

FCC Radio Test Report

FCC ID: TE7C54

This report concerns: Original Grant

| Project No. Equipment Brand Name Test Model Series Model Applicant | 2008C039 AC1200 Dual Band Wi-Fi Router tp-link Archer C54 N/A TP-Link Technologies Co., Ltd. |
|---|---|
| Address | : Building 24(floors1,3,4,5) and 28(floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China |
| Manufacturer | : TP-Link Technologies Co., Ltd. |
| Address | : Building 24(floors1,3,4,5) and 28(floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China |
| Date of Receipt | : Aug. 10, 2020 |
| Date of Test | : Aug. 11, 2020 ~ Oct. 12, 2020 |
| Issued Date | : Oct. 26, 2020 |
| Report Version | : R01 |
| Test Sample | Engineering Sample No.: DG2020081118 for conducted, DG2020091758 for radiated. |
| Standard(s) | : FCC Part15, Subpart C (15.247) ANSI C63.10-2013 FCC KDB 558074 D01 15.247 Meas Guidance v05r02 |

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

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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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APPENDIX H - POWER SPECTRAL DENSITY

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REPORT ISSUED HISTORY

| Report Version | Description | Issued Date |
|----------------|----------------------------------|---------------|
| R00 | Original Issue. | Oct. 21, 2020 |
| R01 | Added the conducted test photos. | Oct. 26, 2020 |

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

| FCC Part15, Subpart C (15.247) | | | | | | | |
|-------------------------------------|-----------------------------------|--|----------|---------|--|--|--|
| Standard(s) Section | Test Item | Test Result | Judgment | Remark | | | |
| 15.207 | AC Power Line Conducted Emissions | 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 Average Output Power | APPENDIX F | PASS | | | | |
| 15.247(d) | Conducted Spurious Emissions | 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 in this test report.

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



1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China. BTL's Test Firm Registration Number for FCC: 357015 BTL's Designation Number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

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

A. AC power line conducted emissions test:

| Test Site | Method | Measurement Frequency Range | U, (dB) |
|-----------|--------|-----------------------------|---------|
| DG-C02 | CISPR | 150kHz ~ 30MHz | 2.68 |

B. Radiated emissions test:

| Test Site | Method | Measurement Frequency Range | Ant. H / V | U, (dB) |
|-----------|--------|-----------------------------|---------------|---------|
| | | 9kHz ~ 30MHz | V | 3.79 |
| | | 9kHz ~ 30MHz | Н | 3.57 |
| | CISPR | 30MHz ~ 200MHz | V | 4.26 |
| | | 30MHz ~ 200MHz | Н | 3.38 |
| DG-CB03 | | 200MHz ~ 1,000MHz | V | 3.98 |
| DG-CB03 | | 200MHz ~ 1,000MHz | Н | 3.94 |
| | | 1GHz ~ 6GHz | - | 4.58 |
| | | 6GHz ~ 18GHz | - | 5.18 |
| | | 18GHz ~ 26.5GHz | - | 3.62 |
| | | 26.5GHz ~ 40GHz | - | 4.00 |

C. Other Measurement:

| Parameter | Uncertainty |
|------------------------------|-------------|
| Bandwidth | ±3.8 % |
| Maximum Average Output Power | ±0.95 dB |
| Conducted Spurious Emission | ±2.71 dB |
| Power Spectral Density | ±0.86 dB |
| Temperature | ±0.08 °C |
| Time | ±0.58 % |
| Supply voltages | ±0.3 % |

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

1.3 TEST ENVIRONMENT CONDITIONS

| Test Item | Temperature | Humidity | | Tested By |
|-----------------------------------|-------------|----------|--------------|-------------|
| AC Power Line Conducted Emissions | 25°C | 60% | AC 120V/60Hz | Kwok Guo |
| Radiated Emissions-9K-30MHz | 26°C | 52% | AC 120V/60Hz | Kwok Guo |
| Radiated Emissions-30 MHz to 1GHz | 26°C | 52% | AC 120V/60Hz | Kwok Guo |
| Radiated Emissions-Above 1000 MHz | 24°C | 60% | AC 120V/60Hz | Kwok Guo |
| Bandwidth | 25°C | 53% | AC 120V/60Hz | Hayden Chen |
| Maximum Average Output Power | 25°C | 53% | AC 120V/60Hz | Hand Huang |
| Conducted Spurious Emissions | 25°C | 53% | AC 120V/60Hz | Hayden Chen |
| Power Spectral Density | 25°C | 53% | AC 120V/60Hz | Hayden Chen |

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

| Equipment | AC1200 Dual Band Wi-Fi Router | | | |
|---------------------------------|--|--|--|--|
| Brand Name | tp-link | | | |
| Test Model | Archer C54 | | | |
| Series Model | N/A | | | |
| Model Difference(s) | N/A | | | |
| Power Source | DC voltage supplied from AC adapter. Model: T090085-2B1 | | | |
| Power Rating | I/P: 100-240V~ 50/60Hz 0.3A O/P: 9V === 0.85A | | | |
| Operation Frequency | 2412 MHz ~ 2462 MHz | | | |
| Modulation Type | IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n: OFDM | | | |
| Bit Rate of Transmitter | IEEE 802.11b: 11/5.5/2/1 Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6 Mbps IEEE 802.11n: up to 300 Mbps | | | |
| Maximum Average Output Power | IEEE 802.11b: 22.07 dBm (0.1611 W) IEEE 802.11g: 20.58 dBm (0.1143 W) IEEE 802.11n (HT20): 19.59 dBm (0.0910 W) IEEE 802.11n (HT40): 17.79 dBm (0.0601 W) | | | |

Note:

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

2. Channel List:

| CH01 - CH11 for IEEE 802.11b, IEEE 802.11g, IEEE 802.11n (HT20) CH03 - CH09 for IEEE 802.11n (HT40) | | | | | | | |
|---|------|----|------|----|------|----|------|
| Channel Frequency (MHz) | | | | | | | |
| 01 | 2412 | 04 | 2427 | 07 | 2442 | 10 | 2457 |
| 02 | 2417 | 05 | 2432 | 08 | 2447 | 11 | 2462 |
| 03 | 2422 | 06 | 2437 | 09 | 2452 | | |

3. Antenna Specification:

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) |
|------|---------|------------|--------------|-----------|------------|
| 1 | tp-link | N/A | Dipole | Weld | 0.97 |
| 2 | tp-link | N/A | Dipole | Weld | 0.97 |

Note:

This EUT supports CDD, and all antennas have the same gain, Directional gain = G_{ANT} +Array Gain. For power measurements, Array Gain=0dB (N_{ANT}≤4), so the Directional gain=0.97. For power spectral density measurements, N_{ANT}=2, N_{SS} = 1.

So the Directional gain= G_{ANT} +Array Gain= G_{ANT} +10log(N_{ANT} / N_{SS})dBi=0.97+10log(2/1)dBi=3.98.



4. Table for Antenna Configuration:

| Operating Mode TX Mode | 2TX |
|------------------------|---------------------|
| IEEE 802.11b | V (Ant. 1 + Ant. 2) |
| IEEE 802.11g | V (Ant. 1 + Ant. 2) |
| IEEE 802.11n (HT20) | V (Ant. 1 + Ant. 2) |
| IEEE 802.11n (HT40) | V (Ant. 1 + Ant. 2) |

2.2 DESCRIPTION OF TEST MODES

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

| Pretest Mode | Description |
|--------------|---|
| Mode 1 | TX B Mode Channel 01/06/11 |
| Mode 2 | TX G Mode Channel 01/06/11 |
| Mode 3 | TX N-20 MHz Mode Channel 01/06/11 |
| Mode 4 | TX N-40 MHz Mode Channel 03/06/09 |
| Mode 5 | TX B Mode Channel 01 |
| Mode 6 | TX B Mode Channel 01/02/06/10/11 |
| Mode 7 | TX G Mode Channel 01/02/06/10/11 |
| Mode 8 | TX N-20 MHz Mode Channel 01/02/06/10/11 |
| Mode 9 | TX N-40 MHz Mode Channel 03/04/06/08/09 |

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 5 | TX B Mode Channel 01 | | |

| Radiated emissions test - Below 1GHz | | |
|--------------------------------------|----------------------|--|
| Final Test Mode | Description | |
| Mode 5 | TX B Mode Channel 01 | |

| Radiated emissions test- Above 1GHz | | |
|-------------------------------------|---|--|
| Final Test Mode | Description | |
| Mode 6 | TX B Mode Channel 01/02/06/10/11 | |
| Mode 7 | TX G Mode Channel 01/02/06/10/11 | |
| Mode 8 | TX N-20 MHz Mode Channel 01/02/06/10/11 | |
| Mode 9 | TX N-40 MHz Mode Channel 03/04/06/08/09 | |



| Conducted test | | |
|-----------------|-----------------------------------|--|
| Final Test Mode | Description | |
| Mode 1 | TX B Mode Channel 01/06/11 | |
| Mode 2 | TX G Mode Channel 01/06/11 | |
| Mode 3 | TX N-20 MHz Mode Channel 01/06/11 | |
| Mode 4 | TX N-40 MHz Mode Channel 03/06/09 | |

NOTE:

- (1) The measurements are performed at the high, middle, low available channels.
- (1) All the bit rate of transmitter have been tested and found the lowest rate is found to be the worst case and recorded.
- (3) For radiated emission below 1 GHz test, the IEEE 802.11b Channel 01 is found to be the worst case and recorded.
- (4) For radiated emission above 1 GHz test, 1GHz~26.5GHz have been pre-tested and in this report only recorded the worst case. The remaining spurious points are all below the limit value of 20dB.
- (5) For Radiated emissions above 1GHz test, the vertical and horizontal polarities have tested, the worst case is vertical and recorded.

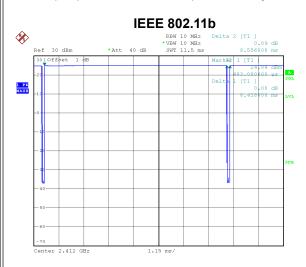
2.3 PARAMETERS OF TEST SOFTWARE

| Test Software | N/A | | |
|---------------------|------|------|------|
| Frequency (MHz) | 2412 | 2437 | 2462 |
| IEEE 802.11b | 31 | 29 | 27 |
| IEEE 802.11g | 22 | 28 | 21 |
| IEEE 802.11n (HT20) | 22 | 27 | 22 |
| Frequency (MHz) | 2422 | 2437 | 2452 |
| IEEE 802.11n (HT40) | 19 | 23 | 19 |



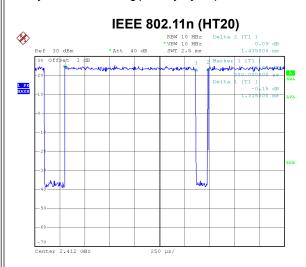
2.4 DUTY CYCLE

If duty cycle is \geq 98 %, duty factor is not required. If duty cycle is < 98 %, duty factor shall be considered. The output power = measured power + duty factor.



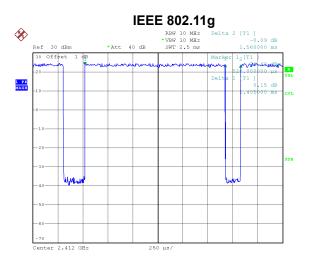
Date: 24.AUG.2020 15:27:12

Duty cycle = 8.418 ms / 8.556 ms = 98.39% Duty Factor = 10 log(1/Duty cycle) = 0.00



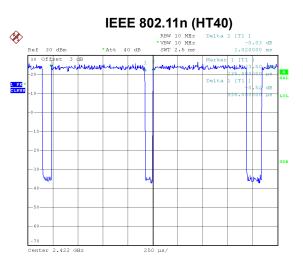
Date: 24.AUG.2020 15:30:04

Duty cycle = 1.315 ms / 1.435 ms = 91.64% Duty Factor = 10 log(1/Duty cycle) = 0.38



Date: 24.AUG.2020 15:27:43

Duty cycle = 1.405 ms / 1.560 ms = 90.06%Duty Factor = $10 \log(1/\text{Duty cycle}) = 0.45$



Date: 24.AUG.2020 20:04:25

Duty cycle = 0.935 ms / 1.020 ms = 91.67% Duty Factor = 10 log(1/Duty cycle) = 0.38

NOTE:

For IEEE 802.11b, IEEE 802.11g and IEEE 802.11n (HT20): For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz (Duty cycle < 98%).

For IEEE 802.11n (HT40):

For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 2 kHz (Duty cycle < 98%).



2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

2.6 SUPPORT UNITS

| ltem | Equipment | Brand | Model No. | Series No. |
|------|------------|---------------|------------------|------------|
| А | Notebook | Dell | Inspiron 15-7559 | N/A |
| | | | | |
| Item | Cable Type | Shielded Type | Ferrite Core | Length |
| 1 | DC Cable | NO | NO | 1.5m |
| 2 | RJ45 Cable | NO | NO | 10m |





3. AC POWER LINE CONDUCTED EMISSIONS TEST

3.1 LIMIT

| Eroquopov of Emission (MHz) | Limit (dBµV) | | |
|-----------------------------|--------------|-----------|--|
| Frequency of Emission (MHz) | 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.

The following table is the setting of the receiver

| Receiver Parameters | Setting |
|---------------------|----------|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

3.2 TEST PROCEDURE

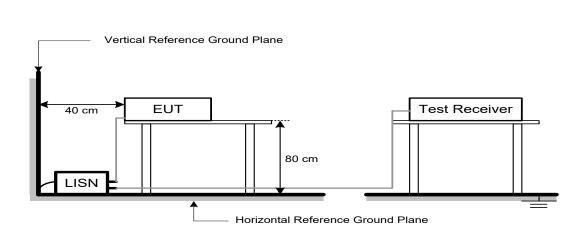
- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 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.

3.3 DEVIATION FROM TEST STANDARD

No deviation



3.4 TEST SETUP



3.5 EUT OPERATION CONDITIONS

EUT was programmed to be in continuously transmitting mode.

3.6 TEST RESULTS

Please refer to the APPENDIX A.



