

FCC EMC Test Report

FCC ID: QISLYA-L0C

Project No. : 2004C059
Equipment : Smart Phone
Brand Name : HUAWEI
Test Model : LYA-L0C
Series Model : N/A
Applicant : Huawei Technologies Co., Ltd.
Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Manufacturer : Huawei Technologies Co., Ltd.
Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Date of Receipt : Apr. 10, 2020
Date of Test : Apr. 11, 2020 ~ Apr. 14, 2020
Issued Date : May 08, 2020
Report Version : R01
Test Sample : Engineering Sample No.: DG2020041038
Standard(s) : FCC Part 15, Subpart B

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

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Declaration

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The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

| Report Version | Description | Issued Date |
|----------------|--|---------------|
| R00 | Compared with original report (SYBH(Z-EMC)20180808003001-2), Model LYA-L0C added BT UHD function by upgrade software. So all the test items for BT UHD are evaluated with the worst config and recorded. | Apr. 17, 2020 |
| R01 | Removed the test photos. | May 08, 2020 |

1. SUMMARY OF TEST RESULTS

| Emission | | |
|-----------------|------------------------------------|--------|
| Ref Standard(s) | Test Item | Result |
| ANSI C63.4-2014 | AC Power Line Conducted Emissions | PASS |
| | Radiated Emissions 30 MHz to 1 GHz | PASS |
| | Radiated Emissions Above 1 GHz | PASS |

NOTE:

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

1.1 TEST FACILITY

The test facilities used to collect the test data in this report 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 | 2.60 |

B. Radiated emissions test:

| Test Site | Method | Measurement Frequency Range | Ant. H / V | U,(dB) |
|-----------------|--------|-----------------------------|---------------|--------|
| DG-CB02 (3m) | CISPR | 30MHz ~ 200MHz | V | 4.56 |
| | | 30MHz ~ 200MHz | H | 3.60 |
| | | 200MHz ~ 1,000MHz | V | 4.16 |
| | | 200MHz ~ 1,000MHz | H | 4.00 |

| Test Site | Method | Measurement Frequency Range | U,(dB) |
|-----------------|--------|-----------------------------|--------|
| DG-CB02 (3m) | CISPR | 1GHz ~ 6GHz | 4.38 |
| | | 6GHz ~ 18GHz | 5.36 |

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 | 55% | Gatsby Wang |
| Radiated emissions 30 MHz to 1 GHz | 25°C | 60% | Albe Zhou |
| Radiated emissions above 1 GHz | 25°C | 60% | Albe Zhou |

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

| | |
|--------------------------------|---|
| Equipment | Smart Phone |
| Brand Name | HUAWEI |
| Test Model | LYA-L0C |
| Series Model | N/A |
| Model Difference(s) | N/A |
| Hardware Version | HL2LAYAM |
| Software Version | 10.1.0.162(C792E8R1P5) |
| Work Frequency | Please refer to note 2. |
| Power Source | 1# DC voltage supplied from AC/DC adapter. 2# Supplied from battery. 3# Supplied from USB port. |
| Power Rating | 1# I/P: 100-240V ~50/60Hz, 1.2A O/P: 5V $\overline{=}$ 2A OR 9V $\overline{=}$ 2A OR 10V $\overline{=}$ 4A 2# DC 3.82V, 4100mAh 3# DC 5V |
| Connecting I/O Port(s) | 1* Type C port 1* SIM Card port |
| Classification of EUT | Class B |
| Highest Internal Frequency(Fx) | 5850MHz |

Note:

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

2. Work Frequency:

| Mode | | Work Frequency | |
|-------------------|--------------|-------------------------------------|-------------------------------------|
| | | Transmitt Frequency(MHz) | Receive Frequency(MHz) |
| GNSS | BDS | / | 1561.098±2.046 |
| | GLONASS | / | 1602+K*0.5625 (K=1~24) |
| | GPS | / | 1575.42±1.023 1176.45±1.023 |
| | A-GPS | | 1575.42±1.023 |
| | Galileo | | 1575.42±1.023 1176.45±1.023 |
| NFC | | / | 13.56 |
| Wireless Charging | | 110kHz-148kHz | 110kHz-148kHz |
| Bluetooth | | 2400-2483.5 | 2400-2483.5 |
| 2.4G WiFi | 802.11b/g/n | 2400-2483.5 | 2400-2483.5 |
| 5G WiFi | 802.11a/n/ac | 5150-5350 5470-5725 5725-5850 | 5150-5350 5470-5725 5725-5850 |
| GSM | GSM 850 | 824-849 | 869-894 |
| | PCS 1900 | 1850-1910 | 1930-1990 |
| WCDMA | Band II | 1850-1910 | 1930-1990 |
| | Band IV | 1710-1755 | 2110-2115 |
| | Band V | 824-849 | 869-894 |
| LTE | Band 2 | 1850-1910 | 1930-1990 |
| | Band 4 | 1710-1755 | 2110-2155 |
| | Band 5 | 824-849 | 869-894 |
| | Band 7 | 2500 -2570 | 2620 -2690 |
| | Band 12 | 699-716 | 729-746 |
| | Band 17 | 704-716 | 734-746 |
| | Band 26 | 814-849 | 859-894 |
| | Band 38 | 2570-2620 | 2570-2620 |
| | Band 40 | 2305-2315 | 2305-2315 |
| | Band 41 | 2545-2655 | 2545-2655 |
| | Band 66 | 1710-1780 | 2110-2200 |

*The above work frequency is exemption frequency.

