# FCC Test Report

**Report No.:** RF170824C11E

**FCC ID:** RID-LM513

**Test Model:** LM-513H

**Received Date:** Oct. 27, 2017

**Test Date:** Nov. 01 ~ Dec. 20, 2017

**Issued Date:** Feb. 23, 2018

**Applicant:** GlobalSat WorldCom Corporation

**Address:** 16F., No. 186, Jian Ist Rd., Zhonghe Dist., New Taipei City, Taiwan

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

**Test Location:** No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

**FCC Registration / Designation Number:** 788550 / TW0003

## Table of Contents

## Release Control Record

| Issue No. | Description | Date Issued |
|---|---|---|
| RF170824C11E | Original release | Feb. 23, 2018 |

## 1 Certificate of Conformity

**Product:** LoRa Module

**Brand:** GlobalSat

**Test Model:** LM-513H

**Sample Status:** Engineering Sample

**Applicant:** GlobalSat WorldCom Corporation

**Test Date:** Nov. 01 ~ Dec. 20, 2017

**Standards:** 47 CFR FCC Part 15, Subpart C (Section 15.247)
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 RF characteristics under the conditions specified in this report.

**Prepared by :** _____ , **Date:** Feb. 23, 2018
Alice Ho / Specialist

**Approved by :** _____ , **Date:** Feb. 23, 2018
Bruce Chen / Project Engineer

## 2 Summary of Test Results

**Hybrid Mode (125kHz Bandwidth, 64 channels)**

| 47 CFR FCC Part 15, Subpart C (Section 15.247) | | | |
|---|---|---|---|
| FCC Clause | Test Item | Result | Remarks |
| 15.207 | AC Power Conducted Emission | Pass | Meet the requirement of limit. Minimum passing margin is -16.89dB at 16.94736MHz. |
| 15.247(a)(1)(i) | Number of Hopping Frequency Used | Pass | Meet the requirement of limit. |
| 15.247(a)(1)(i) | Dwell Time on Each Channel | Pass | Meet the requirement of limit. |
| 15.247(a)(1)(i) | Frequency Hopping Sequence Spread Spectrum System | Pass | Meet the requirement of limit. |
| 15.247(a)(1)(i) | Minimum Number of Hopping Channels | N/A | Refer to Note |
| 15.247(a)(2) | 500 kHz Minimum Bandwidth | N/A | Refer to Note |
| 15.247(b)(2) | Maximum Peak Output Power | Pass | Meet the requirement of limit. |
| 15.205 / 15.209 / 15.247(d) | Radiated Emissions and Band Edge Measurement | Pass | Meet the requirement of limit. Minimum passing margin is -2.9dB at 252.08MHz. |
| 15.247(d) | Antenna Port Emission | Pass | Meet the requirement of limit. |
| 15.247(e) | Power Spectral Density | Pass | Meet the requirement of limit. |
| 15.203 | Antenna Requirement | Pass | For Antenna Model: 98619ZRSX003-715: Antenna connector is SMA not a standard connector. For Antenna Model: AN0915-3901BRS: Antenna connector is SMA Reverse not a standard connector. |

N/A: Not Applicable

Note: There is no requirement for this type of hybrid system to comply with the 500 kHz minimum bandwidth normally associated with a DTS transmission; and, there is no minimum number of hopping channels associated with this type of hybrid system.

**Hybrid Mode (500kHz Bandwidth, 8 channels)**

| 47 CFR FCC Part 15, Subpart C (Section 15.247) | | | |
|---|---|---|---|
| FCC Clause | Test Item | Result | Remarks |
| 15.207 | AC Power Conducted Emission | Pass | Meet the requirement of limit. Minimum passing margin is -17.04dB at 16.94736MHz. |
| 15.247(a)(1)(i) | Number of Hopping Frequency Used | Pass | Meet the requirement of limit. |
| 15.247(a)(1)(i) | Dwell Time on Each Channel | Pass | Meet the requirement of limit. |
| 15.247(a)(1)(i) | Frequency Hopping Sequence Spread Spectrum System | Pass | Meet the requirement of limit. |
| 15.247(a)(1)(i) | Minimum Number of Hopping Channels | N/A | Refer to Note |
| 15.247(a)(2) | 500 kHz Minimum Bandwidth | N/A | Refer to Note |
| 15.247(b)(2) | Maximum Peak Output Power | Pass | Meet the requirement of limit. |
| 15.205 / 15.209 / 15.247(d) | Radiated Emissions and Band Edge Measurement | Pass | Meet the requirement of limit. Minimum passing margin is -0.8dB at 1818.80MHz. |
| 15.247(d) | Antenna Port Emission | Pass | Meet the requirement of limit. |
| 15.247(e) | Power Spectral Density | Pass | Meet the requirement of limit. |
| 15.203 | Antenna Requirement | Pass | For Antenna Model: 98619ZRSX003-715: Antenna connector is SMA not a standard connector. For Antenna Model: AN0915-3901BRS: Antenna connector is SMA Reverse not a standard connector. |

N/A: Not Applicable

Note: There is no requirement for this type of hybrid system to comply with the 500 kHz minimum bandwidth normally associated with a DTS transmission; and, there is no minimum number of hopping channels associated with this type of hybrid system.

## 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 | 2.94 dB |
| Radiated Emissions up to 1 GHz | 30MHz ~ 200MHz | 3.63 dB |
| | 200MHz ~1000MHz | 3.64 dB |
| Radiated Emissions above 1 GHz | 1GHz ~ 18GHz | 2.29 dB |
| | 18GHz ~ 40GHz | 2.29 dB |

## 2.2 Modification Record

There were no modifications required for compliance.

# 3 General Information

## 3.1 General Description of EUT

| | | |
|---|---|---|
| Product | LoRa Module | |
| Brand | GlobalSat | |
| Test Model | LM-513H | |
| Sample Status | Engineering Sample | |
| Power Supply Rating | 5.0Vdc from host equipment | |
| Modulation Type | FSK | |
| Transfer Rate | 21.9kbps | |
| Operating Frequency | 902.3~914.9MHz (125kHz Bandwidth)<br>903~914.2MHz (500kHz Bandwidth) | |
| Number of Channel | Hybrid Mode<br>(125kHz Bandwidth, 64 channels) | 64 |
| | Hybrid Mode<br>(500kHz Bandwidth, 8 channels) | 8 |
| Channel Spacing | Hybrid Mode<br>(125kHz Bandwidth, 64 channels) | 0.2MHz |
| | Hybrid Mode<br>(500kHz Bandwidth, 8 channels) | 1.6MHz |
| Output Power | Hybrid Mode<br>(125kHz Bandwidth, 64 channels) | 84.140mW |
| | Hybrid Mode<br>(500kHz Bandwidth, 8 channels) | 85.507mW |
| Antenna Type | Refer to Note | |
| Antenna Connector | Refer to Note | |
| Accessory Device | NA | |
| Cable Supplied | NA | |

Note:

1. The following antenna was provided to the EUT.

| No | Antenna Type | Antenna Connector | Brand | Model | Gain |
|---|---|---|---|---|---|
| 1 | Dipole | SMA Male | Master Wave | 98619ZRSX003-715 | 2.95dBi |
| 2 | Dipole | SMA Male Reverse | Cortec | AN0915-3901BRS | -1.0dBi |

*Antenna Model: 98619ZRSX003-715 was for the final tests.

### 3.2 Description of Test Modes

64 channels are provided for Hybrid Mode (125kHz Bandwidth):

| Channel | Freq. (MHz) | Channel | Freq. (MHz) | Channel | Freq. (MHz) | Channel | Freq. (MHz) |
|---|---|---|---|---|---|---|---|
| 0 | 902.3 | 16 | 905.5 | 32 | 908.7 | 48 | 911.9 |
| 1 | 902.5 | 17 | 905.7 | 33 | 908.9 | 49 | 912.1 |
| 2 | 902.7 | 18 | 905.9 | 34 | 909.1 | 50 | 912.3 |
| 3 | 902.9 | 19 | 906.1 | 35 | 909.3 | 51 | 912.5 |
| 4 | 903.1 | 20 | 906.3 | 36 | 909.5 | 52 | 912.7 |
| 5 | 903.3 | 21 | 906.5 | 37 | 909.7 | 53 | 912.9 |
| 6 | 903.5 | 22 | 906.7 | 38 | 909.9 | 54 | 913.1 |
| 7 | 903.7 | 23 | 906.9 | 39 | 910.1 | 55 | 913.3 |
| 8 | 903.9 | 24 | 907.1 | 40 | 910.3 | 56 | 913.5 |
| 9 | 904.1 | 25 | 907.3 | 41 | 910.5 | 57 | 913.7 |
| 10 | 904.3 | 26 | 907.5 | 42 | 910.7 | 58 | 913.9 |
| 11 | 904.5 | 27 | 907.7 | 43 | 910.9 | 59 | 914.1 |
| 12 | 904.7 | 28 | 907.9 | 44 | 911.1 | 60 | 914.3 |
| 13 | 904.9 | 29 | 908.1 | 45 | 911.3 | 61 | 914.5 |
| 14 | 905.1 | 30 | 908.3 | 46 | 911.5 | 62 | 914.7 |
| 15 | 905.3 | 31 | 908.5 | 47 | 911.7 | 63 | 914.9 |

8 channels are provided for Hybrid Mode (500kHz Bandwidth):

| Channel | Freq. (MHz) | Channel | Freq. (MHz) | Channel | Freq. (MHz) | Channel | Freq. (MHz) |
|---|---|---|---|---|---|---|---|
| 0 | 903.0 | 2 | 906.2 | 4 | 909.4 | 6 | 912.6 |
| 1 | 904.6 | 3 | 907.8 | 5 | 911.0 | 7 | 914.2 |

### 3.2.1 Test Mode Applicability and Tested Channel Detail

**Hybrid Mode (125kHz Bandwidth, 64 channels)**

| 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

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.

**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.

| EUT Configure Mode | Available Channel | Tested Channel | Modulation Type |
|---|---|---|---|
| - | 0 to 63 | 0, 31, 63 | 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.

| EUT Configure Mode | Available Channel | Tested Channel | Modulation Type |
|---|---|---|---|
| - | 0 to 63 | 0, 31, 63 | 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.

| EUT Configure Mode | Available Channel | Tested Channel | Modulation Type |
|---|---|---|---|
| - | 0 to 63 | 0 | 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.

| EUT Configure Mode | Available Channel | Tested Channel | Modulation Type |
|---|---|---|---|
| - | 0 to 63 | 0, 31, 63 | FSK |

**Test Condition:**

| Applicable to | Environmental Conditions | Input Power (System) | Tested by |
|---|---|---|---|
| RE≥1G | 25 deg. C, 66% RH | 120Vac, 60Hz | James Yang |
| RE<1G | 25 deg. C, 66% RH | 120Vac, 60Hz | James Yang |
| PLC | 25 deg. C, 65% RH | 120Vac, 60Hz | Greg Lin |
| APCM | 25 deg. C, 60% RH | 120Vac, 60Hz | Cedric Wu |

### Hybrid Mode (500kHz Bandwidth, 8 channels)

| 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

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.

### 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.

| EUT Configure Mode | Available Channel | Tested Channel | Modulation Type |
|---|---|---|---|
| - | 0 to 7 | 0, 4, 7 | 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.

| EUT Configure Mode | Available Channel | Tested Channel | Modulation Type |
|---|---|---|---|
| - | 0 to 7 | 0, 4, 7 | 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.

| EUT Configure Mode | Available Channel | Tested Channel | Modulation Type |
|---|---|---|---|
| - | 0 to 7 | 0 | 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.

| EUT Configure Mode | Available Channel | Tested Channel | Modulation Type |
|---|---|---|---|
| - | 0 to 7 | 0, 4, 7 | FSK |

### Test Condition:

| Applicable to | Environmental Conditions | Input Power (System) | Tested by |
|---|---|---|---|
| RE≥1G | 25 deg. C, 66% RH | 120Vac, 60Hz | James Yang |
| RE<1G | 25 deg. C, 66% RH | 120Vac, 60Hz | James Yang |
| PLC | 25 deg. C, 65% RH | 120Vac, 60Hz | Greg Lin |
| APCM | 25 deg. C, 60% RH | 120Vac, 60Hz | Cedric Wu |

## 3.3 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.

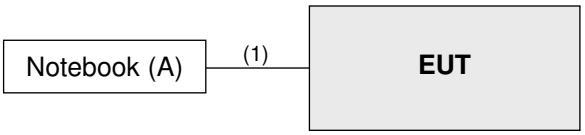
| ID | Product | Brand | Model No. | Serial No. | FCC ID | Remarks |
|---|---|---|---|---|---|---|
| A. | Notebook | Lenovo | S430 | MP-2DBFW | PD92230BNHU | - |

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

| ID | Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks |
|---|---|---|---|---|---|---|
| 1. | USB | 1 | 1 | Y | 0 | - |

### 3.3.1 Configuration of System under Test




## 3.4 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 (15.247)**
**KDB 558074 D01 DTS Meas Guidance v04**
**FCC KDB Publication Number: 453039**
ANSI C63.10:2013

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

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

# 4 Test Types and Results (Hybrid Mode (125kHz Bandwidth, 64 channels))

## 4.1 Radiated Emission and Bandedge Measurement

### 4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

| 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 30dB under any condition of modulation.

