

FCC Test Report

Report No.: AGC00806250807FR01

FCC ID : 2BRNH-H2

APPLICATION PURPOSE: Original Equipment

PRODUCT DESIGNATION: Motorcycle Helmet Bluetooth Headset

BRAND NAME : HYCOMM

MODEL NAME : H2, H4

APPLICANT: Shenzhen Haoyun Technology Co., Ltd

DATE OF ISSUE : Aug. 21, 2025

STANDARD(S) : FCC Part 15 Subpart C §15.247

REPORT VERSION: V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



Page 2 of 79

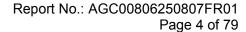
Report Revise Record

Report Version	Revise Time	Revise Time Issued Date Valid Version		Notes	
V1.0	1	Aug. 21, 2025	Valid	Initial Release	



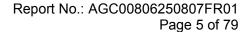
Table of Contents

1. General Information	
2. Product Information	6
2.1 Product Technical Description	6
2.2 Test Frequency List	6
2.3 Related Submittal(S) / Grant (S)	
2.4 Test Methodology	7
2.5 Receiver Input Bandwidth	
2.6 Equally Average Use of Frequencies and Behaviour.	
2.7 Pseudorandom Frequency Hopping Sequence	8
2.8 Special Accessories	9
2.9 Equipment Modifications	9
2.10 Antenna Requirement	9
3. Test Environment	10
3.1 Address of The Test Laboratory	10
3.2 Test Facility	10
3.3 Environmental Conditions	1′
3.4 Measurement Uncertainty	
3.5 List of Equipment Used	12
4. System Test Configuration	14
4.1 EUT Configuration	14
4.2 EUT Exercise	
4.3 Configuration of Tested System	14
4.4 Equipment Used in Tested System	15
4.5 Summary of Test Results	
5. Description of Test Modes	17
6. RF Output Power Measurement	19
6.1 Provisions Applicable	19
6.2 Measurement Procedure	19
6.3 Measurement Setup (Block Diagram of Configuration)	19
6.4 Measurement Result	20
7. 20dB Bandwidth and 99% Occupied Bandwidth Measurement	
7.1 Provisions Applicable	
7.2 Measurement Procedure	
7.3 Measurement Setup (Block Diagram of Configuration)	
7.4 Measurement Results	27
8. Conducted Band Edge and Out-of-Band Emissions	
8.1 Provisions Applicable	
8.2 Measurement Procedure	
8.3 Measurement Setup (Block Diagram of Configuration)	33
8.4 Measurement Results	34





9. Radiated Spurious Emission	54
9.1 Measurement Limit	54
9.2 Measurement Procedure	54
9.3 Measurement Setup (Block Diagram of Configuration)	57
9.4 Measurement Result	58
10. Number of Hopping Frequency Measurement	64
10.1 Provisions Applicable	64
10.2 Measurement Procedure	64
10.3 Measurement Setup (Block Diagram of Configuration)	64
10.4 Measurement Result	64
11. Time of Occupancy (Dwell Time) Measurement	67
11.1 Provisions Applicable	67
11.2 Measurement Procedure	67
11.3 Measurement Setup (Block Diagram of Configuration)	67
11.4 Measurement Result	67
12. Frequency Separation Measurement	71
12.1 Provisions Applicable	71
12.2 Measurement Procedure	71
12.3 Measurement Setup (Block Diagram of Configuration)	71
12.4 Measurement Result	71
13. AC Power Line Conducted Emission Test	74
13.1 Measurement Limit	74
13.2 Measurement Setup (Block Diagram of Configuration)	74
13.3 Preliminary Procedure of Line Conducted Emission Test	75
13.4 Final Procedure of Line Conducted Emission Test	75
13.5 Measurement Result	75
Appendix I: Photographs of Test Setup	78
Appendix II: Photographs of Test EUT	78





1. General Information

Applicant	Shenzhen Haoyun Technology Co., Ltd			
Address	Room 311, Building B8, Yintian Industrial Zone, Yantian Community, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China			
Manufacturer	Shenzhen Haoyun Technology Co., Ltd			
Address	Room 311, Building B8, Yintian Industrial Zone, Yantian Community, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China			
Factory	Shenzhen Haoyun Technology Co., Ltd			
Address	Room 311, Building B8, Yintian Industrial Zone, Yantian Community, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China			
Product Designation	Motorcycle Helmet Bluetooth Headset			
Brand Name	НҮСОММ			
Test Model	H2			
Series Model(s)	H4			
Difference Description	All the same except for the model name.			
Date of receipt of test item	Aug. 11, 2025			
Date of Test	Aug. 11, 2025 to Aug. 21, 2025			
Deviation from Standard	No any deviation from the test method			
Condition of Test Sample	Normal			
Test Result	Pass			
Test Report Form No	AGCER-FCC-BR_EDR-V1			

Note: The test results of this report relate only to the tested sample identified in this report.

Prepared By	Jouk bai	
	Jack Gui (Project Engineer)	Aug. 21, 2025
Reviewed By	Bibo zhang	
	Bibo Zhang (Reviewer)	Aug. 21, 2025
Approved By	Angole Li	
	Angela Li (Authorized Officer)	Aug. 21, 2025



Page 6 of 79

2. Product Information

2.1 Product Technical Description

Technology Type	Classic Bluetooth		
Frequency Band	2400M-2483.5MHz		
Operation Frequency Range	2402MHz-2480MHz		
Bluetooth Version	V5.1		
Modulation Type	BR \boxtimes GFSK, EDR \boxtimes π /4-DQPSK, \boxtimes 8DPSK		
Number of channels	79 of Channels		
Channel Separation	1 MHz		
Maximum Transmitter Power	4.370dBm		
Hardware Version	V1.3		
Software Version	V1.0.0		
Antenna Designation	PCB Antenna		
Antenna Gain	3.35dBi		
Power Supply	DC 3.7V by battery or DC 5V by adapter		

2.2 Test Frequency List

Channel Number	Test Frequency	
0	2402 MHz	
1	2403 MHz	
:	:	
39	2441MHz	
:	:	
77	2479 MHz	
78	2480 MHz	
	0 1 : 39 : 77	



Page 7 of 79

2.3 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for FCC ID: **2BRNH-H2**, filing to comply with Part 2, Part 15 of the Federal Communication Commission rules.

