

Test Report

FCC Part15 Subpart C& RSS-247 Issue 2

Product Name : EZ-BT WICED Module with Mesh
Model No. : CYBT-413034-02,CYBT-413055-02,
CYBT-413061-02
FCC ID : WAP3034
IC : 7922A-3034

Applicant : Cypress Semiconductor
Address : 198 Champion Ct, San Jose, California 95134
United States

Date of Receipt : July. 15, 2019
Issued Date : Sept. 10, 2019
Report No. : 1972089R-RF-US-P06V03
Report Version : V 1.0

Note: This report was based on DEKRA Report No. 1832180R-RF-US-P06V03, added new models (CYBT-413055-02, CYBT-413061-02),the models are for different markets.

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory.

The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to calculate the uncertainty associated with the measurement result.

This report is not used for social proof in China (or Mainland China) market.

Test Report Certification

Issued Date : Sept. 10, 2019

Report No. : 1972089R-RF-US-P06V03



Product Name : EZ-BT WICED Module with Mesh

Applicant : Cypress Semiconductor

Address : 198 Champion Ct, San Jose, California 95134
United States

Manufacturer : Cypress Semiconductor

Address : 198 Champion Ct, San Jose, California 95134
United States

Model No. : CYBT-413034-02,CYBT-413055-02,CYBT-413061-02

FCC ID : WAP3034

IC : 7922A-3034

EUT Voltage : DC 1.8~3.6V

Test Voltage : DC 3.3V

Applicable Standard : FCC CFR Title 47 Part 15 Subpart C
KDB DA 00-705 Released March 30, 2000
ANSI C63.10: 2013
RSS-Gen Issue 4/RSS-247 Issue 2

Test Result : Complied

Performed Location : DEKRA Testing & Certification (Suzhou) Co., Ltd.
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006,
Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
FCC Designation Number: CN1199; ISED Lab Code: 4075B

Documented By : Kathy Feng
(Adm. Specialist: Kathy Feng)

Reviewed By : Frank he
(Senior Engineer: Frank He)

Approved By : Jack Zhang
(Engineering Supervisor: Jack Zhang)



Test Report

FCC Part15 Subpart C& RSS-247 Issue 2

Product Name : EZ-BT WICED Module with Mesh
Model No. : CYBT-413034-02
FCC ID : WAP3034
IC : 7922A-3034

Applicant : Cypress Semiconductor
Address : 198 Champion Ct, San Jose, California 95134
United States

Date of Receipt : Mar. 30, 2018
Test Date : Mar. 30, 2018~ May. 17, 2018
Issued Date : Jun. 04, 2018
Report No. : 1832180R-RF-US-P06V03
Report Version : V 1.1

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by A2LA, TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing & Certification (Suzhou) Co., Ltd.

Test Report Certification

Issued Date : Jun. 04, 2018

Report No. : 1832180R-RF-US-P06V03



Product Name : EZ-BT WICED Module with Mesh

Applicant : Cypress Semiconductor

Address : 198 Champion Ct, San Jose, California 95134
United States

Manufacturer : Cypress Semiconductor

Address : 198 Champion Ct, San Jose, California 95134
United States

Model No. : CYBT-413034-02

FCC ID : WAP3034

IC : 7922A-3034

EUT Voltage : DC 1.8~3.6V

Test Voltage : AC120V/60Hz

Applicable Standard : FCC CFR Title 47 Part 15 Subpart C
KDB DA 00-705 Released March 30, 2000
ANSI C63.10: 2013
RSS-Gen Issue 4/RSS-247 Issue 2

Test Result : Complied

Performed Location : DEKRA Testing & Certification (Suzhou) Co., Ltd.
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006,
Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
FCC Designation Number: CN1199; ISED Lab Code: 4075B

Documented By : Kathy Feng
(Adm. Specialist: Kathy Feng)

Reviewed By : Frank He
(Senior Engineer: Frank He)

Approved By : Harry Zhao
(Engineering Manager: Harry Zhao)

TABLE OF CONTENTS

Description	Page
1. General Information.....	7
1.1. EUT Description	7
1.2. Antenna information	9
1.3. Mode of Operation.....	10
1.4. Tested System Details	11
1.5. Configuration of Tested System.....	12
1.6. EUT Exercise Software	13
2. Technical Test.....	14
2.1. Summary of Test Result	14
2.2. Test Environment.....	16
3. Conducted Emission	17
3.1. Test Equipment	17
3.2. Test Setup	17
3.3. Limit	18
3.4. Test Procedure	18
3.5. Uncertainty	18
3.6. Test Result	19
4. Emissions in restricted frequency bands	19
4.1. Test Equipment	21
4.2. Test Setup	22
4.3. Limit	23
4.4. Test Procedure	26
4.5. Uncertainty	26
4.6. Test Result	27
5. 20dB Bandwidth	47
5.1. Test Equipment	47
5.2. Test Setup	47
5.3. Limit	47
5.4. Test Procedure	48
5.5. Uncertainty	48
5.6. Test Result	49
6. Carrier Frequency Separation	55
6.1. Test Equipment	55
6.2. Test Setup	55
6.3. Limit	56
6.4. Test Procedure	56
6.5. Uncertainty	56

6.6.	Test Result	57
7.	Number of Hopping Frequencies	63
7.1.	Test Equipment	63
7.2.	Test Setup	63
7.3.	Limit	63
7.4.	Test Procedure	64
7.5.	Uncertainty	64
7.6.	Test Result	65
8.	Time of Occupancy (Dwell Time)	68
8.1.	Test Equipment	68
8.2.	Test Setup	68
8.3.	Limit	68
8.4.	Test Procedure.....	69
8.5.	Uncertainty	69
8.6.	Test Result	70
9.	Peak Output Power	76
9.1.	Test Equipment	76
9.2.	Test Setup	76
9.3.	Limit	77
9.4.	Test Procedure	77
9.5.	Uncertainty	77
9.6.	Test Result	78
10.	Emissions in non-restricted frequency bands	81
10.1.	Test Equipment	81
10.2.	Test Setup	81
10.3.	Limit	82
10.4.	Test Procedure	82
10.5.	Uncertainty	82
10.6.	Test Result	83
11.	Radiated Emission Band Edge	84
11.1.	Test Equipment	84
11.2.	Test Setup	84
11.3.	Limit	85
11.4.	Test Procedure	85
11.5.	Uncertainty	85
11.6.	Duty Factor.....	86
11.7.	Test Result	87
12.	Antenna Requirement	99

12.1. Limit	99
12.2. Antenna Connector Construction.....	99

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1832180R-RF-US-P06V03	V1.0	Initial Issued Report	May. 16, 2018
1832180R-RF-US-P06V03	V1.1	<ol style="list-style-type: none">1. P16, added the Section 2.3. Measurement Uncertainty2. P17, updated the Cal. Due date of test instrument.3. P19-20, added the note of measure level.4. P44-46, added the note of measure level and description of test data.	Jun. 04, 2018

1. General Information

1.1. EUT Description

Product Name	EZ-BT WICED Module with Mesh
Model No.	CYBT-413034-02
Working Voltage	DC 1.8-3.6V
Test Voltage	AC120V/60Hz
Bluetooth Specification	V3.0
Frequency Range	2402- 2480 MHz
Channel Number	V3.0: 79
Channel Separation	V3.0: 1MHz
Type of Modulation	V3.0: GFSK, Pi/4 DQPSK, 8DPSK
Data Rate	V3.0: 1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps(8DPSK)
Antenna Type	Reference to Antenna List
Peak Antenna Gain	Reference to Antenna List

Bluetooth Working Frequency of Each Channel: (For V3.0)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2403 MHz	02	2404 MHz	03	2405 MHz
04	2406 MHz	05	2407 MHz	06	2408 MHz	07	2409 MHz
08	2410 MHz	09	2411 MHz	10	2412 MHz	11	2413 MHz
12	2414 MHz	13	2415 MHz	14	2416 MHz	15	2417 MHz
16	2418 MHz	17	2419 MHz	18	2420 MHz	19	2421 MHz
20	2422 MHz	21	2423 MHz	22	2424 MHz	23	2425 MHz
24	2426 MHz	25	2427 MHz	26	2428 MHz	27	2429 MHz
28	2430 MHz	29	2431 MHz	30	2432 MHz	31	2433 MHz
32	2434 MHz	33	2435 MHz	34	2436 MHz	35	2437 MHz
36	2438 MHz	37	2439 MHz	38	2440 MHz	39	2441 MHz
40	2442 MHz	41	2443 MHz	42	2444 MHz	43	2445 MHz
44	2446 MHz	45	2447 MHz	46	2448 MHz	47	2449 MHz
48	2450 MHz	49	2451 MHz	50	2452 MHz	51	2453 MHz
52	2454 MHz	53	2455 MHz	54	2456 MHz	55	2457 MHz
56	2458 MHz	57	2459 MHz	58	2460 MHz	59	2461 MHz
60	2462 MHz	61	2463 MHz	62	2464 MHz	63	2465 MHz
64	2466 MHz	65	2467 MHz	66	2468 MHz	67	2469 MHz
68	2470 MHz	69	2471 MHz	70	2472 MHz	71	2473 MHz
72	2474 MHz	73	2475 MHz	74	2476 MHz	75	2477 MHz
76	2478 MHz	77	2479 MHz	78	2480 MHz	N/A	N/A

1.2 Antenna information

Model No.	N/A					
Antenna manufacturer	N/A					
Antenna Delivery	<input checked="" type="checkbox"/>	1*TX+1*RX	<input type="checkbox"/>	2*TX+2*RX	<input type="checkbox"/>	3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/>	SISO				
	<input type="checkbox"/>	MIMO	<input type="checkbox"/>	Basic		
			<input type="checkbox"/>	CDD		
			<input type="checkbox"/>	Sectorized		
			<input type="checkbox"/>	Beam-forming		
Antenna Type	<input type="checkbox"/>	External	<input type="checkbox"/>	Dipole		
			<input type="checkbox"/>	Sectorized		
	<input checked="" type="checkbox"/>	Internal	<input type="checkbox"/>	PIFA		
			<input checked="" type="checkbox"/>	PCB		
			<input type="checkbox"/>	Ceramic Chip Antenna		
			<input type="checkbox"/>	Monopole Antenna		
	Antenna Technology	Ant Gain (dBi)				
<input checked="" type="checkbox"/>	SISO	-0.5				

1.3 Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmitter-1Mbps(GFSK_DH5)
Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)
Mode 3: Transmitter-3Mbps(8DPSK_DH5)
Mode 4: Transmitter-Hopping

Note:

1. For portable device, radiated spurious emission was verified over X, Y, Z Axis, and shown the worst case on this report.
2. Regards to the frequency band operation for systems using FHSS modulation: normal operation (hopping) was selected to test for conducted spurious test.
3. The extreme test condition for voltage and temperature were declared by the manufacturer.
4. The reading values of all the test items contain cable loss.

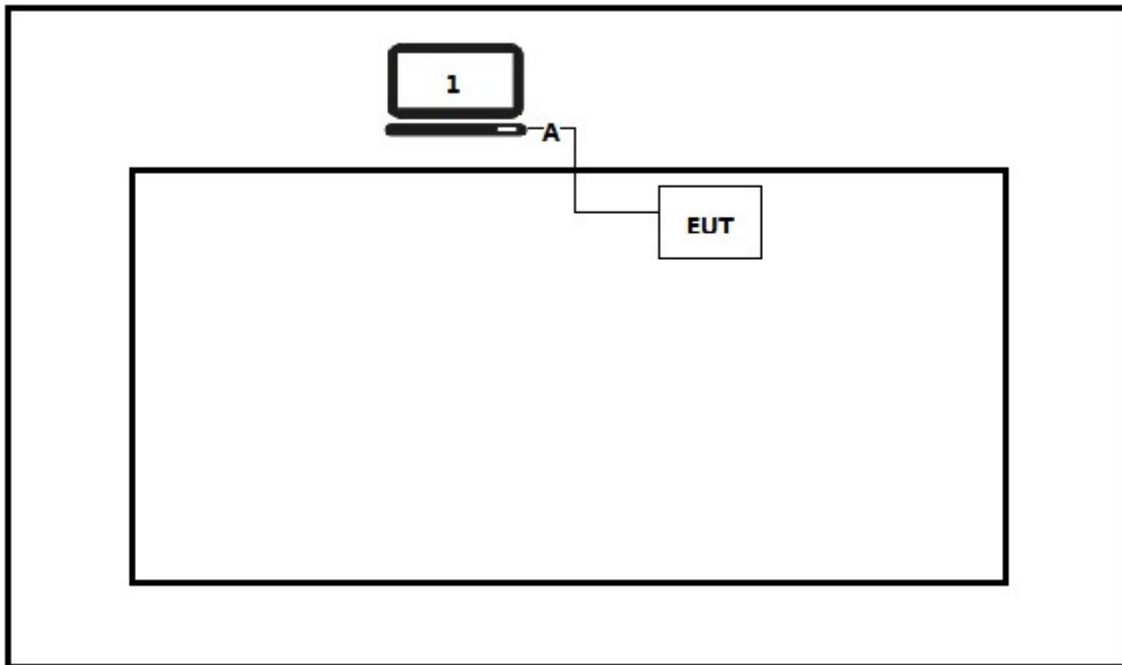
1.4 Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

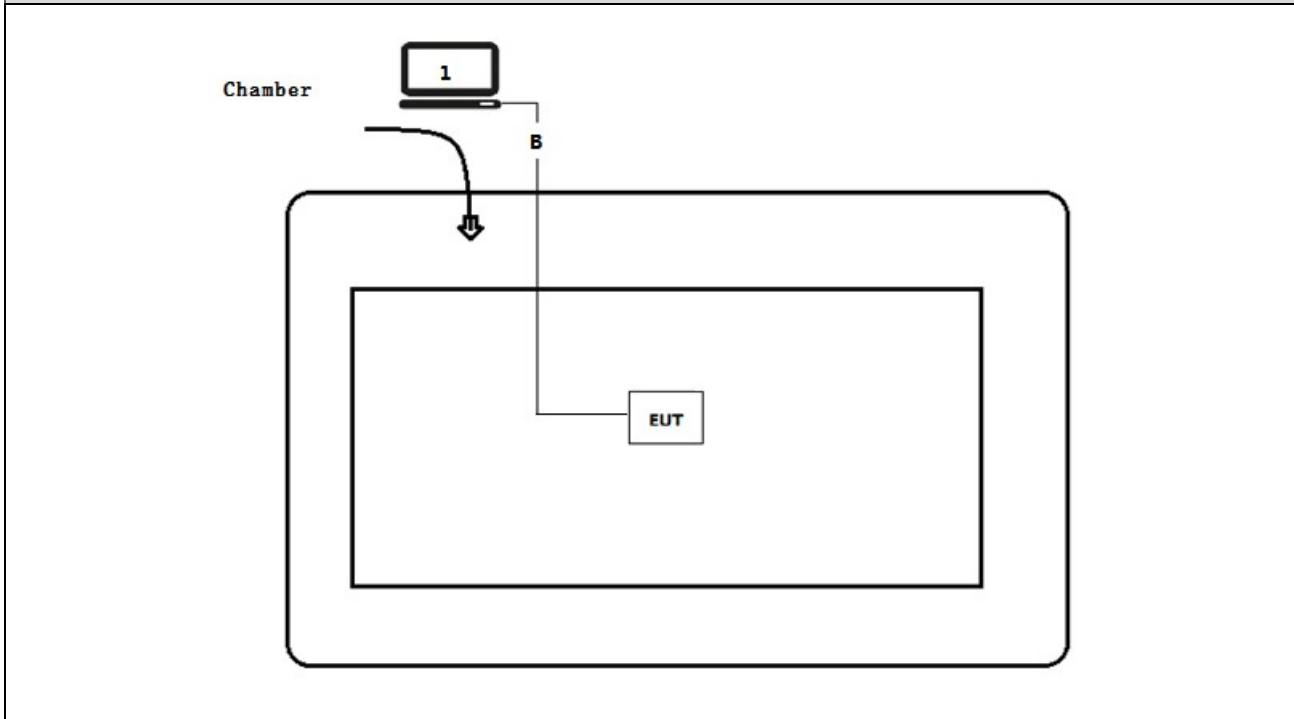
Product	Manufacturer	Model No.	Serial No.	Power Cord
1 Notebook	Think Pad	2526	LV-A3285	Power by adapter
A USB Cable	N/A	N/A	N/A	Shield, 0.5m
B USB Cable	N/A	N/A	N/A	Shield, 10m

1.5 Configuration of Tested System

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Radiated Emission



1.6 EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	Run RF software [Bluetool], and set the test mode and channel, then press OK to start to continue transmit.

