

# **FCC Test Report**

Report No.: AGC01082230804FR02

FCC ID : 2AIXN-BS378Z2A

**APPLICATION PURPOSE**: Original Equipment

**PRODUCT DESIGNATION**: True Wireless Earbuds

**BRAND NAME** : N/A

BS378Z2A, 3304380, BS378Z2A-1, BS378Z2A-2,

**MODEL NAME** : BS378Z2A-3, BS378Z2A-4, BS378Z2A-5, BS378Z2A-6,

BS378Z2A-7, BS378Z2A-8, BS378Z2A-9, BS378Z2A-10

**APPLICANT**: GuangZhou U&I Technology Company Limited

**DATE OF ISSUE** : Aug. 17, 2023

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

**REPORT VERSION**: V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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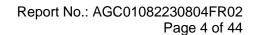
## REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Aug. 17, 2023	Valid	Initial Release



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## 1. VERIFICATION OF COMPLIANCE

Applicant	GuangZhou U&I Technology Company Limited	
Address	4th Floor, 15th Building, Vtrek Innovation Industrial Park, No.644 Shibei Road, Panyu District, Guangzhou, China	
Manufacturer	GuangZhou U&I Technology Company Limited	
Address	4th Floor, 15th Building, Vtrek Innovation Industrial Park, No.644 Shibei Road, Panyu District, Guangzhou, China	
Factory	GuangZhou U&I Technology Company Limited	
Address	4th Floor, 15th Building, Vtrek Innovation Industrial Park, No.644 Shibei Road, Panyu District, Guangzhou, China	
Product Designation	True Wireless Earbuds	
Brand Name	N/A	
Test Model	BS378Z2A	
Series Model	3304380, BS378Z2A-1, BS378Z2A-2, BS378Z2A-3, BS378Z2A-4, BS378Z2A-5, BS378Z2A-6, BS378Z2A-7, BS378Z2A-8, BS378Z2A-9, BS378Z2A-10	
Difference Description	Different colors and model names	
Date of receipt of test item	Aug. 07, 2023	
Date of test	Aug. 07, 2023~Aug. 16, 2023	
Deviation	No any deviation from the test method	
Condition of Test Sample	Normal	
Test Result	Pass	
Report Template	AGCRT-US-BLE/RF	

## We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC part 15.247.

Prepared By	Alan Duan	
	Alan Duan (Project Engineer)	Aug. 17, 2023
Reviewed By	Calin Liu	
	Calvin Liu (Reviewer)	Aug. 17, 2023
Approved By	Max Zhang	
	Max Zhang Authorized Officer	Aug. 17, 2023



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## 2. GENERAL INFORMATION

## 2.1. PRODUCT DESCRIPTION

The EUT is designed as a "True Wireless Earbuds". It is designed by way of utilizing the GFSK technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480GHz
RF Output Power	Left headset: -6.221dBm (Max)
Bluetooth Version	V5.3
Modulation	BR □GFSK, EDR □π /4-DQPSK, □8DPSK BLE □GFSK 1Mbps □GFSK 2Mbps
Number of channels	40 Channel
Antenna Designation	Ceramic antenna (Comply with requirements of the FCC part 15.203)
Antenna Gain	1.75dBi
Hardware Version	V1.1
Software Version	V5.1.5
Power Supply	DC 3.7V by battery or DC 5V by adapter

Note: The EUT comprises left and right channel headsets, both are the same in SCH but different in the PCB Layout. The RF output power of each headset had been tested and recorded in the report. For the other test items, the left headset had been tested and recorded in this report as the worst case because of the higher power.

## 2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency	
	0	2402 MHz	
	1	2404 MHz	
2400~2483.5MHz	;	:	
	38	2478 MHz	
	39	2480 MHz	



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## 2.3. RELATED SUBMITTAL(S)/GRANT(S)

This submittal(s) (test report) is intended for **FCC ID: 2AIXN-BS378Z2A** filing to comply with the FCC Part 15.247 requirements.

#### 2.4. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

#### 2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

#### 2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

## 2.7. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device. For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.



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## 3. MEASUREMENT UNCERTAINTY

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

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 3.1 \text{ dB}$
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 4.0 \text{ dB}$
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.8 \text{ dB}$
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 <sub>c</sub> = ±2 %



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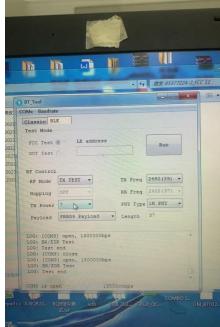
## 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel TX_CH00_1Mbps
2	Middle channel TX_CH19_1Mbps
3	High channel TX_CH39_1Mbps

#### Note:

- 1. Only the result of the worst case was recorded in the report, if no other cases.
- 2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
- 3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.





