# FCC Part 90 Rules
# Test Report

Report No.: AGC02931200901FE10

| | | |
|---|---|---|
| **FCC ID** | : | POD-DMR3 |
| **PRODUCT DESIGNATION** | : | DMR mobile radio |
| **BRAND NAME** | : | TYT |
| **MODEL NAME** | : | MD-9600-5P GPS, MD-9600-5P, MD-9600 GPS, MD-9600 |
| **APPLICANT** | : | TYT ELECTRONICS CO., LTD |
| **DATE OF ISSUE** | : | Nov. 03, 2020 |
| **STANDARD(S)** | : | FCC Part 90 Rules |
| **REPORT VERSION** | : | V 1.0 |

***A***ttestation of ***G***lobal ***C***ompliance (Shenzhen) Co., Ltd

## Report Revise Record

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|---|---|---|---|---|
| V1.0 | / | Nov. 03, 2020 | Valid | Class II Permissive Change |

**Note:** The original test report Ref. No. (RXM170927052-00) (dated 2017-12-06), was modified on 2020-11-03 to include the following changes and additions for:

-Update the main test model and series model

-Update hardware version.

- PCB board changed material

-Modify the maximum power of the VHF band to 40W.

For the above described changes, all the tests of 40W power in the VHF frequency band have been updated.

In response to material changes, re-evaluate the radiation stray and power tests of all powers of VHF and UHF. The rest of the conduction method test items refer to this FCC ID original report

# TABLE OF CONTENTS

## 1. VERIFICATION OF COMPLIANCE

| | |
|---|---|
| **Applicant:** | TYT ELECTRONICS CO., LTD |
| **Address** | Block 39-1, Optoelectronics-information industry base, Nan'an, Quanzhou, Fujian, China. |
| **Manufacturer:** | TYT ELECTRONICS CO., LTD |
| **Address** | Block 39-1, Optoelectronics-information industry base, Nan'an, Quanzhou, Fujian, China. |
| **Factory** | TYT ELECTRONICS CO., LTD |
| **Address** | Block 39-1, Optoelectronics-information industry base, Nan'an, Quanzhou, Fujian, China. |
| **Product Designation:** | DMR mobile radio |
| **Brand Name:** | TYT |
| **Test Model** | MD-9600-5P GPS |
| **Serial Model** | MD-9600-5P, MD-9600 GPS, MD-9600 |
| **Difference Description** | The model is only GPS and 5-Pin cable installation difference<br>MD-9600-5P GPS has GPS & 5-Pin cable<br>MD-9600-5P only has 5-Pin cable<br>MD-9600 GPS only GPS<br>MD-9600 without GPS & 5-Pin cable |
| **Measurement Procedure** | TIA/EIA 603-E-2016 |
| **Deviation** | No any deviation from the test method. |
| **Date of Test:** | Sep. 04, 2020~Nov. 03, 2020 |
| **Condition of Test Sample** | Normal |
| **Test Result** | Pass |

The above equipment was tested by Shenzhen Attestation of Global Compliance Science & Technology Co., Ltd.The data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI/TIA-603-E (2016). The sample tested as described in this report is in compliance with the FCC Rules Part 90 requirements.The test results of this report relate only to the tested sample identified in this report.

Prepared By

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(Project Engineer) Nov. 03, 2020

Reviewed By

Calvin Liu
(Reviewer) Nov. 03, 2020

Approved By

Forrest Lei
Authorized Officer Nov. 03, 2020

# 2. GENERAL INFORMATION

## 2.1PRODUCT DESCRIPTION

The EUT is a **DMR mobile radio** designed for voice/data communication. It is designed by way of utilizing the FM/4FSK modulation achieves the system operating.

A major technical description of EUT is described as following:

| | | |
|---|---|---|
| Communication Type | Voice/ Data only | |
| Hardware Version | MD9600-UV-V4.1 | |
| Software Version | MD9600-UV-V4.1 | |
| Modulation | FM/4FSK | |
| Emission Type | 7K60FXD/7K60FXE/11K0F3E | |
| Emission Bandwidth | Analog:10.67KHz(40W-12.5 KHz)---VHF<br>Digital: 10.42KHz(40W-12.5KHz)---VHF | |
| Peak Frequency Deviation | 1.85KHz | |
| Audio Frequency Response | 7.69dB | |
| Maximum Transmitter Power | Analog:45.51dBm(40W-12.5 KHz), 35.50dBm (5W-12.5 KHz) ---VHF<br>Digital: 45.34dBm(40W), 35.18dBm (5W) ---VHF<br>Analog:45.27dBm(35W-12.5 KHz), 35.47dBm (5W-12.5 KHz) ---UHF<br>Digital: 43.38dBm(35W), 33.74dBm (5W) ---UHF | |
| Output power Modification | VHF:40W/5W UHF:35W/5W<br>(It was fixed by the manufacturer, any individual can't arbitrarily change it.) | |
| Data Rate | 9600bps/12.5KHz(Channel Spacing) | |
| Antenna Designation | Detachable | |
| Antenna Type | External Antenna | |
| Antenna Gain | 0dBi | |
| Power Supply | DC 13.80V by battery | |
| Limiting Voltage | DC11.73V-15.87V | |
| Operation Frequency Range and Channel | Frequency Range: 136 MHz to 174 MHz (VHF) 400 MHz to 480 MHz (UHF)<br>Channel Separation: 12.5KHz(Digital/Analog) | |
| | Bottom Channel: 136.025MHz<br>Middle Channel:151.850MHz<br>Middle Channel:155.025MHz<br>Middle Channel:161.610MHz<br>High Channel: 173.975MHz | Bottom Channel: 400.025MHz<br>Middle Channel: 453.225MHz<br>Middle Channel: 454.025MHz<br>High Channel: 479.975MHz |
| Frequency Tolerance | 1.100ppm | |

| Frequency Range (MHz) | Rated Transmit Power(W)(Conducted) | Transmit Mode/Emission Designator |
|---|---|---|
| 400-480 | 35W/5W | 11K0F3E(Analog Vioce;NB) |
| 400-480 | 35W/5W | 7K60FXD/7K60FXW(9600Data/Digital Voice NB ) |

| Frequency Range (MHz) | Rated Transmit Power(W)(Conducted) | Transmit Mode/Emission Designator |
|---|---|---|
| 136-174 | 40W/5W | 11K0F3E(Analog Vioce;NB) |
| 136-174 | 40W/5W | 7K60FXD/7K60FXW(9600Data/Digital Voice NB ) |

| Channel No. (6.25KHz) | Channel No. (12.5KHz) | 12.5KHz Channel Spaced 400MHz Band Plan(MHz) |
|---|---|---|
| 1 | 1-2 | 400.025 |
| 2 | | |
| 3 | 3-4 | 440.025 |
| 4 | | |
| 5 | 5-6 | 479.975 |
| 6 | | |

| Channel No. (6.25KHz) | Channel No. (12.5KHz) | 12.5KHz Channel Spaced 136MHz Band Plan(MHz) |
|---|---|---|
| 1 | 1-2 | 136.025 |
| 2 | | |
| 3 | 3-4 | 155.025 |
| 4 | | |
| 5 | 5-6 | 173.975 |
| 6 | | |

FCC Rules and Regulations Part 2.202: Necessary Bandwidth and Emission Bandwidth

**For FM Mode (ChannelSpacing: 12.5kHz)**

Emission Designator 11K0F3E
In this case, the maximum modulating frequency is 3.0 kHz with a 2.5 kHz deviation.
BW = 2(M+D) = 2*(3.0 kHz + 2.5 kHz) = 11 kHz = 11K0
F3E portion of the designator represents an FM voice transmission
Therefore, the entire designator for 12.5 kHz channel spacing FM mode is 11K0F3E.

**For FM Mode (Channel Spacing: 25kHz)**

Emission Designator 16K0F3E
In this case, the maximum modulating frequency is 3.0 kHz with a 5.0 kHz deviation.
BW = 2(M+D) = 2*(3.0 kHz + 5.0 kHz) = 16 kHz = 16K0
F3E portion of the designator represents an FM voice transmission
Therefore, the entire designator for 25 kHz channel spacing FM mode is 16K0F3E.

**For Digital Mode (Channel Spacing: 12.5 kHz)**

Emission Designator 7K60F1D and
7K60F1E
The 99% energy rule was used for digital mode. It basically states that 99% of the modulation energy falls within X kHz, in this case, 7.60 kHz.
F1D and F1E portion of the designator indicates digital information.
Therefore, the entire designator for 12.5 kHz channel spacing digital mode is 7K60F1D and 7K60F1E.

## 2.2RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: **POD-DMR3 ,** filing to comply with Part 2, Part 22, and Part 90 of the Federal Communication Commission rules.

## 2.3 TEST METHODOLOGY

The tests were performed according to following standards:
**FCC Part 90** Private Land Mobile Radio Services
**FCC Part 2** Frequency Allocations And Radio Treaty Matters, General Rules And Regulations.
**TIA/EIA 603 E: March 2016** Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.
**ANSI C63.26 :2015** American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services.
**KDB579009 D03 v01:** Applications Part 90 Refarming Bands.

## 2.4 TEST FACILITY

| | |
|---|---|
| **Test Site** | Attestation of Global Compliance (Shenzhen) Co., Ltd |
| **Location** | 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong,China |
| **Designation Number** | CN1259 |
| **FCC Test Firm Registration Number** | 975832 |
| **A2LA Cert. No.** | 5054.02 |
| **Description** | Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA |

## 2.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

## 2.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

# 3. SYSTEM TEST CONFIGURATION

## 3.1EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

## 3.2 EUT EXERCISE

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

## 3.3 GENERAL TECHNICAL REQUIREMENTS

For FCC Part 90 requirements:

(1). Section 90.205 : RF Output Power

(2). Section 90.207 : Modulation Characteristic

(3). Section 90.209 : Occupied Bandwidth

(4). Section 90.210 : Emission Mask

(5). Section 90.213 : Frequency Tolerance

(6). Section 90.214: Transmitter Frequency Behavior

(7). Section 90.210 : Spurious Emission on Antenna Port

(8). Section 90.210 : Spurious Ratiated Emission

### 3.4 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

- Uncertainty of Conducted Emission, Uc = ±3.2 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB
- Uncertainty of total RF power, conducted, Uc = ±0.8dB
- Uncertainty of spurious emissions, conducted, Uc = ±2.7dB
- Uncertainty of Occupied Channel Bandwidth: Uc = ±2 %
- Uncertainty of Frequency: Uc = ±2 %
- Uncertainty of FM deviation: Uc=±2 %
- Uncertainty of Audio Level: Uc=±0.98dB
- Uncertainty of Modulation Limiting: Uc=±0.42 %
- Uncertainty of Transient Frequency Behavior: Uc=±6.8%
- Uncertainty of Low Pass Filter Response: Uc=±0.76dB

## 3.5 CONFIGURATION OF TESTED SYSTEM

Fig. 2-1 Configuration of Tested System


Table 2-1 Equipment Used in Tested System

| Item | Equipment | Model No. | Identifier | Note |
|---|---|---|---|---|
| 1 | DMR mobile radio | RDM-DB-G | FCC ID: POD-DMR3 | EUT |
| 3 | Hand microphone | N/A | N/A | Accessory |

## 4. SUMMARY OF TEST RESULTS

| FCC Rules | Description Of Test | Result |
|---|---|---|
| §90.205& 2.1046 | Maximum Transmitter Power | Compliant |
| §90.207& 2.1047 | Modulation Characteristic | Compliant |
| §90.209& 2.1049 | Occupied Bandwidth | Compliant |
| §90.210& 2.1049 | Emission Mask | Compliant |
| §90.213& 2.1055 | Frequency Tolerance | Compliant |
| §90.214 | Transmitter Frequency Behavior | Compliant |
| §90.210& 2.1051 | Spurious Emission on Antenna Port | Compliant |
| §90.210& 2.1053 | Spurious Ratiated Emission | Compliant |

**LIST OF EQUIPMENTS USED**

| Equipment | Manufacturer | Model | S/N | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| TEST RECEIVER | R&S | ESCI | 10096 | May 15, 2020 | May 14, 2021 |
| EXA Signal Analyzer | Aglient | N9020A | MY52090123 | Sep. 03, 2020 | Sep. 02, 2021 |
| Horn antenna | SCHWARZBECK | BBHA 9170 | #768 | Sep.16, 2019 | Sep.15, 2021 |
| preamplifier | ChengYi | EMC184045SE | 980508 | Oct 27, 2020 | Oct 26, 2021 |
| Double-Ridged Waveguide Horn | ETS LINDGREN | 3117 | 00034609 | May. 17, 2019 | May. 16, 2021 |
| Broadband Preamplifier | SCHWARZBECK | BBV 9718 | 9718-205 | Jun. 09, 2020 | Jun. 08, 2021 |
| HORN ANTENNA | EM | EM-AH-10180 | / | Feb.28, 2020 | Feb.27, 2021 |
| SIGNAL GENERATOR | AGILENT | E4421B | MY43351603 | Jun. 09, 2020 | Jun. 08, 2021 |
| SIGNAL GENERATOR | R&S | SMT03 | A0304261 | Jun. 09, 2020 | Jun. 08, 2021 |
| ANTENNA | SCHWARZBECK | VULB9168 | VULB9168-494 | Jan. 09, 2019 | Jan. 08, 2021 |
| ANTENNA | SCHWARZBECK | VULB9168 | D69250 | Sep.20, 2019 | Sep.19, 2021 |
| Modulation Domain Analyzer | HP | 53310A | 3121A02467 | Jul. 03, 2020 | Jul. 02, 2022 |
| Small environmental tester | ESPEC | SH-242 | -- | Sep. 03, 2020 | Sep. 03, 2022 |
| RF Communication Test Set | HP | 8920B | -- | Jun. 09, 2020 | Jun. 08, 2021 |
| Attenuator | Weinachel Corp | 58-30-33 | ML030 | Oct. 26, 2020 | Oct. 25, 2021 |
| RF Cable | R&S | 1# | -- | Each time | N/A |
| RF Cable | R&S | 2# | -- | Each time | N/A |
| Fliter-UHF | Microwave | N25155M2 | 498705 | May. 11, 2020 | May. 10, 2021 |
| Fliter-VHF | Microwave | N26460M1 | 498703 | May. 11, 2020 | May. 10, 2021 |

NOTE: 8920B can generate audio modulation frequency.