4. RADIATED EMISSIONS TEST

4.1 LIMIT

In case the emission fall within the restricted band specified on 15.205(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 | Field Strength | Measurement Distance |
|-------------|--------------------|----------------------|
| (MHz) | (microvolts/meter) | (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)

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

NOTE:

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

| Spectrum Parameter | Setting | | |
|-------------------------------|-------------------------|--|--|
| Attenuation | Auto | | |
| Start Frequency | 1000 MHz | | |
| Stop Frequency | 10th carrier harmonic | | |
| RBW / VBW | 1 MHz / 3 MHz for Peak, | | |
| (Emission in restricted band) | 1 MHz / 1/T for Average | | |

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

4.2 TEST PROCEDURE

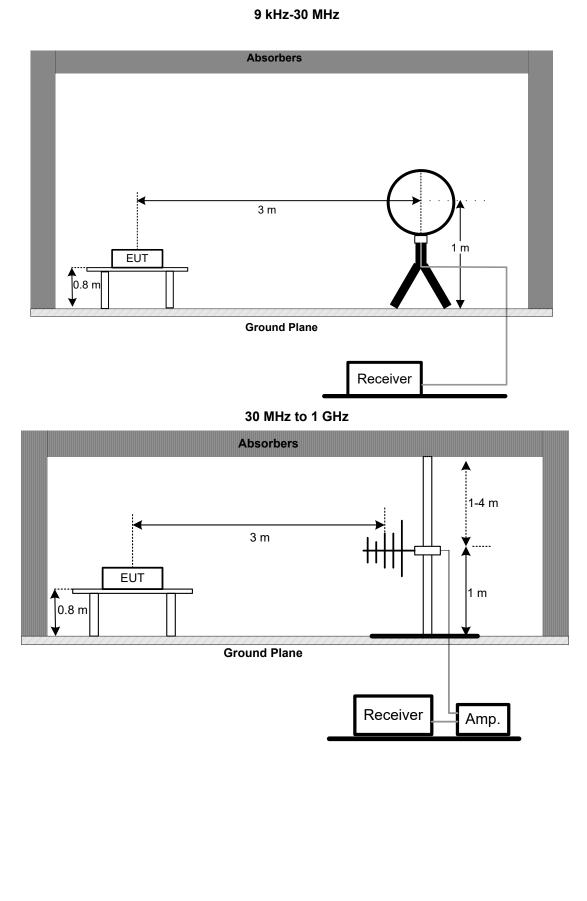
- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1 GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1 GHz)
- 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.

4.3 DEVIATION FROM TEST STANDARD

No deviation

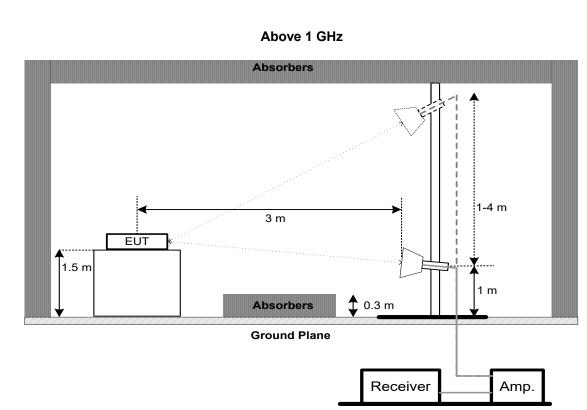


4.4 TEST SETUP









4.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULTS - 9 KHZ TO 30 MHZ

Please refer to the APPENDIX B

Remark:

(1) Distance extrapolation factor = 40 log (specific distance / test distance) (dB).

(2) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.7 TEST RESULTS - 30 MHZ TO 1000 MHZ

Please refer to the APPENDIX C.

4.8 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.



5. BANDWIDTH TEST

5.1 LIMIT

| FCC Part15, Subpart C (15.247) | | | | | |
|--------------------------------|------------------------|-----------------|--|--|--|
| Section Test Item Limit | | | | | |
| 15 247(0)(2) | 6 dB Bandwidth | Minimum 500 kHz | | | |
| 15.247(a)(2) | 99% Emission Bandwidth | - | | | |

5.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting:

For 6 dB Bandwidth: RBW= 100 kHz, VBW=300 kHz, Sweep time = auto.

For 99% Emission Bandwidth B/G/N-20 Mode: RBW= 300 KHz, VBW=1 MHz, Sweep time = 2.5 ms. For 99% Emission Bandwidth N-40 Mode: RBW= 1 MHz, VBW=3 MHz, Sweep time = 2.5 ms.

c. The bandwidth was performed in accordance with method 11.8.1 of ANSI C63.10-2013.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



SPECTRUM ANALYZER

5.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULTS

Please refer to the APPENDIX E.



6. MAXIMUM AVERAGE OUTPUT POWER TEST

6.1 LIMIT

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

6.2 TEST PROCEDURE

a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.

b. The maximum conducted output power was performed in accordance with method 11.9.2.3.1 of ANSI C63.10-2013 and FCC KDB 662911 D01 v02r01 Multiple Transmitter Output.

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 F.



7. CONDUCTED SPURIOUS EMISSIONS

7.1 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.

7.2 TEST PROCEDURE

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

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



SPECTRUM ANALYZER

7.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.6 TEST RESULTS

Please refer to the APPENDIX G.



8. POWER SPECTRAL DENSITY TEST

8.1 LIMIT

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

8.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting: RBW=3 kHz, VBW=10 kHz, Sweep time = Auto.
- c. The Power Spectral Density was performed in accordance with method 11.10.2 of ANSI C63.10-2013.

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 H.

9. 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 | Feb. 28, 2021 | | | | |
| 2 | LISN | EMCO | 3816/2 | 52765 | Mar. 01, 2021 | | | | |
| 3 | TWO-LINE V-NETWORK | R&S | ENV216 | 101447 | Feb. 28, 2021 | | | | |
| 4 | 50Ω Terminator | SHX | TF5-3 | 15041305 | Mar. 01, 2021 | | | | |
| 5 | Measurement Software | Farad | EZ-EMC Ver.NB-03A1-01 | N/A | N/A | | | | |
| 6 | Cable | N/A | RG223 | 12m | Mar. 10, 2021 | | | | |
| 7 | 643 Shield Room | ETS | 6*4*3m | N/A | N/A | | | | |

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

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

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

Feb. 11, 2021

N/A

VAS1214NL

N/A



3

4

sensor

Attenuator

RF Cable

| | Bandwidth & Antenna Conducted Spurious Emissions & Power Spectral Density | | | | | | | | |
|------------------------------|---|--------------|----------|------------|------------------|--|--|--|--|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until | | | | |
| 1 | Spectrum Analyzer | R&S | FSP40 | 100185 | Jul. 25, 2021 | | | | |
| 2 | RF Cable | Tongkaichuan | N/A N/A | | N/A | | | | |
| 3 | DC Block | Mini | N/A | N/A | N/A | | | | |
| Maximum Average Output Power | | | | | | | | | |
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until | | | | |
| 1 | 1 Peak Power Analyzer Keysight | | 8990B | MY51000506 | Aug. 07, 2021 | | | | |
| 2 | 2 Wideband power Keysight | | N1923A | MY58310004 | Jul. 25, 2021 | | | | |

6SM3502

N/A

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

WOKEN

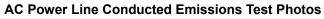
Tongkaichuan

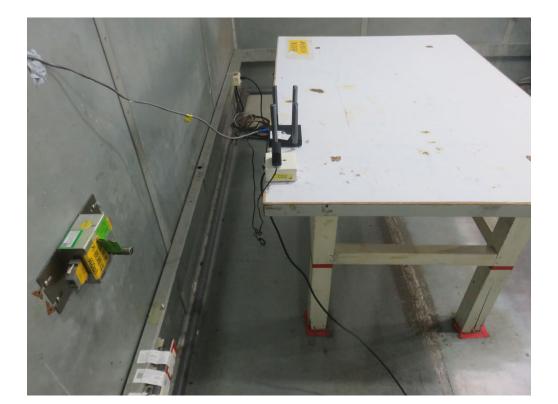
Except * item, all calibration period of equipment list is one year.



Ξ



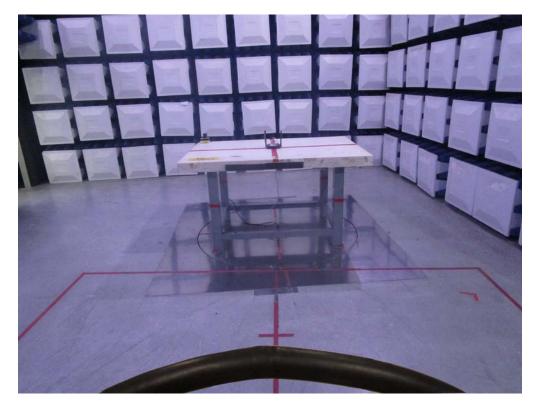


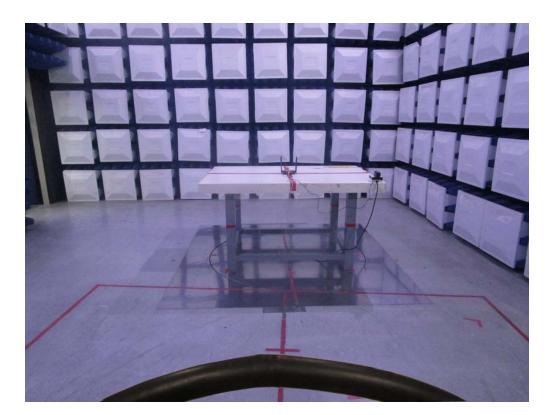






9 kHz to 30 MHz









30 MHz to 1 GHz







Radiated Emissions Test Photos

Above 1 GHz







Conducted Test Photos

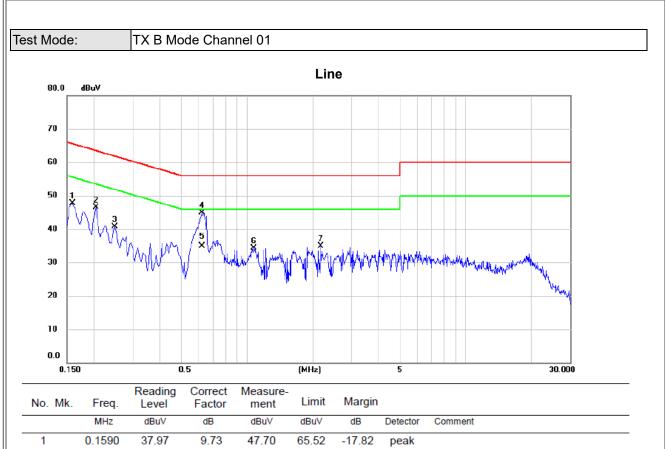






APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS





REMARKS:

2

3

4

5

7

* 6

0.2040

0.2490

0.6225

0.6225

1.0725

2.1750

36.52

30.82

34.98

25.00

24.20

24.78

9.91

9.87

9.94

9.94

10.02

10.10

46.43

40.69

44.92

34.94

34.22

34.88

63.45

61.79

56.00

46.00

56.00

56.00

-17.02

-21.10

-11.08

-11.06

-21.78

-21.12

peak

peak

peak

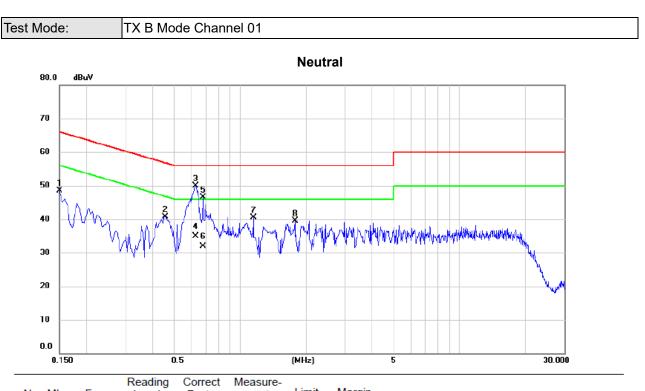
AVG

peak

peak

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





| No. Mk. | Freq. | Level | Factor | ment | Limit | Margin | | |
|---------|--------|-------|--------|-------|-------|--------|----------|---------|
| | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | 0.1500 | 38.86 | 9.74 | 48.60 | 66.00 | -17.40 | peak | |
| 2 | 0.4560 | 30.52 | 10.12 | 40.64 | 56.77 | -16.13 | peak | |
| 3 * | 0.6270 | 39.79 | 10.17 | 49.96 | 56.00 | -6.04 | peak | |
| 4 | 0.6270 | 24.80 | 10.17 | 34.97 | 46.00 | -11.03 | AVG | |
| 5 | 0.6765 | 36.29 | 10.13 | 46.42 | 56.00 | -9.58 | peak | |
| 6 | 0.6765 | 21.70 | 10.13 | 31.83 | 46.00 | -14.17 | AVG | |
| 7 | 1.1490 | 30.17 | 10.32 | 40.49 | 56.00 | -15.51 | peak | |
| 8 | 1.7790 | 29.16 | 10.39 | 39.55 | 56.00 | -16.45 | peak | |
| | | | | | | | | |

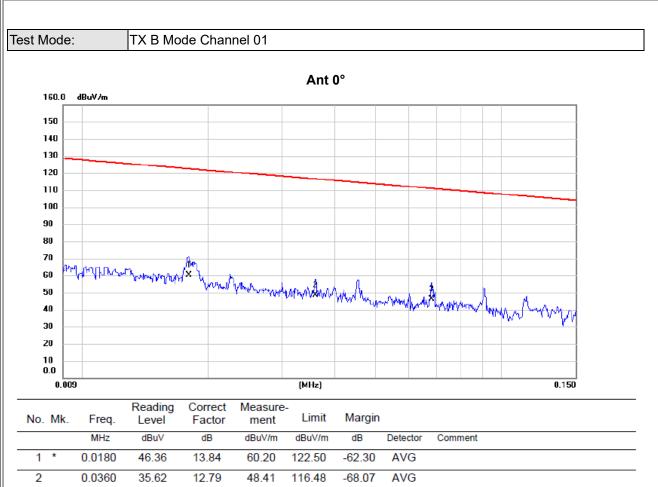
REMARKS:

- Measurement Value = Reading Level + Correct Factor.
 Margin Level = Measurement Value Limit Value.



APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ





AVG

-64.87

REMARKS:

3

0.0680

33.55

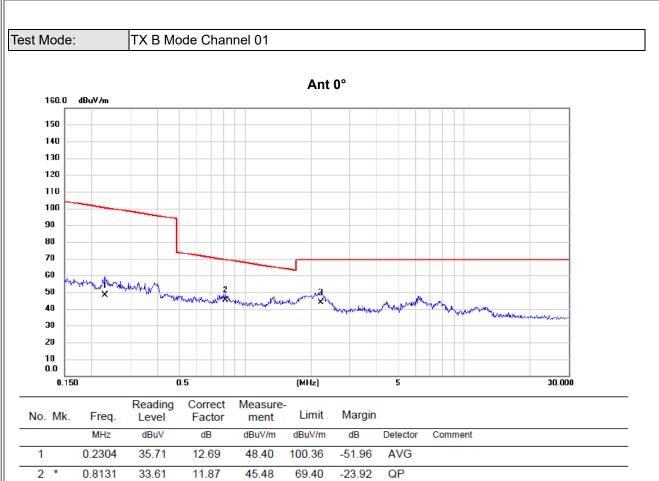
12.53

46.08

110.95

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





3

2.2132

32.61

11.19

43.80

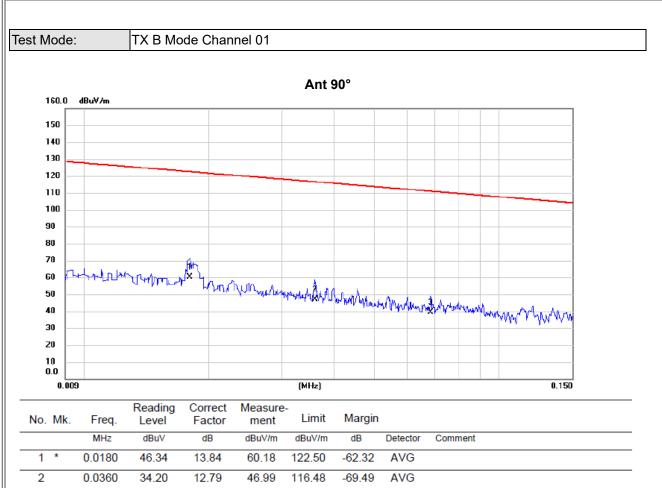
69.54

-25.74

QP

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





3

0.0684

26.79

12.53

39.32

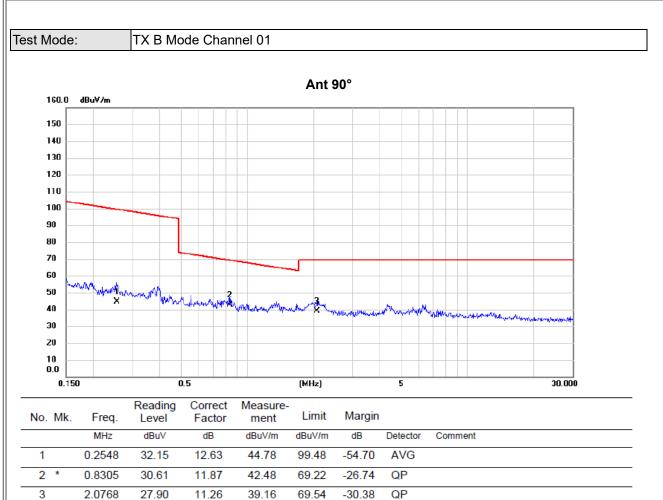
110.90

AVG

-71.58

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



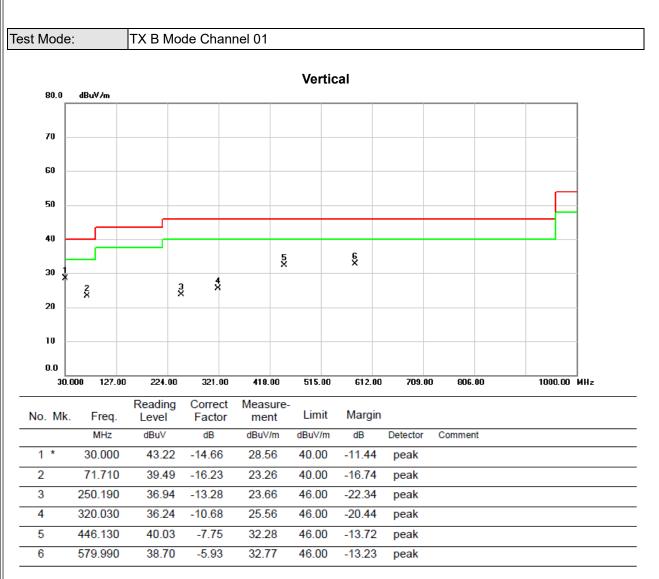


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



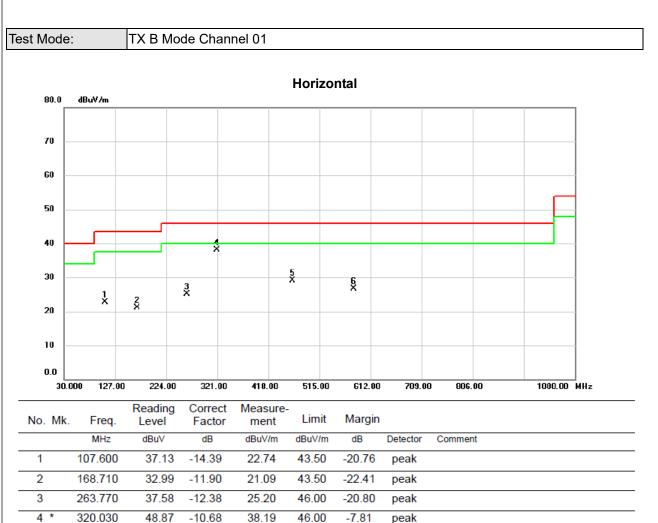
APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ





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





5

6

463.590

579.990

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

36.68

32.59

-7.54

-5.93

29.14

26.66

46.00

46.00

-16.86

-19.34

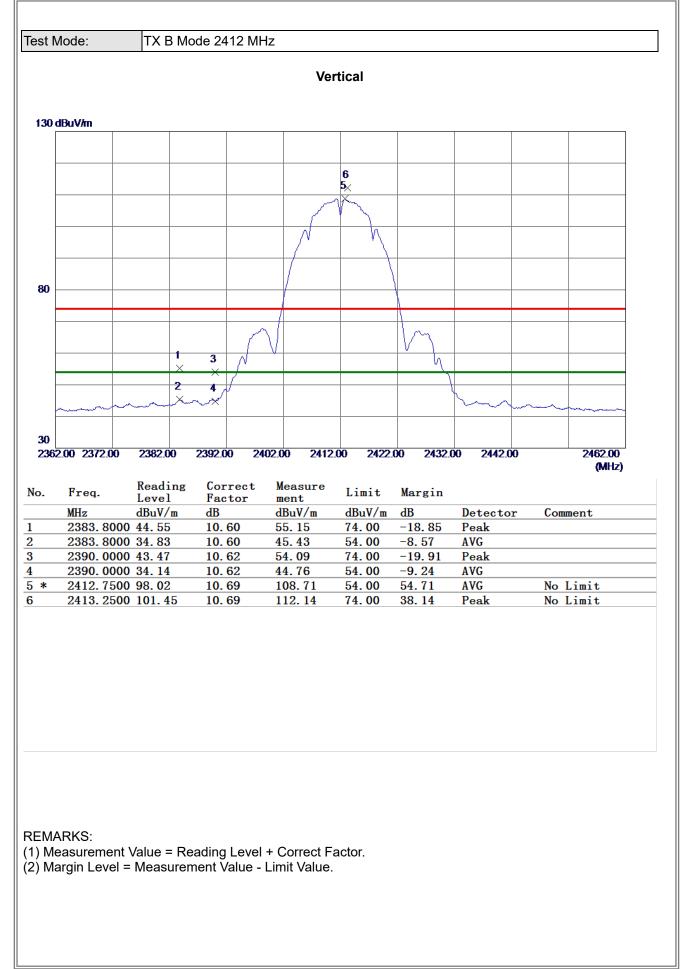
peak

peak

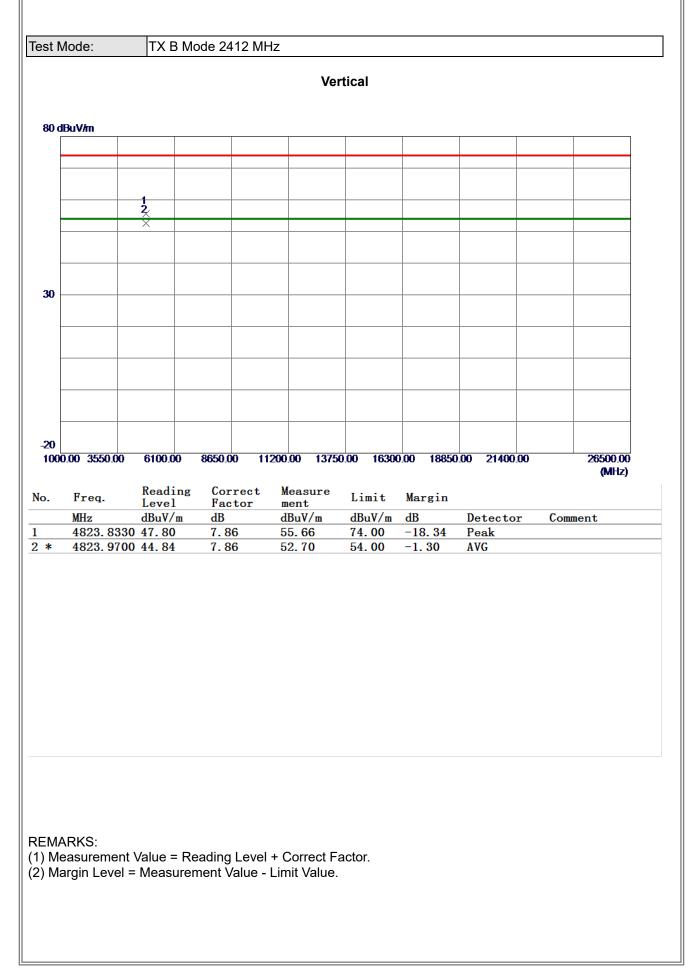


APPENDIX D - RADIATED EMISSION- ABOVE 1000 MHZ

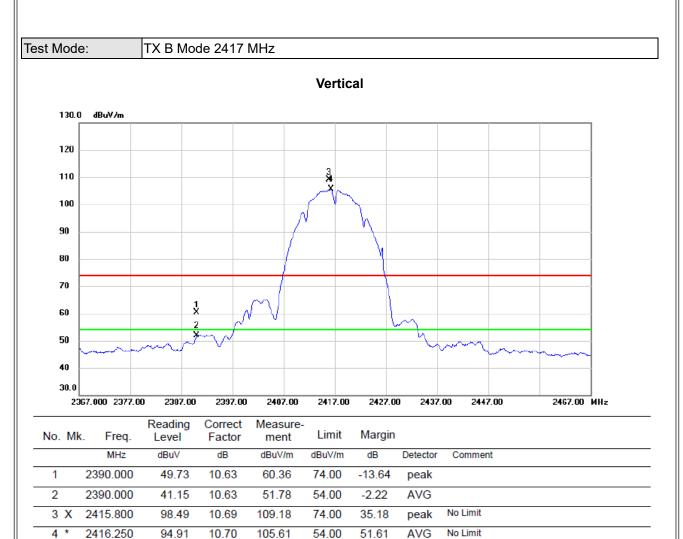






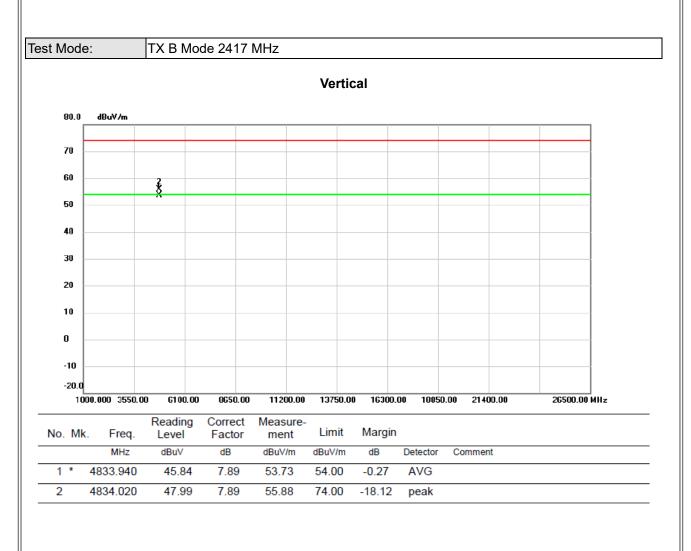






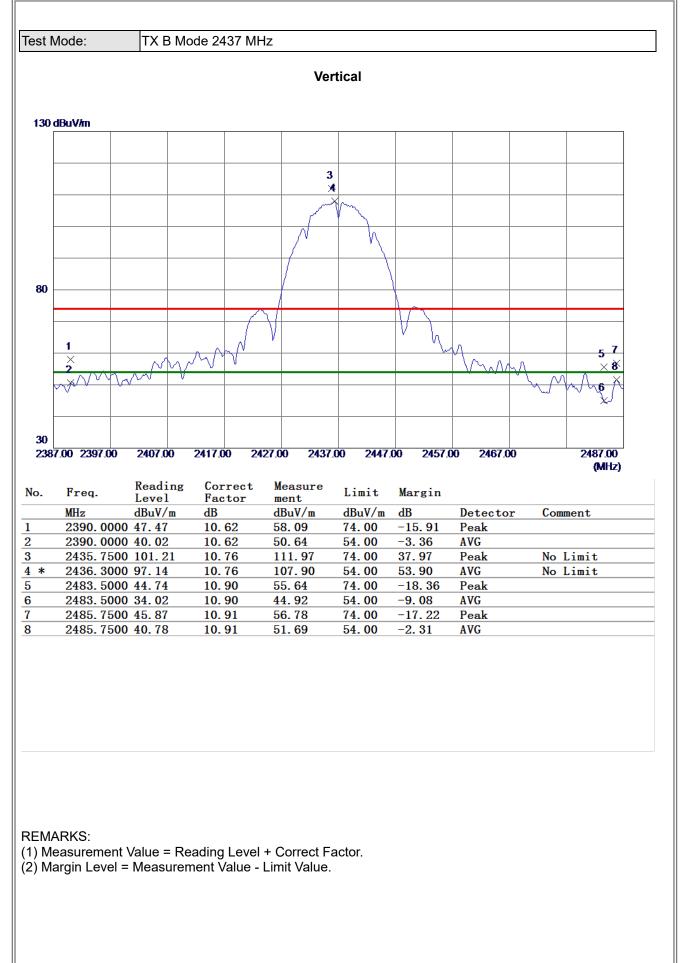
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



