# FCC Test Report (Z-Wave)

| | |
|---|---|
| **Report No.:** | RF180830E03A-4 |
| **FCC ID:** | 2APLE18300394 |
| **Test Model:** | VMB5000 |
| **Received Date:** | Sep. 04, 2018 |
| **Test Date:** | Sep. 26 to Oct. 15, 2018 |
| **Issued Date:** | Nov. 01, 2018 |
| **Applicant:** | Arlo Technologies, Inc. |
| **Address:** | 2200 Faraday Ave. Suite 150, Carlsbad, CA 92008, Unites States |
| **Issued By:** | Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory |
| **Lab Address:** | E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C. |
| **Test Location:** | E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C. |
| **FCC Registration / Designation Number:** | 723255 / TW2022 |

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## Release Control Record

| Issue No. | Description | Date Issued |
|---|---|---|
| RF180830E03A-4 | Original release. | Nov. 01, 2018 |

## 1 Certificate of Conformity

| | |
|---|---|
| **Product:** | Alro Gen5 Entry Hub |
| **Brand:** | Arlo |
| **Test Model:** | VMB5000 |
| **Sample Status:** | ENGINEERING SAMPLE |
| **Applicant:** | Arlo Technologies, Inc. |
| **Test Date:** | Sep. 26 to Oct. 15, 2018 |
| **Standards:** | 47 CFR FCC Part 15, Subpart C (Section 15.249)<br>ANSI C63.10: 2013 |

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** Phoenix Huang , **Date:** Nov. 01, 2018

Phoenix Huang / Specialist

**Approved by :** , **Date:** Nov. 01, 2018

May Chen / Manager

## 2 Summary of Test Results

| 47 CFR FCC Part 15, Subpart C (SECTION 15.249) | | | |
|---|---|---|---|
| FCC Clause | Test Item | Result | Remarks |
| 15.207 | AC Power Conducted Emission | PASS | Meet the requirement of limit. Minimum passing margin is -13.78dB at 0.15000MHz. |
| 15.209<br>15.249<br>15.249 (d) | Radiated Emission Test<br>Band Edge Measurement<br>Limit: 50dB less than the peak value of fundamental frequency or meet radiated emission limit in section 15.209 | PASS | Meet the requirement of limit. Minimum passing margin is -0.1dB at 908.42MHz. |
| 15.215 (c) | 20dB Bandwidth | PASS | Meet the requirement of limit |
| 15.203 | Antenna Requirement | PASS | No antenna connector is used. |

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement | Frequency | Expanded Uncertainty (k=2) (±) |
|---|---|---|
| Conducted Emissions at mains ports | 150kHz ~ 30MHz | 1.84 dB |
| Radiated Emissions up to 1 GHz | 30MHz ~ 1GHz | 5.53 dB |
| | 1GHz ~ 6GHz | 5.08 dB |
| Radiated Emissions above 1 GHz | 6GHz ~ 18GHz | 4.98 dB |
| | 18GHz ~ 40GHz | 5.19 dB |

### 2.2 Modification Record

There were no modifications required for compliance.

## 3 General Information

### 3.1 General Description of EUT (Z-Wave)

| | |
|---|---|
| Product | Alro Gen5 Entry Hub |
| Brand | Arlo |
| Test Model | VMB5000 |
| Status of EUT | ENGINEERING SAMPLE |
| Power Supply Rating | 12Vdc from power adapter |
| Modulation Type | FSK |
| Transfer Rate | 9.6/40/100 kbps |
| Operating Frequency | 908.4 ~ 916MHz |
| Number of Channel | 3 |
| Antenna Type | Refer to Note |
| Antenna Connector | Refer to Note |
| Accessory Device | Adapter x1 |
| Data Cable Supplied | NA |

Note:

1. There are WLAN, Z-Wave, Zigbee and Sub-GHz technology used for the EUT. The EUT has below radios as following table:

| Radio 1 | Radio 2 | Radio 3 | Radio 4 |
|---|---|---|---|
| WLAN (2.4GHz+5GHz band) | Z-Wave | Zigbee | Sub-GHz |

2. Simultaneously transmission condition.

| Condition | Technology | | | | |
|---|---|---|---|---|---|
| 1 | WLAN 2.4GHz | WLAN 5GHz | Z-Wave | Zigbee | Sub-GHz |
| Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found. | | | | | |

3. The EUT must be supplied with a power adapter and following different models could be chosen as following table:

| No. | Brand | Model No. | P/N No. | Spec. |
|---|---|---|---|---|
| 1 | NETGEAR | AD2076F10 | 332-10993-01 | Input: 100-120Vac, 0.56A, 50/60Hz<br>Output: 12Vdc, 1.5A<br>DC output cable (Unshielded, 1.8m) |
| 2 | NETGEAR | AD2067M20 | 332-11074-01 | Input: 100-240Vac, 1.0A, 50/60Hz<br>Output: 12Vdc, 2.5A<br>DC output cable (Unshielded, 1.8m) |
| 3 | NETGEAR | 2ABB018F 1 NJ | 332-10927-01 | Input: 100-120Vac, 0.6A, 50/60Hz<br>Output: 12Vdc, 1.5A<br>DC output cable (Unshielded, 1.8m) |
| 4 | NETGEAR | P030WM120B | 332-10345-02 | Input: 100-240Vac, 1.0A, 50/60Hz<br>Output: 12Vdc, 2.5A<br>DC output cable (Unshielded, 1.8m) |
| Note: From the above models, the worst radiated emission and AC power conducted emission test was found in **Adapter 2**. Therefore only the test data of the modes were recorded in this report. | | | | |

4. The antennas provided to the EUT, please refer to the following table:

| Sub-GHz | | | | | | |
|---|---|---|---|---|---|---|
| Ant No. | Brand | Model | Antenna Gain (dBi) | Frequency rang (MHz) | Antenna type | Connector type |
| 1 | NA | 902P00214N0 | 1.5 | 860~930 | PIFA | NA |

| Z-Wave | | | | | | |
|---|---|---|---|---|---|---|
| Ant No. | Brand | Model | Antenna Gain (dBi) | Frequency rang (MHz) | Antenna type | Connector type |
| 1 | NA | 902P00213N0 | 2.5 | 860~930 | PIFA | NA |

| Zigbee | | | | | | |
|---|---|---|---|---|---|---|
| Ant No. | Brand | Model | Antenna Gain (dBi) | Frequency rang (GHz) | Antenna type | Connector type |
| 1 | INPAQ TECHNOLOGY CO., LTD. | ACA-5036-A2-CC-S | 3.5 | 2.4~2.4835 | CHIP | NA |

| WLAN | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ant No. | Brand | Model | Antenna Net Gain (dBi) | Frequency rang (GHz) | Antenna type | Connector type | Cable Length (mm) |
| 1 | NA | 9 07X01052X0 | 2.5 | 2.4~2.4835 | Dipole | i-pex | 75 |
| | | | 1.8 | 5.15~5.25 | | | |
| | | | 2 | 5.25~5.35 | | | |
| | | | 2.2 | 5.47~5.725 | | | |
| | | | 1.6 | 5.725~5.85 | | | |
| 2 | NA | 9 07X00747X19 | 2.5 | 2.4~2.4835 | Dipole | i-pex | 90 |
| | | | 2.2 | 5.15~5.25 | | | |
| | | | 1.2 | 5.25~5.35 | | | |
| | | | 3.2 | 5.47~5.725 | | | |
| | | | 3.5 | 5.725~5.85 | | | |

5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

### 3.2 Description of Test Modes

3 channels are provided to this EUT:

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 1 | 908.4<br>(9.6kbps) | 3 | 916<br>(100kbps) |
| 2 | 908.4<br>(40kbps) | | |

### 3.2.1 Test Mode Applicability and Tested Channel Detail

| EUT CONFIGURE MODE | APPLICABLE TO | | | | DESCRIPTION |
|---|---|---|---|---|---|
| | RE≥1G | RE<1G | PLC | APCM | |
| - | √ | √ | √ | √ | - |

Where **RE≥1G:** Radiated Emission above 1GHz & Bandedge Measurement **RE<1G:** Radiated Emission below 1GHz

**PLC:** Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

**Radiated Emission Test (Above 1GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TYPE |
|---|---|---|
| 1 to 3 | 1, 2, 3 | FSK |