### 4.1.2 Test Instruments

| Description & Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Due |
|---|---|---|---|---|
| Test Receiver<br>KEYSIGHT | N9038A | MY55420137 | Mar. 27, 2017 | Mar. 26, 2018 |
| Spectrum Analyzer<br>ROHDE & SCHWARZ | FSP40 | 100269 | May 11, 2017 | May 10, 2018 |
| BILOG Antenna<br>SCHWARZBECK | VULB9168 | 9168-148 | Dec. 28, 2016 | Dec. 27, 2017 |
| | | | Dec. 11, 2017 | Dec. 10, 2018 |
| HORN Antenna<br>SCHWARZBECK | BBHA 9120 D | 9120D-1169 | Dec. 27, 2016 | Dec. 26, 2017 |
| | | | Dec. 12, 2017 | Dec. 11, 2018 |
| HORN Antenna<br>SCHWARZBECK | BBHA 9170 | BBHA9170241 | Dec. 14, 2016 | Dec. 13, 2017 |
| | | | Dec. 01, 2017 | Nov. 30, 2018 |
| Loop Antenna<br>EMCI | EM-6879 | 269 | Aug. 11, 2017 | Aug. 10, 2018 |
| Preamplifier<br>Agilent<br>(Below 1GHz) | 8447D | 2944A10638 | Aug. 08, 2017 | Aug. 07, 2018 |
| Preamplifier<br>Agilent<br>(Above 1GHz) | 8449B | 3008A01638 | Feb. 22, 2017 | Feb. 21, 2018 |
| RF signal cable<br>HUBER+SUHNER | SUCOFLEX 104 | CABLE-CH9-02<br>(248780+MY13377) | Aug. 08, 2017 | Aug. 07, 2018 |
| RF signal cable<br>HUBER+SUHNER | SUCOFLEX 104 | CABLE-CH9-(250795/4) | Aug. 08, 2017 | Aug. 07, 2018 |
| RF signal cable<br>Woken | 8D-FB | Cable-CH9-01 | Aug. 01, 2017 | Jul. 31, 2018 |
| Software<br>BV ADT | ADT_Radiated_<br>V7.6.15.9.4 | NA | NA | NA |
| Antenna Tower<br>EMCO | 2070/2080 | 512.835.4684 | NA | NA |
| Turn Table<br>EMCO | 2087-2.03 | NA | NA | NA |
| Antenna Tower &Turn<br>BV ADT | AT100 | AT93021705 | NA | NA |
| Turn Table<br>BV ADT | TT100 | TT93021705 | NA | NA |
| Turn Table Controller<br>BV ADT | SC100 | SC93021705 | 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 test was performed in HwaYa Chamber 9.
3. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
4. The IC Site Registration No. is IC 7450F-9.

### 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. Both X and Y axes 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.

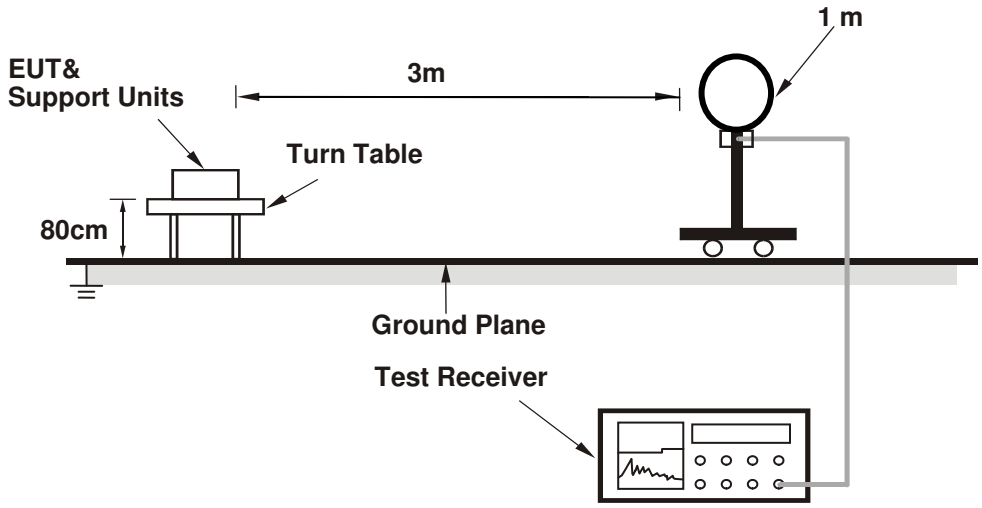
4. All modes of operation were investigated and the worst-case emissions are reported.

### 4.1.4 Deviation from Test Standard

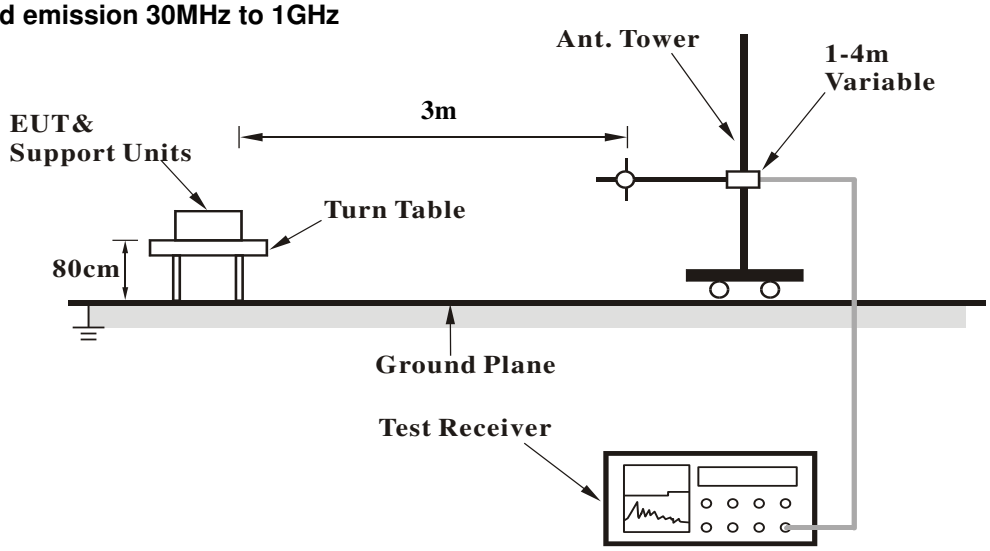
No deviation.

### 4.1.5 Test Setup

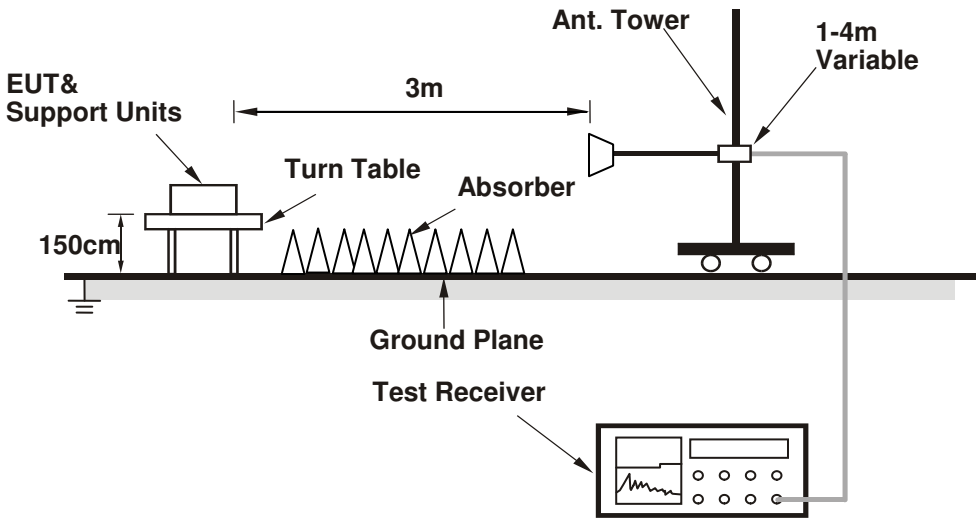
**For Radiated emission below 30MHz**




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

### 4.1.7 Test Results

Above 1GHz Data:

| CHANNEL | TX Channel 0 | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
|---|---|---|---|
| FREQUENCY RANGE | 30MHz ~ 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 | #902.00 | 71.2 PK | 89.3 | -18.1 | 1.00 H | 201 | 46.2 | 25.0 |
| 2 | #902.00 | 63.5 AV | 89.2 | -25.7 | 1.00 H | 201 | 38.5 | 25.0 |
| 3 | *902.30 | 119.3 PK | | | 1.00 H | 201 | 94.3 | 25.0 |
| 4 | *902.30 | 119.2 AV | | | 1.00 H | 201 | 94.2 | 25.0 |
| 5 | #1804.60 | 50.7 PK | 74.0 | -23.3 | 1.51 H | 246 | 56.9 | -6.2 |
| 6 | #1804.60 | 49.0 AV | 54.0 | -5.0 | 1.51 H | 246 | 55.2 | -6.2 |
| 7 | 2706.90 | 52.2 PK | 74.0 | -21.8 | 1.51 H | 159 | 54.6 | -2.4 |
| 8 | 2706.90 | 49.8 AV | 54.0 | -4.2 | 1.51 H | 159 | 52.2 | -2.4 |
| 9 | #7218.40 | 54.1 PK | 74.0 | -19.9 | 1.01 H | 333 | 45.6 | 8.5 |
| 10 | #7218.40 | 48.6 AV | 54.0 | -5.4 | 1.01 H | 333 | 40.1 | 8.5 |
| 11 | 8120.70 | 55.6 PK | 74.0 | -18.4 | 2.57 H | 41 | 45.6 | 10.0 |
| 12 | 8120.70 | 49.1 AV | 54.0 | -4.9 | 2.57 H | 41 | 39.1 | 10.0 |
| 13 | 9023.00 | 53.8 PK | 74.0 | -20.2 | 2.51 H | 90 | 42.8 | 11.0 |
| 14 | 9023.00 | 43.4 AV | 54.0 | -10.6 | 2.51 H | 90 | 32.4 | 11.0 |
| 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 | #902.00 | 64.8 PK | 80.9 | -16.1 | 1.00 V | 78 | 39.8 | 25.0 |
| 2 | #902.00 | 56.1 AV | 80.8 | -24.7 | 1.00 V | 78 | 31.1 | 25.0 |
| 3 | *902.30 | 110.9 PK | | | 1.00 V | 78 | 85.9 | 25.0 |
| 4 | *902.30 | 110.8 AV | | | 1.00 V | 78 | 85.8 | 25.0 |
| 5 | #1804.60 | 47.1 PK | 74.0 | -26.9 | 2.46 V | 119 | 53.3 | -6.2 |
| 6 | #1804.60 | 44.7 AV | 54.0 | -9.3 | 2.46 V | 119 | 50.9 | -6.2 |
| 7 | 2706.90 | 47.1 PK | 74.0 | -26.9 | 2.58 V | 141 | 49.5 | -2.4 |
| 8 | 2706.90 | 43.0 AV | 54.0 | -11.0 | 2.58 V | 141 | 45.4 | -2.4 |
| 9 | #7218.40 | 52.6 PK | 74.0 | -21.4 | 2.72 V | 16 | 44.1 | 8.5 |
| 10 | #7218.40 | 45.2 AV | 54.0 | -8.8 | 2.72 V | 16 | 36.7 | 8.5 |
| 11 | 8120.70 | 55.6 PK | 74.0 | -18.4 | 3.03 V | 21 | 45.6 | 10.0 |
| 12 | 8120.70 | 48.3 AV | 54.0 | -5.7 | 3.03 V | 21 | 38.3 | 10.0 |
| 13 | 9023.00 | 53.0 PK | 74.0 | -21.0 | 3.58 V | 6 | 42.0 | 11.0 |
| 14 | 9023.00 | 42.6 AV | 54.0 | -11.4 | 3.58 V | 6 | 31.6 | 11.0 |

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 radiated frequency is out of the restricted band.

