ISSUED BY Shenzhen BALUN Technology Co., Ltd.

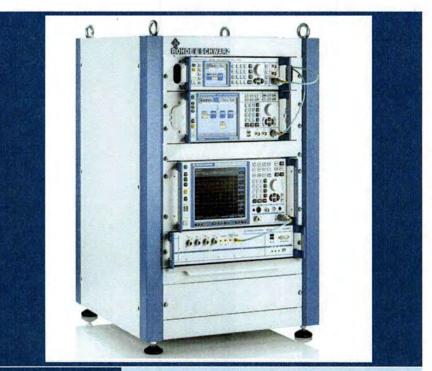


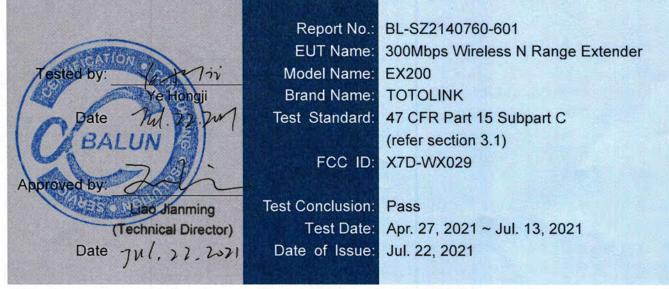
FOR

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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www.baluntek.com

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% |

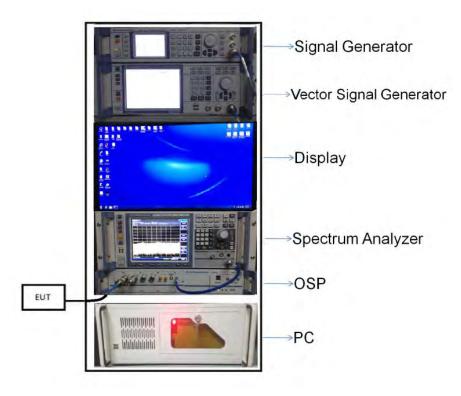


4.4 Description of Test Setup

4.4.1 For Antenna Port Test

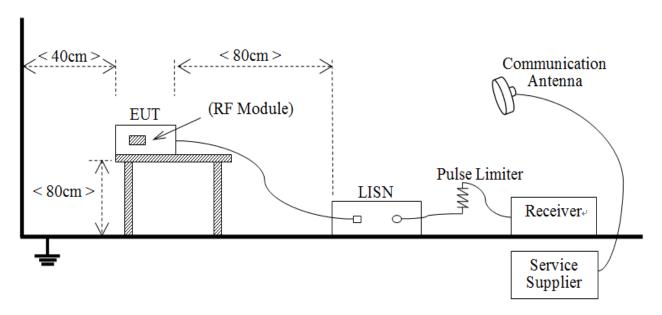
Conducted value (dBm) = Measurement value (dBm) + cable loss (dB)

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)

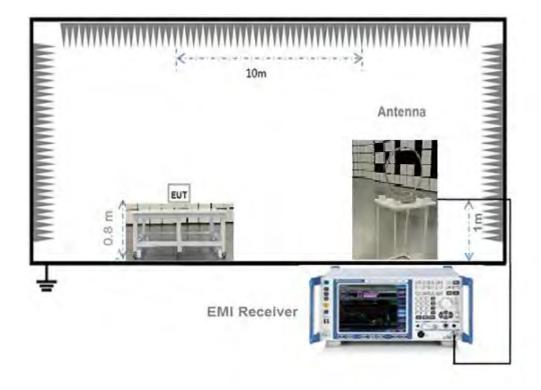




(Diagram 2)

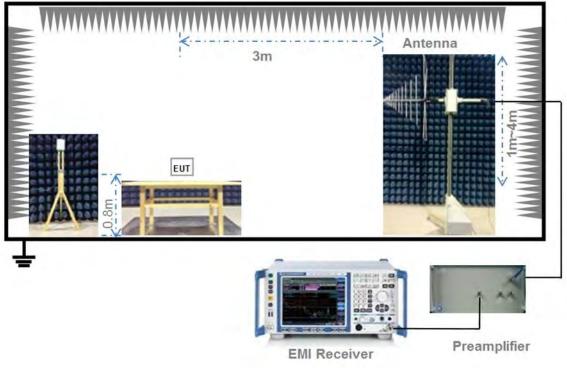


4.4.3 For Radiated Test (Below 30 MHz)



(Diagram 3)

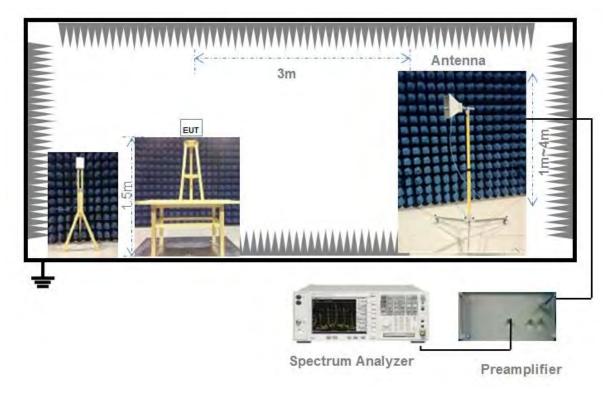
4.4.4 For Radiated Test (30 MHz-1 GHz)



