



FCC Radio Test Report

FCC ID: RWO-RZ040516

This report concerns: Original Grant

Project No. : 2404C035
Equipment : Gaming Headset
Brand Name : 
Test Model : RAZER, RZ04-0516
Series Model : RZ04-0516XXXX-XXXX (X can be 0-9 or A-Z)
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Date of Receipt : Apr. 10, 2024
Date of Test : Apr. 11, 2024 ~ Sep. 03, 2024
Issued Date : Sep. 10, 2024
Report Version : R00
Test Sample : Sample No.: DG20240410119 for conducted, DG20240410116 for Others.
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**.

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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-3-2404C035	R00	Original Report.	Sep. 10, 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 Emission	APPENDIX B APPENDIX C APPENDIX D	PASS	-----
15.247 (a)(1)(iii)	Number of Hopping Frequency	APPENDIX E	PASS	-----
15.247 (a)(1)(iii)	Average Time of Occupancy	APPENDIX F	PASS	-----
15.247(a)(1)	Hopping Channel Separation	APPENDIX G	PASS	-----
15.247(a)(1)	Bandwidth	APPENDIX H	PASS	-----
15.247(a)(1)	Maximum Output Power	APPENDIX I	PASS	-----
15.247(d)	Conducted Spurious Emission	APPENDIX J	PASS	-----
15.203	Antenna Requirement	-----	PASS	Note(2)

Note:

(1) "N/A" denotes test is not applicable in this test report

(2) The device what use a permanently attached antenna were considered sufficient to comply with the provisions of 15.203.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, 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_i (dB)
DG-C02	CISPR	150kHz ~ 30MHz	2.88

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	U_i (dB)
DG-CB01	CISPR	9kHz ~ 30MHz	2.70

Test Site	Method	Measurement Frequency Range	Ant. H / V	U_i (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_i (dB)
DG-CB03 (3m)	CISPR	1GHz ~ 6GHz	4.08
		6GHz ~ 18GHz	4.62

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

C. Other Measurement:

Test Item	Uncertainty
Bandwidth	0.90 %
Maximum Output Power	1.3 dB
Conducted Spurious Emission	1.9 dB
Power Spectral Density	1.4 dB
Temperature	0.8 °C
Humidity	2.2 %

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	26°C	50%	AC 120V/60Hz	Hayden Chen	Apr. 17, 2024
Radiated Emissions-9 kHz to 30 MHz	24°C	56%	DC 5V	Hayden Chen	May 09, 2024
Radiated Emissions-30 MHz to 1000 MHz	22°C	51%	DC 5V	Chen Mo	Apr. 18, 2024
Radiated Emissions-Above 1000 MHz	20-22°C	51-55%	DC 5V	Allen Tong Chen Mo	Apr. 20, 2024~ Apr. 23, 2024
	26°C	54%	DC 5V	Allen Tong	Aug. 30, 2024
Number of Hopping Frequency	25°C	47-56%	DC 5V	Arvin Tong	Aug. 27, 2024~ Sep. 02, 2024
Average Time of Occupancy	25°C	47-56%	DC 5V	Arvin Tong	Aug. 27, 2024~ Sep. 02, 2024
Hopping Channel Separation	25°C	47-56%	DC 5V	Arvin Tong	Aug. 27, 2024~ Sep. 02, 2024
Bandwidth	25°C	47-56%	DC 5V	Arvin Tong	Aug. 27, 2024~ Sep. 02, 2024
Maximum Output Power	25°C	47-56%	DC 5V	Arvin Tong	Aug. 27, 2024~ Sep. 02, 2024
Conducted Spurious Emission	25°C	47-56%	DC 5V	Arvin Tong	Aug. 27, 2024~ Sep. 02, 2024

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Gaming Headset
Brand Name	 RAZER,
Test Model	RZ04-0516
Series Model	RZ04-0516XXXX-XXXX (X can be 0-9 or A-Z)
Model Difference(s)	Only differ in the model name.
Hardware Version	V2.2
Software Version	v1.0.4
Power Source	1# Supplied from USB port. 2# Supplied from battery. Model: 553450PN2
Power Rating	1# 5V  500mA 2# 3.7V 1200mAh/4.44Wh
Operation Frequency	1Mbps, 2Mbps: 2402 MHz ~ 2480 MHz 4Mbps: 2404 MHz ~ 2478 MHz
Modulation Type	GFSK
Bit Rate of Transmitter	1Mbps, 2Mbps, 4Mbps
Max. Output Power	1Mbps: 10.43 dBm (0.0110 W)

Note:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The system model number is RZ04-0516XXXX-XXXX, this system consists of Gaming Headset (Model: RZ04-0516) and OLED Control Hub (Model: RC30-0516), X can be 0-9 or A-Z.

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

Note: The 4Mbps transmit bit rate does not support 2402MHz, 2426MHz and 2480MHz channel, other rates support all channels.

4. Table for Filed Antenna:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	RAZER	RZ04-0516	FPC	N/A	2.7

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_4Mbps Channel 01/19/38
Mode 4	TX Mode_1Mbps Channel 00

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 4	TX Mode_1Mbps Channel 00

Radiated emissions test - Below 1GHz	
Final Test Mode	Description
Mode 4	TX Mode_1Mbps Channel 00

Radiated emissions test - Above 1GHz	
Final Test Mode	Description
Mode 1	TX Mode_1Mbps Channel 00/19/39
Mode 2	TX Mode_2Mbps Channel 00/19/39
Mode 3	TX Mode_4Mbps Channel 01/19/38

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
Mode 3	TX Mode_4Mbps Channel 01/19/38

Other Conducted test	
Final Test Mode	Description
Mode 1	TX Mode_1Mbps Channel 00/19/39
Mode 2	TX Mode_2Mbps Channel 00/19/39
Mode 3	TX Mode_4Mbps Channel 01/19/38

Note:

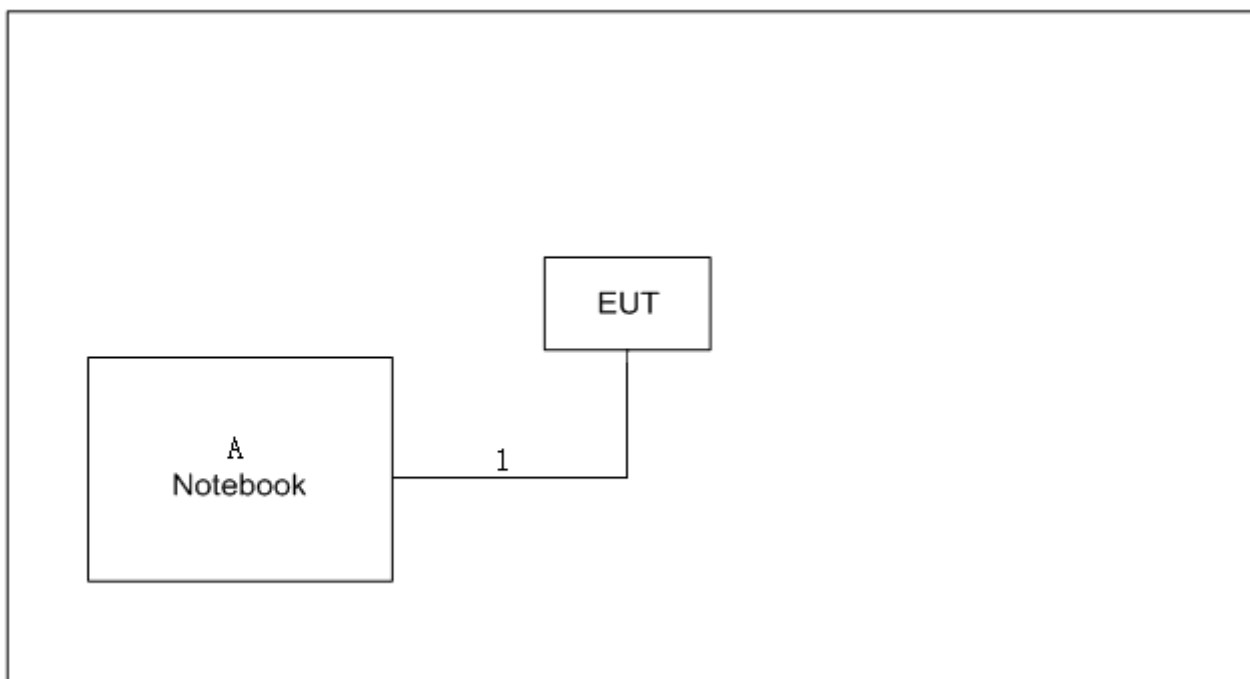
- (1) For radiated emission above 1 GHz test, the spurious points of 1GHz~26.5GHz have been pre-tested and in this report only recorded the worst case. The remaining spurious points are all below the limit value of 20dB.
- (2) For AC power line conducted emissions and radiated emissions below 1 GHz test, the 1Mbps Channel 00 is found to be the worst case and recorded.
- (3) For radiated emission Harmonic 18-26.5GHz test, only tested the worst case and recorded.
- (4) 1Mbps and 2Mbps: For radiated emission above 1 GHz of Bandedge and Harmonic test: The polarization of Vertical and Horizontal are evaluated, the worst case is Horizontal and recorded.
- (5) 4Mbps: For radiated emission above 1 GHz of Bandedge and Harmonic test: The polarization of Vertical and Horizontal are evaluated, the worst case is Vertical and recorded.

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	AB157x_Airoha_Tool_Kit(ATK)_v3.7.5		
Frequency (MHz)	2402	2440	2480
1Mbps	61	61	61
2Mbps	61	61	61
Frequency (MHz)	2404	2440	2478
4Mbps	61	61	61

3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.5 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
A	Notebook	HONOR	Nbl-WAQ9HNRP	N/A

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

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. All cable losses are provided by the testing laboratory.

4. AC POWER LINE CONDUCTED EMISSIONS

4.1 LIMIT

Frequency of Emission (MHz)	Limit (dB μ V)	
	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.

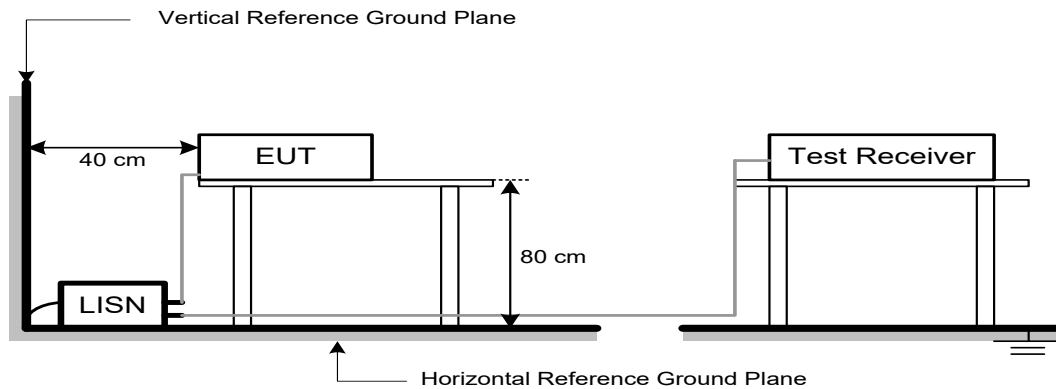
The following table is the setting of the receiver:

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 (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)	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)

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

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

- 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)
- 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)
- 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.
- 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).
- 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.
- 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.
- 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)
- 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)
- 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	9 kHz~150 kHz for RBW 200 Hz
Start ~ Stop Frequency	0.15 MHz~30 MHz for RBW 9 kHz
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

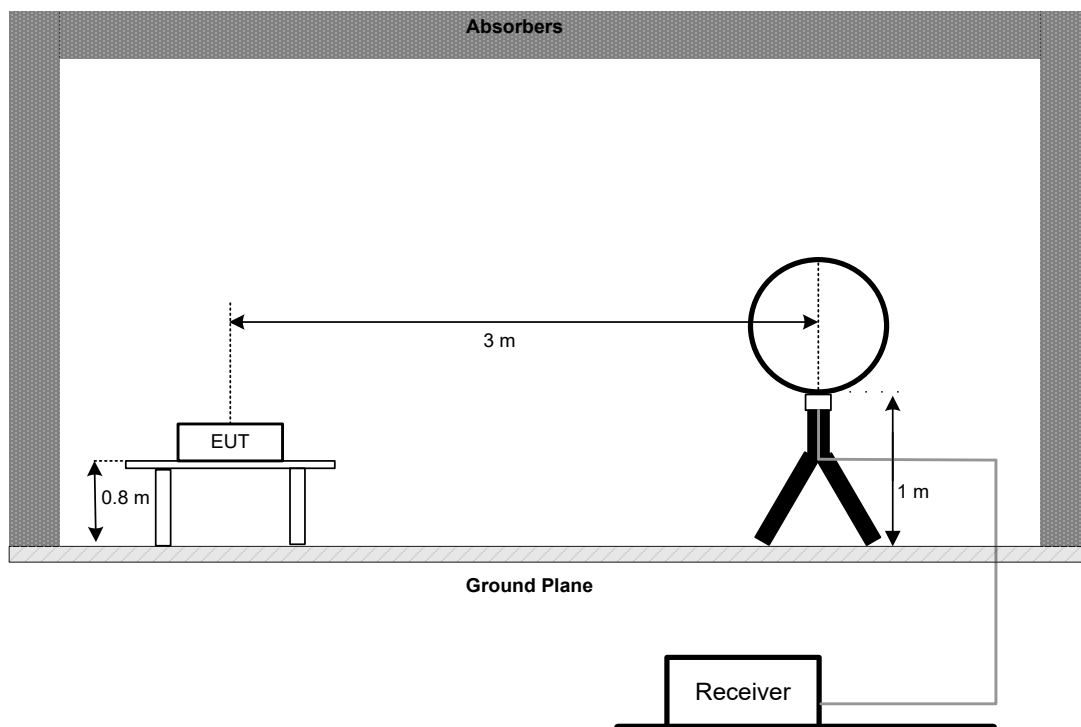
Spectrum Parameters	Setting
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector
Start ~ Stop Frequency	1 GHz~26.5 GHz for PK/AVG detector

5.3 DEVIATION FROM TEST STANDARD

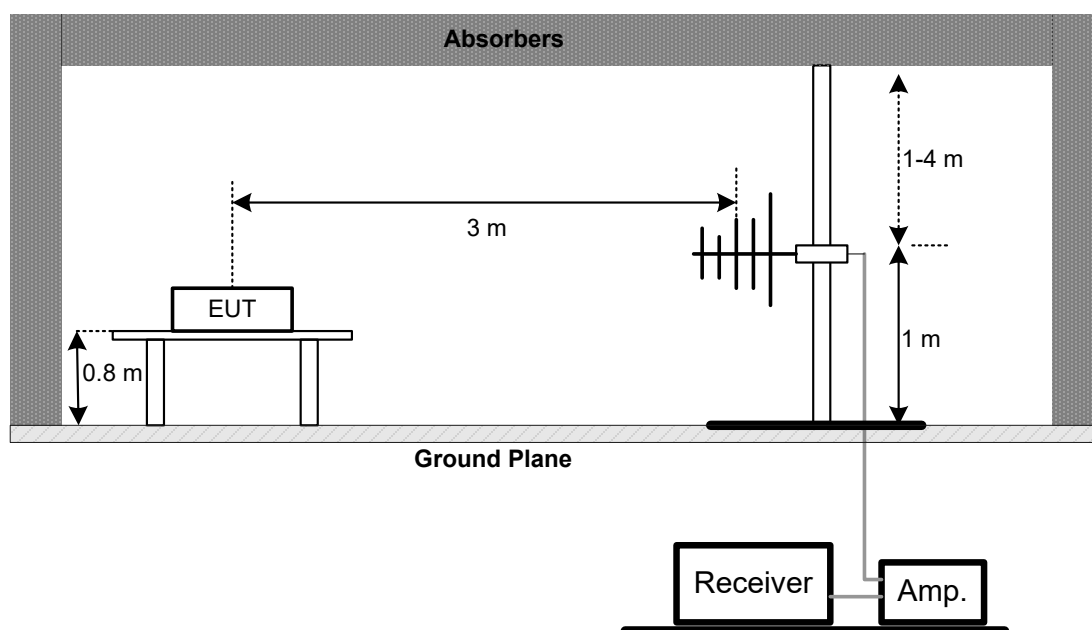
No deviation.

