

FCC Test Report

Report No.: AGC01110240158FR02

FCC ID	:	2AOKB-A3958L
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Wireless Headphone
BRAND NAME	:	soundcore
MODEL NAME	:	A3958L
APPLICANT	:	Anker Innovations Limited
DATE OF ISSUE	:	Feb. 26, 2024
STANDARD(S)	:	FCC Part 15 Subpart C §15.247
REPORT VERSION	:	V1.0
<u>Attestation of</u>	<u><i>G</i>lo</u>	bal Compliance (Shenzhen) Co., Ltd





Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Feb. 26, 2024	Valid	Initial Release



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1. General Information

Applicant	Anker Innovations Limited
Address	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong
Manufacturer	Anker Innovations Limited
Address	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong
Factory	N/A
Address	N/A
Product Designation	Wireless Headphone
Brand Name	soundcore
Test Model	A3958L
Series Model(s)	N/A
Difference Description	N/A
Date of receipt of test item	Feb. 01, 2024
Date of Test	Feb. 01, 2024 - Feb. 26, 2024
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.

Cool cheny Prepared By Cool Cheng Feb. 26, 2024 (Project Engineer) vin Lin **Reviewed By**

Calvin Liu (Reviewer)

Feb. 26, 2024

Approved By

ax cran

Max Zhang Authorized Officer

Feb. 26, 2024



2. Product Information

2.1 Product Technical Description

Frequency Band	2400MHz-2483.5MHz
Operation Frequency Range	2402MHz-2480MHz
Bluetooth Version	V5.4
Modulation Type	BR 🖾 GFSK, EDR 🖾 π /4-DQPSK, 🖾 8DPSK
Number of channels	79 Channels
Channel Separation	1 MHz
Maximum Transmitter Power	5.039dBm
Hardware Version	V1.1
Software Version	V1.0.9
Antenna Designation	LDS Antenna
Antenna Gain	-4.9dBi
Power Supply	DC 3.85V by battery
Adapter Information	N/A

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 =	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: 2AOKB-A3958L, 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	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:

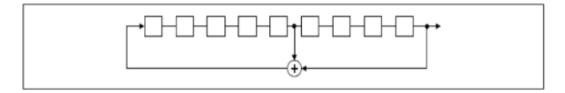
The first connection between the two devices is established, a hopping sequence was generated. For Transmitting the wanted data the complete hopping sequence was not used. The connection ended. The second connection will be established. A new hopping sequence is generated. Due to the fact the Bluetooth 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
]			
			i						1		
			;			1					
				L		<u>'i</u>		1	Ľ		

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 -4.9dBi.



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 (℃)	15 - 35
Relative humidity range	20 % - 75 %
Pressure range (kPa)	86 - 106
Power supply	DC 3.85V by battery

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%.

ltem	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

• R	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)		
\boxtimes	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		
	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	2024-02-01	2025-01-31		
\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	2021-10-31	2023-10-30		
\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)		
	AGC-EM-E045	EMI Test Receiver	R&S	ESPI	101206	2023-06-03	2024-06-02		
	AGC-EM-A130	6dB Attenuator	Eeatsheep	LM-XX-6-5W	DC-6GZ	2023-06-09	2024-06-08		
	AGC-EM-E023	AMN	R&S	100086	ESH2-Z5	2023-06-03	2024/06/02		



• Te	Test Software							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Version Information			
\boxtimes	AGC-EM-S003	RE Test System	FARA	EZ-EMC	V.RA-03A			
	AGC-EM-S011	RSE Test System	Tonscend	TS⁺ Ver2.1(JS36-RSE)	4.0.0.0			
	AGC-EM-S001	CE Test System	R&S	ES-K1	V1.71			
\square	AGC-ER-S009	BT/WIFI Test System	Tonscend	JS1120-3	2.6.77.0518			



4.System Test Configuration

4.1 EUT Configuration

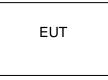
The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

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:



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.	Manufacturer	Manufacturer Specification Information	
1	Xiaomi Phone	MI 10	Xiaomi		
2	Control Box	USB-TTL			

Test Accessories Come From The Manufacturer

No.	Equipment	Model No.	Manufacturer	Specification Information	Cable
1					



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	Not applicable

Note: The BT function cannot transmit when charging.



5. Description of Test Modes

	Summ	ary table of Test Cases				
		Data Rate / Modulation				
Test Item	Bluetooth – BR_EDR (GFSK/π /4-DQPSK/8DPSK)					
Radiated & Conducted 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 CH78_2480 MHz_3Mbps (Battery powered) Mode 8: Bluetooth Tx CH39_2441 MHz_3Mbps (Battery powered) Mode 8: Bluetooth Tx CH39_2441 MHz_3Mbps (Battery powered) Mode 9: Bluetooth Tx CH78_2480 MHz_3Mbps (Battery powered) Mode 10: Bluetooth Tx CH78_2480 MHz_3Mbps (Battery powered) Mode10: Bluetooth Tx Hopping-1Mbps (Battery powered) Mode11: Bluetooth Tx Hopping-3Mbps (Battery powered)					
AC Conducted Emission		N/A				
4. For Conducted Test r 第 FCC As 帮助(H) 第 口设 串 口设 串 口 波特率 数据位 校验位 停止位 流 控 BR/EDR Tr ensei Pacl	on, 3axis were chosen nethod, a temporary a Softw sist 1.0.2.2 COM2 (USB-SERIAL CH340) • 115200 8 • None • 1	A for testing for each applicable mode. attenna connector is provided by the manufacture. are Setting Diagram				
		清除日志				



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:

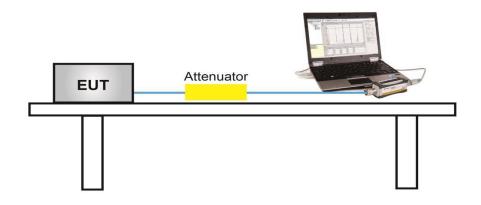
- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- 3. RBW > 20 dB bandwidth of the emission being measured.
- 4. VBW \geq RBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
- 7. 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.

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

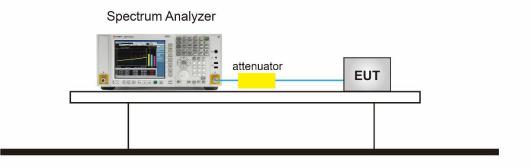
6.3 Measurement Setup (Block Diagram of Configuration)

