

FCC Test Report

Report No.: AGC02037180102FE03

FCC ID : 2AIL4-BH194A
APPLICATION PURPOSE : Original Equipment
PRODUCT DESIGNATION : Bluetooth FM Transmitter
BRAND NAME : N/A
MODEL NAME : BH194A, F-227BT, BH194B, BH194C, F-224BT
CLIENT : VTIN TECHNOLOGY Co.,Limited
DATE OF ISSUE : Mar. 16, 2018
STANDARD(S) : FCC Part 15 Subpart C Section 15.249
TEST PROCEDURE(S)
REPORT VERSION : V1.1

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	/	Mar. 05, 2018	Invalid	Initial release
V1.1	1st	Mar. 16, 2018	Valid	Update the comments.

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1. VERIFICATION OF CONFORMITY

Applicant	VTIN TECHNOLOGY Co.,Limited
Address	Unit D,16/F,One Capital Place,18 Luard Road,Wan Chai,Hong Kong
Manufacturer	Shenzhen DAZA Innovation Technology Company Limited
Address	G Building 102 202 3F,No. 6 Xinmu Avenue, Xinmu Community, Pinghu Longgang District,Shenzhen,China
Product Designation	Bluetooth FM Transmitter
Brand Name	N/A
Test Model	BH194A
Series Model	F-227BT, BH194B, BH194C, F-224BT
Difference description	All the same, except for the model name and shape.
Date of test	Jan. 30, 2018 to Mar. 05, 2018
Deviation	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



Steven Zhou(Zhou Pengyun)

Mar. 05, 2018

Reviewed By



Forrest Lei(Lei Yonggang)

Mar. 16, 2018

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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	-2.28dBm(Max EIRP Power=Max radiation field-95.2)
Bluetooth Version	V4.2
Modulation	BR ☒ GFSK, EDR ☒ $\pi/4$ -DQPSK, ☒ 8DPSK BLE ☐ GFSK
Number of channels	79 for BR/EDR
Hardware Version	F-231BT-CW6621E-QN8027-V5
Software Version	F231_BH194A_6621E_V59_SP0CF8B812_beat12
Antenna Designation (For Bluetooth)	PCB Antenna
Antenna Gain	1.9dBi
Power Supply	INPUT:DC 12V-24V OUTPUT:DC 5V 3A MAX

2.2. TABLE OF CARRIER FREQUENCIES

BR/EDR channel List

Frequency Band	Channel Number	Frequency
2400~2483.5MHz	0	2402MHz
	1	2403MHz
	:	:
	38	2440 MHz
	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 expanded 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, $U_c = \pm 3.2$ dB
- Uncertainty of Radiated Emission below 1GHz, $U_c = \pm 3.9$ dB
- Uncertainty of Radiated Emission above 1GHz, $U_c = \pm 4.8$ dB

4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel GFSK
2	Middle channel GFSK
3	High channel GFSK
4	Low channel $\pi/4$ -DQPSK
5	Middle channel $\pi/4$ -DQPSK
6	High channel $\pi/4$ -DQPSK
7	Low channel 8DPSK
8	Middle channel 8DPSK
9	High channel 8DPSK
10	BT Link

Note: The car charger was supplied by DC 12V and DC 24V. All the model have been assessed, only the worst mode test data (DC 24V) recorded in the test report.

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Software Setting

Form_Main

Interface: COM UART | Port = 4 | Baudrate=115200

Open Close ☒ Download Patch

Hot Key

HCI Reset

Test Mode

Patch code

GetChipInfo

Get BT Stage

0

Script

Non Link Mode | **Hopping** | RW | Options | LE Test | LED

Channel: 0

Packet Type: DH1

Payload Type: ALL'0

Tx Packet Count: 0

Tx Gain Index: 5

Tx Gain Value: 0xCE

Pkt-Tx: Pkt-Tx

Exec Stop Clear Report

Item	Value
Tx bits	874368
Tx Pkt Count	4048

Parameter 1 | Parameter 2 | Parameter 3 | Table | Cal

TX Report | RX Report

Message

```
>>LMP_Version=0x6
>>Version=0c
>>Is_After_PatchCode=1
>>Skip patch code !!
>>Download patch code Success...
>>Enable TRX Thread Mode...!!
>>ActionControlExcute(Pkt-Tx) Success...!!
```

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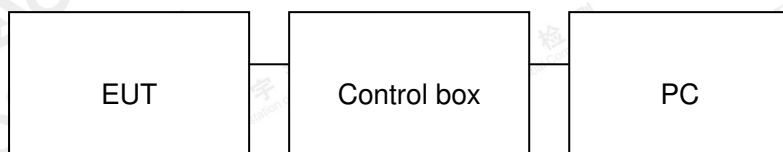
5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure 1: (Normal hopping)



Configure 2: (Control continuous TX)



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
1	Bluetooth FM	Pinmi	BH194A	EUT
2	USB Cable	N/A	1m unshielded	A.E
3	Load	HPX	RX24	A.E
4	DC source	SAIL	12V 60Ah 356A	A.E
5	DC source	SAIL	12V 60Ah 356A	A.E
6	TF Card	Kingston	SDA 10/16GB	A.E
7	U-disc	Kingston	DT 101G2	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	N/A
§15.215	Bandwidth	Compliant

Note: N/A means it's not applicable to this item.

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6. TEST FACILITY

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	--	Mar.01, 2018	Feb.28, 2020

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9. RADIATED EMISSION

9.1 TEST LIMIT

Standard FCC15.249

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (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 (MHz)	Distance Meters	Field Strengths Limit	
		μ V/m	dB(μ V)/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(μ V)/m (Peak) 54.0 dB(μ V)/m (Average)	

Remark:

- (1) Emission level dB μ V = 20 log Emission level μ 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)
3. 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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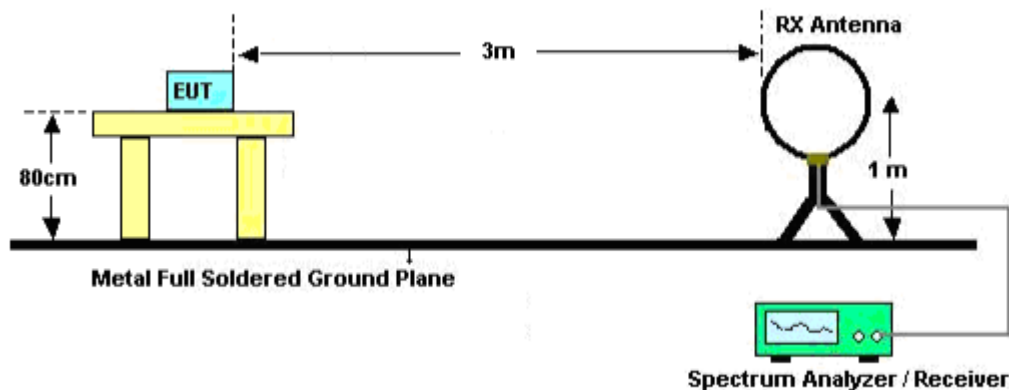
The following table is the setting of spectrum analyzer and receiver.

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	1GHz~26.5GHz RBW 2MHz/ VBW 6MHz for Peak, RBW 1.5MHz/ 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

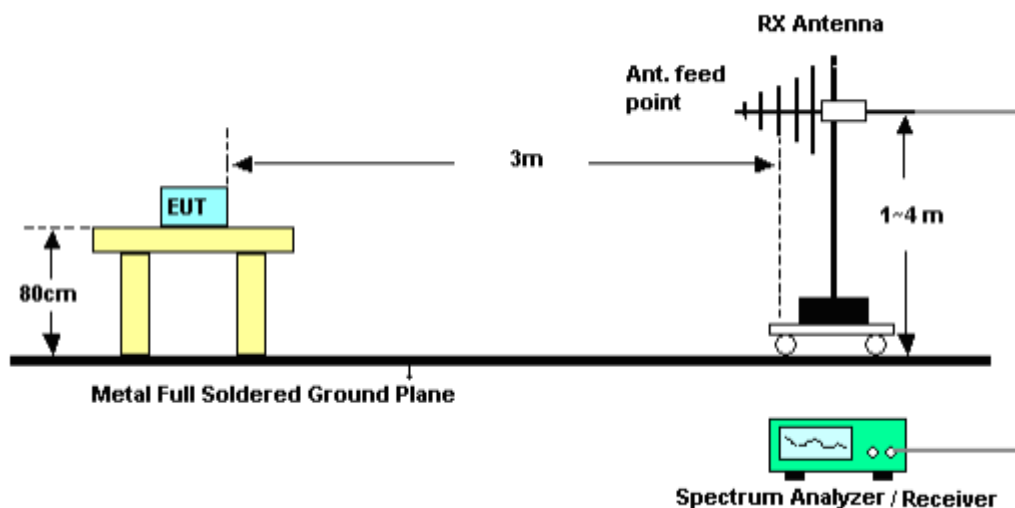
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9.3. TEST SETUP

