ISSUED BY Shenzhen BALUN Technology Co., Ltd.

RF

TEST REPORT



FOR

Laptop

ISSUED TO E&S International Enterprises, Inc.

7801 Hayvenhurst Avenue, Van Nuys, California 91406 USA



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# **Revision History**

Version	Issue Date	Revisions Content
<u>Rev. 01</u> <u>Rev. 02</u>	<u>Nov. 04, 2021</u> <u>Nov. 10, 2021</u>	Initial Issue Add simultaneous transmission test data on section A.6.

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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	
Certificate	accredited testing laboratory. The designation number is CN1196.
	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°⊂ to 25°⊂	
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 E&S International Enterprises, Inc.	
Address	7801 Hayvenhurst Avenue, Van Nuys, California 91406 USA

# 2.2 Manufacturer Information

Manufacturer Shenzhen Yuko Technology Co., Ltd.	
Address	6th, A9 Bldg, Tianrui Industrial Park, Fuyuan 1st Rd, Fuyong,
Address	Baoan, Shenzhen, China.

# 2.3 Factory Information

Factory	Shenzhen Yuko Technology Co., Ltd.	
Address	6th, A9 Bldg, Tianrui Industrial Park, Fuyuan 1st Rd, Fuyong,	
Audress	Baoan, Shenzhen, China.	

# 2.4 General Description for Equipment under Test (EUT)

EUT Type	Laptop
Model Name Under Test	GWCC51416-BK
	147, 147WB, T147WB, GWCC51416-GR, GWCC51416-BL,
Series Model Name	GWCC51416-RD, GWCC51416, C141, U141, I141, C143, U143,
	T143, T147, K147, C147, C148, U148, K148, T148, T149
Description of Model	All models are same with electrical parameters and internal circuit
name differentiation	structure, but only differ in model name and color.
Hardware Version	TU140IR210
Software Version	Windows 11 Home 21H2
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A



# 2.5 Technical Information

	Network and Wireless		Bluetooth (BR+EDR+BLE)
			WIFI 802.11a, 802.11b, 802.11g, 802.11n and 802.11ac
	connectivity		U-NII-1/2A/2C/3
The req	ne requirement for the following technic		cal information of the EUT was tested in this report:
			802.11b/g/n(20 MHz): 2.412 GHz - 2.462 GHz
			f <sub>c</sub> = 2412 MHz + (N-1)*5 MHz, where
			- $f_c$ = "Operating Frequency" in MHz,
			- N = "Channel Number" with the range from 1 to 11.
	Frequency R	lange	802.11n(40 MHz): 2.422 GHz - 2.452 GHz
			f <sub>c</sub> = 2412 MHz + (N-1)*5 MHz, where
			- $f_c$ = "Operating Frequency" in MHz,
			- N = "Channel Number" with the range from 3 to 9.
	Modulation T	уре	DSSS, OFDM
	Product Type	e	⊠ Portable
			☐ Fix Location
	Antonno Sva	tom (og MIMO	Cyclic Delay Diversity (CDD) for 802.11n
	Smart Anten	tem (eg., MIMO,	Basic methodology with NANT transmit antennas, each with
	Smart Anten	na)	the same directional gain GANT dBi for 802.11b/g
	Categorizatio	on as Correlated	Categorization as Correlated
	or Complete	y Uncorrelated	Categorization as Correlated
	Antenna	Main Antenna	PIFA Antenna
	Туре	Aux. Antenna	FIFAAntenna
		Main Antenna	1.68 dBi (In test items related to antenna gain, the final results
	Antenna		reflect this figure. This value is provided by the applicant.)
	Gain	Aux. Antenna	1.29 dBi (In test items related to antenna gain, the final results
			reflect this figure. This value is provided by the applicant.)
		For power	1.68 dBi
		spectral	Formulas: Directional gain = GANT + Array Gain, <i>Array Gain</i> =
		density(PSD)	<i>10 log(NANT/NSS) dB. NSS</i> =2, GANT set equal to the gain of
		measurements	the antenna having the highest gain.
	Total		1.68 dBi
	directional	For power	Formulas: Directional gain = GANT + Array Gain, <i>Array Gain</i> =
	gain	measurements	0, GANT set equal to the gain of the antenna having the
			highest gain.
		For Conducted	1.68 dBi
		Out-of-Band	Formulas: Directional gain = GANT + Array Gain, <i>Array Gain</i> =
		and Spurious	<i>10 log(NANT/NSS) dB. NSS</i> =2, GANT set equal to the gain of
	Measurements		the antenna having the highest gain.
	About the Product		Only the WIFI 802.11b, 802.11g and 802.11n (HT20/40) was
			tested in this report.



Mode		Antenna			
Mode	Main Antenna	Aux. Antenna	MIMO		
802.11b		$\checkmark$			
802.11g	$\checkmark$	$\checkmark$			
802.11n20	$\checkmark$	$\checkmark$			
802.11n40		$\checkmark$			
Note: All the configura	ations were tested, but or	ly the worst case was rep	ported in this report.		

Modulation technology	Modulation Type	Transfer Rate (Mbps)
	DBPSK	1
DSSS (802.11b)	DQPSK	2
	CCK	5.5/11
	BPSK	6/9
OFDM (802.11g)	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:

	Special software is used.
Mode	The software provided by client to enable the EUT under
Wode	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 set						•		
Test Software Version		DRTU						
Support Units		Description	Manufact	urer		Model		
(Software installation media)		N/A	N/A		N/A			
			Sol	t Set				
Mode	Channel	Main Antenna	Aux. Antenna		O-Main Itenna	MIMO-Aux. Antenna		
	CH1	13.5	13					
802.11b	CH6	13	13					
	CH11	13	13					
	CH1	13.5	13.5					
802.11g	CH6	13.5	13.5					
	CH11	13.5	13.5					
	CH1	13.5	13.5		13.5	17.5		
802.11n20	CH6	13.5	13.5		13.5	13.5		
	CH11	13.5	13.5		13.5	13.5		
	CH3	13.5	13.5		13.5	13.5		
802.11n40	CH6	13.5	13.5		13.5	13		
	CH9	13.5	13		13.5	13		



### Run software:

Veterementation     Control Code   Use in an interpretention   Database Regulatory Lints in PAPPD Calcination   Database Regulatory Lints in PAPP	DRTU =		adea(R) W6 F1 6 AUCO1 160Mett: (Havenury) 🛛 😅 Connect 🗢 👔
US   Interminence   Datation Reputatory Units in: PAPD Calcination   Datation Reputatory Units in: PAPD Calcination   Diversion   Packot Statings   Transmit Mode   Other Burst Counting   Other Burst Counting   Diversion   Diversion MACA Address   Extension MACA Address   Extension MACA Address   Diversion MACA Address   Diversion MACA Address   Diversion MACA Address   Diversion Diversion MACA Address   Diversion Diversion MACA Address   Diversion	office and the second se		
	US Detailer Reputatory Linits in PAPD Calcrason Detailer Reputatory Linits in PAPD Calcrason Detailer Packet Settings Packet Settings OF O Burst O Unimited Detaination MAC Address PERPERE	Transmission Mode 3150 Duty Cicle Duty Cicle 100 100 100 100 100 100 100 10	Pover control Q Automatic driver settings Transmit Power Chain A



# **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 <sup>Note 1</sup>
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: I	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	100 kPa - 102 kPa			
Temperature	NT (Normal Temperature)	+22℃ to +25℃			
Working Voltage of the EUT	NV (Normal Voltage)	11.4 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	2021.04.16	2024.04.15
Test Antenna- Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2021.08.20	2024.08.19
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	2021.07.02	2023.07.01
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	2019.08.08	2022.08.07
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.