| CHANNEL | TX Channel 31 | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
|---|---|---|---|
| FREQUENCY RANGE | 30MHz ~ 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 | *908.50 | 118.8 PK | | | 1.00 H | 200 | 93.6 | 25.2 |
| 2 | *908.50 | 118.7 AV | | | 1.00 H | 200 | 93.5 | 25.2 |
| 3 | #1817.00 | 51.4 PK | 74.0 | -22.6 | 3.45 H | 278 | 57.6 | -6.2 |
| 4 | #1817.00 | 49.4 AV | 54.0 | -4.6 | 3.45 H | 278 | 55.6 | -6.2 |
| 5 | 2725.50 | 50.1 PK | 74.0 | -23.9 | 1.00 H | 69 | 52.5 | -2.4 |
| 6 | 2725.50 | 46.7 AV | 54.0 | -7.3 | 1.00 H | 69 | 49.1 | -2.4 |
| 7 | #6359.50 | 51.9 PK | 74.0 | -22.1 | 1.00 H | 41 | 45.7 | 6.2 |
| 8 | #6359.50 | 40.8 AV | 54.0 | -13.2 | 1.00 H | 41 | 34.6 | 6.2 |
| 9 | 7268.00 | 56.6 PK | 74.0 | -17.4 | 2.98 H | 75 | 47.8 | 8.8 |
| 10 | 7268.00 | 49.9 AV | 54.0 | -4.1 | 2.98 H | 75 | 41.1 | 8.8 |
| 11 | 8176.50 | 56.3 PK | 74.0 | -17.7 | 1.17 H | 238 | 46.4 | 9.9 |
| 12 | 8176.50 | 45.7 AV | 54.0 | -8.3 | 1.17 H | 238 | 35.8 | 9.9 |
| 13 | 9085.00 | 58.0 PK | 74.0 | -16.0 | 1.00 H | 121 | 46.8 | 11.2 |
| 14 | 9085.00 | 47.2 AV | 54.0 | -6.8 | 1.00 H | 121 | 36.0 | 11.2 |
| 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 | *908.50 | 112.4 PK | | | 1.01 V | 23 | 87.2 | 25.2 |
| 2 | *908.50 | 112.3 AV | | | 1.01 V | 23 | 87.1 | 25.2 |
| 3 | #1817.00 | 47.2 PK | 74.0 | -26.8 | 2.37 V | 116 | 53.4 | -6.2 |
| 4 | #1817.00 | 45.1 AV | 54.0 | -8.9 | 2.37 V | 116 | 51.3 | -6.2 |
| 5 | 2725.50 | 44.1 PK | 74.0 | -29.9 | 2.47 V | 146 | 46.5 | -2.4 |
| 6 | 2725.50 | 40.8 AV | 54.0 | -13.2 | 2.47 V | 146 | 43.2 | -2.4 |
| 7 | #6359.50 | 48.0 PK | 74.0 | -26.0 | 2.67 V | 86 | 41.8 | 6.2 |
| 8 | #6359.50 | 37.5 AV | 54.0 | -16.5 | 2.67 V | 86 | 31.3 | 6.2 |
| 9 | 7268.00 | 53.6 PK | 74.0 | -20.4 | 2.78 V | 18 | 44.8 | 8.8 |
| 10 | 7268.00 | 46.7 AV | 54.0 | -7.3 | 2.78 V | 18 | 37.9 | 8.8 |
| 11 | 8176.50 | 54.8 PK | 74.0 | -19.2 | 3.08 V | 29 | 44.9 | 9.9 |
| 12 | 8176.50 | 44.6 AV | 54.0 | -9.4 | 3.08 V | 29 | 34.7 | 9.9 |
| 13 | 9085.00 | 55.9 PK | 74.0 | -18.1 | 3.48 V | 11 | 44.7 | 11.2 |
| 14 | 9085.00 | 45.7 AV | 54.0 | -8.3 | 3.48 V | 11 | 34.5 | 11.2 |

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 radiated frequency is out of the restricted band.

| CHANNEL | TX Channel 63 | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
|---|---|---|---|
| FREQUENCY RANGE | 30MHz ~ 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 | *914.90 | 119.3 PK | | | 1.00 H | 18 | 94.0 | 25.3 |
| 2 | *914.90 | 119.2 AV | | | 1.00 H | 18 | 93.9 | 25.3 |
| 3 | #928.00 | 63.9 PK | 89.3 | -25.4 | 1.00 H | 18 | 38.4 | 25.5 |
| 4 | #928.00 | 55.0 AV | 89.2 | -34.2 | 1.00 H | 18 | 29.5 | 25.5 |
| 5 | #1829.80 | 51.9 PK | 74.0 | -22.1 | 3.43 H | 279 | 57.9 | -6.0 |
| 6 | #1829.80 | 49.7 AV | 54.0 | -4.3 | 3.43 H | 279 | 55.7 | -6.0 |
| 7 | 2744.70 | 50.9 PK | 74.0 | -23.1 | 3.78 H | 61 | 53.2 | -2.3 |
| 8 | 2744.70 | 46.8 AV | 54.0 | -7.2 | 3.78 H | 61 | 49.1 | -2.3 |
| 9 | #6404.30 | 51.9 PK | 74.0 | -22.1 | 1.01 H | 44 | 45.5 | 6.4 |
| 10 | #6404.30 | 40.4 AV | 54.0 | -13.6 | 1.01 H | 44 | 34.0 | 6.4 |
| 11 | 7319.20 | 56.8 PK | 74.0 | -17.2 | 1.02 H | 74 | 47.8 | 9.0 |
| 12 | 7319.20 | 50.4 AV | 54.0 | -3.6 | 1.02 H | 74 | 41.4 | 9.0 |
| 13 | 8234.10 | 55.5 PK | 74.0 | -18.5 | 1.18 H | 238 | 45.6 | 9.9 |
| 14 | 8234.10 | 45.1 AV | 54.0 | -8.9 | 1.18 H | 238 | 35.2 | 9.9 |
| 15 | 9149.00 | 58.2 PK | 74.0 | -15.8 | 1.00 H | 120 | 46.8 | 11.4 |
| 16 | 9149.00 | 49.1 AV | 54.0 | -4.9 | 1.00 H | 120 | 37.7 | 11.4 |
| 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 | *914.90 | 111.5 PK | | | 1.00 V | 133 | 86.2 | 25.3 |
| 2 | *914.90 | 111.4 AV | | | 1.00 V | 133 | 86.1 | 25.3 |
| 3 | #928.00 | 65.4 PK | 81.5 | -16.1 | 1.00 V | 133 | 39.9 | 25.5 |
| 4 | #928.00 | 55.1 AV | 81.4 | -26.3 | 1.00 V | 133 | 29.6 | 25.5 |
| 5 | #1829.80 | 47.2 PK | 74.0 | -26.8 | 2.38 V | 117 | 53.2 | -6.0 |
| 6 | #1829.80 | 45.2 AV | 54.0 | -8.8 | 2.38 V | 117 | 51.2 | -6.0 |
| 7 | 2744.70 | 44.2 PK | 74.0 | -29.8 | 2.46 V | 143 | 46.5 | -2.3 |
| 8 | 2744.70 | 40.8 AV | 54.0 | -13.2 | 2.46 V | 143 | 43.1 | -2.3 |
| 9 | #6404.30 | 48.0 PK | 74.0 | -26.0 | 2.69 V | 83 | 41.6 | 6.4 |
| 10 | #6404.30 | 37.5 AV | 54.0 | -16.5 | 2.69 V | 83 | 31.1 | 6.4 |
| 11 | 7319.20 | 52.9 PK | 74.0 | -21.1 | 2.69 V | 17 | 43.9 | 9.0 |
| 12 | 7319.20 | 46.7 AV | 54.0 | -7.3 | 2.69 V | 17 | 37.7 | 9.0 |
| 13 | 8234.10 | 54.7 PK | 74.0 | -19.3 | 3.03 V | 26 | 44.8 | 9.9 |
| 14 | 8234.10 | 44.5 AV | 54.0 | -9.5 | 3.03 V | 26 | 34.6 | 9.9 |
| 15 | 9149.00 | 55.9 PK | 74.0 | -18.1 | 3.46 V | 12 | 44.5 | 11.4 |
| 16 | 9149.00 | 45.8 AV | 54.0 | -8.2 | 3.46 V | 12 | 34.4 | 11.4 |

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 radiated frequency is out of the restricted band.

Below 1GHz Data:

| CHANNEL | TX Channel 0 | 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 | 32.81 | 27.8 QP | 40.0 | -12.2 | 1.99 H | 14 | 43.0 | -15.2 |
| 2 | 215.21 | 38.3 QP | 43.5 | -5.2 | 1.99 H | 159 | 54.5 | -16.2 |
| 3 | 252.08 | 41.3 QP | 46.0 | -4.7 | 1.00 H | 88 | 55.3 | -14.0 |
| 4 | 498.51 | 34.6 QP | 46.0 | -11.4 | 1.49 H | 101 | 44.0 | -9.4 |
| 5 | 597.47 | 34.4 QP | 46.0 | -11.6 | 1.00 H | 127 | 42.0 | -7.6 |
| 6 | 705.16 | 39.3 QP | 46.0 | -6.7 | 1.49 H | 15 | 45.4 | -6.1 |
| 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 | 32.81 | 30.1 QP | 40.0 | -9.9 | 1.51 V | 327 | 45.3 | -15.2 |
| 2 | 190.95 | 35.9 QP | 43.5 | -7.6 | 1.00 V | 105 | 51.8 | -15.9 |
| 3 | 234.61 | 38.1 QP | 46.0 | -7.9 | 1.00 V | 276 | 53.4 | -15.3 |
| 4 | 399.55 | 29.3 QP | 46.0 | -16.7 | 1.51 V | 34 | 40.4 | -11.1 |
| 5 | 508.21 | 33.6 QP | 46.0 | -12.4 | 1.00 V | 16 | 42.8 | -9.2 |
| 6 | 599.41 | 31.3 QP | 46.0 | -14.7 | 1.00 V | 15 | 38.8 | -7.5 |

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 31 | 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 | 32.81 | 24.5 QP | 40.0 | -15.5 | 1.01 H | 15 | 39.7 | -15.2 |
| 2 | 196.77 | 33.3 QP | 43.5 | -10.2 | 1.01 H | 167 | 49.4 | -16.1 |
| **3** | **252.08** | **43.1 QP** | **46.0** | **-2.9** | **1.01 H** | **167** | **57.1** | **-14.0** |
| 4 | 290.88 | 36.3 QP | 46.0 | -9.7 | 1.01 H | 106 | 48.8 | -12.5 |
| 5 | 504.33 | 33.6 QP | 46.0 | -12.4 | 1.50 H | 113 | 42.9 | -9.3 |
| 6 | 734.27 | 34.8 QP | 46.0 | -11.2 | 1.50 H | 159 | 40.2 | -5.4 |
| 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 | 32.81 | 32.6 QP | 40.0 | -7.4 | 1.00 V | 213 | 47.8 | -15.2 |
| 2 | 213.27 | 29.4 QP | 43.5 | -14.1 | 1.00 V | 264 | 45.6 | -16.2 |
| 3 | 304.47 | 27.4 QP | 46.0 | -18.6 | 1.49 V | 97 | 39.7 | -12.3 |
| 4 | 511.12 | 34.7 QP | 46.0 | -11.3 | 1.49 V | 17 | 43.9 | -9.2 |
| 5 | 598.44 | 33.5 QP | 46.0 | -12.5 | 1.00 V | 14 | 41.0 | -7.5 |
| 6 | 761.43 | 30.6 QP | 46.0 | -15.4 | 1.00 V | 142 | 35.3 | -4.7 |

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 63 | 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 | 33.78 | 25.6 QP | 40.0 | -14.4 | 1.00 H | 356 | 40.7 | -15.1 |
| 2 | 201.63 | 38.9 QP | 43.5 | -4.6 | 1.00 H | 121 | 55.1 | -16.2 |
| 3 | 246.25 | 41.0 QP | 46.0 | -5.0 | 1.49 H | 164 | 55.4 | -14.4 |
| 4 | 310.29 | 33.9 QP | 46.0 | -12.1 | 1.00 H | 115 | 46.0 | -12.1 |
| 5 | 496.57 | 33.8 QP | 46.0 | -12.2 | 1.49 H | 117 | 43.3 | -9.5 |
| 6 | 764.34 | 30.1 QP | 46.0 | -15.9 | 1.00 H | 47 | 34.7 | -4.6 |
| 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 | 32.81 | 30.6 QP | 40.0 | -9.4 | 1.50 V | 188 | 45.8 | -15.2 |
| 2 | 163.79 | 34.1 QP | 43.5 | -9.4 | 1.00 V | 208 | 47.6 | -13.5 |
| 3 | 238.49 | 35.5 QP | 46.0 | -10.5 | 1.00 V | 353 | 50.3 | -14.8 |
| 4 | 303.50 | 32.7 QP | 46.0 | -13.3 | 1.50 V | 97 | 45.0 | -12.3 |
| 5 | 505.30 | 33.7 QP | 46.0 | -12.3 | 1.00 V | 5 | 43.0 | -9.3 |
| 6 | 599.41 | 31.7 QP | 46.0 | -14.3 | 1.00 V | 169 | 39.2 | -7.5 |

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

## 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. | Cal. Date | Cal. Due |
|---|---|---|---|---|
| Test Receiver<br>ROHDE & SCHWARZ | ESCI | 100613 | Nov. 29, 2016 | Nov. 28, 2017 |
| | | | Nov. 23, 2017 | Nov. 22, 2018 |
| RF signal cable (with 10dB PAD)<br>Woken | 5D-FB | Cable-cond1-01 | Sep. 05, 2017 | Sep. 04, 2018 |
| LISN<br>ROHDE & SCHWARZ<br>(EUT) | ESH3-Z5 | 835239/001 | Mar. 10, 2017 | Mar. 09, 2018 |
| LISN<br>ROHDE & SCHWARZ<br>(Peripheral) | ESH3-Z5 | 100311 | Aug. 15, 2017 | Aug. 14, 2018 |
| Software<br>ADT | BV ADT_Cond_<br>V7.3.7.3 | NA | 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 test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

### 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.

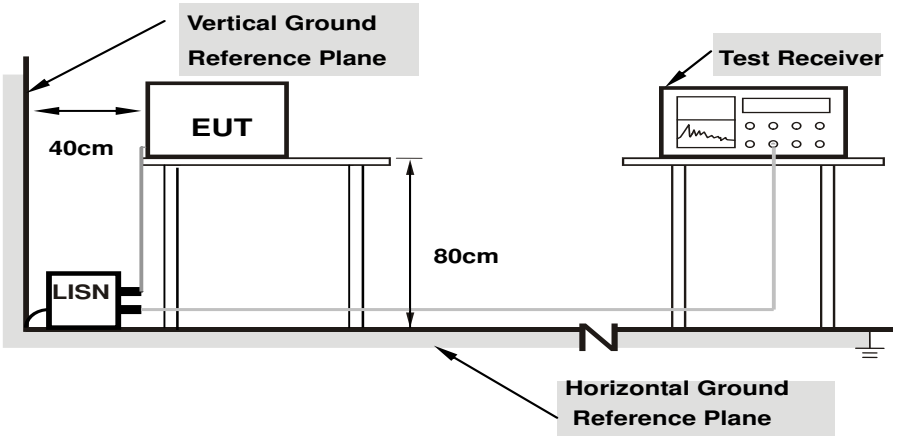
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

