

# FCC Test Report

Product Name	Module
Trade Name	AirPrime
Model No.	MC7411
FCC ID.	N7NMC74B

Applicant	SIERRA WIRELESS, INC.
Address	13811 Wireless Way, Richmond, BC, Canada V6V 3A4 Canada

Date of Receipt	Dec. 18, 2020
Issued Date	Jan. 16, 2021
Report No.	20C0725R-E3042110012-A
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

# Test Report

Issued Date: Jan. 16, 2021


Report No.: 20C0725R-E3042110012-A



Product Name	Module
Applicant	SIERRA WIRELESS, INC.
Address	13811 Wireless Way, Richmond, BC, Canada V6V 3A4 Canada
Manufacturer	SIERRA WIRELESS, INC.
Model No.	MC7411
FCC ID.	N7NMC74B
EUT Voltage	DC 3.7V
Testing Voltage	DC 3.7V
Trade Name	AirPrime
Applicable Standard	FCC 47 CFR Part 96
Test Result	Complied

Documented By : Jinn Chen  
( Senior Adm. Specialist / Jinn Chen )

Tested By : Paul Jiang  
( Engineer / Paul Jiang )

Approved By :   
( Director / Vincent Lin )

## Revision History

Report No.	Version	Description	Issued Date
20C0725R-E3042110012-A	V1.0	Initial issue of report	2021-01-16

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<b>Attachment 1: EUT Test Photographs</b>	

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	Module
Model No.	MC7411
Trade Name	AirPrime
IMEI No.	352418420000200
FCC ID	N7NMC74B
Modulation	QPSK, 16-QAM, 64-QAM
TX/RX Frequency	LTE Band 42 : 3550MHz~3600MHz LTE Band 43 : 3600MHz~3700MHz LTE Band 48 : 3550MHz~3700MHz
Bandwidth	LTE Band 42 : 5MHz, 10MHz, 15MHz, 20MHz LTE Band 43 : 5MHz, 10MHz, 15MHz, 20MHz LTE Band 48 : 5MHz, 10MHz, 15MHz, 20MHz
HW Version	1.1
SW Version	SWI9X50C_01.14.03.00 b06bd3
Antenna Type	Dipole antenna with 4dBi gain

Antenna Information	
Trade Name	PANORAMA ANTENNAS
Model No.	PWB-7-60
Antenna Type	Dipole Antenna
Antenna Gain	4dBi

#### Note:

- Regarding frequency band operation, the lowest, middle and highest frequency of channel were selected to perform the test, and the details were shown on this report.
- The EUT description is from the customer declaration.
- The minimum, half, and maximum numbers of RBs for all BWs were evaluated, and 1 RB with middle offset configuration was identified as worst case. All the tests were performed by using the 1 RB with middle offset configuration.
- All supported modulations were evaluated and QPSK was identified as worst case. All the test results and plots are shown for QPSK modulation only except for Maximum Output Power and EIRP Power, and Occupied Bandwidth tests (QPSK and 16-QAM).

## 1.2. Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: LTE Band 48
Mode 2: LTE Band 42
Mode 3: LTE Band 43

### Note:

The MC7411 is a variant of FCC ID: N7NEM74B and IC: 2417C-EM74B (Model: EM7411). The major difference between these two models is EM7411 has a PCI Express M.2 with MHF4 connectors and the MC7411 has PCI Express with UFL connectors. The technical construction of the main parts all same as EM7411 including software design, RF circuit design, and PCB layout.

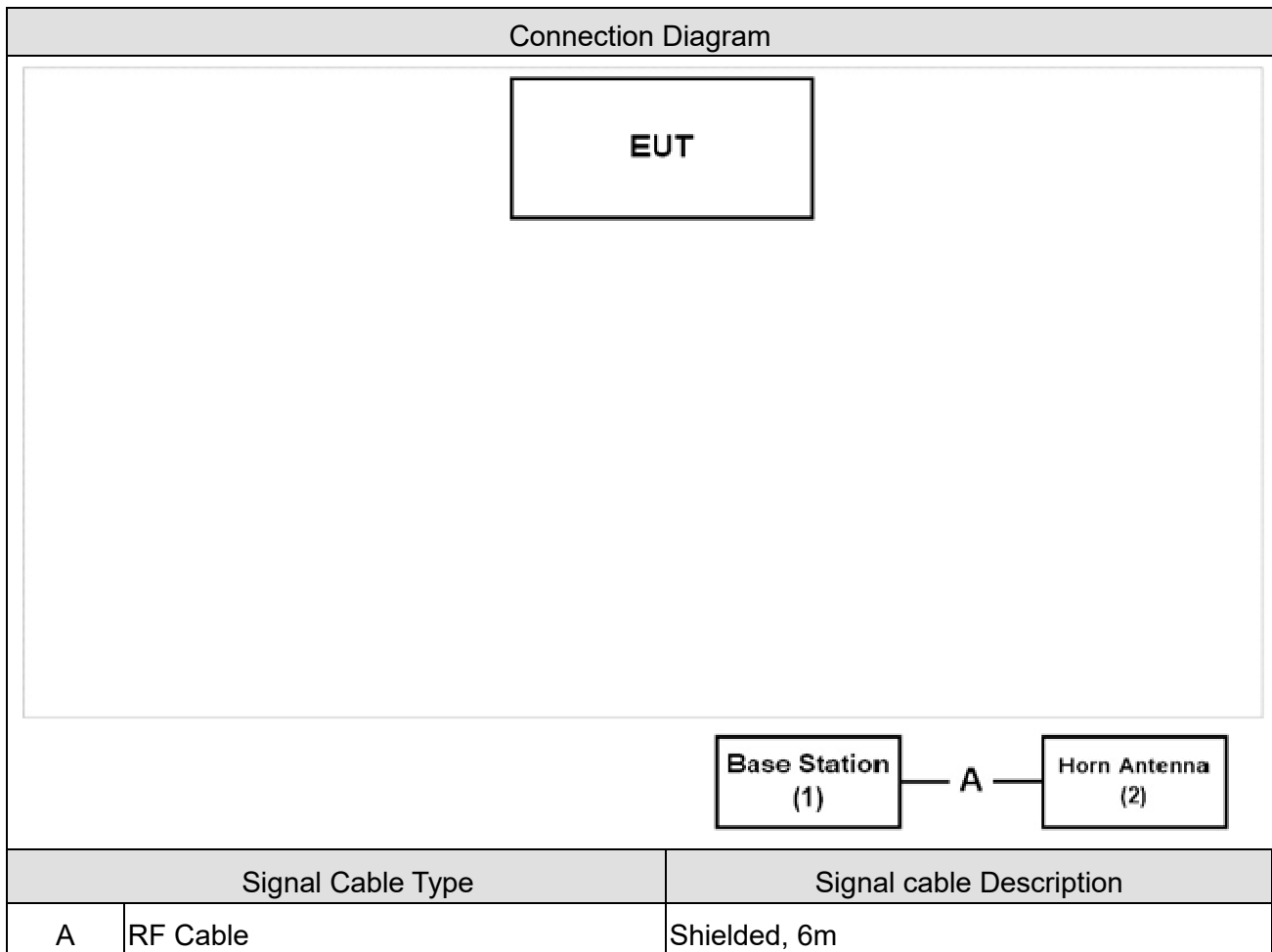
According to the above described and evaluate, only verified the worst case and upgraded report for LTE Band 48 RF Output Power, Radiated Spurious Emission, and Band Edge. Other test items come from the original report.

## 1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1   Base Station	R&S	CMW500	106071	DoC	Non- Shielded, 2m
2   Horn Antenna	Schwarzbeck	BBHA 9120D	1640	DoC	--

### 1.4. Configuration of Tested System



### 1.5. EUT Setup Procedures

- (1) Setup the EUT and simulators as shown on 1.4
- (2) Turn on the power of all equipment.
- (3) The EUT was set to communicate with the Base Station.
- (4) Repeat the above procedure.

### 1.6. Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy

## 1.7. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-70
Barometric pressure (mbar)	860-1060	950-1000

**USA : FCC Registration Number: TW3023**

**Canada : IC Registration Number: 4075A**

Site Description: Accredited by TAF  
Accredited Number: 3023

Test Laboratory: DEKRA Testing and Certification Co., Ltd  
Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451,  
Taiwan, R.O.C.  
Phone number: 886-2-8601-3788  
Fax number: 886-2-8601-3789  
Email address: [info.tw@dekra.com](mailto:info.tw@dekra.com)  
Website: <http://www.dekra.com.tw>



## 2. Technical Test

### 2.1. Summary of test result

FCC Standard	Test Item	Result
2.1046	Conducted Output Power	Pass
96.41(b)		
2.1049	Occupied Bandwidth	Pass
96.41(e)		
2.1051	Spurious Emission at Antenna Terminals	Pass
96.41(e)		
2.1051	Conducted Emission	Pass
96.41(e)		
2.1053	Field Strength of Spurious Radiation	Pass
96.41(e)		
2.1055	Frequency Stability for Temperature & Voltage	Pass
96.47	End user device additional requirements	Pass
96.41(g)	Peak to Average Ratio	Pass

Note:

- The MC7411 is a variant of FCC ID: N7NEM74B and IC: 2417C-EM74B (Model: EM7411). The major difference between these two models is EM7411 has a PCI Express M.2 with MHF4 connectors and the MC7411 has PCI Express with UFL connectors. The technical construction of the main parts all same as EM7411 including software design, RF circuit design, and PCB layout.  
According to the above described and evaluate, only verified the worst case and upgraded report for LTE Band 48 RF Output Power, Radiated Spurious Emission, and Band Edge. Other test items come from the original report.
- For End User Device Additional Requirements according to Part 96.47, there is no FW change with MC7411 and EM7411, test data come from the original report.

## 2.2. List of test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date
Spectrum Analyzer	R&S	FSV40	101148	2020.03.16
Bi-Log Antenna	TESEQ	CBL6112D	23191	2020.06.12
Horn Antenna	SCHWARZBECK	BBHA 9120D	639	2020.06.04
Horn Antenna	Com-Power	AH-840	101087	2020.06.08
Pre-Amplifier	EMCI	EMC001330	980316	2020.06.23
Pre-Amplifier	EMCI	EMC051835SE	980311	2020.06.23
Pre-Amplifier	EMCI	EMC184045SE	980314	2020.06.10
Coaxial Cable	SUHNER	SUCOFLEX 106	RF002	2020.07.03
Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2020.06.10

Note:

1. All equipment are calibrated every one year.
2. Test Software version: DEKRA Testing System V1.2

## 2.3. Measurement Uncertainty

### Conducted Emission

The measurement uncertainty of confidence of 95% is evaluated as  $\pm 1.52$  dB

### Radiated Emission (Below 1GHz)

The measurement uncertainty of confidence of 95% is evaluated as  $\pm 3.44$  dB .

### Radiated Emission (Above 1GHz)

The measurement uncertainty of confidence of 95% is evaluated as  $\pm 4.08$  dB

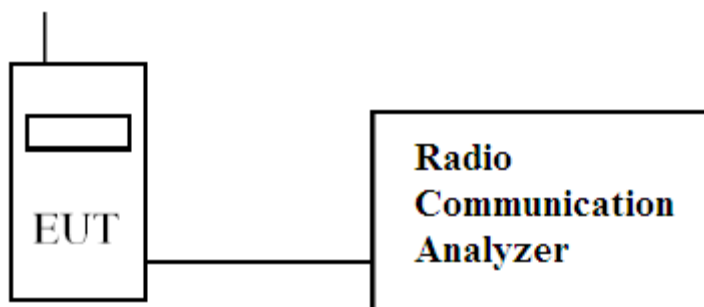
### 3. Conducted Output Power Measurement

#### 3.1. Test Specification

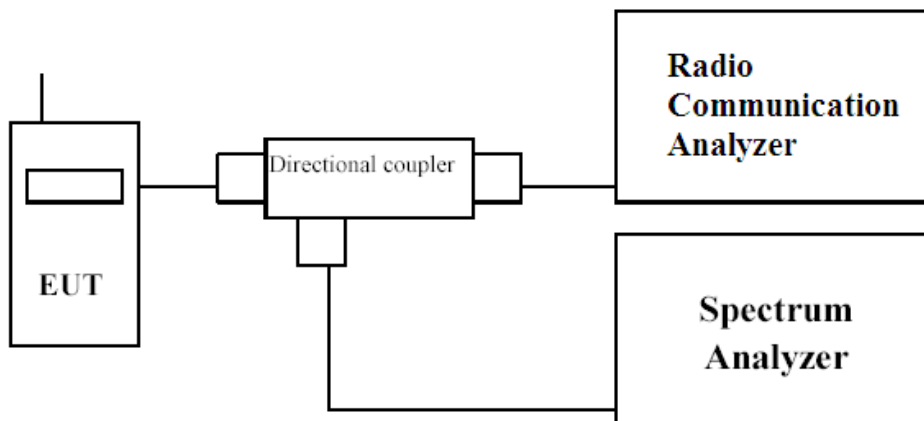
According to FCC Part 2.1046, 96.41(b)

#### 3.2. Test Setup

Conducted Power



Channel Power



### 3.3. Limits

FCC Part 96

Type	Device	Maximum EIRP (dBm/10 MHz)	Maximum PSD (dBm/MHz)
<b>X</b>	<b>End User Device</b>	<b>23</b>	<b>n/a</b>
	<b>Category A CBSD</b>	<b>30</b>	<b>20</b>
	<b>Category B CBSD</b>	<b>47</b>	<b>37</b>

### 3.4. Test Procedure

Conducted Power:

The EUT is tested with maximum rated TX power via the Base Station simulator, and the output power was measured at the antenna terminals of the EUT.

Channel Power:

1. Channel power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW  $\geq$  3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points  $\geq$  2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was set to 10MHz.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

### 3.5. Test Result of Maximum Output Power and EIRP Power

#### Band 48\_BW 5MHz\_QPSK

	Lowest frequency 3552.5 MHz	Middle frequency 3625 MHz	Highest frequency 3697.5 MHz
Measured Power (dBm/10 MHz)	18.20	18.23	18.22
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	22.20	22.23	22.22

#### Band 48\_BW 5MHz\_16QAM

	Lowest frequency 3552.5 MHz	Middle frequency 3625 MHz	Highest frequency 3697.5 MHz
Measured Power (dBm/10 MHz)	17.41	17.33	17.45
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.41	21.33	21.45

#### Band 48\_BW 10MHz\_QPSK

	Lowest frequency 3555 MHz	Middle frequency 3625 MHz	Highest frequency 3695 MHz
Measured Power (dBm/10 MHz)	18.33	18.26	18.35
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	22.33	22.26	22.35

**Band 48\_BW 10MHz\_16QAM**

	Lowest frequency 3555 MHz	Middle frequency 3625 MHz	Highest frequency 3695 MHz
Measured Power (dBm/10 MHz)	17.43	17.52	17.59
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.43	21.52	21.59

**Band 48\_BW 15MHz\_QPSK**

	Lowest frequency 3557.5 MHz	Middle frequency 3625 MHz	Highest frequency 3692.5 MHz
Measured Power (dBm/10 MHz)	18.02	18.13	18.46
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	22.02	22.13	22.46

**Band 48\_BW 15MHz\_16QAM**

	Lowest frequency 3557.5 MHz	Middle frequency 3625 MHz	Highest frequency 3692.5 MHz
Measured Power (dBm/10 MHz)	15.56	15.79	15.81
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	19.56	19.79	19.81

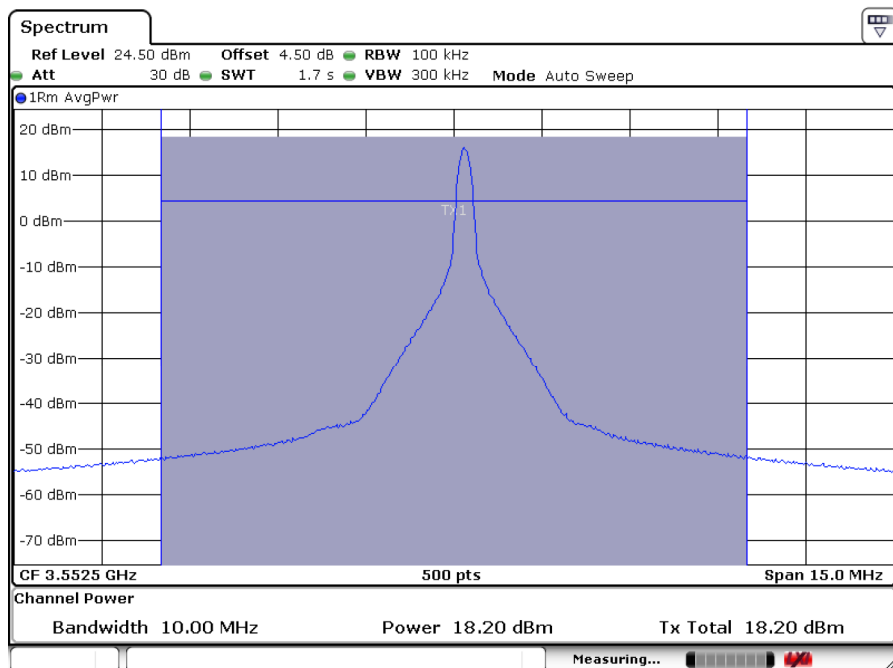
**Band 48\_BW 20MHz\_QPSK**

	Lowest frequency 3560 MHz	Middle frequency 3625 MHz	Highest frequency 3690 MHz
Measured Power (dBm/10 MHz)	18.09	18.34	18.49
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	22.09	22.34	22.49

**Band 48\_BW 20MHz\_16QAM**

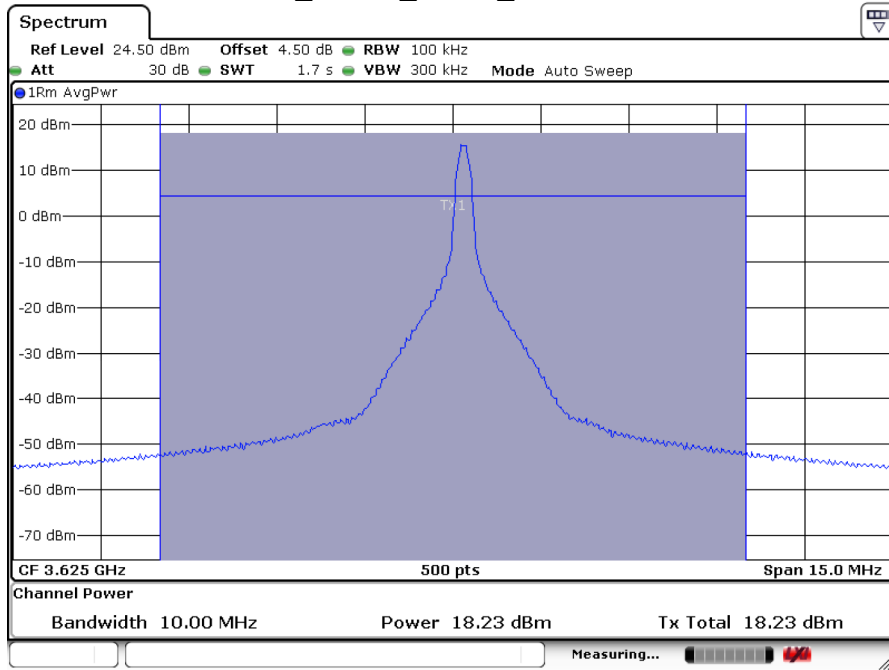
	Lowest frequency 3560 MHz	Middle frequency 3625 MHz	Highest frequency 3690 MHz
Measured Power (dBm/10 MHz)	15.54	15.71	15.69
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	19.54	19.71	19.69

**Band 48\_BW5M\_QPSK\_Low Channel**



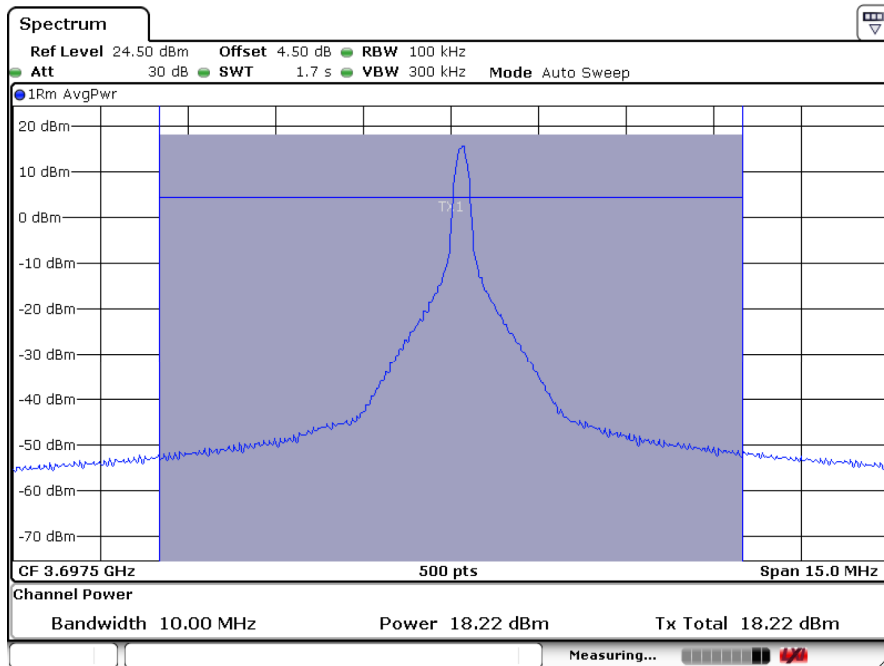
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### Band 48\_BW5M\_QPSK\_Middle Channel