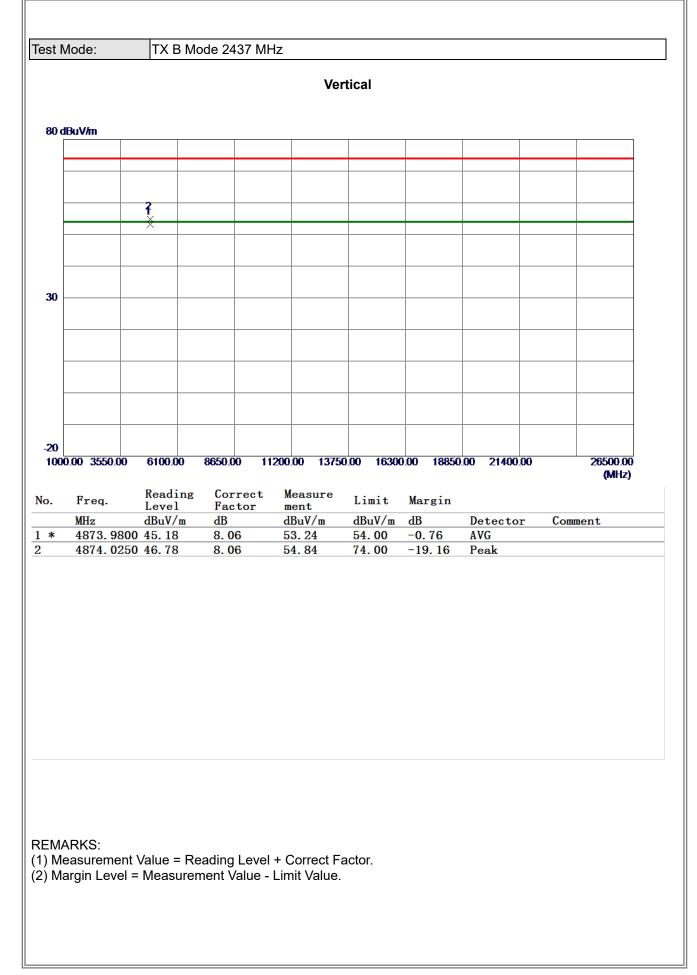


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

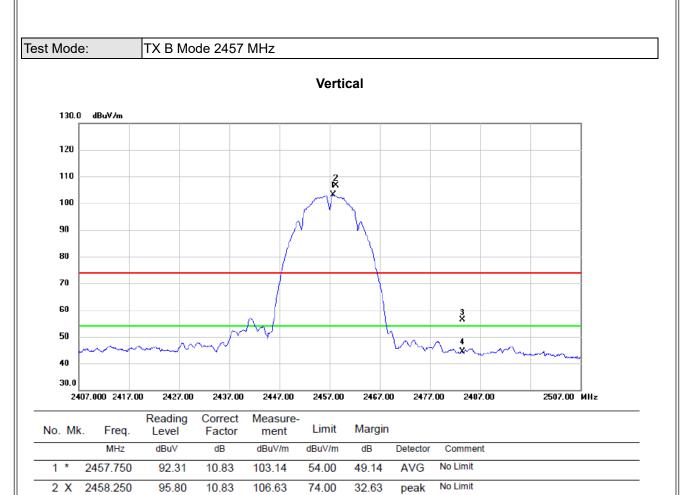












3

4

2483.500

2483.500

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

45.47

33.38

10.90

10.90

56.37

44.28

74.00

54.00

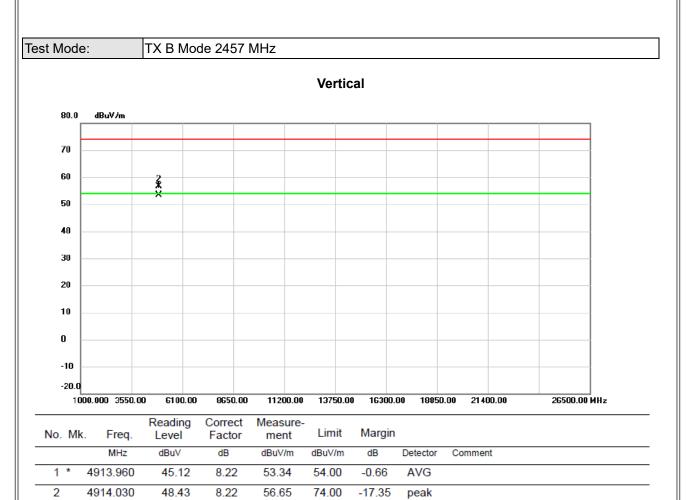
-17.63

-9.72

peak

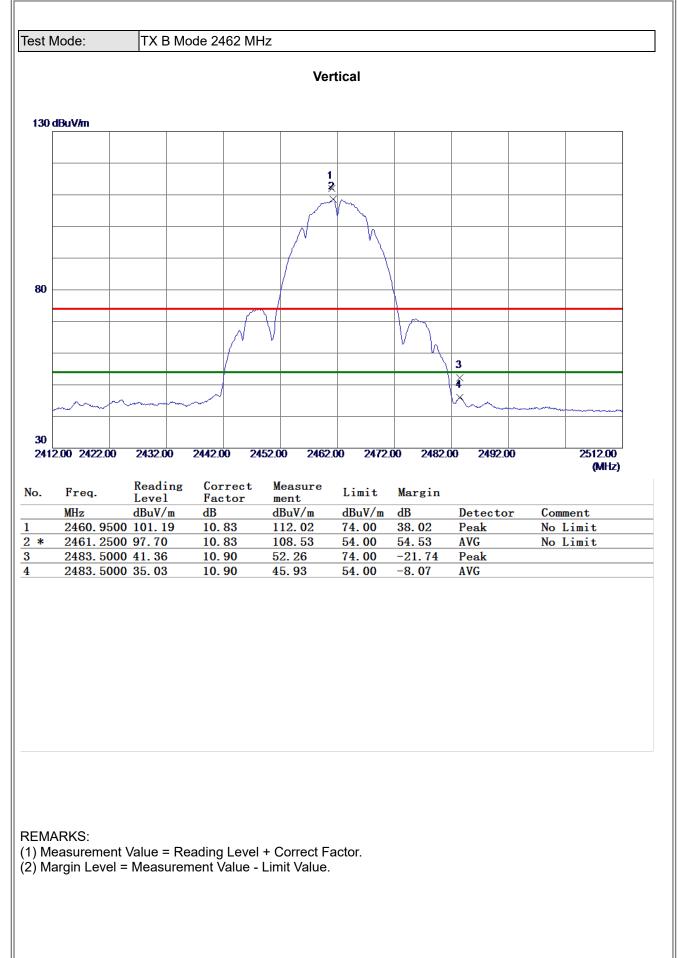
AVG



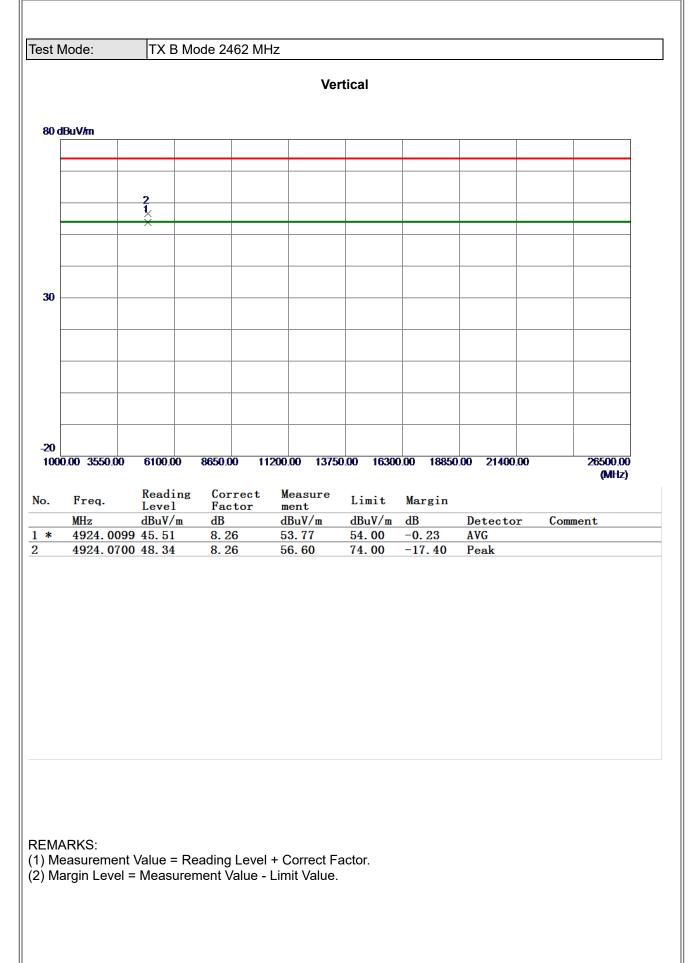


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

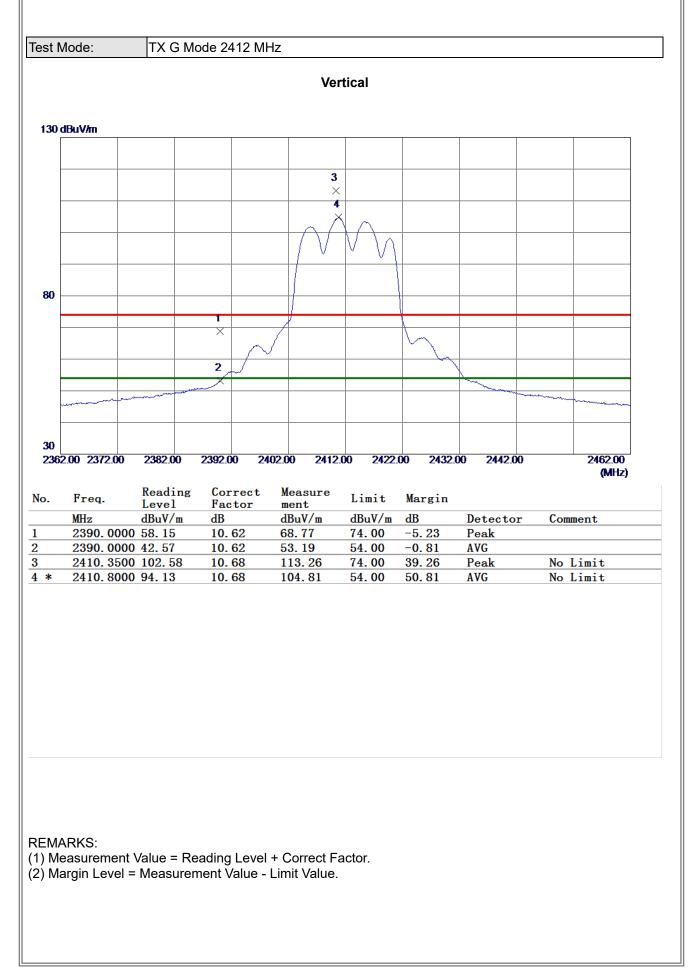




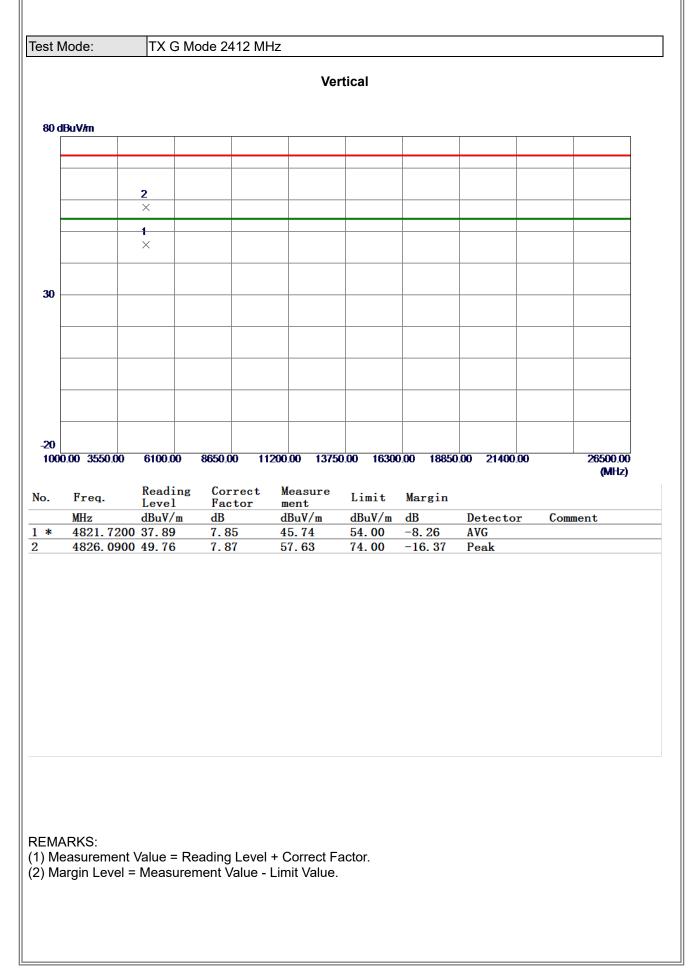




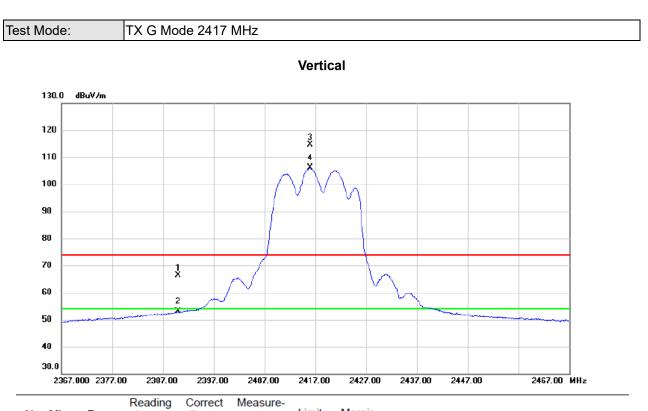












| | No. N | ٨k. | Freq. | Level | | ment | Limit | Margin | | |
|---|-------|-----|----------|--------|-------|--------|--------|--------|----------|----------|
| | | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| _ | 1 | 2 | 2390.000 | 55.80 | 10.63 | 66.43 | 74.00 | -7.57 | peak | |
| | 2 | 2 | 2390.000 | 42.41 | 10.63 | 53.04 | 54.00 | -0.96 | AVG | |
| - | 3 X | (2 | 415.950 | 104.02 | 10.70 | 114.72 | 74.00 | 40.72 | peak | No Limit |
| - | 4 * | 2 | 416.050 | 95.47 | 10.70 | 106.17 | 54.00 | 52.17 | AVG | No Limit |

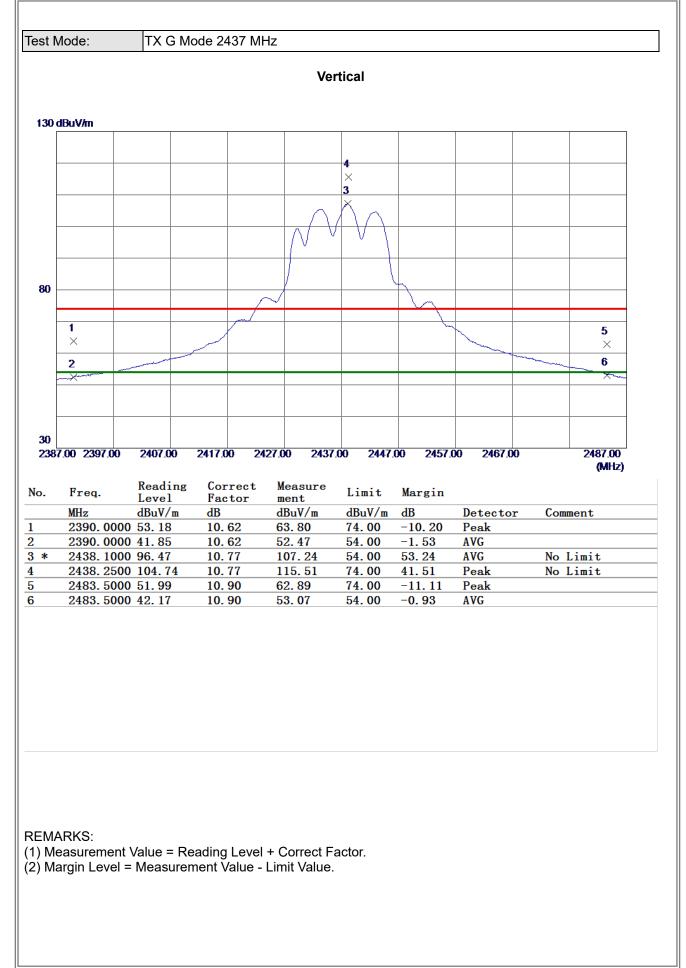
- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