(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 |



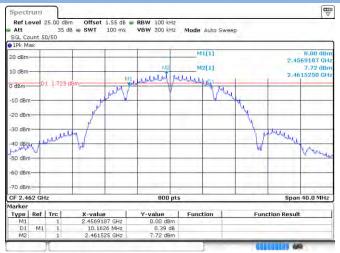
<u>Test plots</u> <u>6 dB Bandwidth</u>

Main Antenna



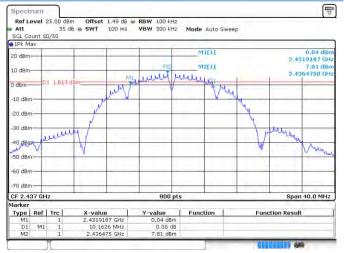
Date: 27.APR.2021 16:59:05

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

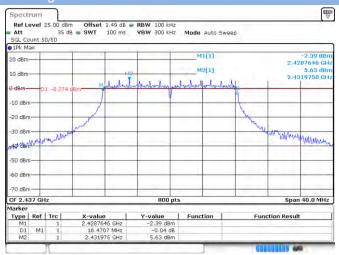
monumpun

Span 40.0 MHz

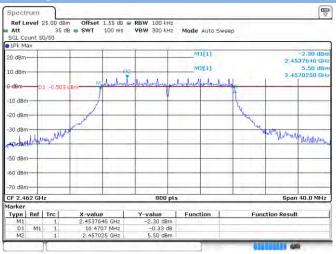
Function Result

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

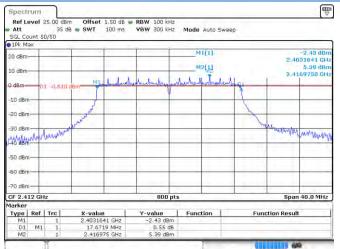
-10 dBm--20 dBm-

MMunumbernt -30 dBm

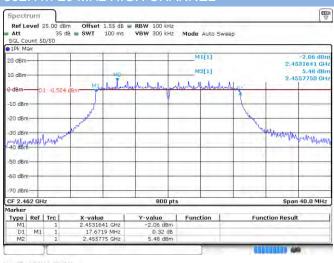
CF 2.437 GHz Marker

Date: 27 APR 2021 17:30:48

802.11n-20 MHz LOW CHANNEL

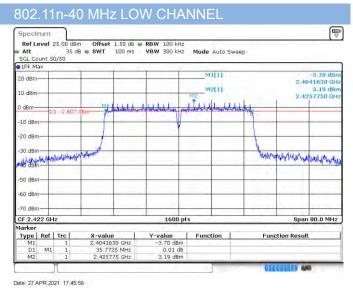


Date: 27 APR 2021 17:37:54



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

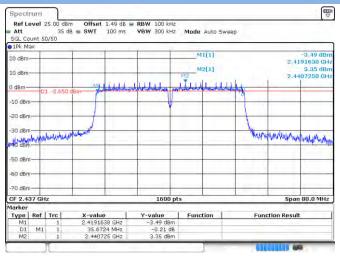
1 -0 369

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

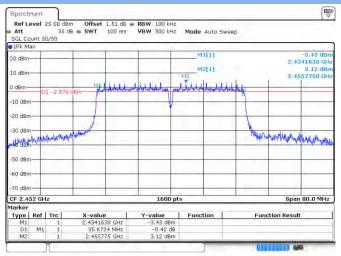
802.11 n-20 MHz MIDDLE CHANNEL



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



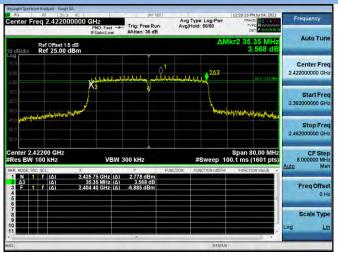
802.11n-20 MHz LOW CHANNEL



802.11n-20 MHz HIGH CHANNEL

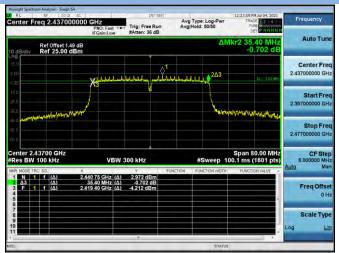


802.11n-40 MHz LOW CHANNEL

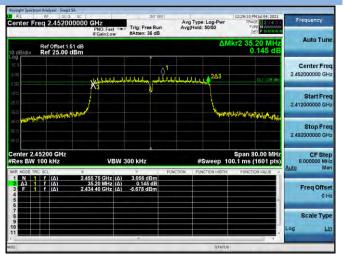




802.11n-40 MHz MIDDLE CHANNEL



802.11n-40 MHz HIGH CHANNEL



99% Bandwidth

Main Antenna

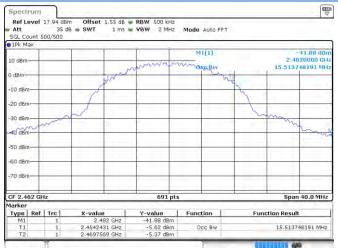


802.11b MIDDLE CHANNEL



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

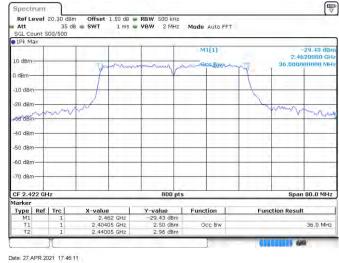
Spectrum Ref Level 21.55 dBm Offset 1.55 dB RBW 500 kHz Att 35 dB SWT 1 ms VBW 2 MHz SGL count 500/500 1Pk Max 31Pk Max 31Pk Max 31Pk Max Mode Auto FFT MI[1] 22,56 dBr -22.56 dB 2.4820000 Gi 18.408104197 Mi n der n dBm 10 dBm -20 dBm -30 dBm 40 dBm -50 dBm -60 dBm 70 riem-691 pts CF 2.462 GH: Span 40.0 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

