



# FCC Test Report

# Report No.: AGC01110241015FR02

FCC ID	:	2AOKB-A3004C
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Wireless Headphone
BRAND NAME	:	soundcore
MODEL NAME	:	A3004
APPLICANT	:	Anker Innovations Limited
DATE OF ISSUE	:	Nov. 07, 2024
STANDARD(S)	:	FCC Part 15 Subpart C §15.247
REPORT VERSION	:	V1.0







# **Report Revise Record**

Report Version	Revise Time	Issued Date	Valid Version	Notes	
V1.0	/	Nov. 07, 2024	Valid	Initial Release	



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# **1. General Information**

Applicant	Anker Innovations Limited
Address	Unit 56, 8th Floor, Tower 2, Admiralty Centre, 18 Harcourt Road, Hong Kong
Manufacturer	Anker Innovations Limited
Address	Unit 56, 8th Floor, Tower 2, Admiralty Centre, 18 Harcourt Road, Hong Kong
Factory	N/A
Address	N/A
Product Designation	Wireless Headphone
Brand Name	soundcore
Test Model	A3004
Series Model(s)	N/A
Difference Description	N/A
Date of receipt of test item	Oct. 14, 2024
Date of Test	Oct. 14, 2024~ Nov. 07, 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.

Bibo zhang Prepared By Bibo Zhang Nov. 07, 2024 (Project Engineer) Calvin Lin **Reviewed By** Calvin Liu Nov. 07, 2024 (Reviewer) Max Zhan Approved By Max Zhang Nov. 07, 2024 Authorized Officer



# 2. Product Information

## 2.1 Product Technical Description

Frequency Band	2400MHz-2483.5MHz
Operation Frequency Range	2402MHz-2480MHz
Bluetooth Version	V5.3
Modulation Type	BR 🖾 GFSK, EDR 🖾 $\pi$ /4-DQPSK, $\boxtimes$ 8DPSK
Number of channels	79 Channels
Channel Separation	1 MHz
Maximum Transmitter Power	7.331dBm
Hardware Version	V04
Software Version	V4.07
Antenna Designation	PCB Antenna
Antenna Gain	2.51dBi
Power Supply	DC 3.7V by battery

#### 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: 2AOKB-A3004C, 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:

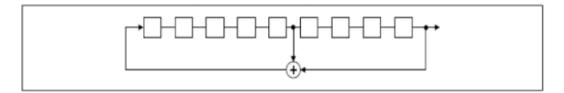
The first connection between the two devices is established, a hopping sequence was generated. For Transmitting the wanted data the complete hopping sequence was not used. The connection ended. The second connection will be established. A new hopping sequence is generated. Due to the fact the Bluetooth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

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 2.51dBi.



# 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	DC 3.7V 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%.

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 <sub>c</sub> = ±2 %		
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2 \%$		
Uncertainty of Dwell Time	Uc = ±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)		
$\square$	AGC-ER-E036	Spectrum Analyzer	Agilent	N9020A	MY49100060	2024-05-24	2025-05-23		
$\boxtimes$	AGC-ER-E062	Power Sensor	Agilent	U2021XA	MY54110007	2024-02-01	2025-01-31		
$\boxtimes$	AGC-ER-E063	Power Sensor	Agilent	U2021XA	MY54110009	2024-02-01	2025-01-31		
$\boxtimes$	AGC-ER-A001	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-09-21	2025-09-20		
	AGC-ER-E083	Signal Generator	Agilent	E4421B	US39340815	2024-05-23	2025-05-22		
$\boxtimes$	N/A	RF Connection Cable	N/A	1#	N/A	Each time	N/A		
$\boxtimes$	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		
$\square$	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2024-05-24	2025-05-23		
$\square$	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2024-05-28	2025-05-27		
$\boxtimes$	AGC-EM-E086	Loop Antenna	ZHINAN	ZN30900C	18051	2024-03-05	2026-03-04		
$\boxtimes$	AGC-EM-E001	Wideband Antenna	SCHWARZBECK	VULB9168	D69250	2023-05-11	2025-05-10		
$\square$	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2024-03-31	2025-03-30		
$\square$	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	2024-07-24	2026-07-23		
$\bowtie$	AGC-EM-A119	2.4G Filter	SongYi	N/A	N/A	2024-05-23	2025-05-22		
$\square$	AGC-EM-A138	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2025-06-08		
	AGC-EM-A139	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2025-06-08		

• A	AC Power Line Conducted Emission							
Used Faunment No. 1. Lest Faunment   Manufacturer   Model No. 1. Serial No. 1. Serial No. 1.						Next Cal. Date (YY-MM-DD)		
	AGC-EM-E045	EMI Test Receiver	R&S	ESPI	101206	2024-05-28	2025-05-27	
	AGC-EM-A130	6dB Attenuator	Eeatsheep	LM-XX-6-5W	DC-6GZ	2023-06-09	2025-06-08	
	AGC-EM-E023	AMN	R&S	100086	ESH2-Z5	2024-05-28	2025-05-27	



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



# 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

1 Control Box RISYM USB-TTL	No.	Equipment	Manufacturer	Model No.	Specification Information	Cable
	1	Control Box	RISYM	USB-TTL	-	

Test Accessories Come From The Manufacturer

No.	Equipment	Manufacturer	Model No.	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

	Summary table of Test Cases
Test Item	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 6: Bluetooth Tx CH78_2480 MHz_3Mbps (Battery powered) Mode 7: Bluetooth Tx CH00_2402 MHz_3Mbps (Battery powered) Mode 8: Bluetooth Tx CH39_2441 MHz_3Mbps (Battery powered) Mode 9: Bluetooth Tx CH78_2480 MHz_3Mbps (Battery powered) Mode 9: Bluetooth Tx CH78_2480 MHz_3Mbps (Battery powered) Mode 10: Bluetooth Tx Hopping-1Mbps (Battery powered) Mode11: Bluetooth Tx Hopping-3Mbps (Battery powered)
AC Conducted Emission	N/A
Note:	
<ol> <li>The battery is full-cha</li> <li>For Radiated Emission</li> </ol>	worst case was recorded in the report, if no other cases. Irged during the test. In, 3axis were chosen for testing for each applicable mode. Inethod, a temporary antenna connector is provided by the manufacture. Software Setting Diagram
	COMx Baudrate
	Classic BLE Test Mode
	FCC Test  BT address Run

FCC Test DUT Test	BT 55	address	Run	
RF Control				
RF Mode	TX TEST	• Packet Type	DH5 🔹	
Hopping	OFF	TX Frequency	2480 👻	
TX Power	7	RX Frequency	2402 👻	
Scenario	PRBS Patt	tern	•	
LOG: Test LOG: BR/ED LOG: Test LOG: BR/ED LOG: Test LOG: BR/ED LOG: Test	R Test end R Test end R Test			* •
COM9 is ope	n	1500000bps		



# 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:

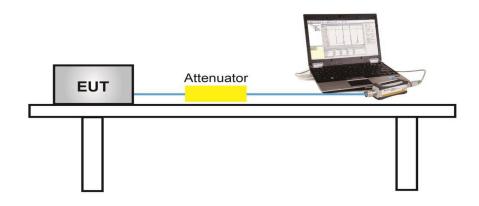
- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- 3. RBW > 20 dB bandwidth of the emission being measured.
- 4. VBW  $\geq$ RBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
-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

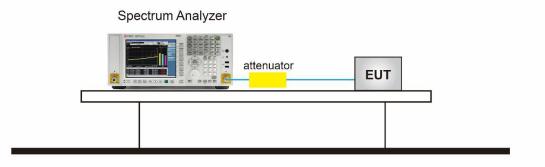
# 6.3 Measurement Setup (Block Diagram of Configuration)

For Average power test setup





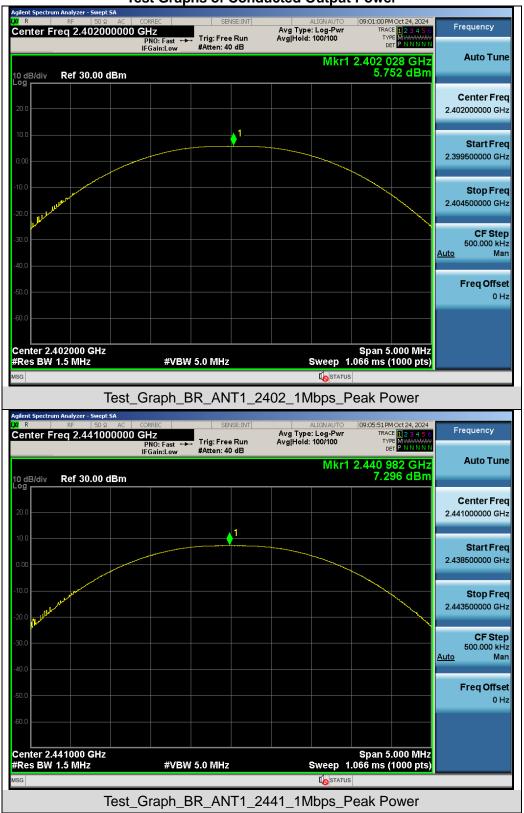
# For peak power test setup



#### 6.4 Measurement Result

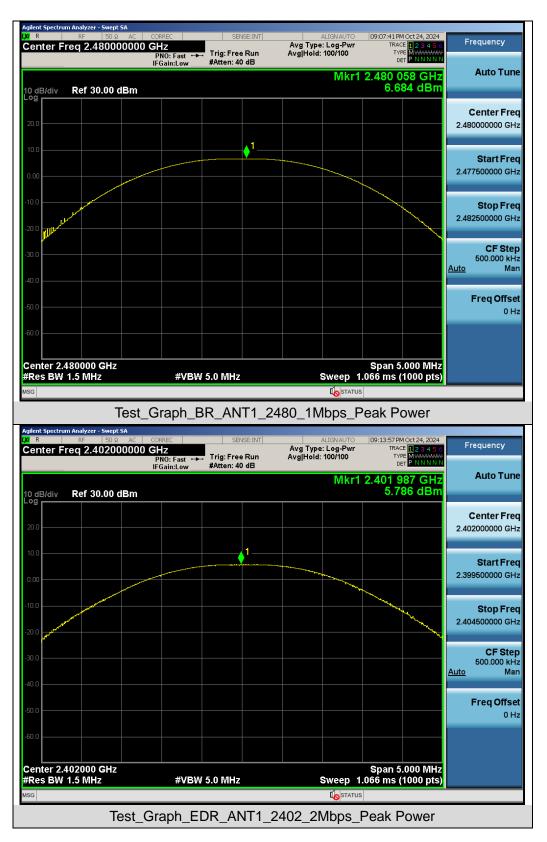
Test Data of Conducted Output Power								
Test Mode	Test Frequency (MHz)	Peak Power (dBm)	Limits (dBm)	Pass or Fail				
	2402	5.752	≤21	Pass				
GFSK	2441	7.296	≤21	Pass				
	2480	6.684	≤21	Pass				
	2402	5.786	≤21	Pass				
π /4-DQPSK	2441	7.331	≤21	Pass				
	2480	6.692	≤21	Pass				
	2402	5.788	≤21	Pass				
8DPSK	2441	7.312	≤21	Pass				
	2480	6.691	≪21	Pass				