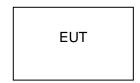


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## 5. SYSTEM TEST CONFIGURATION

## **5.1. CONFIGURATION OF TESTED SYSTEM**

Radiated Emission Configure:



Conducted Emission Configure:

EUT	AE

## **5.2. EQUIPMENT USED IN TESTED SYSTEM**

Item	Equipment	Model No.	ID or Specification	Remark
1	True Wireless Earbuds	BS378Z2A	2AIXN-BS378Z2A	EUT
2	Battery	N/A	N/A	AE
3	Control Box	USB-TTL	N/A	AE

#### 5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
15.247 (b)(3)	Peak Output Power	Compliant
15.247 (a)(2)	6 dB Bandwidth	Compliant
15.247 (d)	Conducted Spurious Emission	Compliant
15.247 (e)	Maximum Conducted Output Power Density	Compliant
15.209	Radiated Emission	Compliant
15.207	Conducted Emission	Not applicable

Note: The BT function cannot transmit when charging.



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## 6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance (Shenzhen) Co., Ltd is accredited by A2LA

## **TEST EQUIPMENT OF RADIATED EMISSION TEST**

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Feb. 18, 2023	Feb. 17, 2024
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Jun. 01, 2023	May 31, 2024
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	N/A	N/A
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 31, 2021	Oct. 30, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 12, 2022	Mar. 11, 2024
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Mar. 23, 2023	Mar. 22, 2024
Broadband Preamplifier	ETS LINDGREN	3117PA	00246148	Aug. 04, 2022	Aug. 03, 2024
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 05, 2023	Jan. 04, 2025
Test software	Tonscend	JS32-RE (Ver.2.5)	N/A	N/A	N/A



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## 7. PEAK OUTPUT POWER

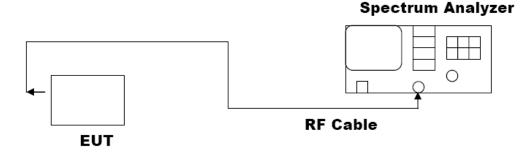
## 7.1. MEASUREMENT PROCEDURE

For peak power test:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. RBW ≥ DTS bandwidth
- 3. VBW≥3\*RBW.
- 4. SPAN≥VBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
- 7. Trace: Max hold.

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.

## 7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) PEAK POWER TEST SETUP





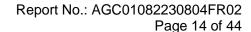
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7.3. LIMITS AND MEASUREMENT RESULT

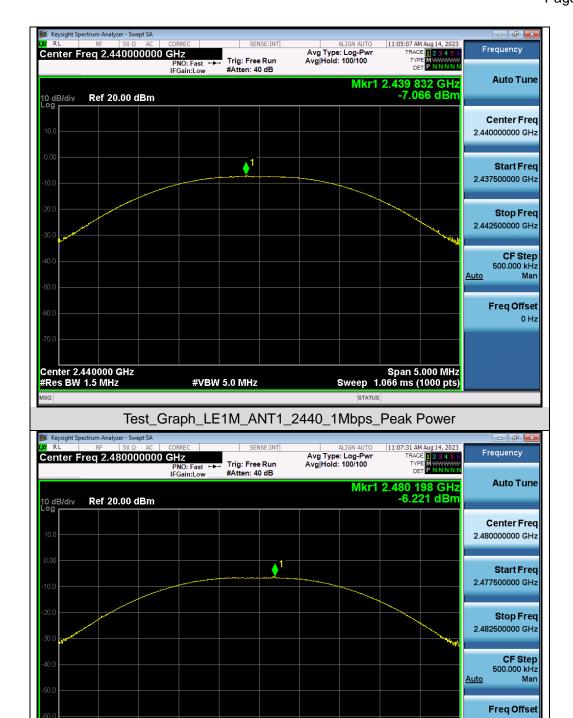
Test Data of Conducted Output Power-Left headset						
Test Mode	Test Mode Test Channel Peak Power Limits (MHz) (dBm) (dBm)					
	2402	-8.006	≤30	Pass		
GFSK 1M	2440	-7.066	≤30	Pass		
	2480	-6.221	≤30	Pass		

Test Graphs of Conducted Output Power







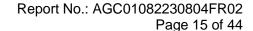


Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_Peak Power

**#VBW 5.0 MHz** 

Span 5.000 MHz Sweep 1.066 ms (1000 pts)

Center 2.480000 GHz #Res BW 1.5 MHz

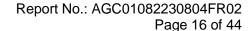




Test Data of Conducted Output Power-Right headset						
Test Mode	Test Mode Test Channel Peak Power Limits (MHz) (dBm) (dBm)					
	2402	-6.839	≤30	Pass		
GFSK 1M	2440	-6.779	≤30	Pass		
	2480	-7.560	≤30	Pass		

