
FCC Test Report

Report No.: AGC01249170601FE08

FCC ID : 2AMWOFSC-BT909

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : Bluetooth Module

BRAND NAME : Feasycom

MODEL NAME : FSC-BT909

CLIENT : Shenzhen Feasycom Technology Co.,Ltd

DATE OF ISSUE : Jul.12, 2017

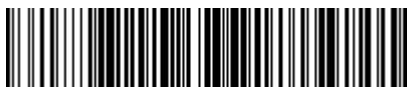
STANDARD(S) : FCC Part 15 Subpart C Section 15.247

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	/	Jul.12, 2017	Valid	Original Report

TABLE OF CONTENTS

1. VERIFICATION OF COMPLIANCE	5
2. GENERAL INFORMATION	6
2.1 PRODUCT DESCRIPTION.....	6
2.2 RELATED SUBMITTAL(S)/GRANT(S)	6
2.3 TEST METHOD.....	6
2.4 TEST FACILITY.....	6
2.5 SPECIAL ACCESSORIES.....	6
2.6 EQUIPMENT MODIFICATIONS	6
2.7 MEASUREMENT UNCERTAINTY	6
3. SYSTEM TEST CONFIGURATION	7
3.1 CONFIGURATION OF TESTED SYSTEM.....	7
3.2 EQUIPMENT USED IN TESTED SYSTEM	7
3.3. SUMMARY OF TEST RESULTS	8
4. DESCRIPTION OF TEST MODES	9
5. TEST FACILITY	10
6. TEST EQUIPMENT LIST.....	10
7. ANTENNA REQUIREMENT	11
7.1. STANDARD APPLICABLE	11
7.2. TEST RESULT	11
8. RADIATED EMISSION	12
8.1 LIMITS.....	12
8.2 MEASUREMENT PROCEDURE	12
8.3 TEST SETUP	13
8.4 TEST RESULT (WORST MODULATION: GFSK)	15
9. BAND EDGE EMISSION.....	27
9.1. MEASUREMENT PROCEDURE	27
9.2. TEST SET-UP	27
9.3. TEST RESULT	28
10. 6DB BANDWIDTH	32
10.1. TEST PROCEDURE.....	32
10.2. SUMMARY OF TEST RESULTS/PLOTS.....	32
11. CONDUCTED OUTPUT POWER	34
11.1. MEASUREMENT PROCEDURE	34
11.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	34
11.3. LIMITS AND MEASUREMENT RESULT.....	35
12. CONDUCTED SPURIOUS EMISSION.....	37

12.1. MEASUREMENT PROCEDURE	37
12.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	37
12.3. LIMITS AND MEASUREMENT RESULT	37
13. CONDUCTED OUTPUT POWER SPECTRAL DENSITY	41
13.1 MEASUREMENT PROCEDURE	41
13.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	41
13.3 LIMITS AND MEASUREMENT RESULT	41
14. LINE CONDUCTED EMISSION TEST	44
14.1 LIMITS	44
14.2 TEST SETUP	44
14.3 PRELIMINARY PROCEDURE	45
14.4 FINAL TEST PROCEDURE	45
14.5 TEST RESULT OF POWER LINE	46
APPENDIX A: PHOTOGRAPHS OF TEST SETUP	48
APPENDIX B: PHOTOGRAPHS OF EUT	52

1. VERIFICATION OF COMPLIANCE

Applicant	Shenzhen Feasycom Technology Co.,Ltd
Address	Room 2004A, 20th Floor, Huichao Technology Building, Jinhai Road, Xixiang, Baoan District, Shenzhen, China
Manufacturer	Shenzhen Feasycom Technology Co.,Ltd
Address	Room 2004A, 20th Floor, Huichao Technology Building, Jinhai Road, Xixiang, Baoan District, Shenzhen, China
Product Designation	Bluetooth Module
Brand Name	Feasycom
Test Model	FSC-BT909
Date of test	Jun.30, 2017 to Jul.02, 2017
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-US-BLE/RF (2013-03-01)

We hereby certify that:

The above equipment was tested by Dongguan Precise Testing Service 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 15.247.

Tested By Time Huang
Time Huang(Huang Nanhui) Jul.02, 2017

Reviewed By Forrest Lei
Forrest Lei(Lei Yonggang) Jul.12, 2017

Approved By Solger Zhang
Solger Zhang(Zhang Hongyi)
Authorized Officer Jul.12, 2017

2.GENERAL INFORMATION

2.1PRODUCT DESCRIPTION

The EUT is designed as a “Bluetooth Module”. It is designed by way of utilizing the FHSS technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480GHz
Bluetooth Version	V4.0
Modulation	GFSK for BLE
Number of channels	40 Channel(37 Hopping Channel,3 advertising Channel)
Antenna Designation	Ceramic Antenna
Antenna Gain	2dBi
Hardware Version	V1.1
Software Version	V2.1.0
Power Supply	DC 3.3V

2.2 RELATED SUBMITTAL(S)/GRANT(S)

This submittal(s) (test report) is intended for **FCC ID: 2AMWOFSC-BT909** , filing to comply with Section 15.247of the FCC Part 15, Subpart C Rules.

2.3TEST METHOD

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

2.4 TEST FACILITY

All measurement facilities used to collect the measurement data are located at Dongguan Precise Testing Service Co., Ltd.

Building D,Baoding Technology Park,Guangming Road2,Dongcheng District, Dongguan, Guangdong, China,

2.5 SPECIAL ACCESSORIES

Refer to section 2.2.

2.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2.7 MEASUREMENT UNCERTAINTY

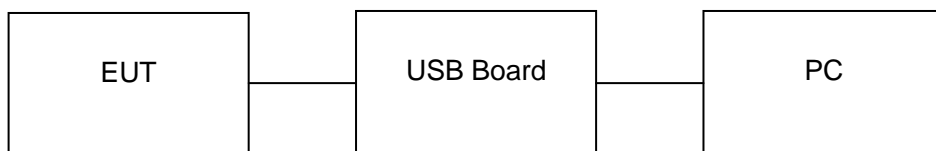
Radiation Emission:±/-3.2

Conduction Emission:±/-2.5

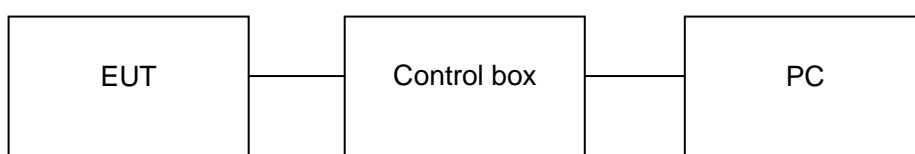
3. SYSTEM TEST CONFIGURATION

3.1 CONFIGURATION OF TESTED SYSTEM

Configure 1: (Normal hopping)



Configuration: Continuous TX



3.2 EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
1	Bluetooth Module	Feasycom	FSC-BT909	EUT
2	PC	Sony	E1412AYCW	A.E
3	PC Adapter	Sony	AC-L100	A.E
4	Control box	Feasycom	FSC-TL001	A.E
5	USB Board	Feasycom	USB TO TTL	A.E
6	USB Cable	N/A	0.8m Unshielded	A.E
7	Temporary Antenna Connector	T10	N/A	A.E

3.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna Requirement	Compliant
§15.209 §15.247(d)	Radiated Emission	Compliant
§15.247(d)	Band Edges	Compliant
§15.247(a) (2)	6 dB Bandwidth	Compliant
§15.247(b)	Conducted Output Power	Compliant
§15.247(d)	Conducted Spurious Emission	Compliant
§15.247(e)	Conducted Power Spectral Density	Compliant
§15.207	Line Conduction Emission	Compliant

4. DESCRIPTION OF TEST MODES

The EUT has been operated in one modulation: GFSK.

NO.	TEST MODE DESCRIPTION
1	Low channel GFSK
2	Middle channel GFSK
3	High channel GFSK
4	BT Link
Note: Transmitting duty cycle=100%.	

5. TEST FACILITY

Site	Dongguan Precise Testing Service Co., Ltd.
Location	Building D,Baoding Technology Park,Guangming Road2,Dongcheng District, Dongguan, Guangdong, China,
FCC Registration No.	371540
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2014

6. TEST EQUIPMENT LIST

TEST EQUIPMENT LIST					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	ROHDE & SCHWARZBECK	ESCI	101417	July 4, 2016	July 3, 2017
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 4, 2016	July 3, 2017
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 4, 2016	July 3, 2017
RF Cable	SCHWARZBECK	AK9515E	96221	July 4, 2016	July 3, 2017
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 6, 2017	June 5, 2018
MULTI-DEVICE Positioning Controller	MAX-FULL	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	SCHWARZBECK	FMZB1519	1519-038	June 6, 2017	June 5, 2018
Spectrum analyzer	AGILENT	E4407B	MY46185649	June 6, 2017	June 5, 2018
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	July 11, 2016	July 10, 2017
Spectrum Analyzer	AGILENT	E4411B	MY4511453	July 4, 2016	July 3, 2017
Signal Amplifier	SCHWARZBECK	BBV 9718	9718-269	July 4, 2016	July 3, 2017
RF Cable	SCHWARZBECK	AK9515H	96220	July 4, 2016	July 3, 2017
Horn Ant (18G-40GHz)	SCHWARZBECK	BBHA 9170	9170-181	June 6, 2016	June 5, 2017
Artificial Mains Network	NARDA	L2-16B	000WX31025	July 8, 2016	July 7, 2017
Artificial Mains Network (AUX)	NARDA	L2-16B	000WX31026	July 8, 2016	July 7, 2017
RF Cable	SCHWARZBECK	AK9515E	96222	July 4, 2016	July 3, 2017
Shielded Room	CHENGYU	843	PTS-002	June 6, 2017	June 5, 2018
Conduction Cable	MXT	SE1	S003	June 6, 2017	June 5, 2018

7. ANTENNA REQUIREMENT

7.1. STANDARD APPLICABLE

According to FCC 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

7.2. TEST RESULT

This product has a permanent antenna, fulfill the requirement of this section.

8. RADIATED EMISSION

8.1 LIMITS

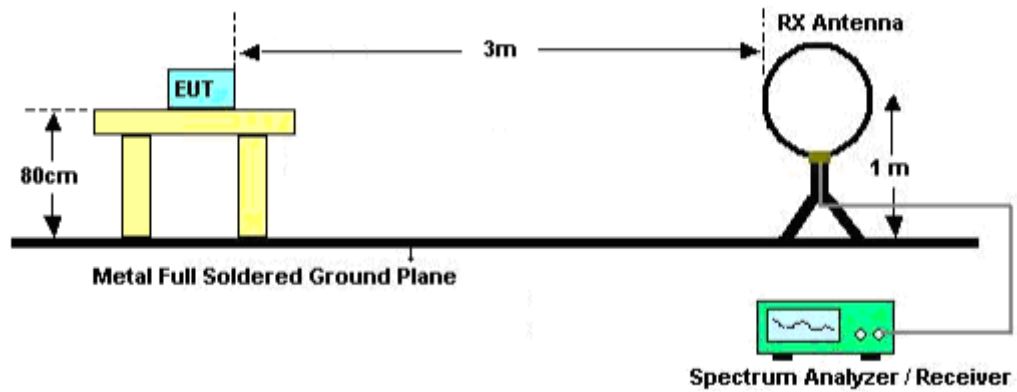
Frequency (MHz)	Distance Meters	Field Strengths Limit	
		μ V/m	dB(μ V)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other:74.0 dB(μ V)/m (Peak) 54.0 dB(μ V)/m (Average)	
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.			

8.2 MEASUREMENT PROCEDURE

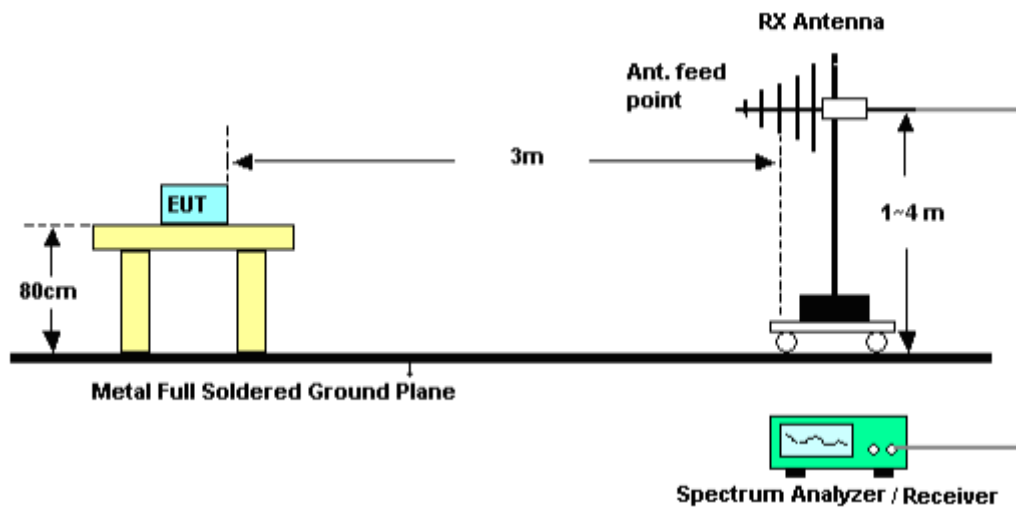
1. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Below 1GHz)
2. The measuring distance of 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)

8.3 TEST SETUP

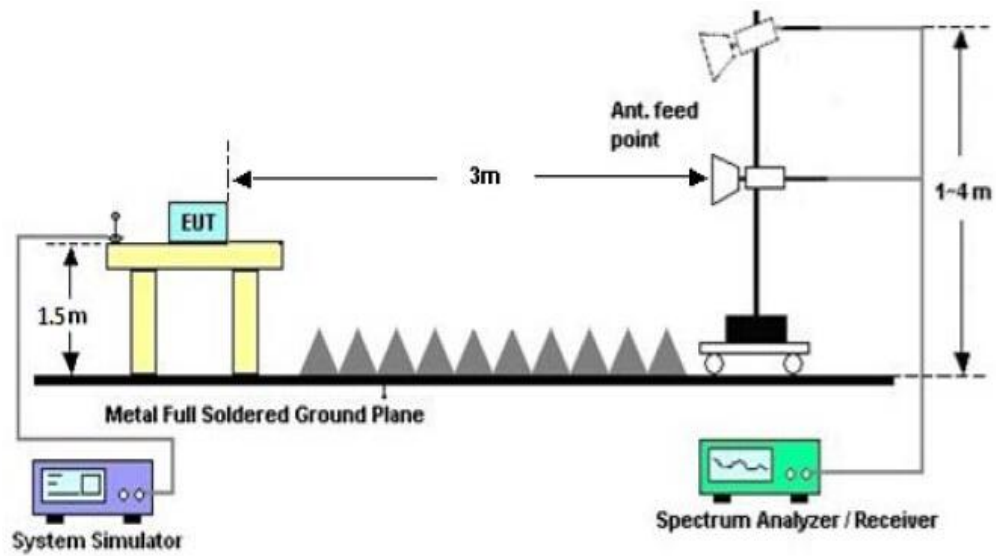
RADIATED EMISSION TEST SETUP BELOW 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



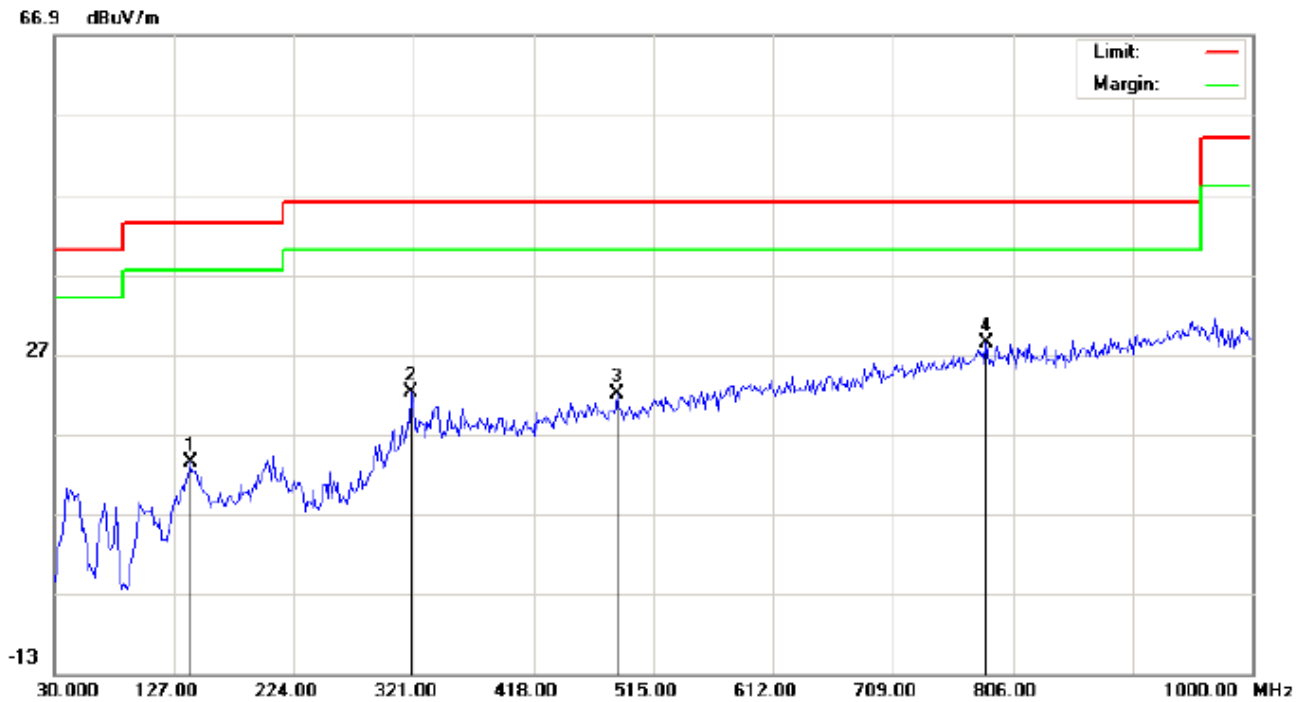
8.4 TEST RESULT (Worst Modulation: GFSK)

