

TEST REPORT

Application No.: HKEM2008000895AT
Applicant: Ecolab, Inc
Address of Applicant: Ecolab Schuman Center -F6, 655 Lone Oak Drive Eagan, MN 55121, United States Of America

Equipment Under Test (EUT):
EUT Name: HHCM915 Installation Tool
Model No.: 92053074
Trade Mark: Ecolab
Standard(s) : 47 CFR Part 15, Subpart C 15.249
 RSS-210 Issue 10 December 2019
 RSS-Gen Issue 5, Amendment 1, March 2019

FCC ID: Z9O-92053074
IC : 10060A-92053074
HVIN : 92053074
Date of Receipt: 2020-08-08
Date of Test: 2020-08-09 to 2020-09-10
Date of Issue: 2020-09-17

| | |
|---------------------|--------------|
| Test Result: | Pass* |
|---------------------|--------------|

* In the configuration tested, the EUT complied with the standards specified above.





Law Man Kit
 EMC Manager

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

| Revision Record | | | | |
|------------------------|----------------|-------------|-----------------|---------------|
| Version | Chapter | Date | Modifier | Remark |
| 01 | | 2020-09-17 | | Original |
| | | | | |
| | | | | |

| | | | |
|---------------------------------|--|---|------------------|
| Authorized for issue by: | | | |
| | |  | |
| | | <hr/> Leo Xu /Project Engineer | Date: 2020-09-17 |
| | |  | |
| | | <hr/> Law Man Kit /Reviewer | Date: 2020-09-17 |

2 Test Summary

| Radio Spectrum Technical Requirement | | | | |
|--------------------------------------|----------------------------------|--------|----------------------------------|--------|
| Item | Standard | Method | Requirement | Result |
| Antenna Requirement | 47 CFR Part 15, Subpart C 15.249 | N/A | 47 CFR Part 15, Subpart C 15.203 | Pass |

| Radio Spectrum Matter Part | | | | |
|--|----------------------------------|--|---|--------|
| Item | Standard | Method | Requirement | Result |
| 20dB Bandwidth | 47 CFR Part 15, Subpart C 15.249 | ANSI C63.10 (2013) Section 6.9 | 47 CFR Part 15, Subpart C 15.215 | Pass |
| Field Strength of the Fundamental Signal (15.249(a)) | 47 CFR Part 15, Subpart C 15.249 | ANSI C63.10 (2013) Section 6.5&6.6 | 47 CFR Part 15, Subpart C 15.249(a) | Pass |
| Restricted Band Around Fundamental Frequency | 47 CFR Part 15, Subpart C 15.249 | ANSI C63.10 (2013) Section 6.4&6.5&6.6 | 47 CFR Part 15, Subpart C 15.205 & 15.249(d) & 15.209 | Pass |
| Radiated Emissions | 47 CFR Part 15, Subpart C 15.249 | ANSI C63.10 (2013) Section 6.4&6.5&6.6 | 47 CFR Part 15, Subpart C 15.209 & 15.249 (a),(d) | Pass |

| Radio Spectrum Technical Requirement | | | | |
|--------------------------------------|--------------------------------|--------|---------------------|--------|
| Item | Standard | Method | Requirement | Result |
| Antenna Requirement | RSS-210 Issue 10 December 2019 | N/A | RSS-Gen Section 6.8 | Pass |

| Radio Spectrum Matter Part | | | | |
|--|--------------------------------|--|---------------------------------------|--------|
| Item | Standard | Method | Requirement | Result |
| 99% Bandwidth | RSS-210 Issue 10 December 2019 | RSS-Gen Section 6.7 | RSS-Gen Section 6.7 | Pass |
| Field Strength of the Fundamental Signal | RSS-210 Issue 10 December 2019 | ANSI C63.10 (2013) Section 6.5&6.6 | RSS-210 B10 (a) | Pass |
| Restricted Band Around Fundamental Frequency | RSS-210 Issue 10 December 2019 | ANSI C63.10 (2013) Section 6.4&6.5&6.6 | RSS-Gen Section 8.9 & 8.10 | Pass |
| Radiated Emissions | RSS-210 Issue 10 December 2019 | ANSI C63.10 (2013) Section 6.4&6.5&6.6 | RSS-Gen Section 8.9 & RSS-210 B10 (b) | Pass |
| Frequency stability | - | RSS-Gen Section 6.11 | RSS-Gen Section 8.11 | PASS* |

Note: Frequency stability requested in RSS GEN Section 8.1.1 has been complied since the result of band edge can demonstrate.

Declaration of EUT Family Grouping:

N/A



Abbreviation:

- Tx: In this whole report Tx (or tx) means Transmitter.
 - Rx: In this whole report Rx (or rx) means Receiver.
 - RF: In this whole report RF means Radiated Frequency.
 - CH: In this whole report CH means channel.
 - Volt: In this whole report Volt means Voltage.
 - Temp: In this whole report Temp means Temperature.
 - Humid: In this whole report Humid means humidity.
 - Press: In this whole report Press means Pressure.
 - N/A: In this whole report not application.
-

