

FCC Radio Test Report

FCC ID: RWO-RZ090368QCNFA**This report concerns: Class II Permissive Changes**

Report No. : BTL-FCCP-3-2212C001
Equipment : Notebook PC
Model Name : RZ09-0482
Brand Name : RAZER
Applicant : Razer Inc.
Address : 9 Pasteur, Suite 100, Irvine, CA92618, USA.
Manufacturer : Razer Inc.
Address : 9 Pasteur, Suite 100, Irvine, CA92618, USA.

Radio Function : WLAN 2.4 GHz

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

Date of Receipt : 2022/12/19
Date of Test : 2022/12/19 ~ 2023/2/1
Issued Date : 2023/2/10

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-3-2212C001	R00	Original Report.	2023/2/10	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	APPENDIX A	Pass	-----
15.205 15.209 15.247(d)	Radiated Emissions	APPENDIX B APPENDIX C	Pass	-----
15.247(a)	Bandwidth	-----	Pass	-----
15.247(b)	Output Power	APPENDIX D	Pass	-----
15.247(e)	Power Spectral Density	-----	Pass	-----
15.247(d)	Antenna conducted Spurious Emission	-----	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 antenna gain of EUT is smaller than that of the module. So in this report the worst cases of radiated spurious emissions and AC Power Line Conducted Emissions were evaluated and recorded. And evaluated the output power items and recorded in the report. For the test results of all other test items please refer to module test reports.

1.1 TEST FACILITY

The test locations stated below are under the TAF Accreditation Number 0659.

The test location(s) used to collect the test data in this report are:

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)

C05 CB08 CB11 SR10 SR11

No. 72, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)

C06 CB21 CB22

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. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U (dB)
C05	CISPR	150 kHz ~ 30MHz	3.44

B. 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

C. Conducted test:

Test Item	U,(dB)
Output power	0.3669

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
AC Power Line Conducted Emissions	21°C, 65%	AC 120V/60Hz	Paul Shen
Radiated emissions below 1 GHz	23°C, 59%	AC 120V/60Hz	Mark Wang
Radiated emissions above 1 GHz	23°C, 59%	AC 120V/60Hz	Mark Wang
Output Power	22.3°C, 51%	AC 120V/60Hz	Tim Lee

1.4 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

Test Software	QRCT V4.0					
Mode	2412 MHz	2437 MHz	2462 MHz	2467 MHz	2472 MHz	Data Rate
IEEE 802.11b	19	21	19	16.5	14	1 Mbps
IEEE 802.11g	16	19	16.5	14	1.5	6 Mbps
IEEE 802.11ac (VHT20)	12.5	16	11	10	-2	MCS 0
IEEE 802.11ax (HE20)	12.5	17	11	9.5	-2.5	MCS 0
Mode	2422 MHz	2437 MHz	2452 MHz	2457 MHz	2462 MHz	Data Rate
IEEE 802.11ac (VHT40)	10	10.5	9	8.5	-1	MCS 0
IEEE 802.11ax (HE40)	9.5	10.5	9.5	9	-1	MCS 0

2 GENERAL INFORMATION

2.1 DESCRIPTION OF EUT

Equipment	Notebook PC
Model Name	RZ09-0482
Brand Name	RAZER
Model Difference	N/A
Power Source	#1 DC voltage supplied from AC adapter. #2 Supplied from battery. Model: RC30-0482
Power Rating	#1 I/P: 100-240V~3.6A 50/60Hz O/P: 19.5V= 11.8A #2 DC 15.4V, 4422mAh, 68.1Wh
Products Covered	1* POWER Adapter: RC30-024801
Operation Band	2400 MHz ~ 2483.5 MHz
Operation Frequency	2412 MHz ~ 2472 MHz
Modulation Technology	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n: OFDM IEEE 802.11ax: OFDMA
Transfer Rate	IEEE 802.11b: 11/5.5/2/1 Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6 Mbps IEEE 802.11n: up to 300 Mbps IEEE 802.11ax: up to 573.6 Mbps
Output Power Max.	IEEE 802.11b: 25.74 dBm (0.3748 W) IEEE 802.11g: 27.00 dBm (0.5008 W) IEEE 802.11ac (VHT20): 27.27 dBm (0.5338 W) IEEE 802.11ac (VHT40): 23.80 dBm (0.2400 W) IEEE 802.11ax (HE20): 27.25 dBm (0.5308 W) IEEE 802.11ax (HE40): 23.41 dBm (0.2190 W)
Test Model	RZ09-0482
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:

CH01 - CH13 for IEEE 802.11b, IEEE 802.11g, IEEE 802.11n (HT20), IEEE 802.11ac (VHT20), IEEE 802.11ax (HE20)					
CH03 - CH11 for IEEE 802.11n (HT40), IEEE 802.11ac (VHT40), IEEE 802.11ax (HE40)					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	06	2437	11	2462
02	2417	07	2442	12	2467
03	2422	08	2447	13	2472
04	2427	09	2452		
05	2432	10	2457		

(3) Table for Filed Antenna:

Ant.	Manufacturer	P/N	Type	Connector	Gain (dBi)
1	Amphenol	BY5964-16-001-C	PIFA	N/A	3.16
2	Amphenol	BY5964-16-002-C	PIFA	N/A	3.09

Note:

- 1) This EUT supports MIMO 2X2, any transmit signals are uncorrelated with each other, so Directional gain= $10\log[(10^{G1/10}+10^{G2/10}+...+10^{GN/10})/N]$ dBi, that is Directional gain= $10\log[(10^{3.16/10}+10^{3.09/10})/2]$ dBi= 3.13.
 - 2) Ant.1 refers to main antenna, Ant.2 refers to aux antenna.
 - 3) The AUX antenna connector of the module connected to the MAIN antenna of the EUT and the MAIN antenna connector of the module connected to the AUX antenna of the EUT.
- (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
AC power line conducted emissions	Normal/Idle	-	-
Transmitter Radiated Emissions (below 1GHz)	TX Mode_IEEE 802.11b	01	-
Transmitter Radiated Emissions (above 1GHz)	TX Mode_IEEE 802.11b	01	Bandedge
	TX Mode_IEEE 802.11ax (HE40)	03	
Transmitter Radiated Emissions (above 1GHz)	TX Mode_IEEE 802.11b	06	Harmonic
	TX Mode_IEEE 802.11ax (HE40)	06	
Output Power	TX Mode_IEEE 802.11b	01/06/11/12/13	-
	TX Mode_IEEE 802.11g		
	TX Mode_IEEE 802.11ac (VHT20) TX Mode_IEEE 802.11ax (HE20)		
	TX Mode_IEEE 802.11ac (VHT40) TX Mode_IEEE 802.11ax (HE40)	03/06/09/10/11	

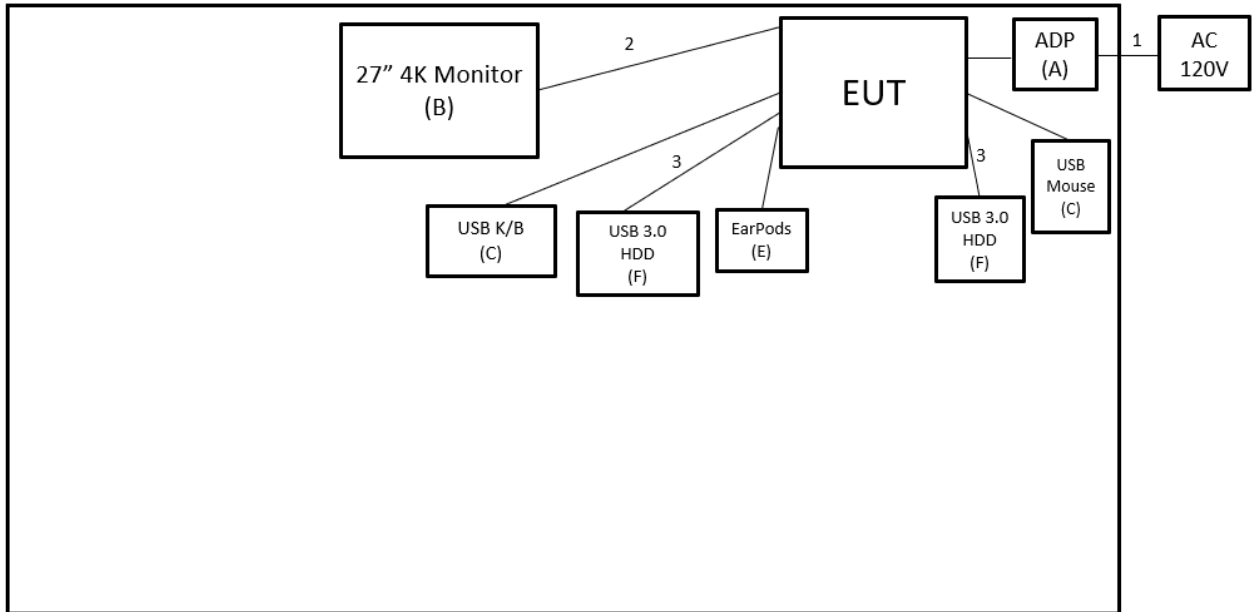
NOTE:

- (1) For radiated emission band edge test, both Vertical and Horizontal are evaluated, but only the worst case (Vertical) is recorded.