Test Graphs of Conducted Output Power

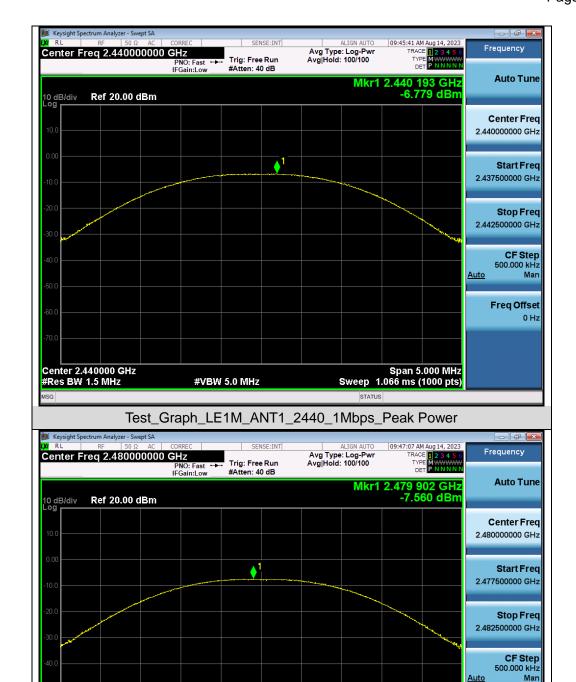




Freq Offset

Span 5.000 MHz Sweep 1.066 ms (1000 pts)





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Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_Peak Power

**#VBW 5.0 MHz** 

Center 2.480000 GHz #Res BW 1.5 MHz



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## 8. BANDWIDTH

#### 8.1. MEASUREMENT PROCEDURE

#### 6dB bandwidth:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 kHz, VBW ≥ 3×RBW.
- 4. Set SPA Trace 1 Max hold, then View.

## Occupied bandwidth:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hoping channel
  The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video
  bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
- 4. Set SPA Trace 1 Max hold, then View.

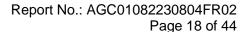
**Note:** The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

## 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

#### 8.3. LIMITS AND MEASUREMENT RESULTS

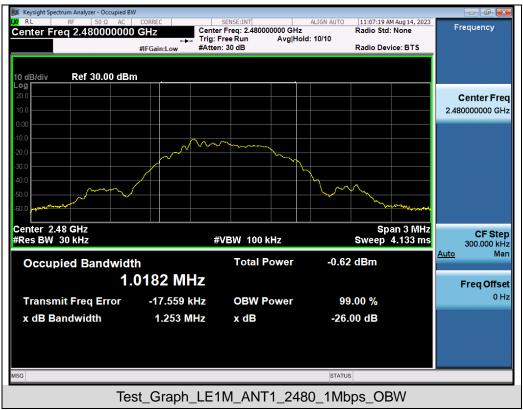
Test Data of Occupied Bandwidth and DTS Bandwidth							
Test Mode	Test Channel (MHz)	Limits (MHz)	Pass or Fail				
	2402	1.018	0.663	≥0.5	Pass		
GFSK 1M	2440	1.019	0.666	≥0.5	Pass		
	2480	1.018	0.664	≥0.5	Pass		

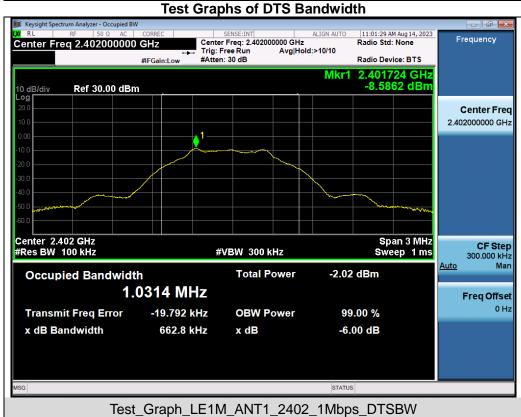




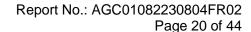




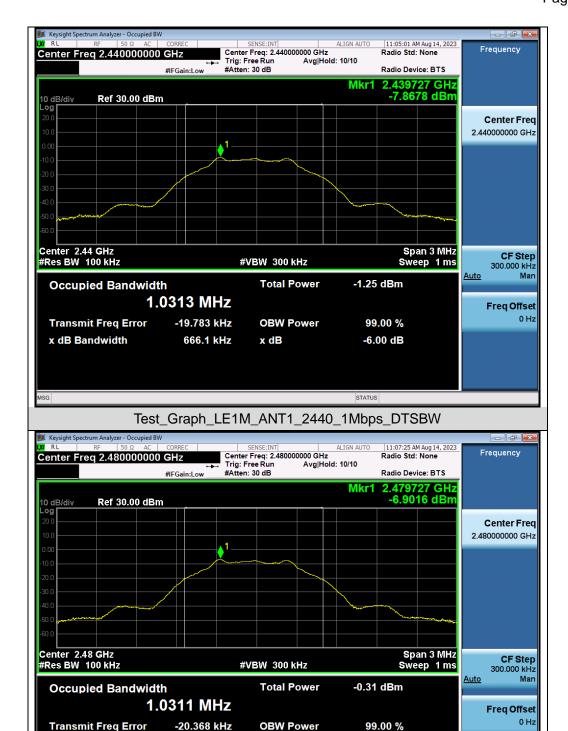




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Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_DTSBW

x dB

-6.00 dB

664.5 kHz

x dB Bandwidth



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## 9. CONDUCTED SPURIOUS EMISSION

## 9.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

## 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

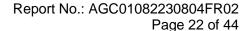
The same as described in section 7.2.