5.4 TEST SETUP

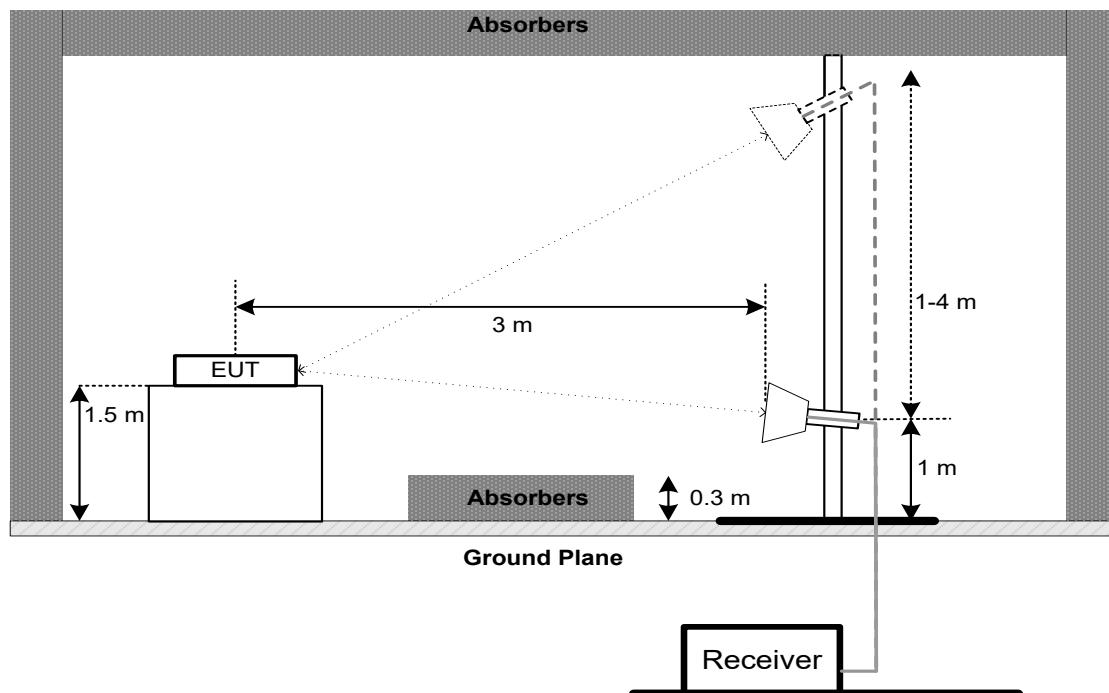
9 kHz to 30 MHz



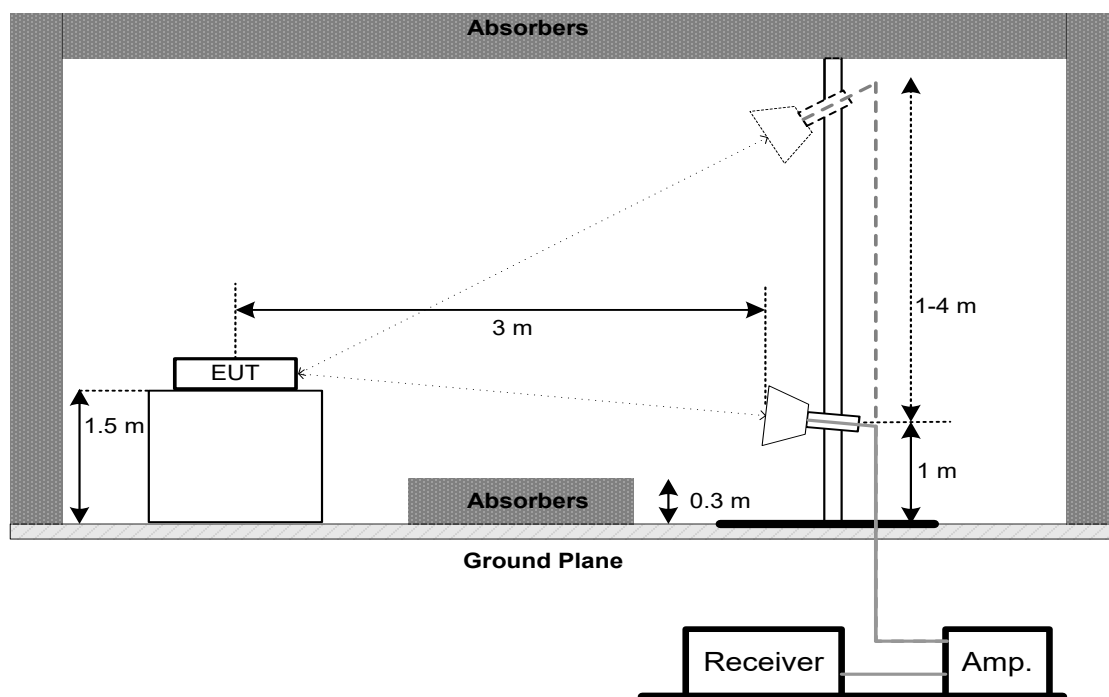
30 MHz to 1 GHz



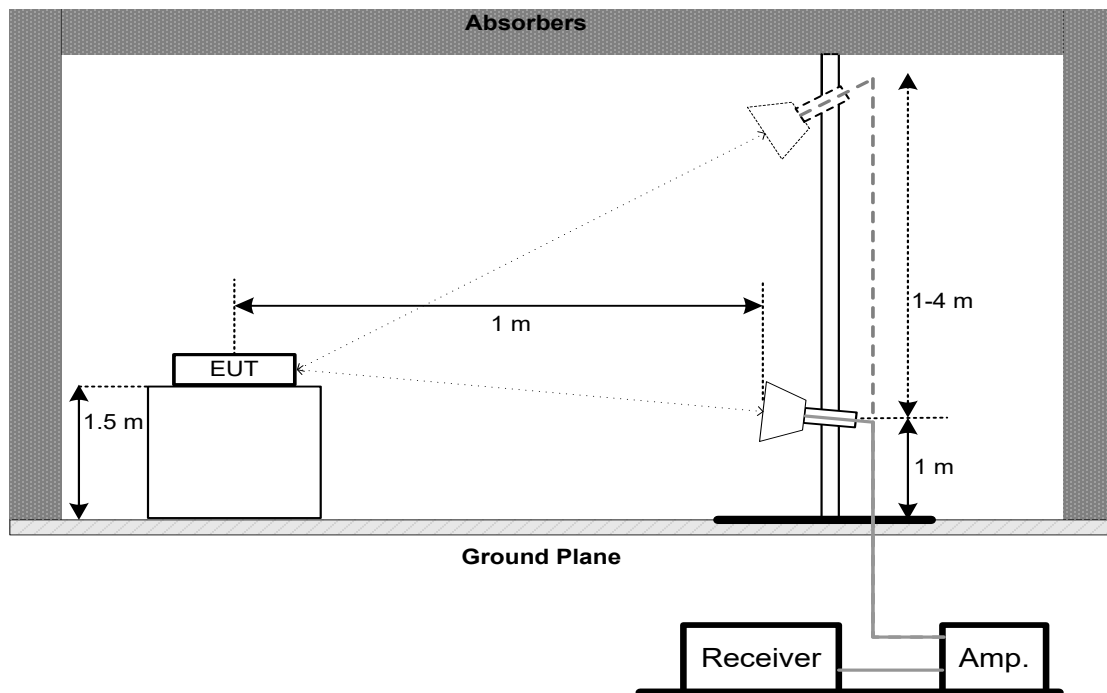
Above 1 GHz Band edge



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.

5.6 TEST RESULTS - 9 kHz TO 30 MHz

Please refer to the APPENDIX B.

Remark:

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

5.7 TEST RESULTS - 30 MHz TO 1000 MHz

Please refer to the APPENDIX C.

5.8 TEST RESULTS - ABOVE 1000 MHz

Please refer to the APPENDIX D.

Remark:

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

6. NUMBER OF HOPPING FREQUENCY

6.1 LIMIT

Section	Test Item	Limit
FCC 15.247(a)(1)(iii)	Number of Hopping Frequency	15

6.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	> Operating Frequency Range
RBW	100 kHz
VBW	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

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 E.

7. AVERAGE TIME OF OCCUPANCY

7.1 LIMIT

Section	Test Item	Limit
FCC 15.247(a)(1)(iii)	Average Time of Occupancy	0.4sec

7.2 TEST PROCEDURE

- Set the EUT for DH packet transmitting.
- Measure the maximum time duration of one single pulse.
- DH Packet permit maximum $1600 / 40 / 2 = 20$ hops per second in each channel (1 time slot TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times $20 \times 16 = 320$ within 31.6 seconds
- For 4Mbps DH Packet permit maximum $1600 / 37 / 2 = 21.62$ hops per second in each channel (1 time slot TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times $21.62 \times 14.8 \approx 320$ within 14.8 seconds
- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	0 MHz
RBW	1 MHz
VBW	1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	As necessary to capture the entire dwell time per hopping channel

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.6 TEST RESULTS

Please refer to the APPENDIX F.

8. HOPPING CHANNEL SEPARATION

8.1 LIMIT

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

8.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	Wide enough to capture the peaks of two adjacent channels
RBW	30 kHz
VBW	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

8.6 TEST RESULTS

Please refer to the APPENDIX G.

9. BANDWIDTH

9.1 LIMIT

Section	Test Item
FCC 15.247(a)(1)	Bandwidth

9.2 TEST PROCEDURE

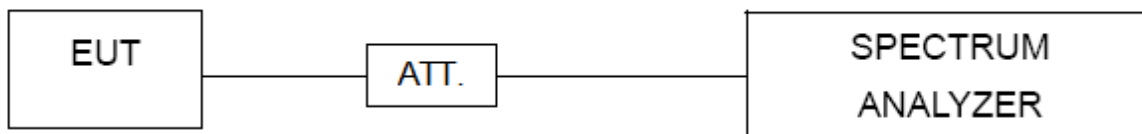
- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	> Measurement Bandwidth
RBW	30 kHz
VBW	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP



9.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

9.6 TEST RESULTS

Please refer to the APPENDIX H.

10. MAXIMUM OUTPUT POWER

10.1 LIMIT

Section	Test Item	Limit
FCC 15.247(a)(1)	Maximum Output Power	0.1250 Watt or 20.97 dBm

Note: Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

10.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	Approximately five times the 20 dB bandwidth, centered on a hopping channel.
RBW	3 MHz
VBW	3 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

10.3 DEVIATION FROM STANDARD

No deviation.

10.4 TEST SETUP



10.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

10.6 TEST RESULTS

Please refer to the APPENDIX I.

11. CONDUCTED SPURIOUS EMISSION

11.1 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.

11.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Start Frequency	30 MHz
Stop Frequency	26.5 GHz
RBW	100 kHz
VBW	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

11.3 DEVIATION FROM STANDARD

No deviation.

11.4 TEST SETUP



11.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

11.6 TEST RESULTS

Please refer to the APPENDIX J.

12. 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	ESR3	103027	Jun. 16, 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 - 9 kHz to 30 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Active Loop Antenna	Schwarzbeck	FMZB 1513-60B	1513-60 B-034	Mar. 30, 2025
2	MXE EMI Receiver	Keysight	N9038A	MY56400091	Dec. 22, 2024
3	Cable	N/A	RW2350-3.8A-NMB M-1.5M	N/A	Jun. 10, 2024
4	966 Chamber room	ETS	9*6*6	N/A	Jul. 11, 2024
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	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. 13,2 024
3	Preamplifier	EMC INSTRUMENT	EMC001330	980998	Nov. 17, 2024
4	Cable	RegalWay	LMR400-NMNM-12 .5m	N/A	Jul. 04, 2024
5	Cable	RegalWay	LMR400-NMNM-3 m	N/A	Jul. 04, 2024
6	Cable	RegalWay	LMR400-NMNM-0. 5m	N/A	Jul. 04, 2024
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 17, 2024

For Apr. 20, 2024 ~ Apr. 23, 2024

Radiated Emissions - Above 1 GHz					
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	Receiver	Keysight	N9038A	MY53220133	Oct. 09, 2024
4	Double Ridged Guide Antenna	ETS	3115	75789	May 31, 2024
5	Cable	RegalWay	RWLP50-4.0A-SMS M-12.5M	N/A	Feb. 19, 2025
6	Cable	RegalWay	RWLP50-4.0A-NM RASM-2.5M	N/A	Aug. 08, 2024
7	Cable	RegalWay	RWLP50-4.0A-NM RASMRA-0.8M	N/A	Aug. 08, 2024
8	Low Noise Amplifier	CONNPHY	CLN-18G40G-4330 -K	619413	Jul. 06, 2024
9	Cable	RegalWay	RWLP50-2.6A-2.92 M2.92M-1.1M	N/A	Jul. 26, 2024
10	Cable	Tonscend	HF160-KMKM-3M	N/A	Jul. 26, 2024
11	Broad-Band Horn Antenna	Schwarzbeck	BBHA9170(3m)	9170-319	Jun.20,2024
12	966 Chamber room	CM	9*6*6	N/A	May 17, 2024
13	Attenuator	Talent Microwave	TA10A2-S-18	N/A	N/A
14	Filter	STI	STI15-9912	N/A	Jun. 16, 2024
15	Positioning Controller	MF	MF-7802	N/A	N/A
16	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

For Aug. 30, 2024

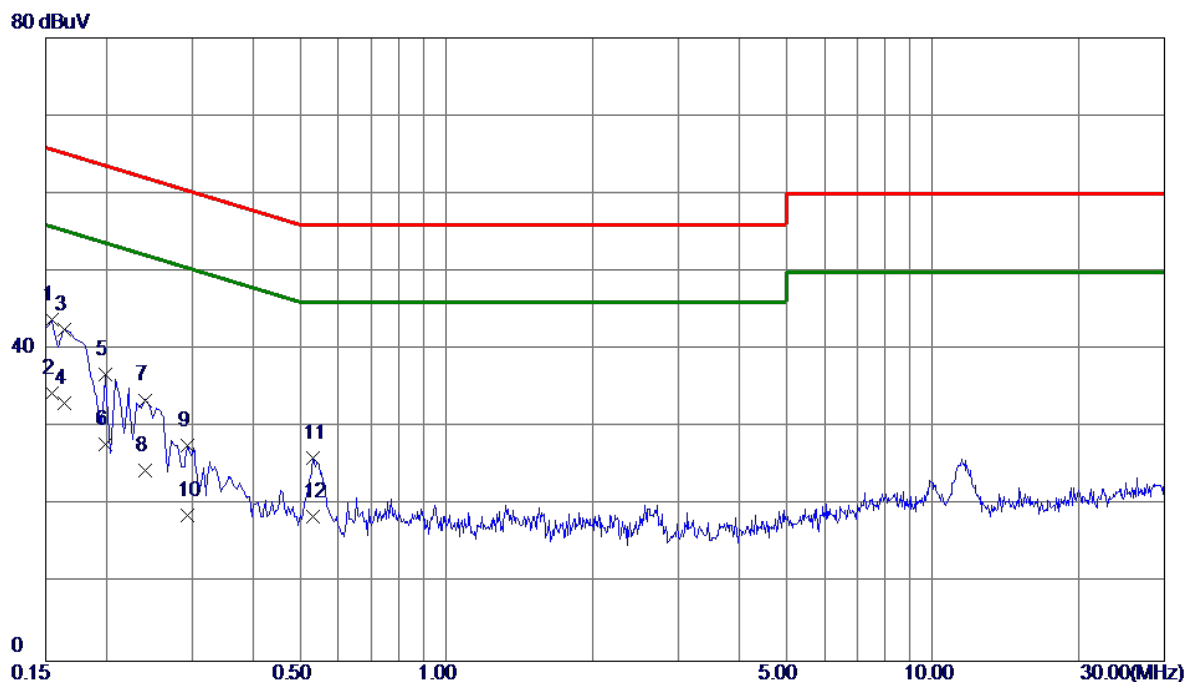
Radiated Emissions - Above 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	MXA Signal Analyzer	KEYSIGHT	N9020B	MY63380204	Nov. 17, 2024
2	Receiver	Agilent	N9038A	MY52130039	Dec. 22, 2024
3	Preamplifier	EMC INSTRUMENT	EMC118A45SE	981001	May 31, 2025
4	EXA Spectrum Analyzer	Keysight	N9010A	MY55150209	Aug. 20, 2025
5	Double Ridged Guide Antenna	ETS	3115	75789	Jun. 15, 2025
6	Cable	RegalWay	RWLP50-4.0A-SMS M-12.5M	N/A	Jul. 03, 2025
7	Cable	RegalWay	RWLP50-4.0A-NM RASM-2.5M	N/A	Jul. 03, 2025
8	Cable	RegalWay	RWLP50-4.0A-NM RASMRA-0.8M	N/A	Jul. 03, 2025
9	Low Noise Amplifier	CONNPHY	CLN-18G40G-4330 -K	619413	Jul. 17, 2025
10	Cable	RegalWay	RWLP50-2.6A-2.92 M2.92M-1.1M	N/A	Jul. 25, 2025
11	Cable	Tonscend	HF160-KMKM-3M	N/A	Jul. 25, 2025
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	Attenuator	Talent Microwave	TA10A2-S-18	N/A	N/A
15	Filter	STI	STI15-9912	N/A	May 31, 2025
16	Positioning Controller	MF	MF-7802	N/A	N/A

Number of Hopping Frequency & Average Time of Occupancy & Hopping Channel Separation & Bandwidth & Maximum Output Power & Conducted Spurious Emission					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100185	May 31, 2025
2	Attenuator	Talent Microwave	TA10A0-S-26.5	N/A	N/A
3	DC Block	N/A	N/A	N/A	N/A
4	Measurement Software	BTL	BTL Conducted Test	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 Mode_1Mbps Channel 00	Phase	Line
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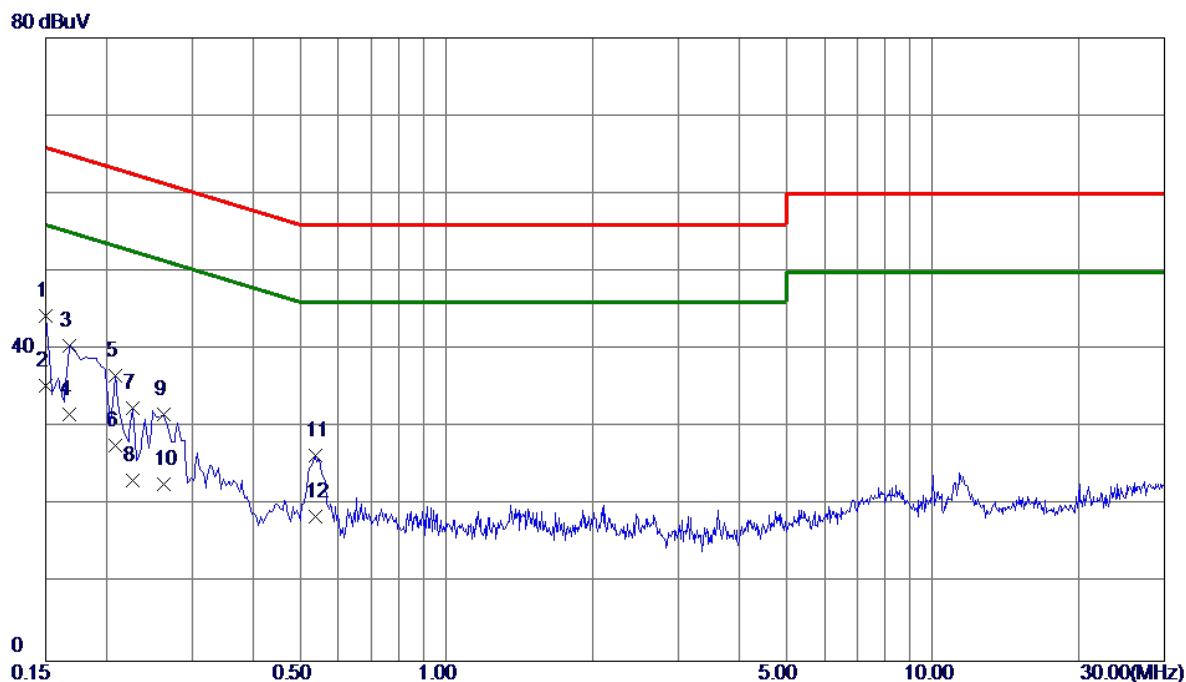