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

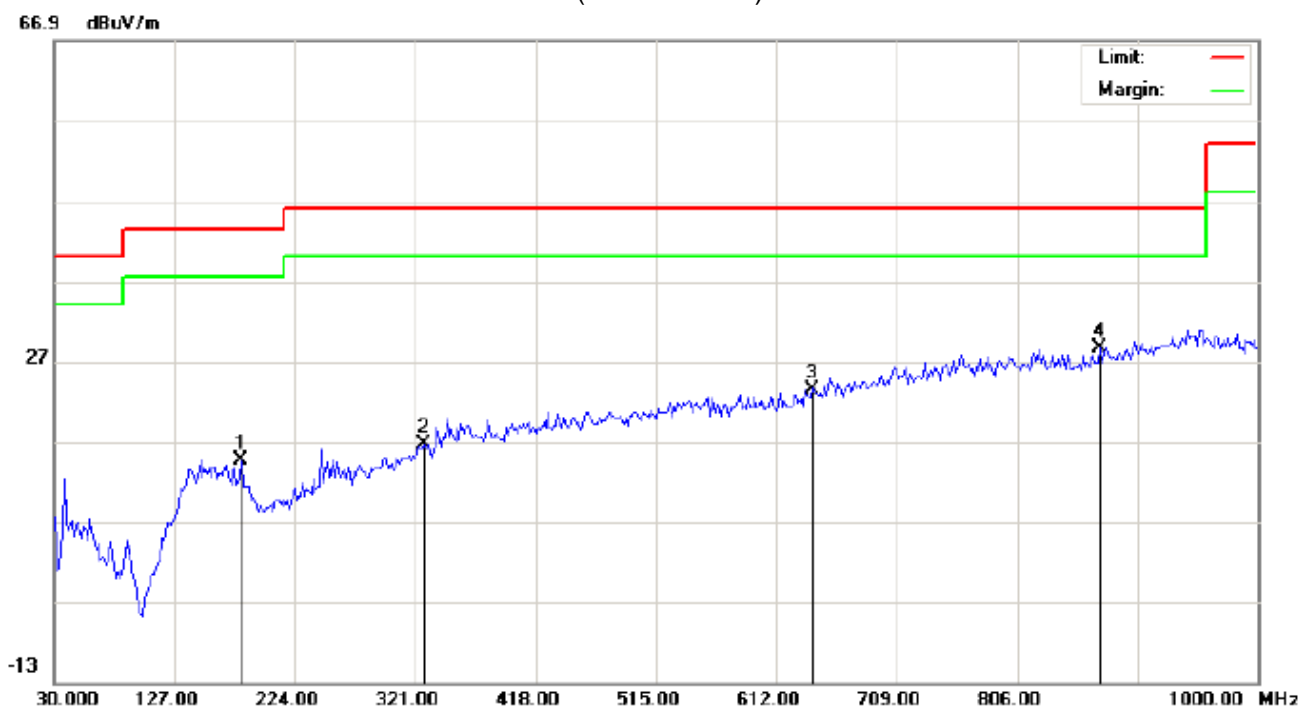


Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 22.4
Limit: FCC Class B 3M Radiation	Power:	Humidity: 52.5 %
EUT: Bluetooth Module	Distance:	
M/N: FSC-BT909		
Mode: Low Channel TX		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		139.9333	-1.75	15.17	13.42	43.50	-30.08	peak			
2		319.3833	5.51	16.70	22.21	46.00	-23.79	peak			
3		485.9000	1.12	20.98	22.10	46.00	-23.90	peak			
4	*	784.9833	1.20	27.11	28.31	46.00	-17.69	peak			

RESULT: PASS

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



Site: site #1
Limit: FCC Class B 3M Radiation
EUT: Bluetooth Module
M/N: FSC-BT909
Mode: Low Channel TX
Note:

Polarization: **Vertical**
Power:
Distance:

Temperature: 22.4
Humidity: 52.5 %

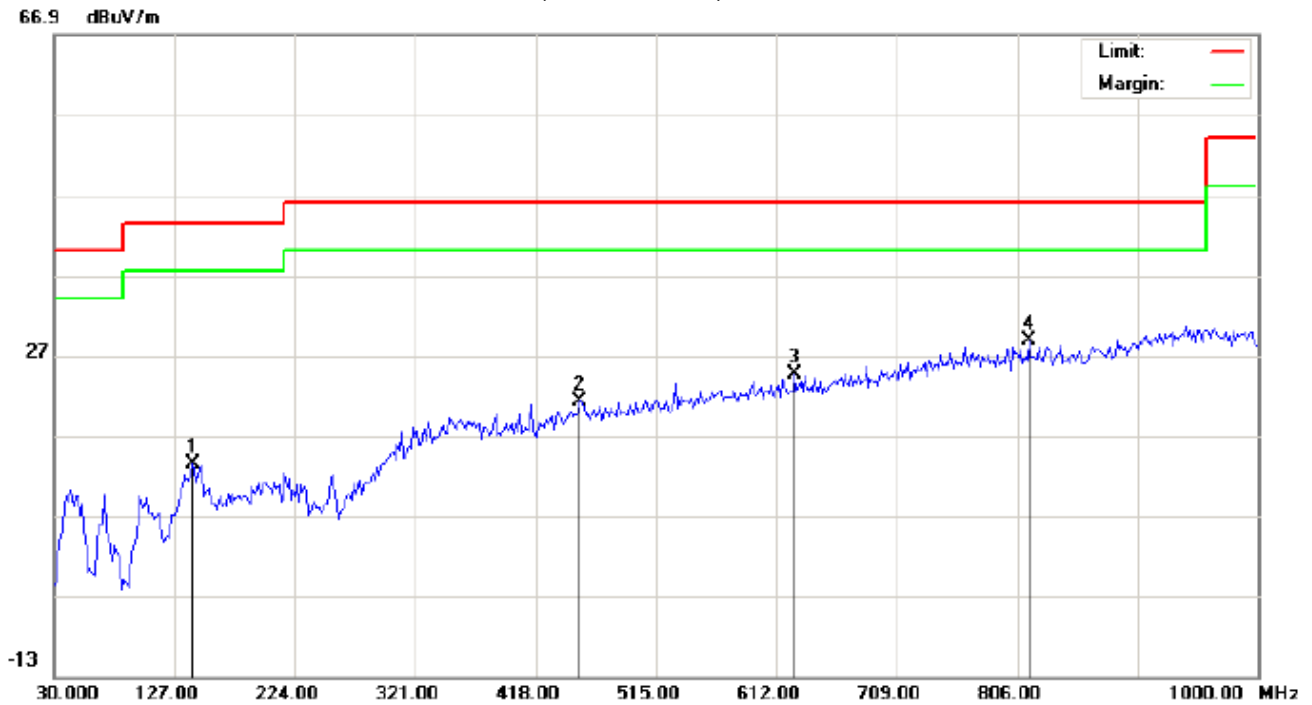
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		180.3500	0.55	13.98	14.53	43.50	-28.97	peak			
2		327.4667	-0.64	17.24	16.60	46.00	-29.40	peak			
3		641.1000	-0.15	23.65	23.50	46.00	-22.50	peak			
4	*	872.2833	0.80	27.89	28.69	46.00	-17.31	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.

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



Site: site #1

Polarization: *Horizontal*

Temperature: 22.4

Limit: FCC Class B 3M Radiation

Power:

Humidity: 52.5 %

EUT: Bluetooth Module

Distance:

M/N: FSC-BT909

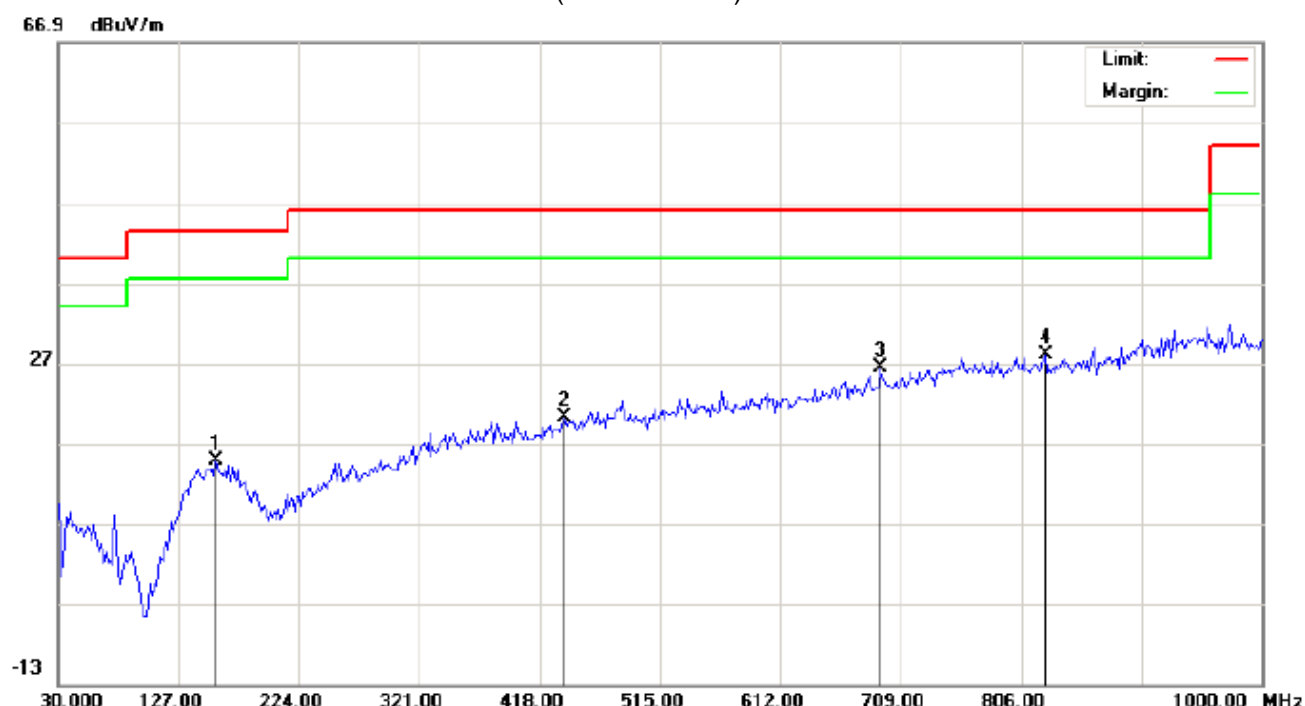
Mode: Middle Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		141.5500	-1.43	14.82	13.39	43.50	-30.11	peak			
2		453.5667	0.59	20.63	21.22	46.00	-24.78	peak			
3		626.5500	0.84	23.79	24.63	46.00	-21.37	peak			
4	*	815.7000	1.56	27.32	28.88	46.00	-17.12	peak			

RESULT: PASS

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



Site: site #1
Limit: FCC Class B 3M Radiation
EUT: Bluetooth Module
M/N: FSC-BT909
Mode: Middle Channel TX
Note:

Polarization: **Vertical**
Power:
Distance:

Temperature: 22.4
Humidity: 52.5 %

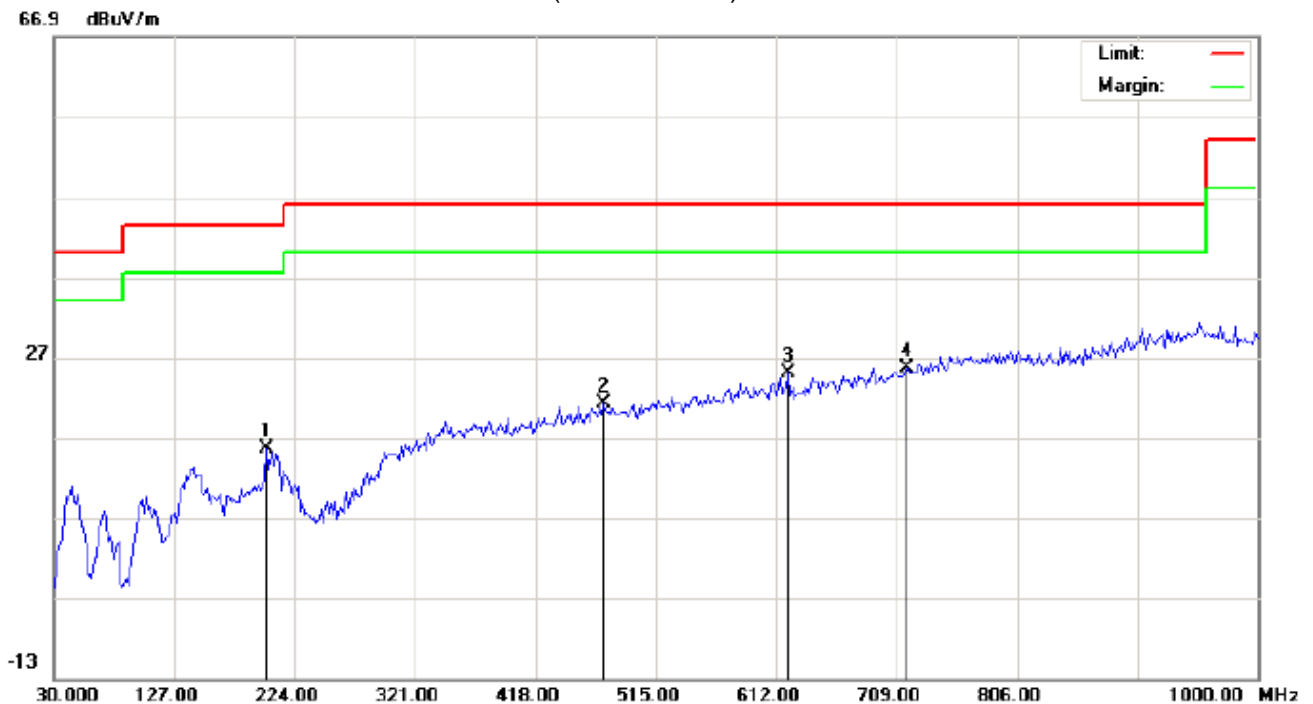
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		157.7167	-0.45	15.32	14.87	43.50	-28.63	peak			
2		437.4000	0.05	20.21	20.26	46.00	-25.74	peak			
3		692.8333	1.49	25.00	26.49	46.00	-19.51	peak			
4	*	825.4000	0.68	27.31	27.99	46.00	-18.01	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.

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



Site: site #1

Limit: FCC Class B 3M Radiation

EUT: Bluetooth Module

M/N: FSC-BT909

Mode: High Channel TX

Note:

Polarization: *Horizontal*

Power:

Distance:

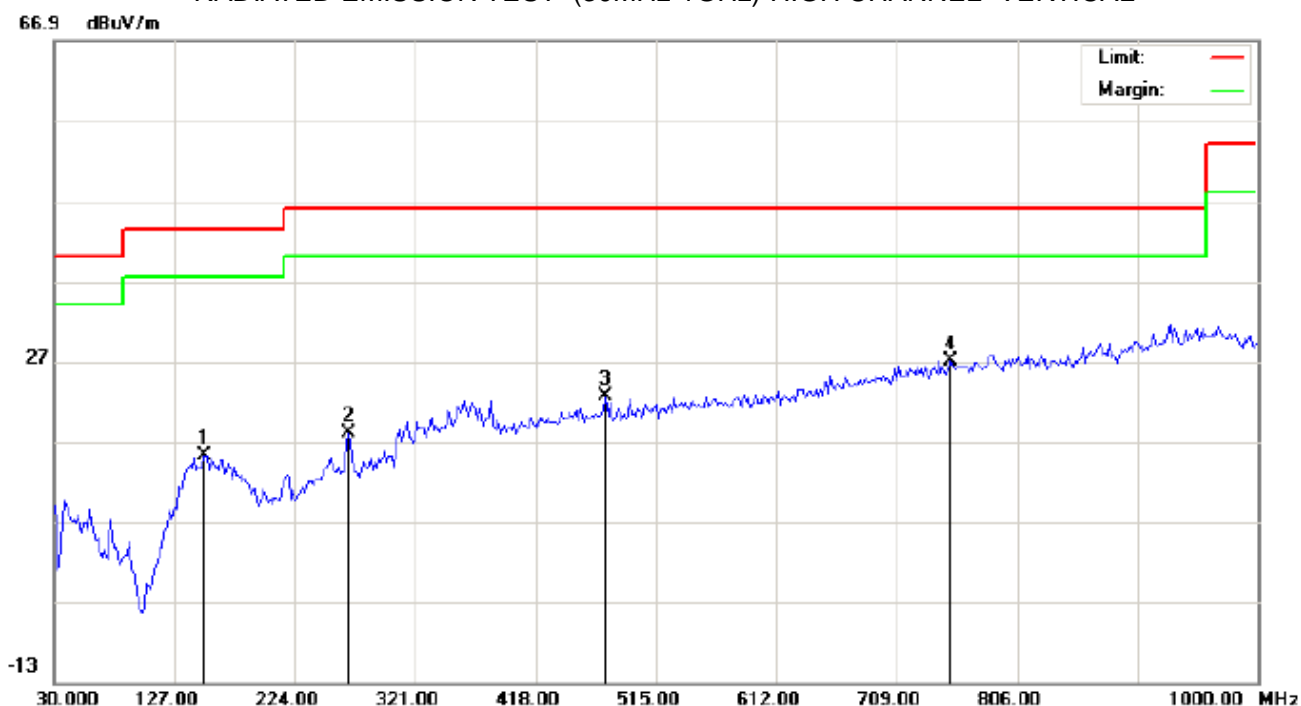
Temperature: 22.4

Humidity: 52.5 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		201.3667	3.77	11.86	15.63	43.50	-27.87	peak			
2		472.9667	0.34	20.84	21.18	46.00	-24.82	peak			
3		621.7000	1.31	23.78	25.09	46.00	-20.91	peak			
4	*	717.0833	0.01	25.68	25.69	46.00	-20.31	peak			

RESULT: PASS

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



Site: site #1
Limit: FCC Class B 3M Radiation
EUT: Bluetooth Module
M/N: FSC-BT909
Mode: High Channel TX
Note:

Polarization: **Vertical**
Power:
Distance:

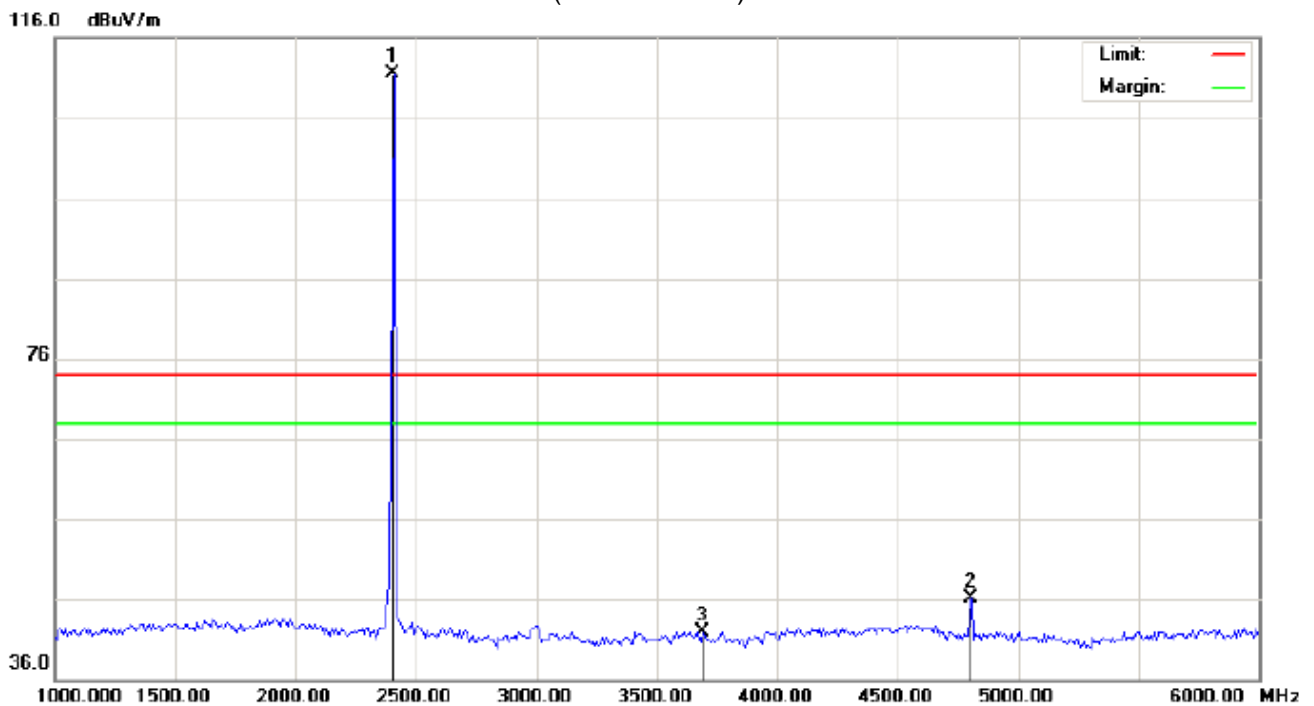
Temperature: 22.4
Humidity: 52.5 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		151.2500	-0.02	15.27	15.25	43.50	-28.25	peak			
2		267.6500	3.50	14.43	17.93	46.00	-28.07	peak			
3		474.5833	1.83	20.86	22.69	46.00	-23.31	peak			
4	*	752.6500	0.43	26.67	27.10	46.00	-18.90	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.

