# **FCC Test Report**

Report No.: AGC00924151003FE03

FCC ID : QIFB45

**APPLICATION PURPOSE** : Original Equipment

**PRODUCT DESIGNATION**: Bluetooth Speaker and Power Bank

**BRAND NAME** : My Music

MODEL NAME : B45

**CLIENT** : My Music Group Limited

**DATE OF ISSUE** : Nov.27,2015

STANDARD(S)

TEST PROCEDURE(S) : FCC Part 15 Rules

**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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# **Report Revise Record**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov.27,2015	Valid	Original Report

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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	4F, Building A, Huangjinye Industrial Park, No.216 Shaxin Road, Keyuan City, Tangxia, Dongguan.CN		
Product Designation	Bluetooth Speaker and Power Bank		
Brand Name	My Music		
Test Model	B45		
Date of test	Nov. 3,2015 to Nov. 6,2015		
Deviation	None		
Condition of Test Sample	Normal		
Report Template	AGCRT-US-BR/RF		

We hereby certify that:

The above equipment was tested by Dongguan Precise Testing Service 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 C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.249.

Tested By	Trime Huang			
10000 29	Time Huang(Huang Nanhui)	Nov.27,2015		
Reviewed By	Forrest cei			
	Forrest Lei(Lei Yonggang)	Nov.27,2015		
Approved By	Solya Hang			
	Solger Zhang(Zhang Hongyi) Authorized Officer	Nov.27,2015		

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# 2. GENERAL INFORMATION

# 2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480GHz	
RF Output Power	-0.86dBm(Max)	
Bluetooth Version	V2.1+EDR	
Modulation	GFSK, π /4-DQPSK, 8DPSK	
Number of channels	79	
Hardware Version	US-FL-B45-BK8000L-R2.0	
Software Version	BK8000L_flash_B45(Gamazoid)_L_20150812(c562)	
Antenna Designation	PCB Antenna (Met 15.203 Antenna requirement)	
Antenna Gain	1.2dBi	
Power Supply	DC3.7V 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

Frequency Band	Channel Number	Frequency
	0	2402MHZ
	1	2403MHZ
	÷	:
	38	2440 MHZ
2400~2483.5MHZ	39	2441 MHZ
	40	2442 MHZ
	÷	•
	77	2479 MHZ
	78	2480 MHZ

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# 3. MEASUREMENT UNCERTAINTY

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

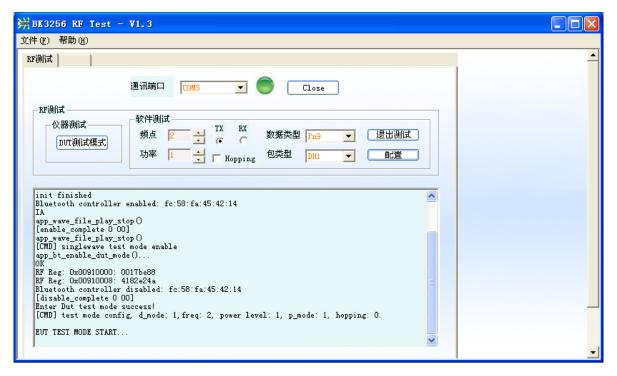
No.	Item	Uncertainty
1	Conducted Emission Test	±3.18dB
2	All emissions,radiated	±3.91dB
3	Temperature	±0.5°C
4	Humidity	±2%

## 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION		
1	Low channel GFSK		
2	Middle channel GFSK		
3	High channel GFSK		
4	Low channel π /4-DQPSK		
5	Middle channel π /4-DQPSK		
6	High channel π /4-DQPSK		
7	Low channel 8DPSK		
8	Middle channel 8DPSK		
9	High channel 8DPSK		
10	BT Link with charging		
11	BT Link		

- 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.

# Software Setting

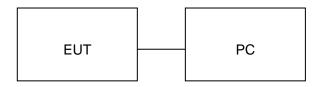


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# 5. SYSTEM TEST CONFIGURATION

# **5.1. CONFIGURATION OF EUT SYSTEM**

Configure 1: (Normal hopping)



Configure 2: (Control continuous TX)



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

Item	Equipment	Model No.	ID or Specification	Remark
1	Bluetooth Speaker and Power	My Music	B45	EUT
2	Control box	N/A	N/A	A.E
3	PC	SONY	E1412AYCW	A.E
4	USB Cable	N/A	0.8m, unshielded	A.E

# **5.3. SUMMARY OF TEST RESULTS**

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.249	Radiated Emission	Compliant
§15.249	Band Edges	Compliant
§15.207	Conduction Emission	Compliant
N/A	BANDWITH Compliant	

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# **6. TEST FACILITY**

Site Dongguan Precise Testing Service Co., Ltd.	
Location  Building D,Baoding Technology Park,Guangming Road2,Dongcheng Distri Dongguan, Guangdong, China,	
FCC Registration No.	371540
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009.

# 7. ALL TEST EQUIPMENT LIST

FOR RADIATED EMISSION TEST (BELOW 1GHZ)

Radiated Emission Test Site						
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration	
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 4, 2015	July 3, 2016	
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 4, 2015	July 3, 2016	
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 4, 2015	July 3, 2016	
RF Cable	SCHWARZBECK	AK9515E	96221	July 4, 2015	July 3, 2016	
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 6, 2015	June 5, 2016	
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A	
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 6, 2015	June 5, 2016	
Spectrum analyzer	Agilent	E4407B	MY46185649	June 6, 2015	June 5, 2016	

FOR RADIATED EMISSION TEST (1GHZ ABOVE)

	Radiat	ted Emission Tes	t Site		
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 4, 2015	July 3, 2016
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	July 11, 2015	July 10, 2016
Spectrum Analyzer	Agilent	E4411B	MY4511453	July 4, 2015	July 3, 2016
Signal Amplifier	SCHWARZBECK	BBV 9718	9718-269	July 7, 2015	July 6, 2016
RF Cable	SCHWARZBECK	AK9515H	96220	July 8, 2015	July 7, 2016
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 6, 2015	June 5, 2016
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 6, 2015	June 5, 2016

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	Conducted Emission Test Site												
Name of Equipment	er Model Number Serial Number Calibration												
EMI Test Receiver	- Rohde & Schwarz	ESCI	101417	July 4, 2015	July 3, 2016								
Artificial Mains Network	Narda	L2-16B	000WX31025	July 8, 2015	July 7, 2016								
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 8, 2015	July 7, 2016								
RF Cable	SCHWARZBECK	AK9515E	96222	July 4, 2015	July 3, 2016								
Shielded Room	CHENGYU	843	PTS-002	June 6,2015	June 5,2016								

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# 8. RADIATED EMISSION

#### 8.1TEST LIMIT

#### Standard FCC15.249

Fundamental Frequency	Field Strength of Fundamental	Field Strength of Harmonics
	(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 Strengths Limit					
(MHz)	Meters	μ V/m	dB(μV)/m				
0.009 ~ 0.490	300	2400/F(kHz)					
0.490 ~ 1.705	30	24000/F(kHz)					
1.705 ~ 30	30	30					
30 ~ 88	3	100	40.0				
88 ~ 216	3	150	43.5				
216 ~ 960	3	200	46.0				
960 ~ 1000	3	500	54.0				
Above 1000	3	Other:74.0 dB(µV)/m (Peal	k) 54.0 dB(μV)/m (Average)				

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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#### **8.2. MEASUREMENT PROCEDURE**

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 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 emissions, 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 1.5MHz VBW and RBW for peak reading. Then 1.5MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
- 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.

