



Test report No: 2330881R-E3012110001-A

FCC TEST REPORT

| | |
|---|--|
| Product Name | Peplink Pepwave Wireless Product |
| Trademark |  |
| Model and /or type reference | UBR Plus UBR-PLUS-LTEA-US-T-PRM |
| FCC ID | U8G-P1AC200 |
| Applicant's name / address | PISMO LABS TECHNOLOGY LIMITED A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Hong Kong |
| Manufacturer's name / address | PISMO LABS TECHNOLOGY LIMITED A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Hong Kong |
| Test method requested, standard | FCC CFR Title 47 Part 15 Subpart B:2021, Class A |
| Verdict Summary | IN COMPLIANCE |
| Documented By (Adm. Specialist / Peggy Tu) |  |
| Approved By (Director / Vincent Lin) |  |
| Date of Receipt | 2023/03/24 |
| Date of Issue | 2023/07/31 |
| Report No. | 2330881R-E3012110001-A |
| Report Version | V3.0 |

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Test Photos: Please refer to the file: 2330881R-E3012110001-A-Test Photo

Product Photos: Please refer to the file: 2330881R-Product Photos

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DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

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General conditions


1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.


Revision History

| Report No. | Version | Description | Issued Date |
|------------------------|---------|---|-------------|
| 2330881R-E3012110001-A | V1.0 | Initial issue of report. | 2023-04-20 |
| 2330881R-E3012110001-A | V2.0 | Shipped products have one more USB port, EMC re-test RE high and low frequency. | 2023-05-29 |
| 2330881R-E3012110001-A | V3.0 | Report add FCC ID. | 2023-07-31 |

1. General Information

1.1. EUT Description

| | |
|-------------------|---|
| Product Name | Peplink Pepwave Wireless Product |
| Trademark |  |
| Model No. | UBR Plus UBR-PLUS-LTEA-US-T-PRM |
| EUT Max Frequency | 5850 MHz |
| EUT Rated Voltage | DC 10~30V 802.3at PoE |
| EUT Test Voltage | DC 12V (by Power Adapter) 802.3at PoE |

| Component | |
|---------------|---|
| Power Adapter | MFR: DVE M/N: DSA-24PFS-12 FUS 120200 Input: 100-240V~ 50/60Hz, 0.8A Output: 12.0V  2.0A, 24.0W Cable Out: Shielded. 1.45m |
| WWAN Module | MFR: Sierra M/N: EM7411 |
| WWAN Antenna | MFR: Master Wave M/N: 98619ZSAX069 |
| WLAN Antenna | MFR: Master Wave M/N: 98614PRSX000 |
| GPS Antenna | MFR: Master Wave M/N: 98335KSAF0000 |

Note: The EUT is including two models for different marketing requirement.

1.2. Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

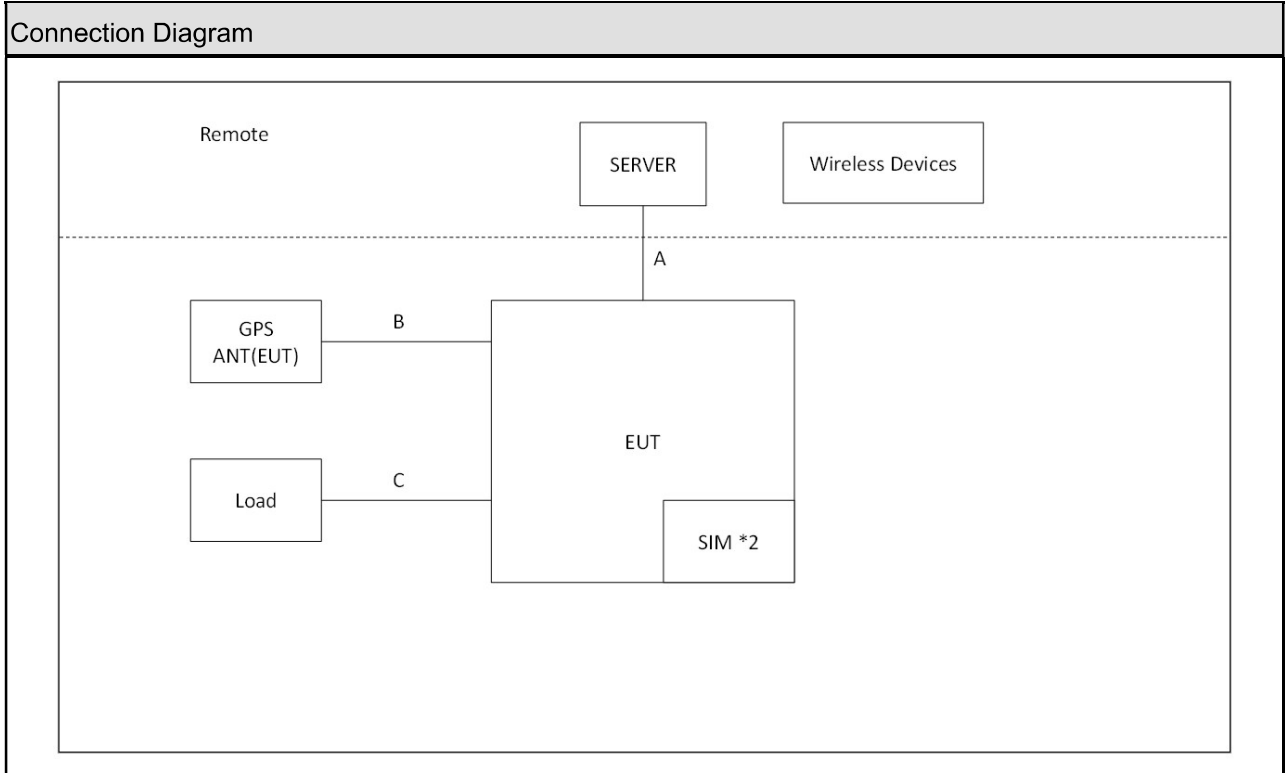
| |
|--|
| Pre-Test Mode |
| Mode 1: Normal Operation(LAN 1Gbps + WiFi 2.4G + WiFi 5G + WAN 1G bps + GPS + USB + WWAN Link LTE Band 5 + Sim Card-Slot 1-A), Molex Power port, DC 12V By Adapter:DVE/DSA-24PFS-12 FUS 120200 |
| Mode 2: Normal Operation(LAN 1Gbps + WiFi 2.4G + WiFi 5G + WAN 1G bps + GPS + USB + WWAN Link LTE Band 5 + Sim Card-Slot 1-B), Molex Power port, DC 10V |
| Mode 3: Normal Operation(LAN 1Gbps + WiFi 2.4G + WiFi 5G + WAN 1G bps + GPS + USB + WWAN Link LTE Band 5 + Sim Card-Slot 2-A), Molex Power port, DC 30V |
| Mode 4: Normal Operation(LAN 1Gbps + WiFi 2.4G + WiFi 5G + WAN 1G bps + GPS + USB + WWAN Link WCDMA Band 5 + Sim Card-Slot 2-B), Molex Power port, DC 30V |
| Mode 5: Normal Operation(802.3at PoE 1Gbps + WiFi 2.4G + WiFi 5G + WAN 1G bps + GPS + USB + WWAN Link LTE Band 5 + Sim Card-Slot 2-A), PoE In |
| Final Test Mode |
| Conducted Emission |
| Mode 1: Normal Operation(LAN 1Gbps + WiFi 2.4G + WiFi 5G + WAN 1G bps + GPS + USB + WWAN Link LTE Band 5 + Sim Card-Slot 1-A), Molex Power port, DC 12V By Adapter:DVE/DSA-24PFS-12 FUS 120200 |
| Radiated Emission |
| Mode 5: Normal Operation(802.3at PoE 1Gbps + WiFi 2.4G + WiFi 5G + WAN 1G bps + GPS + USB + WWAN Link LTE Band 5 + Sim Card-Slot 2-A), PoE In |

Note:

1. Refer to Certified Cellular module report worst band.
2. This product supports client/master mode, but it does not affect EMC testing after evaluation.