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 Module

Distance:

M/N: FSC-BT909

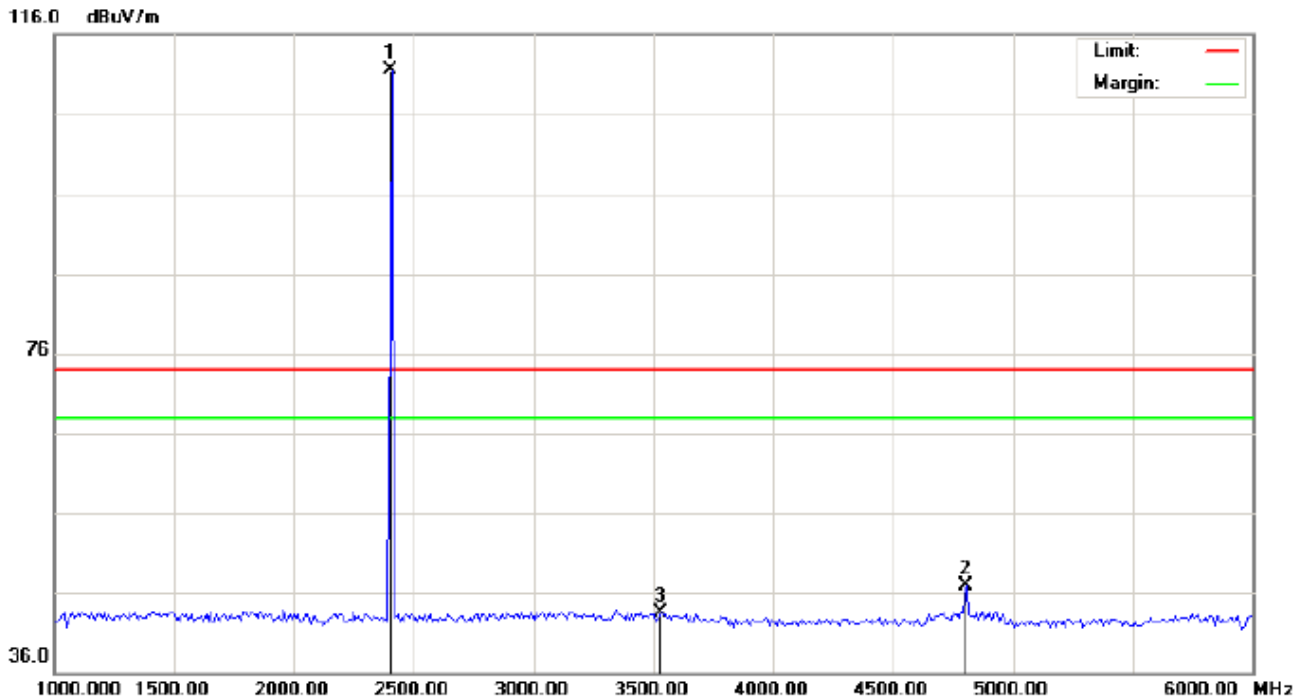
Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2402.000	101.15	10.32	111.47	74.00	37.47	peak			
2		4804.000	38.37	7.69	46.06	74.00	-27.94	peak			
3		3691.667	28.69	13.29	41.98	74.00	-32.02	peak			

RESULT: PASS

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 Module

Distance:

M/N: FSC-BT909

Mode: Low Channel TX

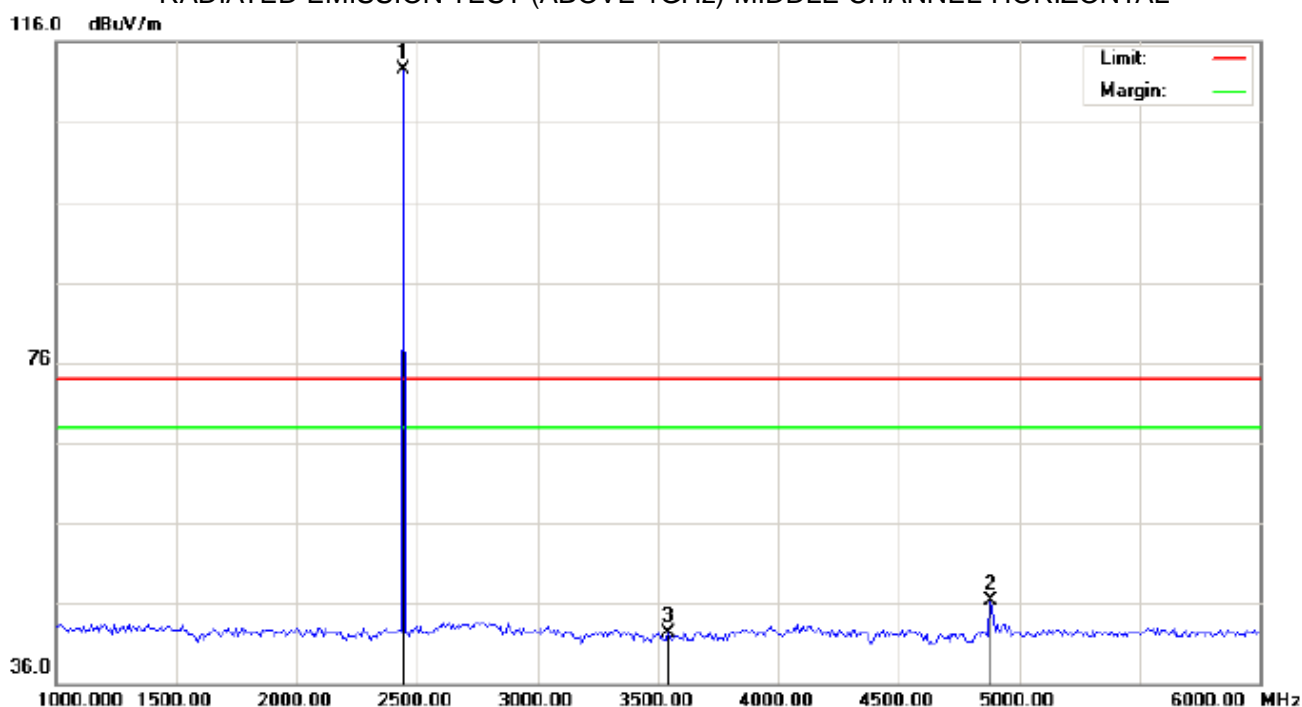
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2402.000	101.18	10.32	111.50	74.00	37.50	peak			
2		4804.000	39.26	7.69	46.95	74.00	-27.05	peak			
3		3533.333	31.11	12.32	43.43	74.00	-30.57	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.

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

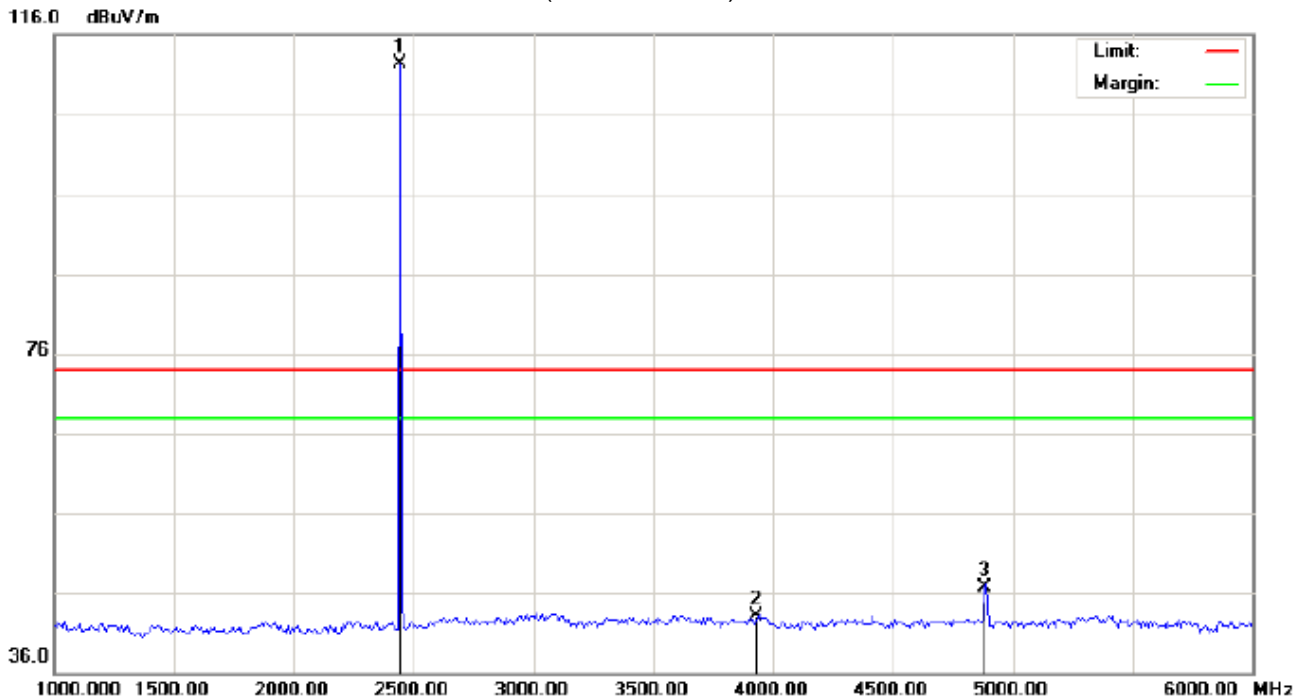


Site: site #1 Polarization: *Horizontal* Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHz(PK) Power: Humidity: 60 %
EUT: Bluetooth Module Distance:
M/N: FSC-BT909
Mode: Middle Channel TX
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2440.000	102.11	10.36	112.47	74.00	38.47	peak			
2		4882.000	38.36	7.89	46.25	74.00	-27.75	peak			
3		3541.667	29.92	12.37	42.29	74.00	-31.71	peak			

RESULT: PASS

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 Module

Distance:

M/N: FSC-BT909

Mode: Middle Channel TX

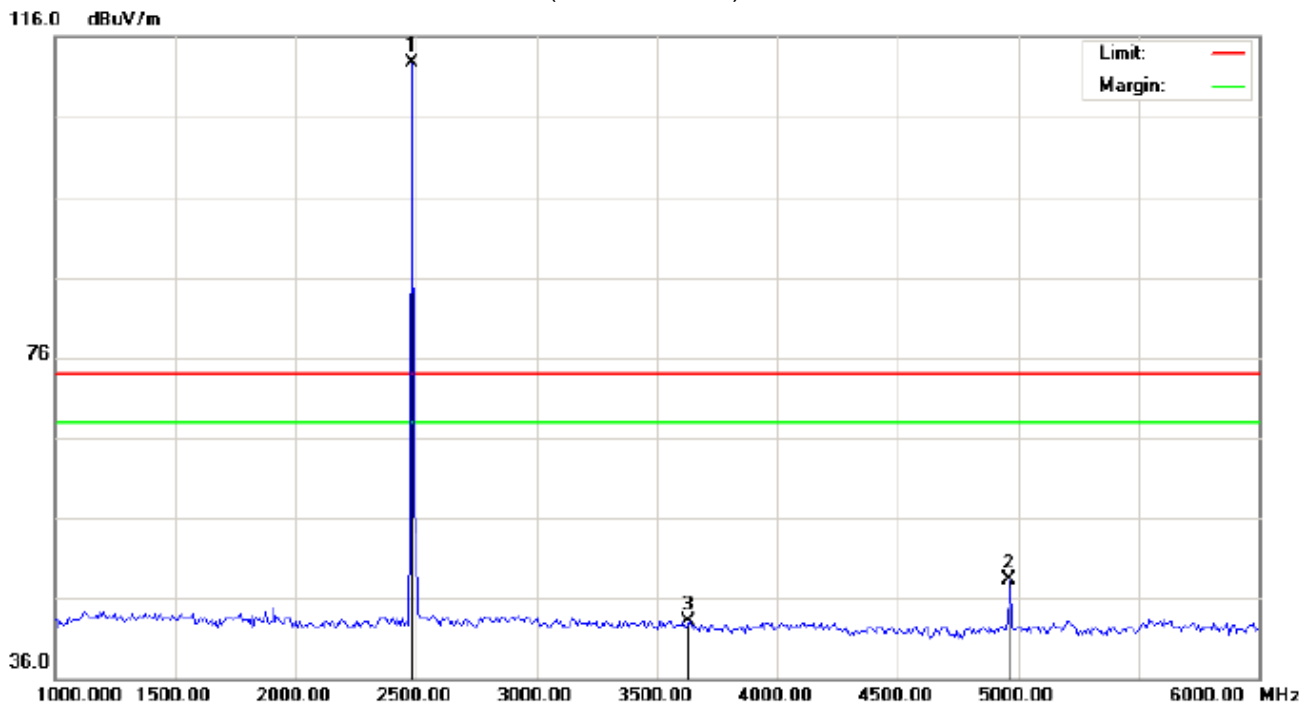
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2440.000	101.91	10.36	112.27	74.00	38.27	peak			
2		3933.333	28.39	14.78	43.17	74.00	-30.83	peak			
3		4882.000	38.81	7.89	46.70	74.00	-27.30	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.

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



Site: site #1
Limit: FCC Class B 3M Radiation above 1GHz(PK)
EUT: Bluetooth Module
M/N: FSC-BT909
Mode: High Channel TX
Note:

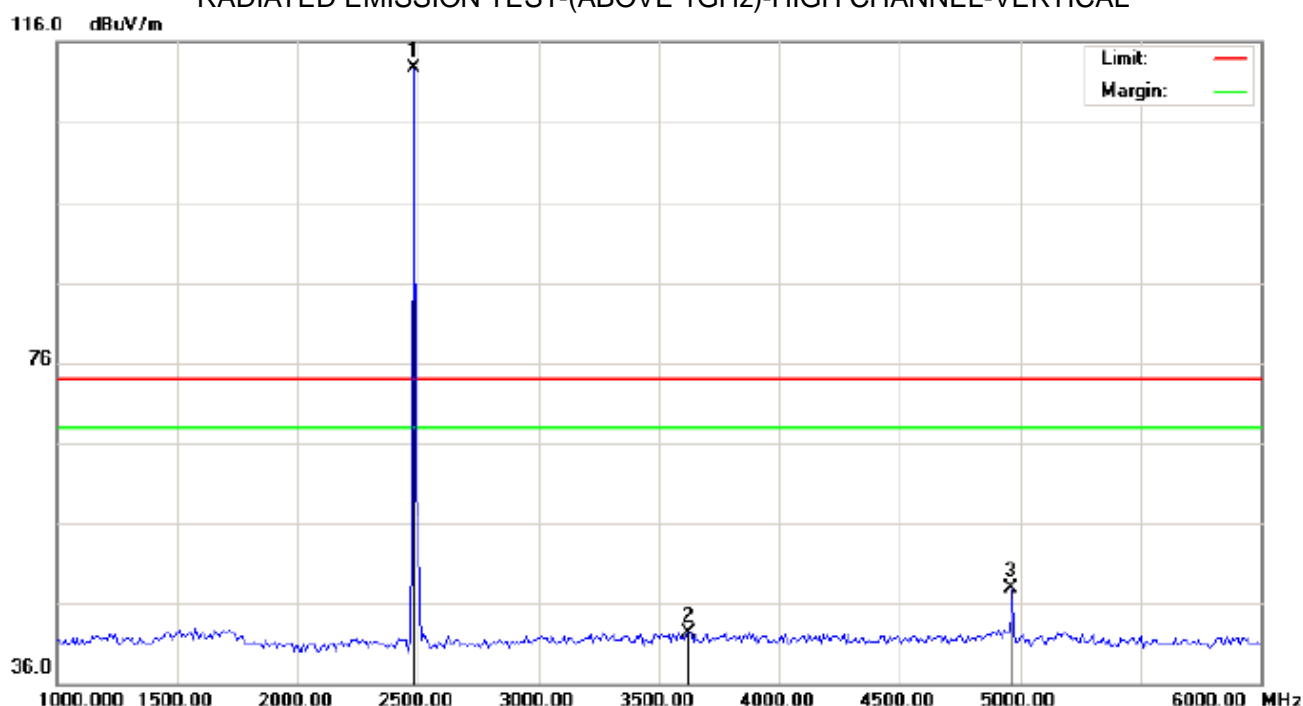
Polarization: *Horizontal*
Power:
Distance:

Temperature: 26
Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	102.39	10.41	112.80	74.00	38.80	peak			
2		4960.000	40.31	8.09	48.40	74.00	-25.60	peak			
3		3633.333	30.25	12.93	43.18	74.00	-30.82	peak			

RESULT: PASS

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



Site: site #1 Polarization: **Vertical** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHz(PK) Power: Humidity: 60 %
EUT: Bluetooth Module Distance:
M/N: FSC-BT909
Mode: High Channel TX
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	102.26	10.41	112.67	74.00	38.67	peak			
2		3625.000	29.39	12.88	42.27	74.00	-31.73	peak			
3		4960.000	39.84	8.09	47.93	74.00	-26.07	peak			

RESULT: PASS

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

Factor=Antenna Factor+ Cable loss-Amplifier gain,

Margin=Measurement-Limit.

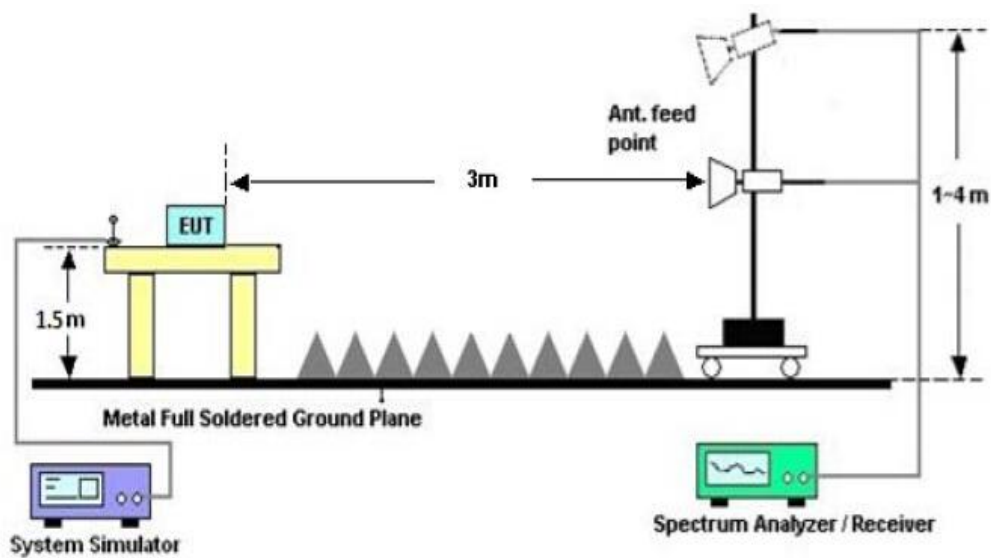
The "Factor" value can be calculated automatically by software of measurement system.