# 5. DESCRIPTION OF TEST MODES

**RF TEST MODES**

The EUT (**DMR mobile radio** ) has been tested under normal operating condition. (The top channel, the middle channel and the bottom channel) are chosen for testing at each channel separation.

**Analog:**

| No. | TEST MODES | CHANNEL SEPARATION |
|---|---|---|
| 1 | Low Channel | 12.5 KHz |
| 2 | Middle Channel | 12.5 KHz |
| 3 | High Channel | 12.5 KHz |

**Digital:**

| No. | TEST MODES | CHANNEL SEPARATION |
|---|---|---|
| 1 | Low Channel | 12.5 KHz |
| 2 | Middle Channel | 12.5 KHz |
| 3 | High Channel | 12.5 KHz |

**Note:** 1.Only the result of the worst case was recorded in the report.
2.The manufacturer provides the laboratory with a temporary external antenna connection for conducting measurements.

# 6. FREQUENCY TOLERANCE

## 6.1 PROVISIONS APPLICABLE

a). According to FCC §2.1055 and §90.213, the frequency stability shall be measured with variation of ambient temperature from –30℃ to +50℃ centigrade.

b). According to FCC Part 2 Section 2.1055(d)(2), for battery powered equipment, the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacturer.

c). According to FCC Part 90 Section 90.213, the frequency tolerance must be maintained within 0.00025% for 12.5 KHz channel separation and 0.0001% for 6.25 KHz channel separation.

## 6.2 MEASUREMENT PROCEDURE

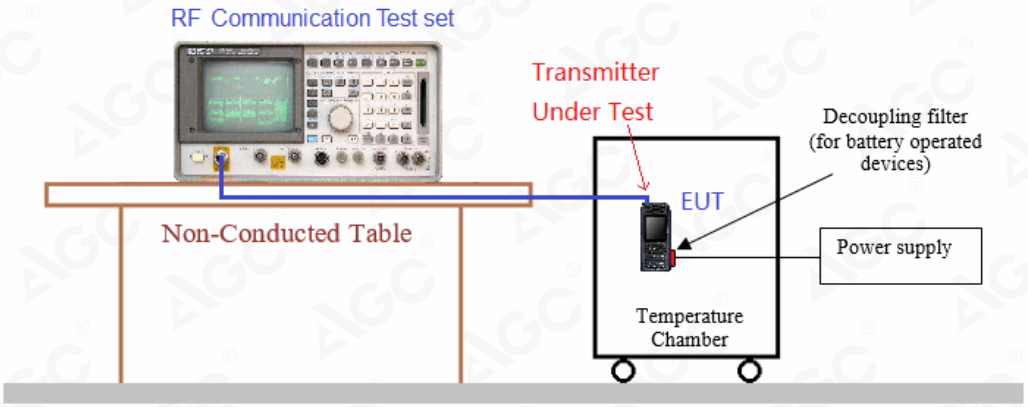
### 6.2.1 Frequency stability versus environmental temperature

1. Setup the configuration per figure 1 for frequencies measurement inside an environment chamber, Install new battery in the EUT.
2. Turn on EUT and set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1KHz and Video Resolution Bandwidth to 1KHz and Frequency Span to 50KHz.Record this frequency as reference frequency.
3. Set the temperature of chamber to 50℃. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4. Repeat step 2 with a 10℃ decreased per stage until the lowest temperature -30℃ is measured, record all measured frequencies on each temperature step.

### 6.2.2 Frequency stability versus input voltage

1. Setup the configuration per figure 1 for frequencies measured at temperature if it is within 15℃ to 25℃. Otherwise, an environment chamber set for a temperature of 20℃ shall be used. The EUT shall be powered by DC 13.80V.
2. Set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1 KHz and Video Resolution Bandwidth to 1KHz. Record this frequency as reference frequency.
3. Supply the EUT primary voltage at the operating end point which is specified by manufacturer and record the frequency.

## 6.3 TEST SETUP BLOCK DIAGRAM



## 6.4 TEST RESULTS

**Analog:**

(1) Frequency stability versus input voltage (Supply nominal voltage is 13.80V)**-40W-12.5KHz**

| Environment Temperature(℃) | Power Supply | Reference Frequency | | | Limit: |
|---|---|---|---|---|---|
| | (V) | 136.025MHz | 155.025MHz | 173.975MHz | ppm |
| 50 | DC 13.80V | 0.977 | 0.653 | 0.917 | 5 |
| 40 | DC 13.80V | 0.613 | 0.832 | 0.690 | |
| 30 | DC 13.80V | 0.656 | 1.073 | 1.029 | |
| 20 | DC 13.80V | 0.598 | 0.901 | 0.923 | |
| 10 | DC 13.80V | 0.691 | 0.749 | 0.996 | |
| 0 | DC 13.80V | 0.806 | 0.588 | 0.855 | |
| -10 | DC 13.80V | 0.546 | 0.833 | 0.976 | |
| -20 | DC 13.80V | 1.000 | 1.031 | 0.924 | |
| -30 | DC 13.80V | 1.097 | 0.737 | 0.918 | |
| Result | Pass | | | | |

| Environment Temperature(℃) | Power Supply | Reference Frequency | | Limit: |
|---|---|---|---|---|
| | (V) | 151.85MHz | 161.61MHz | ppm |
| 50 | DC 13.80V | 0.368 | 0.587 | 5 |
| 40 | DC 13.80V | 0.402 | 0.340 | |
| 30 | DC 13.80V | 0.692 | 0.533 | |
| 20 | DC 13.80V | 0.401 | 0.938 | |
| 10 | DC 13.80V | 0.359 | 0.316 | |
| 0 | DC 13.80V | 0.441 | 0.627 | |
| -10 | DC 13.80V | 0.462 | 0.722 | |
| -20 | DC 13.80V | 0.588 | 0.765 | |
| -30 | DC 13.80V | 0.912 | 0.508 | |
| Result | Pass | | | |

(2) Frequency stability versus input voltage (Battery endpoint is 11.73V) **-40W-12.5KHz**

| Environment Temperature(℃) | Power (V) | Reference Frequency | | | Limit: ppm |
|---|---|---|---|---|---|
| | | 136.025MHz | 155.025MHz | 173.975MHz | |
| 50 | DC 11.73V | 0.657 | 0.568 | 0.900 | 5 |
| 40 | DC 11.73V | 0.716 | 0.647 | 0.504 | |
| 30 | DC 11.73V | 0.718 | 0.667 | 0.610 | |
| 20 | DC 11.73V | 0.988 | 1.074 | 0.899 | |
| 10 | DC 11.73V | 0.755 | 0.744 | 0.935 | |
| 0 | DC 11.73V | 0.577 | 0.622 | 0.770 | |
| -10 | DC 11.73V | 0.976 | 1.038 | 0.525 | |
| -20 | DC 11.73V | 0.982 | 0.533 | 0.627 | |
| -30 | DC 11.73V | 0.772 | 0.733 | 0.986 | |
| Result | Pass | | | | |

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | Limit: ppm |
|---|---|---|---|---|
| | | 151.85MHz | 161.61MHz | |
| 50 | DC 11.73V | 0.458 | 0.532 | 5 |
| 40 | DC 11.73V | 0.341 | 0.815 | |
| 30 | DC 11.73V | 0.453 | 0.664 | |
| 20 | DC 11.73V | 0.429 | 0.739 | |
| 10 | DC 11.73V | 0.611 | 0.997 | |
| 0 | DC 11.73V | 0.625 | 0.376 | |
| -10 | DC 11.73V | 0.767 | 0.929 | |
| -20 | DC 11.73V | 0.477 | 0.690 | |
| -30 | DC 11.73V | 0.513 | 0.580 | |
| Result | Pass | | | |

(3) Frequency stability versus input voltage (Supply nominal voltage is 13.80V)**-40W-12.5KHz**

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | | Limit: ppm |
|---|---|---|---|---|---|
| | | 136.025MHz | 155.025MHz | 173.975MHz | |
| 50 | DC 13.80V | 0.703 | 0.688 | 0.516 | 5 |
| 40 | DC 13.80V | 0.944 | 0.737 | 0.670 | |
| 30 | DC 13.80V | 0.910 | 0.610 | 0.798 | |
| 20 | DC 13.80V | 0.861 | 0.781 | 0.672 | |
| 10 | DC 13.80V | 0.722 | 0.995 | 0.854 | |
| 0 | DC 13.80V | 0.695 | 1.071 | 1.008 | |
| -10 | DC 13.80V | 1.070 | 0.747 | 0.731 | |
| -20 | DC 13.80V | 1.004 | 0.946 | 1.095 | |
| -30 | DC 13.80V | 0.970 | 0.890 | 0.670 | |
| Result | Pass | | | | |

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | Limit: ppm |
|---|---|---|---|---|
| | | 151.85MHz | 161.61MHz | |
| 50 | DC 13.80V | 0.803 | 0.395 | 5 |
| 40 | DC 13.80V | 0.522 | 0.383 | |
| 30 | DC 13.80V | 0.337 | 0.702 | |
| 20 | DC 13.80V | 0.924 | 0.813 | |
| 10 | DC 13.80V | 0.673 | 0.715 | |
| 0 | DC 13.80V | 0.511 | 0.962 | |
| -10 | DC 13.80V | 0.490 | 0.555 | |
| -20 | DC 13.80V | 0.407 | 0.694 | |
| -30 | DC 13.80V | 0.665 | 0.857 | |
| Result | Pass | | | |

(4) Frequency stability versus input voltage (Battery endpoint is 11.73V) **-40W-12.5KHz**

| Environment Temperature(℃) | Power (V) | Reference Frequency | | | Limit: ppm |
|---|---|---|---|---|---|
| | | 136.025MHz | 155.025MHz | 173.975MHz | |
| 50 | DC 11.73V | 0.747 | 0.663 | 1.057 | 5 |
| 40 | DC 11.73V | 0.994 | 0.621 | 0.759 | |
| 30 | DC 11.73V | 0.918 | 0.603 | 0.566 | |
| 20 | DC 11.73V | 0.622 | 0.897 | 0.510 | |
| 10 | DC 11.73V | 0.585 | 1.053 | 1.055 | |
| 0 | DC 11.73V | 0.592 | 0.773 | 1.010 | |
| -10 | DC 11.73V | 0.595 | 0.965 | 0.921 | |
| -20 | DC 11.73V | 1.003 | 0.557 | 0.555 | |
| -30 | DC 11.73V | 0.639 | 0.813 | 0.729 | |
| Result | Pass | | | | |

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | Limit: ppm |
|---|---|---|---|---|
| | | 151.85MHz | 161.61MHz | |
| 50 | DC 11.73V | 0.535 | 0.629 | 5 |
| 40 | DC 11.73V | 0.641 | 0.936 | |
| 30 | DC 11.73V | 0.494 | 0.788 | |
| 20 | DC 11.73V | 0.929 | 0.956 | |
| 10 | DC 11.73V | 0.998 | 0.312 | |
| 0 | DC 11.73V | 0.782 | 0.586 | |
| -10 | DC 11.73V | 0.790 | 0.521 | |
| -20 | DC 11.73V | 0.667 | 0.963 | |
| -30 | DC 11.73V | 0.844 | 0.929 | |
| Result | Pass | | | |

**Digital:**

(1) Frequency stability versus input voltage (Supply nominal voltage is 13.80V)**-40W-12.5KHz**

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | | Limit: ppm |
|---|---|---|---|---|---|
| | | 136.025MHz | 155.025MHz | 173.975MHz | |
| 50 | DC 13.80V | 0.994 | 0.661 | 0.571 | 5 |
| 40 | DC 13.80V | 0.960 | 1.076 | 0.650 | |
| 30 | DC 13.80V | 0.594 | 0.588 | 0.671 | |
| 20 | DC 13.80V | 0.611 | 0.564 | 0.936 | |
| 10 | DC 13.80V | 0.642 | 0.890 | 0.695 | |
| 0 | DC 13.80V | 0.638 | 0.825 | 0.873 | |
| -10 | DC 13.80V | 1.040 | 1.024 | 0.803 | |
| -20 | DC 13.80V | 0.960 | 0.560 | 1.038 | |
| -30 | DC 13.80V | 0.509 | 1.056 | 1.029 | |
| Result | Pass | | | | |

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | Limit: ppm |
|---|---|---|---|---|
| | | 151.85MHz | 161.61MHz | |
| 50 | DC 13.80V | 0.500 | 0.753 | 5 |
| 40 | DC 13.80V | 0.868 | 0.839 | |
| 30 | DC 13.80V | 0.928 | 0.623 | |
| 20 | DC 13.80V | 0.531 | 0.890 | |
| 10 | DC 13.80V | 0.978 | 0.756 | |
| 0 | DC 13.80V | 0.552 | 0.665 | |
| -10 | DC 13.80V | 0.916 | 0.808 | |
| -20 | DC 13.80V | 0.829 | 0.773 | |
| -30 | DC 13.80V | 0.782 | 0.621 | |
| Result | Pass | | | |