Radiated Emission Test-Setup Frequency Below 30MHz

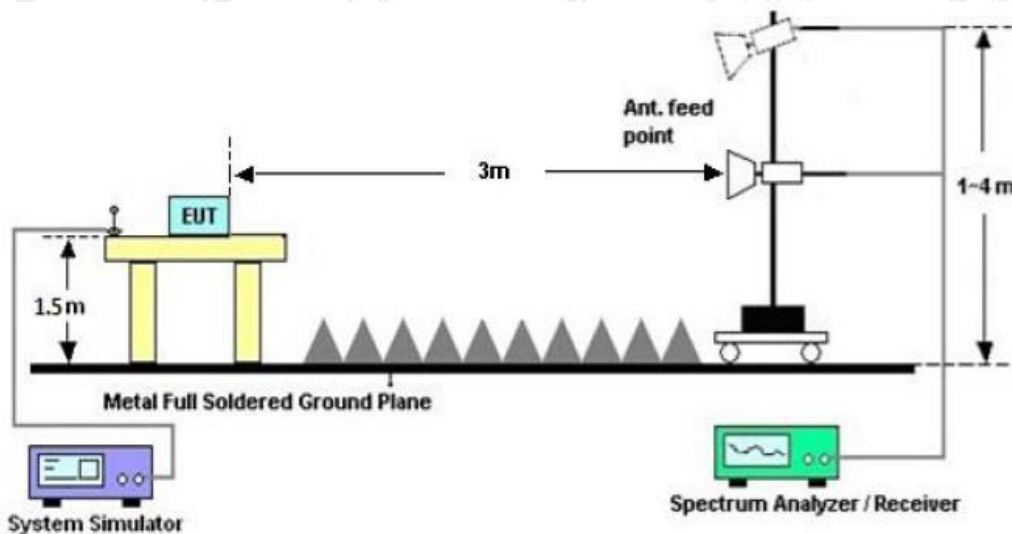


RADIATED EMISSION TEST SETUP 30MHz-1000MHz



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RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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9.4. TEST RESULT

(Worst modulation: GFSK)

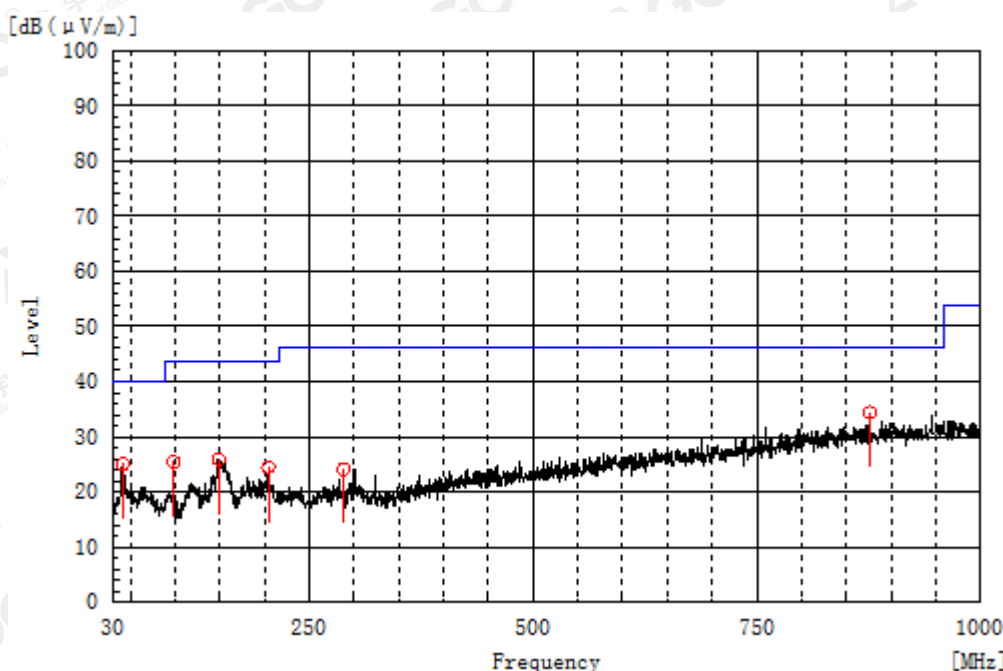
FOR BR/EDR

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

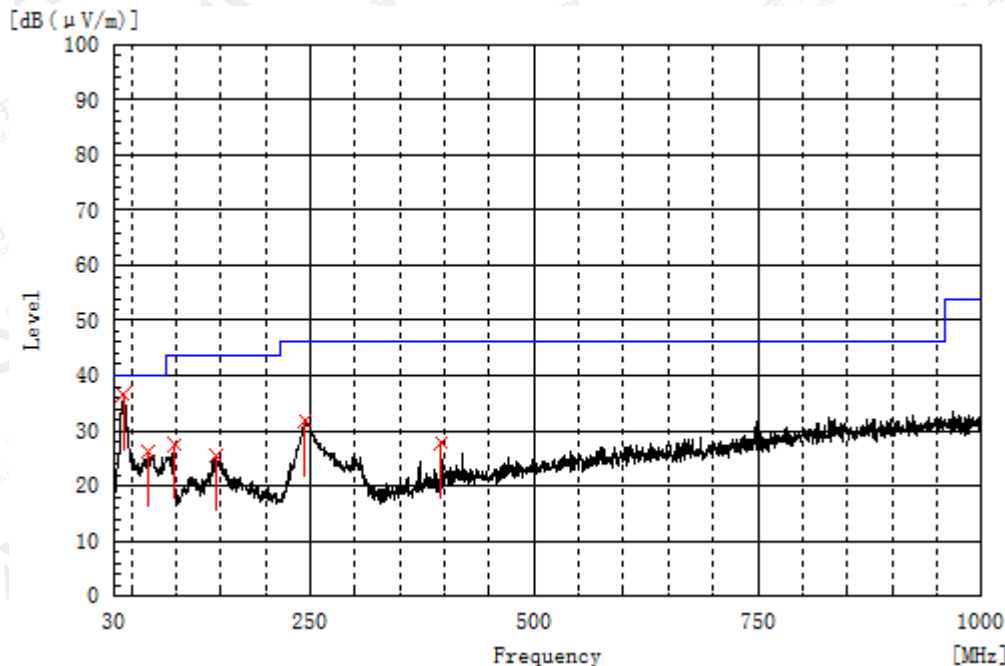


Frequency MHz	Polarization	Reading dB(μV)	Factor dB (1/m)	Level dB(μV/m) PK	Limit dB(μV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
41.155	H	10.7	14.4	25.1	40.0	14.9	Pass	200.0	20.1
97.900	H	15.4	10.1	25.5	43.5	18.0	Pass	100.0	143.7
148.825	H	12.3	13.6	25.9	43.5	17.6	Pass	100.0	287.8
204.115	H	13.9	10.6	24.5	43.5	19.0	Pass	100.0	35.1
288.020	H	9.5	14.6	24.1	46.0	21.9	Pass	100.0	71.5
876.325	H	7.5	26.9	34.4	46.0	11.6	Pass	100.0	71.5

RESULT: PASS

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



Frequency MHz	Polarization	Reading dB(μV)	Factor dB (1/m)	Level dB(μV/m) PK	Limit dB(μV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
40.670	V	22.1	14.4	36.5	40.0	3.5	Pass	100.0	289.5
68.315	V	14.3	11.9	26.2	40.0	13.8	Pass	200.0	21.8
97.900	V	17.5	10.1	27.6	43.5	15.9	Pass	200.0	58.2
143.975	V	12.0	13.6	25.6	43.5	17.9	Pass	100.0	289.5
243.885	V	18.5	13.2	31.7	46.0	14.3	Pass	100.0	218.6
396.175	V	10.1	17.7	27.8	46.0	18.2	Pass	100.0	181.7

RESULT: PASS

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

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

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RADIATED EMISSION ABOVE 1GHz

(Worst modulation: GFSK)

