

FCC Radio Test Report

FCC ID: RWO-RZ010373

This report concerns: Original Grant

Project No. : 2011C051
Equipment : Wireless Mouse
Brand Name : RAZER
Test Model : RZ01-0373
Series Model : RZ01-0373XXXX-XXXX (X can be 0-9 or A-Z)
Applicant : Razer Inc.
Address : 9 Pasteur, Suite 100, Irvine, CA92618, USA
Manufacturer : Razer (Asia-Pacific) Pte.,Ltd.
Address : 514 Chai Chee Lane, #07-01-06, Singapore 469029
Factory : RAZER TECHNOLOGY AND DEVELOPMENT (SHENZHEN) CO., LTD
Address : East Wing, 3rd Floor, Block 2, Phase 1 of Vision Shenzhen Business Park
Keji South Road, Hi-Tech Industrial Park, Shenzhen 518057, China
Date of Receipt : Nov. 09, 2020
Date of Test : Nov. 11, 2020 ~ Nov. 30, 2020
Issued Date : Dec. 07, 2020
Report Version : R00
Test Sample : Sample No.: DG2020111044 for conducted, DG2020111045 for radiated.
Standard(s) : FCC Part15, Subpart C (15.247)
ANSI C63.10-2013
FCC KDB 558074 D01 15.247 Meas Guidance V05r02

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



Prepared by : Welly Zhou



Approved by : Ethan Ma



Certificate #5123.02

Add: No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

Tel: +86-769-8318-3000

Web: www.newbtl.com

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.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the U.S. Government.

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.

Table of Contents	Page
REPORT ISSUED HISTORY	5
1 . SUMMARY OF TEST RESULTS	6
1.1 TEST FACILITY	7
1.2 MEASUREMENT UNCERTAINTY	7
1.3 TEST ENVIRONMENT CONDITIONS	7
2 . GENERAL INFORMATION	8
2.1 GENERAL DESCRIPTION OF EUT	8
2.2 DESCRIPTION OF TEST MODES	10
2.3 PARAMETERS OF TEST SOFTWARE	10
2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	11
2.5 SUPPORT UNITS	11
3 . RADIATED EMISSION TEST	12
3.1 LIMIT	12
3.2 TEST PROCEDURE	13
3.3 DEVIATION FROM TEST STANDARD	13
3.4 TEST SETUP	14
3.5 EUT OPERATING CONDITIONS	15
3.6 TEST RESULT - 9 KHZ TO 30 MHZ	15
3.7 TEST RESULT - 30 MHZ TO 1000 MHZ	15
3.8 TEST RESULT - ABOVE 1000 MHZ	15
4 . BANDWIDTH TEST	16
4.1 LIMIT	16
4.2 TEST PROCEDURE	16
4.3 DEVIATION FROM STANDARD	16
4.4 TEST SETUP	16
4.5 EUT OPERATION CONDITIONS	16
4.6 TEST RESULTS	16
5 . MAXIMUM OUTPUT POWER	17
5.1 LIMIT	17
5.2 TEST PROCEDURE	17
5.3 DEVIATION FROM STANDARD	17
5.4 TEST SETUP	17
5.5 EUT OPERATION CONDITIONS	17

Table of Contents	Page
5.6 TEST RESULTS	17
6 . CONDUCTED SPURIOUS EMISSION	18
6.1 LIMIT	18
6.2 TEST PROCEDURE	18
6.3 DEVIATION FROM STANDARD	18
6.4 TEST SETUP	18
6.5 EUT OPERATION CONDITIONS	18
6.6 TEST RESULTS	18
7 . POWER SPECTRAL DENSITY TEST	19
7.1 LIMIT	19
7.2 TEST PROCEDURE	19
7.3 DEVIATION FROM STANDARD	19
7.4 TEST SETUP	19
7.5 EUT OPERATION CONDITIONS	19
7.6 TEST RESULTS	19
8 . MEASUREMENT INSTRUMENTS LIST	20
APPENDIX A - RADIATED EMISSION - 9 KHZ TO 30 MHZ	21
APPENDIX B - RADIATED EMISSION - 30 MHZ TO 1000 MHZ	26
APPENDIX C - RADIATED EMISSION - ABOVE 1000 MHZ	29
APPENDIX D - BANDWIDTH	42
APPENDIX E - MAXIMUM OUTPUT POWER	44
APPENDIX F - CONDUCTED SPURIOUS EMISSION	46
APPENDIX G - POWER SPECTRAL DENSITY	48

REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Dec. 07, 2020

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart C (15.247)				
Standard(s) Section	Test Item	Test Result	Judgment	Remark
15.207	AC Power Line Conducted Emissions	-----	N/A	-----
15.247(d) 15.205(a) 15.209(a)	Radiated Emissions	APPENDIX A APPENDIX B APPENDIX C	PASS	-----
15.247(a)(2)	Bandwidth	APPENDIX D	PASS	-----
15.247(b)(3)	Maximum Output Power	APPENDIX E	PASS	-----
15.247(d)	Conducted Spurious Emission	APPENDIX F	PASS	-----
15.247(e)	Power Spectral Density	APPENDIX G	PASS	-----
15.203	Antenna Requirement	-----	PASS	Note(2)

Note:

- (1) "N/A" denotes test is not applicable to this device.
- (2) The device what use a permanently attached antenna were considered sufficient to comply with the provisions of 15.203.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

The BTL measurement uncertainty as below table:

A. Radiated emissions Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
DG-CB03	CISPR	9kHz ~ 30MHz	-	3.02
		30MHz ~ 200MHz	V	4.26
		30MHz ~ 200MHz	H	3.38
		200MHz ~ 1,000MHz	V	3.98
		200MHz ~ 1,000MHz	H	3.94
		1GHz ~ 6GHz	-	3.96
		6GHz ~ 18GHz	-	5.24
		18GHz ~ 26.5GHz	-	3.62
		26.5GHz ~ 40GHz	-	4.00

B. Other Measurement:

Test Item	Uncertainty
Bandwidth	±3.8 %
Maximum Output Power	±0.95 dB
Conducted Spurious Emission	±2.71 dB
Power Spectral Density	±0.86 dB
Temperature	±0.08 °C
Humidity	±1.5%

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	Temperature	Humidity	Test Voltage	Tested By
Radiated Emissions-9K-30MHz	25°C	60%	DC 1.5V	Kwok Guo
Radiated Emissions-30 MHz to 1GHz	26°C	52%	DC 1.5V	Kwok Guo
Radiated Emissions-Above 1000 MHz	26°C	52%	DC 1.5V	Kwok Guo
Bandwidth	24°	56%	DC 1.5V	Jesse Wang
Maximum Output Power	24°C	56%	DC 1.5V	Hand Huang
Conducted Spurious Emission	24°C	56%	DC 1.5V	Jesse Wang
Power Spectral Density	24°C	56%	DC 1.5V	Jesse Wang

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless Mouse
Brand Name	RAZER
Test Model	RZ01-0373
Series Model	RZ01-0373XXXX-XXXX (X can be 0-9 or A-Z)
Model Difference(s)	It is the same as the basic model and X is used to define which country it is for under the same family series.
Power Source	Supplied from battery.
Power Rating	1.5V \equiv 25mA
Operation Frequency	2402 MHz ~ 2480 MHz
Modulation Technology	GFSK
Bit Rate of Transmitter	2 Mbps
Max. Peak Output Power	4.16 dBm (0.0026 W)
Max. Average Output Power	4.09 dBm (0.0026 W)

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

3. Table for Filed Antenna:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	YAGEO	ANT5320LL24R2400A	Chip	N/A	1.58

2.2 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description
Mode 1	TX Mode NOTE (1)
Mode 2	TX Mode Channel 00

Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

Radiated emissions test - Below 1GHz	
Final Test Mode	Description
Mode 2	TX Mode Channel 00

Radiated emissions test - Above 1GHz	
Final Test Mode	Description
Mode 1	TX Mode NOTE (1)

Conducted test	
Final Test Mode	Description
Mode 1	TX Mode NOTE (1)

Note:

- (1) The measurements are performed at the high, middle, low available channels.
- (2) For radiated emission above 1 GHz test, 1GHz~26.5GHz have been pre-tested and in this report only recorded the worst case. The remaining spurious points are all below the limit value of 20dB.
- (3) For radiated emission below 1 GHz test, the channel 00 is found to be the worst case and recorded.

2.3 PARAMETERS OF TEST SOFTWARE

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters.

Test Software	N/A		
Frequency (MHz)	2402	2441	2480
2Mbps	N/A	N/A	N/A

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED**2.5 SUPPORT UNITS**

Item	Equipment	Brand	Model No.	Series No.
-	-	-	-	-

Item	Cable Type	Shielded Type	Ferrite Core	Length
-	-	-	-	-

3. RADIATED EMISSION TEST

3.1 LIMIT

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

LIMITS OF RADIATED EMISSION MEASUREMENT (9 kHz-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
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000 MHz)

Frequency (MHz)	(dBuV/m at 3 m)	
	Peak	Average
Above 1000	74	54

Note:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	RBW 1 MHz VBW 3 MHz peak detector for Pk value RMS detector for AV value

