FCC Radio Test Report

FCC ID: RWO-RZ040443

This report concerns: Class II Permissive Change

Project No.	:	2111C028H
Equipment	:	Wireless Headset
Brand Name	:	RAZER or
Test Model	:	RZ04-0443
Series Model	:	RZ04-0443XXXX-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	:	Razer SEA HQ, 1 One-north Crescent, #02-01, Singapore 138538
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	:	Jul. 02, 2024
Date of Test	:	Jul. 02, 2024 ~ Jul. 23, 2024
Issued Date	:	Aug. 20, 2024
Report Version	:	R00
Test Sample	:	Sample No.: DG2024070214 for radiated emissions, DG2024070213 for output power.
Standard(s)	:	FCC CFR Title 47, Part 15, Subpart C

The above equipment has been tested and found compliance with the requirement of the relative 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 assumes no responsibility for the data provided by the customer, any statements, inferences or generalizations drawn by the customer or others from the reports issued by BTL.

The report must not be used by the client to claim product certification, approval, or endorsement by 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: 2017 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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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-2-2111C028H	R00	Original Report.	Aug. 20, 2024	Valid

1. APPLICABLE STANDARDS

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:
ANSI C63.10-2013
The following reference test guidance is not within the scope of accreditation of A2LA:
KDB 558074 D01 15.247 Meas Guidance v05r02

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC CFR Title 47, Part 15, Subpart C				
Standard(s) Section	**Test Item**	**Test Result**	**Judgment**	**Remark**
15.207	AC Power Line Conducted Emissions	APPENDIX A	PASS	------
15.247(d) 15.205(a) 15.209(a)	Radiated Emissions	APPENDIX B APPENDIX C	PASS	------
15.247(b)(3)	Maximum Output Power	APPENDIX D	PASS	------

Note:

(1) “N/A” denotes test is not applicable to this device.

(2) The worst cases of AC Power Line Conducted Emissions, radiated emissions above 30MHz and Maximum Output Power have been re-evaluated by sample of FCC ID: RWO-RZ040443, model name: RZ04-0443. It is found that the new data are the worst, so the test data are reissued from the FCC ID: RWO-RZ040443, model name: RZ04-0443.
Model difference(s):

a. Added the logo in brand name.
b. Changed the manufacturer information.
c. Added a new dongle.
d. Added a crystal oscillator

(3) The other test records and results please refer to the test report number: BTL-FCCP-2-2111C028, issued date is Jan. 04, 2022.
Which was accredited by A2LA, FCC registration number is 357015, with the scopes of cited standards in this test report.
This report is only valid conjunction with the above referenced test report.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report:
No.3, Jinshagang 1st Road, Dalang, Dongguan City, Guangdong People's Republic of China.
BTL's Registration Number for FCC: 747969
BTL's Designation Number for FCC: CN1377

2.2 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 95.45% confidence level (based on a coverage factor (k=2))
The BTL measurement uncertainty as below table:

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	*U*,(dB)
DG-C02	CISPR	150kHz ~ 30MHz	2.88

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	*U*,(dB)
DG-CB03 (3m)	CISPR	30MHz ~ 200MHz	V	4.40
		30MHz ~ 200MHz	H	3.62
		200MHz ~ 1,000MHz	V	4.58
		200MHz ~ 1,000MHz	H	3.98

Test Site	Method	Measurement Frequency Range	*U*,(dB)
DG-CB03 (3m)	CISPR	1GHz ~ 6GHz	4.08
		6GHz ~ 18GHz	4.62

Test Site	Method	Measurement Frequency Range	*U*,(dB)
DG-CB03 (1m)	CISPR	18 ~ 26.5 GHz	3.36

C. Other Measurement:

Test Item	Uncertainty
Maximum Output Power	1.3 dB

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

2.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By	Test Date
AC Power Line Conducted Emissions	20°C	42%	AC 120V/60Hz	Hayden Chen	Jul. 04, 2024
Radiated Emissions -30 MHz to 1000 MHz	25°C	60%	DC 5V	Terry Deng	Jul. 08, 2024
Radiated Emissions -Above 1000 MHz	26°C	54%	DC 5V	Chen Mo	Jul. 20, 2024
	25°C	53%	DC 5V	Chen Mo	Jul. 23, 2024
	25°C	53%	DC 5V	Jensen Zhou	Jul. 22, 2024
Maximum Output Power	24°C	48%	DC 5V	Parker Yang	Jul. 19, 2024

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless Headset
Brand Name	RAZER or
Test Model	RZ04-0443
Series Model	RZ04-0443XXXX-XXXX (X can be 0-9 or A-Z)
Model Difference(s)	Only differ in model name.
Hardware Version	DVT
Software Version	V1.0.0
Power Source	1# Supplied from USB port. 2# Supplied from battery. Model: 553450PN2
Power Rating	1# DC 5V 2# DC 3.7V, 1200mAh, 4.44Wh
Operation Frequency	2402 MHz ~ 2480 MHz
Modulation Type	GFSK
Bit Rate of Transmitter	1Mbps, 2Mbps
Max. Output Power	1Mbps: 5.06 dBm (0.0032 W)

Note:

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

2. The system's model name is RZ04-0443XXXX-XXXX (X:Can be 0-9, A-Z), and the system is contain a Wireless Headset (Model name: RZ04-0443) and USB Wireless Transceiver (Model name: RC30-0378 & RC30-0403).

3. 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

4. Table for Filed Antenna:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Innovation	N/A	PIFI	N/A	4.29

3.2 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_1Mbps Channel 00/19/39
Mode 2	TX Mode_2Mbps Channel 00/19/39
Mode 3	TX Mode_1Mbps Channel 00
Mode 4	TX Mode_2Mbps Channel 39
Mode 5	TX Mode_1Mbps Channel 19

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

AC power line conducted emissions test	
Final Test Mode	Description
Mode 3	TX Mode_1Mbps Channel 00

Radiated emissions test – 30MHz - 1GHz	
Final Test Mode	Description
Mode 3	TX Mode_1Mbps Channel 00

Radiated emissions test - Above 1GHz	
Final Test Mode	Description
Mode 3	TX Mode_1Mbps Channel 00
Mode 4	TX Mode_2Mbps Channel 39
Mode 5	TX Mode_1Mbps Channel 19

Maximum Output Power	
Final Test Mode	Description
Mode 1	TX Mode_1Mbps Channel 00/19/39
Mode 2	TX Mode_2Mbps Channel 00/19/39