3 Contents

| | Page |
|--|-----------|
| 1 COVER PAGE | 1 |
| 2 TEST SUMMARY | 3 |
| 3 CONTENTS | 5 |
| 4 GENERAL INFORMATION | 6 |
| 4.1 DETAILS OF E.U.T. | 6 |
| 4.2 DESCRIPTION OF SUPPORT UNITS | 6 |
| 4.3 MEASUREMENT UNCERTAINTY | 7 |
| 4.4 TEST LOCATION | 8 |
| 4.5 TEST FACILITY | 8 |
| 4.6 DEVIATION FROM STANDARDS | 8 |
| 4.7 ABNORMALITIES FROM STANDARD CONDITIONS | 8 |
| 5 EQUIPMENT LIST | 9 |
| 6 RADIO SPECTRUM TECHNICAL REQUIREMENT | 11 |
| 6.1 ANTENNA REQUIREMENT | 11 |
| 6.1.1 <i>Test Requirement:</i> | 11 |
| 6.1.2 <i>Conclusion:</i> | 12 |
| 7 RADIO SPECTRUM MATTER TEST RESULTS | 13 |
| 7.1 20dB BANDWIDTH | 13 |
| 7.1.1 <i>E.U.T. Operation</i> | 13 |
| 7.1.2 <i>Test Setup Diagram</i> | 13 |
| 7.1.3 <i>Measurement Procedure and Data</i> | 13 |
| 7.2 99% BANDWIDTH | 15 |
| 7.2.1 <i>E.U.T. Operation</i> | 15 |
| 7.2.2 <i>Test Setup Diagram</i> | 15 |
| 7.2.3 <i>Measurement Procedure and Data</i> | 15 |
| 7.3 FIELD STRENGTH OF THE FUNDAMENTAL SIGNAL | 17 |
| 7.3.1 <i>E.U.T. Operation</i> | 18 |
| 7.3.2 <i>Test Setup Diagram</i> | 18 |
| 7.3.3 <i>Measurement Procedure and Data</i> | 18 |
| 7.4 RESTRICTED BAND AROUND FUNDAMENTAL FREQUENCY | 20 |
| 7.4.1 <i>E.U.T. Operation</i> | 21 |
| 7.4.2 <i>Test Setup Diagram</i> | 21 |
| 7.4.3 <i>Measurement Procedure and Data</i> | 21 |
| 7.5 RADIATED EMISSIONS | 23 |
| 7.5.1 <i>E.U.T. Operation</i> | 24 |
| 7.5.2 <i>Test Setup Diagram</i> | 24 |
| 7.5.3 <i>Measurement Procedure and Data</i> | 24 |
| 8 PHOTOGRAPHS | 28 |

4 General Information

4.1 Details of E.U.T.

| | |
|----------------------|----------------------------------|
| Power supply: | DC 4.5 V ('AA' size battery x 3) |
| Test voltage: | DC 4.5 V |
| Antenna Gain: | -1dBi |
| Antenna Type: | Ceramic Chip Antenna |
| Modulation Type: | GFSK |
| Number of Channels: | 1 |
| Operation Frequency: | 917MHz |
| Series no.: | A1 |
| Firmware version: | FW92053140 v0.04 |

EUT channels and frequencies list:

| Channel | Frequency (MHz) |
|---------|-----------------|
| 1 | 917 |

Test frequencies is 917MHz.

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

EMI

| No. | Item | Measurement Uncertainty |
|-----|---------------------|-------------------------|
| 1 | Conduction emission | 2.5dB (9kHz to 150kHz) |
| | | 2.6dB (150kHz to 30MHz) |
| 2 | Radiated emission | 5.1dB (30MHz-1GHz) |
| | | 4.9dB (1GHz-6GHz) |

RF

| No. | Item | Measurement Uncertainty |
|-----|----------------------------------|---------------------------|
| 1 | Radio Frequency | $\pm 7.25 \times 10^{-8}$ |
| 2 | Duty cycle | $\pm 0.37\%$ |
| 3 | Occupied Bandwidth | $\pm 3\%$ |
| 4 | RF conducted power (30MHz-40GHz) | 1.5dB |
| 5 | RF power density | 1.5dB |
| 6 | Conducted Spurious emissions | 1.5dB |
| 7 | RF Radiated power | 5.1dB (below 1GHz) |
| | | 5.3dB (above 1GHz) |
| 8 | Radiated Spurious emission test | 5.1dB (below 1GHz) |
| | | 5.3dB (above 1GHz) |
| 9 | Temperature test | $\pm 1^\circ\text{C}$ |
| 10 | Humidity test | $\pm 3\%$ |
| 11 | Supply voltages | $\pm 1.5\%$ |
| 12 | Time | $\pm 3\%$ |

Remark:

The U_{lab} (lab Uncertainty) is less than U_{cispr} (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

According to decision rule based on Clause 4.2 of CISPR 16-4-2, the EUT complied with the standards specified above.

4.4 Test Location

All tests were performed at:

SGS Hong Kong Limited
Unit 2 and 3, G/F, Block A, Po Lung Centre,
11 Wang Chiu Road, Kowloon Bay, Kowloon, Hong Kong
Tel: +852 2305 2570 Fax: +852 2756 4480

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **HOKLAS (Lab Code: 009)**

SGS Hong Kong Limited has been accepted by HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a HOKLAS Accredited Laboratory, this laboratory meets the requirements of ISO/IEC 17025:2017 and it has been accredited for performing specific tests as listed in the scope of accreditation within the test category of Electrical and Electronic Products.

• **IAS Accreditation (Lab Code: TL-187)**

SGS Hong Kong Limited has met the requirements of AC89, IAS Accreditation Criteria for Testing Laboratories, and has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories. This organization is accredited to provide the services specified in the scope of accreditation maintained on the IAS website (www.iasonline.org).

The report must not be used by the client to claim product certification, approval, or endorsement by IAS, NIST, or any agency of the Federal Government.

• **FCC Recognized Accredited Test Firm (CAB Registration No.: 514599)**

SGS Hong Kong Limited has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: HK0015, Test Firm Registration Number: 514599.