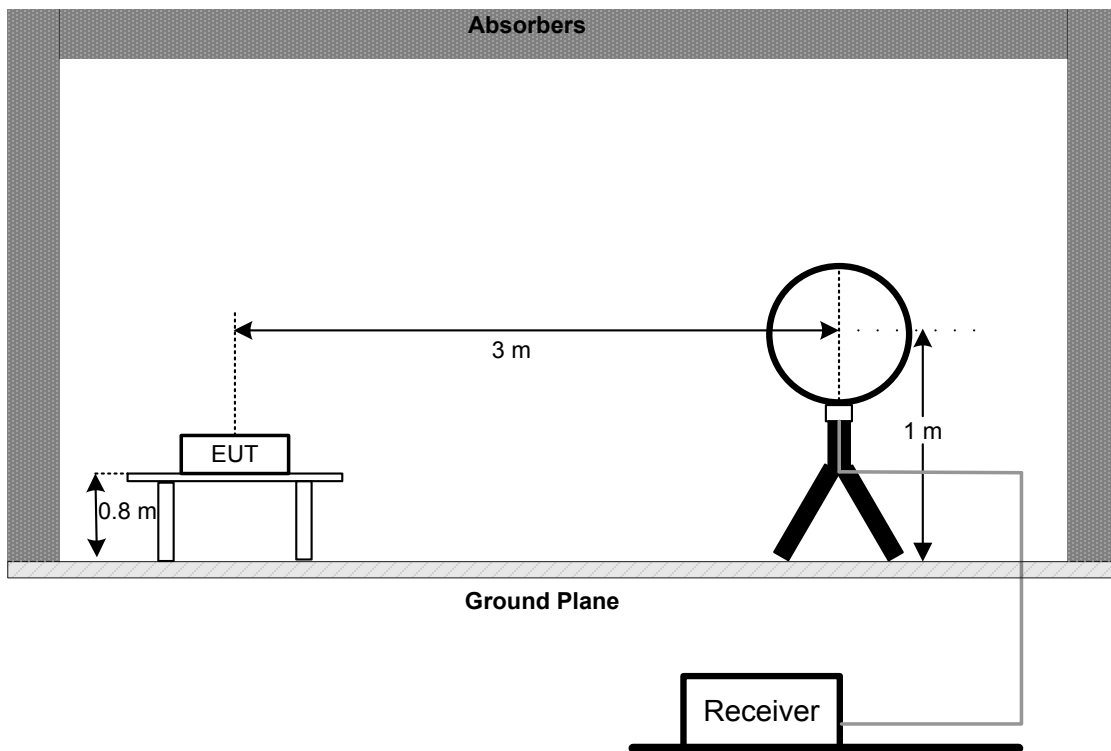
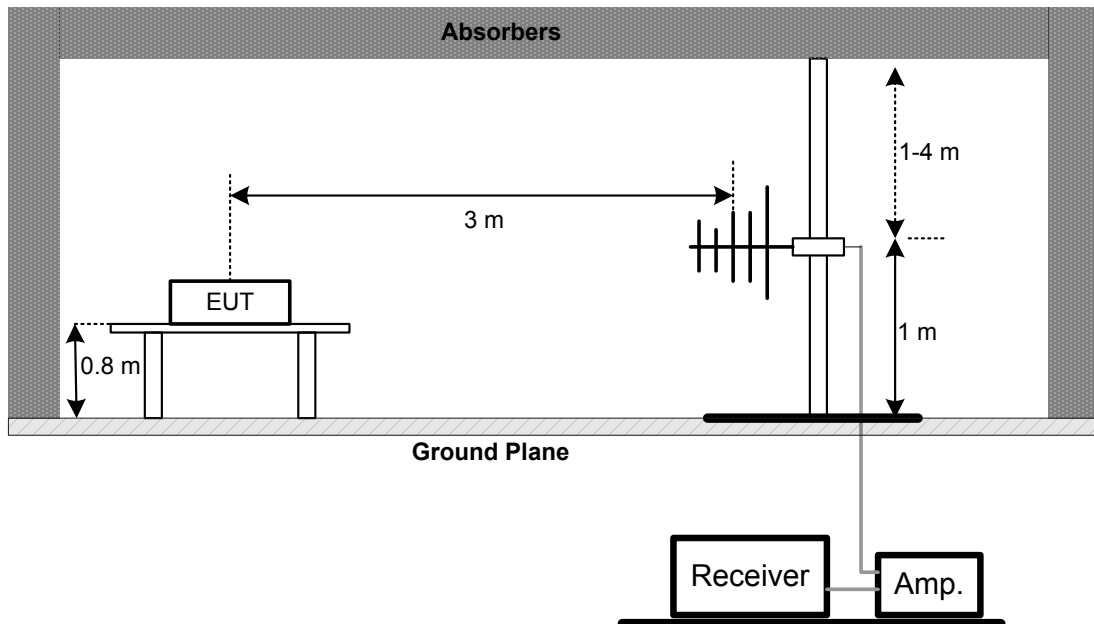
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000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

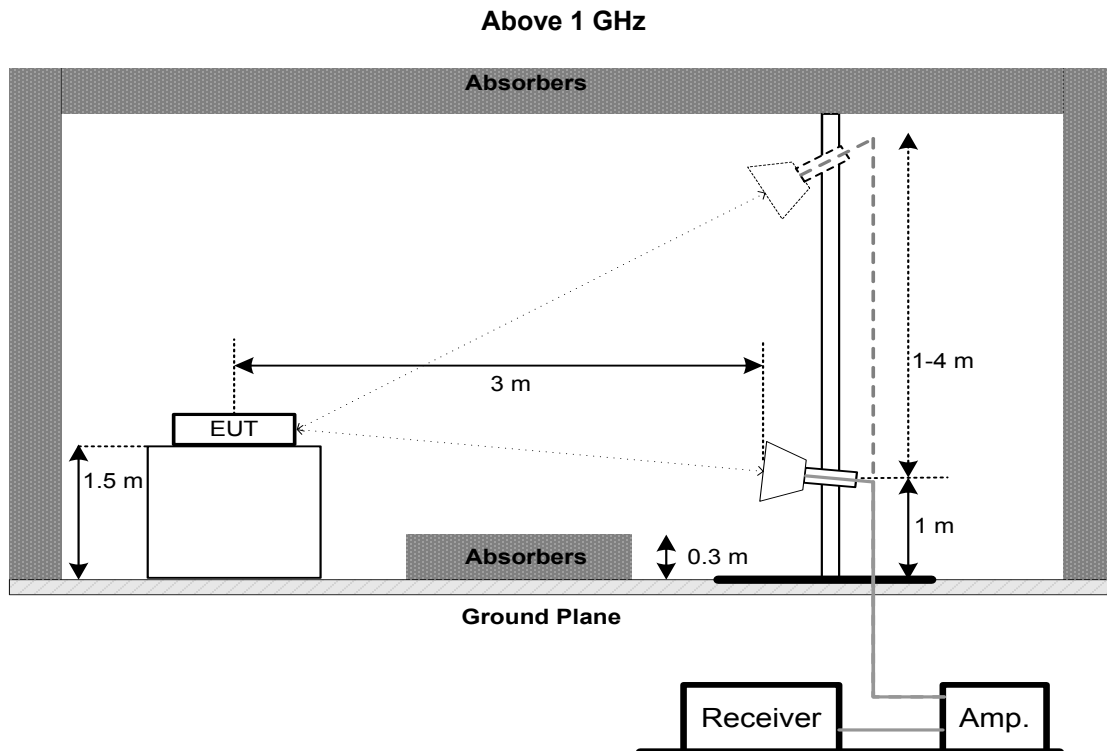
3.2 TEST PROCEDURE

- 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 1 GHz)
- 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 1 GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; 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 1 GHz.
- 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 1 GHz)
- 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 1 GHz)
- i. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3 DEVIATION FROM TEST STANDARD

No deviation

3.4 TEST SETUP**9 kHz-30 MHz****30 MHz to 1 GHz**



3.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

3.6 TEST RESULT - 9 kHz TO 30 MHz

Please refer to the APPENDIX A.

Remark:

- (1) Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB).
- (2) Limit line = specific limits (dBuV) + distance extrapolation factor.

3.7 TEST RESULT - 30 MHz TO 1000 MHz

Please refer to the APPENDIX B.

3.8 TEST RESULT - ABOVE 1000 MHz

Please refer to the APPENDIX C.

Remark:

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

4. BANDWIDTH TEST

4.1 LIMIT

FCC Part15, Subpart C (15.247)		
Section	Test Item	Limit
15.247(a)(2)	6 dB Bandwidth	Minimum 500 kHz
	99% Emission Bandwidth	-

4.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting: RBW= 100 kHz, VBW=300 kHz, Sweep time = 2.5 ms

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP



4.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

4.6 TEST RESULTS

Please refer to the APPENDIX D.

5. MAXIMUM OUTPUT POWER

5.1 LIMIT

FCC Part15, Subpart C (15.247)		
Section	Test Item	Limit
15.247(b)(3)	Maximum Output Power	1 watt or 30 dBm

5.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- The maximum conducted output power was performed in accordance with method 11.9.1.1 or 11.9.2.2 of ANSI C63.10-2013.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULTS

Please refer to the APPENDIX E.

6. CONDUCTED SPURIOUS EMISSION

6.1 LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

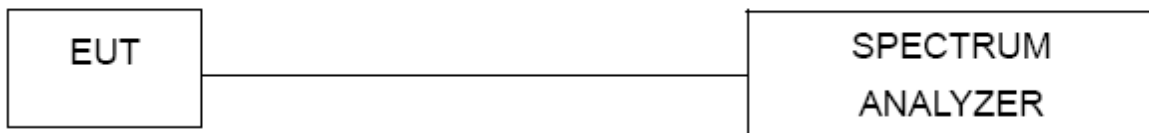
6.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting: RBW= 100 kHz, VBW=300 kHz, Sweep time = Auto.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

6.6 TEST RESULTS

Please refer to the APPENDIX F.

7. POWER SPECTRAL DENSITY TEST

7.1 LIMIT

FCC Part15, Subpart C (15.247)		
Section	Test Item	Limit
15.247(e)	Power Spectral Density	8 dBm (in any 3 kHz)

7.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting: RBW=3 kHz, VBW=10 kHz, Sweep time = auto.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULTS

Please refer to the APPENDIX G.