(2) Frequency stability versus input voltage (Battery endpoint is 11.73V) **-40W-12.5KHz**

| Environment Temperature(℃) | Power (V) | Reference Frequency | | | Limit: ppm |
|---|---|---|---|---|---|
| | | 136.025MHz | 155.025MHz | 173.975MHz | |
| 50 | DC 11.73V | 1.011 | 1.070 | 0.515 | 5 |
| 40 | DC 11.73V | 0.670 | 0.917 | 1.098 | |
| 30 | DC 11.73V | 0.836 | 0.708 | 0.965 | |
| 20 | DC 11.73V | 0.676 | 0.826 | 0.531 | |
| 10 | DC 11.73V | 0.569 | 0.660 | 0.840 | |
| 0 | DC 11.73V | 0.924 | 0.909 | 0.754 | |
| -10 | DC 11.73V | 0.703 | 0.921 | 0.904 | |
| -20 | DC 11.73V | 0.585 | 0.640 | 0.980 | |
| -30 | DC 11.73V | 0.916 | 0.704 | 0.600 | |
| Result | Pass | | | | |

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | Limit: ppm |
|---|---|---|---|---|
| | | 151.85MHz | 161.61MHz | |
| 50 | DC 11.73V | 0.529 | 0.702 | 5 |
| 40 | DC 11.73V | 0.522 | 0.711 | |
| 30 | DC 11.73V | 0.467 | 0.761 | |
| 20 | DC 11.73V | 0.358 | 0.471 | |
| 10 | DC 11.73V | 0.456 | 0.834 | |
| 0 | DC 11.73V | 0.855 | 0.504 | |
| -10 | DC 11.73V | 0.452 | 0.535 | |
| -20 | DC 11.73V | 0.373 | 0.373 | |
| -30 | DC 11.73V | 0.396 | 0.908 | |
| Result | Pass | | | |

(3) Frequency stability versus input voltage (Supply nominal voltage is 13.80V)**-40W-12.5KHz**

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | | Limit: ppm |
|---|---|---|---|---|---|
| | | 136.025MHz | 155.025MHz | 173.975MHz | |
| 50 | DC 13.80V | 0.393 | 0.653 | 0.885 | 5 |
| 40 | DC 13.80V | 0.874 | 0.955 | 0.745 | |
| 30 | DC 13.80V | 1.024 | 0.555 | 0.896 | |
| 20 | DC 13.80V | 0.829 | 0.731 | 1.100 | |
| 10 | DC 13.80V | 0.573 | 0.526 | 0.972 | |
| 0 | DC 13.80V | 0.540 | 0.543 | 0.771 | |
| -10 | DC 13.80V | 0.774 | 0.521 | 0.726 | |
| -20 | DC 13.80V | 0.562 | 1.005 | 0.960 | |
| -30 | DC 13.80V | 0.680 | 0.751 | 0.617 | |
| Result | Pass | | | | |

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | Limit: ppm |
|---|---|---|---|---|
| | | 151.85MHz | 161.61MHz | |
| 50 | DC 13.80V | 0.425 | 0.831 | 5 |
| 40 | DC 13.80V | 0.909 | 0.356 | |
| 30 | DC 13.80V | 0.308 | 0.856 | |
| 20 | DC 13.80V | 0.450 | 0.346 | |
| 10 | DC 13.80V | 0.665 | 0.857 | |
| 0 | DC 13.80V | 0.433 | 0.962 | |
| -10 | DC 13.80V | 0.965 | 0.493 | |
| -20 | DC 13.80V | 0.917 | 0.353 | |
| -30 | DC 13.80V | 0.570 | 0.924 | |
| Result | Pass | | | |

(4) Frequency stability versus input voltage (Battery endpoint is 11.73V) **-40W-12.5KHz**

| Environment Temperature(℃) | Power (V) | Reference Frequency | | | Limit: ppm |
|---|---|---|---|---|---|
| | | 136.025MHz | 155.025MHz | 173.975MHz | |
| 50 | DC 11.73V | 0.706 | 0.561 | 0.731 | 5 |
| 40 | DC 11.73V | 0.607 | 0.901 | 1.045 | |
| 30 | DC 11.73V | 0.664 | 0.564 | 0.567 | |
| 20 | DC 11.73V | 0.512 | 0.714 | 0.881 | |
| 10 | DC 11.73V | 0.527 | 1.061 | 0.767 | |
| 0 | DC 11.73V | 0.930 | 0.773 | 1.007 | |
| -10 | DC 11.73V | 0.829 | 0.920 | 1.020 | |
| -20 | DC 11.73V | 1.000 | 0.848 | 0.561 | |
| -30 | DC 11.73V | 0.521 | 0.912 | 0.641 | |
| Result | Pass | | | | |

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | Limit: ppm |
|---|---|---|---|---|
| | | 151.85MHz | 161.61MHz | |
| 50 | DC 11.73V | 0.900 | 0.708 | 5 |
| 40 | DC 11.73V | 0.687 | 0.629 | |
| 30 | DC 11.73V | 0.999 | 0.694 | |
| 20 | DC 11.73V | 0.560 | 0.414 | |
| 10 | DC 11.73V | 0.359 | 0.328 | |
| 0 | DC 11.73V | 0.666 | 0.951 | |
| -10 | DC 11.73V | 0.653 | 0.890 | |
| -20 | DC 11.73V | 0.507 | 0.368 | |
| -30 | DC 11.73V | 0.613 | 0.510 | |
| Result | Pass | | | |

**Note**: All test values are in “ppm”

# 7. EMISSION BANDWIDTH

## 7.1 PROVISIONS APPLICABLE

For FCC Part 90 requirements:

The authorized bandwidth shall be 11.25 KHz for 12.5 KHz channel separation and 6 KHz for 6.25 KHz channel separation.

## 7.2 MEASUREMENT PROCEDURE

1). The EUT was placed on a turn table which is 0.8m above ground plane.

2). The EUT was modulated by 2.5 KHz Sine wave audio signal, The level of the audio signal employed is 16 dB greater than that necessary to produce 50% of rated system deviation. Rated system deviation is 2.5 kHz (12.5 kHz channel spacing).

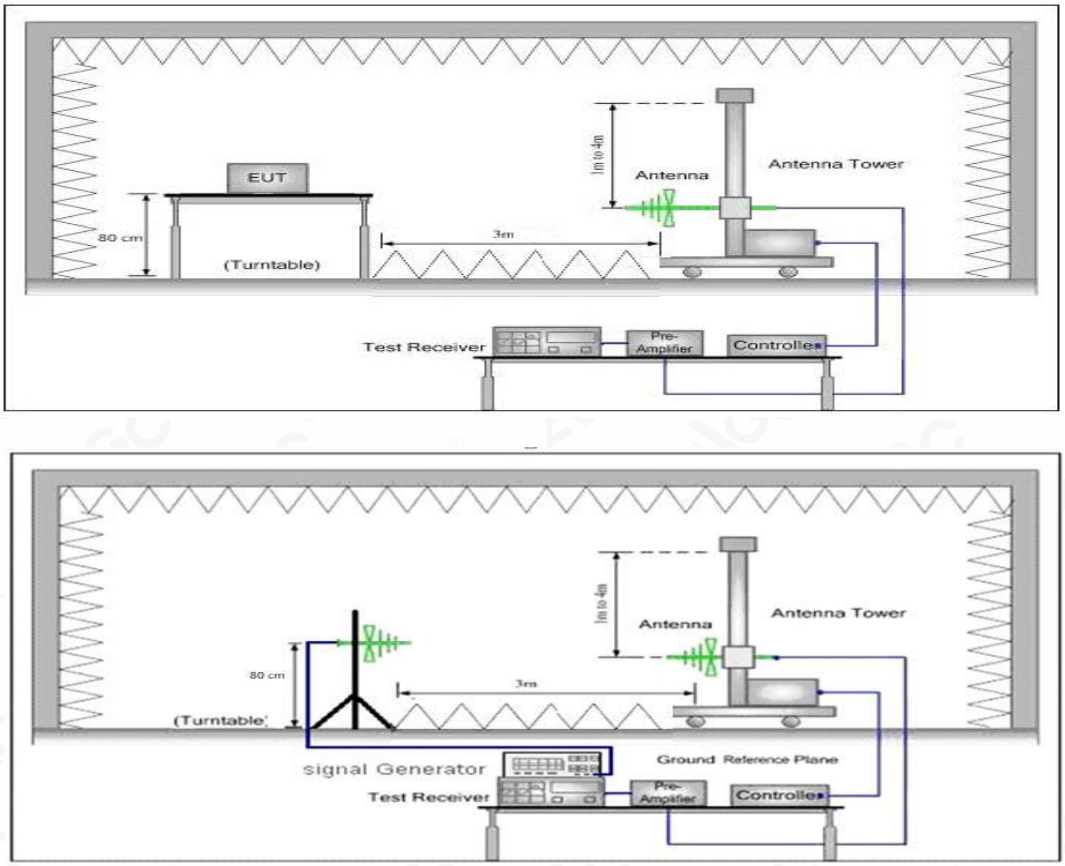
3). Set SPA Center Frequency = fundamental frequency, RBW=100Hz.VBW= 300 Hz, Span =50 KHz.

4). Set SPA Max hold. Mark peak, -26 dB.