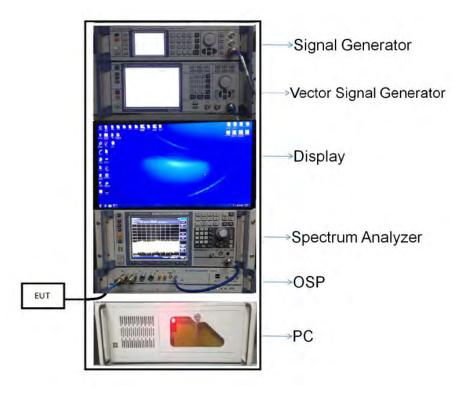
Parameters	Uncertainty
Occupied Channel Bandwidth	2.8%
RF output power, conducted	1.28 dB
Power Spectral Density, conducted	1.30 dB
Unwanted Emissions, conducted	1.84 dB
All emissions, radiated	5.36 dB
Temperature	0.82°C
Humidity	4.1%

# 4.4 Description of Test Setup

### 4.4.1 For Antenna Port Test

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

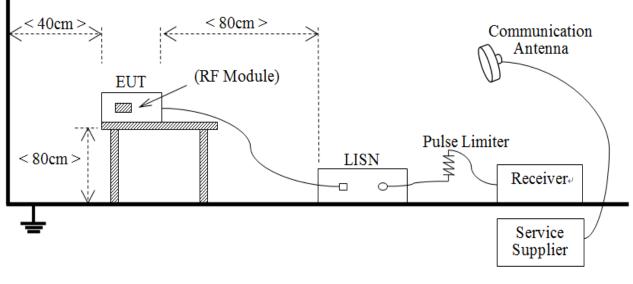
For example: the measurement value is 10 dBm and the cable 0.5dBm used, then the final result of EUT: Conducted value (dBm) = 10 dBm + 0.5 dB = 10.5 dBm



(Diagram 1)

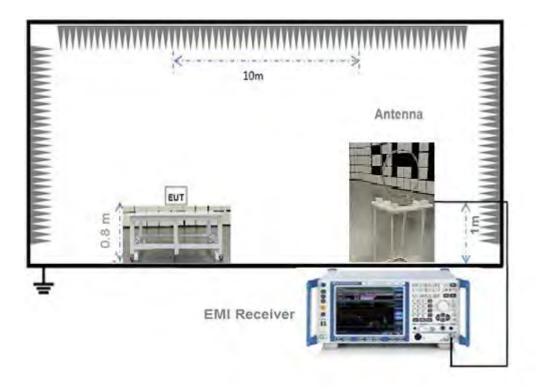


## 4.4.2 For AC Power Supply Port Test



(Diagram 2)

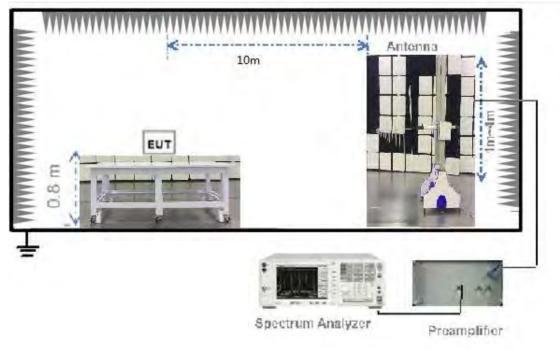
4.4.3 For Radiated Test (Below 30 MHz)





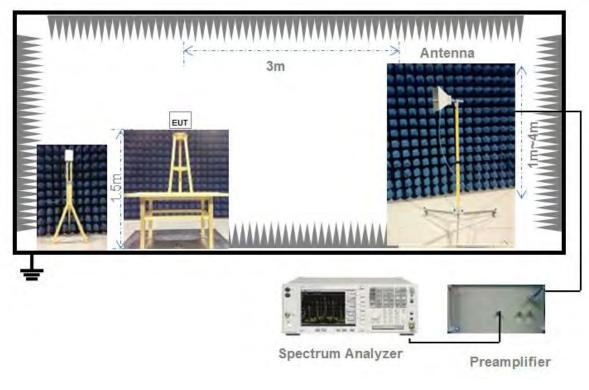


4.4.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.4.5 For Radiated Test (Above 1 GHz)







# 4.5 Measurement Results Explanation Example

4.5.1 For conducted test items:

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

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

Offset = RF cable loss + attenuator factor.

4.5.2 For radiated band edges and spurious emission test:

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
The antenna is embedded in the	An embedded-in antenna design is used.
product.	

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 antennas antennas antennas antennas antennas antennas antennas

#### 5.2.2 Test Setup

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

#### 5.2.3 Test Procedure

#### Maximum peak conducted output power

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

#### Maximum conducted (average) output power (Reporting Only)

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

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

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

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

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

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

described in Section 6.0.

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

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

#### Measurements of duty cycle

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

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



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

Set VBW  $\geq$  RBW. Set detector = peak or average.

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

5.2.4 Test Result

Please refer to ANNEX A.1.



# 5.36dB Bandwidth

### 5.3.1 Limit

FCC §15.247(a); RSS-GEN, 6.7; 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  $\ge$  98%). Use the procedure described in 13.2.3 when using an average detector and the EUT cannot be configured to transmit continuously but the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent). Use the procedure described in 13.2.4 when using an average detector for those cases where the EUT cannot be configured to transmit continuously and the duty cycle is not constant (duty cycle variations equal or exceed 2 percent).

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

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

Set span to 2 MHz

RBW = 100 kHz.

VBW  $\geq$  3 x RBW.

Detector = peak.

Sweep time = auto.

Trace mode = max hold.

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

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

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

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



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

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

Attenuation: Auto (at least 10 dB preferred).

Sweep time: Coupled.

Resolution bandwidth: 100 kHz.

Video bandwidth: 300 kHz.

Detector: Peak.

Trace: Max hold.

#### 5.5.4 Test Result

Please refer to ANNEX A.4.



# 5.6 Conducted Emission

### 5.6.1 Limit

### FCC §15.207; RSS-GEN, 8.8

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

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

### 5.6.2 Test Setup

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

### 5.6.3 Test Procedure

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

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

### 5.6.4 Test Result

Please refer to ANNEX A.5.



# 5.7 Radiated Spurious Emission

### 5.7.1 Limit

#### FCC §15.209&15.247(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  $\geq$  3 x RBW.
- c) Detector = Peak.
- d) Sweep time = auto.

e) Trace mode = max hold.

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

Table 1—RBW as a function of frequency

RBW

200-300 Hz

9-10 kHz

100-120 kHz

1 MHz

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

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

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

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

Frequency 9-150 kHz

0.15-30 MHz

30-1000 MHz

> 1000 MHz





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	8.345	8.402	96.96%
802.11g	2.085	2.132	89.10%
802.11n-20 MHz	3.970	4.025	98.88%
802.11n-40 MHz	3.963	4.018	98.34%

### Peak Power Test Data

### Main Antenna

#### 802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	17.14	51.76			Pass
Middle	16.83	48.19	30	1000	Pass
High	16.98	49.89			Pass

## 802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	21.92	155.60			Pass
Middle	22.06	160.69	30	1000	Pass
High	22.19	165.58			Pass

#### 802.11n-20 MHz Mode:

Channal	Measured Output Peak Power		Limit		Vordiot	
Channel	dBm	mW	dBm	mW	Verdict	
Low	21.81	151.71			Pass	
Middle	21.98	157.76	30	1000	Pass	
High	22.09	161.81	<u> </u>		Pass	

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	verdict
Low	22.19	165.58			Pass
Middle	22.32	170.61	30	1000	Pass
High	22.33	171.00			Pass



# Aux. Antenna

# 802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	16.65	46.24			Pass
Middle	16.72	46.99	30	1000	Pass
High	16.84	48.31			Pass

## 802.11g Mode:

Channel	Measured Output Peak Power		Limit		Vardiat
Channel	dBm	mW	dBm	mW	Verdict
Low	21.91	155.24			Pass
Middle	21.88	154.17	30	1000	Pass
High	22.14	163.68			Pass

#### 802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Vordiot		
Channel	dBm	mW	dBm	mW	Verdict		
Low	21.80	151.36					Pass
Middle	21.77	150.31	30	1000	Pass		
High	22.05	160.32			Pass		

Channel	Measured Output Peak Power		Limit		Verdict	
Channel	dBm	mW	dBm	mW	Verdict	
Low	22.15	164.06			Pass	
Middle	22.12	162.93	30	1000	Pass	
High	21.79	151.01			Pass	



#### MIMO-Main Antenna

#### 802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	21.81	151.71		30 1000	Pass
Middle	21.88	154.17	30		Pass
High	22.04	159.96			Pass

#### 802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict	
Channel	dBm	mW	dBm	mW	Verdict	
Low	22.16	164.44				Pass
Middle	22.22	166.72	30	30 1000	Pass	
High	22.30	169.82			Pass	

#### MIMO-Aux. Antenna

#### 802.11n-20 MHz Mode:

Chappel	Measured Out	Measured Output Peak Power		nit	Verdict
Channel	dBm	mW	dBm	mW	Verdici
Low	21.81	151.71			Pass
Middle	21.69	147.57	30	30 1000	Pass
High	22.01	158.85			Pass

### 802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	21.69	147.57			Pass
Middle	21.68	147.23	30	30 1000	Pass
High	21.82	152.05			Pass

### <u>MIMO</u>

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Vordiot
Channel	dBm	mW	dBm	mW	Verdict
Low	24.82	303.41			Pass
Middle	24.80	301.74	30	1000	Pass
High	25.04	318.81			Pass

Channel	Measured Output Peak Power		Limit		Verdict		
Channel	dBm	mW	dBm	mW	Verdict		
Low	24.94	312.01					Pass
Middle	24.97	313.96	30	1000	Pass		
High	25.08	321.88			Pass		





## Average Power Test Data

### Main Antenna

802.11b Mode:

Channel	Measured Output Average Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	13.63	23.07		30 1000	Pass
Middle	13.25	21.13	30		Pass
High	13.24	21.09			Pass

