

FCC Radio Test Report

FCC ID: 2ABVH-OONA22-1W

Report No. : BTL-FCCP-2-2305G039
Equipment : Kiosk
Model Name : OONA22-1W
Brand Name : AAVA
Applicant : Aava Mobile Oy
Address : Nahkatehtaankatu 2, FI-90130 Oulu, Finland

Radio Function : Bluetooth Low Energy (5.0)

FCC Rule Part(s) : FCC CFR Title 47, Part 15, Subpart C (15.247)
Measurement Procedure(s) : ANSI C63.10-2013

Date of Receipt : 2023/5/11
Date of Test : 2023/6/8 ~ 2023/6/15
Issued Date : 2023/6/19

The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

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Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REVISION HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-2-2305G039	R00	Original Report.	2023/6/19	Valid

1 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

Standard(s) Section	Description	Test Result	Judgement	Remark
15.207	AC Power Line Conducted Emissions	NOTE (3)	Pass	-----
15.205 15.209 15.247(d)	Radiated Emissions	APPENDIX A APPENDIX A	Pass	-----
15.247(a)(2)	Bandwidth	NOTE (3)	Pass	-----
15.247(b)(3)	Output Power	APPENDIX A	Pass	-----
15.247(e)	Power Spectral Density	NOTE (3)	Pass	-----
15.247(d)	Antenna conducted Spurious Emission	NOTE (3)	Pass	-----
15.203	Antenna Requirement	-----	Pass	-----

NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report.
- (2) The report format version is TP.1.1.1.
- (3) The differences compared with test report BTL-FCCP-2-2102C297(FCC ID: 2ABVH-INARI8C1):
 - 1) Changed product name, model name, display, product size, shell and adapter.
 - 2) Removed part of main board features and battery.
 - 3) Added 2*USB A-type ports, 2*USB Type-C ports and LAN port.
 - 4) Changed the antennas structure and position.

After evaluated, the changes with respect to the original one, only output power and radiated emissions tests need to be verified.

The test records and results please refer to the test report number: BTL-FCCP-2-2102C297, issued date is Apr. 14, 2021, and issued by:

Test Laboratory: BTL Inc.

Address: No. 3 Jinshagang 1st Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792 People's Republic of China.

Which was accredited by A2LA, accreditation number is 5123.02, with the scopes of cited standards in this test report.

This report is only valid conjunction with the above referenced test report.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report:

No. 72, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

The test sites and facilities are covered under FCC RN: 674415 and DN: TW0659.

C06 CB21 CB22

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

The test sites and facilities are covered under FCC RN: 674415 and DN: TW0659.

C05 CB08 CB11 CB15 CB16
 SR05 SR10

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k = 2$, providing a level of confidence of approximately **95 %**. The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.

A. Radiated emissions test:

Test Site	Measurement Frequency Range	U,(dB)
CB21	0.03 GHz ~ 0.2 GHz	4.17
	0.2 GHz ~ 1 GHz	4.72
	1 GHz ~ 6 GHz	5.21
	6 GHz ~ 18 GHz	5.51
	18 GHz ~ 26 GHz	3.69
	26 GHz ~ 40 GHz	4.23

B. Conducted test:

Test Item	U,(dB)
Output power	0.3659

NOTE:

Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Environment Condition	Test Voltage	Tested by
Radiated emissions below 1 GHz	23 °C, 52 %	AC 120 V	Mark Wang
Radiated emissions above 1 GHz	21 °C, 56 %	AC 120 V	Mark Wang
Output Power	24.1 °C, 44 %	AC 120 V	Jay Tien

1.4 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

Test Software	QRCT v4.0.00189.0			
Modulation Mode	2402 MHz	2440 MHz	2480 MHz	Data Rate
BLE 5.0	DEF	DEF	DEF	1 Mbps
BLE 5.0	DEF	DEF	DEF	2 Mbps

2 GENERAL INFORMATION

2.1 DESCRIPTION OF EUT

Equipment	Kiosk
Model Name	AAVA
Brand Name	OONA22-1W
Model Difference	N/A
Power Source	DC voltage supplied from AC adapter.
Power Rating	I/P: 100-240V~ 50/60Hz 1.7A O/P: 24.0V === 3.0A 72.0W
Products Covered	1* Adapter: J652-2403000DI
Operation Band	2400 MHz ~ 2483.5 MHz
Operation Frequency	2402 MHz ~ 2480 MHz
Modulation Technology	GFSK
Transfer Rate	1 Mbps, 2 Mbps
Output Power Max.	1 Mbps: 5.68 dBm (0.0037 W) 2 Mbps: 5.80 dBm (0.0038 W)
Test Model	OONA22-1W
Sample Status	Engineering Sample
EUT Modification(s)	N/A

NOTE:

- (1) The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

(2) Channel List:

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

(3) Table for Filed Antenna:

Ant.	Manufacturer	Model Name	Type	Connector	Gain (dBi)
1	PulseLarsen	W3006	Chip	N/A	1.94

(4) The above Antenna information are derived from the antenna data sheet provided by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

2.2 TEST MODES

Test Items	Test mode	Channel	Note
Transmitter Radiated Emissions (below 1GHz)	1 Mbps	39	-
Transmitter Radiated Emissions (above 1GHz)	1/2 Mbps	00/39	Bandedge
	1/2 Mbps	00/19/39	Harmonic
Output Power	1/2 Mbps	00/19/39	-

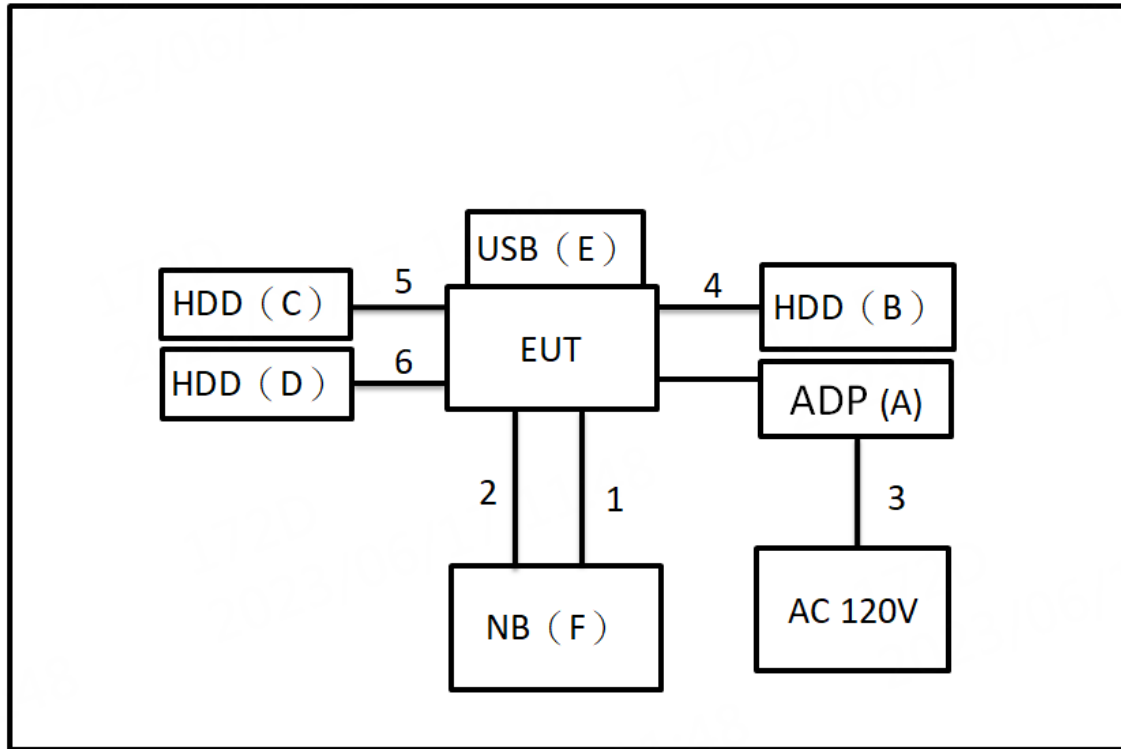
NOTE:

- (1) All X, Y and Z axes are evaluated, but only the worst case (Y axis) is recorded.
- (2) For radiated spurious emissions below 1 GHz test, the 2Mbps Channel 39 is found to be the worst case and recorded.
- (3) For radiated emission band edge test, both Vertical and Horizontal are evaluated, but only the worst case (Horizontal) is recorded.

2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Equipment letters and Cable numbers refer to item numbers described in the tables of clause 2.4.

