

FCC Part 90& Part 22 Rules Test Report

**Test report
On Behalf of
Qixiang Electron Science & Technology Co., Ltd.
For
Digital DMR and Analog UHF/VHF Two Way Radio
Model No.: AT-D878UV, AT-D878UV PLUS, AT-D878UVII, AT-D878UVIII,
AT-D9**

FCC ID: T4KD878UV

Prepared for : Qixiang Electron Science & Technology Co., Ltd.
Qixiang Building,Tangxi Industrial Zone,Luojiang District,Quanzhou,Fujian, China

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Date of Test: Aug. 10, 2018~Oct. 29, 2018

Date of Report: Oct. 31, 2018


Report Number: HK1809191114E

TEST RESULT CERTIFICATION


Applicant's name : Qixiang Electron Science & Technology Co., Ltd.
 Address : Qixiang Building, Tangxi Industrial Zone, Luojiang District, Quanzhou, Fujian, China
Manufacturer's Name : Qixiang Electron Science & Technology Co., Ltd.
 Address : Qixiang Building, Tangxi Industrial Zone, Luojiang District, Quanzhou, Fujian, China
Product description : Digital DMR and Analog UHF/VHF Two Way Radio
 Brand Name : AnyTone
 Mode Name : AT-D878UV
 Serial Name : AT-D878UV PLUS, AT-D878UVII, AT-D878UVIII, AT-D9
 Difference Description : Only the model is different, the circuit, appearance and function are exactly the same
Standards : FCC Part 90& Part 22 Rules

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Date of Test :
 Date (s) of performance of tests : Aug. 10, 2018~Oct. 29, 2018
 Date of Issue : Oct. 31, 2018
 Test Result : **Pass**

Testing Engineer : 

 (Gary Qian)

Technical Manager : 

 (Eden Hu)

Authorized Signatory : 

 (Jason Zhou)

Revision	Issue Date	Revisions	Revised By
V1.0	Sep. 19, 2018	Initial Issue	Jason Zhou
V1.1	Oct. 09, 2018	Revise Report	Jason Zhou
V1.2	Oct. 16, 2018	Revise Report	Jason Zhou
V1.3	Oct. 29, 2018	Updated comments	Jason Zhou
V1.4	Oct. 31, 2018	Updated comments	Jason Zhou

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

The EUT is a **Digital DMR and Analog UHF/VHF 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 / Data	
Hardware Version	D868UV2	
Software Version	V1.0	
Modulation	FM/4FSK	
Emission Type	7K60FXD/7K60FXE/11K0F3E	
Emission Bandwidth	Analog:10.17(7W-12.5 KHz), 10.17KHz(0.2W-12.5 KHz) ---VHF Digital: 9.439KHz(7W),9.591 KHz(0.2W) ---VHF Analog:10.17KHz(6W-12.5 KHz), 10.17KHz(0.2W-12.5 KHz) ---UHF Digital: 9.970KHz(6W), 9.724KHz(0.2W) ---UHF	
Peak Frequency Deviation	1.78KHz	
Audio Frequency Response	11.32 dB	
Maximum Transmitter Power	Analog:38.44 dBm(7W-12.5 KHz), 22.95dBm (0.2W-12.5 KHz) ---VHF Digital: 38.38 dBm(7W), 22.89dBm (0.2W) ---VHF Analog:37.68 dBm(6W-12.5 KHz), 22.91dBm (0.2W-12.5 KHz) ---UHF Digital: 37.71 dBm(6W), 22.94dBm (0.2W) ---UHF	
Output power Modification	UHF:6W/0.2W VHF:7W/0.2W (It was fixed by the manufacturer, any individual can't arbitrarily change it.)	
Data Rate	9600bps/12.5KHz(Channel Spacing)	
Antenna Designation	Detachable	
Antenna Gain	2.15 dBi	
Power Supply	DC 7.4V, 3100mAh (by battery) charging: DC 8.4V 1000mA	
Adapter Parameter	INPUT: AC 100V-240V , 50/60Hz , 0.3A OUTPUT: DC 12V , 1A	
Limiting Voltage	DC 6V-8.51V	
Operation Frequency Range and Channel	Frequency Range: 136 MHz to 174 MHz (VHF) 400 MHz to 480 MHz (UHF) Channel Separation: 12.5KHz(Digital/ Analog)	
	Bottom Channel: 136.025MHz Middle Channel:151.85MHz Middle Channel:155.025MHz Middle Channel:161.61MHz (Top)High Channel: 173.975MHz	Bottom Channel: 400.025MHz Middle Channel: 453.225MHz Middle Channel: 454.025MHz (Top)High Channel: 479.975MHz

Frequency Tolerance	1.100ppm
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Frequency Range (MHz)	Rated Transmit Power(W)(Conducted)	Transmit Mode/Emission Designator
400-480	0.2W/6W	11K0F3E(Analog Voice;NB)
400-480	0.2W/6W	7K60FXD/7K60FXW(9600Data/Digital Voice NB)

Frequency Range (MHz)	Rated Transmit Power(W)(Conducted)	Transmit Mode/Emission Designator
136-174	0.2/7W	11K0F3E(Analog Voice;NB)
136-174	0.2/7W	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

Voice –FM Analog (12.5KHz)

Calculation:

Max modulation (M) in kHz : 3.0

Max deviation(D) in kHz:2.5

Constant factor (K): 1(assumed)

$B_n = 2XM + 2XDK = 11.0$ KHz

Emission designator: 11K0F3E

9600 Digital Voice/date (12.5KHz)

Calculation:

Data rate in bps(R)=9600

Deviation Peak deviation of carrier(D)=2359.585

Constant factor (K): 1 (default)

$B_n = 3.86D + 1.27R$
 $K = 3.86(2359.585) + 0.27(9600)(1) = 11.7\text{KHz}$

Emission designator: 11K0FXD

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: **T4KD878UV**, filing to comply with Part 2, Part 22, and Part 90 of the Federal Communication Commission rules.

1.3 TEST METHODOLOGY

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

1.4 TEST FACILITY

Site	Shenzhen HUAK Testing Technology Co., Ltd.
Location	1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street, Bao'an District, Shenzhen City, China
Designation Number	CN1229
Test Firm Registration Number : 616276	

1.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

1.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2. SYSTEM TEST CONFIGURATION

2.1 EUT 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.

2.2 EUT EXERCISE

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

2.3 GENERAL TECHNICAL REQUIREMENTS

For FCC Part 90& Part 22 requirements:

- (1). Section 90.205 & 22.565: RF Output Power
- (2). Section 90.207: Modulation Characteristic
- (3). Section 90.209 & 22.359: Occupied Bandwidth
- (4). Section 90.210 & 22.359: Emission Mask
- (5). Section 90.213 & 22.355: Frequency Tolerance
- (6). Section 90.214: Transient Frequency Behavior

2.4 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	Digital DMR and Analog UHF/VHF Two Way Radio	AT-D878UV	FCC ID: T4KD878UV	EUT
2	Adapter	SAW12-120-1000UD	DC 12V 1A	Accessory
3	Battery	QB-44HL	DC7.4V, 3100mAh	Accessory
4	Desktop charger	N/A	DC 8.4V, 1A	Accessory
5	High gain antenna	QA-11UV	N/A	Accessory
6	Back clip	N/A	N/A	Accessory
7	lanyard	N/A	N/A	Accessory

3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§90.205 & 22.565	Maximum Transmitter Power	Compliant
§90.207	Modulation Characteristic	Compliant
§90.209& 22.359	Occupied Bandwidth	Compliant
§90.210& 22.359	Emission Mask	Compliant
§90.213& 22.355	Frequency Tolerance	Compliant
§90.214	Transient Frequency Behavior	Compliant

LIST OF EQUIPMENTS USED

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Receiver	R&S	ESCI 7	HKE-010	Dec. 29, 2017	Dec. 28, 2018
Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 29, 2017	Dec. 28, 2018
Horn Antenna	Schwarzbeck	9120D	HKE-013	Dec. 29, 2017	Dec. 28, 2018
Preamplifier	EMCI	EMC051845SE	HKE-015	Dec. 29, 2017	Dec. 28, 2018
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	HKE-087	Dec. 29, 2017	Dec. 28, 2018
Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 29, 2017	Dec. 28, 2018
Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 29, 2017	Dec. 28, 2018
Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 29, 2017	Dec. 28, 2018
Small environmental tester	ESPEC	SH-242	HKE-088	Mar. 02, 2018	Mar. 01, 2019
RF Communication Test Set	HP	HP8920B	HKE-089	June 12, 2018	June 11, 2019
ANTENNA	A.H.	SAS-521-4	HKE-091	Mar. 01, 2018	Feb. 28, 2020
ANTENNA	Schwarzbeck	9168	HKE-095	Mar. 01, 2018	Feb. 28, 2020
HORN ANTENNA	E.M.	EM-AH-10180	HKE-090	Mar. 01, 2018	Feb. 28, 2020
Signal generator	Agilent	N5183A	HKE-071	Dec. 29, 2017	Dec. 28, 2018
Attenuator	JFW	50FHC-006-50	HKE-098	June 12, 2018	June 11, 2019

4. DESCRIPTION OF TEST MODES

RF TEST MODES

The EUT (Digital DMR and Analog UHF/VHF 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

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

5. FREQUENCY TOLERANCE

5.1 PROVISIONS APPLICABLE

- a). According to FCC §2.1055, § 22.355 and §90.213, the frequency stability shall be measured with variation of ambient temperature from -30°C to $+50^{\circ}\text{C}$ 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.

5.2 MEASUREMENT PROCEDURE

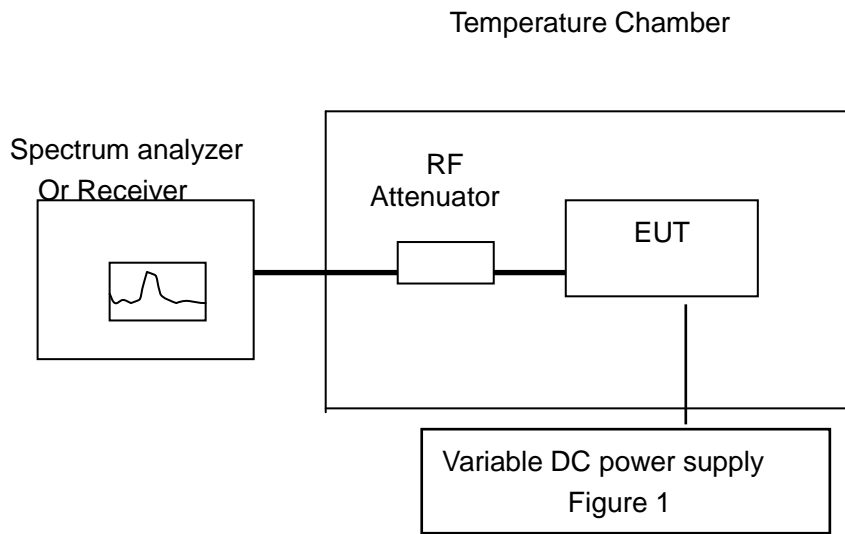
5.2.1 Frequency stability versus environmental temperature

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°C . 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°C decreased per stage until the lowest temperature -30°C is measured, record all measured frequencies on each temperature step.

5.2.2 Frequency stability versus input voltage

1. Setup the configuration per figure 1 for frequencies measured at temperature if it is within 15°C to 25°C . Otherwise, an environment chamber set for a temperature of 20°C 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.

5.3 TEST SETUP BLOCK DIAGRAM



TEST RESULT**VHF-Analog:**(1) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)-**7W-12.5KHz**

Environment Temperature(°C)	Power Supply (V)	Reference Frequency			Limit: ppm
		136.025MHz	155.025MHz	173.975MHz	
50	DC 7.40 V	0.984	0.966	0.584	5
40	DC 7.40 V	0.727	0.397	0.972	
30	DC 7.40 V	0.575	0.664	0.594	
20	DC 7.40 V	0.453	0.758	0.879	
10	DC 7.40 V	0.884	0.385	0.778	
0	DC 7.40 V	0.687	0.356	0.737	
-10	DC 7.40 V	0.627	0.468	0.966	
-20	DC 7.40 V	0.568	0.612	0.775	
-30	DC 7.40 V	0.727	0.798	0.668	
Result	Pass				

Environment Temperature(°C)	Power Supply (V)	Reference Frequency		Limit: ppm
		151.85MHz	161.61MHz	
50	DC 7.40 V	0.668	0.864	5
40	DC 7.40 V	0.623	0.865	
30	DC 7.40 V	0.751	0.672	
20	DC 7.40 V	0.745	0.550	
10	DC 7.40 V	0.774	0.985	
0	DC 7.40 V	0.923	0.753	
-10	DC 7.40 V	0.874	1.004	
-20	DC 7.40 V	0.853	0.889	
-30	DC 7.40 V	1.097	0.845	
Result	Pass			

(2) Frequency stability versus input voltage (Battery endpoint is 6V) -7W-12.5KHz

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		136.025MHz	155.025MHz	173.975MHz	
50	DC 6.00 V	0.837	0.953	0.863	5
40	DC 6.00 V	0.752	0.657	0.819	
30	DC 6.00 V	0.468	0.558	0.920	
20	DC 6.00 V	0.933	0.740	0.794	
10	DC 6.00 V	0.964	0.971	0.546	
0	DC 6.00 V	0.642	0.738	0.924	
-10	DC 6.00 V	0.458	0.956	0.659	
-20	DC 6.00 V	0.847	0.648	0.696	
-30	DC 6.00 V	0.635	0.819	0.695	
Result	Pass				

Environment Temperature(°C)	Power Supply (V)	Reference Frequency		Limit: ppm
		151.85MHz	161.61MHz	
50	DC 6.00 V	0.748	1.005	5
40	DC 6.00 V	0.996	0.995	
30	DC 6.00 V	0.621	0.783	
20	DC 6.00 V	0.896	0.763	
10	DC 6.00 V	0.741	0.952	
0	DC 6.00 V	0.864	0.616	
-10	DC 6.00 V	1.007	0.685	
-20	DC 6.00 V	0.864	0.526	
-30	DC 6.00 V	0.590	0.772	
Result	Pass			

(3) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)-0.2W-12.5KHz

Environment Temperature(°C)	Power Supply (V)	Reference Frequency			Limit: ppm
		136.025MHz	155.025MHz	173.975MHz	
50	DC 7.40 V	0.688	0.872	1.080	5
40	DC 7.40 V	0.582	0.834	0.557	
30	DC 7.40 V	0.652	0.755	0.694	
20	DC 7.40 V	0.891	0.653	0.629	
10	DC 7.40 V	0.702	0.691	0.623	
0	DC 7.40 V	0.553	0.902	0.841	
-10	DC 7.40 V	0.758	0.899	0.866	
-20	DC 7.40 V	0.880	0.723	0.970	
-30	DC 7.40 V	1.080	0.969	0.619	
Result	Pass				

Environment Temperature(°C)	Power Supply (V)	Reference Frequency		Limit: ppm
		151.85MHz	161.61MHz	
50	DC 7.40 V	0.715	0.715	5
40	DC 7.40 V	0.687	0.524	
30	DC 7.40 V	0.788	0.619	
20	DC 7.40 V	0.783	1.037	
10	DC 7.40 V	0.823	1.059	
0	DC 7.40 V	0.590	0.958	
-10	DC 7.40 V	0.800	1.000	
-20	DC 7.40 V	0.513	1.039	
-30	DC 7.40 V	0.923	0.675	
Result	Pass			

(4) Frequency stability versus input voltage (Battery endpoint is 6V) **-0.2W-12.5KHz**

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		136.025MHz	155.025MHz	173.975MHz	
50	DC 6.00 V	0.714	0.510	0.930	5
40	DC 6.00 V	0.971	1.025	1.009	
30	DC 6.00 V	0.590	0.912	0.727	
20	DC 6.00 V	0.888	1.073	0.988	
10	DC 6.00 V	0.820	0.749	0.651	
0	DC 6.00 V	1.092	0.886	0.550	
-10	DC 6.00 V	1.053	0.922	0.754	
-20	DC 6.00 V	0.828	1.056	0.801	
-30	DC 6.00 V	0.559	0.529	0.686	
Result	Pass				

Environment Temperature(°C)	Power Supply (V)	Reference Frequency		Limit: ppm
		151.85MHz	161.61MHz	
50	DC 6.00 V	0.501	0.708	5
40	DC 6.00 V	0.583	0.807	
30	DC 6.00 V	1.062	0.908	
20	DC 6.00 V	1.054	0.838	
10	DC 6.00 V	0.775	0.650	
0	DC 6.00 V	0.646	0.732	
-10	DC 6.00 V	0.755	0.563	
-20	DC 6.00 V	1.054	1.023	
-30	DC 6.00 V	1.046	0.576	
Result	Pass			

