FCC Part 15C Test Report

FCC ID: 2AFW8XZH-787

Product Name:	**Binj-amin 1.0**
Trademark:	Binj
Model Name :	**Binj-amin 1.0**
Prepared For : Address :	**Webtuner Corp.** 11121 Willows Rd. Suite #101Redmond,WA 98052,USA
Prepared By : Address :	**Shenzhen BCTC Technology Co., Ltd.** No.101,Yousong Road,Longhua New District, Shenzhen,China
Test Date:	**Sep. 22 – Sep. 30, 2015**
Date of Report :	**Sep. 30, 2015**
Report No.:	**BCTC-150911769**

VERIFICATION OF COMPLIANCE

Applicant's name ..... :	**Webtuner Corp.**
Address ..... :	11121 Willows Rd. Suite #101Redmond,WA 98052,USA
Manufacture's Name ..... :	**MOVEON TECHNOLOGY LIMITED**
Address ..... :	World Trade Plaza-A block#3201-3202,Fuhong Road, Futian,Shenzhen,China
Product description	
Product name ..... :	Binj-amin 1.0
Trademark:	Binj
Model Name:	Binj-amin 1.0
Test procedure	FCC Part15.249
Standards	ANSI C63.10-2013

This device described above has been tested by BCTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Test Result ..... : **Pass**

Testing Engineer **:** Eric Yang

(Eric Yang)

Technical Manager **:** Sophie Lu

(Sophia Lee)

Authorized Signatory **:** Carson. Zhang

SHENZHEN BCTC TECHNOLOGY CO., LTD. APPROVED

(Carson. Zhang)

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.249) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.249	Fundamental &Radiated Spurious Emission Measurement	PASS	
15.249	Bandwidth	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

Shenzhen BCTC Technology Co., Ltd.
Add.:No.101,Yousong Road,Longhua New District, Shenzhen,China
FCC Registration No.:187086

1.2 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** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Binj-amin 1.0
Trade Name	Binj
Model Name	Binj-amin 1.0
Serial Model	N/A
Model Difference	N/A
Product Description	Operation Frequency: 2402~2480 MHz Modulation Type: GFSK Bluetooth: Bluetooth 4.0 Number Of Channel: 40 CH Antenna Designation: Please see Note 3. Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Battery	DC3.7V
Connecting I/O Port(s)	Please refer to the User's Manual
hardware version	--
Software version	--
Serial number	--

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel List							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	10	2422	20	2442	30	2462
01	2404	11	2424	21	2444	31	2464
02	2406	12	2426	22	2446	32	2466
03	2408	13	2428	23	2448	33	2468
04	2410	14	2430	24	2450	34	2470
05	2412	15	2432	25	2452	35	2472
06	2414	16	2434	26	2454	36	2474
07	2416	17	2436	27	2456	37	2476
08	2418	18	2438	28	2458	38	2478
09	2420	19	2440	29	2460	39	2480

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	FPCB Antenna	N/A	0	

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH00
Mode 2	CH19
Mode 3	CH39

For Conducted & Radiated Emission	
Final Test Mode	Description
Mode 1	CH00
Mode 2	CH19
Mode 3	CH39

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) Fully-charged battery is used during the test

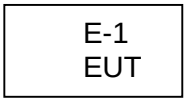
2.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

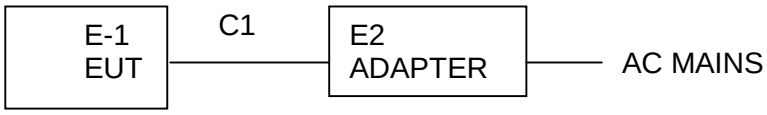
Frequency	2402 MHz	2440 MHz	2480 MHz
Channel	Low	Middle	High

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



Conducted Emission Test



2.5 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Binj-amin 1.0	Binj	Binj-amin 1.0	N/A	EUT
E-2	Adapter	N/A	JX-B050100-1	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C1	NO	NO	0.8M	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	1166.5950K03-101165-ha	2015.06.06	2016.06.05	1 year
2	LISN	R&S	NSLK8126	8126466	2015.08.24	2016.08.23	1 year
3	LISN	R&S	NSLK8126	8126487	2015.08.24	2016.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2015.06.07	2016.06.06	1 year
5	RF cables	R&S	R204	R20X	2015.07.06	2016.07.05	1 year

Radiation test, Band-edge test and 20db bandwith test quipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2015.07.06	2016.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2015.06.07	2016.06.06	1 year
3	Bilog Antenna	R&S	VULB 9168	VULB9168-438	2015.07.06	2016.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2015.06.07	2016.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2015.06.07	2016.06.06	1 year
6	Horn Antenna	R&S	HF906	10027	2015.07.06	2016.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2015.07.06	2016.07.05	1 year
8	Amplifier	R&S	BBV9743	9743-019	2014.12.22	2015.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2015.06.08	2016.06.07	1 year
10	RF cables	R&S	R203	R20X	2015.07.06	2016.07.05	1 year
11	Antenna connector	Florida RFLabs	Lab-Fle	RF 01#	2015.07.06	2016.07.05	1 year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quas -peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