Radiated Emissions



2.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	ADP	UL	J652-2403000DI	N/A	Supplied by test requester.
B	USB 2.5" HDD	AKITIO	Neutrino U3.1	SK21D1621D00 3F	Furnished by test lab.
C	USB 2.5" HDD	AKITIO	Neutrino U3.1	SK21D1621D00 3F	Furnished by test lab.
D	USB 3.0 HDD	WD	WDBC3C0010BS L-0B	WX81A88ALJU C	Furnished by test lab.
E	USB	KINGSTON	N/A	N/A	Furnished by test lab.
F	NB	HP	TPN-C125	N/A	Furnished by test lab.

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	N/A	N/A	0.6m	USB TO TYPE-C	Furnished by test lab.
2	N/A	N/A	2m	RJ45 Cable	Furnished by test lab.
3	N/A	N/A	1.2m	POWER CORD	Supplied by test requester.
4	No	No	0.6m	TypeC to TypeC	Furnished by test lab.
5	No	No	1m	TypeC to TypeC	Furnished by test lab.
6	No	No	0.4m	TypeC to USB	Furnished by test lab.

3 RADIATED EMISSIONS TEST

3.1 LIMIT

In case the emission fall within the restricted band specified on 15.205, then the 15.209 limit in the table below has to be followed.

LIMITS OF RADIATED EMISSIONS MEASUREMENT (9 kHz to 1000 MHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

LIMITS OF RADIATED EMISSIONS MEASUREMENT (Above 1000 MHz)

Frequency (MHz)	Radiated Emissions (dBuV/m)		Measurement Distance (meters)
	Peak	Average	
Above 1000	74	54	3

NOTE:

- (1) The limit for radiated test was performed according to FCC CFR Title 47, Part 15, Subpart C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).
- (4) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)

Margin Level = Measurement Value - Limit Value

Calculation example:

Reading Level		Correct Factor		Measurement Value
41.91	+	-8.36	=	33.55

Measurement Value		Limit Value		Margin Level
33.55	-	43.50	=	-9.95

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average

Spectrum Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9KHz~90KHz for PK/AVG detector
Start ~ Stop Frequency	90KHz~110KHz for QP detector
Start ~ Stop Frequency	110KHz~490KHz for PK/AVG detector
Start ~ Stop Frequency	490KHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

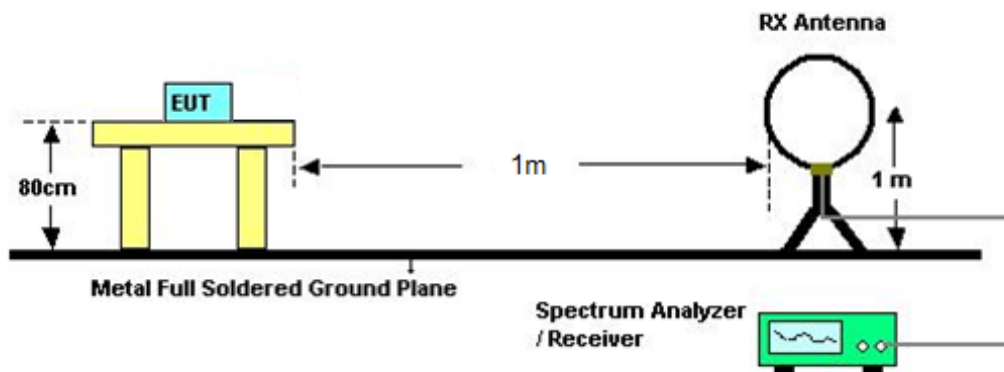
3.2 TEST PROCEDURE

- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
- f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1GHz)
- h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1GHz)
- i. For the actual test configuration, please refer to the related Item – EUT TEST PHOTO.

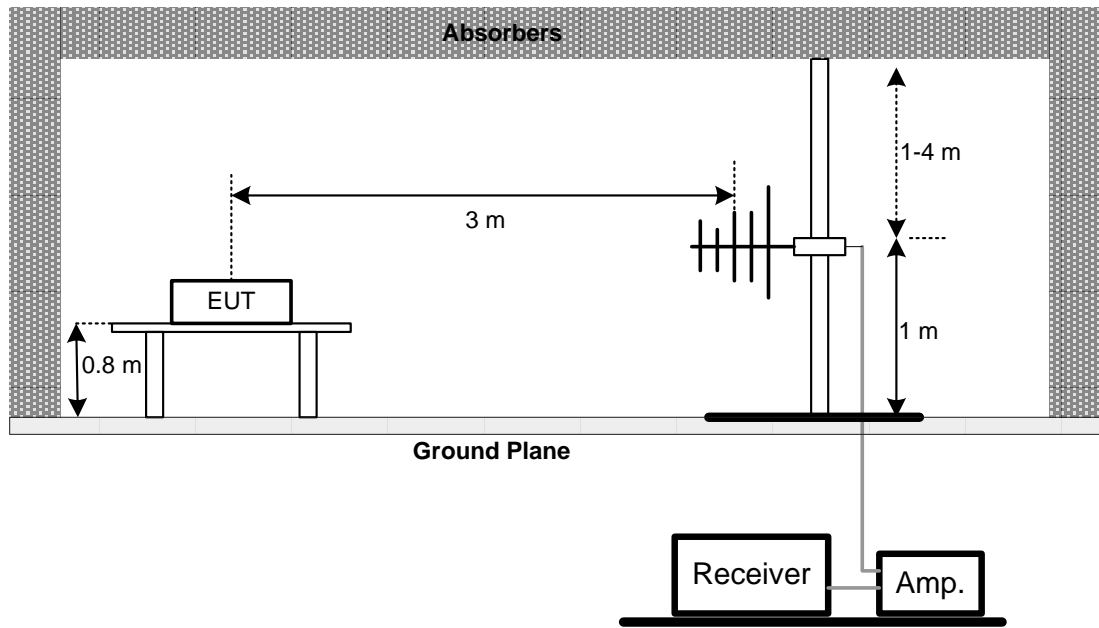
3.3 DEVIATION FROM TEST STANDARD

No deviation.

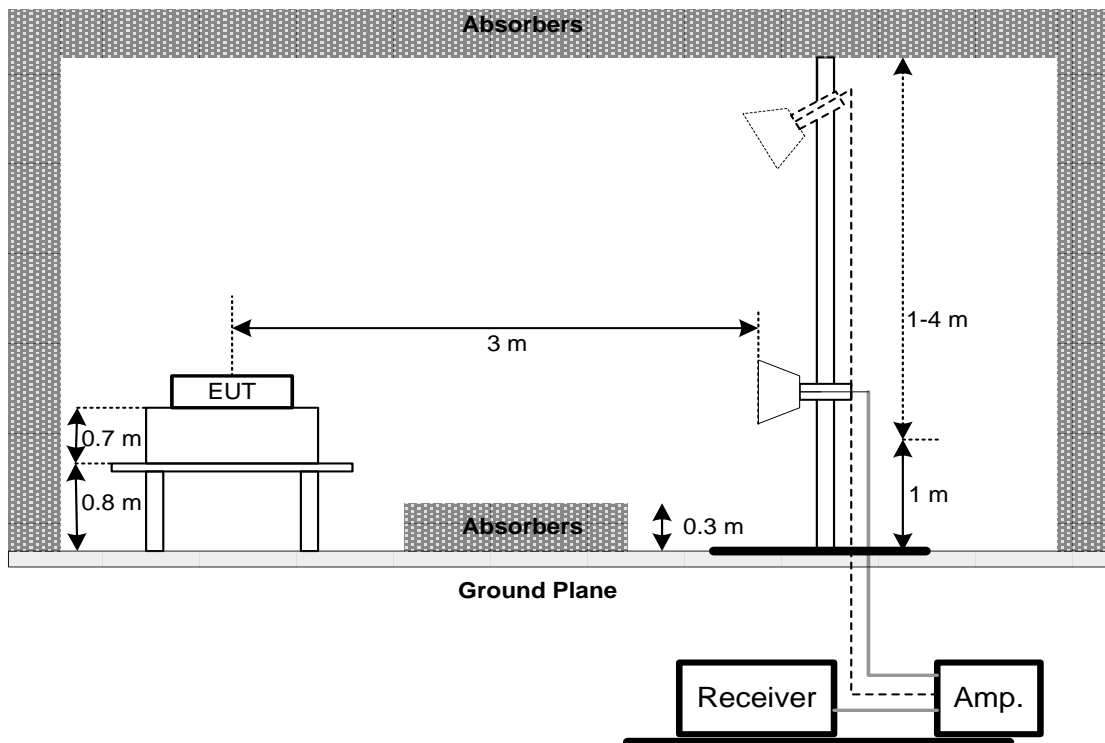
3.4 TEST SETUP



30 MHz to 1 GHz



Above 1 GHz



3.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

3.6 TEST RESULT – BELOW 30 MHZ

There were no emissions found below 30 MHz within 20 dB of the limit.

