

FCC Test Report

Product Name	Dongle
Model No.	MD200-D
FCC ID	MSQ-DG-MD200D

Applicant	ASUSTeK Computer, Inc
Address	1F, No. 15, Lide Rd, Beitou, Taipei, 112 Taiwan

Date of Receipt	Apr. 14, 2022
Issued Date	Jun. 20, 2022
Report No.	2240527R-RFUSOTHV06-A
Report Version	V1.0



The test results relate only to the samples tested.

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

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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 Report

Issued Date: Jun. 20, 2022

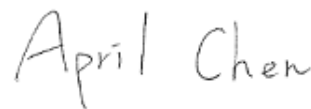
Report No.: 2240527R-RFUSOTHV06-A



Product Name	Dongle
Applicant	ASUSTeK Computer, Inc
Address	1F, No. 15, Lide Rd, Beitou, Taipei, 112 Taiwan
Manufacturer	ASUSTeK Computer, Inc
Model No.	MD200-D
FCC ID	MSQ-DG-MD200D
EUT Rated Voltage	DC 5V (Power by USB)
EUT Test Voltage	DC 5V (Power by USB)
Trade Name	ASUS
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By

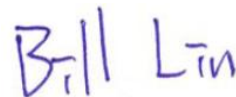
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(Senior Project Specialist / April Chen)

Tested By

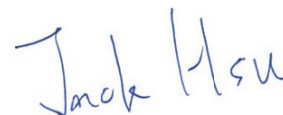
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(Senior Engineer / Bill Lin)

Approved By

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(Senior Engineer / Jack Hsu)

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Revision History

Report No.	Version	Description	Issued Date
2240527R-RFUSOTHV06-A	V1.0	Initial issue of report.	Jun. 20, 2022

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Dongle
Trade Name	ASUS
Model No.	MD200-D
FCC ID	MSQ-DG-MD200D
Frequency Range	2402-2480MHz
Channel Number	40CH
Type of Modulation	GFSK
Antenna Type	Printed Antenna
Antenna Gain	Refer to the table "Antenna List"
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	NORDIC	nRF52820_QDAA-QNF40	Printed Antenna	1.934dBi for 2.4GHz

Note: The antenna of EUT is conform to FCC 15.203

Center Frequency of Each Channel:

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

Note:

1. The EUT is a Dongle with built-in 2.4G wireless transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance of transmitter with Part 15 Subpart C Paragraph 15.249 for spread spectrum devices.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit
	Mode 2: Normal mode

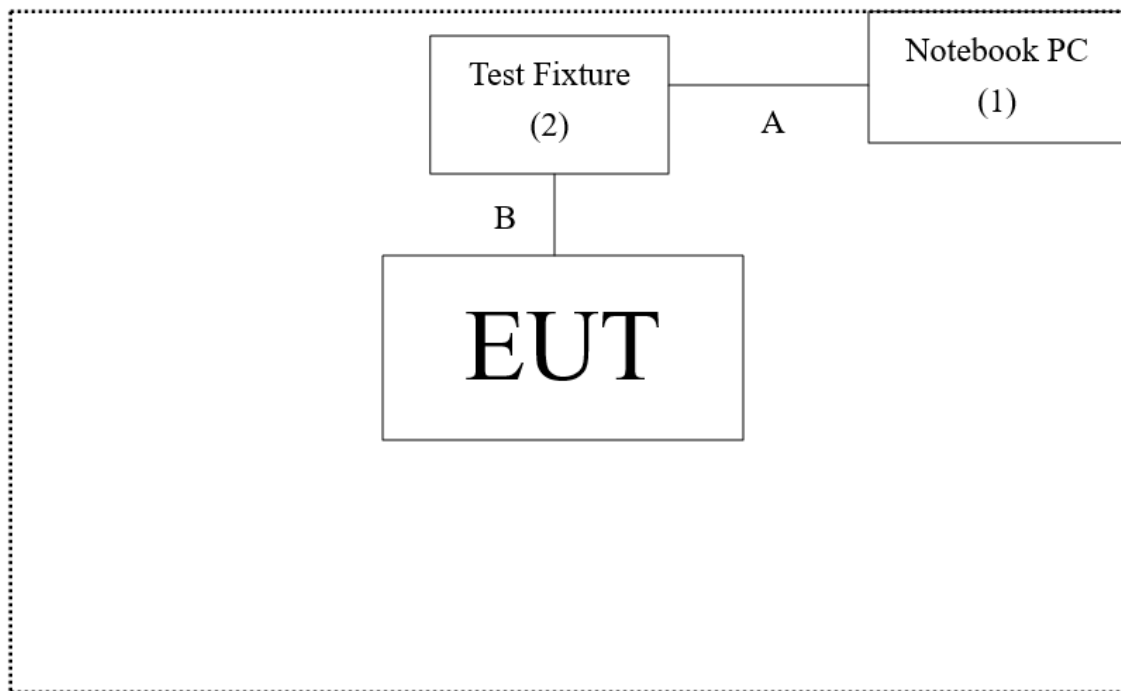
1.2. Tested System Details

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	Notebook PC	DELL	Latitude 5580	2HRD7H2	N/A
2	Test Fixture	ASUS	CP2102	N/A	N/A

Signal Cable Type	Signal cable Description
A	USB Cable
B	Signal Cable

1.3. Configuration of Test System



1.4. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.3.
- (2) Execute “Putty Version 0.73” program on the Notebook PC.
- (3) Configure the test mode and the test channel
- (4) 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	21.0 °C
	Humidity (%RH)	10~90 %	60.0 %

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
Address : No. 5-22, Ruishukeng Linkou District, New Taipei City,
24451, Taiwan

Performed Location : No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City
333411, Taiwan, R.O.C.

Phone number : +886-3-275-7255
Fax number : +866-3-327-8031
Email address : info.tw@dekra.com
Website : <http://www.dekra.com.tw>

1.6. List of Test Equipment

For Conduction measurements /HY-SR01

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	EMI Test Receiver	R&S	ESR7	101601	2021.06.19	2022.06.18
X	Two-Line V-Network	R&S	ENV216	101306	2022.05.23	2023.05.22
X	Two-Line V-Network	R&S	ENV216	102202	2021.06.16	2022.06.15
X	Coaxial Cable	SUHNER	RG400 BNC	RF001	2022.05.24	2023.05.23

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : E3 210616 dekra V9

For Conducted measurements /HY-SR02

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Spectrum Analyzer	R&S	FSV30	103466	2021.12.27	2022.12.26
X	Peak Power Analyzer	KEYSIGHT	8900B	MY51000539	2021.06.07	2022.06.06
X	Power Sensor	KEYSIGHT	N1923A	MY59240002	2021.05.17	2022.05.16
X	Power Sensor	KEYSIGHT	N1923A	MY59240003	2021.05.17	2022.05.16

Note:

4. All equipments are calibrated every one year.
5. The test instruments marked with “X” are used to measure the final test results.
6. Test Software version : RF Conducted Test Tools R3 V3.0.1.19

For Radiated measurements /HY-CB01

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Loop Antenna	AMETEK	HLA6121	56736	2022.05.14	2023.05.13
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-675	2021.08.10	2022.08.09
X	Horn Antenna	ETS-Lindgren	3117	00201259	2021.11.09	2022.11.08
	Horn Antenna	Com-Power	AH-840	101087	2021.06.18	2022.06.17
X	Pre-Amplifier	SGH	SGH0301	20211007-7	2022.02.22	2023.02.21
X	Pre-Amplifier	EMCI	EMC051835SE	980312	2022.02.22	2023.02.21
X	Pre-Amplifier	EMCI	EMC05820SE	980362	2021.08.24	2022.08.23
	Pre-Amplifier	EMCI	EMC184045SE	980369		
	Coaxial Cable	EMCI	EMC102-KM-KM-600	1160314	2022.05.12	2023.05.11
	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242		
X	Filter	MICRO TRONICS	BRM50702	G251	2021.09.16	2022.09.15
	Filter	MICRO TRONICS	BRM50716	G188	2021.09.16	2022.09.15
X	EMI Test Receiver	R&S	ESR	102792	2021.12.15	2022.12.14
X	Spectrum Analyzer	R&S	FSV3044	101113	2022.01.25	2023.02.24
	Coaxial Cable	SUHNER	SUCOFLEX 106	25450/6		
	Coaxial Cable	SGH	HA800	GD20110222-8	2022.03.22	2023.03.21
	Coaxial Cable	SGH	SGH18	2021003-8		
	Coaxial Cable	EMCI	EMC106	151113		

Note:

7. All equipments are calibrated every one year.
8. The test instruments marked with “X” are used to measure the final test results.
9. Test Software version : E3 210616 dekra V9

1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.