2. Technical Test

2.1. Summary of Test Result

- No deviations from the test standards
- Deviations from the test standards as below description:

For FCC

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.207	Yes	No
Emissions in restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.209	Yes	No
20dB Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)	Yes	No
Carrier Frequency Separation	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)	Yes	No
Number of Hopping Frequencies	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)(iii)	Yes	No
Time of Occupancy (Dwell Time)	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)(iii)	Yes	No
Peak Output Power	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(b)(1)	Yes	No
Emissions in non-restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.215(c), 15.247(d)	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2015 15.247(d)	Yes	No
Antenna Requirement	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.203	Yes	No

For ISED

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	RSS-Gen Issue 4 Section 8.8	Yes	No
Radiated Emission	RSS-Gen Issue 4 Section 8.9	Yes	No
20dB Bandwidth	RSS-247 Issue 2 Section 5.1	Yes	No
Carrier Frequency Separation	RSS-247 Issue 2 Section 5.1	Yes	No
Number of Hopping Frequencies	RSS-247 Issue 2 Section 5.1	Yes	No
Time of Occupancy (Dwell Time)	RSS-247 Issue 2 Section 5.1	Yes	No
Peak Output Power	RSS-247 Issue 2 Section 5.4	Yes	No
Emissions in non-restricted frequency bands	RSS-247 Issue 2 Section 5.5	Yes	No
Radiated Emission Band Edge	RSS-Gen Issue 4 Section 8.10	Yes	No
Antenna Requirement	RSS-Gen Issue 4 Section 8.3	Yes	No

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

2.3. Measurement Uncertainty

Test Items	Uncertainty
Conducted Emission	$\pm 2.02\text{dB}$
Radiated Emission	Below 1GHz $\pm 3.8\text{ dB}$
	Above 1GHz $\pm 3.9\text{ dB}$
20dB Bandwidth	$\pm 1\text{kHz}$
Carrier Frequency Separation	$\pm 1\text{kHz}$
Number of Hopping Frequencies	$\pm 1\text{kHz}$
Time of Occupancy (Dwell Time)	$\pm 0.1\mu\text{s}$
Peak Output Power	$\pm 1\text{dB}$
Emissions in non-restricted frequency bands	$\pm 1\text{dB}$
Radiated Emission Band Edge	$\pm 3.9\text{dB}$

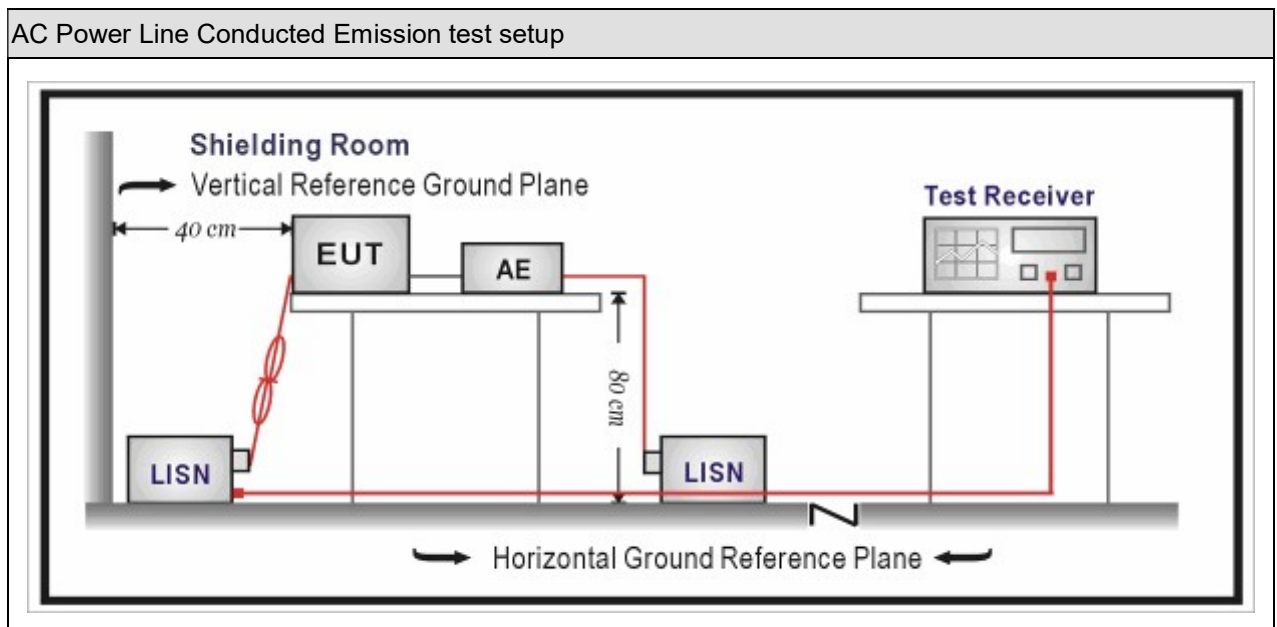
3. Conducted Emission

3.1. Test Equipment

AC Power Line Conducted Emission / TR-1					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100906	2018.03.05	2019.03.04
Two-Line V-Network	R&S	ENV 216	101189	2017.07.16	2018.07.15
Two-Line V-Network	R&S	ENV 216	101044	2017.09.15	2018.09.14
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	N/A	N/A
50ohm Termination	SHX	TF2	07081402	2017.09.15	2018.09.14
Temperature/Humidity Meter	Zhichen	ZC1-2	TR1-TH	2018.01.05	2019.01.04
Quietek EMI V3(test software)	Quietek	N/A	N/A	N/A	N/A

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup



3.3. Limit

Frequency of Emission (MHz)	Conducted Limit	
	Quasi-peak (dB μ V)	Average (dB μ V)
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50
Note 1: The lower limit shall apply at the transition frequencies. Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

3.4. Test Procedure

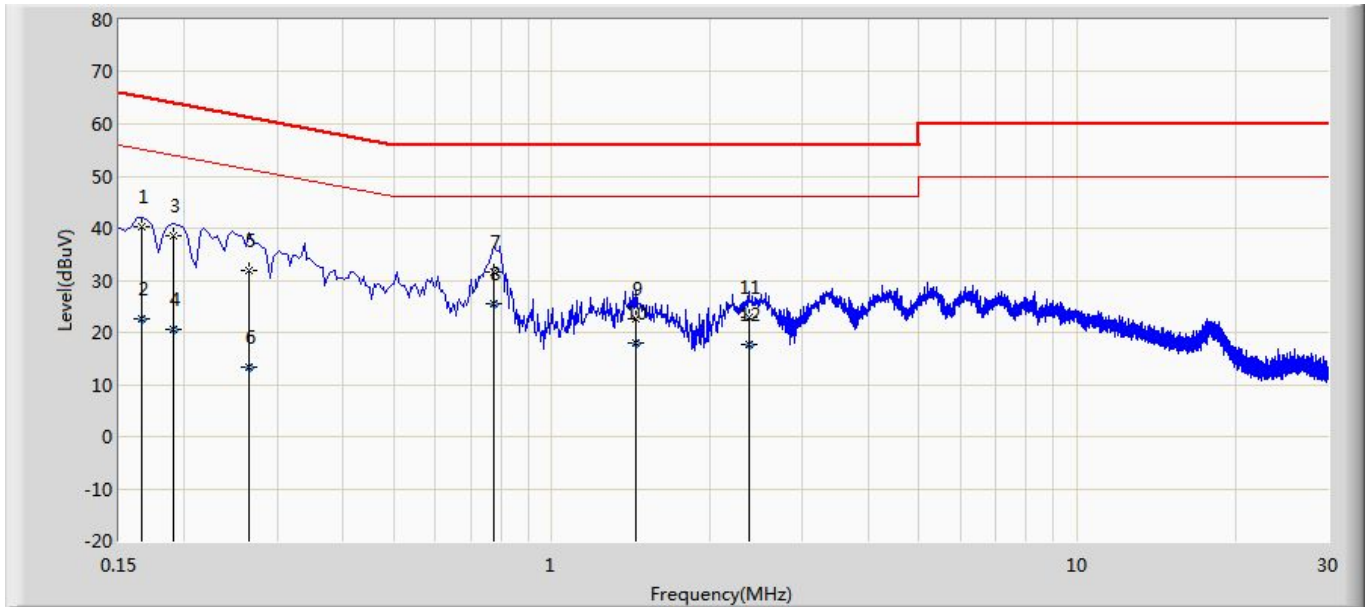
Test Method			
	References Rule	Chapter	Item
<input checked="" type="checkbox"/>	ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

3.6. Test Result

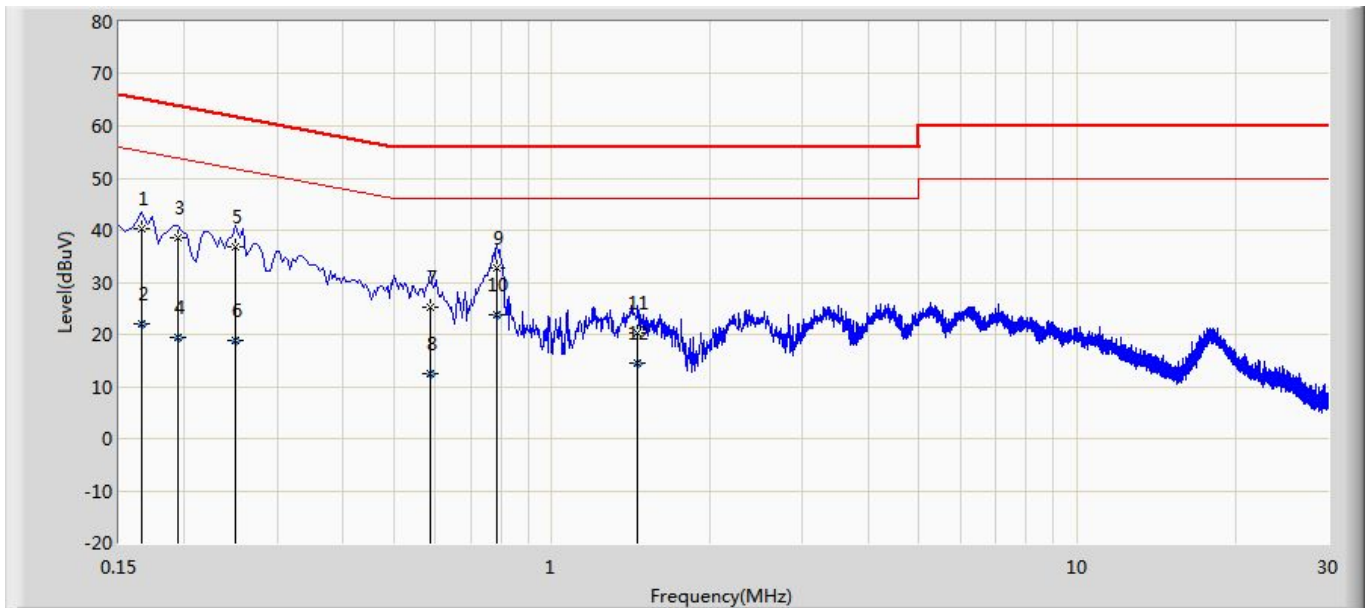
Site: TR1	Time: 2018/04/09
Limit: FCC_Part15.207_CE	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.166	40.244	30.611	-24.914	65.158	9.607	0.027	0.000	QP
2		0.166	22.498	12.865	-32.660	55.158	9.607	0.027	0.000	AV
3		0.190	38.525	28.895	-25.511	64.037	9.602	0.028	0.000	QP
4		0.190	20.697	11.067	-33.340	54.037	9.602	0.028	0.000	AV
5		0.266	31.824	22.192	-29.418	61.242	9.600	0.033	0.000	QP
6		0.266	13.260	3.628	-37.981	51.242	9.600	0.033	0.000	AV
7		0.774	31.460	21.805	-24.540	56.000	9.603	0.052	0.000	QP
8	*	0.774	25.449	15.795	-20.551	46.000	9.603	0.052	0.000	AV
9		1.442	22.556	12.873	-33.444	56.000	9.610	0.073	0.000	QP
10		1.442	17.879	8.196	-28.121	46.000	9.610	0.073	0.000	AV
11		2.370	22.986	13.275	-33.014	56.000	9.616	0.095	0.000	QP
12		2.370	17.544	7.833	-28.456	46.000	9.616	0.095	0.000	AV

Note: Measurement Level = Reading Level + Factor (Probe + Cable - Amp).

Site: TR1	Time: 2018/04/09
Limit: FCC_Part15.207_CE	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.166	40.319	30.699	-24.839	65.158	9.593	0.027	0.000	QP
2		0.166	22.106	12.486	-33.052	55.158	9.593	0.027	0.000	AV
3		0.194	38.529	28.902	-25.335	63.864	9.598	0.028	0.000	QP
4		0.194	19.488	9.861	-34.375	53.864	9.598	0.028	0.000	AV
5		0.250	36.833	27.204	-24.924	61.757	9.598	0.031	0.000	QP
6		0.250	18.816	9.187	-32.941	51.757	9.598	0.031	0.000	AV
7		0.586	25.242	15.606	-30.758	56.000	9.590	0.046	0.000	QP
8		0.586	12.379	2.743	-33.621	46.000	9.590	0.046	0.000	AV
9		0.786	32.801	23.159	-23.199	56.000	9.590	0.052	0.000	QP
10	*	0.786	23.677	14.034	-22.323	46.000	9.590	0.052	0.000	AV
11		1.454	20.329	10.657	-35.671	56.000	9.599	0.073	0.000	QP
12		1.454	14.362	4.690	-31.638	46.000	9.599	0.073	0.000	AV

Note: Measurement Level = Reading Level + Factor (Probe + Cable - Amp).

4. Emissions in restricted frequency bands

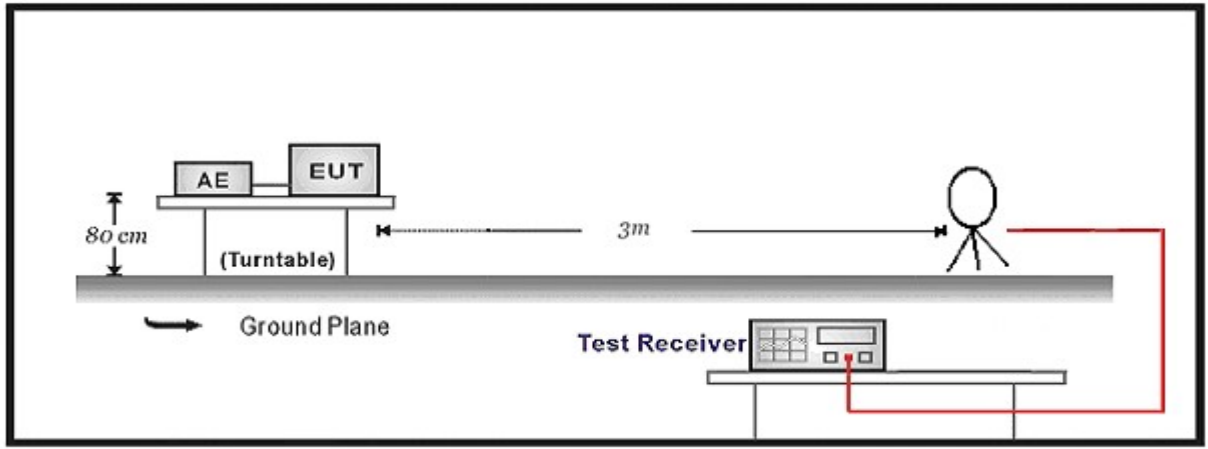
4.1. Test Equipment

Radiated Emission(Below 1GHz) / AC-2					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2018.03.29	2019.03.28
Loop Antenna	R&S	HFH2-Z2	833799/003	2017.11.16	2018.11.15
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2017.10.16	2018.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2018.03.02	2019.03.01
Temperature/Humidity Meter	Zhichen	ZC1-2	AC2-TH	2018.01.04	2019.01.03
Quietek EMI V3(test software)	Quietek	N/A	N/A	N/A	N/A
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