9. BAND EDGE EMISSION

9.1. MEASUREMENT PROCEDURE

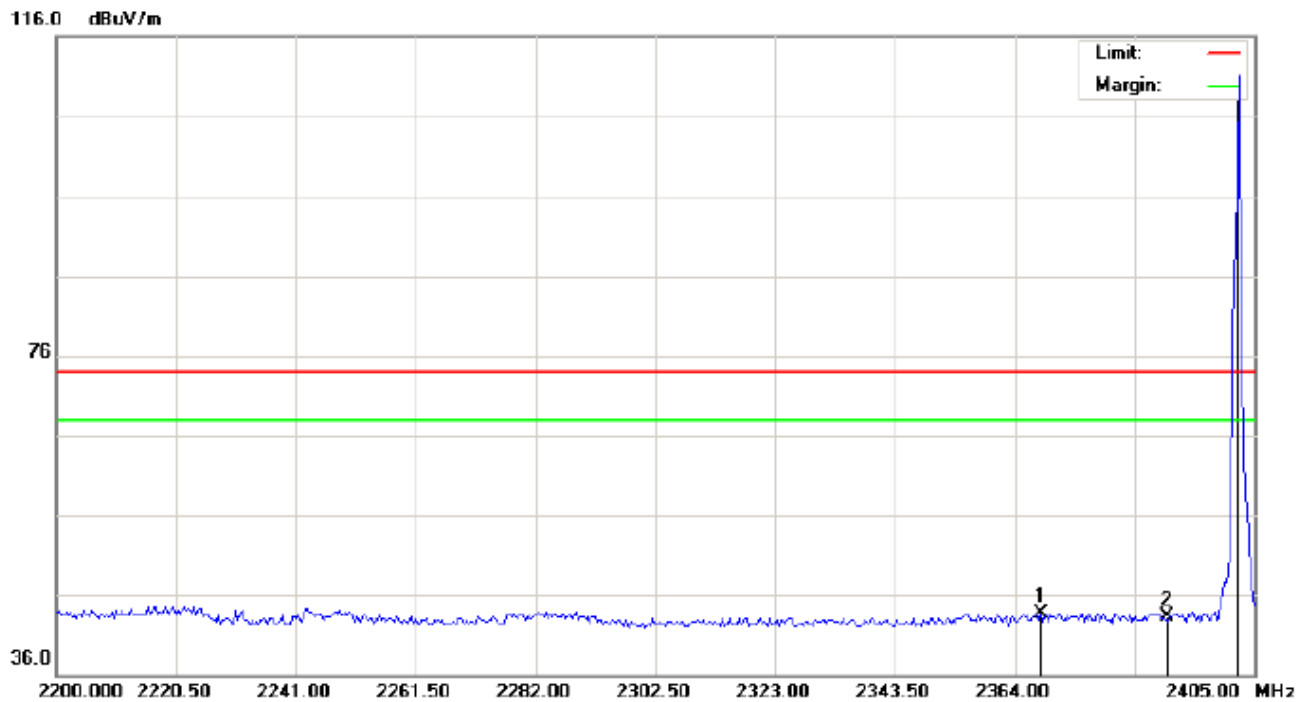
1. Set the EUT Work on the top, the bottom operation frequency individually.
2. Set SPA Start or Stop Frequency=Operation Frequency, $RBW \geq 100\text{kHz}$, $VBW \geq 3 \times RBW$,
Center frequency =Operation frequency
3. The band edges was measured and recorded.

9.2. TEST SET-UP



9.3. TEST RESULT

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 Module Distance:
M/N: FSC-BT909
Mode: Low Channel TX
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2368.442	33.40	10.29	43.69	74.00	-30.31	peak			
2		2390.000	33.00	10.31	43.31	74.00	-30.69	peak			
3	*	2402.000	100.72	10.32	111.04	74.00	37.04	peak			

TEST PLOT OF BAND EDGE FOR LOW CHANNEL - Vertical

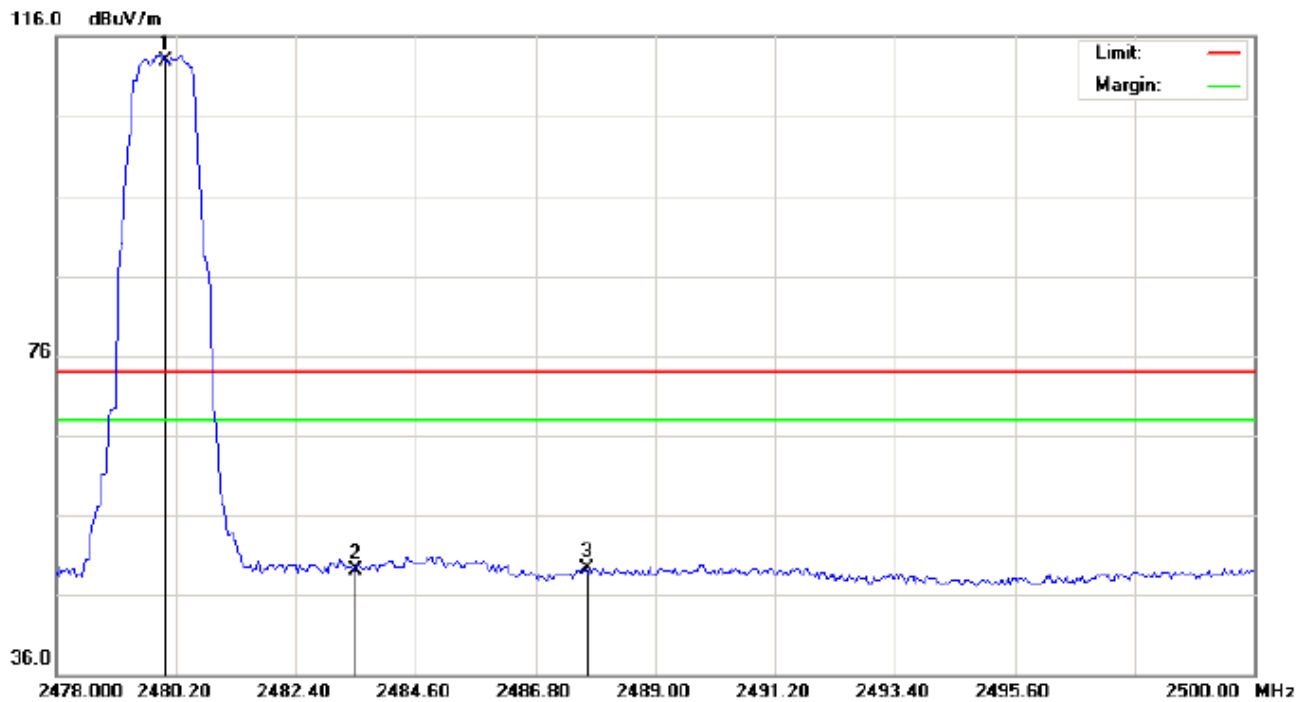


Site: site #1 Polarization: **Vertical** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHz(PK) Power: Humidity: 60 %
EUT: Bluetooth Module Distance:
M/N: FSC-BT909
Mode: Low Channel TX
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2345.550	33.14	10.26	43.40	74.00	-30.60	peak			
2		2390.000	32.21	10.31	42.52	74.00	-31.48	peak			
3	*	2402.000	101.09	10.32	111.41	74.00	37.41	peak			

RESULT: PASS

TEST PLOT OF BAND EDGE FOR HIGH CHANNEL –Horizontal



Site: site #1 Polarization: **Horizontal** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHz(PK) Power: Humidity: 60 %
EUT: Bluetooth Module Distance:
M/N: FSC-BT909
Mode: High Channel TX
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	102.55	10.41	112.96	74.00	38.96	peak			
2		2483.500	38.69	10.41	49.10	74.00	-24.90	peak			
3		2487.753	38.96	10.42	49.38	74.00	-24.62	peak			

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 Module Distance:
M/N: FSC-BT909
Mode: High Channel TX
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	102.32	10.41	112.73	74.00	38.73	peak			
2		2483.500	34.76	10.41	45.17	74.00	-28.83	peak			
3		2491.603	35.95	10.42	46.37	74.00	-27.63	peak			

RESULT: PASS

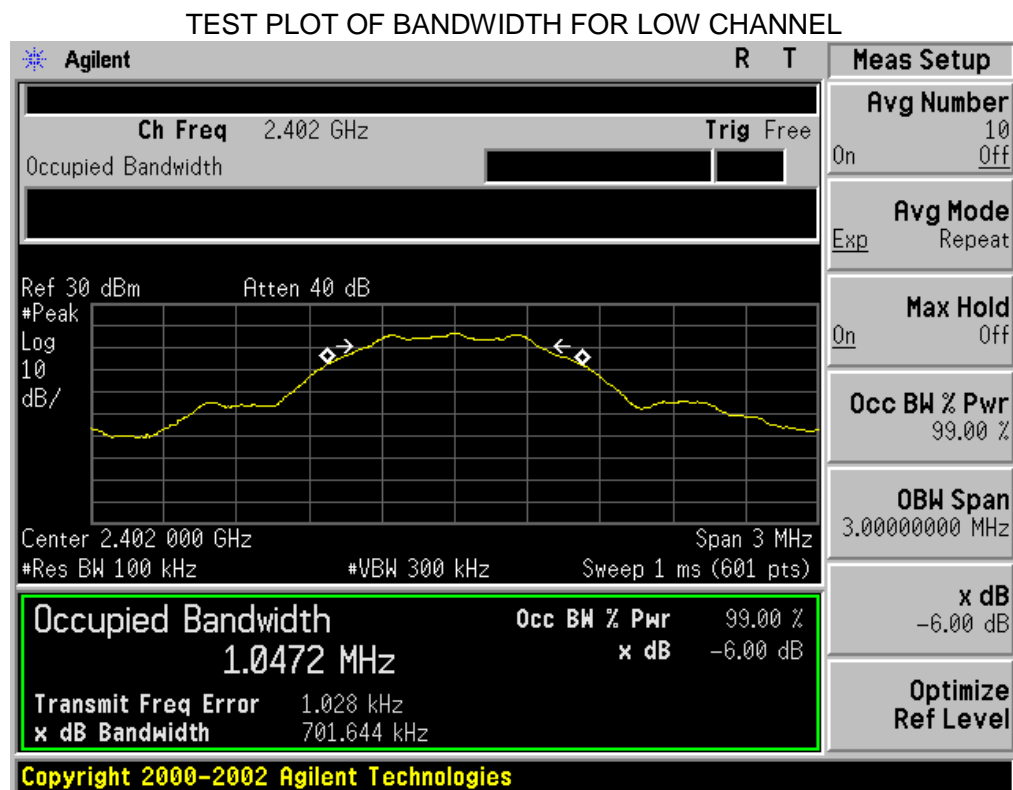
10. 6DB BANDWIDTH

10.1. TEST PROCEDURE

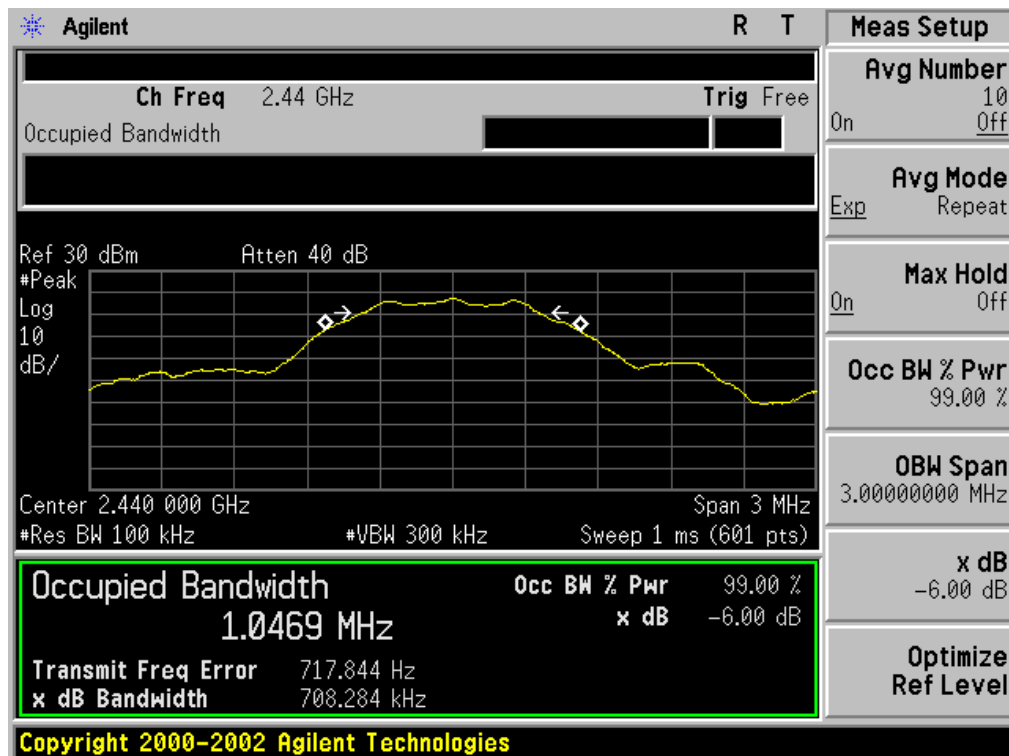
1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW $\geq 3 \times$ RBW.
4. Set SPA Trace 1 Max hold, then View.

10.2. SUMMARY OF TEST RESULTS/PLOTS

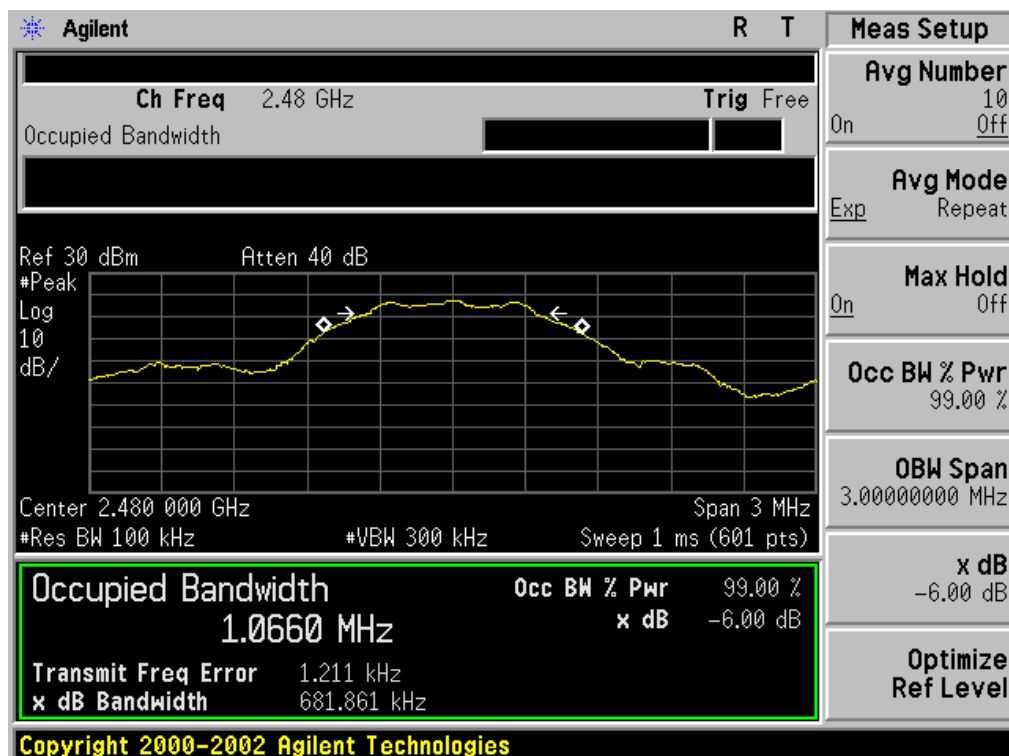
Channel	6dB Bandwidth (KHz)	Minimum Limit (KHz)	Pass/Fail
Low	0.702	500KHz	Pass
Middle	0.708		Pass
High	0.682		Pass



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

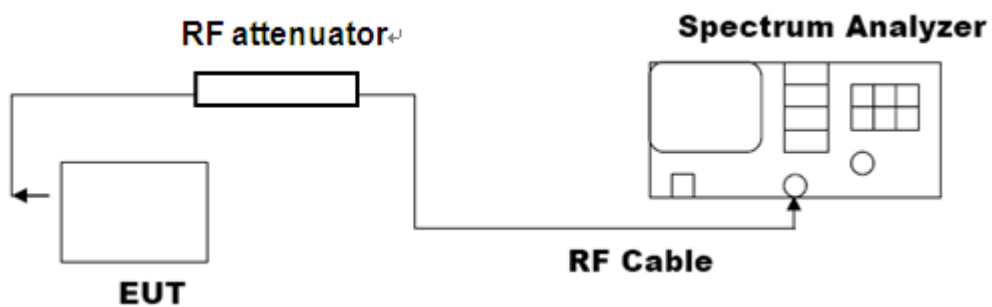


11. CONDUCTED OUTPUT POWER

11.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, middle and the bottom operation frequency individually.
3. Use the following spectrum analyzer settings:
 - a) Set the RBW \geq DTS bandwidth.
 - b) Set VBW $\geq 3 \times$ RBW.
 - c) Set span $\geq 3 \times$ RBW
 - d) Sweep time = auto couple.
 - e) Detector = peak.
 - f) Trace mode = max hold.
 - g) Allow trace to fully stabilize.
 - h) Use peak marker function to determine the peak amplitude level.
4. Allow the trace to stabilize.
5. Record the result form the Spectrum Analyzer.