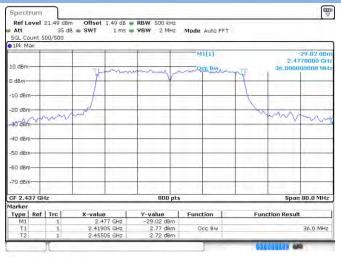
 SGL Count 500/500
 Ims
 VBW 2 MHz

 IPk Max
 Ims
 Ims
 Ims
 Mode Auto FFT

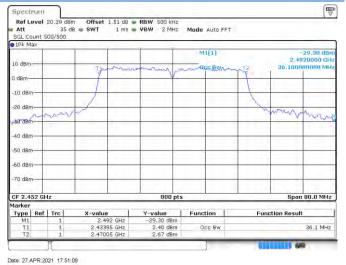
-22,14 dB 2.4570000 G 18.408104197 M MI[1] 10 dBm dBm 10 dBm -20 dBm 30 dBm 40 dBm -50 dBm--60 dBm-70 dBm CF 2.437 GHz 691 pt Span 40.0 MHz X-value 2.457 GHz 2.4278538 GHz 2.4462619 GHz Y-value Type Ref Trc | Function | Function Result 1.93 dBm 1.68 dBm Occ Bw 18:408104197 MHz 680



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



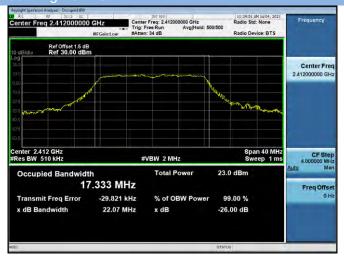
802.11b MIDDLE CHANNEL







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:

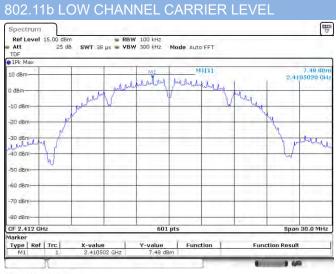
| | Measured Max. Out of | Limit (| dBm) | |
|---------|-----------------------|---------------|---------------|---------|
| Channel | Band Emission (dBm) | Carrier Level | Calculated 20 | Verdict |
| | Danu Emission (ubiri) | Carrier Level | dBc Limit | |
| Low | -48.99 | 1.11 | -18.89 | Pass |
| Middle | -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

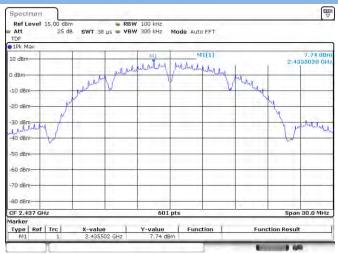
| Att | 15,00 dBn 25 d8 | | 30 ms • VB | W 100 kHz W 300 kHz | Mode Au | to Sweep | | | |
|---------------------|--------------------|--------|----------------------|------------------------|---------|--------------------|-----------------------|-------------|------------|
| 1Pk Max | | | 7 - E | | _ | | | | |
| 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

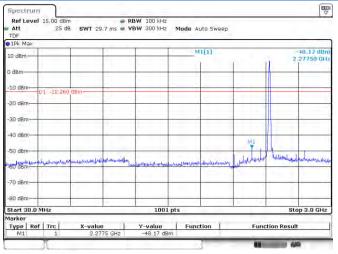


802.11b MIDDLE CHANNEL CARRIER LEVEL



Date: 27 APR 2021 17:07:31

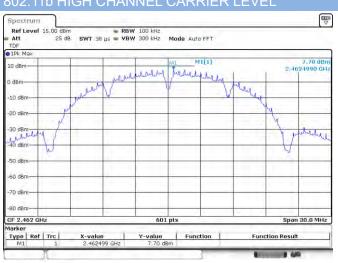
802.11b MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