2.4 Test Methodology

The tests were performed according to following standards:

No.	Identity	Document Title		
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations		
2	FCC 47 CFR Part 15	Radio Frequency Devices		
3	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices		
4	KDB 558074 D01 15.247 Meas Guidance v05r02	Guidance for compliance measurements on Digital Transmission Systems, Frequency Hopping Spread Spectrum system, and Hybrid system devices operating under Section 15.247 of the FCC rules		

2.5 Receiver Input Bandwidth

The input bandwidth of the receiver is 1.3MHz, in every connection one Bluetooth device is the master and the other one is slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally, the type of connection (e.g. single of multi slot packet) is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also, the slave of the connection will use these settings. Repeating of a packet has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means, a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.

2.6 Equally Average Use of Frequencies and Behaviour.

The generation of the hopping sequence in connection mode depends essentially on two input values:

- 1. LAP/UAP of the master of the connection.
- 2. Internal master clock.

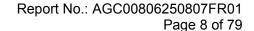
The LAP (lower address part) are the 24 LSB's of the 48 BD_ADDRESS. The BD_ADDRESS is an unambiguous number of every Bluetooth unit. The UAP (upper address part) are the 24MSB's of the 48BD ADDRESS

The internal clock of a Bluetooth unit is derived from a free running clock which is never adjusted and is never turned off. For behavior action with other units only offset is used. It has no relation to the time of the day. Its resolution is at least half the RX/TX slot length of 312.5us. The clock has a cycle of about one day(23h30). In most case it is implemented as 28 bits counter. For the deriving of the hopping sequence the entire. LAP (24 bits),4LSB's(4bits) (Input 1) and the 27MSB's of the clock (Input 2) are used. With this input values different mathematical procedures (permutations, additions, XOR-operations) are performed to generate the Sequence.

This will be done at the beginning of every new transmission.

Regarding short transmissions the Bluetooth system has the following behavior:

The first connection between the two devices is established, a hopping sequence was generated. For Transmitting the wanted data the complete hopping sequence was not used. The connection ended. The second connection will be established. A new hopping sequence is generated. Due to the fact the Bluetooth clock has a different value, because the period between the two transmission is longer (and it Cannot be shorter) than the minimum resolution of the clock(312.5us). The hopping sequence will always differ from the first one.

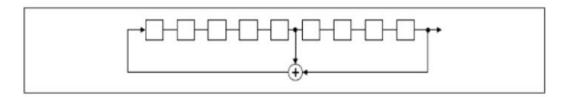




2.7 Pseudorandom Frequency Hopping Sequence

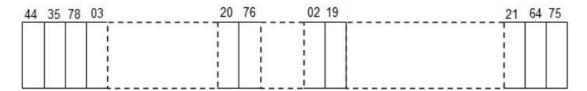
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: 29 1 = 511 bits
- Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of The PRBS Sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their Corresponding transmitters and shift frequencies in synchronization with the transmitted signals.



Page 9 of 79

2.8 Special Accessories

Not available for this EUT intended for grant.

2.9 Equipment Modifications

Not available for this EUT intended for grant.

2.10 Antenna Requirement

Standard Requirement

15.203 requirement:

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, 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.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi

EUT Antenna

The non-detachable antenna inside the device cannot be replaced by the user at will. The gain of the antenna is 3.35dBi.



Page 10 of 79

3. Test Environment

3.1 Address of The Test Laboratory

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to follow CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories.)

A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to follow ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

IC-Registration No.: 24842(CAB identifier: CN0063)

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.



Page 11 of 79

3.3 Environmental Conditions

	Normal Conditions
Temperature range (℃)	15 - 35
Relative humidity range	20 % - 75 %
Pressure range (kPa)	86 - 106
Power supply	DC 3.7V by battery or DC 5V by adapter

3.4 Measurement Uncertainty

The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 2.9 \text{ dB}$
Uncertainty of Radiated Emission below 1GHz	U _c = ±3.9 dB
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.9 \text{ dB}$
Uncertainty of total RF Power, Conducted	$U_c = \pm 0.8 \text{ dB}$
Uncertainty of RF Power Density, Conducted	U _c = ±2.6 dB
Uncertainty of Spurious Emissions, Conducted	U _c = ±2 %
Uncertainty of Occupied Channel Bandwidth	U _c = ±2 %
Uncertainty of Dwell Time	U _c = ±2 %



Page 12 of 79

3.5 List of Equipment Used

•	RF Conducted Test System								
Used Equipment No. Test Equipment Manufacturer Mode					Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)		
	AGC-ER-E036	Spectrum Analyzer	Agilent	N9020A	MY49100060	2025-01-14	2026-01-13		
	AGC-ER-A007	6dB Fixed Attenuator	Mini circuits	BW-S6-2W263A+	N/A	2025-01-30	2026-01-29		
\boxtimes	N/A	RF Connection Cable	N/A	1#	N/A	Each time	N/A		
	N/A	RF Connection Cable	N/A	2#	N/A	Each time	N/A		
	AGC-ER-E091	DC Power Supply	AIDEKESI	IT6720	800103030787810080	2024-03-28	2026-03-27		

