	All	17
802.11 n40	All	17



#### Run software:





## **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 Transmission	
2	558074 D01v03r05	Systems (DTS) Operating Under §15.247	
3	RSS-Gen	Constal Requirements for Compliance of Radio Apparetus	
3	(Issue 4, Nov. 2014)	General Requirements for Compliance of Radio Apparatus	
4	RSS-247	Digital Transmission Systems (DTSs), Frequency Hopping Systems(FHSs)	
4	(Issue 1, May 2015)	and Licence-Exempt Local Area Network (LE-LAN) Devices	
5	ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of	
5	ANSI C03.10-2013	Unlicensed Wireless Devices	

## 3.2 Verdict

No.	Description	FCC PART No.	ISED Part No.	Test Result	Verdict
1	Antenna Requirement	15.203; 15.247(b)	RSS-247, 5.4 (6)	N/A	Pass <sup>Note 1</sup>
2	Output Power	15.247(b)	RSS-247, 5.4 (4)	ANNEX A.1	Pass
3	6dB Bandwidth	15.247(a)	RSS-GEN, 6.6; RSS-247, 5.2 (1)	ANNEX A.2	Pass
4	Conducted Spurious Emission	15.247(d)	RSS-247, 5.5	ANNEX A.3	Pass
5	Band Edge(Authorized- band band-edge)	5.209; 15.247(d)	RSS-GEN, 8.9; RSS-247, 5.5	ANNEX A.4	Pass
6	Conducted Emission	15.207	RSS-GEN, 8.8	ANNEX A.5	Pass
7	Radiated Spurious Emission	15.209; 15.247(d)	RSS-247, 5.5	ANNEX A.6	Pass
8	Band Edge(Restricted- band band-edge)	15.209; 15.247(d)	RSS-247, 5.5	ANNEX A.7	Pass
9	Power spectral density (PSD)	15.247(e)	RSS-247, 5.2 (2)	ANNEX A.8	Pass
10	Receiver Spurious Emissions	N/A	RSS-Gen, 7.1.2	N/A	N/A <sup>Note 2</sup>
Note 1: Please refer to section 5.1					
Note 2	Only radio communication	n receivers operating	in stand-alone mode	within the hand ?	SU-DEU WH2

Note 2: Only radio communication receivers operating in stand-alone mode within the band 30-960 MHz, as well as scanner receivers, are subject to Industry Canada requirements, so this test is not applicable.



# **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)	18 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- Rod(9 kHz-30 MHz)	SCHWARZBECK	VAMP 9243	9243-556	2016.07.22	2017.07.21
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	2015.02.28	2017.02.27
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		



## 4.3 Measurement Uncertainty

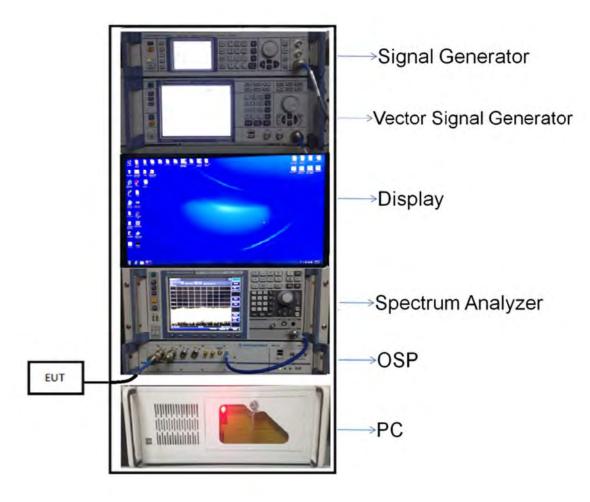
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

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

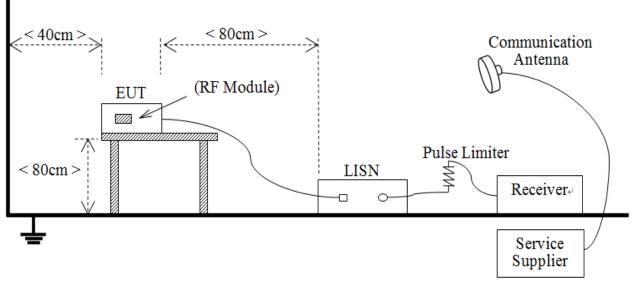
4.4.1 For Antenna Port Test





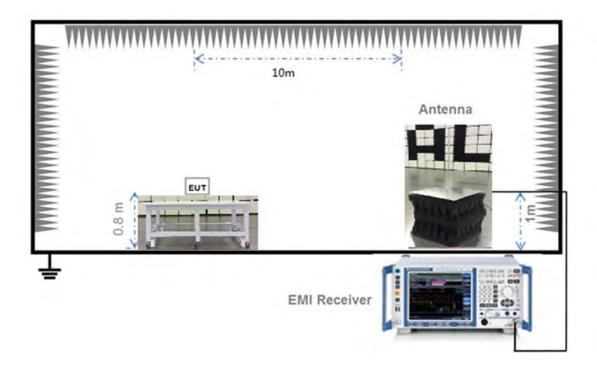


## 4.4.2 For AC Power Supply Port Test





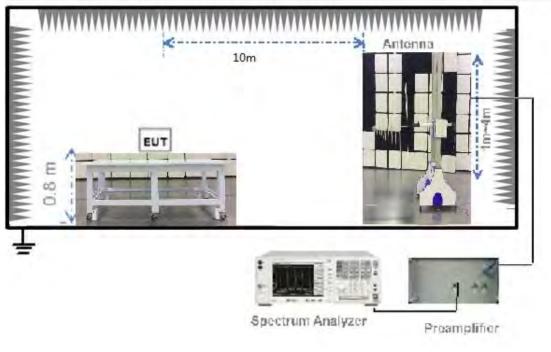
4.4.3 For Radiated Test (Below 30 MHz)



(Diagram 3)

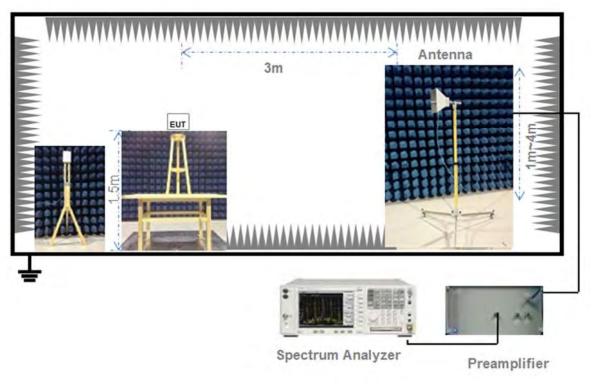


## 4.4.4 For Radiated Test (30 MHz-1 GHz)



(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**

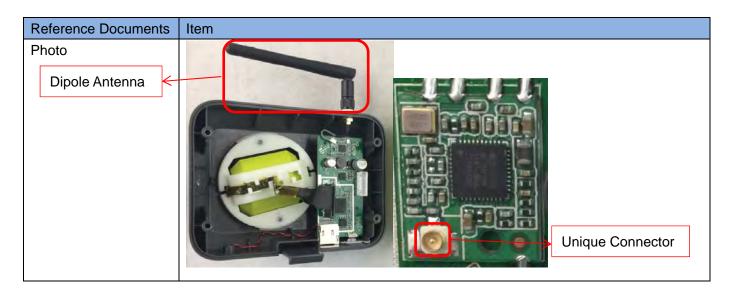
## **5.1 Antenna Requirements**

### 5.1.1 Standard Applicable

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

The Antenna Anti-Replacement as following method:

•	5
Protected Method	Description
Compliance with 15.203, use of a	
standard antenna jack or electrical	The antenna is the unique connector with a wire antenna.
connector is prohibited.	



### 5.1.2 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.



## **5.2Output 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  $50\mu$ H/50 $\Omega$  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  $\geq$  3 x RBW.
- c) Detector = Peak.
- d) Sweep time = auto.

e) Trace mode = max hold.

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

Table 1—RBW as a function of frequency

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



> 1000 MHz 1 MHz

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

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

If continuous transmission of the EUT (i.e., duty cycle  $\ge$  98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than  $\pm$  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	0.97	8.67	0.12
802.11g	0.87	1.44	0.70
802.11n-20 MHz	0.87	1.34	0.75
802.11n-40 MHz	0.76	0.65	1.53

#### Peak Power Test Data

#### 802.11b Mode:

Channel	Measured Out	Lir	nit	Verdict	
Channel	dBm	mW	dBm	mW	Verdict
Low	19.48	88.72			Pass
Middle	19.44	87.90	30	1000	Pass
High	19.67	92.68			Pass

#### 802.11g Mode:

Channel	Measured Out	Lir	nit	Verdict	
Channel	dBm	mW	dBm	mW	verdict
Low	25.27	336.51	30		Pass
Middle	25.19	330.37		1000	Pass
High	25.42	348.34			Pass

#### 802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Lir	nit	Vardiat	
Channel	dBm	mW	dBm	mW	Verdict	
Low	24.84	304.79	30 1000		Pass	
Middle	24.58	287.08		Pass		
High	24.84	304.79			Pass	

802.11n-40 MHz Mode:

Channel	Measured Out	Lir	nit	Verdict	
Channel	dBm	mW	dBm	mW	Verdict
Low	23.39	218.27			Pass
Middle	23.31	214.29	30	1000	Pass
High	23.41	219.28			Pass



## A.2 Bandwidth

#### Test Data

802.11b Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	10.1626	12.6194	≥500
Middle	10.1626	12.6194	≥500
High 10.1626		12.6194	≥500

802.11g Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	16.4207	17.2504	≥500
Middle	Aiddle 16.4708 17.1925		≥500
High	16.6709	17.3082	≥500

802.11n-20MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	16.7709	17.8292	≥500
Middle	Middle 17.1213 17.8292		≥500
High	17.7219	17.9450	≥500

802.11n-40MHz Mode:

Channel	6 dB Bandwidth	99% Bandwidth	6 dB Bandwidth
Channel	(MHz)	(MHz)	Limits (kHz)
Low	36.4226	36.1000	≥500
Middle	36.0725	36.1000	≥500
High	High 35.1719		≥500



#### Test plots

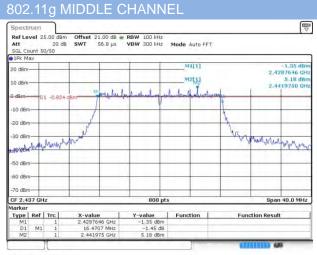
#### 6 dB Bandwidth:



Date: 17 DEC 2016 11:50:29

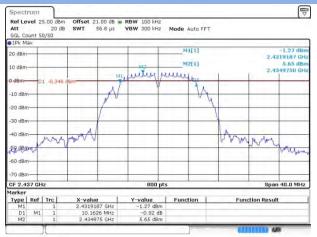


Date: 17 DEC 2016 11:56:36



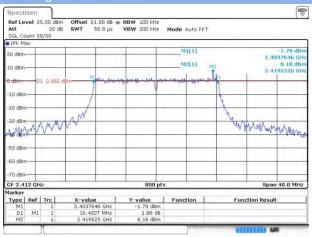
Date: 17 DEC 2016 12:34:02

#### 802.11b MIDDLE CHANNEL



Date: 17 DEC 2016 11:54:01

#### 802.11g LOW CHANNEL



Date: 17 DEC 2016 12:31:40

#### Spectrum Ref Level 25,00 dBm Offset 21.00 dB M Att 20 dB SWT 56.8 μs 56.8 μs 56.2 μ RBW 100 kHz VBW 300 kHz Mode Auto FFT MILTI -4.32 dBr 2.4536646 GH 20 dBm M2[1] 10 dBm 2.46 dBmday and Anda allula Anna 01 -2 409 A M manymanym

₩

3.59 d

2.00

250 G



802.11g HIGH CHANNEL

-50 dBm-60 dBm 800 pts CF 2.462 GHz Span 40.0 MHz Y-value X-value 2.4536646 GHz 16.6709 MHz 2.469525 GHz Type Ref Trc T Function Function Result

-1.74 dB 3.59 dBm

Date: 17 DEC 2016 12:37:17

D1 M1 M2

-----



#### 802.11n-20 MHz LOW CHANNEL



#### Ref Level 25.00 dbm Offset 21.00 dbm RBW 100 kHz Att 20 dbm SWT 56.8 µs VBW 300 kHz Mode Auto FFT SGL Count S0/50 100 kHz Mode Auto FFT 100 kHz Mode Auto FFT -1.82 dB 2.4284143 GF 20 dBm M2[1] 5.08 dB 2,4444750 GI 10 dBm I. dam 01 -0.923 -10 d8m -20 dBr 30 dBm AD GRANNAMANAN monorman 50 dBm 60 dBm 70 dB 800 pts CF 2,437 GHz Span 40.0 MHz

Y-value

-0.83 dB 5.08 dBm

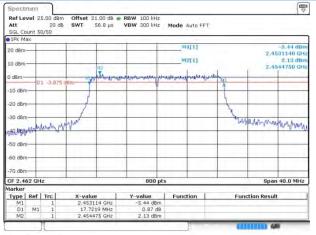
Function

Function Result

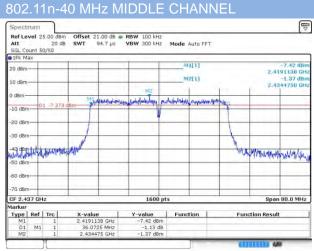
1.440

802.11 n-20 MHz MIDDLE CHANNEL

Date: 17 DEC 2016 12:41:54



Date: 17 DEC 2016 12:49:01



Date: 17 DEC 2016 12:55:09

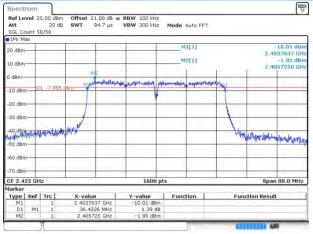
#### Date: 17 DEC 2016 12:46:31

Type Ref Trc

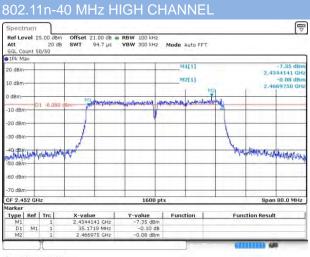
M1 D1 M1 M2

#### 802.11n-40 MHz LOW CHANNEL

X-value 2.4284143 GHz 17.1213 MHz 2.444475 GHz



Date: 17 DEC 2016 12:52:12

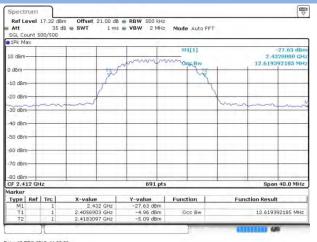


Date: 17 DEC 2016 12:57:35



#### 99% Bandwidth:





Date: 17 DEC 2016 11:50:38

#### 802.11b HIGH CHANNEL

Att	evel 1				RBW 500 kHz     VBW 2 MHz		FT		
SGL Co		00/500		_					
10 dBm	1	-	-		human	MI[1]		-26.47 dbm 2.4820000 GHz 12.619392185 MHz	
0 dBm-	+			35		100			
-10 dBm	-	_		f	-		1		
-20 dBm	-			/	-		1		
-30 dBm	1	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m				have	······································	
-40 dBm	+	_	-				-		
-50 dBm					-				
-60 dBm	+	_					-		
-70 dBm	+		-				-		
-80 dBm		-	-		-		_		
CF 2.4	52 GH	2			691 pt	5		Span 40.0 MHz	
Type	Pof	Trel	X-value		Y-value	Function	Fur	action Result	
M1		1	2.482 GHz		-26.47 dBm	. unstion	1 01	in the search	
T1		1	2.45569		-5.01 dBm	Occ Bw	Occ Bw 12.619392185 MHz		
T2	-	1	2.46830	97 GHz	-4.72 dBm				

Date: 17 DEC 2016 11:56:45

#### 802.11g MIDDLE CHANNEL

Spectr									▼
Ref Le Att SGL Co		35			<ul> <li>RBW 500 kHz</li> <li>VBW 2 MHz</li> </ul>		FFT		
1Pk Ma	x		1						
						M1[1]			23.64 dBrr 70000 GHz
10 dBm-	+	_	TI			Occ Bw			74674 MH2
			7			OLC DI	1×	11.1924	1 10/1 0010
0 dBm-		_	1				1		
-10 dBm	-		/				1		
			- 05						
-20 dBm	54	m	10 -		-		-	1 vous	m
-30 dBm									
-30 0811									
-40 dBm	+		-		+ +				
-50 dBm	-					1			
-60 dBm									
00 0011									
-70 dBm	+		-		-				-
CF 2.43	7 GH	z		-	691 pt	s		Span	40.0 MHz
Marker									
Туре	Ref		X-value					nction Result	-
M1 T1	-	1	2.42837	57 GHz	-23.64 dBm 2.85 dBm	Occ Bw	17.1924746		4674 MHz
T2		1	2.44556		2.31 dBm	JCC DW		11,1924	Maria Mintz
-	_	117		-		-			

Date: 17 DEC 2016 12:34:11

#### 802.11b MIDDLE CHANNEL



Date: 17 DEC 2016 11:54:10

#### 802.11g LOW CHANNEL

SGL Co		00/500	1 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Carrier Carro	-			
IPK M	ax	_	1- T-	1 1	M1[1]		-23.40 dBn		
10 dBm				and the second of		-	2.4320000 GH		
10 0011			TY	- march	Occ Bw	12	17.250361795 MH		
0 dBm-	-		J			1			
			/						
-10 dBn	-		1			4			
-20 dBp		na	N			1	man		
2000	vr	0.0	1				* 1		
-30 dBn	-								
						1.00			
-40 dBn	+					-			
-50 dBn									
50 001									
-60 dBn		_							
-70 dBn	+	-	1			1			
CF 2.4	12 GF	Z.		691 pt	5		Span 40.0 MHz		
Marker				1					
Type M1	Ker	1	2,432 GHz	Y-value -23.40 dBm	Function	Function Result			
T1		1	2.4033169 GHz		Occ Bw		17.250361795 MHz		
T2		1	2.4205673 GHz			17.250301753 (			

Date: 17 DEC 2016 12 31:49

#### 802.11g HIGH CHANNEL

Ref Level Att SGL Count	35 d	m Offset 21.00 d B W SWT 1 m	IB RBW 500 kHz Is VBW 2 MHz		Ţ			
1Pk Max		1 1	1000					
				M1[1]		-22.93 dBn 2.4820000 GH		
10 dBm-		TH	- James -	Occ Bw		17.308248915 MH		
0 dBm		Ý			Y	1		
0 dBm					N			
-10 dBm					1	-		
	2.4	ant			N	-		
-20 dBm	ANV	P -				Vin	ww	
Nº C								
-30 dBm					1			
-40 dBm-								
40 00/11								
-50 d8m-			_		-			
-60 dBm						-		
-70 dBm-								
-70 dBm								
CF 2,462 G			691 pt			Page	40.0 MHz	
GF 2.462 G	HZ		parpe		-	span	40.0 MHZ	
Type   Ref	Trel	X-value	Y-value	Function	Function Result			
M1	1	2.482 GHz	-22.93 dBm	. anodon	i uncourt Result			
T1	1	2.4533169 GHz	2.26 dBm	Occ Bw		17.308248915 MHz		
T2	1	2.4706252 GHz	2,13 dBm					

Date: 17 DEC 2016 12:37:26

#### Report No.: BL-SZ16B0385-601

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#### 802.11n-20 MHz LOW CHANNEL

Att					<ul> <li>RBW 500 k</li> <li>VBW 2 M</li> </ul>		ode Auto FF	Ť			
1Pk M	ax		1	-							
			1		-504[3]				-23.12 dBn 2.4320000 GH		
10 dBm	+		7.7		amount		OCCBW	10		32996 MH	
			- A				OUL DW	1 Y	11.02.92	02990 000	
0 dBm-	-		1					1			
			/								
10 dBn			1					1			
20-dBa	-	-	1					5	no		
20 QUA		~ .						1.000			
30 dBn	n-+-		-			_			-		
			L L L L L								
40 dBn	n		-		-		-	-			
13.43			11111								
-50 dBn	0										
60 dBn				-							
00 000											
70 dBn			-		-	_	-		-	-	
										-	
CF 2.4	12 GH	z		_	691	ots	-		Span	40.0 MHz	
larker	-	-									
Type	Ref	Trc	X-value		Y-value	Fu	unction	Function Result			
M1		1	2.432 GHz		-23.12 dBr						
T1		1	2.40302		2.44 dBr		Occ Bw	17.829232996 MHz			
T2		1	2.42085	57 GHz	2.85 dBr	n					

#### ₽ Spectrum Offset 21.00 db RBW 500 kHz Att 35 db SWT 1 ms VBW 2 MHz SGL Count 500/500 IPIX Max Imit 2 Mit 2 MHz Imit 2 Mit 2 MHz Mode Auto FFT -22.61 db 2.4570000 G 17.829232996 M MILLI 10 dBm OCC BW dBm -10 dBm -29-d8m -30 dBm 40 dBm 50 dBm -60 dBm 70 dBm Span 40.0 MHz CF 2.437 G 691 pt Type Ref Trc X-value 2.457 GHz 2.4280854 GHz 2.4459146 GHz Y-value Function Function Result Occ Bw 17.829232996 MHz T1 T2 3.23 dBm 1.67 dBm