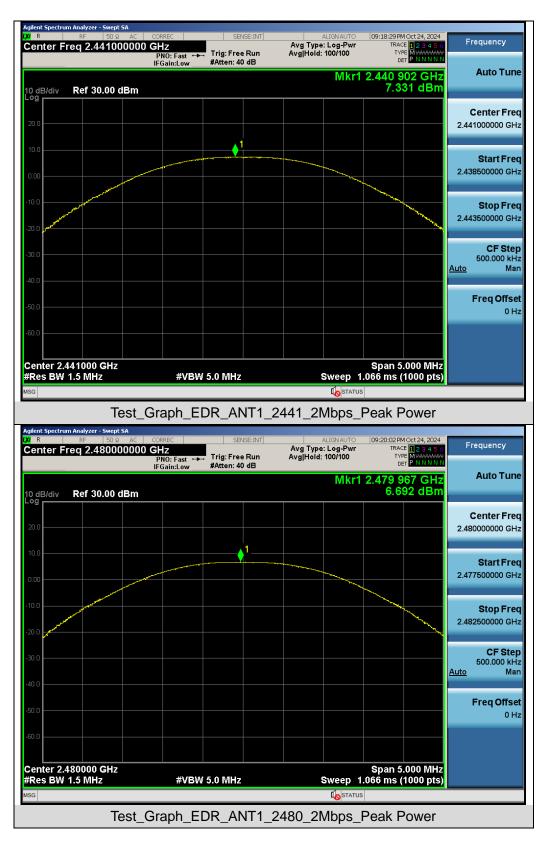


#### **Test Graphs of Conducted Output Power**

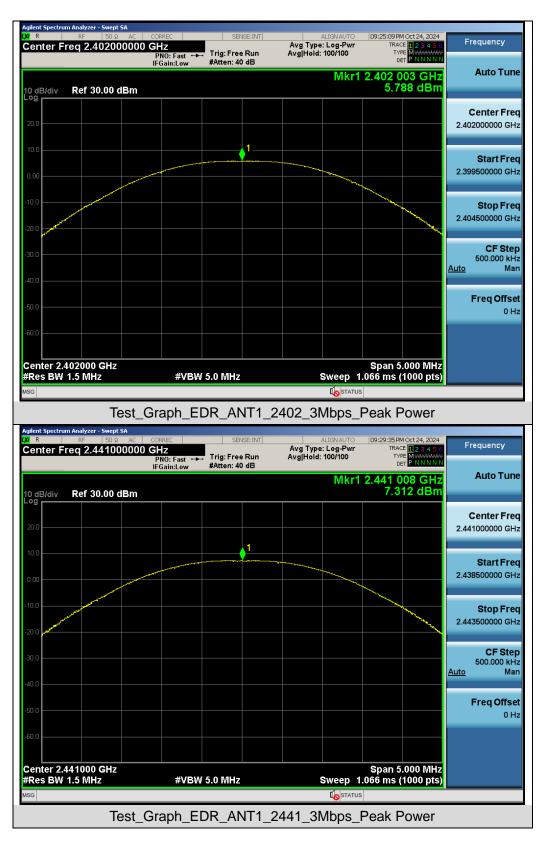




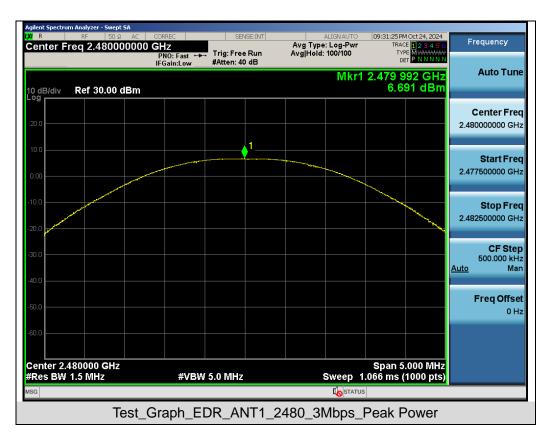














# 7. 20dB Bandwidth and 99% Occupied Bandwidth Measurement

# 7.1 Provisions Applicable

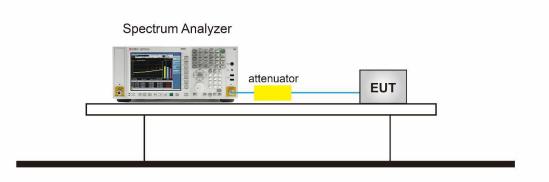
There is no corresponding limit requirement for this test item.

## 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  $\geq$  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)

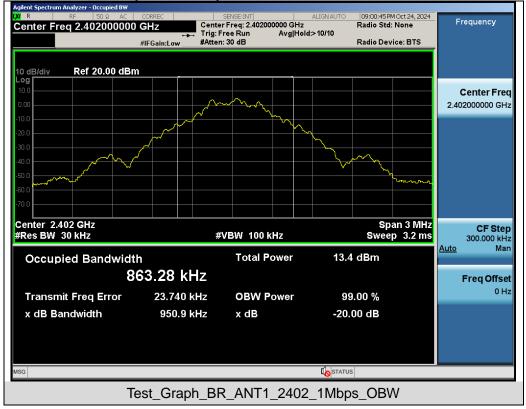




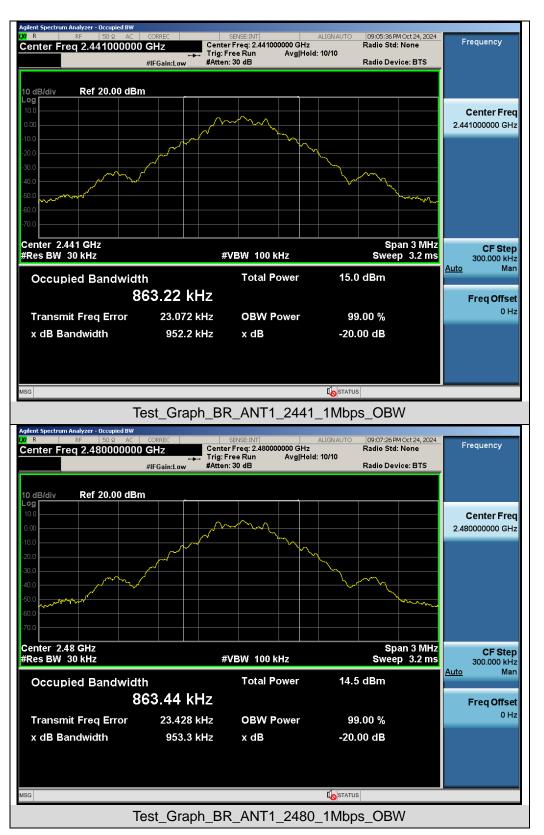
#### 7.4 Measurement Results

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	0.863	0.951	N/A	Pass			
GFSK	2441	0.863	0.952	N/A	Pass			
	2480	0.863	0.953	N/A	Pass			
π /4-DQPSK	2402	1.107	1.180	N/A	Pass			
	2441	1.110	1.182	N/A	Pass			
	2480	1.110	1.181	N/A	Pass			
	2402	1.112	1.189	N/A	Pass			
8DPSK	2441	1.111	1.187	N/A	Pass			
	2480	1.113	1.188	N/A	Pass			

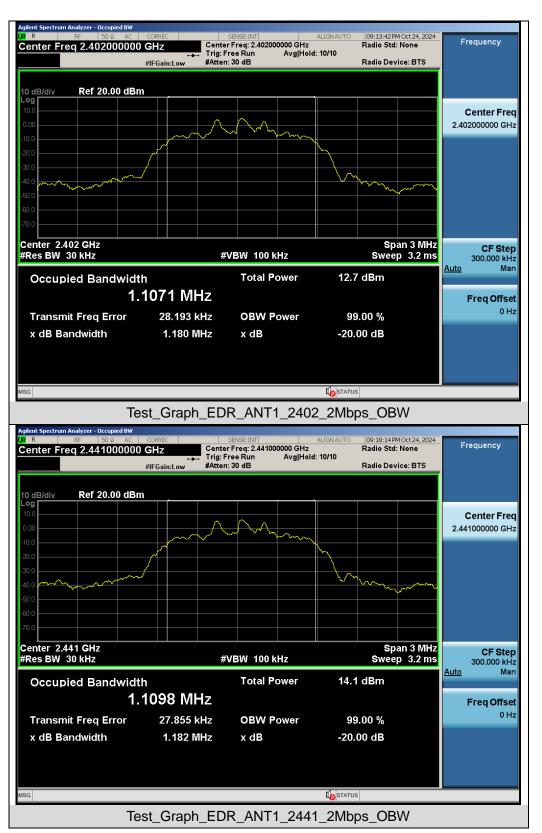
#### Test Graphs of Occupied Bandwidth and -20 Bandwidth



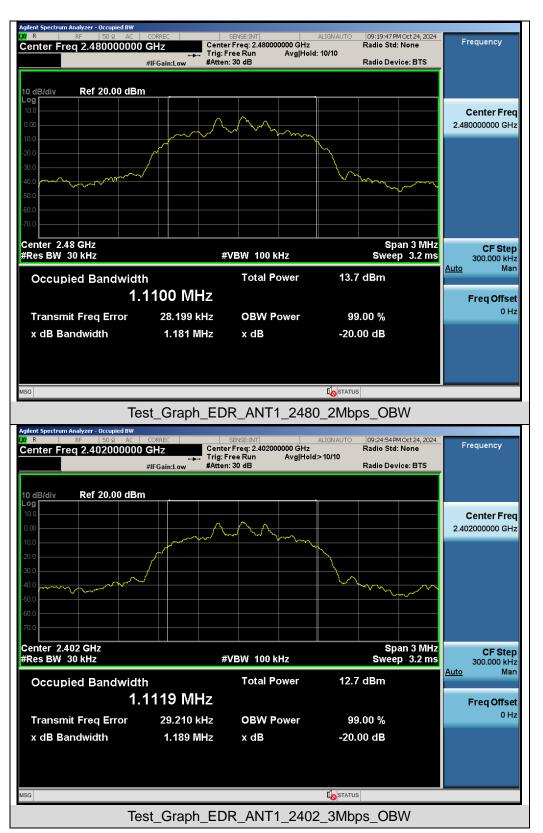




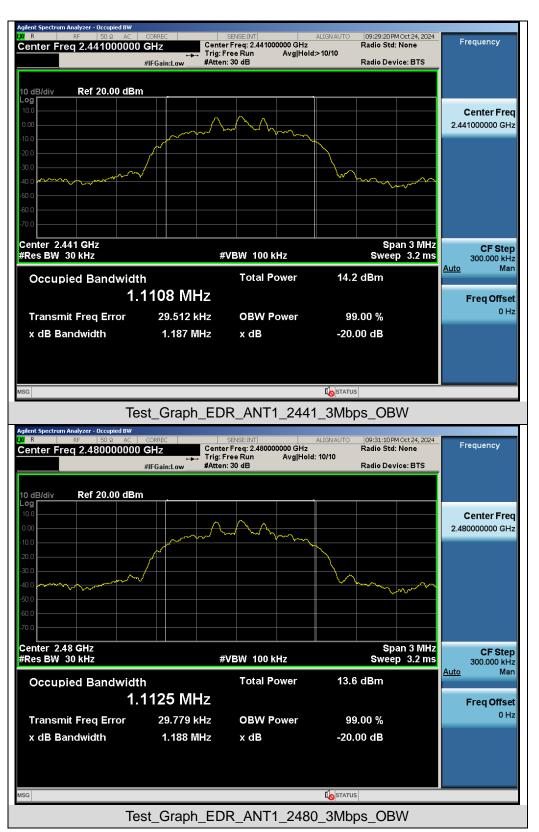














# 8. Conducted Band Edge and Out-of-Band Emissions

#### 8.1 Provisions Applicable

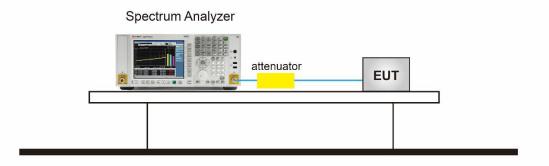
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the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