**Radiated Emission Test (Below 1GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TYPE |
|---|---|---|
| 1 to 3 | 1, 2, 3 | FSK |

**Power Line Conducted Emission Test:**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TYPE |
|---|---|---|
| 1 to 3 | 1 | FSK |

**Antenna Port Conducted Measurement:**

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TYPE |
|---|---|---|
| 1 to 3 | 1, 2, 3 | FSK |

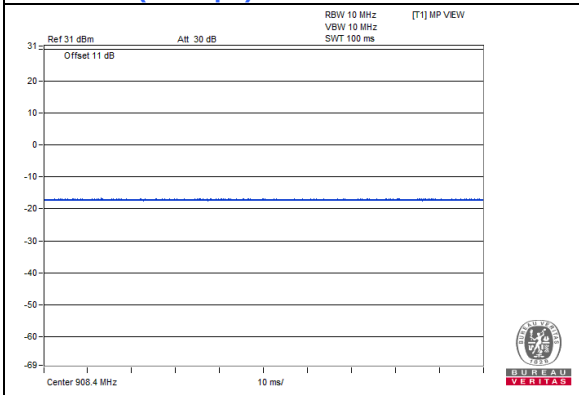
## Test Condition:

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER | TESTED BY |
|---|---|---|---|
| **RE≥1G** | 24deg. C, 63%RH | 120Vac, 60Hz | Andy Ho |
| **RE<1G** | 23deg. C, 68%RH | 120Vac, 60Hz | Andy Ho |
| **PLC** | 25deg. C, 75%RH | 120Vac, 60Hz | Andy Ho |
| **APCM** | 25deg. C, 60%RH | 120Vac, 60Hz | Anderson Chen |

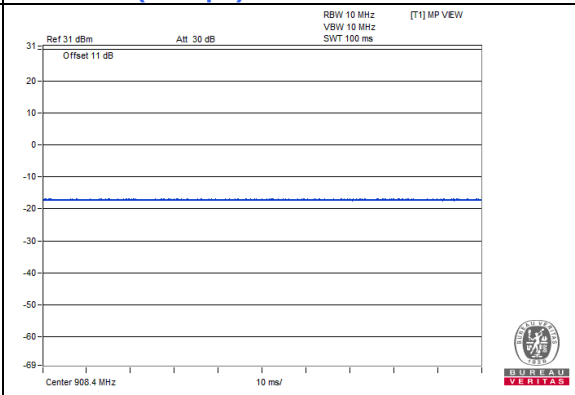
### 3.3 Duty Cycle of Test Signal

Duty cycle of test signal is 100 %, duty factor is not required.

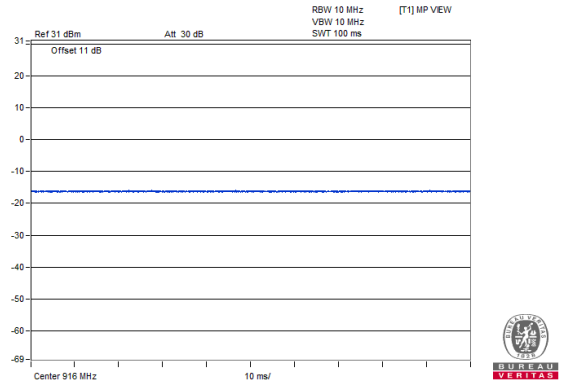
**908.4MHz (9.6kbps)**




**908.4MHz (40kbps)**




**916MHz (100kbps)**



## 3.4 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.

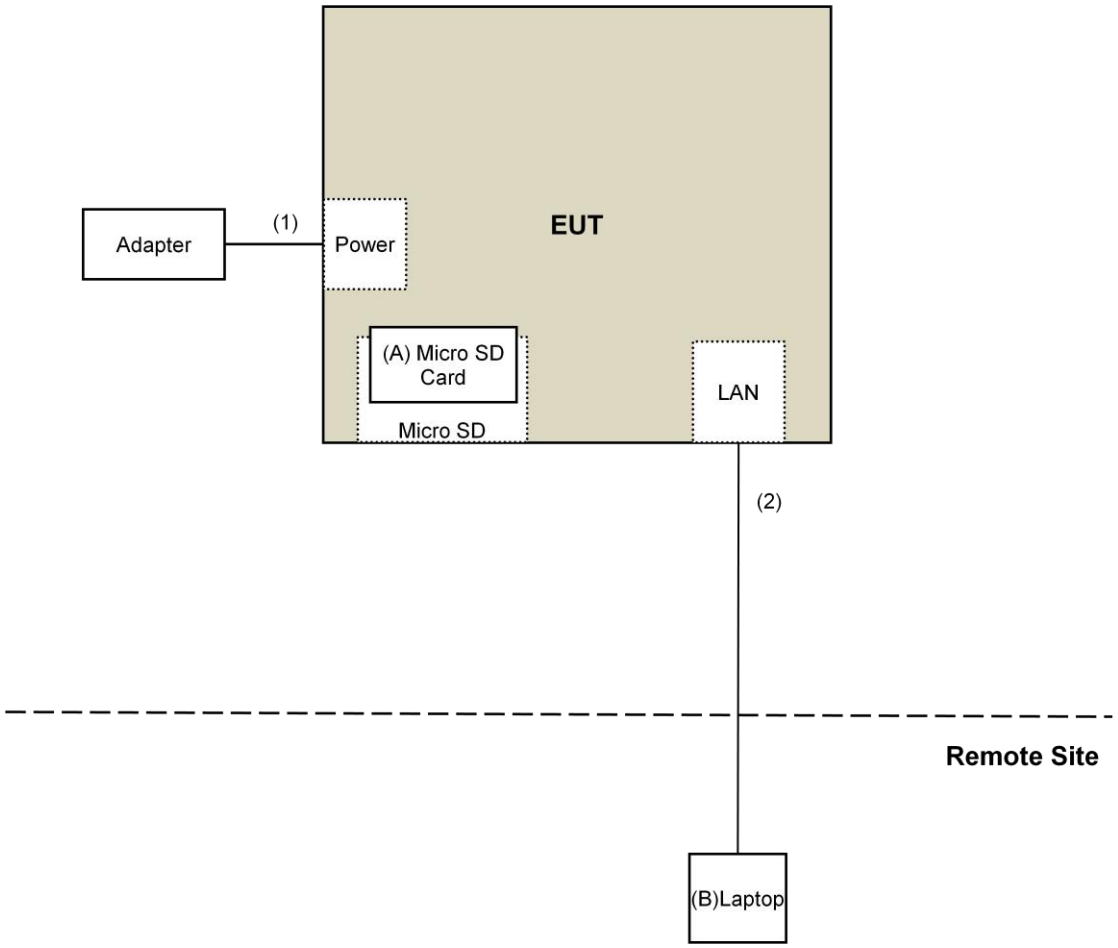
| ID | Product | Brand | Model No. | Serial No. | FCC ID | Remarks |
|---|---|---|---|---|---|---|
| A. | MicroSD Card | SanDisk | 8GB | NA | NA | Provided by Lab |
| B. | Laptop | DELL | E6420 | B92T3R1 | FCC DoC | Provided by Lab |

Note:

1. All power cords of the above support units are non-shielded (1.8m).

| ID | Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks |
|---|---|---|---|---|---|---|
| 1. | DC Cable | 1 | 1.8 | No | 0 | Supplied by client |
| 2. | RJ-45 Cable | 1 | 10 | No | 0 | Provided by Lab |

### 3.4.1 Configuration of System under Test



## 3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C (15.249)**

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

## 4 Test Types and Results

### 4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following

| Fundamental Frequency | Field Strength of Fundamental (millivolts/meter) | Field Strength of Harmonics (microvolts/meter) |
|---|---|---|
| 902 ~ 928 MHz | 50 | 500 |
| 2400 ~ 2483.5 MHz | 50 | 500 |
| 5725 ~ 5875 MHz | 50 | 500 |
| 24 ~ 24.25 GHz | 250 | 2500 |

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits as below table, whichever is the lesser attenuation

| Frequencies (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 |
| 1.705 ~ 30.0 | 30 | 30 |
| 30 ~ 88 | 100 | 3 |
| 88 ~ 216 | 150 | 3 |
| 216 ~ 960 | 200 | 3 |
| Above 960 | 500 | 3 |

