

FCC Test Report

Report No.: AGC03615230901FR01

FCC ID	:	2AFKR-B38
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	WIRELESS HEADPHONE
BRAND NAME	:	ZEALOT
MODEL NAME	:	ZEALOT-B38 (Series model name please see page 6)
APPLICANT	:	SHENZHEN ZEALOT DIGITAL TECHNOLOGY CO., LTD
DATE OF ISSUE	:	Nov. 16, 2023
STANDARD(S)	:	FCC Part 15 Subpart C §15.247
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd







Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov. 16, 2023	Valid	Initial Release



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1. General Information

Applicant	SHENZHEN ZEALOT DIGITAL TECHNOLOGY CO., LTD
Address	401、501, building 3, NO.8, Yong Tai Road, east District, BaiShi xia Community, Fu Yong street, BaoAn District, ShenZhen China.
Manufacturer	SHENZHEN ZEALOT DIGITAL TECHNOLOGY CO., LTD
Address	401、501, building 3, NO.8, Yong Tai Road, east District, BaiShi xia Community, Fu Yong street, BaoAn District, ShenZhen China.
Factory	SHENZHEN ZEALOT DIGITAL TECHNOLOGY CO., LTD
Address	401、501, building 3, NO.8, Yong Tai Road, east District, BaiShi xia Community, Fu Yong street, BaoAn District, ShenZhen China.
Product Designation	WIRELESS HEADPHONE
Brand Name	ZEALOT
Test Model	ZEALOT-B38
Series Model(s)	Series model name please see page 6
Difference Description	All the same except for the model name and color.
Date of receipt of test item	Sep. 21, 2023
Date of Test	Sep. 21, 2023 to Nov. 16, 2023
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
	nement relate and the tested encode identified in this report

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

Thea Yuang Prepared By Thea Huang Nov. 16, 2023 (Project Engineer) **Reviewed By** Calvin Liu Nov. 16, 2023 (Reviewer) 2ran Approved By Max Zhang Nov. 16, 2023

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(Authorized Officer)



2. Product Information

2.1 Product Technical Description

Frequency Band	2400MHz-2483.5MHz
Operation Frequency Range	2402MHz-2480MHz
Bluetooth Version	V5.2
Modulation Type	BR \square GFSK, EDR $\square \pi$ /4-DQPSK, \square 8DPSK
Number of channels	79 Channels
Channel Separation	1 MHz
Maximum Transmitter Power	2.108dBm (1.625mW)
Hardware Version	V1.0
Software Version	V1.0
Antenna Designation	PCB Antenna
Antenna Gain	1.7dBi
Power Supply	DC 3.7V by battery or DC 5V by adapter
Adapter Information	N/A
Note: The EUT doesn't support BLE.	

Difference Description:

Billerenee Beeenpaein	
Series Model(s)	ZEALOT-B5, ZEALOT-B9+, ZEALOT-B15, ZEALOT-B16, ZEALOT-B17, ZEALOT-B18, ZEALOT-B19, ZEALOT-B20, ZEALOT-B21, ZEALOT-B22, ZEALOT-B26, ZEALOT-B27, ZEALOT-B28, ZEALOT-B29, ZEALOT-B30, ZEALOT-B31, ZEALOT-B32, ZEALOT-B33, ZEALOT-B35, ZEALOT-B36, ZEALOT-B37, ZEALOT-B39, ZEALOT-B40, ZEALOT-B41, ZEALOT-B42, ZEALOT-B43, ZEALOT-B44, ZEALOT-B45, ZEALOT-B41, ZEALOT-B47, ZEALOT-B48, ZEALOT-B49, ZEALOT-B50, ZEALOT-B51, ZEALOT-B52, ZEALOT-B53, ZEALOT-B54, ZEALOT-B55, ZEALOT-B56, ZEALOT-B57, ZEALOT-B58, ZEALOT-B59, ZEALOT-B60, ZEALOT-B61, ZEALOT-B62, ZEALOT-B63, ZEALOT-B64, ZEALOT-B65, ZEALOT-B61, ZEALOT-B67, ZEALOT-B68, ZEALOT-B570, ZEALOT-B65, ZEALOT-B66, ZEALOT-B67, ZEALOT-B68, ZEALOT-B570, ZEALOT-T1, ZEALOT-T2, ZEALOT-T3, ZEALOT-T4, ZEALOT-T5, ZEALOT-T6, ZEALOT-T7, ZEALOT-T8, ZEALOT-T9, ZEALOT-T10, ZEALOT-T11, ZEALOT-T12, ZEALOT-T13, ZEALOT-T14, ZEALOT-T15, ZEALOT-T16, ZEALOT-T17, ZEALOT-T18, ZEALOT-T19,
	ZEALOT-B68, ZEALOT-B570, ZEALOT-T1, ZEALOT-T2, ZEALOT-T3, ZEALOT-T4, ZEALOT-T5, ZEALOT-T6, ZEALOT-T7, ZEALOT-T8, ZEALOT-T9,
	ZEALOT-L1, ZEALOT-L2, ZEALOT-L3, ZEALOT-L4, ZEALOT-L5, ZEALOT-L6, ZEALOT-L7, ZEALOT-L8, ZEALOT-L9, ZEALOT-L10
Difference Description	All the same except for the model name and color.



2.2 Test Frequency List

Frequency Band	Channel Number	Frequency		
	0	2402 MHz		
	1	2403 MHz		
	:	:		
2400~2483.5MHz	39	2441MHz		
	:	:		
	77	2479 MHz		
	78	2480 MHz		
Note: f = 2402 + 1k MHz, k = 0,, 78; "f "is the operating frequency (MHz); "k" is the operating channel.				



2.3 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for FCC ID: **2AFKR-B38**, 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:

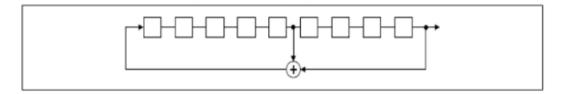
The first connection between the two devices is established, a hopping sequence was generated. For Transmitting the wanted data the complete hopping sequence was not used. The connection ended. The second connection will be established. A new hopping sequence is generated. Due to the fact the Bluetooth 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:

44	35	78	03	20) 76	02	19		 21	64	75
				·					 		
			Ιi						1		
			¦			1			i.		
				L		<u>'i</u>		1	 		

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.



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 1.7dBi.



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.



3.3 Environmental Conditions

	Normal Conditions
Temperature range (°C)	15 - 35
Relative humidity range	20 % - 75 %
Pressure range (kPa)	86 - 106
Power supply	

3.4 Measurement Uncertainty

The reported uncertainty of measurement y \pm 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	$U_c = \pm 3.9 \text{ dB}$
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	$U_c = \pm 2.6 \text{ dB}$
Uncertainty of spurious emissions, conducted	$U_c = \pm 2 \%$
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2 \%$



3.5 List of Equipment Used

RF Conducted Test System								
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)	
\square	AGC-ER-E036	Spectrum Analyzer	Agilent	N9020A	MY49100060	2023-06-01	2024-05-31	
\boxtimes	AGC-ER-E062	Power Sensor	Agilent	U2021XA	MY54110007	2023-03-03	2024-03-02	
\boxtimes	AGC-ER-E063	Power Sensor	Agilent	U2021XA	MY54110009	2023-03-03	2024-03-02	
\boxtimes	AGC-EM-A152	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08	
\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	

• 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)		
	AGC-EM-E046	EMI Test Receiver	R&S	ESCI	10096	2023-02-18	2024-02-17		
\boxtimes	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2023-06-03	2024-06-02		
\boxtimes	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2023-06-01	2024-05-31		
\boxtimes	AGC-EM-E086	Loop Antenna	ZHINAN	ZN30900C	18051	2022-03-12	2024-03-11		
\boxtimes	AGC-EM-E001	Wideband Antenna	SCHWARZBECK	VULB9168	D69250	2023-05-11	2025-05-10		
\boxtimes	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2023-03-23	2024-03-22		
\boxtimes	AGC-EM-E082	Horn Antenna	SCHWARZBECK	BBHA 9170	#768	2023-09-24	2025-09-23		
\boxtimes	AGC-EM-E146	Pre-amplifier	ETS	3117-PA	00246148	2022-08-04	2024-08-03		
\boxtimes	AGC-EM-A119	2.4G Filter	SongYi	N/A	N/A	2023-06-01	2024-05-31		
\square	AGC-EM-A138	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08		
	AGC-EM-A139	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08		

• A	AC Power Line Conducted 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-E045	EMI Test Receiver	R&S	ESPI	101206	2023-06-03	2024-06-02		
\boxtimes	AGC-EM-E023	AMN	R&S	100086	ESH2-Z5	2023-06-03	2024-06-02		
\square	AGC-EM-A130	6dB Attenuator	Eeatsheep	LM-XX-6-5W	DC-6GZ	2023-06-09	2024-06-08		



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



4.System Test Configuration

4.1 EUT Configuration

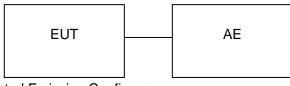
The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

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:



Conducted Emission Configure:

|--|

4.4 Equipment Used in Tested System

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

☑ Test Accessories Come From The Laboratory

No.	Equipment	Model No.	Specification Information	Note
1	Control Box	USB-TTL	N/A	AE
2	Xiaomi Phone	MI 10	N/A	AE
3	Huawei Adapter	HW-200440C00	Input(AC):100V-240V 50/60Hz 2.4A Output(DC):USB-C(5V/3A;9V/3A;10 V/4A;11V/6A;12V/3A;15V/3A;20V4.4 A) USB-A(5V/2A;10V/4A;11V/6A;20V/4. 4A)	AE

☑ Test Accessories Come From The Manufacturer

No.	Equipment	Model No.	ID or Specification	Note
1	WIRELESS HEADPHONE	ZEALOT-B38	2AFKR-B38	EUT
2	Type-C Cable	N/A	0.3m unshielded	Accessory

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 Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

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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