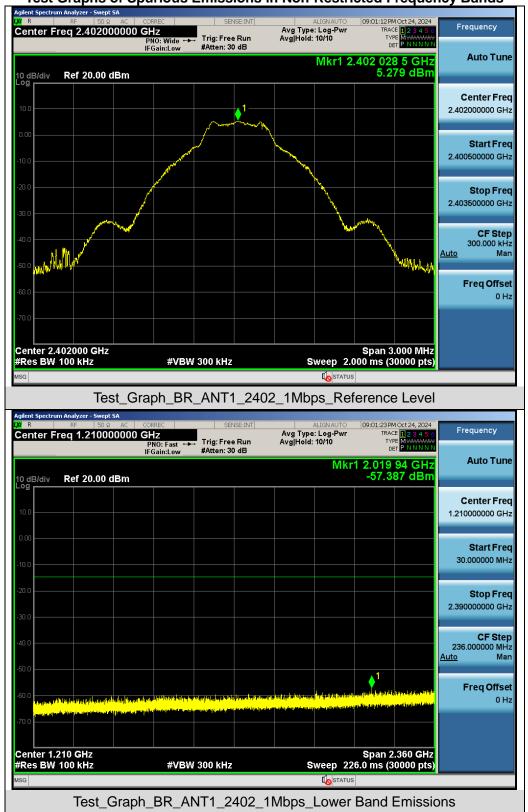
- Reference level measurement
- 1. Span = Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation.
- 2. RBW = 100kHz
- 3. VBW = 300kHz
- 4. Detector = Peak
- 5. Sweep 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)