3. The EUT contains following accessory devices:

| Items | Trademark / Manufacturer / Factory | Model Name | Description |
|-----------|---|--|---|
| Adapter | Huawei Technologies Co., Ltd. | HW-100400A00 HW-100400U00 HW-100400E00 HW-100400B00 | I/P: 100-240V ~50/60Hz, 1.2A O/P: 5V $\overline{\text{---}}$ 2A OR 9V $\overline{\text{---}}$ 2A OR 10V $\overline{\text{---}}$ 4A (A00/U00/E00/B00 have same board) |
| Battery | Huawei Technologies Co., Ltd. (Manufacturer: SCUD / Desay) | HB486486ECW | Rated capacity: 4100mAh Nominal Voltage: +3.82V Charging Voltage: +4.4V |
| Earphone | Jiangxi Lianchuang Hongsheng Electronic Co., LTD | MEND1632B729003 | / |
| | GoerTek Inc. | Windy-S | |
| | Boluo County Quancheng Electronic Co.,Ltd | 1331-3301-6001-TC-088 | |
| | Foster Electric Co.,(GuangZhou)LTD.Sales Dep. | 630276 | |
| USB Cable | Ningbo Broad Telecommunication Co., Ltd | WA0009 | / |
| | LUXSHARE Precision Industry Co., Ltd. | L99UC117-CS-H | |
| | HUIZHOU DEHONG TECHNOLOGY CO.,LTD. | 330-50465 | |

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

| Pretest Mode | Description |
|--------------|--|
| Mode 1 | Adapter(Model: HW-10400U00)+Charging+BT Play(UHD)+Camera On+Idle |

| AC Power Line Conducted Emissions test | |
|--|--|
| Final Test Mode | Description |
| Mode 1 | Adapter(Model: HW-10400U00)+Charging+BT Play(UHD)+Camera On+Idle |

| Radiated Emissions 30 MHz to 1 GHz test | |
|---|--|
| Final Test Mode | Description |
| Mode 1 | Adapter(Model: HW-10400U00)+Charging+BT Play(UHD)+Camera On+Idle |

| Radiated emissions above 1 GHz test | |
|-------------------------------------|--|
| Final Test Mode | Description |
| Mode 1 | Adapter(Model: HW-10400U00)+Charging+BT Play(UHD)+Camera On+Idle |

Evaluated description:

1. Mode 1 tested with battery (Manufacturer: Desay) and the worst adapter based on original report.
2. The product supports BT function.
The frequency exemption are 2400 MHz ~ 2483.5 MHz
3. Radiated emission above 1GHz tested with 2.4G filter.

2.3 EUT OPERATING CONDITIONS

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use. The standard test signals and output signal as following:

1. EUT connected to BT Earphone via BT Function.
2. EUT connected to Adapter via USB Cable.

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



----- Ground plane
----- Remote System

2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. |
|------|-------------|-----------|----------------|------------|
| A | BT Earphone | Huawei | FreeBuds 3 | N/A |

| Item | Cable Type | Shielded Type | Ferrite Core | Length |
|------|------------|---------------|--------------|--------|
| 1 | USB Cable | YES | NO | 1m |

3. EMC EMISSION TEST

3.1 AC POWER LINE CONDUCTED EMISSIONS TEST

3.1.1 LIMIT

| Frequency of Emission (MHz) | Class B (dBuV) | |
|-----------------------------|----------------|-----------|
| | Quasi-peak | Average |
| 0.15 - 0.5 | 66 - 56 * | 56 - 46 * |
| 0.5 - 5.0 | 56.00 | 46.00 |
| 5.0 - 30.0 | 60.00 | 50.00 |

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.
- (3) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
 Margin Level = Measurement Value - Limit Value

3.1.2 MEASUREMENT INSTRUMENTS LIST

| 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 | May 19, 2020 |
| 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 |

Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

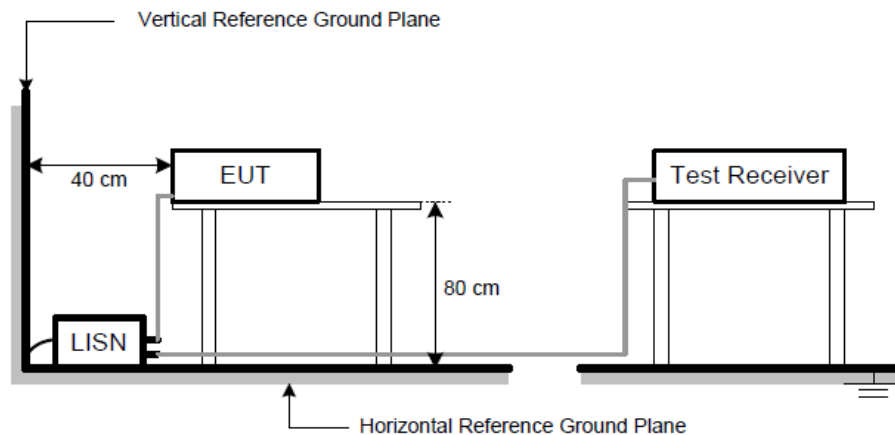
3.1.3 TEST PROCEDURE

- 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.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.
- Measuring frequency range from 150KHz to 30MHz.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP

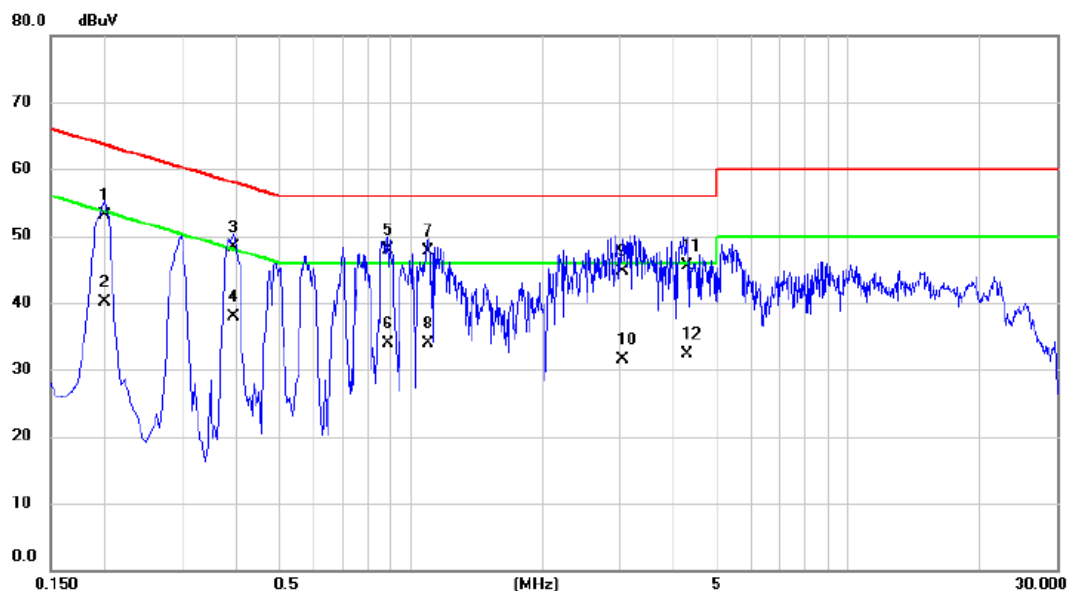


3.1.6 TEST RESULTS

Remark:

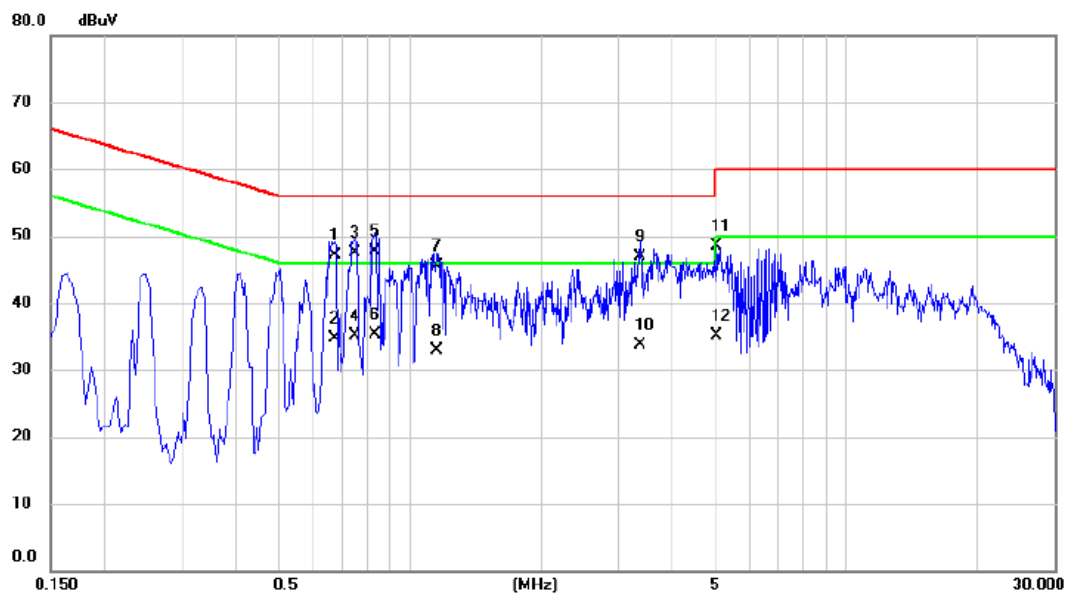
- Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. Time =0.3 sec./MHz.
- All readings are QP Mode value unless otherwise stated AVG in column of [Note] . If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a "*" marked in AVG Mode column of Interference Voltage Measured.

| | | | |
|--------------|--------------|-------|------|
| Test Voltage | AC 120V/60Hz | Phase | Line |
| Test Mode | Mode 1 | | |



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV | Limit dBuV | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1 | | 0.1995 | 43.29 | 9.91 | 53.20 | 63.63 | -10.43 | QP | |
| 2 | | 0.1995 | 30.10 | 9.91 | 40.01 | 53.63 | -13.62 | AVG | |
| 3 | | 0.3930 | 38.44 | 9.92 | 48.36 | 58.00 | -9.64 | QP | |
| 4 | | 0.3930 | 28.00 | 9.92 | 37.92 | 48.00 | -10.08 | AVG | |
| 5 | * | 0.8880 | 37.87 | 10.00 | 47.87 | 56.00 | -8.13 | QP | |
| 6 | | 0.8880 | 24.00 | 10.00 | 34.00 | 46.00 | -12.00 | AVG | |
| 7 | | 1.0950 | 37.76 | 10.02 | 47.78 | 56.00 | -8.22 | QP | |
| 8 | | 1.0950 | 23.90 | 10.02 | 33.92 | 46.00 | -12.08 | AVG | |
| 9 | | 3.0525 | 34.50 | 10.18 | 44.68 | 56.00 | -11.32 | QP | |
| 10 | | 3.0525 | 21.30 | 10.18 | 31.48 | 46.00 | -14.52 | AVG | |
| 11 | | 4.2810 | 35.20 | 10.27 | 45.47 | 56.00 | -10.53 | QP | |
| 12 | | 4.2810 | 22.10 | 10.27 | 32.37 | 46.00 | -13.63 | AVG | |

| | | | |
|--------------|--------------|-------|---------|
| Test Voltage | AC 120V/60Hz | Phase | Neutral |
| Test Mode | Mode 1 | | |



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV | Limit dBuV | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1 | | 0.6720 | 36.90 | 10.14 | 47.04 | 56.00 | -8.96 | QP | |
| 2 | | 0.6720 | 24.60 | 10.14 | 34.74 | 46.00 | -11.26 | AVG | |
| 3 | | 0.7485 | 37.30 | 10.17 | 47.47 | 56.00 | -8.53 | QP | |
| 4 | | 0.7485 | 25.00 | 10.17 | 35.17 | 46.00 | -10.83 | AVG | |
| 5 | * | 0.8295 | 37.41 | 10.25 | 47.66 | 56.00 | -8.34 | QP | |
| 6 | | 0.8295 | 25.10 | 10.25 | 35.35 | 46.00 | -10.65 | AVG | |
| 7 | | 1.1490 | 35.16 | 10.32 | 45.48 | 56.00 | -10.52 | QP | |
| 8 | | 1.1490 | 22.60 | 10.32 | 32.92 | 46.00 | -13.08 | AVG | |
| 9 | | 3.3675 | 36.30 | 10.54 | 46.84 | 56.00 | -9.16 | QP | |
| 10 | | 3.3675 | 23.20 | 10.54 | 33.74 | 46.00 | -12.26 | AVG | |
| 11 | | 5.0505 | 37.93 | 10.67 | 48.60 | 60.00 | -11.40 | QP | |
| 12 | | 5.0505 | 24.50 | 10.67 | 35.17 | 50.00 | -14.83 | AVG | |

