

LTE Band 41 (HPUE) , 5MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3.6	36	28	35	0.014	0.011	0.013
3.85	41	27	26	0.016	0.010	0.010
4.3	45	33	40	0.017	0.013	0.015

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
-20	32	47	30	0.012	0.018	0.012
-10	42	25	23	0.016	0.010	0.009
0	29	28	26	0.011	0.011	0.010
10	28	39	34	0.011	0.015	0.013
20	35	34	29	0.013	0.013	0.011
30	36	31	41	0.014	0.012	0.016
40	43	44	27	0.017	0.017	0.010
50	30	36	33	0.012	0.014	0.013

Expanded measurement uncertainty is 10 Hz, $k = 2$

LTE Band 66, 1.4MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3.6	28	10	31	0.016	0.006	0.018
3.85	15	20	25	0.009	0.011	0.014
4.3	35	26	16	0.020	0.015	0.009

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
-20	33	25	23	0.019	0.014	0.013
-10	26	30	26	0.015	0.017	0.015
0	24	24	15	0.014	0.014	0.009
10	18	41	18	0.010	0.023	0.010
20	20	31	16	0.011	0.018	0.009
30	25	36	17	0.014	0.021	0.010
40	19	22	28	0.011	0.013	0.016
50	35	27	22	0.020	0.015	0.013

Expanded measurement uncertainty is 10Hz, $k = 2$

LTE Band 71, 5MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3.6	11	23	19	0.016	0.034	0.028
3.85	21	24	16	0.031	0.035	0.024
4.3	24	28	28	0.035	0.041	0.041

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
-20	27	14	24	0.040	0.021	0.035
-10	26	12	15	0.038	0.018	0.022
0	14	31	18	0.021	0.046	0.026
10	28	22	26	0.041	0.032	0.038
20	25	26	23	0.037	0.038	0.034
30	23	16	24	0.034	0.024	0.035
40	16	18	30	0.024	0.026	0.044
50	17	27	15	0.025	0.040	0.022

Expanded measurement uncertainty is 10Hz, k = 2

LTE Band CA_41C, 5MHz+20MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3.6	49	28	30	0.019	0.011	0.012
3.85	36	41	26	0.014	0.016	0.010
4.3	27	32	37	0.010	0.012	0.014

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
-20	21	37	27	0.008	0.014	0.010
-10	26	35	41	0.010	0.013	0.016
0	35	29	46	0.013	0.011	0.018
10	34	24	42	0.013	0.009	0.016
20	46	27	33	0.018	0.010	0.013
30	28	27	38	0.011	0.010	0.015
40	36	33	37	0.014	0.013	0.014
50	38	23	28	0.015	0.009	0.011

Expanded measurement uncertainty is 10 Hz, k = 2

A.4 OCCUPIED BANDWIDTH

Reference

FCC: CFR Part 2.1049, 22.917, 24.238, 27.53, 90.1215.

A.4.1 Occupied Bandwidth Results

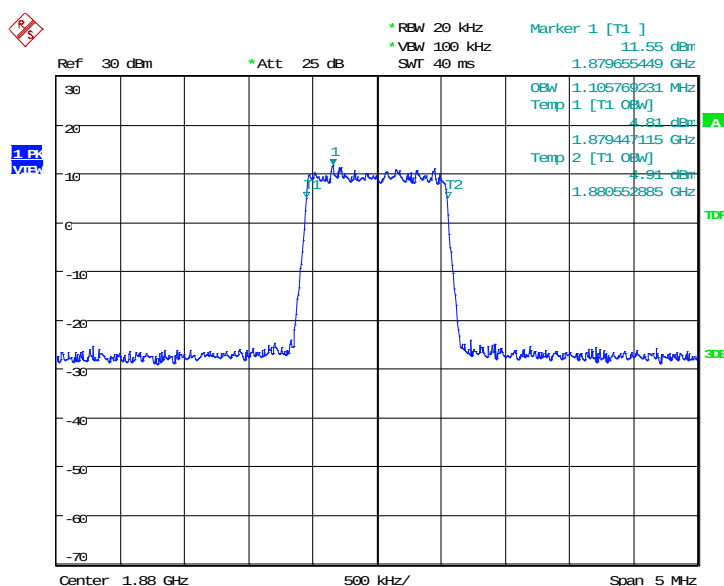
Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the US Cellular/PCS frequency bands. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

- The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).
- The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least $10\log(\text{OBW} / \text{RBW})$ below the reference level.
- Set the detection mode to peak, and the trace mode to max hold.
- Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

LTE band 2, 1.4MHz (99% BW)

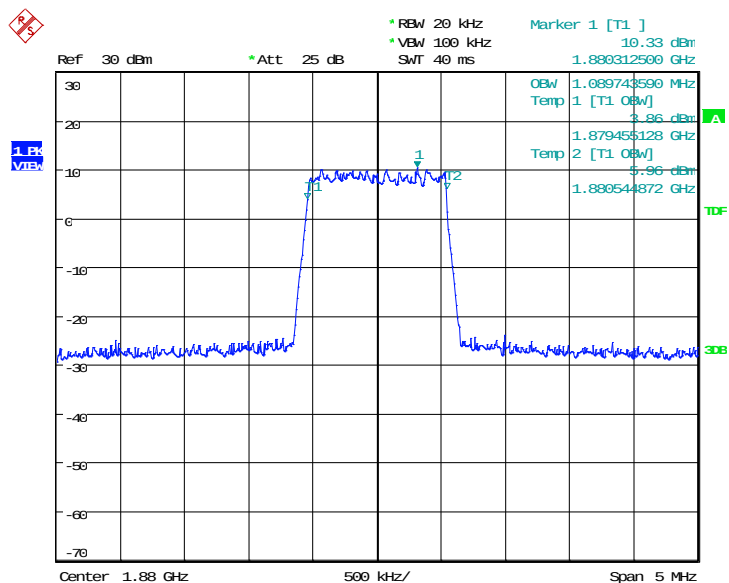
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	1105.77	1089.74	1097.76

LTE band 2, 1.4MHz Bandwidth, QPSK (99% BW)



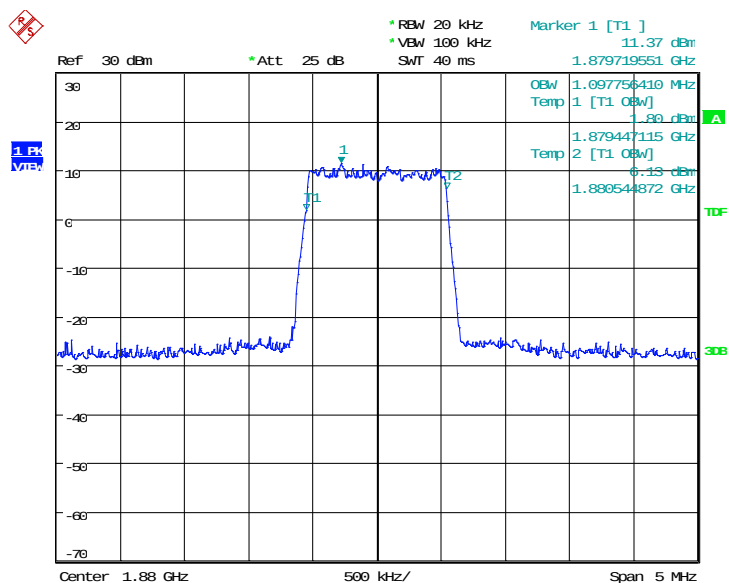
Date: 4.DEC.2019 06:58:55

LTE band 2, 1.4MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 06:59:09

LTE band 2, 1.4MHz Bandwidth, 64QAM (99% BW)

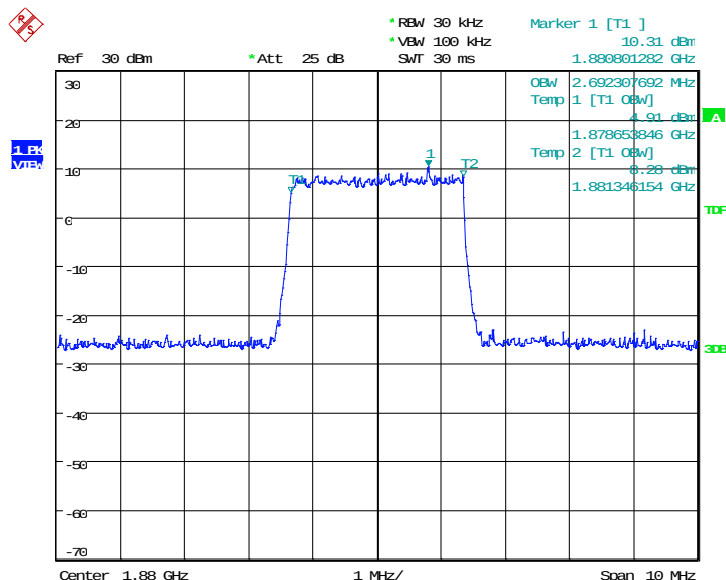


Date: 5.DEC.2019 13:28:50

LTE band 2, 3MHz (99% BW)

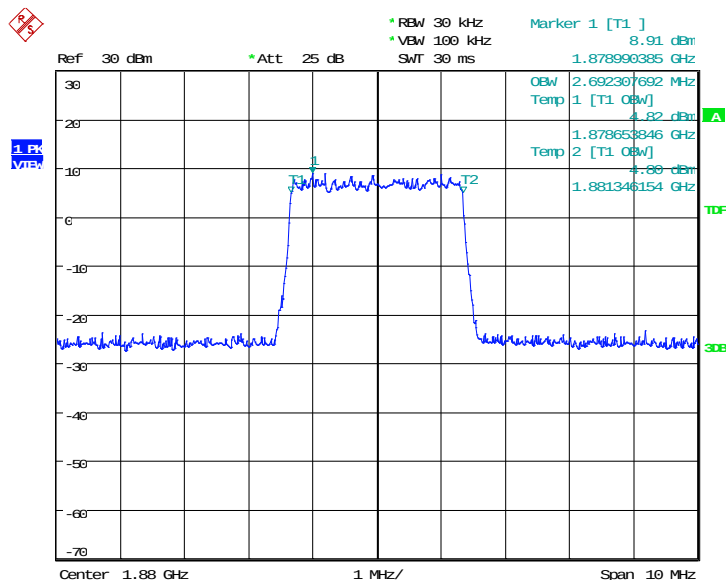
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	2692.31	2692.31	2692.31

LTE band 2, 3MHz Bandwidth, QPSK (99% BW)



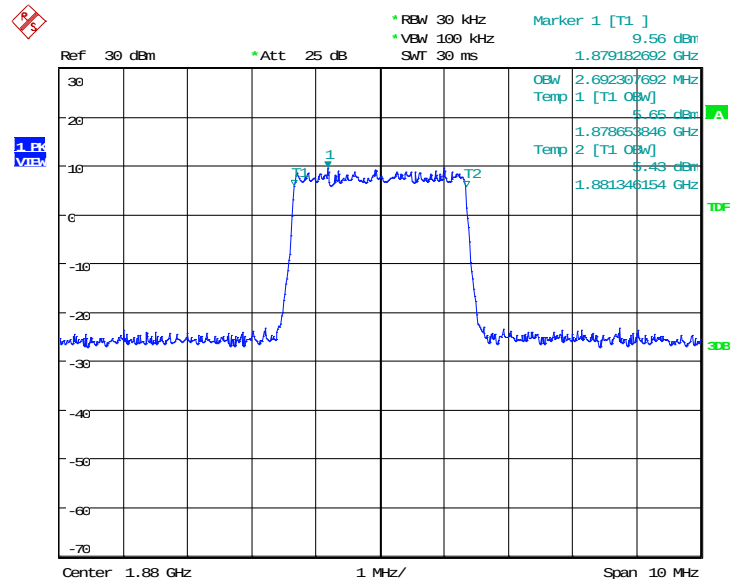
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LTE band 2, 3MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 07:03:29

LTE band 2, 3MHz Bandwidth, 64QAM (99% BW)

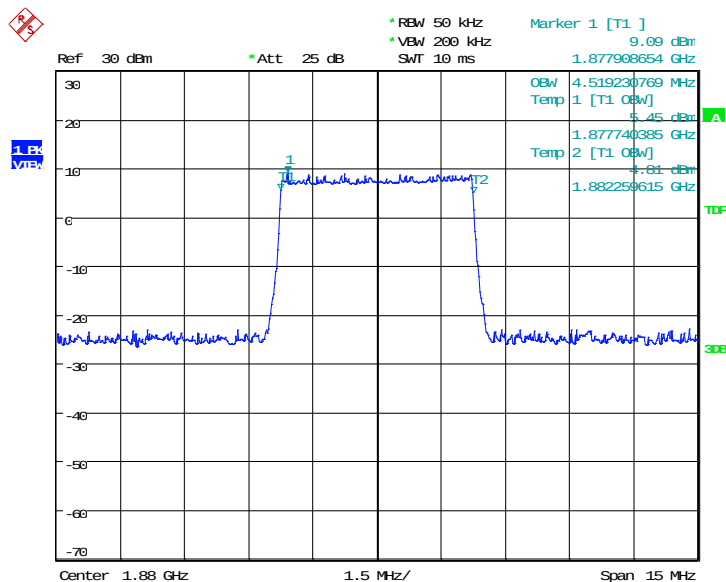


Date: 5.DEC.2019 13:32:20

LTE band 2, 5MHz (99% BW)

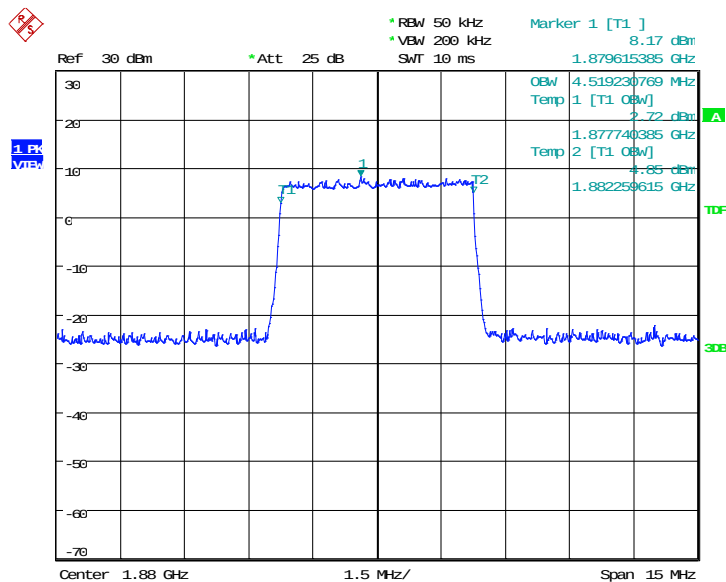
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	4519.23	4519.23	4519.23

LTE band 2, 5MHz Bandwidth, QPSK (99% BW)



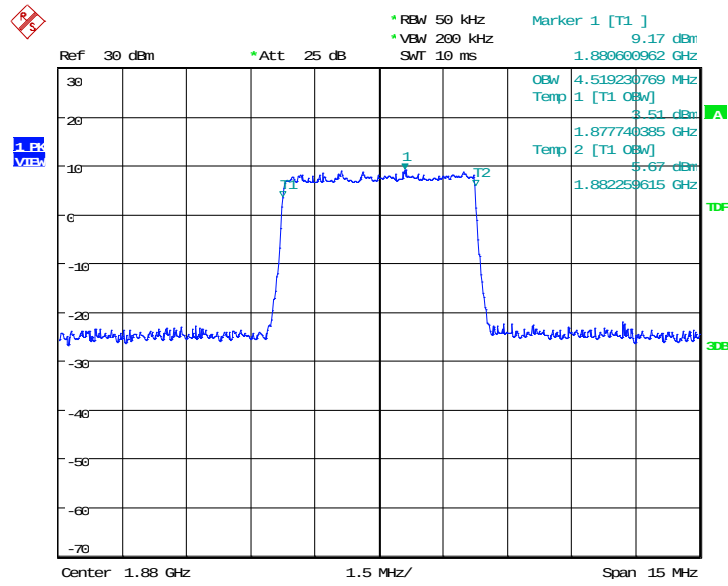
Date: 4.DEC.2019 07:07:36

LTE band 2, 5MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 07:07:49

LTE band 2, 5MHz Bandwidth,64QAM (99% BW)

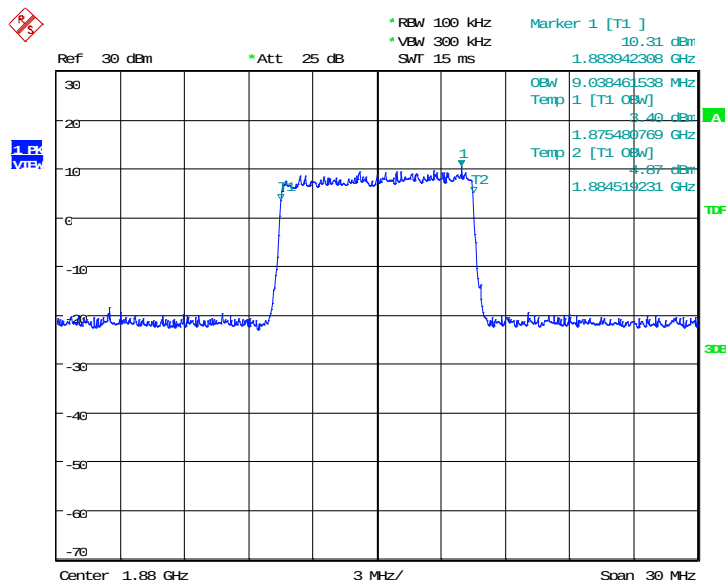


Date: 5.DEC.2019 13:35:52

LTE band 2, 10MHz (99% BW)

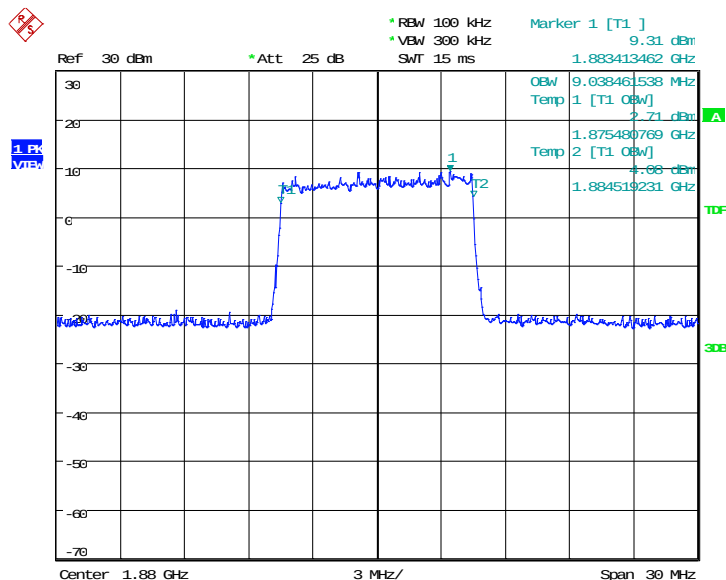
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	9038.46	9038.46	8990.38

LTE band 2, 10MHz Bandwidth, QPSK (99% BW)



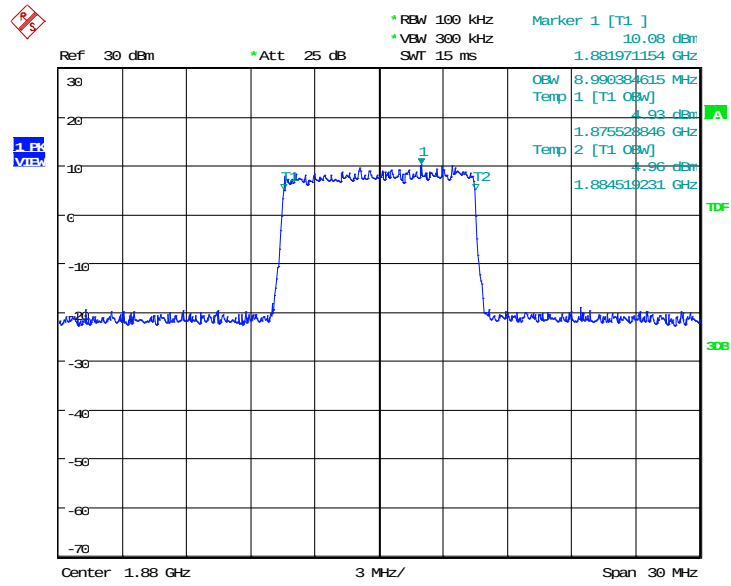
Date: 4.DEC.2019 07:11:54

LTE band 2, 10MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 07:12:07

LTE band 2, 10MHz Bandwidth, 64QAM (99% BW)

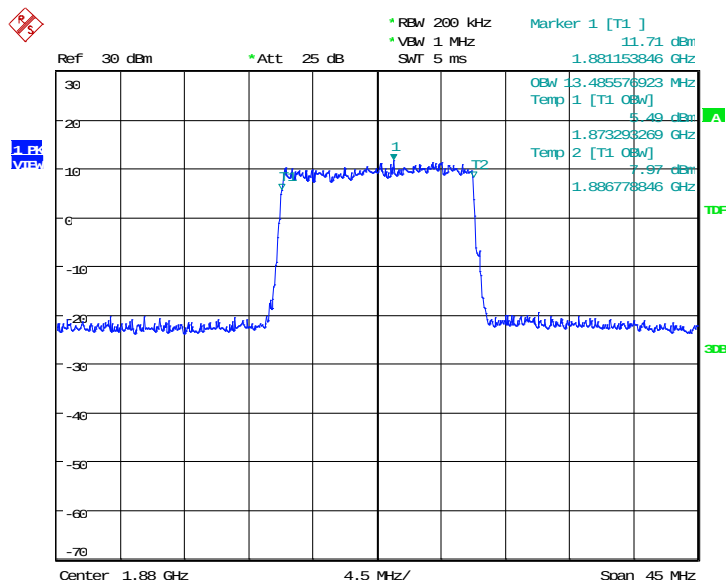


Date: 5.DEC.2019 13:39:22

LTE band 2, 15MHz (99% BW)