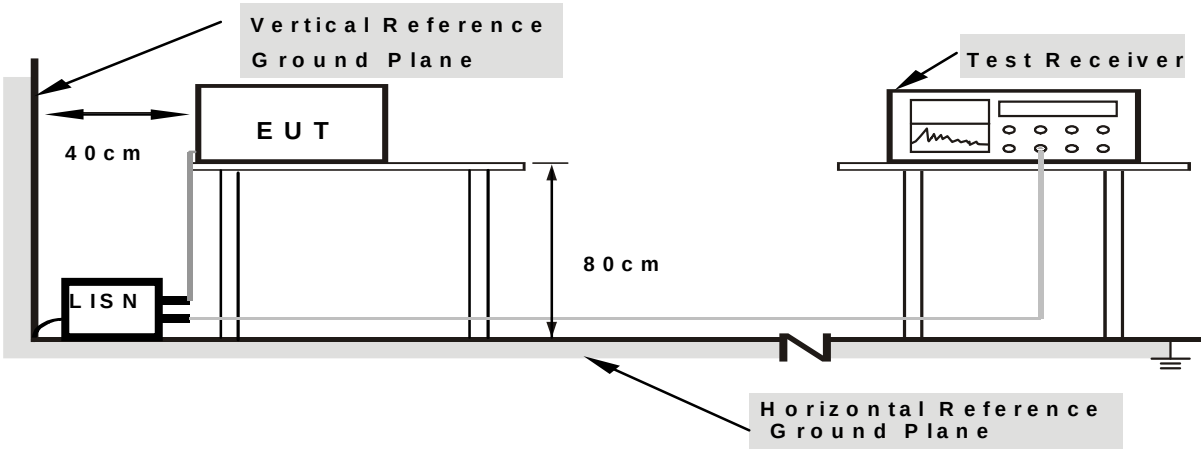
3.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

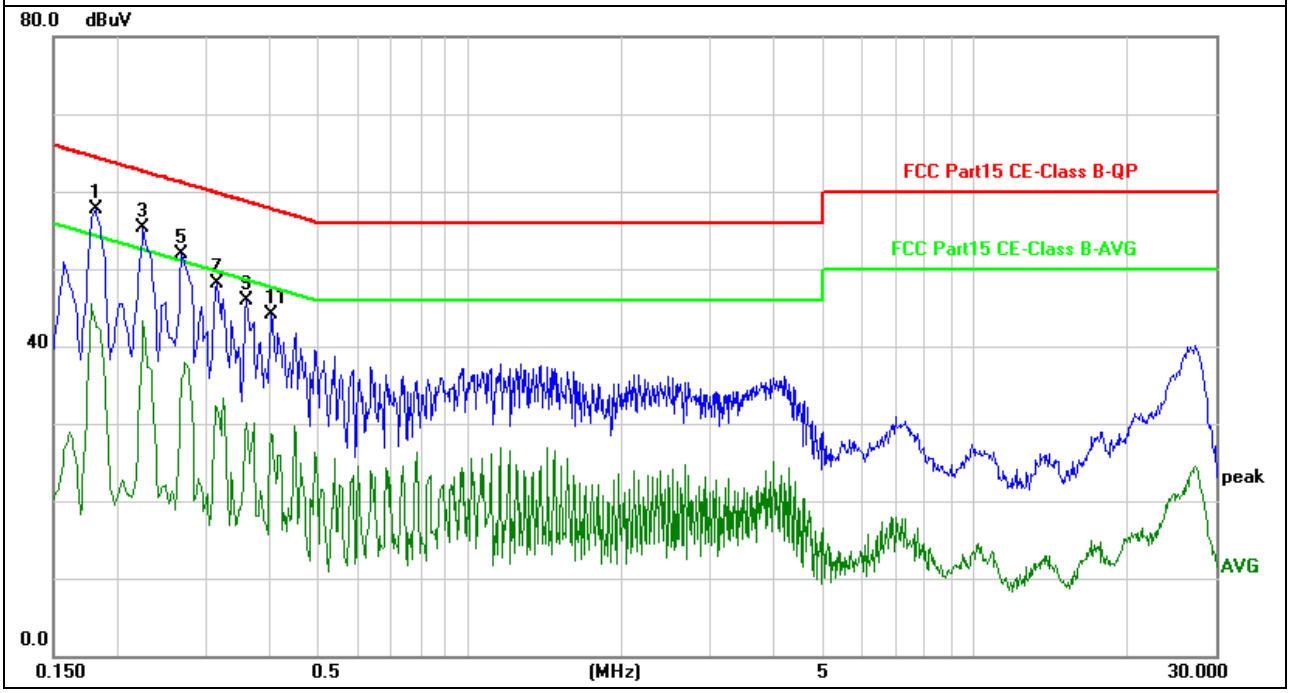
We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

3.1.6 TEST RESULTS

EUT：	Binj-amin 1.0	Model Name ：	Binj-amin 1.0
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	AC120V/60Hz	Test Mode：	Mode 1(Worst Mode)

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector Type
0.1820	47.68	10.06	57.74	64.39	-6.65	QP
0.1820	35.46	10.06	45.52	54.39	-8.87	AVG
0.2260	45.16	10.07	55.23	62.60	-7.37	QP
0.2260	33.27	10.07	43.34	52.60	-9.26	AVG
0.2700	41.81	10.09	51.90	61.12	-9.22	QP
0.2700	27.80	10.09	37.89	51.12	-13.23	AVG
0.3180	37.97	10.10	48.07	59.76	-11.69	QP
0.3180	23.17	10.10	33.27	49.76	-16.49	AVG
0.3620	35.76	10.10	45.86	58.68	-12.82	QP
0.3620	20.02	10.10	30.12	48.68	-18.56	AVG
0.4060	34.02	10.11	44.13	57.73	-13.60	QP
0.4060	18.50	10.11	28.61	47.73	-19.12	AVG