#### 9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

#### 9.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT					
Applicable Limite	Measurement Result				
Applicable Limits	Test Data	Criteria			
In any 100 kHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.	At least -20dBc than the reference level	PASS			





Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands Avg Type: Log-Pwr Avg|Hold: 10/10 Frequency Center Freq 2.402000000 GHz TYPE M WWW Trig: Free Run #Atten: 30 dB IFGain:Low **Auto Tune** Mkr1 2.401 727 5 GHz -8.596 dBm Ref 20.00 dBm 10 dB/div Center Freq 2.402000000 GHz Start Freq 2.400500000 GHz Stop Freq 2.403500000 GHz CF Step 300.000 kHz Auto Man Frea Offset 0 Hz Center 2.402000 GHz #Res BW 100 kHz Span 3.000 MHz Sweep 2.000 ms (30000 pts) #VBW 300 kHz Test\_Graph\_LE1M\_ANT1\_2402\_1Mbps\_Reference Level Center Freq 1.210000000 GHz Frequency Avg Type: Log-Pwr Avg|Hold: 10/10 Trig: Free Run #Atten: 30 dB PNO: Fast ↔ IFGain:Low **Auto Tune** Mkr1 2.388 74 GHz -57.525 dBm Ref 20.00 dBm 10 dB/div Center Frea 1.210000000 GHz Start Freq 30.000000 MHz Stop Freq 2 390000000 GHz CF Step 236.000000 MHz <u>Auto</u> Freq Offset 0 Hz

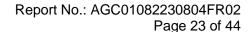
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Test\_Graph\_LE1M\_ANT1\_2402\_1Mbps\_Lower Band Emissions

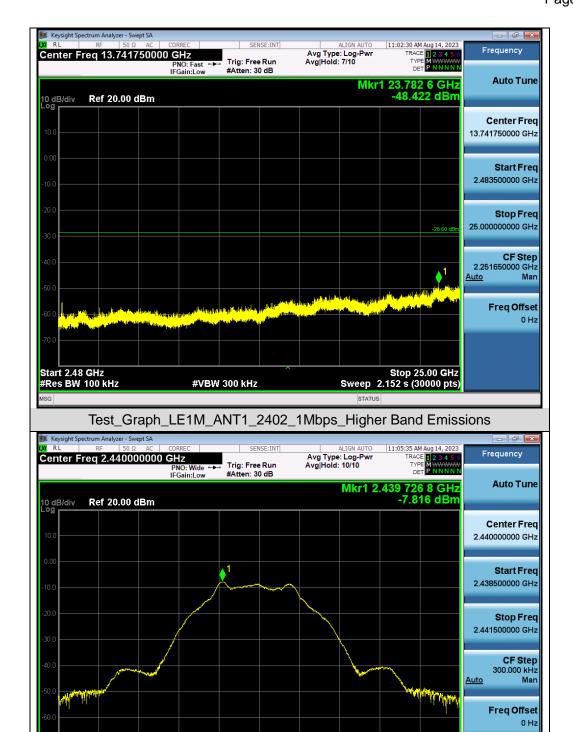
#VBW 300 kHz

Stop 2.390 GHz Sweep 226.0 ms (30000 pts)

Start 30 MHz #Res BW 100 kHz





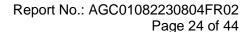


Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_Reference Level

#VBW 300 kHz

Span 3.000 MHz Sweep 2.000 ms (30000 pts)

Center 2.440000 GHz #Res BW 100 kHz



2.483500000 GHz

**CF Step** 2.251650000 GHz

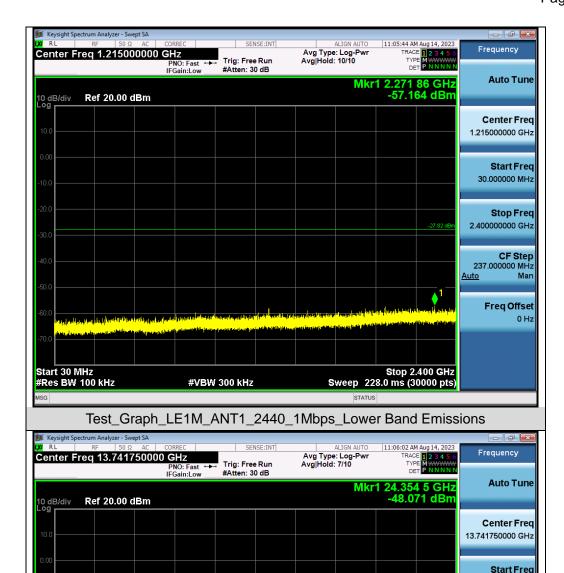
Freq Offset

<u>Auto</u>

**Stop Freq** 25.000000000 GHz

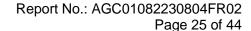
Man





Start 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.152 s (30000 pts)

Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_Higher Band Emissions



Freq Offset





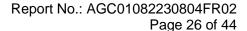
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Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_Lower Band Emissions

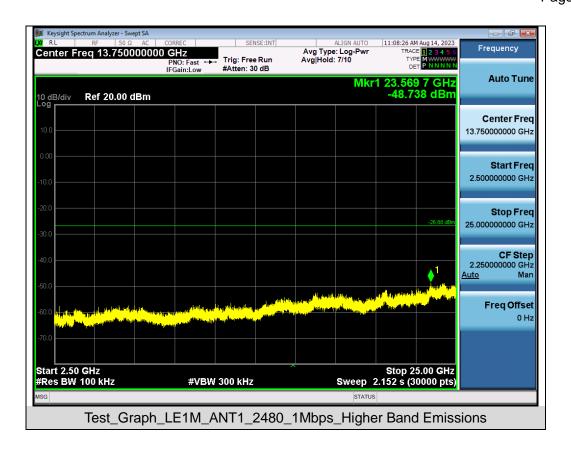
#VBW 300 kHz

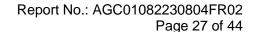
Stop 2.400 GHz Sweep 228.0 ms (30000 pts)

Start 30 MHz #Res BW 100 kHz

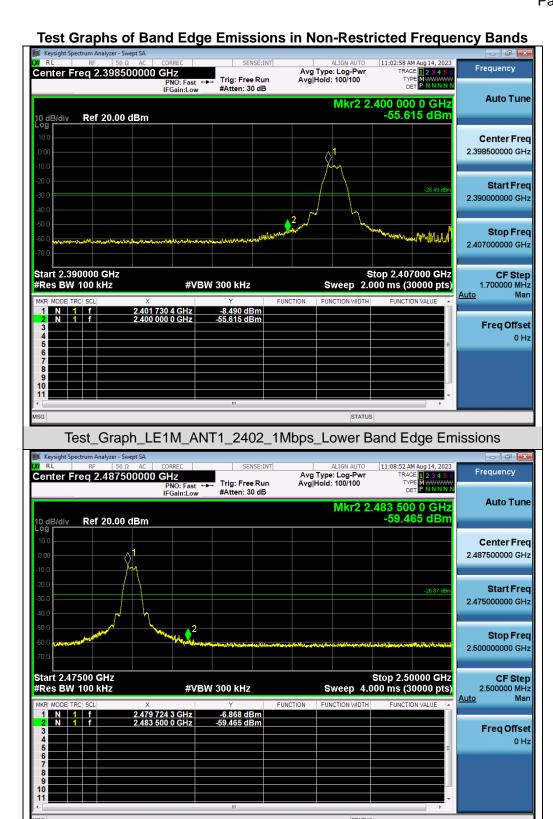












Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_Higher Band Edge Emissions



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10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

#### 10.1. MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set the SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the KDB 558074 item 8.4 was used in this testing.

## 10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer to Section 7.2.

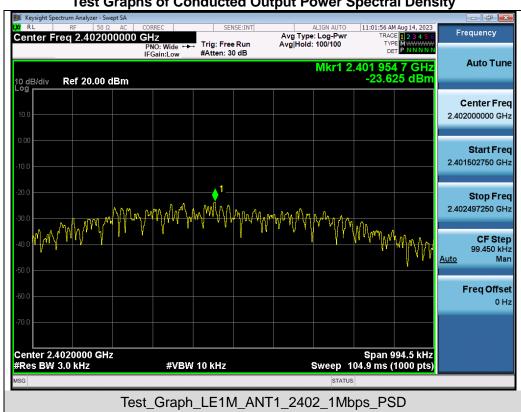
#### 10.3. MEASUREMENT EQUIPMENT USED

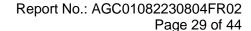
Refer to Section 6.

