

# **EMC Test Report**

Report No.: AGC02457180803EE01

PRODUCT DESIGNATION : VOICE-ASSISTANT WIRELESS STEREO HEADPHONE

**BRAND NAME** : N/A

MODEL NAME

MANUFACTURER :

DATE OF ISSUE : Aug. 10, 2018

STANDARD(S) EN 301489-1 V2.2 .0: 2017-03 (draft)

EN 301489-17 V3.2.0: 2017-03 (draft)

REPORT VERSION : V1.0

Attestation of Globa

oplia

Shenzhen) Co., Ltd

#### **CAUTION:**

This report shall not be reproduce to full the test laboratory and shall not be quot to coard.

t the written permission of the



The results showed this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by 40°C, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gatt.com.

Attestation of Global Compliance

Tel: +86-755 2908 1955 Fax: +86-755 2600 8484 E-mail: agc@agc-cert.com **6** 400 089 2118 Add: 2/F., Bullding 2, No.1-4,Chaxi Sanwei Technical Industrial Park,Gushu, Xixiang, Baoan District, Shenzhen, Guangdong China



Report No.: AGC02457180803EE01

Page 2 of 25

#### Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	, YC.	Aug. 10, 2018	Valid	Extension report

Note: This report is all the same to the original report of No. AGC02457180405 except that add a series model. The test data refer to the original project.

The results shown this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by 40°C, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc-cett.com.

Attestation of Global Compliance

Tel: +86-755 2908 1955

Fax: +86-755 2600 8484

E-mail: agc@agc-cert.com

@ 400 089 2118

Report No.: AGC02457180803EE01 Page 3 of 25

#### TABLE OF CONTENTS

1. TEST REPORT CERTIFICATION	
2. GENERAL INFORMATION	
2.1. DESCRIPTION OF EUT	5
2.2. OBJECTIVE	
2.3. TEST STANDARDS AND RESULTS	5
2.4. TEST ITEMS AND THE RESULTS	
2.5. ENVIRONMENTAL CONDITIONS	6
3. TEST MODE DESCRIPTION	7
4. MEASUREMENT UNCERTAINTY	7
5. SUPPORT EQUIPMENT	7
6. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION	8
7. TEST EQUIPMENT LIST	8
8. EMISSION TEST	10
8.1. RADIATED DISTURBANCE MEASUREMENT	10
9. IMMUNITY TEST	16
9.1. GENERAL PERFORMANCE CRITERIA	16
9.2. ELECTROSTATIC DISCHARGE IMMUNITY TEST	17
9.3. RADIATED, RADIO FREQUENCY ELECTROMAGNETIC FIELD IMMUNITY TEST	21
APPENDIX A: PHOTOGRAPHS OF TEST SETUP	
APPENDIX B: PHOTOGRAPHS OF EUT	25

The results shown this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gett.com.

Report No.: AGC02457180803EE01 Page 4 of 25

#### 1. TEST REPORT CERTIFICATION

Manufacturer	
Address	
Factory	
Address	-60
Product Designation	VOICE-ASSISTANT WIRELESS ST EREO HEADPHONE
Brand Name	N/A
Test Model	DHBT033
Series Model	DHBT033
Difference description	All the same except for the appearance color
Date of test	Apr. 17, 2018 to Apr. 25, 2018
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-EC-BLE/EMC (2013-03-01)

We, Attestation of Global Compliance (Shenzhen) Co., Ltd., hereby certify that the submitted samples of the above item, as detailed in chapter 2.1 of this report, has been tested in our facility. The test record, data evaluation and test configuration represented herein are true and accurate accounts of measurements of the sample's EMC characteristics under the conditions herein specified. The test results of this report relate only to the tested sample identified in this report.

Tested By	Tum Tuo			
0.75	Tom Tuo (Tuo Dewei)	Apr. 25, 2018		
Reviewed By	and change			
	Cool Cheng(Cheng Mengguo)	Aug. 10, 2018		
	Foreth ei			
Approved By				
	Forrest Lei(Lei Yonggang)  Authorized Officer	Aug. 10, 2018		

The results shown this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gett.com.

