

# **FCC Test Report**

Report No.: AGC00159180509FE03

FCC ID : QIF-B56

**APPLICATION PURPOSE**: Original Equipment

**PRODUCT DESIGNATION**: Bluetooth Speaker

**BRAND NAME** : N/A

MODEL NAME : B56, 4823, 4823HD

**CLIENT**: My Music Group Limited

**DATE OF ISSUE** : Jun. 05, 2018

STANDARD(S)

TEST PROCEDURE(S) : FCC Part 15 Subpart C Section 15.249

REPORT VERSION 'V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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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



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# **Report Revise Record**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	plience / © Marie	Jun. 05, 2018	Valid	Initial release

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# 1. VERIFICATION OF CONFORMITY

Applicant	My Music Group Limited			
Address	Room No.2026, Global Logistics Service Center, China South City, Pinghu Town, Longgang, SZ, China.			
Manufacturer	Dongguan Fulun Electronic Co.,Limited			
Address	4-8/F, Building B, Xinbosheng Industrial Park, No.5 Xinyuan S Rd, Tangxia, Dongguan.CN			
Product Designation	Bluetooth Speaker			
Brand Name	N/A			
Test Model	B56			
Series Model	4823, 4823HD			
Difference description	All the same except for the model name.			
Date of test	May 28, 2018 to Jun. 04, 2018			
Deviation	None None			
Condition of Test Sample	Normal			
Report Template	AGCRT-US-BR/RF			

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.249. The test results of this report relate only to the tested sample identified in this report.

Tested By	Jorden War	The The Tomplanes
Jobal Compliance	Jonhen Wang(Wang Yonghua	n) Jun. 04, 2018
	and change	The Manager of The State of The
Reviewed By_		of Global Co
	Cool Cheng(Cheng Mengguo)	Jun. 05, 2018
Approved By	Formers ce	® # Troot Count Company
Approved By	Forrest Lei(Lei Yonggang)  Authorized Officer	Jun. 05, 2018

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#### 2. GENERAL INFORMATION

# 2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

W. 19911111 12 11 11 11 11 11 11 11 11 11 11 1	
Operation Frequency	2.402 GHz to 2.480GHz
RF Output Power	-0.61dBm(Max EIRP Power=Max radiation field-95.2)
Bluetooth Version	V4.2
Modulation	BR ⊠GFSK, EDR ⊠π /4-DQPSK, ⊠8DPSK BLE □GFSK
Number of channels	79 for BR/EDR
Hardware Version	V1.3
Software Version	V1.0
Antenna Designation	PCB Antenna
Antenna Gain	0dBi
Power Supply	DC 3.7V by battery
Note: The USB port only	used for charging and can't be used to transfer data with PC.

# 2.2. TABLE OF CARRIER FREQUENCYS

BR/EDR channel List

Frequency Band	Channel Number	Frequency
100	0	2402MHz
The fill of the fi	1	2403MHz
® Same and a cloud of Color of	AGC: NO	
CC CC	38	2440 MHz
2400~2483.5MHz	39	2441 MHz
TK Companie @ F Thomas of Cichal Co	40	2442 MHz
of Goding		
	77	2479 MHz
10000000000000000000000000000000000000	78	2480 MHz

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#### 3. MEASUREMENT UNCERTAINTY

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

- Uncertainty of Conducted Emission, Uc = ±3.2 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB

## 4. DESCRIPTION OF TEST MODES

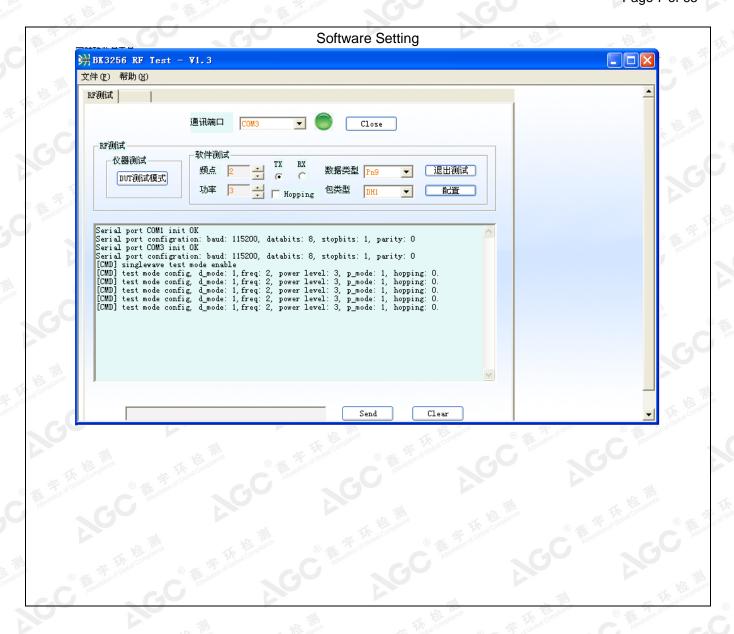
NO.	TEST MODE DESCRIPTION
8 # 1 not coon 8 #	Low channel GFSK
2 60	Middle channel GFSK
3	High channel GFSK
4 报	Low channel π /4-DQPSK
® 5 nd cloud	Middle channel π /4-DQPSK
6	High channel π /4-DQPSK
7	Low channel 8DPSK
The state of the s	Middle channel 8DPSK
90	High channel 8DPSK
10	BT Link with charging
11th his rolling	BT Link
(f) 200c (at)	

#### Note:

- 1. All the test modes can be supply by battery, 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. The EUT used fully-charged battery when tested.

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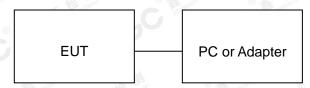


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# 5. SYSTEM TEST CONFIGURATION

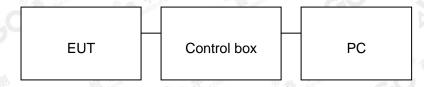
# 5.1. CONFIGURATION OF EUT SYSTEM

Configure 1: (Normal hopping)



Note: Owing to the EUT has own battery, testing may be performed while PC or adapter removed.

Configure 2: (Control continuous TX)



# 5.2. EQUIPMENT USED IN EUT SYSTEM

It was a Marin and			Madal/Town Na		
Item	Equipment	Mfr/Brand	Model/Type No.	Remark	
1 ,	Bluetooth Speaker	Fulun	B56	EUT	
2	Battery	Hubei China Energy Li-ion Battery Technology Co.,Ltd	18650	Accessory	
3	T PC	APPLE	A1465	A.E	
4	Control box	BEKEN	N/A	A.E	
5	Adapter	IPRO	NTR-S01	A.E	
6	USB Cable	N/A	1m unshielded	A.E	
7	AUX in Cable	N/A	1m unshielded	A.E	
8	Mobile Phone	Huawei	V9	A.E	
9	IPOD	APPLE	A1367	A.E	

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#### **5.3. SUMMARY OF TEST RESULTS**

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.249(a) §15.209	Radiated Emission	Compliant
§15.249(d)	Band Edges	Compliant
§15.207	Conduction Emission	Compliant
§15.215	Bandwidth	Compliant

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# 6. TEST FACILITY

Title .				
Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd			
Location	1-2F., Bldg.2, No.1-4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Bao'an District B112-B113, Bldg.12, Baoan Bldg Materials Center, No.1 of Xixiang Inner Ring Road, Baoan District, Shenzhen 518012			
NVLAP Lab Code	600153-0			
Designation Number	CN5028			
Test Firm Registration Number	682566			
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by National Voluntary Laboratory Accreditation program, NVLAP Code 600153-0			

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#### 7. TEST METHOD

All measurements contained in this report were conducted with ANSI C63.10-2013

#### 8. TEST EQUIPMENT LIST

#### TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Jun.20, 2017	Jun.19, 2018
LISN	R&S	ESH2-Z5	100086	Aug.21, 2017	Aug.20, 2018

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

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Jun.20, 2017	Jun.19, 2018
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec.08, 2017	Dec.07, 2018
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep.20, 2017	Sep.19, 2018
preamplifier	ChengYi	EMC184045SE	980508	Sep.15, 2017	Sep.14, 2018
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May 18, 2017	May 17, 2019
Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-205	Jun.20, 2017	Jun.19, 2018
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep.28, 2017	Sep.27, 2018
Loop Antenna	A.H.Systems,Inc	SAS-562B	C Ame	Mar. 01, 2018	Feb. 28, 2019
Radiation Cable 1	MXT	RS1	R005	June 6, 2017	June 5, 2018
Radiation Cable 2	MXT	RS1	R006	June 6, 2017	June 5, 2018
Filter (2.4-2.483GHz)	Micro-tronics	087	-C	Jun.20, 2017	Jun.19, 2018