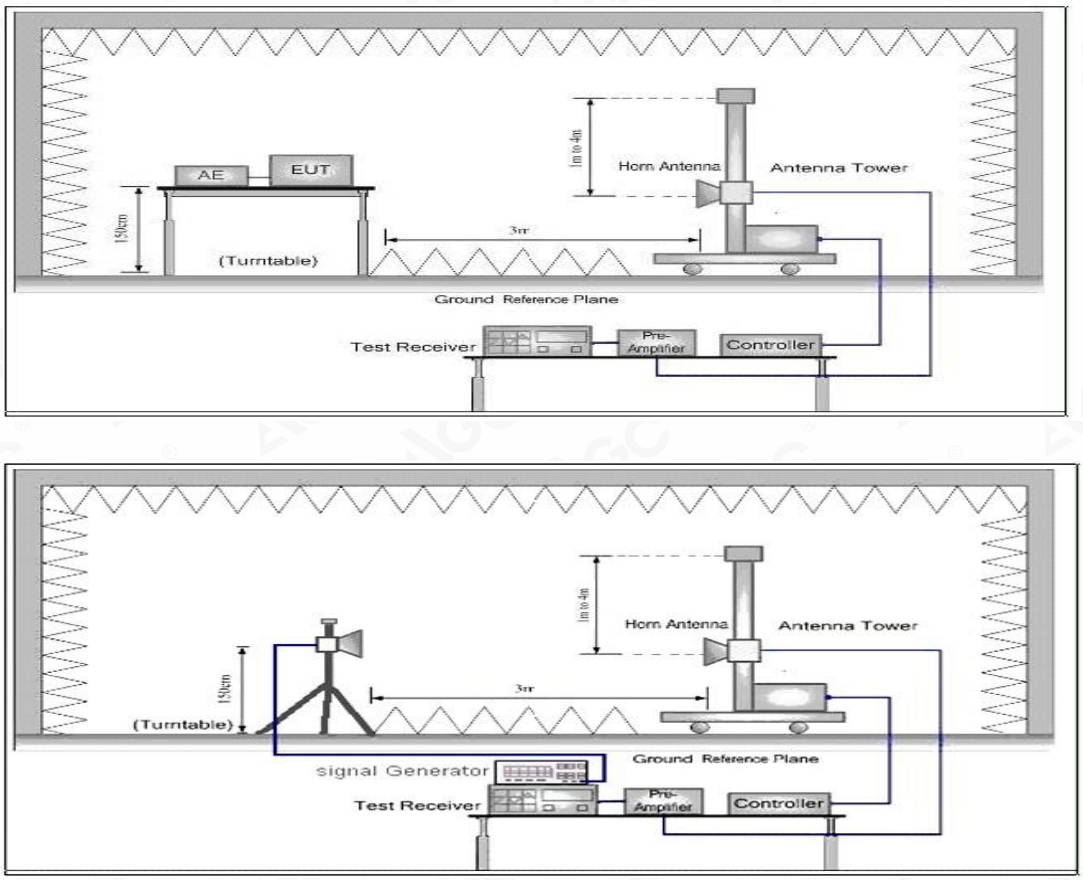
## 7.3 TEST SETUP BLOCK DIAGRAM

**Radiation method:**

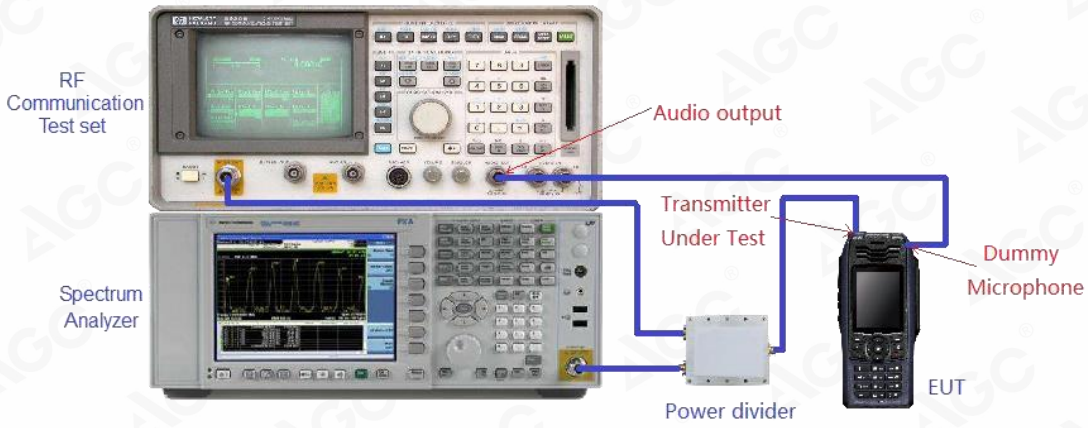
**Radiated Below1GHz**



**Radiated Above 1 GHz**




**Conduction method:**

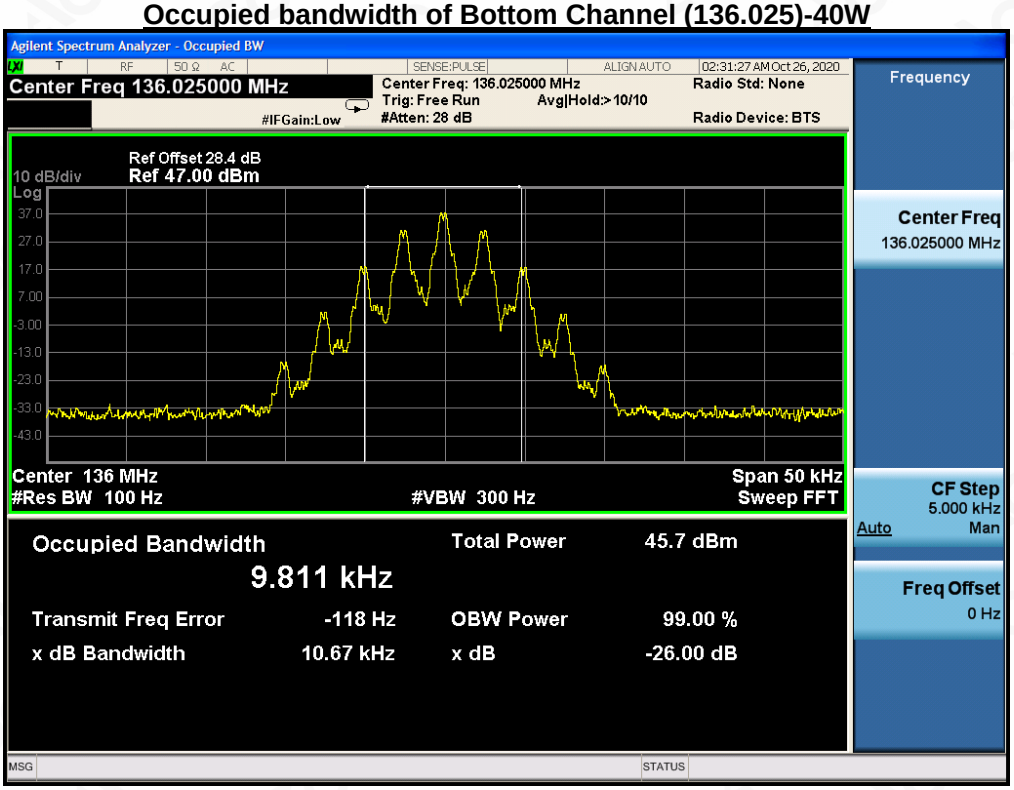


## 7.4 MEASUREMENT RESULT

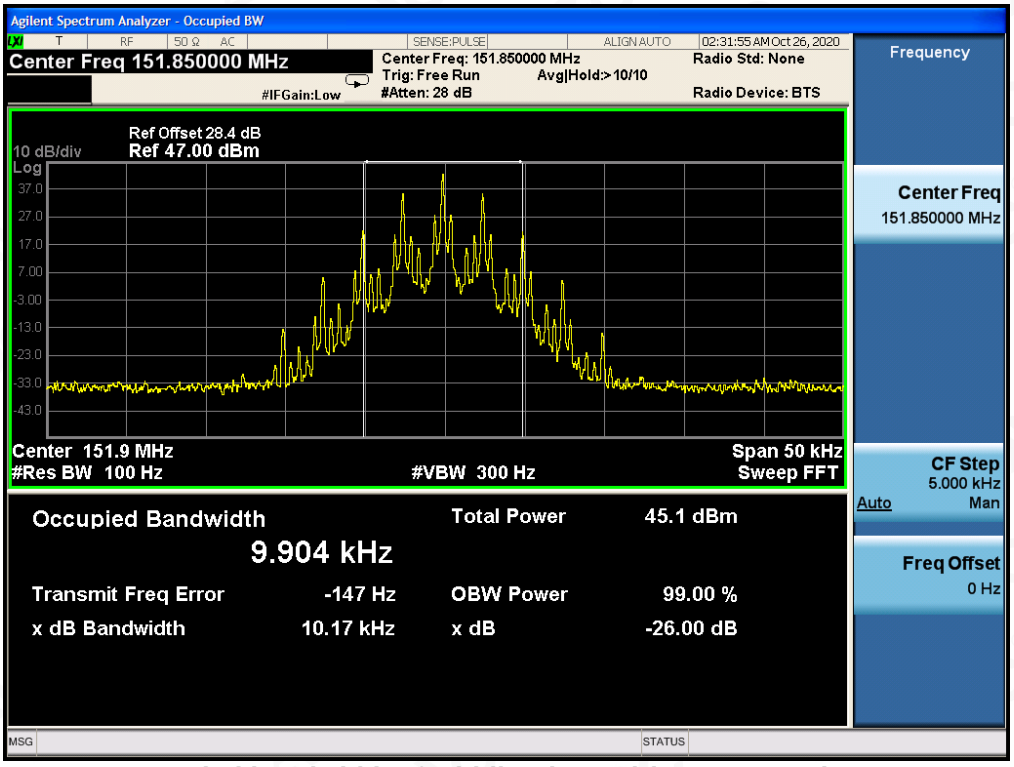
**Analog**

| Emission Bandwidth Measurement Result | | | | |
|---|---|---|---|---|
| Operating Frequency | 12.5 KHz Channel Separation | | | |
| | Occupied Bandwidth | Emission Bandwidth | Limits | Result |
| 136.025MHz | 9.811 KHz | 10.67 KHz | 11.25 KHz | Pass |
| 151.850MHz | 9.904 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 155.025MHz | 9.818 KHz | 10.16 KHz | 11.25 KHz | Pass |
| 161.610MHz | 9.832 KHz | 10.16 KHz | 11.25 KHz | Pass |
| 173.975MHz | 9.938 KHz | 10.17 KHz | 11.25 KHz | Pass |

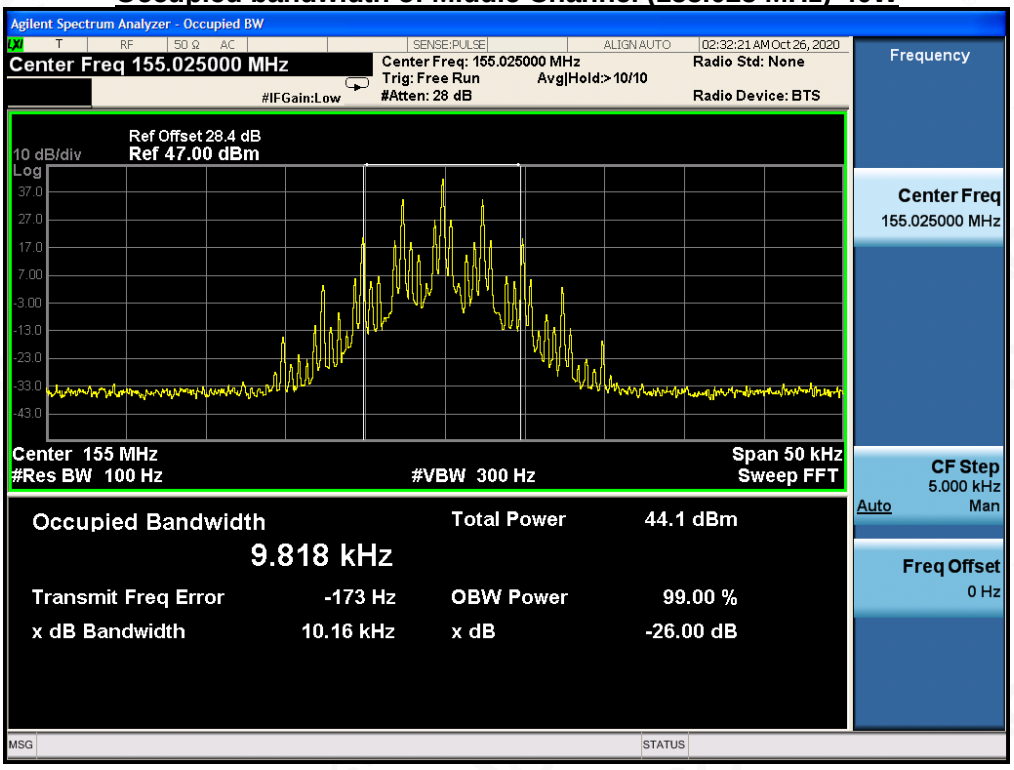
**Occupied bandwidth of Bottom Channel (136.025)-40W**



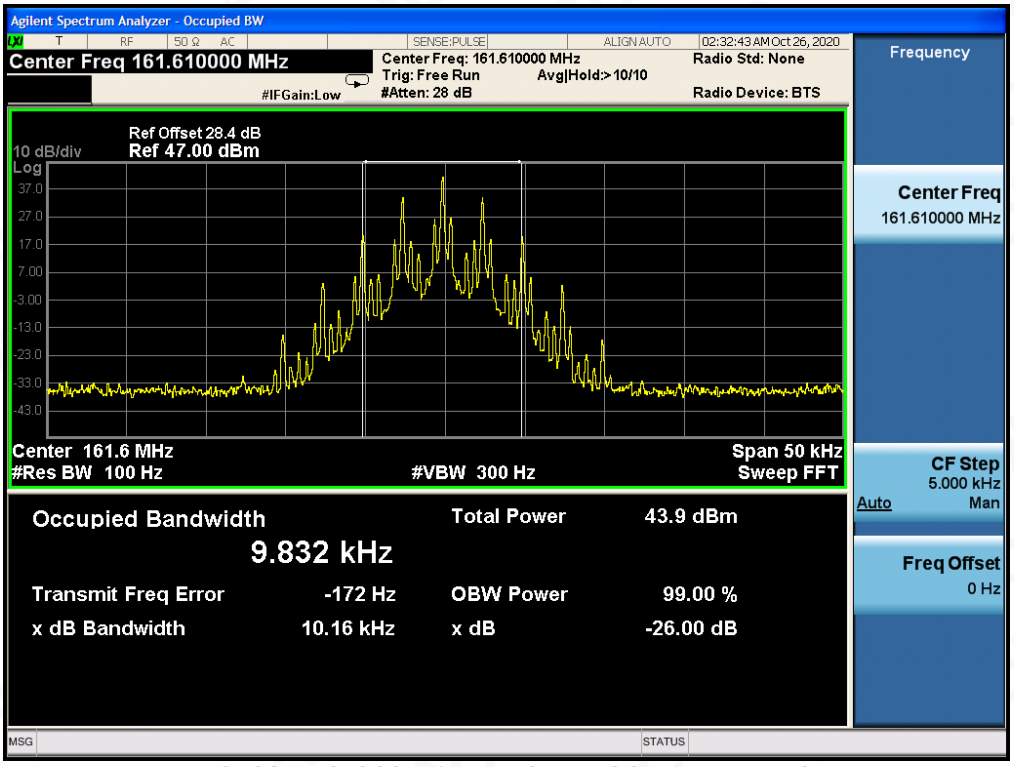
## Occupied bandwidth of Middle Channel (151.850 MHz)-40W