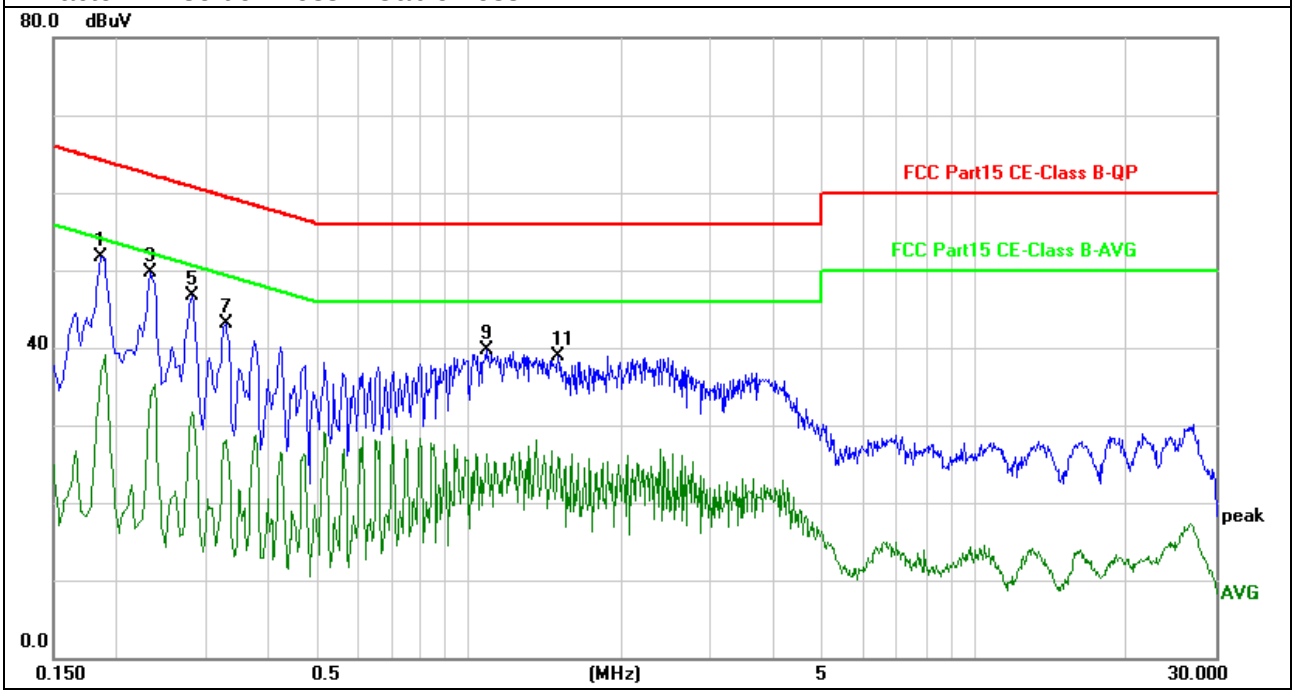
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



EUT：	Binj-amin 1.0	Model Name ：	Binj-amin 1.0
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	AC120V/60Hz	Test Mode：	Mode 1(Worst Mode)

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector Type
0.1860	41.62	10.06	51.68	64.21	-12.53	QP
0.1860	29.03	10.06	39.09	54.21	-15.12	AVG
0.2340	39.60	10.07	49.67	62.31	-12.64	QP
0.2340	25.14	10.07	35.21	52.31	-17.10	AVG
0.2820	36.71	10.09	46.80	60.76	-13.96	QP
0.2820	21.67	10.09	31.76	50.76	-19.00	AVG
0.3300	33.07	10.10	43.17	59.45	-16.28	QP
0.3300	17.95	10.10	28.05	49.45	-21.40	AVG
1.0780	29.46	10.17	39.63	56.00	-16.37	QP
1.0780	16.20	10.17	26.37	46.00	-19.63	AVG
1.4980	28.76	10.17	38.93	56.00	-17.07	QP
1.4980	16.58	10.17	26.75	46.00	-19.25	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

Spectrum Parameter	Setting

Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
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

3.2.2 TEST PROCEDURE

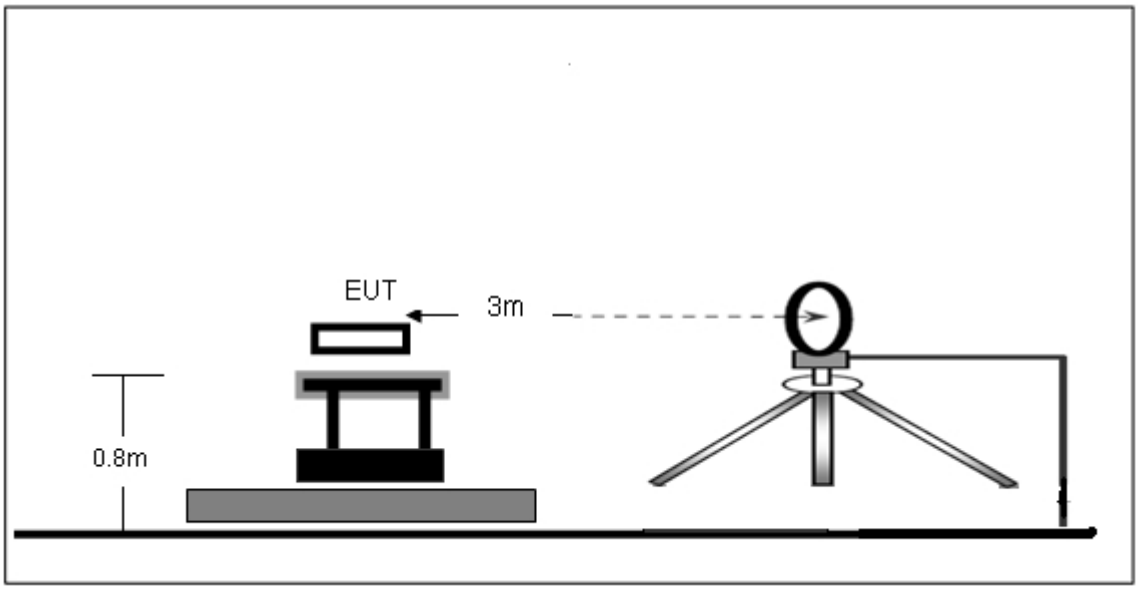
a. The measuring distance of at 3 m shall be used for measurements at frequency up to 25GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 1.5 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.
g. For the radiated emission test above 1GHz:
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.
The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
Note:
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