**Note:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 Test Instruments

**For Radiated emission (Below 1GHz):**

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|---|---|---|---|---|
| Test Receiver<br>Agilent | N9038A | MY50010156 | July 12, 2018 | July 11, 2019 |
| Pre-Amplifier<br>EMCI | EMC001340 | 980142 | Feb. 09, 2018 | Feb. 08, 2019 |
| Loop Antenna(*)<br>Electro-Metrics | EM-6879 | 264 | Dec. 16, 2016 | Dec. 15, 2018 |
| RF Cable | NA | LOOPCAB-001 | Jan. 15, 2018 | Jan. 14, 2019 |
| RF Cable | NA | LOOPCAB-002 | Jan. 15, 2018 | Jan. 14, 2019 |
| Pre-Amplifier<br>Mini-Circuits | ZFL-1000VH2B | AMP-ZFL-05 | May 05, 2018 | May 04, 2019 |
| Trilog Broadband Antenna<br>SCHWARZBECK | VULB 9168 | 9168-361 | Nov. 29, 2017 | Nov. 28, 2018 |
| RF Cable | 8D | 966-3-1 | Mar. 20, 2018 | Mar. 19, 2019 |
| RF Cable | 8D | 966-3-2 | Mar. 20, 2018 | Mar. 19, 2019 |
| RF Cable | 8D | 966-3-3 | Mar. 20, 2018 | Mar. 19, 2019 |
| Fixed attenuator<br>Mini-Circuits | UNAT-5+ | PAD-3m-3-01 | Oct. 03, 2017 | Oct. 02, 2018 |
| Software | ADT_Radiated_V8.7.08 | NA | NA | NA |
| Antenna Tower & Turn Table<br>Max-Full | MF-7802 | MF780208406 | NA | NA |

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 3.
4. The CANADA Site Registration No. is 20331-1
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Sep. 26, 2018

**For other test items:**

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|---|---|---|---|---|
| Test Receiver Agilent | N9038A | MY50010156 | July 12, 2018 | July 11, 2019 |
| Horn_Antenna SCHWARZBECK | BBHA9120-D | 9120D-406 | Dec. 12, 2017 | Dec. 11, 2018 |
| Pre-Amplifier EMCI | EMC12630SE | 980384 | Jan. 29, 2018 | Jan. 28, 2019 |
| RF Cable | EMC104-SM-SM-1200 | 160922 | Jan. 29, 2018 | Jan. 28, 2019 |
| RF Cable | EMC104-SM-SM-2000 | 150317 | Jan. 29, 2018 | Jan. 28, 2019 |
| RF Cable | EMC104-SM-SM-5000 | 150322 | Jan. 29, 2018 | Jan. 28, 2019 |
| Spectrum Analyzer Keysight | N9030A | MY54490679 | July 23, 2018 | July 22, 2019 |
| Pre-Amplifier EMCI | EMC184045SE | 980386 | Jan. 29, 2018 | Jan. 28, 2019 |
| Horn_Antenna SCHWARZBECK | BBHA 9170 | BBHA9170608 | Dec. 14, 2017 | Dec. 13, 2018 |
| RF Cable | EMC102-KM-KM-1200 | 160924 | Jan. 29, 2018 | Jan. 28, 2019 |
| Software | ADT_Radiated_V8.7.08 | NA | NA | NA |
| Antenna Tower & Turn Table Max-Full | MF-7802 | MF780208406 | NA | NA |
| Boresight Antenna Fixture | FBA-01 | FBA-SIP01 | NA | NA |
| Spectrum Analyzer R&S | FSV40 | 100964 | June 20, 2018 | June 19, 2019 |

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 3.
3. The CANADA Site Registration No. is 20331-1
4. Tested Date: Oct. 11 to 15, 2018

4.1.3 Test Procedures

**For Radiated emission below 30MHz**

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

**Note:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

**For Radiated emission above 30MHz**

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-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. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

**Note:**

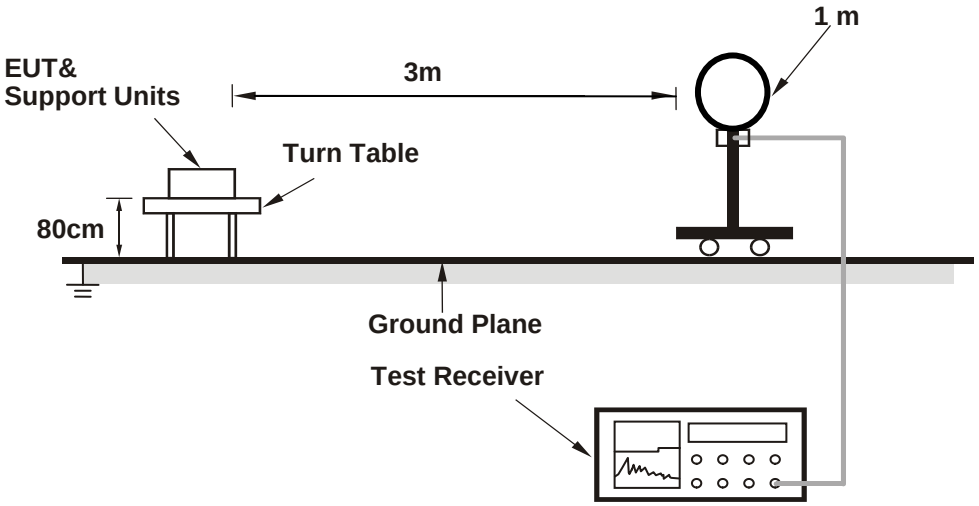
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

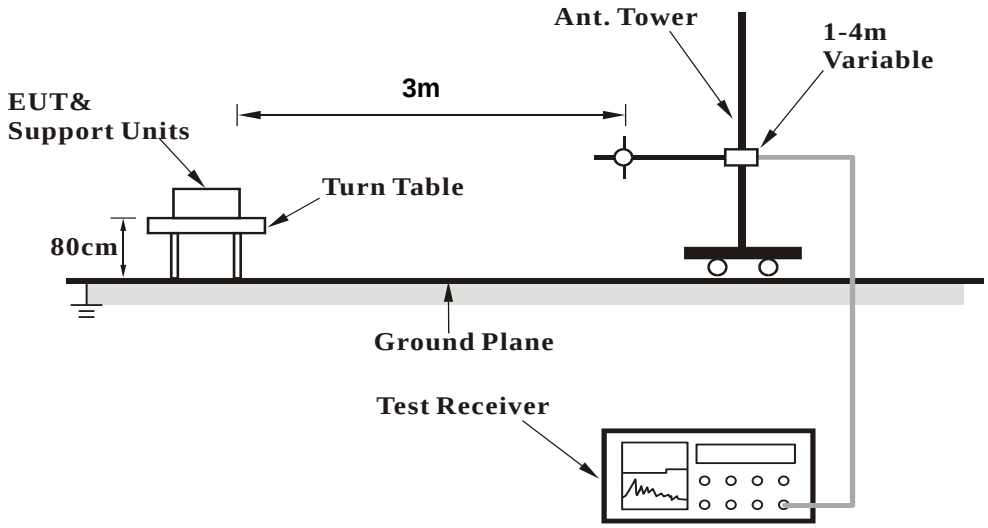
No deviation.

4.1.5 Test Setup

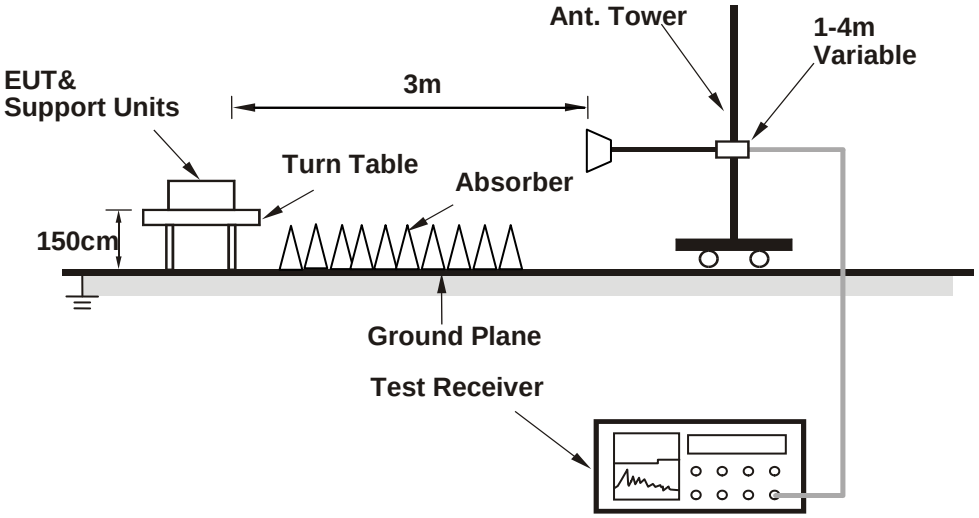
**For Radiated emission below 30MHz**




**For Radiated emission 30MHz to 1GHz**



**For Radiated emission above 1GHz**




For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

a. Connected the EUT with the Laptop which is placed on remote site.
b. Controlling software (Run teraturn paste TX command) has been activated to set the EUT on specific status.