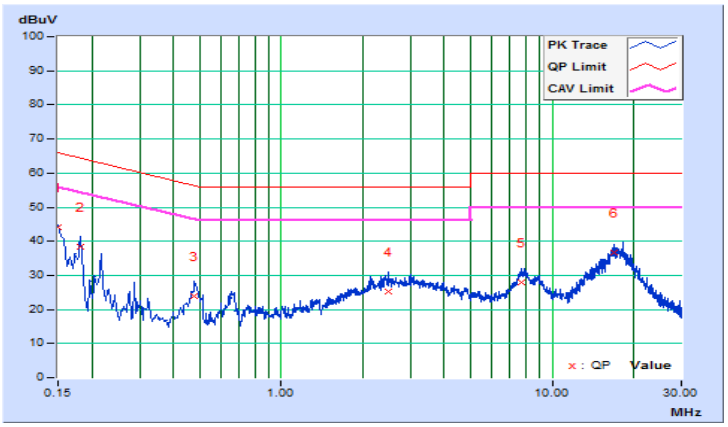
### 4.2.7 Test Results

| Channel | TX Channel 0 | Phase | Line (L) |
|---|---|---|---|
| Detector Function | Quasi-Peak (QP) / Average (AV) | | |

| No | Freq. | Corr. Factor | Reading Value | | Emission Level | | Limit | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | [dB (uV)] | | [dB (uV)] | | [dB (uV)] | | (dB) | |
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.15000 | 10.45 | 33.58 | 22.64 | 44.03 | 33.09 | 66.00 | 56.00 | -21.97 | -22.91 |
| 2 | 0.18122 | 10.45 | 27.98 | 10.96 | 38.43 | 21.41 | 64.43 | 54.43 | -26.00 | -33.02 |
| 3 | 0.47844 | 10.51 | 13.47 | 3.45 | 23.98 | 13.96 | 56.37 | 46.37 | -32.39 | -32.41 |
| 4 | 2.49209 | 10.55 | 14.87 | 9.53 | 25.42 | 20.08 | 56.00 | 46.00 | -30.58 | -25.92 |
| 5 | 7.71976 | 10.82 | 17.03 | 11.09 | 27.85 | 21.91 | 60.00 | 50.00 | -32.15 | -28.09 |
| **6** | **16.94736** | **11.27** | **25.50** | **21.84** | **36.77** | **33.11** | **60.00** | **50.00** | **-23.23** | **-16.89** |

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.

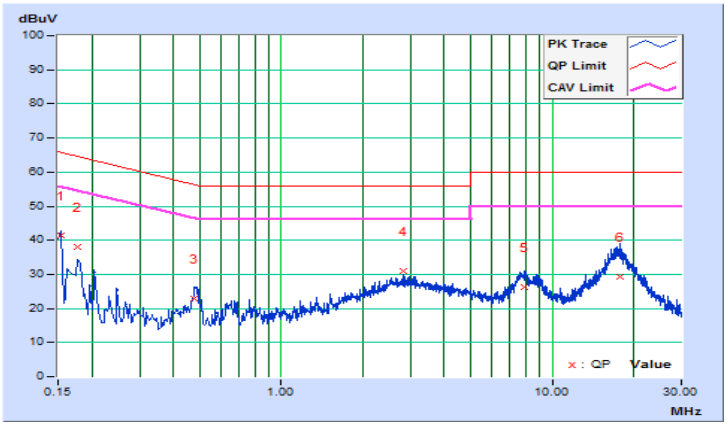


| Channel | TX Channel 0 | Phase | Neutral (N) |
|---|---|---|---|
| Detector Function | Quasi-Peak (QP) / Average (AV) | | |

| No | Freq. | Corr. Factor | Reading Value | | Emission Level | | Limit | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | [dB (uV)] | | [dB (uV)] | | [dB (uV)] | | (dB) | |
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.15391 | 10.21 | 31.07 | 15.57 | 41.28 | 25.78 | 65.79 | 55.79 | -24.51 | -30.01 |
| 2 | 0.17744 | 10.21 | 27.82 | 14.76 | 38.03 | 24.97 | 64.60 | 54.60 | -26.57 | -29.63 |
| 3 | 0.47915 | 10.24 | 12.73 | 3.03 | 22.97 | 13.27 | 56.35 | 46.35 | -33.38 | -33.08 |
| 4 | 2.82053 | 10.35 | 20.59 | 10.15 | 30.94 | 20.50 | 56.00 | 46.00 | -25.06 | -25.50 |
| 5 | 7.91135 | 10.58 | 15.62 | 9.75 | 26.20 | 20.33 | 60.00 | 50.00 | -33.80 | -29.67 |
| 6 | 17.72545 | 10.97 | 18.22 | 14.00 | 29.19 | 24.97 | 60.00 | 50.00 | -30.81 | -25.03 |

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.

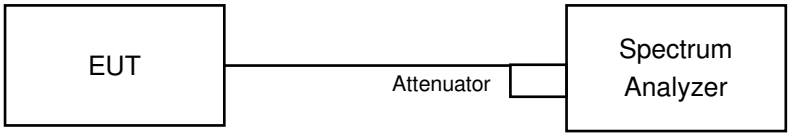


## 4.3 Number of Hopping Frequency Used

### 4.3.1 Limits of Hopping Frequency Used Measurement

There is no minimum number of hopping channels associated with this type of hybrid system.

### 4.3.2 Test Setup




### 4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.3.4 Test Procedure

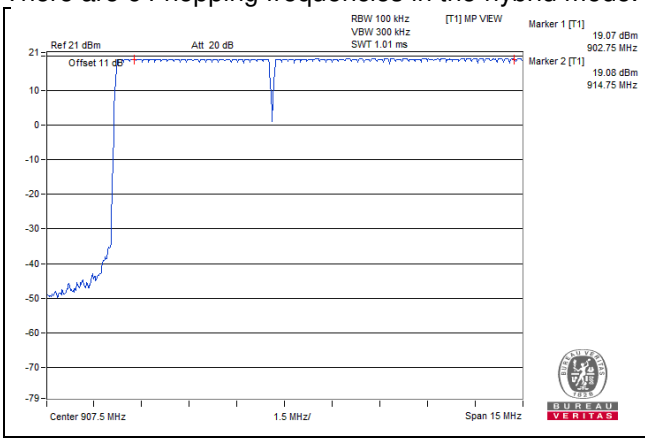
a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
d. Set the SA on View mode and then plot the result on SA screen.
e. Repeat above procedures until all frequencies measured were complete.

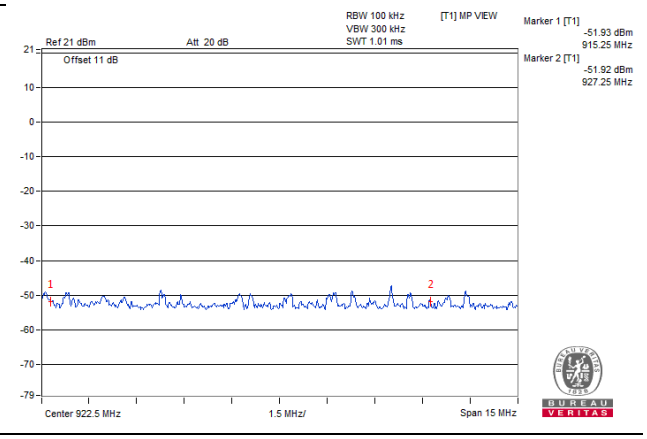
### 4.3.5 Deviation fromTest Standard

No deviation.

### 4.3.6 Test Results

There are 64 hopping frequencies in the hybrid mode.



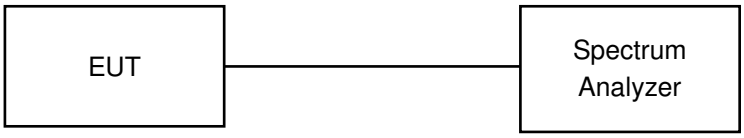



## 4.4 Dwell Time on Each Channel

### 4.4.1 Limits of Dwell Time on Each Channel Measurement

A hybrid system must comply with a 0.4 second/channel maximum dwell time when the hopping function is turned on.

### 4.4.2 Test Setup




### 4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.4.4 Test Procedures

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
d. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
e. Repeat above procedures until all different time-slot modes have been completed.

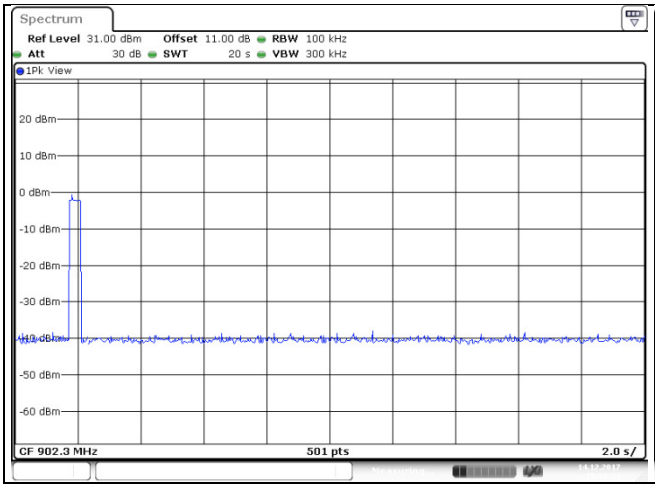
### 4.4.5 Deviation from Test Standard

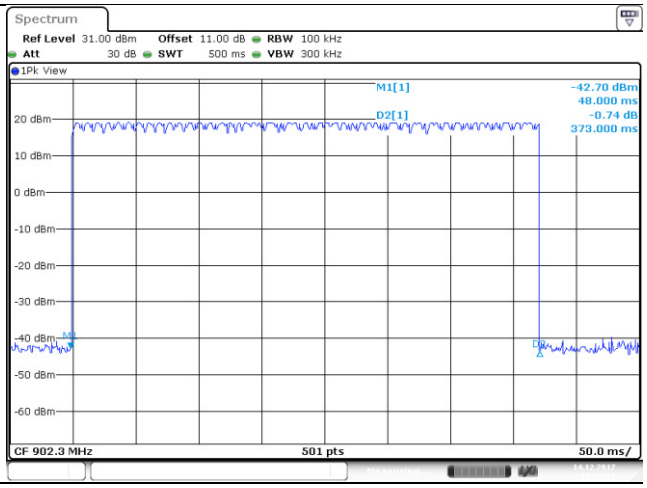
No deviation.

### 4.4.6 Test Results

| Number of transmission in a time period | Length of transmission time (msec) | Result (msec) | Limit (msec) |
|---|---|---|---|
| 1 time | 373 | 373 | 400 |

Note: Test plots of the transmitting time slot are shown on following.



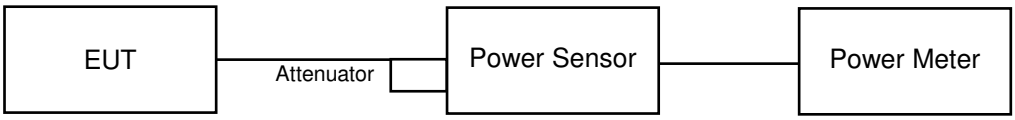



## 4.5 Conducted Output Power Measurement

### 4.5.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 902-928 MHz bands: 1 Watt (30dBm)

### 4.5.2 Test Setup




### 4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.5.4 Test Procedure

An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor. Record the power level.

### 4.5.5 Deviation from Test Standard

No deviation.

### 4.5.6 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

### 4.5.7 Test Results

| Channel | Frequency (MHz) | Average Power (mW) | Average Power (dBm) | Power Limit (dBm) | Pass / Fail |
|---|---|---|---|---|---|
| 0 | 902.3 | **84.140** | 19.25 | 30.00 | Pass |
| 31 | 908.5 | 83.560 | 19.22 | 30.00 | Pass |
| 63 | 914.9 | 83.176 | 19.20 | 30.00 | Pass |

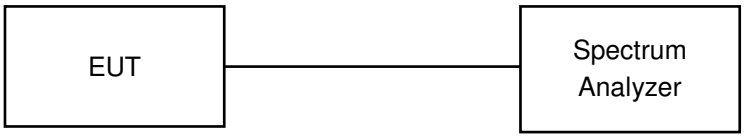
## 4.6 Power Spectral Density Measurement

### 4.6.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

A hybrid system must comply with the power density standard of 8 dBm in any 3 kHz band when the frequency hopping function is turned off

### 4.6.2 Test Setup




### 4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.6.4 Test Procedure

a. Set instrument center frequency to DTS channel center frequency.

b. Set span to at least 1.5 times the OBW.

c. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.

d. Set VBW ≥3 x RBW.

e. Detector = power averaging (RMS) or sample detector (when RMS not available).

f. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.

g. Sweep time = auto couple.

h. Employ trace averaging (RMS) mode over a minimum of 100 traces.

i. Use the peak marker function to determine the maximum amplitude level.

### 4.6.5 Deviation from Test Standard

No deviation.