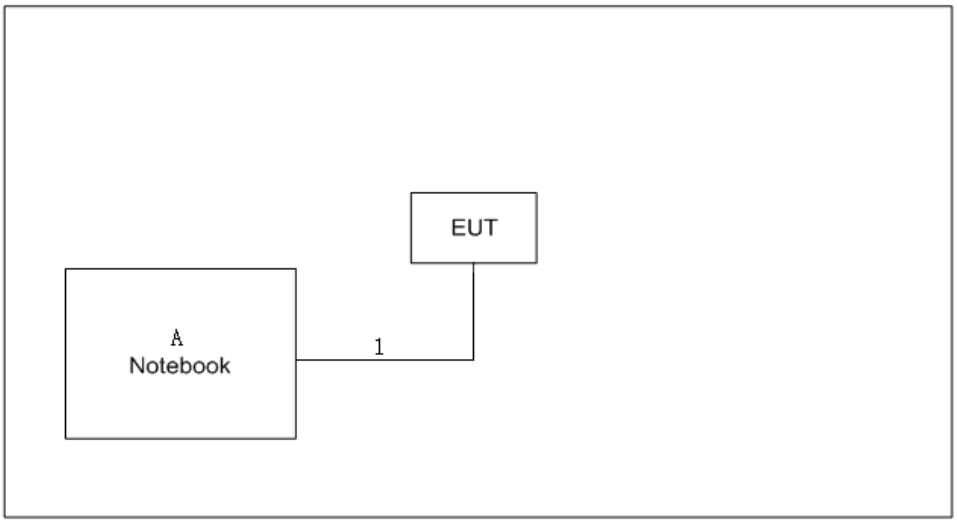
3.3 PARAMETERS OF TEST SOFTWARE

During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

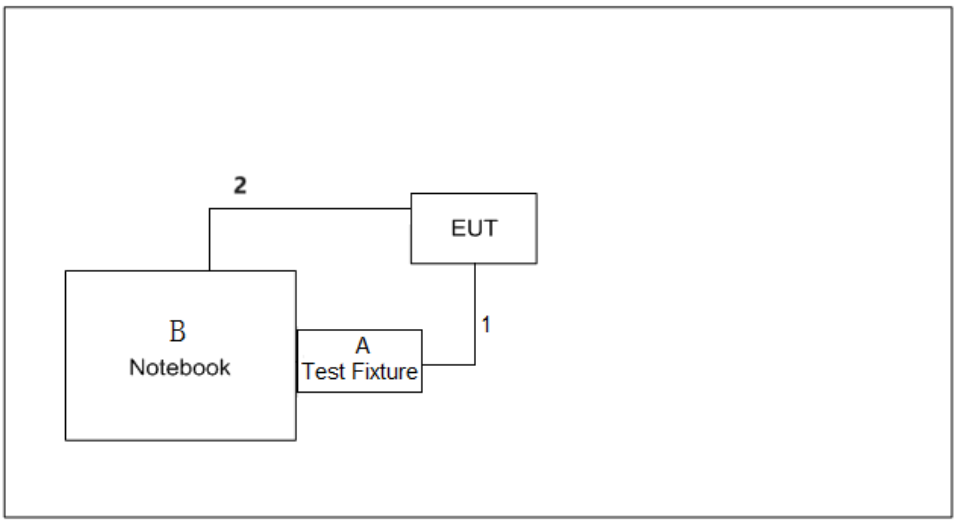
Test Software Version	AWRDLABV2_V1.0.9.7		
Frequency (MHz)	2402	2440	2480
1Mbps	0X04	0X04	0X04
2Mbps	0X04	0X04	0X04

3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

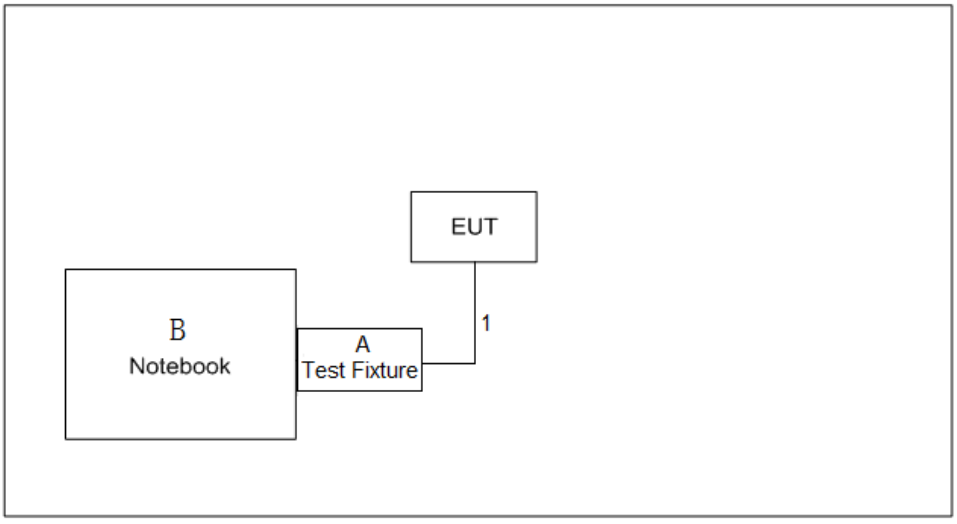
AC power line conducted emissions test & Radiated emissions test - 30MHz - 1GHz



Radiated emissions test – 1GHz - 18GHz



Radiated emissions test – Above 18GHz



3.5 SUPPORT UNITS

AC power line conducted emissions test & Radiated emissions test - 30MHz - 1GHz

Item	Cable Type	Shielded Type	Ferrite Core	Length
A	Notebook	Lenovo	Pro 13	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	USB Cable	NO	NO	1.5m

Radiated emissions test – 1GHz - 18GHz

Item	Cable Type	Shielded Type	Ferrite Core	Length
A	Test Fixture	N/A	N/A	N/A
B	Notebook	HP	Compaq 510	CNU9314Q9W

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	Data Cable	NO	NO	0.2m
2	USB Cable	NO	NO	1.5m

Radiated emissions test – Above 18GHz

Item	Cable Type	Shielded Type	Ferrite Core	Length
A	Test Fixture	N/A	N/A	N/A
B	Notebook	HUAWEI	WFH9	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	Data Cable	NO	NO	0.2m

3.6 CUSTOMER INFORMATION DESCRIPTION

1) The antenna gain is provided by the manufacturer.
2) Except for AC power line conducted emissions and radiated emissions, the results of all test items include cable losses. Part of the cable losses (0.5dB) are provided by the manufacturer, while the other parts of the cable losses are provided by the testing laboratory.

4. AC POWER LINE CONDUCTED EMISSIONS

4.1 LIMIT

Frequency of Emission (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56*	56 to 46*
0.5 - 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.

4.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling 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 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

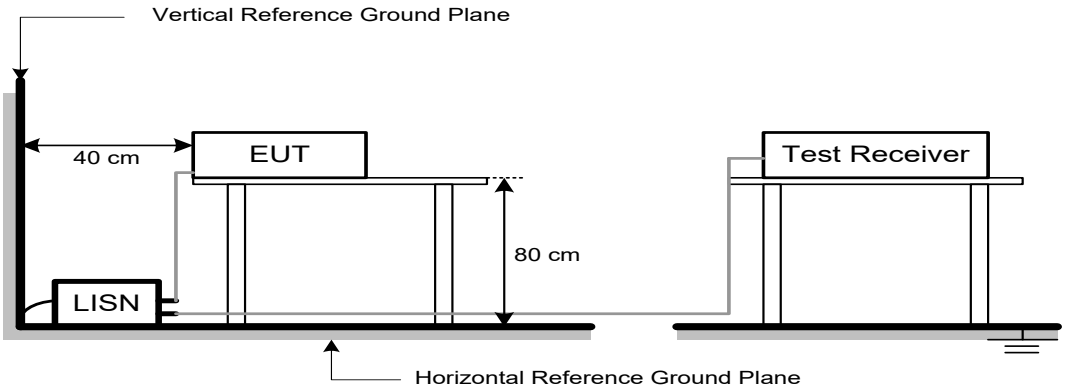
The following table is the setting of the receiver:

Receiver Parameters	Setting
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

4.3 DEVIATION FROM TEST STANDARD

No deviation.

4.4 TEST SETUP



4.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical function (as a customer would normally use it), EUT was programmed to be in continuously transmitting data or hopping on mode.

4.6 TEST RESULTS

Please refer to the APPENDIX A.

Remark:

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform in this case, a "*" marked in AVG Mode column of Interference Voltage Measured.

(2) Measuring frequency range from 150 kHz to 30 MHz.