#### 10.4. LIMITS AND MEASUREMENT RESULT

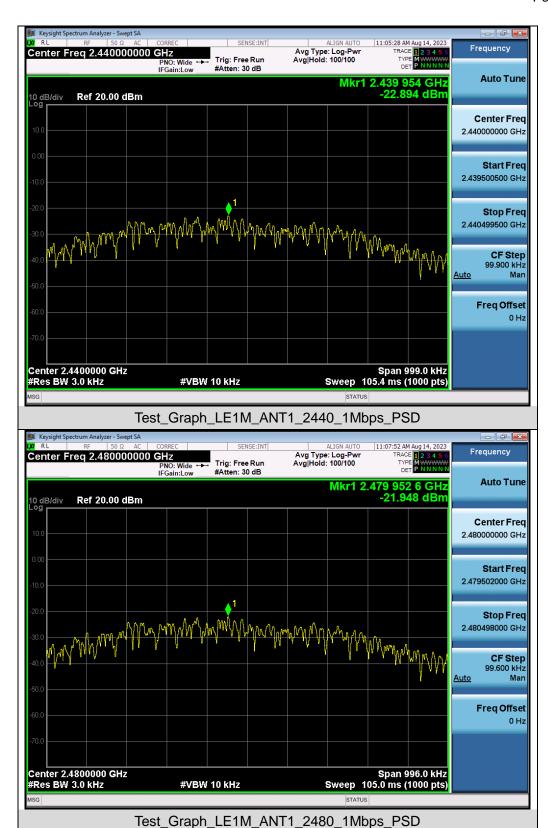
Test Data of Conducted Output Power Spectral Density					
Test Mode	Test Mode Test Channel Power density Limit (MHz) (dBm/3kHz) (dBm/3kHz)				
	2402	-23.625	<b>≤8</b>	Pass	
GFSK 1M	2440	-22.894	≤8	Pass	
	2480	-21.948	<b>≤8</b>	Pass	

Test Graphs of Conducted Output Power Spectral Density









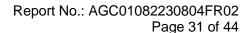


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## 11. RADIATED EMISSION

#### 11.1. MEASUREMENT PROCEDURE

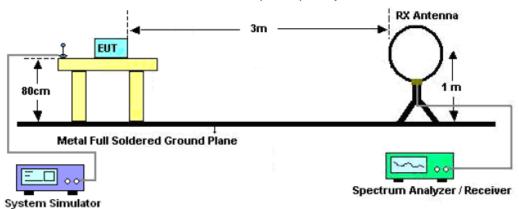
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated 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.



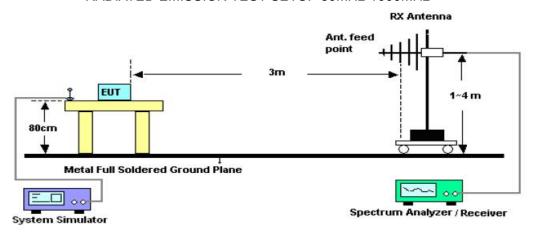


## 11.2. TEST SETUP

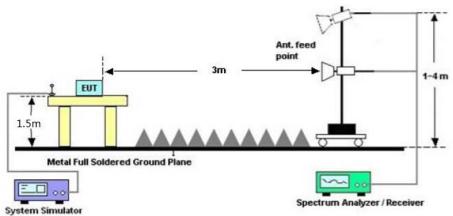
## Radiated Emission Test-Setup Frequency Below 30MHz



## RADIATED EMISSION TEST SETUP 30MHz-1000MHz



## RADIATED EMISSION TEST SETUP ABOVE 1000MHz





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## 11.3. LIMITS AND MEASUREMENT RESULT

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.

## 11.4. TEST RESULT

## Radiated emission below 30MHz

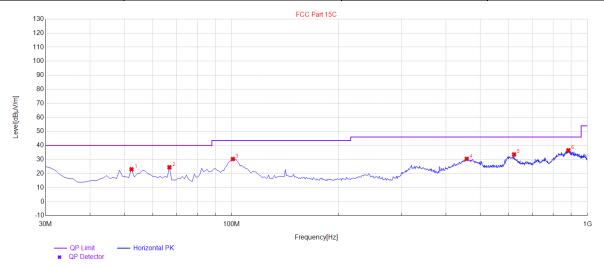
The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.



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## Radiated emission from 30MHz to 1000MHz

EUT	True Wireless Earbuds	Model Name	BS378Z2A
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal



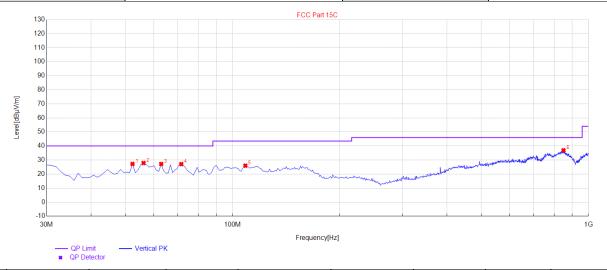
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	52.31	23.09	11.50	40.00	16.91	100	359	Horizontal
2	66.86	24.51	11.83	40.00	15.49	100	358	Horizontal
3	100.81	30.34	21.07	43.50	13.16	100	359	Horizontal
4	457.77	30.47	26.41	46.00	15.53	100	48	Horizontal
5	621.7	33.62	27.79	46.00	12.38	100	48	Horizontal
6	883.6	36.57	32.99	46.00	9.43	100	263	Horizontal

