

TEST REPORT FOR UWB TESTING

Report No.: SRTC2023-9003(F)-0017

Product Name: Smart Phone

Product Model: APYHRO00326

Applicant: Sharp Corporation

Manufacturer: Sharp Corporation

Specification: FCC Part 15, Subpart F(2022)

The State Radio_monitoring_center Testing Center (SRTC)

15th Building, No.30, Shixing Street, Shijingshan District, Beijing, P.R.China

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1. GENERAL INFORMATION

1.1 Notes of the test report

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1.2 Information about the testing laboratory

| | |
|----------------------|---|
| Company: | The State Radio_monitoring_center Testing Center (SRTC) |
| Test Site 1: | 15th Building, No.30 Shixing Street, Shijingshan District |
| Test Site 2: | No.80, Zhaojiachang, Beizang, Daxing District |
| City: | Beijing |
| Country or Region: | P.R.China |
| Contacted person: | Liu Jia |
| Tel: | +86 10 57996183 |
| Fax: | +86 10 57996388 |
| Email: | liujiaf@srtc.org.cn |
| Registration number: | 239125 |

1.3 Applicant's details

| | |
|----------|---|
| Company: | Sharp Corporation |
| Address: | 1 Takumi-cho, Sakai-ku, Sakai City, Osaka 590-8522, Japan |

1.4 Manufacturer's details

| | |
|----------|---|
| Company: | Sharp Corporation |
| Address: | 1 Takumi-cho, Sakai-ku, Sakai City, Osaka 590-8522, Japan |

1.5 Test Environment

| | | |
|---|------------------|--------------|
| Date of Receipt of test sample at SRTC: | 2023.5.10 | |
| Testing Start Date: | 2023.5.10 | |
| Testing End Date: | 2023.5.18 | |
| Environmental Data: | Temperature (°C) | Humidity (%) |
| Ambient | 23.4 | 37.6 |
| Normal Supply Voltage (V d.c.): | 4 | |

2. DESCRIPTION OF THE DEVICE UNDER TEST

| | |
|----------------------------|---|
| Frequency Range | 7737.6-8236.8MHz |
| Modulation | BPM/BPSK |
| PIFA | Integral (permanent fixed antenna, which may be built-in, designed as an indispensable part of EUT) |
| Power Supply | Battery |
| Rated Power Supply Voltage | 4V |
| Device type | <input type="checkbox"/> ground penetrating radars and wall imaging systems |
| | <input type="checkbox"/> through-wall imaging systems |
| | <input type="checkbox"/> surveillance systems |
| | <input type="checkbox"/> medical imaging systems |
| | <input type="checkbox"/> vehicular radar systems |
| | <input type="checkbox"/> indoor UWB systems |
| | <input checked="" type="checkbox"/> hand held UWB systems |
| | <input type="checkbox"/> all UWB devices |
| HW Version | DVT |
| SW Version | A404G |

| Frequency(MHz) | Max Gain (dBi) |
|----------------|----------------|
| 7737.6-8236.8 | 1.3 |

3. REFERENCE SPECIFICATION

| Specification | Version | Title |
|-------------------------------|------------------|--|
| FCC 47 CFR Part F | 2022 | Radio Frequency Devices; Subpart F –Ultra Wide Band Devices |
| ANSI C63.10 | 2013 | American National Standard for Testing Unlicensed Wireless Devices |
| ANSI C63.4 | 2014 | American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz |
| KDB 393764 D01 UWB FAQ v02 | January 29, 2018 | Ultra-Wideband (UWB) Devices frequently asked questions |

4. KEY TO NOTES AND RESULT CODES

| Code | Meaning |
|------|--|
| PASS | Test result shows that the requirements of the relevant specification have been met. |
| FAIL | Test result shows that the requirements of the relevant specification have not been met. |
| N/T | Test case is not tested. |
| NTC | Nominal voltage, Normal Temperature |

5.RESULT SUMMARY

| No. | Test case | FCC reference | Verdict |
|-----|---|------------------------------|---------|
| 1 | Antenna Requirement | 15.203 | Pass |
| 2 | Operational Requirements of the Device under Test | 15.519 (a) | Pass |
| 3 | UWB Bandwidth | 15.503 (a) (d) 15.519 (b) | Pass |
| 4 | Average TransmitPower | 15.519 (c) | Pass |
| 5 | Peak Power Density | 15.519 (e) | Pass |
| 6 | Spurious Radiated Emissions | 15.519 (c) 15.209 | Pass |
| 7 | Spurious Radiated Emissions in GPS Bands | 15.519 (d) | Pass |
| 8 | Shutdown Timing Requirements | 15.519 (a)(1) | Pass |
| 9 | Conducted Emissions | 15.521 | Pass |

Test Site 2: No.80, Zhaojiachang, Beizang, Daxing District

| | |
|---|---|
| Approved By: Mr. Liu Wei Director of the test department 刘巍 | Checked By Mr. Guo Yu Vice director of the test department 郭雨 |
| Tested by: Lv Youyou Test engineer 吕友友 | Issued date: 2023.5.25 |

6.TEST RESULT

6.1 Antenna Requirement (15.203)

6.1.1 Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply.

6.1.2 Result:

Compliant, the antenna utilized by the device is fixed to the module.

6.2 Operational Requirements of the Device under Test (15.519 (a))

6.2.1 Requirement:

(2) The use of antennas mounted on outdoor structures, e.g., antennas mounted on the outside of a building or on a telephone pole, or any fixed outdoors infrastructure is prohibited. Antennas may be mounted only on the hand held UWB device.

(3) UWB devices operating under the provisions of this section may operate indoors or outdoors.

6.2.2 Result:

Compliant.

6.3 UWB Bandwidth (15.503 (a) (d), 15.519 (b))

6.3.1 Requirement:

For the purpose of this subpart, the UWB bandwidth is the frequency band bounded by the points that are 10 dB below the highest radiated emission, as based on the complete transmission system including the antenna. The upper boundary is designated f_H and the lower boundary is designated f_L . The frequency at which the highest radiated emission occurs is designated f_M .

An intentional radiator that, at any point in time, has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

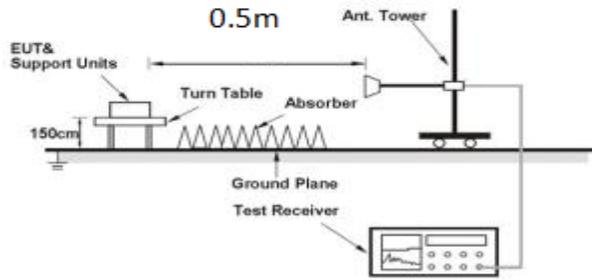
The UWB bandwidth of a device operating under the provisions of this section must be contained between 3100 MHz and 10,600 MHz.

6.3.2 Test Procedure

The UWB Bandwidth is measured conducted, while EUT is operating in transmission mode at the appropriate center frequency. The Resolution Bandwidth was set to 1MHz RBW IAW ANSI C63.10 Section 10.1.

Testing was performed under ambient conditions at nominal voltage.

6.3.3 Test Setup:



6.3.4 Result:

APPENDIX A – TEST DATA – A.1.