5. RADIATED EMISSIONS

5.1 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 (30 MHz-1000 MHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
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)	Band edge/ Harmonic at 3m (dBμV/m)		Harmonic at 1m (dBμV/m)	
	Peak	Average	Peak	Average
Above 1000	74	54	83.5 (Note 4)	63.5 (Note 4)

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)

$$FS_{\text{limit}} = FS_{\max} - 20\log\left(\frac{d_{\text{limit}}}{d_{\text{measure}}}\right)$$

20log ($d_{limit}/d_{measure}$)=20log (3/1)=9.5 dB.
FS_{limit}: Harmonic at 3m Peak and Average limit.
FS_{max}: Harmonic at 1m Peak and Average Maximum value.
d_{limit}: Harmonic at 3m test distance.
$d_{measure}$: Harmonic Actual test distance.

5.2 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 or 1m 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 0.8m 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.

The following table is the setting of the receiver:

Spectrum Parameters	Setting
Start ~ Stop Frequency	30 MHz~1000 MHz for RBW 100 kHz

Spectrum Parameters	Setting
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1 MHz / 3 MHz for PK value 1 MHz / 1/T Hz for AVG value

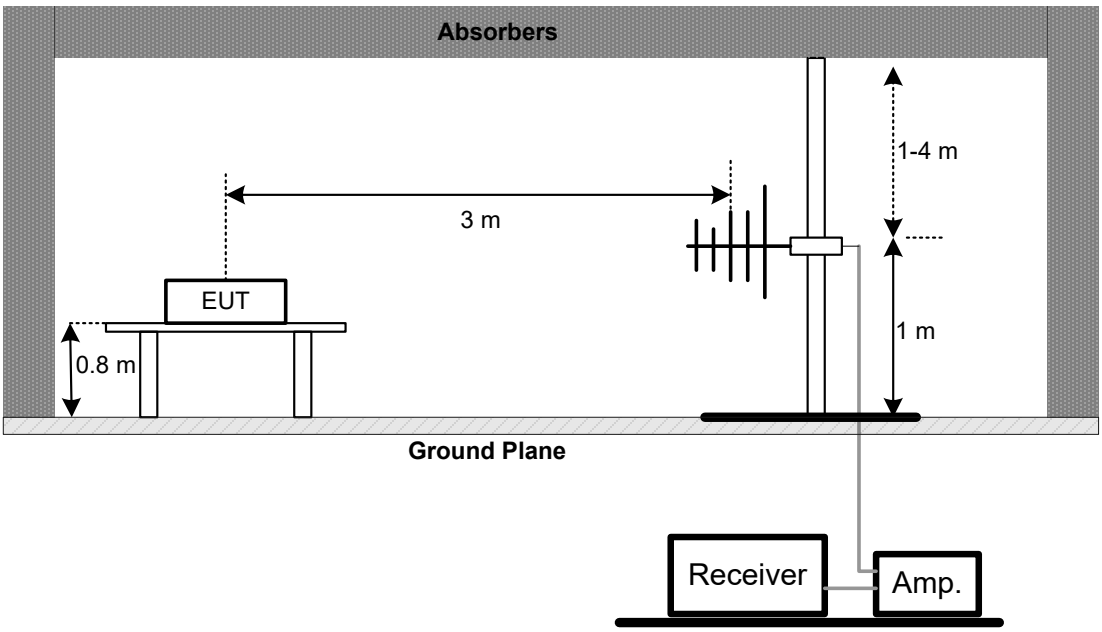
Spectrum Parameters	Setting
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector
Start ~ Stop Frequency	1 GHz~26.5 GHz for PK/AVG detector

5.3 DEVIATION FROM TEST STANDARD

No deviation.

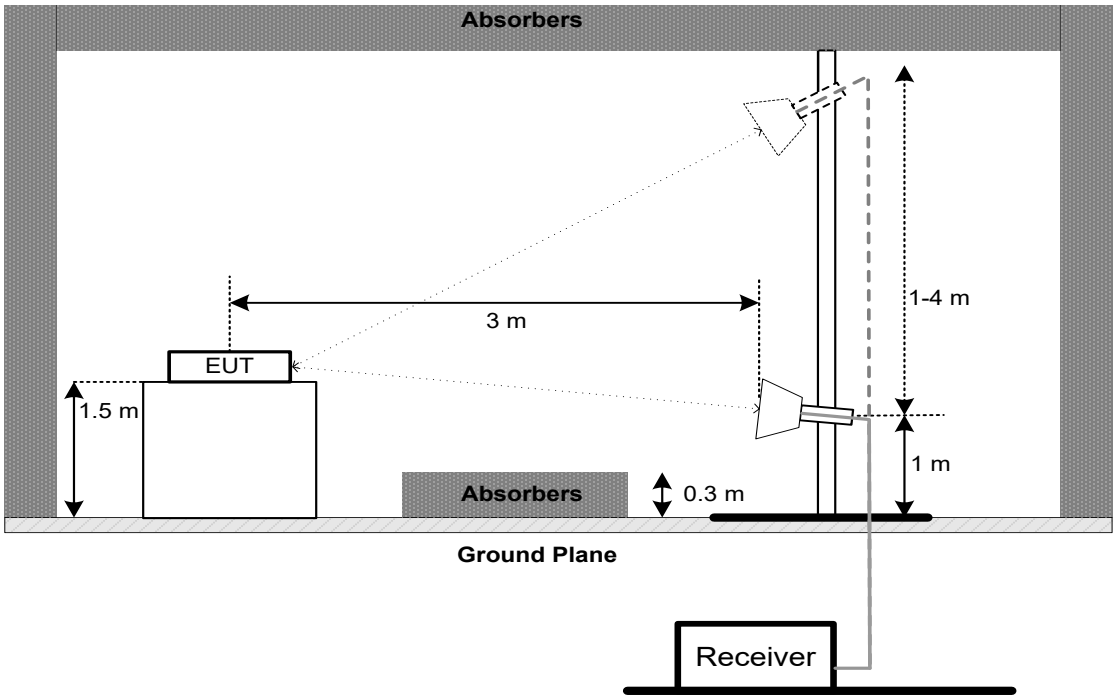
5.4 TEST SETUP

30 MHz to 1 GHz

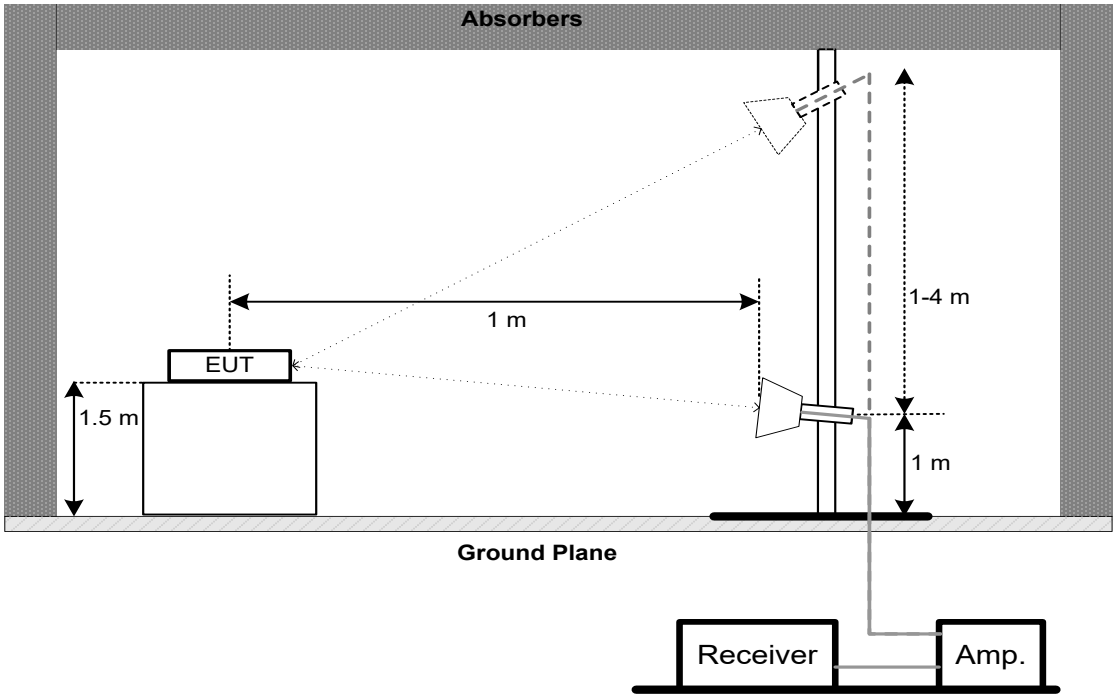


Above 1 GHz

Band edge & Harmonic (1 GHz to 18 GHz)



