




FCC Radio Test Report

FCC ID: 2AR2STAT2149

This report concerns: Original Grant

Project No. : 2407C212
Equipment : True wireless headphones
Brand Name : PHILIPS or 
Test Model : TAT2149
Series Model : TAT2149xx/yy, TAT2159, TAT2159xx/yy (xx=AA-ZZ or blank denoted different color; yy=00-99 denoted different country destination).
Applicant : MMD Hong Kong Holding Limited
Address : Units 1208-11, 12th Floor, C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Manufacturer : MMD Hong Kong Holding Limited
Address : Units 1208-11, 12th Floor, C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Factory : Jiangxi Cosonic Electroacoustic Technologies Co., Ltd.
Address : Shangli Industrial Park, Jinshan Town, Shangli County, Pingxiang, Jiangxi
Date of Receipt : Jul. 30, 2024
Date of Test : Jul. 30, 2024 ~ Aug. 19, 2024
Issued Date : Nov. 11, 2024
Report Version : R00
Test Sample : Engineering Sample No.: DG20240730109 for conducted, DG20240730108 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-4-2407C212 | R00 | Original Report. | Nov. 11, 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 APPENDIX D | PASS | ----- |
| 15.247(a)(2) | Bandwidth | APPENDIX E | PASS | ----- |
| 15.247(b)(3) | Maximum Output Power | APPENDIX F | PASS | ----- |
| 15.247(d) | Conducted Spurious Emission | APPENDIX G | PASS | ----- |
| 15.247(e) | Power Spectral Density | APPENDIX H | PASS | ----- |
| 15.203 | Antenna Requirement | ----- | PASS | Note(2) |

Note:

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

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

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of 1-2/F, 4/F, Building A, 1-2/F, Building B, 3/F, Building C, No.3, Jinshagang 1st Road, Dalang Town, 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 | U,(dB) |
|-----------|--------|-----------------------------|--------|
| DG-CB01 | CISPR | 9kHz ~ 30MHz | 2.36 |

| 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 |
|-----------------------------|-------------|
| 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 | 60% | AC 120V/60Hz | Hayden Chen | Aug. 14, 2024 |
| Radiated Emissions-9 kHz to 30 MHz | 25°C | 40% | DC 5V | Hayden Chen | Aug. 14, 2024 |
| Radiated Emissions-30 MHz to 1000 MHz | 23°C | 54% | DC 5V | Chen Mo | Aug. 14, 2024 |
| Radiated Emissions-Above 1000 MHz | 24°C | 55% | DC 5V | Jensen Zhou | Aug. 11, 2024 |
| Bandwidth | 21°C | 57% | DC 5V | Parker Yang | Aug. 02, 2024 |
| Maximum Output Power | 22°C | 55% | DC 5V | Parker Yang | Aug. 13, 2024 |
| Conducted Spurious Emission | 21°C | 57% | DC 5V | Parker Yang | Aug. 02, 2024 |
| Power Spectral Density | 21°C | 57% | DC 5V | Parker Yang | Aug. 02, 2024 |

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

| | |
|-------------------------|--|
| Equipment | True wireless headphones |
| Brand Name | PHILIPS or  |
| Test Model | TAT2149 |
| Series Model | TAT2149xx/yy, TAT2159, TAT2159xx/yy (xx=AA-ZZ or blank denoted different color; yy=00-99 denoted different country destination). |
| Model Difference(s) | Just different regions, different colors and different model names. |
| Hardware Version | V4.0 |
| Software Version | V1.012 |
| Earphone | Right Earphone |
| Power Source | Charging case: 1# Supplied from USB port. 2# Battery supplied. Model: 551330 Earphone: 1# Supplied from Charging case. 2# Battery supplied. Model: 1144 |
| Power Rating | Charging case: 1# 5V $\overline{\text{---}}$ 500mA 2# DC 3.7V, 190mAh, 0.703Wh Earphone: 1# 5V $\overline{\text{---}}$ 65mA x 2 2# DC 3.7V, 0.148Wh |
| Operation Frequency | 1Mbps: 2402 MHz ~ 2480 MHz 2Mbps: 2404 MHz ~ 2478 MHz |
| Modulation Type | GFSK |
| Bit Rate of Transmitter | 1Mbps, 2Mbps |
| Max. Output Power | 2Mbps: 6.01 dBm (0.0040 W) |

Note:

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

2. Channel List:

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 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: 1Mbps supports Channel 00-39 while 2Mbps supports Channel 01-38.

3. Table for Filed Antenna:

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) |
|------|-------|------------|--------------|-----------|------------|
| 1 | N/A | N/A | PIFA | N/A | -0.2 |

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 01/19/38 |
| Mode 3 | TX Mode_2Mbps Channel 01 |

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_2Mbps Channel 01 |

| Radiated emissions test - Below 1GHz | |
|--------------------------------------|--------------------------|
| Final Test Mode | Description |
| Mode 3 | TX Mode_2Mbps Channel 01 |

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

| Conducted test | |
|-----------------|--------------------------------|
| Final Test Mode | Description |
| Mode 1 | TX Mode_1Mbps Channel 00/19/39 |
| Mode 2 | TX Mode_2Mbps 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 2Mbps Channel 01 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) For radiated emission above 1GHz test, both Vertical and Horizontal are evaluated, only the worst case is recorded.

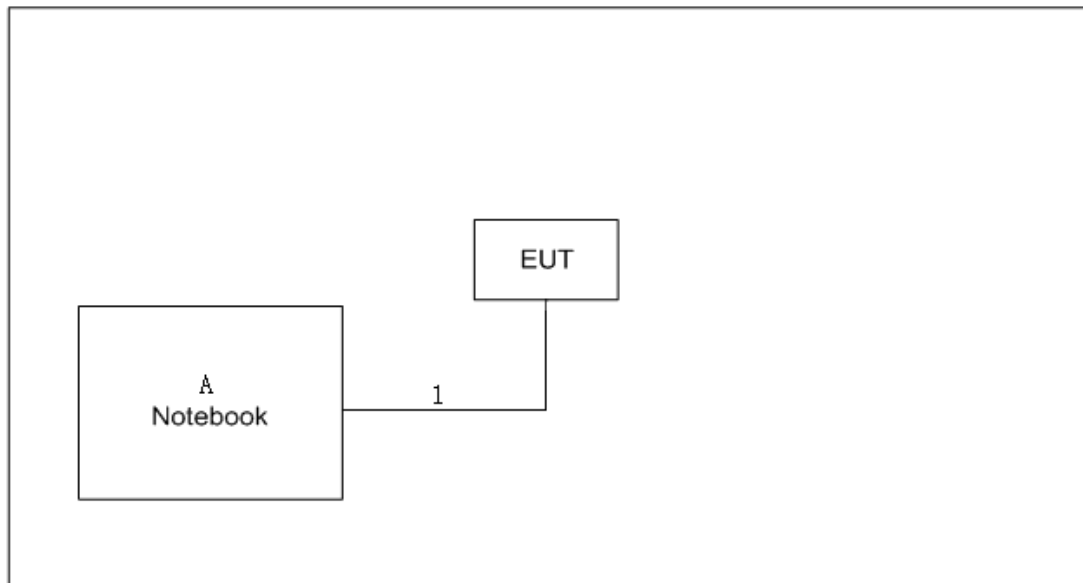
3.3 PARAMETERS OF TEST SOFTWARE

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

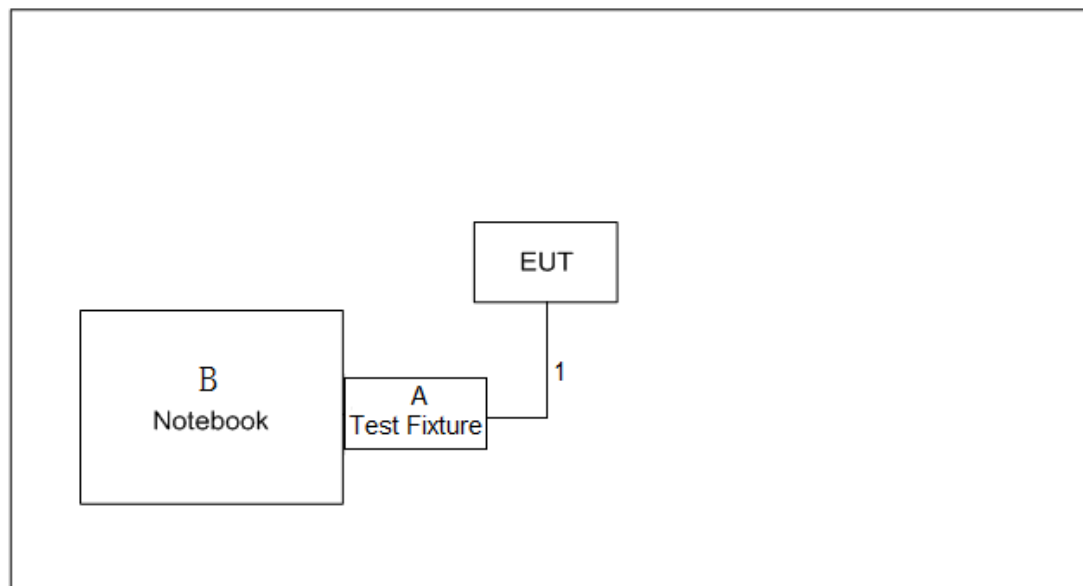
| Test Software Version | BT_Tool V1.1.4 | | |
|-----------------------|----------------|------|------|
| Frequency (MHz) | 2402 | 2440 | 2480 |
| 1Mbps | 7 | 7 | 7 |
| Frequency (MHz) | 2404 | 2440 | 2478 |
| 2Mbps | 7 | 7 | 7 |

3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

AC power line conducted emissions test and Radiated emissions test - 9 kHz to 30 MHz



Radiated emissions test - Above 30 MHz



3.5 SUPPORT UNITS

AC power line conducted emissions test and Radiated emissions test - 9 kHz to 30 MHz

| Item | Equipment | Brand | Model No. | Series No. |
|------|-----------|--------|------------|------------|
| A | Notebook | Lenovo | V310-14ISK | LR07GZNB |

| Item | Cable Type | Shielded Type | Ferrite Core | Length |
|------|------------|---------------|--------------|--------|
| 1 | Data Cable | NO | NO | 0.8m |

Radiated emissions test - Above 30 MHz

| Item | Equipment | Brand | Model No. | Series No. | Note |
|------|--------------|--------|-----------|------------|--------------------|
| A | Test Fixture | N/A | N/A | N/A | - |
| B | Notebook | Lenovo | Pro 13 | N/A | Above 1000 MHz |
| | | HUAWEI | WFH9 | N/A | 30 MHz to 1000 MHz |

| Item | Cable Type | Shielded Type | Ferrite Core | Length |
|------|------------|---------------|--------------|--------|
| 1 | Data Cable | NO | NO | 0.1m |

3.6 CUSTOMER INFORMATION DESCRIPTION

- 1) The antenna gain is provided by the manufacturer.
- 2) Except for radiated spurious emissions, the results of all test items include cable losses. Part of the cable losses (1dB) 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 (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.

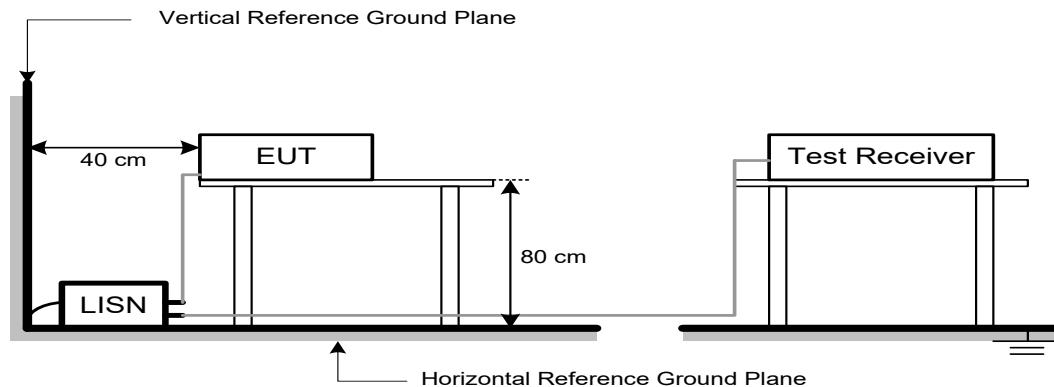
The following table is the setting of the receiver:

| 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 fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

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)

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

$20 \log (d_{\text{limit}}/d_{\text{measure}}) = 20 \log (3/1) = 9.5 \text{ dB}$.

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 | 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 |

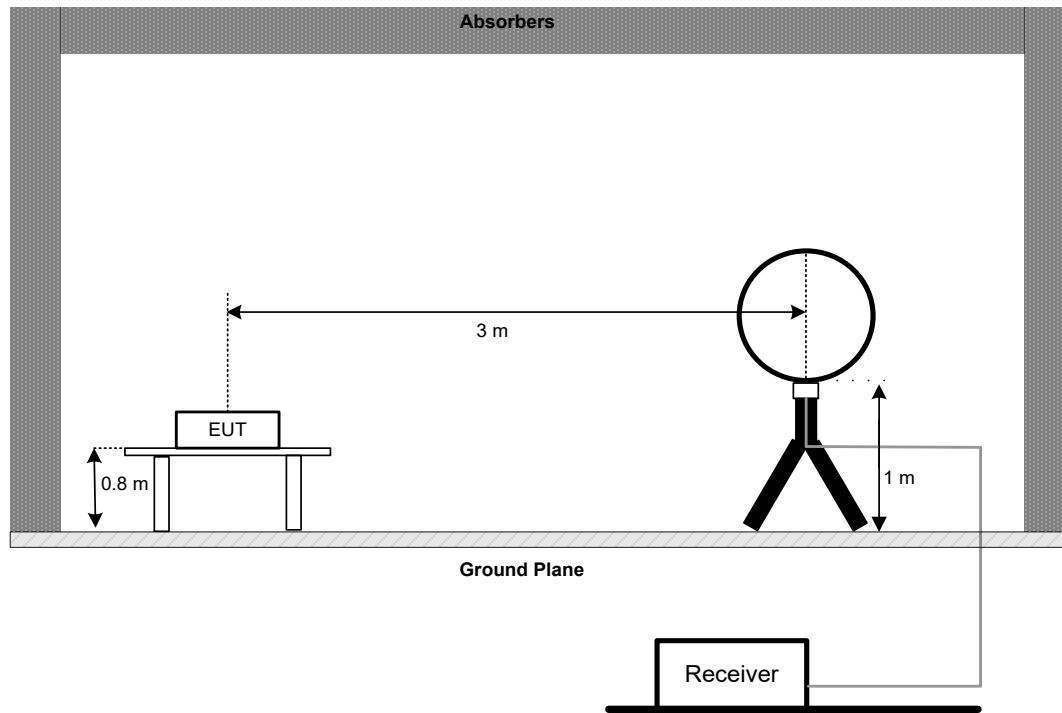
| Spectrum Parameters | Setting |
|------------------------|-------------------------------------|
| Start ~ Stop Frequency | 9 kHz~90 kHz for PK/AVG detector |
| Start ~ Stop Frequency | 90 kHz~110 kHz for QP detector |
| Start ~ Stop Frequency | 110 kHz~490 kHz for PK/AVG detector |
| Start ~ Stop 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

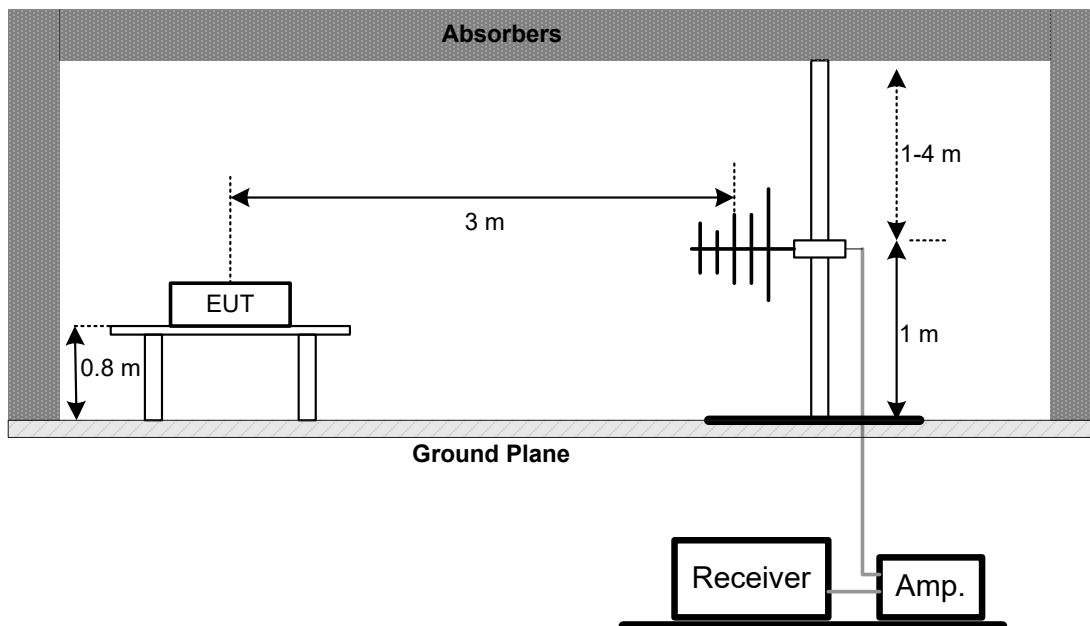
No deviation.

