

FCC Test Report

Report No.: AGC07307230301FE02

FCC ID : 2AY9HVR2280011

APPLICATION PURPOSE: Original Equipment

PRODUCT DESIGNATION: Bluetooth FM Transmitter Voice Assistant

BRAND NAME : onn.

MODEL NAME : 100130570

APPLICANT: Artsun Enterprise Company Limited

DATE OF ISSUE : Mar. 20, 2023

STANDARD(S) : FCC Part 15.247

REPORT VERSION: V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



Page 2 of 56

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Mar. 20, 2023	Valid	Initial Release



Report No.: AGC07307230301FE02 Page 3 of 56

TABLE OF CONTENTS

1. VERIFICATION OF COMPLIANCE	4
2. GENERAL INFORMATION	5
2.1. PRODUCT DESCRIPTION 2.2. TABLE OF CARRIER FREQUENCYS 2.3. RELATED SUBMITTAL(S)/GRANT(S). 2.4. TEST METHODOLOGY 2.5. SPECIAL ACCESSORIES. 2.6. EQUIPMENT MODIFICATIONS. 2.7. ANTENNA REQUIREMENT	
3. MEASUREMENT UNCERTAINTY	7
4. DESCRIPTION OF TEST MODES	8
5. SYSTEM TEST CONFIGURATION	9
5.1. CONFIGURATION OF TESTED SYSTEM	9
6. TEST FACILITY	10
7. PEAK OUTPUT POWER	11
7.1. MEASUREMENT PROCEDURE 7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 7.3. LIMITS AND MEASUREMENT RESULT	11
8. BANDWIDTH	16
8.1. MEASUREMENT PROCEDURE	16
9. CONDUCTED SPURIOUS EMISSION	
9.1. MEASUREMENT PROCEDURE	24 24
10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY	36
10.1. MEASUREMENT PROCEDURE	36 36
11. RADIATED EMISSION	40
11.1. MEASUREMENT PROCEDURE	41 42
APPENDIX A: PHOTOGRAPHS OF TEST SETUP	
APPENDIX B: PHOTOGRAPHS OF EUT	



Page 4 of 56

1. VERIFICATION OF COMPLIANCE

Applicant	Artsun Enterprise Company Limited	
Address	19H Maxgrand plaza, No.3 Tai Yau Street, San Po Kong, Kowloon, HongKong	
Manufacturer	Artsun Enterprise Company Limited	
Address	19H Maxgrand plaza, No.3 Tai Yau Street, San Po Kong, Kowloon, HongKong	
Factory	TELSTAR VIETNAM COMPANY LIMITED	
Address	CN-07-01 factory, lot CN-07, Van Trung Industrial Park, Van Trung Ward, Viet Yen District, Bac Giang Province, Viet Nam	
Product Designation	Bluetooth FM Transmitter Voice Assistant	
Brand Name	onn.	
Test Model	100130570	
Date of receipt of test item	Mar. 07, 2023	
Date of test	Mar. 07, 2023 to Mar. 20, 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	Thea Huang	
	Thea Huang (Project Engineer)	Mar. 20, 2023
Reviewed By	Calin Lin	
	Calvin Liu (Reviewer)	Mar. 20, 2023
Approved By	Max Zhang	
	Max Zhang (Authorized Officer)	Mar. 20, 2023



Page 5 of 56

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as a "Bluetooth FM Transmitter Voice Assistant". 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

	<u> </u>
Operation Frequency	2.402 GHz to 2.480GHz
RF Output Power	BLE GFSK 1Mbps: 2.997dBm (Max); BLE GFSK 2Mbps: 2.702dBm (Max);
Bluetooth Version	V5.2
Modulation	BR □GFSK, EDR □π /4-DQPSK, □8DPSK BLE ☑GFSK 1Mbps ☑GFSK 2Mbps
Number of channels	40 Channels
Antenna Designation	Ceramic Antenna (Comply with requirements of the FCC part 15.203)
Antenna Gain	1.01dBi
Hardware Version	V5.1
Software Version	V1
Power Supply	DC 12V-24V

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



Page 6 of 56

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

This submittal(s) (test report) is intended for **FCC ID: 2AY9HVR2280011** 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.

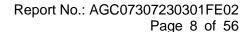


Page 7 of 56

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	$U_c = \pm 2.7 \%$
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2 \%$





4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION		
BLE GFSK 1Mbp	os		
1	Low channel TX		
2	Middle channel TX		
3	High channel TX		
BLE GFSK 2Mbp	BLE GFSK 2Mbps		
1	Low channel TX		
2	Middle channel TX		
3	High channel TX		

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.

Software Setting BlueTest3 - Test Command Mode Test Arguments ENABLE DUT MODE Channel (0-39) BLE TEST TX BLE TEST RX BLE TEST END Length (0-255) Help Bit pattern Pseudo-rdm 9 💌 Set Freq. Trims Execute PHY 1111 Set PIO Read PIO Read ADC Reset ☐ Save to file Browse for f Display : F Standard F BER C:\Users\Administrator\AppData\Local\QTIL\BlueTest3\testapplog.txt Disable Application successful Disable Application successful Channel frequency = 2402MHz PACKET IX successful Chip rest : successful



Page 9 of 56

5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF TESTED SYSTEM

Radiated Emission Configure:

5.2. EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	Bluetooth FM Transmitter Voice Assistant	100130570	2AY9HVR2280011	EUT
2	Control Box	QUALCOMM TRBI200	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 EUT was supplied by car battery.