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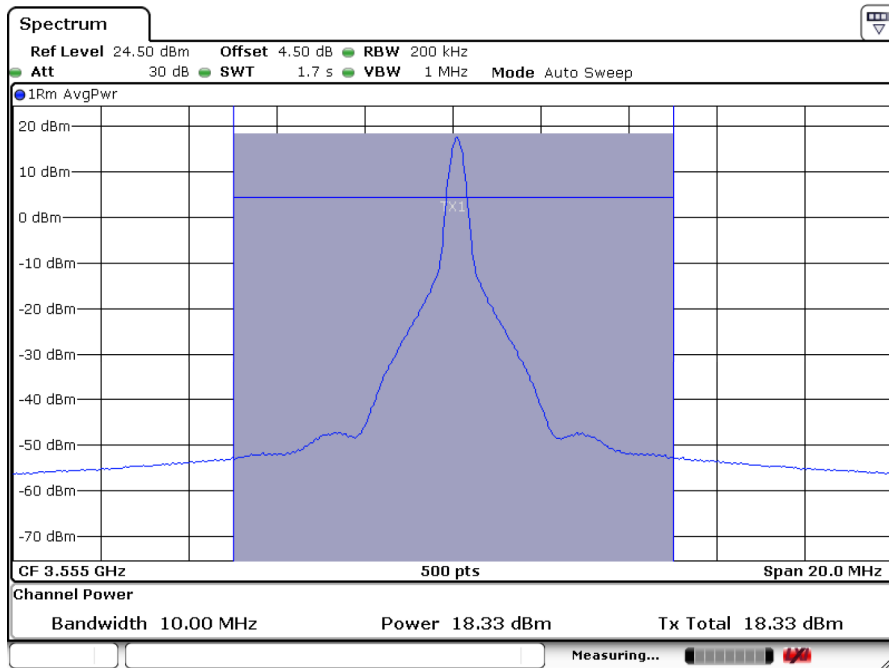
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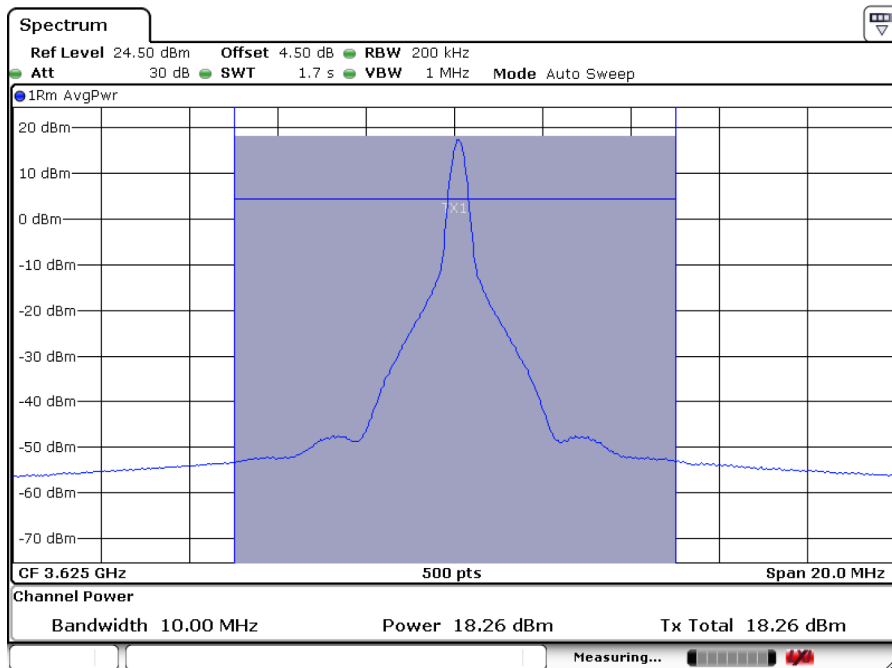


### Band 48\_BW10M\_QPSK\_Low Channel



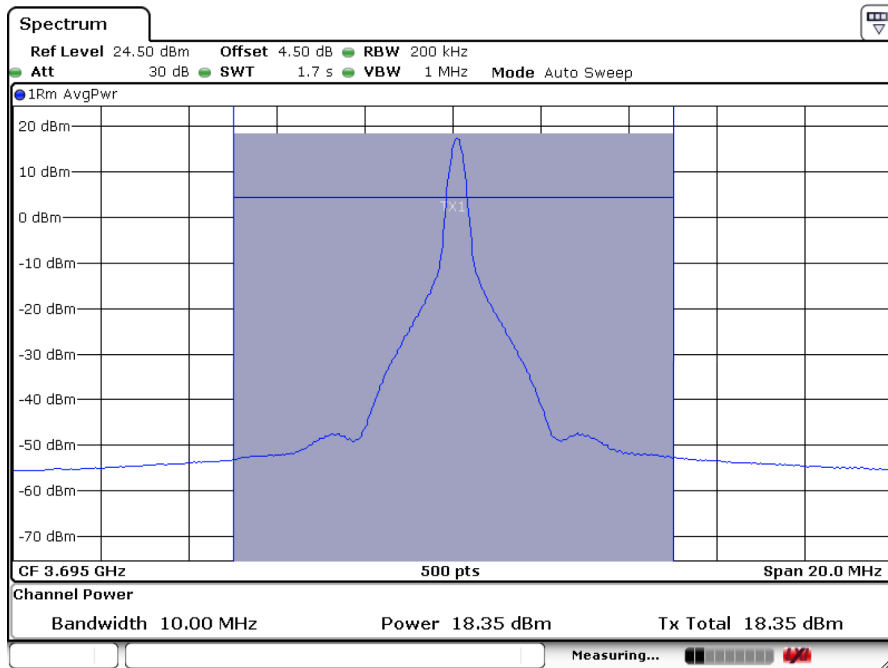
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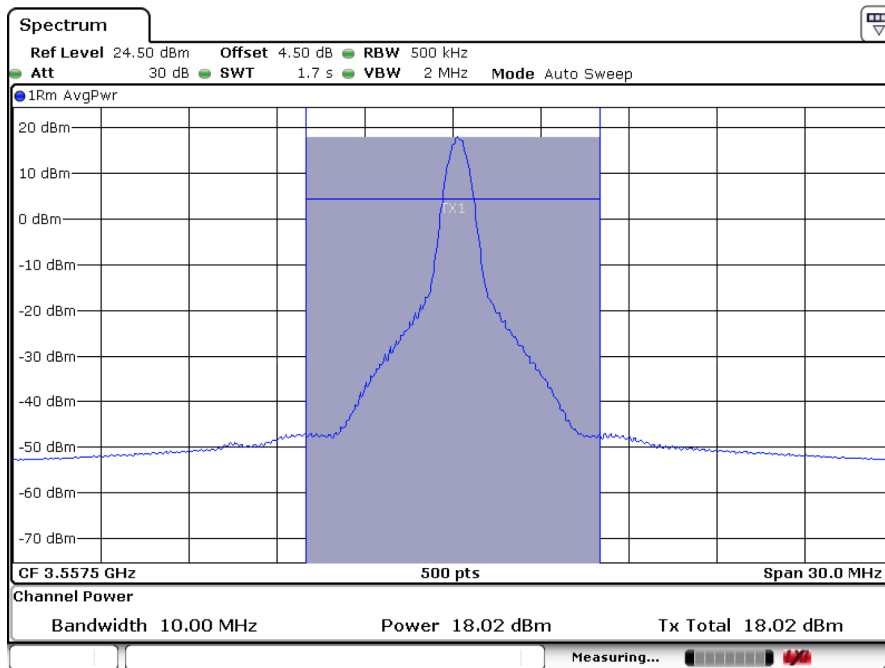
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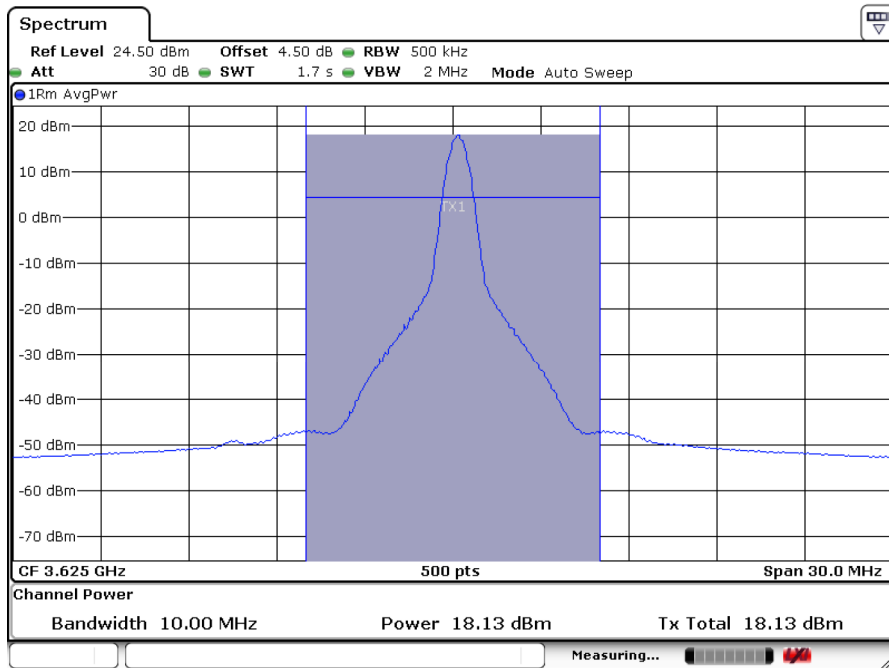
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### Band 48\_BW15M\_QPSK\_Low Channel

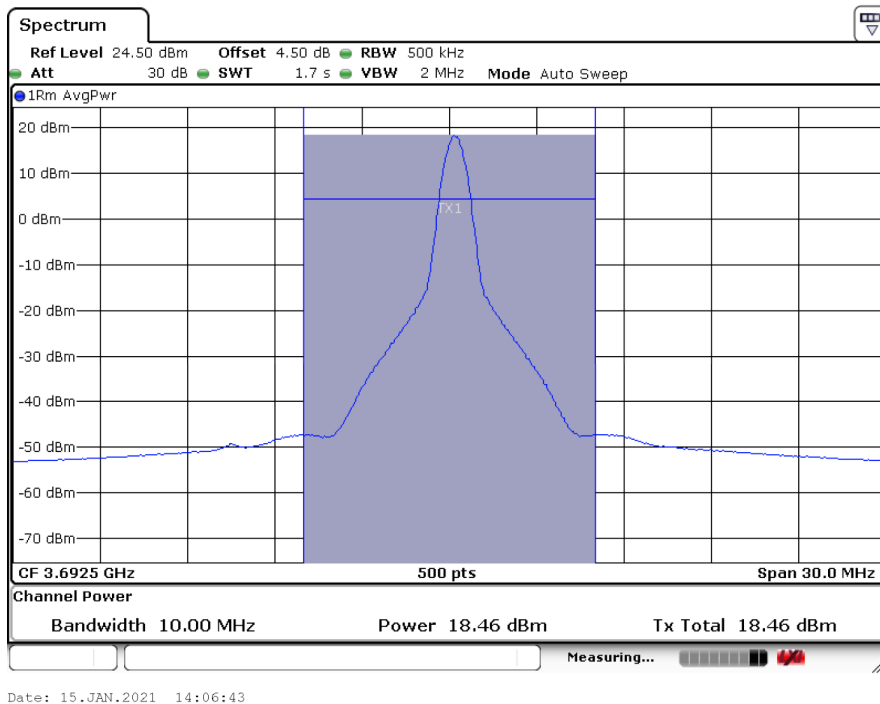


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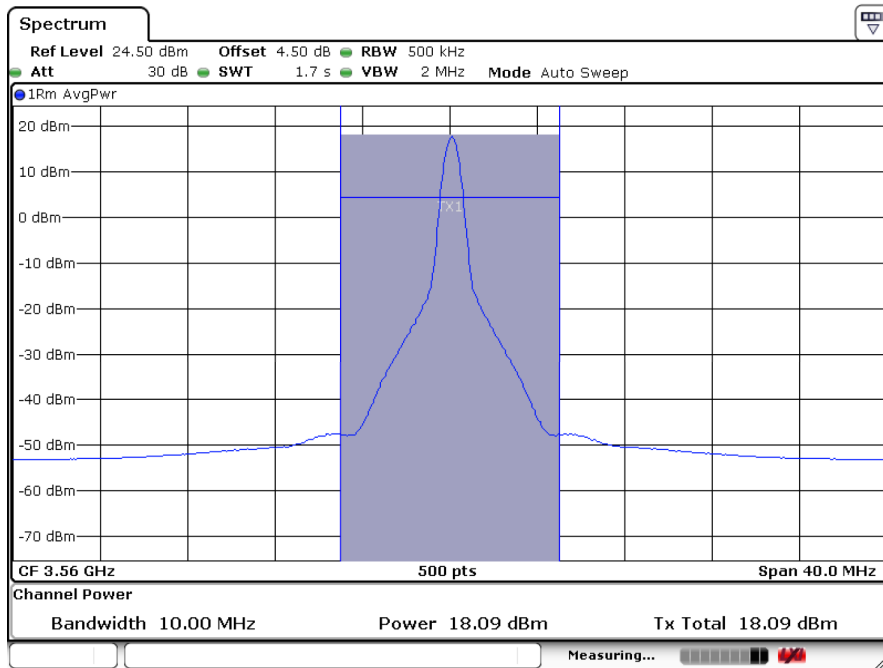
### Band 48\_BW15M\_QPSK\_Middle Channel



### Band 48\_BW15M\_QPSK\_High Channel

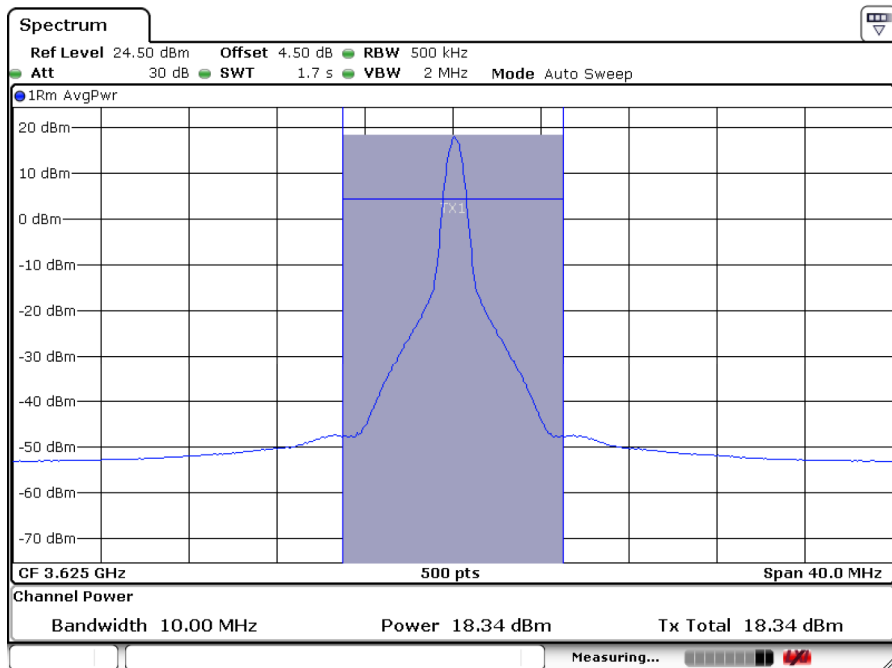


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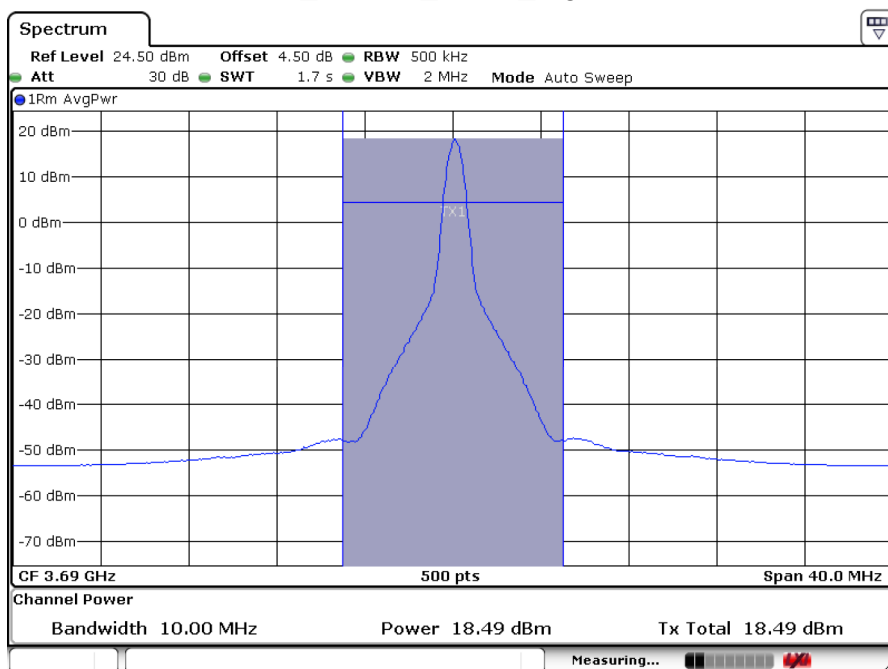
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### Band 48\_BW20M\_QPSK\_Middle Channel



Date: 15.JAN.2021 12:00:36

### Band 48\_BW20M\_QPSK\_High Channel



Date: 15.JAN.2021 14:02:37

**Band 42\_BW 5MHz\_QPSK**

	Lowest frequency 3552.5 MHz	Middle frequency 3575 MHz	Highest frequency 3597.5 MHz
Measured Power (dBm/10 MHz)	17.86	17.90	17.97
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.86	21.90	21.97

**Band 42\_BW 5MHz\_16QAM**

	Lowest frequency 3552.5 MHz	Middle frequency 3575 MHz	Highest frequency 3597.5 MHz
Measured Power (dBm/10 MHz)	17.08	16.94	17.26
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.08	20.94	21.26

**Band 42\_BW 10MHz\_QPSK**

	Lowest frequency 3555 MHz	Middle frequency 3575 MHz	Highest frequency 3595 MHz
Measured Power (dBm/10 MHz)	17.84	17.91	18.02
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.84	21.91	22.02

**Band 42\_BW 10MHz\_16QAM**

	Lowest frequency 3555 MHz	Middle frequency 3575 MHz	Highest frequency 3595 MHz
Measured Power (dBm/10 MHz)	17.54	17.13	17.38
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.54	21.13	21.38

**Band 42\_BW 15MHz\_QPSK**

	Lowest frequency 3557.5 MHz	Middle frequency 3575 MHz	Highest frequency 3592.5 MHz
Measured Power (dBm/10 MHz)	17.80	17.71	17.99
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.80	21.71	21.99

**Band 42\_BW 15MHz\_16QAM**

	Lowest frequency 3557.5 MHz	Middle frequency 3575 MHz	Highest frequency 3592.5 MHz
Measured Power (dBm/10 MHz)	17.16	17.10	17.25
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.16	21.10	21.25

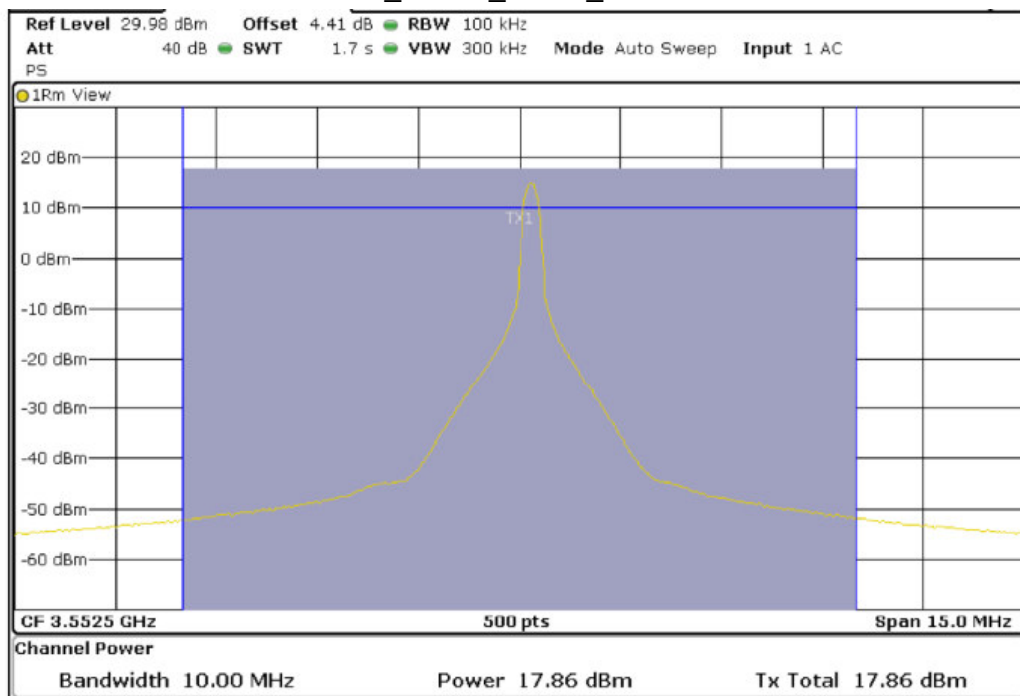
**Band 42\_BW 20MHz\_QPSK**

	Lowest frequency 3560 MHz	Middle frequency 3575 MHz	Highest frequency 3590 MHz
Measured Power (dBm/10 MHz)	17.81	17.66	17.86
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.81	21.66	21.86

