TEST REPORT

Dt&C Co., Ltd.
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Tel : 031-321-2664, Fax : 031-321-1664

1. Report No : DRTFCC2302-0010

2. Customer

• Name (FCC) : LG Electronics USA

• Address (FCC) : 111 Sylvan Avenue North Building Englewood Cliffs New Jersey United States 07632

3. Use of Report : FCC Certification

4. Product Name / Model Name : NAD module / TM15FNNATY0
FCC ID : BEJTM15FNNATY0

5. FCC Regulation(s): Part 27
Test Method Used : KDB971168 D01v03, ANSI/TIA-603-E-2016, ANSI C63.26-2015

6. Date of Test : 2022.12.16 ~ 2023.02.23

7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

8. Testing Environment : See appended test report.

9. Test Result : Refer to the attached test result.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test report is not related to KOLAS accreditation.

Affirmation	Tested by Name : JaeHyeok Bang (Signature)	Technical Manager Name : JaeJin Lee (Signature)

2023 . 02 . 24 .

Dt&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

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Test Report Version

Test Report No.	Date	Description	Revised by	Reviewed by
DRTFCC2302-0010	Feb. 24, 2023	Initial issue	JaeHyeok Bang	JaeJin Lee

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1. GENERAL INFORMATION

Equipment Class	PCS Licensed Transmitter (PCB)
Product Name	NAD module
Model Name	TM15FNNATY0
Add Model Name	-
PMN(Product Marketing Name)	TM15FNNATY0
FVIN(Firmware Version Identification Number)	5G.NAD.06a
EUT Serial Number	No specified
Supplying power	DC 3.90 V
Waveform	CP-OFDM, DFT-S-OFDM
Modulation type	π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
Channel Bandwidth(MHz)	100, 90, 80, 60, 50, 40, 30, 20
Antenna Information	Antenna Type: PIFA Antenna Gain(including path loss between conducted test feeding point and antenna feeding point): -1.13 dBi (n77: 3 450 ~ 3 550 MHz), -2.36 dBi (n77: 3 700 ~ 3 980 MHz)

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3450 ~ 3550 MHz band

NR Frequency Band	Channel Bandwidth (MHz)	Modulation	TX Frequency (MHz)	Emission Designator	Conducted Output Power		EIRP	
					Max power (dBm)	Max power (W)	Max power (dBm)	Max power (W)
n77	100	π/2 BPSK	3 500.01	96M2G7D	23.47	0.222	21.62	0.145
n77	100	QPSK	3 500.01	96M3G7D	23.49	0.223	21.19	0.131
n77	100	16QAM	3 500.01	96M3W7D	22.58	0.181	20.59	0.114
n77	100	64QAM	3 500.01	96M2W7D	21.18	0.131	19.48	0.089
n77	100	256QAM	3 500.01	96M5W7D	18.98	0.079	18.14	0.065
n77	90	π/2 BPSK	3 495.00 ~ 3 504.99	85M6G7D	23.45	0.221	21.58	0.144
n77	90	QPSK	3 495.00 ~ 3 504.99	85M7G7D	23.50	0.224	21.21	0.132
n77	90	16QAM	3 495.00 ~ 3 504.99	85M5W7D	22.36	0.172	20.77	0.119
n77	90	64QAM	3 495.00 ~ 3 504.99	86M8W7D	21.19	0.132	19.12	0.082
n77	90	256QAM	3 495.00 ~ 3 504.99	86M8W7D	19.00	0.079	17.98	0.063
n77	80	π/2 BPSK	3 490.02 ~ 3 510.00	77M0G7D	23.50	0.224	21.52	0.142
n77	80	QPSK	3 490.02 ~ 3 510.00	77M1G7D	23.49	0.223	20.97	0.125
n77	80	16QAM	3 490.02 ~ 3 510.00	77M1W7D	22.56	0.180	20.59	0.115
n77	80	64QAM	3 490.02 ~ 3 510.00	77M0W7D	20.97	0.125	19.44	0.088
n77	80	256QAM	3 490.02 ~ 3 510.00	77M0W7D	18.89	0.077	17.59	0.057
n77	60	π/2 BPSK	3 480.00 ~ 3 519.99	57M9G7D	23.54	0.226	21.57	0.143
n77	60	QPSK	3 480.00 ~ 3 519.99	57M9G7D	23.48	0.223	21.30	0.135
n77	60	16QAM	3 480.00 ~ 3 519.99	57M9W7D	22.63	0.183	20.12	0.103
n77	60	64QAM	3 480.00 ~ 3 519.99	57M8W7D	20.95	0.124	19.46	0.088
n77	60	256QAM	3 480.00 ~ 3 519.99	57M8W7D	19.26	0.084	17.96	0.063
n77	50	π/2 BPSK	3 475.02 ~ 3 525.00	45M6G7D	23.46	0.222	21.55	0.143
n77	50	QPSK	3 475.02 ~ 3 525.00	45M8G7D	23.46	0.222	21.05	0.127
n77	50	16QAM	3 475.02 ~ 3 525.00	45M6W7D	22.44	0.175	20.64	0.116
n77	50	64QAM	3 475.02 ~ 3 525.00	45M7W7D	21.03	0.127	19.58	0.091
n77	50	256QAM	3 475.02 ~ 3 525.00	45M8W7D	18.82	0.076	18.00	0.063
n77	40	π/2 BPSK	3 470.01 ~ 3 529.98	35M7G7D	23.57	0.228	22.05	0.160
n77	40	QPSK	3 470.01 ~ 3 529.98	35M7G7D	23.62	0.230	21.46	0.140
n77	40	16QAM	3 470.01 ~ 3 529.98	35M7W7D	22.60	0.182	21.08	0.128
n77	40	64QAM	3 470.01 ~ 3 529.98	35M7W7D	21.24	0.133	19.29	0.085
n77	40	256QAM	3 470.01 ~ 3 529.98	35M7W7D	19.20	0.083	17.93	0.062
n77	30	π/2 BPSK	3 465.00 ~ 3 534.99	26M8G7D	23.57	0.228	21.17	0.131
n77	30	QPSK	3 465.00 ~ 3 534.99	26M8G7D	23.48	0.223	20.85	0.122
n77	30	16QAM	3 465.00 ~ 3 534.99	26M8W7D	22.66	0.185	20.45	0.111
n77	30	64QAM	3 465.00 ~ 3 534.99	26M8W7D	21.08	0.128	19.23	0.084
n77	30	256QAM	3 465.00 ~ 3 534.99	26M8W7D	19.07	0.081	17.67	0.058
n77	20	π/2 BPSK	3 460.01 ~ 3 540.00	17M9G7D	23.56	0.227	21.23	0.133
n77	20	QPSK	3 460.01 ~ 3 540.00	18M3G7D	23.60	0.229	20.61	0.115
n77	20	16QAM	3 460.01 ~ 3 540.00	17M9W7D	22.45	0.176	20.08	0.102
n77	20	64QAM	3 460.01 ~ 3 540.00	17M9W7D	21.24	0.133	19.01	0.080
n77	20	256QAM	3 460.01 ~ 3 540.00	17M9W7D	19.11	0.081	17.75	0.060

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3700 ~ 3980 MHz band

NR Frequency Band	Channel Bandwidth (MHz)	Modulation	TX Frequency (MHz)	Emission Designator	Conducted Output Power		EIRP	
					Max power (dBm)	Max power (W)	Max power (dBm)	Max power (W)
n77	100	π/2 BPSK	3 750.00 ~ 3 930.00	96M2G7D	23.65	0.232	18.33	0.068
n77	100	QPSK	3 750.00 ~ 3 930.00	96M3G7D	23.59	0.229	17.98	0.063
n77	100	16QAM	3 750.00 ~ 3 930.00	96M4W7D	22.49	0.177	17.48	0.056
n77	100	64QAM	3 750.00 ~ 3930.00	96M2W7D	21.28	0.134	16.61	0.046
n77	100	256QAM	3 750.00 ~ 3 930.00	96M8W7D	19.13	0.082	14.69	0.029
n77	90	π/2 BPSK	3 745.02 ~ 3 934.98	89M5G7D	23.47	0.222	19.90	0.098
n77	90	QPSK	3 745.02 ~ 3 934.98	85M6G7D	23.40	0.219	19.55	0.090
n77	90	16QAM	3 745.02 ~ 3 934.98	85M4W7D	22.36	0.172	18.48	0.070
n77	90	64QAM	3 745.02 ~ 3 934.98	85M5W7D	21.14	0.130	17.35	0.054
n77	90	256QAM	3 745.02 ~ 3 934.98	85M8W7D	18.91	0.078	15.93	0.039
n77	80	π/2 BPSK	3 740.01 ~ 3 939.99	76M9G7D	23.50	0.224	19.32	0.086
n77	80	QPSK	3 740.01 ~ 3 939.99	77M1G7D	23.44	0.221	18.75	0.075
n77	80	16QAM	3 740.01 ~ 3 939.99	77M0W7D	22.51	0.178	18.47	0.070
n77	80	64QAM	3 740.01 ~ 3 939.99	77M0W7D	20.90	0.123	17.21	0.053
n77	80	256QAM	3 740.01 ~ 3 939.99	77M1W7D	19.08	0.081	15.78	0.038
n77	60	π/2 BPSK	3 730.02 ~ 3 949.98	57M7G7D	23.53	0.225	18.18	0.066
n77	60	QPSK	3 730.02 ~ 3 949.98	57M8G7D	23.52	0.225	17.85	0.061
n77	60	16QAM	3 730.02 ~ 3 949.98	57M8W7D	22.41	0.174	17.46	0.056
n77	60	64QAM	3 730.02 ~ 3 949.98	57M8W7D	20.96	0.125	17.13	0.052
n77	60	256QAM	3 730.02 ~ 3 949.98	57M7W7D	19.27	0.085	15.78	0.038
n77	50	π/2 BPSK	3 725.01 ~ 3 954.99	45M6G7D	23.56	0.227	18.90	0.078
n77	50	QPSK	3 725.01 ~ 3 954.99	45M7G7D	23.62	0.230	18.50	0.071
n77	50	16QAM	3 725.01 ~ 3 954.99	45M7W7D	22.64	0.184	18.37	0.069
n77	50	64QAM	3 725.01 ~ 3 954.99	45M7W7D	21.21	0.132	17.33	0.054
n77	50	256QAM	3 725.01 ~ 3 954.99	45M7W7D	19.05	0.080	14.41	0.028
n77	40	π/2 BPSK	3 720.00 ~ 3 960.00	35M9G7D	23.53	0.225	19.01	0.080
n77	40	QPSK	3 720.00 ~ 3 960.00	35M9G7D	23.68	0.233	18.26	0.067
n77	40	16QAM	3 720.00 ~ 3 960.00	35M7W7D	22.57	0.181	17.93	0.062
n77	40	64QAM	3 720.00 ~ 3 960.00	35M7W7D	21.16	0.131	17.49	0.056
n77	40	256QAM	3 720.00 ~ 3 960.00	35M7W7D	19.56	0.090	15.67	0.037
n77	30	π/2 BPSK	3 715.02 ~ 3 964.98	26M8G7D	24.34	0.272	19.10	0.081
n77	30	QPSK	3 715.02 ~ 3 964.98	27M1G7D	24.13	0.259	18.91	0.078
n77	30	16QAM	3 715.02 ~ 3 964.98	26M8W7D	22.82	0.191	18.86	0.077
n77	30	64QAM	3 715.02 ~ 3 964.98	26M8W7D	21.41	0.138	17.76	0.060
n77	30	256QAM	3 715.02 ~ 3 964.98	26M8W7D	19.17	0.083	15.31	0.034
n77	20	π/2 BPSK	3 710.01 ~ 3 969.99	17M8G7D	23.75	0.237	19.12	0.082
n77	20	QPSK	3 710.01 ~ 3 969.99	17M9G7D	23.47	0.222	18.43	0.070
n77	20	16QAM	3 710.01 ~ 3 969.99	17M9W7D	22.52	0.179	17.82	0.061
n77	20	64QAM	3 710.01 ~ 3 969.99	17M9W7D	20.92	0.124	17.00	0.050
n77	20	256QAM	3 710.01 ~ 3 969.99	17M9W7D	18.90	0.078	15.18	0.033

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2. INTRODUCTION

2.1. EUT DESCRIPTION

This device supports the following capabilities:

Multi-Band LTE, LTE up-link carrier aggregation and 5G NR(FR1)

5G NR supports SCS 15 kHz for FDD Band and SCS 30 kHz for TDD Band.

2.2. TESTING ENVIRONMENT

Ambient Condition	
▪ Temperature	+21 ℃ ~ +25 ℃
▪ Relative Humidity	42 % ~ 46 %

2.3. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.4. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with requirements of ANSI C 63.4-2014. All measurement uncertainty values are shown with a coverage factor of *k* = 2 to indicate a 95 % level of confidence.

Parameter	Measurement uncertainty
Radiated Disturbance (Below 1 GHz)	4.8 dB (The confidence level is about 95 %, k = 2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.0 dB (The confidence level is about 95 %, k = 2)
Radiated Disturbance (Above 18 GHz)	5.2 dB (The confidence level is about 95 %, k = 2)

2.5. TEST FACILITY

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The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042.
The test site complies with the requirements of Part 2.948 according to ANSI C63.4-2014.

- FCC & IC MRA Designation No. : KR0034

- ISED#: 5740A

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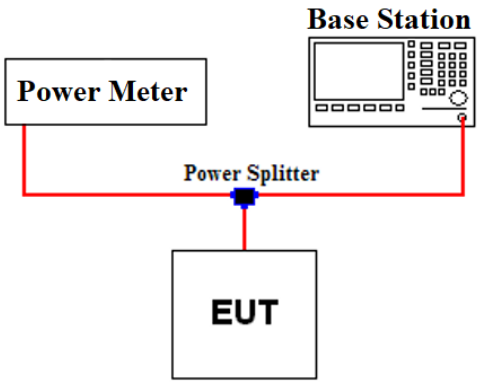
3. DESCRIPTION OF TESTS

3.1. Maximum Output Power

Conducted Output Power

Test Set-up



Limit

- NA

Test Procedure

- **KDB971168 D01v03 - Section 5.2.4**
- **ANSI C63.26-2015 – Section 5.2.4.2**

When an average power meter is used to perform RF output power measurements, the fundamental condition that measurements be performed only over durations of active transmissions at maximum output power level applies. Thus, an average power meter can always be used to perform the measurement when the EUT can be configured to transmit continuously.

If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98%), then the following options can be implemented to facilitate measurement of the average power with an average power meter:

a) A gated average power meter can be used to perform the measurement if the gating parameters can be adjusted such that the power is measured only during active transmission bursts at maximum output power levels.

b) A conventional average power meter with no signal gating capability can also be used if the measured burst duty cycle is constant (i.e., duty cycle variations are less than or equal to ±2%) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to [10 log (1/duty cycle)]. See 5.2.4.3.4 for guidance with respect to measuring the transmitter duty cycle.

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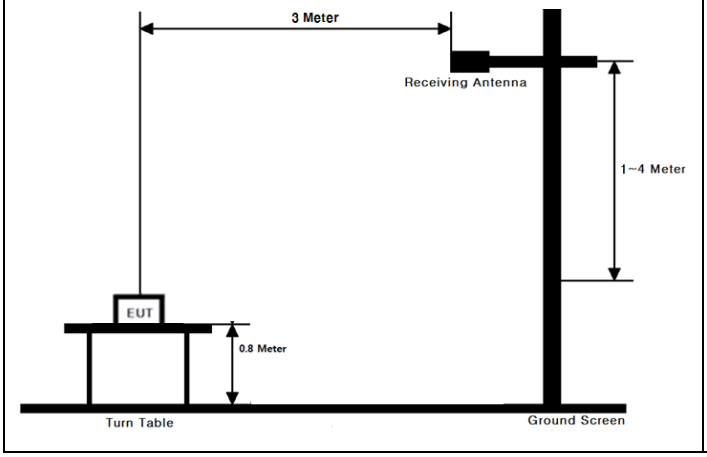
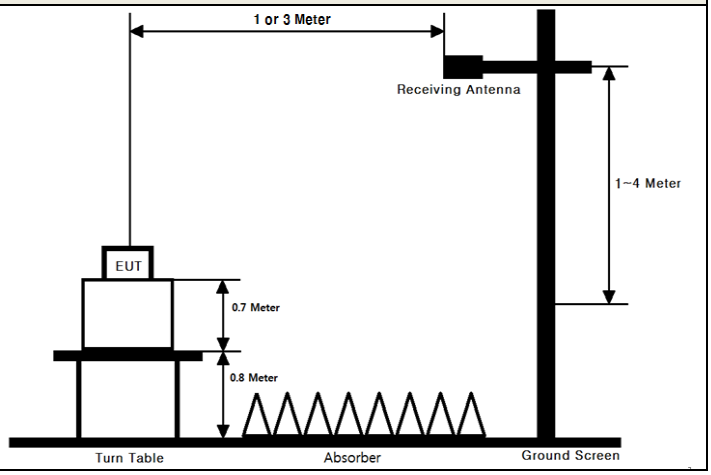
ERP or EIRP (Effective Radiated Power or Equivalent Isotropic Radiated Power)

Test Set-up

Below 1GHz	Above 1GHz
	

These measurements were performed at 3 m test site. The equipment under test is placed on a non-conductive table 0.8 or 1.5-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna. For measurements above 1GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.

Limit

3450 ~ 3550 MHz band: Mobile devices are limited to 1Watt (30 dBm) EIRP.

3700 ~ 3980 MHz band: Mobile devices are limited to 1Watt (30 dBm) EIRP.

Test Procedure

- **KDB971168 D01v03 - Section 5.4**
- **ANSI C63.26-2015 – Section 5.2.4.5, 5.2.4.4.2**
- **ANSI/TIA-603-E-2016 - Section 2.2.17**

Test setting

1. Set span to 2 x to 3 x the OBW.
2. Set RBW = 1 x to 5 x the OBW
3. Set VBW ≥ 3 x RBW.
4. Set number of points in sweep ≥ 2 × span / RBW.
5. Sweep time:
   1) Set = auto-couple, or
   2) Set ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible) measurement. Transmission period is the on and off time of the transmitter.
6. Detector = power averaging (rms).
7. Set sweep trigger to “free run”
8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.
9. By using the marker function to identify the maximum PSD instead of summing the power across the OBW.

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10. Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission. For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is a constant 25 %.

EUT duty cycle

Band	Frequency(MHz)	T_{on}(ms)	T_{on+off} (ms)	Duty cycle = T_{on} / (T_{on+off})	10 log (1/duty cycle)
n77	3500.0	1.0	5.0	0.2	7.0 dB

The receiver antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminal of the substitute antenna is measured.

The ERP/EIRP is calculated using the following formula:

ERP/EIRP = The conducted power at the substitute antenna`s terminal [dBm] + Substitute Antenna gain [dBd for ERP , dBi for EIRP]

For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference
Between the gain of the horn antenna and an isotropic antenna are taken into consideration.

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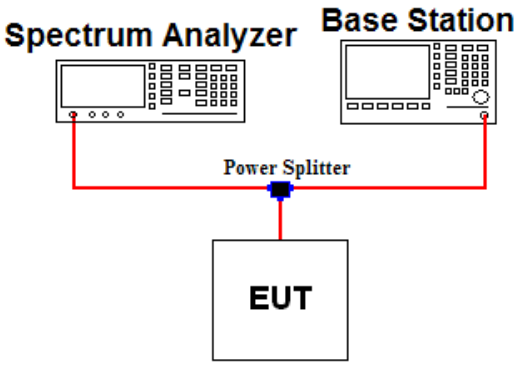
3.2. PEAK TO AVERAGE RATIO

Test set-up



Limit

3450 ~ 3550 MHz band, 3700 ~ 3980 MHz band: The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Test Procedure

- **KDB971168 D01v03 - Section 5.7.2**
- **ANSI C63.26-2015 – Section 5.2.3.4**

A peak to average ratio measurement is performed at the conducted port of the EUT.
The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The present of time the signal spends at or above the level defines the probability for that particular power level.

Test setting

The spectrum Analyzer`s CCDF measurement function is enabled.

1. Set resolution/measurement bandwidth ≥ OBW or specified reference bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Set the measurement interval as follows:
   1) For continuous transmissions, set to the greater of [10 × (number of points in sweep) × (transmission symbol period)] or 1 ms.
   2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration.
   3) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers.
4. Record the maximum PAPR level associated with a probability of 0.1 %.
5. The peak power level is calculated form the sum of the PAPR value from step d) to the measured average power.

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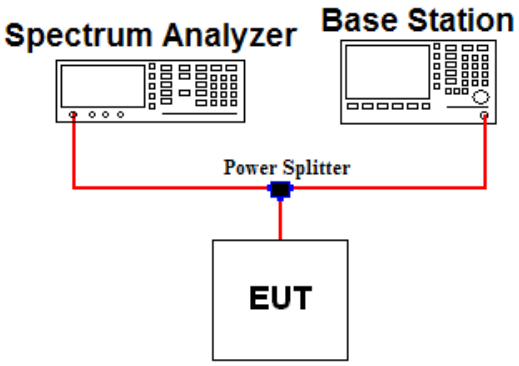
3.3. OCCUPIED BANDWIDTH

Test set-up



Limit

- NA

Test Procedure

- **KDB971168 D01v03 - Section 4.3**
- **ANSI C63.26-2015 – Section 5.4.4**

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power of a given emission.

Test setting

1. The signal analyzer`s automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 % ~ 5 % of the expected OBW & VBW ≥ 3 X RBW
3. Detector = Peak
4. Trance mode = Max hold
5. Sweep = Auto couple
6. The trace was allowed to stabilize
7. If necessary, step 2 ~ 6 were repeated after changing the RBW such that it would be within 1 % ~ 5 % of the 99 % occupied bandwidth observed in step 6.

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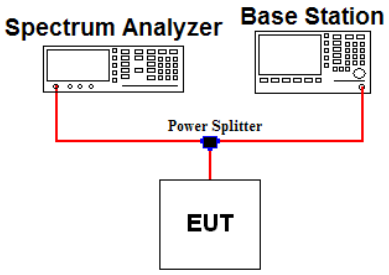
3.4. BAND EDGE EMISSIONS AT ANTENNA TERMINAL

Test set-up



Limit

- Part 27.53(n)(2), for mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz.

- Part 27.53(l)(2), for mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz.

Test Procedure

- **KDB971168 D01v03 - Section 6**
- **ANSI C63.26-2015 – Section 5.7**

All out of band emissions are measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its lowest and highest channel with all bandwidths, modulations and RB configurations.

Test setting

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW ≥ 1 % of the emission bandwidth or Specified bandwidth
4. VBW ≥ 3 X RBW
5. Detector = RMS & Trace mode = Max hold
6. Sweep time = Auto couple or 1 s for band edge
7. Number of sweep point ≥ 2 X span / RBW
8. The trace was allowed to stabilize

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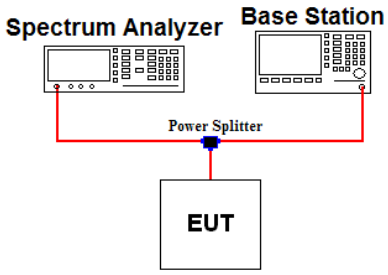
3.5. SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL

Test set-up



Limit

For mobile operations in the 3450-3550 MHz band and 3700-3980 MHz, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

Test Procedure

- **KDB971168 D01v03 - Section 6**
- **ANSI C63.26-2015 – Section 5.7**

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its low, middle, high channel with all bandwidths, modulations and RB configurations. The spectrum is scanned from 9 kHz up to a frequency including its 10^{th} harmonic.

Test setting

1. RBW = 1 MHz & VBW ≥ 3 X RBW
2. Detector = RMS & Trace mode = Max hold
3. Sweep time = Auto couple
4. Number of sweep point ≥ 2 X span / RBW
5. The trace was allowed to stabilize

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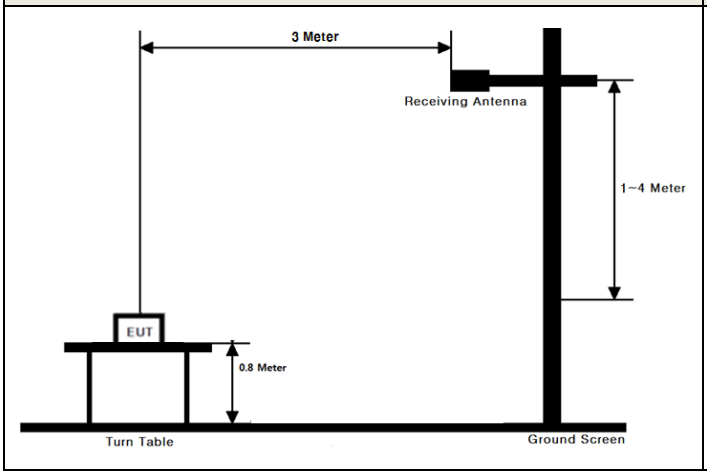
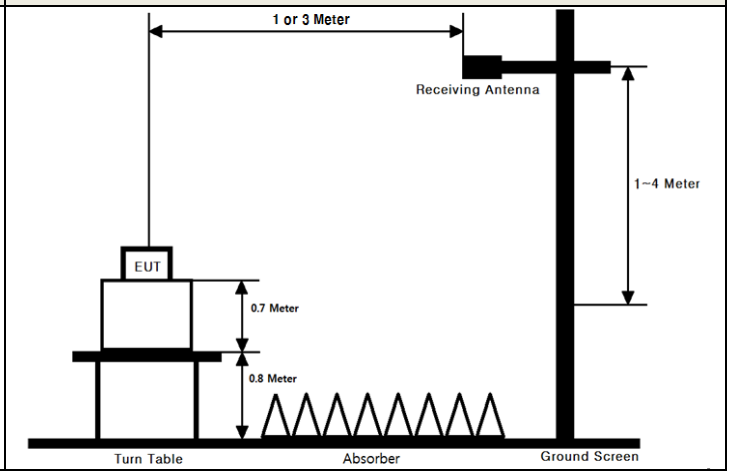
3.6. UNDESIRABLE EMISSIONS

Test Set-up

Below 1GHz	Above 1GHz
	

These measurements were performed at 3 test site. The equipment under test is placed on a non-conductive table 0.8 or 1.5 meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna. For measurements above 1 GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.

Limit

For mobile operations in the 3450-3550 MHz band and 3700-3980 MHz, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

Test Procedure

- **KDB971168 D01v03 - Section 6**
- **ANSI/TIA-603-E-2016 - Section 2.2.12**
- **ANSI C63.26-2015 – Section 5.5**

If the device cannot be configured to transmit continuously (duty cycle < 98%) and a free- running sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time > (number of points in sweep) × (transmitter period) (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by [10 log (1/duty cycle)]. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation ≤ ±2%).

Test setting

1. RBW = 1 MHz / VBW ≥ 3 X RBW
2. Detector = RMS & Trace mode = Max hold
3. Sweep time = Auto couple
4. Number of sweep point ≥ 2 X span / RBW
5. The trace was allowed to stabilize

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The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.
For radiated power measurements below 1 GHz, a half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading.
For radiated power measurements above 1 GHz, a Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. The difference between the gain of the horn and an isotropic antenna are taken into consideration.
This measurement was performed with the EUT oriented in 3 orthogonal axis.

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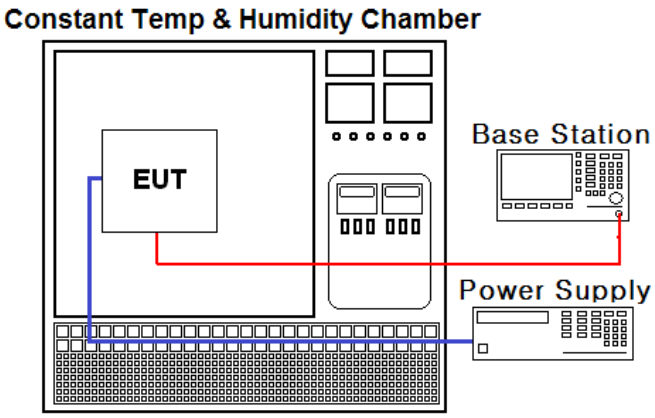
3.7. FREQUENCY STABILITY

Test Set-up



Limit

Fundamental emissions must stay within Authorized frequency block.

Test Procedure

- **KDB971168 D01v03 - Section 9**
- **ANSI C63.26-2015 – Section 5.6**

The frequency stability of the transmitter is measured by:

a.) **Temperature:**
The temperature is varied from -30 °C to +50 °C using an environmental chamber.

b.) **Primary Supply Voltage:**
The primary supply voltage is varied from 85 % to 115 % of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Time Period and Procedure:

1. The carrier frequency of the transmitter is measured at room temperature.
(20 °C to provide a reference)

2. The equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

3. Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C.
A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

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4. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal. Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	22/12/16	23/12/16	MY50410163
Spectrum Analyzer	KEYSIGHT	N9030B	22/12/16	23/12/16	MY55480168
Spectrum Analyzer	KEYSIGHT	N9030A	22/12/16	23/12/16	MY53310140
Spectrum Analyzer	Agilent Technologies	N9020A	22/06/24	23/06/24	US47360812
DC power supply	Agilent Technologies	66332A	22/06/24	23/06/24	US37474125
DC power supply	DIGITAL	DPR-303D	22/06/24	23/06/24	2090097
Multimeter	FLUKE	17B+	22/12/16	23/12/16	36390701WS
Resistive Divider	Clear Microwave	D240	22/09/27	23/09/27	1
Resistive Divider	Clear Microwave	D240	22/09/27	23/09/27	2
Temp & Humi	SJ Science	SJ-TH-S50	22/03/08	23/03/08	U5542113
Radio Communication Analyzer	KEYSIGHT	E7515B	22/06/24	23/06/24	MY60192461
Radio Communication Analyzer	KEYSIGHT	E7515B	22/12/16	23/12/16	MY58300723
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2496A MA2490A	22/12/16	23/12/16	1338004 1249303
Attenuator	Aeroflex/Weinschel	86-20-11	22/06/24	23/06/24	432
Thermohygrometer	BODYCOM	BJ5478	22/12/16	23/12/16	120612-1
Thermohygrometer	BODYCOM	BJ5478	22/12/16	23/12/16	120612-2
Signal Generator	Rohde Schwarz	SMBV100A	22/12/16	23/12/16	255571
Signal Generator	ANRITSU	MG3695C	22/12/16	23/12/16	173501
Loop Antenna	ETS-Lindgren	6502	22/12/16	24/12/16	00226186
Bilog Antenna	Schwarzbeck	VULB 9160	22/12/16	23/12/16	3362
Dipole Antenna	Schwarzbeck	UHA9105	22/12/16	24/12/16	2262
HORN ANT	ETS	3117	22/12/16	23/12/16	00140394
HORN ANT	A.H.Systems	SAS-574	22/06/24	23/06/24	155
PreAmplifier	H.P	8447D	22/12/16	23/12/16	2944A07774
PreAmplifier	Agilent	8449B	22/06/24	23/06/24	3008A02108
PreAmplifier	A.H.Systems Inc.	PAM-1840VH	22/06/24	23/06/24	163
High-pass filter	Wainwright	WHKX12-935-1000-15000-40SS	22/06/24	23/06/24	7
High-pass filter	Wainwright	WHNX5.0/26.5G-6SS	22/06/24	23/06/24	8
High-pass filter	Wainwright	WHKX6-6320-8000-26500-40CC	22/06/24	23/06/24	2
Cable	HUBER+SUHNER	SUCOFLEX100	23/01/04	24/01/04	M-1
Cable	HUBER+SUHNER	SUCOFLEX100	23/01/04	24/01/04	M-2
Cable	Junkosah	MWX241/B	23/01/04	24/01/04	M-3
Cable	Junkosah	MWX221	23/01/04	24/01/04	M-4
Cable	Junkosah	MWX221	23/01/04	24/01/04	M-5
Cable	DTNC	Cable	23/01/04	24/01/04	M-6
Cable	JUNFLON	J12J101757-00	23/01/04	24/01/04	M-7
Cable	HUBER+SUHNER	SUCOFLEX104	23/01/04	24/01/04	M-8
Cable	HUBER+SUHNER	SUCOFLEX106	23/01/04	24/01/04	M-9
Cable	Junkosah	MWX342	23/01/04	24/01/04	RFC-72
Cable	A.H.System Inc	SAC-40G-1.5	23/01/04	24/01/04	RFC-104

Note1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017.
Note2: The cable is not a regular calibration item, so it has been calibrated by Dt&C itself.