5.4 TEST SETUP

9 kHz to 30 MHz

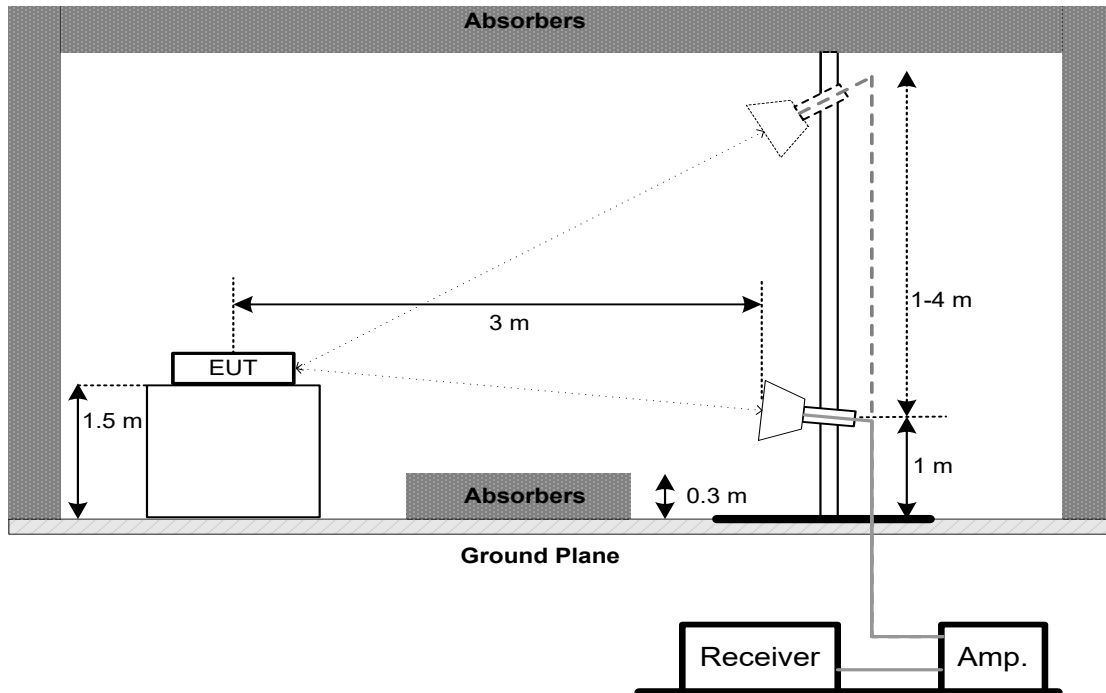


30 MHz to 1 GHz

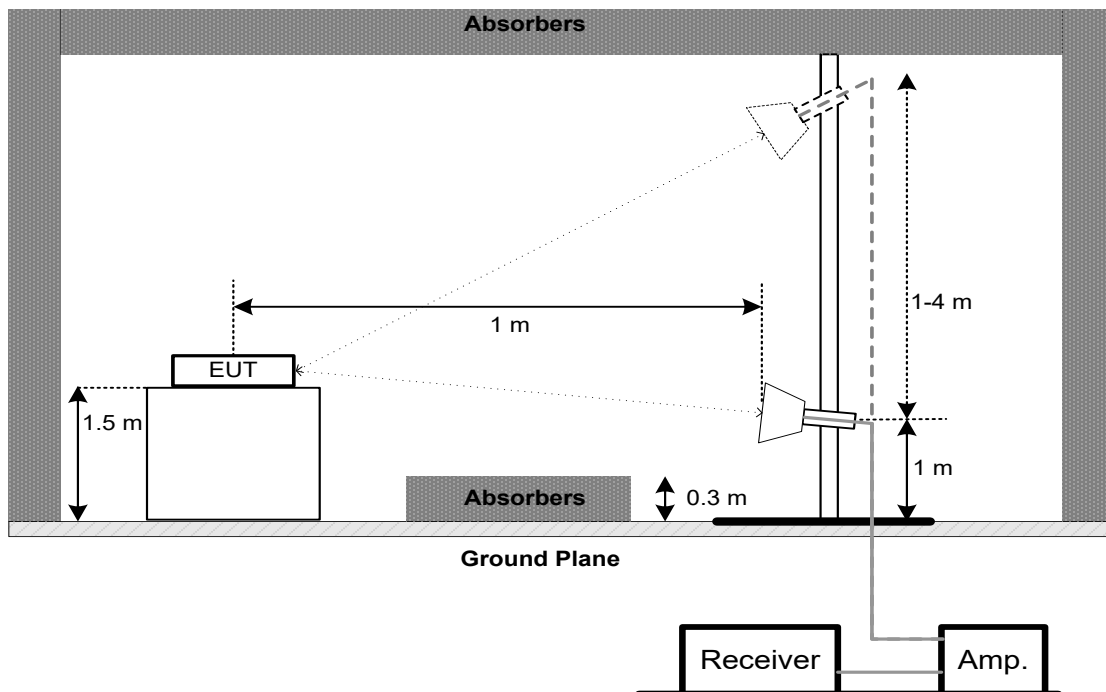


Above 1 GHz

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 RESULT - 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 RESULT - 30 MHz TO 1000 MHz

Please refer to the APPENDIX C.

5.8 TEST RESULT - 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. BANDWIDTH

6.1 LIMIT

| Section | Test Item | Limit |
|------------------|------------------------|----------------|
| FCC 15.247(a)(2) | 6 dB Bandwidth | ≥ 500 kHz |
| | 99% Emission Bandwidth | - |

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:

For 6 dB Bandwidth:

| Spectrum Parameters | Setting |
|---------------------|---------------------------|
| Span Frequency | $>$ Measurement Bandwidth |
| RBW | 100 kHz |
| VBW | 300 kHz |
| Detector | Peak |
| Trace | Max Hold |
| Sweep Time | Auto |

For 99% Emission Bandwidth:

| Spectrum Parameters | Setting |
|---------------------|---|
| Span Frequency | Between 1.5 times and 5.0 times the OBW |
| RBW | 30 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. MAXIMUM OUTPUT POWER

7.1 LIMIT

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

7.2 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 | $\geq 3 \times \text{RBW}$ |
| RBW | 3 MHz |
| VBW | 3 MHz |
| Detector | Peak |
| Trace | Max Hold |
| Sweep Time | Auto |

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. CONDUCTED SPURIOUS EMISSION

8.1 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.

8.2 TEST PROCEDURE

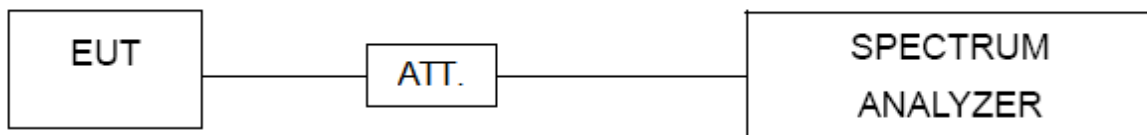
- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

| Spectrum Parameters | Setting |
|---------------------|----------|
| Start Frequency | 30 MHz |
| Stop Frequency | 26.5 GHz |
| RBW | 100 kHz |
| VBW | 300 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. POWER SPECTRAL DENSITY

9.1 LIMIT

| Section | Test Item | Limit |
|---------------|------------------------|-------------------------|
| FCC 15.247(e) | Power Spectral Density | 8 dBm (in any 3 kHz) |

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 | 2 MHz (1 Mbps) / 4 MHz (2 Mbps) |
| RBW | 3 kHz |
| VBW | 10 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. 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-9 M-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. 09, 2025 |
| 4 | Cable | N/A | RG 213/U | N/A | Jun. 09, 2025 |
| 5 | Measurement Software | Farad | EZ-EMC Ver.NB-03A1-01 | N/A | N/A |
| 6 | 966 Chamber room | ETS | 9*6*6 | N/A | May 16, 2025 |

| 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 | 980998 | Nov. 17, 2024 |
| 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 - 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 | EXA Signal Analyzer | Keysight | N9010A | MY56480488 | Dec. 22, 2024 |
| 4 | Double Ridged Guide Antenna | ETS | 3115 | 75789 | Jun. 15, 2025 |
| 5 | Cable | RegalWay | RWLP50-4.0A-SMSM-12.5M | N/A | Jul. 03, 2025 |
| 6 | Cable | RegalWay | RWLP50-4.0A-NMRA SM-2.5M | N/A | Jul. 03, 2025 |
| 7 | Cable | RegalWay | RWLP50-4.0A-NMRA SMRA-0.8M | N/A | Jul. 03, 2025 |
| 8 | Low Noise Amplifier | CONNPHY | CLN-18G40G-4330-K | 619413 | Jul. 17, 2025 |
| 9 | Cable | RegalWay | RWLP50-2.6A-2.92M 2.92M-1.1M | N/A | Jul. 25, 2025 |
| 10 | Cable | Tonscend | HF160-KMKM-3M | N/A | Jul. 25, 2025 |
| 11 | Broad-Band Horn Antenna | Schwarzbeck | BBHA9170(3m) | 9170-319 | Jun. 16, 2025 |
| 12 | 966 Chamber room | CM | 9*6*6 | N/A | May 19, 2025 |
| 13 | Attenuator | Talent Microwave | TA10A2-S-18 | N/A | N/A |
| 14 | Filter | STI | STI15-9912 | N/A | May 31, 2025 |
| 15 | Positioning Controller | MF | MF-7802 | N/A | N/A |
| 16 | Measurement Software | Farad | EZ-EMC Ver.NB-03A1-01 | N/A | N/A |

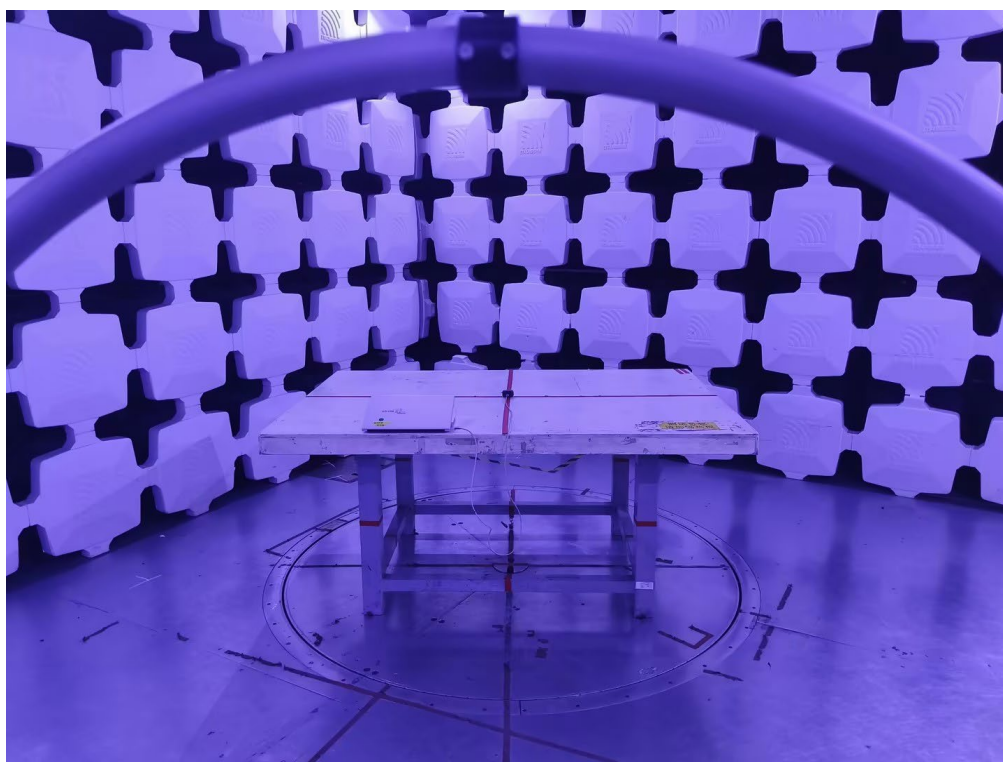
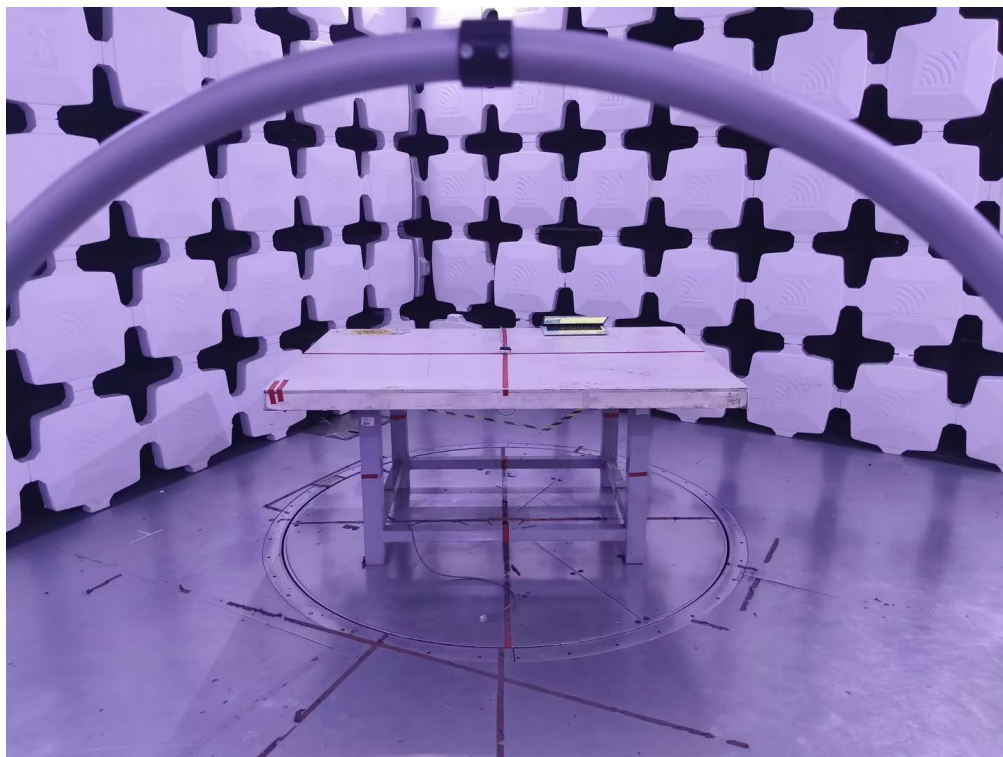
| Bandwidth & Maximum Output Power & Power Spectral Density & Conducted Spurious Emission | | | | | |
|---|----------------------|--------------|--------------------|------------|------------------|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | Spectrum Analyzer | R&S | FSP40 | 100185 | 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 |

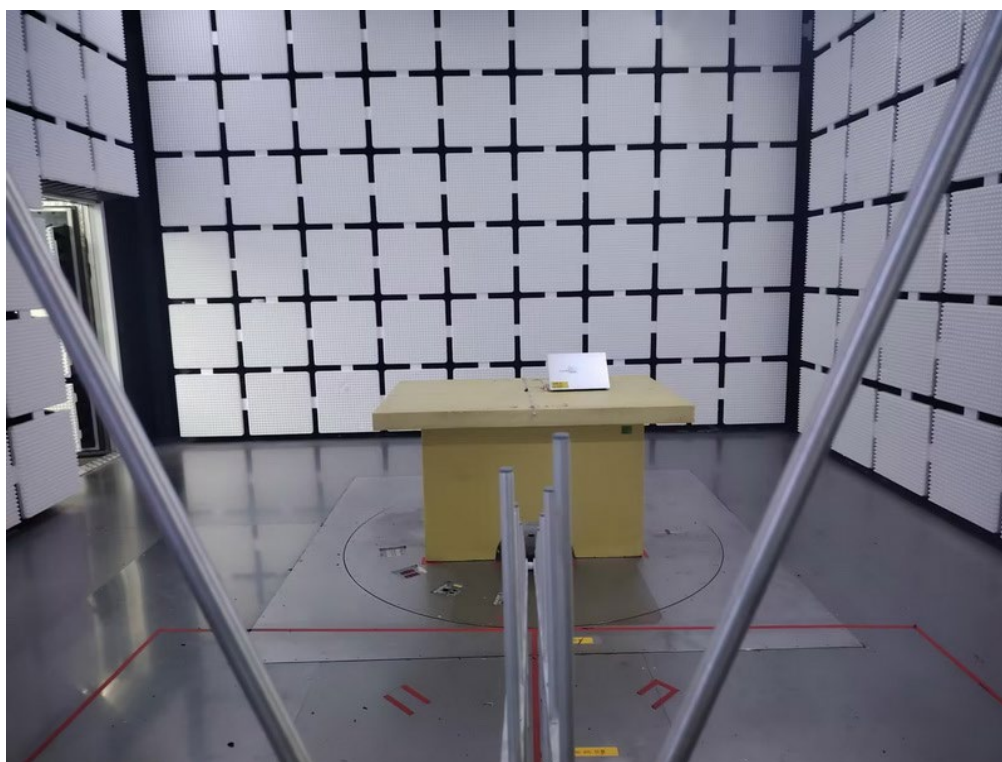
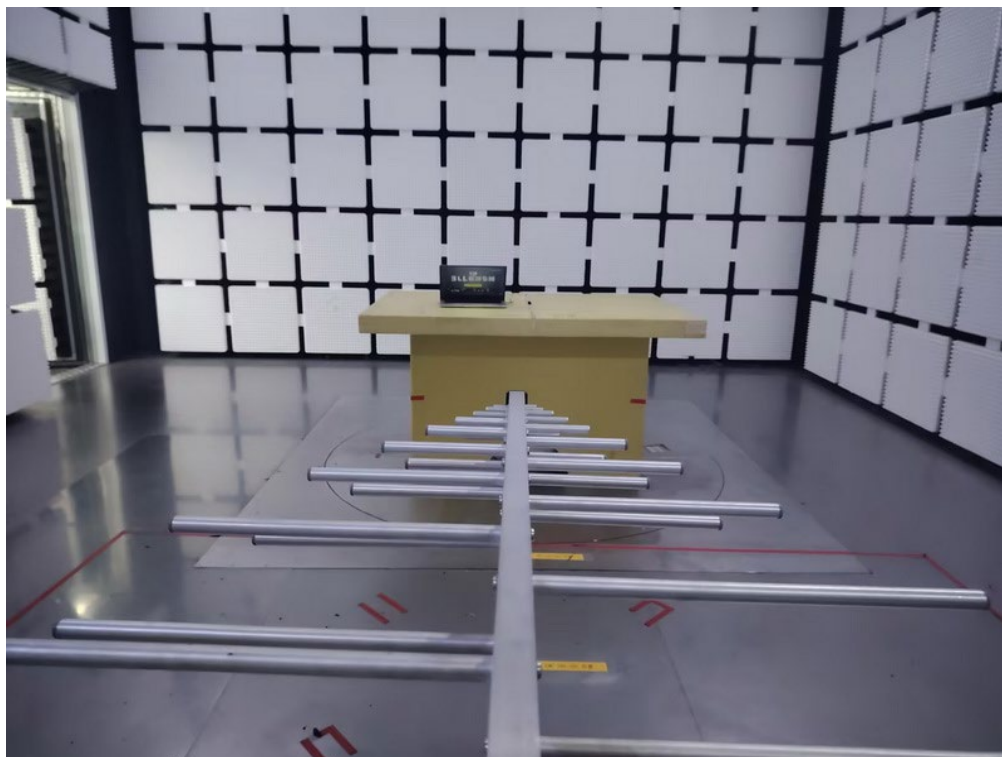
Remark: "N/A" denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