### 802.11g Mode:

Channel	Measured Outp	Measured Output Average Power		nit	Verdict
Channel	dBm	mW	dBm	mW	verdict
Low	13.50	22.39		1000	Pass
Middle	13.53	22.54	30		Pass
High	13.56	22.70			Pass

## 802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict		
Channel	dBm	mW	dBm	mW	verdict		
Low	13.44	22.08					Pass
Middle	13.47	22.23	30	1000	Pass		
High	13.51	22.44			Pass		

Channel	Measured Output Average Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	13.63	23.07			Pass
Middle	13.68	23.33	30	30 1000	Pass
High	13.64	23.12			Pass



# Aux. Antenna

## 802.11b Mode:

Channel	Measured Output Average Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdici
Low	13.22	20.99			Pass
Middle	13.20	20.89	30	30 1000	Pass
High	13.36	21.68			Pass

## 802.11g Mode:

Channel	Measured Output Average Power		Limit		Vardiat
Channel	dBm	mW	dBm	mW	Verdict
Low	13.55	22.65			Pass
Middle	13.42	21.98	30	0 1000	Pass
High	13.51	22.44			Pass

#### 802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Vordict
	dBm	mW	dBm	mW	Verdict
Low	13.43	22.03	30	1000	Pass
Middle	13.40	21.88			Pass
High	13.60	22.91			Pass

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	Verdict
Low	13.63	23.07	30	1000	Pass
Middle	13.62	23.01			Pass
High	13.29	21.33			Pass



#### MIMO-Main Antenna

#### 802.11n-20 MHz Mode:

Channel Measured C		leasured Output Average Power		nit	Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	13.38	21.78			Pass
Middle	13.43	22.03	30	1000	Pass
High	13.47	22.23			Pass

#### 802.11n-40 MHz Mode:

Channel	Measured Outp	ut Average Power	Limit		Verdict
Channel	dBm	mW	dBm	mW	verdict
Low	13.61	22.96			Pass
Middle	13.64	23.12	30	1000	Pass
High	13.60	22.91			Pass

#### MIMO-Aux. Antenna

#### 802.11n-20 MHz Mode:

Chappel	Measured Output Average Power		Limit		Vardiat
Channel	dBm	mW	dBm	mW	Verdict
Low	13.54	22.59			Pass
Middle	13.38	21.78	30	1000	Pass
High	13.53	22.54			Pass

### 802.11n-40 MHz Mode:

Channal	Measured Output Average Power		Limit		Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	13.26	21.18			Pass
Middle	13.24	21.09	30	1000	Pass
High	13.35	21.63			Pass

# <u>MIMO</u>

802.11n-20 MHz Mode:

Channel Measured Out		Measured Output Average Power		nit	Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	16.47	44.37			Pass
Middle	16.42	43.81	30	1000	Pass
High	16.51	44.78			Pass

Channel	Measured Outp	ut Average Power	Lir	nit	Verdict
Channel	dBm	mW	dBm	mW	Verdict
Low	16.45	44.15			Pass
Middle	16.45	44.21	30	1000	Pass
High	16.49	44.54			Pass



# A.2 Bandwidth

Note 1: All antenna were tested, but only the worst case has been reported in this report.

<u>Test Data</u>

### Main Antenna

802.11b Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	9.150000	13.453000	≥500
Middle	9.100000	13.391000	≥500
High	9.150000	13.398000	≥500

# 802.11g Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	15.200000	17.219000	≥500
Middle	15.150000	17.143000	≥500
High	15.150000	17.163000	≥500

#### 802.11n-20MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	15.200000	18.167000	≥500
Middle	15.200000	18.157000	≥500
High	15.200000	18.178000	≥500

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	35.050000	36.092000	≥500
Middle	35.100000	36.016000	≥500
High	35.200000	36.045000	≥500



# Aux. Antenna

# 802.11b Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	9.100000	13.413000	≥500
Middle	9.100000	13.386000	≥500
High	9.100000	13.391000	≥500

# 802.11g Mode:

Channel	6 dB Bandwidth	99% Bandwidth	6 dB Bandwidth
Channel	(MHz)	(MHz)	Limits (kHz)
Low	15.150000	17.182000	≥500
Middle	15.400000	17.104000	≥500
High	15.200000	17.081000	≥500

#### 802.11n-20MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	15.200000	18.173000	≥500
Middle	15.200000	18.093000	≥500
High	15.200000	18.167000	≥500

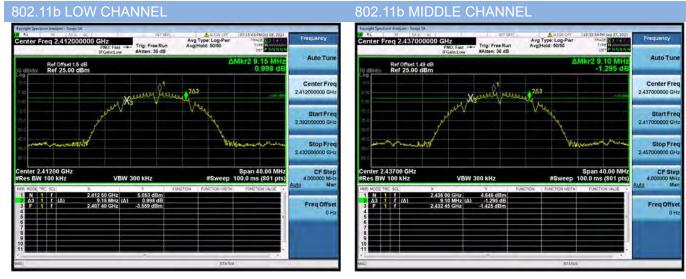
Channel	6 dB Bandwidth	99% Bandwidth	6 dB Bandwidth
Channel	(MHz)	(MHz)	Limits (kHz)
Low	32.650000	36.098000	≥500
Middle	35.100000	36.016000	≥500
High	33.850000	36.044000	≥500



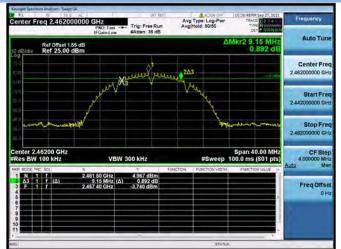
#### Test plots

#### 6 dB Bandwidth

#### Main Antenna



#### 802.11b HIGH CHANNEL



#### 802.11g 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



#### 802.11n-40 MHz HIGH CHANNE





#### Aux. Antenna





#### 802.11b MIDDLE CHANNEL



# 802.11b HIGH CHANNEL



# 802.11g MIDDLE CHANNEL



#### 802.11g LOW CHANNEL



#### 302.11g HIGH CHANNEL





#### 802.11n-20 MHz LOW CHANNEL



#### 802.11 n-20 MHz MIDDLE CHANNEL



#### 802.11n-40 MHz LOW CHANNE





# 802.11n-40 MHz MIDDLE CHANNEL



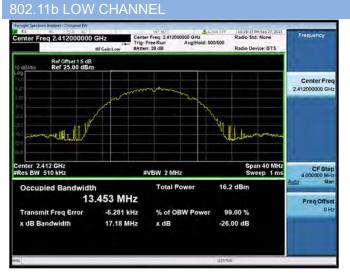
#### 802.11n-40 MHz HIGH CHANNEL

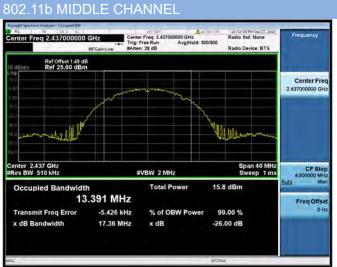




#### 99% Bandwidth

#### Main Antenna





#### 802.11b HIGH CHANNEL



#### 802.11g LOW CHANNEL



# 802.11g MIDDLE CHANNEL



#### 802.11g HIGH CHANNEL





#### 802.11n-20 MHz LOW CHANNEL

802.11n-20 MHz HIGH CHANNEL



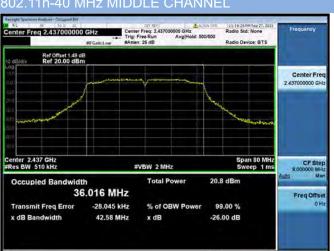


# 802.11 n-20 MHz MIDDLE CHANNEL

#### 802.11n-40 MHz LOW CHANNEL







# 802.11n-40 MHz MIDDLE CHANNEL

#### 802.11n-40 MHz HIGH CHANNEL Center Freq: 2.45200000 GHz Trig: Free Run Avg|Hold: 500/500 ow BAtten: 26 d5 11:22:13 PM 540 27. Radio Std: None Frequency Center Freg 2.452000000 GHz Radio Device: BTS #FGaint.o Ref Offset 1.51 dB Ref 20.00 dBm Center Freq 2.45200 00 GH Span 80 MHz Sweep 1 ms enter 2.452 GHz Res BW 510 kHz CF Step #VBW 2 MHz 9,00 to Total Power 20.7 dBm **Occupied Bandwidth** 36.045 MHz Freq Offse OH Transmit Freq Error -14.930 kHz % of OBW Power 99.00 %

x dB

-26.00 dB

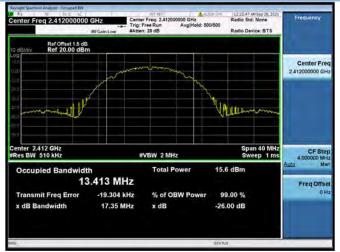
42.43 MHz

x dB Bandwidth

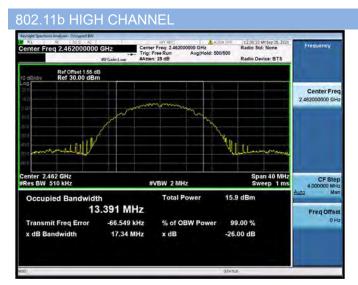


#### Aux. Antenna





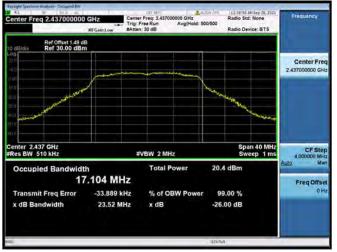
#### 802.11b MIDDLE CHANNEL Center Freq 2.437000000 GHz Center Freq 2.43700000 GHz 12:26:46 AM Sep 28, 202 Radio Std: None Radio Device: BTS Ref Offset 1.49 dB Ref 20.00 dBm Center Freq 2 4370000 Mar al II Center 2.437 GHz #Res BW 510 kHz Span 40 MHz Sweep 1 ms CF Step #VBW 2 MHz Auto Occupied Bandwidth Total Powe 15.6 dBm 13.386 MHz Freq Offse -5.243 kHz Transmit Freq Error % of OBW Power 99.00 % 17.10 MHz x dB Bandwidth x dB -26.00 dB