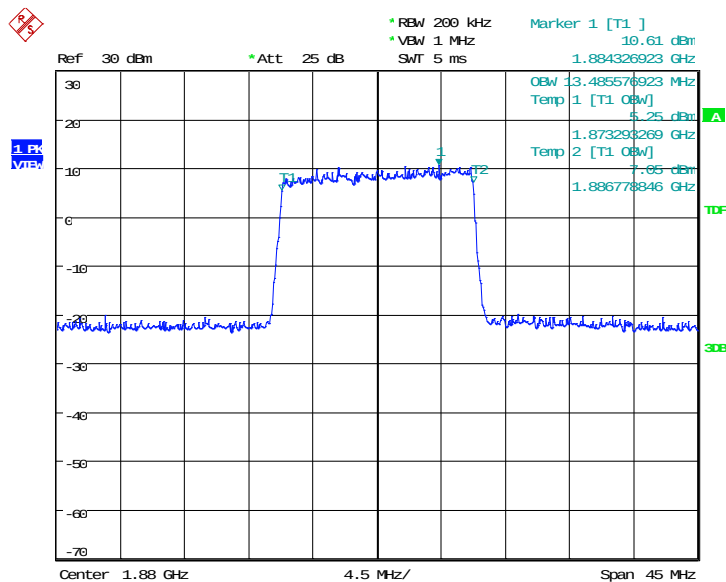
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	13485.58	13485.58	13485.58

LTE band 2, 15MHz Bandwidth, QPSK (99% BW)



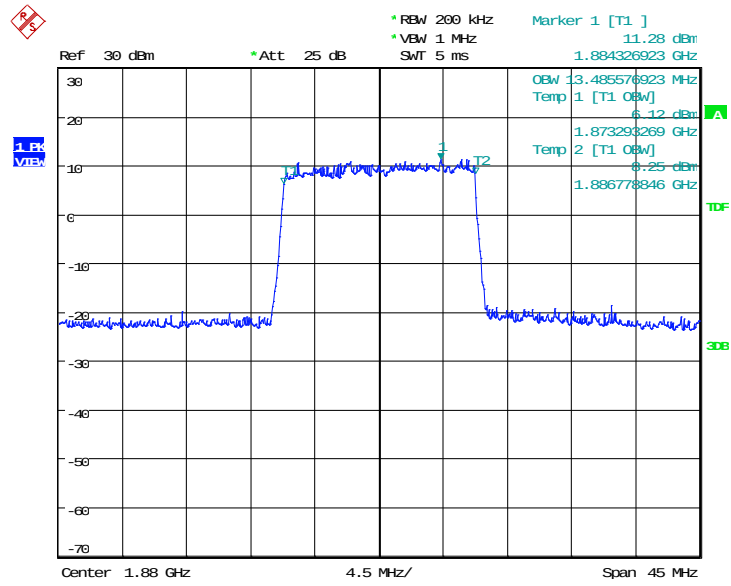
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LTE band 2, 15MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 07:16:26

LTE band 2, 15MHz Bandwidth, 64QAM (99% BW)

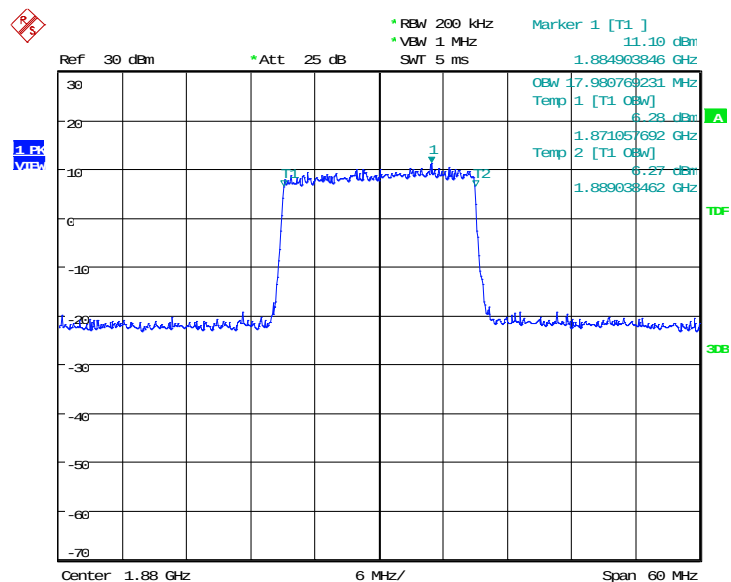


Date: 5.DEC.2019 13:42:53

LTE band 2, 20MHz (99% BW)

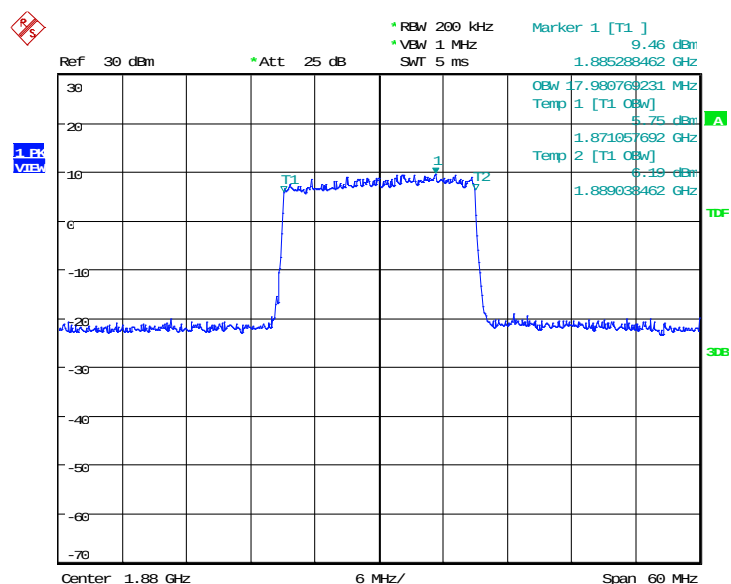
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	17980.77	17980.77	17980.77

LTE band 2, 20MHz Bandwidth, QPSK (99% BW)



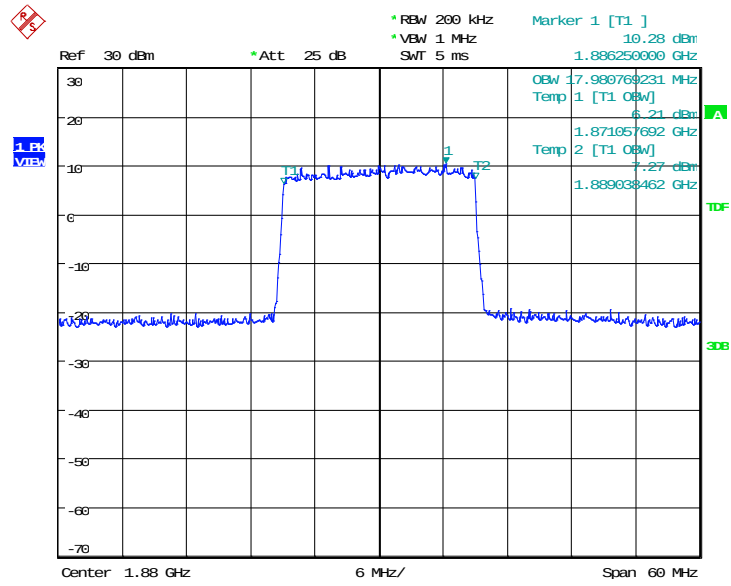
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LTE band 2, 20MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 07:21:14

LTE band 2, 20MHz Bandwidth, 64QAM (99% BW)

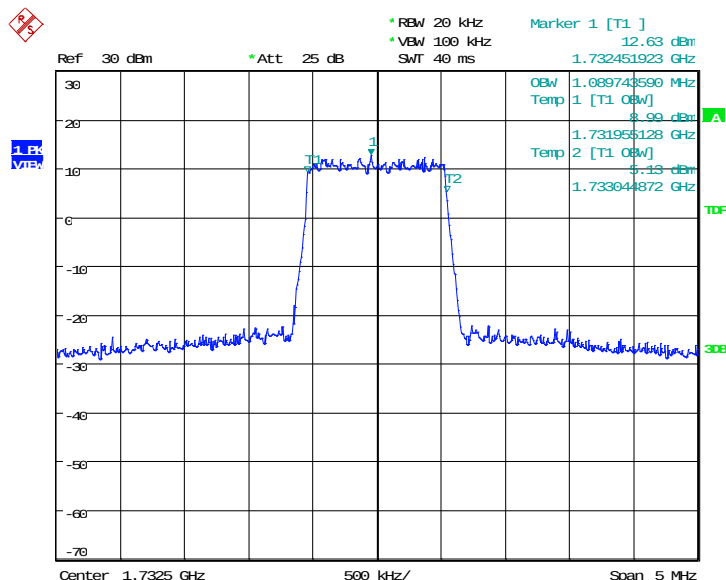


Date: 5.DEC.2019 13:46:20

LTE band 4, 1.4MHz (99% BW)

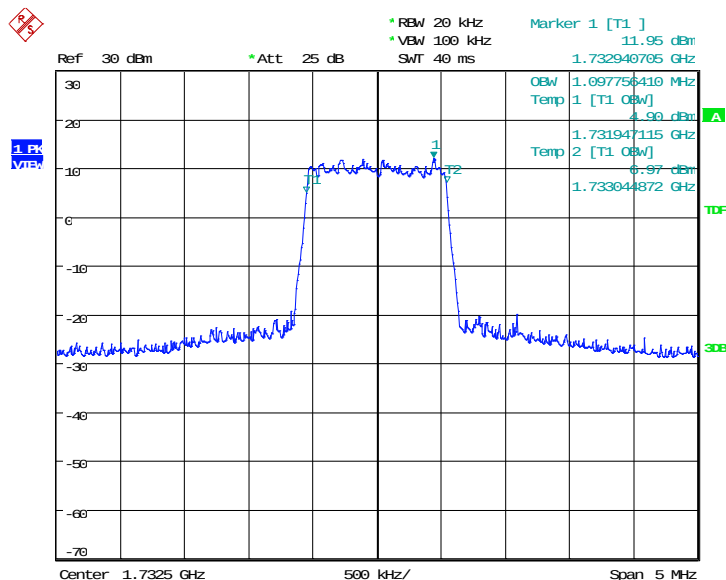
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	1089.74	1097.76	1097.76

LTE band 4, 1.4MHz Bandwidth, QPSK (99% BW)



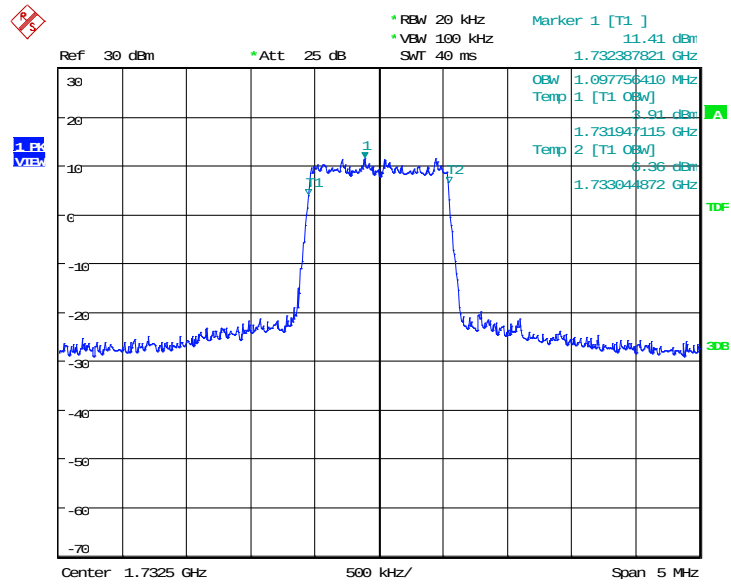
Date: 4.DEC.2019 07:26:55

LTE band 4, 1.4MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 07:27:09

LTE band 4, 1.4MHz Bandwidth, 64QAM (99% BW)

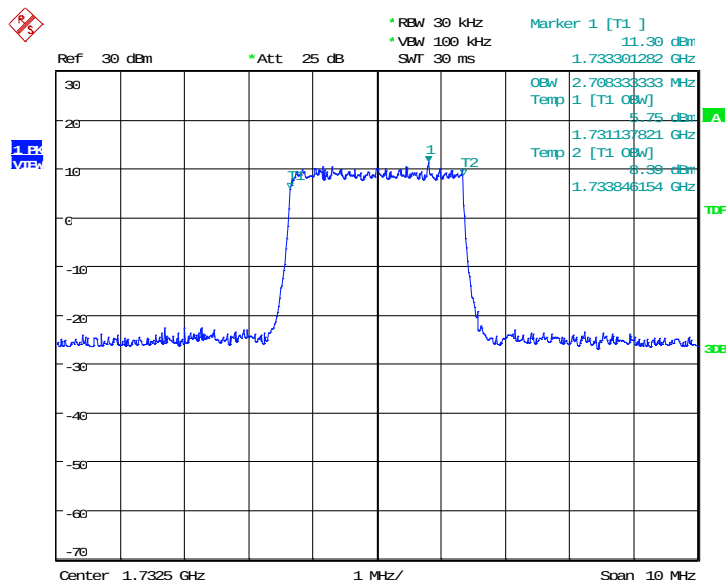


Date: 5.DEC.2019 13:50:57

LTE band 4, 3MHz (99% BW)

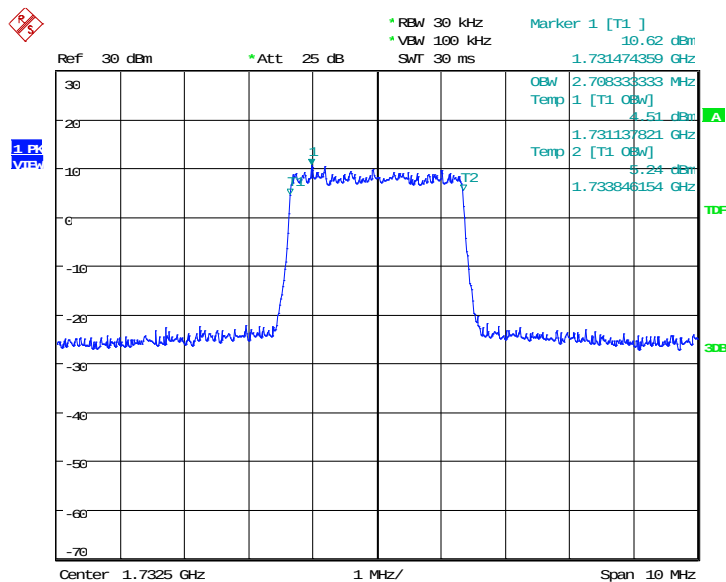
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	2708.33	2708.33	2708.33

LTE band 4, 3MHz Bandwidth, QPSK (99% BW)



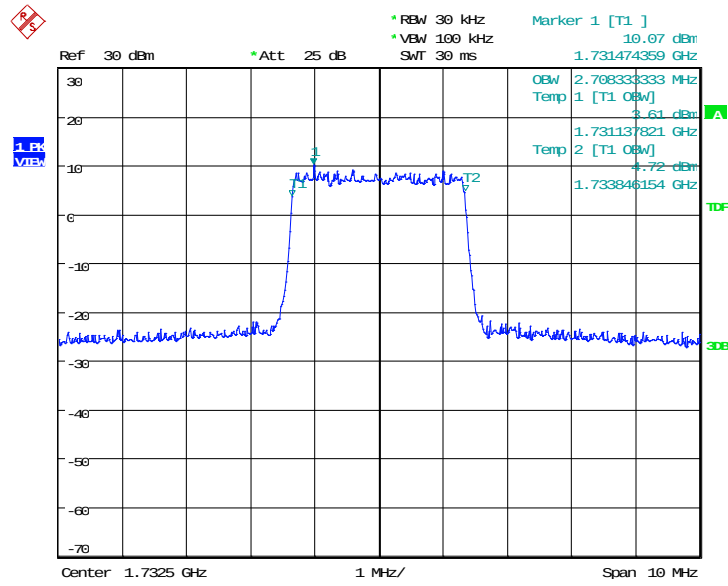
Date: 4.DEC.2019 07:31:13

LTE band 4, 3MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 07:31:27

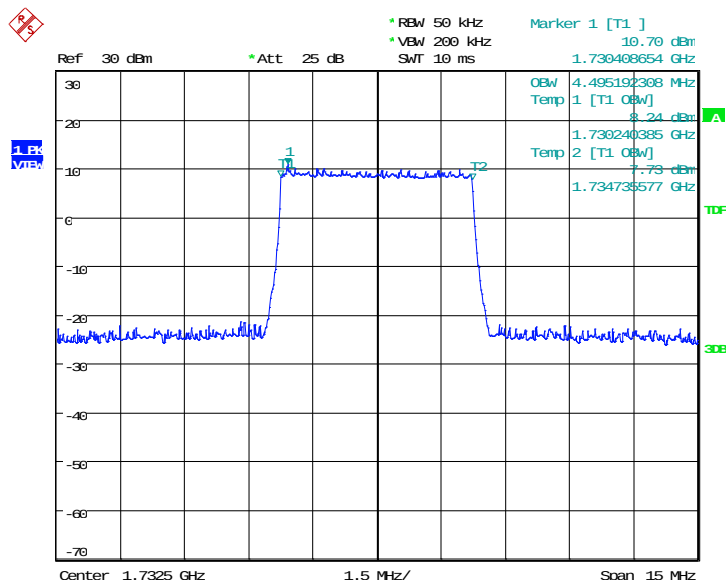
LTE band 4, 3MHz Bandwidth, 64QAM (99% BW)



LTE band 4, 5MHz (99% BW)

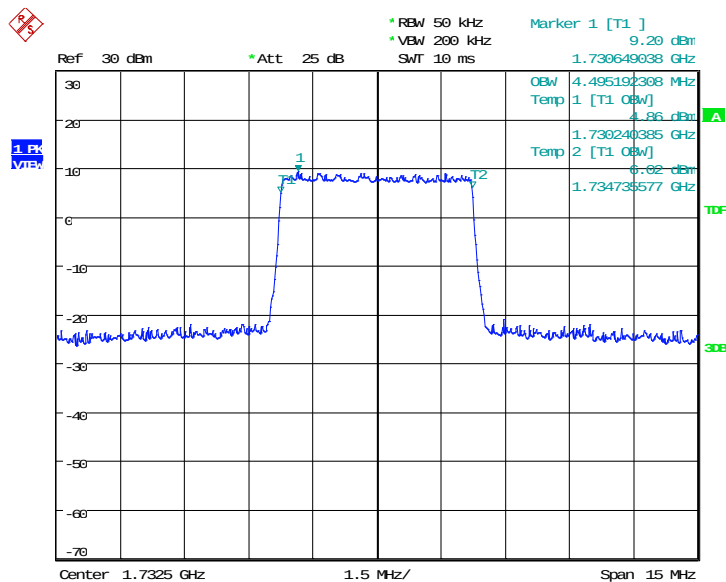
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	4495.19	4495.19	4519.23

LTE band 4, 5MHz Bandwidth, QPSK (99% BW)



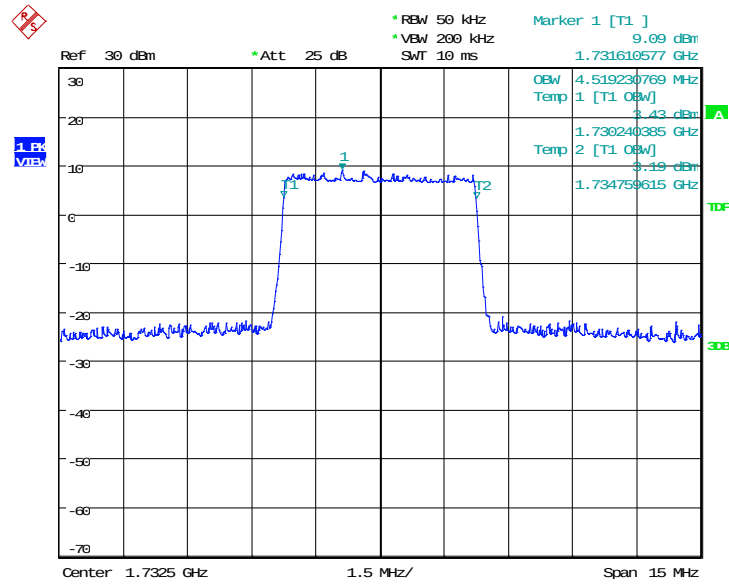
Date: 4.DEC.2019 07:35:31

LTE band 4, 5MHz Bandwidth,16QAM (99% BW)



Date: 4.DEC.2019 07:35:44

LTE band 4, 5MHz Bandwidth,64QAM (99% BW)

