Testing Laboratory
3023

Test report No.: 2380577R-RFUSV01S-A

TEST REPORT

Product Name	Multimedia device with Bluetooth and WLAN
Trademark	BOSCH
Model and /or type reference	CCS2SBXQ
FCC ID	2AUXS-CCS2SBXQ
Applicant´s name / address	Robert Bosch GmbH Robert-Bosch-Strasse 200, 31139 Hildesheim, Germany
Manufacturer´s name	Robert Bosch GmbH
Test method requested, standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Verdict Summary	IN COMPLIANCE
Documented By (Supervisor / Jinn Chen)	Jinn Chen
Tested By (Senior Engineer / Ivan Chuang)	Ivan Chuang
Approved By (Senior Engineer / Alan Chen)	Alan Chen
Date of Receipt	2023/08/17
Date of Issue	2023/11/28
Report Version	V1.0

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Appendix 1: EUT Test Photographs
Appendix 2: Product Photos-Please refer to the file: 2380577R-Product Photos

Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Report No.	Version	Description	Issued Date
2380577R-RFUSV01S-A	V1.0	Initial issue of report.	2023/11/28

1. General Information

1.1. EUT Description

Product Name	Multimedia device with Bluetooth and WLAN
Trademark	BOSCH
Model and /or type reference	CCS2SBXQ
EUT Rated Voltage	DC 9V-16V
EUT Test Voltage	DC 12V by Battery
Frequency Range	2402-2480 MHz
Channel Number	40
Type of Modulation	GFSK (1Mbps, 2Mbps)
Channel Control	Auto

Antenna List_ Internal Antenna

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	BOSCH	W702	Integrated as printed circuit board antenna	1.6 dBi for 2400 MHz

Note:

1. The antenna of EUT is conforming to FCC 15.203.
2. The antenna gain as by the manufacturer provided.

Center Frequency of Each Channel:

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

Note:

1. The EUT is a Multimedia device with Bluetooth and WLAN with built-in WLAN and Bluetooth transceiver, this report for Bluetooth LE.
2. The product includes two configurations with the following as below:

Model name	HW Version Identification Number (HVIN)	Description
CCS2SBXQ	NA1	Internal Antenna / External Antenna
	NA2	2x Internal Antenna

3. Usage of samples, samples undergoing test have been selected by: The client.

ID	Bosch Part No	Control Number	Description
01	7 515 752 687-02	PSR-2054085	Internal / External antenna
02	7 515 752 687-02	PSR-2054083	Internal / External antenna (modified)
03	7 515 752 799-01	PSR-2054086	2x Internal antenna

Notes referenced to samples during the project:

ID	Type
01	Radiated
02	Conducted
03	Radiated

4. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
5. The product Bluetooth transceiver only use Internal antenna.
6. The spectrum plot against conducted item only shows the worst case.
7. DEKRA has evaluated each test mode. Only the worst case is shown in the report.
8. These tests were conducted on a sample for the purpose of demonstrating compliance of transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices

Test Mode	Mode 1	Transmit - 1 Mbps Transmit - 2 Mbps

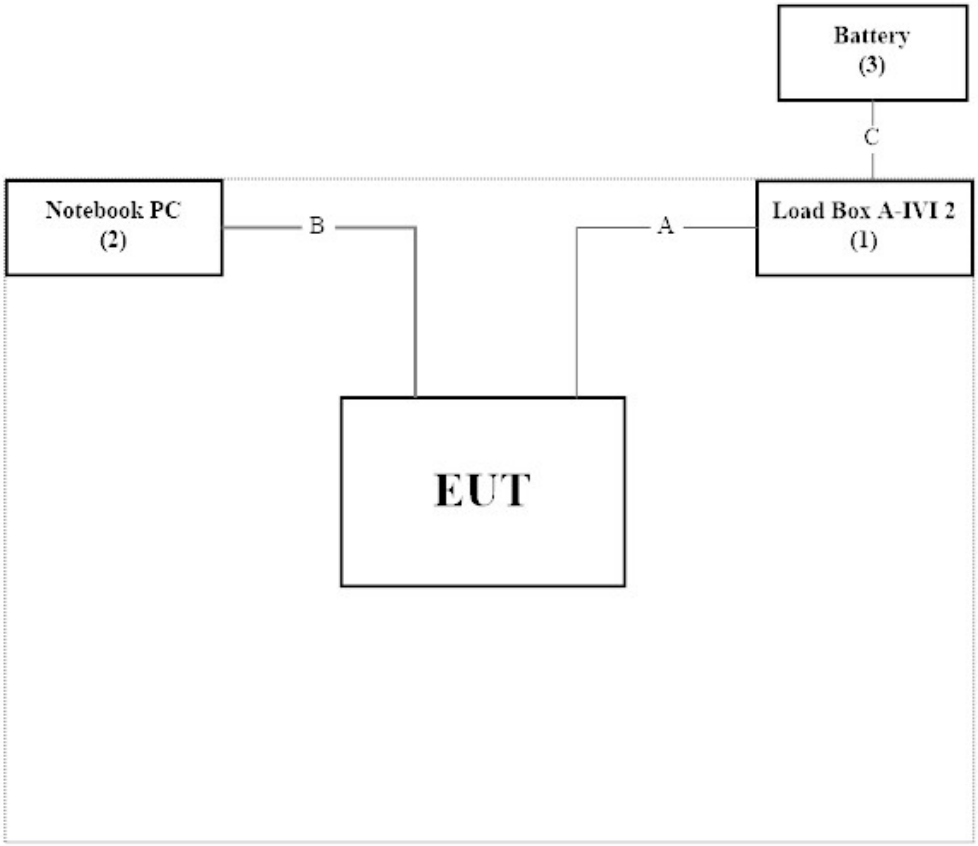
1.2. Tested System Details

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	Load Box A-IVI 2	BOSCH	N/A	N/A	N/A
2	Notebook PC	DELL	Latitude 5501	4H94P13	N/A
3	Battery	BOSCH	60044	N/A	N/A

Cable Type		Cable Description
A	Signal Cable	Non-shielded, 2m
B	USB Cable	Shielded, 0.9m
C	Power Cable	Non-shielded, 2m

1.3. Configuration of Tested System



1.4. EUT Exercise Software

1	Setup the EUT as shown in Section 1.3.
2	Execute software “cmd version 10.0.19045.3570” on the Notebook PC.
3	Configure the test mode, the test channel, and the data rate.
4	Press “OK” to start the continuous transmit.
5	Verify that the EUT works properly.

1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Radiated Emission	Temperature (°C)	10~40 °C	22. °C
	Humidity (%RH)	10~90 %	60.0 %
Conductive	Temperature (°C)	10~40 °C	22.0 °C
	Humidity (%RH)	10~90 %	55.0 %

USA	FCC Registration Number: TW0033
Canada	CAB Identifier Number: TW3023 / Company Number: 26930

Site Description	Accredited by TAF
	Accredited Number: 3023

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
	Linkou Laboratory
Address	No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C.
Performed Location	No. 26, Huaya 1st Rd., Guishan Dist.,Taoyuan City 333411, Taiwan, R.O.C.
Phone Number	+886-3-275-7255
Fax Number	+886-3-327-8031

1.6. List of Test Equipment

For Conducted Measurements / HY-SR02

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	Spectrum Analyzer	R&S	FSV30	103466	2022/12/22	2023/12/21
V	Spectrum Analyzer	KEYSIGHT	N9010A	MY53470892	2023/11/09	2024/11/08
V	Peak Power Analyzer	KEYSIGHT	8990B	MY51000539	2023/05/15	2024/05/14
V	Wideband Power Sensor	KEYSIGHT	N1923A	MY59240002	2023/05/18	2024/05/17
V	Wideband Power Sensor	KEYSIGHT	N1923A	MY59240003	2023/05/18	2024/05/17

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “V” are used to measure the final test results.
3. Test Software Version: RF Conducted Test Tools R3 V3.0.0.14.

For Radiated Measurements /HY-CB01

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
	Loop Antenna	AMETEK	HLA6121	56736	2023/05/23	2024/05/24
V	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-0675	2023/08/09	2025/08/08
V	Horn Antenna	RF SPIN	DRH18-E	210802A18ES	2023/03/23	2024/03/22
V	Horn Antenna	Com-Power	AH-840	101101	2021/11/30	2023/11/29
V	Pre-Amplifier	SGH	0301	20211007-7	2023/01/10	2024/01/09
V	Pre-Amplifier	EMCI	EMC051845SE	980632	2023/01/10	2024/01/09
V	Pre-Amplifier	EMCI	EMC05820SE	980362	2023/01/10	2024/01/09
V	Pre-Amplifier	EMCI	EMC184045SE	980369	2023/01/10	2024/01/09
	Coaxial Cable	EMCI	EMC102-KM-KM-600	1160314		
	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242		
V	Filter	MICRO TRONICS	BRM50702	G251	2023/01/05	2024/01/04
	Filter	MICRO TRONICS	BRM50716	G067	2023/01/05	2024/01/04
V	EMI Test Receiver	R&S	ESR3	102792	2022/12/29	2023/12/28
V	Spectrum Analyzer	R&S	FSV3044	101115	2023/01/06	2024/01/05
V	Coaxial Cable	SUHNER	SUCOFLEX 106	25450/6	2023/01/10	2024/01/09
	Coaxial Cable	SGH	HA800	GD20110222-8		
	Coaxial Cable	SGH	SGH18	2021003-8		
	Coaxial Cable	EMCI	EMC106	151113		

Note:

1. Bi-Log Antenna and Horn Antenna(AH-840) is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with “V” are used to measure the final test results.
3. Test Software Version: e3 230303 dekra V9.

1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.

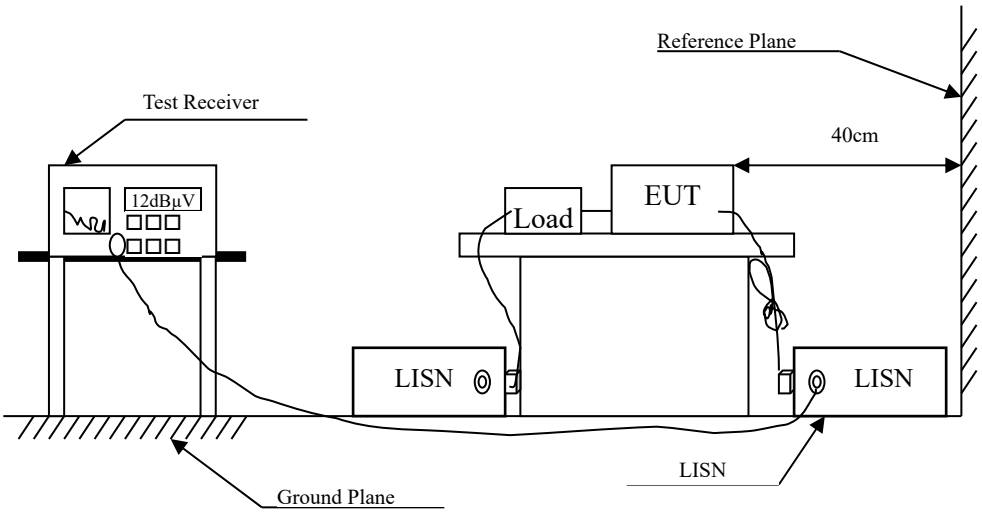
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system but are based on the results of the compliance measurement.