**Band 42\_BW 20MHz\_16QAM**

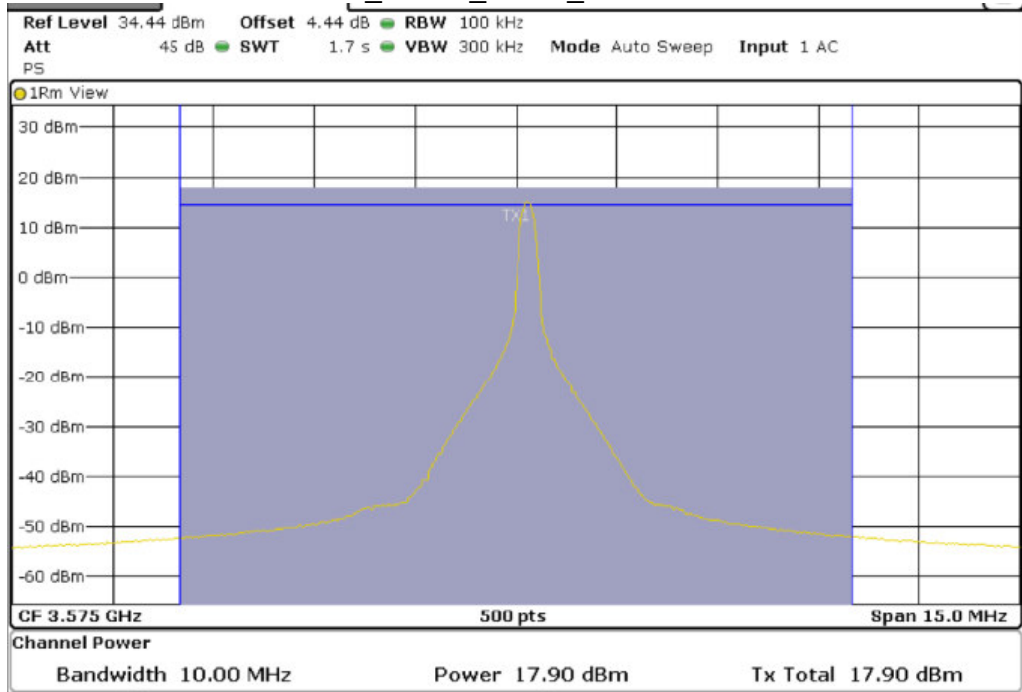
	Lowest frequency 3560 MHz	Middle frequency 3575 MHz	Highest frequency 3590 MHz
Measured Power (dBm/10 MHz)	17.19	17.12	17.20
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.19	21.12	21.20

**Band 42\_BW5M\_QPSK\_Low Channel**

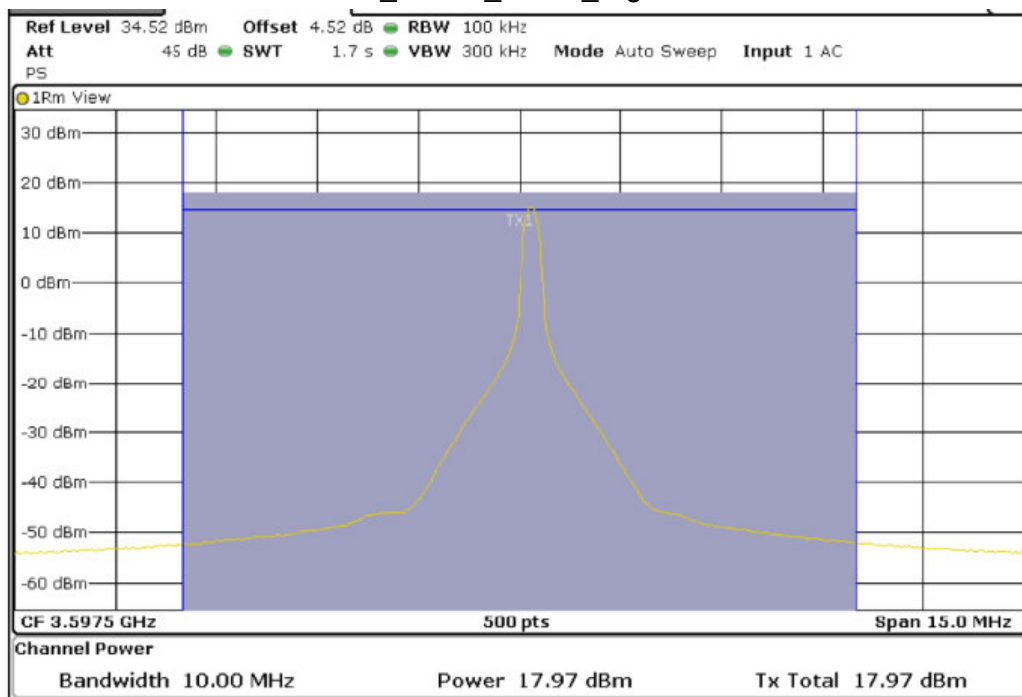




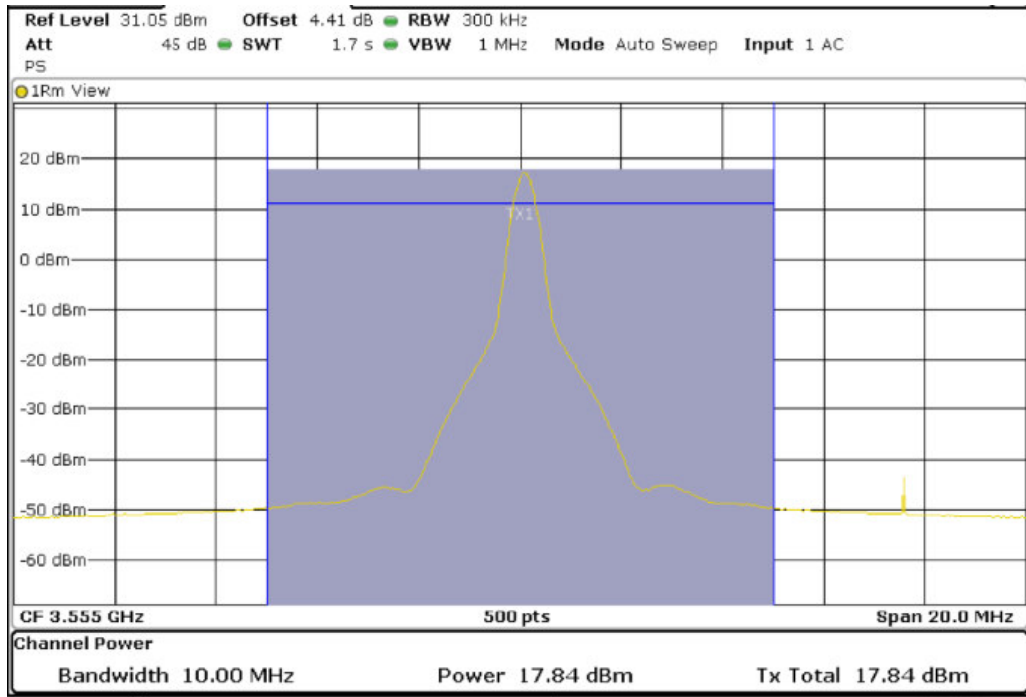
### Band 42\_BW5M\_QPSK\_Middle Channel



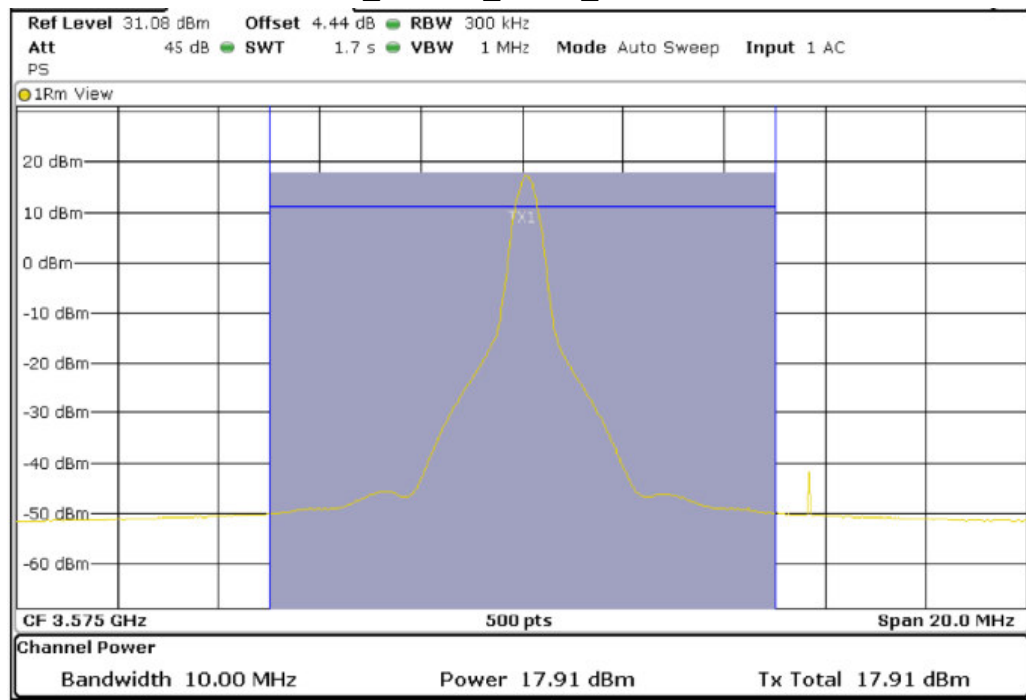
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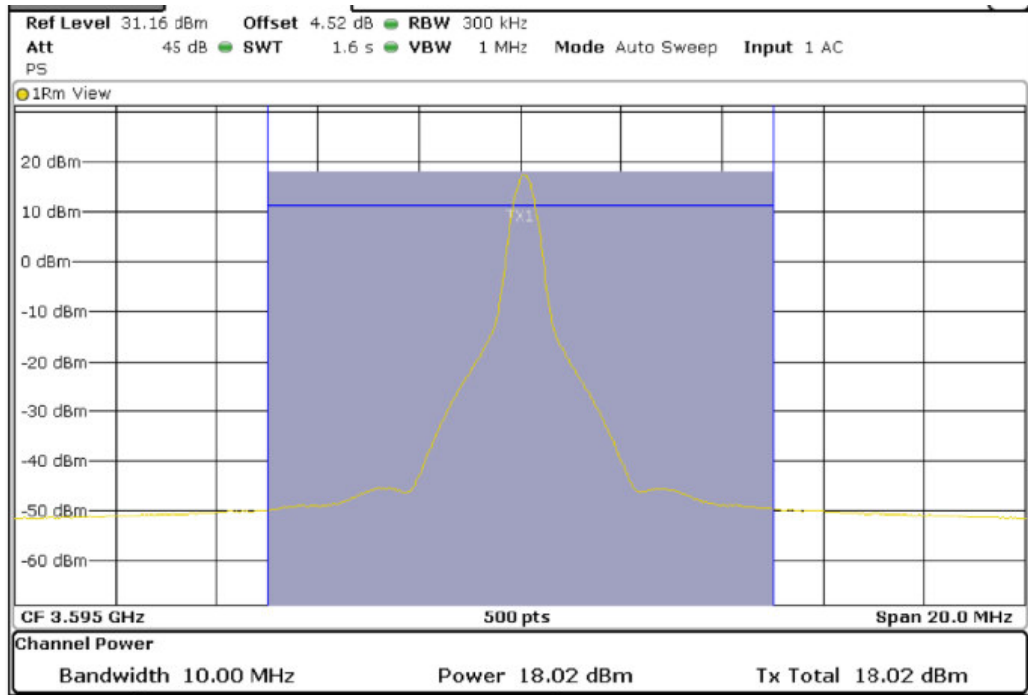
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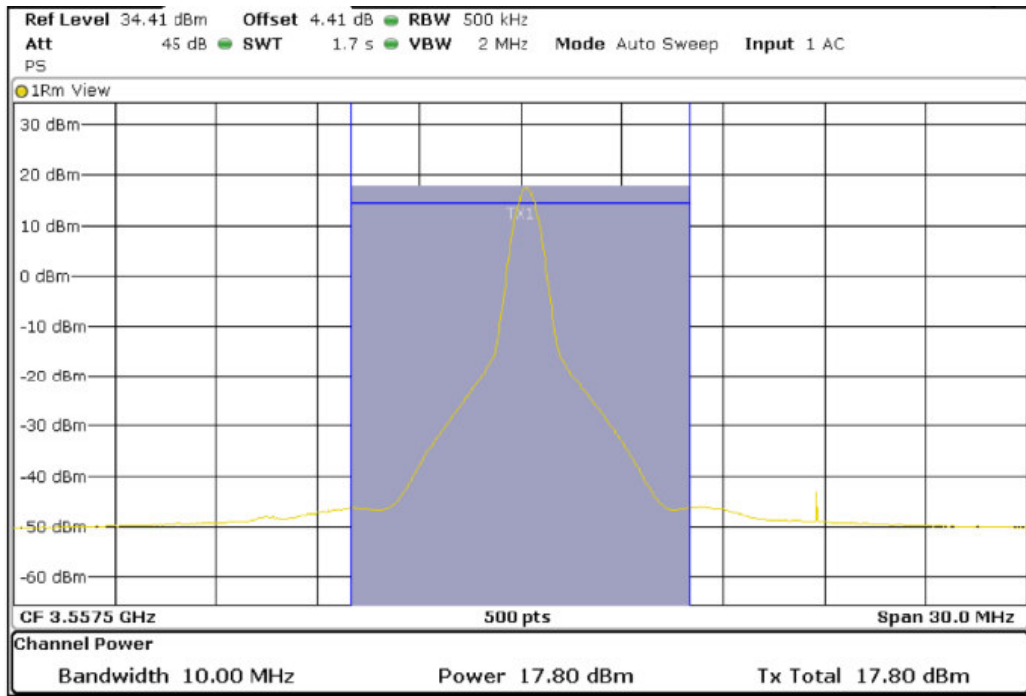
### Band 42\_BW10M\_QPSK\_Middle Channel



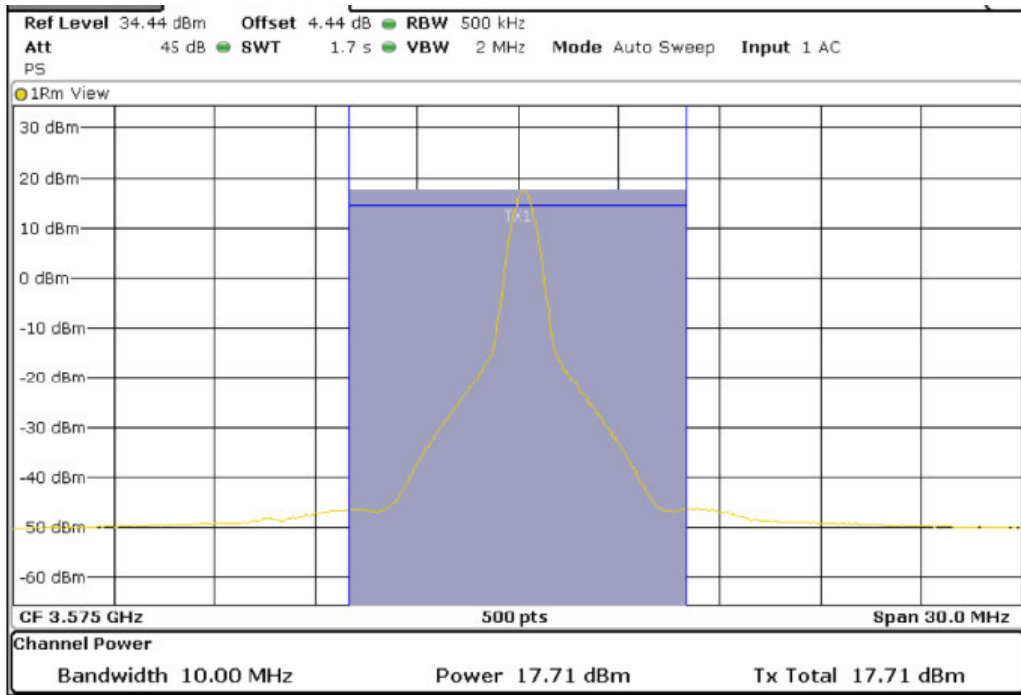
### Band 42\_BW10M\_QPSK\_High Channel



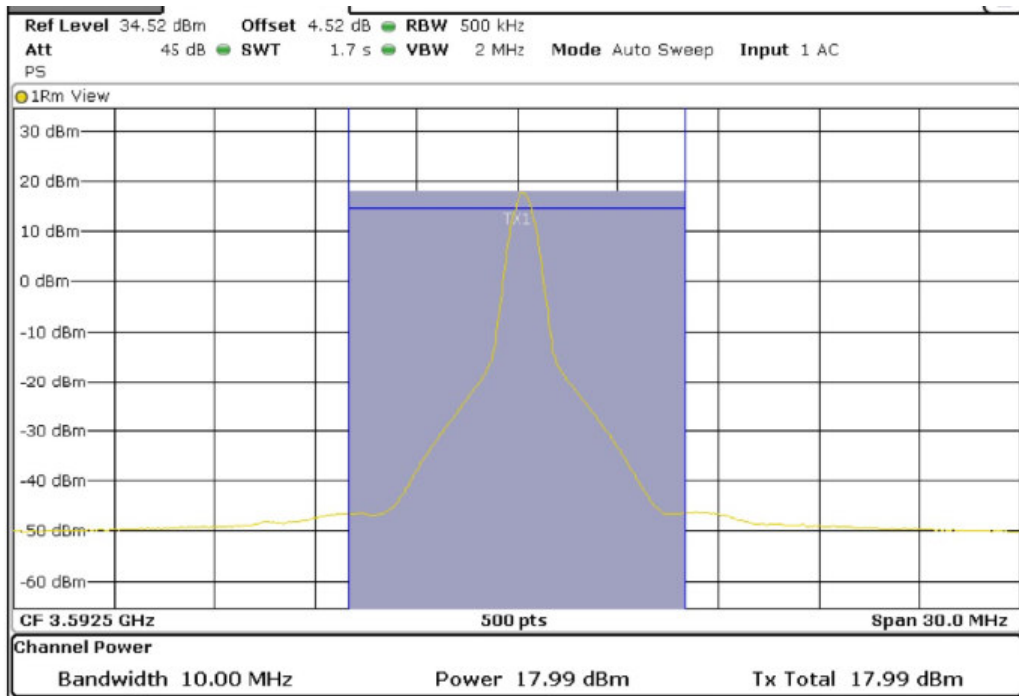
### Band 42\_BW15M\_QPSK\_Low Channel



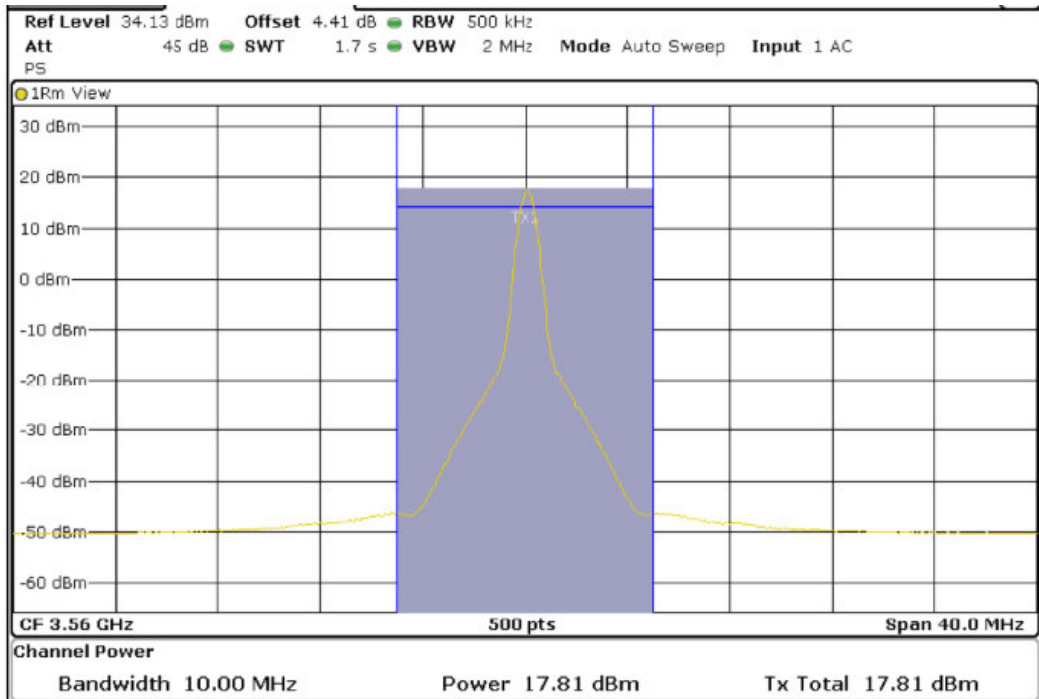
### Band 42\_BW15M\_QPSK\_Middle Channel



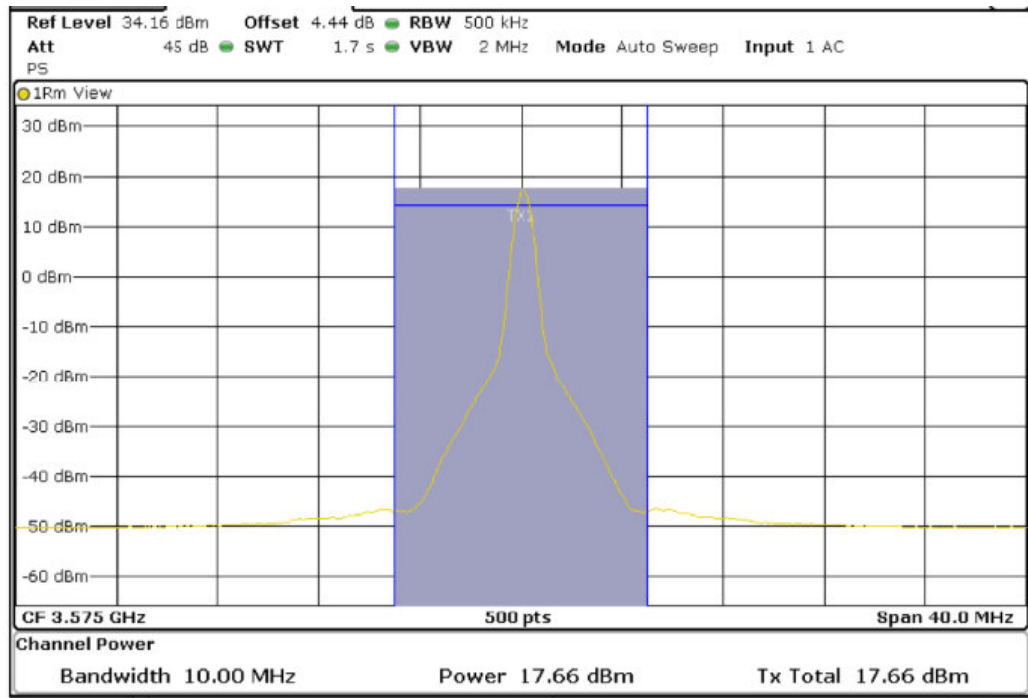
### Band 42\_BW15M\_QPSK\_High Channel



### Band 42\_BW20M\_QPSK\_Low Channel



### Band 42\_BW20M\_QPSK\_Middle Channel





**Band 43\_BW 5MHz\_QPSK**

	Lowest frequency 3602.5 MHz	Middle frequency 3650 MHz	Highest frequency 3697.5 MHz
Measured Power (dBm/10 MHz)	17.84	17.96	18.02
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.84	21.96	22.02