**RESULT: PASS** 



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EUT	True Wireless Earbuds	Model Name	BS378Z2A
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	52.31	27.22	13.69	40.00	12.78	100	150	Vertical
2	56.19	27.85	14.30	40.00	12.15	100	208	Vertical
3	62.98	27.16	14.50	40.00	12.84	100	1	Vertical
4	71.71	27.09	13.29	40.00	12.91	100	1	Vertical
5	108.57	26.00	14.84	43.50	17.50	100	359	Vertical
6	850.62	36.92	32.25	46.00	9.08	100	358	Vertical

## RESULT: PASS Note:

- 1. Factor=Antenna Factor + Cable loss, Margin= Limit-Measurement.
- 2. All test modes had been tested. The mode 3 is the worst case and recorded in the report.



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## Radiated emission above 1GHz

EUT	True Wireless Earbuds	Model Name	BS378Z2A
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	\/alua Tima
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4804.011	49.36	0.08	49.44	74.00	-24.56	peak
4804.011	41.07	0.08	41.15	54.00	-12.85	AVG
7206.022	47.25	2.21	49.46	74.00	-24.54	peak
7206.022	39.63	2.21	41.84	54.00	-12.16	AVG
Remark:						
Factor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier.	·	·	

EUT	True Wireless Earbuds	Model Name	BS378Z2A
Temperature	25° C	Relative Humidity	55.4%
D	000LD	T4 M-14	NI IV/. If

Pressure960hPaTest VoltageNormal VoltageTest ModeMode 1AntennaVertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Trees
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4804.011	48.58	0.08	48.66	74.00	-25.34	peak
4804.011	40.96	0.08	41.04	54.00	-12.96	AVG
7206.022	47.15	2.21	49.36	74.00	-24.64	peak
7206.022	39.34	2.21	41.55	54.00	-12.45	AVG

Factor = Antenna Factor + Cable Loss - Pre-amplifier.



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EUT	True Wireless Earbuds	Model Name	BS378Z2A
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	\/alua Tima
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4880.005	48.57	0.14	48.71	74.00	-25.29	peak
4880.005	41.13	0.14	41.27	54.00	-12.73	AVG
7320.140	45.28	2.36	47.64	74.00	-26.36	peak
7320.140	39.69	2.36	42.05	54.00	-11.95	AVG
_						
Remark:						

Factor = Antenna Factor + Cable Loss - Pre-amplifier.

EUT	True Wireless Earbuds	Model Name	BS378Z2A
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Time
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4880.050	49.69	0.14	49.83	74.00	-24.17	peak
4880.050	42.37	0.14	42.51	54.00	-11.49	AVG
7320.080	47.25	2.36	49.61	74.00	-24.39	peak
7320.080	40.35	2.36	42.71	54.00	-11.29	AVG
Remark:						
Factor = Anter	na Factor + Cab	<u>le Loss – Pre-a</u>	amplifier.			



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EUT	True Wireless Earbuds	Model Name	BS378Z2A
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	\
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	- Value Type
4960.012	49.87	0.22	50.09	74.00	-23.91	peak
4960.012	39.61	0.22	39.83	54.00	-14.17	AVG
7440.027	47.59	2.64	50.23	74.00	-23.77	peak
7440.027	37.31	2.64	39.95	54.00	-14.05	AVG

<u>Remark</u>

Factor = Antenna Factor + Cable Loss - Pre-amplifier.

EUT	True Wireless Earbuds	Model Name	BS378Z2A
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Time	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type	
4960.013	48.25	0.22	48.47	74	-25.53	peak	
4960.013	40.18	0.22	40.40	54	-13.60	AVG	
7440.027	45.37	2.64	48.01	74	-25.99	peak	
7440.027	37.46	2.64	40.10	54	-13.90	AVG	
Remark:							
Factor = Anten	Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

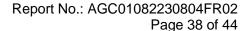
#### **RESULT: PASS**

#### Note:

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.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

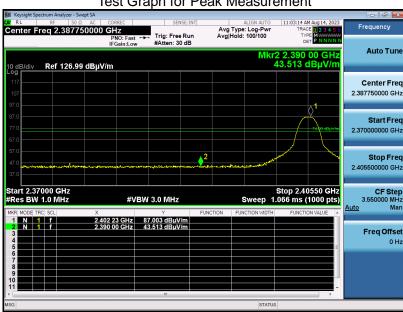


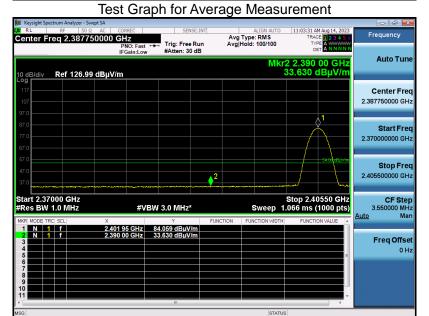


Test result for band edge emission at restricted bands

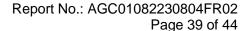
EUT	True Wireless Earbuds	Model Name	BS378Z2A
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Test Graph for Peak Measurement