3.2 RADIATED EMISSIONS 30 MHZ TO 1 GHZ

3.2.1 LIMIT

| Frequency (MHz) | Class B (at 3m) | |
|-----------------|--------------------------|----------------------------|
| | (uV/m) Field strength | (dBuV/m) Field strength |
| 30 - 88 | 100 | 40 |
| 88 - 216 | 150 | 43.5 |
| 216 - 960 | 200 | 46 |
| Above 960 | 500 | 54 |

NOTE:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m) = 20log Emission level (uV/m).
3m Emission level = 10m Emission level + 20log(10m/3m).
- (3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value

3.2.2 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|--------------------------|--------------|-------------------------------|------------|------------------|
| 1 | Amplifier | HP | 8447D | 1937A02847 | Feb. 28, 2021 |
| 2 | Cable | emci | LMR-400(30MHz-1GHz)(10m+2.5m) | N/A | Jun. 19, 2020 |
| 3 | Controller | MF | MF-7802BS | N/A | N/A |
| 4 | Measurement Software | Farad | EZ-EMC Ver.NB-03A1-01 | N/A | N/A |
| 5 | EMI Test Receiver | Keysight | N9038A | MY56400060 | Feb. 28, 2021 |
| 6 | Trilog-Broadband Antenna | Schwarzbeck | VULB9168 | 9168-806 | Aug. 27, 2020 |
| 7 | Amplifier | Agilent | 8449B | 3008A02334 | Mar. 01, 2021 |

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.

All calibration period of equipment list is one year.

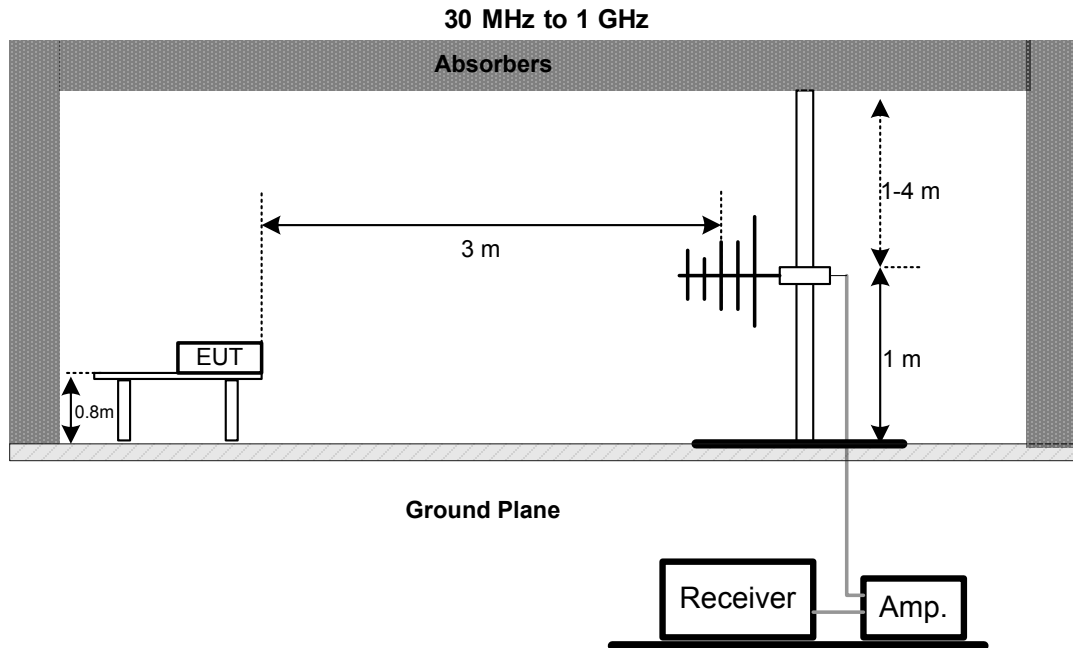
3.2.3 TEST PROCEDURE

- 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.
- b. The height of the equipment or of the substitution antenna shall be 0.8 m, 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.
- c. 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).
- d. 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.
- e. 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.
- f. For the actual test configuration, please refer to the related Item - Block Diagram of system tested.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

3.2.5 TEST SETUP

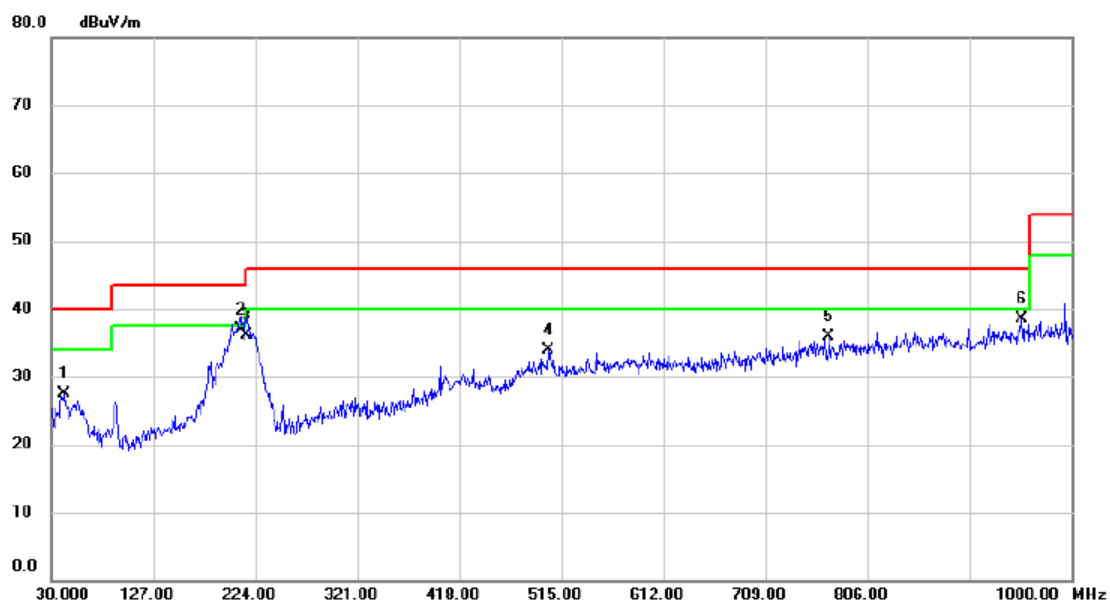


3.2.6 TEST RESULTS

Remark:

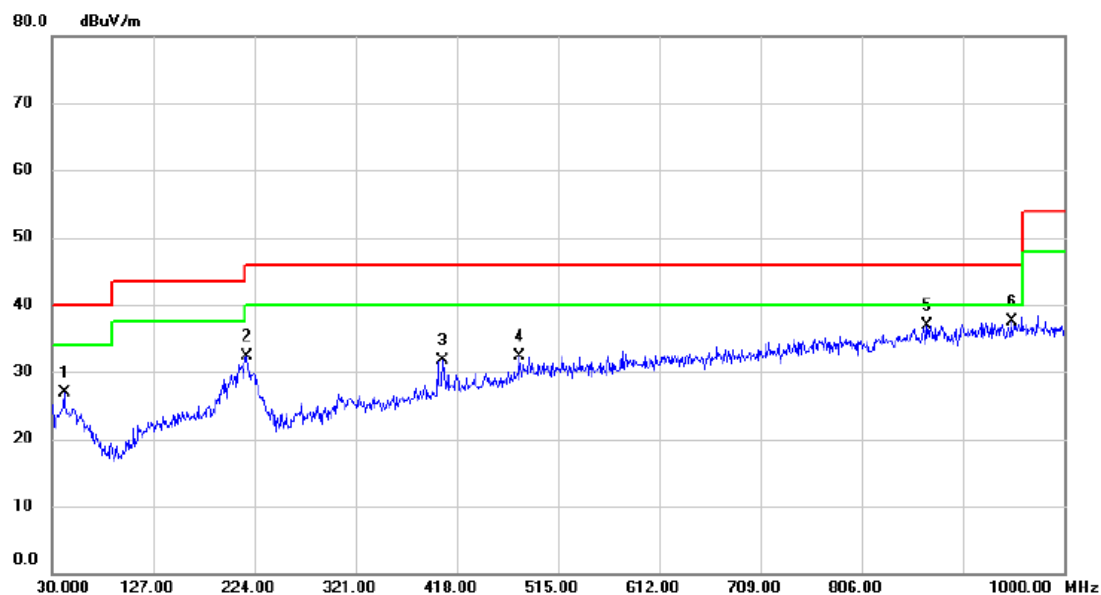
- (1) Measuring frequency range from 30 MHz to 1000 MHz
- (2) If the peak scan value lower limit more than 20 dB, then this signal data does not show in table.

| | | | |
|--------------|--------------|--------------|----------|
| Test Voltage | AC 120V/60Hz | Polarization | Vertical |
| Test Mode | Mode 1 | | |



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|--------------|----------|---------|
| 1 | | 42.6100 | 32.89 | -5.41 | 27.48 | 40.00 | -12.52 | QP | |
| 2 | * | 209.9350 | 44.29 | -7.40 | 36.89 | 43.50 | -6.61 | QP | |
| 3 | | 215.2700 | 43.46 | -7.33 | 36.13 | 43.50 | -7.37 | QP | |
| 4 | | 502.8750 | 32.72 | 1.22 | 33.94 | 46.00 | -12.06 | QP | |
| 5 | | 769.1400 | 29.38 | 6.61 | 35.99 | 46.00 | -10.01 | QP | |
| 6 | | 952.9550 | 29.45 | 9.08 | 38.53 | 46.00 | -7.47 | QP | |

| | | | |
|--------------|--------------|--------------|------------|
| Test Voltage | AC 120V/60Hz | Polarization | Horizontal |
| Test Mode | Mode 1 | | |



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|--------------|----------|---------|
| 1 | | 41.6400 | 32.32 | -5.50 | 26.82 | 40.00 | -13.18 | QP | |
| 2 | | 216.7250 | 39.64 | -7.32 | 32.32 | 46.00 | -13.68 | QP | |
| 3 | | 404.9050 | 32.68 | -0.93 | 31.75 | 46.00 | -14.25 | QP | |
| 4 | | 477.6550 | 31.62 | 0.63 | 32.25 | 46.00 | -13.75 | QP | |
| 5 | | 869.0500 | 28.95 | 7.89 | 36.84 | 46.00 | -9.16 | QP | |
| 6 | * | 949.5600 | 28.44 | 9.06 | 37.50 | 46.00 | -8.50 | QP | |

3.3 RADIATED EMISSIONS ABOVE 1 GHZ

3.3.1 LIMIT

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

FREQUENCY RANGE OF RADIATED MEASUREMENT (FOR UNINTENTIONAL RADIATORS)

| Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz) | 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 |

NOTE:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m) = 20log Emission level (uV/m).
1m Emission level = 3m Emission level + 20log(3m/1m).
- (3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value

3.3.2 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-----------------------------|-----------------------------|----------------------------------|------------|------------------|
| 1 | Double Ridged Guide Antenna | ETS | 3115 | 75846 | Mar. 19, 2021 |
| 2 | Amplifier | Agilent | 8449B | 3008A02334 | Mar. 01, 2021 |
| 3 | Amplifier | HP | 8447D | 1937A02847 | Feb. 28, 2021 |
| 4 | Cable | mitron | RWLP50-4.0A-KJ-SMSM-12M | N/A | Nov. 25, 2020 |
| 5 | Controller | MF | MF-7802BS | N/A | N/A |
| 6 | Measurement Software | Farad | EZ-EMC Ver.NB-03A1-01 | N/A | N/A |
| 7 | EMI Test Receiver | Keysight | N9038A | MY56400060 | Feb. 28, 2021 |
| 8 | Band Reject Filter | Wairwright Instruments GmbH | WRCG 2400/2483-2375/2505-50/10SS | 16 | Feb. 28, 2021 |

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.

All calibration period of equipment list is one year.