**Band 43\_BW 5MHz\_16QAM**

	Lowest frequency 3602.5 MHz	Middle frequency 3650 MHz	Highest frequency 3697.5 MHz
Measured Power (dBm/10 MHz)	17.01	17.15	17.38
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.01	21.15	21.38

**Band 43\_BW 10MHz\_QPSK**

	Lowest frequency 3605 MHz	Middle frequency 3650 MHz	Highest frequency 3695 MHz
Measured Power (dBm/10 MHz)	17.92	18.06	18.30
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.92	22.06	22.30

**Band 43\_BW 10MHz\_16QAM**

	Lowest frequency 3605 MHz	Middle frequency 3650 MHz	Highest frequency 3695 MHz
Measured Power (dBm/10 MHz)	17.31	17.20	17.51
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.31	21.20	21.51

**Band 43\_BW 15MHz\_QPSK**

	Lowest frequency 3607.5 MHz	Middle frequency 3650 MHz	Highest frequency 3692.5 MHz
Measured Power (dBm/10 MHz)	17.67	17.74	17.98
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.67	21.74	21.98

**Band 43\_BW 15MHz\_16QAM**

	Lowest frequency 3607.5 MHz	Middle frequency 3650 MHz	Highest frequency 3692.5 MHz
Measured Power (dBm/10 MHz)	17.10	17.05	17.25
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.10	21.05	21.25



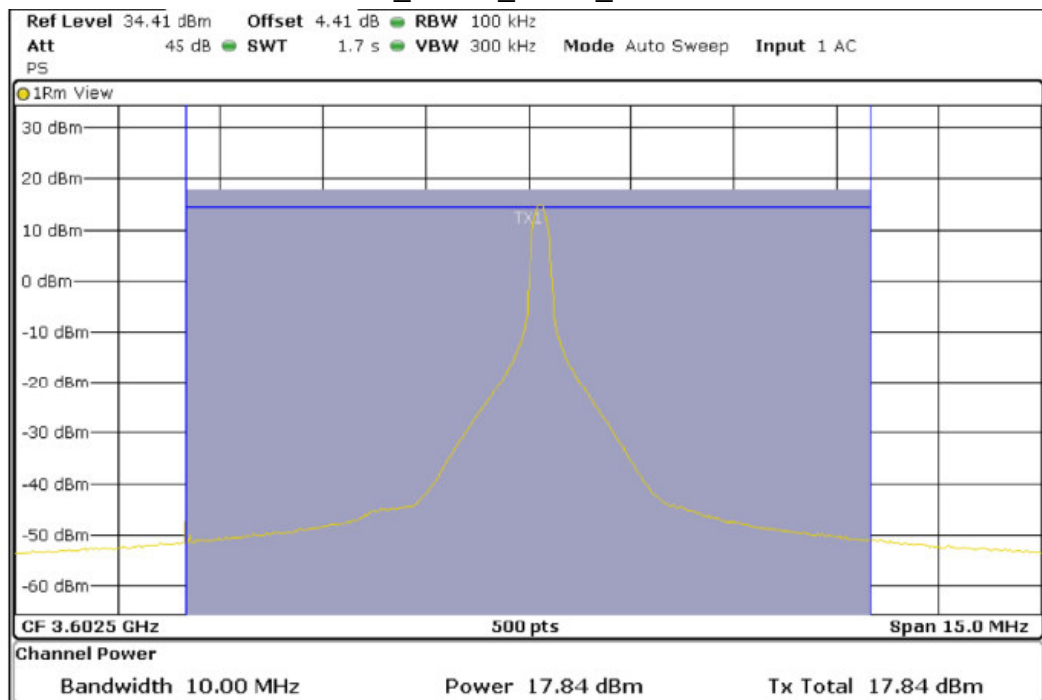
**Band 43\_BW 20MHz\_QPSK**

	Lowest frequency 3610 MHz	Middle frequency 3650 MHz	Highest frequency 3690 MHz
Measured Power (dBm/10 MHz)	17.73	17.70	17.89
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.73	21.70	21.89

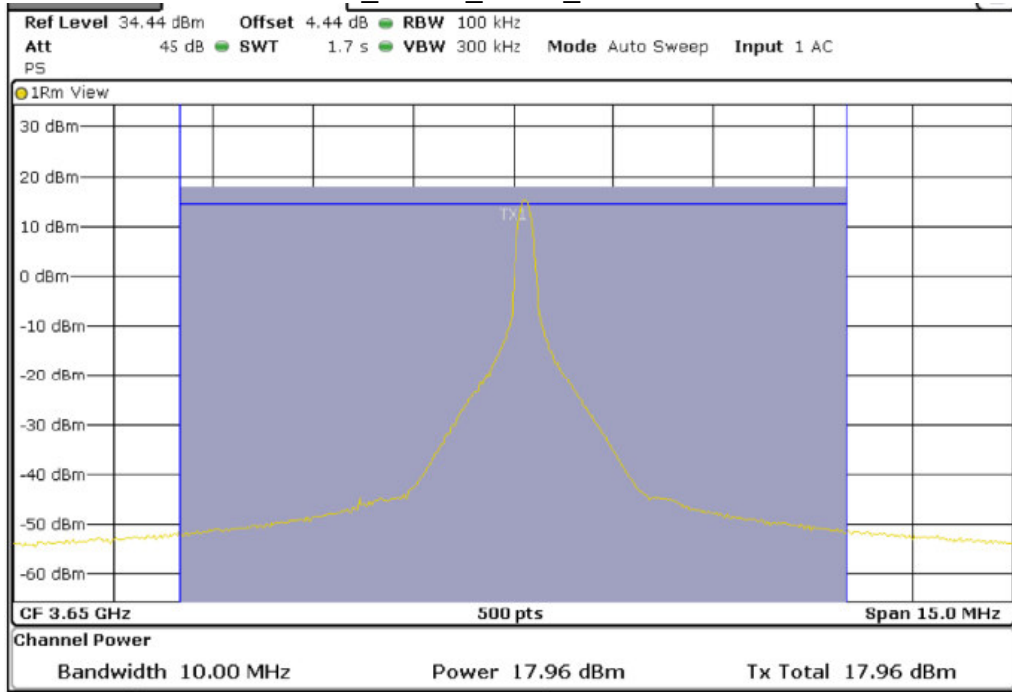
**Band 43\_BW 20MHz\_16QAM**

	Lowest frequency 3610 MHz	Middle frequency 3650 MHz	Highest frequency 3690 MHz
Measured Power (dBm/10 MHz)	17.01	17.03	17.22
Maximum declared Antenna gain (dBi)	4.00	4.00	4.00
Maximum EIRP (dBm/10 MHz)	21.01	21.03	21.22

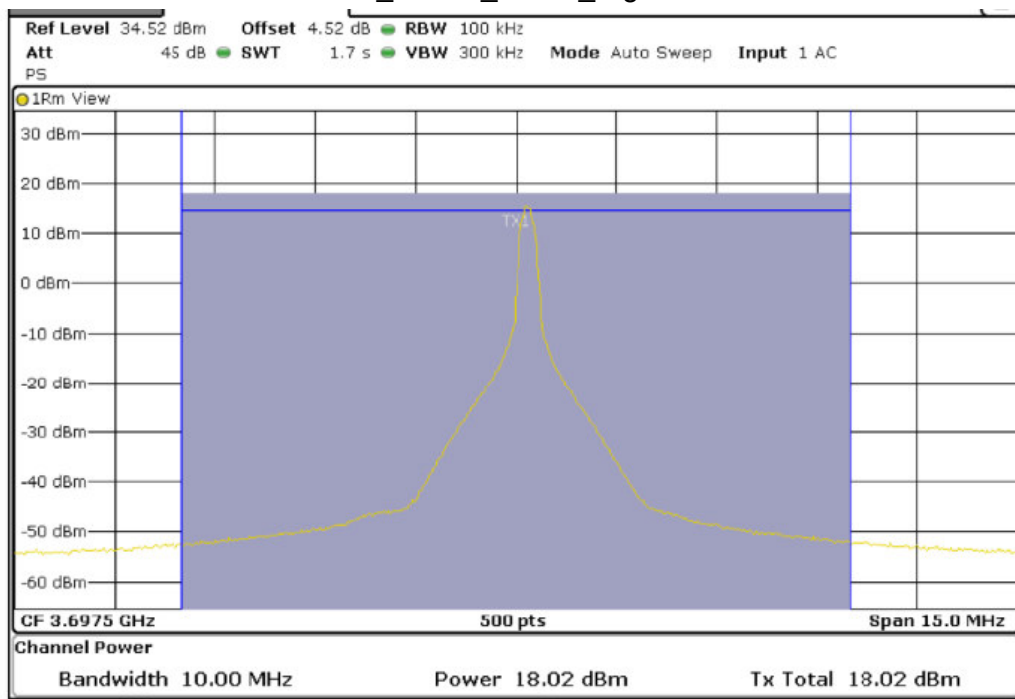
**Band 43\_BW5M\_QPSK\_Low Channel**



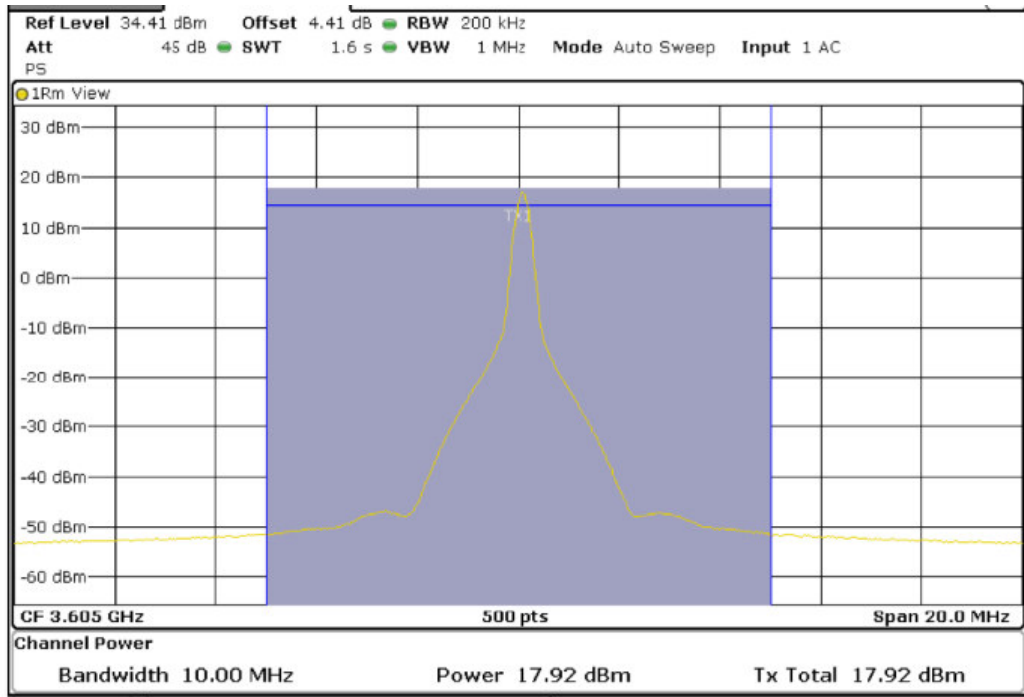
### Band 43\_BW5M\_QPSK\_Middle Channel



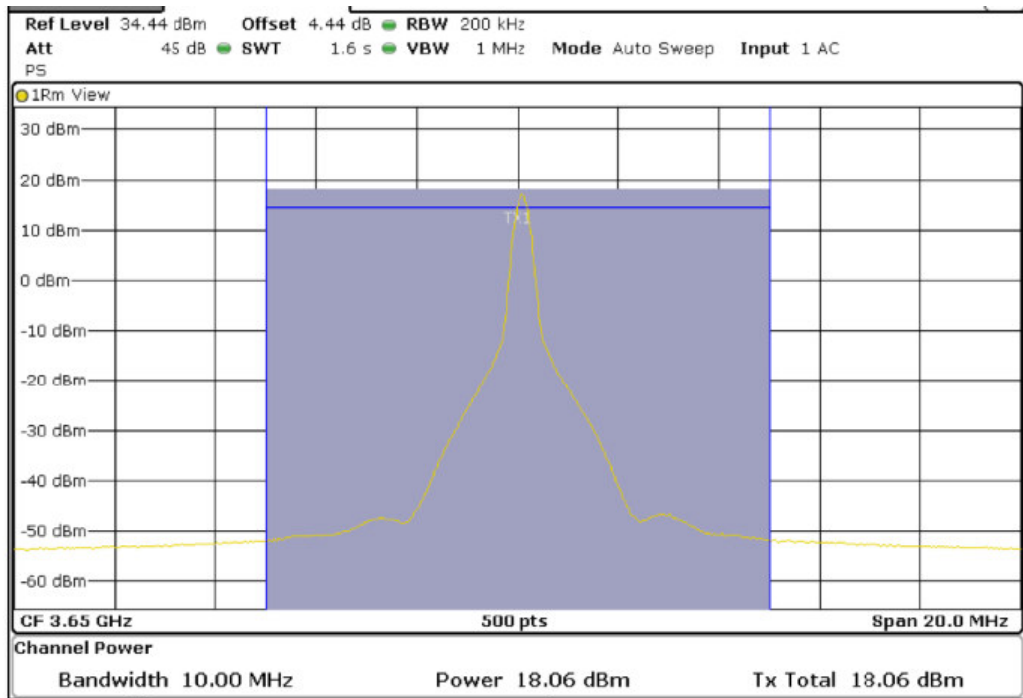
### Band 43\_BW5M\_QPSK\_High Channel



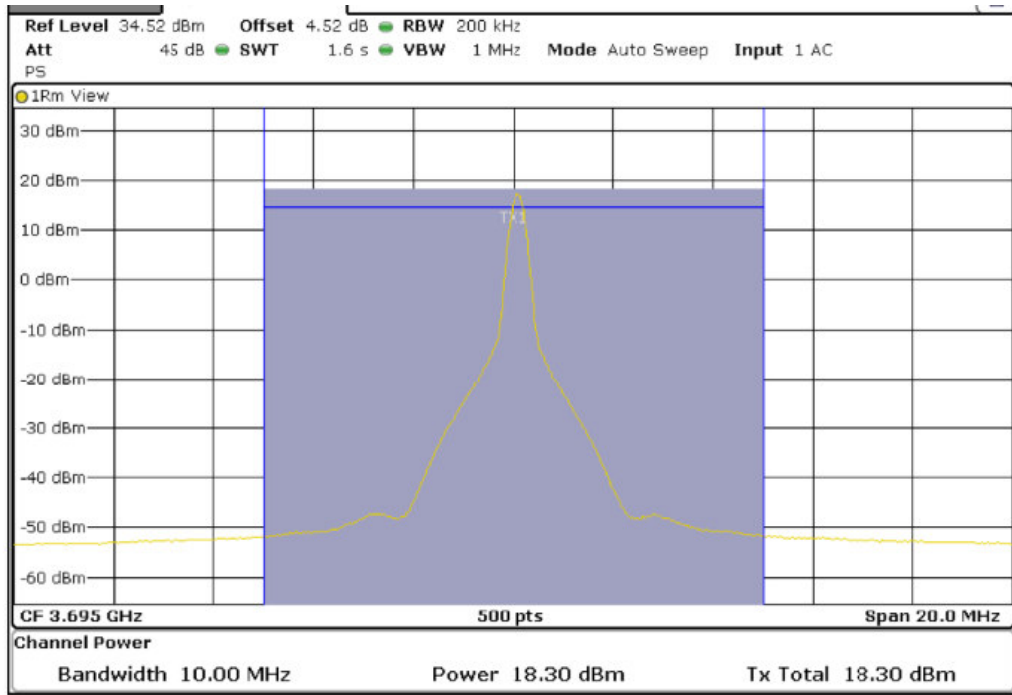
### Band 43\_BW10M\_QPSK\_Low Channel



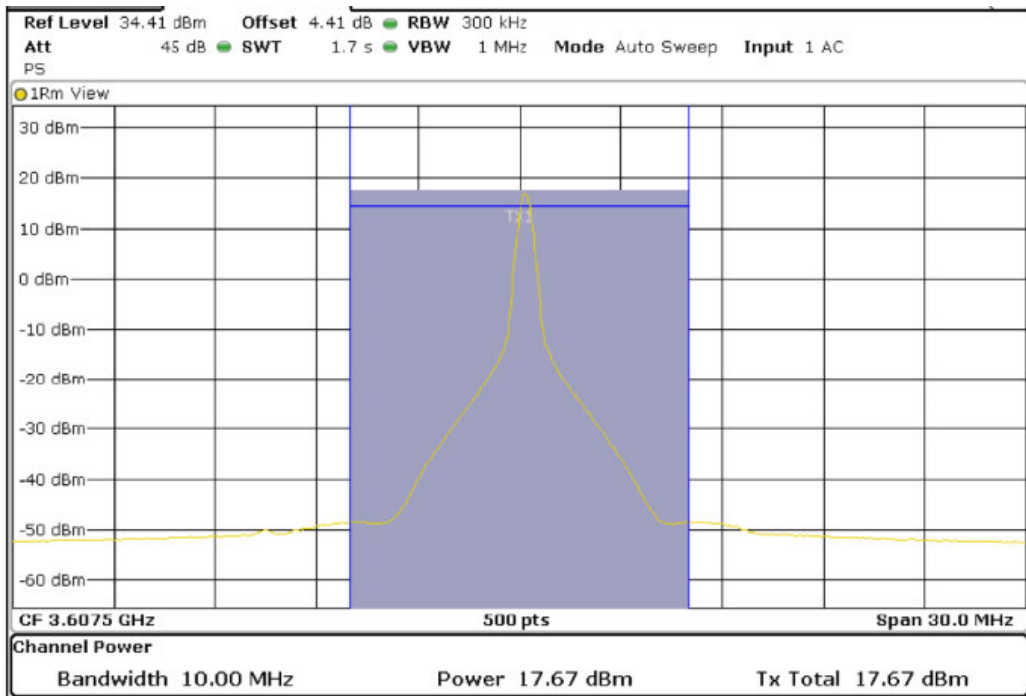
### Band 43\_BW10M\_QPSK\_Middle Channel