FOR BR/EDR

FIELD STRENGTH OF FUNDAMENTAL FOR BR/EDR

EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Modulation :	GFSK	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2402.013	101.12	-9.37	91.75	114	-22.25	peak
2402.013	97.26	-9.37	87.89	94	-6.11	AVG
2441.016	102.16	-9.63	92.53	114	-21.47	peak
2441.016	99.42	-9.63	89.79	94	-4.21	AVG
2480.021	101.29	-9.61	91.68	114	-22.32	peak
2480.021	98.18	-9.61	88.57	94	-5.43	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Modulation :	GFSK	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2402.013	101.26	-9.37	91.89	114	-22.11	peak
2402.013	98.13	-9.37	88.76	94	-5.24	AVG
2441.016	100.38	-9.63	90.75	114	-23.25	peak
2441.016	97.42	-9.63	87.79	94	-6.21	AVG
2480.021	101.53	-9.61	91.92	114	-22.08	peak
2480.021	97.86	-9.61	88.25	94	-5.75	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Modulation :	$\pi/4$ -DQPSK	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2402.013	102.22	-9.37	92.85	114	-21.15	peak
2402.013	97.37	-9.37	88	94	-6	AVG
2441.016	102.55	-9.63	92.92	114	-21.08	peak
2441.016	97.43	-9.63	87.8	94	-6.2	AVG
2480.021	102.18	-9.61	92.57	114	-21.43	peak
2480.021	97.46	-9.61	87.85	94	-6.15	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Modulation :	$\pi/4$ -DQPSK	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2402.013	99.98	-9.37	90.61	114	-23.39	peak
2402.013	96.37	-9.37	87	94	-7	AVG
2441.016	100.26	-9.63	90.63	114	-23.37	peak
2441.016	95.75	-9.63	86.12	94	-7.88	AVG
2480.021	100.71	-9.61	91.1	114	-22.9	peak
2480.021	96.92	-9.61	87.31	94	-6.69	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Modulation :	8DPSK	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2402.013	101.28	-9.37	91.91	114	-22.09	peak
2402.013	97.16	-9.37	87.79	94	-6.21	AVG
2441.016	101.42	-9.63	91.79	114	-22.21	peak
2441.016	97.34	-9.63	87.71	94	-6.29	AVG
2480.021	101.57	-9.61	91.96	114	-22.04	peak
2480.021	97.38	-9.61	87.77	94	-6.23	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Modulation :	8DPSK	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2402.013	100.42	-9.37	91.05	114	-22.95	peak
2402.013	96.67	-9.37	87.3	94	-6.7	AVG
2441.016	99.85	-9.63	90.22	114	-23.78	peak
2441.016	95.91	-9.63	86.28	94	-7.72	AVG
2480.021	99.62	-9.61	90.01	114	-23.99	peak
2480.021	94.49	-9.61	84.88	94	-9.12	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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RADIATED EMISSION ABOVE 1GHZ FOR BR/EDR

EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Mode :	Mode 1	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804.026	48.15	3.74	51.89	74	-22.11	peak
4804.026	44.35	3.74	48.09	54	-5.91	AVG
7206.039	43.15	8.14	51.29	74	-22.71	peak
7206.039	37.42	8.14	45.56	54	-8.44	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Mode :	Mode 1	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804.026	46.17	3.74	49.91	74	-24.09	peak
4804.026	44.38	3.74	48.12	54	-5.88	AVG
7206.039	42.16	8.14	50.3	74	-23.7	peak
7206.039	35.82	8.14	43.96	54	-10.04	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Mode :	Mode 2	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4882.032	49.26	3.76	53.02	74	-20.98	peak
4882.032	45.48	3.76	49.24	54	-4.76	AVG
7323.048	43.35	8.17	51.52	74	-22.48	peak
7323.048	37.71	8.17	45.88	54	-8.12	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Mode :	Mode 2	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4882.032	48.26	3.76	52.02	74	-21.98	peak
4882.032	45.75	3.76	49.51	54	-4.49	AVG
7323.048	42.49	8.17	50.66	74	-23.34	peak
7323.048	38.16	8.17	46.33	54	-7.67	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Mode :	Mode 3	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960.042	50.42	3.83	54.25	74	-19.75	peak
4960.042	46.26	3.83	50.09	54	-3.91	AVG
7440.063	44.51	8.21	52.72	74	-21.28	peak
7440.063	35.68	8.21	43.89	54	-10.11	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	BLUETOOTH FM TRANSMITTER	Model Name. :	BH194A
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC12V
Test Mode :	Mode 3	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960.042	51.15	3.83	54.98	74	-19.02	peak
4960.042	46.24	3.83	50.07	54	-3.93	AVG
7440.063	43.49	8.21	51.7	74	-22.3	peak
7440.063	38.51	8.21	46.72	54	-7.28	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Note: Other emissions from 8G to 25 GHz are considered as ambient noise. 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.
The GFSK modulation was the worst case and only the data of worst recorded in this report.

10. BAND EDGE EMISSION

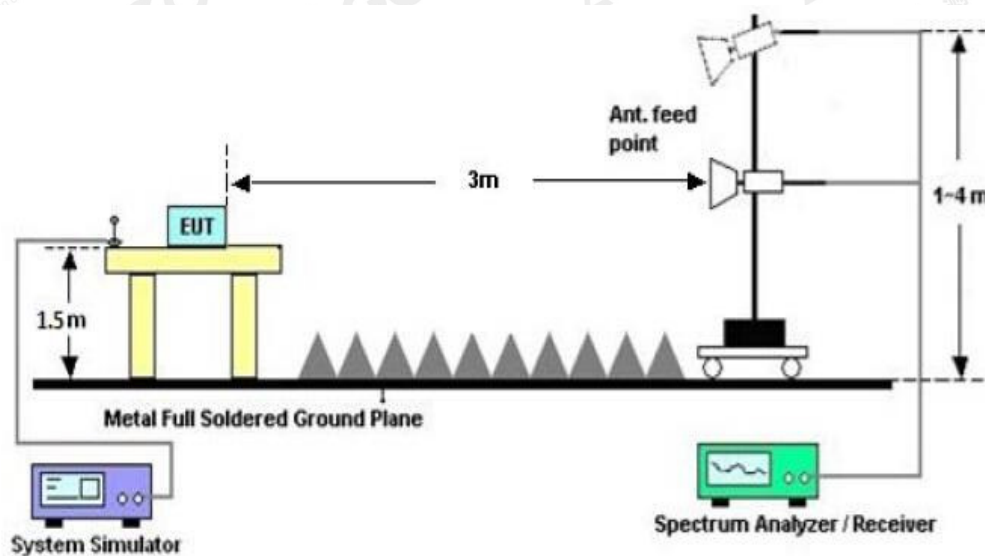
10.1. MEASUREMENT PROCEDURE

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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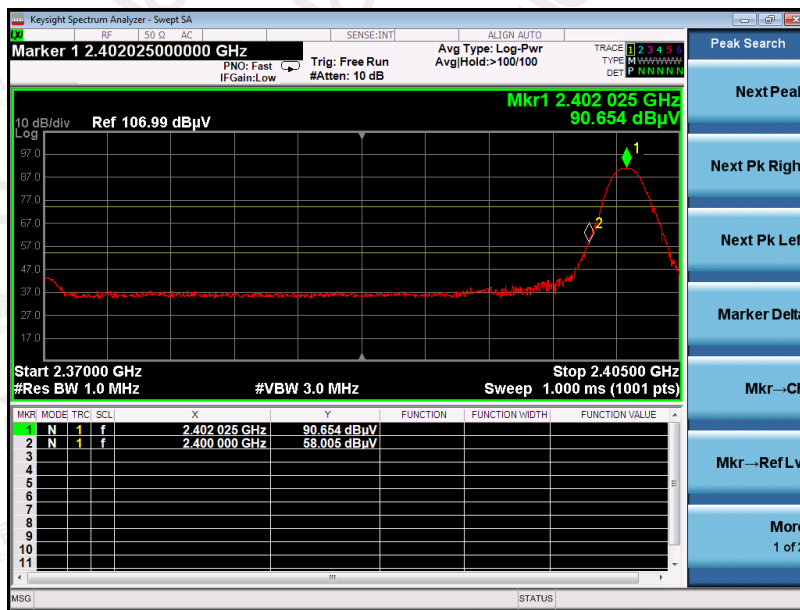
10.3 RADIATED TEST RESULT

(Worst modulation: GFSK)

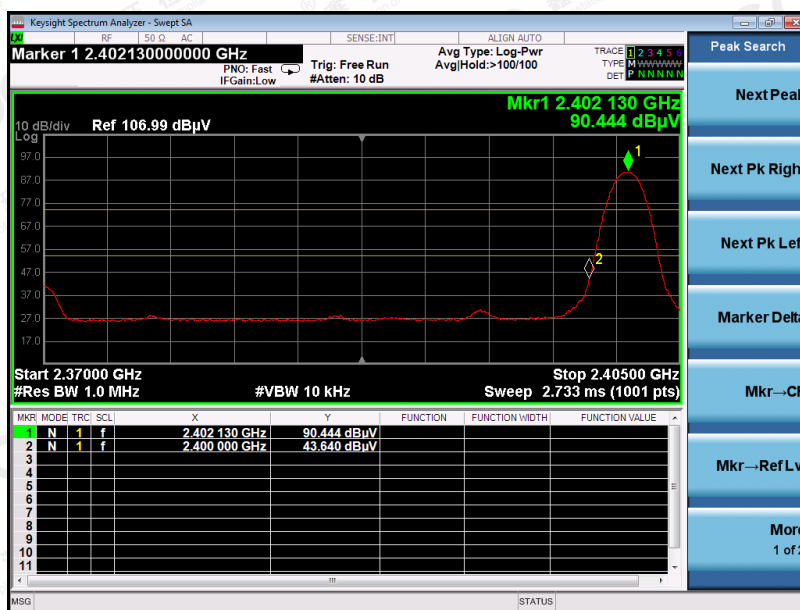
FOR BR/EDR

EUT :	Wireless speaker	Model Name	WBT026
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	Mode 1	Polarization :	Horizontal