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# 9. RADIATED EMISSION

#### 9.1TEST LIMIT

#### Standard FCC15.249

Fundamental	Field Strength of Fundamental	Field Strength of Harmonics
Frequency	(millivolts/meter)	(microvolts/meter)
900-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

#### Standard FCC 15.209

Frequency	Distance	Field Str	engths Limit
(MHz)	Meters	μ V/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	9
0.490 ~ 1.705	30	24000/F(kHz)	技訓
1.705 ~ 30	30	30 (1)	E Cobaco (Color of Color of Co
30 ~ 88	3 F 1000	100	40.0
88 ~ 216	3 - 6	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3. I	Other:74.0 dB(μV)/m (Average)	(Peak) 54.0 dB(μV)/m

Remark:

- (1) Emission level dB $\mu$  V = 20 log Emission level  $\mu$  V/m
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

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#### 9.2. MEASUREMENT PROCEDURE

- 1. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Below 1GHz)
- 2. The measuring distance of 3m shall used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Above 1GHz)
- The height of the test antenna shall vary between 1m to 4m.Both horizontal and vertical polarization Of the antenna are set to make the measurement.
- 4. The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- 5. All readings are peak unless otherwise stated QP in column of Note. Peak denoted that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform(Below 1GHz)
- 6. All readings are Peak mode value unless otherwise stated AVG in column of Note. If the Peak mode measured value compliance with the Peak limits and lower than AVG Limits, the EUT shall be deemed to meet Peak & AVG limits and then only Peak mode was measured, but AVG mode didn't perform.(Above 1GHz)

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The following table is the setting of spectrum analyzer and receiver.

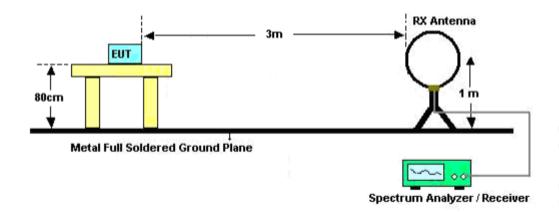
Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	Fundamental: 2.4~2.483GHz RBW 2MHz/ VBW 6MHz for Peak, RBW 2MHz/ VBW 10Hz for Average Harmonics: 1GHz~25GHz RBW 1MHz/ VBW 3MHz for Peak, RBW 1MHz/ VBW 10Hz for Average
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

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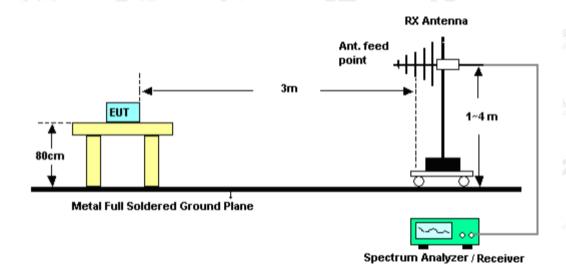


#### 9.3. TEST SETUP

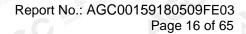
#### Radiated Emission Test-Setup Frequency Below 30MHz



#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz

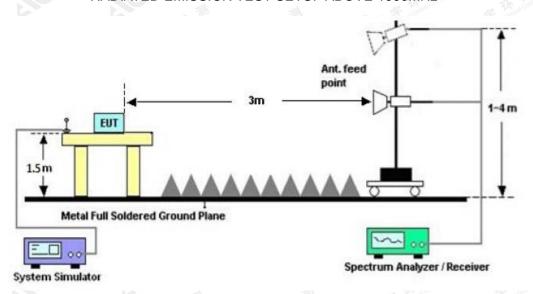


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# RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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#### 9.4. TEST RESULT

FOR BR/EDR

(Worst modulation: GFSK)

#### **RADIATED EMISSION BELOW 30MHz**

No emission found between lowest internal used/generated frequencies to 30MHz.

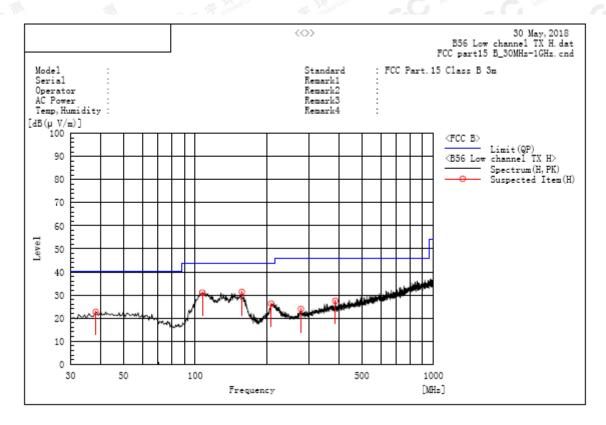
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#### **RADIATED EMISSION BELOW 1GHz**

# RADIATED EMISSION TEST- (30MHz-1GHz)-LOW CHANNEL-HORIZONTAL



#### A. Suspected List:

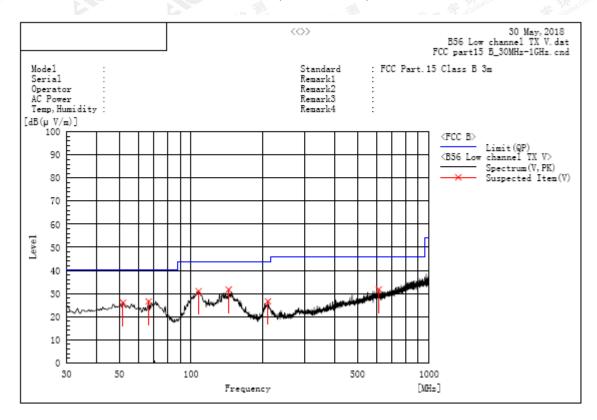
	Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
	38.245	H	5.5	17.2	22.7	40.0	17.3	Pass	100.0	340.6
	107.115	Н	16.8	14.2	31.0	43.5	12.5	Pass	200.0	146.3
Г	157.070	Н	14.8	16.6	31.4	43.5	12.1	Pass	150.0	71.4
	208.480	Н	12.5	13.8	26.3	43.5	17.2	Pass	150.0	181.3
	277.835	Н	6.3	17.7	24.0	46.0	22.0	Pass	150.0	326.9
	387.445	Н	7.2	20.3	27.5	46.0	18.5	Pass	100.0	267.8

**RESULT: PASS** 

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# RADIATED EMISSION TEST- (30MHz-1GHz)-LOW CHANNEL -VERTICAL



#### A. Suspected List:

	Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(u√/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
	51.825	v	9.1	16.9	26.0	40.0	14.0	Pass	150.0	107.1
	66.375	V	11.3	15.3	26.6	40.0	13.4	Pass	200.0	358.1
	107.600	v	16.7	14.3	31.0	43.5	12.5	Pass	150.0	72.1
3	143.975	v	15.1	16.6	31.7	43.5	11.8	Pass	150.0	287.7
8	210.420	V	12.7	13.9	26.6	43.5	16.9	Pass	100.0	108.3
	614.910	v	6.6	25.2	31.8	46.0	14.2	Pass	100.0	72.6

#### **RESULT: PASS**

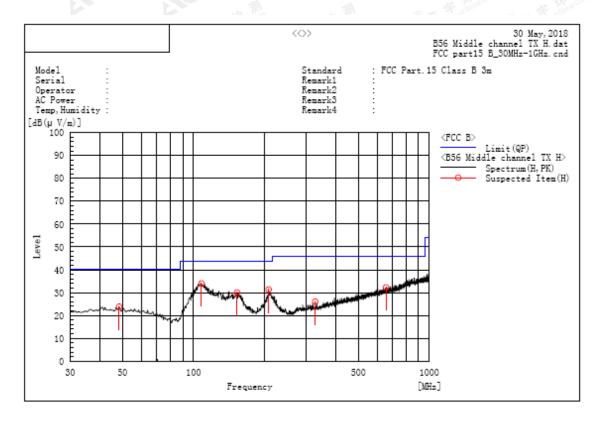
Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