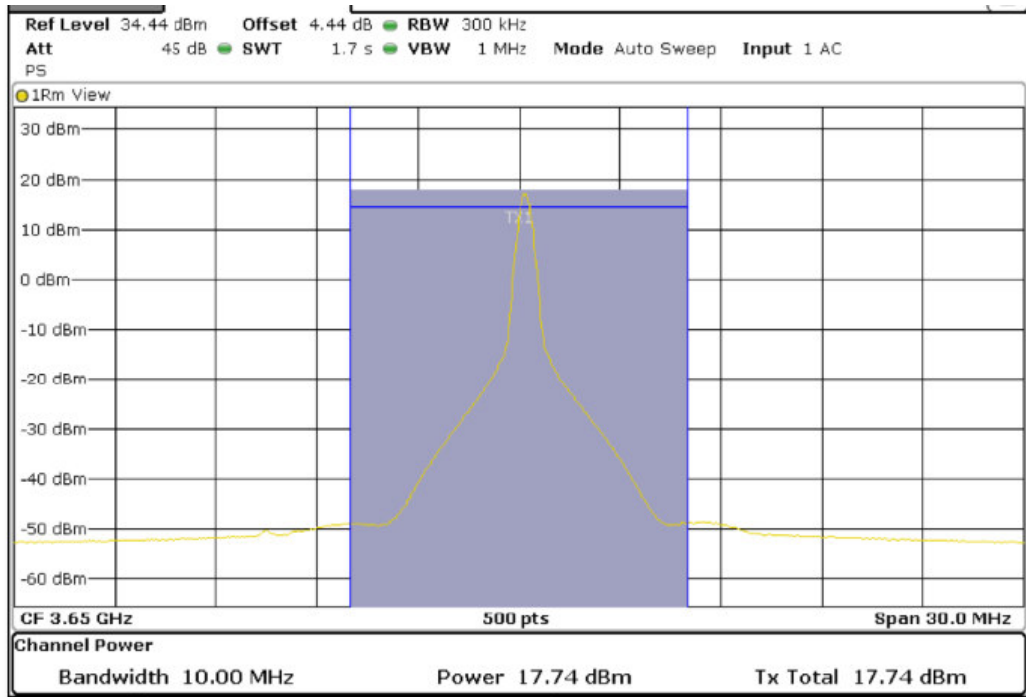
### Band 43\_BW10M\_QPSK\_High Channel



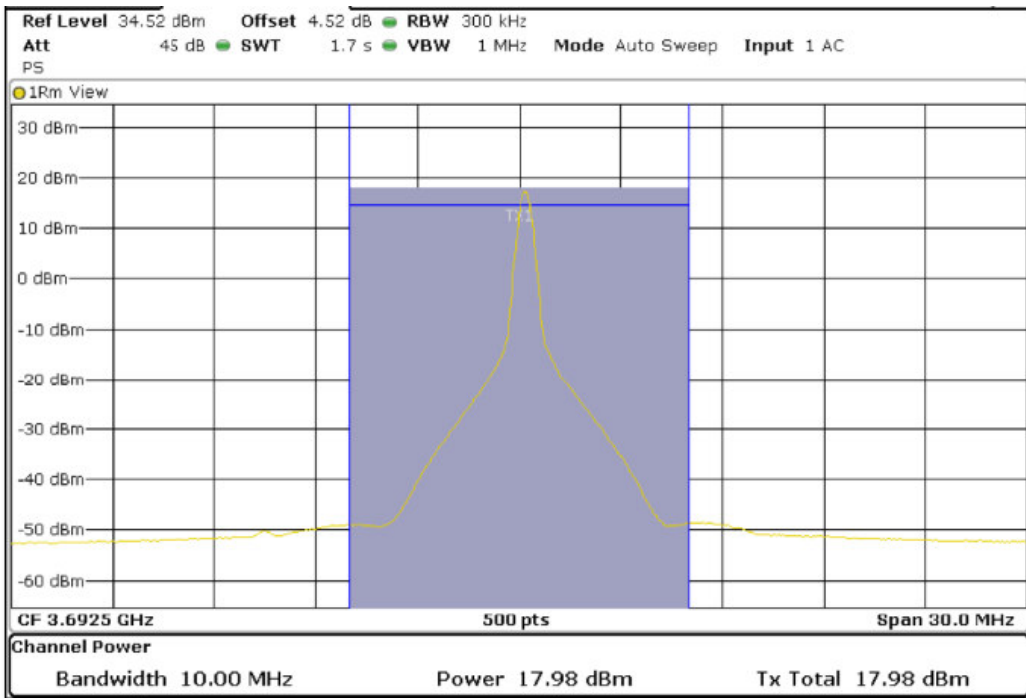
### Band 43\_BW15M\_QPSK\_Low Channel



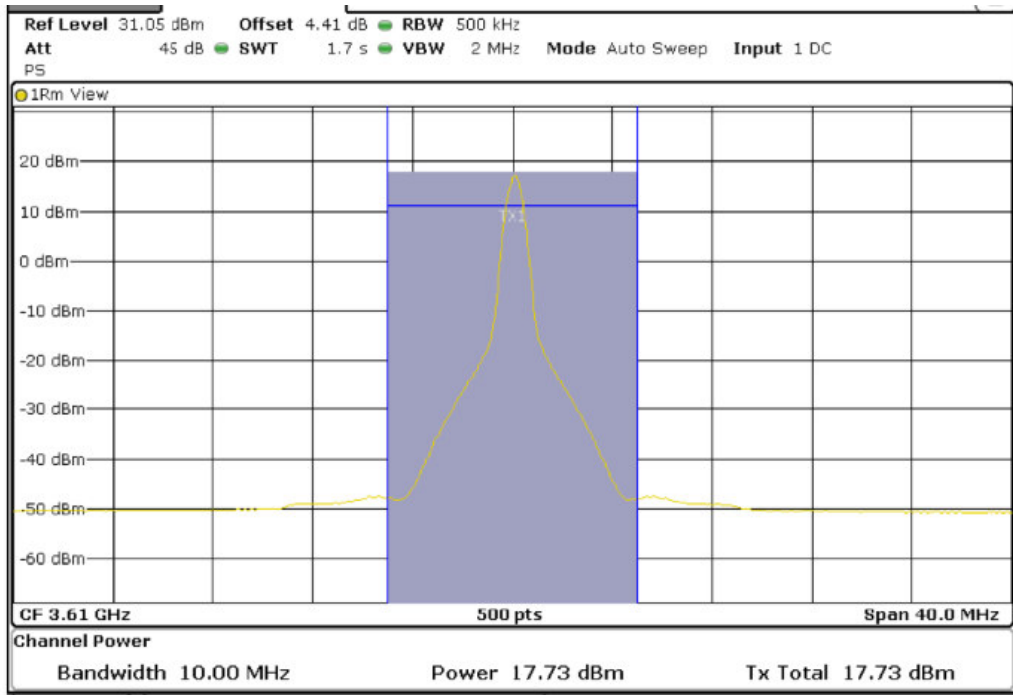
### Band 43\_BW15M\_QPSK\_Middle Channel



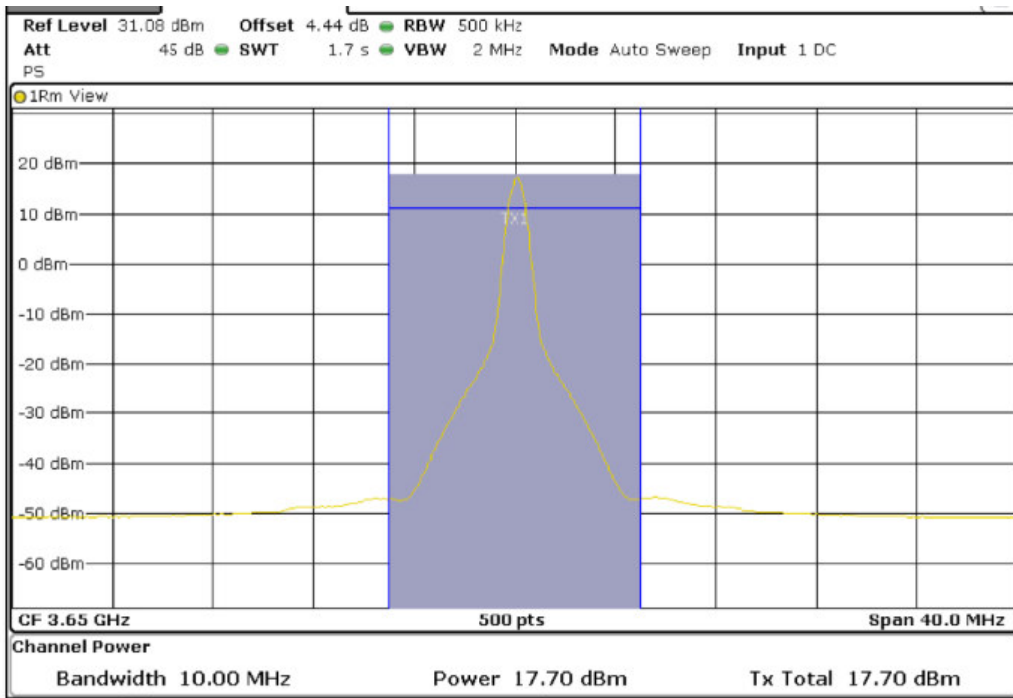
### Band 43\_BW15M\_QPSK\_High Channel



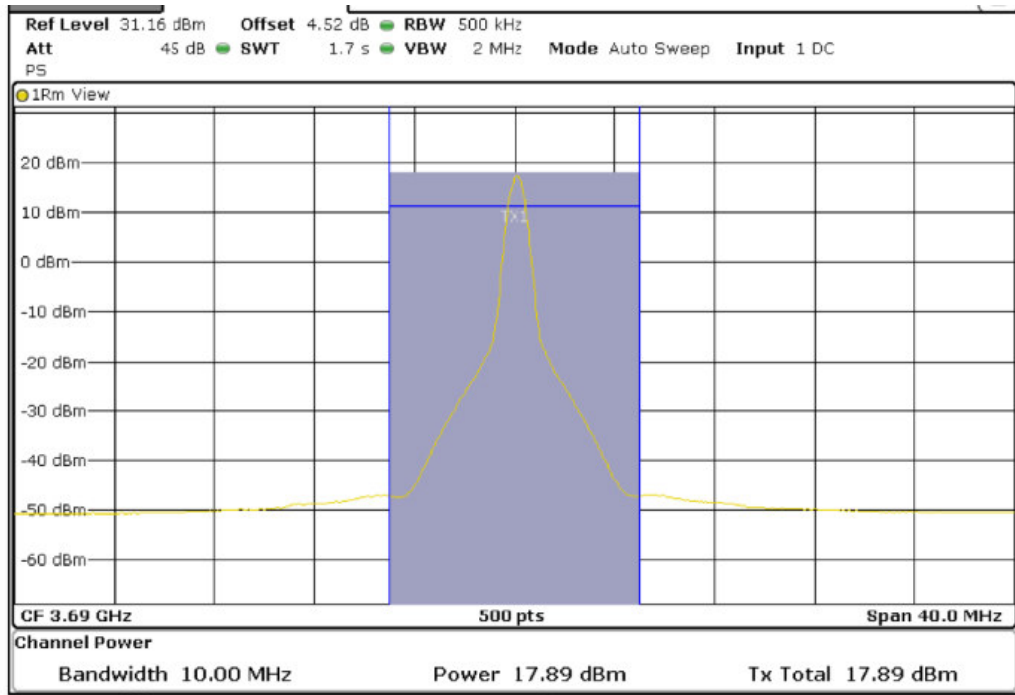
### Band 43\_BW20M\_QPSK\_Low Channel



### Band 43\_BW20M\_QPSK\_Middle Channel



### Band 43\_BW20M\_QPSK\_High Channel

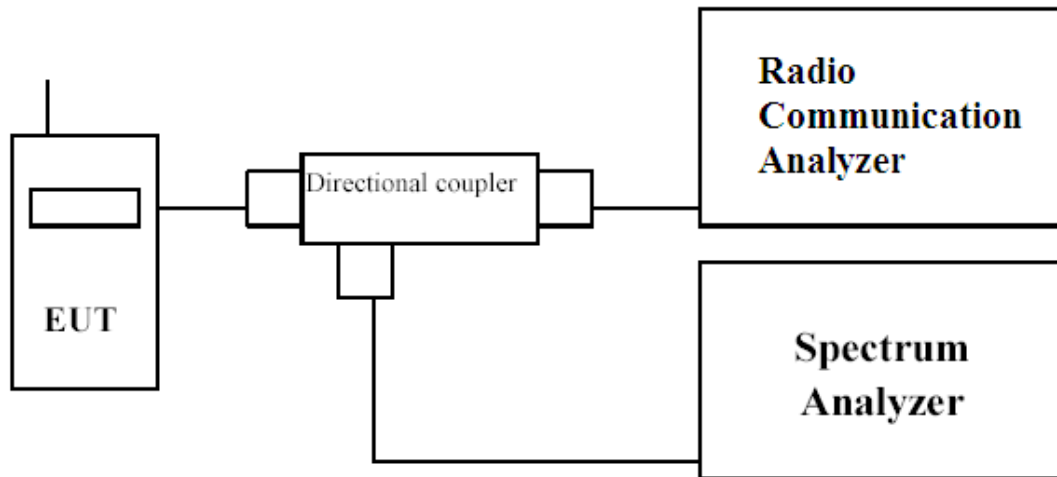


## 4. Occupied Bandwidth

### 4.1. Test Secification

According to FCC Part 2.1049, 96.41

### 4.2. Test Setup



### 4.3. Test Procedure

The EUT is tested with maximum rated TX power via the Base Station simulator, and the occupied bandwidth was measured at the antenna terminals of the EUT.

The Resolution BW of the analyzer is set to 1 %~5% of the emission bandwidth. The EUT's occupied bandwidth is measured as the width of the signal between two points, one below the carrier center frequency and one above the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The plots below show the resultant display from the Spectrum Analyser.



#### 4.4. Test Result of Occupied Bandwidth

##### Band 48\_BW 5MHz\_QPSK

	Lowest frequency 3552.5 MHz	Middle frequency 3625 MHz	Highest frequency 3697.5 MHz
99% OBW (MHz)	4.50	4.52	4.56
-26dB Bandwidth (MHz)	5.38	5.06	5.40

##### Band 48\_BW 5MHz\_16QAM

	Lowest frequency 3552.5 MHz	Middle frequency 3625 MHz	Highest frequency 3697.5 MHz
99% OBW (MHz)	4.50	4.52	4.50
-26dB Bandwidth (MHz)	5.32	5.18	5.00

##### Band 48\_BW 10MHz\_QPSK

	Lowest frequency 3555 MHz	Middle frequency 3625 MHz	Highest frequency 3695 MHz
99% OBW (MHz)	8.96	9.00	8.98
-26dB Bandwidth (MHz)	9.96	9.87	9.90

##### Band 48\_BW 10MHz\_16QAM

	Lowest frequency 3555 MHz	Middle frequency 3625 MHz	Highest frequency 3695 MHz
99% OBW (MHz)	8.94	8.96	8.98
-26dB Bandwidth (MHz)	9.93	9.87	9.96

##### Band 48\_BW 15MHz\_QPSK

	Lowest frequency 3557.5 MHz	Middle frequency 3625 MHz	Highest frequency 3692.5 MHz
99% OBW (MHz)	13.62	13.62	13.56
-26dB Bandwidth (MHz)	15.09	15.18	15.06

**Band 48\_BW 15MHz\_16QAM**

	Lowest frequency	Middle frequency	Highest frequency
	3557.5 MHz	3625 MHz	3692.5 MHz
99% OBW (MHz)	13.56	13.62	13.62
-26dB Bandwidth (MHz)	15.09	15.24	15.18

**Band 48\_BW 20MHz\_QPSK**

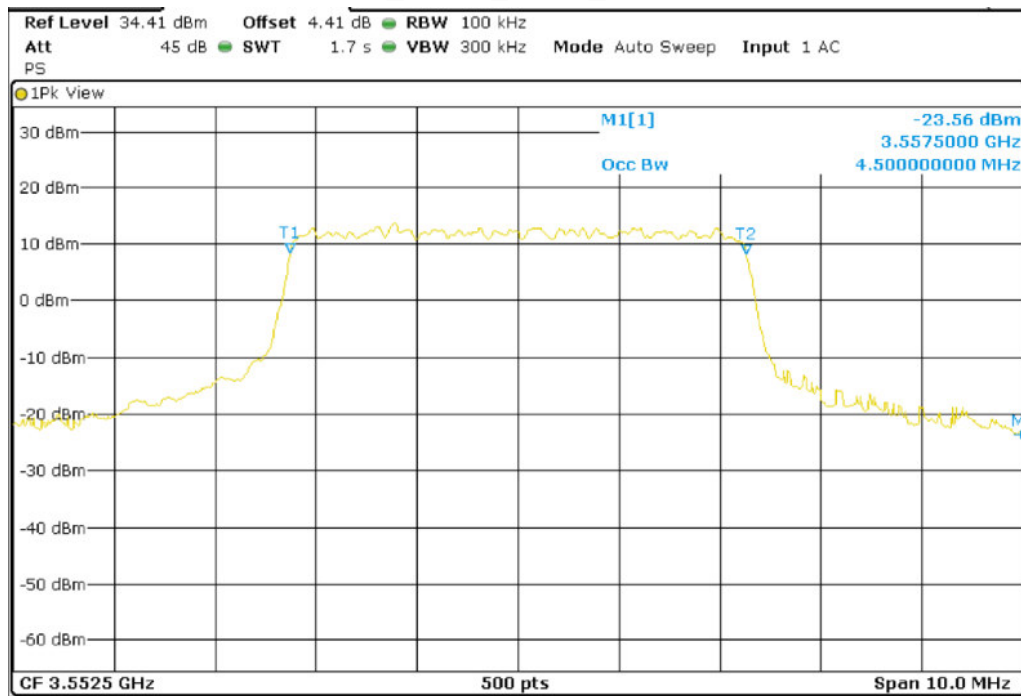
	Lowest frequency	Middle frequency	Highest frequency
	3560 MHz	3625 MHz	3690 MHz
99% OBW (MHz)	18.00	18.00	18.08
-26dB Bandwidth (MHz)	19.88	19.68	19.76

**Band 48\_BW 20MHz\_16QAM**

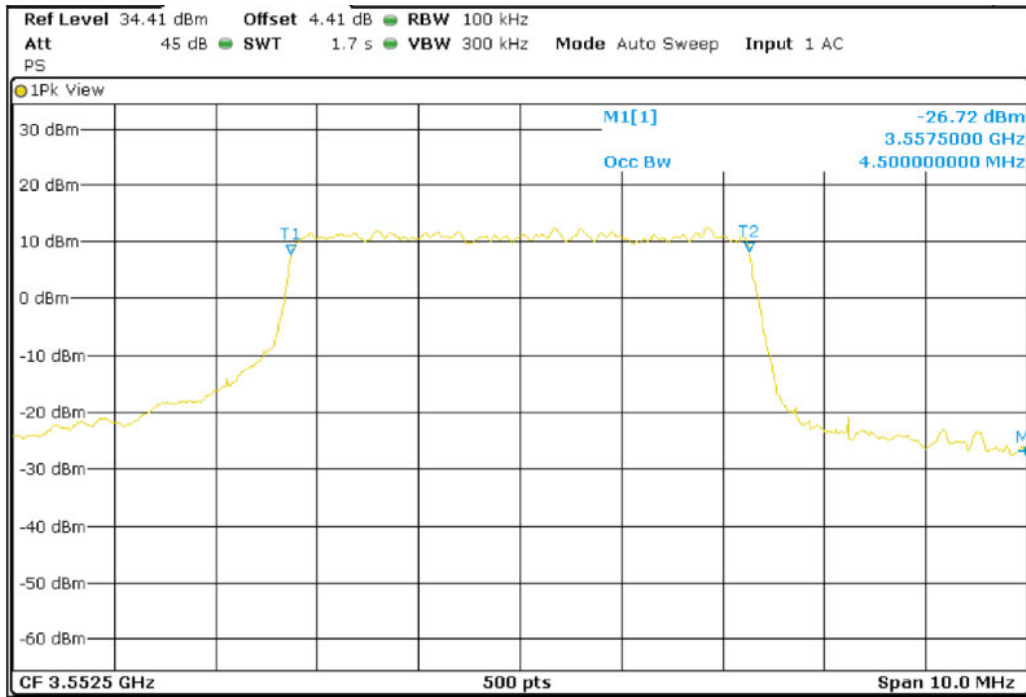
	Lowest frequency	Middle frequency	Highest frequency
	3560 MHz	3625 MHz	3690 MHz
99% OBW (MHz)	18.00	18.00	18.00
-26dB Bandwidth (MHz)	19.88	19.76	19.68