Digital:

(1) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)-7W-12.5KHz

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		136.025MHz	155.025MHz	173.975MHz	
50	DC 7.40 V	0.515	0.611	0.938	5
40	DC 7.40 V	0.841	1.033	0.530	
30	DC 7.40 V	0.961	0.842	0.519	
20	DC 7.40 V	0.524	0.947	0.830	
10	DC 7.40 V	0.684	0.575	1.017	
0	DC 7.40 V	1.100	0.867	0.761	
-10	DC 7.40 V	0.965	0.712	0.721	
-20	DC 7.40 V	0.763	0.792	1.061	
-30	DC 7.40 V	0.944	0.716	0.951	
Result	Pass				

Environment Temperature(°C)	Power Supply (V)	Reference Frequency		Limit: ppm
		151.85MHz	161.61MHz	
50	DC 7.40 V	0.910	0.710	5
40	DC 7.40 V	1.089	0.957	
30	DC 7.40 V	0.908	0.820	
20	DC 7.40 V	0.664	0.737	
10	DC 7.40 V	0.626	0.546	
0	DC 7.40 V	0.725	0.657	
-10	DC 7.40 V	0.834	1.071	
-20	DC 7.40 V	0.511	1.063	
-30	DC 7.40 V	1.043	0.866	
Result	Pass			

(2) Frequency stability versus input voltage(Battery endpoint is 6V) -7W-12.5KHz

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		136.025MHz	155.025MHz	173.975MHz	
50	DC 6.00 V	0.949	0.840	0.567	5
40	DC 6.00 V	0.857	0.848	1.055	
30	DC 6.00 V	0.579	0.998	0.894	
20	DC 6.00 V	1.074	0.512	0.636	
10	DC 6.00 V	0.717	1.041	0.569	
0	DC 6.00 V	0.843	0.767	0.505	
-10	DC 6.00 V	0.637	0.504	0.508	
-20	DC 6.00 V	0.663	0.585	0.540	
-30	DC 6.00 V	1.038	1.005	0.762	
Result	Pass				

Environment Temperature(°C)	Power Supply (V)	Reference Frequency		Limit: ppm	
		151.85MHz	161.61MHz		
50	DC 6.00 V	0.889	0.592	5	
40	DC 6.00 V	0.999	0.779		
30	DC 6.00 V	0.656	0.842		
20	DC 6.00 V	0.689	0.639		
10	DC 6.00 V	0.782	0.884		
0	DC 6.00 V	0.692	0.739		
-10	DC 6.00 V	0.999	0.543		
-20	DC 6.00 V	0.976	0.845		
-30	DC 6.00 V	0.784	0.604		
Result	Pass				

(3) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)-0.2W-12.5KHz

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		136.025MHz	155.025MHz	173.975MHz	
50	DC 7.40 V	0.476	0.865	0.387	5
40	DC 7.40 V	0.739	0.731	0.629	
30	DC 7.40 V	0.500	0.403	0.619	
20	DC 7.40 V	0.866	0.515	0.769	
10	DC 7.40 V	0.893	0.694	0.639	
0	DC 7.40 V	0.609	0.509	0.493	
-10	DC 7.40 V	0.378	0.934	0.427	
-20	DC 7.40 V	0.898	0.571	0.594	
-30	DC 7.40 V	0.731	0.338	0.509	
Result	Pass				

Environment Temperature(°C)	Power Supply (V)	Reference Frequency		Limit: ppm
		151.85MHz	161.61MHz	
50	DC 7.40 V	0.922	0.653	5
40	DC 7.40 V	0.663	0.536	
30	DC 7.40 V	0.803	0.817	
20	DC 7.40 V	0.972	0.737	
10	DC 7.40 V	1.069	0.534	
0	DC 7.40 V	0.780	0.950	
-10	DC 7.40 V	0.907	0.684	
-20	DC 7.40 V	0.530	0.918	
-30	DC 7.40 V	0.814	0.843	
Result	Pass			

(4) Frequency stability versus input voltage (Battery endpoint is 6V) **-0.2W-12.5KHz**

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		136.025MHz	155.025MHz	173.975MHz	
50	DC 6.00 V	0.680	1.090	0.528	5
40	DC 6.00 V	0.949	0.571	0.914	
30	DC 6.00 V	0.810	0.984	0.777	
20	DC 6.00 V	0.777	0.541	0.818	
10	DC 6.00 V	0.836	1.056	1.029	
0	DC 6.00 V	0.777	0.736	0.834	
-10	DC 6.00 V	1.081	0.949	1.098	
-20	DC 6.00 V	0.842	1.080	0.701	
-30	DC 6.00 V	0.552	0.628	0.699	
Result	Pass				

Environment Temperature(°C)	Power Supply (V)	Reference Frequency		Limit: ppm
		151.85MHz	161.61MHz	
50	DC 6.00 V	0.567	0.536	5
40	DC 6.00 V	0.855	0.758	
30	DC 6.00 V	0.976	1.056	
20	DC 6.00 V	0.539	0.674	
10	DC 6.00 V	0.903	0.710	
0	DC 6.00 V	0.624	0.671	
-10	DC 6.00 V	0.696	0.760	
-20	DC 6.00 V	0.955	0.861	
-30	DC 6.00 V	0.731	0.822	
Result	Pass			

UHF:**Analog:**

(1) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)-6W-12.5KHz

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		400.025MHz	454.025MHz	479.975MHz	
50	DC 7.40 V	0.901	0.680	0.958	2.5
40	DC 7.40 V	0.595	0.995	0.846	
30	DC 7.40 V	1.079	0.574	0.581	
20	DC 7.40 V	0.940	0.680	0.575	
10	DC 7.40 V	0.809	0.616	1.088	
0	DC 7.40 V	0.956	0.544	1.076	
-10	DC 7.40 V	0.727	0.734	0.622	
-20	DC 7.40 V	0.766	0.924	1.044	
-30	DC 7.40 V	0.790	0.614	1.001	
Result	Pass				

(2) Frequency stability versus input voltage (Battery endpoint is 6V) -6W-12.5KHz

Environment Temperature(°C)	Power Supply (V)	Reference Frequency			Limit: ppm
		400.025MHz	454.025MHz	479.975MHz	
50	DC 6.00 V	0.521	1.017	0.595	2.5
40	DC 6.00 V	0.949	0.599	1.095	
30	DC 6.00 V	0.696	0.795	1.090	
20	DC 6.00 V	0.506	1.016	0.869	
10	DC 6.00 V	0.635	0.748	0.990	
0	DC 6.00 V	0.539	0.687	0.900	
-10	DC 6.00 V	0.567	0.730	1.054	
-20	DC 6.00 V	0.998	0.526	0.720	
-30	DC 6.00 V	0.514	0.809	0.954	
Result	Pass				

(3) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)-0.2W-12.5KHz

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		400.025MHz	454.025MHz	479.975MHz	
50	DC 7.40 V	1.060	0.918	0.911	2.5
40	DC 7.40 V	1.030	0.780	0.553	
30	DC 7.40 V	0.524	0.912	0.624	
20	DC 7.40 V	0.688	0.710	0.957	
10	DC 7.40 V	0.888	0.677	0.788	
0	DC 7.40 V	0.506	0.902	0.501	
-10	DC 7.40 V	0.581	1.053	0.642	
-20	DC 7.40 V	1.070	0.728	0.557	
-30	DC 7.40 V	0.585	0.794	0.629	
Result	Pass				

(4) Frequency stability versus input voltage (Battery endpoint is 6V) -0.2W-12.5KHz

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		400.025MHz	454.025MHz	479.975MHz	
50	DC 6.00 V	1.079	0.810	0.614	2.5
40	DC 6.00 V	0.897	0.720	0.841	
30	DC 6.00 V	0.951	1.019	0.816	
20	DC 6.00 V	1.034	0.537	0.870	
10	DC 6.00 V	0.974	1.096	0.590	
0	DC 6.00 V	0.572	0.742	0.979	
-10	DC 6.00 V	0.952	0.994	0.714	
-20	DC 6.00 V	1.050	0.873	0.898	
-30	DC 6.00 V	0.678	0.928	0.517	
Result	Pass				

Digital:**(1) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)-6W-12.5KHz**

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		400.025MHz	454.025MHz	479.975MHz	
50	DC 7.40 V	0.582	0.929	0.967	2.5
40	DC 7.40 V	0.734	0.613	0.737	
30	DC 7.40 V	1.054	0.596	0.809	
20	DC 7.40 V	1.063	0.737	0.668	
10	DC 7.40 V	0.547	0.942	0.975	
0	DC 7.40 V	0.687	0.611	0.971	
-10	DC 7.40 V	0.683	0.933	0.854	
-20	DC 7.40 V	0.589	0.687	0.542	
-30	DC 7.40 V	0.627	0.624	0.911	
Result	Pass				

(2) Frequency stability versus input voltage(Battery endpoint is 6V) -6W-12.5KHz

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		400.025MHz	454.025MHz	479.975MHz	
50	DC 6.00 V	0.693	0.535	0.681	2.5
40	DC 6.00 V	0.807	0.807	0.629	
30	DC 6.00 V	1.028	0.709	0.599	
20	DC 6.00 V	1.003	0.779	0.685	
10	DC 6.00 V	0.676	0.539	0.554	
0	DC 6.00 V	0.845	1.047	0.748	
-10	DC 6.00 V	0.766	0.945	0.660	
-20	DC 6.00 V	0.915	0.705	0.899	
-30	DC 6.00 V	0.984	0.740	0.717	
Result	Pass				

(3) Frequency stability versus input voltage (Supply nominal voltage is 7.40V)-0.2W-12.5KHz

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		400.025MHz	454.025MHz	479.975MHz	
50	DC 7.40 V	0.569	0.611	0.781	2.5
40	DC 7.40 V	0.888	0.860	1.098	
30	DC 7.40 V	0.682	0.652	0.637	
20	DC 7.40 V	1.024	1.052	0.758	
10	DC 7.40 V	0.697	0.852	0.890	
0	DC 7.40 V	0.524	0.502	0.627	
-10	DC 7.40 V	0.794	0.887	1.058	
-20	DC 7.40 V	0.806	0.792	0.853	
-30	DC 7.40 V	0.873	0.824	0.898	
Result	Pass				

(4) Frequency stability versus input voltage (Battery endpoint is 6V) -0.2W-12.5KHz

Environment Temperature(°C)	Power (V)	Reference Frequency			Limit: ppm
		400.025MHz	454.025MHz	479.975MHz	
50	DC 6.00 V	0.569	0.899	0.997	2.5
40	DC 6.00 V	0.867	0.735	0.946	
30	DC 6.00 V	0.910	0.740	0.526	
20	DC 6.00 V	0.696	1.056	0.947	
10	DC 6.00 V	1.019	0.875	0.912	
0	DC 6.00 V	0.782	0.602	0.846	
-10	DC 6.00 V	0.554	0.675	0.943	
-20	DC 6.00 V	1.078	0.982	0.524	
-30	DC 6.00 V	0.895	0.552	0.971	
Result	Pass				

6. EMISSION BANDWIDTH

6.1 PROVISIONS APPLICABLE

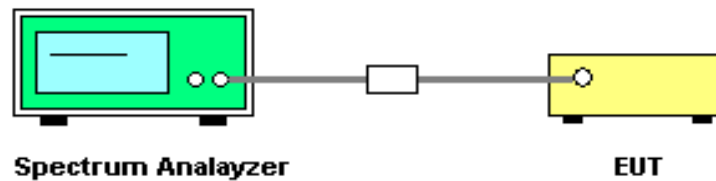
FCC Part 90 & FCC Part 22:

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

6.2 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.

6.3 TEST SETUP BLOCK DIAGRAM



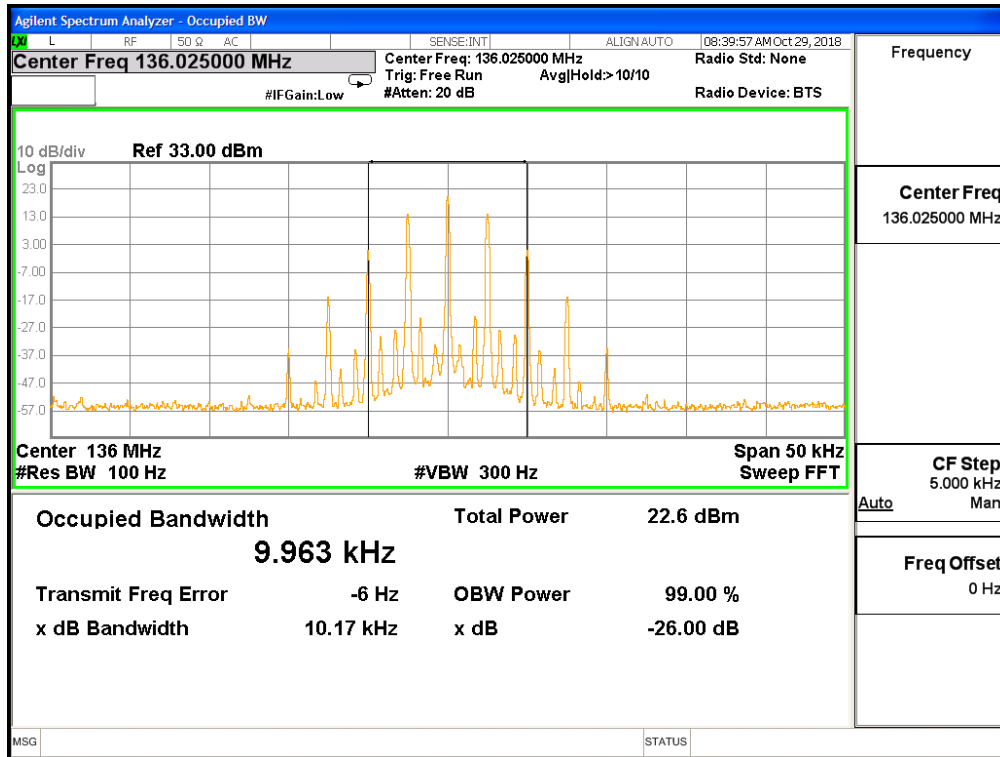
6.4 MEASUREMENT RESULT

VHF:

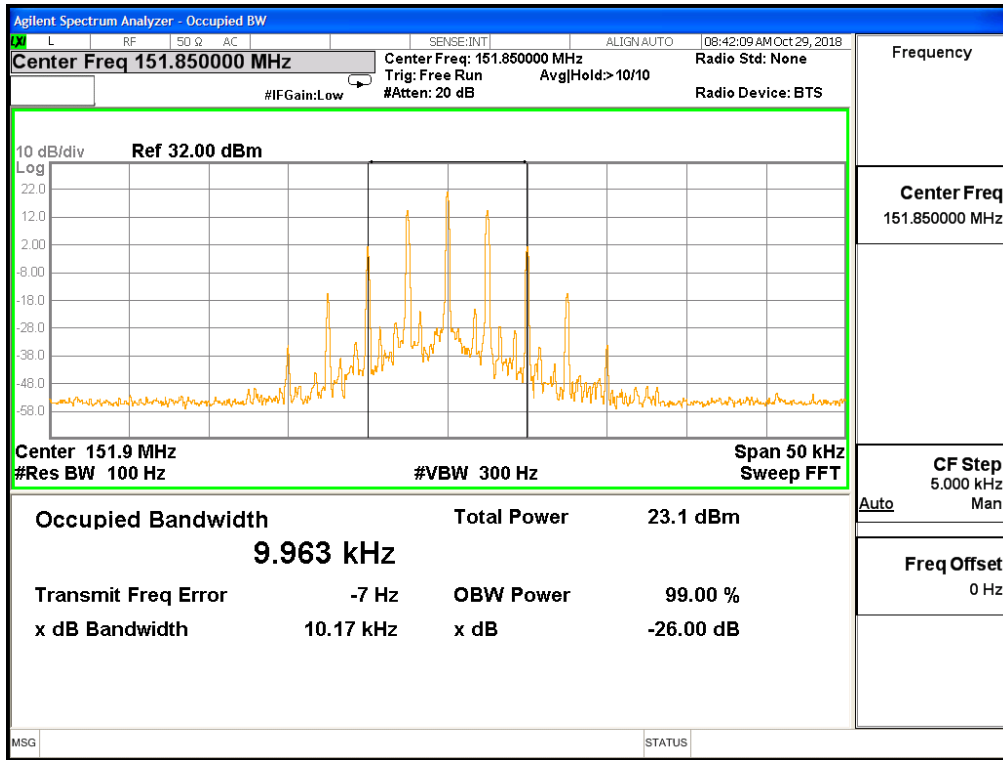
Analog:12.5KHz

26 dB Bandwidth Measurement Result			
Operating Frequency	12.5 KHz Channel Separation		
	Test Data	Limits	Result
136.025MHz	10.17KHz	11.25 KHz	Pass
151.850MHz	10.17KHz	11.25 KHz	Pass
161.61MHz	10.17KHz	11.25 KHz	Pass
173.975MHz	10.17KHz	11.25 KHz	Pass