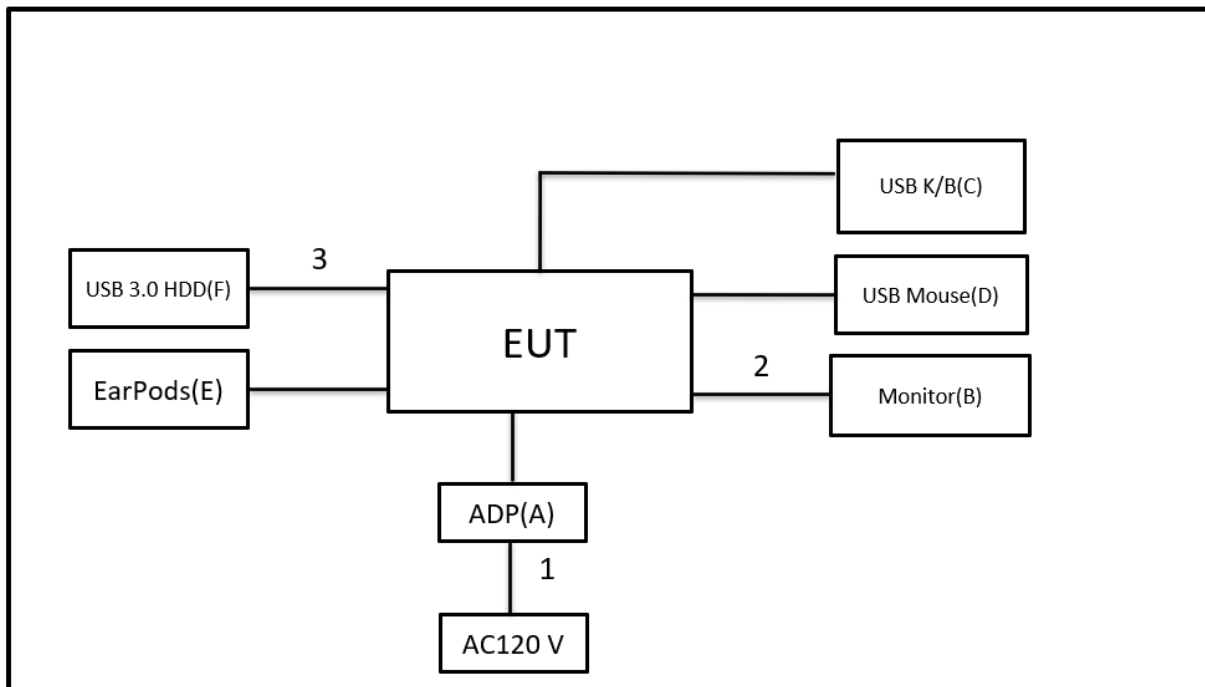
2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

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

AC power line conducted emissions



Radiated Emissions



2.4 SUPPORT UNITS

AC power line conducted emissions

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	ADP	Razer	RC30-024801	N/A	Supplied by test requester.
B	27" 4K Monitor	DELL	U2720Q	CN-083VF-WSL00-0B7-332L	Furnished by test lab.
C	USB K/B	DELL	KB216t	CN-0W33XP-L0300-797-05TY-A03	Furnished by test lab.
D	USB Mouse	DELL	MOCZUL	CN-049TWY-PRC00-79E-01HA	Furnished by test lab.
E	EarPods	Apple	A1472	N/A	Furnished by test lab.
F	USB 3.0 HDD	WD	WDBC3C0010BSL-0B	WX81A88ALJUC	Furnished by test lab.

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	N/A	N/A	1m	Power Cord	Furnished by test lab.
2	N/A	N/A	1.7m	HDMI Cable	Furnished by test lab.
3	N/A	N/A	0.18m	Type C to Type C Cable	Furnished by test lab.

Radiated Emissions

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	ADP	Razer	RC30-024801	N/A	Supplied by test requester.
B	27" 4K Monitor	DELL	U2720Q	CN-083VF-WSL00-0B7-332L	Furnished by test lab.
C	USB K/B	DELL	KB216t	CN-0W33XP-L0300-797-05TY-A03	Furnished by test lab.
D	USB Mouse	DELL	MOCZUL	CN-049TWY-PRC00-79E-01HA	Furnished by test lab.
E	EarPods	Apple	A1472	N/A	Furnished by test lab.
F	USB 3.0 HDD	WD	WDBC3C0010BSL-0B	WX81A88ALJUC	Furnished by test lab.

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	N/A	N/A	1m	Power Cord	Supplied by test requester.
2	N/A	N/A	1.7m	HDMI Cable	Furnished by test lab.
3	N/A	N/A	0.18m	Type C to Type C Cable	Furnished by test lab.

3 AC POWER LINE CONDUCTED EMISSIONS TEST

3.1 LIMIT

Frequency (MHz)	Limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56 *	56 - 46 *
0.50 - 5.0	56	46
5.0 - 30.0	60	50

NOTE:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
- (3) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor (if use)
 Margin Level = Measurement Value – Limit Value
 Calculation example:

Reading Level		Correct Factor		Measurement Value
38.22	+	3.45	=	41.67

Measurement Value		Limit Value		Margin Level
41.67	-	60	=	-18.33

The following table is the setting of the receiver.

Receiver Parameter	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

3.2 TEST PROCEDURE

- a. The EUT was placed 0.8 m above the horizontal ground plane with the EUT being connected to the power mains through a line impedance stabilization network (LISN).
 All other support equipment were powered from an additional LISN(s).
 The LISN provides 50 Ohm/50uH of impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle to keep the cable above 40 cm.
- c. Excess I/O cables that are not connected to a peripheral shall be bundled in the center.
 The end of the cable will be terminated, using the correct terminating impedance.
 The overall length shall not exceed 1 m.
- d. The LISN is spaced at least 80 cm from the nearest part of the EUT chassis.
- e. For the actual test configuration, please refer to the related Item - EUT TEST PHOTO.

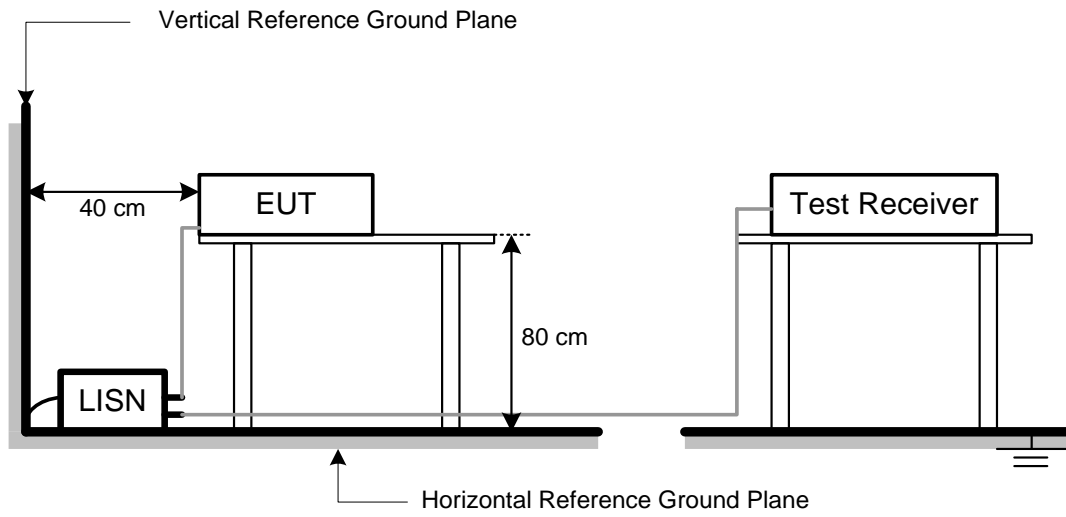
NOTE:

- (1) In the results, each reading is marked as Peak, QP or AVG per the detector used.
 BW=9 kHz (6 dB Bandwidth)
- (2) All readings are Peak unless otherwise stated QP or AVG in column of Note. Both the QP and the AVG readings must be less than the limit for compliance.

3.3 DEVIATION FROM TEST STANDARD

No deviation.

3.4 TEST SETUP



3.5 TEST RESULT

Please refer to the APPENDIX A.

4 RADIATED EMISSIONS TEST

4.1 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
19.11	+	2.11	=	21.22

Measurement Value		Limit Value	=	Margin Level
21.22	-	54	=	-32.78

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

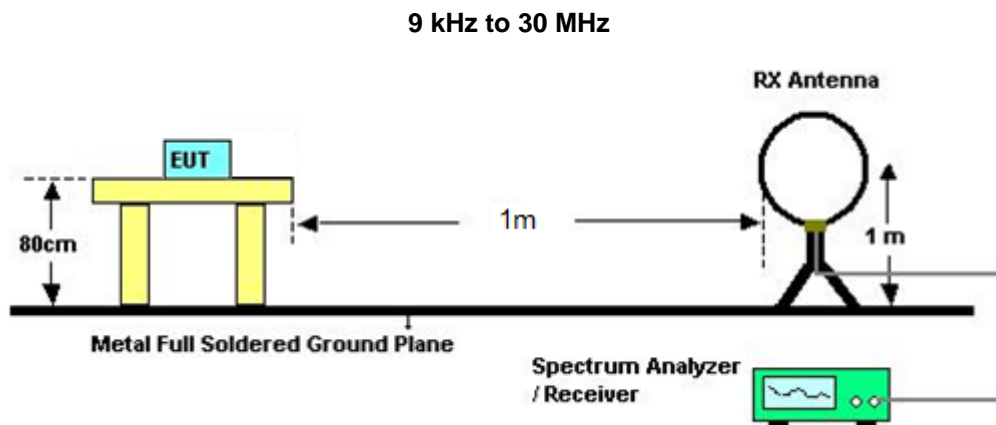
4.2 TEST PROCEDURE

- 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 complies 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 complies 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.