6.4 Average Transmit Power (15.519 (c))

6.4.1 Requirement:

The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz:

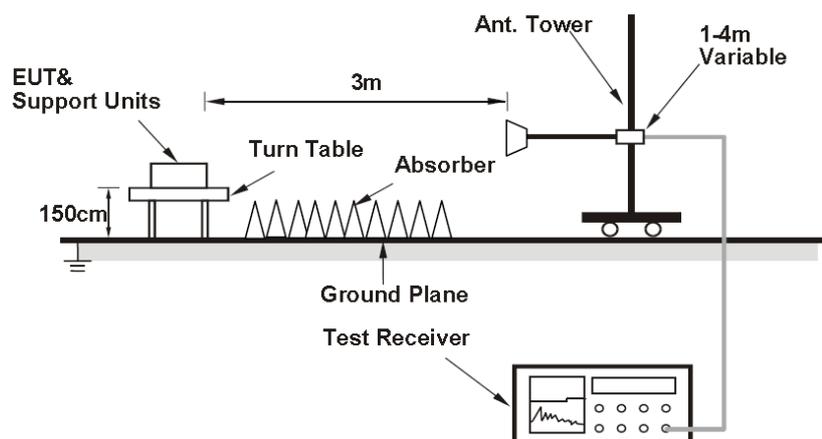
| Frequency (MHz) | EIRP (dBm) |
|-----------------|------------|
| 3100 - 10600 | -41.3 |

6.4.2 Test Procedure

The Average Transmit Power is measured radiated, at a 3-meter distance, while EUT is operating in transmission mode at the appropriate center frequency. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in max hold mode. The Resolution Bandwidth was set to 1MHz RBW IAW 15.519(c).

Testing was performed under ambient conditions at nominal voltage.

6.4.3 Test Setup



6.4.4 Result:

APPENDIX A – TEST DATA – A.2.

6.5 Peak Power Density (15.519 (e))

6.5.1 Requirement:

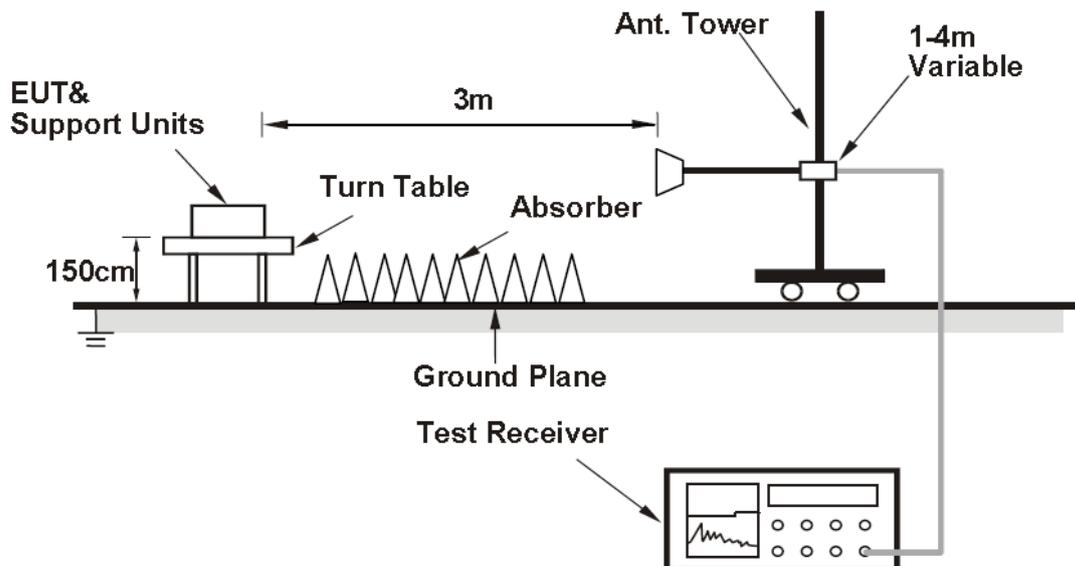
There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth entered on the frequency at which the highest radiated emission occurs, f_M . That limit is 0 dBm EIRP.

6.5.2 Test Procedure

The Peak Power Density is measured radiated, at a 3-meter distance, while EUT is operating in transmission mode at the appropriate center frequency. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in max hold mode. The Resolution Bandwidth was set to 50MHz RBW IAW ANSI C63.10 Section 10.3.6.

Testing was performed under ambient conditions at nominal voltage.

6.5.3 Test Setup



6.5.4 Result:

APPENDIX A – TEST DATA – A.3.

6.6 Spurious Radiated Emissions (Section 15.519 (c) 15.209 15.205)

6.6.1 Requirement:

The radiated emissions at or below 960 MHz from a device operating under the provisions of this section shall not exceed the emission levels in § 15.209. The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz:

| Frequency (MHz) | EIRPat 3 Meters (dBm) | Field strength at 3 Meters (dBμV/m) | Field strength at 0.5 Meters (dBμV/m) |
|-----------------|-----------------------|-------------------------------------|---------------------------------------|
| 960 - 1610 | -75.3 | 19.9 | 35.56 |
| 1610 - 1990 | -63.3 | 31.9 | 47.56 |
| 1990 - 3100 | -61.3 | 33.9 | 49.56 |
| 3100 - 10600 | -41.3 | 53.9 | 69.56 |
| Above 10600 | -61.3 | 33.9 | 49.56 |

Field Strength Calculation

Field strength at 3 Meters (dBμV/m) = EIRPat 3Meters(dBm) + 95.2

Field strength at 0.5 Meters(dBμV/m) = Field strength at 3 Meters(dBμV/m)- 20log(0.5m/3m)

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in below Table per Section 15.209. The spectrum shall be investigated from the lowest radio frequency signal generated in the device

| Frequency (MHz) | Field strength (μV/m) | Measured 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 |

Radiated Limits

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit

Used conversion factor: Limit (dBμV/m) = 20 log (Limit (μV/m)/1μV/m)

| Frequency (MHz) | Detector | Unit (dBμV/m) |
|-----------------|------------|---------------|
| 30~88 | Quasi-peak | 40.0 |
| 88~216 | Quasi-peak | 43.5 |
| 216~960 | Quasi-peak | 46.0 |

Conversion Radiated limits

6.6.2 Test Procedure

Radiated emissions for restricted bands below 1 GHz are measured in the semi-anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities.

Radiated emissions for restricted bands above 1 GHz are measured in the full-anechoic chamber at a 0.5-meter distance on every azimuth in both horizontal and vertical polarities.

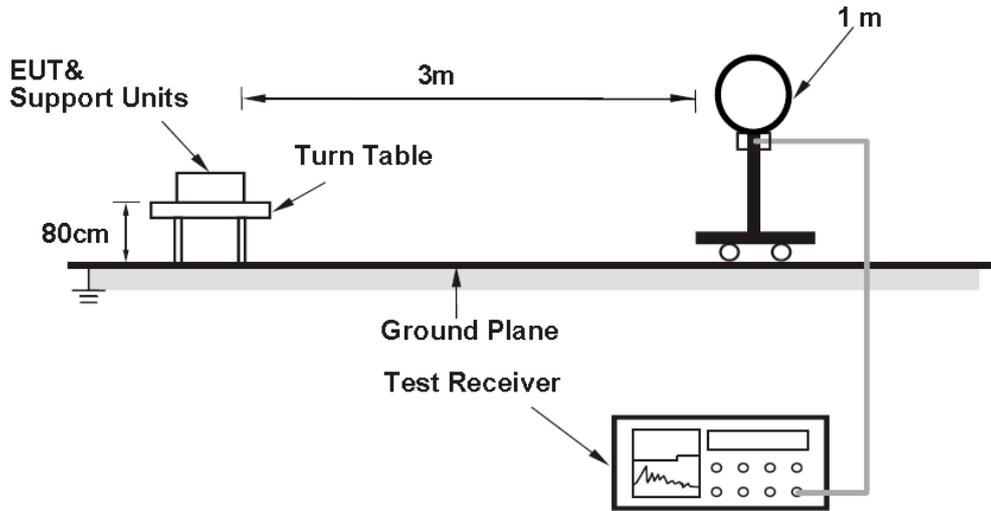
The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in max hold mode. Depending on the frequency band spanned a notch filter was used

to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned.