11. EUT TEST PHOTO**AC Power Line Conducted Emissions Test Photos**

Radiated Emissions Test Photos

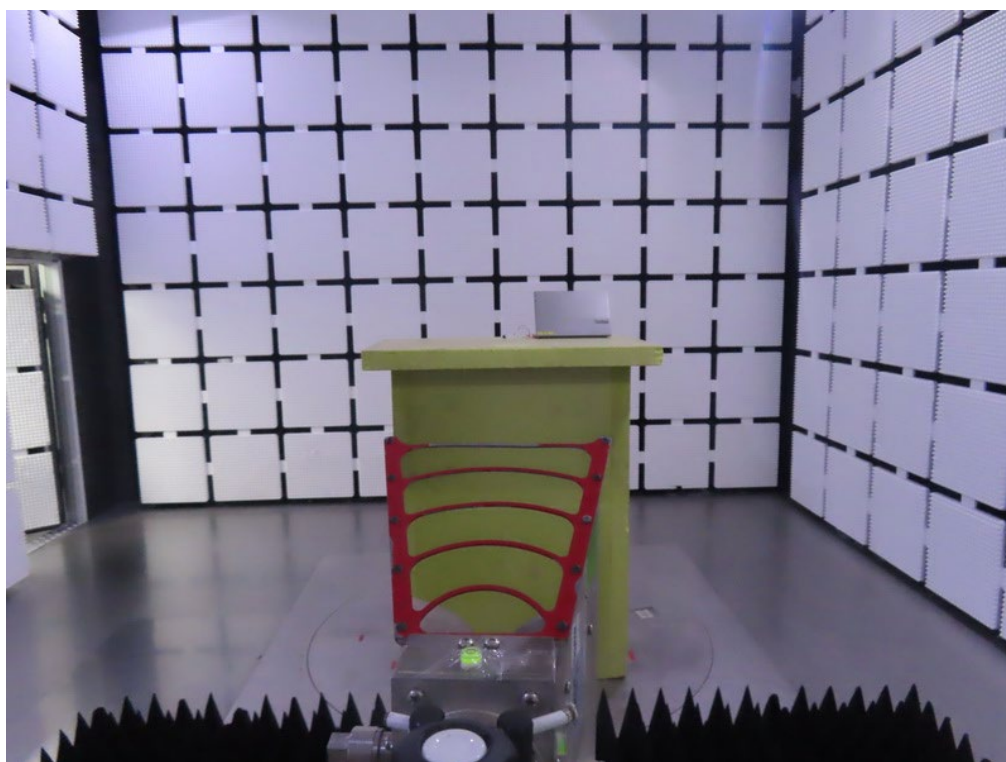
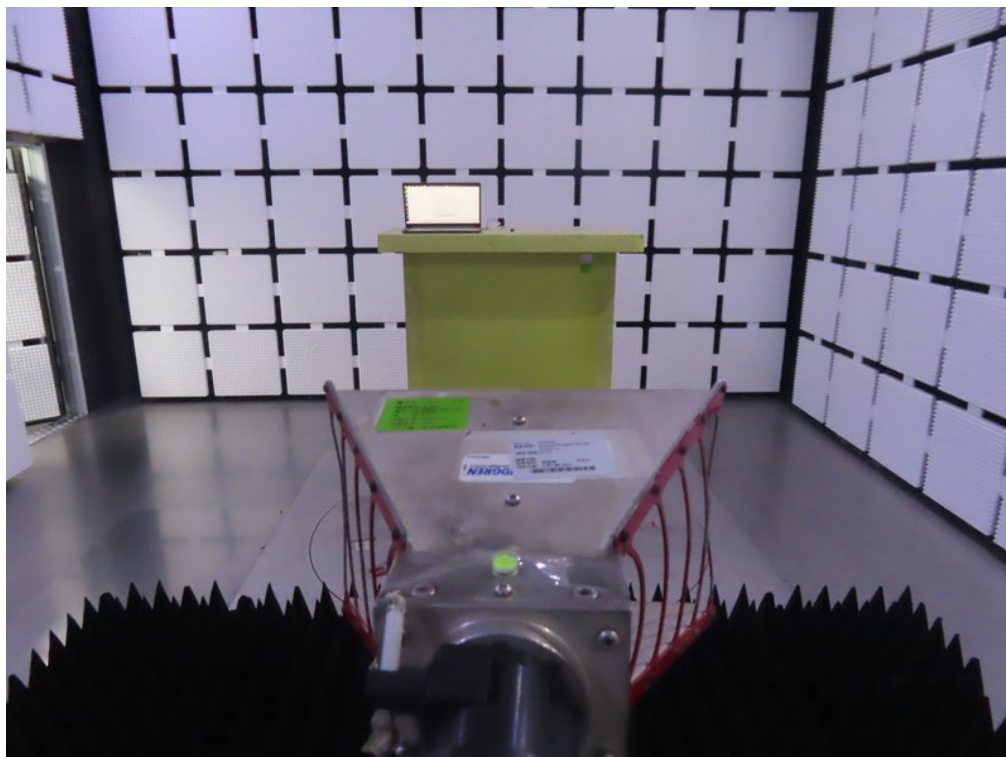
9 kHz to 30 MHz



Radiated Emissions Test Photos**30 MHz to 1000 MHz**

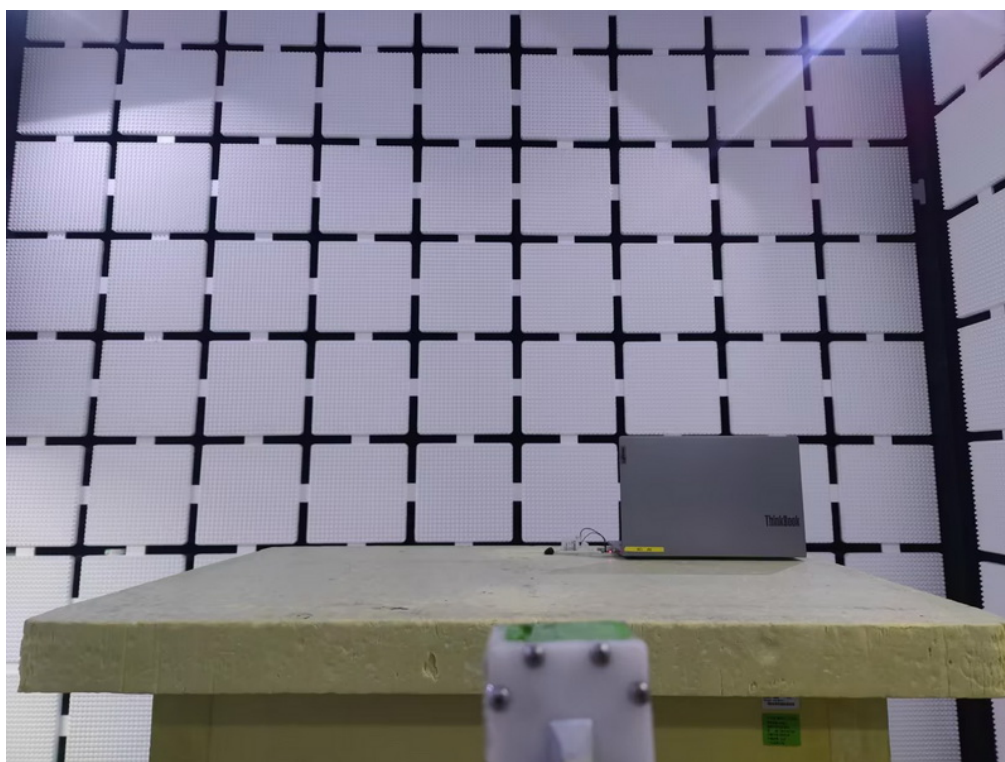
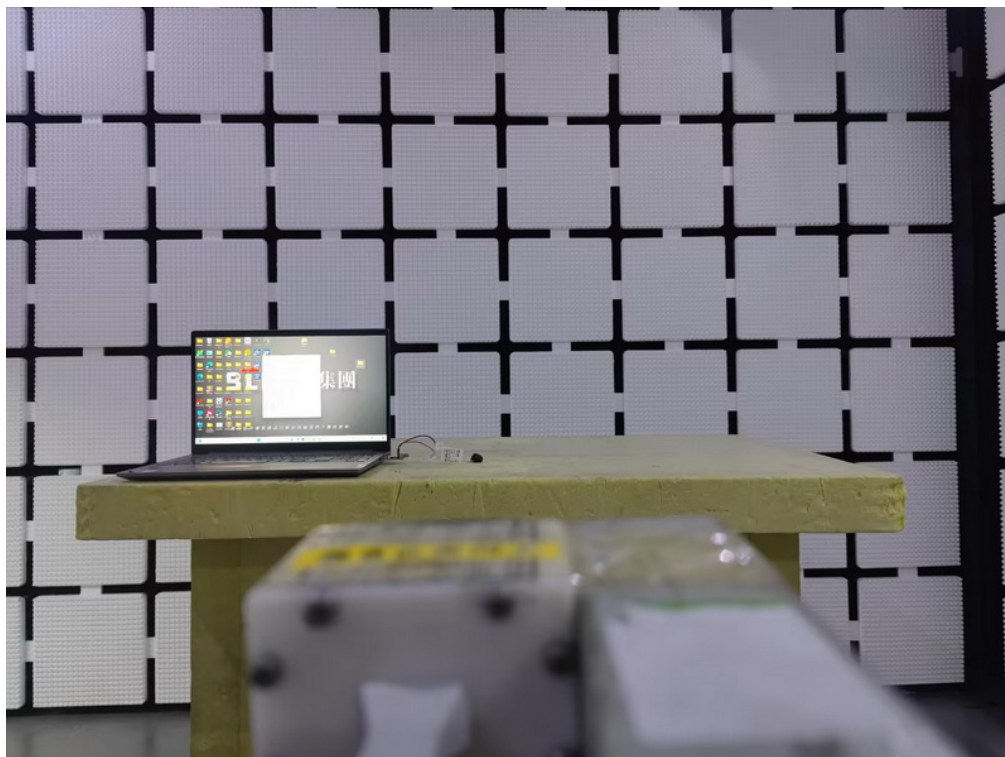
Radiated Emissions Test Photos

Above 1 GHz_Band edge & Harmonic (1 GHz to 18 GHz)

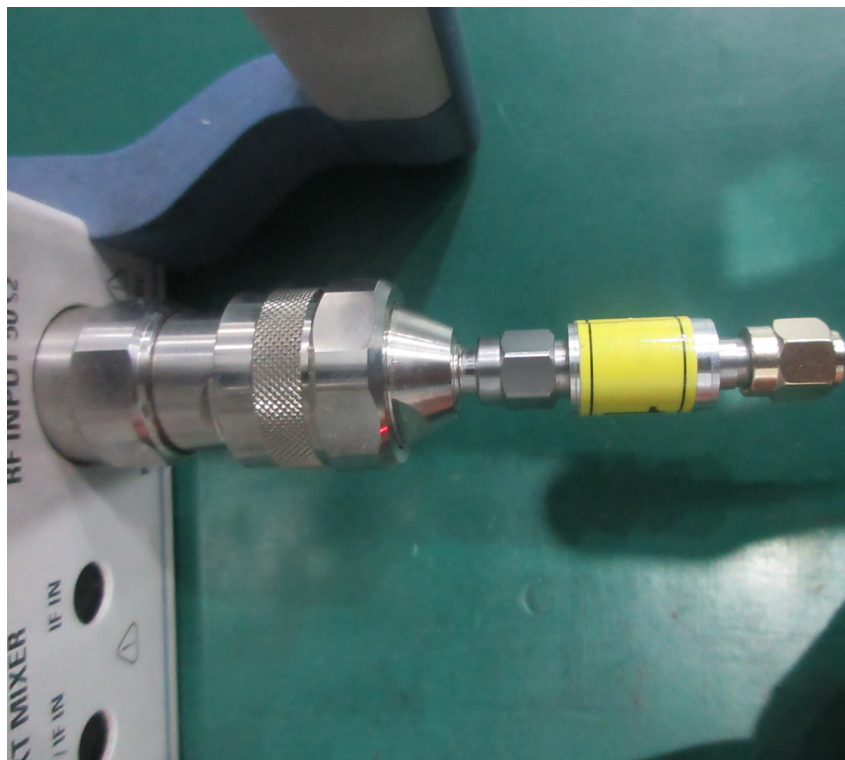
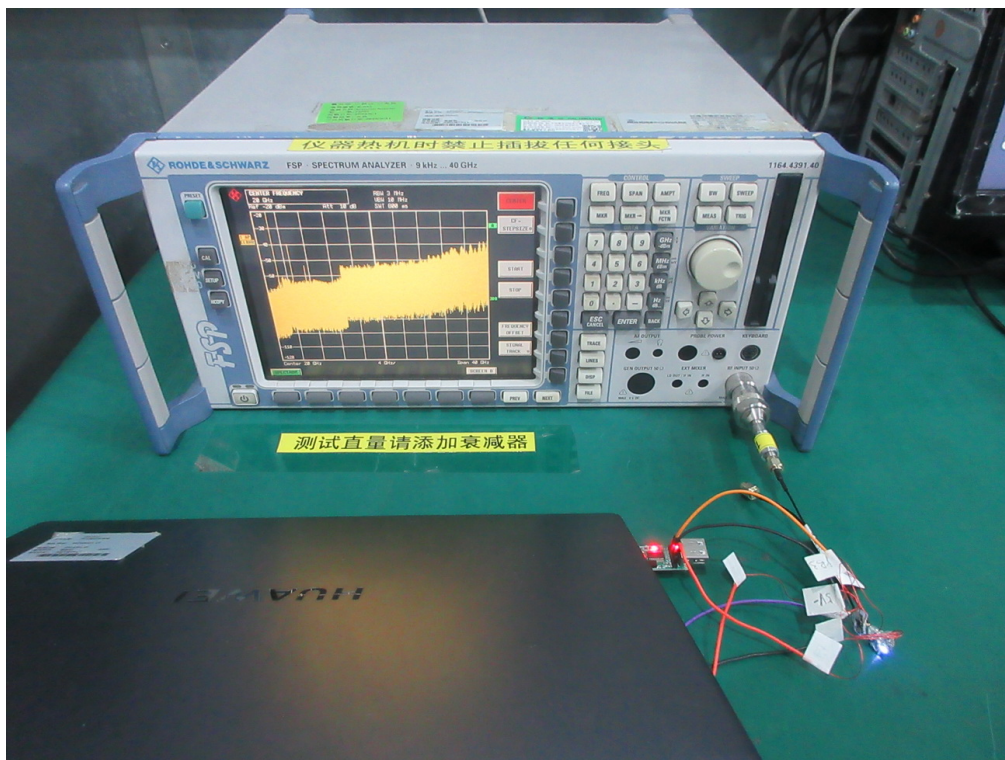


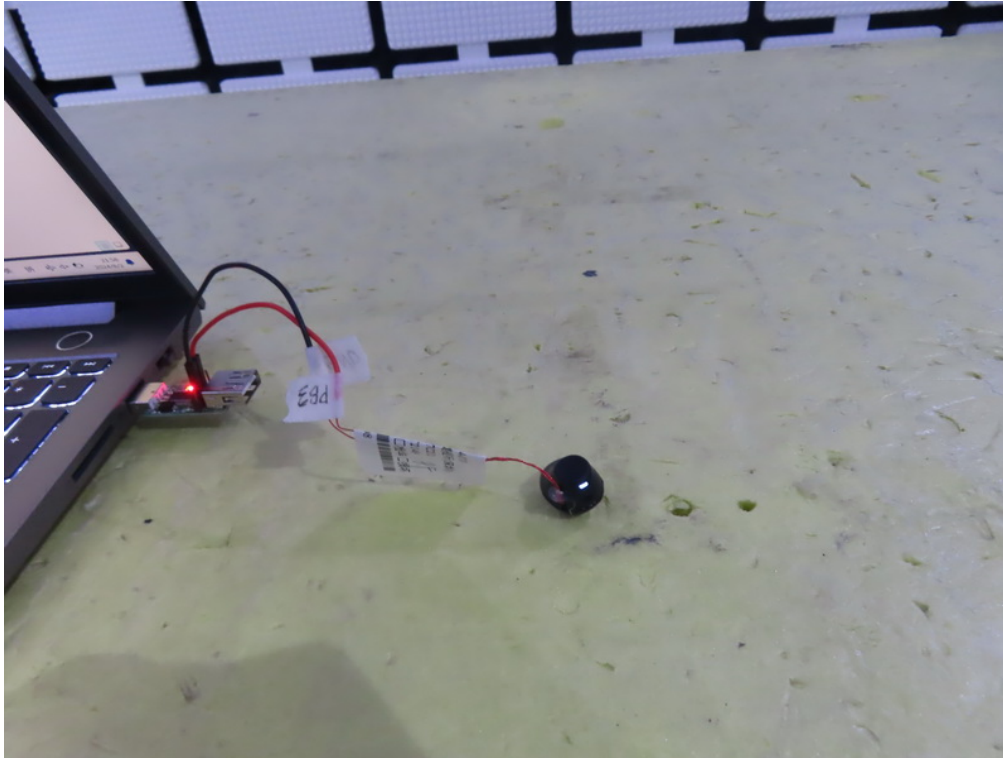
Radiated Emissions Test Photos

Above 1 GHz_Harmonic (18 GHz to 26.5 GHz)