802.11 n-20 MHz MIDDLE CHANNEL

Date: 17 DEC 2016 12:42:03

Date: 17 DEC 2016 12:46:40

Spect	rum									(
Att SGL Co	ount 5				RBW 500		Mode Auto F	FT		
1Pk M	ax		1 1		-	-				
10 dBm		-	TV				MI[1]	~	-20.38 df 2,4820000 0 17.945007236 M	
0 dBm-	+		7		-	-		1		-
-10 dBn	-	_		_		-	_		_	-
-20-dBn	-	~~	1	_	-	-		1	m	
-30 dBn	-	_			-	-		-	-	-
40 dBn	-	_				-			_	-
-50 dBn	-	_		-	-	-		-		
-60 dBn	-				-			-		_
-70 dBn	+				-	-	_	_		-
CF 2.4	62 GH	IZ.	-	_	691	pts	_		Spar	1 40.0 MH
larker		Ca. I				- 1				
Type M1	Ker	Trc	2.482 GHz		-20.38 dBm		Function	FL	inction Resul	
T1		1 2.4530275 GHz			2.21 dBm		Occ Bw		17.945007236 MH	

Date: 17 DEC 2016 12:49:10

1000	rum					_					1
Ref L	evel	17.08 dB	m Offset		RBW 500		Mode Aut	FFT			
SGL C	ount 5	00/500									
1Pk M	ax										
0.000							M1[1]				-25.77 dB
10 dBm	-				1	-					620000 G
0 dBm-			30	mm	many	m	MA DEB	minut	2	36.100	DDDDDD MI
U dBm-			1			-			1		
-10 dBr	-		1				-		1.		
-10 000			1			1			1		
-20 dBr	n		/		-	-			1		
man	nh	Anna	-						The	man	min
-30 dBr	n		-			-					-
-40 dBn	n <del></del>		1			-	-				-
-50 dBr					1.						
-30 080	"T										
-60 dBr			-			_					-
-70 dBn	n-	_	+			-		-			-
-80 dBr			1		1			_	_		1
CF 2.4		z		_	800	pts			_	Spa	n 80.0 MH
Marker		1 - 1		- 6		- 1	-	1			
Type M1	Ref	Trc 1	2,462 GHz		-25.77 dB	im	Function	-	Fun	ction Resu	ut
T1		1		95 GHz	0.17 dB		Occ Bw	n			36.1 MH
T2	-	1		05 GHz	0.87 de		500 011				

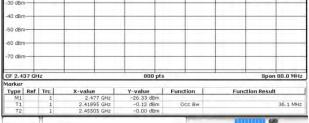
Date: 17 DEC 2016 12 52 23

E

00 8

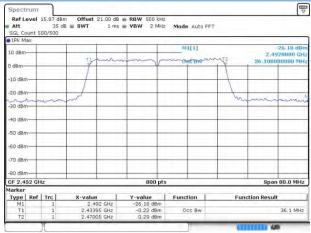
non

#### 802.11n-40 MHz MIDDLE CHANNEL ectrum Ref Level 18.09 dBm Offset 21.00 dB RBW 500 kHz Att 35 dB SWT 1 ms VBW 2 MHz Mode Auto FFT SGL Count 500/500 SQR Max 1 ms VBW 2 MHz Mode Auto FFT M1[1] -26.33 db 10 dBm 36.10 E BI d dBm -10 dBm -20 dBm nois - Ma -30 dBm



Date: 17 DEC 2016 12:55:20

#### 802.11n-40 MHz HIGH CHANNEL



Date: 17 DEC 2016 12:57:45



# **A.3 Conducted Spurious Emissions**

## Test Data

802.11b Mode:

	Measured Max. Out of	Limit (	dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-27.45	6.00	-14.00	Pass
Middle	-28.80	5.77	-14.23	Pass
High	-28.91	5.90	-14.10	Pass

## 802.11g Mode:

	Measured Max. Out of	Limit (	dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-28.31	6.11	-13.89	Pass
Middle	-28.47	6.29	-13.71	Pass
High	-28.94	6.70	-13.30	Pass

802.11n-20MHz Mode:

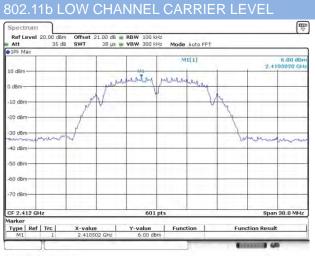
	Measured Max. Out of	Limit (d	dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-28.81	5.99	-14.01	Pass
Middle	-28.70	5.83	-14.17	Pass
High	-28.94	6.18	-13.82	Pass

802.11n-40MHz Mode:

	Measured Max. Out of	Limit (	dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-27.59	1.39	-18.61	Pass
Middle	-27.90	1.12	-18.88	Pass
High	-27.89	0.84	-19.16	Pass

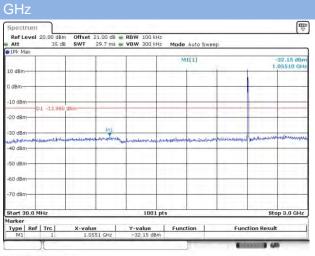


#### Test Plots



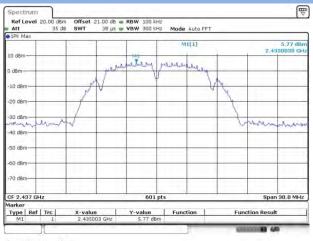
Date: 17 DEC 2016 11:51:09

#### 802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3



Date: 17 DEC 2016 11:51:49

#### 802.11b MIDDLE CHANNEL CARRIER LEVEL



Date: 17 DEC 2016 11:54:24

### 802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

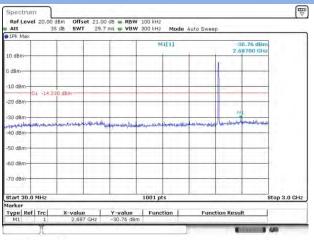
Ref Li	evel	20.00 dBr 35 di			<ul> <li>RBW 100 kH</li> <li>VBW 300 kH</li> </ul>		Auto Sweet	0		
PIPk M	88							-		
10 dBm						М	1[1]			27,45 dBr 33150 GH
10 dBm										
0 dBm—	+			-			-			-
-10 dBm		1 -13,960	dem	_						
-20 d8m		M		-			_			
30 dBr	64.V	Minne	-	005.0		. N. d. en.	Whenpushik	and the second states	- they be	Le contribui
-40 dBm	+	-	hereiter	with with the second	uniter of the		An under star	WAS SHOWN	and the second second	al series of the series of the
-50 dBm	+	_			-	_	_	-		
-60 dBm	+	_	-	-	-	_	_			
-70 dBm	+		-	-	-					
Start 2	.0 GH	Iz			4001	ots			Stop	25.0 GHz
Marker		-				1				
Type M1	Ref	Trc	X-val	IS15 GHz	-27.45 dBn	Fund	tion	Fund	tion Result	t

Date: 17 DEC 2016 11 52:00



### 802.11b MIDDLE CHANNEL, SPURIOUS

#### 30 MHz ~ 3 GHz



Date: 17 DEC 2016 11:54:48

## 802.11b HIGH CHANNEL CARRIER LEVEL

Att     IPk Max	35 dB SWT	30 µs 🗰	<b>VBW</b> 300 k	na mode	Auto FFT	_		
				М	1[1]		2,46	5,90 dBn 34980 GH
10 dBm-		1		miline	100.0			
0 dBm		publich	maning	muality	while	-		
-10 d8m	ý	N	1			4		
	1					X	10.0	
-20 d8m-	11					1		
-30 dBm	mint				-	la	The street and	minumu
-40 dBm		-		_	_	_		La Clarica
-50 d8m								-
-60 d8m				1		1.00		
-70 d8m					-			
CF 2.462 GHz			601	nts			Snan	30.0 MHz
Aarker			991	Pro-			opon	ouro na ic

Date: 17 DEC 2016 11:56:55

### 802.11b HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

Att	35 dB	SWT	29.7 ms 🖷	VBW 300 kH	z Mode Aut	o Sweep			
1Pk Max									
					MI[1]				5.47 dBm 46350 GH
10 dBm			+	-	1	1	N		10000 00
0 dBm-									
-10 d8m-									
	01 -14.100	dBm	-				-		-
-20 dBm-			-	-			-		-
-30 d8m	a to a state	and the state of the second	advantation (	Concernant and Address	a salta a collabilita a	al mound dies	لم الم الحديد	-	HAN MUNICIPAL
-30 dBm-	munipul	part and participation of the	history	www.www.	n and the manufacture of the second	adaren-rodoaldare	examples	-	instructures and
undertain	nungun	perton-subject hitting of	aler of the second second	hlenen werden stande	nighterest helderes	1944-1944-1944-1949)	annachte	-	in the second
undertain	numperio	pinin napatrikity i	and model	interner winner et deres	niqtaanidaliinee	adaine-tripal-tite	ernopelin	Yeli andri Arlia	international
-40 dBm	nunghuid	puter algorithmy	an ann an	ilen-writerie	nigltanostaldis.ee	adam-unpthen	anniala	الم المعامل الم	erselen auf and
-40 dBm	indurryhearid	פונוזייי יווקאלע אנדעין	erran and an and a second	istore na okonstanoj	nightersvilderer	adare-unstructu	adarahilad pa	yinahida	erren and and
-40 dBm	nannaan	puter-startskingd	arus,ruoni	islas unioritary	ระระสุประการที่เป็นได้ขางจร	adaren artzelt erti	alandiqu <sup>i</sup> nd	ginet sold	an management
-40 dBm	nangaa	past-radigati, kt/hgr	ernernund,	น โมงระงงมา (ประจารีเป็นขาง) 	ningthan an Alderice P	adamentalisti ett	alwailad nd	-	
-40 dBm		guer-utgat, hittyr	an na star an	1001		aduite-celatica)	adarratifud pud		อาราสุรังและเปลา 1993 - 20 GHz
-40 dBm	MHz	X-valu				aduite-celother)			op 3.0 GHz

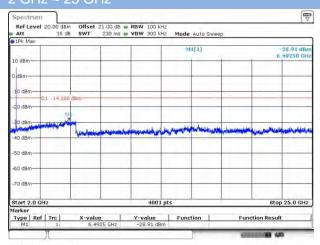
Date: 17 DEC 2016 11:57:23

### 802.11b MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

Att	evel 20,00 dBi 35 d			RBW 100 kH VBW 300 kH		Auto Swee	p.		
1Pk M	ax								
					M	1[1]			28.80 dBn 30280 GH
10 dBm		1					-		-
0 dBm-	-								
-10 dBr					_	_	-		
-20 d8n			_						-
30 d8n	Institutes				1	. Aug		1000	
-40 dBn		hards haipstartill	er many inte	Maning Com	No. and	A Anton Mark	ality with the first of the	New Contraction	And a start of the
-50 dBn	-		-		_	_			
-60 dBn			-		_	_			
-70 dBn			-						
Start 2	.0 GHz		_	4001	pts			Stop	25.0 GHz
				Y-value	Funct		-	tion Result	
Marker Type	Ref   Trc	X-value							