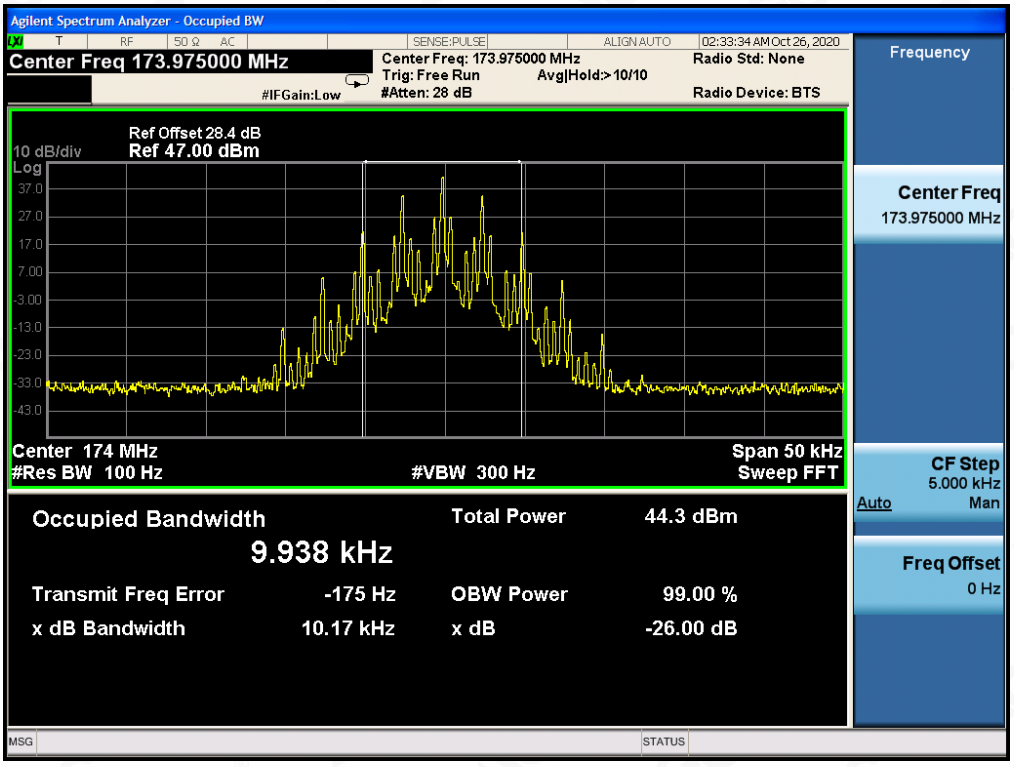

## Occupied bandwidth of Middle Channel (155.025 MHz)-40W



## Occupied bandwidth of Middle Channel (161.610 MHz)-40W



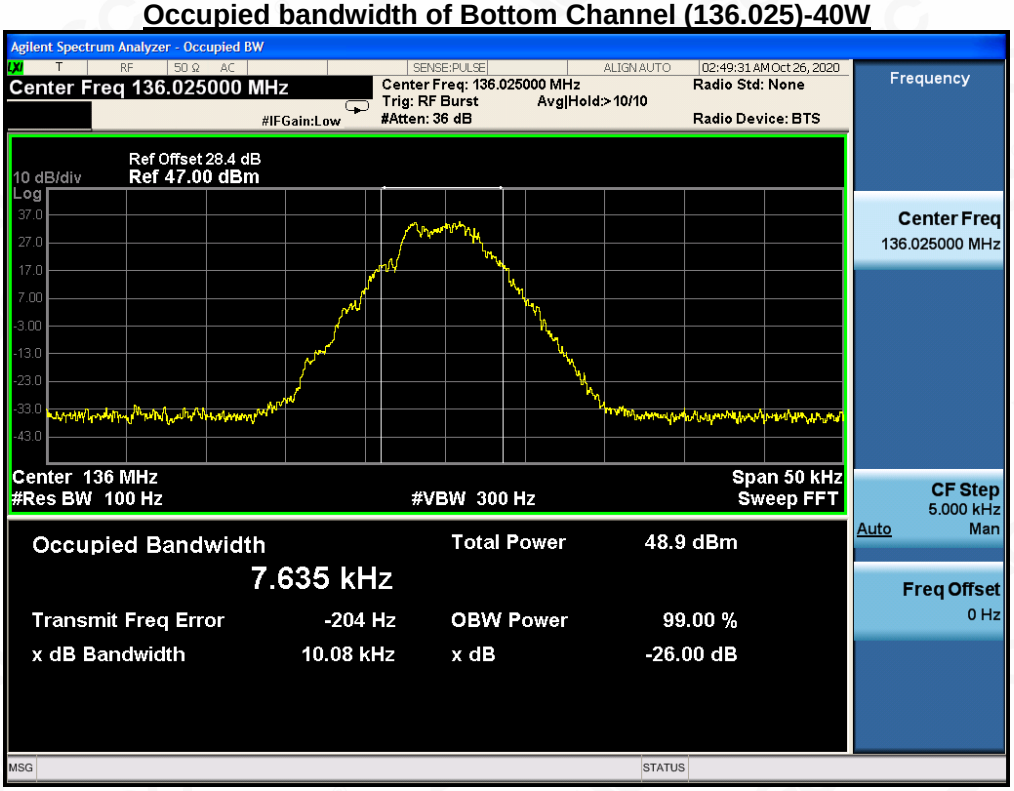

## Occupied bandwidth of Top Channel (173.975 MHz)-40W



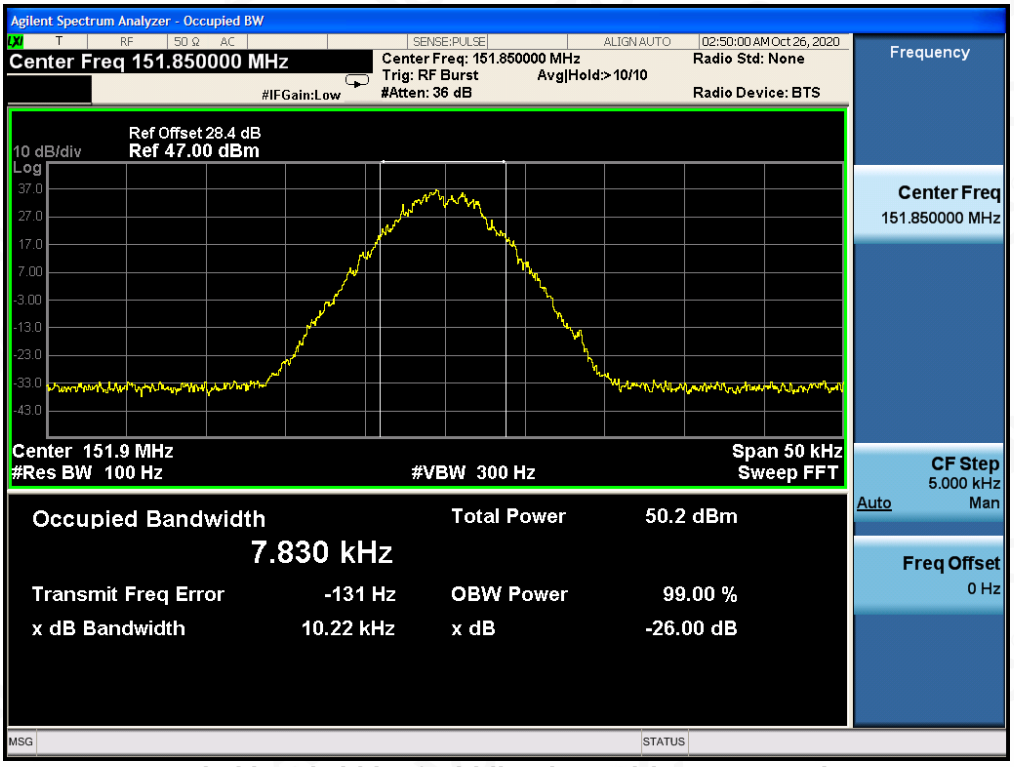
**Digital:**

| Emission Bandwidth Measurement Result | | | | |
|---|---|---|---|---|
| Operating Frequency | 12.5 KHz Channel Separation | | | |
| | Occupied Bandwidth | Emission Bandwidth | Limits | Result |
| 136.025MHz | 7.635 KHz | 10.080 KHz | 11.25 KHz | Pass |
| 151.850MHz | 7.830 KHz | 10.220 KHz | 11.25 KHz | Pass |
| 155.025MHz | 7.747 KHz | 9.793 KHz | 11.25 KHz | Pass |
| 161.610MHz | 7.613 KHz | 9.953 KHz | 11.25 KHz | Pass |
| 173.975MHz | 7.517 KHz | 10.420 KHz | 11.25 KHz | Pass |

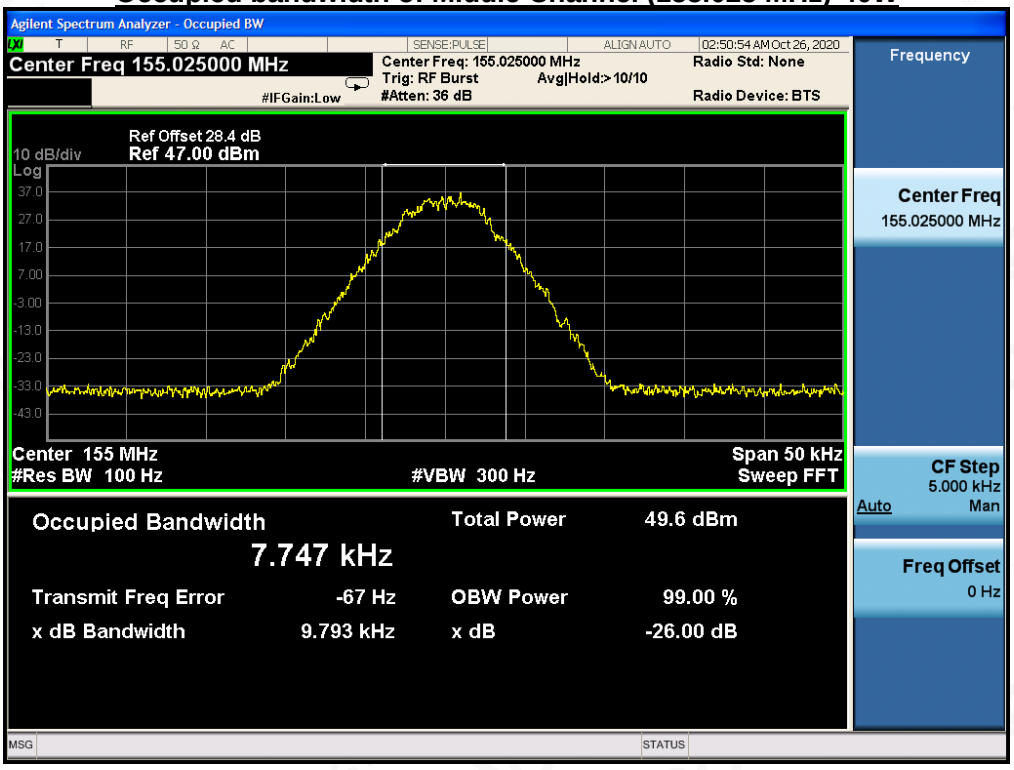
**Occupied bandwidth of Bottom Channel (136.025)-40W**



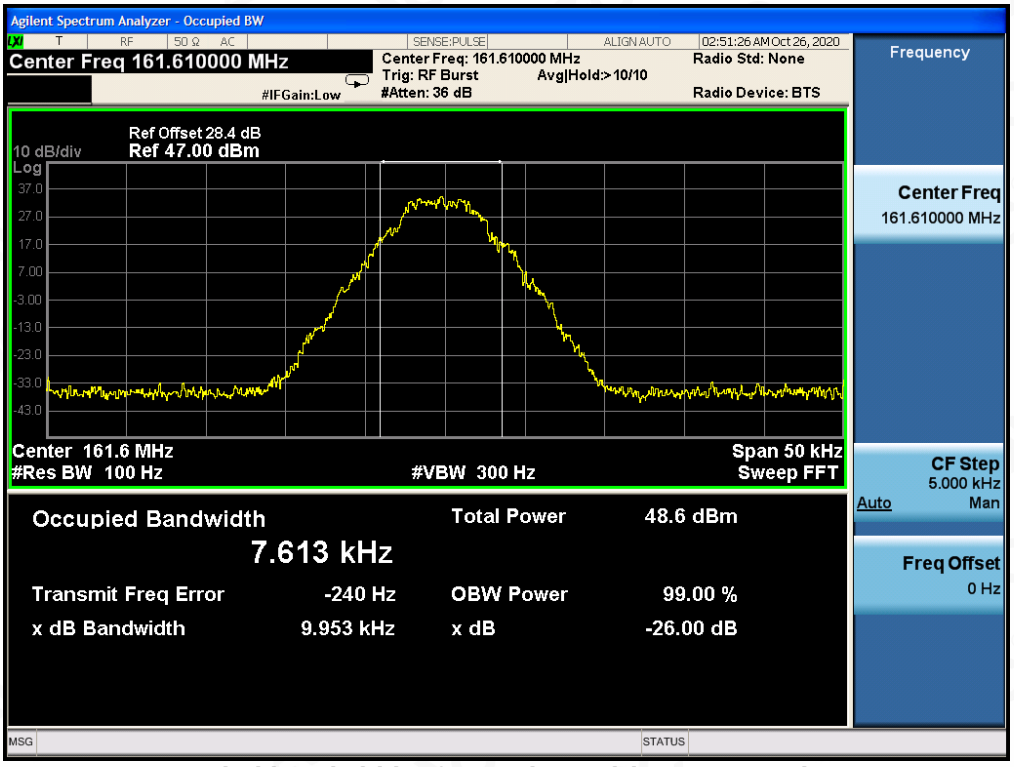
## Occupied bandwidth of Middle Channel (151.850 MHz)-40W



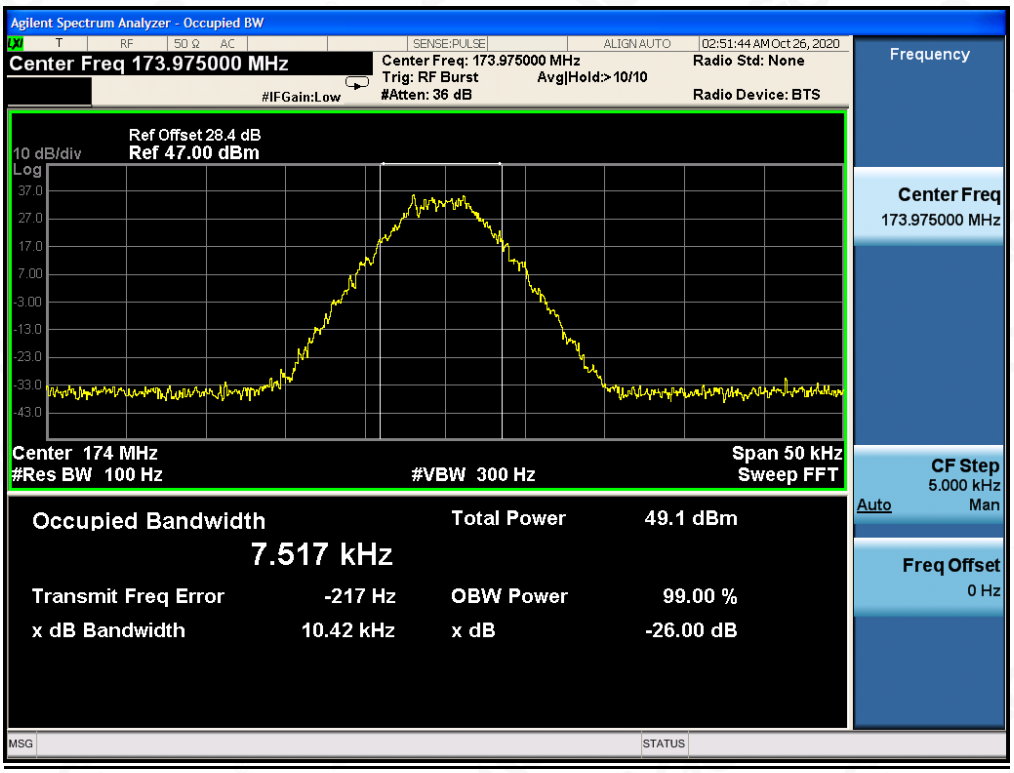

## Occupied bandwidth of Middle Channel (155.025 MHz)-40W



## Occupied bandwidth of Middle Channel (161.610 MHz)-40W




## Occupied bandwidth of Top Channel (173.975 MHz)-40W



# 8. UNWANTED RADIATION

## 8.1 PROVISIONS APPLICABLE

According to FCC §2.1049 and §90.210, the power of each unwanted emission shall be less than Transmitted Power as specified below for transmitters designed to operate with each channel separation.