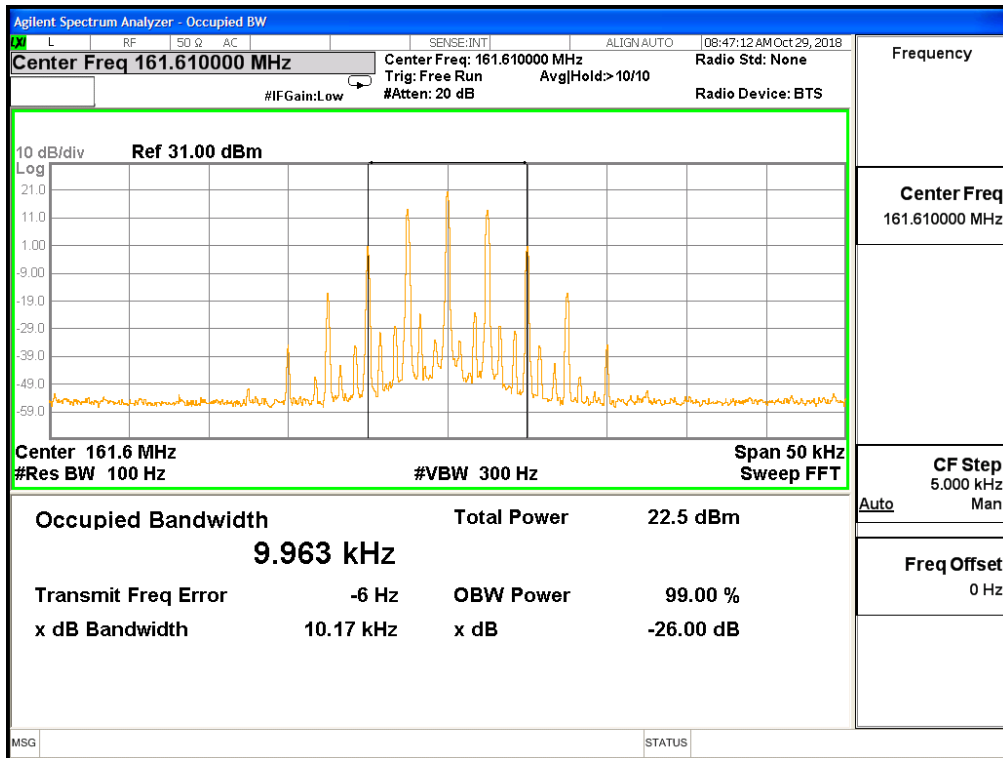
Occupied bandwidth of Middle Channel (Maximum)-0.2W



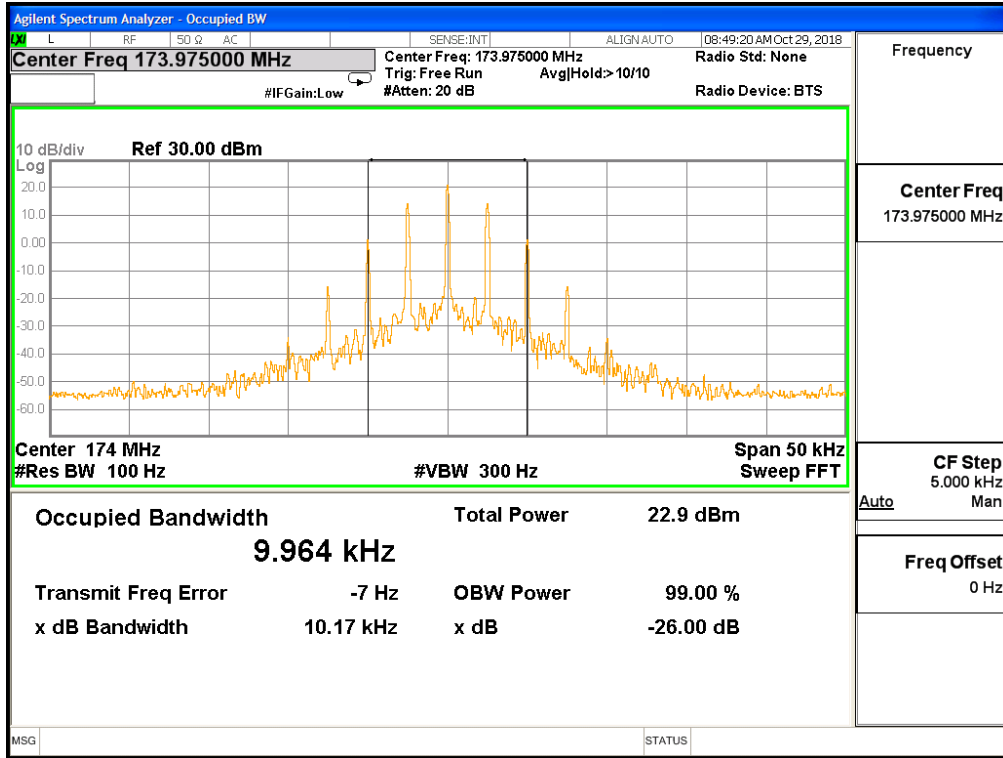
Occupied bandwidth of Bottom Channel (151.850 MHz)-0.2W



Occupied bandwidth of Middle Channel (161.610 MHz)-0.2W

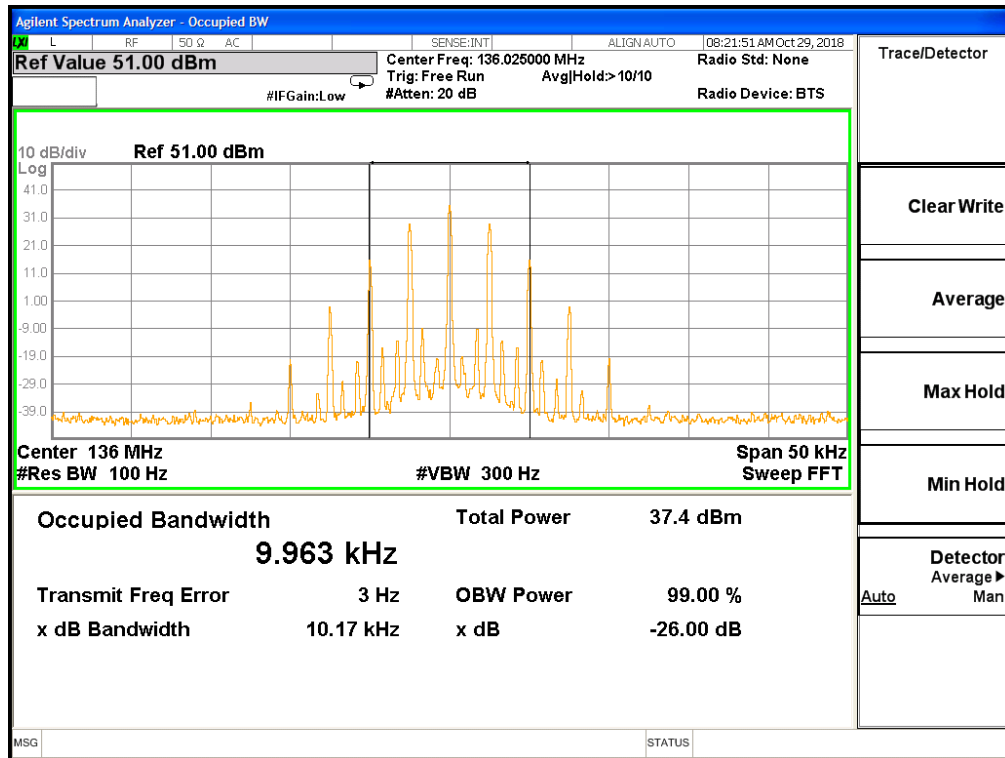


Occupied bandwidth of Top Channel (173.975 MHz)-0.2W

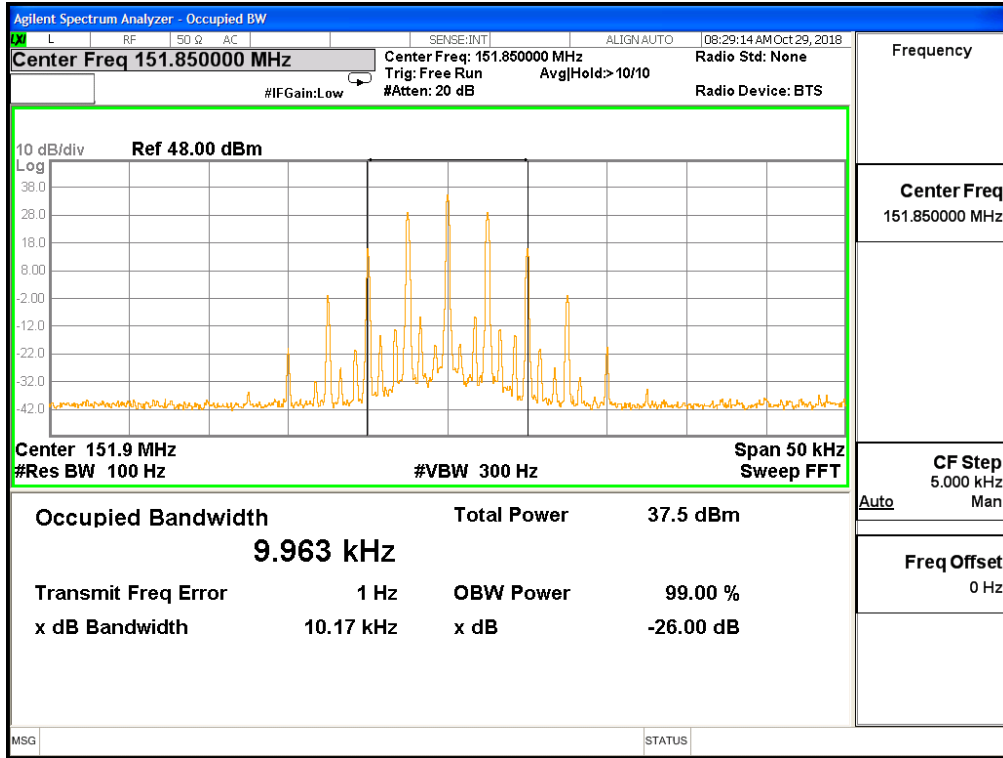


26 dB Bandwidth Measurement Result			
Operating Frequency	12.5 KHz Channel Separation		
	Test Data	Limits	Result
136.025MHz	10.17KHz	11.25 KHz	Pass
151.850MHz	10.17KHz	11.25 KHz	Pass
161.61MHz	10.17KHz	11.25 KHz	Pass
173.975MHz	10.17KHz	11.25 KHz	Pass

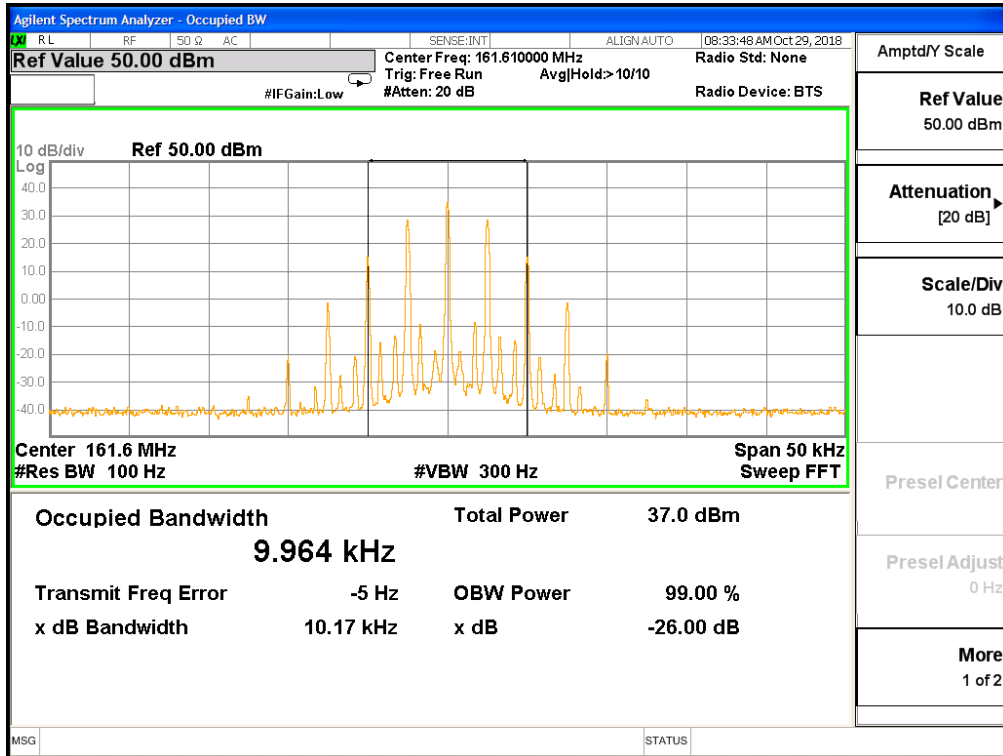
Occupied bandwidth of Bottom Channel (Maximum)-7W



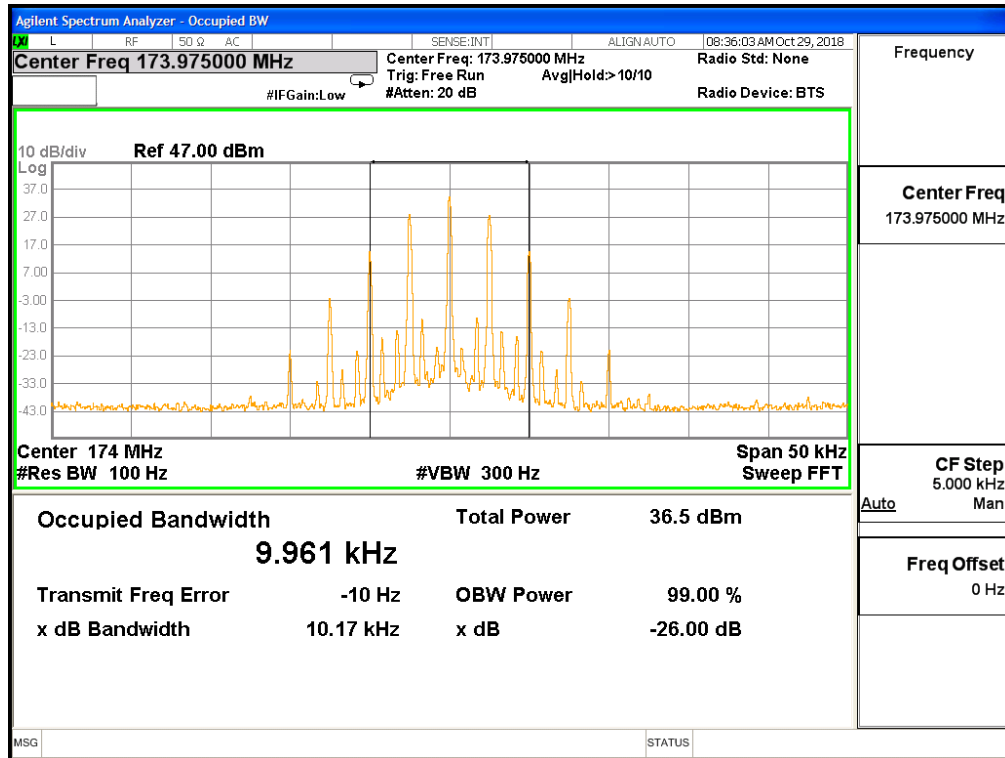
Occupied bandwidth of Middle Channel (151.850 MHz)-7W



