# FCC Part 90 Rules
# Test Report

Report No.: AGC02931200702FE10

| | | |
|---|---|---|
| **FCC ID** | : | PODTH-UVF9 |
| **PRODUCT DESIGNATION** | : | Two-way Radio |
| **BRAND NAME** | : | TYT |
| **MODEL NAME** | : | TH-UVF9, TH-UVF8 |
| **APPLICANT** | : | TYT ELECTRONICS CO., LTD |
| **DATE OF ISSUE** | : | Jul. 23, 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 | / | Jul. 23, 2020 | Valid | Class II Permissive Change |

**Note:** The original test report Ref. No. (AGC092120801-2F2) (dated 2013-03-27), was modified on 2020-07-23 to include the following changes and additions for:

-Updated serial model name.

-Update the appearance color of the main test and series

- Delete DTMF module & vibration motor.

-Updated battery capacity;

-Replacement antenna base & antenna connector;

-Increase low power 1W;

-Updated Hardware version and software version;

For the above described changes, update all evaluation tests and data.

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## 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:** | Two-way Radio |
| **Brand Name:** | TYT |
| **Test Model** | TH-UVF9 |
| **Serial Model** | TH-UVF8 |
| **Difference Description** | Only the model and appearance are different, others are the same |
| **Measurement Procedure** | TIA/EIA 603-E-2016 |
| **Deviation** | No any deviation from the test method. |
| **Date of Test:** | Jul. 14, 2020~Jul. 23, 2020 |
| **Condition of Test Sample** | Normal |
| **Test Result** | Pass |

**WE HEREBY CERTIFY THAT:**

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 — Calvin Liu (Project Engineer) — Jul. 23, 2020

Reviewed By — Max Zhang (Reviewer) — Jul. 23, 2020

Approved By — Forrest Lei (Authorized Officer) — Jul. 23, 2020

# 2. GENERAL INFORMATION

## 2.1PRODUCT DESCRIPTION

The EUT is a **Two-way 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/ Tone only | |
| Hardware Version | F9-VHF/UHF/1.08 | |
| Software Version | V2.2 | |
| Modulation | FM | |
| Emission Type | 11K0F3E | |
| Emission Bandwidth | VHF: 10.17KHz(5W-12.5 KHz) 10.17KHz(1W-12.5 KHz)<br>UHF: 10.17KHz(5W-12.5KHz) 10.17KHz(1W-12.5 KHz) | |
| Peak Frequency Deviation | 1.71KHz | |
| Audio Frequency Response | 6.41dB | |
| Maximum Transmitter Power | VHF: 36.43dBm(5W-12.5 KHz) 29.94dBm(1W-12.5 KHz)<br>UHF: 35.71dBm(5W-12.5 KHz) 29.91dBm(1W-12.5 KHz) | |
| Output power Modification | 5W/1W<br>(It was fixed by the manufacturer, any individual can't arbitrarily change it.) | |
| Data Rate | 12.5KHz(Channel Spacing) | |
| Antenna Designation | Detachable | |
| Antenna Gain | 1.5dBi | |
| Power Supply | DC 7.4V,1600mAh by battery, charging for DC8.4V | |
| Limiting Voltage | DC 6.29V-8.51V | |
| Operation Frequency Range and Channel | Frequency Range:136MHz to 174MHz(VHF), 400 MHz to 470 MHz (UHF)<br>Channel Separation: 12.5KHz(Analog) | |
| | Bottom Channel: 136.025MHz<br>Middle Channel:151.850MHz<br>Middle Channel:155.025MHz<br>High Channel: 173.975MHz | Bottom Channel: 400.025MHz<br>Middle Channel: 435.025MHz<br>Middle Channel: 454.025MHz<br>High Channel: 469.975MHz |
| Frequency Tolerance | 1.095ppm | |

| Frequency Range (MHz) | Rated Transmit Power(W)(Conducted) | Transmit Mode/Emission Designator |
|---|---|---|
| 136-174 | 5W/1W | 11K0F3E(Analog Vioce;NB) |
| 400-470 | 5W/1W | 11K0F3E(Analog Vioce;NB) |

| Channel No. (6.25KHz) | Channel No. (12.5KHz) | 12.5KHz Channel Spaced 400MHz Band Plan(MHz) |
|---|---|---|
| 1 | 1-2 | 136.025 |
| 2 | | |
| 3 | 3-4 | 155.025 |
| 4 | | |
| 5 | 5-6 | 173.975 |
| 6 | | |

| 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 | 455.025 |
| 4 | | |
| 5 | 5-6 | 469.975 |
| 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
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: 20kHz)**

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 20 kHz channel spacing FM mode is 16K0F3E.

**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.

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

This submittal(s) (test report) is intended for FCC ID: **PODTH-UVF9,** filing to comply with Part 2, Part 22, and Part 90 of the Federal Communication Commission rules.

## 2.3 TEST METHODOLOGY

The radiated emission testing was performed according to the procedures of ANSI/TIA-603-E (2016).

## 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 90.210 : Spurious Emission on Antenna Port

(7). Section 90.210 : Spurious Ratiated Emission

## 3.4CONFIGURATION 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 | Two-way Radio | TH-UVF9 | FCC ID: PODTH-UVF9 | EUT |
| 3 | Adapter | AD-V3 | Input: AC 100-240V, 50/60Hz, 0.5A<br>Output: DC 8.5V 600mA | Accessory |
| 4 | Battery | LB-75L | DC 7.4V 1600mAh | Accessory |
| 5 | Back clip | N/A | N/A | Accessory |

Note：The battery is full-charged during the test

## 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 |
| §90.210& 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, 2022 |
| EXA Signal Analyzer | Aglient | N9020A | W1312-60196 | Oct. 08, 2019 | Oct. 07, 2020 |
| EXA Signal Analyzer | Aglient | N9020A | MY52090123 | Oct. 08, 2019 | Oct. 07, 2020 |
| Horn antenna | SCHWARZBECK | BBHA 9170 | #768 | Sep.16, 2019 | Sep.15, 2021 |
| preamplifier | ChengYi | EMC184045SE | 980508 | Oct.29, 2019 | Oct 28, 2020 |
| 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 | / | Mar.01, 2018 | Feb.29, 2020 |
| 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.26, 2018 | Sep.25, 2020 |
| Modulation Domain Analyzer | HP | 53310A | 3121A02467 | Oct. 30, 2019 | Oct. 29, 2020 |
| Small environmental tester | ESPEC | SH-242 | -- | Feb. 25, 2019 | Feb. 24, 2020 |
| RF Communication Test Set | HP | 8920B | -- | Jun. 09, 2020 | Jun. 08, 2021 |
| Attenuator | Weinachel Corp | 58-30-33 | ML030 | Oct. 28, 2019 | Oct. 27, 2020 |
| 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 (**Two-way 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 |

**Note:** Only the result of the worst case was recorded in the report.

# 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

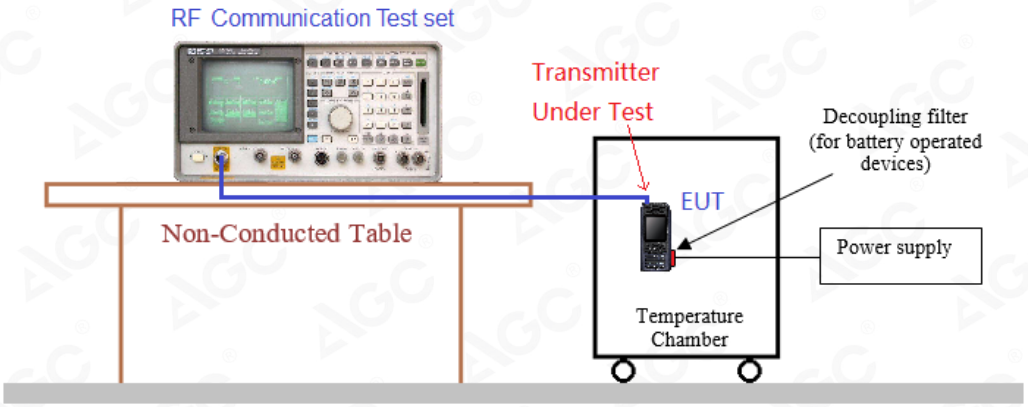
### 6.2.1 Frequency stability versus environmental temperature

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 7.4V.
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**

**VHF:**

(1) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)**-5W-12.5KHz**

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | | | Limit: ppm |
|---|---|---|---|---|---|---|
| | | 136.025MHz | 151.85MHz | 155.025MHz | 173.975MHz | |
| 50 | DC 7.40 V | 0.494 | 0.653 | 0.824 | 0.606 | 5 |
| 40 | DC 7.40 V | 0.576 | 0.591 | 0.697 | 0.669 | |
| 30 | DC 7.40 V | 0.809 | 0.837 | 1.095 | 0.436 | |
| 20 | DC 7.40 V | 1.089 | 1.016 | 0.717 | 0.817 | |
| 10 | DC 7.40 V | 1.060 | 0.629 | 0.514 | 0.694 | |
| 0 | DC 7.40 V | 1.034 | 0.746 | 0.823 | 0.634 | |
| -10 | DC 7.40 V | 0.802 | 0.562 | 0.679 | 0.668 | |
| -20 | DC 7.40 V | 0.720 | 0.764 | 0.530 | 0.471 | |
| -30 | DC 7.40 V | 0.697 | 0.960 | 0.751 | 0.543 | |
| Result | Pass | | | | | |

(2) Frequency stability versus input voltage (Battery endpoint is 6.29V) **-5W-12.5KHz**

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | | | Limit: ppm |
|---|---|---|---|---|---|---|
| | | 136.025MHz | 151.85MHz | 155.025MHz | 173.975MHz | |
| 50 | DC 6.29 V | 0.567 | 0.689 | 0.544 | 0.662 | 5 |
| 40 | DC 6.29 V | 0.996 | 0.705 | 1.022 | 0.303 | |
| 30 | DC 6.29 V | 1.076 | 0.721 | 0.972 | 0.558 | |
| 20 | DC 6.29 V | 1.051 | 0.930 | 1.078 | 0.327 | |
| 10 | DC 6.29 V | 0.987 | 0.530 | 0.586 | 0.334 | |
| 0 | DC 6.29 V | 1.061 | 0.586 | 0.548 | 0.740 | |
| -10 | DC 6.29 V | 0.780 | 0.871 | 0.646 | 0.578 | |
| -20 | DC 6.29 V | 0.830 | 0.846 | 0.570 | 0.834 | |
| -30 | DC 6.29 V | 0.993 | 0.521 | 0.864 | 0.979 | |
| Result | Pass | | | | | |

(3) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)**-1W-12.5KHz**

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | | | Limit: ppm |
|---|---|---|---|---|---|---|
| | | 136.025MHz | 151.85MHz | 155.025MHz | 173.975MHz | |
| 50 | DC 7.40 V | 1.073 | 0.976 | 0.933 | 0.485 | 5 |
| 40 | DC 7.40 V | 0.792 | 0.502 | 1.071 | 0.301 | |
| 30 | DC 7.40 V | 0.539 | 0.945 | 0.526 | 0.926 | |
| 20 | DC 7.40 V | 0.995 | 0.925 | 0.935 | 0.696 | |
| 10 | DC 7.40 V | 0.548 | 1.073 | 0.907 | 0.638 | |
| 0 | DC 7.40 V | 0.973 | 0.915 | 0.833 | 0.315 | |
| -10 | DC 7.40 V | 0.631 | 0.593 | 0.812 | 0.457 | |
| -20 | DC 7.40 V | 0.698 | 0.922 | 0.683 | 0.520 | |
| -30 | DC 7.40 V | 0.755 | 0.505 | 0.578 | 0.515 | |
| Result | Pass | | | | | |