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5. SUMMARY OF TEST RESULTS

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Status Note 1
2.1046	Conducted Output Power	N/A	Conducted	C
2.1049	Occupied Bandwidth	N/A		C
27.50(k.4) 27.50(j.4)	Peak to Average Ratio	< 13 dB		C
2.1051 27.53(n) 27.53(l)	Band Edge / Conducted Spurious Emissions	< -13 dBm/MHz		C
2.1055 27.54	Frequency Stability	Fundamental emissions must stay within Authorized frequency block		C
27.50(k.3) 27.50(j.3)	Radiated Output Power	< 1 Watts max. EIRP	Radiated	C Note2
2.1053 27.53(n) 27.53(l)	Undesirable Emissions	< -13 dBm/MHz		C Note2

Note 1: **C**=Comply **NC**=Not Comply **NT**=Not Tested **NA**=Not Applicable

Note 2: This test item was performed in three orthogonal EUT positions and the worst case data was reported.

Note 3: The DFT-s-OFDM and CP-OFDM waveforms were investigated, and worst case(DFT-s-OFDM) configuration results are reported.

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6. SAMPLE CALCULATION

A. Emission Designator

NR Band n77(PI/2 BPSK)

Emission Designator = **96M2G7D**
LTE OBW = 96.202 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

NR Band n77(QPSK)

Emission Designator = **96M3G7D**
LTE OBW = 96.271 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

NR Band n77(16QAM)

Emission Designator = **96M3W7D**
LTE OBW = 96.320 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

NR Band n77(64QAM)

Emission Designator = **96M2W7D**
LTE OBW = 96.163 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

NR Band n77(256QAM)

Emission Designator = **96M5W7D**
LTE OBW = 96.482 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

B. For substitution method

1) The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1 GHz respectively above ground.
2) The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3) During the test, the turn table is rotated until the maximum signal is found.
4) Record the field strength meter's level. (ex. Spectrum reading level is -8.5 dBm)
5) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
6) Increase the signal generator output till the field strength meter's level is equal to the item (4). (ex. Signal generator level is -18.04 dBm)
7) The gain of the cable and amplifier between the signal generator and terminals of substituted antenna is 46.92 dB at test frequency.
8) Record the level at substituted antenna terminal. (ex. 28.88dBm)
9) The result is calculated as below;

EIRP(dBm) = LEVLE@ANTENNA TERMINAL + TX Antenna Gain (dBi)
ERP(dBm) = LEVLE@ANTENNA TERMINAL + TX Antenna Gain (dBd)
Where, TX Antenna Gain (dBd) = TX Antenna Gain (dBi) - 2.15 dB

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7. TEST DATA

7.1. OCCUPIED BANDWIDTH

- Plots of the EUT's Occupied Bandwidth are shown in Clause 8.1

7.2. PEAK TO AVERAGE RATIO

- Plots of the EUT's Peak- to- Average Ratio are shown in Clause 8.2

7.3. BAND EDEG EMISSIONS (Conducted)

- Plots of the EUT's Band Edge Emissions are shown in Clause 8.3

7.4. SPURIOUS AND HARMONICS EMISSIONS (Conducted)

- Plots of the EUT's Spurious Emissions are shown in Clause 8.4

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7.5. Conducted Output Power

- Test Notes

1) This is device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the below table.

7.5.1. 3 450 ~ 3 550 MHz band

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size & Allocation								
			1 RB					MID RB			Full RB
			edge left	inner left	Mid	inner right	edge right	Low	Mid	High	
100	3 500.01	π/2 BPSK	22.43	23.47	23.23	23.19	22.13	22.38	23.23	22.16	22.33
		QPSK	22.34	23.49	23.20	23.22	22.07	22.30	23.27	22.21	22.25
		16QAM	21.39	22.58	22.18	22.24	21.05	21.47	22.26	21.23	21.28
		64QAM	20.98	21.18	20.92	20.84	20.70	20.94	20.86	20.75	20.77
		256QAM	18.76	18.98	18.58	18.97	18.54	18.81	18.75	18.62	18.79
90	3 495.00	π/2 BPSK	22.33	23.45	23.19	23.25	22.15	22.42	23.29	22.24	22.33
		QPSK	22.36	23.50	23.25	23.29	22.19	22.44	23.31	22.25	22.32
		16QAM	21.28	22.36	22.14	22.17	21.07	21.41	22.32	21.20	21.33
		64QAM	21.05	21.19	20.91	20.98	20.88	20.88	20.83	20.72	20.80
		256QAM	18.88	19.00	18.70	18.83	18.69	18.84	18.75	18.62	18.76
	3 504.99	π/2 BPSK	22.25	23.22	23.04	23.16	22.06	22.25	23.14	22.19	22.20
		QPSK	22.15	23.24	23.07	23.11	22.00	22.32	23.12	22.19	22.21
		16QAM	21.20	22.34	22.17	22.19	21.09	21.20	22.09	21.14	21.23
		64QAM	20.51	20.68	20.52	20.58	20.46	20.80	20.70	20.69	20.71
		256QAM	18.50	18.62	18.47	18.51	18.40	18.74	18.95	18.64	18.75
80	3 490.02	π/2 BPSK	22.50	23.50	23.28	23.15	22.12	22.42	23.30	22.23	22.33
		QPSK	22.44	23.49	23.29	23.10	22.05	22.40	23.33	22.25	22.28
		16QAM	21.58	22.56	22.36	22.17	21.02	21.41	22.39	21.30	21.33
		64QAM	20.87	20.96	20.74	20.52	20.48	20.84	20.80	20.68	20.78
		256QAM	18.81	18.89	18.66	18.45	18.40	18.82	18.78	18.69	18.76
	3 510.00	π/2 BPSK	22.36	23.37	23.14	23.10	22.09	22.28	23.13	22.24	22.23
		QPSK	22.33	23.42	23.21	23.15	22.08	22.27	23.20	22.20	22.18
		16QAM	21.27	22.39	22.17	22.13	21.07	21.33	22.17	21.18	21.26
		64QAM	20.89	20.97	20.81	20.67	20.61	20.77	20.66	20.68	20.75
		256QAM	18.73	18.81	18.53	18.53	18.49	18.75	18.67	18.67	18.73
60	3 480.00	π/2 BPSK	22.40	23.42	23.54	23.18	22.15	22.35	23.47	22.35	22.37
		QPSK	22.40	23.40	23.43	23.16	22.15	22.36	23.48	22.31	22.33
		16QAM	21.42	22.45	22.63	22.15	21.16	21.37	22.44	21.32	21.33
		64QAM	20.84	20.84	20.95	20.61	20.57	20.87	20.95	20.84	20.76
		256QAM	19.26	19.14	19.17	18.86	18.85	18.81	18.89	18.81	18.79
	3 519.99	π/2 BPSK	22.23	23.21	23.11	23.14	22.07	22.10	23.22	22.20	22.25
		QPSK	22.22	23.18	23.12	23.15	22.05	22.15	23.23	22.23	22.25
		16QAM	21.10	22.14	22.07	22.03	21.03	21.20	22.27	21.28	21.25
		64QAM	20.89	20.92	20.94	20.81	20.78	20.63	20.68	20.72	20.72
		256QAM	18.69	18.68	18.81	18.62	18.60	18.53	18.63	18.63	18.65
50	3 475.02	π/2 BPSK	22.52	23.46	23.34	23.22	22.22	22.27	23.39	22.34	22.32
		QPSK	22.49	23.46	23.34	23.09	22.21	22.29	23.41	22.31	22.34
		16QAM	21.44	22.44	22.23	22.09	21.11	21.25	22.39	21.24	21.42
		64QAM	21.03	20.96	20.91	20.71	20.76	20.83	20.89	20.78	20.94
		256QAM	18.75	18.82	-0.80	18.51	18.53	18.74	18.79	18.77	18.82
	3 525.00	π/2 BPSK	22.19	23.07	22.99	23.18	22.18	22.12	23.10	22.29	22.11
		QPSK	22.12	23.11	22.93	23.21	22.23	22.11	23.10	22.24	22.12
		16QAM	21.16	22.17	22.03	22.25	21.22	21.13	22.11	21.21	21.13
		64QAM	20.53	20.49	20.35	20.58	20.58	20.68	20.66	20.78	20.62
		256QAM	18.53	18.47	18.35	18.59	18.59	18.57	18.53	18.72	18.63

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Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size & Allocation								
			1 RB					MID RB			Full RB
			edge left	inner left	Mid	inner right	edge right	Low	Mid	High	
40	3 470.01	π/2 BPSK	22.67	23.57	23.23	23.53	22.46	22.39	23.33	22.50	22.40
		QPSK	22.65	23.62	23.42	23.61	22.58	22.39	23.33	22.50	22.39
		16QAM	21.55	22.60	22.35	22.55	21.55	21.38	22.36	21.53	21.38
		64QAM	21.24	21.18	20.94	21.14	21.16	20.87	20.82	21.00	20.91
		256QAM	18.91	18.93	18.65	18.85	18.86	18.83	18.81	18.95	18.80
	3 500.01	π/2 BPSK	22.62	23.49	23.23	23.39	22.33	22.26	23.23	22.17	22.25
		QPSK	22.51	23.54	23.16	23.38	22.33	22.27	23.14	22.16	22.26
		16QAM	21.61	22.60	22.11	22.32	21.29	21.30	22.29	21.18	21.25
		64QAM	20.92	20.93	20.48	20.67	20.65	20.77	20.67	20.69	20.73
		256QAM	19.13	19.20	18.78	18.94	18.94	18.77	18.67	18.63	18.68
	3 529.98	π/2 BPSK	22.24	23.12	22.97	23.49	22.37	22.12	23.14	22.36	22.15
		QPSK	22.10	23.10	22.98	23.31	22.27	22.14	23.15	22.37	22.23
		16QAM	21.28	22.29	22.16	22.47	21.46	21.20	22.20	21.39	21.18
		64QAM	20.80	20.80	20.68	20.99	20.97	20.70	20.66	20.91	20.74
		256QAM	18.68	18.67	18.55	18.87	18.83	18.62	18.62	18.82	18.68
30	3 465.01	π/2 BPSK	22.45	23.42	23.25	23.57	22.33	22.41	23.36	22.45	22.37
		QPSK	22.37	23.40	23.16	23.48	22.44	22.40	23.33	22.42	22.34
		16QAM	21.63	22.58	22.31	22.66	21.64	21.39	22.36	21.42	21.34
		64QAM	20.98	20.96	20.81	21.08	21.07	20.90	20.88	20.94	20.93
		256QAM	18.97	18.99	18.68	19.06	19.07	18.79	18.74	18.80	18.84
	3 500.01	π/2 BPSK	22.49	23.17	23.05	23.32	22.19	22.32	23.28	22.26	22.28
		QPSK	22.40	23.40	23.20	23.31	22.33	22.26	23.25	22.22	22.29
		16QAM	21.25	22.26	22.14	22.20	21.21	21.27	22.28	21.18	21.31
		64QAM	20.49	20.54	20.29	20.42	20.39	20.84	20.79	20.80	20.82
		256QAM	18.70	18.67	18.53	18.58	18.59	18.76	18.74	18.71	18.79
	3 534.99	π/2 BPSK	22.32	23.34	23.27	23.54	22.29	22.23	23.16	22.28	22.15
		QPSK	22.32	23.30	23.22	23.34	22.26	22.16	23.15	22.23	22.19
		16QAM	21.19	22.14	22.18	22.20	21.22	21.08	22.15	21.26	21.14
		64QAM	20.73	20.70	20.65	20.75	20.73	20.56	20.61	20.76	20.65
		256QAM	18.26	18.27	18.27	18.36	18.33	18.56	18.63	18.74	18.66
20	3 460.01	π/2 BPSK	22.49	23.39	23.21	23.39	22.28	22.45	23.30	22.36	22.37
		QPSK	22.61	23.49	23.28	23.34	22.36	22.42	23.27	22.29	22.34
		16QAM	21.45	22.45	22.16	22.22	21.20	21.42	22.32	21.32	21.38
		64QAM	21.24	21.13	20.90	21.00	20.94	20.92	20.82	20.82	20.90
		256QAM	19.10	19.11	18.91	19.02	18.99	18.89	18.80	18.83	18.84
	3 500.01	π/2 BPSK	22.60	23.38	23.51	23.48	22.40	22.41	23.26	22.28	22.30
		QPSK	22.60	23.60	23.41	23.47	22.44	22.30	23.25	22.26	22.23
		16QAM	21.44	22.42	22.23	22.31	21.29	21.28	22.18	21.27	21.23
		64QAM	20.97	20.98	20.74	20.80	20.82	20.77	20.75	20.78	20.77
		256QAM	18.69	18.71	18.48	18.59	18.58	18.89	18.77	18.79	18.75
	3 540.00	π/2 BPSK	22.61	23.56	23.36	23.31	22.49	22.39	23.31	22.31	22.28
		QPSK	22.17	23.23	23.16	23.21	22.12	22.41	23.32	22.32	22.29
		16QAM	21.25	22.30	22.29	22.28	21.27	21.28	22.23	21.19	21.29
		64QAM	20.40	20.41	20.39	20.29	20.30	20.86	20.78	20.79	20.84
		256QAM	18.69	18.71	18.68	18.64	18.67	18.80	18.67	18.73	18.81

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7.5.2. 3 700 ~ 3 980 MHz band

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size & Allocation								
			1 RB					MID RB			Full RB
			edge left	inner left	Mid	inner right	edge right	Low	Mid	High	
100	3 750.00	π/2 BPSK	22.09	23.36	23.19	23.65	22.44	22.41	23.19	22.37	22.37
		QPSK	22.14	23.34	23.12	23.59	22.45	22.42	23.28	22.38	22.32
		16QAM	21.00	22.20	22.02	22.49	21.34	21.42	22.24	21.42	21.38
		64QAM	20.79	20.99	20.76	21.28	21.13	20.88	20.71	20.88	20.87
		256QAM	18.64	18.84	18.62	19.10	18.93	18.84	18.64	18.85	18.81
	3 840.00	π/2 BPSK	22.09	23.27	23.02	23.14	21.95	22.30	23.08	21.97	22.17
		QPSK	22.03	23.26	22.92	23.09	21.83	22.22	23.00	22.09	22.18
		16QAM	21.22	22.43	22.17	22.24	21.05	21.18	22.03	21.10	21.17
		64QAM	20.59	20.77	20.50	20.60	20.39	20.75	20.47	20.46	20.58
		256QAM	18.62	18.77	18.50	18.57	18.37	18.75	18.93	18.52	18.54
	3 930.00	π/2 BPSK	21.95	23.08	23.48	23.27	22.03	22.09	23.34	22.31	22.29
		QPSK	21.85	23.07	23.26	23.26	22.07	22.11	23.25	22.32	22.25
		16QAM	20.73	21.95	22.15	22.12	20.96	21.13	22.24	21.31	21.27
		64QAM	20.00	20.18	20.55	20.43	20.27	20.66	20.82	20.79	20.73
		256QAM	18.60	18.78	19.13	18.99	18.86	19.08	18.84	18.77	18.72
90	3 745.02	π/2 BPSK	22.22	23.30	23.16	23.37	22.38	22.36	23.25	22.33	22.36
		QPSK	22.21	23.33	23.16	23.38	22.31	22.38	23.22	22.28	22.35
		16QAM	21.14	22.29	22.04	22.33	21.23	21.36	22.27	21.32	21.35
		64QAM	20.77	20.89	20.63	20.92	20.81	20.82	20.77	20.78	20.79
		256QAM	18.59	18.71	18.48	18.72	18.59	18.78	18.70	18.78	18.79
	3 840.00	π/2 BPSK	22.13	23.37	22.91	22.99	21.96	22.31	22.97	22.08	21.89
		QPSK	22.23	23.36	22.95	23.03	21.88	22.30	23.03	22.09	22.20
		16QAM	21.22	22.36	21.99	22.03	20.97	21.27	22.03	21.05	21.13
		64QAM	20.77	20.90	20.57	20.64	20.57	20.77	20.55	20.58	20.70
		256QAM	18.65	18.77	18.33	18.46	18.33	18.73	18.59	18.54	18.63
	3 934.98	π/2 BPSK	21.86	22.96	23.47	23.26	22.09	22.21	23.40	22.25	22.30
		QPSK	21.85	23.06	23.37	23.25	22.13	22.19	23.40	22.24	22.31
		16QAM	20.82	21.93	22.31	22.17	21.05	21.18	22.28	21.29	21.28
		64QAM	20.53	20.64	21.14	20.93	20.82	20.75	20.85	20.81	20.80
		256QAM	18.36	18.47	18.91	18.73	18.65	18.62	18.85	18.80	18.75
80	3 740.01	π/2 BPSK	22.32	23.43	23.21	23.35	22.38	22.40	23.29	22.27	22.35
		QPSK	22.32	23.35	23.16	23.38	22.26	22.37	23.28	22.28	22.34
		16QAM	21.17	22.24	22.05	22.24	21.17	21.35	22.25	21.22	21.32
		64QAM	20.44	20.49	20.35	20.47	20.42	20.89	20.75	20.77	20.68
		256QAM	18.98	19.05	18.89	19.08	19.02	18.80	18.94	18.71	18.78
	3 840.00	π/2 BPSK	22.36	23.50	22.91	23.10	22.01	22.29	23.02	22.05	22.15
		QPSK	22.34	23.44	22.90	23.00	21.92	22.17	23.00	22.02	22.17
		16QAM	21.18	22.36	21.90	22.01	20.94	21.20	21.98	21.04	21.17
		64QAM	20.84	20.90	20.49	20.61	20.56	20.68	20.44	20.56	20.72
		256QAM	18.56	18.66	18.24	18.44	18.29	18.72	18.42	18.52	18.66
	3 939.99	π/2 BPSK	22.02	23.10	23.38	23.26	22.19	22.25	23.42	22.30	22.25
		QPSK	22.02	23.07	23.42	23.25	22.24	22.28	23.44	22.35	22.34
		16QAM	21.05	22.12	22.50	22.33	21.25	21.36	22.51	21.37	21.36
		64QAM	20.42	20.48	20.77	20.66	20.61	20.81	20.88	20.89	20.77
		256QAM	18.37	18.44	18.71	18.62	18.65	18.76	18.86	18.85	18.84

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Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size & Allocation								
			1 RB					MID RB			Full RB
			edge left	inner left	Mid	inner right	edge right	Low	Mid	High	
60	3 730.02	π/2 BPSK	22.28	23.32	23.27	23.24	22.20	22.41	23.29	22.26	22.27
		QPSK	22.29	23.32	23.15	23.20	22.21	22.45	23.41	22.21	22.37
		16QAM	21.41	22.36	22.31	22.27	21.21	21.38	22.38	21.25	21.35
		64QAM	20.70	20.79	20.66	20.60	20.58	20.95	20.80	20.76	20.82
		256QAM	19.09	19.11	18.86	18.87	18.84	18.97	18.83	18.72	18.82
	3 840.00	π/2 BPSK	22.24	23.36	22.92	23.21	22.16	22.08	23.08	21.99	22.14
		QPSK	22.27	23.37	22.92	23.22	22.13	22.13	22.95	21.98	22.13
		16QAM	21.16	22.19	21.77	22.06	21.03	21.21	22.01	21.07	21.13
		64QAM	20.96	20.96	20.62	20.85	20.81	20.65	20.44	20.52	20.61
		256QAM	18.74	18.76	18.28	18.66	18.65	18.57	18.50	18.46	18.55
	3 949.98	π/2 BPSK	22.23	23.25	23.32	23.53	22.59	22.43	23.37	22.40	22.38
		QPSK	22.20	23.23	23.33	23.52	22.48	22.39	23.41	22.37	22.38
		16QAM	21.09	22.17	22.24	22.41	21.32	21.36	22.40	21.30	21.35
		64QAM	20.43	20.47	20.46	20.71	20.69	20.89	20.89	20.96	20.89
		256QAM	18.94	18.98	19.06	19.27	19.25	18.88	18.81	18.93	18.85
50	3 725.01	π/2 BPSK	22.43	23.40	23.25	23.13	22.15	22.46	23.43	22.22	22.31
		QPSK	22.40	23.40	23.25	23.12	22.14	22.46	23.38	22.22	22.33
		16QAM	21.47	22.44	22.37	22.18	21.20	21.42	22.39	21.22	21.35
		64QAM	20.84	20.83	20.68	20.52	20.54	20.97	20.95	20.71	20.83
		256QAM	18.79	18.79	18.64	18.48	18.49	18.89	18.82	18.66	18.84
	3 840.00	π/2 BPSK	22.15	23.19	23.03	23.23	22.27	22.12	23.08	21.92	22.10
		QPSK	22.20	23.26	23.02	23.19	22.18	22.12	23.10	22.01	22.10
		16QAM	21.14	22.12	21.92	22.09	21.10	21.14	21.98	20.93	21.05
		64QAM	20.72	20.69	20.52	20.74	20.75	20.55	20.50	20.42	20.59
		256QAM	18.57	18.55	18.36	18.61	18.62	18.57	18.48	18.39	18.58
	3 954.99	π/2 BPSK	22.55	23.56	23.34	23.53	22.66	22.44	23.40	22.44	22.42
		QPSK	22.58	23.56	23.32	23.62	22.62	22.43	23.42	22.45	22.39
		16QAM	21.58	22.56	22.33	22.64	21.59	21.38	22.30	21.42	21.39
		64QAM	21.16	21.17	20.95	21.21	21.21	20.90	20.82	20.91	20.89
		256QAM	19.00	18.95	18.74	19.05	19.01	18.92	18.82	18.97	18.90
40	3 720.00	π/2 BPSK	22.45	23.44	23.48	23.35	22.40	22.45	23.50	22.41	22.46
		QPSK	22.47	23.42	23.40	23.32	22.31	22.44	23.49	22.40	22.44
		16QAM	21.34	22.28	22.27	22.16	21.15	21.53	22.54	21.38	21.51
		64QAM	21.16	21.15	21.13	21.03	21.02	20.90	20.92	20.76	20.96
		256QAM	18.94	18.95	18.89	18.76	18.75	19.03	18.98	18.86	18.95
	3. 840.00	π/2 BPSK	22.39	23.37	23.06	23.35	22.33	22.24	23.03	21.99	22.13
		QPSK	22.34	23.36	22.96	23.14	22.11	22.22	23.05	21.98	22.14
		16QAM	21.50	22.50	22.10	22.29	21.28	21.16	22.10	21.02	21.13
		64QAM	21.09	21.03	20.66	20.78	20.81	20.71	20.60	20.50	20.65
		256QAM	18.95	18.94	18.57	18.70	18.70	18.71	18.54	18.49	18.60
	3 960.00	π/2 BPSK	22.49	23.51	23.35	23.53	22.81	22.40	23.43	22.55	22.51
		QPSK	22.62	23.63	23.41	23.68	22.80	22.49	23.37	22.52	22.51
		16QAM	21.41	22.41	22.20	22.57	21.46	21.42	22.34	21.52	21.56
		64QAM	20.66	20.72	20.46	20.89	20.90	20.90	20.91	20.96	21.02
		256QAM	19.42	19.44	19.12	19.54	19.56	19.01	18.96	19.03	18.94

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Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size & Allocation								
			1 RB					MID RB			Full RB
			edge left	inner left	Mid	inner right	edge right	Low	Mid	High	
30	3 715.02	π/2 BPSK	22.71	23.45	23.74	23.68	22.56	22.56	23.51	22.53	22.48
		QPSK	22.53	23.55	23.62	23.48	22.46	22.55	23.50	22.55	22.50
		16QAM	21.40	22.42	22.51	22.38	21.36	21.51	22.51	21.52	21.46
		64QAM	20.98	20.99	21.03	20.94	20.91	21.02	20.95	20.97	20.97
		256QAM	18.56	18.56	18.61	18.53	18.48	19.02	18.95	18.99	18.97
	3 840.00	π/2 BPSK	22.40	23.37	23.12	23.08	22.16	22.22	23.05	22.05	22.05
		QPSK	22.24	23.27	23.04	23.00	22.17	22.20	23.07	22.02	22.07
		16QAM	21.46	22.51	22.22	22.27	21.25	21.14	22.02	20.99	21.08
		64QAM	21.00	21.01	20.70	20.90	20.90	20.74	20.56	20.60	20.57
		256QAM	18.78	18.76	18.50	18.62	18.63	18.67	18.51	18.54	18.52
	3 964.98	π/2 BPSK	23.03	24.01	24.01	24.34	23.08	22.78	23.80	22.81	22.86
		QPSK	22.98	23.89	23.83	24.13	23.07	22.66	23.73	22.83	22.84
		16QAM	21.76	22.79	22.68	22.82	21.88	21.61	22.63	21.77	21.74
		64QAM	21.26	21.26	21.13	21.41	21.39	21.01	21.04	21.20	21.19
		256QAM	18.80	18.80	18.57	18.95	18.92	19.00	19.02	19.17	19.16
20	3 710.01	π/2 BPSK	22.01	23.11	23.06	23.14	22.08	22.10	23.13	22.26	22.15
		QPSK	22.09	23.10	23.04	23.17	22.20	22.01	23.09	22.19	22.14
		16QAM	20.92	21.97	21.96	22.04	20.99	20.99	22.09	21.24	21.10
		64QAM	20.75	20.75	20.70	20.79	20.78	20.51	20.56	20.68	20.66
		256QAM	18.66	18.66	18.70	18.74	18.76	18.52	18.58	18.72	18.62
	3 840.00	π/2 BPSK	22.11	22.92	22.95	23.24	22.11	22.06	23.03	21.99	21.98
		QPSK	22.26	23.30	23.18	23.17	22.13	22.06	23.05	21.98	21.97
		16QAM	21.10	22.08	21.96	21.94	20.96	21.02	21.98	20.93	21.03
		64QAM	20.57	20.57	20.47	20.52	20.52	20.54	20.47	20.41	20.47
		256QAM	18.47	18.43	18.30	18.33	18.33	18.57	18.48	18.47	18.51
	3 969.99	π/2 BPSK	22.56	23.55	23.45	23.75	22.74	22.46	23.45	22.55	22.53
		QPSK	22.33	23.39	23.38	23.45	22.46	22.43	23.47	22.49	22.44
		16QAM	21.33	22.46	22.43	22.52	21.52	21.35	22.39	21.44	21.55
		64QAM	20.70	20.70	20.80	20.92	20.91	20.86	20.83	20.91	20.89
		256QAM	18.79	18.88	18.78	18.90	18.78	18.83	18.86	18.84	18.84

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7.6. EIRP

- Test Notes

1) This is device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the below table.