No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.1544	33.91	9.97	43.88	65.76	-21.88	QP	
2 *	0.1544	24.40	9.97	34.37	55.76	-21.39	AVG	
3	0.1635	32.63	9.97	42.60	65.28	-22.68	QP	
4	0.1635	23.10	9.97	33.07	55.28	-22.21	AVG	
5	0.1995	26.79	9.98	36.77	63.63	-26.86	QP	
6	0.1995	17.80	9.98	27.78	53.63	-25.85	AVG	
7	0.2400	23.47	10.05	33.52	62.10	-28.58	QP	
8	0.2400	14.49	10.05	24.54	52.10	-27.56	AVG	
9	0.2940	17.57	10.16	27.73	60.41	-32.68	QP	
10	0.2940	8.60	10.16	18.76	50.41	-31.65	AVG	
11	0.5324	15.32	10.69	26.01	56.00	-29.99	QP	
12	0.5324	7.90	10.69	18.59	46.00	-27.41	AVG	

REMARKS:

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

Test Mode	TX Mode_1Mbps Channel 00	Phase	Neutral
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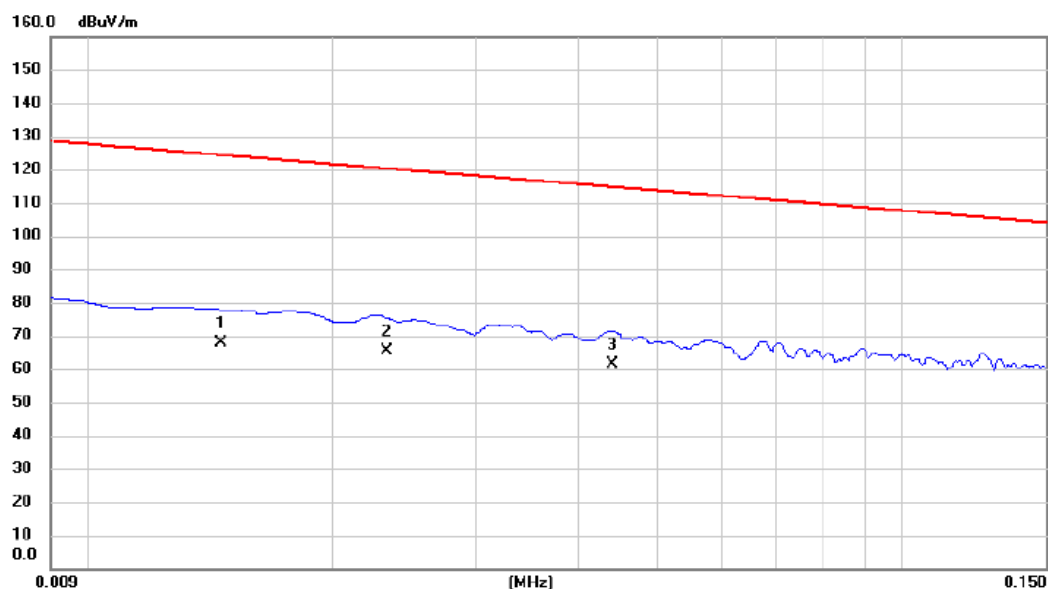
No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.1500	34.45	9.93	44.38	66.00	-21.62	QP	
2 *	0.1500	25.50	9.93	35.43	56.00	-20.57	AVG	
3	0.1680	30.59	9.93	40.52	65.06	-24.54	QP	
4	0.1680	21.70	9.93	31.63	55.06	-23.43	AVG	
5	0.2085	26.62	9.95	36.57	63.26	-26.69	QP	
6	0.2085	17.80	9.95	27.75	53.26	-25.51	AVG	
7	0.2265	22.54	9.99	32.53	62.58	-30.05	QP	
8	0.2265	13.19	9.99	23.18	52.58	-29.40	AVG	
9	0.2625	21.64	10.05	31.69	61.35	-29.66	QP	
10	0.2625	12.61	10.05	22.66	51.35	-28.69	AVG	
11	0.5370	15.73	10.66	26.39	56.00	-29.61	QP	
12	0.5370	7.90	10.66	18.56	46.00	-27.44	AVG	

REMARKS:

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

APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ

Test Mode	TX Mode_1Mbps Channel 00	Polarization	Ant 0°
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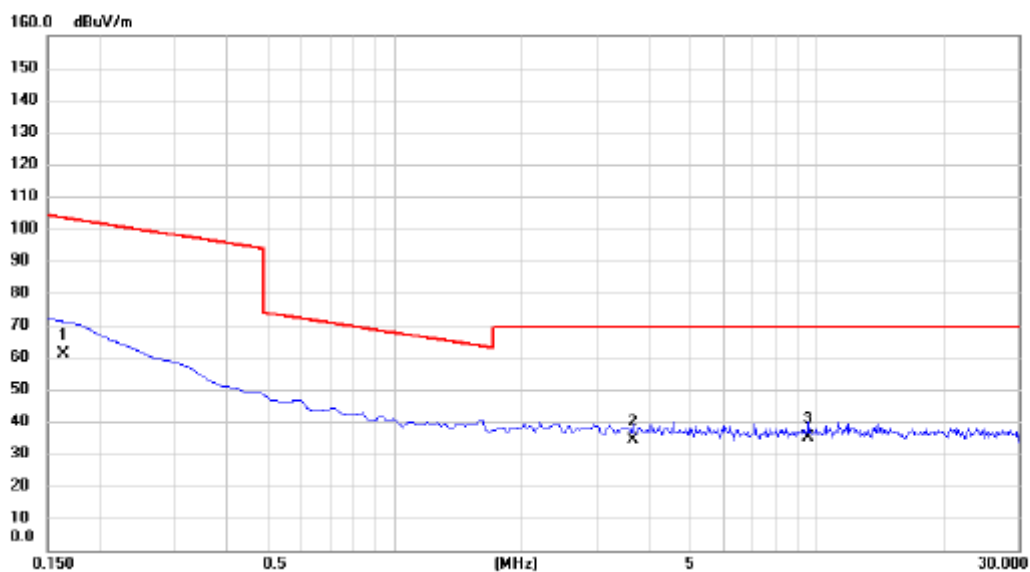


No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.0146	47.28	20.64	67.92	124.32	-56.40	AVG	
2	0.0233	44.57	20.90	65.47	120.26	-54.79	AVG	
3 *	0.0440	40.40	21.17	61.57	114.74	-53.17	AVG	

REMARKS:

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

Test Mode	TX Mode_1Mbps Channel 00	Polarization	Ant 0°
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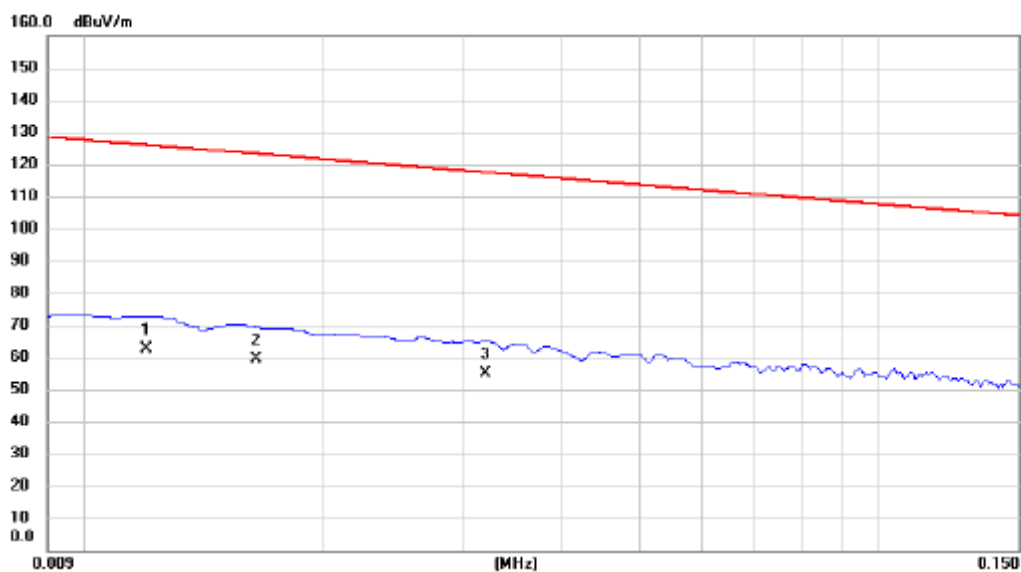


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.1641	39.90	21.24	61.14	103.30	-42.16	AVG	
2		3.6722	13.17	21.13	34.30	69.54	-35.24	QP	
3	*	9.5228	13.79	21.21	35.00	69.54	-34.54	QP	

REMARKS:

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

Test Mode	TX Mode_1Mbps Channel 00	Polarization	Ant 90°
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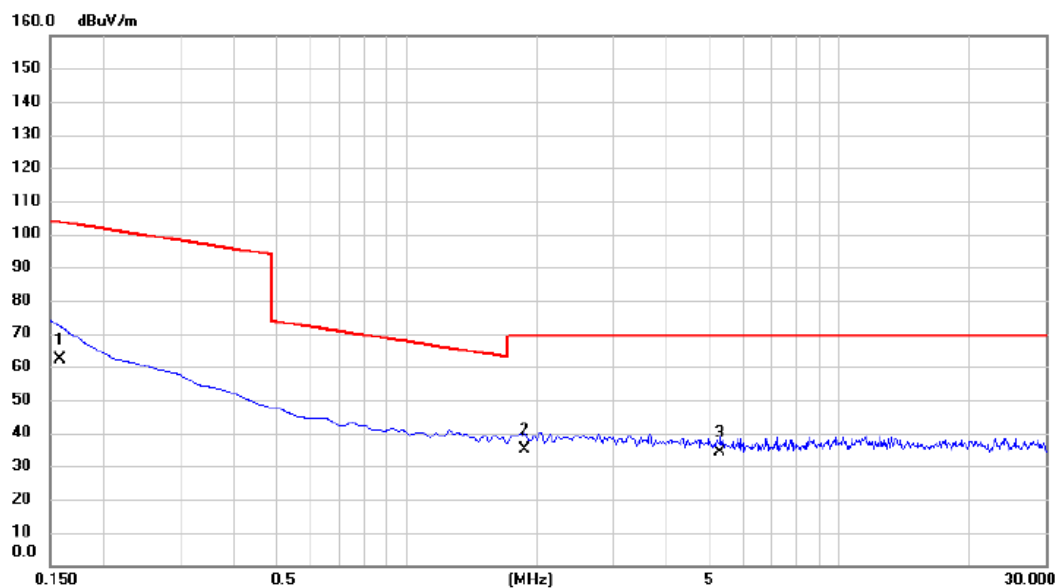


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.0120	42.23	20.56	62.79	126.02	-63.23	AVG	
2		0.0165	38.86	20.70	59.56	123.26	-63.70	AVG	
3	*	0.0320	33.91	21.11	55.02	117.50	-62.48	AVG	

REMARKS:

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

Test Mode	TX Mode_1Mbps Channel 00	Polarization	Ant 90°
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No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	0.1582	41.04	21.25	62.29	103.62	-41.33	AVG	
2 *	1.8811	14.03	21.10	35.13	69.54	-34.41	QP	
3	5.3140	12.97	21.15	34.12	69.54	-35.42	QP	

REMARKS:

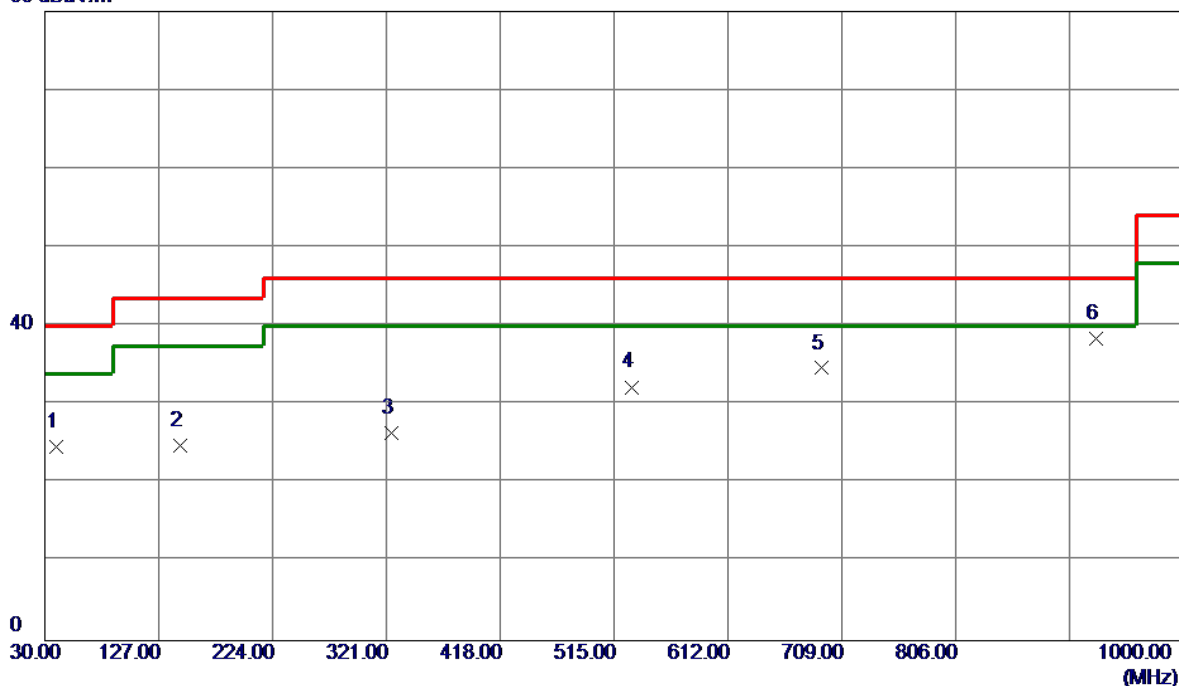
(1) Measurement Value = Reading Level + Correct Factor.

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

APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

Test Mode	TX Mode_1Mbps Channel 00	Polarization	Vertical
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80 dBuV/m



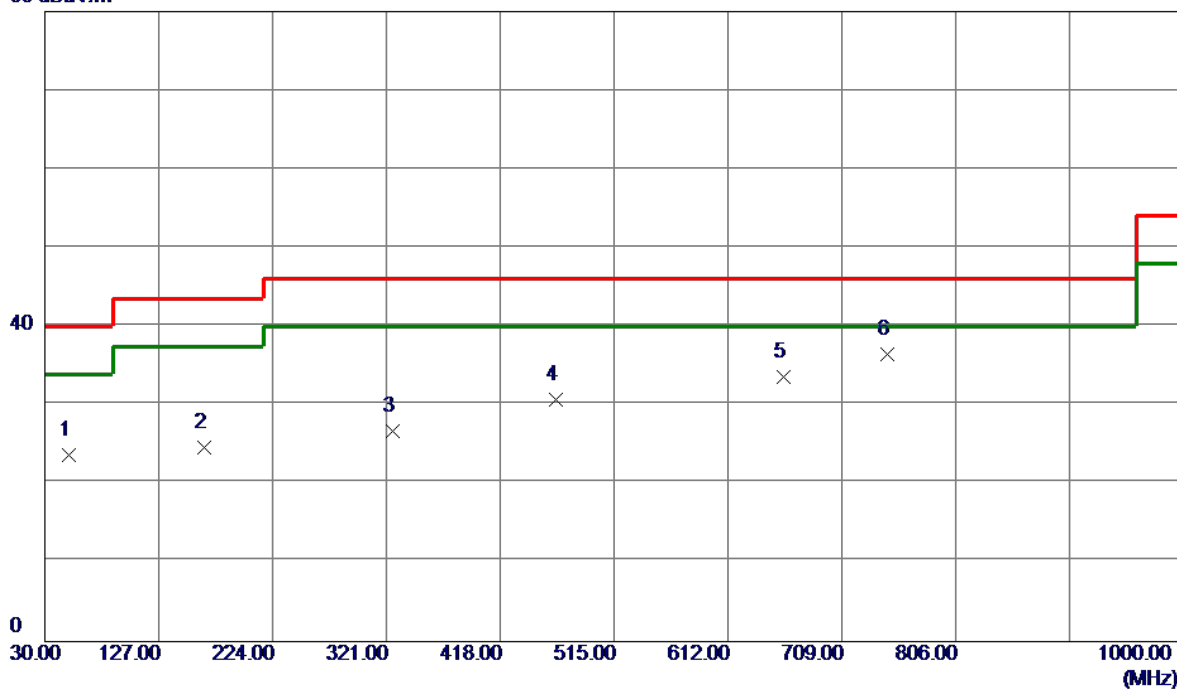
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	39.7000	36.47	-11.81	24.66	40.00	-15.34	Peak	
2	145.4299	36.23	-11.46	24.77	43.50	-18.73	Peak	
3	325.3650	36.35	-9.90	26.45	46.00	-19.55	Peak	
4	530.0349	37.76	-5.52	32.24	46.00	-13.76	Peak	
5	692.0250	37.18	-2.54	34.64	46.00	-11.36	Peak	
6 *	925.7950	38.10	0.24	38.34	46.00	-7.66	Peak	

REMARKS:

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

Test Mode	TX Mode_1Mbps Channel 00	Polarization	Horizontal
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80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	50.3700	34.93	-11.31	23.62	40.00	-16.38	Peak	
2	165.3150	35.75	-11.12	24.63	43.50	-18.87	Peak	
3	326.3350	36.53	-9.87	26.66	46.00	-19.34	Peak	
4	465.0450	37.31	-6.64	30.67	46.00	-15.33	Peak	
5	659.0450	36.44	-2.89	33.55	46.00	-12.45	Peak	
6 *	748.2849	37.83	-1.28	36.55	46.00	-9.45	Peak	

REMARKS:

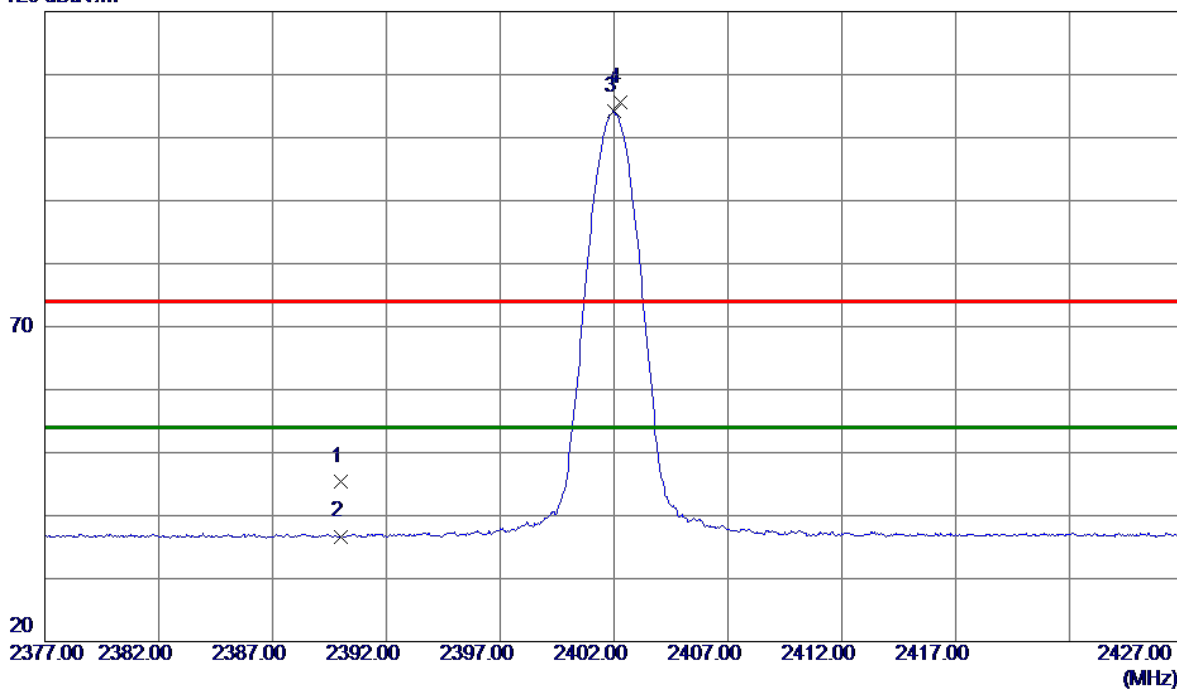
(1) Measurement Value = Reading Level + Correct Factor.

