TEST REPORT

Application No.:	HKEM2005000448AT
Applicant:	BINATONE ELECTRONIC INTERNATIONAL LIMITED
Address of Applicant:	FCC Address 1: 25/F, Guangdong Investment Tower, 148 Connaught Road, Central, Sheung Wan, Hong Kong, China ISED Address 2: Flat 23A, 9 Des Voeux Road West Sheung Wan, Hong Kong, China
Equipment Under Test (EUT):	
EUT Name:	5" Video Baby Monitor (Baby Unit)
Model No.:	MBP50BU, MBP36XLBU
Additional model:	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
FCC ID:	VLJ-MBP36BXLBU
IC:	4522A- MBP36BXLBU
HVIN:	MBP36BXLBU
Standard(s) :	47 CFR Part 15, Subpart C 15.247 RSS-247 Issue 2: May 2017 RSS-Gen: Issue 5 Amdt 2019
Date of Receipt:	2020-05-15
Date of Test:	2020-09-01 to 2020-09-20
Date of Issue:	2020-10-12
Test Result:	Pass*

* In the configuration tested, the EUT complied with the standards specified above.

Law Man Kit
EMC Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		*2020-09-07*		*Original*

Authorized for issue by:				
				
		Leo Xu /Project Engineer		Date: 2020-09-07
				
		Law Man Kit /Reviewer		Date: 2020-09-07

2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Pass
Other requirements Frequency Hopping Spread Spectrum System Hopping Sequence	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.247(a)(1),(g),(h)	Pass

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.5	47 CFR Part 15, Subpart C 15.247(b)(1)	Pass
20dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.7	47 CFR Part 15, Subpart C 15.247(a)(1)	Pass
Carrier Frequencies Separation	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.2	47 CFR Part 15, Subpart C 15.247a(1)	Pass
Hopping Channel Number	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.3	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Pass
Dwell Time	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.4	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Pass
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.6	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.8	47 CFR Part 15, Subpart C 15.247(d)	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
Antenna Requirement	RSS-247 Issue 2, February 2017	N/A	RSS-Gen Section 6.8	Pass
Pseudorandom Frequency Hopping Sequence	RSS-247 Issue 2, February 2017	N/A	RSS-247 Section 5.1(a)	Pass

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at AC Power Line (150kHz-30MHz)	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 6.2	RSS-Gen Section 8.8	Pass
99% Bandwidth	RSS-247 Issue 2, February 2017	ANSI C63.10 Section 6.9.3	RSS-Gen Section 6.7	Pass
Conducted Peak Output Power	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 7.8.5	RSS-247 Section 5.4(b)	Pass
20dB Bandwidth	RSS-247 Issue 2, February 2017	ANSI C63.10 Section 6.9.2	RSS-247 Section 5.1(a)	Pass
Carrier Frequencies Separation	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 7.8.2	RSS-247 Section 5.1(b)	Pass
Hopping Channel Number	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 7.8.3	RSS-247 Section 5.1(d)	Pass
Dwell Time	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 7.8.4	RSS-247 Section 5.1(d)	Pass
Conducted Band Edges Measurement	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section7.8.6	RSS-247 Section 5.5	Pass
Conducted Spurious Emissions	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 7.8.8	RSS-247 Section 5.5	Pass
Radiated Emissions which fall in the restricted bands	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 6.10.5	Section 3.3 & RSS-Gen Section 8.10	Pass
Radiated Spurious Emissions	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 6.4&6.5&6.6	Section 3.3 & RSS-Gen Section 8.9	Pass
Frequency stability	RSS-247 Issue 2, February 2017	RSS-Gen Section 6.11	RSS-Gen Section 8.11	Pass

Note: Frequency stability requested in RSS GEN Section 8.1.1 has been complied since the result of band edge can demonstrate.

Declaration of EUT Family Grouping:

Item no.: MBP50BU, MBP36XLBU

According to the confirmation from the applicant, the above models are identical in all electrical aspects in relating to the functions. The differences are only the existence of the rechargeable battery (Li-ion 3.7V@1200).

Therefore, Model MBP36XLBU with rechargeable battery was selected for full test and partial test on model MBP50BU on Radiated emission in this report.

Abbreviation:

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application.

3 Contents

4 General Information

4.1 Details of E.U.T.

	Power supply:	Adaptor 1 model: BQ06A-0501000-U Input: AC 100-240V, 50/60Hz, 300mA Output: DC 5V, 1000mA Adaptor 2 model: MLF-A250501000CU Input: AC 100-240V, 50/60Hz, 300mA Output: DC 5V, 1000mA
	Test voltage:	AC 120V
	Cable:	Adaptor 1 Power Cable: 180cm unshielded 2-wires DC cable Adaptor 2 Power Cable: 175cm unshielded 2-wires DC cable
	Antenna Gain:	0 dBi
	Antenna Type:	Integrated antenna
	Channel Spacing:	2 MHz and 5MHz
	Modulation Type:	GFSK
	Number of Channels:	22
	Operation Frequency:	2402MHz to 2477MHz
	Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)
	SN Number:	A1
	Hardware Version:	V2.2
	Software Version:	00.01RC42
		Remark: Power level setting was not adjustable and fixed default through SW Version.

Frequency List

Channel Number	TX Freq (MHz)	Channel Number	TX Freq (MHz)
1	**2402**	12	2445
2	2404	13	2450
3	2406	14	2455
4	2408	15	2460
5	2410	16	2465
6	2415	17	2467
7	2420	18	2469
8	24245	19	2471
9	2430	20	2473
10	2435	21	2475
11	**2440**	**22**	**2477**

Remark: 1. Operation channel is total 22.
2. Testing Channels are highlighted in **bold**.

4.2 Description of Support Units

The EUT has been tested with corresponding accessories as below:

Supplied by client

Description	Manufacturer	Model No.	SN/Certificate NO
UART Test board	N/A	N/A	N/A
Test Software	T. Teranishi	Version 4.105	N/A

Supplied by SGS:

Description	Manufacturer	Model No.	SN/Certificate NO
NoteBook (EMC4)	Dell	P75F	N/A

4.3 Measurement Uncertainty

EMI

No.	Item	Measurement Uncertainty
1	Conduction emission	2.5dB (9kHz to 150kHz)
		2.6dB (150kHz to 30MHz)
2	Radiated emission	5.1dB (30MHz-1GHz)
		4.9dB (1GHz-6GHz)

RF

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10^{-8}
2	Duty cycle	± 0.37%
3	Occupied Bandwidth	± 3%
4	RF conducted power (30MHz-40GHz)	1.5dB
5	RF power density	1.5dB
6	Conducted Spurious emissions	1.5dB
7	RF Radiated power	5.1dB (below 1GHz)
		5.3dB (above 1GHz)
8	Radiated Spurious emission test	5.1dB (below 1GHz)
		5.3dB (above 1GHz)
9	Temperature test	± 1℃
10	Humidity test	± 3%
11	Supply voltages	± 1.5%
12	Time	± 3%

Remark:

The U_{lab} (lab Uncertainty) is less than U_{cispr} (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

According to decision rule based on Clause 4.2 of CISPR 16-4-2, the EUT complied with the standards specified above.

4.4 Test Location

All tests were performed at:

SGS Hong Kong Limited

Unit 2 and 3, G/F, Block A, Po Lung Centre,

11 Wang Chiu Road, Kowloon Bay, Kowloon, Hong Kong

Tel: +852 2305 2570 Fax: +852 2756 4480

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **HOKLAS (Lab Code: 009)**

SGS Hong Kong Limited has been accepted by HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a HOKLAS Accredited Laboratory, this laboratory meets the requirements of ISO/IEC 17025:2017 an it has been accredited for performing specific test as listed in the scope of accreditation within the test category of Electrical and Electronic Products.

- **IAS Accreditation (Lab Code: TL-187)**

SGS Hong Kong Limited has met the requirements of AC89, IAS Accreditation Criteria for Testing Laboratories, and has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories. This organization is accredited to provide the services specified in the scope of accreditation maintained on the IAS website (www.iasonline.org).

The report must not be used by the client to claim product certification, approval, or endorsement by IAS, NIST, or any agency of the Federal Government.

- **FCC Recognized Accredited Test Firm(CAB Registration No.: 514599)**

SGS Hong Kong Limited has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: HK0015, Test Firm Registration Number: 514599.

- **Industry Canada (Site Registration No.: 26103; CAB Identifier No.: HK0015)**

SGS Hong Kong Limited has been recognized by Department of Innovation, Science and Economic Development (ISED) Canada as a wireless testing laboratory. The acceptance letter from the ISED is maintained in our files. CAB Identifier No: HK0015, Site Registration Number: 26103.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

Minimum 6dB Bandwidth, Conducted Peak Output Power, Power Spectrum Density, Conducted Band Edges Measurement, Conducted Spurious Emissions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
SMBV100A VECTOR SIGNAL GENERATOR	Rohde & Schwarz	SMBV100A	E234	2020/08/31	2021/08/30
FSV40 SIGNAL ANALYZER 40GHz	Rohde & Schwarz	FSV40	E235	2020/08/31	2021/08/30
Wireless Conn. Tester (CMW)	Rohde & Schwarz	CMW270	E240	CAL IN USE	CAL IN USE
OSP	Rohde & Schwarz	OSP-B157W8	E242	2020/08/31	2021/08/30
Cable	Rohde & Schwarz	J12J103539-00-2	E239	2019/09/22	2020/09/21
WMS32 Test Software	R&S	Version 10	N/A	--	--

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMI Test Receiver 9kHz to 3.6GHz	Rohde & Schwarz	ESR3 / 102326	E231	2020/09/16	2021/09/15
Signal Generator	Rohde & Schwarz	SMT03	E177	2020/5/11	2021/5/10
Artificial Mains Network (LISN)	Schwarzbeck	NSLK 8127 / 8127312	TE10	2020/5/11	2021/5/10
Impulse Limiter	Rohde & Schwarz	ESH-3-Z2 / 357881052	TE36	2020/5/11	2021/5/10
EMC32 Test Software	R&S	Version 10	N/A	--	--

Radiated Spurious Emissions (30MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	ChamPro	N/A	E229	2020/08/09	2021/08/08
Coaxial Cable	SGS	N/A	E167	2020/7/20	2021/7/19
EMI Test Receiver 9kHz to 3.6GHz	Rohde & Schwarz	ESR3 / 102326	E231	2020/09/16	2021/09/15
TRILOG Super Broadb. Test Antenna, (25) 30-1000 (2	Schwarzbeck	VULB 9168	E264	2018/10/20	2020/10/19
Boresight Mast Controller	ChamPro	AM-BS-4500-E	E237	--	--
Turntable with Controller	ChamPro	EM1000	E238	--	--
EMC32 Test Software	R&S	Version 10	N/A	--	--

Radiated Spurious Emissions (above 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	ChamPro	N/A	E229	2020/08/09	2021/08/08
Coaxial Cable	SGS	N/A	E167	2020/07/20	2021/07/19
EMI Test Receiver 9kHz to 3.6GHz	Rohde & Schwarz	ESR3 / 102326	E231	2020/09/16	2021/09/15
Signal and Spectrum Analyzer 2Hz - 26.5GHz	Rohde & Schwarz	FSW26	E296	2019/10/29	2020/10/28
Spectrum Analyzer 9kHz - 30GHz	Rohde & Schwarz	FSP30	E204	2020/05/11	2021/05/10
Horn Antenna 1 - 18GHz	Schwarzbeck	BBHA9120D	E211	2020/01/30	2022/01/29
Horn Antenna 15 - 40GHz	Schwarzbeck	BBHA9170	E212	2020/01/30	2022/01/29
Preamplifier 33dB, 1 - 18GHz	Schwarzbeck	BBV9718	E214	2020/04/14	2021/04/12
Preamplifier 33dB, 18 - 26.5GHz	Schwarzbeck	BBV9719	E215	2019/04/24	2021/04/23
Highpass Filter 3.5-26.5GHz	Wainwright	WHNX3.5/26.5 G-6SS	E205	2019/4/24	2021/4/23
Band Reject Filter 2.4-2.5GHz	Wainwright	WRCJV 2400/2500-2100	E206	2019/04/24	2021/04/23
RF cable SMA to SMA 10000mm	HUBER+SUHNER	SF104-26.5/2*11SMA 45	E207-1	2019/09/26	2020/09/25
Boresight Mast Controller	ChamPro	AM-BS-4500-E	E237	--	--
Turntable with Controller	ChamPro	EM1000	E238	--	--
EMC32 Test Software	R&S	Version 10	N/A	--	--

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Digital temperature & humidity data logger	SATO	SK-L200TH II	E232	2019/10/28	2020/10/27
Electronic Digital Thermometer with Hygrometer	nil	2074/2075	E159	2019/10/28	2020/10/27
Barometer with digital thermometer	SATO	7612-00	E218	2020/04/23	2021/04/22
Conditional Chamber	Zhong Zhi Testing Instruments	CZ-E-608D	E216	2020/8/31	2021/8/30

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

6.1.2 Conclusion

Standard Requirement:

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, 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.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0dBi.

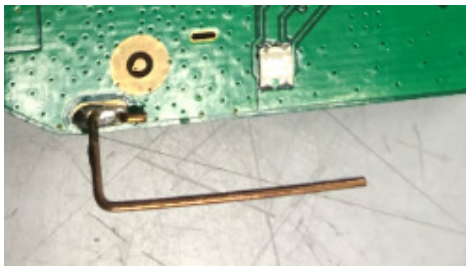


Photo of antenna refer to Appendix – Internal photo.

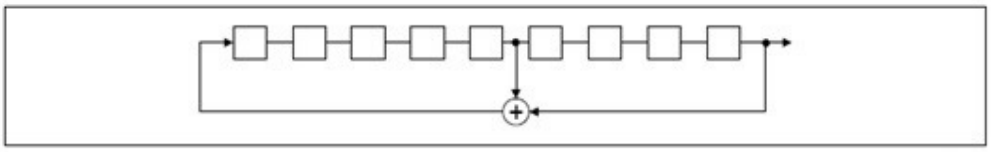
6.2 Pseudorandom Frequency Hopping Sequence

6.2.1 Test Requirement:

FCC Part 15 Subpart C Section 15.247(a)(1)

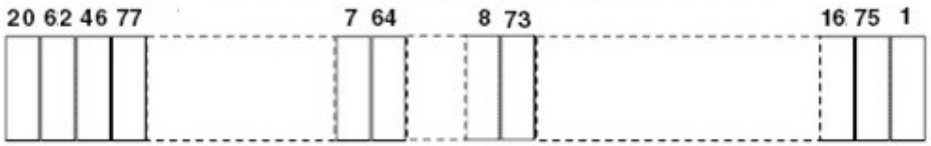
RSS-247 Section 5.1(a)

6.2.2 Test Setup Diagram



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



6.2.3 Conclusion

Standard Requirement:

The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: 29 -1 = 511 bits
- Longest sequence of zeros: 8 (non-inverted signal)

Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:

Each frequency used equally on the average by each transmitter.