7.6.1. 3 450 ~ 3 550 MHz band

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
100	3 500.01	π/2 BPSK	1/1	H	13.30	8.32	21.62	0.145
		QPSK		H	12.87	8.32	21.19	0.131
		16QAM		H	12.27	8.32	20.59	0.114
		64QAM		H	11.16	8.32	19.48	0.089
		256QAM		H	9.82	8.32	18.14	0.065
90	3 495.00	π/2 BPSK	1/1	H	13.26	8.32	21.58	0.144
		QPSK		H	12.89	8.32	21.21	0.132
		16QAM		H	12.45	8.32	20.77	0.119
		64QAM		H	10.76	8.32	19.08	0.081
		256QAM		H	9.66	8.32	17.98	0.063
	3 504.99	π/2 BPSK	1/1	H	12.39	8.33	20.72	0.118
		QPSK		H	12.04	8.33	20.37	0.109
		16QAM		H	11.83	8.33	20.16	0.104
		64QAM		H	10.79	8.33	19.12	0.082
		256QAM		H	8.63	8.33	16.96	0.050
80	3 490.02	π/2 BPSK	1/1	H	13.20	8.32	21.52	0.142
		QPSK		H	12.65	8.32	20.97	0.125
		16QAM		H	12.27	8.32	20.59	0.115
		64QAM		H	11.12	8.32	19.44	0.088
		256QAM		H	9.27	8.32	17.59	0.057
	3 510.00	π/2 BPSK	1/1	H	12.44	8.33	20.77	0.119
		QPSK		H	12.12	8.33	20.45	0.111
		16QAM		H	11.58	8.33	19.91	0.098
		64QAM		H	10.58	8.33	18.91	0.078
		256QAM		H	8.29	8.33	16.62	0.046
60	3 480.00	π/2 BPSK	1/1	H	13.26	8.31	21.57	0.143
		QPSK		H	12.99	8.31	21.30	0.135
		16QAM		H	11.81	8.31	20.12	0.103
		64QAM		H	11.15	8.31	19.46	0.088
		256QAM		H	9.65	8.31	17.96	0.063
	3 519.99	π/2 BPSK	1/1	H	12.10	8.31	20.41	0.110
		QPSK		H	11.71	8.31	20.02	0.100
		16QAM		H	10.17	8.31	18.48	0.070
		64QAM		H	9.72	8.31	18.03	0.064
		256QAM		H	7.25	8.31	15.56	0.036

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Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
50	3 475.02	π/2 BPSK	1/1	H	13.24	8.31	21.55	0.143
		QPSK		H	12.74	8.31	21.05	0.127
		16QAM		H	12.33	8.31	20.64	0.116
		64QAM		H	11.27	8.31	19.58	0.091
		256QAM		H	9.69	8.31	18.00	0.063
	3 525.00	π/2 BPSK	1/1	H	12.60	8.29	20.89	0.123
		QPSK		H	11.68	8.29	19.97	0.099
		16QAM		H	10.60	8.29	18.89	0.077
		64QAM		H	10.10	8.29	18.39	0.069
		256QAM		H	8.04	8.29	16.33	0.043
40	3 470.01	π/2 BPSK	1/1	H	13.39	8.31	21.70	0.148
		QPSK		H	13.15	8.31	21.46	0.140
		16QAM		H	12.62	8.31	20.93	0.124
		64QAM		H	10.98	8.31	19.29	0.085
		256QAM		H	9.62	8.31	17.93	0.062
	3 500.01	π/2 BPSK	1/1	H	13.73	8.32	22.05	0.160
		QPSK		H	12.99	8.32	21.31	0.135
		16QAM		H	12.76	8.32	21.08	0.128
		64QAM		H	10.95	8.32	19.27	0.085
		256QAM		H	9.04	8.32	17.36	0.054
	3 529.98	π/2 BPSK	1/1	H	12.20	8.28	20.48	0.112
		QPSK		H	11.06	8.28	19.34	0.086
		16QAM		H	10.78	8.28	19.06	0.081
		64QAM		H	9.09	8.28	17.37	0.055
		256QAM		H	8.05	8.28	16.33	0.043
30	3 465.00	π/2 BPSK	1/1	H	12.87	8.30	21.17	0.131
		QPSK		H	12.35	8.30	20.65	0.116
		16QAM		H	11.98	8.30	20.28	0.107
		64QAM		H	10.93	8.30	19.23	0.084
		256QAM		H	9.37	8.30	17.67	0.058
	3 500.01	π/2 BPSK	1/1	H	12.73	8.32	21.05	0.127
		QPSK		H	12.53	8.32	20.85	0.122
		16QAM		H	12.13	8.32	20.45	0.111
		64QAM		H	10.23	8.32	18.55	0.072
		256QAM		H	8.78	8.32	17.10	0.051
	3 534.99	π/2 BPSK	1/1	H	12.51	8.27	20.78	0.120
		QPSK		H	11.39	8.27	19.66	0.093
		16QAM		H	10.37	8.27	18.64	0.073
		64QAM		H	9.71	8.27	17.98	0.063
		256QAM		H	7.31	8.27	15.58	0.036

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Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
20	3 460.01	π/2 BPSK	1/1	H	12.93	8.30	21.23	0.133
		QPSK		H	12.31	8.30	20.61	0.115
		16QAM		H	11.78	8.30	20.08	0.102
		64QAM		H	10.71	8.30	19.01	0.080
		256QAM		H	9.45	8.30	17.75	0.060
	3 500.01	π/2 BPSK	1/1	H	12.37	8.32	20.69	0.117
		QPSK		H	11.86	8.32	20.18	0.104
		16QAM		H	11.28	8.32	19.60	0.091
		64QAM		H	10.23	8.32	18.55	0.072
		256QAM		H	8.85	8.32	17.17	0.052
	3 540.00	π/2 BPSK	1/1	H	12.13	8.26	20.39	0.109
		QPSK		H	11.17	8.26	19.43	0.088
		16QAM		H	10.89	8.26	19.15	0.082
		64QAM		H	9.36	8.26	17.62	0.058
		256QAM		H	7.65	8.26	15.91	0.039

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7.6.2. 3 700 ~ 3 980 MHz band

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
100	3 750.00	π/2 BPSK	1/1	H	10.09	8.24	18.33	0.068
		QPSK		H	9.74	8.24	17.98	0.063
		16QAM		H	9.24	8.24	17.48	0.056
		64QAM		H	8.37	8.24	16.61	0.046
		256QAM		H	6.45	8.24	14.69	0.029
	3 840.00	π/2 BPSK	1/1	H	6.64	8.47	15.11	0.032
		QPSK		H	6.57	8.47	15.04	0.032
		16QAM		H	6.27	8.47	14.74	0.030
		64QAM		H	4.71	8.47	13.18	0.021
		256QAM		H	3.05	8.47	11.52	0.014
	3 930.00	π/2 BPSK	1/1	H	6.73	8.83	15.56	0.036
		QPSK		H	5.83	8.83	14.66	0.029
		16QAM		H	5.47	8.83	14.30	0.027
		64QAM		H	4.47	8.83	13.30	0.021
		256QAM		H	2.86	8.83	11.69	0.015
90	3 745.02	π/2 BPSK	1/1	H	11.66	8.24	19.90	0.098
		QPSK		H	11.31	8.24	19.55	0.090
		16QAM		H	10.24	8.24	18.48	0.070
		64QAM		H	9.11	8.24	17.35	0.054
		256QAM		H	7.69	8.24	15.93	0.039
	3 840.00	π/2 BPSK	1/1	H	7.49	8.47	15.96	0.039
		QPSK		H	6.62	8.47	15.09	0.032
		16QAM		H	6.14	8.47	14.61	0.029
		64QAM		H	5.37	8.47	13.84	0.024
		256QAM		H	3.95	8.47	12.42	0.017
	3 934.98	π/2 BPSK	1/1	H	6.69	8.83	15.52	0.036
		QPSK		H	6.21	8.83	15.04	0.032
		16QAM		H	6.01	8.83	14.84	0.030
		64QAM		H	4.95	8.83	13.78	0.024
		256QAM		H	2.70	8.83	11.53	0.014
80	3 740.01	π/2 BPSK	1/1	H	11.09	8.23	19.32	0.086
		QPSK		H	10.52	8.23	18.75	0.075
		16QAM		H	10.24	8.23	18.47	0.070
		64QAM		H	8.98	8.23	17.21	0.053
		256QAM		H	7.55	8.23	15.78	0.038
	3 840	π/2 BPSK	1/1	H	8.40	8.47	16.87	0.049
		QPSK		H	7.85	8.47	16.32	0.043
		16QAM		H	7.08	8.47	15.55	0.036
		64QAM		H	6.39	8.47	14.86	0.031
		256QAM		H	4.57	8.47	13.04	0.020
	3 939.99	π/2 BPSK	1/1	H	7.40	8.82	16.22	0.042
		QPSK		H	7.29	8.82	16.11	0.041
		16QAM		H	6.32	8.82	15.14	0.033
		64QAM		H	5.94	8.82	14.76	0.030
		256QAM		H	3.81	8.82	12.63	0.018

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Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
60	3 730.02	π/2 BPSK	1/1	H	9.95	8.23	18.18	0.066
		QPSK		H	9.62	8.23	17.85	0.061
		16QAM		H	9.23	8.23	17.46	0.056
		64QAM		H	8.90	8.23	17.13	0.052
		256QAM		H	7.55	8.23	15.78	0.038
	3 840.00	π/2 BPSK	1/1	H	7.50	8.47	15.97	0.039
		QPSK		H	7.20	8.47	15.67	0.037
		16QAM		H	6.27	8.47	14.74	0.030
		64QAM		H	5.51	8.47	13.98	0.025
		256QAM		H	4.09	8.47	12.56	0.018
	3 949.98	π/2 BPSK	1/1	H	7.68	8.82	16.50	0.045
		QPSK		H	7.27	8.82	16.09	0.041
		16QAM		H	6.86	8.82	15.68	0.037
		64QAM		H	6.15	8.82	14.97	0.031
		256QAM		H	3.94	8.82	12.76	0.019
50	3 725.01	π/2 BPSK	1/1	H	10.67	8.23	18.90	0.078
		QPSK		H	10.27	8.23	18.50	0.071
		16QAM		H	10.14	8.23	18.37	0.069
		64QAM		H	9.10	8.23	17.33	0.054
		256QAM		H	6.18	8.23	14.41	0.028
	3 840.00	π/2 BPSK	1/1	H	6.93	8.47	15.40	0.035
		QPSK		H	6.60	8.47	15.07	0.032
		16QAM		H	6.18	8.47	14.65	0.029
		64QAM		H	4.32	8.47	12.79	0.019
		256QAM		H	3.68	8.47	12.15	0.016
	3 954.99	π/2 BPSK	1/1	H	7.01	8.82	15.83	0.038
		QPSK		H	6.21	8.82	15.03	0.032
		16QAM		H	5.31	8.82	14.13	0.026
		64QAM		H	4.78	8.82	13.60	0.023
		256QAM		H	3.60	8.82	12.42	0.017
40	3 720.00	π/2 BPSK	1/1	H	10.79	8.22	19.01	0.080
		QPSK		H	10.04	8.22	18.26	0.067
		16QAM		H	9.71	8.22	17.93	0.062
		64QAM		H	9.27	8.22	17.49	0.056
		256QAM		H	7.45	8.22	15.67	0.037
	3 840.00	π/2 BPSK	1/1	H	6.98	8.47	15.45	0.035
		QPSK		H	6.52	8.47	14.99	0.032
		16QAM		H	6.03	8.47	14.50	0.028
		64QAM		H	5.20	8.47	13.67	0.023
		256QAM		H	3.72	8.47	12.19	0.017
	3 960.00	π/2 BPSK	1/1	H	7.74	8.83	16.57	0.045
		QPSK		H	7.04	8.83	15.87	0.039
		16QAM		H	5.89	8.83	14.72	0.030
		64QAM		H	4.88	8.83	13.71	0.024
		256QAM		H	3.86	8.83	12.69	0.019

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Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
30	3 715.02	π/2 BPSK	1/1	H	10.88	8.22	19.10	0.081
		QPSK		H	10.69	8.22	18.91	0.078
		16QAM		H	10.64	8.22	18.86	0.077
		64QAM		H	9.54	8.22	17.76	0.060
		256QAM		H	7.09	8.22	15.31	0.034
	3 840.00	π/2 BPSK	1/1	H	7.43	8.47	15.90	0.039
		QPSK		H	6.82	8.47	15.29	0.034
		16QAM		H	6.32	8.47	14.79	0.030
		64QAM		H	5.02	8.47	13.49	0.022
		256QAM		H	4.01	8.47	12.48	0.018
	3 964.98	π/2 BPSK	1/1	H	7.78	8.84	16.62	0.046
		QPSK		H	7.12	8.84	15.96	0.039
		16QAM		H	6.53	8.84	15.37	0.034
		64QAM		H	6.27	8.84	15.11	0.032
		256QAM		H	3.67	8.84	12.51	0.018
20	3 710.01	π/2 BPSK	1/1	H	10.90	8.22	19.12	0.082
		QPSK		H	10.21	8.22	18.43	0.070
		16QAM		H	9.60	8.22	17.82	0.061
		64QAM		H	8.78	8.22	17.00	0.050
		256QAM		H	6.96	8.22	15.18	0.033
	3 840.00	π/2 BPSK	1/1	H	7.12	8.47	15.59	0.036
		QPSK		H	6.37	8.47	14.84	0.030
		16QAM		H	5.99	8.47	14.46	0.028
		64QAM		H	4.74	8.47	13.21	0.021
		256QAM		H	2.69	8.47	11.16	0.013
	3 969.99	π/2 BPSK	1/1	H	8.78	8.85	17.63	0.058
		QPSK		H	8.48	8.85	17.33	0.054
		16QAM		H	8.09	8.85	16.94	0.049
		64QAM		H	6.17	8.85	15.02	0.032
		256QAM		H	5.15	8.85	14.00	0.025

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7.7. UNDESIRABLE EMISSIONS (Radiated)

- Test Notes

1) This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported.
2) EN-DC mode operation were investigated and the worst case configuration results are reported.
3) The frequency spectrum is examined from 9 kHz to the 10th harmonic of the fundamental frequency of the transmitter.
   No other spurious and harmonic emissions were reported greater than listed emissions.
4) Limit for NR Band 77 = -13 dBm/MHz

7.7.1. 3 450 ~ 3 550 MHz band

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB size/ offset	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
100	3 500.01	π/2 BPSK	1/1	6 911.89	V	-60.62	11.30	-49.32	-13.00	36.32
		QPSK		6 906.30	V	-60.76	11.30	-49.46	-13.00	36.46
		16QAM		6 906.88	V	-60.70	11.30	-49.40	-13.00	36.40
		64QAM		6 911.30	V	-60.68	11.30	-49.38	-13.00	36.38
		256QAM		6 911.74	V	-60.39	11.30	-49.09	-13.00	36.09
40	3 500.01	π/2 BPSK	1/1	6 967.98	V	-60.25	11.37	-48.88	-13.00	35.88
		QPSK		6 955.78	V	-60.34	11.34	-49.00	-13.00	36.00
		16QAM		6 968.06	V	-60.24	11.37	-48.87	-13.00	35.87
		64QAM		6 952.38	V	-60.38	11.34	-49.04	-13.00	36.04
		256QAM		6 964.70	V	-60.24	11.36	-48.88	-13.00	35.88

ENDC MODE: NR n77 + LTE B2

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB size/ offset	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
40	3 500.01	π/2 BPSK	1/1	6 964.65	V	-60.93	11.36	-49.57	-13.00	36.57
		QPSK		6 958.96	V	-61.79	11.35	-50.44	-13.00	37.44
		16QAM		6 949.40	V	-61.70	11.33	-50.37	-13.00	37.37
		64QAM		6 955.42	V	-61.38	11.34	-50.04	-13.00	37.04
		256QAM		6 944.40	V	-61.49	11.33	-50.16	-13.00	37.16

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7.7.2. 3 700 ~ 3 900 MHz band

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB size/ offset	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
100	3 750.00	π/2 BPSK	1/1	7 399.67	V	-59.42	11.91	-47.51	-13.00	34.51
		QPSK		7 406.16	V	-59.60	11.91	-47.69	-13.00	34.69
		16QAM		7 407.49	V	-59.68	11.91	-47.77	-13.00	34.77
		64QAM		7 397.76	V	-59.76	11.91	-47.85	-13.00	34.85
		256QAM		7 400.35	V	-59.70	11.91	-47.79	-13.00	34.79
	3 840.00	π/2 BPSK	1/1	7 585.80	V	-59.47	12.07	-47.40	-13.00	34.40
		QPSK		7 583.67	V	-59.41	12.06	-47.35	-13.00	34.35
		16QAM		7 583.88	V	-59.29	12.06	-47.23	-13.00	34.23
		64QAM		7 579.26	V	-59.30	12.06	-47.24	-13.00	34.24
		256QAM		7 580.74	V	-59.27	12.06	-47.21	-13.00	34.21
	3 930.00	π/2 BPSK	1/1	7 758.57	V	-59.55	12.18	-47.37	-13.00	34.37
		QPSK		7 764.76	V	-59.41	12.19	-47.22	-13.00	34.22
		16QAM		7 757.38	V	-59.43	12.18	-47.25	-13.00	34.25
		64QAM		7 762.84	V	-59.29	12.19	-47.10	-13.00	34.10
		256QAM		7 758.75	V	-59.35	12.18	-47.17	-13.00	34.17
90	3 745.02	π/2 BPSK	1/1	7 409.20	V	-59.77	11.92	-47.85	-13.00	34.85
		QPSK		7 398.47	V	-59.76	11.91	-47.85	-13.00	34.85
		16QAM		7 404.12	V	-59.73	11.91	-47.82	-13.00	34.82
		64QAM		7 403.20	V	-59.74	11.91	-47.83	-13.00	34.83
		256QAM		7 407.20	V	-59.88	11.91	-47.97	-13.00	34.97

ENDC MODE: NR n77 + LTE B2

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB size/ offset	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
90	3 745.02	π/2 BPSK	1/1	7 405.44	V	-61.54	11.91	-49.63	-13.00	36.63
		QPSK		7 410.00	V	-61.00	11.92	-49.08	-13.00	36.08
		16QAM		7 404.76	V	-61.17	11.91	-49.26	-13.00	36.26
		64QAM		7 406.44	V	-60.72	11.91	-48.81	-13.00	35.81
		256QAM		7 413.20	V	-61.08	11.92	-49.16	-13.00	36.16

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7.8. FREQUENCY STABILITY

- Test Notes

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

7.8.1. 3 450 ~ 3 550 MHz band

OPERATING FREQUENCY : 3 500.01 MHz
REFERENCE VOLTAGE : 3.90 V DC
LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (℃)	FREQ (Hz)	Deviation	
				(%)	(ppm)
100 %	3.90	+20(Ref)	3,500,009,970	-0.000 000 857	-0.008 6
100 %		-30	3,500,009,959	-0.000 001 171	-0.011 7
100 %		-20	3,500,009,969	-0.000 000 886	-0.008 9
100 %		-10	3,500,009,981	-0.000 000 543	-0.005 4
100 %		0	3,500,009,948	-0.000 001 486	-0.014 9
100 %		+10	3,500,009,982	-0.000 000 514	-0.005 1
100 %		+20	3,500,009,968	-0.000 000 914	-0.009 1
100 %		+30	3,500,009,959	-0.000 001 171	-0.011 7
100 %		+40	3,500,009,967	-0.000 000 943	-0.009 4
100 %		+50	3,500,009,975	-0.000 000 714	-0.007 1
115 %	4.49	+20	3,500,009,963	-0.000 001 057	-0.010 6
85 %	3.32	+20	3,500,009,975	-0.000 000 714	-0.007 1

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7.8.2. 3 700 ~ 3 980 MHz band

OPERATING FREQUENCY : 3 840.00 MHz
REFERENCE VOLTAGE : 3.90 V DC
LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (℃)	FREQ (Hz)	Deviation	
				(%)	(ppm)
100 %	3.90	+20(Ref)	3,839,999,975	-0.000 000 651	-0.006 5
100 %		-30	3,839,999,984	-0.000 000 417	-0.004 2
100 %		-20	3,839,999,973	-0.000 000 703	-0.007 0
100 %		-10	3,839,999,982	-0.000 000 469	-0.004 7
100 %		0	3,839,999,998	-0.000 000 052	-0.000 5
100 %		+10	3,839,999,982	-0.000 000 469	-0.004 7
100 %		+20	3,839,999,977	-0.000 000 599	-0.006 0
100 %		+30	3,839,999,972	-0.000 000 729	-0.007 3
100 %		+40	3,839,999,983	-0.000 000443	-0.004 4
100 %		+50	3,839,999,991	-0.000 000 227	-0.002 3
115 %	4.49	+20	3,839,999,978	-0.000 000 570	-0.005 7
85 %	3.32	+20	3,839,999,971	-0.000 000 755	-0.007 6

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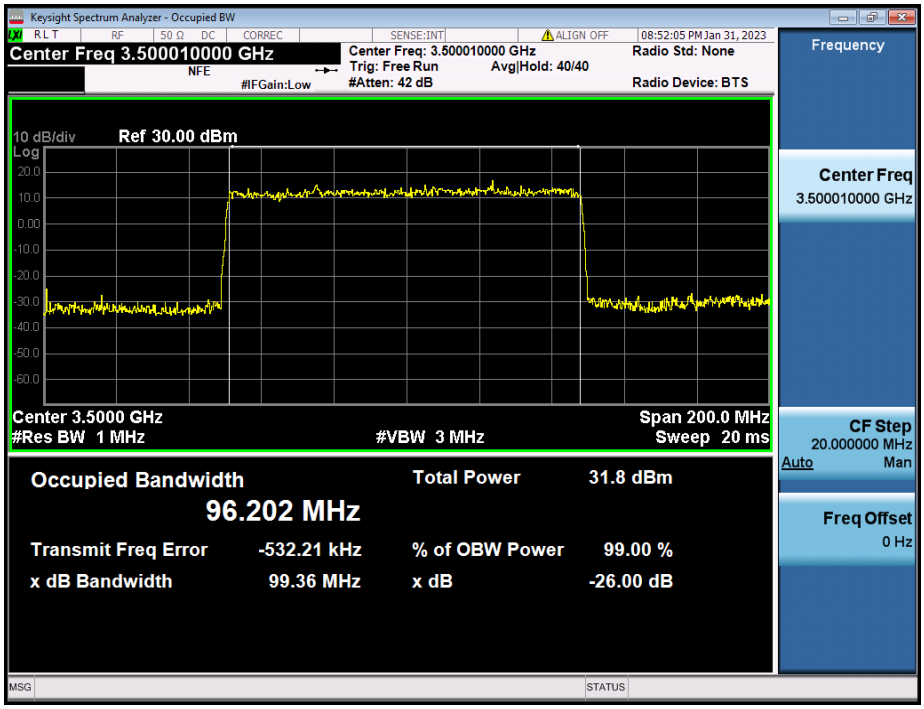
8. TEST PLOTS

- Test Notes:

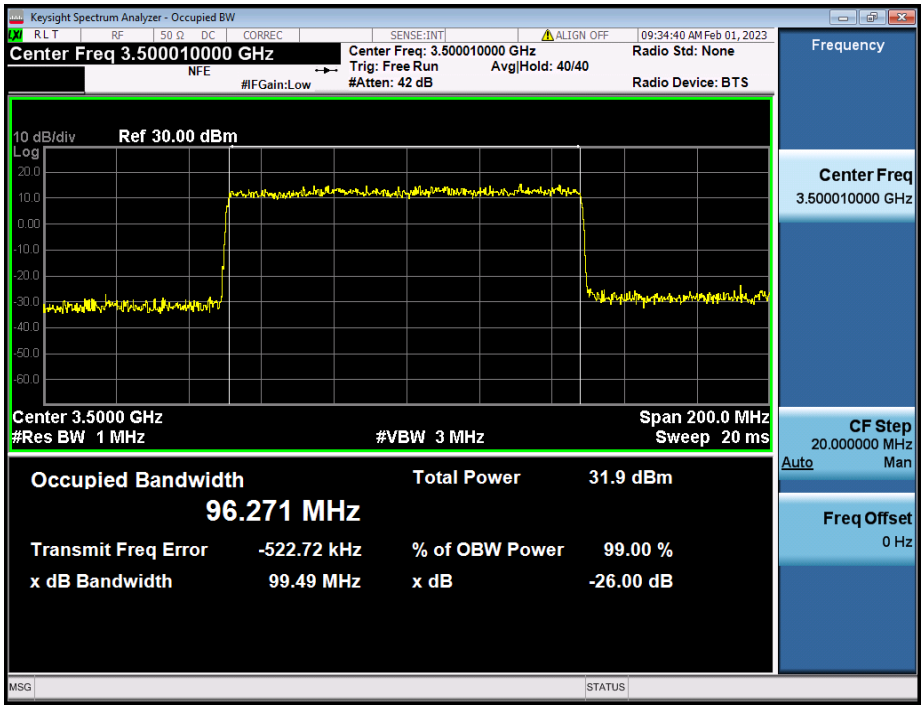
All bandwidths, RB configurations, and modulations were investigated.
The worst case test results are reported.

8.1. OCCUPIED BANDWIDTH

8.1.1. 3450 ~ 3550 MHz band



100 MHz / π/2 BPSK / FULL RB Size



100 MHz / QPSK / FULL RB Size

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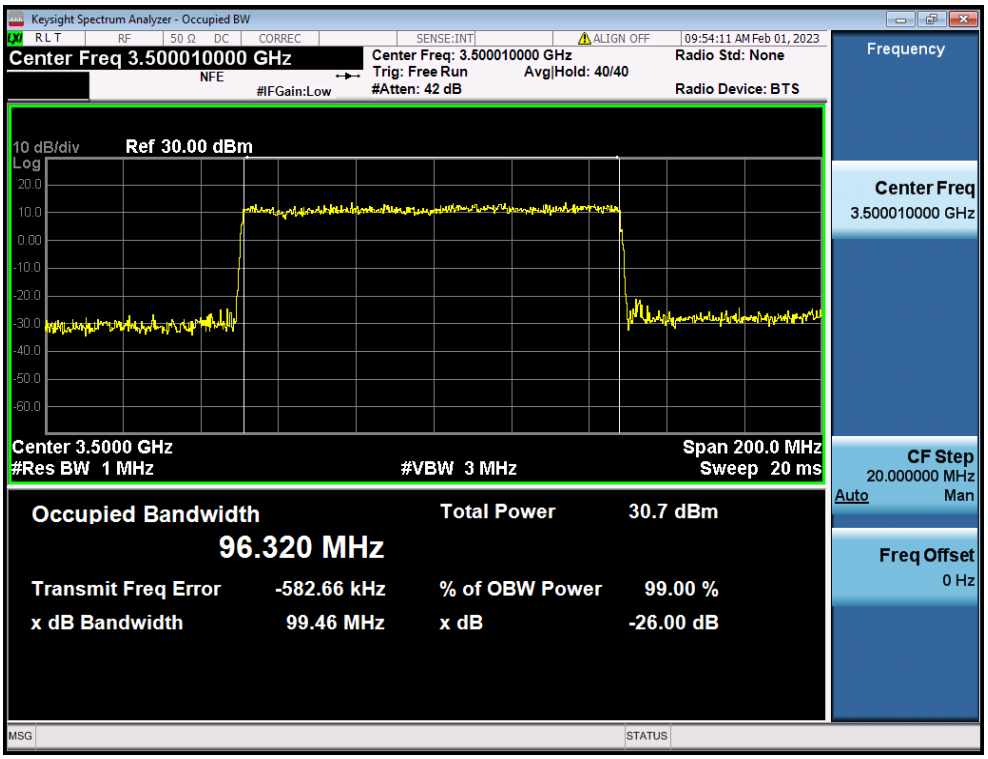
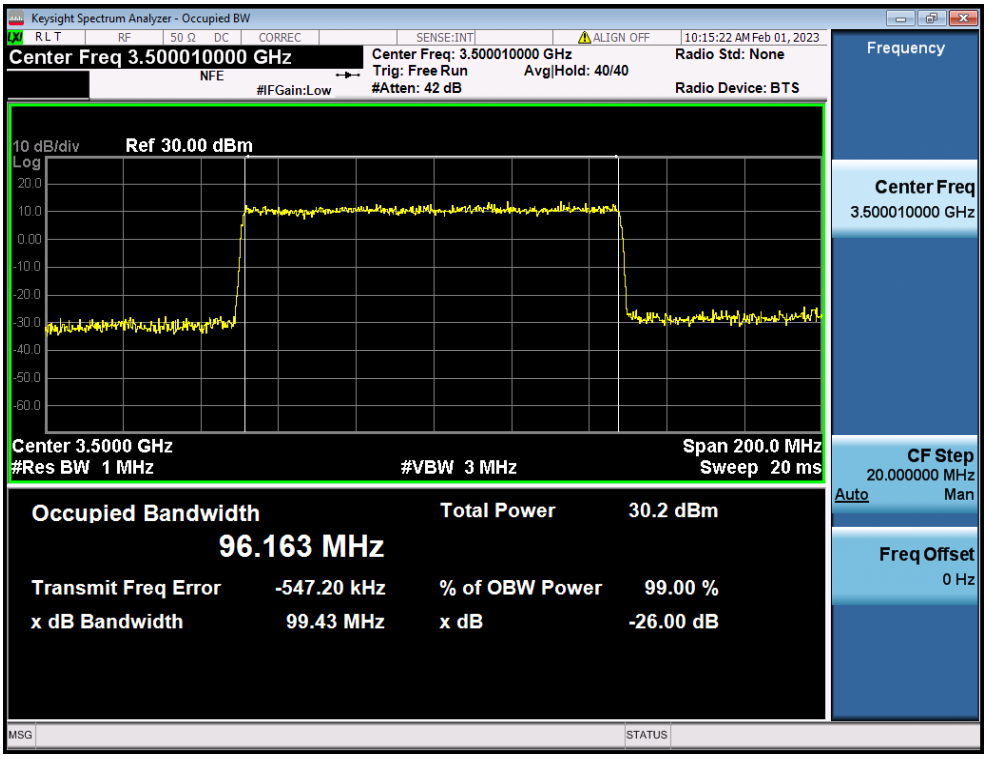


100 MHz / 16QAM / FULL RB Size



100 MHz / 64QAM / FULL RB Size

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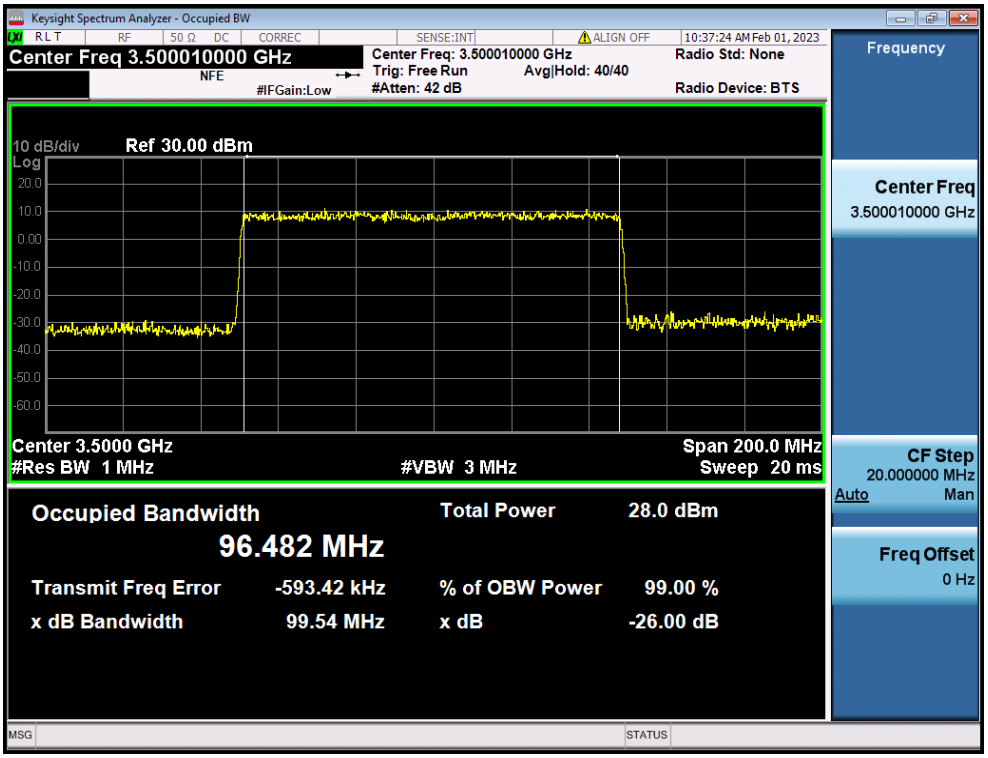
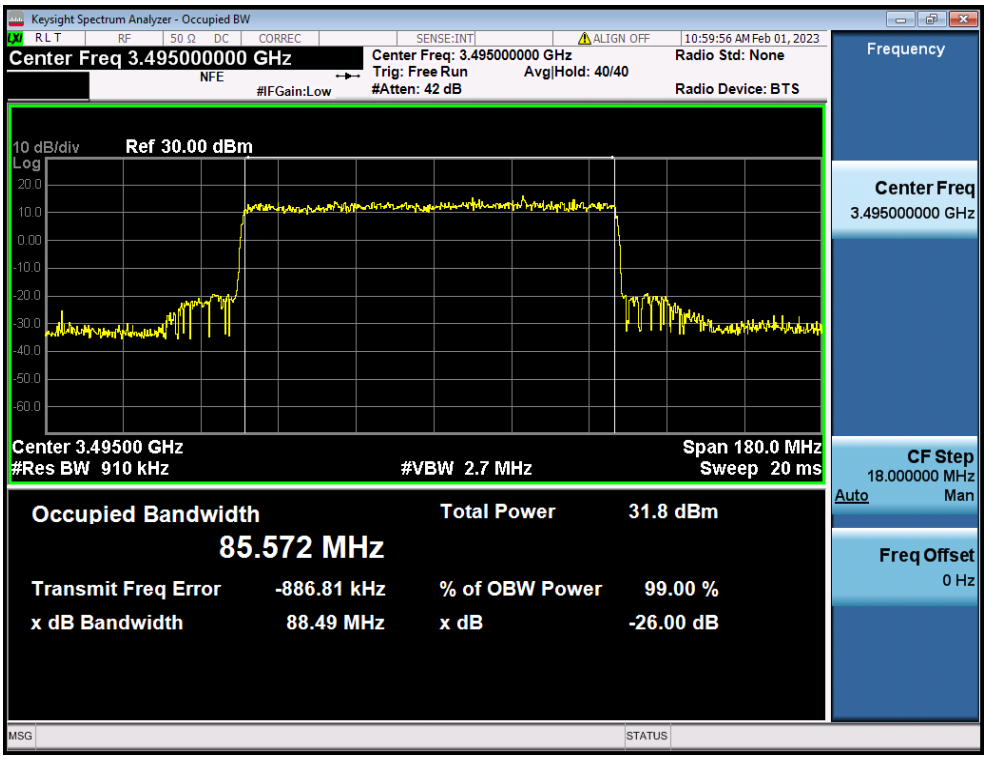
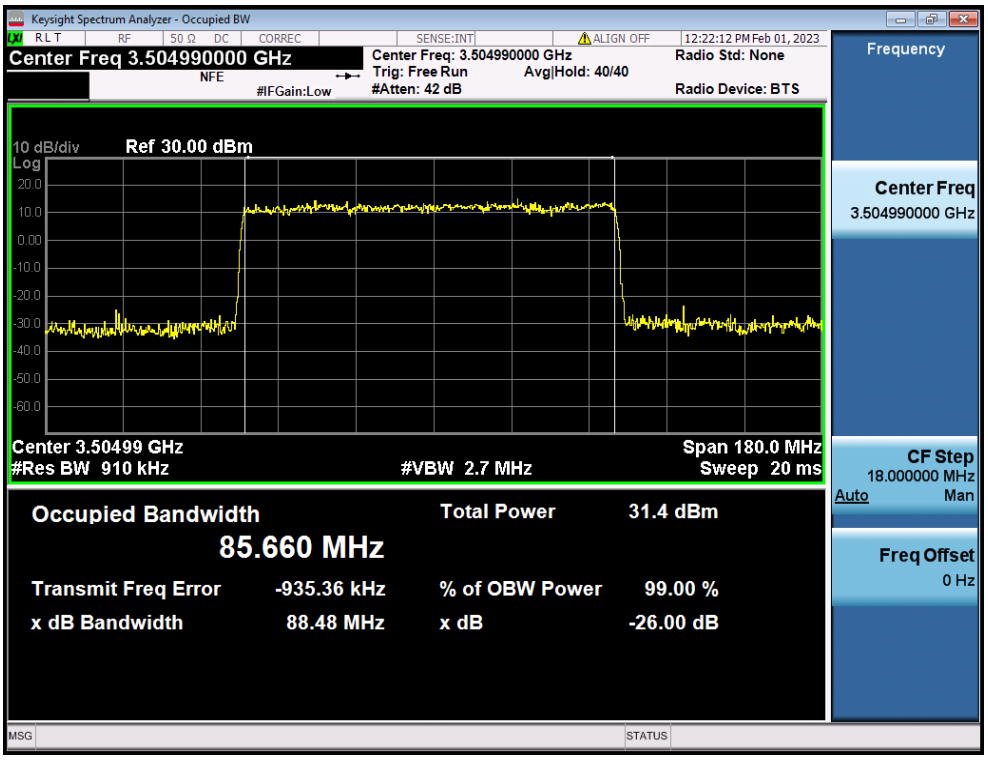