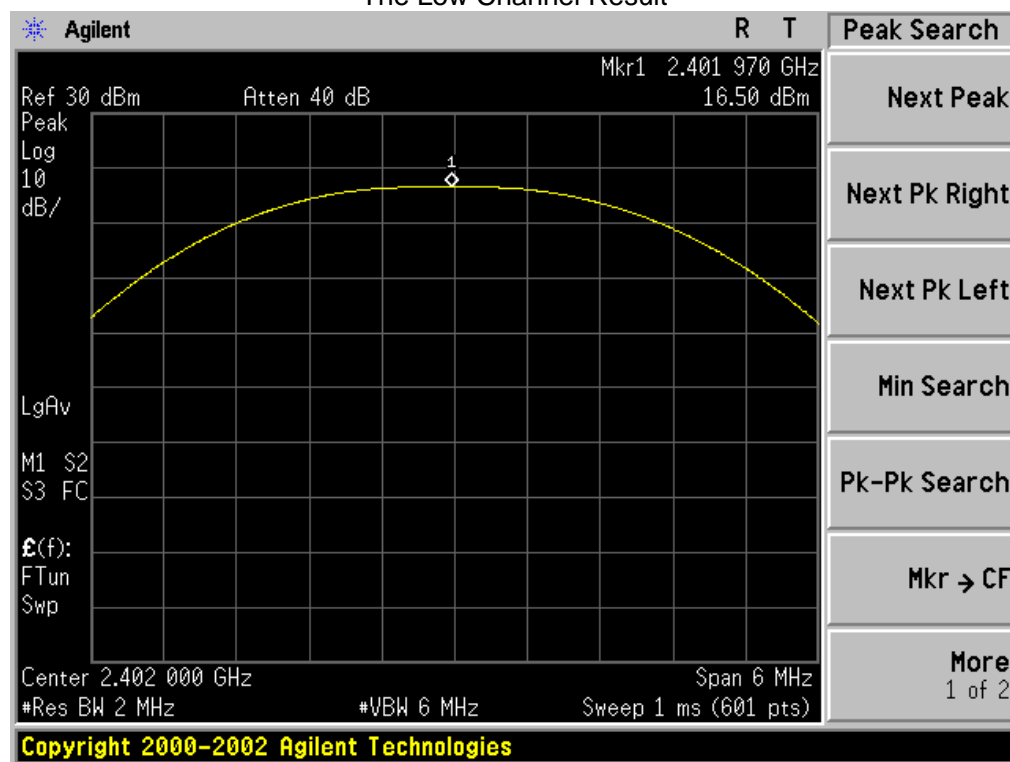
11.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



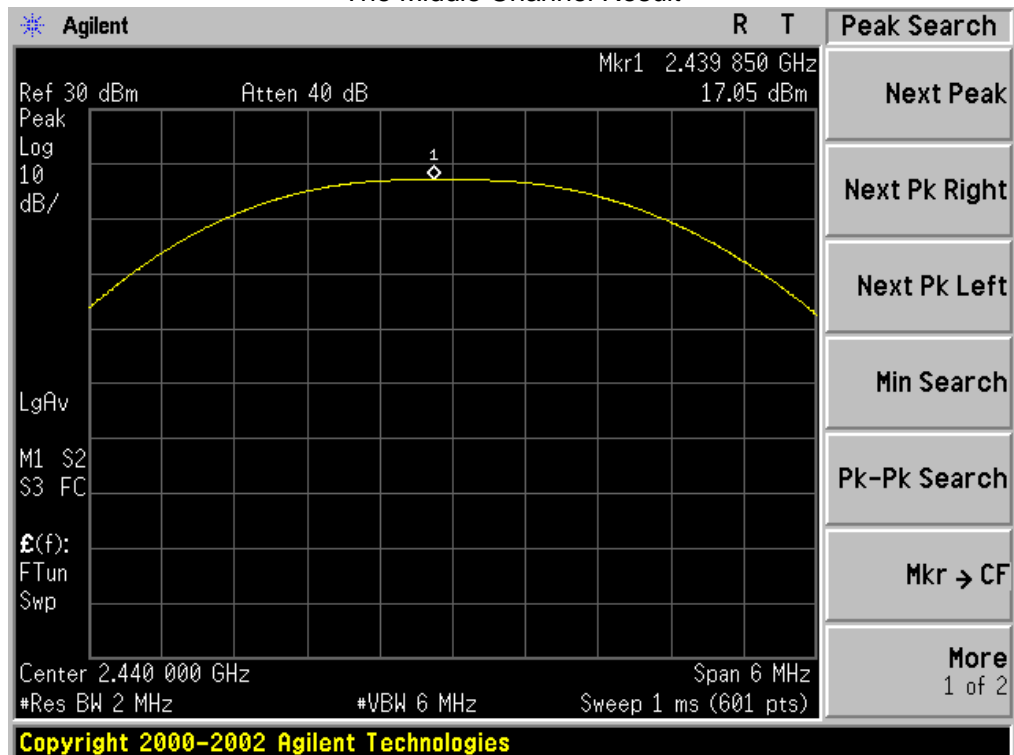
11.3. LIMITS AND MEASUREMENT RESULT

Channel	Peak Power (dBm)	Applicable Limits (dBm)	Pass/Fail
Low Channel	16.50	30	Pass
Middle Channel	17.05	30	Pass
High Channel	17.51	30	Pass

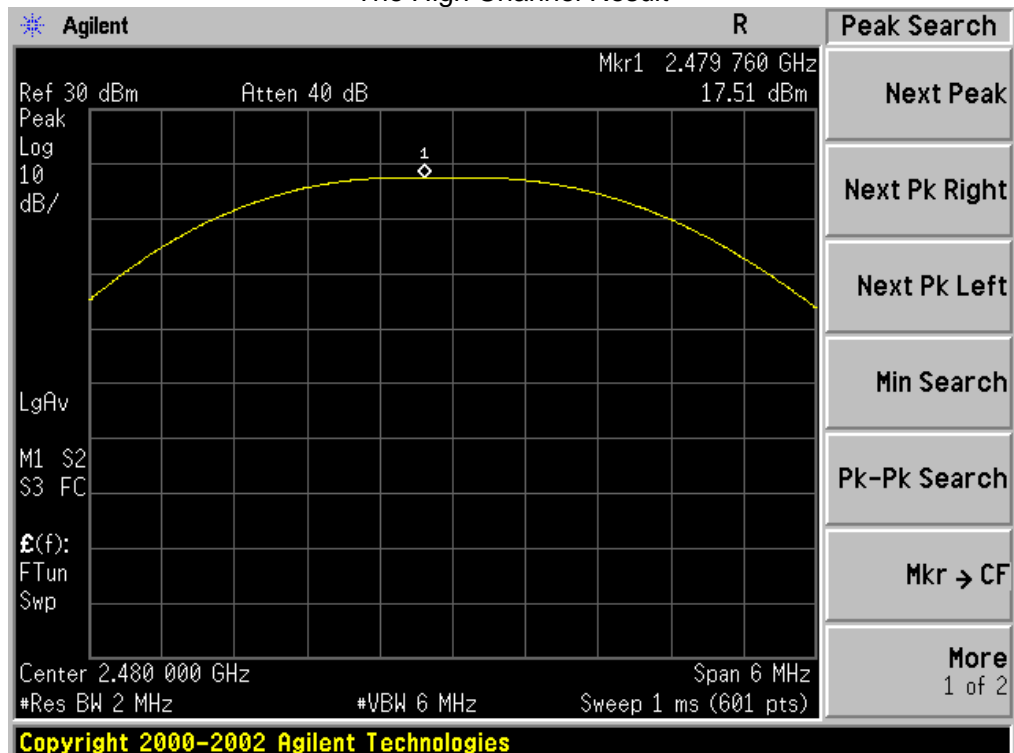
The Low Channel Result



The Middle Channel Result



The High Channel Result

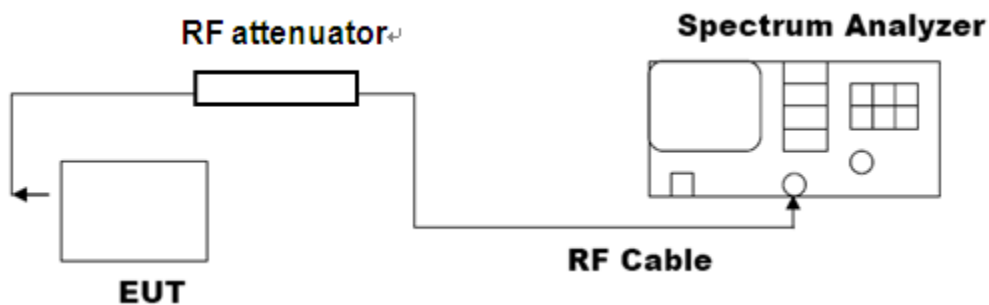


12. CONDUCTED SPURIOUS EMISSION

12.1. 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 the Span = wide enough to capture the peak level of the in-band emission and all spurious emissions from the lowest frequency generated in the EUT up through the 10th harmonic.
 1. RBW = 100 kHz; VBW \geq RBW; Sweep = auto; Detector function = peak.
4. Set SPA Trace 1 Max hold, then View.

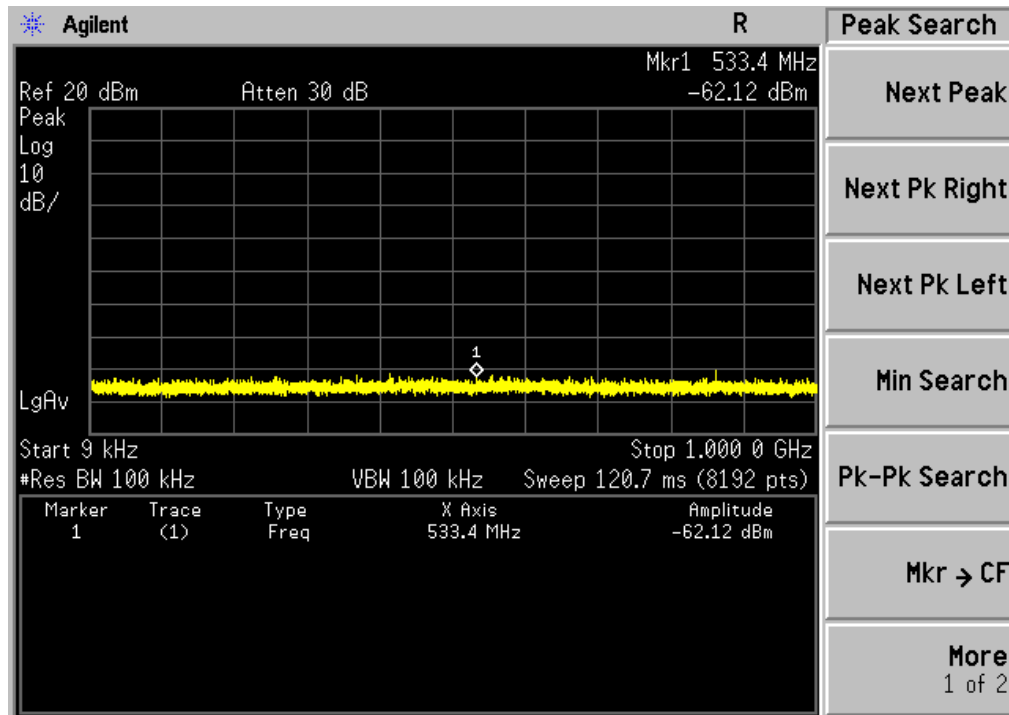
12.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



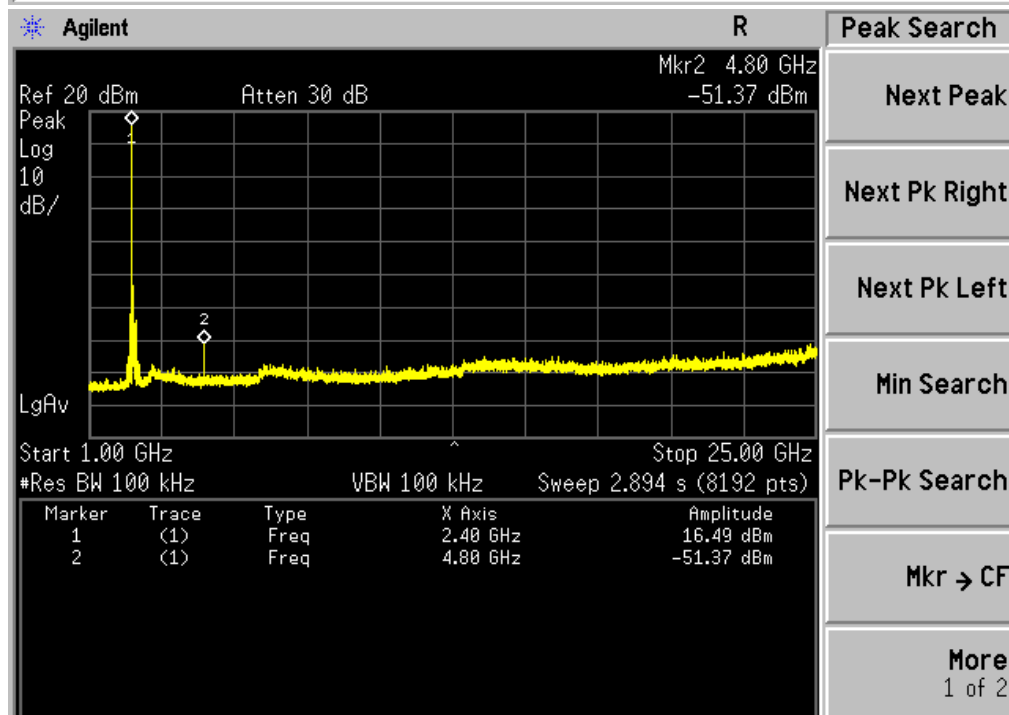
12.3. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Result
In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiation 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))	At least -20dBc than the limit Specified on the BOTTOM Channel	PASS
	At least -20dBc than the limit Specified on the TOP Channel	PASS

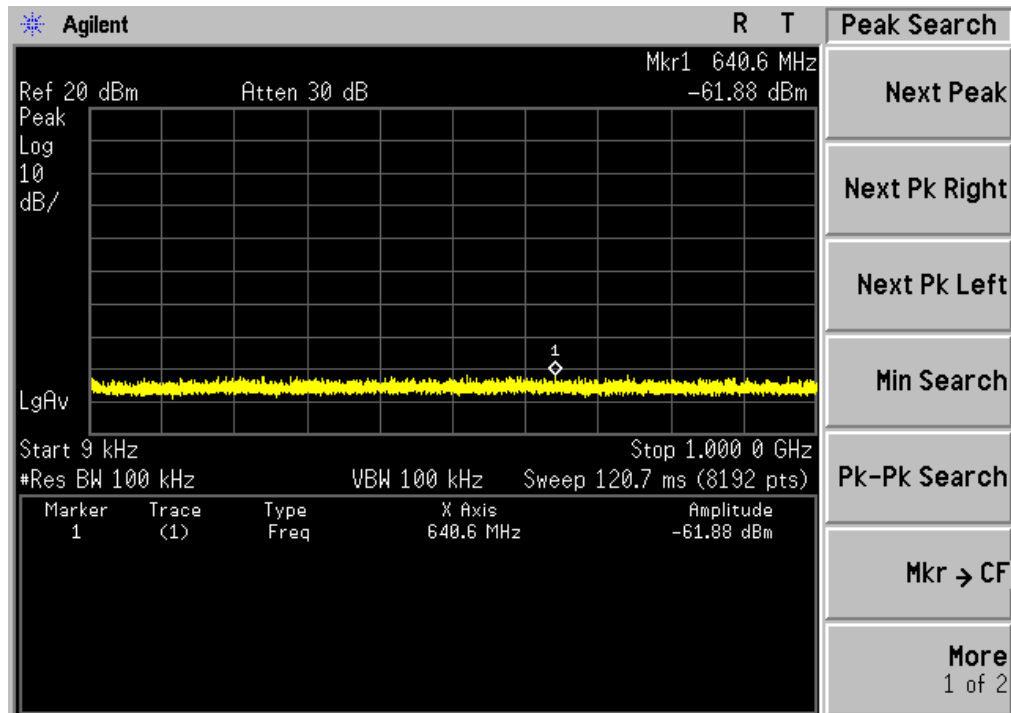
TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE
OF GFSK MODULATION IN LOW CHANNEL



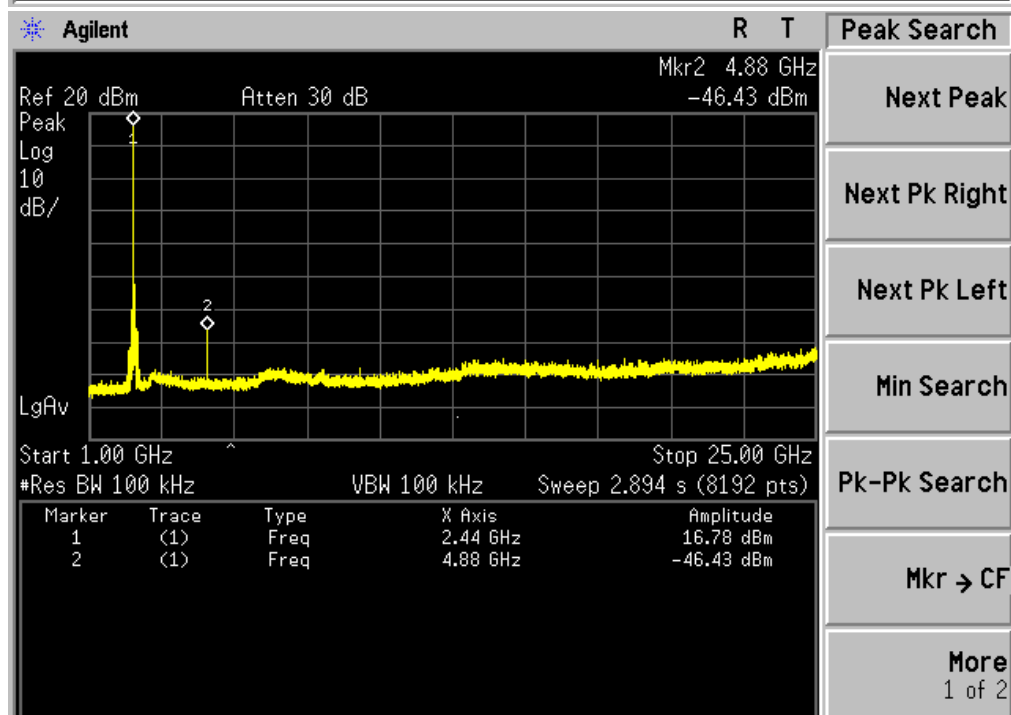
Copyright 2000–2002 Agilent Technologies



