中国认可
国际互认
检测
TESTING
CNAS L2264

RF TEST REPORT

Applicant	ZTE Corporation
FCC ID	SRQ-WF821
Product	LTE router
Brand	ZTE
Model	WF821/WF821+
Report No.	RXA1701-0006RF01R1
Issue Date	April 18, 2017

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2015)/ FCC CFR47 Part 27 (2015)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Performed by: Xianqing Li *Reviewed by: Kai Xu*

TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000

Table of Contents

Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Isotropic Radiated power	27.50(h)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	27.53(m)(4)	PASS
5	Peak-to-Average Power Ratio	27.50(d)(5)/KDB971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 27.54	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 / 27.53(h) / 27.53(g) / 27.53(m)	PASS
8	Radiates Spurious Emission	2.1053 /27.53(h) / 27.53(g) / 27.53(m)	PASS
Date of Testing: February 16, 2017 ~ March 1, 2017 and April 14, 2017			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard.			

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of TA technology (shanghai) co., Ltd. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by any government agencies.

1.2 Test facility

CNAS (accreditation number:L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (recognition number is 428261)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3 Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City:	Shanghai
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	http://www.ta-shanghai.com
E-mail:	xukai@ta-shanghai.com

2 General Description of Equipment under Test

Client Information

Applicant	ZTE Corporation
Applicant address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen Guangdong P.R.China
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen Guangdong P.R.China

General information

Model:	WF821/WF821+		
Product SN:	6611016350400055		
Hardware Version:	v3.3		
Software Version:	OLO_PER_WF821+V1.0.0B03		
Power Supply:	AC adapter		
Antenna Type:	Internal Antenna		
Test Mode(s):	LTE Band 7/41		
Maximum E.I.R.P./ E.R.P.	LTE Band 7: 26.18 dBm LTE Band 41: 27.16 dBm		
Rated Power Supply Voltage:	12V		
Extreme Voltage:	Minimum: 9V Maximum: 15V		
Extreme Temperature:	Lowest: -10°C Highest: +45°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
	LTE Band 41	2496 ~ 2690	2496 ~ 2690
EUT Accessory			
Adapter 1	Manufacturer: AQUILSTAR PRECISION INDUSTRIAL (SHENZHEN) CO., LTD Model: ASSA65A-120100		
Adapter 2	Manufacturer: TRANSIN Model: TS-A012-120010A8H		
Cable	Model: UTP CAT5E		
Note：1. The information of the EUT is declared by the manufacturer. Please refer to the specifications or user manual for details. 2. There is more than one adapter, each one should be applied throughout the compliance test respectively, however, only the worst case (Adapter 1) will be recorded in this report.			

2.1 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards
FCC CFR47 Part 2 (2015)
FCC CFR47 Part 27C (2015)
ANSI/TIA-603-D (2010)
KDB 971168 D01 Power Meas License Digital Systems v02r02

3 Test Configuration

There is more than one Adapter, each one should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 1) will be recorded in this report

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, vertical polarization) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated.
Subsequently, only the worst case emissions are reported.
The following testing in WCDMA/LTE is set based on the maximum RF Output Power.
The following testing in different Bandwidth is set to detailin the following table:

Test modes are chosen to be reported as the worst case configuration below for LTE Band 7/41:

Test items	Modes	Bandwidth (MHz)				Modulation		RB			Test Channel		
		5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF power output	LTE 7	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 41	O	O	O	O	O	O	O	O	O	O	O	O
Effective Isotropic Radiated power	LTE 7	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 41	O	O	O	O	O	O	-	-	O	O	O	O
Occupied Bandwidth	LTE 7	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 41	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	LTE 7	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 41	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	LTE 7	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 41	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	LTE 7	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 41	O	O	O	O	O	O	-	-	O	-	O	-
Spurious Emissions at Antenna Terminals	LTE 7	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 41	O	O	O	O	O	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 7	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 41	O	O	O	O	O	-	O	-	-	O	O	O
Note	1. The mark “O” means that this configuration is chosen for testing. 2. The mark “-” means that this configuration is not testing.												

4 Test Information

4.1 RF Power Output

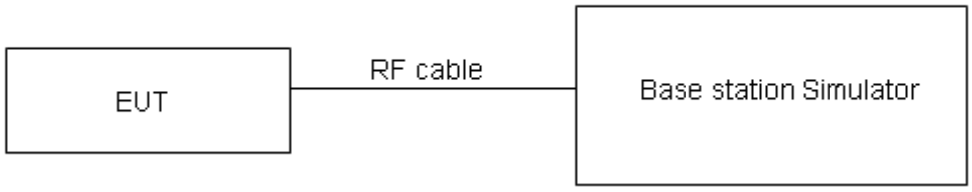
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

Limits

No specific RF power output requirements in part 2.1046.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U=0.4 dB.

Test Results

LTE Band 7				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20775/2502.5	21100/2535	21425/2567.5
5MHz	QPSK	1	0	21.55	21.87	22.19
		1	13	22.01	21.81	22.13
		1	24	22.65	22.52	21.72
		12	0	21.72	21.72	21.88
		12	6	21.83	21.28	21.34
		12	13	22.21	21.88	21.41
		25	0	21.90	21.81	21.60
	16QAM	1	0	20.86	21.03	21.43
		1	13	21.26	20.98	21.41
		1	24	21.90	21.75	20.68
		12	0	20.95	20.99	21.13
		12	6	21.28	20.51	20.61
		12	13	21.36	21.08	20.41
		25	0	21.15	20.97	20.69
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20800/2505	21100/2535	21400/2565
10MHz	QPSK	1	0	21.57	21.88	22.22
		1	25	22.04	21.86	22.17
		1	49	22.67	22.56	21.75
		25	0	21.75	21.77	21.92
		25	13	21.86	21.33	21.38
		25	25	22.23	21.92	21.46
		50	0	21.98	21.83	21.64
	16QAM	1	0	20.88	21.06	21.45
		1	25	21.29	21.02	21.44
		1	49	21.93	21.77	20.71
		25	0	20.98	21.04	21.17
		25	13	21.30	20.55	20.64
		25	25	21.39	21.13	20.45
		50	0	21.18	21.02	20.73
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20825/2507.5	21100/2535	21375/2562.5
15MHz	QPSK	1	0	21.56	21.84	22.20
		1	38	22.02	21.85	22.14
		1	74	22.64	22.51	21.71

		36	0	21.73	21.73	21.89
		36	18	21.83	21.28	21.34
		36	39	22.20	21.89	21.42
		75	0	21.96	21.79	21.59
	16QAM	1	0	20.83	21.04	21.43
		1	38	21.27	20.99	21.42
		1	74	21.90	21.73	20.68
		36	0	20.95	21.02	21.14
		36	18	21.27	20.50	20.60
		36	39	21.37	21.09	20.42
		75	0	21.15	20.97	20.69
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20850/2510	21100/2535	21350/2560
20MHz	QPSK	1	0	21.53	21.80	22.17
		1	50	22.01	21.81	22.12
		1	99	22.62	22.50	21.68
		50	0	21.70	21.68	21.85
		50	25	21.81	21.24	21.31
		50	50	22.17	21.84	21.38
		100	0	21.93	21.74	21.55
	16QAM	1	0	20.81	21.00	21.38
		1	50	21.23	20.97	21.38
		1	99	21.88	21.70	20.66
		50	0	20.92	20.98	21.11
		50	25	21.24	20.48	20.57
		50	50	21.34	21.04	20.38
		100	0	21.13	20.93	20.66

LTE Band 41				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39675/2498.5	40620/2593	41565/2687.5
5MHz	QPSK	1	0	22.94	22.86	22.70
		1	13	22.58	22.52	22.26
		1	24	23.46	22.93	22.90
		12	0	22.75	22.52	22.35
		12	6	22.68	22.51	22.54
		12	13	22.84	22.69	22.50
		25	0	22.61	22.43	22.57
	16QAM	1	0	21.90	21.76	21.53
		1	13	21.55	21.19	21.07
		1	24	22.25	21.71	21.61
		12	0	21.56	21.32	20.88
		12	6	21.50	21.30	20.97
		12	13	21.52	21.49	20.97
		25	0	21.69	21.20	21.16
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39700/2501	40620/2593	41540/2685
10MHz	QPSK	1	0	22.96	22.87	22.73
		1	25	22.61	22.57	22.30
		1	49	23.48	22.97	22.93
		25	0	22.78	22.57	22.39
		25	13	22.71	22.56	22.58
		25	25	22.86	22.73	22.55
		50	0	22.69	22.45	22.61
	16QAM	1	0	21.92	21.79	21.55
		1	25	21.58	21.23	21.10
		1	49	22.28	21.73	21.64
		25	0	21.59	21.37	20.92
		25	13	21.52	21.34	21.00
		25	25	21.55	21.54	21.01
		50	0	21.72	21.25	21.20
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39725/2503.5	40620/2593	41515/2682.5
15MHz	QPSK	1	0	22.95	22.83	22.71
		1	38	22.59	22.56	22.27
		1	74	23.45	22.92	22.89
		36	0	22.76	22.53	22.36

		36	18	22.68	22.51	22.54
		36	39	22.83	22.70	22.51
		75	0	22.67	22.41	22.56
	16QAM	1	0	21.87	21.77	21.53
		1	38	21.56	21.20	21.08
		1	74	22.25	21.69	21.61
		36	0	21.56	21.35	20.89
		36	18	21.49	21.29	20.96
		36	39	21.53	21.50	20.98
		75	0	21.69	21.20	21.16
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39750/2506	40620/2593	41490/2680
20MHz	QPSK	1	0	22.92	22.79	22.68
		1	50	22.58	22.52	22.25
		1	99	23.43	22.91	22.86
		50	0	22.73	22.48	22.32
		50	25	22.66	22.47	22.51
		50	50	22.80	22.65	22.47
		100	0	22.64	22.36	22.52
	16QAM	1	0	21.85	21.73	21.48
		1	50	21.52	21.18	21.04
		1	99	22.23	21.66	21.59
		50	0	21.53	21.31	20.86
		50	25	21.46	21.27	20.93
		50	50	21.50	21.45	20.94
		100	0	21.67	21.16	21.13

4.2 Effective Isotropic Radiated Power

Ambient condition

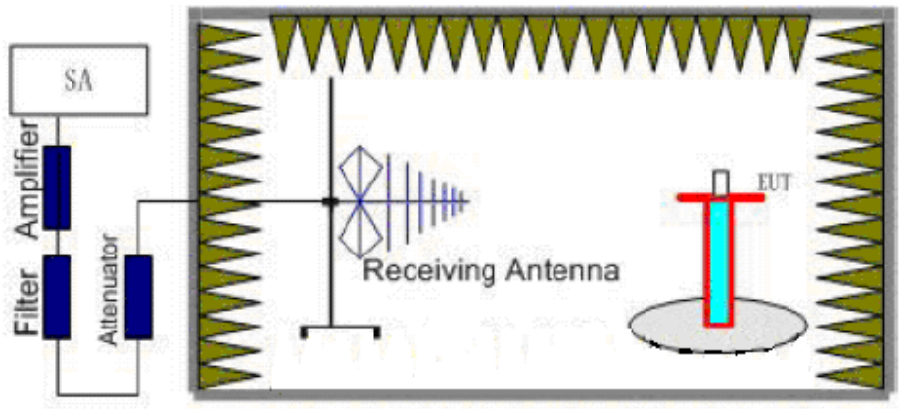
Temperature	Relative humidity
21°C ~25°C	40%~60%

Methods of Measurement

The measurement procedures in TIA- 603-D are used.
1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antennatower.
3. UMTS operating modes: Set RBW= 100 KHz, VBW= 300 KHz, RMS detector over frame, and use channel power option with bandwidth=5MHz, per section 4.0 of KDB 971168 D01.
4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
6. Taking the record of maximum ERP/EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
10. ERP/EIRP = Ps + Et – Es + Gs = Ps + Rt – Rs + Gs
Ps (dBm)：Input power to substitution antenna.
Gs (dBi or dBd)：Substitution antenna Gain.
Et = Rt + AF
Es = Rs + AF
AF (dB/m)：Receive antenna factor
Rt：The highest received signal in spectrum analyzer for EUT.
Rs：The highest received signal in spectrum analyzer for substitution antenna.

EIRP= E.R.P+2.15

Test Setup



Limits

Rule Part 27.50(h) (2) specifies that “Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.”

Part 27.50(h)(2) Limit (EIRP)	≤ 2 W (33 dBm)

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 1.19 dB

Test Results

LTE Band 7								
Band width	Frequency (MHz)	Ant Pot (H/V)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	Conclusion
5MHz (QPSK)	2502.5	H	-35.71	-59.64	0.00	1.81	25.74	Pass
	2535	H	-36.05	-59.72	0.00	1.81	25.48	Pass
	2567.5	H	-37.84	-59.98	0.00	1.83	23.97	Pass
	2502.5	V	-45.34	-59.31	0.00	1.81	15.78	Pass
	2535	V	-44.77	-59.11	0.00	1.81	16.15	Pass
	2567.5	V	-45.65	-59.59	0.00	1.83	15.77	Pass
5MHz (16QAM)	2502.5	H	-36.82	-59.64	0.00	1.81	24.63	Pass
	2535	H	-37.18	-59.72	0.00	1.81	24.35	Pass
	2567.5	H	-37.94	-59.98	0.00	1.83	23.87	Pass
	2502.5	V	-46.43	-59.31	0.00	1.81	14.69	Pass
	2535	V	-45.78	-59.11	0.00	1.81	15.14	Pass
	2567.5	V	-46.66	-59.59	0.00	1.83	14.76	Pass
10MHz (QPSK)	2505	H	-35.76	-59.61	0.00	1.82	25.67	Pass
	2535	H	-36.85	-59.72	0.00	1.81	24.68	Pass
	2565	H	-38.81	-60.02	0.00	1.81	23.02	Pass
	2505	V	-45.01	-59.33	0.00	1.82	16.14	Pass
	2535	V	-44.84	-59.11	0.00	1.81	16.08	Pass
	2565	V	-45.67	-59.59	0.00	1.81	15.73	Pass
10MHz (16QAM)	2505	H	-36.81	-59.61	0.00	1.82	24.62	Pass
	2535	H	-37.97	-59.72	0.00	1.81	23.56	Pass
	2565	H	-39.04	-60.02	0.00	1.81	22.79	Pass
	2505	V	-45.13	-59.33	0.00	1.82	16.02	Pass
	2535	V	-45.08	-59.11	0.00	1.81	15.84	Pass
	2565	V	-46.44	-59.59	0.00	1.81	14.96	Pass
15MHz (QPSK)	2507.5	H	-36.69	-59.71	0.00	1.80	24.82	Pass
	2535	H	-37.72	-59.72	0.00	1.81	23.81	Pass
	2562.5	H	-39.54	-60.08	0.00	1.82	22.36	Pass
	2507.5	V	-45.33	-59.29	0.00	1.80	15.76	Pass
	2535	V	-45.94	-59.72	0.00	1.81	15.59	Pass
	2562.5	V	-46.40	-59.46	0.00	1.82	14.88	Pass
15MHz (16QAM)	2507.5	H	-37.65	-59.71	0.00	1.80	23.86	Pass
	2535	H	-38.38	-59.72	0.00	1.81	23.15	Pass
	2562.5	H	-39.71	-60.08	0.00	1.82	22.19	Pass
	2507.5	V	-46.15	-59.29	0.00	1.80	14.94	Pass
	2535	V	-46.67	-59.72	0.00	1.81	14.86	Pass
	2562.5	V	-47.07	-59.46	0.00	1.82	14.21	Pass
20MHz (QPSK)	2510	H	-35.11	-59.52	0.00	1.77	26.18	Pass
	2535	H	-36.46	-59.72	0.00	1.81	25.07	Pass
	2560	H	-37.60	-60.01	0.00	1.82	24.23	Pass

	2510	V	-44.54	-59.09	0.00	1.77	16.32	Pass
	2535	V	-44.63	-59.72	0.00	1.81	16.90	Pass
	2560	V	-44.69	-59.52	0.00	1.82	16.65	Pass
20MHz (16QAM)	2510	H	-35.61	-59.52	0.00	1.77	25.68	Pass
	2535	H	-36.56	-59.72	0.00	1.81	24.97	Pass
	2560	H	-38.14	-60.01	0.00	1.82	23.69	Pass
	2510	V	-45.02	-59.09	0.00	1.77	15.84	Pass
	2535	V	-46.07	-59.72	0.00	1.81	15.46	Pass
	2560	V	-46.02	-59.52	0.00	1.82	15.32	Pass

LTE Band 41								
Band width	**Frequency (MHz)**	**Ant Pot (H/V)**	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**Conclusion**
5MHz (QPSK)	2498.5	H	-38.91	-37.11	0.00	1.80	25.76	Pass
	2593	H	-40.05	-37.78	0.00	1.85	26.15	Pass
	2687.5	H	-44.07	-38.68	0.00	2.00	26.93	Pass
	2498.5	V	-39.25	-45.79	0.00	1.80	16.86	Pass
	2593	V	-42.67	-45.39	0.00	1.85	18.54	Pass
	2687.5	V	-48.98	-47.66	0.00	2.00	18.62	Pass
5MHz (16QAM)	2498.5	H	-62.87	-38.24	0.00	1.80	24.63	Pass
	2593	H	-63.93	-38.61	0.00	1.85	25.32	Pass
	2687.5	H	-65.61	-39.98	0.00	2.00	25.63	Pass
	2498.5	V	-62.65	-47.00	0.00	1.80	15.65	Pass
	2593	V	-63.93	-46.34	0.00	1.85	17.59	Pass
	2687.5	V	-66.28	-48.60	0.00	2.00	17.68	Pass
10MHz (QPSK)	2501	H	-38.40	-37.50	0.00	1.81	25.39	Pass
	2593	H	-40.05	-38.05	0.00	1.85	25.88	Pass
	2685	H	-43.40	-38.93	0.00	1.99	26.62	Pass
	2501	V	-38.85	-46.09	0.00	1.81	16.62	Pass
	2593	V	-42.94	-45.71	0.00	1.85	18.22	Pass
	2685	V	-48.51	-47.99	0.00	1.99	18.37	Pass
10MHz (16QAM)	2501	H	-62.89	-38.51	0.00	1.81	24.38	Pass
	2593	H	-63.93	-39.08	0.00	1.85	24.85	Pass
	2685	H	-65.55	-40.10	0.00	1.99	25.45	Pass
	2501	V	-62.71	-47.15	0.00	1.81	15.56	Pass
	2593	V	-63.93	-46.28	0.00	1.85	17.65	Pass
	2685	V	-66.36	-48.50	0.00	1.99	17.86	Pass
15MHz (QPSK)	2503.5	H	-38.46	-38.23	0.00	1.82	24.72	Pass
	2593	H	-39.51	-38.79	0.00	1.85	25.14	Pass
	2682.5	H	-43.80	-39.43	0.00	2.00	26.07	Pass
	2503.5	V	-39.13	-46.15	0.00	1.82	16.60	Pass

	2593	V	-42.08	-46.44	0.00	1.85	17.49	Pass
	2682.5	V	-48.81	-48.68	0.00	2.00	17.73	Pass
15MHz (16QAM)	2503.5	H	-62.95	-38.72	0.00	1.82	24.23	Pass
	2593	H	-63.93	-39.07	0.00	1.85	24.86	Pass
	2682.5	H	-65.50	-39.85	0.00	2.00	25.65	Pass
	2503.5	V	-62.75	-47.39	0.00	1.82	15.36	Pass
	2593	V	-63.93	-47.01	0.00	1.85	16.92	Pass
	2682.5	V	-66.41	-49.55	0.00	2.00	16.86	Pass
20MHz (QPSK)	2506	H	-38.40	-36.53	0.00	1.81	26.42	Pass
	2593	H	-39.71	-37.03	0.00	1.85	26.90	Pass
	2680	H	-43.52	-37.75	0.00	1.80	27.61	Pass
	2506	V	-39.13	-44.40	0.00	1.81	18.34	Pass
	2593	V	-42.44	-43.73	0.00	1.85	20.20	Pass
	2680	V	-48.58	-44.74	0.00	1.80	21.40	Pass
20MHz (16QAM)	2506	H	-62.95	-37.59	0.00	1.81	25.36	Pass
	2593	H	-63.93	-38.33	0.00	1.85	25.60	Pass
	2680	H	-65.36	-38.83	0.00	1.80	26.53	Pass
	2506	V	-62.74	-44.62	0.00	1.81	18.12	Pass
	2593	V	-63.93	-44.28	0.00	1.85	19.65	Pass
	2680	V	-66.14	-45.58	0.00	1.80	20.56	Pass

Note: 1. EIRP= E.R.P+2.15

4.3 Occupied Bandwidth

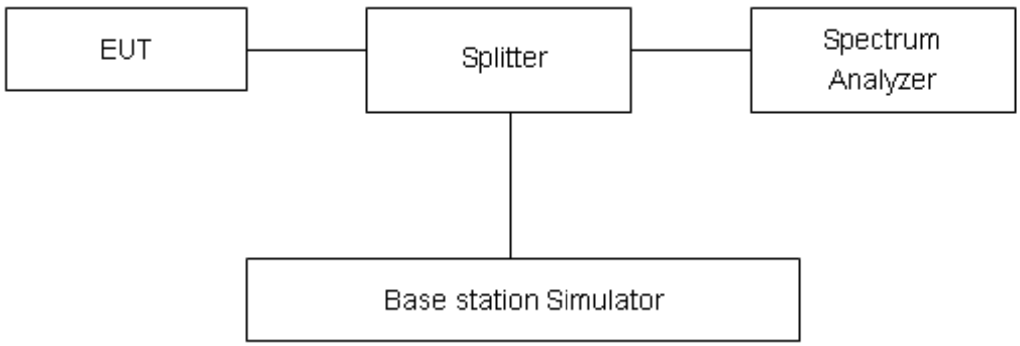
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 7/41 (5MHz).
RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 7/41 (10MHz/15MHz/20MHz).
99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U=624Hz.