Date: 17 DEC 2016 11:55:02

# 802.11b HIGH CHANNEL, SPURIOUS



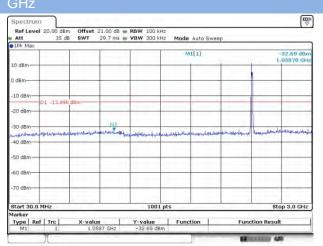
Date: 17 DEC 2016 11:57:33



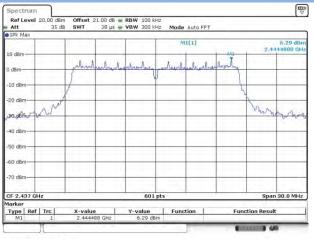
#### 802.11g LOW CHANNEL CARRIER LEVEL

Att		35 di	SWT	38 µs (	<b>VBW</b> 300 kH	z Mode	Auto FF1			
1Pk M	ax I	_		_	1 1	M	1(1)			6.11 dBr
									2,40	57600 GH
10 dBm			. 7	1 m	1		1.00			
0 dBm-			march	myland	untrentier.	alunto	Juleal	malauly		
o opin			1		V					
10 d8m	-		1	-				1		
-			2					1 1		1.000
20 dBm	-	N			-		-	-	£	
		N.M.							Wy	12.21
an del	VV	1W							W Y	man
40 dBm	-				+		-			
-50 dBm	+			_	1		-	-		-
-60 dBm	-	-								
-70 dBm										
-70 dBn										
					-	-			-	
CF 2.4	12 GH	z		_	601	ots			Spar	30.0 MH
Type	Dof	Tec	X-value	- 1	Y-value	Func	tion	Fund	tion Result	
M1	NO1	1	2.4057	6 GHz	6.11 dBr		cion	Func	tion Resul	
	_	11					-	1000 B		0

802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3



Date: 17 DEC 2016 12:32:31



## 802.11g MIDDLE CHANNEL CARRIER LEVEL

Date: 17.DEC 2016 12:34:27

# 802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

Att	20.00 dBm 35 dB			RBW 100 ki		Auto Swe	en		
1Pk Max	55 66	311)	EGO INS 4	1011 202 10	ie mode	Auto Swe	ep		
-					M	1[1]			-28.31 dBr 30280 GH
10 dBm-			1						
0 dBm-				-				-	-
-10 dBm-	01 -13.890	rthou							
-20 dBm	MI		-	-		_	-		
-30 dBm-	MACHINE	-					-		
-30 dBm	And white	Jundinan	فيقيدونه	-	and the second second	-	-	washing and the second	ويشرينه وزرجه
ay her the little	unnicunit.	Luna		-	a grant and a state	s.tuingite		- Manufacture	اری ان بنانی از رسانی ا
-40 dBm	un hand an party from	June			an strank ship			-	
-40 dBm	undunit	2		interesting of	بالمربعي هو	'y Anicada		a hiyaidaa h	
-40 dBm		n.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4001		******		Sto	25.0 GHz

Date: 17 DEC 2016 12:32:41



# 802.11g MIDDLE CHANNEL, SPURIOUS

-31,90 dBr 663,50 MH
A
standard Whenderwhendermanist
Stop 3.0 GHz
Function Result
Stop Function Result

Date: 17 DEC 2016 12:34:54

#### 802.11g HIGH CHANNEL CARRIER LEVEL Spectrum

Att	35 d	B SWT	38 µs 🗰	VBW 300 kHz	Mode /	Auto FFT			
1Pk Max	_	1		1	MI	(1)			6.70 dBn
10 dBm						1.3	MAT	2.40	94880 GH
10 dBm					10.17				
0 dBm	_	pulmalie	Ingaly	planter -	Merchan	والمهدالة	millientry	_	
		1		V					
-10 dBm-		1	_	+ +			4		
		X					2		
-20 dBm	no		-		-			10	15
en plane	SW							Normy	manno
Asic-alism-									
-40 dBm	_		_				_		
-50 dBm-									
							1		
-60 dBm			-		-				
100 C									1.000
-70 dBm							-		
CF 2.462 G	47		_	601 pt		_		Snar	30.0 MHz
Marker				001 p	-		-	opor	outo mina
Type   Ref	Trc	X-value	1	Y-value	Functi	on	Fund	tion Resul	
M1	1	2.469488	GHz	6.70 dBm	1 m				

Date: 17 DEC 2016. 12:37:36

# 802.11g HIGH CHANNEL, SPURIOUS

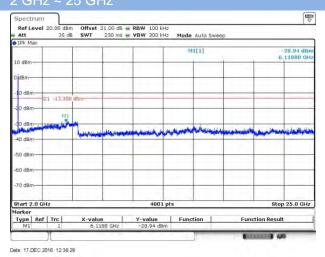


# 802.11g MIDDLE CHANNEL, SPURIOUS

Att	ever	20.00 dBn 35 dB			RBW 100 ki VBW 300 ki		Auto Swe	ер		
P1Pk M	BX .									
			1			M	1[1]			28.47 dBn
10 dBm	+						-	1		37180 GH
0 dBm-	+	_				_	-	-		_
-10 dBm		1 -13.710								_
-20 dBm		1 -13,710	dem-					_		_
-30 d8m		M.	4					1		
-	-	Contradio and	Louisse	Han Margaria	Hyperial Con	-	white a	Maria Maria	W. Milling	م م الم ال ال ال ال
-40 dBm	-									
-50 dBm	+	_				_	-	-		-
-60 dBm	+	_						-		
-70 dBm	+			_						
Start 2	.0 GH	17			4001	pts			Stor	25.0 GHz
Marker	-									
Type M1	Ref	Trc 1	X-value	18 GHz	Y-value -28,47 dB	Funct	tion	Fund	tion Result	

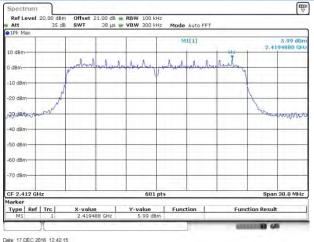
Date: 17 DEC 2016 12:35:05

## 802.11g HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

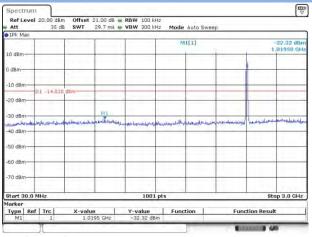




# 802.11n-20 MHz LOW CHANNEL CARRIER LEVEL



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



Date: 17 DEC 2016 12:42:49

#### ₽ ectrum Ref Level 20,00 dBm Att 35 dB Offset 21.00 dB = RBW 100 SWT 38 µs = VBW 300 Mode Auto FFT 5.83 dB MI[1] 2.44 10 dBm A. dBm -10 dBm -20 d8m 30 demo 40 dBm 50 dBm 60 dBm -70 dBm CF 2.437 GHz 601 pts Span 30.0 MHz Type Ref Trc GHz 5.83 dBm Function Result X-value Date: 17 DEC 2016 12:46:54

#### 802.11n-20 MHz MIDDLE CHANNEL CARRIER LEVEL

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

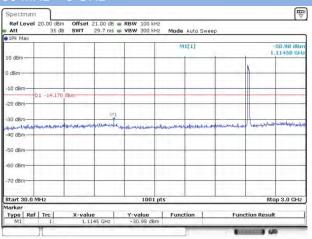
Att		dB SWT	230 ms	WBW 300 kHz	Mode Auto Sv	veep		
	1				M1[1]			28.81 dBn 51550 GH
10 dBm								
0 dBm-		-	+					-
- 0 dBm			-	-		_		
-20 dBm	01 -14,0	10 dim						-
		140						
20.40-		100						
-autor	pre-	- Aller	-	بيا من المناه الما الم	الملافة المسلم المسلم المراجع	-	-	-
30 dBn -40 dBn	pre-	-	-		and a strategy and a strategy and	articularity		nameli inte
-40 dBm		- Andrews	۵. ۵۱، متر ماکو آن م	ميا <b>ي التامنين ا</b> لمياني	ales, oraște de calestatei	and the design of the second	an a	n an a hairing the state of the
-40 dBm -50 dBm		- New States			an a	and the stand of the	a yang selektrisi	naan karist
-40 dBm -50 dBm -60 dBm		A www.			yer, market all and a state of the state of	arten sin serie arte	ayunyak <sup>ja</sup> kinin	n na sana sa
-40 dBm -50 dBm -60 dBm -70 dBm					40.04.44.44.44.44.44.44.44.44.44.44.44.4			
-40 dBm -50 dBm				4001 p	15			25.0 GHz

Date: 17 DEC 2016 12:43:01



# 802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS





Date: 17 DEC 2016 12:47 28

Att	35 di	B SWT	230 ms +	VBW 300 kHz	Mode	Auto Sweep	6		
1Pk Max									
			-		MJ	[1]			-28.70 dBn 42350 GH
10 dBm		-	+	+ +		- 1		0	12300 GPA
0 dBm		1.1.1			_				
		-							
-10 dBm-	_			-			_		-
	01 -14.170	dBm	-						-
-20 d8m-			-	-			_		
	M								
-30 d8m	Marked Mark	4		and the second		Allaber and	a subel able		and all and
-	al and a second	Lavon		بيالوردي. موالوردي	hallow	white where	erent about the	-	-
A PROPERTY AND	No.	Lowen	والمراجع والمحاجم	بيالو يعيمانوفرونين	hallow	white where	erentature)wa	i prigory bilance	na salahan sal
-40 dBm		Lower	, and the second	united and a star	a professional and a second	n Mislainea	and the second	i yang yang terbenang	n silahan ah
-40 dBm	Marked Street	Loven	مۇرومىزىغۇرىلايتىيە. مەرىپومىزىغۇرىلايتىيە		he fit has a design	n Nielwennen	a anistrajos	an a	n
-40 dBm	elevening to ph	howen	, and the second se	يوافر وميداندفر ويون 	h,rijanska	Misiner,	u.u.isha)sh	a	na sister tangka
-40 dBm	Marked Web	Lawon	, and in the weight	يوافر وميداند (مرد ديور) 	a contraction	s.Aistriania	er er i strag bes	i,ei,er,eihaa	n ushalanah
-40 dBm	Martin Martin	Luwein	, a seli se vezi i	يوالو <sup>ير</sup> يدان بر دريو 	a rijeretar	ertening	u.u.ishahs	ayyaayoo ahaa	n sidal en di
-40 dBm	Hz	Lower		4001 p		estiniania	u u da da da da		25.0 GHz
-40 dBm	11	X-valu							p 25.0 GHz