Test item	Uncertainty
Conducted Emission	±3.50 dB
Maximum Peak Conducted Output Power	Spectrum Analyzer: ±2.14 dB Power Meter: ±1.05 dB
Radiated Emission	9 kHz~30 MHz: ±3.88 dB 30 MHz~1 GHz: ±4.42 dB 1 GHz~18 GHz: ±4.28 dB 18 GHz~40 GHz: ±3.90 dB
RF Antenna Conducted Test	±2.14 dB
Band Edge	9 kHz~30 MHz: ±3.88 dB 30 MHz~1 GHz: ±4.42 dB 1 GHz~18 GHz: ±4.28 dB 18 GHz~40 GHz: ±3.90 dB
6dB Bandwidth	±1580.61 Hz
Power Spectral Density	±2.14 dB
Duty Cycle	±0.53 %

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

The EUT and Peripherals are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15 MHz to 30 MHz using a receiver bandwidth of 9 kHz.

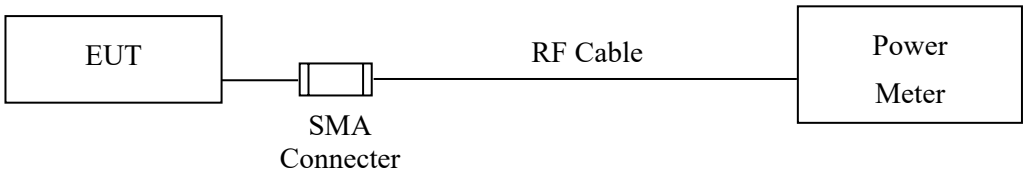
The EUT was setup to ANSI C63.4, 2014; tested to DTS test procedure of FCC KDB-558074 for compliance to FCC 47CFR Subpart C requirements.

2.4. Test Result of Conducted Emission

Owing to the DC operation of EUT, this test item is not performed.

3. Maximum Peak Conducted Output Power

3.1. Test Setup



3.2. Limit

The maximum peak power shall be less 1Watt.

3.3. Test Procedure

The EUT was tested according to C63.10:2013 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using C63.10:2013 Section 11.9.1.3 PKPM1 Peak power meter method.

3.4. Test Result of Maximum Peak Conducted Output Power

Product : Multimedia device with Bluetooth and WLAN
Test Item : Maximum Peak Conducted Output Power
Test Mode : Transmit - 1 Mbps
Test Date : 2023/10/17
Test Sample : ID 02

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
00	2402	-0.22	1 Watt= 30 dBm	Pass
19	2440	-0.02	1 Watt= 30 dBm	Pass
39	2480	-0.16	1 Watt= 30 dBm	Pass

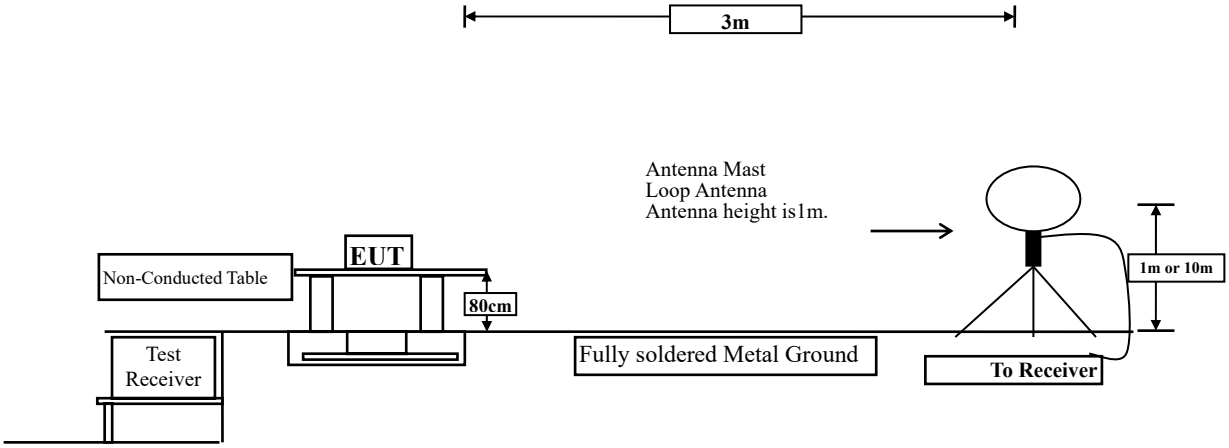
Product : Multimedia device with Bluetooth and WLAN
Test Item : Maximum Peak Conducted Output Power
Test Mode : Transmit - 2 Mbps
Test Date : 2023/10/17
Test Sample : ID 02

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
00	2402	-0.11	1 Watt= 30 dBm	Pass
19	2440	0.18	1 Watt= 30 dBm	Pass
39	2480	-0.09	1 Watt= 30 dBm	Pass

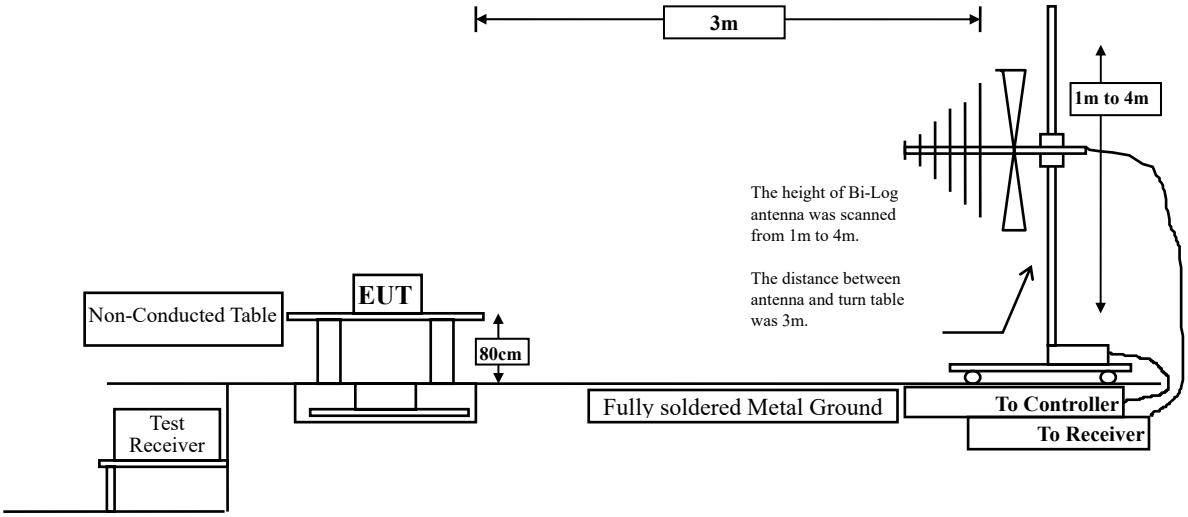
4. Radiated Emission

4.1. Test Setup

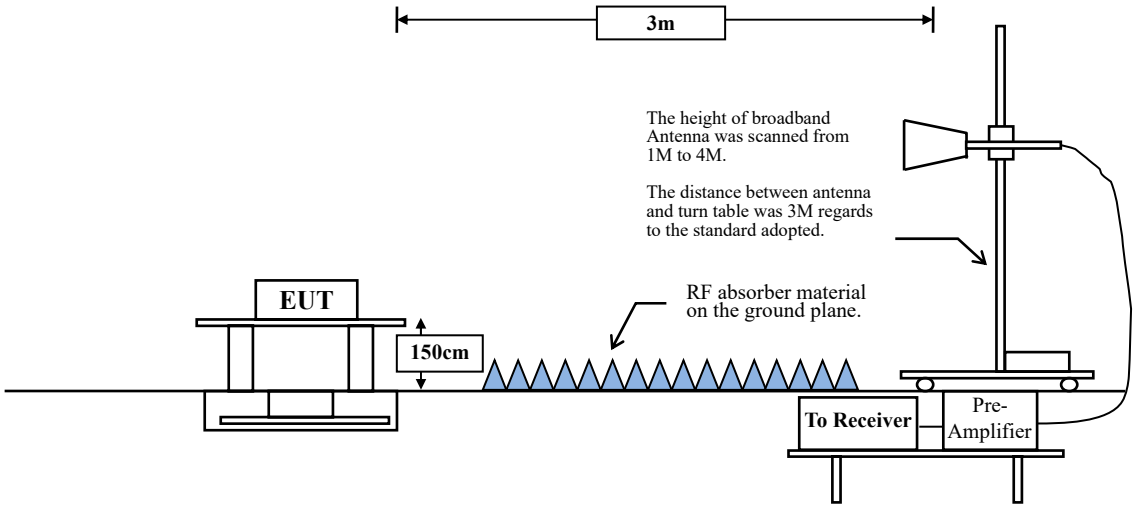
Radiated Emission Under 30 MHz



Radiated Emission Below 1 GHz



Radiated Emission Above 1 GHz



4.2. Limits

➢ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks:

1. RF Voltage (dBμV/m) = 20 log RF Voltage (μV/m)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to C63.10:2013 Section 11.12.1 for compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1 GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1 GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30 MHz setting on the field strength meter is 9 kHz and 30 MHz~1 GHz is 120 kHz and above 1 GHz is 1 MHz.

Radiated emission measurements below 30 MHz are made using Loop Antenna and 30 MHz~1 GHz are made using broadband Bilog antenna and above 1 GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The measurement frequency range form 9 kHz - 10th Harmonic of fundamental was investigated.

RBW and VBW Parameter setting:

According to C63.10 Section 11.12.2.4 Peak measurement procedure.

RBW = as specified in Table 1.

VBW ≥ 3 x RBW.

Table 1 - RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to C63.10 Section 11.12.2.5 Average measurement procedure.

RBW = 1 MHz.