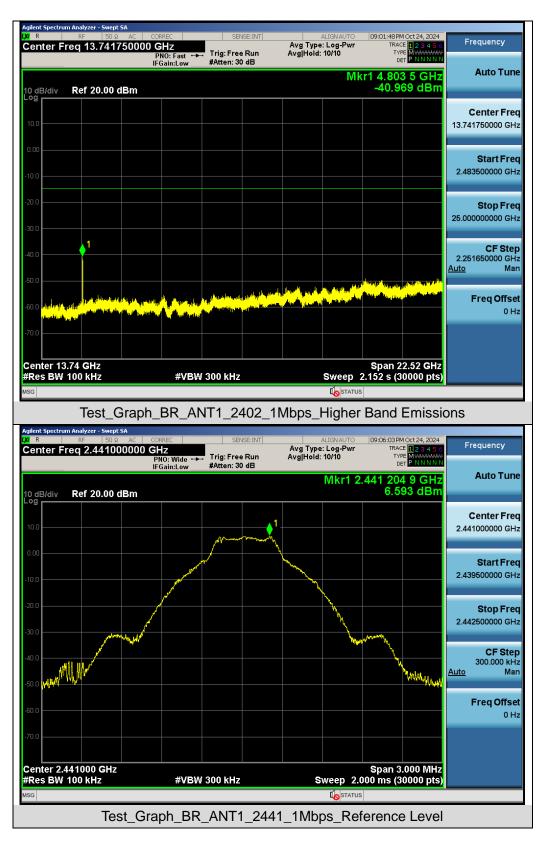


#### **8.4 Measurement Results**

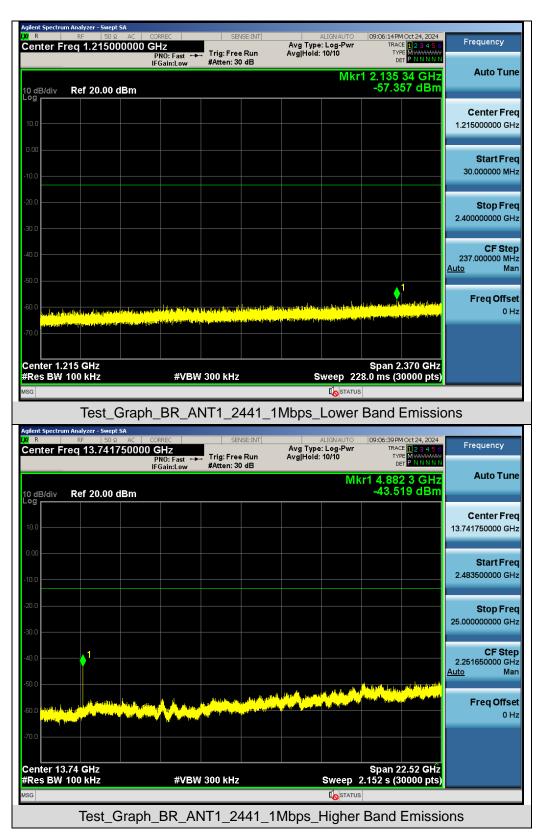


#### Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands





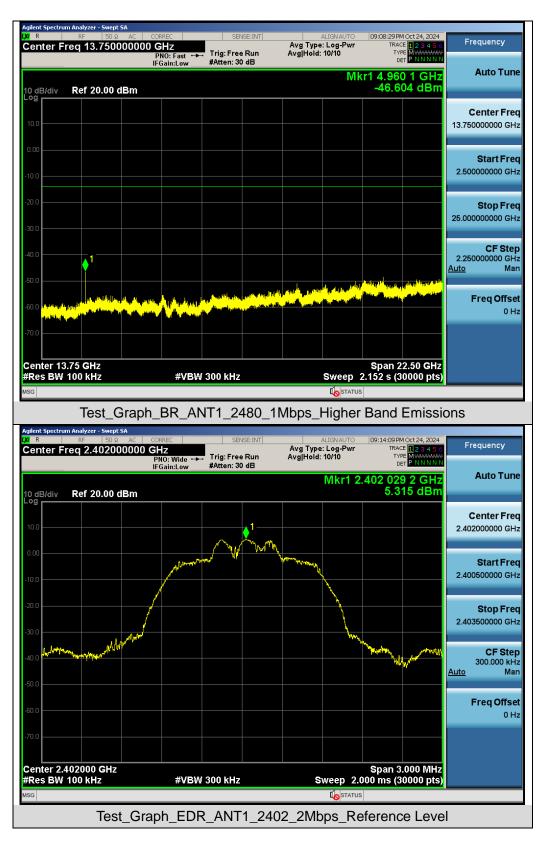




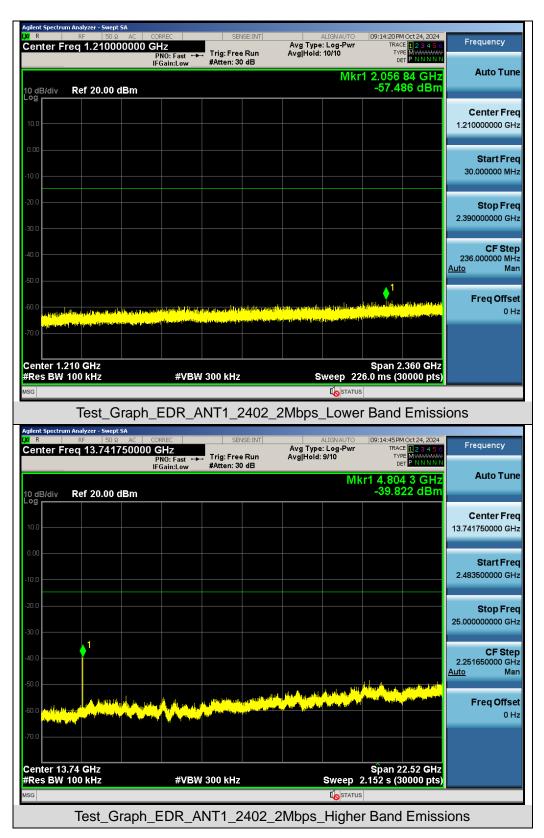




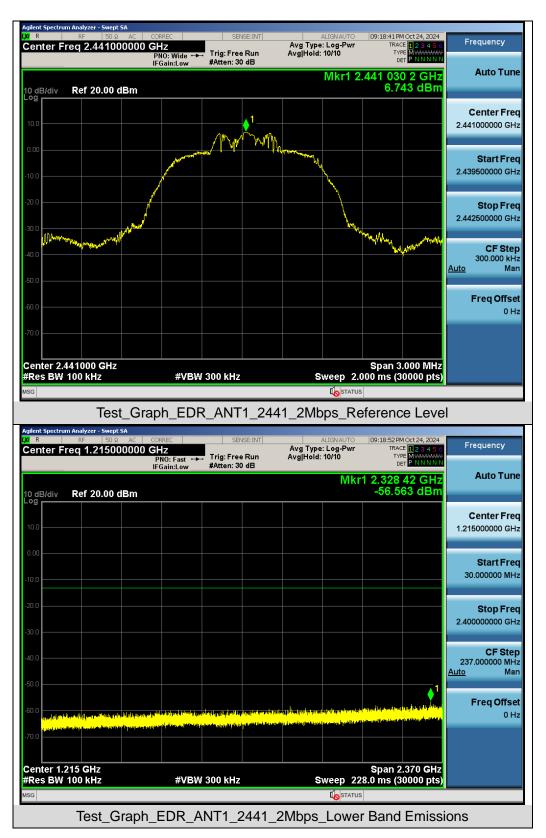




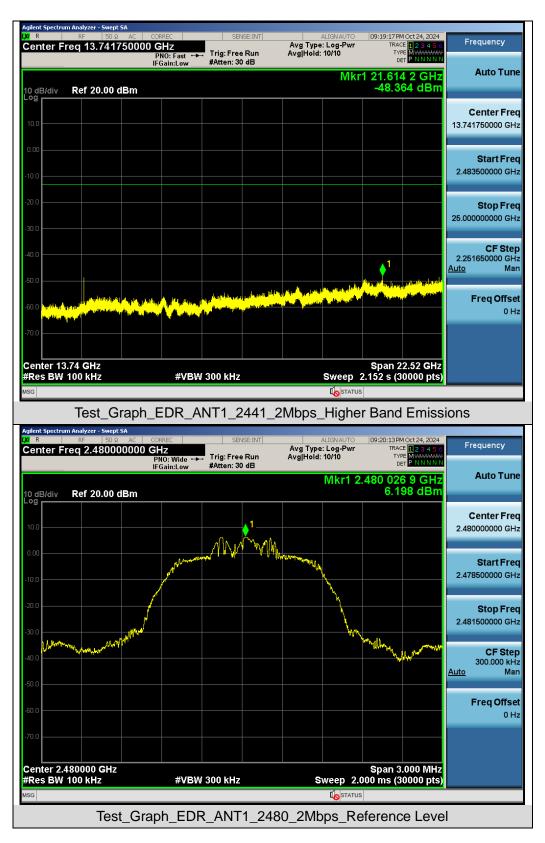




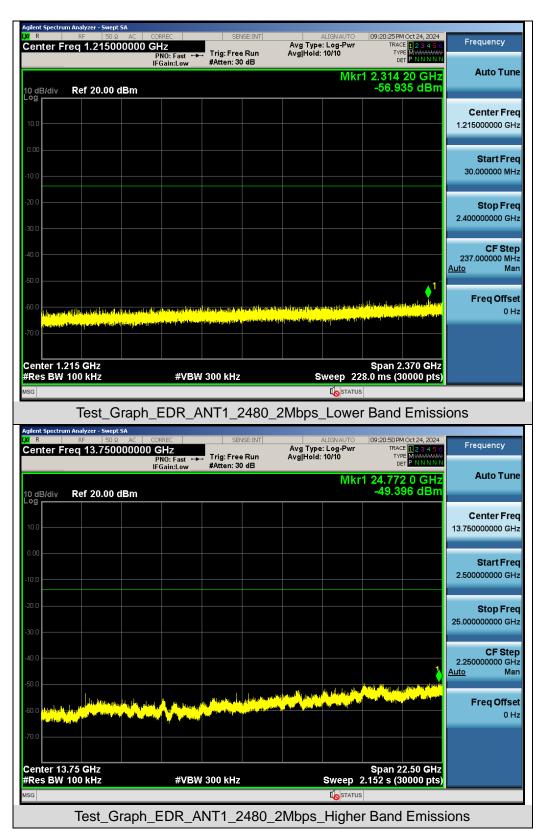




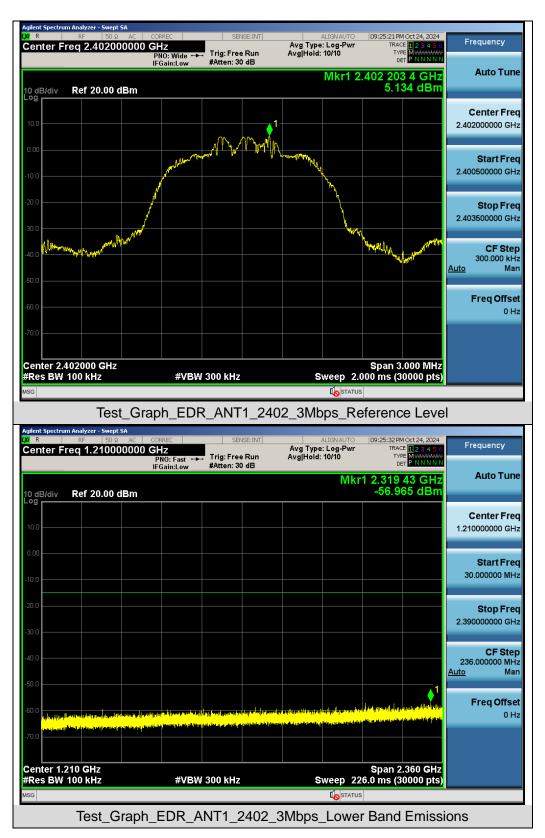




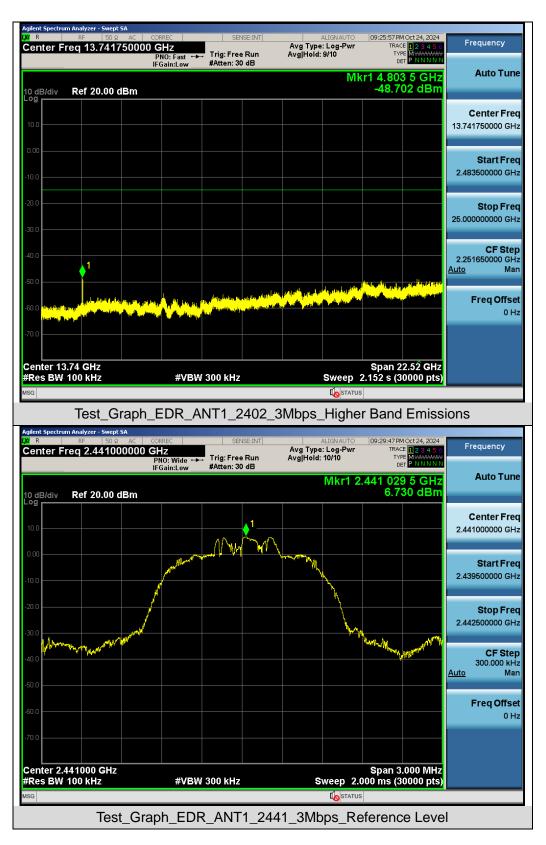




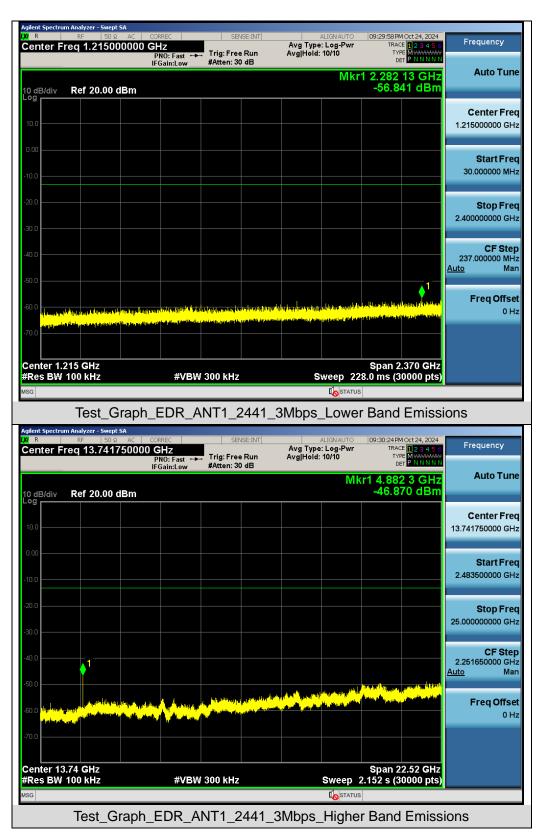




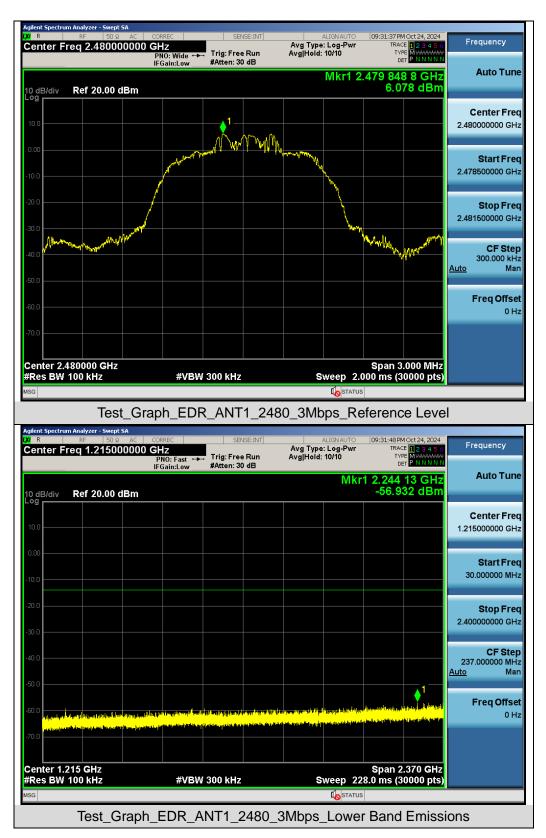








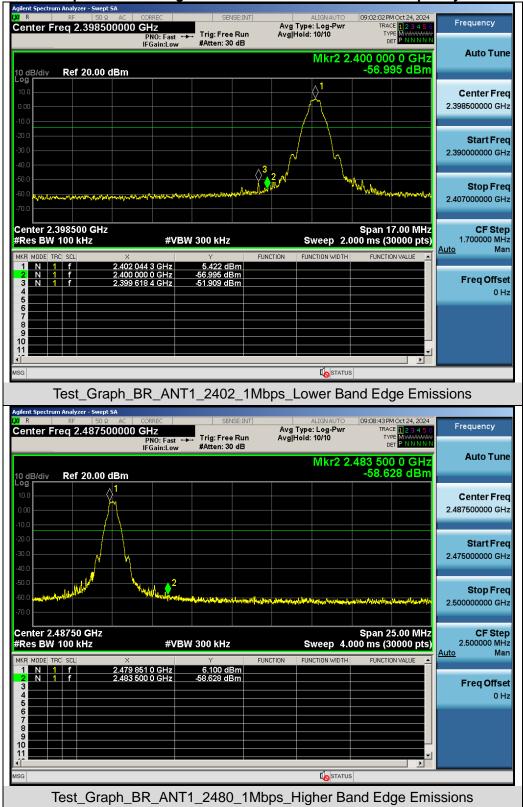






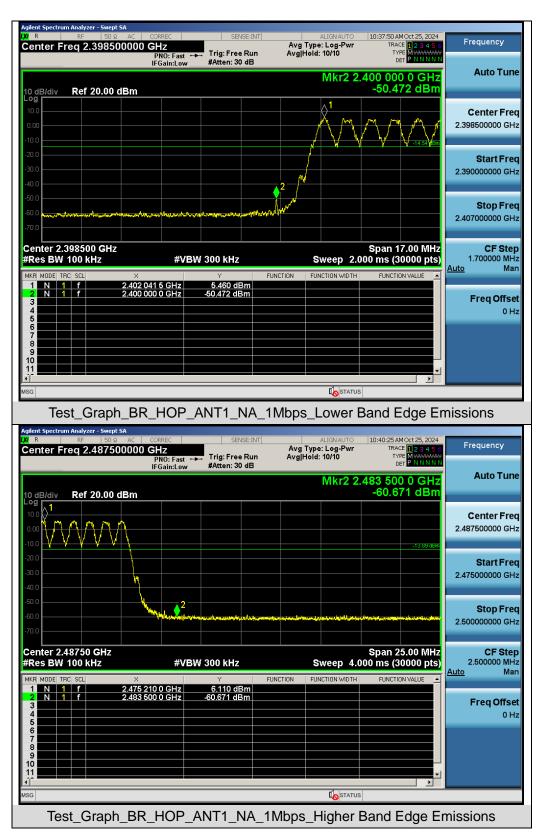
U R	m Analyzer - Swept SA RF 50 Ω reg 13.75000	AC CORREC	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	09:32:13 PM Oct 24, 2024 TRACE 12 3 4 5 6	Frequency
		PNO: Fast +++ IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Hold: 10/10	DET P N N N N N	
0 dB/div	Ref 20.00 dE	Sm		Mł	r1 4.960 1 GHz -44.629 dBm	Auto Tune
10.0						Center Free 13.750000000 GH
0.00						<b>Start Free</b> 2.50000000 GH
20.0						<b>Stop Fre</b> 25.000000000 GH
40.0	1					<b>CF Stej</b> 2.250000000 GH <u>Auto</u> Ma
60.0 <mark>(1.1.1.1.1.1)</mark> 60.0 <mark>(1.1.1.1.1.1)</mark>		alatik Aykanay	n an			Freq Offse 0 H
	3.75 GHz 100 kHz	#VBW	300 kHz	Sween	Span 22.50 GHz 2.152 s (30000 pts)	
sg					· · · · · ·	
	Test Gra	aph EDR Al	NT1 2480	3Mbps Hiahe	r Band Emissi	ons