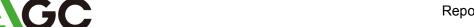
• F	Radiated Spurious Emission								
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)		
\boxtimes	AGC-EM-E046	EMI Test Receiver	R&S	ESCI	100096	2025-01-14	2026-01-13		
	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2025-05-08	2026-05-07		
\boxtimes	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2025-05-08	2026-05-07		
\boxtimes	AGC-EM-E086	Loop Antenna	ZHINAN	ZN30900C	18051	2024-03-05	2026-03-04		
\boxtimes	AGC-EM-E001	Wideband Antenna	SCHWARZBECK	VULB9168	D69250	2025-03-14	2027-03-13		
	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2025-03-27	2026-03-26		
\boxtimes	AGC-EM-E082	Horn Antenna	SCHWARZBECK	BBHA 9170	#768	2023-09-24	2025-09-23		
	AGC-EM-E146	Pre-amplifier	ETS	3117-PA	00246148	2024-07-24	2026-07-23		
\boxtimes	AGC-EM-A119	2.4GHz Filter	SongYi	N/A	N/A	2025-05-16	2026-05-15		
\boxtimes	AGC-EM-A138	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2025-05-16	2027-05-15		
	AGC-EM-A139	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2025-05-16	2027-05-15		

• A	AC Power Line Conducted Emission							
Used	lsed Equipment No. Test Equipment Manufacturer Model No. Serial No. Last Cal. Date (YY-MM-DD) (YY-MM-DD)							
	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2025-05-08	2026-05-07	
\boxtimes	AGC-EM-A171	Attenuator	Mini-Circuits	UNAT-10A+	DC-6GZ	2024-02-01	2026-01-31	
\boxtimes	AGC-EM-E023	AMN	R&S	ESH2-Z5	100086	2025-05-08	2026-05-07	



Page 13 of 79

• Tes	Test Software						
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Version Information		
	AGC-EM-S001	CE Test System	R&S	ES-K1	V1.71		
	AGC-EM-S003	RE Test System	FARA	EZ-EMC	VRA-03A		
	AGC-EM-S004	RE Test System	Tonscend	TS+ Ver2.1(JS32-RE)	4.0.0.0		
	AGC-ER-S012	BT/WIFI Test System	Tonscend	JS1120-2	2.6		
\boxtimes	AGC-EM-S011	RSE Test System	Tonscend	TS+-Ver2.1(JS36-RSE)	4.0.0.0		



Report No.: AGC00806250807FR01 Page 14 of 79

4. System Test Configuration

4.1 EUT Configuration

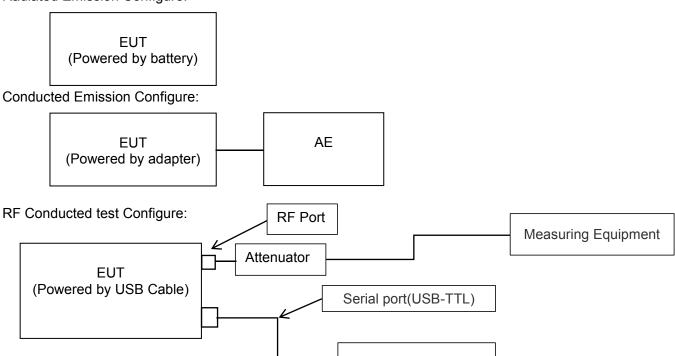
The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

4.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

4.3 Configuration of Tested System

Radiated Emission Configure:



PC of TC Software



Page 15 of 79

4.4 Equipment Used in Tested System

The following peripheral devices and interface cables were connected during the measurement:

No.	Equipment	Manufacturer	Model No.	Specification Information	Cable
1	Control Box	RISYM	USB-TTL	N/A	N/A
2	Redmi Notebook PC	Redmi	XMA2002-AB	N/A	N/A
3	Adapter	Apple	A2452	N/A	N/A

No	p. Equipment	Manufacturer	Model No.	Specification Information	Cable
1	USB Cable	N/A	N/A	N/A	0.5m unshielded



Page 16 of 79

4.5 Summary of Test Results

Item	FCC Rules	Description of Test	Result
1	§15.203&15.247(b)(4)	Antenna Equipment	Pass
2	§15.247 (b)(1)	RF Output Power	Pass
3	§15.247 (a)(1)	20 dB Bandwidth	Pass
4	§15.247 (d)	Conducted Band Edge and Out-of-Band Emissions	Pass
5	§15.209	Radiated Spurious Emission	Pass
6	§15.247 (a)(1)(iii)	Number of Hopping Frequency	Pass
7	§15.247 (a)(1)(iii)	Time of Occupancy	Pass
8	§15.247 (a)(1)	Frequency Separation	Pass
9	§15.207	AC Power Line Conducted Emission	Pass