VBW = 10 Hz, when duty cycle ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

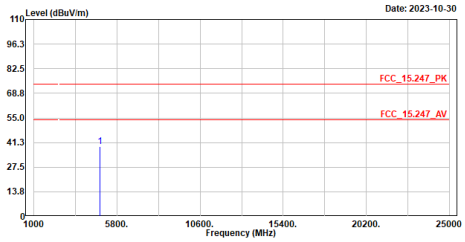
2.4 GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
BLE (1Mbps)	84.86	2.1300	469	500
BLE (2Mbps)	56.91	1.0700	935	1000

Note: Duty Cycle Refer to Section 9.

4.4. Test Result of Radiated Emission

NA1_Sample ID 01

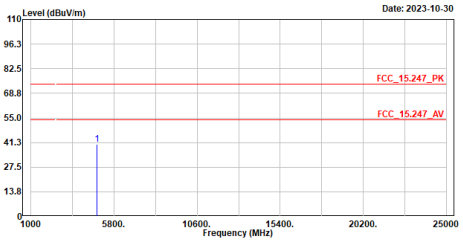
Site :HY-CB01
Condition :3m ,HORIZONTAL
Mode :TX_ble1m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	4804.000	39.10	74.00	-34.90	52.65	-13.55	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

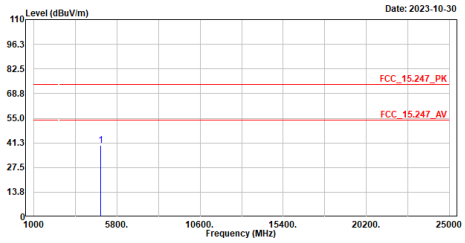
Site :HY-CB01
Condition :3m ,VERTICAL
Mode :TX_ble1m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	4804.000	40.42	74.00	-33.58	53.97	-13.55	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

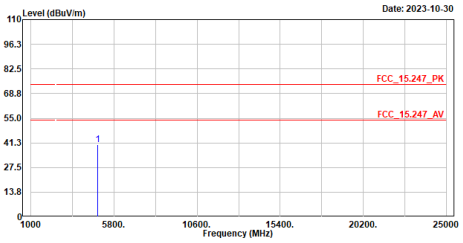
Site :HY-CB01
Condition :3m ,HORIZONTAL
Mode :TX_ble1m_2440MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4880.000	39.75	74.00	-34.25	53.11	-13.36	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

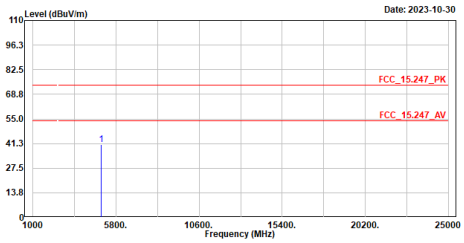
Site :HY-CB01
Condition :3m ,VERTICAL
Mode :TX_ble1m_2440MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4880.000	40.23	74.00	-33.77	53.59	-13.36	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

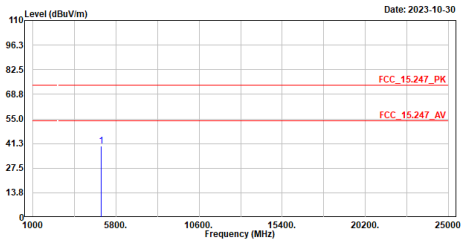
Site :HY-CB01
Condition :3m ,HORIZONTAL
Mode :TX_ble1m_2480MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	4960.000	40.84	74.00	-33.16	54.04	-13.20	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

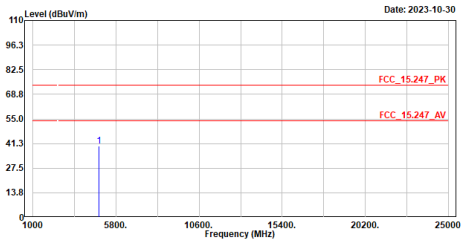
Site :HY-CB01
Condition :3m ,VERTICAL
Mode :TX_ble1m_2480MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	4960.000	39.76	74.00	-34.24	52.96	-13.20	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

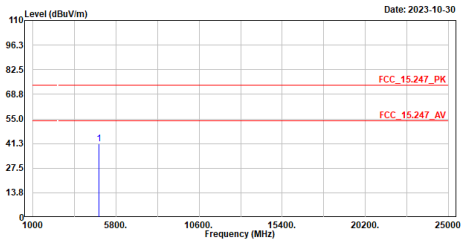
Site :HY-CB01
Condition :3m ,HORIZONTAL
Mode :TX_ble2m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	4804.000	39.80	74.00	-34.20	53.35	-13.55	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

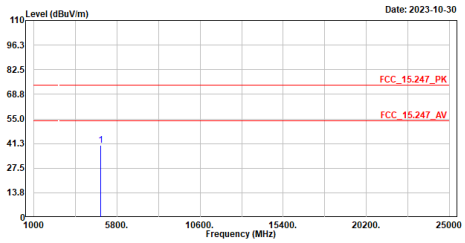
Site :HY-CB01
Condition :3m ,VERTICAL
Mode :TX_ble2m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	4804.000	41.22	74.00	-32.78	54.77	-13.55	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

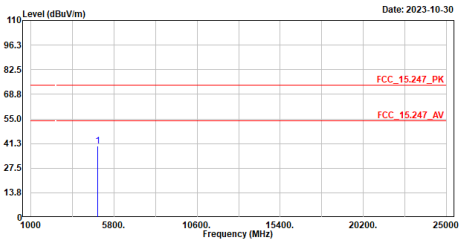
Site :HY-CB01
Condition :3m ,HORIZONTAL
Mode :TX_ble2m_2440MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4880.000	40.14	74.00	-33.86	53.50	-13.36	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

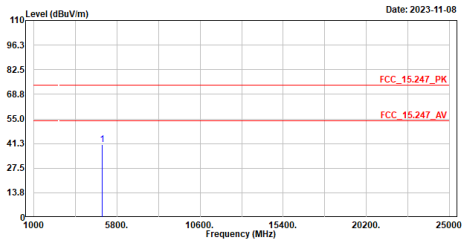
Site :HY-CB01
Condition :3m ,VERTICAL
Mode :TX_ble2m_2440MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4880.000	39.76	74.00	-34.24	53.12	-13.36	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

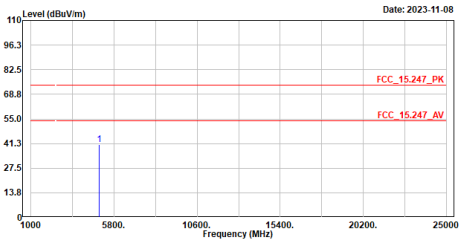
Site :HY-CB01
Condition :3m ,HORIZONTAL
Mode :TX_ble2m_2480MHz
TEST BY :Caster



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	4960.000	40.56	74.00	-33.44	53.76	-13.20	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

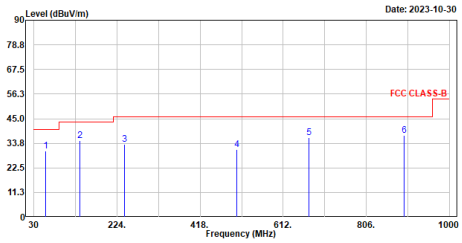
Site :HY-CB01
Condition :3m ,VERTICAL
Mode :TX_ble2m_2480MHz
TEST BY :Caster



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	4960.000	40.53	74.00	-33.47	53.73	-13.20	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

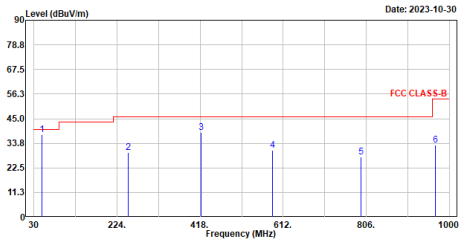
Site :HY-CB01
Condition :3m ,HORIZONTAL
Mode :TX_ble2m_2440MHz
TEST BY :Caster



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB/m	Remark
1	57.160	30.33	40.00	-9.67	54.01	-23.68	QP
2	136.700	35.10	43.50	-8.40	59.67	-24.57	QP
3	241.460	33.33	46.00	-12.67	58.19	-24.86	QP
4	504.330	30.81	46.00	-15.19	48.53	-17.72	QP
5	672.140	36.34	46.00	-9.66	50.92	-14.58	QP
6	895.240	37.24	46.00	-8.76	48.80	-11.56	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :HY-CB01
Condition :3m ,VERTICAL
Mode :TX_ble2m_2440MHz
TEST BY :Caster

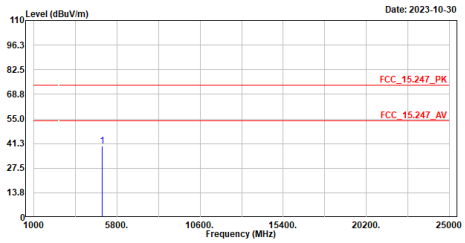


No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB/m	Remark
1	49.400	37.86	40.00	-2.14	60.97	-23.11	QP
2	250.190	29.44	46.00	-16.56	54.22	-24.78	QP
3	419.940	38.68	46.00	-7.32	58.49	-19.81	QP
4	587.750	30.47	46.00	-15.53	46.17	-15.70	QP
5	793.390	27.52	46.00	-18.48	39.94	-12.42	QP
6	967.990	32.85	54.00	-21.15	43.51	-10.66	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

NA2_ Sample ID 03

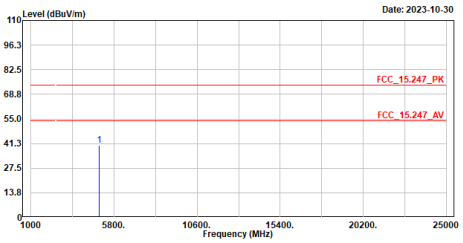
Site :HY-CB01
Condition :3m ,HORIZONTAL
Mode :TX_ble2m_2480MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	4960.000	39.93	74.00	-34.07	53.13	-13.20	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

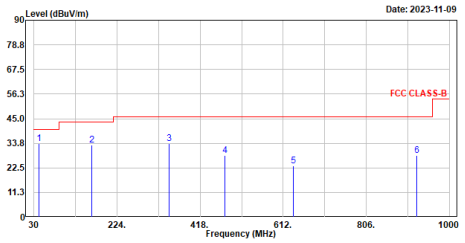
Site :HY-CB01
Condition :3m ,VERTICAL
Mode :TX_ble2m_2480MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	4960.000	40.27	74.00	-33.73	53.47	-13.20	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

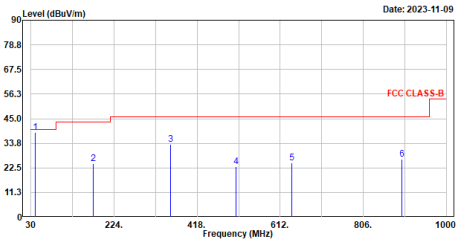
Site :HY-CB01
Condition :3m ,HORIZONTAL
Mode :TX_ble2m_2480MHz
TEST BY :Caster