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



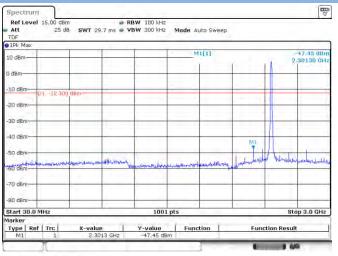
Date: 27 APR 2021 17:12:07

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

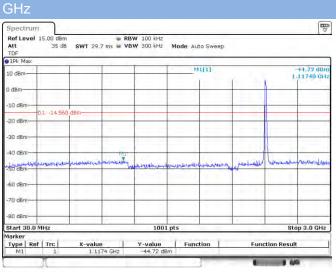
802.11g LOW CHANNEL CARRIER LEVEL

| 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

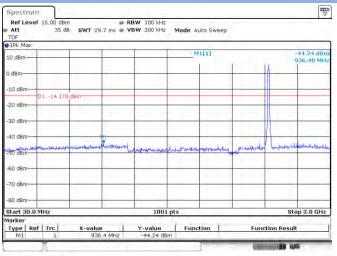
| 1Pk Max | | 94(1.30 | he a ABJ | Y 300 kHz | Mode Auto | FFT | | | | |
|-------------|-------|---------|-----------|------------------|-----------|--------|------------|--------------------------|----------|--|
| The way | - | - | í l | 1 | | [1] | _ | | 5.07 dBa | |
| 10 dBm | - | | Ma | 1 | | | | 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

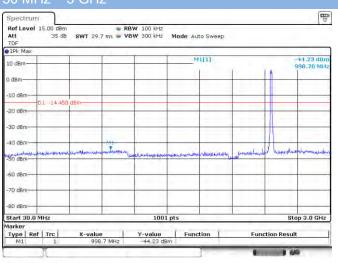
| Att TDF 1Pk Max | | 5444 55 | p 181 | / 300 kHz | Hune Sure | | | | |
|-----------------------|------|------------------|--------------|--------------------|-------------|--------|--------|-----------|------------|
| 1 | | 1 | - | 1 | MI | [1] | | - | 5.55 dBr |
| 10 dBm | | 1.5.7 | 141 | 1.00 | | | 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

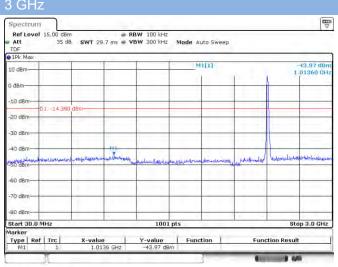
802.11n-20 LOW CHANNEL CARRIER LEVEL

| 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

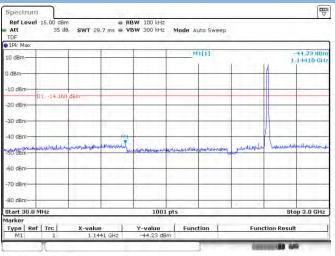
| Att TDF | 35 d8 | SWT 38 | ha 🕿 ABA | 300 kHz M | Mode Auto | FFT | | | - |
|-----------------------|----------|---------|----------|-----------|-----------|---------|-----------|------------|------------|
| 1Pk Max | | | 1 | T T | M | 1[1] | - | | 5.84 dBn |
| 10 dBm | | | T . | Julindre | - 1 - 1 | | 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

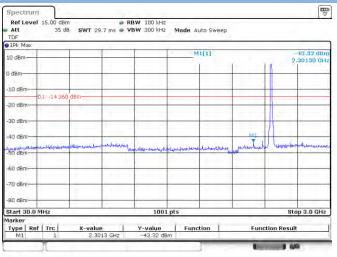
| TDF 1Pk Max | | | | | | A. 44 | | | |
|----------------|---------|---------|---------|--------|-------|-----------|--------|------|----------|
| 10 dBm | | | 102 | | М | 1[1] | | 24 | 5,64 dBn |
| 0 dBm | | manhand | molarly | Multer | which | Andrealow | Amlany | 2.1 | |
| -10 dBm | | | | - | | _ | | ¢ | |
| -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

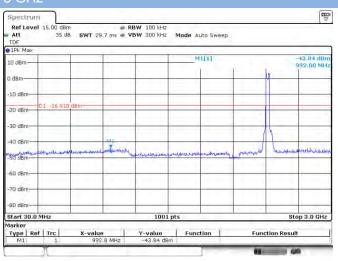
802.11n-40 LOW CHANNEL CARRIER LEVEL

| 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

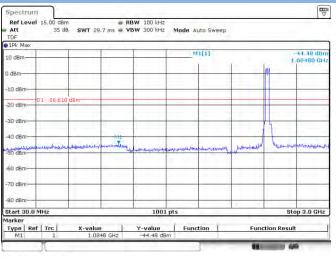
| Ref Level Att | | | | BW 100 kHz BW 300 kHz | Mode Aut | O FFT | | | |
|--------------------------|-------|------------------|--------|--------------------------|------------|-------|-----------------|-------------|-----------------------|
| 1Pk Max | | | | | | | | | - |
| 10 dBm | _ | | - | | MI | [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

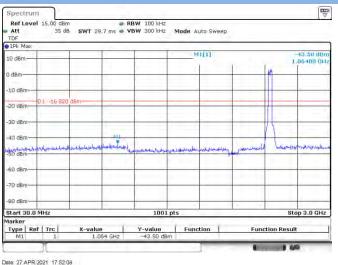
| Ref Level Att | | | | BW 100 kHz BW 300 kHz | Mode Au | O FFT | | | |
|--------------------------|--------------|-------------------------|--------------|--------------------------|-----------|------------|----------------|-------------|----------------------|
| 1Pk Max | | | | | - | | | | |
| 10 dBm | | - | | | 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