3.7 TEST RESULT – 30 MHZ TO 1 GHZ

Please refer to the APPENDIX A.

3.8 TEST RESULT – ABOVE 1 GHZ

Please refer to the APPENDIX B.

NOTE:

- (1) No limit: This is fundamental signal, the judgment is not applicable.
For fundamental signal judgment was referred to Peak output test.

4 OUTPUT POWER TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Maximum Output Power	1 watt or 30dBm	2400-2483.5	PASS

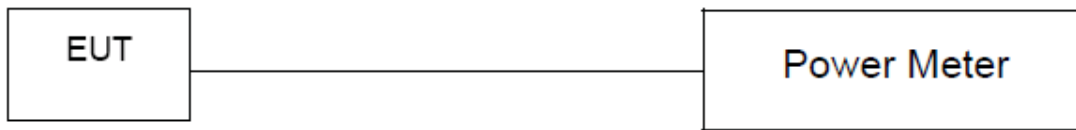
4.2 TEST PROCEDURE

- a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,
- b. The maximum peak conducted output power was performed in accordance with FCC KDB 558074 D01 15.247 Meas Guidance.

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP



4.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULTS

Please refer to the APPENDIX C.

5 LIST OF MEASURING EQUIPMENTS

Radiated Emissions						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Preamplifier	EMCI	EMC330N	980850	2022/9/19	2023/9/18
2	Preamplifier	EMCI	EMC118A45SE	980819	2023/3/7	2024/3/6
3	Pre-Amplifier	EMCI	EMC184045SE	980907	2022/9/28	2023/9/27
4	Preamplifier	EMCI	EMC001340	980579	2022/9/30	2023/9/29
5	Test Cable	EMCI	EMC104-SM-SM-1000	220319	2023/3/14	2024/3/13
6	Test Cable	EMCI	EMC104-SM-SM-3000	220322	2023/3/14	2024/3/13
7	Test Cable	EMCI	EMC104-SM-SM-7000	220324	2023/3/14	2024/3/13
8	EXA Signal Analyzer	keysight	N9020B	MY57120120	2023/2/24	2024/2/23
9	Loop Ant	Electro-Metrics	EMCI-LPA600	291	2022/9/19	2023/9/18
10	Horn Antenna	RFSPIN	DRH18-E	211202A18EN	2023/5/12	2024/5/11
11	Horn Ant	Schwarzbeck	BBHA 9170D	1136	2023/5/12	2024/5/11
12	Log-bicon Antenna	Schwarzbeck	VULB9168	1369	2023/5/9	2024/5/8
13	6dB Attenuator	EMCI	EMCI-N-6-06	AT-06001	2023/5/9	2024/5/8
14	Test Cable	EMCI	EMC101G-KM-KM-3000	220329	2023/3/14	2024/3/13
15	Test Cable	EMCI	EMC102-KM-KM-1000	220327	2023/3/14	2024/3/13
16	Measurement Software	EZ	EZ EMC (Version NB-03A1-01)	N/A	N/A	N/A

Output Power						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Spectrum Analyzer	R&S	FSP 40	100129	2022/10/7	2023/10/7

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

6 EUT TEST PHOTO

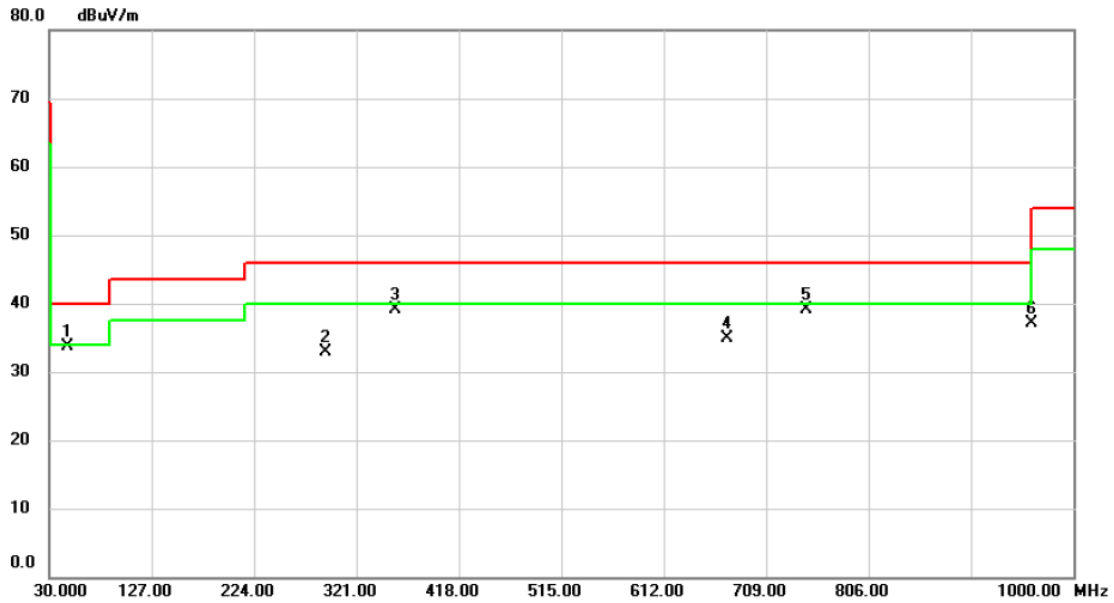
Please refer to document Appendix No.: TP-2305G039-1 (APPENDIX-TEST PHOTOS).

7 EUT PHOTOS

Please refer to document Appendix No.: EP-2305G039-1 (APPENDIX-EUT PHOTOS).

APPENDIX A RADIATED EMISSIONS - 30 MHZ TO 1 GHZ

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2023/6/15
Test Frequency	2480MHz	Polarization	Vertical
Temp	23°C	Hum.	52%

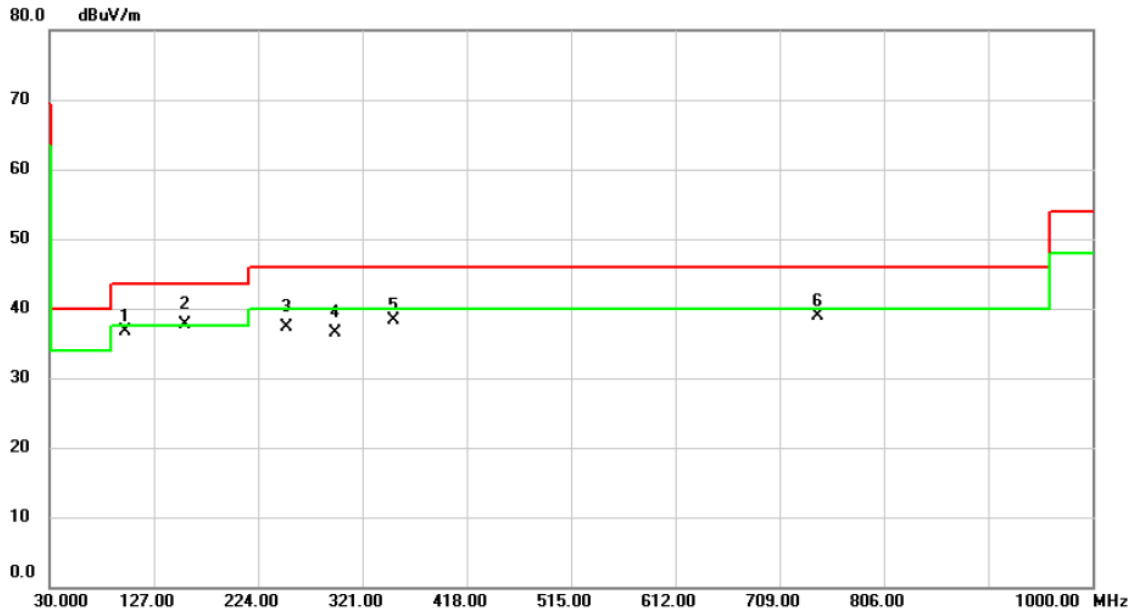


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	47.1043	44.97	-11.26	33.71	40.00	-6.29	peak	
2		292.1587	44.33	-11.45	32.88	46.00	-13.12	peak	
3		358.4097	49.02	-9.98	39.04	46.00	-6.96	peak	
4		671.7197	37.89	-3.01	34.88	46.00	-11.12	peak	
5		746.7653	40.78	-1.58	39.20	46.00	-6.80	peak	
6		960.0037	35.71	1.39	37.10	54.00	-16.90	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2023/6/15
Test Frequency	2480MHz	Polarization	Horizontal
Temp	23°C	Hum.	52%