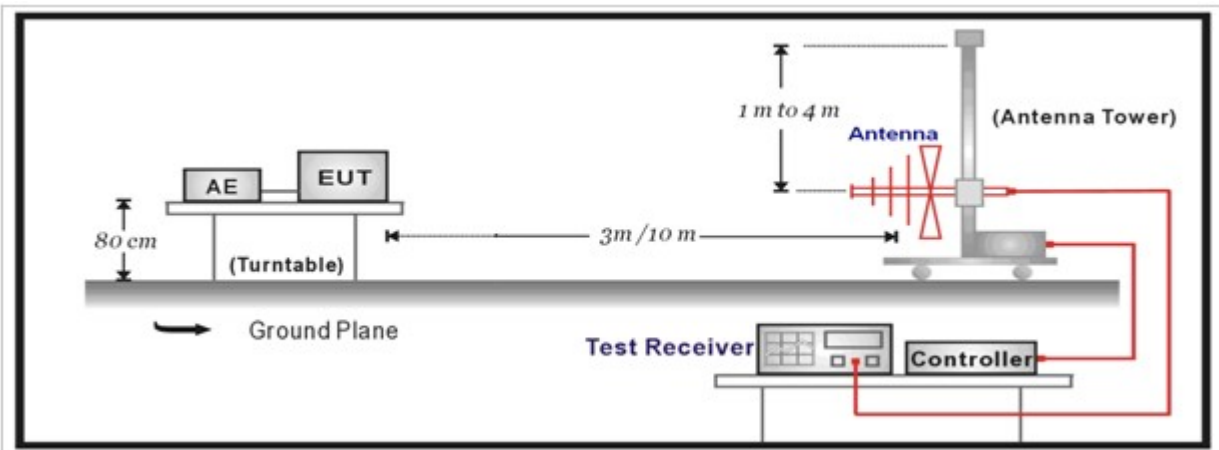
Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2018.01.04	2019.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2017.05.06	2019.05.05
Preamplifier	Quietek	AP-040G	CHM-0906001	2017.05.06	2019.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2018.01.22	2019.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2017.11.25	2018.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2018.03.02	2019.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2018.03.02	2019.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2018.03.02	2019.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2017.06.10	2018.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2018.01.04	2019.01.03
Quietek EMI V3(test software)	Quietek	N/A	N/A	N/A	N/A
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

4.2. Test Setup

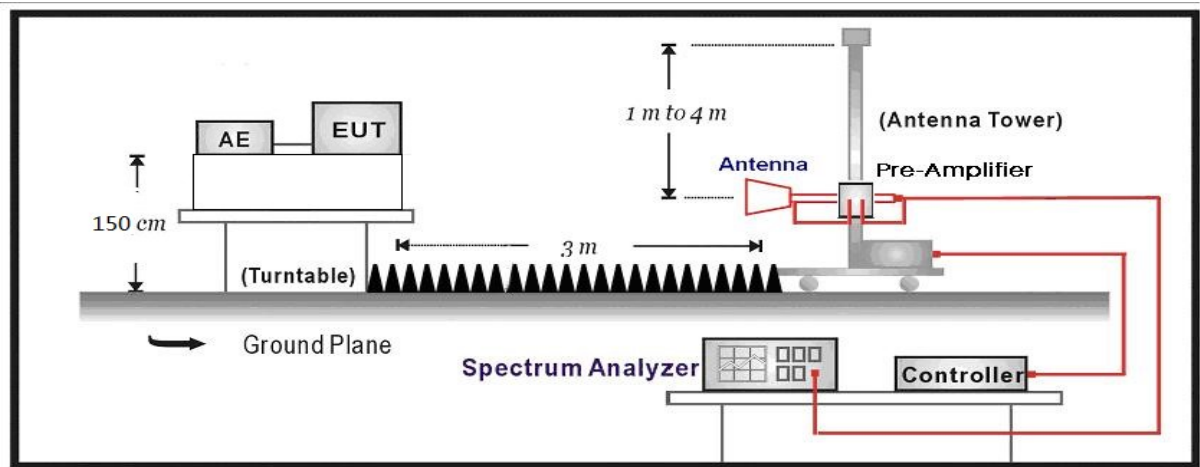
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

For FCC:

Restricted Bands of operation			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.81425 – 8.81475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4	3600 – 4400	
13.36 – 13.41			

For ISED:

Restricted Bands of operation			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090-0.110	13.36-13.41	1645.5-1646.5	13.25-13.4
2.1735-2.1905	16.42-16.423	1660-1710	14.47-14.5
3.020-3.026	16.69475-16.69525	1718.8-1722.2	15.35-16.2
4.125-4.128	16.80425-16.80475	2200-2300	17.7-21.4
4.17725-4.17775	25.5-25.67	2310-2390	22.01-23.12
4.20725-4.20775	37.5-38.25	2655-2900	23.6-24.0
5.677-5.683	73-74.6	3260-3267	31.2-31.8
6.215-6.218	74.8-75.2	3332-3339	36.43-36.5
6.26775-6.26825	108-138	3345.8-3358	Above 38.6
6.31175-6.31225	156.52475-156.52525	3500-4400	
8.291-8.294	156.7-156.9	4500-5150	
8.362-8.366	240-285	5350-5460	
8.37625-8.38675	322-335.4	7250-7750	
8.41425-8.41475	399.9-410	8025-8500	
12.29-12.293	608-614	9.0-9.2	
12.51975-12.52025	960-1427	9.3-9.5	
12.57675-12.57725	1435-1626.5	10.6-12.7	

Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μ V/m)	Field strength (dB μ V/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300 _(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88 - 216	150	43.5	3 _(Note 2)
216 - 960	200	46	3 _(Note 2)
Above 960	500	54	3 _(Note 2)

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.4. Test Procedure

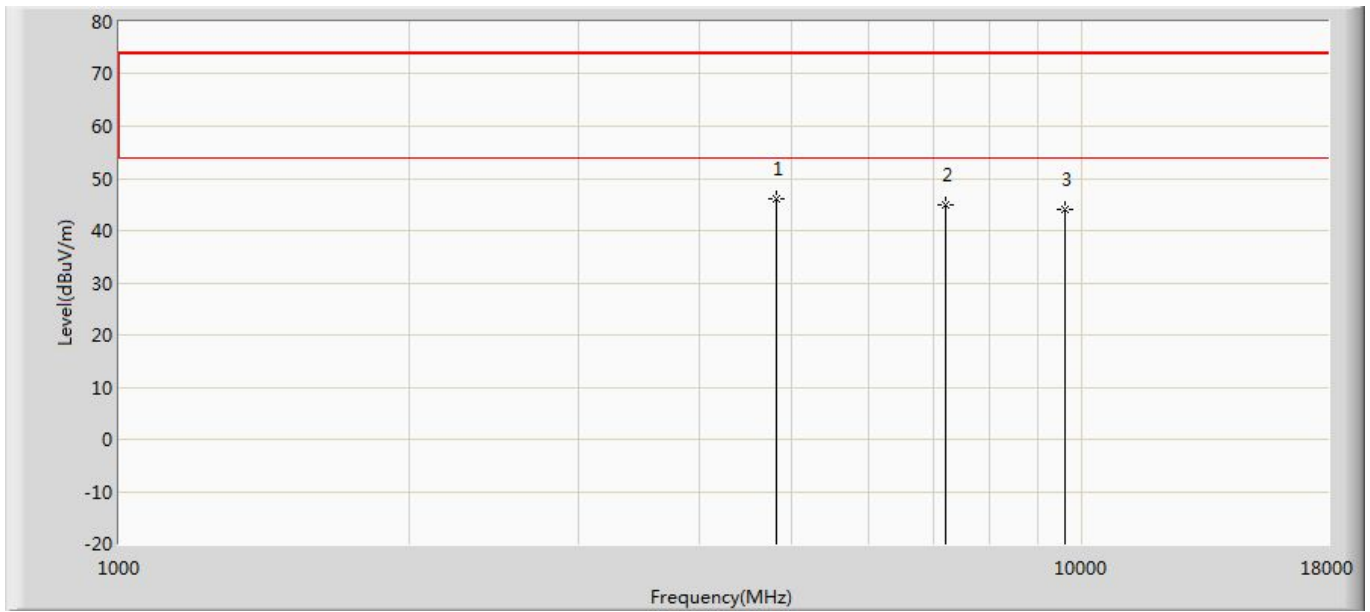
Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
<input checked="" type="checkbox"/>	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
<input checked="" type="checkbox"/>	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

4.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB
 below 1G is defined as ± 3.8 dB

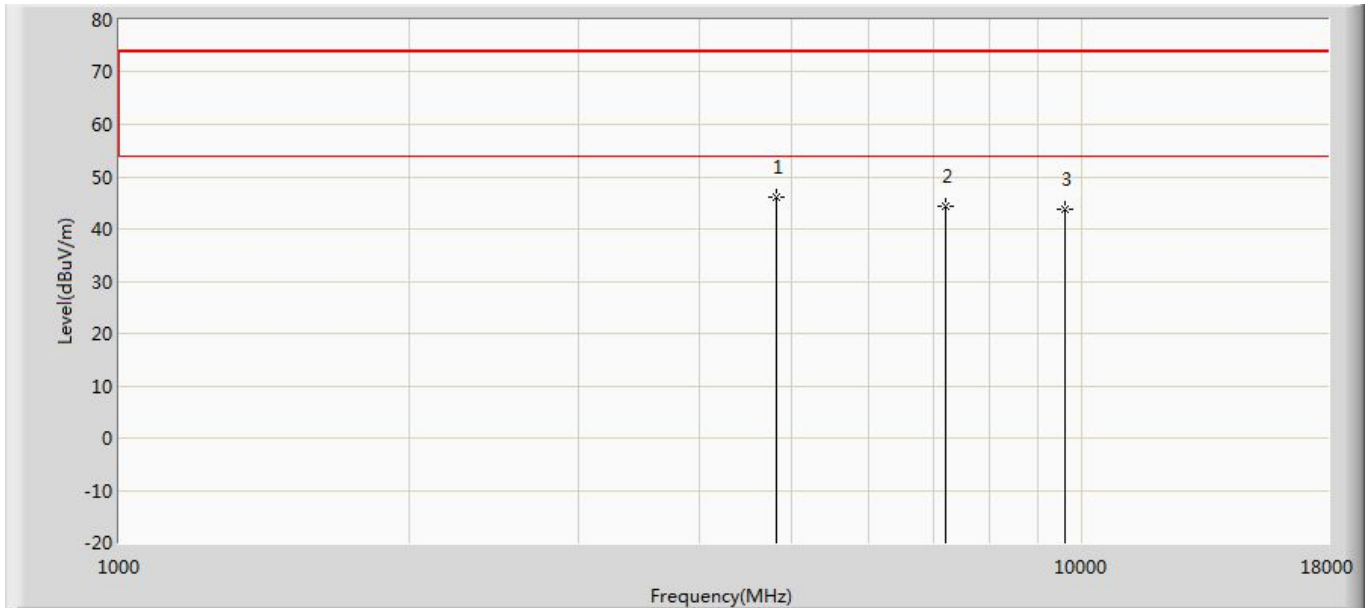
4.6. Test Result

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	



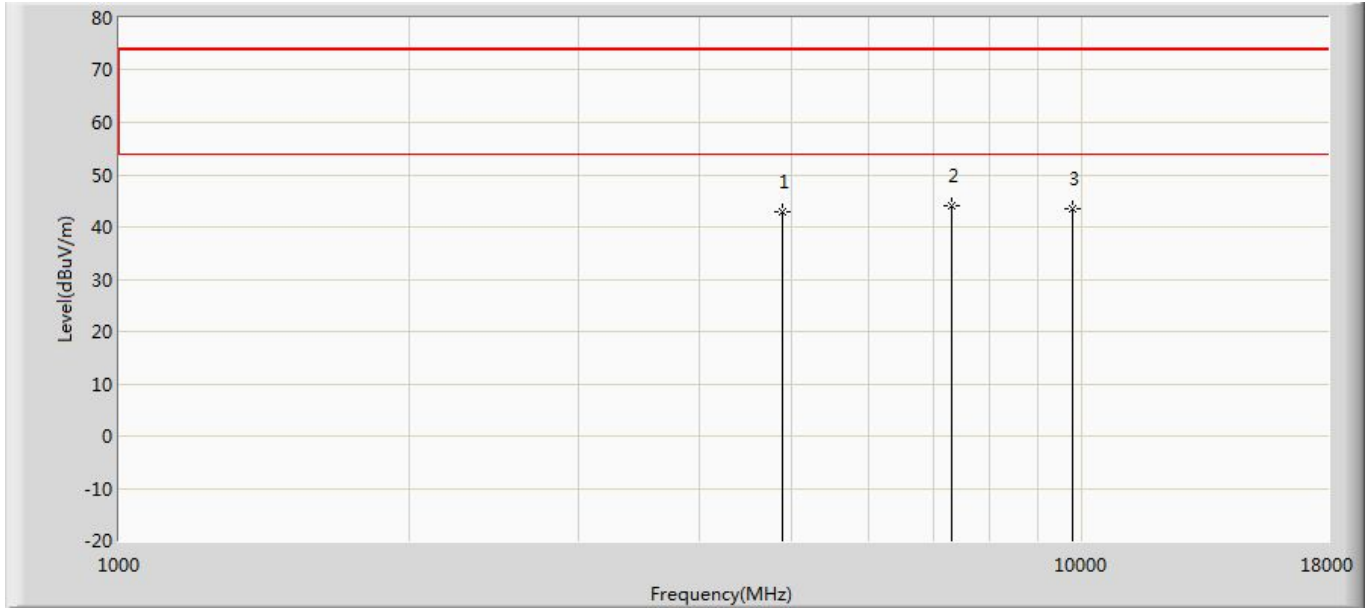
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4808.000	46.130	46.646	-27.870	74.000	-0.516	PK
2		7206.000	44.832	40.816	-29.168	74.000	4.016	PK
3		9608.000	43.979	38.161	-30.021	74.000	5.817	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	



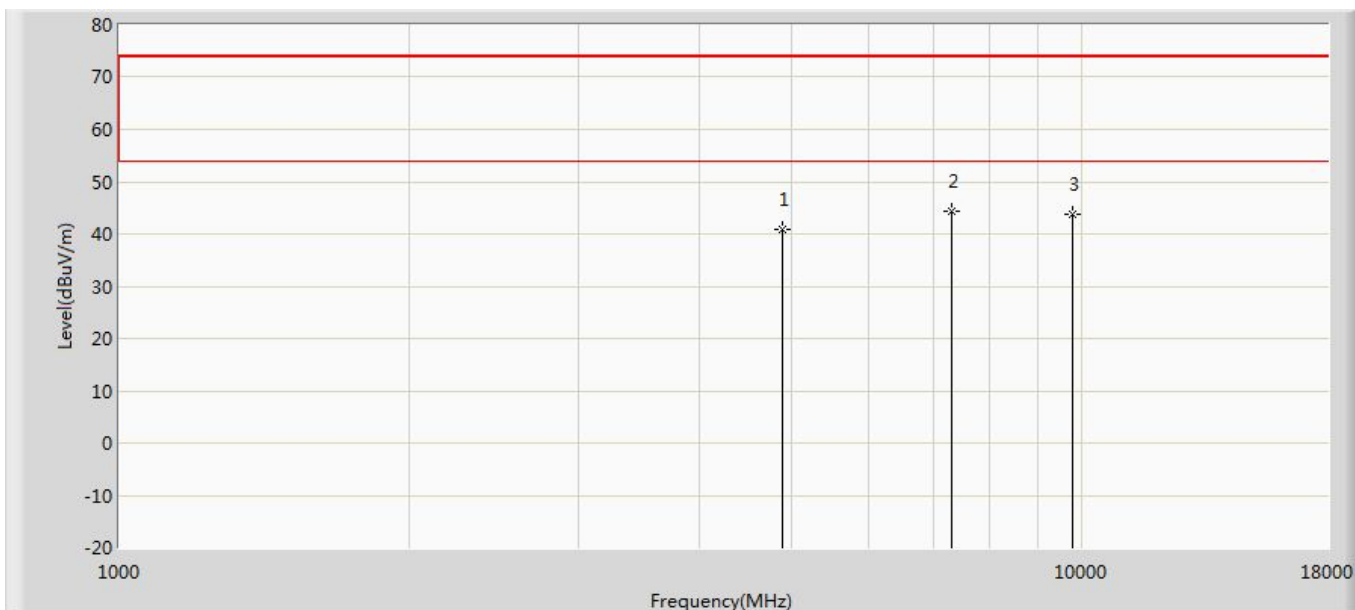
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4808.000	46.168	46.684	-27.832	74.000	-0.516	PK
2		7206.000	44.240	40.224	-29.760	74.000	4.016	PK
3		9608.000	43.910	38.092	-30.090	74.000	5.817	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2441MHz by DH5	