Attestation of Global Compliance

Tel: +86-755 2908 1955

Fax: +86-755 2600 8484

E-mail: agc@agc-cert.com

@ 400 089 2118

Add: 2/F., Building 2, No.1-4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Baoan District, Shenzhen, Guangdong China

Report No.: AGC02457180803EE01 Page 5 of 25

#### 2. GENERAL INFORMATION

#### 2.1. DESCRIPTION OF EUT

The EUT is a short range, lower power, Bluetooth device.

It is designed by way of FHSS modulation achieves the system operating.

Details of technical specification refer to the description in follows:

Transmitter/Receiver (TX/RX)

Operating Frequency	2.402 GHz to 2.480GHz
Bluetooth Version	V4.2
Modulation	GFSK ,π /4-DQPSK, 8DPSK
Hardware Version	VER1.2
Software Version	VER1.3
Antenna Type	PCB Antenna
Number of channels	79
Antenna Gain	-0.5dBi
Power Supply	DC 3.7V by battery

Note: The EUT didn't support BLE.

#### 2.2. OBJECTIVE

Perform Electro Magnetic Interference (EMI) and Electro Magnetic Susceptibility (EMS) tests for CE Marking.

#### 2.3. TEST STANDARDS AND RESULTS

The EUT has been tested according to ETSI EN 301 489-1 V2.2.0 (2017-03) and ETSI EN 301 489-17 V3.2.0 (2017-03).

	ElectroMagnetic Compatibility (EMC)
FTCI FN 204 490 4	standard for radio equipment and services;
ETSI EN 301 489-1	Part 1: Common technical requirements;
	Harmonised Standard covering the essential requirements
	ElectroMagnetic Compatibility (EMC)
ETOLEN 204 400 47	standard for radio equipment and services;
ETSI EN 301 489-17	Part 17: Specific conditions for
100	Broadband Data Transmission Systems;

Note: The standards applied in test are draft.

The results showning this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by 40°C, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gent.com.

Report No.: AGC02457180803EE01 Page 6 of 25

2.4. TEST ITEMS AND THE RESULTS

No.	Basic Standard	Test Type			
EMIS	SSION (EN 301 489-1	§7.1)			
1	EN 55032	Radiated emission	PASS		
2	EN 55032	Conducted emission, AC ports	N/A		
3	EN 55032	Conducted emission, Telecom ports	N/A		
4	EN 61000-3-2	Harmonic current emissions	N/A		
5	EN 61000-3-3	Voltage fluctuations & flicker	N/A		
IMM	UNITY (EN 301 489-1	§7.2)			
6	EN 61000-4-2	Electrostatic discharge immunity	PASS		
7	EN 61000-4-3	Radiated RF electromagnetic field immunity	PASS		
8	EN 61000-4-4	Electrical fast transient/burst immunity	N/A		
9	ISO 7637-1, -2	Transients and surges, DC ports	N/A		
10	EN 6 1000-4-5	Surge immunity, AC ports, Telecom ports	N/A		
11	EN 61000-4-6	Immunity to conducted disturbances induced by RF fields	N/A		
12	EN 61000-4-11	Voltage dips and short interruptions immunity	N/A		

#### Note:

- 1. N/A- Not Applicable.
- 2. The latest versions of basic standards are applied.

#### 2.5. ENVIRONMENTAL CONDITIONS

During the measurement the environmental conditions were within the listed ranges

- Temperature: 15°C-35°C

- Humidity: 30-60 %

- Atmospheric pressure: 86-106 kPa

The results shown in this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at a title; // www.agc-gett.com.

Report No.: AGC02457180803EE01 Page 7 of 25

3. TEST MODE DESCRIPTION

	TEST MODE DESCRIPTION	
NO.	EMI TEST MODE DESCRIPTION	WORST
1	BT Link with charging	V
2	Standby with charging	
3	AUX IN with charging	207 36
NO.	EMS TEST MODE DESCRIPTION	
1	BT Link with charging	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
2	Standby with charging	×0 ×
3	AUX IN with charging	

#### Note:

- 1. V means EMI worst mode.
- 2. All modes have been tested and only the worst mode test data recorded in the test report.