Date: 17 DEC 2016 12:47:40

# 802.11n-20 MHz HIGH CHANNEL, SPURIOUS

Att	35 d	B SWT	29.7 ms 🖷	VBW 300 kHz	Mode Auto 9	Sweep		
		1			M1[1]			-82.20 dBn 2.72260 GH
10 dBm							-44	
0 dBm-	-		-					_
-10 dBn						-		
-20 dBn	10-10-10-10-10-10-10-10-10-10-10-10-10-1	a diam-						
								in the second se
-30 dBn								911
-30 dBn	1	and the second	prover examply	-	an Anna Para		when have	ME would be also proved
-30 d8n -40 d8n	- was the way to be a start	and the second	amere and a	nedaty/entertineally	an International States	neren der son an	and have	ME woodstallsmakels
april and	- Louisten and Anna Anna Anna Anna Anna Anna Anna	and and a second	merendry	naldashterinationadhan	an an the second	normaliteration and the second	way hours	ME multiment,
-40 dBn		anna Murana			an a	norma store de maior contre	and have	1913 merekan Bart sunguturs
-40 dBn -50 dBn		anno Marino	nne-eindry			ang tang tang tang tang tang tang tang t	and here	P13 unicely Mark Longueries
-40 dBn -50 dBn -60 dBn -70 dBn	- <u> </u>	4449-14-14-1-	nne-sining		an this course	unen sieren in der seiner	and have	PIE uncedd Brack, neg defor
-40 dBn -50 dBn -60 dBn -70 dBn Start 3		4.119-4	muching	1001 p		unen jorden for lasse	en lere	Mi anuclastic Annyaided Stop 3.0 GHz
-40 dBn -50 dBn -60 dBn -70 dBn	- <u> </u>	X-volue					inction Re	Stop 3.0 GHz

Date: 17 DEC 2016 12:50:09

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

Att	evel 2	0.00 dBm 35 dB			RBW 100 kHz VBW 300 kHz	Mode	Auto Swee	p		
1Pk M	ax									
						M	1[1]			28.70 dBn 42350 GH
10 dBm	-									
0 dBm-	+									-
-10 dBn						_		-		
-20 dBn		-14:170	daw.							
-30 dBn		March Mar	4				1. A.c.			
	-11-1		Water	A STATE AND A	which which a ship to	and and a second	and a property of	-	Hard House	- automation and
-40 dBn										
-50 dBn	+	_		-		-			_	
-60 dBn	+			-		_	_			
-70 dBn	+					-	-			
Start 2	.0 GH	2	-		4001 pt	5			Stop	25.0 GHz
Marker	Ref	- 1						-		
			X-valu		Y-value	Func	tion	Func	tion Result	

Date: 17 DEC 2016, 12:47:40

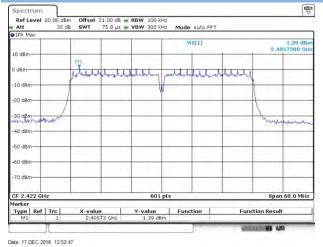
## 802.11n-20 MHz HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

Att	20.00 dBm 35 dB			RBW 100 kH		Auto Swee	p		
1Pk Max									
	· · · · · · · ·				M	1[1]			28.94 dBr
10 dBm				+ +		-		0	79110 61
0 dBm	_				_				
-10 dBm-		1				-			
-20 dBm-	01 -13,820	diam							
30 d8m	and a state	ALL AND A							
-40 dBm		Nert Marshi	-	understand you	, the free free free	har which had the	and the second second	- And a state of the second	an a
-50 dBm					_				
-60 dBm				-					
-70 dBm	_	_		-					
	12	-		4001	pts			Stop	25.0 GHz
Start 2.0 GH									
Start 2.0 GH Marker Type   Ref		X-value	· · · ·	Y-value	Funct			tion Result	_

Date: 17 DEC 2016 12:50:19



#### 802.11n-40 MHz LOW CHANNEL CARRIER LEVEL



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

Att	el 20.00 dBr 35 di			W 100 kHz		Auto Sweep			
1Pk Max									_
		T			MI	(1)			32,99 dBm
10 dBm-								2	65140 GHz
	1.000	1.0.000				1		1 mar 10	1.000
0 dBm	-	++-						11	
					-				
-10 dBm-	-			-			-		
	01 -18.610	dam.			-				
-20 dBm-	01 102010	- Leno							
-30 d8m-								MT	
-30 ubin-	and the second s	will and a service with	and had been	in man and		and a start of the	A Realized and	a property of	and anonader ber
								and a second of the	and the second sec
	and mercenting	A CONTRACTOR OF THE	Antesta				Cabiatian Park		
		Contraction of the	- Anterest	an Dallan Ballan Ayalan a					
-40 dBm-	( and ) and a set of the	ALCO PARTY CONTRACTOR	- Arrente				- and the country of the second		
	( and ) and and and		Helenen						
-40 dBm									
-40 dBm- -50 dBm- -60 dBm-									
-40 dBm-									
-40 dBm- -50 dBm- -60 dBm-									
-40 dBm- -50 dBm- -60 dBm- -70 dBm-				1001 p					p 3.0 GHz
-40 dBm- -50 dBm- -60 dBm- -70 dBm- Start 30. Marker		X-value							p 3.0 GHz

Date: 17 DEC 2016 12:53:35

#### Spectrum Ref Level 20.00 dBm ₽ Offset 21.00 dB = RBW 100 kHz SWT 75.8 µs = VBW 300 kHz Mode Auto FFT 35 dB Att Att 1Pk Max MI[1] 1,12 dBm 2,4207300 GHz 10 dBm Mi Jahalankela Jahakek damat the fait of the state of the state of the -10 dBm -20 d8m -30 dBm ware When an allow -40 dBm -50 dBm -60 dBm -70 dBm-CF 2,437 GHz Marker Span 60.0 MHz 601 pt Type Ref Trc X-value Y-value Function 2.42073 GHz 1.12 dBm Function Result 8 40

Date: 17 DEC 2016 12:55:34

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

# Att	35 dB	SWT	230 ms 🖮	VBW 300 kH	z Mode	Auto Swee	p.		
1Pk Max					_				
					M	1[1]			27.59 dBn
10 dBm-			-	-		-	-	0	00170 50
0ldBm-				1.1			- 1 II		
UUBIII									
- 0 dBm						_	-		
-20 dBm-01	-18-510 d								
Sau Guin	10:010 1	1							
	1	1							
-30 dBm	1	1	and the des	and interface of	-	homercule	un constantia	k. en skalvillatet	مع بدار ا
	1	1	administrative		-	himmeryanta	in administration	hangeler hand	and a second second
-30 d8m	1	1	astract services	interferences and	n an	homeigneik	in administer	iyan sala kutala	and the distance
30 dBm	1	1	astract-scrafted	initian and a second	an a	homesynth	ieresternigetter	in an	and the distance
-30 d8m	1	1	administration	البنية 10 miles		hormonyuth	in administra	iyan ya ka	en al an
-30 dBm -40 dBm -50 dBm -60 dBm	1	1	adhach bardhad			hinneiginhi	ien administration The	n na start and the start of the	and the second
-30 dBm	1	1		1944-1980-1976 <b></b>		hy Manana ya Ma	ien admetation		an a
-30 dBm -40 dBm -50 dBm -60 dBm -70 dBm		1				homosiyuki	in an		
-30 d8m -40 d8m -50 d8m -60 d8m		1		4001		hormanigu the	in an		25.0 GHz

Date: 17 DEC 2016 12:53:45

<sup>802.11</sup>n-40 MHz MIDDLE CHANNEL CARRIER LEVEL



# 802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS

#### 30 MHz ~ 3 GHz

Pk Max					Mode Au			
		1			M1[1	3		-31.60 dBn 2.81160 GH
10 dBm				+ +				
0 dBm	_		-		_		pi	_
-10 dBm	-		-		-			
-20 d8m-0	-18.790	dBm						
-30 d8m								141
	andomatical	d'unearcer a	enterent of	a have been a stand of the sector of the sec	Mulustarildakee	Abarran Bernieter	and the termination is and	here have a constrained
-40 dBm								
-50 dBm	_		-	-		-		
-60 dBm						-		
-70 dBm	_					-+		
Start 30.0 M	Hz	-		1001 pt	ts	-		Stop 3.0 GHz
larker Type   Ref								
		X-value		Y-value	Function	1	Function	Recult

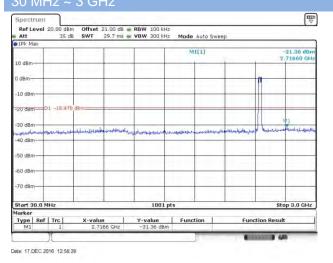
Date: 17 DEC 2016 12:56:00

#### 802.11n-40 MHz HIGH CHANNEL CARRIER LEVEL

1Pk Max									
		1			M	11[1]			E.84 dBn
10 dBm-						ī		3,4	357300 GH
		1011			11.0				
0 dBm			1	JETT	111		1 1 1		-
		populated	plastil	whether	rectulate	al black	hydrobababab		
-10 dBm-		1		-	1		-		-
10.00				1	N				
-20 d8m-		4		-		-	-	1	-
1001	1						1.00	1	
-30 d8m-	und.							Am	holinaling
adminh tool	Allen	11.2.2.2						and the	adustation
-40 dBm		-		-					-
							1.1.1.1		
-50 dBm-									
-60 d8m									
-70 d8m-	_		-						
y a com					1.1.1		1		
CF 2.452 G				601			-	0	n 60.0 MHz
GF 2.432 G Marker	HZ			601	pts			spa	I BU.U MHZ
Type   Ref	Trel	X-value	- 1	Y-value	Fund	tion	Eun	ction Resu	lt.
M1	1		73 GHz	0.84 dB		aton	- Turi	certorit record	

Date: 17 DEC 2016 12:58:02

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

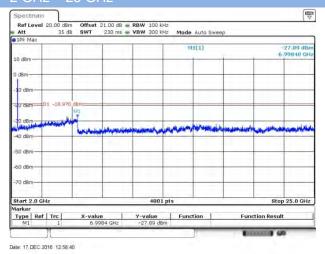


# 802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS

#### **₩** Spectrum Ref Level 20,00 L D0 dBm Offset 21.00 dB RBW 100 kHz 35 dB SWT 230 ms VBW 300 kHz Mode Auto Sweep Att MI[1] -27,90 dBr 10 dBn dBn 0 dBn -18.7 U dBm 0 dBm بدرايده والمسين الدينانية to dBm 50 dBm 60 dBm 70 de 4001 pt Start 2.0 GH Stop 25.0 GHz Type Ref Trc M1 1 X-value Y-value Function Function Result

