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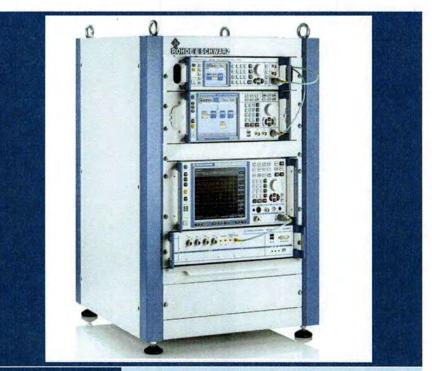


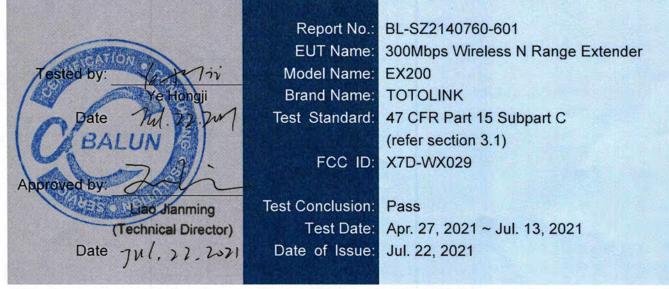
FOR

300Mbps Wireless N Range Extender

ISSUED TO ZIONCOM ELECTRONICS (SHENZHEN) LTD.

Building A1-A2, Lantian Science and Technology Park, Xinyu Road, Xinqiao Henggang Block, Shajing Street, Baoan District, Shenzhen China





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RF

TEST REPORT

1 / 180



Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Jul. 20, 2021</u>	Initial Issue
Rev. 02	Jul. 22, 2021	Modified the product type in section 2.5

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1 ADMINISTRATIVE DATA (GENERAL INFORMATION)

1.1 Identification of the Testing Laboratory

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

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.	
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road,	
Address	Nanshan District, Shenzhen, Guangdong Province, P. R. China	
Accreditation	The laboratory is a testing organization accredited by FCC as a	
Certificate accredited testing laboratory. The designation number is CN11		
	All measurement facilities used to collect the measurement data are	
Description	located at Block B, FL 1, Baisha Science and Technology Park, Shahe	
Description	Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R.	
	China 518055	

1.3 Laboratory Condition

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

1.4Announce

- (1) The test report reference to the report template version v6.4.
- (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.
- (7) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.



2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	ZIONCOM ELECTRONICS (SHENZHEN) LTD.	
	Building A1-A2, Lantian Science and Technology Park, Xinyu Road,	
Address	Xinqiao Henggang Block, Shajing Street, Baoan District, Shenzhen	
	China	

2.2 Manufacturer Information

Manufacturer ZIONCOM ELECTRONICS (SHENZHEN) LTD.	
	Building A1-A2, Lantian Science and Technology Park, Xinyu Road,
Address	Xinqiao Henggang Block, Shajing Street, Baoan District, Shenzhen
	China

2.3 Factory Information

Factory 1	ZIONCOM ELECTRONICS (SHENZHEN) LTD.XINQIAO FACTORY
	Building A1~A2, Lantian Science and Technology Park, Xinyu
Address 1	Road Xinqiao Henggang Block Shajing Street, Baoan District.
	Shenzhen City, China
Factory 2	ZIONCOM (VIETNAM) Co., LTD
	No. 2, VSIP II-A, Road No.23, Vietnam -Singapore II-A Industrial
Address 2	Park, Vinh Tan Commune, Tan Uyen District, Binh Duong province,
	Vietnam

2.4 General Description for Equipment under Test (EUT)

EUT Type	300Mbps Wireless N Range Extender
Model Name Under Test	EX200
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	В
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A



2.5 Technical Information

Network an connectivity		WIFI 802.11a, 802.11b, 802.11g, 802.11n	
The requirement for	requirement for the following technical information of the EUT was tested in this report:		
		802.11b/g/n(20 MHz): 2.412 GHz - 2.462 GHz $f_c = 2412$ MHz + (N-1)*5 MHz, where - $f_c =$ "Operating Frequency" in MHz,	
Frequency	Range	- N = "Channel Number" with the range from 1 to 11. 802.11n(40 MHz): 2.422 GHz - 2.452 GHz $f_c = 2412$ MHz + (N-1)*5 MHz, where - $f_c =$ "Operating Frequency" in MHz, - N = "Channel Number" with the range from 3 to 9.	
Modulation	Type	DSSS, OFDM	
Product Typ		Mobile Portable Fix Location	
	art Antenna)	Cyclic Delay Diversity (CDD) for 802.11n Basic methodology with <i>NANT</i> transmit antennas, each with the same directional gain <i>GANT</i> dBi for 802.11b/g	
Categorizat Correlated Uncorrelate	or Completely	Categorization as Correlated	
Antenna Type	Main Antenna Aux. Antenna	Dipole Antenna	
Antenna Gain	Main Antenna Aux. Antenna	4.0 dBi (In test items related to antenna gain, the final results reflect this figure. This value is provided by the applicant.)	
	For power spectral density(PSD) measurement s	4.0 dBi Formulas: Directional gain = GANT + Array Gain, <i>Array Gain</i> = 10 <i>log(NANT/NSS) dB. NSS</i> =2, GANT set equal to the gain of the antenna having the highest gain.	
Total directiona I gain	For power measurement s	4.0 dBi Formulas: Directional gain = GANT + Array Gain, <i>Array Gain</i> = 0, GANT set equal to the gain of the antenna having the highest gain.	
	For Conducted Out-of-Band and Spurious Measurement s	4.0 dBi Formulas: Directional gain = GANT + Array Gain, <i>Array Gain</i> = 10 <i>log(NANT/NSS) dB. NSS</i> =2, GANT set equal to the gain of the antenna having the highest gain.	
About the F	Product	Only the WIFI 802.11b, 802.11g and 802.11n (HT20/40) was tested in this report.	



	Antenna						
Mode	Main Antenna	Aux. Antenna	MIMO-Main Antenna	MIMO-Aux. Antenna	MIMO		
802.11b	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
802.11g	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
802.11n20	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
802.11n40		\checkmark	\checkmark	\checkmark	\checkmark		

Note: All the configurations were tested, but only the worst data was shown in this report.

Modulation technology	Modulation Type	Transfer Rate (Mbps)
	DBPSK	1
DSSS (802.11b)	DQPSK	2
	ССК	5.5/11
	BPSK	6/9
	QPSK	12/18
OFDM (802.11g)	16QAM	24/36
	64QAM	48 / 54
	BPSK	6.5/7.2
OFDM	QPSK	13/19.5/14.4/21.7
(802.11n-20MHz)	16QAM	26/39/28.9/43.3
	64QAM	52/58.5/65/57.8/65/72.2
	BPSK	13.5/15
OFDM	QPSK	27/40.5/30/45
(802.11n-40MHz)	16QAM	54/81/60/90
	64QAM	108/121.5/135/120/150

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	Cha	nnel
Output Power	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
6dB Bandwidth	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Conducted Spurious Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Conducted Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Radiated Spurious Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Band Edge	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Power spectral density (PSD)	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9

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



2.6 Additional Instructions

EUT Software Settings:

Mode	Special software is used.
	The software provided by client to enable the EUT under
	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.

Power level setup in software						
Test Software Version	MP_TEST	MP_TEST				
Support Units	Description	Manufa	octurer	Model		
(Software installation media)	Notebook	Lenovo		X220		
			So	ft Set		
Mode	Channel	Main	Aux.	MIMO-Main	MIMO-Aux.	
		Antenna	Antenna	Antenna	Antenna	
	1	32	32	27	27	
802.11 b	6	32	32	27	27	
	11	32	32	27	27	
	1	41	45	35	38	
802.11 g	6	41	44	35	38	
	11	41	44	35	38	
	1	41	43	35	38	
802.11 n20	6	41	44	35	38	
	11	40	43	35	38	
	3	39	42	35	38	
802.11 n40	6	41	44	35	38	
	9	39	41	35	38	

Run software:

TL019x 1.6 - 201	0/11/14				
General Plach P	8192F	Consection IF 192 100	S P .	To Form Limit Lend Table Lenk Form: To Form Limit Lend Table Limit Form: Kalenne A	E
NTL61927 2TES			wese Tracking	TafpeerLinit 0 HT3S MT3S HT3S MT3S WT3S HT3S WT3S HT3S WT3S	-
Thy Band II III BAC/PST Disclam Day WDASH RY IIIIII	-	Parterte 22 P P Infinitely Tacket T Silent Media	G thereal ther	There by Rate Table Load Fill Parameters Form by Rate Table Form Fluck For	14 A 14 B
EFE Type FA Type Channel 9 * Randwodth 409 GI Long		Statistics Statistics Visal Vian Vian De De De De De De De De De De	Kegister Kend/Pert Bh/RF/STS 85 • BJ/STS A - - - - - - - - - - - - - - - - - - -	ICE ICE VIT VIT Data 10 15 25 35 45 15 25 36 10 0000 0000 0000 0000 0000 0000 Tricki F0 10 0000 0000 0000 0000 0000 0000 Tricki F0 10 0000 0000 00000 00000 00000 0000 Tricker F1 10 0000 0000 00000 00000 00000 00000 00000 F1 10 0000 00000 000000	
	a hi		8 1 Offie Value Mr To Configuration To Configuration To Configuration Tesses (Tomation "ester(Dicon) Rr Calification	240 MC21 MC22 MC23 MC24	
1250-0	Ex Ex	F	19K LCK	0 - 0 - 0 - 0 - 00 - 000	



3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title		
1	47 CFR Part 15, Subpart C	Miscellaneous Wireless Communications Services		
		GUIDANCE FOR COMPLIANCE MEASUREMENTS ON		
2	KDB Publication 558074	DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING		
2	D01v05r02	SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES		
		OPERATING UNDER SECTION 15.247 OF THE FCC RULES		
3	KDB Publication	Emissions Testing of Transmitters with Multiple Outputs in the Same		
3	662911 D01v02r01	Band (e.g., MIMO, Smart Antenna, etc)		
4	ANGL C62 10 2012	American National Standard of Procedures for Compliance Testing of		
4	ANSI C63.10-2013	Unlicensed Wireless Devices		

3.2 Verdict

No.	Description	FCC PART No.	Test Result	Verdict
1	Antenna Requirement	15.203	N/A	Pass ^{Note 1}
2	Output Power	15.247 (b)	ANNEX A.1	Pass
3	6dB Bandwidth	15.247 (a)	ANNEX A.2	Pass
4	Conducted Spurious Emission	15.247 (d)	ANNEX A.3	Pass
5	Band Edge(Authorized-band band-edge)	15.247 (d)	ANNEX A.4	Pass
6	Conducted Emission	15.207	ANNEX A.5	Pass
7	Radiated Spurious Emission	15.209; 15.247 (d)	ANNEX A.6	Pass
8	Band Edge(Restricted-band band-edge)	15.209; 15.247 (d)	ANNEX A.7	Pass
9	Power spectral density (PSD)	15.247 (e)	ANNEX A.8	Pass
10	Receiver Spurious Emissions	N/A	N/A	N/A Note 2
Note ¹ :	Please refer to section 5.1.			

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)	170 V	

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-40	101544	2021.04.01	2022.03.31
Bluetooth Signaling Unit	ROHDE&SCHWARZ	CMW500	142028	2021.06.01	2022.05.31
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2021.06.01	2022.05.31
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2021.06.01	2022.05.31
LISN	SCHWARZBECK	NSLK 8127	8127-687	2021.06.01	2022.05.31
Test Antenna- Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2019.10.29	2021.10.28
Test Antenna- Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2019.07.02	2022.07.01
Test Antenna- Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1917	2019.07.02	2022.07.01
Test Antenna- Horn (18-40 GHz)	A-INFO	LB- 180400KF	J211060273	2021.01.05	2023.01.04
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2022.02.20
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60 *7.35m	N/A	2018.08.08	2021.08.07
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	±2.8%
RF output power, conducted	±1 .28 dB
Power Spectral Density, conducted	±1.30 dB
Unwanted Emissions, conducted	±1.84 dB
All emissions, radiated	±5.36 dB
Temperature	±0.82℃
Humidity	±4.1%

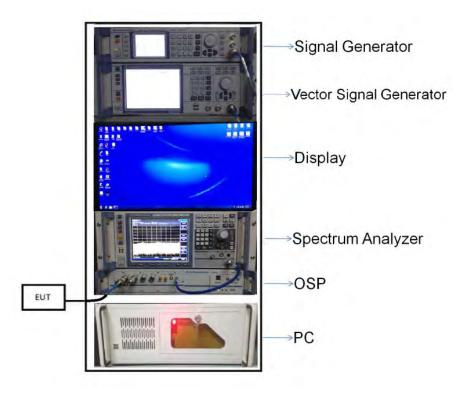


4.4 Description of Test Setup

4.4.1 For Antenna Port Test

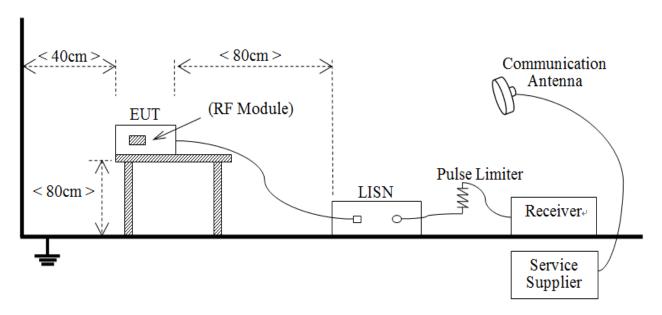
Conducted value (dBm) = Measurement value (dBm) + cable loss (dB)

For example: the measurement value is 10 dBm and the cable 0.5dBm used, then the final result of EUT: Conducted value (dBm) = 10 dBm + 0.5 dB = 10.5 dBm



(Diagram 1)

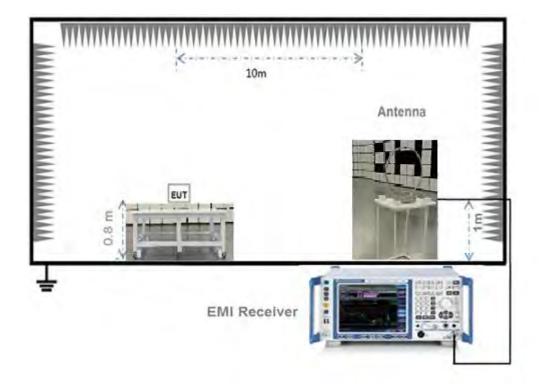




(Diagram 2)

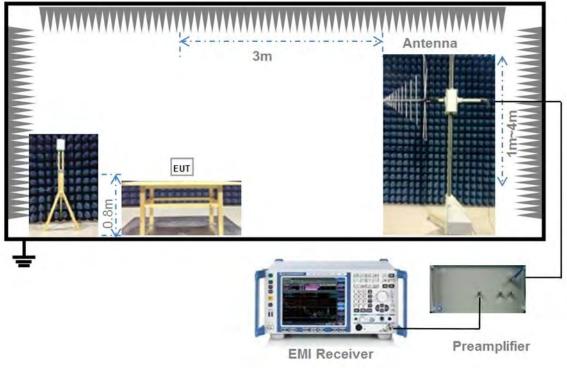


4.4.3 For Radiated Test (Below 30 MHz)



(Diagram 3)

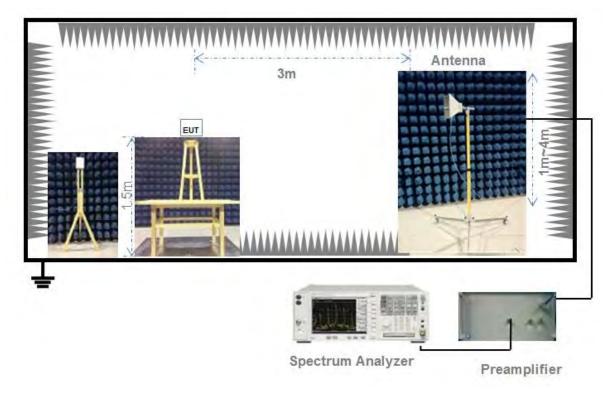
4.4.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)



4.4.5 For Radiated Test (Above 1 GHz)



(Diagram 5)



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:

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.