100 MHz / 256QAM / FULL RB Size



90 MHz / π/2 BPSK / FULL RB Size



90 MHz / QPSK / FULL RB Size

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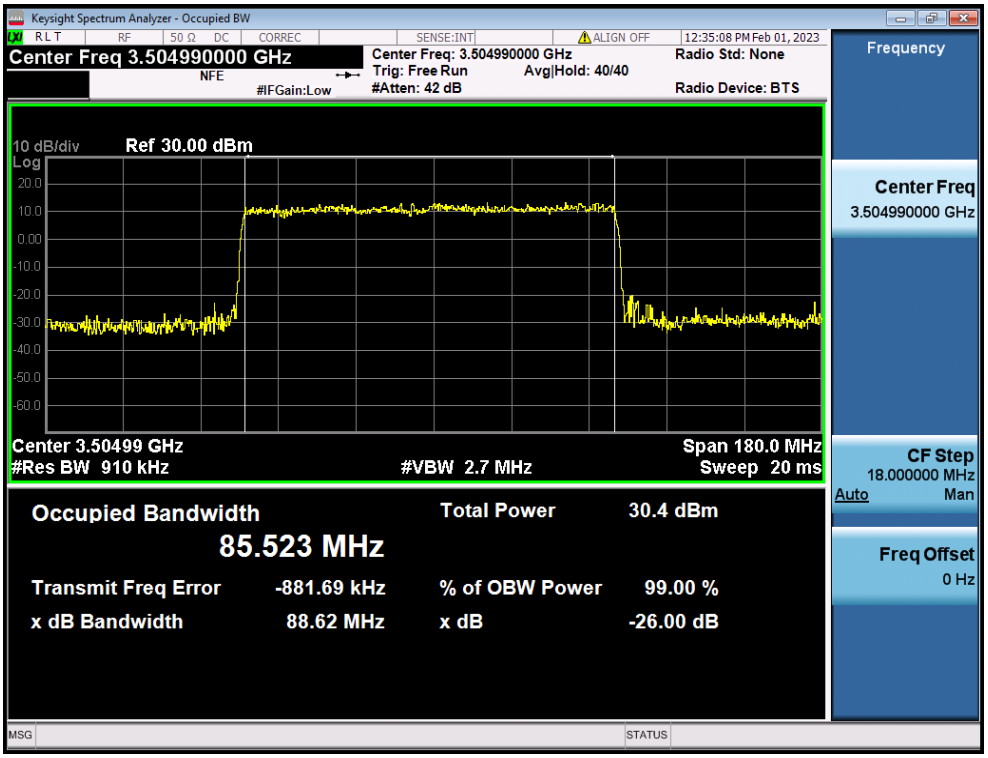

90 MHz / 16QAM / FULL RB Size

90 MHz / 64QAM / FULL RB Size

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90 MHz / 256QAM / FULL RB Size

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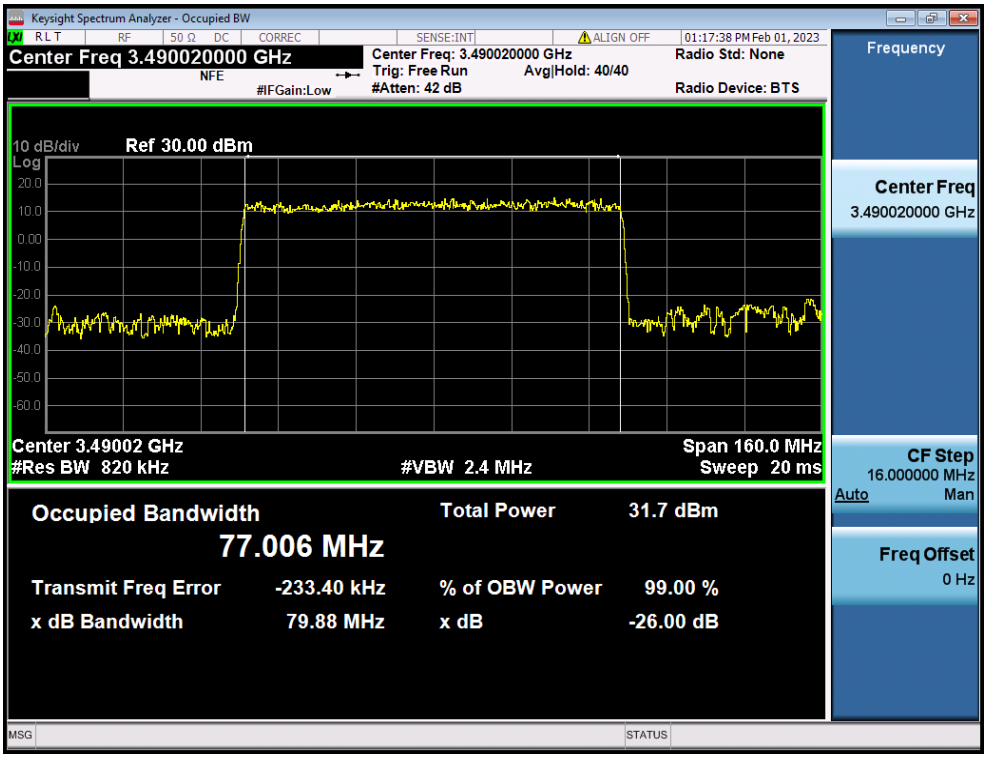
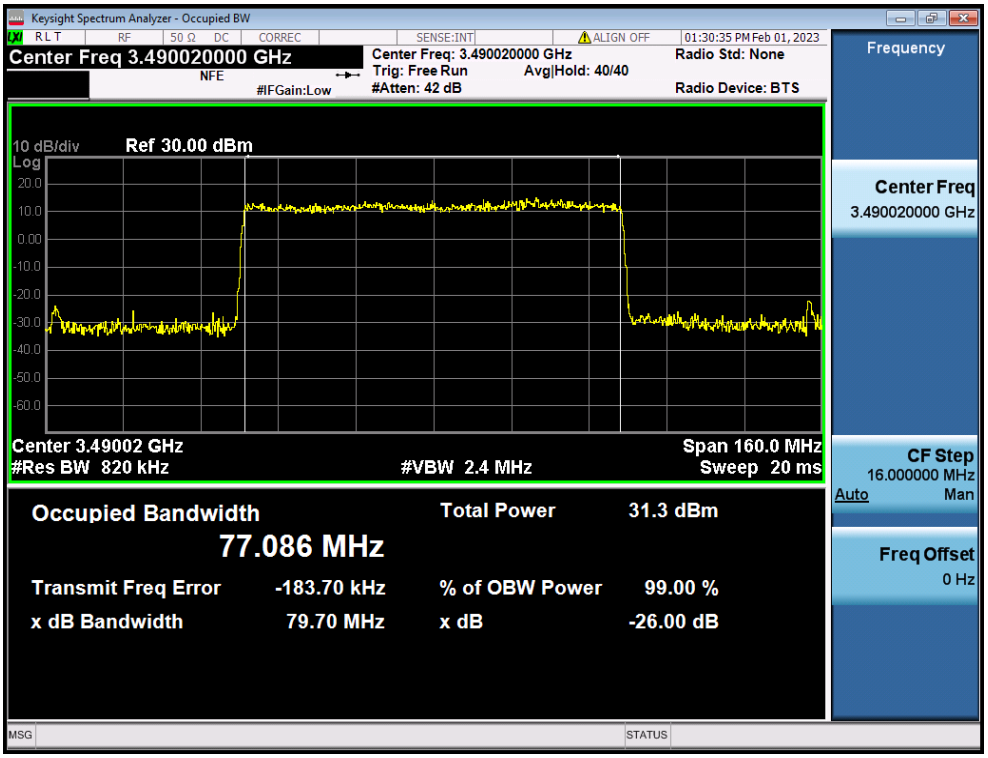


80 MHz / π/2 BPSK / FULL RB Size



80 MHz / QPSK / FULL RB Size

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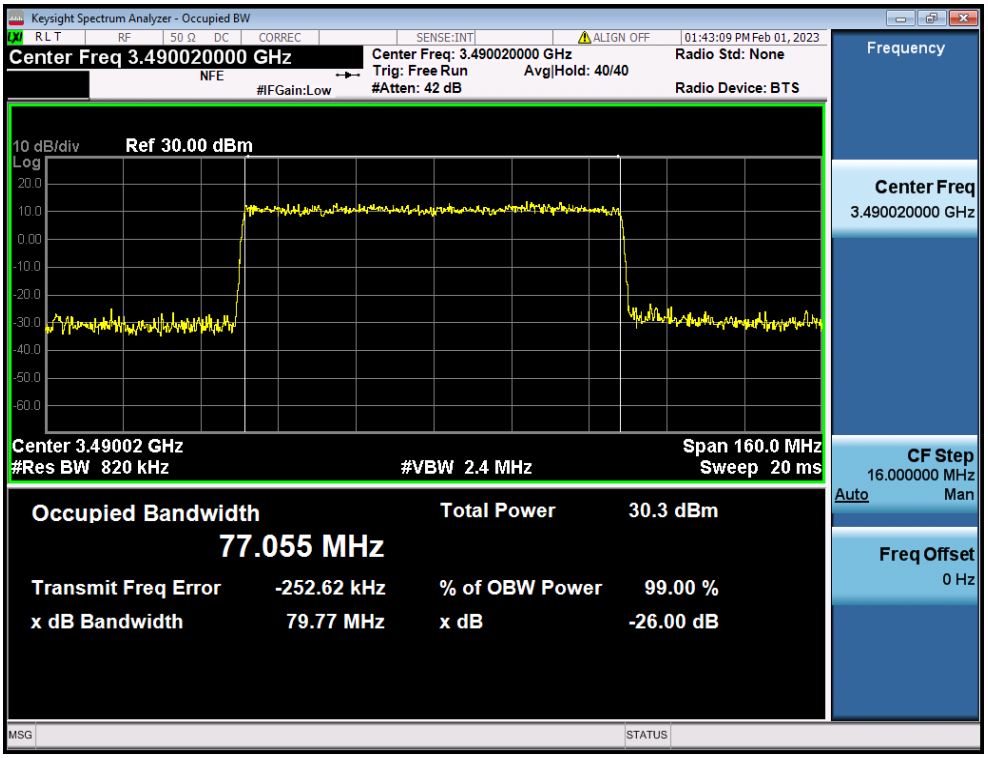
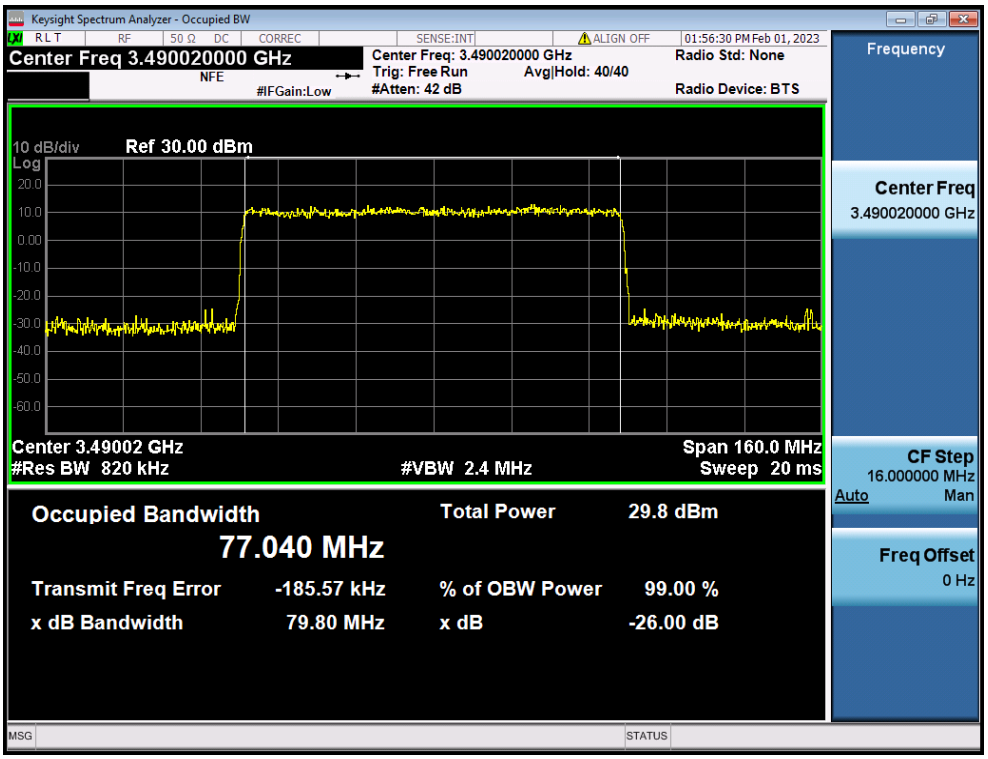


80 MHz / 16QAM / FULL RB Size



80 MHz / 64QAM / FULL RB Size

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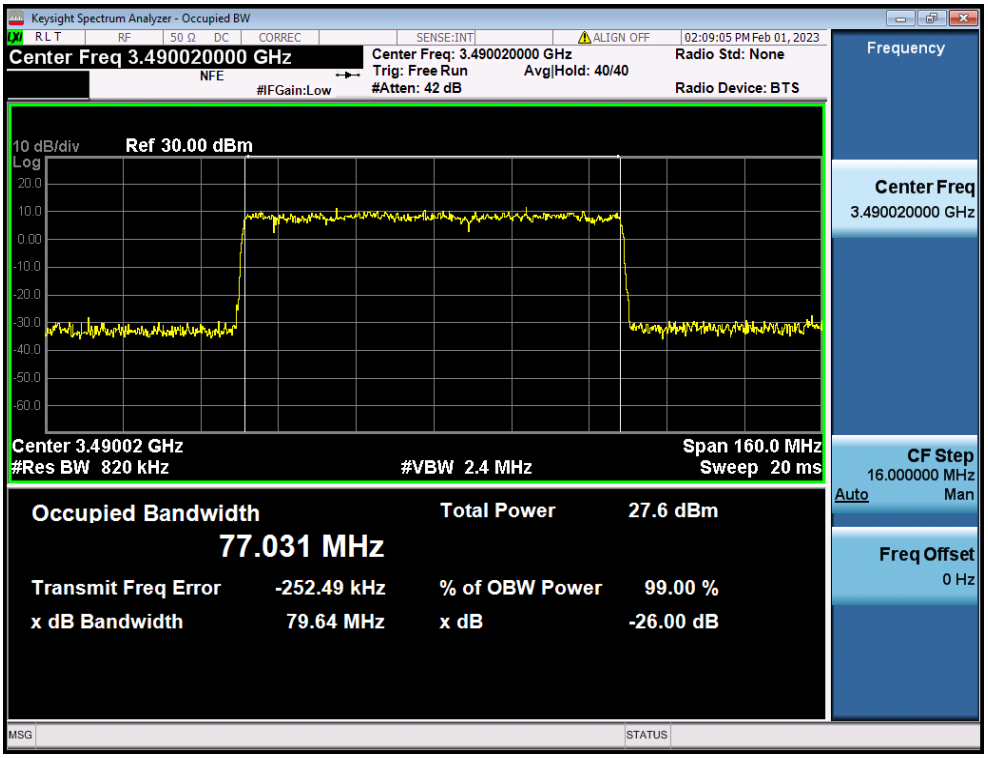
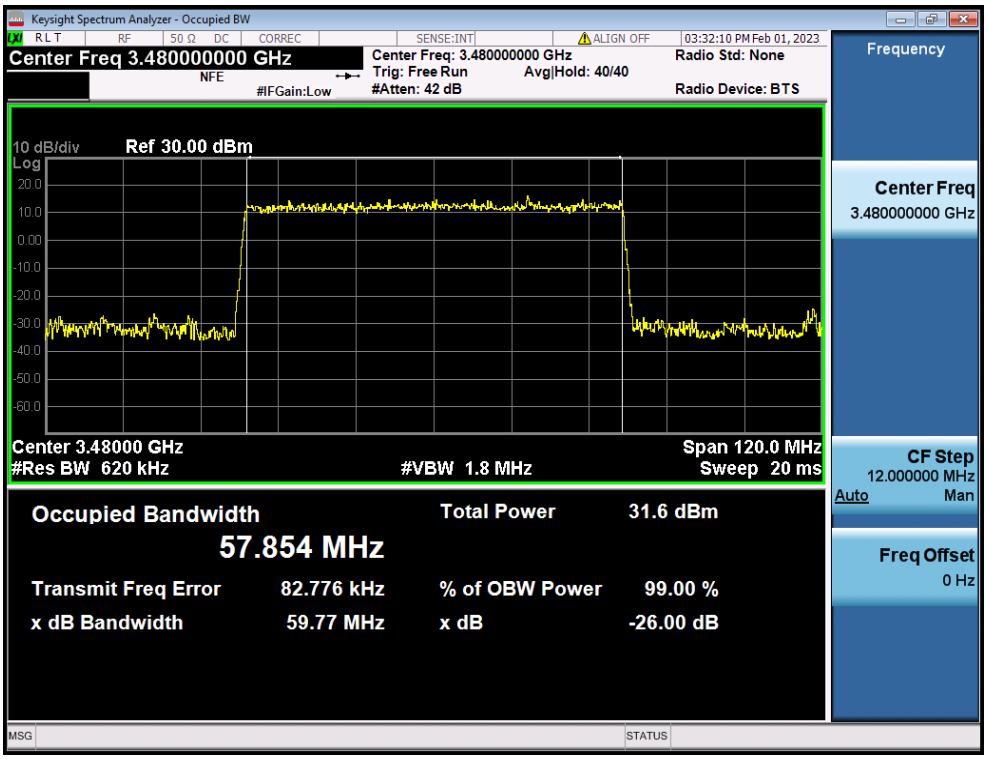
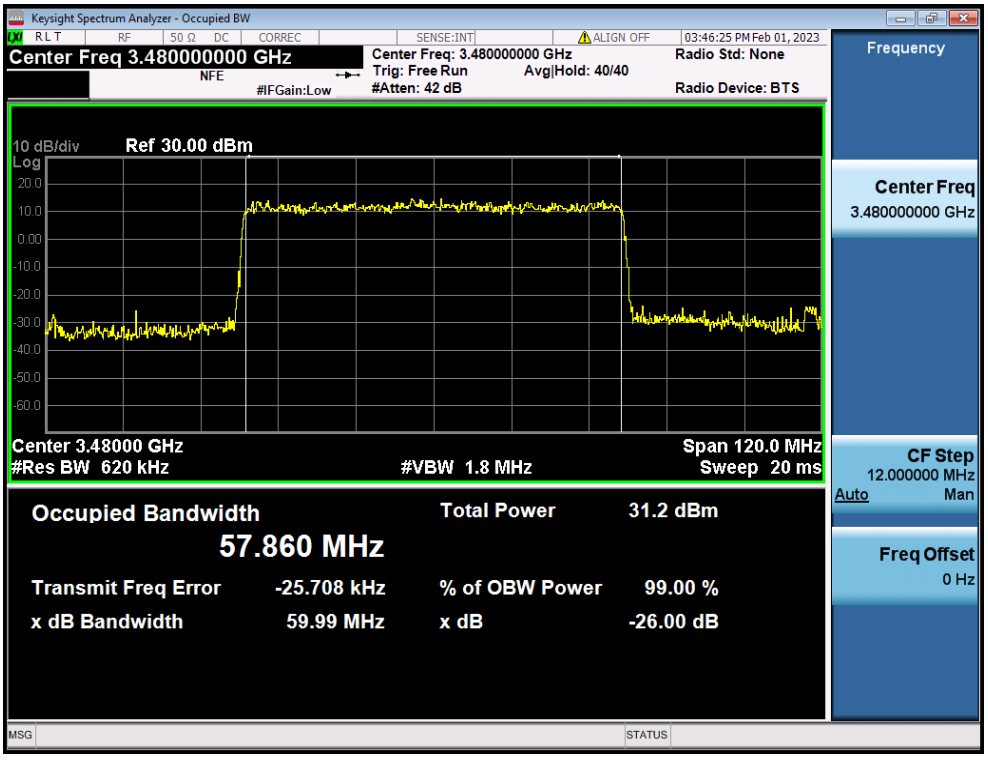


80 MHz / 256QAM / FULL RB Size



60 MHz / π/2 BPSK / FULL RB Size



60 MHz / QPSK / FULL RB Size

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60 MHz / 16QAM / FULL RB Size

60 MHz / 64QAM / FULL RB Size

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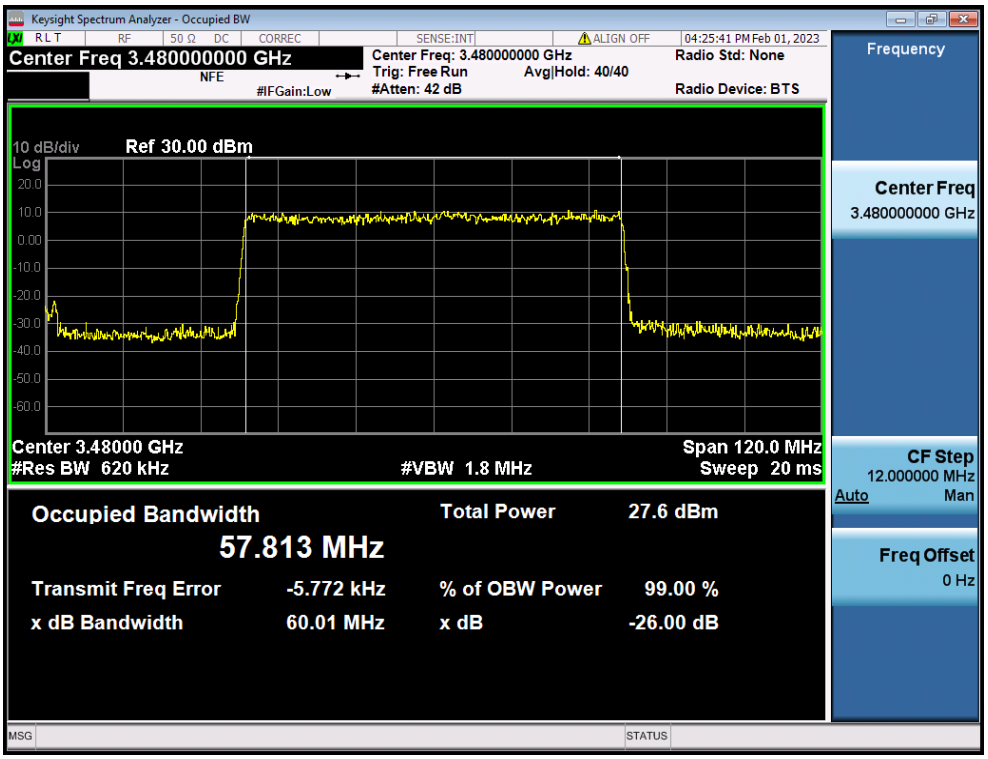

60 MHz / 256QAM / FULL RB Size

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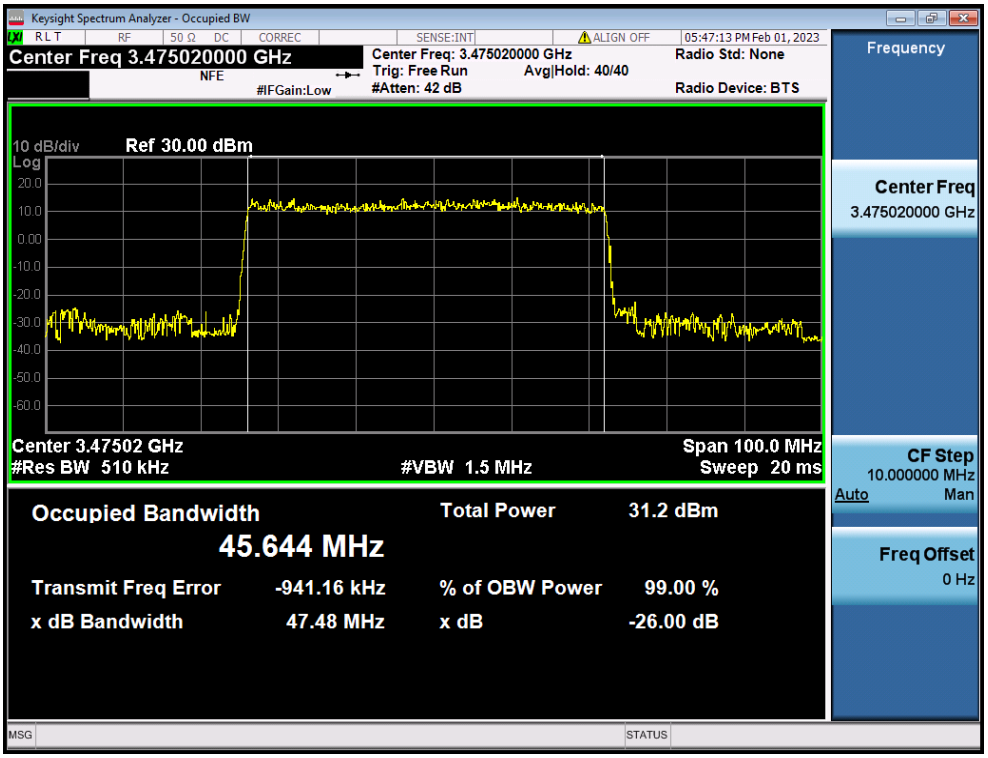
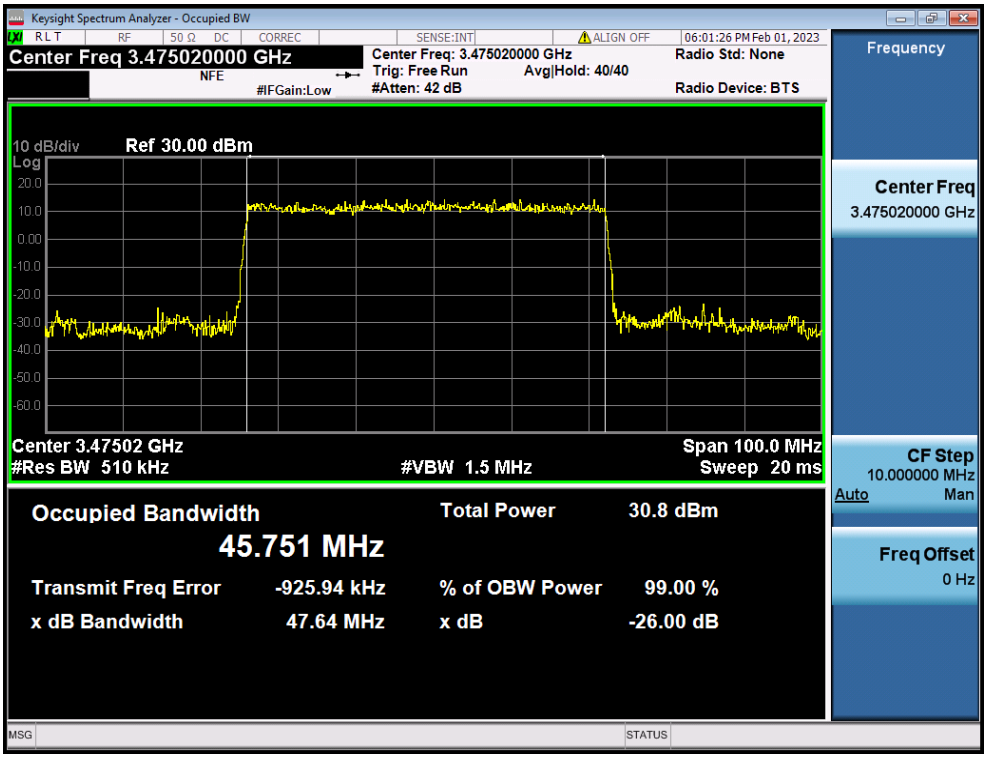