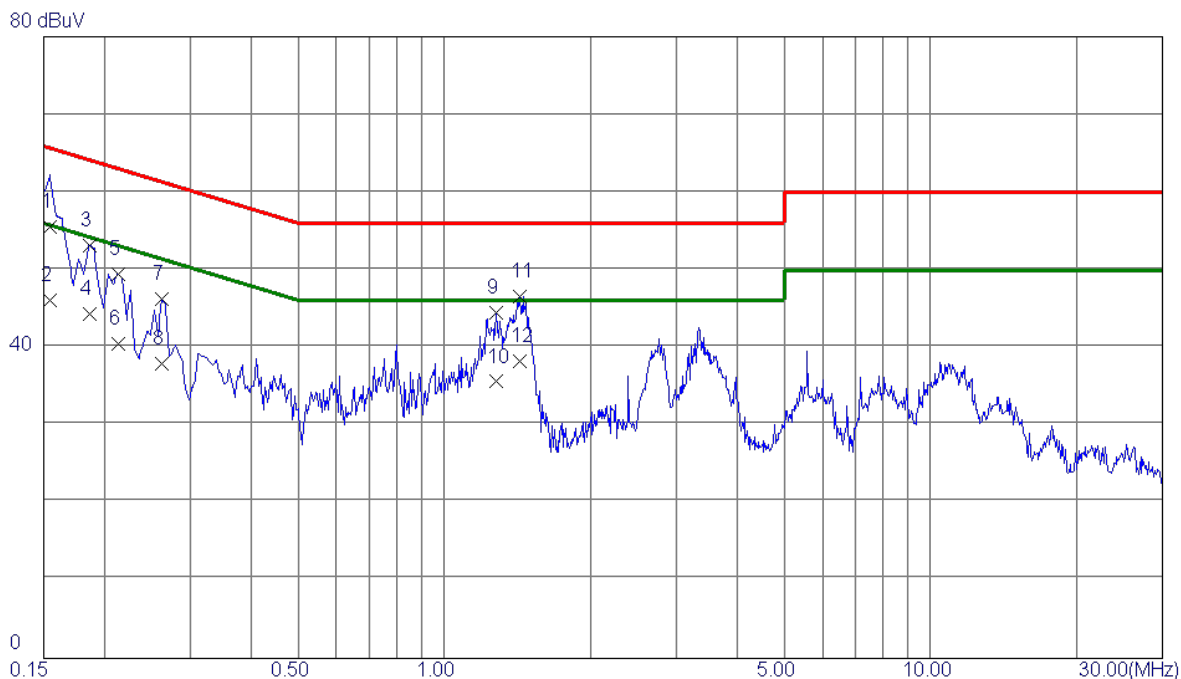
Conducted Test Photos





APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

| | | | |
|-----------|--------------------------|-------|------|
| Test Mode | TX Mode_2Mbps Channel 01 | Phase | Line |
|-----------|--------------------------|-------|------|

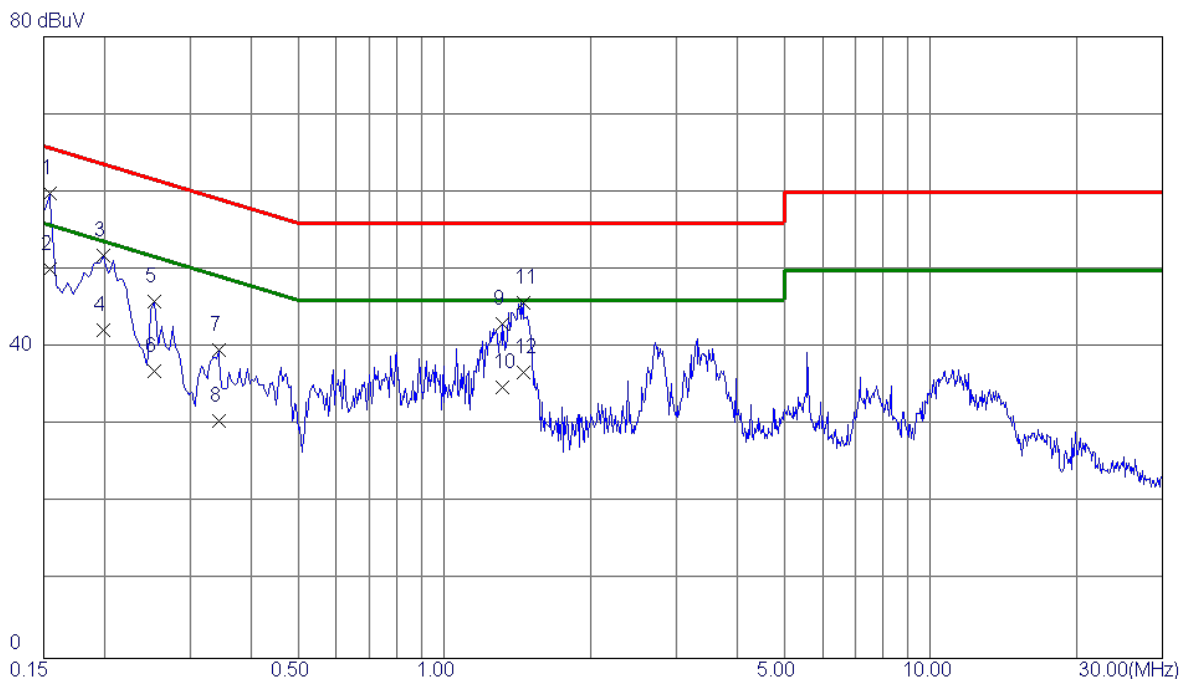


| No. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure ment dBuV | Limit dBuV | Margin dB | Detector | Comment |
|------|--------------|--------------------------|-------------------------|-------------------------|---------------|--------------|----------|---------|
| 1 | 0.1545 | 45.60 | 9.97 | 55.57 | 65.75 | -10.18 | QP | |
| 2 | 0.1545 | 36.10 | 9.97 | 46.07 | 55.75 | -9.68 | AVG | |
| 3 | 0.1860 | 43.22 | 9.97 | 53.19 | 64.21 | -11.02 | QP | |
| 4 | 0.1860 | 34.41 | 9.97 | 44.38 | 54.21 | -9.83 | AVG | |
| 5 | 0.2130 | 39.51 | 10.00 | 49.51 | 63.09 | -13.58 | QP | |
| 6 | 0.2130 | 30.50 | 10.00 | 40.50 | 53.09 | -12.59 | AVG | |
| 7 | 0.2625 | 36.11 | 10.09 | 46.20 | 61.35 | -15.15 | QP | |
| 8 | 0.2625 | 27.80 | 10.09 | 37.89 | 51.35 | -13.46 | AVG | |
| 9 | 1.2795 | 33.12 | 11.30 | 44.42 | 56.00 | -11.58 | QP | |
| 10 | 1.2795 | 24.30 | 11.30 | 35.60 | 46.00 | -10.40 | AVG | |
| 11 | 1.4280 | 35.22 | 11.28 | 46.50 | 56.00 | -9.50 | QP | |
| 12 * | 1.4280 | 26.89 | 11.28 | 38.17 | 46.00 | -7.83 | AVG | |

REMARKS:

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

| | | | |
|-----------|--------------------------|-------|---------|
| Test Mode | TX Mode_2Mbps Channel 01 | Phase | Neutral |
|-----------|--------------------------|-------|---------|



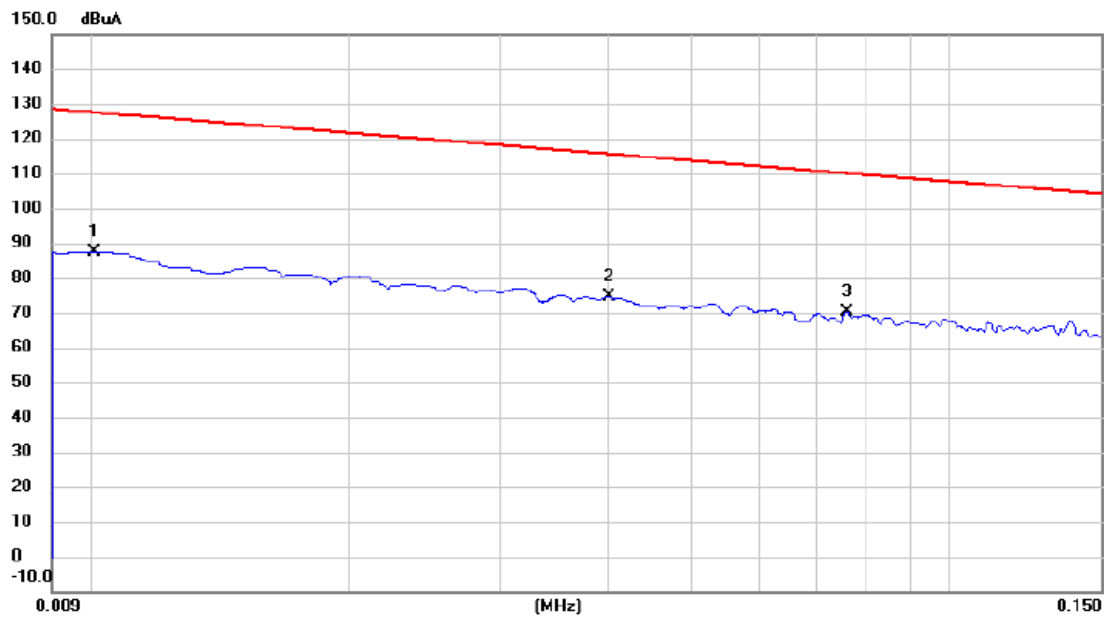
| No. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure ment dBuV | Limit dBuV | Margin dB | Detector | Comment |
|-----|--------------|--------------------------|-------------------------|-------------------------|---------------|--------------|----------|---------|
| 1 | 0.1545 | 49.86 | 9.93 | 59.79 | 65.75 | -5.96 | QP | |
| 2 * | 0.1545 | 40.21 | 9.93 | 50.14 | 55.75 | -5.61 | AVG | |
| 3 | 0.1995 | 41.85 | 9.94 | 51.79 | 63.63 | -11.84 | QP | |
| 4 | 0.1995 | 32.30 | 9.94 | 42.24 | 53.63 | -11.39 | AVG | |
| 5 | 0.2535 | 35.87 | 10.03 | 45.90 | 61.64 | -15.74 | QP | |
| 6 | 0.2535 | 26.91 | 10.03 | 36.94 | 51.64 | -14.70 | AVG | |
| 7 | 0.3435 | 29.39 | 10.23 | 39.62 | 59.12 | -19.50 | QP | |
| 8 | 0.3435 | 20.40 | 10.23 | 30.63 | 49.12 | -18.49 | AVG | |
| 9 | 1.3154 | 31.77 | 11.25 | 43.02 | 56.00 | -12.98 | QP | |
| 10 | 1.3154 | 23.70 | 11.25 | 34.95 | 46.00 | -11.05 | AVG | |
| 11 | 1.4550 | 34.61 | 11.22 | 45.83 | 56.00 | -10.17 | QP | |
| 12 | 1.4550 | 25.60 | 11.22 | 36.82 | 46.00 | -9.18 | 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_2Mbps Channel 01 | Polarization | Ant 0° |
|-----------|--------------------------|--------------|--------|



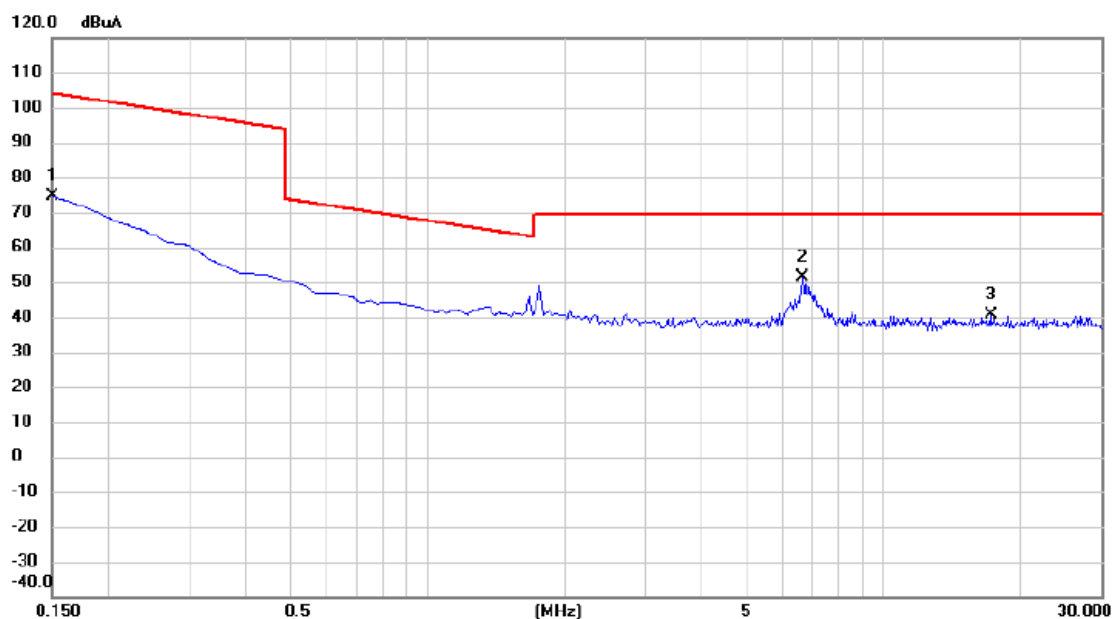
| No. | Mk. | Freq. MHz | Reading Level dBuA | Correct Factor dB | Measure- ment dBuA | Limit dBuA | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1 | | 0.0101 | 67.08 | 20.50 | 87.58 | 127.52 | -39.94 | AVG | |
| 2 | | 0.0401 | 53.35 | 21.15 | 74.50 | 115.54 | -41.04 | AVG | |
| 3 | * | 0.0760 | 48.90 | 21.29 | 70.19 | 109.99 | -39.80 | AVG | |

REMARKS:

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

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

| | | | |
|-----------|--------------------------|--------------|--------|
| Test Mode | TX Mode_2Mbps Channel 01 | Polarization | Ant 0° |
|-----------|--------------------------|--------------|--------|



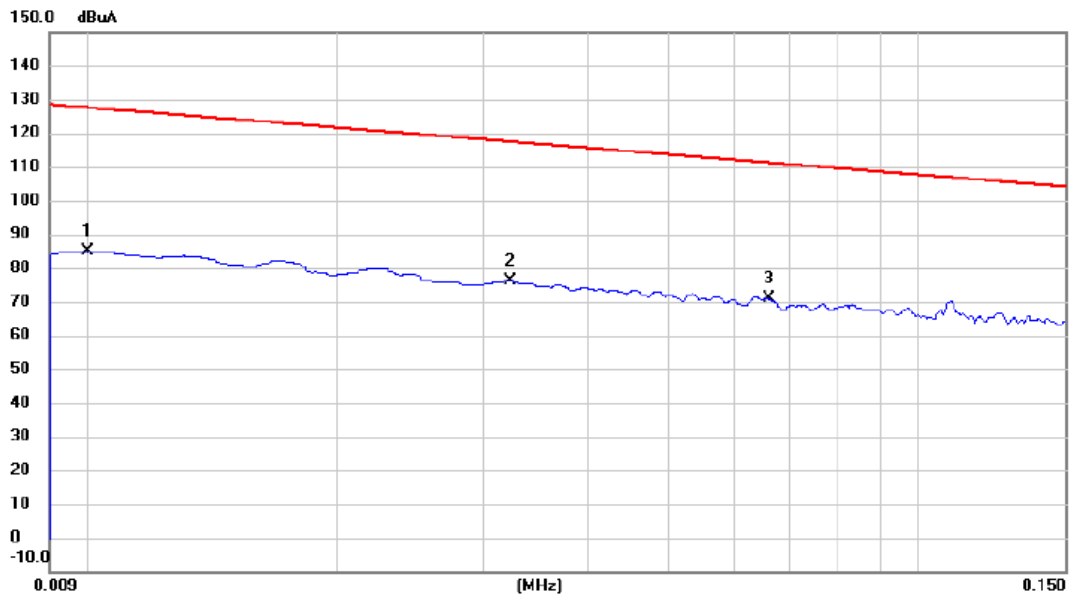
| No. | Mk. | Freq. MHz | Reading Level dBuA | Correct Factor dB | Measure- ment dBuA | Limit dBuA | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1 | | 0.1500 | 53.36 | 21.27 | 74.63 | 104.09 | -29.46 | AVG | |
| 2 | * | 6.6573 | 30.09 | 21.19 | 51.28 | 69.54 | -18.26 | QP | |
| 3 | | 17.1944 | 19.40 | 21.37 | 40.77 | 69.54 | -28.77 | QP | |

REMARKS:

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

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

| | | | |
|-----------|--------------------------|--------------|---------|
| Test Mode | TX Mode_2Mbps Channel 01 | Polarization | Ant 90° |
|-----------|--------------------------|--------------|---------|



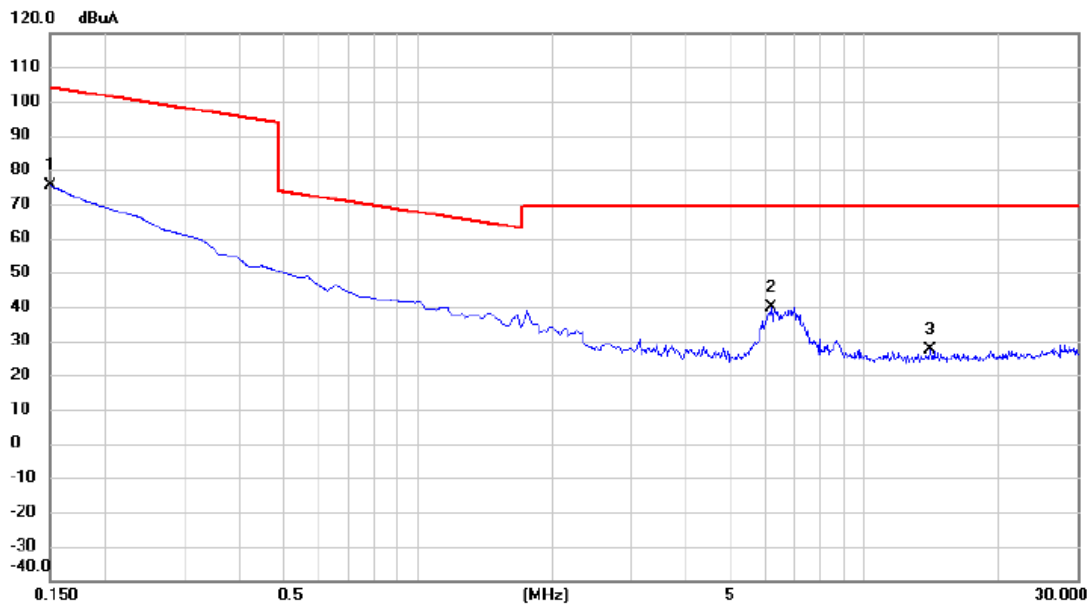
| No. | Mk. | Freq. MHz | Reading Level dBuA | Correct Factor dB | Measure- ment dBuA | Limit dBuA | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1 | | 0.0100 | 64.32 | 20.50 | 84.82 | 127.60 | -42.78 | AVG | |
| 2 | | 0.0323 | 55.04 | 21.11 | 76.15 | 117.42 | -41.27 | AVG | |
| 3 | * | 0.0660 | 49.65 | 21.25 | 70.90 | 111.21 | -40.31 | AVG | |