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

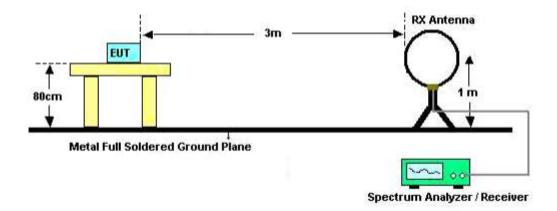
Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz
Clair Ctop Frequency	1.5MHz/1.5MHz for Peak, 1.5MHz/10Hz for Average

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

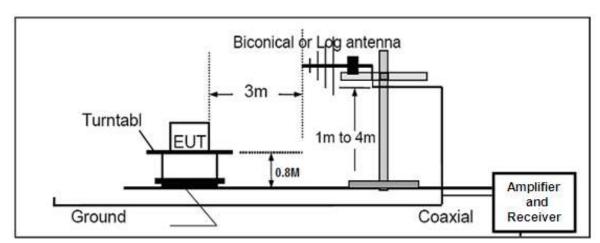
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#### 8.3. TEST SETUP

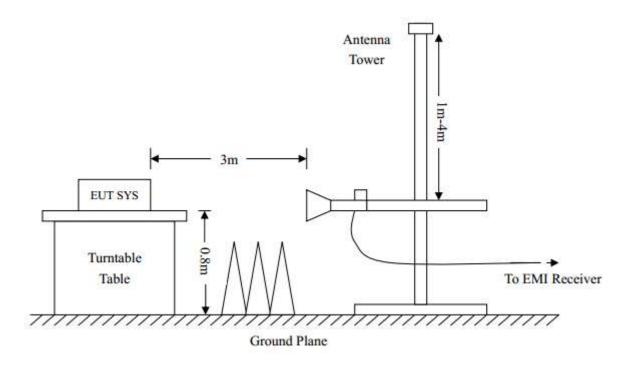
# Radiated Emission Test-Setup Frequency Below 30MHz



# RADIATED EMISSION TEST SETUP 30MHz-1000MHz



# RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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#### **8.4. TEST RESULT**

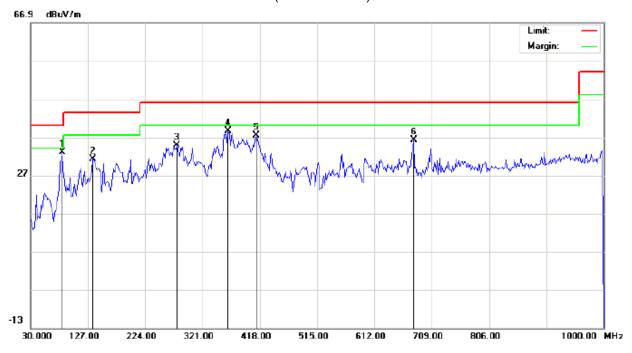
(Worst modulation: GFSK)

#### **RADIATED EMISSION BELOW 30MHZ**

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

#### **RADIATED EMISSION BELOW 1GHZ**

RADIATED EMISSION TEST- (30MHZ-1GHZ)-LOW CHANNEL-HORIZONTAL



Site: site #1 Polarization: Horizontal Temperature: 22.7
Limit: FCC Class B 3M Radiation Power: Humidity: 53.9 %

EUT: Bluetooth Speaker and power bank Distance: 3m

M/N: B45

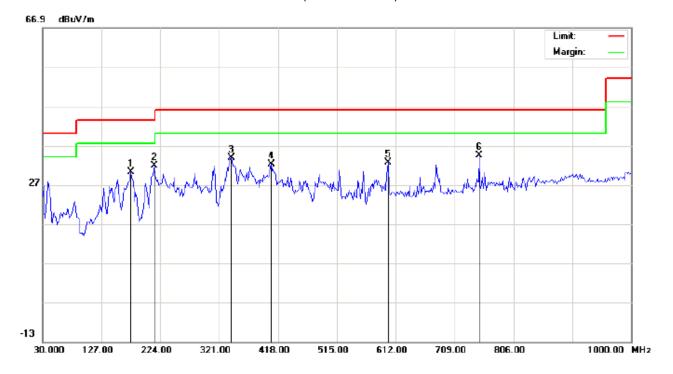
Mode: Low Channel TX

Note:

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	*	83.3500	23.37	9.66	33.03	40.00	-6.97	peak			
2		135.0833	16.86	14.38	31.24	43.50	-12.26	peak			
3		277.3500	20.10	14.73	34.83	46.00	-11.17	peak			
4		364.6500	19.73	18.84	38.57	46.00	-7.43	peak			
5		411.5333	17.89	19.42	37.31	46.00	-8.69	peak		·	
6		678.2833	11.59	24.61	36.20	46.00	-9.80	peak		·	

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# RADIATED EMISSION TEST- (30MHZ-1GHZ)-LOW CHANNEL -VERTICAL



Site: site #1 Polarization: Vertical Temperature: 22.7
Limit: FCC Class B 3M Radiation Power: Humidity: 53.9 %

EUT: Bluetooth Speaker and power bank Distance: 3m

M/N: B45

Mode: Low Channel TX

Note:

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		175.5000	15.77	14.35	30.12	43.50	-13.38	peak			
2		214.3000	21.41	10.40	31.81	43.50	-11.69	peak			
3		340.4000	15.63	18.10	33.73	46.00	-12.27	peak			
4		406.6832	13.00	19.27	32.27	46.00	-13.73	peak			
5		599.0667	9.96	22.73	32.69	46.00	-13.31	peak			
6	*	749.4167	7.71	26.61	34.32	46.00	-11.68	peak			

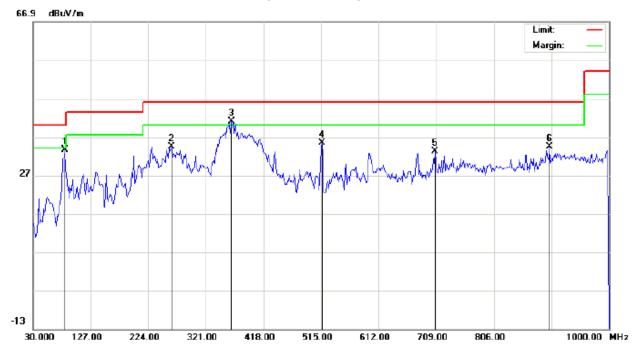
# **RESULT: PASS**

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



Site: site #1 Polarization: Horizontal Temperature: 22.7
Limit: FCC Class B 3M Radiation Power: Humidity: 53.9 %