Page 10 of 56

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

1E31 EQUIPMENT OF RADIATED EMISSION 1E31						
Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due	
TEST RECEIVER	R&S	ESCI	10096	Mar. 28, 2022	Mar. 27, 2023	
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Aug. 04, 2022	Aug. 03, 2023	
2.4GHz Filter	EM Electronics	2400-2500	N/A	Mar. 22, 2022	Mar. 21, 2024	
Attenuator	ZHINAN	E-002	N/A	Aug. 04, 2022	Aug. 03, 2024	
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	Apr. 23, 2021	Apr. 22, 2023	
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 02, 2022	Sep. 01, 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	



Page 11 of 56

7. PEAK OUTPUT POWER

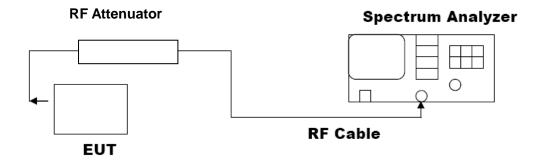
7.1. MEASUREMENT PROCEDURE

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





Page 12 of 56

7.3. LIMITS AND MEASUREMENT RESULT

7.01					
Test Data of Conducted Output Power					
Test Mode	Test Channel (MHz)	Pass or Fail			
	2402	1.851	≤30	Pass	
GFSK 1M	2440	2.841	≤30	Pass	
	2480	2.997	≤30	Pass	

Test Graphs of Conducted Output Power

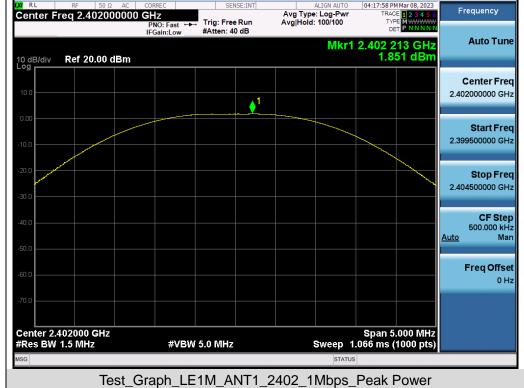
SA
AC | CORREC | SENSE:INT | ALIGN AUTO | 04:17:58 PMM

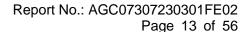
DOD GHZ

DRIVE SERVE SERVER | Avg Type: Log-Pwr TRACE

RVg Type: Log-Pwr TRACE

Avg Hold: 100/100











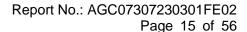


Page 14 of 56

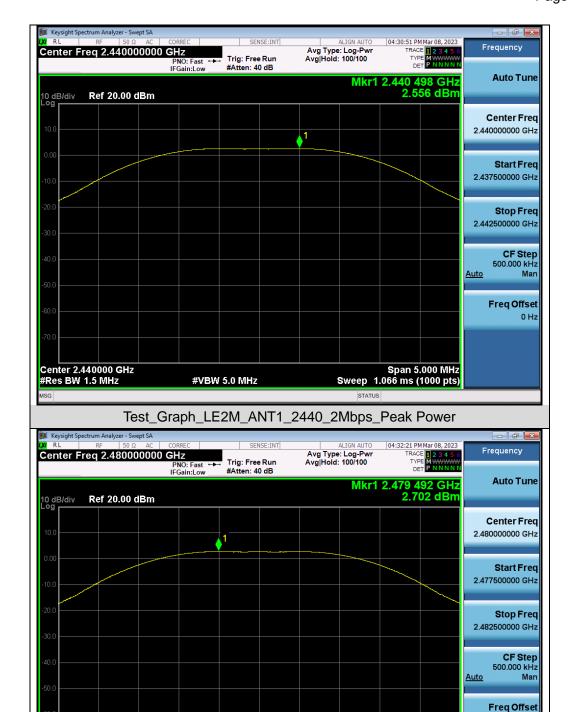
Test Data of Conducted Output Power					
Test Mode	Test Channel (MHz)	Peak Power (dBm)	Limits (dBm)	Pass or Fail	
	2402	1.587	≤30	Pass	
GFSK 2M	2440	2.556	≤30	Pass	
	2480	2.702	≤30	Pass	

Test Graphs of Conducted Output Power









Test_Graph_LE2M_ANT1_2480_2Mbps_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



Page 16 of 56

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.

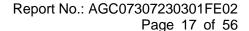
Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

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)	99% Occupied Bandwidth (MHz)	-6dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
	2402	1.044	0.708	≥0.5	Pass
GFSK 1M	2440	1.043	0.707	≥0.5	Pass
	2480	1.041	0.700	≥0.5	Pass

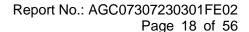




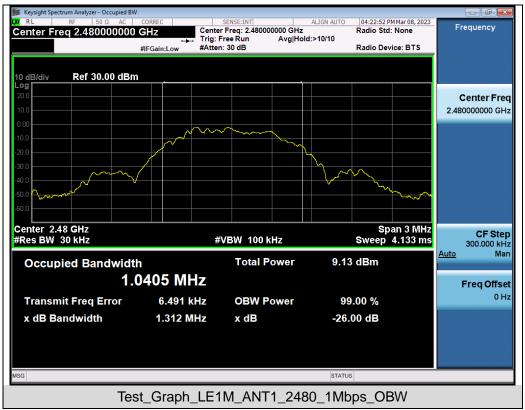
Test Graphs of Occupied Bandwidth 04:17:45 PM Mar 08, 2023 Radio Std: None SENSE:INT Center Freq: 2.402000000 GHz
Trig: Free Run Avg|Hol
#Atten: 30 dB Frequency Avg|Hold: 10/10 Ref 30.00 dBm Center Freq 2.402000000 GHz Span 3 MHz Sweep 4.133 ms Center 2.402 GHz #Res BW 30 kHz **CF Step** #VBW 100 kHz 300,000 kHz Man Auto **Total Power** 7.91 dBm **Occupied Bandwidth** 1.0440 MHz Frea Offset 0 Hz **Transmit Freq Error** 2.433 kHz **OBW Power** 99.00 % x dB Bandwidth 1.314 MHz x dB -26.00 dB Test_Graph_LE1M_ANT1_2402_1Mbps_OBW 04:21:28 PM Mar 08, 2023 Radio Std: None Center Freq: 2.440000000 GHz
Trig: Free Run Avg|Hol Frequency Center Freq 2.440000000 GHz Avg|Hold: 10/10 Radio Device: BTS Ref 30.00 dBm Center Freq 2.440000000 GHz Span 3 MHz Sweep 4.133 ms Center 2.44 GHz #Res BW 30 kHz CF Step 300.000 kHz **#VBW 100 kHz** <u>Auto</u> **Total Power** 8.90 dBm **Occupied Bandwidth** 1.0428 MHz Freq Offset 0 Hz **Transmit Freq Error** 5.391 kHz **OBW Power** 99.00 % x dB Bandwidth 1.313 MHz -26.00 dB x dB