3.3.3 TEST PROCEDURE

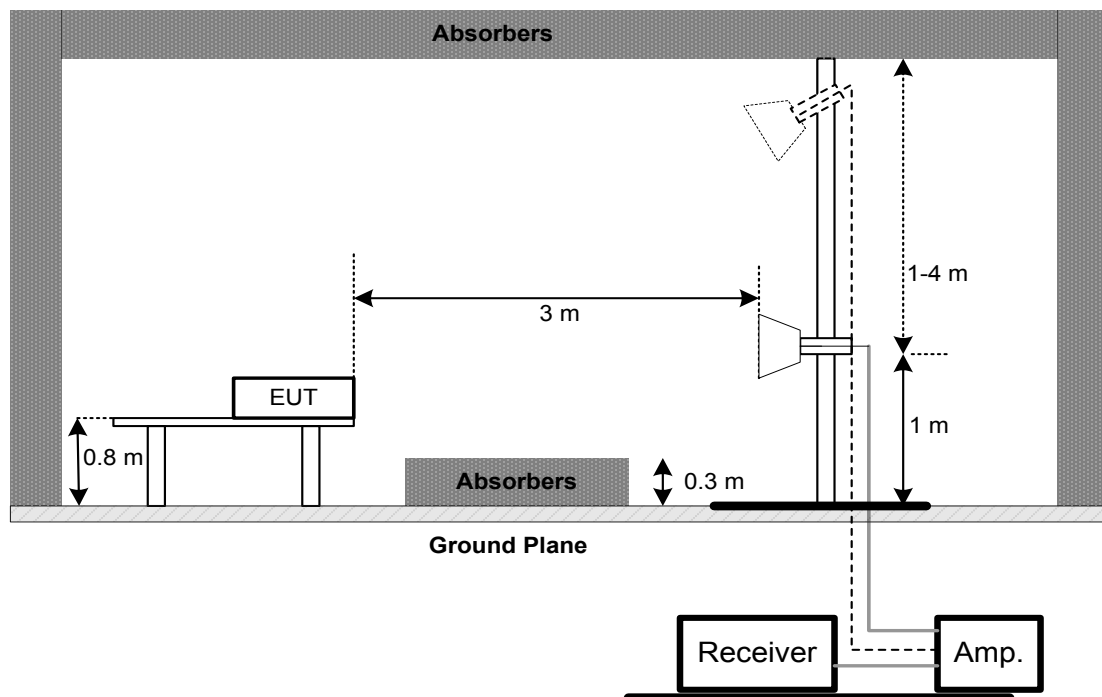
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- The 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.
- 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.
- 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.
- For the actual test configuration, please refer to the related Item - Block Diagram of system tested.

3.3.4 DEVIATION FROM TEST STANDARD

No deviation

3.3.5 TEST SETUP

Above 1GHz

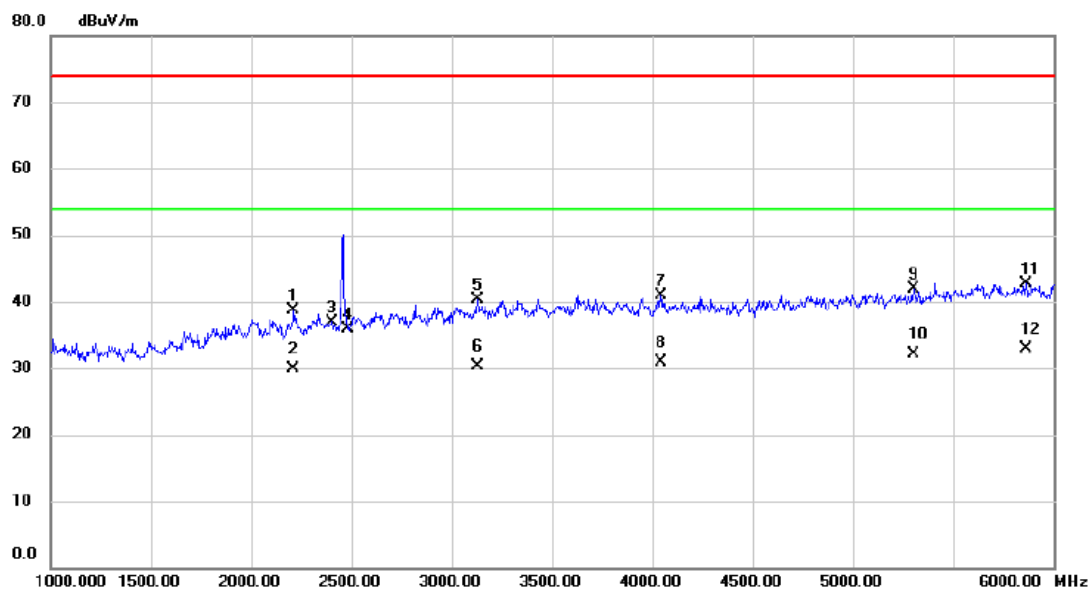


3.3.6 TEST RESULTS

Remark:

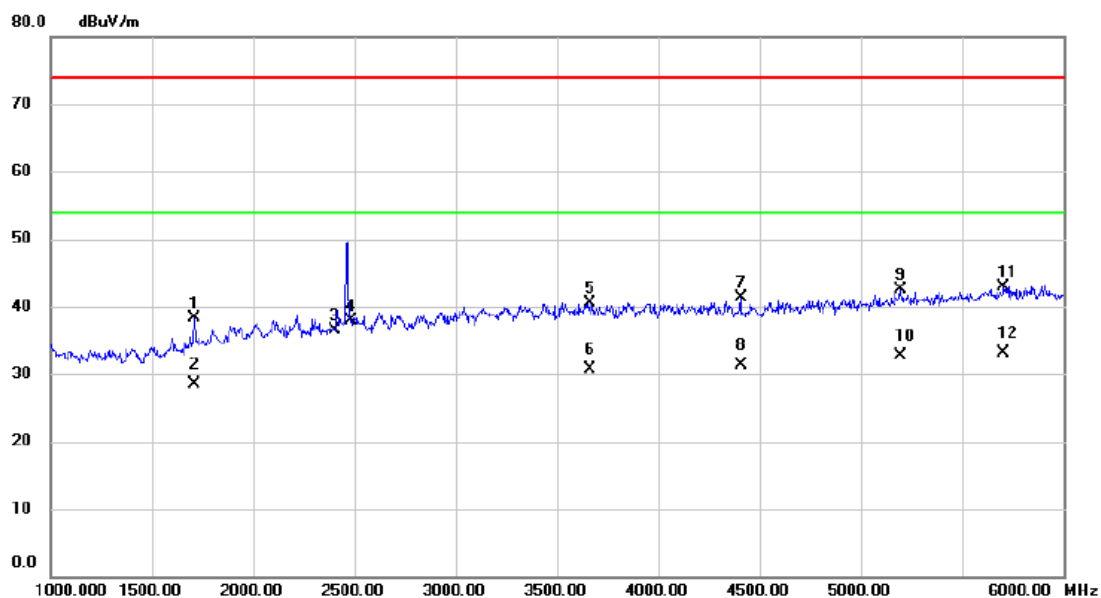
- (1) Radiated emissions measured in frequency range above 1000 MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (2) Data of measurement within this frequency range shown “*” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
- (3) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

| | | | |
|--------------|--------------|--------------|----------|
| Test Voltage | AC 120V/60Hz | Polarization | Vertical |
| Test Mode | Mode 1 | | |