Test Result

LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.5938	6.037
			21100	2535	4.5783	6.150
			21425	2567.5	4.6256	7.612
		10	20800	2505	9.3027	12.70
			21100	2535	9.3877	13.79
			21400	2565	9.4155	15.38
		15	20825	2507.5	13.582	16.72
			21100	2535	13.667	16.52
			21375	2562.5	13.690	16.80
		20	20850	2510	18.095	26.93
			21100	2535	18.141	25.86
			21350	2560	18.182	32.98
	16QAM	5	20775	2502.5	4.6165	6.871
			21100	2535	4.6285	6.446
			21425	2567.5	4.6497	8.093
		10	20800	2505	9.3582	16.08
			21100	2535	9.4162	16.37
			21400	2565	9.6734	16.73
		15	20825	2507.5	13.638	18.39
			21100	2535	13.708	18.44
			21375	2562.5	13.783	20.25
		20	20850	2510	18.151	33.34
			21100	2535	18.305	37.37
			21350	2560	18.333	34.45

LTE Band 41						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	39675	2498.5	4.5407	5.806
			40620	2593	4.5524	5.810
			41565	2687.5	4.5535	5.964
		10	39700	2501	9.1946	11.47
			40620	2593	9.1663	11.51
			41540	2685	9.2259	11.61
		15	39725	2503.5	13.576	16.09
			40620	2593	13.570	15.97
			41515	2682.5	13560	16.02
		20	39750	2506	18.017	20.38
			40620	2593	17.983	20.37
			41490	2680	17.989	20.57
	16QAM	5	39675	2498.5	4.5915	5.833
			40620	2593	4.5448	5.733
			41565	2687.5	4.5345	5.880
		10	39700	2501	9.2487	11.58
			40620	2593	9.1612	11.48
			41540	2685	9.2172	11.79
		15	39725	2503.5	13.517	16.27
			40620	2593	13.522	16.53
			41515	2682.5	13.599	16.40
		20	39750	2506	17.989	20.17
			40620	2593	18.016	20.62
			41490	2680	17.986	20.34

LTE Band 7 QPSK Bandwidth = 5MHz CH20775 Occupied Bandwidth

LTE Band 7 16QAM Bandwidth = 5MHz CH20775 Occupied Bandwidth

LTE Band 7 QPSK Bandwidth = 5MHz CH21100 Occupied Bandwidth

LTE Band 7 16QAM Bandwidth = 5MHz CH21100 Occupied Bandwidth

LTE Band 7 QPSK Bandwidth = 5MHz CH21425 Occupied Bandwidth

LTE Band 7 16QAM Bandwidth = 5MHz CH21425 Occupied Bandwidth

LTE Band 7 QPSK Bandwidth = 10MHz
CH20800 Occupied Bandwidth

LTE Band 7 16QAM Bandwidth = 10MHz
CH20800 Occupied Bandwidth

LTE Band 7 QPSK Bandwidth = 10MHz
CH21100 Occupied Bandwidth

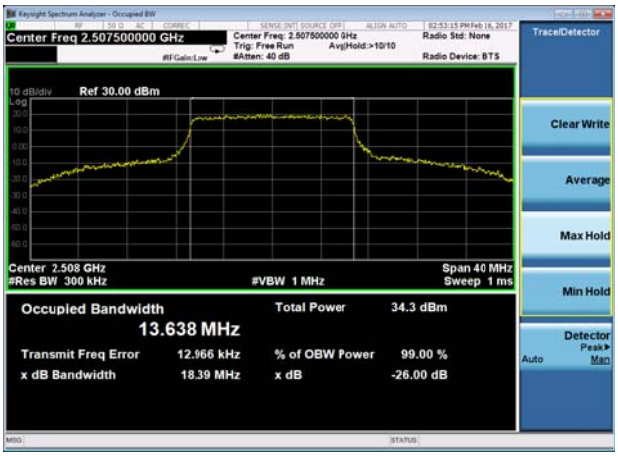
LTE Band 7 16QAM Bandwidth = 10MHz
CH21100 Occupied Bandwidth

LTE Band 7 QPSK Bandwidth = 10MHz
CH21400 Occupied Bandwidth

LTE Band 7 16QAM Bandwidth = 10MHz
CH21400 Occupied Bandwidth

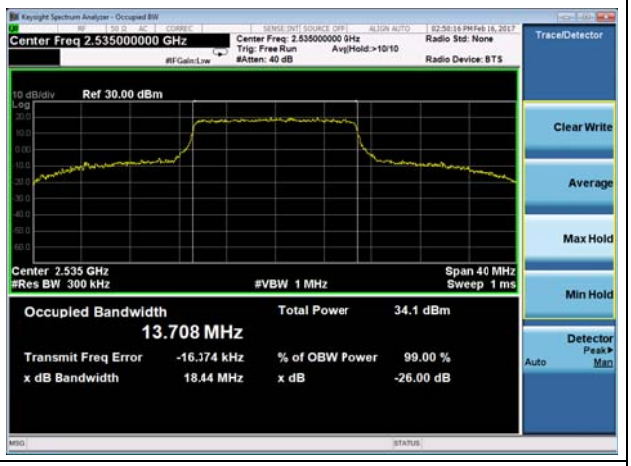
LTE Band 7 QPSK Bandwidth = 15MHz
CH20825 Occupied Bandwidth

LTE Band 7 16QAM Bandwidth = 15MHz
CH20825 Occupied Bandwidth



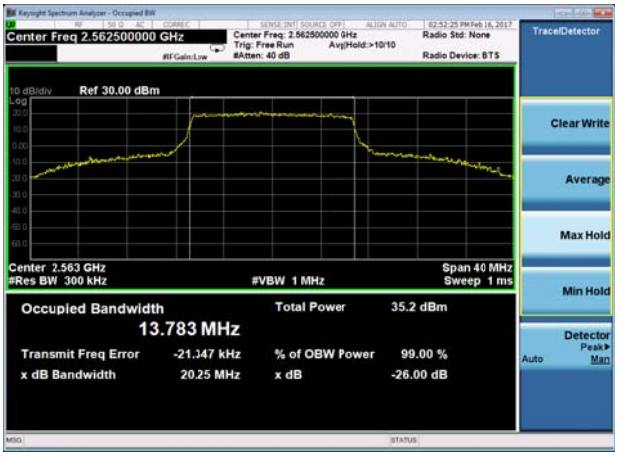
LTE Band 7 QPSK Bandwidth = 15MHz
CH21100 Occupied Bandwidth

LTE Band 7 16QAM Bandwidth = 15MHz
CH21100 Occupied Bandwidth

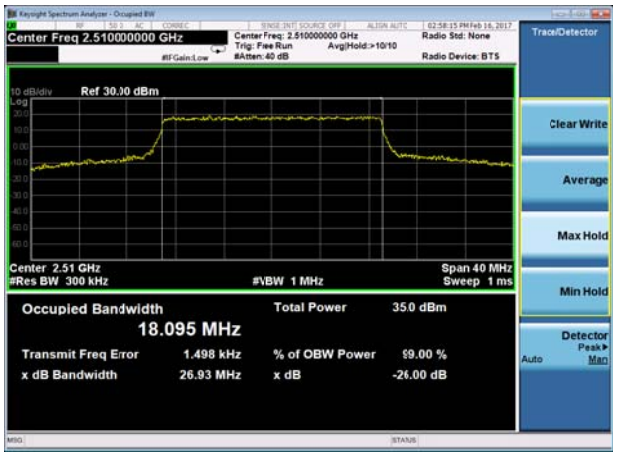


LTE Band 7 QPSK Bandwidth = 15MHz
CH21375 Occupied Bandwidth

LTE Band 7 16QAM Bandwidth = 15MHz
CH21375 Occupied Bandwidth



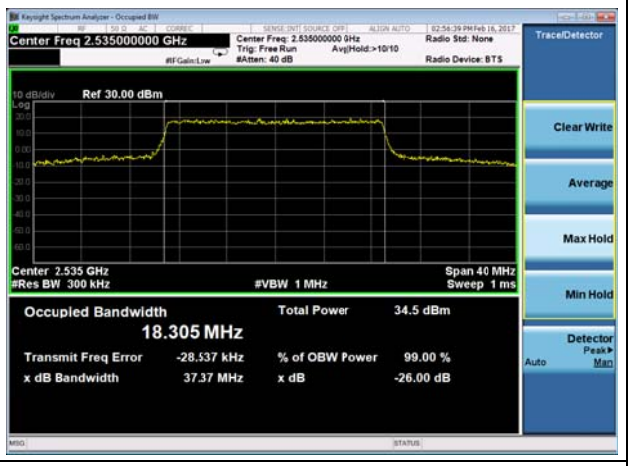
LTE Band 7 QPSK Bandwidth = 20MHz
CH20850 Occupied Bandwidth



LTE Band 7 16QAM Bandwidth = 20MHz
CH20850 Occupied Bandwidth

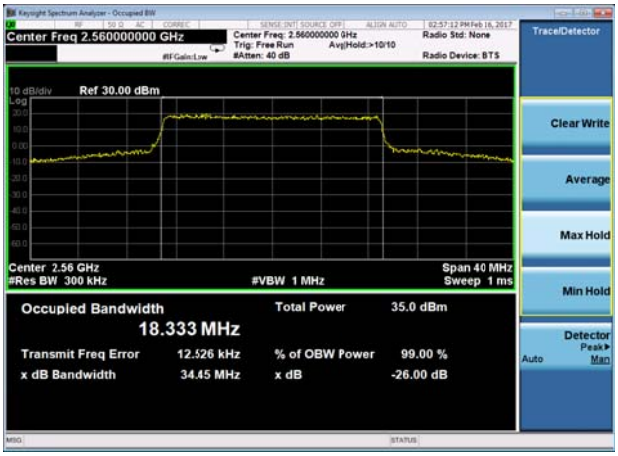
LTE Band 7 QPSK Bandwidth = 20MHz
CH21100 Occupied Bandwidth

LTE Band 7 16QAM Bandwidth = 20MHz
CH21100 Occupied Bandwidth



LTE Band 7 QPSK Bandwidth = 20MHz
CH21350 Occupied Bandwidth

LTE Band 7 16QAM Bandwidth = 20MHz
CH21350 Occupied Bandwidth



LTE Band 41 QPSK Bandwidth = 5MHz
CH39675 Occupied Bandwidth

LTE Band 41 16QAM Bandwidth = 5MHz
CH39675 Occupied Bandwidth

LTE Band 41 QPSK Bandwidth = 5MHz
CH40620 Occupied Bandwidth

LTE Band 41 16QAM Bandwidth = 5MHz
CH40620 Occupied Bandwidth

LTE Band 41 QPSK Bandwidth = 5MHz
CH41565 Occupied Bandwidth

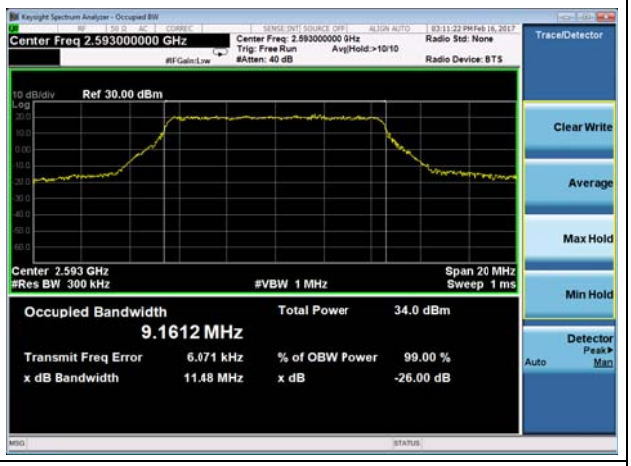
LTE Band 41 16QAM Bandwidth = 5MHz
CH41565 Occupied Bandwidth

LTE Band 41 QPSK Bandwidth = 10MHz
CH39700 Occupied Bandwidth

LTE Band 41 16QAM Bandwidth = 10MHz
CH39700 Occupied Bandwidth

LTE Band 41 QPSK Bandwidth = 10MHz
CH40620 Occupied Bandwidth

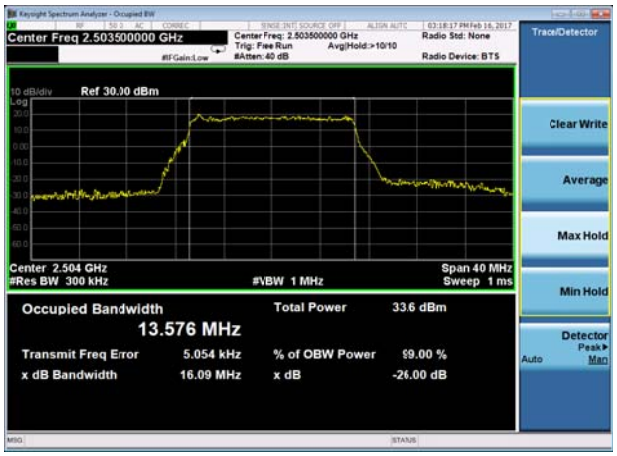
LTE Band 41 16QAM Bandwidth = 10MHz
CH40620 Occupied Bandwidth



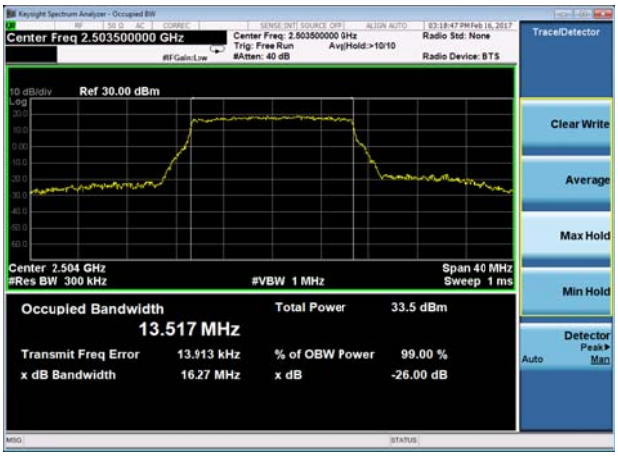
LTE Band 41 QPSK Bandwidth = 10MHz
CH41540 Occupied Bandwidth

LTE Band 41 16QAM Bandwidth = 10MHz
CH41540 Occupied Bandwidth

LTE Band 41 QPSK Bandwidth = 15MHz
CH39725 Occupied Bandwidth

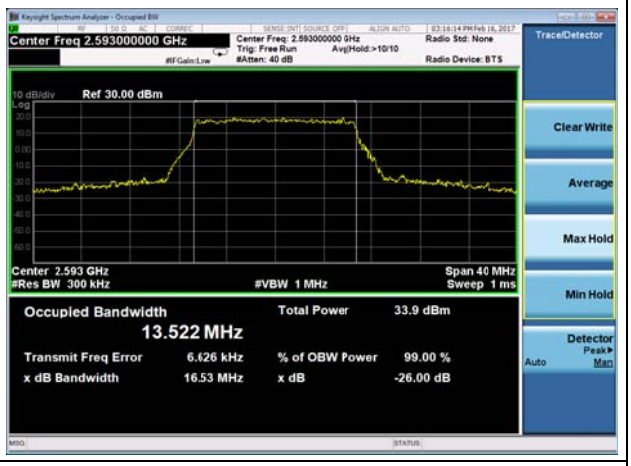


LTE Band 41 16QAM Bandwidth = 15MHz
CH39725 Occupied Bandwidth



LTE Band 41 QPSK Bandwidth = 15MHz
CH40620 Occupied Bandwidth

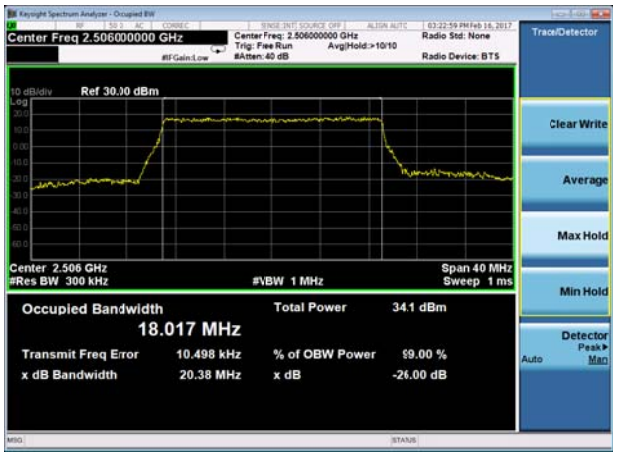
LTE Band 41 16QAM Bandwidth = 15MHz
CH40620 Occupied Bandwidth



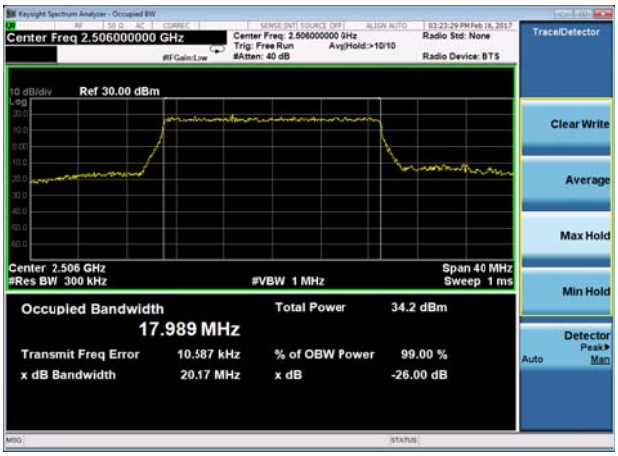
LTE Band 41 QPSK Bandwidth = 15MHz
CH41515 Occupied Bandwidth

LTE Band 41 16QAM Bandwidth = 15MHz
CH41515 Occupied Bandwidth

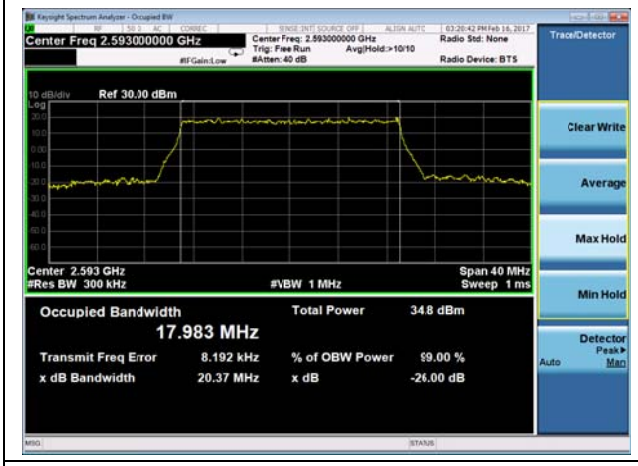
LTE Band 41 QPSK Bandwidth = 20MHz
CH39750 Occupied Bandwidth



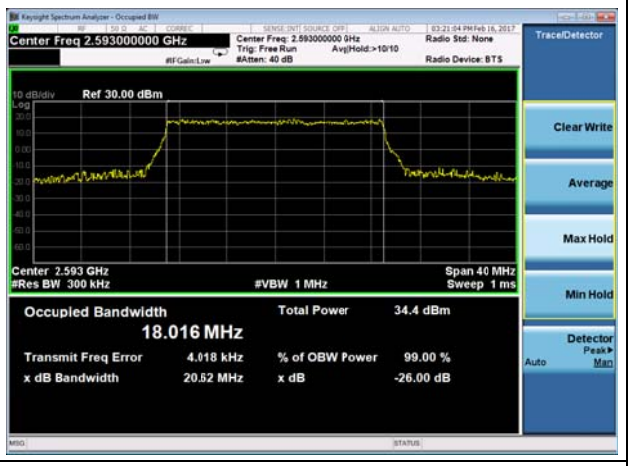
LTE Band 41 16QAM Bandwidth = 20MHz
CH39750 Occupied Bandwidth



LTE Band 41 QPSK Bandwidth = 20MHz
CH40620 Occupied Bandwidth

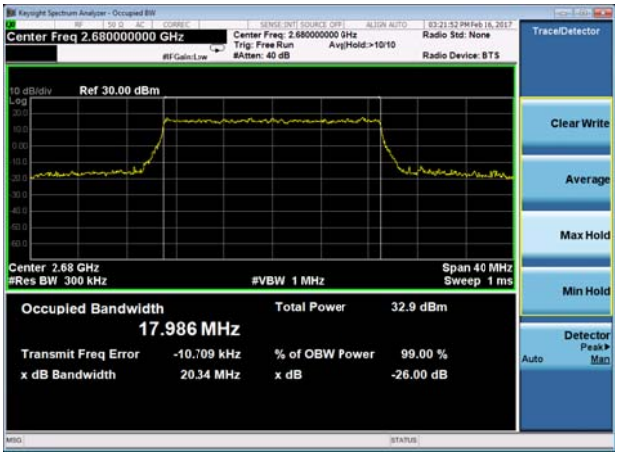


LTE Band 41 16QAM Bandwidth = 20MHz
CH40620 Occupied Bandwidth



LTE Band 41 QPSK Bandwidth = 20MHz
CH41490 Occupied Bandwidth

LTE Band 41 16QAM Bandwidth = 20MHz
CH41490 Occupied Bandwidth



4.4 Band Edge Compliance

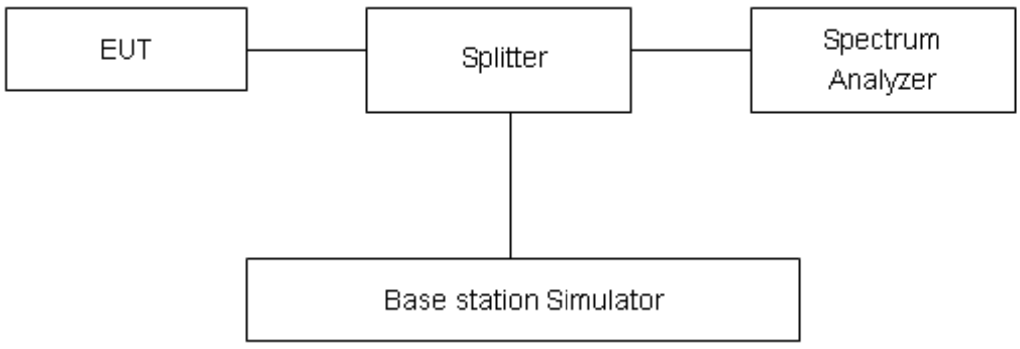
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured.
The testing follows KDB 971168 v02r02 Section 6.0
1.The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. For LTE Band 41 Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 7 (5MHz).
RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 7 (10MHz).
RBW is set to 150 kHz, VBW is set to 510 kHz for LTE Band 7 (15MHz).
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 7 (20MHz) on spectrum analyzer.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. Checked that all the results comply with the emission limit line.

Test Setup



Limits

Part 27.53(m) (4)/ specifies that “for BRS and EBS stations.

For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Example:

The limit line is derived from 43 + 10log (P) dB below the transmitter power P(Watts)

= P(W)- [43 + 10log(P)] (dB)

= [30 + 10log (P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.

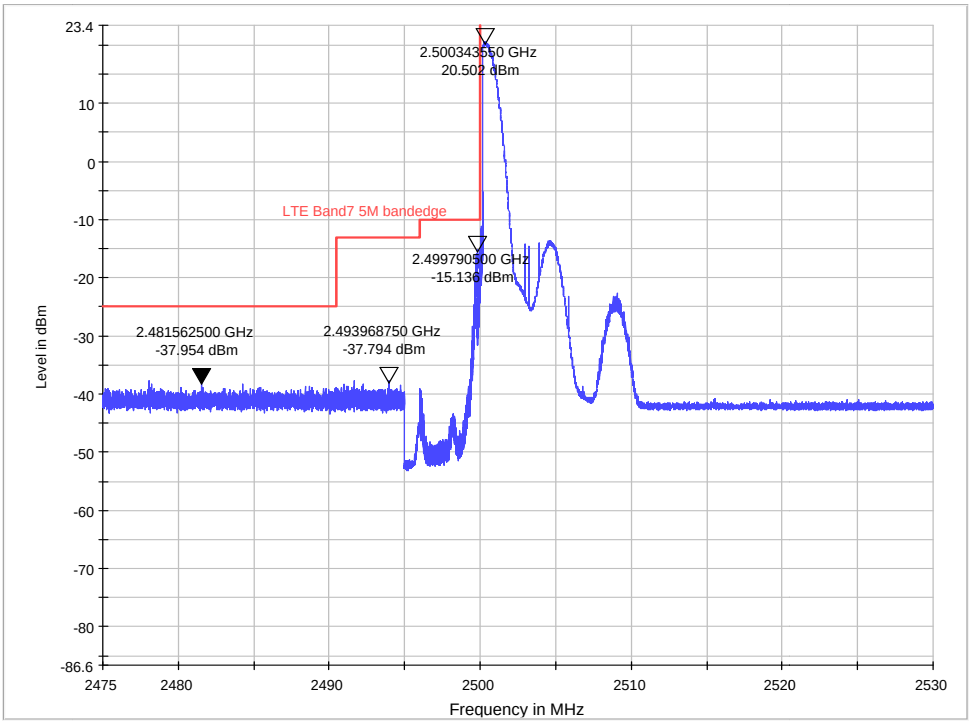
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U=0.684dB.