I/O Port Information (⊠Applicable ☐Not Applicable)

I/O Port of EUT						
I/O Port Type Number Cable Description Tested \						
USB Port	1 - 1	0 85	1			
AUX IN Port	200	0	. 1			

#### 4. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

- Uncertainty of Radiated Emission, Uc = ±3.2dB

#### 5. SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	S/N	Data Cable
IPOD	APPLE	A1367	N/A	0 2
PC	APPLE	A1465	N/A	0
USB Cable	N/A	N/A	N/A	1.0m Unshielded
AUX IN Cable	N/A	N/A	N/A	1.0m Unshielded

Note: The PC was the charging device for EUT.

The results shown in this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by 4.5°C, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at a title;//www.agc-gett.com.

Report No.: AGC02457180803EE01 Page 8 of 25

#### 6. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION

Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location 1	2/F., Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China
Location 2	B112-B113, Building 12, Baoan Building Materials Center, No.1 of Xixiang Inner Ring Road, Baoan District, Shenzhen, Guangdong, P.R.China
Note: The test item ES	D was tested in the laboratory of the location 2, the others were tested in the

### 7. TEST EQUIPMENT LIST

#### TEST EQUIPMENT OF RADIATED EMISSION TEST

Description	Manufacturer	Model No.	S/N	Calibration Date	Calibration Due.
Spectrum Analyzer	AGILENT	E4440A	US41421290	July 13,2017	July 12,2018
EMI Test Receiver	R&S	ESCI	100694	July 02, 2017	July 01, 2018
Wideband Frequency Antenna	SCHWARZBECK	VULB9168	VULB9168-494	Mar.12, 2018	Mar.11, 2019
Hom Antenna	EM C	EM-AH-10180	67	Mar.01, 2018	Feb.28, 2019
Amplifier	EM	EM30180	060552	Mar.01, 2018	Feb.28, 2019

#### **TEST EQUIPMENT OF ESD TEST**

Description	Manufacturer	Model No.	S/N	Calibration Date	Calibration Due.
ESD Simulator	Schaffner	NSG 438	782	Sep.20, 2017	Sep.19, 2018

The results shown this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by 40°C, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gett.com.

Attestation of Global Compliance

Tel: +86-755 2908 1955 Fax: +86-755 2600 8484 E-mail: agc@agc-cert.com @ 400 089 2118 Add: 2/F., Bullding 2, No.1-4,Chaxi Sanwei Technical Industrial Park,Gushu, Xixiang, Baoan District, Shenzhen, Guangdong China



Power Probe

Power Meter

Power Amplifier

**RF** Amplifier

**RF** Amplifier

RF Amplifier

**Directional Couple** 

**Directional Couple** 

TEST EQUIPMENT OF RS IMMUNITY TEST

R&S

R&S

KALMUS

MILMEGA

**MILMEGA** 

**MILMEGA** 

WERLATONE

WERLATONE

Report No.: AGC02457180803EE01 Page 9 of 25

July 29,2017

July 29,2017

July 01,2017

July 01,2017

July 01,2017

July 01,2017

July 16,2017

July 16,2017

July 28,2018

July 28,2018

Jun.30,2018

Jun.30,2018

Jun.30,2018

Jun.30,2018

July 15,2018

July 15,2018

Description	Manufacturer	Model No.	S/N	Calibration Date	Calibration Due.
Signal Generator	R&S	SML03	102525	July 23,2017	July 22,2018
Wideband Frequency Antenna	SCHWARZBECK	VULB9168	VULB9168-494	Mar.12,2018	Mar.11, 2019
Hom Antenna	EM	EM-AH-10180	67	Mar.01,2018	Feb.28,2019

URV5-Z4

**NRVD** 

7100LC

AS0104-55 55

AS1860-50

AS0102-55

C5571-10

C6026-10

100124

8323781027

04-02/17-06-001

1004793

1465421

1531879

99463

99482

The results shown this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at a type www.agc-gent.com.