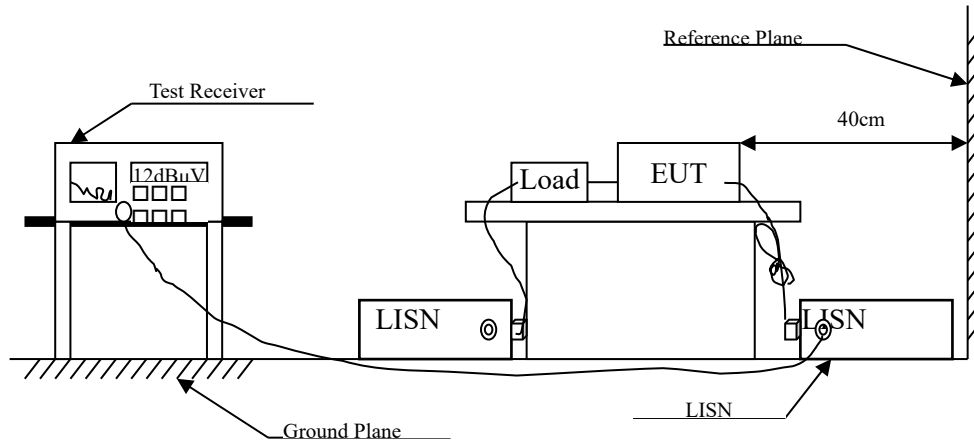
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

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	±3.42 dB	
Radiated Emission	Under 1GHz ±4.06 dB	Above 1GHz ±3.73 dB
Band Edge	Under 1GHz ±4.06 dB	Above 1GHz ±3.73 dB
Duty Cycle	±2.31 ms	

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dB μ V) 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.

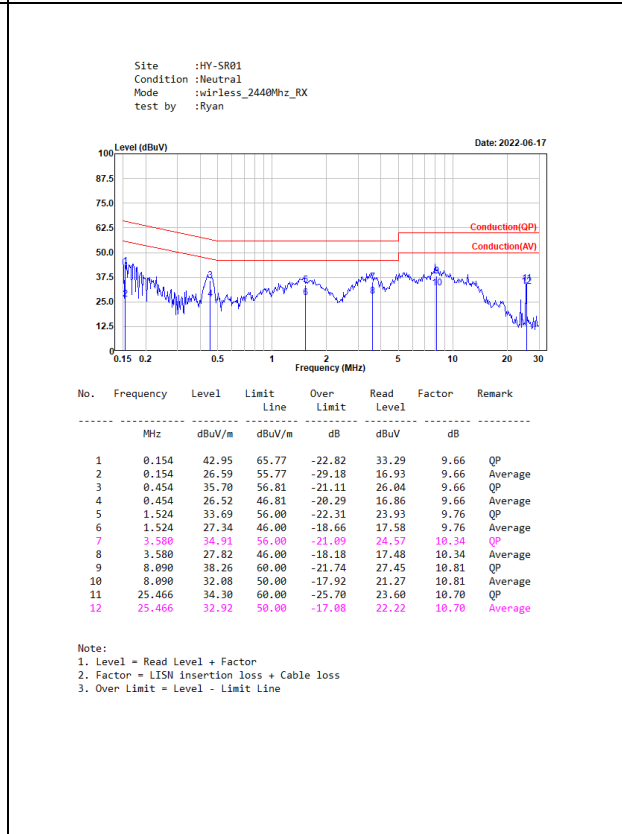
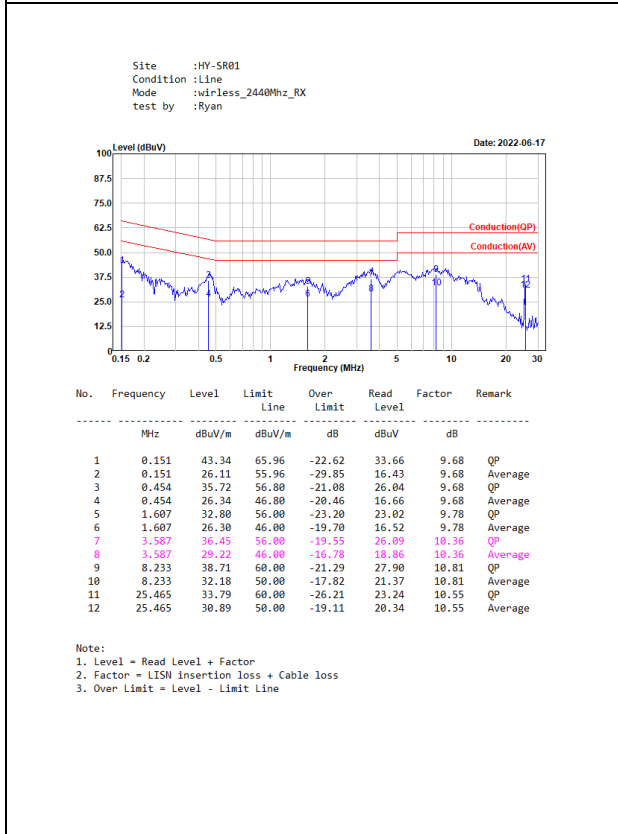
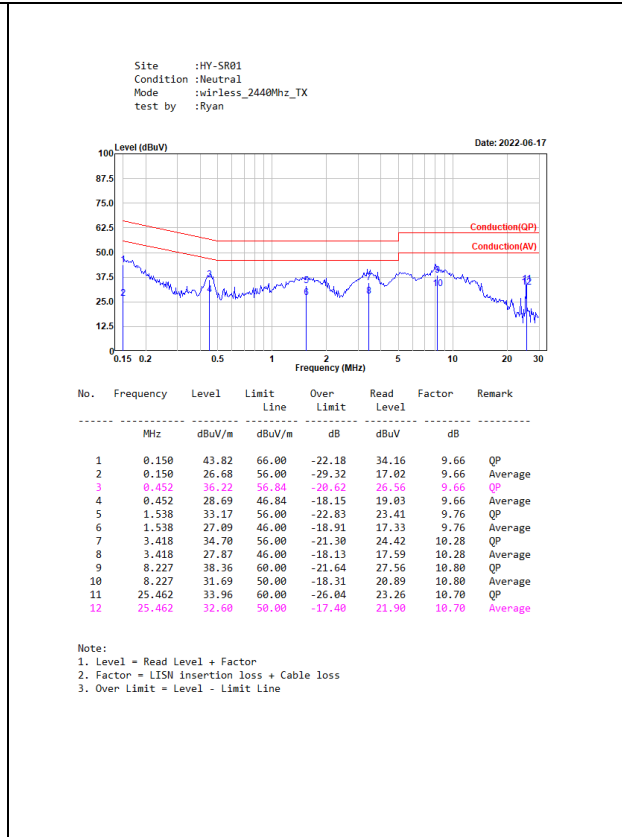
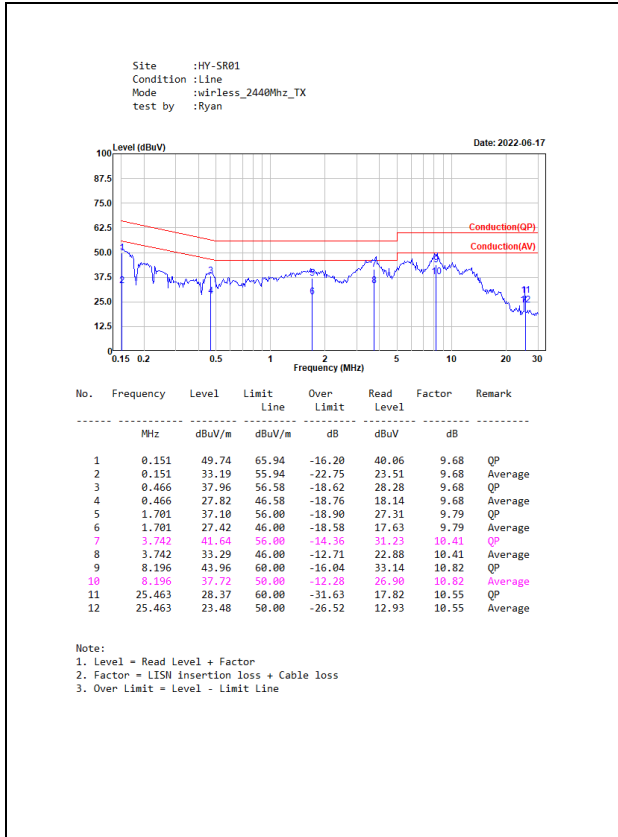
2.3. Test Procedure