Emission Mask D -for 12.5 KHz Channel Separation:

(1).On any frequency removed from the center of the authorized bandwidth fo to 5.625 KHz removed from fo: Zero dB.

(2).On any frequency removed from the center of the authorized bandwidth by a displacement Frequency (fd in KHz) fo of more than 5.625 KHz but no more than 12.5 KHz: At least 7.27(fd-2.88 KHz) dB

(3).On any frequency removed from the center of the authorized bandwidth by a displacement Frequency (fd in KHz)fo of more than 12.5 KHz: At least 50+10 log(P) dB or 70 dB, whichever is lesser attenuation.

## 8.2 MEASUREMENT PROCEDURE

(1)On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.

(2)The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.

(3)The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.

(4)The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.

(5)The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.

(6)The transmitter shall than be rotated through 360°in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

(7)The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.

(8)The maximum signal level detected by the measuring receiver shall be noted.

(9)The measurement shall be repeated with the test antenna set to horizontal polarization.

(10) Replace the antenna with a proper Antenna (substitution antenna).

(11)The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.

(12)The substitution antenna shall be connected to a calibrated signal generator.

(13)If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.

(14)The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.

(15)The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.

(16)The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

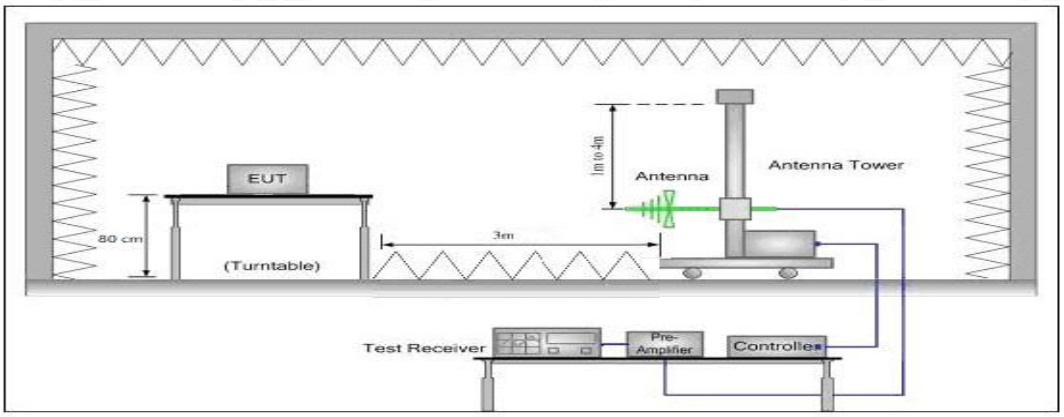
(17)The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

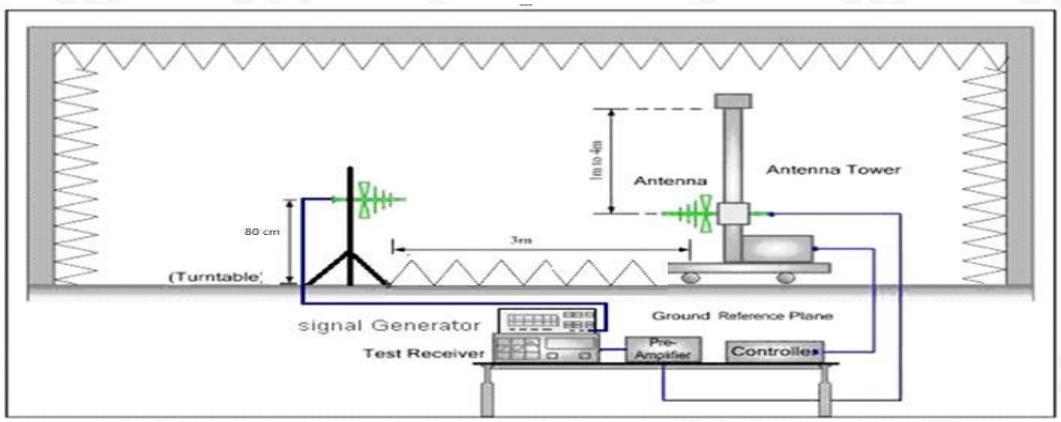
## 8.3 TEST SETUP BLOCK DIAGRAM

**SUBSTITUTION METHOD: (Radiated Emissions)**

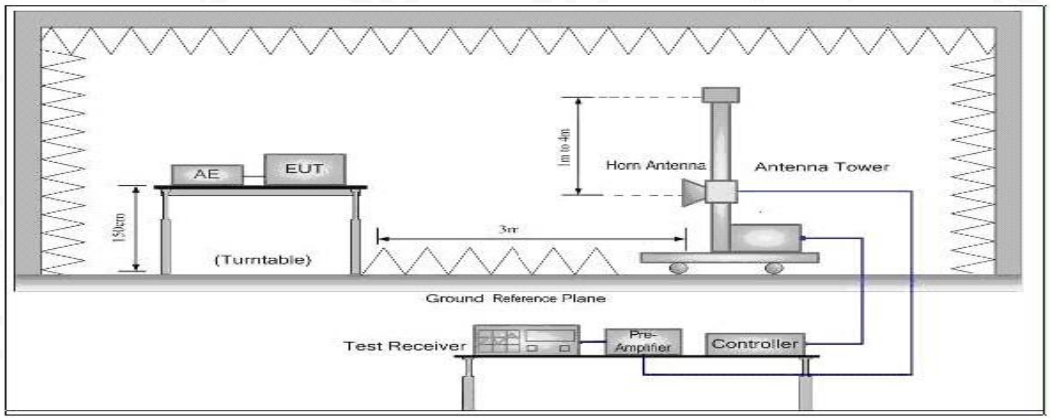
**Radiation method:**

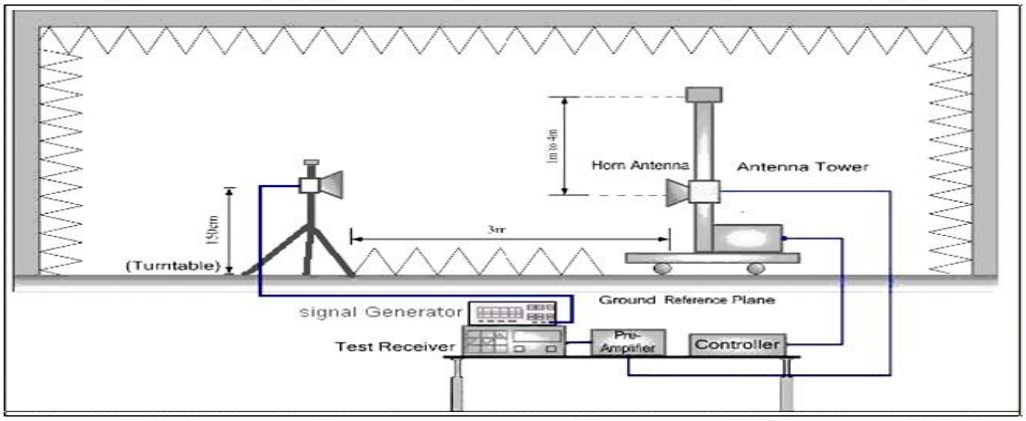
**Radiated Below1GHz**




**Radiated Above 1 GHz**






**8.4 MEASUREMENT RESULTS:**

**Applicable Standard**

FCC §2.1053 and §90.210

On any frequency removed from the center of the authorized bandwidth by a displacement

Frequency (fd in KHz)for of more than 12.5 KHz: at least 50+10 log(P) dB or 70 dB, whichever is lesser attenuation.

**Test Procedure**

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz for below 1GHz, and 1MHz for above 1GHz. Sufficient scans were taken to show any out of band emissions up to 10 harmonic.

In the semi-anechoic chamber, setup as illustrated above the DUT placed on the 0.8m height of Turn Table, rotated the table 45 degree each interval to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power for each degree interval. The “Read Value” is the spectrum reading of maximum power value.

The substitution antenna is substituted for DUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the Measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.

EIRP = “Read Value” + Measured substitution value + 2.15.

**Limit: At least 50+10 log (P) =50+10log (40) =66.02 (dB)—40W 46.02-66.02=-20dBm**
**At least 50+10 log (P) =50+10log (35) =65.44 (dB)—35W 45.44-65.44=-20dBm**
**At least 50+10 log (P) =50+10log (5) =56.99 (dB)—5W 36.99-56.99=-20dBm**