1.3. Configuration & Details of Tested System

For CE



Tested System Details

| Product | Manufacturer | Model No. | No. | Cable Type & Description |
|-------------|--------------|------------|-----|--------------------------|
| SERVER | Lenovo | 5464 | A | LAN *5, non-shielded 7m |
| GPS Antenna | N/A | N/A | B | ANT, non-shielded 7m |
| Load | N/A | N/A | C | USB-A, non-shielded 1m |
| SIM *2 | R&S | GP CMW-Z06 | | |

Wireless Devices Inf.

| Product | Manufacturer | Model No. |
|-------------------------------|--------------|-------------------------|
| Wireless Router | ASUS | ROG RAPTURE GT-AXE11000 |
| Wireless Router | ASUS | RT-AC58U |
| Base Station | R&S | CMW500 |
| UXM 5G Wireless Test Platform | Keysight | E7515B |
| GPS Simulator | Oroila | GSG-5 |

CBS: Cambridge SoundWorks

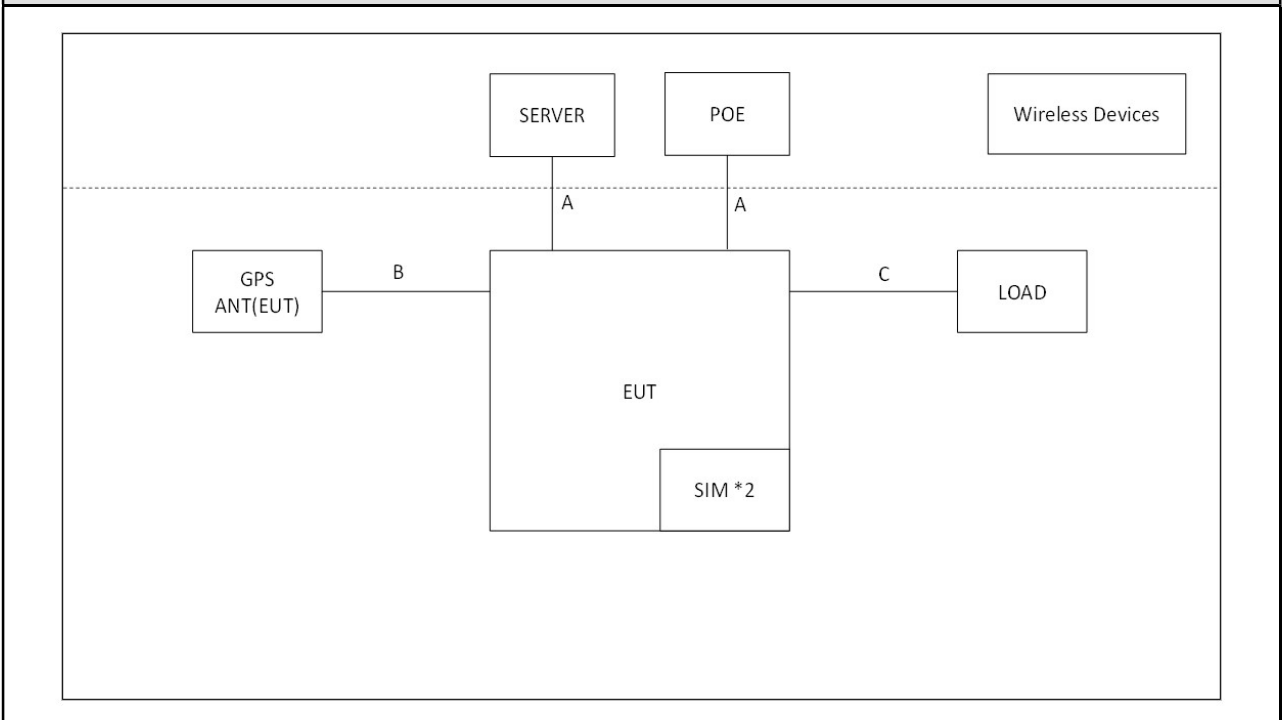
ME: Microphone & Earphone

Note:

- Use Full system setup configuration determines Worst-Case Mode.
- Use 2dB law program determines Max. Cable Configuration and Worst-Case Mode.
- Radiated emission item test: Performed using the Horn Antenna 3dB Beamwidth to 3m from the EUT size sufficient to cover the procedure.
- Radiated emission item test: Performed using the Horn Antenna 3dB Beamwidth non 3m distance sufficient to cover the size of the EUT program.

For RE

Connection Diagram



Tested System Details

| Product | Manufacturer | Model No. | No. | Cable Type & Description |
|-------------|--------------|-----------------|-----|--------------------------|
| SERVER | Lenovo | 5464 | A | LAN *4, non-shielded 7m |
| PoE | BILLION | BP035-560054QAX | | LAN, non-shielded 7m |
| GPS Antenna | N/A | N/A | B | ANT, shielded 7m |
| Load | N/A | N/A | C | USB, shielded 1.2m |
| SIM *2 | R&S | GP CMW-Z06 | | |

Wireless Devices Inf.

| Product | Manufacturer | Model No. |
|-------------------------------|--------------|-------------------------|
| Wireless Router | ASUS | ROG RAPTURE GT-AXE11000 |
| Wireless Router | ASUS | RT-AC58U |
| Base Station | R&S | CMW500 |
| UXM 5G Wireless Test Platform | Keysight | E7515B |
| GPS Simulator | Oroila | GSG-5 |

CBS: Cambridge SoundWorks

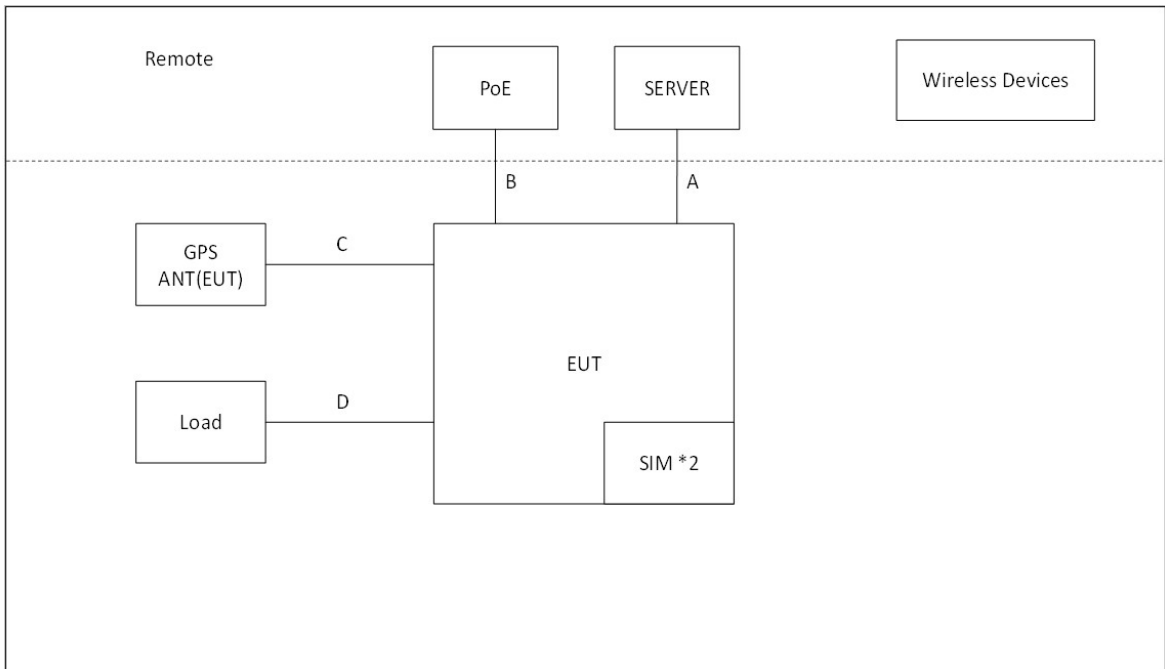
ME: Microphone & Earphone

Note:

- Use Full system setup configuration determines Worst-Case Mode.
- Use 2dB law program determines Max. Cable Configuration and Worst-Case Mode.
- Radiated emission item test: Performed using the Horn Antenna 3dB Beamwidth to 3m from the EUT size sufficient to cover the procedure.
- Radiated emission item test: Performed using the Horn Antenna 3dB Beamwidth non 3m distance sufficient to cover the size of the EUT program.

For RF

Connection Diagram



Tested System Details

| Product | Manufacturer | Model No. | No. | Cable Type & Description |
|-------------|--------------|-----------------|-----|--------------------------|
| SERVER | Lenovo | 5464 | A | LAN *4, non-shielded 7m |
| PoE | BILLION | BP035-560054QAX | B | LAN, non-shielded 10m |
| GPS Antenna | N/A | N/A | C | ANT, non-shielded 7m |
| Load | N/A | N/A | D | USB-A, non-shielded 1m |
| SIM *2 | R&S | GP CMW-Z06 | | |

Wireless Devices Inf.

| Product | Manufacturer | Model No. |
|-------------------------------|--------------|-------------------------|
| Wireless Router | ASUS | ROG RAPTURE GT-AXE11000 |
| Wireless Router | ASUS | RT-AC58U |
| Base Station | R&S | CMW500 |
| UXM 5G Wireless Test Platform | Keysight | E7515B |
| GPS Simulator | Oroila | GSG-5 |

CBS: Cambridge SoundWorks

ME: Microphone & Earphone

Note:

- Use Full system setup configuration determines Worst-Case Mode.
- Use 2dB law program determines Max. Cable Configuration and Worst-Case Mode.
- Radiated emission item test: Performed using the Horn Antenna 3dB Beamwidth to 3m from the EUT size sufficient to cover the procedure.
- Radiated emission item test: Performed using the Horn Antenna 3dB Beamwidth non 3m distance sufficient to cover the size of the EUT program.

1.4. EUT Exercise Software

| | |
|---|--|
| 1 | Setup the EUT and peripheral as shown on Figure. |
| 2 | EUT to enter Operating System, and adjust the display resolution to the test mode first. |
| 3 | Activate Wireless function, connect to Device for transmitting data. |
| 4 | Connect LAN to Server for transmitting data. |
| 5 | All the features of the EUT operation normally. Start Test. |

2. Technical Test

2.1. Summary of Test Result

- No deviations from the test standards
 Deviations from the test standards as below description:

| Emission | | | | |
|--------------------|--|----------------|----------------------|---------|
| Performed Item | Normative References | Test Performed | Test Site | Verdict |
| Conducted Emission | FCC CFR Title 47 Part 15 Subpart B:2021, Class A CISPR 22:2008 ANSI C63.4-2014, ANSI C63.4a-2017 | Yes | HY-SR09 | Pass |
| Radiated Emission | FCC CFR Title 47 Part 15 Subpart B:2021, Class A CISPR 22:2008 ANSI C63.4-2014, ANSI C63.4a-2017 | Yes | LK-Site03 HY-CB05 | Pass |

Note:

1. Test Site information refers to test Laboratory Information.

| | |
|---|--|
| Test Laboratory: | DEKRA Testing and Certification Co., Ltd. Linkou Laboratory |
| Address: | No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C |
| Phone number: | +886-2-8601-3788 |
| Fax number: | +886-2-8601-3789 |
| Test Site | |
| LK: No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C | |
| FS: No.6, Lane 75, Wenlin St., Linkou Dist., New Taipei City, 244017, Taiwan, R.O.C | |
| HY: No.26, Huaya 1 st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C | |

2.2. List of Test Equipment

Conducted Emission / HY-SR09

| Instrument | Manufacturer | Type No. | Serial No | Cal. Date | Due. Date |
|---------------------------------|--------------|-------------|-----------|------------|------------|
| EMI TEST RECEIVER | R&S | ESR3 | 102917 | 2022/12/16 | 2023/12/15 |
| Two-Line V-Network | R&S | ENV216 | 101493 | 2022/12/12 | 2023/12/11 |
| Two-Line V-Network | R&S | ENV216 | 101492 | 2022/12/21 | 2023/12/20 |
| Impedance Stabilization Network | TESEQ | ISN T800 | 61676 | 2022/6/16 | 2023/6/15 |
| Impedance Stabilization Network | TESEQ | ISN T8-Cat6 | 61286 | 2022/6/7 | 2023/6/6 |
| Impedance Stabilization Network | TESEQ | ISN ST08 | 61833 | 2022/5/27 | 2023/5/26 |
| Coaxial Cable | SUHNER | RG 400 | HC001-RG | 2022/4/24 | 2023/4/23 |

Note : ISN T800 for LAN 10Mbps to 1Gbps, T8-Cat6 for LAN above 1Gbps, ST08 for Shielded LAN
Test Software version : E3 210616 Dekra, V9(C) Audix

Note:Test Receiver Detector:Quasipeak and Average Bandwidth:9kHz

Radiated Emission / LK-Site03 (Site3)

| Instrument | Manufacturer | Type No. | Serial No | Cal. Date | Due. Date |
|--------------------------|--------------|-------------|------------------------|------------|------------|
| Trilog-Broadband Antenna | Schwarzbeck | VULB 9168 | 1054 | 2022/12/17 | 2023/12/26 |
| EMI Test Receiver | R&S | ESCS 30 | 838251/001 | 2022/7/21 | 2023/7/20 |
| Coaxial Cable | SUHNER | RG 214 | LC003A-RG LC003B-RG | 2022/6/10 | 2023/6/9 |
| Coaxial Switch | Anritsu | MP59B | 6201415889 | 2022/6/10 | 2023/6/9 |
| Preamplifier | Jet-Power | JPA-10M1G33 | 170101000330010 | 2022/6/10 | 2023/6/9 |
| NSA | DEKRA | N/A | N/A | 2022/6/10 | 2023/6/9 |

Test Software version : DEKRA Test System V2.0

Note:Test Receiver Detector:Quasipeak Bandwidth:120kHz

Radiated Emission (Above 1GHz) / HY-CB05

| Instrument | Manufacturer | Type No. | Serial No | Cal. Date | Due. Date |
|-----------------------------------|--------------|------------------|------------|------------|------------|
| Double Ridged Guide Horn Antenna | ETS-Lindgren | 3117 | 00240055 | 2022/10/27 | 2023/10/26 |
| Horn Antenna | COM-POWER | AH-840 | 101088 | 2021/9/27 | 2023/9/26 |
| EMI Test Receiver | R&S | ESR7 | 102502 | 2023/3/28 | 2024/3/27 |
| Signal Analyzer | R&S | FSV3044 | 101245 | 2023/4/17 | 2024/4/16 |
| Coaxial Cable | ROSNOL | R-Test EW0630 | HC003R | 2022/6/18 | 2023/6/17 |
| Coaxial Cable | ROSNOL | R-Test EW0630 | HC005R | 2022/6/18 | 2023/6/17 |
| Coaxial Cable | ROSNOL | R-Test EW0630 | HC002R | 2022/6/18 | 2023/6/17 |
| Preamplifier | SGH | SGH118-HS | 20220411-2 | 2023/4/26 | 2024/4/25 |
| Microwave Preamplifier with cable | SGH | SGH184 | 20220411-3 | 2023/4/26 | 2024/4/25 |
| VSWR | DEKRA | N/A | N/A | 2022/10/4 | 2023/10/3 |

Test Software version : E3 210616 Dekra, V9(C) Audix

2.3. Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 3.47 dB.