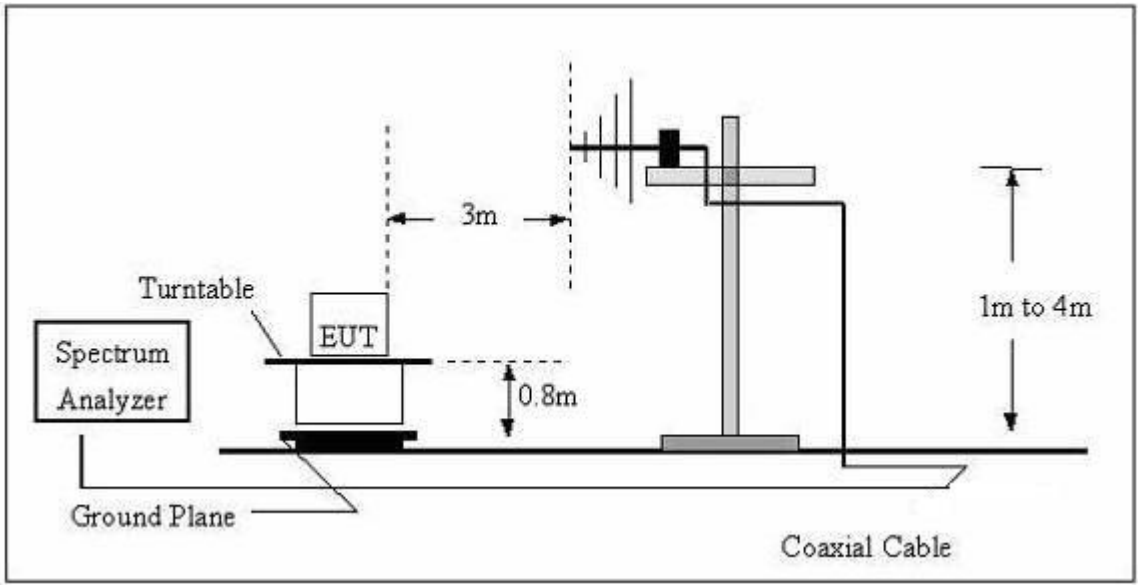
No deviation

3.2.4 TEST SETUP

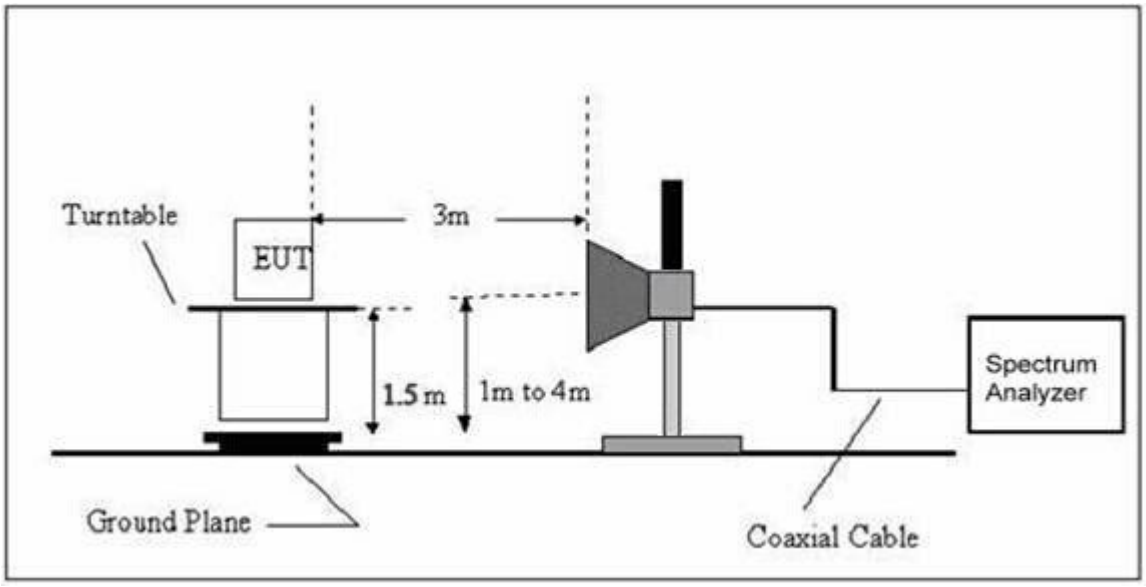
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS

Radiated Spurious Emission (Below 30MHz)

EUT：	Binj-amin 1.0	Model Name ：	Binj-amin 1.0
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Polarization :	---
Test Voltage ：	DC3.7V		
Test Mode ：	TX		