PK Value



AV Value



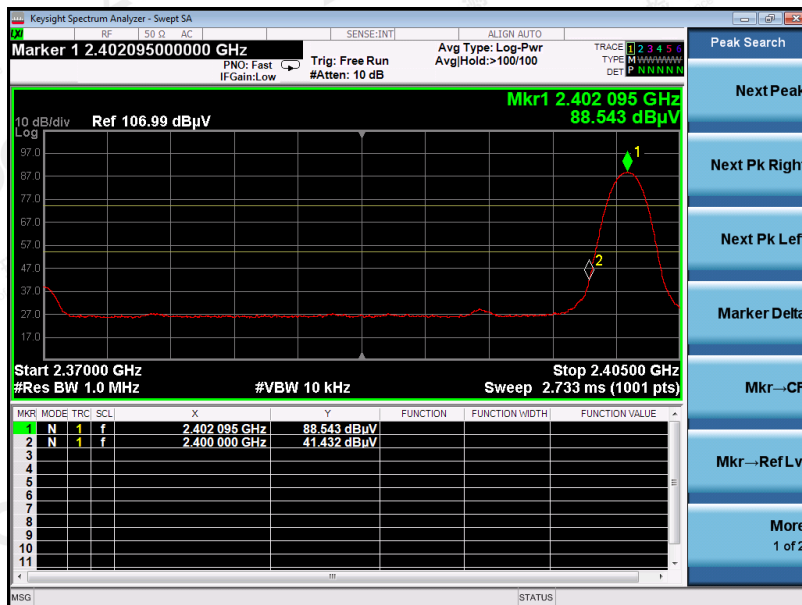
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EUT :	Wireless speaker	Model Name	WBT026
Temperature :	20 °C	Relative Humidityt :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	Mode 1	Polarization :	Vertical

PK Value



AV Value



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EUT :	Wireless speaker	Model Name	WBT026
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	Mode 3	Polarization :	Horizontal

PK Value



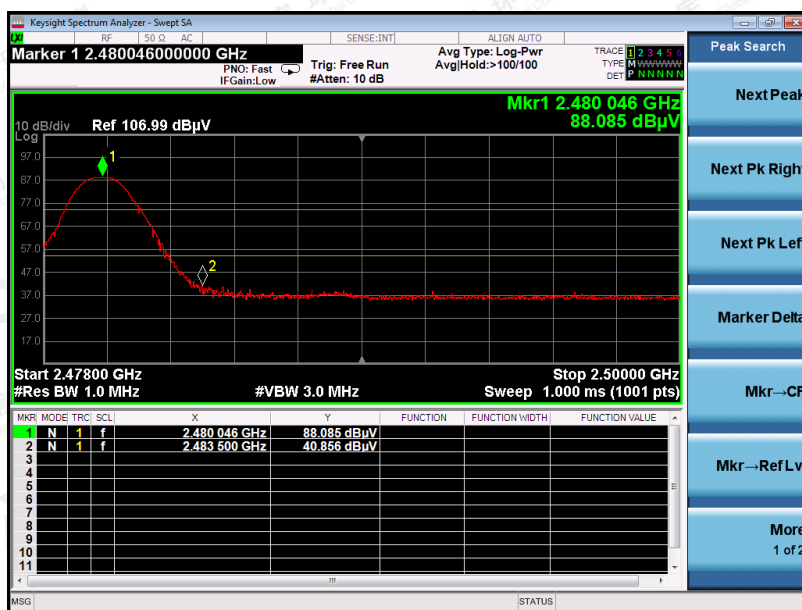
AV Value



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EUT :	Wireless speaker	Model Name	WBT026
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	Mode 3	Polarization :	Vertical

PK Value



AV Value



RESULT: PASS

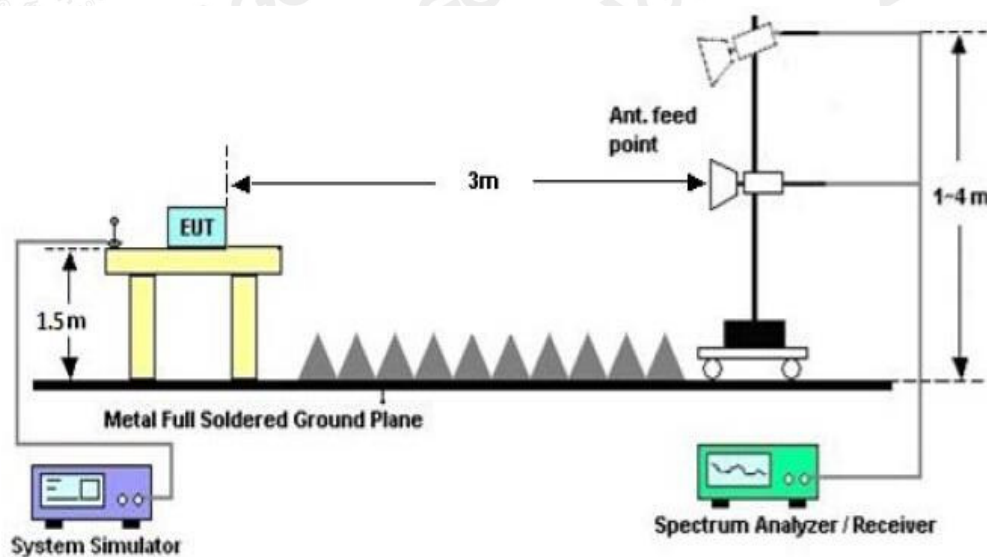
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of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

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 hopping channel
RBW $\geq$ 1% of the 20 dB bandwidth, VBW $\geq$ 3RBW; Sweep = auto; Detector function = peak
3. Set SPA Trace 1 Max hold, then View.

11.2. TEST SET-UP

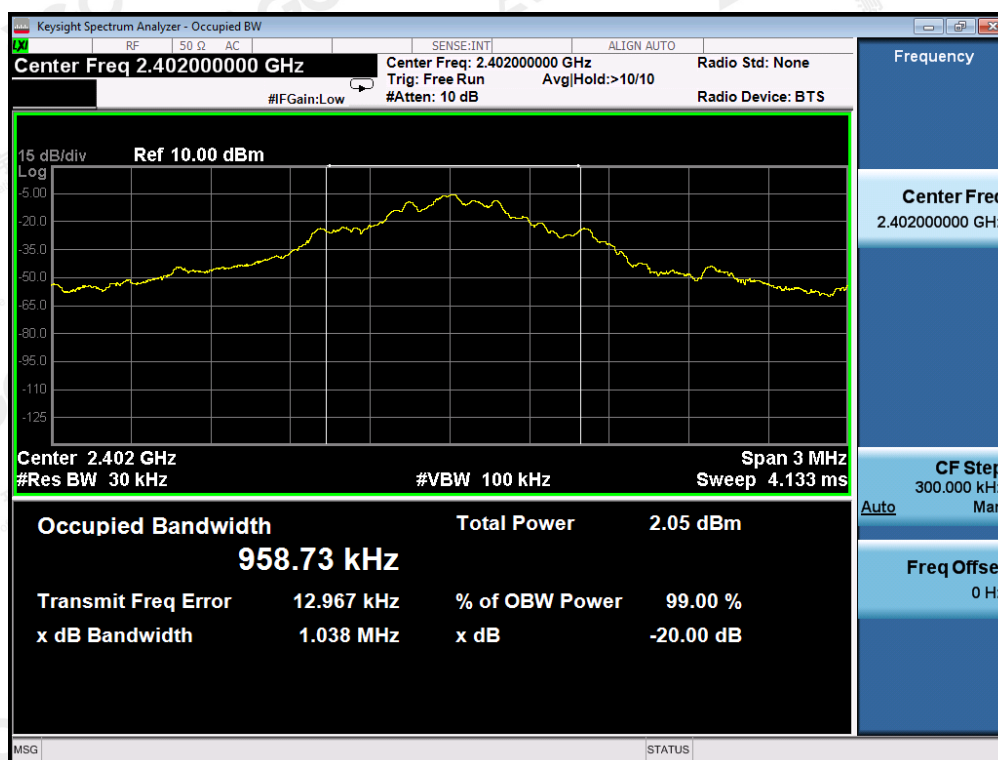


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11.3. LIMITS AND MEASUREMENT RESULTS FOR BR/EDR

BLUETOOTH 1MBPS LIMITS AND MEASUREMENT RESULT				
Applicable Limits	Measurement Result			
	Test Data (MHz)			Result
		99%OBW (MHz)	-20dB BW(MHz)	
N/A	Low Channel	0.9587	1.038	PASS
	Middle Channel	0.9628	1.042	PASS
	High Channel	0.9632	1.044	PASS