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	42.610	33.76	40.00	-6.24	57.21	-23.45	QP
2	165.800	32.96	43.50	-10.54	56.90	-23.94	QP
3	346.220	33.73	46.00	-12.27	55.47	-21.74	QP
4	476.200	28.14	46.00	-17.86	46.45	-18.31	QP
5	635.280	23.41	46.00	-22.59	38.28	-14.87	QP
6	923.370	28.15	46.00	-17.85	39.10	-10.95	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :HY-CB01
Condition :3m ,VERTICAL
Mode :TX_ble2m_2480MHz
TEST BY :Caster

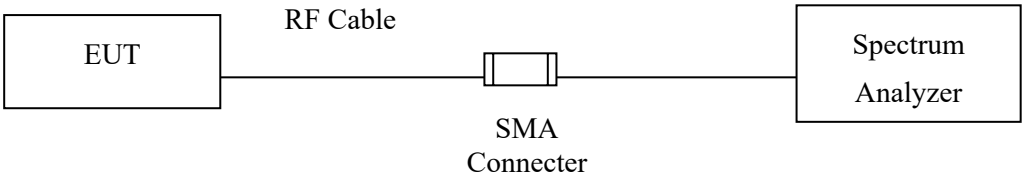


No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	40.670	38.56	40.00	-1.44	62.44	-23.88	QP
2	175.500	24.60	43.50	-18.90	49.24	-24.64	QP
3	356.890	33.19	46.00	-12.81	54.84	-21.65	QP
4	509.180	23.25	46.00	-22.75	40.85	-17.60	QP
5	639.160	24.81	46.00	-21.19	39.68	-14.87	QP
6	896.210	26.51	46.00	-19.49	38.04	-11.53	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

5. RF Antenna Port Conducted Test

5.1. Test Setup



5.2. Limits

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.3. Test Procedure

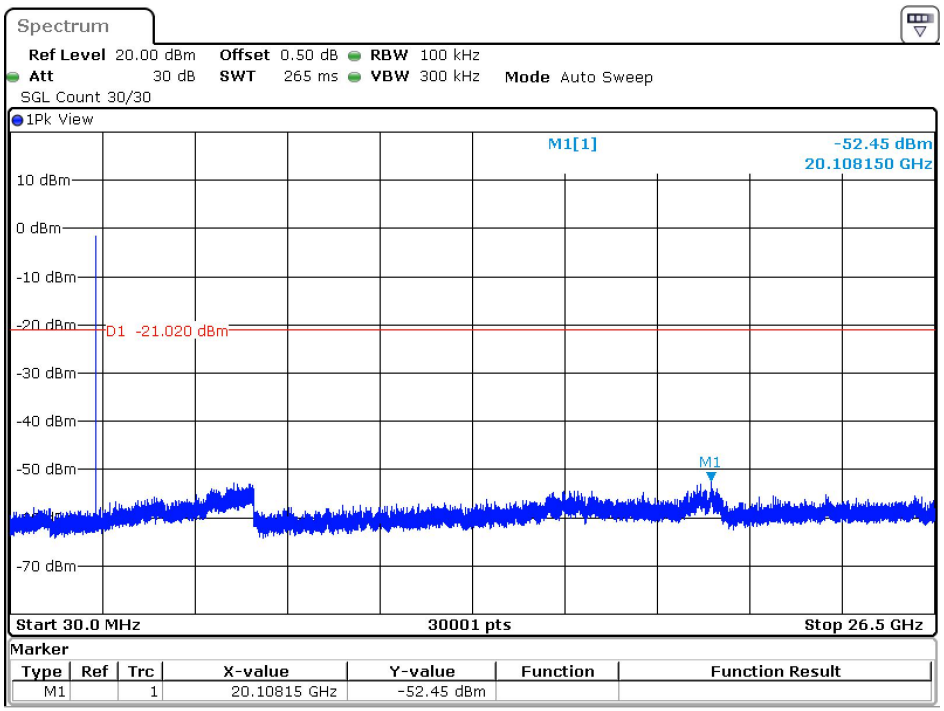
The EUT was tested according to C63.10:2013 Section 11.11 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.4. Test Result of RF Antenna Port Conducted Test

Product	:	Multimedia device with Bluetooth and WLAN
Test Item	:	RF Antenna Port Conducted Test
Test Mode	:	Transmit - 1 Mbps
Test Date	:	2023/10/17
Test Sample	:	ID 02

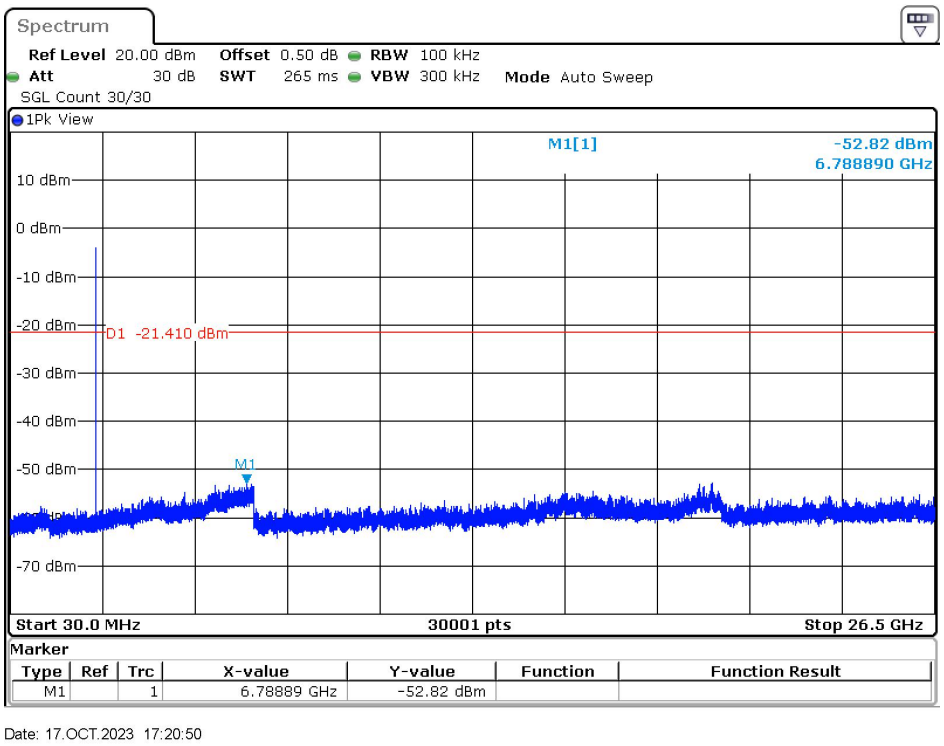
Channel 39:



Date: 17.OCT.2023 17:15:32

Product	:	Multimedia device with Bluetooth and WLAN
Test Item	:	RF Antenna Port Conducted Test
Test Mode	:	Transmit - 2 Mbps
Test Date	:	2023/10/17
Test Sample	:	ID 02

Channel 39:

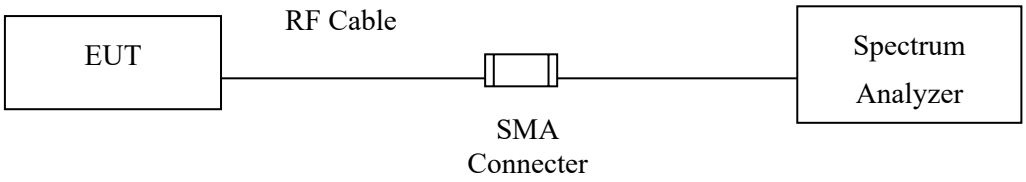


Date: 17.OCT.2023 17:20:50

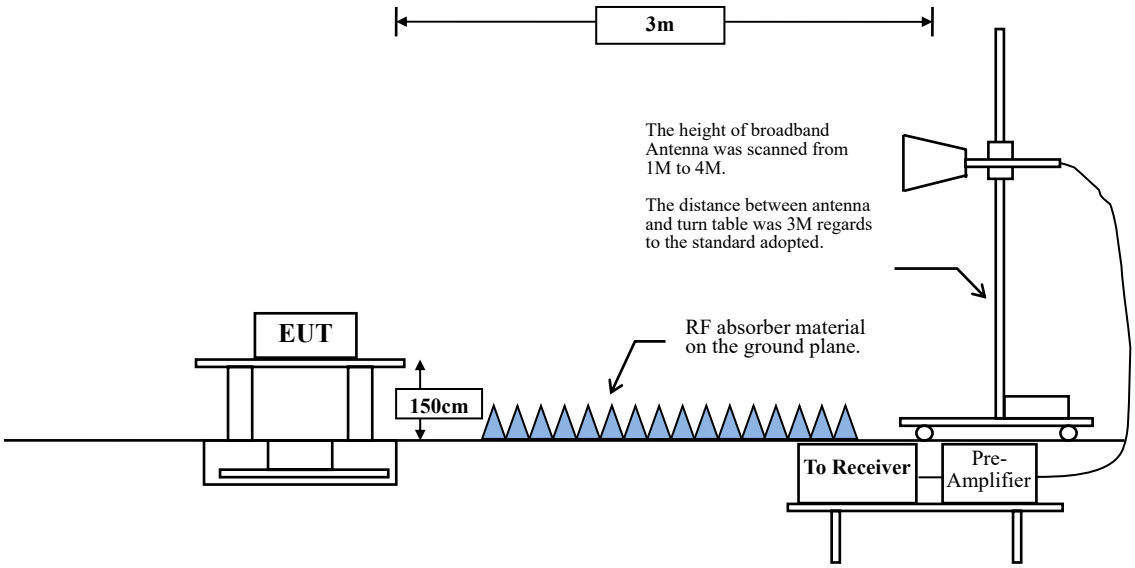
6. Band Edge

6.1. Test Setup

RF Conducted Measurement



RF Radiated Measurement



6.2. Limit

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to C63.10:2013 Section 11.12.1 and 11.12.2 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.

RBW and VBW Parameter setting:

According to C63.10 Section 11.12.2.4 Peak measurement procedure.

RBW = as specified in Table 1.

VBW ≥ 3 x RBW.

Table 1 - RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to C63.10 Section 11.12.2.5 Average measurement procedure.

RBW = 1 MHz.

VBW = 10 Hz, when duty cycle ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

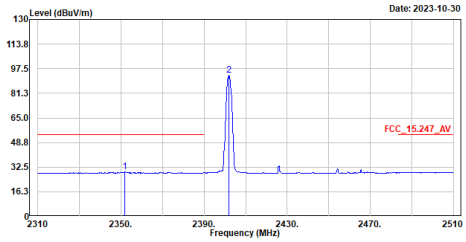
2.4 GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
BLE (1Mbps)	84.86	2.1300	469	500
BLE (2Mbps)	56.91	1.0700	935	1000

Note: Duty Cycle Refer to Section 9.