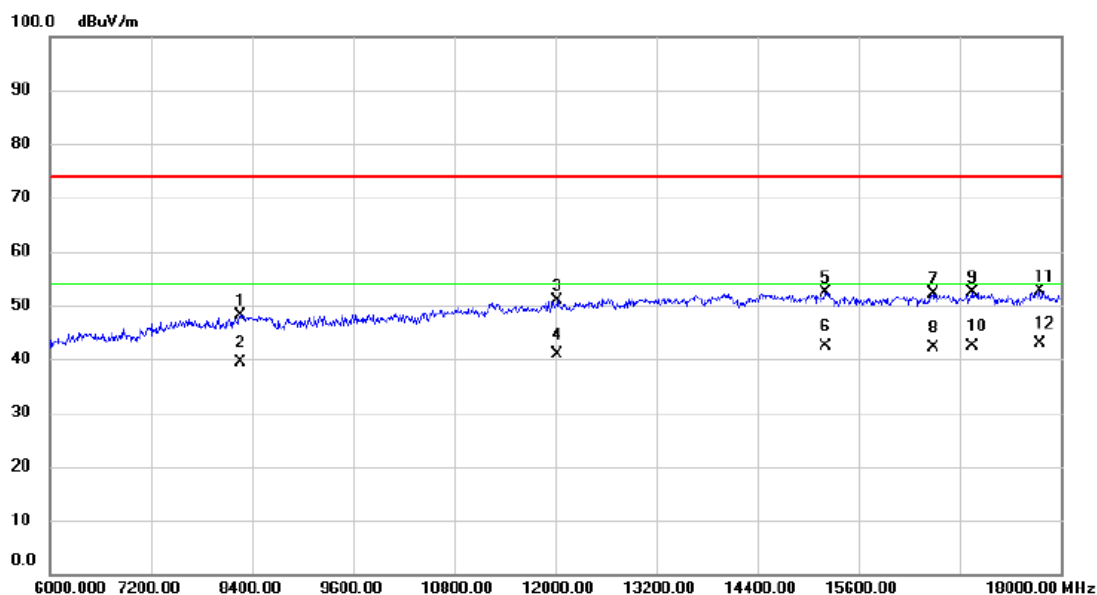
| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|--------------|----------|---------|
| 1 | | 2210.000 | 38.50 | 0.16 | 38.66 | 74.00 | -35.34 | peak | |
| 2 | | 2210.000 | 29.68 | 0.16 | 29.84 | 54.00 | -24.16 | AVG | |
| 3 | | 2400.000 | 36.33 | 0.58 | 36.91 | 74.00 | -37.09 | peak | |
| 4 | | 2483.500 | 35.14 | 0.77 | 35.91 | 74.00 | -38.09 | peak | |
| 5 | | 3132.500 | 37.39 | 2.82 | 40.21 | 74.00 | -33.79 | peak | |
| 6 | | 3132.500 | 27.49 | 2.82 | 30.31 | 54.00 | -23.69 | AVG | |
| 7 | | 4042.500 | 35.66 | 5.28 | 40.94 | 74.00 | -33.06 | peak | |
| 8 | | 4042.500 | 25.72 | 5.28 | 31.00 | 54.00 | -23.00 | AVG | |
| 9 | | 5302.500 | 33.78 | 8.16 | 41.94 | 74.00 | -32.06 | peak | |
| 10 | | 5302.500 | 23.94 | 8.16 | 32.10 | 54.00 | -21.90 | AVG | |
| 11 | | 5862.500 | 32.77 | 9.93 | 42.70 | 74.00 | -31.30 | peak | |
| 12 | * | 5862.500 | 23.06 | 9.93 | 32.99 | 54.00 | -21.01 | AVG | |

| | | | |
|--------------|--------------|--------------|------------|
| Test Voltage | AC 120V/60Hz | Polarization | Horizontal |
| Test Mode | Mode 1 | | |