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

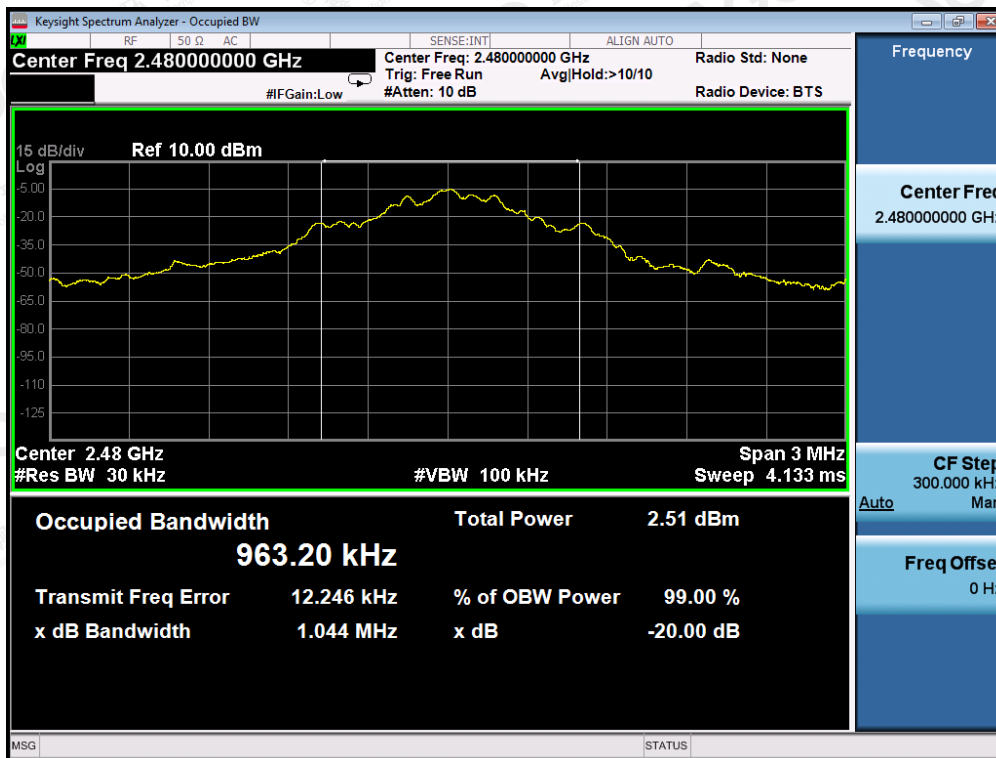


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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



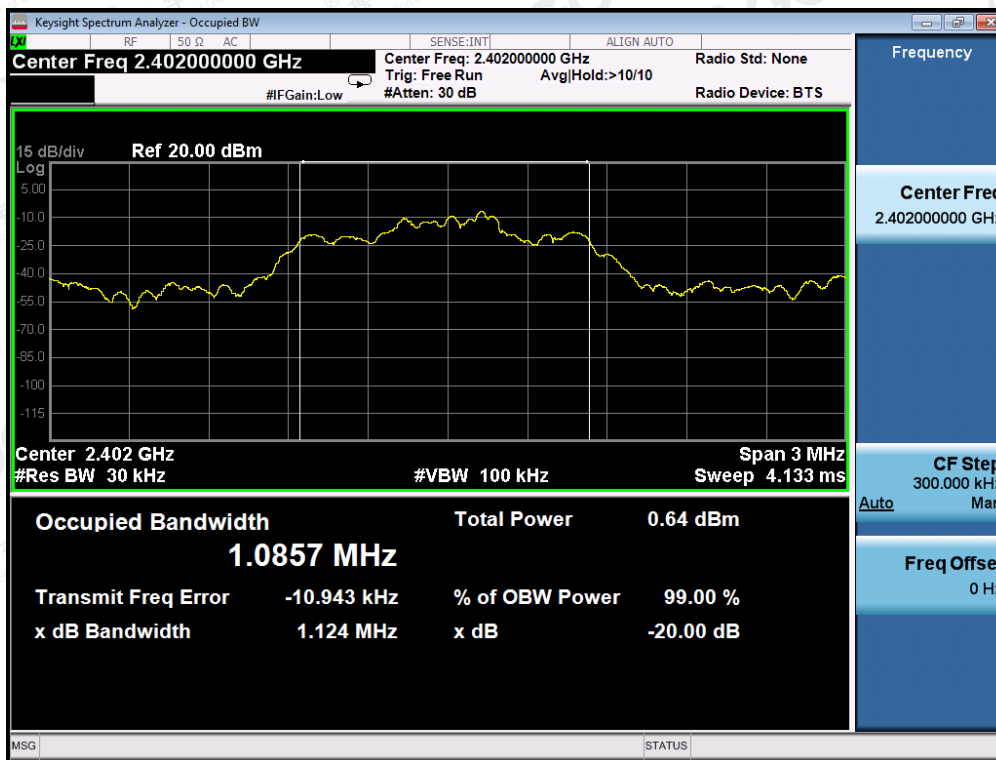
TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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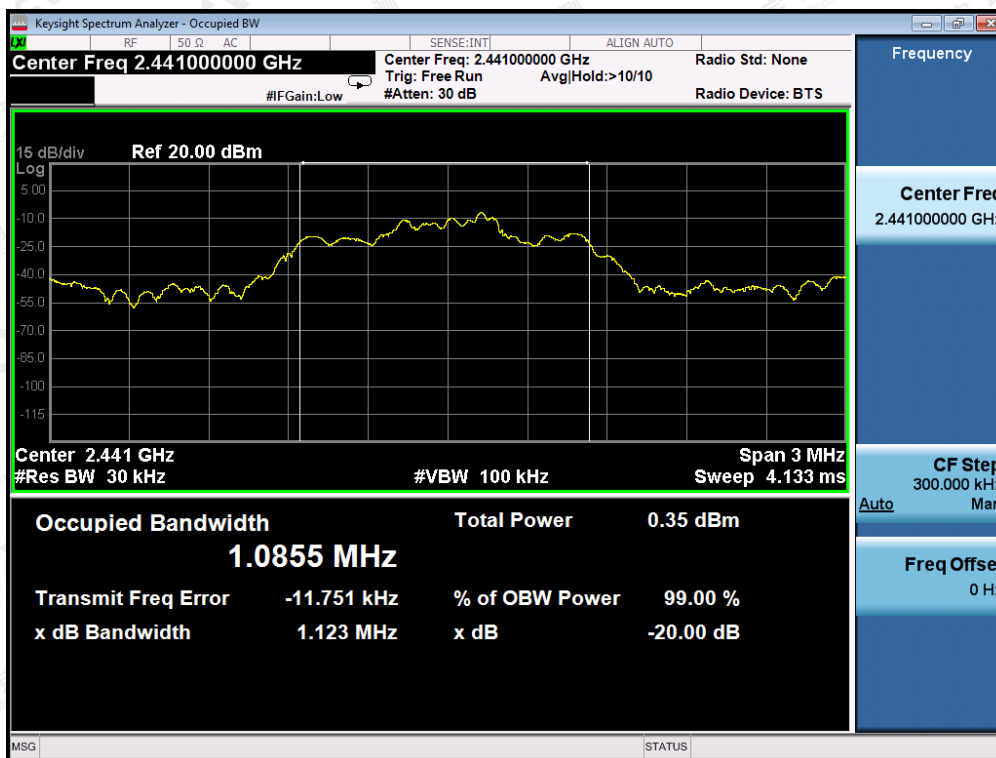
BLUETOOTH 2MBPS LIMITS AND MEASUREMENT RESULT				
Applicable Limits	Measurement Result			
	Test Data (MHz)			Result
		99%OBW (MHz)	-20dB BW(MHz)	
N/A	Low Channel	1.0857	1.124	PASS
	Middle Channel	1.0855	1.123	PASS
	High Channel	1.0874	1.126	PASS