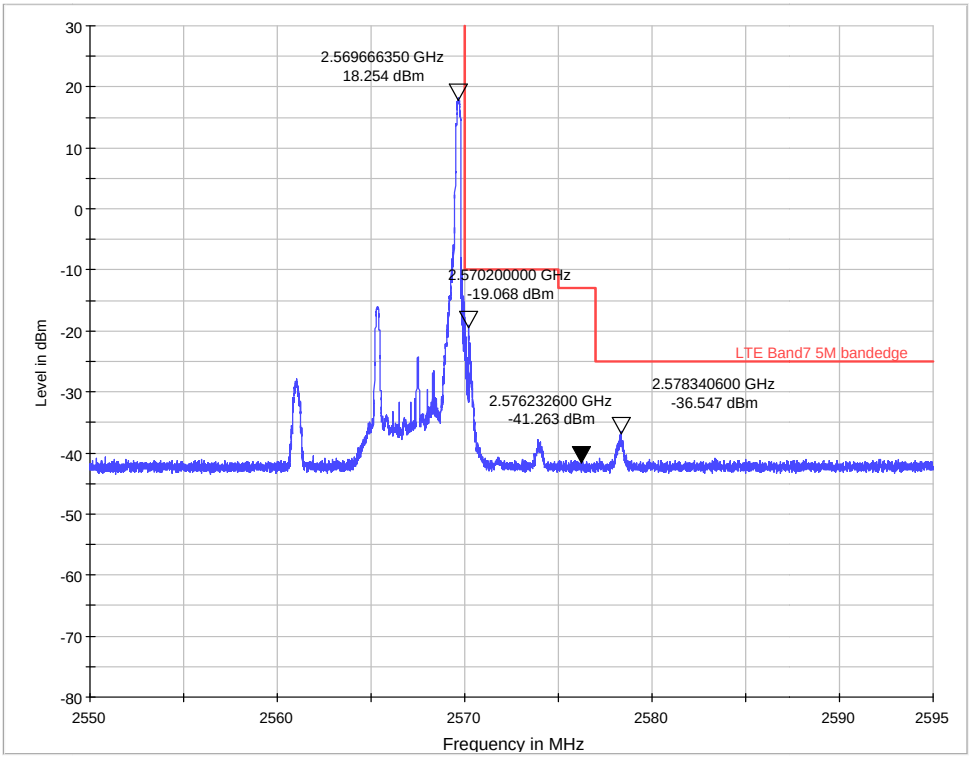
Test Result

All the test traces in the plots shows the test results clearly.

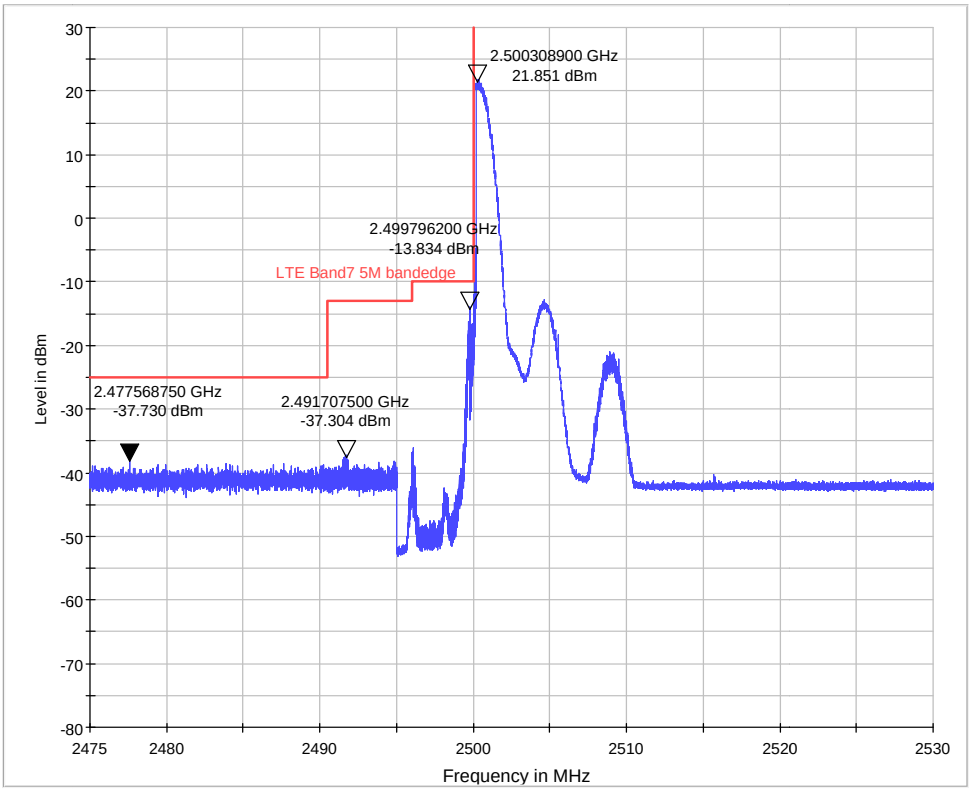
LTE Band 7 QPSK Bandwidth = 5MHz CH20775, RB 1



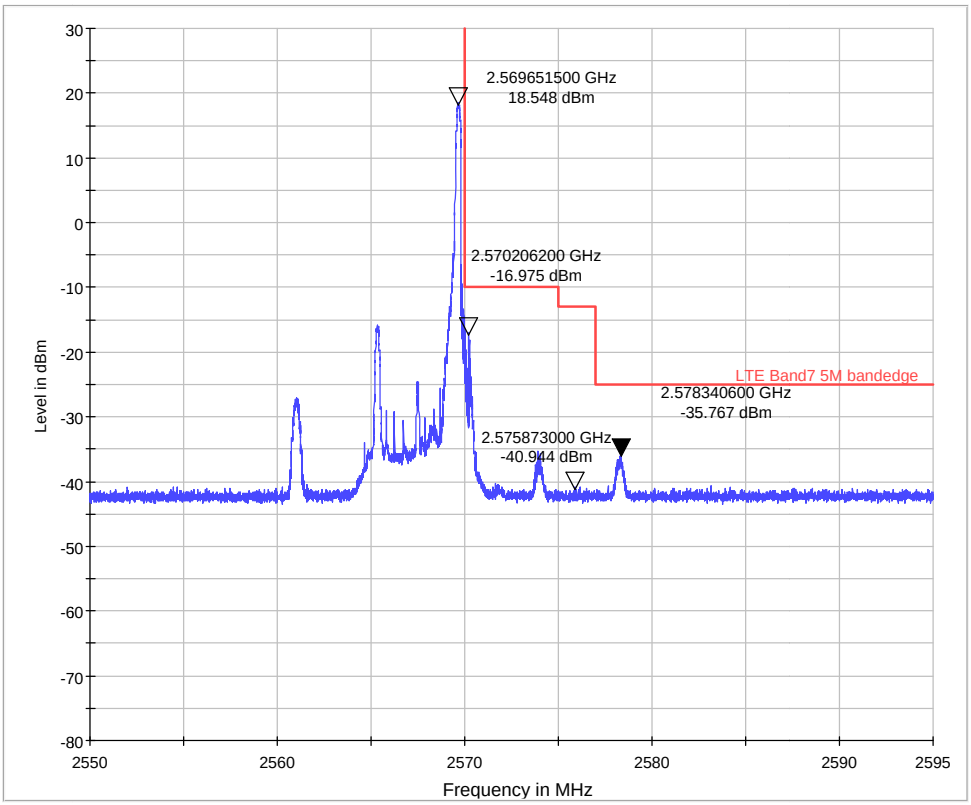
LTE Band 7 QPSK Bandwidth = 5MHz CH21425, RB 1



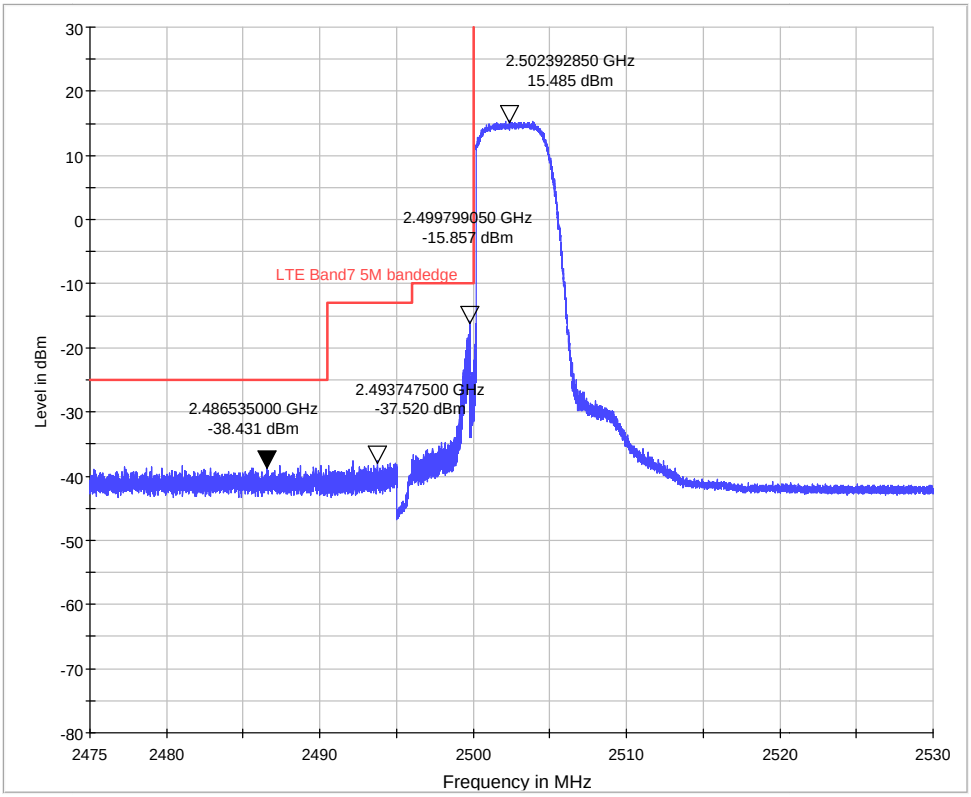
LTE Band 7 16QAM Bandwidth = 5MHz CH20775, RB 1



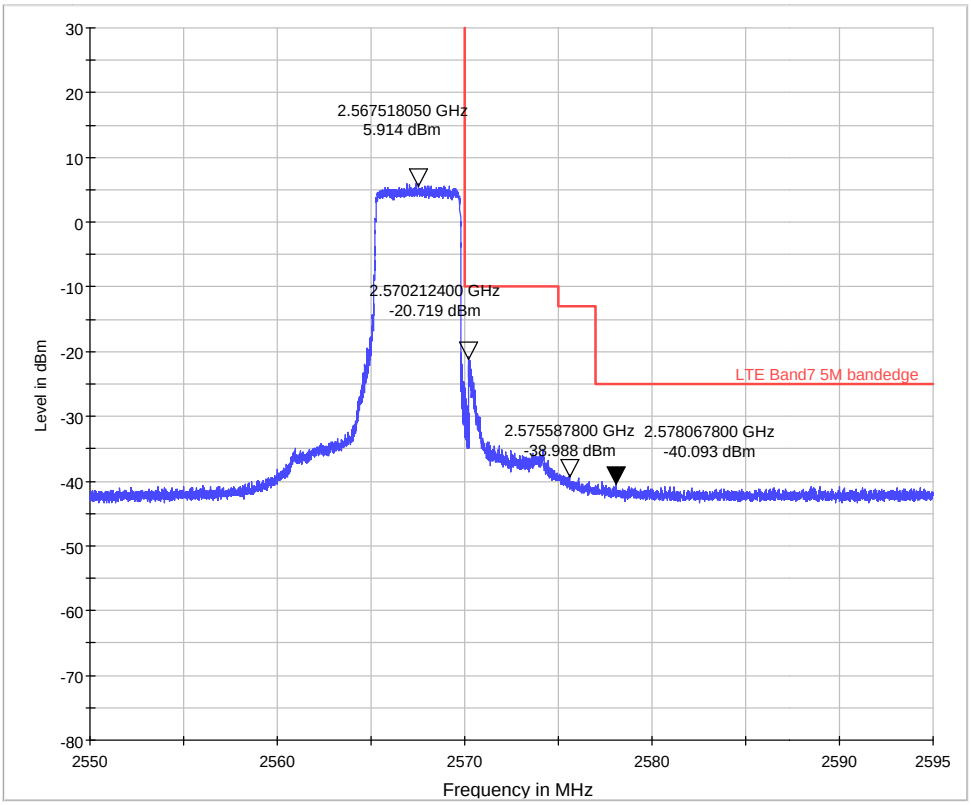
LTE Band 7 16QAM Bandwidth = 5MHz CH21425, RB 1



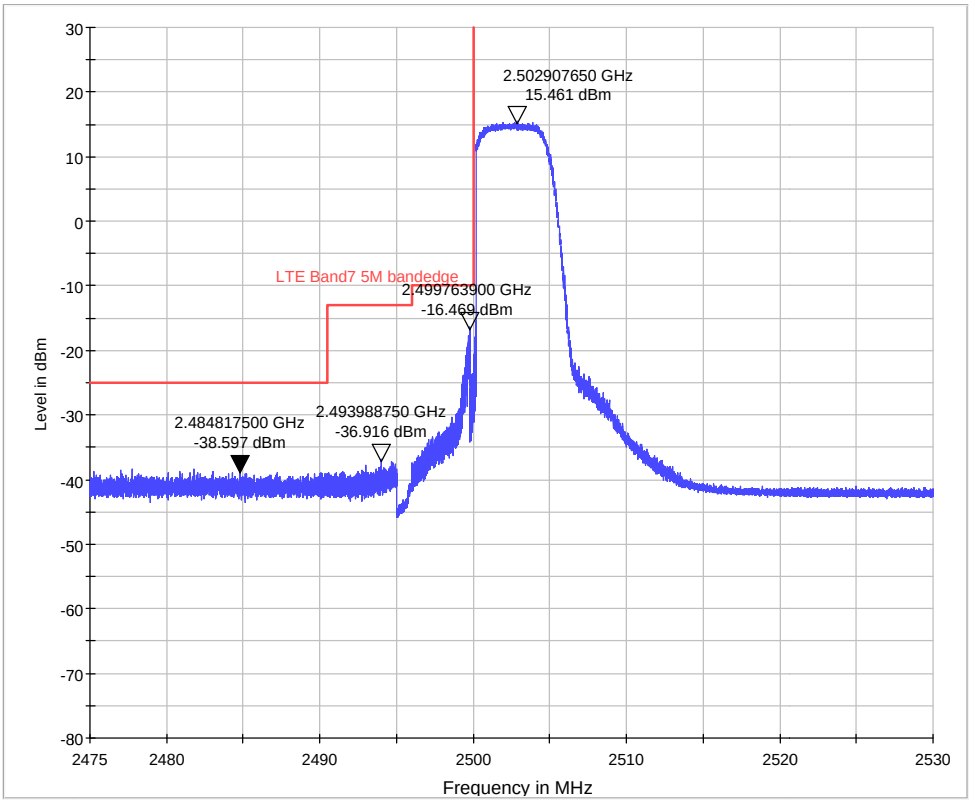
LTE Band 7 QPSK Bandwidth = 5MHz CH20775, RB 25



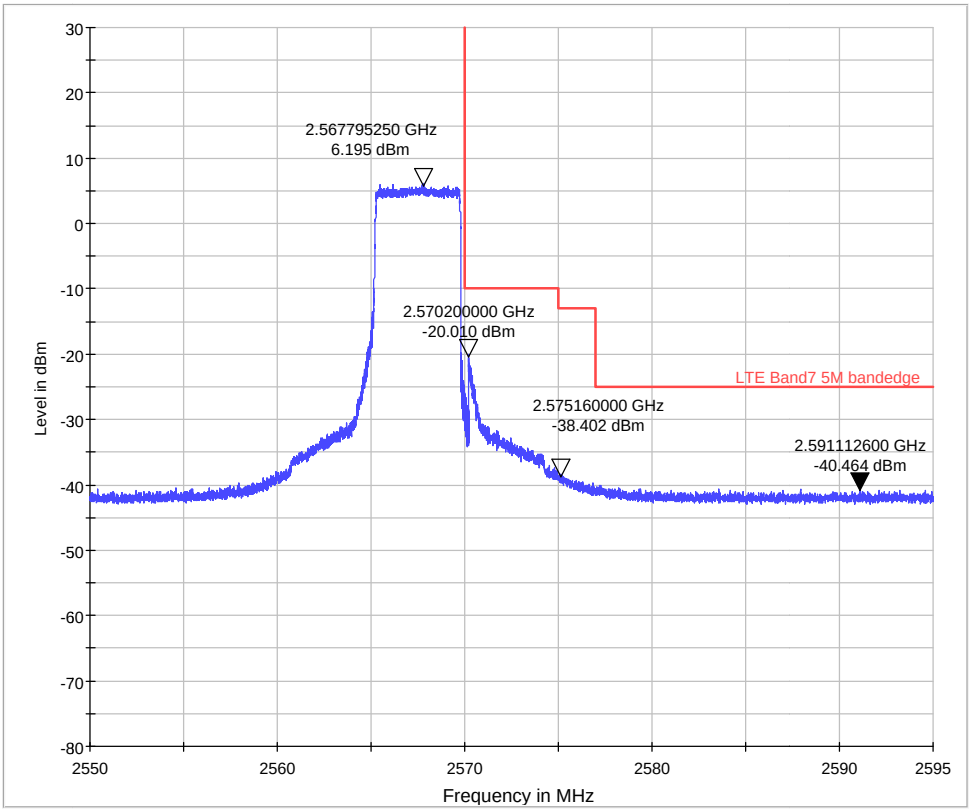
LTE Band 7 QPSK Bandwidth = 5MHz CH21425, RB 25



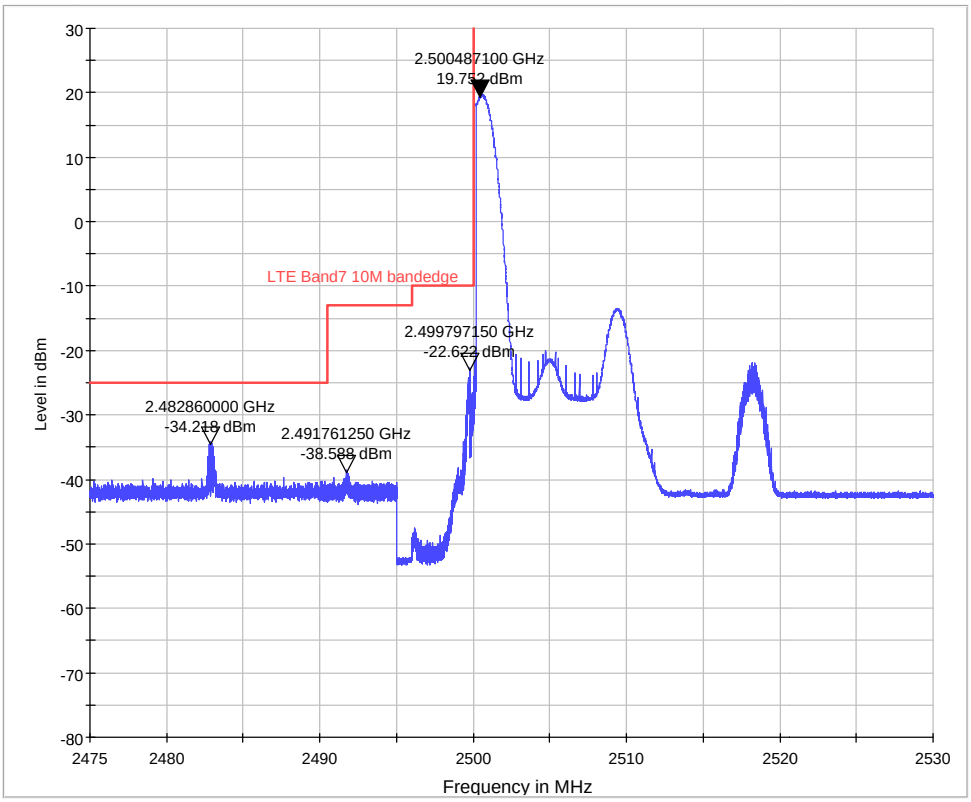
LTE Band 7 16QAM Bandwidth = 5MHz CH20775, RB 25



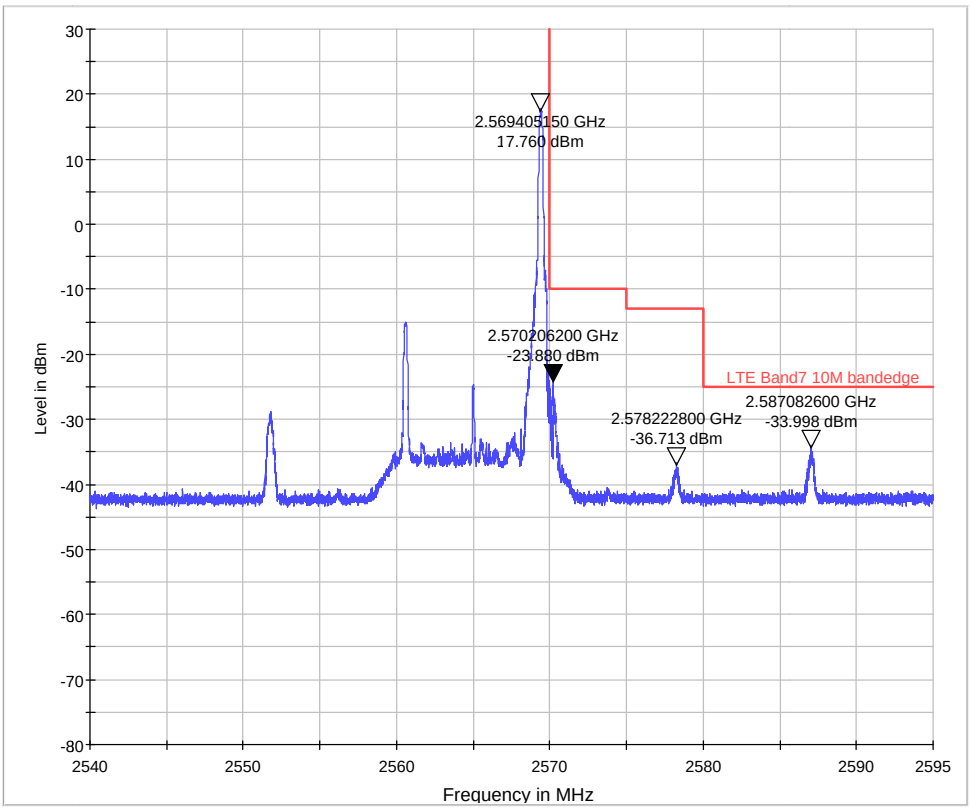
LTE Band 7 16QAM Bandwidth = 5MHz CH21425, RB 25