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

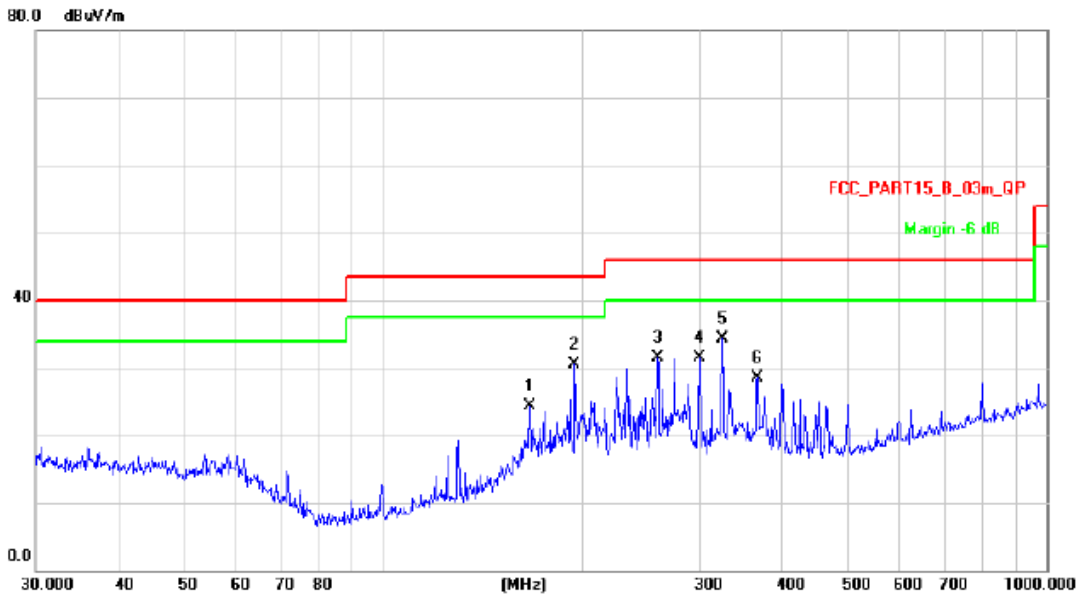
NOTE:
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

Radiated Spurious Emission (Between 30MHz – 1GHz)

EUT：	Binj-amin 1.0	Model Name ：	Binj-amin 1.0
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Polarization：	Horizontal
Test Voltage ：	DC3.7V		
Test Mode ： (Worst)	TX Low Channel		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
166.0680	37.50	-13.23	24.27	43.50	-19.23	QP
194.4534	46.40	-15.86	30.54	43.50	-12.96	QP
259.2338	45.39	-13.94	31.45	46.00	-14.55	QP
300.3672	44.11	-12.57	31.54	46.00	-14.46	QP
324.4561	46.30	-11.95	34.35	46.00	-11.65	QP
366.8231	39.55	-11.03	28.52	46.00	-17.48	QP

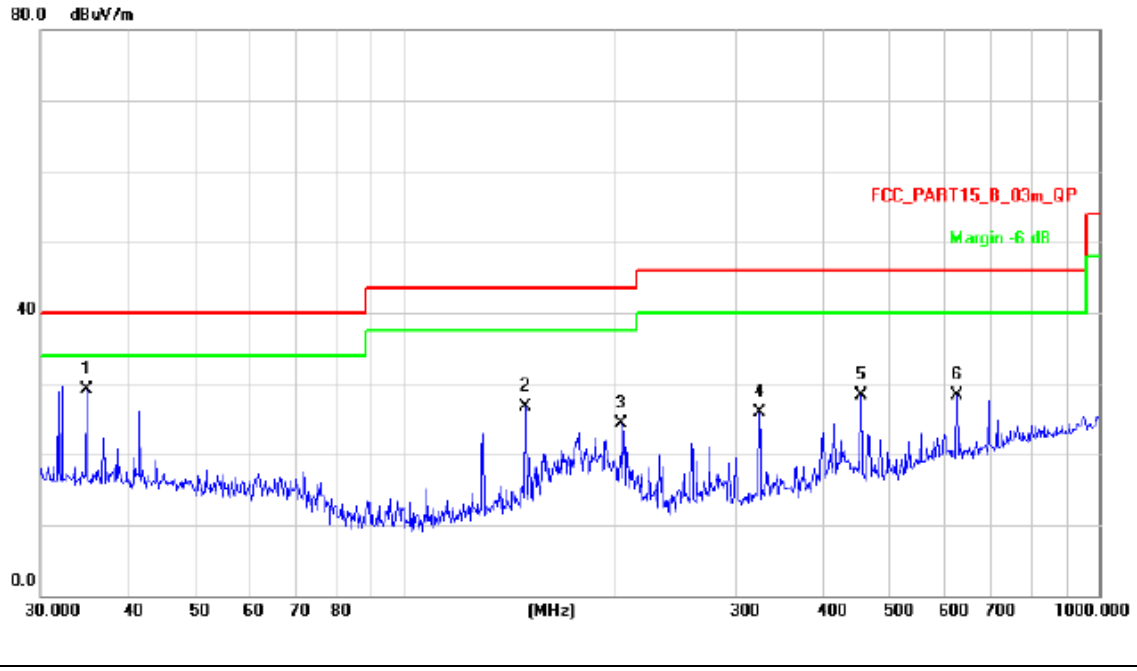
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
All interfaces was connected, and BT TX mode was link.



EUT：	Binj-amin 1.0	Model Name ：	Binj-amin 1.0
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Polarization：	Vertical
Test Voltage ：	DC3.7V		
Test Mode ： (Worst)	TX Low Channel		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
34.8823	37.60	-8.49	29.11	40.00	-10.89	QP
149.4857	39.61	-12.88	26.73	43.50	-16.77	QP
205.6751	40.31	-16.04	24.27	43.50	-19.23	QP
324.4561	37.88	-11.95	25.93	46.00	-20.07	QP
454.3100	37.24	-8.95	28.29	46.00	-17.71	QP
625.0780	33.82	-5.52	28.30	46.00	-17.70	QP

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
All interfaces was connected, and BT TX mode was link.