REMARKS:

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

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

| | | | |
|-----------|--------------------------|--------------|---------|
| Test Mode | TX Mode_2Mbps Channel 01 | Polarization | Ant 90° |
|-----------|--------------------------|--------------|---------|



| No. | Mk. | Freq. MHz | Reading Level dBuA | Correct Factor dB | Measure- ment dBuA | Limit dBuA | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1 | * | 0.1500 | 54.13 | 21.27 | 75.40 | 104.09 | -28.69 | AVG | |
| 2 | | 6.1797 | 18.72 | 21.18 | 39.90 | 69.54 | -29.64 | QP | |
| 3 | | 14.0004 | 5.96 | 21.28 | 27.24 | 69.54 | -42.30 | QP | |

REMARKS:

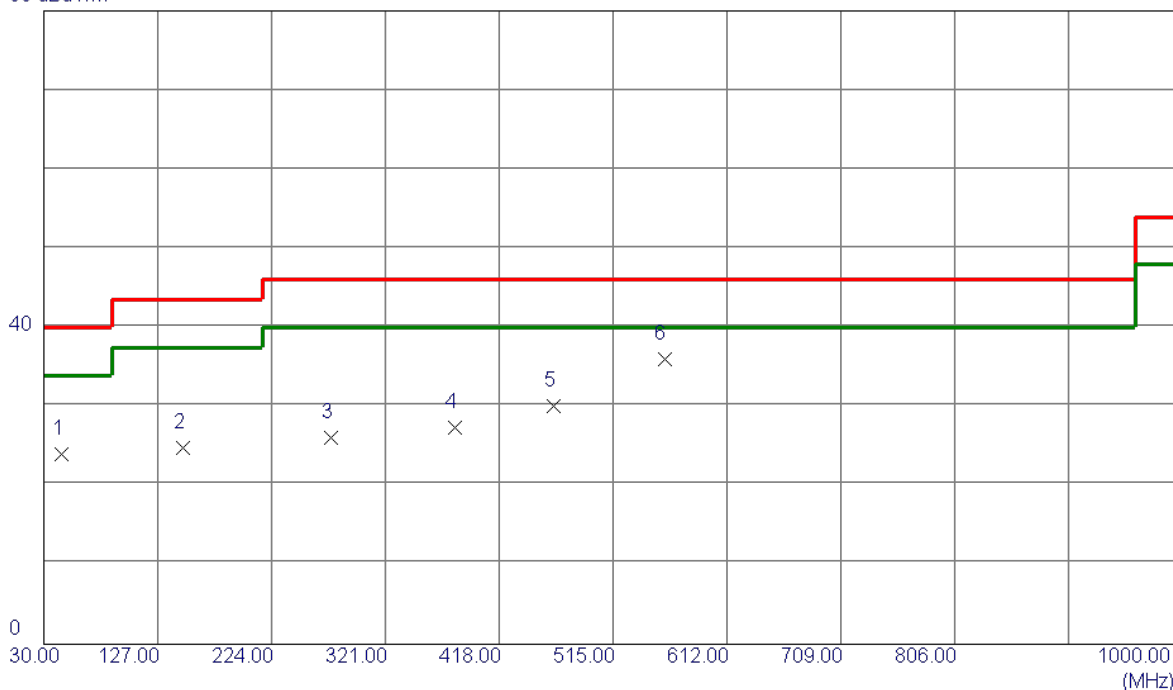
(1) Measurement Value = Reading Level + Correct Factor.

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

APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

| | | | |
|-----------|--------------------------|--------------|----------|
| Test Mode | TX Mode_2Mbps Channel 01 | Polarization | Vertical |
|-----------|--------------------------|--------------|----------|

80 dBuV/m

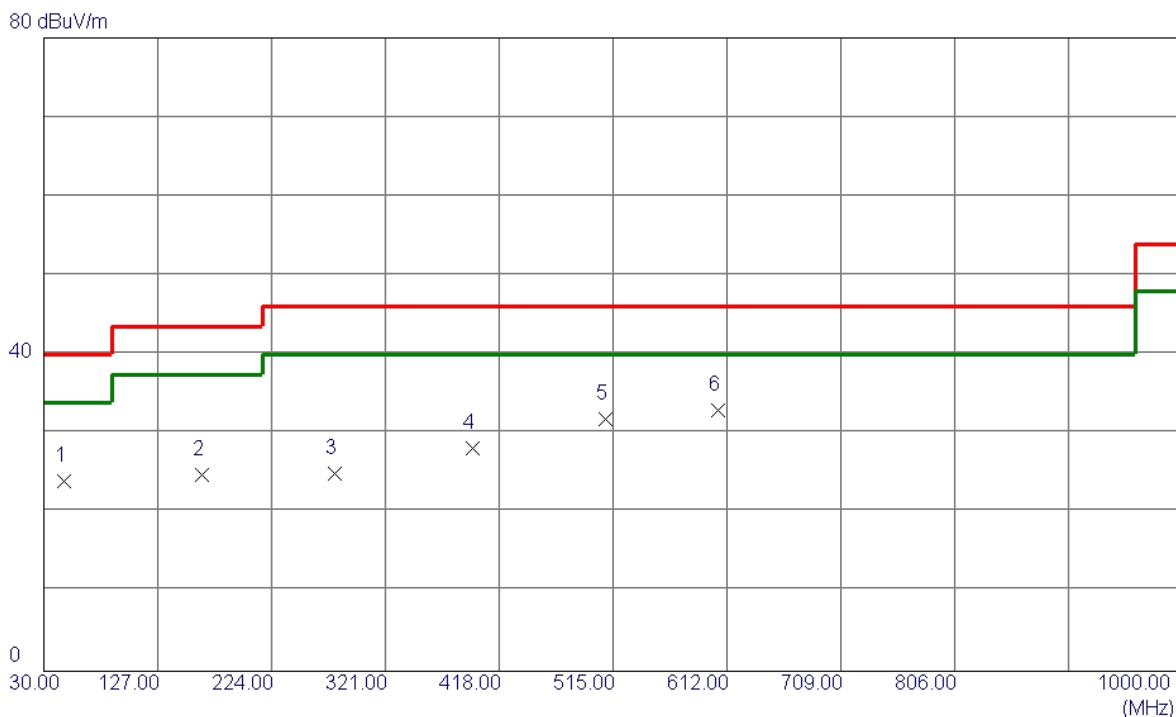


| No. | Freq. MHz | Reading Level dBuV/m | Correct Factor dB | Measure ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|--------------|----------------------------|-------------------------|---------------------------|-----------------|--------------|----------|---------|
| 1 | 45.5200 | 35.33 | -11.34 | 23.99 | 40.00 | -16.01 | Peak | |
| 2 | 148.8250 | 36.05 | -11.23 | 24.82 | 43.52 | -18.70 | Peak | |
| 3 | 274.4400 | 37.40 | -11.30 | 26.10 | 46.02 | -19.92 | Peak | |
| 4 | 380.1700 | 35.98 | -8.64 | 27.34 | 46.02 | -18.68 | Peak | |
| 5 | 464.5600 | 36.68 | -6.56 | 30.12 | 46.02 | -15.90 | Peak | |
| 6 * | 558.6500 | 40.72 | -4.75 | 35.97 | 46.02 | -10.05 | Peak | |

REMARKS:

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

| | | | |
|-----------|--------------------------|--------------|------------|
| Test Mode | TX Mode_2Mbps Channel 01 | Polarization | Horizontal |
|-----------|--------------------------|--------------|------------|



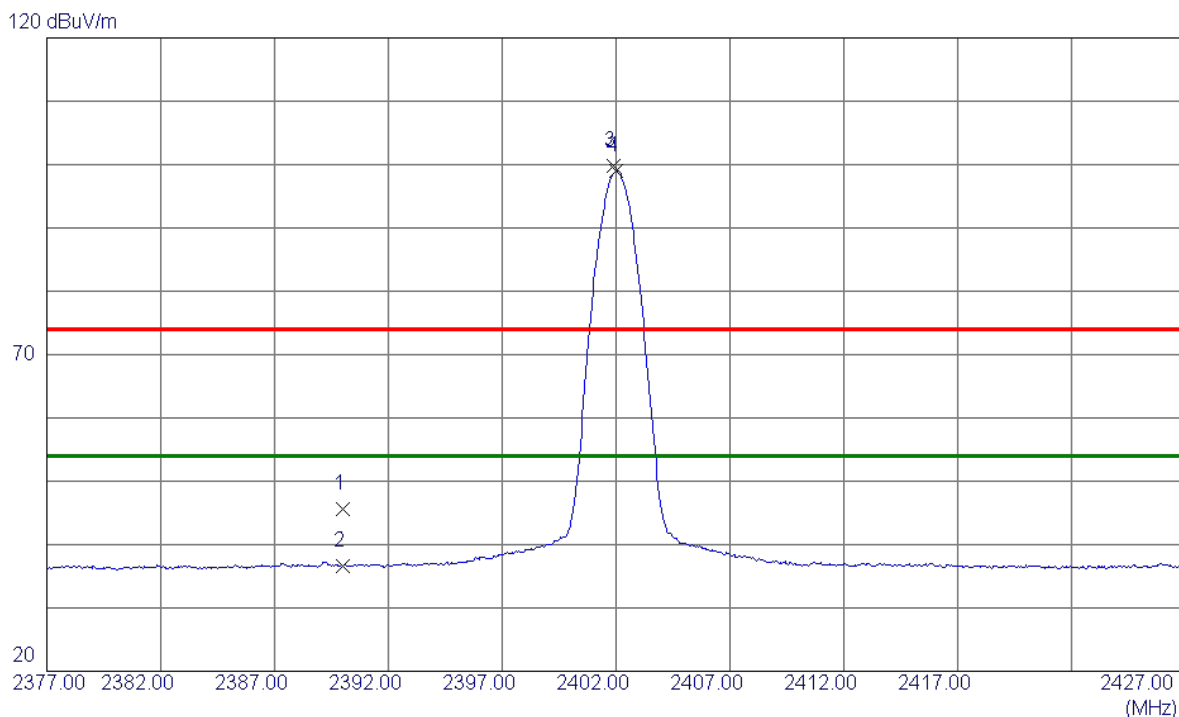
| No. | Freq. MHz | Reading Level dBuV/m | Correct Factor dB | Measure ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|--------------|----------------------------|-------------------------|---------------------------|-----------------|--------------|----------|---------|
| 1 | 47.4600 | 35.25 | -11.28 | 23.97 | 40.00 | -16.03 | Peak | |
| 2 | 164.8300 | 35.86 | -11.04 | 24.82 | 43.52 | -18.70 | Peak | |
| 3 | 277.8350 | 36.04 | -11.14 | 24.90 | 46.02 | -21.12 | Peak | |
| 4 | 395.6900 | 36.34 | -8.12 | 28.22 | 46.02 | -17.80 | Peak | |
| 5 | 508.6950 | 37.64 | -5.84 | 31.80 | 46.02 | -14.22 | Peak | |
| 6 * | 604.7250 | 36.54 | -3.52 | 33.02 | 46.02 | -13.00 | 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 | Vertical |
|-----------|-------------------------|--------------|----------|



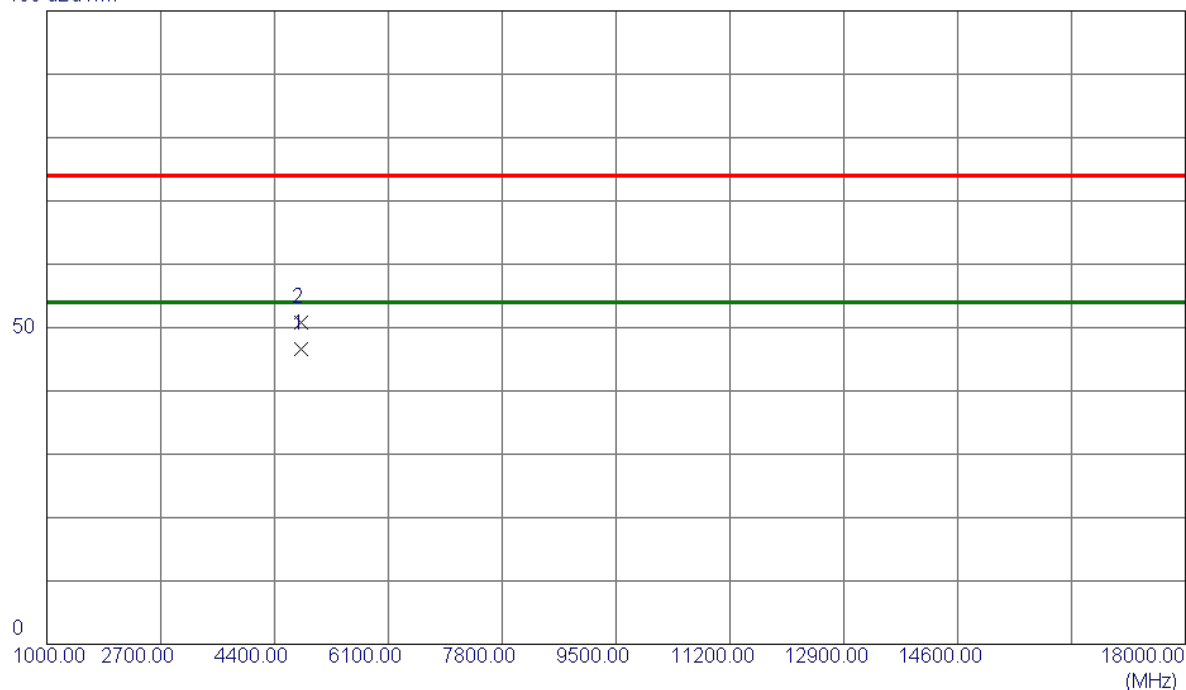
| No. | Freq. MHz | Reading Level dBuV/m | Correct Factor dB | Measure ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|--------------|----------------------------|-------------------------|---------------------------|-----------------|--------------|----------|----------|
| 1 | 2390.0000 | 37.96 | 7.70 | 45.66 | 74.00 | -28.34 | Peak | |
| 2 | 2390.0000 | 28.89 | 7.70 | 36.59 | 54.00 | -17.41 | AVG | |
| 3 | 2401.9000 | 92.12 | 7.71 | 99.83 | 74.00 | 25.83 | Peak | No Limit |
| 4 * | 2402.0250 | 91.28 | 7.71 | 98.99 | 54.00 | 44.99 | AVG | 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 | Vertical |
|-----------|-------------------------|--------------|----------|

100 dBuV/m



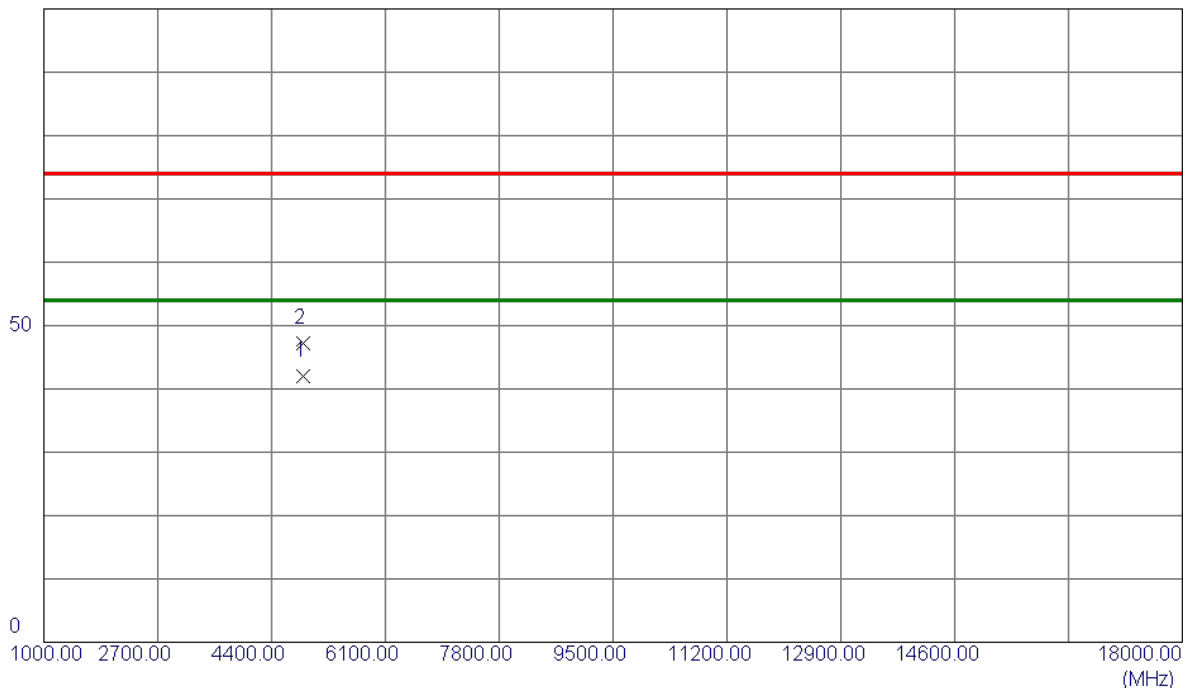
| No. | Freq. MHz | Reading Level dBuV/m | Correct Factor dB | Measure ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|--------------|----------------------------|-------------------------|---------------------------|-----------------|--------------|----------|---------|
| 1 * | 4804.0750 | 43.78 | 2.79 | 46.57 | 54.00 | -7.43 | AVG | |
| 2 | 4804.4500 | 47.97 | 2.79 | 50.76 | 74.00 | -23.24 | Peak | |