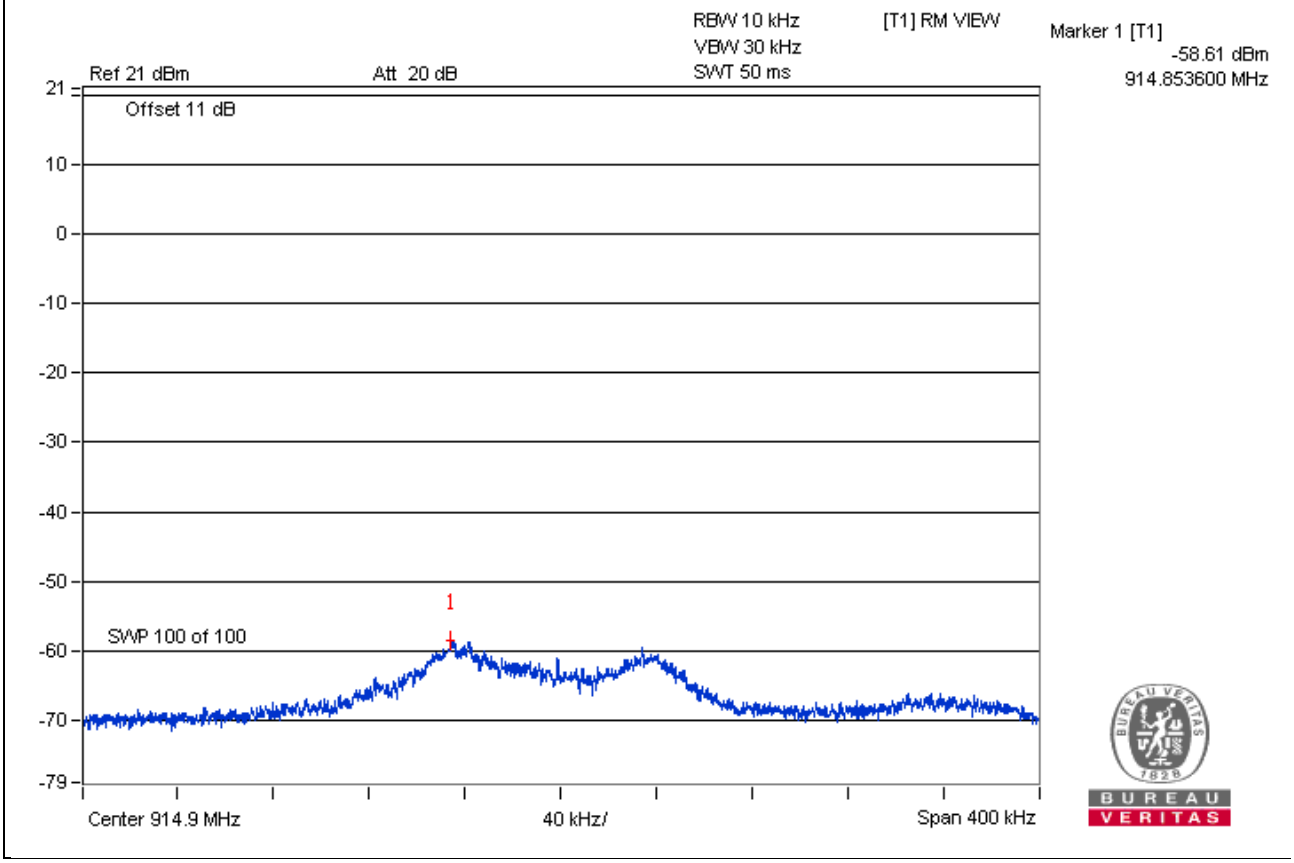
### 4.6.6 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

### 4.6.7 Test Results

| Channel | Freq. (MHz) | PSD (dBm/10kHz) | Limit (dBm/3kHz) | Pass / Fail |
|---|---|---|---|---|
| 0 | 902.3 | -59.73 | 8.00 | Pass |
| 31 | 908.5 | -59.44 | 8.00 | Pass |
| 63 | 914.9 | -58.61 | 8.00 | Pass |

Spectrum Plot of Worst Value

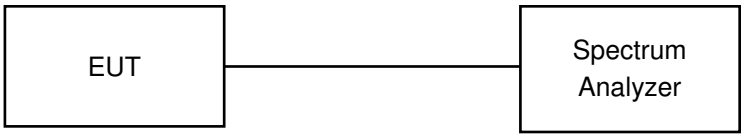


## 4.7 Conducted Out of Band Emission Measurement

### 4.7.1 Limits of Conducted Out Of Band Emission Measurement

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 4.7.2 Test Setup




### 4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.7.4 Test Procedure

**MEASUREMENT PROCEDURE REF**

a. Set the RBW = 100 kHz.
b. Set the VBW ≥ 300 kHz.
c. Detector = average.
d. Sweep time = auto couple.
e. Trace mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

**MEASUREMENT PROCEDURE OOBE**

a. Set RBW = 100 kHz.
b. Set VBW ≥ 300 kHz.
c. Detector = average.
d. Sweep = auto couple.
e. Trace Mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum amplitude level.

### 4.7.5 Deviation from Test Standard

No deviation.

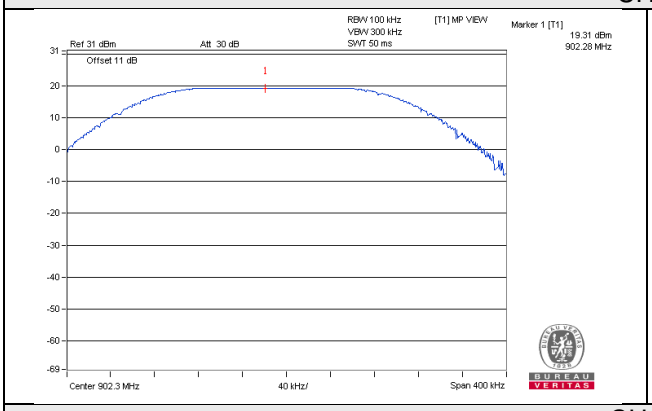
### 4.7.6 EUT Operating Condition

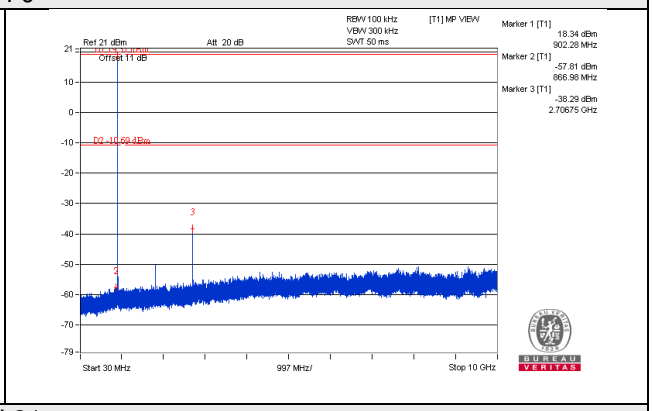
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

### 4.7.7 Test Results

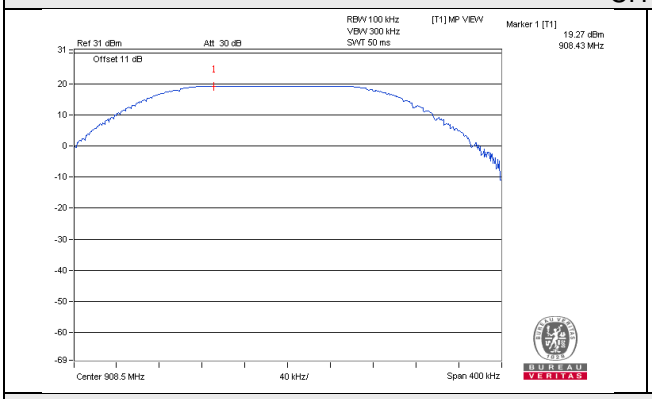
The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

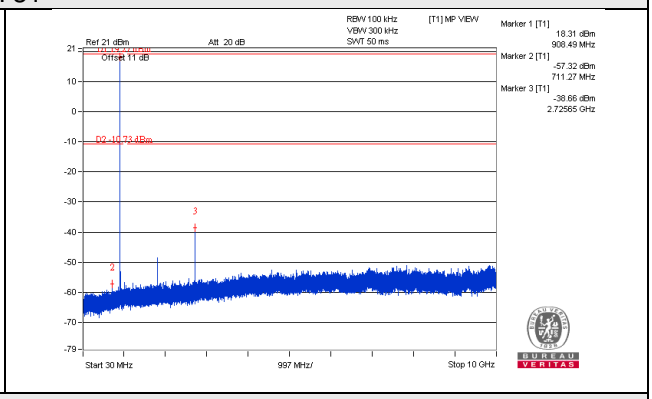
## CH 0



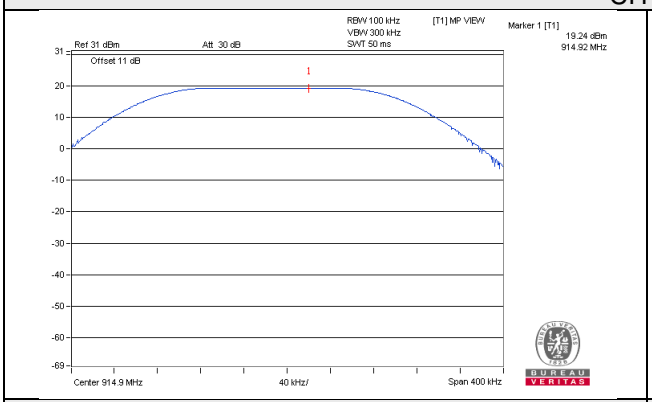



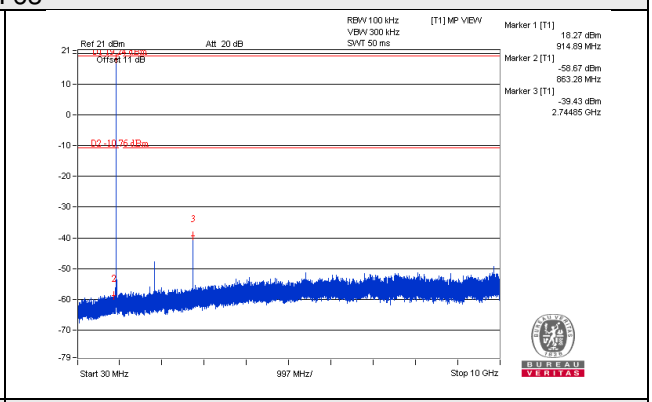

## CH 31



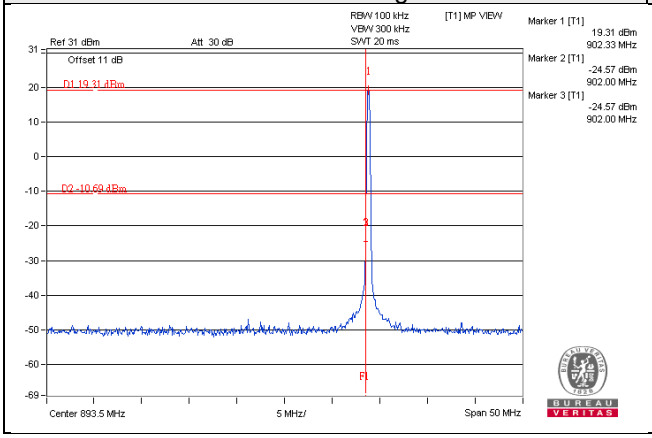




## CH 63

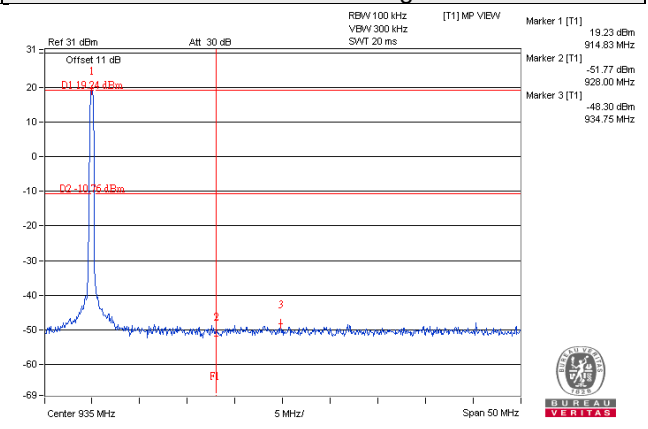



## CH 0 Band edge




## CH 63 Band edge



# 5 Test Types and Results (Hybrid Mode (500kHz Bandwidth, 8 channels))

## 5.1 Radiated Emission and Bandedge Measurement

### 5.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

| 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 30dB under any condition of modulation.

### 5.1.2 Test Instruments

Same as 4.1.2.

### 5.1.3 Test Procedures

Same as 4.1.3.

### 5.1.4 Deviation from Test Standard

No deviation.

### 5.1.5 Test Setup

Same as 4.1.5.

### 5.1.6 EUT Operating Conditions

Same as 4.1.6.