Occupied bandwidth of Middle Channel (161.610 MHz)-7W



Occupied bandwidth of Top Channel (173.975 MHz)-7W

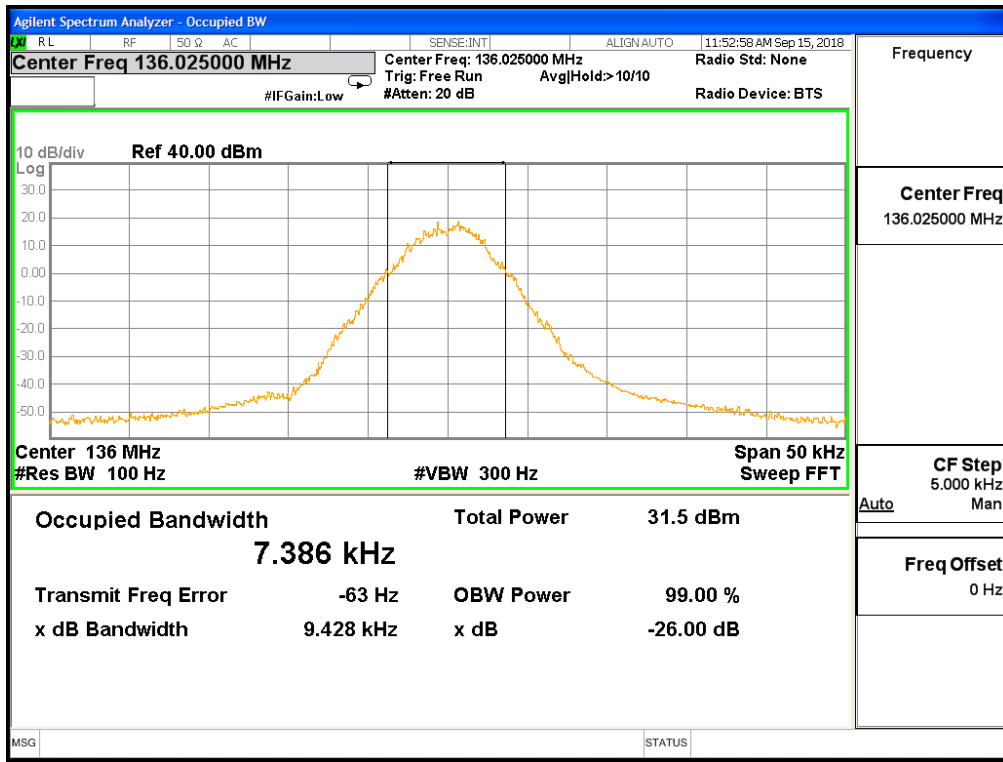


Digital:

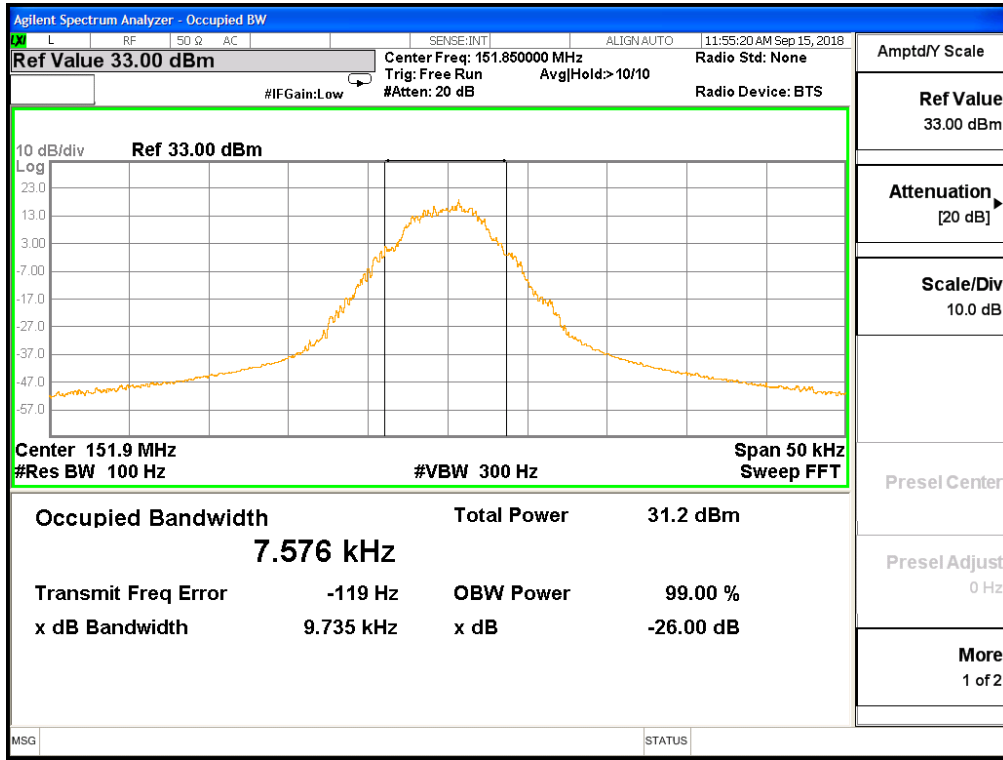
TEST RESULTS

26 DB BANDWIDTH MEASUREMENT RESULT			
Operating Frequency	12.5 KHz Channel Separation		
	Test Data	Limits	Result
136.025MHz	9.428KHz	11.25 KHz	Pass
151.850MHz	9.735KHz	11.25 KHz	Pass
161.61 MHz	9.543KHz	11.25 KHz	Pass
173.975MHz	9.591KHz	11.25 KHz	Pass

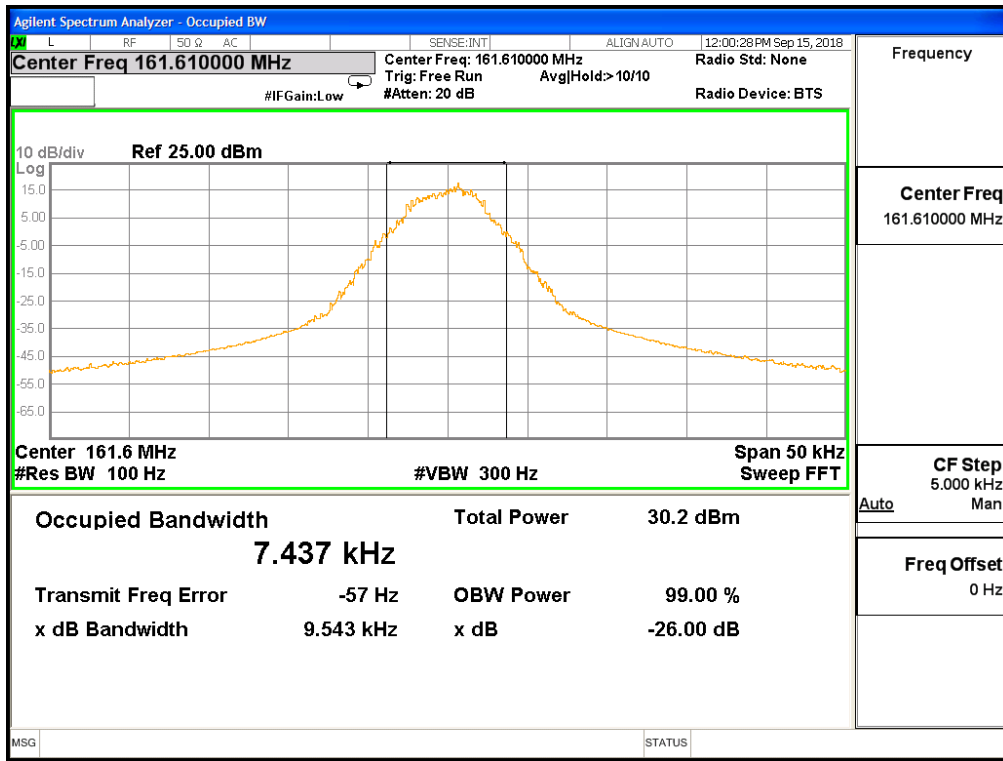
Occupied bandwidth of Bottom Channel (Maximum)-0.2W



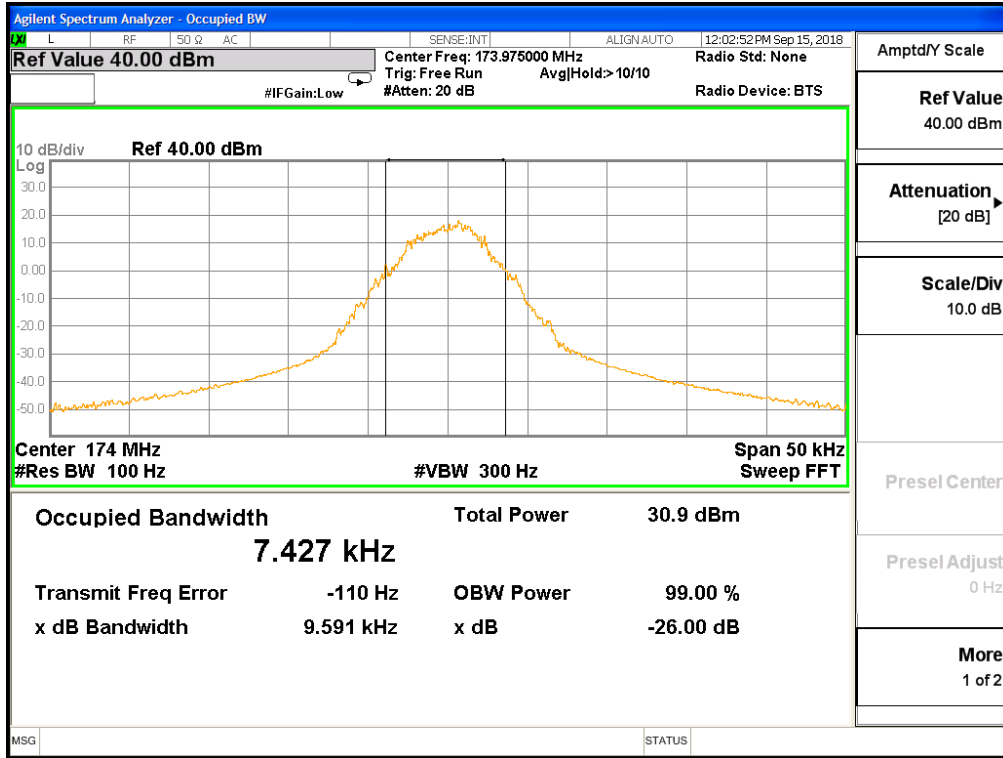
Occupied bandwidth of Middle Channel (151.850 MHz)-0.2W



Occupied bandwidth of Middle Channel (161.610 MHz)-0.2W



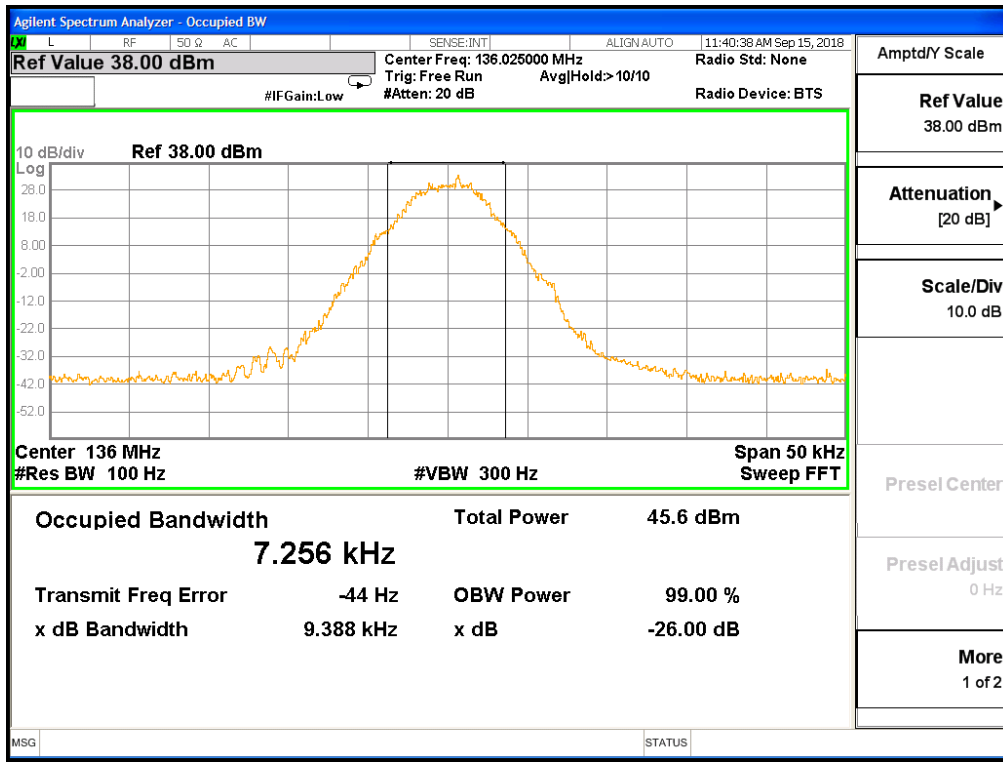
Occupied bandwidth of Top Channel (173.975 MHz)-0.2W



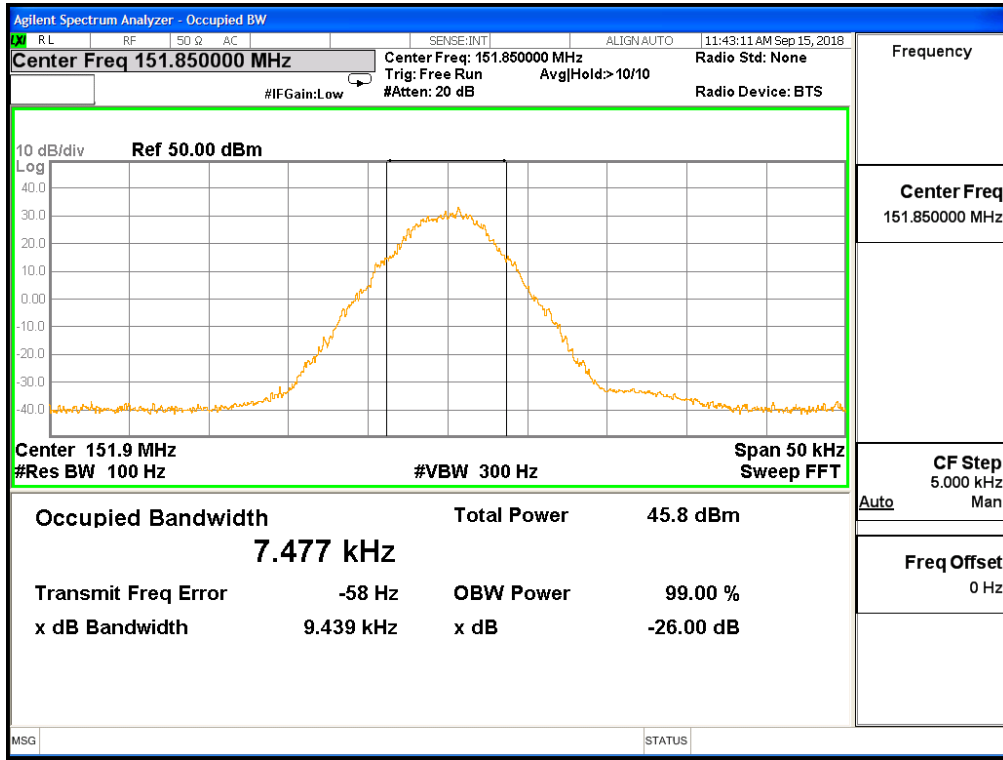
TEST RESULTS

26 DB BANDWIDTH MEASUREMENT RESULT			
Operating Frequency	12.5 KHz Channel Separation		
	Test Data	Limits	Result
136.025MHz	9.388KHz	11.25 KHz	Pass
151.850MHz	9.439KHz	11.25 KHz	Pass
161.610MHz	9.423KHz	11.25 KHz	Pass
173.975MHz	9.436KHz	11.25 KHz	Pass