The EUT and simulators 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 refers 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 of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

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

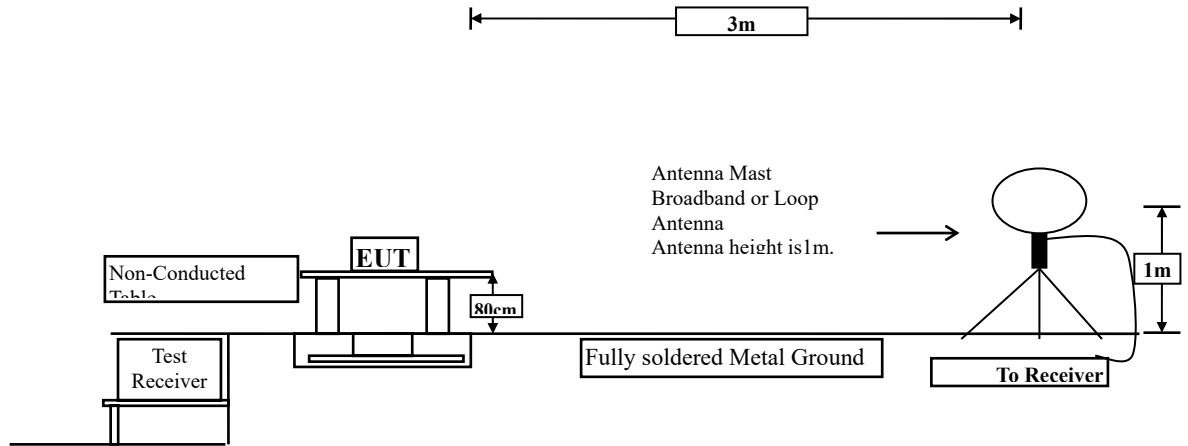
2.4. Test Result of Conducted Emission



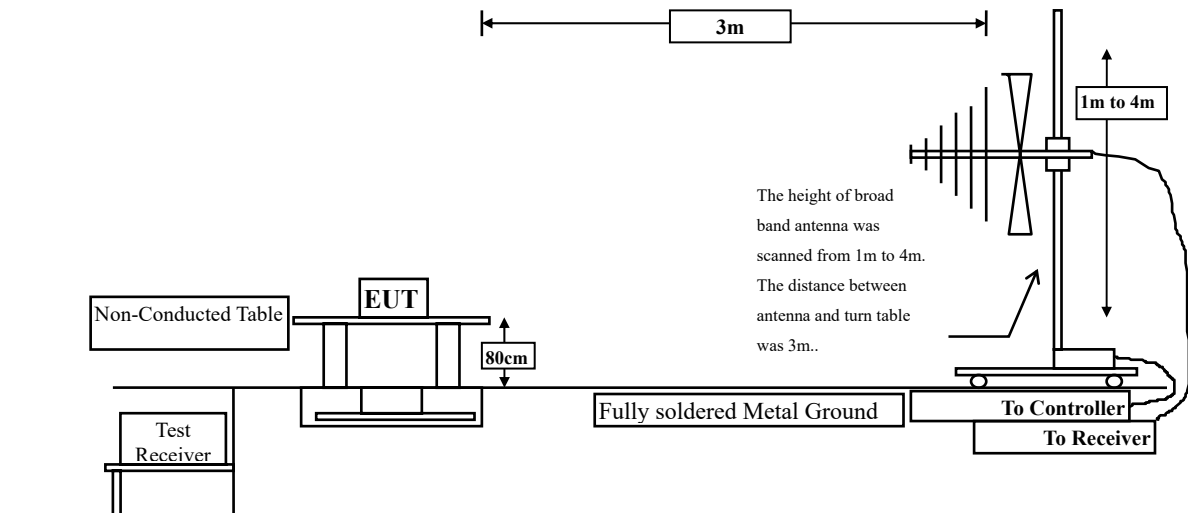
3. Radiated Emission

3.1. Test Setup

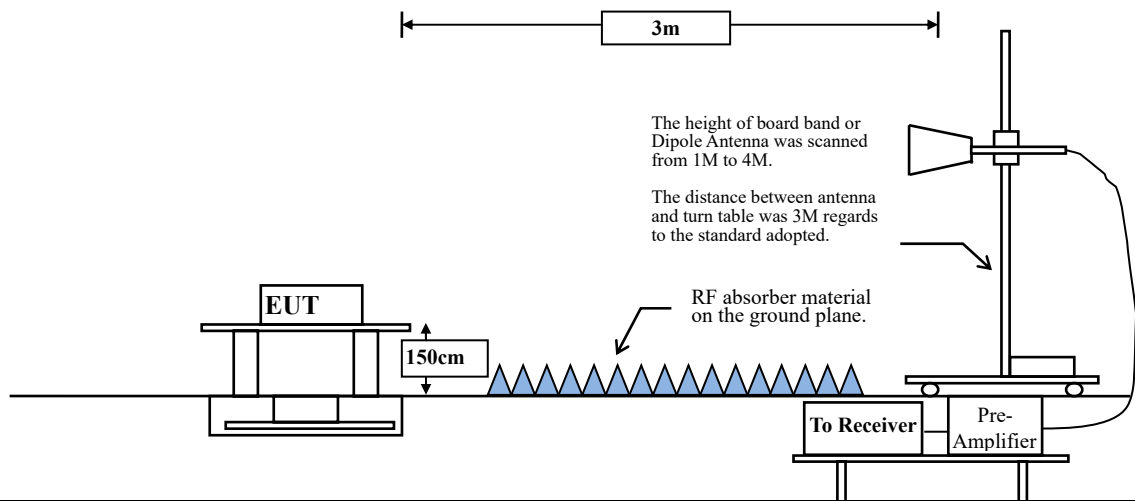
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



3.2. Limits

➤ Fundamental and Harmonics Emission Limits

FCC Part 15 Subpart C Paragraph 15.249 Limits				
Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	(mV/m @3m)	(dB μ V /m @3m)	(uV/m @3m)	(dB μ V /m @3m)
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54
24000-24250	250	108	2500	68

Remarks : 1. RF Voltage (dB μ V /m) = 20 log RF Voltage (uV/m)
 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB 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(a) 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: E field strength (dB μ V /m) = 20 log E field strength (uV/m)

3.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.249 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, 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 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

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

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

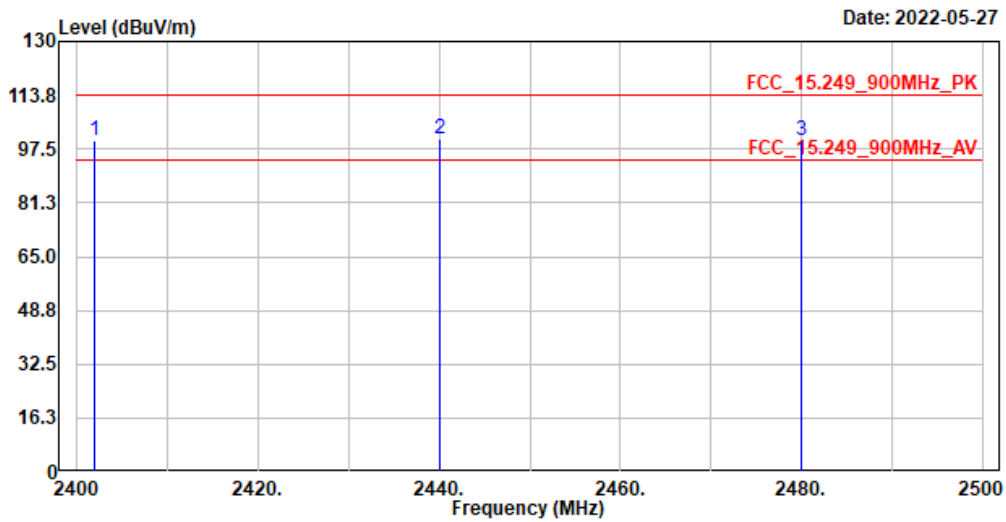
The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the 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 from 9kHz - 10th Harmonic of fundamental was investigated.