**Analog:**
**VHF:**

**Measurement Result for 12.5 KHz Channel Separation @ 136.025MHz-40W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 136.025 | H | 0 | | pass |
| 272.050 | H | -25.70 | -20 | pass |
| 408.075 | H | -27.83 | -20 | pass |
| 544.100 | H | -28.83 | -20 | pass |
| 680.125 | H | -31.80 | -20 | pass |
| 816.150 | H | -31.48 | -20 | pass |
| 952.175 | H | -32.47 | -20 | pass |
| 1088.200 | H | -29.23 | -20 | pass |
| 1224.225 | H | -31.16 | -20 | pass |
| 1360.250 | H | -31.26 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 136.025 | V | 0 | | pass |
| 272.050 | V | -25.56 | -20 | pass |
| 408.075 | V | -26.63 | -20 | pass |
| 544.100 | V | -28.73 | -20 | pass |
| 680.125 | V | -30.35 | -20 | pass |
| 816.150 | V | -29.08 | -20 | pass |
| 952.175 | V | -32.84 | -20 | pass |
| 1088.200 | V | -28.04 | -20 | pass |
| 1224.225 | V | -32.65 | -20 | pass |
| 1360.250 | V | -34.25 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 151.850MHz-40W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 151.850 | H | 0 | | pass |
| 303.700 | H | -26.84 | -20 | pass |
| 455.550 | H | -28.36 | -20 | pass |
| 607.400 | H | -29.17 | -20 | pass |
| 759.250 | H | -30.78 | -20 | pass |
| 911.100 | H | -30.27 | -20 | pass |
| 1062.950 | H | -30.98 | -20 | pass |
| 1214.800 | H | -28.45 | -20 | pass |
| 1366.650 | H | -31.53 | -20 | pass |
| 1518.500 | H | -31.92 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 151.850 | V | 0 | | pass |
| 303.700 | V | -26.30 | -20 | pass |
| 455.550 | V | -24.67 | -20 | pass |
| 607.400 | V | -28.04 | -20 | pass |
| 759.250 | V | -29.27 | -20 | pass |
| 911.100 | V | -32.46 | -20 | pass |
| 1062.950 | V | -34.38 | -20 | pass |
| 1214.800 | V | -28.53 | -20 | pass |
| 1366.650 | V | -27.71 | -20 | pass |
| 1518.500 | V | -33.60 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 155.025MHz-40W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 155.025 | H | 0 | | pass |
| 310.050 | H | -29.81 | -20 | pass |
| 465.075 | H | -29.01 | -20 | pass |
| 620.100 | H | -28.40 | -20 | pass |
| 775.125 | H | -31.46 | -20 | pass |
| 930.150 | H | -30.35 | -20 | pass |
| 1085.175 | H | -31.34 | -20 | pass |
| 1240.200 | H | -29.03 | -20 | pass |
| 1395.225 | H | -30.93 | -20 | pass |
| 1550.250 | H | -32.72 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 155.025 | V | 0 | | pass |
| 310.050 | V | -27.02 | -20 | pass |
| 465.075 | V | -28.82 | -20 | pass |
| 620.100 | V | -30.79 | -20 | pass |
| 775.125 | V | -30.40 | -20 | pass |
| 930.150 | V | -29.01 | -20 | pass |
| 1085.175 | V | -32.47 | -20 | pass |
| 1240.200 | V | -28.20 | -20 | pass |
| 1395.225 | V | -29.81 | -20 | pass |
| 1550.250 | V | -32.63 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 161.610MHz-40W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 161.610 | H | 0 | | pass |
| 323.220 | H | -27.40 | -20 | pass |
| 484.830 | H | -29.40 | -20 | pass |
| 646.440 | H | -30.62 | -20 | pass |
| 808.050 | H | -31.84 | -20 | pass |
| 969.660 | H | -28.58 | -20 | pass |
| 1131.270 | H | -32.06 | -20 | pass |
| 1292.880 | H | -28.48 | -20 | pass |
| 1454.490 | H | -31.45 | -20 | pass |
| 1616.100 | H | -32.98 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 161.610 | V | 0 | | pass |
| 323.220 | V | -27.64 | -20 | pass |
| 484.830 | V | -30.06 | -20 | pass |
| 646.440 | V | -29.11 | -20 | pass |
| 808.050 | V | -30.45 | -20 | pass |
| 969.660 | V | -29.75 | -20 | pass |
| 1131.270 | V | -32.21 | -20 | pass |
| 1292.880 | V | -29.36 | -20 | pass |
| 1454.490 | V | -31.14 | -20 | pass |
| 1616.100 | V | -34.27 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 173.975MHz-40W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 173.975 | H | 0 | | pass |
| 347.950 | H | -26.54 | -20 | pass |
| 521.925 | H | -27.57 | -20 | pass |
| 695.900 | H | -27.08 | -20 | pass |
| 869.875 | H | -27.48 | -20 | pass |
| 1043.850 | H | -31.06 | -20 | pass |
| 1217.825 | H | -33.24 | -20 | pass |
| 1391.800 | H | -29.45 | -20 | pass |
| 1565.775 | H | -30.23 | -20 | pass |
| 1739.750 | H | -33.12 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 173.975 | V | 0 | | pass |
| 347.950 | V | -26.10 | -20 | pass |
| 521.925 | V | -26.16 | -20 | pass |
| 695.900 | V | -24.95 | -20 | pass |
| 869.875 | V | -24.50 | -20 | pass |
| 1043.850 | V | -30.32 | -20 | pass |
| 1217.825 | V | -28.29 | -20 | pass |
| 1391.800 | V | -31.70 | -20 | pass |
| 1565.775 | V | -33.59 | -20 | pass |
| 1739.750 | V | -35.32 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 136.025MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 136.025 | H | 0 | | pass |
| 272.050 | H | -27.08 | -20 | pass |
| 408.075 | H | -26.38 | -20 | pass |
| 544.100 | H | -29.74 | -20 | pass |
| 680.125 | H | -29.59 | -20 | pass |
| 816.150 | H | -33.19 | -20 | pass |
| 952.175 | H | -35.52 | -20 | pass |
| 1088.200 | H | -30.07 | -20 | pass |
| 1224.225 | H | -30.21 | -20 | pass |
| 1360.250 | H | -34.46 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 136.025 | V | 0 | | pass |
| 272.050 | V | -27.40 | -20 | pass |
| 408.075 | V | -29.51 | -20 | pass |
| 544.100 | V | -30.85 | -20 | pass |
| 680.125 | V | -30.06 | -20 | pass |
| 816.150 | V | -31.07 | -20 | pass |
| 952.175 | V | -33.13 | -20 | pass |
| 1088.200 | V | -28.87 | -20 | pass |
| 1224.225 | V | -34.28 | -20 | pass |
| 1360.250 | V | -32.64 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 151.850MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 151.850 | H | 0 | | pass |
| 303.700 | H | -27.19 | -20 | pass |
| 455.550 | H | -28.43 | -20 | pass |
| 607.400 | H | -28.37 | -20 | pass |
| 759.250 | H | -28.63 | -20 | pass |
| 911.100 | H | -28.66 | -20 | pass |
| 1062.950 | H | -32.67 | -20 | pass |
| 1214.800 | H | -29.10 | -20 | pass |
| 1366.650 | H | -31.95 | -20 | pass |
| 1518.500 | H | -33.40 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 151.850 | V | 0 | | pass |
| 303.700 | V | -28.22 | -20 | pass |
| 455.550 | V | -24.84 | -20 | pass |
| 607.400 | V | -30.06 | -20 | pass |
| 759.250 | V | -29.92 | -20 | pass |
| 911.100 | V | -34.27 | -20 | pass |
| 1062.950 | V | -34.11 | -20 | pass |
| 1214.800 | V | -28.84 | -20 | pass |
| 1366.650 | V | -29.01 | -20 | pass |
| 1518.500 | V | -35.46 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 155.025MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 155.025 | H | 0 | | pass |
| 310.050 | H | -27.82 | -20 | pass |
| 465.075 | H | -25.27 | -20 | pass |
| 620.100 | H | -27.76 | -20 | pass |
| 775.125 | H | -29.03 | -20 | pass |
| 930.150 | H | -32.92 | -20 | pass |
| 1085.175 | H | -34.78 | -20 | pass |
| 1240.200 | H | -29.45 | -20 | pass |
| 1395.225 | H | -28.54 | -20 | pass |
| 1550.250 | H | -35.51 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 155.025 | V | 0 | | pass |
| 310.050 | V | -27.22 | -20 | pass |
| 465.075 | V | -27.49 | -20 | pass |
| 620.100 | V | -28.51 | -20 | pass |
| 775.125 | V | -29.45 | -20 | pass |
| 930.150 | V | -30.60 | -20 | pass |
| 1085.175 | V | -33.50 | -20 | pass |
| 1240.200 | V | -27.98 | -20 | pass |
| 1395.225 | V | -31.52 | -20 | pass |
| 1550.250 | V | -33.94 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 161.610MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 161.610 | H | 0 | | pass |
| 323.220 | H | -26.53 | -20 | pass |
| 484.830 | H | -27.65 | -20 | pass |
| 646.440 | H | -28.31 | -20 | pass |
| 808.050 | H | -30.53 | -20 | pass |
| 969.660 | H | -30.77 | -20 | pass |
| 1131.270 | H | -33.80 | -20 | pass |
| 1292.880 | H | -28.52 | -20 | pass |
| 1454.490 | H | -32.39 | -20 | pass |
| 1616.100 | H | -34.27 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 161.610 | V | 0 | | pass |
| 323.220 | V | -25.53 | -20 | pass |
| 484.830 | V | -27.67 | -20 | pass |
| 646.440 | V | -28.40 | -20 | pass |
| 808.050 | V | -31.62 | -20 | pass |
| 969.660 | V | -30.72 | -20 | pass |
| 1131.270 | V | -30.82 | -20 | pass |
| 1292.880 | V | -32.30 | -20 | pass |
| 1454.490 | V | -33.23 | -20 | pass |
| 1616.100 | V | -34.62 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 173.975MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 173.975 | H | 0 | | pass |
| 347.950 | H | -27.85 | -20 | pass |
| 521.925 | H | -27.85 | -20 | pass |
| 695.900 | H | -29.34 | -20 | pass |
| 869.875 | H | -29.91 | -20 | pass |
| 1043.850 | H | -31.91 | -20 | pass |
| 1217.825 | H | -34.21 | -20 | pass |
| 1391.800 | H | -30.80 | -20 | pass |
| 1565.775 | H | -30.87 | -20 | pass |
| 1739.750 | H | -34.02 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 173.975 | V | 0 | | pass |
| 347.950 | V | -26.82 | -20 | pass |
| 521.925 | V | -26.63 | -20 | pass |
| 695.900 | V | -27.05 | -20 | pass |
| 869.875 | V | -27.68 | -20 | pass |
| 1043.850 | V | -30.41 | -20 | pass |
| 1217.825 | V | -29.60 | -20 | pass |
| 1391.800 | V | -32.62 | -20 | pass |
| 1565.775 | V | -33.73 | -20 | pass |
| 1739.750 | V | -35.50 | -20 | pass |

**UHF:**

**Measurement Result for 12.5 KHz Channel Separation @ 400.025MHz-35W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 400.025 | H | 0 | | pass |
| 800.050 | H | -26.08 | -20 | pass |
| 1200.075 | H | 0.00 | -20 | pass |
| 1600.100 | H | -28.71 | -20 | pass |
| 2000.125 | H | -30.57 | -20 | pass |
| 2400.150 | H | -31.11 | -20 | pass |
| 2800.175 | H | -33.22 | -20 | pass |
| 3200.200 | H | -28.89 | -20 | pass |
| 3600.225 | H | -31.12 | -20 | pass |
| 4000.250 | H | -30.83 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 400.025 | V | 0 | | pass |
| 800.050 | V | -25.83 | -20 | pass |
| 1200.075 | V | -27.07 | -20 | pass |
| 1600.100 | V | -28.11 | -20 | pass |
| 2000.125 | V | -29.83 | -20 | pass |
| 2400.150 | V | -29.16 | -20 | pass |
| 2800.175 | V | -33.06 | -20 | pass |
| 3200.200 | V | -27.55 | -20 | pass |
| 3600.225 | V | -32.32 | -20 | pass |
| 4000.250 | V | -33.11 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 453.225MHz-35W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 453.225 | H | 0 | | pass |
| 906.450 | H | -26.22 | -20 | pass |
| 1359.675 | H | 0.00 | -20 | pass |
| 1812.900 | H | -29.23 | -20 | pass |
| 2266.125 | H | -30.56 | -20 | pass |
| 2719.350 | H | -31.72 | -20 | pass |
| 3172.575 | H | -31.95 | -20 | pass |
| 3625.800 | H | -29.14 | -20 | pass |
| 4079.025 | H | -31.12 | -20 | pass |
| 4532.250 | H | -31.08 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 453.225 | V | 0 | | pass |
| 906.450 | V | -25.57 | -20 | pass |
| 1359.675 | V | -27.84 | -20 | pass |
| 1812.900 | V | -28.09 | -20 | pass |
| 2266.125 | V | -30.94 | -20 | pass |
| 2719.350 | V | -29.36 | -20 | pass |
| 3172.575 | V | -33.29 | -20 | pass |
| 3625.800 | V | -28.99 | -20 | pass |
| 4079.025 | V | -32.15 | -20 | pass |
| 4532.250 | V | -33.81 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 454.025MHz-35W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 454.025 | H | 0 | | pass |
| 908.050 | H | -25.69 | -20 | pass |
| 1362.075 | H | -29.72 | -20 | pass |
| 1816.100 | H | -29.47 | -20 | pass |
| 2270.125 | H | -30.84 | -20 | pass |
| 2724.150 | H | -32.65 | -20 | pass |
| 3178.175 | H | -28.86 | -20 | pass |
| 3632.200 | H | -28.84 | -20 | pass |
| 4086.225 | H | -31.31 | -20 | pass |
| 4540.250 | H | -35.85 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 454.025 | V | 0 | | pass |
| 908.050 | V | -25.99 | -20 | pass |
| 1362.075 | V | -24.60 | -20 | pass |
| 1816.100 | V | -28.14 | -20 | pass |
| 2270.125 | V | -29.06 | -20 | pass |
| 2724.150 | V | -33.34 | -20 | pass |
| 3178.175 | V | -33.93 | -20 | pass |
| 3632.200 | V | -34.67 | -20 | pass |
| 4086.225 | V | -35.88 | -20 | pass |
| 4540.250 | V | -36.21 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 479.975MHz-35W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 479.975 | H | 0 | | pass |
| 959.950 | H | -28.72 | -20 | pass |
| 1439.925 | H | -28.54 | -20 | pass |
| 1919.900 | H | -29.42 | -20 | pass |
| 2399.875 | H | -30.39 | -20 | pass |
| 2879.850 | H | -30.91 | -20 | pass |
| 3359.825 | H | -30.55 | -20 | pass |
| 3839.800 | H | -28.95 | -20 | pass |
| 4319.775 | H | -31.68 | -20 | pass |
| 4799.750 | H | -36.95 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 479.975 | V | 0 | | pass |
| 959.950 | V | -27.36 | -20 | pass |
| 1439.925 | V | -28.12 | -20 | pass |
| 1919.900 | V | -30.14 | -20 | pass |
| 2399.875 | V | -30.79 | -20 | pass |
| 2879.850 | V | -28.56 | -20 | pass |
| 3359.825 | V | -31.54 | -20 | pass |
| 3839.800 | V | -27.77 | -20 | pass |
| 4319.775 | V | -29.84 | -20 | pass |
| 4799.750 | V | -32.85 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 400.025MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 400.025 | H | 0 | | pass |
| 800.050 | H | -27.40 | -20 | pass |
| 1200.075 | H | -28.50 | -20 | pass |
| 1600.100 | H | -30.06 | -20 | pass |
| 2000.125 | H | -30.77 | -20 | pass |
| 2400.150 | H | -29.51 | -20 | pass |
| 2800.175 | H | -31.67 | -20 | pass |
| 3200.200 | H | -28.54 | -20 | pass |
| 3600.225 | H | -34.69 | -20 | pass |
| 4000.250 | H | -34.40 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 400.025 | V | 0 | | pass |
| 800.050 | V | -27.63 | -20 | pass |
| 1200.075 | V | -28.66 | -20 | pass |
| 1600.100 | V | -29.39 | -20 | pass |
| 2000.125 | V | -29.48 | -20 | pass |
| 2400.150 | V | -30.75 | -20 | pass |
| 2800.175 | V | -32.66 | -20 | pass |
| 3200.200 | V | -28.94 | -20 | pass |
| 3600.225 | V | -31.41 | -20 | pass |
| 4000.250 | V | -34.55 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 453.225MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 453.225 | H | 0 | | pass |
| 906.450 | H | -25.20 | -20 | pass |
| 1359.675 | H | -28.15 | -20 | pass |
| 1812.900 | H | -27.16 | -20 | pass |
| 2266.125 | H | -27.73 | -20 | pass |
| 2719.350 | H | -32.03 | -20 | pass |
| 3172.575 | H | -33.00 | -20 | pass |
| 3625.800 | H | -34.89 | -20 | pass |
| 4079.025 | H | -36.39 | -20 | pass |
| 4532.250 | H | -36.51 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 453.225 | V | 0 | | pass |
| 906.450 | V | -27.97 | -20 | pass |
| 1359.675 | V | -29.41 | -20 | pass |
| 1812.900 | V | -28.97 | -20 | pass |
| 2266.125 | V | -29.16 | -20 | pass |
| 2719.350 | V | -30.00 | -20 | pass |
| 3172.575 | V | -27.95 | -20 | pass |
| 3625.800 | V | -31.92 | -20 | pass |
| 4079.025 | V | -33.32 | -20 | pass |
| 4532.250 | V | -35.74 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 454.025MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 454.025 | H | 0 | | pass |
| 908.050 | H | -27.58 | -20 | pass |
| 1362.075 | H | -28.26 | -20 | pass |
| 1816.100 | H | -30.14 | -20 | pass |
| 2270.125 | H | -29.62 | -20 | pass |
| 2724.150 | H | -33.34 | -20 | pass |
| 3178.175 | H | -36.25 | -20 | pass |
| 3632.200 | H | -29.90 | -20 | pass |
| 4086.225 | H | -33.33 | -20 | pass |
| 4540.250 | H | -34.75 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 479.975 | V | 0 | | pass |
| 959.950 | V | -27.65 | -20 | pass |
| 1439.925 | V | -25.65 | -20 | pass |
| 1919.900 | V | -30.93 | -20 | pass |
| 2399.875 | V | -28.65 | -20 | pass |
| 2879.850 | V | -33.16 | -20 | pass |
| 3359.825 | V | -34.26 | -20 | pass |
| 3839.800 | V | -32.19 | -20 | pass |
| 4319.775 | V | -31.91 | -20 | pass |
| 4799.750 | V | -34.54 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 479.975MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 479.975 | H | 0 | | pass |
| 959.950 | H | -26.20 | -20 | pass |
| 1439.925 | H | -27.99 | -20 | pass |
| 1919.900 | H | -28.65 | -20 | pass |
| 2399.875 | H | -29.06 | -20 | pass |
| 2879.850 | H | -28.80 | -20 | pass |
| 3359.825 | H | -32.42 | -20 | pass |
| 3839.800 | H | -27.96 | -20 | pass |
| 4319.775 | H | -32.74 | -20 | pass |
| 4799.750 | H | -34.55 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 479.975 | V | 0 | | pass |
| 959.950 | V | -27.36 | -20 | pass |
| 1439.925 | V | -28.12 | -20 | pass |
| 1919.900 | V | -30.14 | -20 | pass |
| 2399.875 | V | -30.79 | -20 | pass |
| 2879.850 | V | -28.56 | -20 | pass |
| 3359.825 | V | -31.54 | -20 | pass |
| 3839.800 | V | -27.77 | -20 | pass |
| 4319.775 | V | -29.84 | -20 | pass |
| 4799.750 | V | -32.85 | -20 | pass |