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 Relevant Standards

FCC §15.203; RSS-247, 5.4 (f)

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

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

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

Reference Documents	Item
Photo	Please refer to the EUT Photo documents.

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



5.2 Output Power

5.2.1 Test Limit

FCC § 15.247(b); RSS-247, 5.4 (d)

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 be summed across all antennas and antennas antennas and antennas and antennas and antennas and antennas and antennas and antennas antenna

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 $10\log(1/x)$, where x is the duty cycle to the measurement result.

Measurements of duty cycle

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

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



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

Set VBW \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, 6.7; RSS-247, 5.2 (a)

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

5.3.2 Test Setup

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

5.3.3 Test Procedure

Use the following spectrum analyzer settings:

Set RBW = 100 kHz.

Set the video bandwidth (VBW) \geq 3 RBW.

Detector = Peak.

Trace mode = max hold.

Sweep = auto couple.

Allow the trace to stabilize.

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

5.3.4 Test Result

Please refer to ANNEX A.2.



5.4 Conducted Spurious Emission

5.4.1 Limit

FCC §15.247(d); RSS-247, 5.5

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

5.4.2 Test Setup

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

5.4.3 Test Procedure

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

a) If the maximum peak conducted output power procedure was used to demonstrate compliance as described in 9.1, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).

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

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

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

Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to DTS channel center frequency.

Set the span to \geq 1.5 times the DTS bandwidth.

Set the RBW = 100 kHz.

Set the VBW \geq 3 x RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

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



Emission level measurement

Use the following spectrum analyzer settings:

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

Set the RBW = 100 kHz.

Set the VBW \geq 3 x RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

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

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

5.4.4 Test Result

Please refer to ANNEX A.3.



5.5 Band Edge (Authorized-band band-edge)

5.5.1 Limit

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

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

5.5.2 Test Setup

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

5.5.3 Test Procedure

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

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

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

Set span to 2 MHz

RBW = 100 kHz.

VBW \geq 3 x RBW.

Detector = peak.

Sweep time = auto.

Trace mode = max hold.

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

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

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

Span: Wide enough to capture the peak level of the emission operating on the channel closest to the band edge,



as well as any modulation products that fall outside of the authorized band of operation.

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

Attenuation: Auto (at least 10 dB preferred).

Sweep time: Coupled.

Resolution bandwidth: 100 kHz.

Video bandwidth: 300 kHz.

Detector: Peak.

Trace: Max hold.

5.5.4 Test Result

Please refer to ANNEX A.4.



5.6 Conducted Emission

5.6.1 Limit

FCC §15.207; RSS-GEN, 8.8

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μ H/50 Ω line impedance stabilization network (LISN).

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

5.6.2 Test Setup

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

5.6.3 Test Procedure

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

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

5.6.4 Test Result

Please refer to ANNEX A.5.



5.7 Radiated Spurious Emission

5.7.1 Limit

FCC §15.209&15.247(d); 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 ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).

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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 ≥ 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).

 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

Table 1—RBW as a function of frequency

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 \geq 98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then the following procedure shall be used:

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



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

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

d) VBW \geq 3 x RBW.

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

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

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

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

g) Sweep time = auto.

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

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

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

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

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

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

Determining the applicable transmit antenna gain

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

Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.



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

Radiated spurious emission test

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

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

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

The power of the EUT transmitting frequency should be ignored.

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

Use the following spectrum analyzer settings:

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

5.7.4 Test Result

Please refer to ANNEX A.6.



5.8 Band Edge (Restricted-band band-edge)

5.8.1 Limit

FCC §15.209&15.247(d); 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(e); RSS-247, 5.2 (b)

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	On Time (ms)	On+Off time (ms)	Duty Cycle
802.11b	8.409100	8.500000	98.93%
802.11g	1.395000	1.492500	93.47%
802.11n-20 MHz	1.306650	1.430060	91.37%
802.11n-40 MHz	0.641347	0.818271	78.38%

Peak Power Test Data

Main Antenna

802.11b Mode:

Channel	Measured Out	put Peak Power	Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	20.23	105.44			Pass
Middle	20.41	109.90	30	1000	Pass
High	20.37	108.89			Pass

802.11g Mode:

Channel Measured Ou		Channel Measured Output Peak Power		nit	Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	25.16	328.10			Pass
Middle	25.46	351.56	30	1000	Pass
High	25.27	336.51			Pass

802.11n-20 MHz Mode:

Channel	Measured Out	put Peak Power	Lir	nit	Vardiat
Channel	dBm	mW	dBm	mW	Verdict
Low	25.26	335.74			Pass
Middle	25.60	363.08	30	1000	Pass
High	25.46	351.56			Pass

Channal	Channel Measured Output Peak Power		Lir	nit	Vordiot
Channel	dBm	mW	dBm	mW	Verdict
Low	25.81	381.07			Pass
Middle	25.96	394.46	30	1000	Pass
High	25.84	383.71			Pass



<u>Aux. Antenna</u>

802.11b Mode:

Channel	Channel Measured Out		Channel Measured Output Peak Power		Lir	nit	Vardiat
Channel	dBm	mW	dBm	mW	Verdict		
Low	18.64	73.11			Pass		
Middle	18.74	74.82	30	1000	Pass		
High	18.64	73.11			Pass		

802.11g Mode:

Channel Measured Ou		put Peak Power	Lir	nit	Verdiet
Channel	dBm	mW	dBm	mW	Verdict
Low	24.42	276.69			Pass
Middle	24.86	306.20	30	1000	Pass
High	24.61	289.07			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdici
Low	24.57	286.42			Pass
Middle	24.99	315.50	30	1000	Pass
High	24.73	297.17			Pass

Channel	Channel Measured Output Peak Power		Limit		Vardiat
Channel	dBm	mW	dBm	mW	Verdict
Low	25.00	316.23			Pass
Middle	25.22	332.66	30	1000	Pass
High	25.21	331.89			Pass





MIMO-Main Antenna

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Vardiat
Channel	dBm	mW	dBm	mW	Verdict
Low	16.64	46.13			Pass
Middle	17.09	51.17	30	1000	Pass
High	17.35	54.33			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdiet		
Channel	dBm	mW	dBm	mW	Verdict		
Low	21.79	151.01					Pass
Middle	22.04	159.96	30	1000	Pass		
High	21.76	149.97			Pass		

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdici
Low	21.79	151.01			Pass
Middle	22.11	162.55	30	0 1000	Pass
High	21.83	152.41			Pass

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	22.42	174.58			Pass
Middle	22.40	173.78	30	1000	Pass
High	22.33	171.00			Pass



MIMO-Aux. Antenna

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdici
Low	14.70	29.51			Pass
Middle	14.76	29.92	30	1000	Pass
High	14.78	30.06			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdiet
Channel	dBm	mW	dBm	mW	Verdict
Low	20.14	103.28			Pass
Middle	20.60	114.82	30	1000	Pass
High	20.33	107.89			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	20.27	106.41			Pass
Middle	20.80	120.23	30	30 1000	Pass
High	20.29	106.91			Pass

Channel	Measured Output Peak Power		Limit		Vordiot
Channel	dBm	mW	dBm	mW	Verdict
Low	20.40	109.65		30 1000	Pass
Middle	20.86	121.90	30		Pass
High	20.63	115.61			Pass



<u>MIMO</u>

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Vardiat
Channel	dBm	mW	dBm	mW	Verdict
Low	18.79	75.64			Pass
Middle	19.09	81.09	30	30 1000	Pass
High	19.26	84.39			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdiet			
Channel	dBm	mW	dBm	mW	Verdict			
Low	24.05	254.28						Pass
Middle	24.39	274.77	30	1000	Pass			
High	24.11	257.86			Pass			

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	24.11	257.42			Pass
Middle	24.51	282.78	30	30 1000	Pass
High	24.14	259.31			Pass

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	24.54	284.23			Pass
Middle	24.71	295.68	30	1000	Pass
High	24.57	286.61			Pass



Average Power Test Data

Main Antenna

802.11b Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	Verdict
Low	16.53	44.98	30	1000	Pass
Middle	17.07	50.93			Pass
High	16.97	49.77			Pass

802.11g Mode:

Channel	Measured Output Average Power		Limit		Vordiot
	dBm	mW	dBm	mW	Verdict
Low	16.59	45.60	30	1000	Pass
Middle	16.96	49.66			Pass
High	16.74	47.21			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	Verdici
Low	16.75	47.32	30	1000	Pass
Middle	17.01	50.23			Pass
High	16.44	44.06			Pass

Channel	Measured Output Average Power		Limit		Vordiot
	dBm	mW	dBm	mW	Verdict
Low	16.93	49.32	30	1000	Pass
Middle	17.10	51.29			Pass
High	16.84	48.31			Pass



<u>Aux. Antenna</u>

802.11b Mode:

Channel	Measured Output Average Power		Limit		Vardiat
Channel	dBm	mW	dBm	mW	Verdict
Low	16.33	42.95			Pass
Middle	16.90	48.98	30	1000	Pass
High	17.23	52.84			Pass

802.11g Mode:

Channel	Measured Output Average Power		Limit		Verdiet
Channel	dBm	mW	dBm	mW	Verdict
Low	15.74	37.50			Pass
Middle	16.98	49.89	30	1000	Pass
High	17.63	57.94			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdici
Low	15.13	32.58			Pass
Middle	16.53	44.98	30	1000	Pass
High	17.28	53.46			Pass

Channel	Measured Output Average Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	17.08	51.05			Pass
Middle	17.60	57.54	30	1000	Pass
High	16.94	49.43			Pass



MIMO-Main Antenna

802.11b Mode:

Channel	Measured Output Average Power		Limit		Vardiat
Channel	dBm	mW	dBm	mW	Verdict
Low	13.36	21.68			Pass
Middle	13.75	23.71	30	1000	Pass
High	14.08	25.59			Pass

802.11g Mode:

Channel	Measured Output Average Power		Limit		Verdiet
Channel	dBm	mW	dBm	mW	Verdict
Low	13.18	13.47			Pass
Middle	13.31	13.60	30	1000	Pass
High	12.93	13.22			Pass

802.11n-20 MHz Mode:

Chappel	Measured Output Average Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdici
Low	12.87	13.26			Pass
Middle	12.14	12.53	30	1000	Pass
High	10.19	10.58			Pass

Channel	Measured Output Average Power		Limit		Vordiot
Channel	dBm	mW	dBm	mW	Verdict
Low	12.69	13.75			Pass
Middle	12.69	13.75	30	1000	Pass
High	9.91	10.97			Pass



MIMO-Aux. Antenna

802.11b Mode:

Channel	Measured Output Average Power		Limit		Vardiat
Channel	dBm	mW	dBm	mW	Verdict
Low	13.29	21.33			Pass
Middle	13.31	21.43	30	1000	Pass
High	13.87	24.38			Pass

802.11g Mode:

Channel	Measured Output Average Power		Limit		Vordiot
Channel	dBm	mW	dBm	mW	Verdict
Low	13.62	23.01			Pass
Middle	13.44	22.08	30	1000	Pass
High	13.62	23.01			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdici
Low	13.44	22.08			Pass
Middle	13.37	21.73	30	1000	Pass
High	13.72	23.55			Pass

Channel	Measured Output Average Power		Limit		Vordiot
Channel	dBm	mW	dBm	mW	Verdict
Low	14.19	26.24			Pass
Middle	13.84	24.21	30	1000	Pass
High	14.14	25.94			Pass



<u>MIMO</u>

802.11b Mode:

Channel	Measured Output Average Power		Limit		Vordiot
Channel	dBm	mW	dBm	mW	Verdict
Low	16.34	43.01			Pass
Middle	16.55	45.14	30	1000	Pass
High	16.99	49.96			Pass

802.11g Mode:

Channel	Measured Output Average Power Limit		nit	Verdiet	
Channel	dBm	mW	dBm	mW	Verdict
Low	16.56	45.25			Pass
Middle	16.53	44.99	30	1000	Pass
High	16.43	44.00			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict	
Channel	dBm	mW	dBm	mW	Verdict	
Low	16.36	43.26			Pass	
Middle	15.98	39.63	30	1000	Pass	
High	15.44	34.98			Pass	

Channel	Measured Output Average Power		Limit		Vardiat	
Channel	dBm	mW	dBm	mW	Verdict	
Low	16.99	49.96			Pass	
Middle	16.81	47.92	30	1000	Pass	
High	15.85	38.44			Pass	



A.2 Bandwidth

<u>Test Data</u>

Main Antenna

802.11b Mode:

Channel	6 dB Bandwidth	99% Bandwidth	6 dB Bandwidth
	(MHz)	(MHz)	Limits (kHz)
Low	10.162598	15.513748	≥500
Middle	10.162598	15.455861	≥500
High	10.162598	15.513748	≥500

802.11g Mode:

Channel	6 dB Bandwidth	99% Bandwidth	6 dB Bandwidth
	(MHz)	(MHz)	Limits (kHz)
Low	16.470703	17.481910	≥500
Middle	16.470703	17.424023	≥500
High	16.470703	17.539797	≥500

802.11n-20MHz Mode:

Channel	6 dB Bandwidth	99% Bandwidth	6 dB Bandwidth
	(MHz)	(MHz)	Limits (kHz)
Low	17.671875	18.465991	≥500
Middle	17.671875	18.408104	≥500
High	17.671875	18.408104	≥500

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	35.772461	36.000000	≥500
Middle	35.672363	36.000000	≥500
High	35.672363	36.100000	≥500





Aux. Antenna

802.11b Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	10.150000	15.140000	≥500
Middle	10.150000	15.142000	≥500
High	10.150000	15.156000	≥500

802.11g Mode:

Channel	6 dB Bandwidth	99% Bandwidth	6 dB Bandwidth
	(MHz)	(MHz)	Limits (kHz)
Low	16.400000	17.333000	≥500
Middle	16.400000	17.276000	≥500
High	16.400000	17.301000	≥500

802.11n-20MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	17.100000	18.196000	≥500
Middle	17.150000	18.213000	≥500
High	17.150000	18.178000	≥500

Channel	6 dB Bandwidth	99% Bandwidth	6 dB Bandwidth
	(MHz)	(MHz)	Limits (kHz)
Low	35.500000	35.777000	≥500
Middle	35.400000	35.781000	≥500
High	35.200000	35.775000	≥500