**99% OBW**

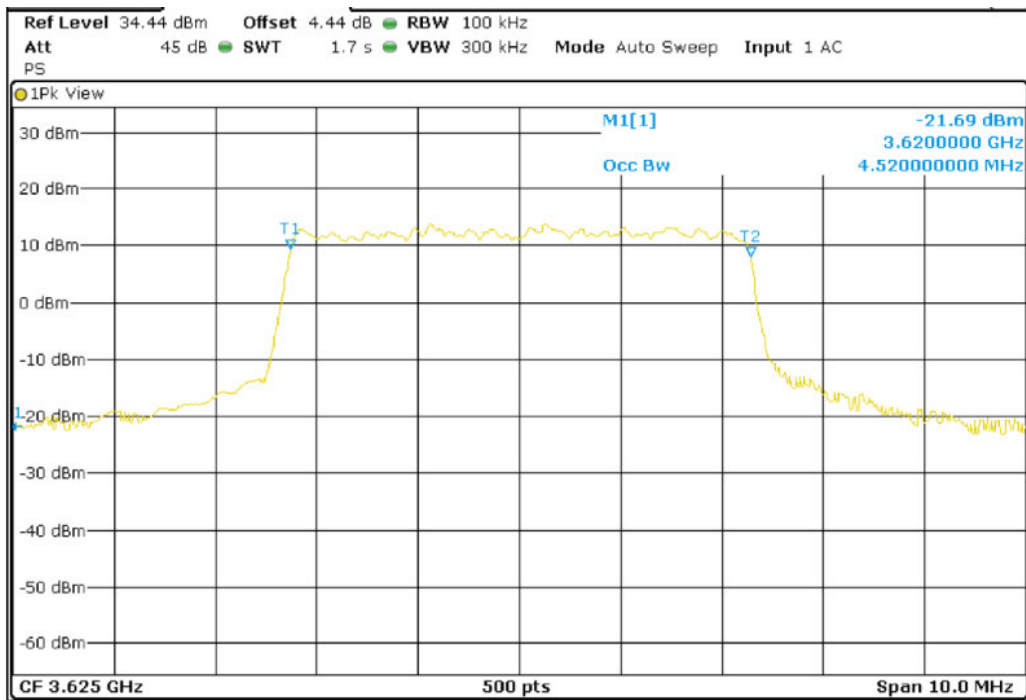
Band 48\_BW5M\_QPSK\_Low Channel



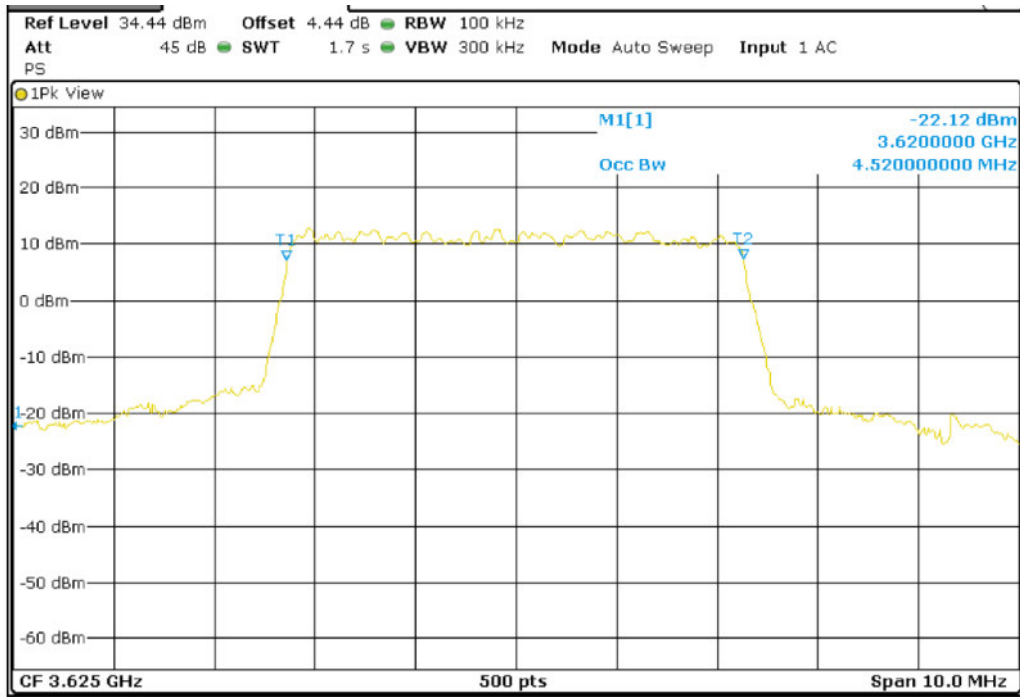
### Band 48\_BW5M\_16QAM\_Low Channel



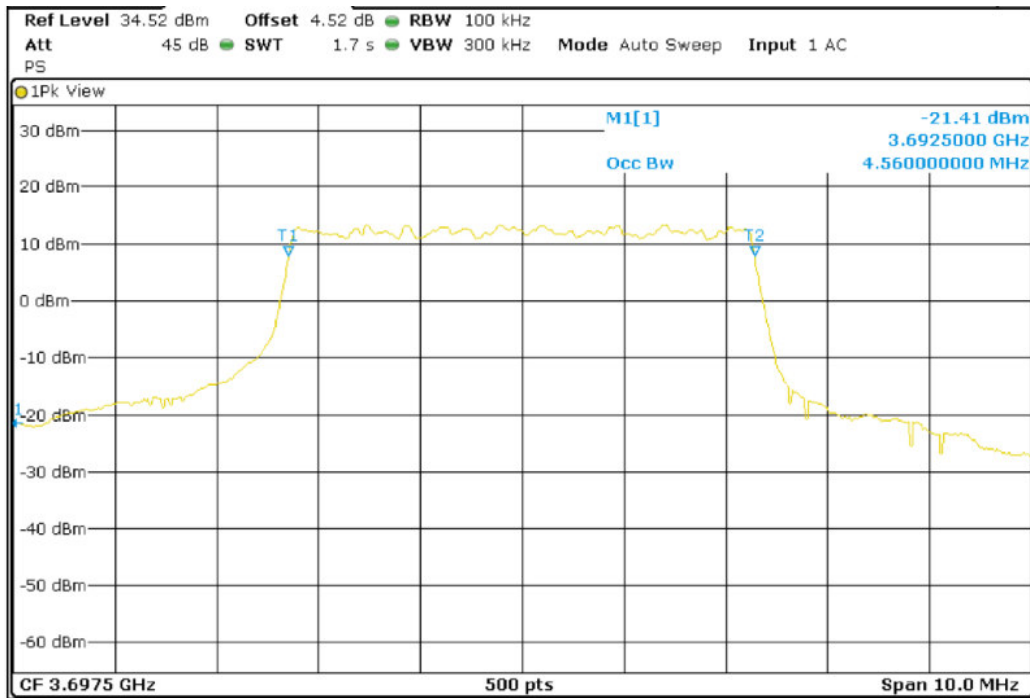
### Band 48\_BW5M\_QPSK\_Middle Channel



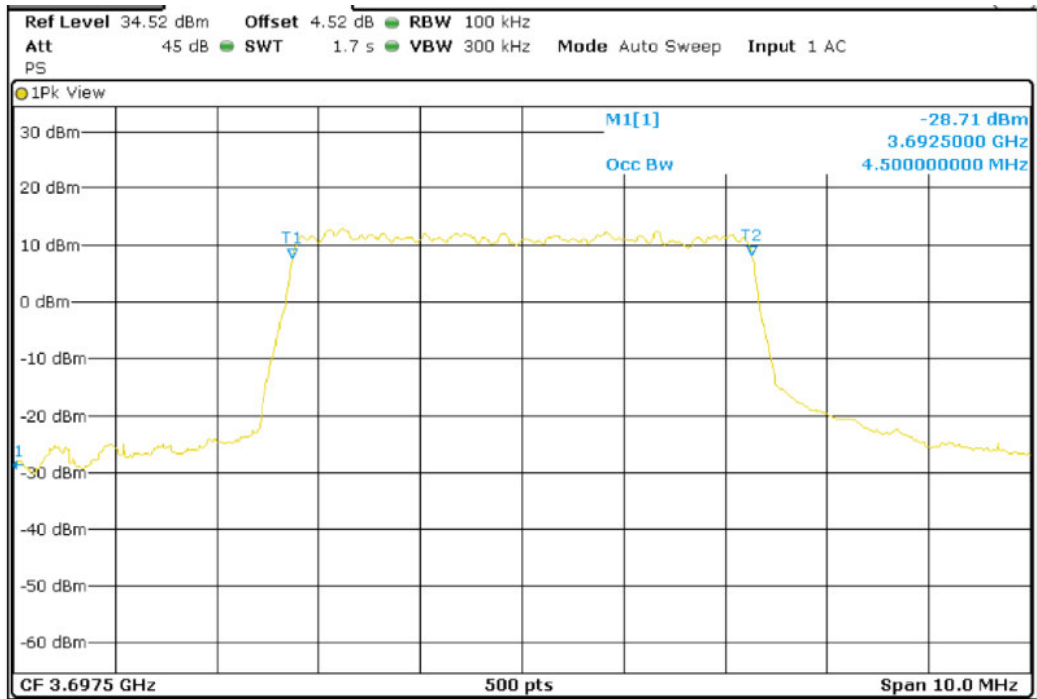
### Band 48\_BW5M\_16QAM\_Middle Channel



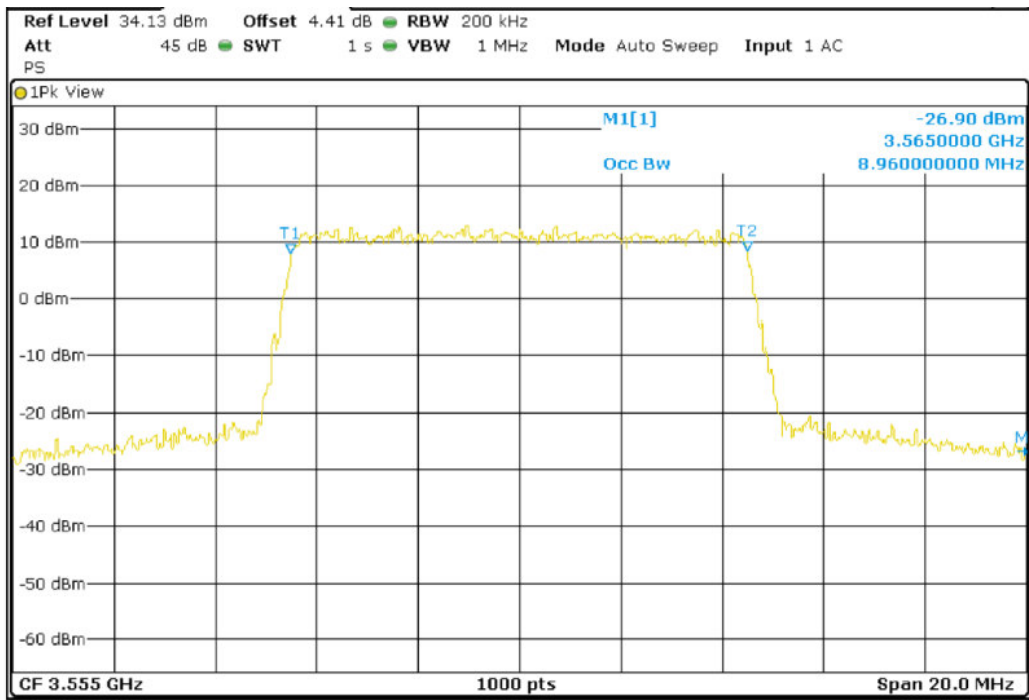
### Band 48\_BW5M\_QPSK\_High Channel



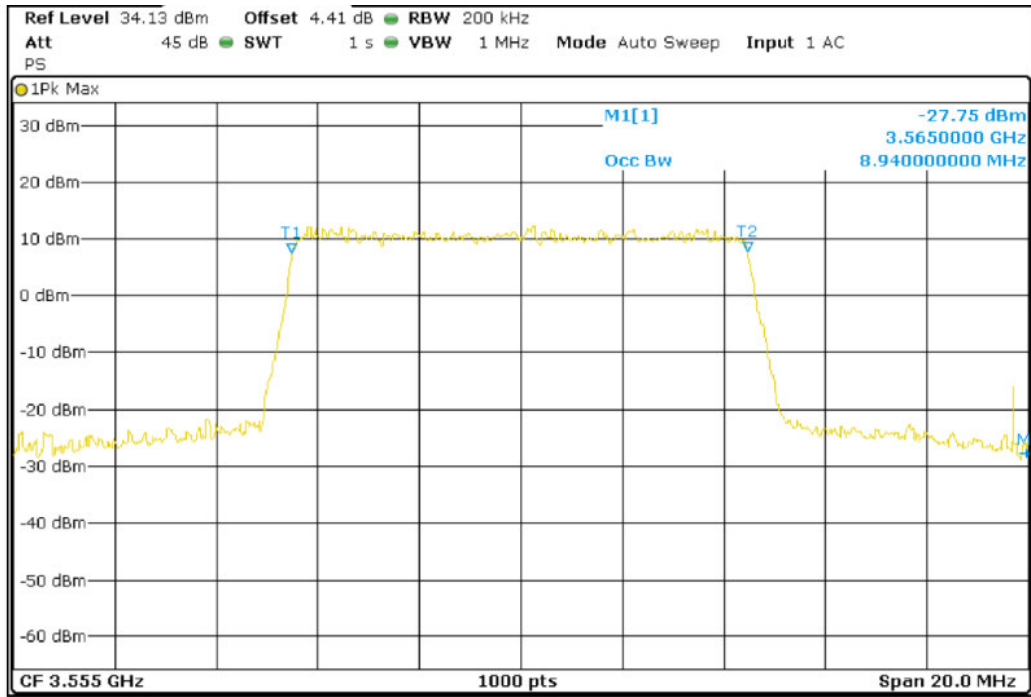
### Band 48\_BW5M\_16QAM\_High Channel



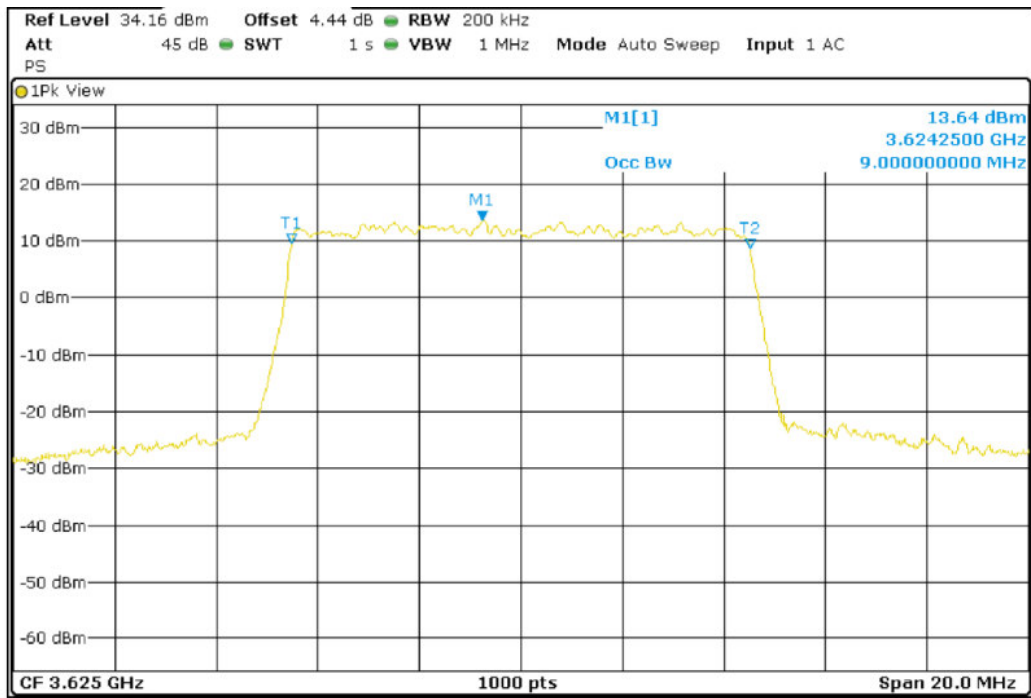
### Band 48\_BW10M\_QPSK\_Low Channel



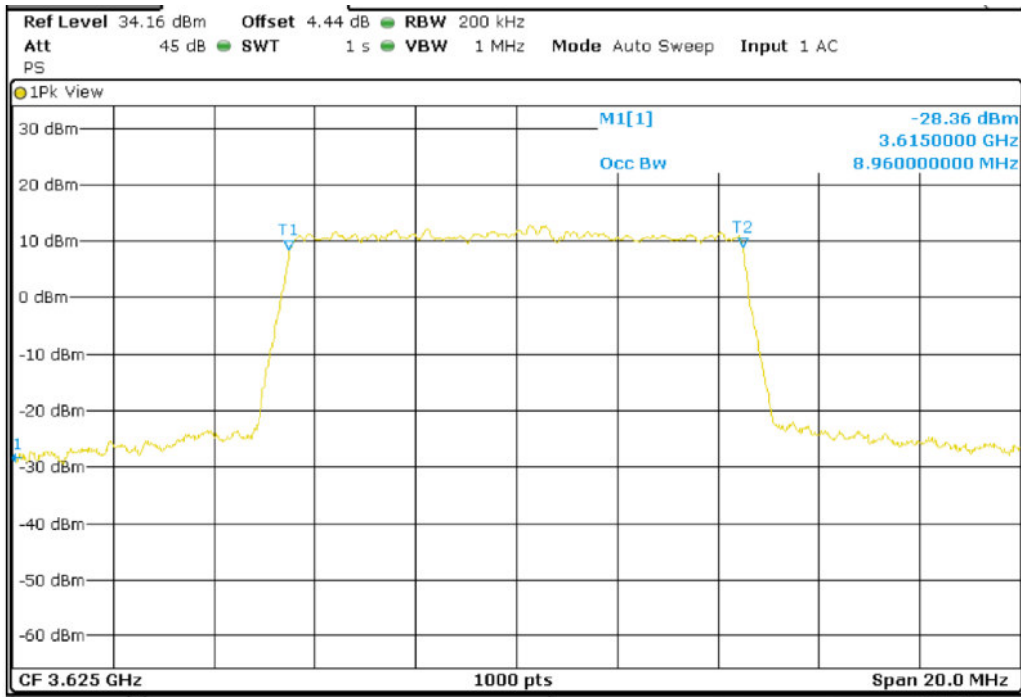
### Band 48\_BW10M\_16QAM\_Low Channel



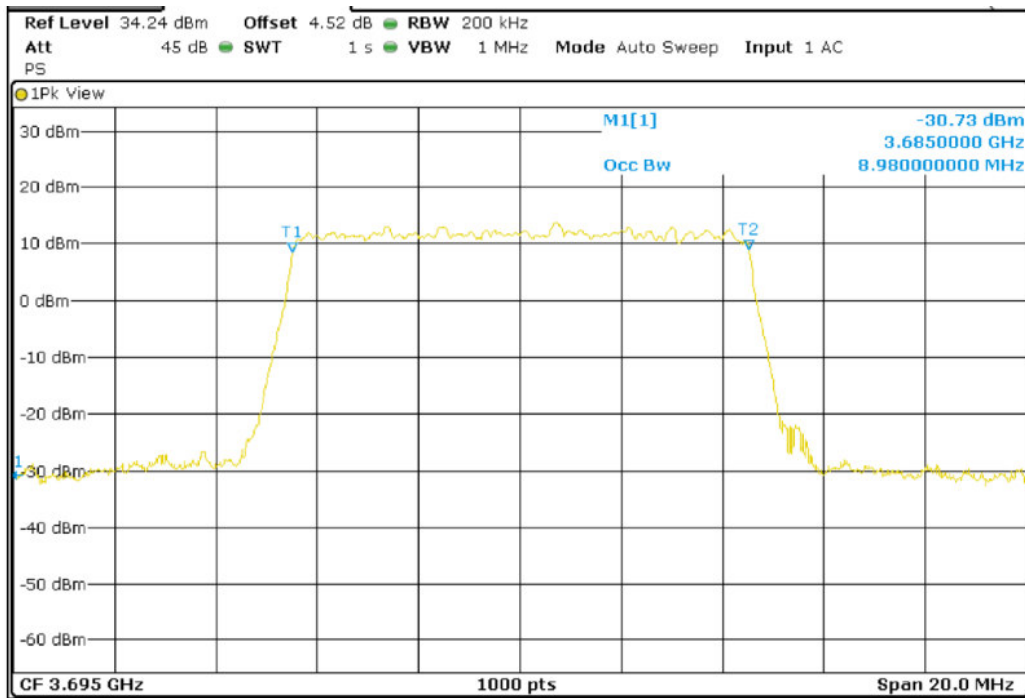
### Band 48\_BW10M\_QPSK\_Middle Channel



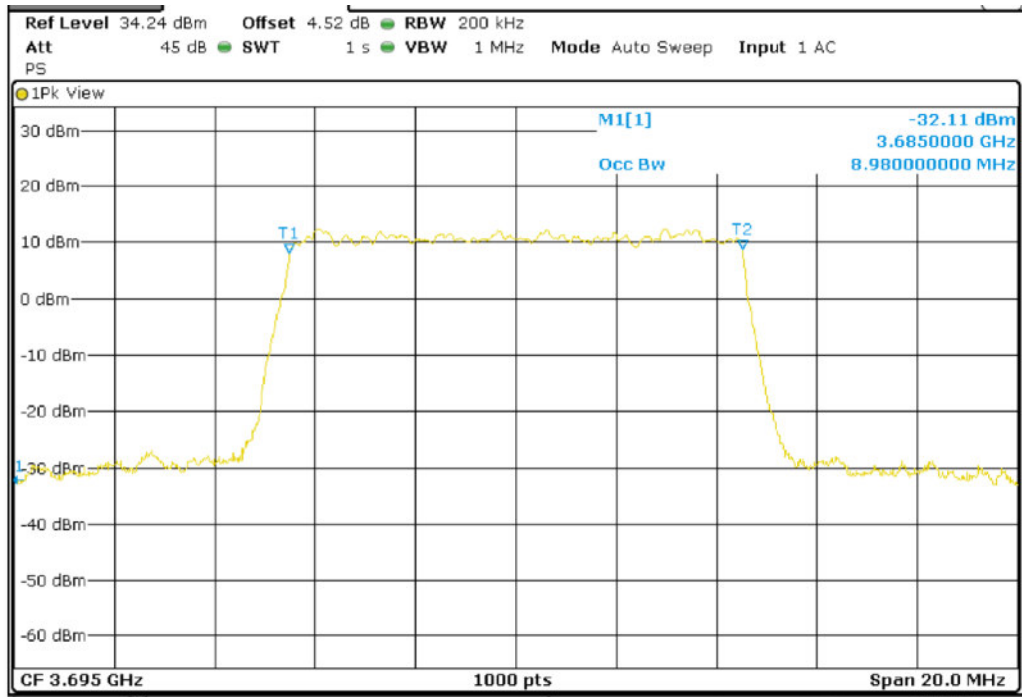
### Band 48\_BW10M\_16QAM\_Middle Channel