4.1.7 Test Results

**Above 1GHz Data:**

| CHANNEL | TX Channel 1 | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
|---|---|---|---|
| FREQUENCY RANGE | 1GHz ~ 10GHz | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 1816.80 | 42.1 PK | 74.0 | -31.9 | 1.50 H | 196 | 47.5 | -5.4 |
| 2 | 1816.80 | 28.8 AV | 54.0 | -25.2 | 1.50 H | 196 | 34.2 | -5.4 |
| 3 | 2725.20 | 44.2 PK | 74.0 | -29.8 | 1.52 H | 184 | 46.1 | -1.9 |
| 4 | 2725.20 | 31.9 AV | 54.0 | -22.1 | 1.52 H | 184 | 33.8 | -1.9 |
| 5 | 3633.60 | 45.7 PK | 74.0 | -28.3 | 1.56 H | 210 | 46.4 | -0.7 |
| 6 | 3633.60 | 33.5 AV | 54.0 | -20.5 | 1.56 H | 210 | 34.2 | -0.7 |
| 7 | 4542.00 | 47.2 PK | 74.0 | -26.8 | 1.55 H | 192 | 46.2 | 1.0 |
| 8 | 4542.00 | 35.1 AV | 54.0 | -18.9 | 1.55 H | 192 | 34.1 | 1.0 |
| 9 | 5450.40 | 48.9 PK | 74.0 | -25.1 | 1.53 H | 165 | 46.2 | 2.7 |
| 10 | 5450.40 | 35.8 AV | 54.0 | -18.2 | 1.53 H | 165 | 33.1 | 2.7 |
| 11 | 6358.80 | 49.6 PK | 74.0 | -24.4 | 1.48 H | 241 | 44.9 | 4.7 |
| 12 | 6358.80 | 37.6 AV | 54.0 | -16.4 | 1.48 H | 241 | 32.9 | 4.7 |
| 13 | 7267.20 | 53.2 PK | 74.0 | -20.8 | 1.50 H | 198 | 45.4 | 7.8 |
| 14 | 7267.20 | 40.8 AV | 54.0 | -13.2 | 1.50 H | 198 | 33.0 | 7.8 |
| 15 | 8175.60 | 53.8 PK | 74.0 | -20.2 | 1.64 H | 221 | 45.4 | 8.4 |
| 16 | 8175.60 | 42.1 AV | 54.0 | -11.9 | 1.64 H | 221 | 33.7 | 8.4 |
| 17 | 9084.00 | 54.2 PK | 74.0 | -19.8 | 1.51 H | 349 | 44.7 | 9.5 |
| 18 | 9084.00 | 42.3 AV | 54.0 | -11.7 | 1.51 H | 349 | 32.8 | 9.5 |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | | | | | | |
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 1816.80 | 42.7 PK | 74.0 | -31.3 | 1.30 V | 360 | 48.1 | -5.4 |
| 2 | 1816.80 | 33.8 AV | 54.0 | -20.2 | 1.30 V | 360 | 39.2 | -5.4 |
| 3 | 2725.20 | 44.3 PK | 74.0 | -29.7 | 1.49 V | 360 | 46.2 | -1.9 |
| 4 | 2725.20 | 32.1 AV | 54.0 | -21.9 | 1.49 V | 360 | 34.0 | -1.9 |
| 5 | 3633.60 | 46.2 PK | 74.0 | -27.8 | 1.53 V | 358 | 46.9 | -0.7 |
| 6 | 3633.60 | 33.5 AV | 54.0 | -20.5 | 1.53 V | 358 | 34.2 | -0.7 |
| 7 | 4542.00 | 47.8 PK | 74.0 | -26.2 | 1.52 V | 349 | 46.8 | 1.0 |
| 8 | 4542.00 | 35.2 AV | 54.0 | -18.8 | 1.52 V | 349 | 34.2 | 1.0 |
| 9 | 5450.40 | 49.2 PK | 74.0 | -24.8 | 1.53 V | 338 | 46.5 | 2.7 |
| 10 | 5450.40 | 36.1 AV | 54.0 | -17.9 | 1.53 V | 338 | 33.4 | 2.7 |
| 11 | 6358.80 | 50.1 PK | 74.0 | -23.9 | 1.56 V | 340 | 45.4 | 4.7 |
| 12 | 6358.80 | 37.8 AV | 54.0 | -16.2 | 1.56 V | 340 | 33.1 | 4.7 |
| 13 | 7267.20 | 54.1 PK | 74.0 | -19.9 | 1.49 V | 335 | 46.3 | 7.8 |
| 14 | 7267.20 | 41.2 AV | 54.0 | -12.8 | 1.49 V | 335 | 33.4 | 7.8 |
| 15 | 8175.60 | 54.3 PK | 74.0 | -19.7 | 1.53 V | 343 | 45.9 | 8.4 |
| 16 | 8175.60 | 42.6 AV | 54.0 | -11.4 | 1.53 V | 343 | 34.2 | 8.4 |
| 17 | 9084.00 | 54.9 PK | 74.0 | -19.1 | 1.52 V | 351 | 45.4 | 9.5 |
| 18 | 9084.00 | 42.6 AV | 54.0 | -11.4 | 1.52 V | 351 | 33.1 | 9.5 |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