5. Description of Test Modes

Summary table of Test Cases						
		Data Rate / Modulation				
Test Item	Blue	etooth – BR_EDR (GFSK/π /4-DQPSK/8DPSK)				
Radiated & Conducted Test Cases	Mode 2: Bluetooth Tx Mode 3: Bluetooth Tx Mode 4: Bluetooth Tx Mode 5: Bluetooth Tx Mode 6: Bluetooth Tx Mode 7: Bluetooth Tx Mode 8: Bluetooth Tx Mode 9: Bluetooth Tx Mode 10: Bluetoo Mode11: Bluetoo	 x CH00_2402 MHz_1Mbps (Battery powered or AC/DC adapter) x CH39_2441 MHz_1Mbps (Battery powered or AC/DC adapter) x CH78_2480 MHz_1Mbps (Battery powered or AC/DC adapter) x CH00_2402 MHz_2Mbps (Battery powered or AC/DC adapter) x CH39_2441 MHz_2Mbps (Battery powered or AC/DC adapter) x CH39_2441 MHz_2Mbps (Battery powered or AC/DC adapter) x CH78_2480 MHz_2Mbps (Battery powered or AC/DC adapter) x CH78_2480 MHz_3Mbps (Battery powered or AC/DC adapter) x CH00_2402 MHz_3Mbps (Battery powered or AC/DC adapter) x CH39_2441 MHz_3Mbps (Battery powered or AC/DC adapter) x CH39_2441 MHz_3Mbps (Battery powered or AC/DC adapter) x CH39_2440 MHz_3Mbps (Battery powered or AC/DC adapter) x CH78_2480 MHz_3Mbps (Battery powered or AC/DC adapter) 				
AC Conducted Emission	AC Conducted Emission Mode 1: Bluetooth Link + Battery + USB Cable (Charging from AC Adapter)					
 The battery is full-cha For Radiated Emission For Conducted Test r For Conducted Test r 	arged during the test. on, 3axis were chosen nethod, a temporary a Softw sist 1.0.2.2	rded in the report, if no other cases.				



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 \geq RBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
- 7. Trace: Max hold.

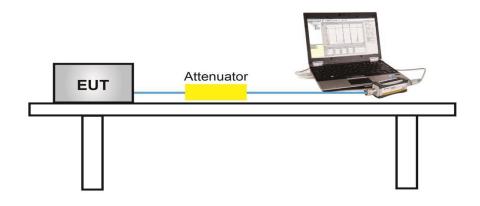
8.Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

\boxtimes For Average power test:

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required

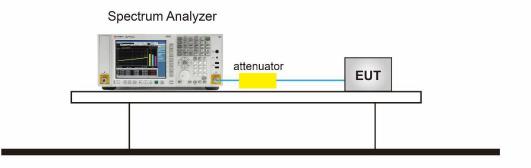
6.3 Measurement Setup (Block Diagram of Configuration)

 \boxtimes For Average power test setup





For peak power test setup



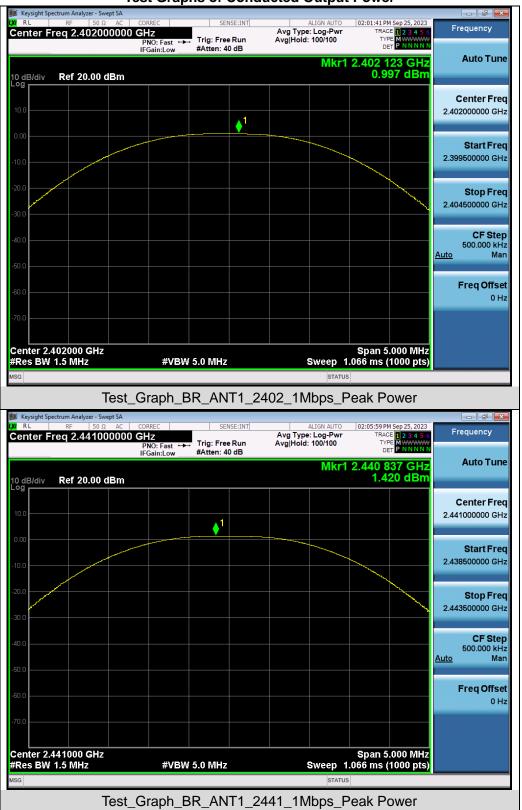
6.4 Measurement Result

Test Data of Conducted Output Power							
Test Mode	Test Frequency (MHz)	Peak Power (dBm)	Limits (dBm)	Pass or Fail			
	2402	0.997	≤21	Pass			
GFSK	2441	1.420	≤21	Pass			
	2480	1.305	≤21	Pass			
	2402	1.460	≤21	Pass			
π /4-DQPSK	2441	1.774	≤21	Pass			
	2480	1.645	≤21	Pass			
	2402	1.804	≤21	Pass			
8DPSK	2441	2.108	≤21	Pass			
	2480	1.942	≤21	Pass			

Test Result of Average Output Power (Reporting Only)

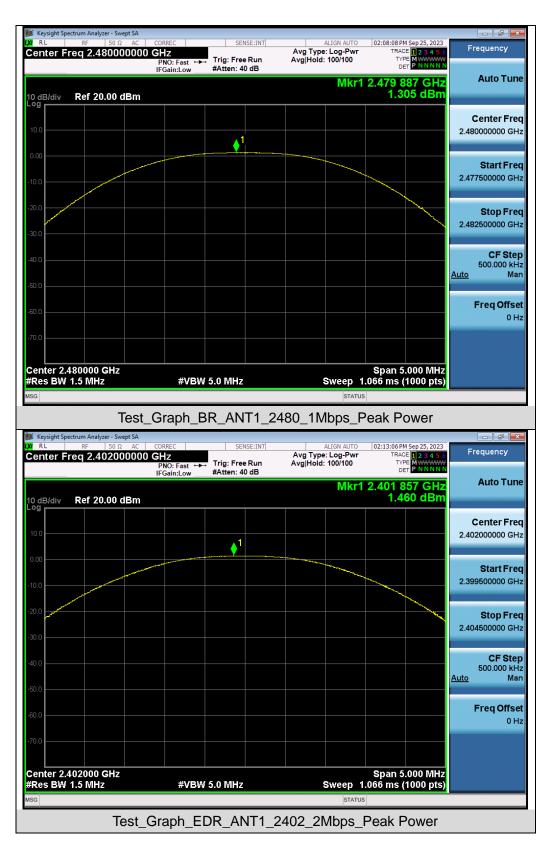
Test Data of Conducted Output Power							
Test Mode	Test Frequency (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail			
	2402	-1.468	≤21	Pass			
8DPSK	2441	-0.234	≤21	Pass			
	2480	-1.517	≤21	Pass			



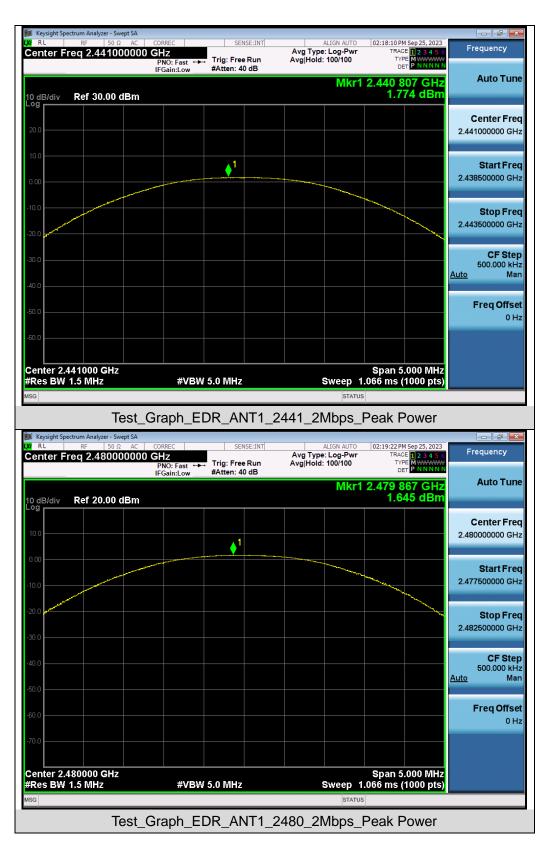


Test Graphs of Conducted Output Power

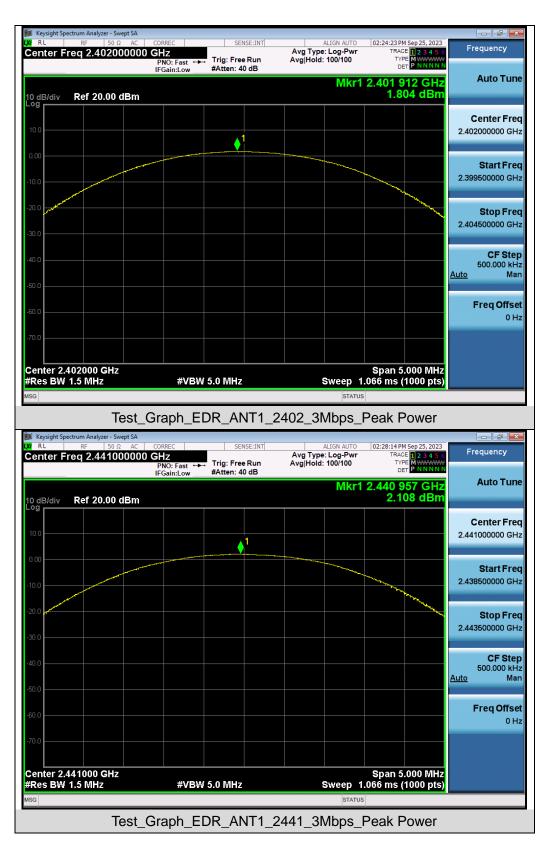




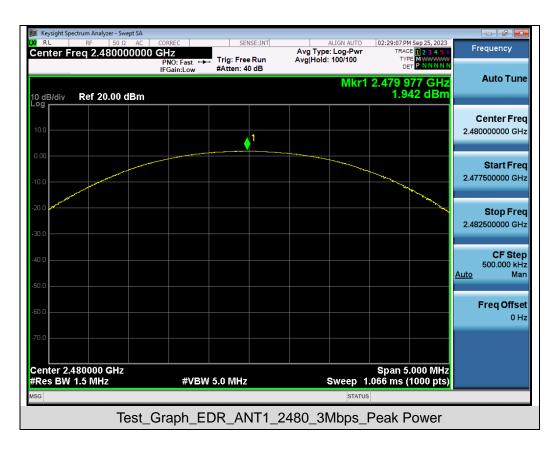














7. 20dB Bandwidth and 99% Occupied Bandwidth Measurement

7.1 Provisions Applicable

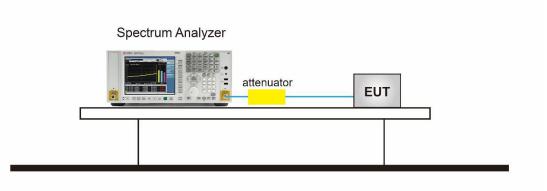
There is no corresponding limit requirement for this test item.