According to Technical Specification, the receivers are designed to have input and IF bandwidths that match the hopping channel bandwidths of any transmitters and shift frequencies in synchronization with the transmitted signals.

According to Technical specification, the system incorporates with an adaptive system to detect other user within the spectrum band so that it individually and independently to avoid hopping on the occupied channels.

The system is designed not have the ability to coordinated with other FHSS System in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitter.

6.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207, RSS-Gen Section 8.8

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		

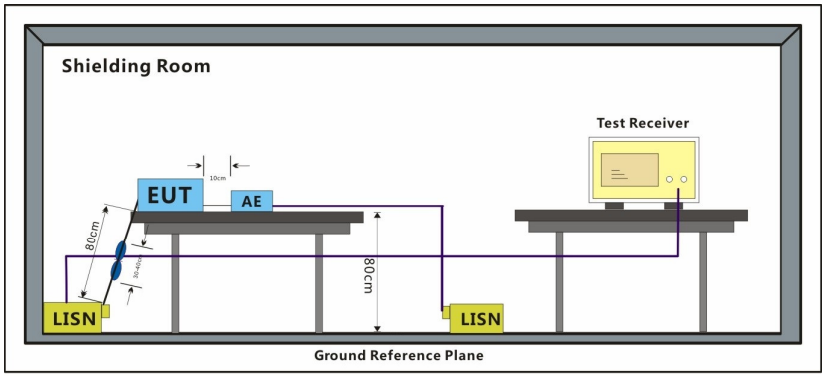
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 51.2 % RH :

Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.1.2 Test Setup Diagram



6.1.3 Measurement Procedure and Data

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

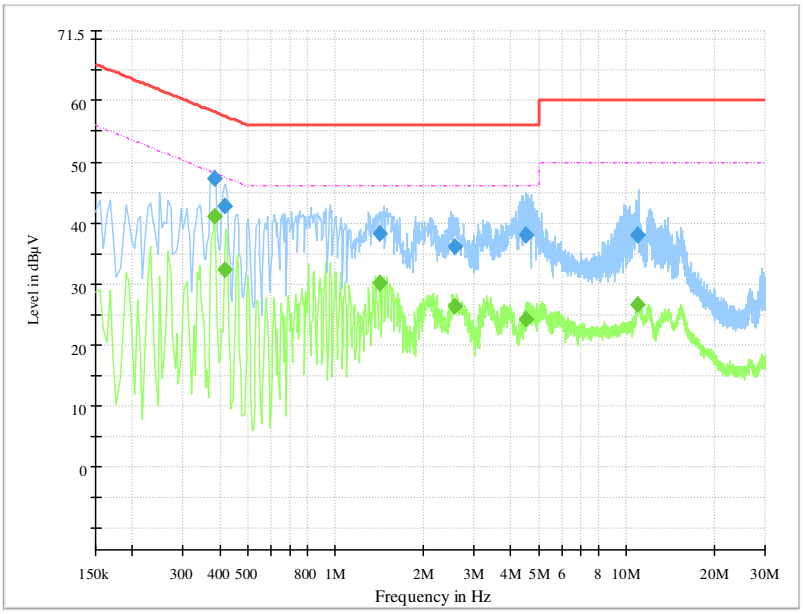
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

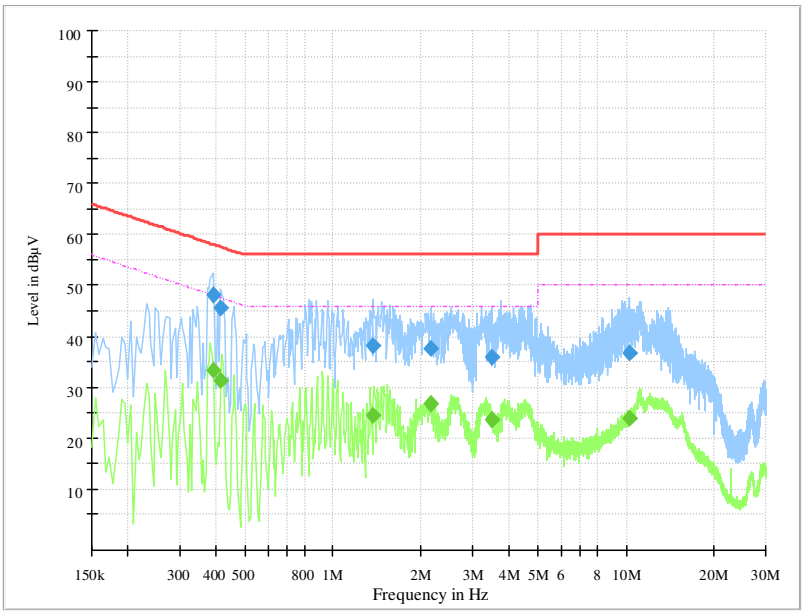
Remark: LISN=Read Level+ Cable Loss+ LISN Factor

Adaptor: BQ06A-0501000-U
Mode:b;
Line: Live Line



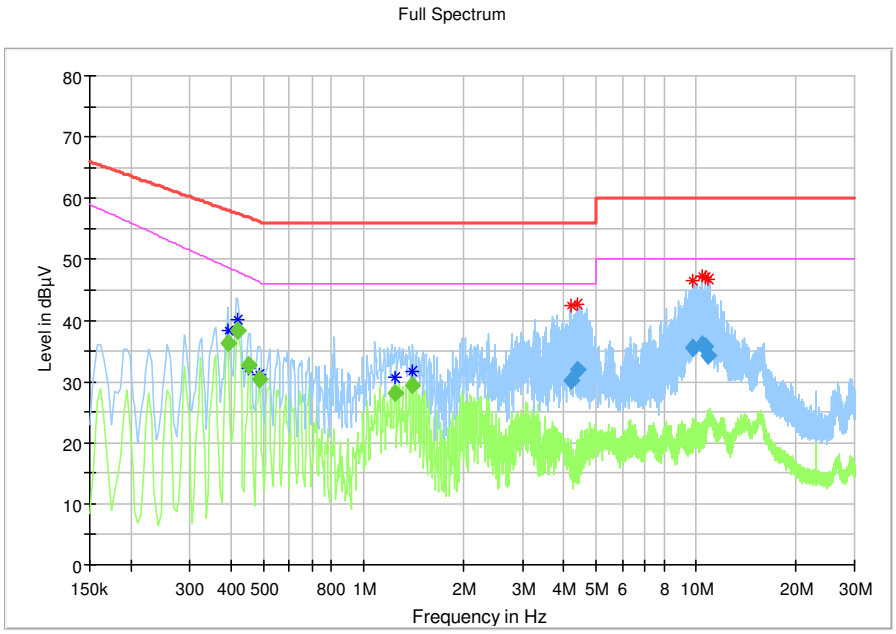
Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)	Result
0.384000	---	41.1	48.2	7.1	10.2	Pass
0.384000	47.2	---	58.2	11.0	10.2	Pass
0.415500	---	32.2	47.5	15.3	10.2	Pass
0.415500	42.7	---	57.5	14.8	10.2	Pass
1.419000	---	30.3	46.0	15.7	10.2	Pass
1.419000	38.2	---	56.0	17.8	10.2	Pass
2.566500	---	26.3	46.0	19.7	10.2	Pass
2.566500	36.1	---	56.0	19.9	10.2	Pass
4.519500	---	24.2	46.0	21.8	10.3	Pass
4.519500	37.9	---	56.0	18.1	10.3	Pass
10.936500	---	26.7	50.0	23.3	10.5	Pass
10.936500	38.1	---	60.0	21.9	10.5	Pass

Mode:b;
Line: Neutral Line



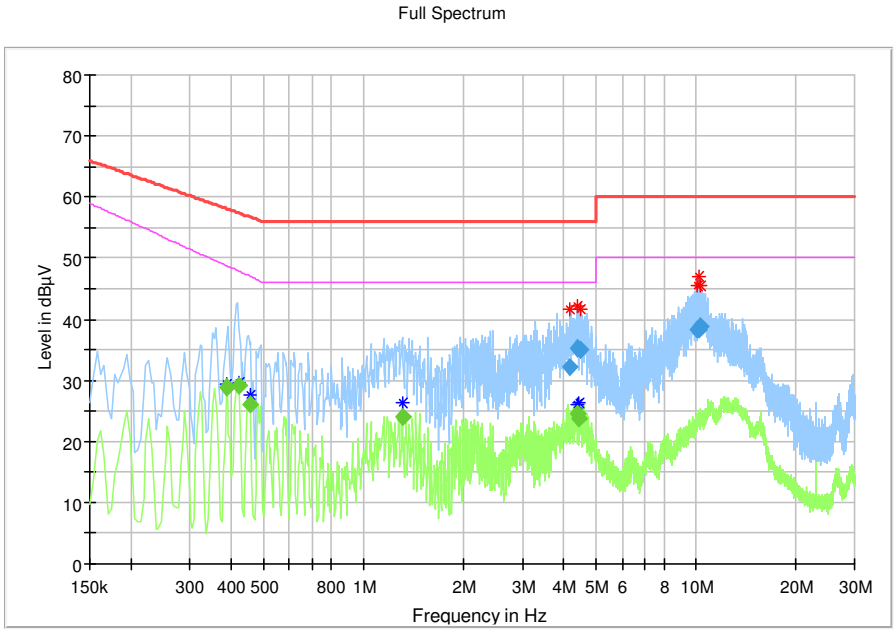
Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)	Result
0.388500	---	33.2	48.1	14.9	10.2	Pass
0.388500	48.1	---	58.1	10.0	10.2	Pass
0.415500	---	31.3	47.5	16.2	10.2	Pass
0.415500	45.7	---	57.5	11.8	10.2	Pass
1.369500	---	24.4	46.0	21.6	10.2	Pass
1.369500	38.1	---	56.0	17.9	10.2	Pass
2.148000	---	26.8	46.0	19.2	10.2	Pass
2.148000	37.5	---	56.0	18.5	10.2	Pass
3.475500	---	23.8	46.0	22.2	10.2	Pass
3.475500	35.9	---	56.0	20.1	10.2	Pass
10.252500	---	23.9	50.0	26.1	10.4	Pass
10.252500	36.7	---	60.0	23.3	10.4	Pass

Adaptor: MLF-A250501000CU
Mode:b; Line: Live Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)	Result
0.390000	---	36.2	48.7	12.5	10.1	Pass
0.418000	---	38.4	47.9	9.5	10.1	Pass
0.450000	---	32.7	47.1	14.4	10.1	Pass
0.486000	---	30.4	46.3	15.9	10.1	Pass
1.242000	---	28.2	46.0	17.8	10.2	Pass
1.406000	---	29.5	46.0	16.5	10.2	Pass
4.194000	30.2	---	56.0	25.8	10.3	Pass
4.414000	31.8	---	56.0	24.2	10.3	Pass
9.802000	35.6	---	60.0	24.4	10.5	Pass
10.442000	36.0	---	60.0	24.0	10.6	Pass
10.650000	35.9	---	60.0	24.1	10.6	Pass
10.906000	34.4	---	60.0	25.6	10.7	Pass

Mode:b;
Line: Neutral Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)	Result
0.386000	---	28.9	48.8	19.9	10.0	Pass
0.422000	---	29.1	47.8	18.7	10.0	Pass
0.454000	---	26.1	47.0	20.9	10.0	Pass
1.306000	---	24.1	46.0	21.9	10.3	Pass
4.166000	32.2	---	56.0	23.8	10.5	Pass
4.374000	---	24.6	46.0	21.4	10.5	Pass
4.406000	35.3	---	56.0	20.7	10.5	Pass
4.442000	---	23.9	46.0	22.1	10.6	Pass
4.502000	35.1	---	56.0	20.9	10.6	Pass
10.066000	38.5	---	60.0	21.5	10.9	Pass
10.194000	38.3	---	60.0	21.7	10.9	Pass
10.290000	38.9	---	60.0	21.1	10.9	Pass

6.2 99% Bandwidth

Test Requirement RSS-Gen Section 6.7

Test Method: ANSI C63.10 Section 6.9.3

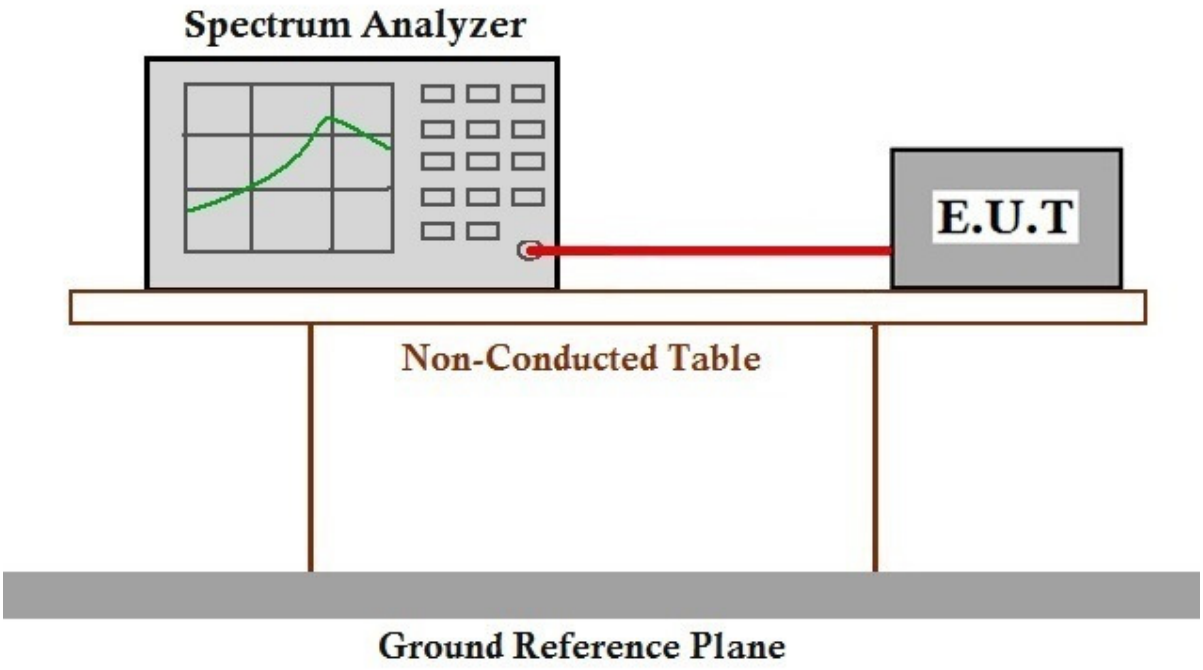
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 51.2 % RH :

Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.2.2 Test Setup Diagram



6.2.3 Measurement Procedure and Data

The detailed test data see section 9: Appendix

6.3 Conducted Peak Output Power

Test Requirement: 47 CFR Part 15, Subpart C 15.247:2019(b)(1) & 15.247(b)(3), RSS-247 Section 5.4(b)

Test Method: ANSI C63.10 (2013) Section 7.8.5

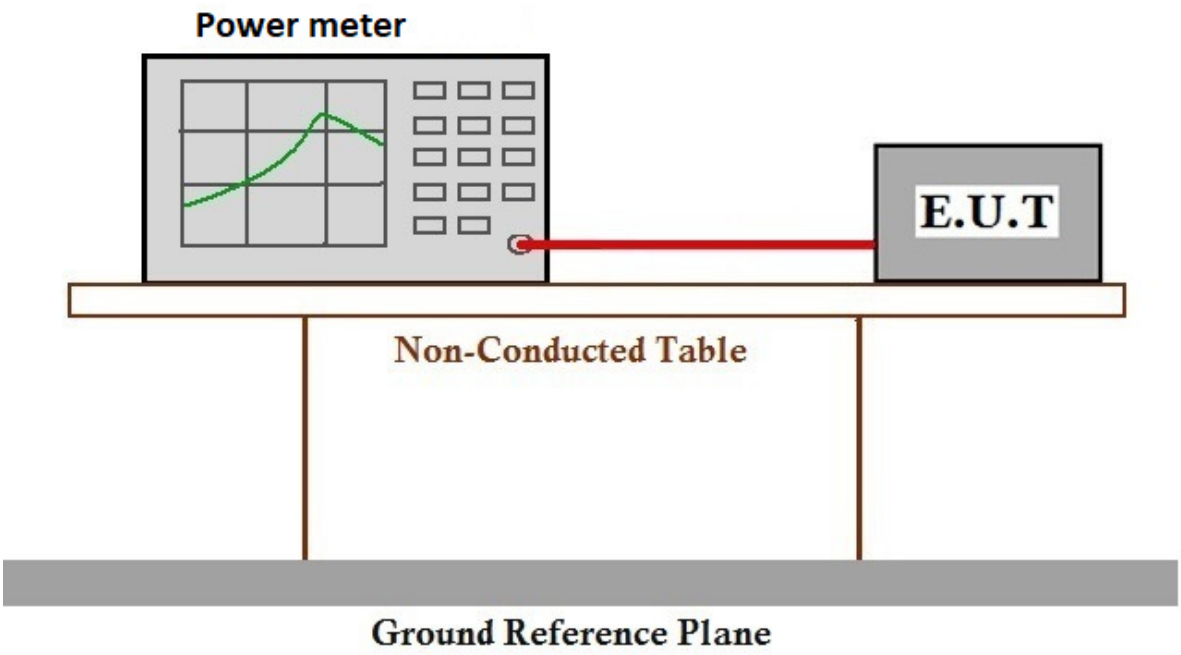
6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 51.2 % RH :

Test mode: a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.3.2 Test Setup Diagram



6.3.3 Measurement Procedure and Data

The detailed test data see section 9: Appendix

6.4 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215, RSS-247 Section 5.1(a)

Test Method: ANSI C63.10 Section 6.9.2

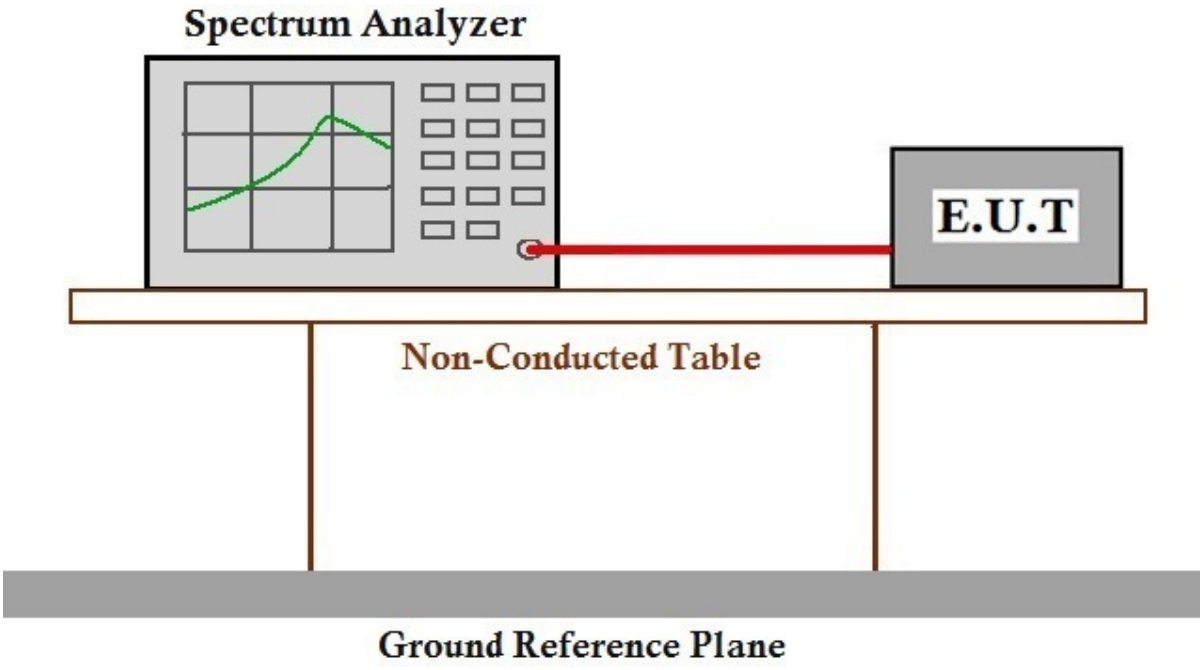
6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.1 °C Humidity: 51.2 % RH :

Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.4.2 Test Setup Diagram



6.4.3 Measurement Procedure and Data

The detailed test data see section 9: Appendix

6.5 Carrier Frequencies Separation

Test Requirement	47 CFR Part 15, Subpart C 15.247:2019a(1), RSS-247 Section 5.1(b)
Test Method:	ANSI C63.10 (2013) Section 7.8.2
Limit:	2/3 of the 20dB bandwidth base on the transmission power is less than 0.125W

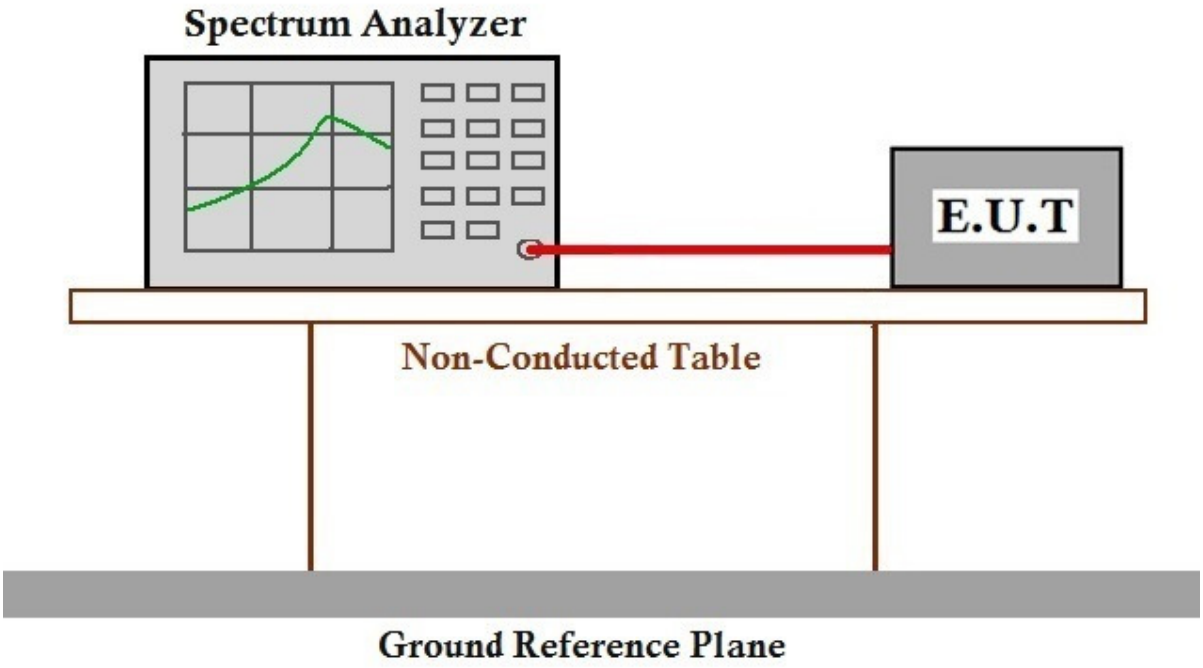
6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 51.21 % RH :

Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.5.2 Test Setup Diagram



6.5.3 Measurement Procedure and Data

The detailed test data see section 9: Appendix

6.6 Hopping Channel Number

Test Requirement 47 CFR Part 15, Subpart C 15.247:2019a(1)(iii), RSS-247 Section 5.1(d)

Test Method: ANSI C63.10 (2013) Section 7.8.3

Limit:

Frequency range(MHz)	Number of hopping channels (minimum)
902-928	50 for 20dB bandwidth <250kHz
	25 for 20dB bandwidth ≥250kHz
2400-2483.5	15
5725-5850	75

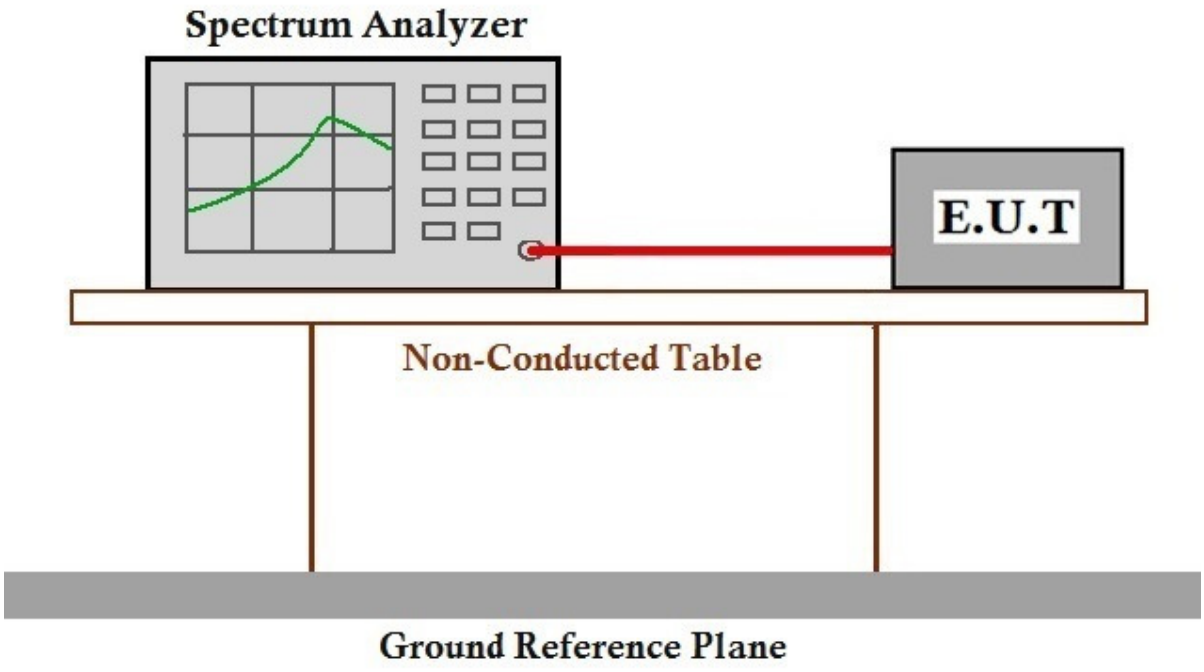
6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 51.2 % RH :

Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.6.2 Test Setup Diagram



6.6.3 Measurement Procedure and Data

The detailed test data see section 9: Appendix

6.7 Dwell Time

Test Requirement 47 CFR Part 15, Subpart C 15.247:2019a(1)(iii), RSS-247 Section 5.1(d)

Test Method: ANSI C63.10 (2013) Section 7.8.4

Limit:

Frequency(MHz)	Limit
902-928	0.4S within a 20S period(20dB bandwidth<250kHz)
	0.4S within a 10S period(20dB bandwidth≥250kHz)
2400-2483.5	0.4S within a period of 0.4S multiplied by the number of hopping channels
5725-5850	0.4S within a 30S period