Page 17 of 79

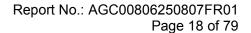
5. Description of Test Modes

Summary table of Test Cases				
Test Item	Data Rate / Modulation			
rest item	Bluetooth – BR_EDR (GFSK/π /4-DQPSK/8DPSK)			
Radiated Test Cases	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps (Battery powered) Mode 2: Bluetooth Tx CH39_2441 MHz_1Mbps (Battery powered) Mode 3: Bluetooth Tx CH78_2480 MHz_1Mbps (Battery powered) Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps (Battery powered) Mode 5: Bluetooth Tx CH39_2441 MHz_2Mbps (Battery powered) Mode 6: Bluetooth Tx CH78_2480 MHz_2Mbps (Battery powered) Mode 7: Bluetooth Tx CH00_2402 MHz_3Mbps (Battery powered) Mode 8: Bluetooth Tx CH39_2441 MHz_3Mbps (Battery powered) Mode 9: Bluetooth Tx CH78_2480 MHz_3Mbps (Battery powered) Mode10: Bluetooth Tx Hopping-1Mbps (Battery powered) Mode11: Bluetooth Tx Hopping-2Mbps (Battery powered) Mode12: Bluetooth Tx Hopping-3Mbps (Battery powered)			
Conducted Test Cases	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps (Powered by USB Cable) Mode 2: Bluetooth Tx CH39_2441 MHz_1Mbps (Powered by USB Cable) Mode 3: Bluetooth Tx CH78_2480 MHz_1Mbps (Powered by USB Cable) Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps (Powered by USB Cable) Mode 5: Bluetooth Tx CH39_2441 MHz_2Mbps (Powered by USB Cable) Mode 6: Bluetooth Tx CH78_2480 MHz_2Mbps (Powered by USB Cable) Mode 7: Bluetooth Tx CH00_2402 MHz_3Mbps (Powered by USB Cable) Mode 8: Bluetooth Tx CH39_2441 MHz_3Mbps (Powered by USB Cable) Mode 9: Bluetooth Tx CH39_2441 MHz_3Mbps (Powered by USB Cable) Mode 10: Bluetooth Tx Hopping-1Mbps (Powered by USB Cable) Mode11: Bluetooth Tx Hopping-2Mbps (Powered by USB Cable) Mode12: Bluetooth Tx Hopping-3Mbps (Powered by USB Cable)			
AC Conducted Emission	Mode 1: Bluetooth Link + Battery + USB Cable (Charging from AC Adapter)			

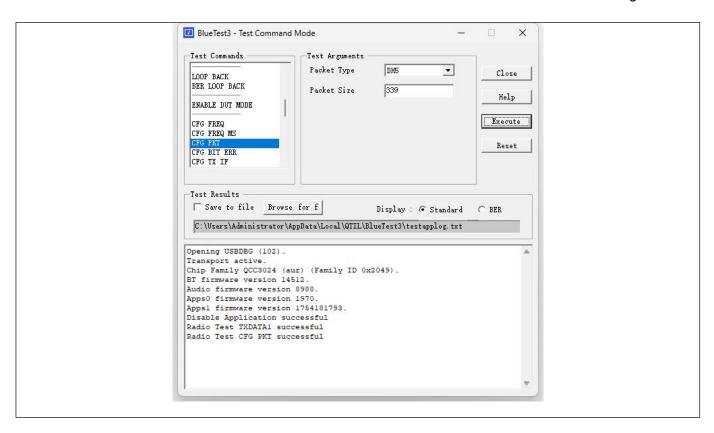
Note:

- 1. Only the result of the worst case was recorded in the report, if no other cases.
- The battery is full-charged during the test.
- 3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
- 4. For Conducted Test method, a temporary antenna connector is provided by the manufacture.
- The manufacturer of RF external cable claims that the cable loss is 0.5dB, and the cable loss and attenuator have been compensated into the Corrections Configuration of measuring equipment.
- 6. Input correction factor includes external cable loss and attenuator amplitude compensation. The formula is: Input compensation coefficient (dB) = Cable Loss (dB) + Attenuator attenuation value (dB)

Software Setting Diagram









Page 19 of 79

6. RF Output Power Measurement

6.1 Provisions Applicable

The maximum out power permissible output power is 1 Watt for all frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels.

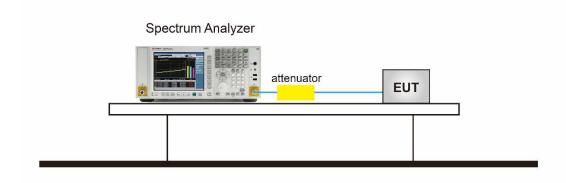
The maximum out power permissible output power is 0.125 watts for all other frequency hopping systems in the 2400-2483.5 MHz band.

6.2 Measurement Procedure

⊠ For Peak power test:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- 3. RBW > 20 dB bandwidth of the emission being measured.
- 4. VBW ≥RBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
- 7. Trace: Max hold.
- 8. Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

6.3 Measurement Setup (Block Diagram of Configuration)

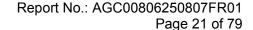




Page 20 of 79

6.4 Measurement Result

	Test Data of Conducted Output Power					
Test Mode	Test Frequency (MHz)	Peak Power (dBm)	Limits (dBm)	Pass or Fail		
	2402	3.996	≤21	Pass		
GFSK	2441	3.835	≤21	Pass		
	2480	4.370	≤21	Pass		
	2402	1.617	≤21	Pass		
π /4-DQPSK	2441	-0.721	≤21	Pass		
	2480	-3.996	≤21	Pass		
	2402	1.632	≤21	Pass		
8DPSK	2441	-1.256	≤21	Pass		
	2480	-2.983	≤21	Pass		