(4) Frequency stability versus input voltage (Battery endpoint is 6.29V) **-1W-12.5KHz**

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | | | Limit: ppm |
|---|---|---|---|---|---|---|
| | | 136.025MHz | 151.85MHz | 155.025MHz | 173.975MHz | |
| 50 | DC 6.29 V | 0.985 | 0.610 | 1.041 | 0.653 | 5 |
| 40 | DC 6.29 V | 0.881 | 0.571 | 0.911 | 0.868 | |
| 30 | DC 6.29 V | 0.762 | 0.767 | 0.659 | 0.979 | |
| 20 | DC 6.29 V | 1.039 | 0.602 | 0.812 | 0.726 | |
| 10 | DC 6.29 V | 0.804 | 1.095 | 0.886 | 0.822 | |
| 0 | DC 6.29 V | 0.879 | 0.862 | 0.613 | 0.942 | |
| -10 | DC 6.29 V | 0.835 | 0.889 | 0.635 | 0.881 | |
| -20 | DC 6.29 V | 0.910 | 0.668 | 0.903 | 0.748 | |
| -30 | DC 6.29 V | 0.524 | 0.592 | 0.596 | 0.673 | |
| Result | Pass | | | | | |

**UHF:**

(1) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)**-5W-12.5KHz**

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | | | Limit: ppm |
|---|---|---|---|---|---|---|
| | | 400.025MHz | 435.025MHz | 454.025MHz | 469.975MHz | |
| 50 | DC 7.40 V | 0.852 | 0.653 | 0.808 | 0.944 | 2.5 |
| 40 | DC 7.40 V | 0.707 | 0.642 | 0.535 | 0.860 | |
| 30 | DC 7.40 V | 0.611 | 0.921 | 0.903 | 0.429 | |
| 20 | DC 7.40 V | 0.515 | 1.040 | 0.714 | 0.558 | |
| 10 | DC 7.40 V | 0.705 | 0.781 | 0.507 | 0.786 | |
| 0 | DC 7.40 V | 0.582 | 0.989 | 0.695 | 0.865 | |
| -10 | DC 7.40 V | 0.870 | 0.775 | 0.949 | 0.863 | |
| -20 | DC 7.40 V | 0.518 | 1.033 | 0.639 | 0.790 | |
| -30 | DC 7.40 V | 0.562 | 0.609 | 0.560 | 0.856 | |
| Result | Pass | | | | | |

(2) Frequency stability versus input voltage (Battery endpoint is 6.29V) **-5W-12.5KHz**

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | | | Limit: ppm |
|---|---|---|---|---|---|---|
| | | 400.025MHz | 435.025MHz | 454.025MHz | 469.975MHz | |
| 50 | DC 6.29 V | 0.569 | 0.522 | 1.030 | 0.367 | 2.5 |
| 40 | DC 6.29 V | 0.539 | 0.843 | 0.747 | 0.758 | |
| 30 | DC 6.29 V | 0.824 | 1.055 | 0.623 | 0.564 | |
| 20 | DC 6.29 V | 0.833 | 0.931 | 0.605 | 0.448 | |
| 10 | DC 6.29 V | 0.976 | 0.549 | 0.920 | 0.672 | |
| 0 | DC 6.29 V | 0.646 | 0.835 | 0.804 | 0.649 | |
| -10 | DC 6.29 V | 0.592 | 0.987 | 0.536 | 0.682 | |
| -20 | DC 6.29 V | 0.956 | 0.780 | 0.551 | 0.936 | |
| -30 | DC 6.29 V | 1.072 | 0.916 | 0.537 | 0.389 | |
| Result | Pass | | | | | |

(3) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)**-1W-12.5KHz**

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | | | Limit: ppm |
|---|---|---|---|---|---|---|
| | | 400.025MHz | 435.025MHz | 454.025MHz | 469.975MHz | |
| 50 | DC 7.40 V | 0.615 | 0.945 | 0.850 | 0.360 | 2.5 |
| 40 | DC 7.40 V | 0.643 | 0.668 | 0.697 | 0.603 | |
| 30 | DC 7.40 V | 0.861 | 0.978 | 0.737 | 0.967 | |
| 20 | DC 7.40 V | 0.890 | 0.948 | 0.710 | 0.912 | |
| 10 | DC 7.40 V | 0.961 | 0.503 | 0.806 | 0.802 | |
| 0 | DC 7.40 V | 0.789 | 1.024 | 0.802 | 0.345 | |
| -10 | DC 7.40 V | 0.591 | 0.671 | 0.858 | 0.919 | |
| -20 | DC 7.40 V | 1.080 | 0.860 | 0.543 | 0.455 | |
| -30 | DC 7.40 V | 0.815 | 0.935 | 0.970 | 0.542 | |
| Result | Pass | | | | | |

(4) Frequency stability versus input voltage (Battery endpoint is 6.29V) **-1W-12.5KHz**

| Environment Temperature(℃) | Power Supply (V) | Reference Frequency | | | | Limit: ppm |
|---|---|---|---|---|---|---|
| | | 400.025MHz | 435.025MHz | 454.025MHz | 469.975MHz | |
| 50 | DC 6.29 V | 1.028 | 0.792 | 0.563 | 0.711 | 2.5 |
| 40 | DC 6.29 V | 0.725 | 1.008 | 0.756 | 0.384 | |
| 30 | DC 6.29 V | 0.660 | 0.693 | 0.996 | 0.528 | |
| 20 | DC 6.29 V | 0.623 | 0.872 | 0.709 | 0.506 | |
| 10 | DC 6.29 V | 1.071 | 0.916 | 0.906 | 0.945 | |
| 0 | DC 6.29 V | 0.637 | 1.055 | 0.672 | 0.550 | |
| -10 | DC 6.29 V | 0.550 | 0.663 | 0.788 | 0.516 | |
| -20 | DC 6.29 V | 0.761 | 0.656 | 0.729 | 0.403 | |
| -30 | DC 6.29 V | 0.895 | 0.651 | 0.896 | 0.337 | |
| Result | Pass | | | | | |

**Note**: 1.Battery terminal voltage is declared and specified by the manufacturer.
2. 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).

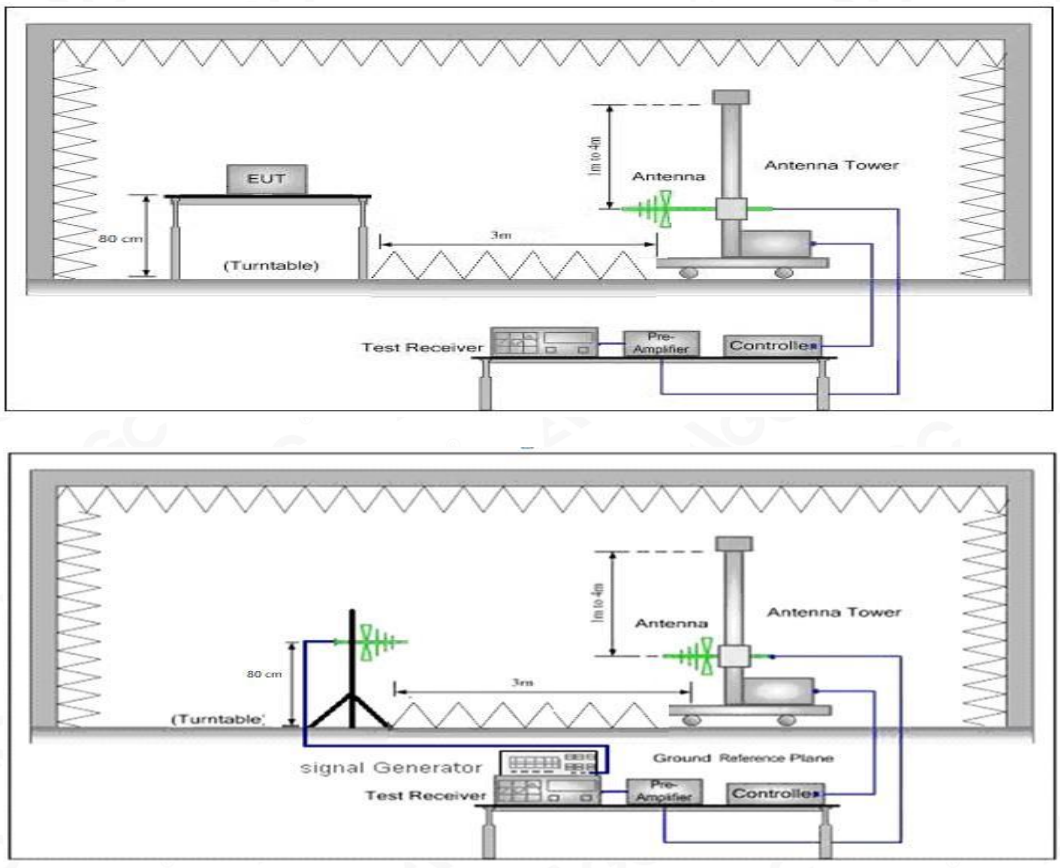
3). Set SPA Center Frequency = fundamental frequency, RBW=100Hz.VBW= 300 Hz, Span =50 KHz.