For Average power test setup





For peak power test setup



6.4 Measurement Result

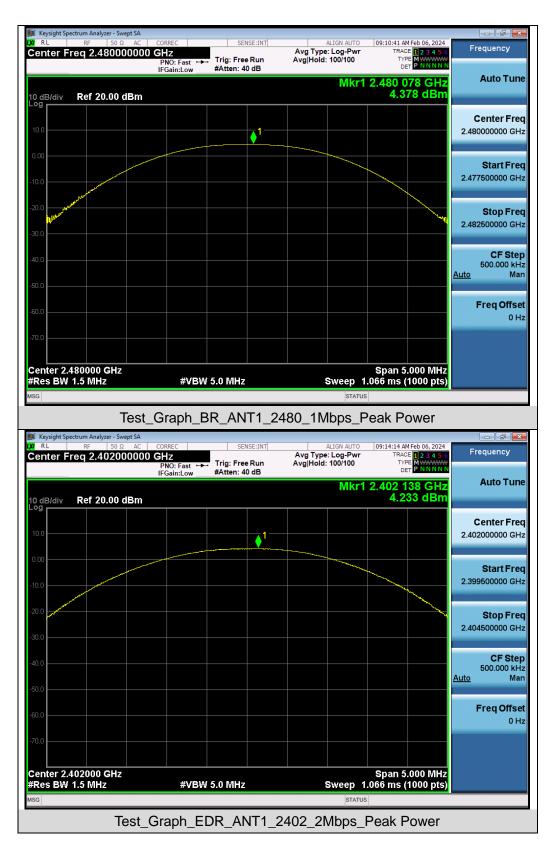
Test Data of Conducted Output Power								
Test Mode	Test Frequency (MHz)	Peak Power (dBm)	Limits (dBm)	Pass or Fail				
	2402	3.490	≤21	Pass				
GFSK	2441	4.250	≦21	Pass				
	2480	4.378	≤21	Pass				
	2402	4.233	≤21	Pass				
π /4-DQPSK	2441	4.920	≪21	Pass				
	2480	4.956	≤21	Pass				
	2402	4.408	≪21	Pass				
8DPSK	2441	5.039	≤21	Pass				
	2480	5.028	≦21	Pass				



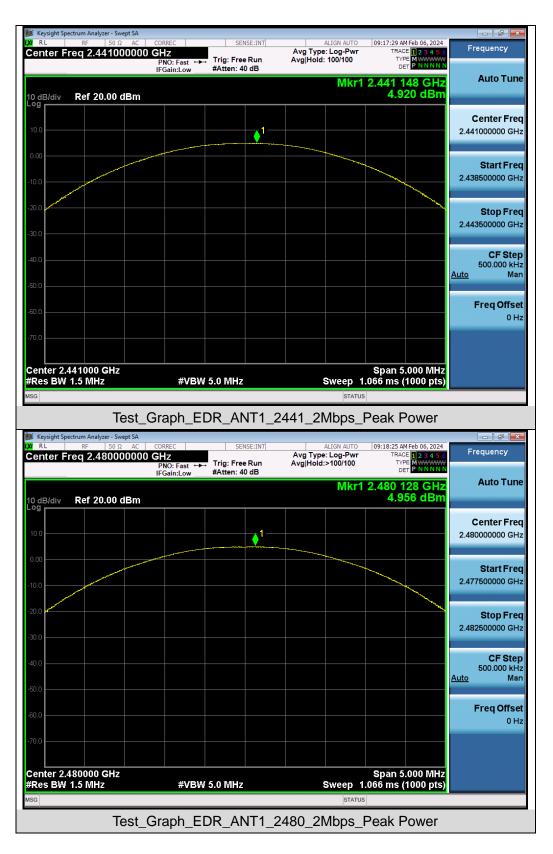


Test Graphs of Conducted Output Power

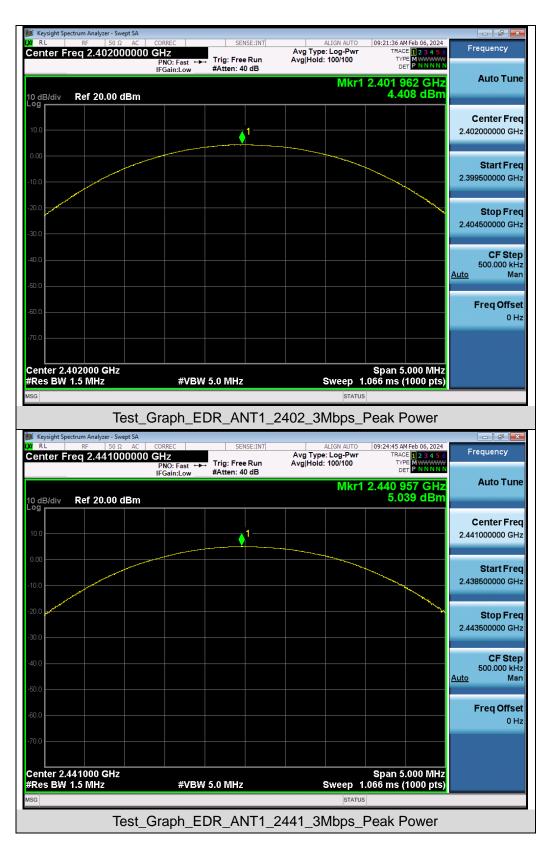




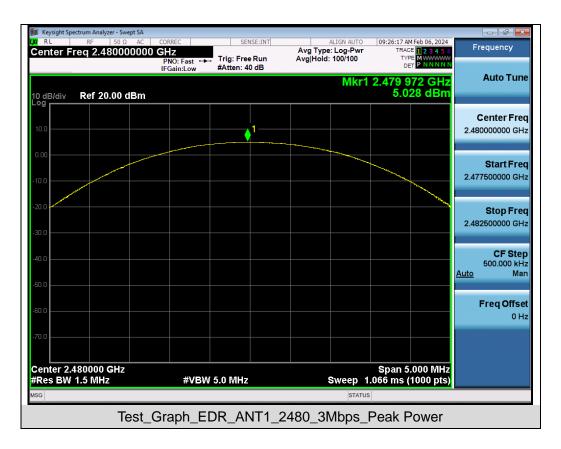














7. 20dB Bandwidth and 99% Occupied Bandwidth Measurement

7.1 Provisions Applicable

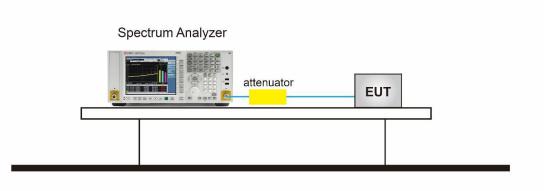
There is no corresponding limit requirement for this test item.

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)

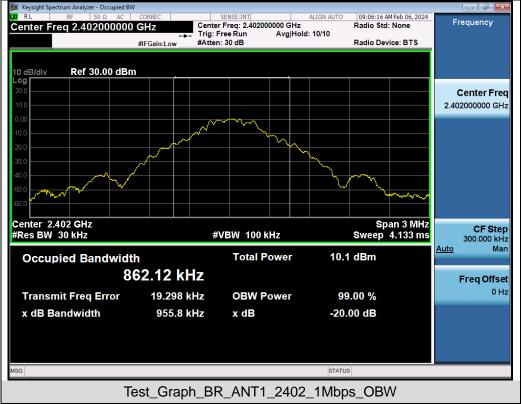




7.4 Measurement Results

Test Data of Occupied Bandwidth and -20dB Bandwidth								
Test Mode	Test Frequency (MHz)	99% Occupied Bandwidth (MHz)	-20dB Bandwidth (MHz)	Limits	Pass or Fail			
	2402	0.862	0.956	N/A	Pass			
GFSK	2441	0.867	0.954	N/A	Pass			
	2480	0.867	0.954	N/A	Pass			
	2402	1.167	1.283	N/A	Pass			
π /4-DQPSK	2441	1.175	1.282	N/A	Pass			
	2480	1.181	1.311	N/A	Pass			
	2402	1.173	1.296	N/A	Pass			
8DPSK	2441	1.180	1.297	N/A	Pass			
	2480	1.195	1.300	N/A	Pass			