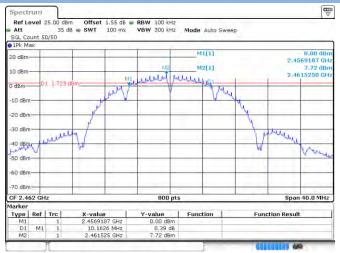
<u>Test plots</u> <u>6 dB Bandwidth</u>

Main Antenna



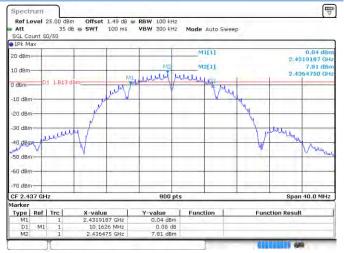
Date: 27.APR.2021 16:59:05

802.11b HIGH CHANNEL



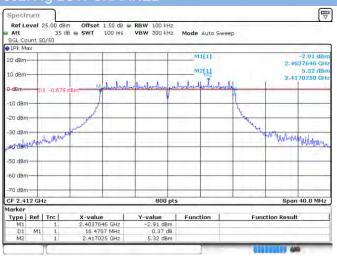
Date: 27.APR 2021 17:11:33

802.11b MIDDLE CHANNEL



Date: 27 APR 2021 17:06:58

802.11g LOW CHANNEL



Date: 27 APR 2021 17:28:02



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-2,07 dB 2.4281641 G 5.63 dB 2.4419750 G

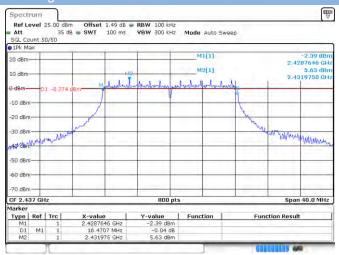
monumpun

Span 40.0 MHz

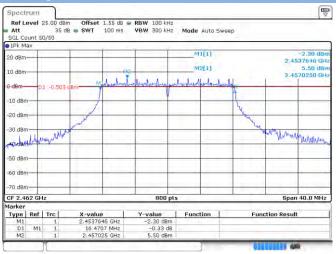
Function Result

640

802.11g MIDDLE CHANNEL



802.11g HIGH CHANNEL



RBW 100 kHz VBW 300 kHz Mode Auto Sweep

M2[1]

An 4

800 pts

Date: 27.APR.2021 17:34.01

Spectrum

20 dBm-

10 dBm-

diam

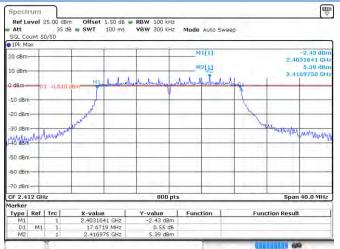
-10 dBm--20 dBm-

MMunumbernt -30 dBm

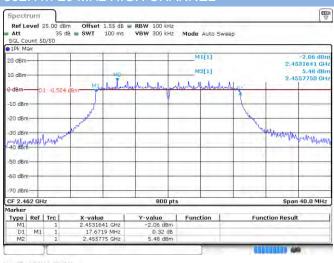
CF 2.437 GHz Marker

Date: 27 APR 2021 17:30:48

802.11n-20 MHz LOW CHANNEL

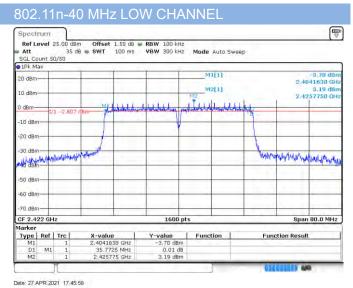


Date: 27 APR 2021 17:37:54



Date: 27 APR 2021 17 43:09





-50 dBm -60 dBm -70 dBm

 Ref Level
 25.00 dBm
 Offset
 1,49 dB

 Att
 35 d8
 SWT
 100 ms

 SGL Count 50/50
 1Pk. Max

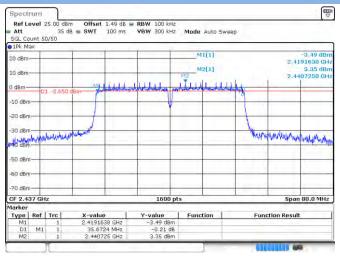
1 -0 369

X-value 2.4281641 GHz 17.6719 MHz 2.441975 GHz Type Ref Trc Y-value Function D1 M1 M2 0.36 dB 5.63 dBm

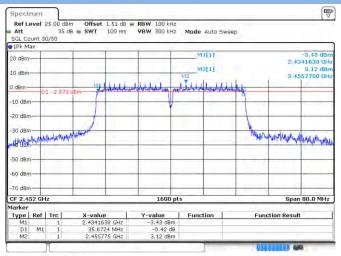
802.11 n-20 MHz MIDDLE CHANNEL



802.11n-40 MHz MIDDLE CHANNEL



802.11n-40 MHz HIGH CHANNEL



Date: 27 APR 2021 17 50:57

Date: 27.APR.2021 17:48:21

Aux. Antenna

802.11b LOW CHANNEL



802.11b MIDDLE CHANNEL







802.11g LOW CHANNE







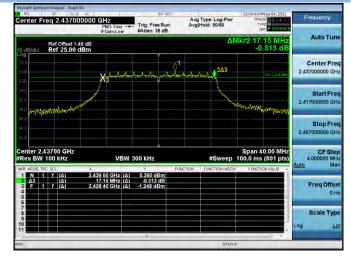
802.11g MIDDLE CHANNEL



802.11g HIGH CHANNEL



802.11 n-20 MHz MIDDLE CHANNEL



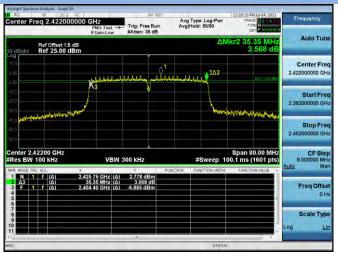
802.11n-20 MHz LOW CHANNEL



802.11n-20 MHz HIGH CHANNEL

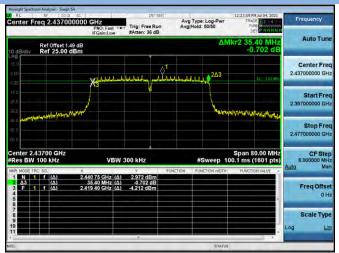


802.11n-40 MHz LOW CHANNEL

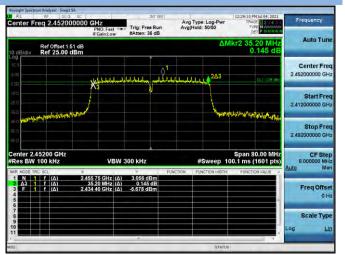




802.11n-40 MHz MIDDLE CHANNEL



802.11n-40 MHz HIGH CHANNEL

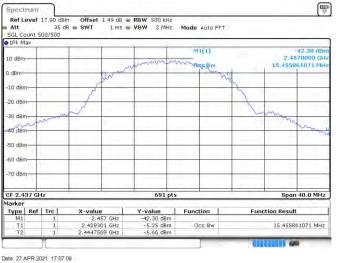


99% Bandwidth

Main Antenna



802.11b MIDDLE CHANNEL



Date: 27 APR 2021 16:59:15

802.11b HIGH CHANNEL



802.11g LOW CHANNEL



Date: 27 APR 2021 17:28:12

Date: 27 APR 2021 17:11.43



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802.11g MIDDLE CHANNEL



802.11g HIGH CHANNEL



Date: 27 APR 2021 17:34:11

802.11 n-20 MHz MIDDLE CHANNEL



Date: 27 APR 2021 17:38:04

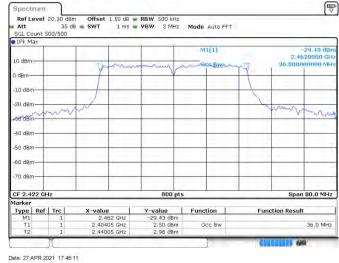
Spectrum Ref Level 21.55 dBm Offset 1.55 dB RBW 500 kHz Att 35 dB SWT 1 ms VBW 2 MHz SGL count 500/500 1Pk Max 31Pk Max 31Pk Max 31Pk Max Mode Auto FFT MI[1] 22,56 dBr -22.56 dB 2.4820000 Gi 18.408104197 Mi n der n dBm 10 dBm -20 dBm -30 dBm 40 dBm -50 dBm -60 dBm 70 riem-691 pts CF 2.462 GH: Span 40.0 MHz larke X-value 2.482 GHz Y-value Type Ref Trc 1 Function **Function Result** Occ Bw 18.408104197 MHz 2.4528538 GHz 2.4712619 GHz 2.01 dBm 1.43 dBm 640

802.11n-20 MHz LOW CHANNEL

Date: 27 APR 2021 17:43:19

Date: 27 APR 2021 17:40:48

802.11n-40 MHz LOW CHANNEL



Spectrum
 RefLevel 21.49 dBm
 Offset 1.49 dB
 RBW 500 kHz

 Att
 35 dB
 SWT
 1 ms
 VBW 2 MHz

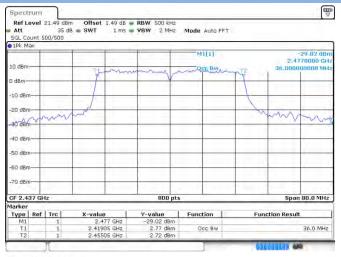
 SGL Count 500/500
 Ims
 VBW 2 MHz

 IPk Max
 Ims
 Ims
 Ims
 Mode Auto FFT

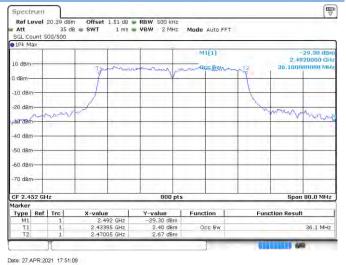
-22,14 dB 2.4570000 G 18.408104197 M MI[1] 10 dBm dBm 10 dBm -20 dBm 30 dBm 40 dBm -50 dBm--60 dBm-70 dBm CF 2.437 GHz 691 pt Span 40.0 MHz X-value 2.457 GHz 2.4278538 GHz 2.4462619 GHz Y-value Type Ref Trc | Function | Function Result 1.93 dBm 1.68 dBm Occ Bw 18:408104197 MHz 680



802.11n-40 MHz MIDDLE CHANNEL



802.11n-40 MHz HIGH CHANNEL



Date: 27.APR 2021 17:48:33

Aux. Antenna

802.11b LOW CHANNEL



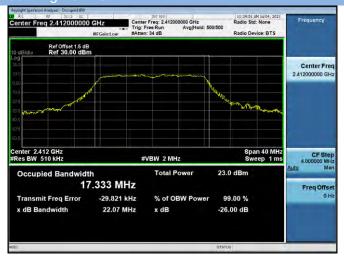
802.11b MIDDLE CHANNEL







802.11a LOW CHANNEL





802.11g MIDDLE CHANNEL



802.11g HIGH CHANNEL



802.11n-20 MHz LOW CHANNEL



802.11 n-20 MHz MIDDLE CHANNEL



802.11n-20 MHz HIGH CHANNEL



802.11n-40 MHz LOW CHANNEL





802.11n-40 MHz MIDDLE CHANNEL

35 Transmit Freq Error x dB Bandwidth	.781 MHz -8.027 kHz 38.81 MHz	% of OBW Powe x dB	99.00 % -26.00 dE		Freq Offset 0 Hz
Occupied Bandwidth		Total Power	23.9 dBm		<u>Auto</u> Man
Center 2.437 GHz #Res BW 510 kHz	#	VBW 2 MHz		Span 80 MHz Sweep 1 ms	CF Step B.000000 MHz Auto Man
5.00 15.0 25.0				Mann	
Ref Offset 1.49 dE 10 dB/div Ref 25.00 dBm 15 0 5 00		y and the second			Center Freq 2.437000000 GHz
Center Freq 2.437000000	Trig: 1	TFreq: 2.437000000 GHz Free Run Avg Hold: h: 30 dB	Radio	:05 PM Jul 04, 2021 Std: None Device: BTS	Frequency

802.11n-40 MHz HIGH CHANNEL

RL MF 300 AC Center Freq 2.45200000	00 GHz #FGain:Low	Center Freq: 2.4520 Trig: Free Run #Atten: 30 dB	00000 GHz Avg Hold: 500/5	Radio St	PM Jul 04, 2021 d: None wice: BTS	Frequency
Ref Offset 1.51 Ref 25.00 de	dB 3m					
-0g 150 500 5.00	Jutania	ar and the second s	many			Center Fred 2.452000000 GH:
150 250 350	/			homenin	Mr.W.Marian	
45 0 95'0 65 0						
Center 2.452 GHz #Res BW 510 kHz		#VBW 2 MI	Hz.		an 80 MHz eep 1 ms	CF Ster B.000000 MH
Occupied Bandwig	ith 5.775 MH	Total F	Power	23.7 dBm		Auto Mar Freq Offse
Transmit Freq Error x dB Bandwidth	-16.050 k 38.65 M		BW Power	99.00 % -26.00 dB		0H
50				STATUS		



A.3 Conducted Spurious Emissions

<u>Test Data</u>

Main Antenna

802.11b Mode:

	Channel Measured Max. Out of Band Emission (dBm)	Limit (
Channel		Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-28.69	7.48	-12.52	Pass
Middle	-30.01	7.74	-12.26	Pass
High	-30.47	7.70	-12.30	Pass

802.11g Mode:

	Measured Max. Out of		Limit (dBm)		
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict	
Low	-40.25	5.44	-14.56	Pass	
Middle	-40.12	5.83	-14.17	Pass	
High	-40.74	5.55	-14.45	Pass	

802.11n-20MHz Mode:

	Measured Max. Out of Band Emission (dBm)	Limit (
Channel		Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-39.54	5.62	-14.38	Pass
Middle	-39.82	5.84	-14.16	Pass
High	-40.16	5.64	-14.36	Pass

	Measured Max. Out of	Limit (
Channel	Channel Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-40.49	3.09	-16.91	Pass
Middle	-40.90	3.39	-16.61	Pass
High	-40.87	3.18	-16.82	Pass





Aux. Antenna

802.11b Mode:

	Measured Max. Out of Band Emission (dBm)	Limit (
Channel		Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-48.68	6.19	-13.82	Pass
Middle	-48.17	6.36	-13.64	Pass
High	-48.97	6.29	-13.71	Pass

802.11g Mode:

Macoured Max, Out of		Limit (
Channel	Measured Max. Out of Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-47.84	5.18	-14.82	Pass
Middle	-47.54	5.52	-14.48	Pass
High	-47.84	5.57	-14.44	Pass

802.11n-20MHz Mode:

	Measured Max. Out of	Limit (
Channel	Band Emission (dBm)	Corrier Lovel	Calculated 20	Verdict
		Carrier Level	dBc Limit	
Low	-48.76	5.11	-14.89	Pass
Middle	-48.97	5.75	-14.25	Pass
High	-48.58	5.55	-14.45	Pass

	Measured Max. Out of	Limit (
Channel	Band Emission (dBm)	Carrier Level	Calculated 20	Verdict
			dBc Limit	
Low	-48.46	2.86	-17.14	Pass
Middle	-46.70	3.03	-16.97	Pass
High	-48.35	3.01	-16.99	Pass



MIMO-Main Antenna

802.11b Mode:

	Measured Max. Out of Band Emission (dBm)	Limit (
Channel		Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-32.00	3.91	-16.09	Pass
Middle	-32.89	4.43	-15.57	Pass
High	-33.51	4.66	-15.34	Pass

802.11g Mode:

	Measured Max Out of		Limit (dBm)		
Channel	Measured Max. Out of Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict	
Low	-44.13	2.36	-17.64	Pass	
Middle	-46.12	2.45	-17.55	Pass	
High	-46.22	2.20	-17.80	Pass	

802.11n-20MHz Mode:

	Measured Max. Out of	Limit (dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20	Verdict
			dBc Limit	
Low	-42.85	2.19	-17.81	Pass
Middle	-46.31	2.42	-17.58	Pass
High	-44.35	2.36	-17.64	Pass