REMARKS:

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

| | | | |
|-----------|-------------------------|--------------|----------|
| Test Mode | TX 2440 MHz _CH19_1Mbps | Polarization | Vertical |
|-----------|-------------------------|--------------|----------|

100 dBuV/m

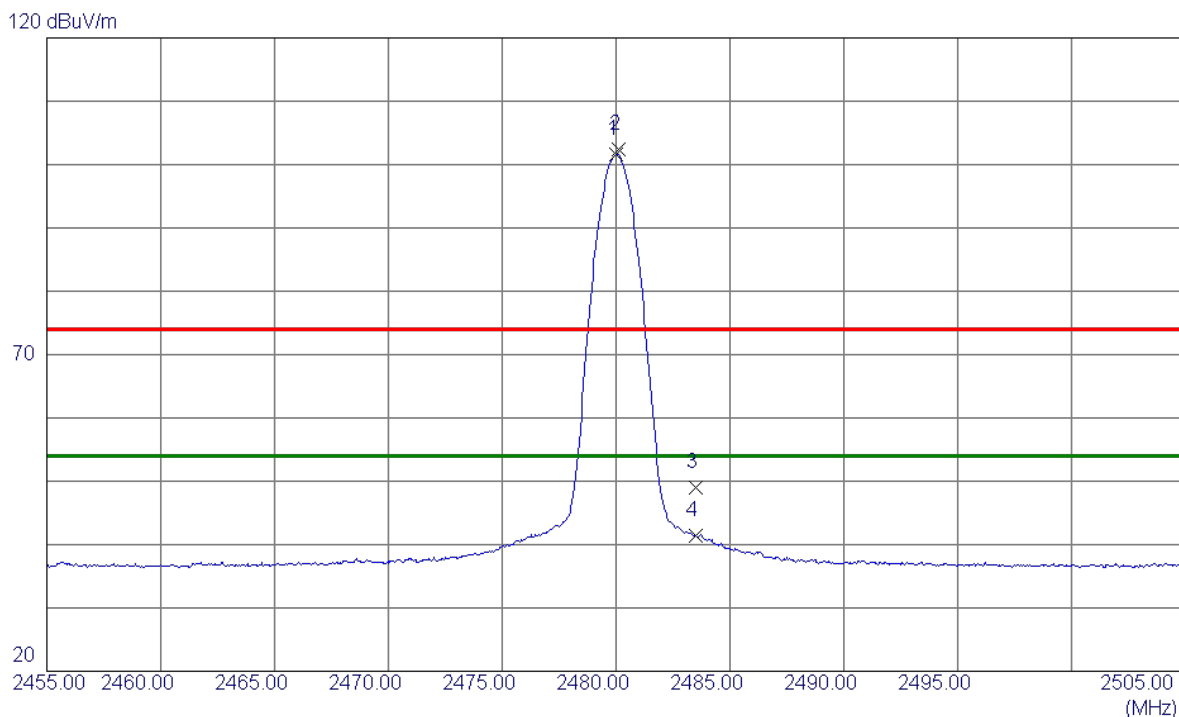


| No. | Freq. | Reading Level | Correct Factor | Measurement | Limit | Margin | | |
|-----|-----------|---------------|----------------|-------------|--------|--------|----------|---------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 * | 4880.0750 | 39.05 | 2.97 | 42.02 | 54.00 | -11.98 | AVG | |
| 2 | 4880.3500 | 44.17 | 2.97 | 47.14 | 74.00 | -26.86 | Peak | |

REMARKS:

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

| | | | |
|-----------|-------------------------|--------------|----------|
| Test Mode | TX 2480 MHz _CH39_1Mbps | Polarization | Vertical |
|-----------|-------------------------|--------------|----------|



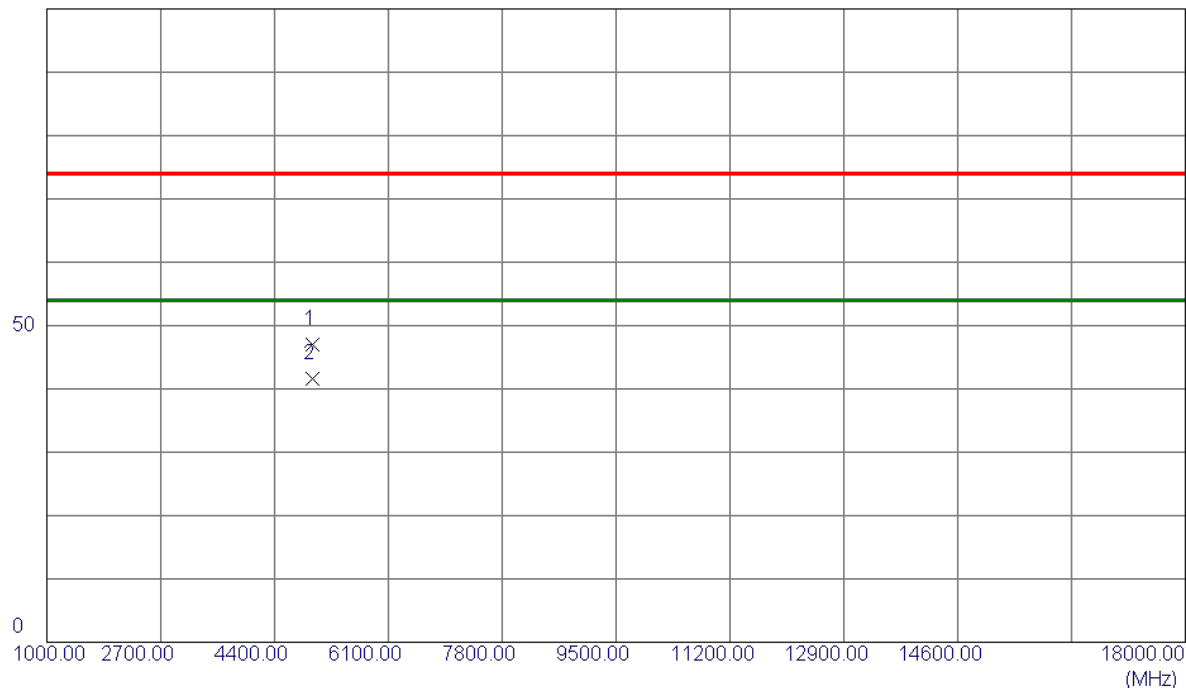
| No. | Freq. MHz | Reading Level dBuV/m | Correct Factor dB | Measure ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|--------------|----------------------------|-------------------------|---------------------------|-----------------|--------------|----------|----------|
| 1 * | 2480.0000 | 93.80 | 7.81 | 101.61 | 54.00 | 47.61 | AVG | No Limit |
| 2 | 2480.1250 | 94.65 | 7.81 | 102.46 | 74.00 | 28.46 | Peak | No Limit |
| 3 | 2483.5000 | 41.19 | 7.81 | 49.00 | 74.00 | -25.00 | Peak | |
| 4 | 2483.5000 | 33.51 | 7.81 | 41.32 | 54.00 | -12.68 | AVG | |

REMARKS:

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

| | | | |
|-----------|-------------------------|--------------|----------|
| Test Mode | TX 2480 MHz _CH39_1Mbps | Polarization | Vertical |
|-----------|-------------------------|--------------|----------|

100 dBuV/m

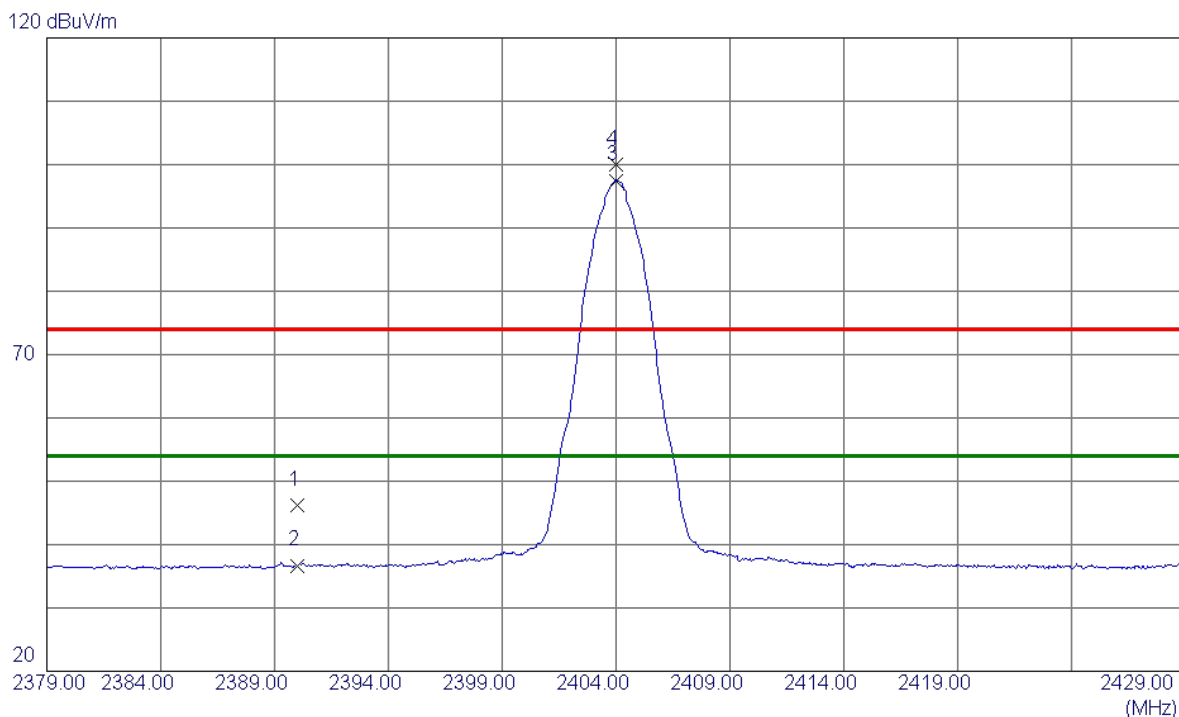


| No. | Freq. MHz | Reading Level dBuV/m | Correct Factor dB | Measure ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|--------------|----------------------------|-------------------------|---------------------------|-----------------|--------------|----------|---------|
| 1 | 4960.1500 | 43.80 | 3.16 | 46.96 | 74.00 | -27.04 | Peak | |
| 2 * | 4960.2250 | 38.52 | 3.16 | 41.68 | 54.00 | -12.32 | AVG | |

REMARKS:

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

| | | | |
|-----------|-------------------------|--------------|----------|
| Test Mode | TX 2404 MHz _CH01_2Mbps | Polarization | Vertical |
|-----------|-------------------------|--------------|----------|



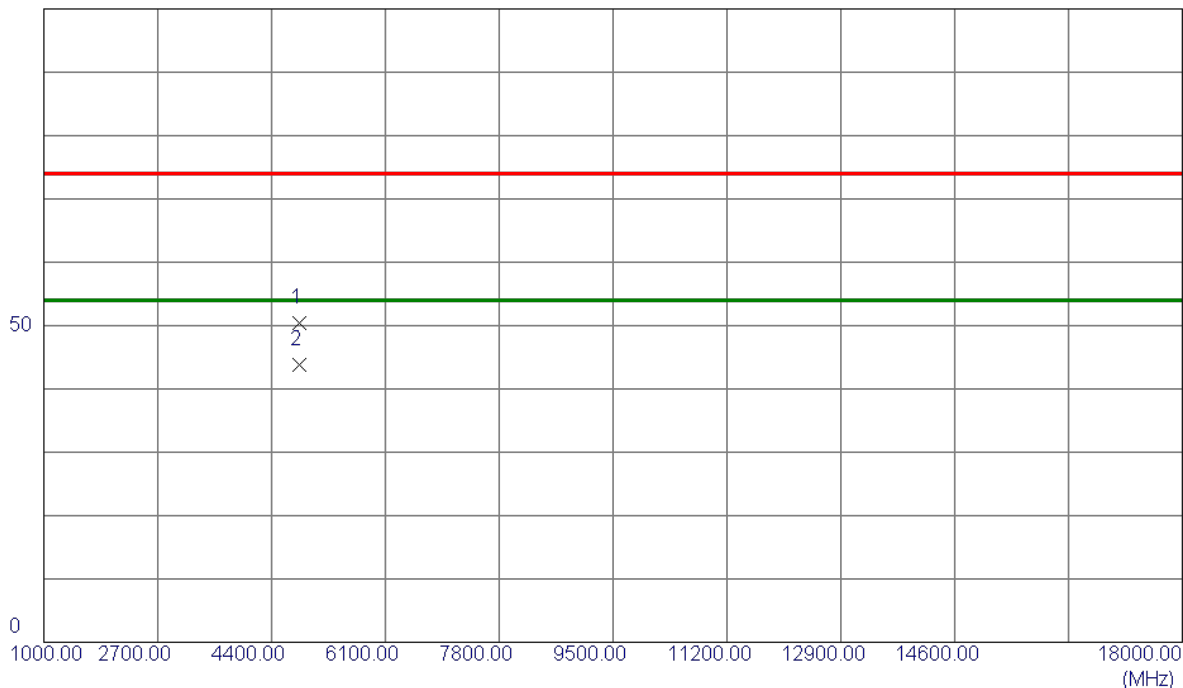
| No. | Freq. MHz | Reading Level dBuV/m | Correct Factor dB | Measure ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|--------------|----------------------------|-------------------------|---------------------------|-----------------|--------------|----------|----------|
| 1 | 2390.0000 | 38.59 | 7.70 | 46.29 | 74.00 | -27.71 | Peak | |
| 2 | 2390.0000 | 29.00 | 7.70 | 36.70 | 54.00 | -17.30 | AVG | |
| 3 * | 2404.0000 | 89.79 | 7.71 | 97.50 | 54.00 | 43.50 | AVG | No Limit |
| 4 | 2404.0250 | 92.35 | 7.71 | 100.06 | 74.00 | 26.06 | Peak | No Limit |

REMARKS:

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

| | | | |
|-----------|-------------------------|--------------|----------|
| Test Mode | TX 2404 MHz _CH01_2Mbps | Polarization | Vertical |
|-----------|-------------------------|--------------|----------|

100 dBuV/m



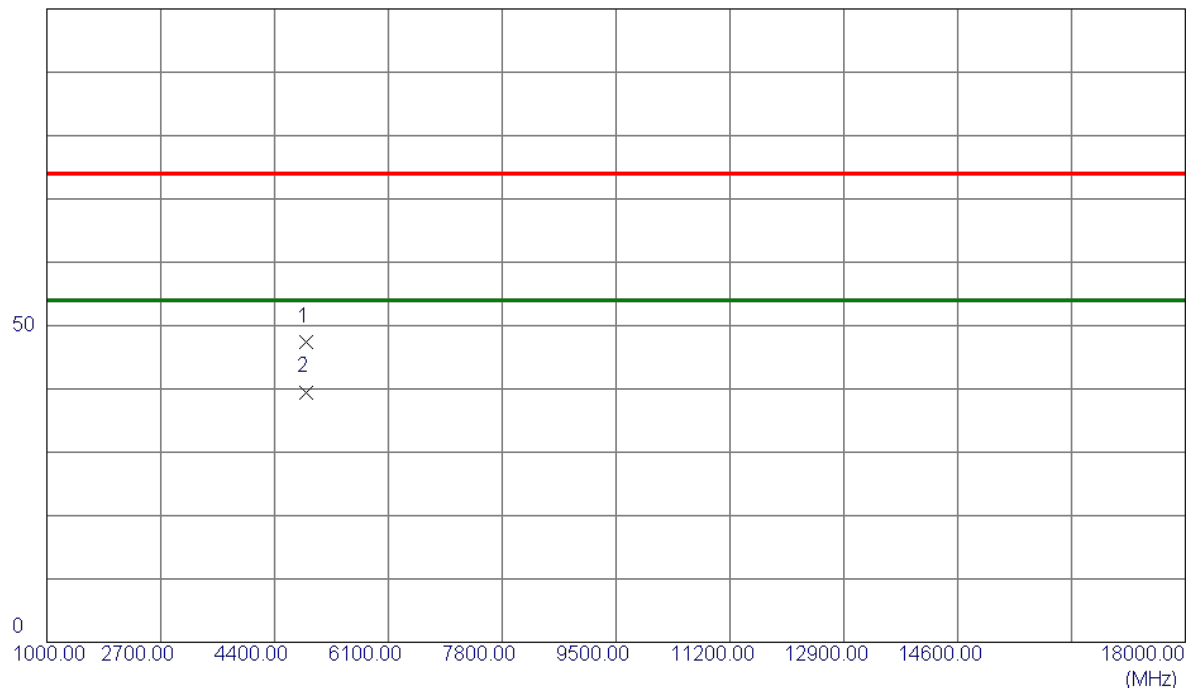
| No. | Freq. MHz | Reading Level dBuV/m | Correct Factor dB | Measure ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|--------------|----------------------------|-------------------------|---------------------------|-----------------|--------------|----------|---------|
| 1 | 4807.9750 | 47.60 | 2.80 | 50.40 | 74.00 | -23.60 | Peak | |
| 2 * | 4808.7500 | 41.03 | 2.80 | 43.83 | 54.00 | -10.17 | AVG | |

REMARKS:

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

| | | | |
|-----------|-------------------------|--------------|----------|
| Test Mode | TX 2440 MHz _CH19_2Mbps | Polarization | Vertical |
|-----------|-------------------------|--------------|----------|