**RESULT: PASS** 

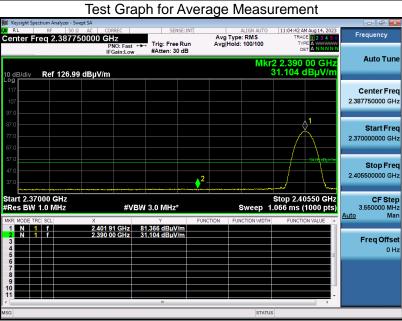




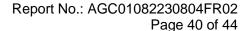
**EUT** True Wireless Earbuds **Model Name** BS378Z2A 25° C **Temperature Relative Humidity** 55.4% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 1 **Antenna** Vertical

Test Graph for Peak Measurement





**RESULT: PASS** 

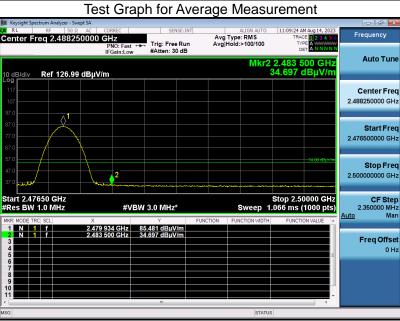




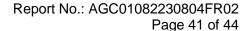
**EUT** True Wireless Earbuds **Model Name** BS378Z2A 25° C **Temperature Relative Humidity** 55.4% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 3 **Antenna** Horizontal

Test Graph for Peak Measurement





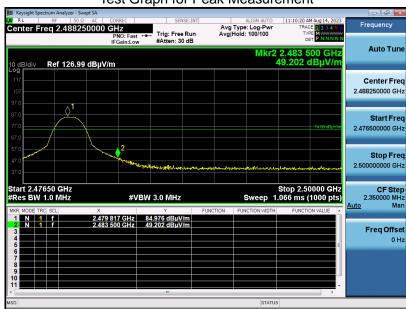
**RESULT: PASS** 

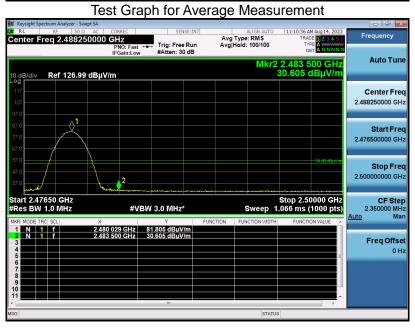




**EUT** True Wireless Earbuds **Model Name** BS378Z2A 25° C **Temperature Relative Humidity** 55.4% 960hPa Normal Voltage **Pressure Test Voltage Test Mode** Mode 3 **Antenna** Vertical

Test Graph for Peak Measurement





## **RESULT: PASS**

Note: The factor had been edited in the "Input Correction" of the Spectrum Analyzer.



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## 12. LINE CONDUCTED EMISSION TEST

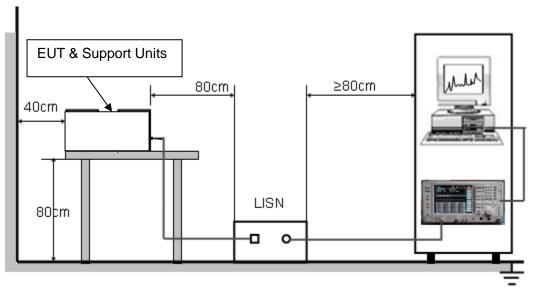
## 12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Francisco	Maximum RF Line Voltage		
Frequency	Q.P.( dBuV)	Average( dBuV)	
150kHz~500kHz	66-56	56-46	
500kHz~5MHz	56	46	
5MHz~30MHz	60	50	

#### Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

## 12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST





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#### 12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipment received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC 5V power from adapter which received AC120V/60Hz power from a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

#### 12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less 2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.

## 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Not applicable



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## **APPENDIX I: PHOTOGRAPHS OF TEST SETUP**

Refer to the Report No.: AGC01082230804AP02

**APPENDIX II: PHOTOGRAPHS OF EUT** 

Refer to the Report No.: AGC01082230804AP03

----END OF REPORT----



## Conditions of Issuance of Test Reports

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- 3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
- 4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
- 5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
- 6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
- 7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
- 8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
- 9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.