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

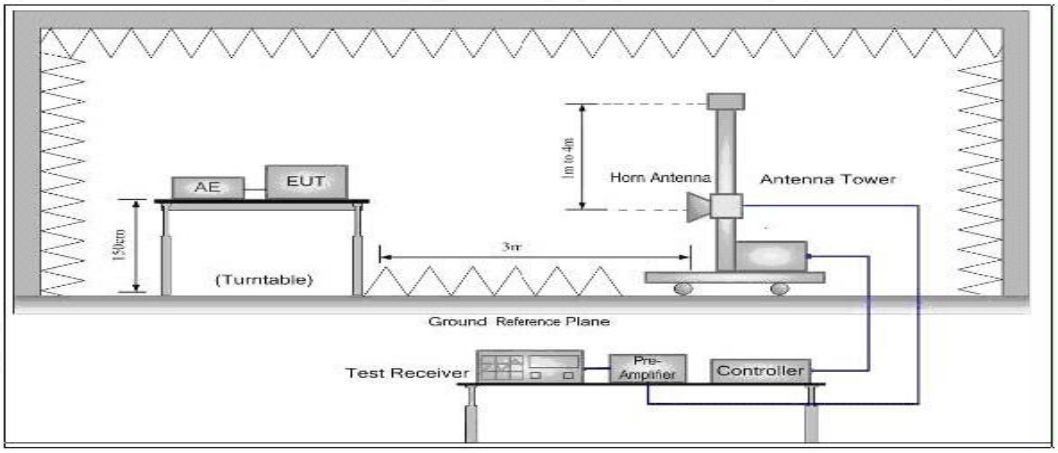
## 7.3 TEST SETUP BLOCK DIAGRAM

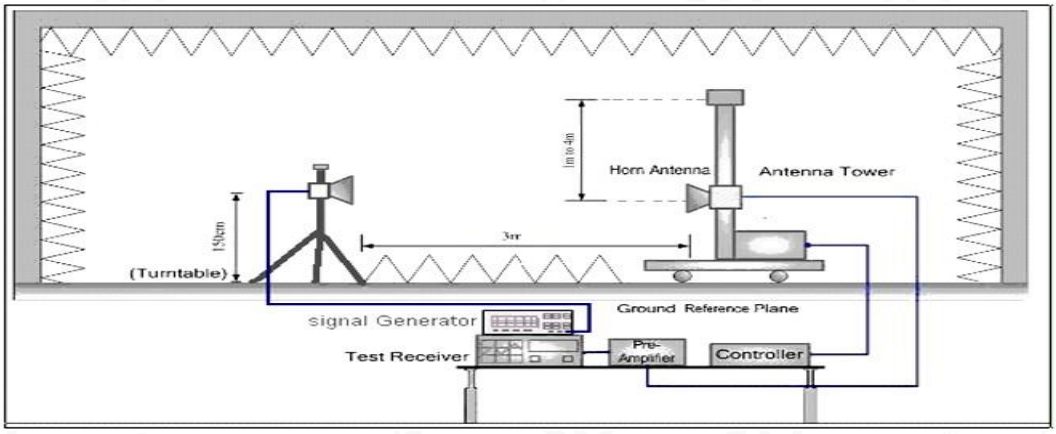
**Radiation method:**

**Radiated Below1GHz**

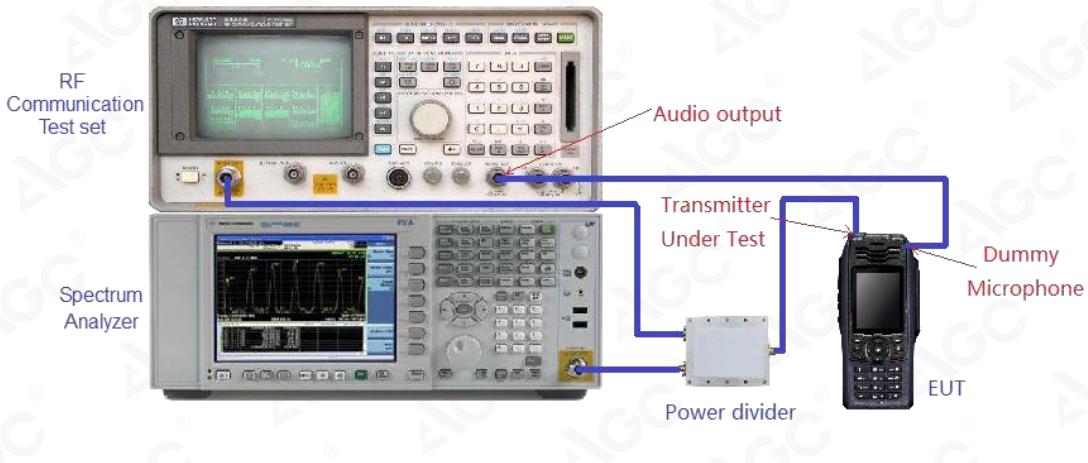


**Radiated Above 1 GHz**



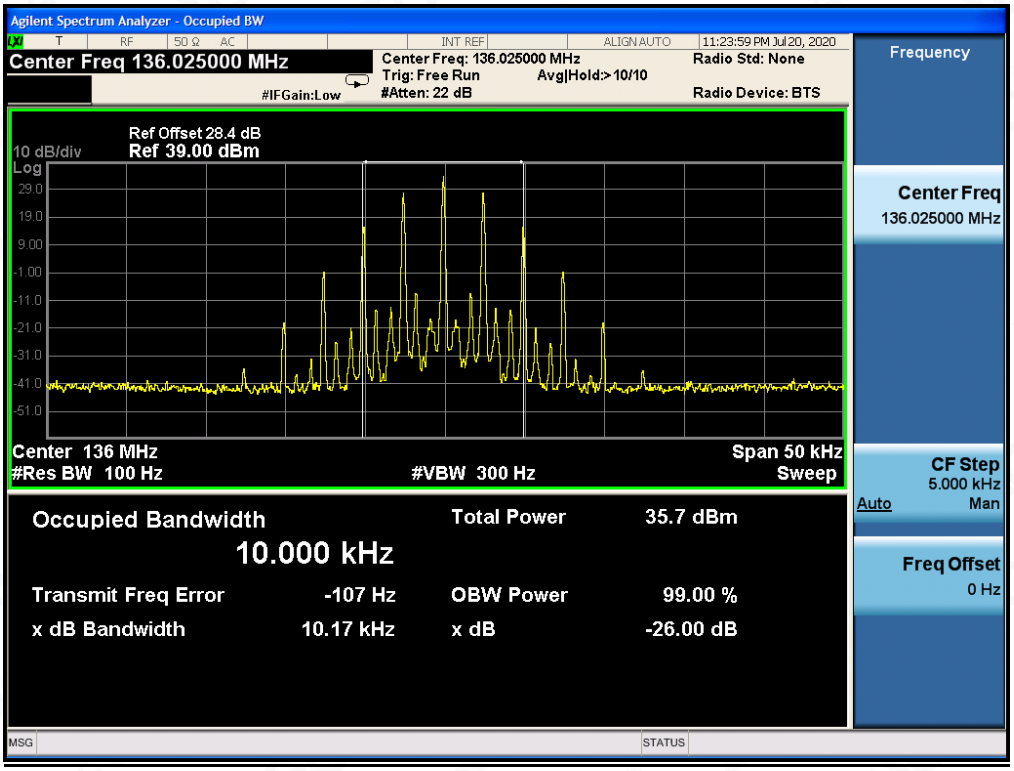

**Conduction method:**



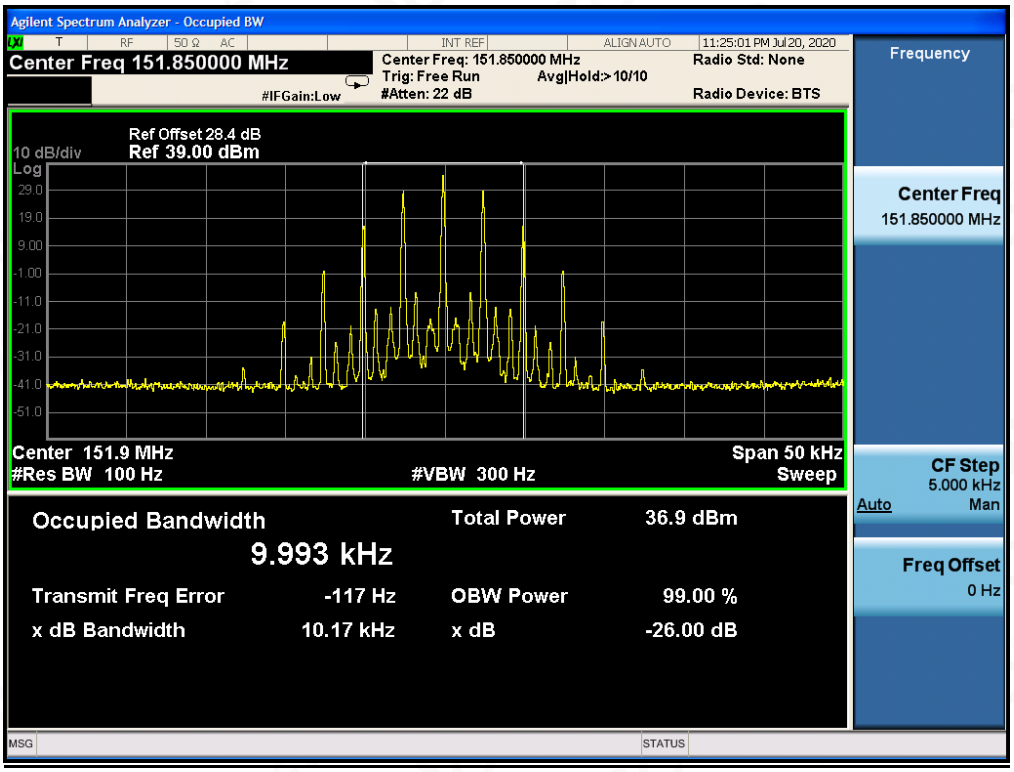
## 7.4 MEASUREMENT RESULT

| Emission Bandwidth Measurement Result | | | | |
|---|---|---|---|---|
| Operating Frequency | 12.5 KHz Channel Separation | | | |
| | Occupied Bandwidth (KHZ) | Emission Bandwidth (KHZ) | Limits | Result |
| 136.025MHz | 10.000 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 151.850MHz | 9.993 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 155.025MHz | 9.994 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 173.975MHz | 10.000 KHz | 10.17 KHz | 11.25 KHz | Pass |

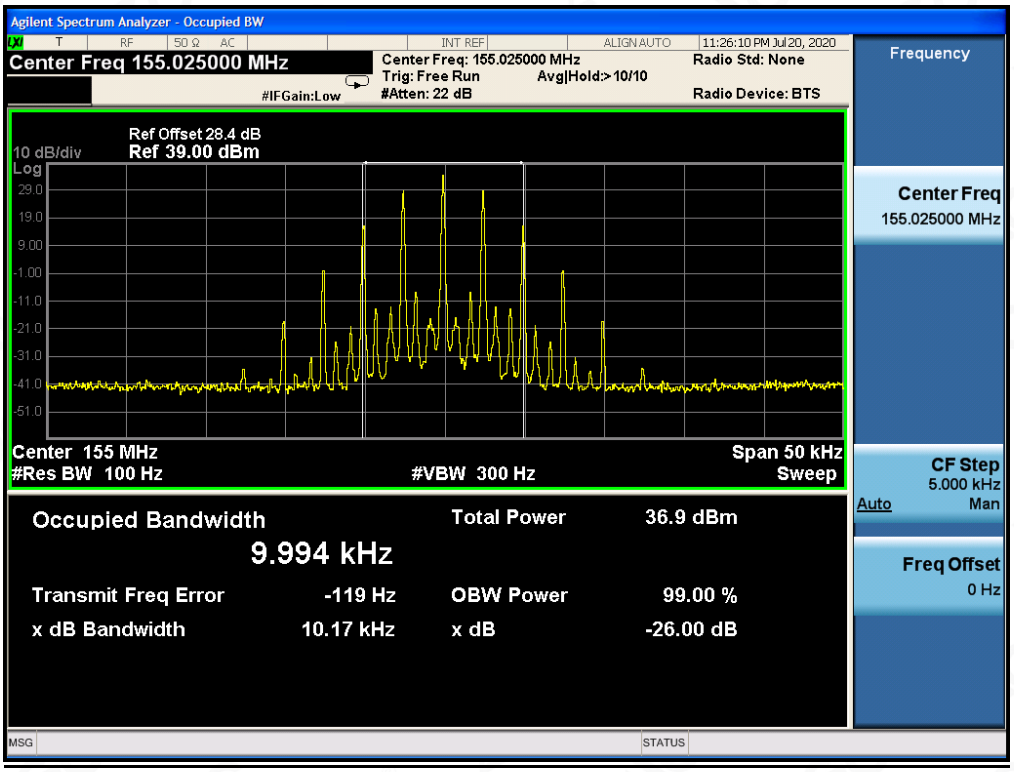
**Occupied bandwidth of Bottom Channel (136.025MHz)-5W**