Harmonic (18 GHz to 26.5 GHz)



5.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

Remark:

(1) Distance extrapolation factor = 40 log (specific distance / test distance) (dB).
(2) Limit line = specific limits (dBuV) + distance extrapolation factor.

5.6 TEST RESULTS - 30 MHz TO 1000 MHz

Please refer to the APPENDIX B.

5.7 TEST RESULTS - 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.

6. MAXIMUM OUTPUT POWER

6.1 LIMIT

Section	Test Item	Limit
FCC 15.247(b)(3)	Maximum Output Power	1.0000 watt or 30.00 dBm

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. The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	≥ 3×RBW
RBW	3 MHz
VBW	3 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

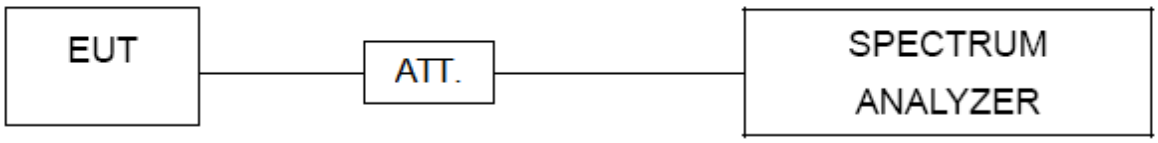
Spectrum Parameters	Setting
Span Frequency	At least 1.5 times the OBW
RBW	1% to 5% of the OBW, not to exceed 1 MHz
VBW	≥ 3×RBW
Detector	RMS
Trace	Max Hold
Sweep Time	≤ (number of points in sweep) × T **(Note)**

Note: Where T is defined in 11.6 of ANSI C63.10-2013.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.6 TEST RESULTS

Please refer to the APPENDIX D.

7. MEASUREMENT INSTRUMENTS LIST

AC Power Line Conducted Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMI TEST RECEIVER	R&S	ESCI	100382	Dec. 22, 2024
2	TWO-LINE V-NETWORK	R&S	ENV216	101447	Dec. 22, 2024
3	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
4	Cable	N/A	SFT205-NMNM-9M -001	9M	Nov. 27, 2024
5	643 Shield Room	ETS	6*4*3	N/A	N/A

Radiated Emissions - 30 MHz to 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	1462	Dec. 13, 2024
2	Attenuator	EMC INSTRUMENT	EMCI-N-6-06	AT-06009	Dec. 13, 2024
3	Preamplifier	EMC INSTRUMENT	EMC001330	980863	Apr. 07, 2025
4	Cable	RegalWay	LMR400-NMNM-12 .5m	N/A	Jun. 06, 2025
5	Cable	RegalWay	LMR400-NMNM-3 m	N/A	Jun. 06, 2025
6	Cable	RegalWay	LMR400-NMNM-0. 5m	N/A	Jun. 06, 2025
7	Receiver	Agilent	N9038A	MY52130039	Dec. 22, 2024
8	Positioning Controller	MF	MF-7802	N/A	N/A
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
10	966 Chamber room	CM	9*6*6	N/A	May 16, 2025

Radiated Emissions - 1 GHz to 18GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Receiver	Agilent	N9038A	MY52130039	Dec. 22, 2024
2	Preamplifier	EMC INSTRUMENT	EMC118A45SE	980888	Nov. 17, 2024
3	EXA Spectrum Analyzer	Keysight	N9010A	MY55150209	May 31, 2025
4	Double Ridged Guide Antenna	ETS	3115	75789	Jun. 15, 2025
5	Cable	RegalWay	RWLP50-4.0A-SMS M-12.5M	N/A	Jul. 03, 2025
6	Cable	RegalWay	RWLP50-4.0A-NMR ASM-2.5M	N/A	Jul. 03, 2025
7	Cable	RegalWay	RWLP50-4.0A-NMR ASMRA-0.8M	N/A	Jul. 03, 2025
8	966 Chamber room	CM	9*6*6	N/A	May 19, 2025
9	Attenuator	Talent Microwave	TA10A2-S-18	N/A	N/A
10	Filter	STI	STI15-9912	N/A	May 31, 2025
11	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
12	Positioning Controller	MF	MF-7802	N/A	N/A

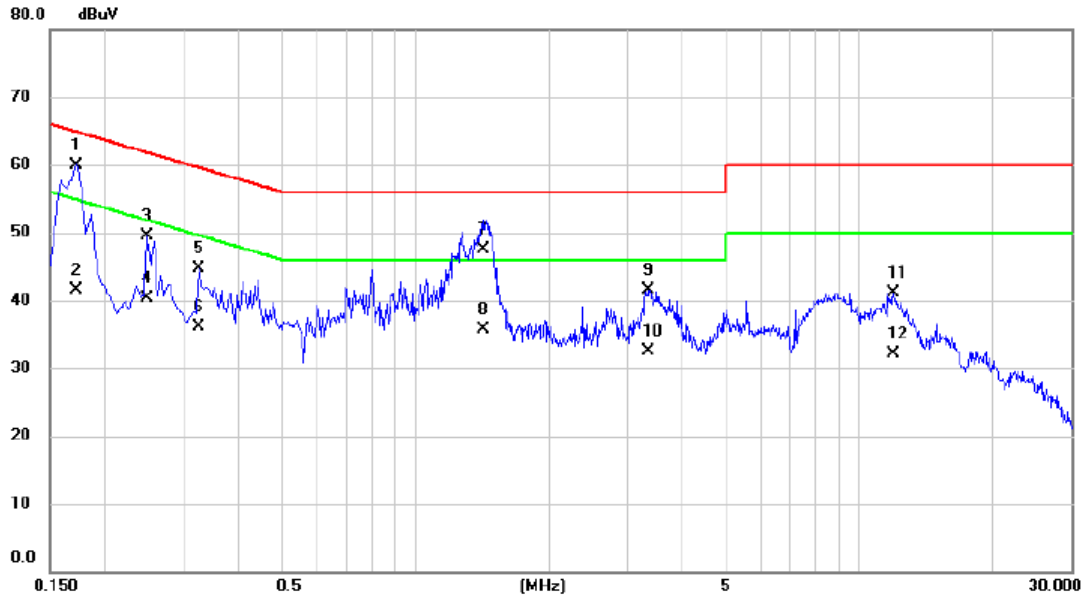
Radiated Emissions - Above 18 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	MXA Signal Analyzer	KEYSIGHT	N9020B	MY63380204	Nov. 17, 2024
2	Receiver	Agilent	N9038A	MY52130039	Dec. 22, 2024
3	Preamplifier	EMC INSTRUMENT	EMC118A45SE	980888	Nov. 17, 2024
4	EXA Spectrum Analyzer	Keysight	N9010A	MY55150209	May 31, 2025
5	Double Ridged Guide Antenna	ETS	3115	75789	Jun. 15, 2025
6	Cable	RegalWay	RWLP50-4.0A-SMSM-12.5M	N/A	Jul. 03, 2025
7	Cable	RegalWay	RWLP50-4.0A-NMRASM-2.5M	N/A	Jul. 03, 2025
8	Cable	RegalWay	RWLP50-4.0A-NMRASMRA-0.8M	N/A	Jul. 03, 2025
9	Preamplifier	EMC INSTRUMENT	EMC184045SE	980905	Nov. 19, 2024
10	Cable	RegalWay	RWLP50-2.6A-2.92M2.92M-1.1M	N/A	Jul. 26, 2024
11	Cable	Tonscend	HF160-KMKM-3M	N/A	Jul. 26, 2024
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA9170(3m)	9170-319	Jun. 16, 2025
13	966 Chamber room	CM	9*6*6	N/A	May 19, 2025
14	Positioning Controller	MF	MF-7802	N/A	N/A
15	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Maximum Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP38	100852	May 31, 2025
2	Measurement Software	BTL	BTL Conducted Test	N/A	N/A
3	Isolation attenuator	Z-Link	ASMA-16-18-2W	N/A	N/A