Copyright 2000–2002 Agilent Technologies

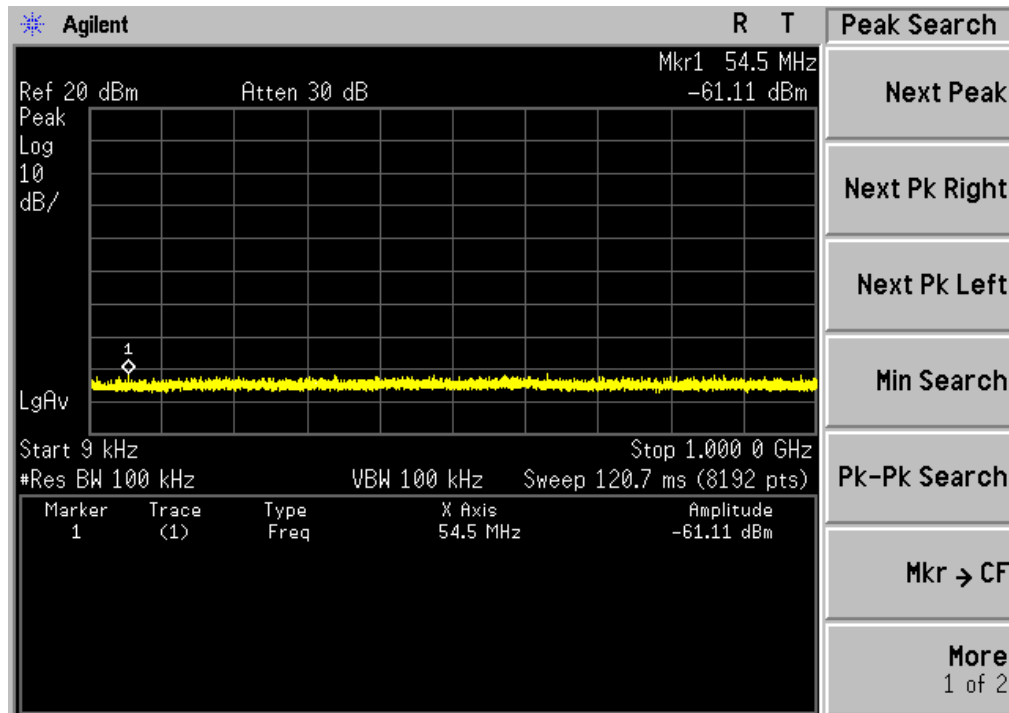
TEST PLOT OF OUT OF BAND EMISSIONS
OF GFSK MODULATION IN MIDDLE CHANNEL

Copyright 2000–2002 Agilent Technologies

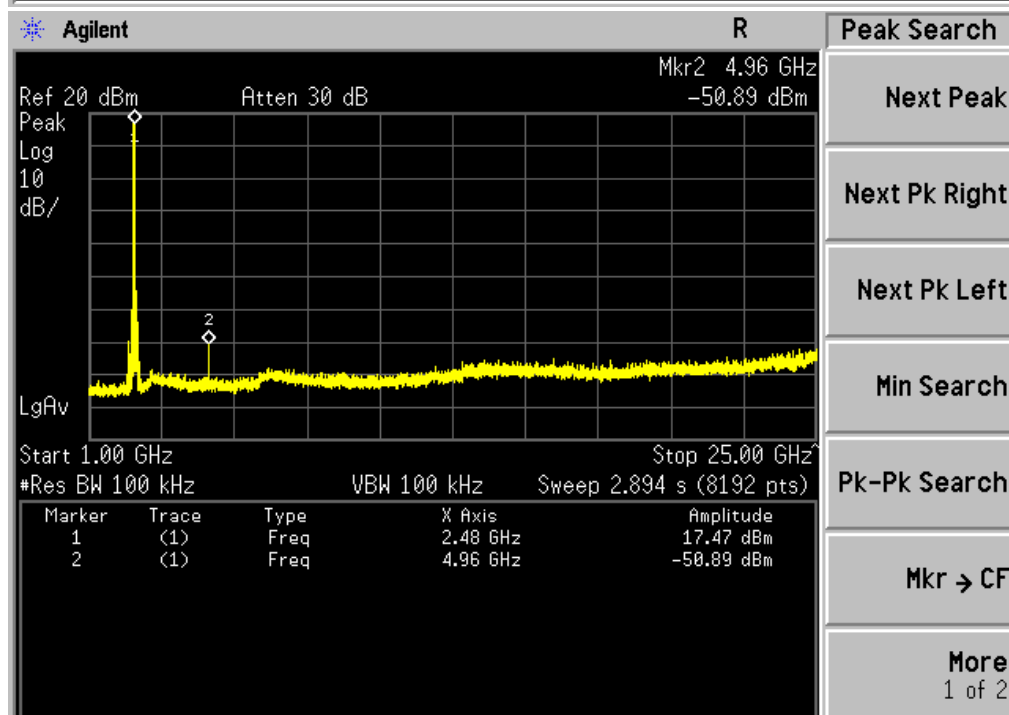


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TEST PLOT OF OUT OF BAND EMISSIONS OF GFSK MODULATION IN HIGH CHANNEL



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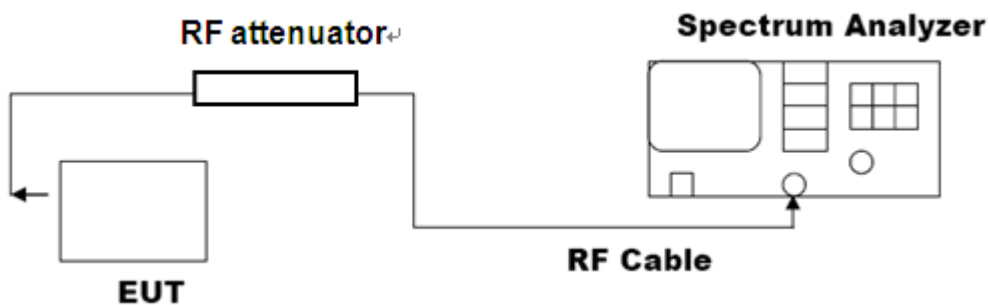
13. CONDUCTED OUTPUT POWER SPECTRAL DENSITY

13.1 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 the span to 1.5times the DTS bandwidth, RBW: $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$, VBW $\geq 3 \times \text{RBW}$
- (4). Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

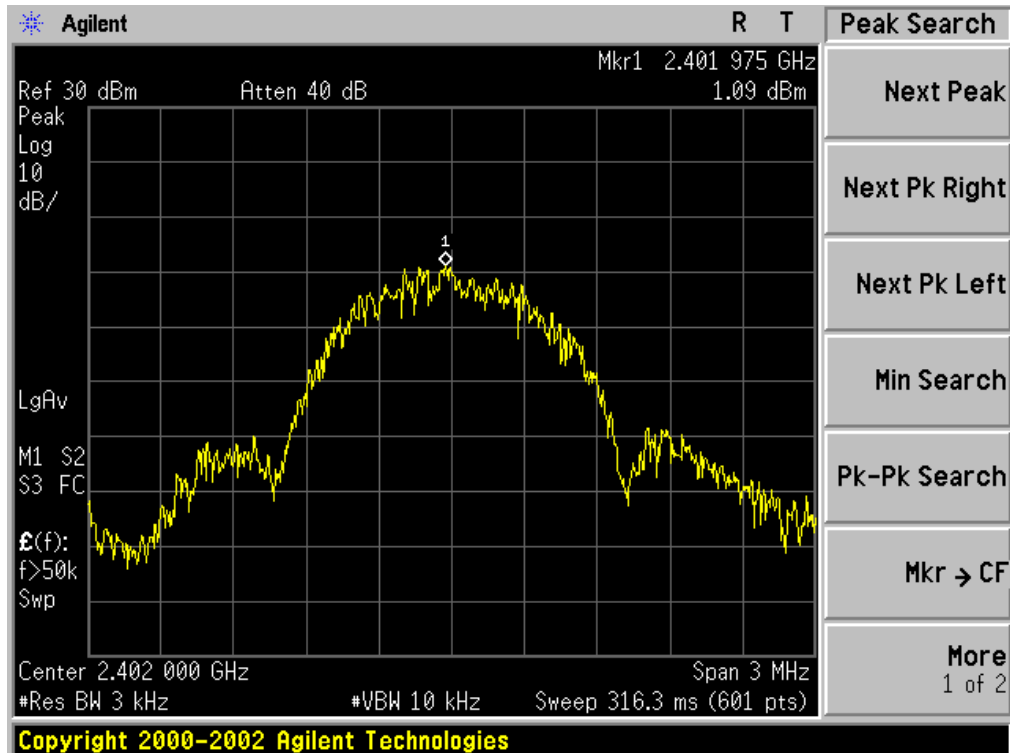
13.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



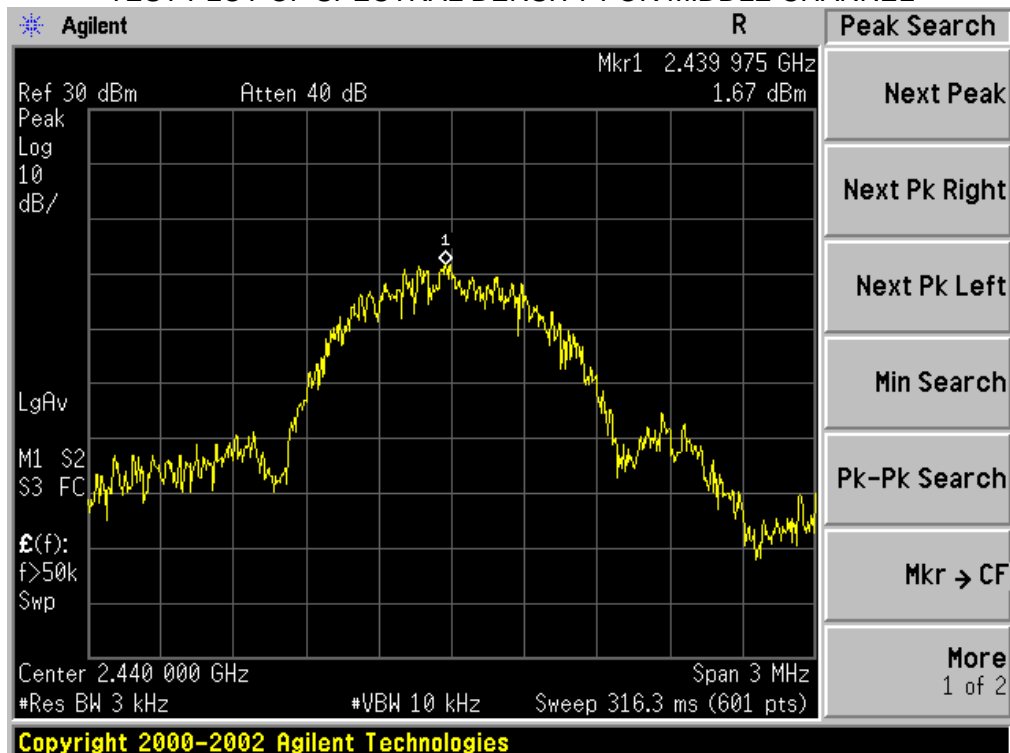
13.3 LIMITS AND MEASUREMENT RESULT

Channel No.	PSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
Low Channel	1.09	8	Pass
Middle Channel	1.67	8	Pass
High Channel	2.01	8	Pass

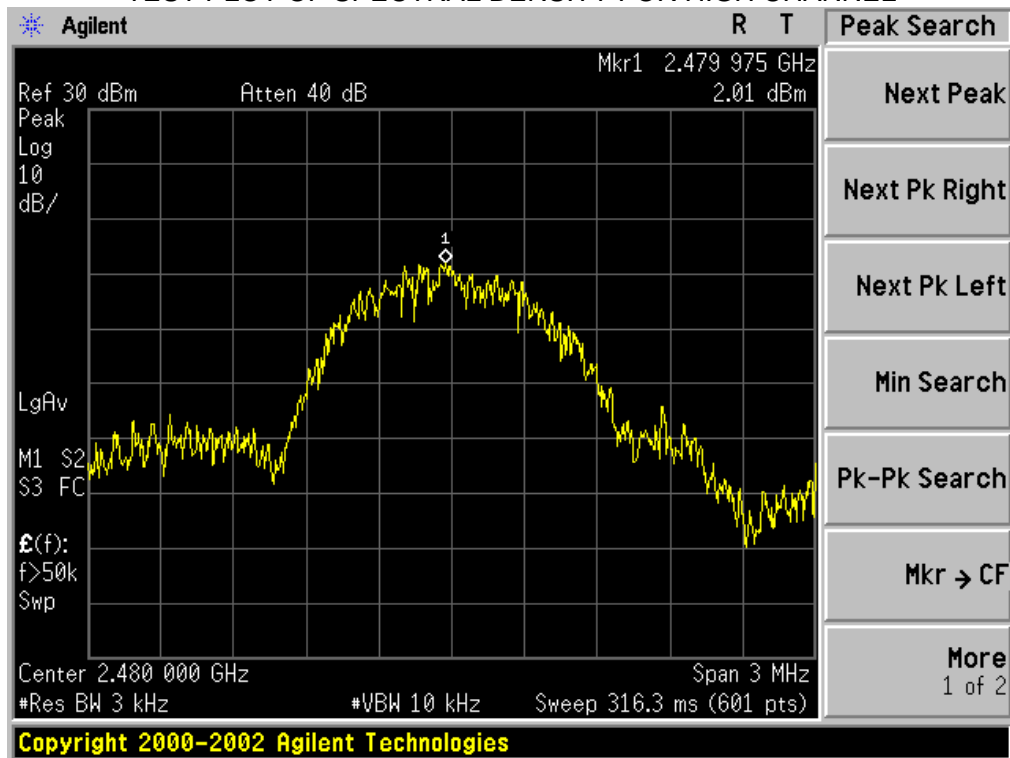
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



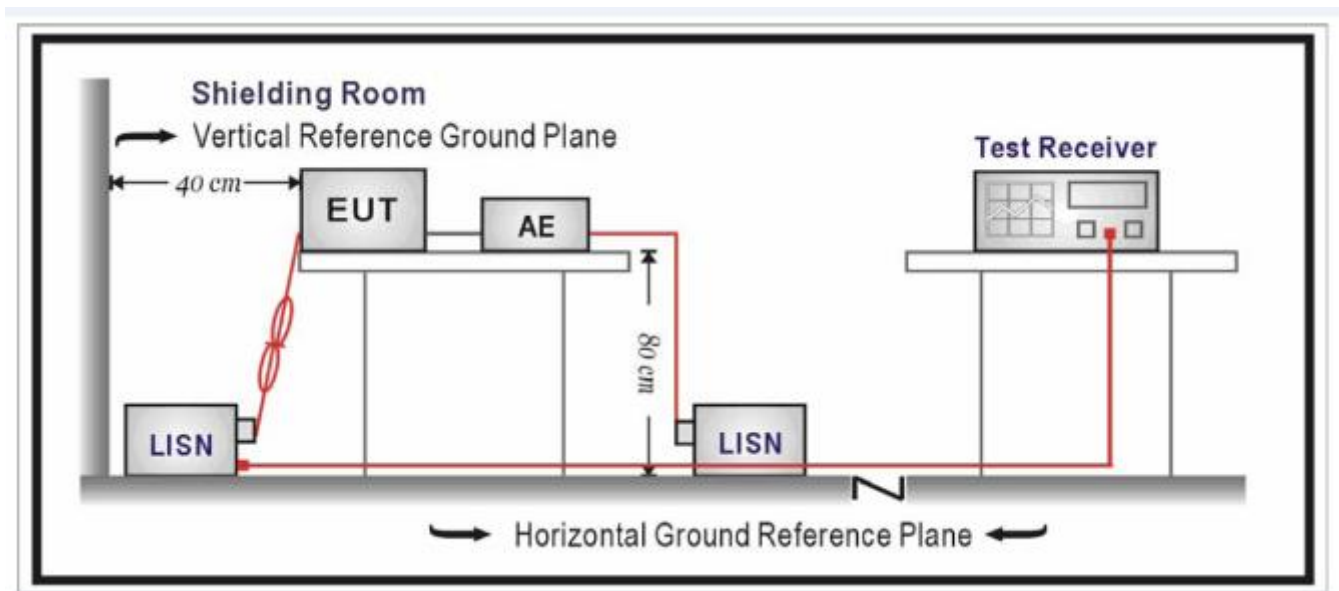
14. LINE CONDUCTED EMISSION TEST

14.1 LIMITS

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

14.2 TEST SETUP



14.3 PRELIMINARY PROCEDURE

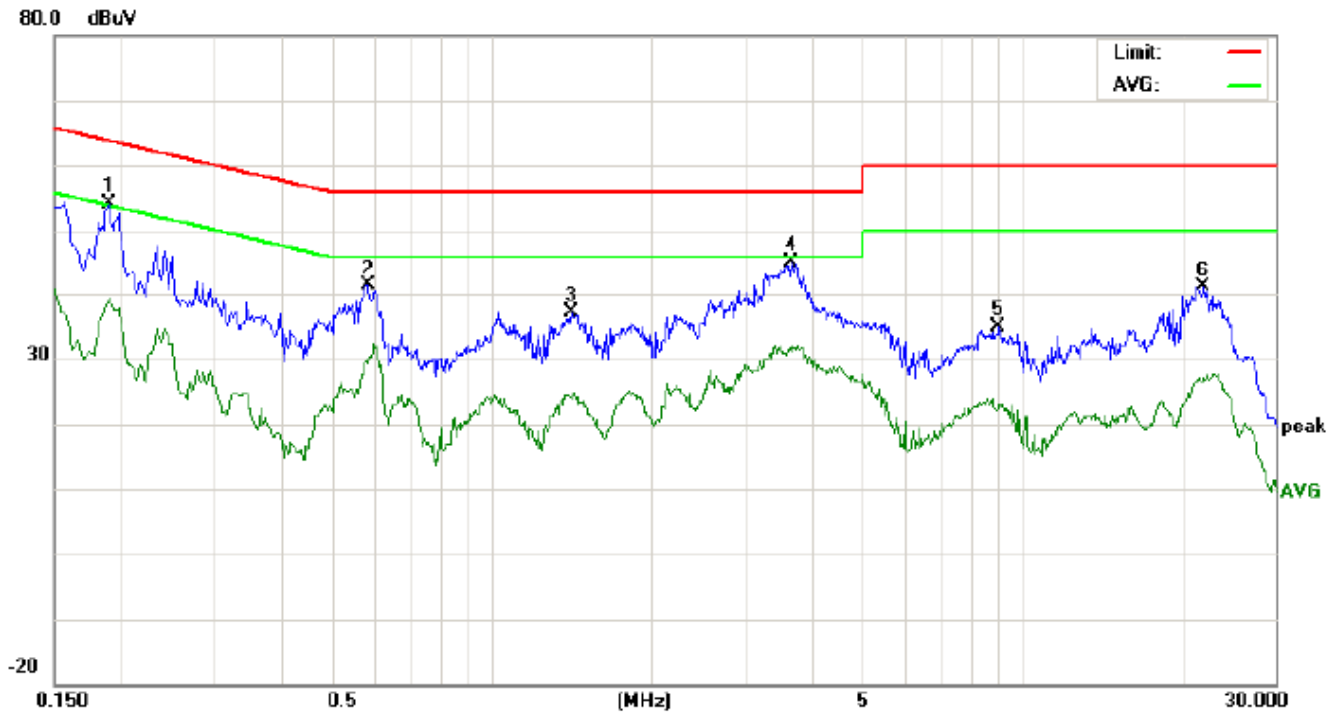
- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground 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 USB board connecting 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 following 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.

14.4 FINAL TEST PROCEDURE

- 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.