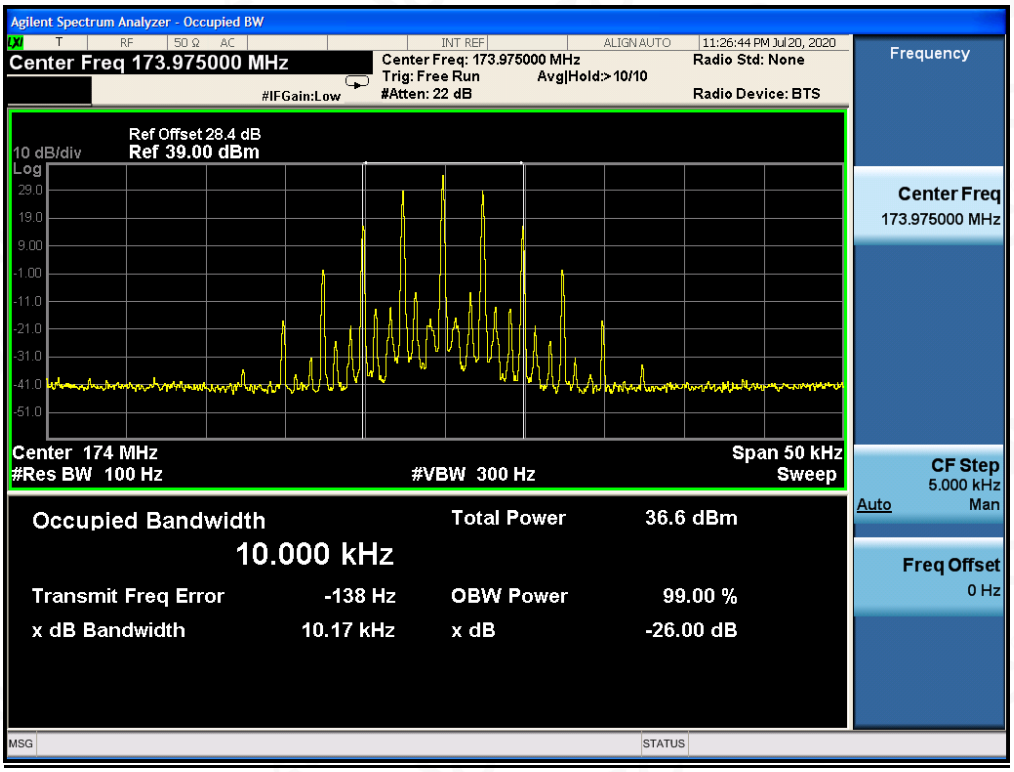
## Occupied bandwidth of Bottom Channel (151.850MHz)-5W




## Occupied bandwidth of Bottom Channel (155.025MHz)-5W

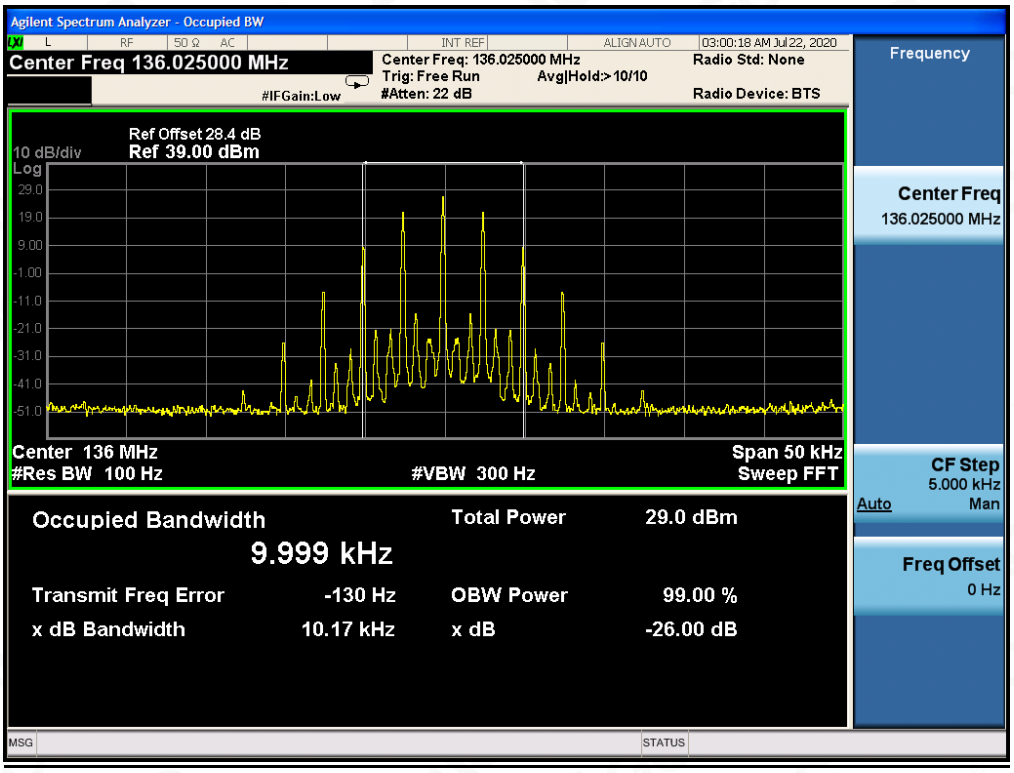


## Occupied bandwidth of Bottom Channel (173.975MHz)-5W

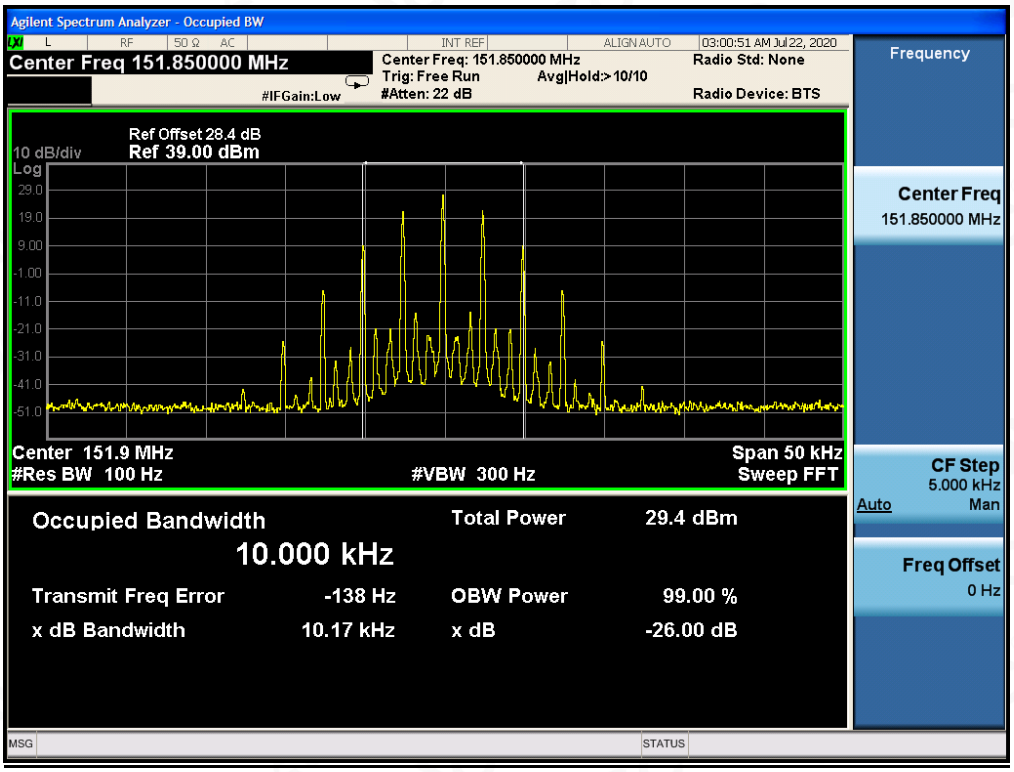


| Emission Bandwidth Measurement Result | | | | |
|---|---|---|---|---|
| Operating Frequency | 12.5 KHz Channel Separation | | | |
| | Occupied Bandwidth (KHZ) | Emission Bandwidth (KHZ) | Limits | Result |
| 136.025MHz | 9.999 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 151.850MHz | 10.000 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 155.025MHz | 10.000 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 173.975MHz | 10.001 KHz | 10.17 KHz | 11.25 KHz | Pass |

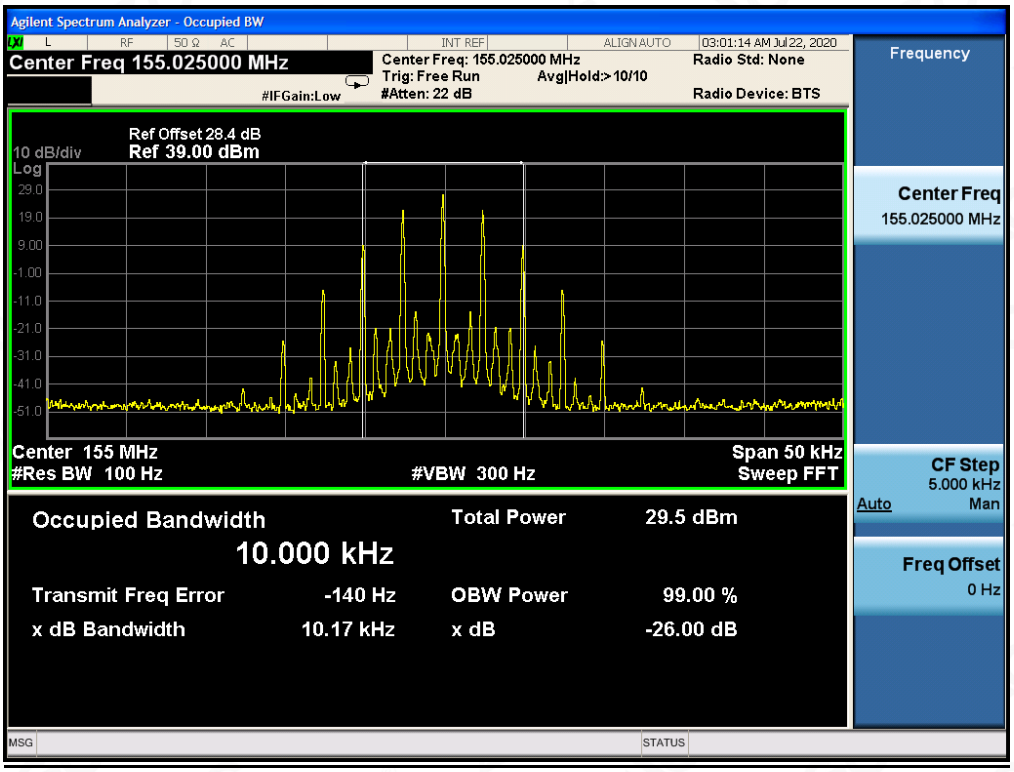
**Occupied bandwidth of Bottom Channel (136.025MHz)-1W**