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

APPENDIX D - RADIATED EMISSION - ABOVE 1000 MHZ

Test Mode	TX 2402 MHz_CH00_1Mbps	Polarization	Horizontal
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120 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	36.97	8.51	45.48	74.00	-28.52	Peak	
2	2390.0000	28.19	8.51	36.70	54.00	-17.30	AVG	
3 *	2402.0000	95.63	8.51	104.14	54.00	50.14	AVG	No Limit
4	2402.2500	97.14	8.51	105.65	74.00	31.65	Peak	No Limit

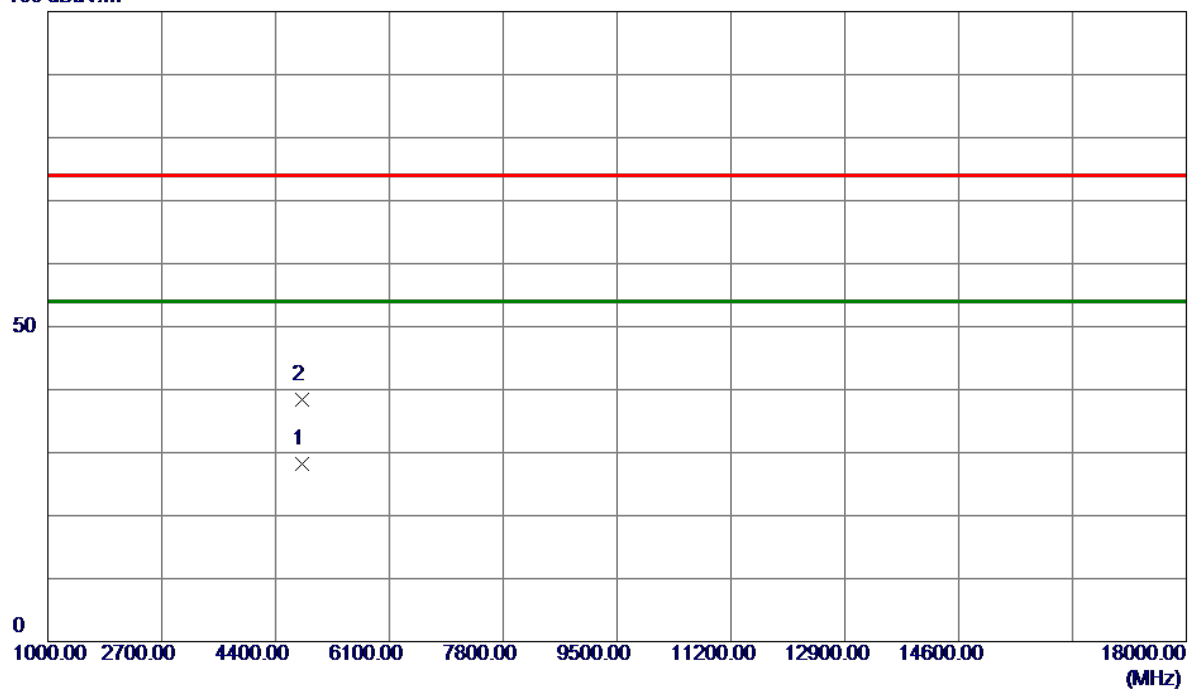
REMARKS:

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

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

Test Mode	TX 2402 MHz _CH00_1Mbps	Polarization	Horizontal
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100 dBuV/m



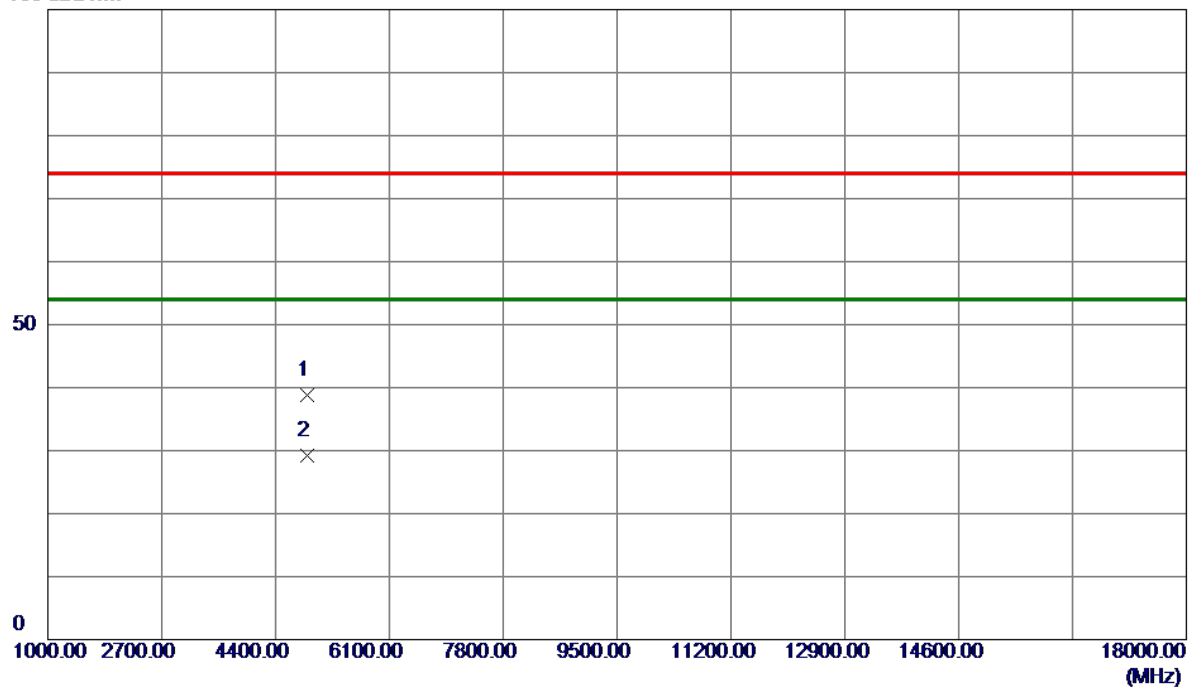
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4803.8800	25.87	2.41	28.28	54.00	-25.72	AVG	
2	4804.4169	36.01	2.41	38.42	74.00	-35.58	Peak	

REMARKS:

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

Test Mode	TX 2440 MHz _CH19_1Mbps	Polarization	Horizontal
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100 dBuV/m



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4879.1300	36.18	2.59	38.77	74.00	-35.23	Peak	
2 *	4879.9270	26.68	2.59	29.27	54.00	-24.73	AVG	

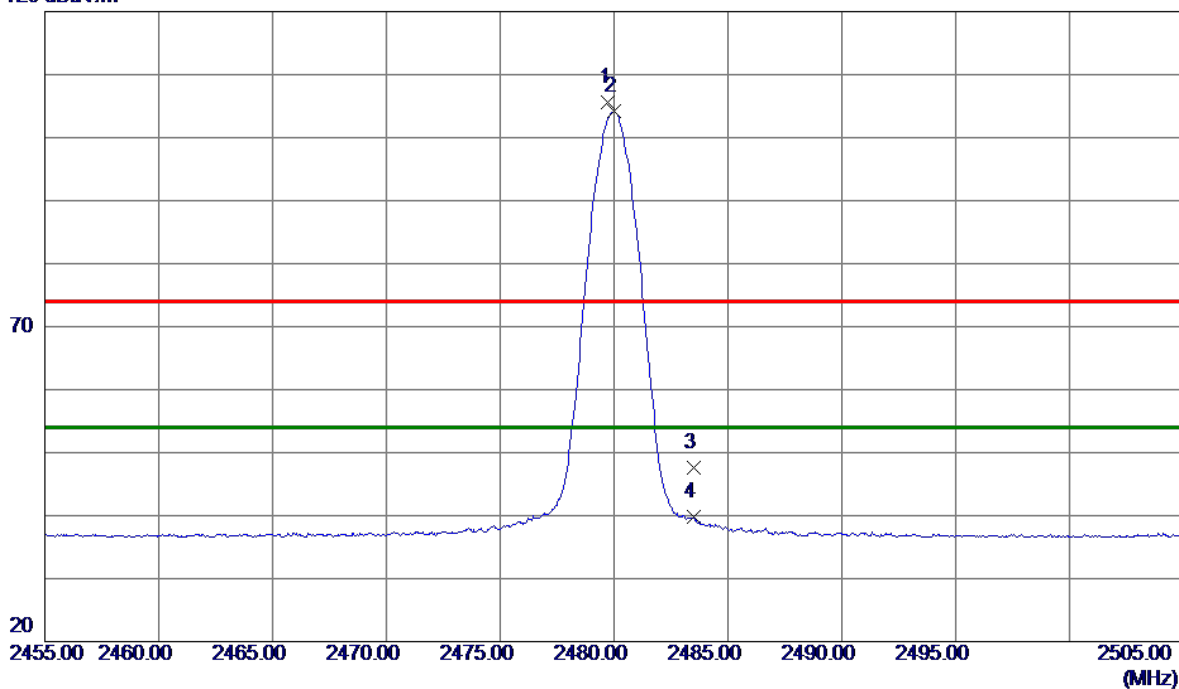
REMARKS:

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

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

Test Mode	TX 2480 MHz _CH39_1Mbps	Polarization	Horizontal
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120 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2479.7500	97.13	8.48	105.61	74.00	31.61	Peak	No Limit
2 *	2479.9750	95.66	8.48	104.14	54.00	50.14	AVG	No Limit
3	2483.5000	39.09	8.48	47.57	74.00	-26.43	Peak	
4	2483.5000	31.27	8.48	39.75	54.00	-14.25	AVG	

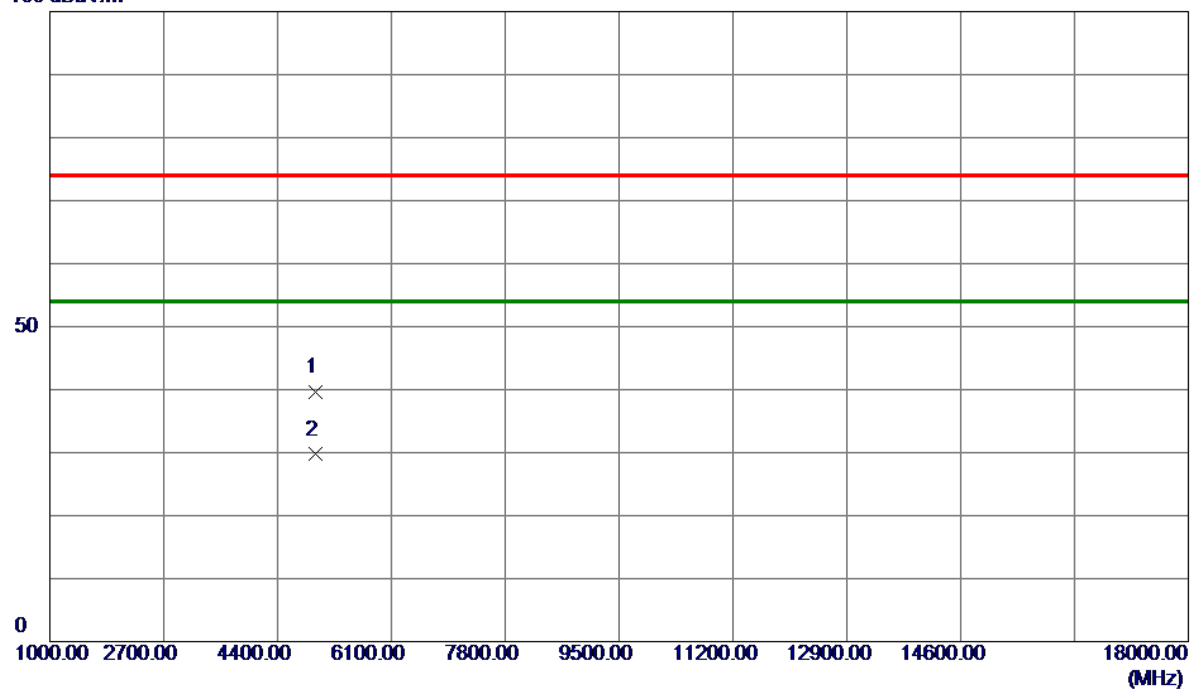
REMARKS:

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

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

Test Mode	TX 2480 MHz _CH39_1Mbps	Polarization	Horizontal
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100 dBuV/m



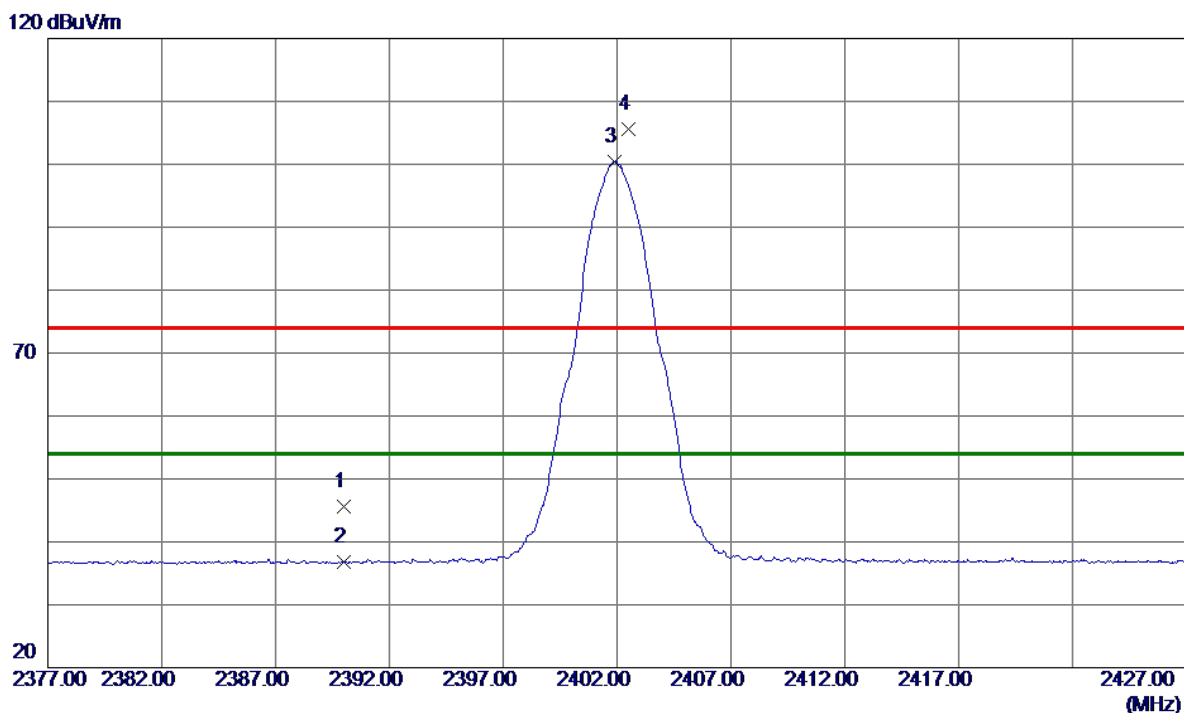
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4959.6770	36.90	2.78	39.68	74.00	-34.32	Peak	
2 *	4959.7650	26.92	2.78	29.70	54.00	-24.30	AVG	

REMARKS:

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

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

Test Mode	TX 2402 MHz _CH00_2Mbps	Polarization	Horizontal
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No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	37.02	8.51	45.53	74.00	-28.47	Peak	
2	2390.0000	28.23	8.51	36.74	54.00	-17.26	AVG	
3 *	2401.9000	91.96	8.51	100.47	54.00	46.47	AVG	No Limit
4	2402.5000	97.16	8.51	105.67	74.00	31.67	Peak	No Limit

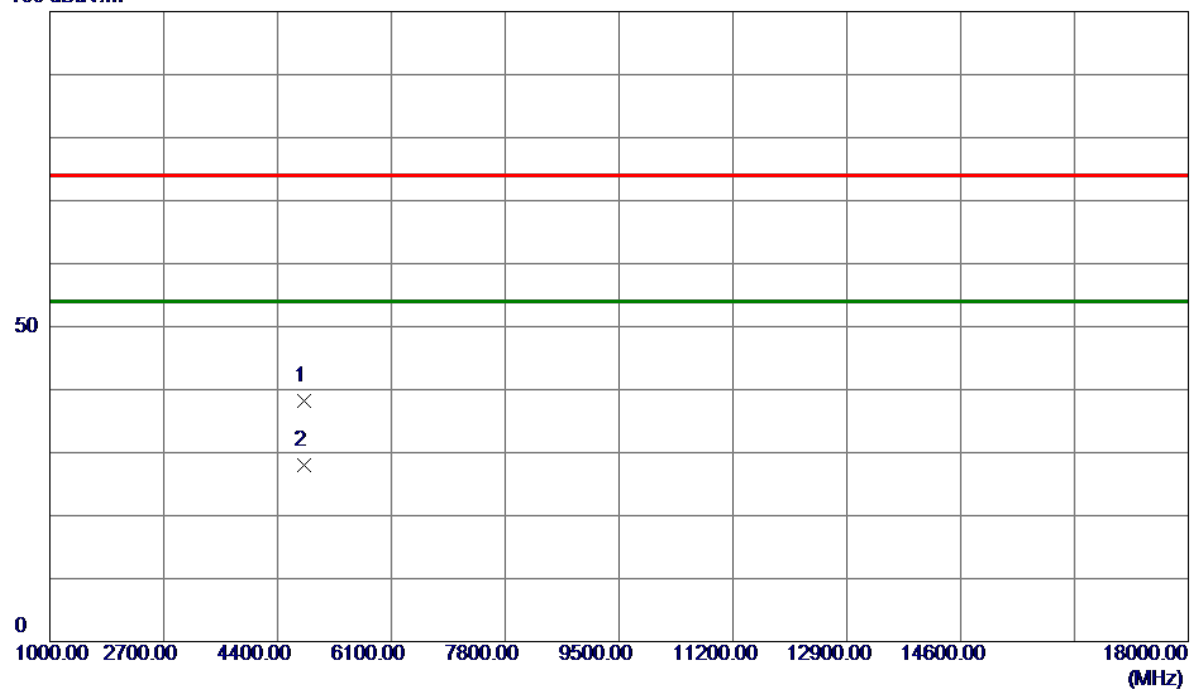
REMARKS:

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

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

Test Mode	TX 2402 MHz_CH00_2Mbps	Polarization	Horizontal
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100 dBuV/m



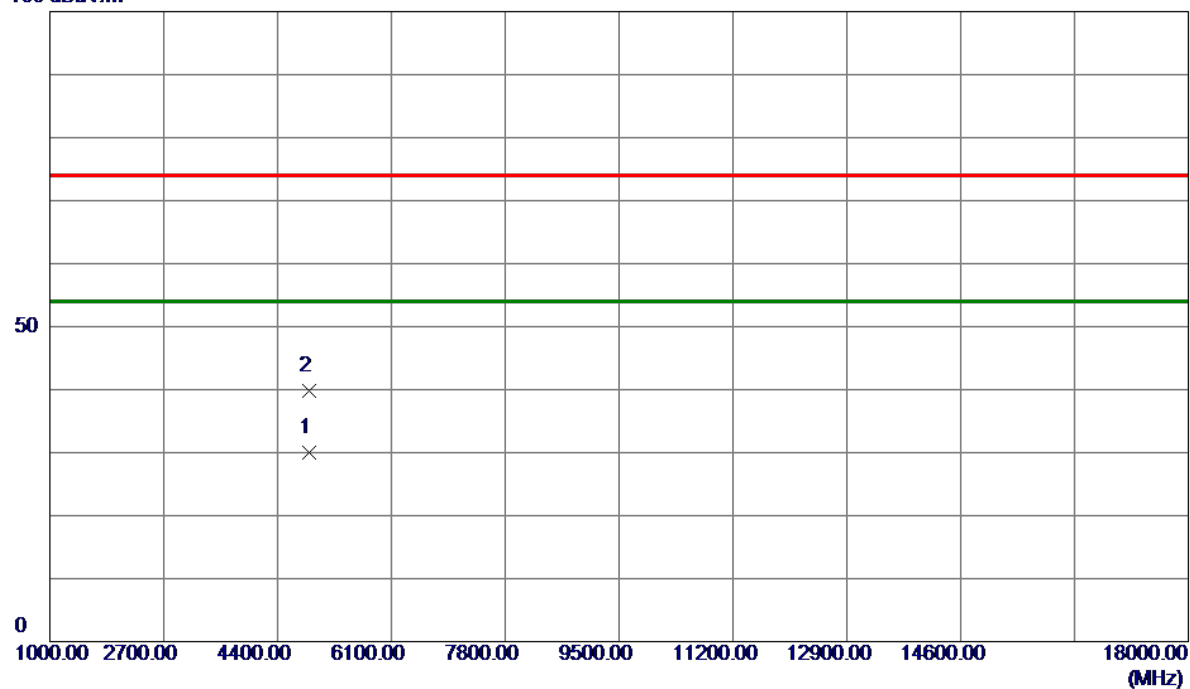
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4803.2050	35.76	2.41	38.17	74.00	-35.83	Peak	
2 *	4803.9129	25.61	2.41	28.02	54.00	-25.98	AVG	

REMARKS:

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

Test Mode	TX 2440 MHz _CH19_2Mbps	Polarization	Horizontal
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100 dBuV/m

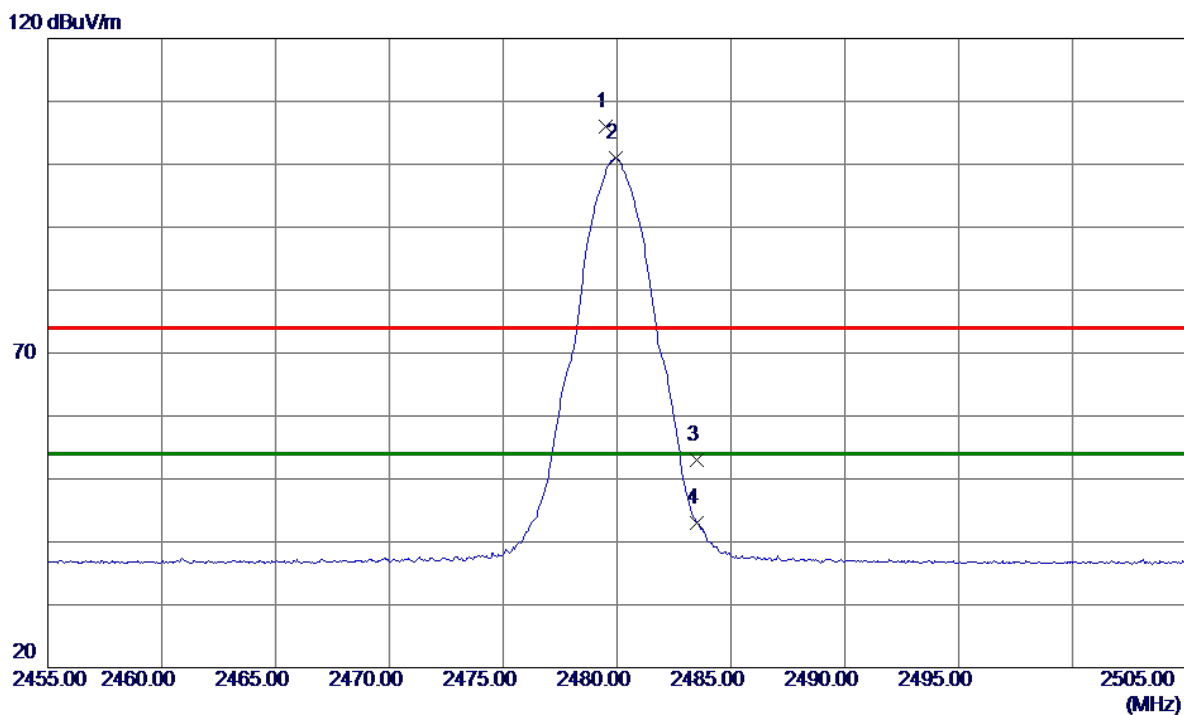


No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4879.9620	27.45	2.59	30.04	54.00	-23.96	AVG	
2	4880.0200	37.14	2.59	39.73	74.00	-34.27	Peak	

REMARKS:

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

Test Mode	TX 2480 MHz _CH39_2Mbps	Polarization	Horizontal
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No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2479.5000	97.61	8.48	106.09	74.00	32.09	Peak	No Limit
2 *	2479.9250	92.49	8.48	100.97	54.00	46.97	AVG	No Limit
3	2483.5000	44.54	8.48	53.02	74.00	-20.98	Peak	
4	2483.5000	34.55	8.48	43.03	54.00	-10.97	AVG	

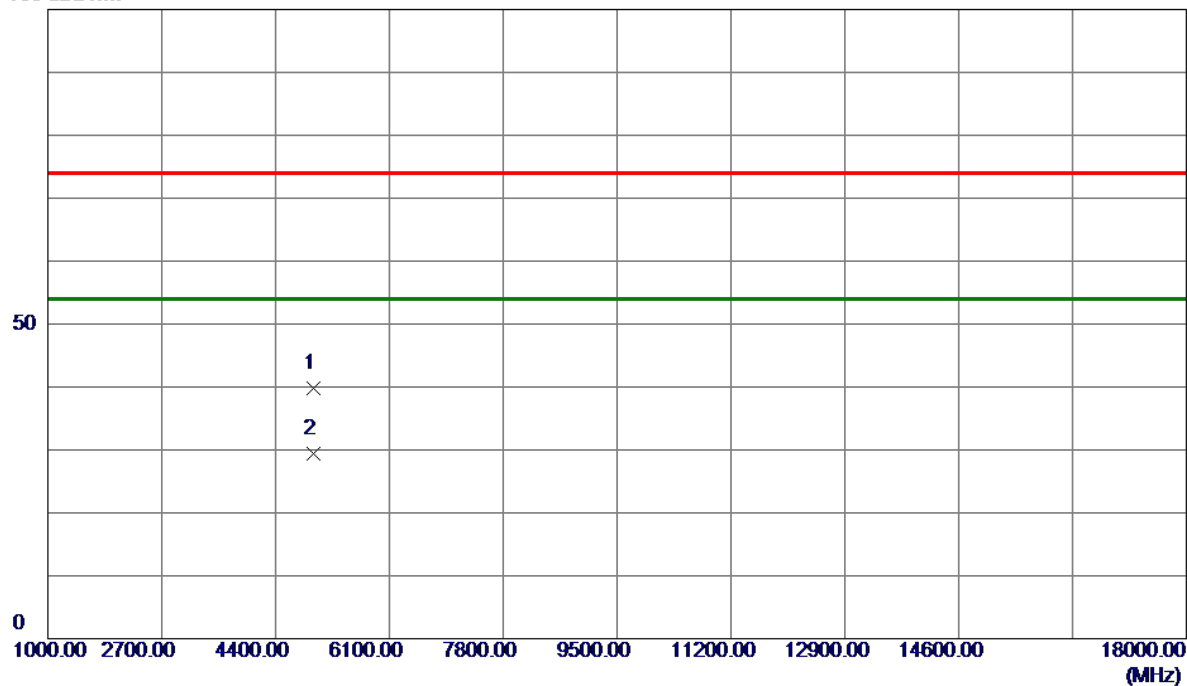
REMARKS:

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

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

Test Mode	TX 2480 MHz _CH39_2Mbps	Polarization	Horizontal
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100 dBuV/m



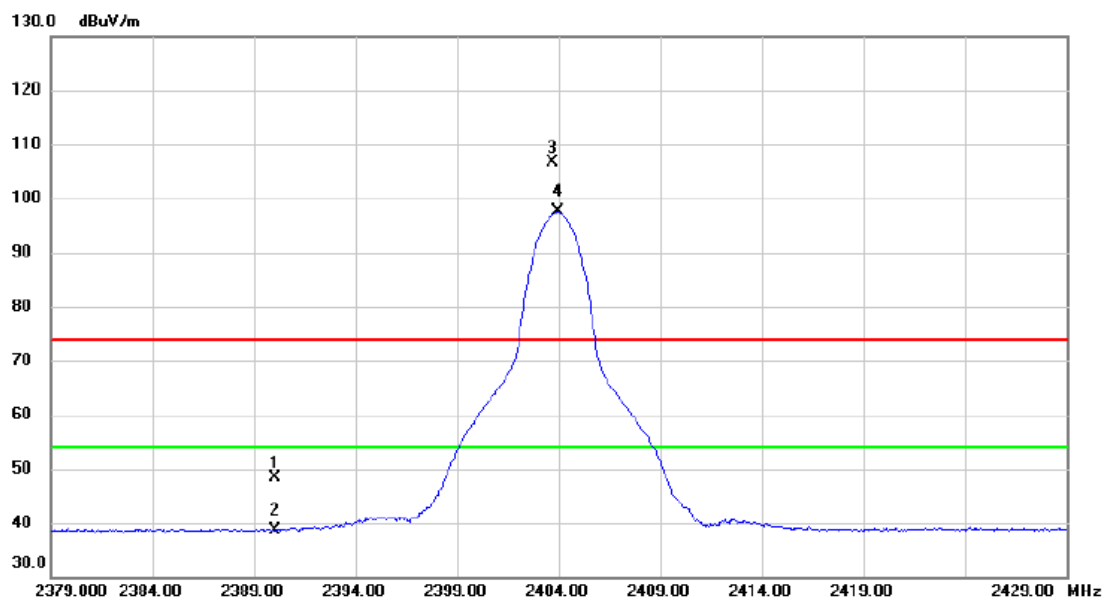
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4959.0870	37.10	2.77	39.87	74.00	-34.13	Peak	
2 *	4959.9320	26.60	2.78	29.38	54.00	-24.62	AVG	

REMARKS:

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

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

Test Mode	TX 2404 MHz _CH01_4Mbps	Polarization	Vertical
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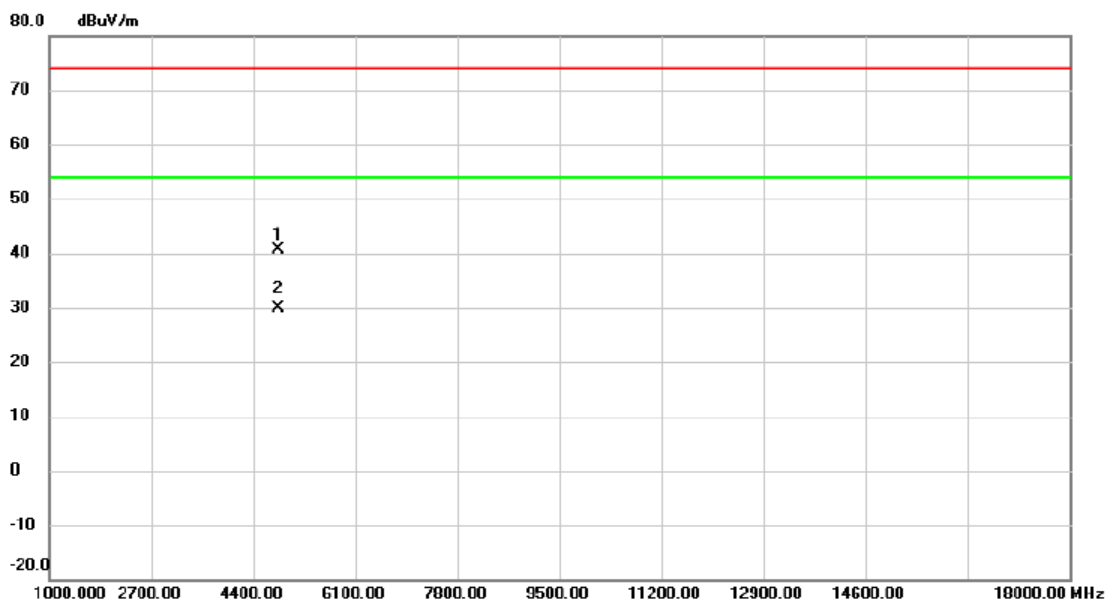


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2390.000	38.07	10.40	48.47	74.00	-25.53	peak	
2		2390.000	28.26	10.40	38.66	54.00	-15.34	AVG	
3	X	2403.700	96.11	10.42	106.53	74.00	32.53	peak	No Limit
4	*	2403.975	87.09	10.42	97.51	54.00	43.51	AVG	No Limit

REMARKS:

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

Test Mode	TX 2404 MHz_CH01_4Mbps	Polarization	Vertical
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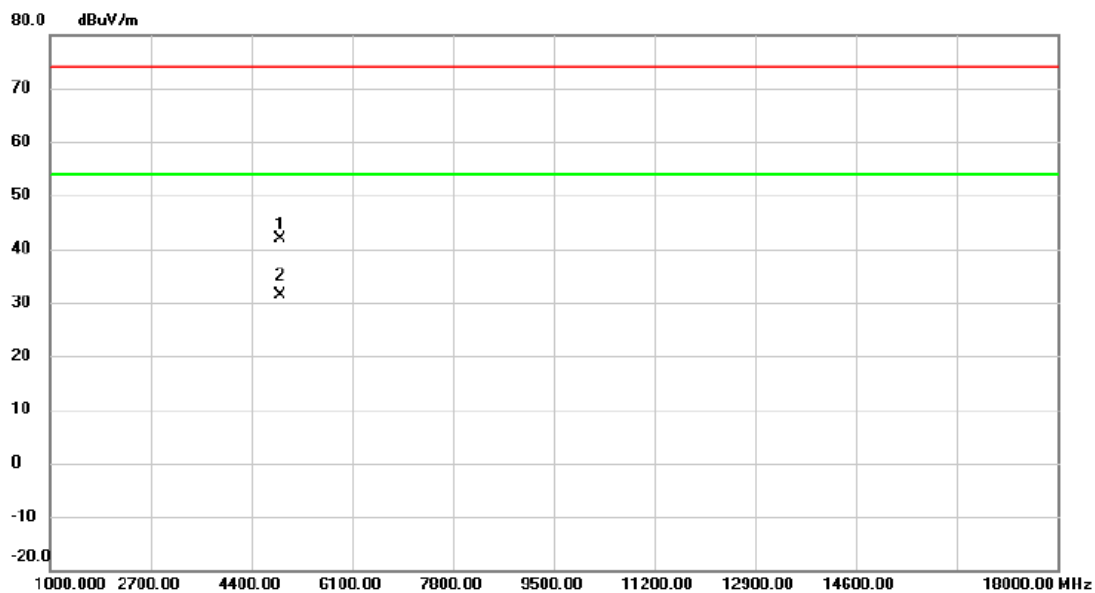


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4811.510	35.85	4.70	40.55	74.00	-33.45	peak	
2	*	4814.470	25.29	4.71	30.00	54.00	-24.00	AVG	

REMARKS:

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

Test Mode	TX 2440 MHz _CH19_4Mbps	Polarization	Horizontal
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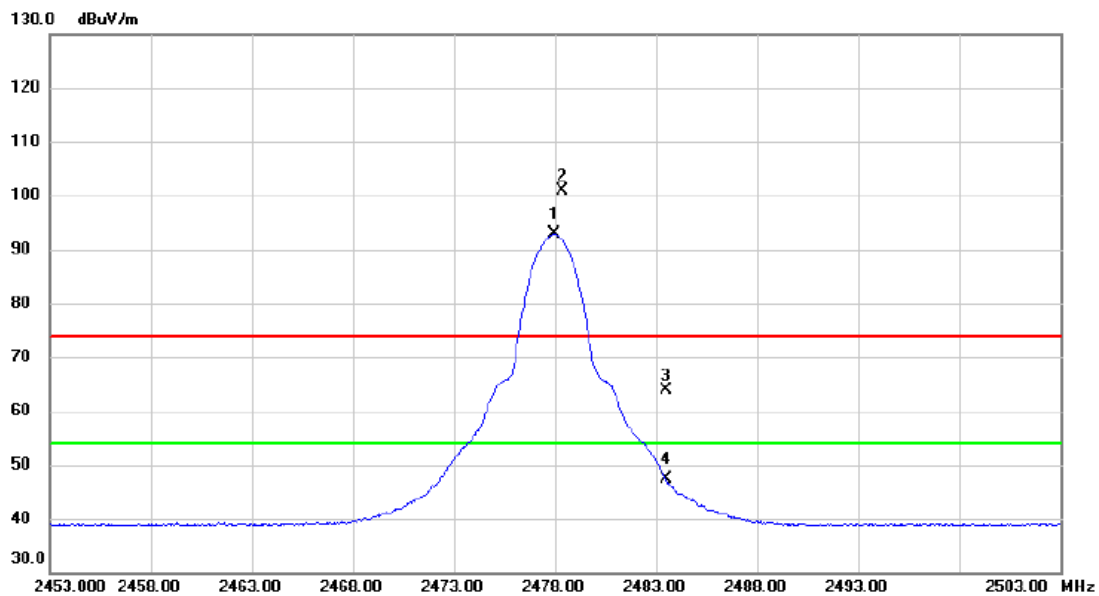


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4876.260	37.08	4.82	41.90	74.00	-32.10	peak	
2	*	4879.560	26.55	4.82	31.37	54.00	-22.63	AVG	

REMARKS:

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

Test Mode	TX 2478 MHz _CH38_4Mbps	Polarization	Horizontal
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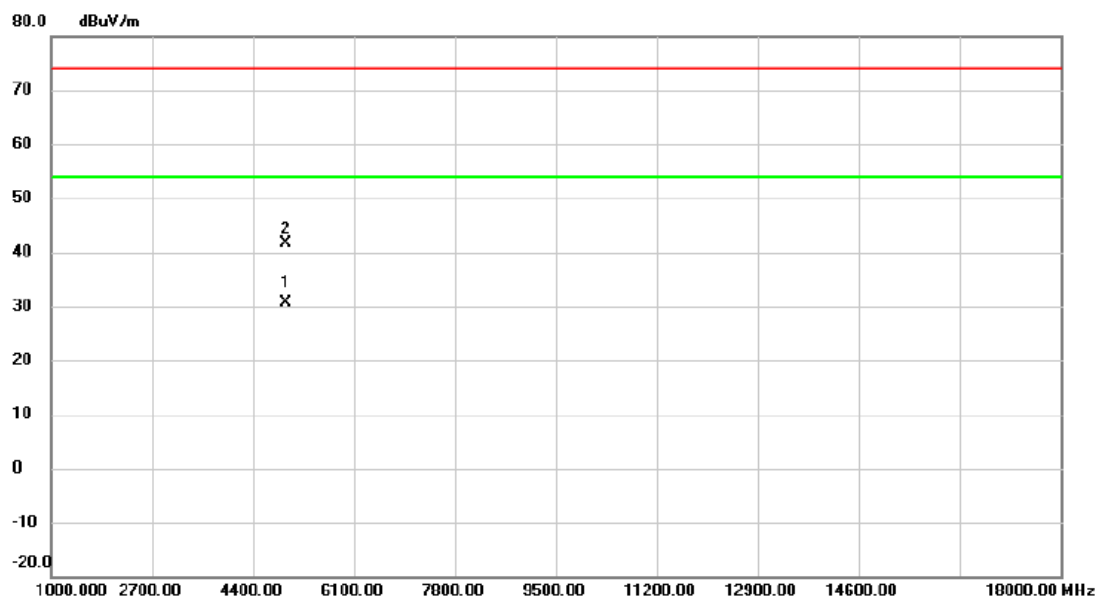


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	2477.950	82.39	10.50	92.89	54.00	38.89	AVG	No Limit
2	X	2478.350	90.26	10.50	100.76	74.00	26.76	peak	No Limit
3		2483.500	53.40	10.51	63.91	74.00	-10.09	peak	
4		2483.500	36.87	10.51	47.38	54.00	-6.62	AVG	

REMARKS:

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

Test Mode	TX 2478 MHz _CH38_4Mbps	Polarization	Horizontal
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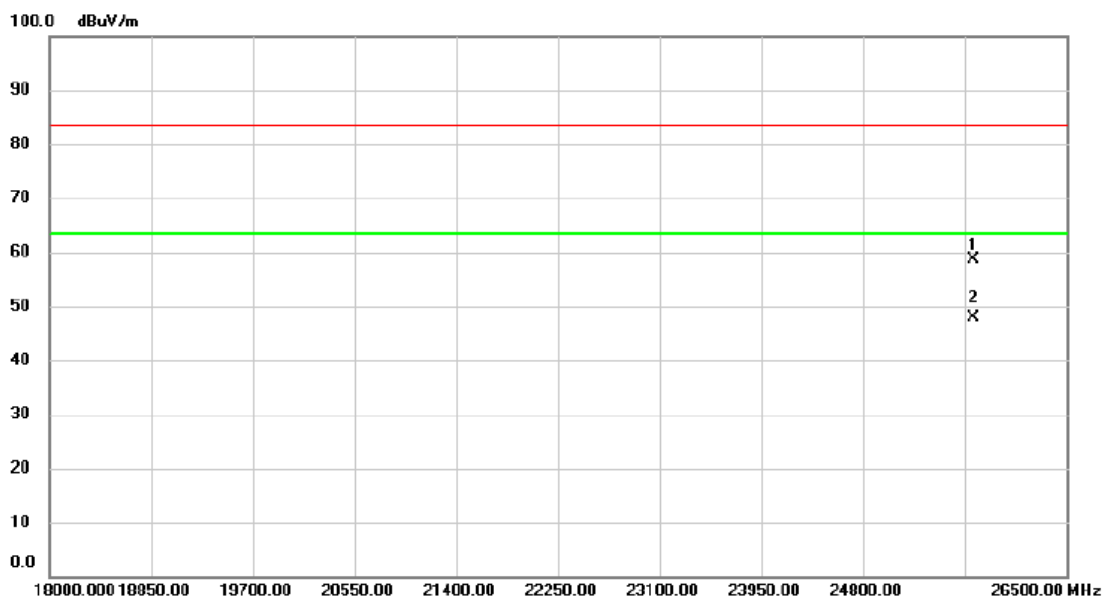


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4959.080	25.69	4.97	30.66	54.00	-23.34	AVG	
2		4963.060	36.61	4.97	41.58	74.00	-32.42	peak	

REMARKS:

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

Test Mode	TX Mode_1Mbps Channel 00	Polarization	Vertical
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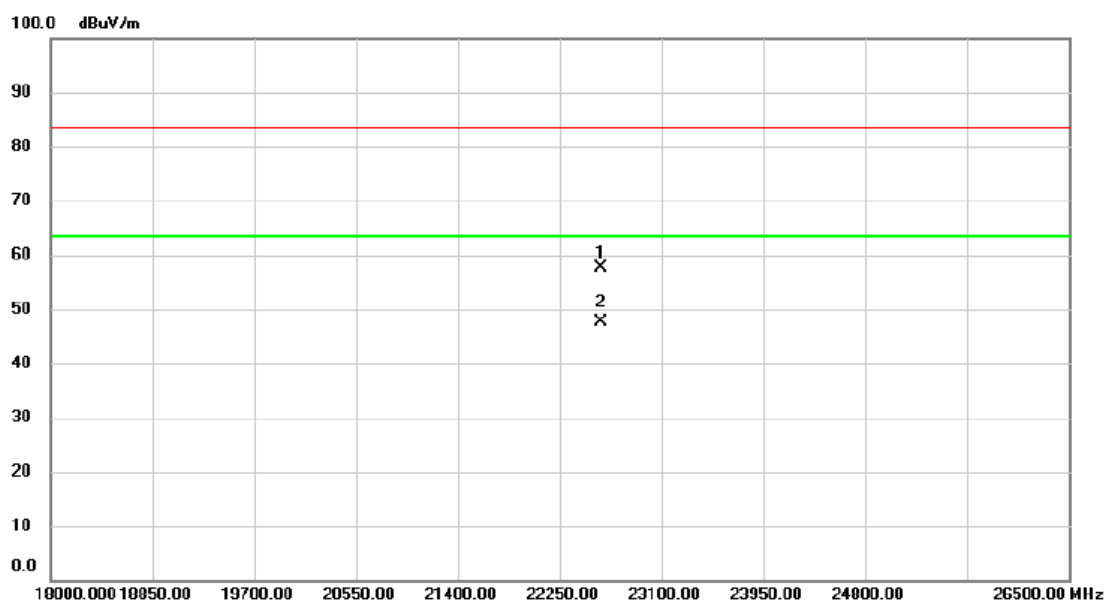


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		25722.25	48.64	10.02	58.66	83.50	-24.84	peak	
2	*	25722.25	37.98	10.02	48.00	63.50	-15.50	AVG	

REMARKS:

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

Test Mode	TX Mode_1Mbps Channel 00	Polarization	Horizontal
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No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		22598.50	49.07	8.68	57.75	83.50	-25.75	peak	
2	*	22598.50	38.97	8.68	47.65	63.50	-15.85	AVG	

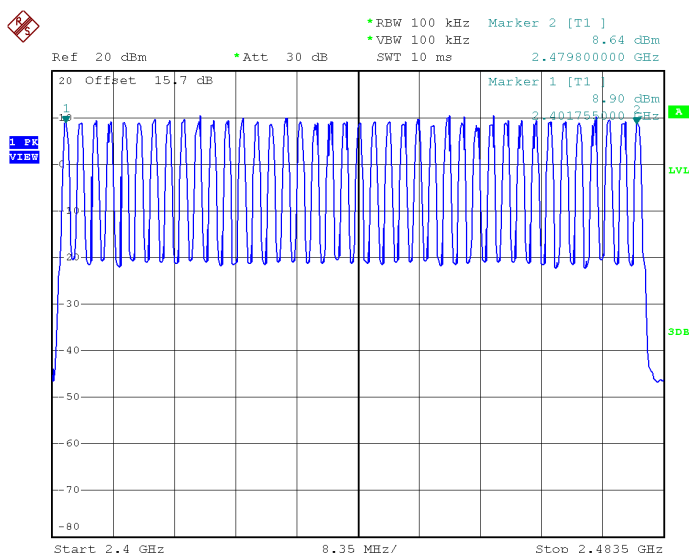
REMARKS:

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

APPENDIX E - NUMBER OF HOPPING FREQUENCY

Test Mode:	TX Mode_1Mbps
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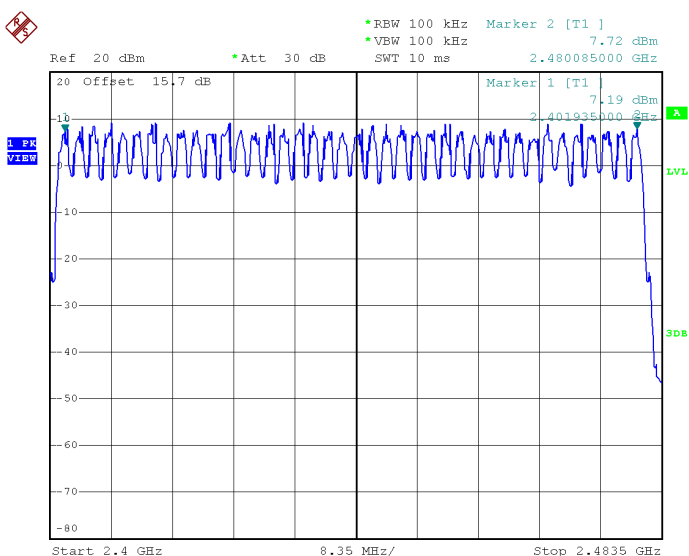
Test Mode	Hopping Mode_1Mbps	Limit	Test Result
Number of Hopping Frequency	40	15	Pass



Date: 15.AUG.2024 10:37:12

Test Mode:	TX Mode_2Mbps
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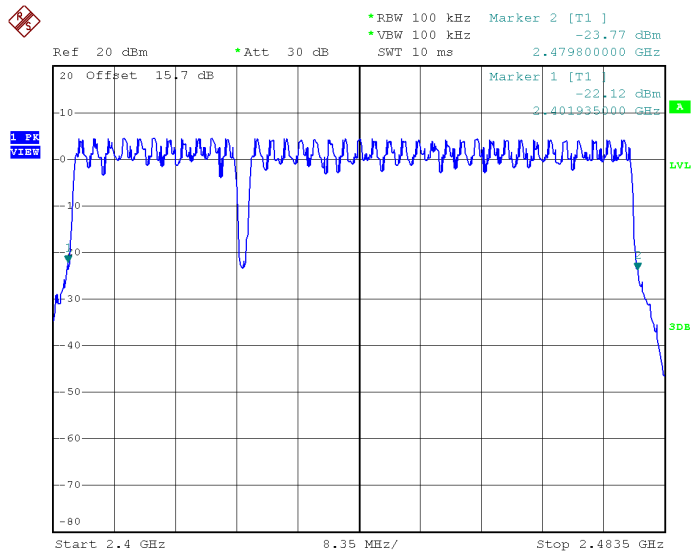
Test Mode	Hopping Mode_2Mbps	Limit	Test Result
Number of Hopping Frequency	40	15	Pass



Date: 15.AUG.2024 10:57:09

Test Mode:	TX Mode_4Mbps
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Test Mode	Hopping Mode_2Mbps	Limit	Test Result
Number of Hopping Frequency	37	15	Pass

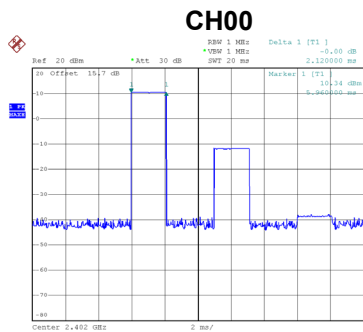


Date: 27.AUG.2024 17:11:57

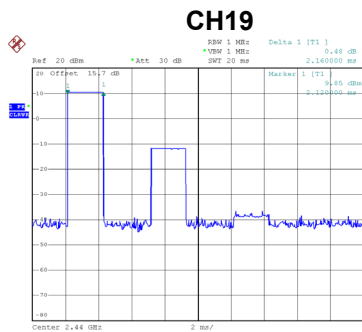
APPENDIX F - AVERAGE TIME OF OCCUPANCY

Test Mode	Hopping Mode_1Mbps
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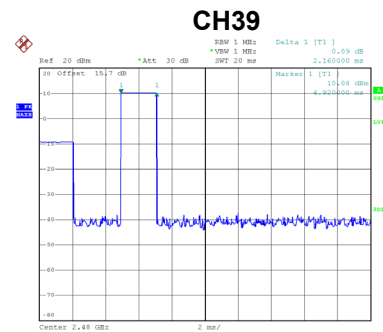
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH	2402	2.1200	0.2261	0.4000	Pass
DH	2441	2.1600	0.2304	0.4000	Pass
DH	2480	2.1600	0.2304	0.4000	Pass



Date: 15.AUG.2024 10:40:28



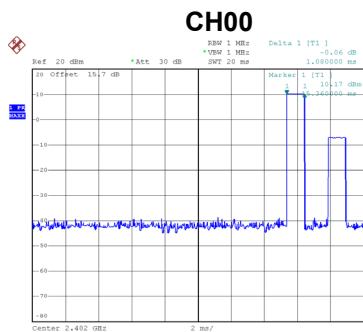
Date: 15.AUG.2024 10:42:17



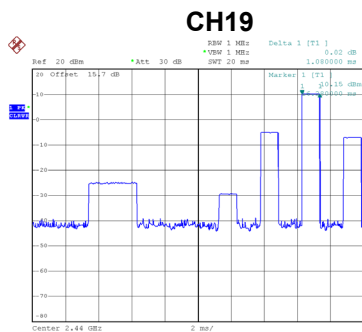
Date: 15.AUG.2024 10:42:47

Test Mode	Hopping Mode_2Mbps
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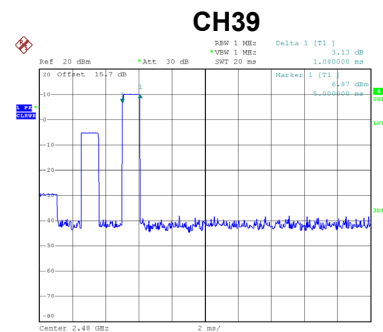
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH	2402	1.0800	0.1152	0.4000	Pass
DH	2441	1.0800	0.1152	0.4000	Pass
DH	2480	1.0800	0.1152	0.4000	Pass



Date: 15.AUG.2024 10:59:00



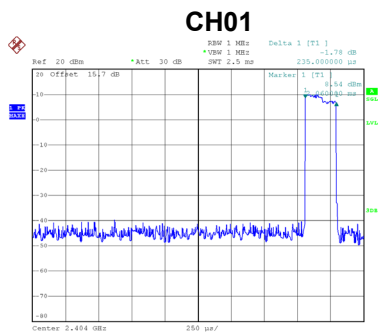
Date: 15.AUG.2024 11:00:10



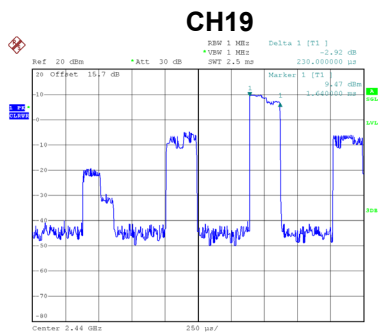
Date: 15.AUG.2024 11:00:35

Test Mode	Hopping Mode_4Mbps
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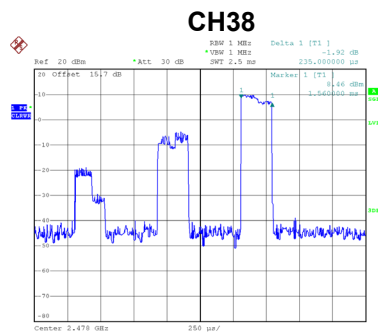
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH	2404	0.2350	0.0752	0.4000	Pass
DH	2440	0.2300	0.0736	0.4000	Pass
DH	2478	0.2350	0.0752	0.4000	Pass