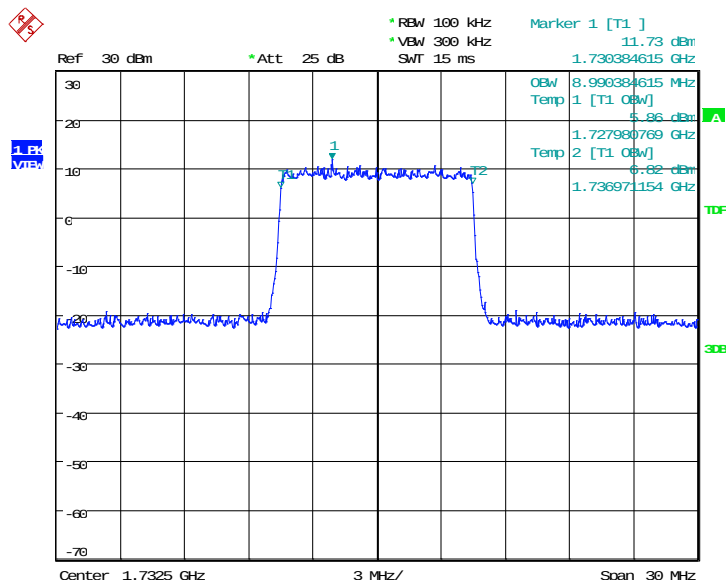


Date: 5.DEC.2019 13:57:54

LTE band 4, 10MHz (99% BW)

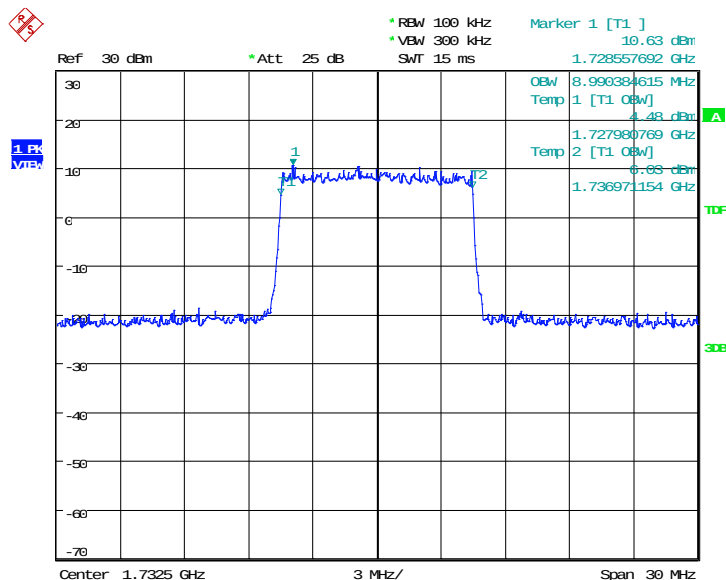
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	8990.38	8990.38	9038.46

LTE band 4, 10MHz Bandwidth, QPSK (99% BW)



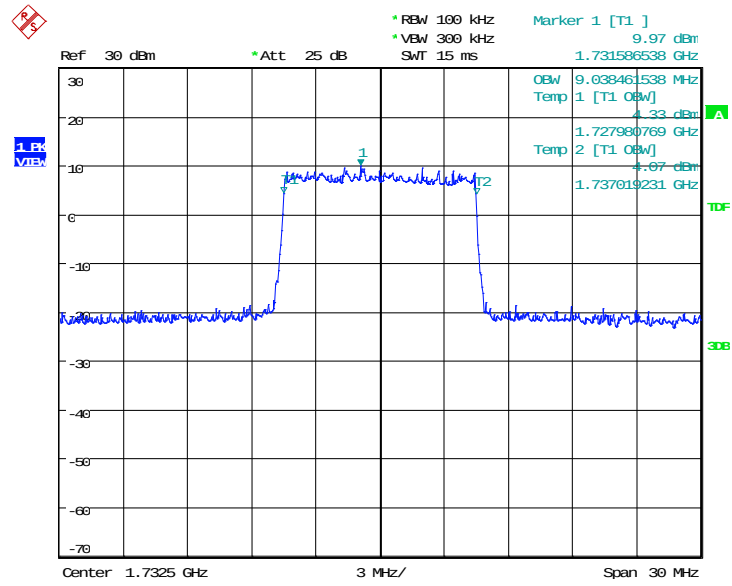
Date: 4.DEC.2019 07:39:51

LTE band 4, 10MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 07:40:05

LTE band 4, 10MHz Bandwidth, 64QAM (99% BW)

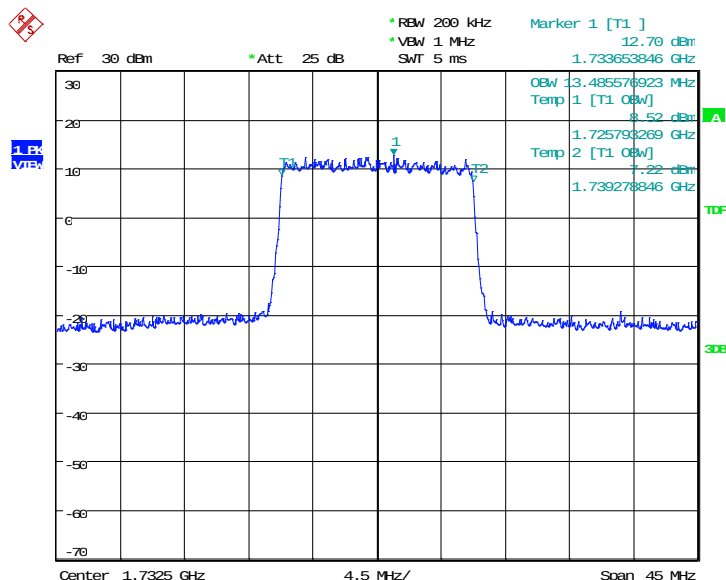


Date: 5.DEC.2019 14:01:24

LTE band 4, 15MHz (99% BW)

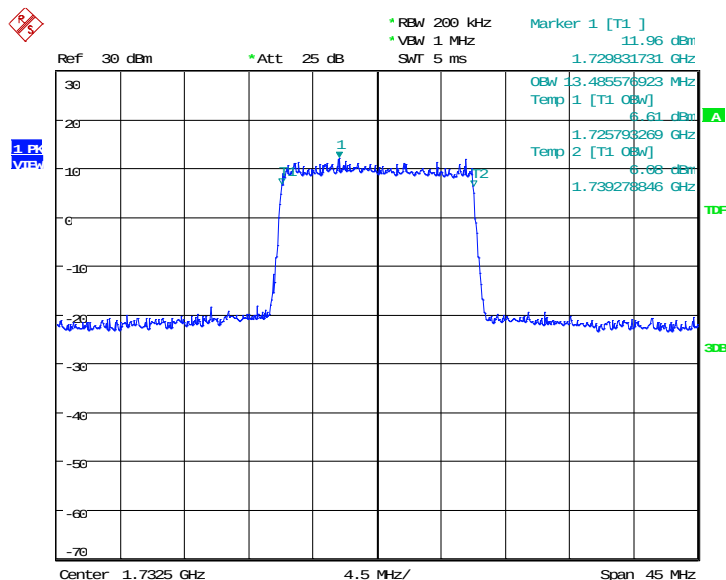
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	13485.58	13485.58	13485.58

LTE band 4, 15MHz Bandwidth, QPSK (99% BW)



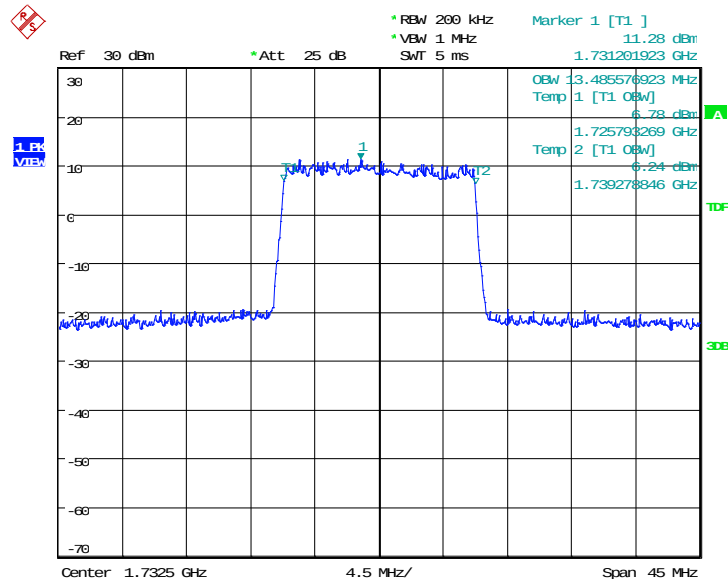
Date: 4.DEC.2019 07:44:12

LTE band 4, 15MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 07:44:26

LTE band 4, 15MHz Bandwidth, 64QAM (99% BW)

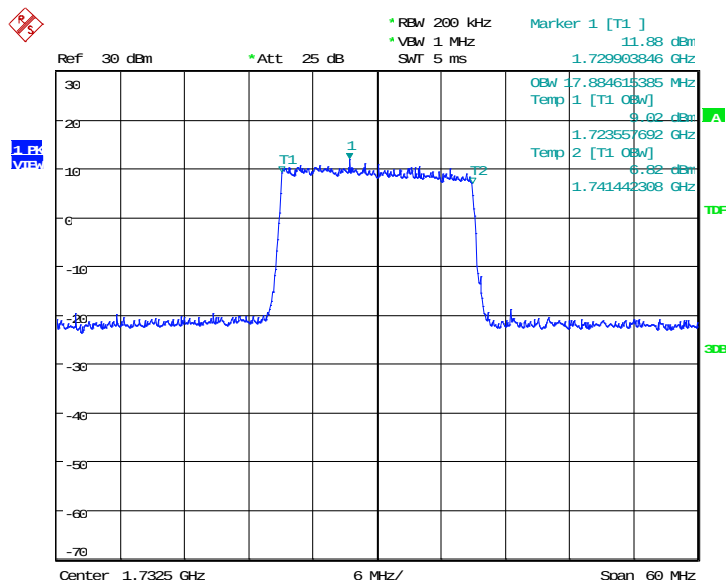


Date: 5.DEC.2019 14:04:54

LTE band 4, 20MHz (99% BW)

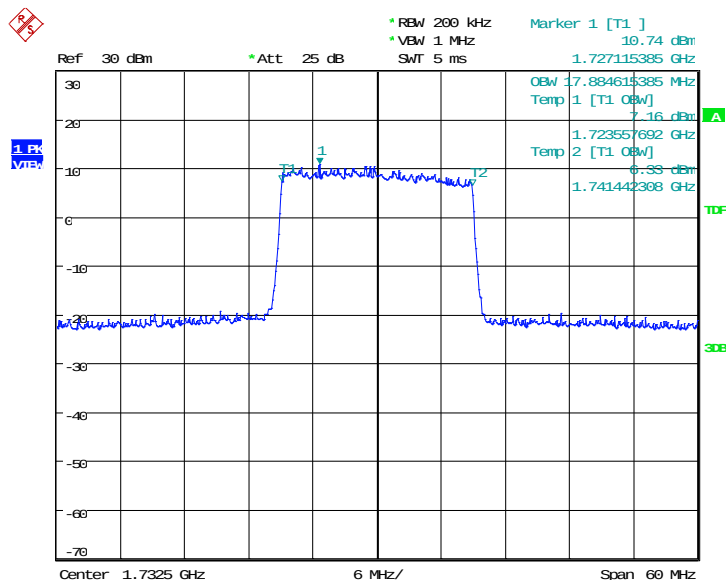
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	17884.62	17884.62	17884.62

LTE band 4, 20MHz Bandwidth, QPSK (99% BW)



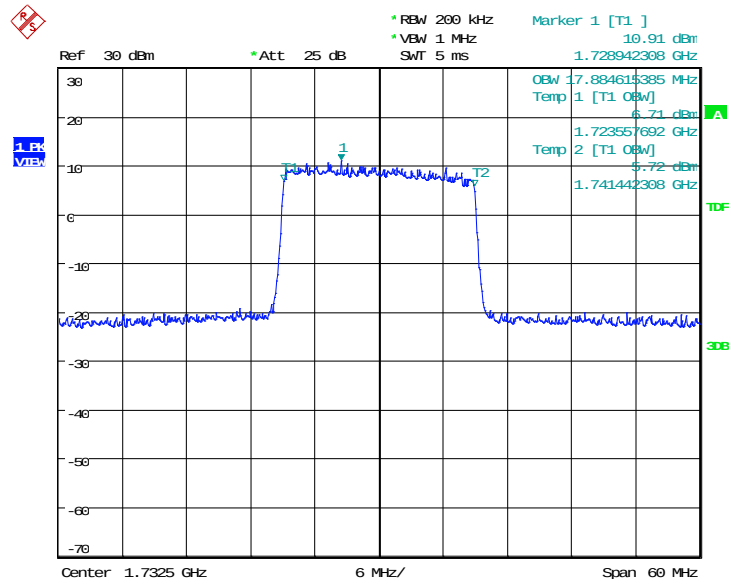
Date: 5.DEC.2019 12:47:33

LTE band 4, 20MHz Bandwidth, 16QAM (99% BW)



Date: 5.DEC.2019 12:47:47

LTE band 4, 20MHz Bandwidth, 64QAM (99% BW)

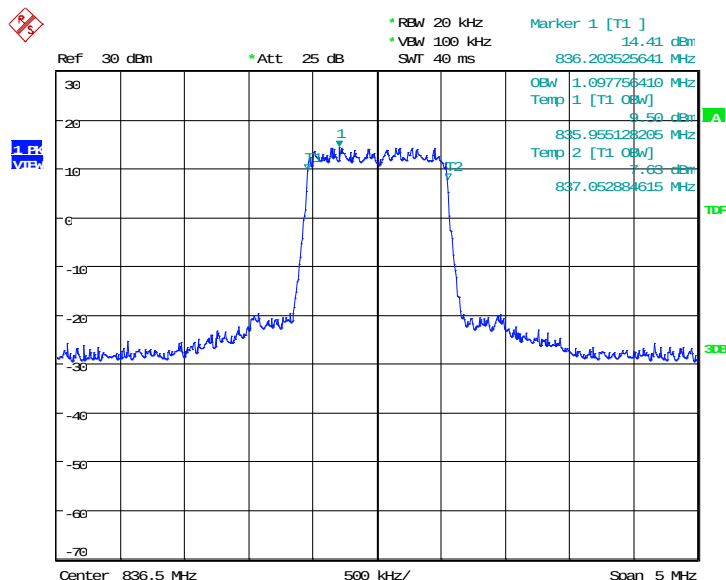


Date: 5.DEC.2019 14:24:45

LTE band 5, 1.4MHz (99% BW)

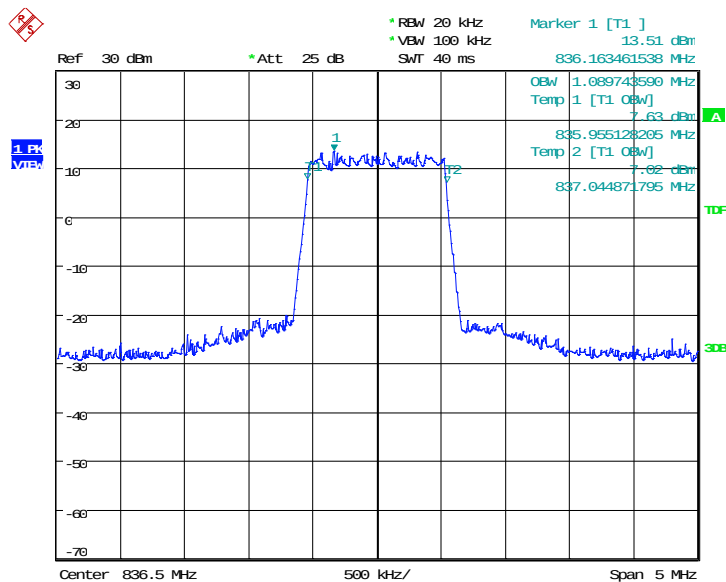
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	1097.76	1089.74	1097.76

LTE band 5, 1.4MHz Bandwidth, QPSK (99% BW)



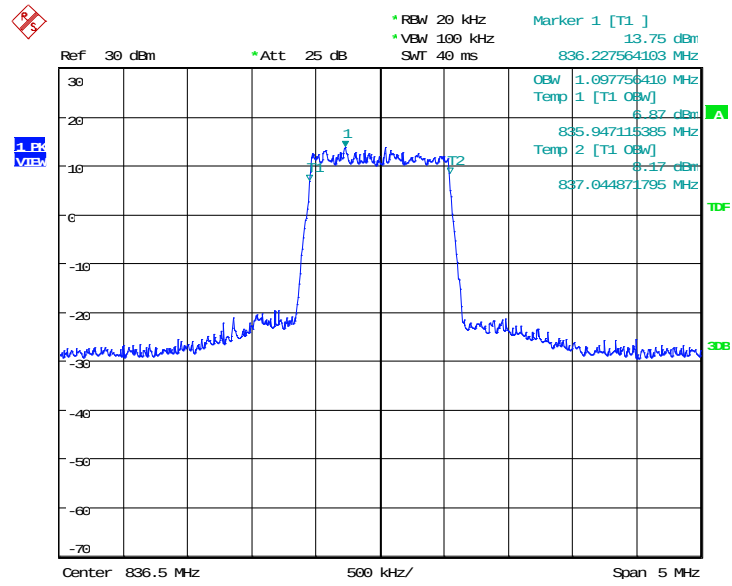
Date: 4.DEC.2019 06:41:31

LTE band 5, 1.4MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 06:41:44

LTE band 5, 1.4MHz Bandwidth, 64QAM (99% BW)

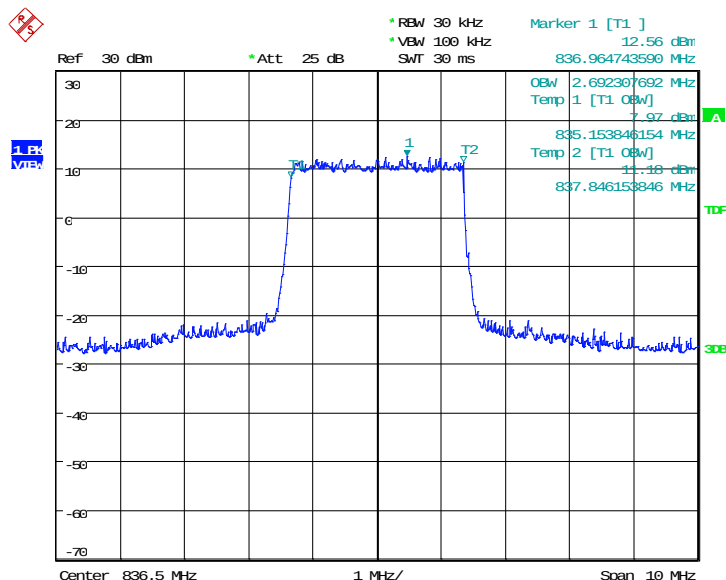


Date: 5.DEC.2019 13:14:51

LTE band 5, 3MHz (99% BW)

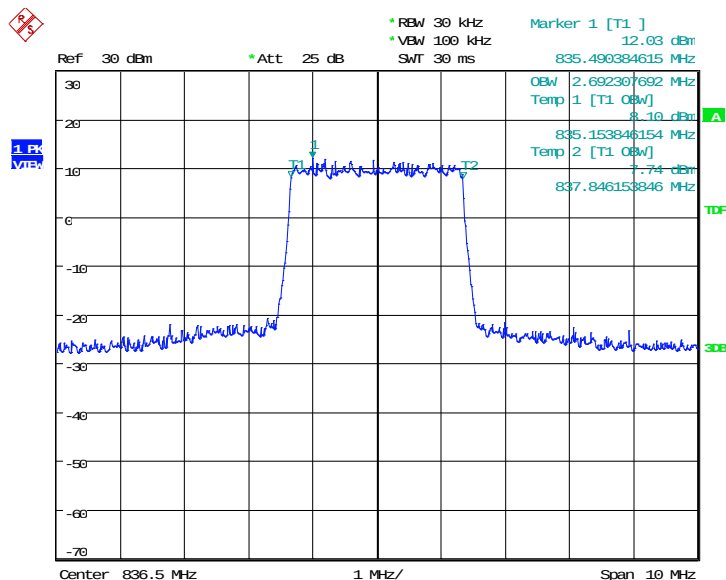
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	2692.31	2692.31	2692.31

LTE band 5, 3MHz Bandwidth, QPSK (99% BW)



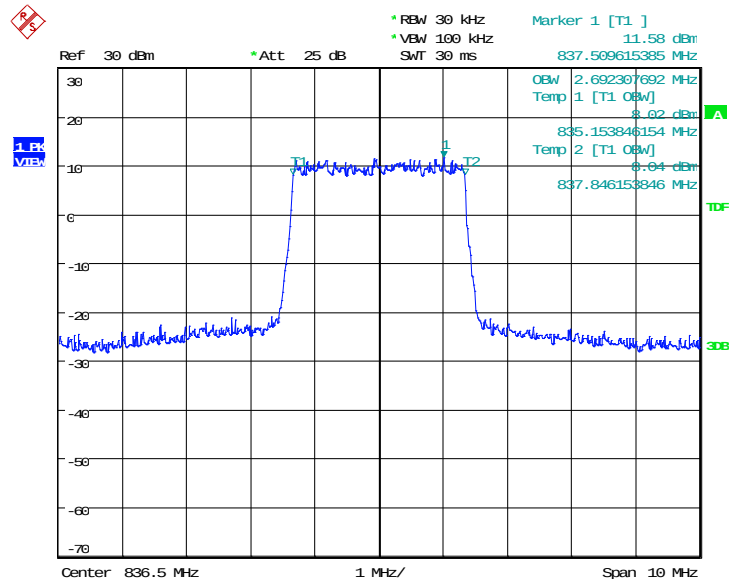
Date: 4.DEC.2019 06:45:52

LTE band 5, 3MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 06:46:05

LTE band 5, 3MHz Bandwidth, 64QAM (99% BW)