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
- 6. 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 \geq 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)

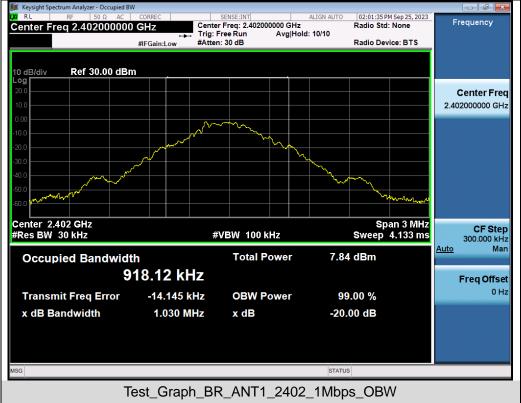




7.4 Measurement Results

Test Data of Occupied Bandwidth and -20dB Bandwidth							
Test Mode	Test Frequency (MHz)	99% Occupied Bandwidth (MHz)	-20dB Bandwidth (MHz)	Limits	Pass or Fail		
GFSK	2402	0.918	1.030	N/A	Pass		
	2441	0.935	1.034	N/A	Pass		
	2480	0.951	1.042	N/A	Pass		
π /4-DQPSK	2402	1.207	1.328	N/A	Pass		
	2441	1.231	1.342	N/A	Pass		
	2480	1.248	1.358	N/A	Pass		
	2402	1.215	1.301	N/A	Pass		
8DPSK	2441	1.226	1.301	N/A	Pass		
	2480	1.229	1.297	N/A	Pass		

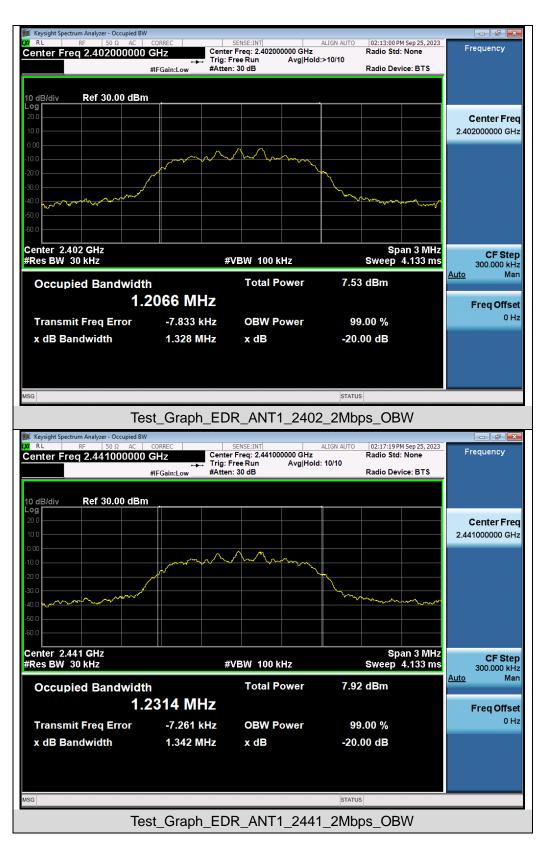
Test Graphs of Occupied Bandwidth and -20 Bandwidth



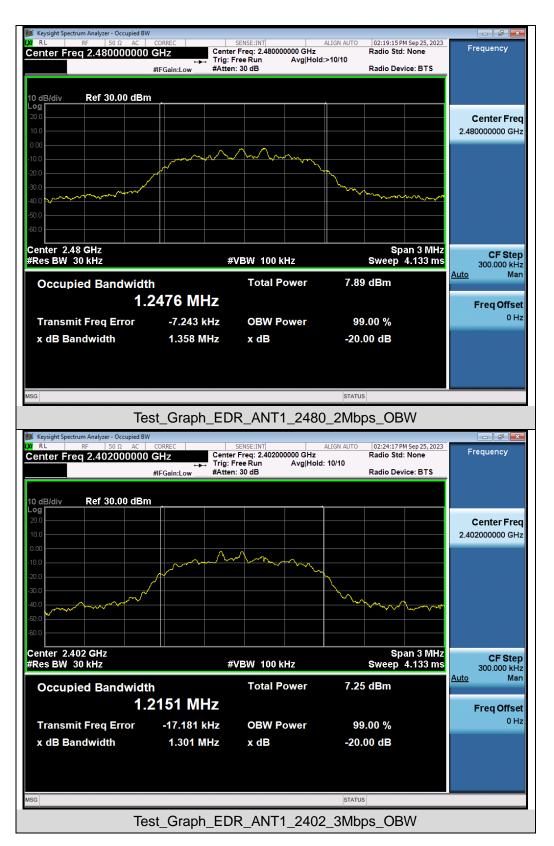




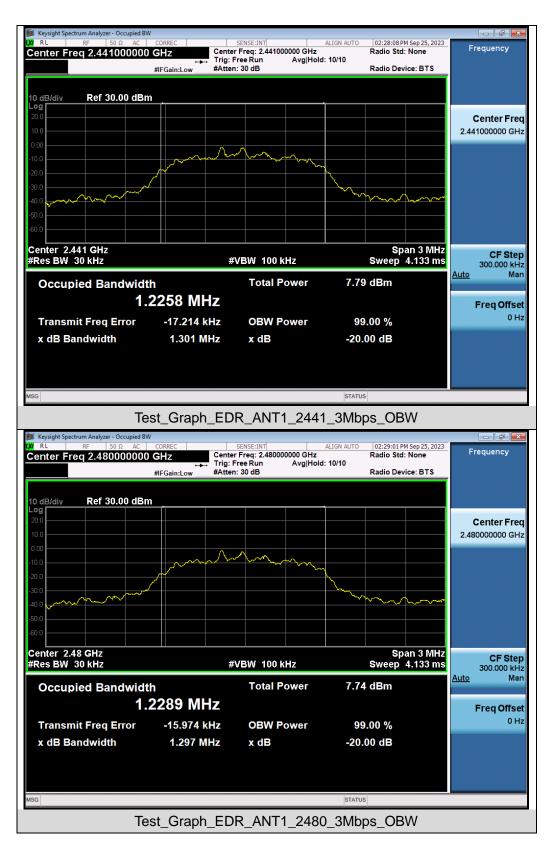














8. Conducted Band Edge and Out-of-Band Emissions

8.1 Provisions Applicable

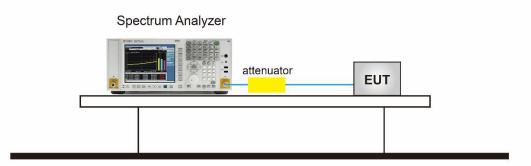
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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 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 30 dB instead of 20 dB.

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.
- 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.