**Digital:**

**Measurement Result for 12.5 KHz Channel Separation @ 136.025MHz-40W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 136.025 | H | 0 | | pass |
| 272.050 | H | -26.93 | -20 | pass |
| 408.075 | H | -25.76 | -20 | pass |
| 544.100 | H | -27.94 | -20 | pass |
| 680.125 | H | -28.82 | -20 | pass |
| 816.150 | H | -32.88 | -20 | pass |
| 952.175 | H | -35.79 | -20 | pass |
| 1088.200 | H | -29.45 | -20 | pass |
| 1224.225 | H | -33.86 | -20 | pass |
| 1360.250 | H | -34.97 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 136.025 | V | 0 | | pass |
| 272.050 | V | -27.77 | -20 | pass |
| 408.075 | V | -27.63 | -20 | pass |
| 544.100 | V | -28.06 | -20 | pass |
| 680.125 | V | -29.63 | -20 | pass |
| 816.150 | V | -29.60 | -20 | pass |
| 952.175 | V | -33.49 | -20 | pass |
| 1088.200 | V | -29.46 | -20 | pass |
| 1224.225 | V | -31.05 | -20 | pass |
| 1360.250 | V | -33.40 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 151.850MHz-40W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 151.850 | H | 0 | | pass |
| 303.700 | H | -25.07 | -20 | pass |
| 455.550 | H | -28.44 | -20 | pass |
| 607.400 | H | -28.46 | -20 | pass |
| 759.250 | H | -29.86 | -20 | pass |
| 911.100 | H | -31.45 | -20 | pass |
| 1062.950 | H | -33.62 | -20 | pass |
| 1214.800 | H | -29.57 | -20 | pass |
| 1366.650 | H | -31.68 | -20 | pass |
| 1518.500 | H | -33.16 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 151.850 | V | 0 | | pass |
| 303.700 | V | -26.55 | -20 | pass |
| 455.550 | V | -26.74 | -20 | pass |
| 607.400 | V | -28.86 | -20 | pass |
| 759.250 | V | -32.40 | -20 | pass |
| 911.100 | V | -29.44 | -20 | pass |
| 1062.950 | V | -30.67 | -20 | pass |
| 1214.800 | V | -31.83 | -20 | pass |
| 1366.650 | V | -34.11 | -20 | pass |
| 1518.500 | V | -34.13 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 155.025MHz-40W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 155.025 | H | 0 | | pass |
| 310.050 | H | -29.81 | -20 | pass |
| 465.075 | H | -29.01 | -20 | pass |
| 620.100 | H | -28.40 | -20 | pass |
| 775.125 | H | -31.46 | -20 | pass |
| 930.150 | H | -30.35 | -20 | pass |
| 1085.175 | H | -31.34 | -20 | pass |
| 1240.200 | H | -29.03 | -20 | pass |
| 1395.225 | H | -30.93 | -20 | pass |
| 1550.250 | H | -32.72 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 155.025 | V | 0 | | pass |
| 310.050 | V | -25.86 | -20 | pass |
| 465.075 | V | -27.63 | -20 | pass |
| 620.100 | V | -27.37 | -20 | pass |
| 775.125 | V | -27.92 | -20 | pass |
| 930.150 | V | -31.63 | -20 | pass |
| 1085.175 | V | -28.85 | -20 | pass |
| 1240.200 | V | -31.98 | -20 | pass |
| 1395.225 | V | -33.92 | -20 | pass |
| 1550.250 | V | -34.42 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 161.610MHz-40W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 161.610 | H | 0 | | pass |
| 323.220 | H | -27.94 | -20 | pass |
| 484.830 | H | -28.28 | -20 | pass |
| 646.440 | H | -28.26 | -20 | pass |
| 808.050 | H | -31.61 | -20 | pass |
| 969.660 | H | -31.90 | -20 | pass |
| 1131.270 | H | -30.70 | -20 | pass |
| 1292.880 | H | -29.23 | -20 | pass |
| 1454.490 | H | -31.64 | -20 | pass |
| 1616.100 | H | -35.15 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 161.610 | V | 0 | | pass |
| 323.220 | V | -26.80 | -20 | pass |
| 484.830 | V | -27.76 | -20 | pass |
| 646.440 | V | -27.53 | -20 | pass |
| 808.050 | V | -30.66 | -20 | pass |
| 969.660 | V | -31.59 | -20 | pass |
| 1131.270 | V | -33.50 | -20 | pass |
| 1292.880 | V | -34.93 | -20 | pass |
| 1454.490 | V | -34.65 | -20 | pass |
| 1616.100 | V | -35.79 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 173.975MHz-40W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 173.975 | H | 0 | | pass |
| 347.950 | H | -25.99 | -20 | pass |
| 521.925 | H | -28.44 | -20 | pass |
| 695.900 | H | -28.52 | -20 | pass |
| 869.875 | H | -31.73 | -20 | pass |
| 1043.850 | H | -32.29 | -20 | pass |
| 1217.825 | H | -33.14 | -20 | pass |
| 1391.800 | H | -28.65 | -20 | pass |
| 1565.775 | H | -30.48 | -20 | pass |
| 1739.750 | H | -33.77 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 173.975 | V | 0 | | pass |
| 347.950 | V | -25.54 | -20 | pass |
| 521.925 | V | -27.99 | -20 | pass |
| 695.900 | V | -29.13 | -20 | pass |
| 869.875 | V | -30.82 | -20 | pass |
| 1043.850 | V | -30.07 | -20 | pass |
| 1217.825 | V | -34.04 | -20 | pass |
| 1391.800 | V | -27.98 | -20 | pass |
| 1565.775 | V | -31.67 | -20 | pass |
| 1739.750 | V | -34.02 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 136.025MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 136.025 | H | 0 | | pass |
| 272.050 | H | -26.86 | -20 | pass |
| 408.075 | H | -29.76 | -20 | pass |
| 544.100 | H | -29.99 | -20 | pass |
| 680.125 | H | -31.25 | -20 | pass |
| 816.150 | H | -32.32 | -20 | pass |
| 952.175 | H | -29.41 | -20 | pass |
| 1088.200 | H | -29.25 | -20 | pass |
| 1224.225 | H | -34.06 | -20 | pass |
| 1360.250 | H | -36.35 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 136.025 | V | 0 | | pass |
| 272.050 | V | -26.64 | -20 | pass |
| 408.075 | V | -24.63 | -20 | pass |
| 544.100 | V | -27.34 | -20 | pass |
| 680.125 | V | -29.52 | -20 | pass |
| 816.150 | V | -32.75 | -20 | pass |
| 952.175 | V | -34.80 | -20 | pass |
| 1088.200 | V | -33.87 | -20 | pass |
| 1224.225 | V | -35.67 | -20 | pass |
| 1360.250 | V | -36.53 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 151.850MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 151.850 | H | 0 | | pass |
| 303.700 | H | -29.13 | -20 | pass |
| 455.550 | H | -28.60 | -20 | pass |
| 607.400 | H | -28.28 | -20 | pass |
| 759.250 | H | -30.64 | -20 | pass |
| 911.100 | H | -29.49 | -20 | pass |
| 1062.950 | H | -30.60 | -20 | pass |
| 1214.800 | H | -28.62 | -20 | pass |
| 1366.650 | H | -32.39 | -20 | pass |
| 1518.500 | H | -34.31 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 151.850 | V | 0 | | pass |
| 303.700 | V | -27.57 | -20 | pass |
| 455.550 | V | -28.57 | -20 | pass |
| 607.400 | V | -31.17 | -20 | pass |
| 759.250 | V | -30.73 | -20 | pass |
| 911.100 | V | -28.43 | -20 | pass |
| 1062.950 | V | -32.34 | -20 | pass |
| 1214.800 | V | -28.60 | -20 | pass |
| 1366.650 | V | -30.86 | -20 | pass |
| 1518.500 | V | -33.39 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 155.025MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 155.025 | H | 0 | | pass |
| 310.050 | H | -27.27 | -20 | pass |
| 465.075 | H | -28.81 | -20 | pass |
| 620.100 | H | -30.32 | -20 | pass |
| 775.125 | H | -31.88 | -20 | pass |
| 930.150 | H | -29.91 | -20 | pass |
| 1085.175 | H | -31.49 | -20 | pass |
| 1240.200 | H | -27.74 | -20 | pass |
| 1395.225 | H | -33.87 | -20 | pass |
| 1550.250 | H | -34.80 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 155.025 | V | 0 | | pass |
| 310.050 | V | -27.31 | -20 | pass |
| 465.075 | V | -29.63 | -20 | pass |
| 620.100 | V | -28.92 | -20 | pass |
| 775.125 | V | -30.21 | -20 | pass |
| 930.150 | V | -30.85 | -20 | pass |
| 1085.175 | V | -32.06 | -20 | pass |
| 1240.200 | V | -28.37 | -20 | pass |
| 1395.225 | V | -31.43 | -20 | pass |
| 1550.250 | V | -33.78 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 161.610MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 161.610 | H | 0 | | pass |
| 323.220 | H | -26.13 | -20 | pass |
| 484.830 | H | -28.42 | -20 | pass |
| 646.440 | H | -26.96 | -20 | pass |
| 808.050 | H | -27.85 | -20 | pass |
| 969.660 | H | -32.12 | -20 | pass |
| 1131.270 | H | -33.32 | -20 | pass |
| 1292.880 | H | -34.40 | -20 | pass |
| 1454.490 | H | -35.13 | -20 | pass |
| 1616.100 | H | -36.22 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 161.610 | V | 0 | | pass |
| 323.220 | V | -27.78 | -20 | pass |
| 484.830 | V | -29.25 | -20 | pass |
| 646.440 | V | -28.10 | -20 | pass |
| 808.050 | V | -29.19 | -20 | pass |
| 969.660 | V | -29.47 | -20 | pass |
| 1131.270 | V | -27.55 | -20 | pass |
| 1292.880 | V | -32.07 | -20 | pass |
| 1454.490 | V | -33.46 | -20 | pass |
| 1616.100 | V | -35.29 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 173.975MHz-5W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 173.975 | H | 0 | | pass |
| 347.950 | H | -26.75 | -20 | pass |
| 521.925 | H | -28.60 | -20 | pass |
| 695.900 | H | -30.84 | -20 | pass |
| 869.875 | H | -30.24 | -20 | pass |
| 1043.850 | H | -33.49 | -20 | pass |
| 1217.825 | H | -35.55 | -20 | pass |
| 1391.800 | H | -29.45 | -20 | pass |
| 1565.775 | H | -32.00 | -20 | pass |
| 1739.750 | H | -34.49 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 173.975 | V | 0 | | pass |
| 347.950 | V | -28.60 | -20 | pass |
| 521.925 | V | -28.97 | -20 | pass |
| 695.900 | V | -29.81 | -20 | pass |
| 869.875 | V | -31.21 | -20 | pass |
| 1043.850 | V | -31.48 | -20 | pass |
| 1217.825 | V | -32.71 | -20 | pass |
| 1391.800 | V | -29.09 | -20 | pass |
| 1565.775 | V | -33.32 | -20 | pass |
| 1739.750 | V | -36.45 | -20 | pass |

**UHF:**

**Measurement Result for 12.5 KHz Channel Separation @ 400.025MHz-35W**

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 400.025 | H | 0 | | pass |
| 800.050 | H | -27.01 | -20 | pass |
| 1200.075 | H | -27.62 | -20 | pass |
| 1600.100 | H | -29.29 | -20 | pass |
| 2000.125 | H | -28.84 | -20 | pass |
| 2400.150 | H | -29.10 | -20 | pass |
| 2800.175 | H | -31.76 | -20 | pass |
| 3200.200 | H | -28.93 | -20 | pass |
| 3600.225 | H | -32.93 | -20 | pass |
| 4000.250 | H | -34.20 | -20 | pass |

| Emission Frequency (MHz) | Ant. Polarity(H/V) | Measurement Result (dBm) | Limit (dBm) | Result(P/F) |
|---|---|---|---|---|
| 400.025 | V | 0 | | pass |
| 800.050 | V | -28.62 | -20 | pass |
| 1200.075 | V | -25.15 | -20 | pass |
| 1600.100 | V | -31.17 | -20 | pass |
| 2000.125 | V | -29.13 | -20 | pass |
| 2400.150 | V | -33.49 | -20 | pass |
| 2800.175 | V | -34.69 | -20 | pass |
| 3200.200 | V | -32.42 | -20 | pass |
| 3600.225 | V | -32.54 | -20 | pass |
| 4000.250 | V | -35.29 | -20 | pass |