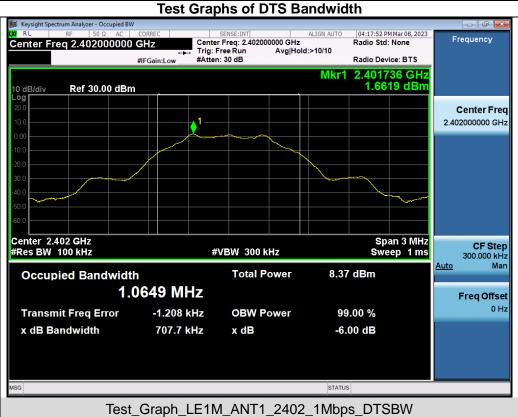
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the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

Test_Graph_LE1M_ANT1_2440_1Mbps_OBW

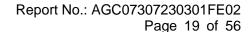






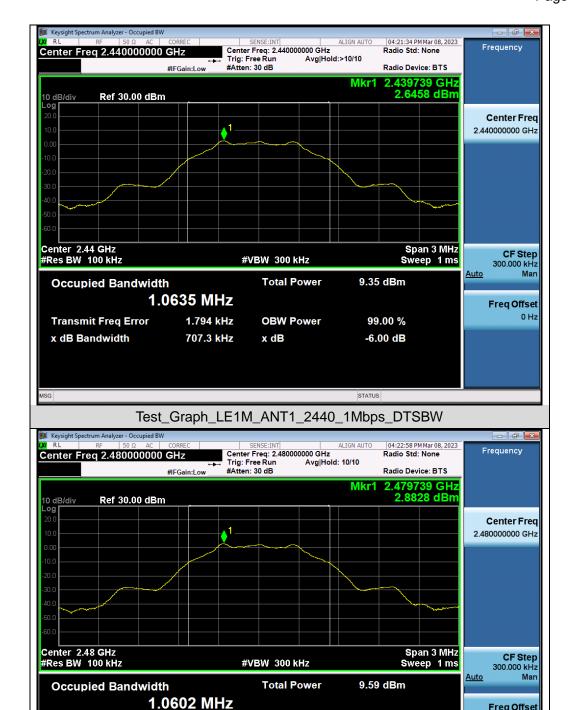


Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/



Freq Offset





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

Test_Graph_LE1M_ANT1_2480_1Mbps_DTSBW

OBW Power

x dB

99.00 %

-6.00 dB

Transmit Freg Error

x dB Bandwidth

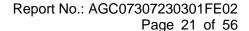
3.068 kHz

699.8 kHz



Page 20 of 56

Test Data of Occupied Bandwidth and DTS Bandwidth					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-6dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
	2402	2.054	1.208	≥0.5	Pass
GFSK 2M	2440	2.054	1.259	≥0.5	Pass
	2480	2.051	1.208	≥0.5	Pass

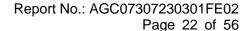




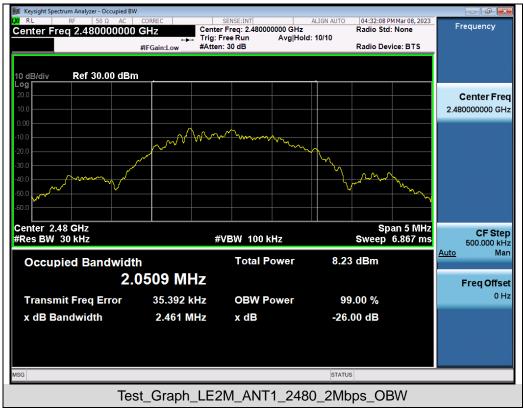
Test Graphs of Occupied Bandwidth 04:26:35 PM Mar 08, 2023 Radio Std: None SENSE:INT Center Freq: 2.402000000 GHz
Trig: Free Run Avg|Hol
#Atten: 30 dB Frequency Avg|Hold: 10/10 Ref 30.00 dBm Center Freq 2.402000000 GHz Center 2.402 GHz #Res BW 30 kHz Span 5 MHz Sweep 6.867 ms **CF Step** #VBW 100 kHz 500,000 kHz Man Auto **Total Power** 7.03 dBm **Occupied Bandwidth** 2.0541 MHz Freq Offset 0 Hz 28.942 kHz **OBW Power** 99.00 % **Transmit Freq Error** x dB Bandwidth 2.471 MHz x dB -26.00 dB Test_Graph_LE2M_ANT1_2402_2Mbps_OBW 04:30:39 PM Mar 08, 2023 Radio Std: None Center Freq: 2.440000000 GHz
Trig: Free Run Avg|Hol Frequency Center Freq 2.440000000 GHz Avg|Hold: 10/10 Radio Device: BTS Ref 30.00 dBm Center Freq 2.440000000 GHz Span 5 MHz Sweep 6.867 ms Center 2.44 GHz #Res BW 30 kHz CF Step 500.000 kHz **#VBW 100 kHz** <u>Auto</u> **Total Power** 8.01 dBm **Occupied Bandwidth** 2.0538 MHz Freq Offset 0 Hz **Transmit Freq Error** 34.924 kHz **OBW Power** 99.00 % x dB Bandwidth 2.463 MHz -26.00 dB x dB

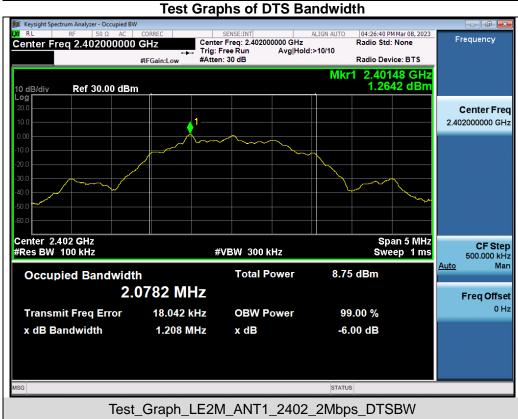
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the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

Test_Graph_LE2M_ANT1_2440_2Mbps_OBW

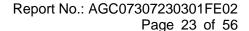








Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/







Test_Graph_LE2M_ANT1_2480_2Mbps_DTSBW

Total Power

OBW Power

x dB

9.92 dBm

99.00 %

-6.00 dB

Freq Offset

Occupied Bandwidth

Transmit Freq Error x dB Bandwidth

2.0777 MHz

23.756 kHz

1.208 MHz



Page 24 of 56

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)

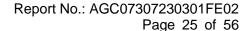
The same as described in section 7.2.