Radiated Emission(Under 1GHz)

The measurement uncertainty is evaluated as ± 5.11 dB.

Radiated Emission(Above 1GHz)

The measurement uncertainty is evaluated as ± 4.22 dB.

2.4. Test Environment

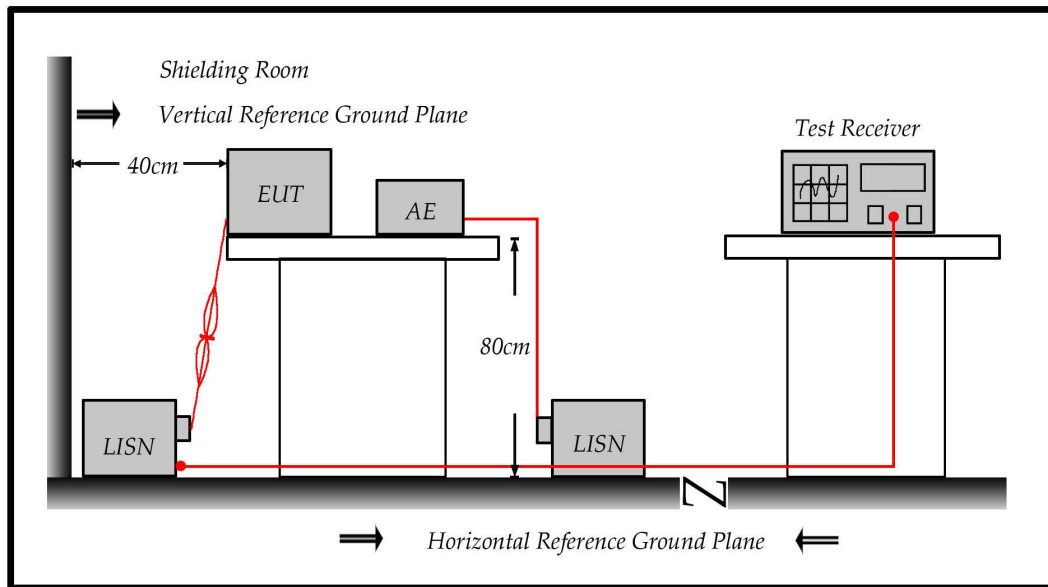
| Performed Item | Items | Required |
|--------------------|------------------|----------|
| Conducted Emission | Temperature (°C) | 10-40 |
| | Humidity (%RH) | 10-90 |
| Radiated Emission | Temperature (°C) | 10-40 |
| | Humidity (%RH) | 10-90 |

3. Conducted Emission

3.1. Test Specification

According to Standard : FCC Part 15 Subpart B & CISPR 22

3.2. Test Setup



3.3. Limit

| Conducted emissions limits (AC mains power terminals) | | | | |
|---|---------------------------|------------------------|---------------------------|------------------------|
| Frequency range (MHz) | Class A Quasi-peak (dBuV) | Class A Average (dBuV) | Class B Quasi-peak (dBuV) | Class B Average (dBuV) |
| 0.15 - 0.5 | 79 | 66 | 66 to 56 | 56 to 46 |
| 0.5 - 5 | 73 | 60 | 56 | 46 |
| 5 - 30 | 73 | 60 | 60 | 50 |

Note:

- The more stringent limit applies at transition frequencies.
- The limit level in dB μ V decreases linearly with the logarithm of frequency

3.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.

(Please refers to the block diagram of the test setup and photographs.)

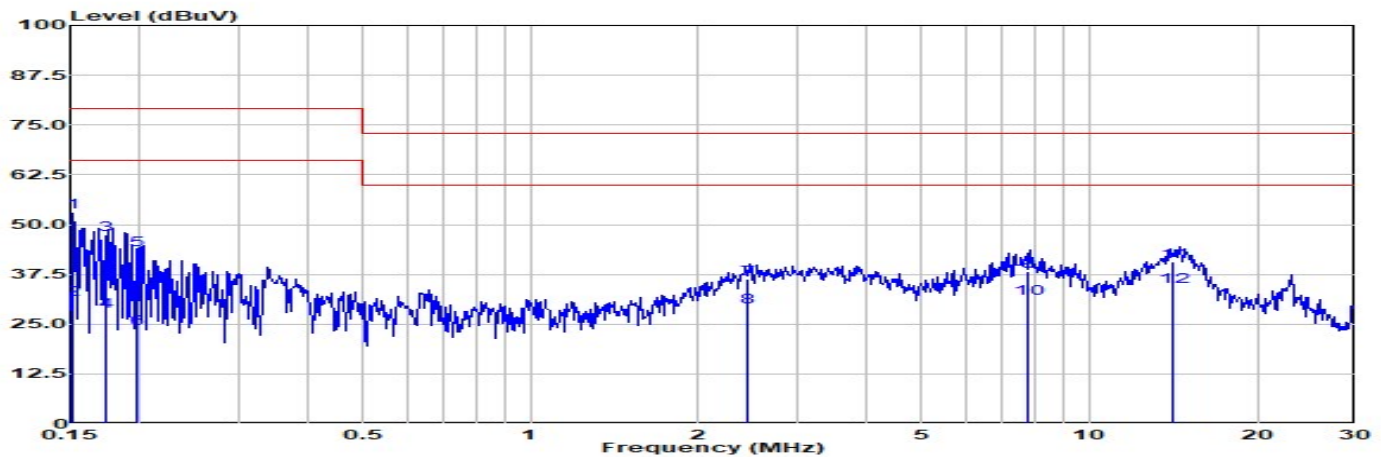
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Test Result

| | | | |
|----------------|--------------|------------------|------------|
| Model No | UBR Plus | Site | HY-SR09 |
| Test Voltage | AC 120V/60Hz | Test Date | 2023-04-07 |
| Test Mode | Mode 1 | Engineer | Leto Chen |
| Phase | Line | Temperature (°C) | 21.5 |
| Test Condition | -- | Humidity (%RH) | 62 |