Test Graphs of Occupied Bandwidth and -20 Bandwidth



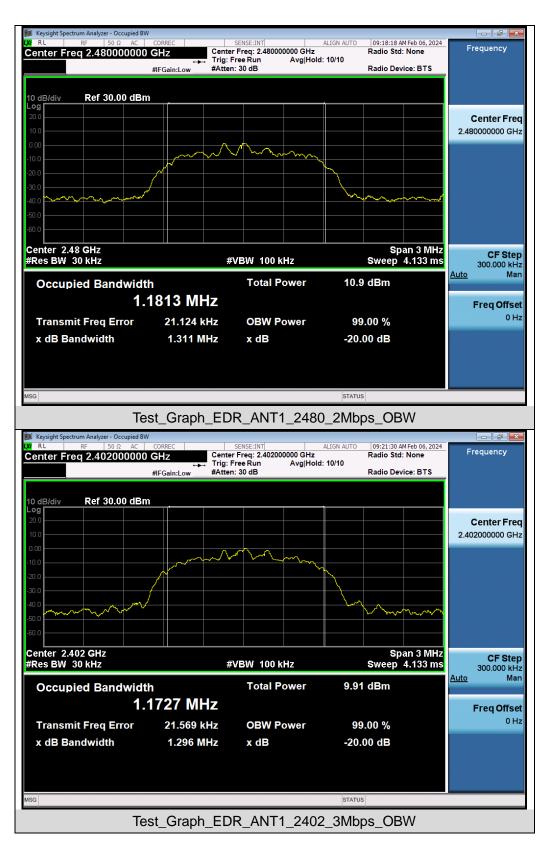




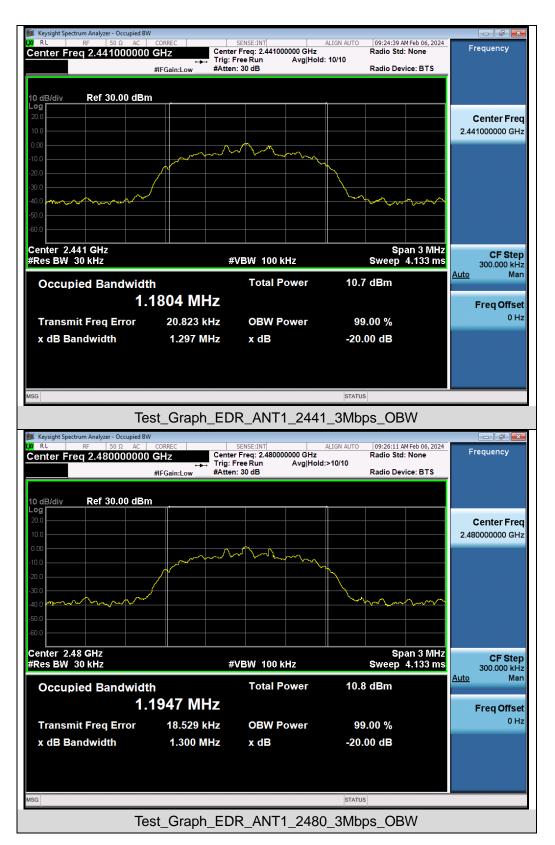














8. Conducted Band Edge and Out-of-Band Emissions

8.1 Provisions Applicable

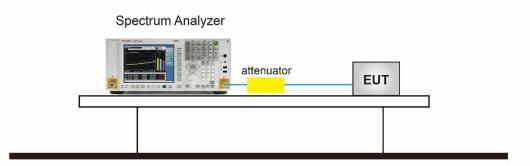
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the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