EUT: Bluetooth Speaker and power bank Distance: 3m

M/N: B45

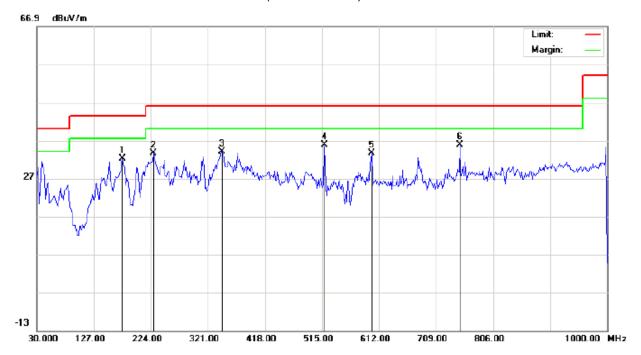
Mode: Middle Channel TX

Note:

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		83.3500	23.87	9.66	33.53	40.00	-6.47	peak			
2		262.8000	20.11	14.29	34.40	46.00	-11.60	peak			
3	*	364.6500	22.23	18.84	41.07	46.00	-4.93	peak			
4		516.6167	13.77	21.58	35.35	46.00	-10.65	peak			
5		707.3833	7.90	25.40	33.30	46.00	-12.70	peak			
6		899.7667	5.86	28.60	34.46	46.00	-11.54	peak			

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# RADIATED EMISSION TEST- (30MHZ-1GHZ)- MIDDLE CHANNEL -VERTICAL



Site: site #1 Polarization: Vertical Temperature: 22.7 Limit: FCC Class B 3M Radiation Power: Humidity: 53.9 %

EUT: Bluetooth Speaker and power bank Distance: 3m

M/N: B45

Mode: Middle Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height		Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		175.5000	17.77	14.35	32.12	43.50	-11.38	peak			
2		228.8500	21.72	11.83	33.55	46.00	-12.45	peak			
3		345.2500	15.59	18.42	34.01	46.00	-11.99	peak			
4		519.8500	14.04	21.67	35.71	46.00	-10.29	peak			
5		599.0667	10.96	22.73	33.69	46.00	-12.31	peak			
6	*	749.4167	9.21	26.61	35.82	46.00	-10.18	peak			

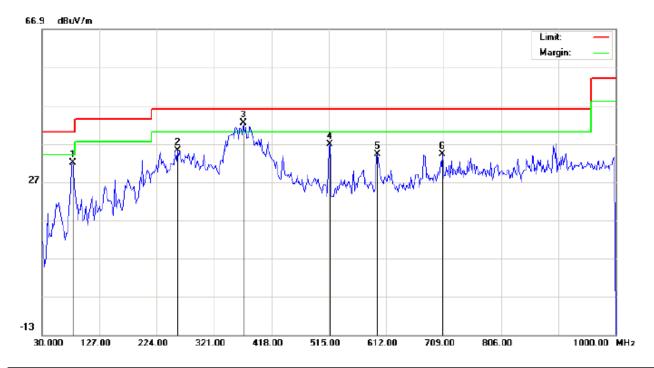
# **RESULT: PASS**

**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



Site: site #1 Polarization: Horizontal Temperature: 22.7
Limit: FCC Class B 3M Radiation Power: Humidity: 53.9 %

EUT: Bluetooth Speaker and power bank Distance: 3m

M/N: B45

Mode: High Channel TX

Note:

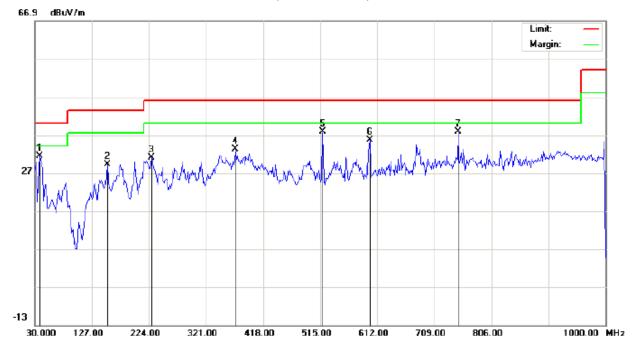
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu√/m	dB		cm	degree	
1		81.7333	22.30	9.73	32.03	40.00	-7.97	peak			
2		259.5667	21.08	14.19	35.27	46.00	-10.73	peak			
3	*	371.1167	23.55	18.88	42.43	46.00	-3.57	peak			
4		516.6167	15.27	21.58	36.85	46.00	-9.15	peak			
5		597.4500	10.44	23.67	34.11	46.00	-11.89	peak			
6		707.3833	8.90	25.40	34.30	46.00	-11.70	peak		·	

Temperature: 22.7

Humidity: 53.9 %

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# RADIATED EMISSION TEST- (30MHZ-1GHZ)-HIGH CHANNEL -VERTICAL



Polarization: Vertical

Site: site #1

Limit: FCC Class B 3M Radiation

EUT: Bluetooth Speaker and power bank

M/N: B45

Mode: High Channel TX

Note:

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		38.0833	24.92	6.39	31.31	40.00	-8.69	peak			
2		152.8667	13.96	15.28	29.24	43.50	-14.26	peak			
3		228.8500	19.22	11.83	31.05	46.00	-14.95	peak			
4		371.1167	14.23	18.88	33.11	46.00	-12.89	peak			
5		519.8500	16.04	21.67	37.71	46.00	-8.29	peak			
6		599.0667	12.96	22.73	35.69	46.00	-10.31	peak			
7	*	749.4167	11.21	26.61	37.82	46.00	-8.18	peak			

Power:

Distance: 3m

#### **RESULT: PASS**

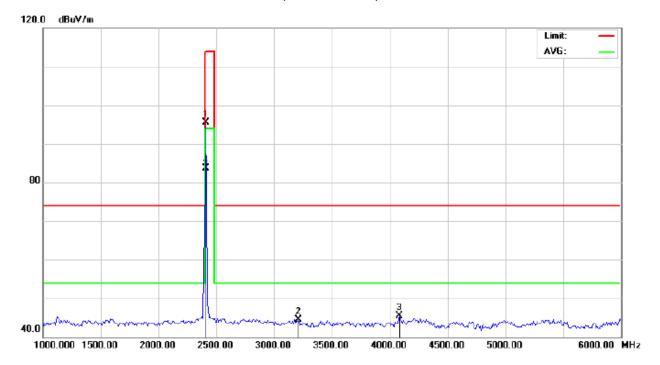
Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

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

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#### **RADIATED EMISSION ABOVE 1GHZ**

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



Site: site #1 Polarization: Horizontal Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 60 %