14.5 TEST RESULT OF POWER LINE FOR BLE

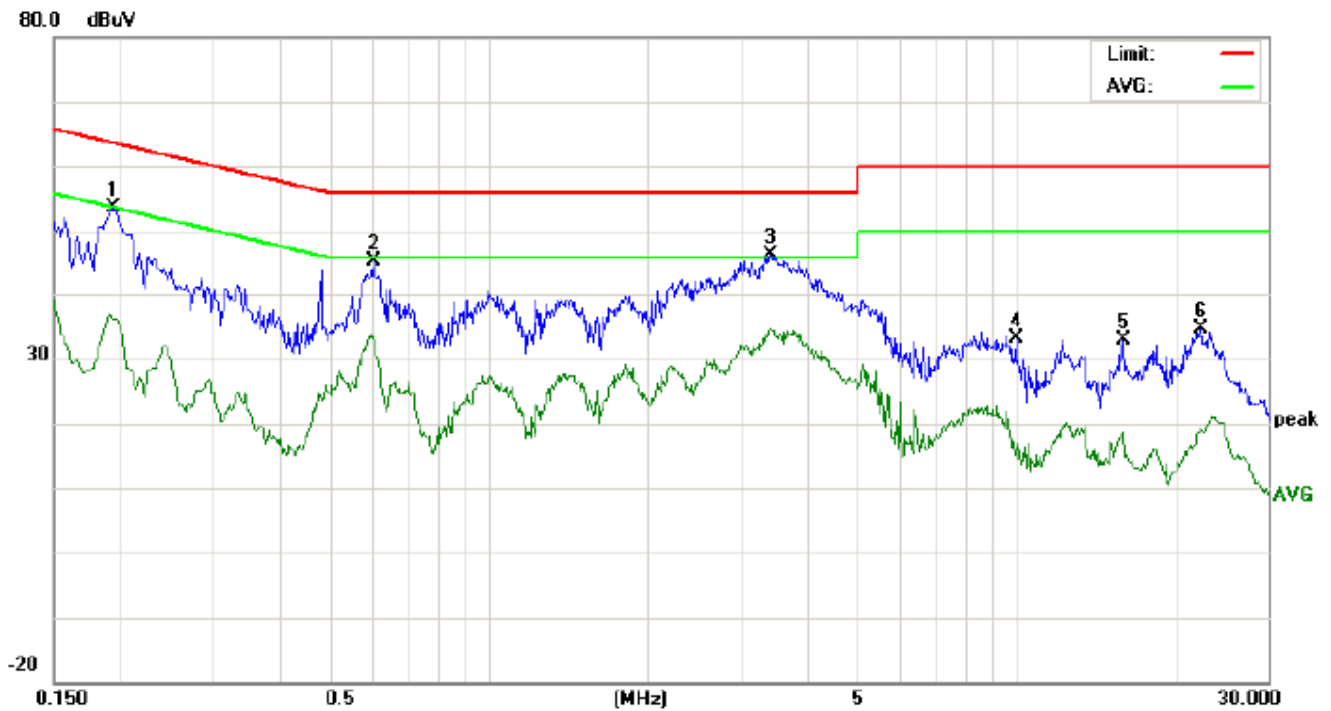
Line Conducted Emission Test Line 1-L



Site: Conduction Phase: **L1** Temperature: 26
Limit: FCC Class B Conduction(QP) Power: Humidity: 60 %
EUT: Bluetooth Module
M/N: FSC-BT909
Mode: BT Link
Note:

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1900	43.97		29.07	10.20	54.17		39.27	64.03	54.03	-9.86	-14.76	P	
2	0.5823	30.96		19.39	10.33	41.29		29.72	56.00	46.00	-14.71	-16.28	P	
3	1.4139	26.82		13.53	10.38	37.20		23.91	56.00	46.00	-18.80	-22.09	P	
4	3.6619	34.60		20.68	10.48	45.08		31.16	56.00	46.00	-10.92	-14.84	P	
5	9.0178	24.61		12.80	10.22	34.83		23.02	60.00	50.00	-25.17	-26.98	P	
6	22.0138	30.91		16.96	10.12	41.03		27.08	60.00	50.00	-18.97	-22.92	P	

Line Conducted Emission Test Line 2-N

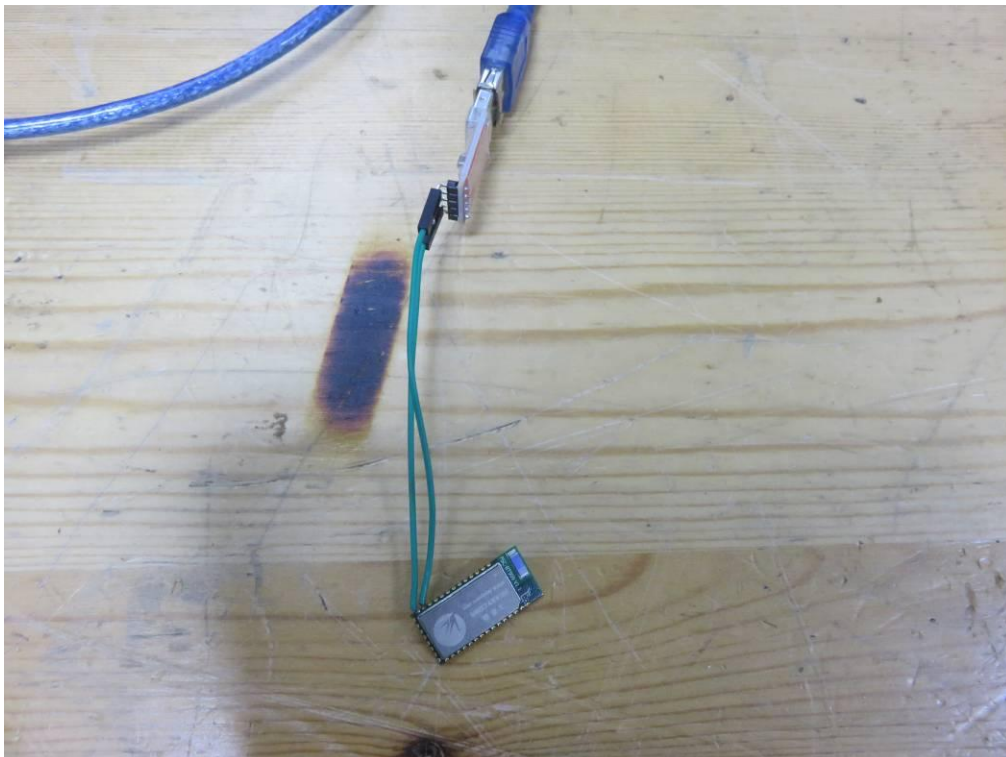


Site: Conduction Phase: **N** Temperature: 26
Limit: FCC Class B Conduction(QP) Power: Humidity: 60 %
EUT: Bluetooth Module
M/N: FSC-BT909
Mode: BT Link
Note:

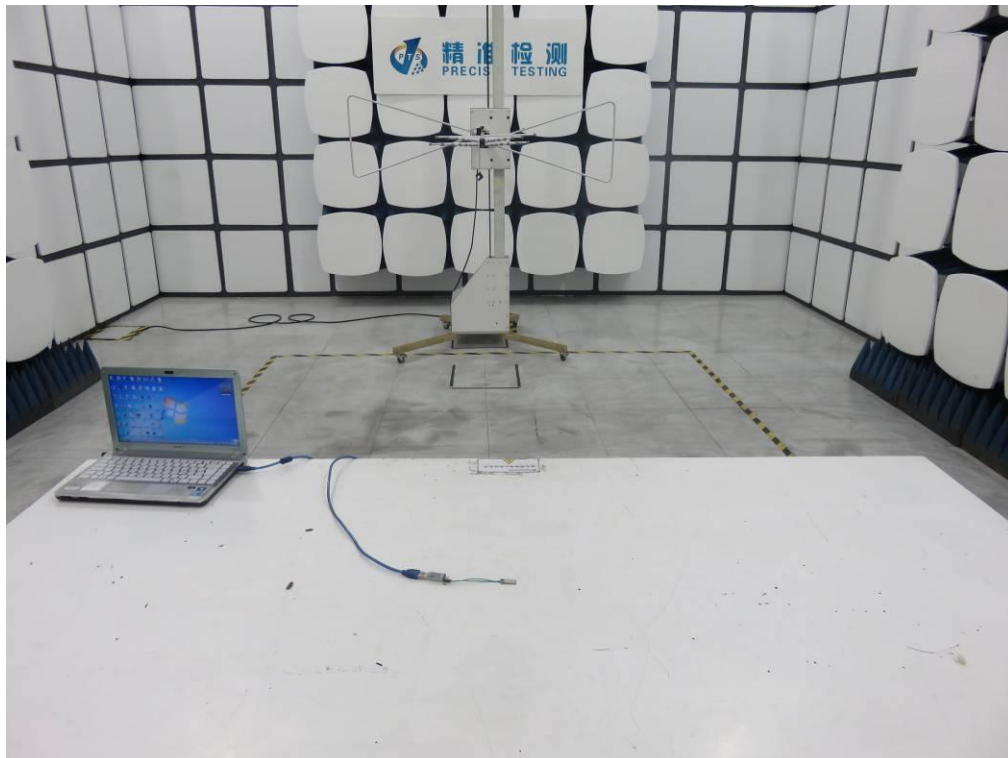
No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1940	43.41		26.02	10.21	53.62		36.23	63.86	53.86	-10.24	-17.63	P	
2	0.6059	35.04		22.19	10.31	45.35		32.50	56.00	46.00	-10.65	-13.50	P	
3	3.4260	35.96		24.05	10.52	46.48		34.57	56.00	46.00	-9.52	-11.43	P	
4	9.9778	22.93		6.31	10.10	33.03		16.41	60.00	50.00	-26.97	-33.59	P	
5	15.9618	22.75		8.52	10.11	32.86		18.63	60.00	50.00	-27.14	-31.37	P	
6	22.4939	24.53		9.12	10.11	34.64		19.23	60.00	50.00	-25.36	-30.77	P	

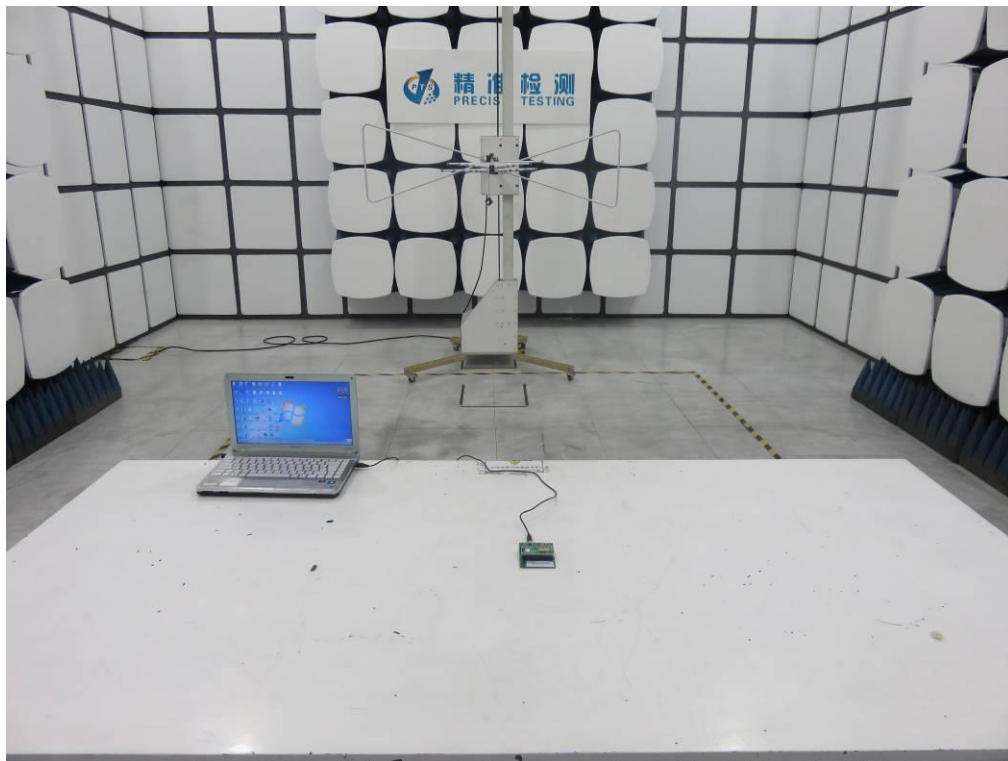
APPENDIX A: PHOTOGRAPHS OF TEST SETUP

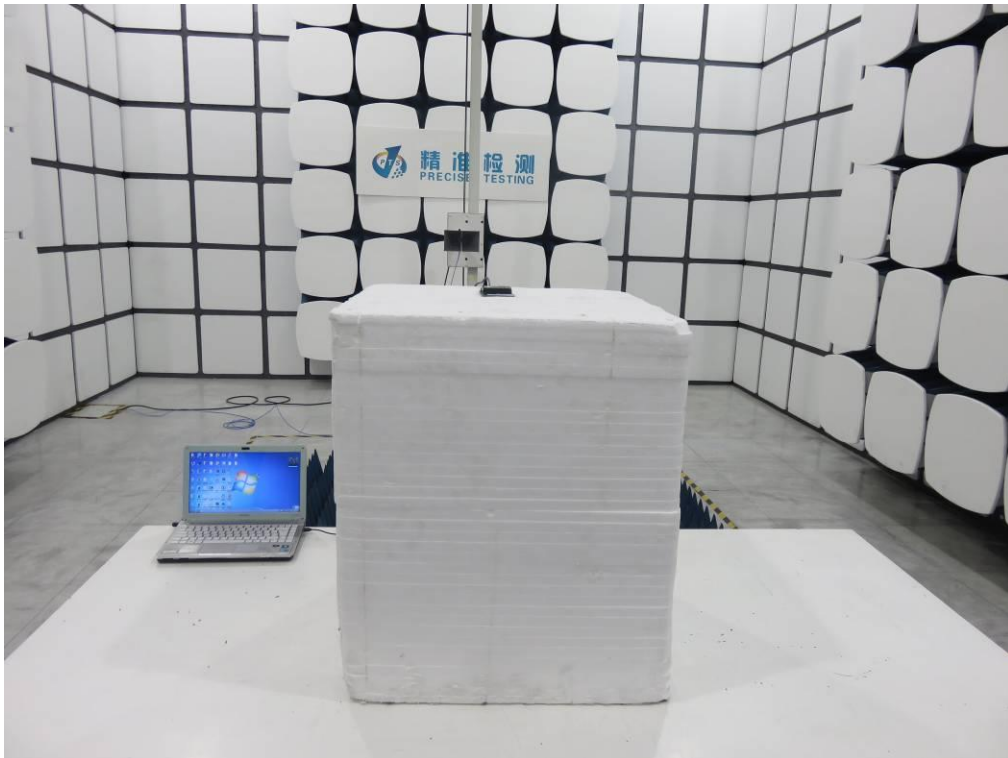
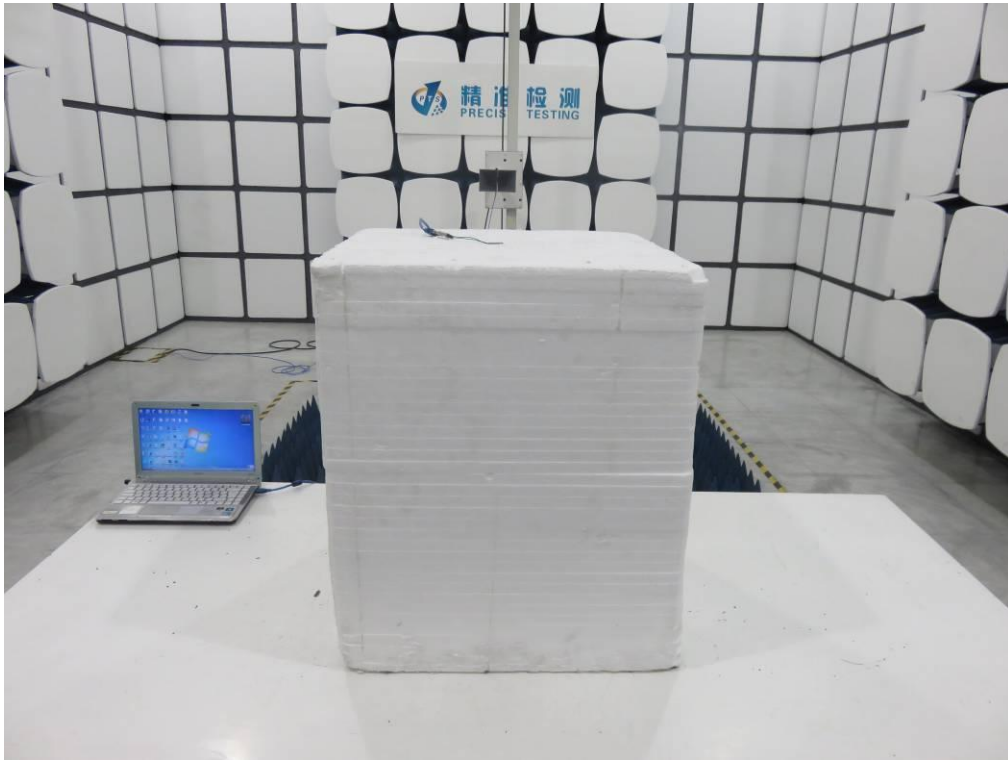
FCC LINE CONDUCTED EMISSION TEST SETUP