Report No.: AGC02457180803EE01 Page 10 of 25

#### 8. EMISSION TEST

#### 8.1. RADIATED DISTURBANCE MEASUREMENT

#### 8.1.1. LIMITS OF RADIATED DISTURBANCES

Limits for radiated disturbance 30M to1 GHz at a measurement distance of 3 m

Eroguanay rango (MHz)	Quasi peak limits(dBuV/m),
Frequency range (MHz)	for Class B ITE, at 3m measurement distance
30 - 230	40
230 - 1000	47

Limits for radiated disturbance above 1 GHz at a measurement distance of 3 m

Francisco (MIII)	Limits (dBuV/m), Class BITE					
Frequency range (MHz)	Peak	Average				
1000-3000MHz	70	50				
3000-6000MHz	74	54				

#### Notes:

- 1. The lower limit shall apply at the transition frequency.
- 2. Additional provisions may be required for cases where interference occurs.

#### 8.1.2. TEST PROCEDURE

- (1). The EUT was placed on the top of an insulating table 0.8 meters above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2). The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- (3). The antenna is a broadband antenna, and its height is varied from 1 to 4 meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- (4). For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to the heights from 1 to 4 meters and the ratable table was turned from 0 degrees to 360 degrees to find the maximum reading.

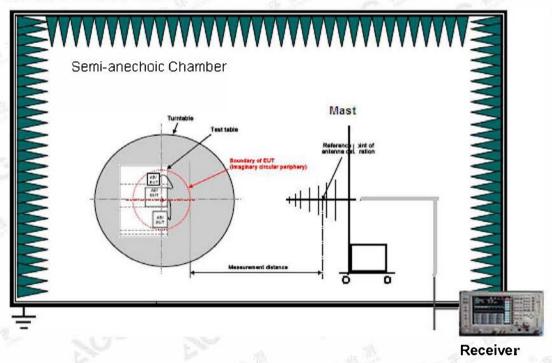
The results spowning this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by 40°C, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at attp://www.agc.gett.com.



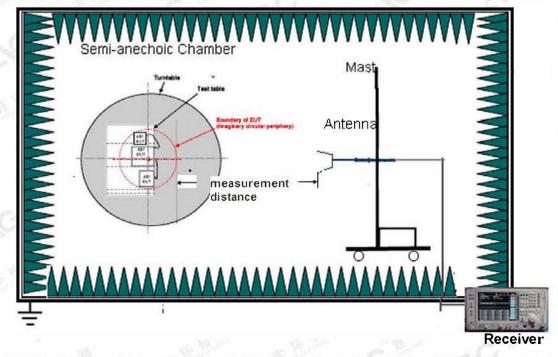
Report No.: AGC02457180803EE01 Page 11 of 25

#### 8.1.3. BLOCK DIAGRAM OF TEST SETUP

#### Radiated Disturbance below 1 GHz



#### Radiated Disturbance above 1 GHz



For the actual test configuration, please refer to the related item-Photographs of the Test Configuration.

The results showed this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by ACC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc-cert.com.

Attestation of Global Compliance

Tel: +86-755 2908 1955 Fax: +86-755 2600 8484 E-mail: agc@agc-cert.com Add: 2/F., Building 2, No.1-4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Baoan District, Shenzhen, Guangdong China