| CHANNEL | TX Channel 2 | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
|---|---|---|---|
| FREQUENCY RANGE | 1GHz ~ 10GHz | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 1816.80 | 42.6 PK | 74.0 | -31.4 | 1.48 H | 208 | 48.0 | -5.4 |
| 2 | 1816.80 | 29.2 AV | 54.0 | -24.8 | 1.48 H | 208 | 34.6 | -5.4 |
| 3 | 2725.20 | 44.0 PK | 74.0 | -30.0 | 1.47 H | 174 | 45.9 | -1.9 |
| 4 | 2725.20 | 31.9 AV | 54.0 | -22.1 | 1.47 H | 174 | 33.8 | -1.9 |
| 5 | 3633.60 | 45.8 PK | 74.0 | -28.2 | 1.58 H | 216 | 46.5 | -0.7 |
| 6 | 3633.60 | 33.7 AV | 54.0 | -20.3 | 1.58 H | 216 | 34.4 | -0.7 |
| 7 | 4542.00 | 47.7 PK | 74.0 | -26.3 | 1.50 H | 189 | 46.7 | 1.0 |
| 8 | 4542.00 | 35.4 AV | 54.0 | -18.6 | 1.50 H | 189 | 34.4 | 1.0 |
| 9 | 5450.40 | 49.0 PK | 74.0 | -25.0 | 1.50 H | 154 | 46.3 | 2.7 |
| 10 | 5450.40 | 35.8 AV | 54.0 | -18.2 | 1.50 H | 154 | 33.1 | 2.7 |
| 11 | 6358.80 | 49.8 PK | 74.0 | -24.2 | 1.52 H | 247 | 45.1 | 4.7 |
| 12 | 6358.80 | 38.0 AV | 54.0 | -16.0 | 1.52 H | 247 | 33.3 | 4.7 |
| 13 | 7267.20 | 53.4 PK | 74.0 | -20.6 | 1.53 H | 208 | 45.6 | 7.8 |
| 14 | 7267.20 | 41.1 AV | 54.0 | -12.9 | 1.53 H | 208 | 33.3 | 7.8 |
| 15 | 8175.60 | 53.4 PK | 74.0 | -20.6 | 1.64 H | 228 | 45.0 | 8.4 |
| 16 | 8175.60 | 41.8 AV | 54.0 | -12.2 | 1.64 H | 228 | 33.4 | 8.4 |
| 17 | 9084.00 | 54.5 PK | 74.0 | -19.5 | 1.54 H | 346 | 45.0 | 9.5 |
| 18 | 9084.00 | 42.5 AV | 54.0 | -11.5 | 1.54 H | 346 | 33.0 | 9.5 |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | | | | | | |
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 1816.80 | 42.9 PK | 74.0 | -31.1 | 1.29 V | 357 | 48.3 | -5.4 |
| 2 | 1816.80 | 33.8 AV | 54.0 | -20.2 | 1.29 V | 357 | 39.2 | -5.4 |
| 3 | 2725.20 | 44.1 PK | 74.0 | -29.9 | 1.47 V | 360 | 46.0 | -1.9 |
| 4 | 2725.20 | 32.1 AV | 54.0 | -21.9 | 1.47 V | 360 | 34.0 | -1.9 |
| 5 | 3633.60 | 45.8 PK | 74.0 | -28.2 | 1.47 V | 360 | 46.5 | -0.7 |
| 6 | 3633.60 | 33.3 AV | 54.0 | -20.7 | 1.47 V | 360 | 34.0 | -0.7 |
| 7 | 4542.00 | 47.8 PK | 74.0 | -26.2 | 1.57 V | 354 | 46.8 | 1.0 |
| 8 | 4542.00 | 35.4 AV | 54.0 | -18.6 | 1.57 V | 354 | 34.4 | 1.0 |
| 9 | 5450.40 | 49.8 PK | 74.0 | -24.2 | 1.53 V | 341 | 47.1 | 2.7 |
| 10 | 5450.40 | 36.5 AV | 54.0 | -17.5 | 1.53 V | 341 | 33.8 | 2.7 |
| 11 | 6358.80 | 49.7 PK | 74.0 | -24.3 | 1.53 V | 343 | 45.0 | 4.7 |
| 12 | 6358.80 | 37.6 AV | 54.0 | -16.4 | 1.53 V | 343 | 32.9 | 4.7 |
| 13 | 7267.20 | 53.8 PK | 74.0 | -20.2 | 1.51 V | 333 | 46.0 | 7.8 |
| 14 | 7267.20 | 41.0 AV | 54.0 | -13.0 | 1.51 V | 333 | 33.2 | 7.8 |
| 15 | 8175.60 | 53.5 PK | 74.0 | -20.5 | 1.54 V | 346 | 45.1 | 8.4 |
| 16 | 8175.60 | 42.1 AV | 54.0 | -11.9 | 1.54 V | 346 | 33.7 | 8.4 |
| 17 | 9084.00 | 55.0 PK | 74.0 | -19.0 | 1.48 V | 339 | 45.5 | 9.5 |
| 18 | 9084.00 | 42.9 AV | 54.0 | -11.1 | 1.48 V | 339 | 33.4 | 9.5 |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

| CHANNEL | TX Channel 3 | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
|---|---|---|---|
| FREQUENCY RANGE | 1GHz ~ 10GHz | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 1832.00 | 42.8 PK | 74.0 | -31.2 | 1.49 H | 191 | 48.2 | -5.4 |
| 2 | 1832.00 | 29.2 AV | 54.0 | -24.8 | 1.49 H | 191 | 34.6 | -5.4 |
| 3 | 2748.00 | 44.2 PK | 74.0 | -29.8 | 1.52 H | 184 | 46.1 | -1.9 |
| 4 | 2748.00 | 32.1 AV | 54.0 | -21.9 | 1.52 H | 184 | 34.0 | -1.9 |
| 5 | 3664.00 | 46.0 PK | 74.0 | -28.0 | 1.62 H | 201 | 46.6 | -0.6 |
| 6 | 3664.00 | 33.6 AV | 54.0 | -20.4 | 1.62 H | 201 | 34.2 | -0.6 |
| 7 | 4580.00 | 47.7 PK | 74.0 | -26.3 | 1.53 H | 180 | 46.5 | 1.2 |
| 8 | 4580.00 | 35.5 AV | 54.0 | -18.5 | 1.53 H | 180 | 34.3 | 1.2 |
| 9 | 5496.00 | 48.7 PK | 74.0 | -25.3 | 1.51 H | 173 | 46.2 | 2.5 |
| 10 | 5496.00 | 35.8 AV | 54.0 | -18.2 | 1.51 H | 173 | 33.3 | 2.5 |
| 11 | 6412.00 | 49.2 PK | 74.0 | -24.8 | 1.53 H | 227 | 44.4 | 4.8 |
| 12 | 6412.00 | 37.1 AV | 54.0 | -16.9 | 1.53 H | 227 | 32.3 | 4.8 |
| 13 | 7328.00 | 53.4 PK | 74.0 | -20.6 | 1.56 H | 193 | 45.5 | 7.9 |
| 14 | 7328.00 | 41.0 AV | 54.0 | -13.0 | 1.56 H | 193 | 33.1 | 7.9 |
| 15 | 8244.00 | 53.7 PK | 74.0 | -20.3 | 1.65 H | 211 | 45.4 | 8.3 |
| 16 | 8244.00 | 41.8 AV | 54.0 | -12.2 | 1.65 H | 211 | 33.5 | 8.3 |
| 17 | 9160.00 | 54.0 PK | 74.0 | -20.0 | 1.46 H | 353 | 44.2 | 9.8 |
| 18 | 9160.00 | 42.0 AV | 54.0 | -12.0 | 1.46 H | 353 | 32.2 | 9.8 |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | | | | | | |
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 1832.00 | 42.6 PK | 74.0 | -31.4 | 1.28 V | 360 | 48.0 | -5.4 |
| 2 | 1832.00 | 33.9 AV | 54.0 | -20.1 | 1.28 V | 360 | 39.3 | -5.4 |
| 3 | 2748.00 | 44.2 PK | 74.0 | -29.8 | 1.53 V | 360 | 46.1 | -1.9 |
| 4 | 2748.00 | 32.2 AV | 54.0 | -21.8 | 1.53 V | 360 | 34.1 | -1.9 |
| 5 | 3664.00 | 46.4 PK | 74.0 | -27.6 | 1.54 V | 351 | 47.0 | -0.6 |
| 6 | 3664.00 | 33.7 AV | 54.0 | -20.3 | 1.54 V | 351 | 34.3 | -0.6 |
| 7 | 4580.00 | 47.5 PK | 74.0 | -26.5 | 1.48 V | 334 | 46.3 | 1.2 |
| 8 | 4580.00 | 35.2 AV | 54.0 | -18.8 | 1.48 V | 334 | 34.0 | 1.2 |
| 9 | 5496.00 | 48.7 PK | 74.0 | -25.3 | 1.56 V | 329 | 46.2 | 2.5 |
| 10 | 5496.00 | 35.8 AV | 54.0 | -18.2 | 1.56 V | 329 | 33.3 | 2.5 |
| 11 | 6412.00 | 49.8 PK | 74.0 | -24.2 | 1.59 V | 332 | 45.0 | 4.8 |
| 12 | 6412.00 | 37.5 AV | 54.0 | -16.5 | 1.59 V | 332 | 32.7 | 4.8 |
| 13 | 7328.00 | 54.0 PK | 74.0 | -20.0 | 1.49 V | 340 | 46.1 | 7.9 |
| 14 | 7328.00 | 41.2 AV | 54.0 | -12.8 | 1.49 V | 340 | 33.3 | 7.9 |
| 15 | 8244.00 | 54.1 PK | 74.0 | -19.9 | 1.58 V | 331 | 45.8 | 8.3 |
| 16 | 8244.00 | 42.2 AV | 54.0 | -11.8 | 1.58 V | 331 | 33.9 | 8.3 |
| 17 | 9160.00 | 55.6 PK | 74.0 | -18.4 | 1.50 V | 356 | 45.8 | 9.8 |
| 18 | 9160.00 | 43.0 AV | 54.0 | -11.0 | 1.50 V | 356 | 33.2 | 9.8 |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