EUT: Bluetooth Speaker and power ban Distance: 3m

M/N: B45

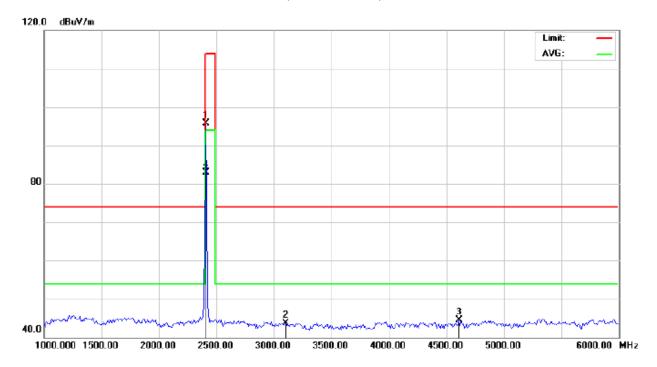
Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height		Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2402.000	105.17	-9.68	95.49	114.00	-18.51	peak			
2		3208.333	52.74	-8.16	44.58	74.00	-29.42	peak			
3		4083.333	49.94	-4.53	45.41	74.00	-28.59	peak			
4	*	2402.000	93.44	-9.68	83.76	94.00	-10.24	AVG	100	219	

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



Site: site #1 Polarization: Vertical Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 60 %

EUT: Bluetooth Speaker and power ban Distance: 3m

M/N: B45

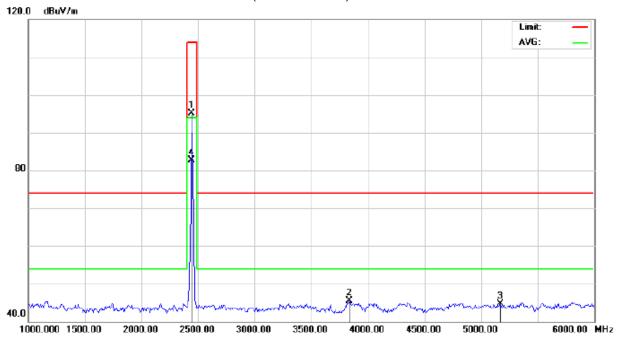
Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height		Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2402.000	105.29	-9.68	95.61	114.00	-18.39	peak			
2		3100.000	52.07	-8.27	43.80	74.00	-30.20	peak			
3		4608.333	47.24	-2.83	44.41	74.00	-29.59	peak			
4	*	2402.000	92.56	-9.68	82.88	94.00	-11.12	AVG	100	337	

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



Site: site #1 Polarization: Horizontal Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 60 %

EUT: Bluetooth Speaker and power ban Distance: 3m

M/N: B45

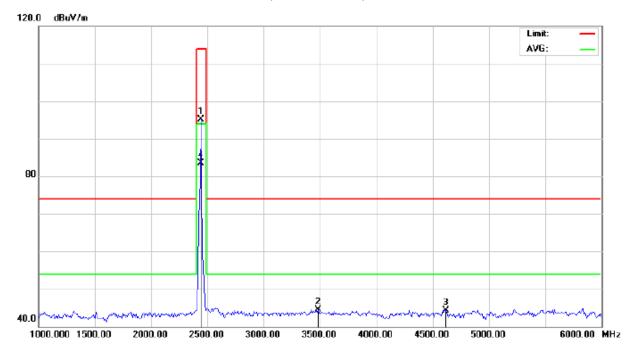
Mode: Middle Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2441.000	104.79	-9.63	95.16	114.00	-18.84	peak			
2		3833.333	51.30	-5.84	45.46	74.00	-28.54	peak			
3		5166.667	46.50	-1.80	44.70	74.00	-29.30	peak			
4	*	2441.000	92.42	-9.63	82.79	94.00	-11.21	AVG	100	337	

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



Site: site #1 Polarization: Vertical Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 60 %

EUT: Bluetooth Speaker and power ban Distance: 3m

M/N: B45

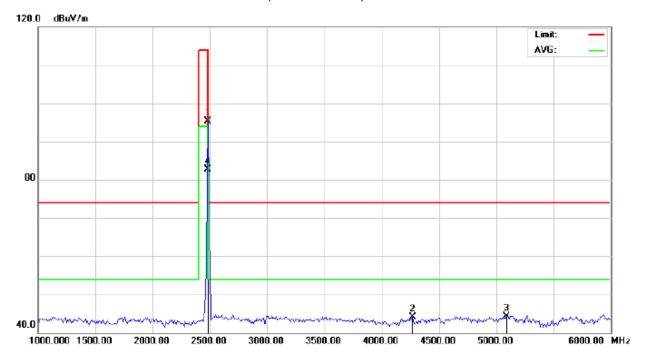
Mode: Middle Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height		Comment
	.	MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2441.000	104.73	-9.63	95.10	114.00	-18.90	peak			
2		3483.333	52.49	-7.91	44.58	74.00	-29.42	peak			
3		4616.667	47.05	-2.80	44.25	74.00	-29.75	peak			
4	*	2441.000	93.11	-9.63	83.48	94.00	-10.52	AVG	100	218	

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



Site: site #1 Polarization: Horizontal Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 60 %

EUT: Bluetooth Speaker and power ban Distance: 3m

M/N: B45

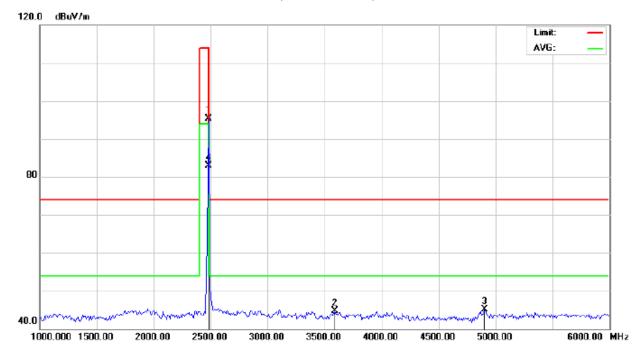
Mode: High Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2480.000	104.87	-9.59	95.28	114.00	-18.72	peak			
2		4266.667	47.92	-3.90	44.02	74.00	-29.98	peak			
3		5091.667	46.12	-1.80	44.32	74.00	-29.68	peak			
4	*	2480.000	92.25	-9.59	82.66	94.00	-11.34	AVG	100	221	

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



Site: site #1

Polarization: Vertical
Power:

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)-

Hamilton CO N

EUT: Bluetooth Speaker and power bank

Distance: 3m

Humidity: 60 %

M/N: B45

Mode: High Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	104.90	-9.59	95.31	114.00	-18.69	peak			
2		3591.667	52.12	-7.33	44.79	74.00	-29.21	peak			
3		4900.000	47.18	-2.06	45.12	74.00	-28.88	peak			
4		2480.000	92.48	-9.59	82.89	94.00	-11.11	AVG	100	337	

#### **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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# Field strength of the fundamental signal