8.3 Measurement Setup (Block Diagram of Configuration)



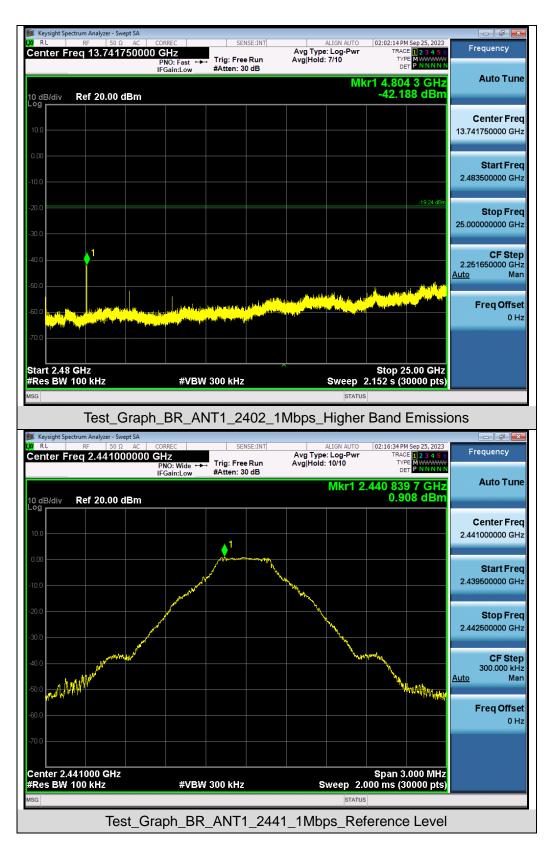


8.4 Measurement Results

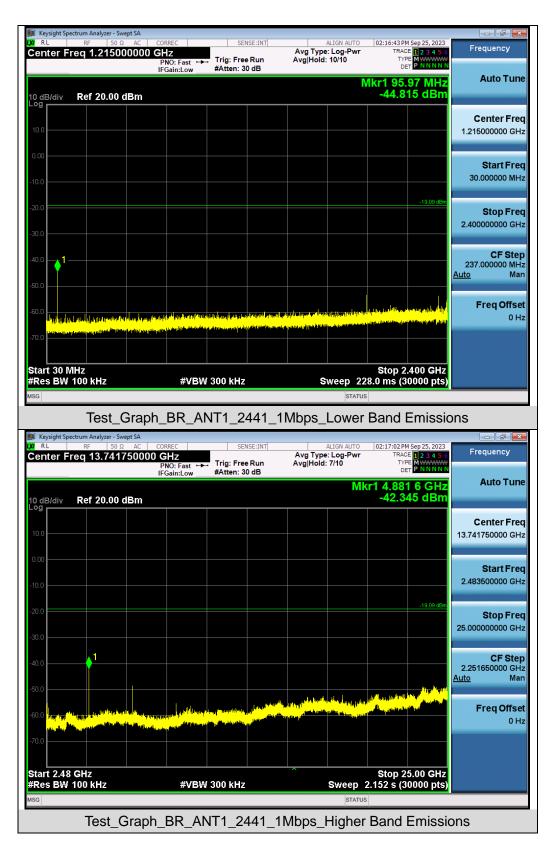


Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands

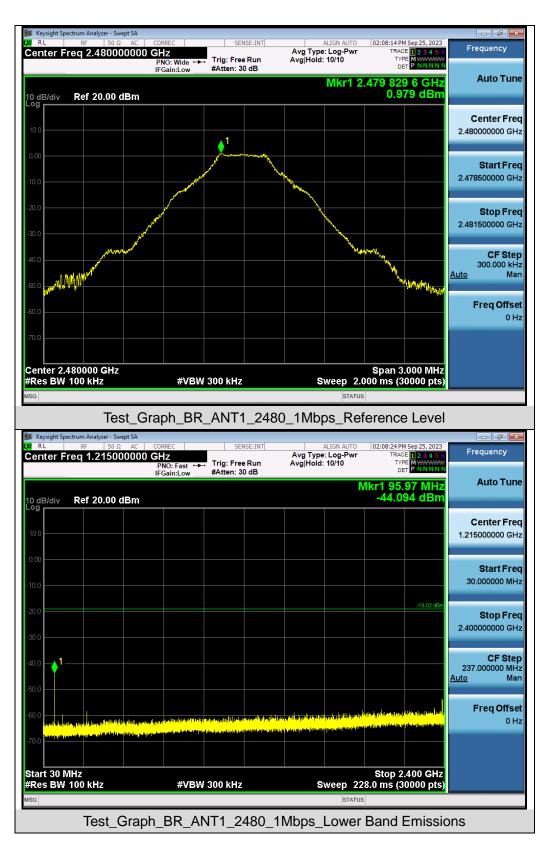




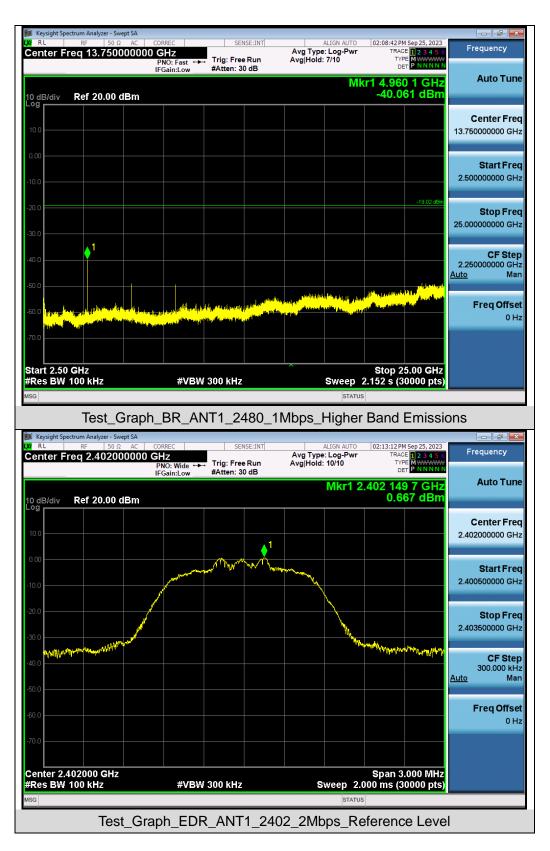




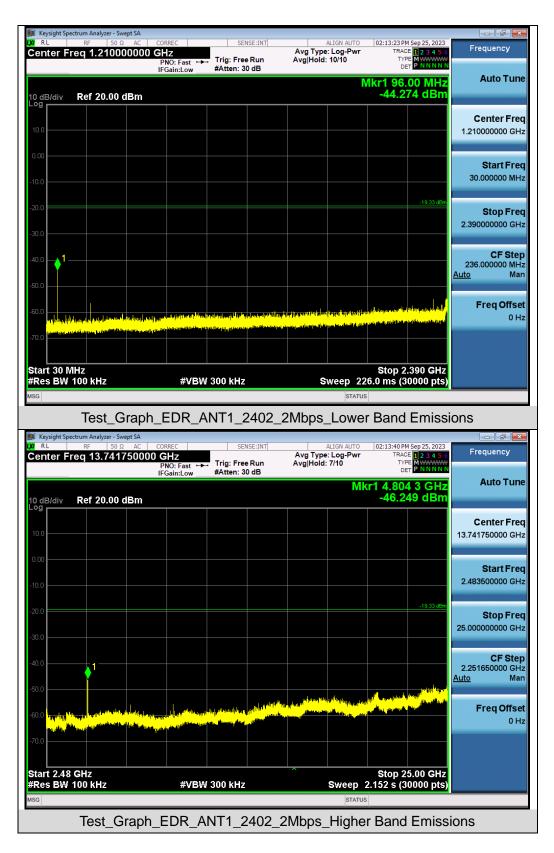




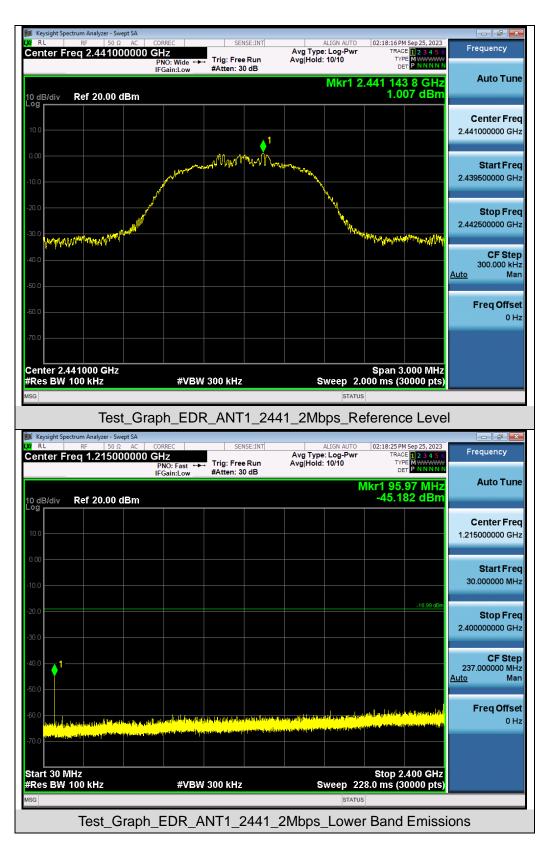




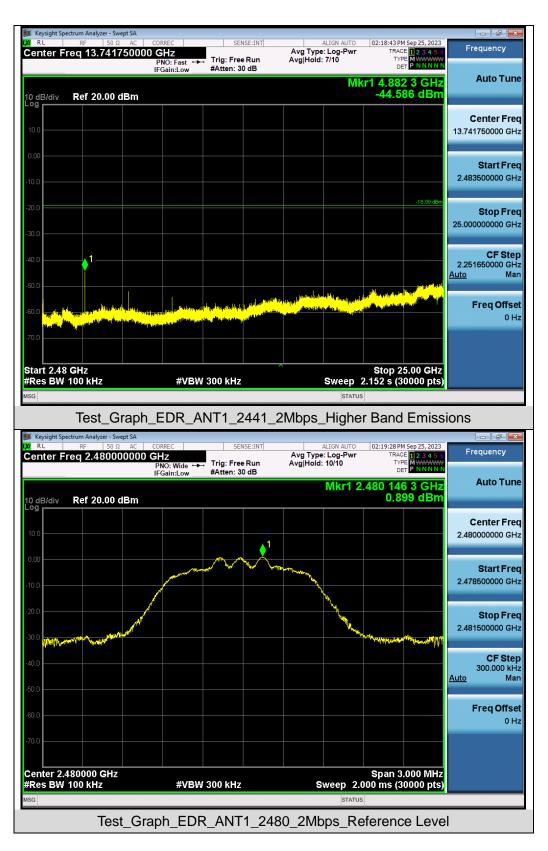




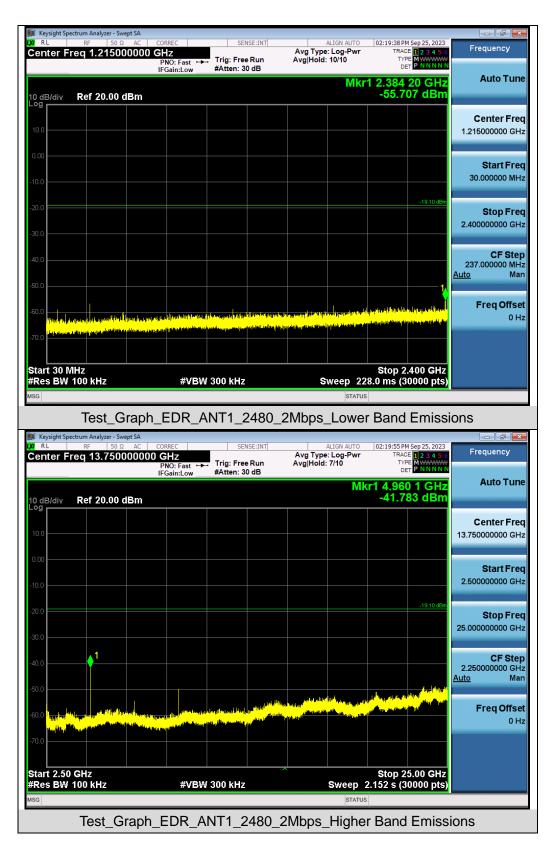








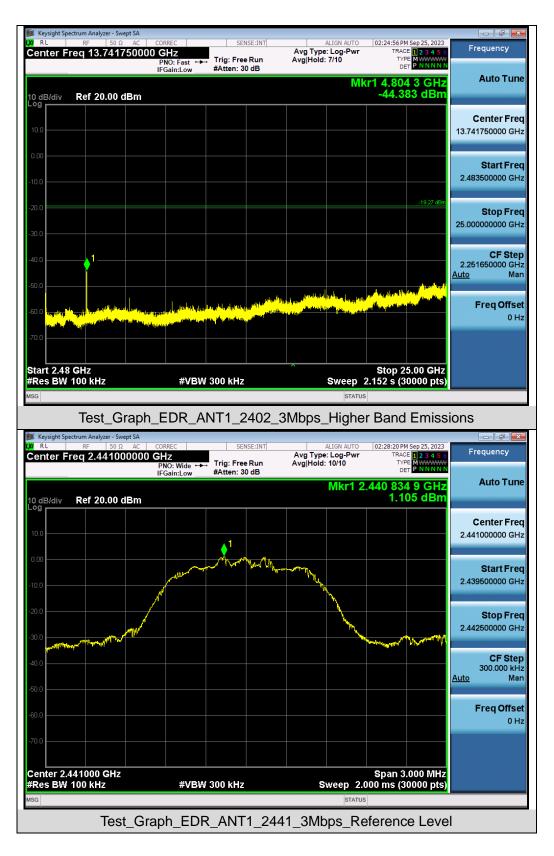




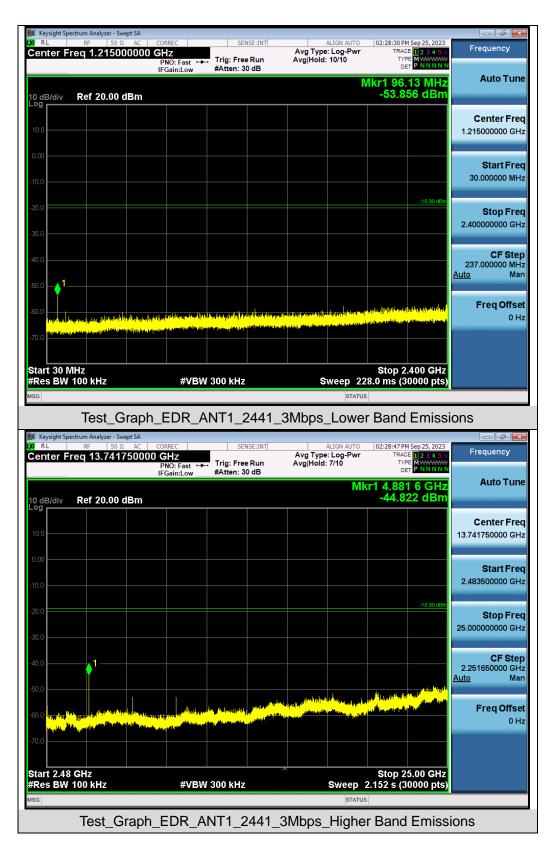








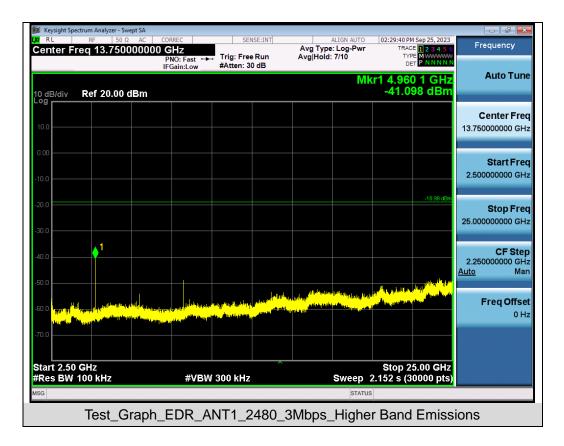




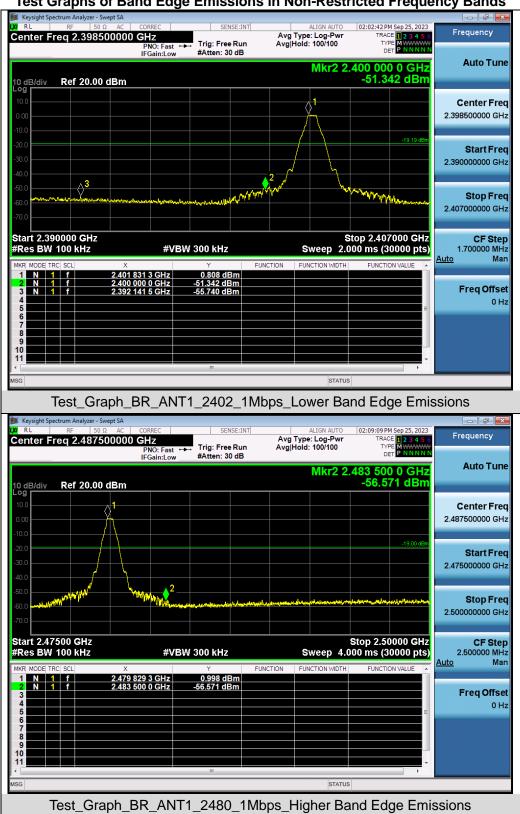






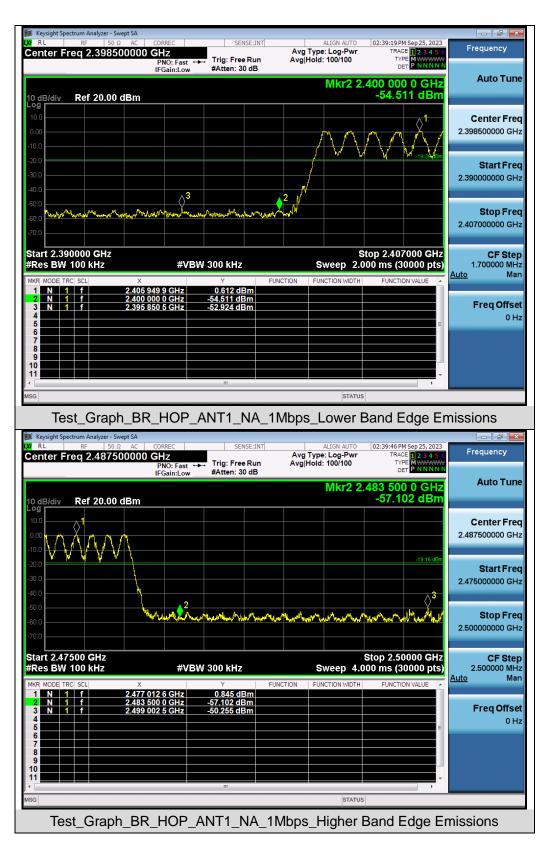




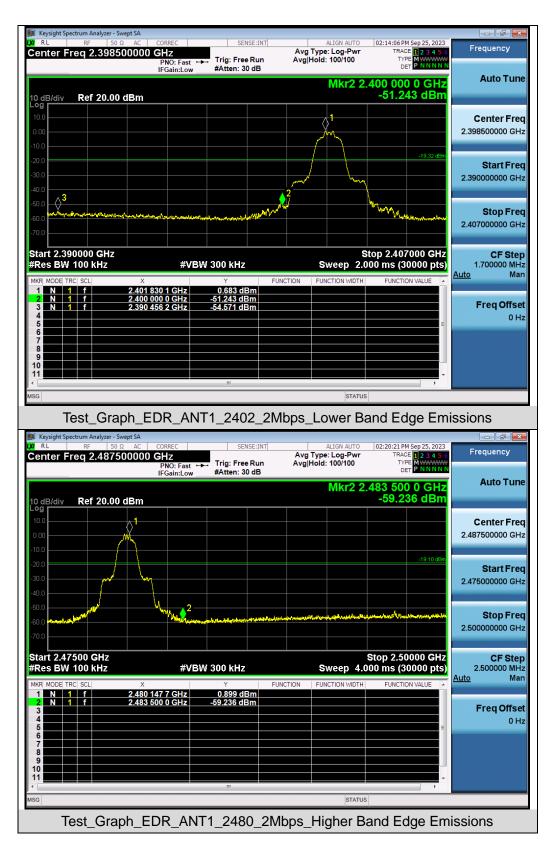


Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands