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

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# RADIATED EMISSION TEST- (30MHz-1GHz)-MIDDLE CHANNEL-HORIZONTAL



#### A. Suspected List:

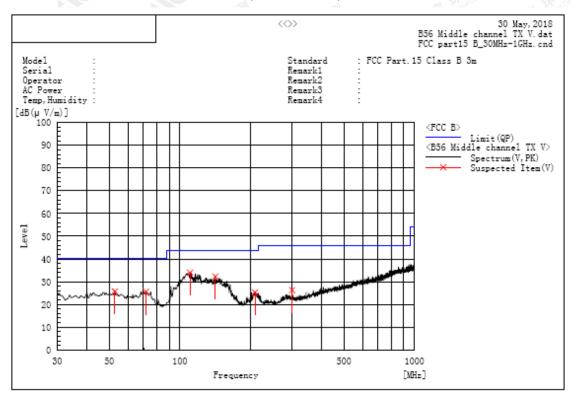
Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
48.430	Н	6.7	17.1	23.8	40.0	16.2	Pass	150.0	121.6
108.085	Н	19.7	14.3	34.0	43.5	9.5	Pass	150.0	9.6
153.190	Н	13.5	16.6	30.1	43.5	13.4	Pass	200.0	7.2
208.480	Н	17.5	13.8	31.3	43.5	12.2	Pass	100.0	45.0
328.275	Н	8.0	18.1	26.1	46.0	19.9	Pass	100.0	58.0
655.165	Н	6.6	25.7	32.3	46.0	13.7	Pass	200.0	211.6

**RESULT: PASS** 

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# RADIATED EMISSION TEST- (30MHz-1GHz)- MIDDLE CHANNEL -VERTICAL



#### A. Suspected List:

Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
52.795	V	8.9	16.9	25.8	40.0	14.2	Pass	150.0	347.3
71.710	v	11.7	14.0	25.7	40.0	14.3	Pass	100.0	39.1
110.510	V	19.4	14.6	34.0	43.5	9.5	Pass	100.0	145.2
141.550	V	15.7	16.6	32.3	43.5	11.2	Pass	100.0	201.4
208.965	V	11.5	13.8	25.3	43.5	18.2	Pass	100.0	330.0
300.630	v	8.9	17.4	26.3	46.0	19.7	Pass	100.0	357.0

#### **RESULT: PASS**

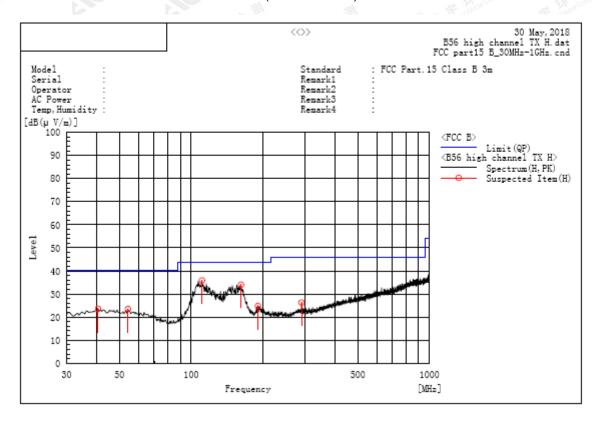
Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

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

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# RADIATED EMISSION TEST- (30MHz-1GHz)-HIGH CHANNEL-HORIZONTAL



#### A. Suspected List:

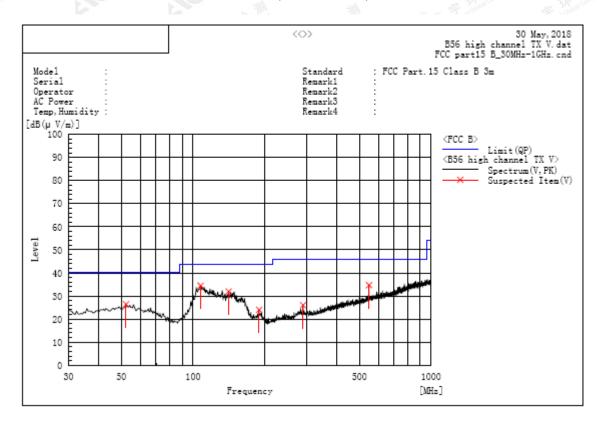
	Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
	40.670	Н	6.1	17.4	23.5	40.0	16.5	Pass	150.0	107.0
	54.250	Н	6.7	16.8	23.5	40.0	16.5	Pass	150.0	32.2
Г	110.995	H	21.3	14.6	35.9	43.5	7.6	Pass	150.0	350.5
	161.920	Н	17.4	16.6	34.0	43.5	9.5	Pass	150.0	4.2
	190.535	H	11.1	13.7	24.8	43.5	18.7	Pass	150.0	147.7
	290.445	Н	8.7	17.6	26.3	46.0	19.7	Pass	100.0	127.7

**RESULT: PASS** 

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## RADIATED EMISSION TEST- (30MHz-1GHz)-HIGH CHANNEL -VERTICAL



#### A. Suspected List:

Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(u∀/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
52.310	v	9.6	16.9	26.5	40.0	13.5	Pass	100.0	342.1
107.600	v	20.2	14.3	34.5	43.5	9.0	Pass	100.0	79.5
141.065	v	15.3	16.6	31.9	43.5	11.6	Pass	100.0	253.0
189.565	v	10.2	13.8	24.0	43.5	19.5	Pass	100.0	126.4
289.960	v	8.4	17.6	26.0	46.0	20.0	Pass	199.2	2.2
548.465	v	10.9	23.8	34.7	46.0	11.3	Pass	199.2	4.0

#### **RESULT: PASS**

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

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

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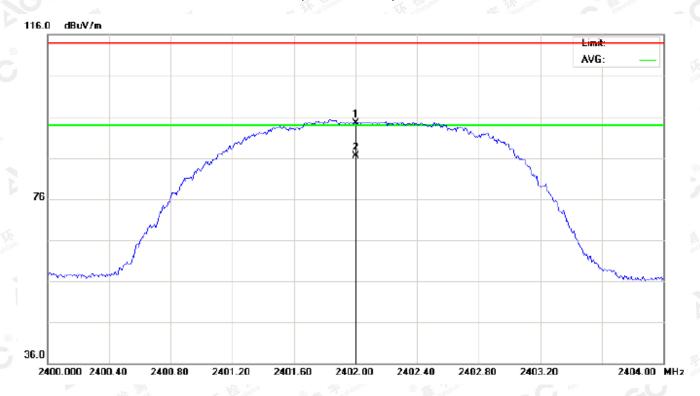
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# RADIATED EMISSION ABOVE 1GHz FOR BR/EDR

(Worst modulation: GFSK)

#### For Fundamental

RADIATED EMISSION TEST- (ABOVE 1GHz)-LOW CHANNEL-HORIZONTAL



No	. N	Лk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
			MHz	dBu∀	dB/m	dBu∀/m	dBu√/m	dB		cm	degree	
1	Τ		2402.000	84.27	10.32	94.59	114.00	-19.41	peak			
2	,	*	2402.000	76.28	10.32	86.60	94.00	-7.40	AVG	100	233	

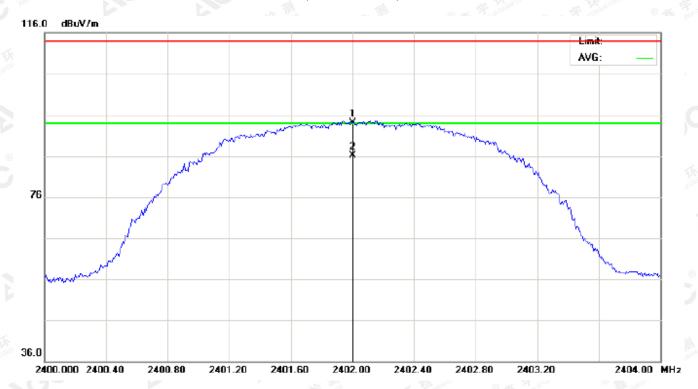
RESULT: PASS

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# RADIATED EMISSION TEST- (ABOVE 1GHz)-LOW CHANNEL- VERTICAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu\//m	dBu∀/m	dB		cm	degree	
1		2402.000	83.85	10.32	94.17	114.00	-19.83	peak			
2	*	2402.000	75.79	10.32	86.11	94.00	-7.89	AVG	100	258	