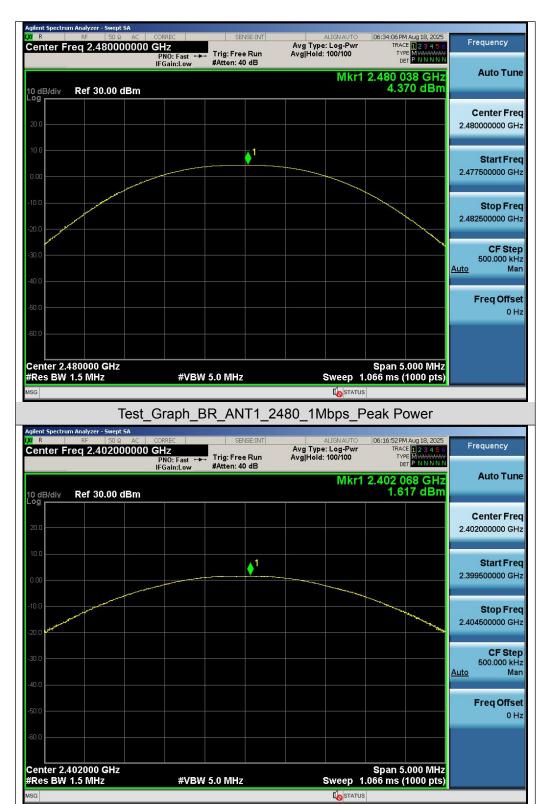




Test Graphs of Conducted Output Power Frequency Center Freq 2.402000000 GHz Avg Type: Log-Pwr Avg|Hold: 100/100 Trig: Free Run #Atten: 40 dB Mkr1 2.401 992 GHz 3.996 dBm **Auto Tune** Ref 30.00 dBm Center Freq 2.402000000 GHz Start Freq 2.399500000 GHz Stop Freq 2.404500000 GHz CF Step 500.000 kHz <u>Auto</u> Man Freq Offset 0 Hz Span 5.000 MHz Sweep 1.066 ms (1000 pts) Center 2.402000 GHz #Res BW 1.5 MHz **#VBW 5.0 MHz** Test Graph BR ANT1 2402 1Mbps Peak Power Frequency Center Freq 2.441000000 GHz Avg Type: Log-Pwr Avg|Hold: 100/100 Trig: Free Run

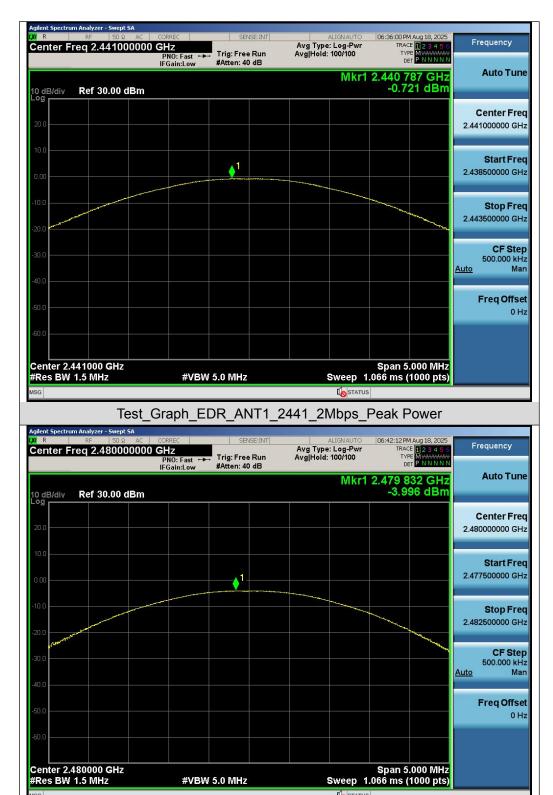






Test_Graph_EDR_ANT1_2402_2Mbps_Peak Power





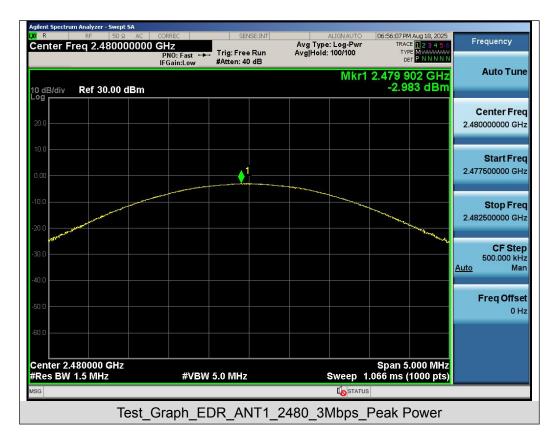
Test Graph EDR ANT1 2480 2Mbps Peak Power





Test Graph EDR ANT1 2441 3Mbps Peak Power







7. 20dB Bandwidth and 99% Occupied Bandwidth Measurement

7.1 Provisions Applicable

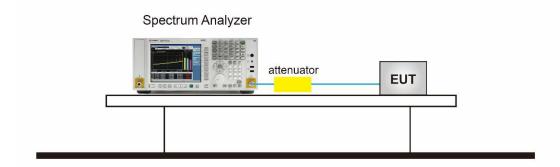
There is no corresponding limit requirement for this test item.

7.2 Measurement Procedure

The testing follows the ANSI C63.10 Section 6.9.3 (OBW) and 6.9.2 (20dB BW).

- The 20dB bandwidth spectrum analyzer setting reference is as follows:
- 1. Set RBW ≥ 1% to 5% of the 20dB bandwidth
- 2. VBW = Approximately three times RBW
- 3. Span = Approximately 2 to 5 times the 20dB bandwidth, centered on a hopping channel
- 4. Detector = Peak
- 5. Trace mode = Max hold
- Sweep = Auto couple
- 7. Allow the trace to stabilize
- 8. Measure the maximum width of the emission that is constrained by the frequencies associated
- 9. with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20
- 10. dB relative to the maximum level in the fundamental emission.
- The 99% bandwidth spectrum analyzer setting reference is as follows:
- 1. Span = 1.5 times to 5 times the OBW
- 2. Set RBW = 1% to 5% the OBW
- 3. VBW ≥ 3 × RBW
- 4. Detector = Peak
- 5. Trace mode = Max hold
- 6. Sweep = Auto couple
- 7. Allow the trace was allowed to stabilize