	Measured Max. Out of	Limit (dBm)		
Channel	Band Emission (dBm)			Verdict	
Low	-44.87	-0.11	-20.11	Pass	
Middle	-47.73	-0.17	-20.17	Pass	
High	-47.51	-0.27	-20.27	Pass	



MIMO-Aux. Antenna

802.11b Mode:

	Measured Max. Out of	Limit (dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-48.94	2.22	-17.78	Pass
Middle	-48.98	2.42	-17.58	Pass
High	-47.65	2.58	-17.42	Pass

802.11g Mode:

	Measured Max. Out of	Limit (dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-48.69	0.76	-19.25	Pass
Middle	-49.36	1.33	-18.67	Pass
High	-49.34	0.97	-19.03	Pass

802.11n-20MHz Mode:

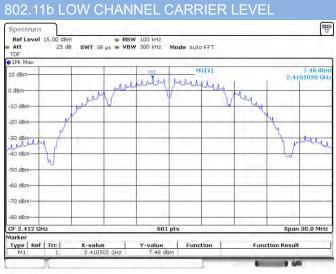
	Measured Max. Out of	Limit (dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20	Verdict
	Danu Emission (ubiri)	Carrier Level	dBc Limit	
Low	-48.99	1.11	-18.89	Pass
Middle	-46.79	1.72	-18.28	Pass
High	-48.62	1.21	-18.79	Pass

	Measured Max. Out of	Limit (dBm)		
Channel	Band Emission (dBm)			Verdict	
Low	-48.19	-1.52	-21.52	Pass	
Middle	-49.32	-1.01	-21.01	Pass	
High	-47.59	-1.12	-21.12	Pass	



Test Plots

Main Antenna



Date: 27.APR.2021 17:00:00

802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

Att TDF	5,00 dBm 25 dB SW	₽ F T 29.7 ms ● V	BW 100 kHz BW 300 kHz	Mode Au	to Sweep				
10k Max		1			-				
10 dBm			-	MI	(1)	-47,47 dBm 2,25080 GHz			
0 dBm		_			-	1.1		_	
-10 dBm				-	_	_			
1 - I - I	-12.520 dBm					1.0		1. 1	
-20 dBm-									
30 dBm	· · · · ·	-			-				
40 dBm						M1		_	
50 dBm		_				TI	Lange L		
50 dBm-	control and produced allow	alening hearing	achimicalumena	an tride un derste	ununun	ed malan shall	houthenhile	ubrendelline	
70 dBm	-	11 1 1 1 1			1	6	-		
80 dBm									
Start 30.0 MI	łz		1001	pts		-	Stop	3.0 GHz	
larker						_			

802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

Att	15,00 dBn 25 d8		30 ms • VB	W 100 kHz W 300 kHz	Mode Au	to Sweep			
1Pk Max			7 - E		_				
10 dBm-	-				M		28,69 dBr		
1					1 1		0.0017		
G dBm-									
0 dBm-					_		_	_	
LO GDIII	01 -12.520	dBm			_		_		
20 dBm-	1	-					-		
	MI								
-30 dBm									
0.dBm-									
1000		_							
50 dBm-	munt		1. 1. 1. 1.	in a start of	- h a	a section of	-		- Contract
60 dBm		anti-	and the multiple and	-	-	And the second res	and the second second		
OU UBIN								-	
70 dBm-	-	-		-		_			
80 dBm-							10 C C C C		1
Start 2.0	GHz	_	-	4001	pts	_		Stop	25.0 GHz
larker Type Re	f Trc	X-valu	~	Y-value	-			tion Result	

Date: 27 APR 2021 17:03:32

Date: 27 APR 2021 17:04:13

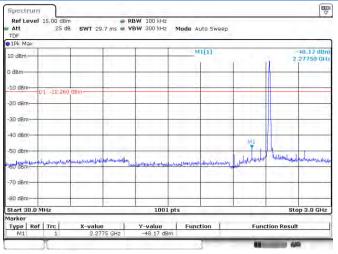


802.11b MIDDLE CHANNEL CARRIER LEVEL



Date: 27 APR 2021 17:07:31

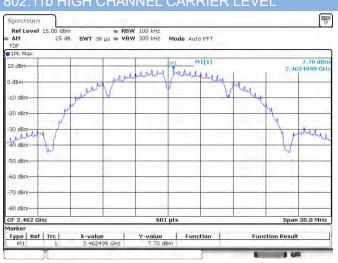
802.11b MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



802.11b MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

Att	el 15,00 dBn 25 di	n 8 SWT 23		W 100 kHz W 300 kHz	Mode Au	to Sweep			
1Pk Max	-								
10 dBm-	-				M		-30,01 dBr .87140 Gi		
								(· · · · ·	1
G dBm-			1						-
-10 dBm-		_	-				_		
	01 -12.260	dBm							
-20 dBm	-	-							
-30 dBm	Mi								
Ju ubili									
a dBm—									-
-				_					
0. dBm—	July when the	1	and the later	ALCON ALCON	L. R. Jacker	ALPHANKALAN	Laboration Bala		المس الداريم
60 dBm-		- Water Street	A MARY ARY			Contraction of the second	And the second second	ALC: NO.	
				1	1.000				
-70 dBm		1		1					
-80 dBm	-						_		-
Start 2.0	GHz	1		4001	pts		-	Stop	25.0 GHz
larker					·				
Type R M1	ef Trc	X-value	14 GHz	Y-value -30.01 d8	Func	tion	Fund	tion Result	

Date: 27 APR 2021 17:07:49



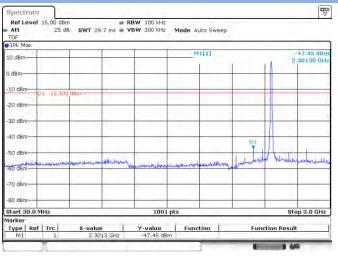
Date: 27 APR 2021 17:12:07

Date: 27 APR 2021 17:07:57



802.11b HIGH CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



802.11b HIGH CHANNEL, SPURIOUS

Spectrum Rfbw 100 kHz Ref Level 15,00 dBm RBW 100 kHz Att 25 dB SWT 230 ms • VBW 300 kHz Mode Auto Sweep TOF • IPk Max • VBW 300 kHz -30, 47 dB M1[1] 10 dBm dBn -10 dBm 0 dBn M 0 dBm 0 dBm 0 dBmwhite of الارتاس والمراد المحالي المراج 60 dBm-70 dBm -80 dBm 4001 pts Stop 25.0 GHz Start 2.0 GHz Marker X-value 4.9231 GH: Type | Ref | Trc | Y-value | Function | Function Result 0 1 640

Date: 27 APR 2021 17:12:47

Date: 27 APR 2021 17:12:37

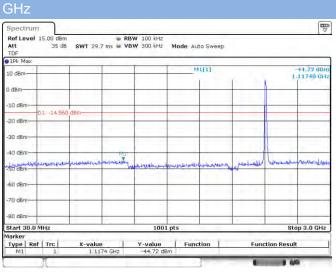
802.11g LOW CHANNEL CARRIER LEVEL

TDF 1Pk Max		- 940-77 × -	10. A. 1993						_
			1	T	M	1[1]		-	5.44 dBn
10 dBm		1.5	T	1000				2.4	070080 GH.
G dBm-		gallyon	harling	wheeling	million	pollinguillage	Munuling		
-10 d8m			1	Y			1.2.2		
-10 UBIII		1					3		
-20 dBm	50	-		-				the start of the s	-
-30 dBm	N	_						Mary	1000
M		1							MM
-40 dBm									
-50 dBm									
-60 dBm		-							
-70 dBm				-	_				_
-80 dBm					· · · · · · · · · · · · · · · · · · ·				
CF 2.412 GH				601	ots		_	Spar	a 30.0 MHz

Date: 27 APR 2021 17:28:35



802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3



802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25

Spectrum									1 V
Ref Level : Att TDF	15,00 dBm 35 dB			W 100 kHz W 300 kHz	Mode Aut	o Sweep			
1Pk Max		-	Y	7					
10 dBm	_	-	-		M	1[1]			25 dBn 20 Git
1		-			1 1	1	1 1		20 011
0 dBm		-							
0 dBm			_				-		_
	1 -14.560	dem-							-
20 dBm					-		1		-
30 dBm				_					
	101								
0 dBm	ME alustration				in the		1	C. 2	. Mit Anto
50 dBm	Without Manual	all	ANT A SALAN AND A	-	the second	and the second second	w showshill the	a bearing and a second second	Carrywing
50 dBm									
60 dBm-		-		-		-			
1.22									
-70 dBm		-	-	-					
80 dBm			-	-					-
Start 2.0 G	-1z		1	400	1 pts	1	1 1	Stop 25.	0 GHz
larker								- L	-
Type Ref M1	Trc 1	X-valu	312 GHz	Y-value -40.25 di	Func	tion	Funct	ion Result	_
MIT	1 1	4.8	312 GHZ	-40.25 di	pri)	-	-		-

Date: 27 APR 2021 17:29:27

Date: 27 APR 2021 17:29:13

802.11g MIDDLE CHANNEL CARRIER LEVEL

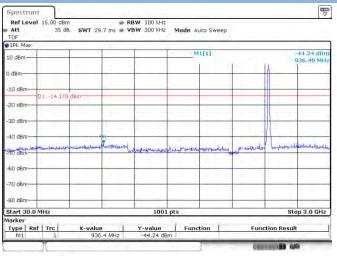
1Pk Max		94(1.30	he a ABJ	Y 300 kHz	Mode Auto	FFT				
The way	-	-	í l	1		[1]	_		5.07 dBa	
10 dBm	-		Ma	1				5,83 dBr 2.4320080 GH		
3 dBm		pillant	willowill	un hourst-ra	intresty	winder	Analy			
10 d8m	_)		1	1	-			_	
-20 dBm	Jord					_	The second	hu		
30 dBm	and -	-				-		July 1	W WW	
40 dBm		-		-				_	0.04	
-50 dBm				_			_	_		
60 dBm		_		-					-	
-70 dBm		-	-	-	_				_	
80 dBm	-			-				-		
CF 2.437 GH	z			601	pts			Span	30.0 MHz	
Type Ref	Trc	X-value	. I	Y-value	Funct	ion	Function	on Result		

Date: 27 APR 2021 17:31:34



802.11g MIDDLE CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



802.11g MIDDLE CHANNEL, SPURIOUS

2 GHz ~ 25 GHz Spectrum RfL vol Bm RBW 100 kHz Att 35 d8 SWT 230 ms VBW 300 kHz Mode Auto Sweep TDF TDF Nax Mode Auto Sweep Note Auto Sweep -+0.12 dB 6.16480 G M1[1] 10 dBmdBr -10 dBm 01 -14 170 20 dBm 30 dBm MI -10 dBm المالية المالية un in D dBm -60 dBm 70 dBm -80 dBm-Start 2.0 GHz Marker Type Ref Trc | 4001 pts Stop 25.0 GHz X-value 6.1648 GH Y-value | Function | Function Result 1 640 .

Date: 27 APR 2021 17:32:13

Date: 27 APR 2021 17 32:00

802.11g HIGH CHANNEL CARRIER LEVEL

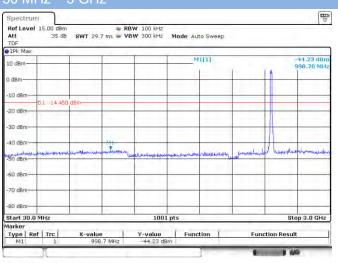
Att TDF 1Pk Max		5444 55	p 181	/ 300 kHz	Hune Sure				
1		1	-	1	MI	[1]		-	5.55 dBr
10 dBm		1.5.7	141	1.00			2 2 1	2.4	570080 GH
0 dBm		polura	portival	malanting	mentrealing	Mayula	Aundry		
		1							
-10 dBm		1				-			
-20 d8m	- de	1				_	4	N.	
	al.							May 1	
-30 dBm N						-		-	why
40 dBm									1
-									
-50 dBm									
-60 dBm		-	-	-					-
-70 dBm									
-70 ub//(
-80 dBm	-	-	-	-				-	
CF 2.462 GH	Iz			601	pts			Spa	n 30.0 MHz
larker	In I		. 1		1 million				
Type Ref M1	1	X-valu 2.4570	e 008 GHz	Y-value 5.55 de	Functi	on 1	Funct	ion Resul	t

Date: 27 APR 2021 17:35:23



802.11g HIGH CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



802.11g HIGH CHANNEL, SPURIOUS

2 GHz ~ 25 GHz Spectrum Ref Level 15.00 dBm Att 35.dB SWT 230 ms VBW 300 kHz Mode Auto Sweep TDF IDF Max **m** ⊽ -40.74 dB 6.98690 G MI[1] 10 dBmdBn -10 dBm 01 -14.450 d dBm 0 dBm 0 dBm 6 March JAN SHALL -50 dBm--60 dBm 70 dBm -80 dBm-Start 2.0 GHz Marker Type Ref Trc | 4001 pts Stop 25.0 GHz X-value Y-value | Function | Function Result 0 1 640

Date: 27 APR 2021 17:36:24

Date: 27 APR 2021 17:36.08

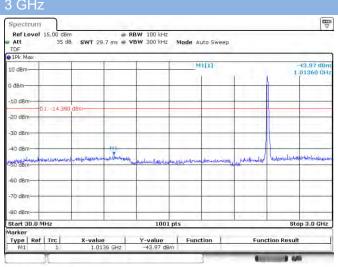
802.11n-20 LOW CHANNEL CARRIER LEVEL

1Pk Max	-		-						
10 dBm				-		1[1] M1		2.4	5,62 dBn 169920 GH
0 dBm		mention	unbeach	malun bay	marchian	Multi	Ambring		1
-10 dBm					Y	_	1		
-20 d8m	M							1 de	
30 dem	اقسم	-				-		~	hand
-40 dBm				-				-	
-50 dBm-	_	_				_			
-60 dBm			-	-			_		-
-70 dBm		_		-	-			_	
-80 dBm	-	_				_		_	
CF 2.412 GH	1z			601	pts			Spar	1 30.0 MHz

Date: 27.APR.2021 17:38:31



802.11n-20 LOW CHANNEL, SPURIOUS 30 MHz ~



802.11n-20 LOW CHANNEL, SPURIOUS 2 GHz ~

25 GHz Spectrum RfLwvel 15,00 dBm RBW 100 kHz Att 35 dB SWT 230 ms VBW 300 kHz Mode Auto Sweep. TDF TDF Nax Mode Auto Sweep. Note Auto Sweep. 1 -39,54 dB 6,91790 G M1[1] 10 dBmdBm 0 dBm 01 -14.380 -20 dBm-30 dBm 0 dBm لسبابحيله a andus والايالوريون 50 dBm--60 dBm 70 dBm -80 dBm-4001 pts Stop 25.0 GHz Start 2.0 GHz Type | Ref | Trc | X-value 6.9179 GH: Y-value | Function | Function Result 0.0 1 640

Date: 27 APR 2021 17:39:18

Date: 27 APR 2021 17:39:05

802.11n-20 MIDDLE CHANNEL CARRIER LEVEL

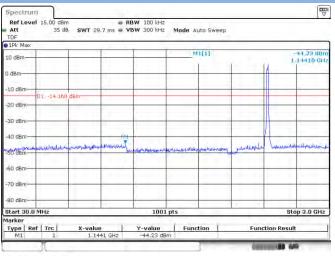
Att TDF	35 d8	SWT 38	ha 🕿 ABA	300 kHz M	Mode Auto	FFT			-
1Pk Max			1	T T	M	1[1]	-		5.84 dBn
10 dBm			T .	Julindre	- 1 - 1		10 1	2.4	320080 GH.
0 dBm	-	minhard	unlunh	pluiting	malland	Minuthi	Montering	-	
-10 d8m				Y			12		
	S	-					-	L	
-20 dBm	when							1	
-30 dBm	<u> </u>	-		-		-			una work
-40 dBm									
1.1.1							1.1.1.1		
-50 dBm									-
-60 dBm			-				-	-	
-70 dBm									
-80 dBm	-						1		
CF 2.437 GH Marker	Z	_		601	ots	_	_	Spar	n 30.0 MHz
Type Ref	Inul	X-value	1	Y-value	Eunch	ion I	Eune	tion Resul	