100 dBuV/m

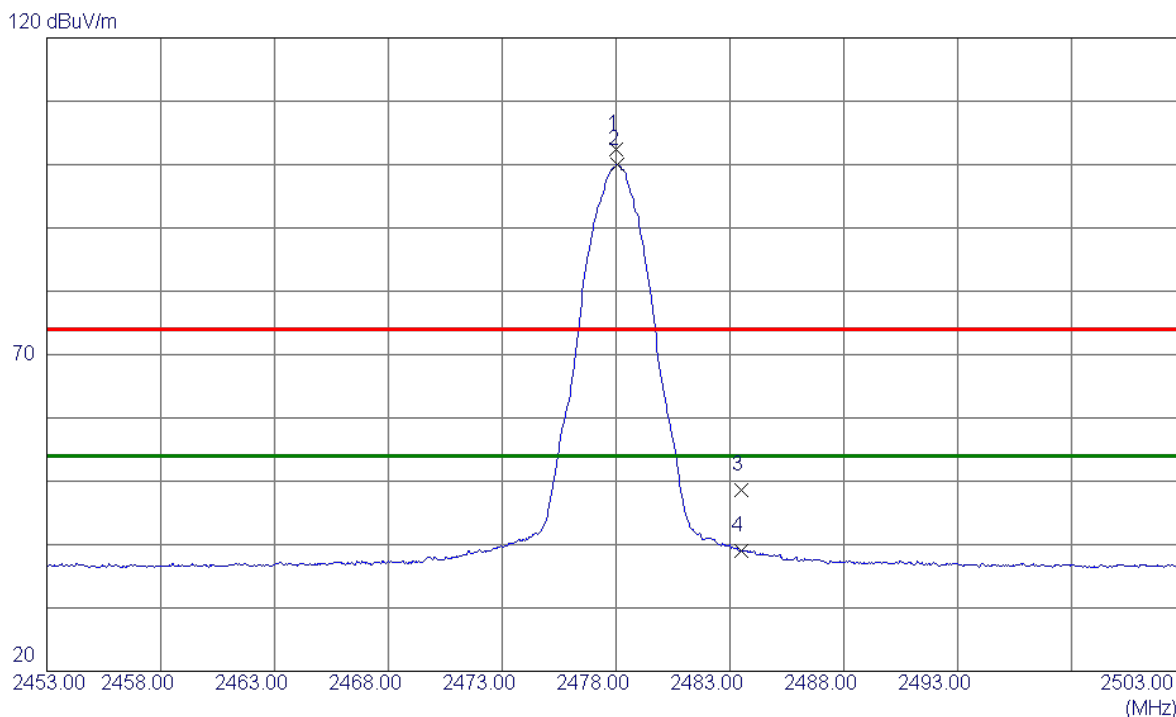


| No. | Freq. MHz | Reading Level dBuV/m | Correct Factor dB | Measure ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|--------------|----------------------------|-------------------------|---------------------------|-----------------|--------------|----------|---------|
| 1 | 4879.0500 | 44.35 | 2.97 | 47.32 | 74.00 | -26.68 | Peak | |
| 2 * | 4881.0000 | 36.53 | 2.97 | 39.50 | 54.00 | -14.50 | AVG | |

REMARKS:

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

| | | | |
|-----------|-------------------------|--------------|----------|
| Test Mode | TX 2478 MHz _CH38_2Mbps | Polarization | Vertical |
|-----------|-------------------------|--------------|----------|



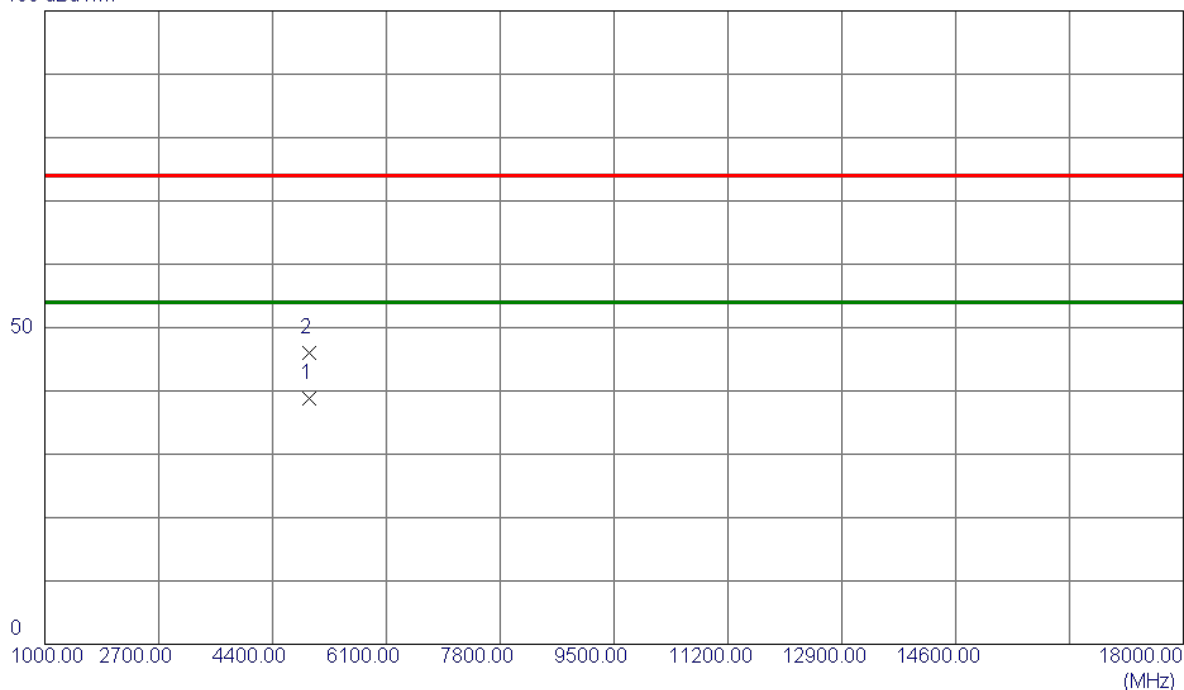
| No. | Freq. MHz | Reading Level dBuV/m | Correct Factor dB | Measure ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|--------------|----------------------------|-------------------------|---------------------------|-----------------|--------------|----------|----------|
| 1 | 2478.0000 | 94.69 | 7.80 | 102.49 | 74.00 | 28.49 | Peak | No Limit |
| 2 * | 2478.0500 | 92.11 | 7.80 | 99.91 | 54.00 | 45.91 | AVG | No Limit |
| 3 | 2483.5000 | 40.74 | 7.81 | 48.55 | 74.00 | -25.45 | Peak | |
| 4 | 2483.5000 | 31.10 | 7.81 | 38.91 | 54.00 | -15.09 | AVG | |

REMARKS:

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

| | | | |
|-----------|-------------------------|--------------|----------|
| Test Mode | TX 2478 MHz _CH38_2Mbps | Polarization | Vertical |
|-----------|-------------------------|--------------|----------|

100 dBuV/m

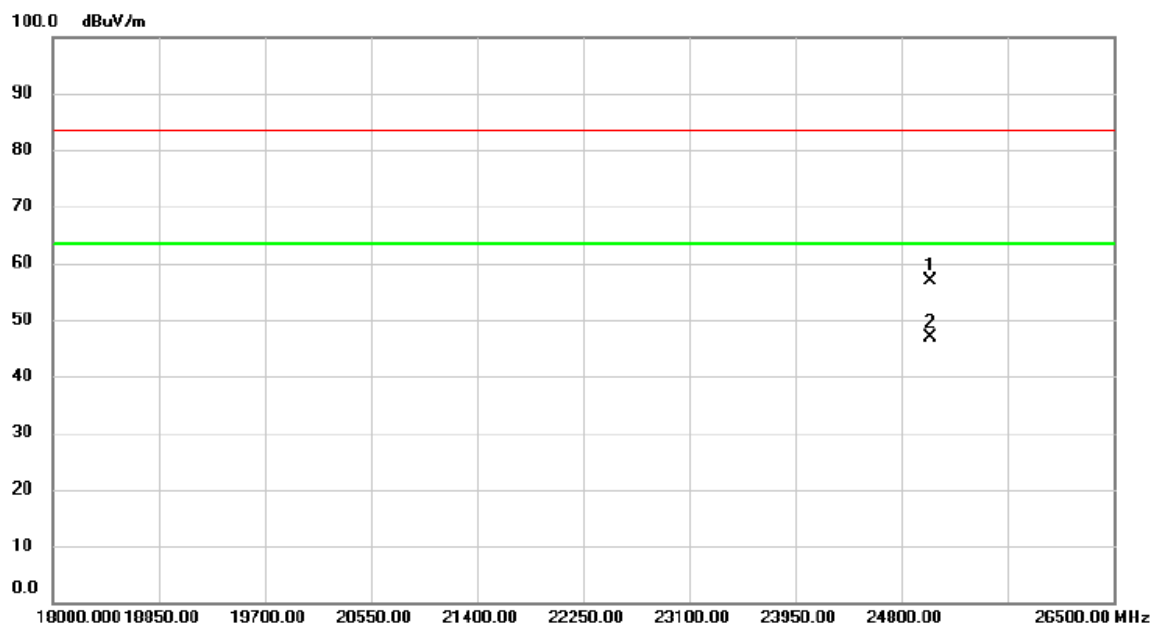


| No. | Freq. MHz | Reading Level dBuV/m | Correct Factor dB | Measure ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|--------------|----------------------------|-------------------------|---------------------------|-----------------|--------------|----------|---------|
| 1 * | 4956.8500 | 35.71 | 3.15 | 38.86 | 54.00 | -15.14 | AVG | |
| 2 | 4956.9250 | 42.79 | 3.15 | 45.94 | 74.00 | -28.06 | Peak | |

REMARKS:

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

| | | | |
|-----------|-------------------------|--------------|------------|
| Test Mode | TX 2404 MHz _CH01_2Mbps | Polarization | Horizontal |
|-----------|-------------------------|--------------|------------|

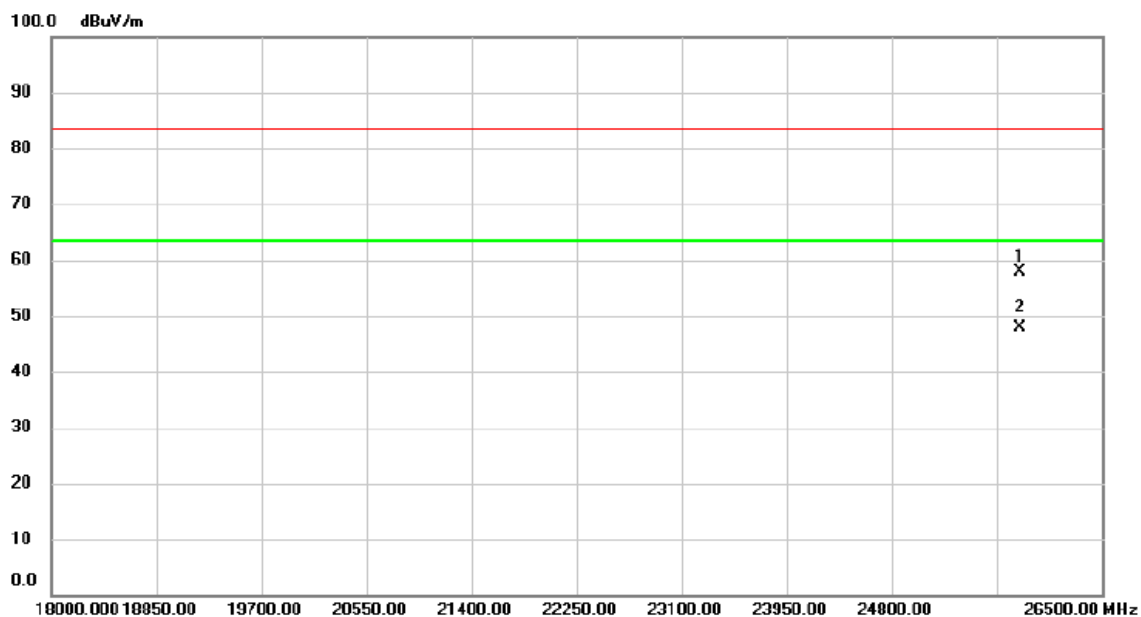


| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|-----|-----|-----------|---------------|----------------|--------------|--------|--------|----------|---------|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | * | 25029.500 | 45.02 | 11.86 | 56.88 | 83.50 | -26.62 | peak | |
| 2 | | 25029.500 | 34.97 | 11.86 | 46.83 | 83.50 | -36.67 | peak | |

REMARKS:

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

| | | | |
|-----------|-------------------------|--------------|------------|
| Test Mode | TX 2404 MHz _CH01_2Mbps | Polarization | Horizontal |
|-----------|-------------------------|--------------|------------|



| No. | Mk. | Freq. | Reading Level | Correct Factor | Measurement | Limit | Margin | | |
|-----|-----|-----------|---------------|----------------|-------------|--------|--------|----------|---------|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 25837.000 | 45.71 | 12.28 | 57.99 | 83.50 | -25.51 | peak | |
| 2 | * | 25837.000 | 35.67 | 12.28 | 47.95 | 63.50 | -15.55 | AVG | |

REMARKS:

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

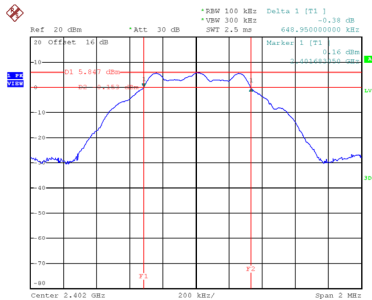
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX E - BANDWIDTH

| | |
|-----------|----------------|
| Test Mode | TX Mode _1Mbps |
|-----------|----------------|

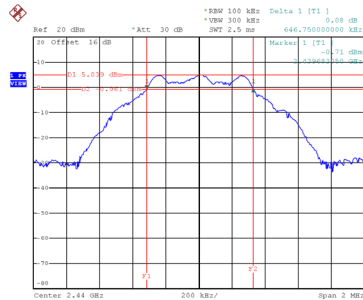
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | 99 % Occupied Bandwidth (MHz) | 6 dB Bandwidth Min. Limit (MHz) | Test Result |
|---------|-----------------|----------------------|-------------------------------|---------------------------------|-------------|
| 00 | 2402 | 0.649 | 0.968 | 0.5 | Pass |
| 19 | 2440 | 0.647 | 0.956 | 0.5 | Pass |
| 39 | 2480 | 0.651 | 0.972 | 0.5 | Pass |

CH00



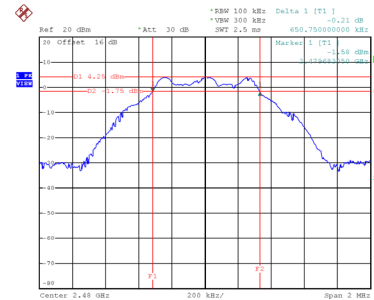
Date: 9.AUG.2024 17:54:33

CH19
6 dB Bandwidth



Date: 9.AUG.2024 17:56:08

CH39

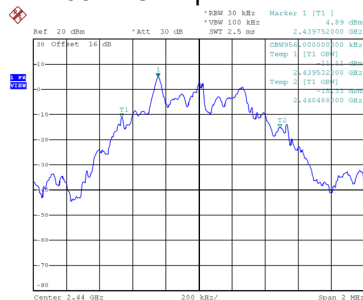


Date: 9.AUG.2024 17:58:54

99 % Occupied Bandwidth



Date: 9.AUG.2024 17:53:29



Date: 9.AUG.2024 17:56:14

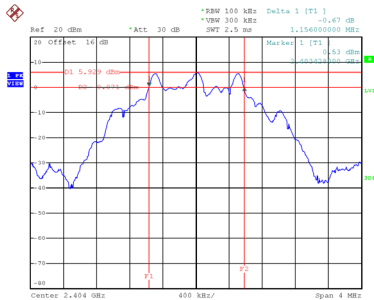


Date: 9.AUG.2024 17:58:59

| | |
|-----------|----------------|
| Test Mode | TX Mode _2Mbps |
|-----------|----------------|

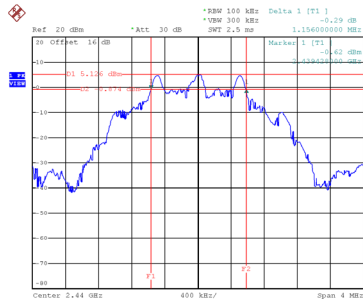
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | 99 % Occupied Bandwidth (MHz) | 6 dB Bandwidth Min. Limit (MHz) | Test Result |
|---------|-----------------|----------------------|-------------------------------|---------------------------------|-------------|
| 01 | 2404 | 1.156 | 1.888 | 0.5 | Pass |
| 19 | 2440 | 1.156 | 1.912 | 0.5 | Pass |
| 38 | 2478 | 1.152 | 1.912 | 0.5 | Pass |

CH01



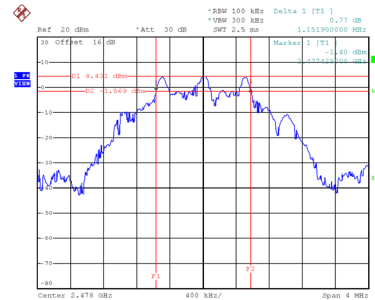
Date: 9.AUG.2024 18:38:07

CH19
6 dB Bandwidth



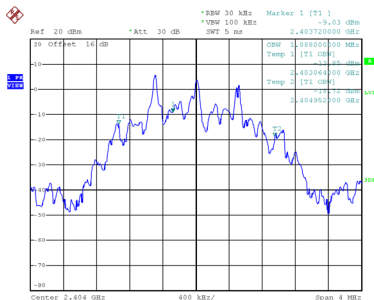
Date: 9.AUG.2024 18:43:36

CH38

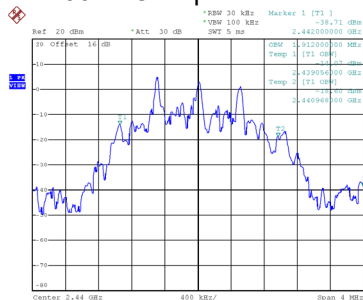


Date: 9.AUG.2024 18:47:46

99 % Occupied Bandwidth



Date: 9.AUG.2024 18:38:58



Date: 9.AUG.2024 18:44:55



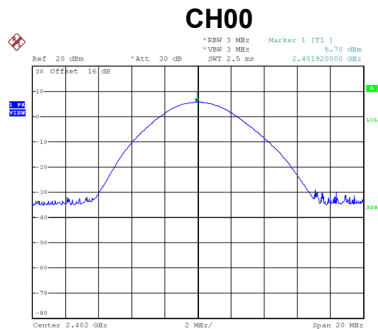
Date: 9.AUG.2024 18:47:52

APPENDIX F - MAXIMUM OUTPUT POWER

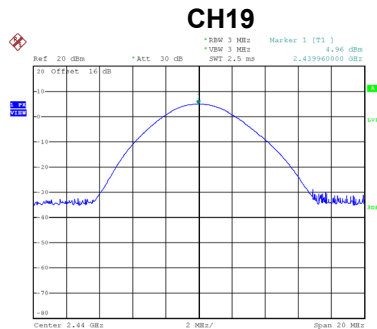
| | |
|-----------|----------------|
| Test Mode | TX Mode _1Mbps |
|-----------|----------------|

| Frequency (MHz) | Output Power (dBm) | Output Power (W) | Max. Limit (dBm) | Max. Limit (W) | Test Result |
|-----------------|--------------------|------------------|------------------|----------------|-------------|
| 2402 | 5.70 | 0.0037 | 30.00 | 1.0000 | Pass |
| 2440 | 4.96 | 0.0031 | 30.00 | 1.0000 | Pass |
| 2480 | 4.12 | 0.0026 | 30.00 | 1.0000 | Pass |