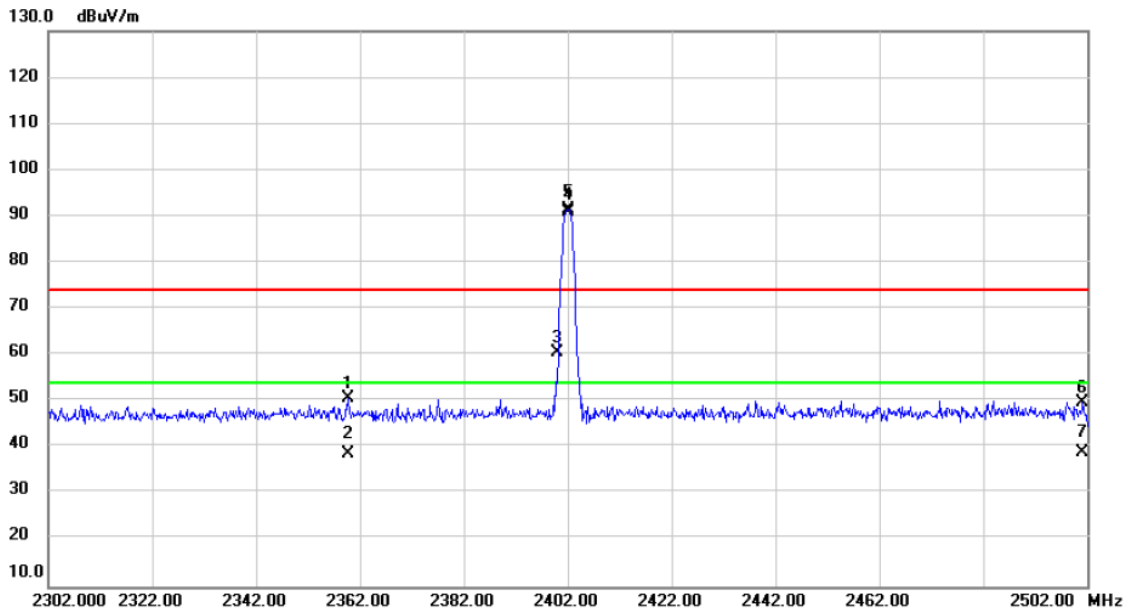
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		100.3573	53.47	-16.74	36.73	43.50	-6.77	peak	
2	*	156.0030	49.68	-11.97	37.71	43.50	-5.79	QP	
3		250.0283	50.50	-13.14	37.36	46.00	-8.64	QP	
4		295.8446	47.83	-11.39	36.44	46.00	-9.56	QP	
5		350.0030	48.55	-10.24	38.31	46.00	-7.69	peak	
6		744.6960	40.54	-1.64	38.90	46.00	-7.10	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

APPENDIX B RADIATED EMISSIONS - ABOVE 1 GHZ

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2023/6/13
Test Frequency	2402MHz	Polarization	Horizontal
Temp	21°C	Hum.	56%

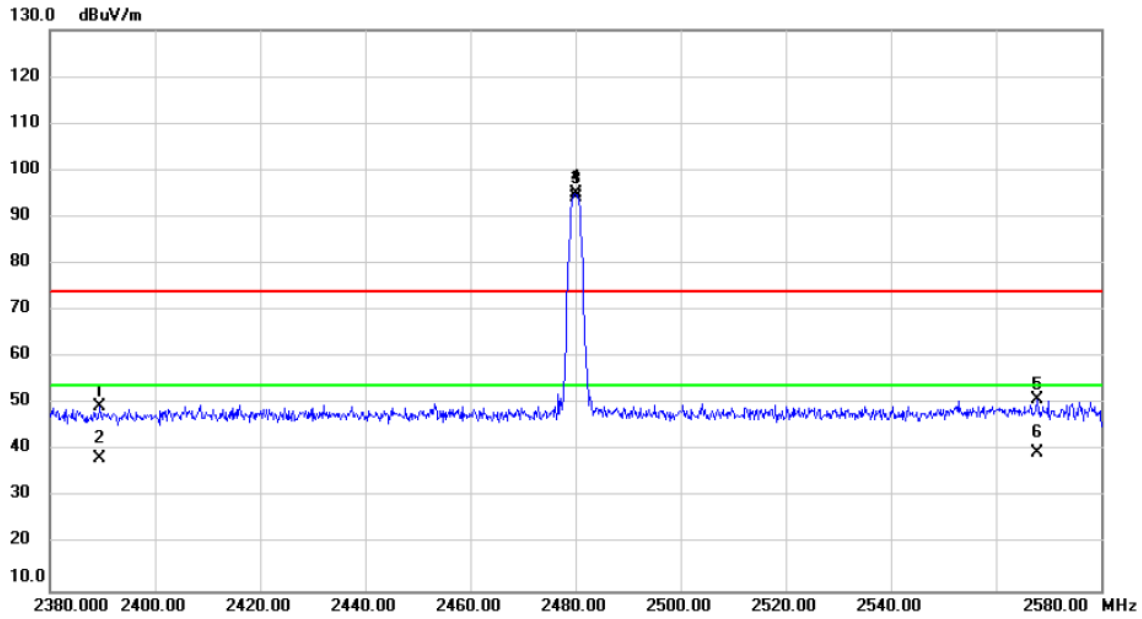


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2359.680	55.98	-5.42	50.56	74.00	-23.44	peak	
2		2359.680	44.08	-5.42	38.66	54.00	-15.34	AVG	
3		2400.000	65.87	-5.37	60.50	74.00	-13.50	peak	No Limit
4	X	2402.000	96.72	-5.36	91.36	74.00	17.36	peak	No Limit
5	*	2402.000	96.11	-5.36	90.75	54.00	36.75	AVG	No Limit
6		2501.160	55.01	-5.19	49.82	74.00	-24.18	peak	
7		2501.160	44.03	-5.19	38.84	54.00	-15.16	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2023/6/13
Test Frequency	2480MHz	Polarization	Horizontal
Temp	21°C	Hum.	56%

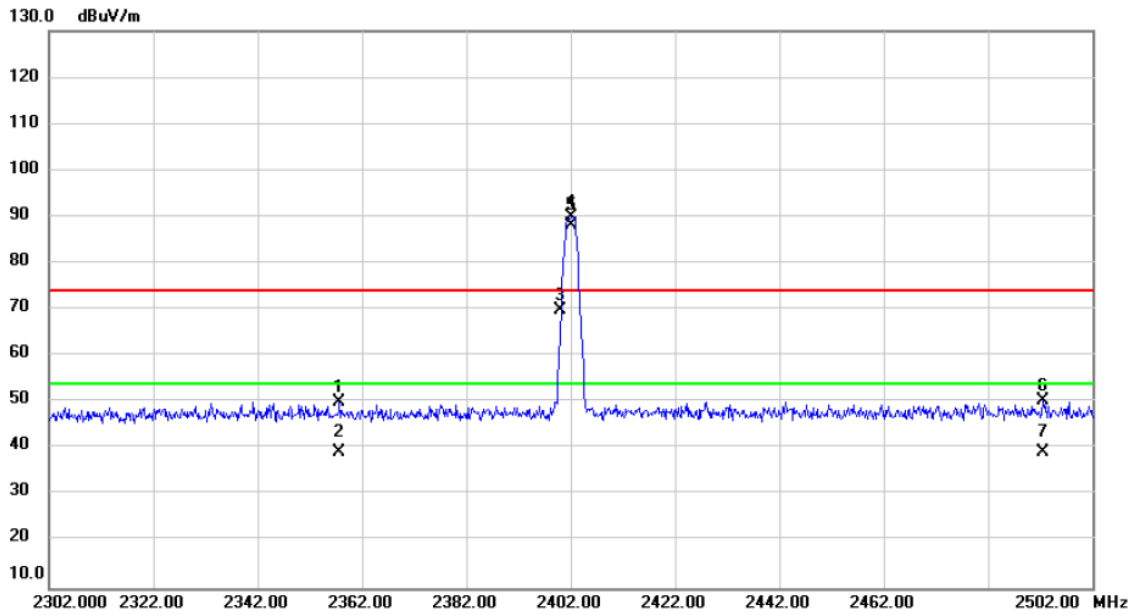


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		2389.407	54.94	-5.39	49.55	74.00	-24.45	peak	
2		2389.407	43.78	-5.39	38.39	54.00	-15.61	AVG	
3	X	2480.000	100.22	-5.22	95.00	74.00	21.00	peak	No Limit
4	*	2480.000	99.50	-5.22	94.28	54.00	40.28	AVG	No Limit
5		2567.920	55.81	-4.96	50.85	74.00	-23.15	peak	
6		2567.920	44.42	-4.96	39.46	54.00	-14.54	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2023/6/13
Test Frequency	2402MHz	Polarization	Horizontal
Temp	21°C	Hum.	56%