9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

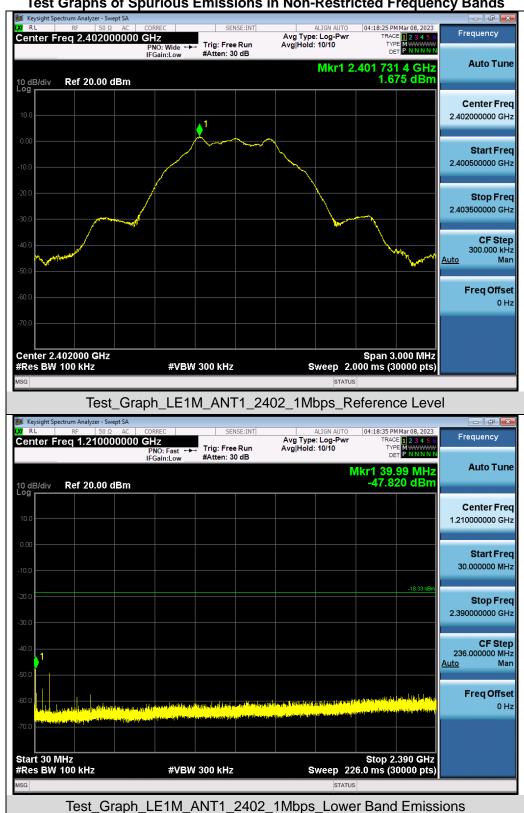
9.4. LIMITS AND MEASUREMENT RESULT

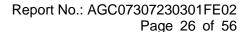
LIMITS AND MEASUREMENT RESULT					
Applicable Limite	Measurement Result				
Applicable Limits	Test Data	Criteria			
In any 100 kHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator 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

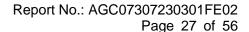




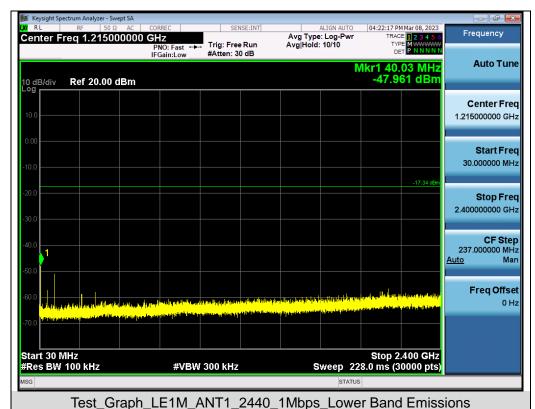




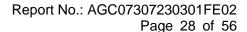




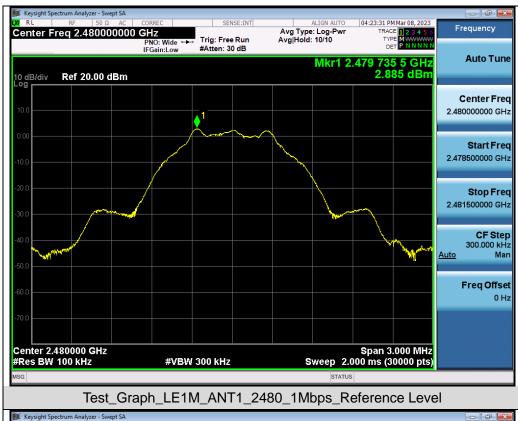


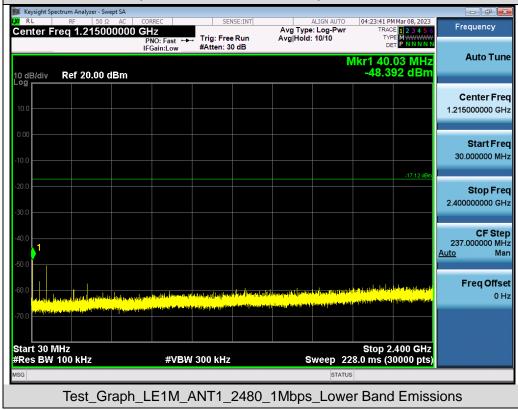


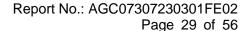










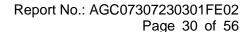




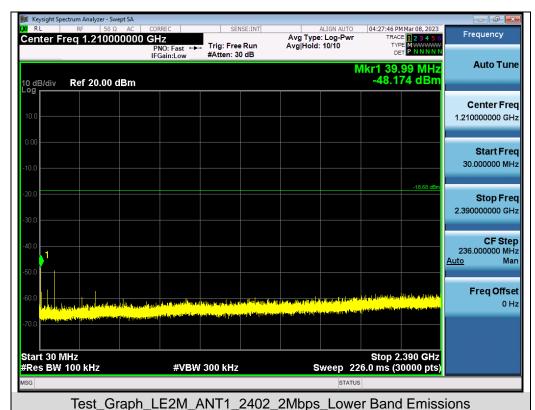


Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands

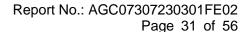












2.400000000 GHz

CF Step 237.000000 MHz to Man

Freq Offset





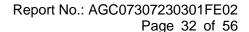
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the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

Test_Graph_LE2M_ANT1_2440_2Mbps_Lower Band Emissions

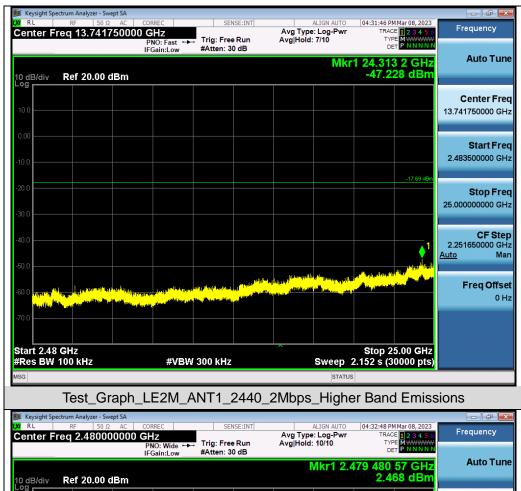
#VBW 300 kHz

Stop 2.400 GHz Sweep 228.0 ms (30000 pts)