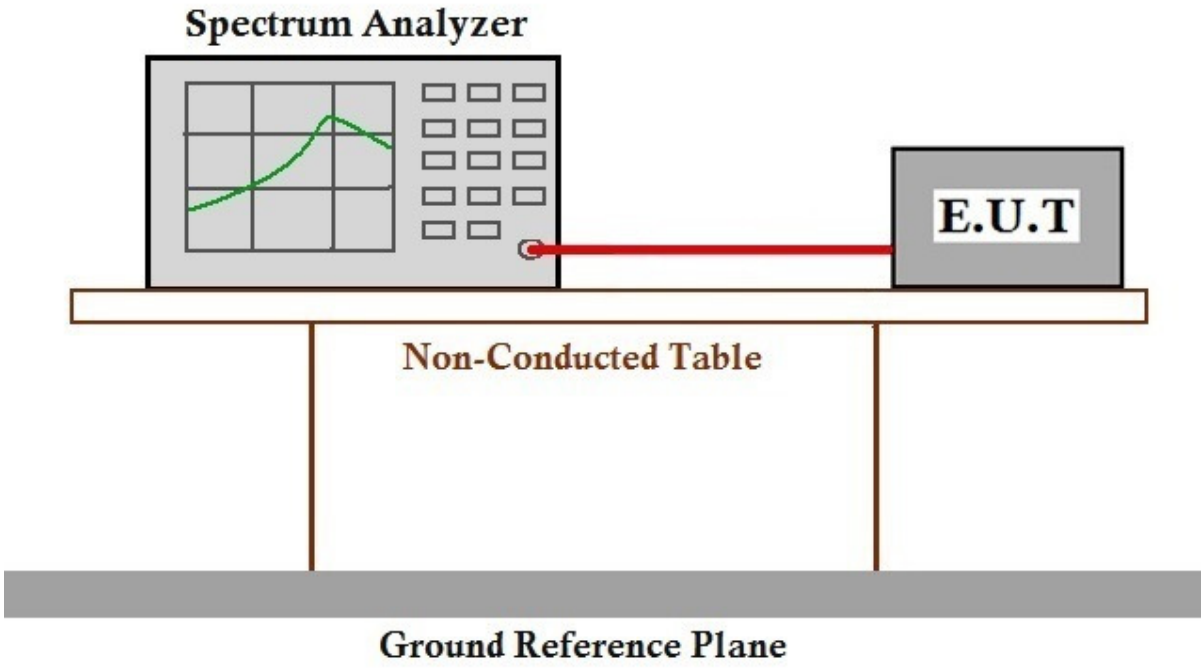
6.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 51.2 % RH :

Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.7.2 Test Setup Diagram



6.7.3 Measurement Procedure and Data

The detailed test data see section 9: Appendix

6.8 Conducted Band Edges Measurement

Test Requirement	47 CFR Part 15, Subpart C 15.247:2019(d), RSS-247 Section 5.5
Test Method:	ANSI C63.10 (2013) Section7.8.6
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)

FCC Part15 C Section 15.205 Restricted bands of operation.

(a) Except as shown in paragraph (d) of this section. only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]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	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	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			

RSS-Gen Section 8.10 Restricted bands of operation.

Restricted frequency bands, identified in table 7, are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following conditions related to the restricted frequency bands apply:

(a) The transmit frequency, including fundamental components of modulation, of licence-exempt radio

apparatus shall not fall within the restricted frequency bands listed in table 7 except for apparatus compliant with RSS-287, *Emergency Position Indicating Radio Beacons (EPIRB), Emergency Locator Transmitters (ELT), Personal Locator Beacons (PLB), and Maritime Survivor Locator Devices (MSLD)*.
(b) Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table 5 and table 6.
(c) Unwanted emissions that do not fall within the restricted frequency bands listed in table 7 shall comply either with the limits specified in the applicable RSS or with those specified in table 5 and table 6.

Table 7 – Restricted frequency bands* MHz	**MHz**	**GHz**
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	* Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138	--	

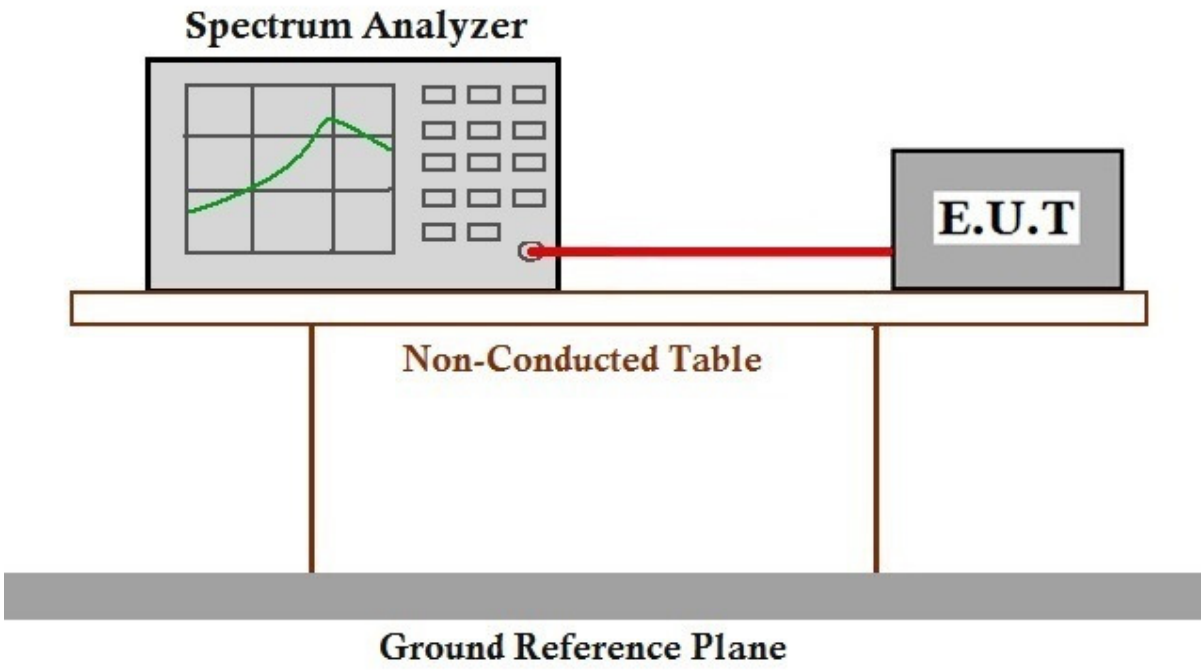
6.8.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 51.1 % RH :

Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.8.2 Test Setup Diagram



6.8.3 Measurement Procedure and Data

The detailed test data see section 9: Appendix

6.9 Conducted Spurious Emissions

Test Requirement	47 CFR Part 15, Subpart C 15.247:2019(d), RSS-247 Section 5.5
Test Method:	ANSI C63.10 (2013) Section 7.8.8
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

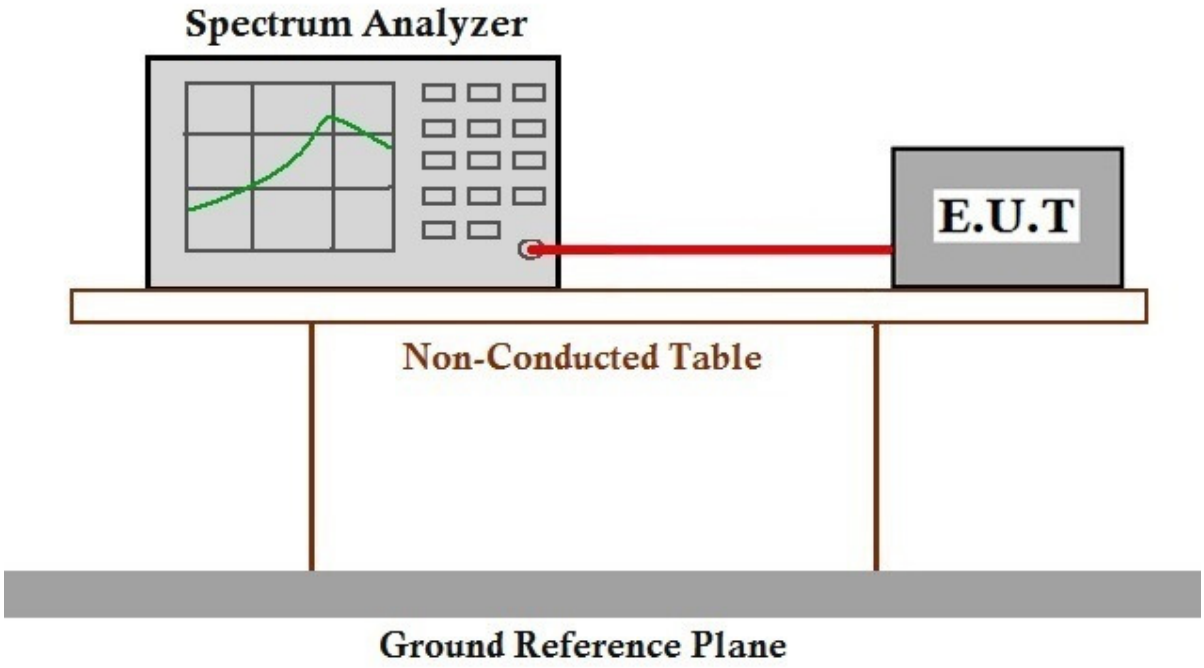
6.9.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 51.2 % RH :

Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.9.2 Test Setup Diagram



6.9.3 Measurement Procedure and Data

The detailed test data see section 9: Appendix

6.10 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.247(d), Section 3.3 & RSS-Gen Section 8.10

Test Method: ANSI C63.10 (2013) Section 6.10.5

Limit:

Table 5 – General field strength limits at frequencies above 30 MHz

Frequency (MHz)	Field strength (μ V/m at 3 m)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Table 6 – General field strength limits at frequencies below 30 MHz

Frequency	Magnetic field strength (H-Field) (μ A/m)	Measurement distance (m)
9 - 490 kHz 1	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

6.10.1 E.U.T. Operation

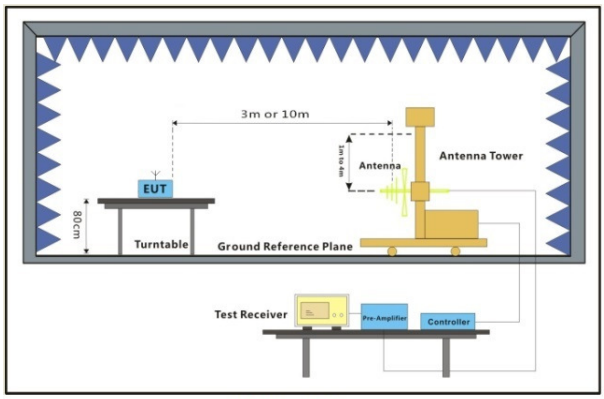
Operating Environment:

Temperature: 23.1 °C Humidity: 51.4 % RH :

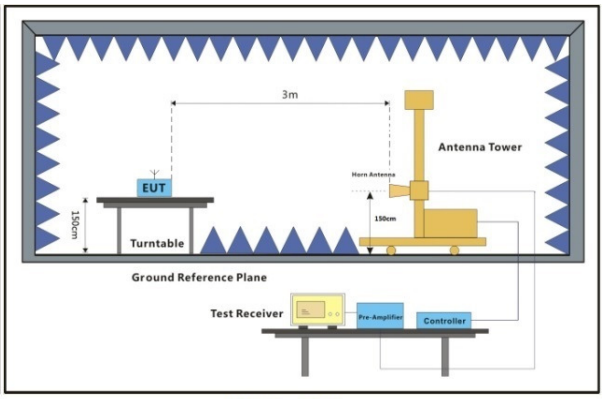
Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

All adapters were tested, only found BQ06A-0501000-U is the worst case and recorded in the report.

6.10.2 Test Setup Diagram



30MHz-1GHz



Above 1GHz

6.10.3 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

6.10.4 Measurement Procedure and data

Frequency (MHz)	Antenna Polarization	Emission Level (dBµV/m)		Limit (dBµV/m)		Remark
		Peak	Average	Peak	Average	
2390.000	H	51.7	/	74.0	54.0	Pass
2483.500	H	51.5	/	74.0	54.0	Pass
2390.000	V	51.3	/	74.0	54.0	Pass
2483.500	V	52.0	/	74.0	54.0	Pass

6.11 Radiated Spurious Emissions

Test Requirement Section 3.3 & RSS-Gen Section 8.9
Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6
Limit:

Table 5 – General field strength limits at frequencies above 30 MHz

Frequency (MHz)	**Field strength (μ V/m at 3 m)**
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Table 6 – General field strength limits at frequencies below 30 MHz

Frequency	**Magnetic field strength (H-Field) (μ A/m)**	**Measurement distance (m)**
9 - 490 kHz 1	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

6.11.1 E.U.T. Operation

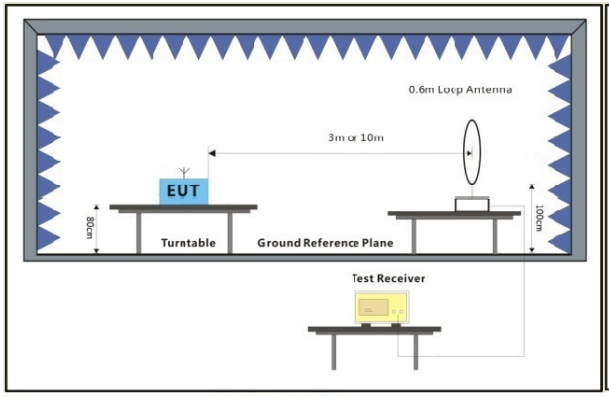
Operating Environment:

Temperature: 22.3 °C Humidity: 52.3 % RH :

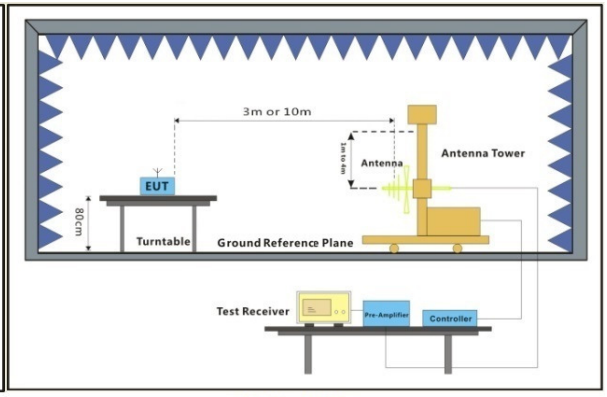
Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

For radiated emission above 1GHz: All adapters were tested, only found BQ06A-0501000-U is the worst case and recorded in the report.