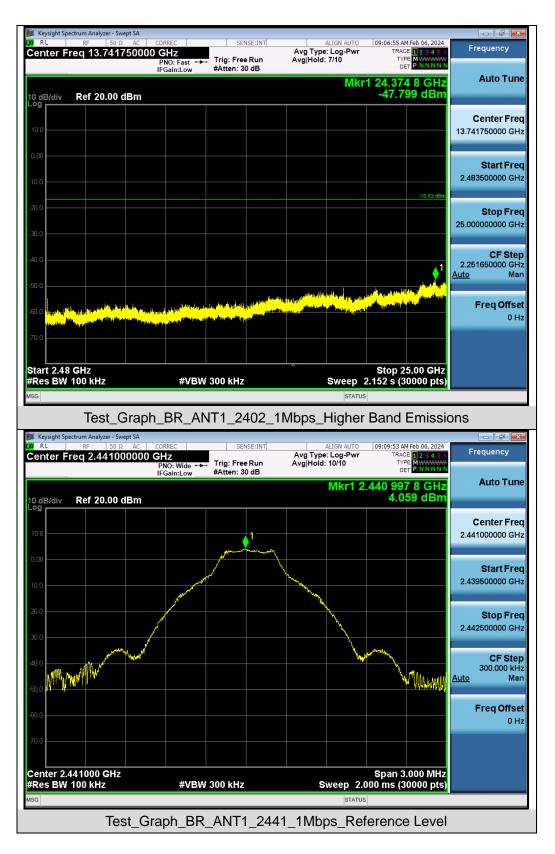


8.4 Measurement Results

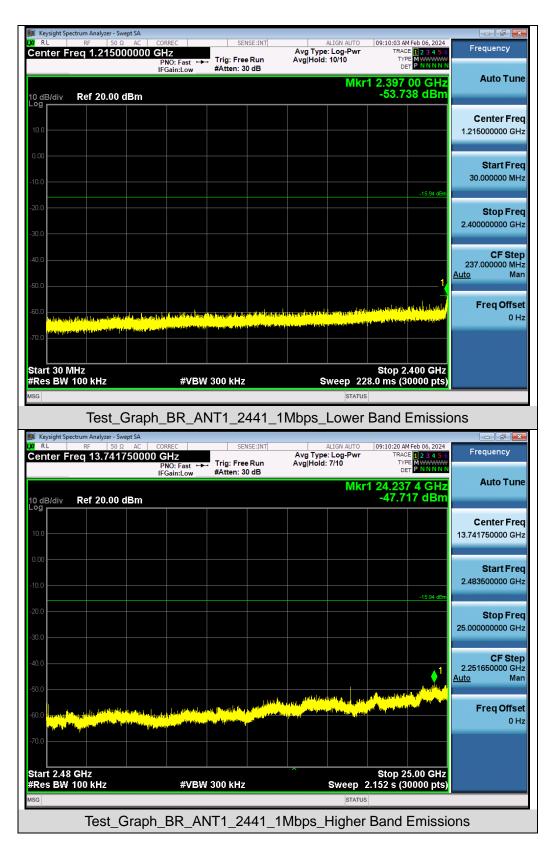


Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands





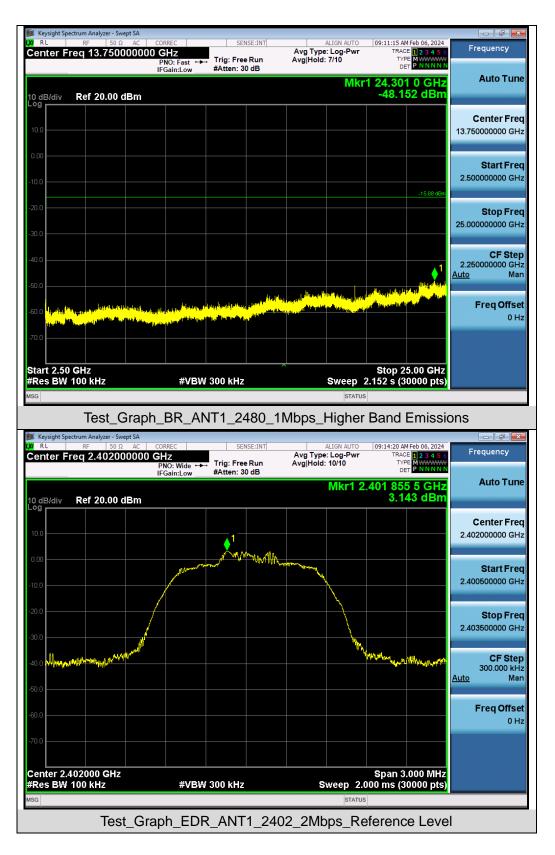




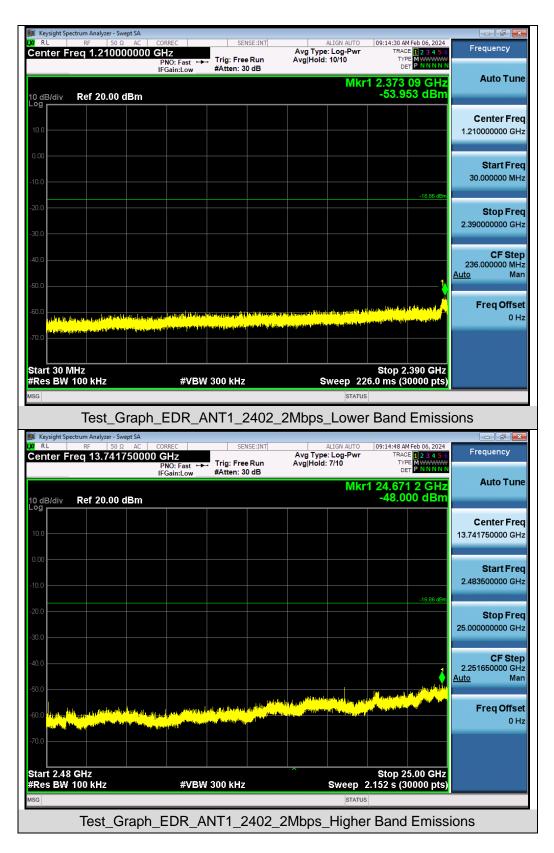




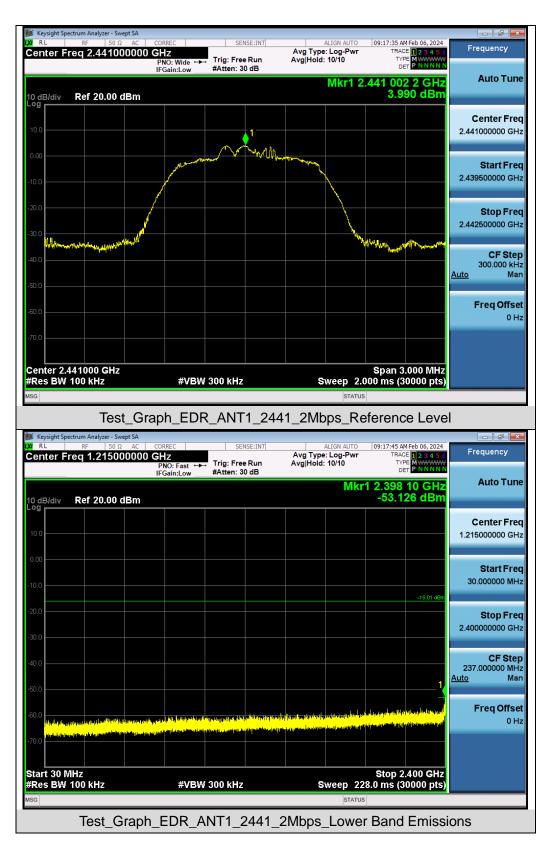




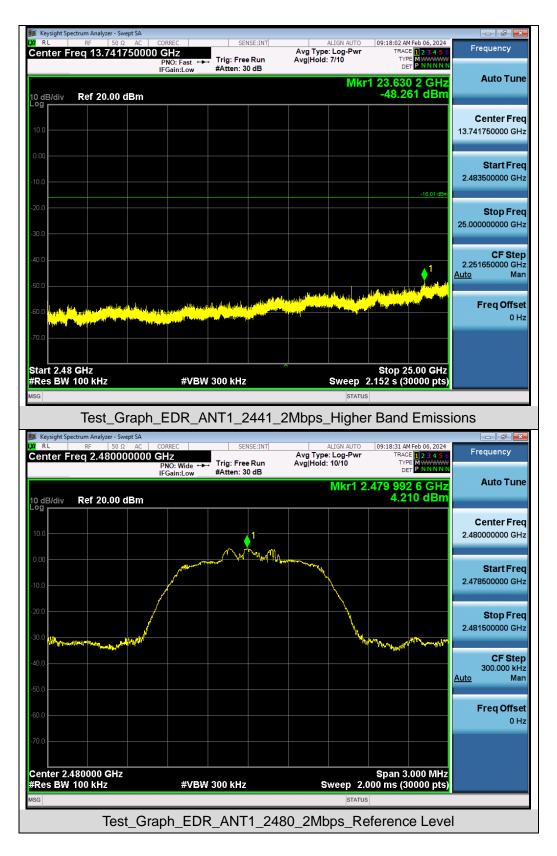




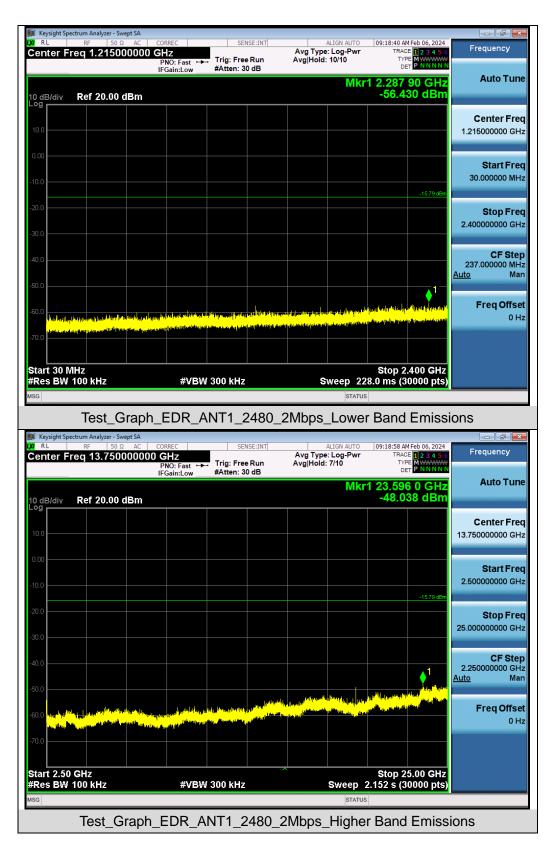




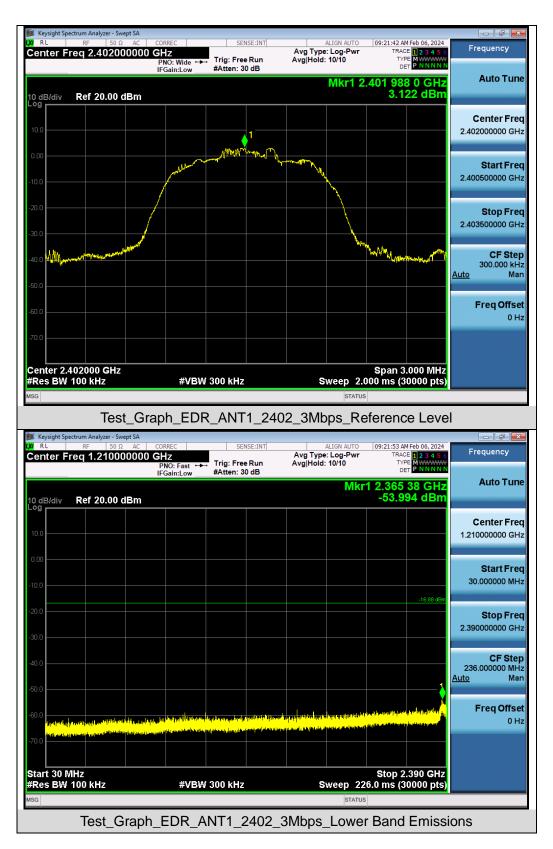




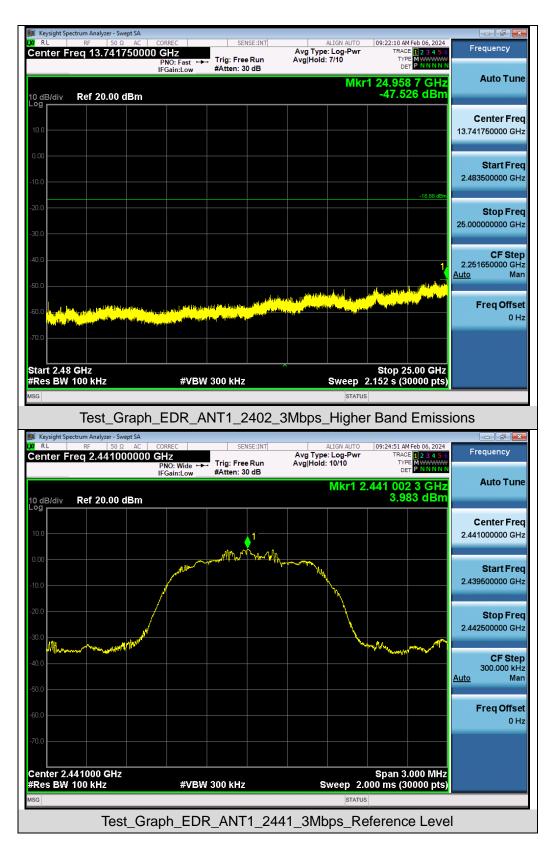




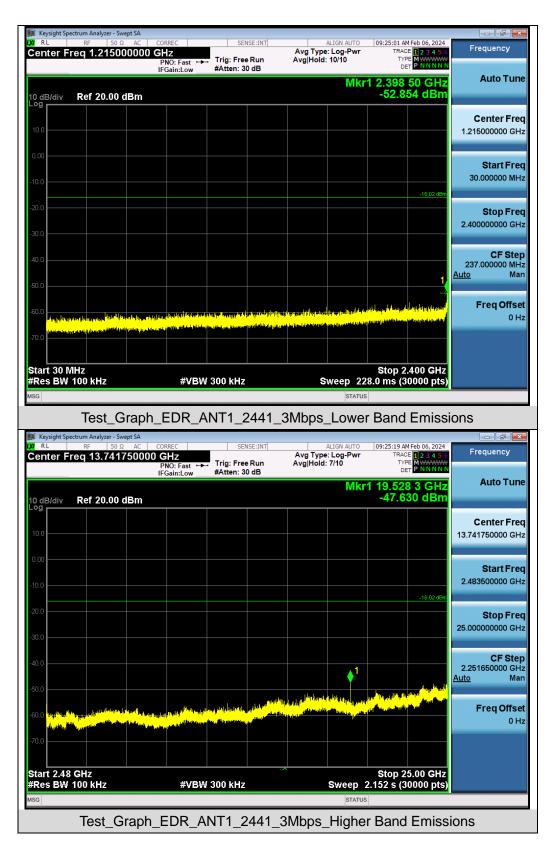




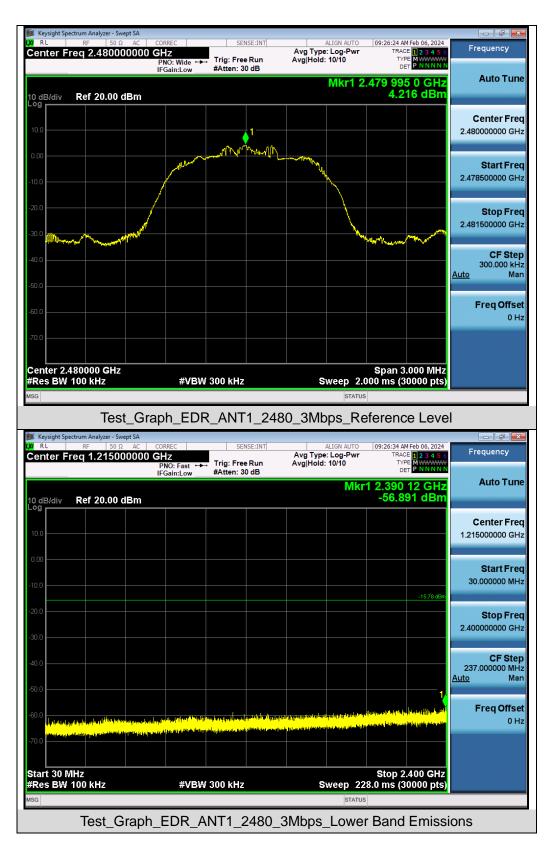




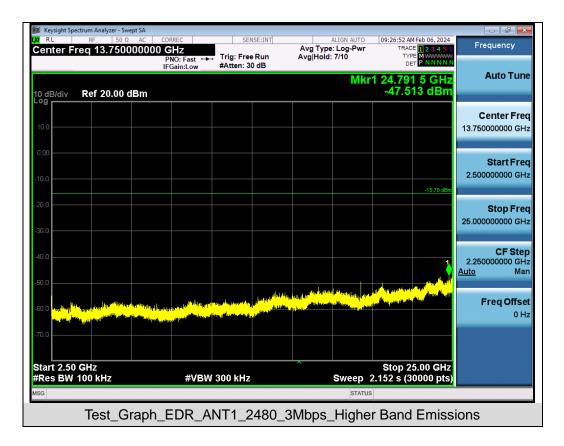




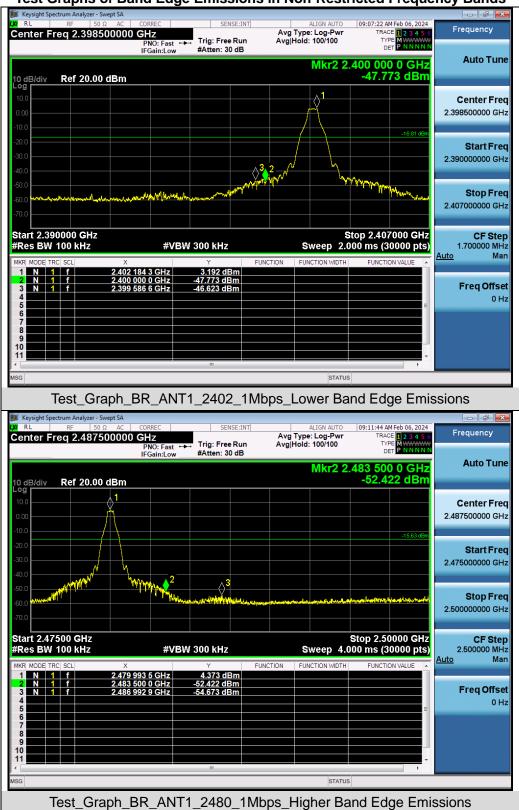












Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands























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"

Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.



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

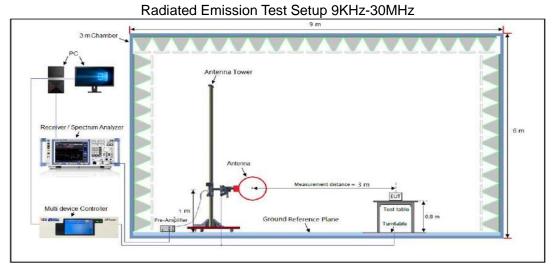
- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = peak
- 5. Sweep time = auto couple
- 6. Trace mode = max hold
- 7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

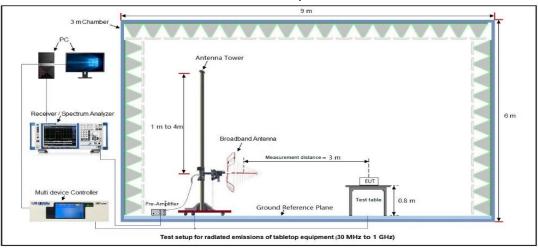
- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW setting requirements are as follows:
- 4. If the EUT is configured to transmit with duty cycle \ge 98%, set VBW = 10 Hz.
- 5. If the EUT duty cycle is < 98%, set VBW \geq 1/T.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



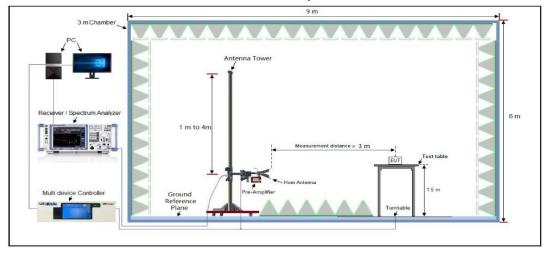
9.3 Measurement Setup (Block Diagram of Configuration)



Radiated Emission Test Setup 30MHz-1000MHz



Radiated Emission Test Setup Above 1000MHz



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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.

			Radia	ted Emiss	ion Test Res	ults at 30MH	z-1GHz		
EUT N	JT Name Wireless Headphone					Model Na	ime	A3958L	
Tempe	erature	23.7°C Relative Humidity					Humidity	60.8%	
Press	ure	960hPa Test Voltage						DC 3.85V	by battery
Test N	lode	Мос	le 8			Antenna	Polarity	Horizontal	
	72.0	dBuV/n	1						
								Limit: — Margin: —	
	-								
	_							f	
						J	4 E	. And the second s	
	32						A Starting	yerrowwwww	
	_		1 2 X X	1	3	United the second and the second	during -		
	and the second second	www.	white white manufacture at the	Municipalities	"Mallel market	annead a maderada			
	-								
	-8	00 4	0 50 60 70	80	(MHz)	300	400 500 60	0 700 1000.0	00
	00.0		0 00 00 10		(100 000 00		
Final D	Data List								
NO.	Freq [MHz		Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	44.27	51	20.52	13.60	40.00	19.48	100	148	Horizontal