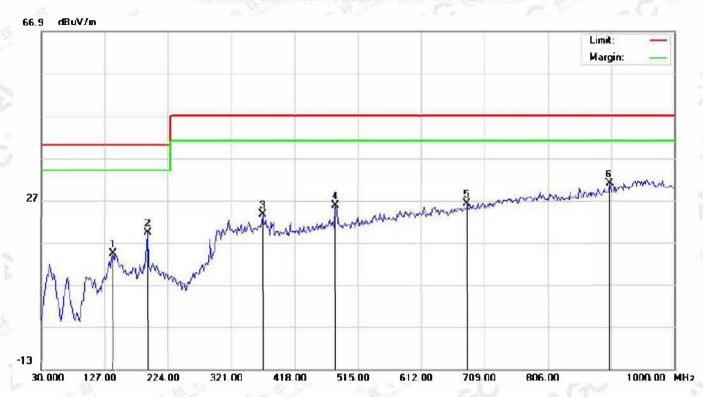
**@** 400 089 2118



Report No.: AGC02457180803EE01 Page 12 of 25

#### 8.1.4 TEST RESULT (mode 1)

#### RADIATED EMISSION BELOW 1GHz-HORIZONTAL



No	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		139.9333	-0.68	15.17	14.49	40.00	-25.51	peak			
2		193.2833	7.63	11.69	19.32	40.00	-20.68	peak			
3		369.5000	4.80	18.87	23.67	47.00	-23.33	peak			
4		481.0500	4.80	20.93	25.73	47.00	-21.27	peak			
5		683.1332	1.50	24.76	26.26	47.00	-20.74	peak			
6	ıt	901.3833	2.30	28.65	30.95	47.00	-16.05	peak			

RESULT: PASS

The results shown this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by 40°C, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gett.com.

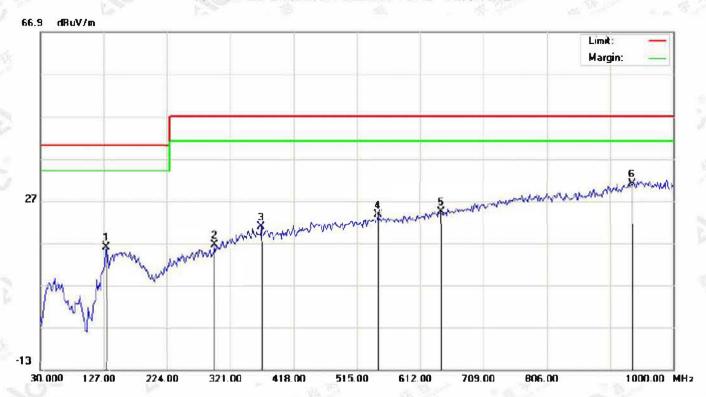
Attestation of Global Compliance

Tel: +86-755 2908 1955 Fax: +86-755 2600 8484 E-mail: agc@agc-cert.com @ 400 089 2118 Add: 2/F. , Bullding 2, No.1-4,Chaxi Sanwei Technical Industrial Park,Gushu, Xixiang, Baoan District, Shenzhen, Guangdong China



Report No.: AGC02457180803EE01 Page 13 of 25

#### RADIATED EMISSION BELOW 1GHz-VERTICAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
5	76	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		131.8500	4.23	11.80	16.03	40.00	-23.97	peak			
2		296.7500	1.27	15.31	16.58	47.00	-30.42	peak			
3		369.5000	1.98	18.8 <b>7</b>	20.85	47.00	-26.15	peak			
4		547.3333	1.13	22.41	23.54	47.00	-23.46	peak			
5		644.3333	0.71	23.72	24.43	47.00	-22.57	peak			
6	*	936.9500	1.27	29.64	30.91	47.00	-16.09	peak			

RESULT: PASS

The results showning this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gett.com.