Date: 17 DEC 2016 12:56:11

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



#### 45 / 65



# 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	-44.2	6.0	-14.0	Pass
High Channel	-52.9	5.9	-14.1	Pass

#### 802.11g Mode:

	Measured Max. Band	Limit	(dBm)	
Channel	Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-28.76	6.11	-13.89	Pass
High Channel	-35.46	6.70	-13.30	Pass

#### 802.11n-20 MHz Mode:

	Measured Max. Band	Limit	(dBm)	
Channel	Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-32.24	5.99	-14.01	Pass
High Channel	-35.98	6.18	-13.82	Pass

#### 802.11n-40 MHz Mode:

		Measured Max. Band	Limit	(dBm)	
	Channel	Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
ſ	Low Channel	-39.17	1.39	-18.61	Pass
	High Channel	-39.18	0.84	-19.16	Pass



52.90 de

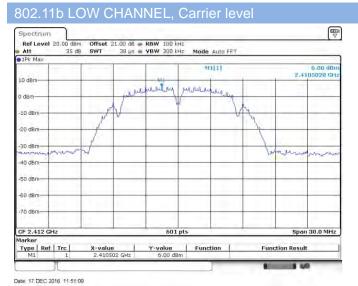
Span 10.0 MH

Function Result

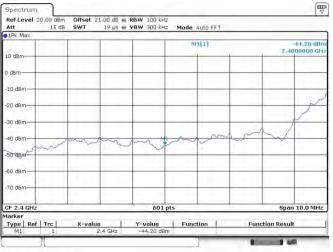
100 GH

2,4

#### Test Plots



802.11b LOW CHANNEL, Band Edge



Mode Auto FFT

M1[1]

Date: 17.DEC 2016 11.52:33

802.11b HIGH CHANNEL, Band Edge

Offset 21.00 dB RBW 100 kHz SWT 19 µs VBW 300 kHz



Date: 17.DEC 2016 11.56.55

Spectrum

Att 1Pk Ma

10 dBm

dBn

10 dBm

20 dBr

30 dBm-

40 dBm-

-50 dBr

-60 dBm

70 dBm

lark

CF 2.462 GH

Ref Level 20.

#### 802.11g LOW CHANNEL, Carrier level

802.11b HIGH CHANNEL, Carrier level

1Pk Max				<b>YBW</b> 300 k		1140-1111			
					01	1[1]		2.40	6.11 dBr
10 dBm		the state					1	-	1
0 dBm		palment	higher	Manha	molande	allerlin	Marking		
		5							1.
-10 dBm		1		-			1		
-20 dBm	A		_				1	1	
	ANT	1						Way	
acide the t	1 10			-			-	an of	maraya
40 dBm									
1.07									
-50 dBm		-		-					1
-60 d8m				-					
1.1			12.00						11.1.1
-70 dBm									
CF 2.412 G	łz			601	pts			Spar	30.0 MHz
larker		N			11 200				
Type Ref M1	Trc	X-value	76 GHz	Y-value 6.11 dB	Funct	tion	Fund	tion Resul	1

ate: 17.DEC 2016 12:32:03

# Date: 17 DEC 2016 11 57 57



601

Function

Y-value -52.90 dBn

## 802.11g LOW CHANNEL, Band Edge

X-value 2.4835 GHz



Mode Auto FFT

M1[1]

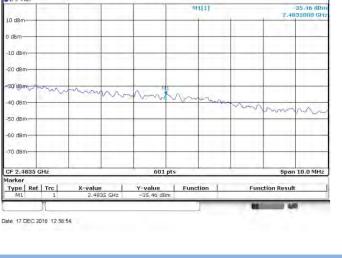
₩

1Pk Max			_						
			-		D1	1[1]		2.4	6.70 dBn 6948B0 GH
10 dBm							ALL Y		
dBm		pulmin	rechard	manhan	malunte	entralises	Assuluq		
		5							
10 dBm		1					- ti	-	
20 dBm-	1	d					L	5	
dedelar	www							Many	manne
ur dun	1.1.1								
40 dBm		-		-				-	-
50 dBm		-	-				_		
60 d8m	_	_	-					_	
	10.0		1000		11 11		12.2		11 - 1
70 dBm									1
CF 2.462 G	Hz	-		601	pts		-	Spar	n 30.0 MHz
larker					-				

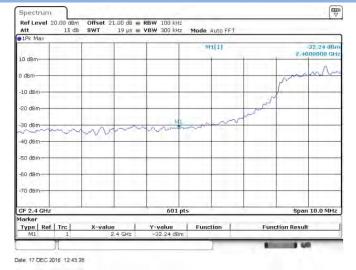
Date: 17 DEC 2016 12:37:36

#### 802.11n-20 MHz LOW CHANNEL, Carrier level

1Pk Max	35 dB	SWT	50 05 =	YBW 300 k	nie mous	Auto FFT			
	1.11				01	1[1]		94	5.99 dBn 194880 GH:
10 dBm			12 1	- 22		1	1 1		i stanti cirti
0 dBm	-	marchant	andrealla	haladar	manhanda	adlandlos	Mundony	-	-
-10 dBm			-					_	
-20 dBm	ſ						-	1	
-391.date	av		_			-		home	-
-40 dBm						_			-
-50 dBm	_			-		_	-		
-60 dBm			-	-		-			
-70 dBm			_	-	_		-		-
CF 2.412 G	łz			601	pts		-	Spar	n 30.0 MHz
1arker Type   Ref	Tral	X-value	1	Y-value	Funct	tion 1	Fund	tion Resul	

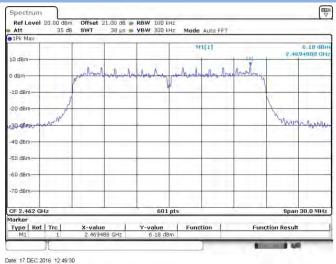


#### 802.11n-20 MHz LOW CHANNEL, Band Edge

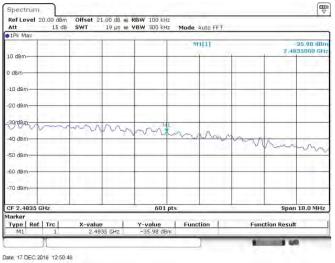


Date: 17.DEC 2016 12:42:15

#### 802.11n-20 MHz HIGH CHANNEL, Carrier level



# 802.11n-20 MHz HIGH CHANNEL, Band Edge



 Offset
 21.00 dB
 RBW
 100 kHz

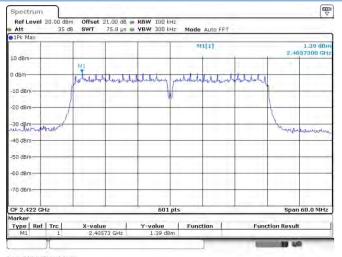
 SWT
 19 μs
 VBW
 300 kHz

15 dB SWT

Spectru Ref Level 20.00 dBm Att 15 dB 1Pk Max



#### 802.11n-40 MHz LOW CHANNEL, Carrier level



802.11n-40 MHz LOW CHANNEL, Band Edge



Date: 17 DEC 2016 12:54:09

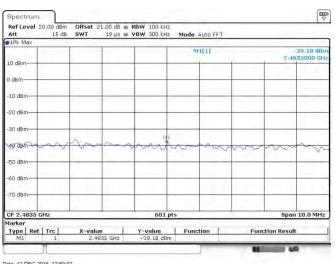
Date: 17 DEC 2016 12:52:47

## 802.11n-40 MHz HIGH CHANNEL, Carrier level

1Pk Max									
					DVI 3	1[1]		0.10	0.84 dBn 357300 GH
10 dBm-			-				- 1	6/74	aram an
1000	1	M1	1		E. a. J		1.1.1		
0 dBm		holadoha	hughly	Muhrulytung	metalista	halfertration	habelal		
10 dBm-		ľ							
			1	1					11.777.3
20 dBm-	1	1	1	+ +				1	
30 d8m-	1							4	
Junit to	Mappin							1 con ale	a have been and
40 dBm-		-							-
						-			1.4
50 dBm-									1
60 dBm-		-						_	
		1.	1		1.0				11.2.1
70 dBm-								_	-
			-					-	
CF 2.452 larker	GHz		_	601	pts			Spar	1 60.0 MHz

Date: 17 DEC 2016 12:58:02

#### 802.11n-40 MHz HIGH CHANNEL, Band Edge



Date: 17 DEC 2016 12:59:07

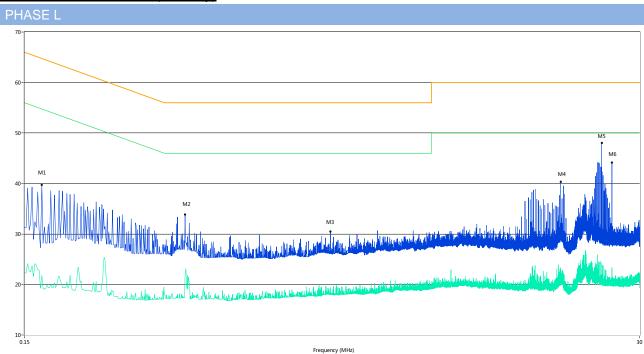


# A.5 Conducted Emissions

Note 1: All configurations have been tested, only the worst configuration (802.11b High Channel) shown here.