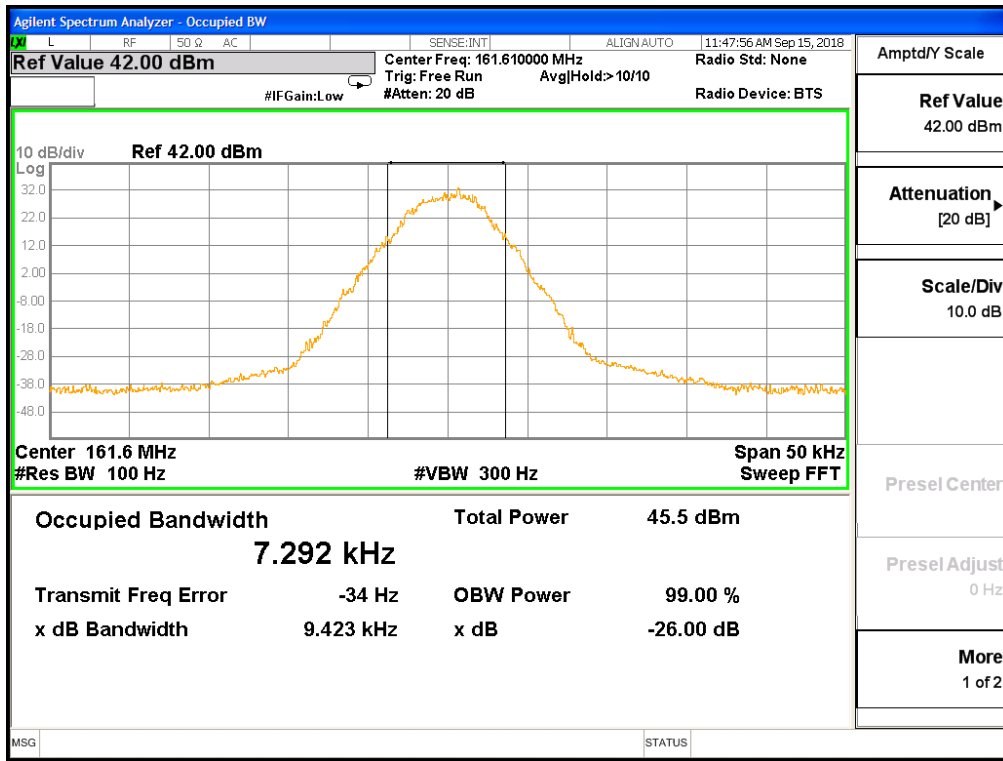
Occupied bandwidth of Bottom Channel (Maximum)-7W



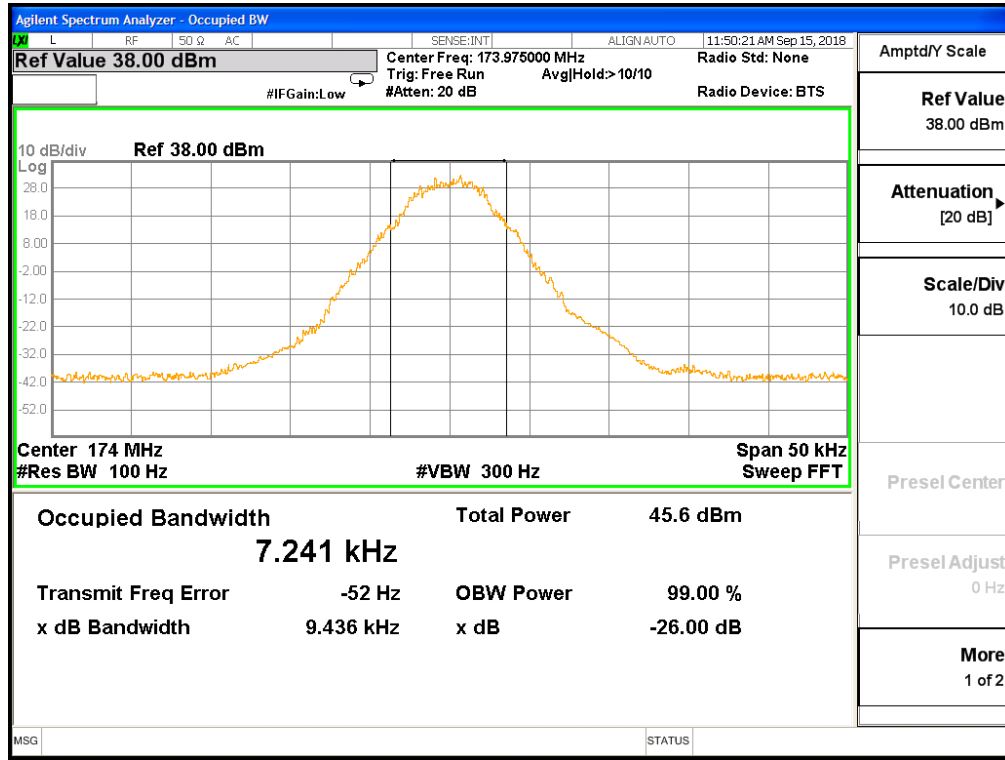
Occupied bandwidth of Middle Channel (151.850 MHz)-7W



Occupied bandwidth of Middle Channel (161.610 MHz)-7W



Occupied bandwidth of Top Channel (173.975 MHz)-7W

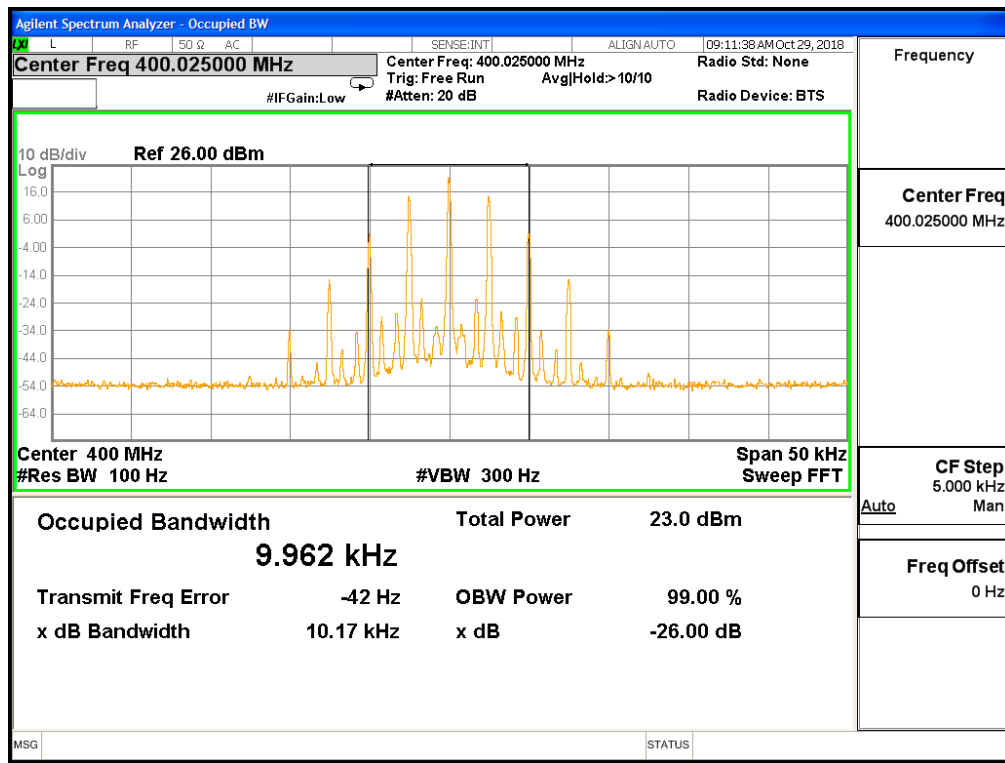


UHF:

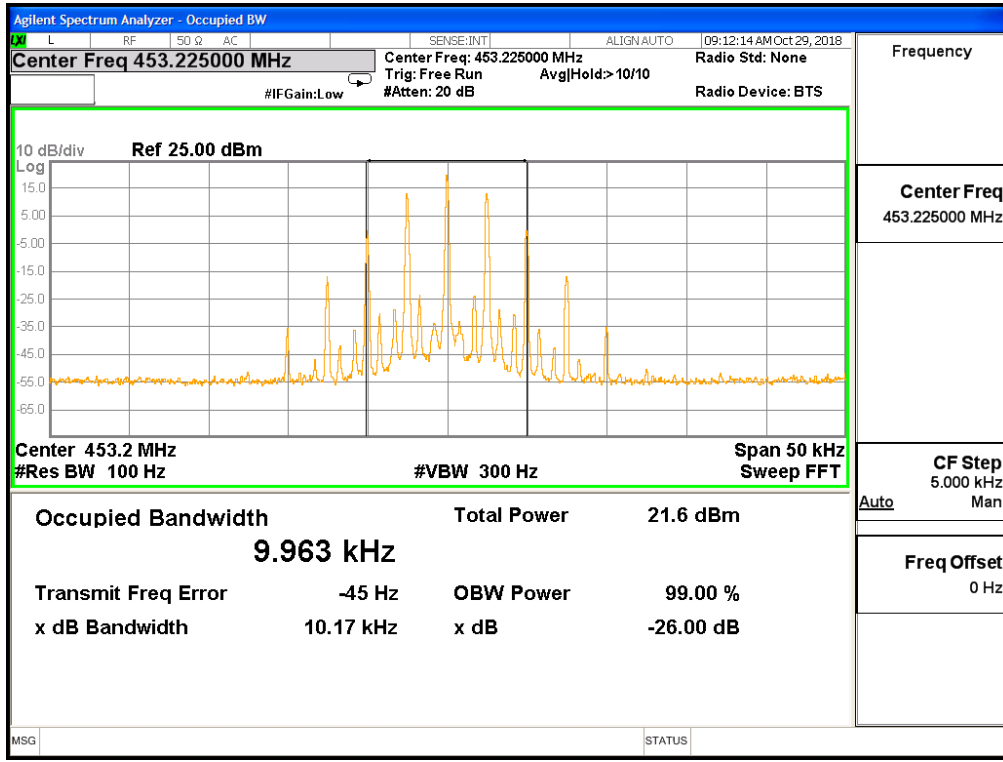
Analog:12.5KHz

26 DB BANDWIDTH MEASUREMENT RESULT			
Operating Frequency	12.5 KHz Channel Separation		
	Test Data	Limits	Result
400.025MHz	10.17KHz	11.25 KHz	Pass
453.225MHz	10.17KHz	11.25 KHz	Pass
454.025MHz	10.17KHz	11.25 KHz	Pass
479.975MHz	10.17KHz	11.25 KHz	Pass

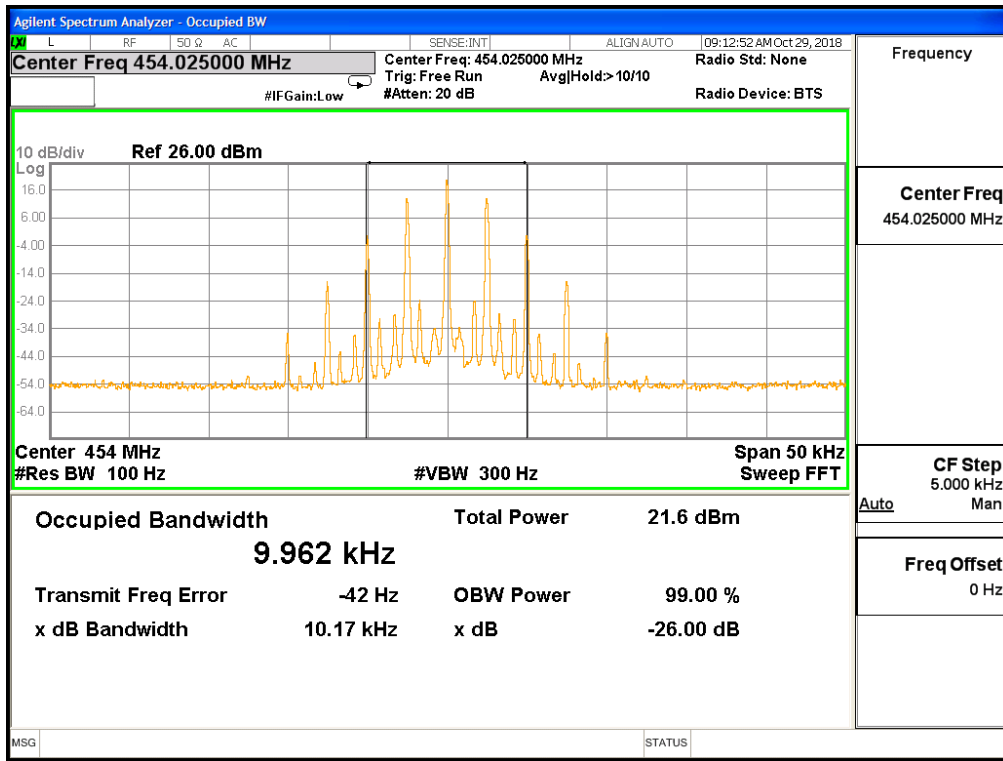
Occupied bandwidth of Bottom Channel (Maximum)-0.2W



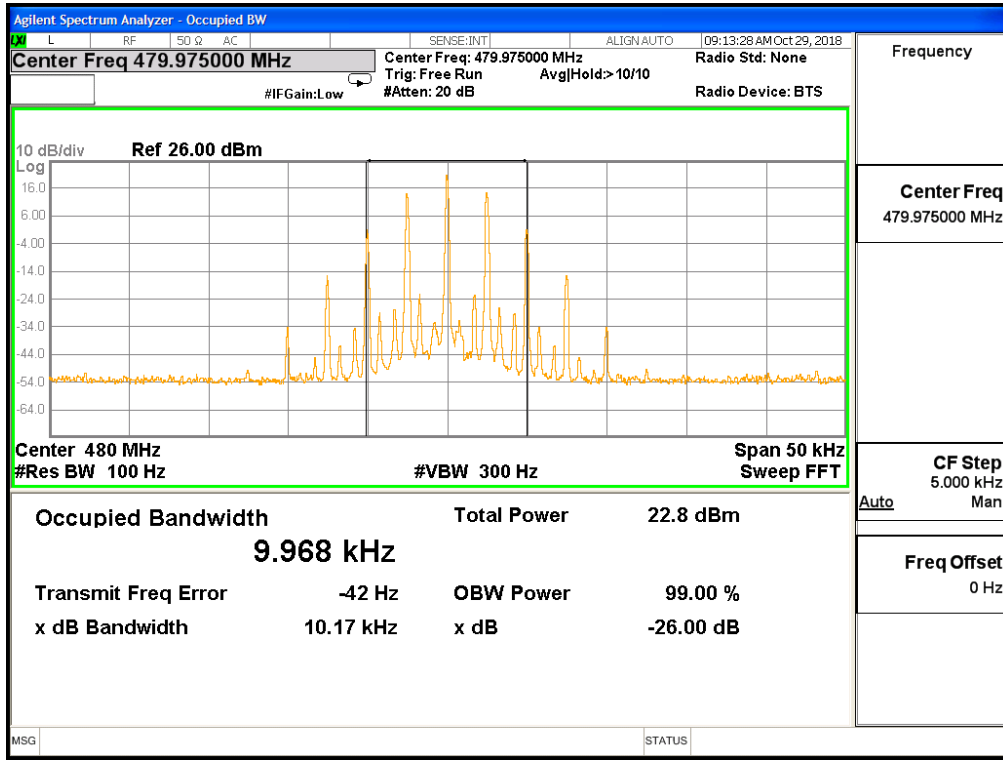
Occupied bandwidth of Middle Channel (Maximum)-0.2W