Radiated Spurious Emission (1GHz to 10th harmonics)
GFSK

	Freq.	Receiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Result
	(MHz)	(dBμV)	(PK/QP/Ave)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	
Lower Channel 2402MHz	2402	103.75	PK	H	1.31	105.06	114	Pass
	2402	88.45	Ave	H	1.31	89.76	94	Pass
	4804	57.58	PK	H	-1.06	56.52	74	Pass
	4804	48.74	Ave	H	-1.06	47.68	54	Pass
	2402	103.31	PK	V	1.31	104.62	114	Pass
	2402	88.79	Ave	V	1.31	90.1	94	Pass
	4804	57.06	PK	V	-1.06	56	74	Pass
	4804	48.25	Ave	V	-1.06	47.19	54	Pass
Middle Channel 2440MHz	2440	102.86	PK	H	0.85	103.71	114	Pass
	2440	89.79	Ave	H	0.85	90.64	94	Pass
	4880	57.35	PK	H	-0.62	56.73	74	Pass
	4880	49.56	Ave	H	-0.62	48.94	54	Pass
	2440	101.88	PK	V	0.85	102.73	114	Pass
	2440	88.65	Ave	V	0.85	89.5	94	Pass
	4880	58.23	PK	V	-0.62	57.61	74	Pass
	4880	48.84	Ave	V	-0.62	48.22	54	Pass
Upper Channel 2480MHz	2480	103.55	PK	H	0.53	104.08	114	Pass
	2480	87.71	Ave	H	0.53	88.24	94	Pass
	4960	57.32	PK	H	-0.24	57.08	74	Pass
	4960	48.41	Ave	H	-0.24	48.17	54	Pass
	2480	103.17	PK	V	0.53	103.7	114	Pass
	2480	88.26	Ave	V	0.53	88.79	94	Pass
	4960	57.34	PK	V	-0.24	57.1	74	Pass
	4960	47.81	Ave	V	-0.24	47.57	54	Pass

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Meter Reading + Factor
Margin = Emission Level - Limit
Other harmonics emissions are lower than 20dB below the allowable limit.

4. BANDWIDTH TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.249) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.249	Bandwidth	(20dB bandwidth)	2400-2483.5	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30KHz
VB	≥RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

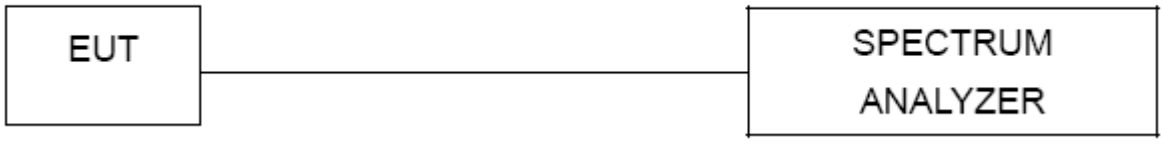
4.1.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW≥ RBW, Sweep time = Auto.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

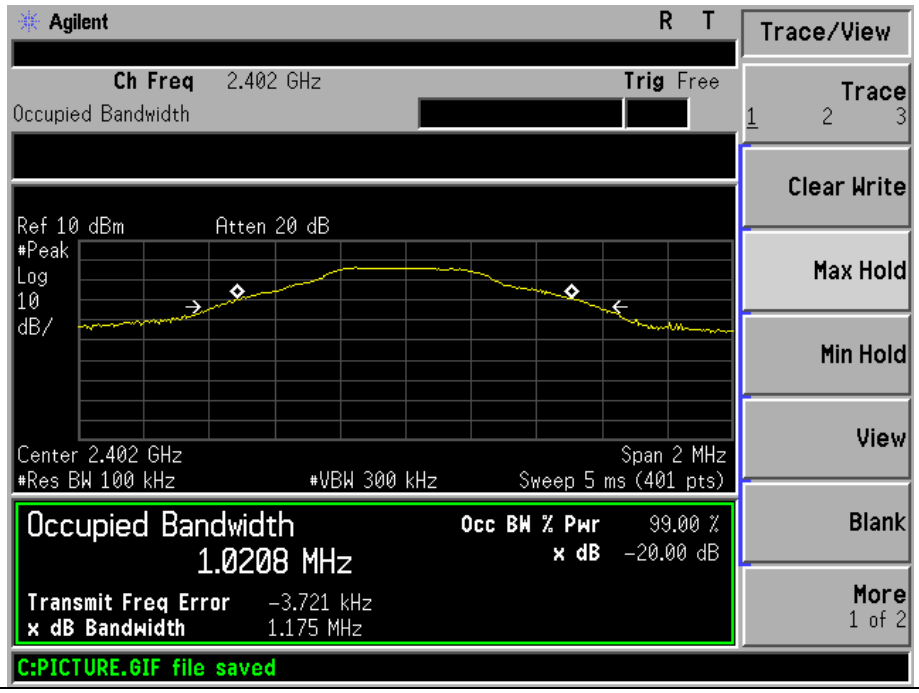
4.1.5 TEST RESULTS

EUT：	Binj-amin 1.0	Model Name ：	Binj-amin 1.0
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC3.7V
Test Mode ：	CH00 / CH19 /C39		