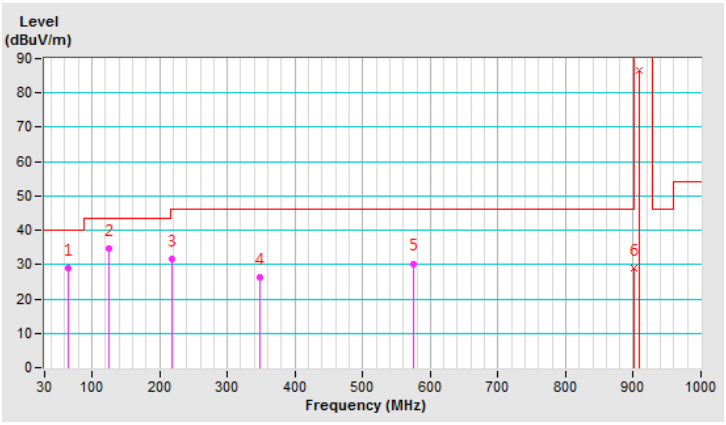
**Below 1GHz Data:**

| | | | |
|---|---|---|---|
| **CHANNEL** | TX Channel 1 | **DETECTOR FUNCTION** | Quasi-Peak (QP) |
| **FREQUENCY RANGE** | 9kHz ~ 1GHz | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **NO.** | **FREQ. (MHz)** | **EMISSION LEVEL (dBuV/m)** | **LIMIT (dBuV/m)** | **MARGIN (dB)** | **ANTENNA HEIGHT (m)** | **TABLE ANGLE (Degree)** | **RAW VALUE (dBuV)** | **CORRECTION FACTOR (dB/m)** |
| 1 | 64.53 | 28.8 QP | 40.0 | -11.2 | 3.00 H | 261 | 38.0 | -9.2 |
| 2 | 125.01 | 34.6 QP | 43.5 | -8.9 | 3.00 H | 86 | 43.9 | -9.3 |
| 3 | 217.89 | 31.5 QP | 46.0 | -14.5 | 1.50 H | 262 | 42.3 | -10.8 |
| 4 | 347.84 | 26.4 QP | 46.0 | -19.6 | 1.50 H | 131 | 32.1 | -5.7 |
| 5 | 574.78 | 30.3 QP | 46.0 | -15.7 | 2.00 H | 1 | 30.8 | -0.5 |
| 6 | 902.00 | 28.8 QP | 46.0 | -17.2 | 1.02 H | 332 | 23.7 | 5.1 |
| 7 | *908.40 | 86.5 QP | 94.0 | -7.5 | 1.02 H | 332 | 81.3 | 5.2 |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

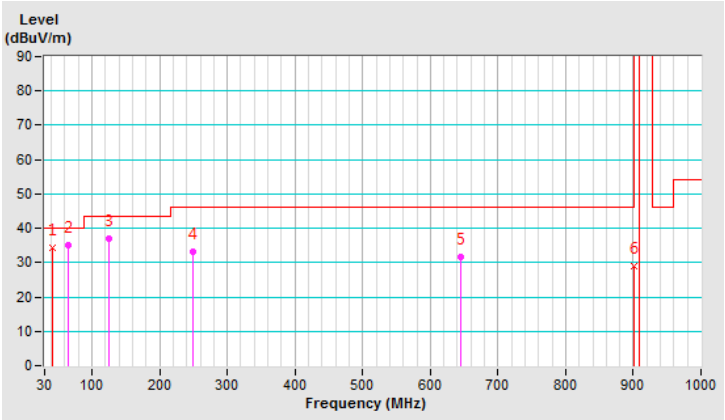


| CHANNEL | TX Channel 1 | DETECTOR FUNCTION | Quasi-Peak (QP) |
|---|---|---|---|
| FREQUENCY RANGE | 9kHz ~ 1GHz | | |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 41.70 | 34.4 QP | 40.0 | -5.6 | 1.02 V | 0 | 42.5 | -8.1 |
| 2 | 65.57 | 35.1 QP | 40.0 | -4.9 | 1.00 V | 286 | 44.5 | -9.4 |
| 3 | 125.01 | 37.0 QP | 43.5 | -6.5 | 1.00 V | 240 | 46.3 | -9.3 |
| 4 | 250.00 | 33.2 QP | 46.0 | -12.8 | 1.50 V | 360 | 42.1 | -8.9 |
| 5 | 644.33 | 31.7 QP | 46.0 | -14.3 | 1.00 V | 172 | 30.5 | 1.2 |
| 6 | 902.00 | 29.1 QP | 46.0 | -16.9 | 1.13 V | 128 | 24.0 | 5.1 |
| 7 | *908.40 | 93.8 QP | 94.0 | -0.2 | 1.13 V | 128 | 88.6 | 5.2 |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

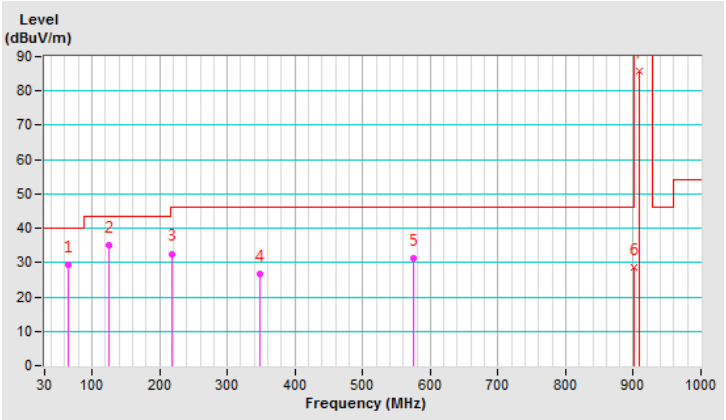


| CHANNEL | TX Channel 2 | DETECTOR FUNCTION | Quasi-Peak (QP) |
|---|---|---|---|
| FREQUENCY RANGE | 9kHz ~ 1GHz | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 64.53 | 29.2 QP | 40.0 | -10.8 | 2.50 H | 149 | 38.4 | -9.2 |
| 2 | 124.99 | 35.2 QP | 43.5 | -8.3 | 2.50 H | 187 | 44.5 | -9.3 |
| 3 | 217.89 | 32.6 QP | 46.0 | -13.4 | 2.00 H | 314 | 43.4 | -10.8 |
| 4 | 347.84 | 26.8 QP | 46.0 | -19.2 | 1.50 H | 226 | 32.5 | -5.7 |
| 5 | 574.78 | 31.2 QP | 46.0 | -14.8 | 2.00 H | 221 | 31.7 | -0.5 |
| 6 | 902.00 | 28.6 QP | 46.0 | -17.4 | 1.02 H | 331 | 23.5 | 5.1 |
| 7 | *908.37 | 85.9 QP | 94.0 | -8.1 | 1.02 H | 331 | 80.7 | 5.2 |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

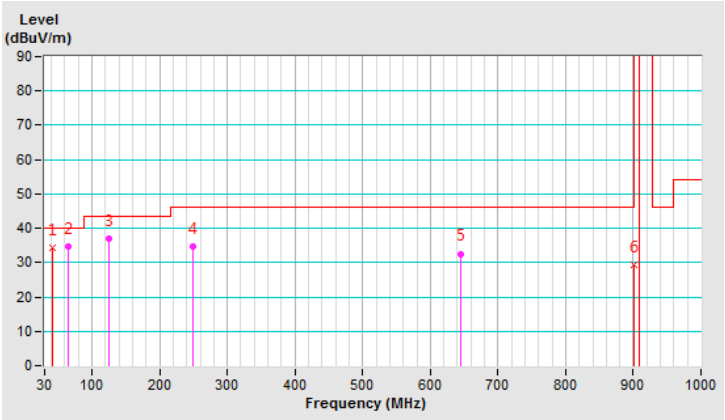


| CHANNEL | TX Channel 2 | DETECTOR FUNCTION | Quasi-Peak (QP) |
|---|---|---|---|
| FREQUENCY RANGE | 9kHz ~ 1GHz | | |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 41.70 | 34.2 QP | 40.0 | -5.8 | 1.00 V | 19 | 42.3 | -8.1 |
| 2 | 65.57 | 34.6 QP | 40.0 | -5.4 | 1.00 V | 115 | 44.0 | -9.4 |
| 3 | 125.01 | 37.0 QP | 43.5 | -6.5 | 1.10 V | 225 | 46.3 | -9.3 |
| 4 | 250.00 | 34.6 QP | 46.0 | -11.4 | 2.00 V | 187 | 43.5 | -8.9 |
| 5 | 644.33 | 32.6 QP | 46.0 | -13.4 | 1.50 V | 148 | 31.4 | 1.2 |
| 6 | 902.00 | 29.2 QP | 46.0 | -16.8 | 1.10 V | 113 | 24.1 | 5.1 |
| **7** | ***908.42** | **93.9 QP** | **94.0** | **-0.1** | **1.10 V** | **113** | **88.7** | **5.2** |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