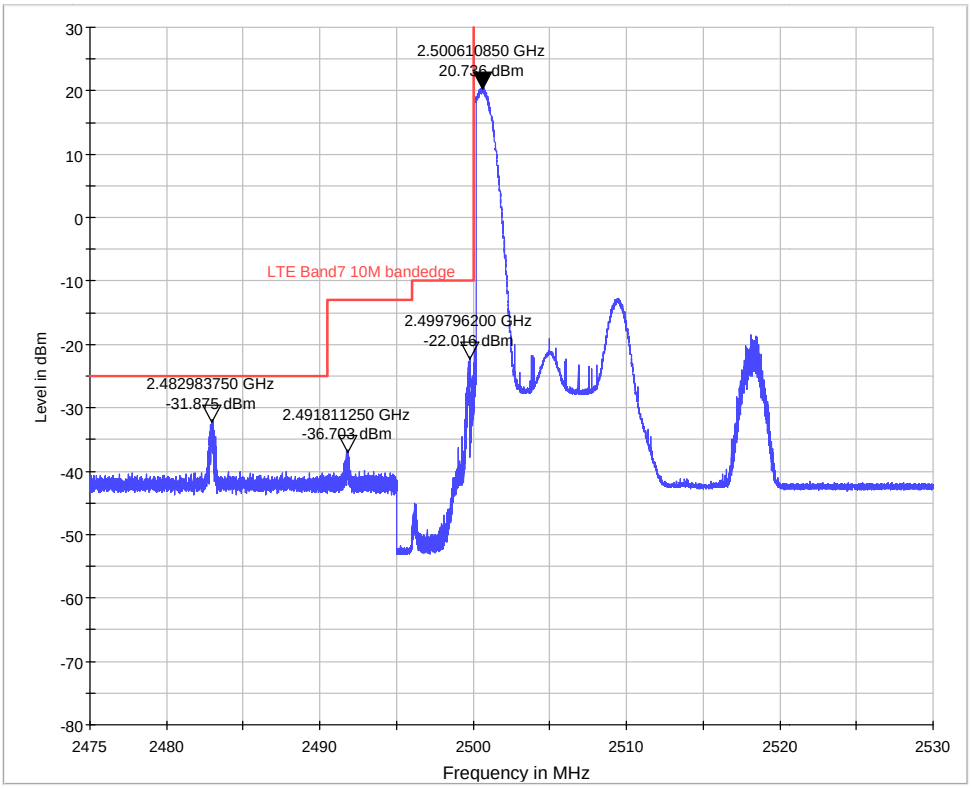
LTE Band 7 QPSK Bandwidth = 10MHz CH20800, RB 1



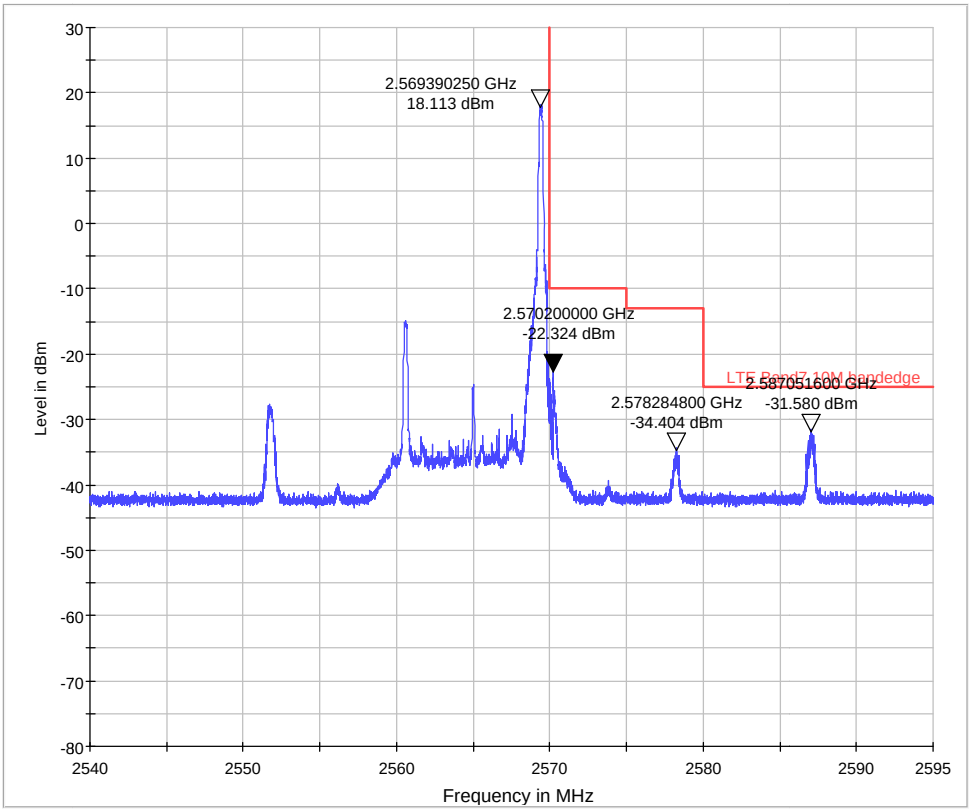
LTE Band 7 QPSK Bandwidth = 10MHz CH21400, RB 1



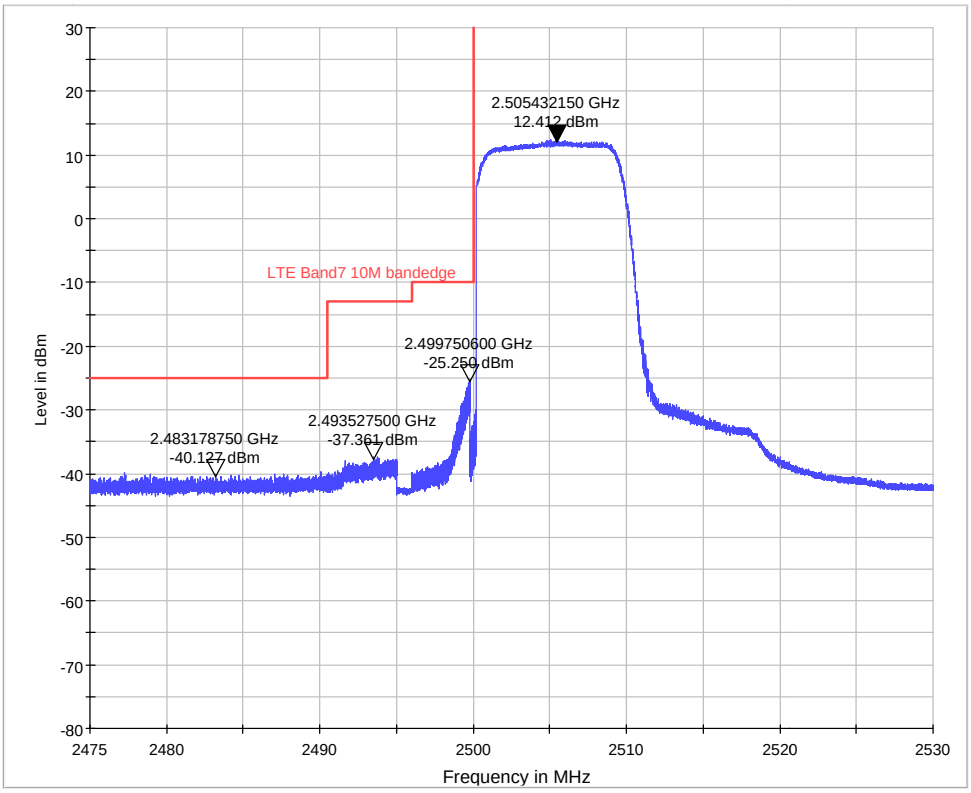
LTE Band 7 16QAM Bandwidth = 10MHz CH20800, RB 1



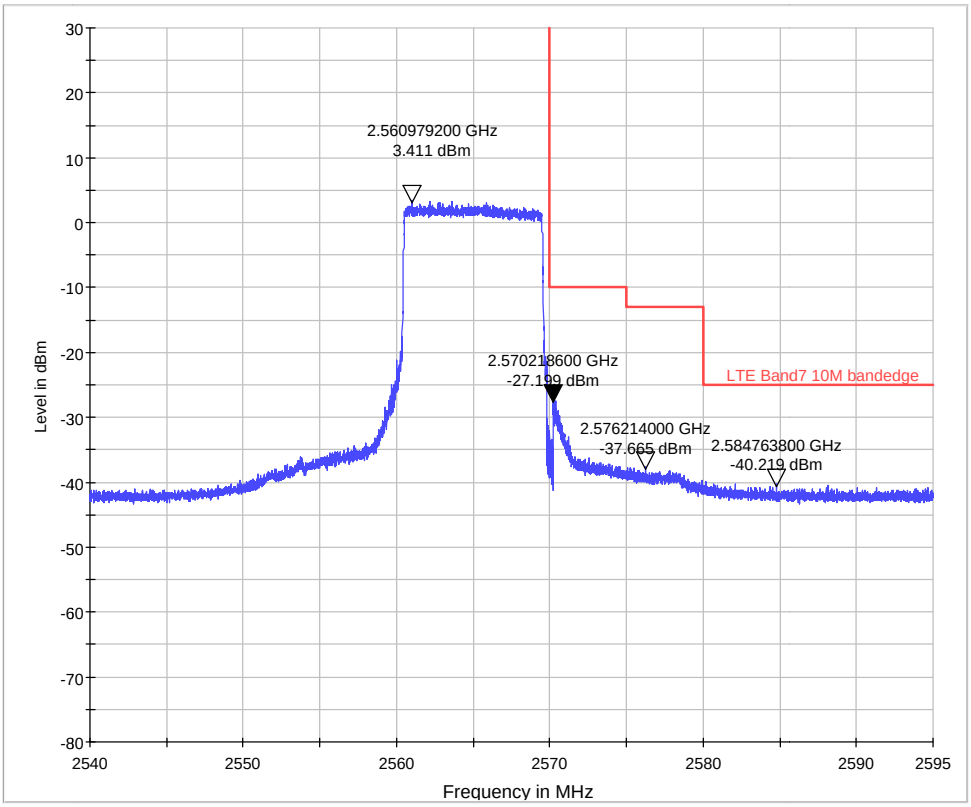
LTE Band 7 16QAM Bandwidth = 10MHz CH21400, RB 1



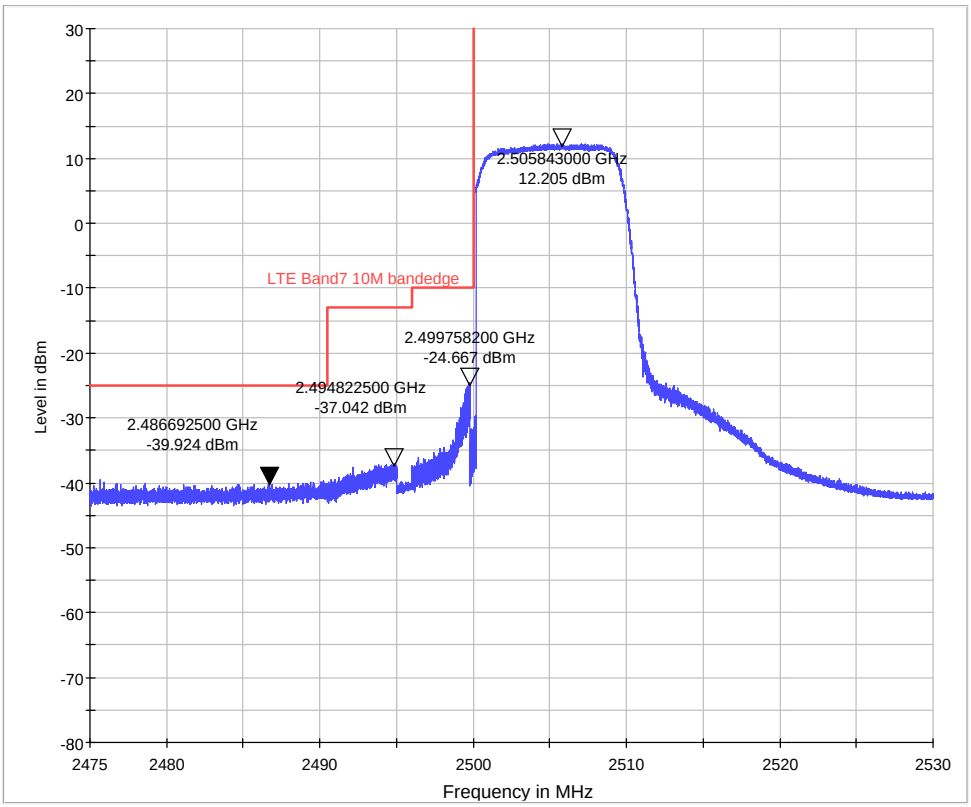
LTE Band 7 QPSK Bandwidth = 10MHz CH20800, RB 50



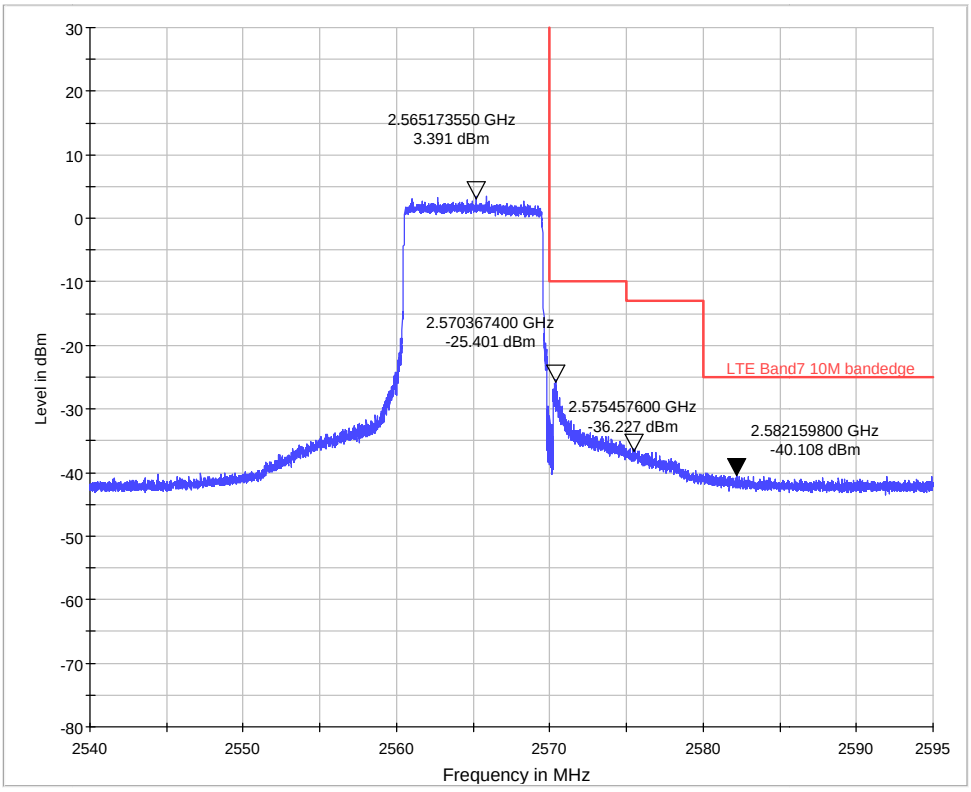
LTE Band 7 QPSK Bandwidth = 10MHz CH21400, RB 50



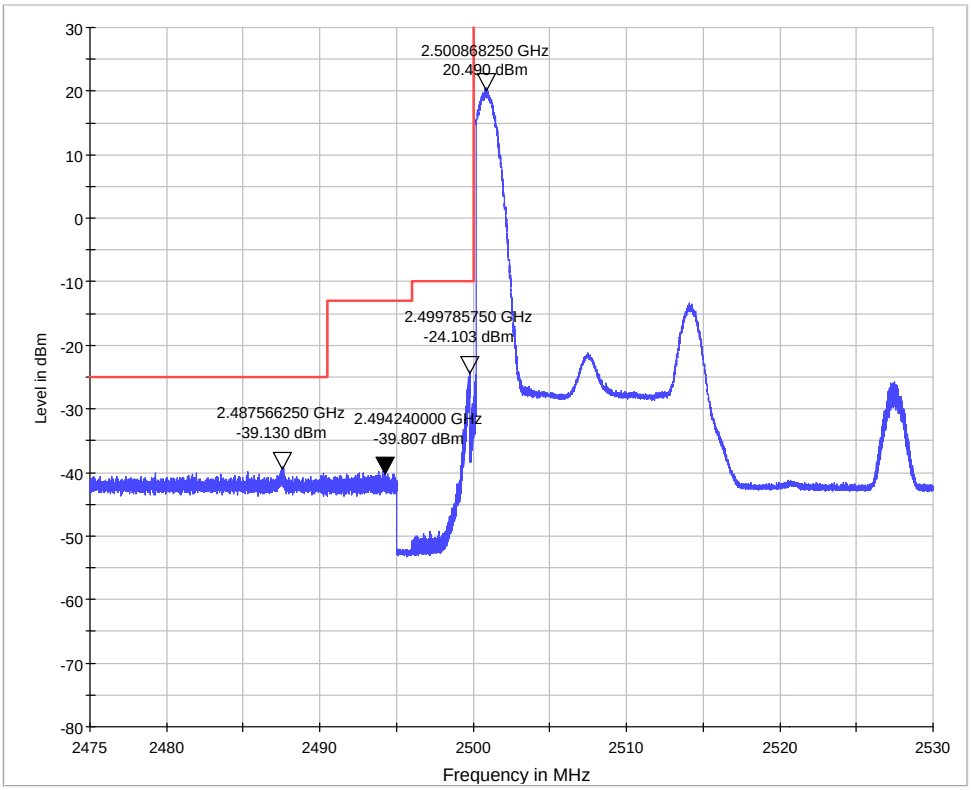
LTE Band 7 16QAM Bandwidth = 10MHz CH20800, RB 50



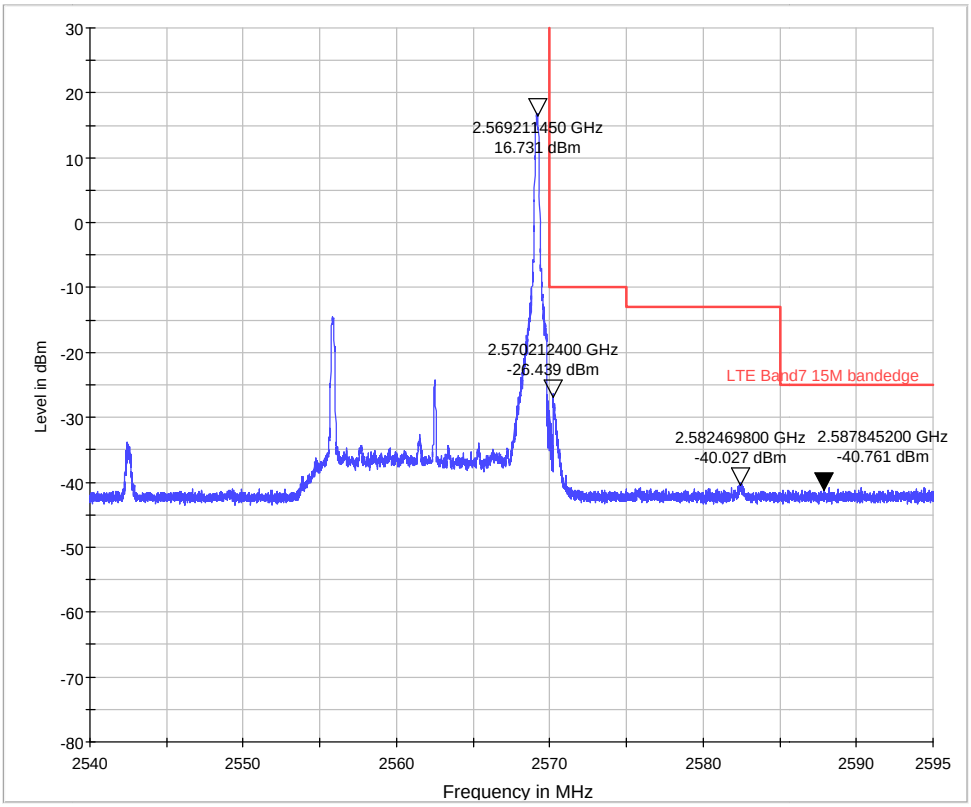
LTE Band 7 16QAM Bandwidth = 10MHz CH21400, RB 50



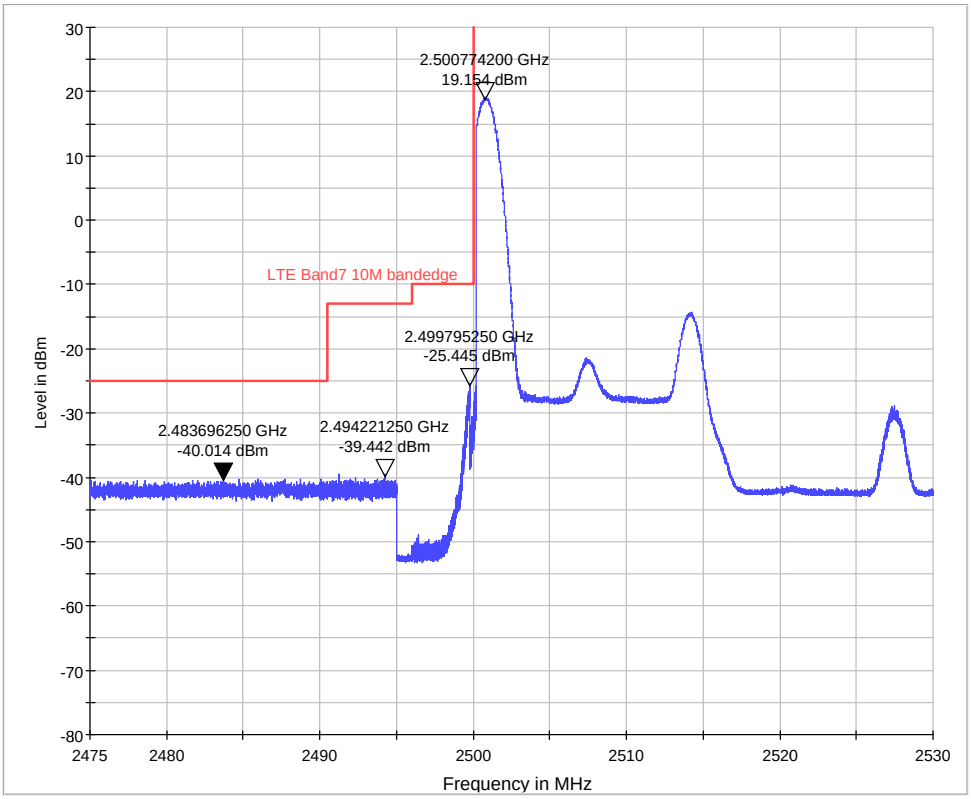
LTE Band 7 QPSK Bandwidth = 15MHz CH20825, RB 1