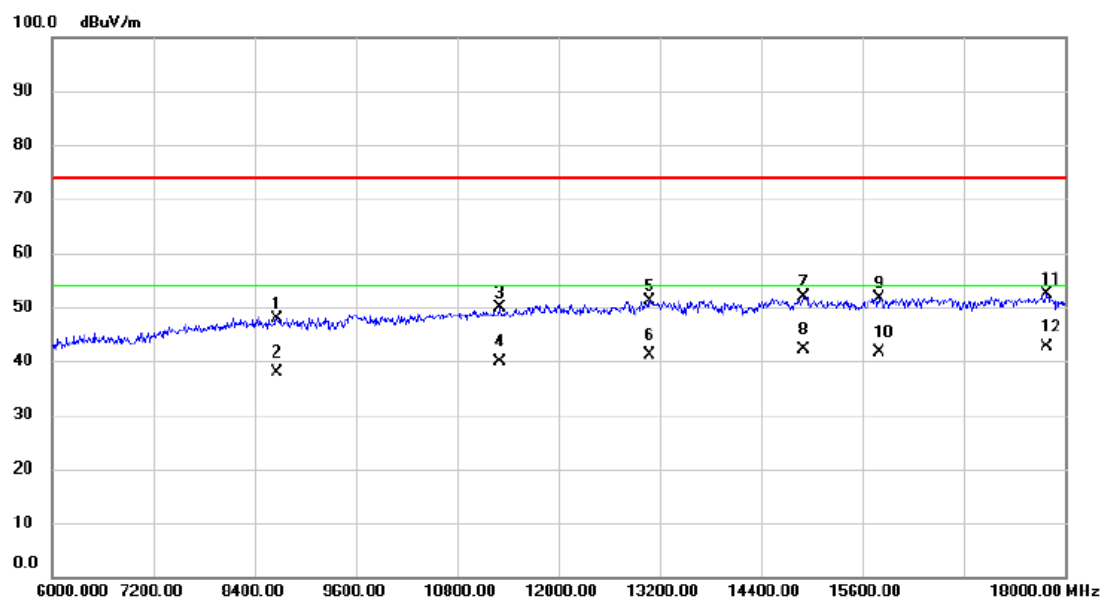
| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dBuV/m | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|--------------|----------|---------|
| 1 | | 1710.000 | 41.20 | -2.88 | 38.32 | 74.00 | -35.68 | peak | |
| 2 | | 1710.000 | 31.44 | -2.88 | 28.56 | 54.00 | -25.44 | AVG | |
| 3 | | 2400.000 | 35.83 | 0.58 | 36.41 | 74.00 | -37.59 | peak | |
| 4 | | 2483.500 | 37.07 | 0.77 | 37.84 | 74.00 | -36.16 | peak | |
| 5 | | 3662.500 | 36.07 | 4.40 | 40.47 | 74.00 | -33.53 | peak | |
| 6 | | 3662.500 | 26.38 | 4.40 | 30.78 | 54.00 | -23.22 | AVG | |
| 7 | | 4407.500 | 35.59 | 5.63 | 41.22 | 74.00 | -32.78 | peak | |
| 8 | | 4407.500 | 25.64 | 5.63 | 31.27 | 54.00 | -22.73 | AVG | |
| 9 | | 5197.500 | 34.62 | 7.86 | 42.48 | 74.00 | -31.52 | peak | |
| 10 | | 5197.500 | 24.75 | 7.86 | 32.61 | 54.00 | -21.39 | AVG | |
| 11 | | 5705.000 | 33.55 | 9.42 | 42.97 | 74.00 | -31.03 | peak | |
| 12 | * | 5705.000 | 23.76 | 9.42 | 33.18 | 54.00 | -20.82 | AVG | |

| | | | |
|--------------|--------------|--------------|----------|
| Test Voltage | AC 120V/60Hz | Polarization | Vertical |
| Test Mode | Mode 1 | | |



| No. | Mk. | Freq. | Reading | Correct | Measure- | Limit | Margin | | |
|-----|-----|----------|---------|---------|----------|--------|--------|----------|---------|
| | | MHz | Level | Factor | ment | | | Detector | Comment |
| | | | dBuV | dB | dBuV/m | dBuV/m | dB | | |
| 1 | | 8256.000 | 32.22 | 15.93 | 48.15 | 74.00 | -25.85 | peak | |
| 2 | | 8256.000 | 23.41 | 15.93 | 39.34 | 54.00 | -14.66 | AVG | |
| 3 | | 12030.00 | 29.67 | 21.11 | 50.78 | 74.00 | -23.22 | peak | |
| 4 | | 12030.00 | 19.84 | 21.11 | 40.95 | 54.00 | -13.05 | AVG | |
| 5 | | 15210.00 | 27.74 | 24.70 | 52.44 | 74.00 | -21.56 | peak | |
| 6 | | 15210.00 | 17.63 | 24.70 | 42.33 | 54.00 | -11.67 | AVG | |
| 7 | | 16482.00 | 28.15 | 23.90 | 52.05 | 74.00 | -21.95 | peak | |
| 8 | | 16482.00 | 18.26 | 23.90 | 42.16 | 54.00 | -11.84 | AVG | |
| 9 | | 16956.00 | 25.54 | 26.86 | 52.40 | 74.00 | -21.60 | peak | |
| 10 | | 16956.00 | 15.63 | 26.86 | 42.49 | 54.00 | -11.51 | AVG | |
| 11 | | 17754.00 | 21.27 | 31.43 | 52.70 | 74.00 | -21.30 | peak | |
| 12 | * | 17754.00 | 11.48 | 31.43 | 42.91 | 54.00 | -11.09 | AVG | |

| | | | |
|--------------|--------------|--------------|------------|
| Test Voltage | AC 120V/60Hz | Polarization | Horizontal |
| Test Mode | Mode 1 | | |



| No. | Mk. | Freq. | Reading | Correct | Measure- | Limit | Margin | | |
|-----|-----|----------|---------|---------|----------|--------|--------|----------|---------|
| | | MHz | Level | Factor | ment | | | Detector | Comment |
| | | | dBuV | dB | dBuV/m | dBuV/m | dB | | |
| 1 | | 8664.000 | 31.35 | 16.55 | 47.90 | 74.00 | -26.10 | peak | |
| 2 | | 8664.000 | 21.23 | 16.55 | 37.78 | 54.00 | -16.22 | AVG | |
| 3 | | 11310.00 | 29.71 | 20.17 | 49.88 | 74.00 | -24.12 | peak | |
| 4 | | 11310.00 | 19.64 | 20.17 | 39.81 | 54.00 | -14.19 | AVG | |
| 5 | | 13080.00 | 27.84 | 23.41 | 51.25 | 74.00 | -22.75 | peak | |
| 6 | | 13080.00 | 17.76 | 23.41 | 41.17 | 54.00 | -12.83 | AVG | |
| 7 | | 14898.00 | 25.31 | 26.65 | 51.96 | 74.00 | -22.04 | peak | |
| 8 | | 14898.00 | 15.41 | 26.65 | 42.06 | 54.00 | -11.94 | AVG | |
| 9 | | 15804.00 | 28.96 | 22.76 | 51.72 | 74.00 | -22.28 | peak | |
| 10 | | 15804.00 | 18.78 | 22.76 | 41.54 | 54.00 | -12.46 | AVG | |
| 11 | | 17778.00 | 20.74 | 31.62 | 52.36 | 74.00 | -21.64 | peak | |
| 12 | * | 17778.00 | 11.02 | 31.62 | 42.64 | 54.00 | -11.36 | AVG | |

End of Test Report