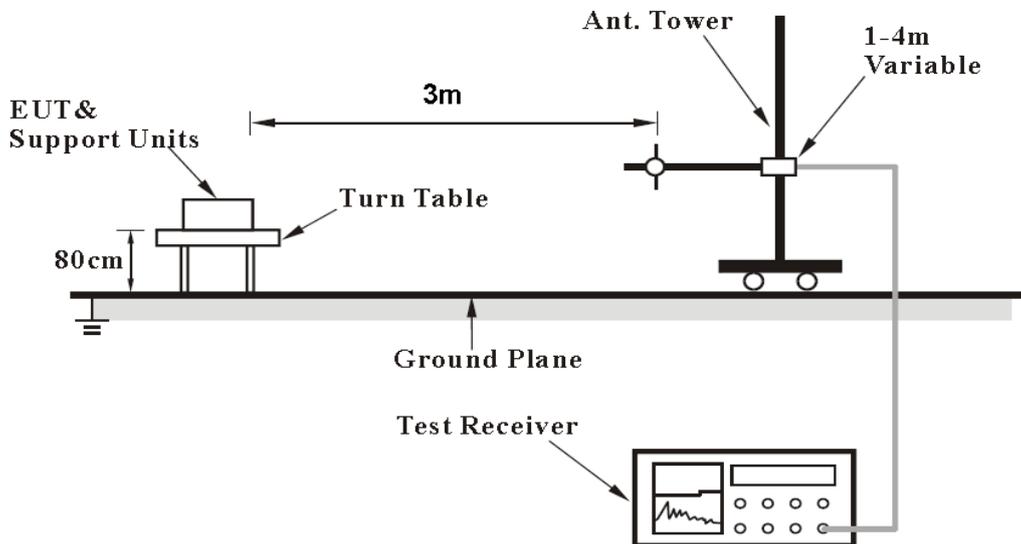
Measurements on any restricted band frequency or frequencies above 1 GHz are based on the use of measurement instrumentation employing peak and average detectors. All measurements were performed using a resolution bandwidth of 1 MHz.

6.6.3 Test Setup

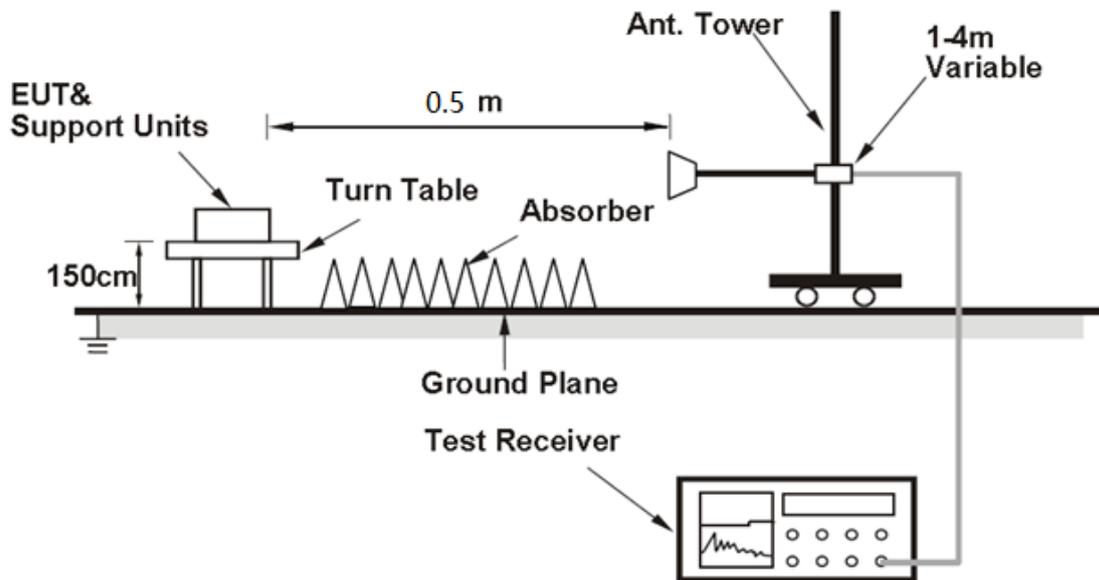
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



6.6.4 Result:
APPENDIX A – TEST DATA – A.4..

6.7 Spurious Radiated Emissions in GPS Bands (15.519 (d))

6.7.1 Requirement:

In addition to the radiated emission limits specified in the table in paragraph (c) of this section, UWB transmitters operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of no less than 1 kHz:

| Frequency (MHz) | EIRP (dBm) | Field strength at 3 Meters (dBμV/m) | Field strength at 0.5 Meters (dBμV/m) |
|-----------------|------------|-------------------------------------|---------------------------------------|
| 1164 - 1240 | -85.3 | 9.9 | 25.46 |
| 1559 - 1610 | -85.3 | 9.9 | 25.46 |

Field Strength Calculation

Field strength at 3 Meters (dBμV/m) = EIRPat 3Meters(dBm) + 95.2

Field strength at 0.5 Meters(dBμV/m) = Field strength at 3 Meters(dBμV/m) - 20log(0.5m/3m)

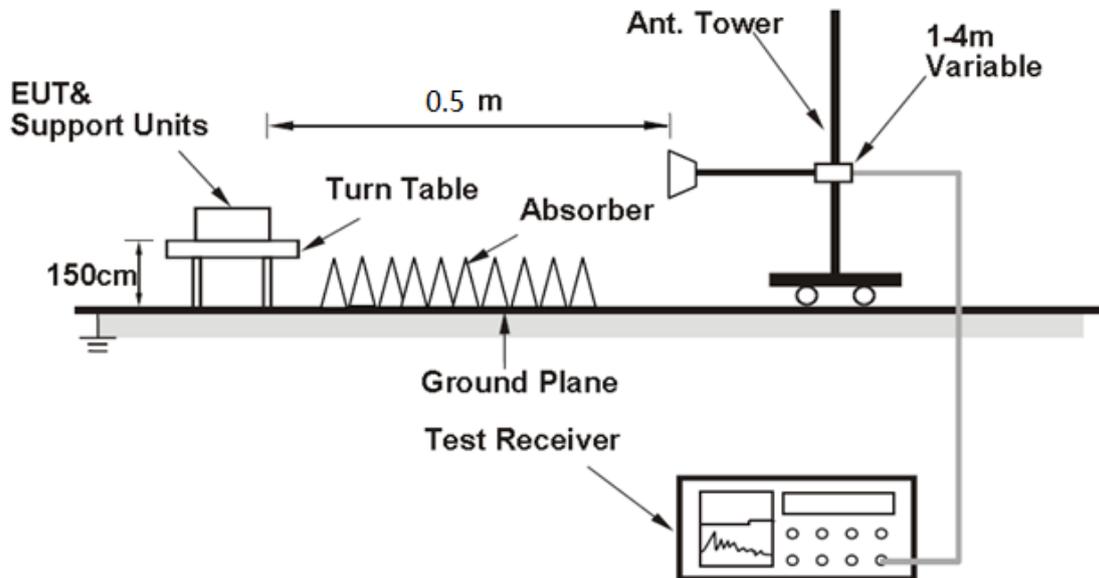
6.7.2 Test Procedure

Radiated emissions for restricted bands above 1 GHz are measured in the anechoic chamber at a 0.5-meter distance on every azimuth in both horizontal and vertical polarities.

The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in max hold mode. Depending on the frequency band spanned a notch filter was used to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned.

Measurements on any restricted band frequency or frequencies above 1 GHz are based on the use of measurement instrumentation employing peak and average detectors. All measurements were performed using a resolution bandwidth of 1 kHz.

6.7.3 Test Setup



6.7.4 Result:

APPENDIX A – TEST DATA – A.5.