50 MHz / π/2 BPSK / FULL RB Size



50 MHz / QPSK / FULL RB Size

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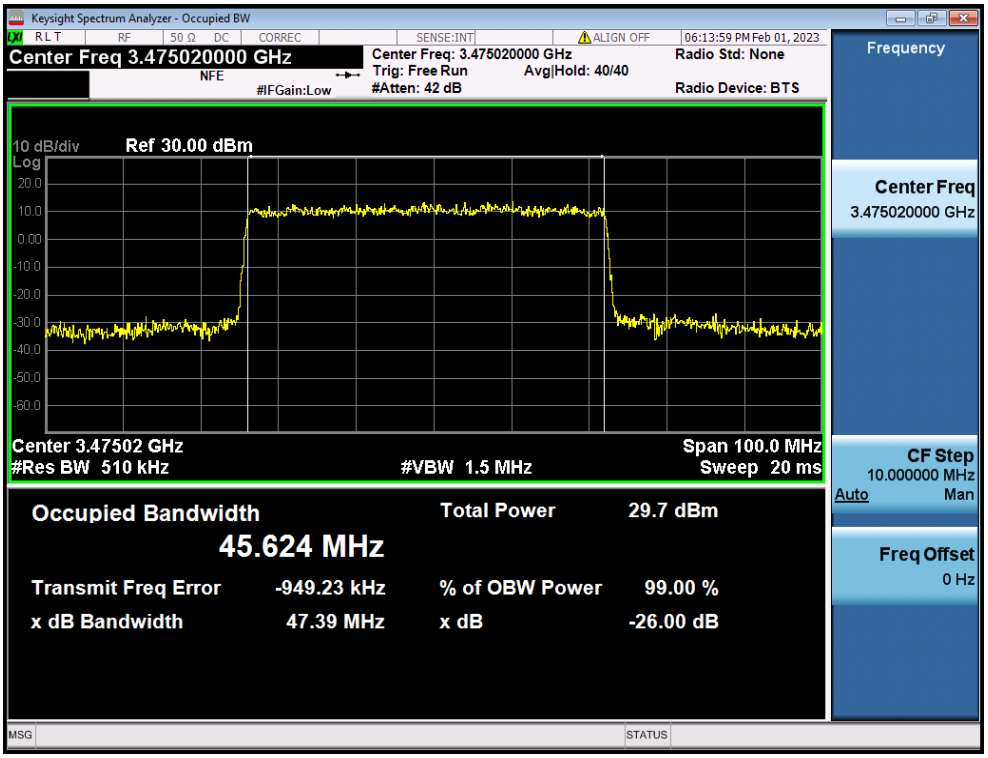
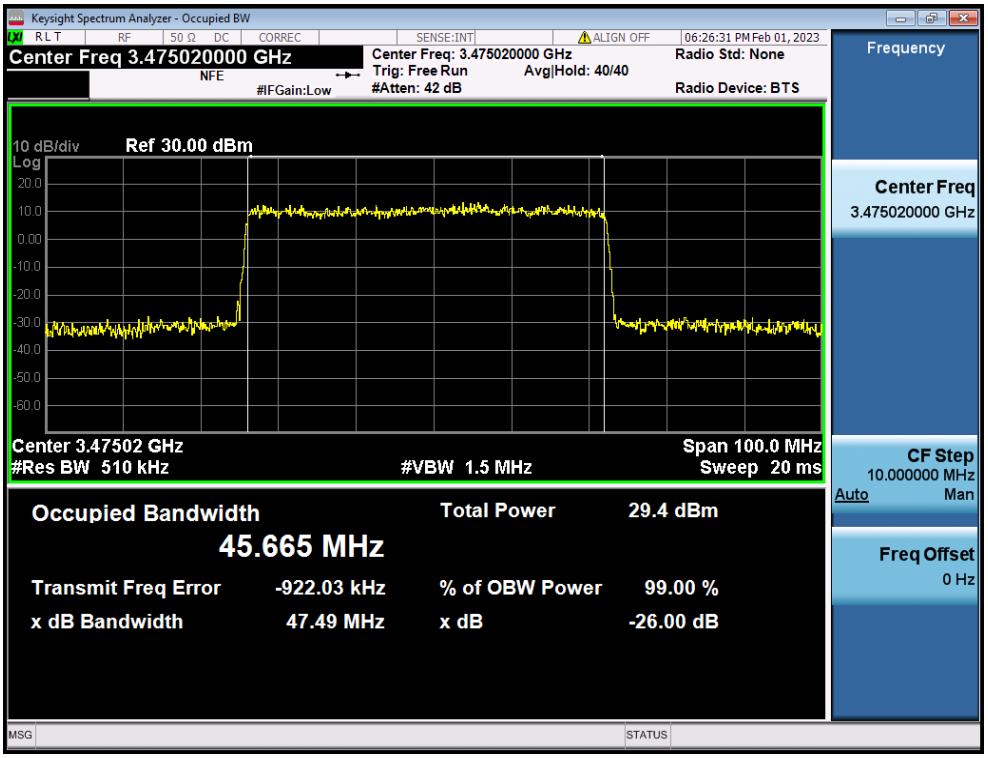


50 MHz / 16QAM / FULL RB Size



50 MHz / 64QAM / FULL RB Size

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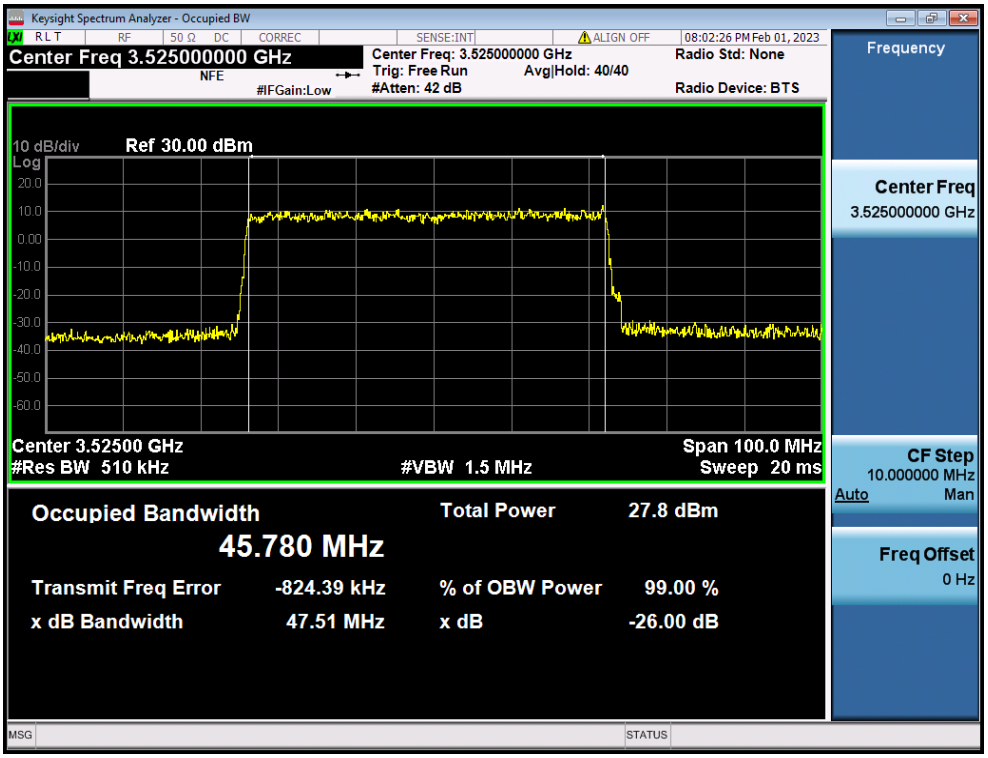

50 MHz / 256QAM / FULL RB Size

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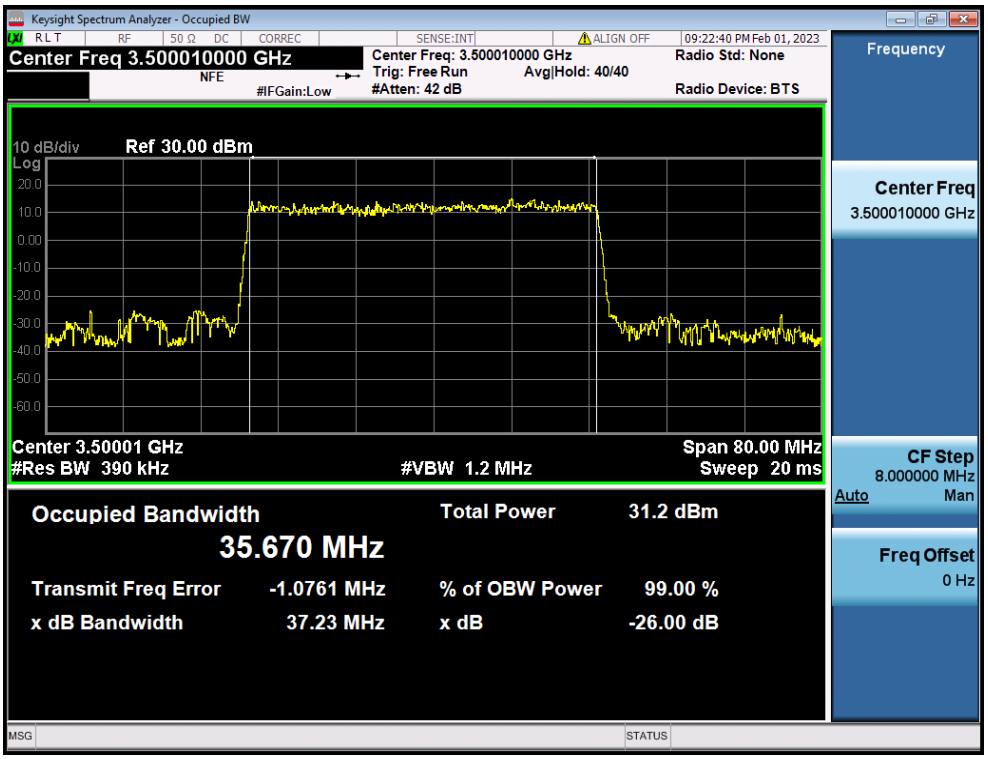
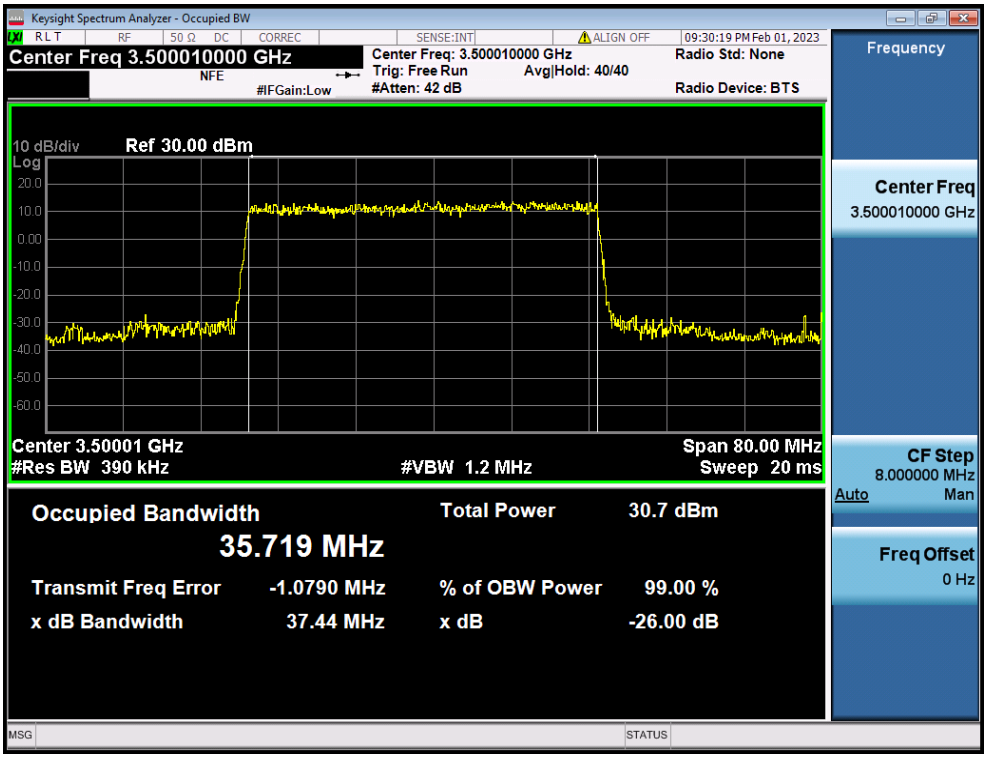


40 MHz / π/2 BPSK / FULL RB Size



40 MHz / QPSK / FULL RB Size

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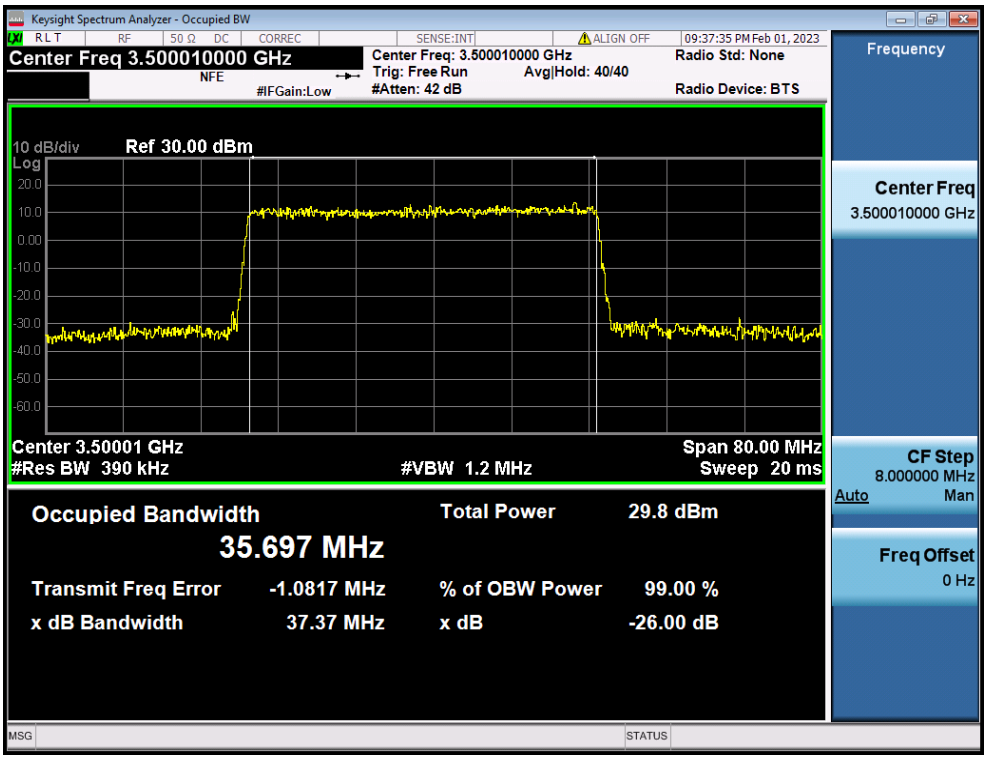
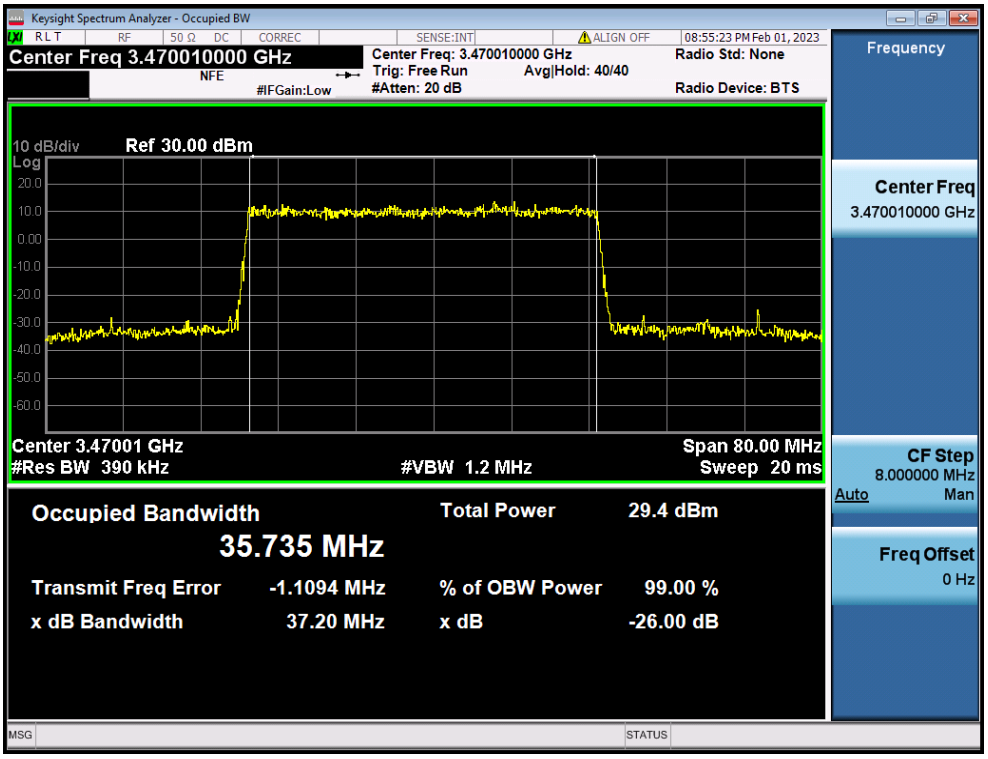


40 MHz / 16QAM / FULL RB Size



40 MHz / 64QAM / FULL RB Size

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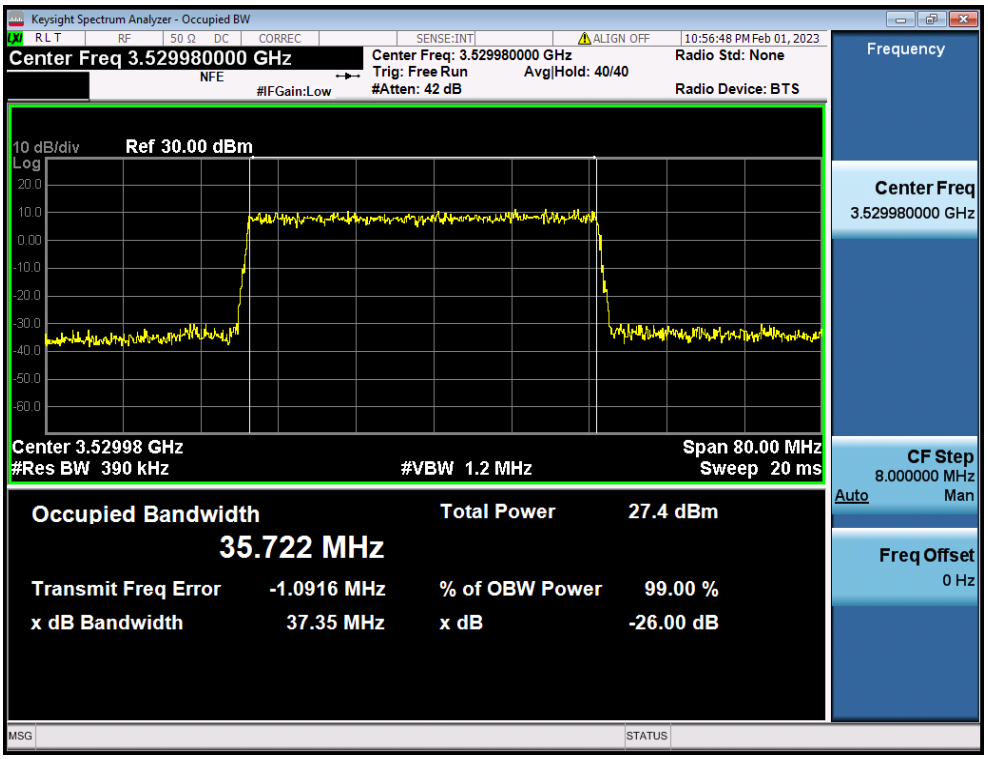

40 MHz / 256QAM / FULL RB Size

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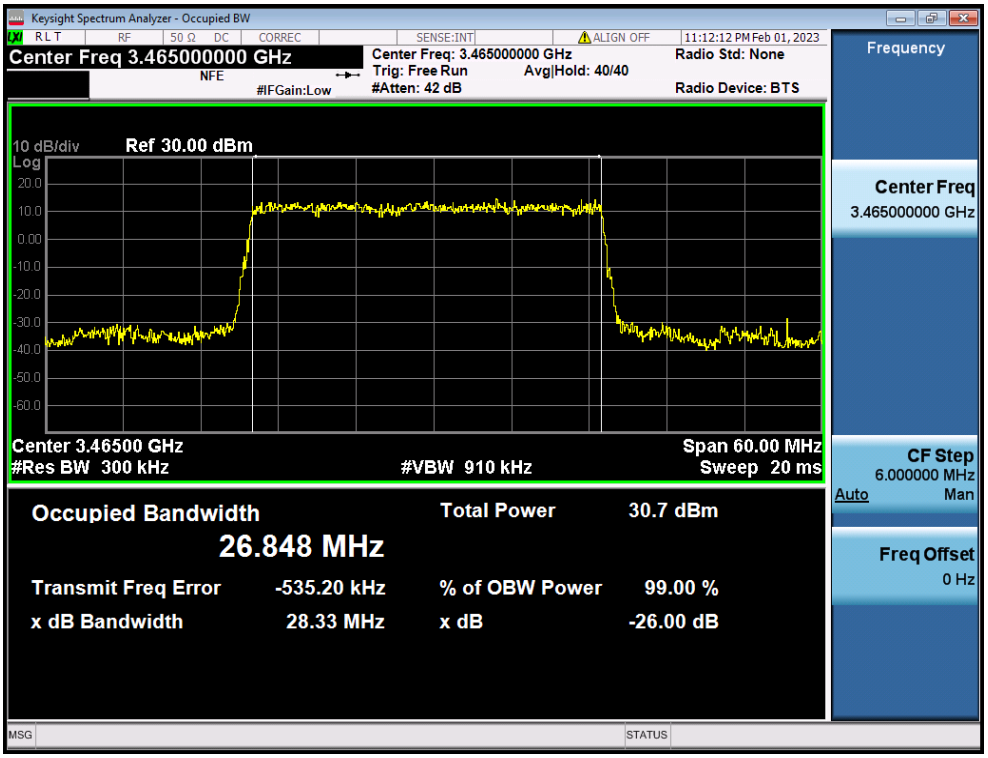
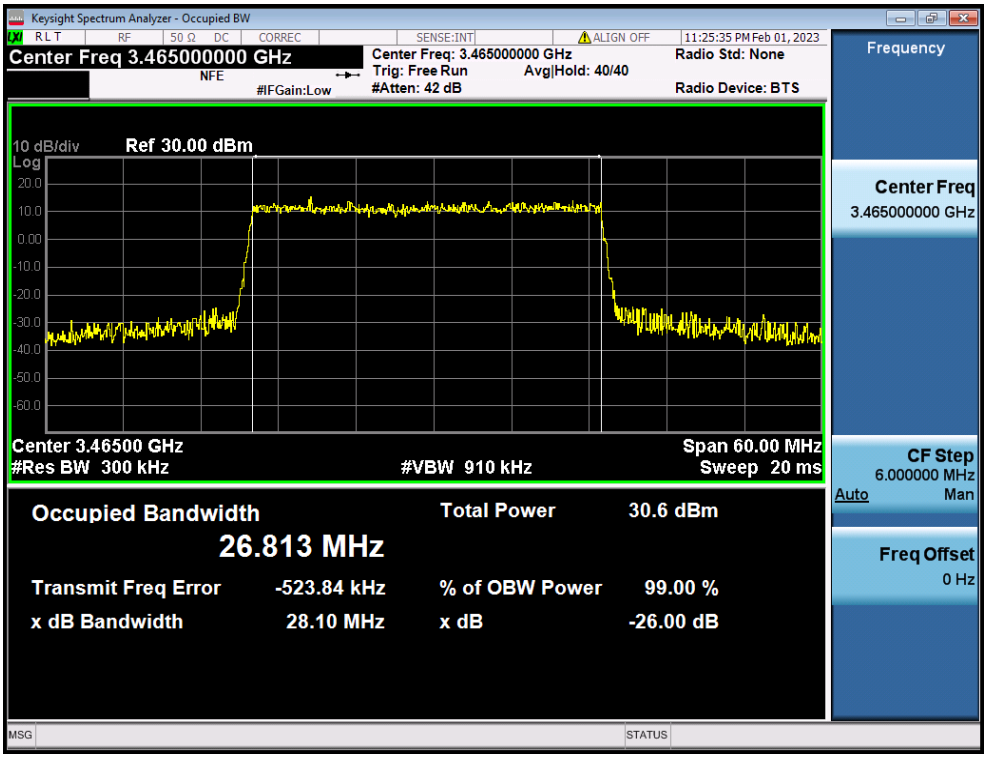


30 MHz / π/2 BPSK / FULL RB Size



30 MHz / QPSK / FULL RB Size

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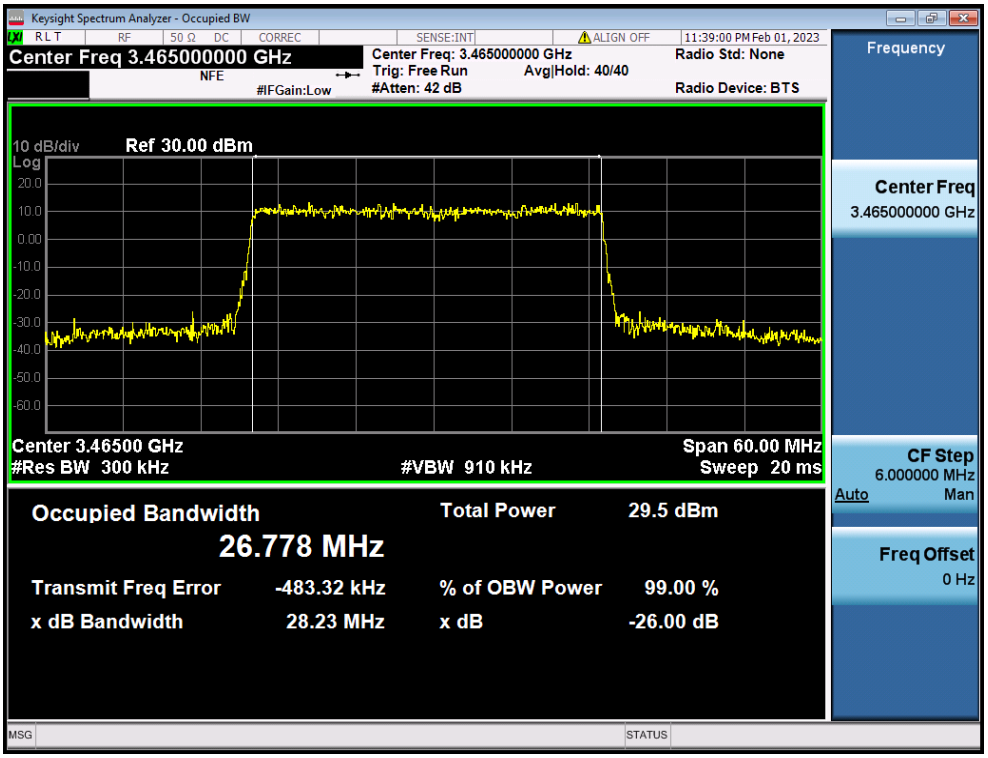
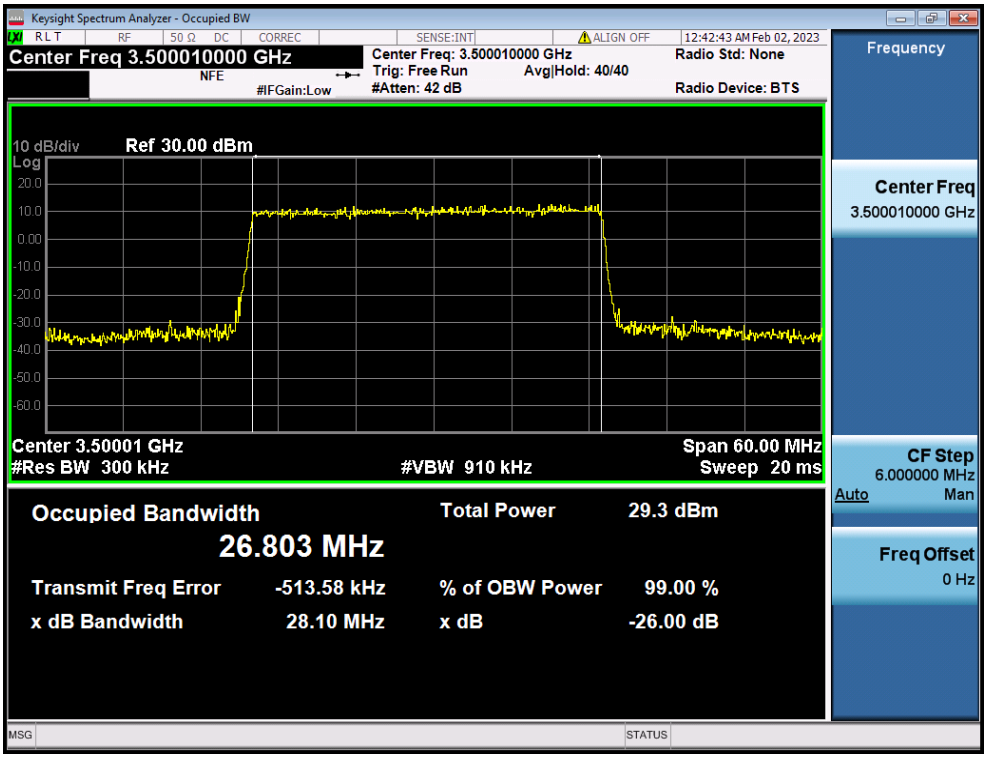


30 MHz / 16QAM / FULL RB Size



30 MHz / 64QAM / FULL RB Size

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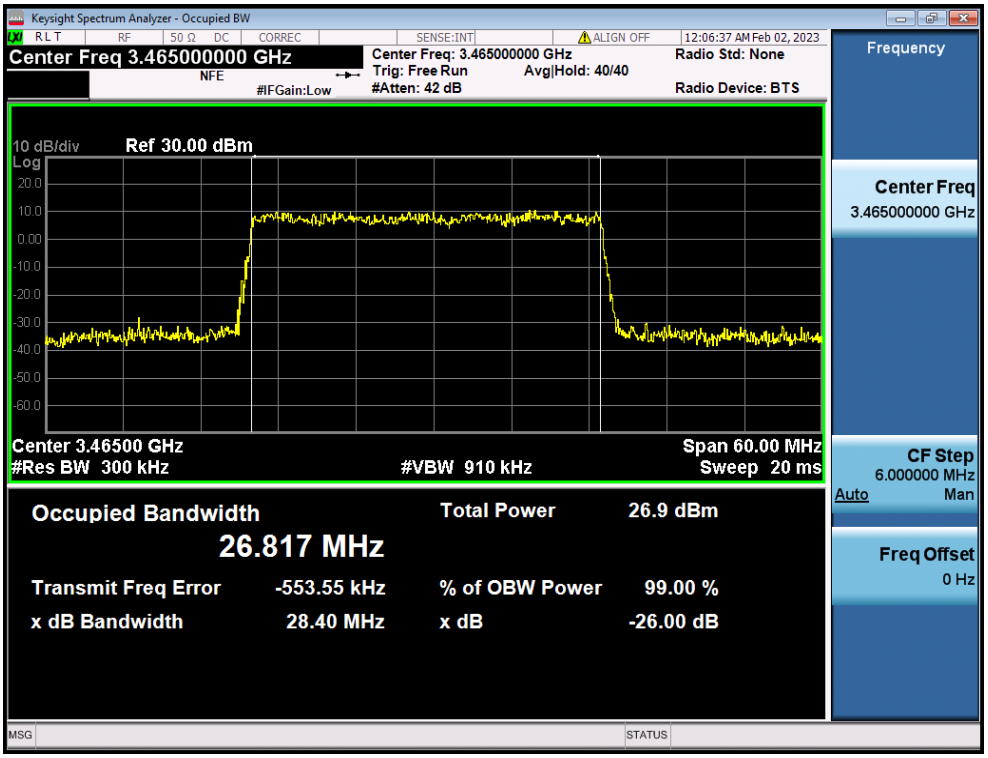