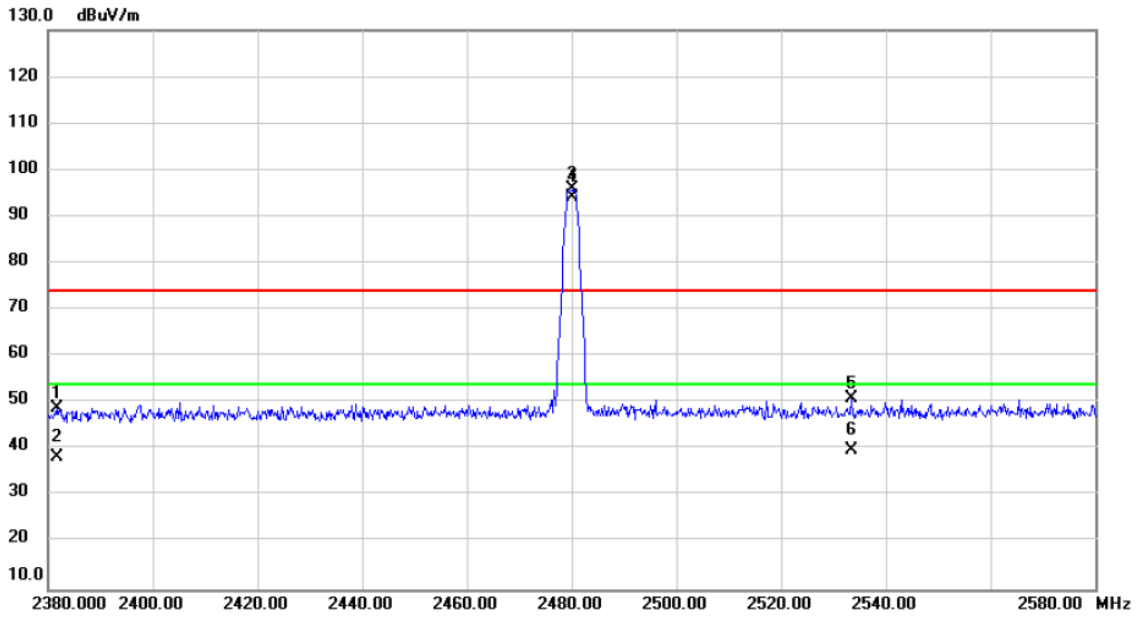


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		2357.627	55.46	-5.44	50.02	74.00	-23.98	peak	
2		2357.627	44.82	-5.44	39.38	54.00	-14.62	AVG	
3		2400.000	75.22	-5.37	69.85	74.00	-4.15	peak	No Limit
4	X	2402.000	95.42	-5.36	90.06	74.00	16.06	peak	No Limit
5	*	2402.000	93.65	-5.36	88.29	54.00	34.29	AVG	No Limit
6		2492.493	55.45	-5.20	50.25	74.00	-23.75	peak	
7		2492.493	44.50	-5.20	39.30	54.00	-14.70	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2023/6/13
Test Frequency	2480MHz	Polarization	Horizontal
Temp	21°C	Hum.	56%

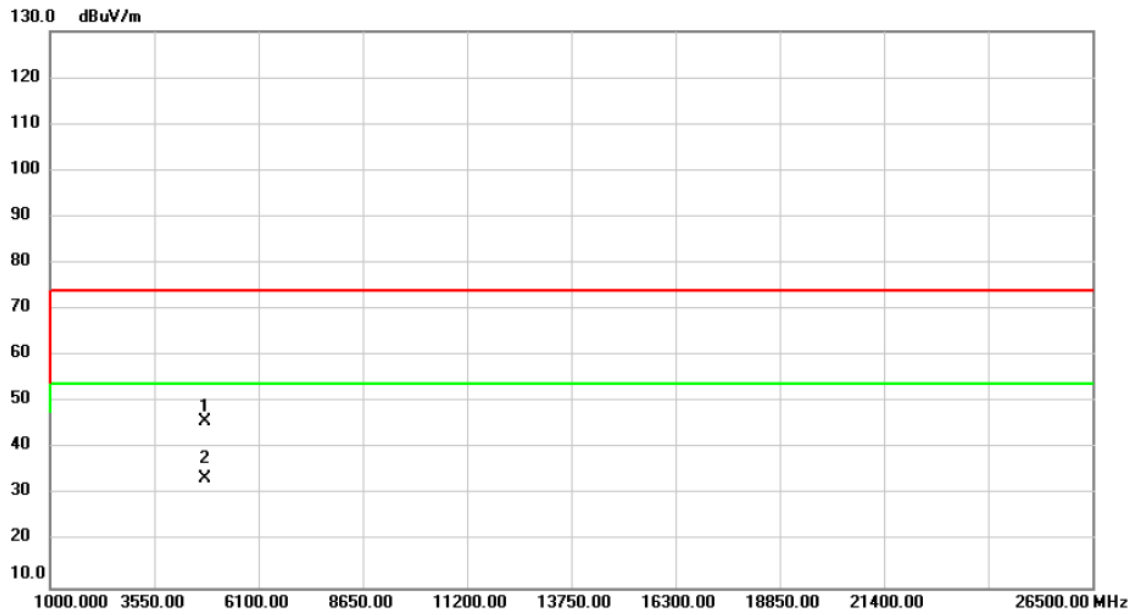


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		2381.833	54.29	-5.39	48.90	74.00	-25.10	peak	
2		2381.833	43.89	-5.39	38.50	54.00	-15.50	AVG	
3	X	2480.000	101.27	-5.22	96.05	74.00	22.05	peak	No Limit
4	*	2480.000	99.23	-5.22	94.01	54.00	40.01	AVG	No Limit
5		2533.440	56.03	-5.08	50.95	74.00	-23.05	peak	
6		2533.440	44.93	-5.08	39.85	54.00	-14.15	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2023/6/13
Test Frequency	2402MHz	Polarization	Vertical
Temp	21°C	Hum.	56%

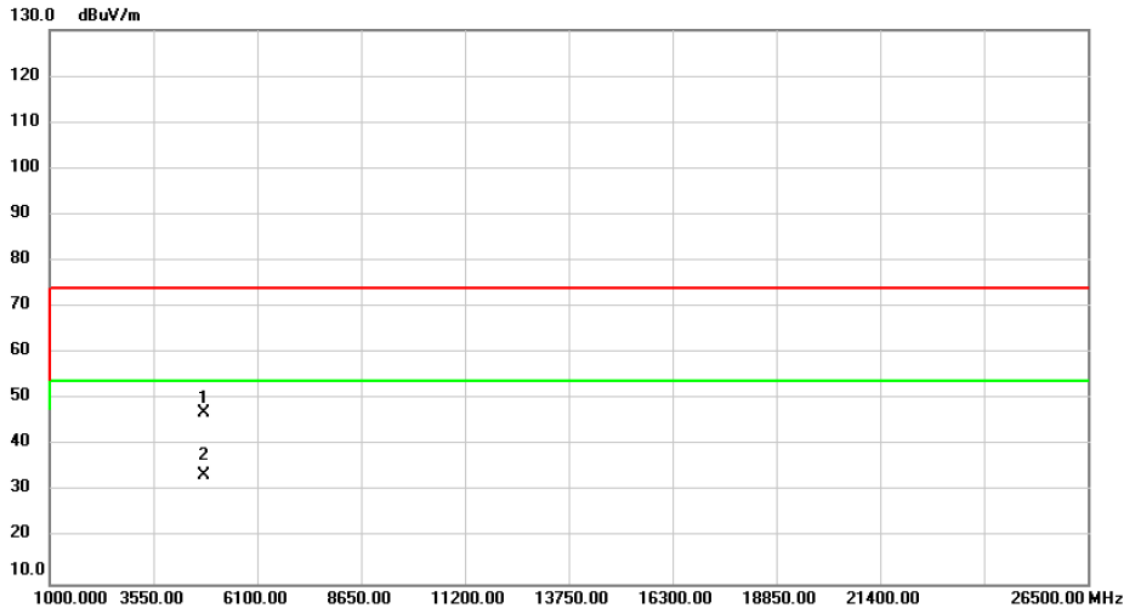


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4804.000	45.20	0.53	45.73	74.00	-28.27	peak	
2	*	4804.000	33.16	0.53	33.69	54.00	-20.31	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2023/6/13
Test Frequency	2402MHz	Polarization	Horizontal
Temp	21°C	Hum.	56%