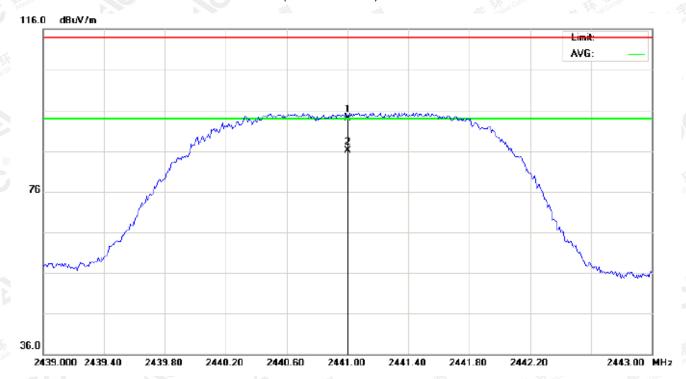
RESULT: PASS

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# RADIATED EMISSION TEST- (ABOVE 1GHz)-MIDDLE CHANNEL-HORIZONTAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		2441.000	83.67	10.36	94.03	114.00	-19.97	peak			
2	*	2441.000	75.67	10.36	86.03	94.00	-7.97	AVG	100	236	

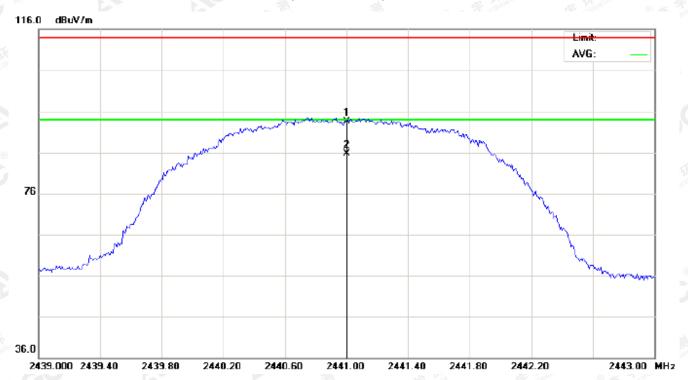
**RESULT: PASS** 

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# RADIATED EMISSION TEST- (ABOVE 1GHz)-MIDDLE CHANNEL- VERTICAL



N	lo.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height		Comment
		-	MHz	dBu∀	dB/m	dBu\//m	dBu∀/m	dB		cm	degree	
	1		2441.000	83.21	10.36	93.57	114.00	-20.43	peak			
	2	*	2441.000	75.27	10.36	85.63	94.00	-8.37	AVG	100	121	_

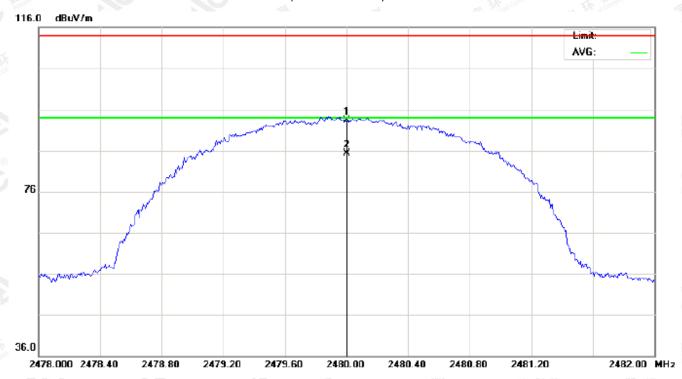
**RESULT: PASS** 

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# RADIATED EMISSION TEST- (ABOVE 1GHz)-HIGH CHANNEL-HORIZONTAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		2480.000	82.96	10.41	93.37	114.00	-20.63	peak			
2	*	2480.000	74.97	10.41	85.38	94.00	-8.62	AVG	100	358	

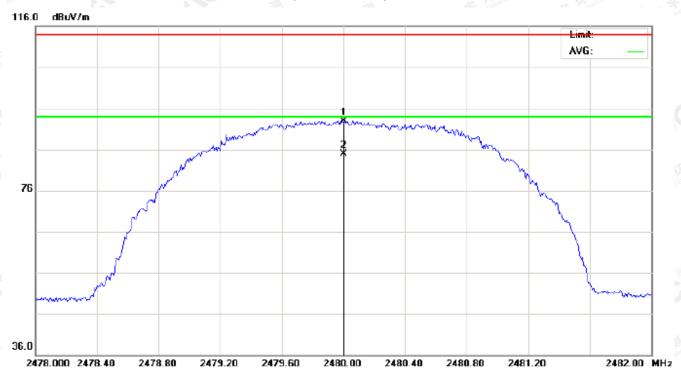
**RESULT: PASS** 

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# RADIATED EMISSION TEST- (ABOVE 1GHz)-HIGH CHANNEL- VERTICAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		2480.000	82.47	10.41	92.88	114.00	-21.12	peak			
2	*	2480.000	74.51	10.41	84.92	94.00	-9.08	AVG	100	·	

# **RESULT: PASS**

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

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

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# Field strength of the fundamental signal

# 1Mbps Result:

#### Peak value

Frequency	Reading Level	Factor	Measurement	Limit	Over	Antenna Polarization	
(MHz)	(dBuv)	(dB/m)	(dBuv/m)	(dBuv/m)	(dB)		
2402	84.27	10.32	94.59	114	-19.41	Horizontal	
2402	83.85	10.32	94.17	114	-19.83	Vertical	
2441	83.67	10.36	94.03	114	-19.97	Horizontal	
2441	83.21	10.36	93.57	114	-20.43	Vertical	
2480	82.96	10.41	93.37	114	-20.63	Horizontal	
2480	82.47	10.41	92.88	114	-21.12	Vertical	

# Average value

			The same of the sa	Globy B and of				
Frequency	Reading Level	Factor	Measurement	Limit	Over	Antenna		
(MHz)	(dBuv)	(dB/m)	(dBuv/m)	(dBuv/m)	(dB)	Polarization		
2402	76.28	10.32	86.60	94	-7.40	Horizontal		
2402	75.79	10.32	86.11	94	-7.89	Vertical		
2441	75.67	10.36	86.03	94	-7.97	Horizontal		
2441	75.27	10.36	85.63	94	-8.37	Vertical		
2480	74.97	10.41	85.38	94	-8.62	Horizontal		
2480	74.51	10.41	84.92	94	-9.08	Vertical		

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# 2Mbps Result:

#### Peak value

Frequency	Reading Level	Factor	Measurement	Limit	Over	Antenna
(MHz)	(dBuv)	(dB/m)	(dBuv/m)	(dBuv/m)	(dB)	Polarization
2402	83.90	10.32	94.22	114	-19.78	Horizontal
2402	83.58	10.32	93.90	114	-20.10	Vertical
2441	83.25	10.36	93.61	114	-20.39	Horizontal
2441	82.73	10.36	93.09	114	-20.91	Vertical
2480	82.53	10.41	92.94	114	-21.06	Horizontal
2480	82.05	10.41	92.46	114	-21.54	Vertical

## Average value

Frequency	Reading Level	Factor	Measurement	Limit	Over	Antenna
(MHz)	(dBuv)	(dB/m)	(dBuv/m)	(dBuv/m)	(dB)	Polarization
2402	75.96	10.32	86.28	94	-7.72	Horizontal
2402	75.32	10.32	85.64	94	-8.36	Vertical
2441	75.21	10.36	85.57	94	-8.43	Horizontal
2441	74.81	10.36	85.17	94	-8.83	Vertical
2480	74.54	10.41	84.95	94	-9.05	Horizontal
2480	74.13	10.41	84.54	94	-9.46	Vertical

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# 3Mbps Result:

#### Peak value

Frequency	Reading Level	Factor	Measurement	Limit	Over	Antenna	
(MHz)	(dBuv)	(dB/m)	(dBuv/m)	(dBuv/m)	(dB)	Polarization	
2402	83.56	10.32	93.88	114	-20.12	Horizontal	
2402	83.16	10.32	93.48	114	-20.52	Vertical	
2441	82.82	10.36	93.18	114	-20.82	Horizontal	
2441	82.27	10.36	92.63	114	-21.37	Vertical	
2480	82.20	10.41	92.61	114	-21.39	Horizontal	
2480	81.70	10.41	92.11	114	-21.89	Vertical	