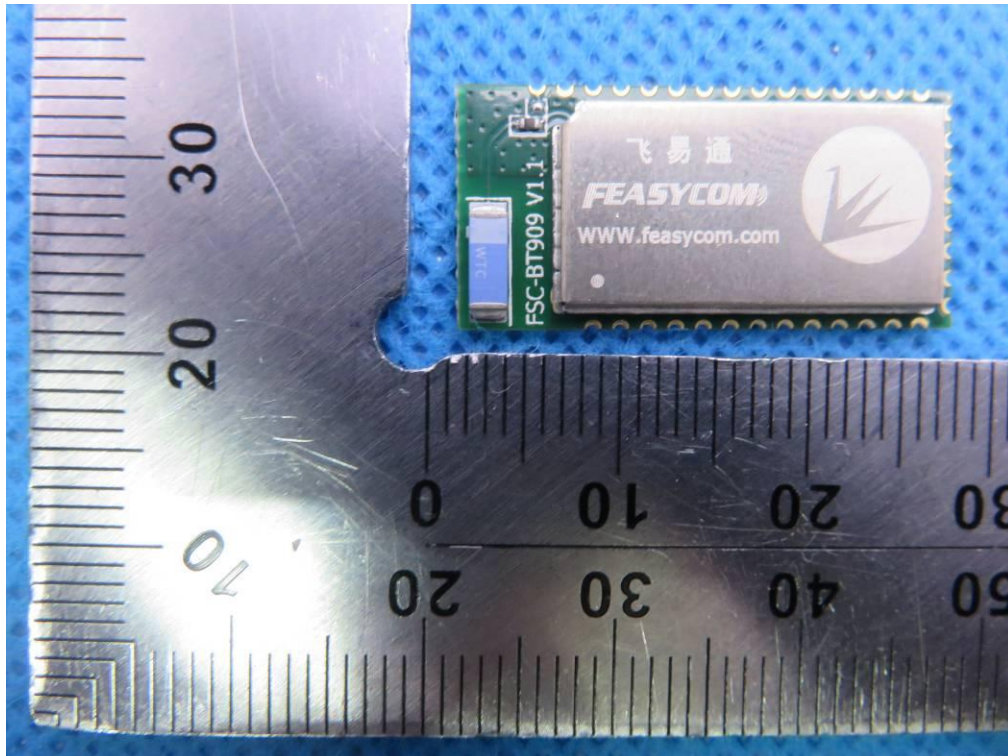
FCC RADIATED EMISSION TEST SETUP



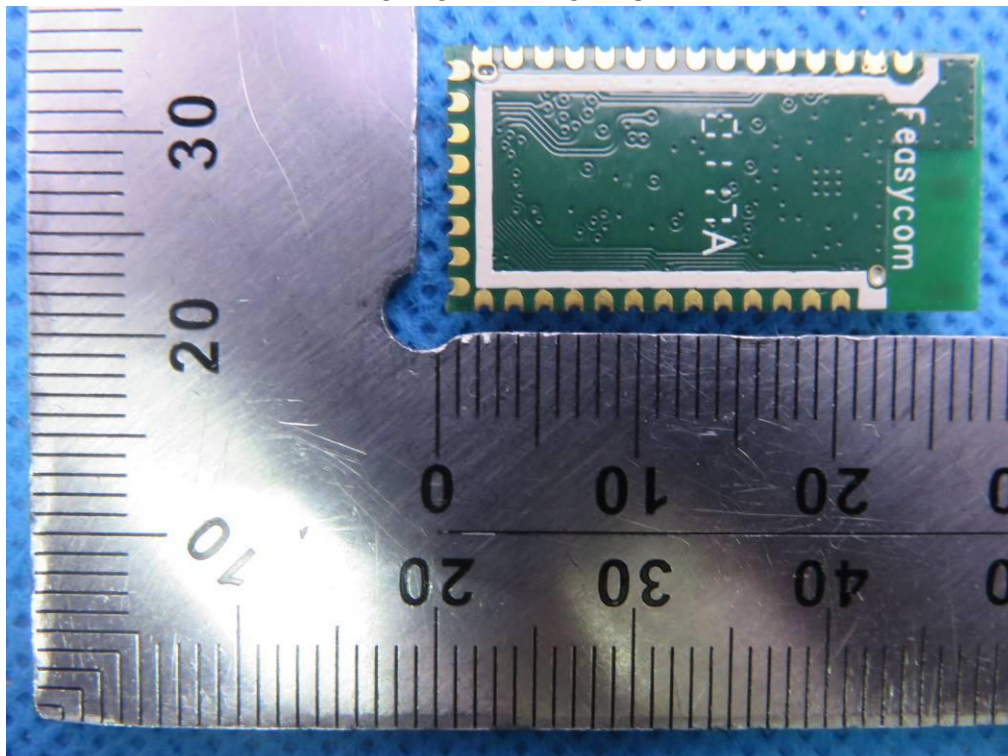




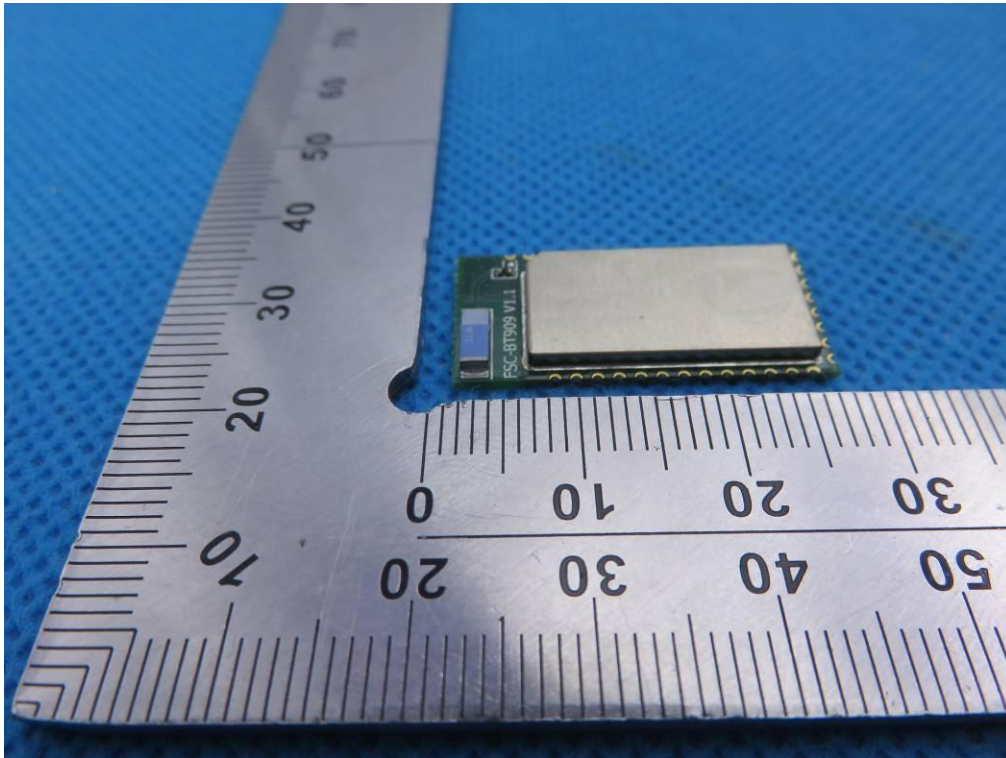
APPENDIX B: PHOTOGRAPHS OF EUT
TOP VIEW OF EUT



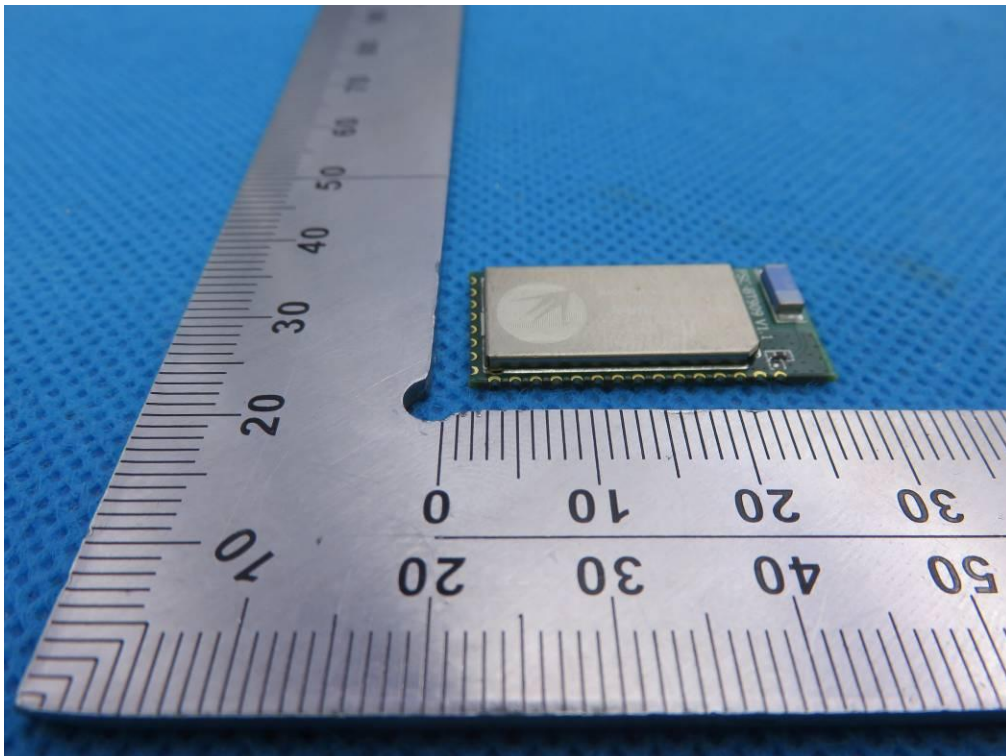
BOTTOM VIEW OF EUT



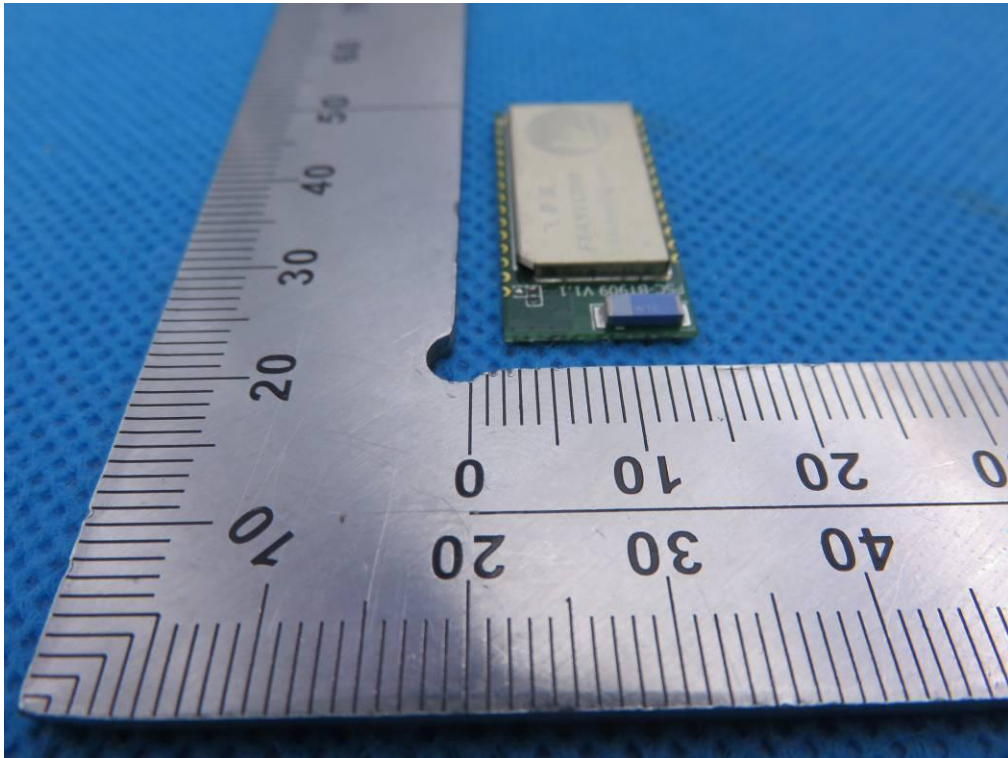
FRONT VIEW OF EUT



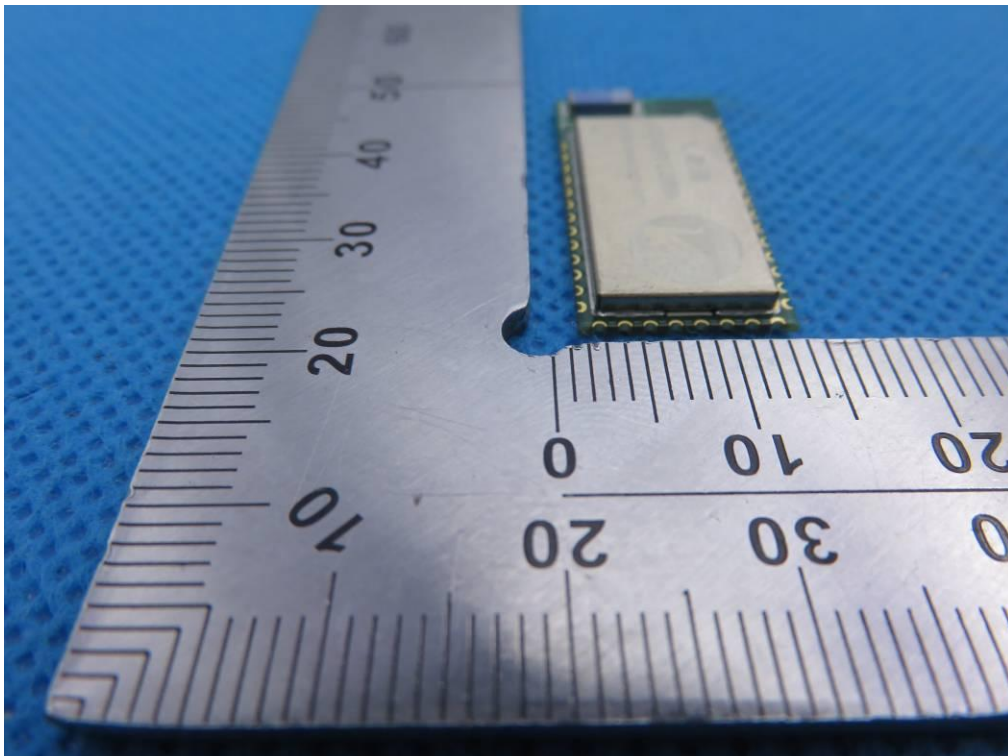
BACK VIEW OF EUT



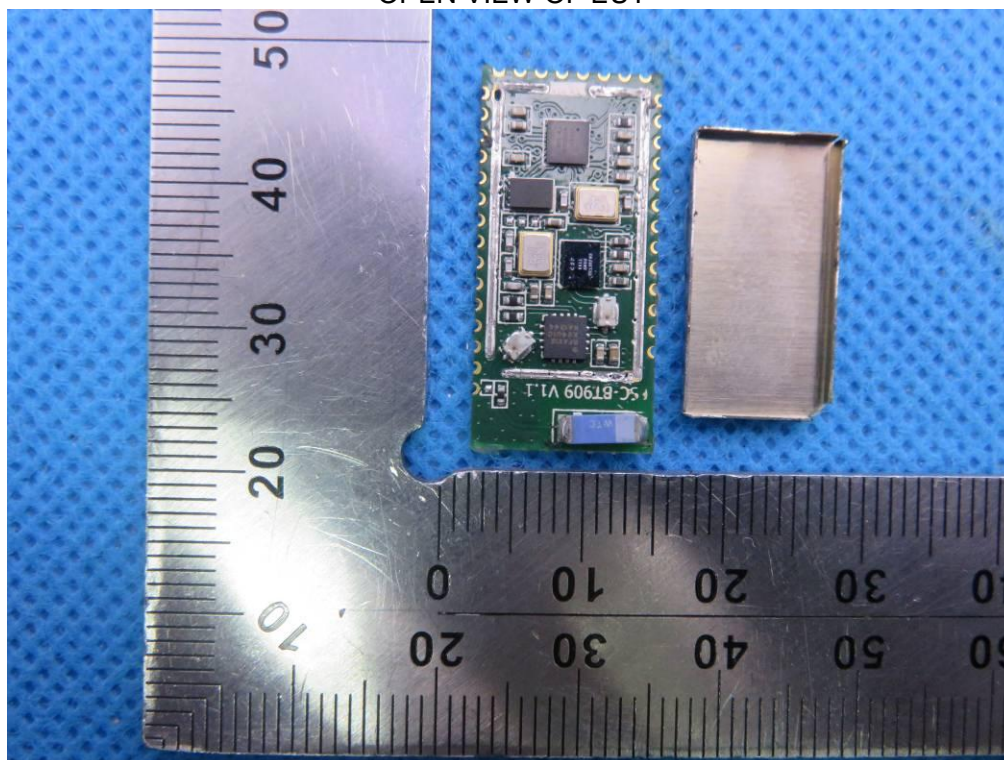
LEFT VIEW OF EUT



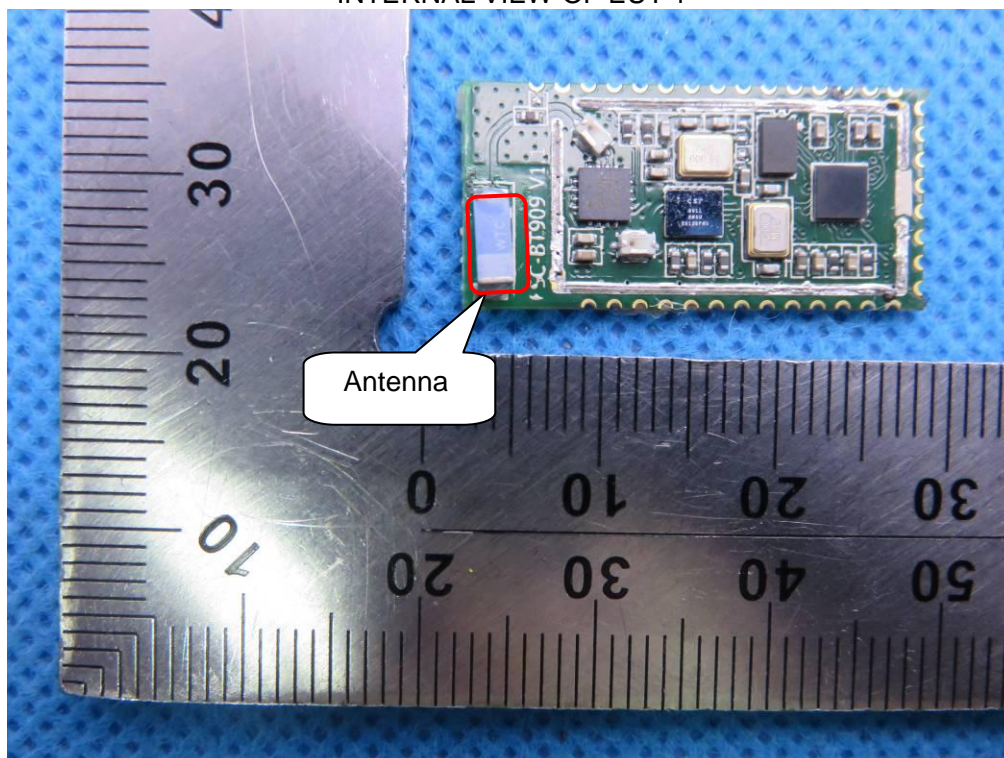
RIGHT VIEW OF EUT



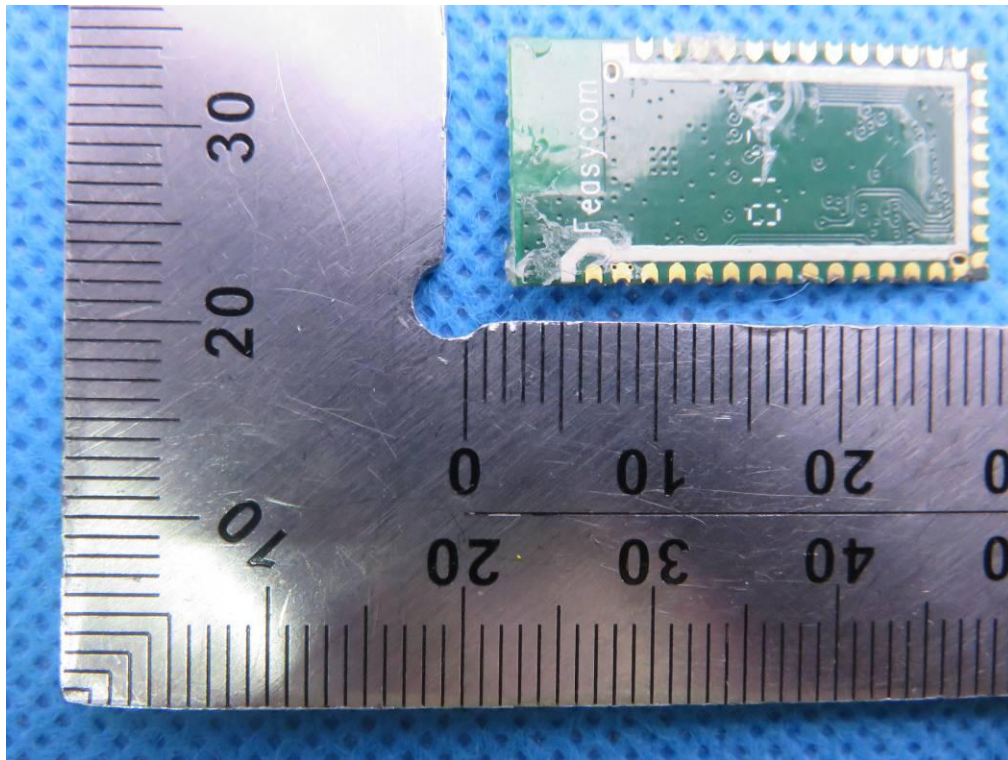
OPEN VIEW OF EUT



INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



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