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

APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

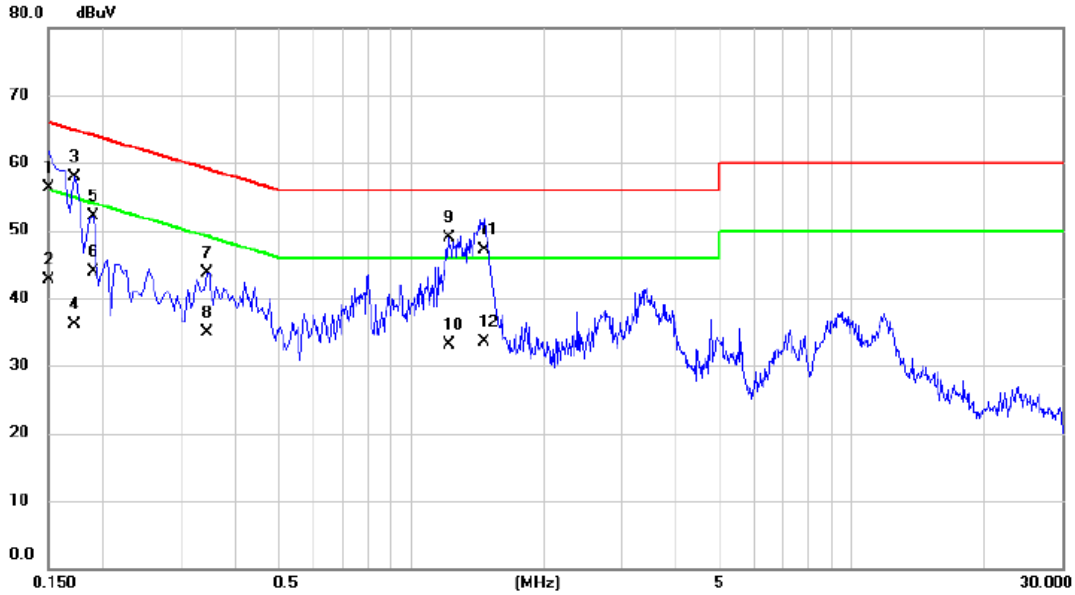
Test Mode	TX 2402 MHz _CH00_1Mbps	Phase	Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1725	50.03	9.97	60.00	64.84	-4.84	QP	
2		0.1725	31.50	9.97	41.47	54.84	-13.37	AVG	
3		0.2490	39.50	10.06	49.56	61.79	-12.23	QP	
4		0.2490	30.30	10.06	40.36	51.79	-11.43	AVG	
5		0.3255	34.39	10.23	44.62	59.57	-14.95	QP	
6		0.3255	25.80	10.23	36.03	49.57	-13.54	AVG	
7		1.4280	36.20	11.27	47.47	56.00	-8.53	QP	
8		1.4280	24.40	11.27	35.67	46.00	-10.33	AVG	
9		3.3495	31.03	10.42	41.45	56.00	-14.55	QP	
10		3.3495	22.10	10.42	32.52	46.00	-13.48	AVG	
11		11.9670	28.74	12.41	41.15	60.00	-18.85	QP	
12		11.9670	19.70	12.41	32.11	50.00	-17.89	AVG	

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

Test Mode	TX 2402 MHz _CH00_1Mbps	Phase	Neutral

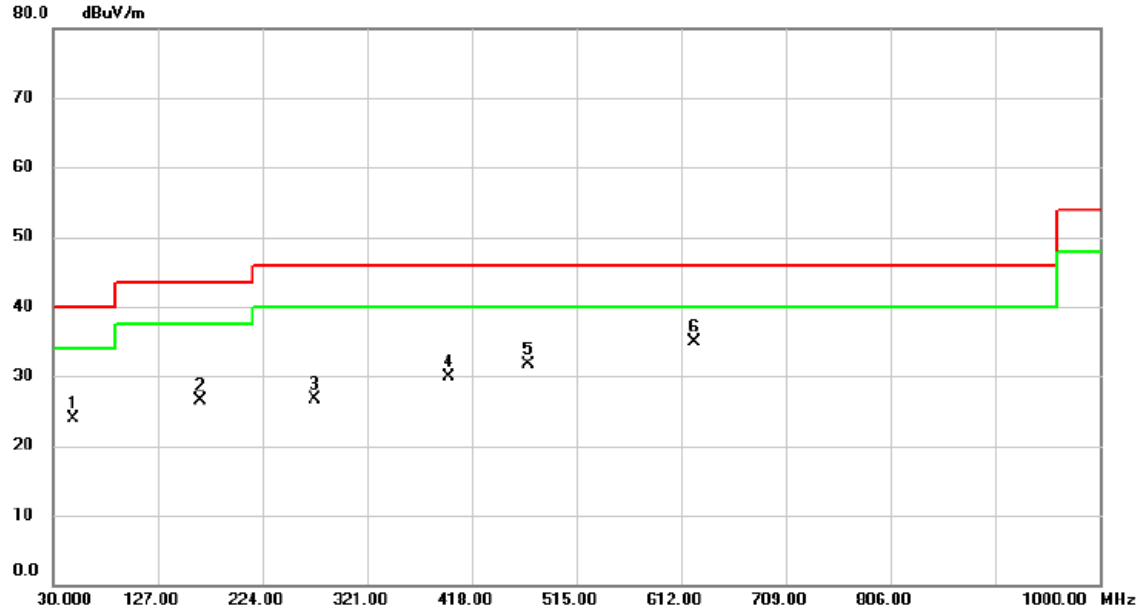


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	46.40	9.93	56.33	66.00	-9.67	QP	
2		0.1500	32.80	9.93	42.73	56.00	-13.27	AVG	
3	*	0.1725	47.98	9.93	57.91	64.84	-6.93	QP	
4		0.1725	26.10	9.93	36.03	54.84	-18.81	AVG	
5		0.1905	42.19	9.94	52.13	64.01	-11.88	QP	
6		0.1905	33.90	9.94	43.84	54.01	-10.17	AVG	
7		0.3435	33.52	10.23	43.75	59.12	-15.37	QP	
8		0.3435	24.70	10.23	34.93	49.12	-14.19	AVG	
9		1.2164	37.64	11.28	48.92	56.00	-7.08	QP	
10		1.2164	21.90	11.28	33.18	46.00	-12.82	AVG	
11		1.4640	35.90	11.22	47.12	56.00	-8.88	QP	
12		1.4640	22.20	11.22	33.42	46.00	-12.58	AVG	