8. MEASUREMENT INSTRUMENTS LIST

Radiated Emissions - 9 kHz to 30 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	EM	EM-6876-1	230	Apr. 16, 2021
2	Cable	N/A	RG 213/U	N/A	May 29, 2021
3	EMI Test Receiver	R&S	ESCI	100895	Feb. 28, 2021
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
5	966 Chambe Room	RM	9*6*6m	N/A	Jul. 25, 2021

Radiated Emissions - 30 MHz to 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB9160	9160-3232	Mar. 09, 2021
2*	Amplifier	HP	8447D	2944A09673	Aug. 11, 2021
3	Receiver	Agilent	N9038A	MY52130039	Jul. 25, 2021
4	Cable	emci	LMR-400(30MHz-1 GHz)(8m+5m)	N/A	May 22, 2021
5	Controller	CT	SC100	N/A	N/A
6	Controller	MF	MF-7802	MF780208416	N/A
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
8	966 Chambe Room	RM	9*6*6m	N/A	Jul. 25, 2021

Radiated Emissions - Above 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double Ridged Guide Antenna	ETS	3115	75789	May 12, 2021
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jul. 07, 2021
3	Amplifier	Agilent	8449B	3008A02333	Mar. 01, 2021
4	Microwave Preampifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 07, 2021
5	Receiver	Agilent	N9038A	MY52130039	Jul. 25, 2021
6	Controller	CT	SC100	N/A	N/A
7	Controller	MF	MF-7802	MF780208416	N/A
8	Cable	N/A	EMC104-SM-SM-6 000	N/A	May 09, 2021
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
10	Filter	STI	STI15-9912	N/A	Jul. 25, 2021
11	966 Chambe Room	RM	9*6*6m	N/A	Jul. 25, 2021

Bandwidth & Maximum Output Power & Power Spectral Density & Conducted Spurious Emission					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100185	Jul. 25, 2021
2	DC Block	Mini	N/A	N/A	N/A
3	RF Cable	Tongkaichuan	N/A	N/A	N/A

Remark: "N/A" denotes no model name, serial no. or calibration specified.

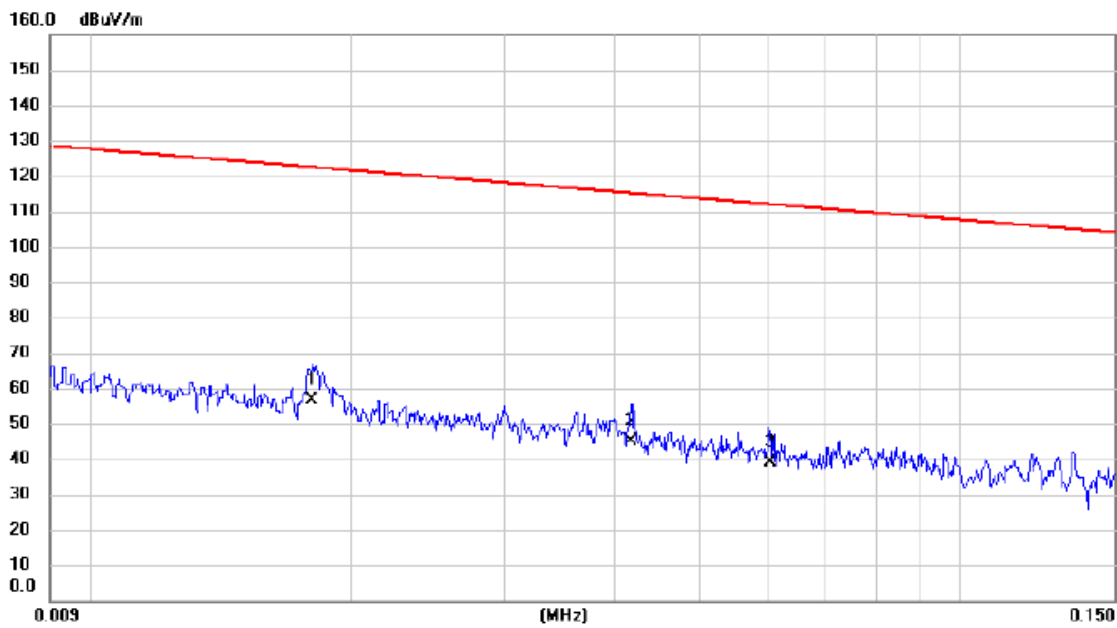
*** calibration period of equipment list is three year.

Except * item, all calibration period of equipment list is one year.

APPENDIX A - RADIATED EMISSION - 9 KHZ TO 30 MHZ

Test Mode: TX Mode Channel 00

Ant 0°



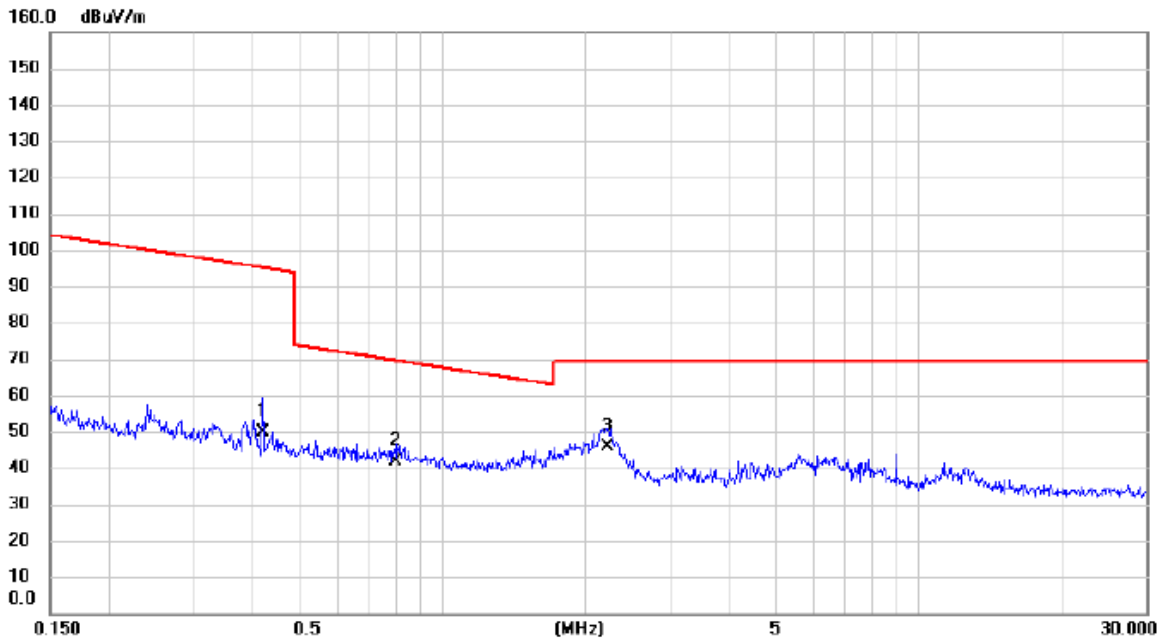
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	0.0180	42.68	13.84	56.52	122.50	-65.98	AVG	
2		0.0418	32.48	12.64	45.12	115.18	-70.06	AVG	
3		0.0603	26.50	12.48	38.98	112.00	-73.02	AVG	

REMARKS:

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

Test Mode: TX Mode Channel 00

Ant 0°

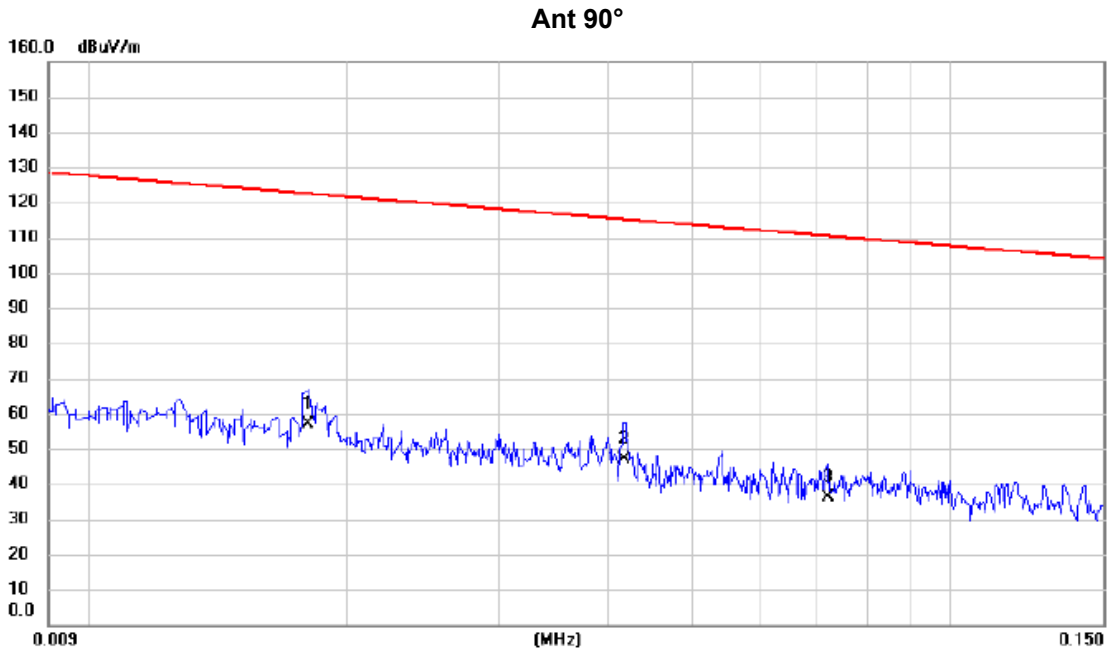


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.4193	37.52	12.21	49.73	95.15	-45.42	AVG	
2		0.8002	29.88	11.88	41.76	69.54	-27.78	QP	
3	*	2.2132	34.72	11.19	45.91	69.54	-23.63	QP	

REMARKS:

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

Test Mode: TX Mode Channel 00



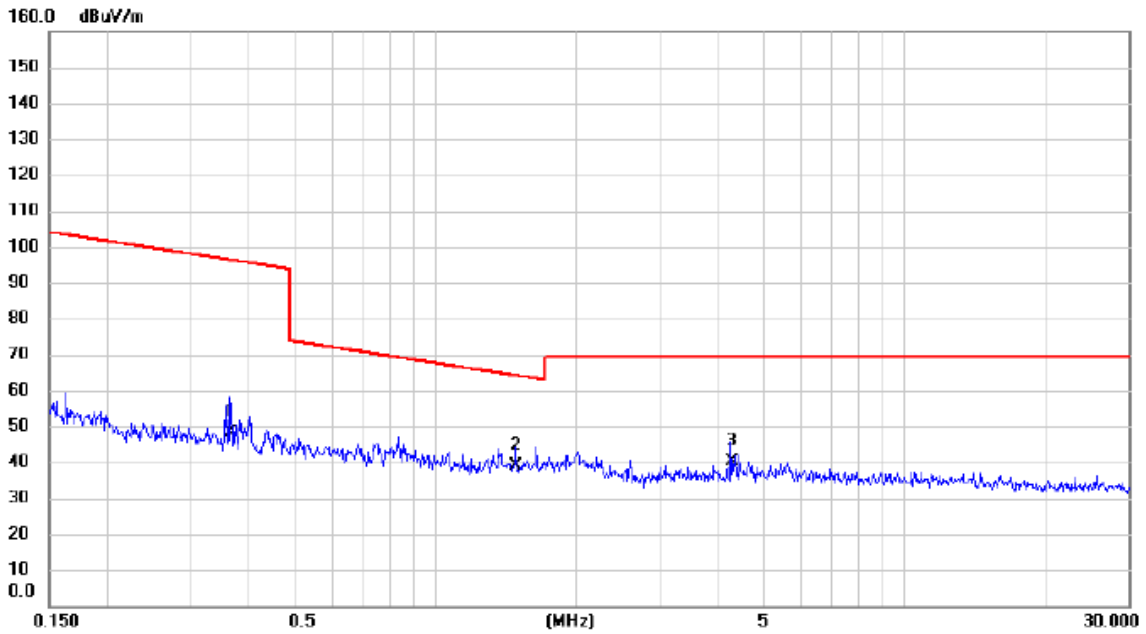
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	0.0180	43.11	13.84	56.95	122.50	-65.55	AVG	
2		0.0418	34.50	12.64	47.14	115.18	-68.04	AVG	
3		0.0720	23.85	12.55	36.40	110.46	-74.06	AVG	

REMARKS:

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

Test Mode: TX Mode Channel 00

Ant 90°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.3634	35.66	12.35	48.01	96.40	-48.39	AVG	
2	*	1.4796	27.64	11.56	39.20	64.20	-25.00	QP	
3		4.2692	29.18	10.99	40.17	69.54	-29.37	QP	

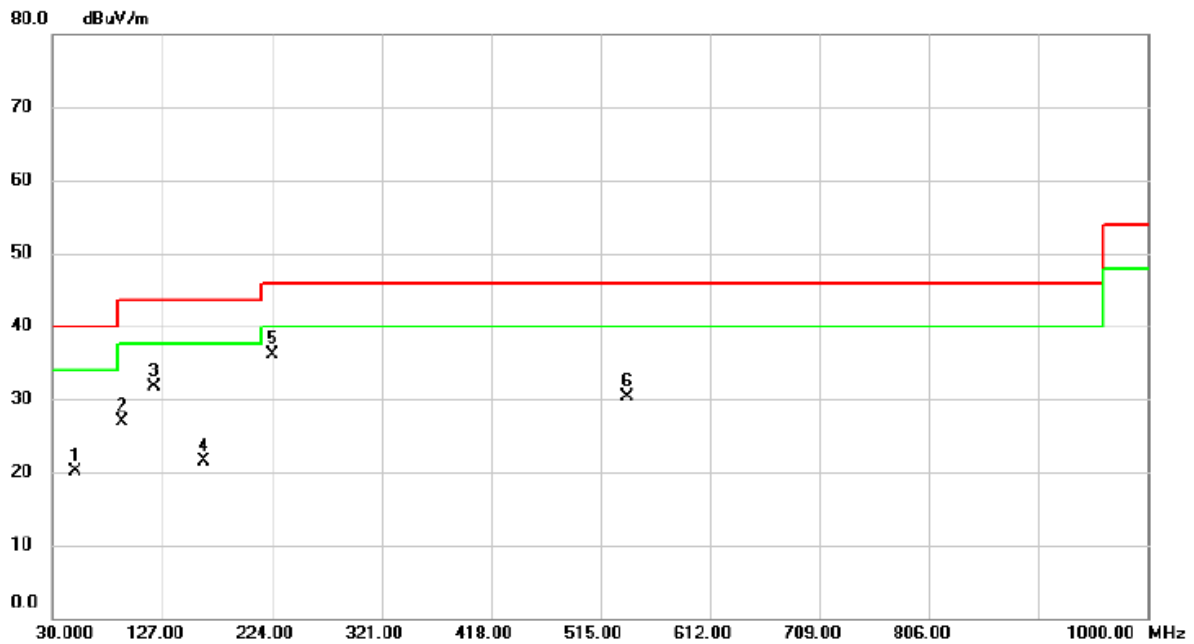
REMARKS:

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

APPENDIX B - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

Test Mode: TX Mode Channel 00

Vertical

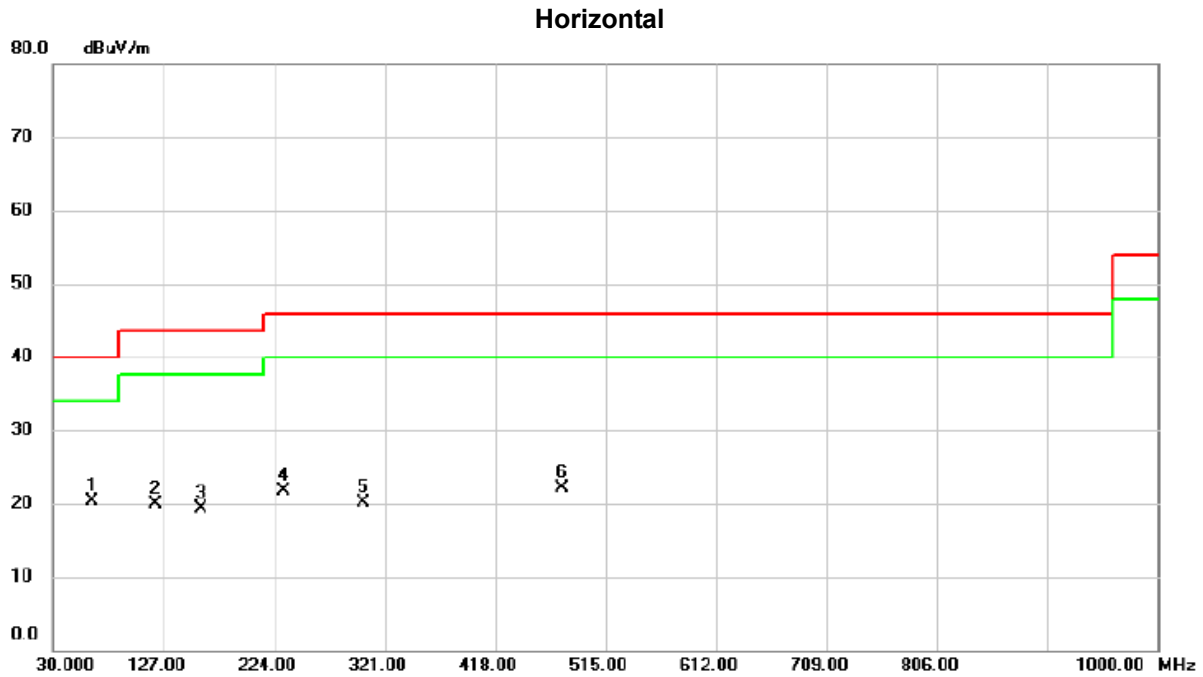


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	50.370	33.59	-13.56	20.03	40.00	-19.97	peak	
2	91.110	42.44	-15.61	26.83	43.50	-16.67	peak	
3	120.210	44.47	-12.74	31.73	43.50	-11.77	peak	
4	163.860	32.76	-11.22	21.54	43.50	-21.96	peak	
5 *	224.000	50.14	-14.09	36.05	46.00	-9.95	peak	
6	538.280	37.28	-6.92	30.36	46.00	-15.64	peak	

REMARKS:

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

Test Mode: TX Mode Channel 00



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	63.950	35.09	-14.79	20.30	40.00	-19.70	peak	
2		119.240	32.66	-12.85	19.81	43.50	-23.69	peak	
3		159.980	29.95	-10.67	19.28	43.50	-24.22	peak	
4		232.730	35.41	-13.80	21.61	46.00	-24.39	peak	
5		301.600	31.15	-10.97	20.18	46.00	-25.82	peak	
6		476.200	29.62	-7.44	22.18	46.00	-23.82	peak	

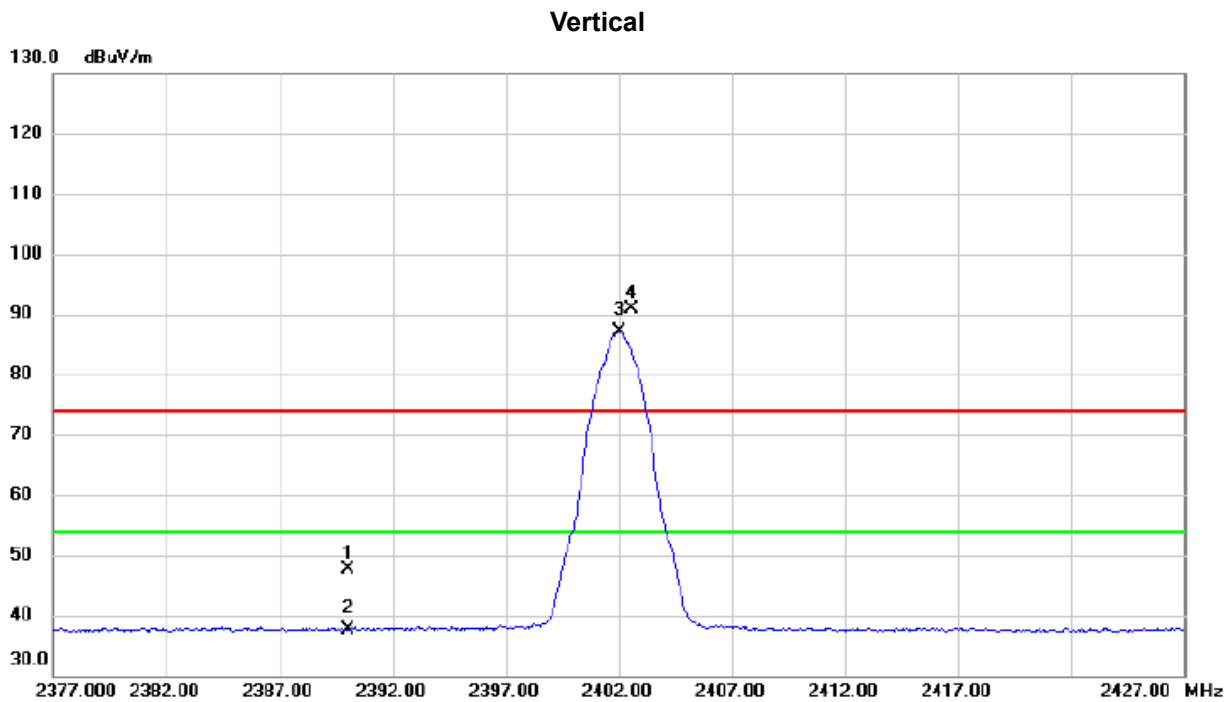
REMARKS:

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

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

APPENDIX C - RADIATED EMISSION - ABOVE 1000 MHZ

Test Mode : TX Mode_ 2402 MHz _CH00



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2390.000	40.41	7.26	47.67	74.00	-26.33	peak	
2		2390.000	30.44	7.26	37.70	54.00	-16.30	AVG	
3	*	2402.000	79.94	7.26	87.20	54.00	33.20	AVG	No Limit
4	X	2402.550	83.61	7.26	90.87	74.00	16.87	peak	No Limit

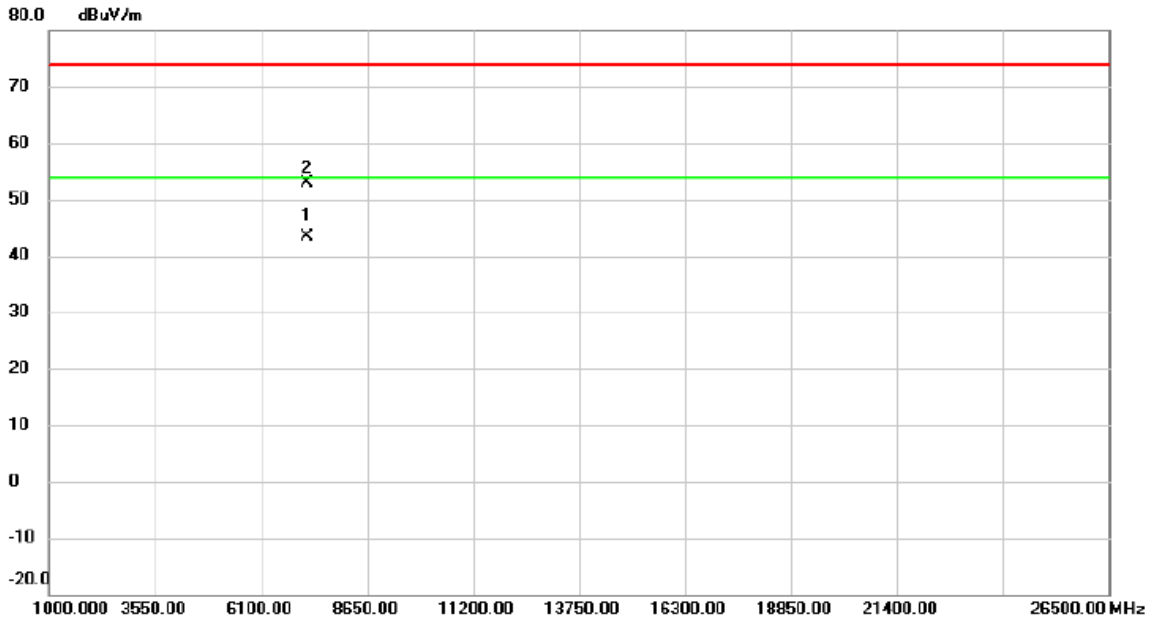
REMARKS:

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

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

Test Mode : TX Mode_ 2402 MHz _CH00

Vertical

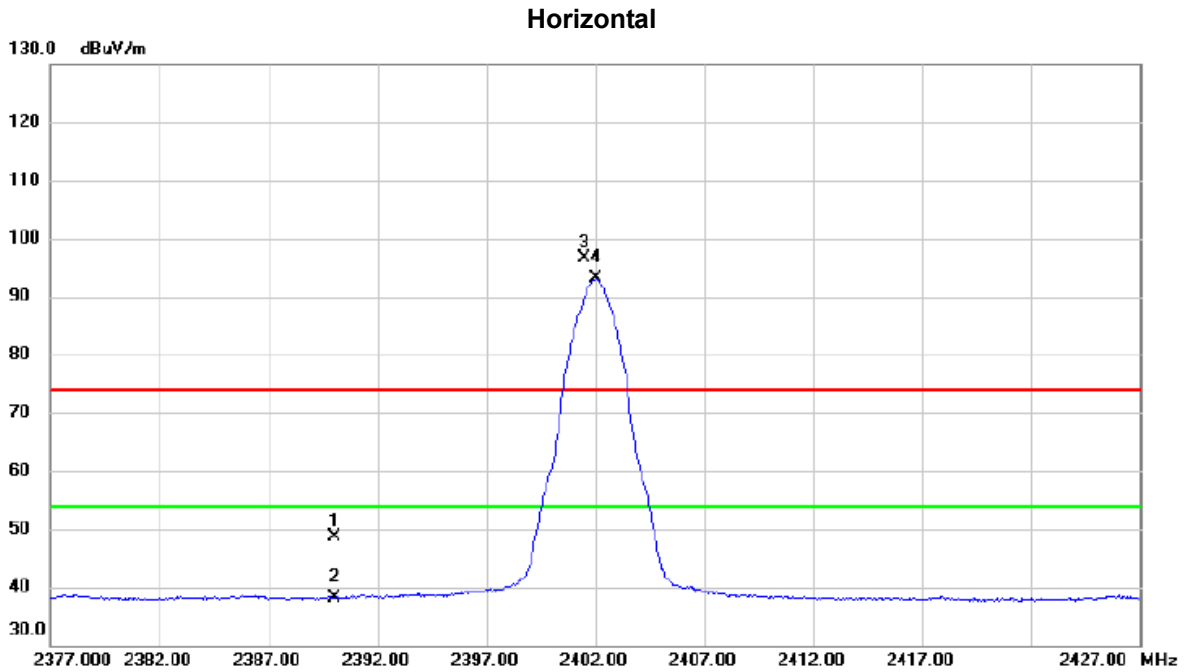


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	7204.820	33.22	10.14	43.36	54.00	-10.64	AVG	
2		7206.220	42.64	10.14	52.78	74.00	-21.22	peak	

REMARKS:

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

Test Mode : TX Mode_ 2402 MHz _CH00



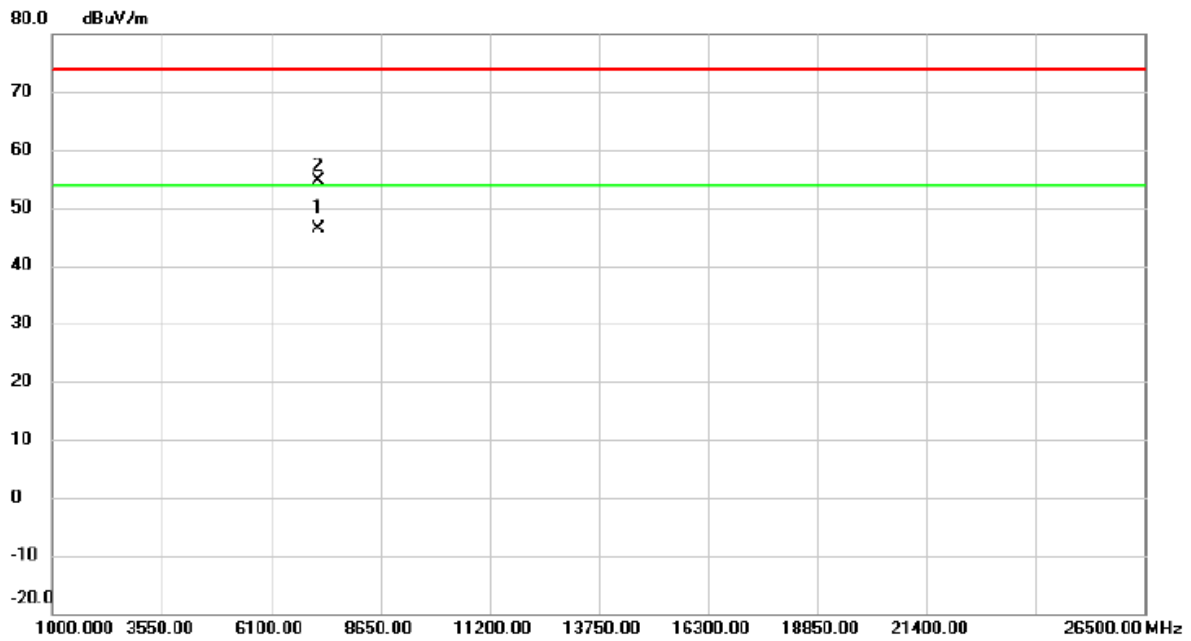
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2390.000	41.34	7.26	48.60	74.00	-25.40	peak	
2		2390.000	30.90	7.26	38.16	54.00	-15.84	AVG	
3	X	2401.500	89.39	7.26	96.65	74.00	22.65	peak	No Limit
4	*	2402.000	85.77	7.26	93.03	54.00	39.03	AVG	No Limit

REMARKS:

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

Test Mode : TX Mode_ 2402 MHz _CH00

Horizontal

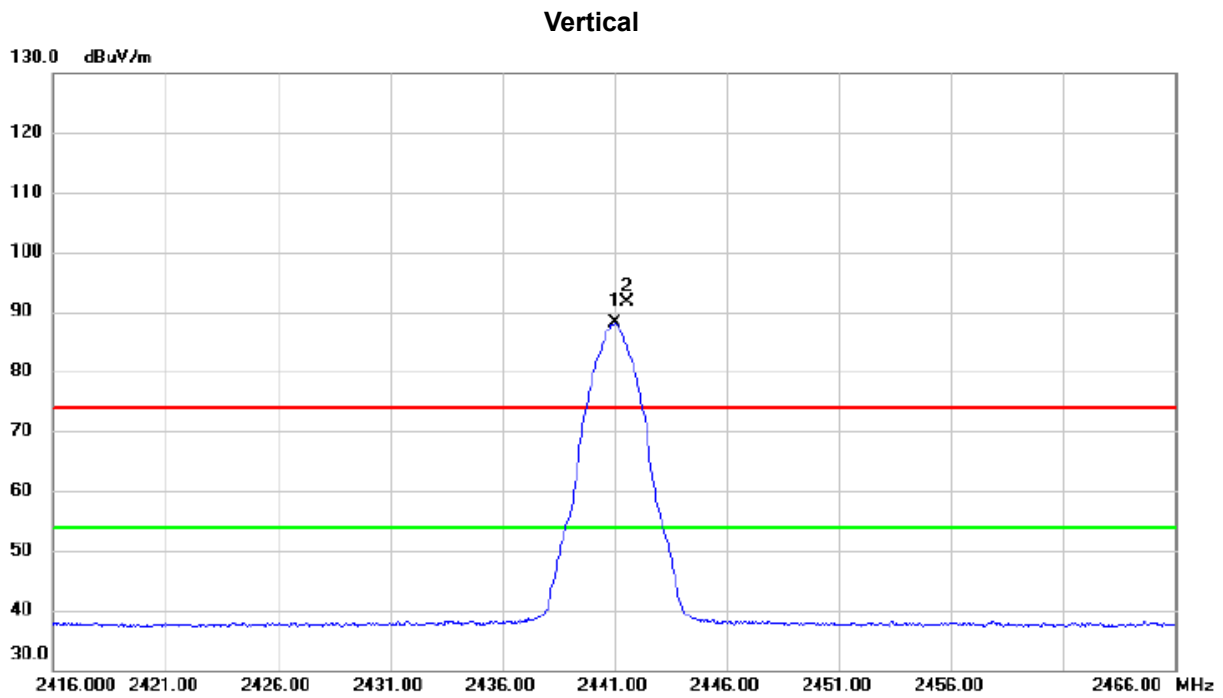


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	7204.750	36.12	10.14	46.26	54.00	-7.74	AVG	
2		7207.565	44.58	10.14	54.72	74.00	-19.28	peak	

REMARKS:

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

Test Mode : TX Mode_ 2441 MHz _CH39



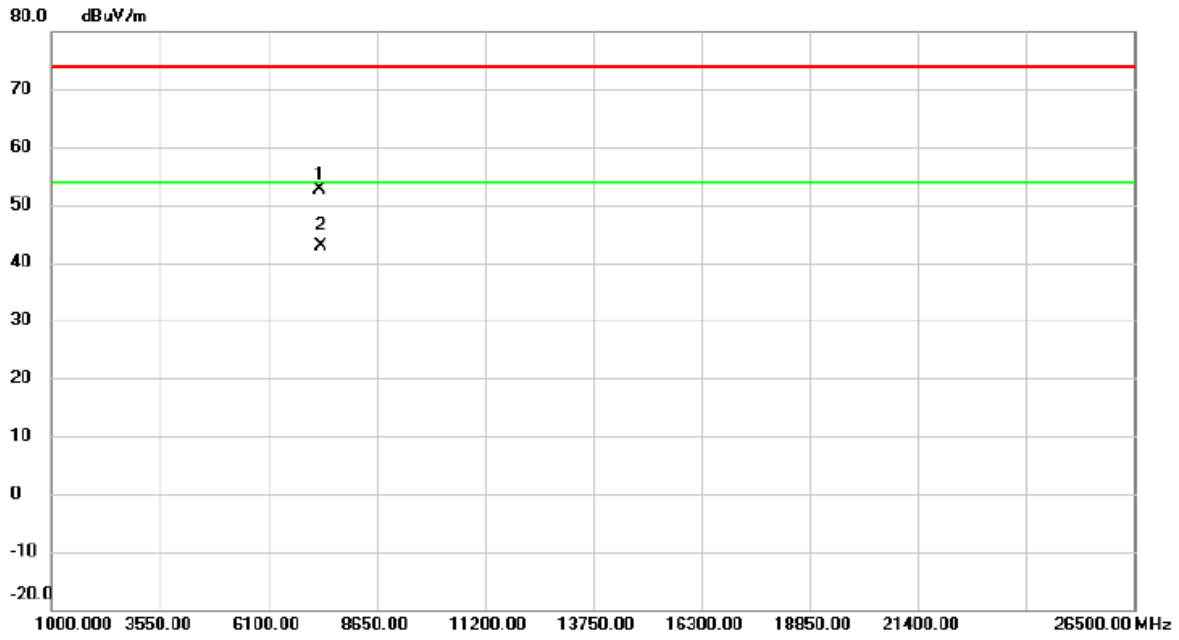
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	2441.000	80.79	7.25	88.04	54.00	34.04	AVG	No Limit
2	X	2441.550	84.26	7.25	91.51	74.00	17.51	peak	No Limit

REMARKS:

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

Test Mode : TX Mode_ 2441 MHz _CH39

Vertical



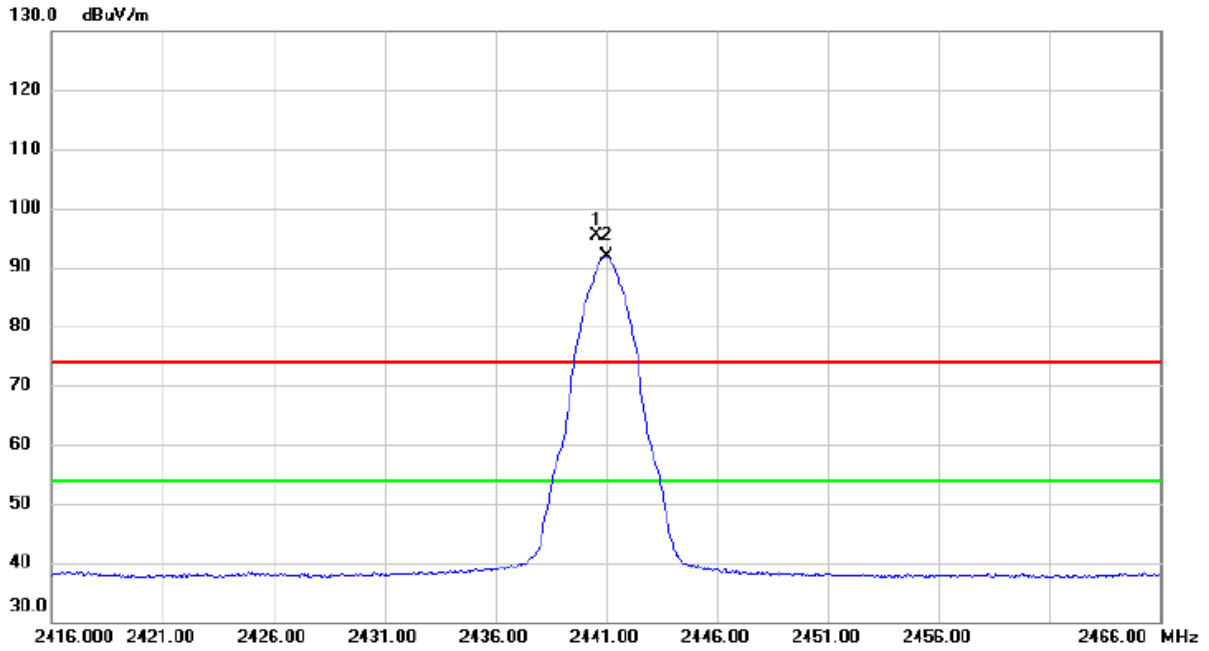
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		7323.200	42.40	10.33	52.73	74.00	-21.27	peak	
2	*	7324.340	32.57	10.33	42.90	54.00	-11.10	AVG	

REMARKS:

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

Test Mode : TX Mode_ 2441 MHz _CH39

Horizontal



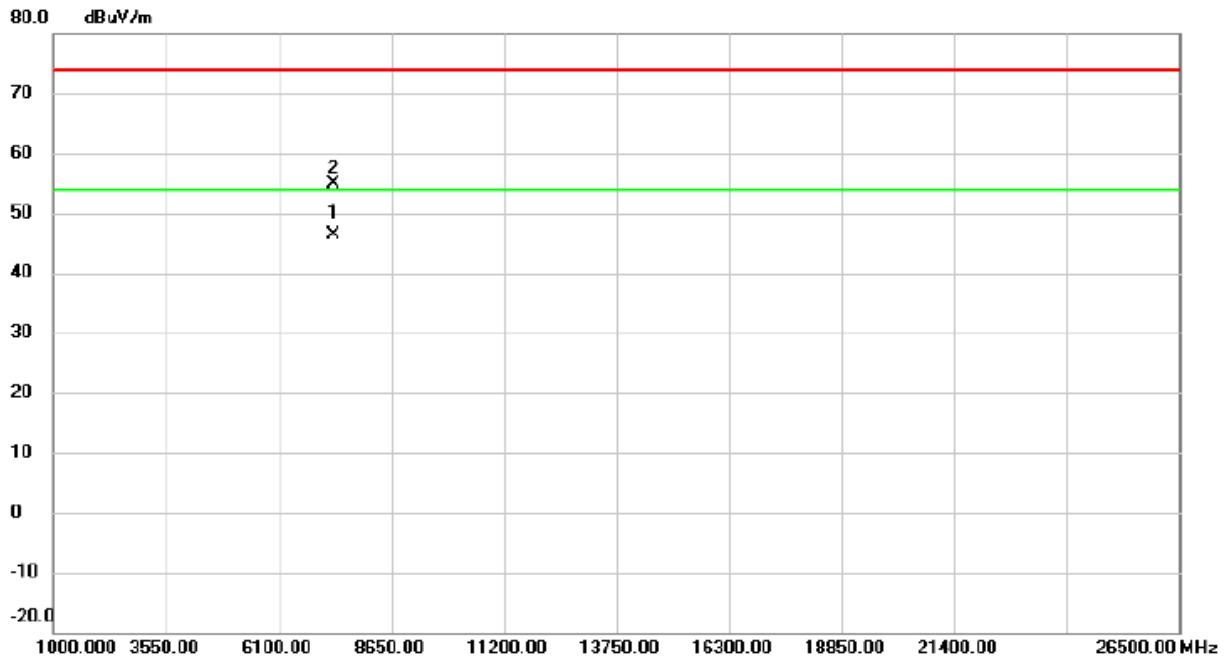
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	X	2440.550	88.15	7.25	95.40	74.00	21.40	peak	No Limit
2	*	2441.000	84.58	7.25	91.83	54.00	37.83	AVG	No Limit