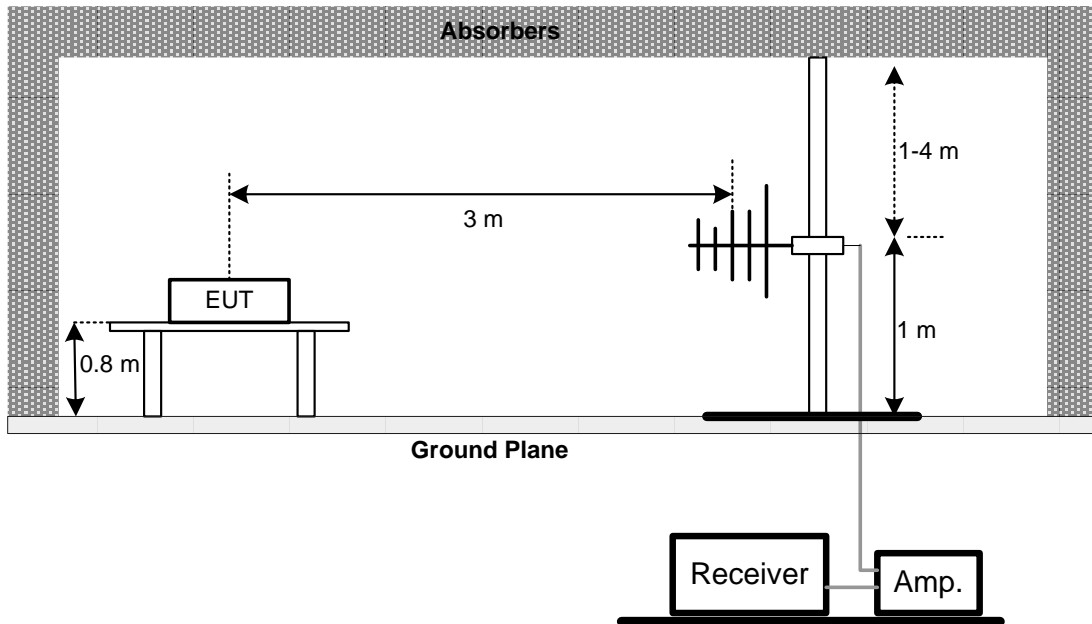
4.3 DEVIATION FROM TEST STANDARD

No deviation.

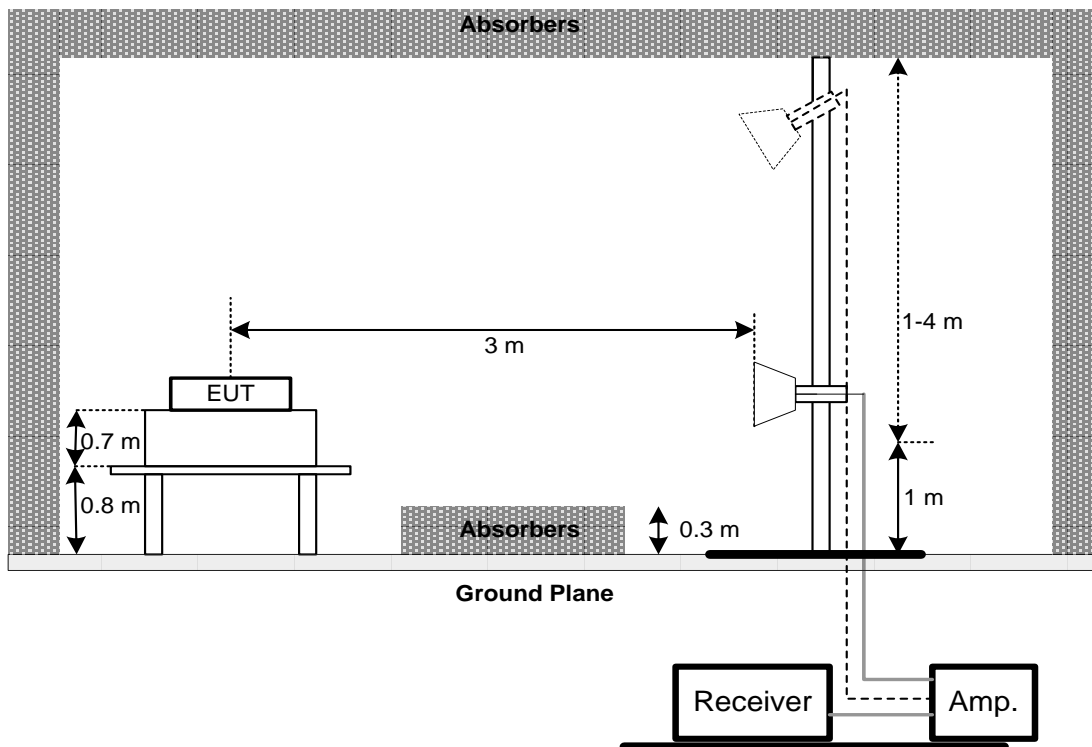
4.4 TEST SETUP



30 MHz to 1 GHz



Above 1 GHz



4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULT – BELOW 30 MHZ

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

4.7 TEST RESULT – 30 MHZ TO 1 GHZ

Please refer to the APPENDIX B.

4.8 TEST RESULT – ABOVE 1 GHZ

Please refer to the APPENDIX C.

NOTE:

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

5 OUTPUT POWER TEST

5.1 LIMIT

Section	Test Item	Limit
15.247(b)	Maximum Output Power	1 Watt or 30dBm

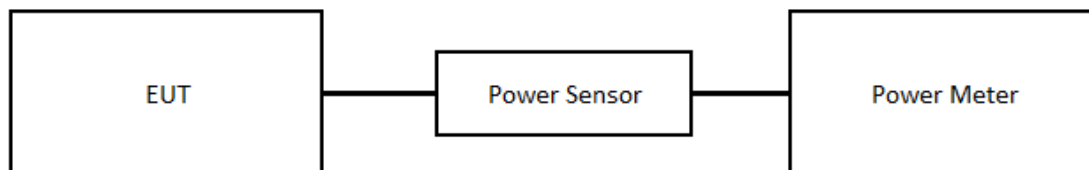
5.2 TEST PROCEDURE

- The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.
- The maximum peak conducted output power was performed in accordance with FCC KDB 558074 D01 15.247 Meas Guidance.
- Subclause 11.9.1.1 of ANSI C63.10 is applied. The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

5.3 DEVIATION FROM TEST STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULT

Please refer to the APPENDIX D.

6 LIST OF MEASURING EQUIPMENTS

AC Power Line Conducted Emissions						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	TWO-LINE V-NETWORK	R&S	ENV216	101521	2022/9/28	2023/9/27
2	Test Cable	EMCI	EMCCFD300-BM-BMR-5000	220331	2022/3/31	2023/3/30
3	EMI Test Receiver	R&S	ESR 7	101433	2022/11/16	2023/11/15
4	Measurement Software	EZ	EZ EMC (Version NB-03A1-01)	N/A	N/A	N/A

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	2022/3/8	2023/3/7
3	Preamplifier	EMCI	EMC184045SE	980882	2022/2/9	2023/2/8
4	Preamplifier	EMCI	EMC001340	980579	2022/9/30	2023/9/29
5	Test Cable	EMCI	EMC104-SM-SM-1000	220319	2022/3/15	2023/3/14
6	Test Cable	EMCI	EMC104-SM-SM-3000	220322	2022/3/15	2023/3/14
7	Test Cable	EMCI	EMC104-SM-SM-7000	220324	2022/3/15	2023/3/14
8	EXA Signal Analyzer	keysight	N9020B	MY57120120	2022/3/7	2023/3/6
9	Loop Ant	Electro-Metrics	EMCI-LPA600	291	2022/9/19	2023/9/18
10	Horn Antenna	RFSPIN	DRH18-E	211202A18EN	2022/5/18	2023/5/17
11	Horn Ant	Schwarzbeck	BBHA 9170D	1136	2022/5/18	2023/5/17
12	Log-bicon Antenna	Schwarzbeck	VULB9168	1369	2022/5/20	2023/5/19
13	6dB Attenuator	EMCI	EMCI-N-6-06	AT-N0625	2022/5/20	2023/5/19
14	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	Power Meter	Anritsu	ML2495A	1128008	2022/6/1	2023/5/31
2	Power Sensor	Anritsu	MA2411B	1126001	2022/6/1	2023/5/31