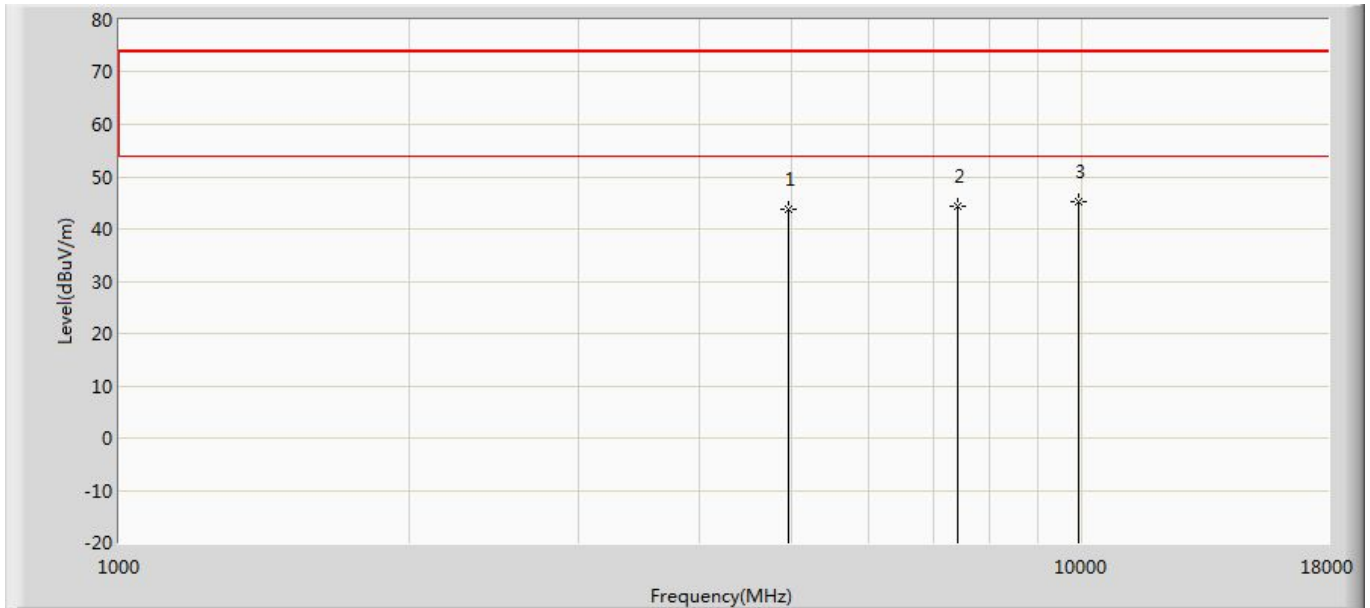
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	42.877	43.390	-31.123	74.000	-0.514	PK
2	*	7323.000	44.194	40.267	-29.806	74.000	3.927	PK
3		9764.000	43.570	38.440	-30.430	74.000	5.131	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2441MHz by DH5	



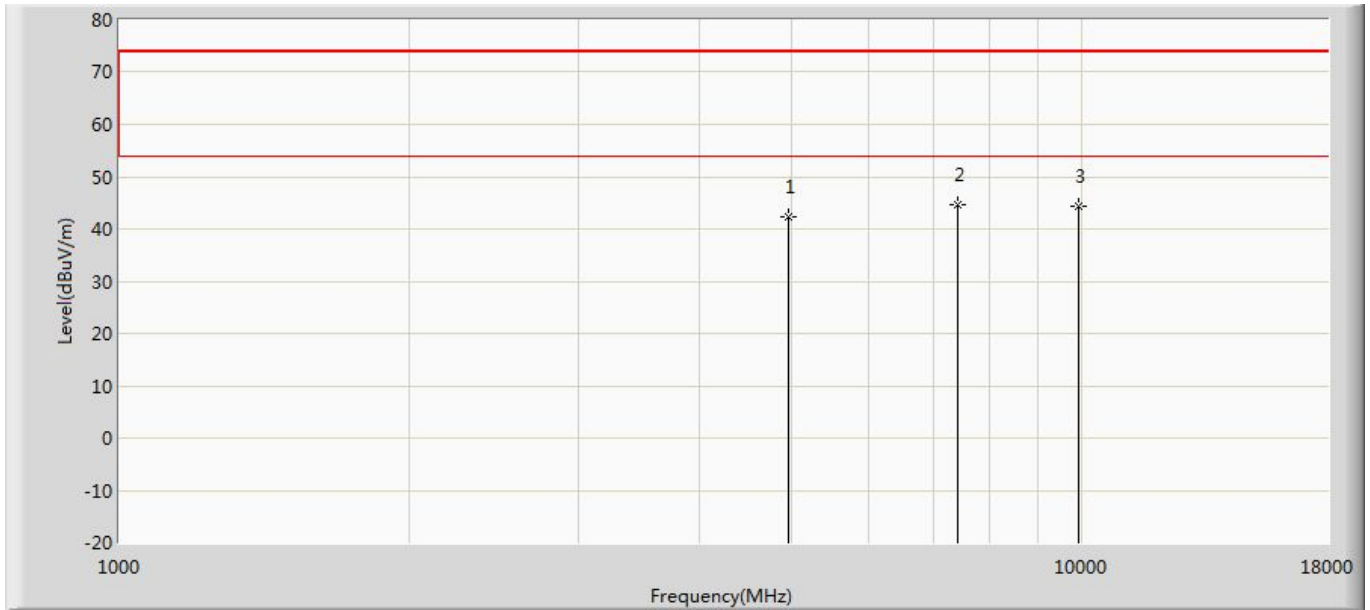
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	40.930	41.443	-33.070	74.000	-0.514	PK
2	*	7323.000	44.482	40.555	-29.518	74.000	3.927	PK
3		9764.000	43.829	38.699	-30.171	74.000	5.131	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	



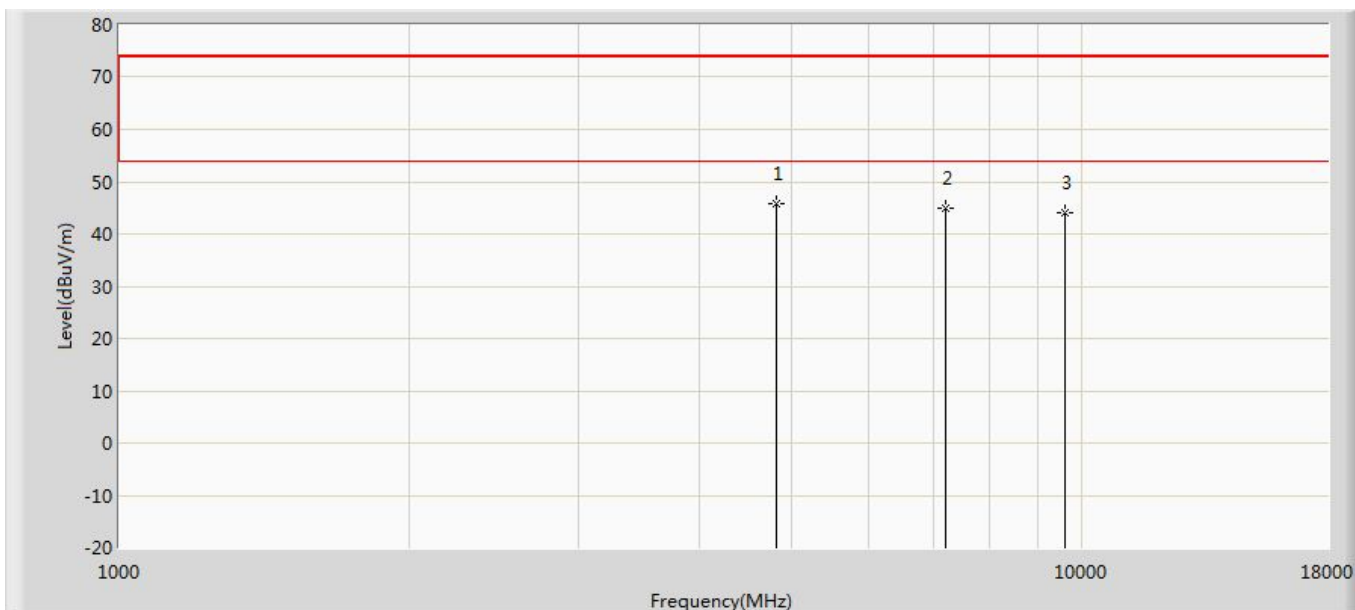
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	43.709	44.624	-30.291	74.000	-0.915	PK
2		7440.000	44.332	40.693	-29.668	74.000	3.638	PK
3	*	9920.000	45.254	39.288	-28.746	74.000	5.966	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	



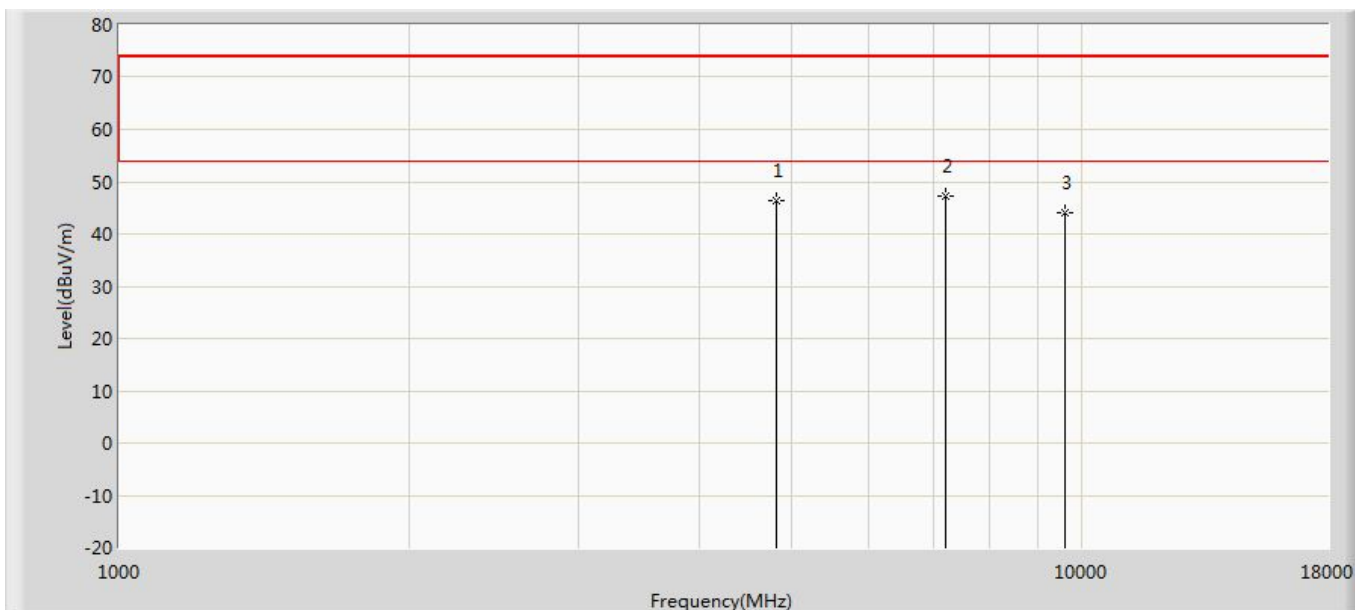
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	42.387	43.264	-31.613	74.000	-0.877	PK
2	*	7440.000	44.516	40.877	-29.484	74.000	3.638	PK
3		9920.000	44.371	38.405	-29.629	74.000	5.966	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by 2DH5	



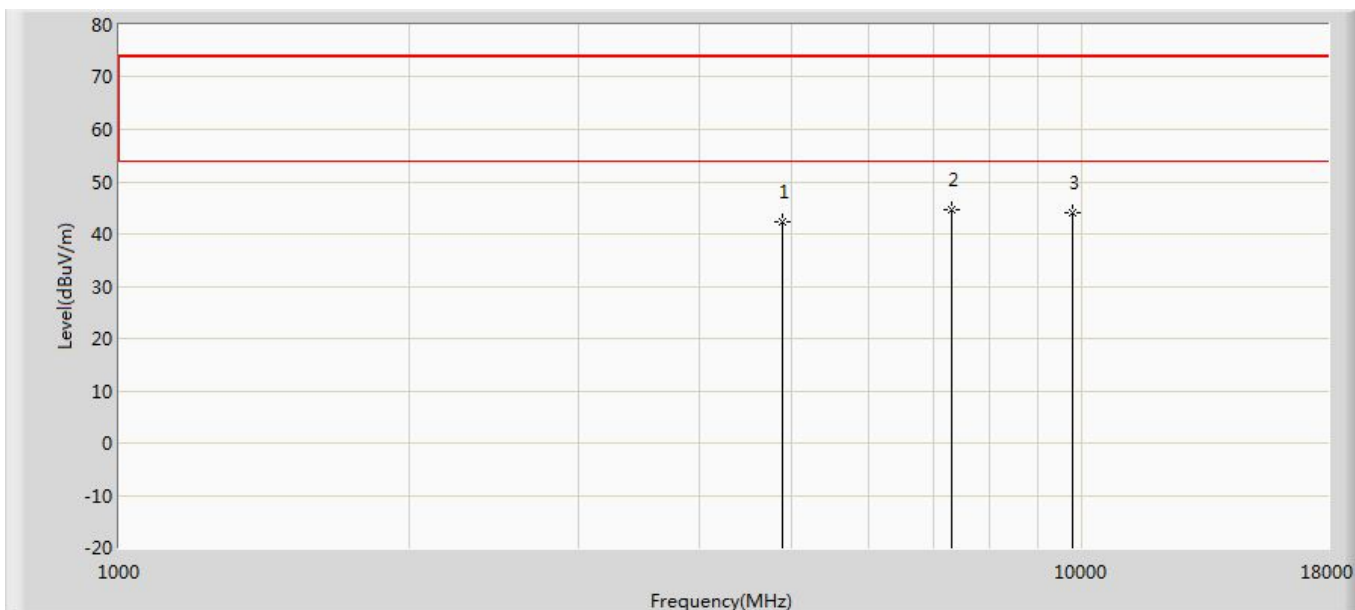
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4808.000	45.656	46.172	-28.344	74.000	-0.516	PK
2		7206.000	45.054	41.038	-28.946	74.000	4.016	PK
3		9608.000	44.181	38.363	-29.819	74.000	5.817	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by 2DH5	



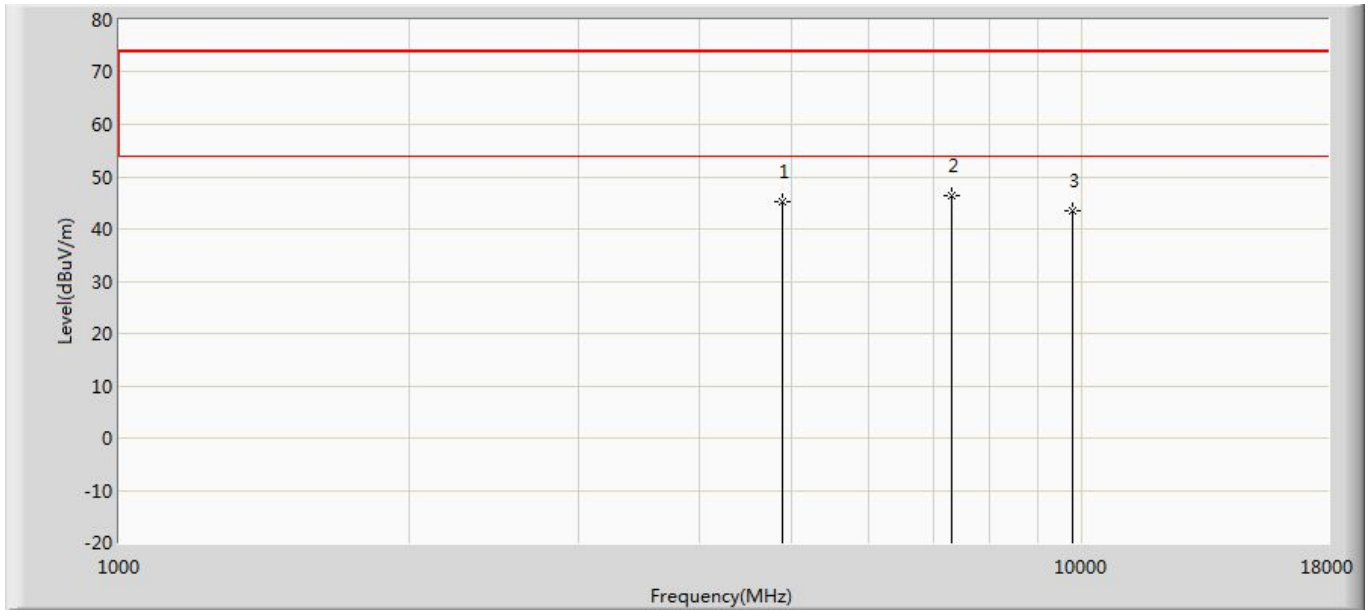
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	46.365	46.881	-27.635	74.000	-0.516	PK
2	*	7206.000	47.254	43.238	-26.746	74.000	4.016	PK
3		9608.000	44.051	38.233	-29.949	74.000	5.817	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2441MHz by 2DH5	