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

APPENDIX B - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

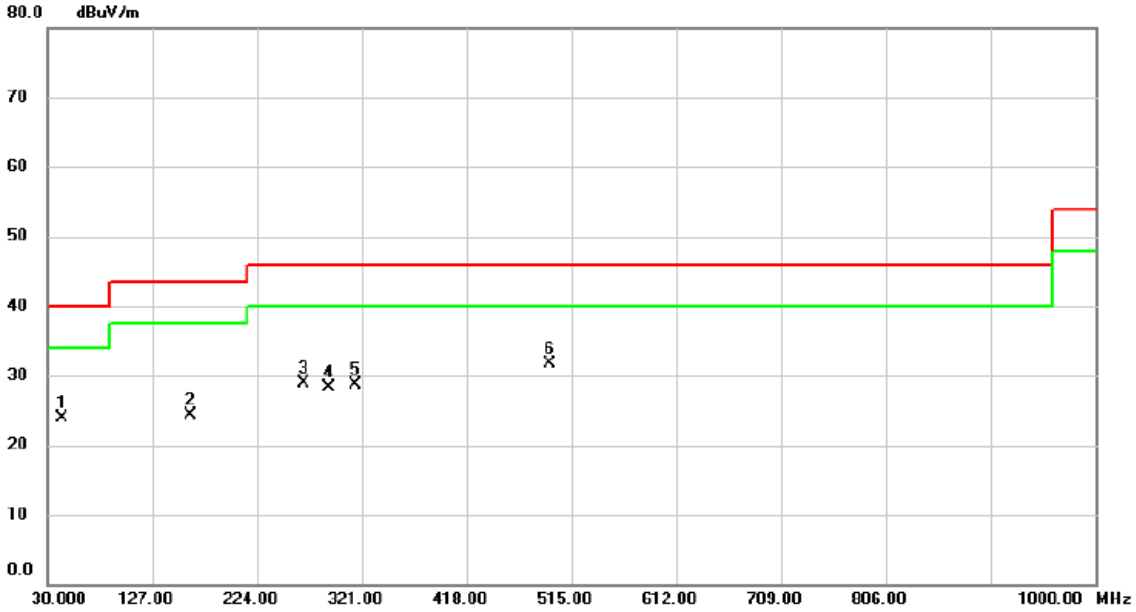
Test Mode	TX 2402 MHz _CH00_1Mbps	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48.4300	35.20	-11.29	23.91	40.00	-16.09	peak	
2		165.8000	37.46	-11.01	26.45	43.50	-17.05	peak	
3		272.5000	37.99	-11.28	26.71	46.00	-19.29	peak	
4		397.1450	37.94	-7.94	30.00	46.00	-16.00	peak	
5		470.3800	38.09	-6.29	31.80	46.00	-14.20	peak	
6	*	624.6100	38.06	-3.07	34.99	46.00	-11.01	peak	

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

Test Mode	TX 2402 MHz _CH00_1Mbps	Polarization	Horizontal

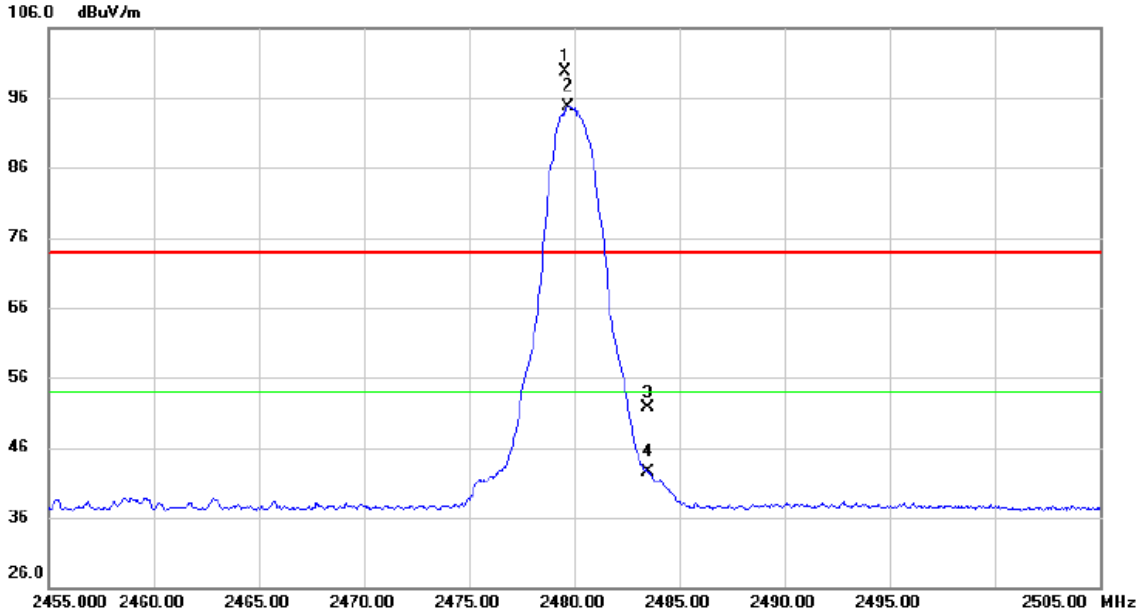


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		43.5800	35.42	-11.45	23.97	40.00	-16.03	peak	
2		161.9200	35.19	-10.85	24.34	43.50	-19.16	peak	
3		267.6500	40.43	-11.53	28.90	46.00	-17.10	peak	
4		290.4450	38.86	-10.61	28.25	46.00	-17.75	peak	
5		315.1800	38.63	-10.02	28.61	46.00	-17.39	peak	
6	*	495.1150	37.67	-5.91	31.76	46.00	-14.24	peak	

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

APPENDIX C - RADIATED EMISSION - ABOVE 1000 MHZ

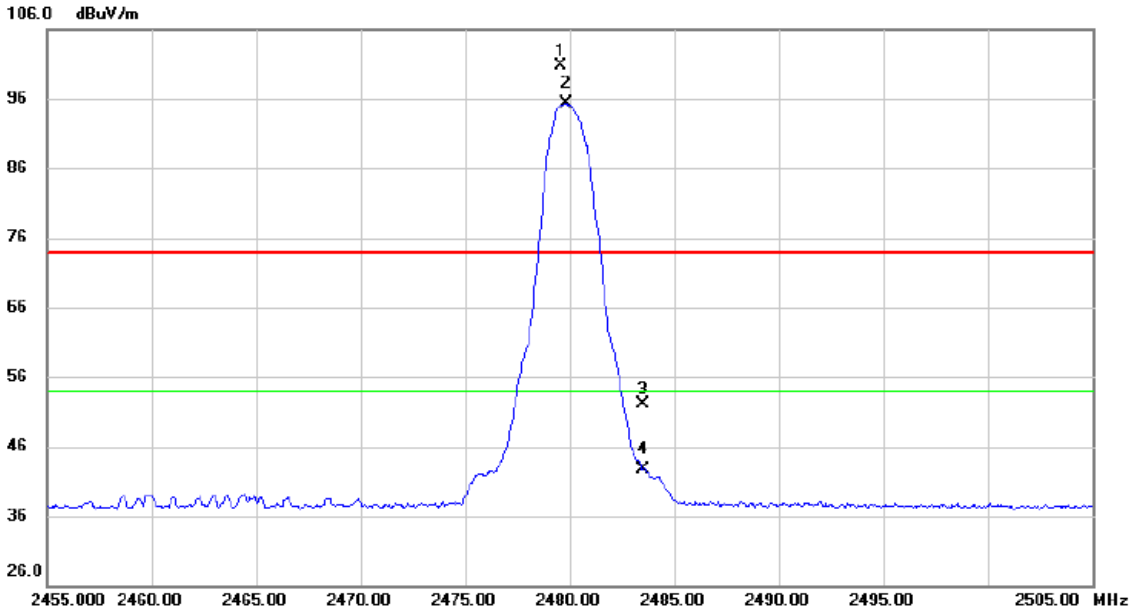
Test Mode	TX 2480 MHz _CH39_2Mbps	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2479.575	91.99	7.81	99.80	74.00	25.80	peak	No Limit
2	*	2479.700	86.86	7.81	94.67	54.00	40.67	AVG	No Limit
3		2483.500	43.98	7.81	51.79	74.00	-22.21	peak	
4		2483.500	34.60	7.81	42.41	54.00	-11.59	AVG	