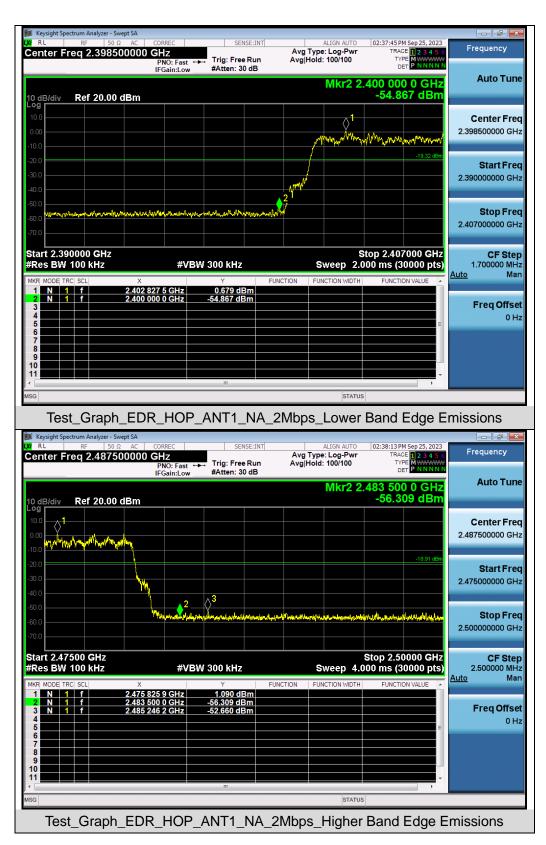






















9. Radiated Spurious Emission

9.1 Measurement Limit

15.209 Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
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: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

9.2 Measurement Procedure

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection"

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absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.

- 8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

Spectrum Parameter	Setting				
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP				
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP				
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP				
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average				

The following table is the setting of spectrum analyzer and receiver.

Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP



• Quasi-Peak Measurements below 1GHz

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. Span was set greater than 1MHz
- 3. RBW = as shown in the table above
- 4. Detector = CISPR quasi-peak
- 5. Sweep time = auto couple
- 6. Trace was allowed to stabilize

Peak Measurements above 1GHz

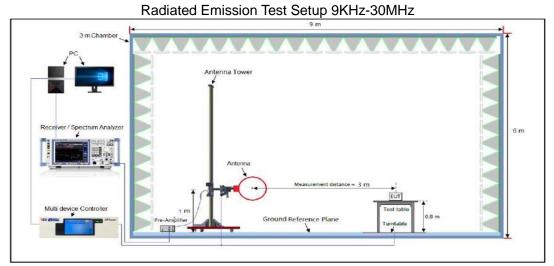
- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = peak
- 5. Sweep time = auto couple
- 6. Trace mode = max hold
- 7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

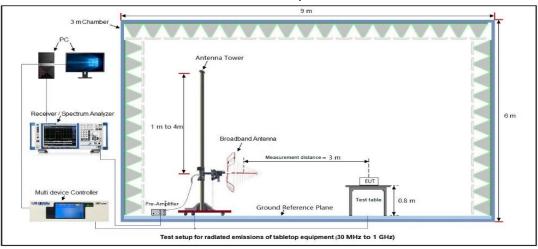
- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW setting requirements are as follows:
- 4. If the EUT is configured to transmit with duty cycle \ge 98%, set VBW = 10 Hz.
- 5. If the EUT duty cycle is < 98%, set VBW \geq 1/T. T is the minimum transmission duration.
- 6. Detector = Peak
- 7. Sweep time = auto
- 8. Trace mode = max hold
- 8. Trace was allowed to stabilize



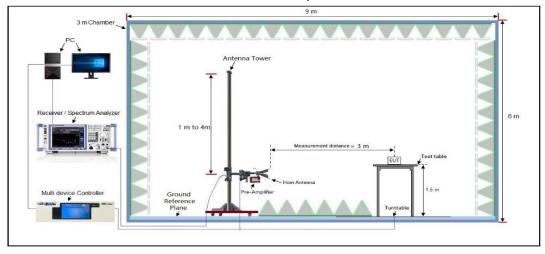
9.3 Measurement Setup (Block Diagram of Configuration)



Radiated Emission Test Setup 30MHz-1000MHz



Radiated Emission Test Setup Above 1000MHz



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 E-mail: agc@agccert.com

 Web: http://www.agccert.com/



9.4 Measurement Result

Radiated Emission Below 30MHz

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

				anatt				resu	ts at 3		2-101	12			
UT Name	WIRELESS HEADPHONE Model Name						ZE	EAL	ОТ-В						
emperature	23.8°	С							Rela	Relative Humidity			61	61.7%	
ressure	960h	Pa							Test	Volta	age		No	Normal Voltage	
est Mode	Mode	8							Ante	enna	Polar	ity	Н	orizo	ontal
72.0	dBu∀/m														
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		50	60	1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 70 8		an a	(MHz)				400	500	600 7	00	1000.0
-8 30.00)0 40	50	60	70 8 R	o eadi	ing	(мнг) Соггес	t M	easur	300 ''e-	400	500	600 7	00	1000.0
-8 30.00		50 Fr	60 eq.	70 8 R	₀ eadi _eve	ing	(MHz) Correc Factor	t M	easur ment	300 'e-	400	500	600 7 Over		
-8 30.00 No.	. Mk.	50 Fro Mi	60 eq.	70 8 R	₀ eadi _eve dBu\	ing el	(MHz) Correc Factor dB	t M	easur ment BuV/m	300 '@-	400 Limit	500	600 7 Over dB	D)etect
-8 30.00 No.	. Mk.	50 Fr MI 39.29	60 eq. Hz	70 8 R	o eadi _eve dBu\ 6.5	ing el /	(MHz) Correc Factor dB 13.60	t M	easur ment BuV/m 20.11	300 'e- 	400 Limit dB/m 40.00	500	600 7 Over dB 19.89	D)etect peal
-8 30.00 No.	. Mk.	50 Fro Mi	60 eq. Hz	70 8 R	₀ eadi _eve dBu\	ing el /	(MHz) Correc Factor dB	t M	easur ment BuV/m	300 'e- 	400 Limit	500	600 7 Over dB	D)etect
-8 30.00 No.	. Mk.	50 Fr MI 39.29	60 eq. Hz 991 138	70 8 R	o eadi _eve dBu\ 6.5	ing 21 7 8	(MHz) Correc Factor dB 13.60	t M	easur ment BuV/m 20.11	300 'e- 	400 Limit dB/m 40.00	500	600 7 Over dB 19.89	D)etect peal
-8 30.00 No. 1 2)0 40 . Mk. 1 2	50 Fro 39.29 14.11	60 eq. Hz 9991 138 240	70 8 R(L	o _eadi _eve dBu\ 6.5 6.4	ing 21 7	(MHz) Correc Factor dB 13.60 16.34	t M	easur ment BuV/m 20.11 22.82	300 Te-	400 Limit dB/m 10.00 13.50	500	600 7 Over dB 19.89 20.68	D) }	^{)etect} peal
-8 30.00 No. 1 2 3	³⁰ 40 . Mk. 1 2 31	50 Fr 39.29 14.11 16.02	60 eq. Hz 9991 138 240 318	70 8 R(L	eadi _eve dBu\ 6.5 6.4 9.5	ing 21 7 0	(MHz) Correc Factor dB 13.60 16.34 14.42	t M	easur ment BuV/m 20.11 22.82 23.99	300 7e- 2 2 2	400 Limit dB/m 10.00 13.50 16.00		600 7 Over dB 19.89 20.68 22.01	D) }	^{)etect} peal peal peal



			F	Radia	ted I	Emis	sion Test Re	esults at	30MHz-1GH	z		
UT Name	WIR	RELES	SS H	IEAD	PHO	NE		Мо	del Name	ZE	ALOT-B38	
emperature	23.8	3℃						Rel	ative Humic	lity 61	61.7% Normal Voltage	
ressure	960	hPa						Tes	t Voltage	No		
est Mode	Mod	de 8						Ant	enna Polari	ty Ve	rtical	
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-8												
30.00	0 40	50	60		80		(MHz)		300 400	500 600 7	00 1000.000	
No.	Mk.	F	req		Read Lev		Correct Factor	Measu ment	1 Sec. 14	Over		
		N	MHz		dBu	١V	dB	dBuV/n	n dB/m	dB	Detector	
1		69.3	3568	3	7.8	89	17.01	24.90	40.00	-15.10	peak	
2		137.9	9028	3	7.	55	18.15	25.70	43.50	-17.80	peak	
3		315.4	1808	3	10.0	63	19.98	30.61	46.00	-15.39	peak	
					14.3	21	21.56	35.77	46.00	-10.23	peak	
4		383.9	9318	5	17.4	21						
4		383.9 595.1			6.8		25.98	32.78		-13.22	peak	

RESULT: Pass

Note: 1. Factor=Antenna Factor + Cable loss, Margin= Limit-Level.

2. All test modes had been pre-tested. The mode 8 is the worst case and recorded in the report.



EUT	UT Name WIRELESS HEADPHONE				Mode	el Name	ZEALOT-B38		
Tem	perature	23.8 ℃			Relat	ive Humidity	61.7%		
Pres	ssure	960hPa			Test V	Voltage	Normal	Voltage	
Test	t Mode	Mode 7			Anter	nna Polarity	Horizont	al	
	Frequency	Meter Reading	Factor	Emission	n Level	Limits	Margin	Value Type	
	(MHz)	(dBµV)	(dB)	(dBµV	//m)	(dBµV/m)	(dB)	value Type	
	4804.000	45.74	0.08	45.8	2	74	-28.18	peak	
	4804.000	35.42	0.08	35.5	5	54	-18.5	AVG	
	7206.000	42.69	2.21	44.9	9	74	-29.1	peak	
	7206.000	31.5	2.21	33.7	'1	54	-20.29	AVG	
	emark:								
Fa	actor = Anten	na Factor + Cabl	e Loss – Pre-	amplifier.					
	actor = Anten		e Loss – Pre-		Mode	el Name	ZEALOT	-B38	
EUT						I Name	ZEALOT 61.7%	⁻ -B38	
EUT Tem	Name	WIRELESS			Relat				
EUT Tem Pres	⁻ Name Iperature	WIRELESS 23.8℃			Relat	ive Humidity	61.7%		
EUT Tem Pres	Name perature ssure Mode	WIRELESS 23.8℃ 960hPa Mode 7	HEADPHON	E	Relat Test V Anter	ive Humidity Voltage nna Polarity	61.7% Normal Vertical		
EUT Tem Pres	Name perature ssure Mode Frequency	WIRELESS 23.8℃ 960hPa Mode 7 Meter Reading	HEADPHON	E	Relat	ive Humidity Voltage nna Polarity Limits	61.7% Normal Vertical Margin		
EUT Tem Pres	Name perature ssure Mode Frequency (MHz)	WIRELESS 23.8℃ 960hPa Mode 7 Meter Reading (dBµV)	Factor (dB)	E Emission (dBµV	Relat Test V Anter	ive Humidity Voltage nna Polarity Limits (dBµV/m)	61.7% Normal Vertical Margin (dB)	Voltage Value Type	
EUT Tem Pres	Name operature ssure t Mode Frequency (MHz) 4804.000	WIRELESS 23.8℃ 960hPa Mode 7 Meter Reading (dBµV) 45.85	Factor (dB) 0.08	E Emission (dBµV) 45.9	Relat Test V Anter	ive Humidity Voltage nna Polarity Limits (dBµV/m) 74	61.7% Normal Vertical Margin (dB) -28.07	Voltage Value Type peak	
EUT Tem Pres	Name operature ssure t Mode Frequency (MHz) 4804.000 4804.000	WIRELESS 23.8℃ 960hPa Mode 7 Meter Reading (dBµV) 45.85 35.47	Factor (dB) 0.08 0.08	E Emission (dBµV 45.9 35.5	Relat Test V Anter D Level //m) 13 55	ive Humidity Voltage nna Polarity Limits (dBµV/m) 74 54	61.7% Normal Vertical Margin (dB) -28.07 -18.45	Voltage Value Type peak AVG	
EUT Tem Pres	Name operature ssure t Mode Frequency (MHz) 4804.000 4804.000 7206.000	WIRELESS 23.8℃ 960hPa Mode 7 Meter Reading (dBµV) 45.85 35.47 42.36	Factor (dB) 0.08 0.08 2.21	E Emission (dBµV 45.9 35.5 44.5	Relat Test V Anter D Level (/m) 13 15 15 17	ive Humidity Voltage nna Polarity Limits (dBµV/m) 74 54 74	61.7% Normal Vertical Margin (dB) -28.07 -18.45 -29.43	Voltage Value Type peak AVG peak	
EUT Tem Pres	Name operature ssure t Mode Frequency (MHz) 4804.000 4804.000	WIRELESS 23.8℃ 960hPa Mode 7 Meter Reading (dBµV) 45.85 35.47	Factor (dB) 0.08 0.08	E Emission (dBµV 45.9 35.5	Relat Test V Anter D Level (/m) 13 15 15 17	ive Humidity Voltage nna Polarity Limits (dBµV/m) 74 54	61.7% Normal Vertical Margin (dB) -28.07 -18.45	Voltage Value Type peak AVG	
EUT Tem Pres	Name operature ssure t Mode Frequency (MHz) 4804.000 4804.000 7206.000	WIRELESS 23.8℃ 960hPa Mode 7 Meter Reading (dBµV) 45.85 35.47 42.36	Factor (dB) 0.08 0.08 2.21	E Emission (dBµV 45.9 35.5 44.5	Relat Test V Anter D Level (/m) 13 15 15 17	ive Humidity Voltage nna Polarity Limits (dBµV/m) 74 54 74	61.7% Normal Vertical Margin (dB) -28.07 -18.45 -29.43	Voltage Value Type peak AVG peak	
EUT Tem Pres Test	Name operature ssure t Mode Frequency (MHz) 4804.000 4804.000 7206.000	WIRELESS 23.8℃ 960hPa Mode 7 Meter Reading (dBµV) 45.85 35.47 42.36	Factor (dB) 0.08 0.08 2.21	E Emission (dBµV 45.9 35.5 44.5	Relat Test V Anter D Level (/m) 13 15 15 17	ive Humidity Voltage nna Polarity Limits (dBµV/m) 74 54 74	61.7% Normal Vertical Margin (dB) -28.07 -18.45 -29.43	Voltage Value Type peak AVG peak	