6.4. Test Result of Band Edge

NA1_ Sample ID 01

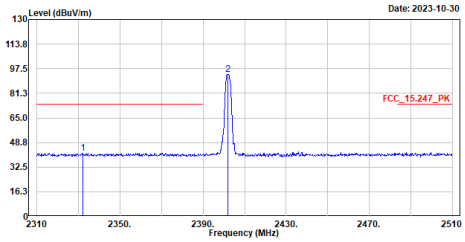
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ble1m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2352.000	29.39	54.00	-24.61	23.62	5.77	Average
2	2402.000	93.00	------	------	87.37	5.63	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

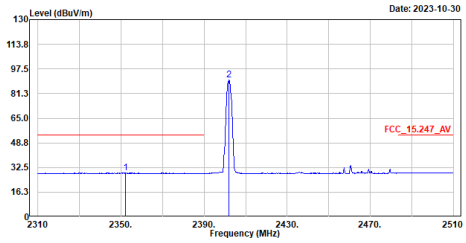
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ble1m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2332.200	41.84	74.00	-32.16	36.08	5.76	Peak
2	2401.800	93.75	------	------	88.12	5.63	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

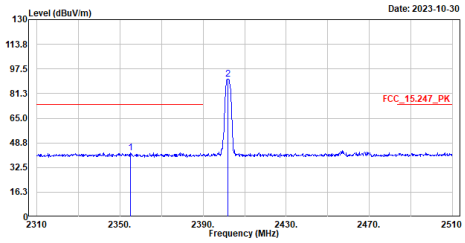
Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ble1m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2352.200	28.90	54.00	-25.10	23.13	5.77	Average
2	2402.000	90.07	------	------	84.44	5.63	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

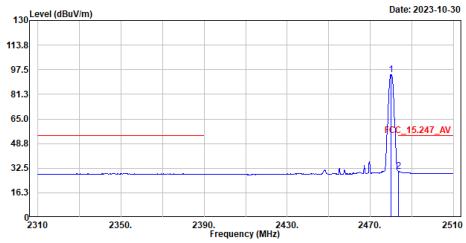
Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ble1m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2355.000	42.38	74.00	-31.62	36.61	5.77	Peak
2	2401.800	90.82	------	------	85.19	5.63	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

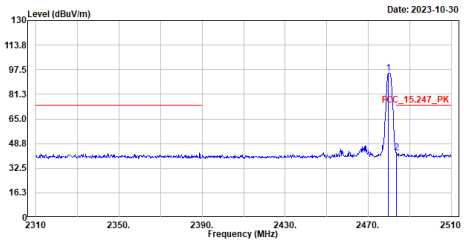
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ble1m_2480MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2480.000	94.42	------	------	88.75	5.67	Average
2	2483.600	30.33	54.00	-23.67	24.64	5.69	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

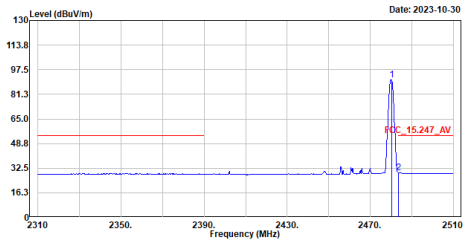
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ble1m_2480MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2479.800	95.16	------	------	89.49	5.67	Peak
2	2483.600	42.54	74.00	-31.46	36.85	5.69	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

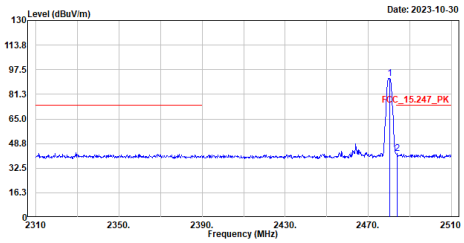
Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ble1m_2480MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2480.200	90.89	------	------	85.22	5.67	Average
2	2483.600	29.62	54.00	-24.38	23.93	5.69	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

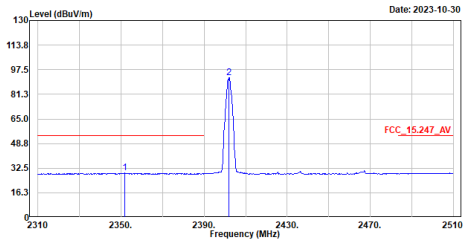
Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ble1m_2480MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2480.400	91.65	------	------	85.98	5.67	Peak
2	2484.000	42.07	74.00	-31.93	36.38	5.69	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

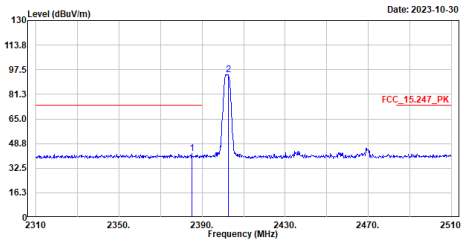
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ble2m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2351.800	29.30	54.00	-24.70	23.53	5.77	Average
2	2402.000	92.21	------	------	86.58	5.63	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

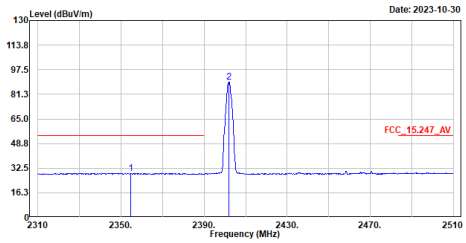
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ble2m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2385.000	42.24	74.00	-31.76	36.57	5.67	Peak
2	2402.600	94.02	------	------	88.39	5.63	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

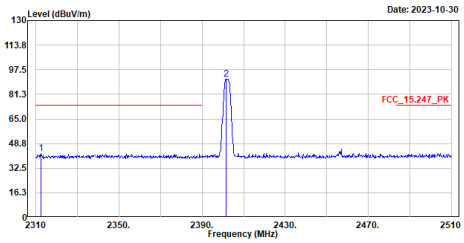
Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ble2m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2354.600	29.13	54.00	-24.87	23.36	5.77	Average
2	2402.000	89.41	------	------	83.78	5.63	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

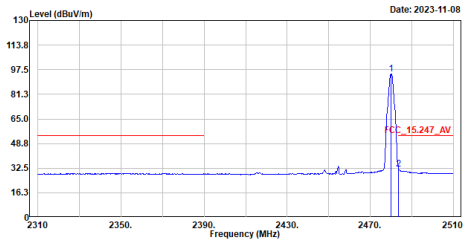
Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ble2m_2402MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2312.600	42.07	74.00	-31.93	36.33	5.74	Peak
2	2401.600	91.23	------	------	85.60	5.63	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

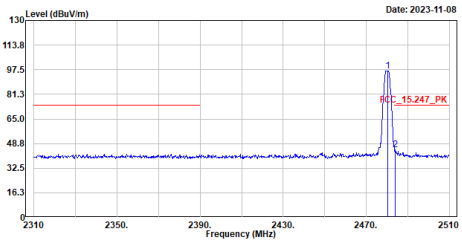
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ble2m_2480MHz
TEST BY :Caster



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2480.000	94.78	------	------	89.11	5.67	Average
2	2483.600	32.01	54.00	-21.99	26.32	5.69	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

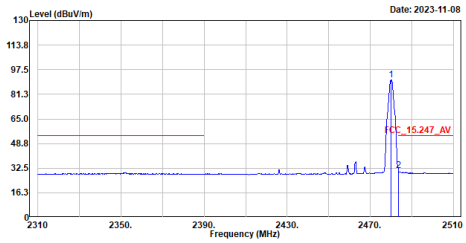
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ble2m_2480MHz
TEST BY :Caster



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2480.200	96.61	------	------	90.94	5.67	Peak
2	2484.000	44.56	74.00	-29.44	38.87	5.69	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

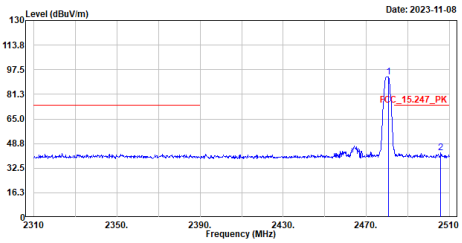
Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ble2m_2480MHz
TEST BY :Caster



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2480.000	90.90	------	------	85.23	5.67	Average
2	2483.600	30.86	54.00	-23.14	25.17	5.69	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ble2m_2480MHz
TEST BY :Caster

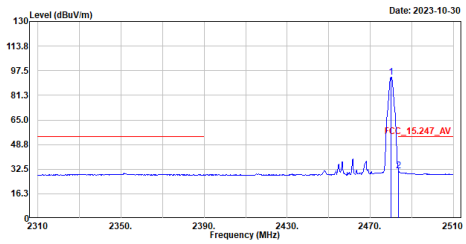


No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2480.600	92.76	------	------	87.08	5.68	Peak
2	2505.800	42.48	74.00	-31.52	36.74	5.74	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

NA2_ Sample ID 03

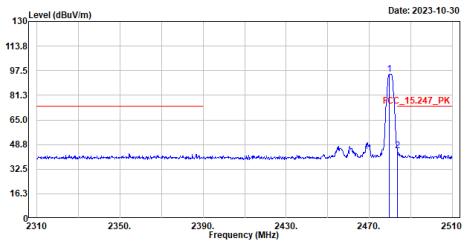
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ble2m_2480MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2480.000	93.30	------	------	87.63	5.67	Average
2	2483.600	31.31	54.00	-22.69	25.62	5.69	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

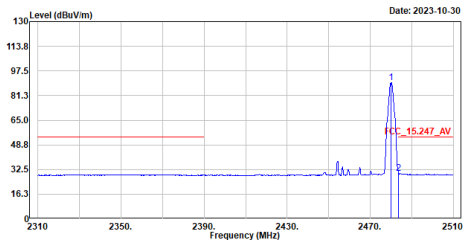
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ble2m_2480MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2479.600	95.09	------	------	89.42	5.67	Peak
2	2483.600	44.70	74.00	-29.30	39.01	5.69	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

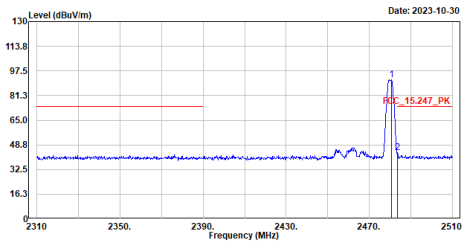
Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ble2m_2480MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2480.000	89.76	------	------	84.09	5.67	Average
2	2483.600	30.10	54.00	-23.90	24.41	5.69	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ble2m_2480MHz
TEST BY :Sam