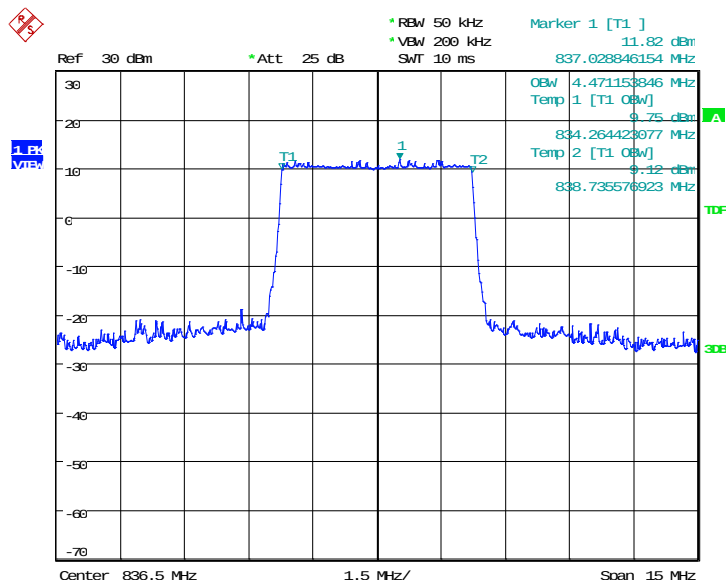


Date: 5.DEC.2019 13:18:19

LTE band 5, 5MHz (99% BW)

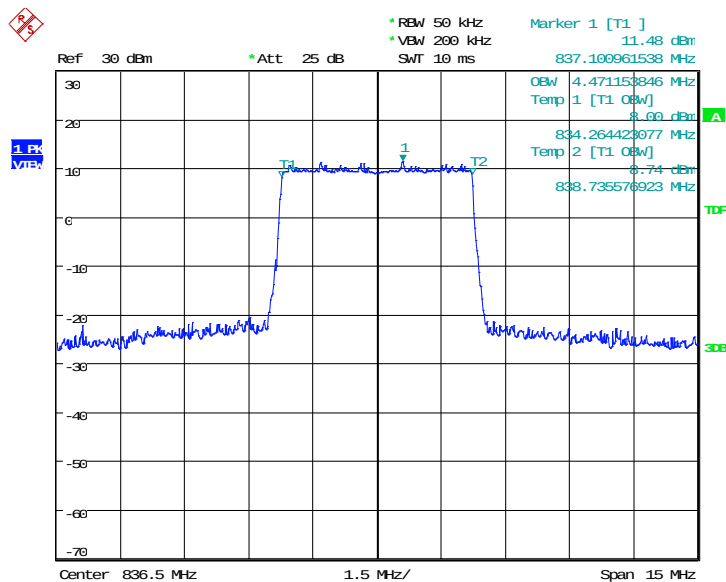
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	4471.15	4471.15	4519.23

LTE band 5, 5MHz Bandwidth, QPSK (99% BW)



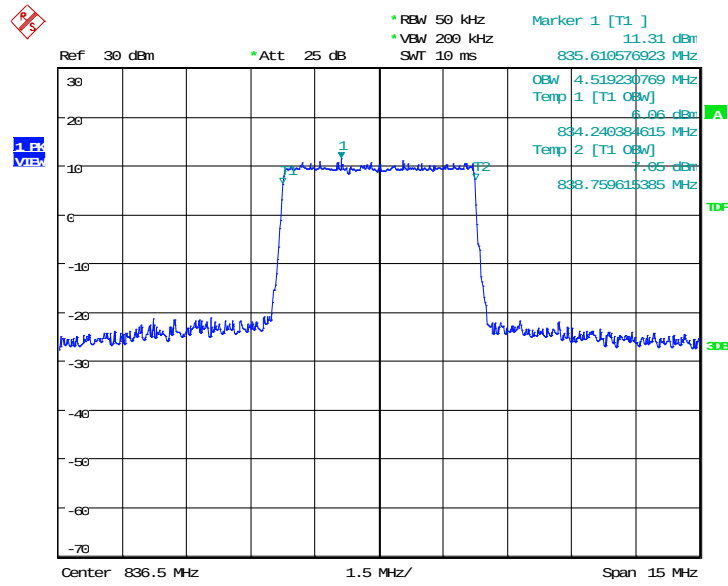
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LTE band 5, 5MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 06:50:26

LTE band 5, 5MHz Bandwidth,64QAM (99% BW)

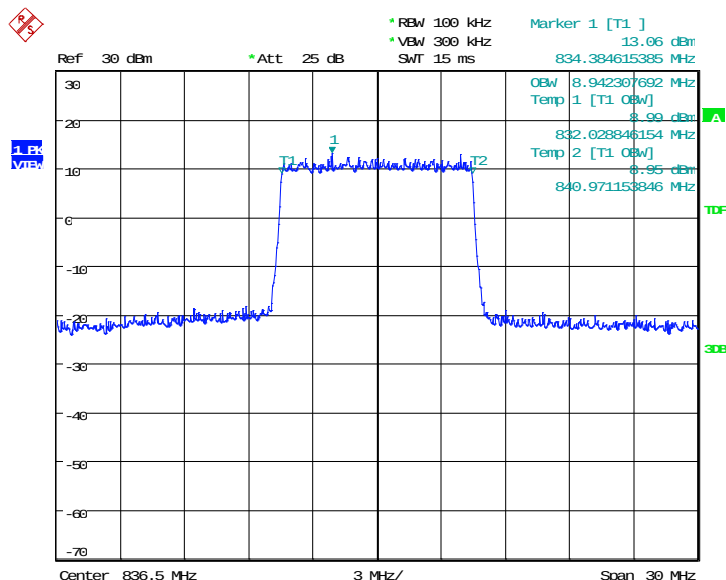


Date: 5.DEC.2019 13:21:46

LTE band 5, 10MHz (99% BW)

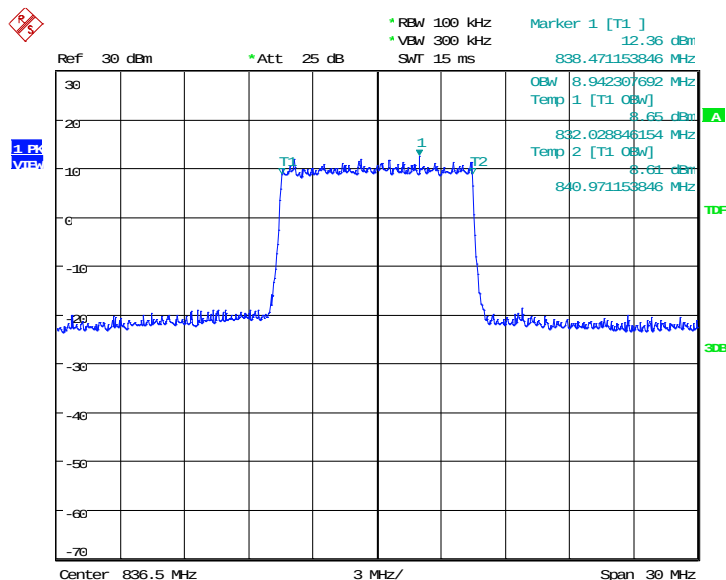
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	8942.31	8942.31	8942.31

LTE band 5, 10MHz Bandwidth, QPSK (99% BW)



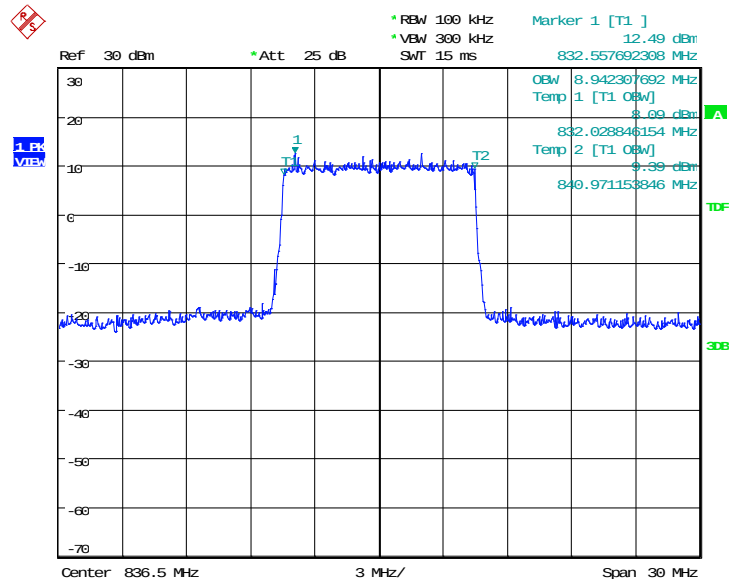
Date: 4.DEC.2019 06:54:33

LTE band 5, 10MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 06:54:47

LTE band 5, 10MHz Bandwidth, 64QAM (99% BW)

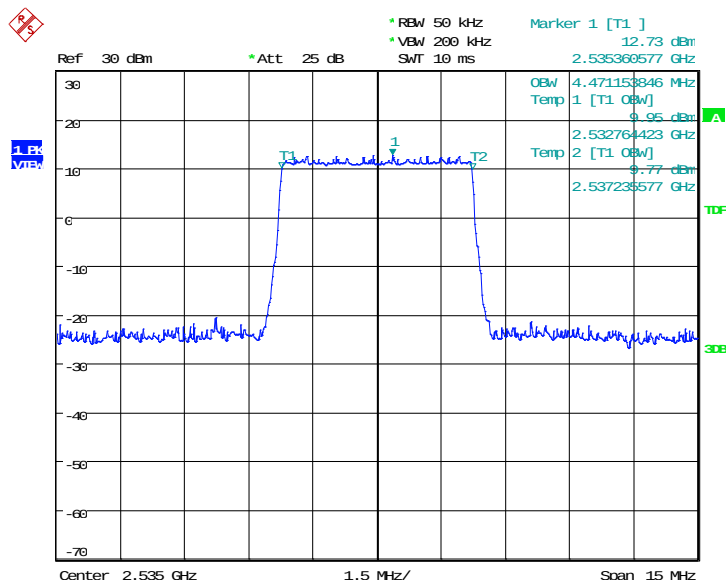


Date: 5.DEC.2019 13:25:16

LTE band 7, 5MHz (99% BW)

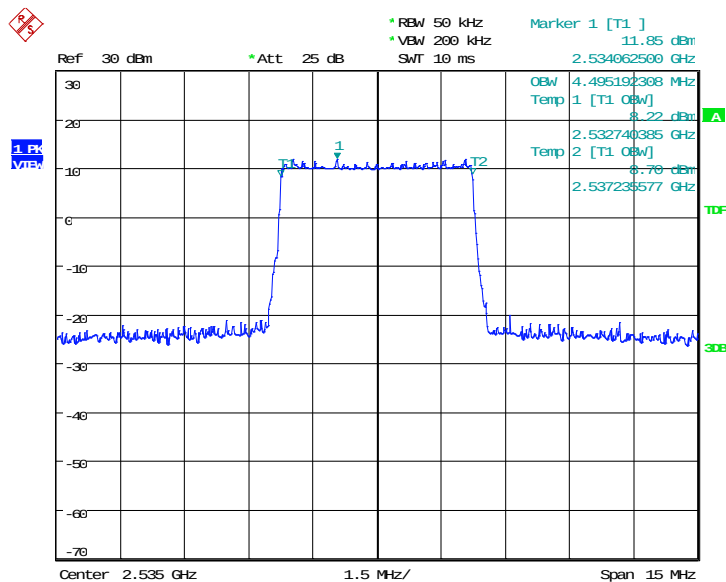
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2535.0	QPSK	16QAM	64QAM
	4471.15	4495.19	4495.19

LTE band 7, 5MHz Bandwidth, QPSK (99% BW)



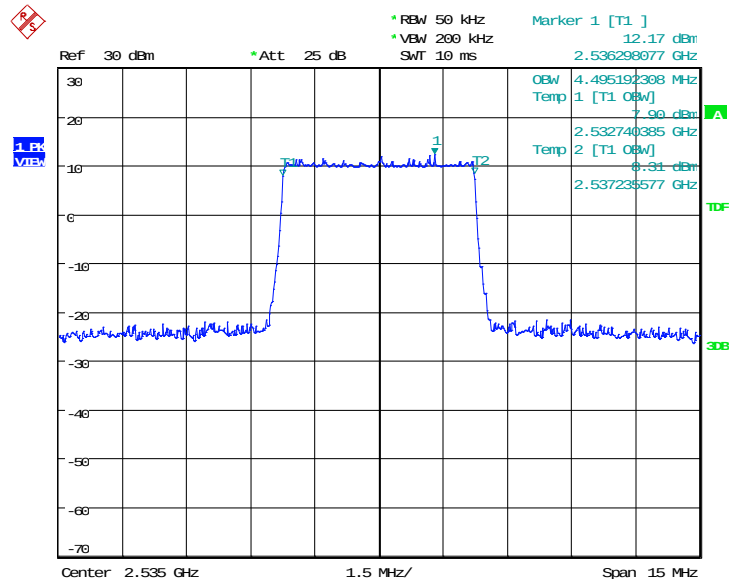
Date: 4.DEC.2019 06:15:24

LTE band 7, 5MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 06:15:37

LTE band 7, 5MHz Bandwidth,64QAM (99% BW)

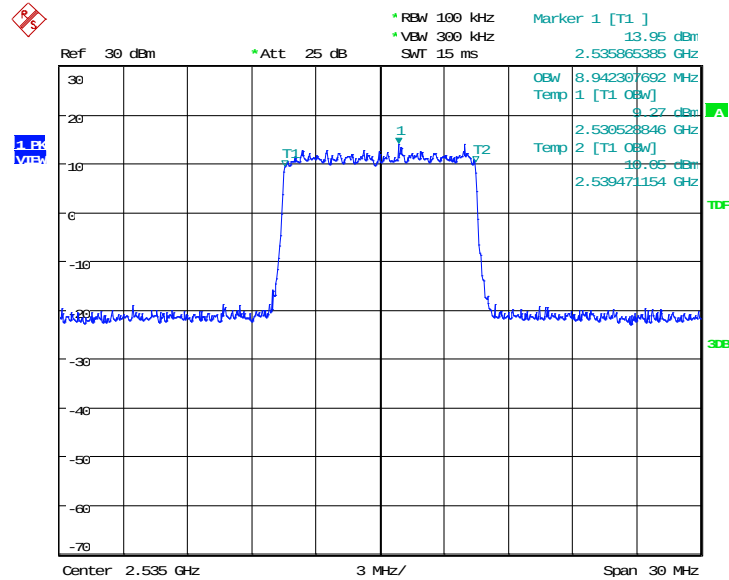


Date: 5.DEC.2019 12:59:44

LTE band 7, 10MHz (99% BW)

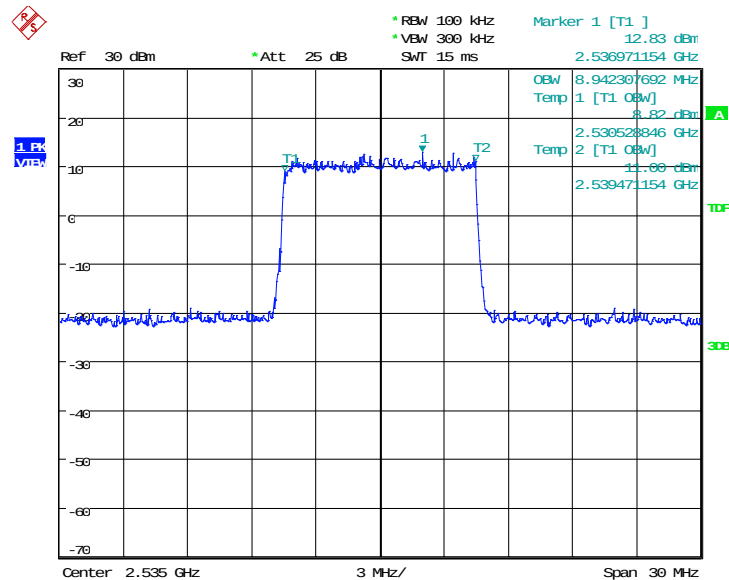
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2535.0	QPSK	16QAM	64QAM
	8942.31	8942.31	8942.31

LTE band 7, 10MHz Bandwidth, QPSK (99% BW)



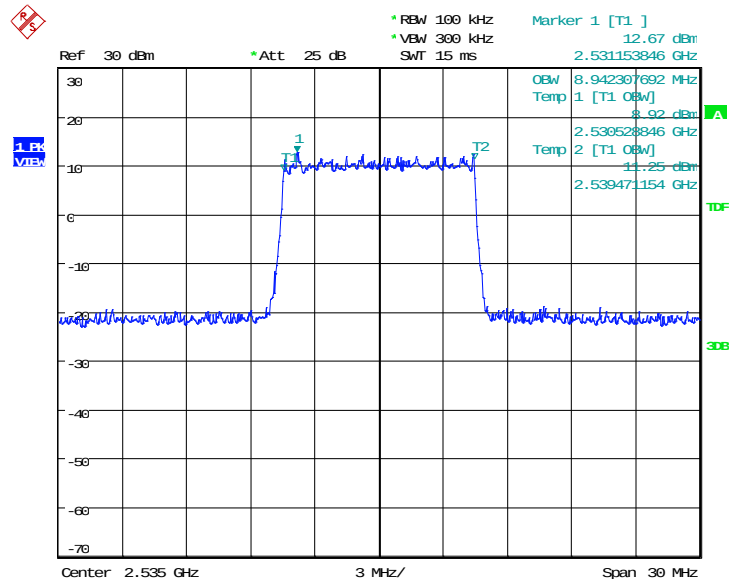
Date: 4.DEC.2019 06:19:44

LTE band 7, 10MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 06:19:58

LTE band 7, 10MHz Bandwidth, 64QAM (99% BW)

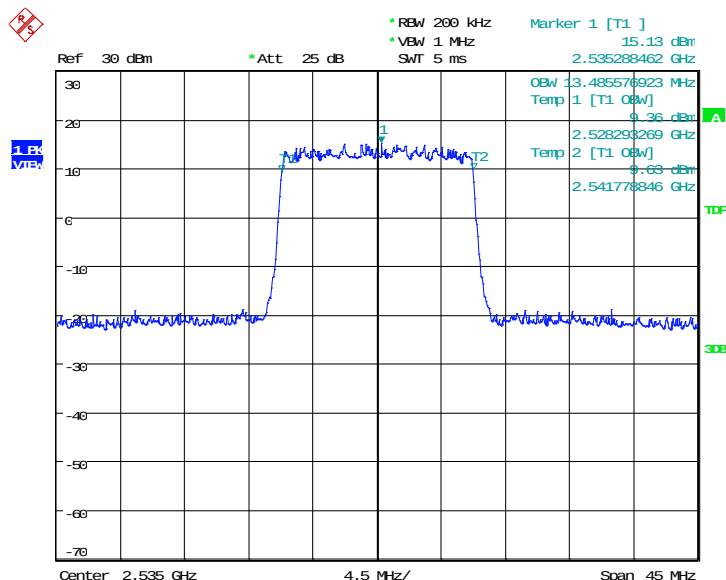


Date: 5.DEC.2019 13:03:14

LTE band 7, 15MHz (99% BW)

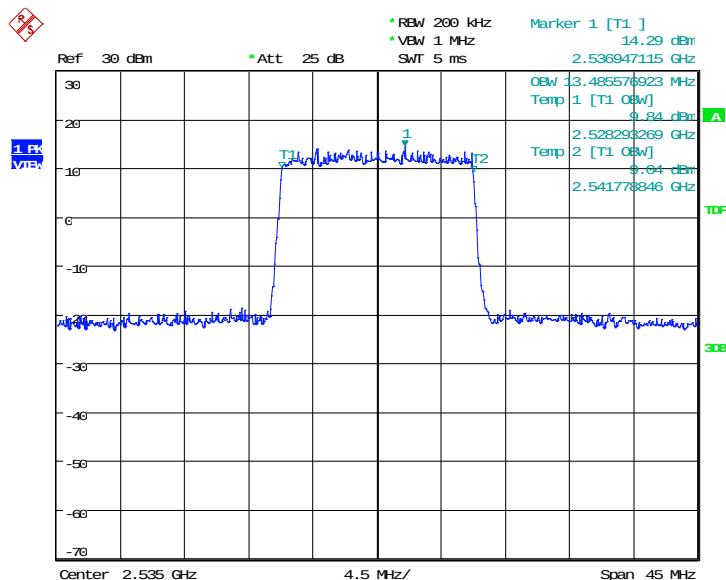
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2535.0	QPSK	16QAM	64QAM
	13485.58	13485.58	13485.58

LTE band 7, 15MHz Bandwidth, QPSK (99% BW)