# Peak value

Frequency	Reading Level	Factor	Measurement	Limit	Over	Antenna
(MHz)	(dBuv)	(dB/m)	(dBuv/m)	(dBuv/m)	(dB)	Polarization
2402	105.17	-9.68	95.49	114	-18.51	Horizontal
2402	105.29	-9.68	95.61	114	-18.39	Vertical
2441	104.79	-9.63	95.16	114	-18.84	Horizontal
2441	104.73	-9.63	95.10	114	-18.90	Vertical
2480	104.87	-9.59	95.28	114	-18.72	Horizontal
2480	104.90	-9.59	95.31	114	-18.69	Vertical

# Average value

Frequency	Reading Level	Factor	Measurement	Limit	Over	Antenna
(MHz)	(dBuv)	(dB/m)	(dBuv/m)	(dBuv/m)	(dB)	Polarization
2402	93.44	-9.68	83.76	94	-10.24	Horizontal
2402	92.56	-9.68	82.88	94	-11.12	Vertical
2441	92.42	-9.63	82.79	94	-11.21	Horizontal
2441	93.11	-9.63	83.48	94	-10.52	Vertical
2480	92.25	-9.59	82.66	94	-11.34	Horizontal
2480	92.48	-9.59	82.89	94	-11.11	Vertical

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#### 9. BAND EDGE EMISSION

#### 9.1. MEASUREMENT PROCEDURE

1The 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.

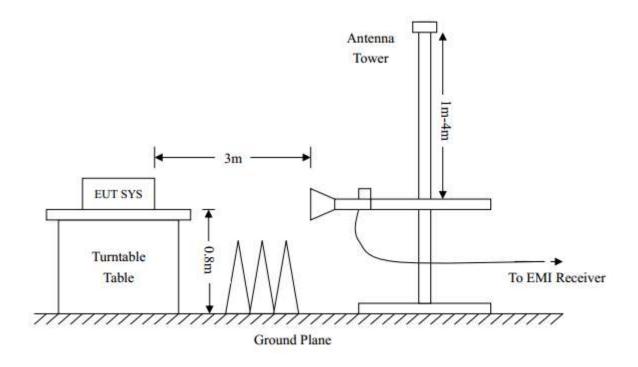
2Max hold the trace of the setp 1,and the EUT operates at hopping-on test mode to verify the largest spurious emissions power.

3Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: (a) PEAK: RBW=VBW=1.5MHz / Sweep=AUTO

(b) AVERAGE: RBW=1.5MHz; VBW=1/on time(1KHz) / Sweep=AUTO

#### 9.2 TEST SETUP

#### RADIATED EMISSION TEST SETUP

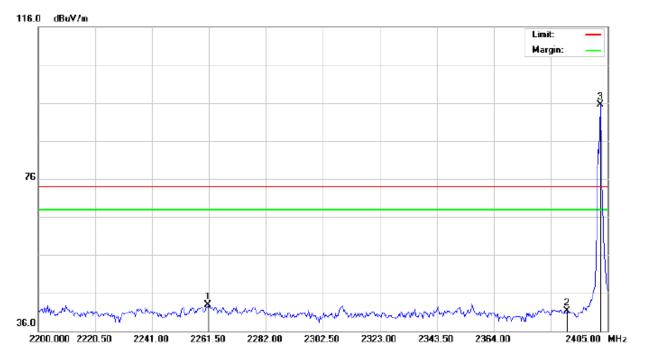


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#### 9.3 RADIATED TEST RESULT

(Worst modulation: GFSK)

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



Site: site #1

Polarization: Horizontal

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

Power:

Humidity: 60 %

EUT: Bluetooth Speaker and power ban

Distance:

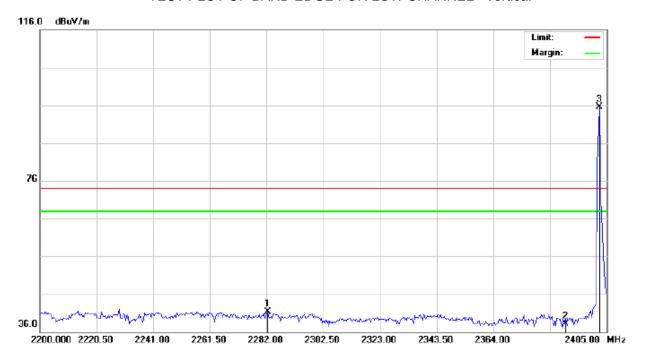
M/N: B45

Mode: Low Channel TX

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2261.158	32.74	10.17	42.91	74.00	-31.09	peak			
2		2390.000	31.00	10.31	41.31	74.00	-32.69	peak			
3	*	2402.000	85.22	10.32	95.54	74.00	21.54	peak			

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# TEST PLOT OF BAND EDGE FOR LOW CHANNEL - Vertical



Site: site #1 Polarization: Vertical Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %

EUT: Bluetooth Speaker and power ban Distance:

M/N: B45

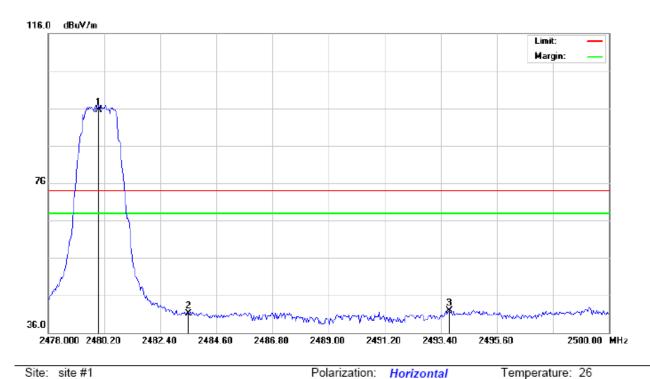
Mode: Low Channel TX

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2282.342	31.20	10.19	41.39	74.00	-32.61	peak			
2		2390.000	27.71	10.31	38.02	74.00	-35.98	peak			
3	*	2402.000	85.09	10.32	95.41	74.00	21.41	peak			

Humidity: 60 %

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



Site: site #1 Polarization: Horizontal
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power:

EUT: Bluetooth Speaker and power ban Distance:

M/N: B45

Mode: High Channel TX

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	85.05	10.41	95.46	74.00	21.46	peak			
2		2483.500	30.69	10.41	41.10	74.00	-32.90	peak			
3		2493.730	31.42	10.42	41.84	74.00	-32.16	peak			

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# TEST PLOT OF BAND EDGE FOR HIGH CHANNEL-Vertical



Site: site #1 Polarization: Vertical Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %

EUT: Bluetooth Speaker and power ban Distance:

M/N: B45

Mode: High Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	85.32	10.41	95.73	74.00	21.73	peak			
2		2483.500	31.26	10.41	41.67	74.00	-32.33	peak			
3		2493.620	31.73	10.42	42.15	74.00	-31.85	peak			

#### **RESULT: PASS**

Note: The other modes radiation emission have enough 20dB margin.