### 5.1.7 Test Results

Above 1GHz Data:

| CHANNEL | TX Channel 0 | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
|---|---|---|---|
| FREQUENCY RANGE | 30MHz ~ 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 | #902.00 | 64.8 PK | 89.8 | -25.0 | 1.00 H | 202 | 39.8 | 25.0 |
| 2 | #902.00 | 55.0 AV | 84.8 | -29.8 | 1.00 H | 202 | 30.0 | 25.0 |
| 3 | *903.00 | 119.8 PK | | | 1.00 H | 202 | 94.8 | 25.0 |
| 4 | *903.00 | 114.8 AV | | | 1.00 H | 202 | 89.8 | 25.0 |
| 5 | #1806.00 | 54.6 PK | 74.0 | -19.4 | 1.00 H | 174 | 60.8 | -6.2 |
| 6 | #1806.00 | 51.9 AV | 54.0 | -2.1 | 1.00 H | 174 | 58.1 | -6.2 |
| 7 | 2709.00 | 50.2 PK | 74.0 | -23.8 | 1.00 H | 3 | 52.6 | -2.4 |
| 8 | 2709.00 | 46.4 AV | 54.0 | -7.6 | 1.00 H | 3 | 48.8 | -2.4 |
| 9 | #7224.00 | 56.8 PK | 74.0 | -17.2 | 1.15 H | 337 | 48.2 | 8.6 |
| 10 | #7224.00 | 45.9 AV | 54.0 | -8.1 | 1.15 H | 337 | 37.3 | 8.6 |
| 11 | 8127.00 | 55.9 PK | 74.0 | -18.1 | 2.75 H | 43 | 46.0 | 9.9 |
| 12 | 8127.00 | 48.2 AV | 54.0 | -5.8 | 2.75 H | 43 | 38.3 | 9.9 |
| 13 | 9030.00 | 56.7 PK | 74.0 | -17.3 | 2.52 H | 92 | 45.7 | 11.0 |
| 14 | 9030.00 | 43.7 AV | 54.0 | -10.3 | 2.52 H | 92 | 32.7 | 11.0 |
| 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 | #902.00 | 64.2 PK | 78.5 | -14.3 | 1.00 V | 219 | 39.2 | 25.0 |
| 2 | #902.00 | 54.6 AV | 73.8 | -19.2 | 1.00 V | 219 | 29.6 | 25.0 |
| 3 | *903.00 | 108.5 PK | | | 1.00 V | 219 | 83.5 | 25.0 |
| 4 | *903.00 | 103.8 AV | | | 1.00 V | 219 | 78.8 | 25.0 |
| 5 | #1806.00 | 50.3 PK | 74.0 | -23.7 | 2.47 V | 118 | 56.5 | -6.2 |
| 6 | #1806.00 | 47.4 AV | 54.0 | -6.6 | 2.47 V | 118 | 53.6 | -6.2 |
| 7 | 2709.00 | 46.9 PK | 74.0 | -27.1 | 2.54 V | 139 | 49.3 | -2.4 |
| 8 | 2709.00 | 43.4 AV | 54.0 | -10.6 | 2.54 V | 139 | 45.8 | -2.4 |
| 9 | #7224.00 | 54.2 PK | 74.0 | -19.8 | 2.74 V | 14 | 45.6 | 8.6 |
| 10 | #7224.00 | 43.4 AV | 54.0 | -10.6 | 2.74 V | 14 | 34.8 | 8.6 |
| 11 | 8127.00 | 55.6 PK | 74.0 | -18.4 | 3.01 V | 25 | 45.7 | 9.9 |
| 12 | 8127.00 | 47.0 AV | 54.0 | -7.0 | 3.01 V | 25 | 37.1 | 9.9 |
| 13 | 9030.00 | 52.8 PK | 74.0 | -21.2 | 3.53 V | 11 | 41.8 | 11.0 |
| 14 | 9030.00 | 42.5 AV | 54.0 | -11.5 | 3.53 V | 11 | 31.5 | 11.0 |

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 radiated frequency is out of the restricted band.

| CHANNEL | TX Channel 4 | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
|---|---|---|---|
| FREQUENCY RANGE | 30MHz ~ 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 | *909.40 | 118.7 PK | | | 1.00 H | 204 | 93.5 | 25.2 |
| 2 | *909.40 | 114.0 AV | | | 1.00 H | 204 | 88.8 | 25.2 |
| 3 | #1818.80 | 55.2 PK | 74.0 | -18.8 | 1.00 H | 177 | 61.3 | -6.1 |
| **4** | **#1818.80** | **53.5 AV** | **54.0** | **-0.5** | **1.00 H** | **177** | **59.6** | **-6.1** |
| 5 | 2728.20 | 50.2 PK | 74.0 | -23.8 | 1.00 H | 5 | 52.6 | -2.4 |
| 6 | 2728.20 | 46.3 AV | 54.0 | -7.7 | 1.00 H | 5 | 48.7 | -2.4 |
| 7 | 7275.20 | 56.9 PK | 74.0 | -17.1 | 1.13 H | 329 | 48.1 | 8.8 |
| 8 | 7275.20 | 45.9 AV | 54.0 | -8.1 | 1.13 H | 329 | 37.1 | 8.8 |
| 9 | 8184.60 | 55.7 PK | 74.0 | -18.3 | 2.73 H | 42 | 45.8 | 9.9 |
| 10 | 8184.60 | 48.1 AV | 54.0 | -5.9 | 2.73 H | 42 | 38.2 | 9.9 |
| 11 | 9094.00 | 57.1 PK | 74.0 | -16.9 | 2.51 H | 94 | 45.9 | 11.2 |
| 12 | 9094.00 | 44.0 AV | 54.0 | -10.0 | 2.51 H | 94 | 32.8 | 11.2 |

| 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 | *909.40 | 111.8 PK | | | 1.00 V | 20 | 86.6 | 25.2 |
| 2 | *909.40 | 107.1 AV | | | 1.00 V | 20 | 81.9 | 25.2 |
| 3 | #1818.80 | 51.5 PK | 74.0 | -22.5 | 2.49 V | 117 | 57.6 | -6.1 |
| 4 | #1818.80 | 49.6 AV | 54.0 | -4.4 | 2.49 V | 117 | 55.7 | -6.1 |
| 5 | 2728.20 | 46.8 PK | 74.0 | -27.2 | 2.53 V | 136 | 49.2 | -2.4 |
| 6 | 2728.20 | 43.2 AV | 54.0 | -10.8 | 2.53 V | 136 | 45.6 | -2.4 |
| 7 | 7275.20 | 54.3 PK | 74.0 | -19.7 | 2.71 V | 17 | 45.5 | 8.8 |
| 8 | 7275.20 | 43.5 AV | 54.0 | -10.5 | 2.71 V | 17 | 34.7 | 8.8 |
| 9 | 8184.60 | 55.7 PK | 74.0 | -18.3 | 2.98 V | 27 | 45.8 | 9.9 |
| 10 | 8184.60 | 46.8 AV | 54.0 | -7.2 | 2.98 V | 27 | 36.9 | 9.9 |
| 11 | 9094.00 | 53.1 PK | 74.0 | -20.9 | 3.51 V | 14 | 41.9 | 11.2 |
| 12 | 9094.00 | 42.7 AV | 54.0 | -11.3 | 3.51 V | 14 | 31.5 | 11.2 |

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 radiated frequency is out of the restricted band.

| CHANNEL | TX Channel 7 | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
|---|---|---|---|
| FREQUENCY RANGE | 30MHz ~ 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 | *914.20 | 119.9 PK | | | 1.00 H | 204 | 94.6 | 25.3 |
| 2 | *914.20 | 115.0 AV | | | 1.00 H | 204 | 89.7 | 25.3 |
| 3 | #928.00 | 65.1 PK | 89.9 | -24.8 | 1.00 H | 204 | 39.6 | 25.5 |
| 4 | #928.00 | 55.2 AV | 85.0 | -29.8 | 1.00 H | 204 | 29.7 | 25.5 |
| 5 | #1828.40 | 53.8 PK | 74.0 | -20.2 | 3.43 H | 19 | 59.9 | -6.1 |
| 6 | #1828.40 | 51.6 AV | 54.0 | -2.4 | 3.43 H | 19 | 57.7 | -6.1 |
| 7 | 2742.60 | 51.0 PK | 74.0 | -23.0 | 3.76 H | 65 | 53.3 | -2.3 |
| 8 | 2742.60 | 46.6 AV | 54.0 | -7.4 | 3.76 H | 65 | 48.9 | -2.3 |
| 9 | 7313.60 | 56.6 PK | 74.0 | -17.4 | 1.00 H | 77 | 47.6 | 9.0 |
| 10 | 7313.60 | 50.5 AV | 54.0 | -3.5 | 1.00 H | 77 | 41.5 | 9.0 |
| 11 | 8227.80 | 55.5 PK | 74.0 | -18.5 | 1.16 H | 237 | 45.6 | 9.9 |
| 12 | 8227.80 | 45.0 AV | 54.0 | -9.0 | 1.16 H | 237 | 35.1 | 9.9 |
| 13 | 9142.00 | 58.1 PK | 74.0 | -15.9 | 1.01 H | 118 | 46.7 | 11.4 |
| 14 | 9142.00 | 48.9 AV | 54.0 | -5.1 | 1.01 H | 118 | 37.5 | 11.4 |
| 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 | *914.20 | 108.1 PK | | | 1.00 V | 18 | 82.8 | 25.3 |
| 2 | *914.20 | 103.9 AV | | | 1.00 V | 18 | 78.6 | 25.3 |
| 3 | #928.00 | 65.0 PK | 78.1 | -13.1 | 1.00 V | 18 | 39.5 | 25.5 |
| 4 | #928.00 | 54.9 AV | 73.9 | -19.0 | 1.00 V | 18 | 29.4 | 25.5 |
| 5 | #1828.40 | 49.7 PK | 74.0 | -24.3 | 2.40 V | 116 | 55.8 | -6.1 |
| 6 | #1828.40 | 47.5 AV | 54.0 | -6.5 | 2.40 V | 116 | 53.6 | -6.1 |
| 7 | 2742.60 | 44.3 PK | 74.0 | -29.7 | 2.47 V | 144 | 46.6 | -2.3 |
| 8 | 2742.60 | 40.7 AV | 54.0 | -13.3 | 2.47 V | 144 | 43.0 | -2.3 |
| 9 | 7313.60 | 52.8 PK | 74.0 | -21.2 | 2.72 V | 19 | 43.8 | 9.0 |
| 10 | 7313.60 | 46.8 AV | 54.0 | -7.2 | 2.72 V | 19 | 37.8 | 9.0 |
| 11 | 8227.80 | 54.7 PK | 74.0 | -19.3 | 3.01 V | 27 | 44.8 | 9.9 |
| 12 | 8227.80 | 44.4 AV | 54.0 | -9.6 | 3.01 V | 27 | 34.5 | 9.9 |
| 13 | 9142.00 | 55.8 PK | 74.0 | -18.2 | 3.41 V | 15 | 44.4 | 11.4 |
| 14 | 9142.00 | 45.9 AV | 54.0 | -8.1 | 3.41 V | 15 | 34.5 | 11.4 |

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 radiated frequency is out of the restricted band.

Below 1GHz worst-case data:

| CHANNEL | TX Channel 0 | 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 | 105.58 | 26.9 QP | 43.5 | -16.6 | 1.49 H | 66 | 44.2 | -17.3 |
| 2 | 199.69 | 39.4 QP | 43.5 | -4.1 | 1.00 H | 75 | 55.5 | -16.1 |
| 3 | 250.14 | 41.9 QP | 46.0 | -4.1 | 1.00 H | 135 | 56.1 | -14.2 |
| 4 | 301.56 | 34.3 QP | 46.0 | -11.7 | 1.00 H | 196 | 46.6 | -12.3 |
| 5 | 499.48 | 34.1 QP | 46.0 | -11.9 | 1.49 H | 100 | 43.5 | -9.4 |
| 6 | 729.41 | 34.7 QP | 46.0 | -11.3 | 1.49 H | 15 | 40.3 | -5.6 |
| 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 | 32.81 | 32.1 QP | 40.0 | -7.9 | 1.50 V | 208 | 47.3 | -15.2 |
| 2 | 215.21 | 34.6 QP | 43.5 | -8.9 | 1.01 V | 102 | 50.8 | -16.2 |
| 3 | 297.68 | 27.7 QP | 46.0 | -18.3 | 1.50 V | 203 | 40.2 | -12.5 |
| 4 | 501.42 | 33.9 QP | 46.0 | -12.1 | 1.01 V | 24 | 43.3 | -9.4 |
| 5 | 599.41 | 33.7 QP | 46.0 | -12.3 | 1.01 V | 15 | 41.2 | -7.5 |
| 6 | 760.46 | 30.5 QP | 46.0 | -15.5 | 1.01 V | 139 | 35.2 | -4.7 |

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 4 | 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 | 33.78 | 27.3 QP | 40.0 | -12.7 | 1.00 H | 7 | 42.4 | -15.1 |
| 2 | 202.60 | 38.6 QP | 43.5 | -4.9 | 1.00 H | 126 | 54.8 | -16.2 |
| 3 | 236.55 | 42.7 QP | 46.0 | -3.3 | 1.00 H | 137 | 57.6 | -14.9 |
| 4 | 270.51 | 40.0 QP | 46.0 | -6.0 | 1.00 H | 191 | 53.1 | -13.1 |
| 5 | 485.89 | 33.2 QP | 46.0 | -12.8 | 1.50 H | 184 | 42.8 | -9.6 |
| 6 | 598.44 | 33.2 QP | 46.0 | -12.8 | 1.50 H | 148 | 40.7 | -7.5 |
| 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 | 32.81 | 33.0 QP | 40.0 | -7.0 | 1.00 V | 346 | 48.2 | -15.2 |
| 2 | 71.62 | 26.7 QP | 40.0 | -13.3 | 1.00 V | 136 | 42.4 | -15.7 |
| 3 | 203.57 | 34.0 QP | 43.5 | -9.5 | 1.50 V | 60 | 50.2 | -16.2 |
| 4 | 286.03 | 28.6 QP | 46.0 | -17.4 | 1.50 V | 242 | 41.2 | -12.6 |
| 5 | 496.57 | 34.9 QP | 46.0 | -11.1 | 1.00 V | 34 | 44.4 | -9.5 |
| 6 | 598.44 | 32.5 QP | 46.0 | -13.5 | 1.00 V | 42 | 40.0 | -7.5 |

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 7 | 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 | 33.78 | 25.2 QP | 40.0 | -14.8 | 1.49 H | 356 | 40.3 | -15.1 |
| 2 | 211.33 | 40.2 QP | 43.5 | -3.3 | 1.49 H | 172 | 56.4 | -16.2 |
| 3 | 241.40 | 42.6 QP | 46.0 | -3.4 | 1.49 H | 156 | 57.1 | -14.5 |
| 4 | 262.75 | 42.0 QP | 46.0 | -4.0 | 1.00 H | 155 | 55.6 | -13.6 |
| 5 | 500.45 | 34.3 QP | 46.0 | -11.7 | 1.49 H | 107 | 43.7 | -9.4 |
| 6 | 759.49 | 29.7 QP | 46.0 | -16.3 | 1.00 H | 47 | 34.4 | -4.7 |
| 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 | 33.78 | 33.7 QP | 40.0 | -6.3 | 1.01 V | 211 | 48.8 | -15.1 |
| 2 | 214.24 | 36.8 QP | 43.5 | -6.7 | 1.01 V | 103 | 53.0 | -16.2 |
| 3 | 314.17 | 30.6 QP | 46.0 | -15.4 | 1.50 V | 59 | 42.7 | -12.1 |
| 4 | 508.21 | 32.5 QP | 46.0 | -13.5 | 1.01 V | 35 | 41.7 | -9.2 |
| 5 | 599.41 | 33.9 QP | 46.0 | -12.1 | 1.01 V | 48 | 41.4 | -7.5 |
| 6 | 767.25 | 29.7 QP | 46.0 | -16.3 | 1.01 V | 153 | 34.3 | -4.6 |

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

## 5.2 Conducted Emission Measurement

### 5.2.1 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.

### 5.2.2 Test Instruments

Same as 4.2.2.