2	72.59 ⁻	16	19.70	12.88	40.00	20.3	100	191	Horizontal
3	122.83	40	22.15	16.23	43.50	21.35	100	57	Horizontal
4	447.98	21	32.05	24.82	46.00	13.95	100	264	Horizontal
5	597.22	32	31.57	24.99	46.00	14.43	100	188	Horizontal
6	900.14	73	37.08	31.78	46.00	8.92	100	125	Horizontal



EUT Name Wireless Headphone Model Name A3958L Temperature 23.7°C Relative Humidity 60.8% Pressure 960hPa Test Voltage DC 3.85V by Test Mode Mode 8 Antenna Polarity Vertical Limit:	y battery
Pressure 960hPa Test Voltage DC 3.85V by Test Mode Mode 8 Antenna Polarity Vertical	y battery
Test Mode Mode 8 Antenna Polarity Vertical 72.0 dBuV/m	y battery
72.0 dBuV/m	
-8	
Final Data List	
NO.Freq.LevelFactorLimitMarginHeightAngle[MHz][dBµV/m][dB][dBµV/m][dB][cm][°]	Polarity
1 46.1779 24.76 16.96 40.00 15.24 100 148	Vertical
2 58.8185 24.08 17.09 40.00 15.92 100 191	Vertical
3 150.5378 24.09 18.20 43.50 19.41 100 57	Vertical
4 447.9822 32.64 25.74 46.00 13.36 100 264	Vertical
5 704.2261 35.46 28.25 46.00 10.54 100 188	Vertical
6 938.8326 36.75 30.84 46.00 9.25 100 125	Vertical

RESULT: Pass

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



Radiated Emissions Test Results Above	1 GHz
---------------------------------------	-------