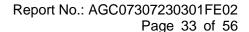
Start 30 MHz #Res BW 100 kHz



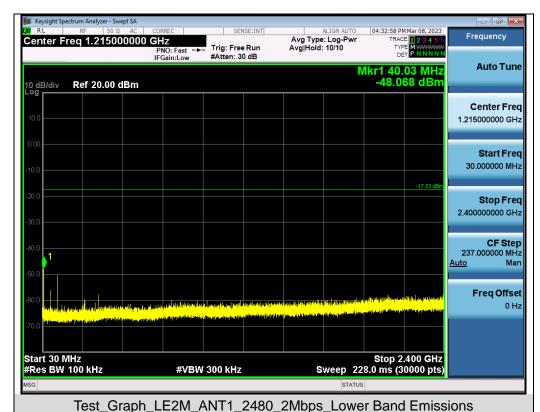




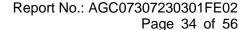








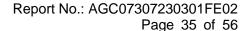






Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands Avg Type: Log-Pwr Avg|Hold: 100/100 Frequency Center Freq 2.398500000 GHz Trig: Free Run #Atten: 30 dB TYPE **Auto Tune** Mkr2 2.400 000 0 GHz -51.010 dBm Ref 20.00 dBm Center Freq 2.398500000 GHz Start Freq 2.390000000 GHz Stop Freq 2.407000000 GHz Start 2.390000 GHz #Res BW 100 kHz Stop 2.407000 GHz 2.000 ms (30000 pts) CF Step 1.700000 MHz **#VBW** 300 kHz Auto Man 1.701 dBm -51.010 dBm Freq Offset 0 Hz

Test_Graph_LE1M_ANT1_2402_1Mbps_Lower Band Edge Emissions Avg Type: Log-Pwr Avg|Hold: 100/100 Frequency Center Freq 2.487500000 GHz Trig: Free Run #Atten: 30 dB PNO: Fast ↔ IFGain:Low Mkr2 2.483 500 0 GHz -54.948 dBm **Auto Tune** Ref 20.00 dBm Center Frea 2.487500000 GHz Start Freq 2.475000000 GHz Stop Freq 2 500000000 GHz Stop 2.50000 GHz Sweep 4.000 ms (30000 pts) Start 2.47500 GHz #Res BW 100 kHz **CF Step #VBW** 300 kHz 2.500000 MHz <u>Auto</u> 2.873 dBm -54.948 dBm Freq Offset 0 Hz Test_Graph_LE1M_ANT1_2480_1Mbps_Higher Band Edge Emissions





Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands Avg Type: Log-Pwr Avg|Hold: 100/100 Frequency Center Freq 2.398500000 GHz Trig: Free Run #Atten: 30 dB TYPE **Auto Tune** Mkr2 2.400 000 0 GHz -30.172 dBm Ref 20.00 dBm Center Freq 2.398500000 GHz Start Freq 2.390000000 GHz Stop Freq 2.407000000 GHz Start 2.390000 GHz #Res BW 100 kHz Stop 2.407000 GHz 2.000 ms (30000 pts) CF Step 1.700000 MHz #VBW 300 kHz Auto Man Freq Offset 0 Hz Test_Graph_LE2M_ANT1_2402_2Mbps_Lower Band Edge Emissions Avg Type: Log-Pwr Avg|Hold: 100/100 Frequency Center Freq 2.487500000 GHz Trig: Free Run #Atten: 30 dB PNO: Fast ↔ IFGain:Low Mkr2 2.483 500 0 GHz -54.245 dBm **Auto Tune** Ref 20.00 dBm Center Frea 2.487500000 GHz Start Freq 2.475000000 GHz Stop Freq 2 500000000 GHz Stop 2.50000 GHz Sweep 4.000 ms (30000 pts) Start 2.47500 GHz #Res BW 100 kHz **CF Step #VBW** 300 kHz 2.500000 MHz <u>Auto</u> 2.568 dBm -54.245 dBm Freq Offset 0 Hz

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

Test_Graph_LE2M_ANT1_2480_2Mbps_Higher Band Edge Emissions



Page 36 of 56

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.

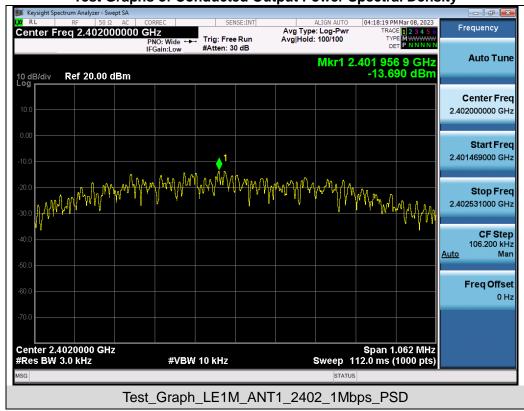
10.3. MEASUREMENT EQUIPMENT USED

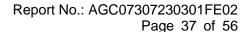
Refer to Section 6.

10.4. LIMITS AND MEASUREMENT RESULT

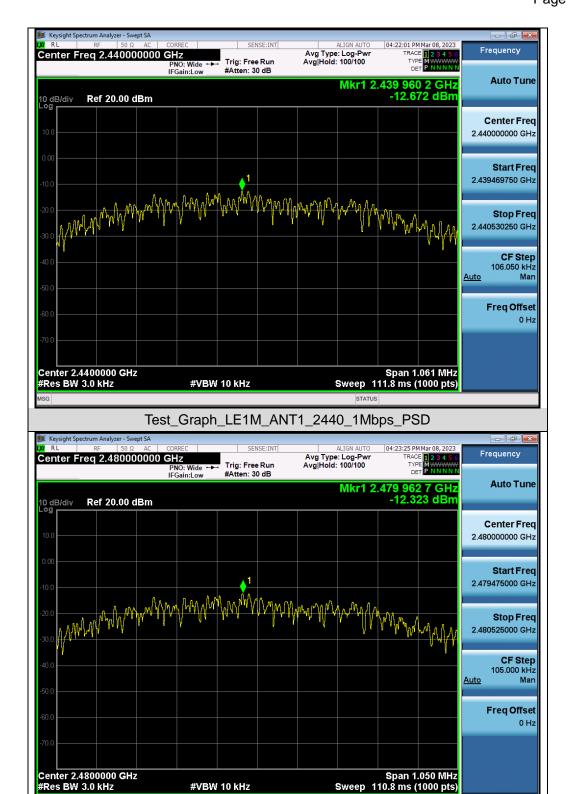
Test Data of Conducted Output Power Spectral Density					
Test Mode	Test Channel (MHz)	Power density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail	
	2402	-13.690	≤8	Pass	
GFSK 1M	2440	-12.672	≤8	Pass	
	2480	-12.323	≤8	Pass	