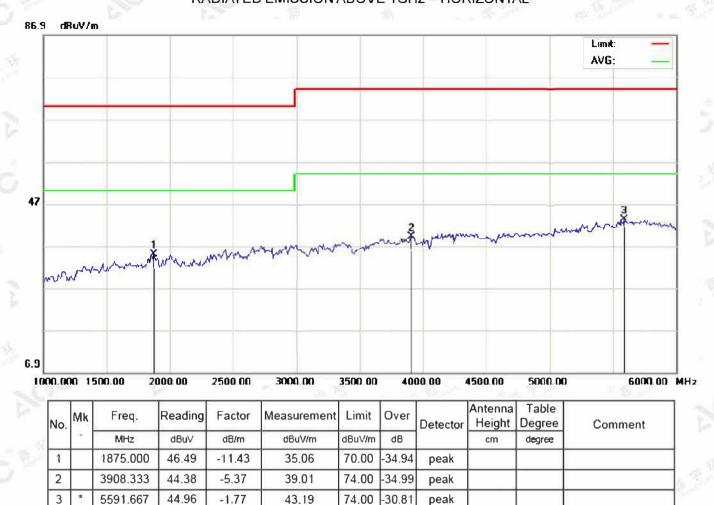
Attestation of Global Compliance

Tel: +86-755 2908 1955 Fax: +86-755 2600 8484 E-mail: agc@agc-cert.com @ 400 089 2118 Add: 2/F. , Bullding 2, No.1-4,Chaxi Sanwei Technical Industrial Park,Gushu, Xixiang, Baoan District, Shenzhen, Guangdong China



Report No.: AGC02457180803EE01 Page 14 of 25

#### RADIATED EMISSION ABOVE 1GHz - HORIZONTAL



**RESULT: PASS** 

The results shown in this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by 40°C, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gett.com.

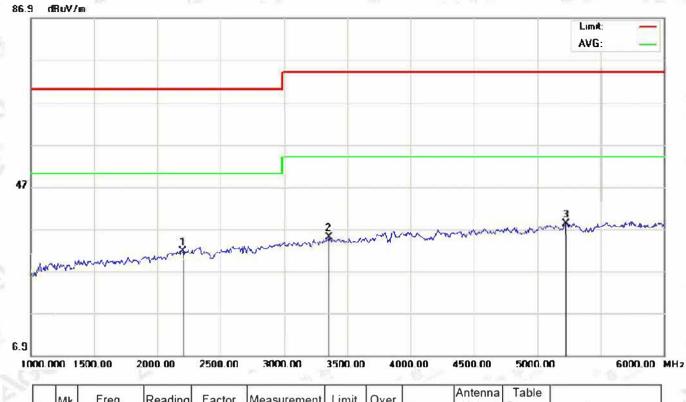
Attestation of Global Compliance

Tel: +86-755 2908 1955 Fax: +86-755 2600 8484 E-mail: agc@agc-cert.com @ 400 089 2118 Add: 2/F., Bullding 2, No.1-4,Chaxi Sanwei Technical Industrial Park,Gushu, Xixiang, Baoan District. Shenzhen, Guangdong China



Report No.: AGC02457180803EE01 Page 15 of 25

#### RADIATED EMISSION ABOVE 1GHz - VERTICAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	=	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		CIT	degree	
1		2200.000	41.48	-9.90	31.58	70.00	-38.42	peak			
2		3358.333	43.00	-8.02	34.98	74.00	-39.02	peak			
3	*	5233.333	40.06	-1.80	38.26	74.00	-35.74	peak			

**RESULT: PASS** 

The results shown this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by 40°C, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gett.com.

Attestation of Global Compliance

Tel: +86-755 2908 1955 Fax: +86-755 2600 8484 E-mail: agc@agc-cert.com @ 400 089 2118 Add: 2/F. , Building 2, No.1-4,Chaxi Sanwei Technical Industrial Park,Gushu, Xixiang, Baoan District, Shenzhen, Guangdong China



Report No.: AGC02457180803EE01 Page 16 of 25

#### 9. IMMUNITY TEST

#### 9.1. GENERAL PERFORMANCE CRITERIA

#### 1. Performance criteria for Continuous phenomena applied to Transmitter (CT)

The performance criteria A shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) or Not ACKnowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

#### 2. Performance criteria for Transient phenomena applied to Transmitter (TT)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

#### 3. Performance criteria for Continuous phenomena applied to Receiver (CR)

The performance criteria A shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

#### 4. Performance criteria for Transient phenomena applied to Receiver (TR)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration for which performance criteria C shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

The results shown if this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by 40°C, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at attp://www.agc.gett.com.