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

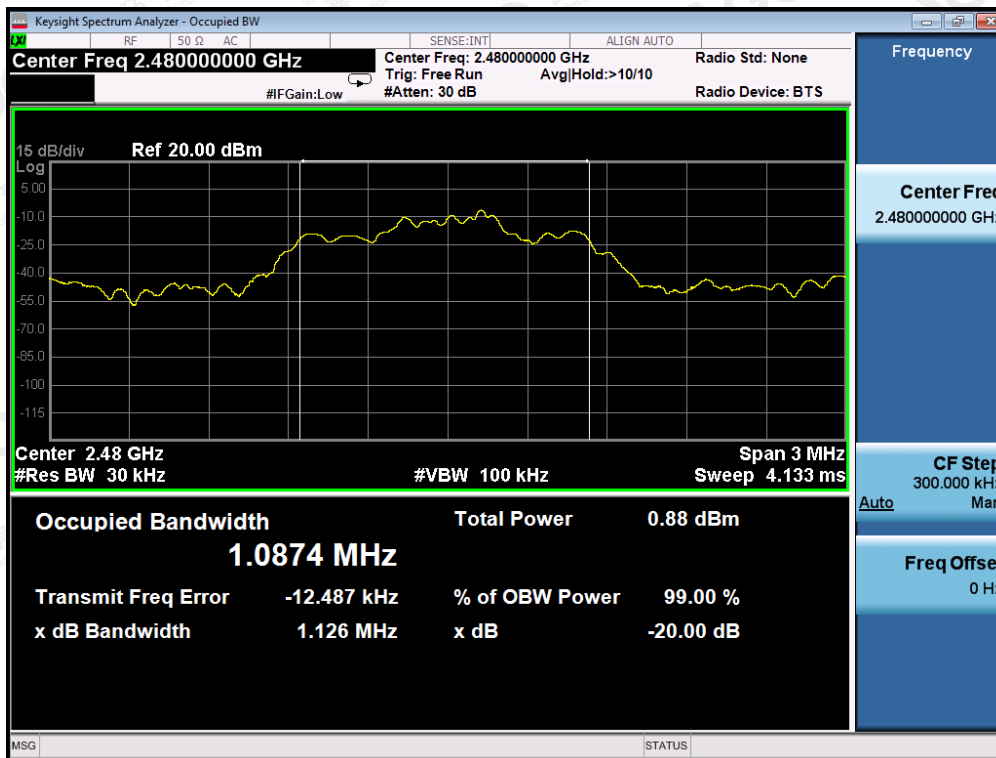


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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



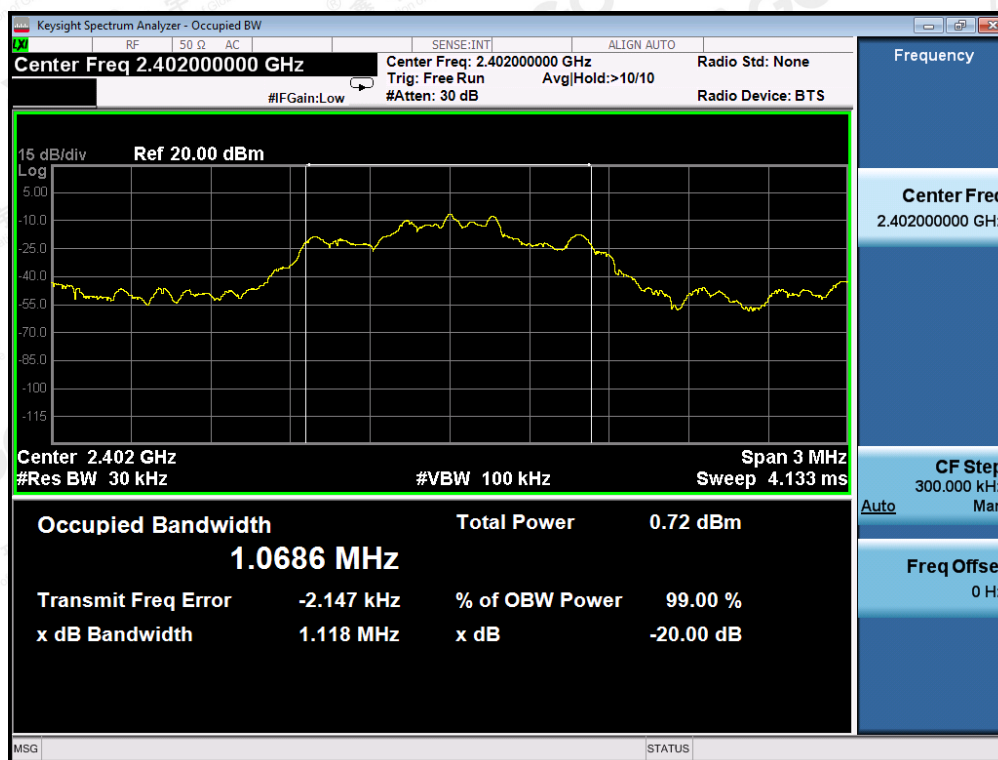
TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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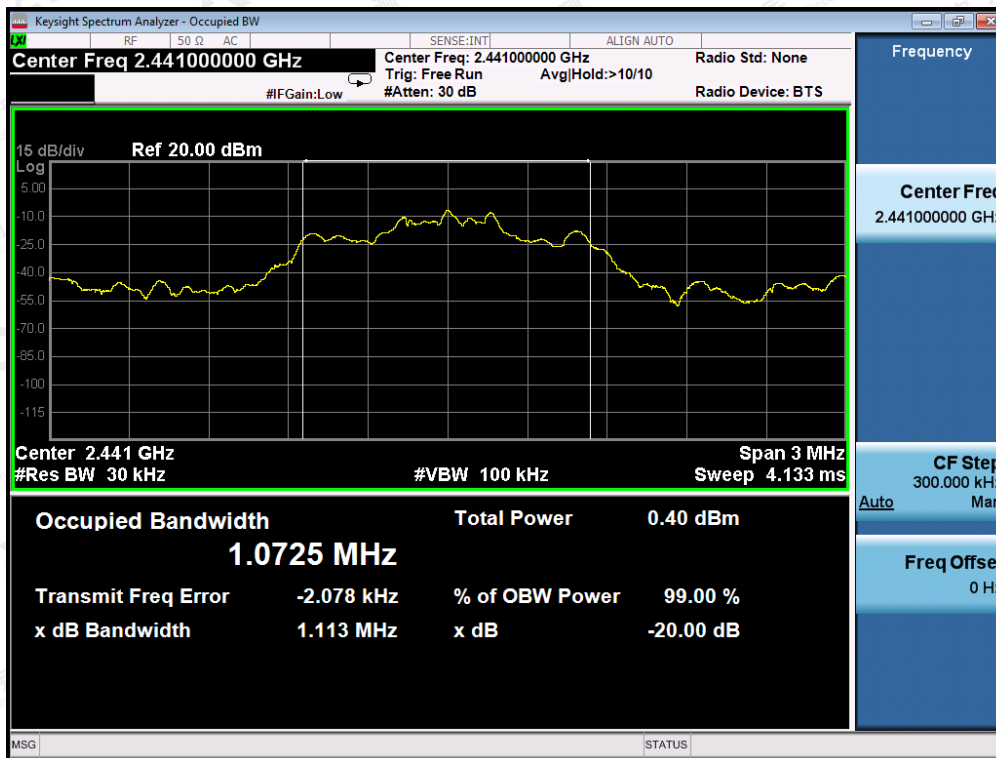
BLUETOOTH 3MBPS LIMITS AND MEASUREMENT RESULT				
Applicable Limits	Measurement Result			
	Test Data (MHz)			Result
		99%OBW (MHz)	-20dB BW(MHz)	
N/A	Low Channel	1.0686	1.118	PASS
	Middle Channel	1.0725	1.113	PASS
	High Channel	1.0734	1.117	PASS

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

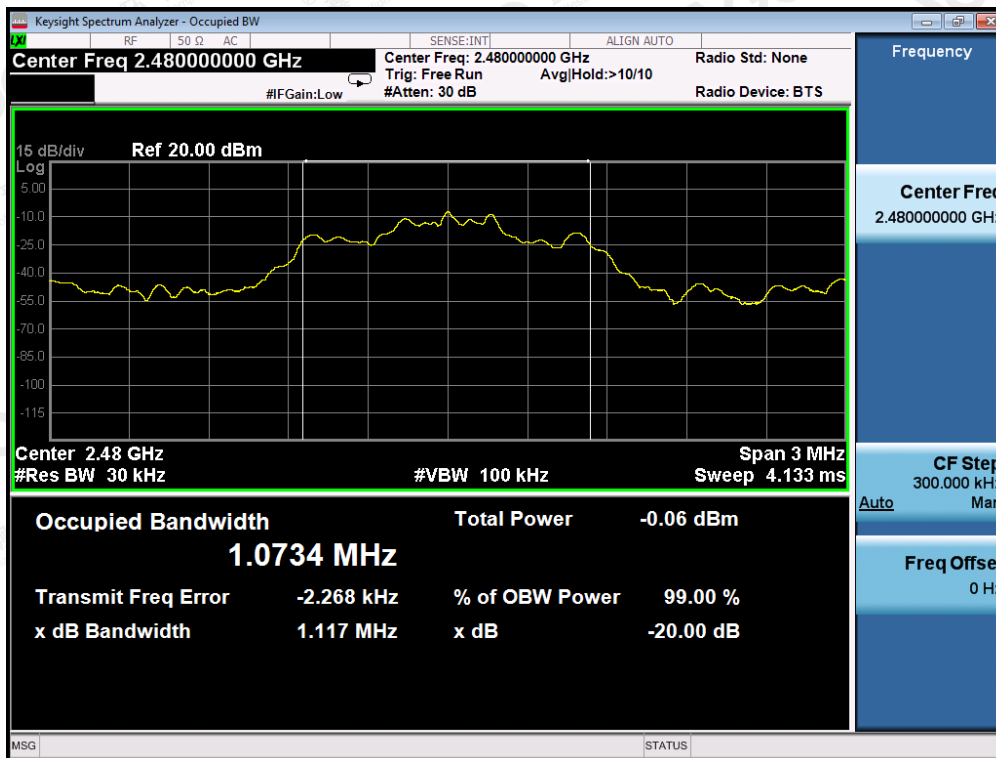


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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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12. FCC LINE CONDUCTED EMISSION TEST