Date: 27 APR 2021 17:41:16



802.11n-20 MIDDLE CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



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

Spectrum RfJ weil 15.00 dBm RBW 100 kHz Att 35 dB SWT 230 ms VBW 300 kHz Mode Auto Sweep. TOP TPk Max SWT 230 ms VBW 300 kHz Mode Auto Sweep. **m** ⊽ -39,82 dB 4.85990 G M1[1] 10 dBmdBn -10 dBm-01 -14 160 20 dBm 30 dBm MI 0 dBm -50 dBm-المجالية المراج anti -60 dBm 70 dBm -80 dBm-4001 pts Stop 25.0 GHz Start 2.0 GHz Marker X-value A R599 GH Type | Ref | Trc | Y-value | Function | Function Result 100 640

Date: 27 APR 2021 17 41 58

Date: 27 APR 2021 17:41:47

802.11n-20 HIGH CHANNEL CARRIER LEVEL

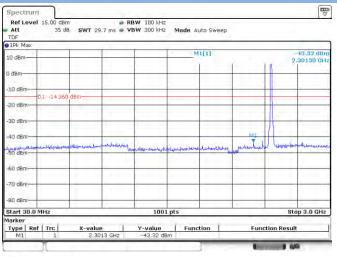
TDF 1Pk Max						A. 44			
10 dBm			102		М	1[1]		24	5,64 dBn
0 dBm		manhand	molarly	Multer	which	Andrealow	Amlany	2.1	
-10 dBm				-		_		¢	
-20 dBm	and the							Jack	
-30 dBm								~	MAR WAN
50 dBm		_			_				-
60 dBm	-		-						-
-70 dBm		_			_				
-80 dBm	-							-	
CF 2.462 GH	z		-	601	pts			Spar	30.0 MHz

Date: 27 APR 2021 17:43:41



802.11n-20 HIGH CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



802.11n-20 HIGH CHANNEL, SPURIOUS

Spectrum Rfbw 100 kHz Ref Level 15.00 dBm RBW 100 kHz Att 35 dB SWT 230 ms VBW 300 kHz Mode Auto Sweep TOP IPk Max **m** ⊽ -40.16 dB 6.99840 Gi M1[1] 10 dBmdBn -10 dBm 01 -14.360 0 dBm 0 dBn 0 dBm MARYAN -50 dBm-1. Mar 10 - 10 45 -60 dBm-70 dBm -80 dBm 4001 pts Stop 25.0 GHz Start 2.0 GHz Y-value z -40.16 dB X-value 6.9984 GH Type | Ref | Trc | | Function | Function Result 0 1 640

Date: 27 APR 2021 17:44:25

Date: 27 APR 2021 17 44 10

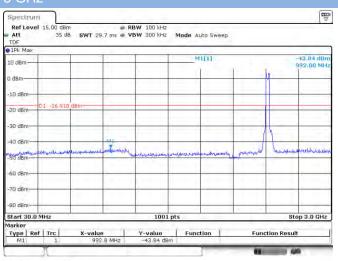
802.11n-40 LOW CHANNEL CARRIER LEVEL

Ref Level	15 00 dBp	2	an P	BW 100 kHz					- 4
Att					Mode Auto	FFT			
TDF	1.5.5.5.5				11000 0000				
1Pk Max		A	·		-	~			
10 dBm			-		MID			0.10	3,09 dBr 4 (800 GH
				100.00	1.1	MI .	1	2.43	HIGOD GH
0 dBm	_	the hasperturk	Automber	Anterter MA	portachetuto	turber and the	markely		
-10 dBm								-	
-10 UBII/-									
-20 dBm		-		-		-		-	-
	1						1	× 1	
-30 dBm	ulter-vel							MANMAN	m har har
-40 dBm				-					0 - 1 - 11
-50 dBm-			-			-	_		-
-60 dBm		_	-						-
		10000			1				
-70 dBm	_		-	-				_	-
-80 dBm									
CF 2.422 GH				601				0	60.0 MHz
Aarker	2			001	prs		-	apon	00.0 mm2
Type Ref	Trc	X-value	e I	Y-value	Functio	n I	Functio	n Result	
M1	1		48 GHz	3.09 dB		1			

Date: 27 APR 2021 17 46:31



802.11n-40 LOW CHANNEL, SPURIOUS 30 MHz ~



802.11n-40 LOW CHANNEL, SPURIOUS 2 GHz ~

25 GHz Spectrum RfLwvel 15,00 dBm RBW 100 kHz Att 35 dB SWT 230 ms VBW 300 kHz Mode Auto Sweep. TDF TDF Nax Mode Auto Sweep. Note Auto Sweep. The second secon -+0, +9 dB 6.18210 G M1[1] 10 dBmdBm O dBm 1 -16.9 0 dBm 0 dBm 10 0 dBm want man -50 dBm--60 dBm 70 dBm -80 dBm-4001 pts Stop 25.0 GHz Start 2.0 GHz Marker Type | Ref | Trc | Y-value X-value 6.1821 GH | Function | Function Result 0 1 640

Date: 27 APR 2021 17 47:07

Date: 27 APR 2021 17 46:56

802.11n-40 MIDDLE CHANNEL CARRIER LEVEL

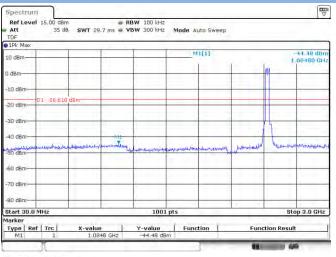
Ref Level Att				BW 100 kHz BW 300 kHz	Mode Aut	O FFT			
1Pk Max									-
10 dBm	_		-		MI	[1]		2.44	3.39 dBn 107900 GH
0 dBm	-	the day and when	-	Ashederbury	purticheta	-	wheether the ly	-	_
-10 dBm	_			1					
-20 d8m	1						-		
-30 dBm	Month	-		-		-		SHUTW	amanonamina
-40 dBm								1	
-50 dBm									-
-60 dBm						_	-		-
-70 dBm				-	-				
-80 dBm	-	-						-	-
CF 2.437 GH	IZ	1.		601	pts			Span	60.0 MHz
Marker Type Ref M1	Trc	X-value	79 GHz	Y-value 3.39 de	Funct	on [Funct	tion Result	

Date: 27 APR 2021 17:49:01



802.11n-40 MIDDLE CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



802.11n-40 MIDDLE CHANNEL, SPURIOUS

Spectrum RfL vel 15,00 dBm RBW 100 kHz Att 35 dB SWT 230 ms VBW 300 kHz Mode Auto Sweep. TDF TDF Nax Mode Auto Sweep. Note Auto Sweep. tm ⊽ -40,90 de 4.87140 G M1[1] 10 dBmdBn 0 dBm 1 16.6 0 dBm 0 dBm 0 dBm White J A State -50 dBm--60 dBm 70 dBm -80 dBm-4001 pts Stop 25.0 GHz Start 2.0 GHz X-value 4.8714 GH: Type | Ref | Trc | Y-value | Function | Function Result 0 1 640

Date: 27 APR 2021 17:49:44

Date: 27 APR 2021 17 49:29

802.11n-40 HIGH CHANNEL CARRIER LEVEL

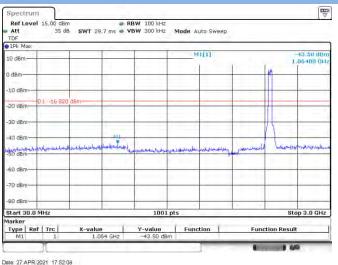
Ref Level Att				BW 100 kHz BW 300 kHz	Mode Au	O FFT			
1Pk Max					-				
10 dBm		-			MI	[1]		2.45	3,18 dBn 57900 GH
0 dBm	-	the lot had had had had	almonthing .	Anderburg	purtility	bolenhound	holestate buly		-
-10 dBm	_					-		-	
-20 d8m	- 1	-							-
-30 dBm	ally applied							forthank	mun-dayla
-50 dBm	-							1.1	
-60 dBm									-
-70 dBm			-	-					
-80 dBm	-							-	-
CF 2.452 GH	z			601	ots			Span	60.0 MHz
Narker Type Ref M1	Trc	X-value	79 GHz	Y-value 3.18 dBr	Funct	ion	Func	tion Result	

Date: 27 APR 2021 17 51:38

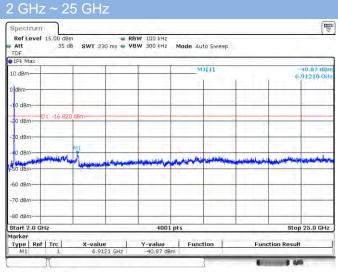


802.11n-40 HIGH CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



802.11n-40 HIGH CHANNEL, SPURIOUS



Date: 27.APR.2021 17:52:20

<u>Aux. Antenna</u>





802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25







802.11b MIDDLE CHANNEL CARRIER LEVEL



802.11b MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

Ru MF 500 AC Marker 1 2.51769000000	Marker	11:24:00 AM Jul 04, 2021 TRACE 2 34 5 TYPE M									
	Select Marker	DET P NNNN									
10 dB/div Ref 16.00 dBm55.585 dBm											
6.00	Norma										
4 GTI		DL1 13.64 dBm									
34.0	Delta										
44.0	-	1									
54 //	Fixed	hand and and and and									
tart 0.030 GHz Res BW 100 kHz	GHz pts) Off	Stop 3.000 GHz 3.9 ms (1001 pts)									
KR MODE TRC SCL X		FUNCTION VALUE									
2 3 4 5	Properties										
6 1 1 1 1 1 1 1 1 1 1	More										
9 10 11	t of 2										

802.11b MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

Peak Search	M Jul 04, 2021 CE 1 2 34 5 PE M WWWWWWWW	TRAC	pe:Log-Pwr Id:>1/1	Avg Avg I	rig: Free Run Atten: 26 dB	st 😱	DOOD GHZ PNO: Fast IFGaintLov		ker 1 21.			
NextPeak	50 GHz 71 dBm	Mkr1 21.101 50 GHz 48/4/V Ref 16.00 dBm -48.171 dBm										
Next Pk Righ	DL1 1364 ctm											
Next Pk Le		<u>1</u>										
Marker Dell	an a	Ninn	and and proved	and and a second	نياجي م نادين		مهدر الرومية ال		L			
Mkr→C	25.00 GHz (4001 pts)	2.198 s (Sweep		IO KHZ	VBW		kHz	2,00 GH BW 100			
Mkr-RefL		PONCI	OWE NOW WILLIN	FUNCTION	3.171 dBm		× 21.101 50 GHz		N 1 1			
Mor												

802.11b HIGH CHANNEL CARRIER LEVE





802.11b HIGH CHANNEL, SPURIOUS





802.11g LOW CHANNEL CARRIER LEVEL



802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

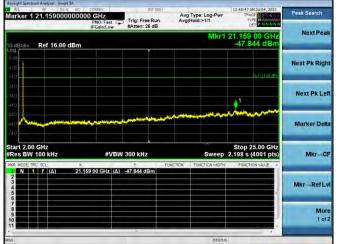


802.11b HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25

GHZ Reysight Spectrum Analyzer - Swept SA 200 RL NF SD 2 AC





802.11g MIDDLE CHANNEL CARRIER LEVEL

Peak Search	AM 3004, 2021 AGE 2 3 4 5 MM 0000000000000000000000000000000000	TR	be: Log-Pwr d:>1/1	Avg Avg t	INT RE rig: Free Run Atten: 26 dB		CORREC GHZ PNO: Fas IFGain:Lo	00000			ker
NextPea	3 25 GHz 522 dBm		Mkr					dBm	f 16.00	R	B/div
Next Pk Rig)			2	nthrouture	mm	nthand	Martin	J. Mar			
Next Pk Le	Winnghan	N. S. Co. alan							e de la compañía de	la gassi	Nul
Marker Del											
Mkr→C	30.00 MHz s (601 pts)	2.880 m			0 kHz	/BW 3	#\			V 10	s Bl
Mkr→RefL	TION VALUE *	FUNC	INCTION WIDTH	FUNCTION	Υ 5.522 dBm	(Δ)	8 25 GHz	× 2.431	<u>(Δ)</u>	TRC SI	NDDE
Mor 1 of											
		-	STATUS	_	m	-	_	_	-		_

802.11g MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

Peak Search	11:44:35 AM Jul 04, 2021	the second second		INT R	CONVEC		- 1	RL
	TRACE 12 3 4 1 TVPE MWWWWWWW DET P NN NN N	Type: Log-Pwr Hold:>1/1	n A	Trig: Free Run #Atten: 26 dB	PNO: Fast IFGain:Low	9870000000	er 1 2.3	lark
NextPea	1 2.319 9 GHz -55.963 dBm	Mkr				16.00 dBm	div R	0 dB
Next Pk Righ								6:00 4:00
_	\$6.1 -14 A0 a8m							14.0 34.0
Next Pk Le								34,0 -
Marker Dell	-	neros and and and	and the state	harrow and	والمراجع والمراجع	and the second		51.0 H
								74,0
Mkr→C	Stop 3.000 GHz 3.9 ms (1001 pts)			300 kHz	#VBW	KHZ	0.030 G BW 100	Res
	FUNCTION VALUE	FUNCTION WIDTH	FUNCTIO	ү 55.963 dBm	19 9 GHz (Δ)	(Δ) ×	DDE TRC SO	2
Mkr-Ref L								3456
Mor								7 8 9
1 of				m				10
		STATUS						sa

802.11g MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

Peak Search	M Jul 04, 2021	11:44:47 /	and the second		INT REF	_	RREC		RF 50	-
	ET PINNING		d:>1/1	Avg		Trig: Fre #Atten: 2	NO: Fast Gain:Low	000000	.084250	ker 1 21
NextPea	25 GHz 43 dBm	21.084	Mkr1					dBm	ef 16.00	Vdiv 1
Next Pk Righ										1
_	051-0430 attm									
Next Pk Le		▲ 1								
Marker Dell		~~~~~			معيد		April and the	t. the fail of the		hum
Mkr→C	25.00 GHz (4001 pts)		Sweep			300 kHz	#VBW			2.00 G BW 10
	ON VALUE	PUNCT	JNETION WIDTH	INCTION		-47,543 d	5 GHz (A)	× 21.084	CL (Δ)	N 1
Mkr→Ref L	=									
Mor										
TO	-					m				

802.11g HIGH CHANNEL CARRIER LEVEL





802.11g HIGH CHANNEL, SPURIOUS



802.11n-20 LOW CHANNEL CARRIER LEVEL



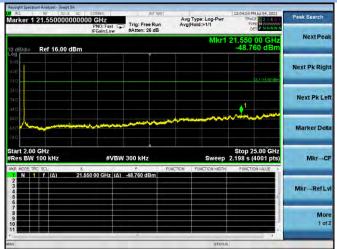
802.11n-20 LOW CHANNEL, SPURIOUS 30 MHz ~