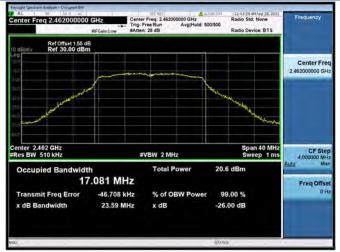
# 802.11g LOW CHANNEL



# 802.11g MIDDLE CHANNEL



# 802.11g HIGH CHANNEL

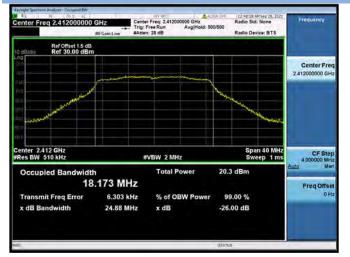




N

Freq Offset

#### 802.11n-20 MHz LOW CHANNEL





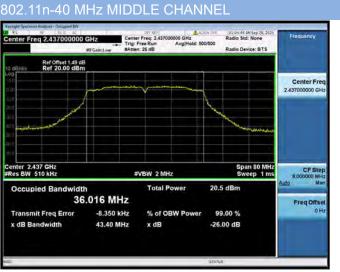
#### 802.11n-40 MHz LOW CHANNEL



#### AJUN DIE Center Freq: 2.462000000 GHz Trig: Free Run Avg Ho #Atten: 28 dB g 2.46200000 GHz 14: 500/500

802.11n-20 MHz HIGH CHANNEL





#### 802.11n-40 MHz HIGH CHANNEL



#### 802.11 n-20 MHz MIDDLE CHANNEL



# A.3 Conducted Spurious Emissions

# <u>Test Data</u>

<u>Main Antenna</u>

# 802.11b Mode:

	Measured Max. Out of	Limit (dBm)			
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict	
Low	-49.05	5.37	-14.63	Pass	
Middle	-49.00	5.00	-15.00	Pass	
High	-48.34	5.25	-14.75	Pass	

# 802.11g Mode:

	Measured Max. Out of	Limit (dBm)		
Channel	Band Emission (dBm)	Carrier Level	Calculated 20	Verdict
		Carrier Lever	dBc Limit	
Low	-46.94	3.97	-16.03	Pass
Middle	-48.67	4.16	-15.84	Pass
High	-47.16	4.17	-15.83	Pass

#### 802.11n-20MHz Mode:

	Measured Max. Out of	Limit (dBm)		
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-48.61	3.69	-16.32	Pass
Middle	-48.42	4.01	-15.99	Pass
High	-47.50	4.28	-15.72	Pass

	Measured Max. Out of	Limit (dBm)		
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-49.72	0.57	-19.43	Pass
Middle	-48.50	0.83	-19.17	Pass
High	-47.75	0.88	-19.12	Pass





# Aux. Antenna

#### 802.11b Mode:

	Measured Max. Out of	Limit (		
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-49.38	4.86	-15.14	Pass
Middle	-47.56	4.85	-15.15	Pass
High	-48.04	5.09	-14.91	Pass

# 802.11g Mode:

	Measured Max. Out of	Limit (	dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-47.14	3.96	-16.04	Pass
Middle	-48.68	4.00	-16.00	Pass
High	-48.13	4.16	-15.84	Pass

#### 802.11n-20MHz Mode:

	Measured Max. Out of	Limit (		
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-47.86	3.92	-16.08	Pass
Middle	-48.49	3.90	-16.10	Pass
High	-46.45	3.01	-16.99	Pass

	Measured Max. Out of	Limit (dBm)		
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-46.58	0.50	-19.50	Pass
Middle	-48.31	0.65	-19.35	Pass
High	-48.66	0.27	-19.73	Pass



# MIMO-Main Antenna

802.11n-20MHz Mode:

	Measured Max. Out of	Limit (dBm)		
Channel	Band Emission (dBm)	Carrier Level	Calculated 20	Verdict
			dBc Limit	
Low	-48.93	3.43	-16.57	Pass
Middle	-48.09	4.08	-15.92	Pass
High	-48.67	4.14	-15.86	Pass

#### 802.11n-40MHz Mode:

	Measured Max. Out of	Limit (		
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-49.26	0.43	-19.57	Pass
Middle	-48.39	0.51	-19.49	Pass
High	-48.82	0.64	-19.36	Pass

#### MIMO-Aux. Antenna

802.11n-20MHz Mode:

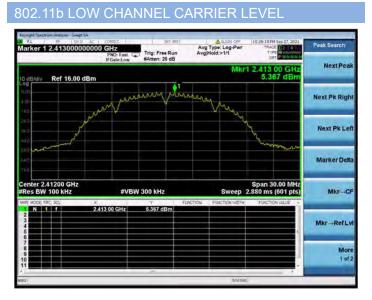
	Measured Max. Out of	Limit (	dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-47.94	3.75	-16.25	Pass
Middle	-49.05	3.56	-16.44	Pass
High	-49.19	4.00	-16.00	Pass

	Measured Max. Out of	Limit (	dBm)	
Channel	Band Emission (dBm)	Carrier Level	Calculated 20 dBc Limit	Verdict
Low	-48.42	-0.10	-20.10	Pass
Middle	-48.40	-0.01	-20.01	Pass
High	-48.46	-0.19	-20.19	Pass



#### Test Plots

#### Main Antenna



802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

arker 1 2.650600	0.0 AC CORREC 10000000 GHz PNO: Fast IFGalm:Low	Trig: Free Run #Atten: 26 dB	Avg	Type: Log-Pwr Hold:>1/1	10:29:49 PM Sep 27, 2021 TRACE 12:4 TYPE NORMANN DET P MINIEN	Marker I Select Marker
o dE/div Ref 16.0	0 dBm			Mk	1 2.650 6 GHz -59.143 dBm	Selectmarker
1.00						Norma
40 N 0 M 0						Deit
54.0		ay vigent das son open som steller berke	tay, and a bad soly		harmon and the second	Fixed
tart 0.030 GHz Res BW 100 kHz	#V	BW 300 kHz	FUNCTION	Sweep 2	Stop 3.000 GHz 33.9 ms (1001 pts)	o
1 N 1 f 2 3 4 5	2.650 6 GHz	-59,143 dBm				Properties
6 7 8 9 0						Mor 1 of
0		21		STATUS		-

# 802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25





#### 802.11b MIDDLE CHANNEL CARRIER LEVEL



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

RL RE 130.9 arker 1 2.19099000	PNO: Fast.	Trig: Free Run	Avg Type: Log-Pwr Avg[Hold:>1/1	10:34:09 PM Sep 27, 2021 TRACE 12 4 TVPE N DET P 1 M 10 1	Marker
	IFGain:Low	#Atten: 26 dB	Mk	r1 2.191 0 GHz -60.058 dBm	Select Marker
0 dB/div Ref 16.00 0	18m				Norma
10 10					Delt
40 40 <b></b>	مود و بار بار بر از ب	an an the first state of the second	anner the street	Amminia	Fixed
art 0.030 GHz Res BW 100 kHz		W 300 kHz		Stop 3.000 GHz 83.9 ms (1001 pts)	o
	x 2.191 0 GHz	-60,058 dBm	NETION FUNCTION WOTH	FUNCTION VALUE	Properties
6 7 8 9 0					Mor 1 of
		101	STATIS		1