• **Industry Canada (Site Registration No.: 26103; CAB Identifier No.: HK0015)**

SGS Hong Kong Limited has been recognized by Department of Innovation, Science and Economic Development (ISED) Canada as a wireless testing laboratory. The acceptance letter from the ISED is maintained in our files. CAB Identifier No: HK0015, Site Registration Number: 26103.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

| 99% Bandwidth, 20dB Bandwidth | | | | | |
|----------------------------------|-----------------|-----------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| SMBV100A VECTOR SIGNAL GENERATOR | Rohde & Schwarz | SMBV100A | E234 | 2020/08/31 | 2021/08/30 |
| FSV40 SIGNAL ANALYZER 40GHz | Rohde & Schwarz | FSV40 | E235 | 2020/08/31 | 2021/08/30 |
| Wireless Conn. Tester (CMW) | Rohde & Schwarz | CMW270 | E240 | CAL IN USE | CAL IN USE |
| OSP | Rohde & Schwarz | OSP-B157W8 | E242 | 2020/08/31 | 2021/08/30 |
| Cable | Rohde & Schwarz | J12J103539-00-2 | E239 | 2019/09/23 | 2020/09/22 |

| Radiated Emissions | | | | | |
|---|-----------------|----------------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| 3m Semi-Anechoic Chamber | ChamPro | N/A | E229 | 2020/08/09 | 2021/08/08 |
| Coaxial Cable | SGS | N/A | E167 | 2020/07/20 | 2021/07/19 |
| EMI Test Receiver 9kHz to 7GHz | Rohde & Schwarz | ESR7 / 102298 | E314 | 2020/05/18 | 2021/05/18 |
| EMI Test Receiver 9kHz to 3.6GHz | Rohde & Schwarz | ESR3 / 102326 | E231 | 2019/09/02 | 2020/10/01 |
| TRILOG Super Broadb. Test Antenna, (25) 30-1000MHz | Schwarzbeck | VULB 9168 | E264 | 2018/10/20 | 2020/10/19 |
| EMC32 Test software | Rohde & Schwarz | Version 10 | N/A | N/A | N/A |
| Signal and Spectrum Analyzer 2Hz - 26.5GHz | Rohde & Schwarz | FSW26 | E296 | 2020/08/31 | 2021/08/30 |
| Spectrum Analyzer 9kHz - 30GHz | Rohde & Schwarz | FSP30 | E204 | 2020/04/23 | 2021/04/22 |
| Horn Antenna 1 - 18GHz | Schwarzbeck | BBHA9120D | E211 | 2020/1/30 | 2022/01/29 |
| Horn Antenna 15 - 40GHz | Schwarzbeck | BBHA9170 | E212 | 2017/10/17 | 2020/10/16 |
| Preamplifier 33dB, 1 - 18GHz | Schwarzbeck | BBV9718 | E214 | 2020/04/24 | 2021/04/23 |
| Preamplifier 33dB, 18 - 26.5GHz | Schwarzbeck | BBV9719 | E215 | 2019/04/24 | 2021/04/23 |
| Broadband Coaxial Preamplifier typ. 30 dB, 18-40GHz | Schwarzbeck | BBV 9721 | E266 | 2019/08/22 | 2021/08/21 |
| Highpass Filter 3.5-26.5GHz | Wainwright | WHNX3.5/26.5 G-6SS | E205 | 2019/04/24 | 2021/04/23 |
| Band Reject Filter 2.4-2.5GHz | Wainwright | WRCJV 2400/2500-2100 | E206 | 2019/04/24 | 2021/04/23 |

| | | | | | |
|--------------------------------|--------------|------------------------------|--------|-----------|-----------|
| RF cable SMA to SMA 10000mm | HUBER+SUHNER | SF104- 26.5/2*11SMA 45 | E207-1 | 2019/9/26 | 2020/9/25 |
| Boresight Mast Controller | ChamPro | AM-BS-4500-E | E237 | -- | -- |
| Turntable with Controller | ChamPro | EM1000 | E238 | -- | -- |

| General used equipment | | | | | |
|--|----------------------------------|-----------------|---------------------|-----------------|---------------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Digital temperature & humidity data logger | SATO | SK-L200TH II | E232 | 2019/10/28 | 2020/10/27 |
| Electronic Digital Thermometer with Hygrometer | nil | 2074/2075 | E159 | 2019/10/28 | 2020/10/27 |
| Barometer with digital thermometer | SATO | 7612-00 | E218 | 2020/4/23 | 2021/4/22 |
| Conditional Chamber | Zhong Zhi Testing Instruments | CZ-E-608D | E216 | 2020/8/31 | 2021/8/30 |

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

RSS-Gen Section 6.8

Limit:

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna.

Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power (e.i.r.p.) limits specified in the applicable standard (RSS) for the licence-exempt apparatus.

Testing shall be performed using the highest gain antenna of each combination of licence-exempt transmitter and antenna type, with the transmitter output power set at the maximum level.⁹ When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna manufacturer.

User manuals for transmitters equipped with detachable antennas shall also contain the following notice in a conspicuous location:

This radio transmitter (identify the device by certification number) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types approved for use with the transmitter, indicating the maximum permissible antenna gain (in dBi).

6.1.2 Conclusion

Standard Requirement:

Testing shall be performed using the highest gain antenna of each combination of licence-exempt transmitter and antenna type, with the transmitter output power set at the maximum level. When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna manufacturer.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is -1dBi.