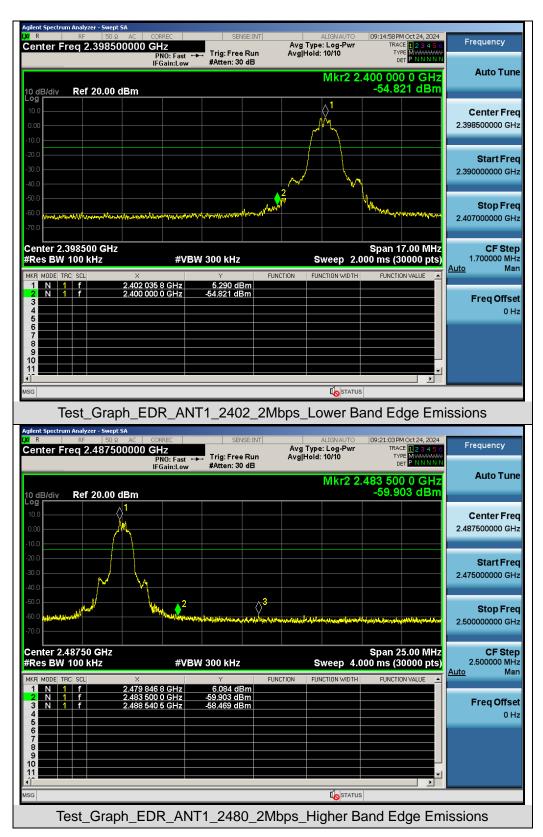


### Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands

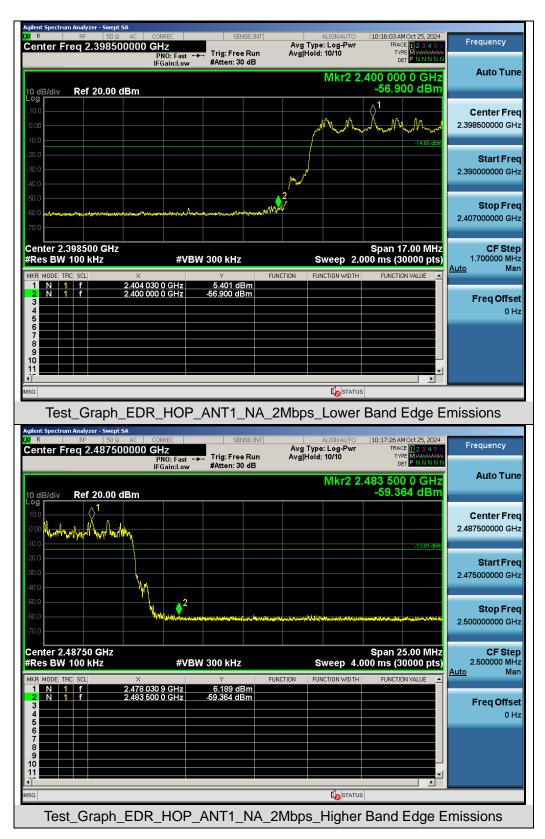




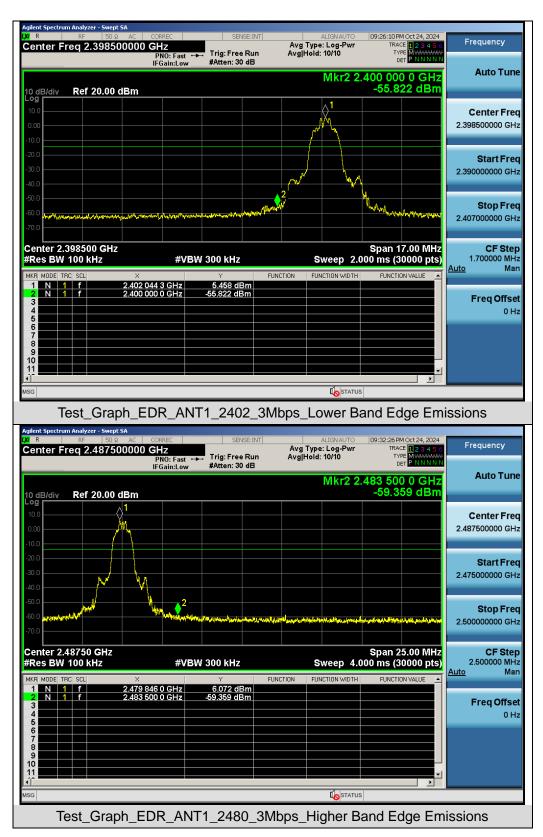




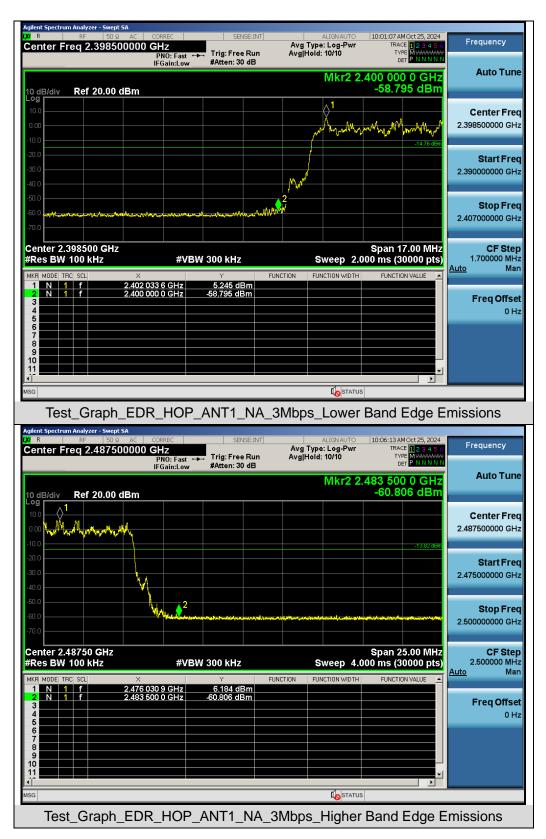
















# 9. Radiated Spurious Emission

### 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



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
Start ~Stop T requency	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

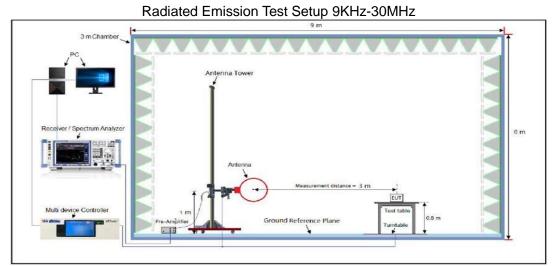
- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = peak
- 5. Sweep time = auto couple
- 6. Trace mode = max hold
- 7. Trace was allowed to stabilize

### <u>Average Measurements above 1GHz</u>

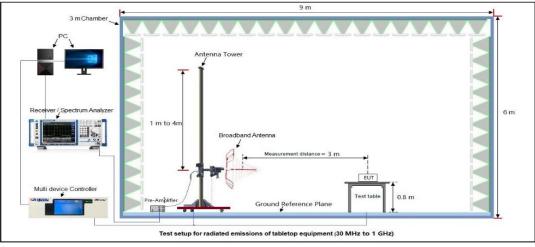
- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW  $\geq$  [3 × RBW]
- 4. Detector = Power averaging (rms)
- 5. Averaging type = power (i.e., rms)
- 6. Sweep time = auto
- 7. Perform a trace average of at least 100 traces.
- 8. The applicable correction factor is [10\*log (1 / D)], where D is the duty cycle. The factor had been edited in the "Input Correction" of the Spectrum Analyzer.



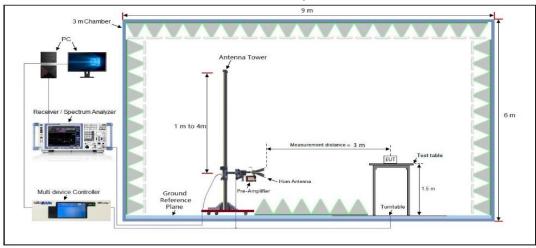
### 9.3 Measurement Setup (Block Diagram of Configuration)



#### 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/

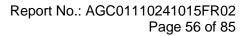


### 9.4 Measurement Result

### **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.

		Radiated Emission Test Res														
EUT Name	Wire	eless H	lead	phone	Э				Mod	el Nai	me		A	3004		
Temperature	26°	С							Rela	tive H	lumid	lity	40	)%		
Pressure	960	hPa							Test	Volta	ge		No	Normal Voltag		age
Test Mode	Мос	de 5							Ante	enna F	Polari	ty	Но	orizoi	ntal	
72.0	IBuV/m															
32		1 National Academic State				2 1/16/14/14/14/14/14/14/14/14/14/14/14/14/14/	3			4 4 4			Lim Mar	rgin:		
							"They decided	r 								
-8 30.000	) 40	) 50	60	70 80	]		(MHz)			300	400	500	600	700	1000.0	000
30.000				70 80 Re	eadir		(MHz)	Me	asure	300 Э-				700	1000.0	000
30.000	) 40 . Mk.	. Fi	req.	70 80 Re L	eadir .evel	F	(MH2) Correct Factor	Me	easure	300 ∋- L	imit	O	ver			_
30.000		. Fi	req. 1Hz	70 80 Re L	eadir .evel dBu∨	F	(MHz) Correct Factor dB	Men	easure nent BuV/m	300 300 2- L	imit 3uV/m	Ov d	ver B	Det	ector	_
30.000 No.	. Mk.	. Fi M 42.3	req. 1Hz 1022	70 80 Re L	eadir .evel dBu∨ 5.87	7 1	(MHz) Correct Factor dB 13.74	Me n dB	easure nent 3uV/m 9.61	300 ∋- dE 40	imit <sup>3uV/m</sup> ).00	0 d	ver B 0.39	Det	ector eak	_
30.000 No. 1	. Mk.	. Fi M 42.3 111.3	req. 1Hz 1022 468	70 80 Re L	eadir evel dBuV 5.87 6.41	7 1 1 1	(MHz) Correct Factor dB 13.74 16.31	Me n dB 19	easure nent <sup>3uV/m</sup> 9.61 2.72	300 300 300 40 40 43	imit 3u∨/m ).00 3.50	0\ d -20	ver B ).39 ).78	Det pe	ector eak eak	_
30.000 No.	. Mk.	. Fi M 42.3	req. 1Hz 1022 468	70 80 Re L	eadir .evel dBu∨ 5.87	7 1 1 1	(MHz) Correct Factor dB 13.74	Me n dB 19 22	easure nent <sup>3uV/m</sup> 9.61 2.72 1.32	300 300 300 40 40 43	imit <sup>3uV/m</sup> ).00	0\ d -20	ver B 0.39	Det pe	ector eak	_
30.000 No. 1	. Mk.	. Fi M 42.3 111.3	req. 1Hz 022 468 613	70 80 Re L	eadir evel dBuV 5.87 6.41	7 1 7 1 1 1 3 1	(MHz) Correct Factor dB 13.74 16.31	Me n dB 19 22	easure nent <sup>3uV/m</sup> 9.61 2.72	300 300 300 40 40 43 43	imit 3u∨/m ).00 3.50	Ov d -20 -20 -22	ver B ).39 ).78	Det pe pe	ector eak eak	_
30.000 No. 1 2 3	. Mk.	. Fi M 42.3 111.3 139.3	req. 1Hz 022 468 613 1842	70 80 Re L	eadir evel dBuV 5.87 6.41 6.08	7 1 7 1 1 1 3 1 5 1	(MHz) correct actor dB 13.74 16.31 15.24	Me n dB 19 22 22	easure nent <sup>3uV/m</sup> 9.61 2.72 1.32	300 300 300 40 40 40 40 40	imit <sup>3uV/m</sup> ).00 3.50 3.50	Ov d -20 -20 -22 -23	ver B 0.39 0.78 2.18	Det pe pe	ector eak eak eak	_