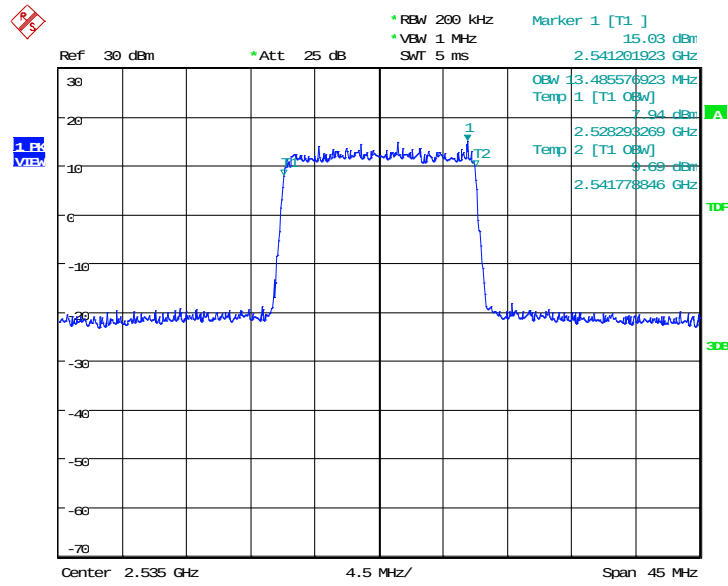
Date: 4.DEC.2019 06:24:02

LTE band 7, 15MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 06:24:16

LTE band 7, 15MHz Bandwidth, 64QAM (99% BW)

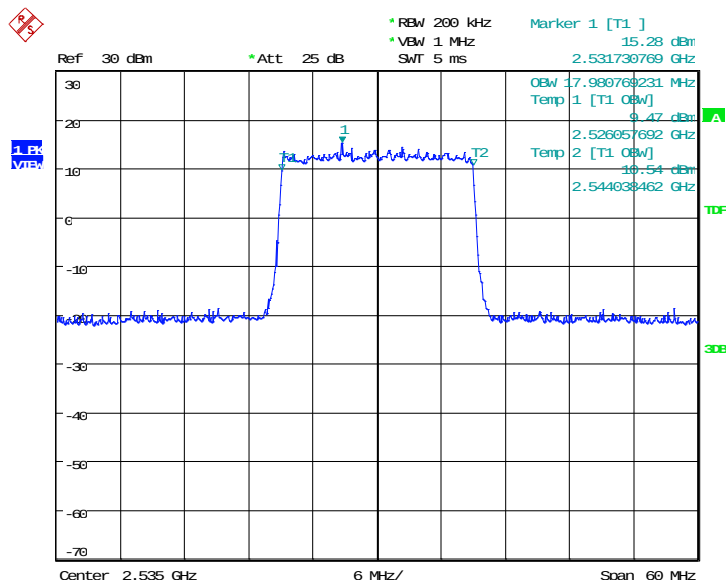


Date: 5.DEC.2019 13:06:41

LTE band 7, 20MHz (99% BW)

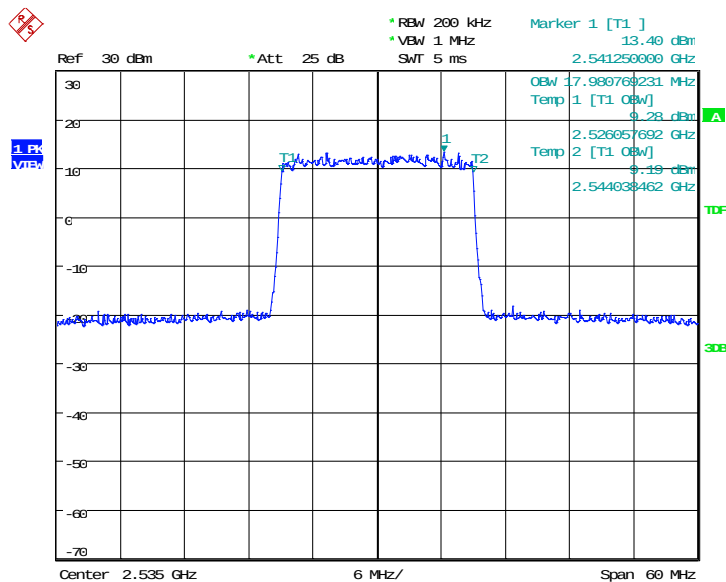
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2535.0	QPSK	16QAM	64QAM
	17980.77	17980.77	17980.77

LTE band 7, 20MHz Bandwidth, QPSK (99% BW)



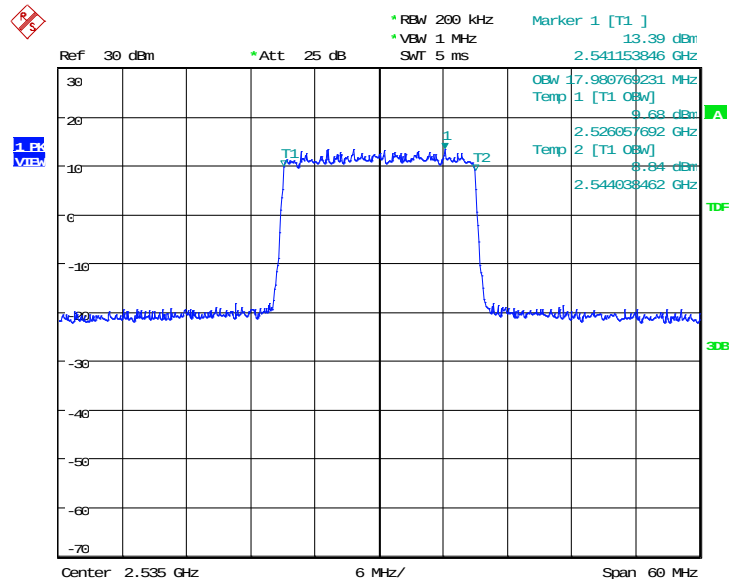
Date: 4.DEC.2019 06:28:23

LTE band 7, 20MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 06:28:37

LTE band 7, 20MHz Bandwidth, 64QAM (99% BW)



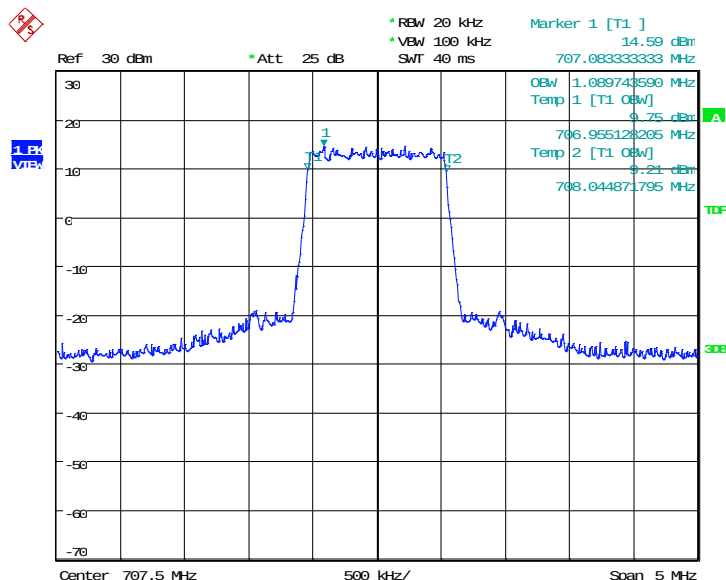
Date: 5.DEC.2019 13:10:12

Note: Expanded measurement uncertainty is $U = 3428\text{Hz}$, $k = 2$

LTE band 12, 1.4MHz (99% BW)

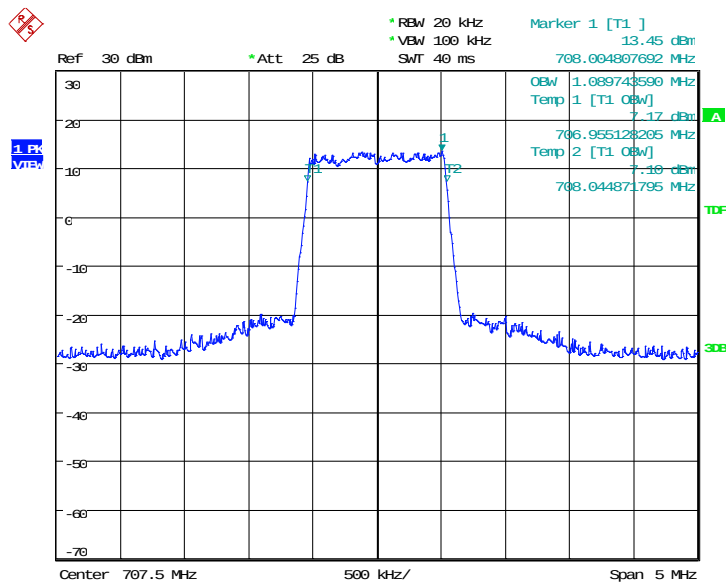
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
707.5	QPSK	16QAM	64QAM
	1089.74	1089.74	1089.74

LTE band 12, 1.4MHz Bandwidth, QPSK (99% BW)



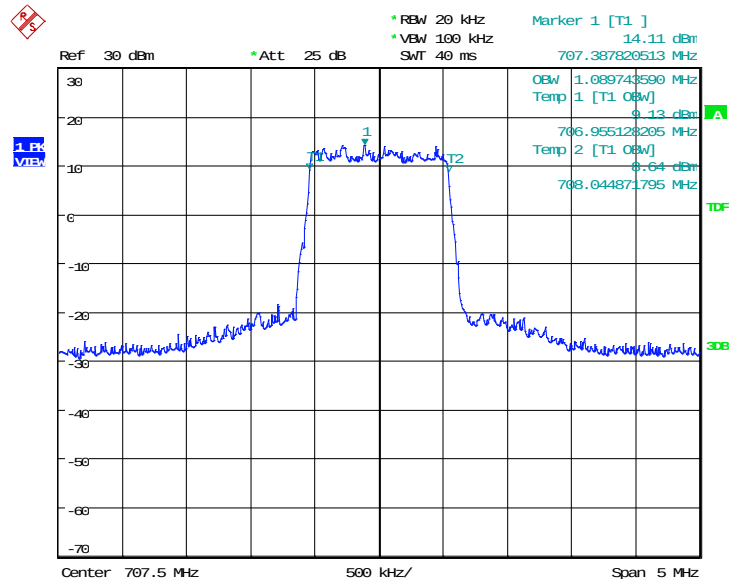
Date: 4.DEC.2019 11:17:17

LTE band 12, 1.4MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 11:17:30

LTE band 12, 1.4MHz Bandwidth, 64QAM (99% BW)

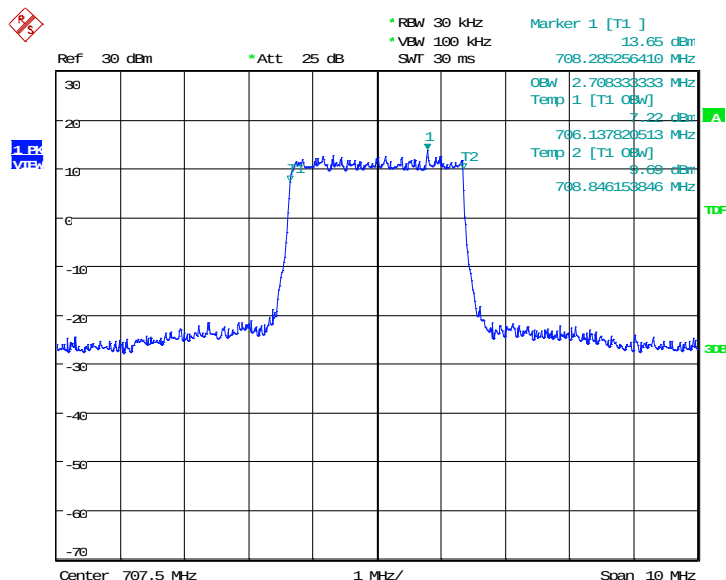


Date: 5.DEC.2019 19:09:51

LTE band 12, 3MHz (99% BW)

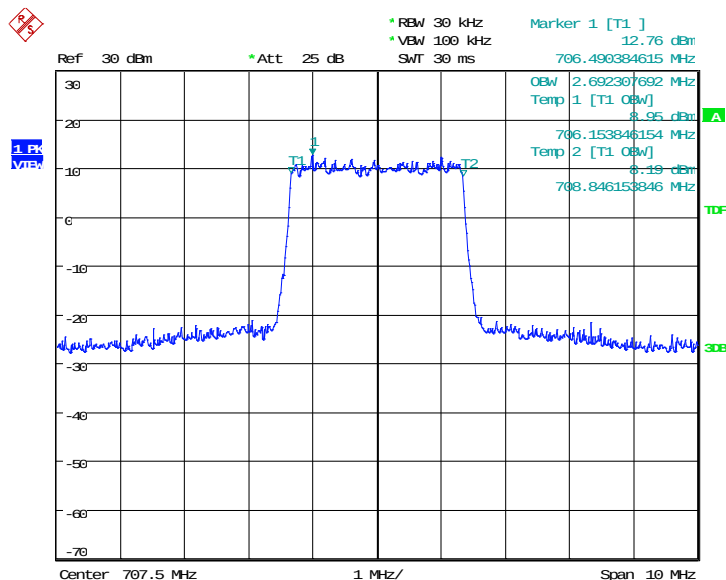
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
707.5	QPSK	16QAM	64QAM
	2708.33	2692.31	2692.31

LTE band 12, 3MHz Bandwidth, QPSK (99% BW)



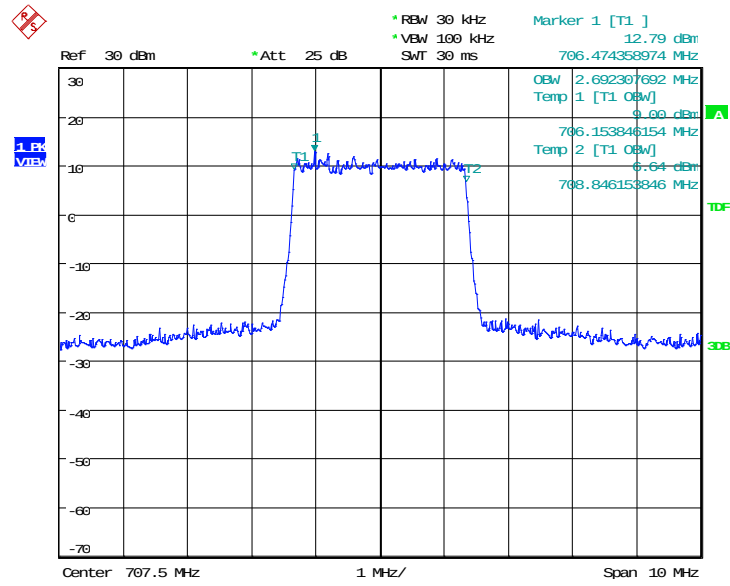
Date: 4.DEC.2019 11:21:37

LTE band 12, 3MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 11:21:51

LTE band 12, 3MHz Bandwidth, 64QAM (99% BW)

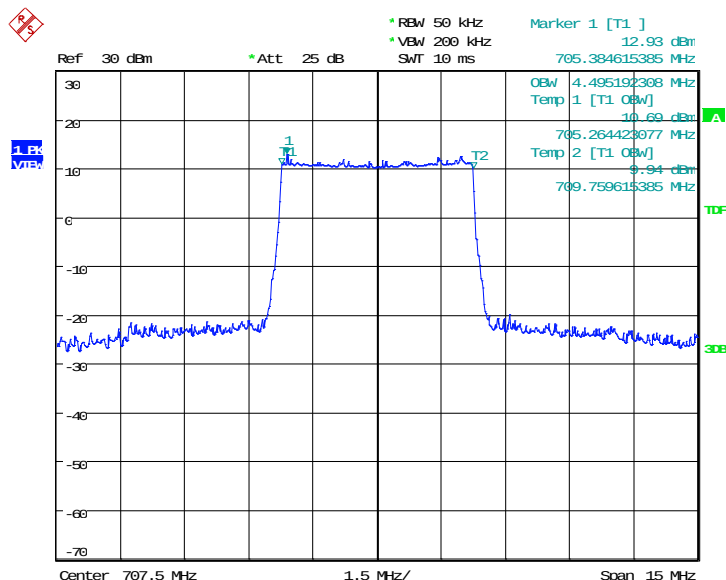


Date: 5.DEC.2019 19:13:22

LTE band 12, 5MHz (99% BW)

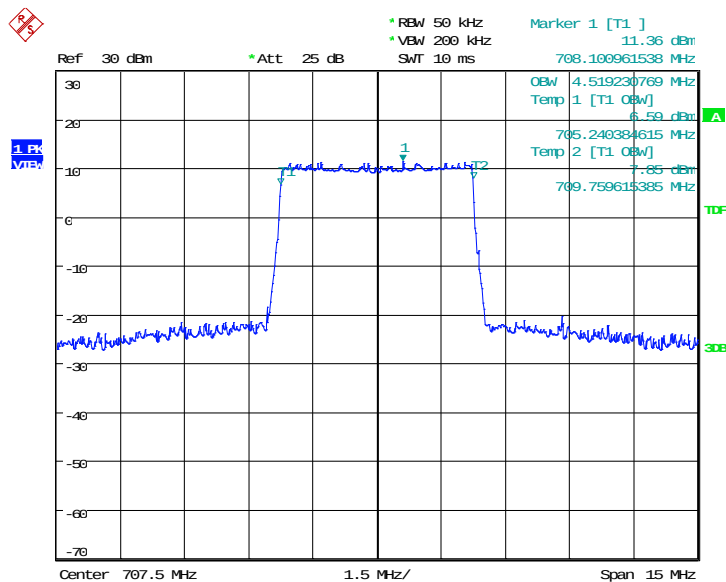
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
707.5	QPSK	16QAM	64QAM
	4495.19	4519.23	4495.19

LTE band 12, 5MHz Bandwidth, QPSK (99% BW)



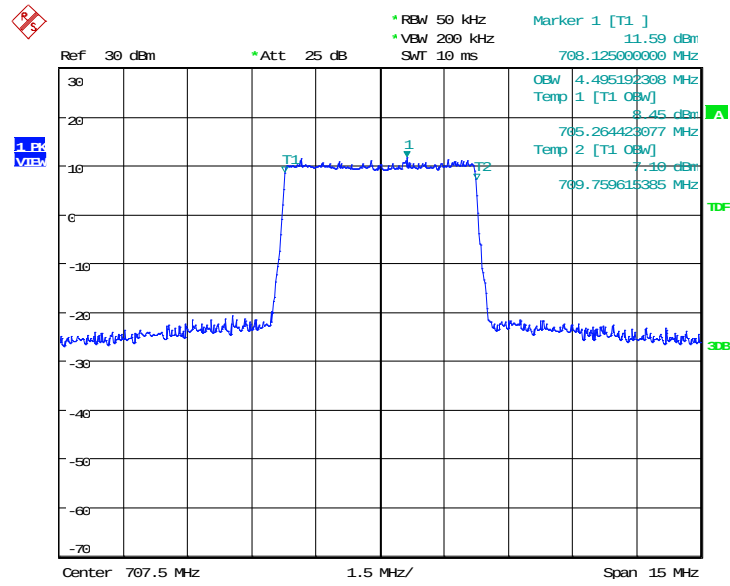
Date: 4.DEC.2019 11:25:55

LTE band 12, 5MHz Bandwidth,16QAM (99% BW)



Date: 4.DEC.2019 11:26:09

LTE band 12, 5MHz Bandwidth,64QAM (99% BW)

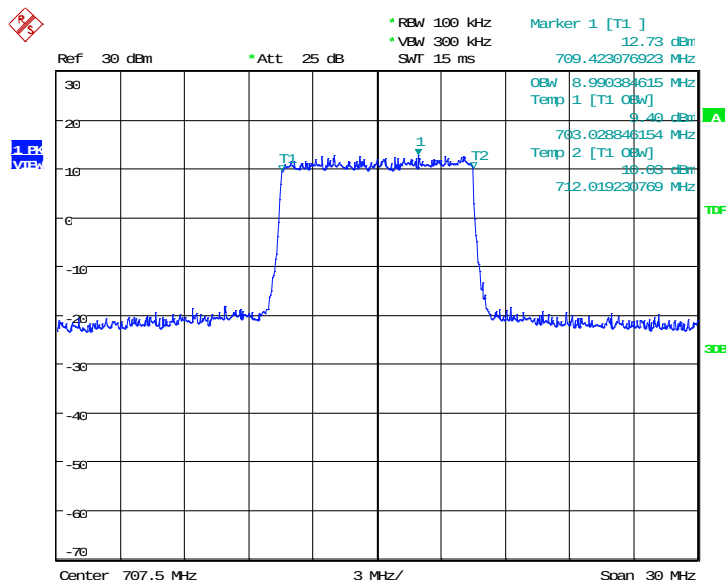


Date: 5.DEC.2019 19:16:49

LTE band 12, 10MHz (99% BW)

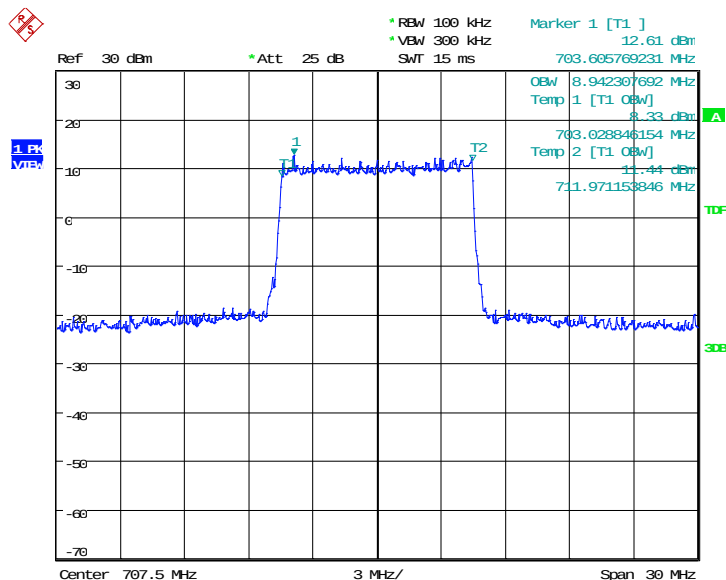
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
707.5	QPSK	16QAM	64QAM
	8990.38	8942.31	9038.46