6.8 Shutdown Timing Requirements (Section 15.519(a)(1))

6.8.1 Requirement:

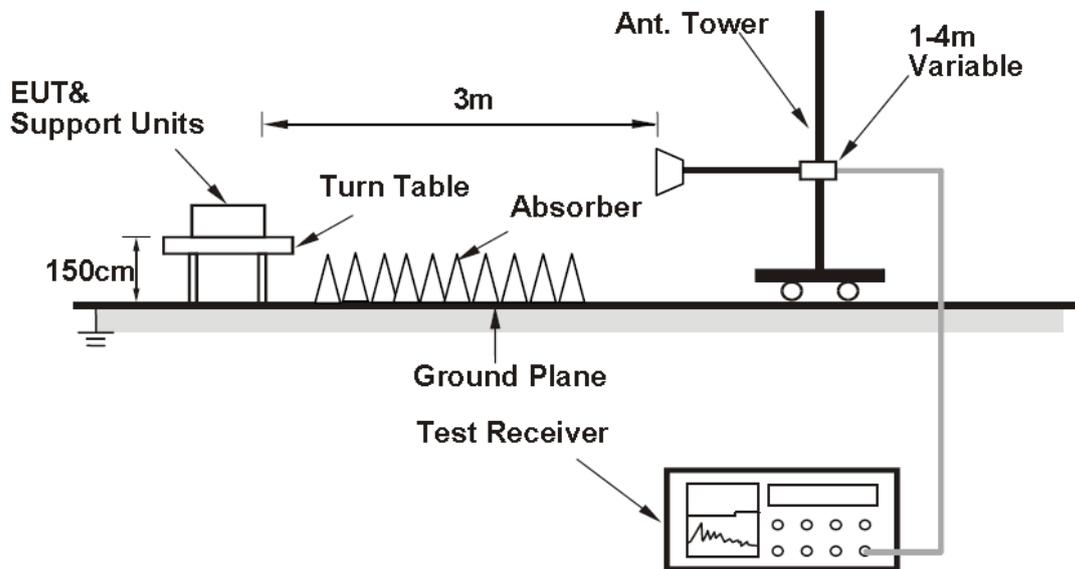
A UWB device operating under the provisions of this section shall transmit only when it is sending information to an associated receiver. The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received. An acknowledgment of reception must continue to be received by the UWB intentional radiator at least every 10 seconds or the UWB device must cease transmitting.

6.8.2 Test Procedure

The Shutdown Timing is measured radiated, while EUT is operating in normal work mode. The Resolution Bandwidth was set to 1MHz RBW IAW ANSI C63.10 Section 10.3.6.

Testing was performed under ambient conditions at nominal voltage.

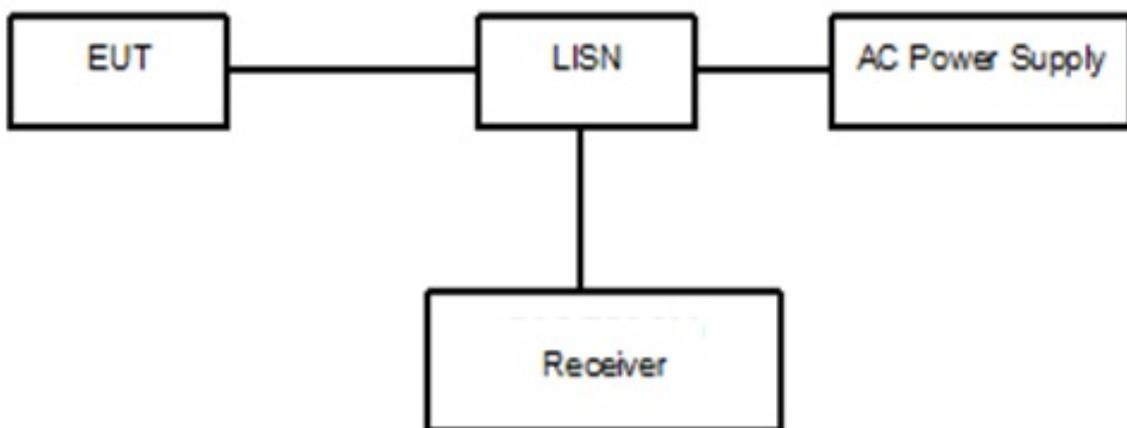
6.8.3 Test Setup



6.8.4 Result:
APPENDIX A – TEST DATA – A.6.

6.9 Conducted Emissions (Section 15.521)

6.9.1 Test Setup with charger:



6.9.2 Test Procedure:

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The EUT is connected with LISN via the charger and Charging dock. The LISN is connected to the reference ground. Open the following functions of EUT: Alarm clock.

The test set-up and the test methods are performed according to ANSI C63.4:2014. Then start the test software EMC32. Sweep the whole frequency band through the range from 150 KHz to 30 MHz with RBW 9kHz, VBW 30kHz. The measurement should be done for both L line and N line. During pre-test, the receiver uses both peak detector and average detector. And the final test, the receiver uses both average detector and Quasi-peak detector.

The data of cable loss has been calibrated in full testing frequency range before the testing.

6.9.3 Limit:

| Frequency of Emission(MHz) | Limits(dBμV) | |
|----------------------------|--------------|-----------|
| | Quasi-peak | Average |
| 0.15~0.5 | 66 to 56* | 56 to 46* |
| 0.5~5 | 56 | 46 |
| 5~30 | 60 | 50 |

Note: * Decreases with the logarithm of the frequency

6.9.4 Result:

APPENDIX A – TEST DATA – A.7.