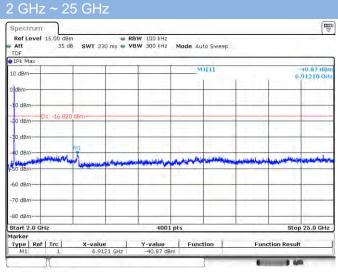


802.11n-40 HIGH CHANNEL, SPURIOUS

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 | | | | | |

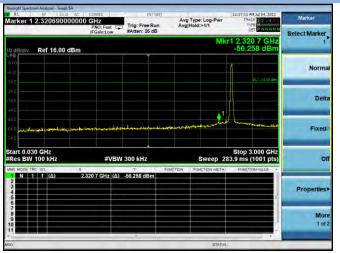
802.11n-20 HIGH CHANNEL CARRIER LEVE



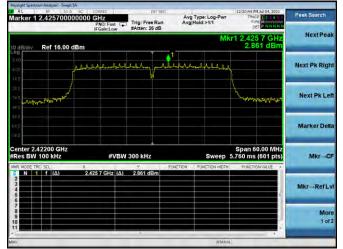


802.11n-20 HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

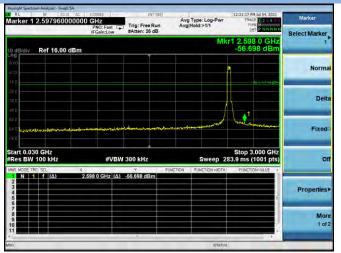




802.11n-40 LOW CHANNEL CARRIER LEVEL



802.11n-40 LOW CHANNEL, SPURIOUS 30 MHz ~



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

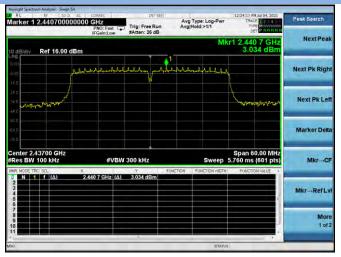


802.11n-40 LOW CHANNEL, SPURIOUS 2 GHz ~





802.11n-40 MIDDLE CHANNEL CARRIER LEVEL



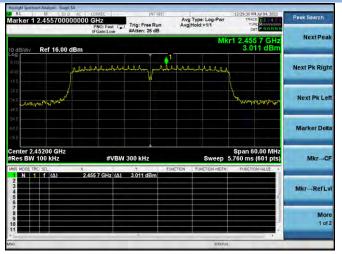
802.11n-40 MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

| 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





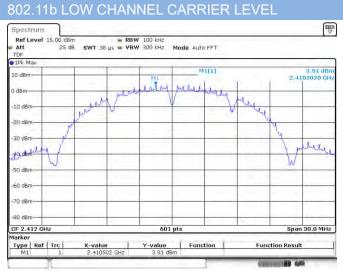
802.11n-40 HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



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



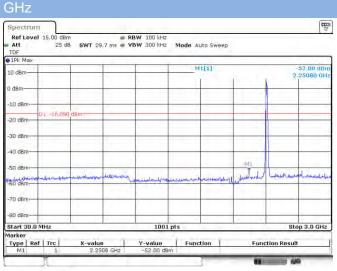
MIMO-Main Antenna



Date: 27.APR.2021 17:56.54



802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3



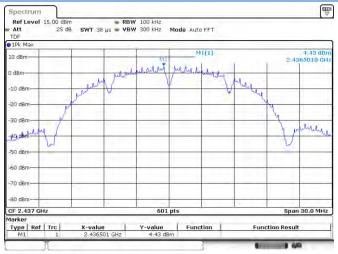
802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25

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

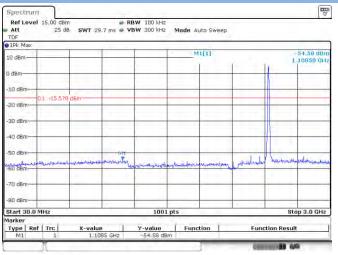


Date: 27.APR.2021 18:00:10



802.11b MIDDLE CHANNEL, SPURIOUS

30 MHz ~ 3 GHz



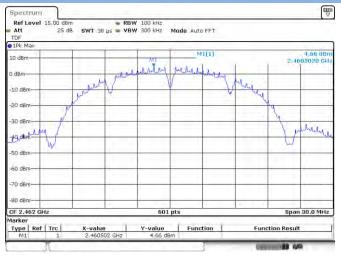
802.11b MIDDLE CHANNEL, SPURIOUS

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

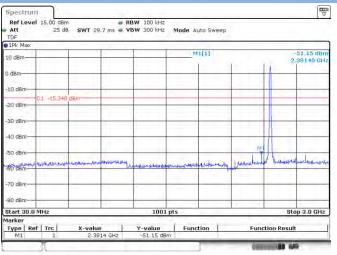


Date: 27 APR 2021 18:39:13



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

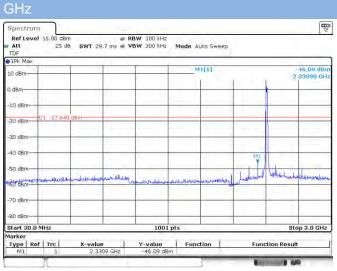
802.11g LOW CHANNEL CARRIER LEVEL

| 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

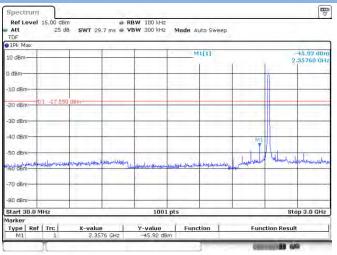
| 1Pk Max | | | - | - | - | | | _ | |
|-----------|----|---------|------------|------------|------------|-----------|---------|--------|---------------------|
| LŪ dBm | | | | | M | [1] MI | | | 2,45 dBr 9920 GH |
| dBm | | arthant | nontimente | antronting | marchendry | mount | menting | - | |
| 10 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