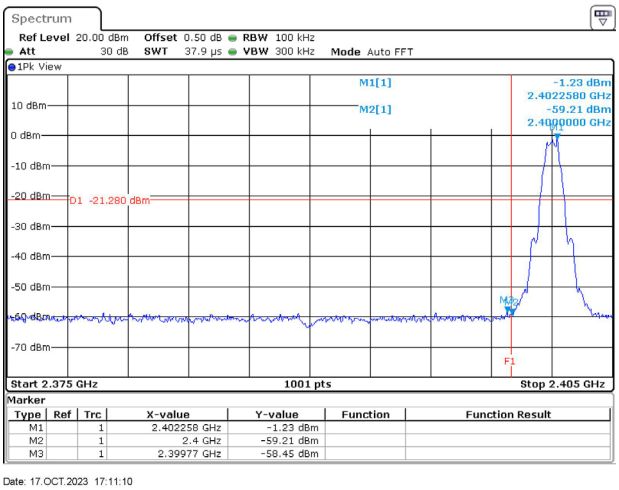
No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	2480.600	91.56	------	------	85.88	5.68	Peak
2	2483.600	43.58	74.00	-30.42	37.89	5.69	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

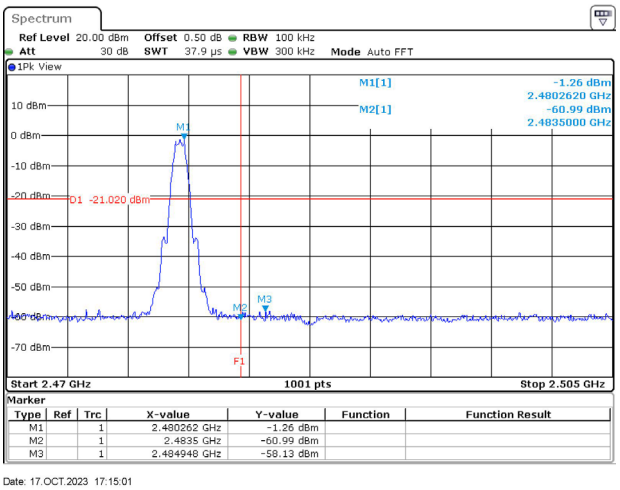
Product	:	Multimedia device with Bluetooth and WLAN
Test Item	:	Band Edge
Test Mode	:	Transmit - 1 Mbps
Test Date	:	2023/10/17
Test Sample	:	ID 02

Measurement Level Δ (dB)	Result
> 20	PASS

Channel 00



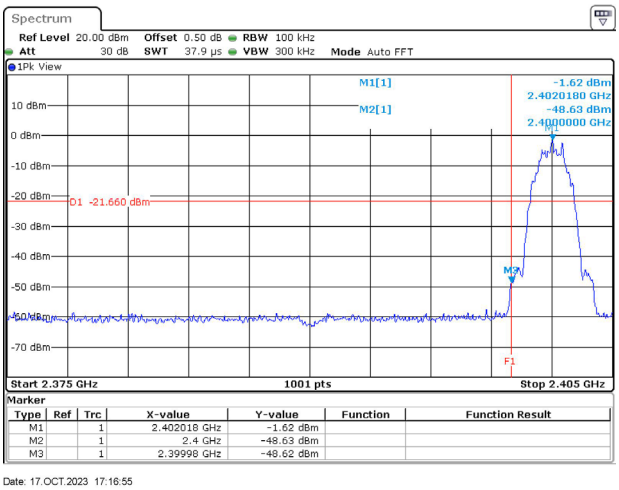
Channel 39



Product	:	Multimedia device with Bluetooth and WLAN
Test Item	:	Band Edge
Test Mode	:	Transmit - 2 Mbps
Test Date	:	2023/10/17
Test Sample	:	ID 02

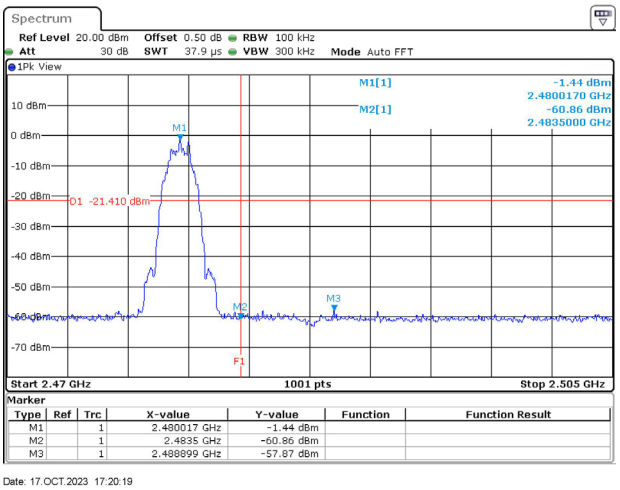
Measurement Level Δ (dB)	Result
> 20	PASS

Channel 00



Date: 17.OCT.2023 17:16:55

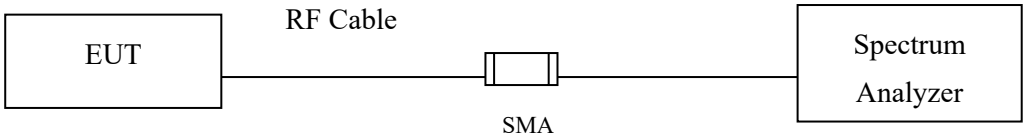
Channel 39



Date: 17.OCT.2023 17:20:19

7. 6dB Bandwidth

7.1. Test Setup



7.2. Limits

The minimum bandwidth shall be at least 500 kHz.

7.3. Test Procedure

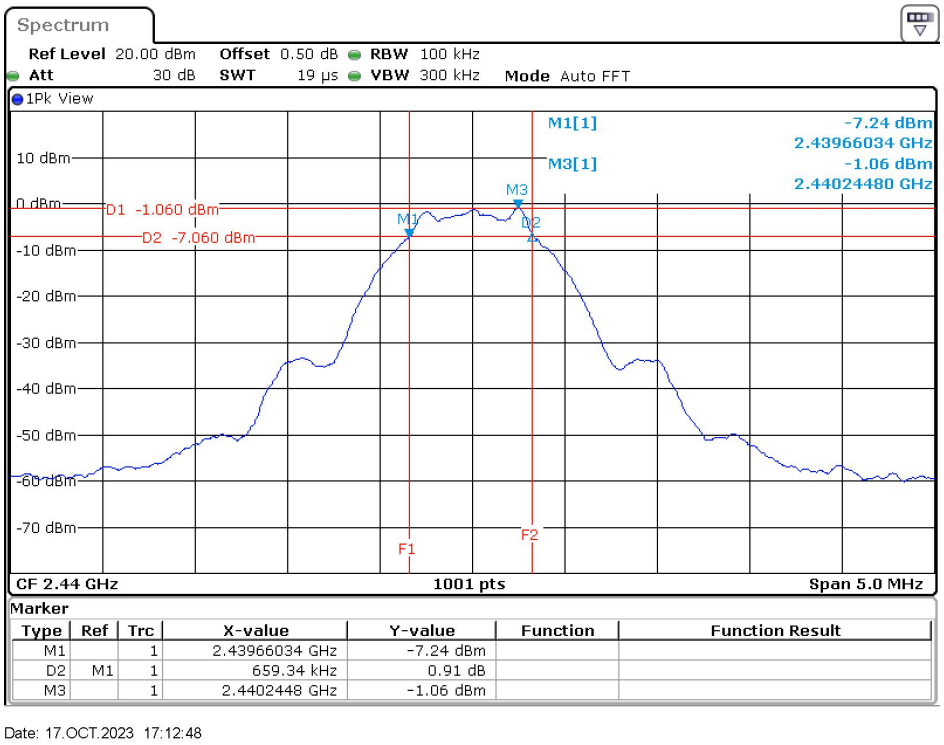
The EUT was setup according to ANSI C63.4, 2014; tested according to ANSI C63.10 Section 11.8 for compliance to FCC 47CFR 15.247 requirements.

7.4. Test Result of 6dB Bandwidth

Product : Multimedia device with Bluetooth and WLAN
Test Item : 6dB Bandwidth
Test Mode : Transmit - 1 Mbps
Test Date : 2023/10/17
Test Sample : ID 02

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	664	>500	Pass
19	2440	659	>500	Pass
39	2480	664	>500	Pass

Channel 19:

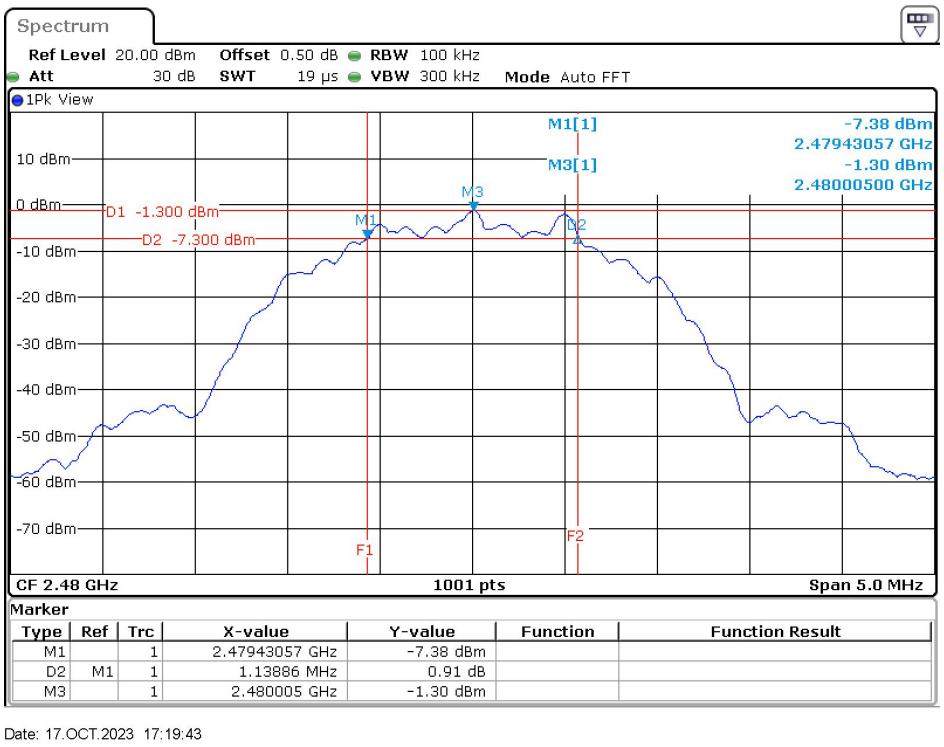


Date: 17.OCT.2023 17:12:48

Product : Multimedia device with Bluetooth and WLAN
Test Item : 6dB Bandwidth
Test Mode : Transmit - 2 Mbps
Test Date : 2023/10/17
Test Sample : ID 02

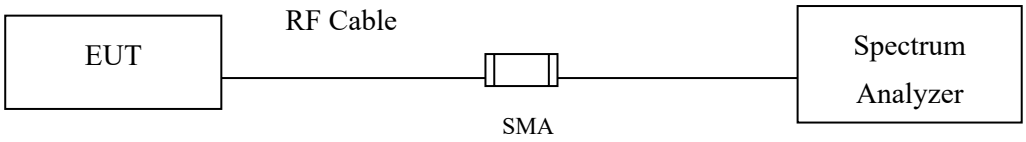
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1144	>500	Pass
19	2440	1144	>500	Pass
39	2480	1139	>500	Pass

Channel 39:



8. Power Spectral Density

8.1. Test Setup



8.2. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3 kHz bandwidth.