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

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

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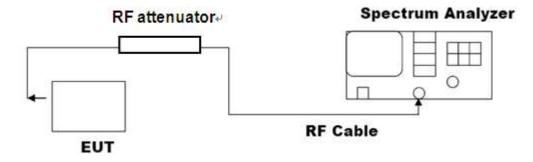
# 10. 20DB BANDWIDTH

#### **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 Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hoping channel RBW  $\geq$  1% of the 20 dB bandwidth, VBW  $\geq$  RBW; Sweep = auto; Detector function = peak
- 4. Set SPA Trace 1 Max hold, then View.

#### 10.2. TEST SET-UP

## (BLOCK DIAGRAM OF CONFIGURATION)



#### 10.3. LIMITS AND MEASUREMENT RESULTS

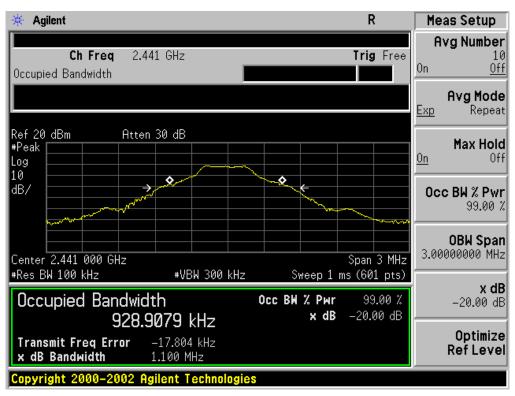
BLUETOOTH 1MBPS LIMITS AND MEASUREMENT RESUL			
Applicable Limits	Measurement Result		
	Test Data (MHz)		Criteria
N/A	Low Channel	1.096	PASS
	Middle Channel	1.100	PASS
	High Channel	1.104	PASS

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#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

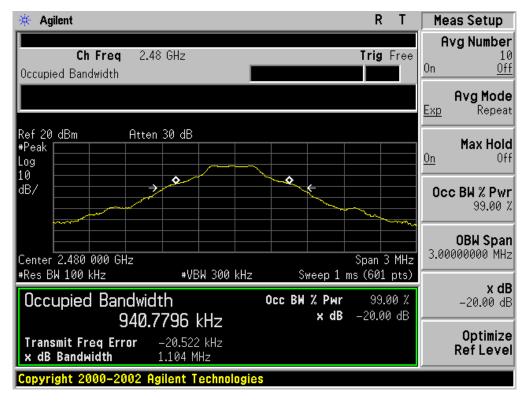


#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



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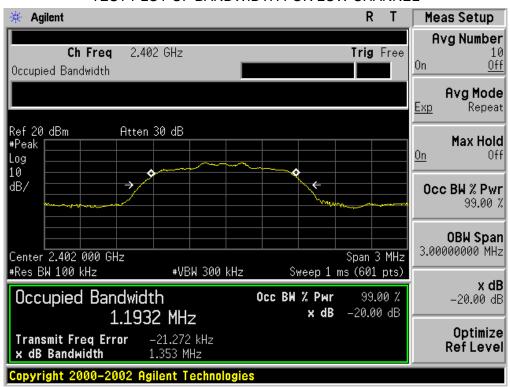
#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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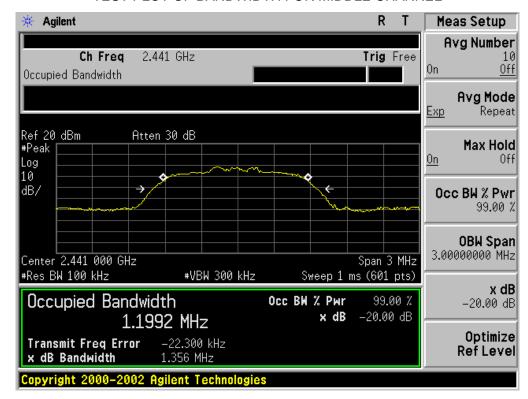
BLUETOOTH 2MBPS LIMITS AND MEASUREMENT RESUL										
Applicable Limite	Measurement Result									
Applicable Limits	Test Da	Criteria								
	Low Channel	1.353	PASS							
N/A	Middle Channel	1.356	PASS							
	High Channel	1.366	PASS							

## TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

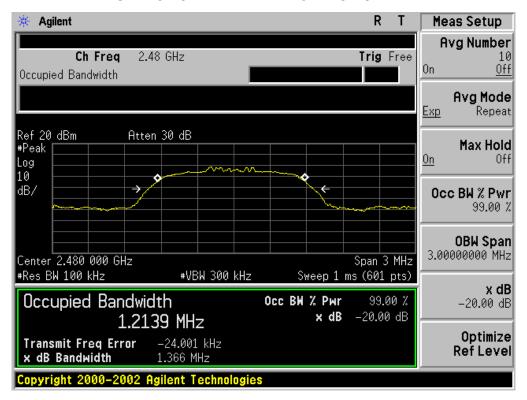


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#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



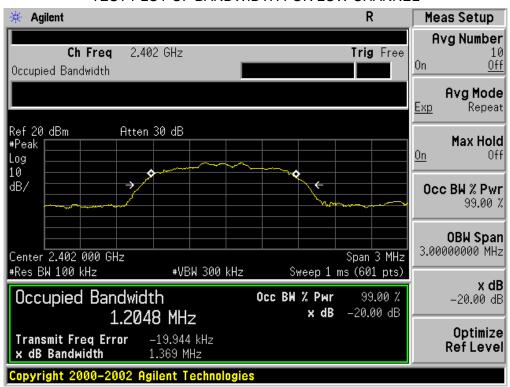
#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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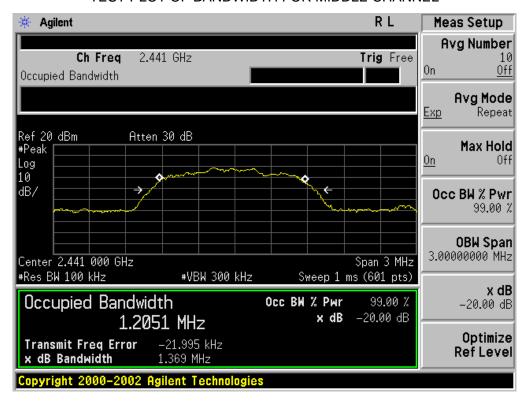
BLUETOOTH 3MBPS LIMITS AND MEASUREMENT RESUL									
Applicable Limite	Measurement Result								
Applicable Limits	Test Da	Criteria							
	Low Channel	1.369	PASS						
N/A	Middle Channel	1.369	PASS						
	High Channel	1.369	PASS						

### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

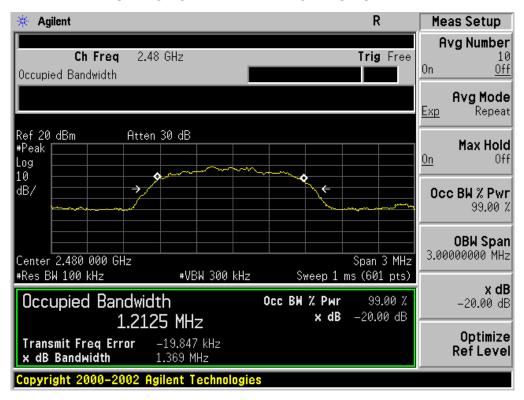


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#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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### 11. FCC LINE CONDUCTED EMISSION TEST