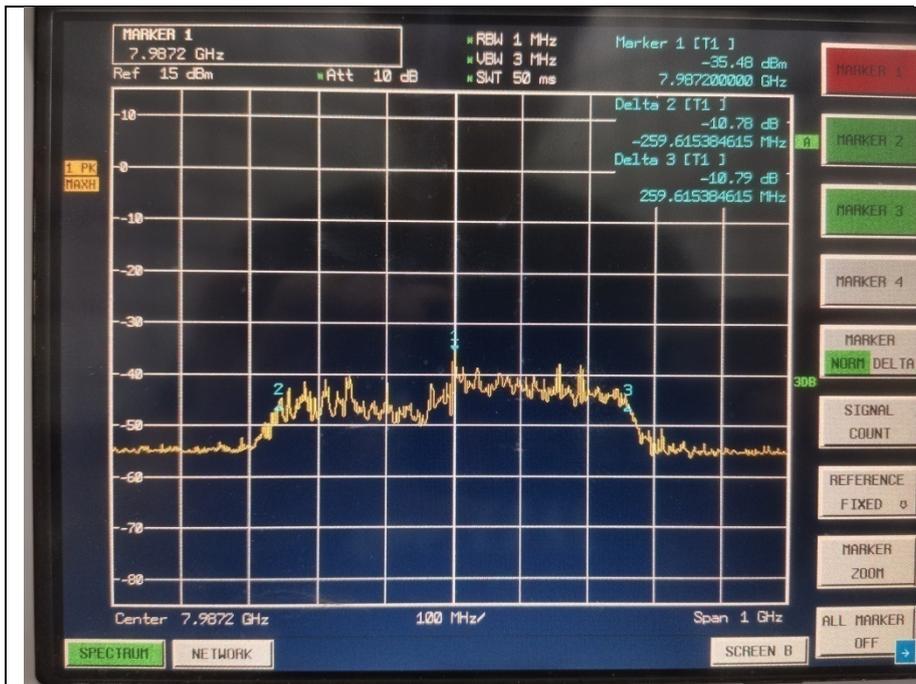
7. TEST EQUIPMENTS

| No. | Name/ Model | Manufacturer | S/N | Cal Due date | Cal date |
|-----|--|--------------|--------------|--------------|------------|
| 1. | Spectrum Analyzer FSU | R&S | 200357 | 2024.03.19 | 2023.03.20 |
| 2. | 23.18m×16.88m×9.60m Semi-Anechoic Chamber | FRANKONIA | ---- | 2023.11.15 | 2018.11.16 |
| 3. | Turn table Diameter:1m | HD | ---- | ---- | ---- |
| 4. | Turn table Diameter:5m | HD | ---- | ---- | ---- |
| 5. | Antenna master FAC(MA4.0) | MATURO | ---- | ---- | ---- |
| 6. | Antenna master SAC(MA4.0) | MATURO | ---- | ---- | ---- |
| 7. | 9.080m×5.255m×3.525m Shielding room | FRANKONIA | ---- | 2027.03.24 | 2022.03.25 |
| 8. | HF 907 Double-Ridged Waveguide Horn Antenna | R&S | 100512 | 2025.05.12 | 2023.05.13 |
| 9. | HF 907 Double-Ridged Waveguide Horn Antenna | R&S | 100513 | 2025.05.12 | 2023.05.13 |
| 10. | VULB 9163 Ultra log test antenna | R&S | 867 | 2025.05.28 | 2023.05.29 |
| 11. | SAS-574 Horn Antenna | R&S | 535 | 2023.06.19 | 2021.06.20 |
| 12. | ENV216 AMN | R&S | 3560.6550.12 | 2023.06.19 | 2022.06.20 |
| 13. | ESW EMI test receiver | R&S | 101574 | 2023.06.19 | 2022.06.20 |
| 14. | ESR3EMI test receiver | R&S | 102361 | 2024.03.11 | 2023.03.12 |
| 15. | EMC32EMI test software | R&S | V10.20.10 | ---- | ---- |

APPENDIX A – TEST DATA

A.1 UWB Bandwidth

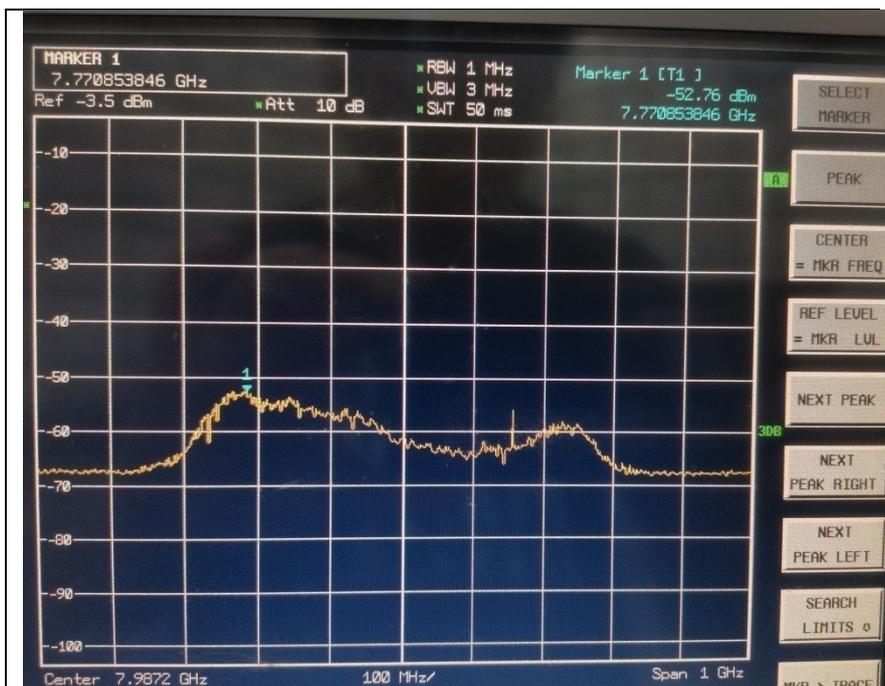
| Test Frequency (MHz) | Test Results (MHz) | Verdict |
|----------------------|--------------------|---------|
| 7987.2 | 519.23 | Pass |



A.2 Average Transmit Power

| Frequency (MHz) | Reading Average (dBm) | Measured EIRP (dBm) | Attenuation (dB) | Limit (dBm) | Margin (dB) | Polarity | Verdict |
|-----------------|-----------------------|---------------------|------------------|-------------|-------------|----------|---------|
| 7987.2 | -52.76 | -44.46 | -8.3 | -41.30 | 3.36 | V | Pass |

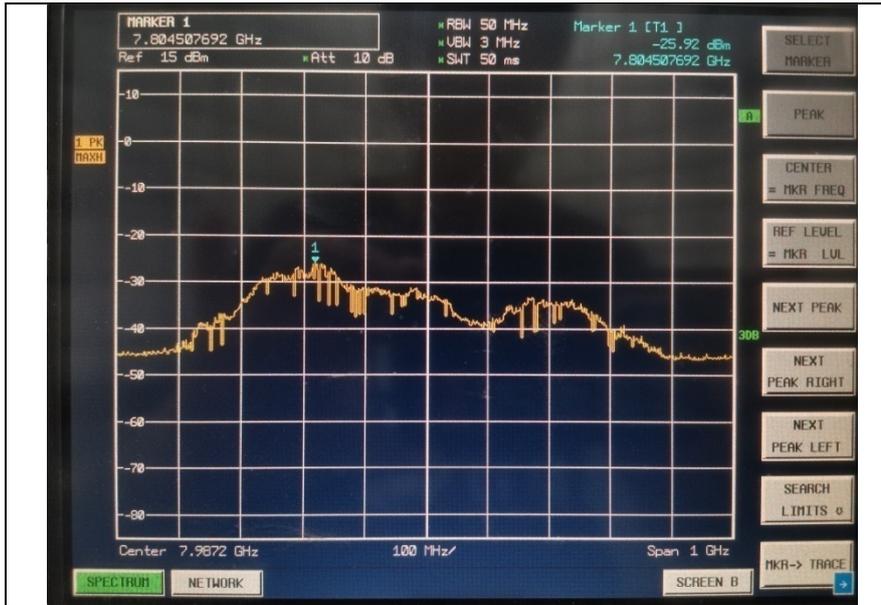
$EIRP = \text{Reading Average (dBm)} - \text{Attenuation (dB)}$



A.3 Peak Power Density

| Frequency (MHz) | Reading MaxPeak (dBm) | MaxPeak (dBm) | Attenuation (dB) | Limit (dBm) | Margin (dB) | Polarity | Verdict |
|-----------------|-----------------------|---------------|------------------|-------------|-------------|----------|---------|
| 7987.2 | -25.92 | -17.62 | -8.3 | 0 | 17.62 | V | Pass |

Maxpeak=Reading Average (dBm)-Attenuation(dB)



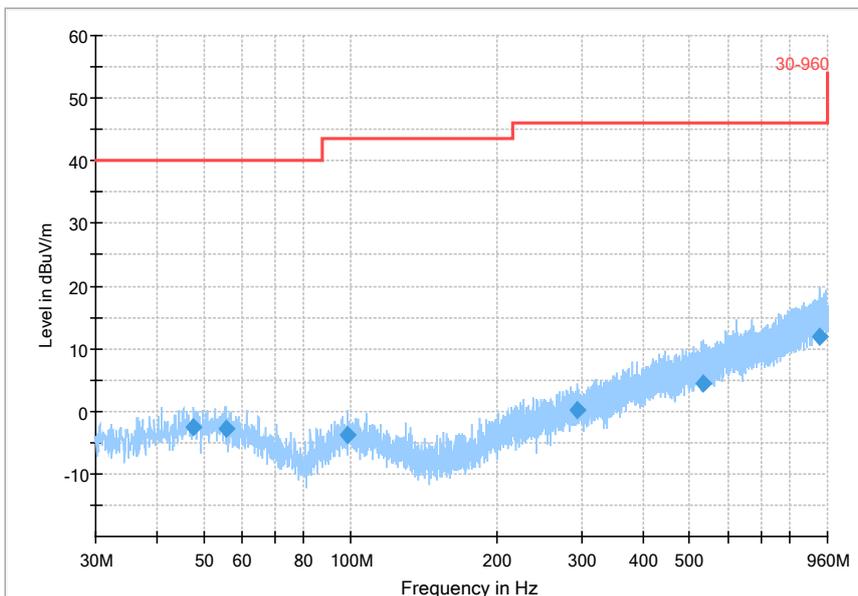
A.4 Spurious Radiated Emissions

| Test Frequency (MHz) | Frequency (MHz) | Verdict |
|----------------------|-----------------|---------|
| 7987.2 | 0.009 – 30 | Pass |
| | 30 – 960 | Pass |
| | 960 – 1000 | Pass |
| | 1000 - 18000 | Pass |
| | 18000 - 40000 | Pass |

Note: There were no emissions below 30 MHz found within 20dB of the limit.