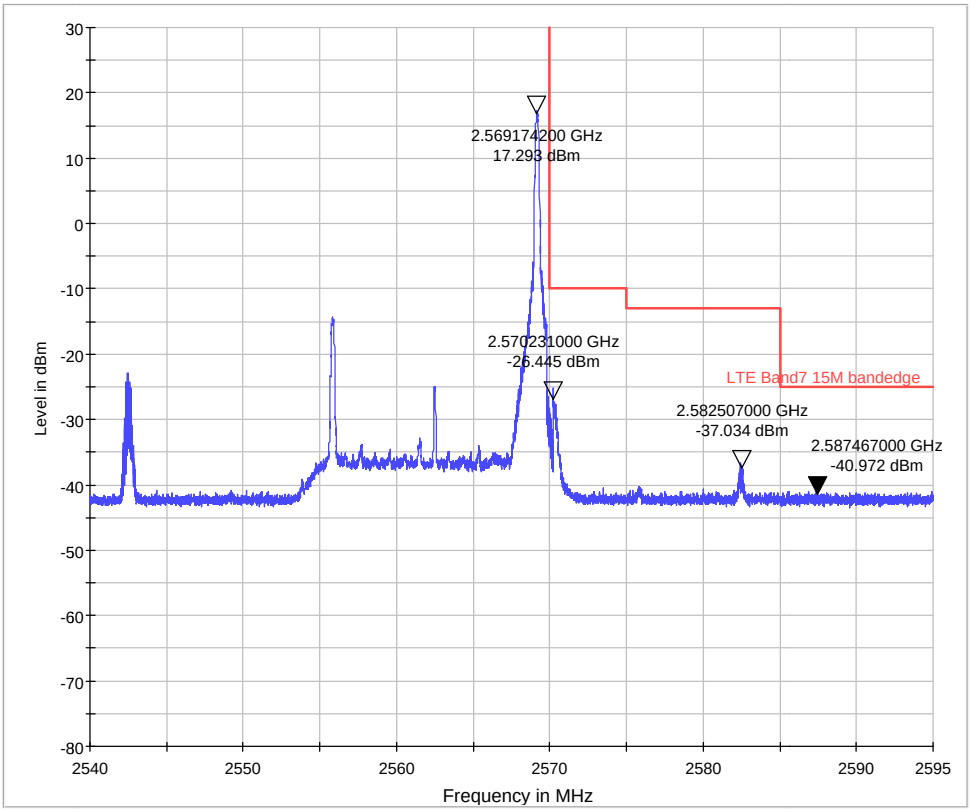
LTE Band 7 QPSK Bandwidth = 15MHz CH21375, RB 1



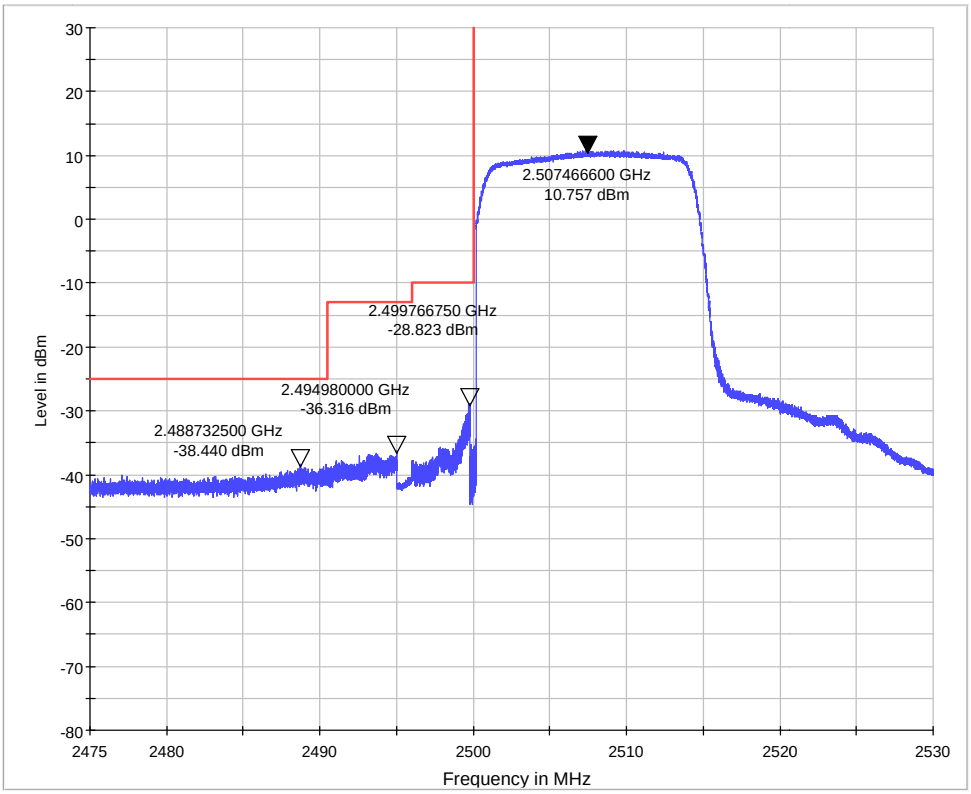
LTE Band 7 16QAM Bandwidth = 15MHz CH20825, RB 1



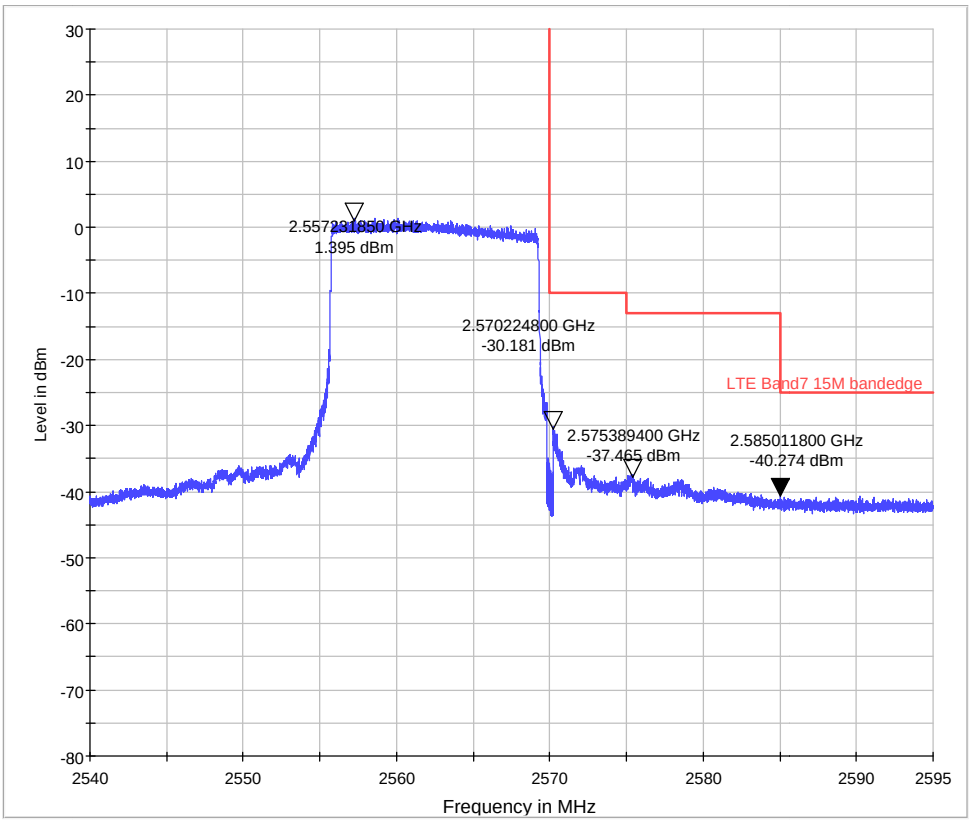
LTE Band 7 16QAM Bandwidth = 15MHz CH21375, RB 1



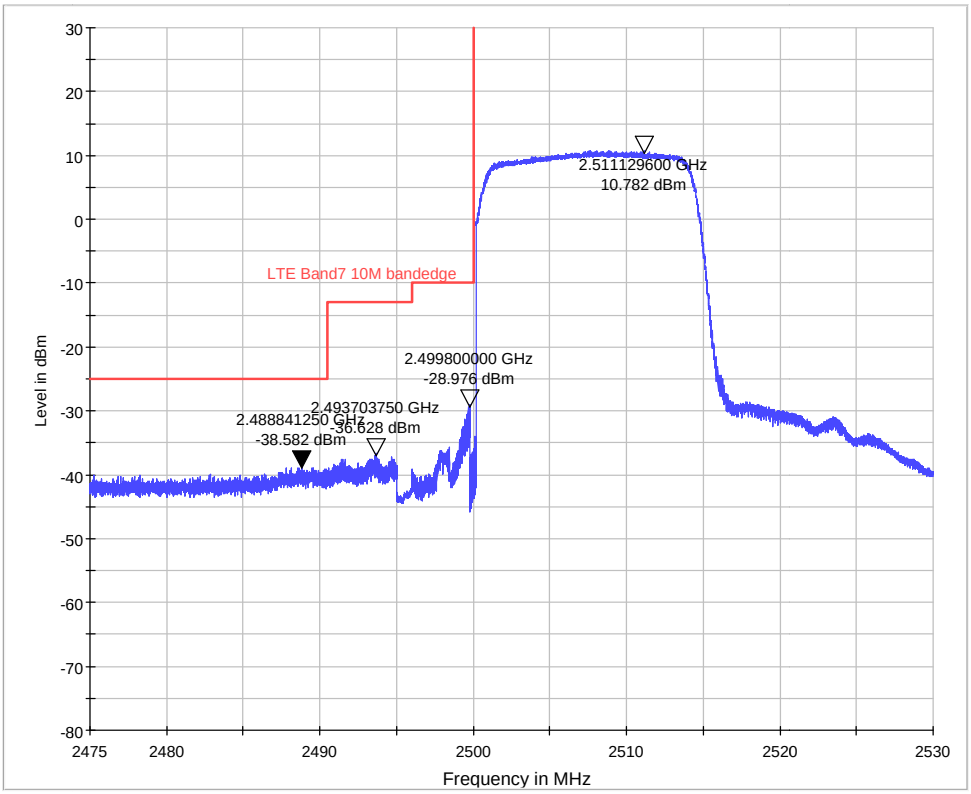
LTE Band 7 QPSK Bandwidth = 15MHz CH20825, RB 75



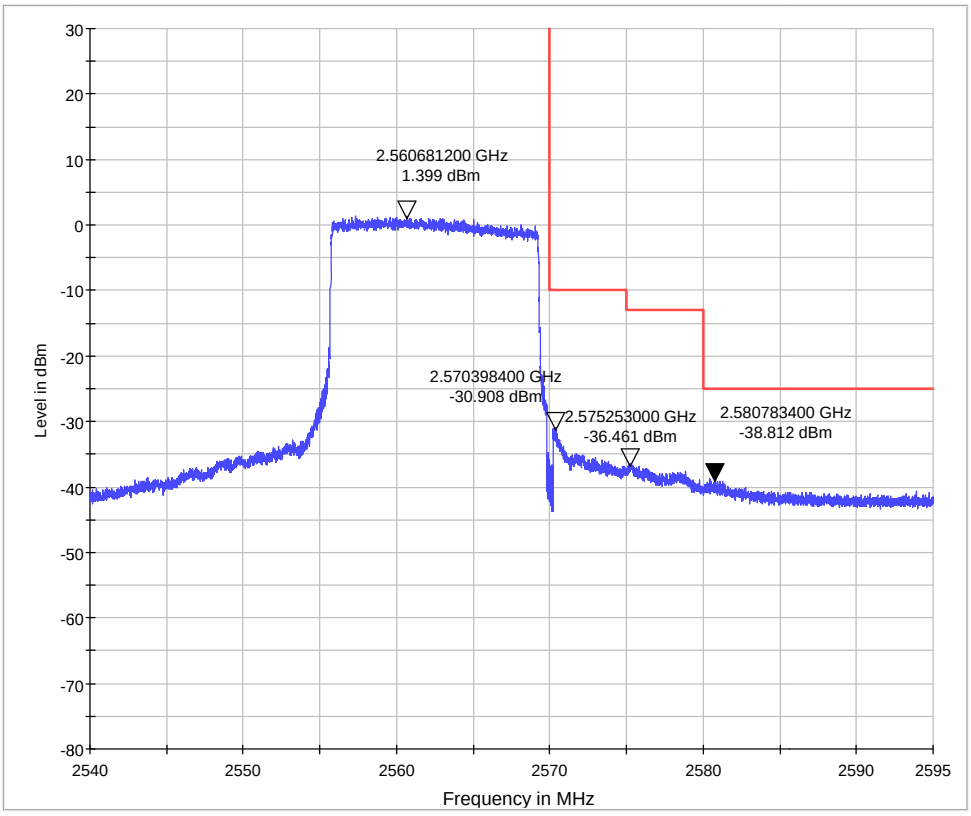
LTE Band 7 QPSK Bandwidth = 15MHz CH21375, RB 75



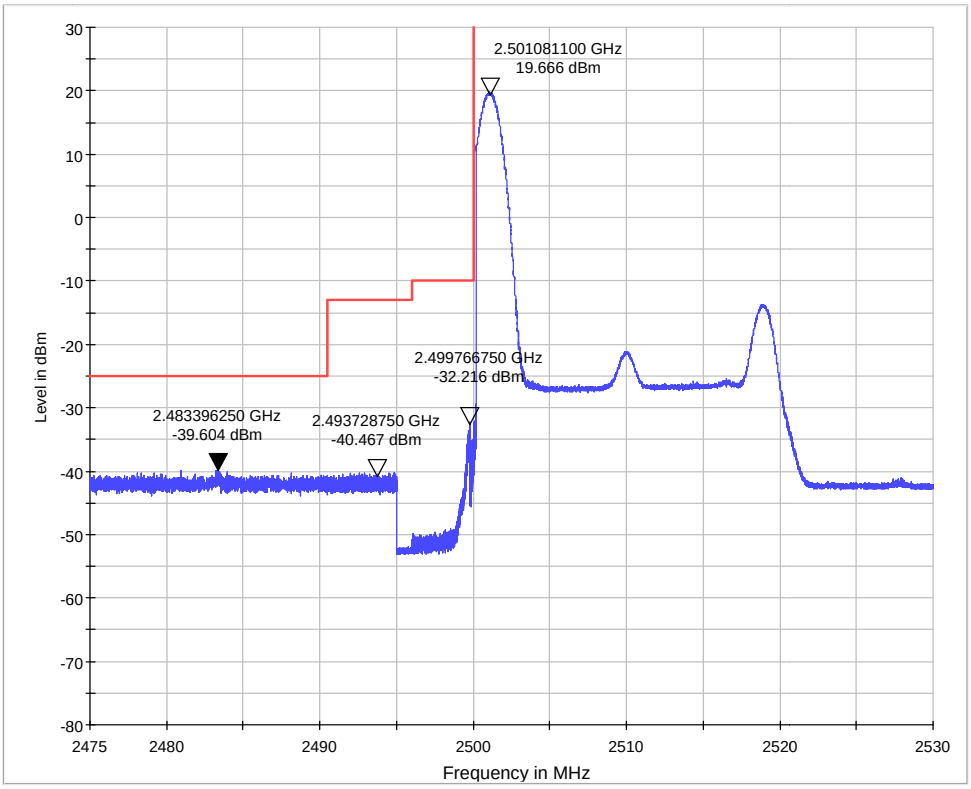
LTE Band 7 16QAM Bandwidth = 15MHz CH20825, RB 75



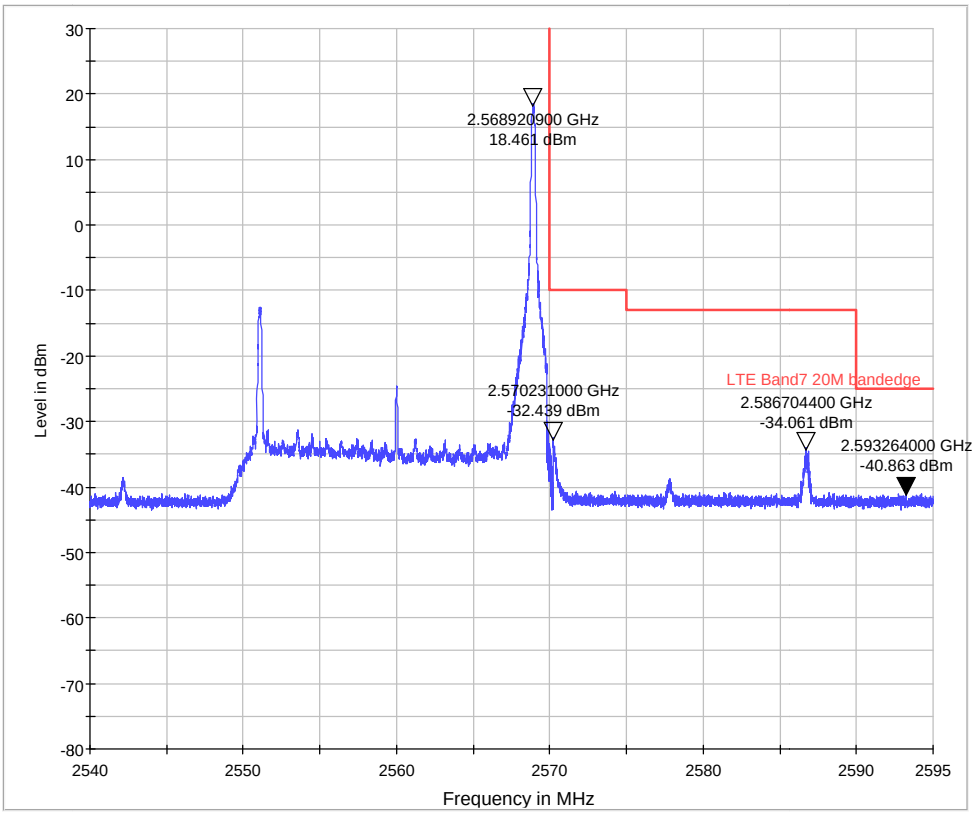
LTE Band 7 16QAM Bandwidth = 15MHz CH21375, RB 75



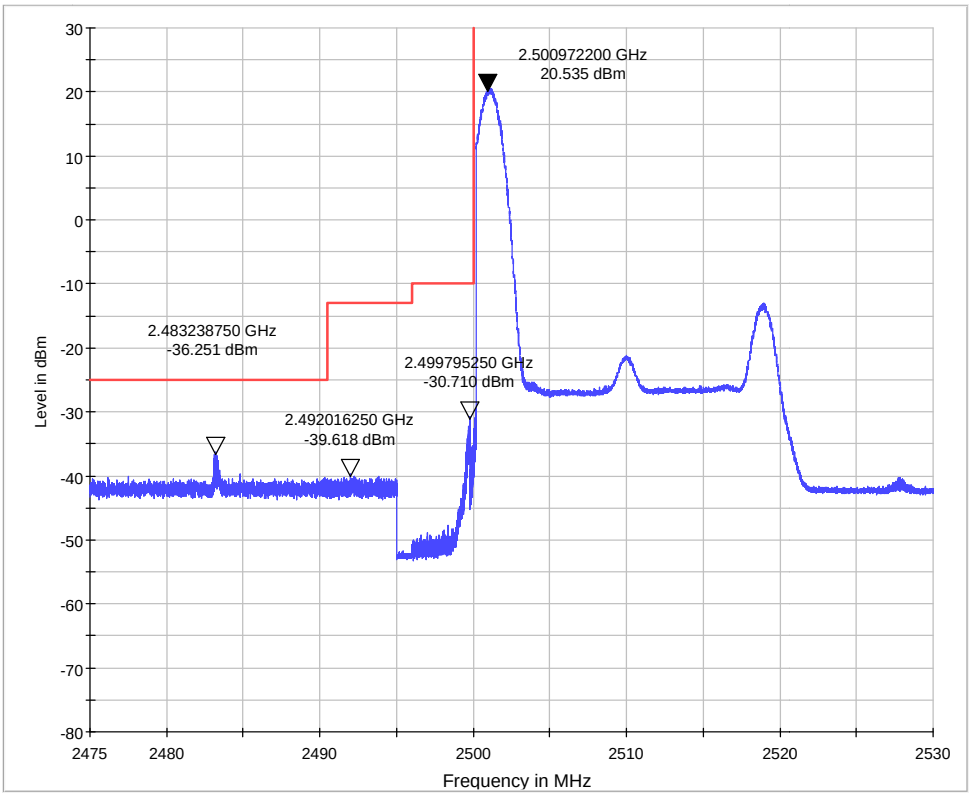
LTE Band 7 QPSK Bandwidth = 20MHz CH20850, RB 1



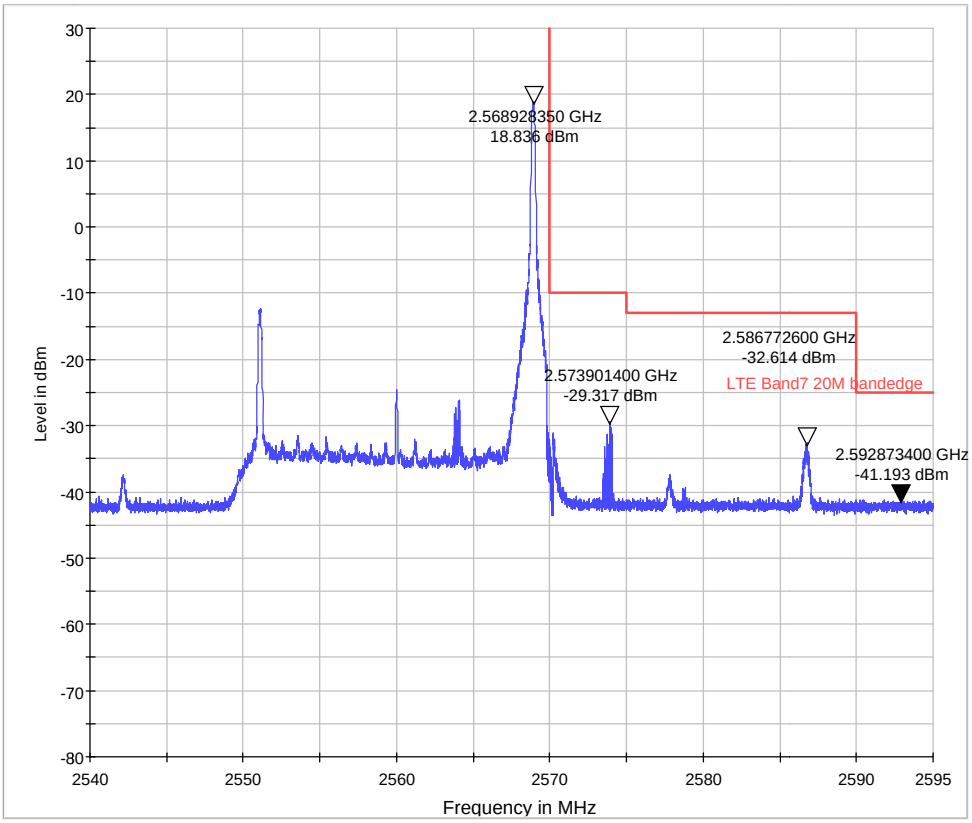
LTE Band 7 QPSK Bandwidth = 20MHz CH21350, RB 1