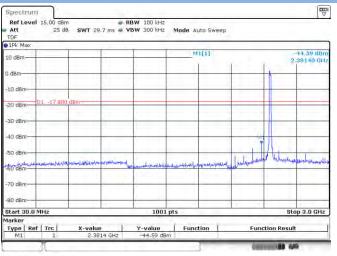
| anthree | | 1 | M1[1] | | | 2,20 dBn |
|----------|---------------|--------------|--------------|-------------|--------|-----------|
| tentre | | | | | | |
| antre | | | M1 | 1 | 2.46 | 69920 GH |
| | athantination | almention of | Arcateration | motionation | | |
| | | | 2020 | | | |
| 1 | | | | | | |
| 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

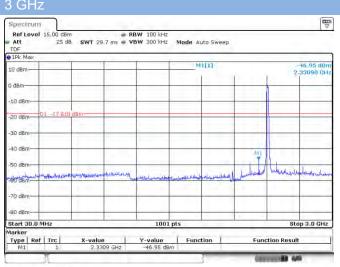
802.11n-20 LOW CHANNEL CARRIER LEVEL

| 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

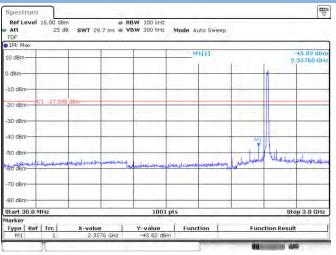
| TDF 1Pk Max | 1 | | Mode Auto FFT | | |
|----------------|-------------|-----------------|---------------|-----------|--------------------------|
| LO dem | 1 | | M1[1] | | 2,42 dBn 2,4419920 GH |
| dBm | manturation | martinationstry | | thenterry | |
| 10 dBm | | | 1 | | - |
| 20 dBm | J.C. | - | | 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

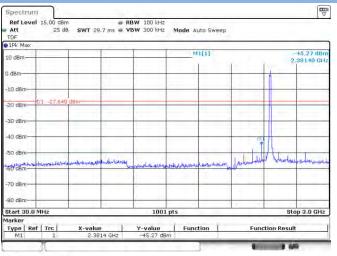
| TDF | 1.5 00 | 341 30 | ps = 40 | W 300 kHz | HOUE ACTO | 3.1 | | | |
|----------------|--------|-------------------|---------|--------------------|-------------|-----------|--------|----------|------------|
| 1Pk Max | | _ | | 1 1 | MI | | | | 2,36 dBn |
| 10 dBm | | - | Mi | - | (e) L | | | 2.4 | 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

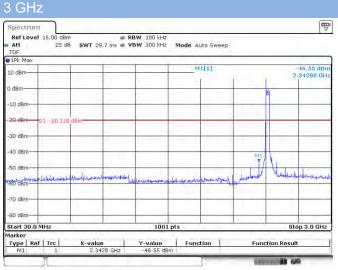
802.11n-40 LOW CHANNEL CARRIER LEVEL

| 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 |

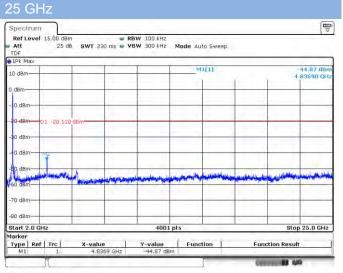
Date: 27.APR.2021 19:00:36



802.11n-40 LOW CHANNEL, SPURIOUS 30 MHz ~



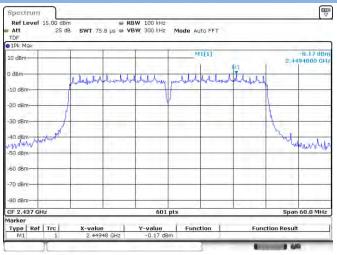
802.11n-40 LOW CHANNEL, SPURIOUS 2 GHz ~