			Ra	diated	d Emis	sion Test	Results	s at 30	MHz-1	GHz	Z			
JT Name	Wire	eless l	Head	ohone				Mode	I Name	9		A300	04	
emperature	<b>26</b> °C	2						Relat	ive Hur	midi	ity	40%	)	
essure	960ł	hPa						Test \	Voltage	;		Normal Voltage		
est Mode	Mod	le 5						Antenna Polarity Ver				Verti	ertical	
72.0	lBuV/m													
												Limit: Margin:		
	www.	rleWybern-Wyor		wijinaka inde	na n	at the second	Mpt when we	warmen	and the state		No star la co	, mark	Naga-Array	<u></u>
			<i>цицио</i> лиции) 60	2 ************************************	- 	(MHz		404				00 700		
-8 30.000		50		70 80 Re	ading		t Mea	404	00 40	00		00 700		
-8 30.000	) 40	50 F	60	70 80 Rea Le	ading	(MHz Correc	t Mea	30 33 33 35 10 35	00 40	oo	500 60			000.00
-8 30.000	) 40	50 F	<sup>60</sup>	70 80 Re: Le	ading	(MHz Correc Factor	t Mea m dBu	3 asure- ient	00 40 - Lim	oo nit V/m	500 60 Ove	) 00 700 ) 700	1	000.000
-8 30.000	) 40 . Mk.	50 F M 40.1	60 Freq. MHz	70 80 Rea Le	ading evel	(MHz Correc Factor dB	t Mea m dBu 24	31 asure- ient uV/m	00 40 - Lim dBu\	00 nit V/m	500 60 Ove dB	00 700 20 700 20 700	Dete	000.000
-8 30.000 No.	) 40 . Mk.	50 F M 40.1	60 Freq. MHz 1347 2298	70 80 Re: d	ading evel BuV 7.19	(MHz Correc Factor dB 16.90	dBu 24	3 asure- ient iv/m	00 40 - dBu\ 40.0	00 nit 00 00	500 60 Ove dB -15.9	20 700 20 700 27 [ 21 64	Dete	ctor ak ak
-8 30.000 No. 1 2	) 40 . Mk.	50 F 40.1 83.2	60 Freq. MHz 1347 2298 4202	70 80 Rea d	ading evel BuV 7.19 7.90	(MHz Correc Factor dB 16.90 16.46	dBu 24 25	3 asure- ient uV/m 1.09	00 40 - dBu\ 40.0	00 nit 00 00 00	500 60 Ove dB -15.9 -15.6	20 700 20 700 20 700 20 700 20 700	Dete	ctor ak ak
-8 30.000 No. 1 2 3	. Mk.	50 F 40.1 83.2 137.4	60 Freq. MHz 1347 2298 4202 7926	70 80 Rea d	ading evel BuV 7.19 7.90 7.07	(MHz Correc Factor dB 16.90 16.46 18.14	Mea m dBu 24 24 25 24	31 asure- ient 1.09 1.36 5.21	00 40 - - - - - - - - - - - - - - - - - - -	00 nit 00 00 50	500 60 Ove dB -15.9 -15.0 -18.2	20 700 20 700 20 20 20 20 20 20 20 20 20 20 20 20 2	Dete	ctor ak ak ak

### **RESULT: Pass**

- Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.
  - 2. All test modes had been pre-tested. The mode 5 is the worst case and recorded in the report.



UT Na	ame		Wireless Head	dphone	M	odel Name	A	43004		
empe	ratur	<b>ure 26</b> °C			Re	lative Hum	idity 4	40%		
ressu	ire	960hPa Test Voltage		960hPa			١	Normal Voltage		
est M	ode		Mode 4		Ar	Antenna Polarity Horizontal		Horizontal		
	13	i0			FCC Part 15C					
	12									
	11 10									
		10		Fundar	mental freque	ncy				
		0				<u> </u>				
	- <sup>4</sup> / <sub>2</sub>	0		/						
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	e	i0 i0		-/-				ANNUE		
	4	0 .0	La contra contrata internativativativa		an, mandae, wayoon ( wa (m. 100 Feller) ( 14 14 14	When the state of	irwana fanayingina fart	A CONTRACTOR OF CONTRACTOR		
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	4 3 2 1		26	36	46	6G	8G		18G	
	4 3 2 1			36					186	
	4 3 2 1		AV Limit H		46				18G	
	4 3 2 1 -1	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	AV Limit F	torizontal PK	4G Frequency[Hz]	6G	8G	Angle	_	
NO.	4 3 2 1 -1	00 00 00 00 00 00 00 00 00 00 00 00 00	AV Limit H	36	46			Angle [°]	18G	
	4 3 2 1 -1	PK Limit AV Detect Freq. MHz]	- AV Limit - F Level [dBµV/m]	orizontal PK	4G Frequency[Hz] Limit [dBµV/m]	6G Margin [dB]	8G Height [cm]	[°]	Polarity	
1	4 3 2 1 -1 -1 2897	PK Limit * AV Detect Freq. [MHz] 7.389739	or AV Limit - F Level [dBµV/m] 38.63	Arrizontal PK	4G Frequency[Hz] Limit [dBµV/m] 74.00	6G Margin [dB] 35.37	BG Height [cm] 150	[°] 192	Polarity Horizontal	
1 2	4 3 2 1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -	PK Limit PK Limit PK Limit AV Detect Freq. [MHz] 7.389739 0.432043	- AV Limit - F Level [dBμV/m] 38.63 41.17	3G Iorizontal PK Factor [dB] -12.02 -8.63	4G Frequency[Hz] Limit [dBµV/m] 74.00 74.00	6G Margin [dB] 35.37 32.83	8G Height [cm] 150 150	[°] 192 216	Polarity Horizontal Horizontal	
1 2 3	4 3 2 1 1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	PK Limit * AV Detect Freq. MHz] 7.389739 0.432043 5.155616	- AV Limit - F Level [dBµV/m] 38.63 41.17 46.25	Arrizontal PK Factor [dB] -12.02 -8.63 -4.39	4G Frequency[Hz] Limit [dBµV/m] 74.00 74.00 74.00	6G Margin [dB] 35.37 32.83 27.75	BG Height [cm] 150 150 150	[°] 192 216 130	Polarity Horizontal Horizontal Horizontal	
1 2	4 3 2 1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -	PK Limit PK Limit PK Limit AV Detect Freq. [MHz] 7.389739 0.432043	- AV Limit - F Level [dBμV/m] 38.63 41.17	3G Iorizontal PK Factor [dB] -12.02 -8.63	4G Frequency[Hz] Limit [dBµV/m] 74.00 74.00	6G Margin [dB] 35.37 32.83	8G Height [cm] 150 150	[°] 192 216	Polarity Horizontal Horizontal	

#### **Radiated Emissions Test Results Above 1GHz**



UT N	lame		Wireless Head	phone	M	odel Name	A	3004		
Tempe	erature		<b>26</b> ℃		Re	elative Humi	dity 4	0%		
Press	ure	960hPa			Те	st Voltage	١	Iormal Volt	age	
Fest M	lode		Mode 4		А	ntenna Polar	∙ity \	Vertical		
		·								
	130 120				FCC Part 15C					
	110									
	100 90			Fundan	nental freque	ency				
	80					)				
	[W//180 = 50									
		www.www.			<b>.</b> 2	NUT ON AN AND AND AND AND AND AND AND AND AND	den de riter <b>Se</b> nda e La dela <b>MAN</b>			
	40 30	an and the second	marter and a for the stand of the	which where and a state of the	and the second	WWW	a na star star star star star star star sta			
	20 10									
	0									
	-10 1G		2G	3G	4G	6G	8G		18G	
					Frequency[Hz]					
		PK Limit	AV Limit Ve	ertical PK						
		PK Limit     AV Detector		ertical PK						
NO.		* AV Detector	Level	Factor	Limit	Margin	Height	Angle	Polarity	
	[M	eq. Hz]	Level [dBµV/m]	Factor [dB]	[dBµV/m]	[dB]	[cm]	[°]		
1	[M 3137.1	* AV Detector eq. Hz] 113711	Level [dBµV/m] 38.52	Factor [dB] -11.61	[dBµV/m] 74.00	[dB] 35.48	[cm] 150	[°] 15	Vertical	
1 2	[M 3137. 4199.7	* AV Detector req. Hz] 113711 719972	Level [dBµV/m] 38.52 40.50	Factor [dB] -11.61 -9.13	[dBµV/m] 74.00 74.00	[dB] 35.48 33.50	[cm] 150 150	[°] 15 158	Vertical Vertical	
1 2 3	[M 3137. 4199.7 6333.4	* AV Detector eq. Hz] 113711 719972 433343	Level [dBµV/m] 38.52 40.50 46.67	Factor [dB] -11.61 -9.13 -4.79	[dBµV/m] 74.00 74.00 74.00	[dB] 35.48 33.50 27.33	[cm] 150 150 150	[°] 15 158 215	Vertical Vertical Vertical	
1 2	[M 3137. 4199.7 6333.4 8535.7	* AV Detector req. Hz] 113711 719972	Level [dBµV/m] 38.52 40.50	Factor [dB] -11.61 -9.13	[dBµV/m] 74.00 74.00	[dB] 35.48 33.50	[cm] 150 150	[°] 15 158	Vertical Vertical	