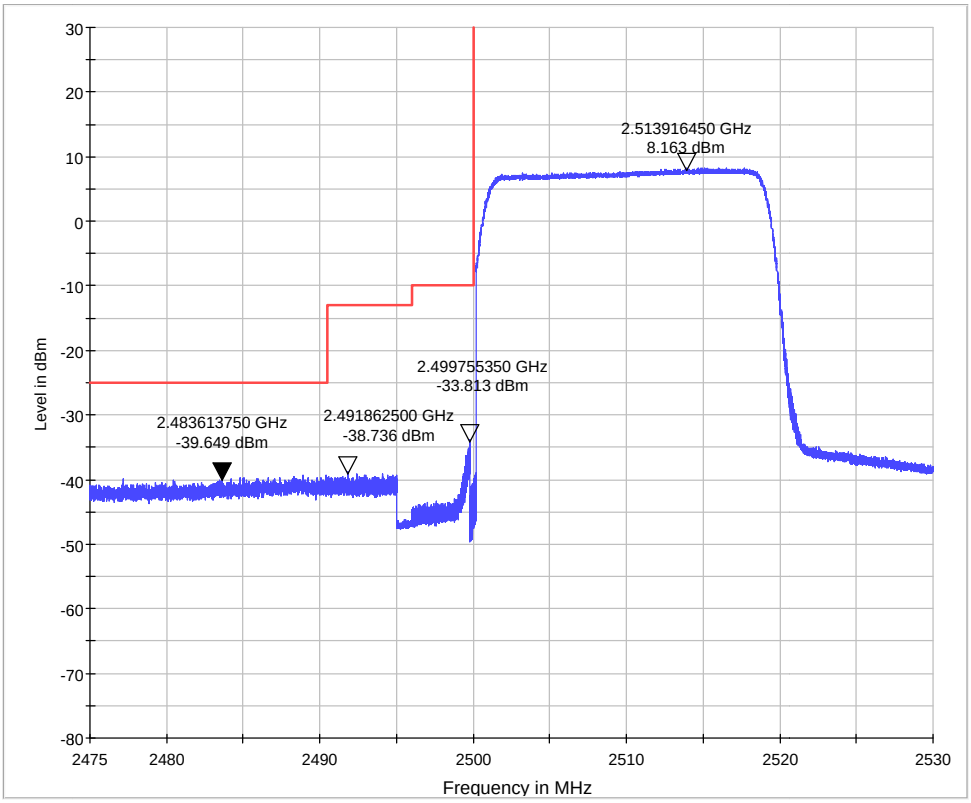
LTE Band 7 16QAM Bandwidth = 20MHz CH20850, RB 1



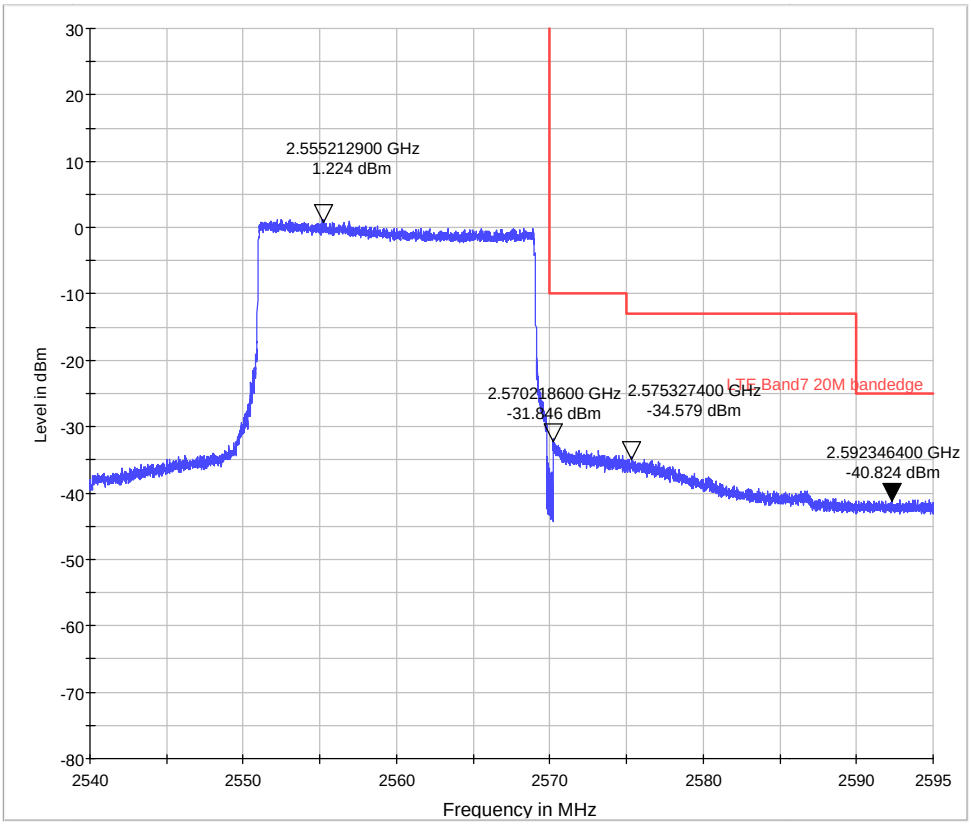
LTE Band 7 16QAM Bandwidth = 20MHz CH21350, RB 1



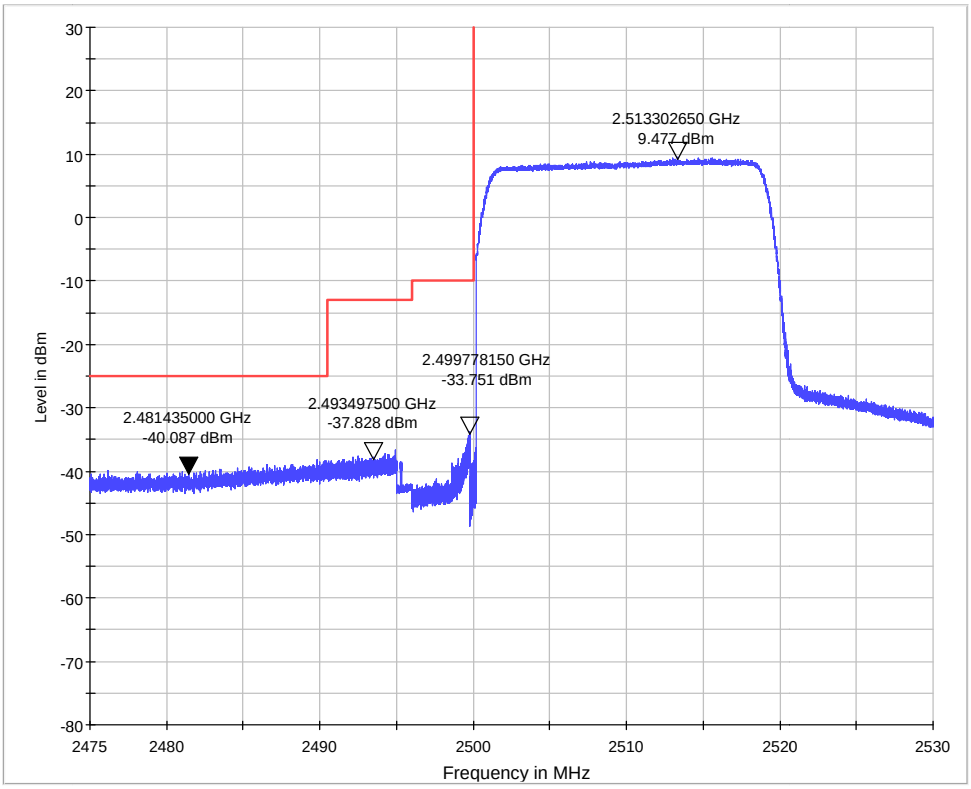
LTE Band 7 QPSK Bandwidth = 20MHz CH20850, RB 100



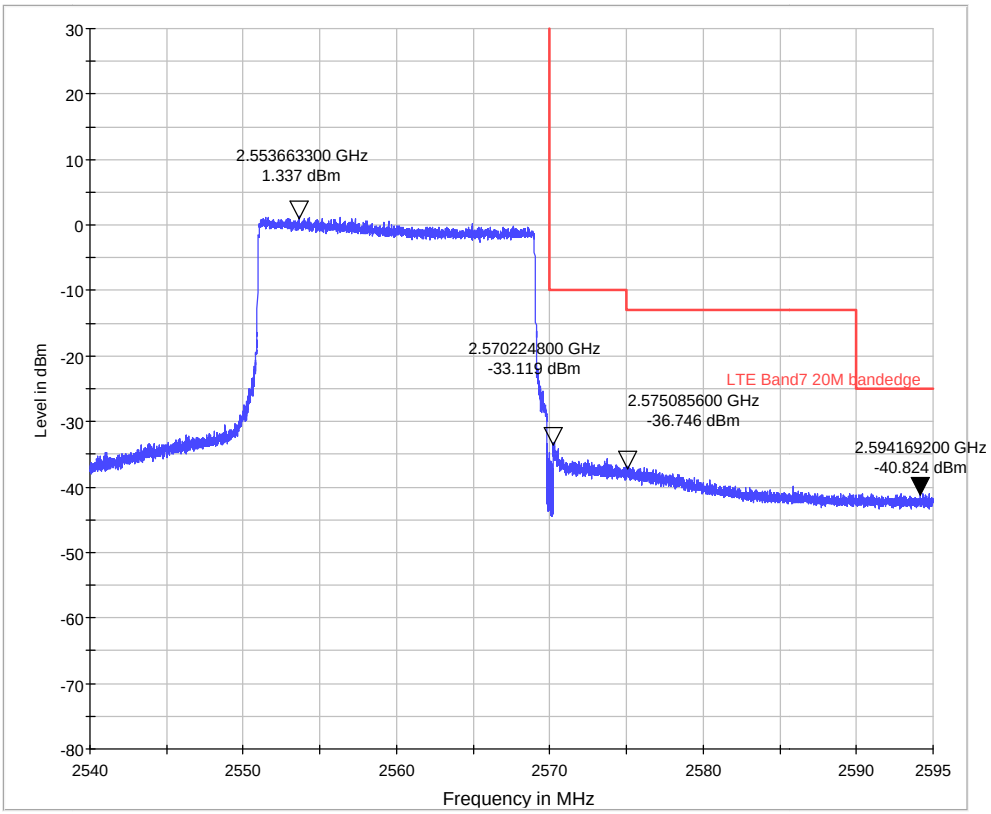
LTE Band 7 QPSK Bandwidth = 20MHz CH21350, RB 100



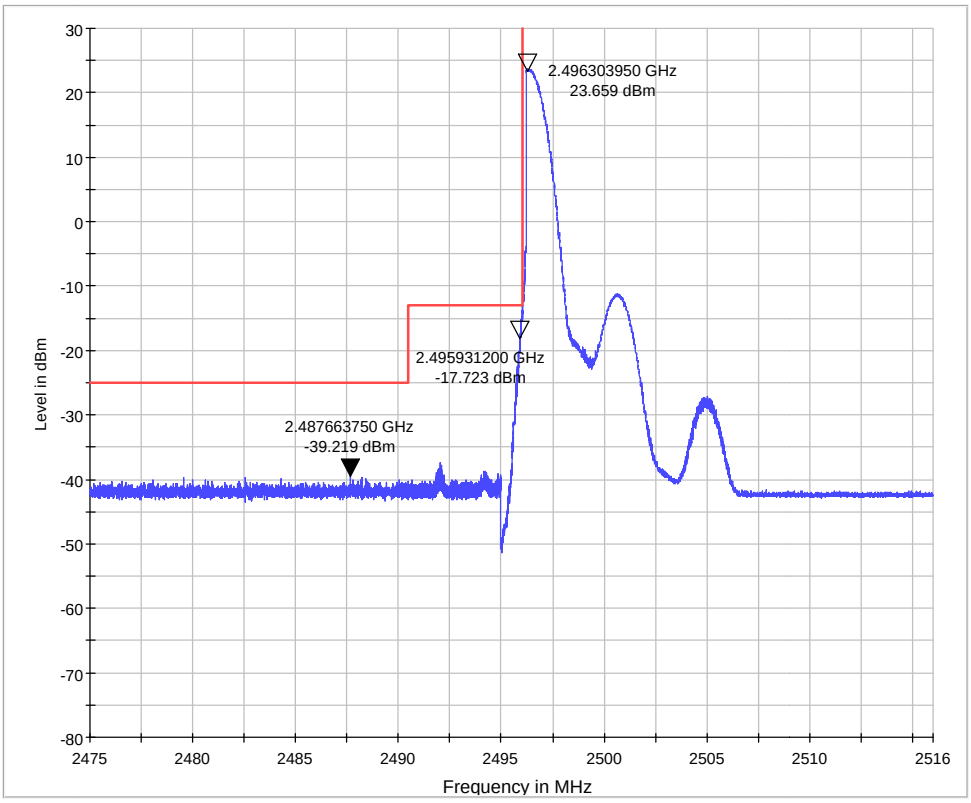
LTE Band 7 16QAM Bandwidth = 20MHz CH20850, RB 100



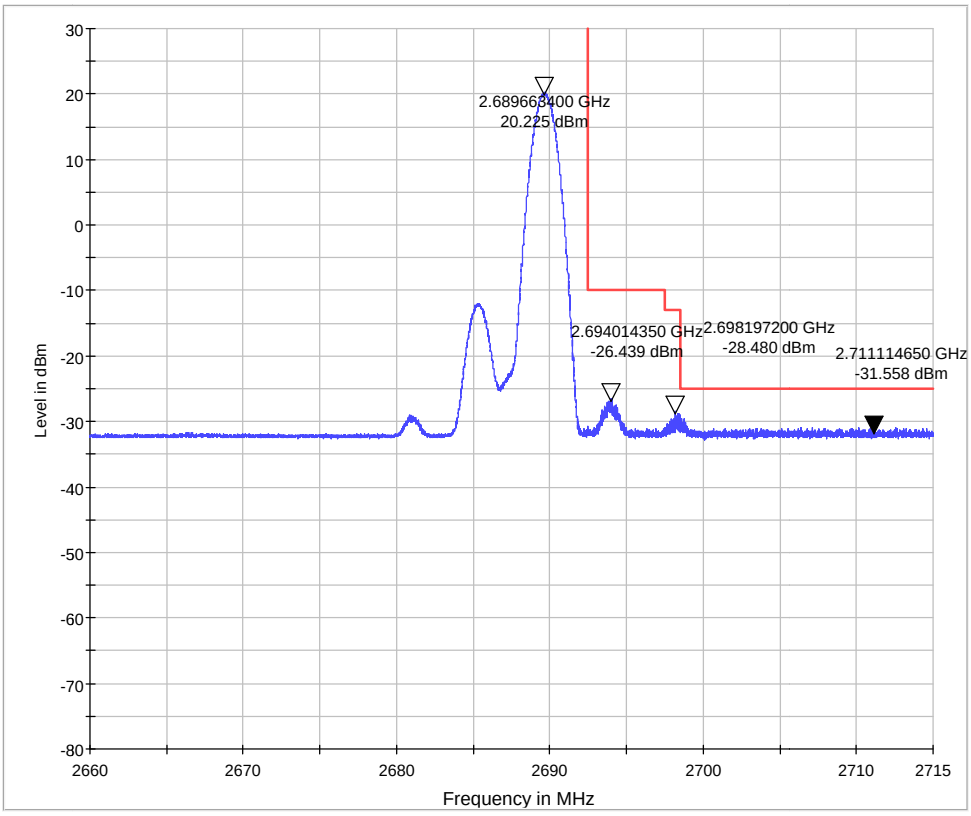
LTE Band 7 16QAM Bandwidth = 20MHz CH21350, RB 100



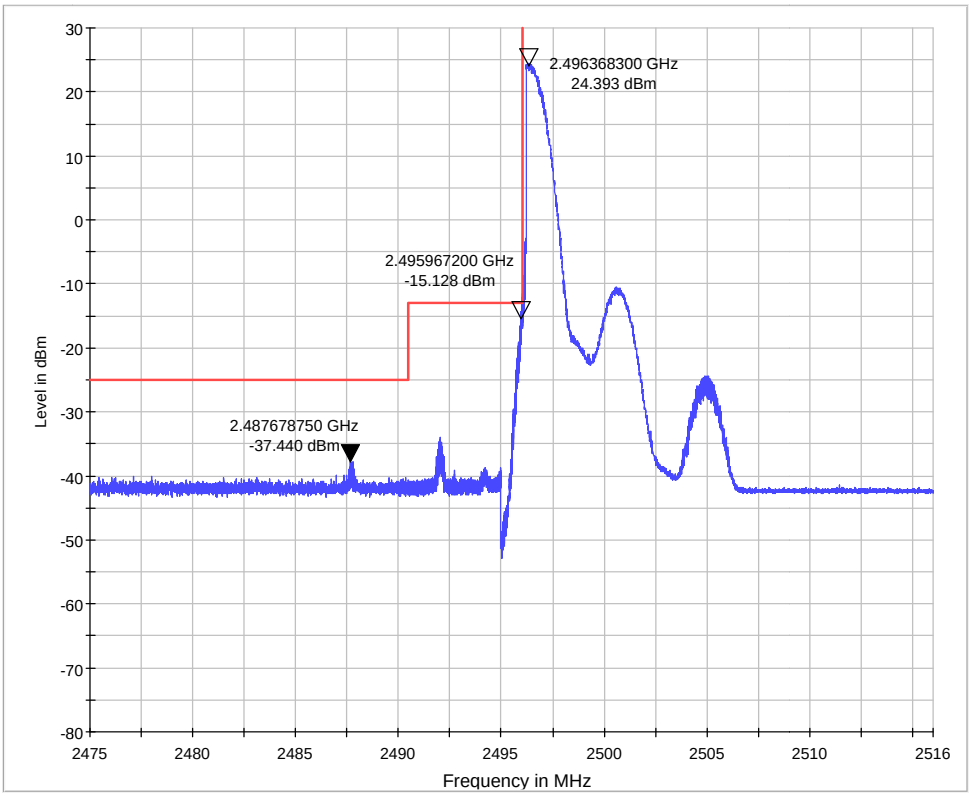
LTE Band 41 QPSK Bandwidth = 5MHz CH39675, RB 1



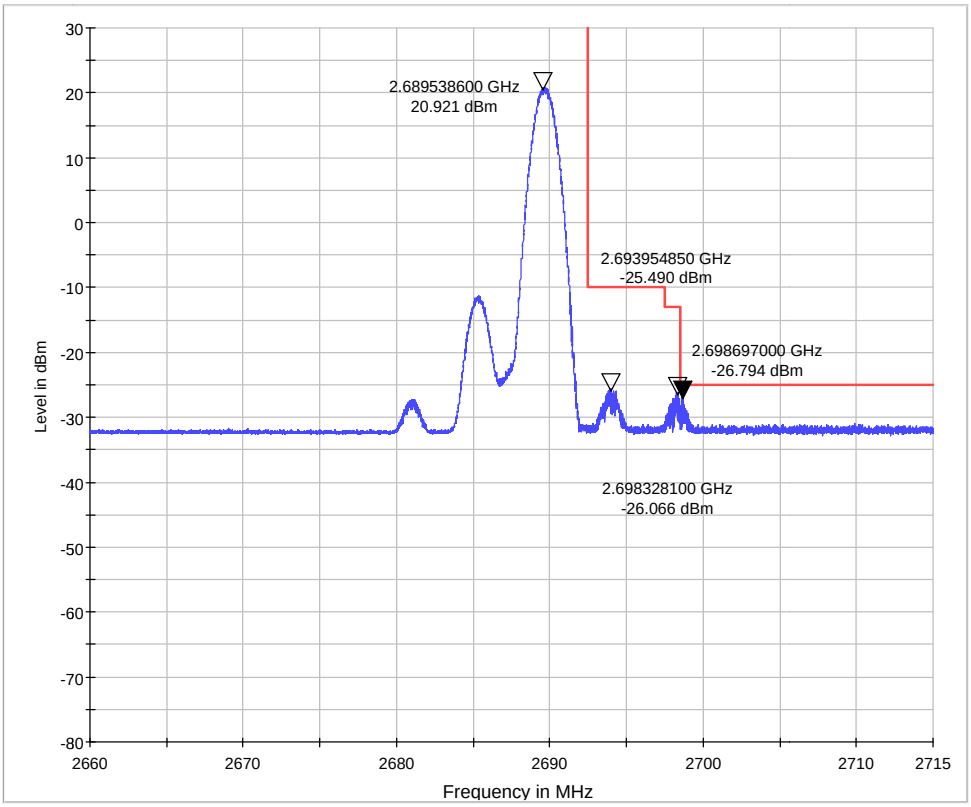
LTE Band 41 QPSK Bandwidth = 5MHz CH41565, RB 1



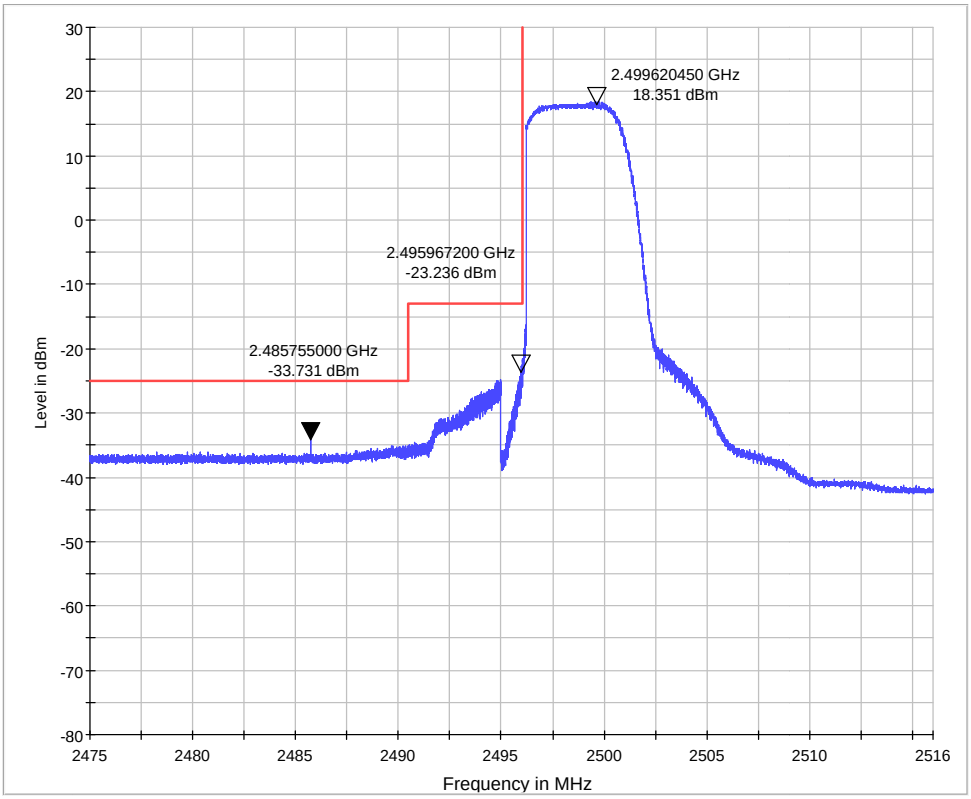
LTE Band 41 16QAM Bandwidth = 5MHz CH39675, RB 1