Test Graphs of Conducted Output Power Spectral Density









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

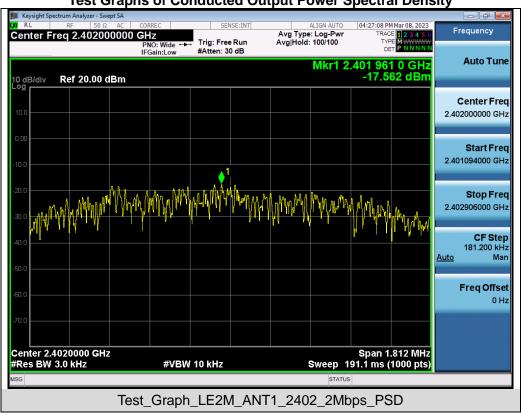
Test_Graph_LE1M_ANT1_2480_1Mbps_PSD

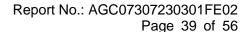


Page 38 of 56

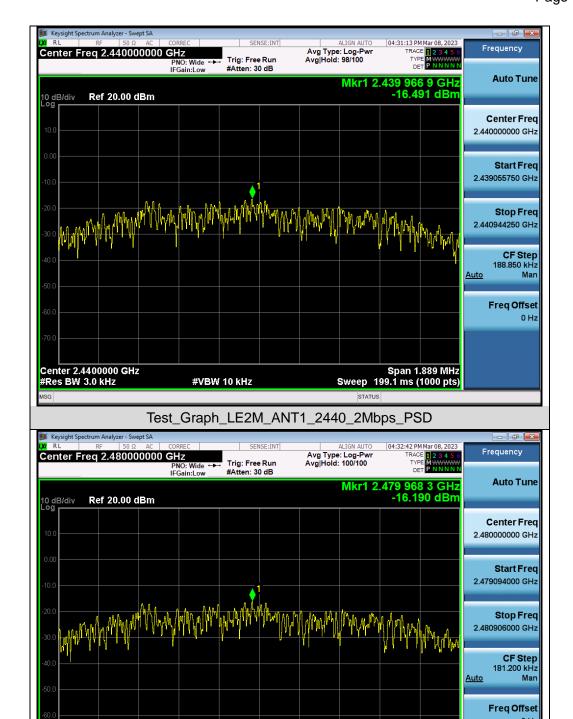
Test Data of Conducted Output Power Spectral Density							
Test Mode Test Channel Power density Limit (dBm/3kHz) Pass or							
	2402	-17.562	≤ 8	Pass			
GFSK 2M	2440	-16.491	≤8	Pass			
	2480	-16.190	≤8	Pass			

Test Graphs of Conducted Output Power Spectral Density









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

Test_Graph_LE2M_ANT1_2480_2Mbps_PSD

#VBW 10 kHz

Span 1.812 MHz Sweep 191.1 ms (1000 pts)

Center 2.4800000 GHz #Res BW 3.0 kHz

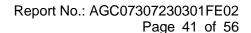


Page 40 of 56

11. RADIATED EMISSION

11.1. MEASUREMENT PROCEDURE

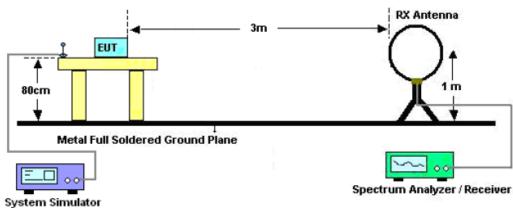
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated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



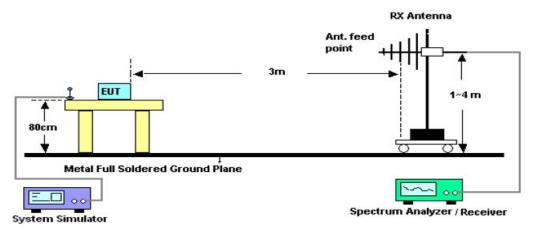


11.2. TEST SETUP

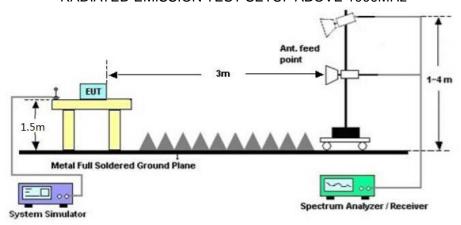
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz





Page 42 of 56

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

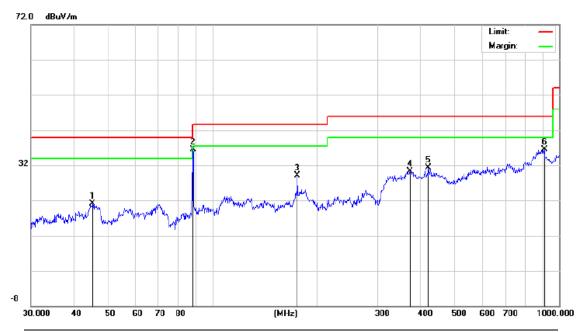
The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.



Page 43 of 56

Radiated emission from 30MHz to 1000MHz

EUT	Bluetooth FM Transmitter Voice Assistant	Model Name	100130570
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal



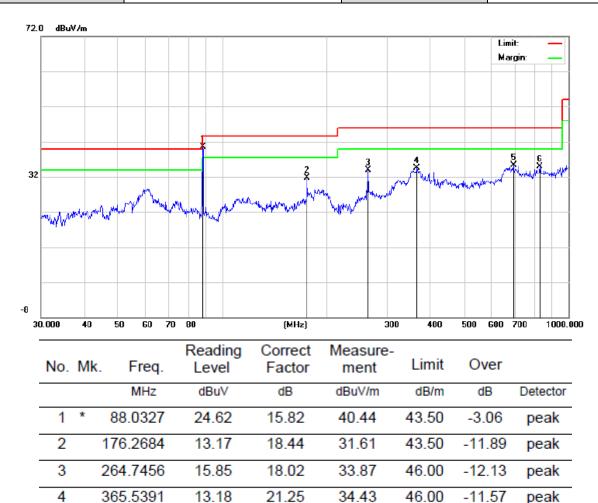
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		45.2165	9.69	11.50	21.19	40.00	-18.81	peak
2	*	88.0327	23.23	13.34	36.57	43.50	-6.93	peak
3		176.2684	13.72	15.44	29.16	43.50	-14.34	peak
4		372.0045	9.99	20.36	30.35	46.00	-15.65	peak
5		420.5803	7.45	23.81	31.26	46.00	-14.74	peak
6		906.4823	6.95	29.54	36.49	46.00	-9.51	peak