Occupied bandwidth of Middle Channel (Maximum)-0.2W

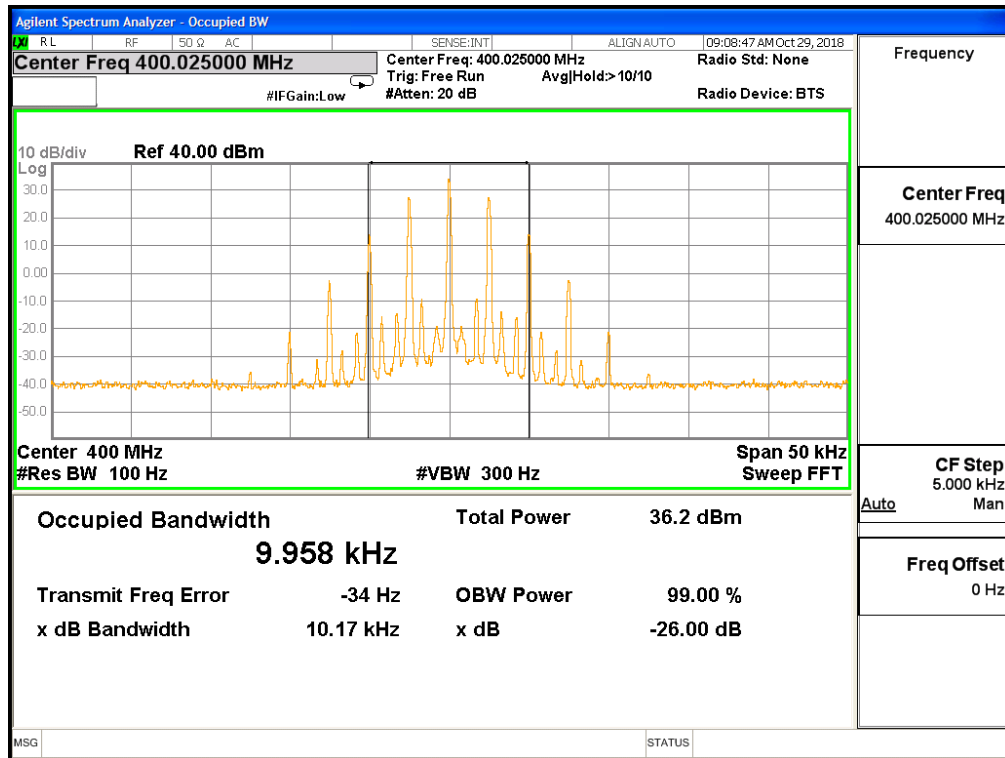


Occupied bandwidth of Top Channel (Maximum)-0.2W

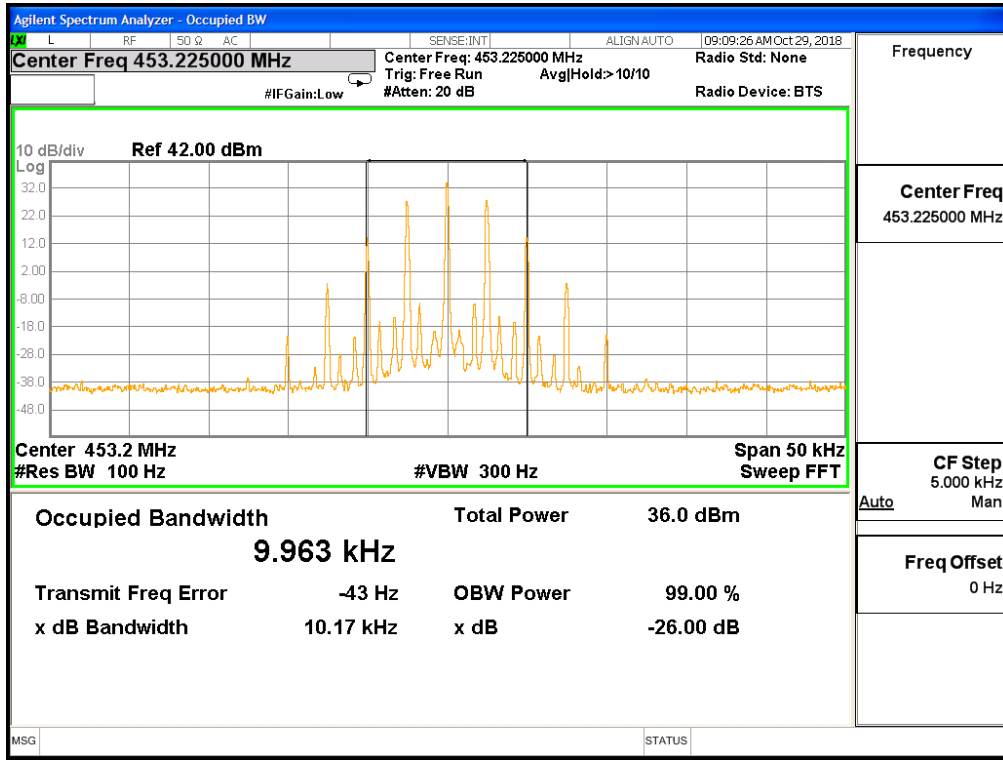


26 DB BANDWIDTH MEASUREMENT RESULT			
Operating Frequency	12.5 KHz Channel Separation		
	Test Data	Limits	Result
400.025MHz	10.17KHz	11.25 KHz	Pass
453.225MHz	10.17KHz	11.25 KHz	Pass
454.025MHz	10.17KHz	11.25 KHz	Pass
479.975MHz	10.17KHz	11.25 KHz	Pass

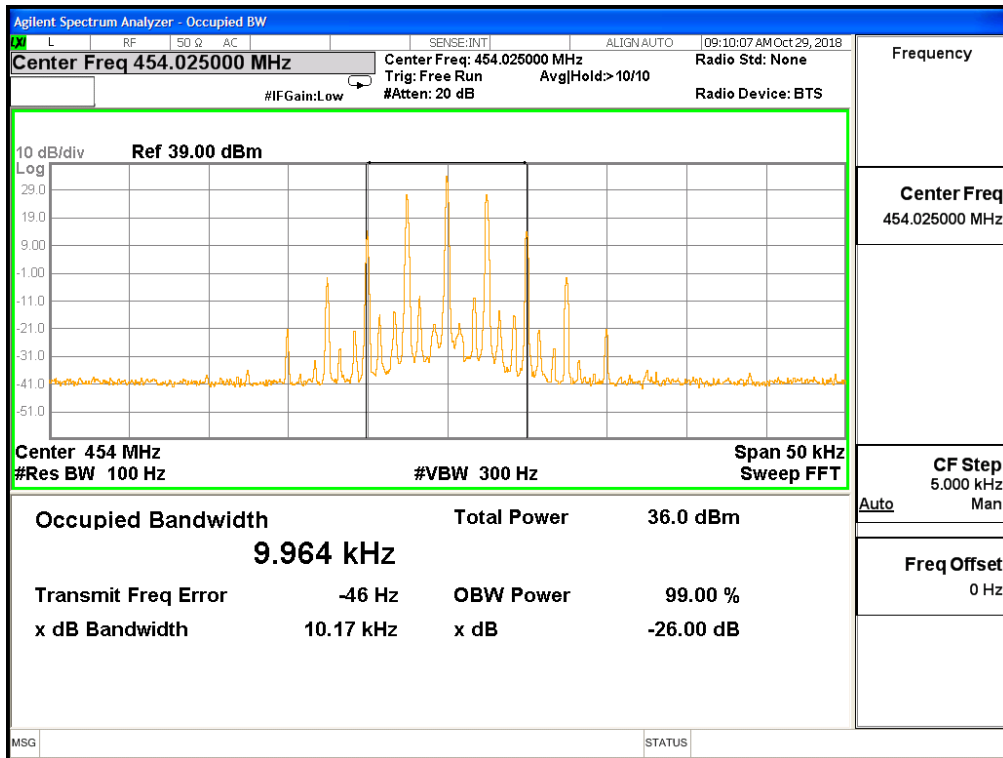
Occupied bandwidth of Bottom Channel (Maximum)-6W



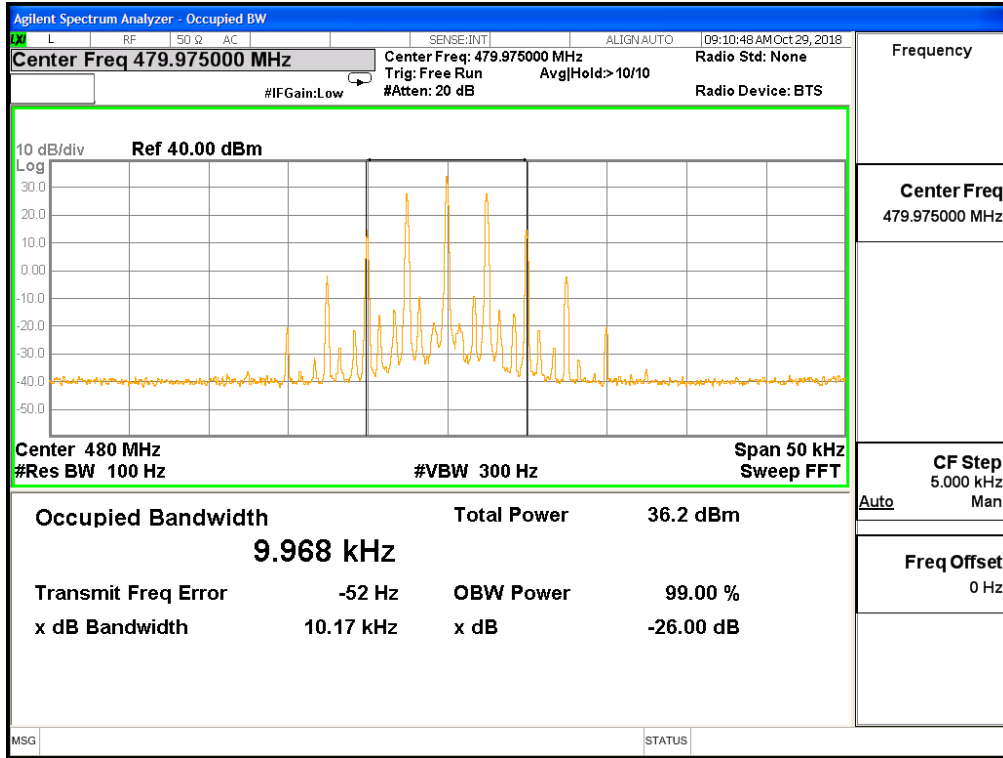
Occupied bandwidth of Middle Channel (Maximum)-6W



Occupied bandwidth of Middle Channel (Maximum)-6W



Occupied bandwidth of Top Channel (Maximum)-6W

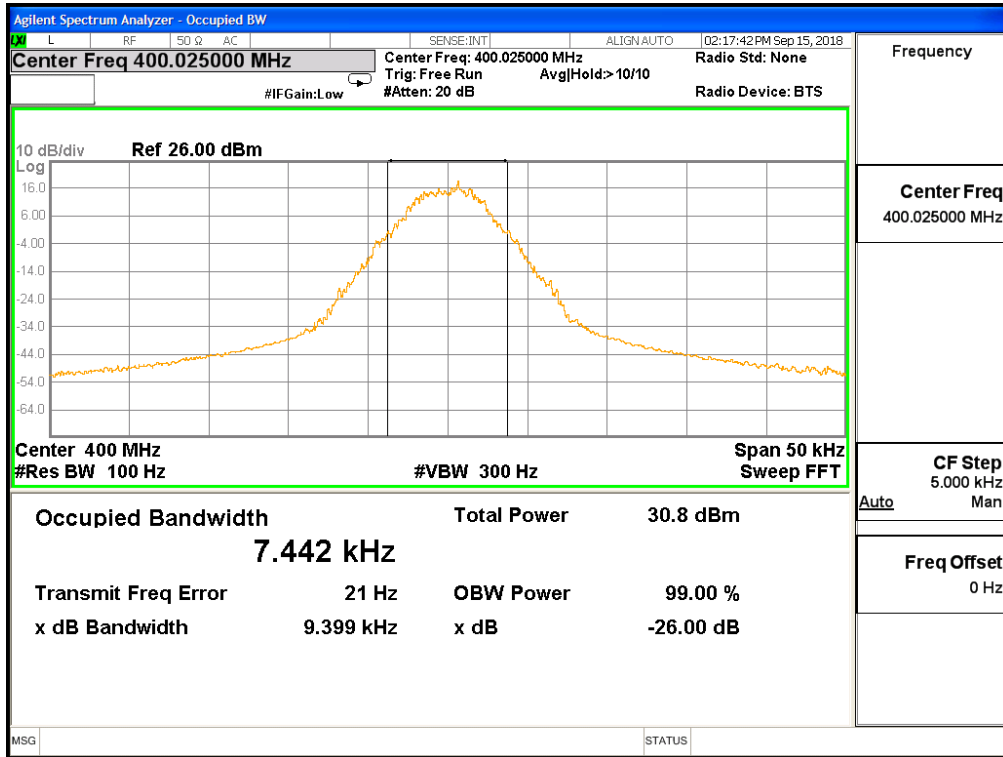


Digital:

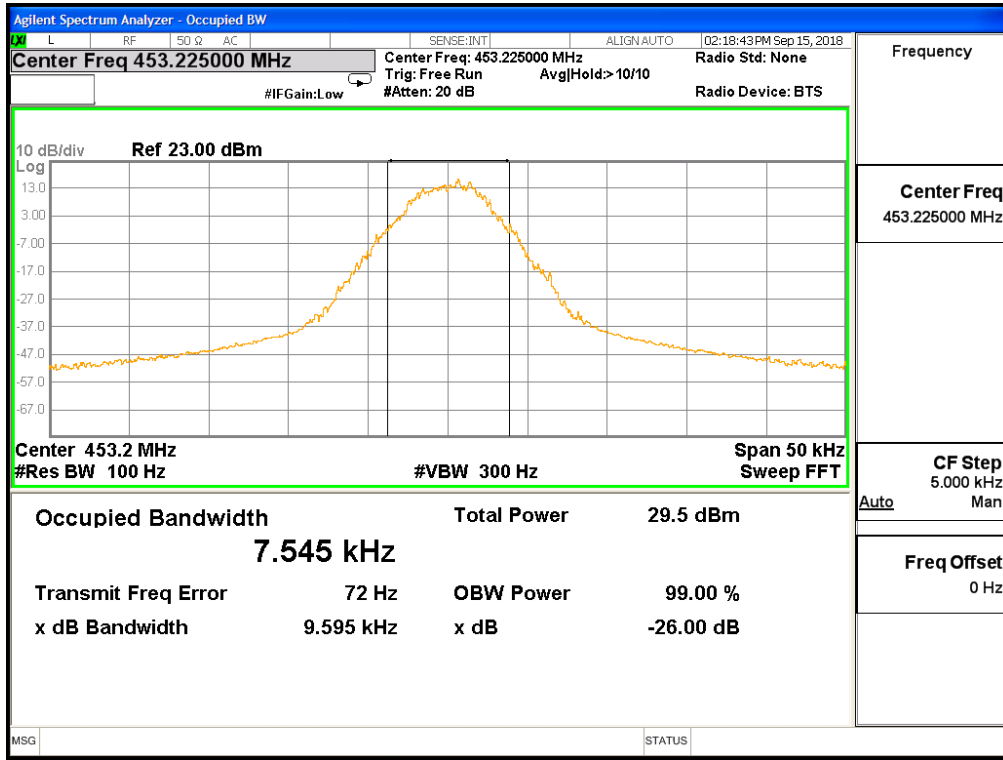
TEST RESULTS

26 DB BANDWIDTH MEASUREMENT RESULT			
Operating Frequency	12.5 KHz Channel Separation		
	Test Data	Limits	Result
400.025MHz	9.399KHz	11.25 KHz	Pass
453.225MHz	9.595KHz	11.25 KHz	Pass
454.025MHz	9.480KHz	11.25 KHz	Pass
479.975MHz	9.724KHz	11.25 KHz	Pass

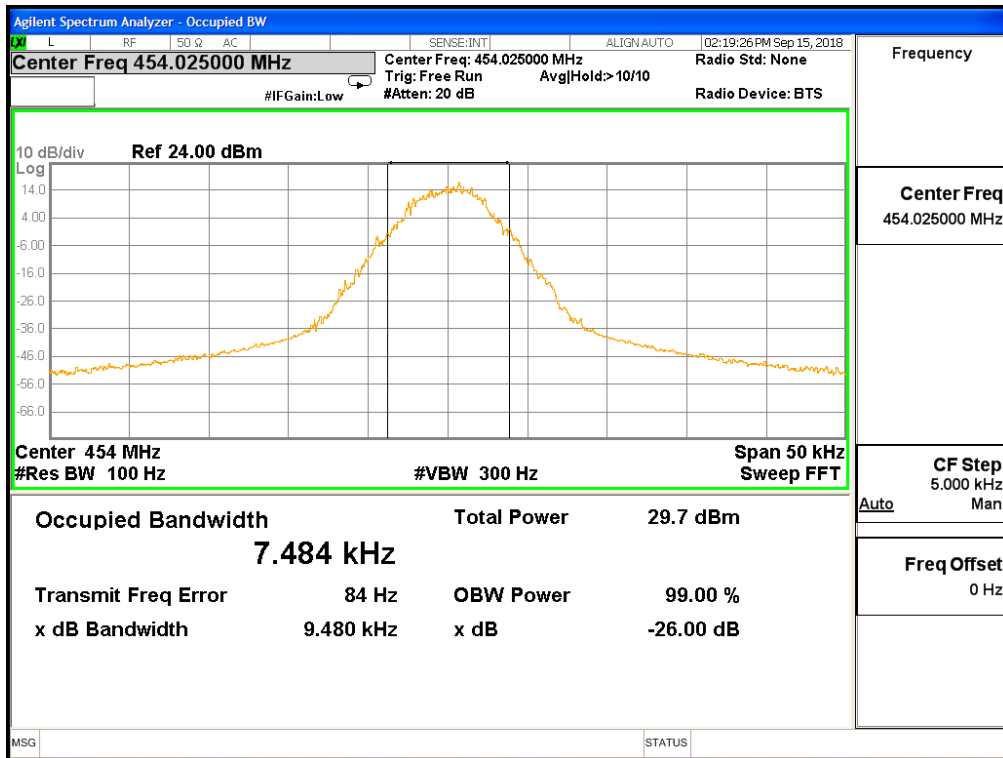
Occupied bandwidth of Bottom Channel (Low) -0.2W