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





#### 802.11b HIGH CHANNEL CARRIER LEVEI



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

Marker	10:38:08 PM 545 27, 2021 TRACE 12 4 TYPE MINIMUM	Type: Log-Pwr Hold:>1/1	Av	Trig: Free Run		00000 G		er 1 2.9	ark
Select Marker	1 2.913 9 GHz -58.220 dBm	Mkr		#Atten: 26 dB	Sain:Low	IF	ef 16.00	De De	0 88
Norma							1 10.00	aiv Ke	<b>og</b> 6.00 -
Delt									149 - 340 - 340 -
Fixed	Amaken acases	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	-	Gringt age a factor	م والعرب المراجع الم		/lownes/teta-r	mulateria	54.0
o	Stop 3.000 GHz 33.9 ms (1001 pts)	Sweep 28	FUNCTION	300 kHz	#VBW	x	kHz	0.030 G BW 100	Res
Properties				58 220 dBm	9 GHz			N 1 1	2345
Mor 1 of									6 7 8 9 10
		STATUS		20					

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





# 802.11g LOW CHANNEL CARRIER LEVEL

Aarker 1 2.4132	50000000 GHz PNO: Fast IFGain:Low	Trig: Free Run #Atten: 26 dB	Avg Type: Log-Pwr Avg[Hold:>1/1	10:45:40 PM Sep 27, 2021 TRACE 12 4 TYPE MUNUMUM DET P 11 N 10 M	Peak Search Next Peak			
400		marker hay and has	hardman have been		Next Pk Righ			
240 240 Jan Connered				mannet	Next Pk Lef			
54.0 24.0 74.0					Marker Delta			
Center 2.41200 G Res BW 100 kH		BW 300 kHz	Sweep	Span 30.00 MHz 2.880 ms (601 pts)	Mkr-+Cl			
N 1 1 2 3 4 5	2.413 25 GHz	3.970 dBm			Mkr→RefLv			
6 7 8 9 10					Mon 1 of:			
Ϊ,		20	STATUS					

# 802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

Marker 1 2.083580000		Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>1/1	10:46:06 PM Sep 27, 2021 TRACE 12:44 TYPE 2:44	Marker
	PNO: Fast IFGain:Low	#Atten: 26 dB	stright totals in t	TYPE NWWWWWW DET P. NNNNN	Select Marker
ID dErdiv Ref 16.00 dB	m		Mk	r1 2.083 6 GHz -60.049 dBm	
4:00					Norma
240 340 440					Delta
54.0			( interest	harmonanan	
240 denter in a man of the second		- Harrison and the speech of the section of	and the state of the second		Fixed
Start 0.030 GHz #Res BW 100 kHz		W 300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	Fixed
Start 0.030 GHz #Res BW 100 kHz MMR MODE TRC: Scl.		W 300 kHz		Stop 3.000 GHz	
Start 0.030 GHz           Res BW 100 KHz           WMP MODE THE SEL           1           2           3           4           5	#VB	W 300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	
10         Start 0.030 GHz           RRes BW 100 KHz         MOR MCGUTRC SCL           MOR MCGUTRC SCL         1           2         3	#VB	W 300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	O

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





# 802.11g MIDDLE CHANNEL CARRIER LEVEL

RL RE larker 1 2.4382	PI		Sec	Run Avy	g Type: Log-Pwr j Hold:>1/1	10:50:33 PM Sep 27, 2021 TRACE 1 2 4 TYPE MONOTONIC DET P M N N N	Peak Search
o de/div Ref 1	6.00 dBm				Mkr	1 2.438 25 GHz 4.158 dBm	
6 <b>0</b>		whent	mmy	.A. Anton	montay		Next Pk Right
ND DATAMAN	and ranks					man man	Next Pk Lef
54()							Marker Delta
enter 2.43700 ( Res BW 100 kH		#VBI	W 300 kHz			Span 30.00 MHz 2.880 ms (601 pts)	Mkr-+CF
MFI MODE TRC SCL	x 2,438,2	5 GHz	4.158 dBr	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	MkrRef Lv
6 7 9 10							More 1 of 2
			100				

# 802.11g MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

narker 1 1.9:	54140000000	GHZ PNO: Fast	Trig: Free Run	Avg Ty Avg/Ho	de:Lach cire pe: Log-Pwr id:>1/1	10:51:05 PM Sep 27, 2021 TRACE 1214 TVPE N	Marker
_		IFGain:Low	#Atten: 26 dB	1.516	Mk	rt 1.954 1 GHz	Select Marker
ID dE/div Rel	f 16.00 dBm					-60.454 dBm	
6.00							Norma
4.00							Horme
210						يغدي وحد ا	1
34.0							Delta
A10 540				.1			-
10 milentered		مدونا برمایه میدند		an and an	and a second	Lanna pullinger see	Fixed
74.0							
Start 0.030 GH			W 300 kHz		Current 21	Stop 3.000 GHz 33.9 ms (1001 pts)	01
MKR MODE THE SEL		#VI-	W JUU KHZ	FUNCTION 3	Sweep 2	FUNCTION VALUE	0
N 1 1		954 1 GHz	-60.454 dBm				
2							Properties
2 3 4							
23456							
2 3 4 5							
2 3 4 5 6 7 8							More 1 of 2

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





#### 802.11g HIGH CHANNEL CARRIER LEVEI



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

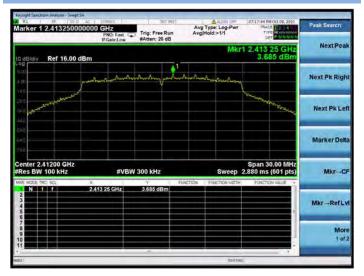
arker 1 2.1484	30000000 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg[Hold:>1/1	10:57:53PH Sep 27, 2021 TRACE 12 4 TYPE MUMMUMUM DET P N MUMUMUM	Marker
DidBrdiv Ref 16	IFGain:Low	#Atten: 26 dB	Mk	r1 2.148 4 GHz -58.705 dBm	Select Marker
.og 6.00 4.00	.00 06m			1	Norma
149 240 340					Delt
54.0 94.0	ana da paga ang kabupatèn kabupatèn kabupatèn kabupatèn kabupatèn kabupatèn kabupatèn kabupatèn kabupatèn kabu	a	······································	Automore	Fixed
Start 0.030 GHz Res BW 100 kHz		W 300 kHz		Stop 3.000 GHz 83.9 ms (1001 pts)	o
MR MODE TRC SCI.	× 2.148 4 GHz	-58.705 dBm	INCTION FUNCTION WIDTH	FUNCTION VALUE	Properties
6 7 8 9 10					Mor 1 of
		28			-

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





#### 802.11n-20 LOW CHANNEL CARRIER LEVE



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

0 dE/div Ref 16.00 dBm	PNO: Feat. G FGain:Low	Trig: Free Run #Atten: 26 dB	Avg Hold:>1/1	kr1 2.670 3 GHz -58.357 dBm	Select Marker
00			M		
500 100 149					
					Norma
30 30					Delt
540 540 <b></b>		ووفر الدو (فرسو الدوار ساهر		1 marine	Fixed
tart 0.030 GHz Res BW 100 kHz	#VBI	N 300 KHz		Stop 3.000 GHz 283.9 ms (1001 pts)	o
NRE MODE TRC SEL X	3 GHz	-58.357 dBm	UNCTION FUNCTION WEITH	FUNCTION VALUE	
					Properties
					Mon
		~			

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





#### 802.11n-20 MIDDLE CHANNEL CARRIER LEVE



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

arker 1 2.6134800000	O GHZ PNO: Fest.	Trig: Free Run	Avg Type: Log-Pwr Avg/Hold:>1/1	11:06:55 PH Sep 27, 2021 TRACE 12 4 TYPE NOVEMBER	Marker
	IFGain:Low	#Atten: 26 dB		DET	Select Marker
BEIdiv Ref 16.00 dBm			Mk	-57.625 dBm	
00					Norma
40 40 40					Deit
10 40 40		and the second		1 1 million	Fixed
tart 0.030 GHz Res BW 100 kHz	#VBW :	300 kHz	Sweep 2	Stop 3.000 GHz 33.9 ms (1001 pts)	0
AT MODE TRC SCL X		7 FUN 57.625 dBm	CTION FUNCTION WOTH	FUNCTION VALUE	
2 3 4 5 5					Properties
9					Mor 1 of

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





#### 802.11n-20 HIGH CHANNEL CARRIER LEVE



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

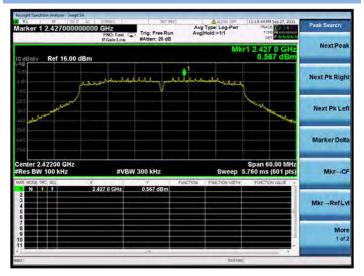
	PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg[Hold:>1/1	TYPE MOUNTAIN	Marker
	IFGain:Low	#Atten: 26 dB	M	kr1 2.697 9 GHz	Select Marker
de/div Ref 16.00 dBn	n			-59.075 dBm	
00 00					Norma
49				00000	
ий					Delt
4.0 4.0 Aldreeder. Martin Concerns	ويتحدها الماحين المجليس	an a	and and and the second of the last	Andiana	Fixed
tart 0.030 GHz Res BW 100 kHz	#VB	W 300 kHz	Sweep	Stop 3.000 GHz 283.9 ms (1001 pts)	01
KRI MODE TRC SEL	x 2.697 9 GHz	-59.075 dBm	FUNCTION FUNCTION WIDTH	FUNCTION-VALUE	
2 3 4 5					Properties
6 7 8 9					Mor
		28			1.01