EMC32 Report

Full Spectrum



Final_Result

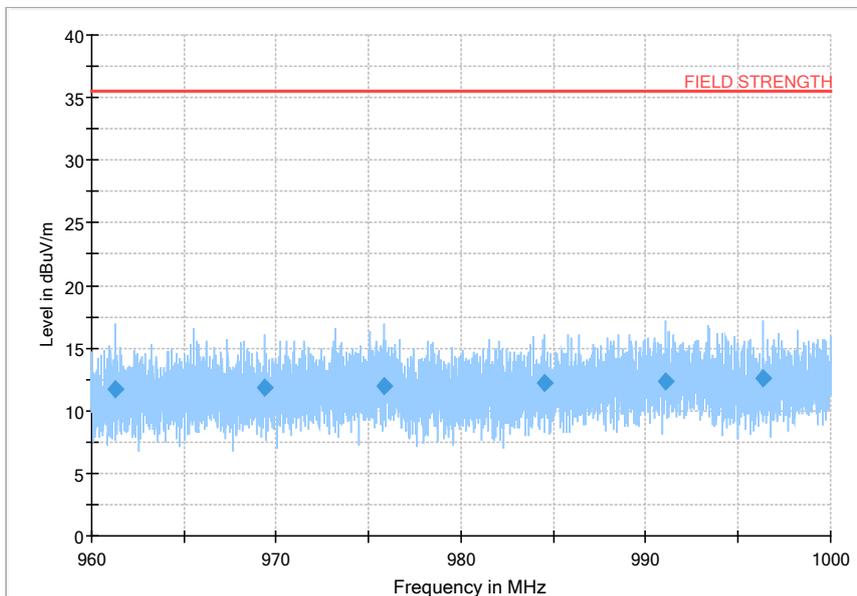
| Frequency (MHz) | QuasiPeak (dBμV/m) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol |
|-----------------|--------------------|------------------|----------------|-------------|-----------------|-----------------|-------------|-----|
| 47.670000 | -2.49 | --- | 40.00 | 42.49 | 10.0 | 120.000 | 100.0 | V |
| 55.528500 | -2.85 | --- | 40.00 | 42.85 | 10.0 | 120.000 | 100.0 | V |
| 98.680500 | -3.74 | --- | 43.50 | 47.24 | 10.0 | 120.000 | 100.0 | V |
| 293.143500 | 0.30 | --- | 46.00 | 45.70 | 10.0 | 120.000 | 100.0 | V |
| 533.316000 | 4.40 | --- | 46.00 | 41.60 | 10.0 | 120.000 | 100.0 | V |
| 927.961500 | 12.00 | --- | 46.00 | 34.00 | 10.0 | 120.000 | 100.0 | V |

30 – 960 MHz

Note: The spectrum from 960MHz to 18GHz is investigated with the EUT set to transmit at the lowest, middle and highest channels with the highest output power. From 30MHz to 960MHz, emissions were performed with the EUT set to transmit at the channel with the highest PSD as worst-case scenario.

EMC32 Report

Full Spectrum

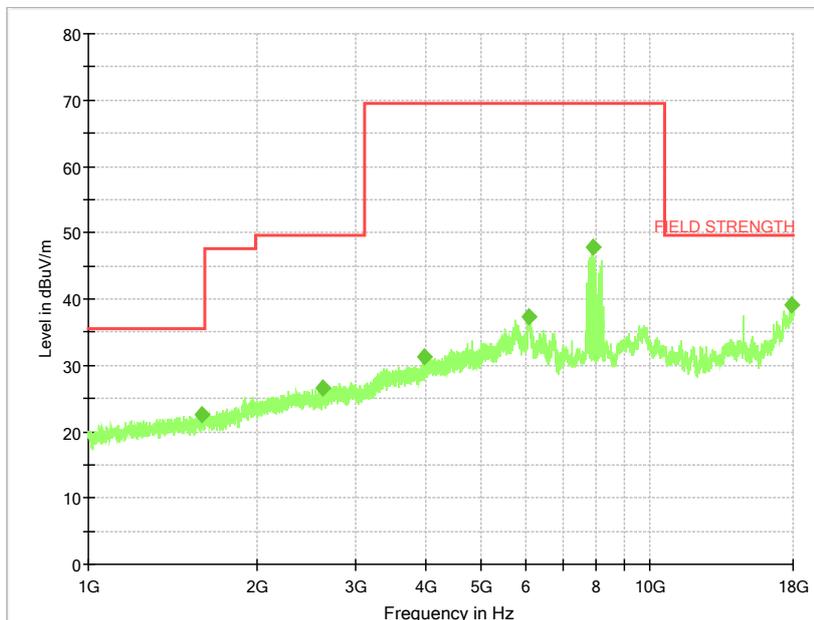


Final Result

| Frequency (MHz) | QuasiPeak (dBμV/m) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol |
|-----------------|--------------------|------------------|----------------|-------------|-----------------|-----------------|-------------|-----|
| 961.280000 | 11.77 | --- | 35.56 | 23.79 | 10.0 | 120.000 | 100.0 | V |
| 969.378000 | 11.81 | --- | 35.56 | 23.75 | 10.0 | 120.000 | 100.0 | V |
| 975.848000 | 11.97 | --- | 35.56 | 23.59 | 10.0 | 120.000 | 100.0 | V |
| 984.484000 | 12.17 | --- | 35.56 | 23.39 | 10.0 | 120.000 | 100.0 | V |
| 991.052000 | 12.35 | --- | 35.56 | 23.21 | 10.0 | 120.000 | 100.0 | V |
| 996.358000 | 12.55 | --- | 35.56 | 23.01 | 10.0 | 120.000 | 100.0 | V |

960 – 1000 MHz

EMC32 Report



Final Result

| Frequency (MHz) | Average (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) |
|-----------------|------------------------|----------------------|-------------|-----------------|-----------------|-------------|-----|---------------|
| 1591.000000 | 22.56 | 35.56 | 13.00 | 100.0 | 1000.000 | 100.0 | V | 0.0 |
| 2617.500000 | 26.53 | 49.56 | 23.03 | 100.0 | 1000.000 | 100.0 | V | 0.0 |
| 3969.500000 | 31.20 | 69.56 | 38.36 | 100.0 | 1000.000 | 100.0 | V | 0.0 |
| 6095.000000 | 37.31 | 69.56 | 32.25 | 100.0 | 1000.000 | 100.0 | V | 0.0 |
| 7931.000000 | 47.73 | 69.56 | 21.83 | 100.0 | 1000.000 | 100.0 | V | 0.0 |
| 17928.000000 | 39.05 | 49.56 | 10.51 | 100.0 | 1000.000 | 100.0 | V | 0.0 |

1 -18 GHz

EMC32 Report

Full Spectrum



Critical_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol |
|-----------------|------------------|------------------|----------------|-------------|-----------------|-----------------|-------------|-----|
| 21788.400000 | --- | 37.10 | 50 | 12.9 | 100.0 | 1000.000 | 100.0 | V |
| 26276.400000 | --- | 40.00 | 50 | 10 | 100.0 | 1000.000 | 100.0 | V |
| 30826.000000 | --- | 39.60 | 50 | 10.4 | 100.0 | 1000.000 | 100.0 | V |
| 34561.600000 | --- | 44.10 | 50 | 5.9 | 100.0 | 1000.000 | 100.0 | V |
| 37822.000000 | --- | 42.70 | 50 | 7.3 | 100.0 | 1000.000 | 100.0 | V |
| 39709.600000 | --- | 46.50 | 50 | 3.5 | 100.0 | 1000.000 | 100.0 | V |