Date: 27.AUG.2024 17:16:09



Date: 27.AUG.2024 17:16:32

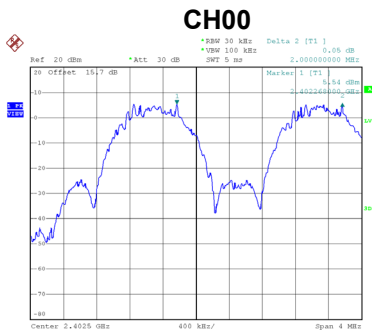


Date: 27.AUG.2024 17:16:37

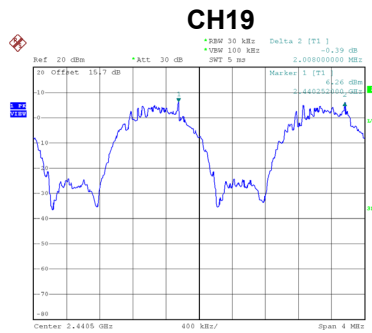
APPENDIX G - HOPPING CHANNEL SEPARATION

Test Mode	Hopping Mode_1Mbps
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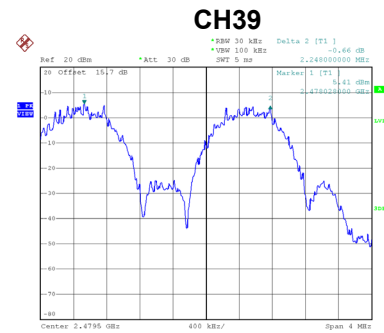
Channel	Frequency (MHz)	Channel Separation (MHz)	2/3 of 20 dB Bandwidth (MHz)	Test Result
00	2402	2.000	0.779	Pass
19	2440	2.008	0.781	Pass
39	2480	2.248	0.793	Pass



Date: 15.AUG.2024 10:34:04



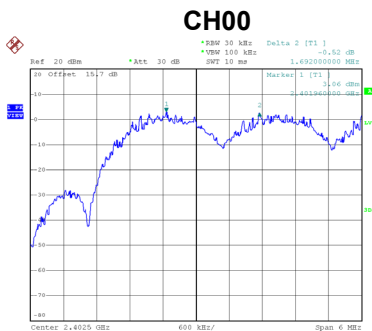
Date: 15.AUG.2024 10:29:06



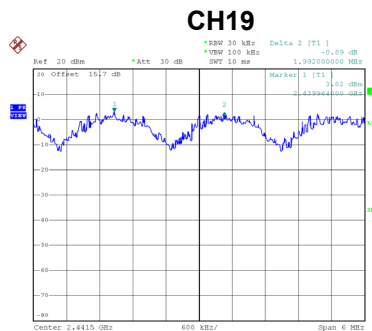
Date: 15.AUG.2024 10:30:50

Test Mode	Hopping Mode_2Mbps
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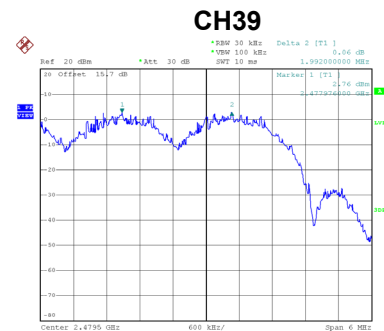
Channel	Frequency (MHz)	Channel Separation (MHz)	2/3 of 20 dB Bandwidth (MHz)	Test Result
00	2402	1.692	1.607	Pass
19	2440	1.992	1.616	Pass
39	2480	1.992	1.576	Pass



Date: 15.AUG.2024 11:04:36



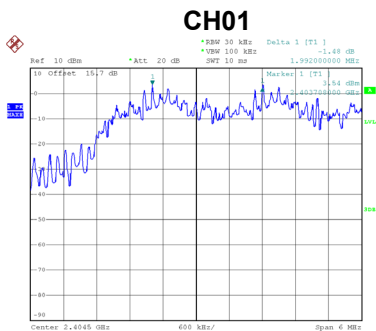
Date: 15.AUG.2024 11:07:06



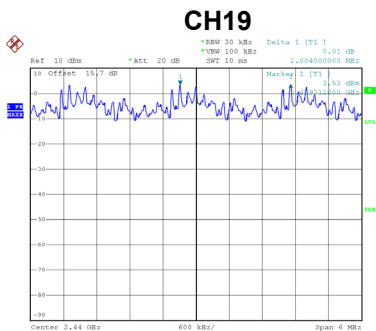
Date: 15.AUG.2024 11:08:40

Test Mode	Hopping Mode_4Mbps
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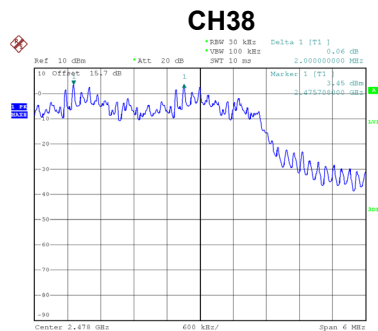
Channel	Frequency (MHz)	Channel Separation (MHz)	2/3 of 20 dB Bandwidth (MHz)	Test Result
01	2404	1.99	1.668	Pass
19	2440	2.00	1.695	Pass
38	2478	2.00	1.700	Pass



Date: 2.SEP.2024 14:24:32



Date: 2.SEP.2024 14:25:53

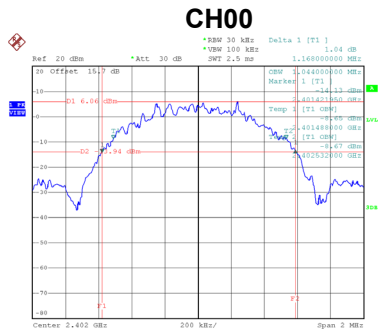


Date: 2.SEP.2024 14:26:46

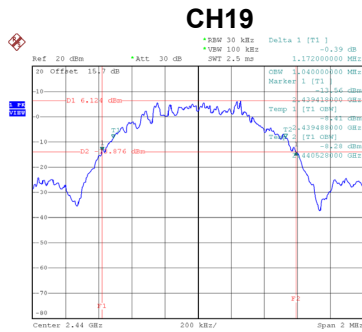
APPENDIX H - BANDWIDTH

Test Mode	TX Mode _1Mbps
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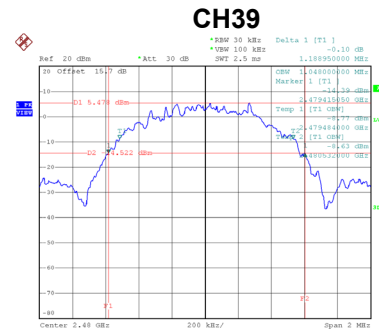
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)
00	2402	1.168	1.044
19	2440	1.172	1.040
39	2480	1.189	1.048



Date: 15.AUG.2024 10:10:46



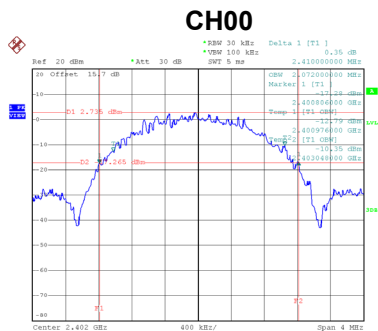
Date: 15.AUG.2024 10:45:02



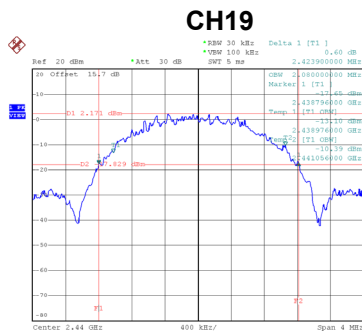
Date: 15.AUG.2024 10:46:28

Test Mode	TX Mode _2Mbps
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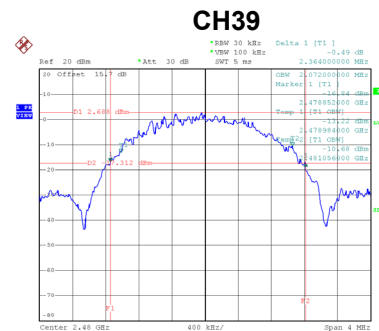
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)
00	2402	2.410	2.072
19	2440	2.424	2.080
39	2480	2.364	2.072



Date: 15.AUG.2024 10:51:21



Date: 15.AUG.2024 10:53:28

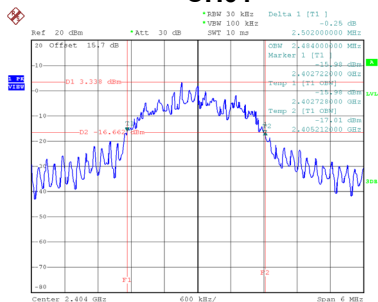


Date: 15.AUG.2024 10:54:21

Test Mode	TX Mode_4Mbps
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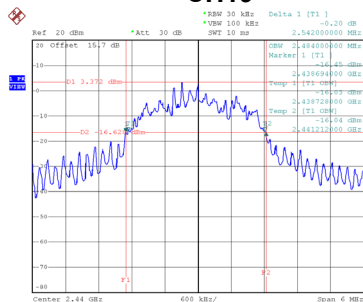
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)
01	2404	2.502	2.484
19	2440	2.542	2.484
38	2478	2.550	2.484

CH01



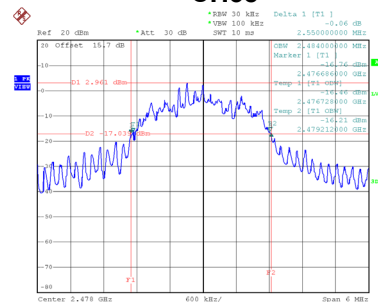
Date: 27.AUG.2024 19:17:37

CH19



Date: 27.AUG.2024 19:18:52

CH38



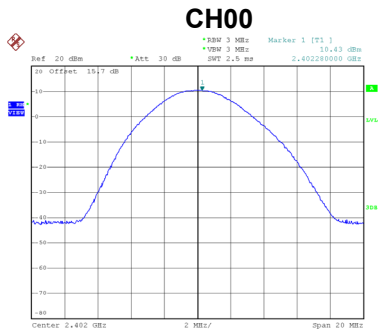
Date: 27.AUG.2024 19:19:52

APPENDIX I - MAXIMUM OUTPUT POWER

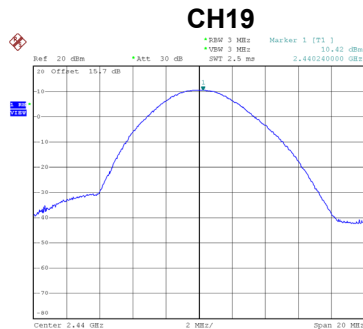
Test Mode	TX Mode _1Mbps
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Channel	Frequency (MHz)	Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Test Result
00	2402	10.43	20.97	0.1250	Pass
19	2440	10.42	20.97	0.1250	Pass
39	2480	10.26	20.97	0.1250	Pass

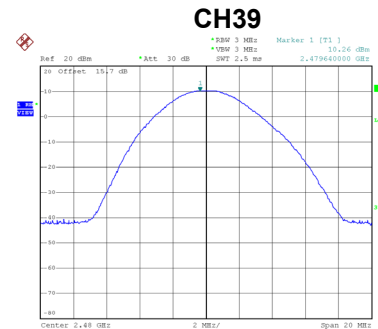
Note: Output power = Measure result + Cable loss



Date: 15.AUG.2024 10:09:43



Date: 15.AUG.2024 10:43:46

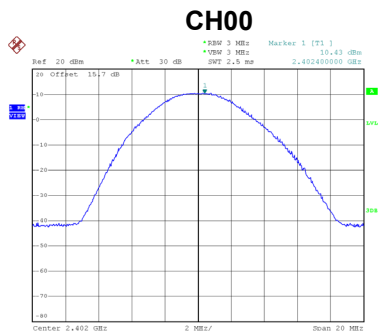


Date: 15.AUG.2024 10:45:41

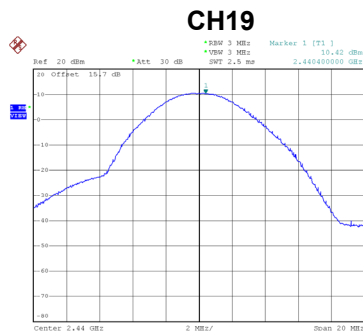
Test Mode	TX Mode _2Mbps
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Channel	Frequency (MHz)	Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Test Result
00	2402	10.43	20.97	0.1250	Pass
19	2440	10.42	20.97	0.1250	Pass
39	2480	10.26	20.97	0.1250	Pass

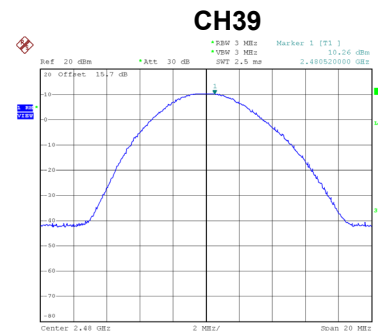
Note: Output power = Measure result + Cable loss



Date: 15.AUG.2024 10:50:38



Date: 15.AUG.2024 10:52:11

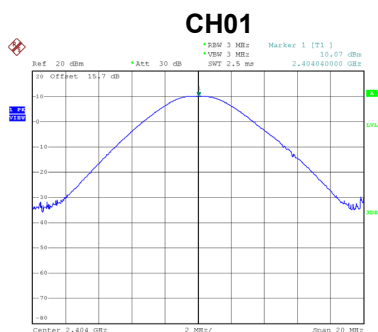


Date: 15.AUG.2024 10:53:38

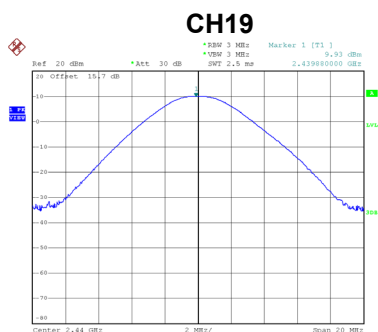
Test Mode	TX Mode _4Mbps
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Channel	Frequency (MHz)	Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Test Result
01	2402	10.07	20.97	0.1250	Pass
19	2441	9.93	20.97	0.1250	Pass
38	2480	9.80	20.97	0.1250	Pass

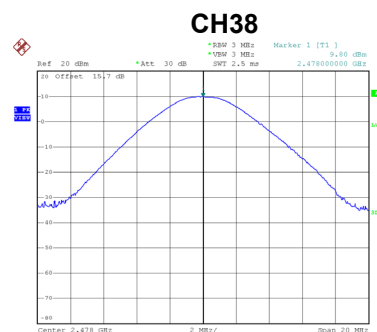
Note: Output power = Measure result + Cable loss



Date: 27.AUG.2024 17:03:14



Date: 27.AUG.2024 17:03:31

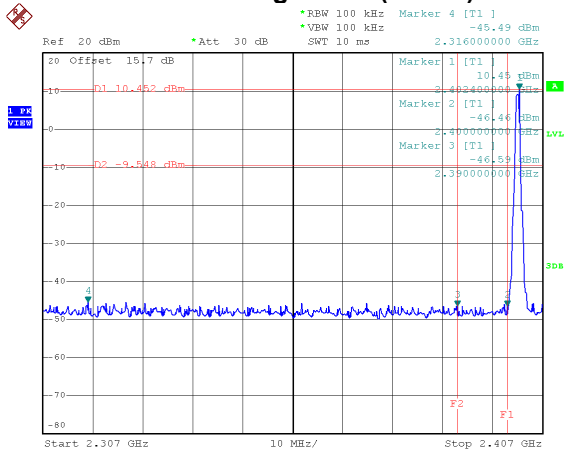


Date: 27.AUG.2024 17:03:55

APPENDIX J - CONDUCTED SPURIOUS EMISSION

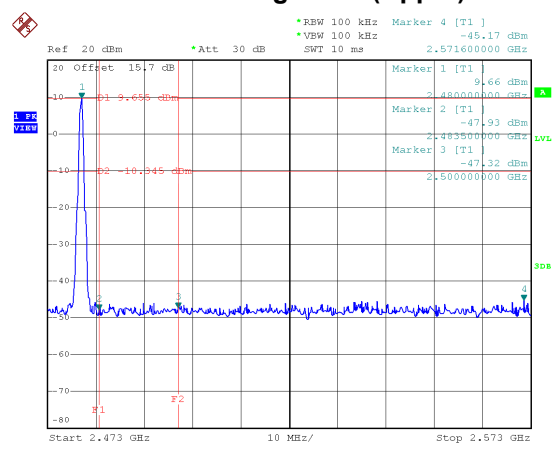
Test Mode TX Mode _1Mbps

BandedgeCH00 (Lower)



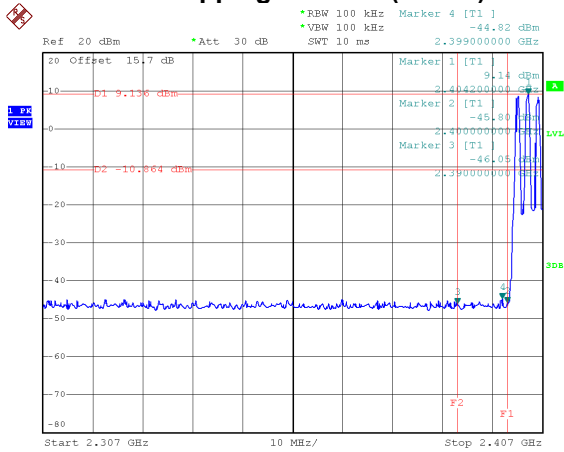
Date: 15.AUG.2024 10:10:13

BandedgeCH39(Upper)



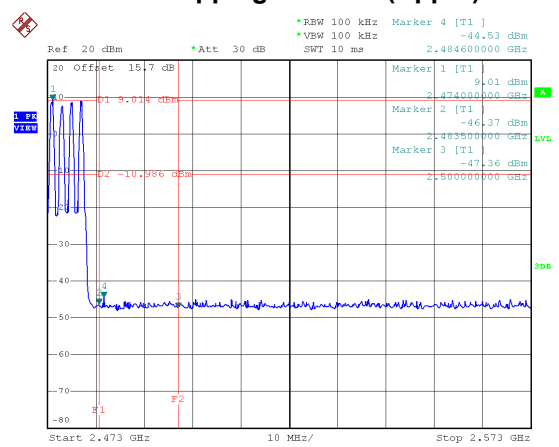
Date: 15.AUG.2024 10:45:49

Hopping on mode(Lower)



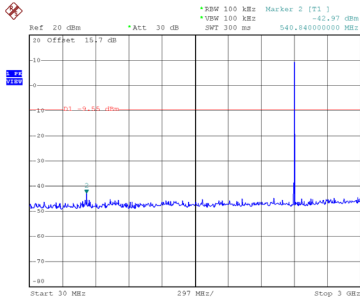
Date: 15.AUG.2024 10:37:57

Hopping on mode(Upper)