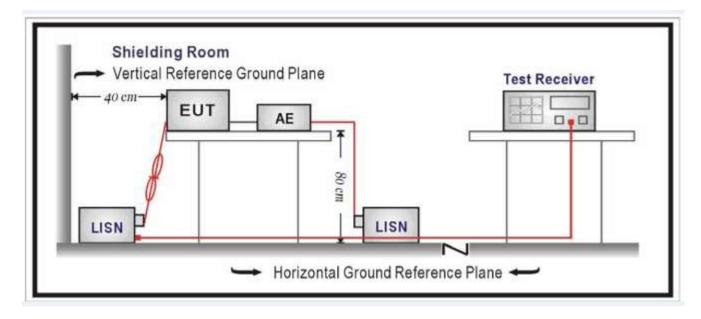
# 11.1. LIMITS OF LINE CONDUCTED EMISSION TEST

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

### Note:

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

## 11.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



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#### 11.3. 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 C63.4 (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 C63.4.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4. All support equipments received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC charging voltage by 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.

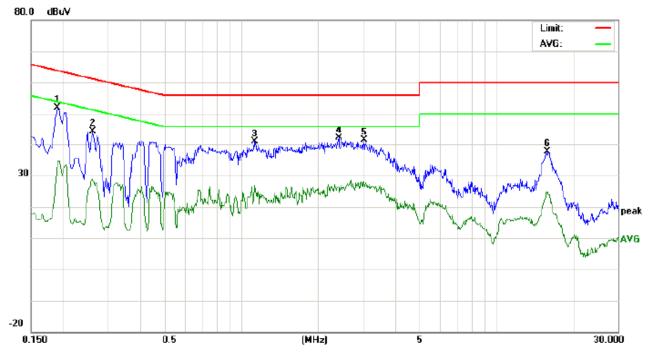
## 11.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 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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# 11.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

### Line Conducted Emission Test Line 1-L



Site: Conduction Phase: L1 Temperature: 22.5
Limit: FCC Class B Conduction(QP) Power: Humidity: 56.3 %

EUT: Bluetooth Speaker and power ban

M/N: B45

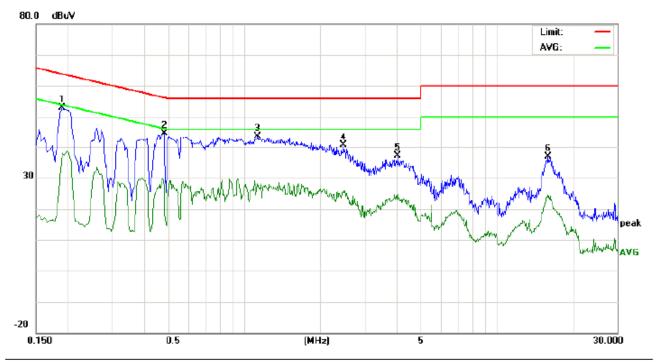
Mode: BT Link with charging

Note:

No. Freq.	Reading_Level (dBuV)			Correct Measuremen Factor (dBuV)				Limit (dBuV)		Margin (dB)		P/F	Comment	
	(MHz)	Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1900	41.64		24.55	10.20	51.84		34.75	64.03	54.03	-12.19	-19.28	Р	
2	0.2620	34.14		18.67	10.27	44.41		28.94	61.36	51.36	-16.95	-22.42	Р	
3	1.1260	30.40		16.28	10.37	40.77		26.65	56.00	46.00	-15.23	-19.35	Р	
4	2.4100	31.69		15.75	10.39	42.08		26.14	56.00	46.00	-13.92	-19.86	Р	
5	3.0340	30.81		17.27	10.55	41.36		27.82	56.00	46.00	-14.64	-18.18	Р	
6	15.8540	27.59		14.19	10.11	37.70		24.30	60.00	50.00	-22.30	-25.70	Р	

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# Line Conducted Emission Test Line 2-N



Site: Conduction Phase: N Temperature: 22.5
Limit: FCC Class B Conduction(QP) Power: Humidity: 56.3 %

EUT: Bluetooth Speaker and power ban

M/N: B45

Mode: BT Link with charging

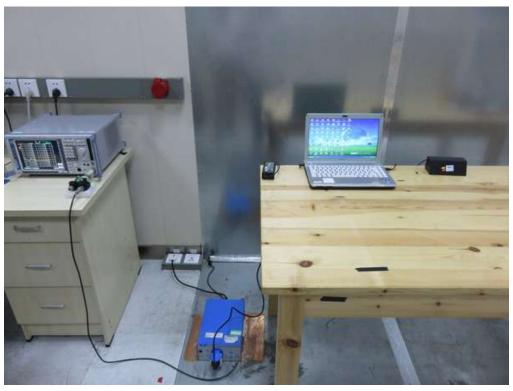
Note:

No.	Freq.	Reading_Level (dBuV)			Correct Factor	Me	easurement (dBuV)		Limit (dBuV)		Margin (dB)		P/F	Comment
	(MHz)	Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1900	42.70		27.80	10.20	52.90		38.00	64.03	54.03	-11.13	-16.03	Р	
2	0.4820	34.23		16.18	10.39	44.62		26.57	56.30	46.30	-11.68	-19.73	Р	
3	1.1300	33.18		17.85	10.37	43.55		28.22	56.00	46.00	-12.45	-17.78	Р	
4	2.4780	30.28		14.90	10.42	40.70		25.32	56.00	46.00	-15.30	-20.68	Р	
5	4.0580	26.69		14.52	10.40	37.09		24.92	56.00	46.00	-18.91	-21.08	Р	
6	15.9820	26.81		13.73	10.11	36.92		23.84	60.00	50.00	-23.08	-26.16	Р	

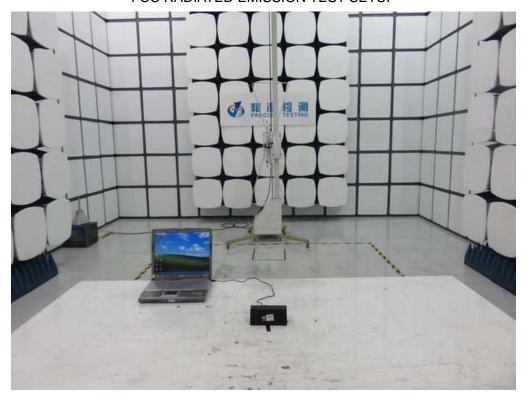
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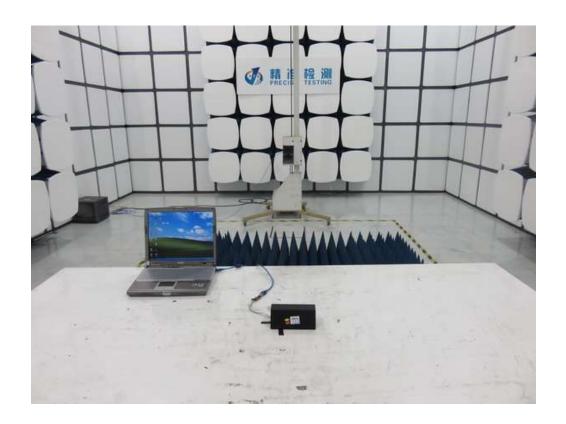
# **APPENDIX A: PHOTOGRAPHS OF TEST SETUP**