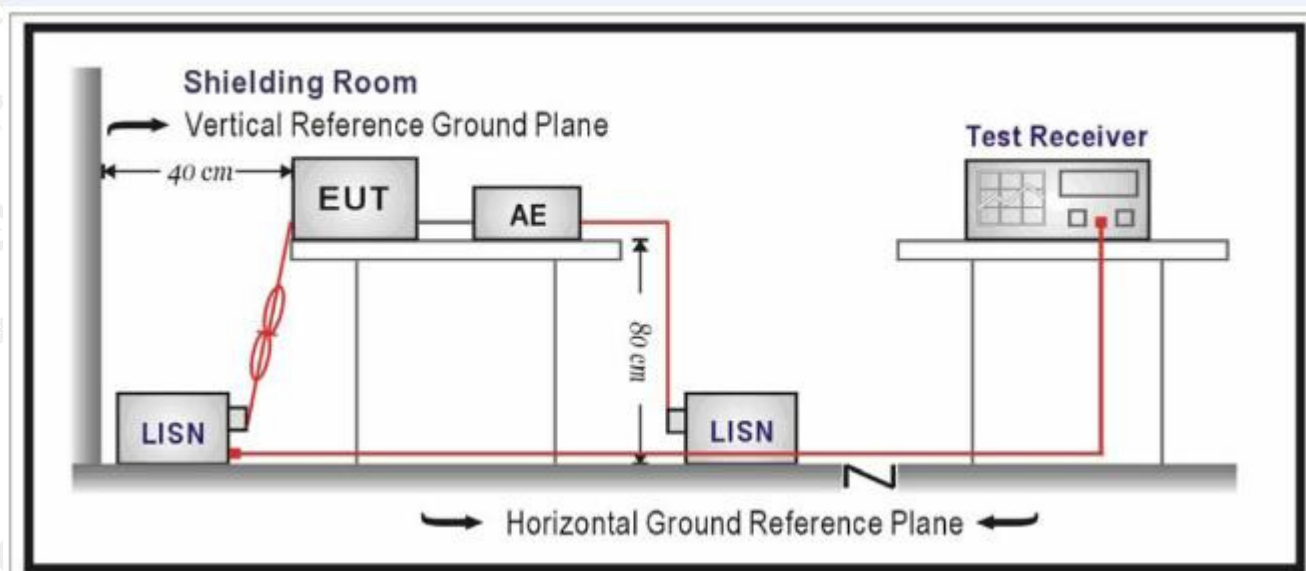
12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

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

Note:

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

12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



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12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC voltage by adapter or PC which received 120V/60Hz power 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

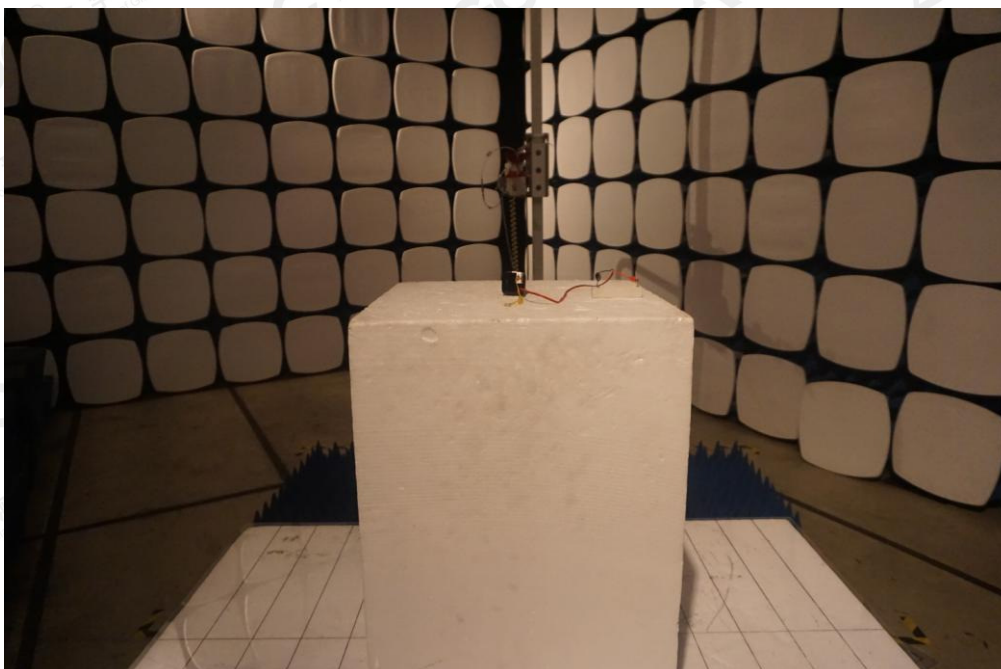
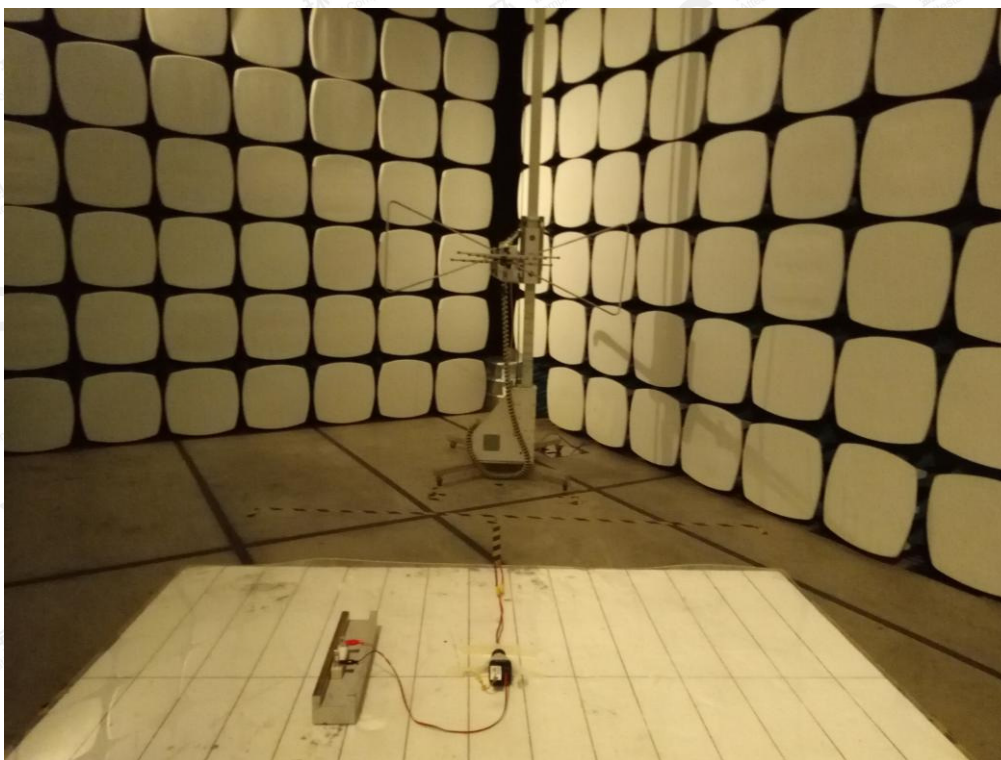
1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used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

12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

N/A

Note: Owing to the EUT supplied by DC source, the test item is not applicable.