Date: 27.APR 2021 19:01:00

Date: 27 APR 2021 19:00:52

802.11n-40 MIDDLE CHANNEL CARRIER LEVEL

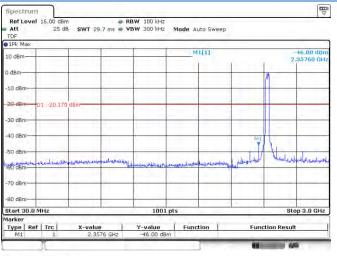


Date: 27 APR 2021 19:02:44

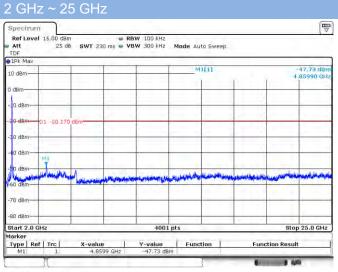


802.11n-40 MIDDLE CHANNEL, SPURIOUS





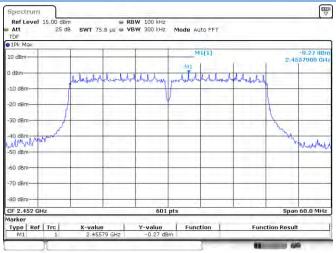
802.11n-40 MIDDLE CHANNEL, SPURIOUS



Date: 27 APR 2021 19:03:11

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

802.11n-40 HIGH CHANNEL CARRIER LEVEL

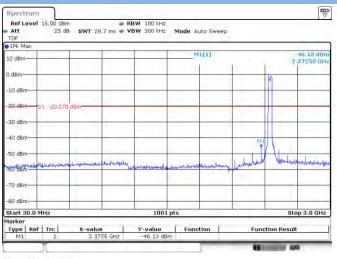


Date: 27 APR 2021 19:05:03



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 |
|---------------|---|-----------------------------|------------|--|----------------|----------------------|--------------------|------------------|-------|------------------------------|
| | TRACE 12 34 5 TVPE MWWWWWW DET PNNNNN | Type: Log-Pwr Hold:>1/1 | , 1 | Trig: Free Ru #Atten: 26 dB | ast 😱 | | 84000000 | 2.5018 | ker 1 | lari |
| Select Marker | 1 2.501 8 GHz -55.388 dBm | Mk | | | | 1. 19 1 1 1 1 1 | 16.00 dBm | Ref 1 | 3/div | |
| Norma | | | | | | | | | | .og 600 401 |
| Deita | DL1+17 95 mini | | | | | | | | | 14 0 34 0 34,0 |
| Fixed | 1. | and management | estaso art | un an air an | a.a.l. interes | فستعية معافل عاقبتهم | والرواقية والمراجع | | - | 44,0 54,0 54,0 54,0 |
| 01 | Stop 3.000 GHz 3.9 ms (1001 pts) | Sweep 28 | FUNCTIO | 300 kHz | #VBW | | Hz | 30 GHz 100 kH | | Re |
| | 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 |
|---------------|-----------------------------|------------------|--|--------|------------------------------|--------------------------|---------|------------------|-----------|----------------------|
| Select Marker | TYPE MUNICIPAL PLAN | | Type: Log-Pwr Hold:>1/1 | | Trig: Free R #Atten: 26 d | PNO: Fast | 0000000 | 2.501840 | ker 1 | lar |
| Select Marker | 01 8 GHz .388 dBm | r1 2.50 -55.3 | Mki | | | | 0 dBm | Ref 16.0 | B/div | ID dE |
| Norma | | 1 | | | | | | | | -og 6.00 400 |
| Delt | 11.1+17-55 mBm | | | | | | | | | 34.0 34.0 |
| Fixed | | Luna | anna an | Andara | sienen des en ter | an and the second second | | **** | - Andrews | 54.0 54.0 74.0 |
| OI | o 3.000 GHz s (1001 pts) | 33.9 ms | Sweep 28 | FUN | 300 kHz | #VBW | X | 0 GHz 100 kHz | | Res |
| | | | | | -55.388 dBm | 1 B GHz (A) | 2.5 | f (A) | N | |
| Properties | ti i | | | | | | | | | 23456 |

802.11b HIGH CHANNEL CARRIER LEVE



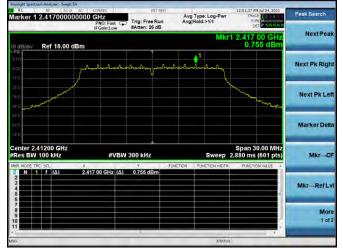


802.11b HIGH CHANNEL, SPURIOUS





802.11g LOW CHANNEL CARRIER LEVEL



802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

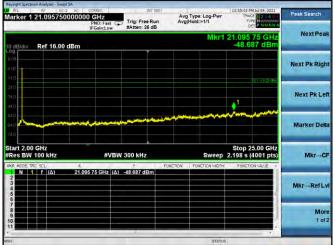


802.11b HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25







802.11g MIDDLE CHANNEL CARRIER LEVEL



802.11g MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

| RACE | 17 | be: Log-Pwr d:>1/1 | Avg Avg | ee Run | Trig: Fre | O: Fast Ca | 0000 MH | | er 1 40 |
|-----------------------|-------------------------|--|--|--|--|---|--|--|---|
| 01.3 MHz 870 dBm | kr1 4 -59. | M | | | | Junitow | | ef 16.00 c | idiv R |
| | 1 | | | | | | | | |
| DLT-1887 dBm | | | | | | | | | |
| and a second spin com | h | mand | uluene? | an de se | ممرعاباته | الما بالمحمو | acal selvere | and in the | e al a Persona |
| 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

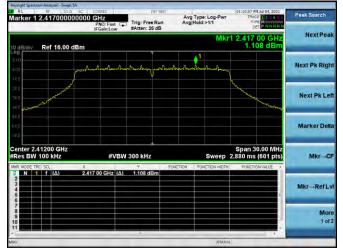




802.11g HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



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



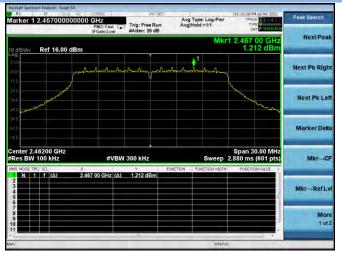
802.11n-20 MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

| 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 | | | | | | | |
| | | | | | | | | og 600) 400 - |
| 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