LTE band 12, 10MHz Bandwidth, QPSK (99% BW)



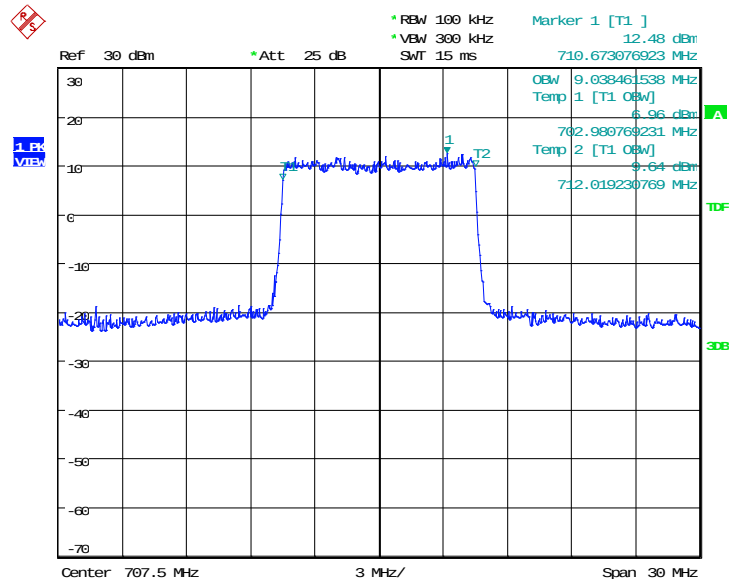
Date: 4.DEC.2019 11:30:13

LTE band 12, 10MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 11:30:27

LTE band 12, 10MHz Bandwidth, 64QAM (99% BW)

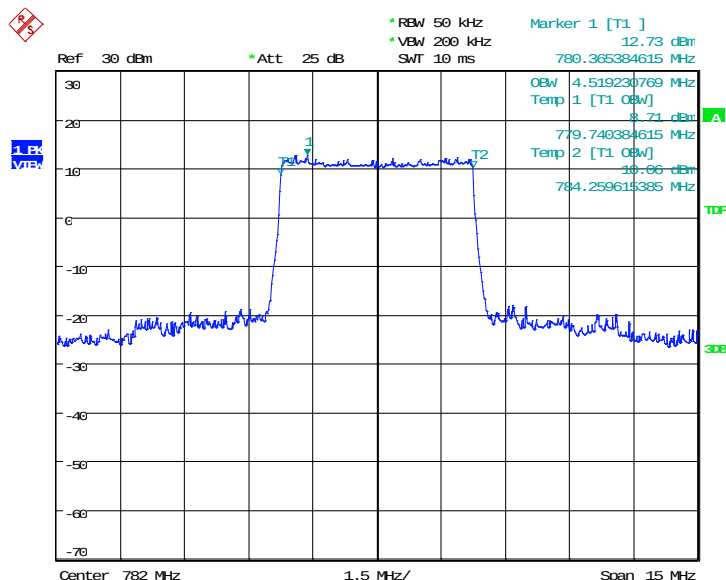


Date: 5.DEC.2019 19:20:19

LTE band 13, 5MHz (99% BW)

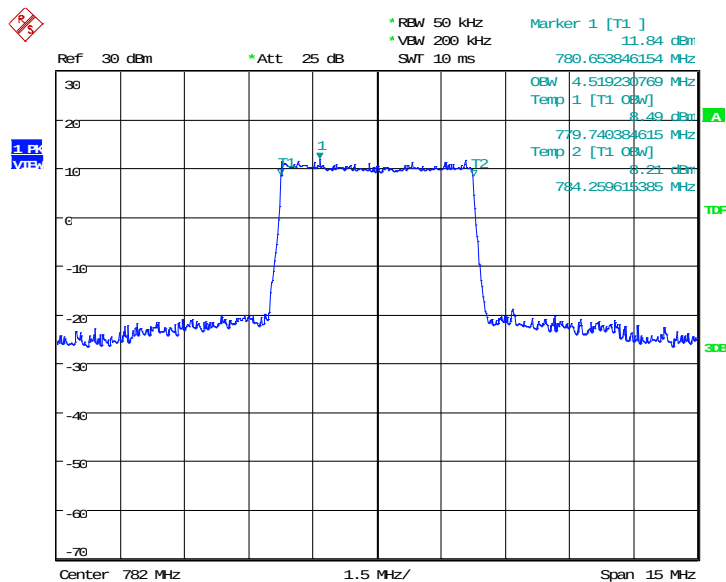
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
782.0	QPSK	16QAM	64QAM
	4519.23	4519.23	4471.15

LTE band 13, 5MHz Bandwidth, QPSK (99% BW)



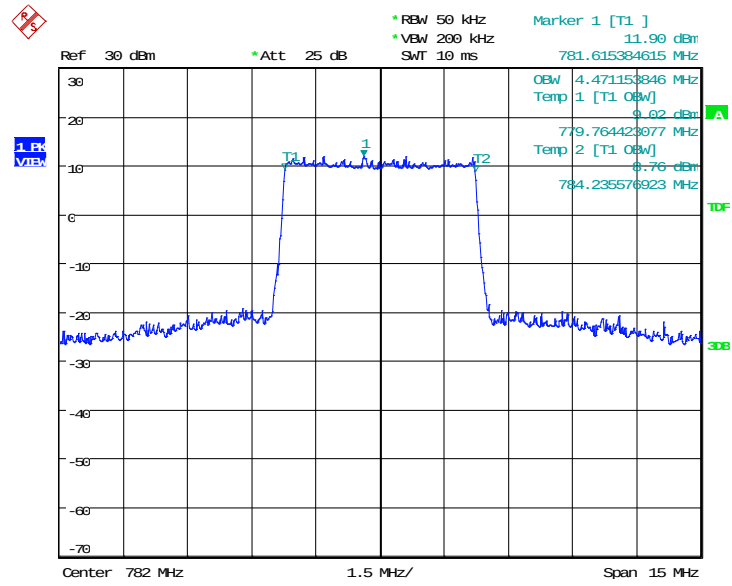
Date: 4.DEC.2019 06:32:48

LTE band 13, 5MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 06:33:02

LTE band 13, 5MHz Bandwidth,64QAM (99% BW)

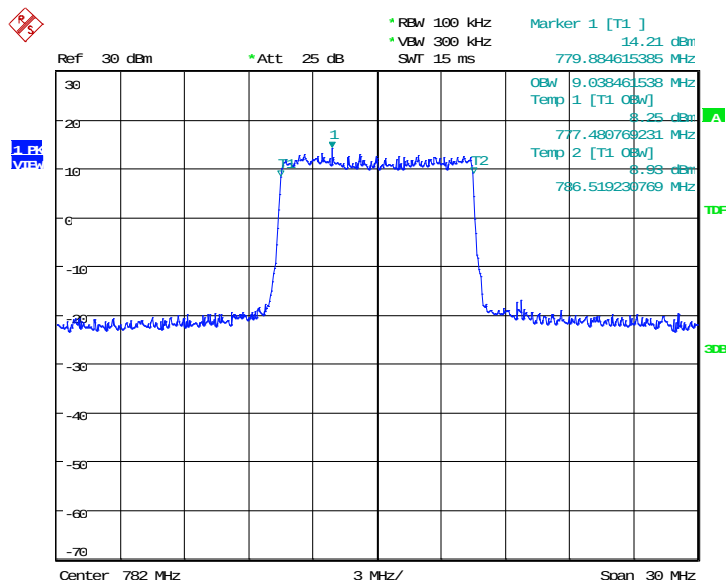


Date: 6.DEC.2019 12:10:21

LTE band 13, 10MHz (99% BW)

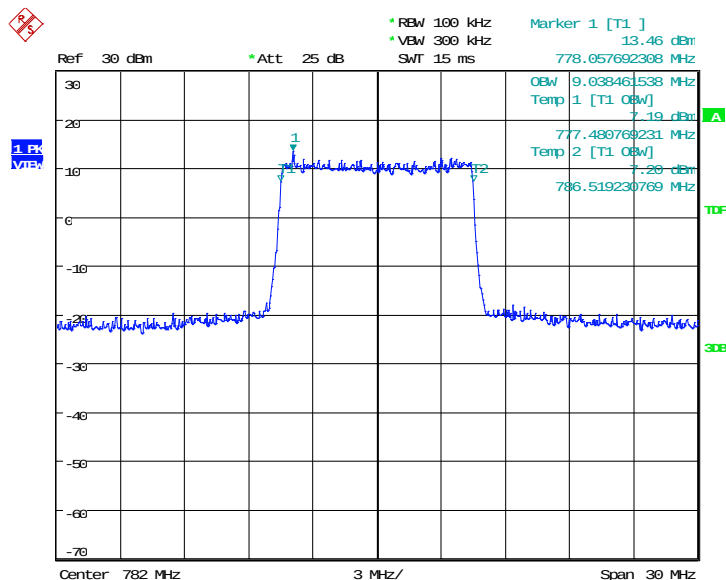
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
782.0	QPSK	16QAM	64QAM
	9038.46	9038.46	8990.38

LTE band 13, 10MHz Bandwidth, QPSK (99% BW)



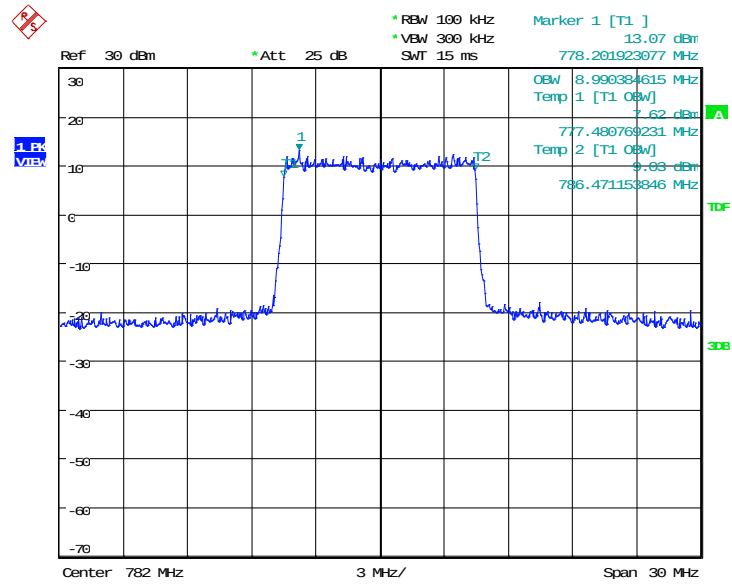
Date: 4.DEC.2019 06:37:08

LTE band 13, 10MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 06:37:22

LTE band 13, 10MHz Bandwidth, 64QAM (99% BW)

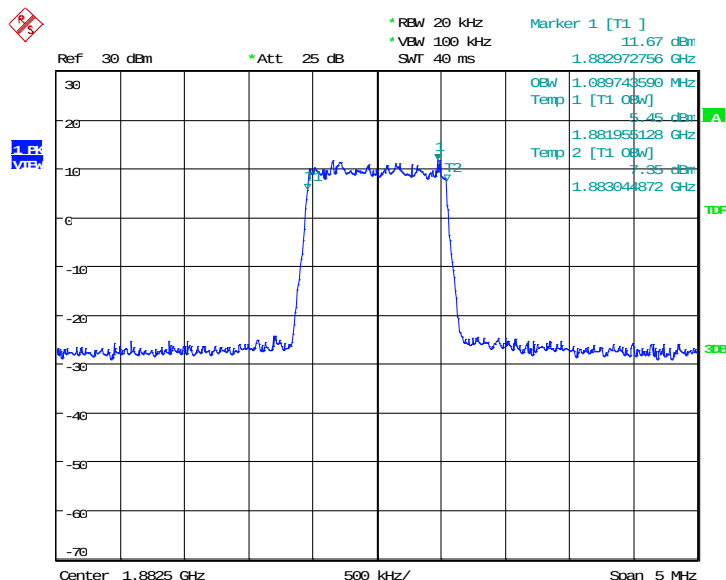


Date: 6.DEC.2019 12:13:51

LTE band 25, 1.4MHz (99% BW)

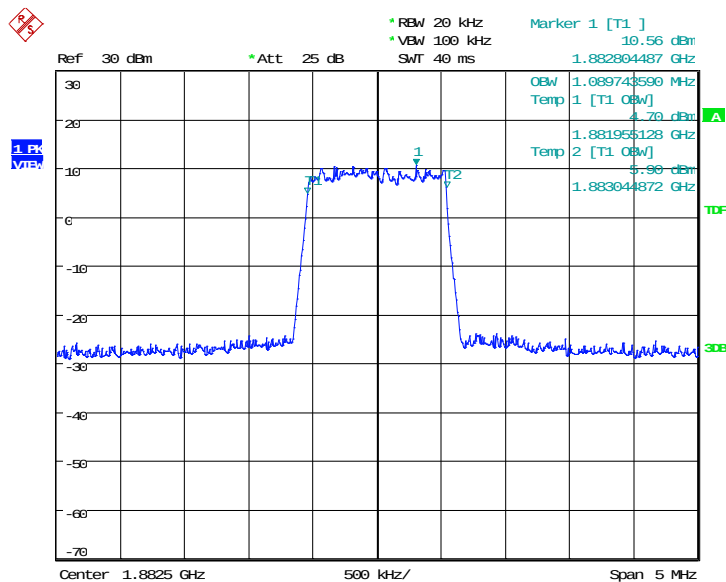
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1882.5	QPSK	16QAM	64QAM
	1089.74	1089.74	1089.74

LTE band 25, 1.4MHz Bandwidth, QPSK (99% BW)



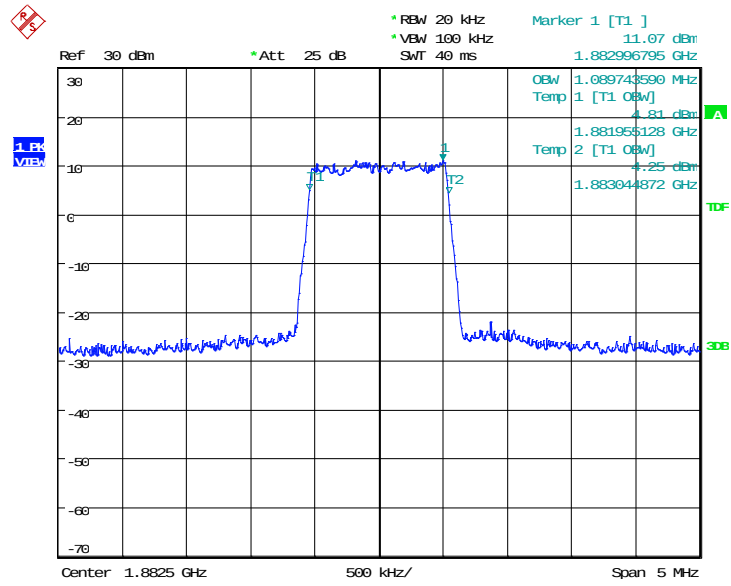
Date: 4.DEC.2019 11:34:33

LTE band 25, 1.4MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 11:34:47

LTE band 25, 1.4MHz Bandwidth, 64QAM (99% BW)

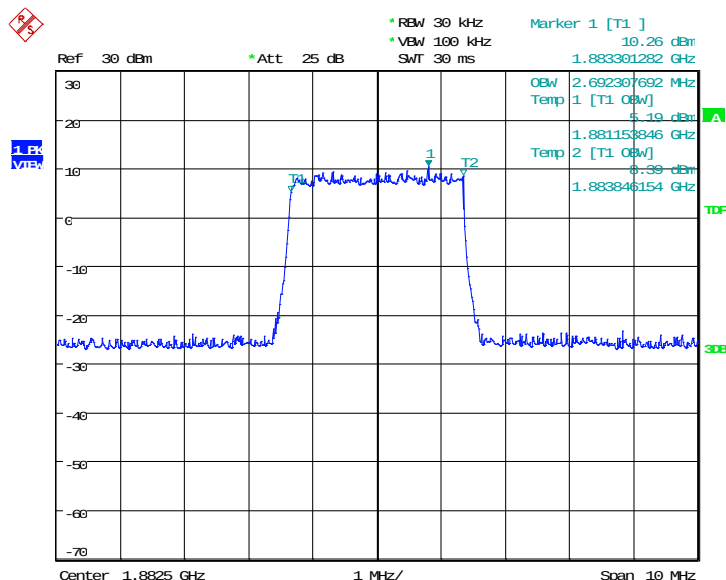


Date: 6.DEC.2019 05:01:13

LTE band25, 3MHz (99% BW)

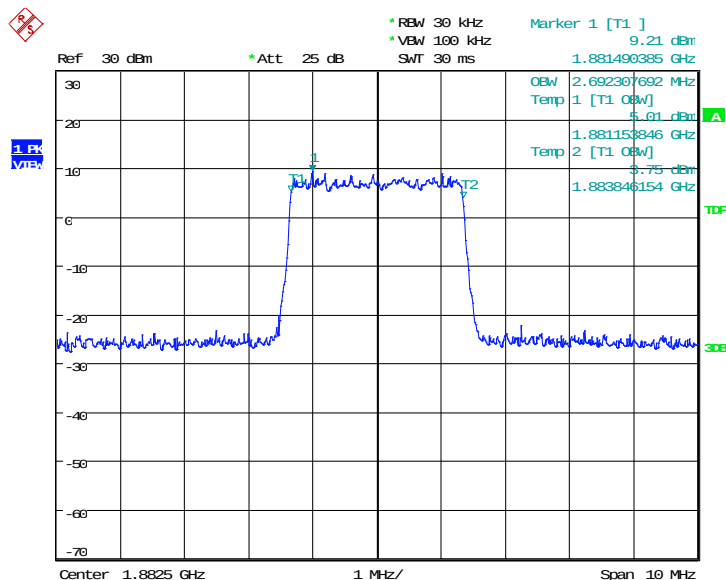
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1882.5	QPSK	16QAM	64QAM
	2692.31	2692.31	2692.31

LTE band 25, 3MHz Bandwidth, QPSK (99% BW)



Date: 4.DEC.2019 11:38:53

LTE band 25, 3MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 11:39:07

* RBW 30 kHz
 * VBW 100 kHz
 * Att 25 dB
 Marker 1 [T1]
 9.95 dBm
 1.881490385 GHz
 30 ms
 1.881153846 GHz
 1.883846154 GHz

Ref 30 dBm
 30
 20
 10
 0
 -10
 -20
 -30
 -40
 -50
 -60
 -70

OBW 2.692307692 MHz
 Temp 1 [T1 OBW]
 6.42 dBm
 Temp 2 [T1 OBW]
 5.51 dBm

T1
 T2

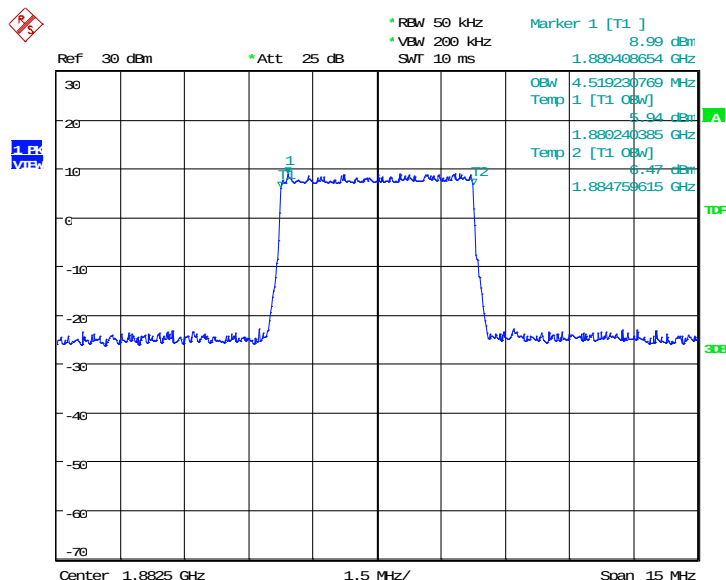
Center 1.8825 GHz
 1 MHz/
 Span 10 MHz

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LTE band 25, 5MHz (99% BW)

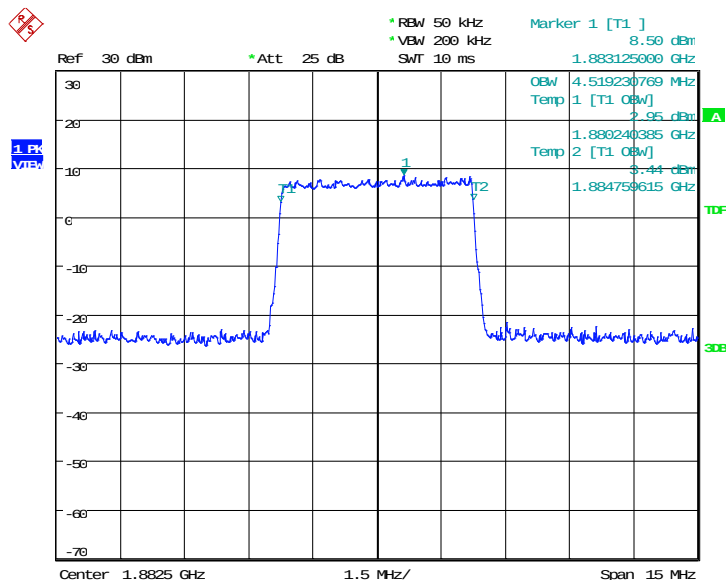
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1882.5	QPSK	16QAM	64QAM
	4519.23	4519.23	4495.19