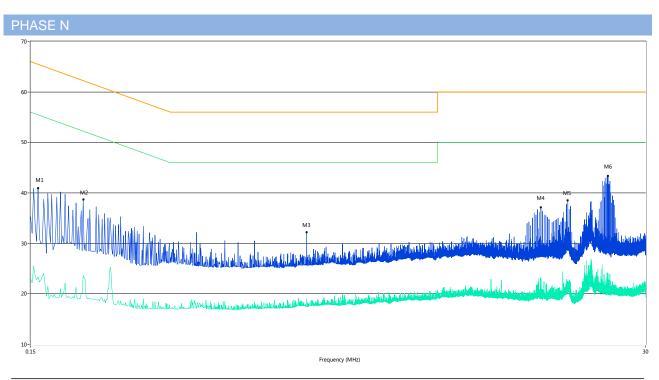
### Test Data and Plots

#### CONFIGURATION A+ C-P35 (Huntkey)



No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Line	Verdict
	(MHz)	(dBuV)		(dBuV)	(dB)			
1	0.174	39.8	11.00	64.8	25.00	Peak	L Line	Pass
1**	0.174	21.8	11.00	54.8	33.00	AV	L Line	Pass
2	0.598	33.8	11.00	56.0	22.20	Peak	L Line	Pass
2**	0.598	21.8	11.00	46.0	24.20	AV	L Line	Pass
3	2.092	30.5	11.00	56.0	25.50	Peak	L Line	Pass
3**	2.092	19.4	11.00	46.0	26.60	AV	L Line	Pass
4	15.210	40.3	11.00	60.0	19.70	Peak	L Line	Pass
4**	15.210	23.3	11.00	50.0	26.70	AV	L Line	Pass
5	21.652	48.1	11.00	60.0	11.90	Peak	L Line	Pass
5**	21.652	24.2	11.00	50.0	25.80	AV	L Line	Pass
6	23.644	44.2	11.00	60.0	15.80	Peak	L Line	Pass
6**	23.644	23.3	11.00	50.0	26.70	AV	L Line	Pass





No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Line	Verdict
	(MHz)	(dBuV)		(dBuV)	(dB)			
1	0.160	40.9	11.00	65.5	24.60	Peak	N Line	Pass
1**	0.160	23.3	11.00	55.5	32.20	AV	N Line	Pass
2	0.236	38.7	11.00	62.2	23.50	Peak	N Line	Pass
2**	0.236	23.7	11.00	52.2	28.50	AV	N Line	Pass
3	1.618	32.2	11.00	56.0	23.80	Peak	N Line	Pass
3**	1.618	18.4	11.00	46.0	27.60	AV	N Line	Pass
4	12.178	37.1	11.00	60.0	22.90	Peak	N Line	Pass
4**	12.178	20.3	11.00	50.0	29.70	AV	N Line	Pass
5	15.356	38.5	11.00	60.0	21.50	Peak	N Line	Pass
5**	15.356	22.5	11.00	50.0	27.50	AV	N Line	Pass
6	21.714	43.4	11.00	60.0	16.60	Peak	N Line	Pass
6**	21.714	24.1	11.00	50.0	25.90	AV	N Line	Pass

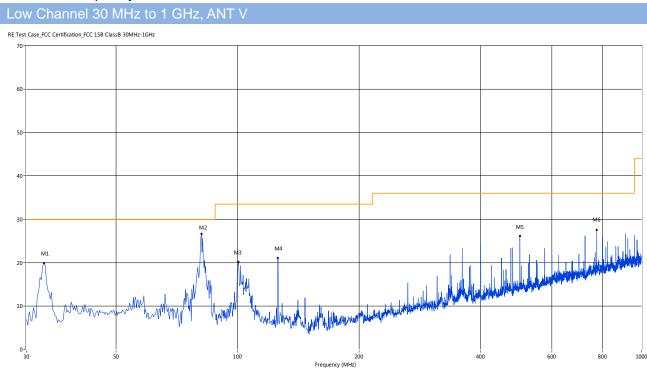


# A.6 Radiated Emission

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.

Test Data and Plots (30 MHz ~ 1 GHz)

Note : The bold frequency is the fundamental.

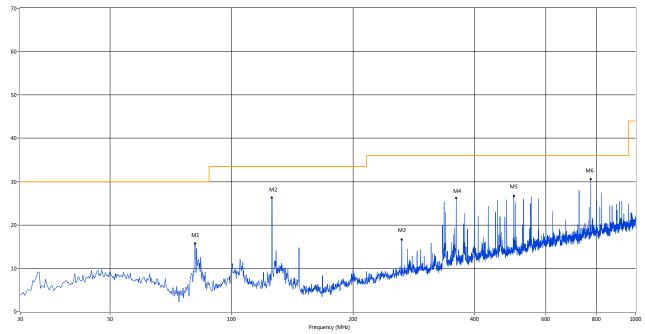


No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	33.152	19.91	-16.73	30.0	10.09	Peak	0.00	200	Vertical	Pass
2	81.397	26.62	-19.76	30.0	3.38	Peak	167.00	100	Vertical	Pass
3	100.550	20.21	-16.10	33.5	13.29	Peak	92.00	100	Vertical	Pass
4	125.764	21.06	-18.88	33.5	12.44	Peak	232.00	100	Vertical	Pass
5	499.848	26.13	-9.12	36.0	9.87	Peak	335.00	300	Vertical	Pass
6	774.774	27.49	-4.21	36.0	8.51	Peak	75.00	300	Vertical	Pass



#### Low Channel 30 MHz to 1 GHz, ANT H





No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdi
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		ct
1	81.155	15.74	-19.77	30.0	14.26	Peak	44.00	200	Horizontal	Pass
2	125.764	26.34	-18.88	33.5	7.16	Peak	360.00	200	Horizontal	Pass
3	263.954	16.63	-14.17	36.0	19.37	Peak	75.00	200	Horizontal	Pass
4	359.960	26.19	-11.69	36.0	9.81	Peak	113.00	200	Horizontal	Pass
5	499.848	26.75	-9.12	36.0	9.25	Peak	133.00	200	Horizontal	Pass
6	774.774	30.59	-4.21	36.0	5.41	Peak	165.00	100	Horizontal	Pass



#### Test Data and Plots (1 GHz ~ 10th Harmonic)

Note 1: The marked is the harmonic signal.

Note 2: Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Note 3: Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

Note 4: Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Note 5: Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column. Note 6: Only show the worst data on the test report.

#### The worst data

11b low	channel
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No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdi
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		ct
1	1312.000	42.29	-2.11	74.0	31.71	Peak	87.00	100	Horizontal	Pass
2	2419.600	93.86	1.11	74.0	-19.86	Peak	64.00	100	Horizontal	N/A
3	2452.100	54.56	0.85	74.0	19.44	Peak	168.00	100	Horizontal	Pass
4	2613.300	47.60	2.07	74.0	26.40	Peak	1.00	100	Horizontal	Pass
5	3284.750	47.06	4.60	74.0	26.94	Peak	4.00	100	Horizontal	Pass
6	4822.200	48.48	10.77	74.0	25.52	Peak	5.00	100	Horizontal	Pass

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	1363.350	41.71	-1.88	74.0	32.29	Peak	24.70	100	Vertical	Pass
2	2412.450	103.58	1.53	74.0	-29.58	Peak	198.70	100	Vertical	N/A
3	2720.550	47.12	3.15	74.0	26.88	Peak	141.10	100	Vertical	Pass
4	3473.250	47.33	4.98	74.0	26.67	Peak	232.90	100	Vertical	Pass
5	4333.800	46.27	9.79	74.0	27.73	Peak	360.00	100	Vertical	Pass
6	5508.600	49.66	11.63	74.0	24.34	Peak	199.60	100	Vertical	Pass



#### 11b Middle channel

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	1514.150	41.16	-2.01	74.0	32.84	Peak	359.00	100	Vertical	Pass
2	2174.550	45.80	1.26	74.0	28.20	Peak	345.70	100	Vertical	Pass
3	2444.300	103.26	0.82	74.0	-29.26	Peak	311.90	100	Vertical	N/A
4	3249.650	47.11	4.59	74.0	26.89	Peak	355.60	100	Vertical	Pass
5	4819.800	47.97	10.74	74.0	26.03	Peak	295.10	100	Vertical	Pass
6	5133.600	48.80	11.52	74.0	25.20	Peak	358.50	100	Vertical	Pass

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdi
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		ct
1	1758.550	41.35	-2.34	74.0	32.65	Peak	128.40	100	Horizontal	Pass
2	2443.650	95.27	1.28	74.0	-21.27	Peak	197.80	100	Horizontal	N/A
3	3101.450	46.19	4.57	74.0	27.81	Peak	303.20	100	Horizontal	Pass
4	3559.700	47.17	5.46	74.0	26.83	Peak	360.00	100	Horizontal	Pass
5	4752.000	47.29	10.67	74.0	26.71	Peak	358.00	100	Horizontal	Pass
6	5352.600	49.44	11.78	74.0	24.56	Peak	209.40	100	Horizontal	Pass

# 11b High channel

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdi
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		ct
1	1977.600	41.70	-0.25	74.0	32.30	Peak	360.00	100	Horizontal	Pass
2	2457.950	92.17	0.56	74.0	-18.17	Peak	219.90	100	Horizontal	N/A
3	3165.150	47.35	5.05	74.0	26.65	Peak	92.30	100	Horizontal	Pass
4	4382.400	46.08	9.43	74.0	27.92	Peak	358.40	100	Horizontal	Pass
5	4922.400	49.01	10.72	74.0	24.99	Peak	55.60	100	Horizontal	Pass
6	5827.800	49.32	11.60	74.0	24.68	Peak	175.50	100	Horizontal	Pass

No.	Frequency	Results	Factor (dB)	Limit	Margin	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	1715.650	41.13	-1.79	74.0	32.87	Peak	68.80	100	Vertical	Pass
2	2461.200	102.30	0.70	74.0	-28.30	Peak	327.80	100	Vertical	N/A
3	2694.550	46.04	3.88	74.0	27.96	Peak	34.80	100	Vertical	Pass
4	3282.150	47.78	4.50	74.0	26.22	Peak	169.30	100	Vertical	Pass
5	4518.600	46.41	9.93	74.0	27.59	Peak	89.30	100	Vertical	Pass
6	4921.800	48.66	10.90	74.0	25.34	Peak	200.40	100	Vertical	Pass



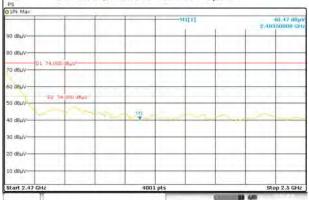
Em |

#### Restricted-band band-edge

Spectrum									∇
Ref Leve Att	1 102.00 dB		13.4 µs 🖷 1	RBW 1 MHz VBW 3 MHz		iuto FFT	nput AC		
1Pk Max									
					-	41(1)			0000 GH
90 dBµV-			-		-	-			-
90 d8µV									
70 dayy-	01 74.000 e	19UV	-		-	-			
60 deuv-						_			1
50 d8µV-	D2 54	aao a <del>k</del> yv					-	_	
40 d8uV-		m	1	and a	m	-	man		
							1		
ia geha-									
-Vu8b 02									
10 d8µV				-	-	-	1	-	
CF 2.36 G				100	1 pts			Print 11	0.0 MHz

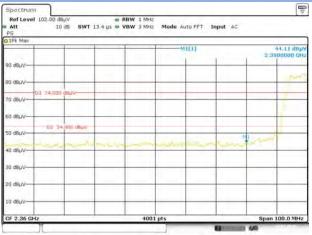
Spectrum

Dete: 22.3AM.2016 09:17:35



Date: 22.JAN.2016 09:15:25

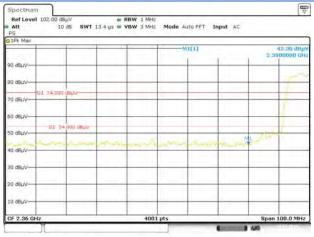
## 802.11g LOW CHANNEL, PEAK



802.11g HIGH CHANNEL, PEAK Em: ▽ PS 91Pk M 43.15 dbj MI 2,48 90 dBuV BO dBuV-74.00 70 dBuly 60 d8µA DZ D o deux 50 dBµV MI 40 dBuV 30 dBu Augh Dc 10 dBuv-CF 2.485 G 4001 p 0 0 MH2 an - 60 Dete: 21.333.2016 09:20:08