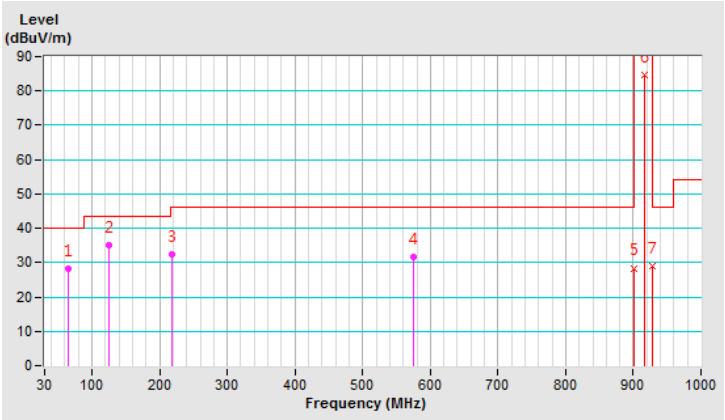


| CHANNEL | TX Channel 3 | DETECTOR FUNCTION | Quasi-Peak (QP) |
|---|---|---|---|
| FREQUENCY RANGE | 9kHz ~ 1GHz | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 64.52 | 28.1 QP | 40.0 | -11.9 | 2.50 H | 149 | 37.3 | -9.2 |
| 2 | 125.01 | 35.2 QP | 43.5 | -8.3 | 2.50 H | 116 | 44.5 | -9.3 |
| 3 | 217.89 | 32.4 QP | 46.0 | -13.6 | 1.50 H | 225 | 43.2 | -10.8 |
| 4 | 574.81 | 31.6 QP | 46.0 | -14.4 | 2.00 H | 224 | 32.1 | -0.5 |
| 5 | 902.00 | 28.4 QP | 46.0 | -17.6 | 1.60 H | 332 | 23.3 | 5.1 |
| 6 | *916.02 | 84.8 QP | 94.0 | -9.2 | 1.60 H | 332 | 79.6 | 5.2 |
| 7 | 928.00 | 29.1 QP | 46.0 | -16.9 | 1.60 H | 332 | 23.8 | 5.3 |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

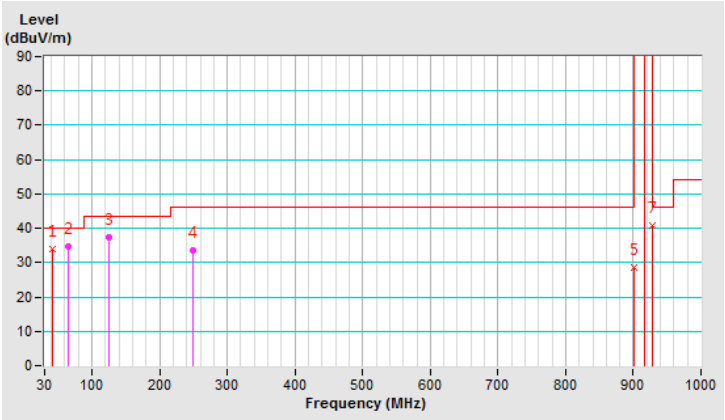


| CHANNEL | TX Channel 3 | DETECTOR FUNCTION | Quasi-Peak (QP) |
|---|---|---|---|
| FREQUENCY RANGE | 9kHz ~ 1GHz | | |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 41.70 | 33.8 QP | 40.0 | -6.2 | 1.00 V | 16 | 41.9 | -8.1 |
| 2 | 65.57 | 34.6 QP | 40.0 | -5.4 | 1.00 V | 115 | 44.0 | -9.4 |
| 3 | 125.01 | 37.2 QP | 43.5 | -6.3 | 1.00 V | 156 | 46.5 | -9.3 |
| 4 | 249.99 | 33.6 QP | 46.0 | -12.4 | 1.50 V | 269 | 42.5 | -8.9 |
| 5 | 902.00 | 28.6 QP | 46.0 | -17.4 | 1.08 V | 113 | 23.5 | 5.1 |
| 6 | *915.97 | 93.8 QP | 94.0 | -0.2 | 1.08 V | 113 | 88.6 | 5.2 |
| 7 | 928.00 | 40.8 QP | 46.0 | -5.2 | 1.08 V | 113 | 35.5 | 5.3 |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

| Frequency (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 - 0.5 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.2.2 Test Instruments

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|---|---|---|---|---|
| Test Receiver R&S | ESCS 30 | 847124/029 | Nov. 01, 2017 | Oct. 31, 2018 |
| Line-Impedance Stabilization Network (for EUT) R&S | ESH3-Z5 | 848773/004 | Nov. 15, 2017 | Nov. 14, 2018 |
| Line-Impedance Stabilization Network (for Peripheral) R&S | ENV216 | 100072 | June 04, 2018 | June 03, 2019 |
| 50 ohms Terminator | N/A | EMC-04 | Nov. 01, 2017 | Oct. 31, 2018 |
| RF Cable | 5D-FB | COCCAB-001 | Sep. 28, 2018 | Sep. 27, 2019 |
| Fixed attenuator EMCI | STI02-2200-10 | 003 | Mar. 16, 2018 | Mar. 15, 2019 |
| Software BVADT | BVADT_Cond_ V7.3.7.4 | NA | NA | NA |

**Note:**
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3 Tested Date: Oct. 10, 2018

4.2.3 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

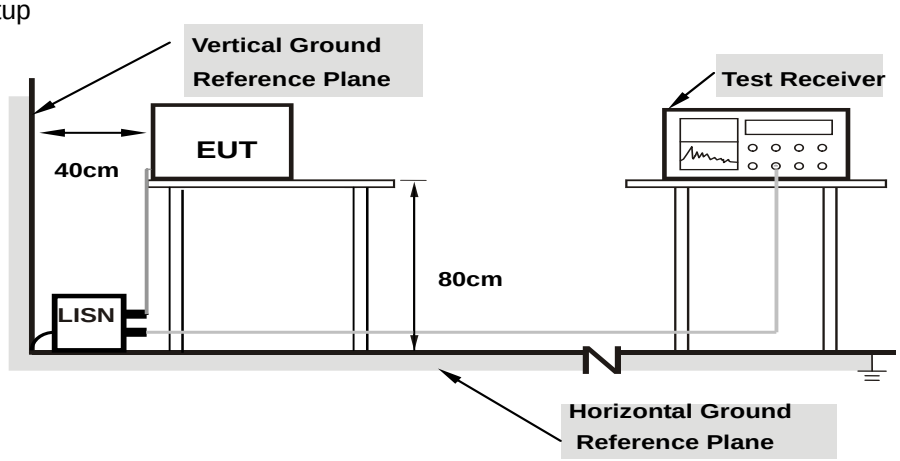
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

**Note:** The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup




**Note: 1.Support units were connected to second LISN.**

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

Same as 4.1.6.