FCC CLASS-A



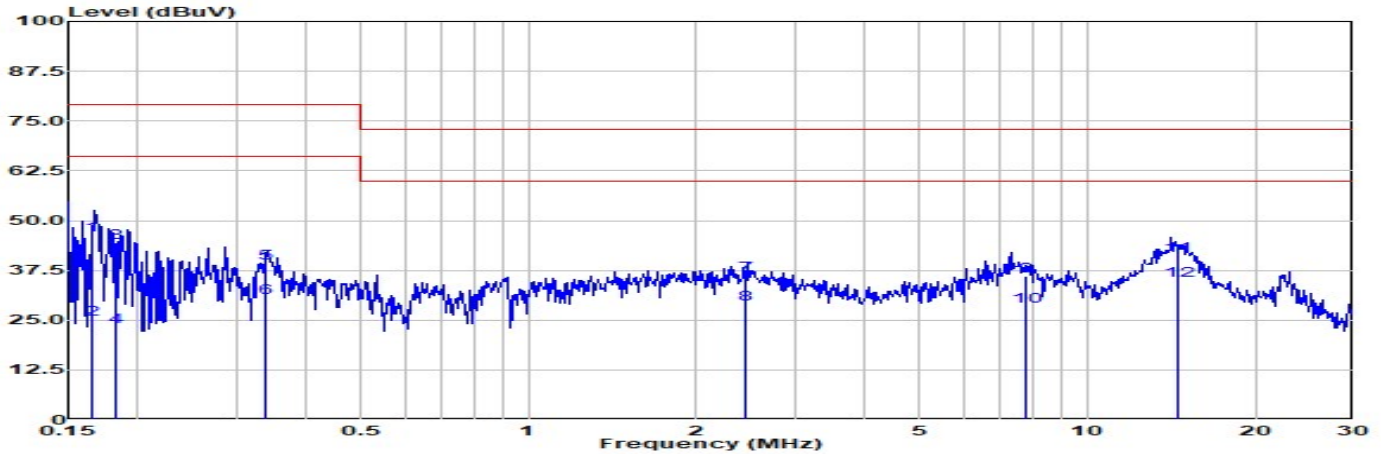
| No | Frequency (MHz) | Emission Level (dBUV) | Limit (dBUV) | Margin (dB) | Reading Level (dBUV) | Correct Factor (dB) | Detector Type |
|----|-----------------|-----------------------|--------------|-------------|----------------------|---------------------|---------------|
| 1 | 0.151 | 53.09 | 79.00 | -25.91 | 43.45 | 9.64 | QP |
| 2 | 0.151 | 31.23 | 66.00 | -34.77 | 21.59 | 9.64 | Average |
| 3 | 0.174 | 47.39 | 79.00 | -31.61 | 37.75 | 9.64 | QP |
| 4 | 0.174 | 28.12 | 66.00 | -37.88 | 18.48 | 9.64 | Average |
| 5 | 0.197 | 43.62 | 79.00 | -35.38 | 33.97 | 9.64 | QP |
| 6 | 0.197 | 23.91 | 66.00 | -42.09 | 14.26 | 9.64 | Average |
| 7 | 2.440 | 36.26 | 73.00 | -36.74 | 26.51 | 9.74 | QP |
| 8 | 2.440 | 29.31 | 60.00 | -30.69 | 19.57 | 9.74 | Average |
| 9 | 7.768 | 38.13 | 73.00 | -34.87 | 28.20 | 9.93 | QP |
| 10 | 7.768 | 31.56 | 60.00 | -28.44 | 21.63 | 9.93 | Average |
| 11 | 14.160 | 40.76 | 73.00 | -32.24 | 30.70 | 10.05 | QP |
| 12 | 14.160 | 34.55 | 60.00 | -25.45 | 24.50 | 10.05 | Average |

Remark:

1. Emission Level=Reading Level + Correct Factor(Correct Factor=LISN Factor+Cable Loss).
2. Margin=Emission Level-Limit

| | | | |
|----------------|--------------|------------------|------------|
| Model No | UBR Plus | Site | HY-SR09 |
| Test Voltage | AC 120V/60Hz | Test Date | 2023-04-07 |
| Test Mode | Mode 1 | Engineer | Leto Chen |
| Phase | Neutral | Temperature (°C) | 21.5 |
| Test Condition | -- | Humidity (%RH) | 62 |

FCC CLASS-A



| No | Frequency (MHz) | Emission Level (dBUV) | Limit (dBUV) | Margin (dB) | Reading Level (dBUV) | Correct Factor (dB) | Detector Type |
|----|-----------------|-----------------------|--------------|-------------|----------------------|---------------------|---------------|
| 1 | 0.165 | 46.45 | 79.00 | -32.55 | 36.80 | 9.65 | QP |
| 2 | 0.165 | 25.10 | 66.00 | -40.90 | 15.45 | 9.65 | Average |
| 3 | 0.182 | 44.40 | 79.00 | -34.60 | 34.76 | 9.65 | QP |
| 4 | 0.182 | 23.21 | 66.00 | -42.79 | 13.56 | 9.65 | Average |
| 5 | 0.339 | 39.42 | 79.00 | -39.58 | 29.77 | 9.65 | QP |
| 6 | 0.339 | 30.53 | 66.00 | -35.47 | 20.88 | 9.65 | Average |
| 7 | 2.441 | 36.40 | 73.00 | -36.60 | 26.65 | 9.75 | QP |
| 8 | 2.441 | 28.99 | 60.00 | -31.01 | 19.24 | 9.75 | Average |
| 9 | 7.740 | 35.99 | 73.00 | -37.01 | 26.04 | 9.95 | QP |
| 10 | 7.740 | 28.44 | 60.00 | -31.56 | 18.49 | 9.95 | Average |
| 11 | 14.534 | 41.17 | 73.00 | -31.83 | 31.06 | 10.11 | QP |
| 12 | 14.534 | 35.09 | 60.00 | -24.91 | 24.98 | 10.11 | Average |

Remark:

1. Emission Level=Reading Level + Correct Factor(Correct Factor=LISN Factor+Cable Loss).
2. Margin=Emission Level-Limit

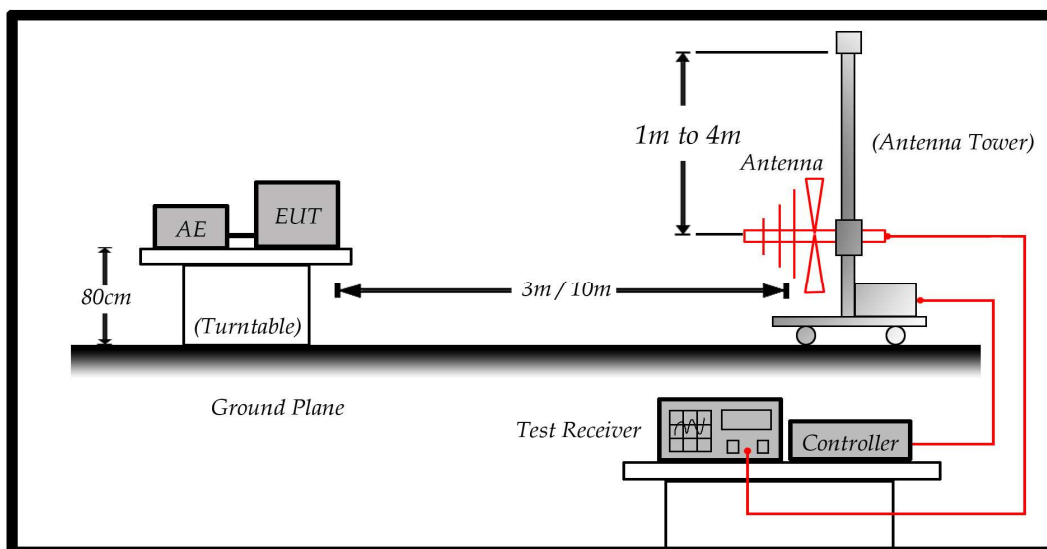
4. Radiated Emission

4.1. Test Specification

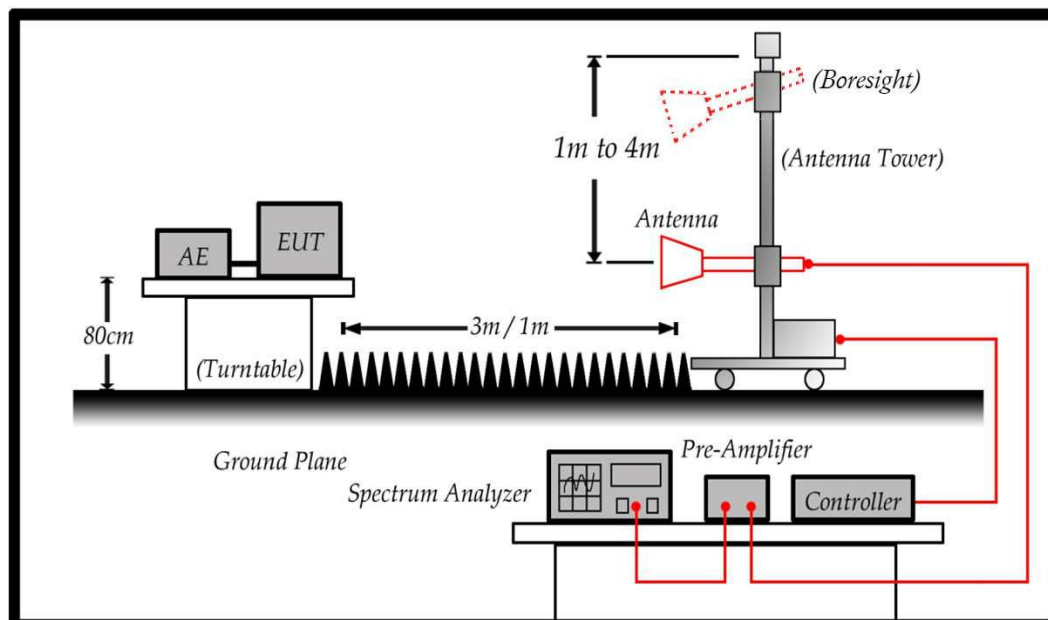
According to EMC Standard : FCC Part 15 Subpart B & CISPR 22

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

Above 1GHz test shall not exceed the following value:

| FCC Part 15 Subpart B Paragraph 15.109 Limits (dBuV/m) | | |
|--|-------------|--------|
| Frequency (MHz) | Distance(m) | dBuV/m |
| 30-88 | 10 | 39 |
| 88-216 | 10 | 43.5 |
| 216-960 | 10 | 46.4 |
| 960-1000 | 10 | 49.5 |
| 1000-40000 | 3 | 60 |
| 18000-40000 | 1 | 69.5 |

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. $RF\ Voltage\ (dBuV/m) = 20\ \log\ RF\ Voltage\ (\mu V/m)$

4.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground.

The turn table can rotate 360 degrees to determine the position of the maximum emission level and the antenna (boresight antenna tower) can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

| Highest frequency generated or used in the device or on which the device operates or tunes (MHz) | Upper frequency of measurement range (MHz) |
|--|---|
| Below 1.705 | 30 |
| 1.705 – 108 | 1000 |
| 108 – 500 | 2000 |
| 500 – 1000 | 5000 |
| Above 1000 | 5 th harmonic of the highest frequency or 40 GHz, whichever is lower |

On any frequency or frequencies below or equal to 1000MHz, the radiated limits shown are based on measuring equipment employing a quasi-peak detector function and above 1000MHz, the radiated limits shown are based measuring equipment employing an average detector function.

When average radiated emission measurement are included emission measurement Above 1000MHz, there also is 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.

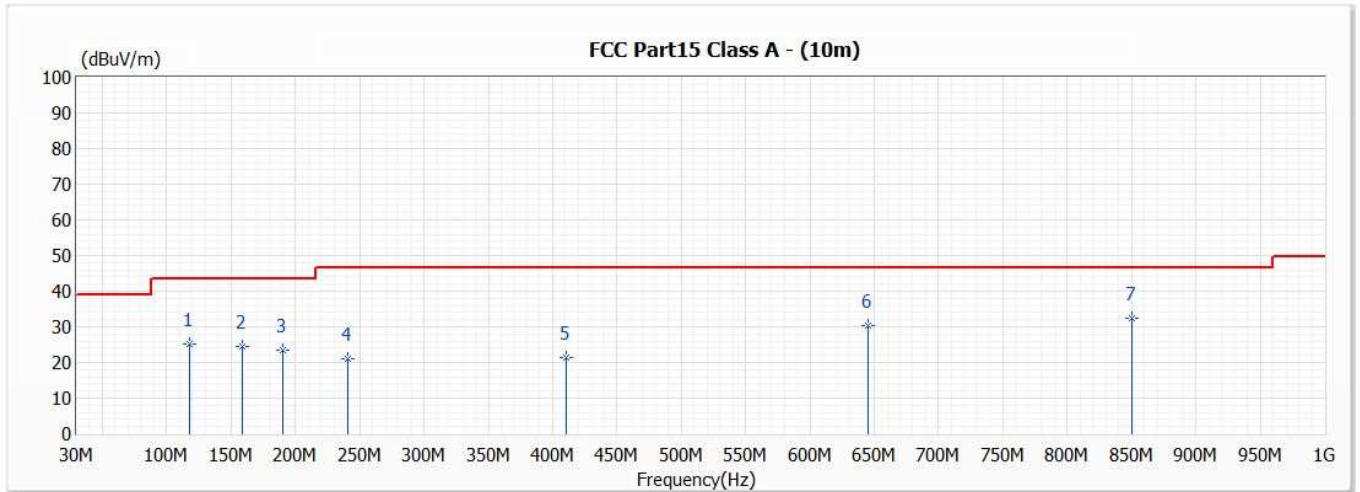
For class A, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and above 1GHz.

For class B, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and 3 meters for above 1GHz.

The bandwidth below 1GHz setting on the field strength meter (Test Receiver) is 120 kHz and above 1GHz is 1MHz.

4.5. Test Result

| | | | |
|----------------|-------------|------------------|-------------|
| Model No | UBR Plus | Site | SITE3 |
| Test Voltage | PoE Adapter | Test Date | 2023/5/22 |
| Test Mode | Mode 5 | Engineer | Cloud Hsieh |
| Polarity | Horizontal | Temperature (°C) | 32 |
| Test Condition | -- | Humidity (%RH) | 58 |