8.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

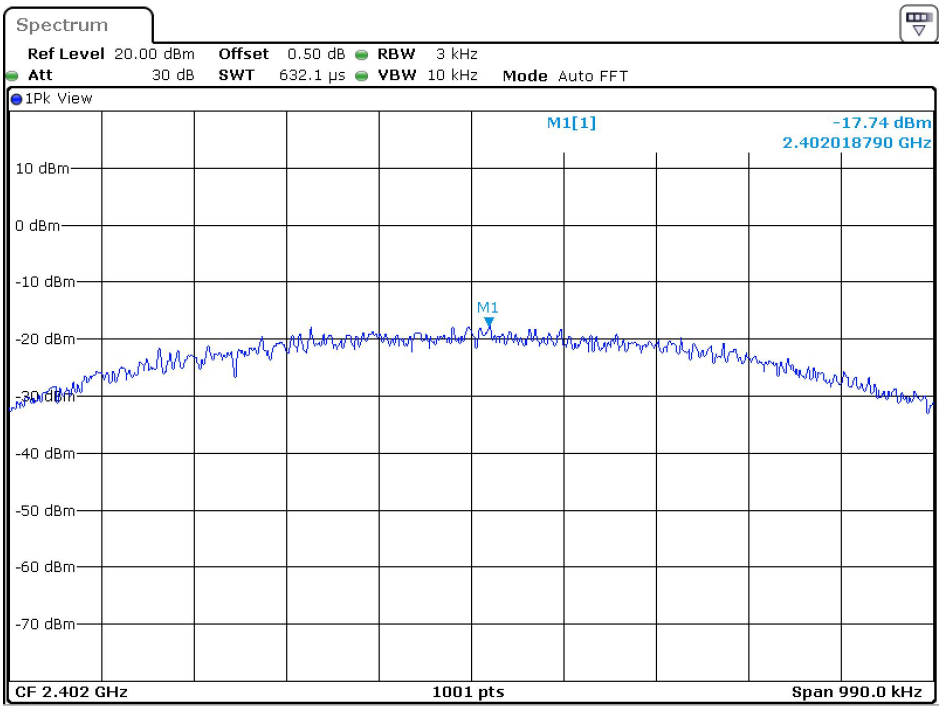
The maximum power spectral density using C63.10 Section 11.10.2 Method PKPSD (peak PSD).

8.4. Test Result of Power Spectral Density

Product : Multimedia device with Bluetooth and WLAN
Test Item : Power Spectral Density
Test Mode : Transmit - 1 Mbps
Test Date : 2023/10/17
Test Sample : ID 02

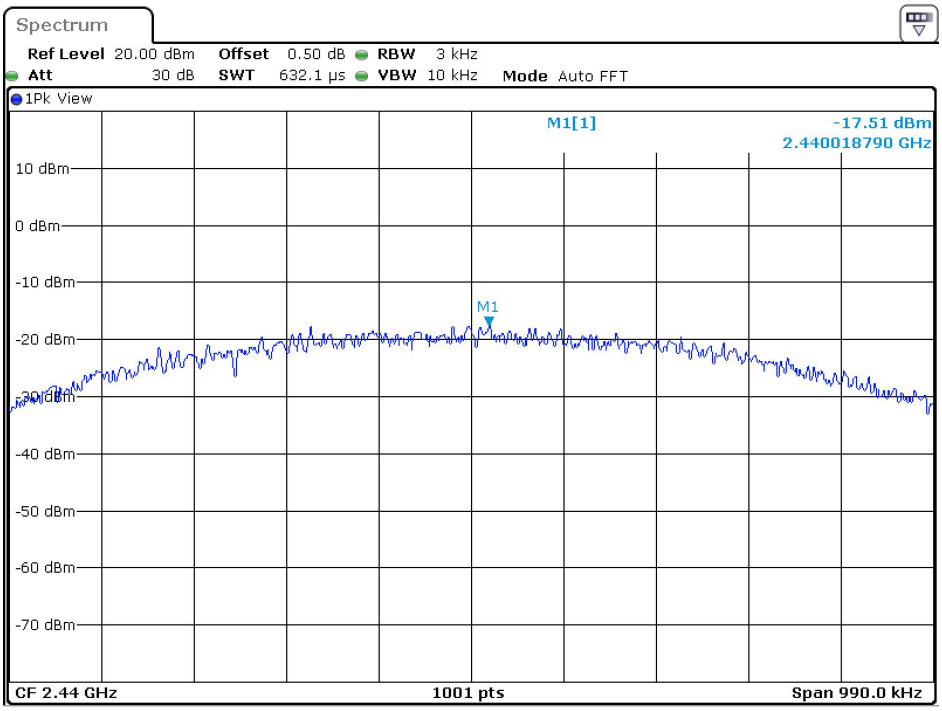
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	-17.74	≦8dBm	Pass
19	2440	-17.51	≦8dBm	Pass
39	2480	-17.45	≦8dBm	Pass

Channel 00:



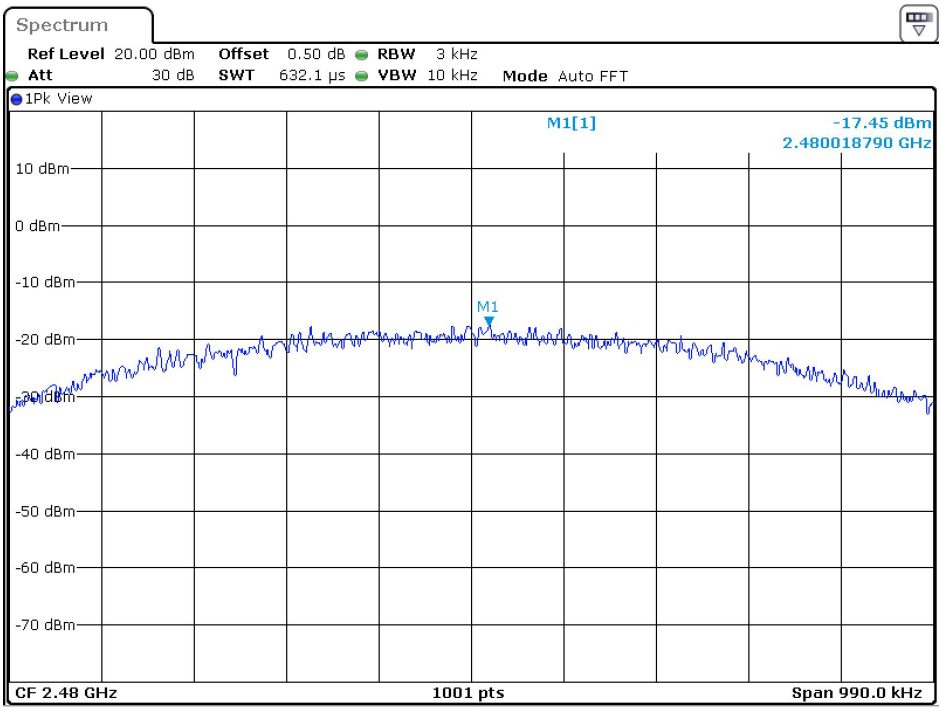
Date: 17.OCT.2023 17:10:53

Channel 19:



Date: 17.OCT.2023 17:13:07

Channel 39:

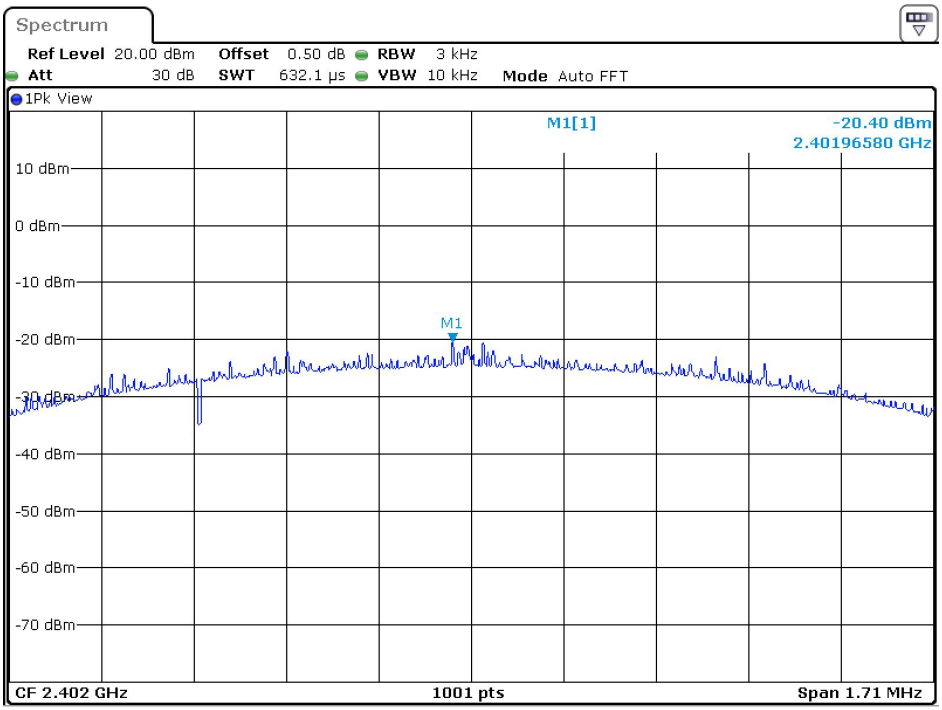


Date: 17.OCT.2023 17:14:44

Product : Multimedia device with Bluetooth and WLAN
Test Item : Power Spectral Density
Test Mode : Transmit - 2 Mbps
Test Date : 2023/10/17
Test Sample : ID 02