3.4. Test Result of Radiated Emission

Product : Dongle
 Test Item : Fundamental
 Radiated Emission
 Test Date : 2022/05/27
 Test Mode : Mode 1: Transmit

Site :HY-CB01
 Condition :3m ,Horizontal
 Mode :TX_wirless_X
 TEST BY :Nick



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2402.000	100.17	113.97	-13.80	88.85	11.32	Peak
2	2440.000	100.50	113.97	-13.47	89.22	11.28	Peak
3	2480.000	100.12	113.97	-13.85	88.84	11.28	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

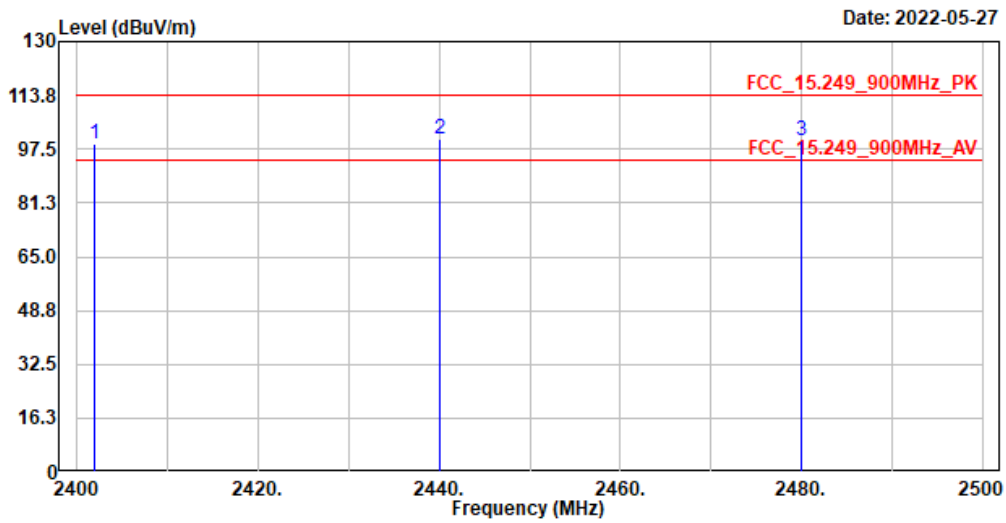
Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Margin (dB)	Average Limit (dBμV/m)
2402	100.17	-33.859	66.311	-27.659	93.970
2440	100.5	-33.859	66.641	-27.329	93.970
2480	100.12	-33.859	66.261	-27.709	93.970

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : Dongle
 Test Item : Fundamental
 Radiated Emission
 Test Date : 2022/05/27
 Test Mode : Mode 1: Transmit

Site :HY-CB01
 Condition :3m ,Vertical
 Mode :TX_wirless_X
 TEST BY :Nick



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2402.000	99.10	113.97	-14.87	87.78	11.32	Peak
2	2440.000	100.38	113.97	-13.59	89.10	11.28	Peak
3	2480.000	100.07	113.97	-13.90	88.79	11.28	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

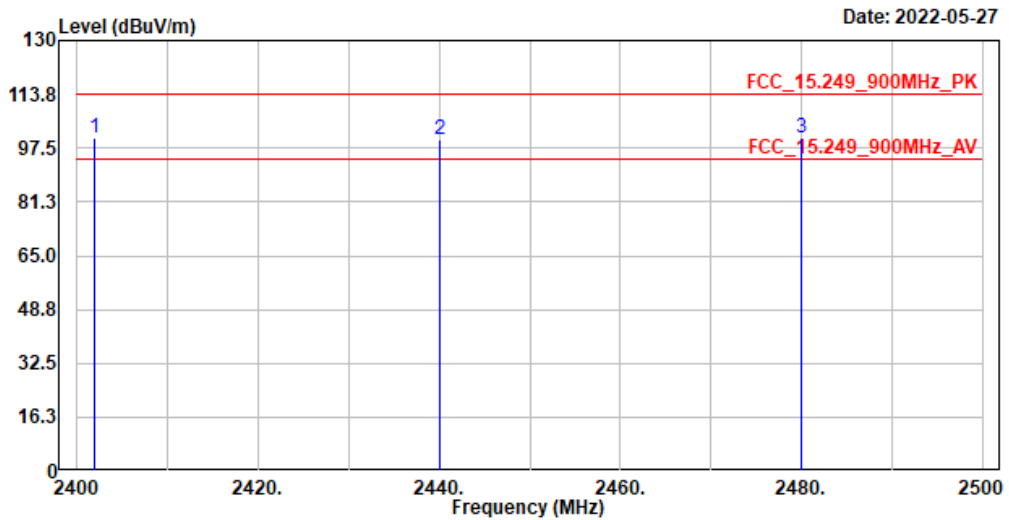
Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Margin (dB)	Average Limit (dBμV/m)
2402	99.1	-33.859	65.241	-28.729	93.970
2440	100.38	-33.859	66.521	-27.449	93.970
2480	100.07	-33.859	66.211	-27.759	93.970

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : Dongle
 Test Item : Fundamental
 Radiated Emission
 Test Date : 2022/05/27
 Test Mode : Mode 1: Transmit

Site :HY-CB01
 Condition :3m ,Horizontal
 Mode :TX_wirless_Y
 TEST BY :Nick



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2402.000	100.72	113.97	-13.25	89.40	11.32	Peak
2	2440.000	99.95	113.97	-14.02	88.67	11.28	Peak
3	2480.000	100.39	113.97	-13.58	89.11	11.28	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

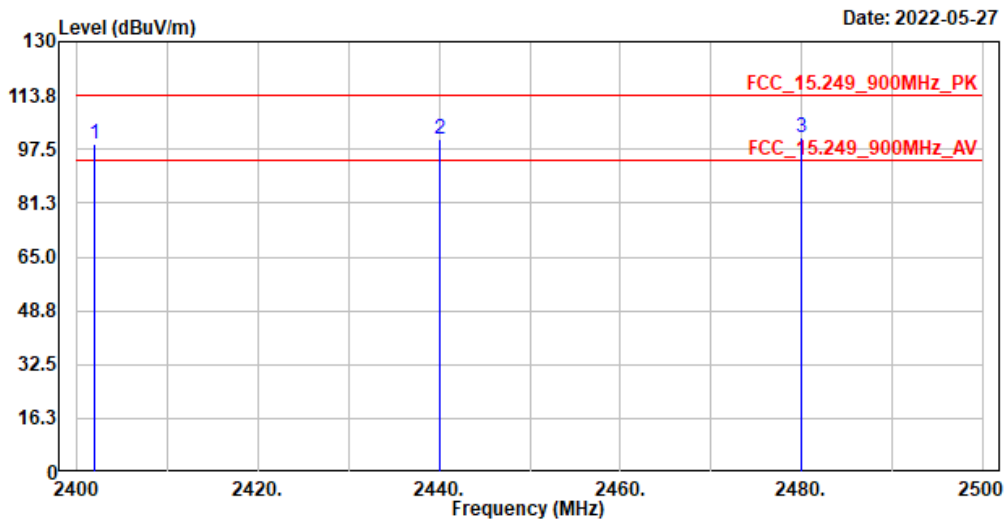
Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Margin (dB)	Average Limit (dBμV/m)
2402	100.72	-33.859	66.861	-27.109	93.970
2440	99.95	-33.859	66.091	-27.879	93.970
2480	100.39	-33.859	66.531	-27.439	93.970

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
 The Duty Cycle is refer to section 5.