## Average value

30 1000					TEST MILITARY	
Frequency	Reading Level	Factor	Measurement	Limit	Over	Antenna
(MHz)	(dBuv)	(dB/m)	(dBuv/m)	(dBuv/m)	(dB)	Polarization
2402	75.52	10.32	85.84	94	-8.16	Horizontal
2402	74.84	10.32	85.16	94	-8.84	Vertical
2441	74.77	10.36	85.13	94	-8.87	Horizontal
2441	74.44	10.36	84.80	94	-9.20	Vertical
2480	74.16	10.41	84.57	94	-9.43	Horizontal
2480	73.74	10.41	84.15	94	-9.85	Vertical

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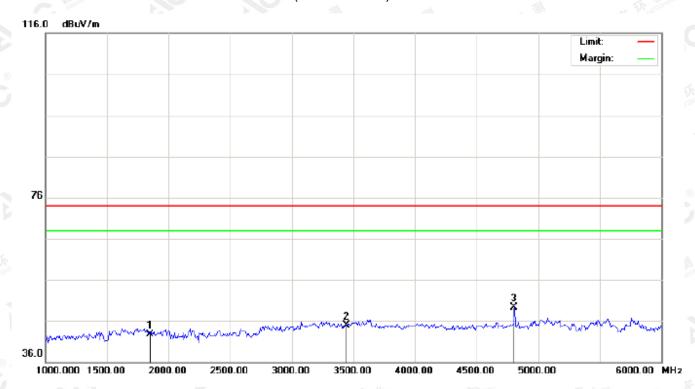
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#### FOR BR/EDR

(Worst modulation: GFSK)

#### **For Harmonics**

# RADIATED EMISSION TEST- (ABOVE 1GHz)-LOW CHANNEL-HORIZONTAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBu∀	dB/m	dBu\//m	dBu∀/m	dB		cm	degree	
1		1850.000	34.40	8.30	42.70	74.00	-31.30	peak			
2		3441.667	32.77	12.05	44.82	74.00	-29.18	peak			
3	*	4804.000	41.71	7.69	49.40	74.00	-24.60	peak			

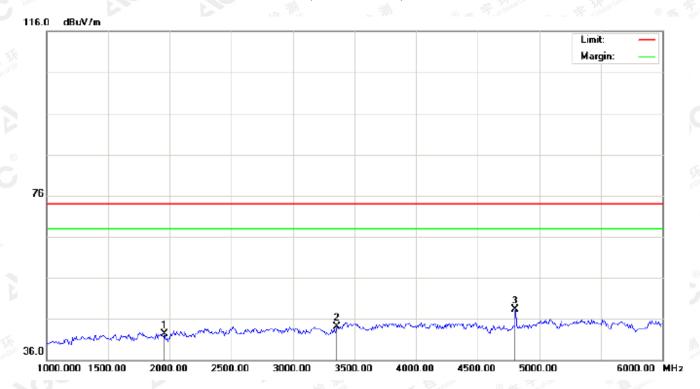
RESULT: PASS

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# RADIATED EMISSION TEST- (ABOVE 1GHz)-LOW CHANNEL- VERTICAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		1958.333	32.85	9.44	42.29	74.00	-31.71	peak			
2		3358.333	32.03	11.98	44.01	74.00	-29.99	peak			
3	*	4804.000	40.55	7.69	48.24	74.00	-25.76	peak			

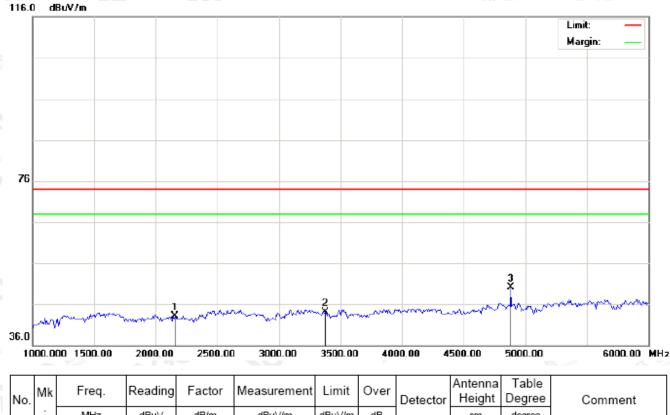
RESULT: PASS

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# RADIATED EMISSION TEST- (ABOVE 1GHz)-MIDDLE CHANNEL-HORIZONTAL



N	О.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height		Comment
	_	-	MHz	dBu∀	dB/m	dBu\//m	dBu∀/m	dB		cm	degree	
	1		2158.333	33.08	10.05	43.13	74.00	-30.87	peak			
	2		3375.000	32.14	11.99	44.13	74.00	-29.87	peak			
,	3	*	4882.000	42.16	7.89	50.05	74.00	-23.95	peak			

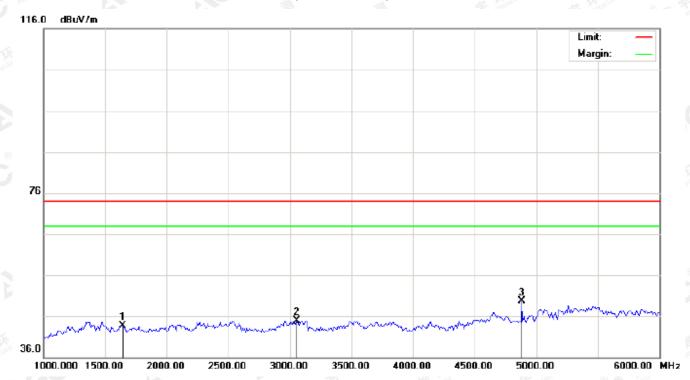
**RESULT: PASS** 

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# RADIATED EMISSION TEST- (ABOVE 1GHz)-MIDDLE CHANNEL- VERTICAL



1	No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
			MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
	1		1641.667	37.62	6.11	43.73	74.00	-30.27	peak			
	2		3058.333	33.15	11.69	44.84	74.00	-29.16	peak			
	3	*	4882.000	41.89	7.89	49.78	74.00	-24.22	peak			

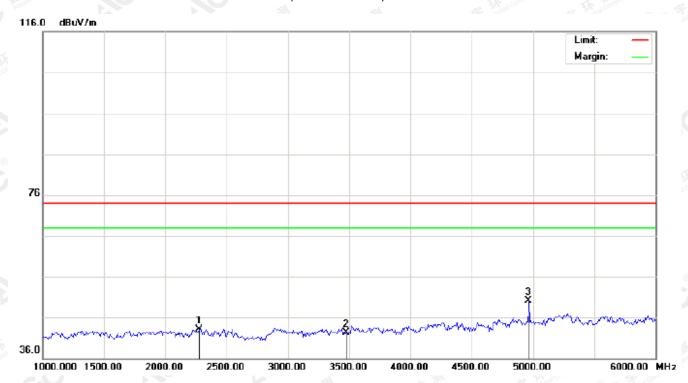
**RESULT: PASS** 

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# RADIATED EMISSION TEST- (ABOVE 1GHz)-HIGH CHANNEL-HORIZONTAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu\//m	dBu∀/m	dB		cm	degree	
1		2275.000	33.01	10.18	43.19	74.00	-30.81	peak			
2		3475.000	30.19	12.09	42.28	74.00	-31.72	peak			
3	*	4960.000	42.10	8.09	50.19	74.00	-23.81	peak			

DECILIT: DACC

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# RADIATED EMISSION TEST- (ABOVE 1GHz)-HIGH CHANNEL- VERTICAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		1858.333	35.07	8.39	43.46	74.00	-30.54	peak			
2		3166.667	33.90	11.80	45.70	74.00	-28.30	peak			
3	*	4960.000	41.41	8.09	49.50	74.00	-24.50	peak			

### **RESULT: PASS**

Note: 6~25GHz at least have 20dB margin. No recording in the test report.

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

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

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### 10. BAND EDGE EMISSION

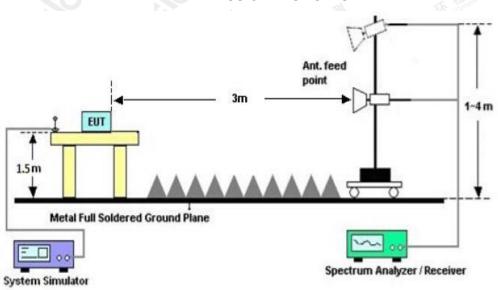
### 10.1. MEASUREMENT PROCEDURE

- 1. The EUT operates at hopping-off test mode. The lowest or highest channels are tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
- 2. Max hold the trace of the setup 1, and the EUT operates at hopping-on test mode to verify the largest spurious emissions power.
- 3. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission.