FCC LINE CONDUCTED EMISSION TEST SETUP



FCC RADIATED EMISSION TEST SETUP

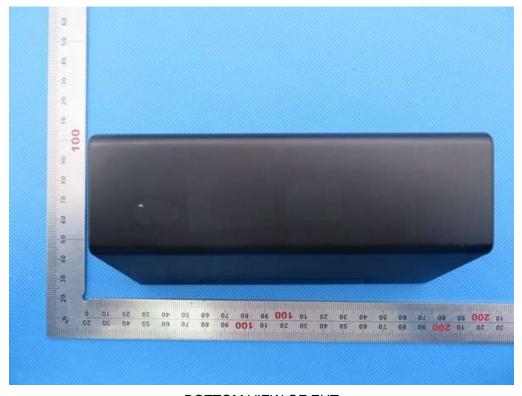




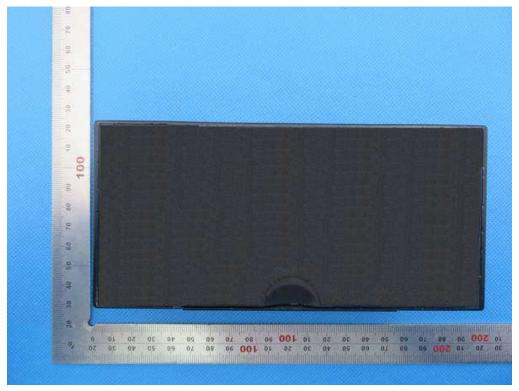
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# **APPENDIX B: PHOTOGRAPHS OF EUT**

TOP VIEW OF EUT

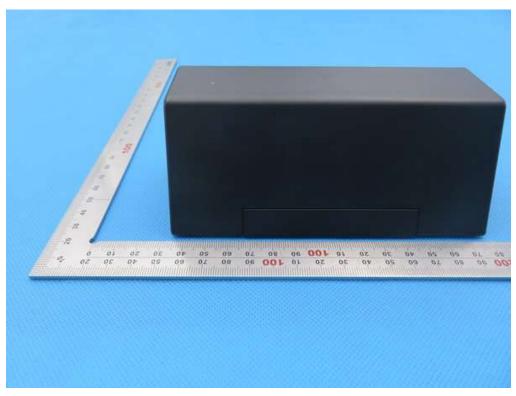


**BOTTOM VIEW OF EUT** 



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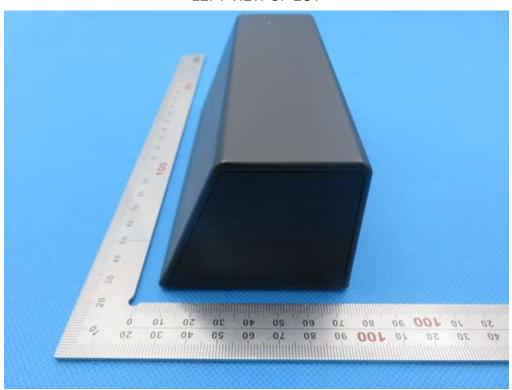
FRONT VIEW OF EUT



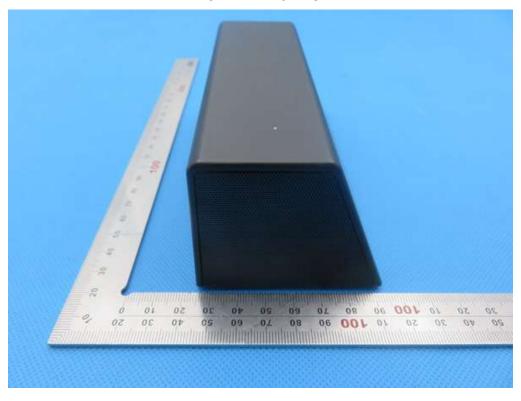
**BACK VIEW OF EUT** 



LEFT VIEW OF EUT



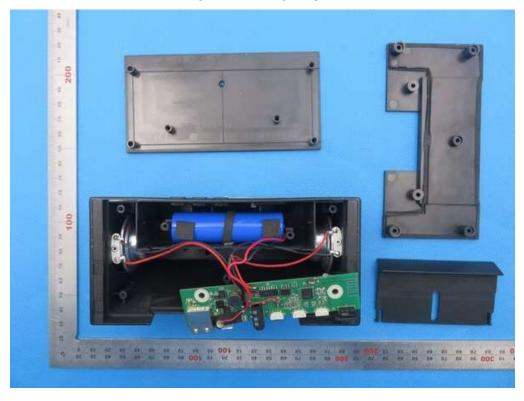
**RIGHT VIEW OF EUT** 



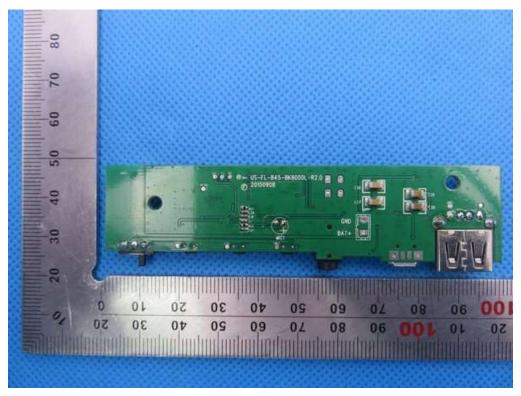
# VIEW OF EUT (PORT)



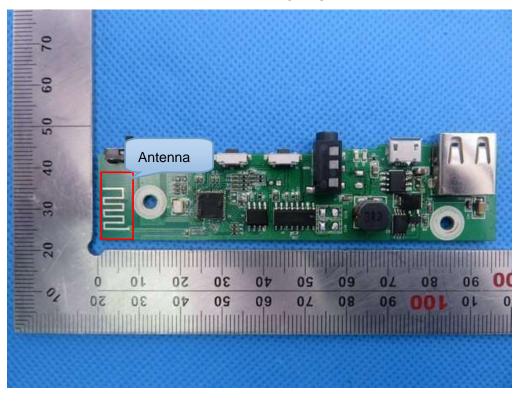
**OPEN VIEW OF EUT** 



# **INTERNAL VIEW OF EUT-1**



**INTERNAL VIEW OF EUT-2** 



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# **INTERNAL VIEW OF EUT-3**



----END OF REPORT----