APPENDIX A: PHOTOGRAPHS OF 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

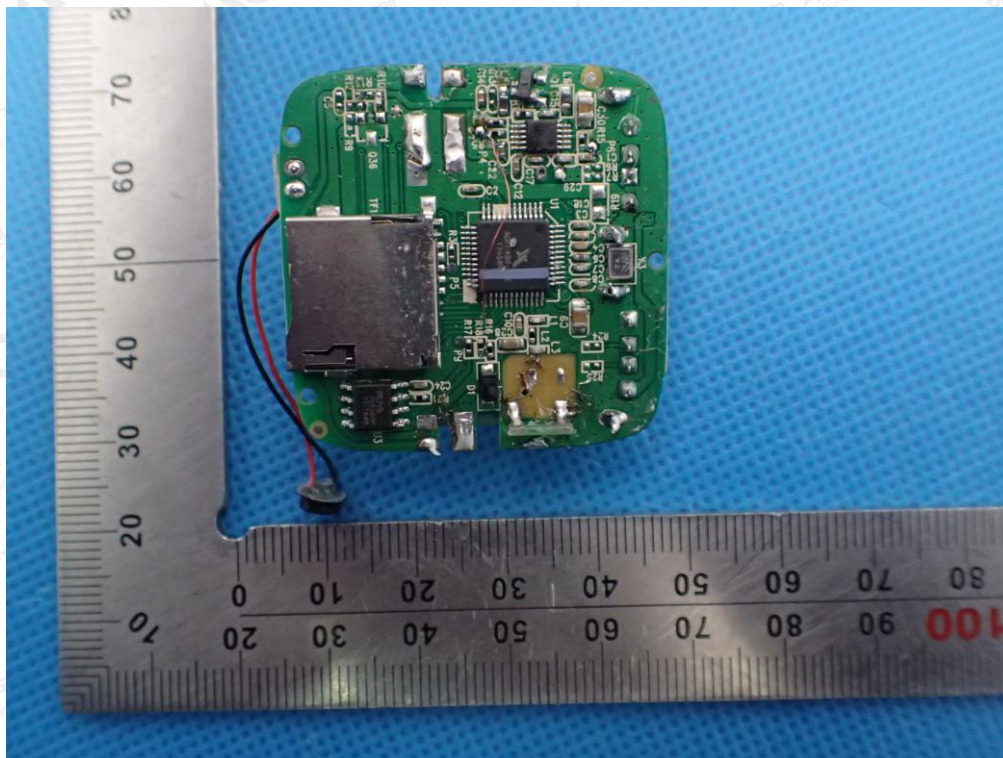


RIGHT VIEW OF EUT

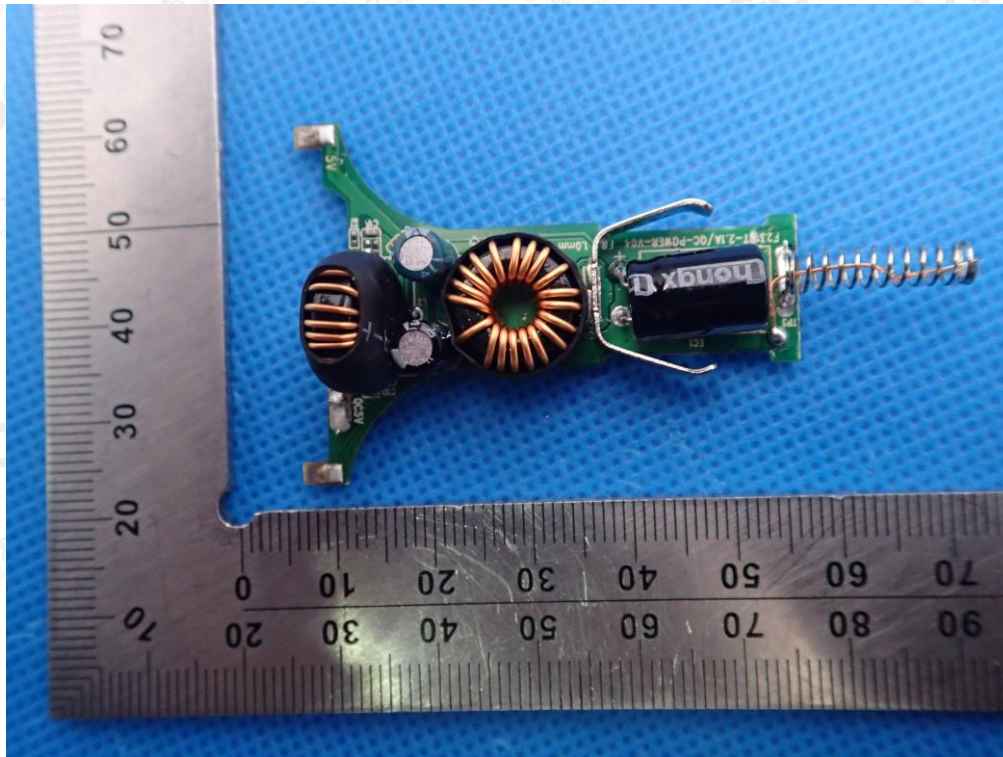


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INTERNAL VIEW OF EUT-2

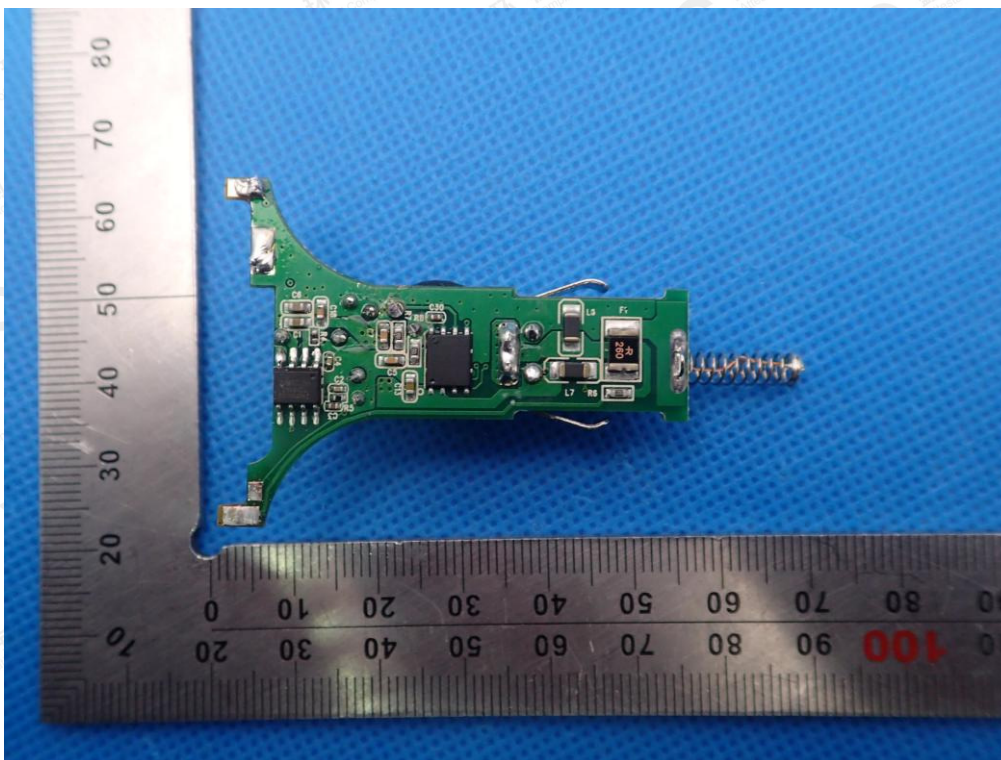


INTERNAL VIEW OF EUT-3

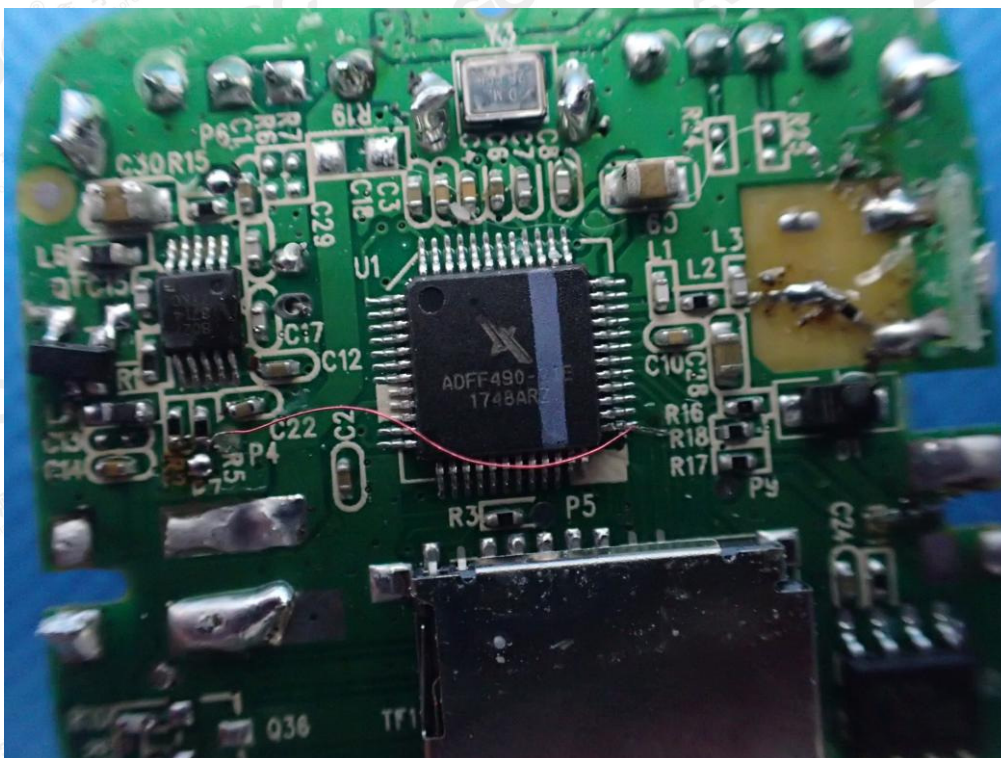


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INTERNAL VIEW OF EUT-4



INTERNAL VIEW OF EUT-5



----END OF REPORT----

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