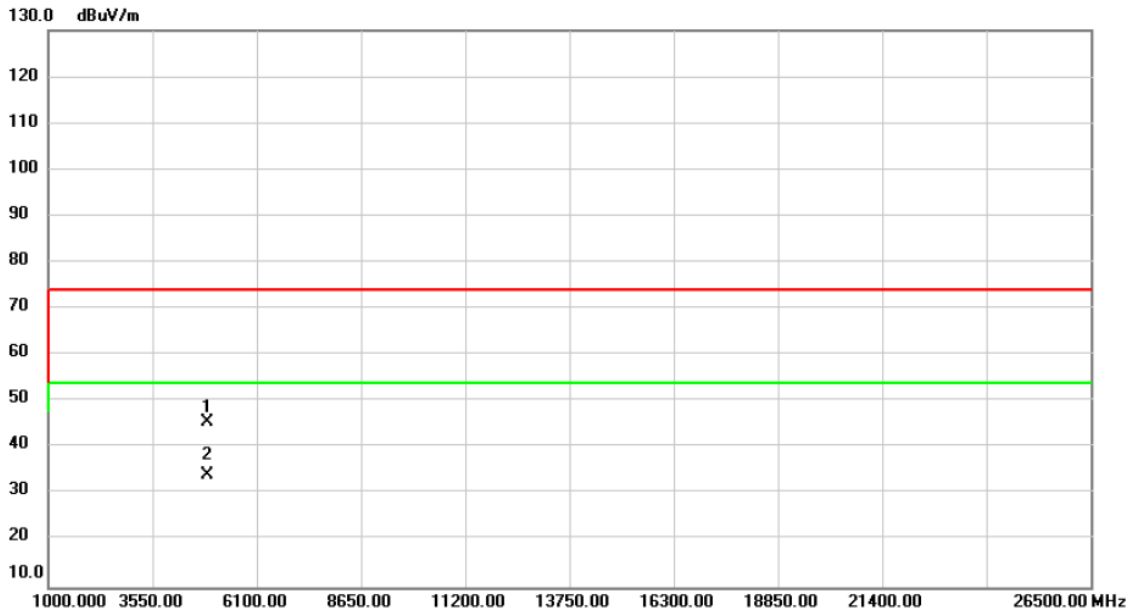


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4804.000	46.61	0.53	47.14	74.00	-26.86	peak	
2	*	4804.000	33.07	0.53	33.60	54.00	-20.40	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2023/6/13
Test Frequency	2440MHz	Polarization	Vertical
Temp	21°C	Hum.	56%

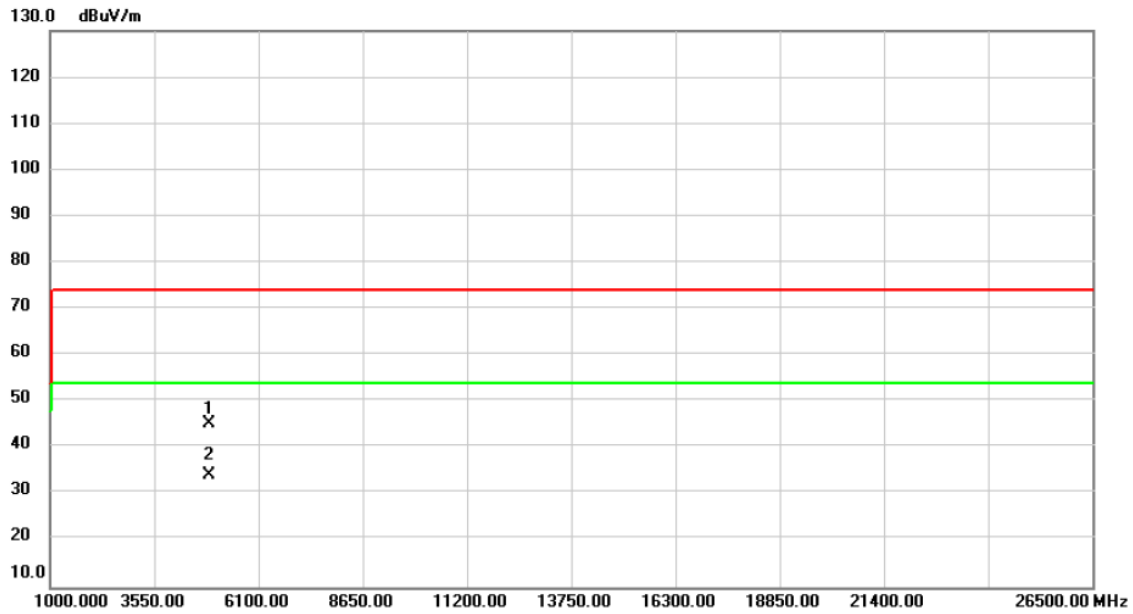


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4880.000	44.76	0.75	45.51	74.00	-28.49	peak	
2	*	4880.000	33.42	0.75	34.17	54.00	-19.83	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2023/6/13
Test Frequency	2440MHz	Polarization	Horizontal
Temp	21°C	Hum.	56%

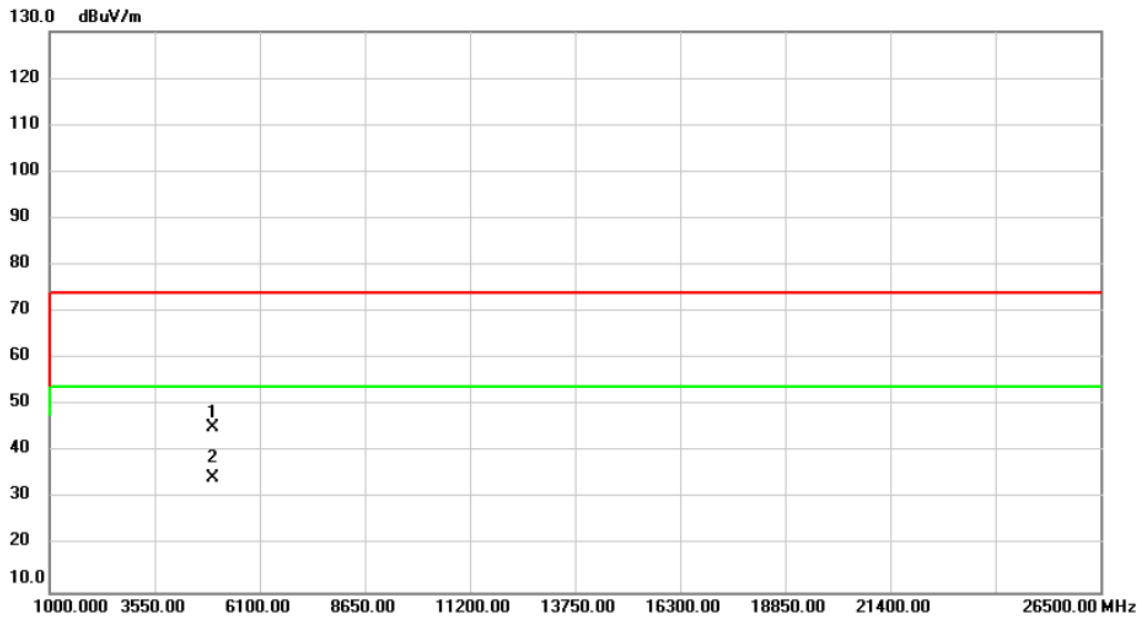


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4880.000	44.55	0.75	45.30	74.00	-28.70	peak	
2 *	4880.000	33.52	0.75	34.27	54.00	-19.73	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2023/6/13
Test Frequency	2480MHz	Polarization	Vertical
Temp	21°C	Hum.	56%