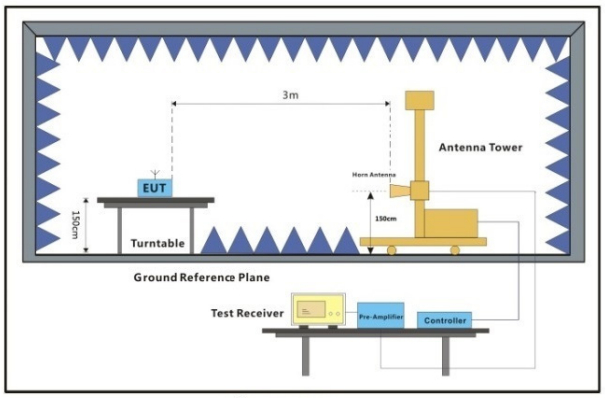
6.11.2 Test Setup Diagram



Below 30MHz



30MHz-1GHz



Above 1GHz

6.11.3 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

Remark:

1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

3) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

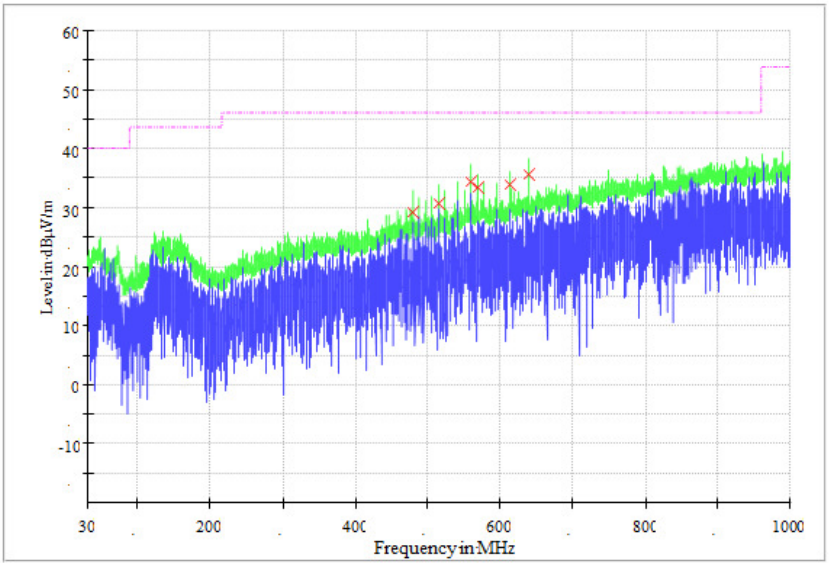
4) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

Remark:

1. For radiated emission test: Correction Factor = Antenna Factor + Cable Loss.
2. For conducted emission test: Correction Factor = LISN Factor + Cable Loss.
3. Margin = Limit – Reading
4. Pol = Polarization

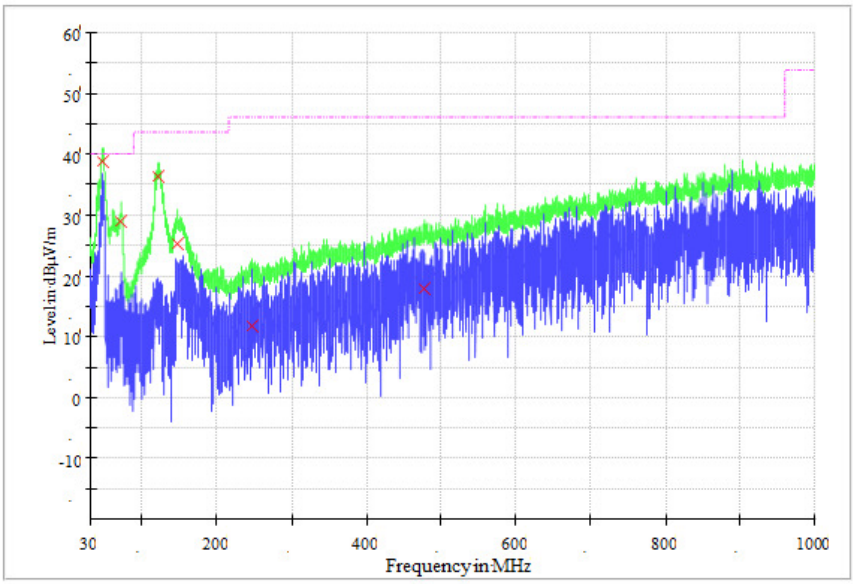
Radiated emission below 1GHz
For model: MBP36XL

Adaptor: BQ06A-0501000-U
Mode: a
Polarization: Horizontal
Quasi-peak measurement:



Frequency (MHz)	QuasiPeak (dBµV/m)	Pol.	Corr. (dB/m)	Margin (dB)	Limit (dBµV/m)	Result
480.000000	29.1	H	19.0	16.9	46.0	Pass
515.600000	30.6	H	19.2	15.4	46.0	Pass
560.000000	34.4	H	20.7	11.6	46.0	Pass
568.920000	33.4	H	21.0	12.6	46.0	Pass
613.360000	33.8	H	21.5	12.2	46.0	Pass
640.040000	35.5	H	22.3	10.5	46.0	Pass

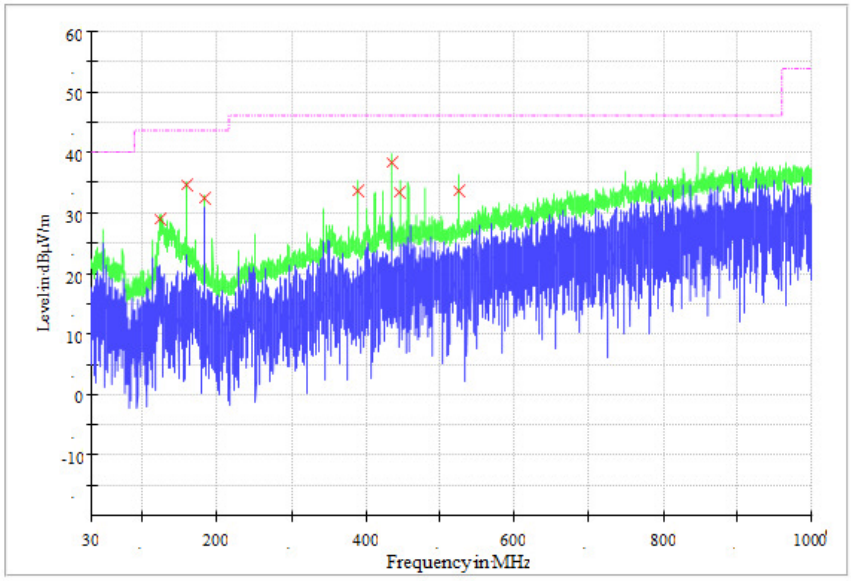
Mode: a
Polarization: Vertical
Quasi-peak measurement:



Frequency (MHz)	QuasiPeak (dBµV/m)	Pol.	Corr. (dB/m)	Margin (dB)	Limit (dBµV/m)	Result
46.393000	38.8	V	14.5	1.2	40.0	Pass
71.225000	29.0	V	11.2	11.0	40.0	Pass
122.538000	36.4	V	12.2	7.1	43.5	Pass
148.146000	25.2	V	14.1	18.3	43.5	Pass
247.086000	11.8	V	12.8	34.2	46.0	Pass
478.625000	17.9	V	18.9	28.1	46.0	Pass

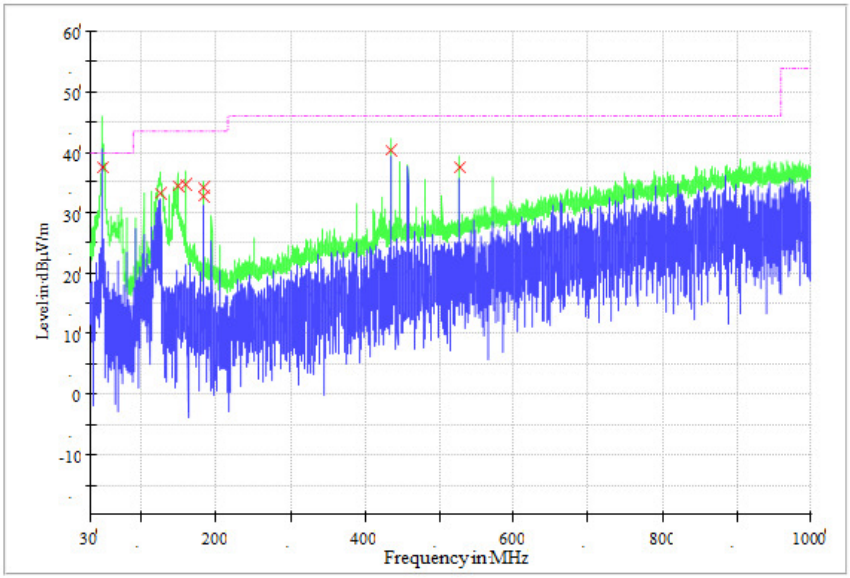
For model: MBP50

Adaptor: BQ06A-0501000-U
Mode:a;
Polarization: Horizontal
Quasi-peak measurement:



Frequency (MHz)	QuasiPeak (dBµV/m)	Pol.	Corr. (dB/m)	Margin (dB)	Limit (dBµV/m)	Result
159.980000	34.6	H	14.6	8.9	43.5	Pass
182.872000	32.3	H	11.8	11.2	43.5	Pass
388.609000	33.5	H	16.4	12.5	46.0	Pass
434.296000	38.2	H	17.3	7.8	46.0	Pass
445.742000	33.3	H	18.0	12.7	46.0	Pass
525.767000	33.6	H	19.5	12.4	46.0	Pass

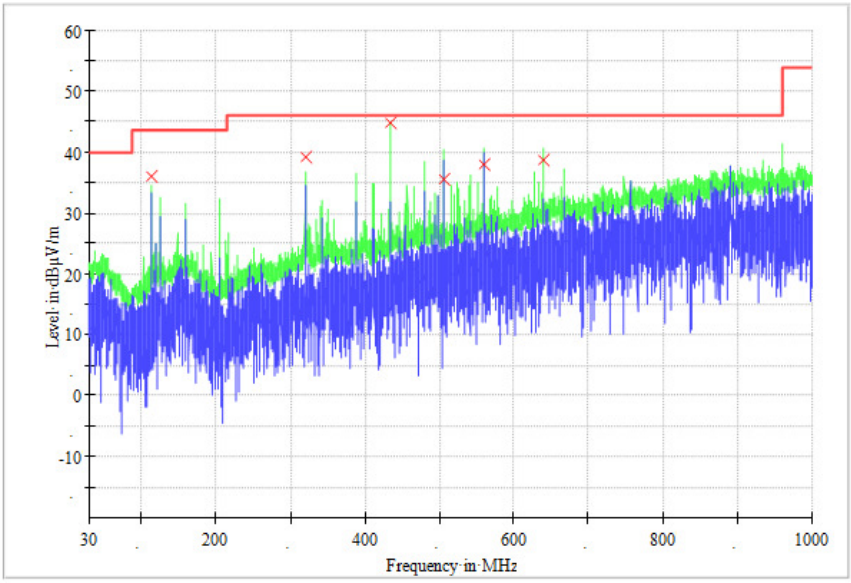
Mode:a;
Polarization: Vertical
Quasi-peak measurement:



Frequency (MHz)	QuasiPeak (dBµV/m)	Pol.	Corr. (dB/m)	Margin (dB)	Limit (dBµV/m)	Result
45.617000	37.5	V	14.5	2.5	40.0	Pass
148.534000	34.4	V	14.2	9.1	43.5	Pass
159.980000	34.7	V	14.6	8.8	43.5	Pass
182.872000	34.1	V	11.8	9.4	43.5	Pass
434.296000	40.4	V	17.3	5.6	46.0	Pass
525.767000	37.4	V	19.5	8.6	46.0	Pass

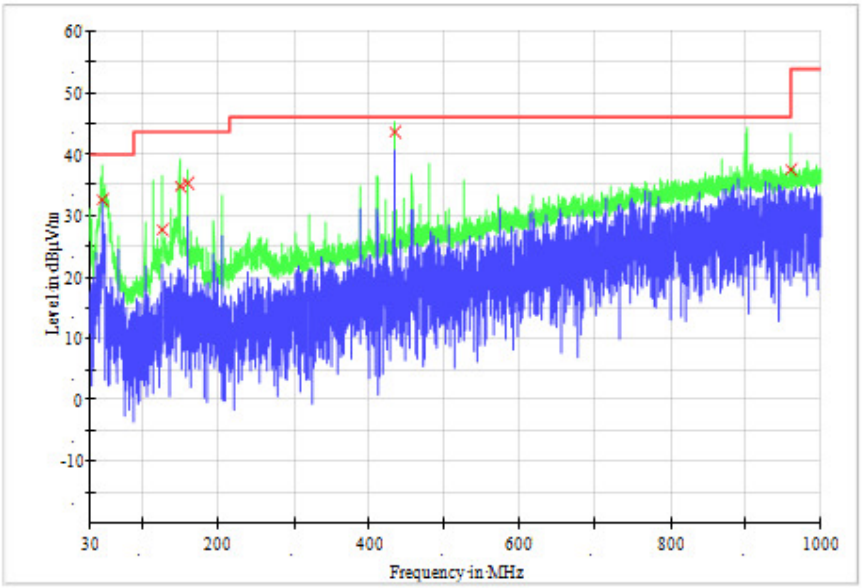
For model: MBP36XL

Adaptor: MLF-A250501000CU
Mode:a; Polarization:Horizontal
Quasi-peak measurement:



Frequency (MHz)	QuasiPeak (dBµV/m)	Pol.	Corr. (dB/m)	Margin (dB)	Limit (dBµV/m)	Result
114.293000	36.0	H	11.4	7.5	43.5	Pass
320.030000	39.2	H	14.9	6.8	46.0	Pass
434.296000	44.9	H	17.3	1.1	46.0	Pass
506.658000	35.6	H	19.1	10.4	46.0	Pass
560.008000	38.1	H	20.7	7.9	46.0	Pass
640.033000	38.7	H	22.3	7.3	46.0	Pass