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

7 EUT TEST PHOTO

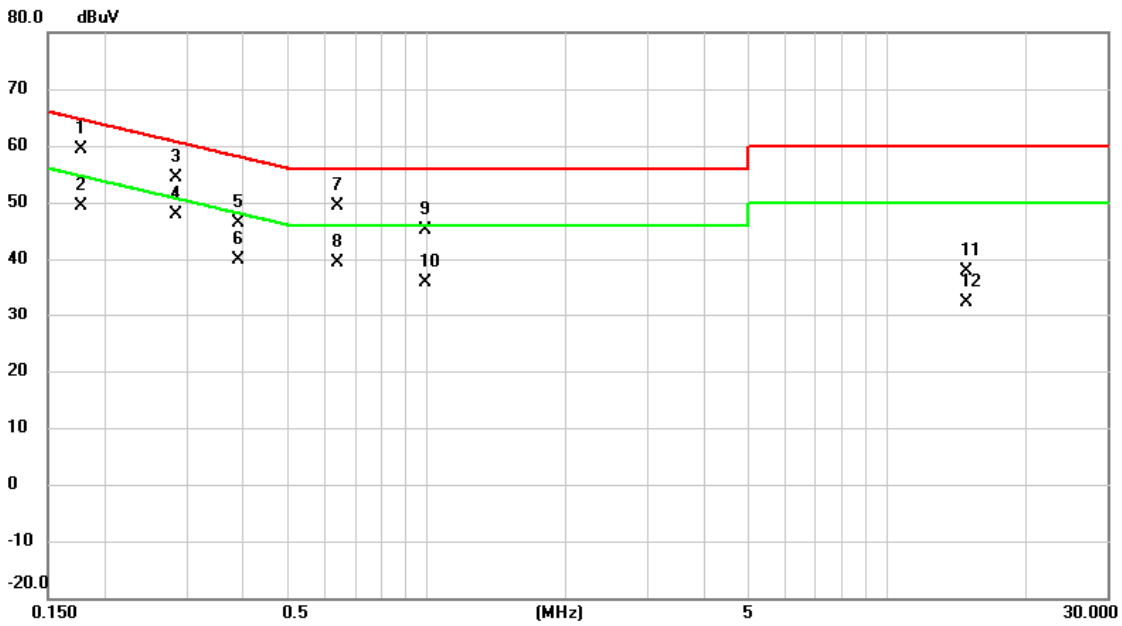
Please refer to document Appendix No.: TP-2212C001-1 (APPENDIX-TEST PHOTOS).

8 EUT PHOTOS

Please refer to document Appendix No.: EP-2212C001-1 (APPENDIX-EUT PHOTOS).

APPENDIX A AC POWER LINE CONDUCTED EMISSIONS

Test Mode	Normal	Tested Date	2023/1/6
Test Frequency	-	Phase	Line



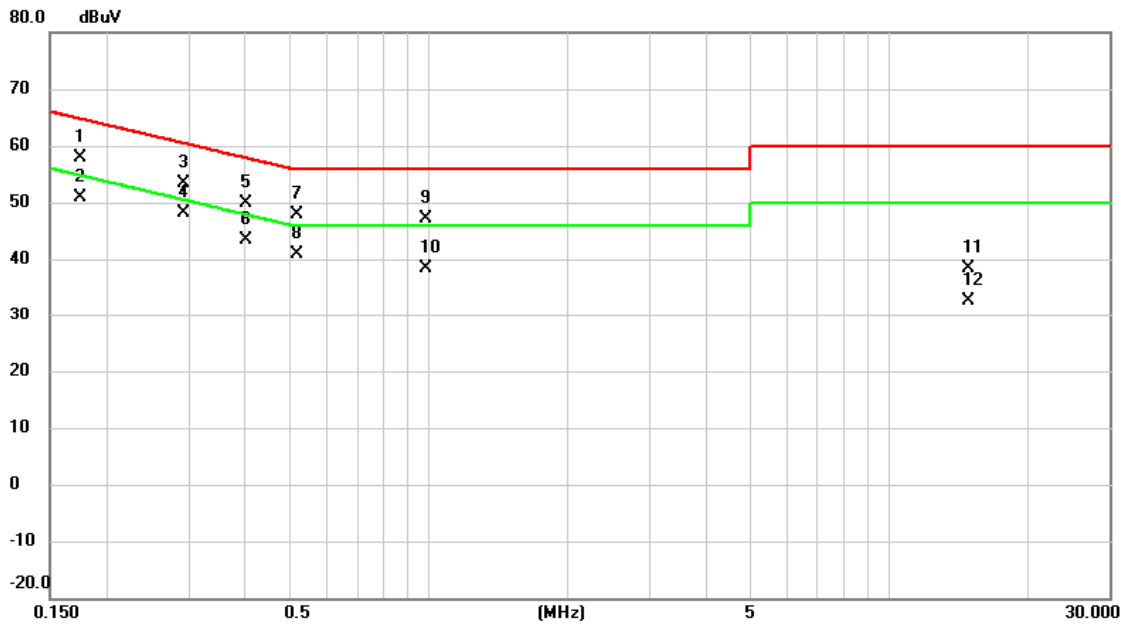
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1770	49.65	9.63	59.28	64.63	-5.35	QP	
2		0.1770	39.72	9.63	49.35	54.63	-5.28	AVG	
3		0.2850	44.70	9.63	54.33	60.67	-6.34	QP	
4	*	0.2850	38.24	9.63	47.87	50.67	-2.80	AVG	
5		0.3907	36.82	9.63	46.45	58.05	-11.60	QP	
6		0.3907	30.37	9.63	40.00	48.05	-8.05	AVG	
7		0.6405	39.69	9.64	49.33	56.00	-6.67	QP	
8		0.6405	29.65	9.64	39.29	46.00	-6.71	AVG	
9		0.9960	35.34	9.67	45.01	56.00	-10.99	QP	
10		0.9960	26.10	9.67	35.77	46.00	-10.23	AVG	
11		14.8830	27.99	9.89	37.88	60.00	-22.12	QP	
12		14.8830	22.40	9.89	32.29	50.00	-17.71	AVG	

REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode	Normal	Tested Date	2023/1/6
Test Frequency	-	Phase	Neutral

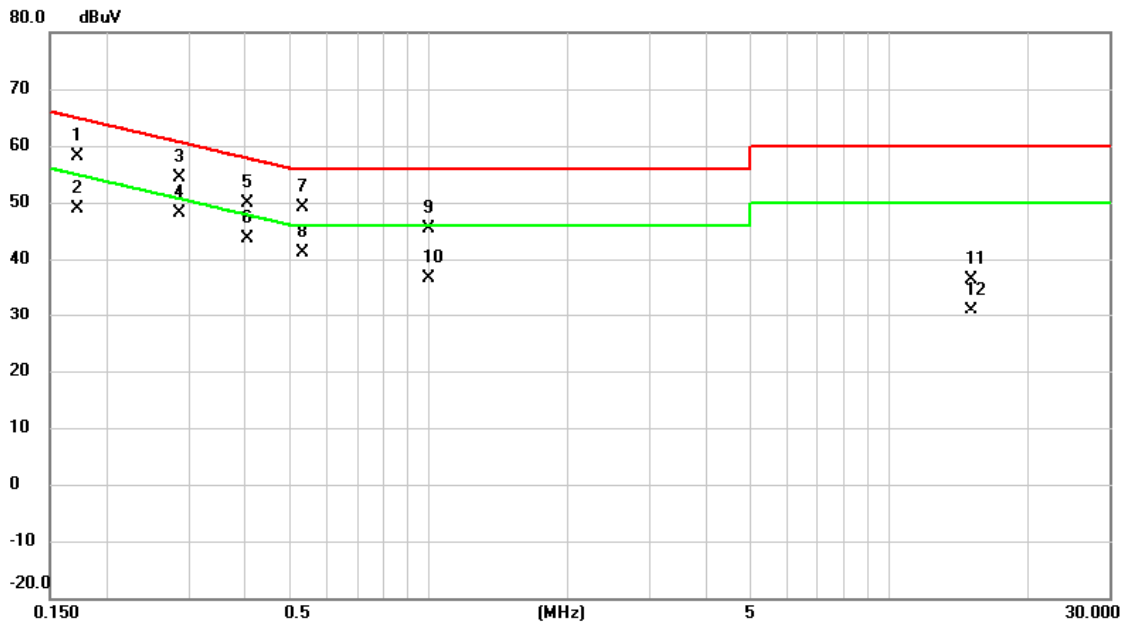


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1748	48.22	9.65	57.87	64.73	-6.86	QP	
2		0.1748	41.29	9.65	50.94	54.73	-3.79	AVG	
3		0.2917	43.65	9.64	53.29	60.48	-7.19	QP	
4	*	0.2917	38.42	9.64	48.06	50.48	-2.42	AVG	
5		0.4020	40.26	9.64	49.90	57.81	-7.91	QP	
6		0.4020	33.83	9.64	43.47	47.81	-4.34	AVG	
7		0.5167	38.22	9.64	47.86	56.00	-8.14	QP	
8		0.5167	31.16	9.64	40.80	46.00	-5.20	AVG	
9		0.9870	37.34	9.68	47.02	56.00	-8.98	QP	
10		0.9870	28.65	9.68	38.33	46.00	-7.67	AVG	
11		14.8853	28.53	9.97	38.50	60.00	-21.50	QP	
12		14.8853	22.73	9.97	32.70	50.00	-17.30	AVG	

REMARKS:

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

Test Mode	Idle	Tested Date	2023/1/6
Test Frequency	-	Phase	Line



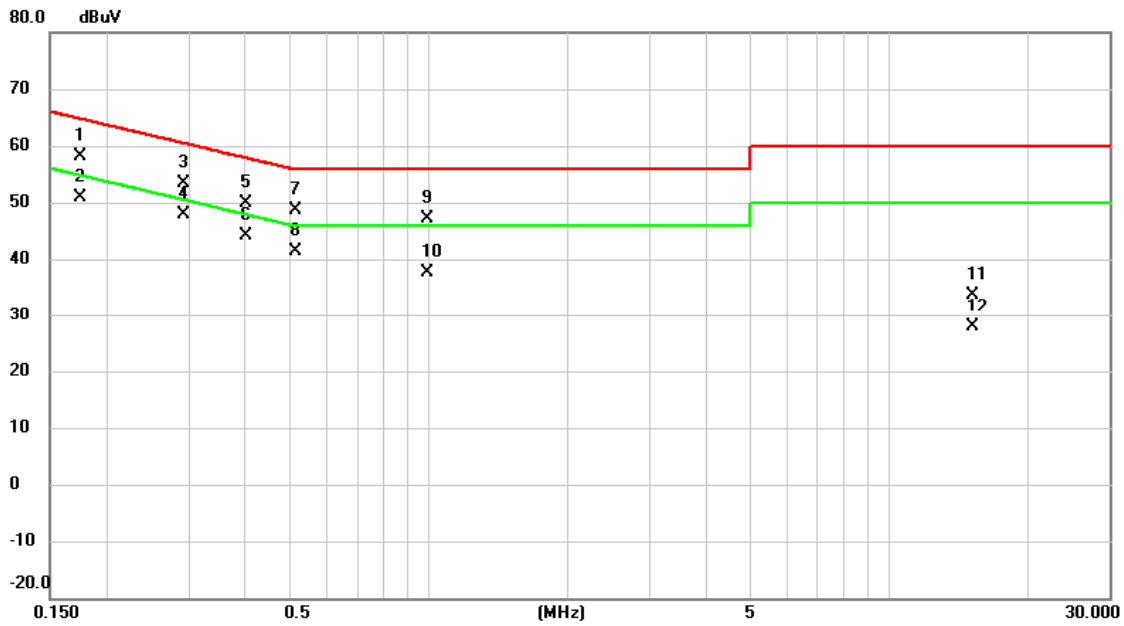
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1725	48.52	9.64	58.16	64.84	-6.68	QP	
2		0.1725	39.22	9.64	48.86	54.84	-5.98	AVG	
3		0.2872	44.76	9.63	54.39	60.60	-6.21	QP	
4	*	0.2872	38.54	9.63	48.17	50.60	-2.43	AVG	
5		0.4042	40.28	9.63	49.91	57.77	-7.86	QP	
6		0.4042	33.88	9.63	43.51	47.77	-4.26	AVG	
7		0.5325	39.43	9.63	49.06	56.00	-6.94	QP	
8		0.5325	31.52	9.63	41.15	46.00	-4.85	AVG	
9		1.0005	35.62	9.67	45.29	56.00	-10.71	QP	
10		1.0005	27.04	9.67	36.71	46.00	-9.29	AVG	
11		15.0833	26.54	9.90	36.44	60.00	-23.56	QP	
12		15.0833	20.95	9.90	30.85	50.00	-19.15	AVG	

REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode	Idle	Tested Date	2023/1/6
Test Frequency	-	Phase	Neutral



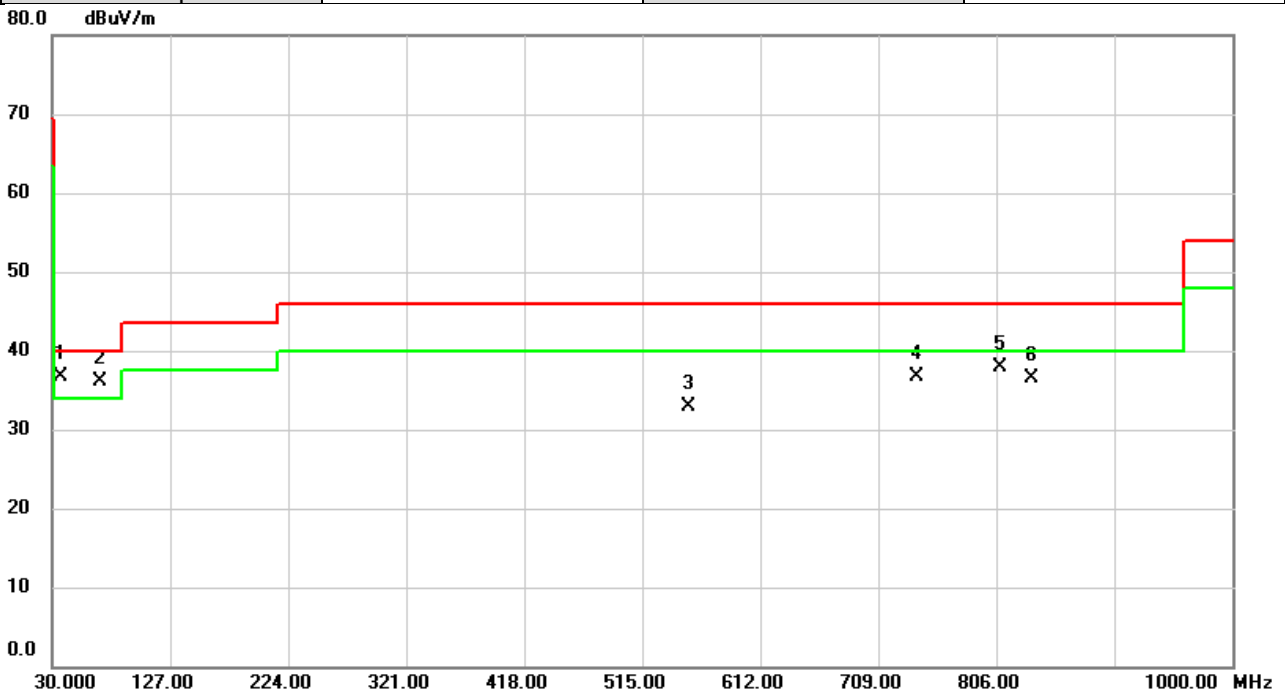
No.	Mk.	Freq. (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
1		0.1748	48.52	9.65	58.17	64.73	-6.56	QP	
2		0.1748	41.23	9.65	50.88	54.73	-3.85	AVG	
3		0.2917	43.65	9.64	53.29	60.48	-7.19	QP	
4	*	0.2917	38.19	9.64	47.83	50.48	-2.65	AVG	
5		0.4020	40.23	9.64	49.87	57.81	-7.94	QP	
6		0.4020	34.52	9.64	44.16	47.81	-3.65	AVG	
7		0.5144	38.91	9.64	48.55	56.00	-7.45	QP	
8		0.5144	31.62	9.64	41.26	46.00	-4.74	AVG	
9		0.9892	37.42	9.68	47.10	56.00	-8.90	QP	
10		0.9892	28.06	9.68	37.74	46.00	-8.26	AVG	
11		15.1463	23.61	9.98	33.59	60.00	-26.41	QP	
12		15.1463	17.83	9.98	27.81	50.00	-22.19	AVG	

REMARKS:

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

APPENDIX B RADIATED EMISSIONS - 30 MHZ TO 1 GHZ

Test Mode	IEEE 802.11b	Test Date	2023/1/18
Test Frequency	2412MHz	Polarization	Vertical
Temp	23°C	Hum.	59%

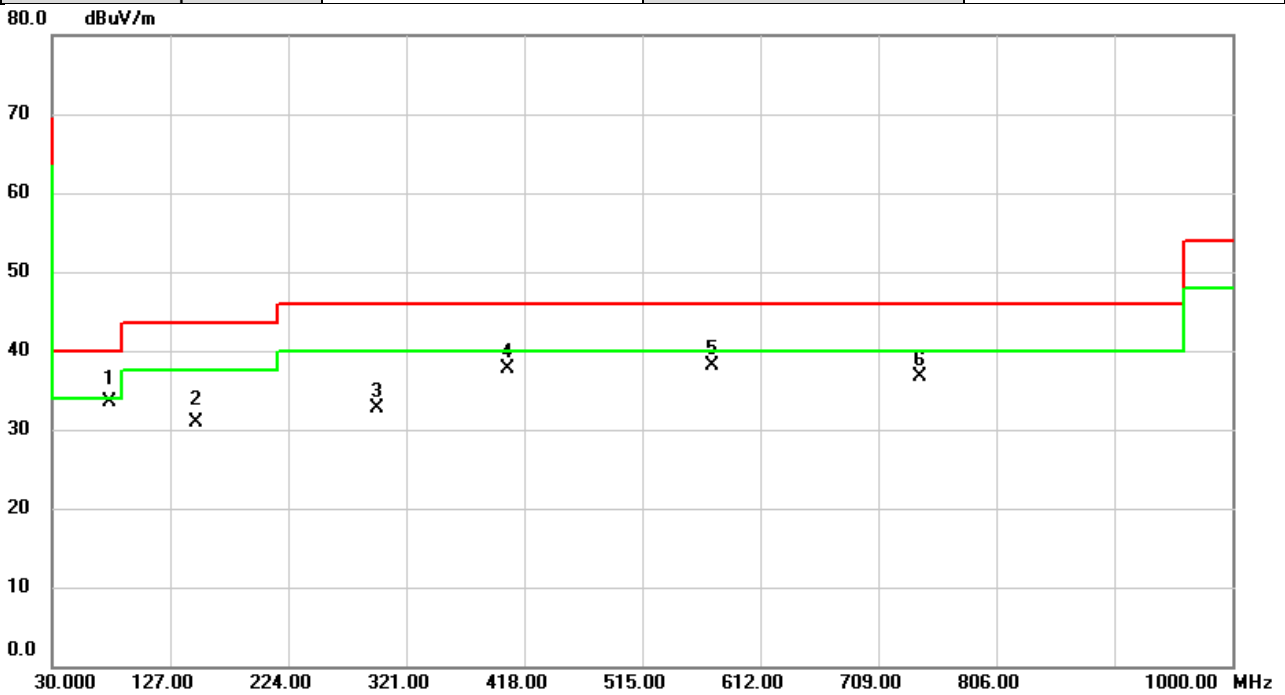


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	37.3720	48.98	-12.19	36.79	40.00	-3.21	QP	
2	!	69.8347	50.13	-14.01	36.12	40.00	-3.88	QP	
3		553.0887	38.37	-5.51	32.86	46.00	-13.14	QP	
4		740.7837	38.52	-1.78	36.74	46.00	-9.26	QP	
5		809.8153	38.91	-0.95	37.96	46.00	-8.04	QP	
6		835.6497	37.06	-0.61	36.45	46.00	-9.55	QP	