Product : Dongle
 Test Item : Fundamental
 Radiated Emission
 Test Date : 2022/05/27
 Test Mode : Mode 1: Transmit

Site :HY-CB01
 Condition :3m ,Vertical
 Mode :TX_wirless_Y
 TEST BY :Nick



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2402.000	99.00	113.97	-14.97	87.68	11.32	Peak
2	2440.000	100.52	113.97	-13.45	89.24	11.28	Peak
3	2480.000	100.93	113.97	-13.04	89.65	11.28	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

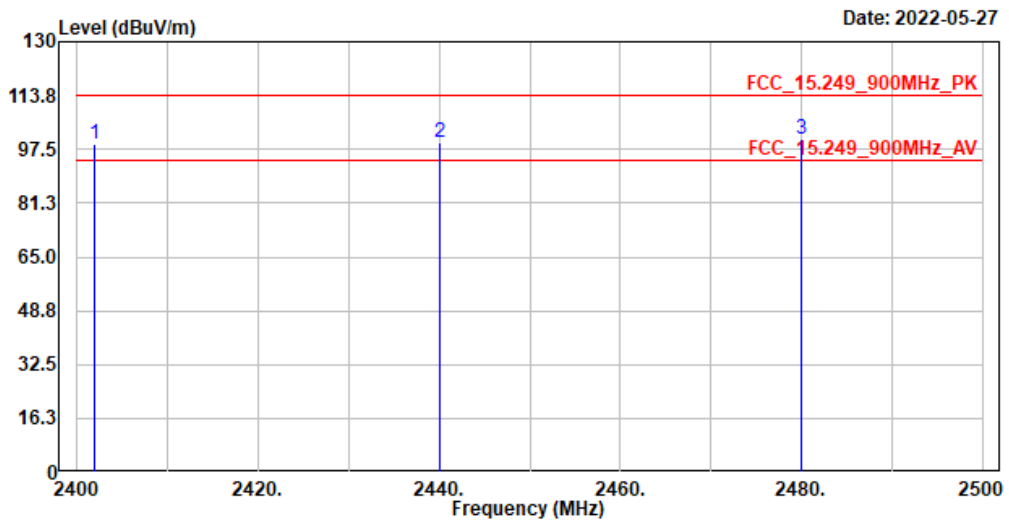
Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Margin (dB)	Average Limit (dBμV/m)
2402	99	-33.859	65.141	-28.829	93.970
2440	100.52	-33.859	66.661	-27.309	93.970
2480	100.93	-33.859	67.071	-26.899	93.970

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : Dongle
 Test Item : Fundamental
 Radiated Emission
 Test Date : 2022/05/27
 Test Mode : Mode 1: Transmit

Site :HY-CB01
 Condition :3m ,Horizontal
 Mode :TX_wirless_Z
 TEST BY :Nick



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2402.000	99.22	113.97	-14.75	87.90	11.32	Peak
2	2440.000	99.52	113.97	-14.45	88.24	11.28	Peak
3	2480.000	100.35	113.97	-13.62	89.07	11.28	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

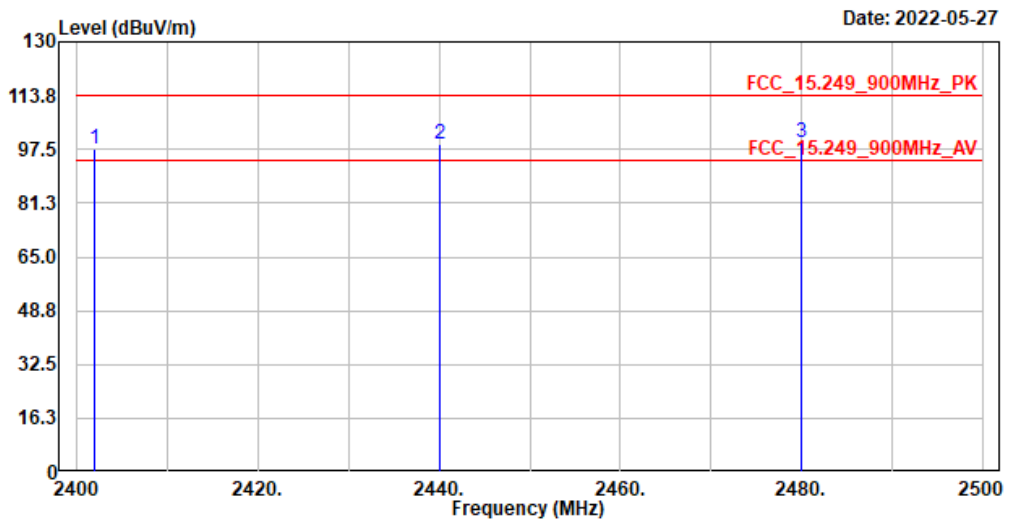
Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Margin (dB)	Average Limit (dBμV/m)
2402	99.22	-33.859	65.361	-28.609	93.970
2440	99.52	-33.859	65.661	-28.309	93.970
2480	100.35	-33.859	66.491	-27.479	93.970

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : Dongle
 Test Item : Fundamental
 Radiated Emission
 Test Date : 2022/05/27
 Test Mode : Mode 1: Transmit

Site :HY-CB01
 Condition :3m ,Vertical
 Mode :TX_wirless_Z
 TEST BY :Nick



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	Line dBuV/m	Limit dB	Level dBuV	dB	
1	2402.000	97.82	113.97	-16.15	86.50	11.32	Peak
2	2440.000	99.02	113.97	-14.95	87.74	11.28	Peak
3	2480.000	99.43	113.97	-14.54	88.15	11.28	Peak

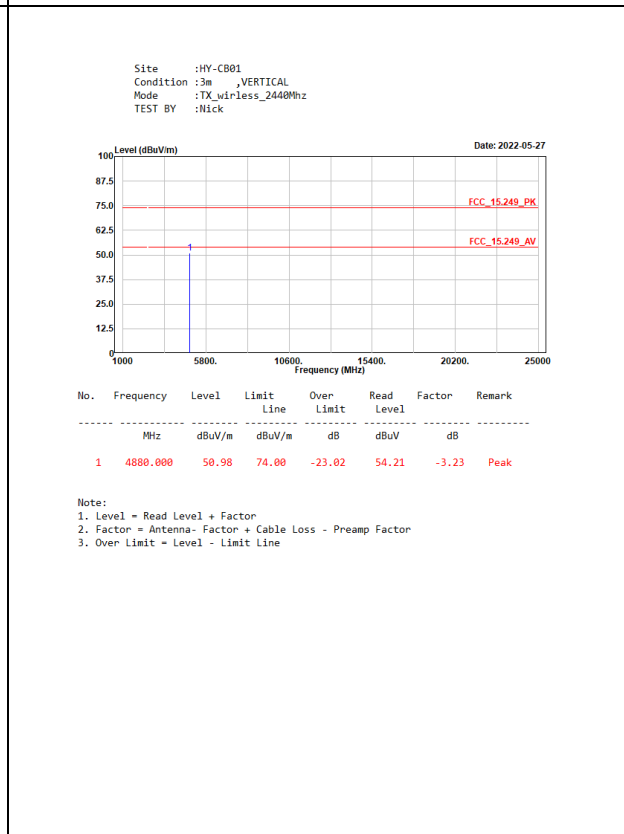
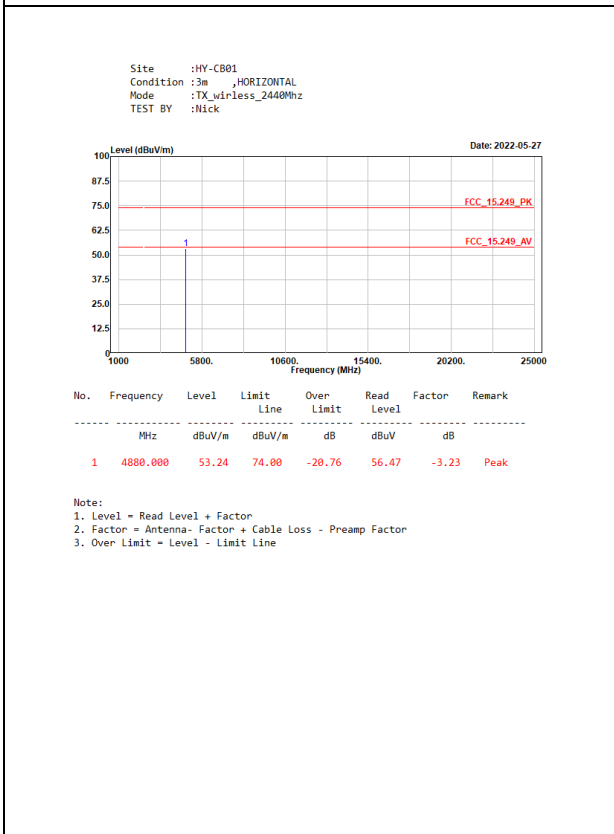
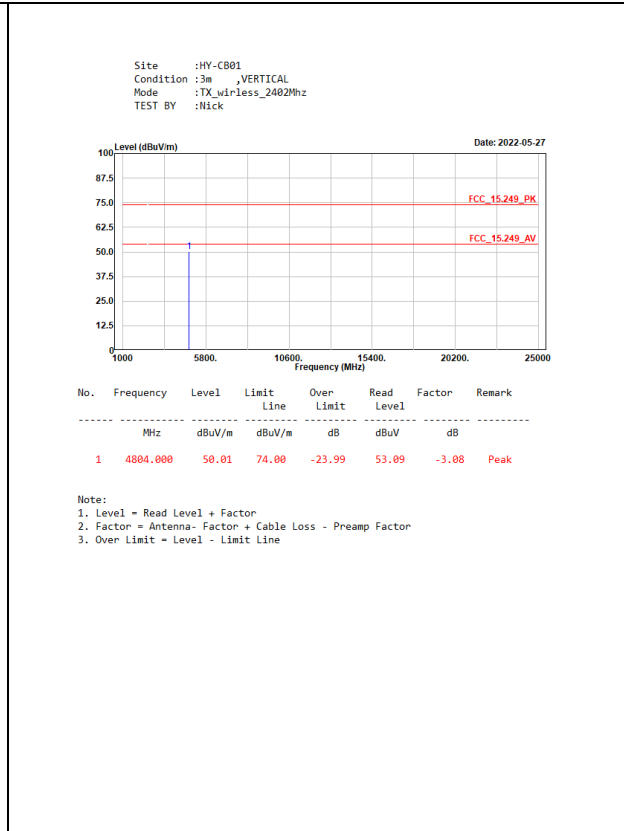
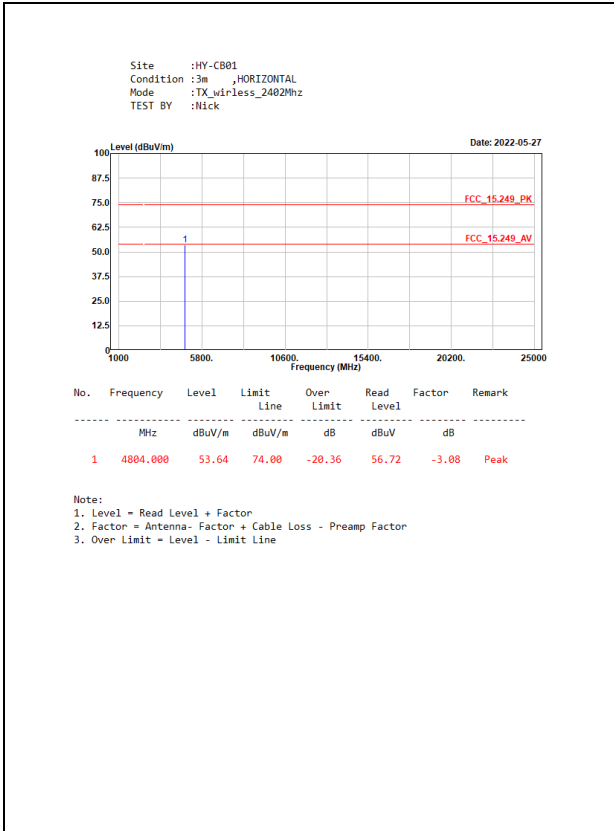
Note:

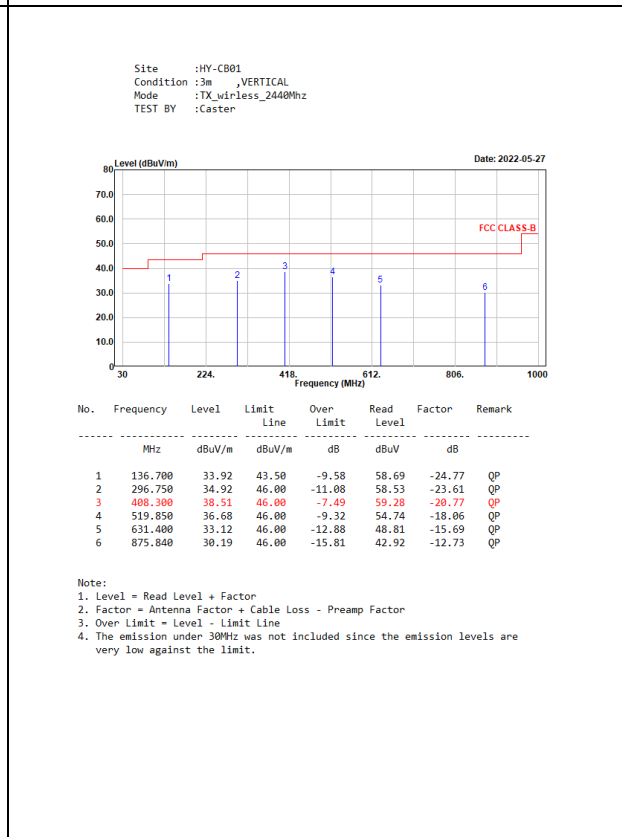
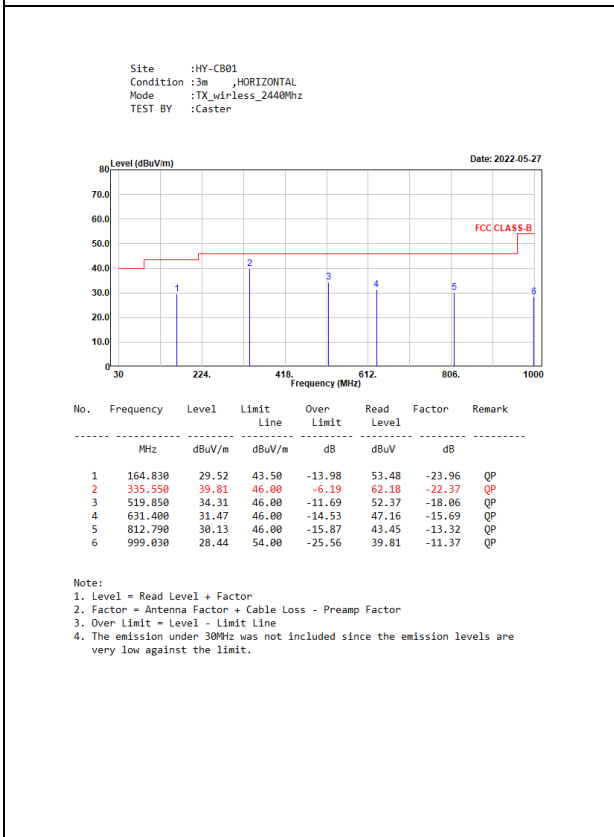
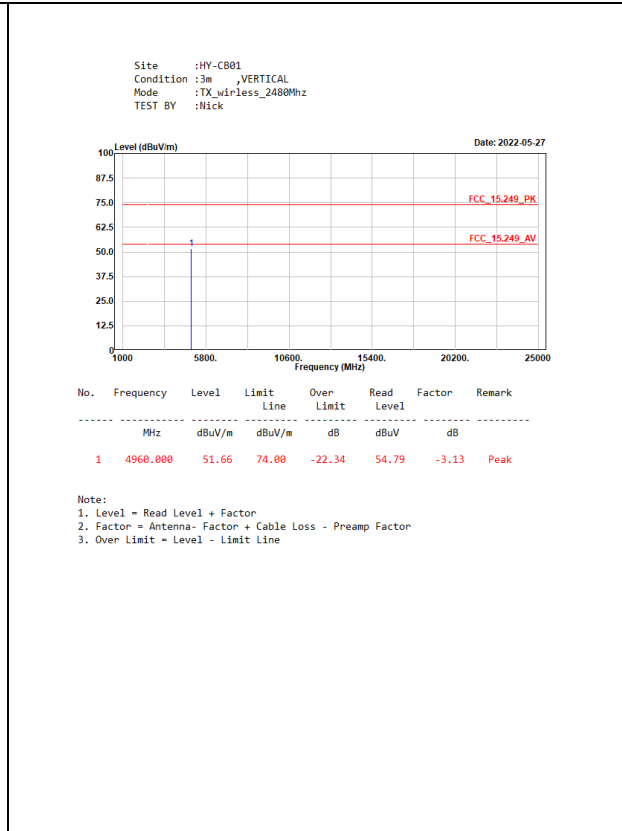
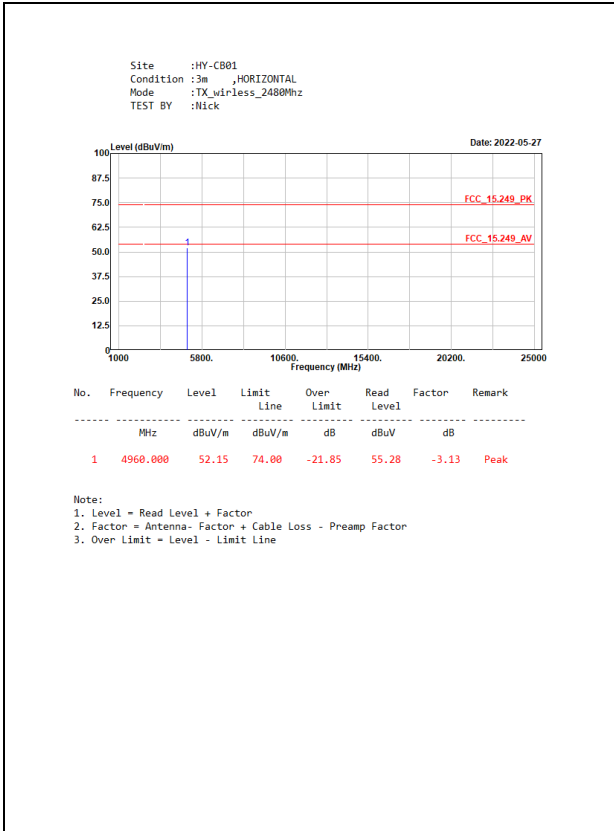
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Margin (dB)	Average Limit (dBμV/m)
2402	97.82	-33.859	63.961	-30.009	93.970
2440	99.02	-33.859	65.161	-28.809	93.970
2480	99.43	-33.859	65.571	-28.399	93.970