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

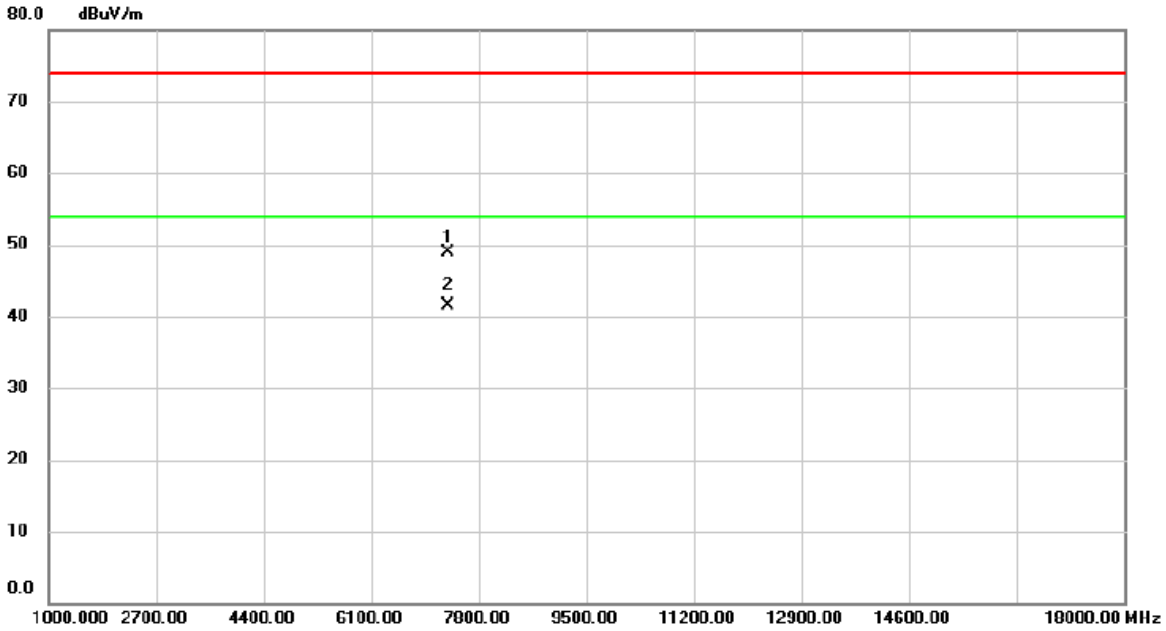
Test Mode	TX 2480 MHz _CH39_2Mbps	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2479.550	92.91	7.81	100.72	74.00	26.72	peak	No Limit
2	*	2479.800	87.50	7.81	95.31	54.00	41.31	AVG	No Limit
3		2483.500	44.22	7.81	52.03	74.00	-21.97	peak	
4		2483.500	34.87	7.81	42.68	54.00	-11.32	AVG	

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

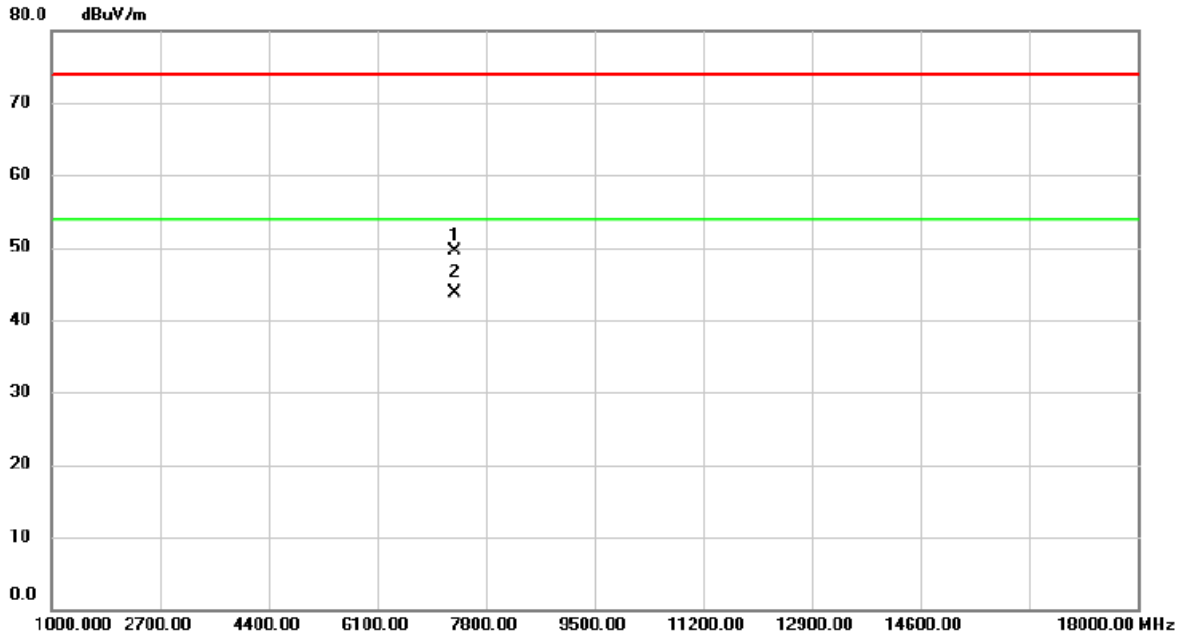
Test Mode	TX 2440 MHz _CH19_1Mbps	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		7319.887	40.51	8.31	48.82	74.00	-25.18	peak	
2	*	7319.915	33.19	8.31	41.50	54.00	-12.50	AVG	