### 5.2.3 Test Procedures

Same as 4.2.3.

### 5.2.4 Deviation from Test Standard

No deviation.

### 5.2.5 Test Setup

Same as 4.2.5.

### 5.2.6 EUT Operating Conditions

Same as 4.1.6.

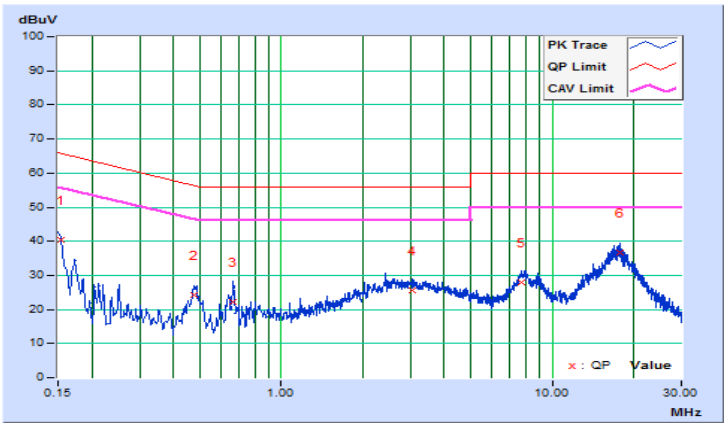
### 5.2.7 Test Results

| Channel | TX Channel 0 | Phase | Line (L) |
|---|---|---|---|
| Detector Function | Quasi-Peak (QP) / Average (AV) | | |

| No | Freq. | Corr. Factor | Reading Value | | Emission Level | | Limit | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | [dB (uV)] | | [dB (uV)] | | [dB (uV)] | | (dB) | |
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.15391 | 10.45 | 30.05 | 14.41 | 40.50 | 24.86 | 65.79 | 55.79 | -25.29 | -30.93 |
| 2 | 0.47844 | 10.51 | 13.59 | 3.45 | 24.10 | 13.96 | 56.37 | 46.37 | -32.27 | -32.41 |
| 3 | 0.66605 | 10.50 | 11.80 | 1.61 | 22.30 | 12.11 | 56.00 | 46.00 | -33.70 | -33.89 |
| 4 | 3.04340 | 10.59 | 15.09 | 10.13 | 25.68 | 20.72 | 56.00 | 46.00 | -30.32 | -25.28 |
| 5 | 7.74713 | 10.82 | 17.04 | 11.13 | 27.86 | 21.95 | 60.00 | 50.00 | -32.14 | -28.05 |
| 6 | 17.86230 | 11.32 | 25.39 | 21.56 | 36.71 | 32.88 | 60.00 | 50.00 | -23.29 | -17.12 |

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.

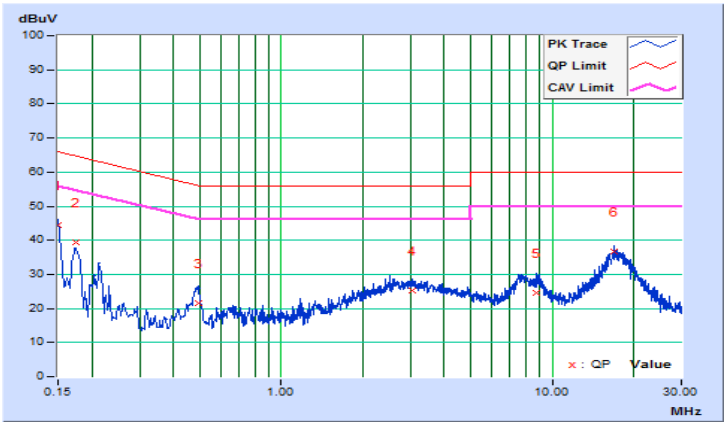


| Channel | TX Channel 0 | Phase | Neutral (N) |
|---|---|---|---|
| Detector Function | Quasi-Peak (QP) / Average (AV) | | |

| No | Freq. | Corr. Factor | Reading Value | | Emission Level | | Limit | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | [dB (uV)] | | [dB (uV)] | | [dB (uV)] | | (dB) | |
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.15000 | 10.20 | 34.24 | 21.62 | 44.44 | 31.82 | 66.00 | 56.00 | -21.56 | -24.18 |
| 2 | 0.17374 | 10.21 | 29.19 | 16.56 | 39.40 | 26.77 | 64.78 | 54.78 | -25.38 | -28.01 |
| 3 | 0.49799 | 10.24 | 11.31 | 2.97 | 21.55 | 13.21 | 56.03 | 46.03 | -34.48 | -32.82 |
| 4 | 3.03558 | 10.36 | 15.01 | 10.29 | 25.37 | 20.65 | 56.00 | 46.00 | -30.63 | -25.35 |
| 5 | 8.70117 | 10.61 | 13.87 | 7.81 | 24.48 | 18.42 | 60.00 | 50.00 | -35.52 | -31.58 |
| **6** | **16.94736** | **10.94** | **25.62** | **22.02** | **36.56** | **32.96** | **60.00** | **50.00** | **-23.44** | **-17.04** |

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.

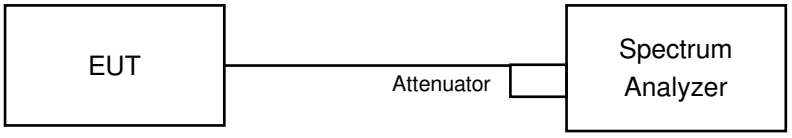


## 5.3 Number of Hopping Frequency Used

### 5.3.1 Limits of Hopping Frequency Used Measurement

There is no minimum number of hopping channels associated with this type of hybrid system.

### 5.3.2 Test Setup




### 5.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 5.3.4 Test Procedure

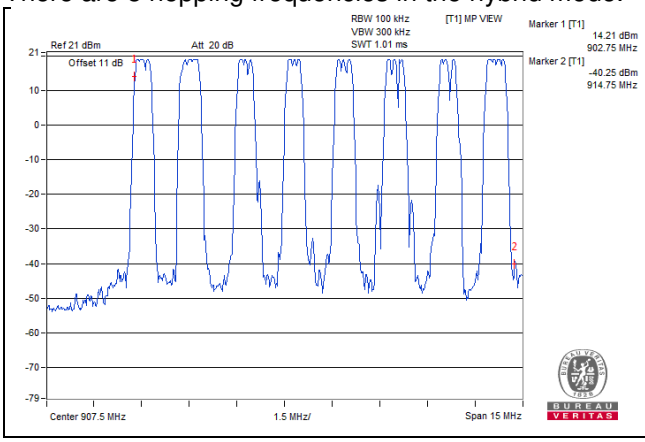
a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
d. Set the SA on View mode and then plot the result on SA screen.
e. Repeat above procedures until all frequencies measured were complete.

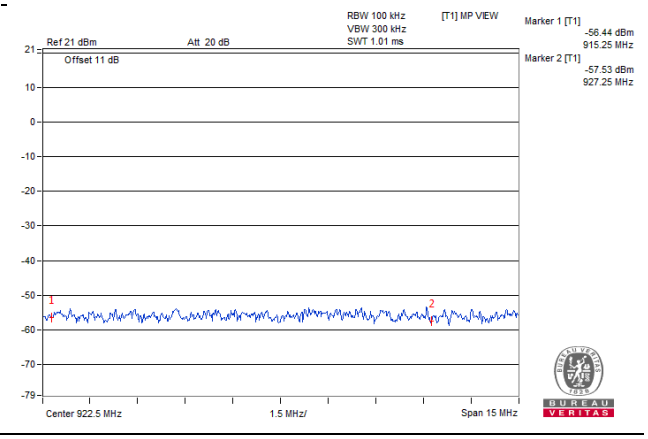
### 5.3.5 Deviation fromTest Standard

No deviation.

### 5.3.6 Test Results

There are 8 hopping frequencies in the hybrid mode.



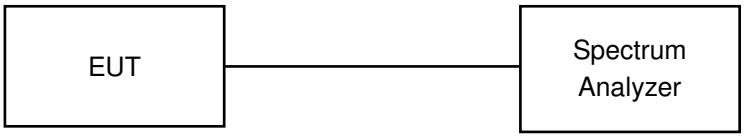



## 5.4 Dwell Time on Each Channel

### 5.4.1 Limits of Dwell Time on Each Channel Measurement

A hybrid system must comply with a 0.4 second/channel maximum dwell time when the hopping function is turned on.

### 5.4.2 Test Setup




### 5.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 5.4.4 Test Procedures

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
d. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
e. Repeat above procedures until all different time-slot modes have been completed.

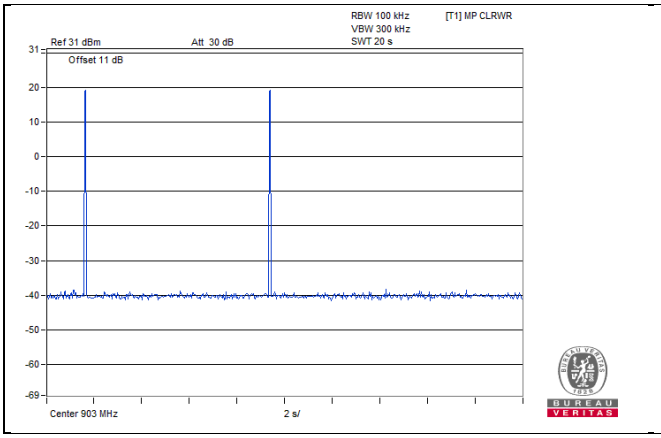
### 5.4.5 Deviation from Test Standard

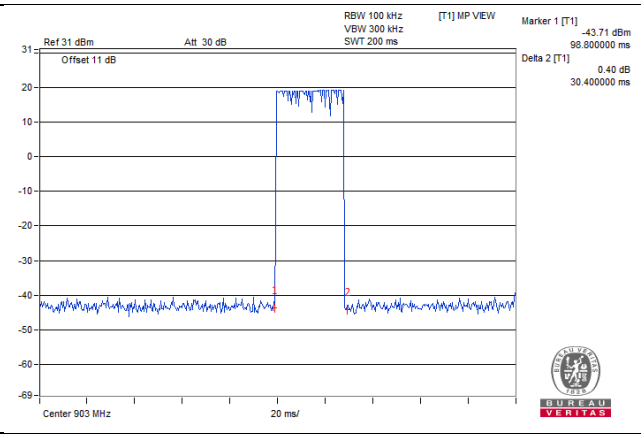
No deviation.

### 5.4.6 Test Results

| Number of transmission in a time period | Length of transmission time (msec) | Result (msec) | Limit (msec) |
|---|---|---|---|
| 2 time | 30.4 | 60.8 | 400 |

Note: Test plots of the transmitting time slot are shown on following.



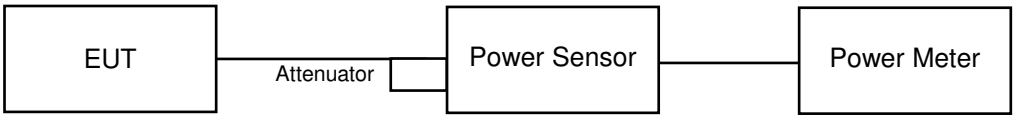



## 5.5 Conducted Output Power Measurement

### 5.5.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 902-928 MHz bands: 1 Watt (30dBm)

### 5.5.2 Test Setup




### 5.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 5.5.4 Test Procedure

An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor. Record the power level.

### 5.5.5 Deviation from Test Standard

No deviation.