REMARKS:

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

Test Mode	IEEE 802.11b	Test Date	2023/1/18
Test Frequency	2412MHz	Polarization	Horizontal
Temp	23°C	Hum.	59%



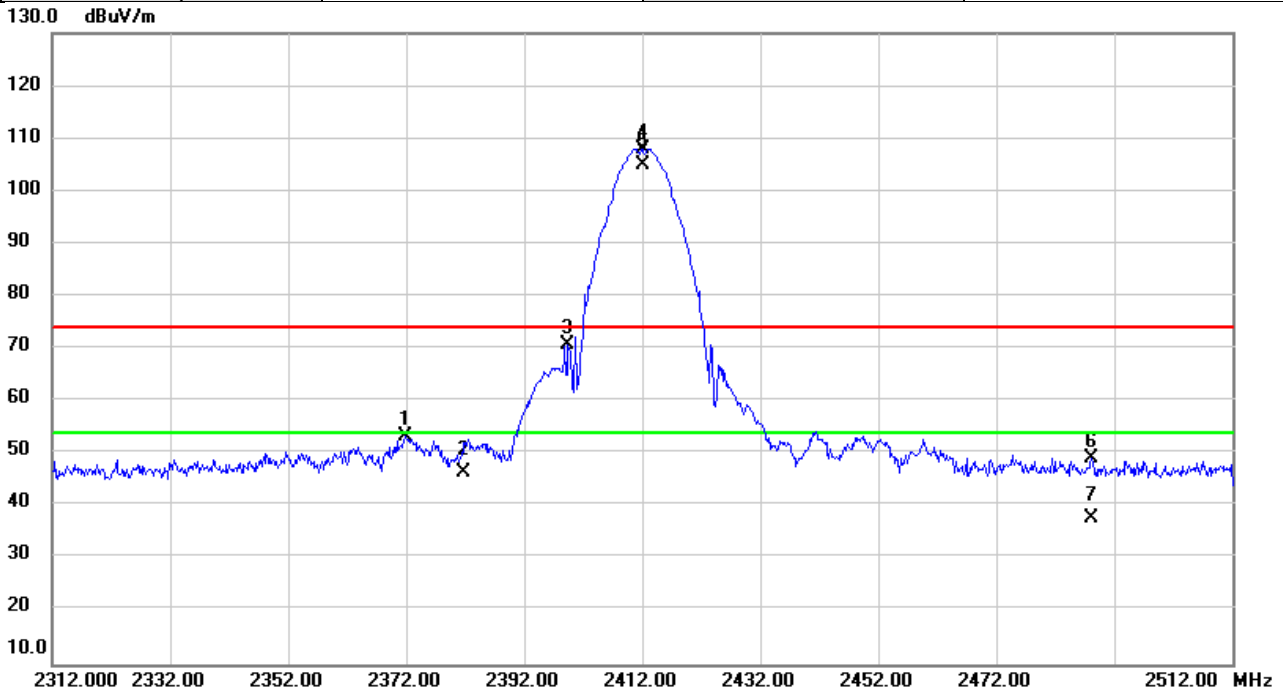
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	77.2390	49.39	-15.94	33.45	40.00	-6.55	QP	
2		148.5016	42.74	-11.90	30.84	43.50	-12.66	QP	
3		297.0087	44.18	-11.51	32.67	46.00	-13.33	peak	
4		404.9373	46.30	-8.64	37.66	46.00	-8.34	peak	
5		573.1352	43.10	-4.94	38.16	46.00	-7.84	peak	
6		742.9500	38.38	-1.73	36.65	46.00	-9.35	peak	

REMARKS:

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

APPENDIX C RADIATED EMISSIONS - ABOVE 1 GHZ

Test Mode	IEEE 802.11b	Test Date	2023/1/30
Test Frequency	2412MHz	Polarization	Vertical
Temp	23°C	Hum.	59%

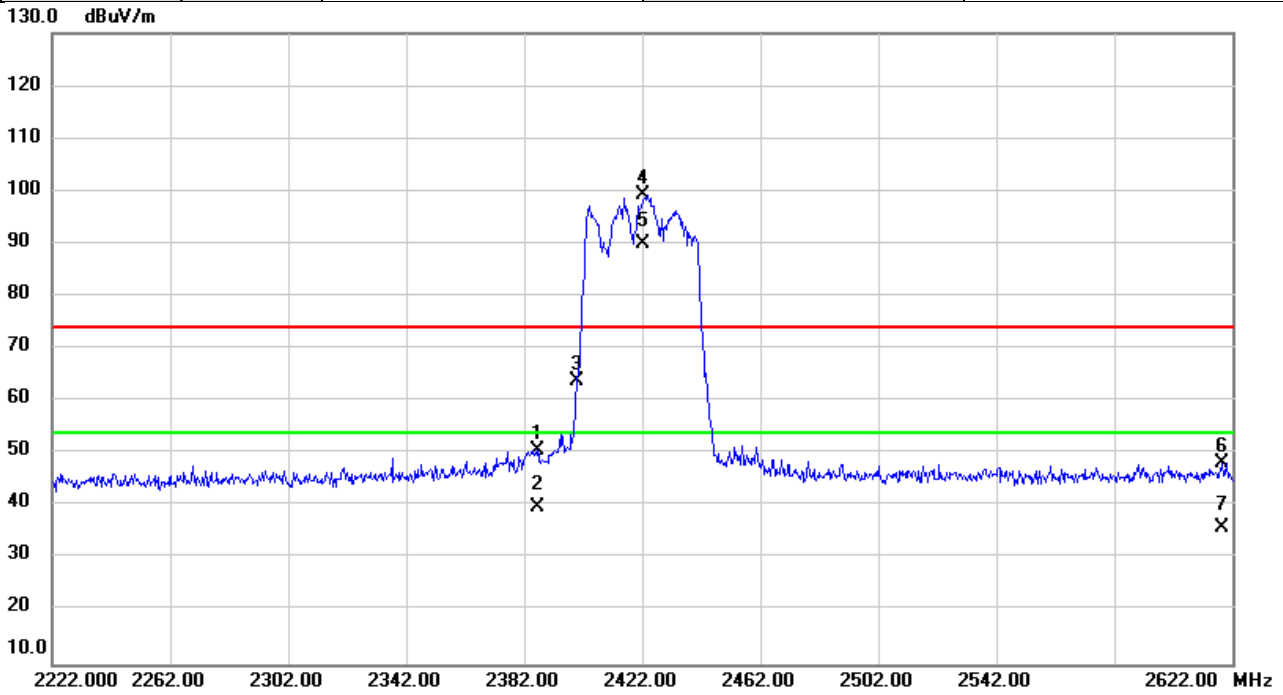


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		2371.847	58.99	-5.79	53.20	74.00	-20.80	peak	
2		2381.847	52.17	-5.78	46.39	54.00	-7.61	AVG	
3		2399.447	76.62	-5.76	70.86	74.00	-3.14	peak	NoLimit
4	X	2412.000	113.75	-5.74	108.01	74.00	34.01	peak	NoLimit
5	*	2412.000	110.66	-5.74	104.92	54.00	50.92	AVG	NoLimit
6		2488.207	54.77	-5.63	49.14	74.00	-24.86	peak	
7		2488.207	43.38	-5.63	37.75	54.00	-16.25	AVG	

REMARKS:

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

Test Mode	IEEE 802.11ax (HE40)	Test Date	2023/1/30
Test Frequency	2422MHz	Polarization	Vertical
Temp	23°C	Hum.	59%