7.3 Measurement Setup (Block Diagram of Configuration)

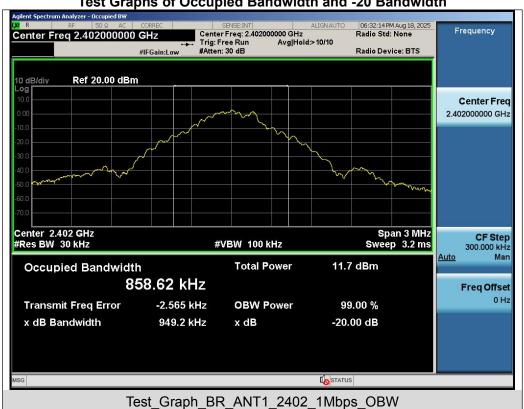




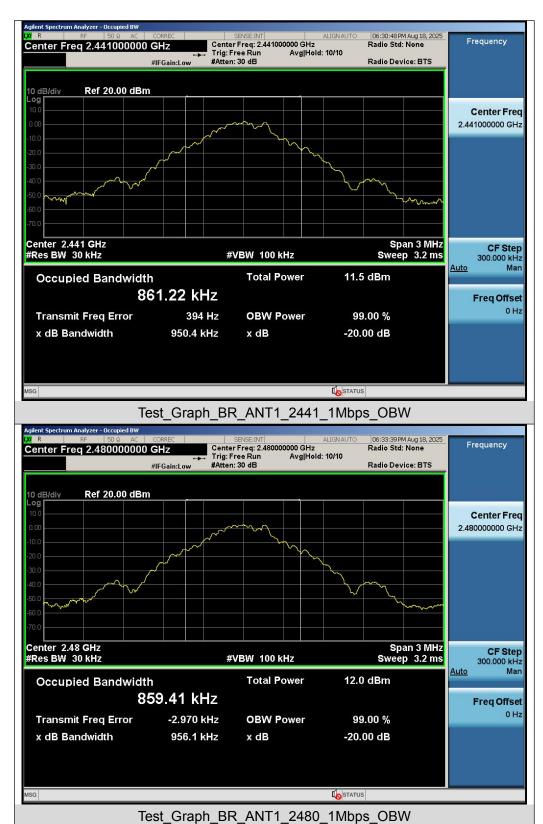
7.4 Measurement Results

Test Data of Occupied Bandwidth and -20dB Bandwidth					
Test Mode	Test Frequency (MHz)	99% Occupied Bandwidth (MHz)	-20dB Bandwidth (MHz)	Limits	Pass or Fail
	2402	0.859	0.949	N/A	Pass
GFSK	2441	0.861	0.950	N/A	Pass
	2480	0.859	0.956	N/A	Pass
	2402	1.225	1.350	N/A	Pass
π /4-DQPSK	2441	1.246	1.351	N/A	Pass
	2480	1.215	1.346	N/A	Pass
	2402	1.208	1.315	N/A	Pass
8DPSK	2441	1.218	1.317	N/A	Pass
	2480	1.198	1.312	N/A	Pass

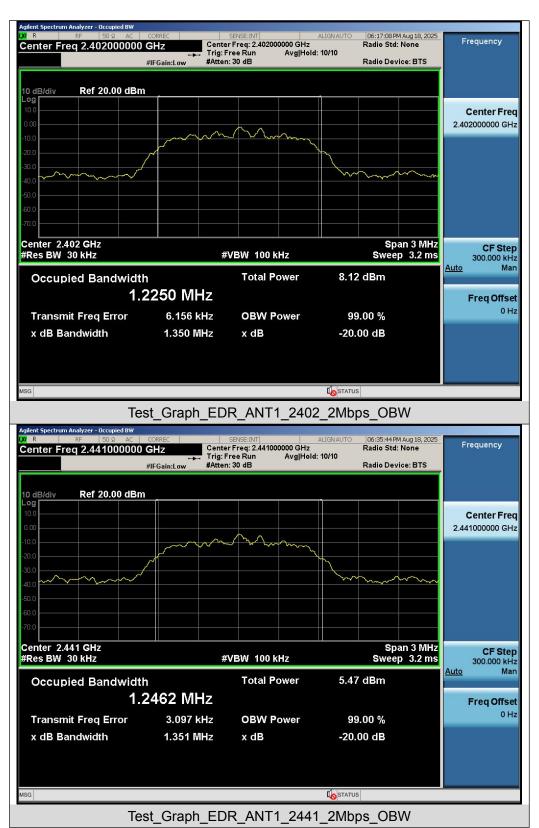
Test Graphs of Occupied Bandwidth and -20 Bandwidth







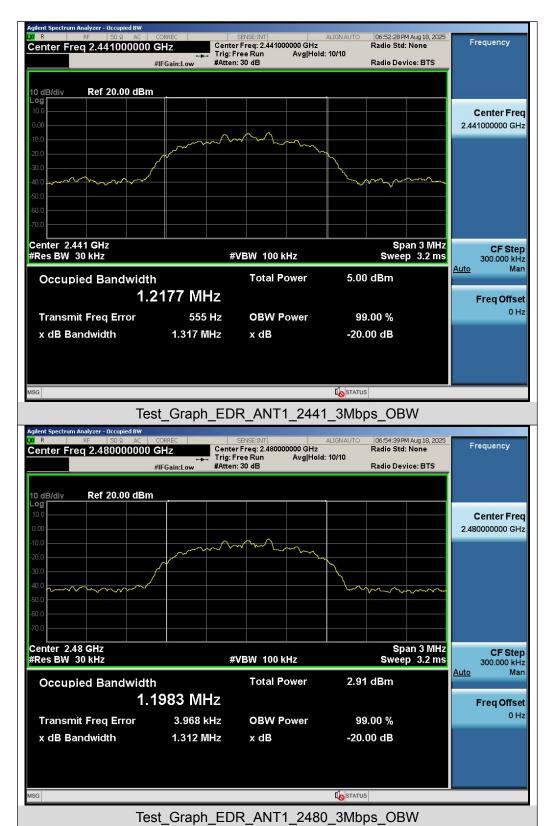














Page 32 of 79

8. Conducted Band Edge and Out-of-Band Emissions

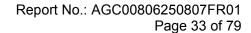
8.1 Provisions Applicable

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, provided the transmitter demonstrates compliance with the peak conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30dB instead of 20dB