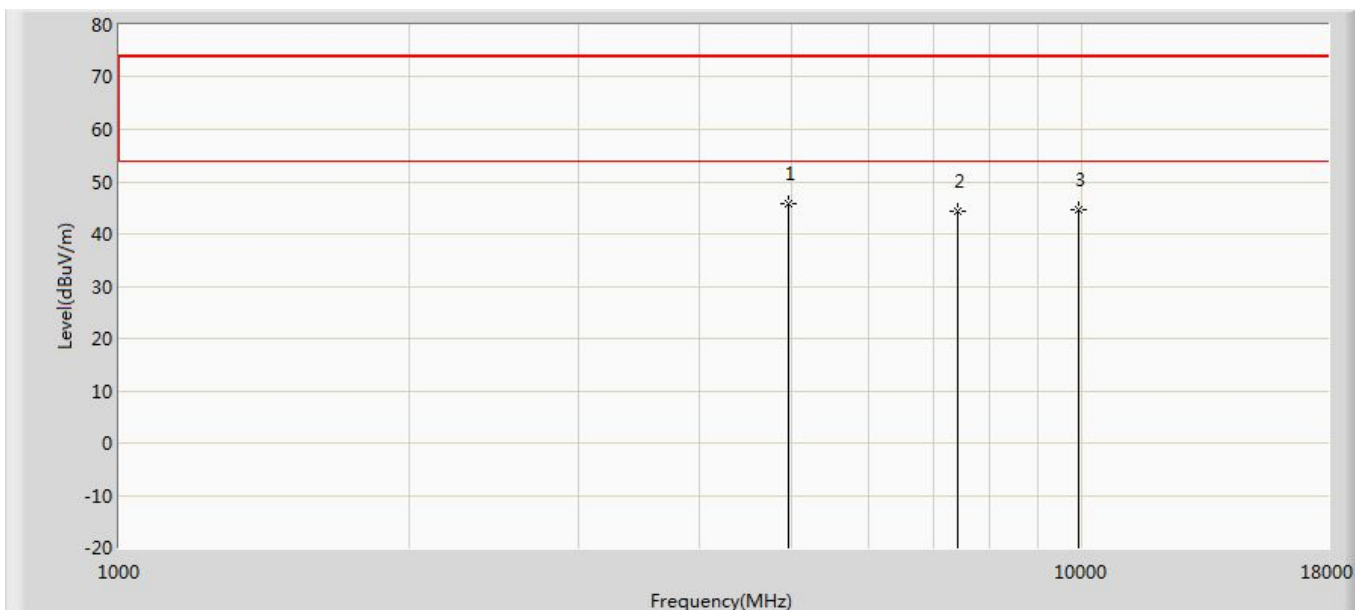
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	42.455	42.968	-31.545	74.000	-0.514	PK
2	*	7323.000	44.569	40.642	-29.431	74.000	3.927	PK
3		9764.000	43.946	38.816	-30.054	74.000	5.131	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2441MHz by 2DH5	



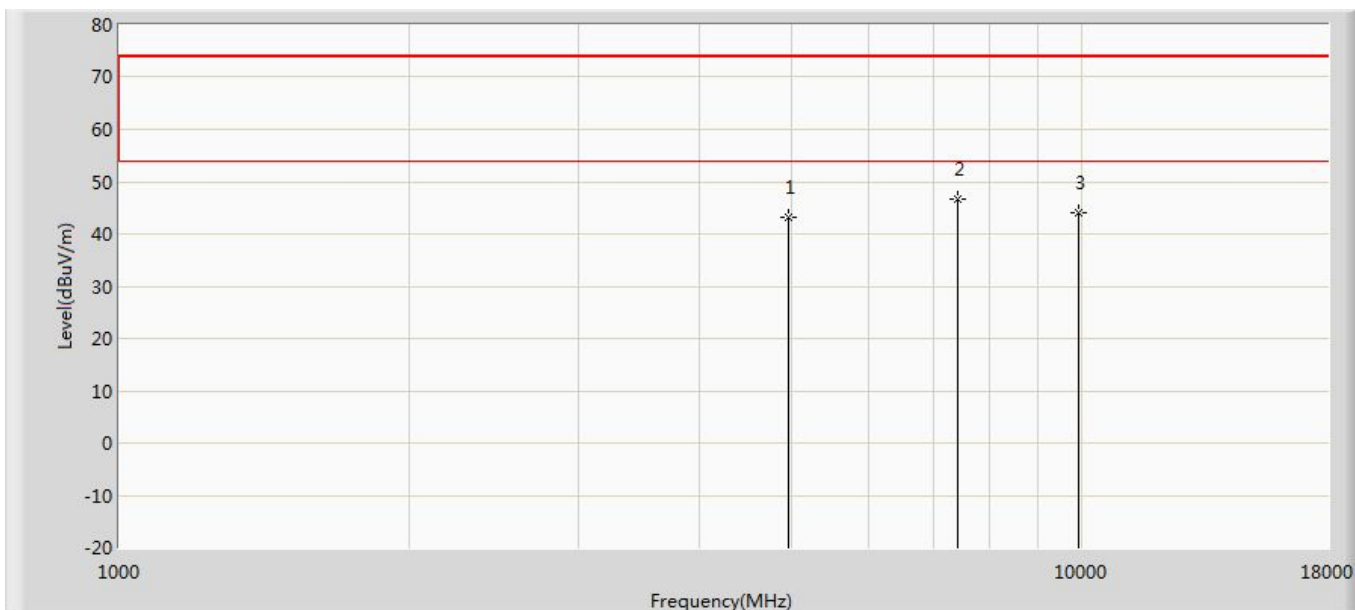
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4876.000	45.336	45.746	-28.664	74.000	-0.410	PK
2	*	7323.000	46.465	42.538	-27.535	74.000	3.927	PK
3		9764.000	43.364	38.234	-30.636	74.000	5.131	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by 2DH5	



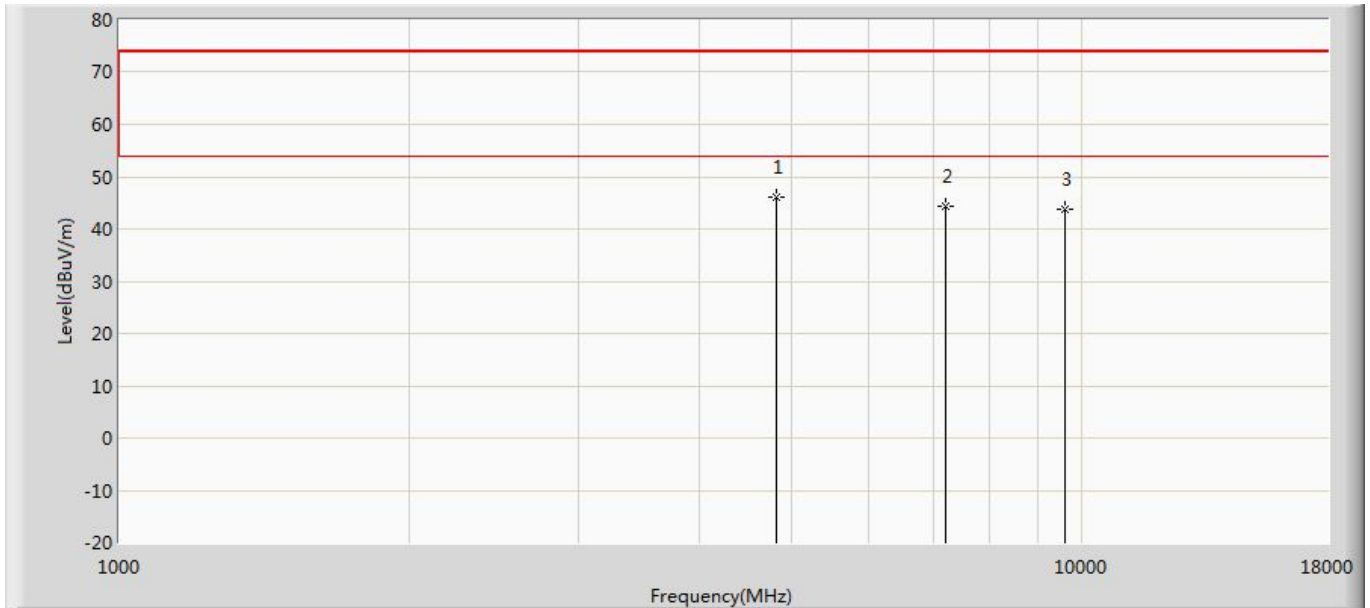
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4961.000	45.702	46.617	-28.298	74.000	-0.915	PK
2		7440.000	44.253	40.614	-29.747	74.000	3.638	PK
3		9920.000	44.511	38.545	-29.489	74.000	5.966	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by 2DH5	



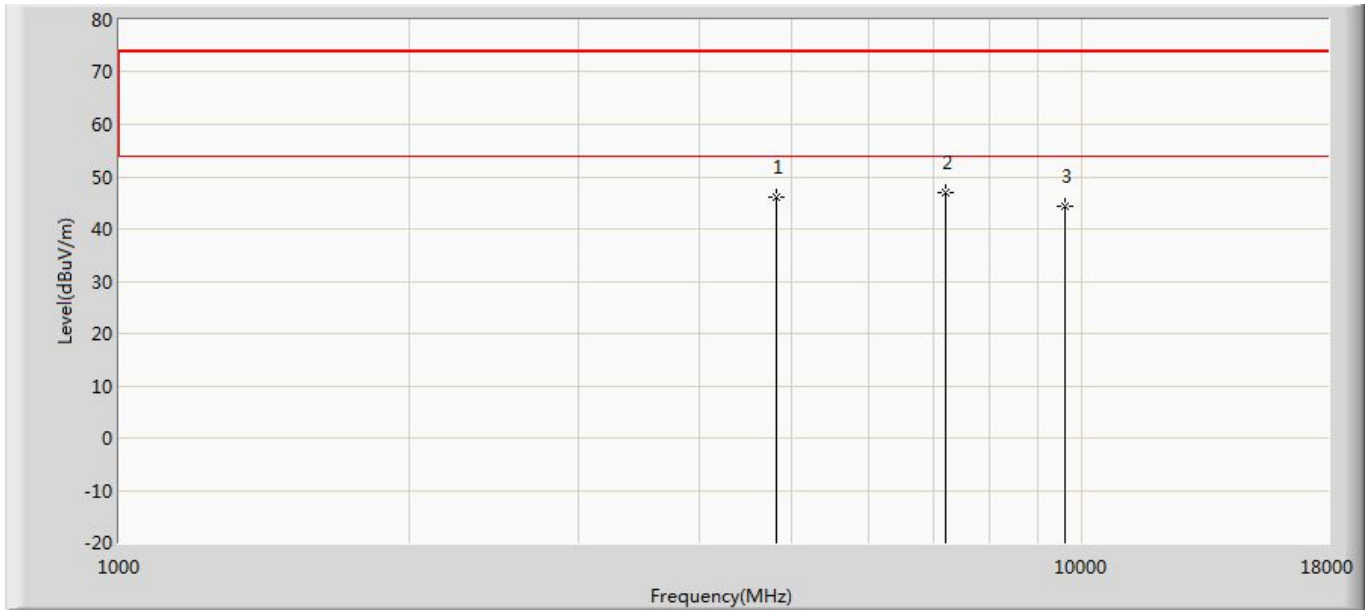
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	43.052	43.967	-30.948	74.000	-0.915	PK
2	*	7440.000	46.535	42.896	-27.465	74.000	3.638	PK
3		9920.000	44.030	38.064	-29.970	74.000	5.966	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by 3DH5	



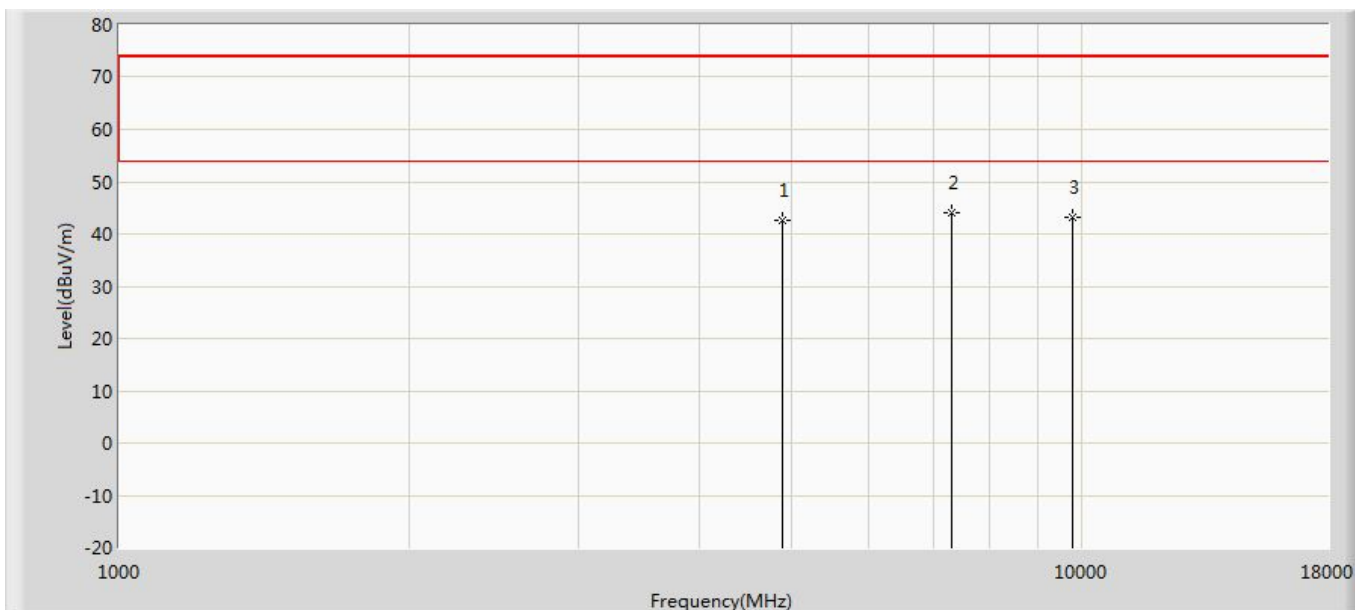
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4808.000	46.196	46.712	-27.804	74.000	-0.516	PK
2		7206.000	44.269	40.253	-29.731	74.000	4.016	PK
3		9608.000	43.802	37.984	-30.198	74.000	5.817	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by 3DH5	



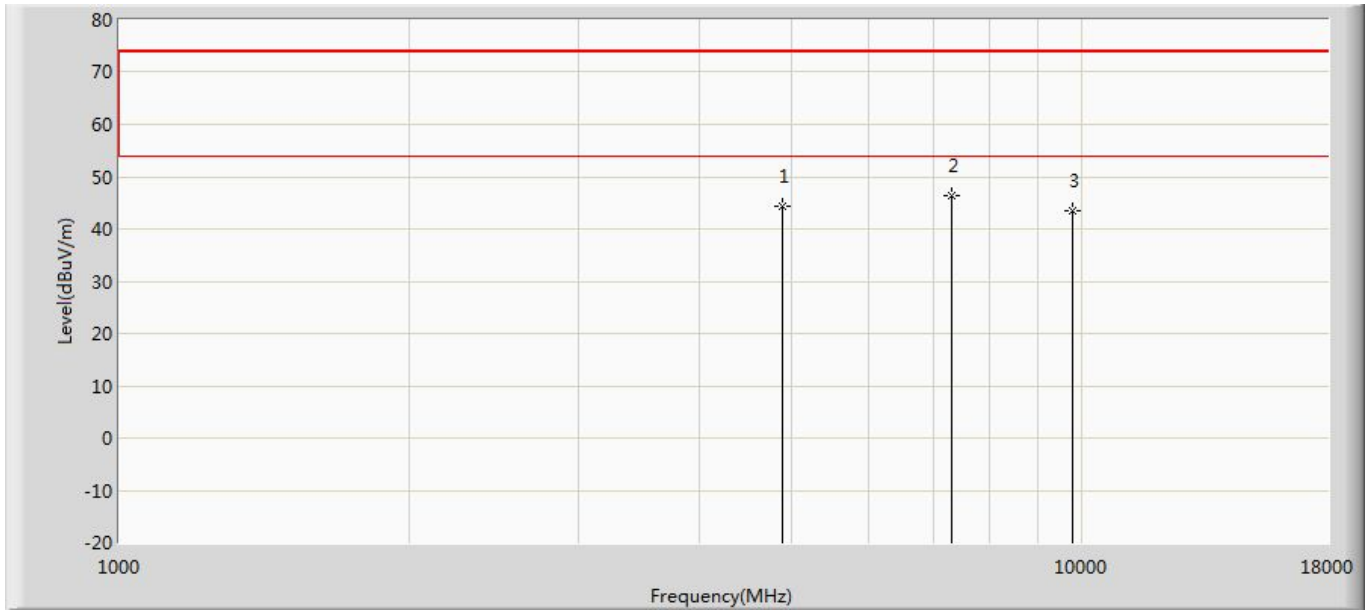
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	46.010	46.526	-27.990	74.000	-0.516	PK
2	*	7206.000	47.100	43.084	-26.900	74.000	4.016	PK
3		9608.000	44.415	38.597	-29.585	74.000	5.817	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 15:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2441MHz by 3DH5	