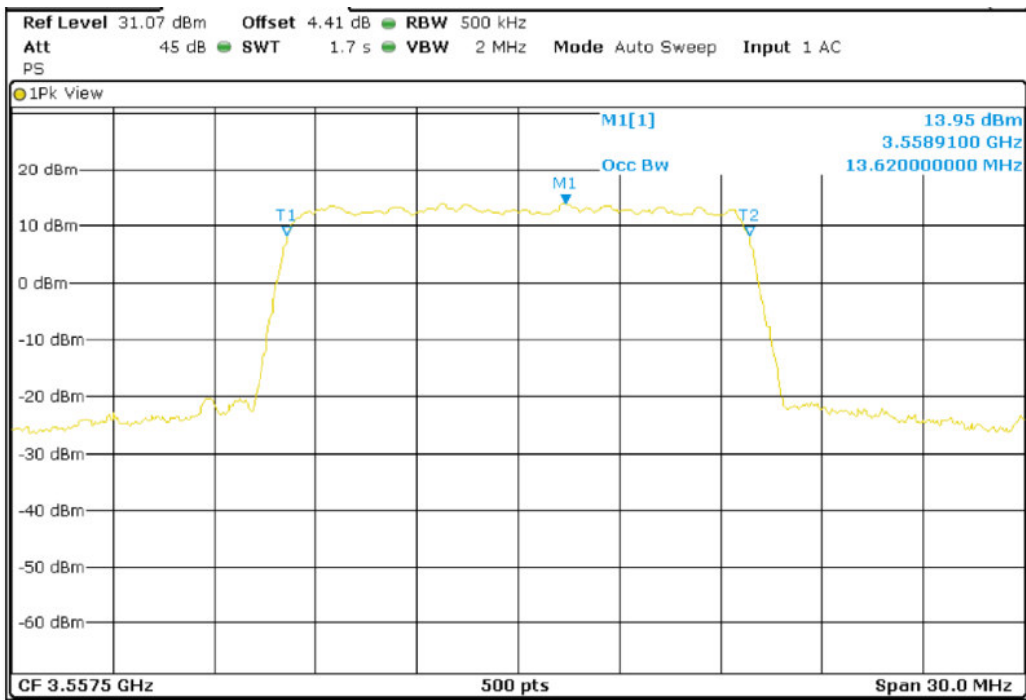
### Band 48\_BW10M\_QPSK\_High Channel



### Band 48\_BW10M\_16QAM\_High Channel

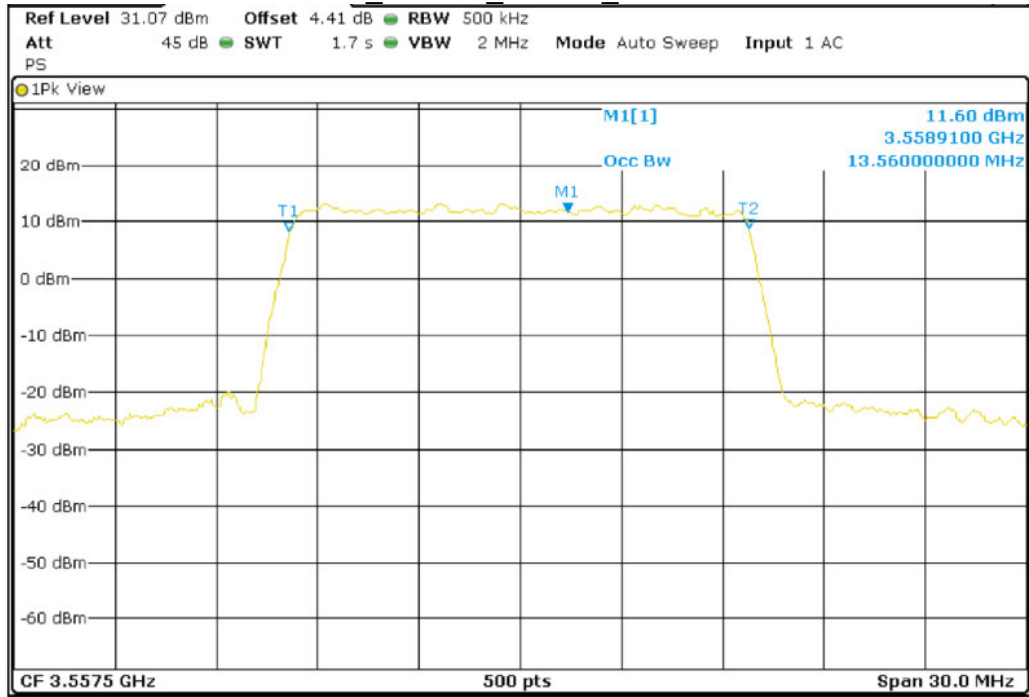


### Band 48\_BW15M\_QPSK\_Low Channel

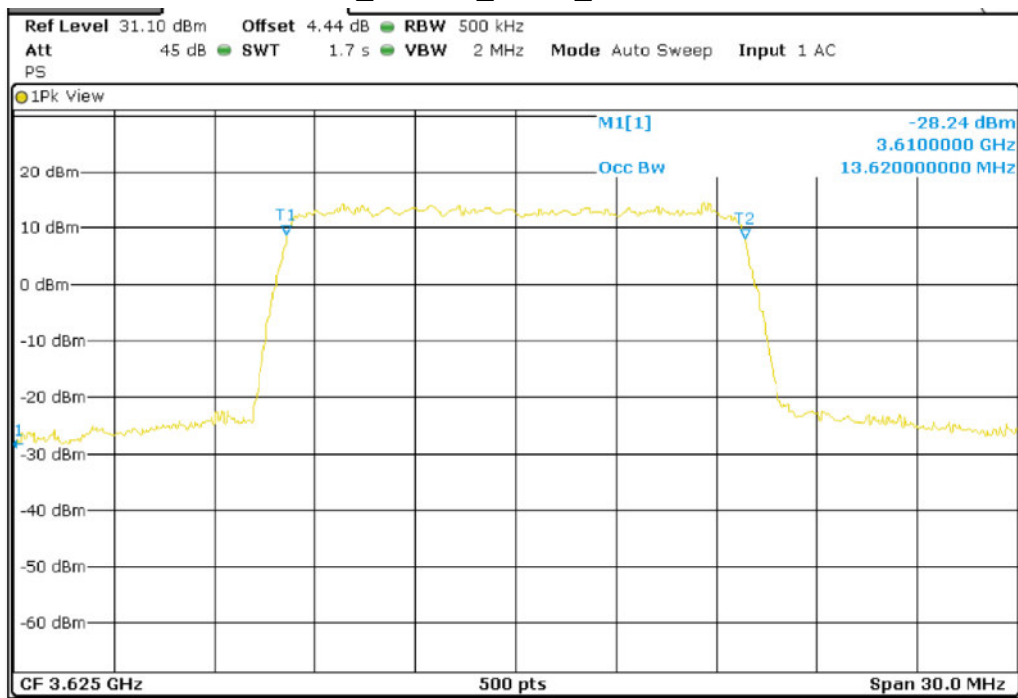




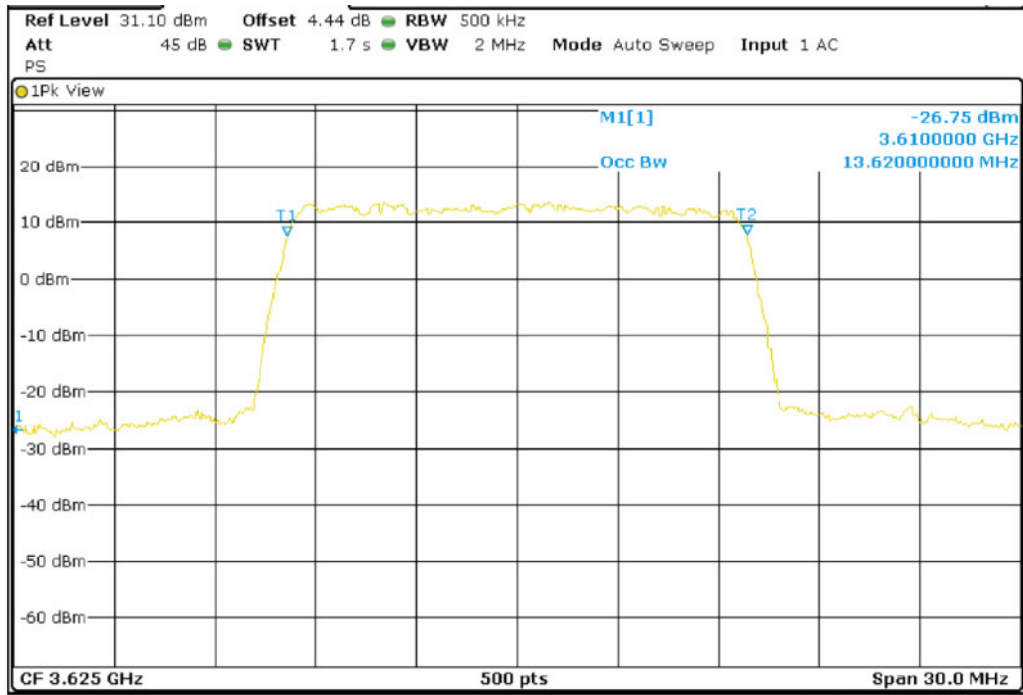
### Band 48\_BW15M\_16QAM\_Low Channel



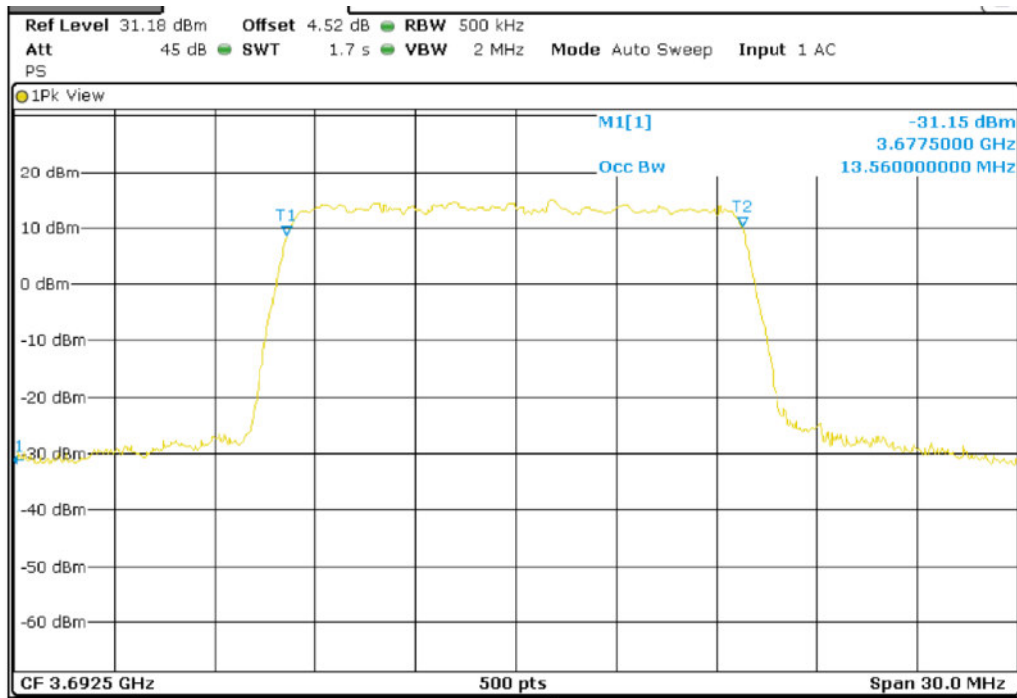
### Band 48\_BW15M\_QPSK\_Middle Channel



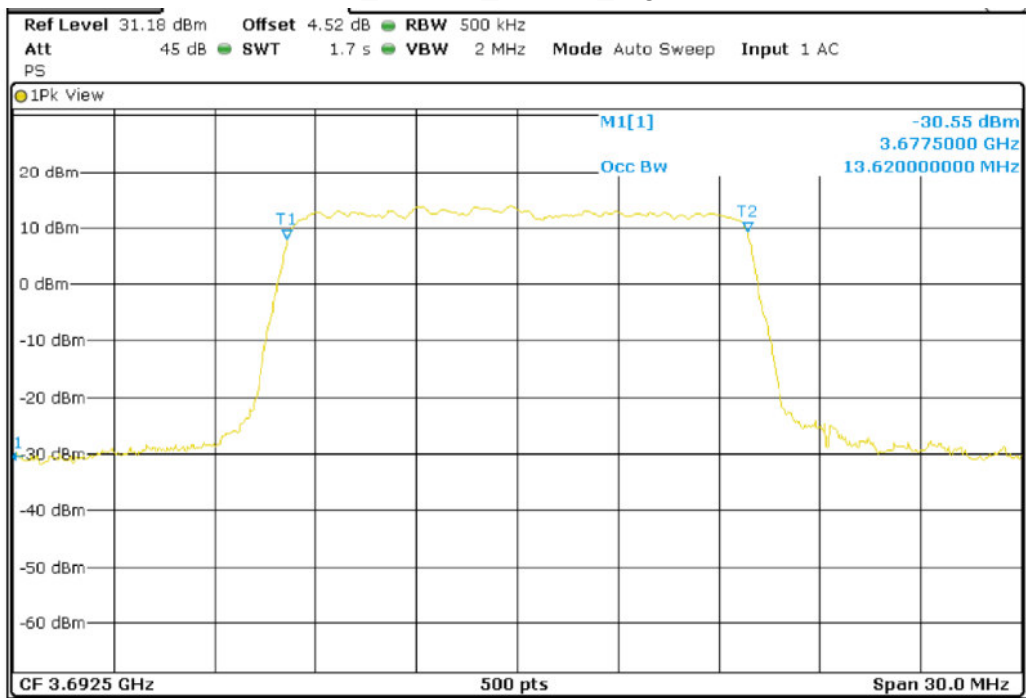
### Band 48\_BW15M\_16QAM\_Middle Channel



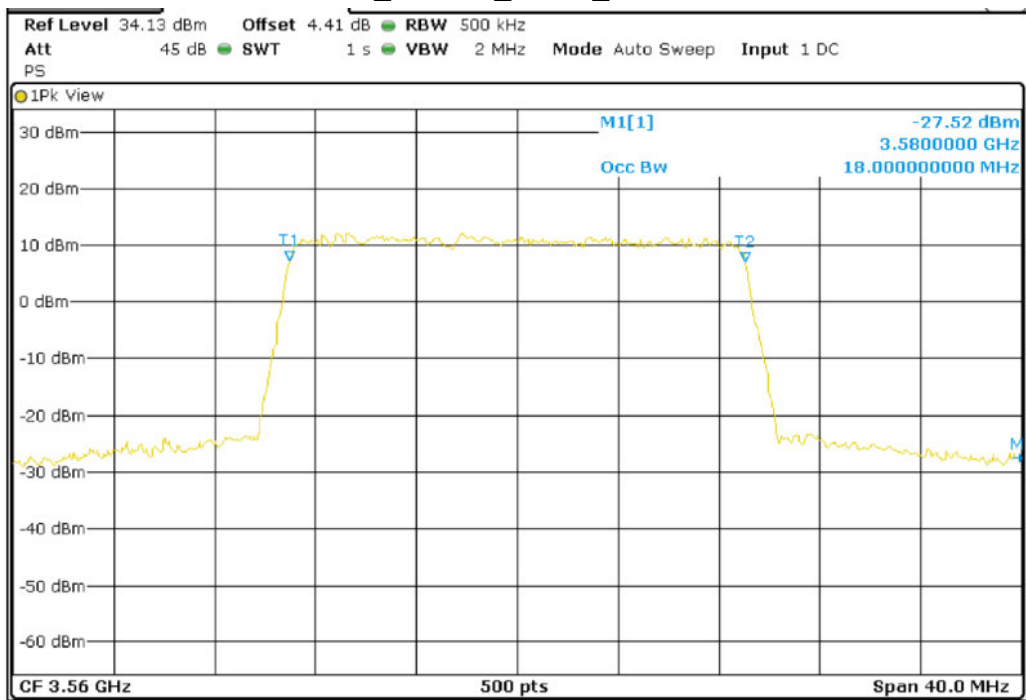
### Band 48\_BW15M\_QPSK\_High Channel



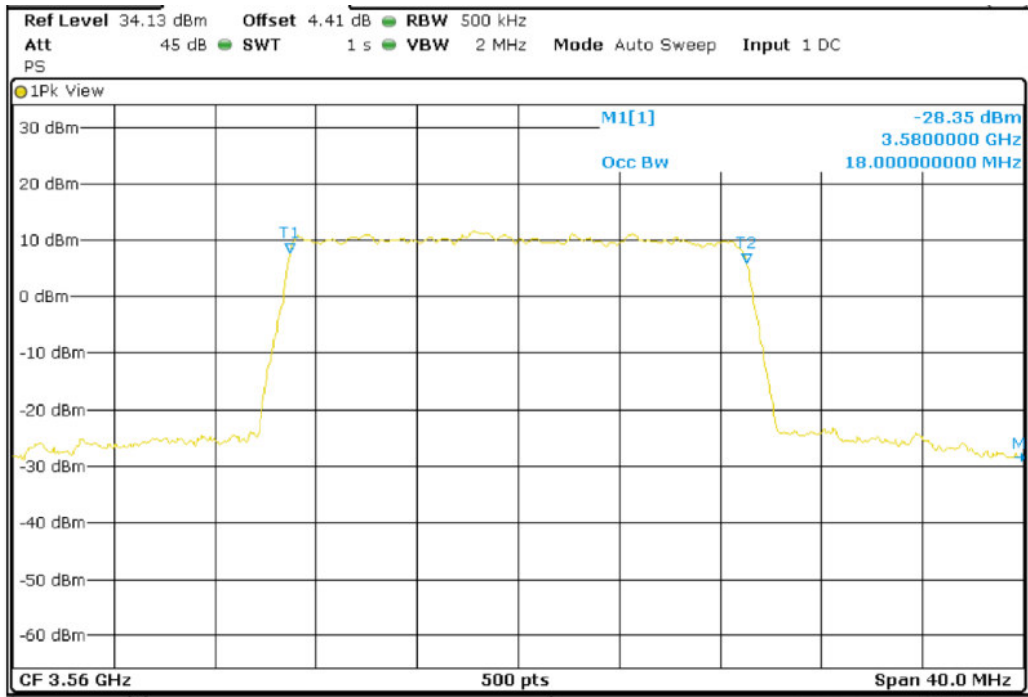
### Band 48\_BW15M\_16QAM\_High Channel



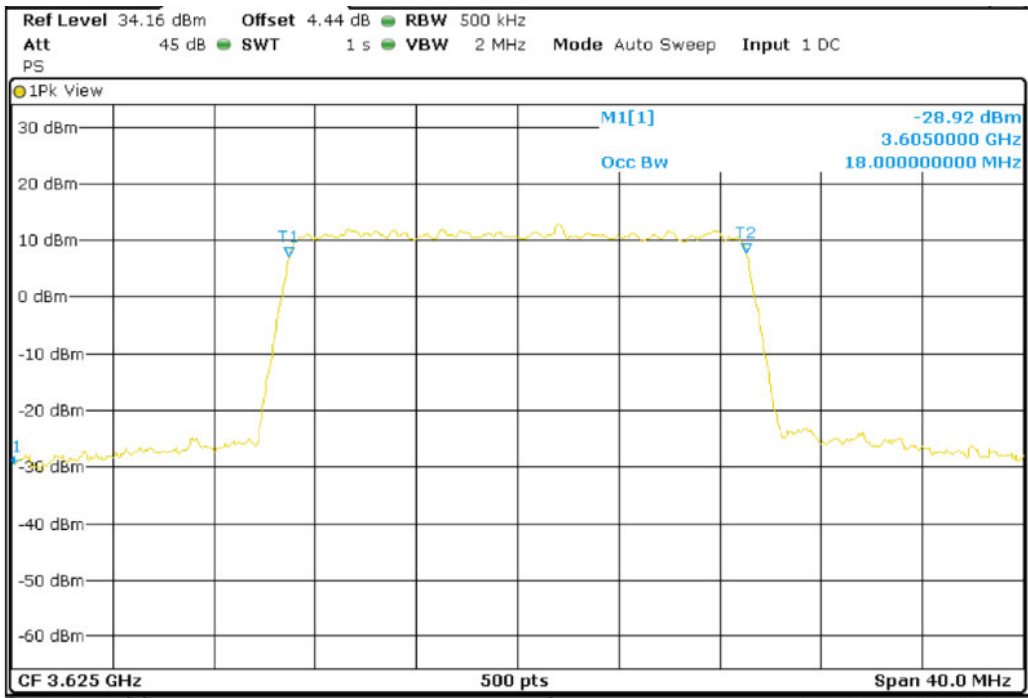
### Band 48\_BW20M\_QPSK\_Low Channel



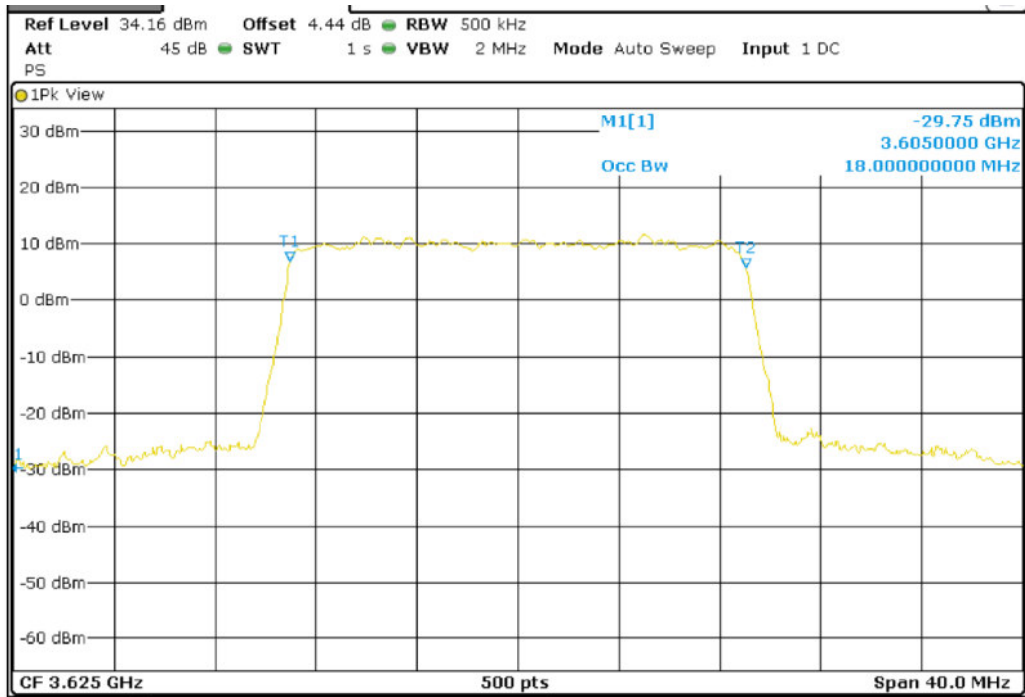
### Band 48\_BW20M\_16QAM\_Low Channel



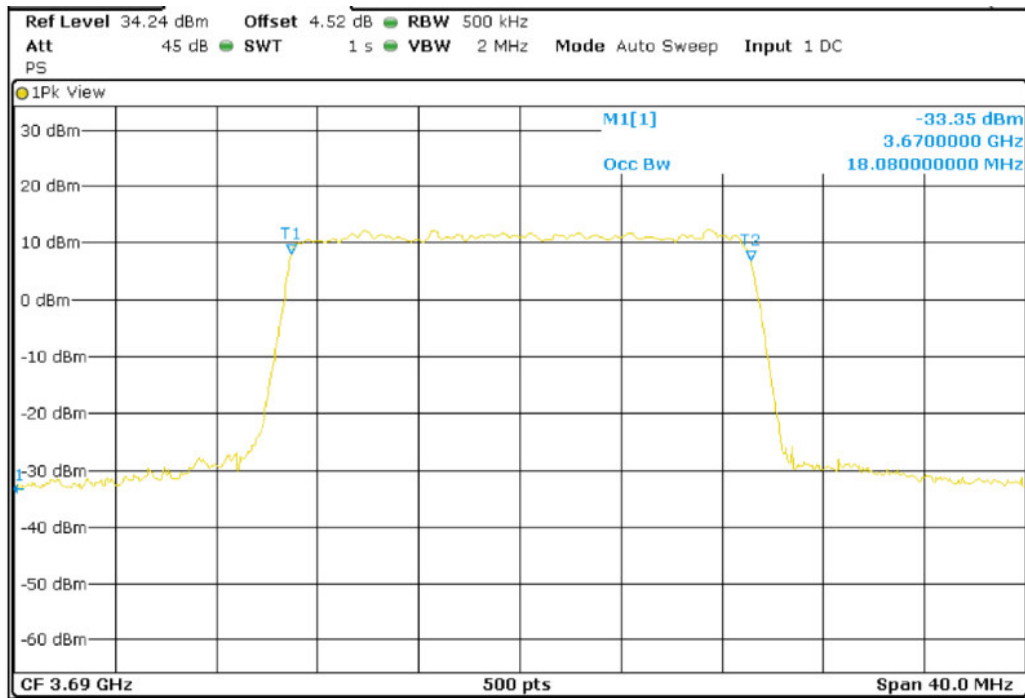
### Band 48\_BW20M\_QPSK\_Middle Channel