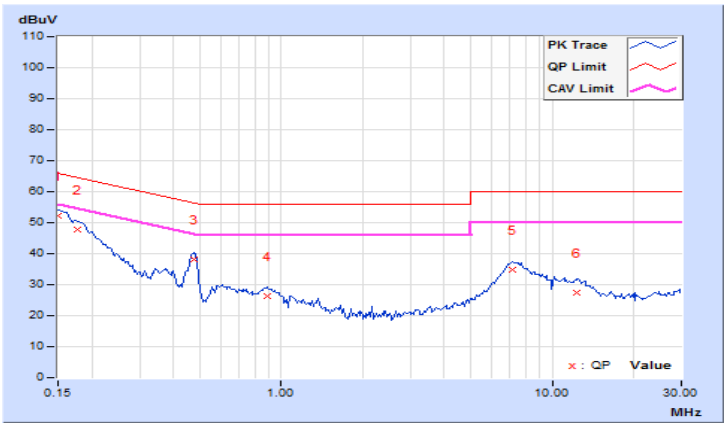
4.2.7 Test Results

| Phase | Line (L) | Detector Function | Quasi-Peak (QP) / Average (AV) |
|---|---|---|---|

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.15000 | 10.05 | 42.09 | 25.47 | 52.14 | 35.52 | 66.00 | 56.00 | -13.86 | -20.48 |
| 2 | 0.17734 | 10.06 | 37.83 | 24.51 | 47.89 | 34.57 | 64.61 | 54.61 | -16.72 | -20.04 |
| 3 | 0.47813 | 10.13 | 28.19 | 18.69 | 38.32 | 28.82 | 56.37 | 46.37 | -18.05 | -17.55 |
| 4 | 0.89219 | 10.16 | 16.12 | 12.34 | 26.28 | 22.50 | 56.00 | 46.00 | -29.72 | -23.50 |
| 5 | 7.14063 | 10.53 | 24.46 | 19.29 | 34.99 | 29.82 | 60.00 | 50.00 | -25.01 | -20.18 |
| 6 | 12.35156 | 10.87 | 16.65 | 10.68 | 27.52 | 21.55 | 60.00 | 50.00 | -32.48 | -28.45 |

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

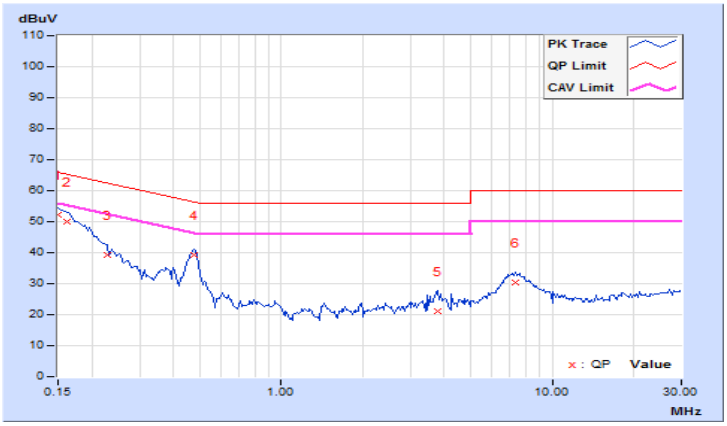


| Phase | Neutral (N) | Detector Function | Quasi-Peak (QP) / Average (AV) |
|---|---|---|---|

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| **1** | **0.15000** | **9.95** | **42.27** | **24.93** | **52.22** | **34.88** | **66.00** | **56.00** | **-13.78** | **-21.12** |
| 2 | 0.16172 | 9.96 | 40.16 | 23.10 | 50.12 | 33.06 | 65.38 | 55.38 | -15.26 | -22.32 |
| 3 | 0.22812 | 9.98 | 29.34 | 14.76 | 39.32 | 24.74 | 62.52 | 52.52 | -23.20 | -27.78 |
| 4 | 0.47422 | 10.02 | 29.29 | 22.47 | 39.31 | 32.49 | 56.44 | 46.44 | -17.13 | -13.95 |
| 5 | 3.75781 | 10.18 | 10.88 | 0.20 | 21.06 | 10.38 | 56.00 | 46.00 | -34.94 | -35.62 |
| 6 | 7.32813 | 10.38 | 19.86 | 14.31 | 30.24 | 24.69 | 60.00 | 50.00 | -29.76 | -25.31 |

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



## 4.3 20dB Bandwidth Measurement

### 4.3.1 Limits of 20dB Bandwidth Measurement

The 20dB bandwidth shall be specified in operating frequency band.

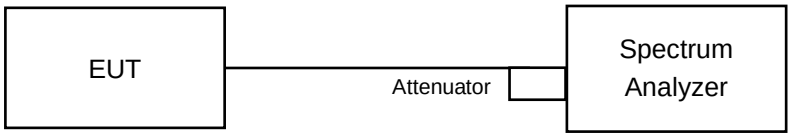
### 4.3.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.3.3 Test Procedure

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 3kHz RBW and 10kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

### 4.3.4 Test Setup




### 4.3.5 Deviation from Test Standard

No deviation.

### 4.3.6 EUT Operating Condition

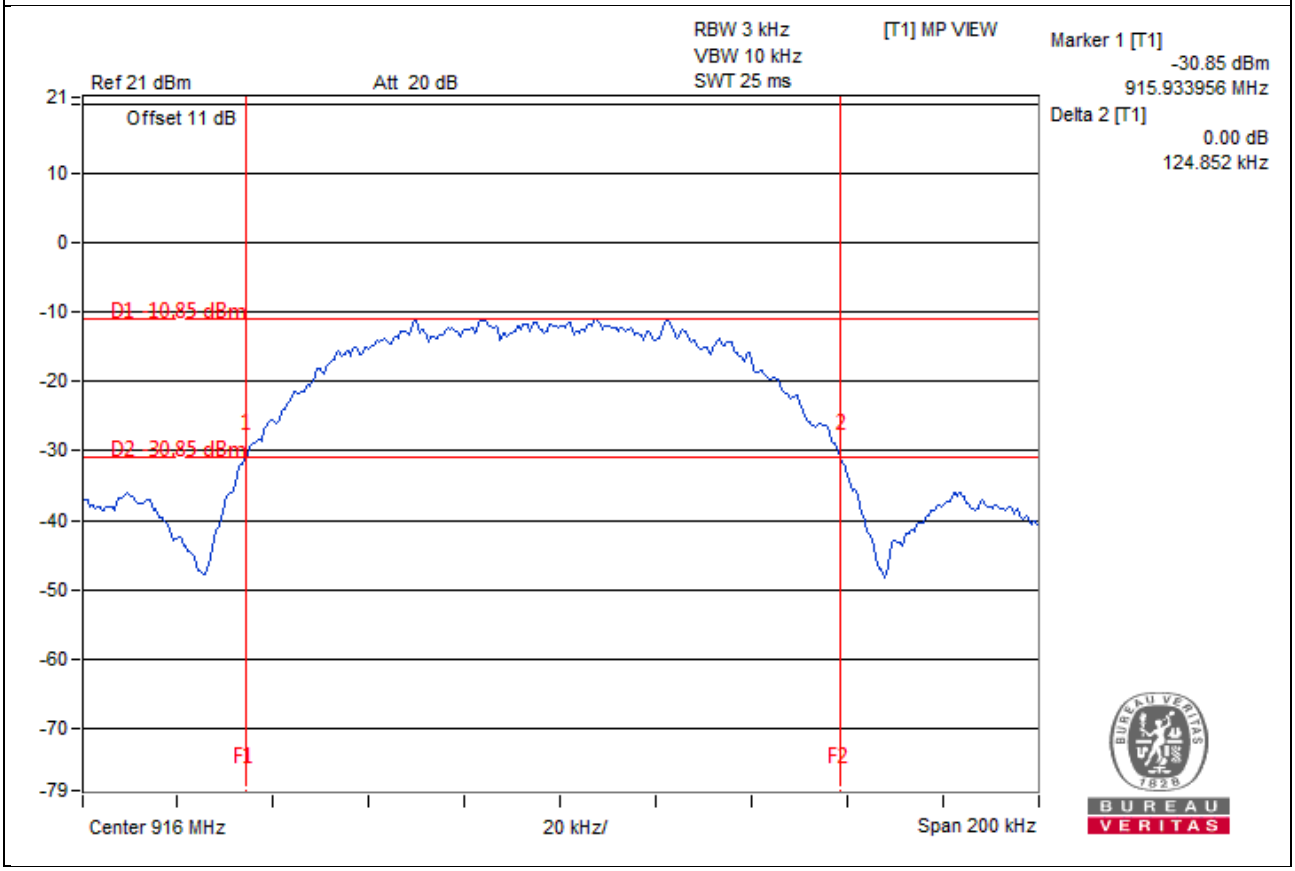
Set the EUT under transmission condition continuously at specific channel frequency.

4.3.7 Test Results

| Channel | Frequency (MHz) | 20dB Bandwidth (MHz) |
|---|---|---|
| 1 | 908.4 | 0.10 |
| 2 | 908.4 | 0.10 |
| 3 | 916 | 0.12 |

Spectrum Plot of Max. Value

**CH 3**



## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

**Appendix – Information on the Testing Laboratories**

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following: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Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**
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Fax: 886-3-6668323

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Tel: 886-3-3183232
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**Email:** service.adt@tw.bureauveritas.com
**Web Site:** www.bureauveritas-adt.com


The address and road map of all our labs can be found in our web site also.

**--- END ---**