Start frequency(MHz)	Stop frequency(MHz)				
2200	2405				
2478	2500				

#### **10.2 TEST SETUP**

## RADIATED EMISSION TEST SETUP



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# **10.3 RADIATED TEST RESULT**

## FOR BR/EDR

(Worst modulation: GFSK)

### TEST PLOT OF BAND EDGE FOR LOW CHANNEL-Horizontal



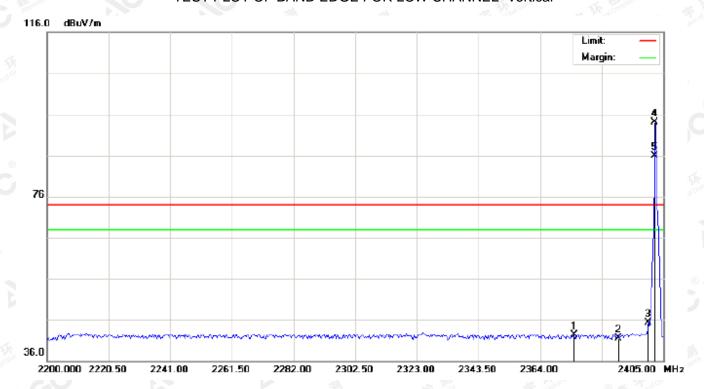
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		2378.350	32.16	10.30	42.46	74.00	-31.54	peak			
2		2390.000	31.50	10.31	41.81	74.00	-32.19	peak			
3		2400.000	39.97	10.32	50.29	74.00	-23.71	peak			
4	*	2402.000	84.16	10.32	94.48	74.00	20.48	peak			
5	Х	2402.000	76.17	10.32	86.49	74.00	12.49	AVG	100	354	

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## TEST PLOT OF BAND EDGE FOR LOW CHANNEL -Vertical



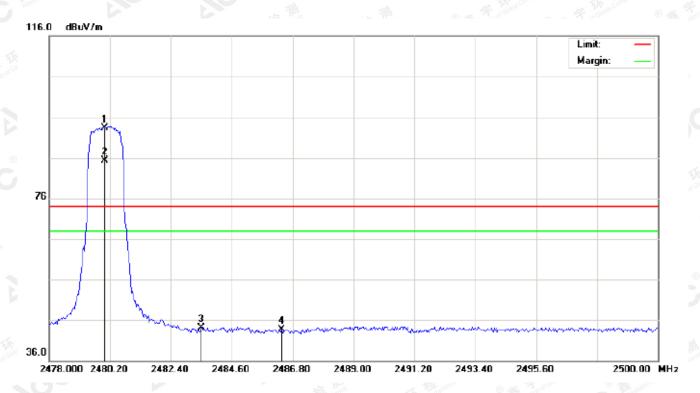
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		2375.275	32.10	10.29	42.39	74.00	-31.61	peak			
2		2390.000	31.21	10.31	41.52	74.00	-32.48	peak			
3		2400.000	35.06	10.32	45.38	74.00	-28.62	peak			
4	*	2402.000	83.73	10.32	94.05	74.00	20.05	peak			
5	Х	2402.000	75.68	10.32	86.00	74.00	12.00	AVG	100	157	

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# TEST PLOT OF BAND EDGE FOR HIGH CHANNEL -Horizontal



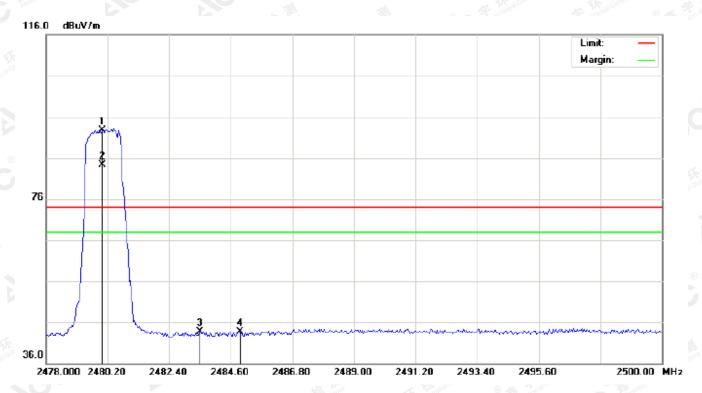
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBuV/m	dBu∀/m	dB		cm	degree	
1	*	2480.000	82.84	10.41	93.25	74.00	19.25	peak			
2	Х	2480.000	74.85	10.41	85.26	74.00	11.26	AVG	100	147	
3		2483.500	33.69	10.41	44.10	74.00	-29.90	peak			
4		2486.396	33.36	10.41	43.77	74.00	-30.23	peak			

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# TEST PLOT OF BAND EDGE FOR HIGH CHANNEL-Vertical



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree		
1	*	2480.000	82.36	10.41	92.77	74.00	18.77	peak			
2	Х	2480.000	74.35	10.41	84.76	74.00	10.76	AVG	100	134	
3		2483.500	33.26	10.41	43.67	74.00	-30.33	peak			
4		2484.930	33.39	10.41	43.80	74.00	-30.20	peak			

## **RESULT: PASS**

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

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

Hopping on mode and Hopping off mode have been tested, but only worst case reported.

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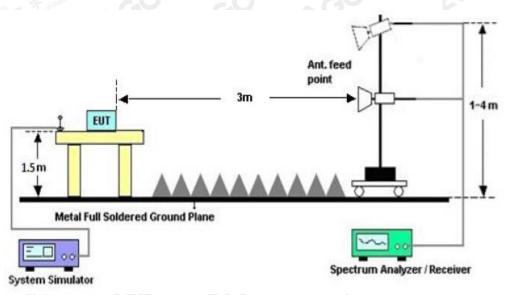
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## 11. 20DB BANDWIDTH

### 11.1. MEASUREMENT PROCEDURE

- 1. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 2. Set Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hoping channel RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ 3RBW; Sweep = auto; Detector function = peak
- 3. Set SPA Trace 1 Max hold, then View.

### 11.2. TEST SET-UP



# 11.3. LIMITS AND MEASUREMENT RESULTS

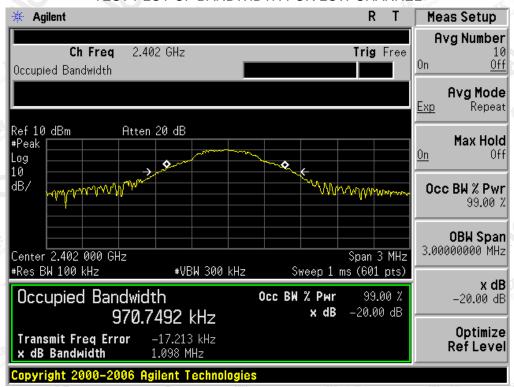
#### FOR BR/EDR

BLUET	OOTH 1MBPS LIN	MITS AND MEASU	REMENT RESULT	
		Measure	ement Result	
Applicable Limits		Result		
		99%OBW (MHz)	-20dB BW(MHz)	Result
Solar Complete (8) September 10	Low Channel	0.971	1.098	PASS
N/A	Middle Channel	0.955	1.097	PASS
700	High Channel	0.950	1.082	PASS

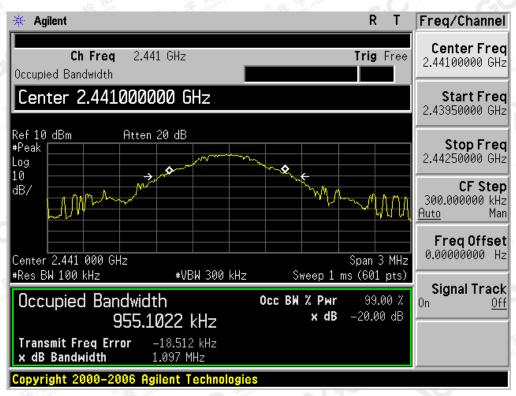
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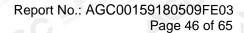
#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