8.2 Measurement Procedure

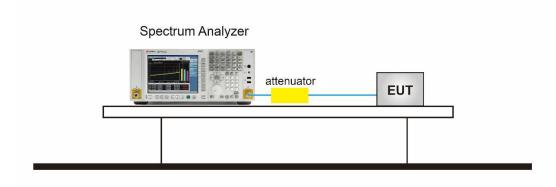
The testing follows the ANSI C63.10 Section 6.10.4 and 7.8.8:

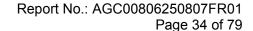
- Reference level measurement
- 1. Span = Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation.
- 2. RBW = 100kHz
- 3. VBW = 300kHz
- 4. Detector = Peak
- 5. Sweep time = Auto couple
- 6. Trace mode = Max hold
- 7. Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission.
- 8. Input compensation coefficient (dB) = Cable Loss (dB) + Attenuator attenuation value (dB)
- Emission level measurement
- 1. 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.
- 2. RBW = 100kHz
- 3. VBW = 300kHz
- 4. Detector = Peak
- 5. Sweep time = Auto couple
- 6. Trace mode = Max hold
- 7. Trace was allowed to stabilize
- 8. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this section.
- 9. Input compensation coefficient (dB) = Cable Loss (dB) + Attenuator attenuation value (dB)





8.3 Measurement Setup (Block Diagram of Configuration)



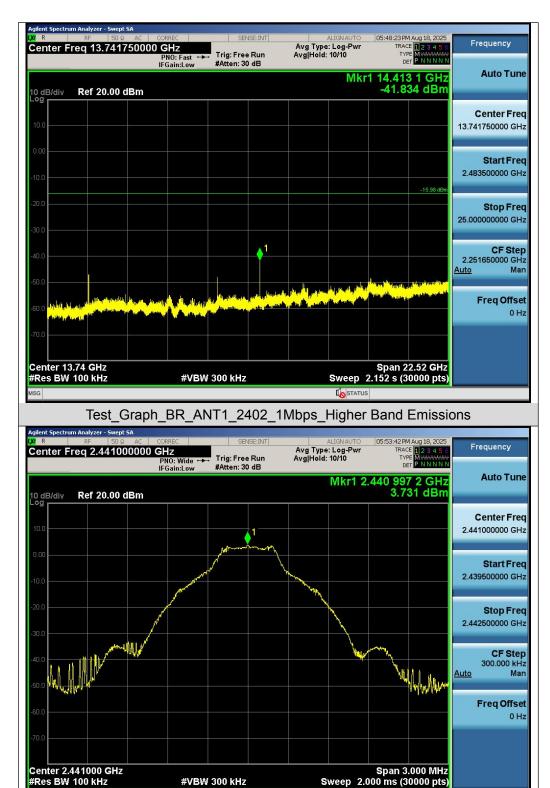




8.4 Measurement Results



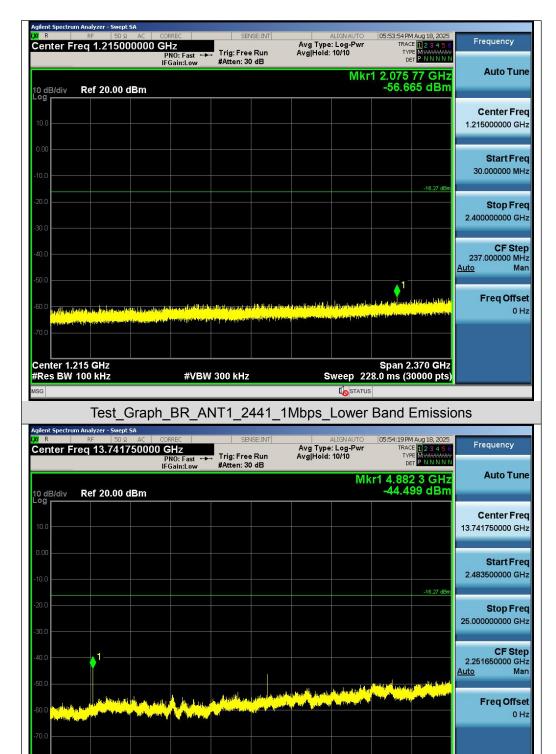




Test_Graph_BR_ANT1_2441_1Mbps_Reference Level

#VBW 300 kHz





Test Graph_BR_ANT1_2441_1Mbps_Higher Band Emissions

#VBW 300 kHz

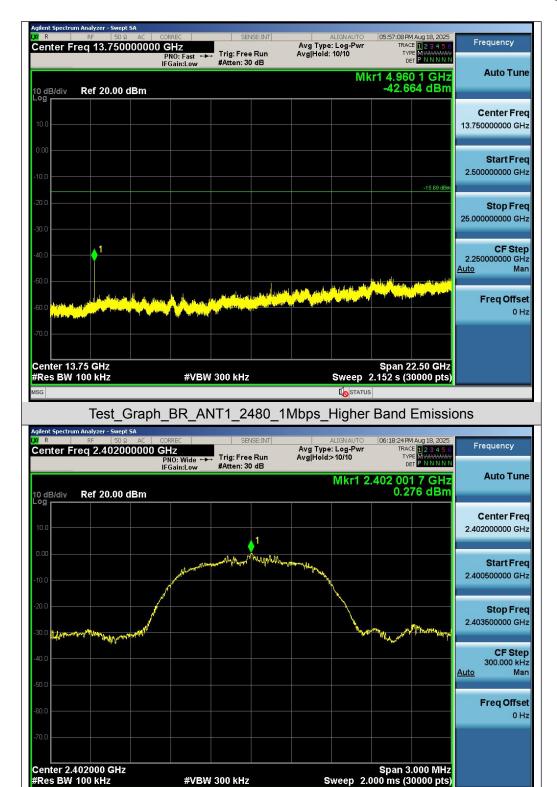
Span 22.52 GHz Sweep 2.152 s (30000 pts)