RESULT: PASS



Page 44 of 56

EUT	Bluetooth FM Transmitter Voice Assistant	Model Name	100130570
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical



RESULT: PASS Note:

5

6

1. Factor=Antenna Factor + Cable loss, Over=Measurement-Limit.

7.28

7.38

694.4174

827.4932

2. All test modes had been tested. The BLE GFSK 1Mbps mode 3 is the worst case and recorded in the report.

27.99

27.62

35.27

35.00

46.00

46.00

-10.73

-11.00

peak

peak



Page 45 of 56

Radiated emission above 1GHz

EUT	Bluetooth FM Transmitter Voice Assistant	Model Name	100130570
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	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4804.000	43.89	0.08	43.97	74	-30.03	peak
4804.000	35.74	0.08	35.82	54	-18.18	AVG
7206.000	38.51	2.21	40.72	74	-33.28	peak
7206.000	31.42	2.21	33.63	54	-20.37	AVG
Domorki						

Remark

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

EUT	Bluetooth FM Transmitter Voice Assistant	Model Name	100130570
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4804.000	44.96	0.08	45.04	74	-28.96	peak
4804.000	34.65	0.08	34.73	54	-19.27	AVG
7206.000	38.54	2.21	40.75	74	-33.25	peak
7206.000	30.78	2.21	32.99	54	-21.01	AVG
		_				

Remark:

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



Page 46 of 56

EUT	Bluetooth FM Transmitter Voice Assistant	Model Name	100130570
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	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
4880.000	44.51	0.14	44.65	74	-29.35	peak	
4880.000	35.42	0.14	35.56	54	-18.44	AVG	
7320.000	39.68	2.36	42.04	74	-31.96	peak	
7320.000	31.49	2.36	33.85	54	-20.15	AVG	
temark:							

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

EUT	Bluetooth FM Transmitter Voice Assistant	Model Name	100130570
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 Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4880.000	45.57	0.14	45.71	74	-28.29	peak
4880.000	38.33	0.14	38.47	54	-15.53	AVG
7320.000	40.62	2.36	42.98	74	-31.02	peak
7320.000	32.59	2.36	34.95	54	-19.05	AVG
Remark:						

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



Page 47 of 56

EUT	Bluetooth FM Transmitter Voice Assistant	Model Name	100130570
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	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4960.000	44.87	0.22	45.09	74	-28.91	peak
4960.000	35.49	0.22	35.71	54	-18.29	AVG
7440.000	38.51	2.64	41.15	74	-32.85	peak
7440.000	29.66	2.64	32.3	54	-21.7	AVG

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

EUT	Bluetooth FM Transmitter Voice Assistant	Model Name	100130570
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 Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4960.000	42.71	0.22	42.93	74	-31.07	peak
4960.000	34.59	0.22	34.81	54	-19.19	AVG
7440.000	38.63	2.64	41.27	74	-32.73	peak
7440.000	29.42	2.64	32.06	54	-21.94	AVG
Remark:						
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.

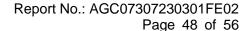
Factor = Antenna Factor + Cable loss - Amplifier gain, Margin=Level-Limit.

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

All test modes had been tested. The BLE GFSK 1Mbps is the worst case and recorded in the report.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. $Further\ enquiry\ of\ validity\ or\ verification\ of\ the\ test\ report\ should\ be\ addressed\ to\ AGC\ by\ agc 01@agccert.com.$

Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/



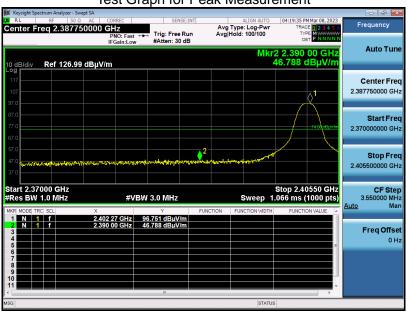


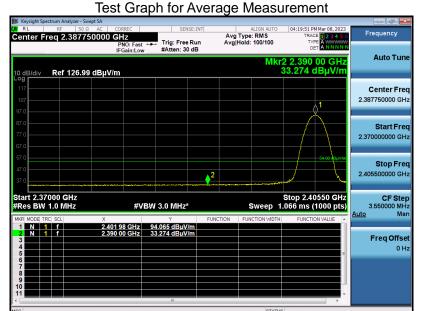
BLE GFSK 1Mbps:

Test result for band edge emission at restricted bands

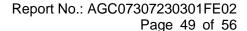
rect rectit to: band dage contested at rectited bands					
EUT	Bluetooth FM Transmitter Voice Assistant	Model Name	100130570		
Temperature	25° C	Relative Humidity	55.4%		
Pressure	960hPa	Test Voltage	Normal Voltage		
Test Mode	Mode 1	Antenna	Horizontal		

Test Graph for Peak Measurement





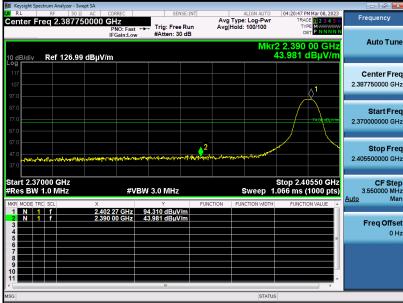
RESULT: PASS



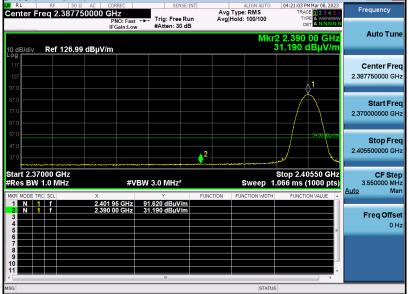


Bluetooth FM Transmitter Voice 100130570 **EUT Model Name** Assistant 25° C **Temperature Relative Humidity** 55.4% **Pressure** 960hPa **Test Voltage** Normal Voltage **Test Mode** Mode 1 **Antenna** Vertical