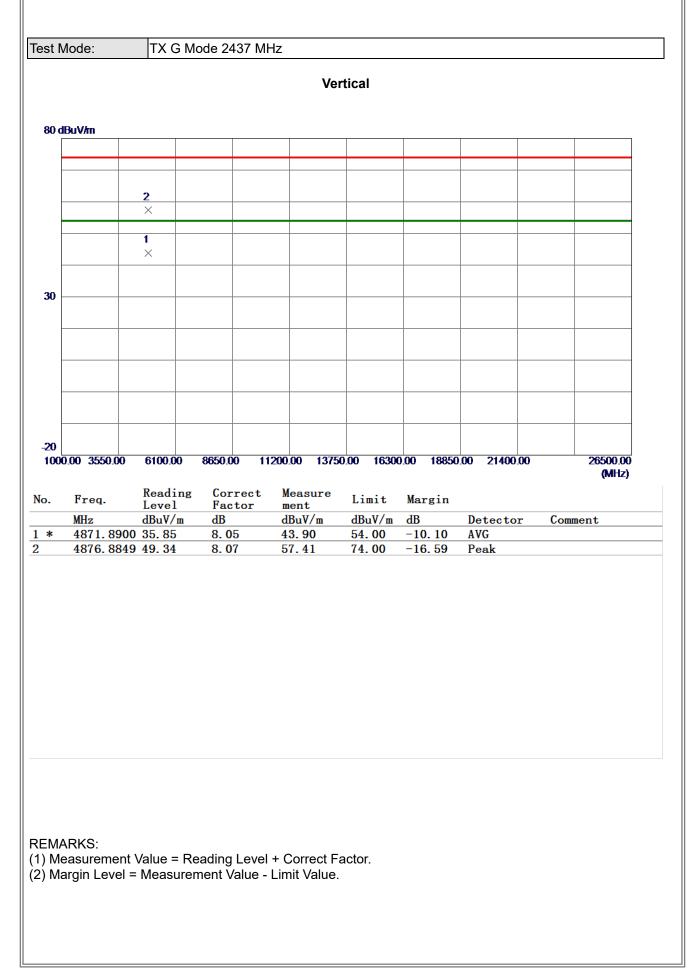


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

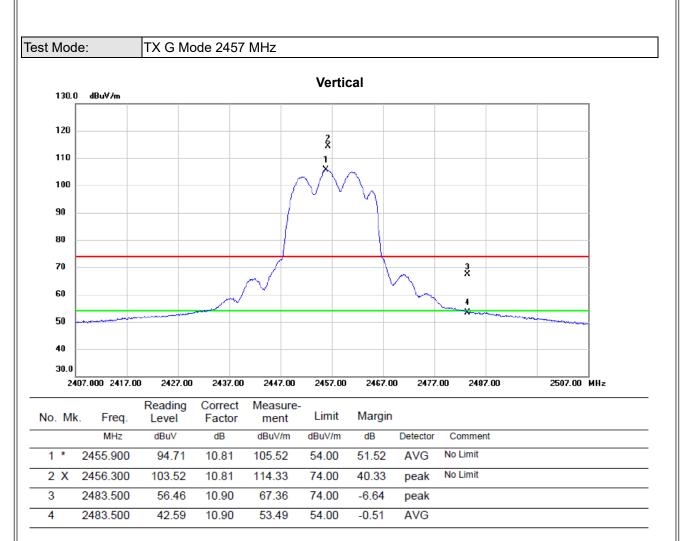






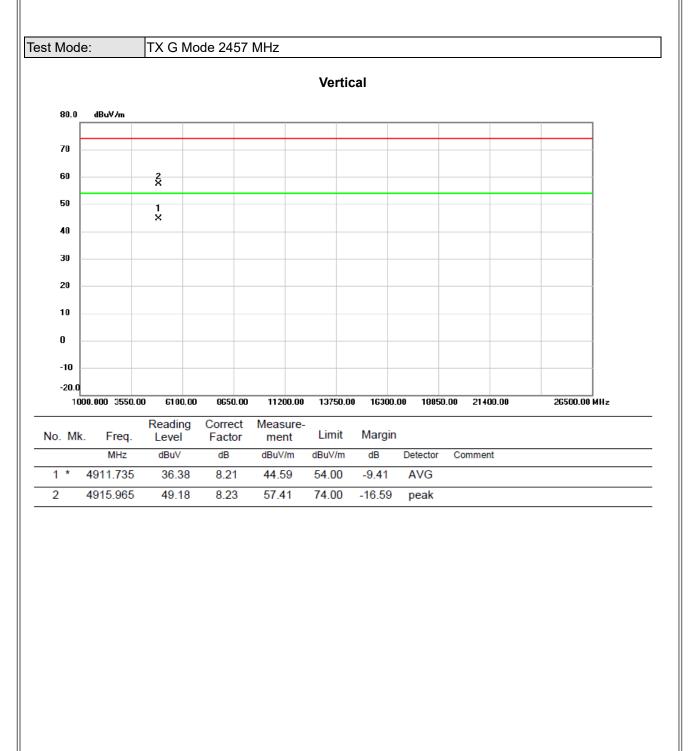






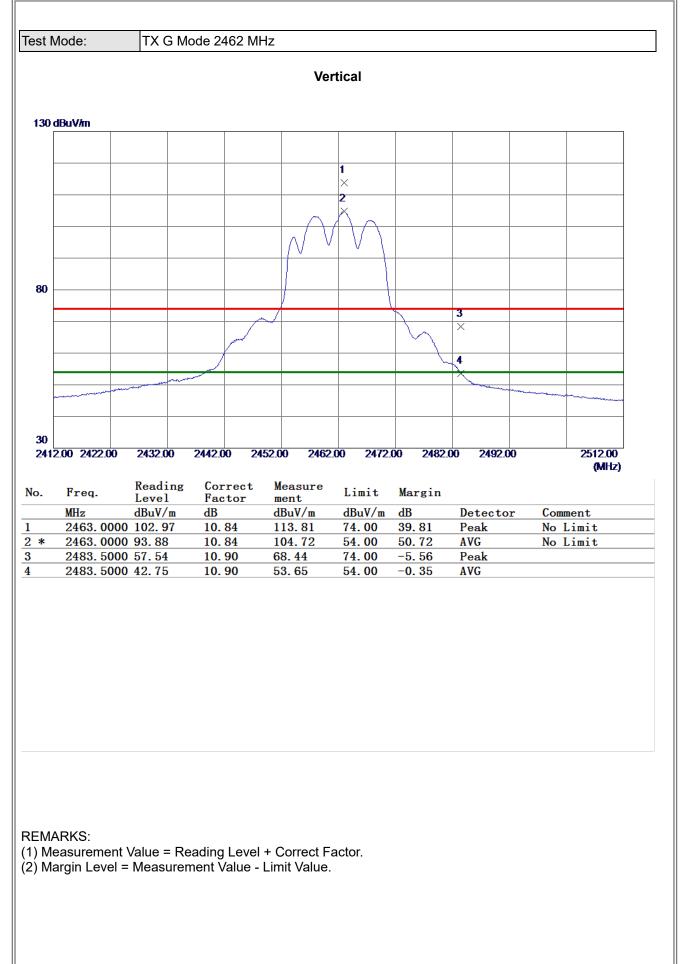
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



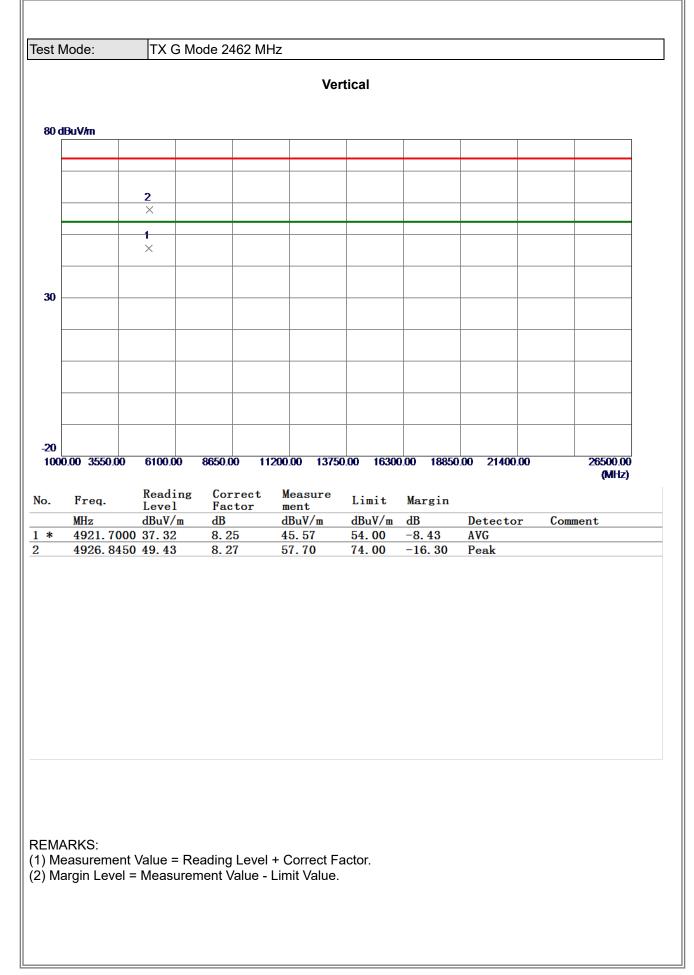


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

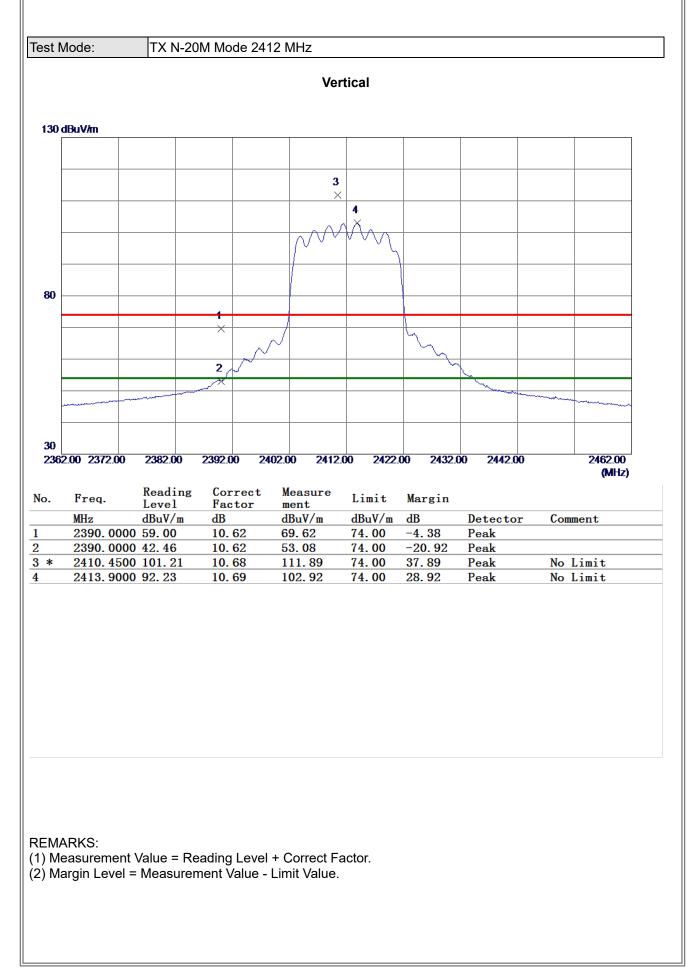




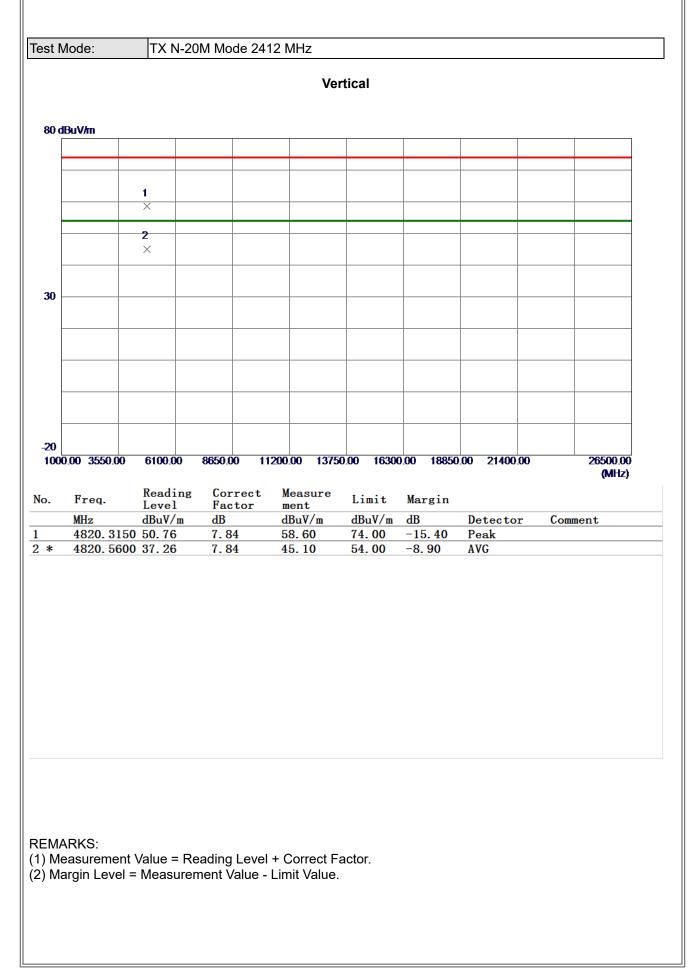




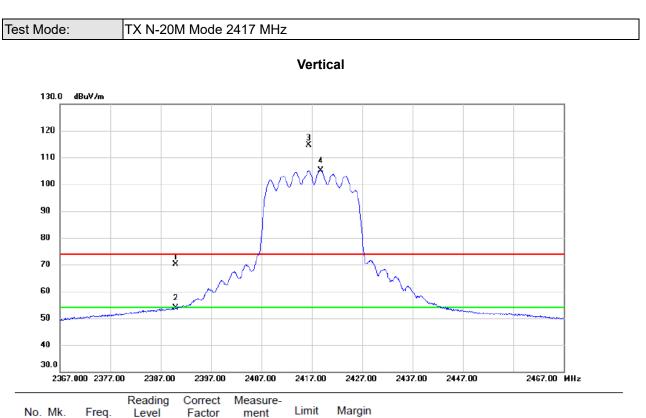








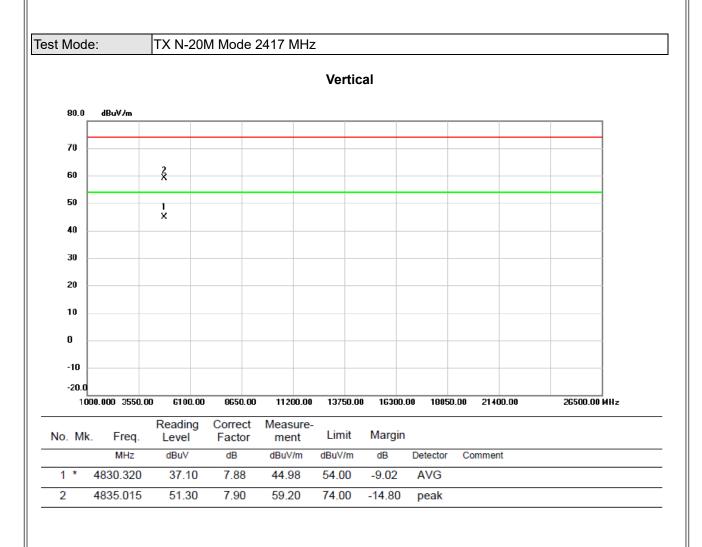




| INO. | WK. | Freq. | Level | Factor | ment | Limit | Margin | | |
|------|-----|----------|--------|--------|--------|--------|--------|----------|----------|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | 2 | 2390.000 | 59.52 | 10.63 | 70.15 | 74.00 | -3.85 | peak | |
| 2 | 1 | 2390.000 | 43.18 | 10.63 | 53.81 | 54.00 | -0.19 | AVG | |
| 3 | X | 2416.350 | 103.89 | 10.70 | 114.59 | 74.00 | 40.59 | peak | No Limit |
| 4 | * | 2418.750 | 94.48 | 10.71 | 105.19 | 54.00 | 51.19 | AVG | No Limit |