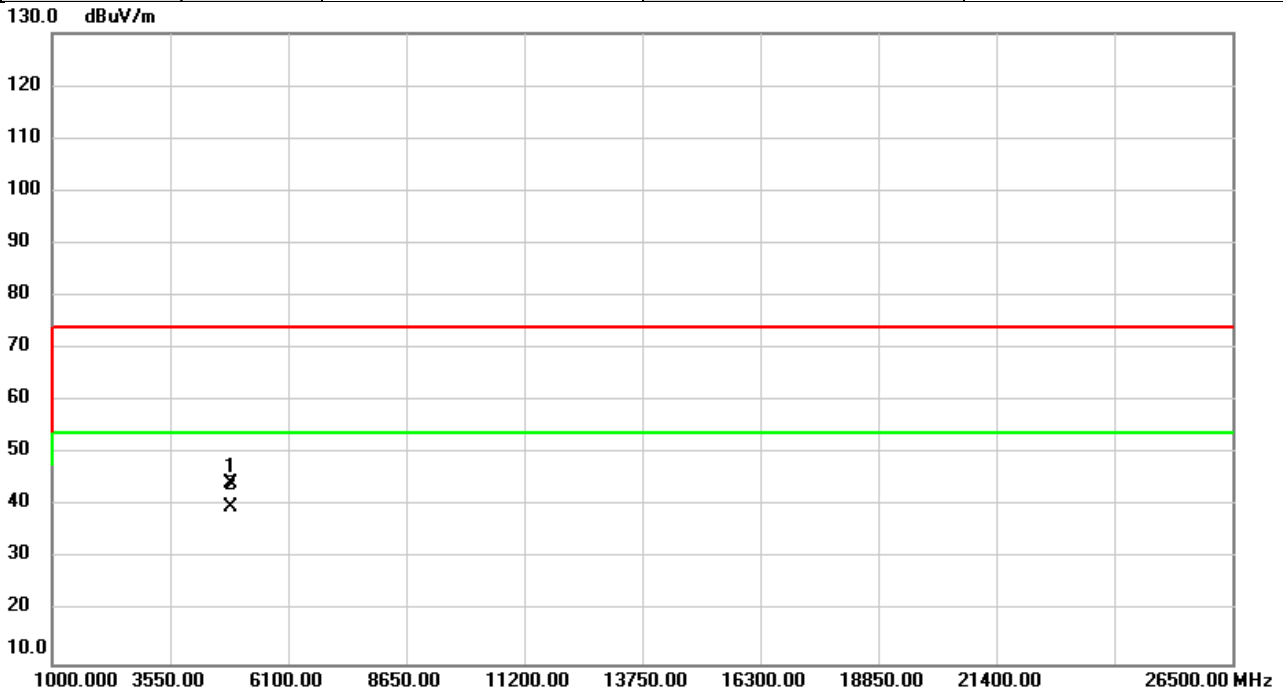


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		2386.440	56.52	-5.77	50.75	74.00	-23.25	peak	
2		2386.440	45.49	-5.77	39.72	54.00	-14.28	AVG	
3		2400.000	69.58	-5.76	63.82	74.00	-10.18	peak	NoLimit
4	X	2422.000	105.01	-5.72	99.29	74.00	25.29	peak	NoLimit
5	*	2422.000	95.64	-5.72	89.92	54.00	35.92	AVG	NoLimit
6		2618.653	53.52	-5.13	48.39	74.00	-25.61	peak	
7		2618.653	41.06	-5.13	35.93	54.00	-18.07	AVG	

REMARKS:

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

Test Mode	IEEE 802.11b	Test Date	2023/1/30
Test Frequency	2437MHz	Polarization	Vertical
Temp	23°C	Hum.	59%

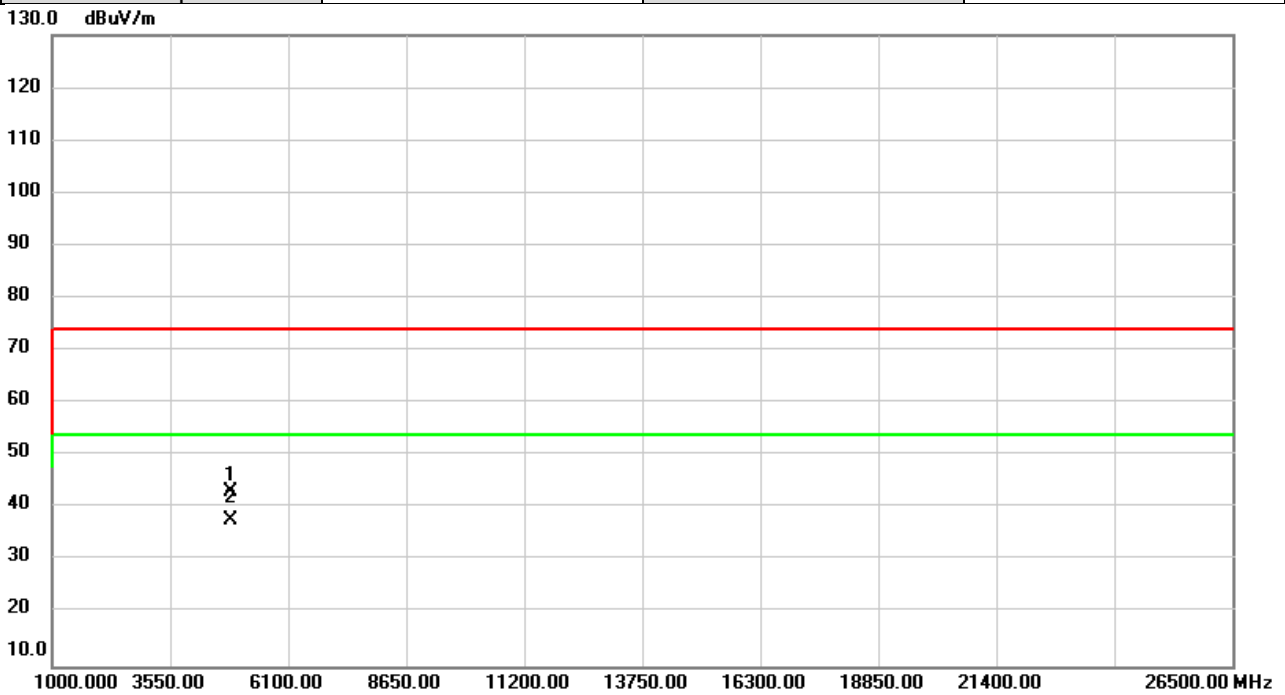


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.000	43.31	0.89	44.20	74.00	-29.80	peak	
2	*	4874.000	38.91	0.89	39.80	54.00	-14.20	AVG	

REMARKS:

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

Test Mode	IEEE 802.11b	Test Date	2023/1/30
Test Frequency	2437MHz	Polarization	Horizontal
Temp	23°C	Hum.	59%

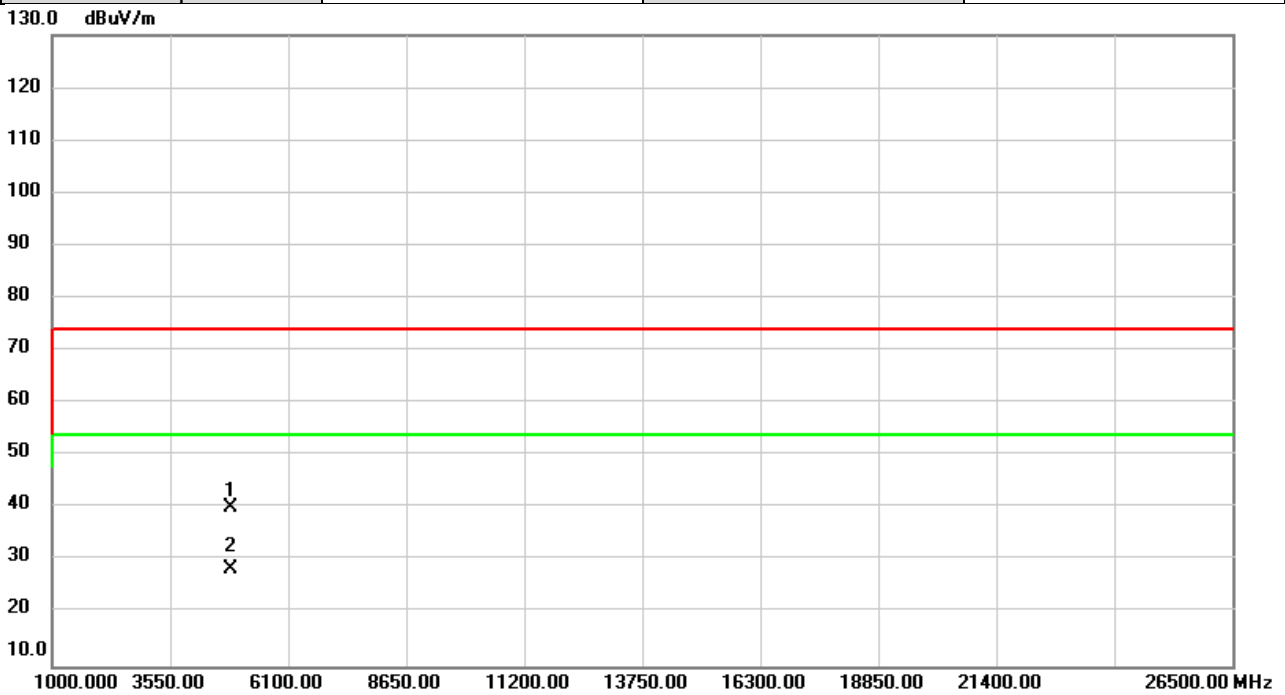


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.000	42.16	0.89	43.05	74.00	-30.95	peak	
2	*	4874.000	36.84	0.89	37.73	54.00	-16.27	AVG	

REMARKS:

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

Test Mode	IEEE 802.11ax (HE40)	Test Date	2023/1/30
Test Frequency	2437MHz	Polarization	Vertical
Temp	23°C	Hum.	59%