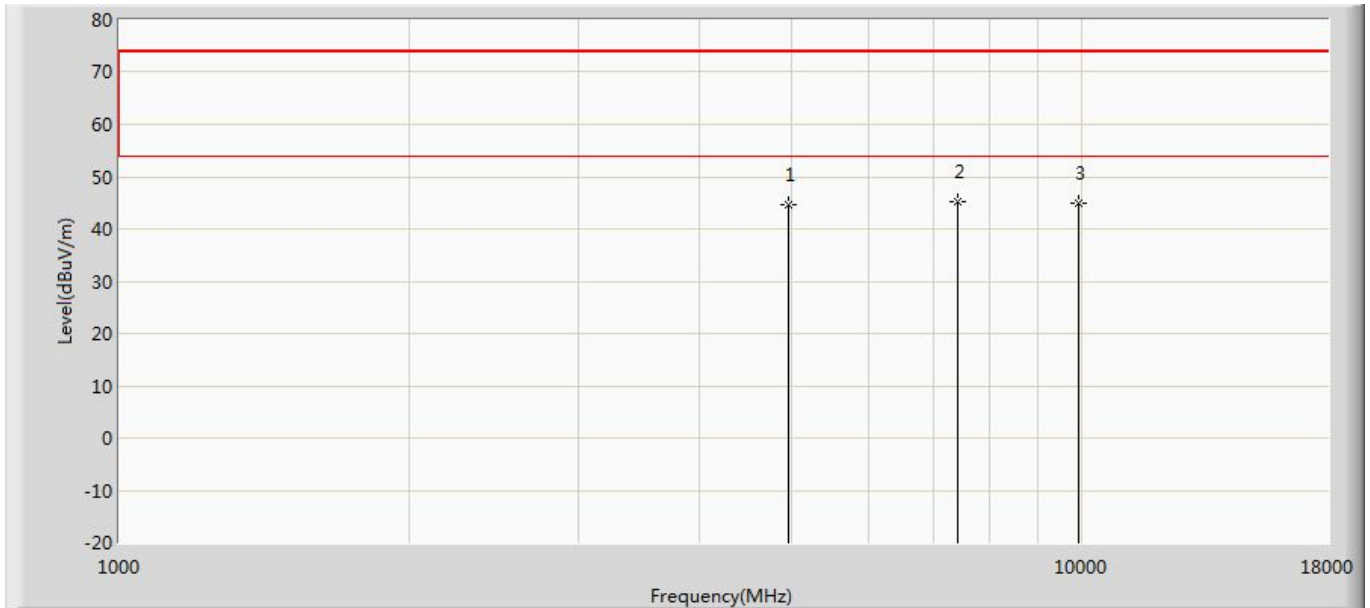
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	42.686	43.199	-31.314	74.000	-0.514	PK
2	*	7323.000	44.150	40.223	-29.850	74.000	3.927	PK
3		9764.000	43.135	38.005	-30.865	74.000	5.131	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 16:00
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2441MHz by 3DH5	



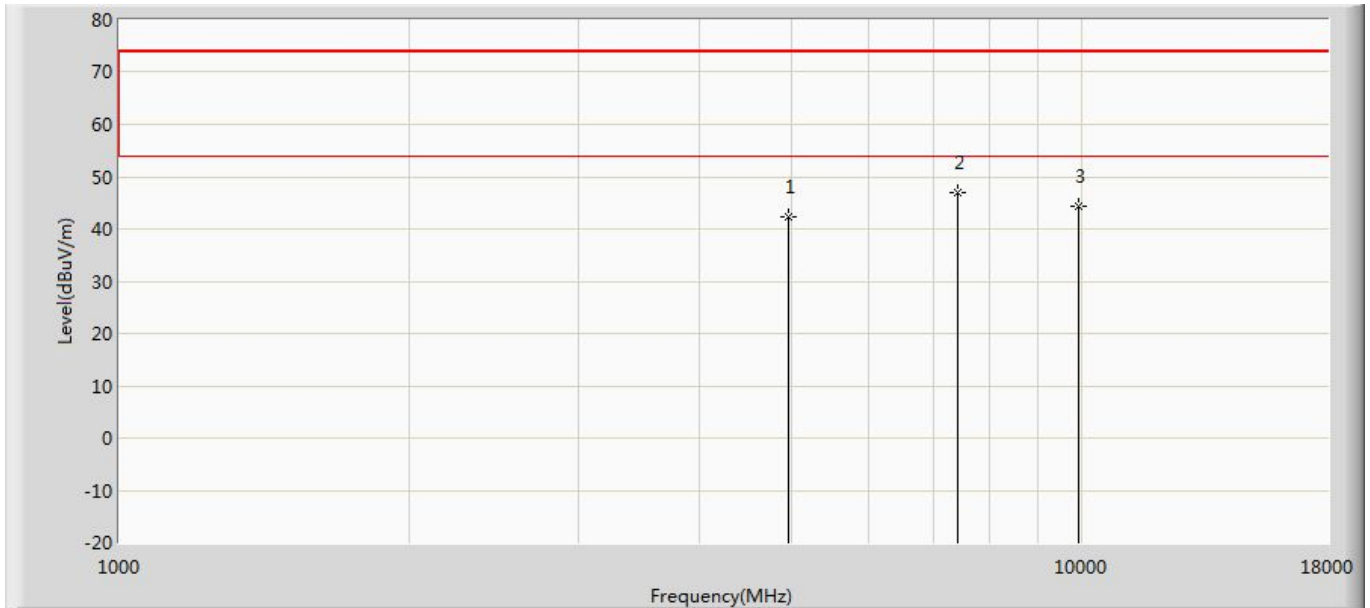
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4876.000	44.356	44.766	-29.644	74.000	-0.410	PK
2	*	7323.000	46.443	42.516	-27.557	74.000	3.927	PK
3		9764.000	43.456	38.326	-30.544	74.000	5.131	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 16:00
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	44.593	45.508	-29.407	74.000	-0.915	PK
2	*	7440.000	45.275	41.636	-28.725	74.000	3.638	PK
3		9920.000	44.885	38.919	-29.115	74.000	5.966	PK

Engineer: Tommie	
Site: AC5	Time: 2018/04/15 - 16:00
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by 3DH5	



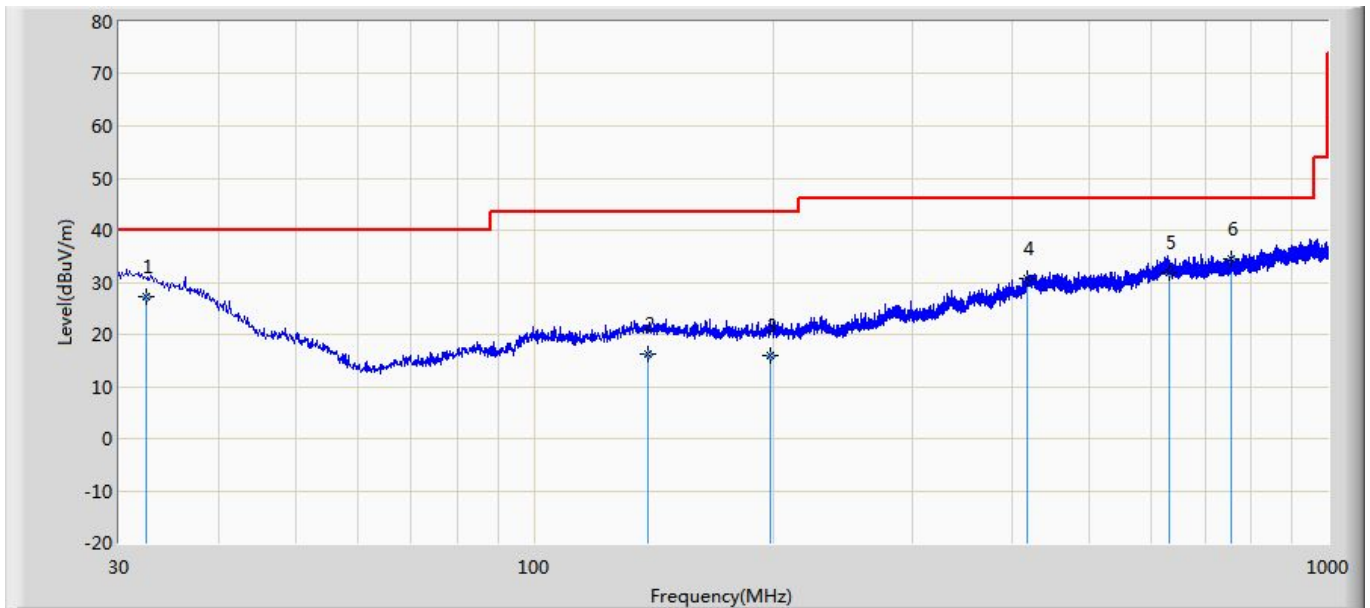
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	42.366	43.243	-31.634	74.000	-0.877	PK
2	*	7440.000	46.981	43.342	-27.019	74.000	3.638	PK
3		9920.000	44.454	38.488	-29.546	74.000	5.966	PK

Note:

1. Measure Level = Reading Level + Factor.
2. The test frequency range, 9kHz~30MHz, 18GHz~26GHz, both of the worst case are at least 20dB below the limits, therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.
4. As the radiated emission was performed, so conducted emission was not tested.

The worst case of Radiated Emission below 1GHz:

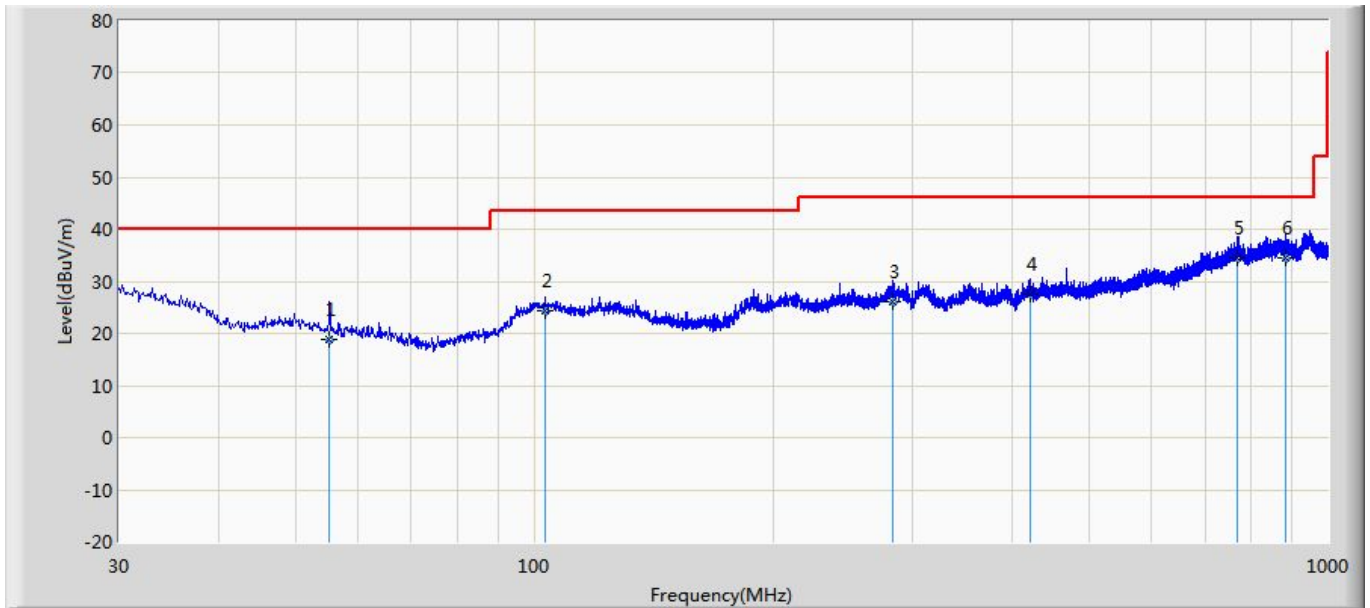
Engineer: CptJack	
Site: AC3	Time: 2018/04/08
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Horizontal
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Type
1		32.461	27.131	0.545	-12.869	40.000	20.118	6.468	0.000	QP
2		139.310	16.286	-1.397	-27.214	43.500	10.652	7.031	0.000	QP
3		198.264	15.948	-1.749	-27.552	43.500	10.417	7.280	0.000	QP
4		418.921	30.823	3.838	-15.177	46.000	19.028	7.957	0.000	QP
5		629.791	31.912	2.369	-14.088	46.000	21.042	8.501	0.000	QP
6	*	755.194	34.455	4.829	-11.545	46.000	20.842	8.784	0.000	QP

Note: Measurement Level = Reading Level + Factor (Probe + Cable - Amp).

Engineer: CptJack	
Site: AC3	Time: 2018/04/08
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Vertical
EUT: EZ-BT WICED Module with Mesh	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Type
1		55.220	18.730	1.900	-21.270	40.000	10.210	6.620	0.000	QP
2		103.356	24.360	2.300	-19.140	43.500	15.192	6.868	0.000	QP
3		282.685	26.043	1.300	-19.957	46.000	17.183	7.559	0.000	QP
4		420.910	27.494	2.100	-18.506	46.000	17.434	7.960	0.000	QP
5		767.564	34.369	2.100	-11.631	46.000	23.456	8.814	0.000	QP
6	*	884.085	34.374	1.300	-11.626	46.000	24.007	9.067	0.000	QP

Note: Measurement Level = Reading Level + Factor (Probe + Cable - Amp).

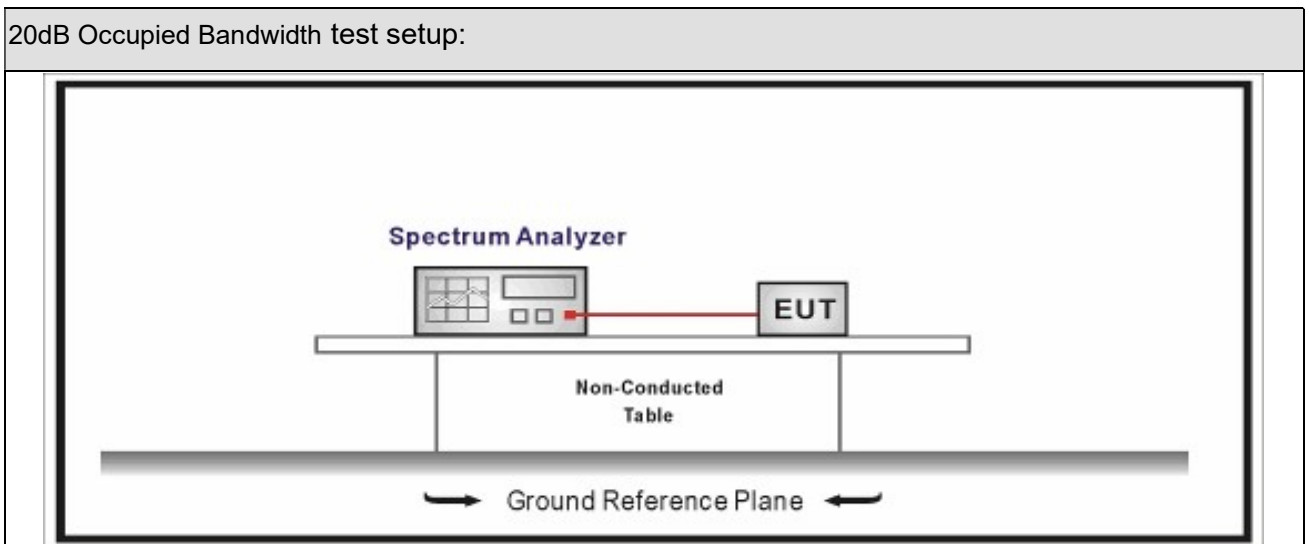
5. 20dB Bandwidth

5.1 Test Equipment

20dB Occupied Bandwidth / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

5.2 Test Setup



5.3 Limit

Carrier Frequency Separation	
<input checked="" type="checkbox"/>	For frequency hopping systems operating in 2400-2483.5 MHz band, within frequency range.
<input type="checkbox"/>	For frequency hopping systems operating in 902-928 MHz band, the maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
<input type="checkbox"/>	For frequency hopping systems operating in 5725-5850 MHz band, the maximum 20 dB bandwidth of the hopping channel is 1 MHz.