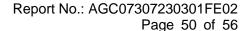
Test Graph for Peak Measurement





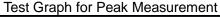


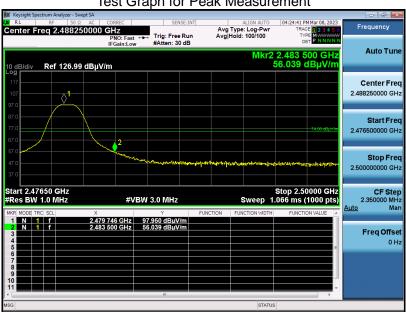
RESULT: PASS

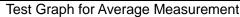


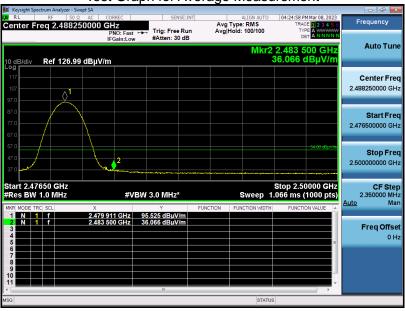


Bluetooth FM Transmitter Voice **EUT Model Name** 100130570 Assistant 25° C **Temperature Relative Humidity** 55.4% **Pressure** 960hPa **Test Voltage** Normal Voltage **Test Mode** Horizontal Mode 3 **Antenna**

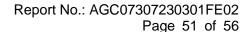








RESULT: PASS





Bluetooth FM Transmitter Voice **EUT Model Name** 100130570 Assistant 25° C **Temperature Relative Humidity** 55.4% **Pressure** 960hPa **Test Voltage** Normal Voltage **Test Mode** Mode 3 **Antenna** Vertical

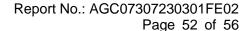


Test Graph for Average Measurement



RESULT: PASS

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



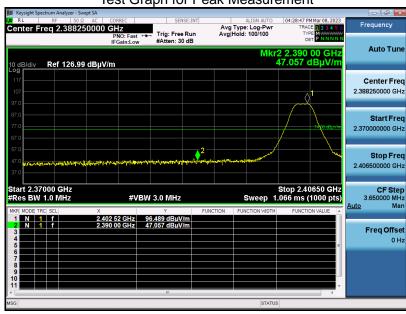


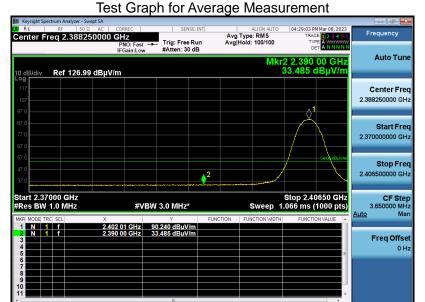
BLE GFSK 2Mbps:

Test result for band edge emission at restricted bands

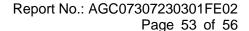
rest result for build eage clinesion at restricted builds					
EUT	Bluetooth FM Transmitter Voice Assistant	Model Name	100130570		
Temperature	25° C	Relative Humidity	55.4%		
Pressure	960hPa	Test Voltage	Normal Voltage		
Test Mode	Mode 1	Antenna	Horizontal		

Test Graph for Peak Measurement



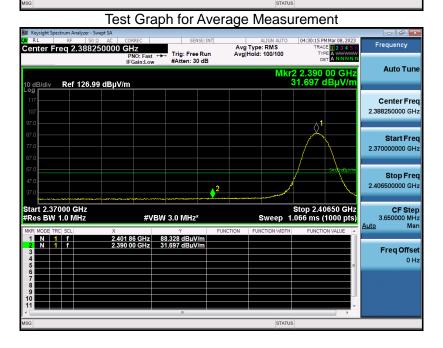


RESULT: PASS

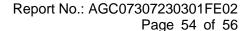




Bluetooth FM Transmitter Voice **EUT Model Name** 100130570 Assistant 25° C **Temperature Relative Humidity** 55.4% **Pressure** 960hPa **Test Voltage** Normal Voltage **Test Mode** Vertical Mode 1 **Antenna**



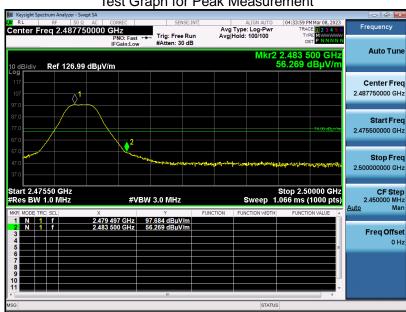
RESULT: PASS



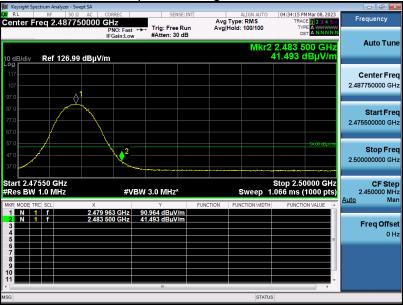


Bluetooth FM Transmitter Voice **EUT Model Name** 100130570 Assistant 25° C **Temperature Relative Humidity** 55.4% **Pressure** 960hPa **Test Voltage** Normal Voltage **Test Mode** Horizontal Mode 3 **Antenna**

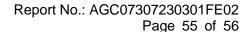
Test Graph for Peak Measurement







RESULT: PASS



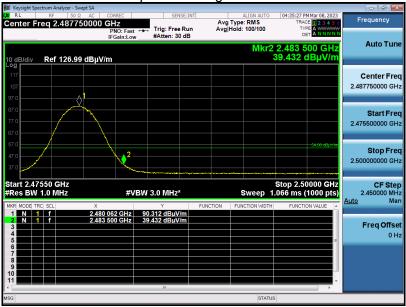


Bluetooth FM Transmitter Voice **EUT Model Name** 100130570 Assistant 25° C **Temperature Relative Humidity** 55.4% **Pressure** 960hPa **Test Voltage** Normal Voltage **Test Mode** Mode 3 **Antenna** Vertical

Test Graph for Peak Measurement

| No. | Section | Program | Program





RESULT: PASS

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



Page 56 of 56

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC07307230301AP01

APPENDIX B: PHOTOGRAPHS OF EUT Refer to the Report No.: AGC07307230301AP02

----END OF REPORT----



Conditions of Issuance of Test Reports

- 1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").
- 2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
- 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.