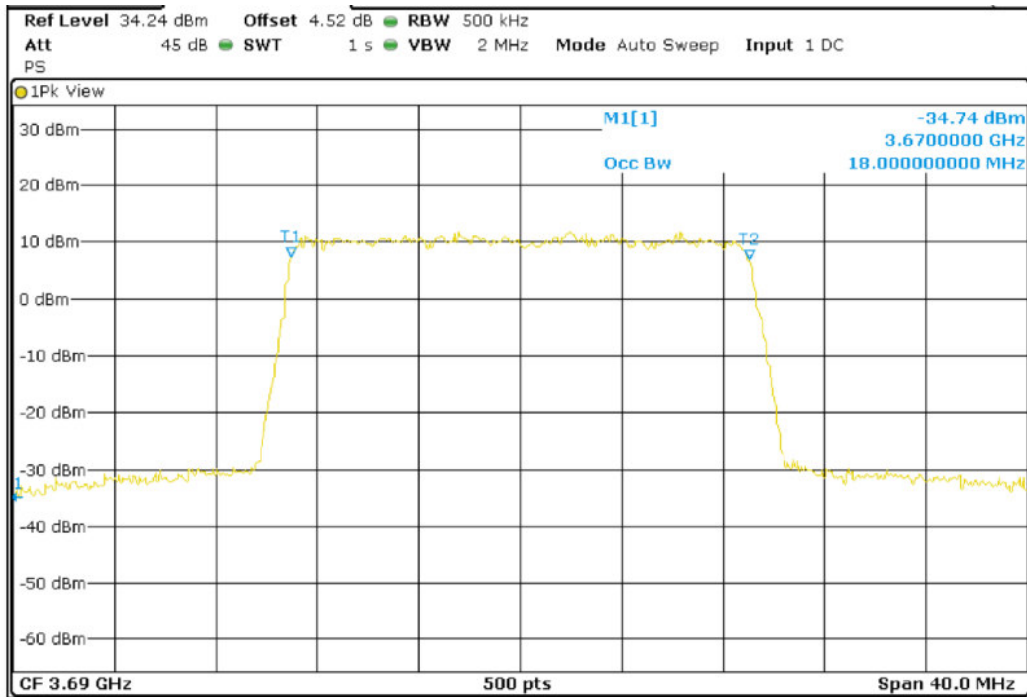
### Band 48\_BW20M\_16QAM\_Middle Channel



### Band 48\_BW20M\_QPSK\_High Channel

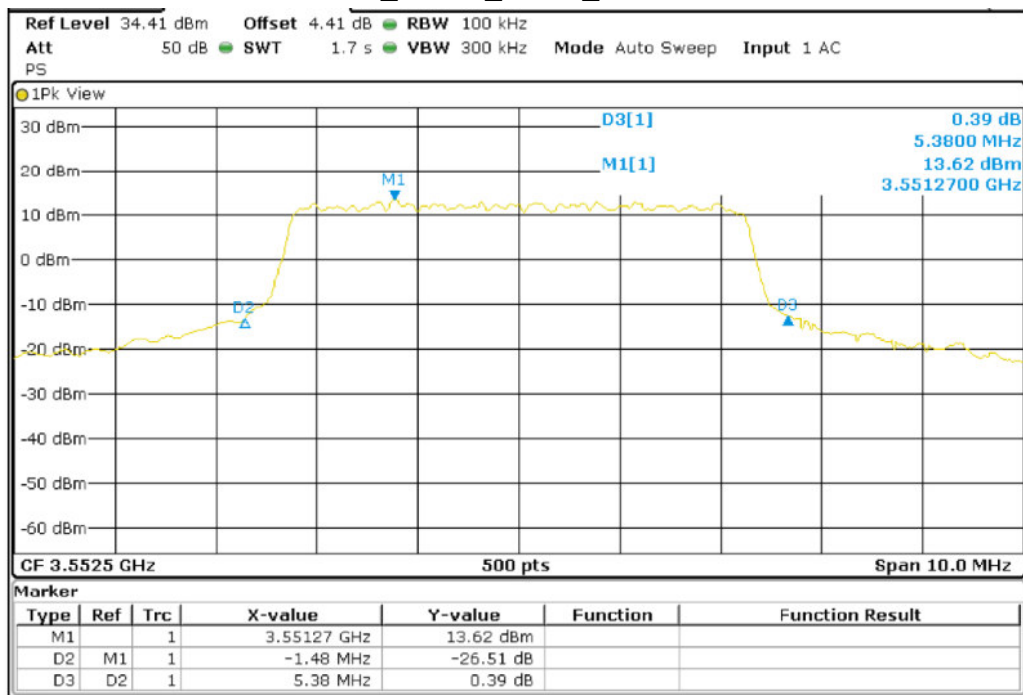


Band 48\_BW20M\_16QAM\_High Channel

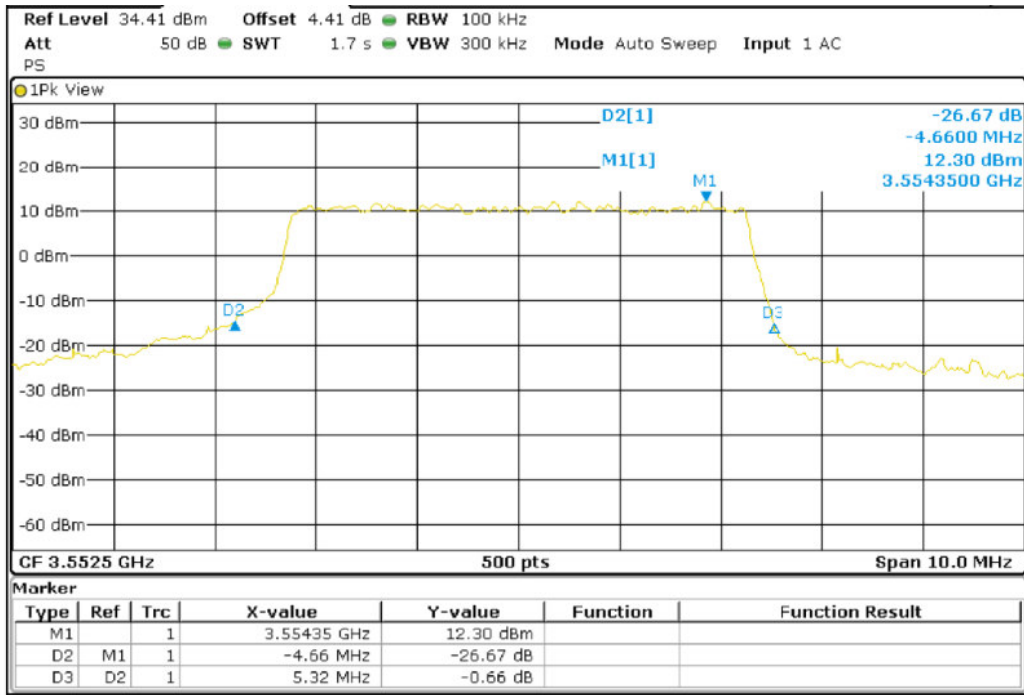


-26dB Bandwidth

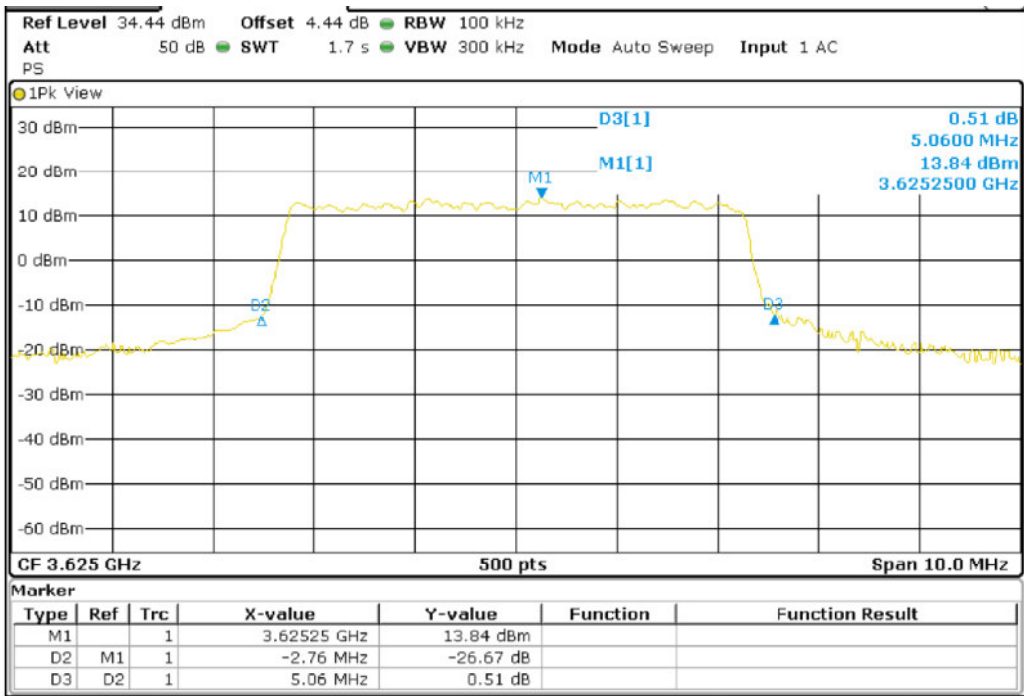
Band 48\_BW5M\_QPSK\_Low Channel



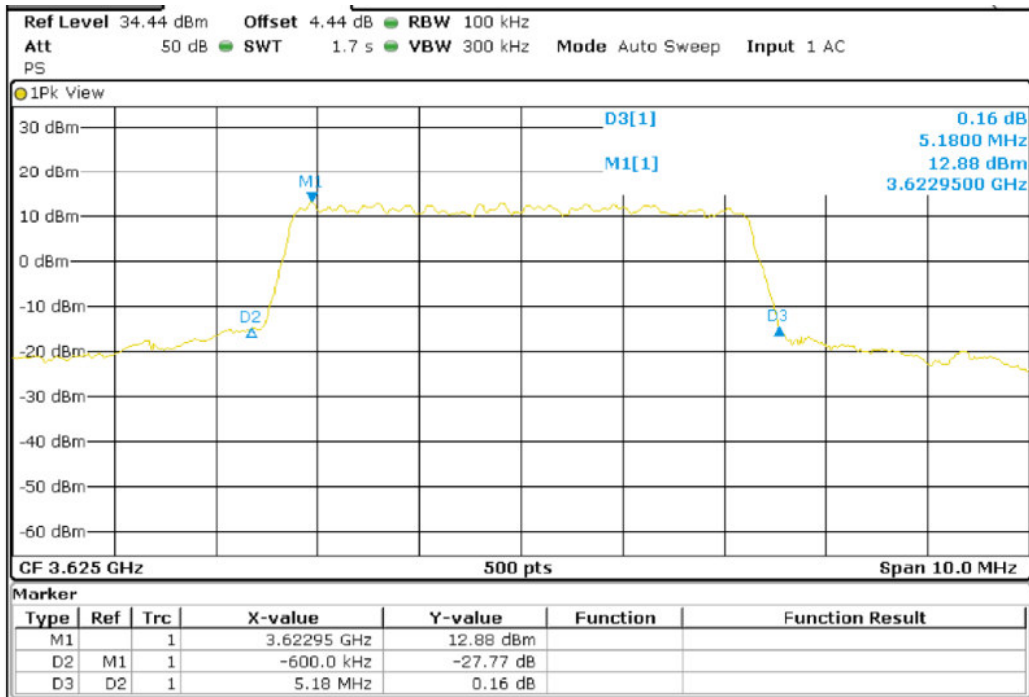
### Band 48\_BW5M\_16QAM\_Low Channel



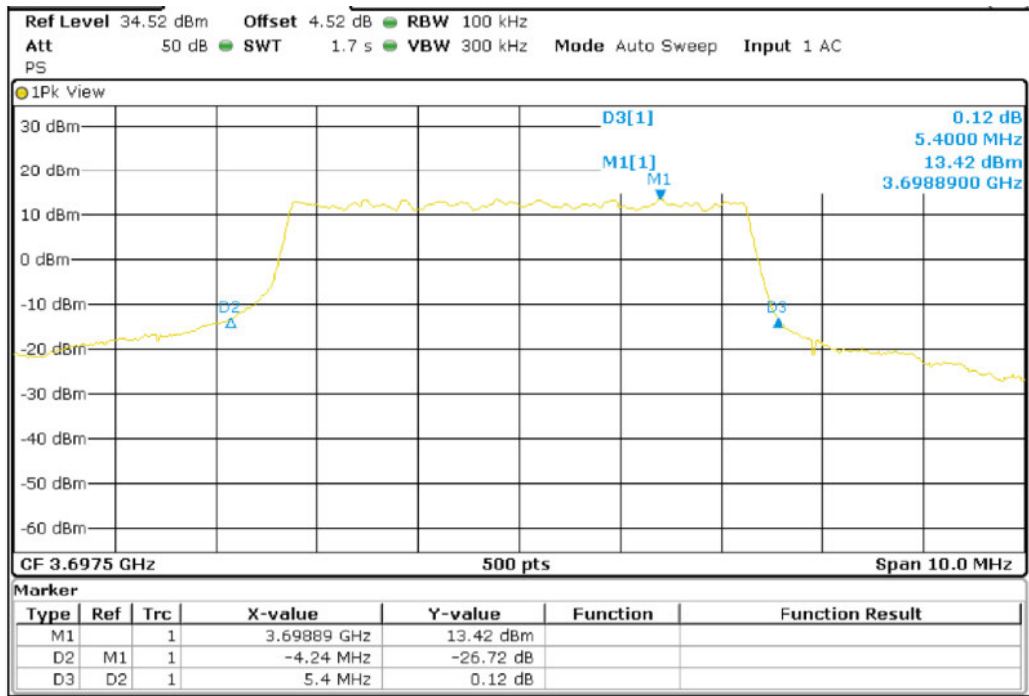
### Band 48\_BW5M\_QPSK\_Middle Channel



### Band 48\_BW5M\_16QAM\_Middle Channel

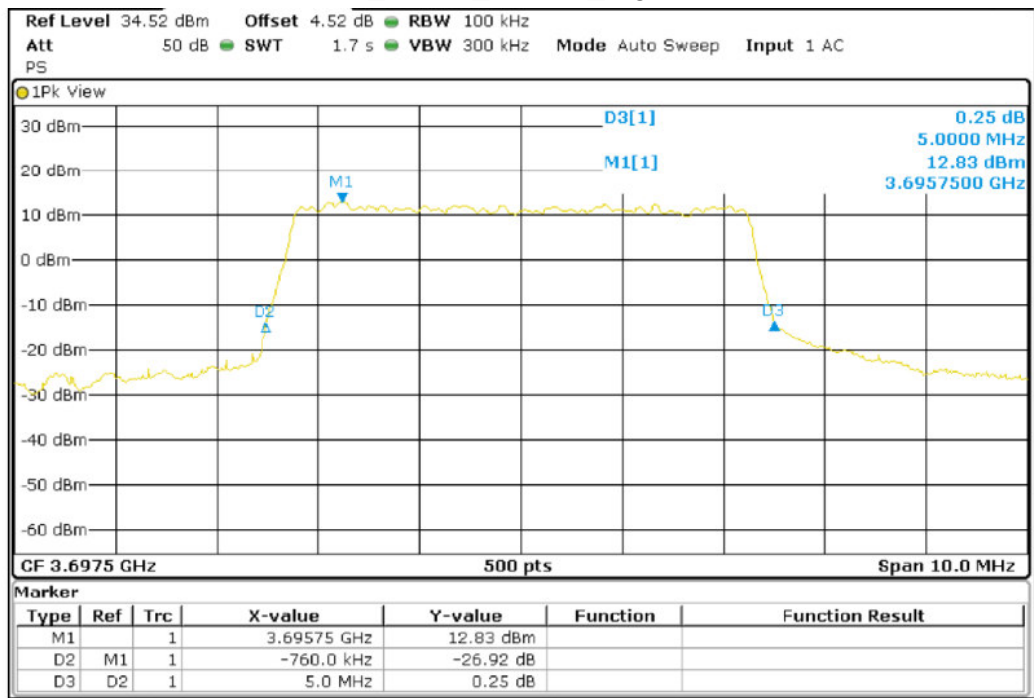


### Band 48\_BW5M\_QPSK\_High Channel

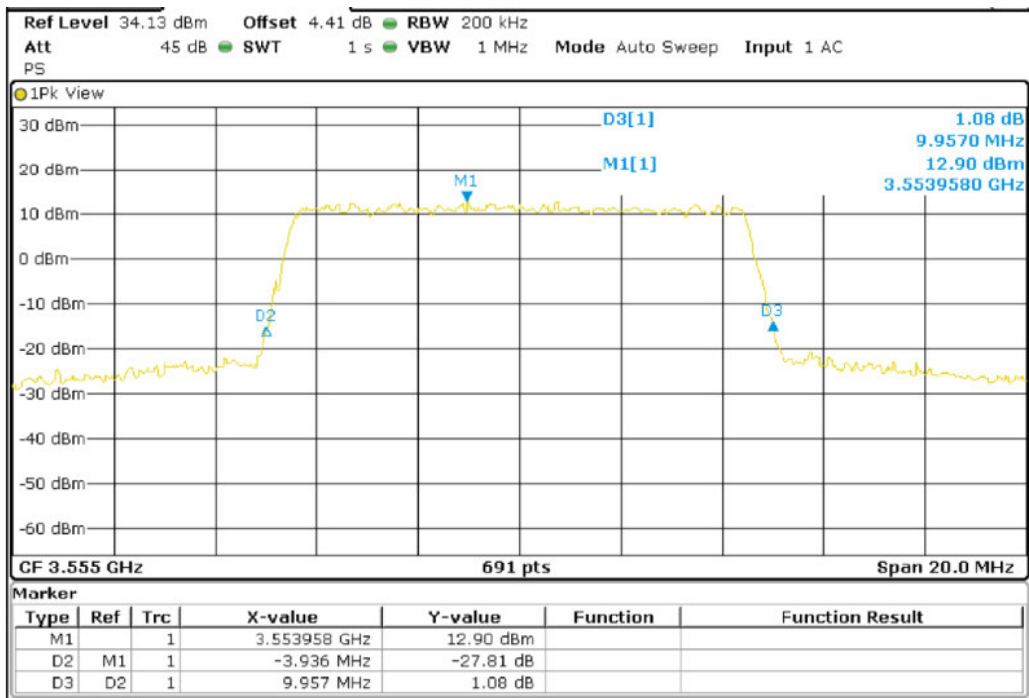




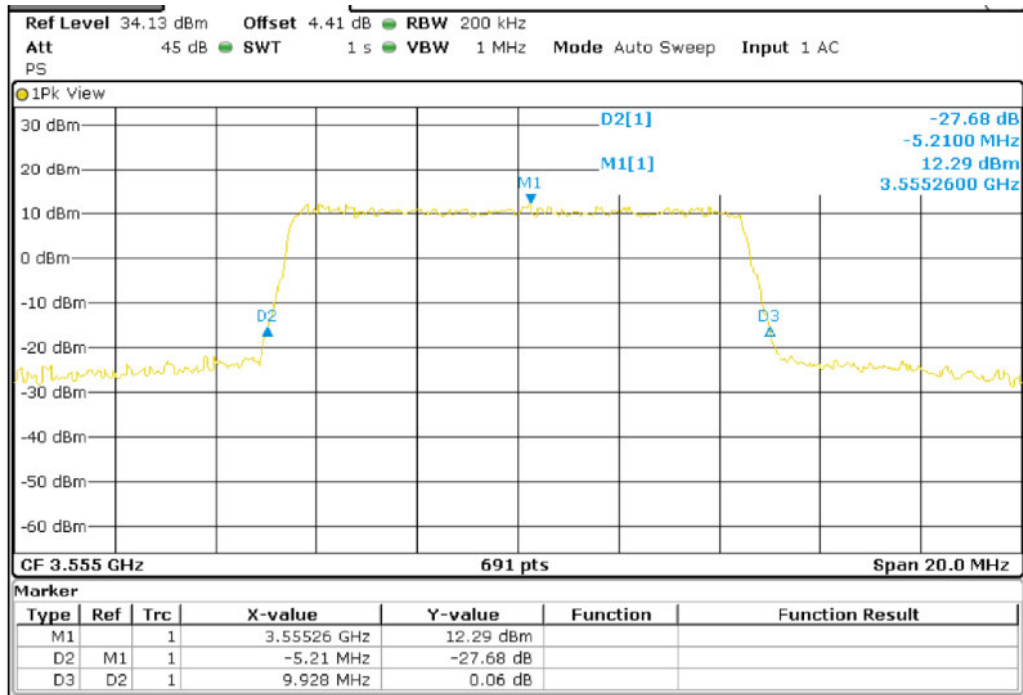
### Band 48\_BW5M\_16QAM\_High Channel



### Band 48\_BW10M\_QPSK\_Low Channel



### Band 48\_BW10M\_16QAM\_Low Channel



### Band 48\_BW10M\_QPSK\_Middle Channel