Report No.: AGC02457180803EE01

Page 17 of 25

#### 9.2. ELECTROSTATIC DISCHARGE IMMUNITY TEST

Basic Standard	EN 61000-4-2
Discharge Impedance	330Ω / 150 pF
Discharge Voltage	Air Discharge –8 kV , Contact Discharge – 4 kV
Polarity	Positive / Negative
Number of Discharge	Minimum 20 times at each test point
Discharge Mode	Single discharge
Discharge Period	1-second minimum

The test procedure was in accordance with EN 61000-4-2:

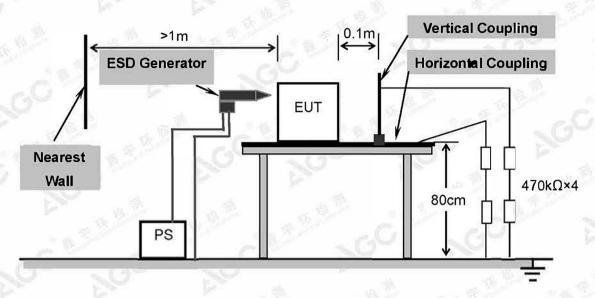
- Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during normal operation.
- b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive
- The time interval between two successive single discharges was at least 1 second.
- The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the EUT.
- Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
- Air discharges were applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were completed.
- At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the EUT. The ESD generator was positioned vertically at a distance of 0.1 meters from the EUT with the discharge electrode touching the HCP.
- At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the EUT were completely illuminated. The VCP (dimensions 0.5m×0.5m) was placed vertically to and 0.1 meters from

The results shown this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by XCC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc-cert.com.



Report No.: AGC02457180803EE01 Page 18 of 25

#### 9.2.3 TEST SETUP



For the actual test configuration, please refer to Appendix A: Photographs of the Test Configuration.

## 9.2.4 TEST RESULT TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.3.2 and EN 61000-4-2 for the measurement methods.

#### **TEST RESULTS**

Criteria	During Test	After Test
Α	Shall operate as intended.  May show degradation of performance (see note 1).  Shall be no loss of function.  Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance (see note 2). Shall be no loss of function. Shall be no loss of stored data or user programmable functions.
В	May show loss of function (one or more). May show degradation of performance (see note 1). No unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2). Shall be no loss of stored data or user programmable functions.

**NOTE 1:** Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

The results spowfil this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by XQC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at attp://www.agc.gett.com.

Report No.: AGC02457180803EE01 Page 19 of 25

DESCRIPTION OF THE ELECTROSTATIC DISCHARGES (ESD)

Amount of Discharges	Voltage	Coupling	Observation	performance	Result (Pass/Fail)	
Mini 20 / Point	±2KV, ±4kV	Contact Discharge	No Function Loss	А	Pass	
Mini 20 / Point ±2KV, ±4kV, ±8kV		Air Discharge	No Function Loss	А	Pass	
Mini 20 / Point ±2KV, ±4kV		Indirect Discharge HCP	No Function Loss	A	Pass	
Mini 20 / Point	±2KV, ±4kV	Indirect Discharge VCP	No Function Loss	A	Pass	

Note: operating mode include all modes of EMS in page 7



The results shown in this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at a title; // www.agc-gett.com.

Attestation of Global Compliance

Tel: +86-755 2908 1955 Fax: +86-755 2600 8484 E-mail: agc@agc-cert.com Add: 2/F., Bullding 2, No.1-4, Chaxl Sanwei Technical Industrial Park, Gushu, Xixiang, Baoan District, Shenzhen, Guangdong China

@ 400 089 2118

Report No.: AGC02457180803EE01 Page 20 of 25

⊠Criteria A:	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
□Criteria B:	The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
□Criteria C:	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

46. 11. 711.			519	
	<b>⊠</b> PASS	□FAIL		

The results shown this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gett.com.

Tel: +86-755 2908 1955

Report No.: AGC02457180803EE01 Page 21 of 25

#### 9.3. RADIATED, RADIO FREQUENCY ELECTROMAGNETIC FIELD IMMUNITY TEST

#### 9.3.1 TEST SPECIFICATION

Basic Standard	EN 61000-4-3
Frequency Range	80 MHz – 6000MHz
Field Strength	3V/m
Modulation	1 kHz sine wave, 80%, AM modulation
Frequency Step	1% of fundamental
Polarity of Antenna	Horizontal and Vertical
Test Distance	3m
Antenna Height	1.5m
Dwell Time	3 seconds

#### 9.3.2 TEST PROCEDURE

The test procedure was in accordance with EN 61000-4-3.