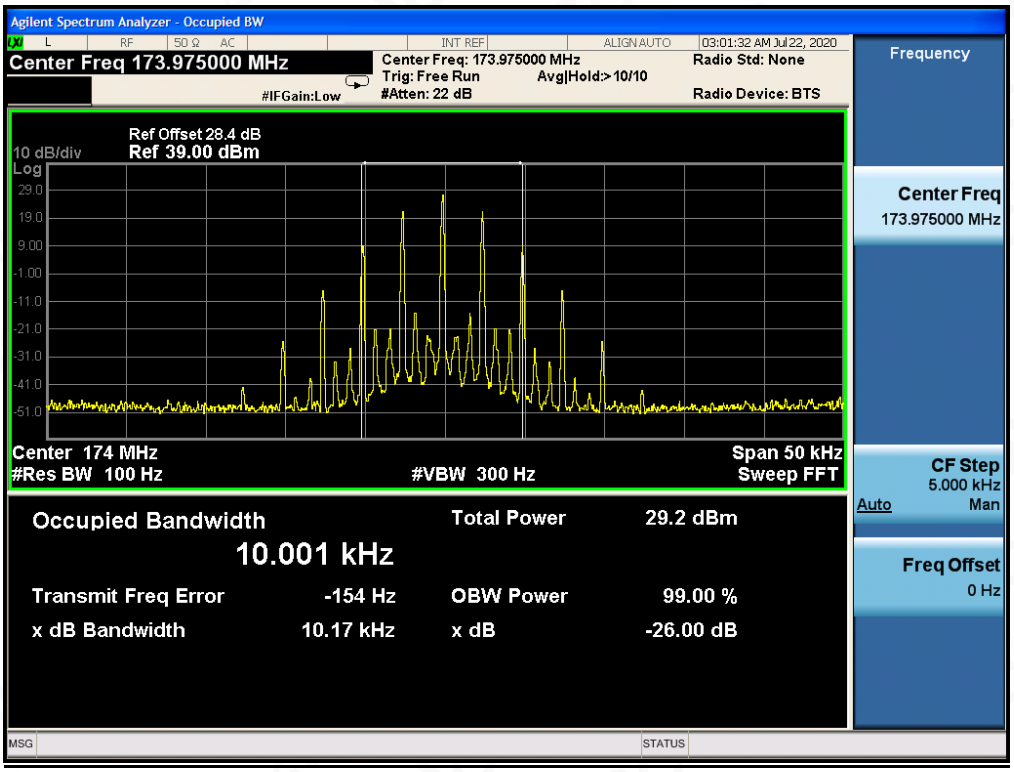
## Occupied bandwidth of Bottom Channel (151.850MHz)-1W




## Occupied bandwidth of Bottom Channel (155.025MHz)-1W



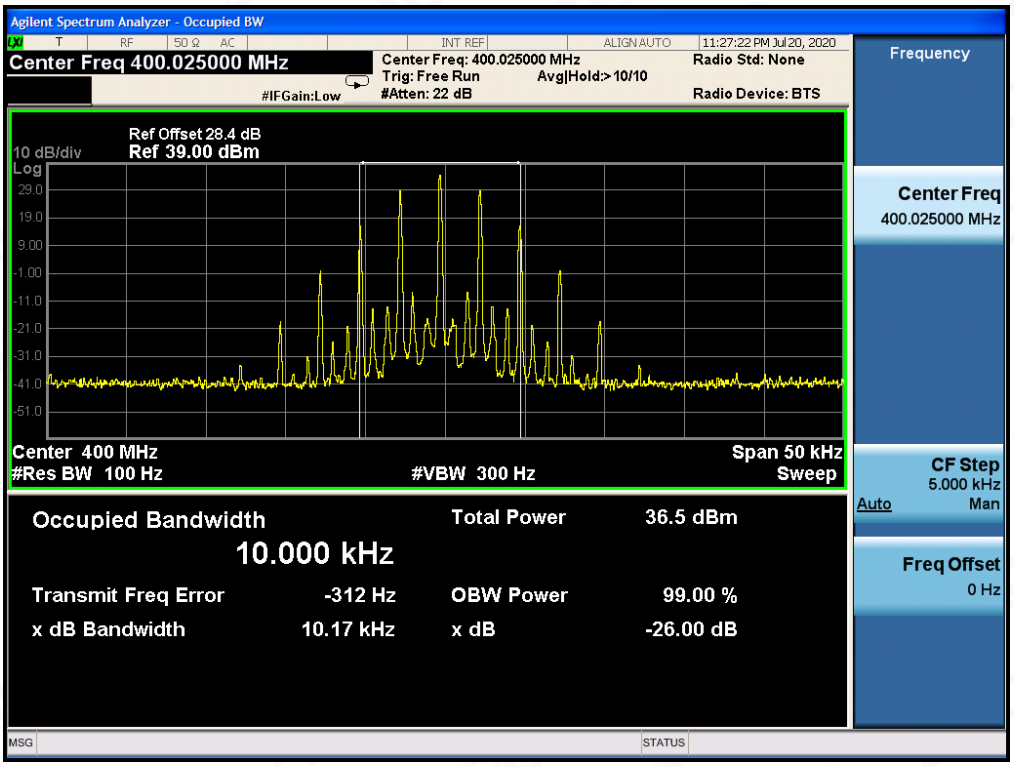
## Occupied bandwidth of Bottom Channel (173.975MHz)-1W



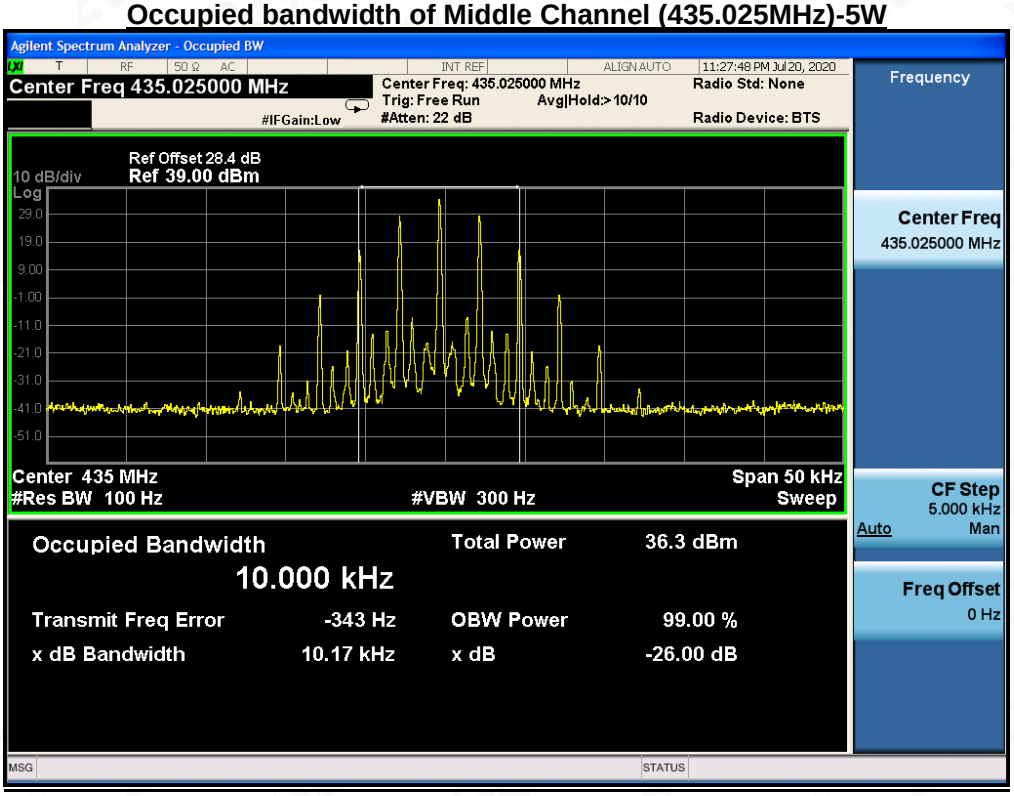
**UHF:**

| Emission Bandwidth Measurement Result | | | | |
|---|---|---|---|---|
| Operating Frequency | 12.5 KHz Channel Separation | | | |
| | Occupied Bandwidth (KHZ) | Emission Bandwidth (KHZ) | Limits | Result |
| 400.025MHz | 10.000 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 435.025MHz | 10.000 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 454.025MHz | 10.000 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 469.975MHz | 10.000 KHz | 10.17 KHz | 11.25 KHz | Pass |

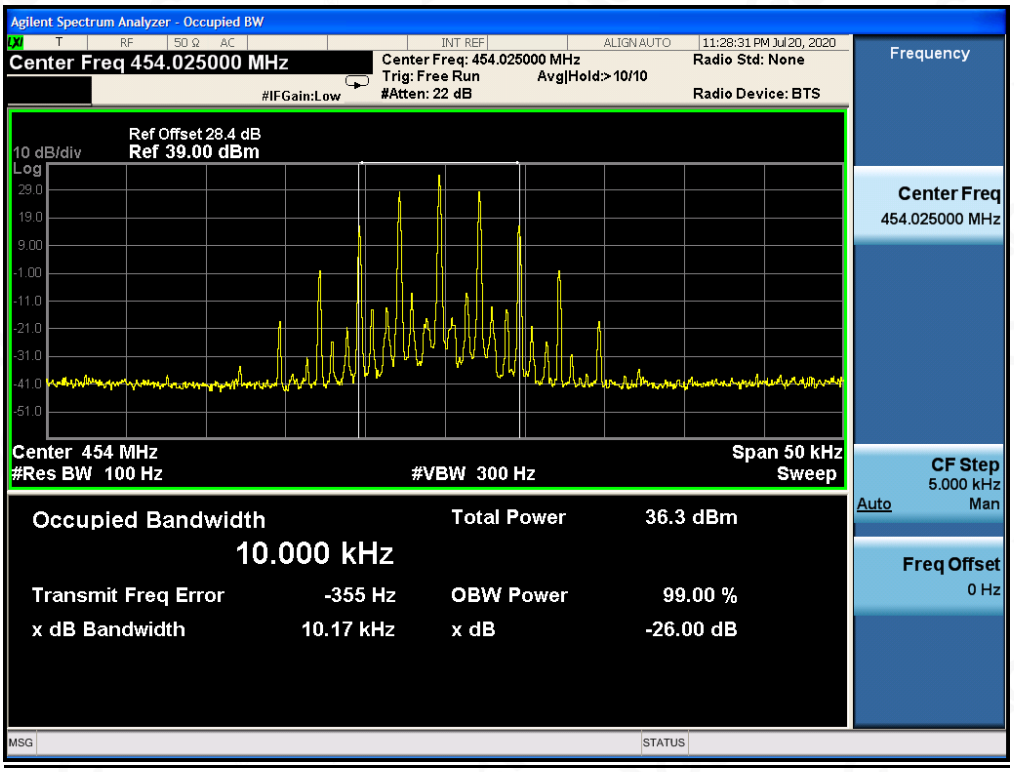
**Occupied bandwidth of Bottom Channel (400.025MHz)-5W**