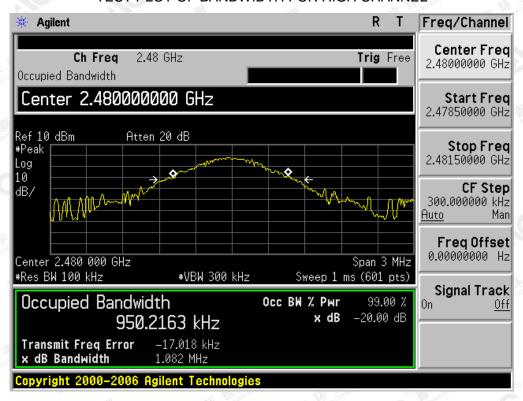


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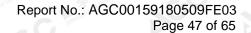




#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



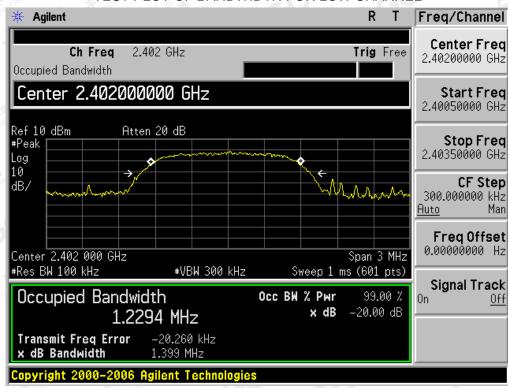
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BLUETO	OOTH 2MBPS LIN	MITS AND MEASU	REMENT RESULT						
	Measurement Result								
Applicable Limits		Dogult							
		99%OBW (MHz)	-20dB BW(MHz)	Result					
The fill the state of the state	Low Channel	1.229	1.399	PASS					
N/A	Middle Channel	1.232	1.416	PASS					
	High Channel	1.226	1.435	PASS					

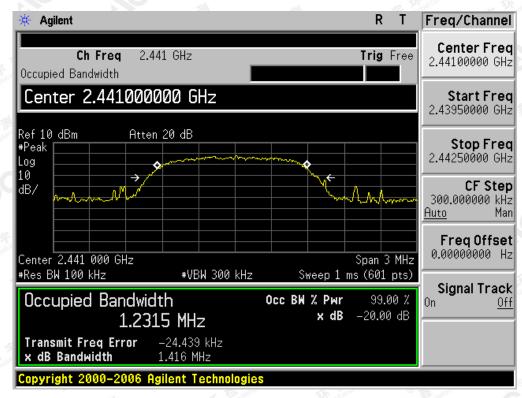
#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



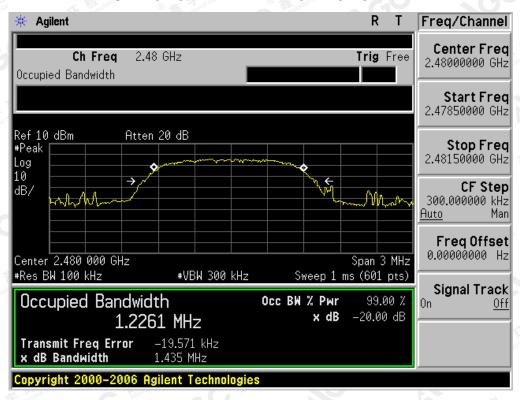
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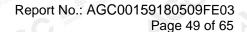
#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



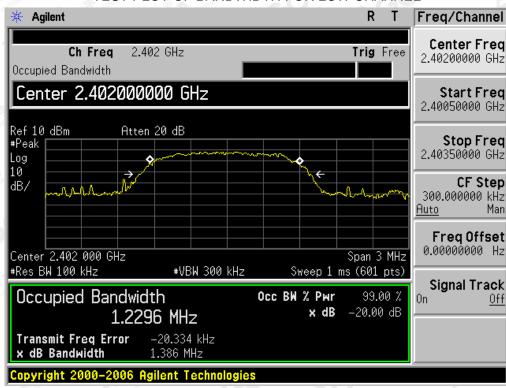
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BLUETOOTH 3MBPS LIMITS AND MEASUREMENT RESULT										
		Measure	ement Result							
Applicable Limits		Result								
		99%OBW (MHz)	-20dB BW(MHz)	Nesuit						
不 整 测	Low Channel	1.230	1.386	PASS						
N/A	Middle Channel	1.230	1.406	PASS						
CO	High Channel	1.230	1.405	PASS						

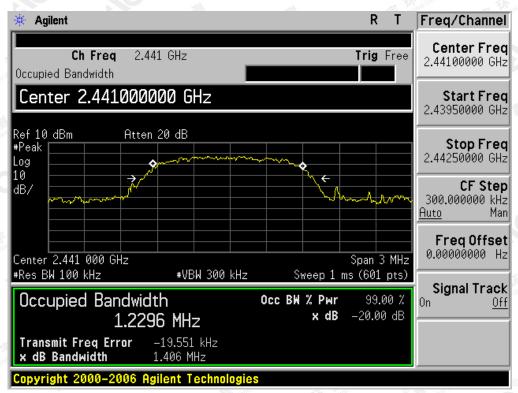
### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



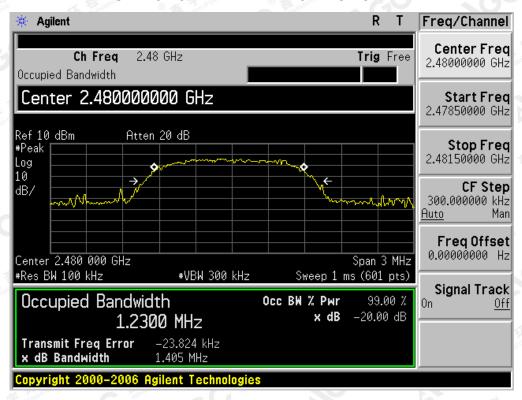
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#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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## 12. FCC LINE CONDUCTED EMISSION TEST

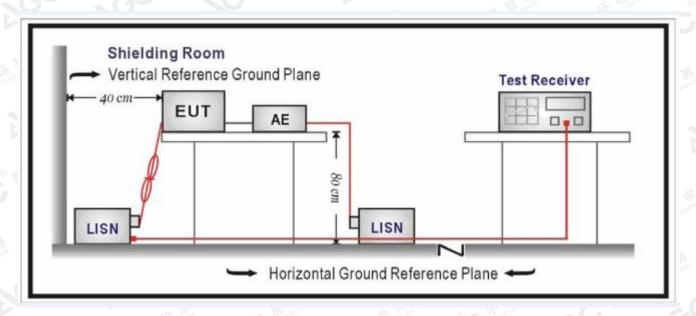
## 12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

F	Maximum RF	Line Voltage
Frequency	Q.P.( dBuV)	Average( dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	8 gg 200 56 gg 100 00 00 00 00 00 00 00 00 00 00 00 00	46 / W
5MHz~30MHz	60	50

#### Note:

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

## 12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



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## 12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipments received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC charging voltage by adapter or PC which received 120V/60Hzpower by a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

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

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

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

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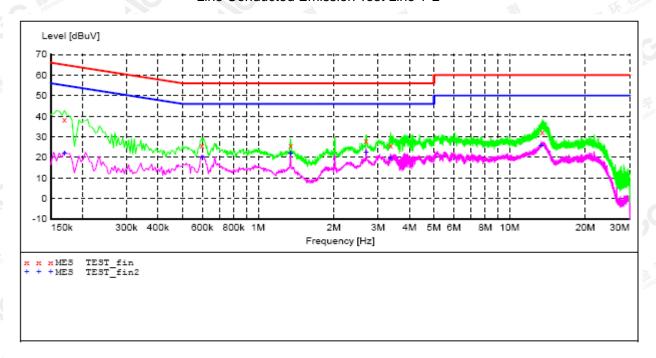
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## 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

## By adapter(worst case)

### FOR BR/EDR

## Line Conducted Emission Test Line 1-L



#### MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.170000	38.30	10.0	65	26.7	QP	L1	FLO
0.598000	25.80	10.1	56	30.2	QP	L1	FLO
1.346000	25.70	10.2	56	30.3	QP	L1	FLO
2.686000	28.30	10.0	56	27.7	QP	L1	FLO
3.366000	25.70	10.0	56	30.3	QP	L1	FLO
13.498000	32.20	9.5	60	27.8	QP	L1	FLO