REMARKS:

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

Test Mode :	TX Mode_ 2441 MHz _CH39
-------------	-------------------------

Horizontal

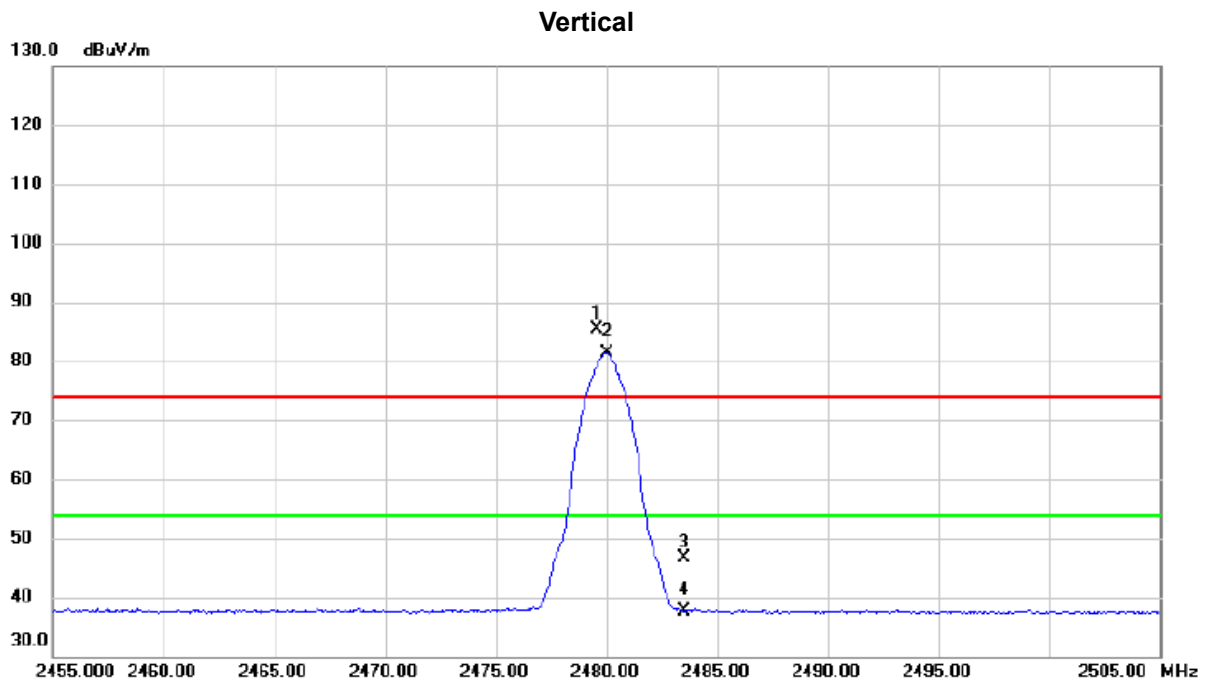


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	7324.275	36.00	10.33	46.33	54.00	-7.67	AVG	
2		7324.535	44.47	10.33	54.80	74.00	-19.20	peak	

REMARKS:

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

Test Mode : TX Mode_ 2480 MHz _CH78



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 X	2479.550	78.08	7.25	85.33	74.00	11.33	peak	No Limit
2 *	2480.000	74.13	7.25	81.38	54.00	27.38	AVG	No Limit
3	2483.500	39.34	7.25	46.59	74.00	-27.41	peak	
4	2483.500	30.46	7.25	37.71	54.00	-16.29	AVG	

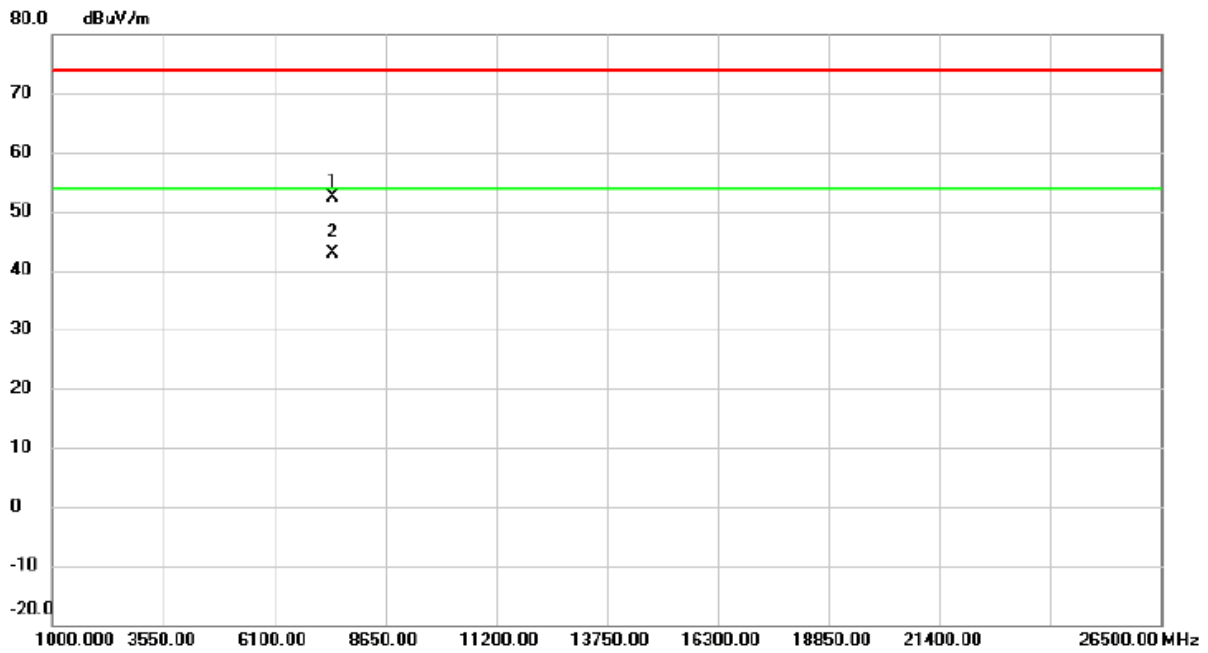
REMARKS:

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

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

Test Mode : TX Mode_ 2480 MHz _CH78

Vertical

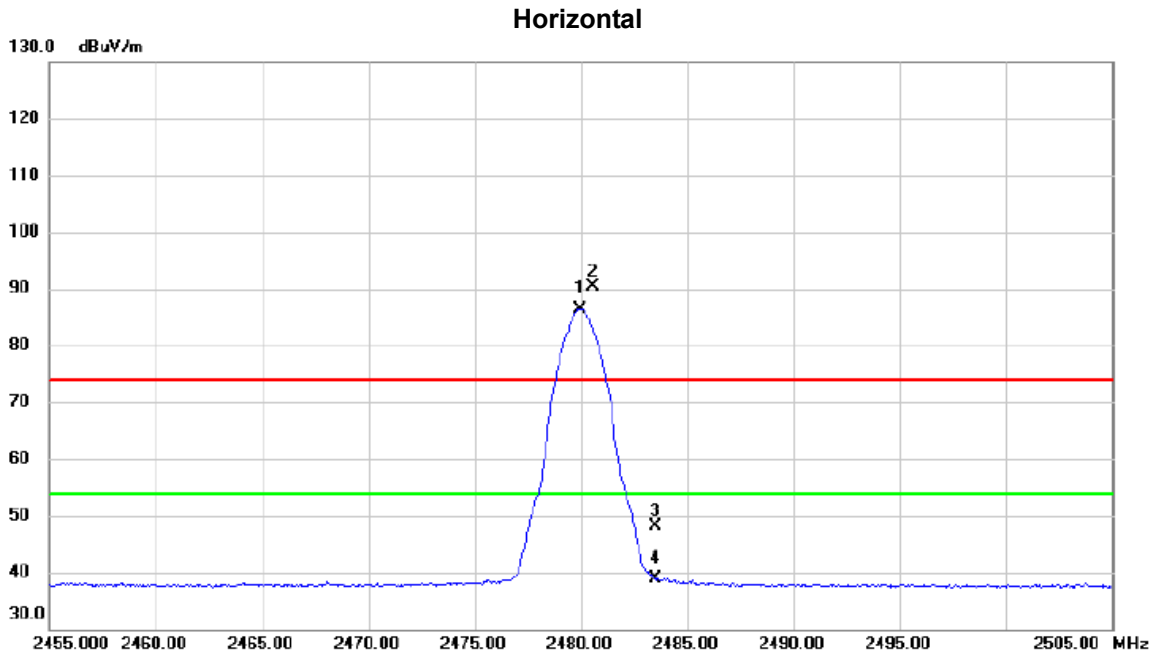


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		7438.510	41.82	10.53	52.35	74.00	-21.65	peak	
2	*	7438.760	32.29	10.53	42.82	54.00	-11.18	AVG	

REMARKS:

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

Test Mode : TX Mode_ 2480 MHz _CH78



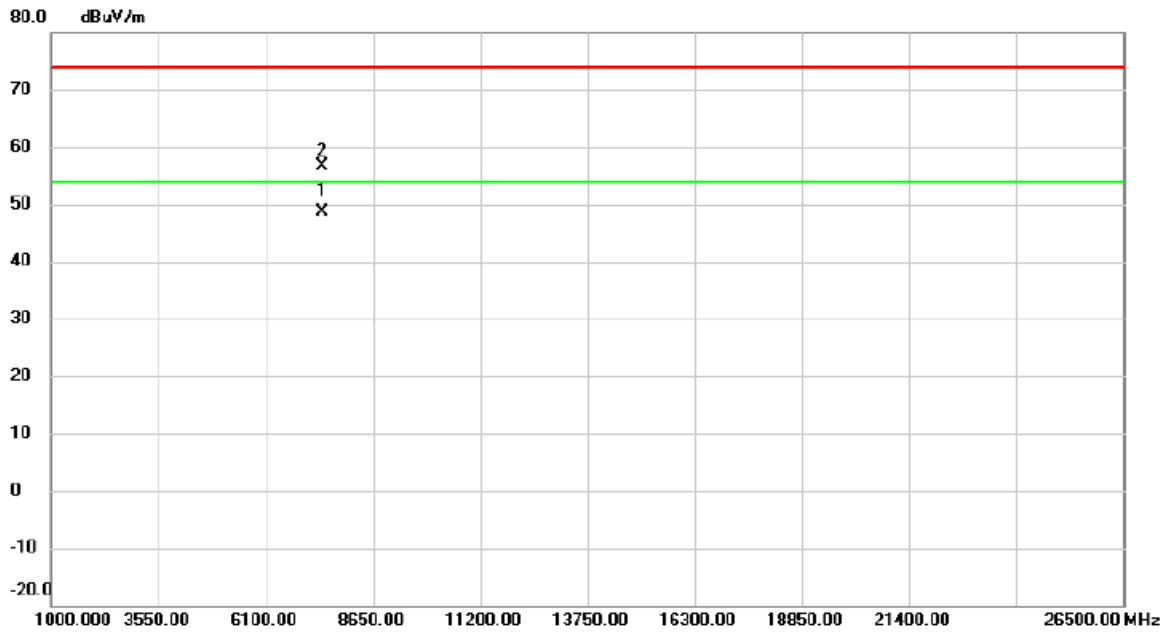
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	2479.950	79.21	7.25	86.46	54.00	32.46	AVG	No Limit
2	X	2480.550	83.16	7.25	90.41	74.00	16.41	peak	No Limit
3		2483.500	40.78	7.25	48.03	74.00	-25.97	peak	
4		2483.500	31.59	7.25	38.84	54.00	-15.16	AVG	

REMARKS:

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

Test Mode :	TX Mode_ 2480 MHz _CH78
-------------	-------------------------

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	7438.755	38.07	10.53	48.60	54.00	-5.40	AVG	
2		7441.565	46.19	10.54	56.73	74.00	-17.27	peak	

REMARKS:

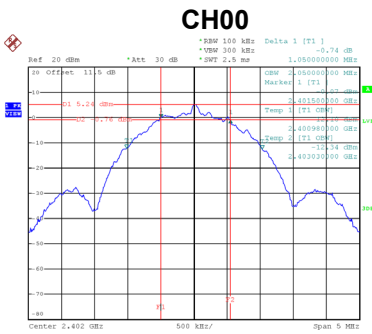
(1) Measurement Value = Reading Level + Correct Factor.

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

APPENDIX D - BANDWIDTH

Test Mode: CH00, CH39 , CH78

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Emission Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Test Result
00	2402	1.050	2.050	500	Pass
39	2441	1.080	2.060	500	Pass
78	2480	1.080	2.050	500	Pass



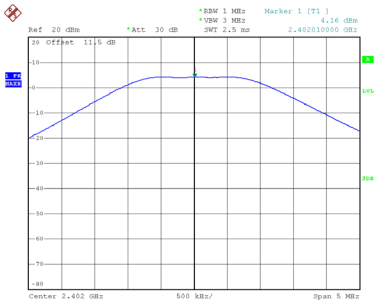
APPENDIX E - MAXIMUM OUTPUT POWER

Test Mode: CH00, CH39, CH78

Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	4.16	0.0026	30.00	1.00	Pass
2441	3.60	0.0023	30.00	1.00	Pass
2480	3.11	0.0020	30.00	1.00	Pass

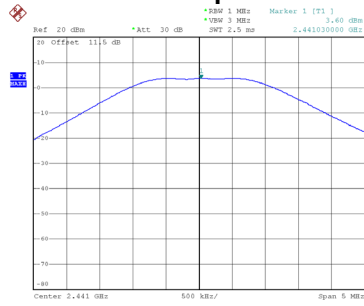
Frequency (MHz)	Average Output Power (dBm)	Average Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	4.09	0.0026	30.00	1.00	Pass
2441	3.51	0.0022	30.00	1.00	Pass
2480	3.02	0.0020	30.00	1.00	Pass

CH00



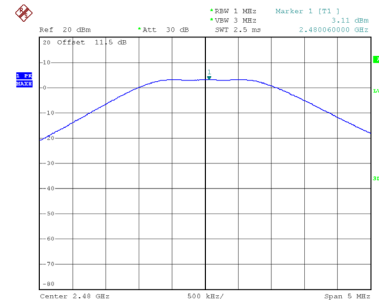
Date: 30_NOV_2020 10:57:23

CH39 Peak Output Power



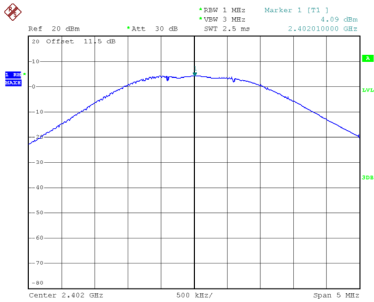
Date: 30_NOV_2020 10:58:18

CH78

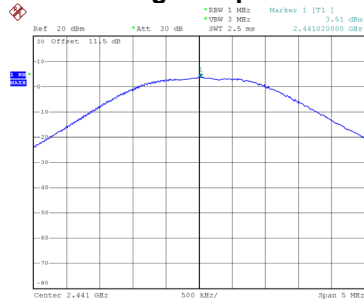


Date: 30_NOV_2020 10:59:44

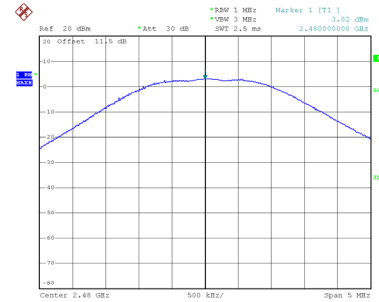
Average Output Power



Date: 30_NOV_2020 10:56:25



Date: 30_NOV_2020 10:58:47

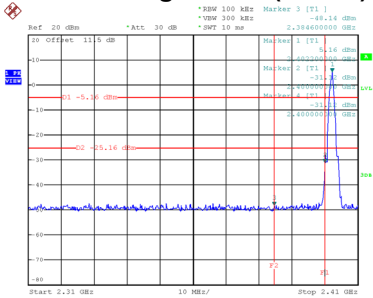


Date: 30_NOV_2020 10:59:26

APPENDIX F - CONDUCTED SPURIOUS EMISSION

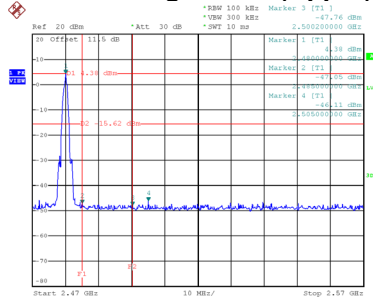
Test Mode: CH00, CH39 , CH78

Bandedge CH00 (Lower)



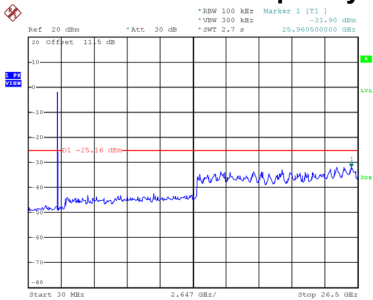
Date: 18_NOV.2020 10:30:00

Bandedge CH78 (Upper)



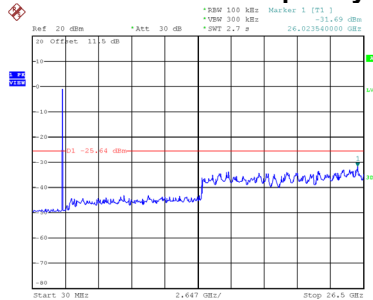
Date: 18_NOV.2020 11:02:59

CH00 – 10th Harmonic of the fundamental frequency



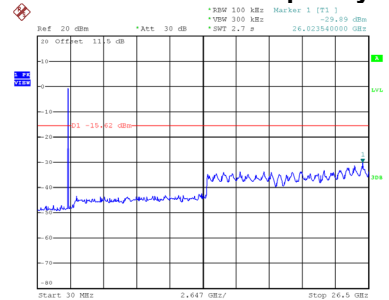
Date: 18_NOV.2020 10:33:05

CH39 – 10th Harmonic of the fundamental frequency



Date: 18_NOV.2020 10:45:19

CH78 – 10th Harmonic of the fundamental frequency

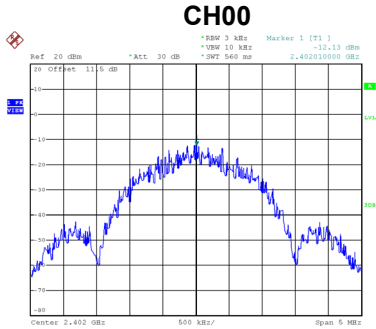


Date: 18_NOV.2020 11:04:44

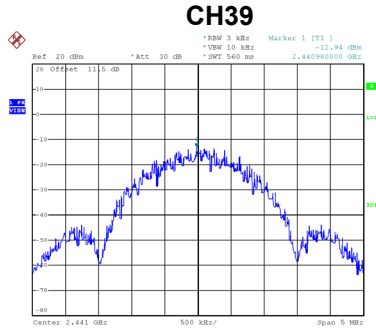
APPENDIX G - POWER SPECTRAL DENSITY

Test Mode: CH00, CH39 , CH78

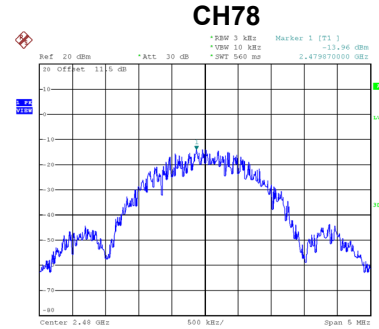
Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Max. Limit (dBm/3 kHz)	Test Result
00	2402	-12.13	8.00	Pass
39	2441	-12.94	8.00	Pass
78	2480	-13.96	8.00	Pass



Date: 18_NOV_2020 10:41:50



Date: 18_NOV_2020 10:50:14



Date: 18_NOV_2020 11:10:40

End of Test Report