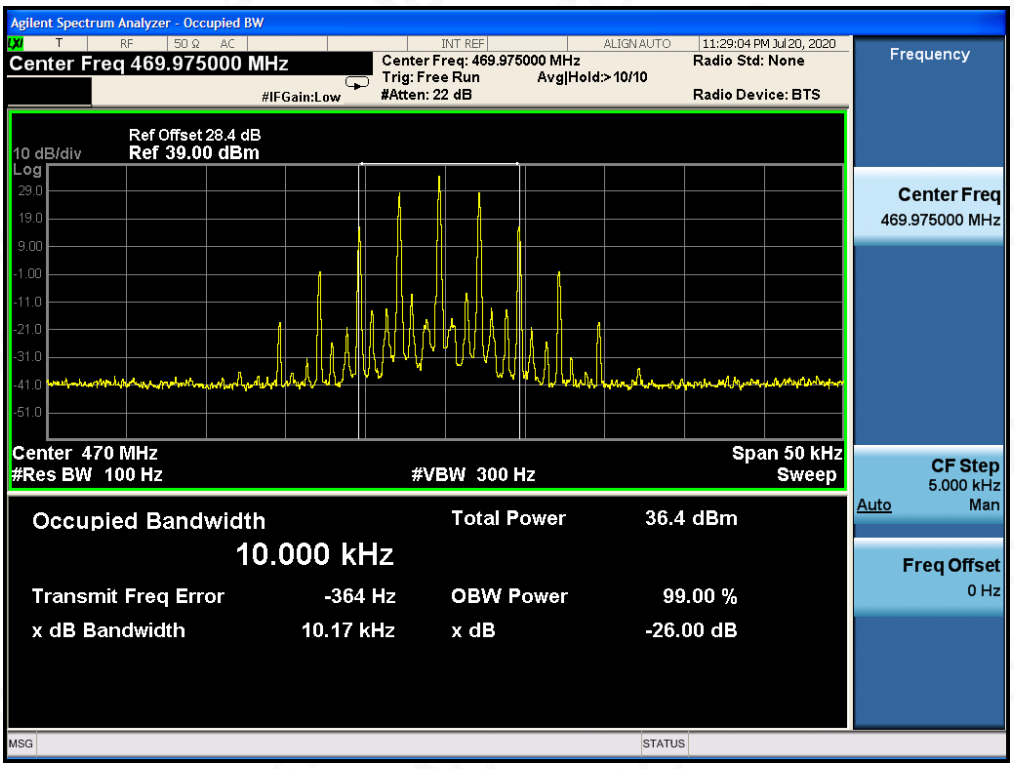
## Occupied bandwidth of Middle Channel (435.025MHz)-5W




## Occupied bandwidth of Middle Channel (454.025MHz)-5W

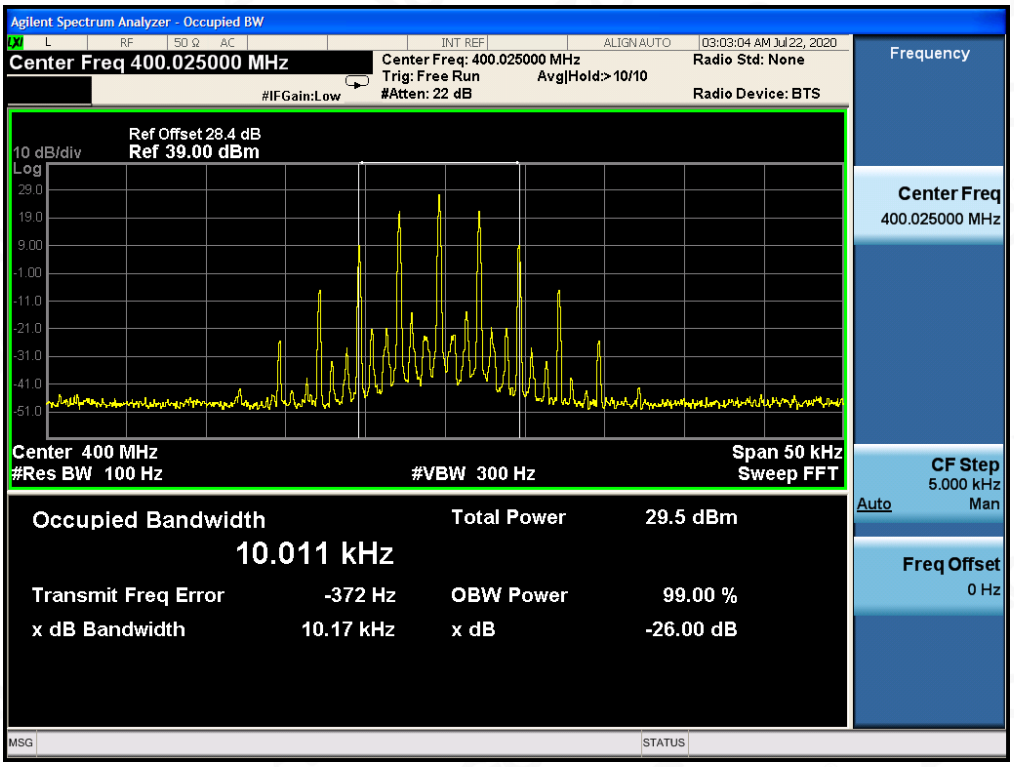


## Occupied bandwidth of Top Channel (469.975MHz)-5W

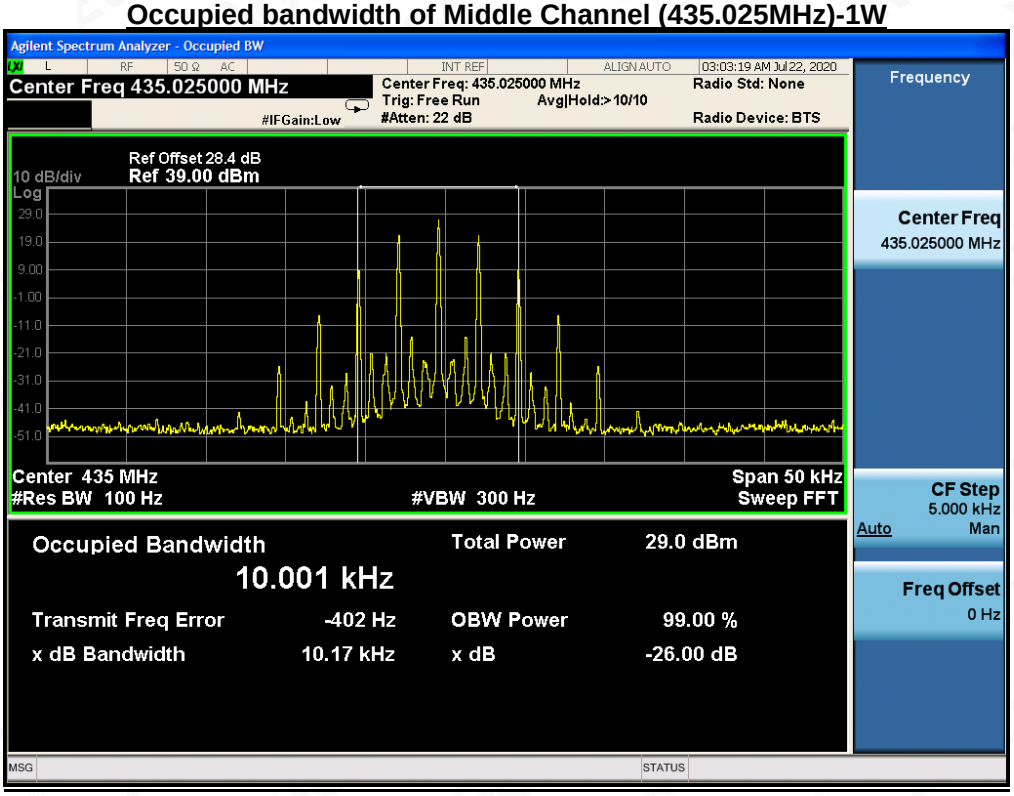


| Emission Bandwidth Measurement Result | | | | |
|---|---|---|---|---|
| Operating Frequency | 12.5 KHz Channel Separation | | | |
| | Occupied Bandwidth (KHZ) | Emission Bandwidth (KHZ) | Limits | Result |
| 400.025MHz | 10.011 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 435.025MHz | 10.001 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 454.025MHz | 9.993 KHz | 10.17 KHz | 11.25 KHz | Pass |
| 469.975MHz | 9.999 KHz | 10.17 KHz | 11.25 KHz | Pass |

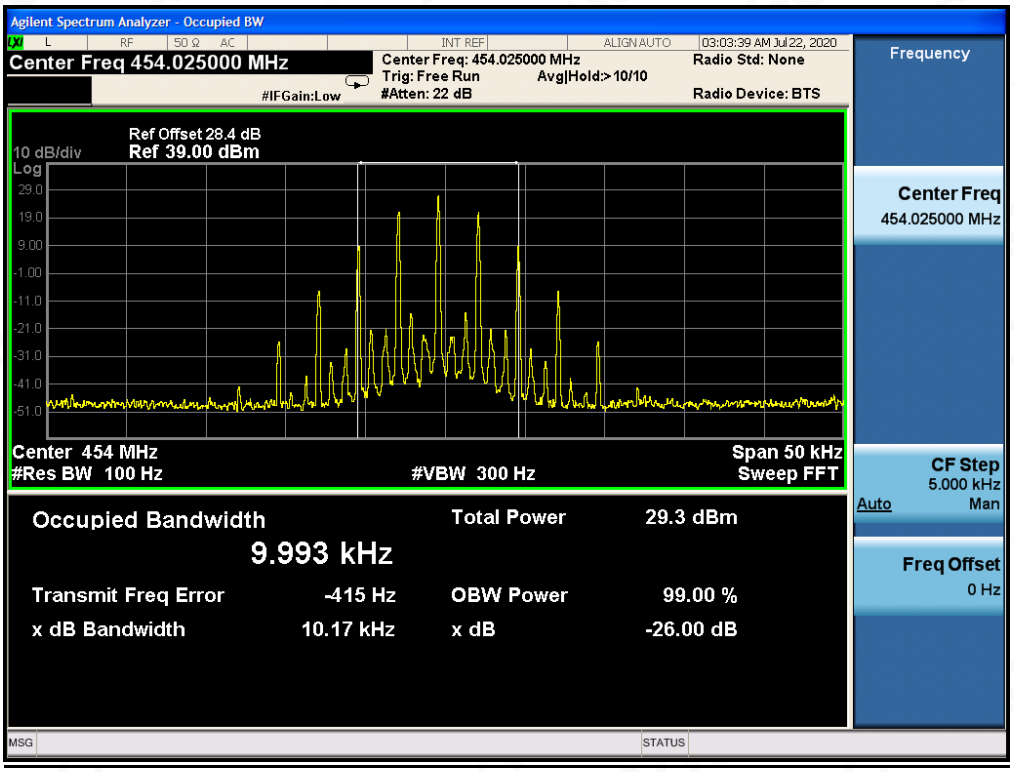
**Occupied bandwidth of Bottom Channel (400.025MHz)-1W**