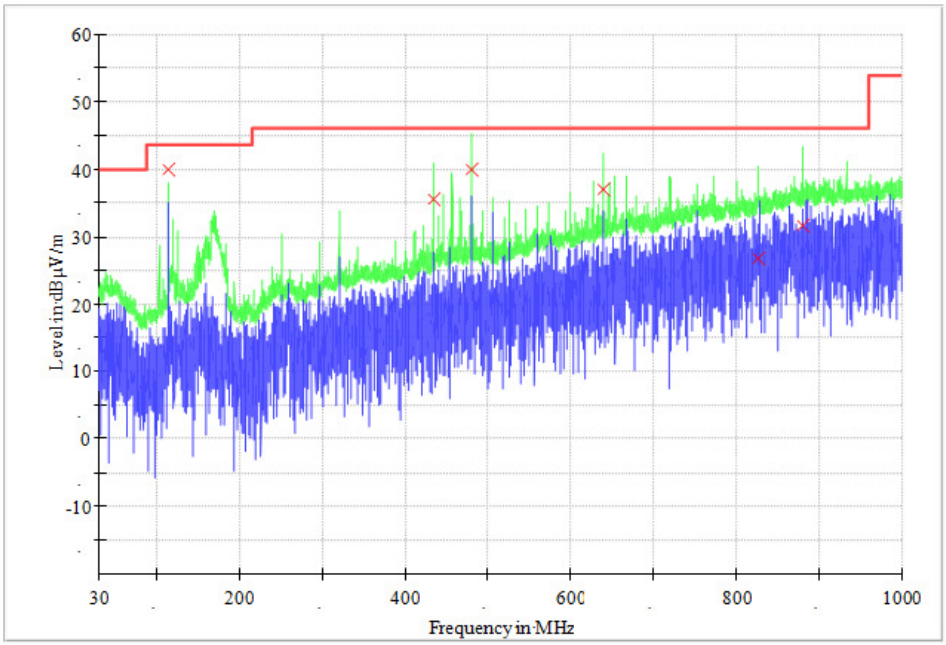
Mode:a;
Polarization: Vertical
Quasi-peak measurement:



Frequency (MHz)	QuasiPeak (dBµV/m)	Pol.	Corr. (dB/m)	Margin (dB)	Limit (dBµV/m)	Result
45.617000	32.7	V	14.5	7.3	40.0	Pass
125.642000	27.7	V	12.3	15.8	43.5	Pass
148.534000	34.8	V	14.2	8.7	43.5	Pass
159.980000	35.3	V	14.6	8.2	43.5	Pass
434.296000	43.7	V	17.3	2.3	46.0	Pass
960.133000	37.6	V	26.6	8.4	46.0	Pass

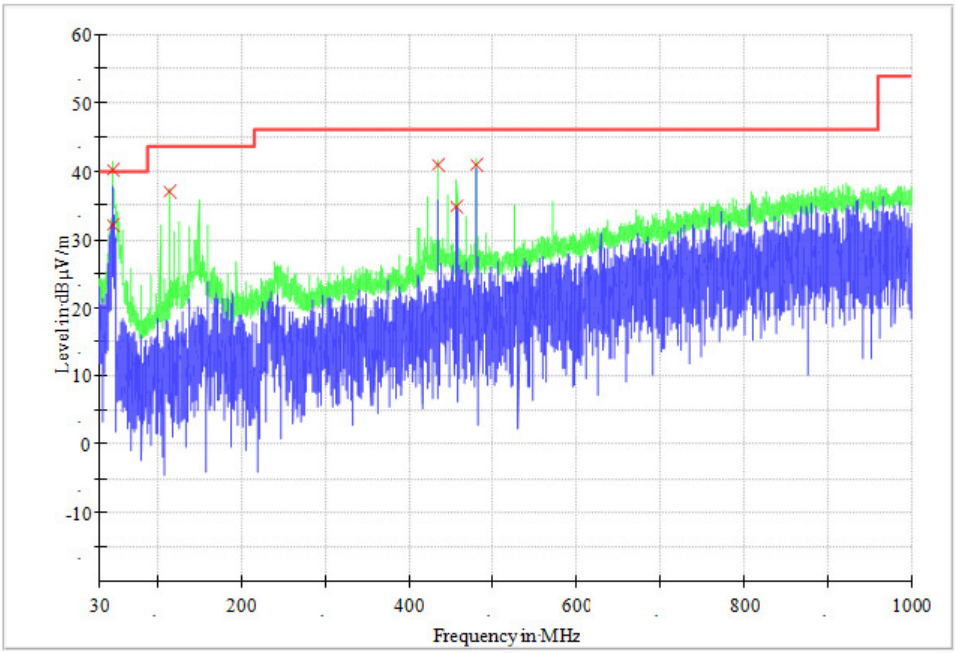
For model: MBP50

Adaptor: MLF-A250501000CU
Mode:a;
Polarization: Horizontal
Quasi-peak measurement:



Frequency (MHz)	QuasiPeak (dBµV/m)	Pol.	Corr. (dB/m)	Margin (dB)	Limit (dBµV/m)	Result
114.293000	39.8	H	11.4	3.7	43.5	Pass
434.296000	35.6	H	17.3	10.4	46.0	Pass
480.080000	39.9	H	19	6.1	46.0	Pass
640.033000	36.9	H	22.3	9.1	46.0	Pass
826.758000	26.7	H	25.2	19.3	46.0	Pass
880.108000	31.6	H	26.4	14.4	46.0	Pass

Mode:a;
Polarization: Vertical
Quasi-peak measurement:



Frequency (MHz)	QuasiPeak (dBµV/m)	Pol.	Corr. (dB/m)	Margin (dB)	Limit (dBµV/m)	Result
45.617000	32.1	V	14.5	7.9	40.0	Pass
45.714000	39.8	V	14.5	0.2	40.0	Pass
114.293000	37.0	V	11.4	6.5	43.5	Pass
434.296000	40.9	V	17.3	5.1	46.0	Pass
457.091000	34.8	V	18.5	11.2	46.0	Pass
479.983000	40.8	V	19.0	5.2	46.0	Pass

Above 1GHz

Channel:Low

Frequency (MHz)	Antenna Polarization	Emission Level (dBμV/m)		Limit (dBμV/m)		Remark
		Peak	Average	Peak	Average	
4803.000	V	59.9	52.1	74.0	54.0	Pass
4804.000	H	59.0	53.6	74.0	54.0	Pass
7206.000	H	55.2	45.0	74.0	54.0	Pass
7490.500	V	57.5	43.2	74.0	54.0	Pass
8752.500	V	60.3	46.2	74.0	54.0	Pass
13317.500	H	56.7	43.0	74.0	54.0	Pass

Channel:Middle

Frequency (MHz)	Antenna Polarization	Emission Level (dBμV/m)		Limit (dBμV/m)		Remark
		Peak	Average	Peak	Average	
4879.500	V	57.5	51.3	74.0	54.0	Pass
4880.000	H	59.3	53.4	74.0	54.0	Pass
7319.000	H	56.5	46.8	74.0	54.0	Pass
8800.500	V	54.8	40.5	74.0	54.0	Pass
11652.000	H	56.6	42.2	74.0	54.0	Pass
13351.000	V	56.5	43.1	74.0	54.0	Pass

Channel: High

Frequency (MHz)	Antenna Polarization	Emission Level (dBμV/m)		Limit (dBμV/m)		Remark
		Peak	Average	Peak	Average	
4953.000	H	60.4	53.3	74.0	54.0	Pass
4954.500	V	58.6	52.2	74.0	54.0	Pass
7432.000	H	57.6	48.4	74.0	54.0	Pass
11766.000	V	54.2	40.1	74.0	54.0	Pass
13388.000	V	56.7	43.2	74.0	54.0	Pass
13440.000	H	56.4	43.0	74.0	54.0	Pass

7 Photographs

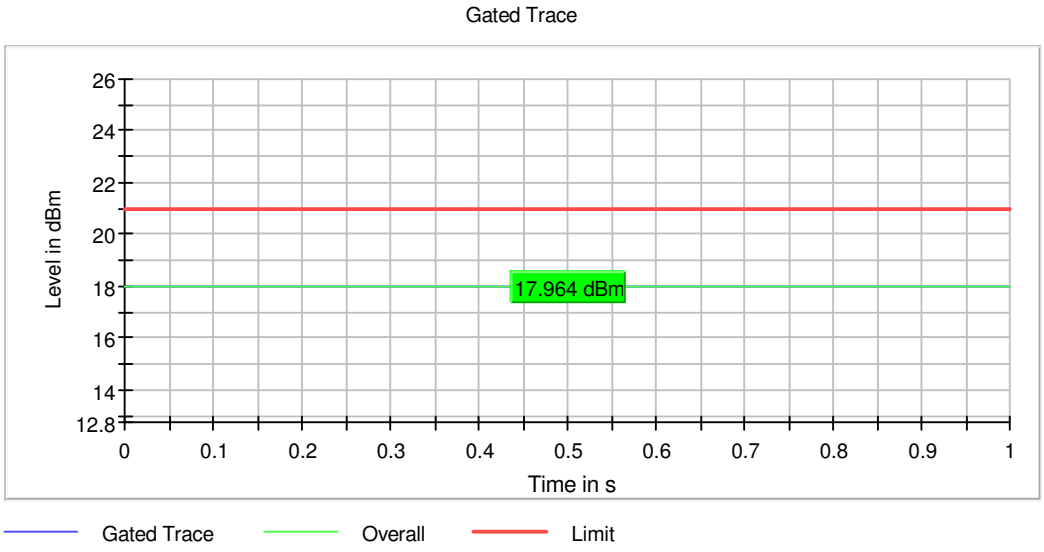
Remark: Photos refer to Appendix: External Photo, Internal Phot, Setup Photo

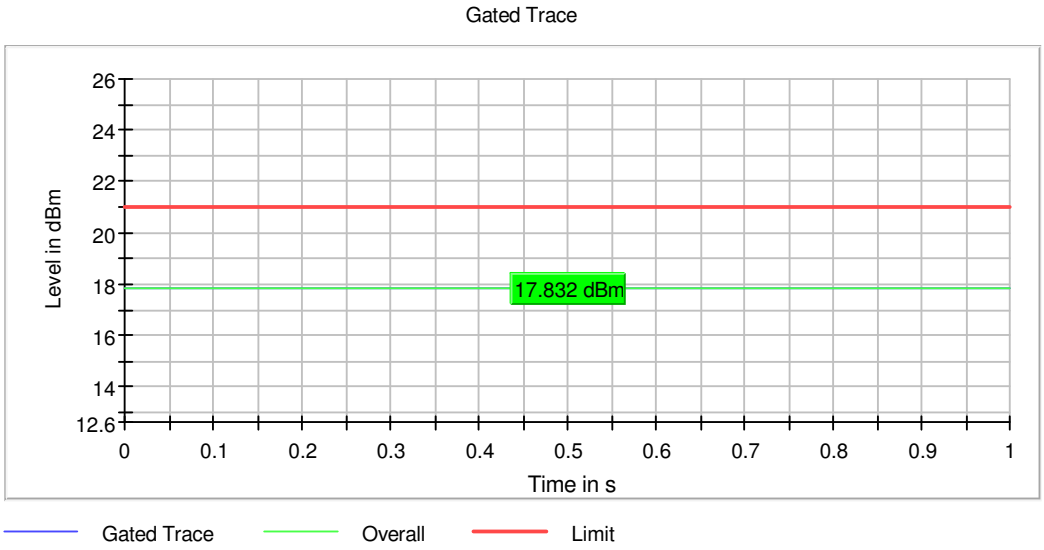
8 Appendix

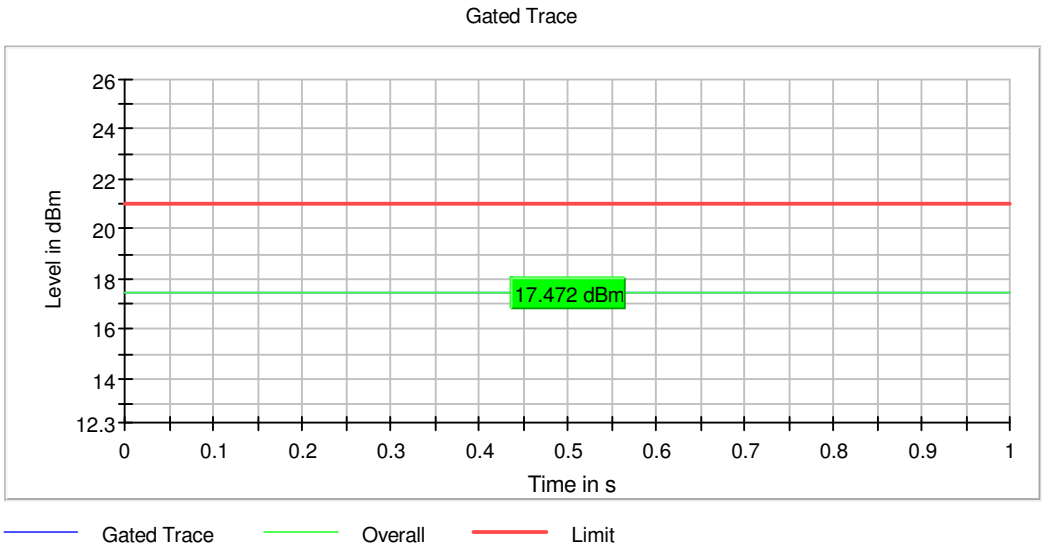
8.1 Peak conducted output power (Sweep)

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2402.000000	18.0	21.0	PASS
2440.000000	17.8	21.0	PASS
2477.000000	17.5	21.0	PASS

Remark: Cable loss 0.8dB was considered and set in system configuration.