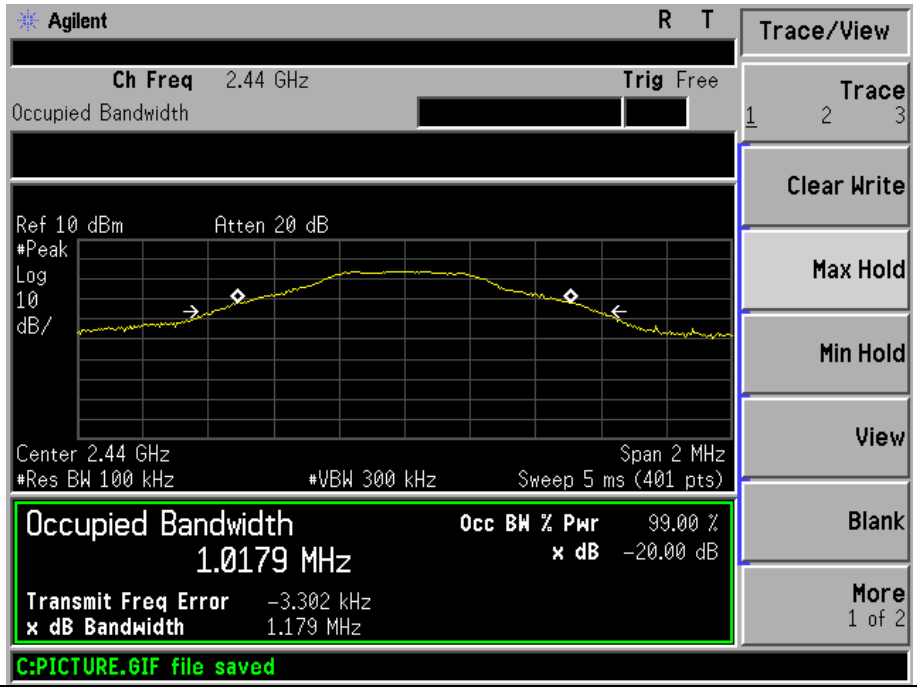
	Frequency	20dB Bandwidth (kHz)	Result
GFSK	2402 MHz	1175	**PASS**
	2440 MHz	1179	**PASS**
	2480 MHz	1185	**PASS**

GFSK

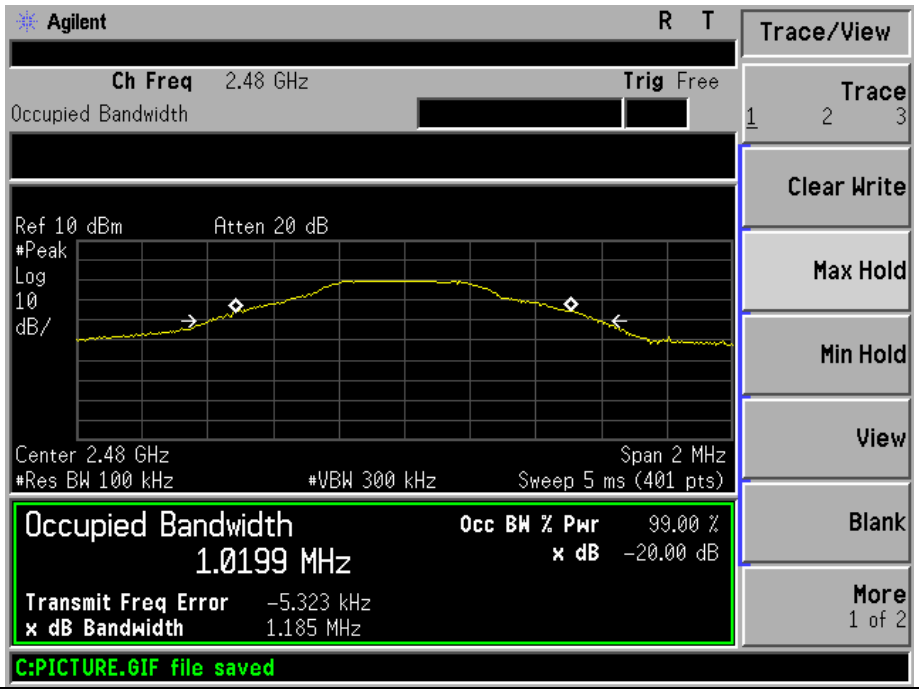
CH00



CH19



CH39


Agilent
R T
Trace/View
Ch Freq 2.48 GHz
Trig Free
Occupied Bandwidth
Trace
1 2 3
Clear Write
Ref 10 dBm
Atten 20 dB
#Peak
Log
10
dB/
Max Hold
Min Hold
View
Center 2.48 GHz
Span 2 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 5 ms (401 pts)
Blank
Occupied Bandwidth
1.0199 MHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
More
1 of 2
Transmit Freq Error -5.323 kHz
x dB Bandwidth 1.185 MHz
C:PICTURE.GIF file saved

5. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 25GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 1.5 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.
g. For the radiated emission test above 1GHz:
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.
The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
Note:
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

5.1 DEVIATION FROM STANDARD

No deviation.

5.2 TEST SETUP

5.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.4 TEST RESULTS

EUT：	Binj-amin 1.0	Model Name ：	Binj-amin 1.0
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC3.7V
Test Mode ：	CH00/ CH39		

		Frequency (MHz)	Antenna polarization (H/V)	Emission (dBuV/m)	Band edge Limit (dBuV/m)		Result
				PK	PK	AV	Pass
GFSK	Hopping	<2400	H	49.23	74.00	54.00	Pass
		<2400	V	49.35	74.00	54.00	Pass
		>2483.5	H	49.12	74.00	54.00	Pass
		>2483.5	V	49.33	74.00	54.00	Pass
	Unhopping	<2400	H	49.20	74.00	54.00	Pass
		<2400	V	49.13	74.00	54.00	Pass
		>2483.5	H	49.19	74.00	54.00	Pass
		>2483.5	V	49.15	74.00	54.00	Pass