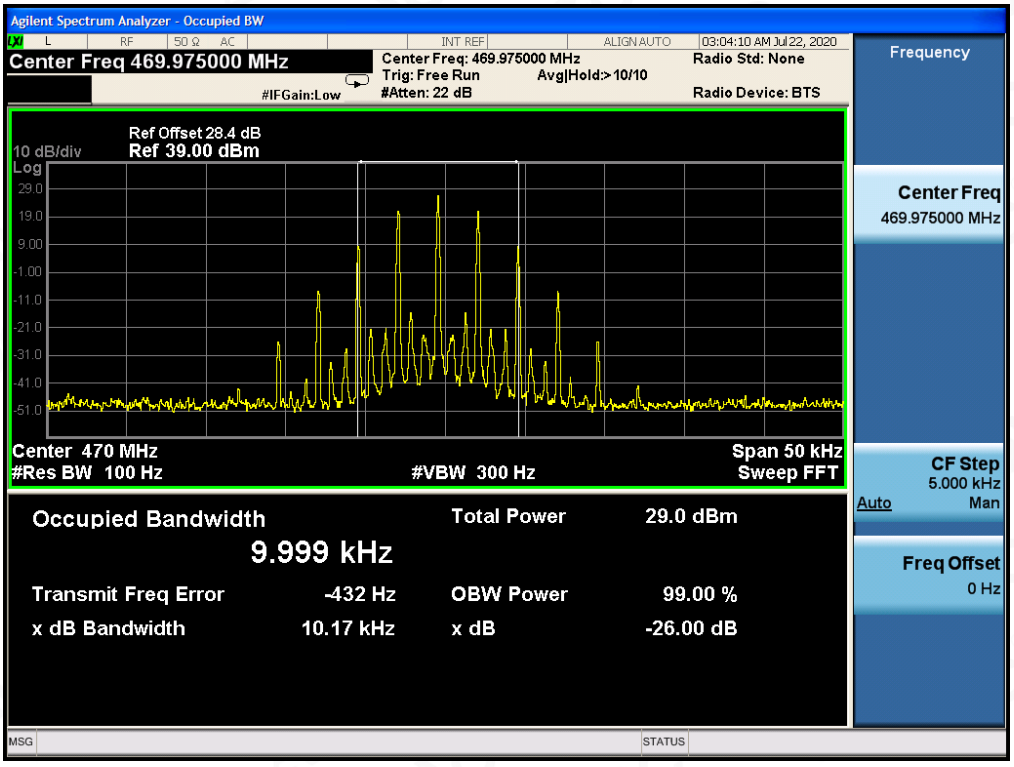
## Occupied bandwidth of Middle Channel (435.025MHz)-1W




## Occupied bandwidth of Middle Channel (454.025MHz)-1W



## Occupied bandwidth of Top Channel (469.975MHz)-1W



# 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.

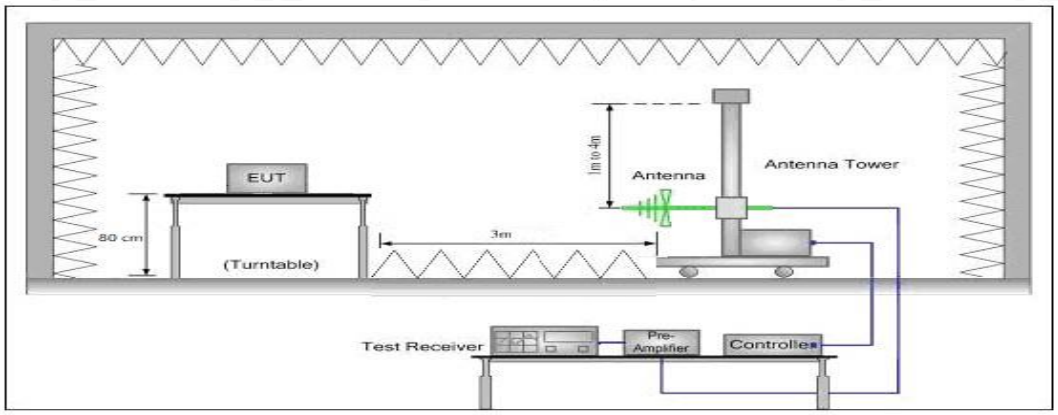
(17)The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

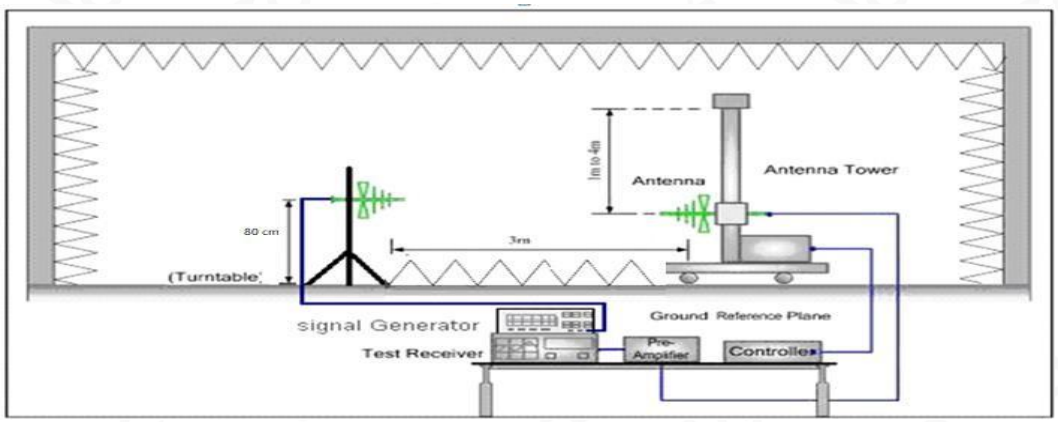
## 8.3 TEST SETUP BLOCK DIAGRAM

**SUBSTITUTION METHOD: (Radiated Emissions)**

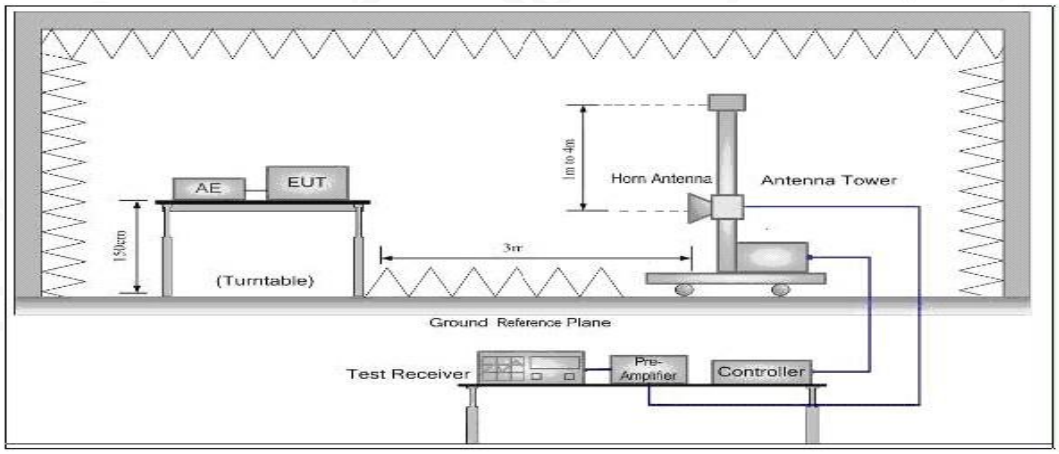
**Radiation method:**

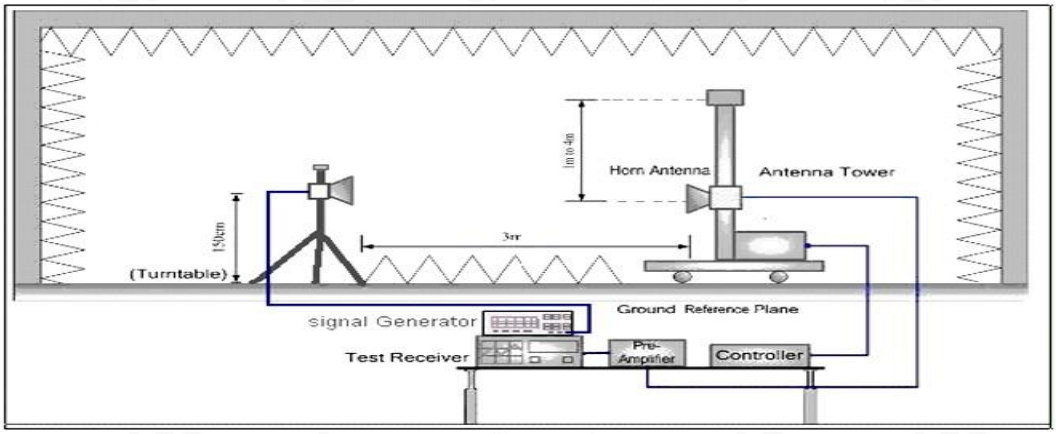
**Radiated Below1GHz**




**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 (5) =56.99 (dB)—5W 36.99-56.99=-20dBm**

**At least 50+10 log (P) =50+10log (1) =50.00 (dB)—1W 30.00-50.00=-20dBm**

**VHF:**

**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 | -25.64 | -20 | pass |
| 408.075 | H | -26.60 | -20 | pass |
| 544.100 | H | -29.37 | -20 | pass |
| 680.125 | H | -30.03 | -20 | pass |
| 816.150 | H | -31.53 | -20 | pass |
| 952.175 | H | -32.44 | -20 | pass |
| 1088.200 | H | -27.09 | -20 | pass |
| 1224.225 | H | -28.91 | -20 | pass |
| 1360.250 | H | -35.49 | -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 | -25.42 | -20 | pass |
| 408.075 | V | -27.08 | -20 | pass |
| 544.100 | V | -30.53 | -20 | pass |
| 680.125 | V | -31.51 | -20 | pass |
| 816.150 | V | -32.81 | -20 | pass |
| 952.175 | V | -32.79 | -20 | pass |
| 1088.200 | V | -28.56 | -20 | pass |
| 1224.225 | V | -29.03 | -20 | pass |
| 1360.250 | V | -32.85 | -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 | -25.68 | -20 | pass |
| 455.550 | H | -27.32 | -20 | pass |
| 607.400 | H | -28.66 | -20 | pass |
| 759.250 | H | -29.07 | -20 | pass |
| 911.100 | H | -28.21 | -20 | pass |
| 1062.950 | H | -30.65 | -20 | pass |
| 1214.800 | H | -27.42 | -20 | pass |
| 1366.650 | H | -29.16 | -20 | pass |
| 1518.500 | H | -33.90 | -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 | -26.40 | -20 | pass |
| 455.550 | V | -28.77 | -20 | pass |
| 607.400 | V | -30.12 | -20 | pass |
| 759.250 | V | -30.46 | -20 | pass |
| 911.100 | V | -28.33 | -20 | pass |
| 1062.950 | V | -31.71 | -20 | pass |
| 1214.800 | V | -28.09 | -20 | pass |
| 1366.650 | V | -29.79 | -20 | pass |
| 1518.500 | V | -34.81 | -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 | -25.10 | -20 | pass |
| 465.075 | H | -28.48 | -20 | pass |
| 620.100 | H | -26.12 | -20 | pass |
| 775.125 | H | -26.91 | -20 | pass |
| 930.150 | H | -29.58 | -20 | pass |
| 1085.175 | H | -32.73 | -20 | pass |
| 1240.200 | H | -28.82 | -20 | pass |
| 1395.225 | H | -31.26 | -20 | pass |
| 1550.250 | H | -32.93 | -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 | -26.60 | -20 | pass |
| 465.075 | V | -27.81 | -20 | pass |
| 620.100 | V | -28.70 | -20 | pass |
| 775.125 | V | -30.19 | -20 | pass |
| 930.150 | V | -29.11 | -20 | pass |
| 1085.175 | V | -32.05 | -20 | pass |
| 1240.200 | V | -27.76 | -20 | pass |
| 1395.225 | V | -29.82 | -20 | pass |
| 1550.250 | V | -34.67 | -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 | -24.22 | -20 | pass |
| 521.925 | H | -25.79 | -20 | pass |
| 695.900 | H | -23.38 | -20 | pass |
| 869.875 | H | -22.87 | -20 | pass |
| 1043.850 | H | -28.31 | -20 | pass |
| 1217.825 | H | -27.40 | -20 | pass |
| 1391.800 | H | -30.53 | -20 | pass |
| 1565.775 | H | -31.64 | -20 | pass |
| 1739.750 | H | -36.30 | -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 | -25.06 | -20 | pass |
| 521.925 | V | -26.90 | -20 | pass |
| 695.900 | V | -24.19 | -20 | pass |
| 869.875 | V | -23.64 | -20 | pass |
| 1043.850 | V | -28.81 | -20 | pass |
| 1217.825 | V | -28.56 | -20 | pass |
| 1391.800 | V | -30.74 | -20 | pass |
| 1565.775 | V | -32.03 | -20 | pass |
| 1739.750 | V | -34.47 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 136.025MHz-1W**