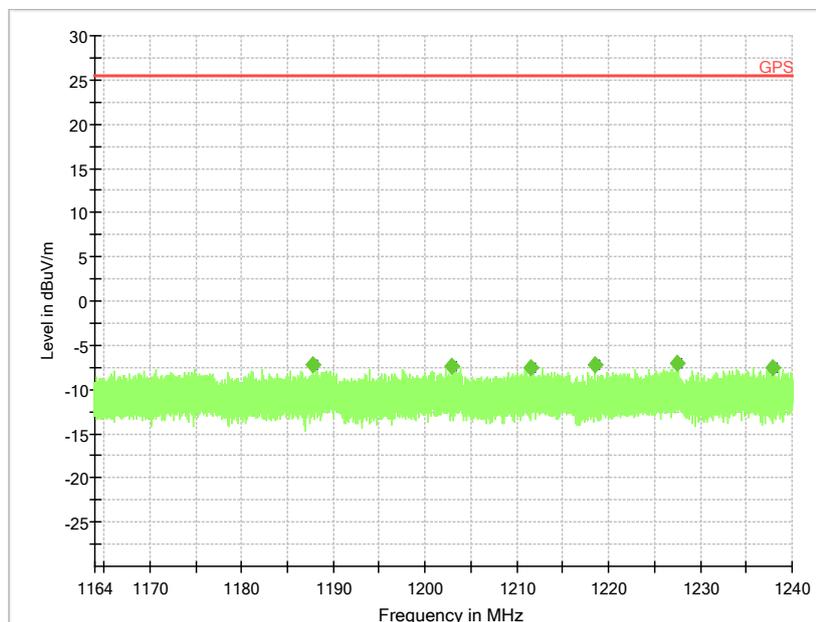
18 -40 GHz

Note: In the event that no emissions are observed in the aforementioned frequency bands, report the minimum sensitivity (noise floor) of the measurement system in these bands (i.e., show that the measurement system is capable of detecting emissions down to the level indicated by the applicable emissions limit)

A.5 Spurious Radiated Emissions in GPS Bands

| Test Frequency (MHz) | Frequency (MHz) | Verdict |
|----------------------|-----------------|---------|
| 7987.2 | 1164 - 1240 | Pass |
| | 1559 - 1610 | Pass |

EMC32 Report

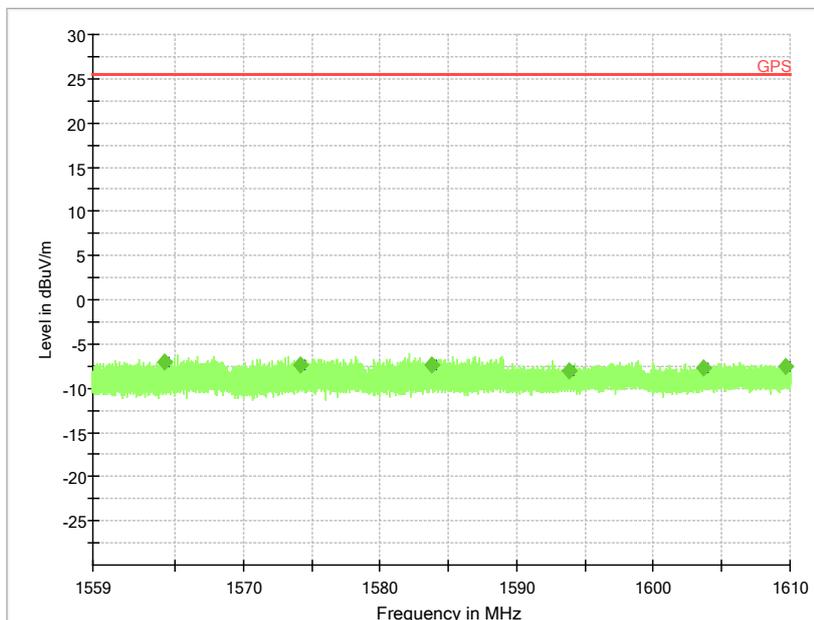


Final Result

| Frequency (MHz) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) |
|-----------------|------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|
| 1187.749143 | -7.29 | 25.46 | 32.75 | 100.0 | 1.000 | 100.0 | V | 0.0 |
| 1202.860000 | -7.35 | 25.46 | 32.81 | 100.0 | 1.000 | 100.0 | V | 0.0 |
| 1211.443257 | -7.53 | 25.46 | 32.99 | 100.0 | 1.000 | 100.0 | V | 0.0 |
| 1218.593886 | -7.20 | 25.46 | 32.66 | 100.0 | 1.000 | 100.0 | V | 0.0 |
| 1227.388171 | -7.05 | 25.46 | 32.51 | 100.0 | 1.000 | 100.0 | V | 0.0 |
| 1237.935657 | -7.56 | 25.46 | 33.02 | 100.0 | 1.000 | 100.0 | V | 0.0 |

1164 – 1240 MHz

EMC32 Report

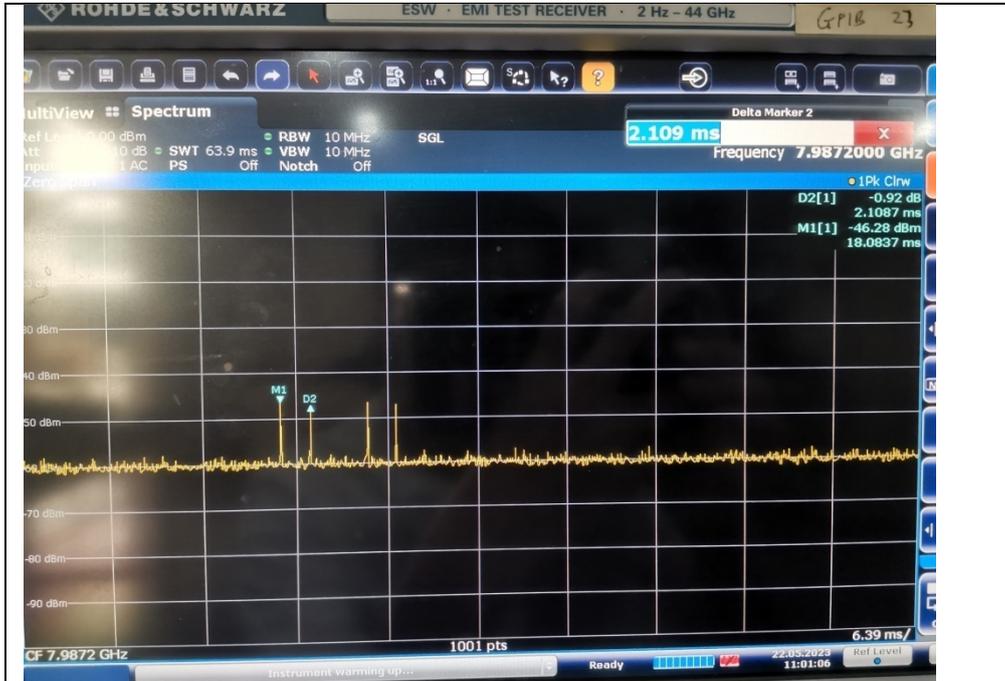


Final Result

| Frequency (MHz) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) |
|-----------------|------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|
| 1564.283273 | -7.12 | 25.46 | 32.58 | 100.0 | 1.000 | 100.0 | V | 0.0 |
| 1574.196909 | -7.30 | 25.46 | 32.76 | 100.0 | 1.000 | 100.0 | V | 0.0 |
| 1583.787636 | -7.38 | 25.46 | 32.84 | 100.0 | 1.000 | 100.0 | V | 0.0 |
| 1593.804800 | -8.09 | 25.46 | 33.55 | 100.0 | 1.000 | 100.0 | V | 0.0 |
| 1603.679525 | -7.78 | 25.46 | 33.24 | 100.0 | 1.000 | 100.0 | V | 0.0 |
| 1609.723325 | -7.59 | 25.46 | 33.05 | 100.0 | 1.000 | 100.0 | V | 0.0 |
| 1559 – 1610 MHz | | | | | | | | |