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





#### 802.11n-40 LOW CHANNEL CARRIER LEVE



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

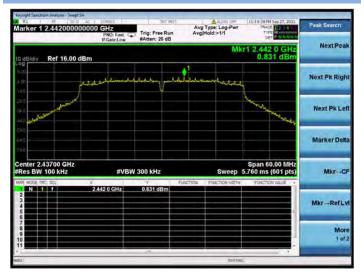
arker 1 2.66460000	AC CORRECT 00000 GHZ PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>1/1	11:15:58 PM Sep 27, 2021 TRACE 12 4 TVPE	Marker
	IFGain:Low	#Atten: 26 dB		DET	Select Marker
D dErdiv Ref 16.00 d	Bm		Mk	-58.514 dBm	
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start 0.030 GHz Res BW 100 kHz		W 300 kHz		Stop 3.000 GHz 83.9 ms (1001 pts)	Fixed
Res BW 100 kHz		W 300 kHz		Stop 3.000 GHz 83.9 ms (1001 pts) PUNCTION VALUE	
7/10 ttart 0.030 GHz Res BW 100 kHz MI 100 kHz N 1 7 2 3 4 5	#VB	W 300 kHz Y FU	Sweep 2	83.9 ms (1001 pts)	01
viii)         start 0.030 GHz           Res BW 100 kHz         with work start           with work start         start 1           N         1           2         3           4         start 1	#VB	W 300 kHz Y FU	Sweep 2	83.9 ms (1001 pts)	

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





#### 802.11n-40 MIDDLE CHANNEL CARRIER LEVEI



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

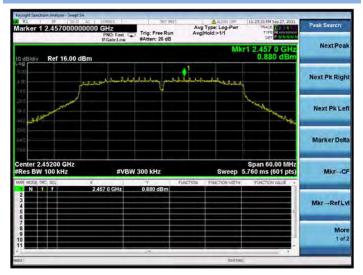
arker 1 2.6944500000	PNO: Fast. Co.	Trig: Free Run	Avg Type: Log-Pwr Avg[Hold:>1/1	11:20:16 PH Sep 27, 2021 TRACE 1 2 14 TYPE NUMBER OF	Marker
BidBidiv Ref 16.00 dBm	IFGain:Low	#Atten: 25 dB	Mk	1 2.694 5 GHz -58.395 dBm	Select Marker
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tart 0.030 GHz Res BW 100 kHz	#VBW 3			Stop 3.000 GHz 3.9 ms (1001 pts)	0
2 3 4 5		7 FUNC 58,395 dBm	TION FUNCTION WEITH	FUNCTION VALUE	Properties
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# 802.11n-40 MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz





#### 802.11n-40 HIGH CHANNEL CARRIER LEVE



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

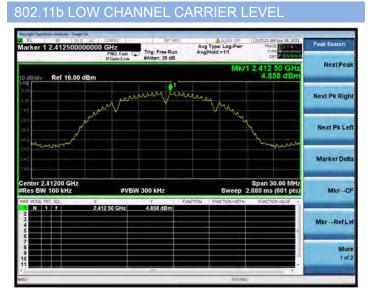
arker 1 2.18	0790000000		Trig: Free Ru	Avg Avg	Type: Log-Pwr Hold:>1/1	11:23:579H Sep 27, 2021 TRACE 12 4 TYPE NOVY	Marker
	_	IFGain:Low	#Atten: 26 dB			DET P NNNN	Select Marker
D dE/div Ref	16.00 dBm				Mk	r1 2.180 8 GHz -59.925 dBm	
6 <b>g</b>							
						*	Norma
11.9						- 112 mai	
40							Delt
uij							
54:0					• <sup>1</sup>	humaning	
10 month from	+ Jan Carpon - Hall			and a start and a start and	and the second second		Fixed
							-
tart 0.030 GH Res BW 100		#VB	W 300 kHz		Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	Of
NR MODE TRC SEL	x	-		FUNCTION	FUNCTION WOTH	FUNCTION VALUE	
2	241	80 8 GHz	-59.925 dBm				
4							Properties
6							
9							Mon
							1 of:
-		_			-		

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





#### Aux. Antenna



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

larker 1 2.6679200000	DO GHZ	Trig: Free Run	Avg Type: Log-Pwr Avg/Hold:>1/1	12:24:00 AM Sep 28, 2021 TRACE 12 4 TVPE	Marker
	IFGain:Low	#Atten: 26 dB		DETPINNIN	Select Marker
o de/div Ref 16.00 dBn	1		Mk	r1 2.667 9 GHz -58,137 dBm	
6g (50) 400					Norma
24.0 24.0 34.0					Delta
410 540 540		ndan daga kanga darabak kegena metan		Landra Particular	Fixed
Start 0.030 GHz Res BW 100 kHz		300 kHz		Stop 3.000 GHz 83.9 ms (1001 pts)	o
MPR MODE TRC SCL	2.667 9 GHz	-58.137 dBm	NETION FUNCTION WIDTH	FUNCTION VALUE	Properties
5					Mor
9					1 of :

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





#### 802.11b MIDDLE CHANNEL CARRIER LEVEL



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

000000 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg[Hold:>1/1	12:28:05 AM Sep 28, 2021 TRACE 12 4 TYPE N	Marker
IFGain:Low	EAtten: 26 05	Mk		Select Marker
				Norma
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	an a	مومان، ورواند و العرب و الم	Anna 1	Fixed
#VE				0
X 2.737 5 GHz	-58.432 dBm	NETION FUNCTION WIDTH	FUNCTION VALUE -	Properties
				Mor 1 of
	00000 GHZ PPO: Fact IFGainŁow dBm #VE	00000 GHZ PHO: East IFGalin≵ow BAttan: 26 dB dBm GBm GBM	00000 GHZ Proc. Fax. IFGsinLow         Trig: Free Run Avg Type: Log-Por AvgHold>11         Avg Type: Log-Por AvgHold>11           dBm         Mk           dBm         Mk           #VBW 300 kHz         Sweep 2'           X         Y         Factors	00000 GHZ IFGSINLow         Trig: Free Run Avg Type: Log-Pwr Avg/Mold:>1/1         Trig: Tr

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





#### 802.11b HIGH CHANNEL CARRIER LEVEI



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

arker 1 2.67634000000	O GHZ	Trig: Free Run	Avg Type: Log-Pwr Avg[Hold:>1/1	12:31:13 AM Sep 28, 2021 TRACE 12 4 TYPE N WWWWWW DET P N MINIMUM	Marker
P-5 40 00 /P-1	IFGain:Low	#Atten: 26 dB	Mik	r1 2.676 3 GHz -58.600 dBm	Select Marker
D dB/div Ref 16.00 dBm					Norma
940 340					Delta
Mig 540 		un fank onder som en stører som at dette	and the second	Andimu	Fixed
itart 0.030 GHz Res BW 100 kHz	#VB	W 300 KHz		Stop 3.000 GHz 83.9 ms (1001 pts)	01
	2.676 3 GHz	-58.600 dBm	INCTION FUNCTION WIDTH	FUNCTION VALUE	Properties
6 7 8 9 9					Mor 1 of
		E	STATU		

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





# 802.11g LOW CHANNEL CARRIER LEVEL

Peak Search	12:34:52 AH Sep 28, 2021 TRACE 12 4 TYPE N WWWWWW DET P M N N H N	Type: Log-Pwr Hold:>1/1	un Avg			000000 G		12.4	ker
NextPeak	AB/div Ref 16.00 dBm 3.960 dBm								
Next PK Righ			1 months	www.white	runn	5			
Next Pk Lei	Jan Wale was and						happyor	for the second	pan
Marker Delt									
Mkr-+Cl	Span 30.00 MHz 2.880 ms (601 pts) PUNCTION VALUE	Sweep 2 PUNCTION WIDTH	FUNCTION	W 300 kHz		x		2.4120 N 100	s BV
Mkr-Ref L				3,960 dBr	25 GHz	2.413		1 1	N
Mon 1 of :									
		STATUS		(11)					_