7 Radio Spectrum Matter Test Results

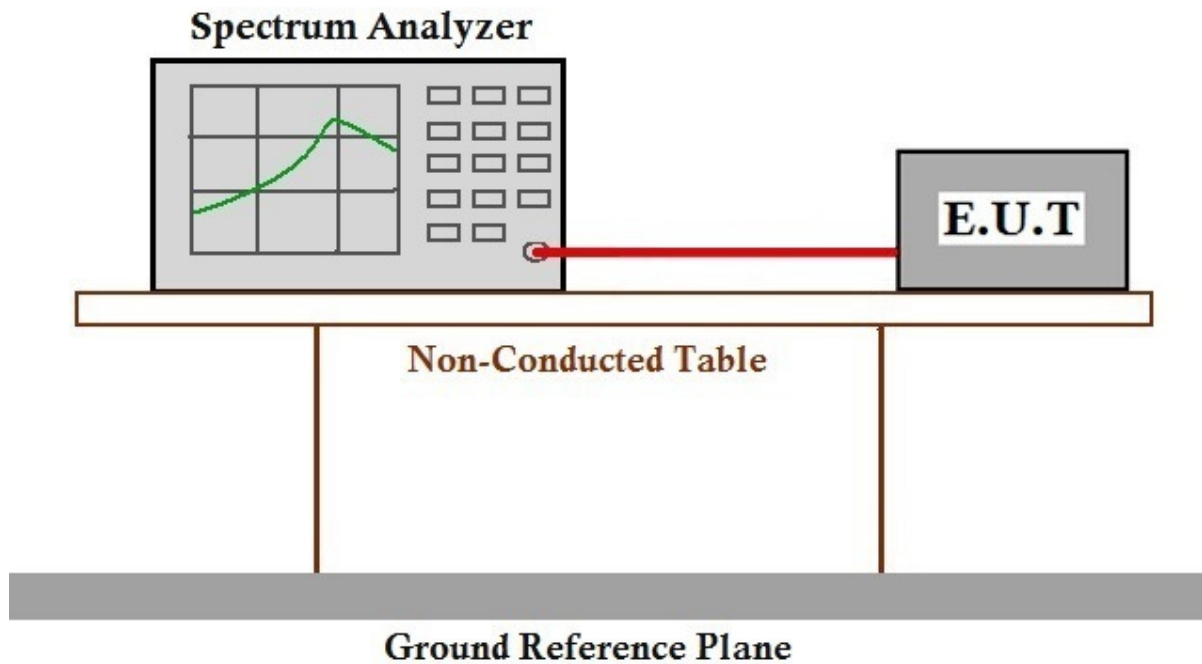
7.1 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215
 Test Method: ANSI C63.10 (2013) Section 6.9
 Limit: N/A

7.1.1 E.U.T. Operation

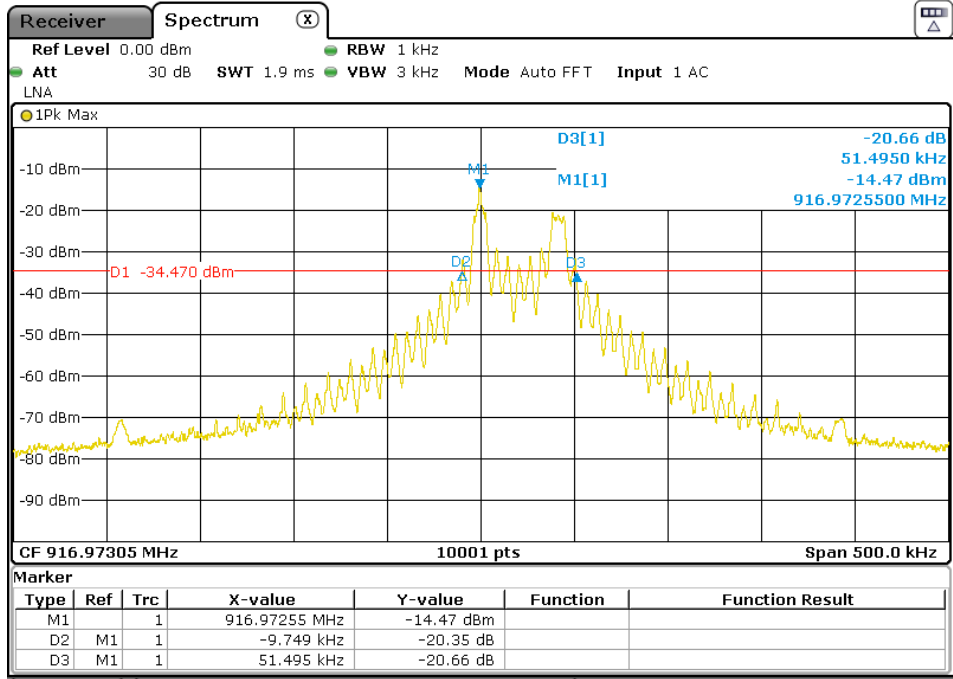
Operating Environment:
 Temperature: 25 °C Humidity: 50 % RH :
 Test mode a: TX mode_Keep the EUT in transmitting with modulation mode.