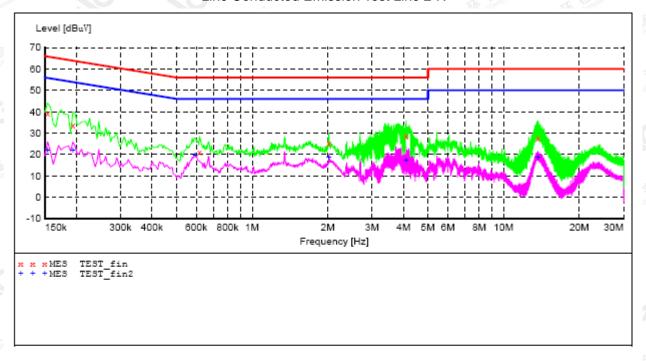
#### MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.170000 0.598000 1.346000 2.686000 3.358000 13.342000	21.80 20.20 21.80 22.70 19.90 25.90	10.0 10.1 10.2 10.0 10.0 9.5	55 46 46 46 46 50	25.8 24.2	AV AV AV AV AV	L1 L1 L1 L1 L1 L1	FLO FLO FLO FLO FLO

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### Line Conducted Emission Test Line 2-N



#### MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.154000	39.40	10.0	66	26.4	QP	N	FLO
0.194000	33.80	10.1	64	30.1	QP	N	FLO
0.618000	20.90	10.1	56	35.1	QP	N	FLO
2.018000	25.50	10.2	56	30.5	QP	N	FLO
4.094000	28.70	10.2	56	27.3	QP	N	FLO
13.662000	27.60	9.5	60	32.4	QP	N	FLO

### MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.154000 0.194000 0.594000 2.018000 4.094000 13.690000	22.10 21.90 19.60 18.60 17.30 18.50	10.0 10.1 10.1 10.2 10.2 9.5	56 54 46 46 46 50	33.7 32.0 26.4 27.4 28.7 31.5	AV AV AV AV AV	N N N N N	FLO FLO FLO FLO FLO

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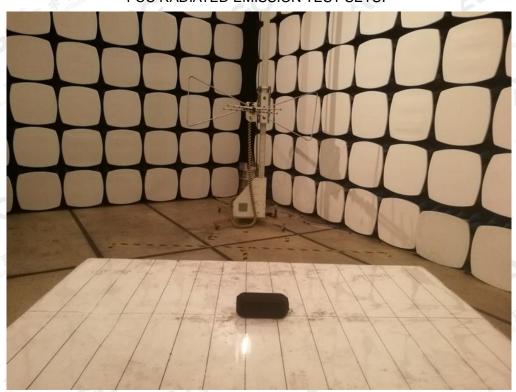


## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC LINE CONDUCTED EMISSION TEST SETUP

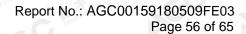


FCC RADIATED EMISSION TEST SETUP

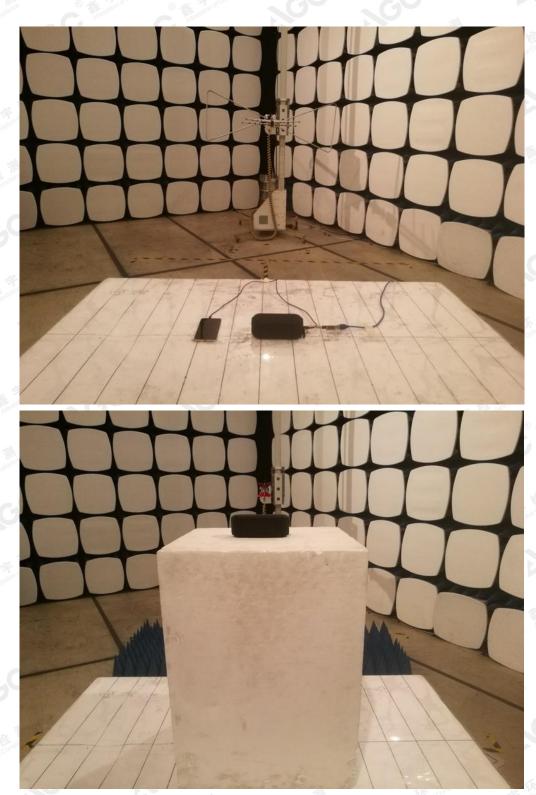


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# **APPENDIX B: PHOTOGRAPHS OF EUT**

TOP VIEW OF EUT



**BOTTOM VIEW OF EUT** 



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# FRONT VIEW OF EUT



**BACK VIEW OF EUT** 



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# LEFT VIEW OF EUT



RIGHT VIEW OF EUT



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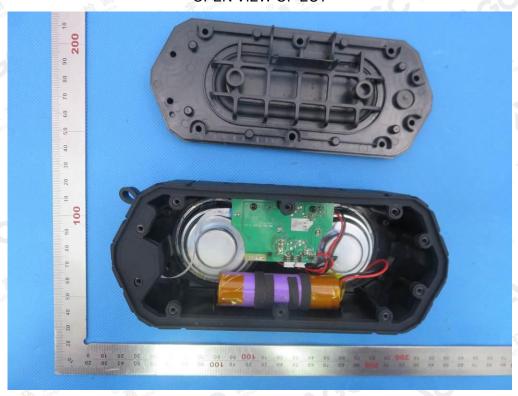
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# VIEW OF EUT (PORT)



**OPEN VIEW OF EUT** 



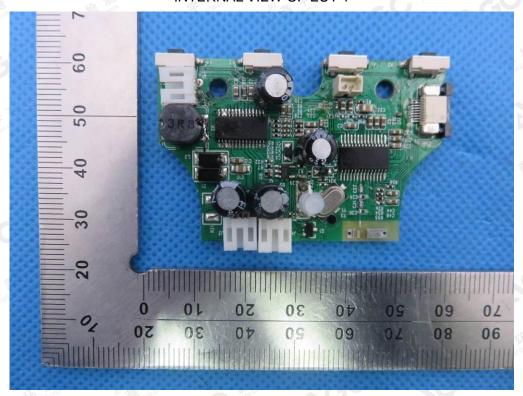
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# VIEW OF BATTERY



**INTERNAL VIEW OF EUT-1** 

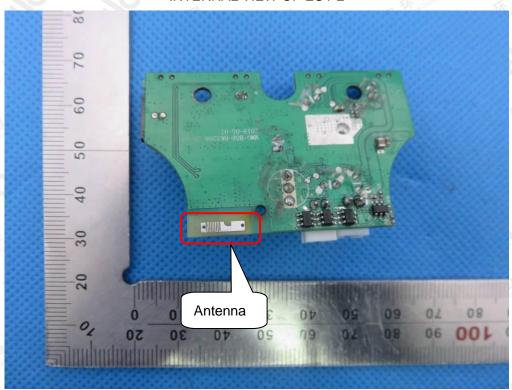


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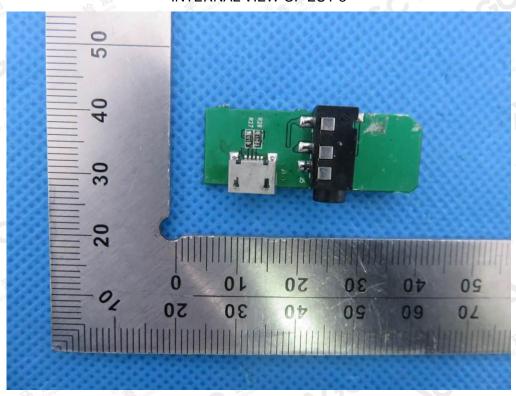
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## **INTERNAL VIEW OF EUT-2**



**INTERNAL VIEW OF EUT-3** 

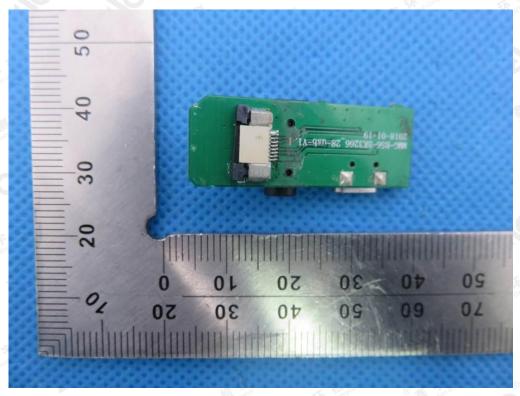


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# **INTERNAL VIEW OF EUT-4**

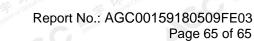


**INTERNAL VIEW OF EUT-5** 



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VIEW OF ADAPTER(AE)



The adapter was supplied by AGC

-END OF REPORT-

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