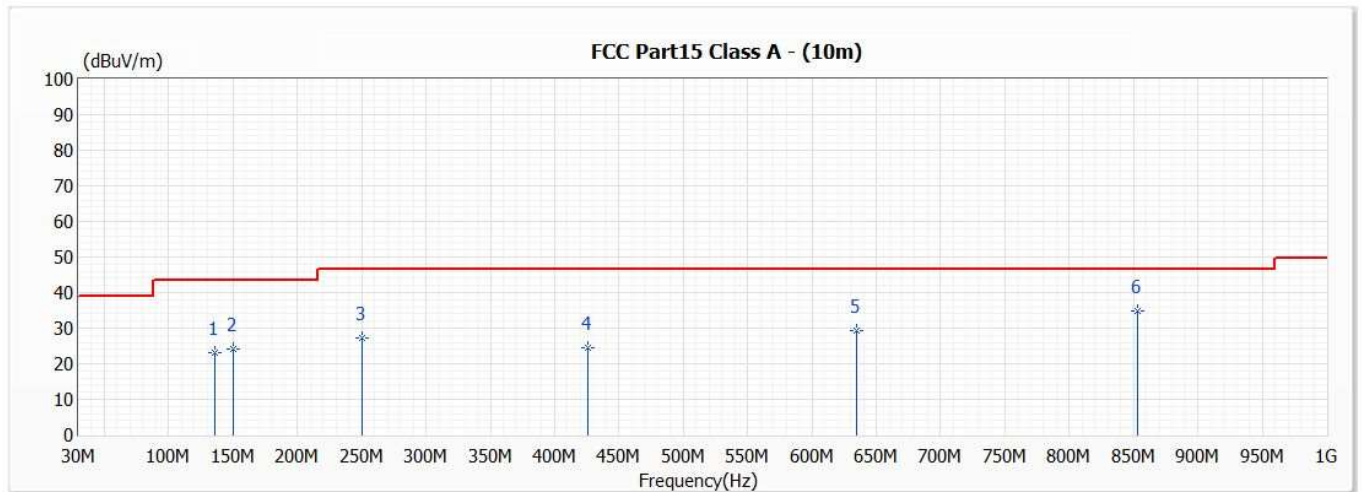


| No | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Reading Level (dBuV) | Correct Factor (dB/m) | Ant Pos (cm) | TT Pos (deg) | Detector Type |
|-----|-----------------|-------------------------|----------------|-------------|----------------------|-----------------------|--------------|--------------|---------------|
| 1 | 117.840 | 25.25 | 43.50 | -18.25 | 38.90 | -13.65 | 370 | -161 | QP |
| 2 | 158.800 | 24.37 | 43.50 | -19.13 | 35.20 | -10.83 | 370 | 189 | QP |
| 3 | 189.840 | 23.51 | 43.50 | -19.99 | 36.60 | -13.09 | 370 | -161 | QP |
| 4 | 240.800 | 20.99 | 46.40 | -25.41 | 32.40 | -11.41 | 370 | 9 | QP |
| 5 | 410.400 | 21.25 | 46.40 | -25.15 | 26.90 | -5.65 | 200 | -144 | QP |
| 6 | 644.800 | 30.49 | 46.40 | -15.91 | 29.30 | 1.19 | 100 | 75 | QP |
| * 7 | 850.400 | 32.38 | 46.40 | -14.02 | 26.60 | 5.78 | 100 | -144 | QP |

Remark:

1. "*" means this data is the worst emission level; "!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
3. Margin=Emission Level-Limit.

| | | | |
|----------------|-------------|------------------|-------------|
| Model No | UBR Plus | Site | SITE3 |
| Test Voltage | PoE Adapter | Test Date | 2023/5/22 |
| Test Mode | Mode 5 | Engineer | Cloud Hsieh |
| Polarity | Vertical | Temperature (°C) | 32 |
| Test Condition | -- | Humidity (%RH) | 58 |



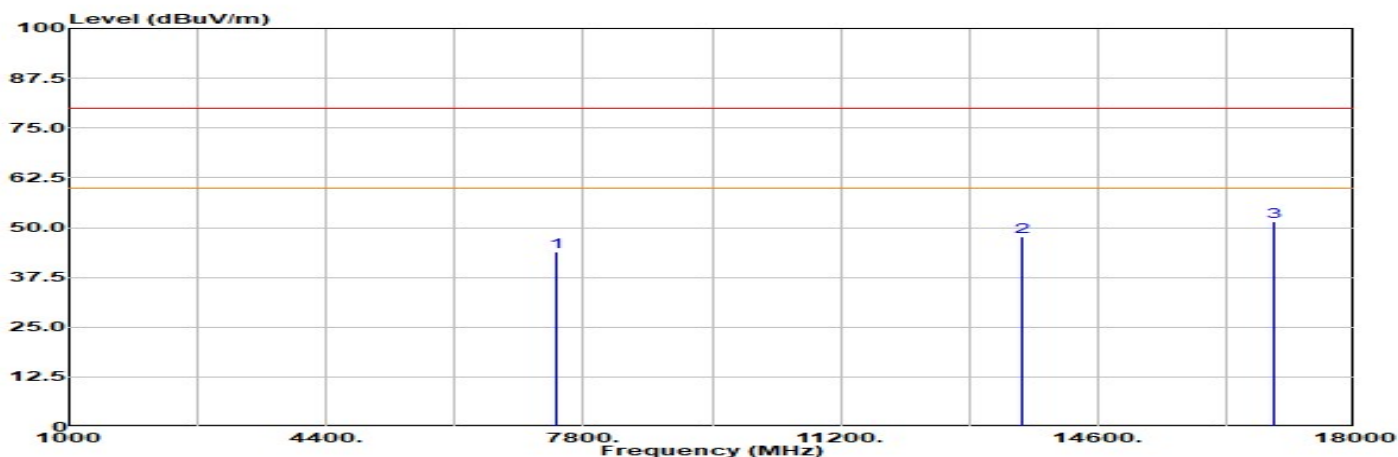
| No | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Reading Level (dBuV) | Correct Factor (dB/m) | Ant Pos (cm) | TT Pos (deg) | Detector Type |
|-----|-----------------|-------------------------|----------------|-------------|----------------------|-----------------------|--------------|--------------|---------------|
| 1 | 136.040 | 22.99 | 43.50 | -20.51 | 34.90 | -11.91 | 100 | 97 | QP |
| 2 | 149.840 | 24.07 | 43.50 | -19.43 | 34.90 | -10.83 | 100 | 9 | QP |
| 3 | 250.000 | 27.39 | 46.40 | -19.01 | 38.60 | -11.21 | 100 | -49 | QP |
| 4 | 426.000 | 24.41 | 46.40 | -21.99 | 29.40 | -4.99 | 300 | -67 | QP |
| 5 | 634.800 | 29.26 | 46.40 | -17.14 | 28.30 | 0.96 | 250 | 99 | QP |
| * 6 | 853.200 | 34.70 | 46.40 | -11.70 | 28.90 | 5.80 | 150 | -161 | QP |

Remark:

1. "*" means this data is the worst emission level; "!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
3. Margin=Emission Level-Limit.

| | | | |
|----------------|-------------|------------------|------------|
| Model No | UBR Plus | Site | HY-CB05 |
| Test Voltage | PoE Adapter | Test Date | 2023-05-23 |
| Test Mode | Mode 5 | Engineer | Leto Chen |
| Polarity | Horizontal | Temperature (°C) | 24 |
| Test Condition | -- | Humidity (%RH) | 63 |

FCC CLASS-A PK



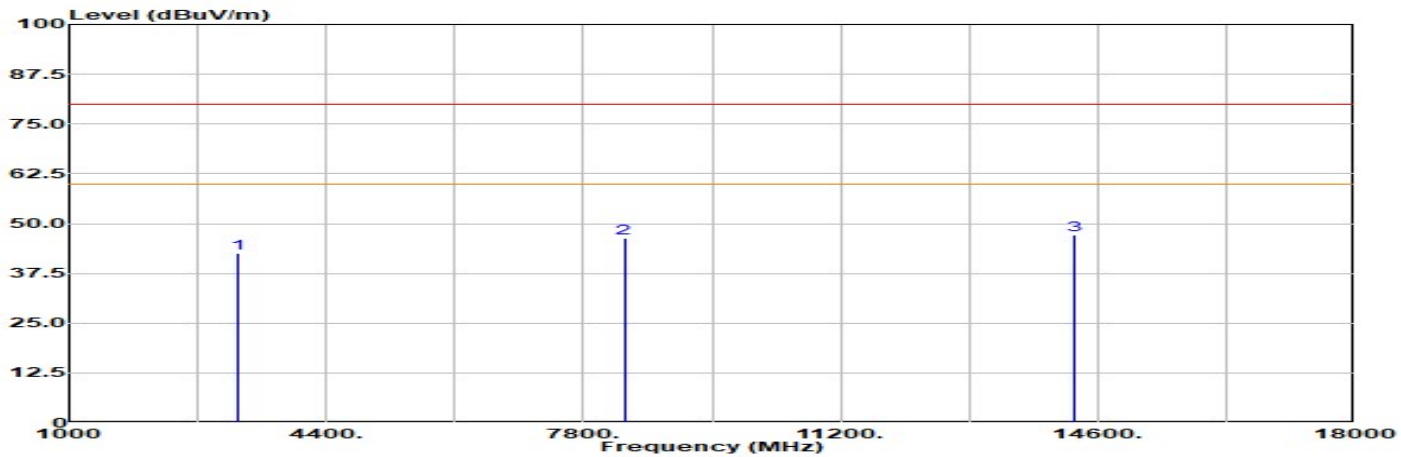
| No | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Reading Level (dBuV) | Correct Factor (dB/m) | Ant Pos (cm) | TT Pos (deg) | Detector Type |
|----|-----------------|-------------------------|----------------|-------------|----------------------|-----------------------|--------------|--------------|---------------|
| 1 | 7448.667 | 43.80 | 80.00 | -36.20 | 44.18 | -0.38 | 100 | 52 | Peak |
| 2 | 13614.000 | 47.65 | 80.00 | -32.35 | 40.69 | 6.95 | 100 | 290 | Peak |
| 3 | 16946.000 | 51.60 | 80.00 | -28.40 | 40.70 | 10.90 | 100 | 224 | Peak |