7.1.2 Test Setup Diagram



7.1.3 Measurement Procedure and Data

Mode:a;



20dB Bandwidth = 61.2kHz

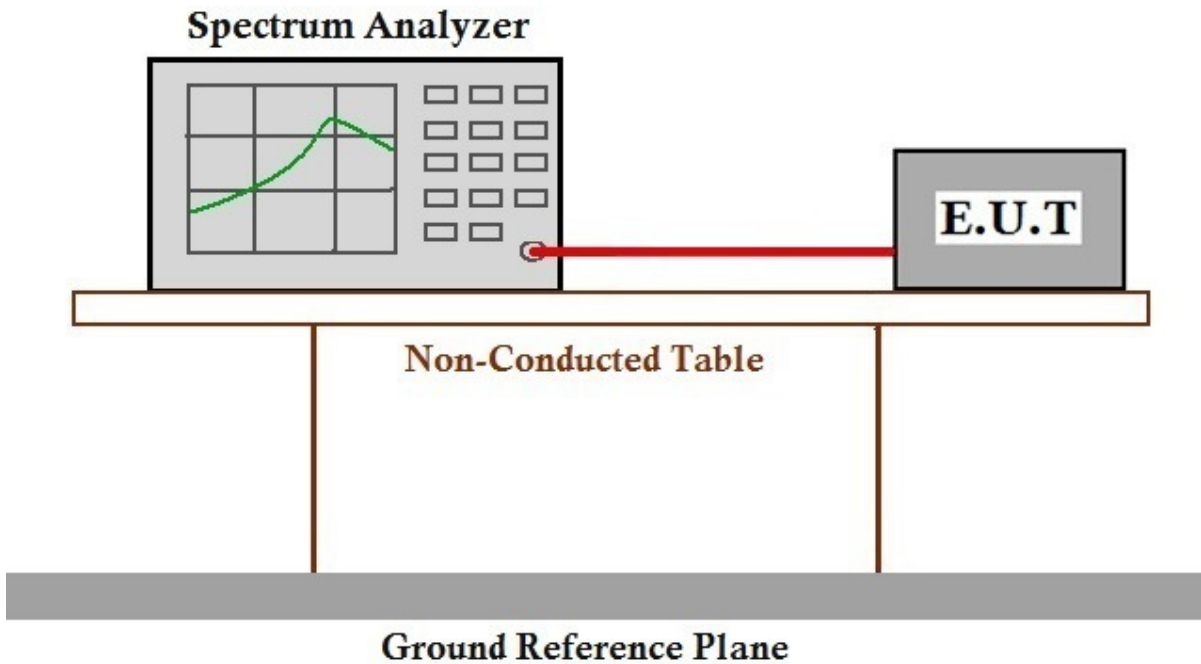
7.2 99% Bandwidth

Test Requirement RSS-Gen Section 6.7
 Test Method: RSS-Gen Section 6.7
 Limit: N/A

7.2.1 E.U.T. Operation

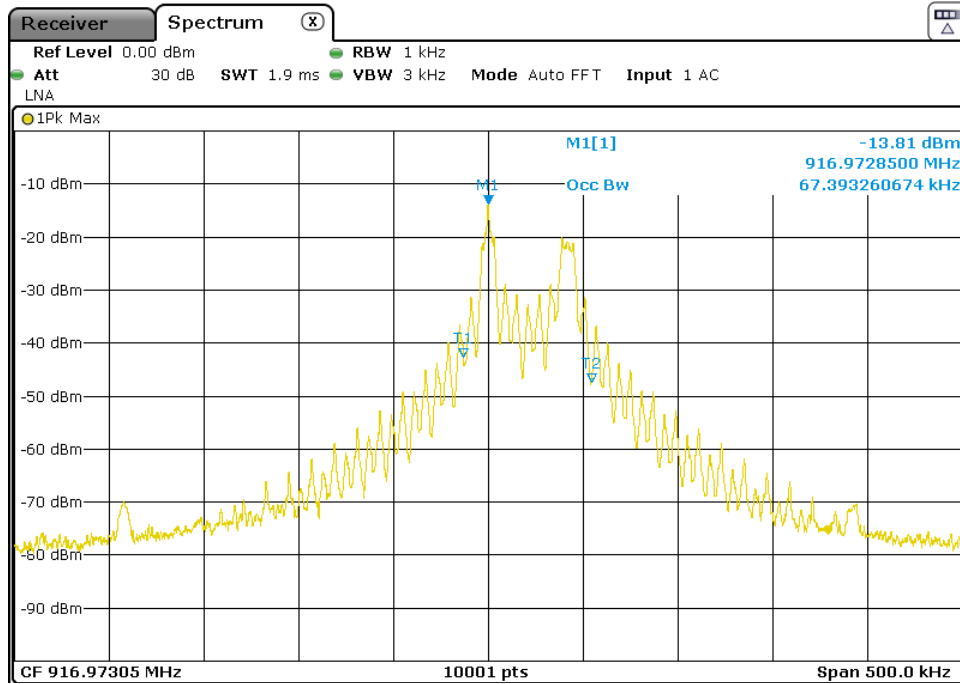
Operating Environment:
 Temperature: 25 °C Humidity: 50 % RH :
 Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

7.2.2 Test Setup Diagram



7.2.3 Measurement Procedure and Data

Mode:a;



99% Bandwidth = 67.4kHz



7.3 Field Strength of the Fundamental Signal

Test Requirement 47 CFR Part 15, Subpart C 15.249(a), RSS-210 B10 (a)
Test Method: ANSI C63.10 (2013) Section 6.5&6.6
Measurement Distance: 3m
Limit:

| Fundamental frequency(MHz) | Field strength of fundamental(millivolts/meter) | Field strength of harmonics(microvolts/meter) |
|-----------------------------------|--|--|
| 902-928 | 50 | 500 |
| 2400-2483.5 | 50 | 500 |
| 5725-5875 | 50 | 500 |
| 24000-24250 | 250 | 2500 |

Remark: The frequencies above 1000MHz are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.
For fundamental frequency in "902-928MHz", the field strength of fundamental is based on Quasi-Peak.