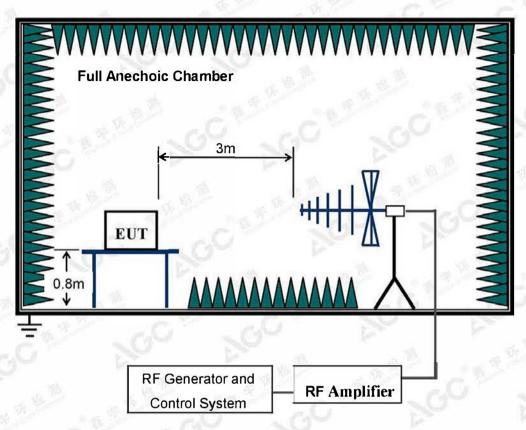
- a. The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- b. The test signal was 80% amplitude modulated with a 1 kHz sine wave.
- c. The frequency range was swept from 80 MHz to 6000MHz with the exception of the exclusion band for transmitters, receivers and duplex transceivers. The rate of sweep did not exceed 1.5×10<sup>-3</sup> decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- d. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- e. The field strength level was 3V/m.
- f. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

The results shown if this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by 40°C, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at attp://www.ago-gent.com.



Report No.: AGC02457180803EE01 Page 22 of 25

#### 9.3.3 TEST SETUP



For the actual test configuration, please refer to Appendix A: Photographs of the Test Configuration.

The results shown in this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by ACC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc-gett.com.

Attestation of Global Compliance

Tel: +86-755 2908 1955 Fax: +86-755 2600 8484 E-mail: agc@agc-cert.com @ 400 089 2118
Add: 2/F., Building 2, No.1-4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Baoan District. Shenzhen, Guangdong China



Report No.: AGC02457180803EE01

Page 23 of 25

#### 9.3.4 TEST RESULT **TEST PROCEDURE**

Please refer to ETSI EN 301 489-1 Clause 9.2.2, ETSI EN 301 489-17 and EN 61000-4-3 for the measurement methods.

#### **TEST RESULTS**

Criteria	During Test	After Test		
A	Shall operate as intended.  May show degradation of performance (see note 1).  Shall be no loss of function.  Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance (see note 2). Shall be no loss of function. Shall be no loss of stored data or user programmable functions.		

NOTE 1: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

Freq. Range (MHz)	Field	Modulation	Polarity	Position	Observation	performance	Result (Pass/Fail)
80-6000	3V/m	Yes	H/V	Front	No Function Loss	Α	PASS
80-6000	3V/m	Yes	H/V	Back	No Function Loss	А	PASS
80-6000	3V/m	Yes	H/V	Left	No Function Loss	A	PASS
80-6000	3V/m	Yes	H/V	Right	No Function Loss	Α	PASS
80-6000	3V/m	Yes	H/V	Тор	No Function Loss	Α	PASS
80-6000	3V/m	Yes	H/V	Bottom	No Function Loss	А	PASS

Note: operating mode include all modes of EMS in page 7

The results shown this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc-cent.com.



Report No.: AGC02457180803EE01 Page 24 of 25

#### 9.3.5. PERFORMANCE

⊠Criteria A:	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
□Criteria B:	The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
□Criteria C:	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

		70,10	510 - 10	
⊠ <i>P</i> A	ASSFAIL	f.		

The results shown this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gett.com.



Report No.: AGC02457180803EE01

Page 25 of 25

#### APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to Attached file (APPENDIX I).

#### APPENDIX B: PHOTOGRAPHS OF EUT

Refer to Attached file (APPENDIX I).

----END OF REPORT----

The results showning this jest report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.agc.gett.com.

Attestation of Global Compliance

Tel: +86-755 2908 1955

Fax: +86-755 2600 8484

E-mail: agc@agc-cert.com

@ 400 089 2118