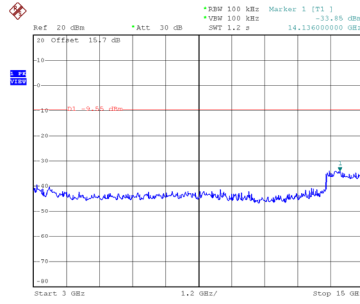


Date: 15.AUG.2024 10:38:43

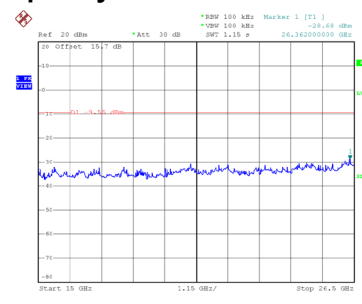
CH00–10th Harmonic of the fundamental frequency



Date: 15.AUG.2024 10:10:59

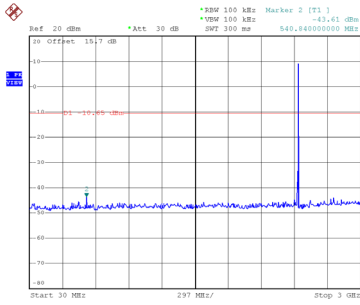


Date: 5.SEP.2024 14:09:49

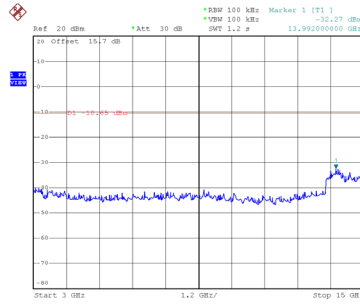


Date: 5.SEP.2024 14:09:59

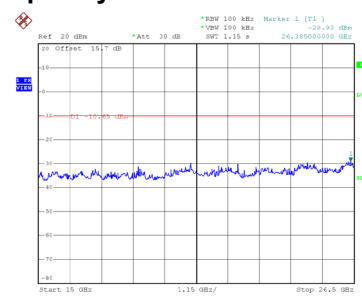
CH19–10th Harmonic of the fundamental frequency



Date: 15.AUG.2024 10:44:09

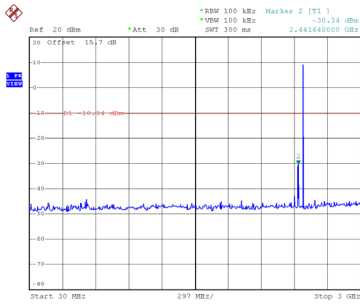


Date: 5.SEP.2024 14:10:11

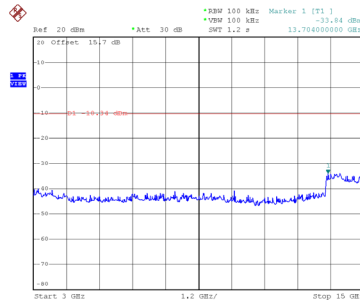


Date: 5.SEP.2024 14:10:20

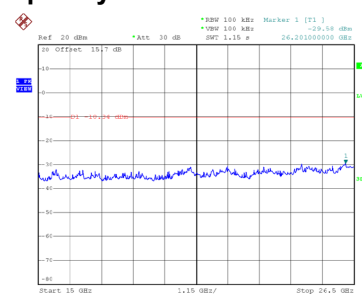
CH39–10th Harmonic of the fundamental frequency



Date: 15.AUG.2024 10:46:43



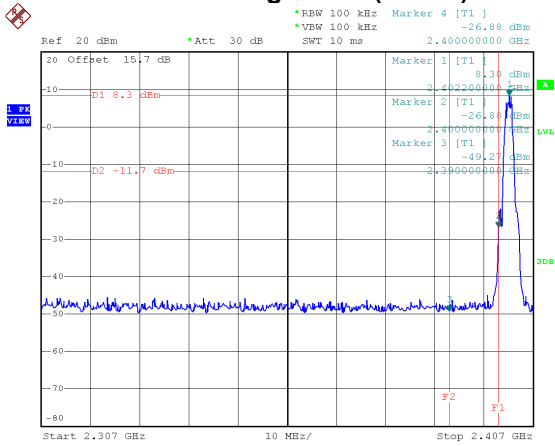
Date: 5.SEP.2024 14:10:29



Date: 5.SEP.2024 14:10:38

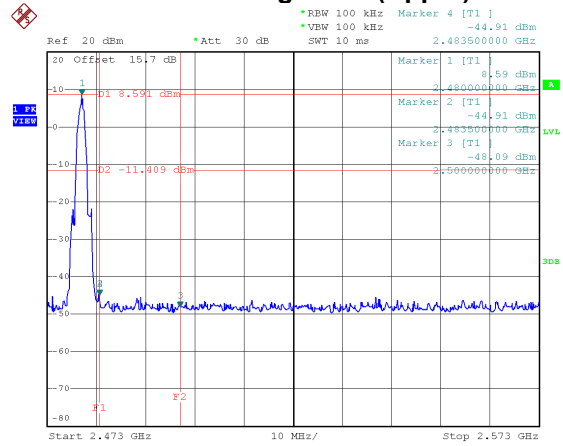
Test Mode TX Mode _2Mbps

BandedgeCH00 (Lower)



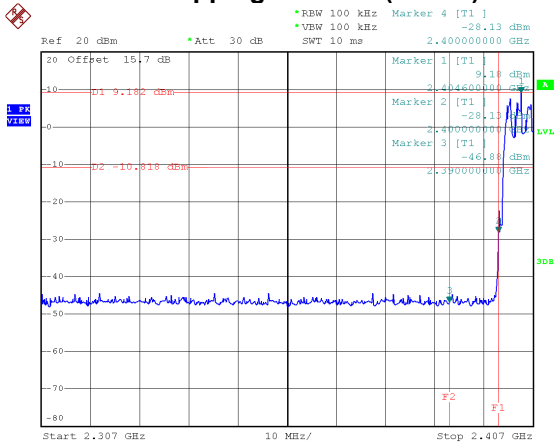
Date: 15.AUG.2024 10:50:47

BandedgeCH39(Upper)



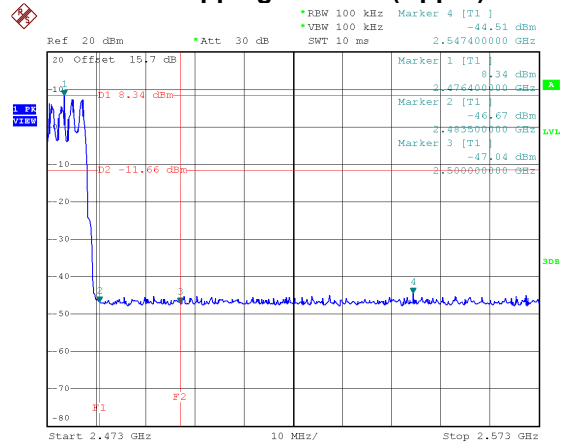
Date: 15.AUG.2024 10:53:46

Hopping on mode(Lower)



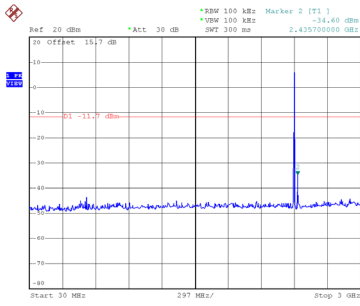
Date: 15.AUG.2024 10:57:45

Hopping on mode(Upper)

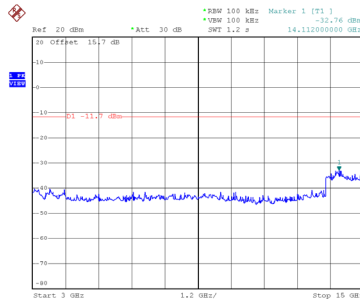


Date: 15.AUG.2024 10:58:20

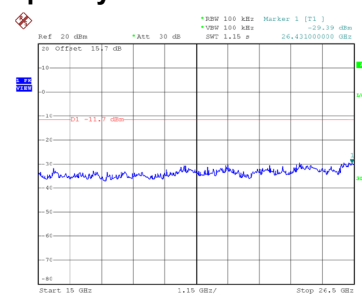
CH00-10th Harmonic of the fundamental frequency



Date: 15.AUG.2024 10:51:36

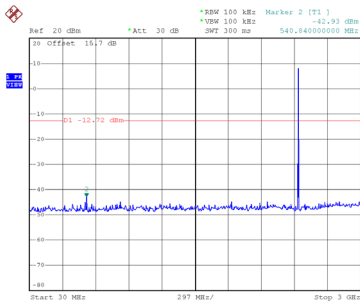


Date: 15.AUG.2024 10:51:45

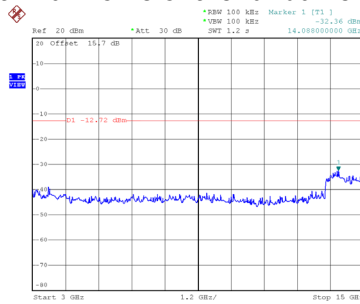


Date: 15.AUG.2024 10:51:54

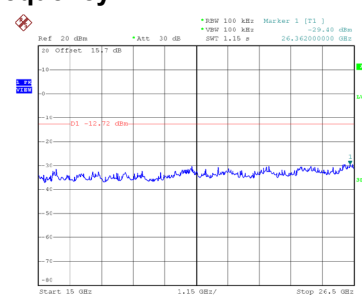
CH19-10th Harmonic of the fundamental frequency



Date: 15.AUG.2024 10:52:34

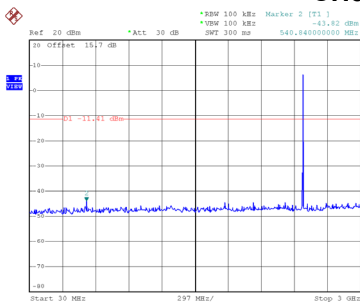


Date: 15.AUG.2024 10:52:43

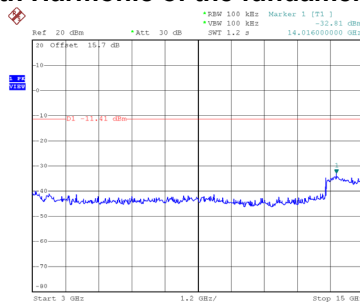


Date: 15.AUG.2024 10:52:52

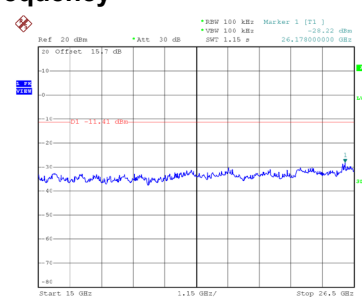
CH39-10th Harmonic of the fundamental frequency



Date: 15.AUG.2024 10:54:35



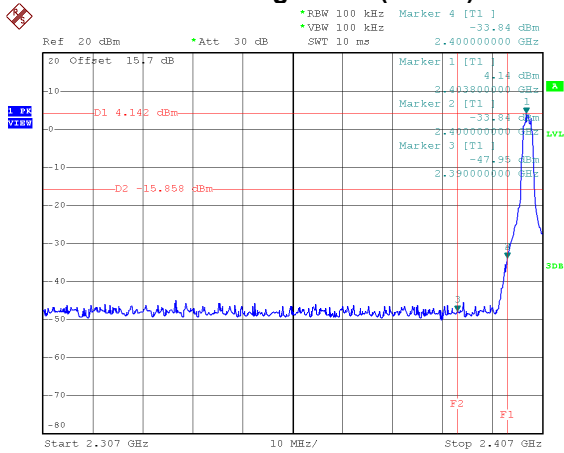
Date: 15.AUG.2024 10:54:44



Date: 15.AUG.2024 10:54:53

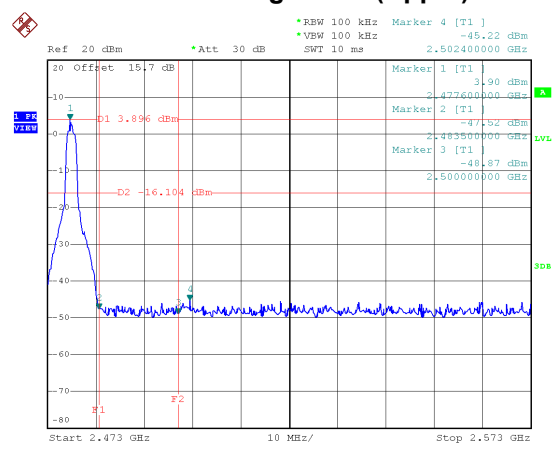
Test Mode TX Mode _4Mbps

BandedgeCH01 (Lower)



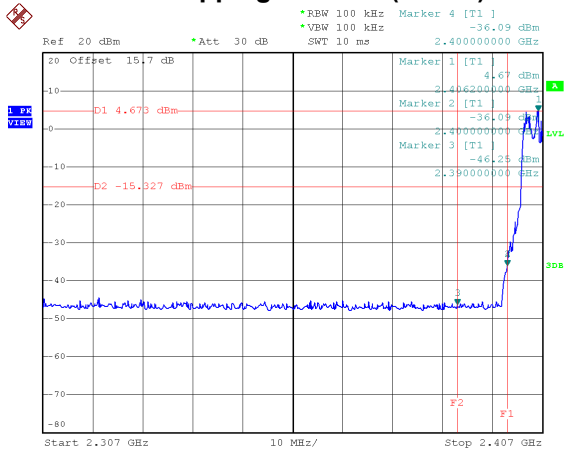
Date: 27.AUG.2024 17:06:46

Bandedge CH38(Upper)



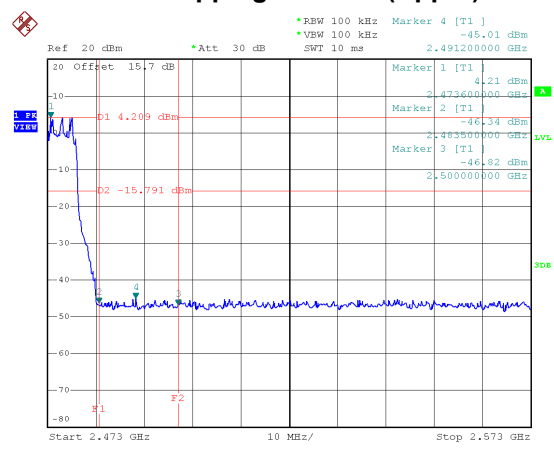
Date: 27.AUG.2024 17:08:26

Hopping on mode(Lower)



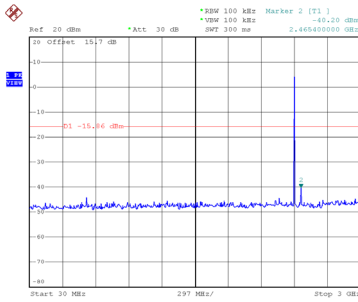
Date: 27.AUG.2024 17:12:32

Hopping on mode(Upper)

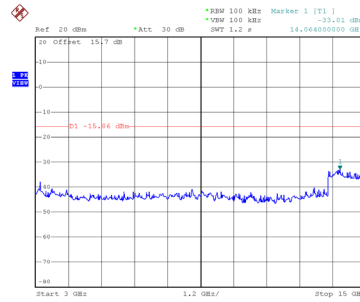


Date: 27.AUG.2024 17:13:07

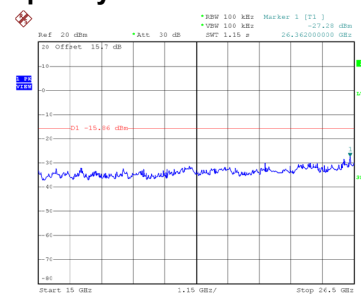
CH01–10th Harmonic of the fundamental frequency



Date: 27.AUG.2024 17:07:00

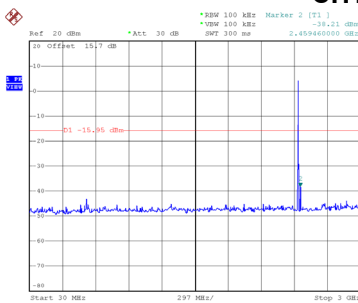


Date: 5.SEP.2024 09:53:44

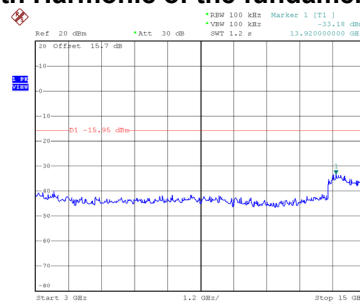


Date: 5.SEP.2024 09:53:53

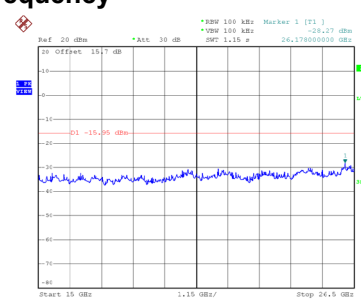
CH19–10th Harmonic of the fundamental frequency



Date: 27.AUG.2024 17:07:53

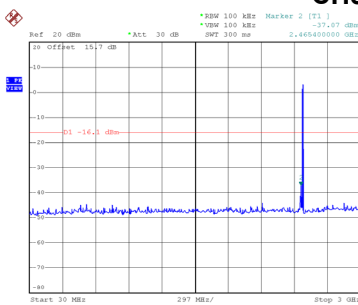


Date: 5.SEP.2024 09:54:02

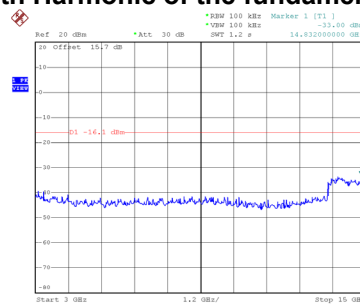


Date: 5.SEP.2024 09:54:10

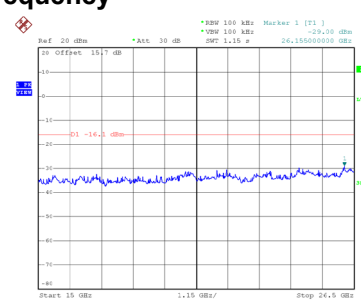
CH38–10th Harmonic of the fundamental frequency



Date: 27.AUG.2024 17:08:39



Date: 5.SEP.2024 09:54:21



Date: 5.SEP.2024 09:54:29

End of Test Report