LTE band 25, 5MHz Bandwidth, QPSK (99% BW)



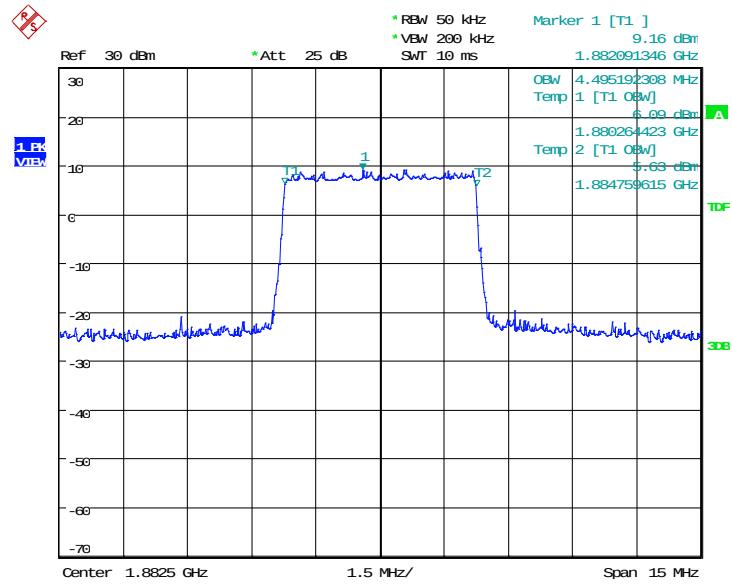
Date: 4.DEC.2019 11:43:14

LTE band 25, 5MHz Bandwidth,16QAM (99% BW)



Date: 4.DEC.2019 11:43:27

LTE band 25, 5MHz Bandwidth,64QAM (99% BW)

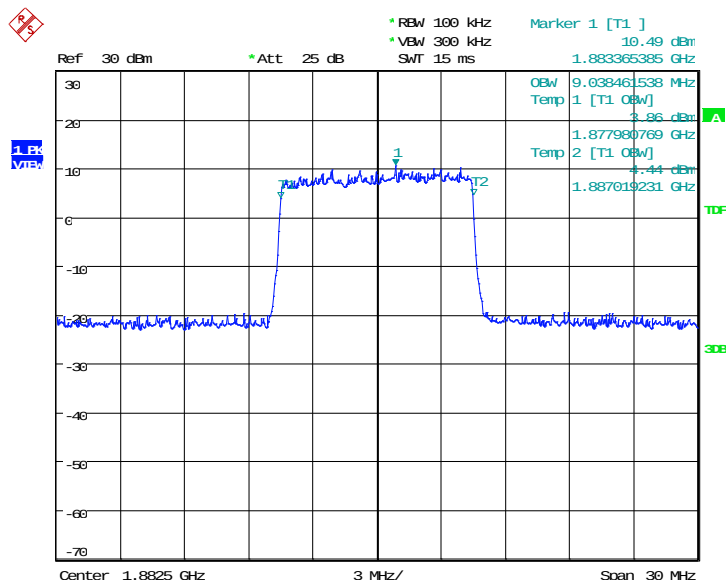


Date: 6.DEC.2019 05:08:40

LTE band 25, 10MHz (99% BW)

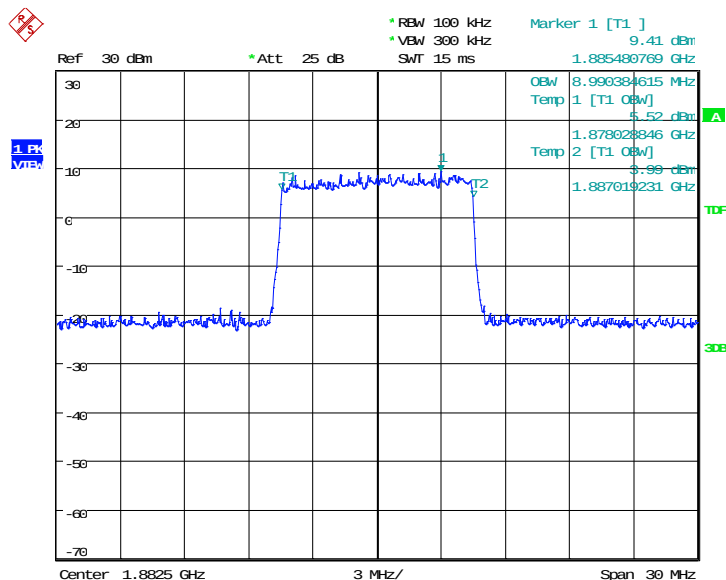
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1882.5	QPSK	16QAM	64QAM
	9038.46	8990.38	8990.38

LTE band 25, 10MHz Bandwidth, QPSK (99% BW)



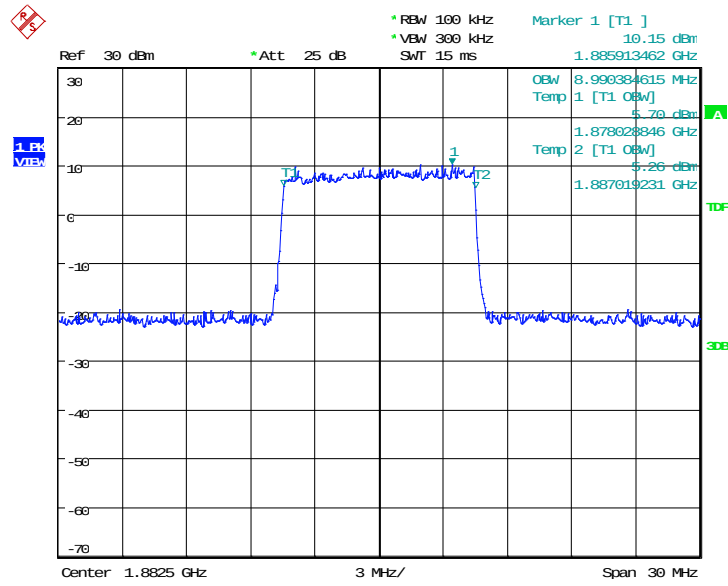
Date: 4.DEC.2019 11:47:34

LTE band 25, 10MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 11:47:48

LTE band 25, 10MHz Bandwidth, 64QAM (99% BW)

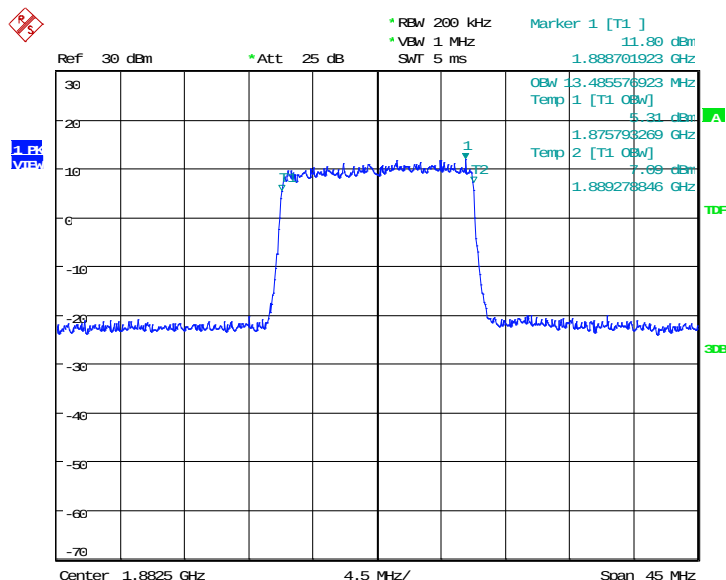


Date: 6.DEC.2019 05:12:10

LTE band 25, 15MHz (99% BW)

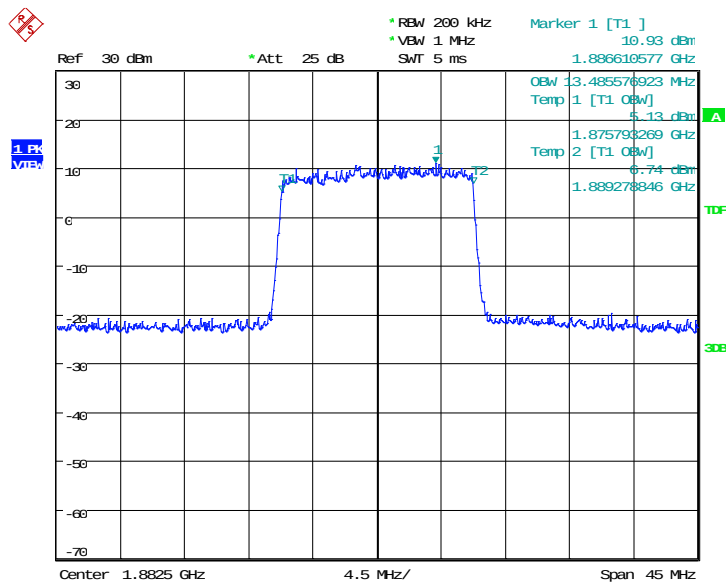
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1882.5	QPSK	16QAM	64QAM
	13485.58	13485.58	13485.58

LTE band 25, 15MHz Bandwidth, QPSK (99% BW)



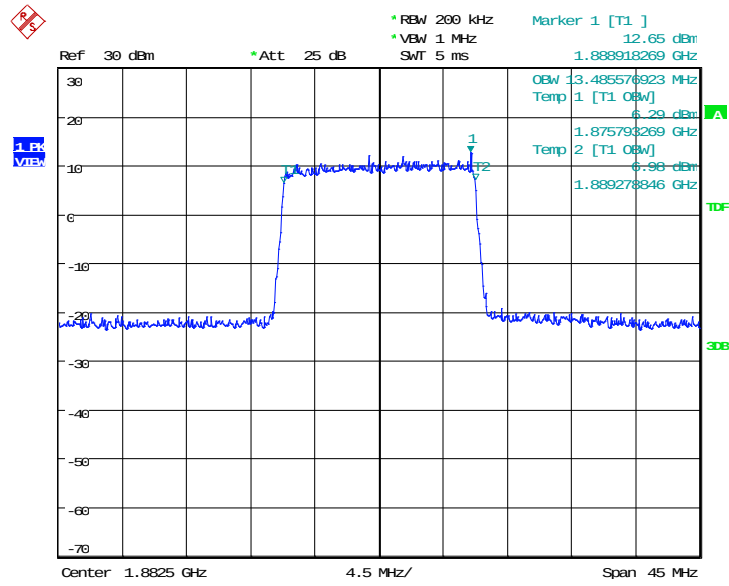
Date: 4.DEC.2019 12:01:02

LTE band 25, 15MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 12:01:16

LTE band 25, 15MHz Bandwidth, 64QAM (99% BW)

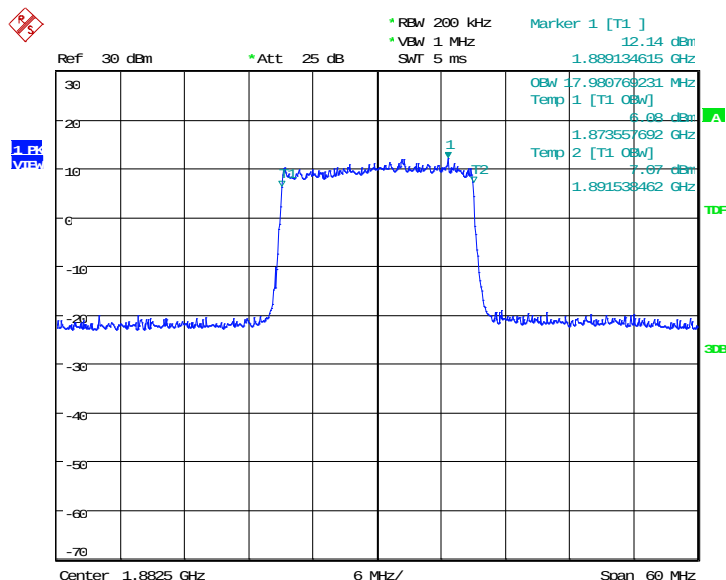


Date: 6.DEC.2019 05:33:22

LTE band 25, 20MHz (99% BW)

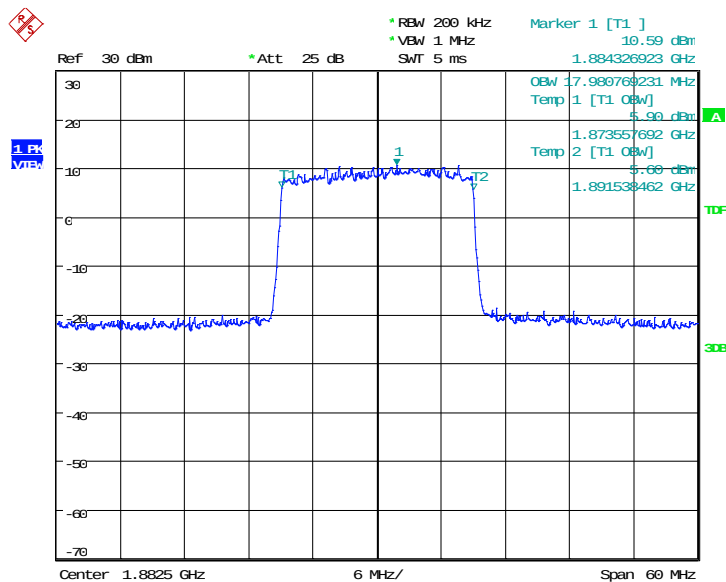
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1882.5	QPSK	16QAM	64QAM
	17980.77	17980.77	17980.77

LTE band 25, 20MHz Bandwidth, QPSK (99% BW)



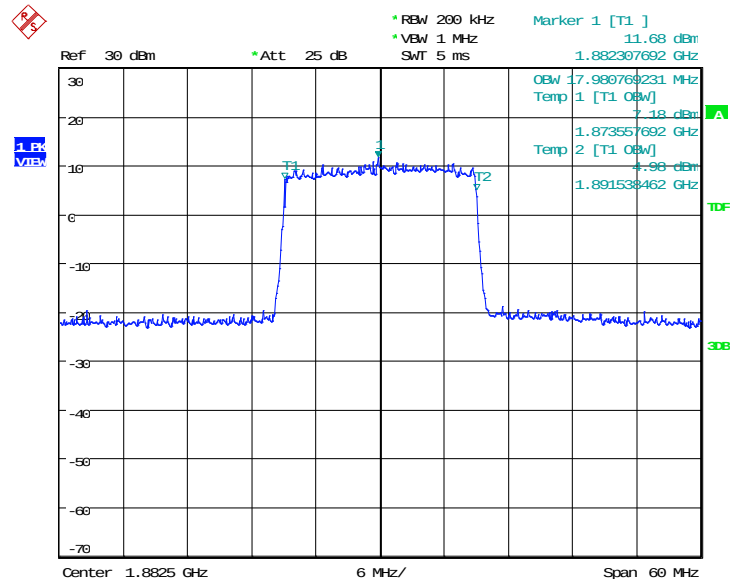
Date: 5.DEC.2019 12:51:03

LTE band 25, 20MHz Bandwidth, 16QAM (99% BW)



Date: 5.DEC.2019 12:51:16

LTE band 25, 20MHz Bandwidth, 64QAM (99% BW)

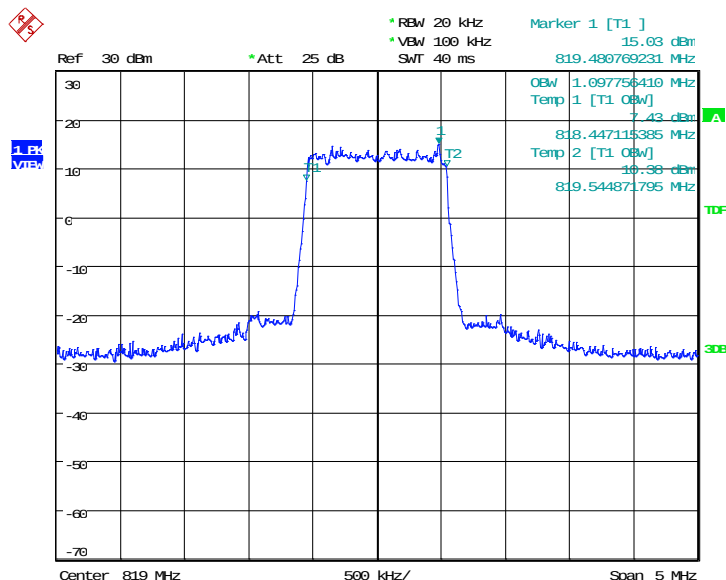


Date: 6.DEC.2019 05:42:36

LTE band 26(814MHz-824MHz), 1.4MHz (99% BW)

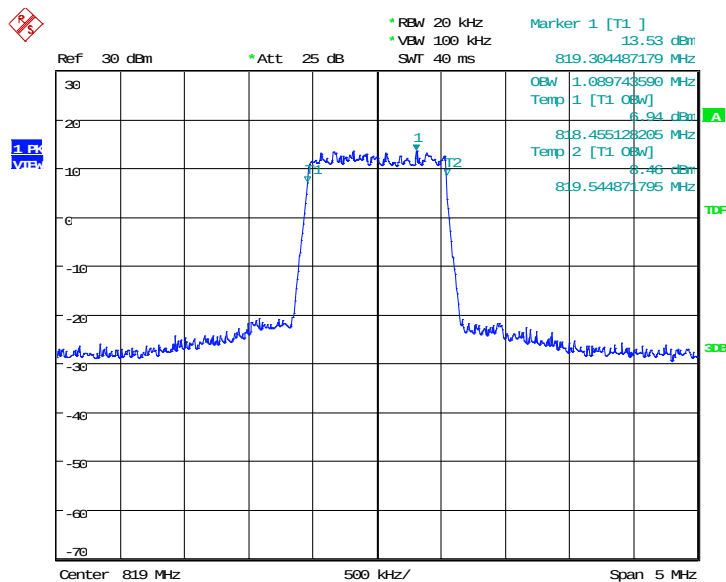
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
819.0	QPSK	16QAM	64QAM
	1097.76	1089.74	1089.74

LTE band 26(814MHz-824MHz), 1.4MHz Bandwidth, QPSK (99% BW)



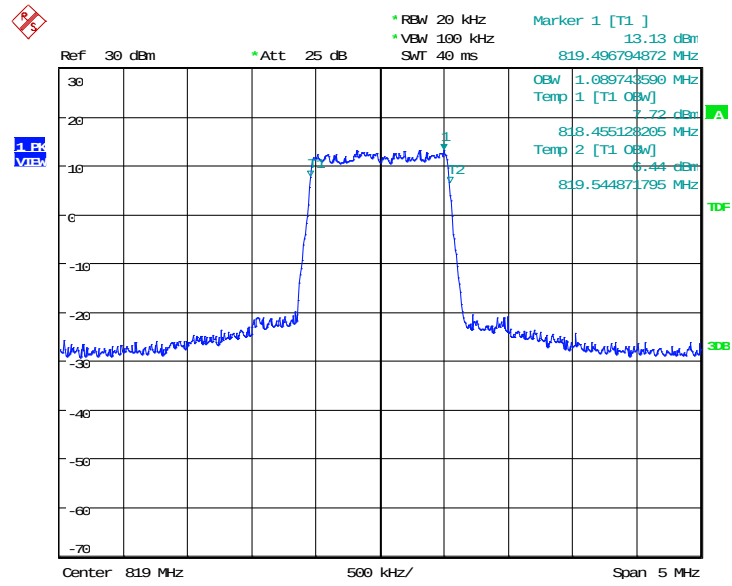
Date: 4.DEC.2019 14:01:21

LTE band 26(814MHz-824MHz), 1.4MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 14:01:35

LTE band 26(814MHz-824MHz), 1.4MHz Bandwidth, 64QAM (99% BW)

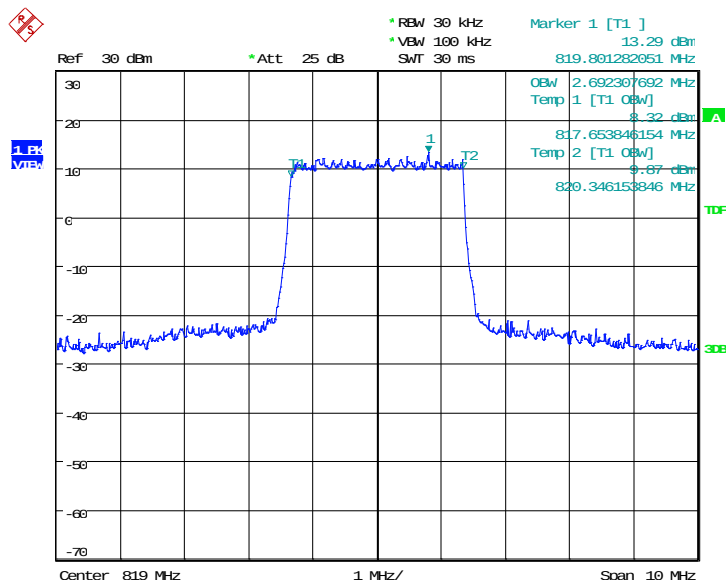


Date: 6.DEC.2019 06:10:49

LTE band 26(814MHz-824MHz), 3MHz (99% BW)