802.11g HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



802.11n-20 LOW CHANNEL, SPURIOUS 2 GHz ~





802.11n-20 MIDDLE CHANNEL CARRIER LEVEL

		Mkr1 2.438	25 6145	
		5.7	48 dBm	NextPeak
walker have have have a	for the the the the	mmy	Nex	t Pk Righ
		- And	Minimi Ne	ext Pk Le
			Ma	arker Dell
Ŷ	FUNCTION FUN	Sweep 2.880 ms	s (601 pts)	Mkr→C
5 GHz (Δ) 5.748 d	Bm		Mk	r→RefL
				Mor 1 of
	#VBW 300 kHz	#VBW 300 kHz #VBW 300 kHz 5 GHz (Δ) 5748 dBm	#VBW 300 kHz Span 3 #VBW 300 kHz Sweep 2.880 ms 5 GHz (Δ) 5.748 dBm	#VBW 300 kHz Span 30.00 MHz #VBW 300 kHz Sweep 2.880 ms (601 pts) 5 GHz (A) 5748 dBm FUNCTION WOTH

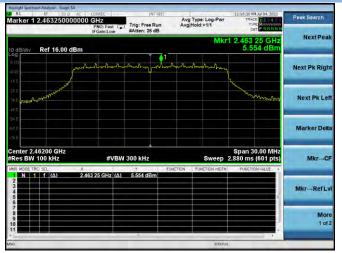
802.11n-20 MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

	CORREC INT R		12:07:41 PM Jul 04, 2021	Marker		
arker 1 2.58081000000	PNO: Fast Trig: Free Ru IFGain:Low #Atten: 26 dB	Avg Type: Log-Pwr Avg Hold:>1/1	TRACE 1234 TYPE MUSER	Select Marker		
dB/div Ref 16.00 dBm		Mk	r1 2.580 8 GHz -57.246 dBm			
00 00				Norma		
4 0			(01) -14 25 dBm			
4.0				Delt		
i D ^a D مارستان المارس الم	والمعربين والمتالحات والمعارض والمعارض والمعاري والمعارك والمعارك والمعارك والمعارك والمعارك والمعارك والمعارك	and the second		Fixed		
tart 0.030 GHz Res BW 100 kHz	#VBW 300 kHz	Stop 3.000 GHz kHz Sweep 283.9 ms (1001 pts)				
2	γ 580 B GHz (Δ) -57.246 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE			
3 4 5 6			e e	Properties		
7				Mor		

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

Peak Search	MJU 04, 2021 CE 12345 PE NUMUNIN	TRA	Log-Pwr >1/1	Avg Typ Avg Hold			HZ IO: Fast C	000000	067000		RL
NextPeak	00 GHz 67 dBm	21.067	Mkr1				Jan LOW		ef 16.00	/div R	0 dB
Next Pk Righ	(a.) -11 29 atm										og 6.00 400
Next Pk Lef		<u>_1</u> .									34 D -
Marker Delta		n Anna		a jining kalend	مردور	مير معاول المرين المرين المرين	ىيىنى بەر يەليانلى	www.	-	human	54 D 54 D
Mkr→Cl	tart 2.00 GHz Stop 25.00 GHz Res BW 100 kHz #VBW 300 kHz Sweep 2.198 s (4001 pts) we note the sto							Res			
Mkr→RefLv		Tower					GHz (Δ)			N 1 1	
More 1 of 2											6 7 8 9
1 of 2						m					

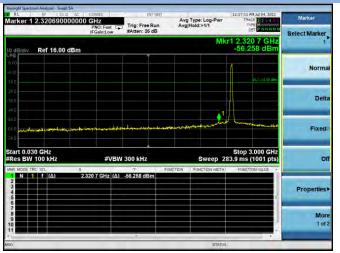
802.11n-20 HIGH CHANNEL CARRIER LEVE



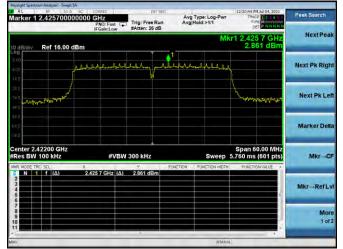


802.11n-20 HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

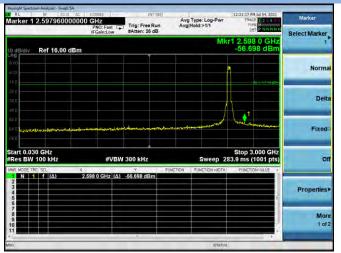




802.11n-40 LOW CHANNEL CARRIER LEVEL



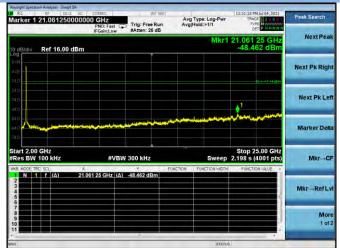
802.11n-40 LOW CHANNEL, SPURIOUS 30 MHz ~



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

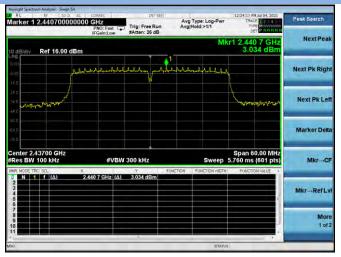


802.11n-40 LOW CHANNEL, SPURIOUS 2 GHz ~





802.11n-40 MIDDLE CHANNEL CARRIER LEVEL



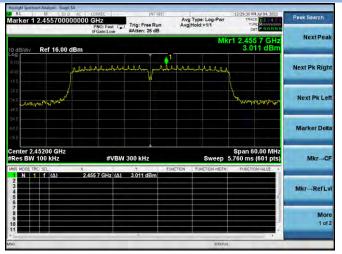
802.11n-40 MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

RL RF 50 0 AC	CORREE	INT REF	Avg Type: Log-Pwr	12/24:43 PM Jul 04, 2021 TRACE TRACE	Marker
arker 1 2.318930000000	PNO: Fast [] Trig: F	ree Run : 26 dB	Avg Hold:>1/1	DET P NNNNN	Select Marker
dB/div Ref 16.00 dBm			Mk	r1 2.318 9 GHz -55.767 dBm	1
00 (0)				Λ	Norma
40				£s++16 <i>81+£</i> m	Delt
#0					
¹ المادي في روي المحمد المادي المحمد الم	ور موجود المراقع موجود المرجود المرجود	finandytadd	and the second second second second second	Martin Construction	Fixed
tart 0.030 GHz Res BW 100 kHz	#VBW 300 ki			Stop 3.000 GHz 83.9 ms (1001 pts)	o
KR MODE TRC SCL X 1 Λ Λ Λ 3 4 5 5	Υ 318 9 GHz (Δ) -55.767		ETION FUNCTION WIDTH	FONCTION VALUE *	Properties
6 7 8 9					Mor 1 of
					1 01

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

TRACE 12 34	Type: Log-Pwr Iold:>1/1	n Avg	Trig: Free	HZ O: Fast	0000000 G			RL ark
24.609 00 GHz -46.700 dBm	Mkr1				dBm	Ref 16.00	ldiv R	D dB
								og 5000- 100 -
Ss (Mirid) dam								14 ()
munun			الموجوديني	فانجالهم	all in the state of the	a second	Automation	40 40 40
		EUM/TEM		#VBW	×	00 kHz	BW 10	Res
				GHz (Δ)				
								678
	24.609 00 GH	Type: Log-Paw Hold:>1/1 Mkr1 24.609 00 cf -46.700 dB	Ang Type:Log-Par de Anglidid:>1/1 Tree Data Anglidid:>1/1 Tree Data Mikr1 24.609 00 G1 -46,700 dB -46,700 dB Sitop 25.00 G1 Sitop 25.00 G1 Sitop 25.00 G1 Sitop 25.00 G1 Sitop 25.00 G1 -40,000 IP	Агду Туре: Log-Pur atten: 26 dB Тисс р.зан Агд)Mold:://1 Тисс р.зан тес Тисс р.зан тес Mkr1 24.609 00 G1	HZ OF Fait Log-Pur alterLow Trig: Free Run alterLow Arg Types Log-Pur Arg Types Log-Pur Mkt1 24.607 00 GB Mkt1 24.607 00 GB 46.700 GB Stop 25.00 GB #VBW 300 kHz Sweep 2.198 5 (400 Fp Sweep 2.198 5 (400 Fp	OD00000 GHz IPIC-Est (FGalin:Low Carbon BAtten: 26 dB Arg Type: Log-Part Avg fold:>1/1 Title: Free Run Register Arg Type: Log-Part Register Title: Tree Run Register Title: Free Run Register Title: Free Run Register Title: Tree Run Register <thtitle: run<br="" tree="">Register Title: Tre</thtitle:>	Asception0000000 CH2 Trig: Free Run #Arg/Hold:>1/1 Arg/Type: Log-Pur Arg/Hold:>1/1 Trig: Free Run #Arg/Hold:>1/1 Trig: Free Run #C Arg/Type: Log-Pur Arg/Hold:>1/1 Trig: Free Run #C Arg/Type: Log-Pur Run Trig: Free Run #C Trig	er 1 24.6090000000 GHz FiGairs.tow FiGairs.tow Avg Type: Log-Park Avg Type: Log-Park Type: Log-Park Avg Type: Log-Park

802.11n-40 HIGH CHANNEL CARRIER LEVE





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



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



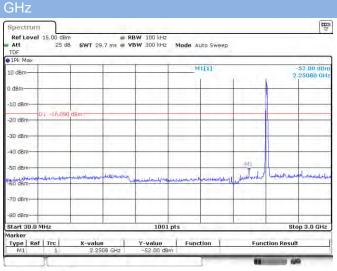
MIMO-Main Antenna



Date: 27.APR.2021 17:56.54



802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3



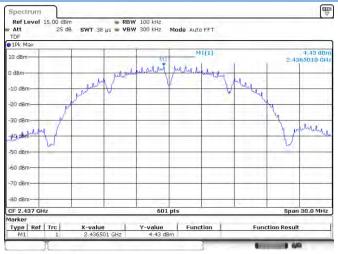
802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25

GHz ₩ V Spectrum Ref Level 15,00 dBm RBW 100 kHz Att 25 dB SWT 230 ms VBW 300 kHz Mode Auto Sweep TDF IPK Max Intervention Intervention Intervention -32,00 de 4.82540 G M1[1] 10 dBm dBm 0 dBm 1 -16.09 -20 dBm 30 dBn 0 dBm 0 dBm water. in the ALC: NO. 50 dBm 70 dBm 80 dBm Stop 25.0 GHz Start 2.0 GHz 4001 pts X-value 4.8254 GHz Type | Ref | Trc | Y-value | Function | Function Result 1 640 .

Date: 27.APR 2021 17:57:29

Date: 27.APR 2021 17:57:20

802.11b MIDDLE CHANNEL CARRIER LEVEL

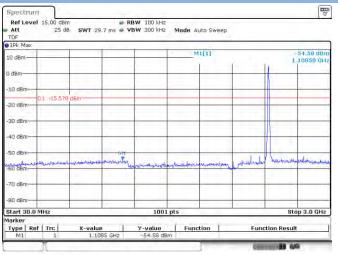


Date: 27.APR.2021 18:00:10



802.11b MIDDLE CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



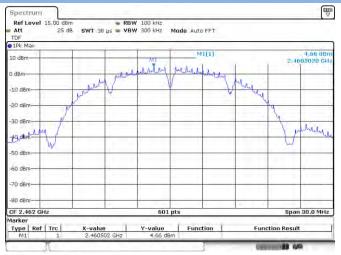
802.11b MIDDLE CHANNEL, SPURIOUS

Spectrum Rfbw 100 kHz Ref Level 15,00 dBm RBW 100 kHz Att 25 dB SWT 230 ms VBW 300 kHz Mode Auto Sweep TOP IPk Max M1[1] -32,89 dB 10 dBmdBr 0 dBm 01 -15.57 20 dBm 0 dBn 0 dBm 0 dBm shift in الد حل D dBm 70 dBm 80 dBm Stop 25.0 GHz Start 2.0 GHz 4001 pts X-value 4.8714 GH Type | Ref | Trc | Y-value | Function | Function Result 0 1 640

Date: 27 APR 2021 18:00:40

Date: 27.APR 2021 18:00.34

802.11b HIGH CHANNEL CARRIER LEVEL

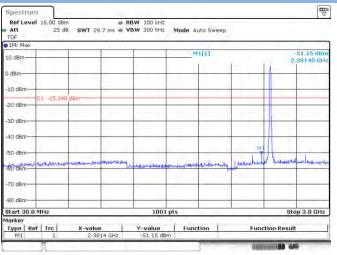


Date: 27 APR 2021 18:39:13



802.11b HIGH CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



802.11b HIGH CHANNEL, SPURIOUS

Spectrum RfJ weil R5W 100 kHz Att 25 dB SWT 230 ms VBW 300 kHz Mode Auto Sweep TOP **m** ⊽ -33,51 dB 4.92310 G M1[1] 10 dBmdBm 10 dBm -15 346 0 dBm 0 dBn 0 dBm n dBm 1 ALL AN 60 dBm-70 dBm -80 dBm Start 2.0 GHz Marker 4001 pts Stop 25.0 GHz X-value 4.9231 GHz Type | Ref | Trc | Y-value | Function | Function Result 0 1 640

Date: 27.APR.2021 18:39.44

Date: 27.APR 2021 18:39:37

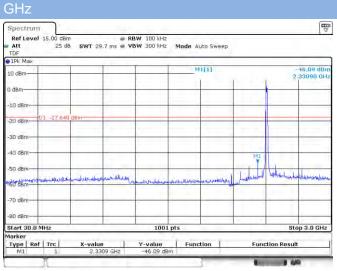
802.11g LOW CHANNEL CARRIER LEVEL

Ref Level Att	25 dB			W 100 kHz W 300 kHz	Mode Auto	FFT			
TDF 1Pk Max			-						
10 dBm			-		MI			24	2,36 dBn 169920 GH
0 dBm			In all wall	waterta	atriction	M1	turnter	20	
-10 dBm		Januar		and and	participation of the second se				
-20 d8m		1		-		_	Z	la .	
-30 dBm	1				-	-	-	and a start of	-
-40 dBm	_	_	-						- manage
-50 dBm		_						_	- of
-60 dBm			-					_	-
-70 dBm			-	-					-
-80 dBm	-	_	-				_	_	
CF 2.412 GH	Iz		1	601	pts	-		Spar	1 30.0 MHz
Marker Type Ref M1	Trc	X-valu	e	Y-value 2.36 dB	Funct	ion 1	Funct	ion Resul	t

Date: 27.APR.2021 18:42:10



802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3



802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25

GHz Ref Level 15,00 dBm RBW 100 kHz Att 25 dB SWT 230 ms VBW 300 kHz Mode Auto Sweep TOP IPk Max **₩** -44,13 dB 4.82540 G M1[1] 10 dBmdBm 0 dBm 1 -17.64 -20 dBm-30 dBn 0 dBm O dBmwith law in the الدام عا 60 dBm-70 dBm 80 dBm 4001 pts Stop 25.0 GHz Start 2.0 GHz X-value 4.8254 GH: Type | Ref | Trc | Y-value | Function | Function Result 0.0 1 640