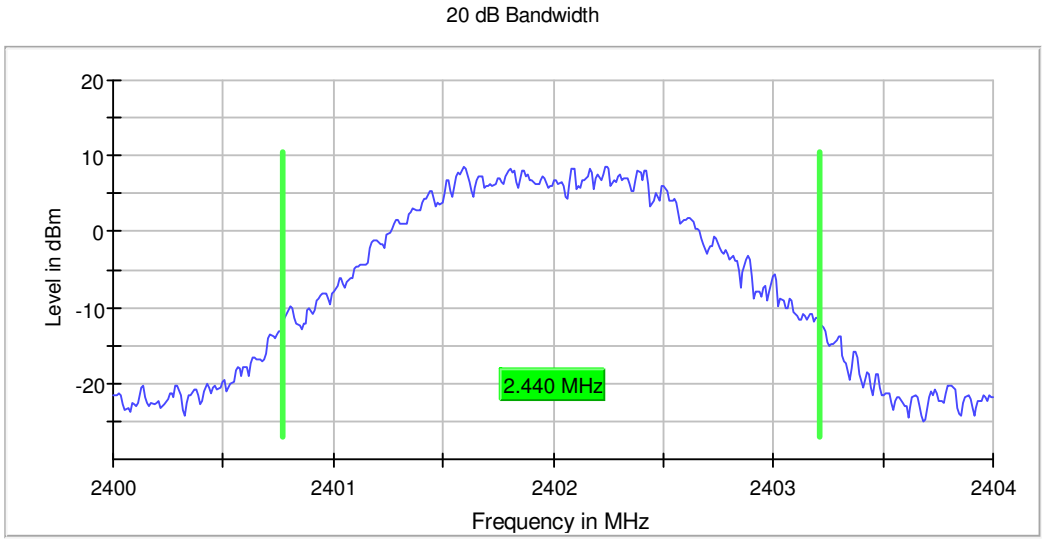


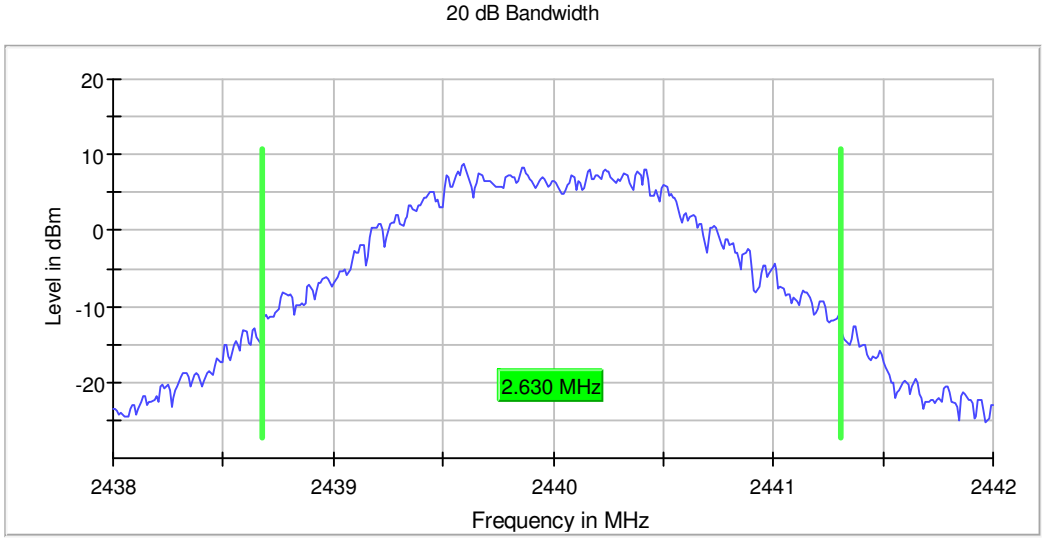

Gated Trace
Level in dBm
26
24
22
20
18
16
14
12.6
17.832 dBm
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time in s
Gated Trace
Overall
Limit

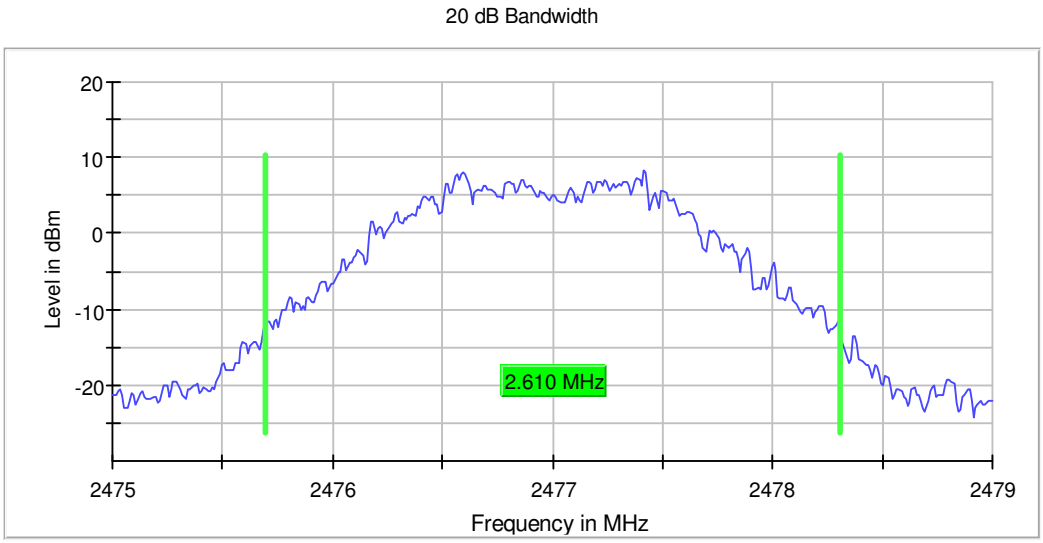

Gated Trace
Level in dBm
26
24
22
20
18
16
14
12.3
17.472 dBm
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time in s
Gated Trace
Overall
Limit

8.2 Emission Bandwidth 20 dB

DUT Frequency (MHz)	Bandwidth (MHz)	Limit (MHz)	Result
2402.000000	2.44	---	PASS
2440.000000	2.63	---	PASS
2477.000000	2.61	---	PASS







Measurement Setting

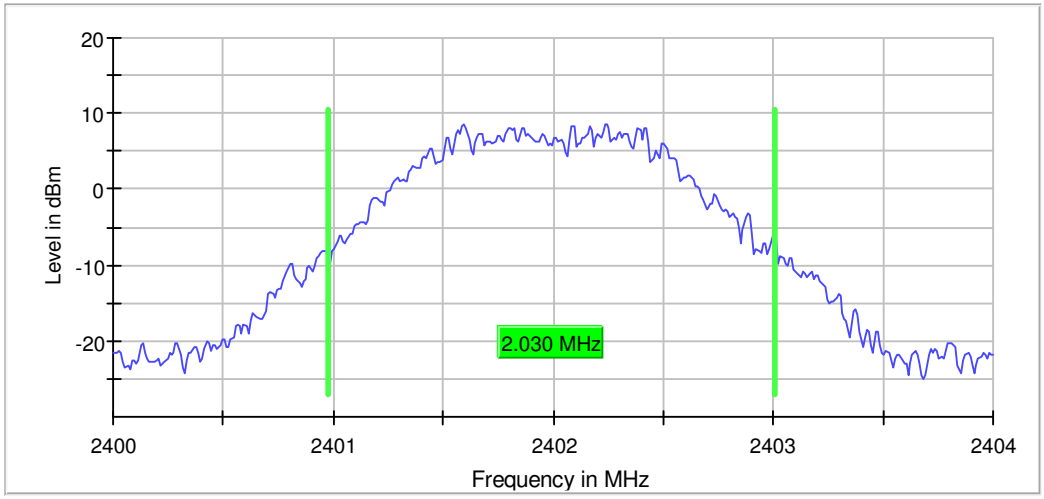
Setting	Instrument Value	Target Value
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>=150.000
SweepPoints	400	~ 400
Sweeptime	75.781 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	24 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.15 dB	0.50 dB

Remark: Cable loss 0.8dB was considered and set in system configuration.

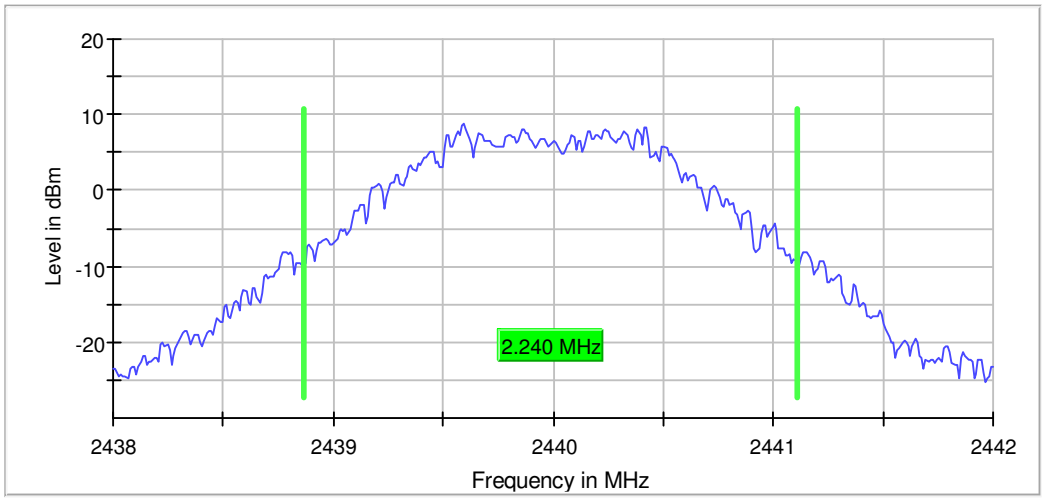
8.3 Occupied Channel Bandwidth 99%

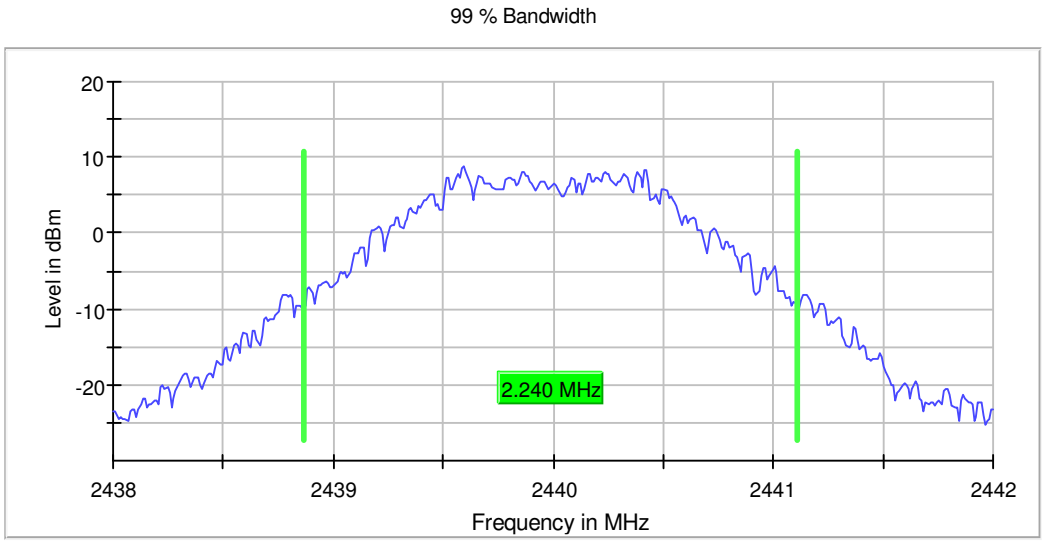
DUT Frequency (MHz)	Bandwidth (MHz)	Limit (MHz)	Result
2402.000000	2.03	---	PASS
2440.000000	2.24	---	PASS
2477.000000	2.24	---	PASS

99 % Bandwidth



99 % Bandwidth





Measurement Setting

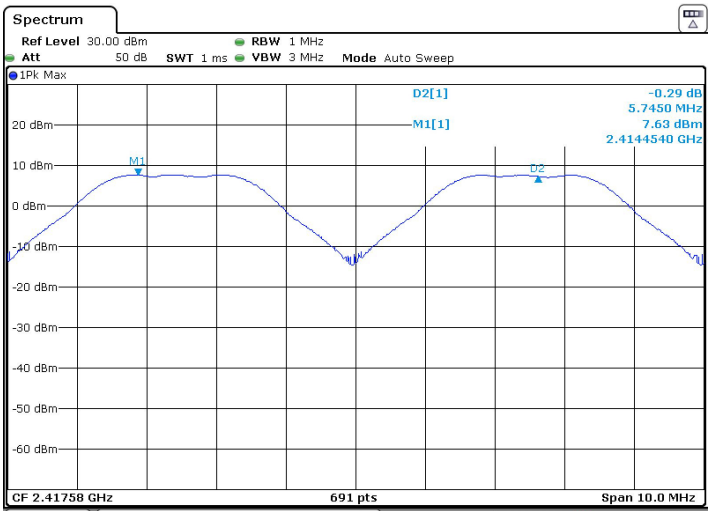
Setting	Instrument Value	Target Value
Span	4.000 MHz	4.000 MHz
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>= 100.000 kHz
SweepPoints	400	~ 400
Sweeptime	94.824 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	500	500
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	5 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.24 dB	0.30 dB

Remark: Cable loss 0.8dB was considered and set in system configuration.