30 MHz / 256QAM / FULL RB Size

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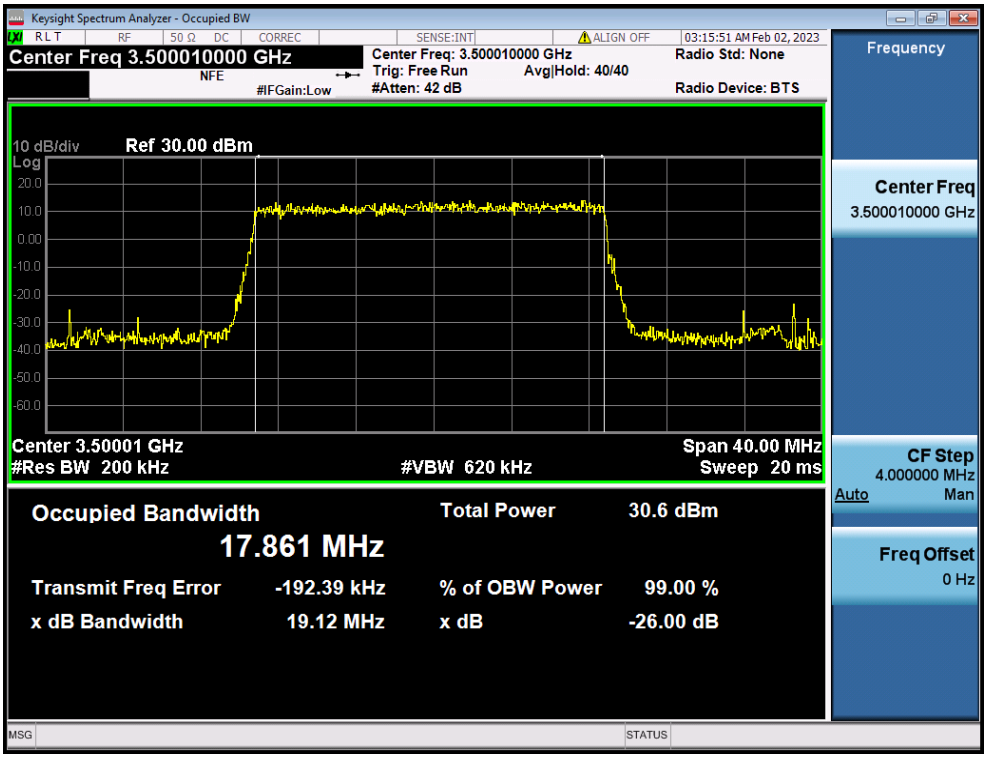
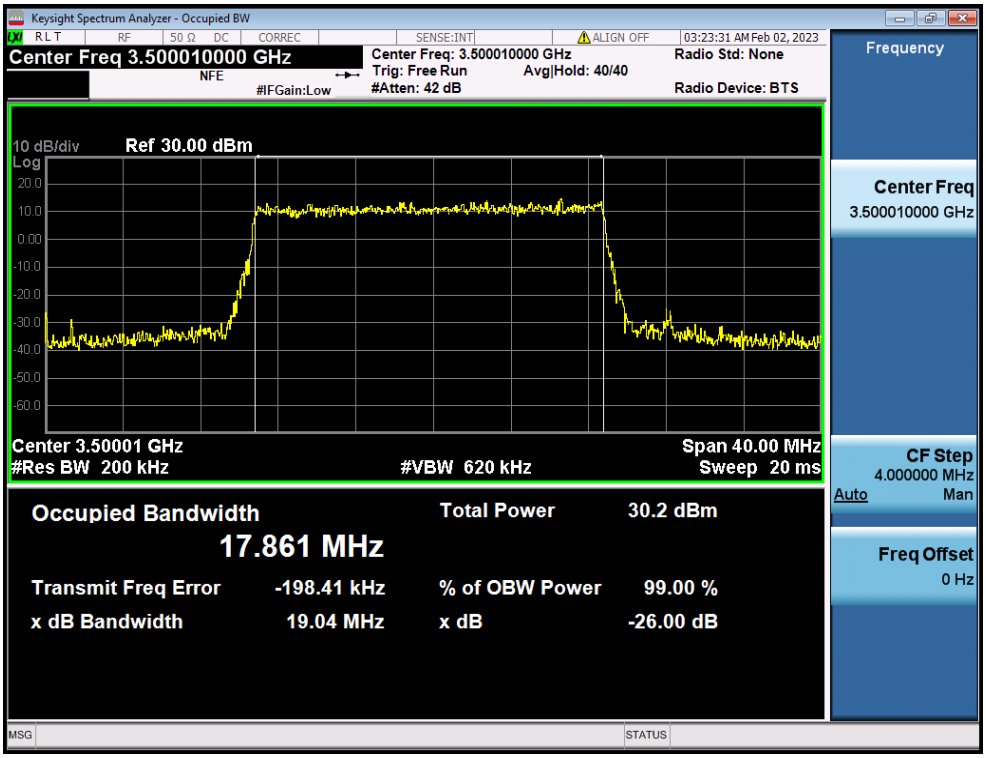


20 MHz / π/2 BPSK / FULL RB Size



20 MHz / QPSK / FULL RB Size

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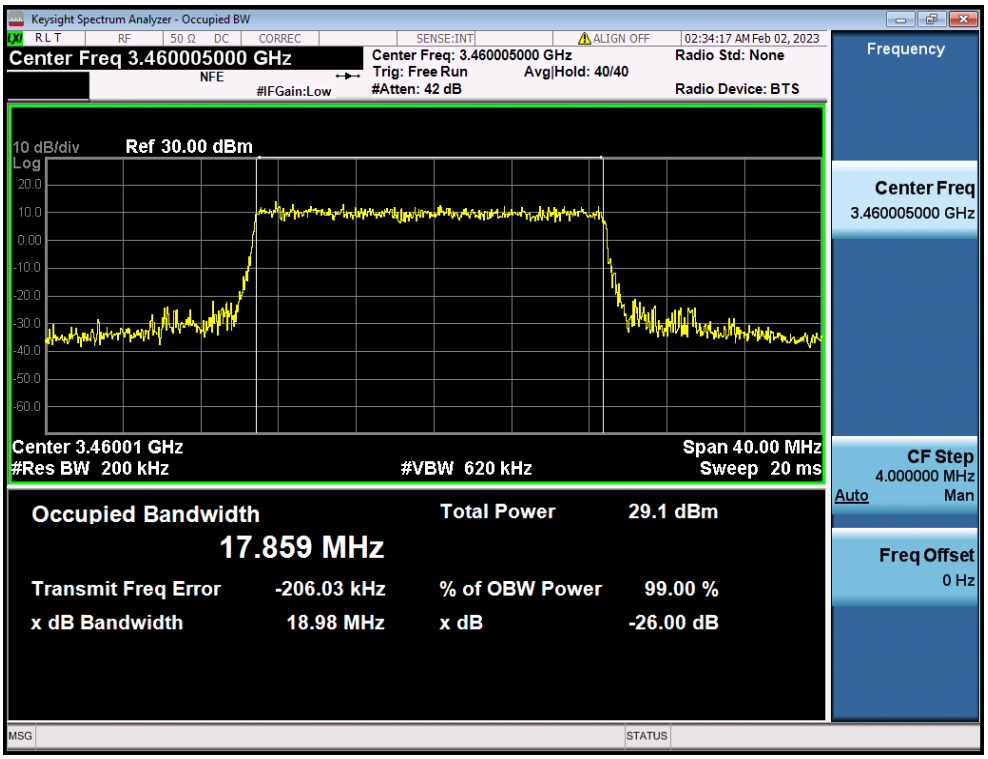
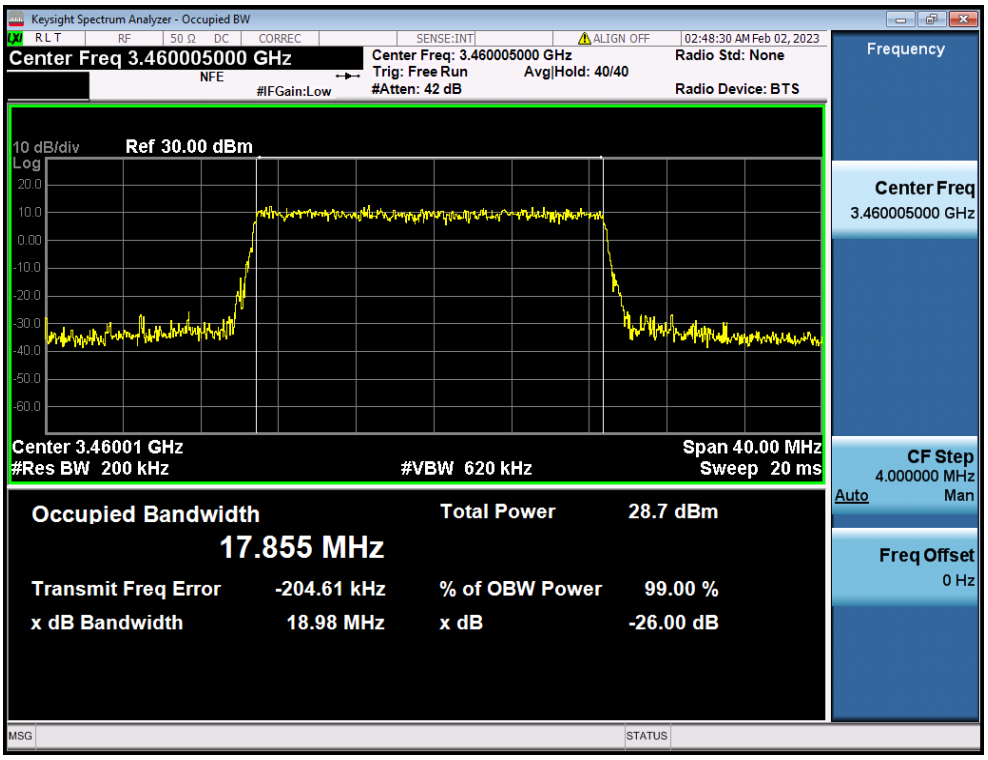


20 MHz / 16QAM / FULL RB Size



20 MHz / 64QAM / FULL RB Size

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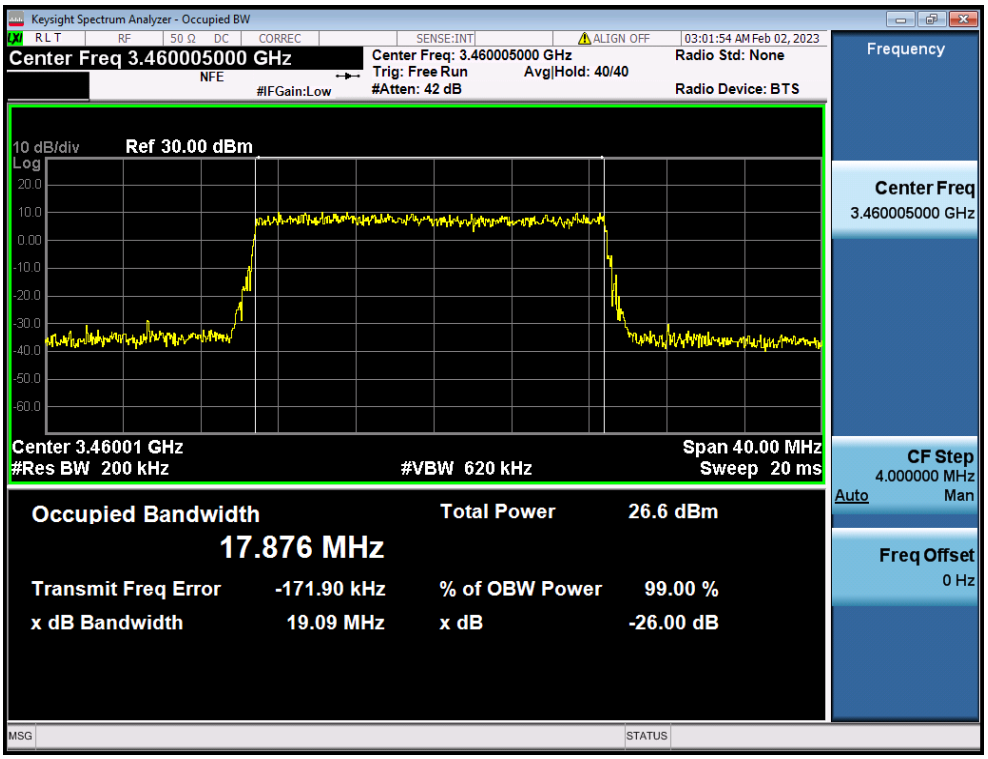

20 MHz / 256QAM / FULL RB Size

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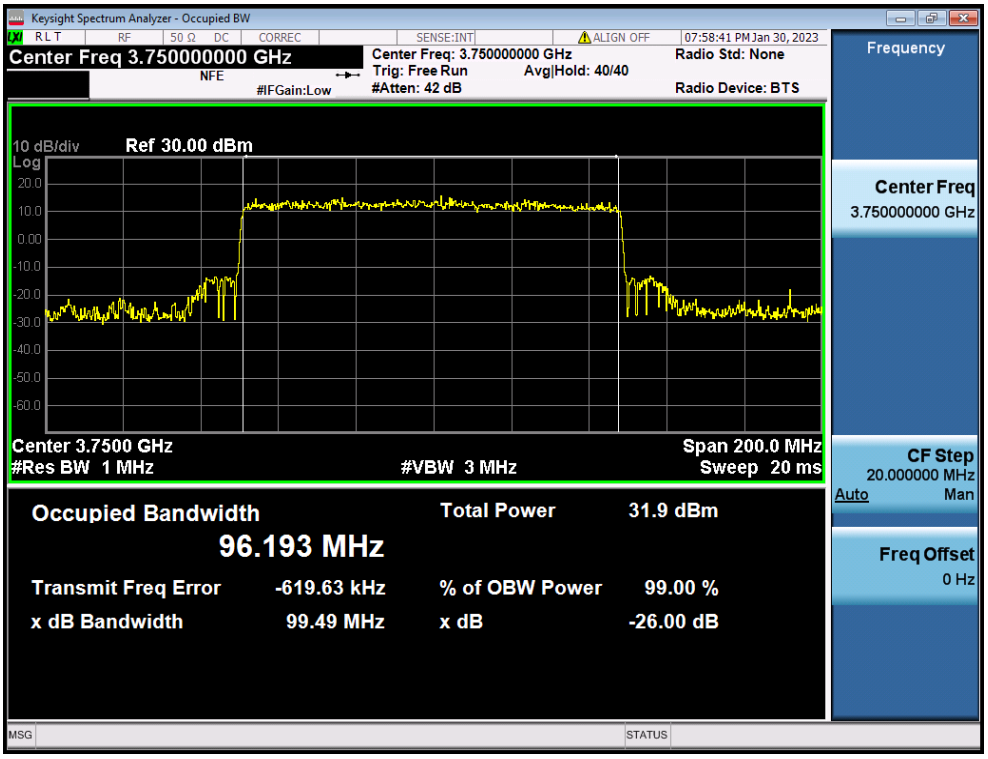
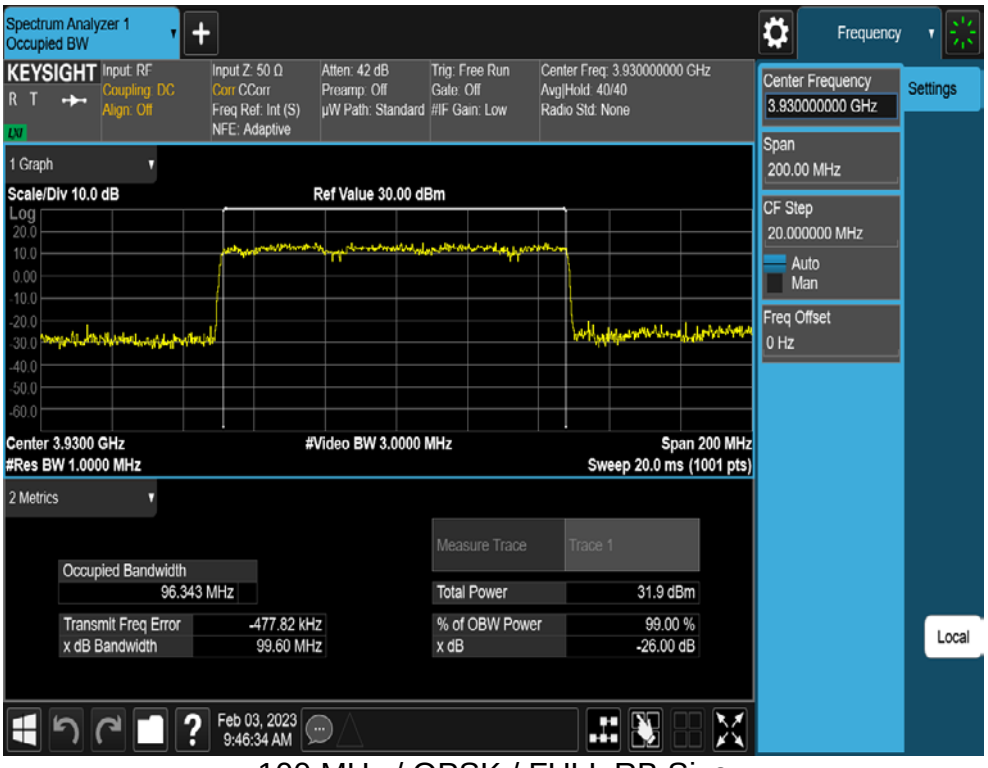
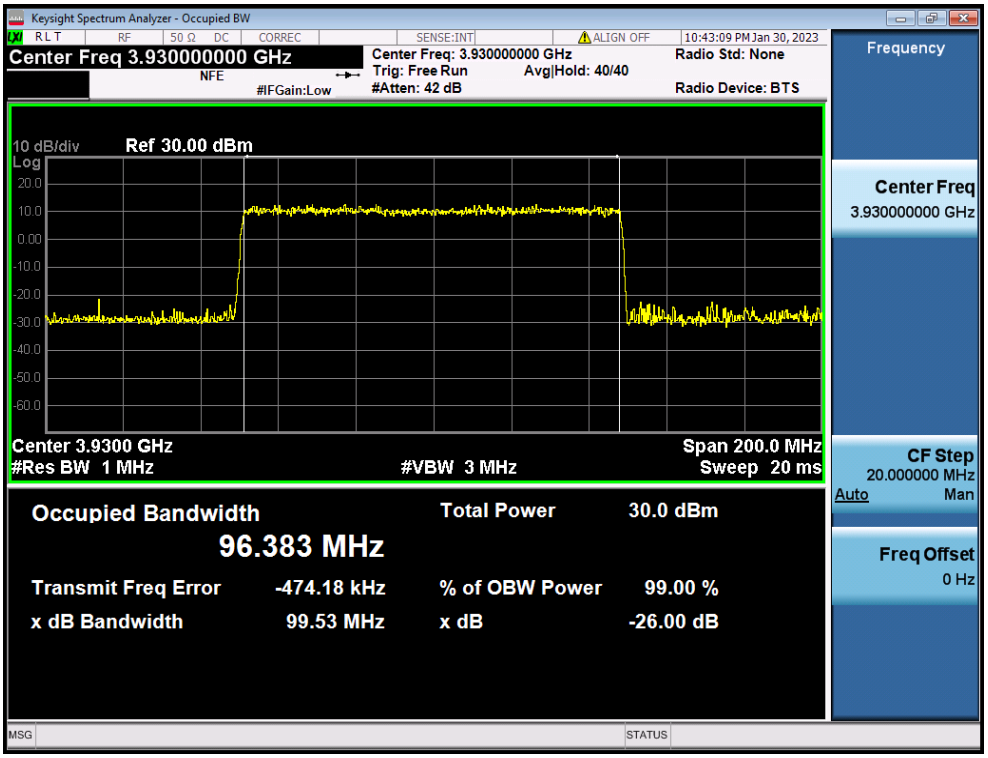
8.1.2. 3 700 ~ 3 980 MHz band



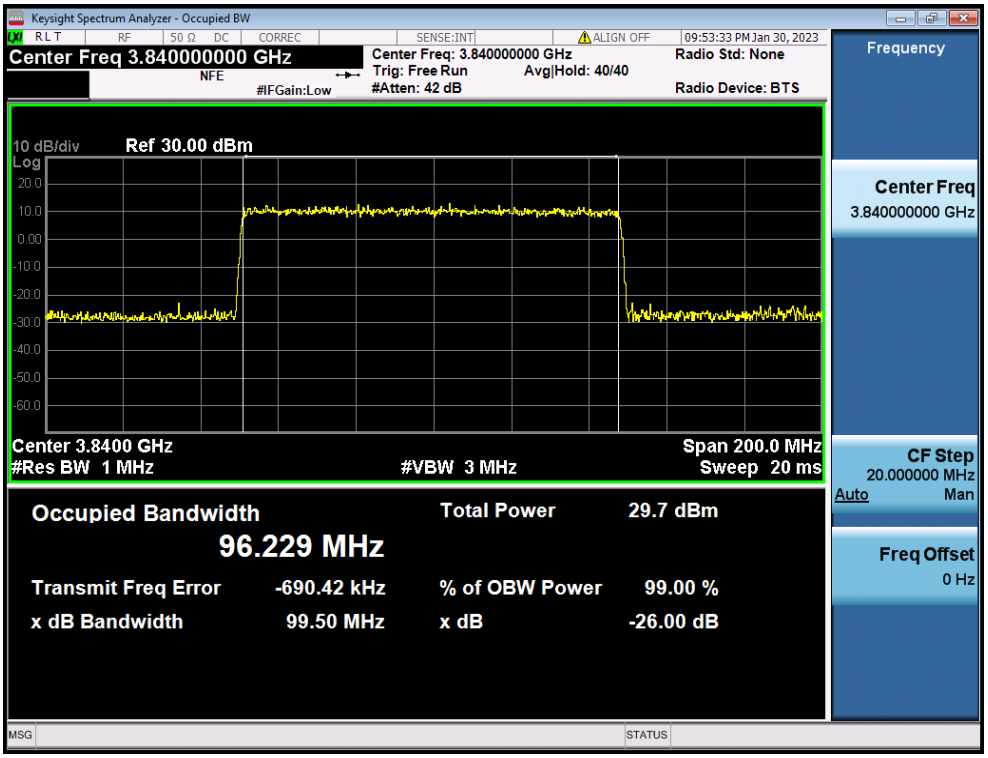
100 MHz / π/2 BPSK / FULL RB Size



100 MHz / QPSK / FULL RB Size



100 MHz / 16QAM / FULL RB Size



100 MHz / 64QAM / FULL RB Size

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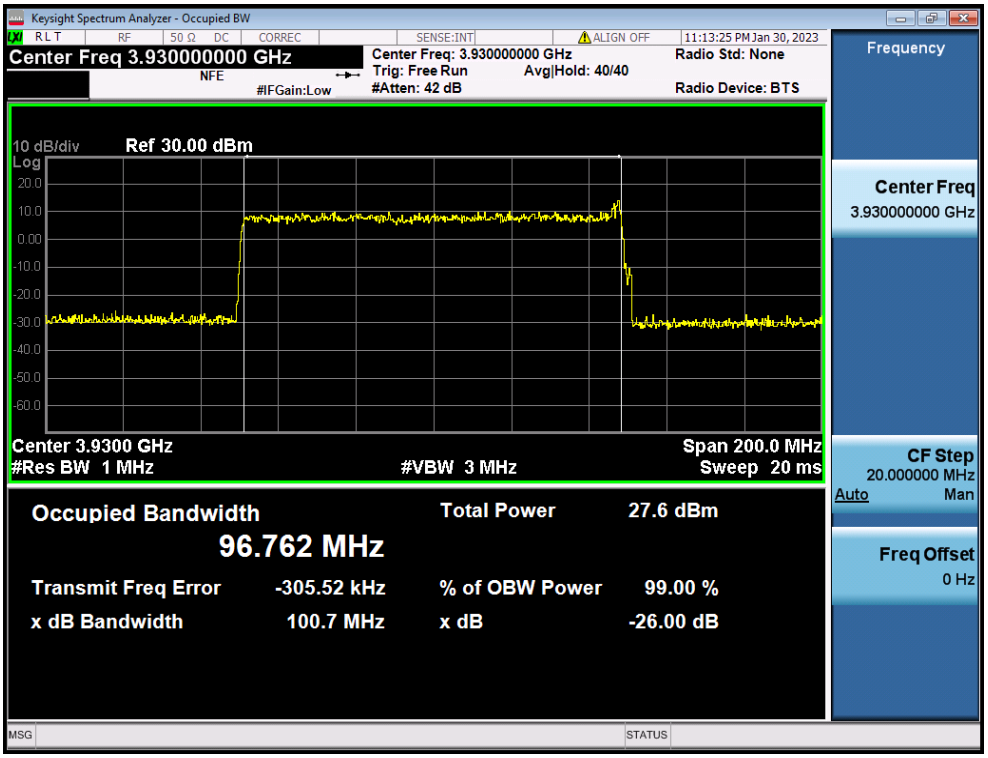

100 MHz / 256QAM / FULL RB Size

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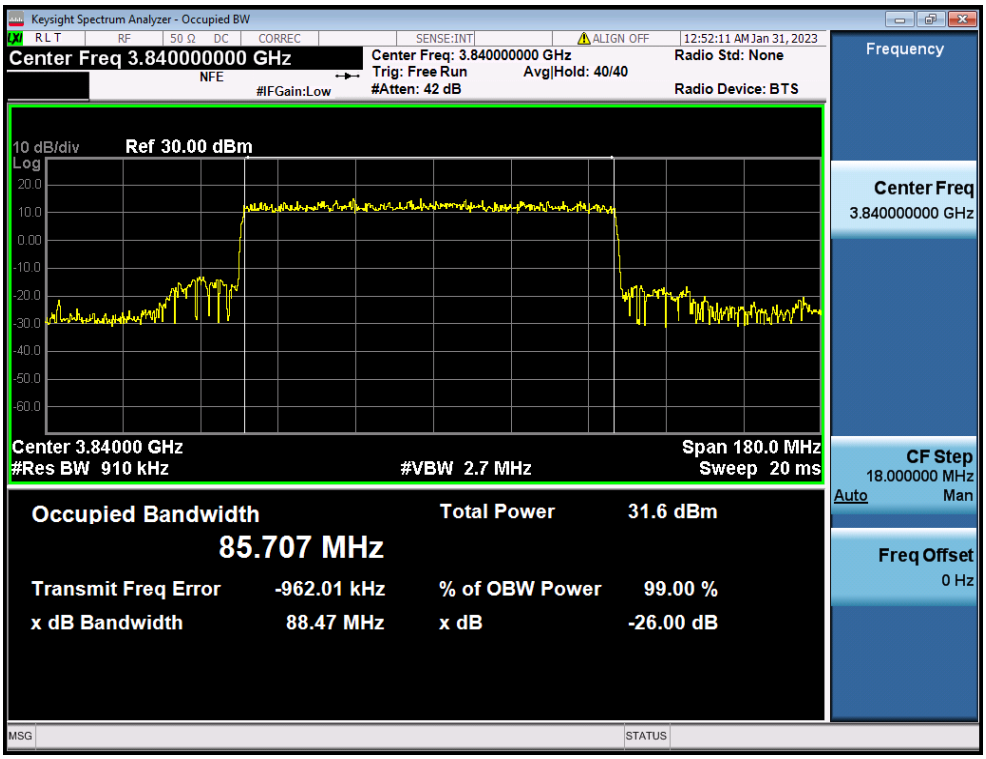
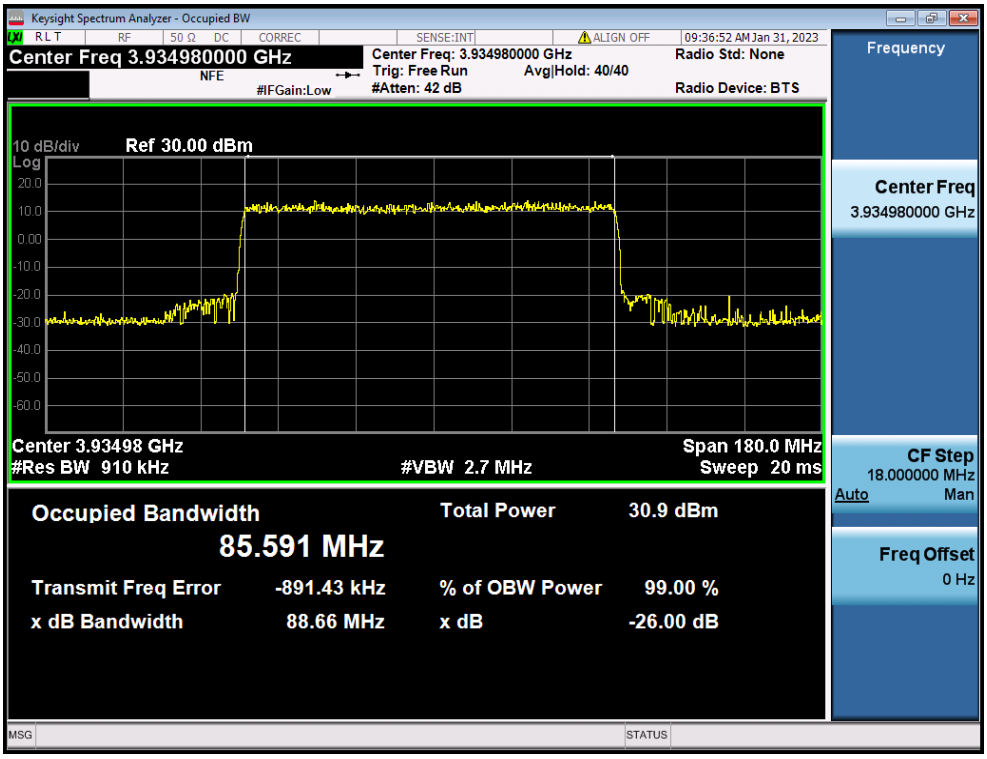
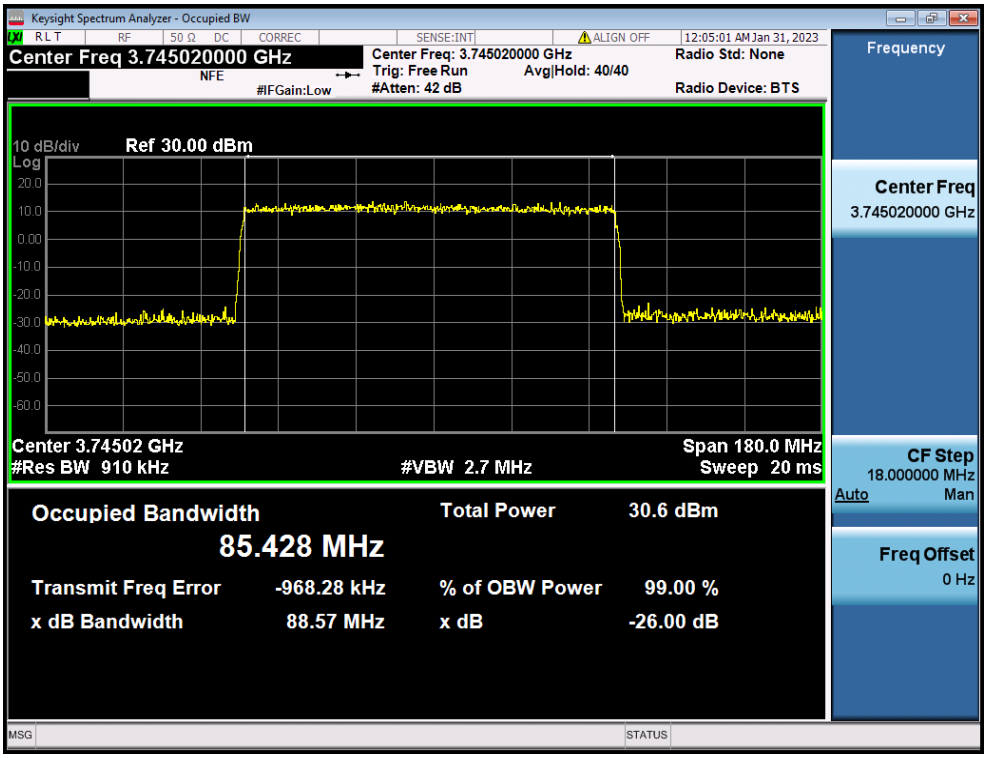