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

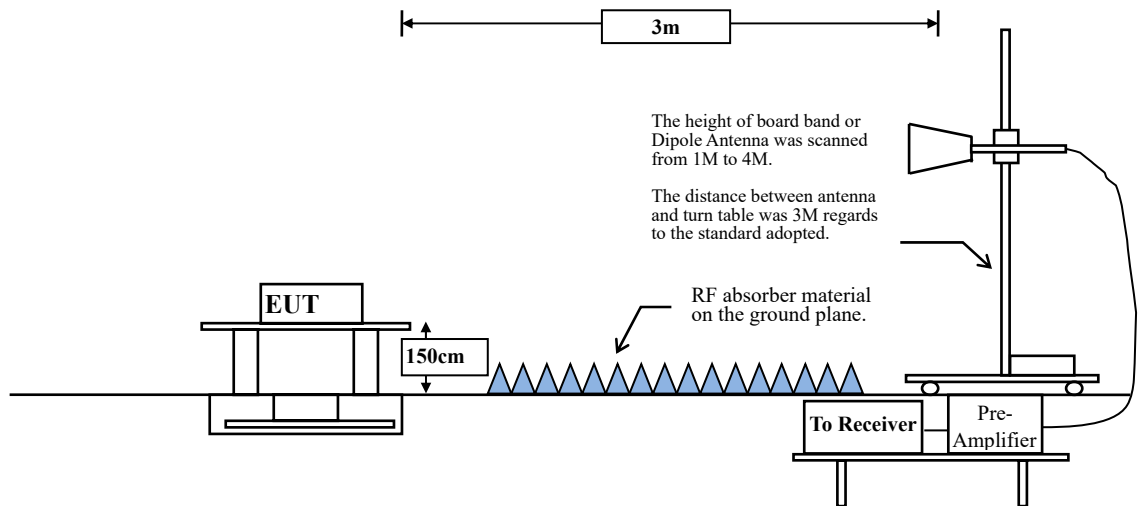




4. Band Edge

4.1. Test Setup

RF Radiated Measurement:



4.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB 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(a) 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: E field strength (dBμV /m) = 20 log E field strength (uV/m)

4.3. Test Procedure

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 can move up and down between 1 meter and 4 meters to find out the maximum emission level.

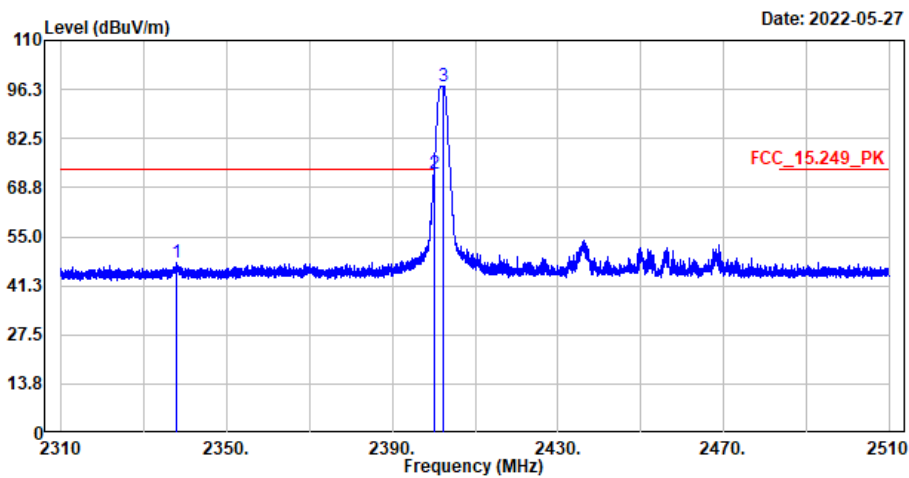
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

4.4. Test Result of Band Edge

Product : Dongle
 Test Item : Fundamental
 Radiated Emission
 Test Date : 2022/05/27
 Test Mode : Mode 1: Transmit (2402MHz)

Site :HY-CB01
 Condition :3m ,Horizontal
 Mode :TX_wirless_2402Mhz
 TEST BY :Nick



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2337.900	47.83	74.00	-26.17	36.73	11.10	Peak
2	2400.000	72.50	74.00	-1.50	61.18	11.32	Peak
3	2402.325	97.19	-----	-----	85.87	11.32	Peak

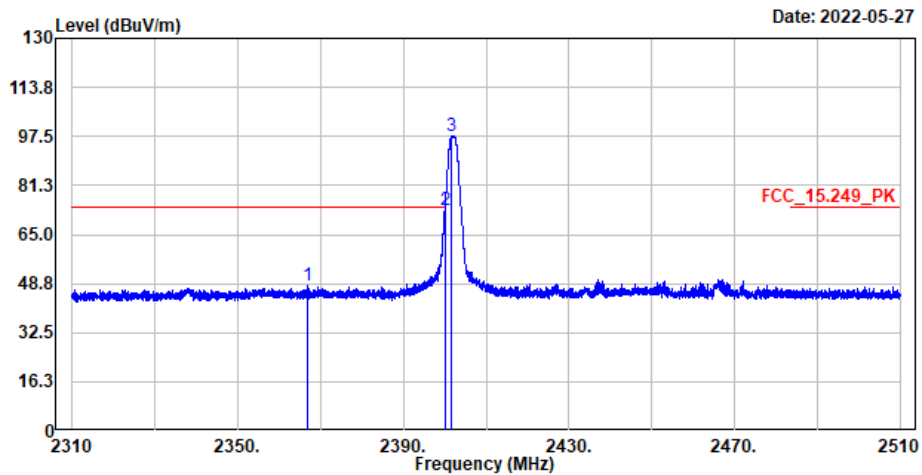
Note:
 1. Level = Read Level + Factor
 2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
 3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Margin (dB)	Average Limit (dBμV/m)	Result
2337.9	47.83	-33.859	13.971	-40.029	54.000	Pass
2400	72.5	-33.859	38.641	-15.359	54.000	Pass
2402.325	97.19	-33.859	63.331	--	--	Pass

Note:
 1. Average Measurement=Peak Measurement + Duty Cycle Factor
 2. The Duty Cycle is refer to section 5.