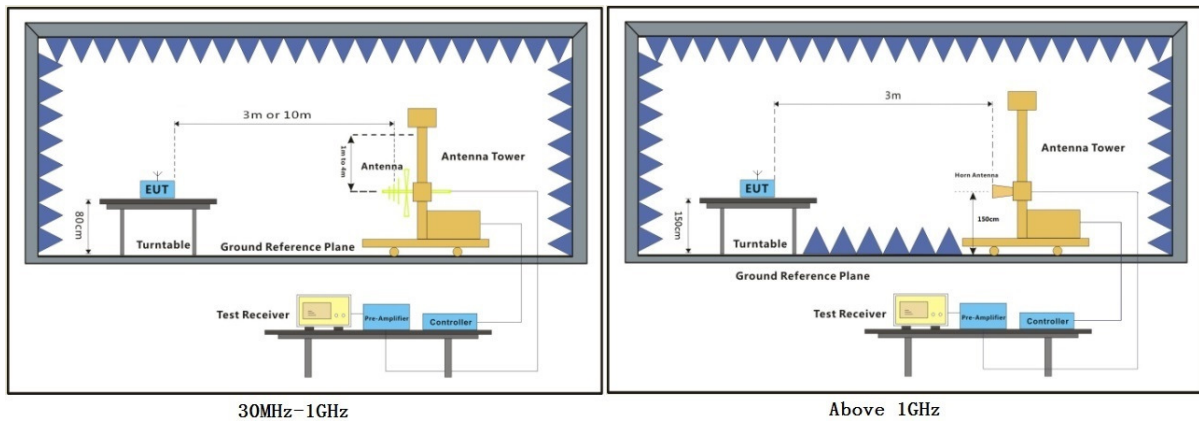
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 50 % RH :

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

7.3.2 Test Setup Diagram



7.3.3 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
 - b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
 - c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
 - d. The antenna height 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.
 - e. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
 - f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
 - g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
 - h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
 - i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
 - j. Repeat above procedures until all frequencies measured was complete.
- Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor



Mode:a

| Frequency (MHz) | QP (dB μ V/m) | Pol. | Corr. (dB/m) | QP Margin (dB) | QP Limit (dB μ V/m) | Result |
|--------------------|----------------------|------|-----------------|----------------------|-------------------------------|--------|
| 917.000000 | 83.7 | H | 26.5 | 10.3 | 94.0 | Pass |
| 917.000000 | 72.6 | V | 26.5 | 21.4 | 94.0 | Pass |



7.4 Restricted Band Around Fundamental Frequency

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.249(d) & 15.209, RSS-Gen Section 8.9 & 8.10
Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6
Measurement Distance: 3m
Limit:

| Frequency | Limit (dBuV/m @3m) | Remark |
|---------------|--------------------|------------------|
| 30MHz-88MHz | 40.0 | Quasi-peak Value |
| 88MHz-216MHz | 43.5 | Quasi-peak Value |
| 216MHz-960MHz | 46.0 | Quasi-peak Value |
| 960MHz-1GHz | 54.0 | Quasi-peak Value |
| Above 1GHz | 54.0 | Average Value |
| Above 1GHz | 74.0 | Peak Value |

Emission 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 in Section 15.209, whichever is the lesser attenuation.

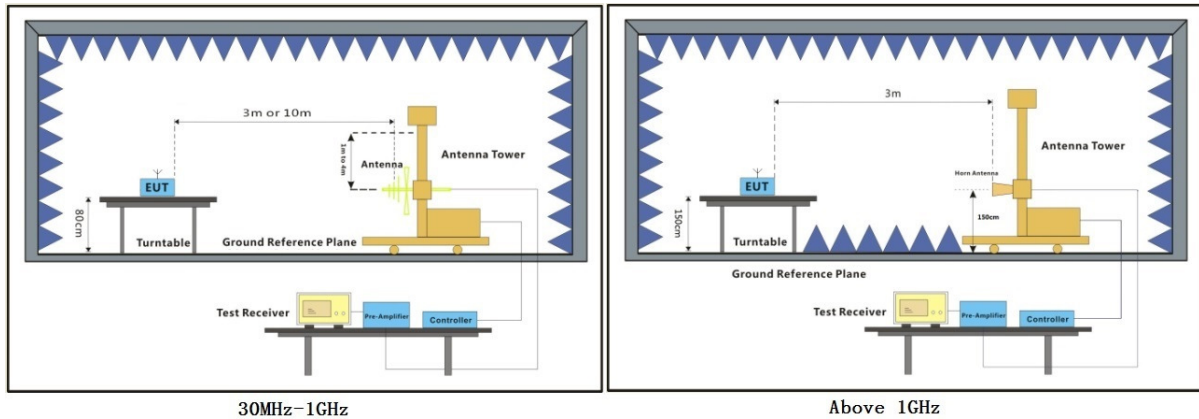
7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 50 % RH :

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

7.4.2 Test Setup Diagram



7.4.3 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
 - b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
 - c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
 - d. The antenna height 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.
 - e. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
 - f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
 - g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
 - h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
 - i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
 - j. Repeat above procedures until all frequencies measured was complete.
- Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor



Mode:a;

| Frequency (MHz) | Antenna Polarization | Emission Level (dB μ V/m) | | Limit (dB μ V/m) | Remark |
|-----------------|----------------------|-------------------------------|---------|----------------------|--------|
| | | QP | Average | QP | |
| 902.000 | H | 30.3 | / | 54.0 | Pass |
| 928.000 | H | 26.6 | / | 54.0 | Pass |
| 902.000 | V | 27.3 | / | 54.0 | Pass |
| 928.000 | V | 26.5 | / | 54.0 | Pass |