Remark:

- 1.Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
- 2.Margin=Emission Level - Limit.
- 3.The above 1 GHz test. When PEAK measures level less than AV limit by 20 dBuV, its average is not measured separately.

| | | | |
|----------------|-------------|------------------|------------|
| Model No | UBR Plus | Site | HY-CB05 |
| Test Voltage | PoE Adapter | Test Date | 2023-05-23 |
| Test Mode | Mode 5 | Engineer | Leto Chen |
| Polarity | Vertical | Temperature (°C) | 24 |
| Test Condition | -- | Humidity (%RH) | 63 |

FCC CLASS-A PK



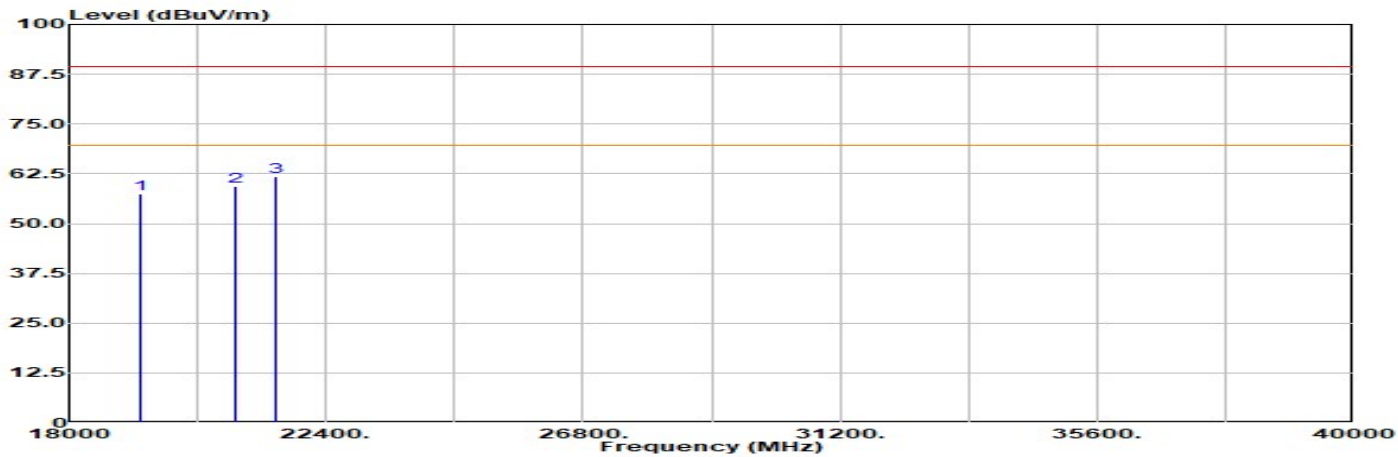
| No | Frequency (MHz) | Emission Level (dBUV/m) | Limit (dBUV/m) | Margin (dB) | Reading Level (dBUV) | Correct Factor (dB/m) | Ant Pos (cm) | TT Pos (deg) | Detector Type |
|----|-----------------|-------------------------|----------------|-------------|----------------------|-----------------------|--------------|--------------|---------------|
| 1 | 3232.667 | 42.52 | 80.00 | -37.48 | 47.86 | -5.34 | 100 | 316 | Peak |
| 2 | 8338.333 | 46.43 | 80.00 | -33.57 | 45.90 | 0.53 | 100 | 211 | Peak |
| 3 | 14305.330 | 47.26 | 80.00 | -32.74 | 40.39 | 6.87 | 100 | 205 | Peak |

Remark:

- 1.Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
- 2.Margin=Emission Level - Limit.
- 3.The above 1 GHz test. When PEAK measures level less than AV limit by 20 dBUV, its average is not measured separately.

| | | | |
|----------------|-------------|------------------|------------|
| Model No | UBR Plus | Site | HY-CB05 |
| Test Voltage | PoE Adapter | Test Date | 2023-05-23 |
| Test Mode | Mode 5 | Engineer | Leto Chen |
| Polarity | Horizontal | Temperature (°C) | 24 |
| Test Condition | -- | Humidity (%RH) | 63 |

FCC CLASS-A PK



| No | Frequency (MHz) | Emission Level (dBUV/m) | Limit (dBUV/m) | Margin (dB) | Reading Level (dBUV) | Correct Factor (dB/m) | Ant Pos (cm) | TT Pos (deg) | Detector Type |
|----|-----------------|-------------------------|----------------|-------------|----------------------|-----------------------|--------------|--------------|---------------|
| 1 | 19204.500 | 57.53 | 89.54 | -32.01 | 49.55 | 7.97 | 100 | 343 | Peak |
| 2 | 20838.000 | 59.22 | 89.54 | -30.32 | 48.73 | 10.49 | 100 | 243 | Peak |
| 3 | 21542.000 | 61.88 | 89.54 | -27.66 | 51.02 | 10.86 | 100 | 0 | Peak |

Remark:

- 1.Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
- 2.Margin=Emission Level - Limit.
- 3.The above 1 GHz test. When PEAK measures level less than AV limit by 20 dBUV, its average is not measured separately.

| | | | |
|----------------|-------------|------------------|------------|
| Model No | UBR Plus | Site | HY-CB05 |
| Test Voltage | PoE Adapter | Test Date | 2023-05-23 |
| Test Mode | Mode 5 | Engineer | Leto Chen |
| Polarity | Vertical | Temperature (°C) | 24 |
| Test Condition | -- | Humidity (%RH) | 63 |

FCC CLASS-A PK



| No | Frequency (MHz) | Emission Level (dBUV/m) | Limit (dBUV/m) | Margin (dB) | Reading Level (dBUV) | Correct Factor (dB/m) | Ant Pos (cm) | TT Pos (deg) | Detector Type |
|----|-----------------|-------------------------|----------------|-------------|----------------------|-----------------------|--------------|--------------|---------------|
| 1 | 19270.500 | 57.77 | 89.54 | -31.77 | 49.76 | 8.01 | 100 | 338 | Peak |
| 2 | 21569.500 | 61.25 | 89.54 | -28.29 | 50.47 | 10.77 | 100 | 88 | Peak |
| 3 | 22037.000 | 61.22 | 89.54 | -28.32 | 50.40 | 10.81 | 100 | 321 | Peak |

Remark:

- 1.Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
- 2.Margin=Emission Level - Limit.
- 3.The above 1 GHz test. When PEAK measures level less than AV limit by 20 dBUV, its average is not measured separately.