### **RESULT: Pass**



EUT N	lame	Wireless Head	phone	Мс	odel Name	A	3004		
Tempe	erature	<b>26</b> ℃		Re	lative Humi	dity 4	0%		
Press	ure	960hPa			960hPa Test Voltage		N	Normal Voltage	
lest M	lode	Mode 5		An	itenna Polar	rity H	Horizontal		
	130 120			FCC Part 15C					
	110 100 90 80 5 70		Fundar	mental freque	ency				
	2 60								
	шу 70 60 90 40 30 20 10	and a state of the		างาางาระการเกมส์ชีวรรมรูปชาวิชาร	grandense and a second and a second and a second	History and Property Classified			
	40 30 20		3G rizontal PK	4G Frequency[Hz]	6G	8G		18G	
NO.	40 30 20 10 	AV Limit Ho	36	46			Angle [°]	18G Polarity	
NO.	40 30 20 10 -0 10 10 -0 10 -0 10 -0 10 -0 -0 10 -0 -0 10 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0	or — AV Limit — Ho	3G rizontal PK Factor	4G Frequency[Hz]	6G Margin	BG Height		Polarity	
	40 30 20 10 -10 13 	or AV Limit Ho	3G rizontal PK Factor [dB]	4G Frequency[Hz] Limit [dBµV/m]	6G Margin [dB]	BG Height [cm]	[°]		
1	40 20 10 10 10 13 PK Limit * AV Detect Freq. [MHz] 3009.60096 4237.123712 6197.419742	- AV Limit - Ho Level [dBµV/m] 38.85 39.68 44.87	36 rizontal PK Factor [dB] -11.95 -8.98 -5.04	4G Frequency[Hz] Limit [dBµV/m] 74.00 74.00 74.00	6G Margin [dB] 35.15 34.32 29.13	BG Height [cm] 150 150 150	[°] 312 40 269	Polarity Horizontal Horizontal Horizontal	
1 2 3 4	40 20 10 -10 -10 -10 -10 -10 -10 -10	- AV Limit - Ho Level [dBµV/m] 38.85 39.68	3G rizontal PK Factor [dB] -11.95 -8.98	4G Frequency[Hz] Limit [dBμV/m] 74.00 74.00 74.00 74.00 74.00	6G Margin [dB] 35.15 34.32	BG Height [cm] 150 150	[ <sup>n</sup> ] 312 40 269 6	Polarity Horizontal Horizontal	
1 2 3	40 20 10 10 10 13 PK Limit * AV Detect Freq. [MHz] 3009.60096 4237.123712 6197.419742	- AV Limit - Ho Level [dBµV/m] 38.85 39.68 44.87	36 rizontal PK Factor [dB] -11.95 -8.98 -5.04	4G Frequency[Hz] Limit [dBµV/m] 74.00 74.00 74.00	6G Margin [dB] 35.15 34.32 29.13	BG Height [cm] 150 150 150	[°] 312 40 269	Polarity Horizontal Horizontal Horizontal	

#### **Radiated Emissions Test Results for Above 1GHz**



	lame	Wireless Head	phone	Мо	del Name	1	\3004		
emp	erature	<b>26</b> ℃		Rel	ative Humi	dity 4	10%		
ress	ure	960hPa			960hPa Test Voltage		1	Normal Voltage	
est N	lode	Mode 5		Ant	tenna Polar	ity \	Vertical		
Leve[dBµVm]	130 120 110 100 90 80 70 60 50 40 40 40 40 40 40 40 40 40 4	2G AV Limit — Vertical PK	7/	FCC Part 15C	) 			16 	
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	
1	3363.236324	39.18	-11.00	74.00	34.82	150	282	Vertical	
2	4291.529153	40.58	-8.75	74.00	33.42	150	168	Vertical	
3	5447.644765	42.29	-6.97	74.00	31.71	150	25	Vertical	
-	7108.710871	45.78	-3.63	74.00	28.22	150	1	Vertical	
4	40050 50500	50.08	2.53	74.00	23.92	150	44	Vertical	
4 5	10959.59596	00.00							

### **RESULT: Pass**



EUT N	lame	e					Wireless Headphone			Mod	el Na	me	Model Name					
Tempe	eratu	ure		<b>26</b> ℃	2					Rela	tive H	lumid	lity	40	%			
Press	ure			960hPa				Test	Volta	ge		No	Normal Voltage					
Test M	lode	•		Mod	le 6					Ante	enna F	Polari	ty	Hc	Horizontal			
		130							FCC Pa	rt 15C								
		120																
		110																
		90					- Fi	unda	mental fr	requei	ncy							
	-	80						7										
	1BµV/m	70 60					/											
	Image: Constraint of the second sec							/										
	Leve	50					$-\mathcal{V}$					2		(c)				
	Leve	40 10	14 monthly and	k. Joshilludrice/	المرد ورايا مار عمر ورام	in which which	- Kanalana	apressive side shall	· milinappy	WWW.WWWWW	Marketter	eren hyrene	vunantahinini	a the second second				
	Leve		1999 west have	لاسام المالية المرد	الجمعين المحاصيهم وروابهم		- Land	arran hipahihi	with we have you with	And a start of the start of t	Walandaha	nyanaka karaka karak	saantehindi	W PROPERTY IN				
	Leve	40 30	Warding	الم الم الم الم	trin spine shakened			ngrangi yipayini	rational and a second	Marina ana ana ana ana ana ana ana ana ana	Maderiality	<b>hymryd yn o</b> f	suurahtee paratasi					
	Leve	40 30 20 10 0	1990 wester had a solar	la din dalamina						Kannonnah	NYAMIWA	<b>ereniyer</b> inge	sanan fan tan ta					
	Leve	40 30 20 10	March 1. August			2G		3G	46		6G		8G				180	3
	Leve	40 30 20 10 0	- PK Limit		AV Limit -		zontal PK					******					180	3
	Leve	40 30 20 10 0							46			• • • • • • • • • • • • • • • • • • •					180	6
	Leve	40 30 20 10 -10 1G	PK Limit * AV Detect					36	46	icy[Hz]	6G		8G		And			_
NO.	Leve	40 30 20 10 0	PK Limit * AV Detect	tor	AV Limit -	— Hori	zontal PK	3G Or	4G Frequen	icy[Hz]	6G Mai		8G	eight cm]	Ang [°	gle ]		a Dlarity
NO.		40 30 20 10 0 -10 16 Fre [MH	PK Limit * AV Detect	tor	AV Limit -	— Hori	zontal PK Facto	3G or ]	4G Frequen	icy[Hz] it /m]	6G Mai	rgin B]	BG He	eight	Ang [°	]	Pc	_
	34	40 30 20 10 -10 -10 -10 -10 -10 -10 -10	PK Limit AV Detect PQ. Hz]	tor	AV Limit Level dBµV/m	— Hori	zontal PK Factu [dB	3G or ] 39	4G Frequen [dBµV,	it /m] 0	6G Ma [d	rgin B] .35	BG He [4	eight	[°	]	Po	blarity
1	34	40 30 10 0 -10 16 Free [MH 05.74 22.1	PK Limit * AV Detect eq. Hz] 740574	tor	AV Limit - Level dBµV/m 40.65	— Hori	zontal PK Factr [dB -10.8	or ] 39 33	4G Frequen [dBµV/ 74.0	it /m] 0	6G Ma [d 33	rgin B] .35 .28	8G	eight cm]	[°	] ; 5	Po Hor Hor	plarity
1 2	34 43 63	40 30 20 10 -10 13 Fre [MF 05.7 22.1 23.2	PK Limit * AV Detect eq. +z] 40574 32213	tor	AV Limit - Level dBµV/m 40.65 40.72	— Hori	zontal PK [dB -10.8 -8.6	or ] 39 39 3 2	4G Frequen [dBµV, 74.0 74.0	it /m] 0 0 0	6G Mai [d 333. 333.	rgin B] .35 .28 .96	8G He [1 1 1	eight cm] 50 50	[° 6	] 5 3	Pc Hor Hor	olarity izontal izontal
1 2 3	34 43 63 71	40 30 10 10 10 10 10 10 10 10 10 1	PK Limit * AV Detect eq. +z] 40574 32213 32323	tor	AV Limit - Level dBμV/m 40.65 40.72 46.04	— Hori	zontal PK Factı [dB -10.8 -8.6 -4.8	or ] 39 39 33 2 3	4G Frequen [dBµV/ 74.0 74.0 74.0	it /m] 0 0 0 0 0	6G Ma [d 333 333 27	rgin B] .35 .28 .96 .27	BG He [4	eight cm] 50 50 50	[° 6 1! 27	] 5 3 2	Po Hor Hor Hor	blarity izontal izontal izontal

#### **Radiated Emissions Test Results for Above 1GHz**



EUT N	lame	Wireless Head	phone	M	odel Name	A3	004	
Tempe	erature	<b>26</b> ℃		Re	elative Humid	lity 40	%	
Press	ure	960hPa		Те	st Voltage	No	rmal Volta	ge
Test N	lode	Mode 6		Ar	ntenna Polari	ty Ve	rtical	
	130			FCC Part 15C				
	120 110 100 90 80 70 60 50 40 10 10 100 90 80 100 100 100 90 80 100 90 80 100 90 80 100 90 80 100 90 80 100 90 80 100 90 80 100 90 80 100 100 90 80 100 100 100 90 80 100 100 100 100 100 100 100	2G AV Limit — Ve	36	4G Frequency[Hz]	Jency 6G	8G		18G
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	3123.512351	39.29	-11.64	74.00	34.71	150	158	Vertical
2	4320.432043	41.32	-8.63	74.00	32.68	150	202	Vertical
3	5877.787779	43.18	-5.76	74.00	30.82	150	125	Vertical
4	7084.908491	46.88	-3.62	74.00	27.12	150	264	Vertical
5	10512.451245	49.85	1.06	74.00	24.15	150	187	Vertical
6	16571.857186	49.58	5.70	74.00	24.42	150	182	Vertical

### **RESULT: Pass**

#### Note:

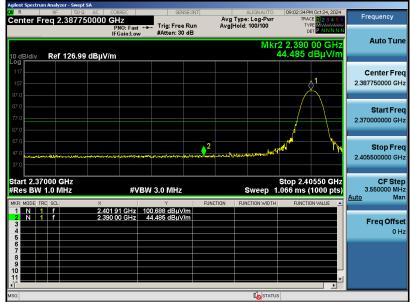
- 1. The amplitude of other spurious emissions from 18G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.
- 2. Factor = Antenna Factor + Cable loss Pre-amplifier gain, Margin = Emission Level-Limit.
- 3. The "Factor" value can be calculated automatically by software of measurement system.



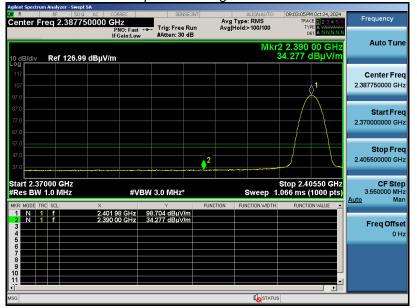
Band Edge Emission Test Results for Restricted Bands
--

EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26</b> ℃	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna Polarity	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement

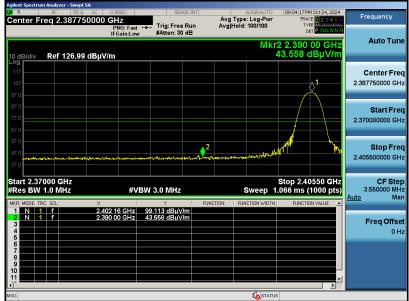


## **RESULT: Pass**

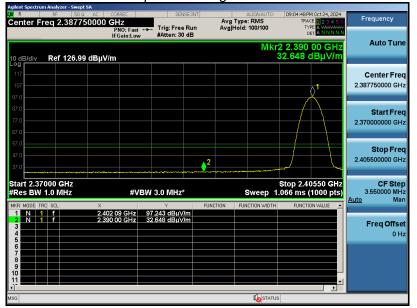


EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26</b> ℃	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna Polarity	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



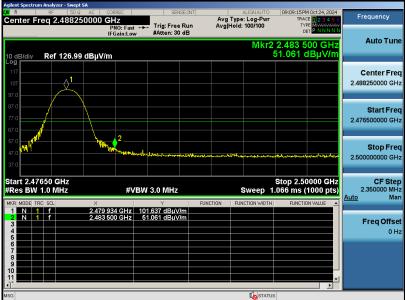
## **RESULT: Pass**



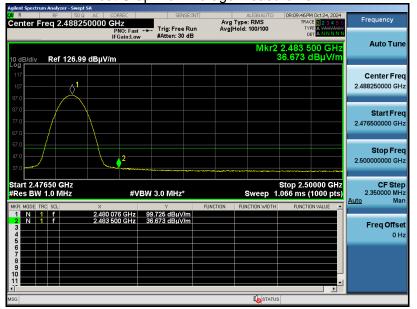
EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26</b> ℃	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna Polarity	Horizontal