RESULT: Pass



EUT Name	WIRELE	SS HEADPH	IONE	Model Name		ZEAL	.OT-B38		
Temperature	23.8 ℃			Relative Humidity 61.			6		
Pressure	960hPa			Test Voltage		Normal Voltage			
Test Mode	Mode 8			Antenna Pola	arity	Horizontal			
Frequency	Frequency Meter Reading		r Emission	Level Limits	;	Margin	Value Type	<u>`</u>	
(MHz)	(dBµV)	(dB)	(dBµV/	/m) (dBµV/r	n)	(dB)	value Type	,	
4882.000	46.96	0.14	47.1	74		-26.9	peak		
4882.000	34.57	0.14	34.7	1 54		-19.29	AVG		
7323.000	42.15	2.36				-29.49	peak		
7323.000	32.37	2.36	34.73	3 54		-19.27	AVG		
Remark:		<u></u>							
Factor = Anter	na Factor + (Cable Loss - I	Pre-amplifier.						
EUT Name	WIRELE	ESS HEADPHONE		Model Name		ZEAL	.OT-B38		
Temperature	23.8 ℃			Relative Hum	idity	61.7%	61.7%		
Pressure	960hPa			Test Voltage		Norm	Normal Voltage		
Test Mode	Mode 8			Antenna Pola	arity	Vertic	al		
Frequency Me	ter Reading	Factor	Emission Level	Limits	Margi				
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		Value Type		
4882.000	46.85	0.14	46.99	74	-27.0	1	peak		
4882.000	34.41	0.14	34.55	54	-19.4		AVG		
7323.000	42.26	2.36	44.62	74	-29.3		peak		
7323.000	32.53	2.36	34.89	54	-19.1		AVG		
Remark: Factor = Antenna F									

Radiated Emissions Test Results for Above 1 GHz

RESULT: Pass



Radiated Emissions	Test Results	for Above 1 GHz
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EUT Name	WIRELESS H	IEADPHONI	E Mode	I Name	ZEALO	ZEALOT-B38		
Temperature	23.8 ℃	23.8 ℃			61.7%	61.7%		
Pressure	960hPa		Test \	/oltage	Normal	Voltage		
Test Mode	Mode 9	Mode 9		na Polarity	Horizon	tal		
			·		·			
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type		
4960.000	46.45	0.22	46.67	74	-27.33	peak		
4960.000	35.32	0.22	35.54	54	-18.46	AVG		
7440.000	41.61	2.64	44.25	74	-29.75	peak		
7440.000	32.47	2.64	35.11	54	-18.89	AVG		
Remark:								
Factor = Anter	nna Factor + Cable				_			
Factor = Anter	ma Factor + Cable			I Name	ZEALO	Г-В38		
Factor = Anter			E Mode	I Name ive Humidity	ZEALO ⁻ 61.7%	Г-В38		
Factor = Anter	WIRELESS H		E Mode Relati					
Factor = Anter EUT Name Temperature Pressure	WIRELESS H		E Mode Relati Test V	ive Humidity	61.7%			
Factor = Anter EUT Name Temperature Pressure Test Mode	WIRELESS H 23.8°C 960hPa Mode 9	IEADPHONI	E Mode Relati Test V Anter	ive Humidity /oltage nna Polarity	61.7% Normal Vertical	Voltage		
Factor = Anter	WIRELESS H 23.8°C 960hPa Mode 9 Meter Reading		E Mode Relati Test V Anter Emission Level	ive Humidity /oltage na Polarity	61.7% Normal			
Factor = Anter	WIRELESS H 23.8°C 960hPa Mode 9	HEADPHONI Factor (dB)	E Mode Relati Test V Anter	ive Humidity /oltage nna Polarity	61.7% Normal Vertical Margin (dB)	Voltage Value Type		
Factor = Anter EUT Name Temperature Pressure Test Mode Frequency (MHz)	WIRELESS ⊢ 23.8°C 960hPa Mode 9 Meter Reading (dBµV) 46.66	HEADPHONI Factor (dB) 0.22	E Mode Relati Test V Anter Emission Level (dBµV/m) 46.88	Limits (dBµV/m) 74	61.7% Normal Vertical Margin (dB) -27.12	Voltage Value Type peak		
Factor = Anter EUT Name Temperature Pressure Test Mode Frequency (MHz) 4960.000	WIRELESS H 23.8°C 960hPa Mode 9 Meter Reading (dBµV)	HEADPHONI Factor (dB)	E Mode Relati Test V Anter Emission Level (dBµV/m)	ive Humidity /oltage na Polarity Limits (dBµV/m)	61.7% Normal Vertical Margin (dB)	Voltage Value Type		
Factor = Anter EUT Name Temperature Pressure Test Mode Frequency (MHz) 4960.000	WIRELESS ⊢ 23.8°C 960hPa Mode 9 Meter Reading (dBµV) 46.66 35.74	Factor (dB) 0.22 0.22	E Mode Relati Test V Anter Emission Level (dBµV/m) 46.88 35.96	Limits (dBµV/m) 74 54	61.7% Normal Vertical Margin (dB) -27.12 -18.04	Voltage Value Type peak AVG		
Factor = Anter EUT Name Temperature Pressure Test Mode Frequency (MHz) 4960.000 7440.000	WIRELESS ⊢ 23.8°C 960hPa Mode 9 Meter Reading (dBµV) 46.66 35.74 41.85	Factor (dB) 0.22 0.22 2.64	E Mode Relati Test V Anter Emission Level (dBµV/m) 46.88 35.96 44.49	Limits (dBµV/m) 74 54 74	61.7% Normal Vertical Margin (dB) -27.12 -18.04 -29.51	Voltage Value Type peak AVG peak		
Factor = AnterEUT NameTemperaturePressureTest ModeFrequency(MHz)4960.0004960.0007440.000	WIRELESS ⊢ 23.8°C 960hPa Mode 9 Meter Reading (dBµV) 46.66 35.74 41.85	Factor (dB) 0.22 0.22 2.64	E Mode Relati Test V Anter Emission Level (dBµV/m) 46.88 35.96 44.49	Limits (dBµV/m) 74 54 74	61.7% Normal Vertical Margin (dB) -27.12 -18.04 -29.51	Voltage Value Type peak AVG peak		

RESULT: Pass

Note:

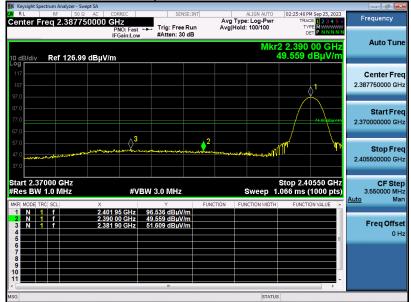
- 1. The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.
- 2. Factor = Antenna Factor + Cable loss Pre-amplifier gain, Margin = Emission Level-Limit.
- 3. The "Factor" value can be calculated automatically by software of measurement system.
- 4. All test modes had been tested. The 8DPSK modulation is the worst case and recorded in the report.