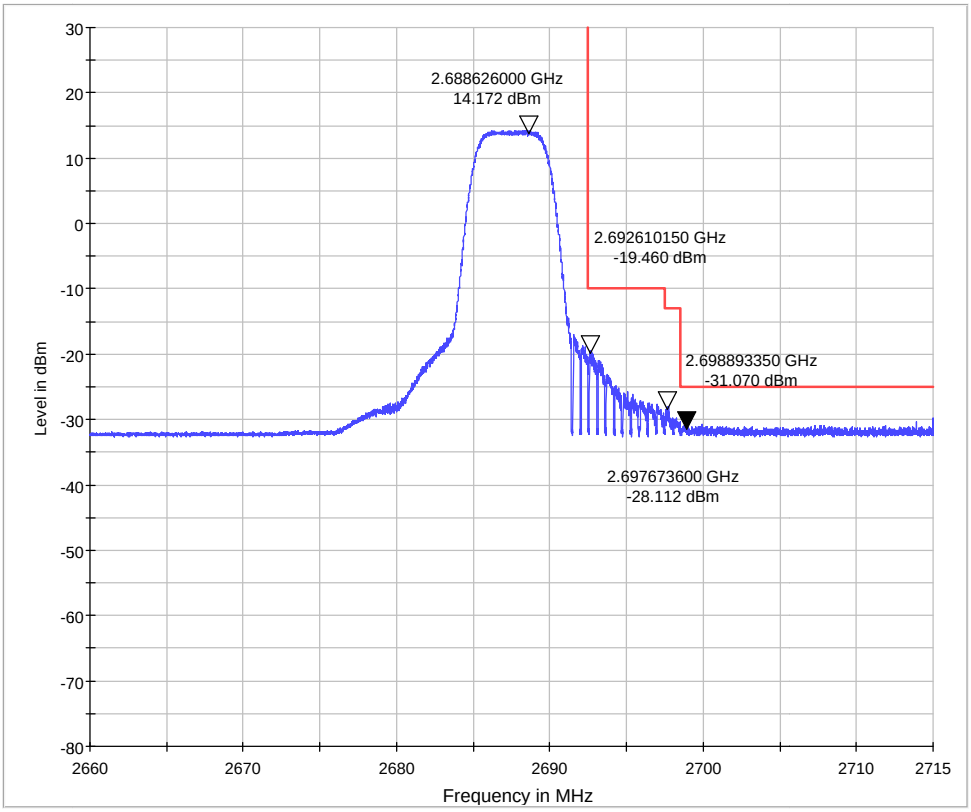
LTE Band 41 16QAM Bandwidth = 5MHz CH41565, RB 1



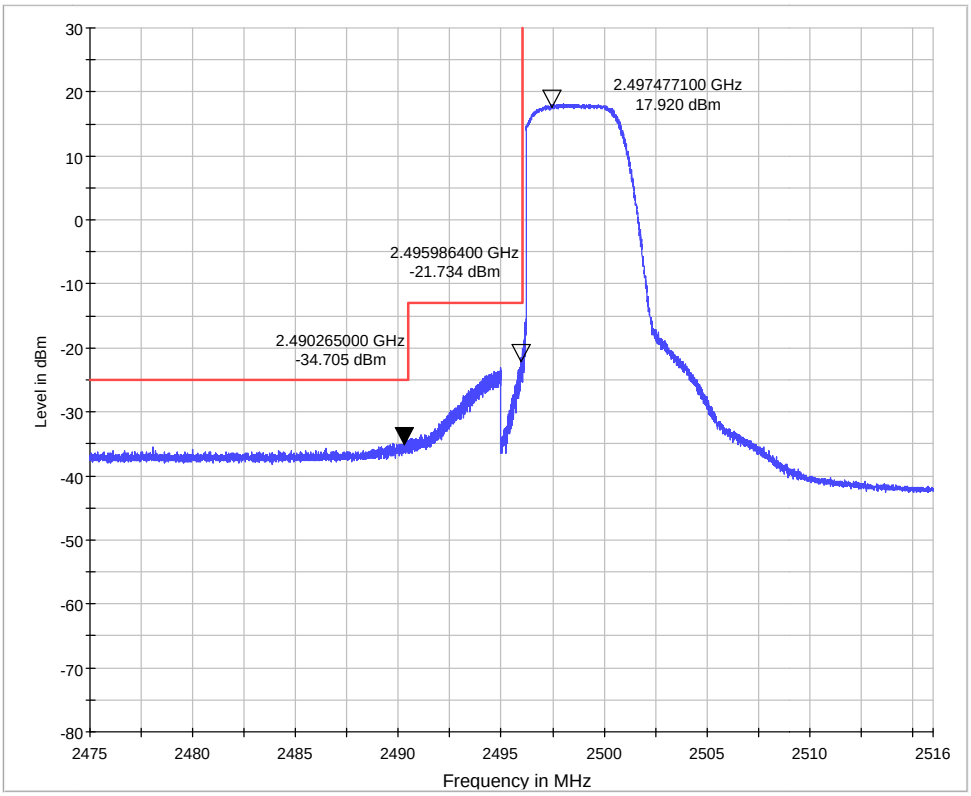
LTE Band 41 QPSK Bandwidth = 5MHz CH39675, RB 25



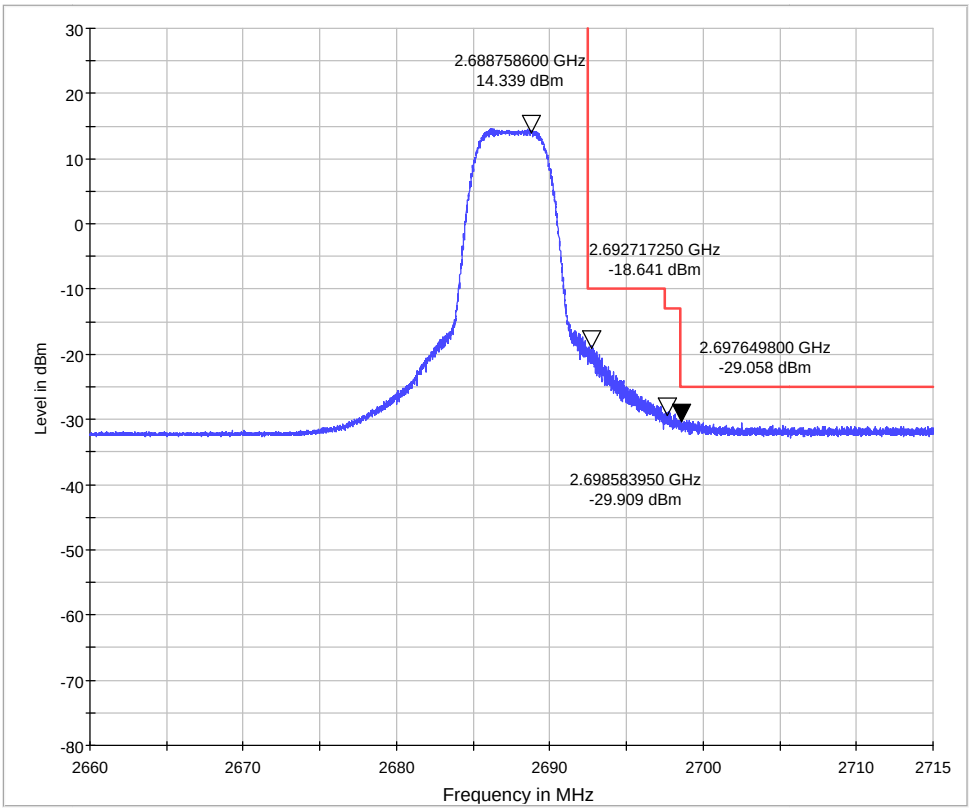
LTE Band 41 QPSK Bandwidth = 5MHz CH41565, RB 25



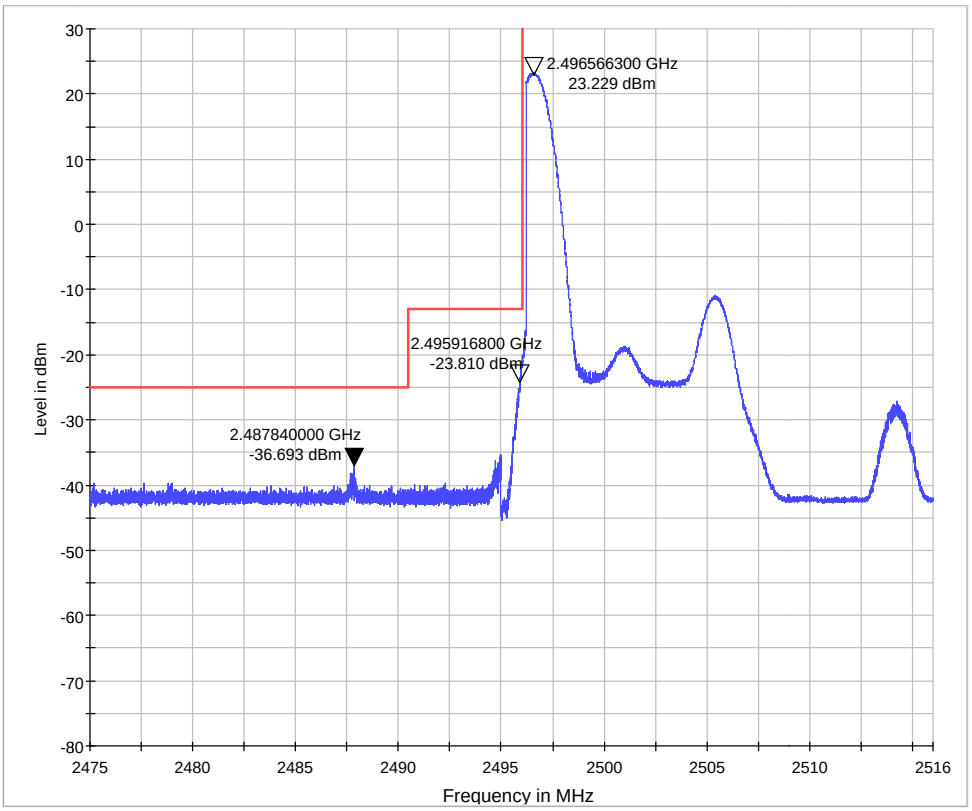
LTE Band 41 16QAM Bandwidth = 5MHz CH39675, RB 25



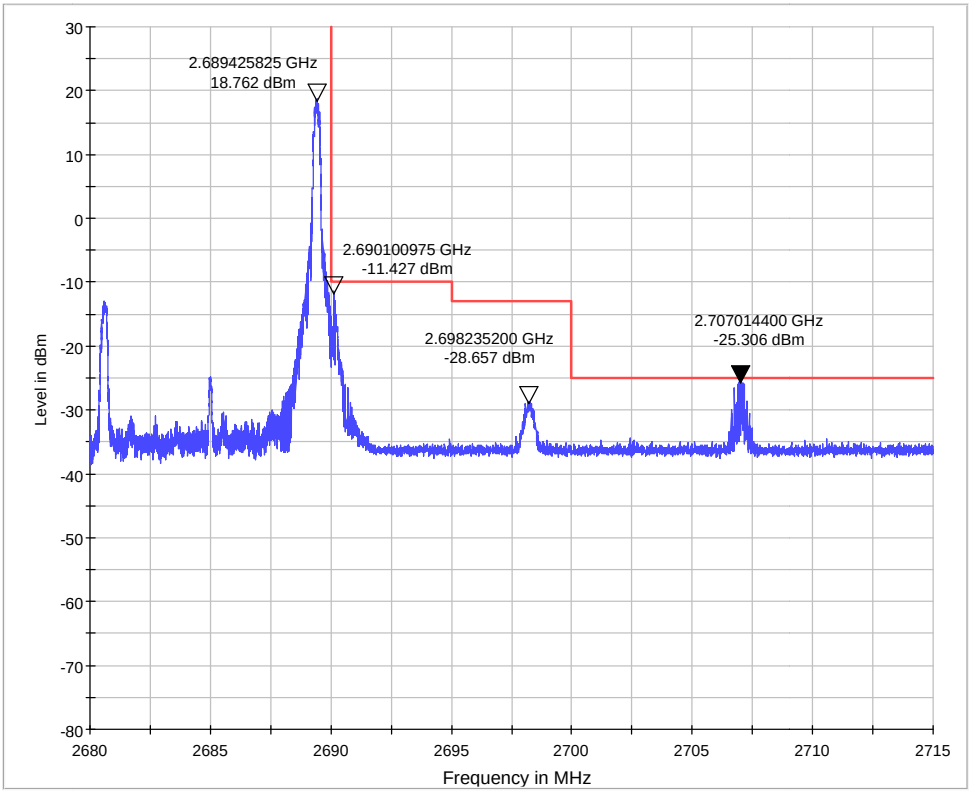
LTE Band 41 16QAM Bandwidth = 5MHz CH41565, RB 25



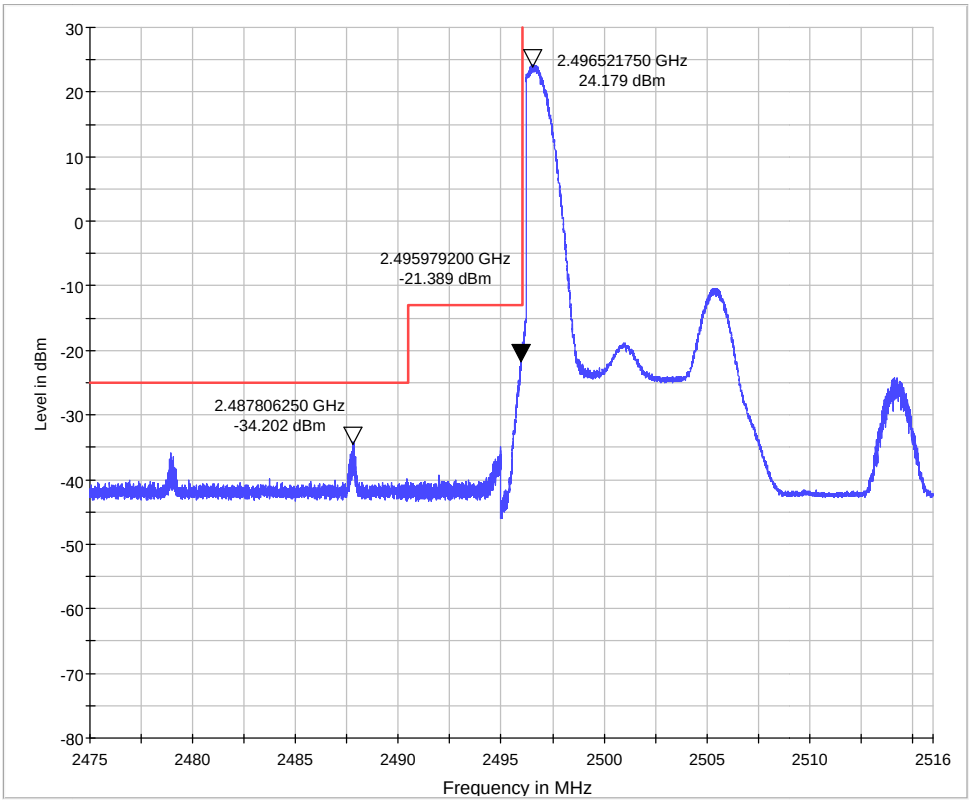
LTE Band 41 QPSK Bandwidth = 10MHz CH39700, RB 1



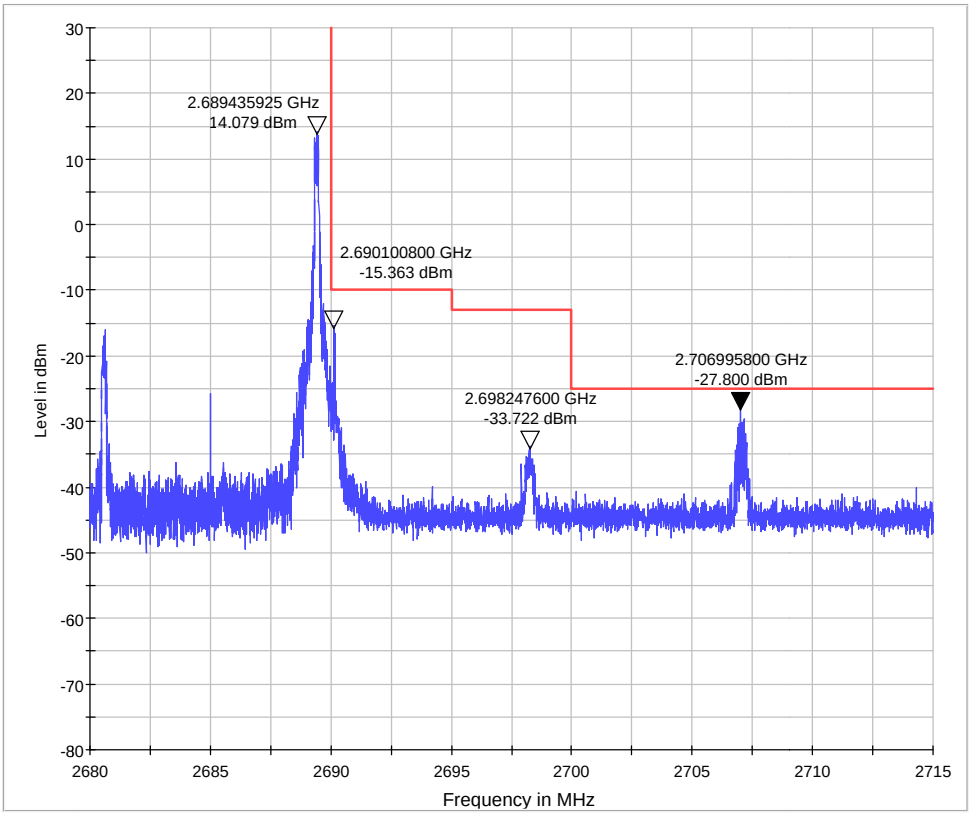
LTE Band 41 QPSK Bandwidth = 10MHz CH41540, RB 1



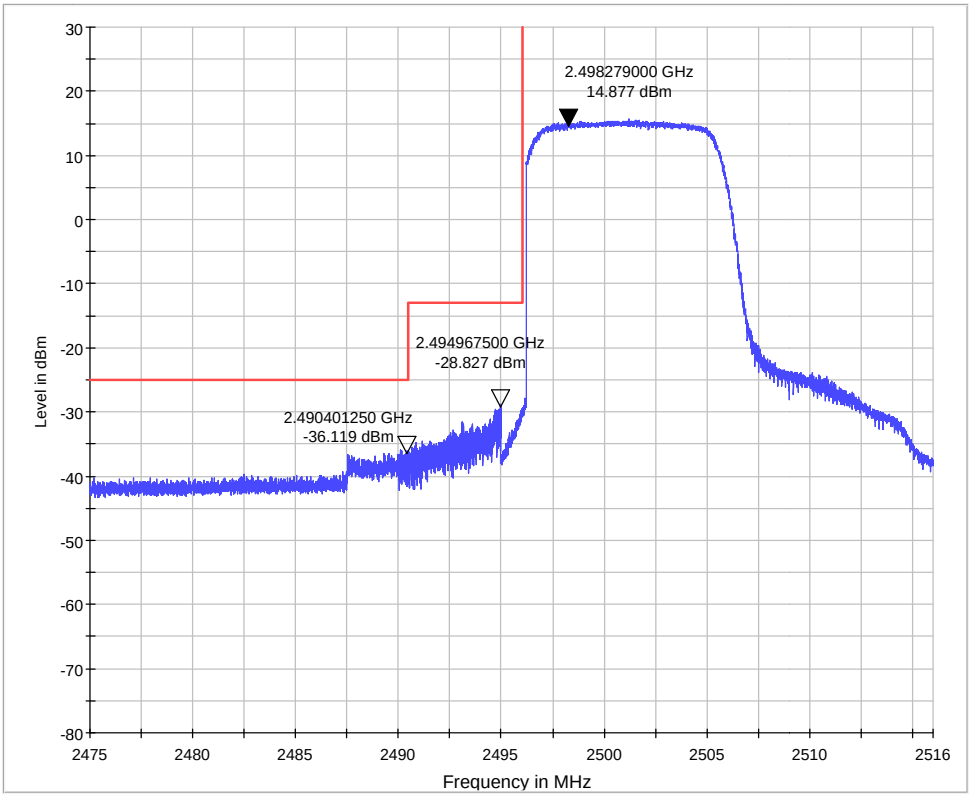
LTE Band 41 16QAM Bandwidth=10MHz CH39700, RB 1



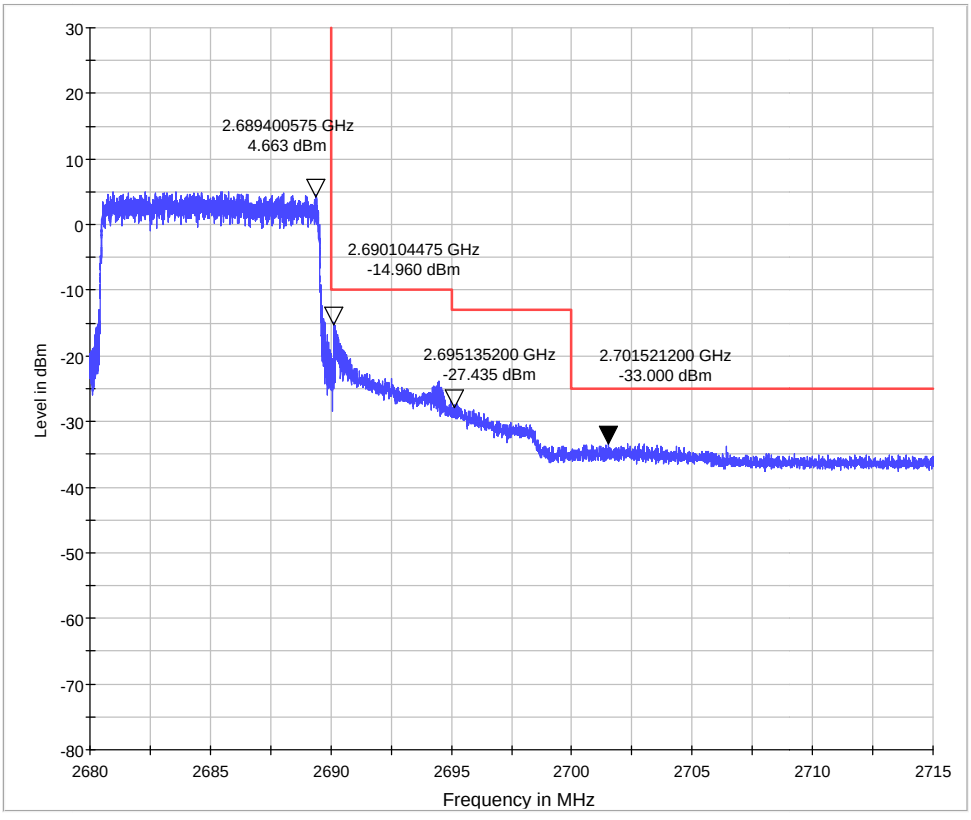
LTE Band 41 16QAM Bandwidth = 10MHz CH41540, RB 1