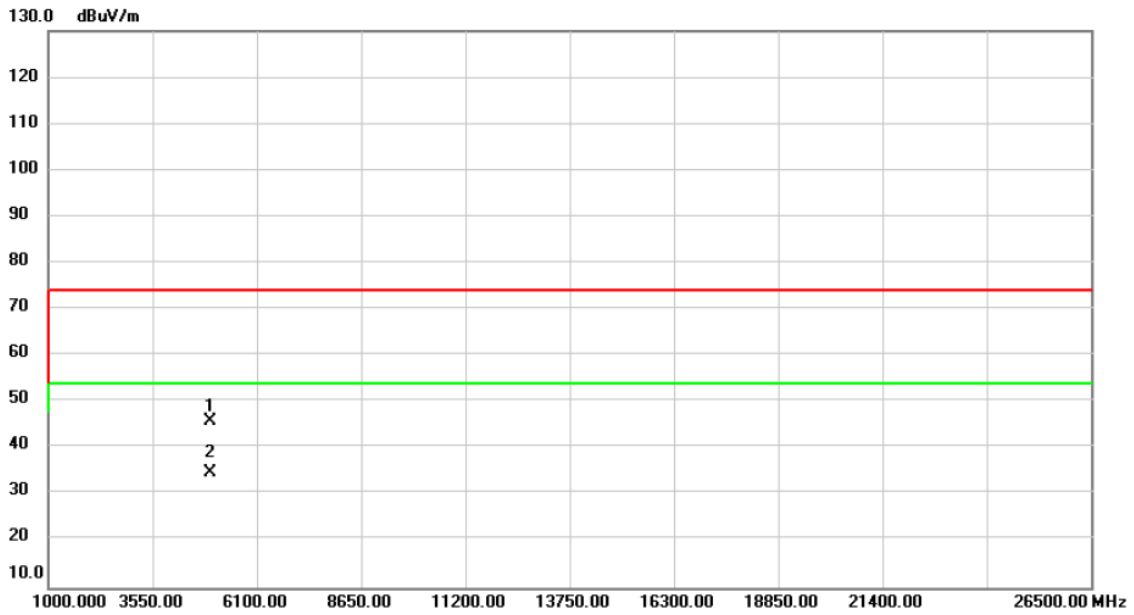


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4960.000	44.12	1.00	45.12	74.00	-28.88	peak	
2	*	4960.000	33.45	1.00	34.45	54.00	-19.55	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2023/6/13
Test Frequency	2480MHz	Polarization	Horizontal
Temp	21°C	Hum.	56%

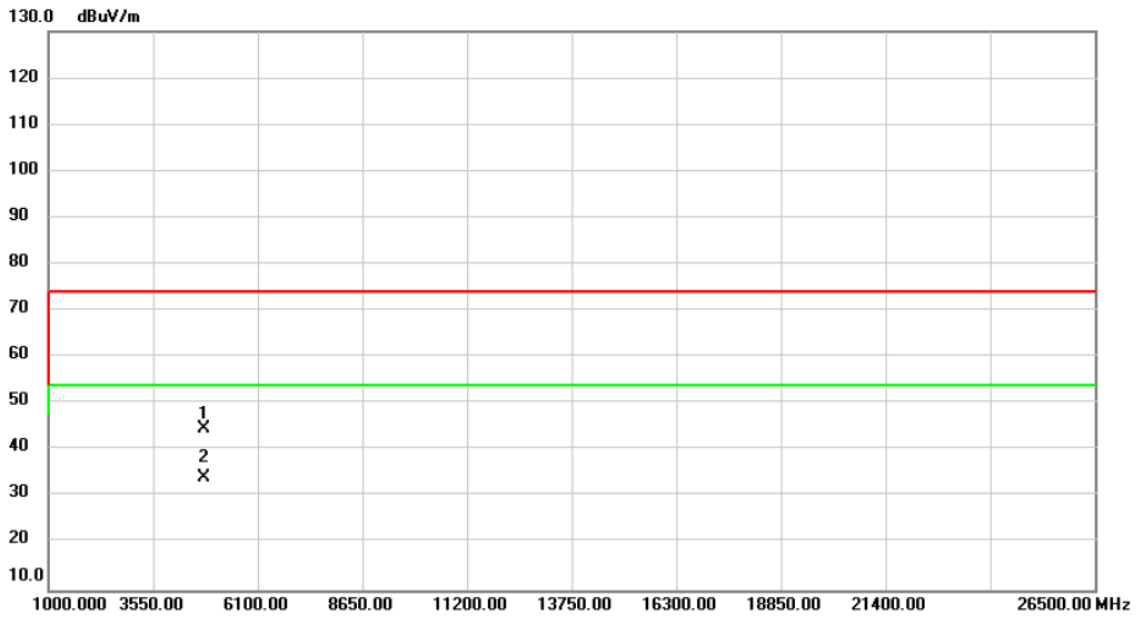


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4960.000	44.86	1.00	45.86	74.00	-28.14	peak	
2	*	4960.000	33.73	1.00	34.73	54.00	-19.27	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2023/6/13
Test Frequency	2402MHz	Polarization	Vertical
Temp	21°C	Hum.	56%

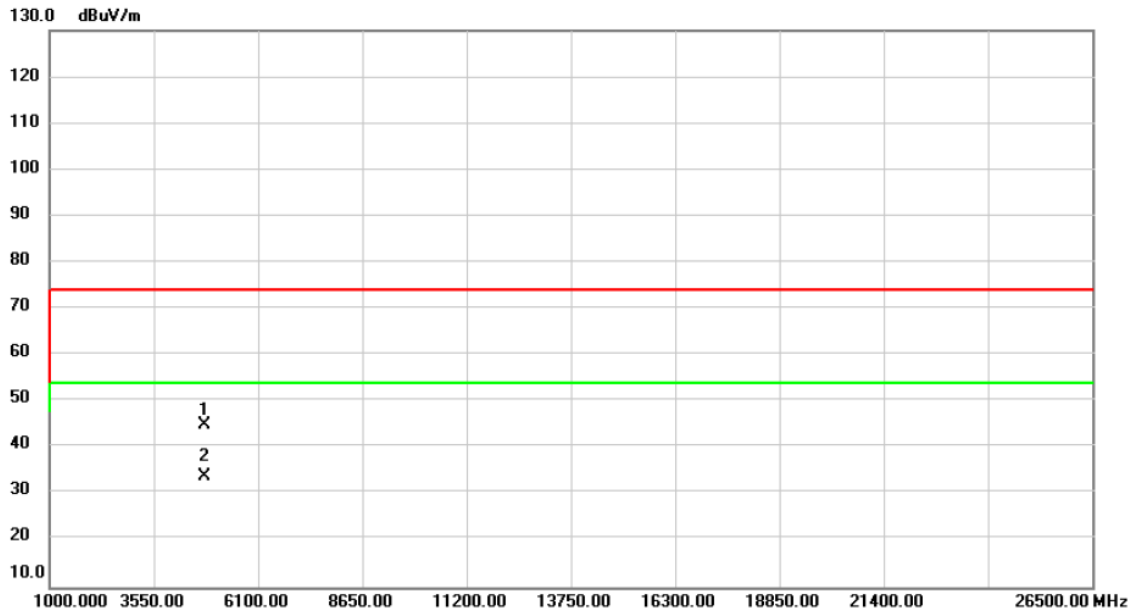


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4804.000	44.24	0.53	44.77	74.00	-29.23	peak	
2	*	4804.000	33.61	0.53	34.14	54.00	-19.86	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2023/6/13
Test Frequency	2402MHz	Polarization	Horizontal
Temp	21°C	Hum.	56%

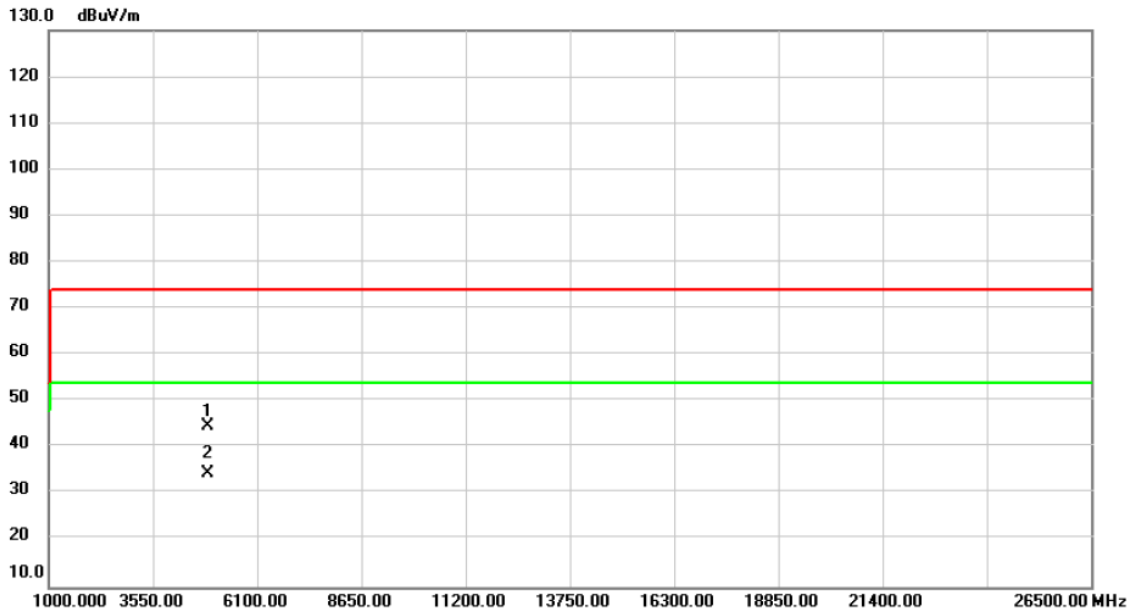


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4804.000	44.56	0.53	45.09	74.00	-28.91	peak	
2	*	4804.000	33.40	0.53	33.93	54.00	-20.07	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2023/6/13
Test Frequency	2440MHz	Polarization	Vertical
Temp	21°C	Hum.	56%