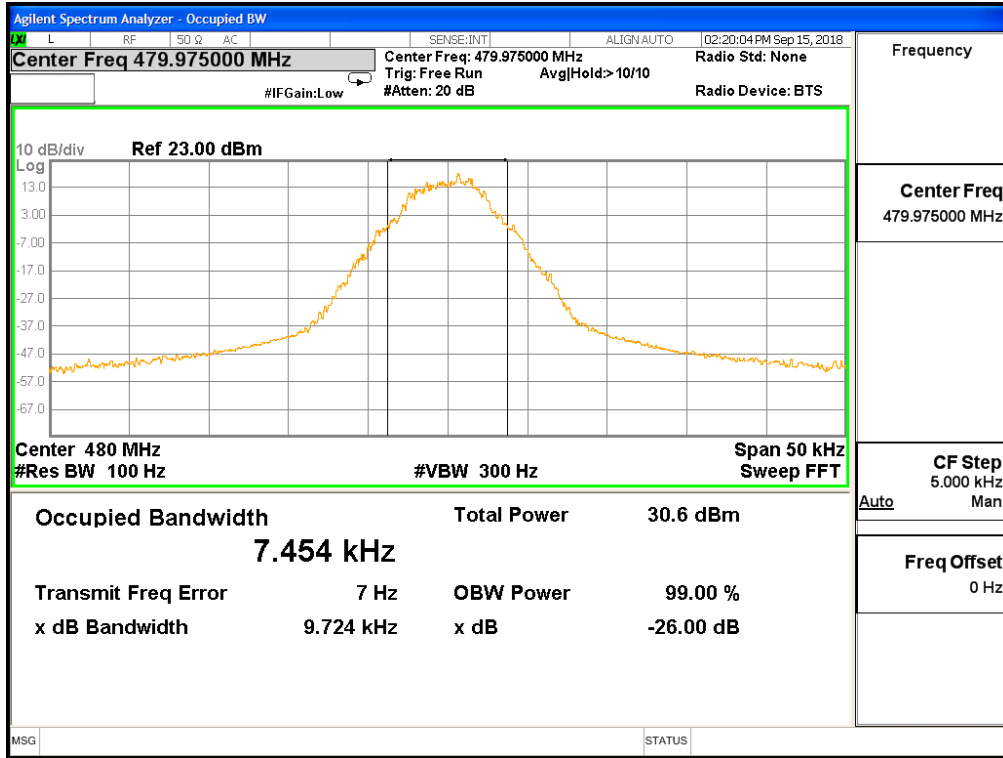
Occupied bandwidth of Middle Channel (Low)-0.2W



Occupied bandwidth of Middle Channel (Low)-0.2W



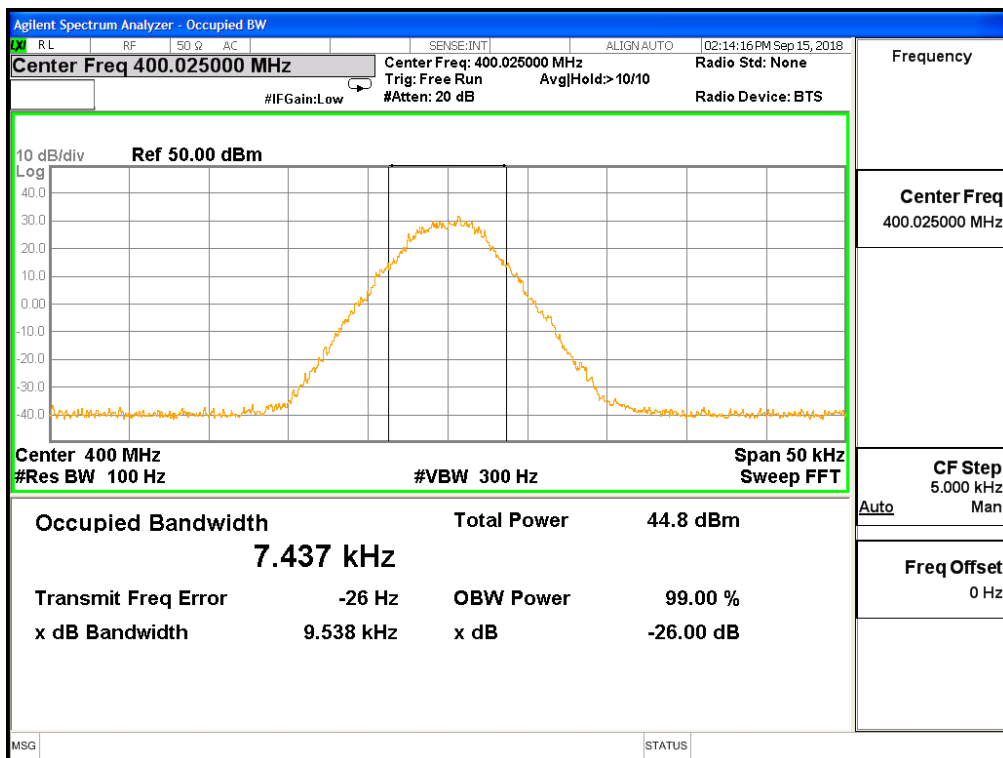
Occupied bandwidth of Top Channel (Low)-0.2W



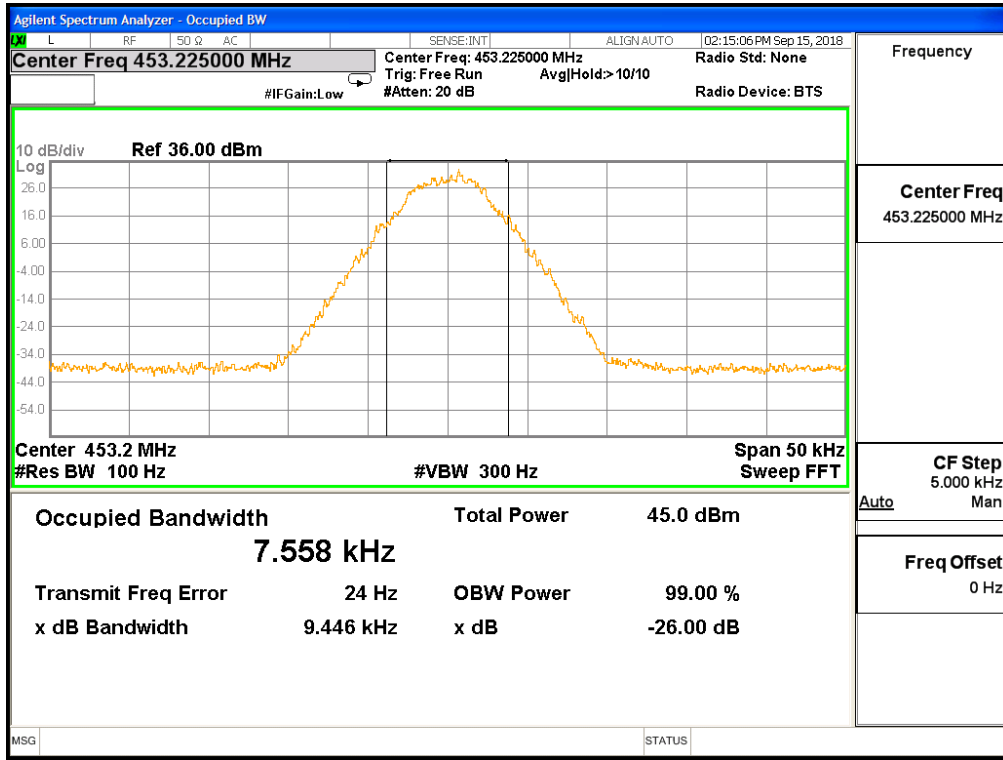
TEST RESULTS

26 DB BANDWIDTH MEASUREMENT RESULT			
Operating Frequency	12.5 KHz Channel Separation		
	Test Data	Limits	Result
400.025MHz	9.538KHz	11.25 KHz	Pass
453.225MHz	9.446KHz	11.25 KHz	Pass
454.025MHz	9.970KHz	11.25 KHz	Pass
479.975MHz	9.470KHz	11.25 KHz	Pass

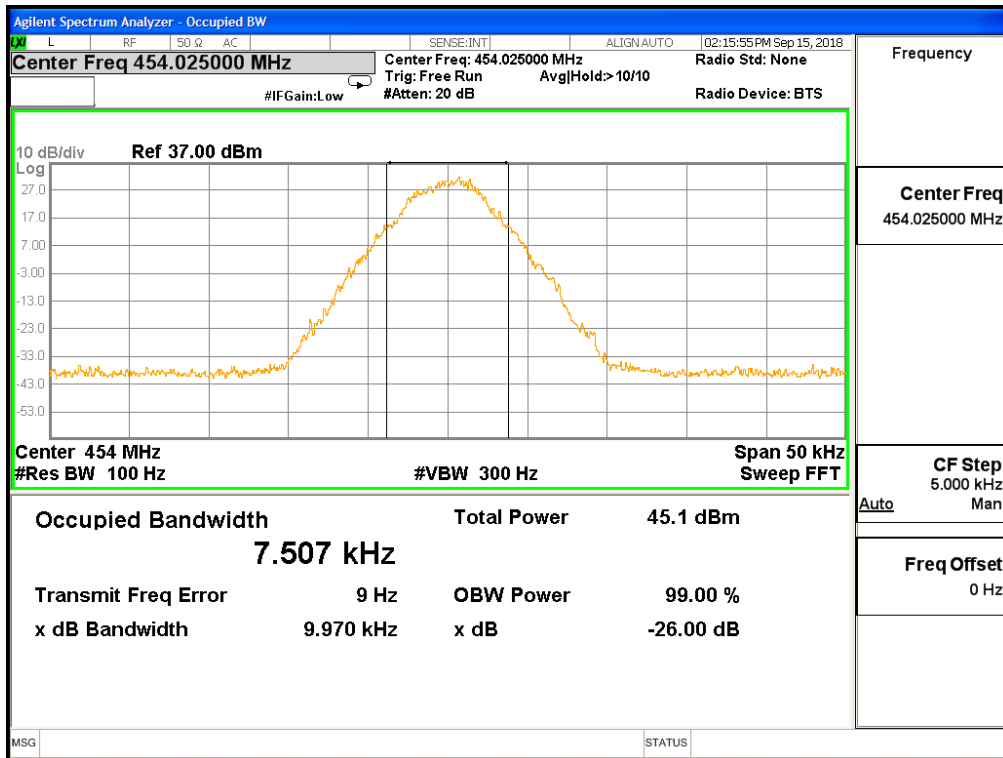
Occupied bandwidth of Bottom Channel (Maximum) -6W



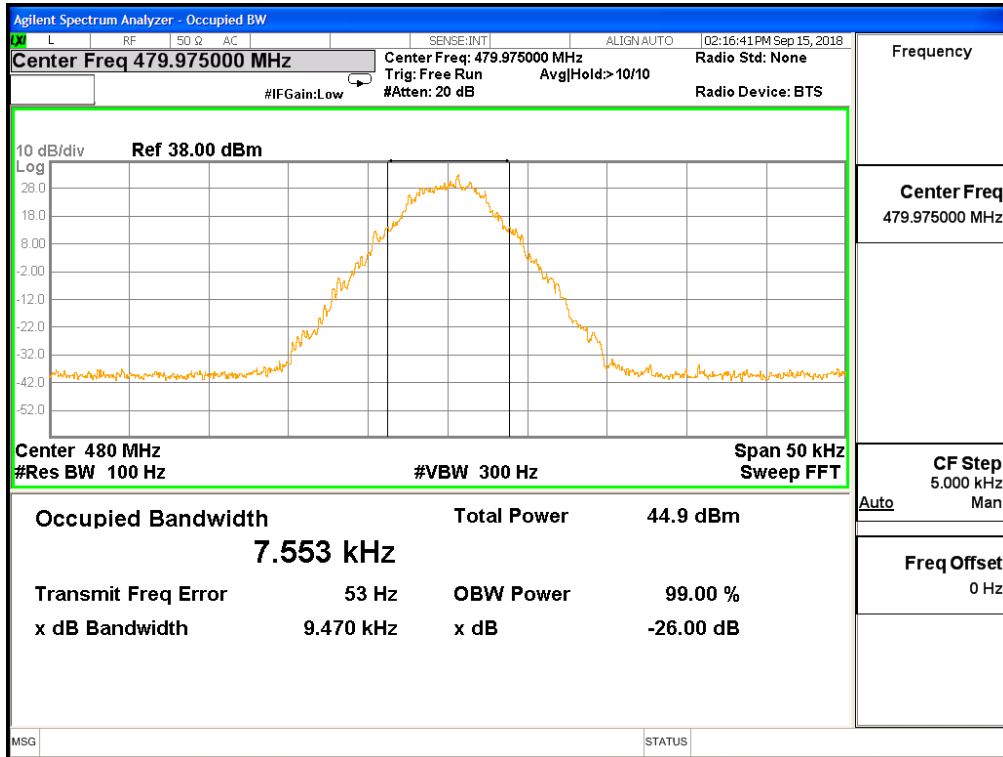
Occupied bandwidth of Middle Channel (Maximum)-6W



Occupied bandwidth of Middle Channel (Maximum)-6W



Occupied bandwidth of Top Channel (Maximum)-6W



7. UNWANTED RADIATION

7.1 PROVISIONS APPLICABLE

8.1.1 According to FCC §2.1049, §22.359 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 f_0 to 5.625 KHz removed from f_0 : Zero dB.
- (2). On any frequency removed from the center of the authorized bandwidth by a displacement Frequency (f_d in KHz) f_0 of more than 5.625 KHz but no more than 12.5 KHz: At least $7.27(f_d - 2.88 \text{ KHz})$ dB
- (3). On any frequency removed from the center of the authorized bandwidth by a displacement Frequency (f_d in KHz) f_0 of more than 12.5 KHz: At least $50 + 10 \log(P)$ dB or 70 dB, whichever is lesser attenuation.

7.2 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 then 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.

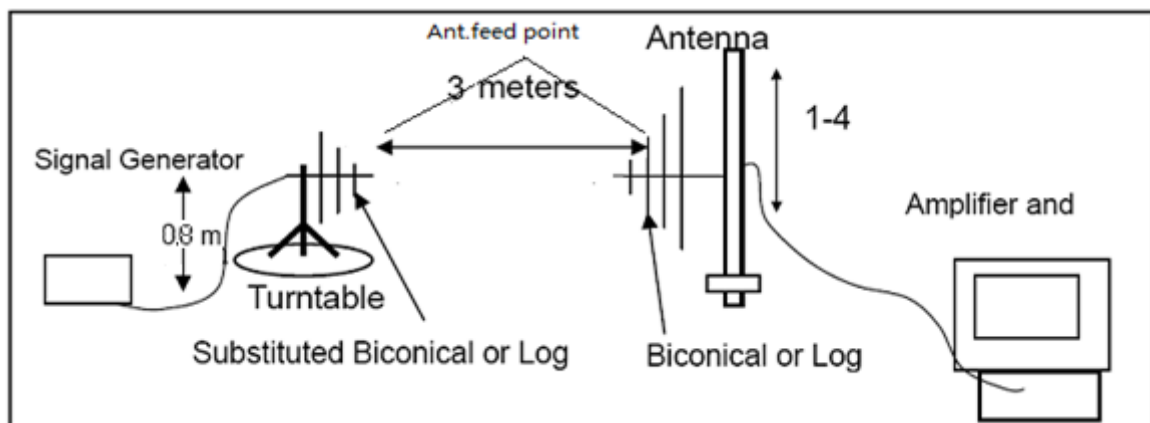
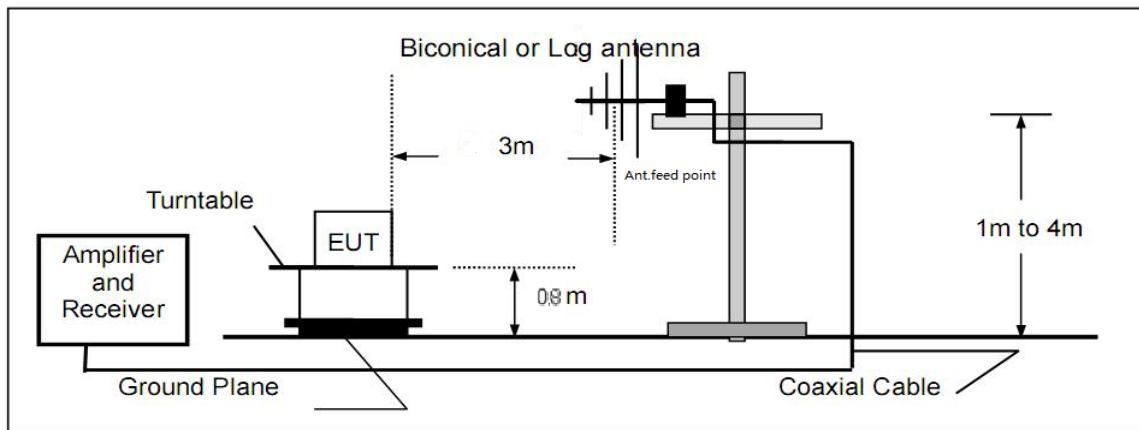
(16)The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