Date: 27 APR 2021 18:42:39

Date: 27.APR 2021 18:42:29

802.11g MIDDLE CHANNEL CARRIER LEVEL

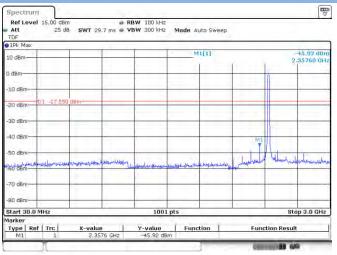
1Pk Max			-	-	-			_	
LŪ dBm					M	[1] MI			2,45 dBr 9920 GH
dBm		arthant	nontimente	antronting	marchendry	mount	menting	-	
10 dBm		1	10.000	100	Į.			-	_
20 dBm	/	1				_	2 mar		_
30 dBm-	J.			· · · ·	-	-		1	_
40 delo		_						2	S.
50 dBm-									With
Sci ubili									
60 dBm			-	-			-		-
70 dBm			-	-					
80 dBm			_					_	
					pts			Span 3	

Date: 27 APR 2021 18:44:31



802.11g MIDDLE CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



802.11g MIDDLE CHANNEL, SPURIOUS

2 GHz ~ 25 GHz Spectrum RfL vol Bm RBW 100 kHz Att 25 d8 SWT 230 ms VBW 300 kHz Mode Auto Sweep. TDF TDF Att SWT 230 ms VBW 300 kHz Mode Auto Sweep. **m** ⊽ -46,12 dB 4.87720 G M1[1] 10 dBmdBn O dBm 20 dBm-0 dBn 0 dBm 50 dBm-60 dBmweb a b 70 dBm -80 dBm-4001 pts Stop 25.0 GHz Start 2.0 GHz Marker X-value 4.8772 GH Type | Ref | Trc | Y-value | Function | Function Result 100 640

Date: 27.APR.2021 18:44.56

Date: 27 APR 2021 18:44:47

802.11g HIGH CHANNEL CARRIER LEVEL

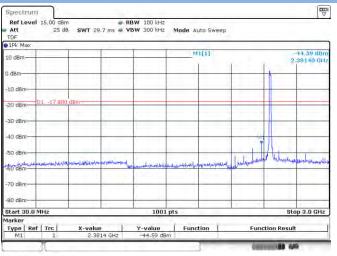
anthree		1	M1[1]			2,20 dBn
tentre						
antre			M1	1	2.46	69920 GH
	athantination	almention of	Arcateration	motionation		
			2020			
1						
1				1	6.	-
1					"hours	
					Mary -	
	_					1 and and
						2st
						-
	-			-		
		601 pt:	5	1 1	Span	30.0 MHz
rc X-val						
			601 pt:	601 pts		

Date: 27.APR.2021 18:46:49



802.11g HIGH CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



802.11g HIGH CHANNEL, SPURIOUS

Spectrum RfL vol Bm RBW 100 kHz Att 25 d8 SWT 230 ms VBW 300 kHz Mode Auto Sweep. TDF TDF VBW VBW 300 kHz Mode Auto Sweep. **m** ⊽ -46.22 dB 4.92310 G M1[1] 10 dBmdQ. O dBm 1-17.8 0 dBm 0 dBn 0 dBm-D dBm-Stration. 50 dBm 70 dBm 80 dBm 4001 pts Stop 25.0 GHz Start 2.0 GHz Marker X-value 4.9231 GHz Type Ref Trc Y-value | Function | Function Result 0 1 640

Date: 27.APR.2021 18:47:24

Date: 27 APR 2021 18:47:12

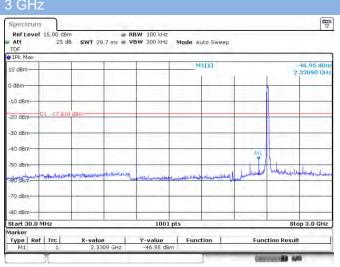
802.11n-20 LOW CHANNEL CARRIER LEVEL

1Pk Max									
10 dBm	-	_	-		MI	1] Mi	1	2.41	2,19 dBn 69920 GH
3 dBm		montion	unterth	withinthe p	withinky	trubante	mbrug	-	_
10 dBm				V				-	
20 d8m-	and a						X	5	
30 dBm-	ward the		-			-		white where	
40 dBm	-								Mary Mr.
50 dBm			-				_	_	
60 dBm									
70 dBm									
80 dBm									
CF 2.412 GH				601 p	te	-		Snan	30.0 MHz

Date: 27 APR 2021 18:51 12



802.11n-20 LOW CHANNEL, SPURIOUS 30 MHz ~



802.11n-20 LOW CHANNEL, SPURIOUS 2 GHz ~

25 GHz Spectrum RfL vol Bm RBW 100 kHz Att 25 d8 SWT 230 ms VBW 300 kHz Mode Auto Sweep. TDF TDF Nax Mode Auto Sweep. SWEEP. 1 -42,85 dB 4.82540 G M1[1] 10 dBmdBn 0 dBm 1 -17.8 -20 dBm-30 dBn 0 dBm O dBm ALHA WWW L ALL HILLING 60 dBm-70 dBm 80 dBm 4001 pts Stop 25.0 GHz Start 2.0 GHz X-value 4.8254 GH: Type | Ref | Trc | Y-value | Function | Function Result 0 1 640

Date: 27 APR 2021 18:51.40

Date: 27 APR 2021 18:51:33

802.11n-20 MIDDLE CHANNEL CARRIER LEVEL

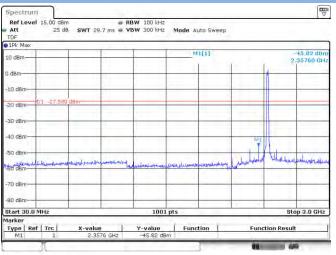
TDF 1Pk Max	1		Mode Auto FFT		
LO dem	1		M1[1]		2,42 dBn 2,4419920 GH
dBm	manturation	martinationstry		thenterry	
10 dBm			1		-
20 dBm	J.C.	-		1 de	
30 dBm	9			3	S.
19 den					Month
50 dBm	_				
60 dBm					_
70 dBm					
80 dBm					
CF 2.437 GHz	_	60	01 pts		Span 30.0 MHz

Date: 27 APR 2021 18:54:04



802.11n-20 MIDDLE CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



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

Spectrum RfL vol Bm RBW 100 kHz Att 25 d8 SWT 230 ms VBW 300 kHz Mode Auto Sweep. TDF TDF Max Mode Auto Sweep. Mode Auto Sweep. -46.31 dB M1[1] 10 dBmdBr 10 dBm -20 dBm-0 dBn 0 dBm 50 dBm-A.A. مالية المرايد ر والدانية 70 dBm -80 dBm 4001 pts Stop 25.0 GHz Start 2.0 GHz X-value Type | Ref | Trc | Y-value | Function | Function Result 0 1 640

Date: 27 APR 2021 18:54:33

Date: 27.APR 2021 18:54:24

802.11n-20 HIGH CHANNEL CARRIER LEVEL

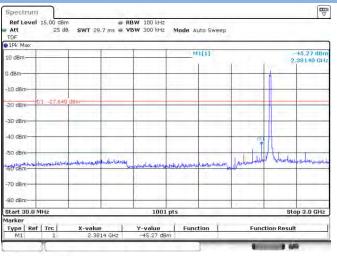
TDF	1.5 00	341 30	ps = 40	W 300 kHz	HOUE ACTO	3.1			
1Pk Max		_		1 1	MI				2,36 dBn
10 dBm		-	Mi	-	(e) L			2.4	570080 GH
0 dBm	_	mention	1 .	withinky	montaintage	Inabright	mbreig	0	1
-10 dBm			1			-			-
-20 d8m	and a			-				1 miles	
-30 dBm	pt	-	-			-	-	-	4
40 dent			-	-					and the
-50 dBm-		_	-				_	-	
60 dBm		-	-				_	_	-
-70 dBm		_	-					_	-
80 dBm	_	_		-			_	-	
CF 2.462 GH	z		-	601	pts	1	1	Spa	n 30.0 MHz
1arker						-			
Type Ref M1	Trc	X-value 2.4570		Y-value 2.36 dB	Functi	on	Funct	ion Resu	t

Date: 27 APR 2021 18:56:39



802.11n-20 HIGH CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



802.11n-20 HIGH CHANNEL, SPURIOUS

Spectrum RfL vol Bm RBW 100 kHz Att 25 d8 SWT 230 ms VBW 300 kHz Mode Auto Sweep TDF TDF Max Mode Auto Sweep Mode Auto Sweep **m** ⊽ -44.35 dB 4.92310 G M1[1] 10 dBmdBr 0 dBm 1 -17.64 0 dBm-0 dBm 0 dBm an dBm-60 dBm-70 dBm--80 dBm 4001 pts Stop 25.0 GHz Start 2.0 GHz Marker X-value 4.9231 GH: Type | Ref | Trc | Y-value | Function | Function Result 0 1 640

Date: 27 APR 2021 18:58:01

Date: 27.APR.2021 18:57:03

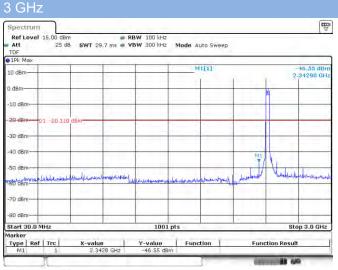
802.11n-40 LOW CHANNEL CARRIER LEVEL

TDF	25 di	3 SWT 75	8 µs 🖷 V	BW 300 kHz	Mode Au	to FFT			
1Pk Max		1	(i	1	M	1(1)	_		-0.11 dBn
10 dBm				1				2.4	4 (800 GH
0 dBm	_	1 Japoly	Mumber	Antuktion	white	William	Al departed		
-10 d8m					P P		-		-
-20 dBm					1			1	
-30 dBm	-1	-	-	-		-		1	
-40 dBm	-tanto 1		-	_			1	hall	
-50 dBm								°a.	havenahul
Sta upin/					1		1.000		
-60 dBm		-	-	-				-	
-70 dBm	_	_	-	-					
-80 dBm	-		-					_	
CF 2.422 GH	z			601	pts			Spar	60.0 MHz
Marker	In I		1		1 million				
Type Ref M1	Trc	X-value	18 GHz	Y-value -0.11 de	Fund	tion	Fund	ction Resul	t

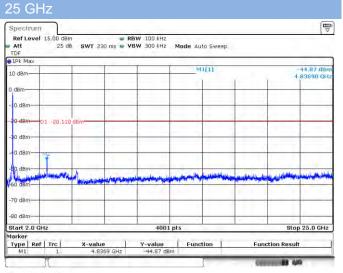
Date: 27.APR.2021 19:00:36



802.11n-40 LOW CHANNEL, SPURIOUS 30 MHz ~



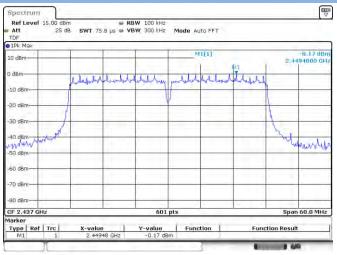
802.11n-40 LOW CHANNEL, SPURIOUS 2 GHz ~



Date: 27.APR 2021 19:01:00

Date: 27 APR 2021 19:00:52

802.11n-40 MIDDLE CHANNEL CARRIER LEVEL

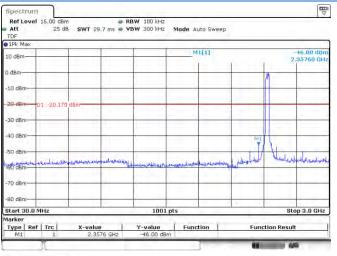


Date: 27 APR 2021 19:02:44

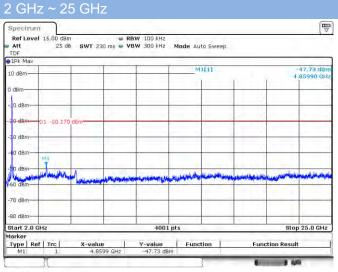


802.11n-40 MIDDLE CHANNEL, SPURIOUS





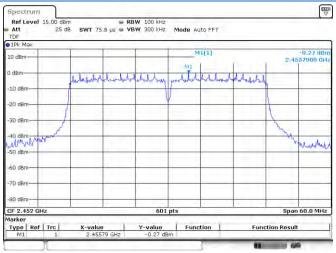
802.11n-40 MIDDLE CHANNEL, SPURIOUS



Date: 27 APR 2021 19:03:11

Date: 27.APR.2021 19:03:01

802.11n-40 HIGH CHANNEL CARRIER LEVEL

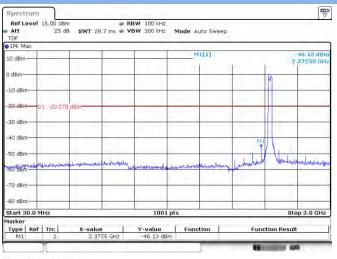


Date: 27 APR 2021 19:05:03



802.11n-40 HIGH CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



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

Spectrum Ref Level 15,00 GBm RBW 100 kHz Att 25 dB SWT 230 ms VBW 300 kHz Mode Auto sweep TOF IPk Max tm ⊽ -47.51 dB 4.90010 G 10 dBm O dBm -20.2 0 dB 0 dBn dBr 70 dBn 80 dBm Stop 25.0 GHz 4001 pts Start 2.0 GHz X-value 4.9001 GF Type | Ref | Trc | Y-value Function Function Result

Date: 27.APR.2021 19:05:31

Date: 27 APR 2021 19:05:21

MIMO-Aux. Antenna





802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25







802.11b MIDDLE CHANNEL CARRIER LEVEL



802.11b MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

Marker	12:40:27 PM Jul 04, 2021			INT	1		50 0 AC	庭		RL
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	TONCTON VIECE	POWERENTIE	Toncho	55.388 dBm	IZ (Δ)			1 1 14		
Properties	e .									4

802.11b MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

Marker	27 PM Jul 04, 2021			REF	INT	ORKEC		RF - 53		RL
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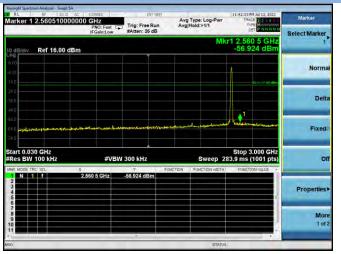
802.11b HIGH CHANNEL CARRIER LEVE



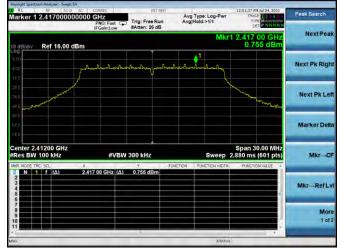


802.11b HIGH CHANNEL, SPURIOUS





802.11g LOW CHANNEL CARRIER LEVEL



802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

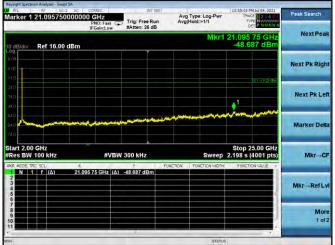


802.11b HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25







802.11g MIDDLE CHANNEL CARRIER LEVEL



802.11g MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

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s (1001 pts)	33.9 ms			z		#VBW		0 kHz	0.030 0 BW 10
E TRUM VIELOE	2000	MUTUN MUTU	PONC NON	IBm		3 MHz (Δ)			N 1
	3.000 GHz (1001 pts)	kr1 401.3 MHz -59.870 dBm strasmas stop 3.000 GHz	Type-Loo-Parr Held:>11 Mkr1 405 Stop 3.000 CHz Sweep 283.9 ms (1001 pts)	Avg Type: Log-Perr Avg)Hold:>111 Mkr1 401.3 Mkr2 59.870 dBm xcr38# Stop 3.000 CHz Stop 283.9 ms (1001 pts)	Avg Type: Log-Par Type: Log-Par B dB Avg Type: Log-Par Type: Log-Par Mkr1 401.3 Mkr1 401.3 Mkr2 Sd dB Mkr1 401.3 Mkr2 Sd dB Stop 3.000 GHz Stop 3.000 GHz Stop 3.000 Stop 3.000 GHz Stop 3.000 Stop 3.000 FMS Stop 3.000	Arg Type: Log-Pur Arg/Mold:>1/1 The parts Trig: Free Run Parten: 26 dB Arg/Mold:>1/1 The parts Mkr1 401:3 Mkr2 -59.370 dBm Stop 3:000 cHz Stop 3:000 CHz 300 kHz Stop 3:000 CHz Y Factoriant	Z Z Drig: Free Run Eatriciow Trig: Free Run Eatriciow Arty Type: Log-Part Arg Type: Log-Part Arg Type: Log-Part Arg Type: Log-Part Truc: Draw Mkr1 401:3 MHz -59.370 dBm -59.370	Act Diff regil Diff regil <td>Mit Mit Mit</td>	Mit Mit