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

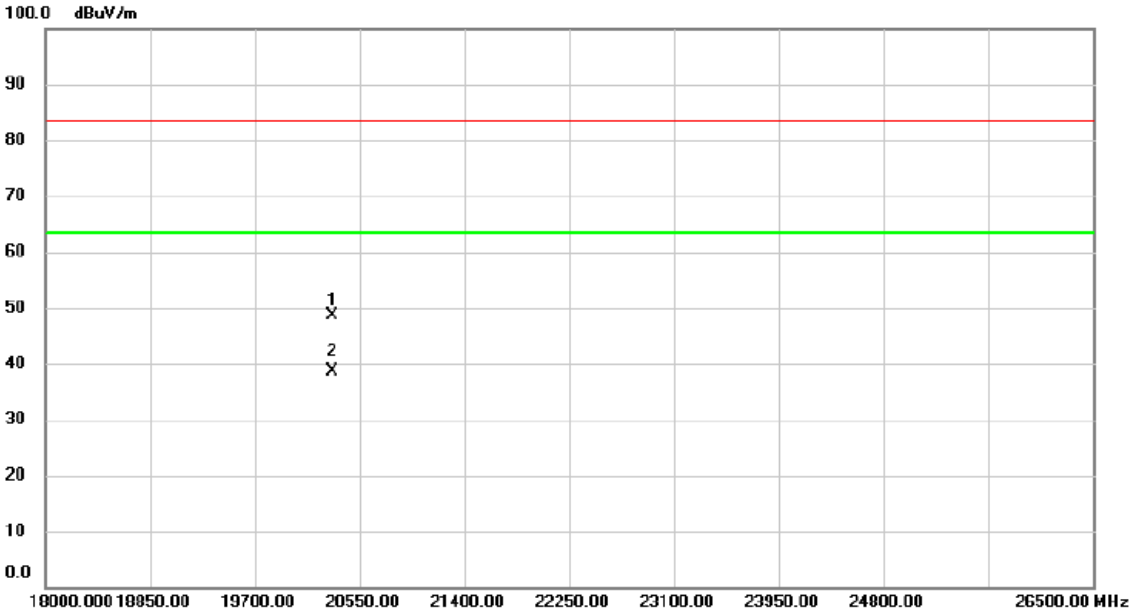
Test Mode	TX 2440 MHz _CH19_1Mbps	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		7319.370	41.26	8.31	49.57	74.00	-24.43	peak	
2	*	7319.370	35.41	8.31	43.72	54.00	-10.28	AVG	

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

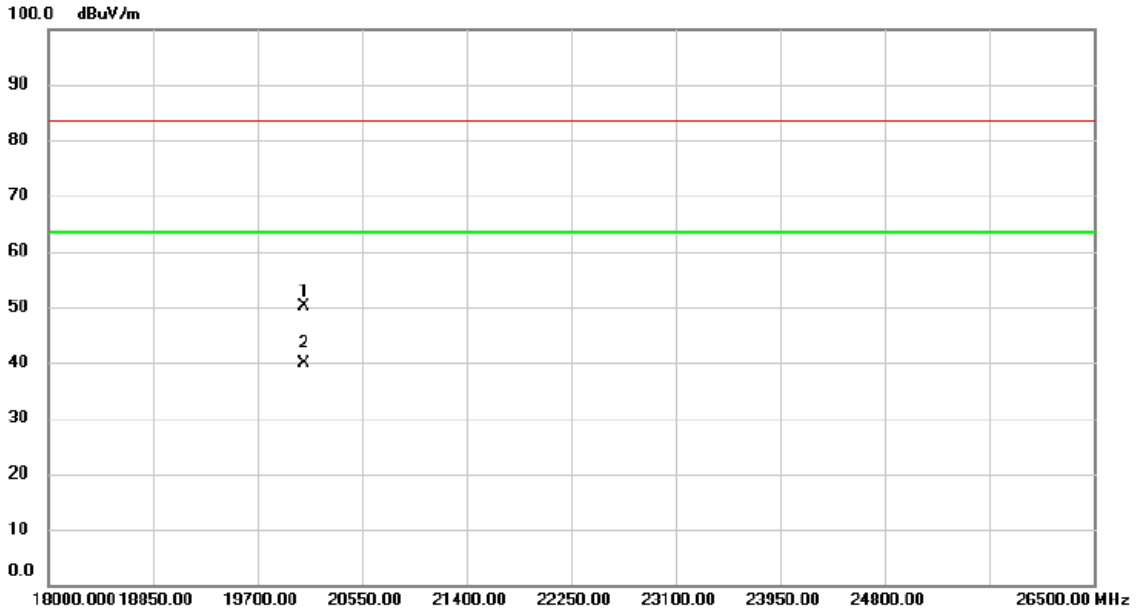
Test Mode	TX 2402 MHz _CH00_1Mbps	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		20329.000	54.11	-5.48	48.63	83.50	-34.87	peak	
2	*	20329.000	44.03	-5.48	38.55	63.50	-24.95	AVG	

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

Test Mode	TX 2402 MHz _CH00_1Mbps	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		20082.500	55.78	-5.76	50.02	83.50	-33.48	peak	
2	*	20082.500	45.67	-5.76	39.91	63.50	-23.59	AVG	

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

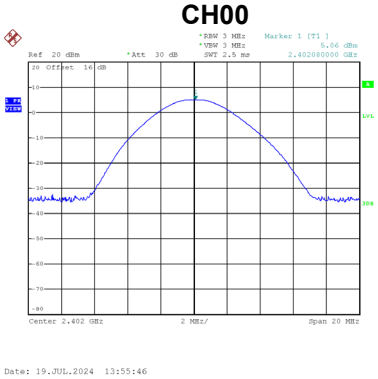
APPENDIX D - MAXIMUM OUTPUT POWER

Test Mode	TX Mode _1Mbps

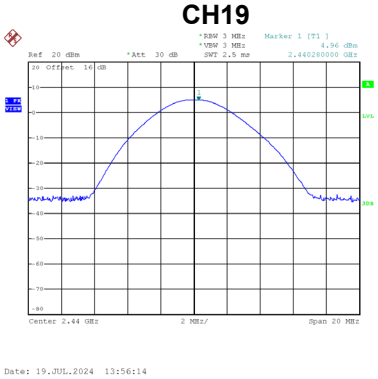
Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	5.06	0.0032	30.00	1.0000	Pass
2440	4.96	0.0031	30.00	1.0000	Pass
2480	4.94	0.0031	30.00	1.0000	Pass

Note: Output power = Measure result + Cable loss

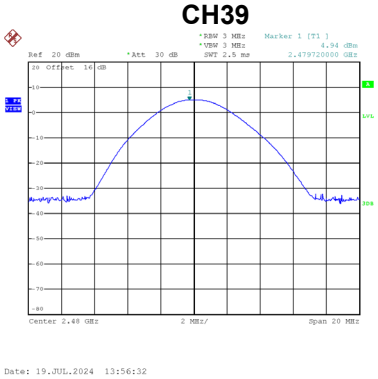
CH00



CH19



CH39

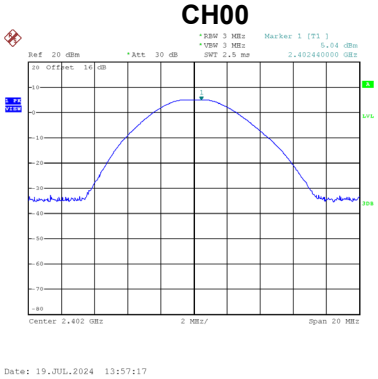


Test Mode	TX Mode _2Mbps

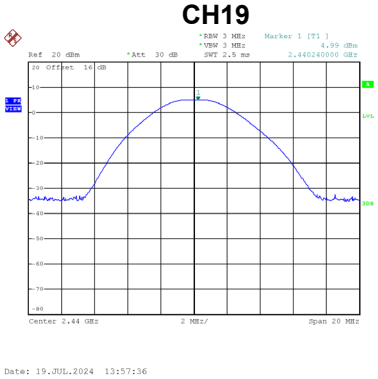
Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	5.04	0.0032	30.00	1.0000	Pass
2440	4.99	0.0032	30.00	1.0000	Pass
2480	4.97	0.0031	30.00	1.0000	Pass

Note: Output power = Measure result + Cable loss

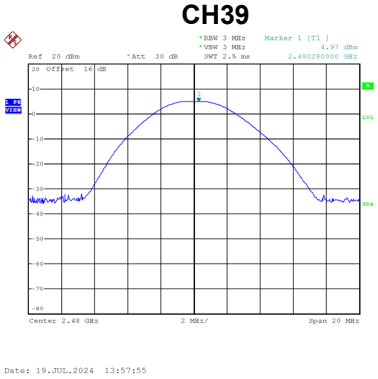
CH00



CH19



CH39



End of Test Report