5.4 Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	DA 00-705	N/A	20 dB Bandwidth

5.5 Uncertainty

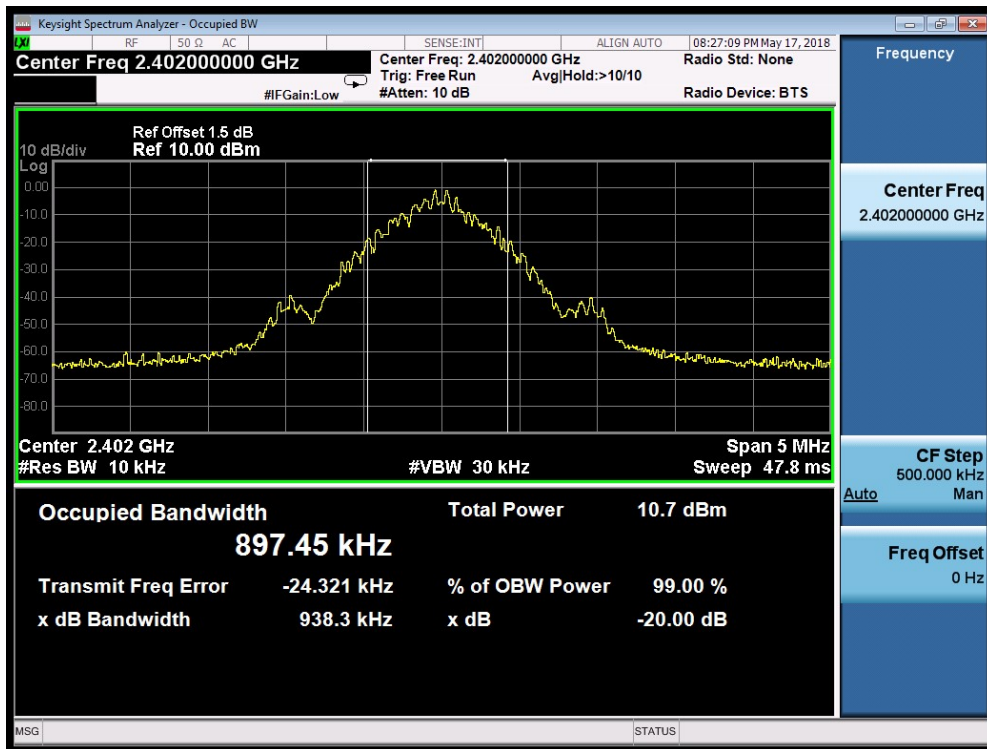
The measurement uncertainty is defined as ± 1 kHz

5.6 Test Result

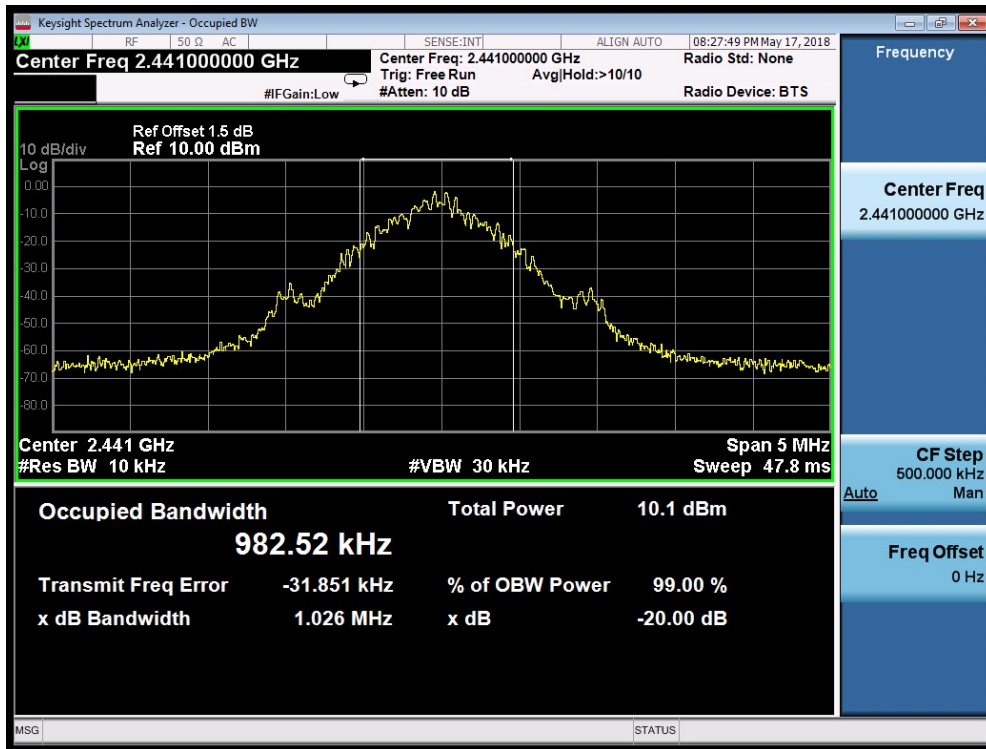
Product Name	: EZ-BT WICED Module with Mesh	Power	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2018.05.17	Test Engineer	: Tommie

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	938.3	897.45
39	2441	1026	982.52
78	2480	952.2	948.76

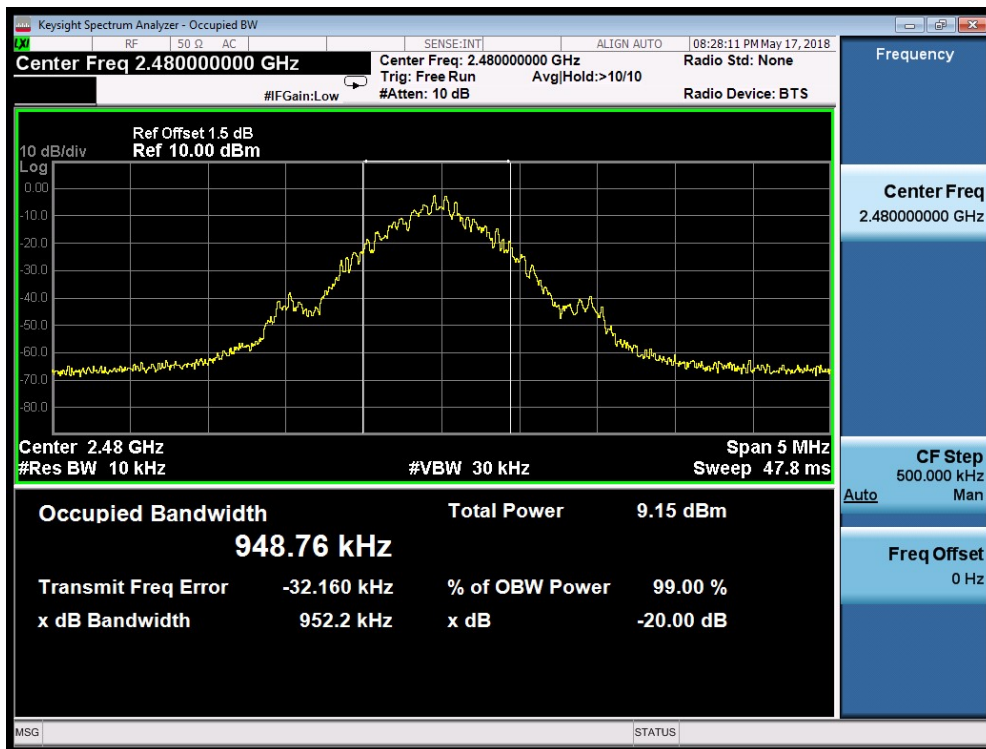
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



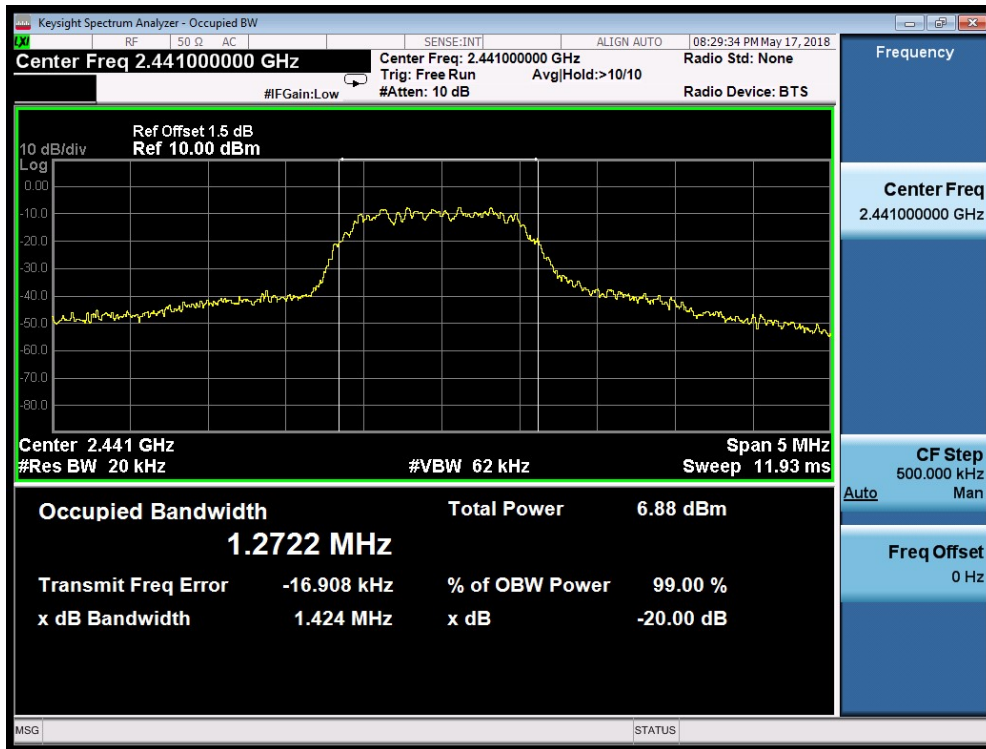
Product Name	: EZ-BT WICED Module with Mesh	Power	: AC 120V/60Hz
Test Mode	: Mode 2	Test Site	: TR-8
Test Date	: 2018.05.17	Test Engineer	: Tommie

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1431	1304
39	2441	1424	1272.2
78	2480	1389	1235.7

Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



Product Name	: EZ-BT WICED Module with Mesh	Power	: AC 120V/60Hz
Test Mode	: Mode 3	Test Site	: TR-8
Test Date	: 2018.05.17	Test Engineer	: Tommie

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1376	1237.8
39	2441	1379	1235.3
78	2480	1377	1232.3

Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



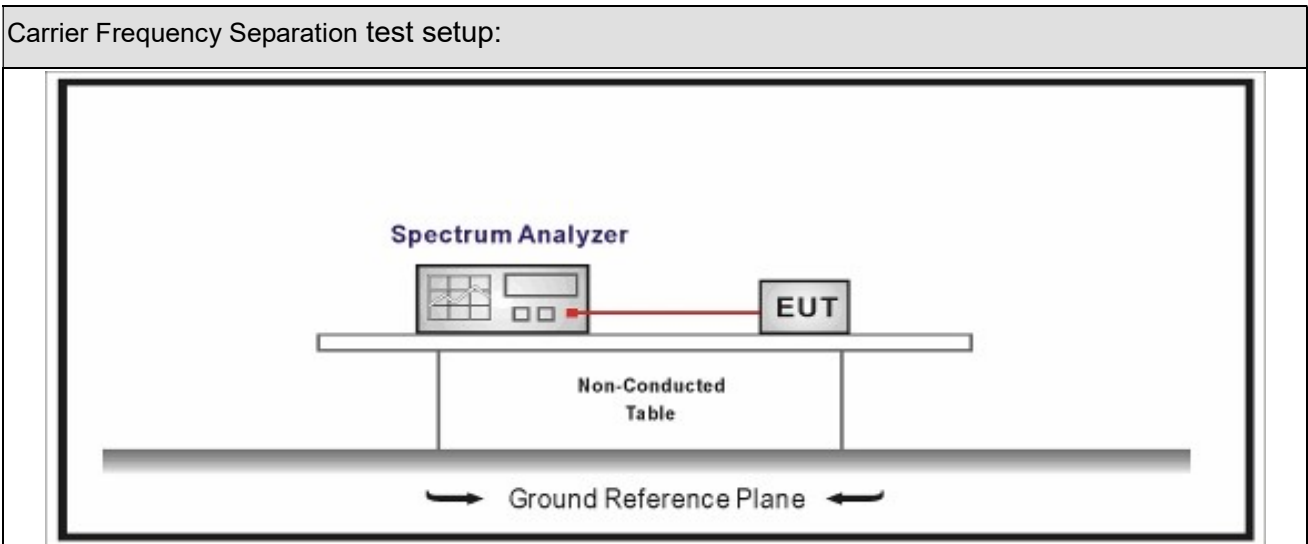
6. Carrier Frequency Separation

6.1. Test Equipment

Carrier Frequency Separation / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

6.2. Test Setup



6.3. Limit

Carrier Frequency Separation	
<input type="checkbox"/>	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.
<input checked="" type="checkbox"/>	Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel.
<input type="checkbox"/>	The 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period;
<input type="checkbox"/>	The 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
<input type="checkbox"/>	Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.

6.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	7.8.2	Carrier frequency separation

6.5. Uncertainty

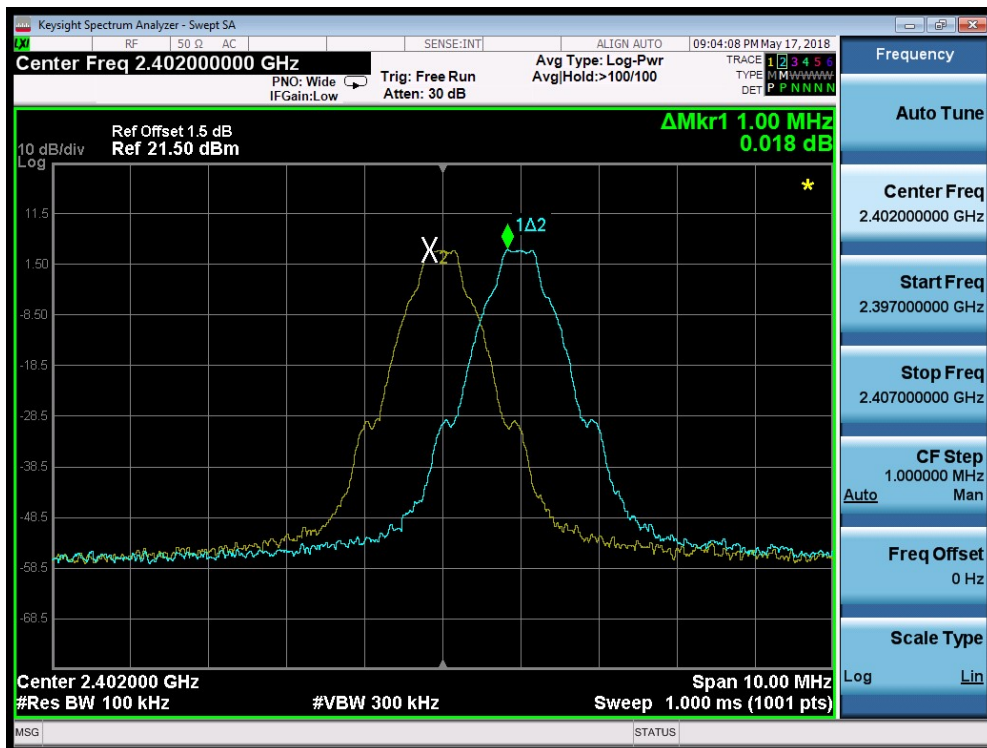
The measurement uncertainty is defined as ± 1 kHz

6.6. Test Result

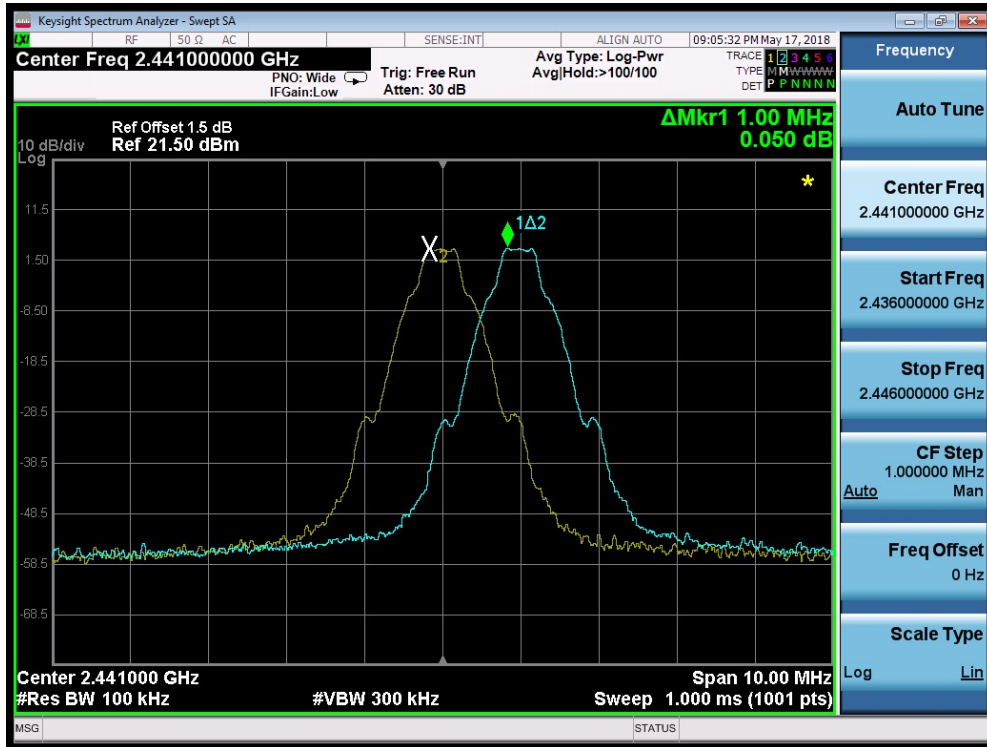
Product Name	: EZ-BT WICED Module with Mesh	Power	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2018.05.17	Test Engineer	: Tommie