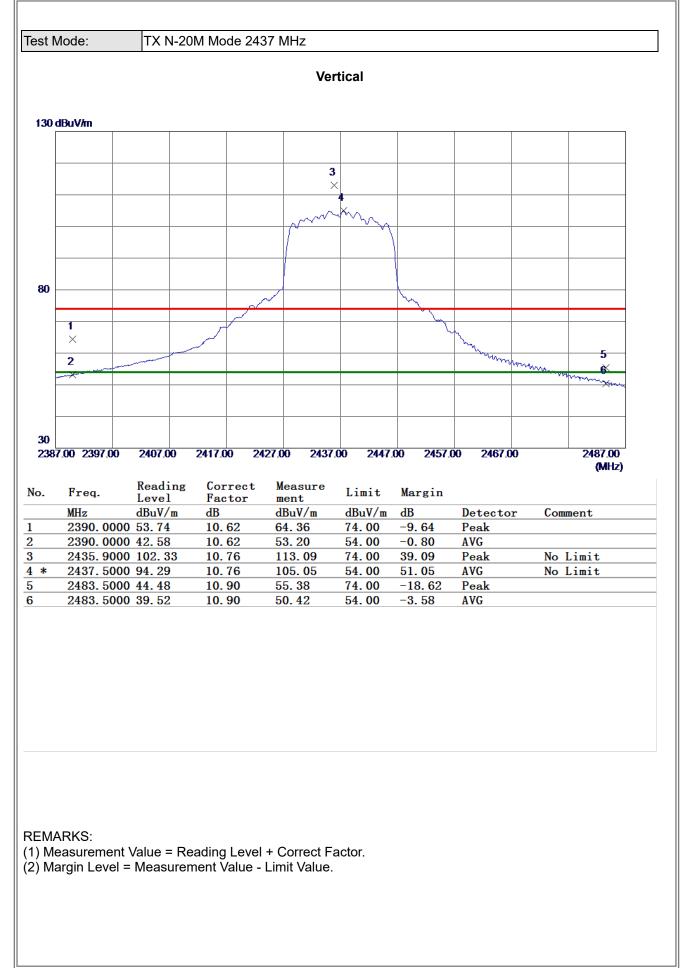
- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



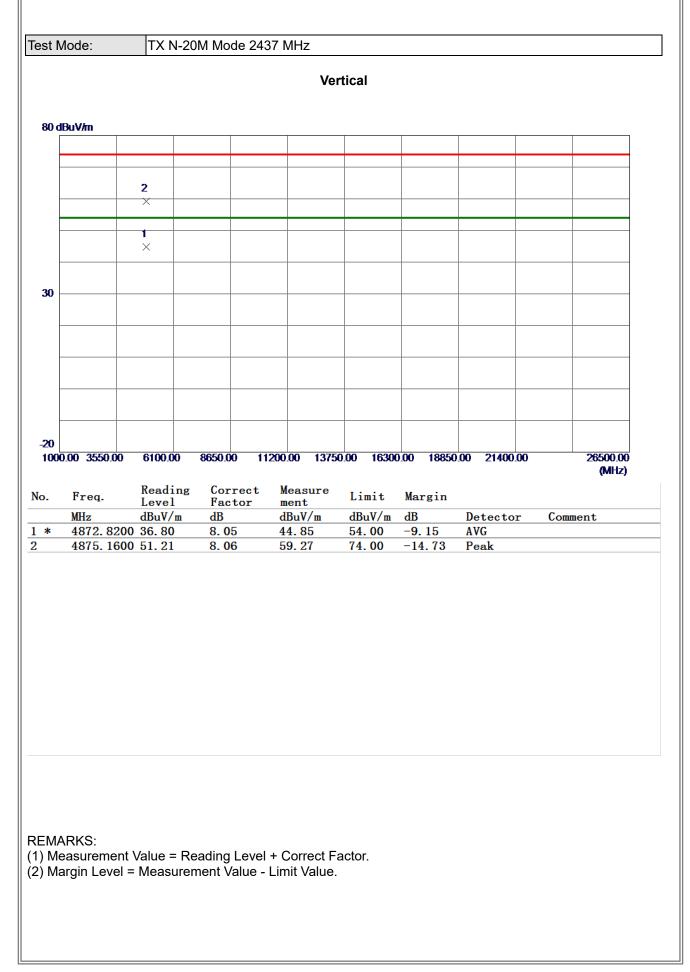


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

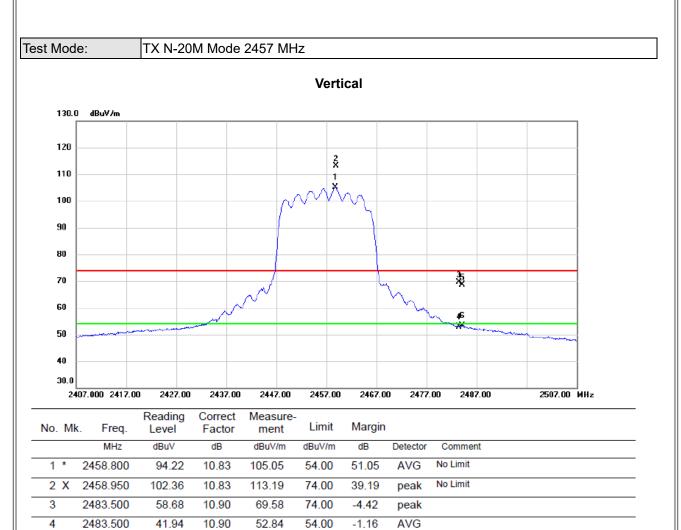












5

6

2484.150

2484.150

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

57.73

42.56

10.91

10.91

68.64

53.47

74.00

54.00

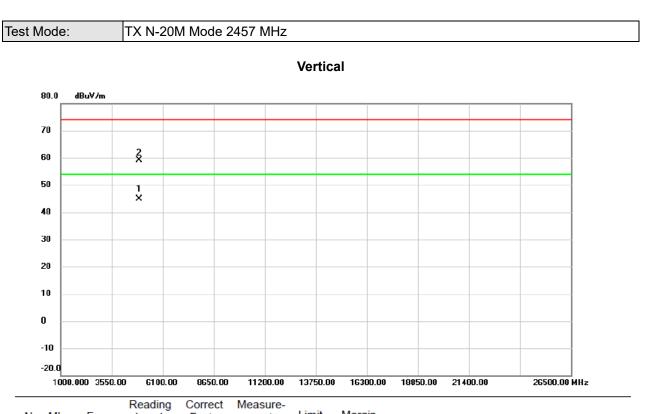
-5.36

-0.53

peak

AVG

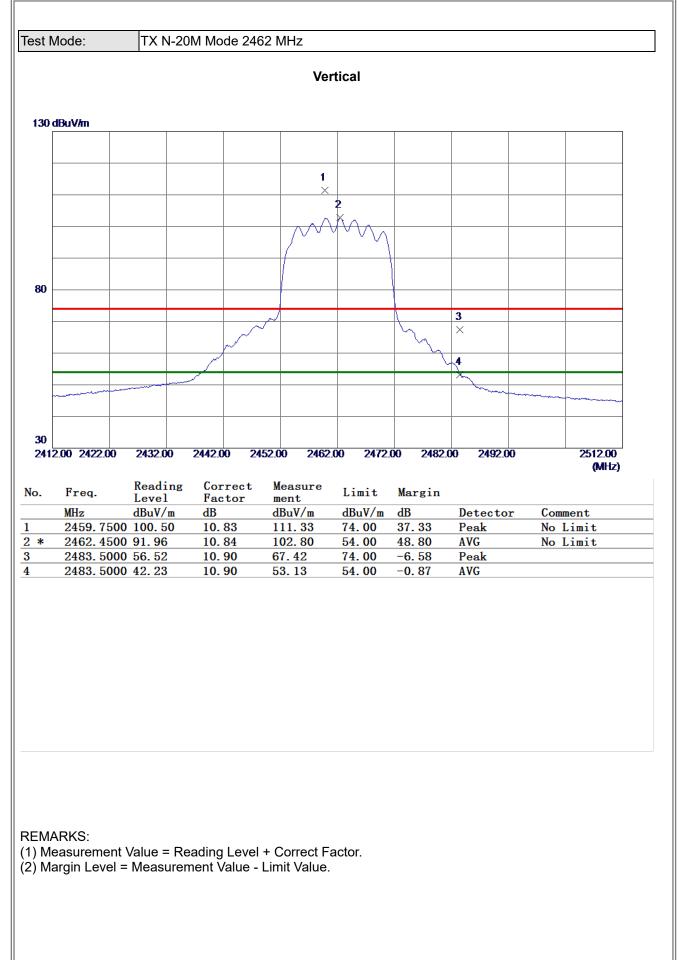




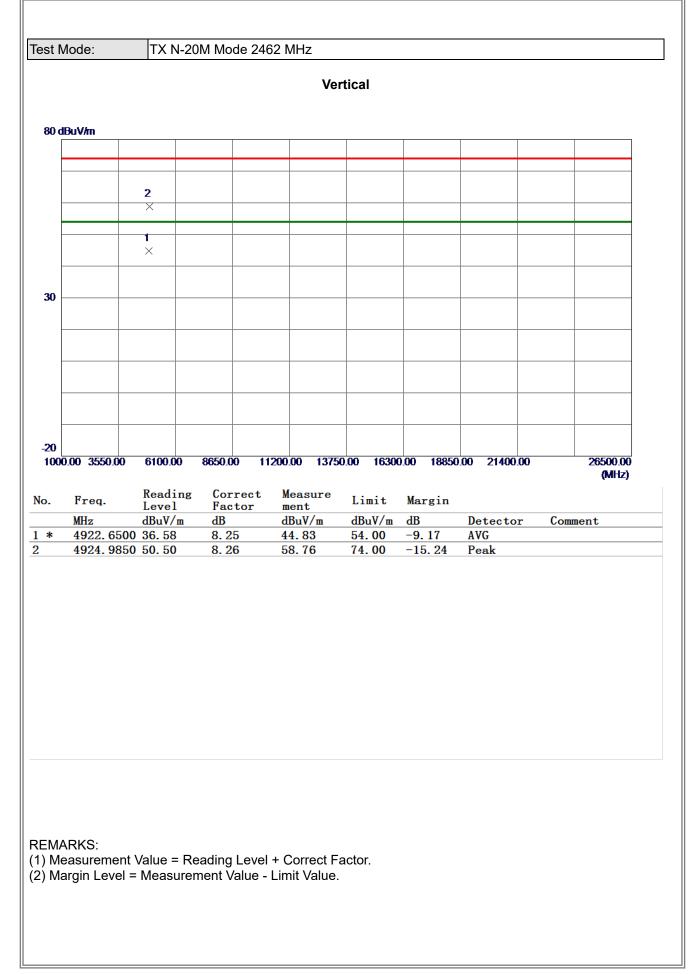
| | No. N | /k. | Freq. | | | ment | Limit | Margin | | |
|---|-------|-----|---------|-------|------|--------|--------|--------|----------|---------|
| - | | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| - | 1 * | 49 | 912.735 | 36.66 | 8.22 | 44.88 | 54.00 | -9.12 | AVG | |
| - | 2 | 49 | 915.415 | 50.85 | 8.22 | 59.07 | 74.00 | -14.93 | peak | |