8.4 Carrier Frequency Separation

DUT Frequency (MHz)	Frequency Separation (MHz)	Limit (MHz)	Result
2.41758	5.75	1.75	**PASS**

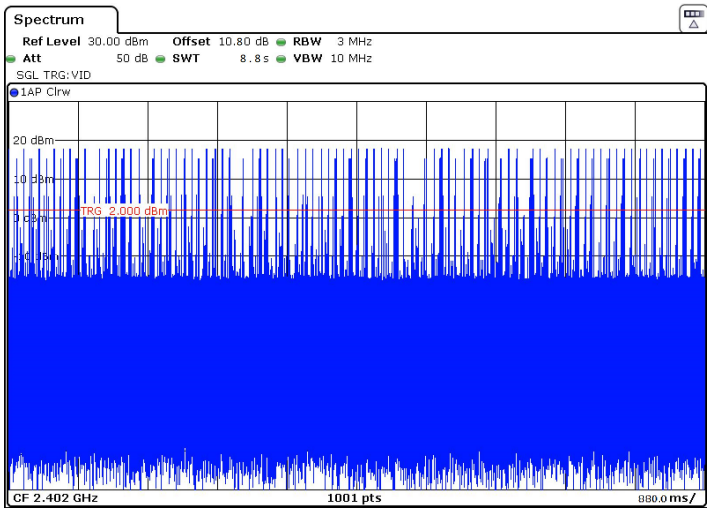
Remark: Limit = 2/3* 20dB Bandwidth
Test plot is as below:

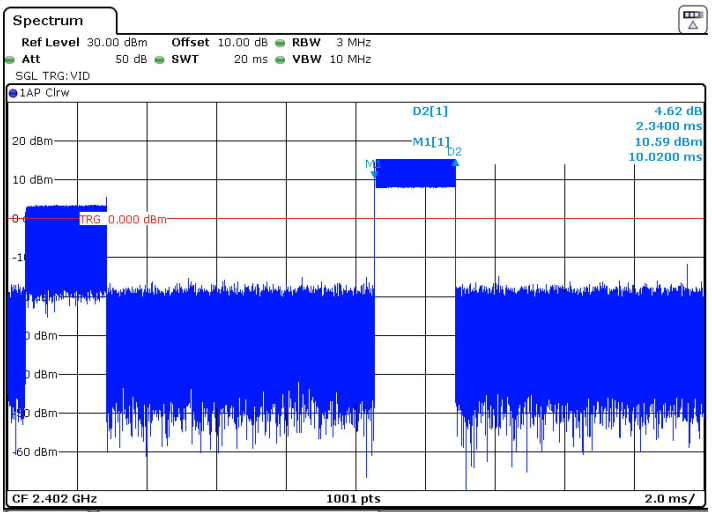


8.5 Dwell Time

Channel (MHz)	Width of Burst (ms)	Number of Burst(s)	Active Channels	Measurement Time (s)	Dwell Time (ms)	Limit (ms)	Result
2442	2.34	90	22	8.8	210.6	≤400	Pass

Remark: the channel shown is the worst case.
Test plots are as below:

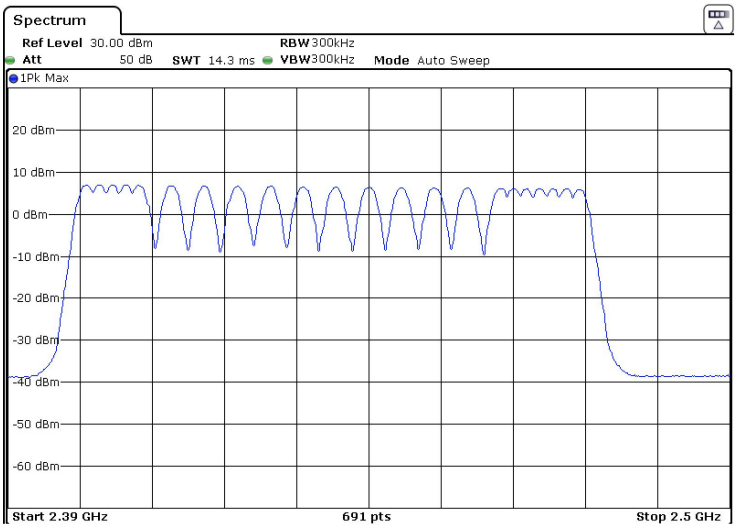




8.6 Hopping Frequencies

Channels	Limit Min	Result
22	15	PASS

Test plot is as below:



8.7 Conducted Band Edge Measurement

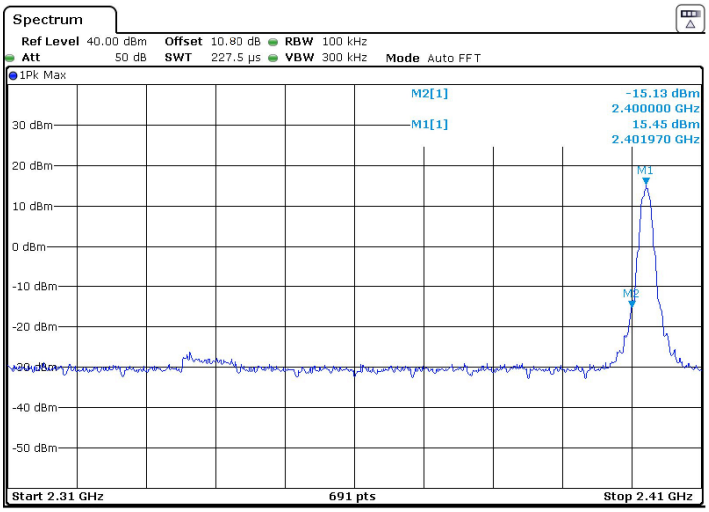
Non-hopping mode

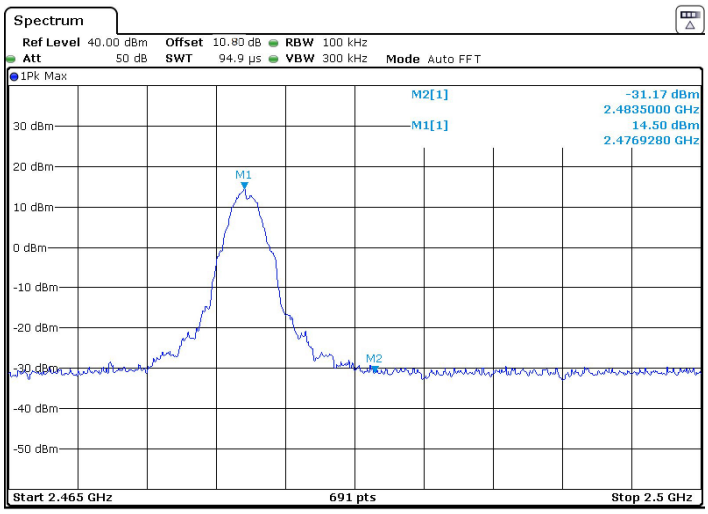
Inband Peak

Frequency (MHz)	Level (dBm)
2401.970000	15.5
2476.928000	14.5

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
2400.000000	-15.1	-4.5	-10.6	PASS
2483.500000	-31.2	-5.5	-23.8	PASS

Remark: Limit = Inband peak – 20dB





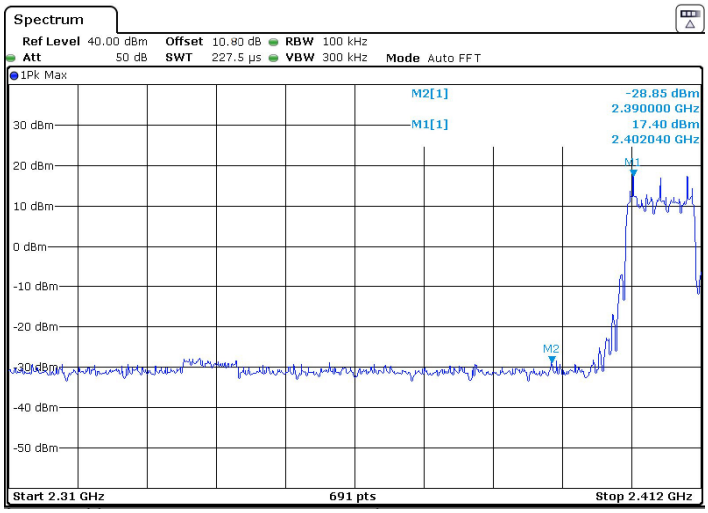
Hopping mode

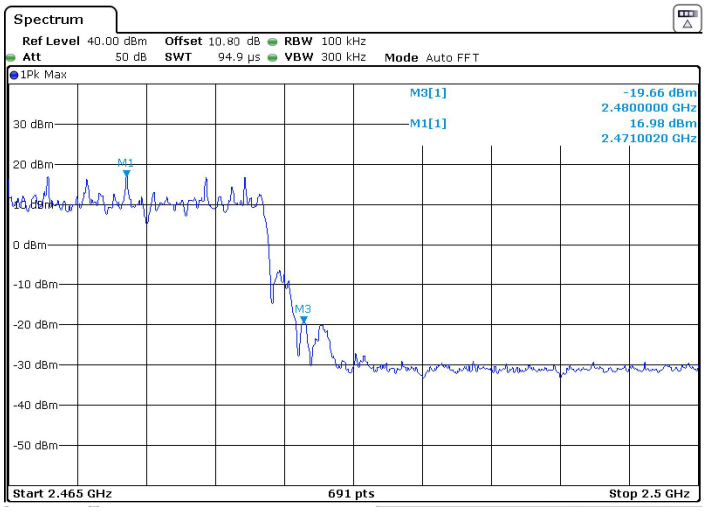
Inband Peak

Frequency (MHz)	Level (dBm)
2402.040000	17.4
2476.928000	17.0

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
2390.000000	-28.9	-2.6	-26.3	PASS
2480.000000	-19.7	-3.0	-16.7	PASS

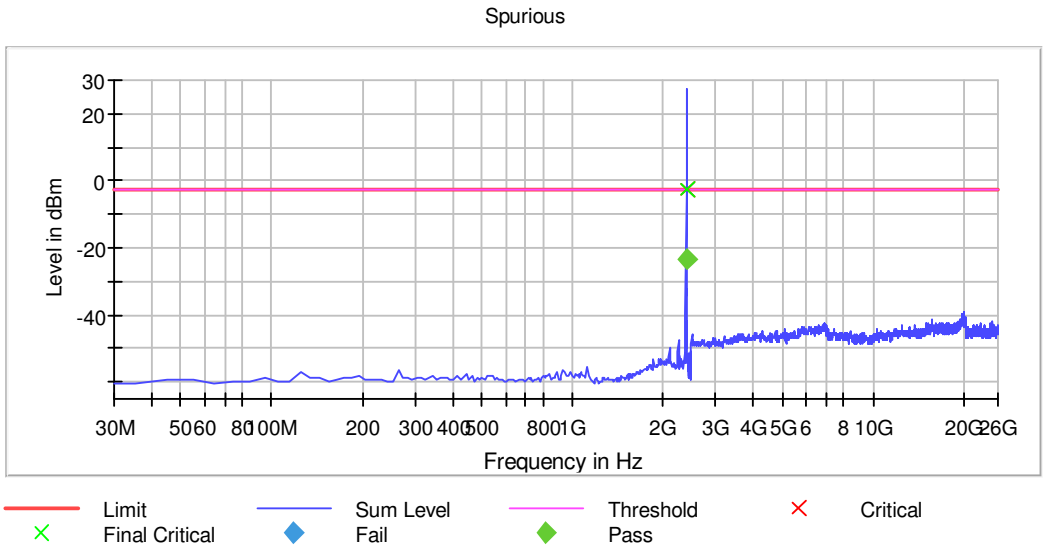
Remark: Limit = Inband peak – 20dB



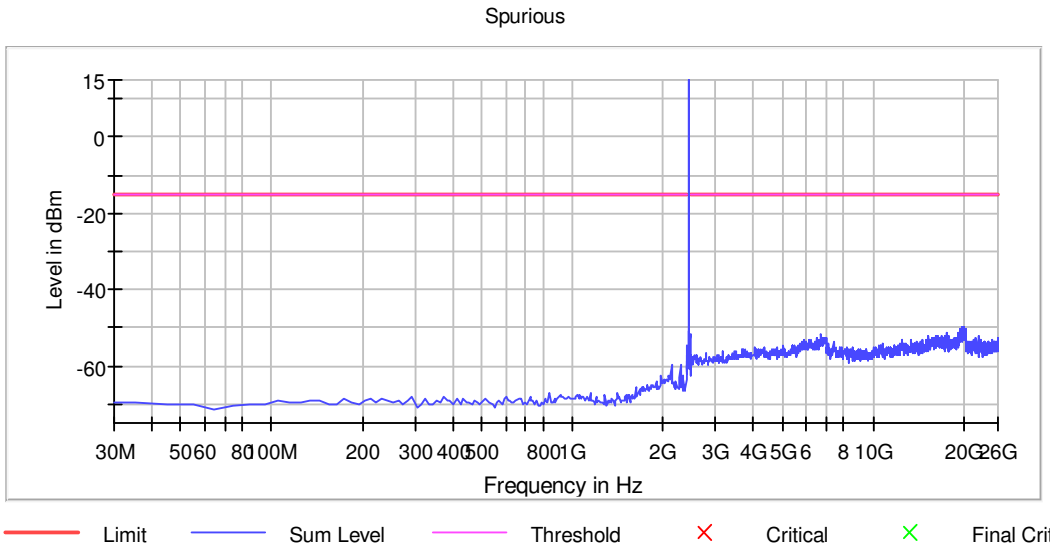


Conducted spurious emission

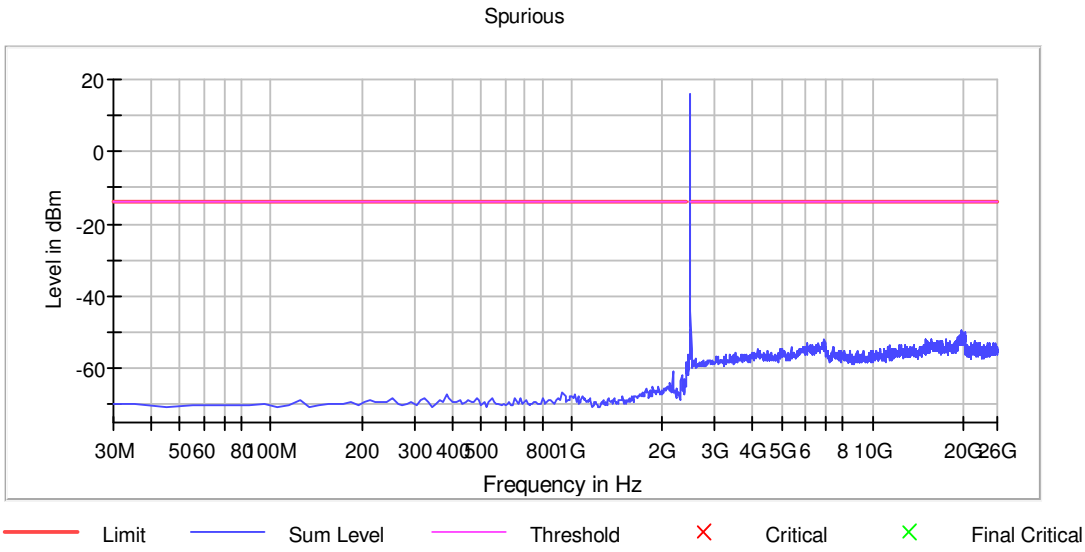
Lowest Channel



Middle Channel



Highest Channel



Measurement Setting

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000
VBW	300.000 kHz	>= 300.000
SweepPoints	238	~ 238
Sweeptime	23.700 ms	AUTO
Reference Level	-10.000 dBm	-30.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	14 / max. 40	max. 40
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

Remark: Cable loss 0.8dB was considered and set in system configuration.

- End of the Report -