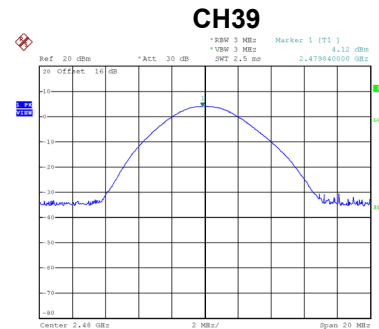
Note: Output power = Measure result + Cable loss



Date: 9.AUG.2024 17:34:34



Date: 9.AUG.2024 17:34:47

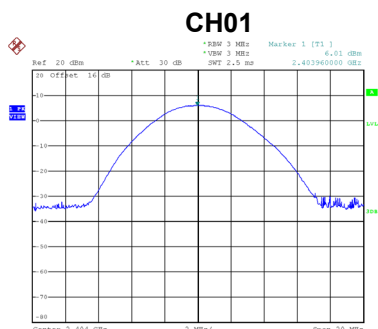


Date: 9.AUG.2024 17:35:01

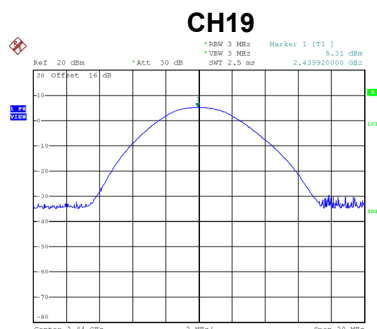
| | |
|-----------|----------------|
| Test Mode | TX Mode _2Mbps |
|-----------|----------------|

| Frequency (MHz) | Output Power (dBm) | Output Power (W) | Max. Limit (dBm) | Max. Limit (W) | Test Result |
|-----------------|--------------------|------------------|------------------|----------------|-------------|
| 2404 | 6.01 | 0.0040 | 30.00 | 1.0000 | Pass |
| 2440 | 5.31 | 0.0034 | 30.00 | 1.0000 | Pass |
| 2478 | 4.50 | 0.0028 | 30.00 | 1.0000 | Pass |

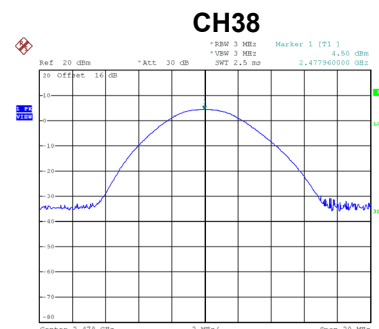
Note: Output power = Measure result + Cable loss



Date: 9.AUG.2024 18:49:46



Date: 9.AUG.2024 18:45:59

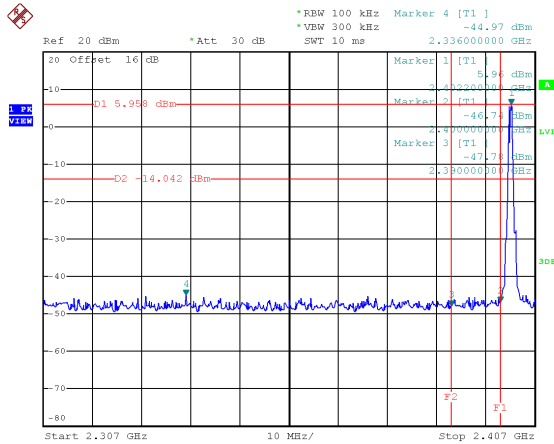


Date: 9.AUG.2024 18:48:02

APPENDIX G - CONDUCTED SPURIOUS EMISSION

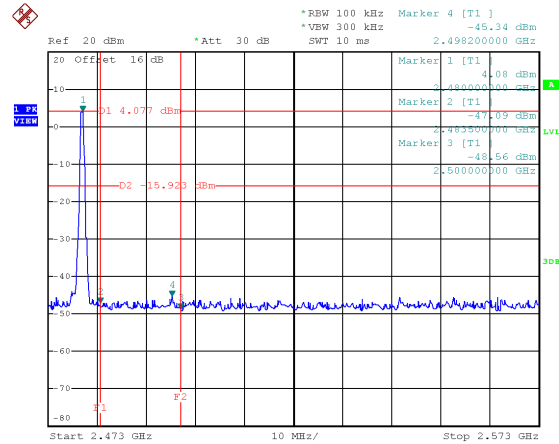
Test Mode TX Mode_1Mbps

Bandedge CH00 (Lower)



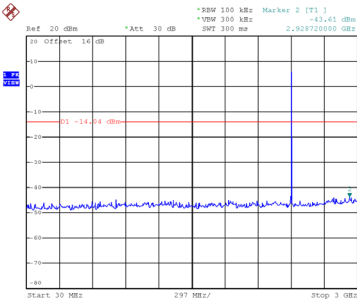
Date: 9.AUG.2024 17:54:41

Bandedge CH39 (Upper)

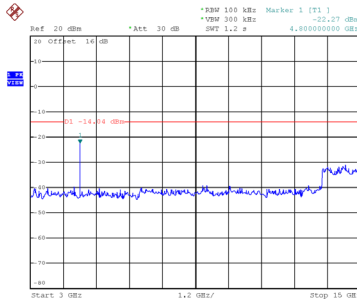


Date: 9.AUG.2024 17:59:23

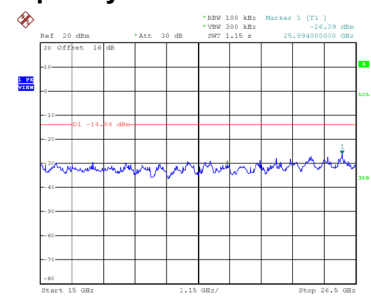
CH00 – 10th Harmonic of the fundamental frequency



Date: 9.AUG.2024 17:54:54

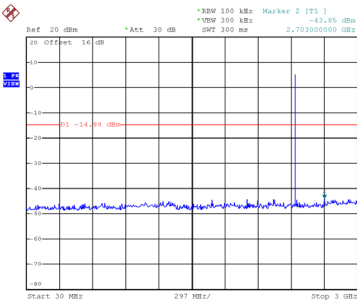


Date: 9.AUG.2024 17:55:01

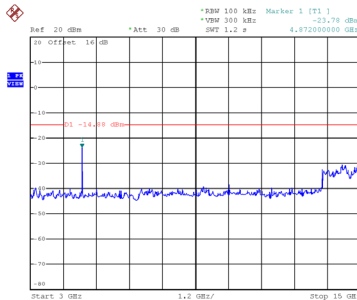


Date: 9.AUG.2024 17:55:08

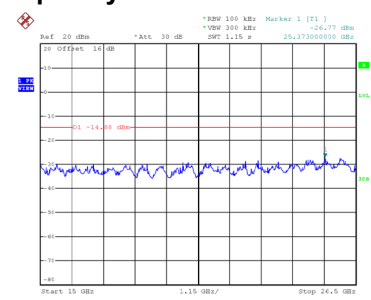
CH19 – 10th Harmonic of the fundamental frequency



Date: 9.AUG.2024 17:57:35

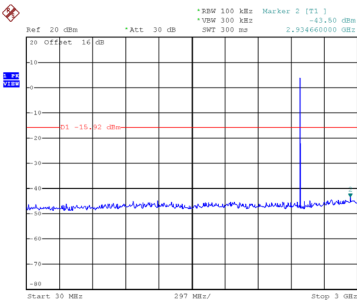


Date: 9.AUG.2024 17:57:42

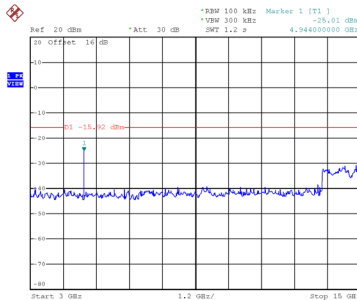


Date: 9.AUG.2024 17:57:50

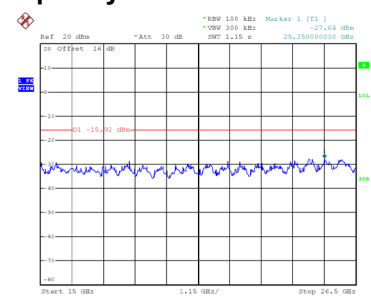
CH39 – 10th Harmonic of the fundamental frequency



Date: 9.AUG.2024 17:59:37



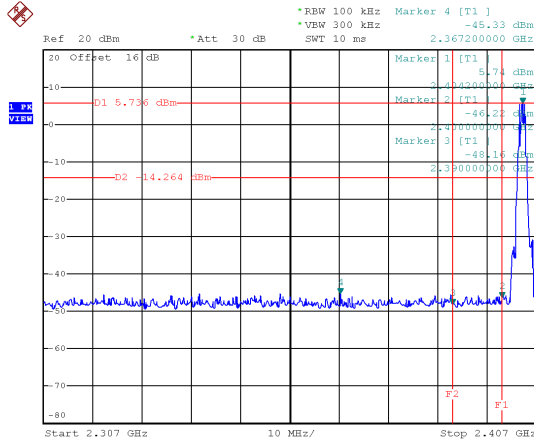
Date: 9.AUG.2024 17:59:44



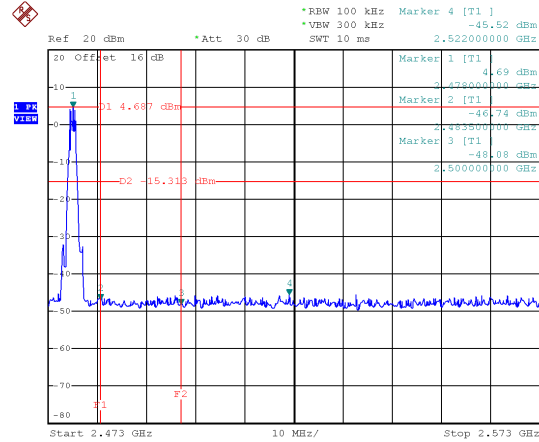
Date: 9.AUG.2024 17:59:51

Test Mode TX Mode_2Mbps

Bandedge CH01 (Lower)



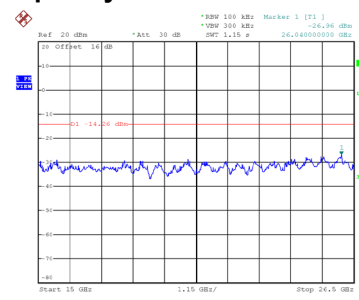
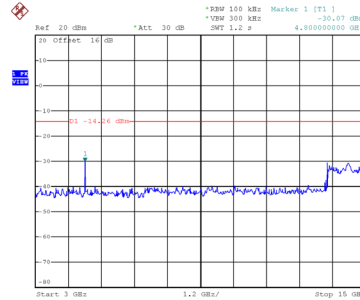
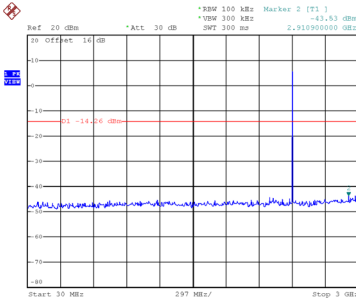
Bandedge CH78 (Upper)



Date: 9.AUG.2024 18:39:00

Date: 9.AUG.2024 18:48:42

CH01 – 10th Harmonic of the fundamental frequency

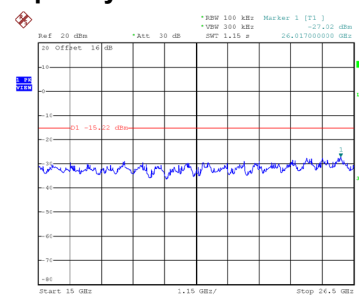
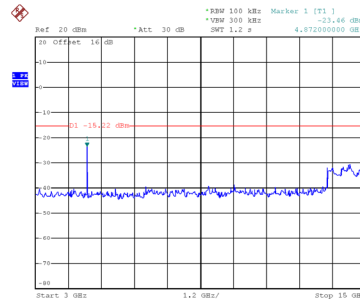
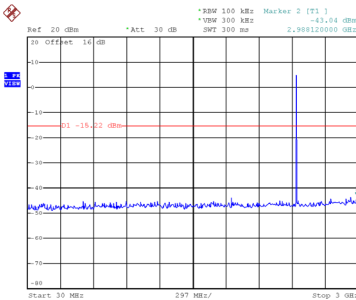


Date: 9.AUG.2024 18:39:13

Date: 9.AUG.2024 18:39:21

Date: 9.AUG.2024 18:39:28

CH19 – 10th Harmonic of the fundamental frequency

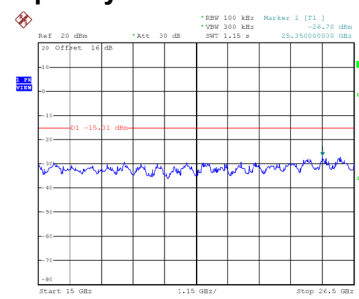
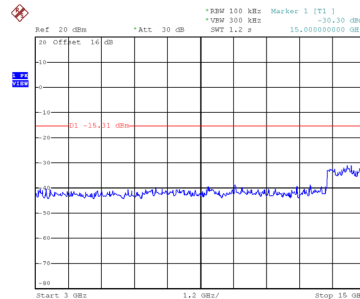
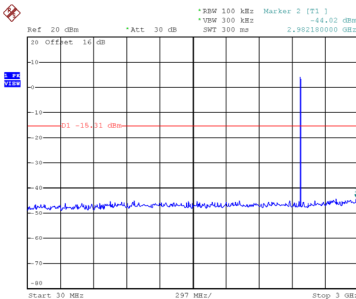


Date: 9.AUG.2024 18:45:33

Date: 9.AUG.2024 18:45:40

Date: 9.AUG.2024 18:45:47

CH78 – 10th Harmonic of the fundamental frequency



Date: 9.AUG.2024 18:48:55

Date: 9.AUG.2024 18:49:02

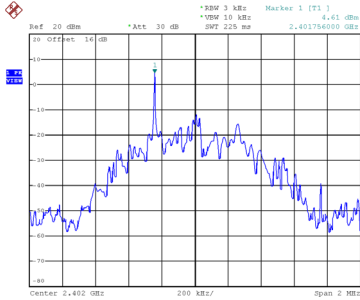
Date: 9.AUG.2024 18:49:09

APPENDIX H - POWER SPECTRAL DENSITY

| | |
|-----------|----------------|
| Test Mode | TX Mode _1Mbps |
|-----------|----------------|

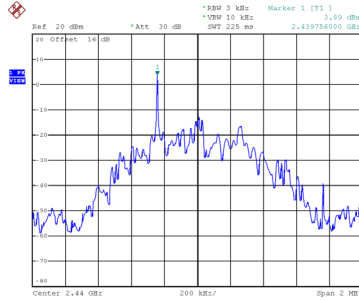
| Channel | Frequency (MHz) | Power Spectral Density (dBm/3 kHz) | Max. Limit (dBm/3 kHz) | Test Result |
|---------|-----------------|------------------------------------|------------------------|-------------|
| 00 | 2402 | 4.61 | 8.00 | Pass |
| 19 | 2440 | 3.89 | 8.00 | Pass |
| 39 | 2480 | 3.08 | 8.00 | Pass |

CH00



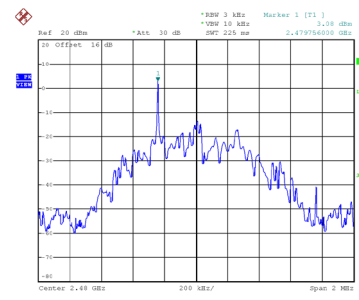
Date: 9.AUG.2024 17:55:14

CH19



Date: 9.AUG.2024 17:57:55

CH39

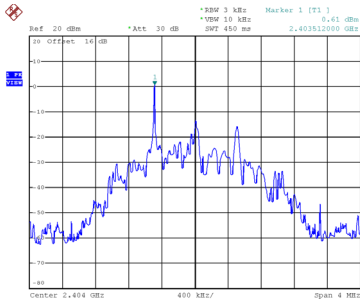


Date: 9.AUG.2024 17:59:57

| | |
|-----------|----------------|
| Test Mode | TX Mode _2Mbps |
|-----------|----------------|

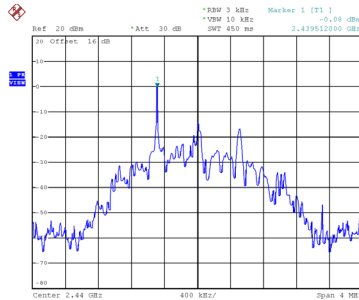
| Channel | Frequency (MHz) | Power Spectral Density (dBm/3 kHz) | Max. Limit (dBm/3 kHz) | Test Result |
|---------|-----------------|------------------------------------|------------------------|-------------|
| 01 | 2404 | 0.61 | 8.00 | Pass |
| 19 | 2440 | -0.08 | 8.00 | Pass |
| 38 | 2478 | -1.04 | 8.00 | Pass |

CH01



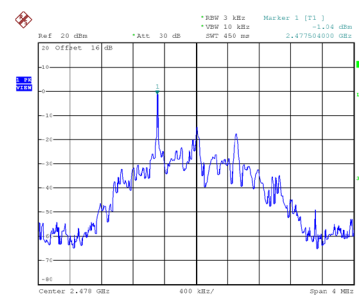
Date: 9.AUG.2024 18:38:12

CH19



Date: 9.AUG.2024 18:45:53

CH38



Date: 9.AUG.2024 18:47:57

End of Test Report