EUT Name	Wireless He	Wireless Headphone			I Name	A3958I	-	
Temperature	23.7 ℃	23.7℃ 960hPa			Relative Humidity Test Voltage		60.8% DC 3.85V by battery	
Pressure	960hPa							
Test Mode	Mode 7			Anter	nna Polarity	Horizor	ntal	
Frequency	Meter Reading Factor Emission L		Level	Limits	Margin			
(MHz)	(dBµV)	(dB)	(dBµV/	′m)	(dBµV/m)	(dB)	Value Type	
4804.000	47.53	0.08	47.61	1	74	-26.39	peak	
4804.000	38.41	0.08	38.49	9	54	-15.51	AVG	
7206.000	41.25	2.21	43.46	6	74	-30.54	peak	
7206.000	32.68	2.21	34.89	9	54	-19.11	AVG	
Remark: Factor = Ante	nna Factor + Cabl	e Loss – Pre-	amplifier.					
Factor = Ante	nna Factor + Cabl		amplifier.	Mode	I Name	A3958I	-	
Factor = Ante			amplifier.		el Name ive Humidity	A3958I 60.8%		
Factor = Ante EUT Name Temperature	Wireless He		amplifier.	Relat		60.8%	- 5V by battery	
Factor = Ante EUT Name Temperature Pressure	Wireless He 23.7℃		amplifier.	Relat	ive Humidity	60.8%	5V by battery	
Factor = Ante EUT Name Temperature Pressure	Wireless He 23.7℃ 960hPa		emplifier.	Relat Test V Anter	ive Humidity Voltage	60.8% DC 3.8	5V by battery	
Factor = Ante EUT Name Temperature Pressure Test Mode	Wireless He 23.7℃ 960hPa Mode 7	adphone		Relat Test V Anter	ive Humidity Voltage nna Polarity	60.8% DC 3.8 Vertica	5V by battery	
Factor = Ante	Wireless He 23.7°C 960hPa Mode 7 Meter Reading	adphone Factor	Emission	Relat Test V Anter Level	ive Humidity Voltage nna Polarity Limits	60.8% DC 3.8 Vertica Margin	5V by battery	
Factor = Ante	Wireless He 23.7℃ 960hPa Mode 7 Meter Reading (dBµV)	adphone Factor (dB)	Emission (dBµV/	Relat Test V Anter Level (m) 2	ive Humidity Voltage nna Polarity Limits (dBµV/m)	60.8% DC 3.8 Vertica Margin (dB)	5V by battery I Value Type	
Factor = Ante EUT Name Temperature Pressure Test Mode Frequency (MHz) 4804.000	Wireless He 23.7℃ 960hPa Mode 7 Meter Reading (dBµV) 47.94	adphone Factor (dB) 0.08	Emission (dBµV/ 48.02	Relat Test V Anter	ive Humidity Voltage nna Polarity Limits (dBµV/m) 74	60.8% DC 3.8 Vertica Margin (dB) -25.98	5V by battery I Value Type peak	
Factor = Ante EUT Name Temperature Pressure Test Mode Frequency (MHz) 4804.000	Wireless He 23.7 °C 960hPa Mode 7 Meter Reading (dBµV) 47.94 38.42	adphone Factor (dB) 0.08 0.08	Emission (dBµV/ 48.02 38.5	Relat Test V Anter Level (m) 2 5	ive Humidity Voltage nna Polarity Limits (dBµV/m) 74 54	60.8% DC 3.8 Vertica Margin (dB) -25.98 -15.5	5V by battery I Value Type peak AVG	
Factor = Ante EUT Name Temperature Pressure Test Mode Frequency (MHz) 4804.000 4804.000 7206.000	Wireless He 23.7 °C 960hPa Mode 7	adphone Factor (dB) 0.08 0.08 2.21	Emission (dBµV/ 48.02 38.5 44.75	Relat Test V Anter Level (m) 2 5	ive Humidity Voltage nna Polarity Limits (dBµV/m) 74 54 74	60.8% DC 3.8 Vertica Margin (dB) -25.98 -15.5 -29.25	5V by battery I Value Type peak AVG peak	
Factor = Ante EUT Name Temperature Pressure Test Mode Frequency (MHz) 4804.000 4804.000 7206.000	Wireless He 23.7 °C 960hPa Mode 7	adphone Factor (dB) 0.08 0.08 2.21	Emission (dBµV/ 48.02 38.5 44.75	Relat Test V Anter Level (m) 2 5	ive Humidity Voltage nna Polarity Limits (dBµV/m) 74 54 74	60.8% DC 3.8 Vertica Margin (dB) -25.98 -15.5 -29.25	5V by battery I Value Type peak AVG peak	

RESULT: Pass



UT Name Wireless Headphone			Мо	del Name	A3958I	A3958L		
Femperature	23.7 ℃		Rel	ative Humidity	60.8%	60.8%		
Pressure	960hPa		Tes	Test Voltage		DC 3.85V by battery		
Fest Mode	Mode 8		Ant	enna Polarity	Horizor	ntal		
	·							
Frequency	Meter Reading	Factor	Emission Leve	l Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type		
4882.000	46.98	0.14	47.12	74	-26.88	peak		
4882.000	38.52	0.14	38.66	54	-15.34	AVG		
7323.000	42.15	2.36	44.51	74	-29.49	peak		
7323.000	31.34	2.36	33.7	54	-20.3	AVG		
Remark:								
	nna Factor + Cab	e Loss – Pre-	amplifier					
EUT Name	Wireless He	adphone	Мо	del Name	A3958I	_		
Femperature	23.7 ℃		Rel	ative Humidity	60.8%			
Pressure	960hPa	960hPa		Test Voltage		5V by battery		
Fest Mode	Mode 8		Ant	enna Polarity	Vertica			
	Motor Decilie -	Fester	Emination Laws		Moreire			
Frequency (MHz)	Meter Reading	Factor (dB)	Emission Leve		Margin (dB)	Value Type		
(IMH2) 4882.000	(dBµV) 48.62	(dB) 0.14	(dBµV/m) 48.76	(dBµV/m)	()	peak		
4882.000	38.41	0.14	48.76	54	-25.24 -15.45	AVG		
7323.000	41.26	2.36	43.62	74	-15.45	peak		
	32.59	2.36	34.95	54	-30.38	AVG		
7202 000	52.59	2.30	34.90		-19.00	7/0		
7323.000								
7323.000								
7323.000 Remark:								

Radiated Emissions Test Results for Above 1 GHz

RESULT: Pass



EUT	Name	Wireless Hea	Idphone		Model Name		A3958L	A3958L		
Tem	perature	23.7 °C Relative Humidity 60.8%								
Pres	ssure	960hPa)60hPa			oltage	DC 3.85	DC 3.85V by battery		
Test	t Mode	Mode 9			Anten	na Polarity	Horizont	al		
		·					·			
	Frequency	Meter Reading	Factor	Emissio	on Level	Limits	Margin	Value Type		
	(MHz)	(dBµV)	(dB)	(dBµ	ıV/m)	(dBµV/m)	(dB)	value Type		
	4960.000	47.65	0.22	47.	.87	74	-26.13	peak		
	4960.000	38.42	0.22	38.	.64	54	-15.36	AVG		
	7440.000	41.26	2.64	43	3.9	74	-30.1	peak		
	7440.000	31.84	2.64	34.	.48	54	-19.52	AVG		
Remark:										
		nna Factor + Cable	e Loss – Pre-	amplifier.						
EUT	۲ Name	Wireless Hea	dphone		Model	Name	A3958L			
_										

Radiated Emissions Test Results for Above 1 GHz

EUT Name	Wireless Headphone	Model Name	A3958L
Temperature	23.7℃	Relative Humidity	60.8%
Pressure	960hPa	Test Voltage	DC 3.85V by battery
Test Mode	Mode 9	Antenna Polarity	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4960.000	47.68	0.22	47.9	74	-26.1	peak
4960.000	38.42	0.22	38.64	54	-15.36	AVG
7440.000	41.26	2.64	43.9	74	-30.1	peak
7440.000	32.34	2.64	34.98	54	-19.02	AVG
emark:						
	nna Factor + Cable	e Loss – Pre-	amplifier.			