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	625.5	Pass
39	2441	1000	684.0	Pass
78	2480	1000	634.8	Pass

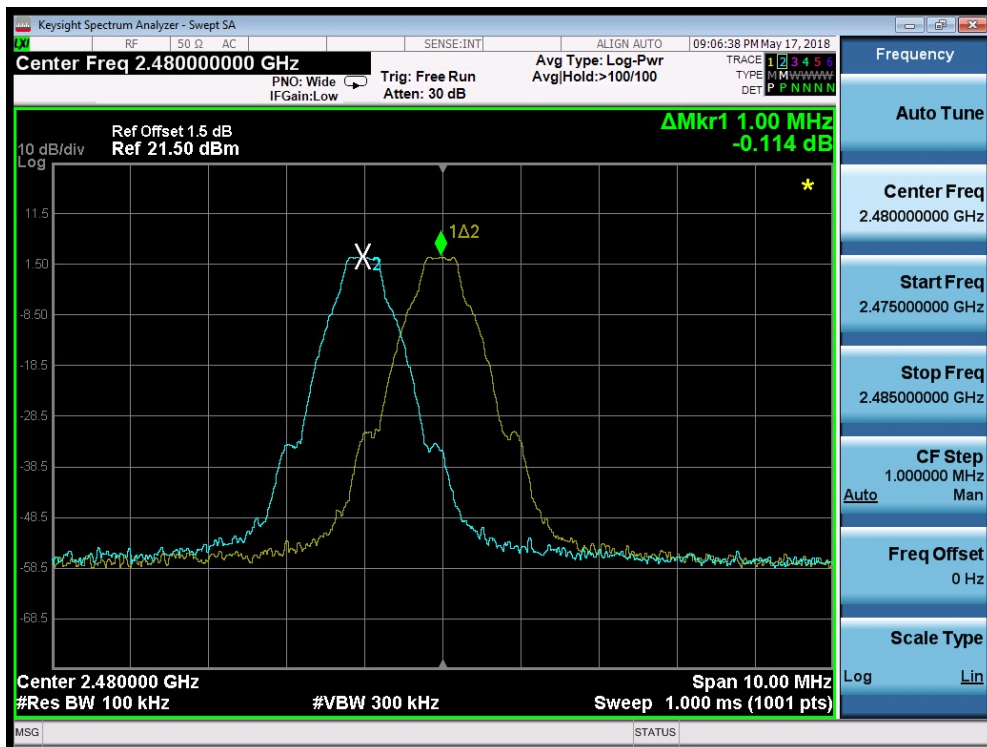
Channel 00 (2402MHz)



Channel 39 (2441MHz)



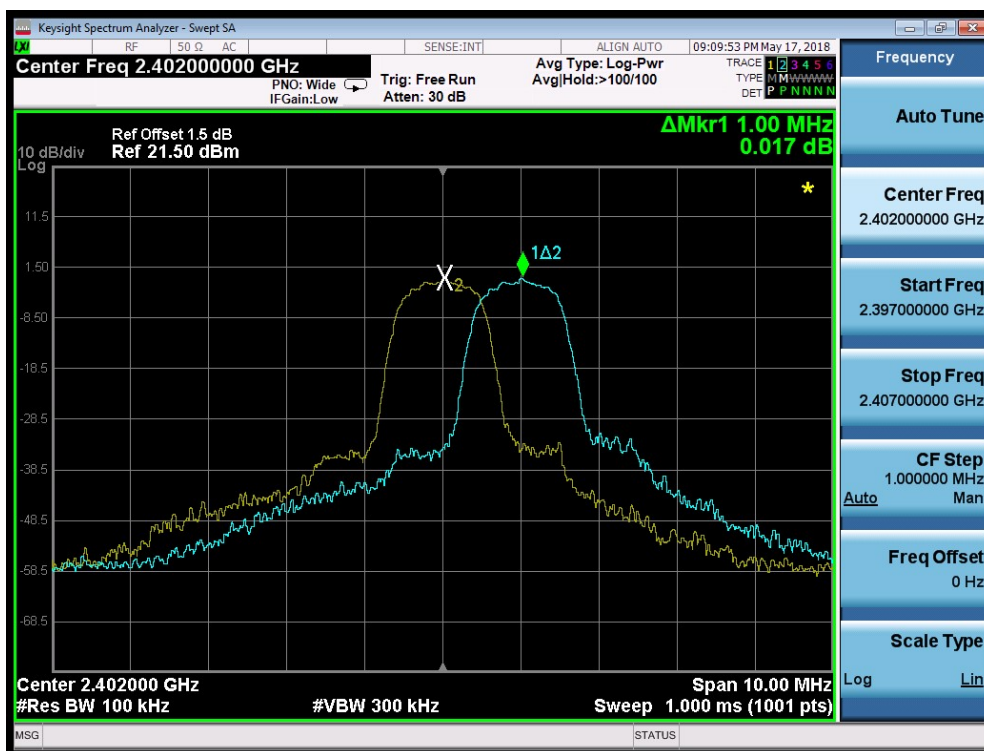
Channel 78 (2480MHz)



Product Name	: EZ-BT WICED Module with Mesh	Power	: AC 120V/60Hz
Test Mode	: Mode 2	Test Site	: TR-8
Test Date	: 2018.05.17	Test Engineer	: Tommie

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	954.0	Pass
39	2441	1000	949.3	Pass
78	2480	1000	926.0	Pass

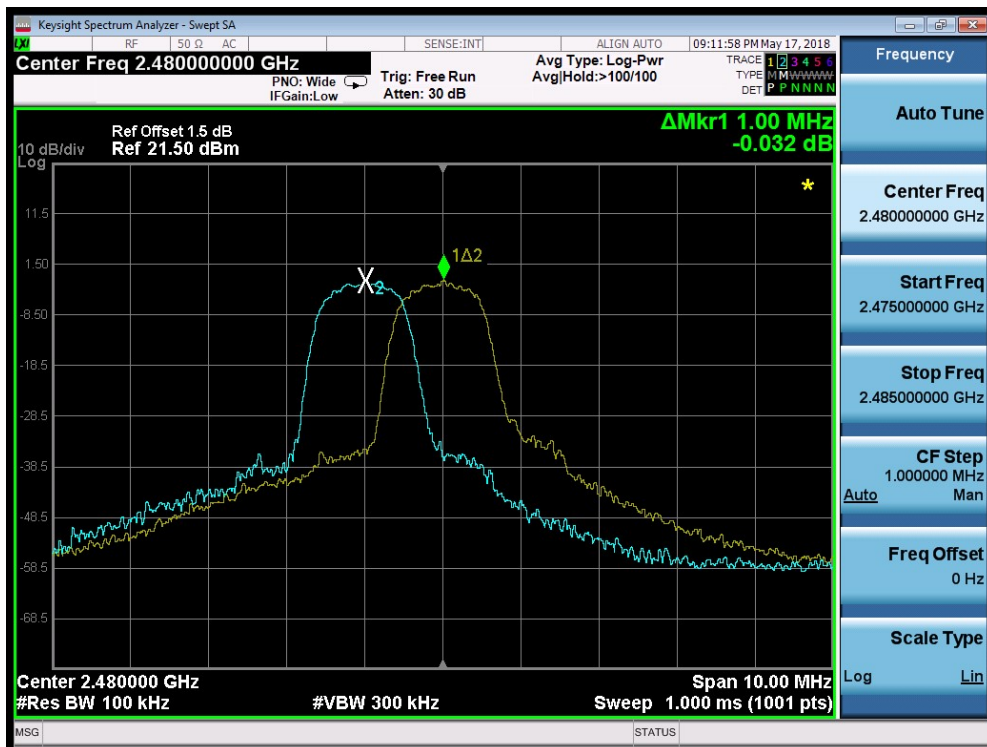
Channel 00 (2402MHz)



Channel 39 (2441MHz)



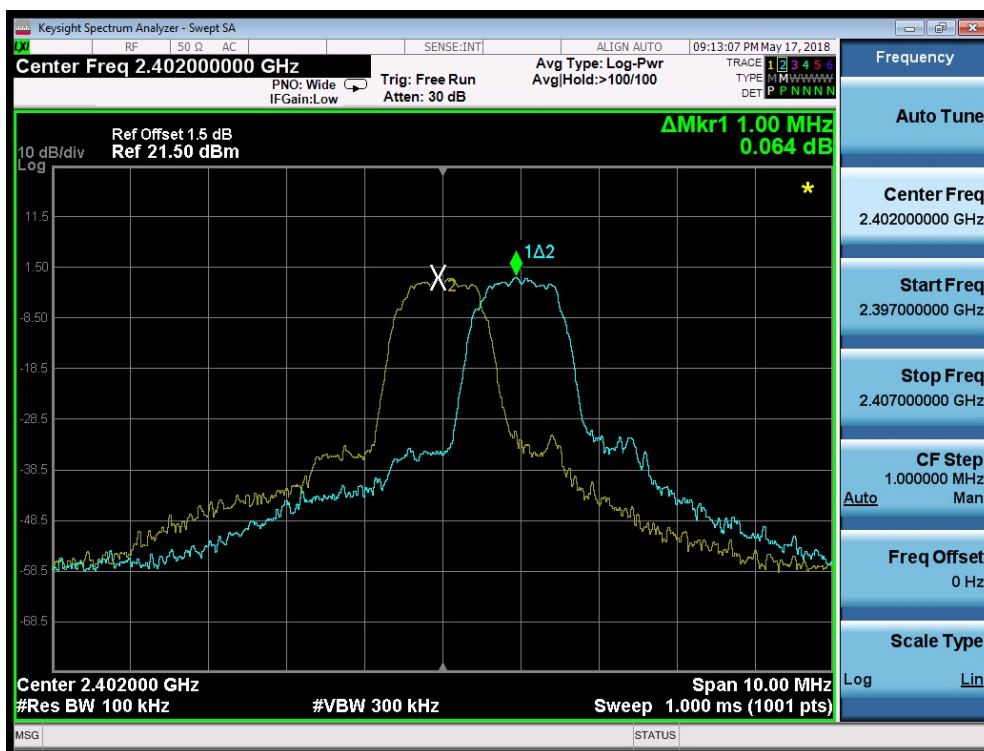
Channel 78 (2480MHz)



Product Name	: EZ-BT WICED Module with Mesh	Power	: AC 120V/60Hz
Test Mode	: Mode 3	Test Site	: TR-8
Test Date	: 2018.05.17	Test Engineer	: Tommie

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	917.3	Pass
39	2441	1000	919.3	Pass
78	2480	1000	918.0	Pass

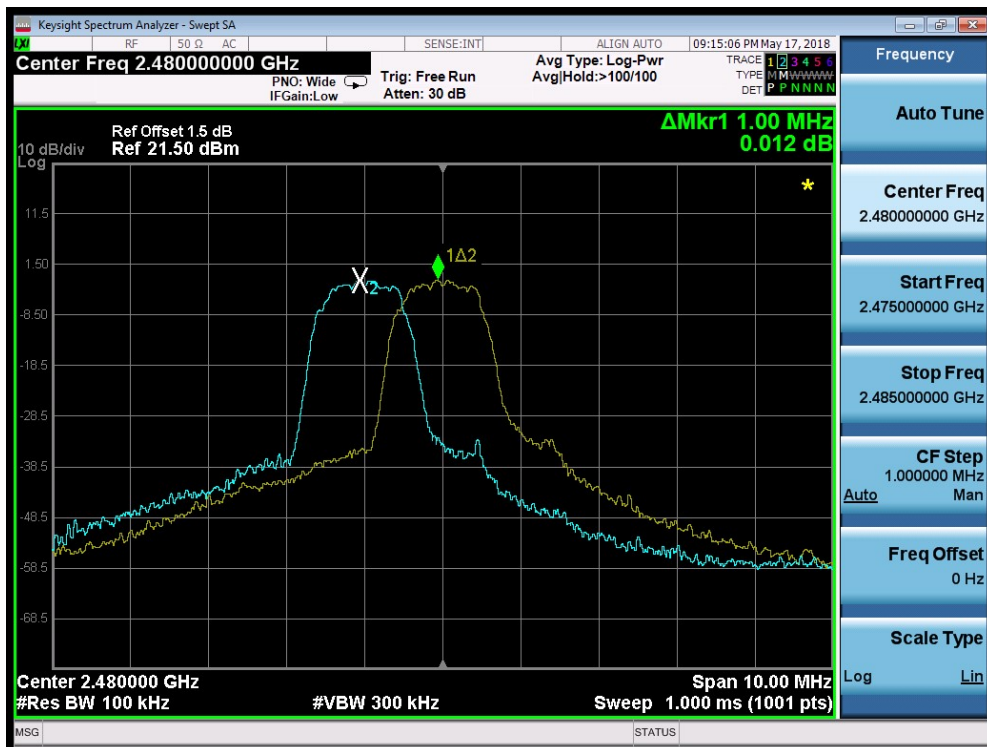
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



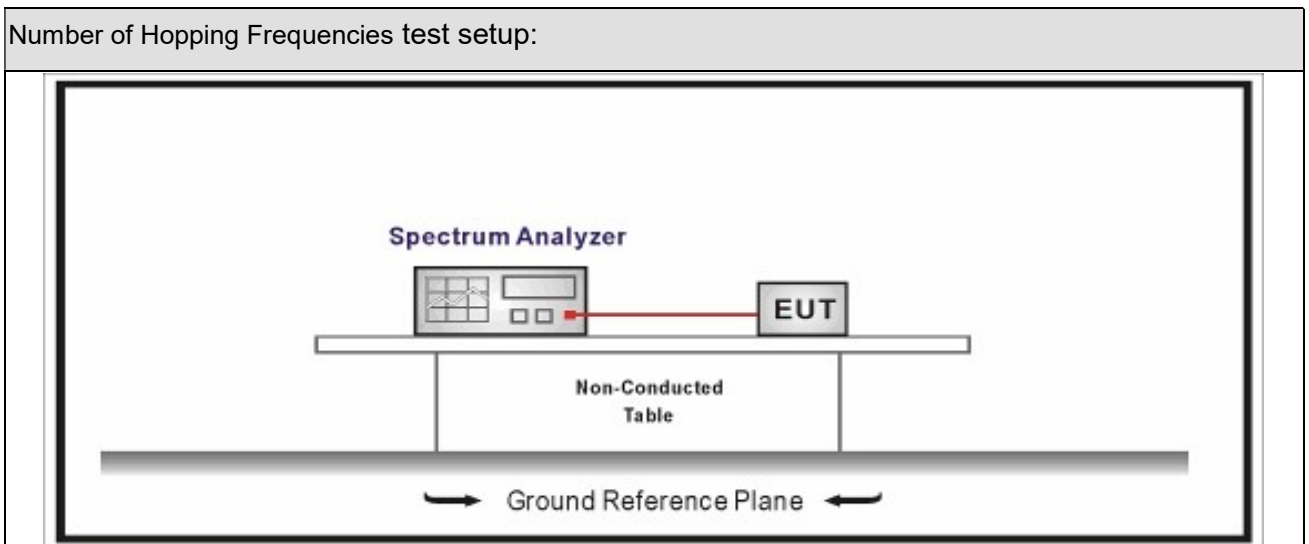
7. Number of Hopping Frequencies

7.1. Test Equipment

Number of Hopping Frequencies / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

7.2. Test Setup



7.3. Limit

Carrier Frequency Separation	
<input checked="" type="checkbox"/>	For frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies.
<input type="checkbox"/>	For frequency hopping systems operating in 902-928 MHz band, if the 20 dB bandwidth of the hopping channel is less than 250 kHz, shall use at least 50 hopping frequencies.
<input type="checkbox"/>	For frequency hopping systems operating in 902-928 MHz band, if the 20 dB bandwidth of the hopping channel is higher than 250 kHz, shall use at least 25 hopping frequencies.
<input type="checkbox"/>	For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

7.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	7.8.3	Number of Hopping Frequencies

7.5. Uncertainty

The measurement uncertainty is defined as ± 1 kHz