90 MHz / π/2 BPSK / FULL RB Size

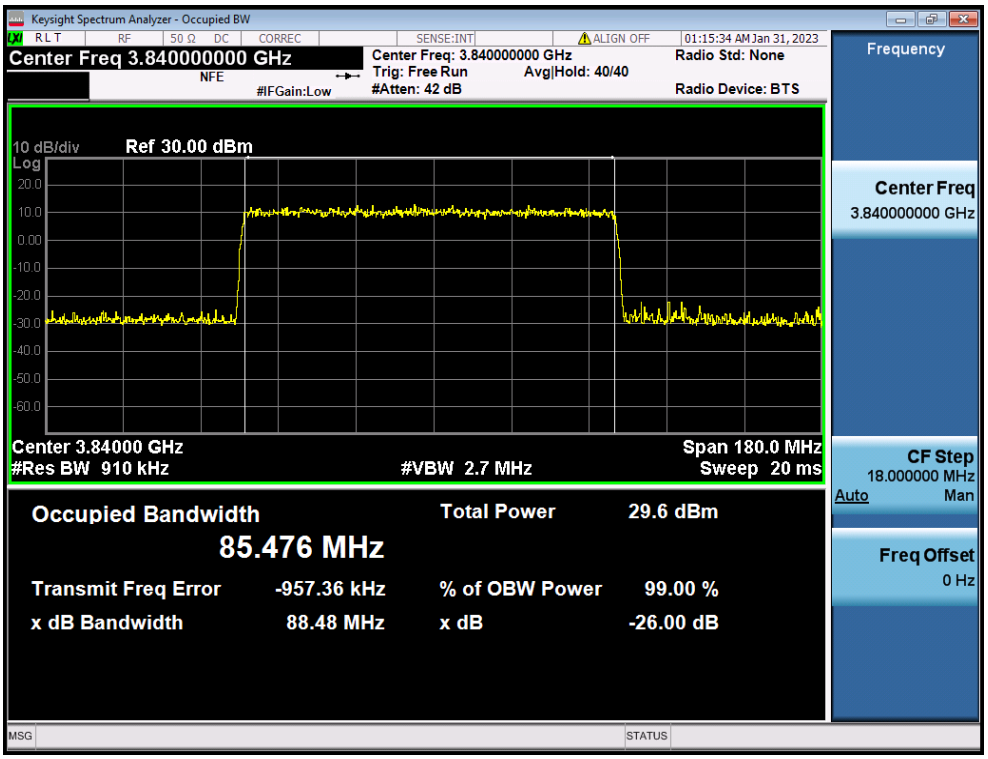


90 MHz / QPSK / FULL RB Size

This test report is prohibited to copy or reissue in whole or in part without the approval of Dt&C Co., Ltd.



90 MHz / 16QAM / FULL RB Size



90 MHz / 64QAM / FULL RB Size

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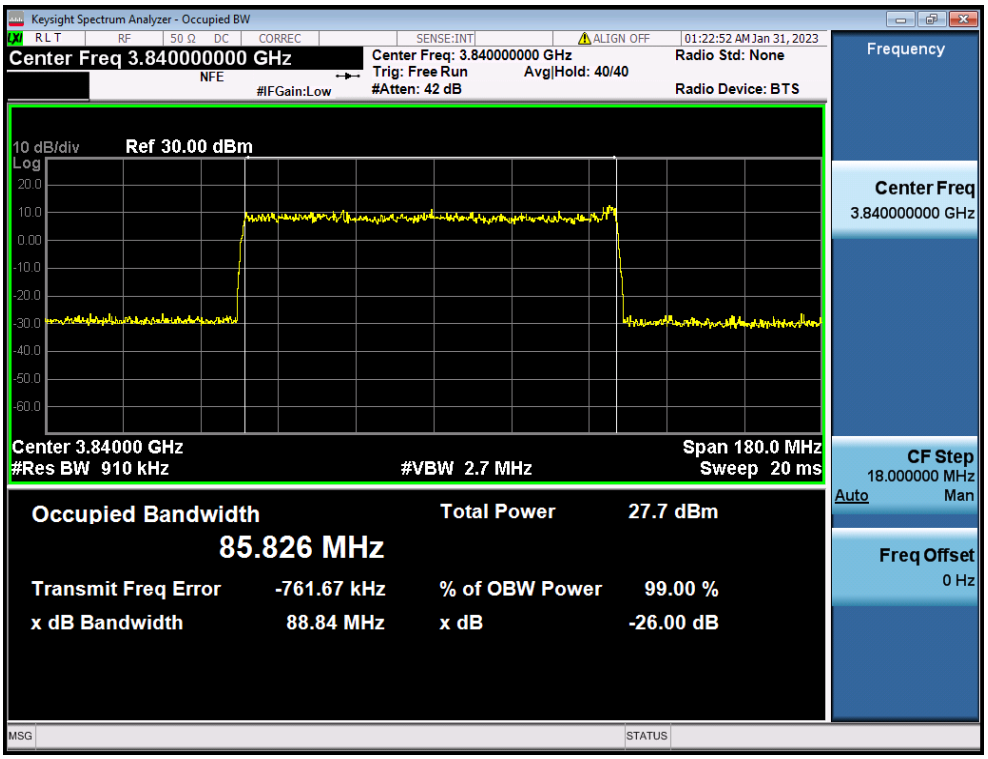
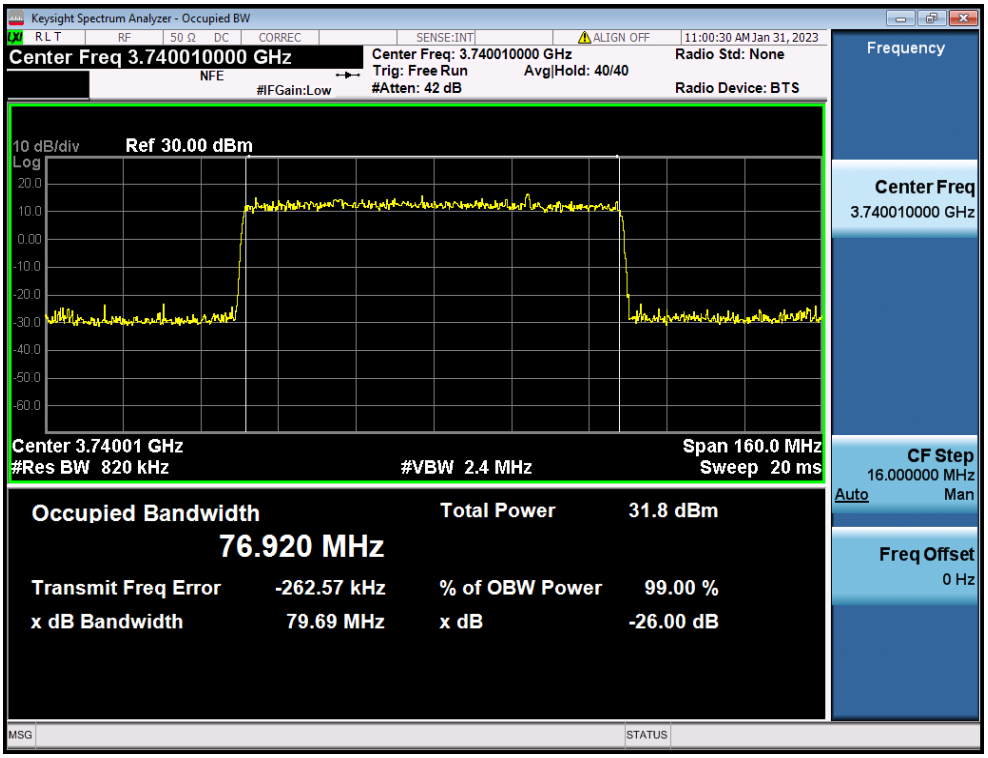
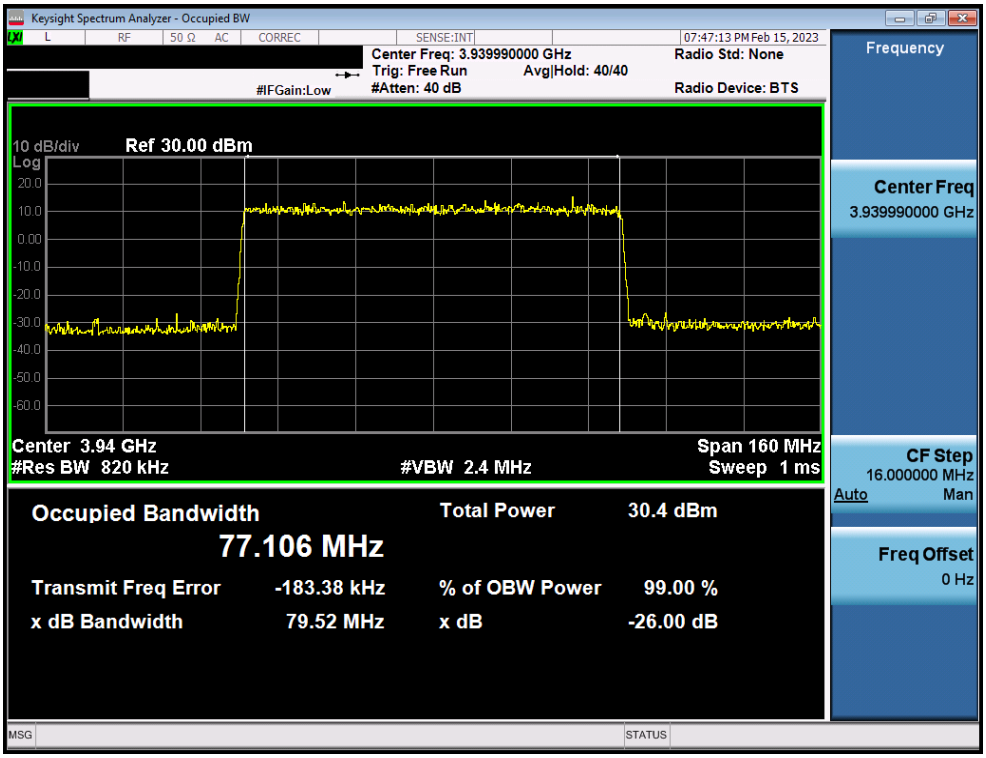


90 MHz / 256QAM / FULL RB Size

This test report is prohibited to copy or reissue in whole or in part without the approval of Dt&C Co., Ltd.



80 MHz / π/2 BPSK / FULL RB Size



80 MHz / QPSK / FULL RB Size

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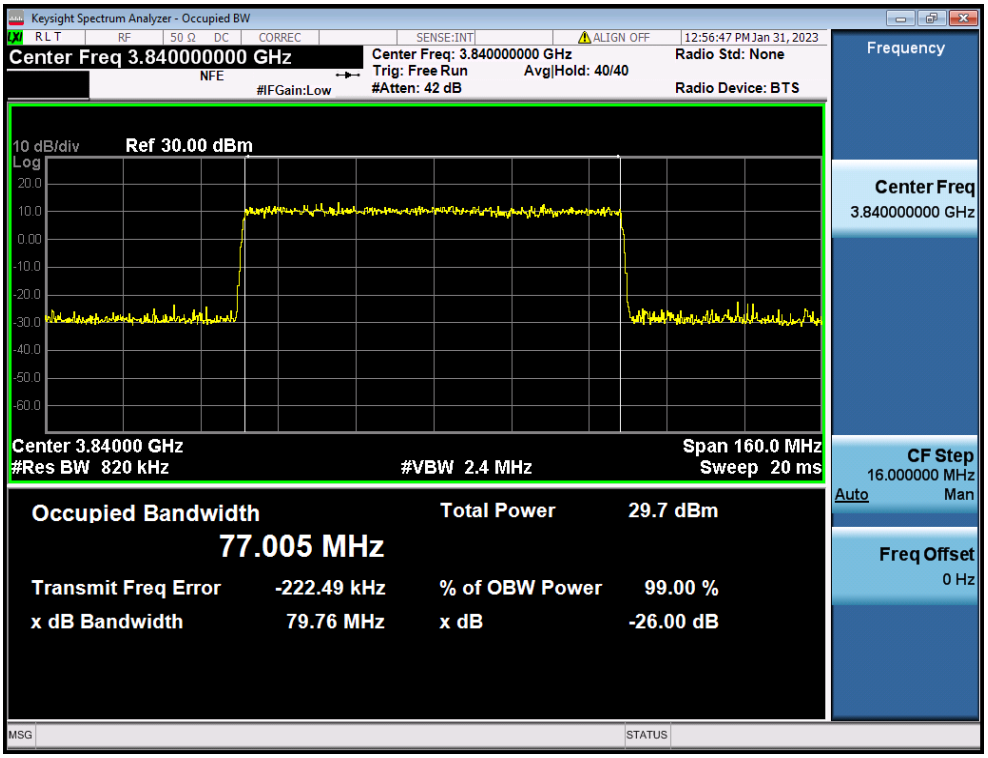
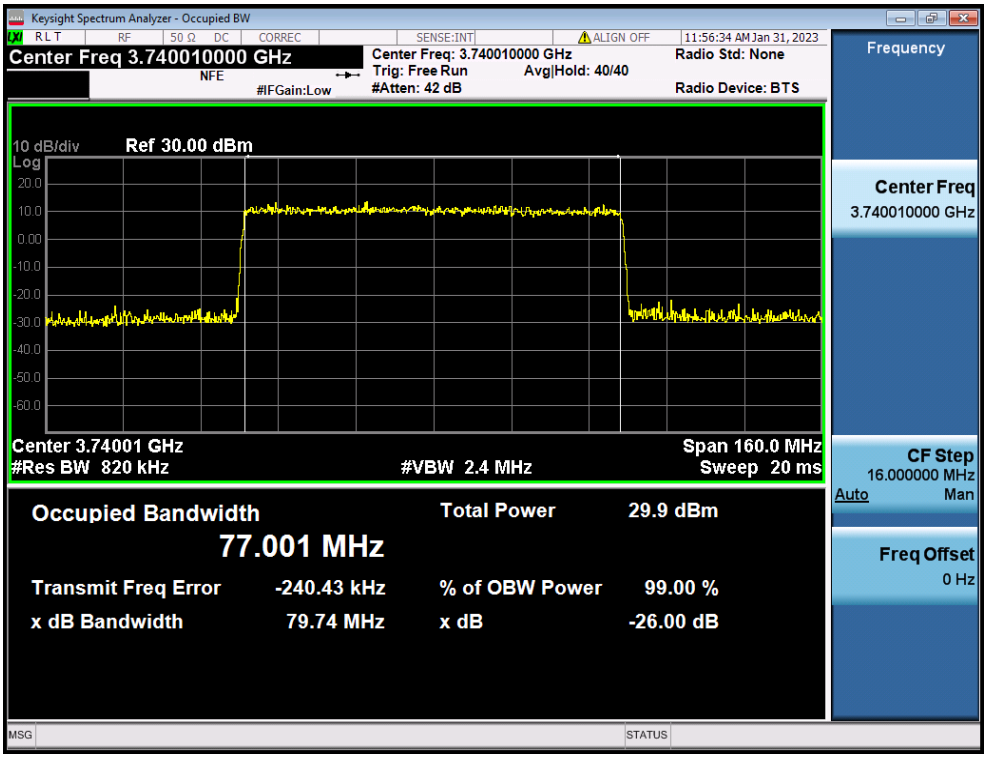


80 MHz / 16QAM / FULL RB Size



80 MHz / 64QAM / FULL RB Size

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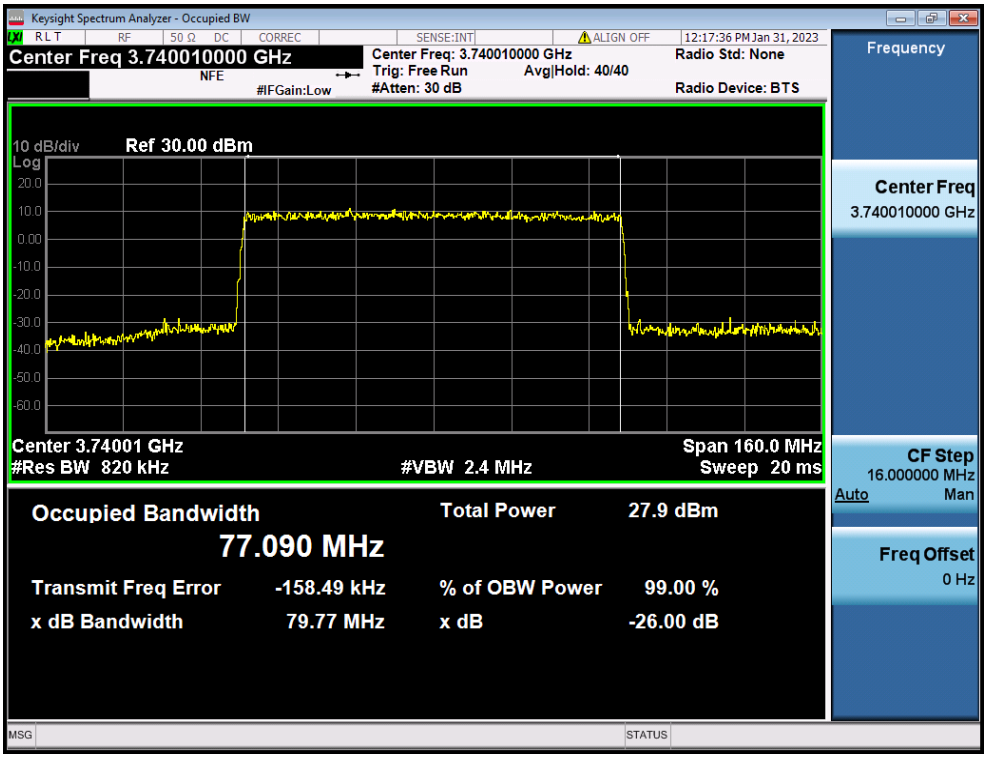

80 MHz / 256QAM / FULL RB Size

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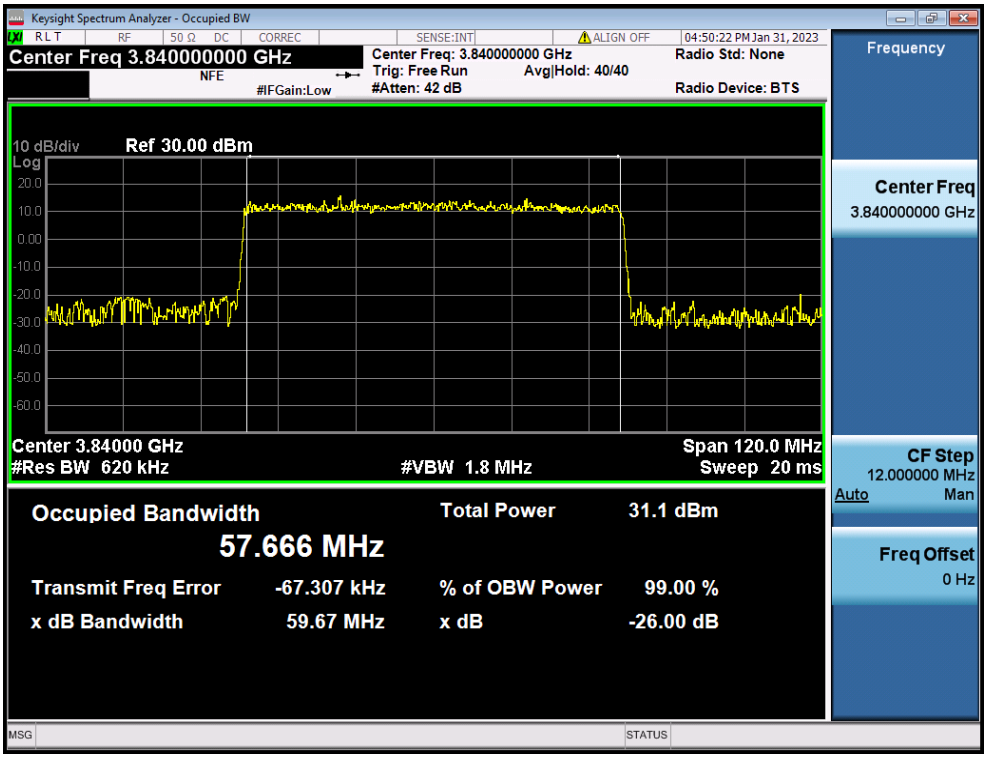
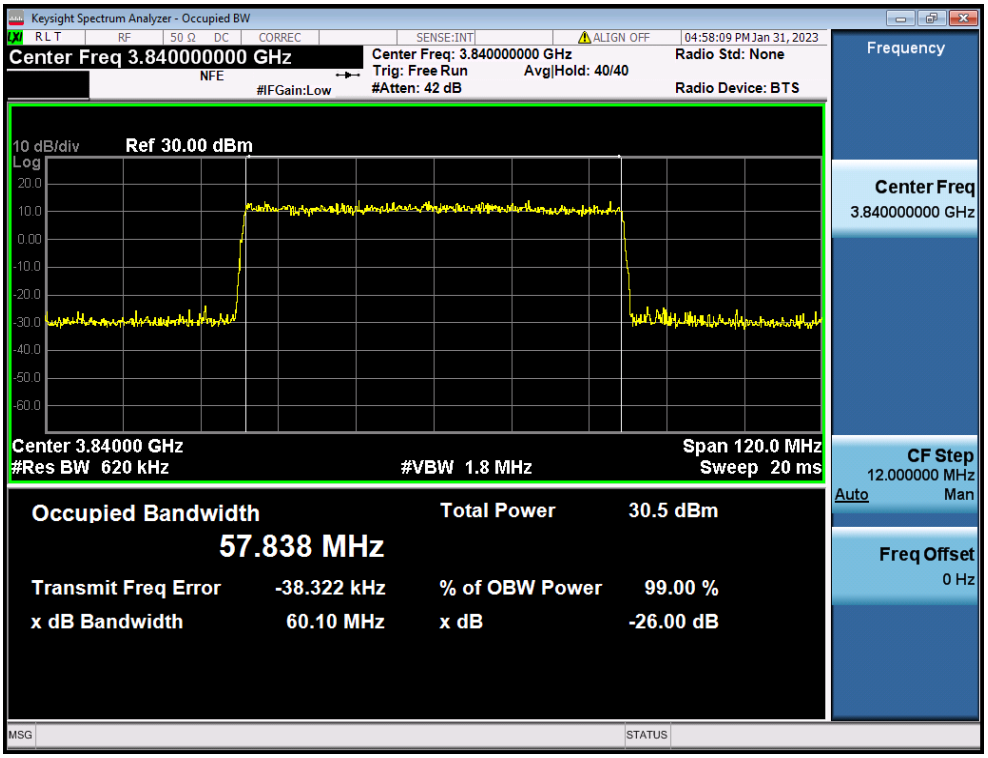


60 MHz / π/2 BPSK / FULL RB Size



60 MHz / QPSK / FULL RB Size

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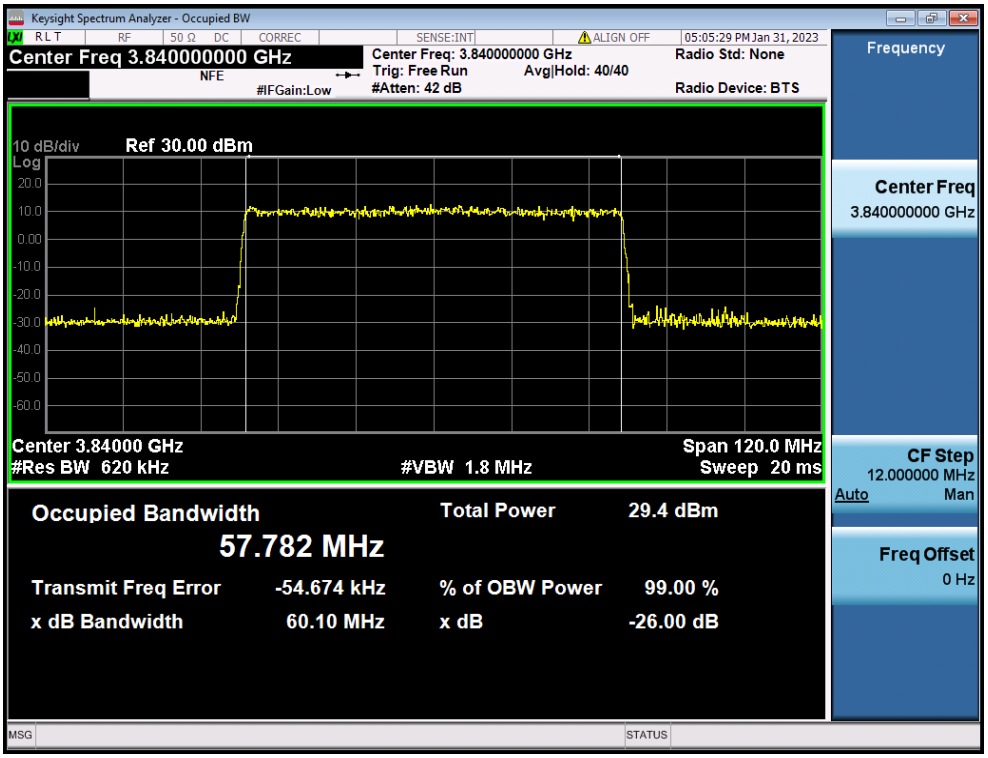
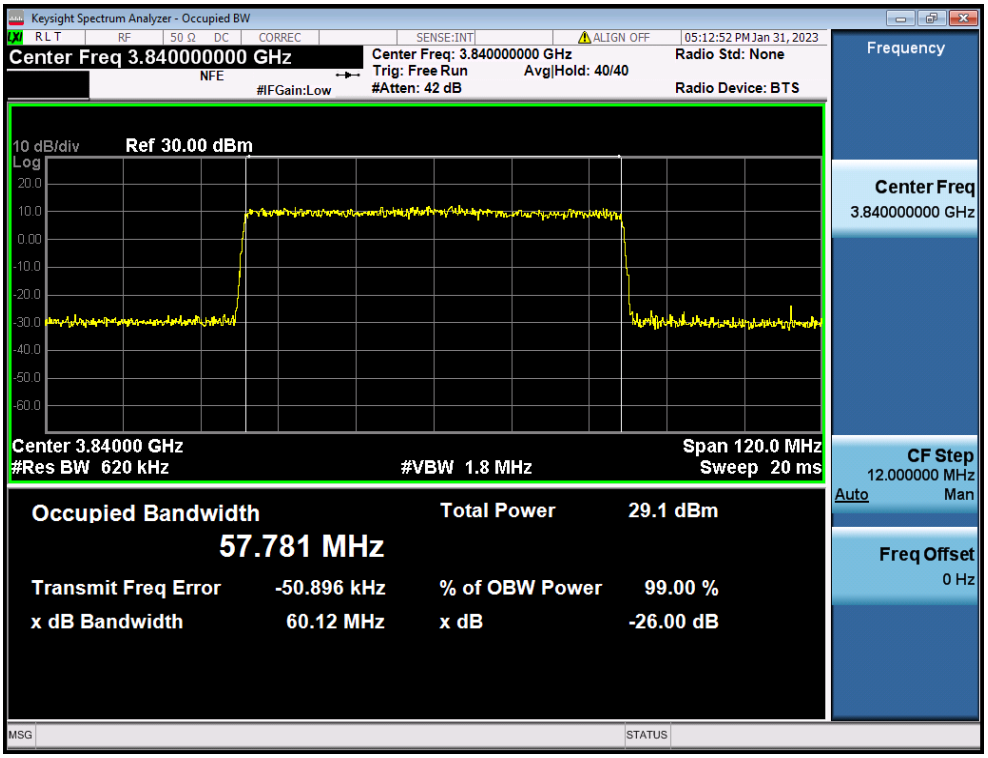


60 MHz / 16QAM / FULL RB Size



60 MHz / 64QAM / FULL RB Size

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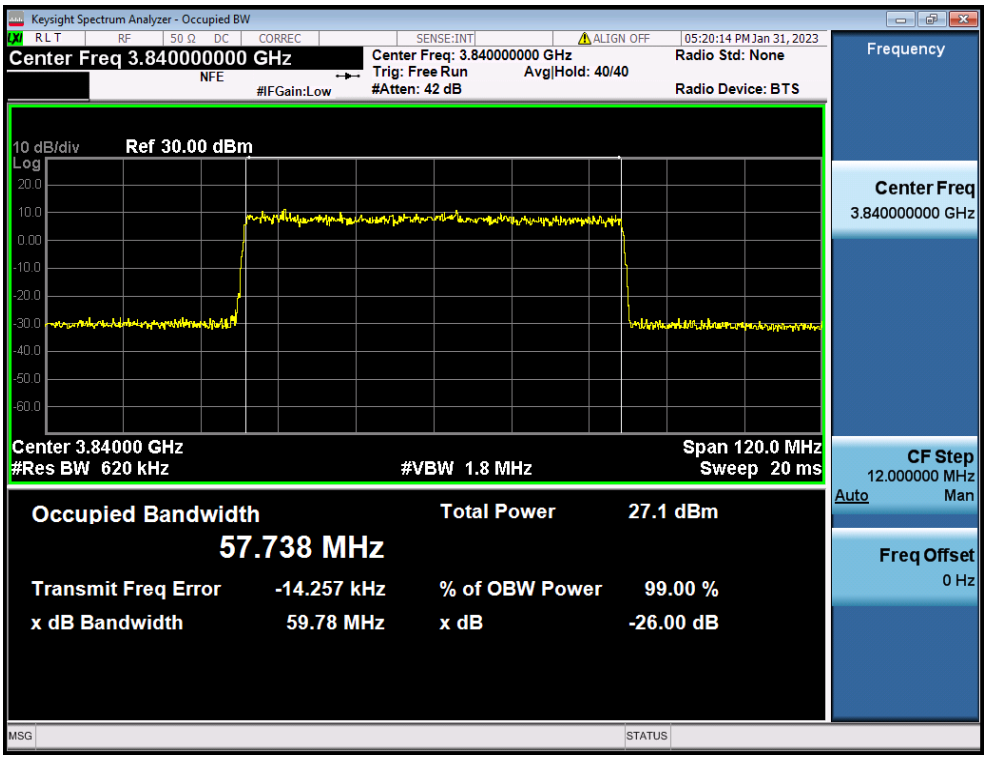