### Band Edge Emission Test Results for Restricted Bands

Test Graph for Peak Measurement



Test Graph for Average Measurement



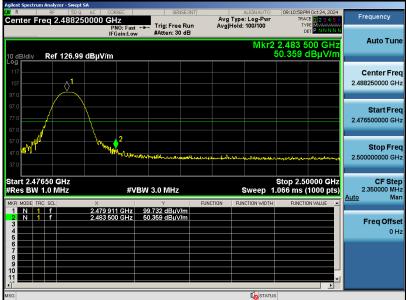
## **RESULT: Pass**



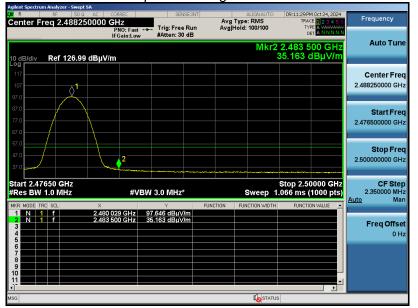
EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26</b> ℃	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna Polarity	Vertical

### Band Edge Emission Test Results for Restricted Bands

Test Graph for Peak Measurement



Test Graph for Average Measurement



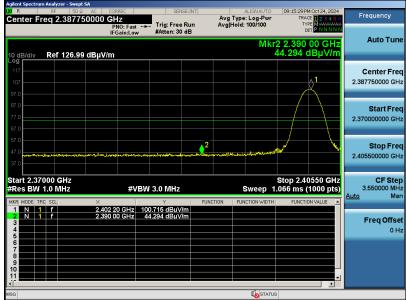
## **RESULT: Pass**



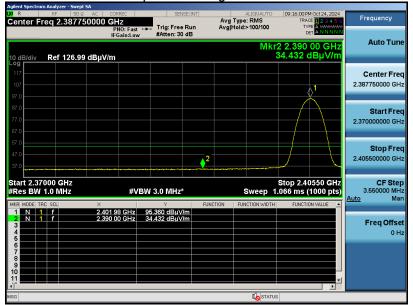
Band Edge Emission Test R	Results for Restricted Bands
---------------------------	------------------------------

EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26</b> ℃	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna Polarity	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement

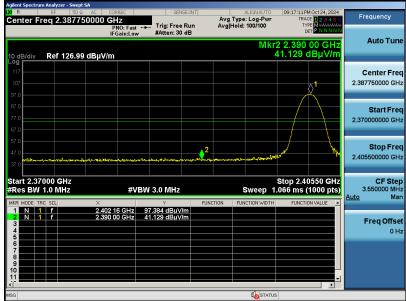


## **RESULT: Pass**

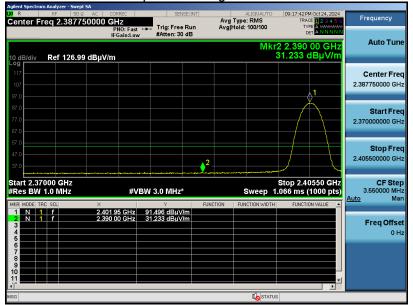


EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26</b> ℃	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna Polarity	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



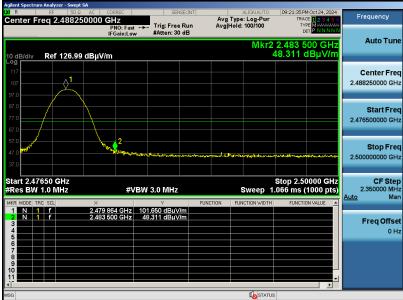
## **RESULT: Pass**



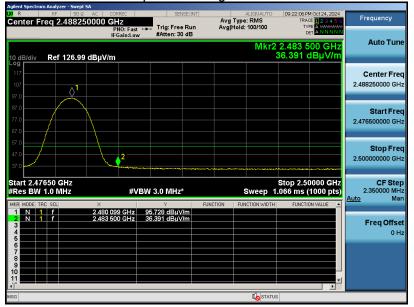
EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26</b> °C	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 6	Antenna Polarity	Horizontal

### Band Edge Emission Test Results for Restricted Bands

Test Graph for Peak Measurement



Test Graph for Average Measurement



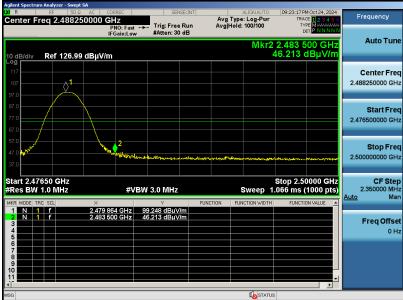
## **RESULT: Pass**



EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26°</b> C	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 6	Antenna Polarity	Vertical

### Band Edge Emission Test Results for Restricted Bands

Test Graph for Peak Measurement



Test Graph for Average Measurement



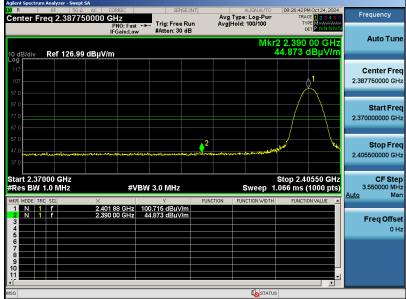
## **RESULT: Pass**



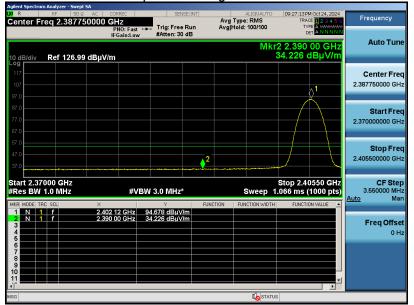
Band Edge Emission Test Results for Restricted Bands
--

EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26</b> ℃	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 7	Antenna Polarity	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement

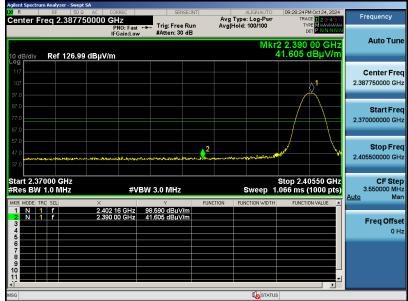


## **RESULT: Pass**

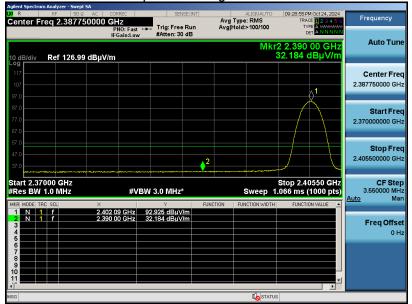


EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26</b> °C	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 7	Antenna Polarity	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



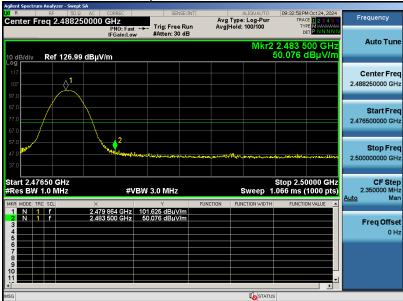
## **RESULT: Pass**



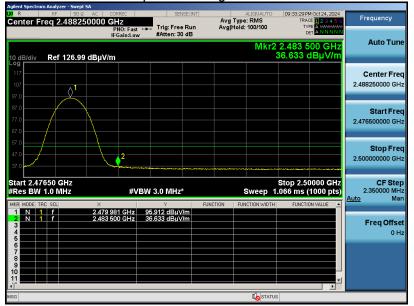
EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26</b> ℃	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 9	Antenna Polarity	Horizontal

### Band Edge Emission Test Results for Restricted Bands

Test Graph for Peak Measurement



Test Graph for Average Measurement



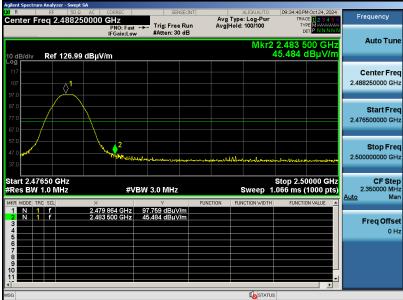
## **RESULT: Pass**



EUT Name	Wireless Headphone	Model Name	A3004
Temperature	<b>26</b> ℃	Relative Humidity	40%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 9	Antenna Polarity	Vertical

### Band Edge Emission Test Results for Restricted Bands

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.



# **10. Number of Hopping Frequency Measurement**

### **10.1 Provisions Applicable**

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

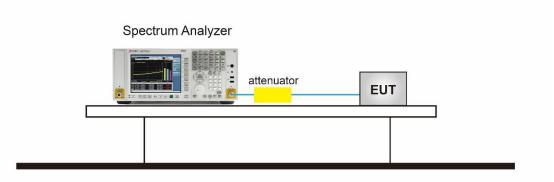
### **10.2 Measurement Procedure**

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

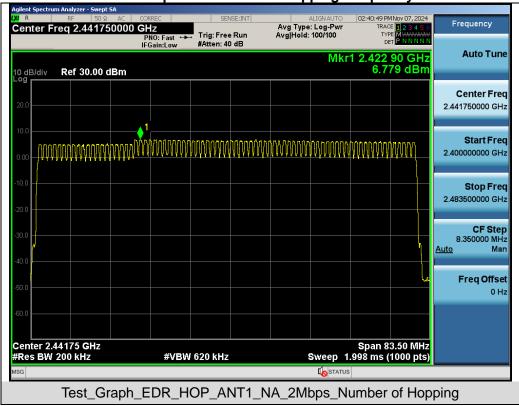
### 10.3 Measurement Setup (Block Diagram of Configuration)



#### **10.4 Measurement Result**

Test Data of Number of Hopping Frequency				
Test Mode Number of Hopping Frequency Limits Pass of				
$\pi$ /4-DQPSK Hopping	79	>=15	Pass	





### Test Graphs of Number of Hopping Frequency

Note: All mode rates are tested and evaluated,  $\pi$  /4-DQPSK modulated 2DH5 mode is the worst case and documented in the report.



# 11. Time of Occupancy (Dwell Time) Measurement

### **11.1 Provisions Applicable**

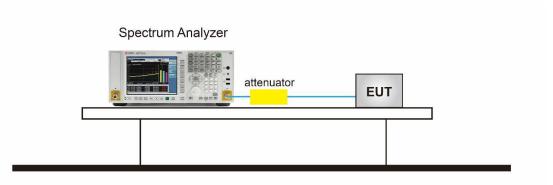
The maximum permissible time of occupancy is 400ms within a period of 400ms multiplied by the number of hopping channels employed.

### **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 2DH5 (ms)	Number of hops in the period specified in the requirements	Dwell Time (ms)	Limit (ms)	Pass or Fail
2402	2.893	20.0*4	231.440	400	Pass
2441	2.890	25.0*4	289.000	400	Pass
2480	2.890	23.0*4	265.880	400	Pass