# 802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

arker 1 2.93894000000	CORREC GHZ PNO: Fast. C	Trig: Free Run	Avg Type: Log-Pwr Avg[Hold:>1/1	12:35:16 AM Sep 28, 2021 TRACE 12 4 TYPE 14	Marker
	IFGain:Low	#Atten: 26 dB		DET	Select Marker
DidE/div Ref 16.00 dBm			Mk	r1 2.938 9 GHz -57.057 dBm	
6g (0)					Norma
40 90 90					Deite
40 40		ووالدابة والتهاب وفان	- galaxie and a second	human	Fixed
tart 0.030 GHz Res BW 100 kHz	#VB	W 300 kHz		Stop 3.000 GHz 83.9 ms (1001 pts)	O
	938 9 GHz	-57.057 dBm	FUNCTION FUNCTION WETH	FUNCTION VALUE	-
234556					Properties
7					Mon 1 of 2
0					

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





# 802.11g MIDDLE CHANNEL CARRIER LEVEL

Peak Search	2:39:21 AM Sep 28, 2021 TRACE 12:4 TYPE NUMBER DET P NINNEN	telash cirr te: Log-Pwr d:>1/1	Avg Ty Avg/Ho		-	NO: Fast. C.	00000 GI		1 2.43	rker
NextPea	Mkr1 2.438 25 GHz 48/div Ref 16.00 dBm 3.998 dBm									
Next Pk Righ			man	molinet	wheeling	man	mind			
Next Pk Le	an and a series							www	man	a nor
Marker Del										0 0 0
Mkr-+C	Span 30.00 MHz 80 ms (601 pts)				300 kHz	#VBW			2.4370 N 100	es BV
Mkr→RefL	PUNCTION VALUE	INCTION WEITH	TION		¥ 3.998 d	5 GHz	× 2,438 2		TRC SQ	N
Mor 1 of										
		STATUE	_	_	-			_	_	_

# 802.11g MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

	0 AC CORREC 000000 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg/Hold:>1/1	12:39:45 AM Sep 28, 2021 TRACE 12:4 TYPE	Marker
	IFGain:Low	#Atten: 26 dB		DET	Select Marker
D dErdiv Ref 16.00	dBm		Mk	r1 2.171 0 GHz -61.111 dBm	
6.00					Norma
4.00				100	Norma
21.0					2.1
34.0					Delt
54.0			• <sup>1</sup>		
and and a second s	And Jose construction for the second s		and the second	Weiner Martinerations	Fixed
Start 0.030 GHz				Stop 3.000 GHz	
Res BW 100 kHz		300 kHz		83.9 ms (1001 pts)	0
Res BW 100 kHz	* 2.171 0 GHz		Sweep 2 UNCTION FUNCTION WOTH	FUNCTION VALUE	.01
Res BW 100 kHz	x	Υ. F			
Res BW 100 kHz           MR MODE TRC SCL           1           2           3           4           5           6           7	x	Υ. F			OI
Res BW 100 kHz	x	Υ. F			

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





# 802.11g HIGH CHANNEL CARRIER LEVEL

arker 1 2.4632	250000000 GHz PNO: Fast IFGain:Low		Avg Type: Log-Pwr Avg Hold:>1/1	12:44:07 AM Sep 28, 2021 TRACE 1 2 4 TYPE MWWWWWW DET P SINNER	Peak Search Next Peak		
Mkr1 2.463 25 GHz 4.159 dBm 4.159 dBm							
600 4.00		monte produce	manning		Next Pk Righ		
NO PORMONAN				and a second and	Next Pk Lei		
54.0 54.0 74.0					Marker Delta		
Center 2.46200 C Res BW 100 kH	z #V		Sweep	Span 30.00 MHz 2.880 ms (601 pts) FUNCTION VALUE	Mkr-+CF		
1 N 1 1 2 3 4 6	2.463 25 GHz	4.159 dBm			Mkr→RefLv		
7 8 9 10					Mon 1 of 2		
(		101	STATUS				

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

PNO: Fast	Trig: Free Run	Avg Hold:>1/1	TYPE NWWWWW	
IFGain:Low	#Atten: 26 dB		DET P NNNH	Select Marker
m		Mk	r1 2.665 2 GHz -59.013 dBm	
				Norma
				Delt
a dan da was para sa da wa	undersonalistic		Annimum	Fixed
				or
2.665 2 GHz	-59.013 dBm	UNCTION FUNCTION WDTH	FUNCTION VALUE	Properties
				Mor 1 of:
	#VB	#VBW 300 kHz	m #VBW 300 kHz Sweep 2 x y Factor Factor	*VBW 300 kHz x YENCTON PLACTON USE

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





#### 802.11n-20 LOW CHANNEL CARRIER LEVE



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

	9442000000	0 GHz	Trig: Free Run	Avg Type: Log-Pwr Avg/Hold:>1/1	12:49:44 AM Sep 28, 2021 TRACE 12 4	Marker
		PNO: Fast C IFGain:Low	#Atten: 26 dB	striffictions and	DETPININNIN	Select Marker
	1					
600						Norma
140 340 340					- 1 G (B)	Deita
54.0 24.0 24.0	and a second system		بالمراجع والمراجع والمراجع والمراجع والمراجع		And and and and and	Fixed
Start 0.030 C #Res BW 10	0 kHz	#VB	W 300 KHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	or
MKR MODE TRC S		2.594 4 GHz	-58,182 dBm	FUNCTION FUNCTION WEITH	FUNCTION VALUE	-
2 3 4 5		و ایندانین ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱				Properties
6 7 8 9						More
11					-	1013
			-	STATU		_

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





#### 802.11n-20 MIDDLE CHANNEL CARRIER LEVE



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

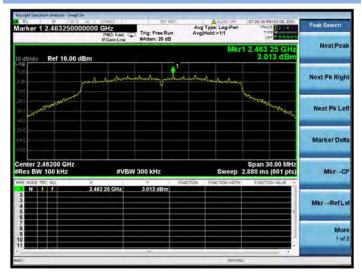
	060000000 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>1/1	12:53:07 AM Sep 28, 2021 TRACE 12 4 TVPE	Marker	
	IFGain:Low	#Atten: 26 dB		DET PRIMINIE	Select Marker	
D dB/div Ref 16.00 dBm -60.980 dBm -60.980 dBm						
6.00 4.00					Norma	
140 240 340					Deite	
54.0 54.0 74.0	an a	ومناويل وليباد ورودهم وي	and the second sec	turaning	Fixed	
Start 0.030 GHz Res BW 100 kH	iz #VE	3W 300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	or	
MAR MODE TRC SCL	× 2.061 1 GHz	-60.980 dBm	INCTION FUNCTION WIDTH	FUNCTION VALUE		
2 3 4 5	2.0011 0112				Properties	
6 7 8 9					Mon 1 of 2	
11				-		

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





#### 802.11n-20 HIGH CHANNEL CARRIER LEVE



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

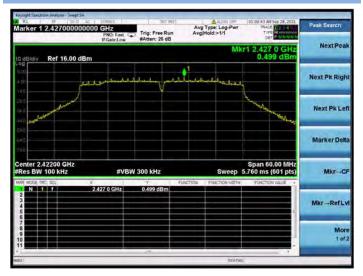
larker 1 2.56044000	AC CORRECT 00000 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>1/1	07:30:22 PM Oct 06, 2021 TRACE 12 A TYPE MWWWWWW	Marker
	IFGain:Low	#Atten: 26 dB	Mk	r1 2.560 4 GHz	Select Marker
D dE/div Ref 16.00 d	IBm			-57.726 dBm	
60 6.00 4.00				0	Norma
749 240 340				art ve dar.	Delta
41)) 54.0 54.0		dialistic operation of the start	alahan ang ang ang ang ang ang ang ang ang a	Al'	Fixed
Start 0.030 GHz Res BW 100 kHz	#VB	300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	01
NR MODE TRIC SEL	× 2.560 4 GHz	-57.726.dBm	HICTION FUNCTION WETH	FUNCTION VALUE +	Properties
5 6 7 8 9 10					Mor 1 of:

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





#### 802.11n-40 LOW CHANNEL CARRIER LEVE



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

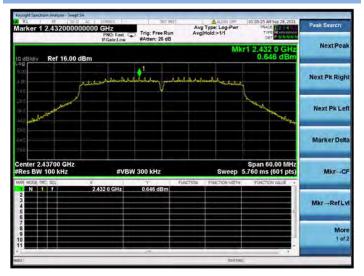
Marker 1 2.7952800	AC CORRECT 000000 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg[Hold:>1/1	01:01:06 AM Sep 28, 2021 TRACE 12 4 TYPE MONTON	Marker
O dE/div Ref 16.00	IFGain:Low	#Atten: 26 dB	Mk	r1 2.795 3 GHz -59.818 dBm	Select Marker
-00 6:00 4:00				1	Norma
149 240 340				115085	Deit
540 240 <mark></mark>	ly ge gegen and a star of the start start and a start st	ar yan casaying di Wingbrand		transform	Fixed
Start 0.030 GHz Res BW 100 kHz	#VB	W 300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	0
1 N 1 T 2 3 4 5	2.795 3 GHz	-59.818 dBm	PORCION WOOT	TORCHOW BALDE	Properties
6 7 8 9 10					Mon 1 of 2
		(a)	STATUS		1