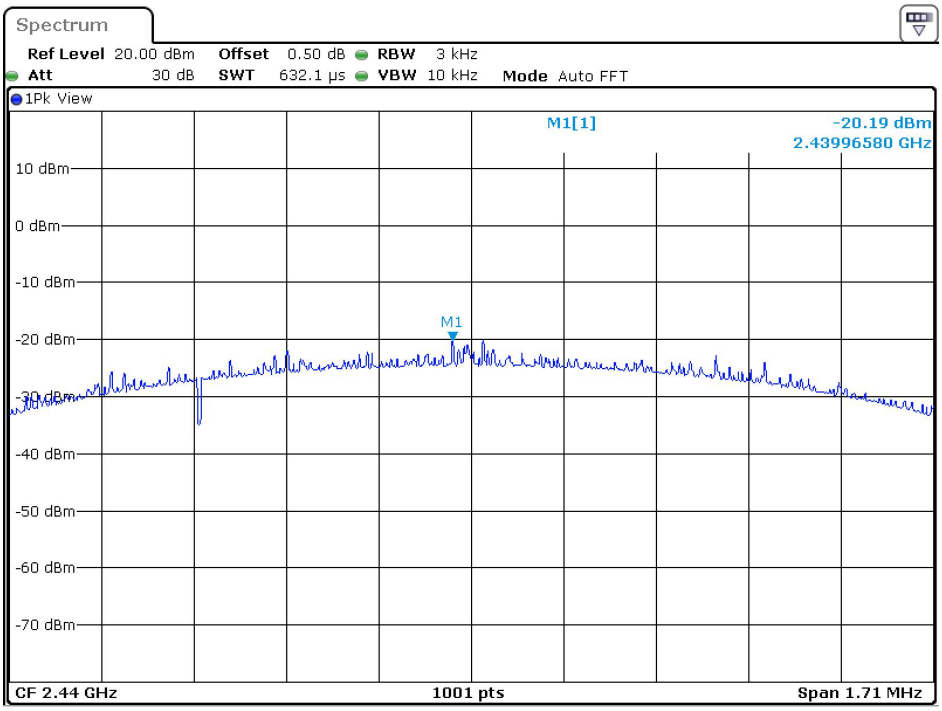
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	-20.40	≦8dBm	Pass
19	2440	-20.19	≦8dBm	Pass
39	2480	-20.14	≦8dBm	Pass

Channel 00:



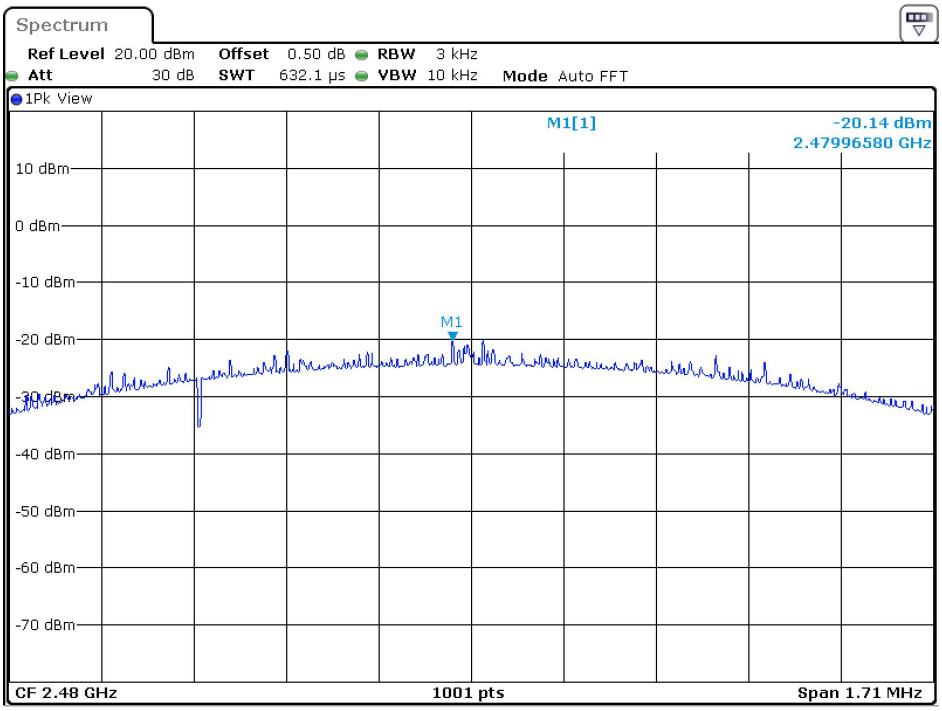
Date: 17.OCT.2023 17:16:38

Channel 19:



Date: 17.OCT.2023 17:18:22

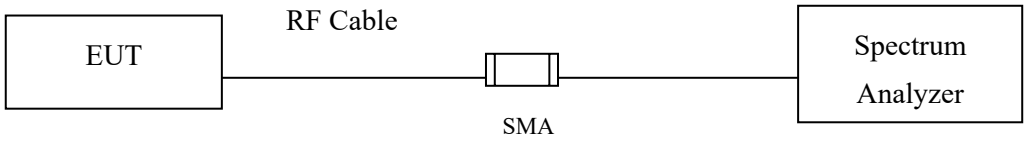
Channel 39:



Date: 17.OCT.2023 17:20:02

9. Duty Cycle

9.1. Test Setup



9.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to ANSI C63.10 2013 for compliance to FCC 47CFR 15.247 requirements.

9.3. Test Result of Duty Cycle

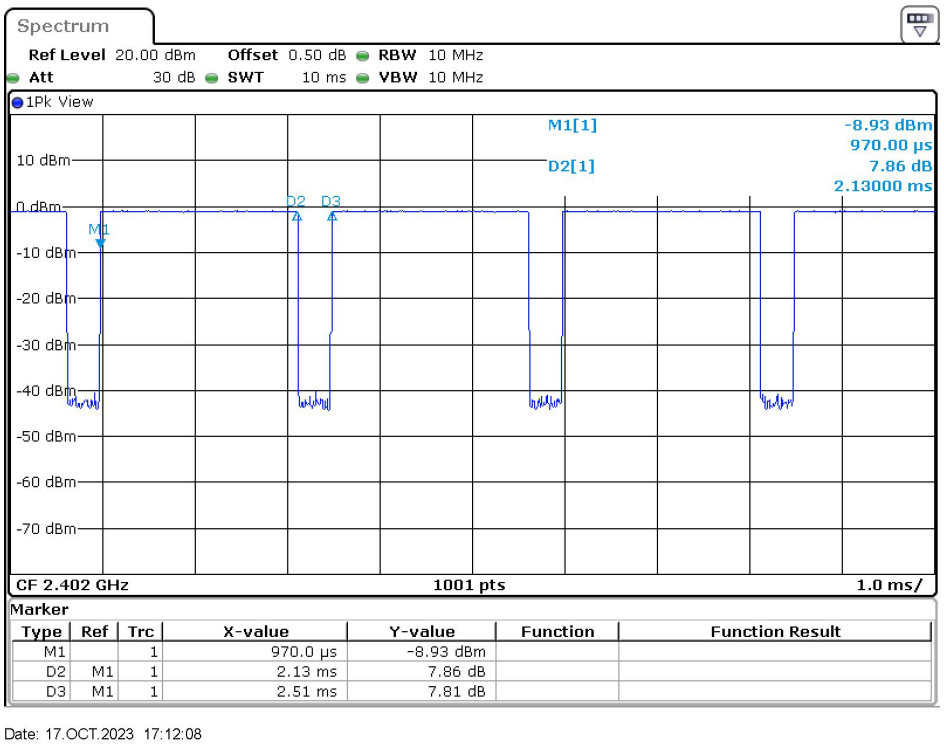
Product : Multimedia device with Bluetooth and WLAN
Test Item : Duty Cycle
Test Mode : Transmit - 1 Mbps
Test Sample : ID 02

Formula:

Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

2.4GHz Band	Time On (ms)	Time On + Time Off (ms)	Duty Cycle (%)	Duty Factor (dB)
BLE (1Mbps)	2.1300	2.5100	84.86	0.71



Date: 17.OCT.2023 17:12:08

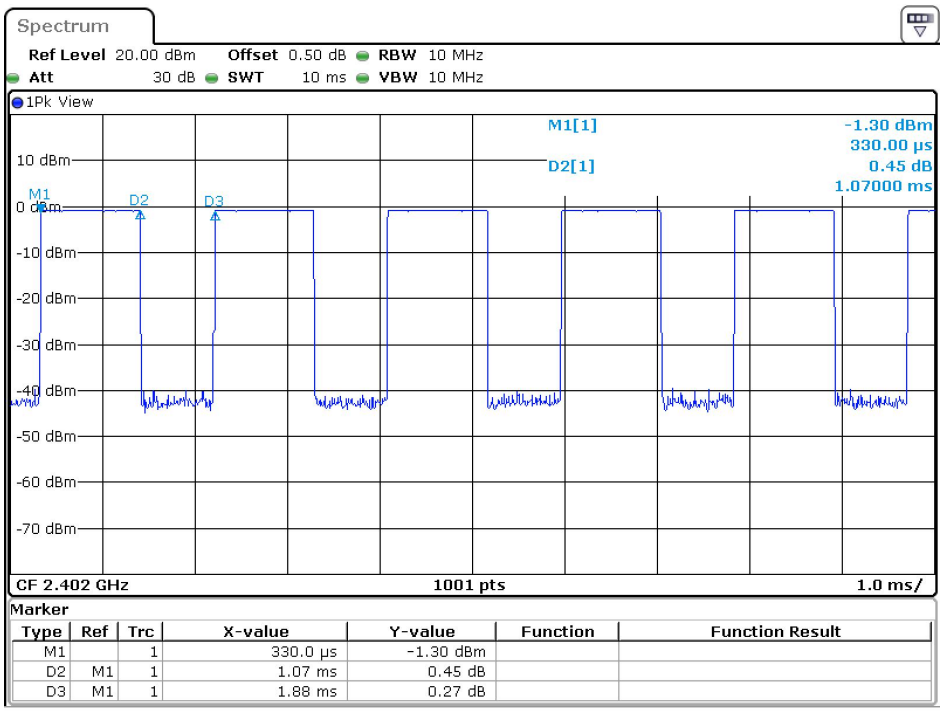
Product : Multimedia device with Bluetooth and WLAN
Test Item : Duty Cycle
Test Mode : Transmit - 2 Mbps
Test Sample : ID 02

Formula:

Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

2.4GHz Band	Time On (ms)	Time On + Time Off (ms)	Duty Cycle (%)	Duty Factor (dB)
BLE (2Mbps)	1.0700	1.8800	56.91	2.45



Date: 17.OCT.2023 17:15:58