Product : Dongle
 Test Item : Fundamental
 Radiated Emission
 Test Date : 2022/05/27
 Test Mode : Mode 1: Transmit (2402MHz)

Site :HY-CB01
 Condition :3m ,Vertical
 Mode :TX_wirless_2402Mhz
 TEST BY :Nick



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	Limit	Level	dB	
1	2366.700	47.87	74.00	-26.13	36.66	11.21	Peak
2	2400.000	72.93	74.00	-1.07	61.61	11.32	Peak
3	2401.675	97.51	-----	-----	86.19	11.32	Peak

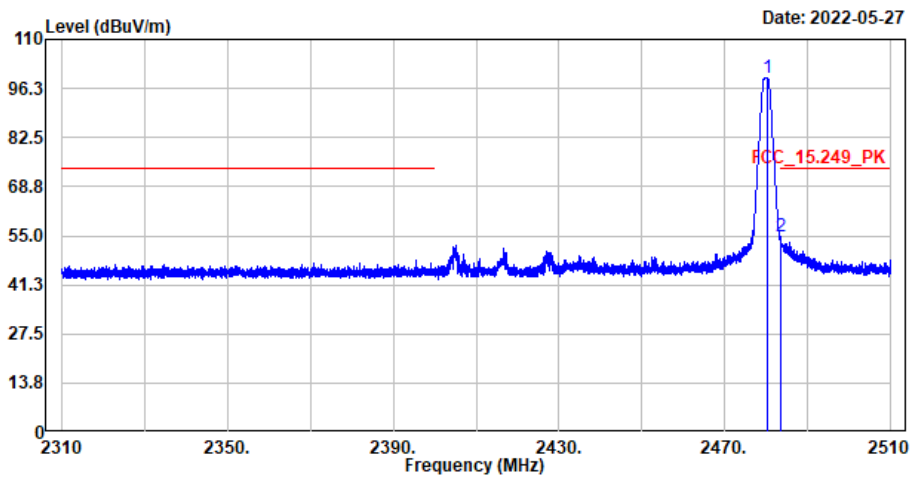
Note:
 1. Level = Read Level + Factor
 2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
 3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Margin (dB)	Average Limit (dBμV/m)	Result
2366.7	47.87	-33.859	14.011	-39.989	54.000	Pass
2400	72.93	-33.859	39.071	-14.929	54.000	Pass
2401.675	97.51	-33.859	63.651	--	--	Pass

Note:
 1. Average Measurement=Peak Measurement + Duty Cycle Factor
 2. The Duty Cycle is refer to section 5.

Product : Dongle
 Test Item : Fundamental
 Radiated Emission
 Test Date : 2022/05/27
 Test Mode : Mode 1: Transmit (2480MHz)

Site :HY-CB01
 Condition :3m ,Horizontal
 Mode :TX_wirless_2480Mhz
 TEST BY :Nick



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2480.325	99.38	-----	-----	88.10	11.28	Peak
2	2483.500	54.76	74.00	-19.24	43.48	11.28	Peak

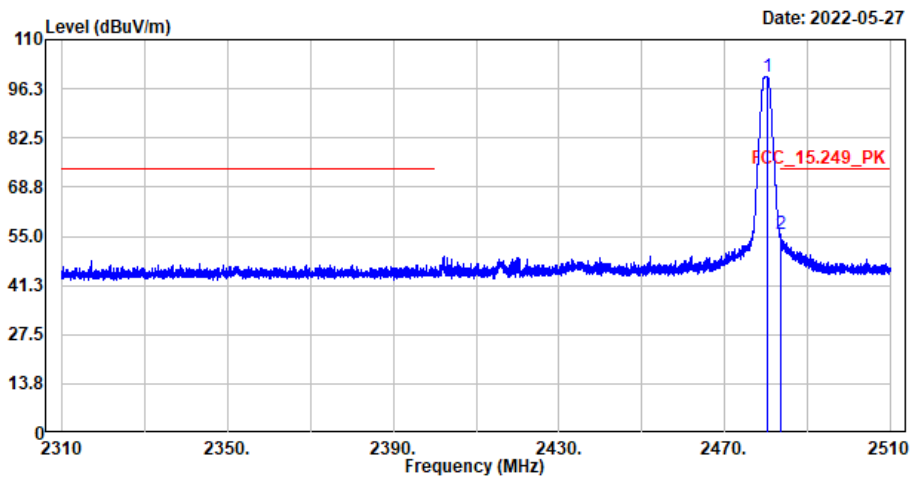
Note:
 1. Level = Read Level + Factor
 2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
 3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Margin (dB)	Average Limit (dBμV/m)
2480.325	99.38	-33.859	65.521	--	54.000
2483.5	54.76	-33.859	20.901	-33.099	54.000

Note:
 1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
 2. The Duty Cycle is refer to section 5.

Product : Dongle
 Test Item : Fundamental Radiated Emission
 Test Date : 2022/05/27
 Test Mode : Mode 1: Transmit (2480MHz)

Site :HY-CB01
 Condition :3m ,Vertical
 Mode :TX_wirless_2480Mhz
 TEST BY :Nick



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2480.350	99.81	-----	-----	88.53	11.28	Peak
2	2483.650	55.73	74.00	-18.27	44.45	11.28	Peak

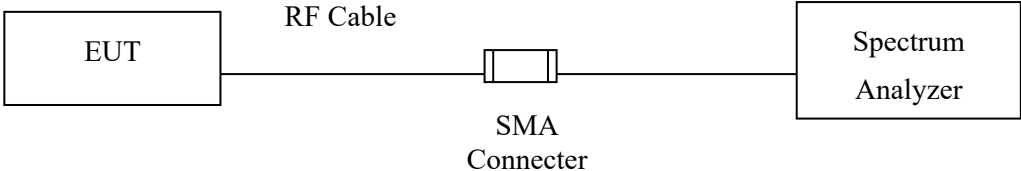
Note:
 1. Level = Read Level + Factor
 2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
 3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Margin (dB)	Average Limit (dBμV/m)
2480.35	99.81	-33.859	65.951	--	54.000
2483.65	55.73	-33.859	21.871	-32.129	54.000

Note:
 1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
 2. The Duty Cycle is refer to section 5.

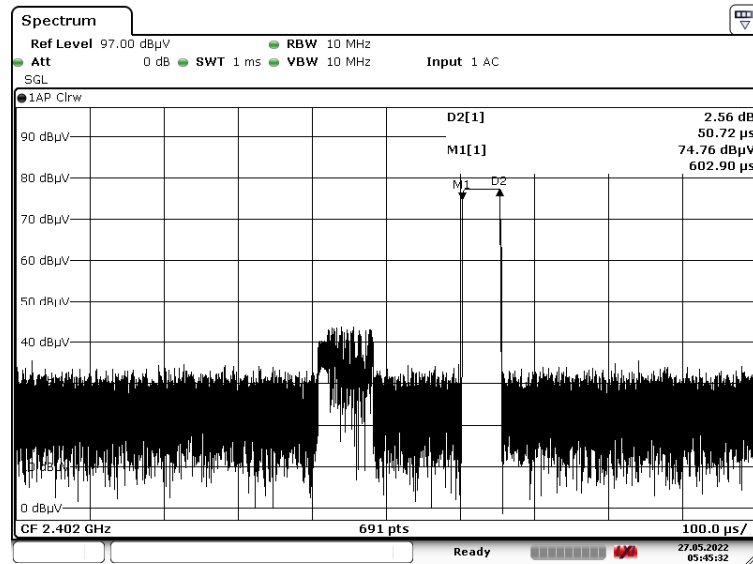
5. Duty Cycle

5.1. Test Setup

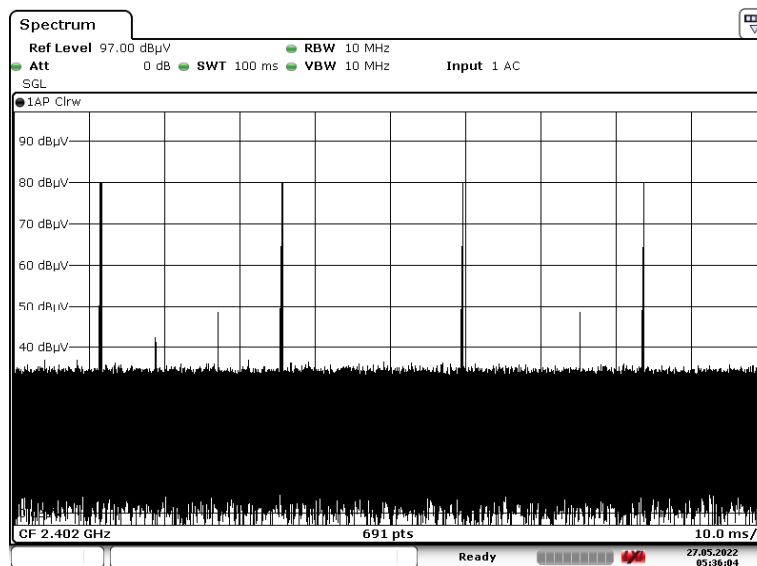


5.2. Test Result of Duty Cycle

Product : Dongle
 Test Item : Duty Cycle Data
 Test Mode : Mode 2: Normal mode



Date: 27.MAY.2022 05:45:32



Date: 27.MAY.2022 05:36:04

Time on of 100ms= 2.028 ms

Duty Cycle=0.028s / 100ms=0.02028

Duty Cycle correction factor= 20 LOG 0.02028= -33.859 dB

Duty Cycle correction factor	-33.859 dB
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