| Emission Frequency (MHz) | Ant.Polarity (H/V) | Measurement Result (dBm) | Limit (dBm) | Result (P/F) |
|---|---|---|---|---|
| 136.025 | H | 0 | | pass |
| 272.050 | H | -25.73 | -20 | pass |
| 408.075 | H | -27.01 | -20 | pass |
| 544.100 | H | -29.92 | -20 | pass |
| 680.125 | H | -30.59 | -20 | pass |
| 816.150 | H | -32.64 | -20 | pass |
| 952.175 | H | -33.61 | -20 | pass |
| 1088.200 | H | -28.34 | -20 | pass |
| 1224.225 | H | -29.15 | -20 | pass |
| 1360.250 | H | -36.06 | -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 | -25.96 | -20 | pass |
| 408.075 | V | -26.98 | -20 | pass |
| 544.100 | V | -28.96 | -20 | pass |
| 680.125 | V | -30.32 | -20 | pass |
| 816.150 | V | -27.90 | -20 | pass |
| 952.175 | V | -31.38 | -20 | pass |
| 1088.200 | V | -26.27 | -20 | pass |
| 1224.225 | V | -28.42 | -20 | pass |
| 1360.250 | V | -32.62 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 151.850MHz-1W**

| Emission Frequency (MHz) | Ant.Polarity (H/V) | Measurement Result (dBm) | Limit (dBm) | Result (P/F) |
|---|---|---|---|---|
| 151.850 | H | 0 | | pass |
| 303.700 | H | -26.80 | -20 | pass |
| 455.550 | H | -28.53 | -20 | pass |
| 607.400 | H | -28.82 | -20 | pass |
| 759.250 | H | -30.52 | -20 | pass |
| 911.100 | H | -29.51 | -20 | pass |
| 1062.950 | H | -32.15 | -20 | pass |
| 1214.800 | H | -27.65 | -20 | pass |
| 1366.650 | H | -30.11 | -20 | pass |
| 1518.500 | H | -35.27 | -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 | -26.24 | -20 | pass |
| 455.550 | V | -28.67 | -20 | pass |
| 607.400 | V | -28.80 | -20 | pass |
| 759.250 | V | -29.57 | -20 | pass |
| 911.100 | V | -28.47 | -20 | pass |
| 1062.950 | V | -31.54 | -20 | pass |
| 1214.800 | V | -28.91 | -20 | pass |
| 1366.650 | V | -30.20 | -20 | pass |
| 1518.500 | V | -34.87 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 155.025MHz-1W**

| Emission Frequency (MHz) | Ant.Polarity (H/V) | Measurement Result (dBm) | Limit (dBm) | Result (P/F) |
|---|---|---|---|---|
| 155.025 | H | 0 | | pass |
| 310.050 | H | -25.25 | -20 | pass |
| 465.075 | H | -28.82 | -20 | pass |
| 620.100 | H | -25.68 | -20 | pass |
| 775.125 | H | -26.70 | -20 | pass |
| 930.150 | H | -30.73 | -20 | pass |
| 1085.175 | H | -33.20 | -20 | pass |
| 1240.200 | H | -28.86 | -20 | pass |
| 1395.225 | H | -31.07 | -20 | pass |
| 1550.250 | H | -32.10 | -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 | -24.48 | -20 | pass |
| 465.075 | V | -26.19 | -20 | pass |
| 620.100 | V | -23.50 | -20 | pass |
| 775.125 | V | -23.26 | -20 | pass |
| 930.150 | V | -29.15 | -20 | pass |
| 1085.175 | V | -27.85 | -20 | pass |
| 1240.200 | V | -31.26 | -20 | pass |
| 1395.225 | V | -32.78 | -20 | pass |
| 1550.250 | V | -34.34 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 173.975MHz-1W**

| Emission Frequency (MHz) | Ant.Polarity (H/V) | Measurement Result (dBm) | Limit (dBm) | Result (P/F) |
|---|---|---|---|---|
| 173.975 | H | 0 | | pass |
| 347.950 | H | -25.27 | -20 | pass |
| 521.925 | H | -24.94 | -20 | pass |
| 695.900 | H | -27.21 | -20 | pass |
| 869.875 | H | -27.78 | -20 | pass |
| 1043.850 | H | -31.78 | -20 | pass |
| 1217.825 | H | -33.86 | -20 | pass |
| 1391.800 | H | -27.07 | -20 | pass |
| 1565.775 | H | -27.76 | -20 | pass |
| 1739.750 | H | -34.63 | -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 | -25.84 | -20 | pass |
| 521.925 | V | -26.26 | -20 | pass |
| 695.900 | V | -27.76 | -20 | pass |
| 869.875 | V | -28.47 | -20 | pass |
| 1043.850 | V | -28.21 | -20 | pass |
| 1217.825 | V | -31.23 | -20 | pass |
| 1391.800 | V | -26.68 | -20 | pass |
| 1565.775 | V | -30.16 | -20 | pass |
| 1739.750 | V | -31.60 | -20 | pass |

**UHF:**

**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 | -25.36 | -20 | pass |
| 1200.075 | H | -25.17 | -20 | pass |
| 1600.100 | H | -28.45 | -20 | pass |
| 2000.125 | H | -28.68 | -20 | pass |
| 2400.150 | H | -32.82 | -20 | pass |
| 2800.175 | H | -34.91 | -20 | pass |
| 3200.200 | H | -27.80 | -20 | pass |
| 3600.225 | H | -28.95 | -20 | pass |
| 4000.250 | H | -35.42 | -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 | -27.01 | -20 | pass |
| 1200.075 | V | -27.58 | -20 | pass |
| 1600.100 | V | -28.92 | -20 | pass |
| 2000.125 | V | -29.62 | -20 | pass |
| 2400.150 | V | -28.88 | -20 | pass |
| 2800.175 | V | -32.66 | -20 | pass |
| 3200.200 | V | -27.53 | -20 | pass |
| 3600.225 | V | -31.24 | -20 | pass |
| 4000.250 | V | -32.97 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 435.025MHz-5W**

| Emission Frequency (MHz) | Ant.Polarity (H/V) | Measurement Result (dBm) | Limit (dBm) | Result (P/F) |
|---|---|---|---|---|
| 435.025 | H | 0 | | pass |
| 870.050 | H | -26.93 | -20 | pass |
| 1305.075 | H | -26.23 | -20 | pass |
| 1740.100 | H | -29.20 | -20 | pass |
| 2175.125 | H | -29.29 | -20 | pass |
| 2610.150 | H | -28.97 | -20 | pass |
| 3045.175 | H | -30.93 | -20 | pass |
| 3480.200 | H | -26.94 | -20 | pass |
| 3915.225 | H | -30.73 | -20 | pass |
| 4350.250 | H | -31.80 | -20 | pass |

| Emission Frequency (MHz) | Ant.Polarity (H/V) | Measurement Result (dBm) | Limit (dBm) | Result (P/F) |
|---|---|---|---|---|
| 435.025 | V | 0 | | pass |
| 870.050 | V | -25.65 | -20 | pass |
| 1305.075 | V | -24.57 | -20 | pass |
| 1740.100 | V | -27.31 | -20 | pass |
| 2175.125 | V | -28.03 | -20 | pass |
| 2610.150 | V | -31.90 | -20 | pass |
| 3045.175 | V | -33.52 | -20 | pass |
| 3480.200 | V | -27.75 | -20 | pass |
| 3915.225 | V | -27.33 | -20 | pass |
| 4350.250 | V | -33.47 | -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 | -27.12 | -20 | pass |
| 1362.075 | H | -27.53 | -20 | pass |
| 1816.100 | H | -29.22 | -20 | pass |
| 2270.125 | H | -29.98 | -20 | pass |
| 2724.150 | H | -29.48 | -20 | pass |
| 3178.175 | H | -31.54 | -20 | pass |
| 3632.200 | H | -27.83 | -20 | pass |
| 4086.225 | H | -29.74 | -20 | pass |
| 4540.250 | H | -35.32 | -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 | -27.01 | -20 | pass |
| 1362.075 | V | -27.34 | -20 | pass |
| 1816.100 | V | -29.81 | -20 | pass |
| 2270.125 | V | -30.02 | -20 | pass |
| 2724.150 | V | -28.43 | -20 | pass |
| 3178.175 | V | -31.25 | -20 | pass |
| 3632.200 | V | -27.57 | -20 | pass |
| 4086.225 | V | -29.39 | -20 | pass |
| 4540.250 | V | -34.25 | -20 | pass |

**Measurement Result for 12.5 KHz Channel Separation @ 469.975MHz-5W**

| Emission Frequency (MHz) | Ant.Polarity (H/V) | Measurement Result (dBm) | Limit (dBm) | Result (P/F) |
|---|---|---|---|---|
| 469.975 | H | 0 | | pass |
| 939.950 | H | -26.87 | -20 | pass |
| 1409.925 | H | -27.92 | -20 | pass |
| 1879.900 | H | -29.39 | -20 | pass |
| 2349.875 | H | -30.55 | -20 | pass |
| 2819.850 | H | -28.51 | -20 | pass |
| 3289.825 | H | -30.99 | -20 | pass |
| 3759.800 | H | -27.71 | -20 | pass |
| 4229.775 | H | -30.45 | -20 | pass |
| 4699.750 | H | -34.61 | -20 | pass |

| Emission Frequency (MHz) | Ant.Polarity (H/V) | Measurement Result (dBm) | Limit (dBm) | Result (P/F) |
|---|---|---|---|---|
| 469.975 | V | 0 | | pass |
| 939.950 | V | -26.90 | -20 | pass |
| 1409.925 | V | -28.57 | -20 | pass |
| 1879.900 | V | -28.82 | -20 | pass |
| 2349.875 | V | -29.40 | -20 | pass |
| 2819.850 | V | -29.35 | -20 | pass |
| 3289.825 | V | -31.24 | -20 | pass |
| 3759.800 | V | -28.17 | -20 | pass |
| 4229.775 | V | -30.33 | -20 | pass |
| 4699.750 | V | -34.37 | -20 | pass |