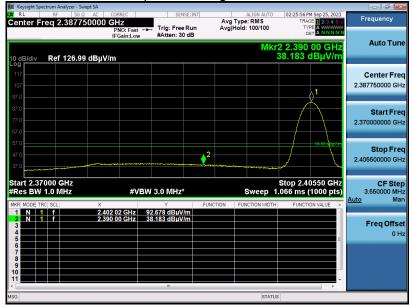
EUT Name	WIRELESS HEADPHONE	Model Name	ZEALOT-B38
Temperature	23.8 ℃	Relative Humidity	61.7%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 7	Antenna Polarity	Horizontal

Band Edge Emission Test Results for Restricted Bands

Test Graph for Peak Measurement



Test Graph for Average Measurement



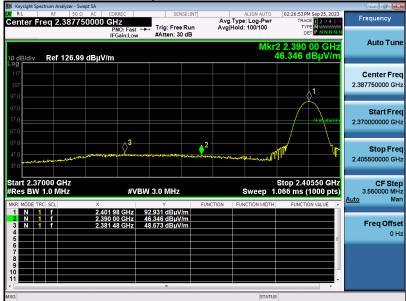
RESULT: Pass



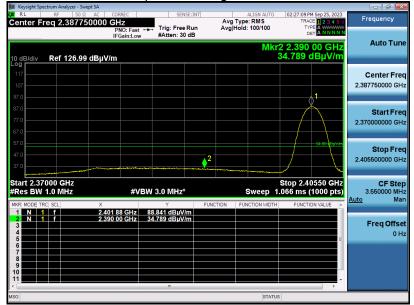
Band Edge Emission Test Results for Restricted Bands

EUT Name	WIRELESS HEADPHONE	Model Name	ZEALOT-B38
Temperature	23.8 ℃	Relative Humidity	61.7%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 7	Antenna Polarity	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



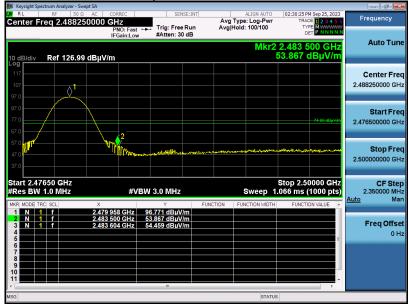
RESULT: Pass



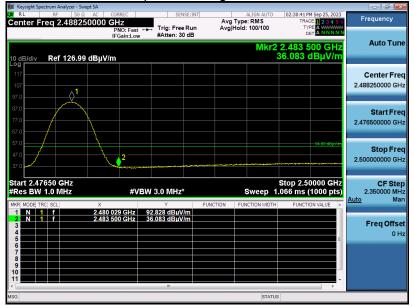
Band Edge Emission Test Results for Restricted Bands

EUT Name	WIRELESS HEADPHONE	Model Name	ZEALOT-B38
Temperature	23.8 ℃	Relative Humidity	61.7%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 9	Antenna Polarity	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



RESULT: Pass



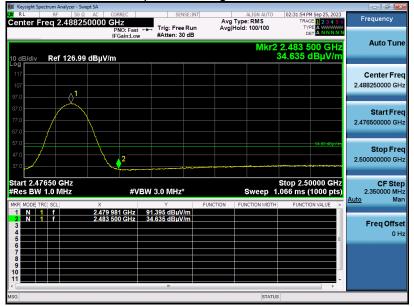
Band Edge Emission Test Results for Restricted	d Bands
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EUT Name	WIRELESS HEADPHONE	Model Name	ZEALOT-B38
Temperature	23.8 ℃	Relative Humidity	61.7%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 9	Antenna Polarity	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



RESULT: Pass

Note: The factor had been edited in the "Input Correction" of the Spectrum Analyzer. The 8DPSK modulation is the worst case and recorded in the report.



10. Number of Hopping Frequency Measurement

10.1 Provisions Applicable

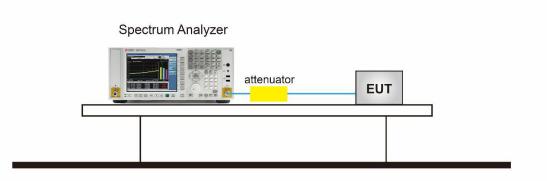
This frequency hopping system must employ a minimum of 15 hopping channels.

10.2 Measurement Procedure

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- 1. Span = The frequency band of operation. Depending on the number of channels the device
- 2. supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
- 3. RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
- 4. VBW \geq RBW
- 5. Sweep time = Auto couple
- 6. Detector = Peak
- 7. Trace mode = Max hold
- 8. Allow the trace to stabilize

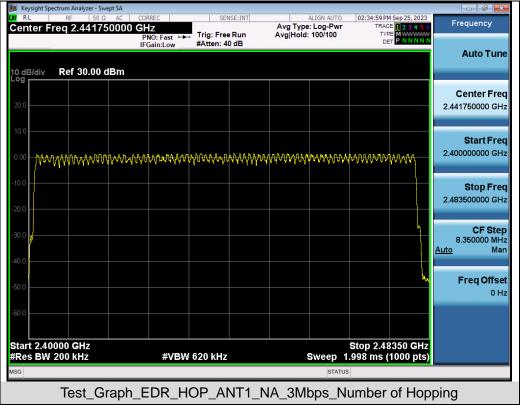
10.3 Measurement Setup (Block Diagram of Configuration)



10.4 Measurement Result

Test Data of Number of Hopping Frequency			
Test Mode	Number of Hopping Frequency	Limits	Pass or Fail
8DPSK Hopping	79	>=15	Pass





Test Graphs of Number of Hopping Frequency

Note: The 8DPSK modulation is the worst case and recorded in the report.



11. Time of Occupancy (Dwell Time) Measurement

11.1 Provisions Applicable

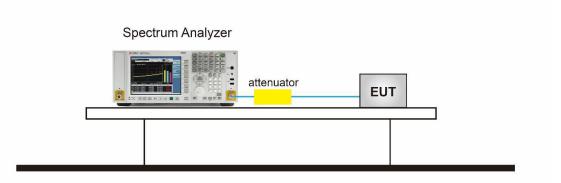
The maximum permissible time of occupancy is 400ms within a period of 400ms multiplied by the number of hopping channels employed.

11.2 Measurement Procedure

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- 1. Span = Zero span, centered on a hopping channel.
- 2. RBW shall be \leq channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel.
- 3. VBW \geq RBW
- 4. Sweep time = As necessary to capture the entire dwell time per hopping channel
- 5. Detector = Peak
- 6. Trace mode = Free Run
- 7. Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time. An oscilloscope may be used instead of a spectrum analyzer. The EUT shall show compliance with the appropriate regulatory limit for the number of hopping channels. A plot of the data shall be included in the test report.

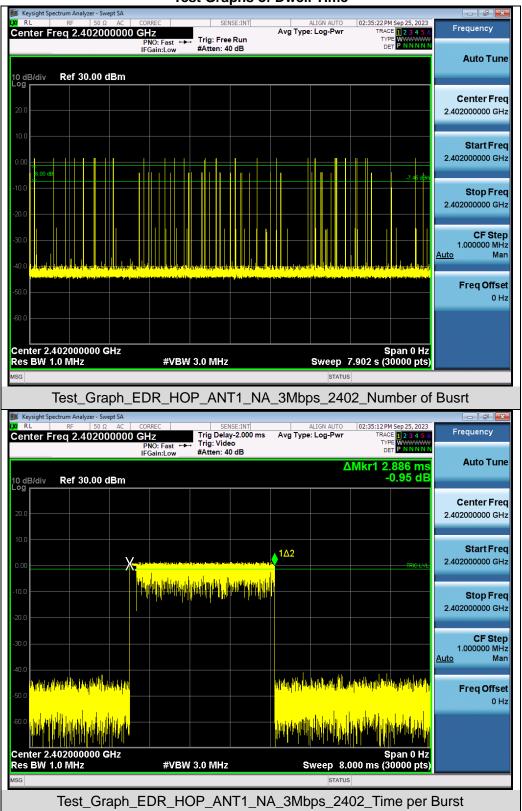
11.3 Measurement Setup (Block Diagram of Configuration)



11.4 Measurement Result

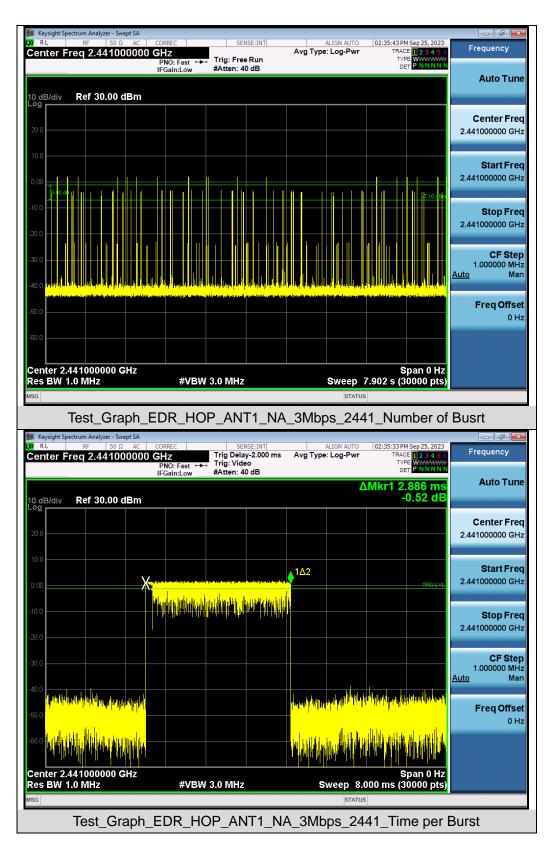
Test Data of Dwell Time					
Channel	Time of Pulse for DH5 (ms)	Number of hops in the period specified in the requirements	Sweep Time (ms)	Limit (ms)	Pass or Fail
2402	2.886	28.0*4	323.232	400	Pass
2441	2.886	18.0*4	207.792	400	Pass
2480	2.886	26.0*4	300.144	400	Pass



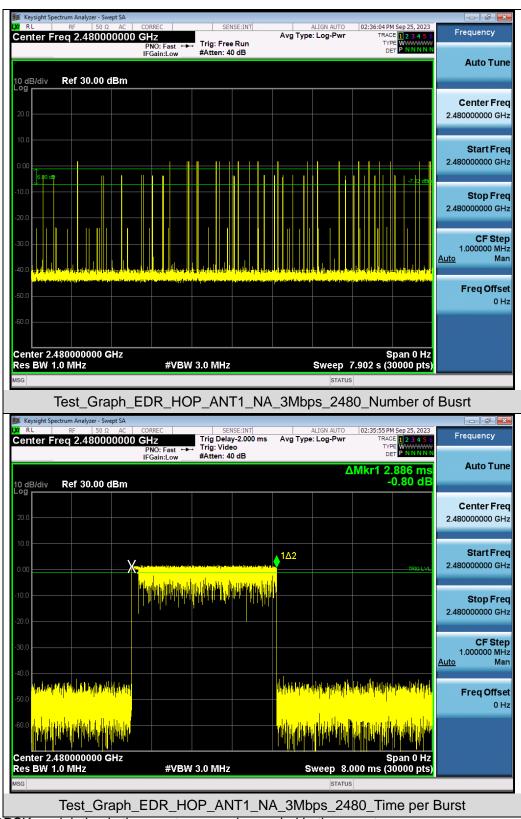


Test Graphs of Dwell Time









Note: The 8DPSK modulation is the worst case and recorded in the report.