7.5 Radiated Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.249 (a),(d), RSS-Gen Section 8.9 & RSS-210 B10 (b)
 Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6
 Measurement Distance: 3m
 Limit:

| Frequency(MHz) | Field strength (microvolts/meter) | Limit (dBuV/m) | Detector | Measurement Distance (meters) |
|----------------|-----------------------------------|----------------|----------|-------------------------------|
| 0.009-0.490 | 2400/F(kHz) | - | - | 300 |
| 0.490-1.705 | 24000/F(kHz) | - | - | 30 |
| 1.705-30 | 30 | - | - | 30 |
| 30-88 | 100 | 40.0 | QP | 3 |
| 88-216 | 150 | 43.5 | QP | 3 |
| 216-960 | 200 | 46.0 | QP | 3 |
| 960-1000 | 500 | 54.0 | QP | 3 |
| Above 1000 | 500 | 54.0 | AV | 3 |

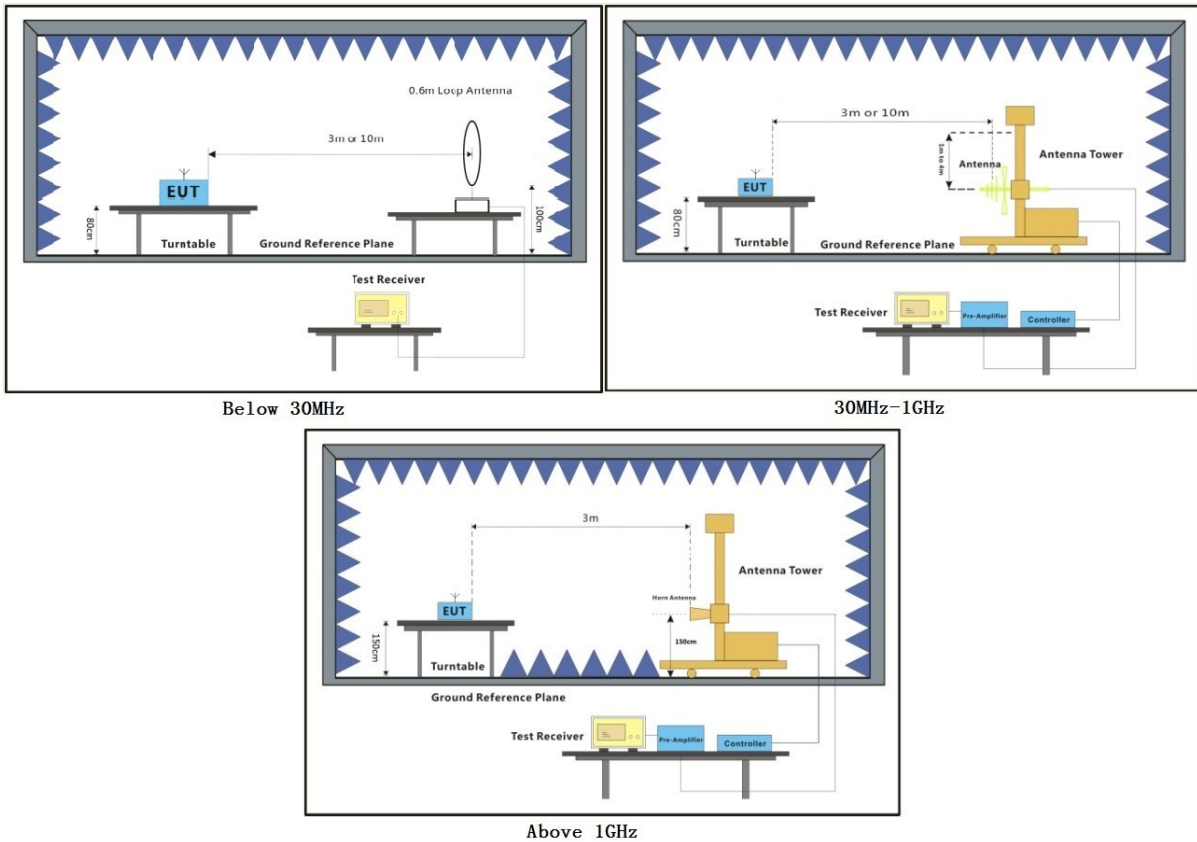
7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 50 % RH :