### 5.5.6 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

### 5.5.7 Test Results

| Channel | Frequency (MHz) | Average Power (mW) | Average Power (dBm) | Power Limit (dBm) | Pass / Fail |
|---|---|---|---|---|---|
| 0 | 903.0 | **85.507** | 19.32 | 30.00 | Pass |
| 4 | 909.4 | 83.753 | 19.23 | 30.00 | Pass |
| 7 | 914.2 | 82.985 | 19.19 | 30.00 | Pass |

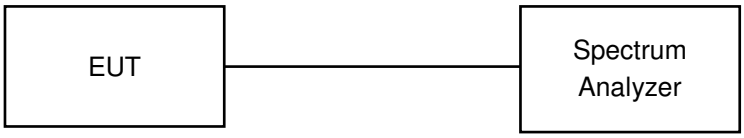
## 5.6 Power Spectral Density Measurement

### 5.6.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

A hybrid system must comply with the power density standard of 8 dBm in any 3 kHz band when the frequency hopping function is turned off

### 5.6.2 Test Setup




### 5.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 5.6.4 Test Procedure

a. Set instrument center frequency to DTS channel center frequency.

b. Set span to at least 1.5 times the OBW.

c. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.

d. Set VBW ≥3 x RBW.

e. Detector = power averaging (RMS) or sample detector (when RMS not available).

f. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.

g. Sweep time = auto couple.

h. Employ trace averaging (RMS) mode over a minimum of 100 traces.

i. Use the peak marker function to determine the maximum amplitude level.

### 5.6.5 Deviation from Test Standard

No deviation.

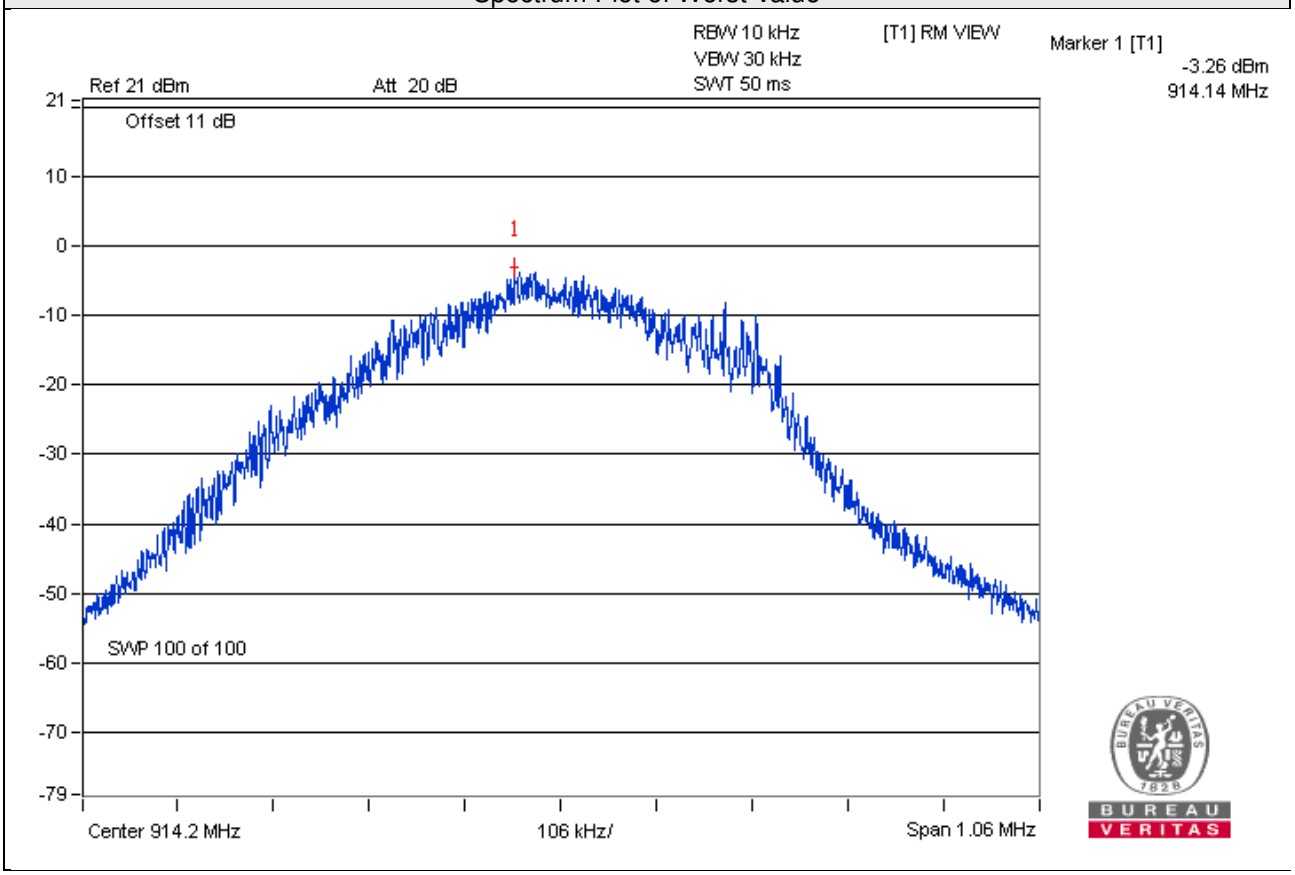
### 5.6.6 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

### 5.6.7 Test Results

| Channel | Freq. (MHz) | PSD (dBm/10kHz) | Limit (dBm/3kHz) | Pass / Fail |
|---|---|---|---|---|
| 0 | 903.0 | -4.33 | 8.00 | Pass |
| 4 | 909.4 | -4.39 | 8.00 | Pass |
| 7 | 914.2 | -3.26 | 8.00 | Pass |

Spectrum Plot of Worst Value

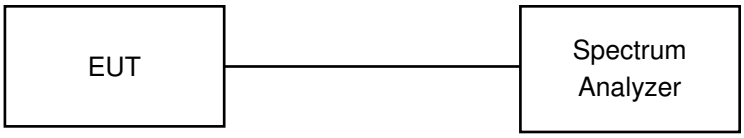


## 5.7 Conducted Out of Band Emission Measurement

### 5.7.1 Limits of Conducted Out Of Band Emission Measurement

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 5.7.2 Test Setup




### 5.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 5.7.4 Test Procedure

**MEASUREMENT PROCEDURE REF**

a. Set the RBW = 100 kHz.
b. Set the VBW ≥ 300 kHz.
c. Detector = average.
d. Sweep time = auto couple.
e. Trace mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

**MEASUREMENT PROCEDURE OOBE**

a. Set RBW = 100 kHz.
b. Set VBW ≥ 300 kHz.
c. Detector = average.
d. Sweep = auto couple.
e. Trace Mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum amplitude level.

### 5.7.5 Deviation from Test Standard

No deviation.

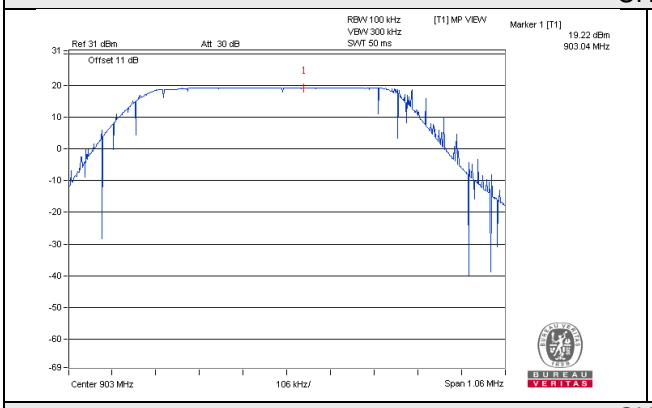
### 5.7.6 EUT Operating Condition

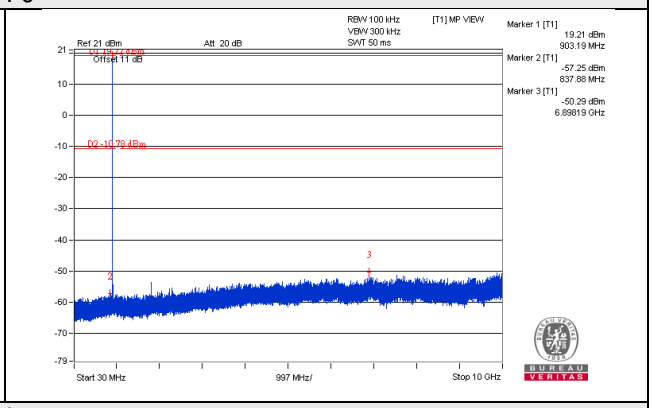
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

### 5.7.7 Test Results

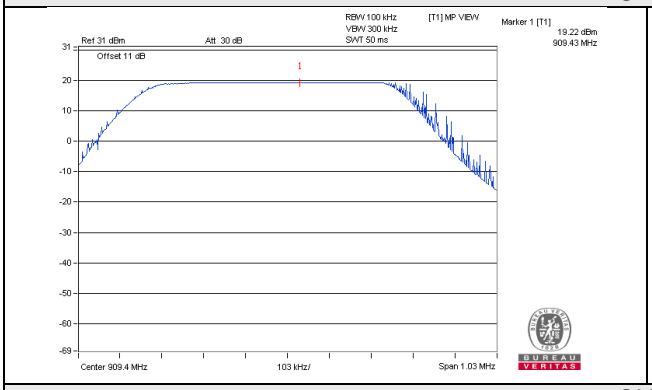
The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

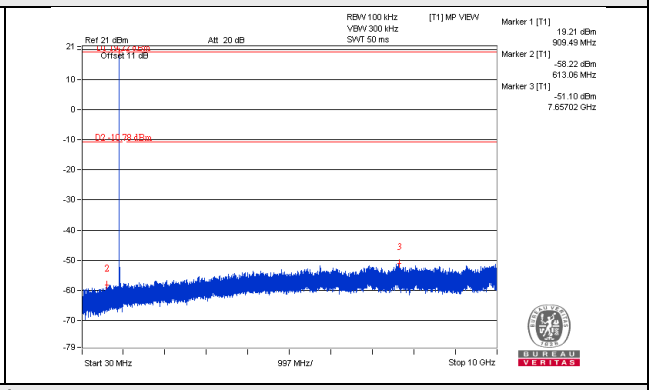
## CH 0



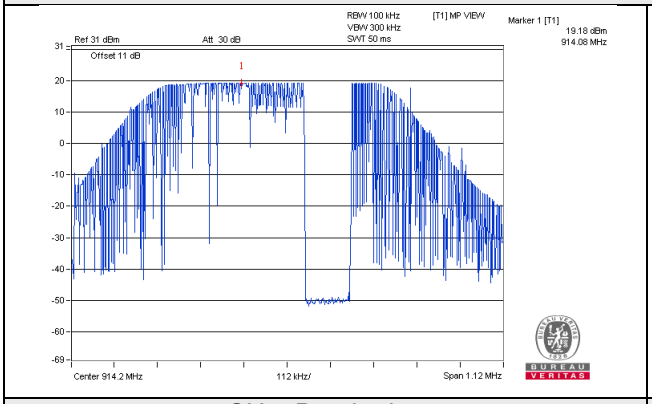



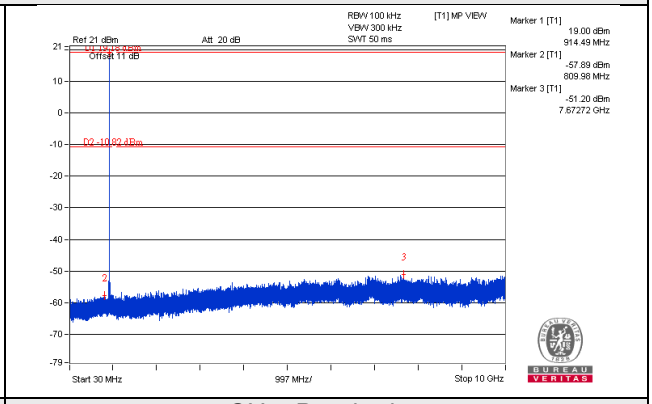

## CH 4



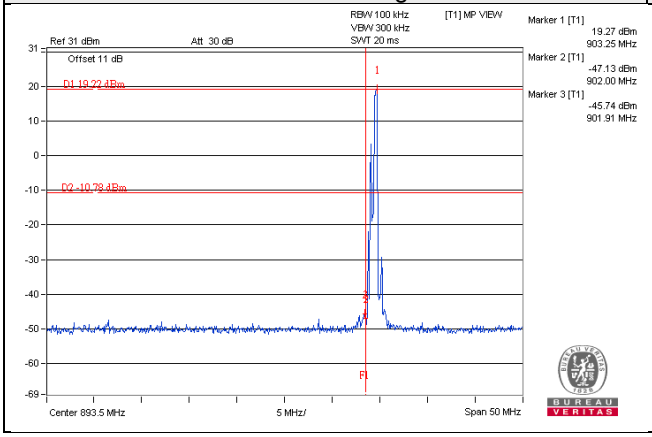




## CH 7

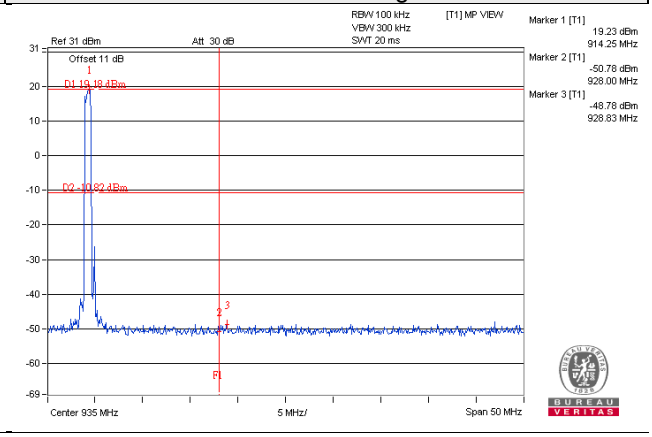



## CH 0 Band edge




## CH 7 Band edge



## 6 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 and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following: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The address and road map of all our labs can be found in our web site also.

**--- END ---**