60 MHz / 256QAM / FULL RB Size

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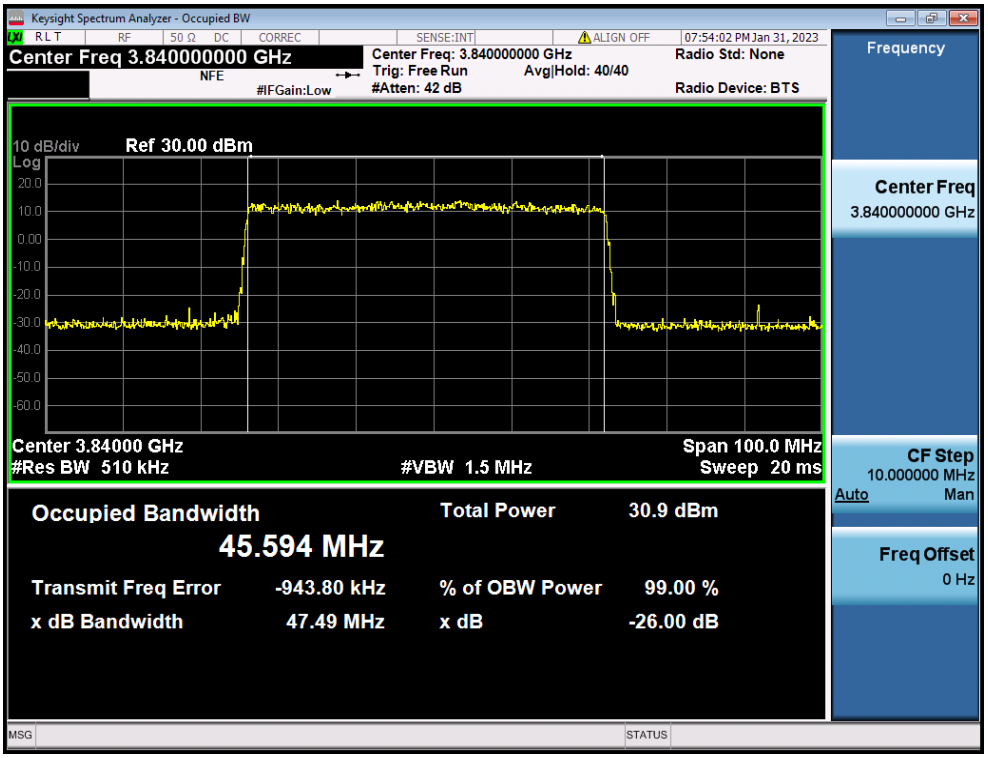
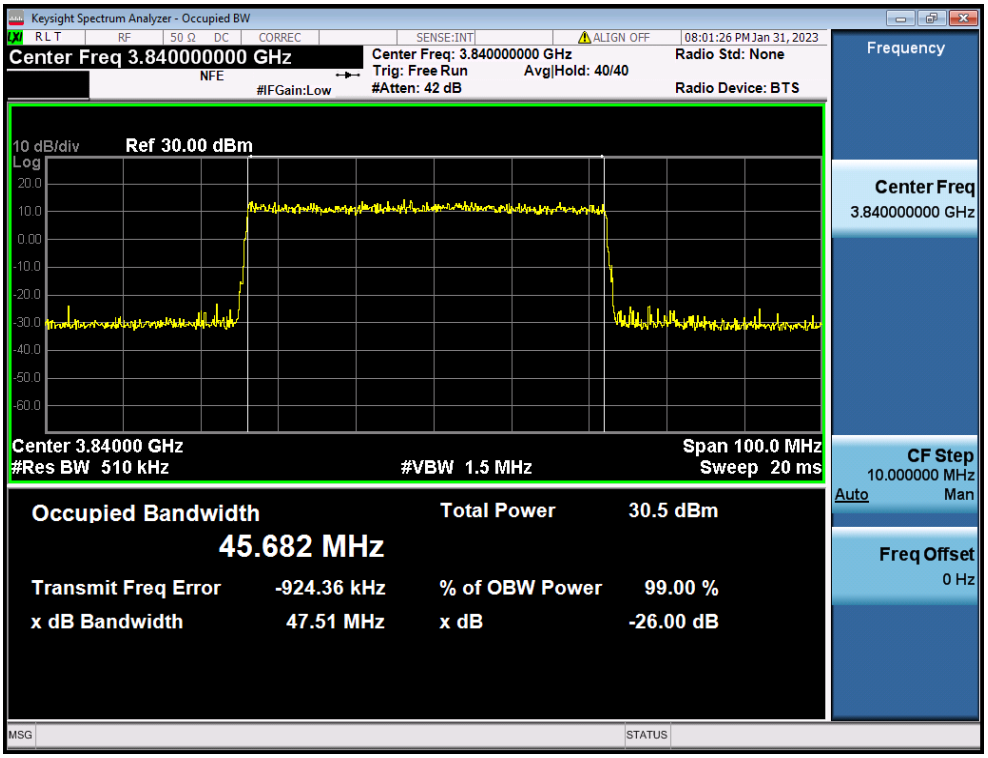


50 MHz / π/2 BPSK / FULL RB Size



50 MHz / QPSK / FULL RB Size

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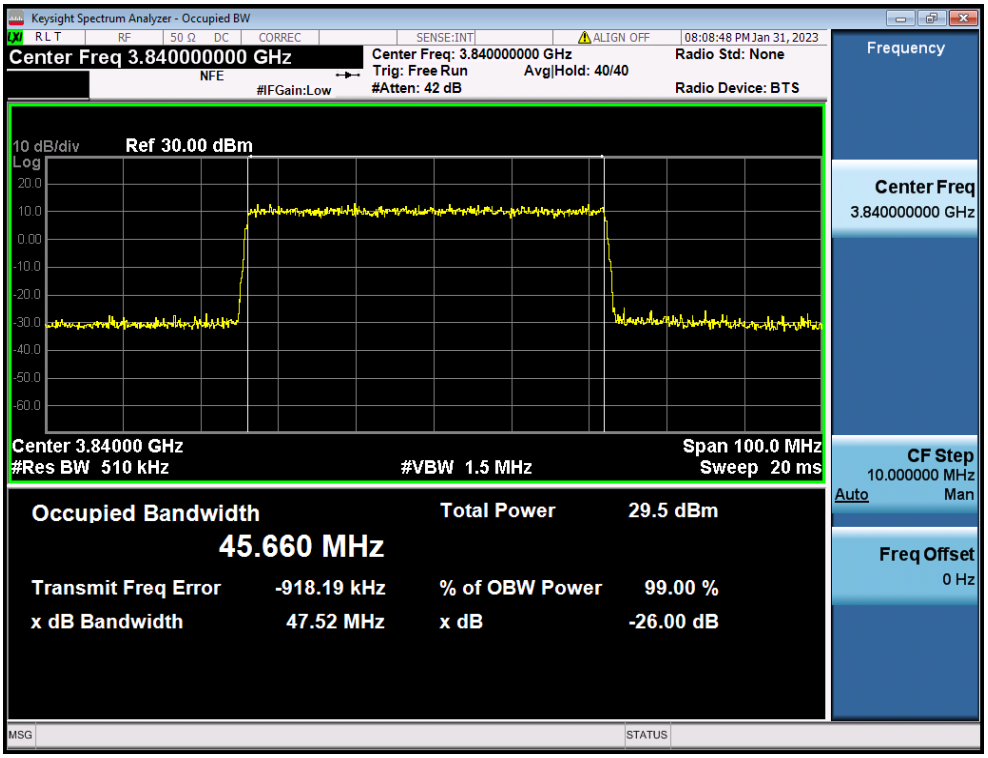
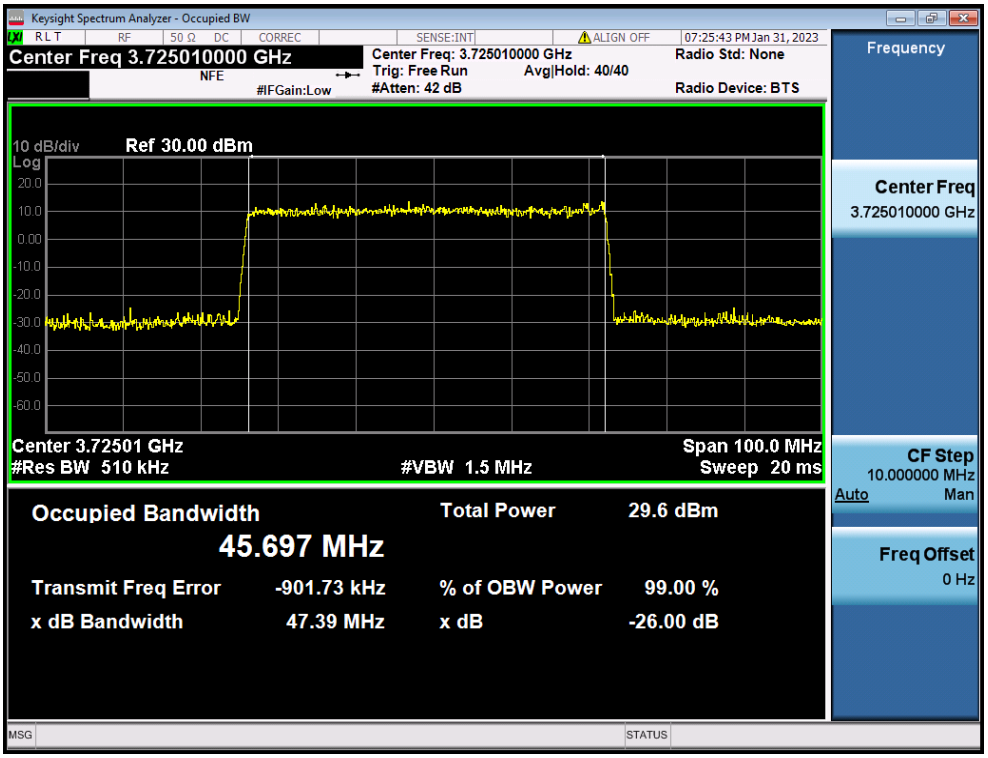


50 MHz / 16QAM / FULL RB Size



50 MHz / 64QAM / FULL RB Size

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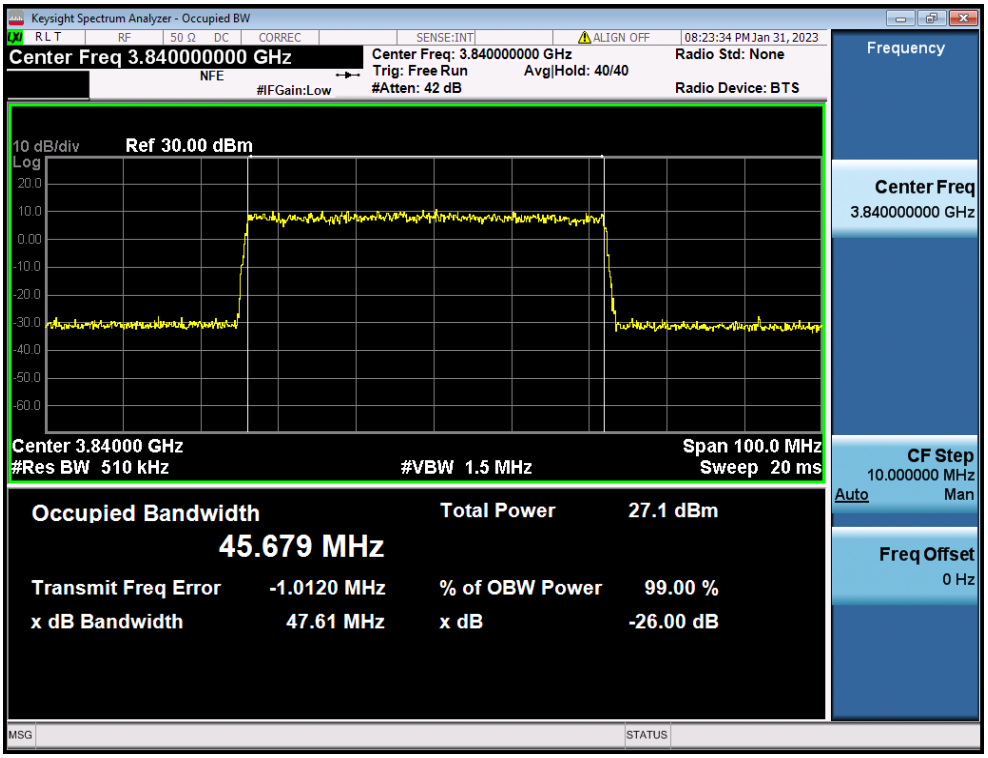

50 MHz / 256QAM / FULL RB Size

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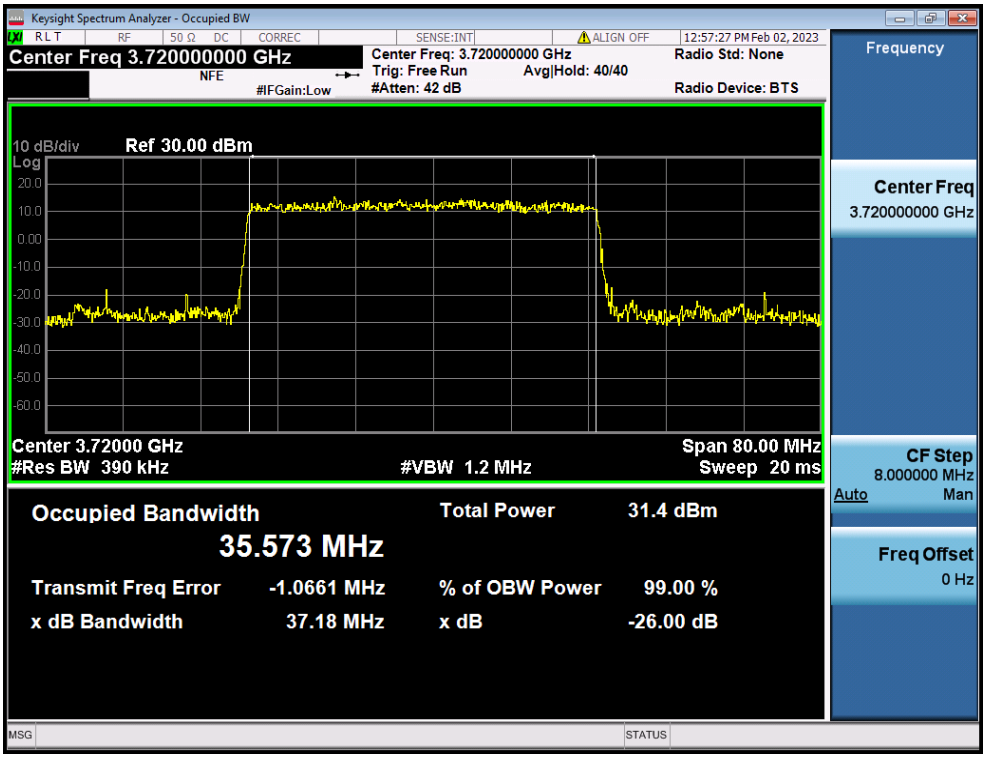
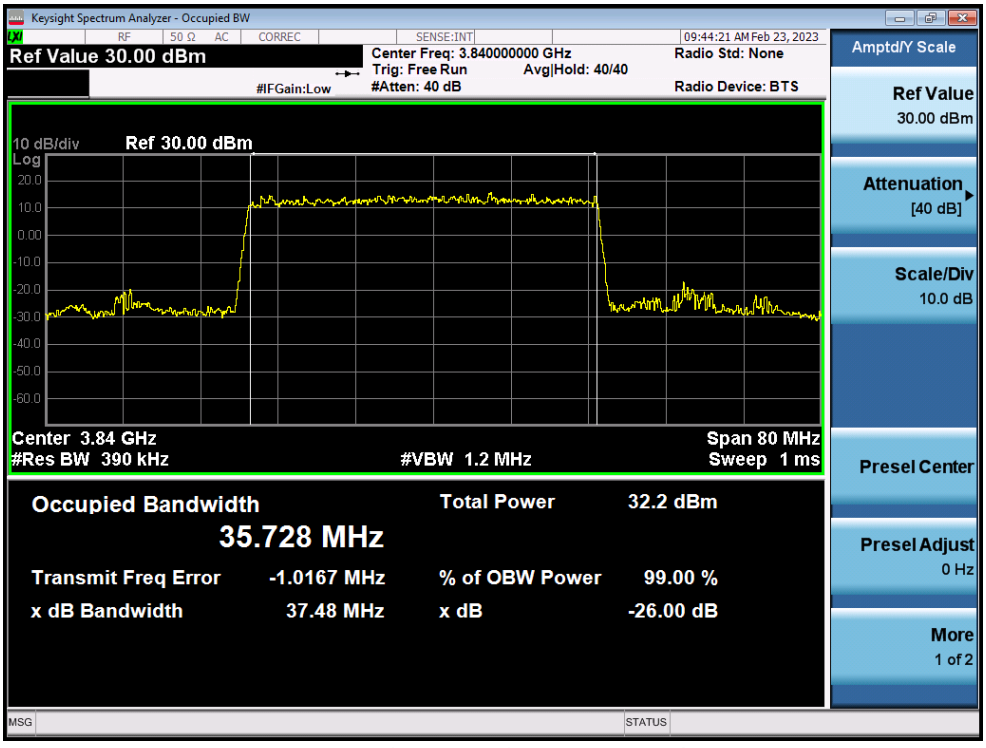


40 MHz / π/2 BPSK / FULL RB Size



40 MHz / QPSK / FULL RB Size

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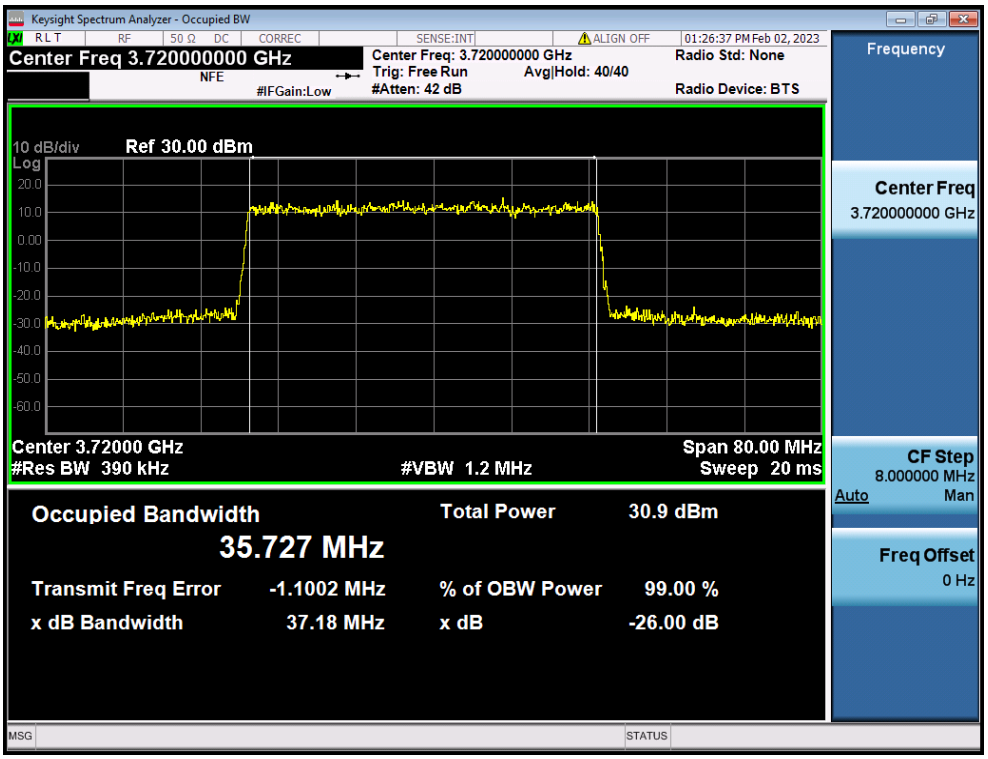
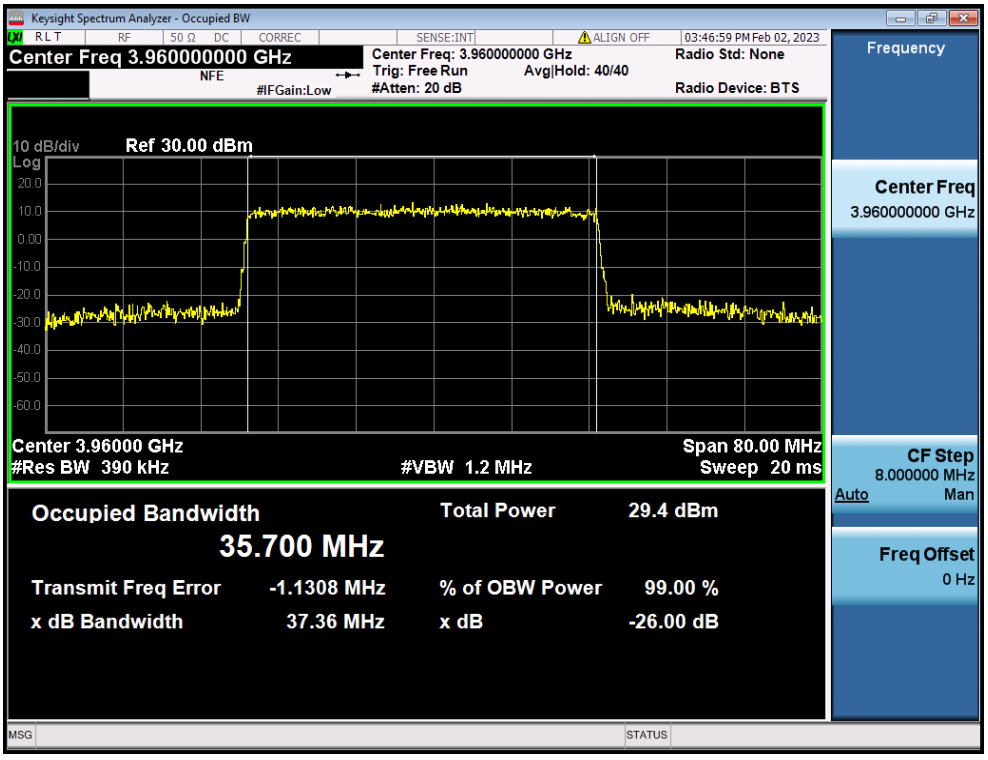


40 MHz / 16QAM / FULL RB Size



40 MHz / 64QAM / FULL RB Size

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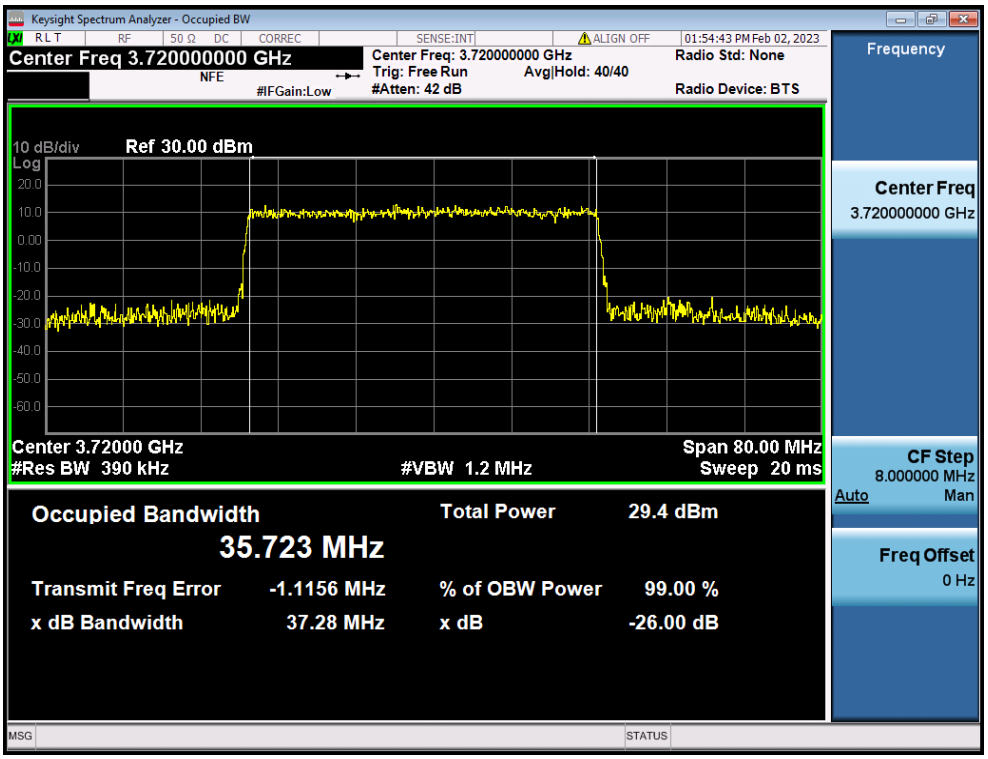

40 MHz / 256QAM / FULL RB Size

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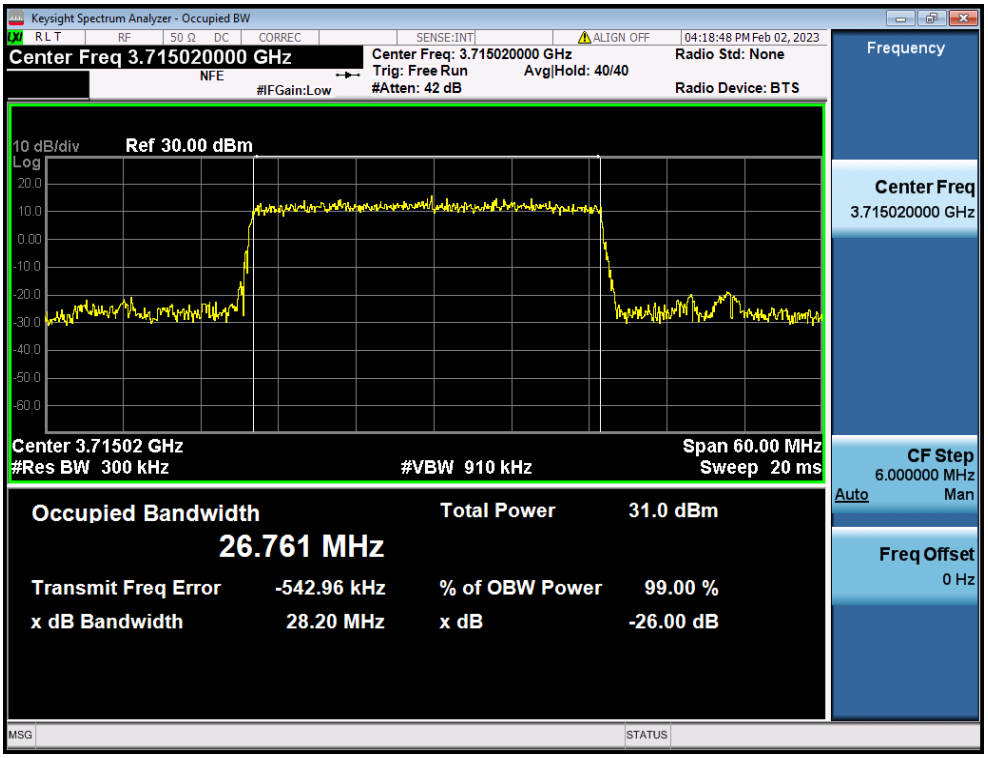
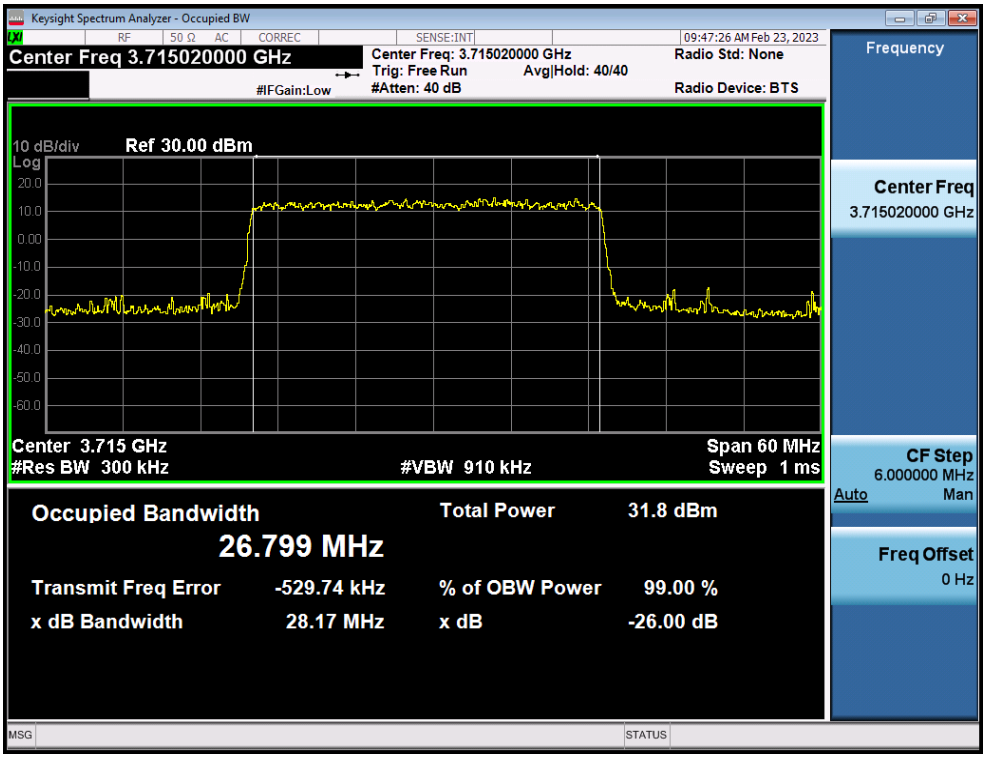


30 MHz / π/2 BPSK / FULL RB Size



30 MHz / QPSK / FULL RB Size

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