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

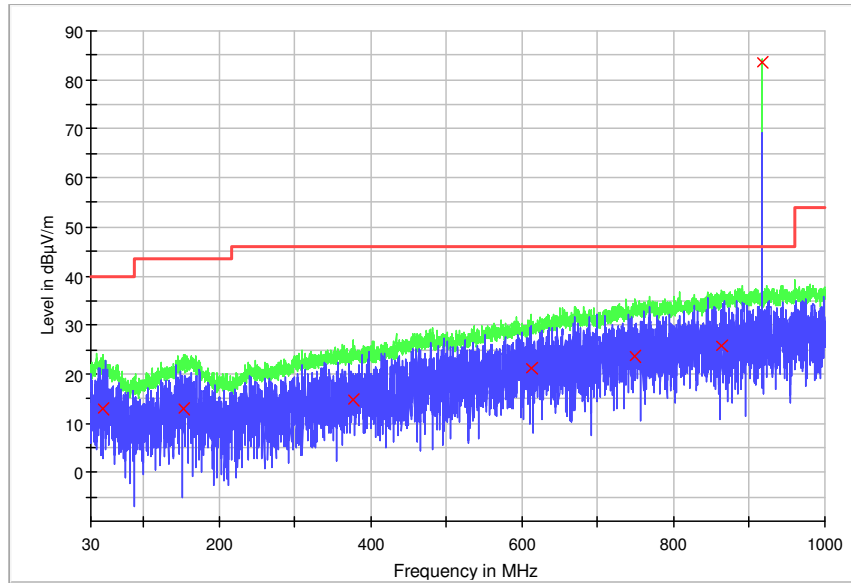
7.5.2 Test Setup Diagram



7.5.3 Measurement Procedure and Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.

Radiated emission below 1GHz
 Horizontal

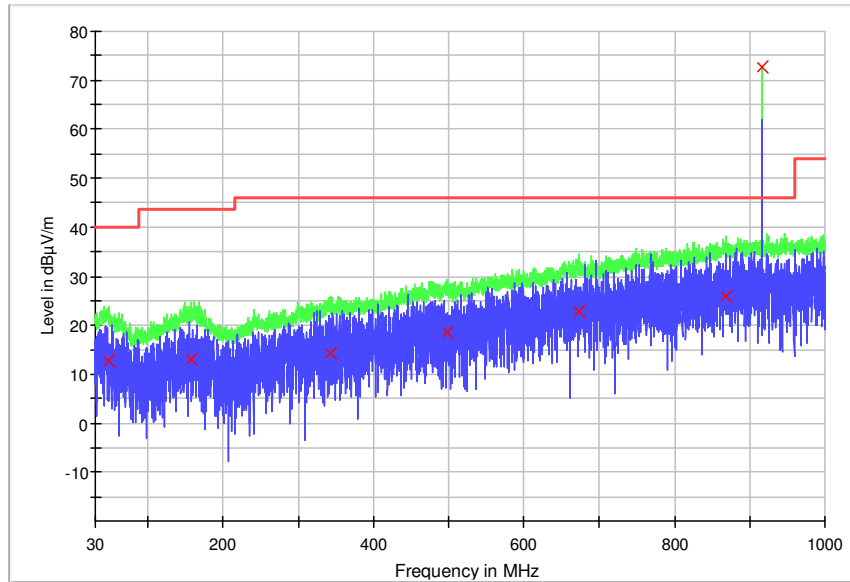


| Frequency (MHz) | QuasiPeak (dBµV/m) | Pol. | Corr. (dB/m) | Margin (dB) | Limit (dBµV/m) | Result |
|-----------------|--------------------|------|--------------|-------------|----------------|--------|
| 45.182500 | 13.0 | H | 14.5 | 27.0 | 40.0 | Pass |
| 152.822500 | 12.9 | H | 14.6 | 30.6 | 43.5 | Pass |
| 376.585000 | 14.8 | H | 16.2 | 31.2 | 46.0 | Pass |
| 611.267500 | 21.1 | H | 21.5 | 24.9 | 46.0 | Pass |
| 748.060000 | 23.7 | H | 24.3 | 22.3 | 46.0 | Pass |
| 864.377500 | 25.8 | H | 26.1 | 20.2 | 46.0 | Pass |

Remark:

1. All readings are Quasi-Peak values.
2. Correction Factor = Antenna Factor + Cable Loss.
3. Pol. = antenna polarization

Vertical



| Frequency (MHz) | QuasiPeak (dBµV/m) | Pol. | Corr. (dB/m) | Margin (dB) | Limit (dBµV/m) | Result |
|-----------------|--------------------|------|--------------|-------------|----------------|--------|
| 45.182500 | 13.0 | V | 14.5 | 27.0 | 40.0 | Pass |
| 152.822500 | 12.9 | V | 14.6 | 30.6 | 43.5 | Pass |
| 376.585000 | 14.8 | V | 16.2 | 31.2 | 46.0 | Pass |
| 611.267500 | 21.1 | V | 21.5 | 24.9 | 46.0 | Pass |
| 748.060000 | 23.7 | V | 24.3 | 22.3 | 46.0 | Pass |
| 864.377500 | 25.8 | V | 26.1 | 20.2 | 46.0 | Pass |

Remark:

1. All readings are Quasi-Peak values.
2. Correction Factor = Antenna Factor + Cable Loss.
3. Pol. = antenna polarization

Above 1GHz

Channel: Low

| Frequency (MHz) | Antenna Polarization | Emission Level (dB μ V/m) | | Limit (dB μ V/m) | | Remark |
|--------------------|-------------------------|----------------------------------|---------|----------------------|---------|--------|
| | | Peak | Average | Peak | Average | |
| 1644.625 | H | 35.5 | / | 74.0 | 54.0 | Pass |
| 2564.125 | H | 37.2 | / | 74.0 | 54.0 | Pass |
| 3542.870 | H | 43.7 | / | 74.0 | 54.0 | Pass |
| 4822.000 | H | 47.1 | / | 74.0 | 54.0 | Pass |
| 7609.500 | H | 56.1 | 42.4 | 74.0 | 54.0 | Pass |
| 10424.375 | H | 60.1 | 46.2 | 74.0 | 54.0 | Pass |

| Frequency (MHz) | Antenna Polarization | Emission Level (dB μ V/m) | | Limit (dB μ V/m) | | Remark |
|--------------------|-------------------------|----------------------------------|---------|----------------------|---------|--------|
| | | Peak | Average | Peak | Average | |
| 1397.125 | V | 35.1 | / | 74.0 | 54.0 | Pass |
| 2102.125 | V | 36.4 | / | 74.0 | 54.0 | Pass |
| 3113.500 | V | 43.9 | / | 74.0 | 54.0 | Pass |
| 4390.500 | V | 45.9 | / | 74.0 | 54.0 | Pass |
| 7027.500 | V | 54.3 | 40.5 | 74.0 | 54.0 | Pass |
| 10438.437 | V | 60.0 | 46.3 | 74.0 | 54.0 | Pass |



8 Photographs

Remark: Photos refer to Appendix: External Photo, Internal Phot, and Setup Photo

- End of the Report -