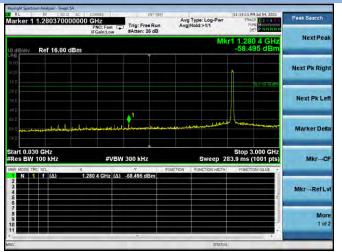
| larker 1 24.6032500000 | | | 01:16:38 PM Jul 04, 2021 TRACE 1 2 3 4 TYPE MUSEUM DET P NNNN R | Peak Search |
|---|-------------------------------------|-----------------------|--|----------------------------|
| o dBidiv Ref 16.00 dBm | | Mk | r1 24.603 25 GHz -46.785 dBm | NextPeak |
| eg 6.00 4.00 t | | | | Next Pk Righ |
| 14 D | | | 011-16,25 dBm | |
| 34.0 | | | | Next Pk Lef |
| | 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

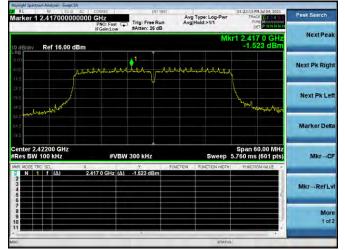




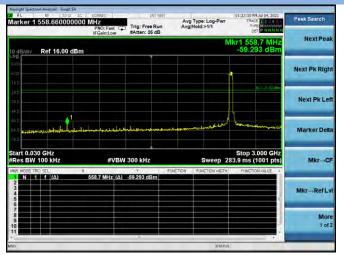
802.11n-20 HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



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

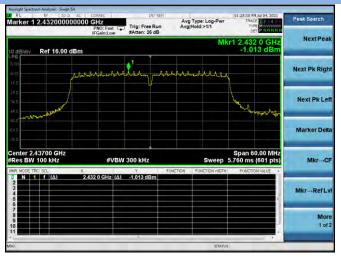


802.11n-40 LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

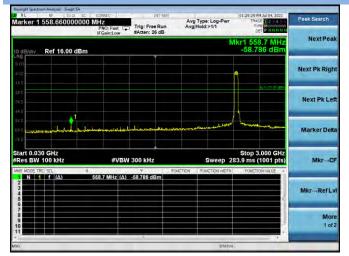




802.11n-40 MIDDLE CHANNEL CARRIER LEVEL



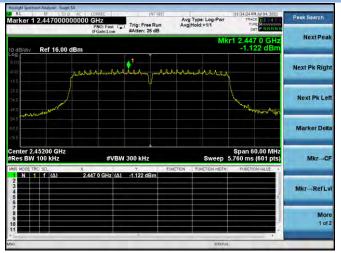
802.11n-40 MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



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

| | | and a second | ABF | INT | | | | | RL |
|-------------------------|---------------------------|----------------------------|--|--|--|---|--|---|--|
| | | Type: Log-Pwr Iold:>1/1 | un B | Trig: Free Ru #Atten: 26 di | O: Fast | P | .067000 | er 1 21 | lark |
| 10 dB/div Ref 16.00 dBm | | | | | | | | | |
| | | | | | | | | 1 | 6,00 400 |
| 51-21 DT (8m | | | | | | | | | 14 0 34 0 34 0 |
| a nines | a normality of the second | | and the second | وي الجارية الجامع الم | مية بالداري | | - | Anning | 44,0 - 54,0 - 54,0 - 54,0 - |
| | | - | | 200 1-11- | | | | 2,00 G | Start |
| 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:

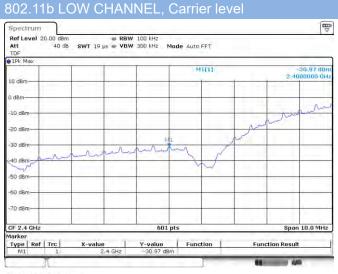
| Channel | Measured Max. Band Edge Emission (dBm) | Limit (dBm) | | |
|--------------|---|---------------|----------------------------|---------|
| | | Carrier Level | Calculated 20 dBc Limit | Verdict |
| Low Channel | -39.35 | 1.11 | -18.89 | Pass |
| High Channel | -52.67 | 1.21 | -18.79 | Pass |

| 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

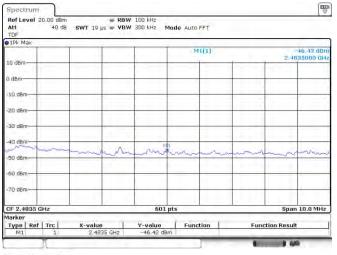


802.11b LOW CHANNEL, Reference level Spectrum Ref Level 20.00 dBm RBW 100 kHz Att 40 dB SWT 19.1 µs VBW 300 kHz Mode Auto FFT SGL Count 100/100 TDF TDF Imm AvgPwr MI[1] 40,84 0 2.399 10 dBm dBm -10 dBn -20 dBn -30 dBm 4FL dBd -50 dBn -60 dB 70 dBm CF 2.4 GH 601 pt Span 2.0 MHz X-value Type | Ref | Trc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