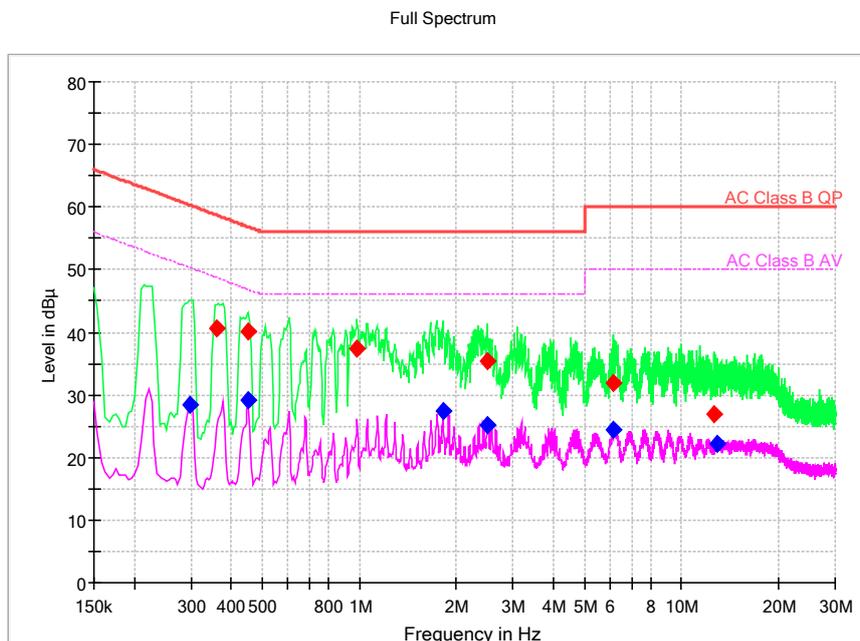
A.6 Shutdown Timing Requirements

| Test Frequency (MHz) | Shutdown Time (s) |
|----------------------|-------------------|
| 7987.2 | 2.109ms |



The manufacturer defines that UWB stops transmitting immediately after a connection is not established.

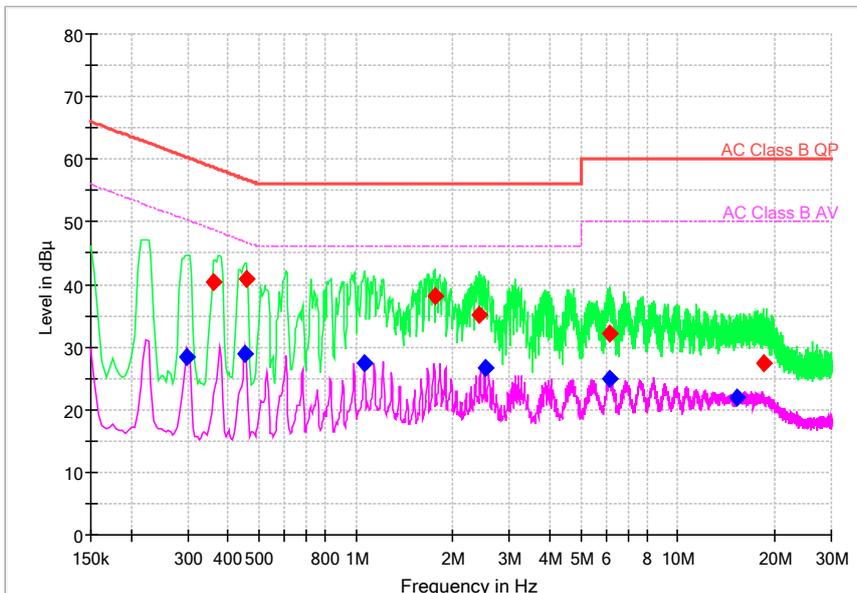
A.7 Conducted emission



Conducted emission L&N Line Voltage: 120VAC

| Frequency (MHz) | QuasiPeak (dBµV) | Average (dBµV) | Limit (dBµV) | Margin (dB) | Line | Corr. (dB) | P _{mea} QuasiPeak (dBµV) | P _{mea} Average (dBµV) |
|-----------------|------------------|----------------|--------------|-------------|------|------------|-----------------------------------|---------------------------------|
| 0.299250 | --- | 28.51 | 50.26 | 21.75 | L1 | 29.8 | --- | -1.29 |
| 0.358950 | 40.50 | --- | 58.75 | 18.25 | L1 | 29.8 | 10.7 | --- |
| 0.452764 | --- | 29.17 | 46.82 | 17.65 | L1 | 29.8 | --- | -0.63 |
| 0.452764 | 40.06 | --- | 56.82 | 16.76 | L1 | 29.8 | 10.26 | --- |
| 0.981536 | 37.42 | --- | 56.00 | 18.58 | L1 | 29.8 | 7.62 | --- |
| 1.821600 | --- | 27.47 | 46.00 | 18.53 | L1 | 29.8 | --- | -2.33 |
| 2.499622 | 35.42 | --- | 56.00 | 20.58 | N | 29.9 | 5.52 | --- |
| 2.499622 | --- | 25.15 | 46.00 | 20.85 | L1 | 29.9 | --- | -4.75 |
| 6.137057 | --- | 24.52 | 50.00 | 25.48 | L1 | 29.9 | --- | -5.38 |
| 6.145586 | 31.90 | --- | 60.00 | 28.10 | L1 | 29.9 | 2 | --- |
| 12.648621 | 26.85 | --- | 60.00 | 33.15 | L1 | 30.0 | -3.15 | --- |
| 12.947121 | --- | 22.20 | 50.00 | 27.80 | L1 | 30.0 | --- | -7.8 |

Full Spectrum



Conducted emission L&N Line Voltage: 240VAC

| Frequency (MHz) | QuasiPeak (dBμV) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Line | Corr. (dB) | P _{mea} QuasiPeak (dBμV) | P _{mea} Average (dBμV) |
|-----------------|------------------|----------------|--------------|-------------|------|------------|-----------------------------------|---------------------------------|
| 0.299250 | --- | 28.38 | 50.26 | 21.88 | L1 | 29.8 | --- | -1.42 |
| 0.358950 | 40.38 | --- | 58.75 | 18.37 | L1 | 29.8 | 10.58 | --- |
| 0.452764 | --- | 28.81 | 46.82 | 18.01 | L1 | 29.8 | --- | -0.99 |
| 0.457029 | 40.79 | --- | 56.75 | 15.96 | L1 | 29.8 | 10.99 | --- |
| 1.062557 | --- | 27.36 | 46.00 | 18.64 | L1 | 29.8 | --- | -2.44 |
| 1.753372 | 38.08 | --- | 56.00 | 17.92 | L1 | 29.8 | 8.28 | --- |
| 2.422864 | 35.22 | --- | 56.00 | 20.78 | L1 | 29.9 | 5.32 | --- |
| 2.512414 | --- | 26.58 | 46.00 | 19.42 | N | 29.9 | --- | -3.32 |
| 6.171172 | --- | 24.83 | 50.00 | 25.17 | N | 29.9 | --- | -5.07 |
| 6.175436 | 32.09 | --- | 60.00 | 27.91 | L1 | 29.9 | 2.19 | --- |
| 15.258364 | --- | 21.92 | 50.00 | 28.08 | L1 | 30.0 | --- | -8.08 |
| 18.413936 | 27.34 | --- | 60.00 | 32.66 | L1 | 30.0 | -2.66 | --- |

---End of Test Report---