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.



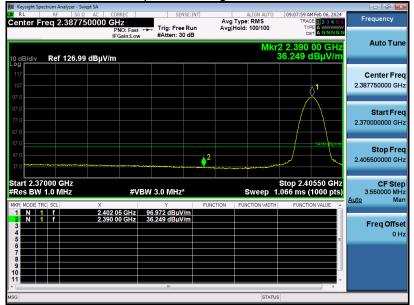
EUT Name	Wireless Headphone	Model Name	A3958L
Temperature	25 ℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC 3.85V by battery
Test Mode	Mode 1	Antenna Polarity	Horizontal

Band Edge Emission Test Results for Restricted Bands

Test Graph for Peak Measurement



Test Graph for Average Measurement



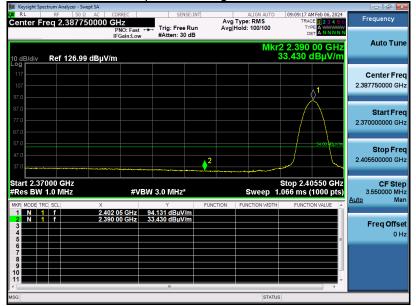
RESULT: Pass



EUT Name	Wireless Headphone	Model Name	A3958L
Temperature	25 ℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC 3.85V by battery
Test Mode	Mode 1	Antenna Polarity	Vertical



Test Graph for Average Measurement



RESULT: Pass

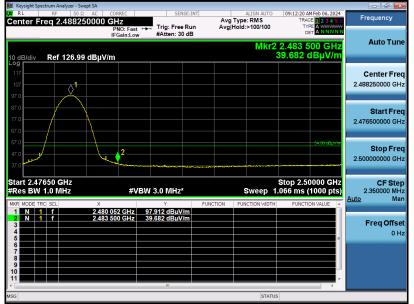


EUT Name	Wireless Headphone	Model Name	A3958L
Temperature	25 ℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC 3.85V by battery
Test Mode	Mode 3	Antenna Polarity	Horizontal





Test Graph for Average Measurement



RESULT: Pass

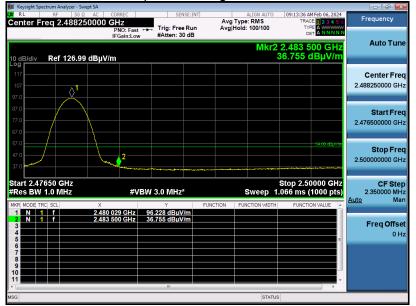


EUT Name	Wireless Headphone	Model Name	A3958L
Temperature	25 ℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC 3.85V by battery
Test Mode	Mode 3	Antenna Polarity	Vertical





Test Graph for Average Measurement



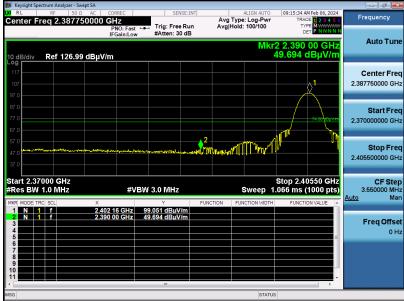
RESULT: Pass



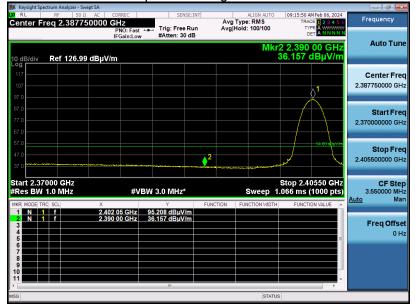
EUT Name	Wireless Headphone	Model Name	A3958L
Temperature	25℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC 3.85V by battery
Test Mode	Mode 4	Antenna Polarity	Horizontal

Band Edge Emission Test Results for Restricted Bands

Test Graph for Peak Measurement



Test Graph for Average Measurement



RESULT: Pass

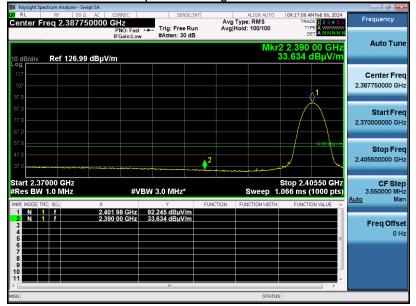


Band Edge Emission Test R	esults for Restricted Bands
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EUT Name	Wireless Headphone	Model Name	A3958L
Temperature	25 ℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC 3.85V by battery
Test Mode	Mode 4	Antenna Polarity	Vertical



Test Graph for Average Measurement



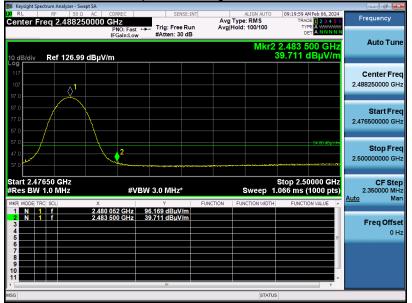
RESULT: Pass



EUT Name	Wireless Headphone	Model Name	A3958L
Temperature	25℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC 3.85V by battery
Test Mode	Mode 6	Antenna Polarity	Horizontal



Test Graph for Average Measurement



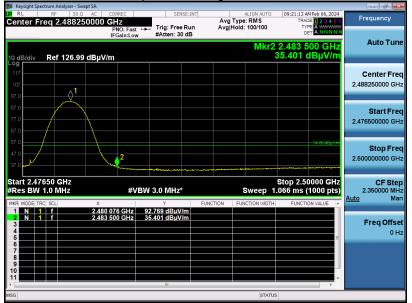
RESULT: Pass



EUT Name	Wireless Headphone	Model Name	A3958L
Temperature	25℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC 3.85V by battery
Test Mode	Mode 6	Antenna Polarity	Vertical



Test Graph for Average Measurement



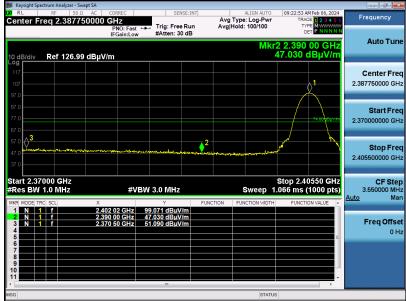
RESULT: Pass



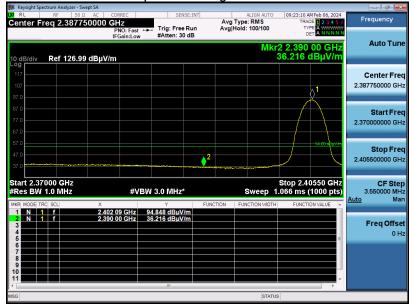
EUT Name	Wireless Headphone	Model Name	A3958L
Temperature	25 ℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC 3.85V by battery
Test Mode	Mode 7	Antenna Polarity	Horizontal

Band Edge Emission Test Results for Restricted Bands

Test Graph for Peak Measurement



Test Graph for Average Measurement



RESULT: Pass