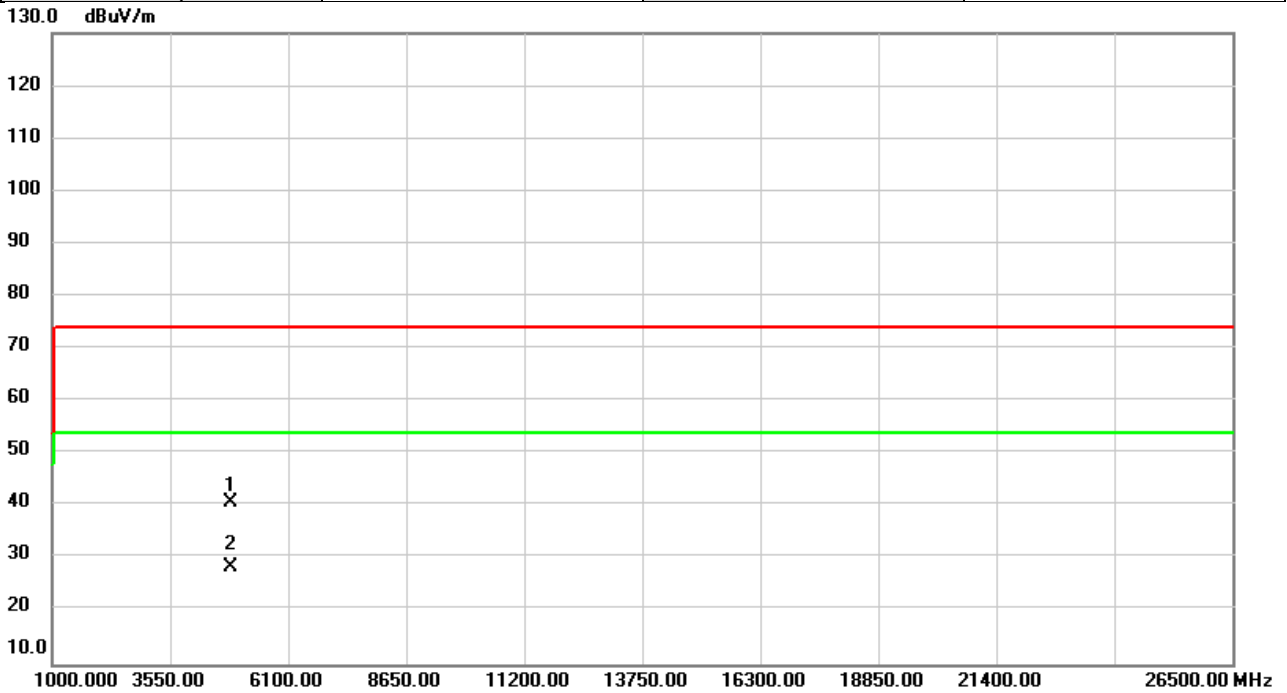


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.000	39.23	0.89	40.12	74.00	-33.88	peak	
2	*	4874.000	27.63	0.89	28.52	54.00	-25.48	AVG	

REMARKS:

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

Test Mode	IEEE 802.11ax (HE40)	Test Date	2023/1/30
Test Frequency	2437MHz	Polarization	Horizontal
Temp	23°C	Hum.	59%



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.000	39.82	0.89	40.71	74.00	-33.29	peak	
2	*	4874.000	27.66	0.89	28.55	54.00	-25.45	AVG	

REMARKS:

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

APPENDIX D OUTPUT POWER

Test Mode	IEEE 802.11b_Ant. 1	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	21.55	0.1429	30.00	1.0000	Pass
2437	22.87	0.1936	30.00	1.0000	Pass
2462	21.62	0.1452	30.00	1.0000	Pass
2467	19.09	0.0811	30.00	1.0000	Pass
2472	16.62	0.0459	30.00	1.0000	Pass

Test Mode	IEEE 802.11b_Ant. 2	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	21.40	0.1380	30.00	1.0000	Pass
2437	22.58	0.1811	30.00	1.0000	Pass
2462	21.11	0.1291	30.00	1.0000	Pass
2467	19.20	0.0832	30.00	1.0000	Pass
2472	16.85	0.0484	30.00	1.0000	Pass

Test Mode	IEEE 802.11b_Total	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	24.49	0.2809	30.00	1.0000	Pass
2437	25.74	0.3748	30.00	1.0000	Pass
2462	24.38	0.2743	30.00	1.0000	Pass
2467	22.16	0.1643	30.00	1.0000	Pass
2472	19.75	0.0943	30.00	1.0000	Pass

Test Mode	IEEE 802.11g_Ant. 1	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	22.23	0.1671	30.00	1.0000	Pass
2437	23.74	0.2366	30.00	1.0000	Pass
2462	22.66	0.1845	30.00	1.0000	Pass
2467	20.27	0.1064	30.00	1.0000	Pass
2472	8.04	0.0064	30.00	1.0000	Pass

Test Mode	IEEE 802.11g_Ant. 2	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	22.49	0.1774	30.00	1.0000	Pass
2437	24.22	0.2642	30.00	1.0000	Pass
2462	22.67	0.1849	30.00	1.0000	Pass
2467	20.36	0.1086	30.00	1.0000	Pass
2472	8.49	0.0071	30.00	1.0000	Pass

Test Mode	IEEE 802.11g_Total	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	25.37	0.3445	30.00	1.0000	Pass
2437	27.00	0.5008	30.00	1.0000	Pass
2462	25.68	0.3694	30.00	1.0000	Pass
2467	23.33	0.2151	30.00	1.0000	Pass
2472	11.28	0.0134	30.00	1.0000	Pass

Test Mode	IEEE 802.11ac (VHT20)_Ant. 1	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	22.42	0.1746	30.00	1.0000	Pass
2437	23.84	0.2421	30.00	1.0000	Pass
2462	21.27	0.1340	30.00	1.0000	Pass
2467	19.69	0.0931	30.00	1.0000	Pass
2472	8.23	0.0067	30.00	1.0000	Pass

Test Mode	IEEE 802.11ac (VHT20)_Ant. 2	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	22.73	0.1875	30.00	1.0000	Pass
2437	24.65	0.2917	30.00	1.0000	Pass
2462	20.98	0.1253	30.00	1.0000	Pass
2467	20.54	0.1132	30.00	1.0000	Pass
2472	8.58	0.0072	30.00	1.0000	Pass

Test Mode	IEEE 802.11ac (VHT20)_Total	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	25.59	0.3621	30.00	1.0000	Pass
2437	27.27	0.5338	30.00	1.0000	Pass
2462	24.14	0.2593	30.00	1.0000	Pass
2467	23.15	0.2064	30.00	1.0000	Pass
2472	11.42	0.0139	30.00	1.0000	Pass

Test Mode	IEEE 802.11ac (VHT40) _Ant. 1	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2422	19.48	0.0887	30.00	1.0000	Pass
2437	20.39	0.1094	30.00	1.0000	Pass
2452	19.07	0.0807	30.00	1.0000	Pass
2457	18.14	0.0652	30.00	1.0000	Pass
2462	9.07	0.0081	30.00	1.0000	Pass

Test Mode	IEEE 802.11ac (VHT40) _Ant. 2	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2422	19.94	0.0986	30.00	1.0000	Pass
2437	21.16	0.1306	30.00	1.0000	Pass
2452	19.45	0.0881	30.00	1.0000	Pass
2457	18.89	0.0774	30.00	1.0000	Pass
2462	10.12	0.0103	30.00	1.0000	Pass

Test Mode	IEEE 802.11ac (VHT40)_Total	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2422	22.73	0.1873	30.00	1.0000	Pass
2437	23.80	0.2400	30.00	1.0000	Pass
2452	22.27	0.1688	30.00	1.0000	Pass
2457	21.54	0.1426	30.00	1.0000	Pass
2462	12.64	0.0184	30.00	1.0000	Pass

Test Mode	IEEE 802.11ax (HE20) _Ant. 1	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	22.87	0.1936	30.00	1.0000	Pass
2437	23.71	0.2350	30.00	1.0000	Pass
2462	21.31	0.1352	30.00	1.0000	Pass
2467	19.87	0.0971	30.00	1.0000	Pass
2472	8.20	0.0066	30.00	1.0000	Pass

Test Mode	IEEE 802.11ax (HE20)_Ant. 2	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	23.11	0.2046	30.00	1.0000	Pass
2437	24.71	0.2958	30.00	1.0000	Pass
2462	20.94	0.1242	30.00	1.0000	Pass
2467	19.93	0.0984	30.00	1.0000	Pass
2472	8.77	0.0075	30.00	1.0000	Pass

Test Mode	IEEE 802.11ax (HE20)_Total	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2412	26.00	0.3983	30.00	1.0000	Pass
2437	27.25	0.5308	30.00	1.0000	Pass
2462	24.14	0.2594	30.00	1.0000	Pass
2467	22.91	0.1955	30.00	1.0000	Pass
2472	11.50	0.0141	30.00	1.0000	Pass

Test Mode	IEEE 802.11ax (HE40)_Ant. 1	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2422	19.31	0.0853	30.00	1.0000	Pass
2437	20.38	0.1091	30.00	1.0000	Pass
2452	19.40	0.0871	30.00	1.0000	Pass
2457	18.66	0.0735	30.00	1.0000	Pass
2462	8.91	0.0078	30.00	1.0000	Pass

Test Mode	IEEE 802.11ax (HE40)_Ant. 2	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2422	19.85	0.0966	30.00	1.0000	Pass
2437	20.41	0.1099	30.00	1.0000	Pass
2452	19.43	0.0877	30.00	1.0000	Pass
2457	18.91	0.0778	30.00	1.0000	Pass
2462	10.26	0.0106	30.00	1.0000	Pass

Test Mode	IEEE 802.11ax (HE40)_Total	Tested Date	2023/1/13
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Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Limit (dBm)	Limit (W)	Result
2422	22.60	0.1819	30.00	1.0000	Pass
2437	23.41	0.2190	30.00	1.0000	Pass
2452	22.43	0.1748	30.00	1.0000	Pass
2457	21.80	0.1513	30.00	1.0000	Pass
2462	12.65	0.0184	30.00	1.0000	Pass

End of Test Report