If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

6. ANTENNA REQUIREMENT

6.1 STANDARD REQUIREMENT

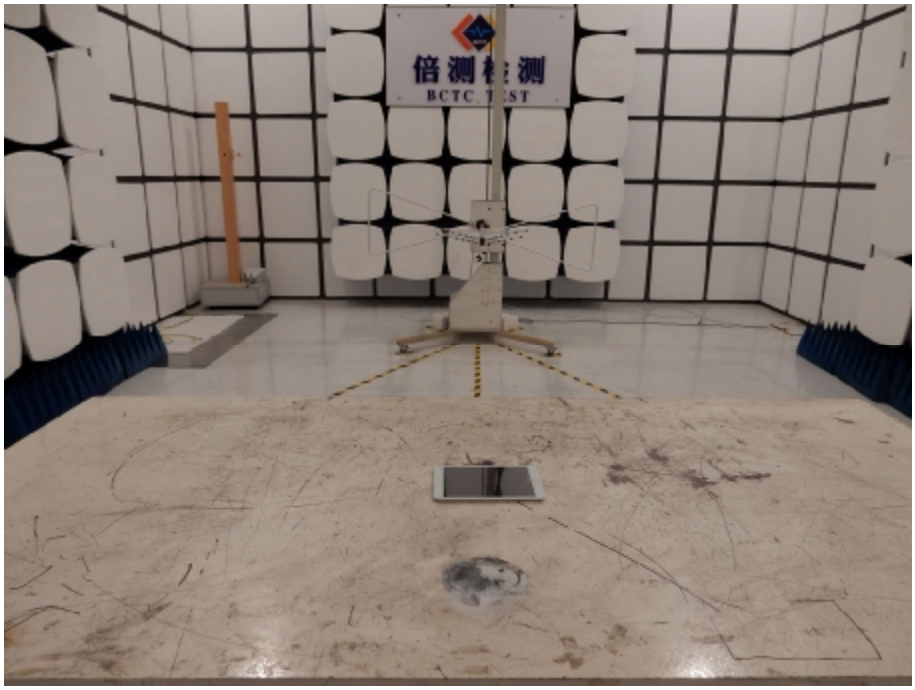
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

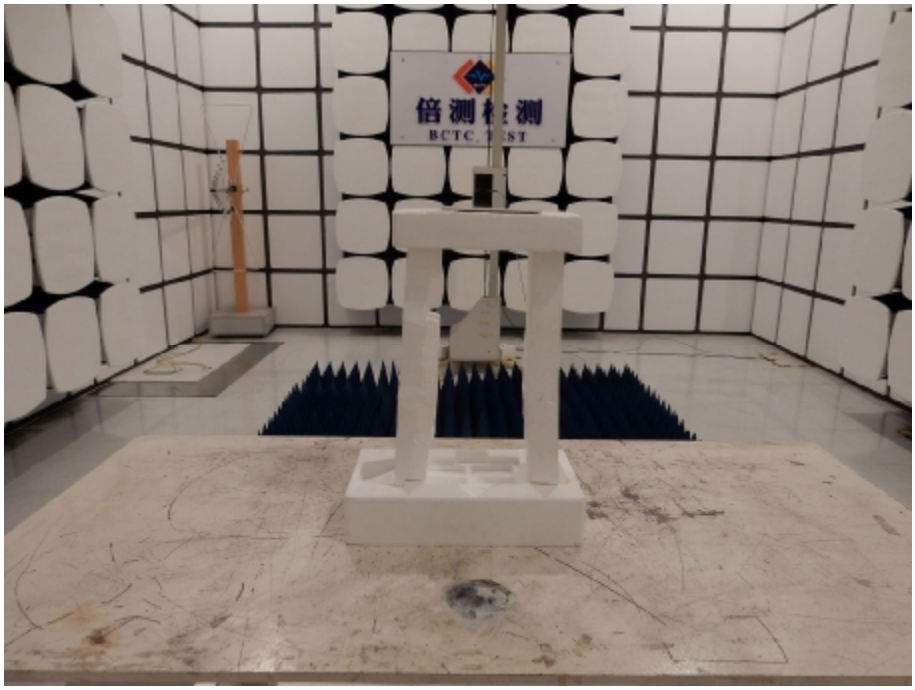
6.2 EUT ANTENNA

The EUT antenna is FPCB antenna. It complies with the standard requirement.

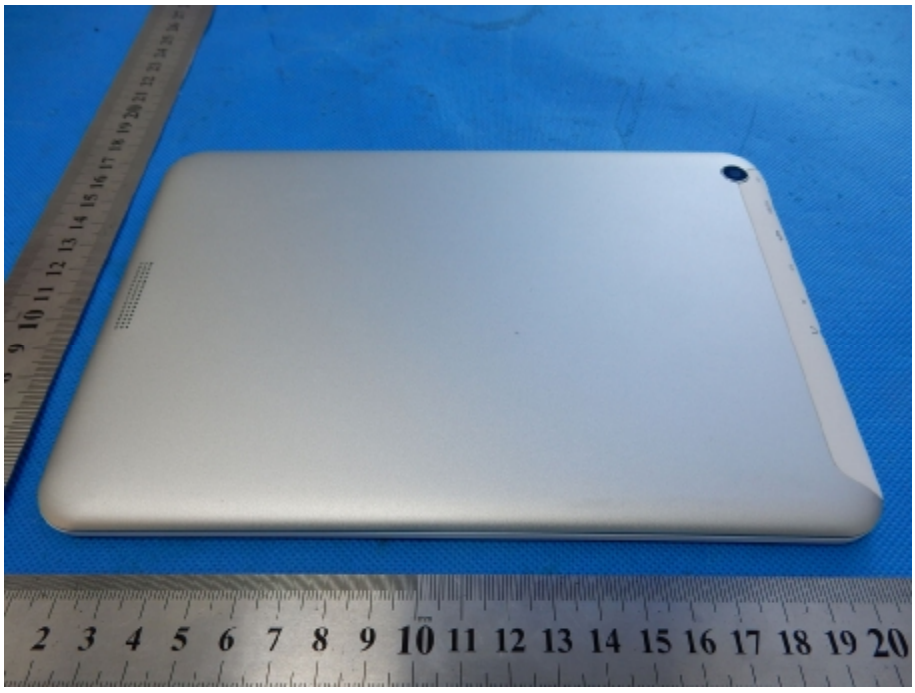
7. EUT TEST PHOTO

Radiated Measurement Photos





8. EUT PHOTO



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