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

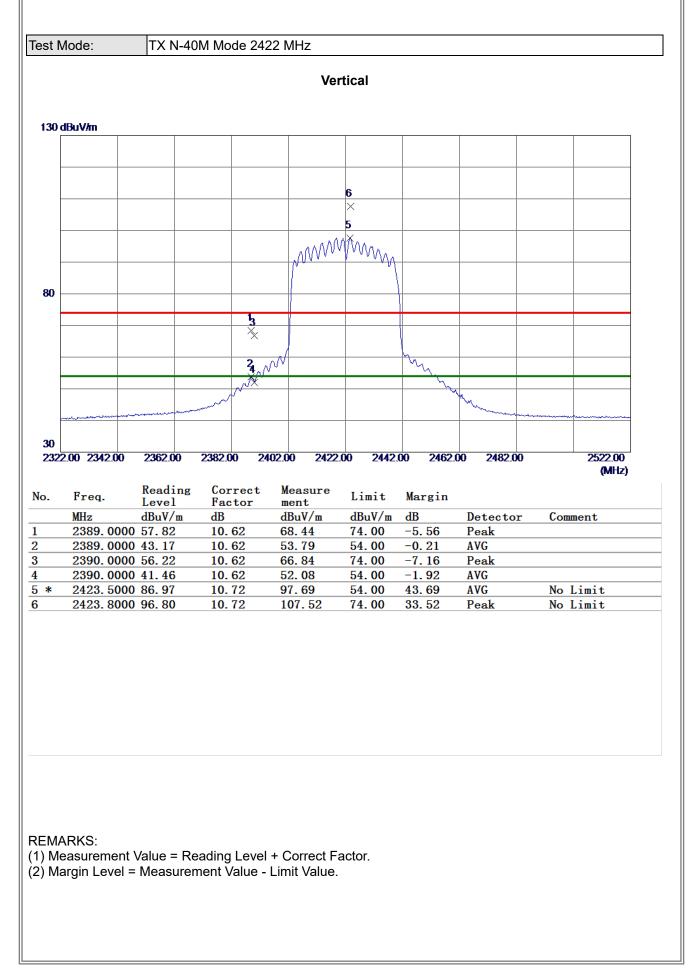




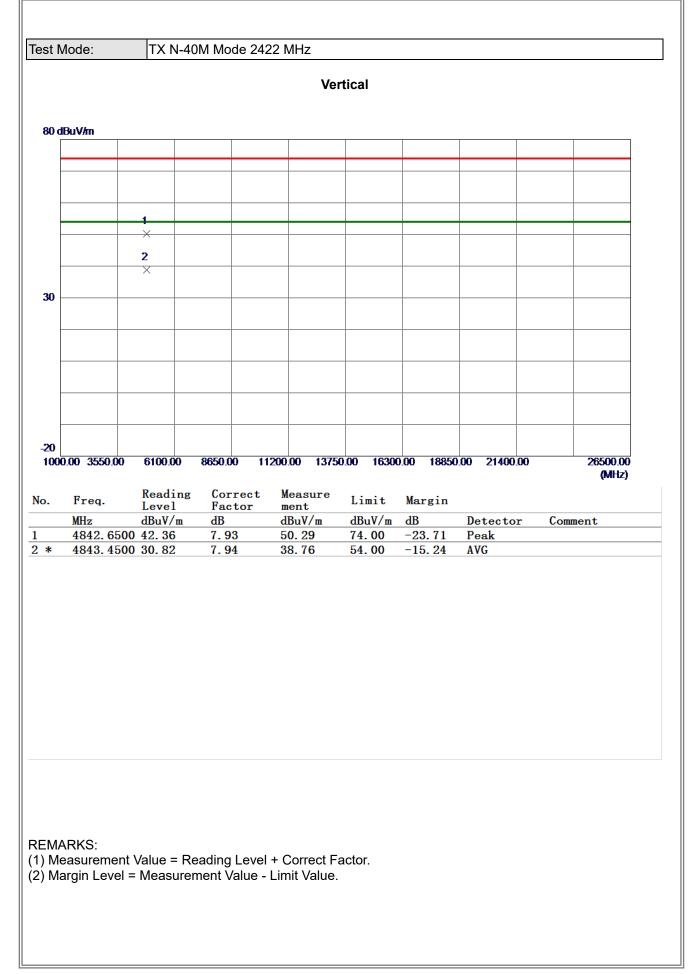




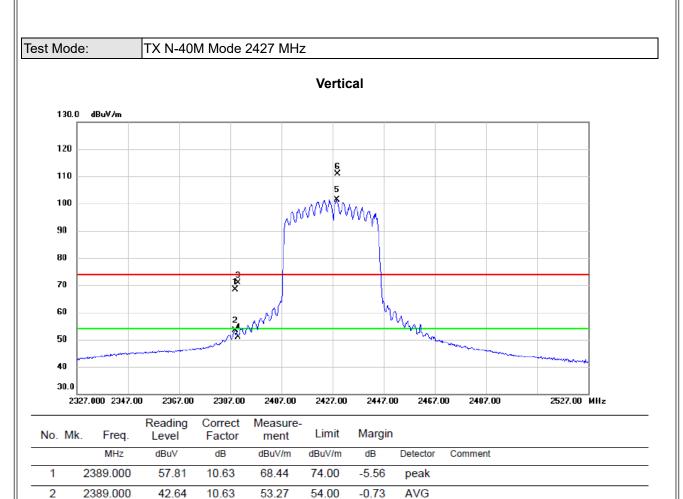












3

4

5 *

6 X

2390.000

2390.000

2428.700

2428.900

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

60.27

40.30

90.62

100.17

10.63

10.63

10.74

10.74

70.90

50.93

101.36

110.91

74.00

54.00

54.00

74.00

-3.10

-3.07

47.36

36.91

peak

AVG

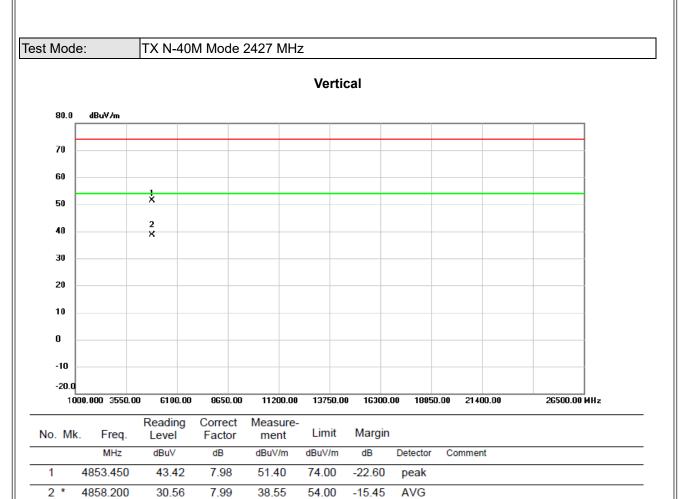
AVG

peak

No Limit

No Limit





2 *

4858.200

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

30.56

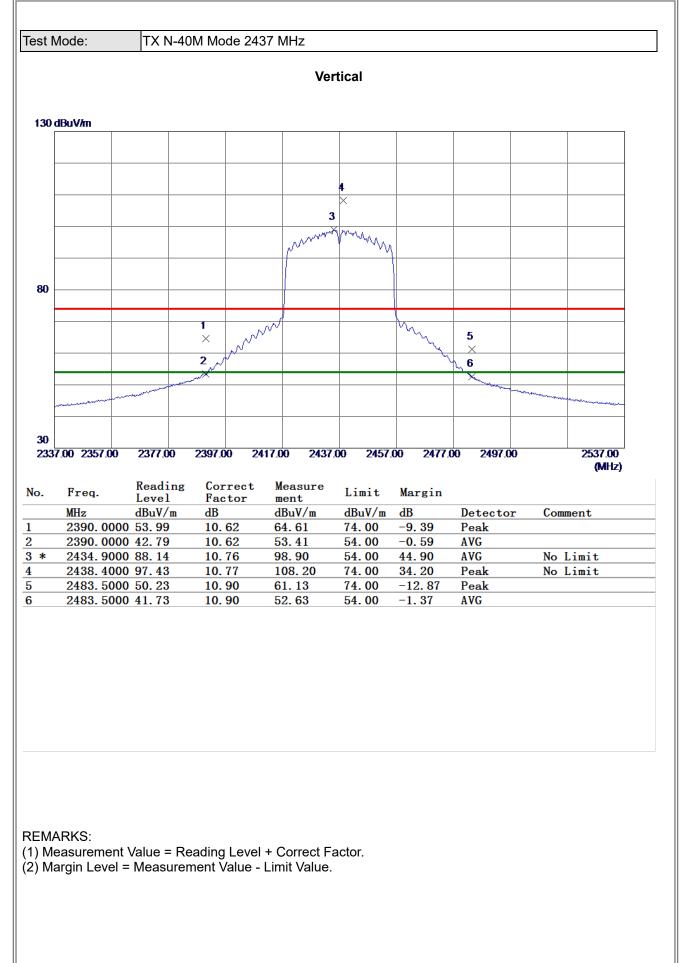
7.99

38.55

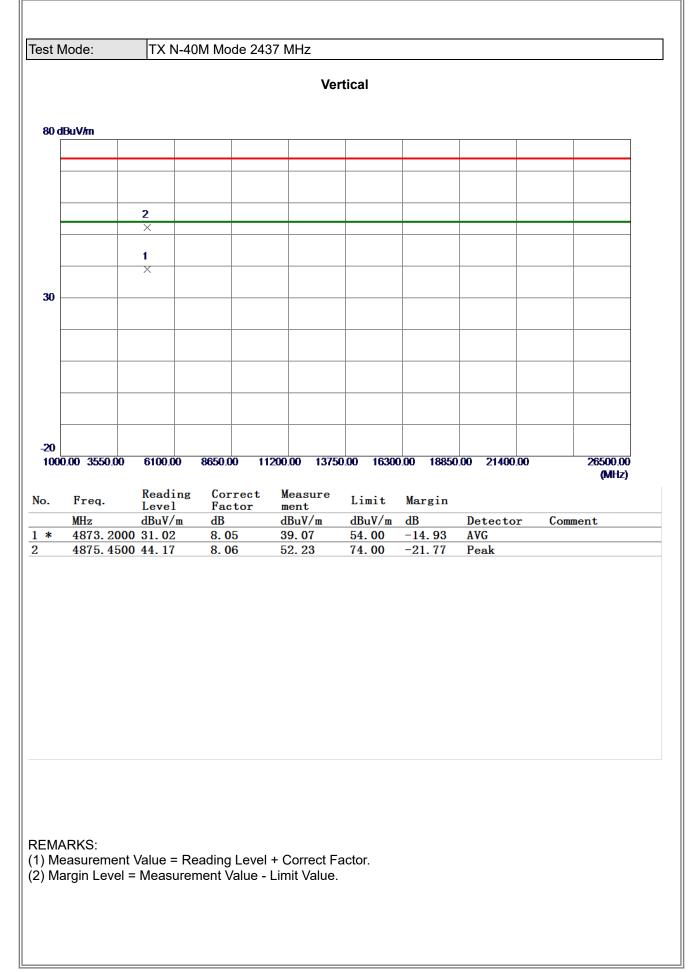
54.00

-15.45

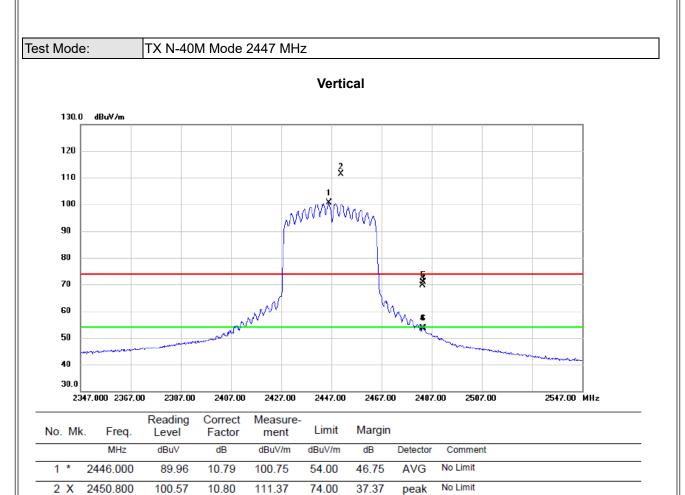












3

4

5

6

2483.500

2483.500

2483.700

2483.700

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

58.76

42.69

60.08

42.83

10.90

10.90

10.90

10.90

69.66

53.59

70.98

53.73

74.00

54.00

74.00

54.00

-4.34

-0.41

-3.02

-0.27

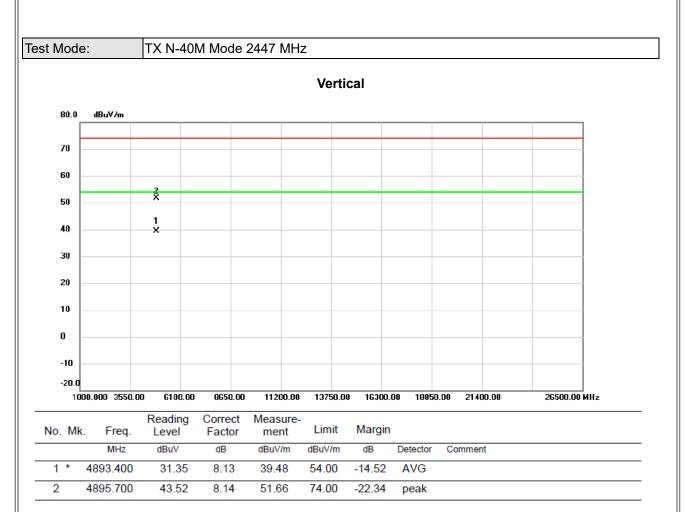
peak

AVG

peak

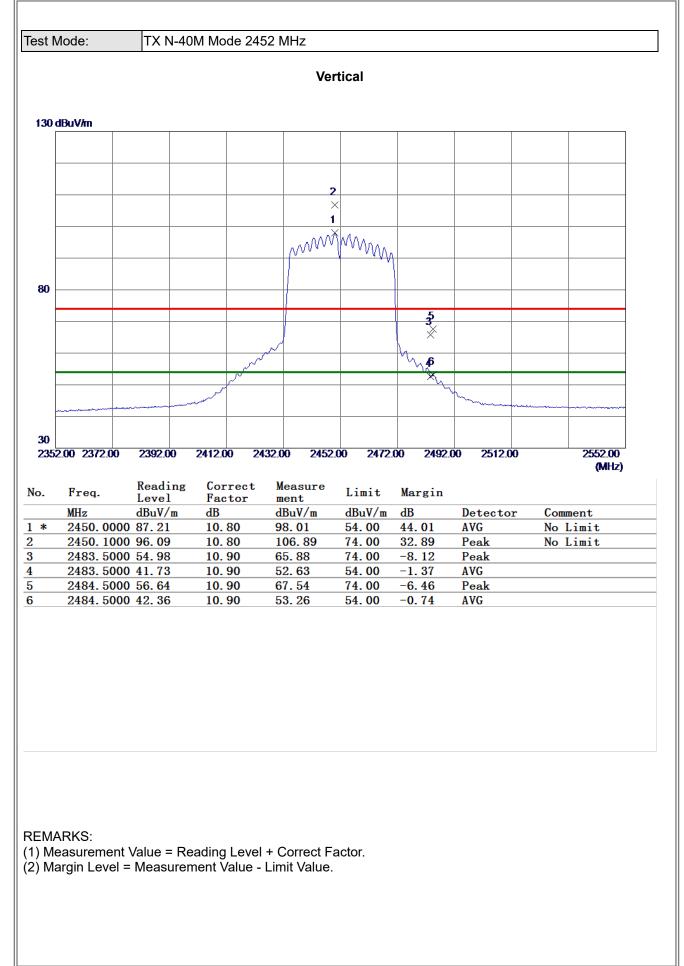
AVG



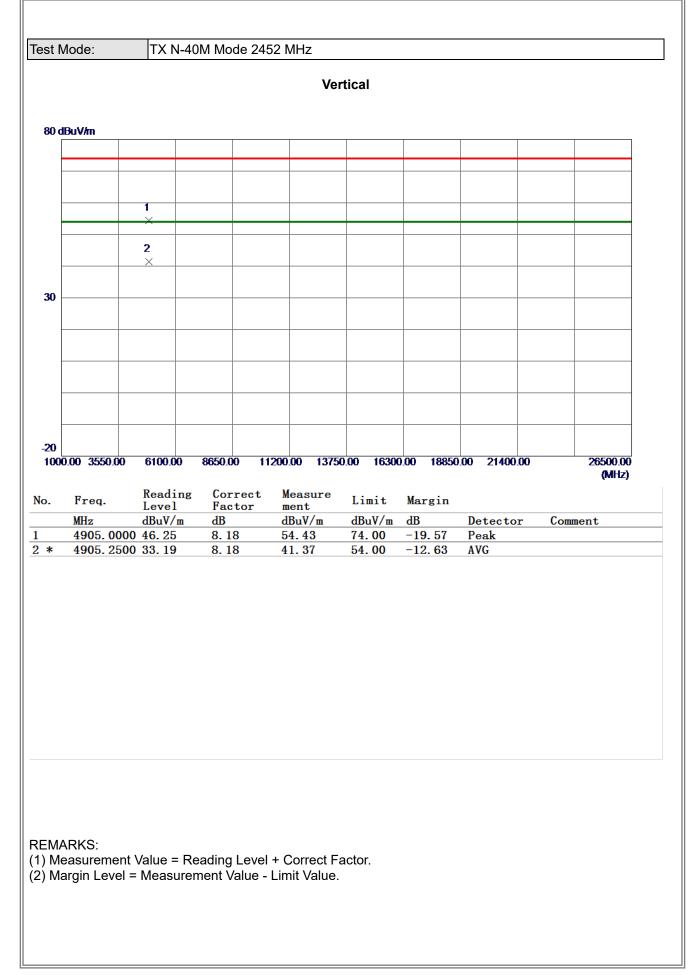


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.