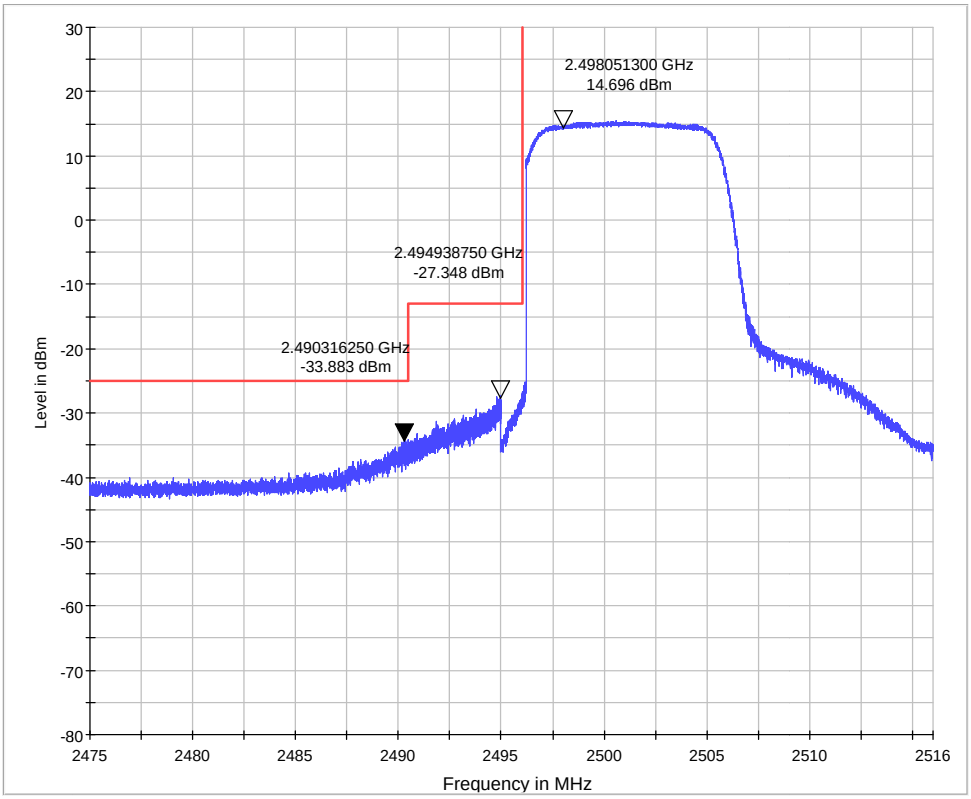
LTE Band 41 QPSK Bandwidth = 10MHz CH39700, RB 50



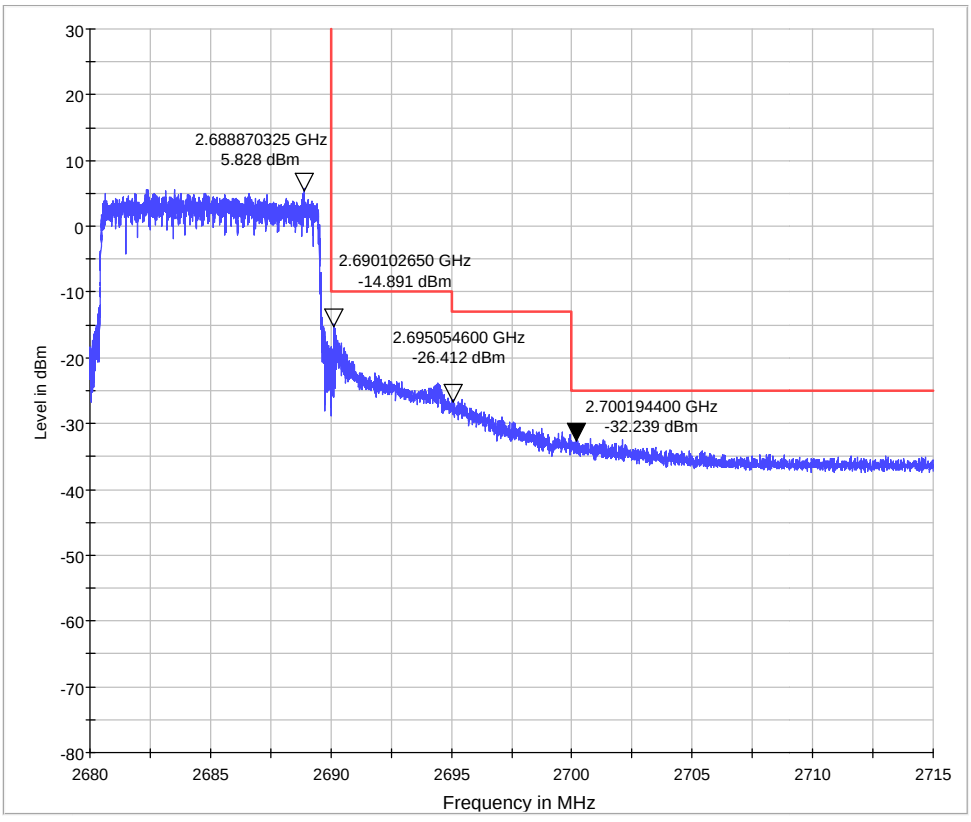
LTE Band 41 QPSK Bandwidth = 10MHz CH41540, RB 50



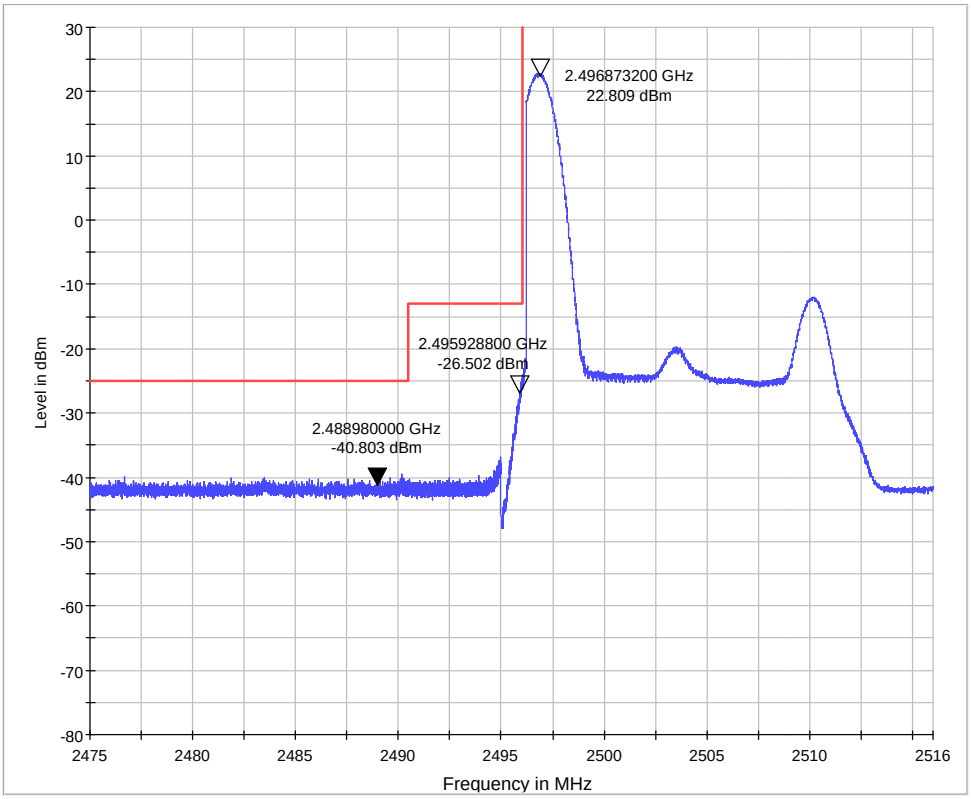
LTE Band 41 16QAM Bandwidth = 10MHz CH39700, RB 50



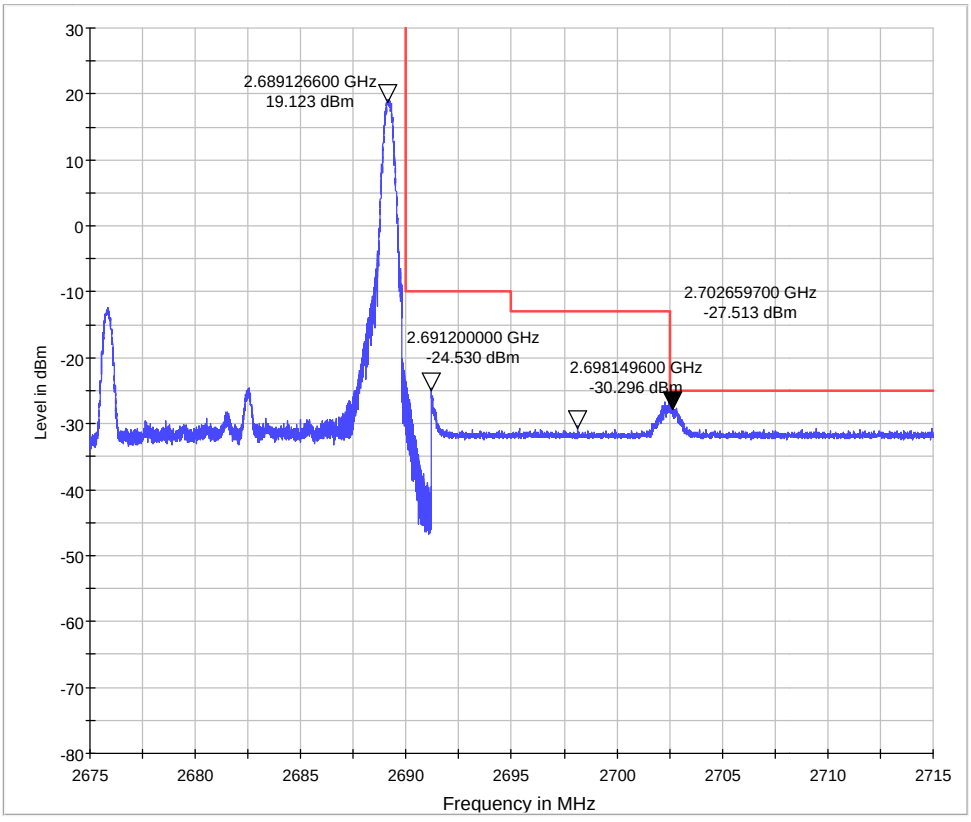
LTE Band 41 16QAM Bandwidth = 10MHz CH41540, RB 50



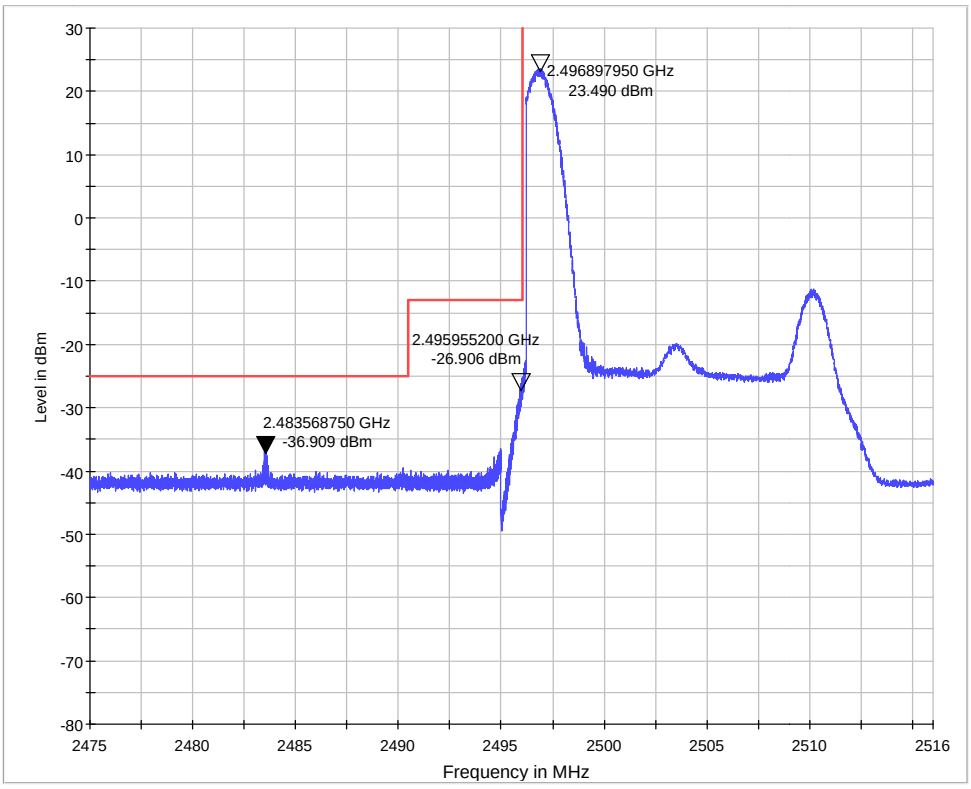
LTE Band 41 QPSK Bandwidth = 15MHz CH39725, RB 1



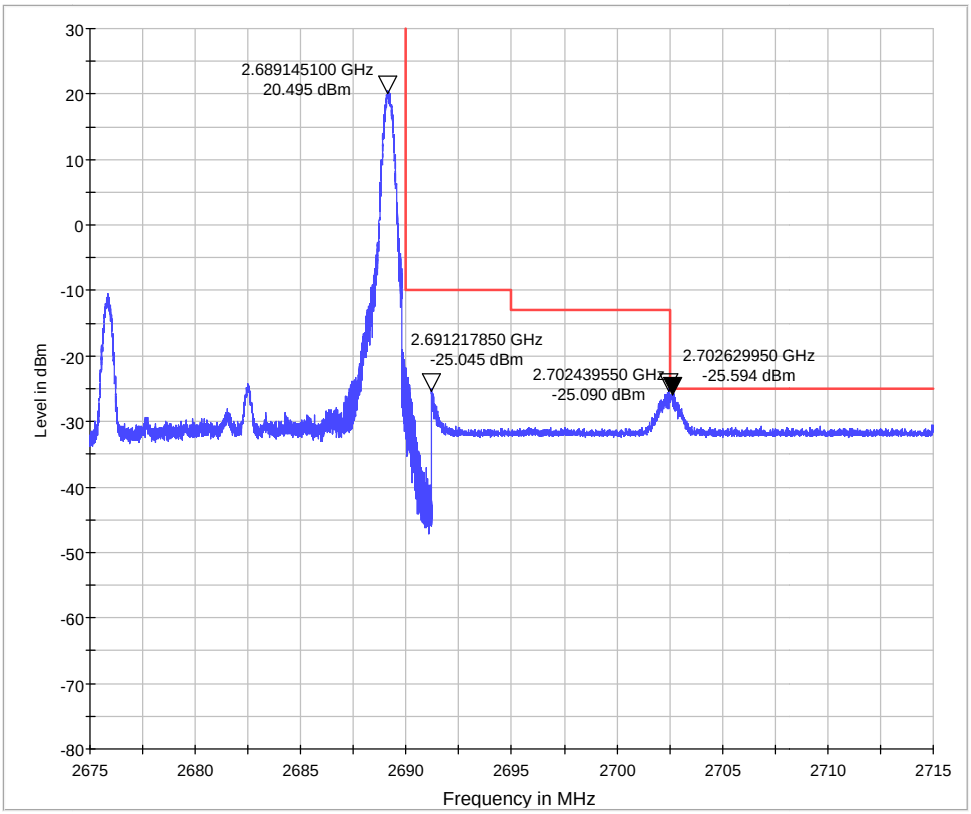
LTE Band 41 QPSK Bandwidth = 15MHz CH41515, RB 1



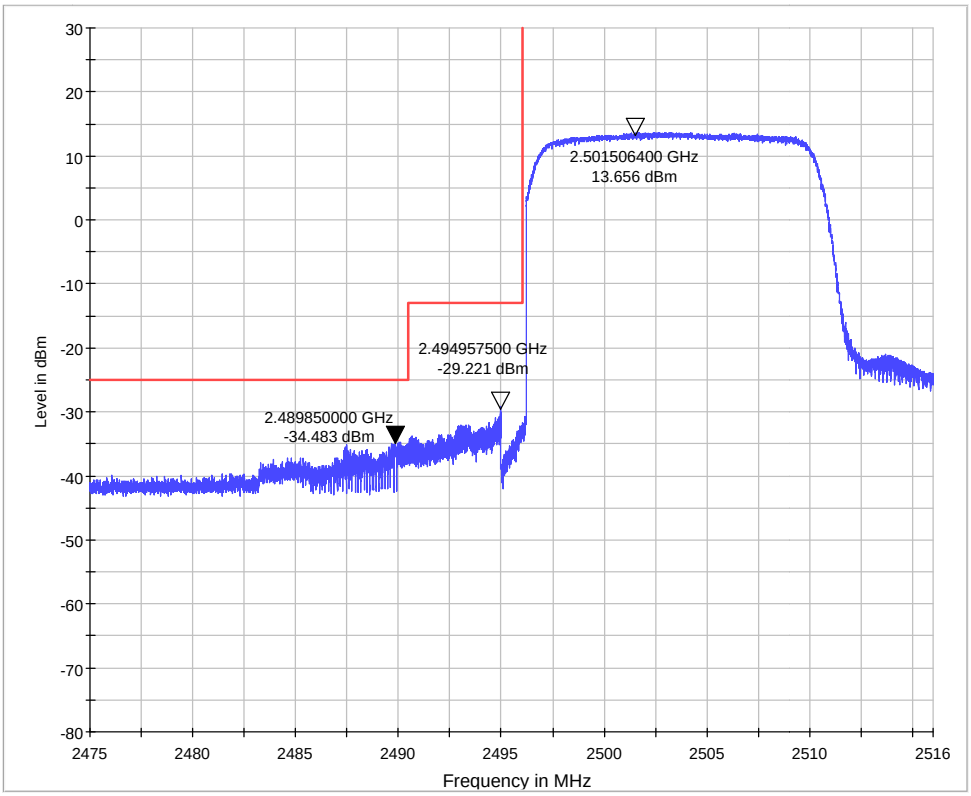
LTE Band 41 16QAM Bandwidth = 15MHz CH39725, RB 1



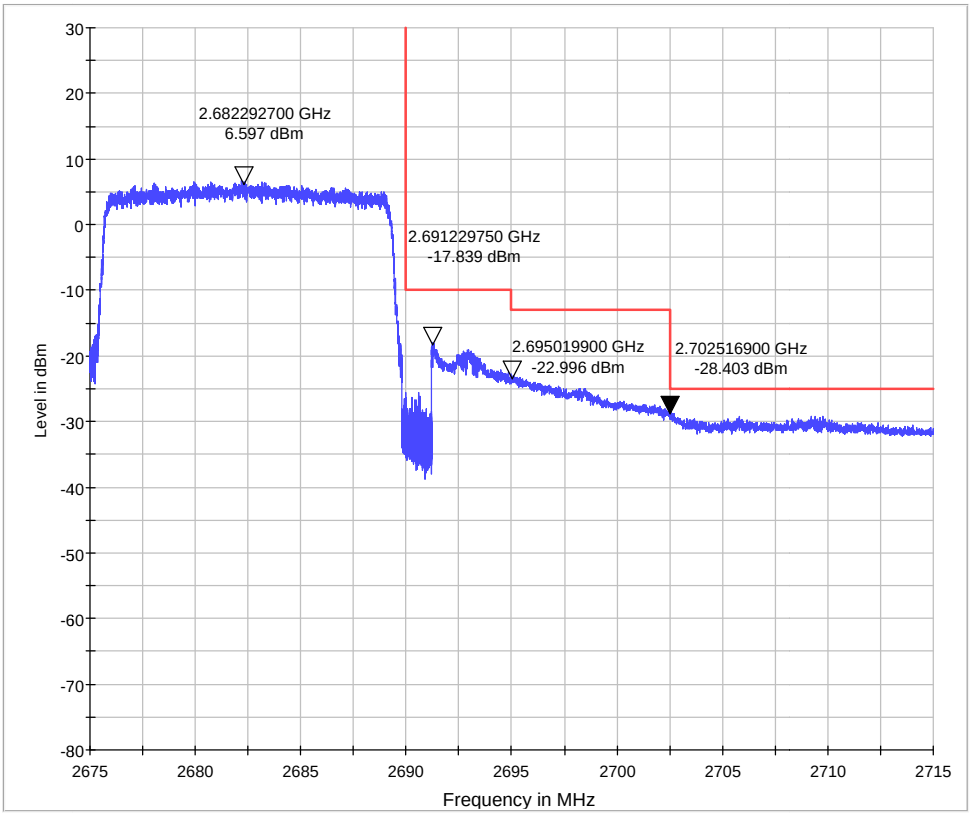
LTE Band 41 16QAM Bandwidth = 15MHz CH41515, RB 1



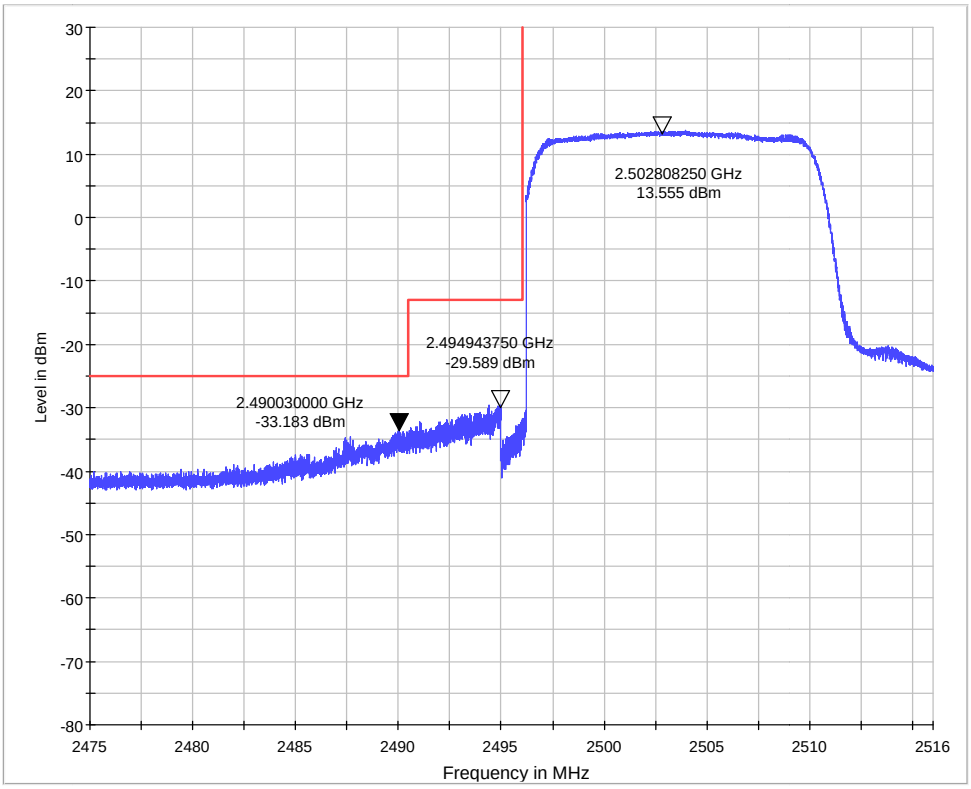
LTE Band 41 QPSK Bandwidth = 15MHz CH39725, RB 75



LTE Band 41 QPSK Bandwidth = 15MHz CH41515, RB 75



LTE Band 41 16QAM Bandwidth = 15MHz CH39725, RB 75



LTE Band 41 16QAM Bandwidth = 15MHz CH41515, RB 75