Date: 22.JAN.2016 09:16:03

# 802.11n-20 LOW CHANNEL, PEAK



# 802.11n-20 HIGH CHANNEL, PEAK



Date: 22.JAN.2016 09:16:38

Dete: 22.333.2016 09:19:25



# 802.11n-40 LOW CHANNEL , PEAK

Att	102.00 dBµV 10 d8			BW 1 MHz BW 3 MHz	Mode A	uto FFT 1	nput AC		
PS 1Pk Max				1997 - 1997 1997 - 1997	1000				
ALC: COMP					- 51	1(1)			49.56 dBpv 00000 GH
90 dBµV-		-		-		-	-		
80 d8µV			_	_		_	-		
70 dayy-	01 74.000 da)	N	_		-	_		-	1
60 dajuv-			_						1
50 dBuV-	D2 54.00	0 dhpV			_			-	-
				in		-		1	
							1		
30 dBµV									
20 d8µV			_	-			-		-
u daµv—						-			-
CF 2.36 G				4001				Prove 1	100.0 MHz

Date: 22.JAN.2516 09:14:J7

## 802.11n-40 HIGH CHANNEL, PEAK

 
 Spectrum
 RBW 1 MHz

 Ref Level 102.00 dBµV
 RBW 1 MHz

 Att
 10 dB
 SWT 5.7 µs = VBW 3 MHz

 P5
 01Pk Max
 ⊽ 50,43 d0p MI[1] Nuel De 80 dBLV-74,00 70 deuv 60 dBuv 02 5 Hi. deury 50 dBuV-40 dBuV-30 dBµ/v 20 dBµV-10 d8µv-4001 pts Span 30.0 MHz CF 2.485 GH

Date: 22.353,2016 09520:53



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

### Test Data

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.

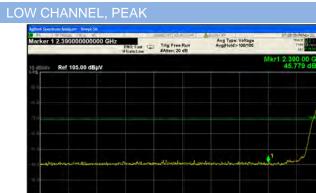
Note 2: The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have shown the worst case.

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	74.00	28.22	PEAK	Pass
802.11b	LOW	2390	N/A	54.00	N/A	AVERAGE	N/A
002.110	HIGH	2483.5	65.01	74.00	8.99	PEAK	Pass
	пібп	2483.5	45.36	54.00	8.64	AVERAGE	Pass
	Low	2390	62.34	74.00	11.66	PEAK	Pass
802.11~	Low	2390	48.21	54.00	5.79	AVERAGE	Pass
802.11g		2483.5	70.13	74.00	3.87	PEAK	Pass
	HIGH	2483.5	52.34	54.00	1.66	AVERAGE	Pass
	Law	2390	70.48	74.00	3.52	PEAK	Pass
000 11=00	Low	2390	50.45	54.00	3.55	AVERAGE	Pass
802.11n20		2483.5	73.30	74.00	0.70	PEAK	Pass
	HIGH	2483.5	48.40	54.00	5.61	AVERAGE	Pass
	Law	2390	67.95	74.00	6.05	PEAK	Pass
000 11 - 10	Low	2390	50.63	54.00	3.38	AVERAGE	Pass
802.11n40	шен	2483.5	64.98	74.00	9.02	PEAK	Pass
	HIGH	2483.5	45.38	54.00	8.62	AVERAGE	Pass



#### 802.11b Mode:



#VBW 3.0 MHz

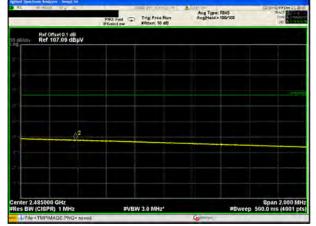
#### HIGH CHANNEL PEAK

0 GHZ ISPR) 1 MHZ



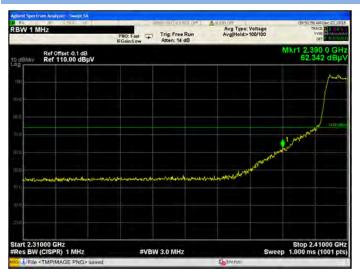
Stop 2.41000 ( Sweep 1.012 ms (691

# Aginet Spectrum Knilger - Singer Sk



#### 802.11g Mode:

## LOW CHANNEL, PEAK



## LOW CHANNEL, AV





#### HIGH CHANNEL, PEAK



#### HIGH CHANNEL, A



### 802.11n-20 MHz Mode:

LOW CHANNEL, PEAK



#### LOW CHANNEL, AV



#### HIGH CHANNEL, PEAK



#### HIGH CHANNEL, A





#### 802.11n-40 MHz Mode:

# LOW CHANNEL, PEAK



#### LOW CHANNEL, AV



#### HIGH CHANNEL, PEAK



#### HIGH CHANNEL, AV





# A.8 Power Spectral Density (PSD)

# Test Data

802.11b Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	5.04	8
Middle	4.77	8
High	5.03	8

802.11g Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-9.06	8
Middle	-9.61	8
High	-10.2	8

802.11n-20 MHz Mode:

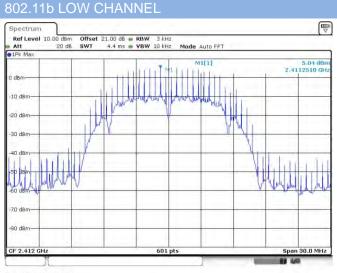
Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-9.15	8
Middle	-9.25	8
High	-9.65	8

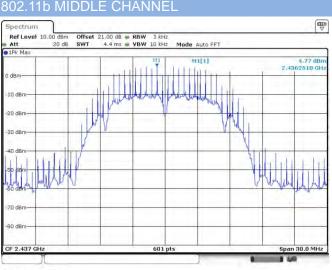
802.11n-40 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-12.31	8
Middle	-14.36	8
High	-12.15	8



#### Test plots



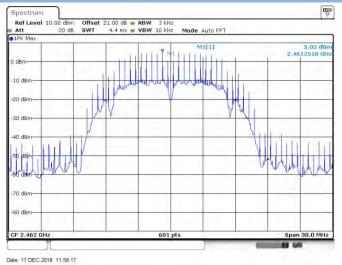


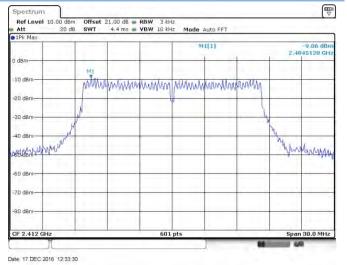
Date: 17 DEC 2016 11:55:36

802.11g LOW CHANNEL

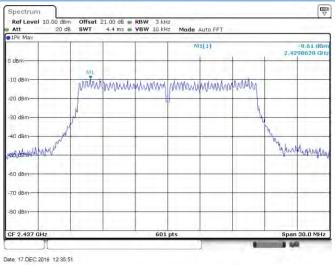
Date: 17.DEC 2016 11.53.21

#### 802.11b HIGH CHANNEL

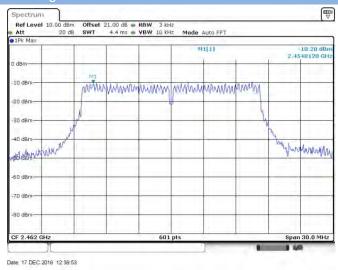




### 802.11g MIDDLE CHANNEL

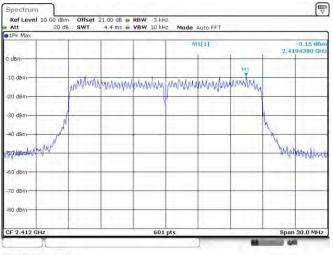








## 802.11n-20 MHz LOW CHANNEL



1Pk Max								
2.1			0	11[1]	2,43	-9.25 dBr 2,4382480 GH		
dBm-			-					
10 dBm-			MI	1				
	www	MAMMMAN	which where	manhaman	114			
20 dBm			• V			-		
30 dBm	8		_		-	_		
40 dBm	P				1	1		
+U dBm	6				1			
SQ HEAD HAD AND	C	-			MN	too William		
60 dBm			_					
70 d8m	_				_	-		
30 dBm	1.1.1.4.4							

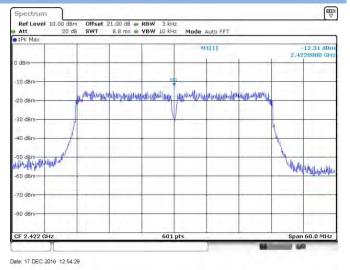
Date: 17.DEC 2016 12:44:41

#### 802.11n-20 MHz HIGH CHANNEL

Att 2 1Pk Max	0 dB SWT		VBW 10 kH	z Mode A	did ff f					
		1		M13	WIT[1]			-9.65 dBn 2,4695370 GH;		
0 dBm										
-10 dBm	MANAM	MMMMM	Mundar	MMANAN	whythe	ANNIN				
-20 dBm										
-30 dBm	A					-	5			
150-44 rolun with							INT	MANIHAN		
-60 dBm							_			
-70 dBm										
-80 dBm		-								
CF 2.462 GHz			601	nte			Cnar	1 30.0 MHz		

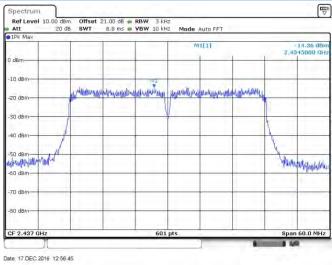
#### 802.11n-40 MHz LOW CHANNEL

Date: 17.DEC 2016 12:48:06

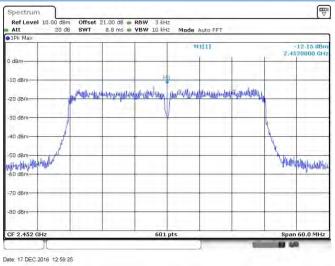


Date: 17.DEC 2016 12:51:06

## 802.11n-40 MHz MIDDLE CHANNEL



#### 802.11n-40 MHz HIGH CHANNEL



# 802.11 n-20 MHz MIDDLE CHANNEL



# ANNEX B TEST SETUP PHOTOS

Please refer the document "BL-SZ16B0385-AR.pdf".

# ANNEX C EUT EXTERNAL PHOTOS

Please refer the document "BL- SZ16B0385-AW.pdf".

# ANNEX D EUT INTERNAL PHOTOS

Please refer the document "BL- SZ16B0385-AI.pdf".

--END OF REPORT--