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





#### 802.11n-40 MIDDLE CHANNEL CARRIER LEVE



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

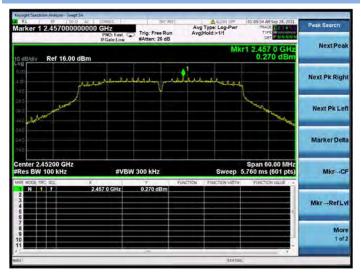
arker 1 2.0696600000	DOO GHZ PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg[Hold:>1/1	01:05:49 AM Sep 28, 2021 TRACE 1 2 4 TYPE NWWWWW	Marker
	IFGain:Low	#Atten: 26 dB		DET P MINNIN	Select Marker
dE/div Ref 16.00 dBr	m		Mk	r1 2.069 7 GHz -61.116 dBm	
00 00				n	Norma
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10 40 40 mentlinnersterstersterstersterstersterstersterst	an shi an	and an a star and a star		Laningunger	Fixed
tart 0.030 GHz Res BW 100 kHz	#VB	W 300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	or
R MODE TRC SQL	x 2.069 7 GHz	-61.116 dBm	UNCTION PUNCTION WEITH	FUNCTION VALUE	
2 <b>1</b> 3 <b>1</b> 4 <b>1</b> 5 <b>1</b>					Properties
6 7 8 9 9					Mon

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





#### 802.11n-40 HIGH CHANNEL CARRIER LEVE



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

Marker	01:10:29 AM Sep 28, 2021 TRACE 12:34	d ALISh OFF ype: Log-Pwr sid:>1/1	Avg	Trig: Free Run		000000 G			arke
Select Marker	DET PLUMNING	_		#Atten: 26 dB	Gain:Low	IF	_	_	_
	-60.427 dBm	Mkr				dBm	ef 16.00	IV R	0 dBR
Norma									69 6.00
-									14.0
Delt									40 40
Fixed	Christian same	mound							4.0
Fixed							All Concerned	Polos des	74.0
0	Stop 3.000 GHz 33.9 ms (1001 pts)	Sweep 28		300 kHz	#VBV			0.030 G BW 100	
	FUNCTION VALUE	FUNCTION WIDTH	FUNCTION	-60.427 dBm	3 GHz	x 1.937		OE TRC S	1 N
Properties	-								2 3 4 5
Mor									6 7 8 9
1 of									10
		STATUS						_	(a)

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





#### MIMO-Main Antenna

802.11n-20 LOW CHANNEL CARRIER LEVEL



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

1 2.628750000000 GHz PNO: Fast. C Trig: F	Aver Run Aver	g Type: Log-Pwr 1Hold:>1/1	07:34:07 PH Oct 08, 2021 TRACE 12:4 TVPE NUMBER OF PURISHIES	Marker		
IFGain:Low #Atter				Select Marker		
0 48/4/V Ref 16.00 dBm -58.264 dBm -58.264 dBm						
				Norma		
			-19-			
				Delt		
	nisades an Nedar	and a second	hoursenances	Fixed		
030 GHz W 100 kHz #VBW 300 ki	z	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	0		
TRC SEL X Y 1 1 2.628 8 GHz -58 264	FUNCTION	FUNCTION WETH	FUNCTION VALUE	-		
				Properties		
				Mor		
			-	1 of		
		STATUS				

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





# 802.11n-20 MIDDLE CHANNEL CARRIER LEVEL

Peak Search	12:00:39 AM Sep 28, 2021 TRACE 12:4 TVPE M WWWWWW DET P M M HIN N	ype: Log-Pwr old:>1/1	Avg	Trig: Free Ru #Atten: 26 dB		AC   0 00000 G		1 2.4	rker
NextPeak	Mkr1 2.438 25 GHz 48/div Ref 16.00 dBm 4.083 dBm								
Next Pk Righ		hornoring	1 milionte	hintagen	portin	portin			0 0
Next Pk Let	Maniconterme						man	www	e ogenti
Marker Delt									0 0 0
Mkr-+C	Span 30.00 MHz 880 ms (601 pts)			300 KHz	#VBW			N 100	es Bl
Mkr→RefLy	FUNCTION VALUE	FUNCTION WETH	FUNCTION	4.083 dBm	25 GHz	× 2.438		TRC 901	N
Mor 1 of									
_		STATUS				_	_	-	1

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

RL 85 3 Marker 1 2.907510	00 AC CORRECT 0000000 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg/Hold:>1/1	12:01:09 AM Sep 28, 2021 TRACE 12:14 TYPE M WWWWWW	Marker
	IFGain:Low	#Atten: 26 dB			Select Marker
D 4E/div Ref 16.00 dBm -58.625 dBm					
<b>69</b> 6.00					
4.00				1	Norma
149				-1.11.009	
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Ariji					
54.0				<b>↓</b>	
240	an and share and a strate strates	and a second and a second and the se	and service and a service of the ser		Fixed
Start 0.030 GHz Res BW 100 kHz	#VE	300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	or
		Y I	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
1 N 1 1 2	2.907 5 GHz	-58.625 dBm			
4					Properties
6					
8					Mon
10					1 of 2
6		1	STATU		

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





#### 802.11n-20 HIGH CHANNEL CARRIER LEVE



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

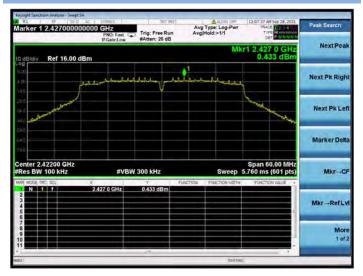
arker 1 2.6830300000	DO GHZ	Trig: Free Run	Avg Type: Log-Pwr Avg[Hold:>1/1	12:04:07 AM Sep 28, 2021 TRACE 12:04 TYPE MONITORING DET P. N. MINIMUM	Marker
	IFGain:Low	#Atten: 26 dB	Mk	r1 2.683 0 GHz -58.236 dBm	Select Marker
0 dB/div Ref 16.00 dBn					Norma
910 910					Delt
540 940 <b>944 944 944 944 944 94</b> 940	and a second	واسترساره واردوا مراسر ومرا	arlan margaren ez aldutten margaren eta	Harrison	Fixed
tart 0.030 GHz Res BW 100 kHz		W 300 kHz		Stop 3.000 GHz 83.9 ms (1001 pts)	o
1 N 1 1 2 3 4 5	2.683 0 GHz	-58 236 dBm	NETION FUNCTION WIDTH	FUNCTION VALUE	Properties
6 7 8 9 9 1					Mor 1 of
-		28	STATUS		

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





#### 802.11n-40 LOW CHANNEL CARRIER LEVE



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

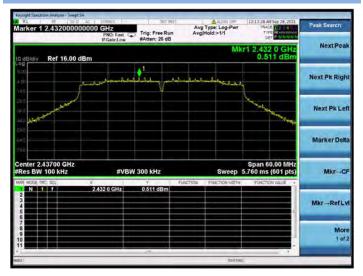
larker 1 2.64657	00000000 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>1/1	12:08:09 AM Sep 28, 2021 TRACE 12 4 TVPE NUMBER	Marker
	IFGain:Low	#Atten: 26 dB		DETPINNNN	Select Marker
	00 dBm		Mk	-57.717 dBm	
6 <b>0</b> 6.00 4.00				,	Norma
210					
34 Q					Delt
540 540 <mark>33 41 20 20 20 20 20 20 20 20 20 20 20 20 20 </mark>	al <sub>andelin</sub> yata.Sebiaknya <sub>kala</sub> anaan	autolous at estrator	en waaren ar an	Lucian	Fixed
Start 0.030 GHz Res BW 100 kHz	#VB	300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	01
N 1 T	× 2.646 6 GHz	-57.717 dBm	INCTION FUNCTION WDTH	FUNCTION VALUE	-
2 3 4 5					Properties
6					Mon
7					1.41
					1 of 3

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





#### 802.11n-40 MIDDLE CHANNEL CARRIER LEVE



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

larker 1 2.1409400	00000 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg[Hold:>1/1	12:13:54 AM Sep 28, 2021 TRACE 12 4 TVPE	Marker
	IFGain:Low	#Atten: 26 dB		DET	Select Marker
ID 4B/4IV Ref 16.00 dBm -61.282 dBm					
6 <b>9</b> (FCX) 4 00				Λ	Norma
24.0 24.0 34.0					Delt
54.0 54.0 74.0	و نې ورو ورو د نور و ورو و	والمرسطة المحاصر وحاصر والمحاصر		human	Fixed
Start 0.030 GHz Res BW 100 kHz	#VE	3W 300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	
INF MODE TRC SCL	x 2.140 9 GHz	-61.282 dBm	UNCTION FUNCTION WEITH	FUNCTION VALUE	
2 3 4 5					Properties
6					Mor
8 9 10					1 of

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