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

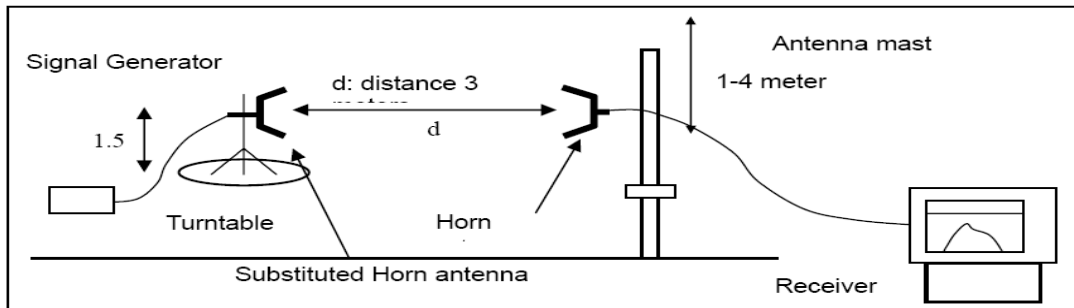
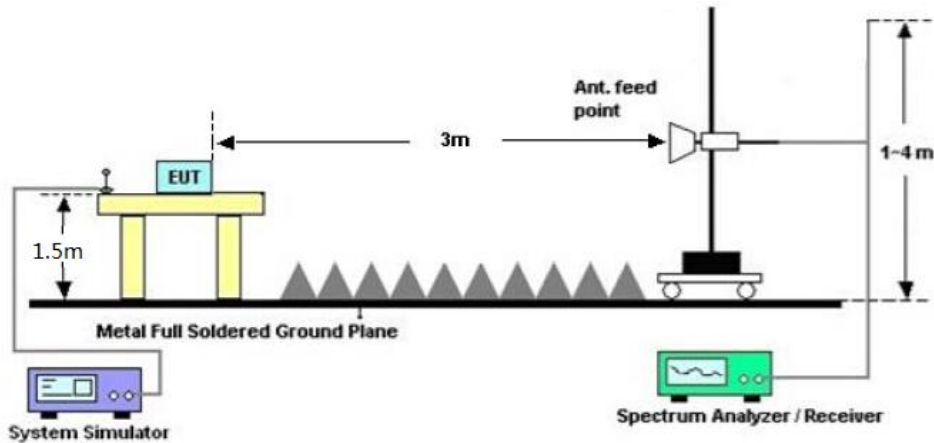
7.3 TEST SETUP BLOCK DIAGRAM

SUBSTITUTION METHOD: (Radiated Emissions)

Radiated Below 1GHz



Radiated Above 1 GHz



7.4 MEASUREMENT RESULTS:

Applicable Standard

FCC §2.1053, §22.359 and §90.210

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

Frequency (f_d 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.

$$EIRP = \text{“Read Value”} + \text{Measured substitution value} + 2.15.$$

Limit: At least $50+10 \log (P) = 50+10 \log (7) = 58.45$ (dB)—7W

At least $50+10 \log (P) = 50+10 \log (6) = 57.78$ (dB)—6W

At least $50+10 \log (P) = 50+10 \log (0.2) = 43.01$ (dB)—0.2W

VHF:

Analog:

Measurement Result for 12.5 KHz Channel Separation @ 136.025MHz-7W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
136.025	H	0		pass
272.050	H	70.42	58.45	pass
408.08	H	70.53	58.45	pass
544.100	H	72.34	58.45	pass
680.125	H	73.71	58.45	pass
816.150	H	74.52	58.45	pass
952.175	H	76.46	58.45	pass
1088.200	H	81.74	58.45	pass
1224.225	H	82.23	58.45	pass
1360.250	H	82.74	58.45	pass

Emission Frequency (MHz)	Ant. Polarity(H/H)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
136.025	V	0		pass
272.050	V	70.09	58.45	pass
408.08	V	72.38	58.45	pass
544.100	V	72.84	58.45	pass
680.125	V	70.53	58.45	pass
816.150	V	74.18	58.45	pass
952.175	V	76.74	58.45	pass
1088.200	V	75.28	58.45	pass
1224.225	V	78.86	58.45	pass
1360.250	V	79.53	58.45	pass

Measurement Result for 12.5 KHz Channel Separation @ 151.850MHz-7W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
151.850	H	0		pass
303.700	H	69.45	58.45	pass
455.550	H	70.23	58.45	pass
607.400	H	70.86	58.45	pass
759.250	H	73.67	58.45	pass
911.100	H	76.86	58.45	pass
1062.950	H	77.34	58.45	pass
1214.800	H	78.18	58.45	pass
1366.650	H	81.86	58.45	pass
1518.500	H	80.34	58.45	pass

Emission Frequency (MHz)	Ant. Polarity(H/H)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
151.850	V	0		pass
303.700	V	70.86	58.45	pass
455.550	V	70.16	58.45	pass
607.400	V	70.23	58.45	pass
759.250	V	73.85	58.45	pass
911.100	V	75.23	58.45	pass
1062.950	V	78.52	58.45	pass
1214.800	V	77.69	58.45	pass
1366.650	V	82.34	58.45	pass
1518.500	V	81.93	58.45	pass

Measurement Result for 12.5 KHz Channel Separation @ 155.025MHz-7W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
155.025	H	0		pass
310.050	H	69.75	58.45	pass
465.075	H	70.20	58.45	pass
620.100	H	71.23	58.45	pass
775.125	H	72.34	58.45	pass
930.150	H	75.73	58.45	pass
1085.175	H	78.41	58.45	pass
1240.200	H	73.73	58.45	pass
1395.225	H	81.64	58.45	pass
1550.250	H	81.32	58.45	pass

Emission Frequency (MHz)	Ant. Polarity(H/H)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
155.025	V	0		pass
310.050	V	69.46	58.45	pass
465.075	V	69.41	58.45	pass
620.100	V	71.53	58.45	pass
775.125	V	74.23	58.45	pass
930.150	V	76.53	58.45	pass
1085.175	V	77.85	58.45	pass
1240.200	V	79.53	58.45	pass
1395.225	V	80.54	58.45	pass
1550.250	V	80.75	58.45	pass

Measurement Result for 12.5 KHz Channel Separation @ 161.610MHz-7W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
161.610	H	0		pass
323.220	H	70.34	58.45	pass
484.83	H	71.38	58.45	pass
646.440	H	72.83	58.45	pass
808.050	H	73.12	58.45	pass
969.660	H	73.97	58.45	pass
1131.270	H	75.64	58.45	pass
1292.880	H	80.93	58.45	pass
1454.490	H	81.75	58.45	pass
1616.100	H	80.97	58.45	pass

Emission Frequency (MHz)	Ant. Polarity(H/H)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
161.610	V	0		pass
323.220	V	70.92	58.45	pass
484.83	V	70.17	58.45	pass
646.440	V	72.57	58.45	pass
808.050	V	71.45	58.45	pass
969.660	V	73.38	58.45	pass
1131.270	V	75.54	58.45	pass
1292.880	V	74.18	58.45	pass
1454.490	V	78.83	58.45	pass
1616.100	V	78.23	58.45	pass

Measurement Result for 12.5 KHz Channel Separation @ 173.975MHz-7W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
173.975	H	0		pass
347.950	H	71.57	58.45	pass
521.925	H	71.28	58.45	pass
695.900	H	72.16	58.45	pass
869.875	H	75.83	58.45	pass
1043.850	H	74.96	58.45	pass
1217.825	H	78.29	58.45	pass
1391.800	H	77.52	58.45	pass
1565.775	H	80.16	58.45	pass
1739.750	H	81.46	58.45	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
173.975	V	0		pass
347.950	V	70.18	58.45	pass
521.925	V	71.75	58.45	pass
695.900	V	75.82	58.45	pass
869.875	V	74.75	58.45	pass
1043.850	V	76.16	58.45	pass
1217.825	V	77.42	58.45	pass
1391.800	V	79.36	58.45	pass
1565.775	V	80.57	58.45	pass
1739.750	V	81.55	58.45	pass

Measurement Result for 12.5 KHz Channel Separation @ 136.025MHz-0.2W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
136.025	H	0		pass
272.050	H	71.17	43.01	pass
408.08	H	70.36	43.01	pass
544.100	H	73.85	43.01	pass
680.125	H	75.42	43.01	pass
816.150	H	74.86	43.01	pass
952.175	H	76.07	43.01	pass
1088.200	H	79.14	43.01	pass
1224.225	H	80.74	43.01	pass
1360.250	H	81.49	43.01	pass

Emission Frequency (MHz)	Ant. Polarity(H/H)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
136.025	V	0		pass
272.050	V	70.71	43.01	pass
408.08	V	71.48	43.01	pass
544.100	V	73.13	43.01	pass
680.125	V	74.57	43.01	pass
816.150	V	76.38	43.01	pass
952.175	V	77.19	43.01	pass
1088.200	V	78.58	43.01	pass
1224.225	V	80.14	43.01	pass
1360.250	V	81.75	43.01	pass

Measurement Result for 12.5 KHz Channel Separation @ 151.850MHz-0.2W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
151.850	H	0		pass
303.700	H	69.29	43.01	pass
455.550	H	70.64	43.01	pass
607.400	H	71.23	43.01	pass
759.250	H	72.73	43.01	pass
911.100	H	75.15	43.01	pass
1062.950	H	78.34	43.01	pass
1214.800	H	79.74	43.01	pass
1366.650	H	81.52	43.01	pass
1518.500	H	80.85	43.01	pass

Emission Frequency (MHz)	Ant. Polarity(H/H)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
151.85	V	0		pass
303.7	V	70.75	43.01	pass
455.55	V	71.86	43.01	pass
607.4	V	73.43	43.01	pass
759.25	V	73.12	43.01	pass
911.1	V	75.64	43.01	pass
1062.95	V	76.16	43.01	pass
1214.8	V	77.71	43.01	pass
1366.65	V	78.44	43.01	pass
1518.5	V	80.28	43.01	pass

Measurement Result for 12.5 KHz Channel Separation @ 155.025MHz-0.2W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
155.025	H	0		pass
310.050	H	70.12	43.01	pass
465.075	H	70.86	43.01	pass
620.100	H	71.36	43.01	pass
775.125	H	73.59	43.01	pass
930.150	H	76.12	43.01	pass
1085.175	H	77.75	43.01	pass
1240.200	H	80.05	43.01	pass
1395.225	H	81.85	43.01	pass
1550.250	H	81.75	43.01	pass

Emission Frequency (MHz)	Ant. Polarity(H/H)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
155.025	V	0		pass
310.050	V	70.84	43.01	pass
465.075	V	71.23	43.01	pass
620.100	V	73.43	43.01	pass
775.125	V	74.11	43.01	pass
930.150	V	76.06	43.01	pass
1085.175	V	75.49	43.01	pass
1240.200	V	79.52	43.01	pass
1395.225	V	80.17	43.01	pass
1550.250	V	81.57	43.01	pass

Measurement Result for 12.5 KHz Channel Separation @ 161.610MHz-0.2W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
161.610	H	0		pass
323.220	H	71.38	43.01	pass
484.830	H	72.18	43.01	pass
646.440	H	73.09	43.01	pass
808.050	H	76.22	43.01	pass
969.660	H	74.17	43.01	pass
1131.270	H	79.64	43.01	pass
1292.880	H	78.36	43.01	pass
1454.490	H	80.19	43.01	pass
1616.100	H	81.65	43.01	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
173.975	V	0		pass
347.950	V	70.95	43.01	pass
521.925	V	72.23	43.01	pass
695.900	V	73.18	43.01	pass
869.875	V	75.23	43.01	pass
1043.850	V	76.64	43.01	pass
1217.825	V	77.18	43.01	pass
1391.800	V	79.09	43.01	pass
1565.775	V	81.11	43.01	pass
1739.750	V	82.28	43.01	pass

Measurement Result for 12.5 KHz Channel Separation @ 173.975MHz-0.2W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
173.975	H	0		pass
347.950	H	71.85	43.01	pass
521.925	H	72.21	43.01	pass
695.900	H	74.86	43.01	pass
869.875	H	75.12	43.01	pass
1043.850	H	76.17	43.01	pass
1217.825	H	78.49	43.01	pass
1391.800	H	79.15	43.01	pass
1565.775	H	80.28	43.01	pass
1739.750	H	80.17	43.01	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
173.975	V	0		pass
347.950	V	70.34	43.01	pass
521.925	V	72.15	43.01	pass
695.900	V	73.27	43.01	pass
869.875	V	75.36	43.01	pass
1043.850	V	76.86	43.01	pass
1217.825	V	77.13	43.01	pass
1391.800	V	79.75	43.01	pass
1565.775	V	81.97	43.01	pass
1739.750	V	82.83	43.01	pass

Digital:**Measurement Result for 12.5 KHz Channel Separation @ 136.025MHz-7W**

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
136.025	H	0		pass
272.050	H	69.16	58.45	pass
408.08	H	71.45	58.45	pass
544.100	H	76.72	58.45	pass
680.125	H	72.17	58.45	pass
816.150	H	74.45	58.45	pass
952.175	H	75.86	58.45	pass
1088.200	H	81.64	58.45	pass
1224.225	H	80.17	58.45	pass
1360.250	H	81.38	58.45	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
136.025	V	0		pass
272.050	V	71.73	58.45	pass
408.08	V	70.19	58.45	pass
544.100	V	72.33	58.45	pass
680.125	V	73.75	58.45	pass
816.150	V	74.23	58.45	pass
952.175	V	75.13	58.45	pass
1088.200	V	78.86	58.45	pass
1224.225	V	80.44	58.45	pass
1360.250	V	80.28	58.45	pass

Measurement Result for 12.5 KHz Channel Separation @ 151.850MHz-7W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
151.850	H	0		pass
303.700	H	70.19	58.45	pass
455.55	H	71.22	58.45	pass
607.400	H	73.88	58.45	pass
759.250	H	72.28	58.45	pass
911.100	H	74.61	58.45	pass
1062.950	H	75.11	58.45	pass
1214.800	H	81.24	58.45	pass
1366.650	H	80.52	58.45	pass
1518.500	H	81.64	58.45	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
151.850	V	0		pass
303.700	V	71.12	58.45	pass
455.55	V	70.64	58.45	pass
607.400	V	72.52	58.45	pass
759.250	V	72.47	58.45	pass
911.100	V	74.12	58.45	pass
1062.950	V	75.34	58.45	pass
1214.800	V	77.73	58.45	pass
1366.650	V	79.11	58.45	pass
1518.500	V	81.78	58.45	pass

Measurement Result for 12.5 KHz Channel Separation @ 155.025MHz-7W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
155.025	H	0		pass
310.050	H	71.17	58.45	pass
465.075	H	71.08	58.45	pass
620.100	H	72.37	58.45	pass
775.125	H	75.92	58.45	pass
930.150	H	76.75	58.45	pass
1085.175	H	78.11	58.45	pass
1240.200	H	79.45	58.45	pass
1395.225	H	80.75	58.45	pass
1550.250	H	80.22	58.45	pass

Emission Frequency (MHz)	Ant. Polarity(H/H)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
155.025	V	0		pass
310.050	V	69.75	58.45	pass
465.08	V	70.86	58.45	pass
620.100	V	71.17	58.45	pass
775.125	V	70.33	58.45	pass
930.150	V	71.64	58.45	pass
1085.175	V	75.86	58.45	pass
1240.200	V	77.11	58.45	pass
1395.225	V	78.64	58.45	pass
1550.250	V	80.62	58.45	pass

Measurement Result for 12.5 KHz Channel Separation @ 161.61MHz-7W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
161.610	H	0		pass
323.220	H	69.18	58.45	pass
484.83	H	71.64	58.45	pass
646.440	H	72.54	58.45	pass
808.050	H	71.19	58.45	pass
969.660	H	73.55	58.45	pass
1131.270	H	77.14	58.45	pass
1292.880	H	80.65	58.45	pass
1454.490	H	81.23	58.45	pass
1616.100	H	80.17	58.45	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
161.610	V	0		pass
323.220	V	70.85	58.45	pass
484.83	V	70.91	58.45	pass
646.440	V	71.34	58.45	pass
808.050	V	72.57	58.45	pass
969.660	V	73.16	58.45	pass
1131.270	V	76.22	58.45	pass
1292.880	V	77.75	58.45	pass
1454.490	V	81.12	58.45	pass
1616.100	V	81.09	58.45	pass