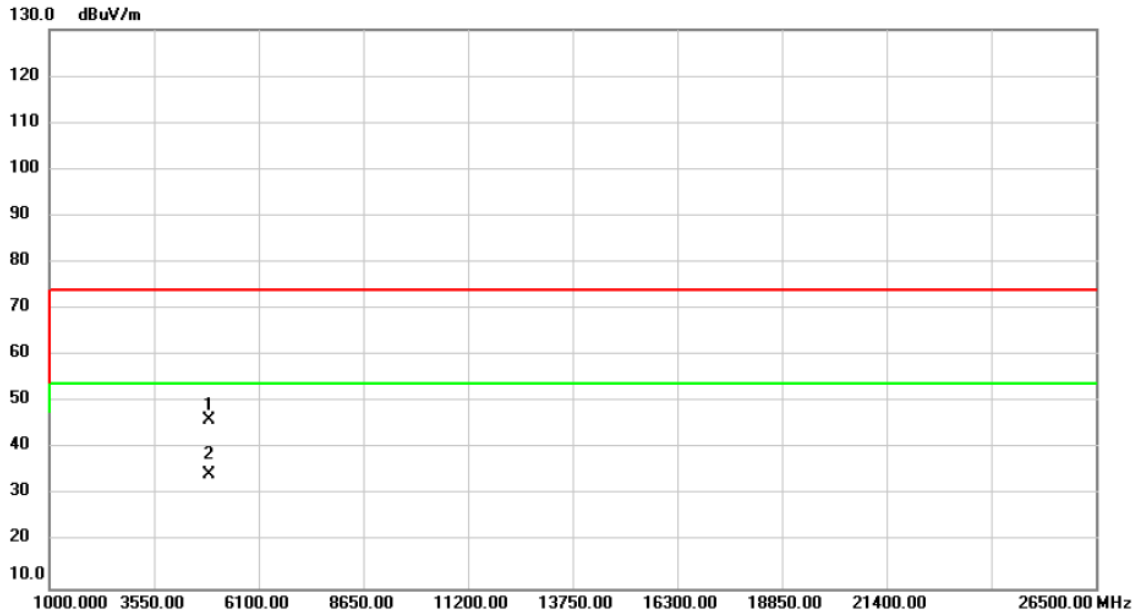


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4880.000	43.89	0.75	44.64	74.00	-29.36	peak	
2 *	4880.000	33.75	0.75	34.50	54.00	-19.50	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2023/6/13
Test Frequency	2440MHz	Polarization	Horizontal
Temp	21°C	Hum.	56%

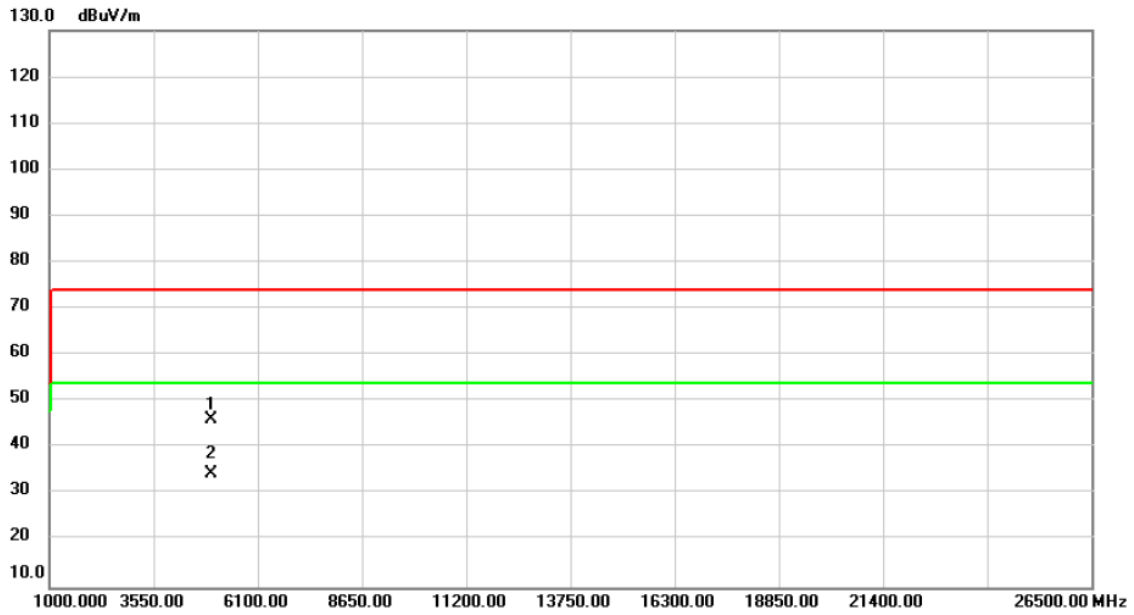


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4880.000	45.46	0.75	46.21	74.00	-27.79	peak	
2	*	4880.000	33.71	0.75	34.46	54.00	-19.54	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2023/6/13
Test Frequency	2480MHz	Polarization	Vertical
Temp	21°C	Hum.	56%

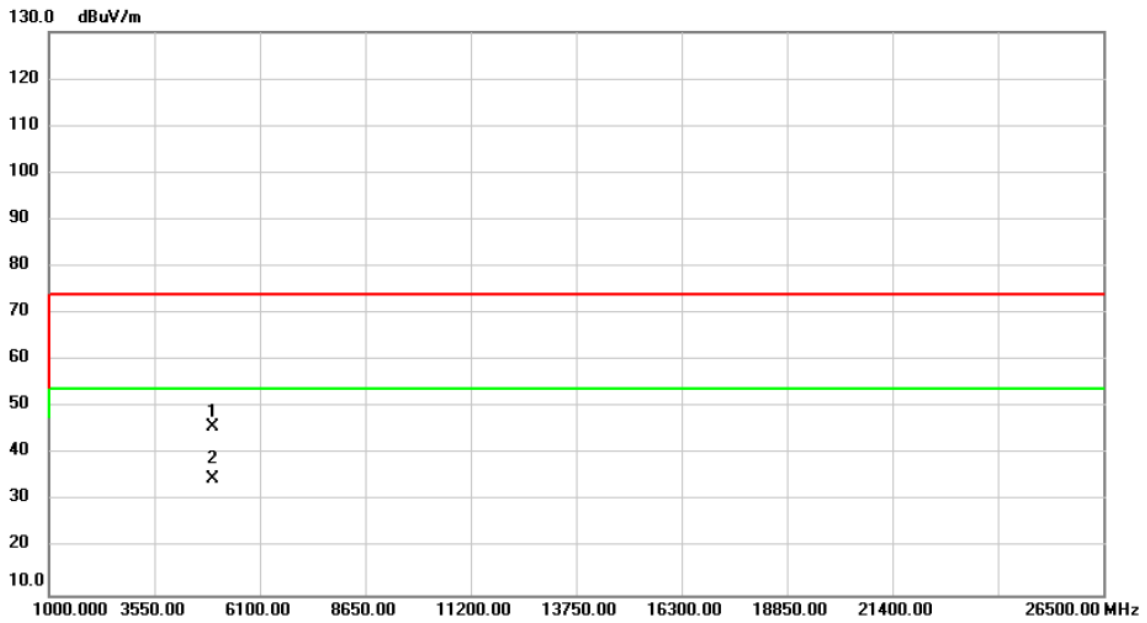


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4960.000	45.05	1.00	46.05	74.00	-27.95	peak	
2	*	4960.000	33.58	1.00	34.58	54.00	-19.42	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	BLE 5.0 (2Mbps)	Test Date	2023/6/13
Test Frequency	2480MHz	Polarization	Horizontal
Temp	21°C	Hum.	56%



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4960.000	44.81	1.00	45.81	74.00	-28.19	peak	
2	*	4960.000	33.77	1.00	34.77	54.00	-19.23	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

APPENDIX C OUTPUT POWER

Test Mode :	1Mbps	Tested Date	2023/6/8
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	5.23	0.0033	30.00	1.0000	Pass
2440	5.43	0.0035	30.00	1.0000	Pass
2480	5.68	0.0037	30.00	1.0000	Pass

Test Mode :	2Mbps	Tested Date	2023/6/8
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	5.34	0.0034	30.00	1.0000	Pass
2440	5.48	0.0035	30.00	1.0000	Pass
2480	5.80	0.0038	30.00	1.0000	Pass

End of Test Report