Center 13.74 GHz #Res BW 100 kHz









Test_Graph_EDR_ANT1_2402_2Mbps_Reference Level

#VBW 300 kHz

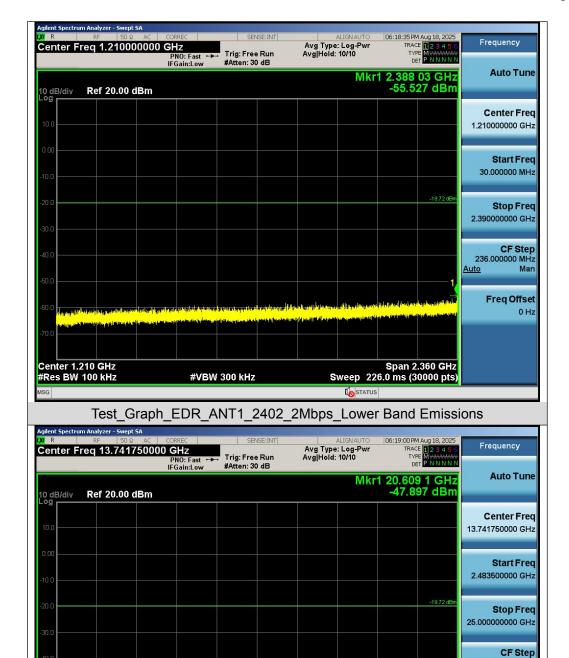
2.251650000 GHz

Freq Offset 0 Hz

Auto

Span 22.52 GHz Sweep 2.152 s (30000 pts)





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Test Graph EDR ANT1 2402 2Mbps Higher Band Emissions

#VBW 300 kHz

Center 13.74 GHz #Res BW 100 kHz

Freq Offset 0 Hz

Span 2.370 GHz Sweep 228.0 ms (30000 pts)





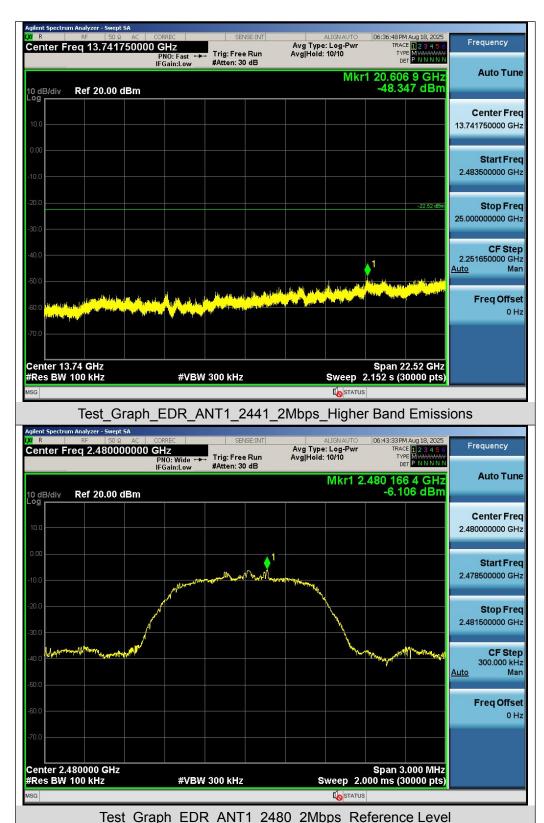
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Test Graph EDR ANT1 2441 2Mbps Lower Band Emissions

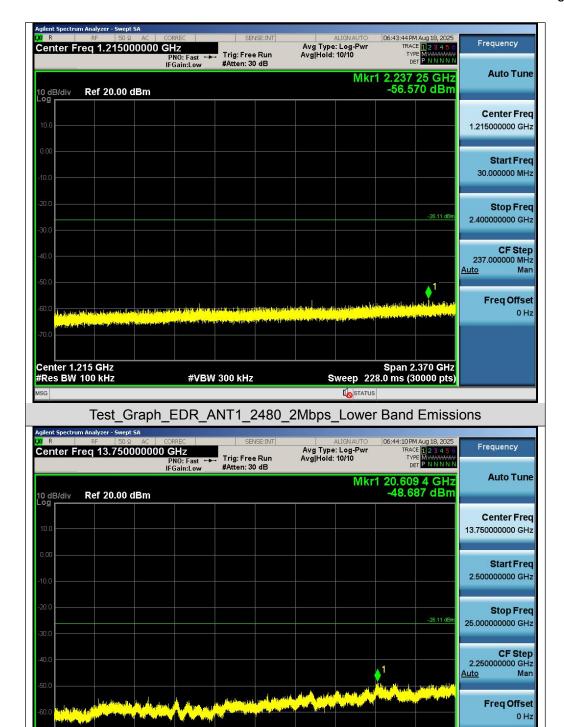
#VBW 300 kHz

Center 1.215 GHz #Res BW 100 kHz









Test Graph EDR ANT1 2480 2Mbps Higher Band Emissions

#VBW 300 kHz

Span 22.50 GHz Sweep 2.152 s (30000 pts)

Center 13.75 GHz #Res BW 100 kHz