802.11g MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



802.11g HIGH CHANNEL CARRIER LEVE

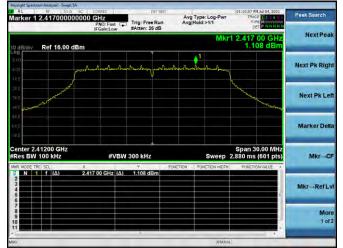




802.11g HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



802.11n-20 LOW CHANNEL CARRIER LEVEL



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



802.11g HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



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





802.11n-20 MIDDLE CHANNEL CARRIER LEVEL



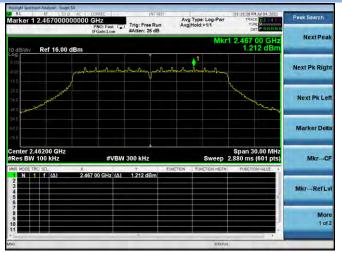
802.11n-20 MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

TRACE 12 4 1 TYPE NUMBER OF PRINT N		Avg	Trig: Free Ru	Fast C	00000 GH		er 1 1.2	RL ark
1.280 4 GHz -58.346 dBm	10 dB/div Ref 16.00 dBm							
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C41=10 25 686								14.0 - 34.0 - 34.0 -
how man de construction	and a state of the	1,4,5 - 1,4 1 - 7 - 7	1 Lanuar #	مەلەرلەرمە	t-duberie	en frakada	bug yillan good	54.D
		FUNCTION	300 kHz	#VBW :	×) kHz	BW 100	Res
			58.346 dBm	3Hz (Δ) -	1.280.4			
								678
	1 1.280 4 GHz	Type: Log-Por Hold:>11 Mkr11:200-46 58:346 dBm 58:346 dBm 58:346 dBm 58:346 dBm 58:346 dBm 58:346 dBm 58:346 dBm 58:346 dBm 59:3000 GHz 59:3000 GHz 59:3000 GHz 59:3000 GHz 59:3000 GHz 59:3000 GHz	Avg Type:Log-Pur Avg Type:Log-Pur Set 12 - 200 -	Avg Type: Log-Per Avg Hold>H1 The c type The c type Type: Log-Per type Type	Z Trig: Free Run	D0000 GHz Arg Type: Log-Per Trig: Free Run Arg Type: Log-Per Trig: Company Trig: Free Run Arg Type: Log-Per Trig: Company Trig: Company <t< td=""><td>80370000000 GHz PRC-tast FGaint.ow PRC-tast FGaint.ow PRC-tast FGaint.ow PRC-tast FGaint.ow PRC-tast FGaint.ow PRC-tast FG PRC-tast</td><td>er 1 1.280370000000 GHz PrGsteinclow Irig: Free Run Atten: 26 dB Avg Type: Log-Per Avg Type: Log-Per A</td></t<>	80370000000 GHz PRC-tast FGaint.ow PRC-tast FGaint.ow PRC-tast FGaint.ow PRC-tast FGaint.ow PRC-tast FGaint.ow PRC-tast FG PRC-tast	er 1 1.280370000000 GHz PrGsteinclow Irig: Free Run Atten: 26 dB Avg Type: Log-Per Avg Type: Log-Per A

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

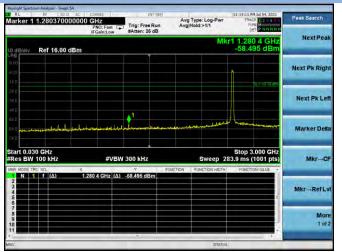
larker 1 24.6032500000			01:16:38 PM Jul 04, 2021 TRACE 1 2 3 4 TYPE MUSEUM DET P NNNN R	Peak Search
o dBidiv Ref 16.00 dBm		Mk	r1 24.603 25 GHz -46.785 dBm	NextPeak
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	والمتناطع والمرجع والمتعادي المراجع			Marker Delta
tart 2.00 GHz	#VBW 300 kHz	Swee	Stop 25.00 GHz p 2.198 s (4001 pts)	Mkr→CF
Res BW 100 kHz				
IKR MODE TRC SCL X	γ 603 25 GHz (Δ) _46.785 dB	FUNCTION FUNCTION VIE		
KR MODE TRC SCL X N 1 f (Δ) 24. 3 4 5				
1 N 1 f (Δ) 24. 2 3 4				Mkr→RefLv More 1 of2

802.11n-20 HIGH CHANNEL CARRIER LEVE

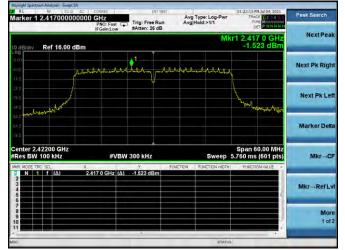




802.11n-20 HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



802.11n-40 LOW CHANNEL CARRIER LEVEL



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



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

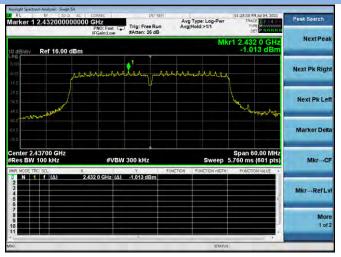


802.11n-40 LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

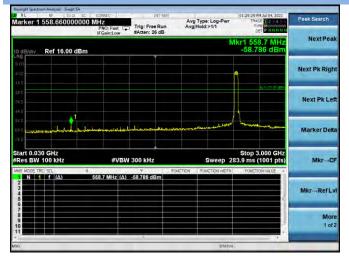




802.11n-40 MIDDLE CHANNEL CARRIER LEVEL



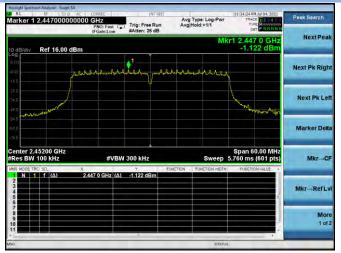
802.11n-40 MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



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

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400 r pts/	2.190 5	Sweep		300 KHZ	#VBW		U KHZ		W.C.S.
DN VALUE *		FUNCTION WIDTH	FUNCT	300 KHZ -49.324 dBm		× 21.067 0	SCL	N 1	VIKE M
	C. 1.210 de 5.00°GHz	-49.324 dBm	Arg Type: Log-Par Arghod:>11 Mkr1 21.067 D0 GHz -49.324 dBm -51-21 0x8	Avg Type: Log-Per Avg Hold:>11 The B244 Mkr1 21.067 00 GHz 49.324 dBm	Trig: Free Run ZAtten: 26 dB Arg Type: Log-Part Mygl/dd:>11 Trace Part of the State Mkr1 21.0670 00 GHz	SH2 Arg Type: Log-Perr Arg/Type: Log-Perr Arg/Type: Log-Perr Mkr1 21.067 D0 GH2 Mkr1 21.067 D0 GH2 Stop 25.00 GH2	DODODOD GH2 PICSTER Trg: Free Run IFGelet.ow BRTEN: 26 dB Arg Type: Log-Parr ArgHod:>11 Mkr1 21.067 DO GH2 Mkr1 21.067 DO GH2 Stop 25.00 GH2	I. 0670000000 CH2 Trig: Free Run PHC: Fast Trig: Free Run Avg Hold:>H1 Trig: Free Run Avg Hold:>H1 Trig: Free Run PHC: Fast Ref 16.00 dBm Mkr1 21.067.00 CH2 Mkr2 21.067.00 CH2 Ref 16.00 dBm -49.324 dBm -49.324 dBm Image: State Image: State Image: State Ref 16.00 dBm -49.324 dBm -49.324 dBm Image: State -49.324 dBm -49.324 dBm Image: State -49.324 dBm -49.324 dBm Image: State -49.324 dBm -49.324 dBm	er 1 21.06700000000 GHz Productor Productor Real 1 200 GHz Real 1 21.06700000000 GHz Productor

802.11n-40 HIGH CHANNEL CARRIER LEVE





802.11n-40 HIGH CHANNEL, SPURIOUS





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





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

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

<u>Test Data</u>

<u>Main Antenna</u>

802.11b Mode:

	Measured Max. Band	Limit	(dBm)		
Channel	Edge Emission (dBm)	Carrier Level Calculated 20 dBc Limit		Verdict	
Low Channel	-31.08	7.48	-12.52	Pass	
High Channel	-46.85	7.70	-12.30	Pass	

802.11g Mode:

	Measured Max. Band	Limit	(dBm)		
Channel	Edge Emission (dBm)	Carrier Level Calculated 20 dBc Limit		Verdict	
Low Channel	-31.78	5.44	-14.56	Pass	
High Channel	-42.41	5.55	-14.45	Pass	

802.11n-20 MHz Mode:

	Measured Max. Band		Limit (dBm)			
Channel	Edge Emission (dBm)	Carrier Level	Calculated 20	Verdict		
		Carrier Lever	dBc Limit			
Low Channel	-30.75	5.62	-14.38	Pass		
High Channel	-41.83	5.64	-14.36	Pass		

	Measured Max. Band	Limit	(dBm)	
Channel	Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-32.20	3.09	-16.91	Pass
High Channel	-37.93	3.18	-16.82	Pass





Aux. Antenna

802.11b Mode:

	Maggured May Dand	Limit	Limit (dBm)			
Channel	Measured Max. Band Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict		
Low Channel	-34.69	6.19	-13.82	Pass		
High Channel	-52.21	6.29	-13.71	Pass		

802.11g Mode:

	Measured Max. Band	Limit	(dBm)	
Channel	Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-34.16	5.18	-14.82	Pass
High Channel	-45.03	5.57	-14.44	Pass

802.11n-20 MHz Mode:

Channel	Measured Max. Band	Limit	(dBm)	
	Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-33.30	5.11	-14.89	Pass
High Channel	-42.70	5.55	-14.45	Pass

	Measured Max. Band	Limit	(dBm)	
Channel	Edge Emission (dBm)	Carrier Level	Calculated 20	Verdict
			dBc Limit	
Low Channel	-37.00	2.86	-17.14	Pass
High Channel	-38.85	3.01	-16.99	Pass



MIMO-Main Antenna

802.11b Mode:

	Macourod Max Dand	Limit	(dBm)	
Channel	Measured Max. Band Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-35.26	3.91	-16.09	Pass
High Channel	-47.72	4.66	-15.34	Pass

802.11g Mode:

Channel	Measured Max. Band	Limit (dBm)		
	Edge Emission (dBm)	Carrier Level	Calculated 20	Verdict
			dBc Limit	
Low Channel	-36.40	2.36	-17.64	Pass
High Channel	-47.73	2.20	-17.80	Pass

802.11n-20 MHz Mode:

Channel	Measured Max. Band	Limit (dBm)		
	Edge Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-36.02	2.19	-17.81	Pass
High Channel	-47.32	2.36	-17.64	Pass

Channel	Measured Max. Band	Limit (dBm)		
	Edge Emission (dBm)	Carrier Level	Calculated 20	Verdict
			dBc Limit	
Low Channel	-41.89	-0.11	-20.11	Pass
High Channel	-46.19	-0.27	-20.27	Pass



MIMO-Aux. Antenna

802.11b Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		
		Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-39.75	2.22	-17.78	Pass
High Channel	-54.47	2.58	-17.42	Pass

802.11g Mode:

Channel	Measured Max. Band	Limit (dBm)		
	Edge Emission (dBm)	Carrier Level	Calculated 20	Verdict
			dBc Limit	
Low Channel	-40.36	0.76	-19.25	Pass
High Channel	-52.57	0.97	-19.03	Pass

802.11n-20 MHz Mode:

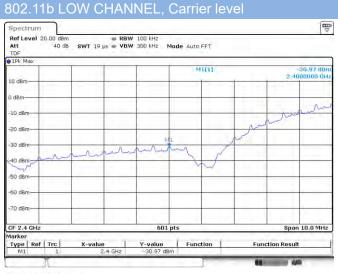
Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		
		Carrier Level	Calculated 20 dBc Limit	Verdict
Low Channel	-39.35	1.11	-18.89	Pass
High Channel	-52.67	1.21	-18.79	Pass

Channel	Measured Max. Band	Limit (dBm)		
	Edge Emission (dBm)	Carrier Level	Calculated 20	Verdict
			dBc Limit	
Low Channel	-47.31	-1.52	-21.52	Pass
High Channel	-49.20	-1.12	-21.12	Pass



Test Plots

Main Antenna

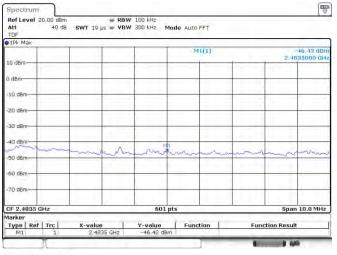


802.11b LOW CHANNEL, Reference level Spectrum Ref Level 20.00 dBm RBW 100 kHz Att 40 dB SWT 19.1 µs VBW 300 kHz Mode Auto FFT SGL Count 100/100 TDF TDF Imm AvgPwr MI[1] 40,84 0 2.399 10 dBm dBm -10 dBn -20 dBn -30 dBm 4FL dBd -50 dBn -60 dB 70 dBm CF 2.4 GH 601 pt Span 2.0 MHz X-value Type | Ref | Trc | Y-value Function Result Function I DR HB

Date: 27 APR 2021 17 04:39

Date: 27 APR 2021 17:04:24

802.11b HIGH CHANNEL, Carrier level



802.11b HIGH CHANNEL, Reference level Spectrum ₽ Ref Level 20,00 dBm RBW 100 kHz Att 40 d8 SWT 19,1 µs VBW 300 kHz Mode Auto FFT SGL Count 100/100 TDF TDF TDF TDF IRm Avg MIEI 56.12 dB 2.4840 16 dAn dBr 10 dBn 20 dBm 30 dBo 40 dBn 50 dBn 141 -60 dBm 70 dBm CF 2.4835 Span X-value 2,484 GH Type Ref Trc Y-value | Function | **Function Result** Date: 27 APR 2021 17:13:04

Date: 27 APR 2021 17:12:56



802.11g LOW CHANNEL, Carrier level

802.11g LOW CHANNEL, Reference level ₩ V Spectrum ■ RBW 100 kHz SWT 19.1 µs ■ VBW 300 kHz TDF Ref Level 20,00 dBm Att 40 dB SGL Count 100/100 Mode Auto FFT M1[1] 41,04 di 2.30 10 dB d dBn -10 dBm 20 dBn 30 dBn MI 40 dBm--50 dBm -50 dBm 70 dBm CF 2.4 GH: Span 2.0 MHz larke X-value 9.3995 GHz Type Ref Trc Y-value Function | Band Power Function Result 1.78 dBm

Date: 27 APR 2021 17:29:35

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Date: 27 APR 2021 17:29.41