APPENDIX E - BANDWIDTH



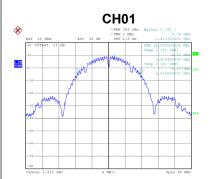
| Test Mode | TX B Mode | | | |
|-----------|--------------------|-------------------------|------------------------------------|----------|
| | | | | |
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | 6 dB Bandwidth Min. Limit (kHz) | Result |
| 01 | 2412 | 10.11 | 500 | Complies |
| 06 | 2437 | 10.16 | 500 | Complies |
| 11 | 2462 | 10.07 | 500 | Complies |
| | | | | |







| Channel | Frequency (MHz) | 99 % Emission Bandwidth (MHz) | Result |
|---------|--------------------|-------------------------------|----------|
| 01 | 2412 | 15.20 | Complies |
| 06 | 2437 | 15.28 | Complies |
| 11 | 2462 | 14.40 | Complies |







Date: 23.SEP.2020 17:20:53

Date: 23.SEP.2020 17:20:44

Date: 23.SEP.2020 17:23:08

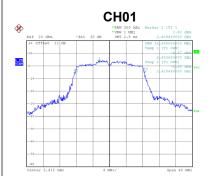
Date: 23.SEP.2020 17:25:43

Date: 23.SEP.2020 17:25:36

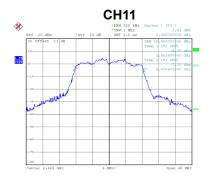


| Test Mode | TX G Mode | | | |
|---|--------------------|--|--|--|
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | 6 dB Bandwidth Min. Limit (kHz) | Result |
| 01 | 2412 | 15.11 | 500 | Complies |
| 06 | 2437 | 15.14 | 500 | Complies |
| 11 | 2462 | 15.16 | 500 | Complies |
| Nef 20 dBm *Att 30 dB 30 offlet 11 dB | HOD: | CHUCC MARKAR AND MARKAR AND MARK | 1:17:1 0:0:0 0:100000000000000000000000000 | Hundler Provide Data Bord 20 to 10 |
| Channel | | 99 % Emissio | n Bandwidth (MHz) | Result |

| Channel | Frequency (MHz) | 99 % Emission Bandwidth (MHz) | Result |
|---------|--------------------|-------------------------------|----------|
| 01 | 2412 | 16.88 | Complies |
| 06 | 2437 | 17.20 | Complies |
| 11 | 2462 | 16.80 | Complies |







Date: 23.SEP.2020 17:28:07

Date: 23.SEP.2020 17:29:56

Date: 23.SEP.2020 17:32:27



| Test Mode | TX N-20M Mode | | | |
|--|--------------------|--|--|---|
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | 6 dB Bandwidth Min. Limit (kHz) | Result |
| 01 | 2412 | 14.24 | 500 | Complies |
| 06 | 2437 | 15.20 | 500 | Complies |
| 11 | 2462 | 13.88 | 500 | Complies |
| Ref 20 dBm *Att 30 dB 10 -10 | HO1. | Ref 20 dBm *Att 30 dB SWT 2.5 mm 20 office 11 dB MM 30 dB MM 2.5 mm 20 office 11 dB MM 30 dB MM 2.5 mm | 1.10711 1.10300 1.1030000 NBs 1.10112 1.1011 1.101 1 | WINH Einit i [t] i Minit i Minit i [t] i Minit i [t] i Minit i Minit i [t] i Minit i [t] i Minit i Minit i [t] i Minit i [t] i Minit i Minit i [t] i Minit [t] |
| Channel | Frequency (MHz) | 99 % Emissio | n Bandwidth (MHz) | Result |
| 01 | 2412 | | 17.84 | Complies |
| 06 | 2437 | | 18.16 | Complies |
| 11 | 2462 | | 17.76 | Complies |
| | H011 | CHO6 ************************************ | r: 1 (7)] 7.11 (dm 2.45600000 GEr 1 (73.00) 2 (35.00000 GER 2 (35.0000) 2 (37.00) 2 (37.00) 3 (37.00) 2 (37.00) 3 (37.00) | H111 520 300 Mis. Marker 1 [71] 97 2.4 marker 1 [71] 97 2.4 marker 1 [71] 1 40 1 40 1 1 2 40 00 40 Mis 1 4 00 1 1 2 40 00 40 Mis 1 4 00 1 1 2 40 00 40 Mis 1 4 00 1 1 2 40 00 40 Mis 1 4 00 1 1 2 40 00 40 Mis 1 4 00 1 1 2 40 00 40 Mis 1 4 00 1 1 2 40 00 40 Mis 1 4 00 1 1 2 40 00 40 Mis 1 4 00 1 1 2 40 00 40 Mis 1 4 00 1 1 2 40 00 40 Mis 1 4 00 1 2 40 Mis 1 4 0 |

Date: 23.SEP.2020 17:34:16

Date: 23.SEP.2020 17:36:16

Date: 23.SEP.2020 17:38:08



| Test Mode | TX N-40M Mode | | | |
|--|--|---|--|--------------------|
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | 6 dB Bandwidth Min. Limit (kHz) | Result |
| 03 | 2422 | 35.20 | 500 | Complies |
| 06 | 2437 | 32.64 500 | | Complies |
| 09 | 2452 | 35.08 | 500 | Complies |
| <u>A</u> | SWT 5 HAR 35.199950000 Milz Marker 1 (T1) -7.53 dffr 2404440000 dffs 35.199950000 dffs | CHUG Provide the second seco | L 1 [1] 2.0395000 Wa 1 [1] 1 5 5 cm 2.0395000 Wa 1 [1] 1 5 5 cm 2.05 | |
| -70 -80 Center 2.422 082 4 980 Date: 23.5EP.2020 17:40:51 | | -70 -77 -28 Center 2.437 GHz 4 MHZ/ Date: 23.5EP.2020 17:42:40 | P2 Bpan 40 MHz Date: 23.5EP.2020 17:44:37 | 12/ 2pan 40 Miz |
| | | Date: 23.559-2020 17:42:40 | | ez open 6 me |
| Date: 23.5EP.2020 17:40:51 | Frequency | Date: 23.585.2020 17:42:40 99 % Emissio | Date: 23.559.2020 17:44:37 | |
| Date: 23.587.2020 17:40:51 | Frequency (MHz) | Date: 23.5EP.2020 17:42:40 99 % Emissio | Date: 23.555.2020 17:44:37 | Result |
| Date: 23.589.2020 17:40:51 | Frequency (MHz) 2422 | Date: 23.585.2020 17:42:40 99 % Emissio | n Bandwidth (MHz) 36.16 | Result Complies |

Date: 23.SEP.2020 17:40:59

Date: 23.SEP.2020 17:42:48

Date: 23.SEP.2020 17:44:45



APPENDIX F - MAXIMUM AVERAGE OUTPUT POWER



| Test Mode | Test Mode TX B Mode_Ant. 1 | | | | | | | | |
|-----------|----------------------------|----------------------------------|----------------|---|---------------------|-------------------|----------|--|--|
| Channel | Frequency (MHz) | Average Output Power (dBm) | Duty Factor | Average Output Power + Duty Factor (dBm) | Max. Limit (dBm) | Max. Limit (W) | Result | | |
| 01 | 2412 | 19.04 | 0.00 | 19.04 | 30.00 | 1.0000 | Complies | | |
| 06 | 2437 | 18.92 | 0.00 | 18.92 | 30.00 | 1.0000 | Complies | | |
| 11 | 2462 | 18.32 | 0.00 | 18.32 | 30.00 | 1.0000 | Complies | | |

Test Mode TX B Mode_Ant. 2

| Channel | Frequency (MHz) | Average Output Power (dBm) | Duty Factor | Average Output Power + Duty Factor (dBm) | | Max. Limit (W) | Result |
|---------|--------------------|----------------------------------|----------------|---|-------|-------------------|----------|
| 01 | 2412 | 19.08 | 0.00 | 19.08 | 30.00 | 1.0000 | Complies |
| 06 | 2437 | 18.84 | 0.00 | 18.84 | 30.00 | 1.0000 | Complies |
| 11 | 2462 | 18.39 | 0.00 | 18.39 | 30.00 | 1.0000 | Complies |

Test Mode TX B Mode_Total

| Channel | Frequency (MHz) | Average Output Power (dBm) | Max. Limit (dBm) | Max. Limit (W) | Result |
|---------|--------------------|-------------------------------|---------------------|-------------------|----------|
| 01 | 2412 | 22.07 | 30.00 | 1.0000 | Complies |
| 06 | 2437 | 21.89 | 30.00 | 1.0000 | Complies |
| 11 | 2462 | 21.37 | 30.00 | 1.0000 | Complies |



| Test Mode | Test Mode TX G Mode_Ant. 1 | | | | | | | | |
|-----------|----------------------------|----------------------------------|----------------|---|---------------------|-------------------|----------|--|--|
| Channel | Frequency (MHz) | Average Output Power (dBm) | Duty Factor | Average Output Power + Duty Factor (dBm) | Max. Limit (dBm) | Max. Limit (W) | Result | | |
| 01 | 2412 | 14.61 | 0.45 | 15.06 | 30.00 | 1.0000 | Complies | | |
| 06 | 2437 | 17.15 | 0.45 | 17.60 | 30.00 | 1.0000 | Complies | | |
| 11 | 2462 | 13.96 | 0.45 | 14.41 | 30.00 | 1.0000 | Complies | | |

| Test Mode TX | G Mode_Ant. 2 |
|--------------|---------------|
|--------------|---------------|

| Channel | Frequency (MHz) | Average Output Power (dBm) | Duty Factor | Average Output Power + Duty Factor (dBm) | | Max. Limit (W) | Result |
|---------|--------------------|----------------------------------|----------------|---|-------|-------------------|----------|
| 01 | 2412 | 14.94 | 0.45 | 15.39 | 30.00 | 1.0000 | Complies |
| 06 | 2437 | 17.09 | 0.45 | 17.54 | 30.00 | 1.0000 | Complies |
| 11 | 2462 | 14.06 | 0.45 | 14.51 | 30.00 | 1.0000 | Complies |

Test Mode TX G Mode_Total

| Channel | Frequency (MHz) | Average Output Power (dBm) | Max. Limit (dBm) | Max. Limit (W) | Result |
|---------|--------------------|-------------------------------|---------------------|-------------------|----------|
| 01 | 2412 | 18.24 | 30.00 | 1.0000 | Complies |
| 06 | 2437 | 20.58 | 30.00 | 1.0000 | Complies |
| 11 | 2462 | 17.48 | 30.00 | 1.0000 | Complies |



| Test Mode TX N-20M Mode_Ant. 1 | | | | | | | |
|--------------------------------|--------------------|----------------------------------|----------------|---|---------------------|-------------------|----------|
| Channel | Frequency (MHz) | Average Output Power (dBm) | Duty Factor | Average Output Power + Duty Factor (dBm) | Max. Limit (dBm) | Max. Limit (W) | Result |
| 01 | 2412 | 13.32 | 0.38 | 13.70 | 30.00 | 1.0000 | Complies |
| 06 | 2437 | 16.26 | 0.38 | 16.64 | 30.00 | 1.0000 | Complies |
| 11 | 2462 | 13.23 | 0.38 | 13.61 | 30.00 | 1.0000 | Complies |

Test Mode TX N-20M Mode_Ant. 2

| Channel | Frequency (MHz) | Average Output Power (dBm) | Duty Factor | Average Output Power + Duty Factor (dBm) | | Max. Limit (W) | Result |
|---------|--------------------|----------------------------------|----------------|---|-------|-------------------|----------|
| 01 | 2412 | 13.45 | 0.38 | 13.83 | 30.00 | 1.0000 | Complies |
| 06 | 2437 | 16.15 | 0.38 | 16.53 | 30.00 | 1.0000 | Complies |
| 11 | 2462 | 13.56 | 0.38 | 13.94 | 30.00 | 1.0000 | Complies |

Test Mode TX N-20M Mode_Total

| Channel | Frequency (MHz) | Average Output Power (dBm) | Max. Limit (dBm) | Max. Limit (W) | Result |
|---------|--------------------|-------------------------------|---------------------|-------------------|----------|
| 01 | 2412 | 16.78 | 30.00 | 1.0000 | Complies |
| 06 | 2437 | 19.59 | 30.00 | 1.0000 | Complies |
| 11 | 2462 | 16.79 | 30.00 | 1.0000 | Complies |



| Test Mode TX N-40M Mode_Ant. 1 | | | | | | | | |
|--------------------------------|--------------------|----------------------------------|----------------|---|---------------------|-------------------|----------|--|
| Channel | Frequency (MHz) | Average Output Power (dBm) | Duty Factor | Average Output Power + Duty Factor (dBm) | Max. Limit (dBm) | Max. Limit (W) | Result | |
| 03 | 2422 | 12.11 | 0.38 | 12.49 | 30.00 | 1.0000 | Complies | |
| 06 | 2437 | 14.22 | 0.38 | 14.60 | 30.00 | 1.0000 | Complies | |
| 09 | 2452 | 11.89 | 0.38 | 12.27 | 30.00 | 1.0000 | Complies | |

Test Mode TX N-40M Mode_Ant. 2

| Channel | Frequency (MHz) | Average Output Power (dBm) | Duty Factor | Average Output Power + Duty Factor (dBm) | | Max. Limit (W) | Result |
|---------|--------------------|----------------------------------|----------------|---|-------|-------------------|----------|
| 03 | 2422 | 11.99 | 0.38 | 12.37 | 30.00 | 1.0000 | Complies |
| 06 | 2437 | 14.58 | 0.38 | 14.96 | 30.00 | 1.0000 | Complies |
| 09 | 2452 | 12.25 | 0.38 | 12.63 | 30.00 | 1.0000 | Complies |

Test Mode TX N-40M Mode_Total

| Channel | Frequency (MHz) | Average Output Power (dBm) | Max. Limit (dBm) | Max. Limit (W) | Result |
|---------|--------------------|-------------------------------|---------------------|-------------------|----------|
| 03 | 2422 | 15.44 | 30.00 | 1.0000 | Complies |
| 06 | 2437 | 17.79 | 30.00 | 1.0000 | Complies |
| 09 | 2452 | 15.46 | 30.00 | 1.0000 | Complies |



APPENDIX G - CONDUCTED SPURIOUS EMISSIONS