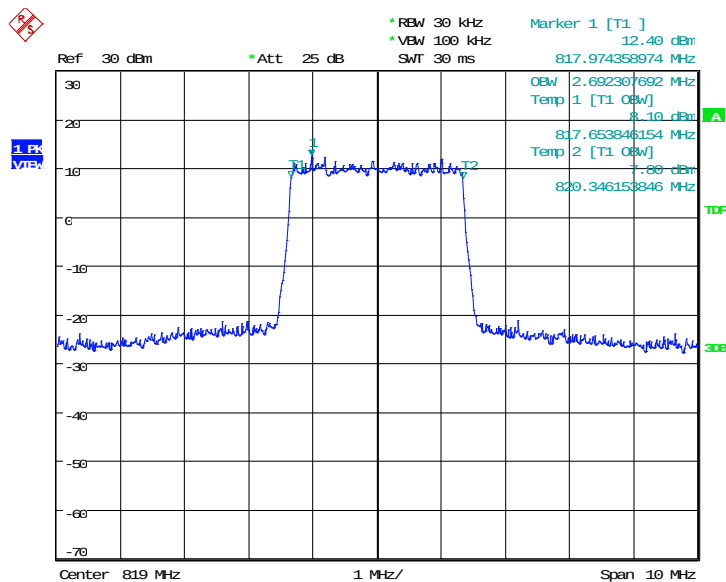
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
819.0	QPSK	16QAM	64QAM
	2692.31	2692.31	2708.33

LTE band 26(814MHz-824MHz), 3MHz Bandwidth, QPSK (99% BW)



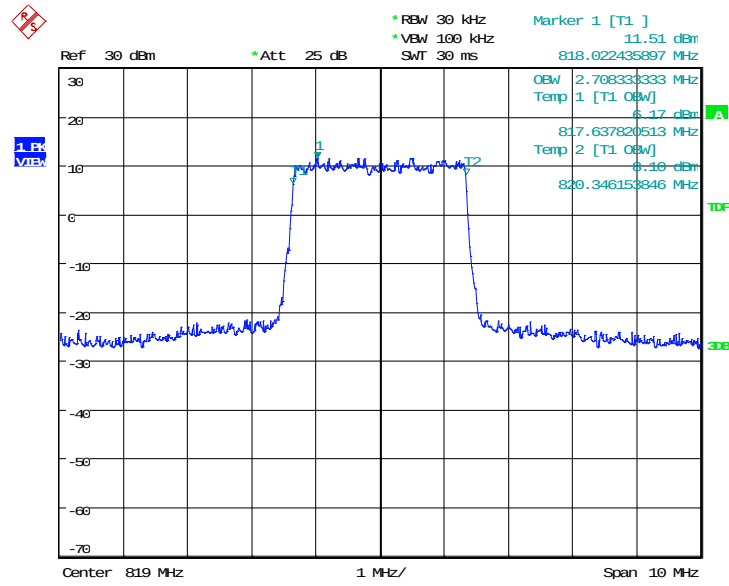
Date: 4.DEC.2019 14:05:42

LTE band 26(814MHz-824MHz), 3MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 14:05:56

LTE band 26(814MHz-824MHz), 3MHz Bandwidth, 64QAM (99% BW)

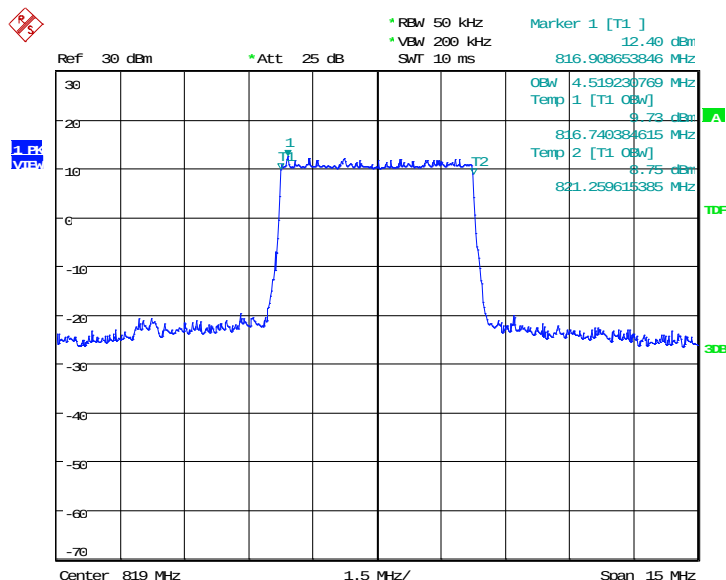


Date: 6.DEC.2019 06:14:05

LTE band 26(814MHz-824MHz), 5MHz (99% BW)

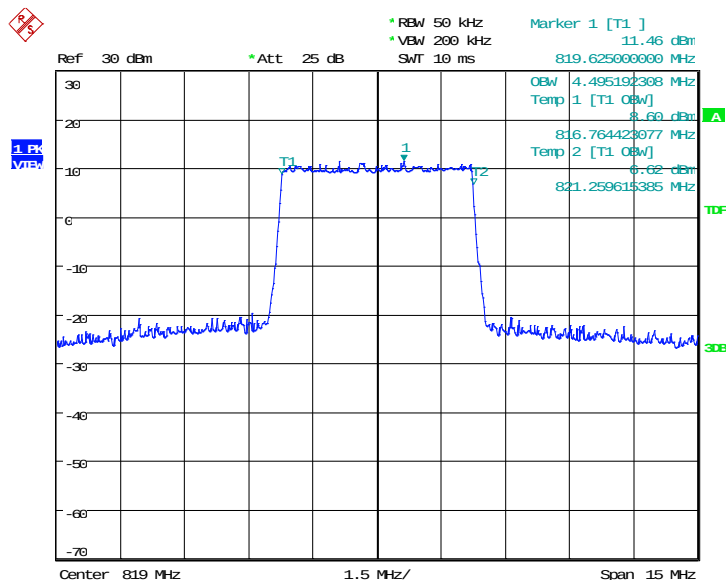
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
819.0	QPSK	16QAM	64QAM
	4519.23	4495.19	4495.19

LTE band 26(814MHz-824MHz), 5MHz Bandwidth, QPSK (99% BW)



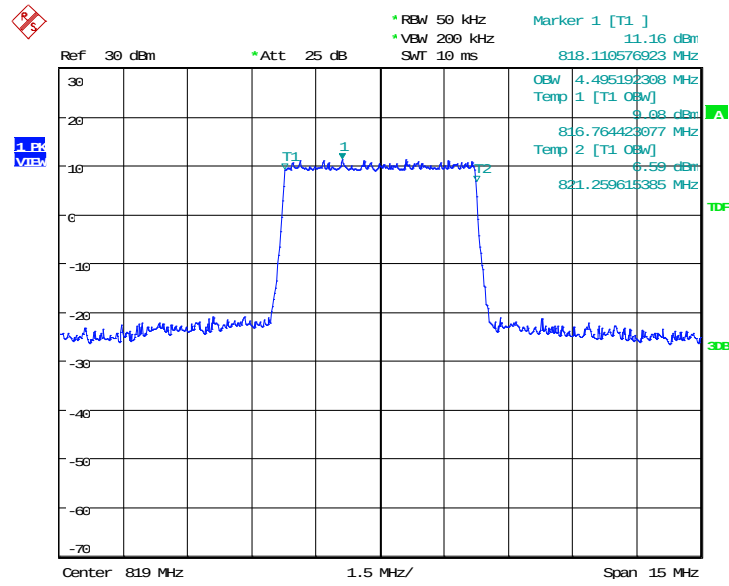
Date: 4.DEC.2019 14:10:02

LTE band 26(814MHz-824MHz), 5MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 14:10:16

LTE band 26(814MHz-824MHz), 5MHz Bandwidth,64QAM (99% BW)

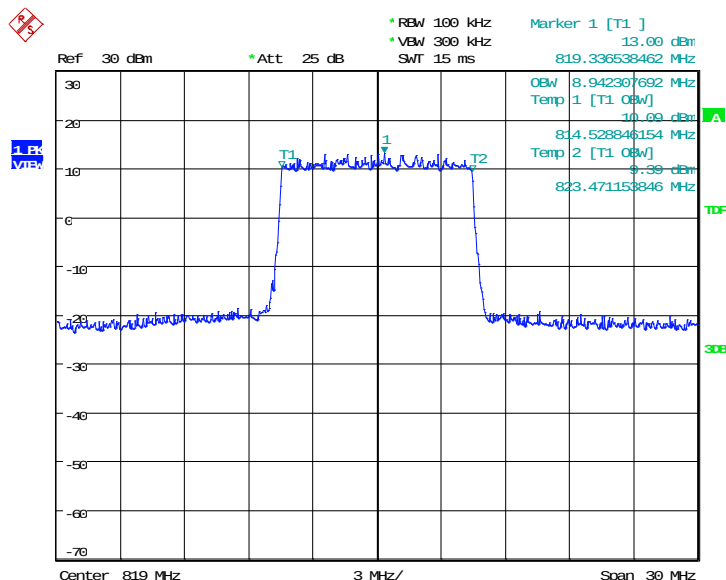


Date: 6.DEC.2019 06:16:47

LTE band 26(814MHz-824MHz), 10MHz (99% BW)

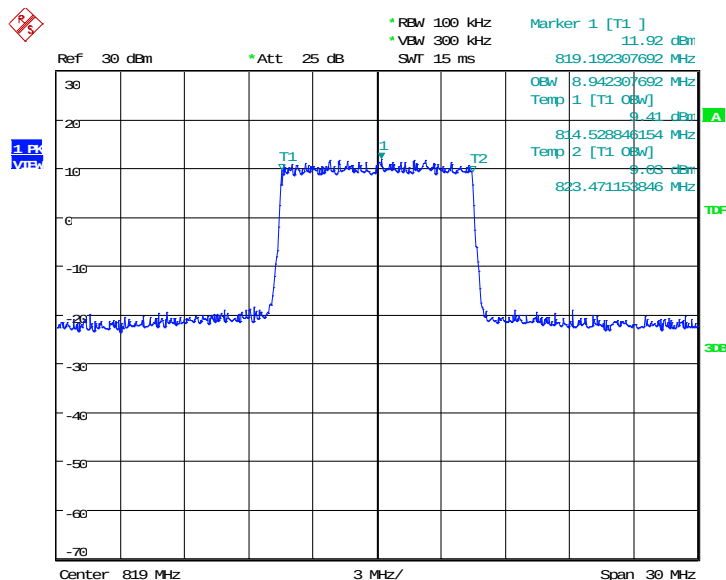
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
819.0	QPSK	16QAM	64QAM
	8942.31	8942.31	8990.38

LTE band 26(814MHz-824MHz), 10MHz Bandwidth, QPSK (99% BW)



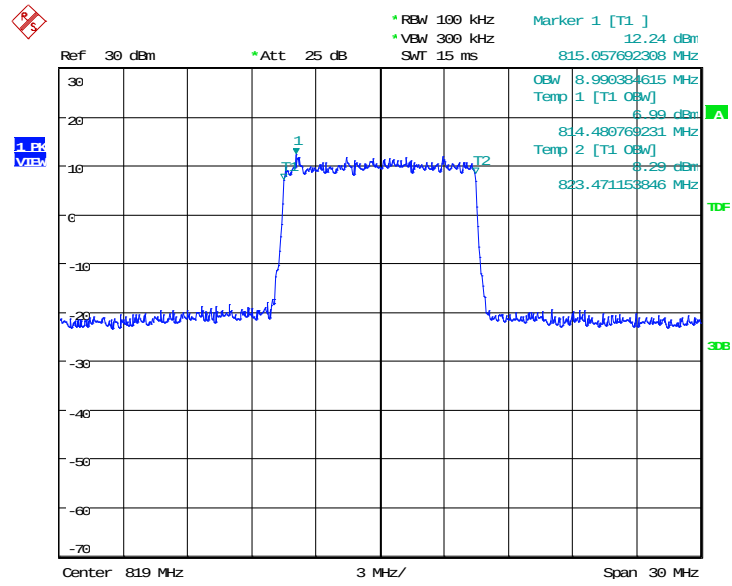
Date: 5.DEC.2019 12:42:31

LTE band 26(814MHz-824MHz), 10MHz Bandwidth, 16QAM (99% BW)



Date: 5.DEC.2019 12:42:45

LTE band 26(814MHz-824MHz), 10MHz Bandwidth, 64QAM (99% BW)

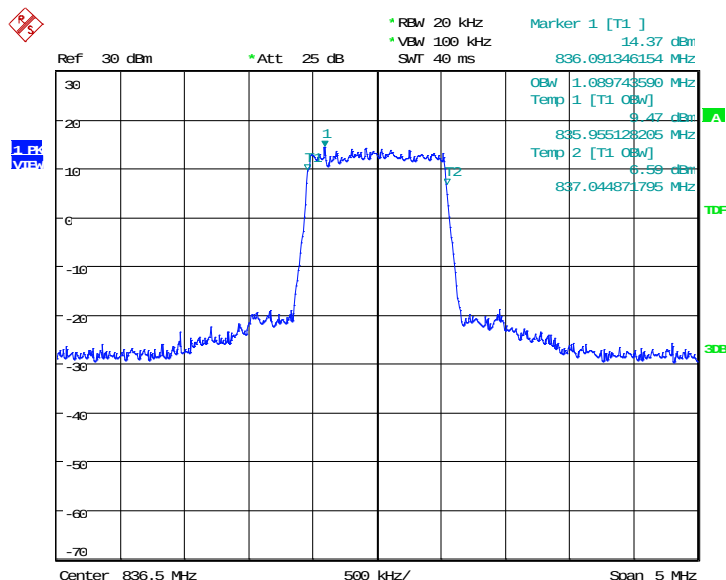


Date: 6.DEC.2019 06:19:33

LTE band 26(824MHz-849MHz), 1.4MHz (99% BW)

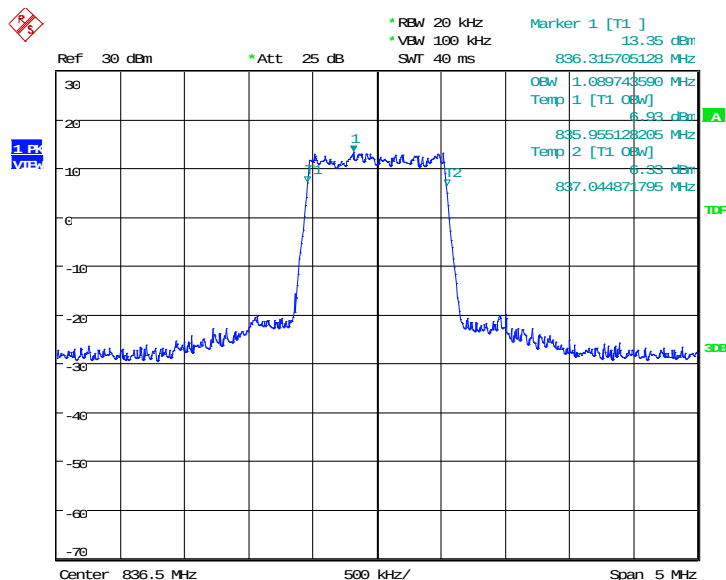
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	1089.74	1089.74	1097.76

LTE band 26(824MHz-849MHz), 1.4MHz Bandwidth, QPSK (99% BW)



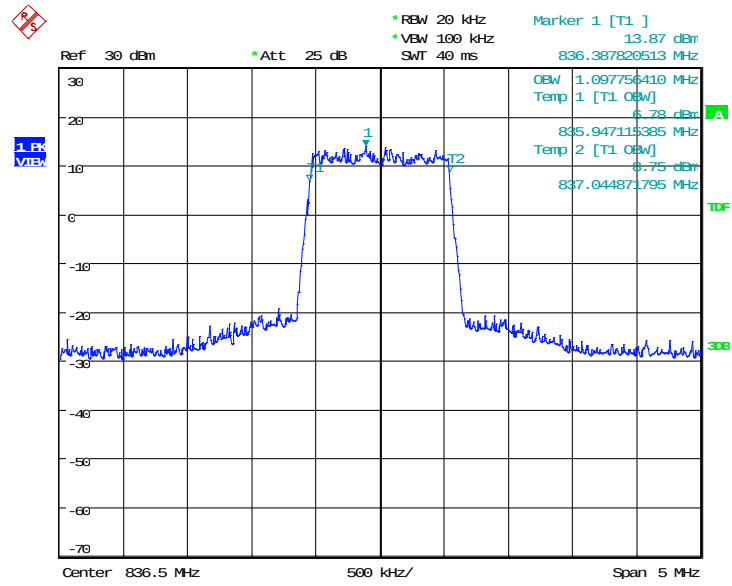
Date: 4.DEC.2019 13:39:40

LTE band 26(824MHz-849MHz), 1.4MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 13:39:53

LTE band 26(824MHz-849MHz), 1.4MHz Bandwidth, 64QAM (99% BW)

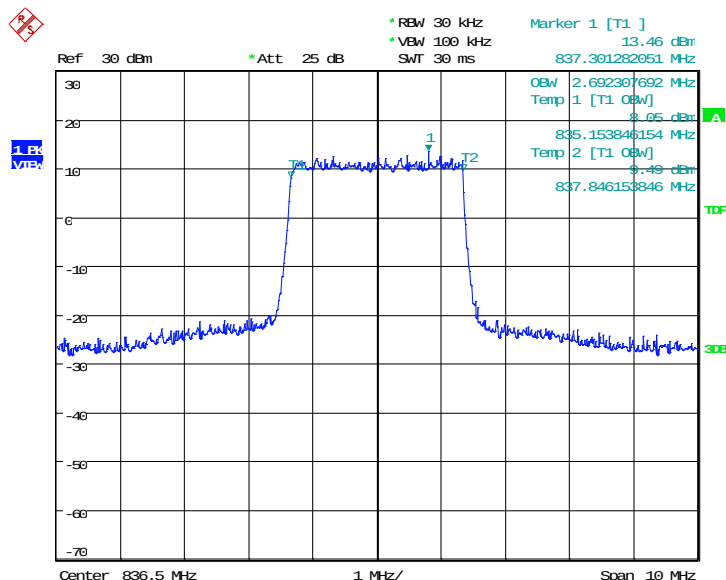


Date: 6.DEC.2019 05:57:08

LTE band 26(824MHz-849MHz), 3MHz (99% BW)

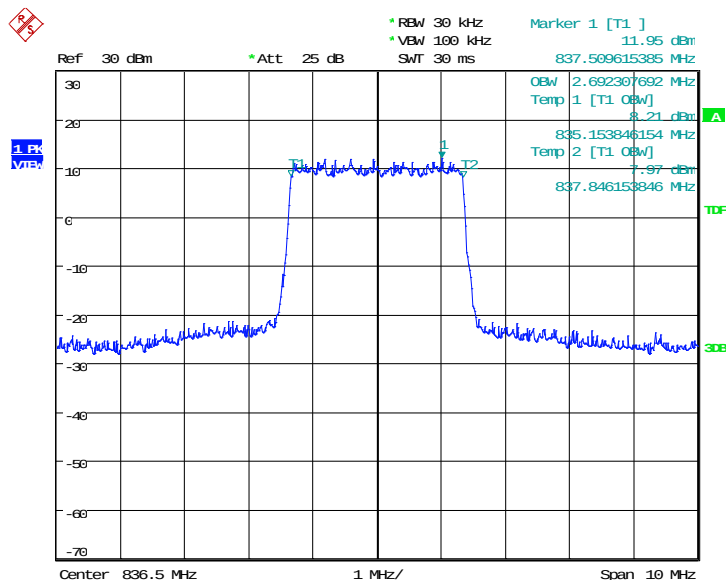
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	2692.31	2692.31	2708.33

LTE band 26(824MHz-849MHz), 3MHz Bandwidth, QPSK (99% BW)



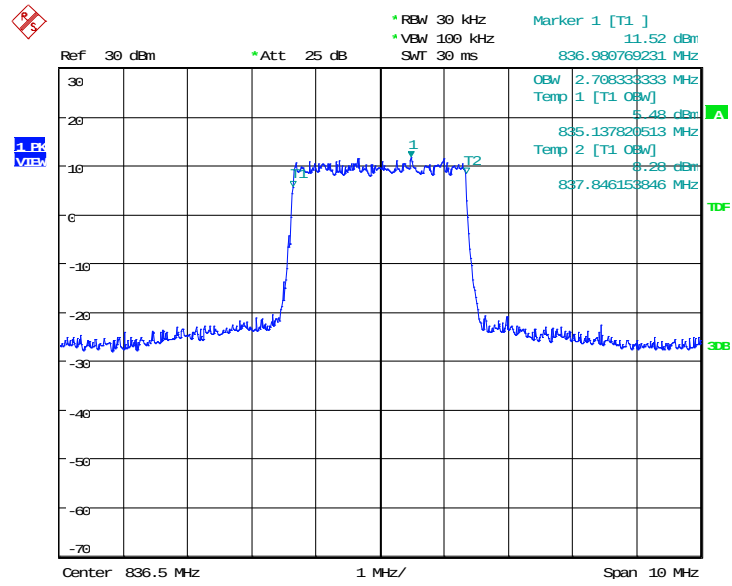
Date: 4.DEC.2019 13:44:00

LTE band 26(824MHz-849MHz), 3MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 13:44:14

LTE band 26(824MHz-849MHz), 3MHz Bandwidth, 64QAM (99% BW)

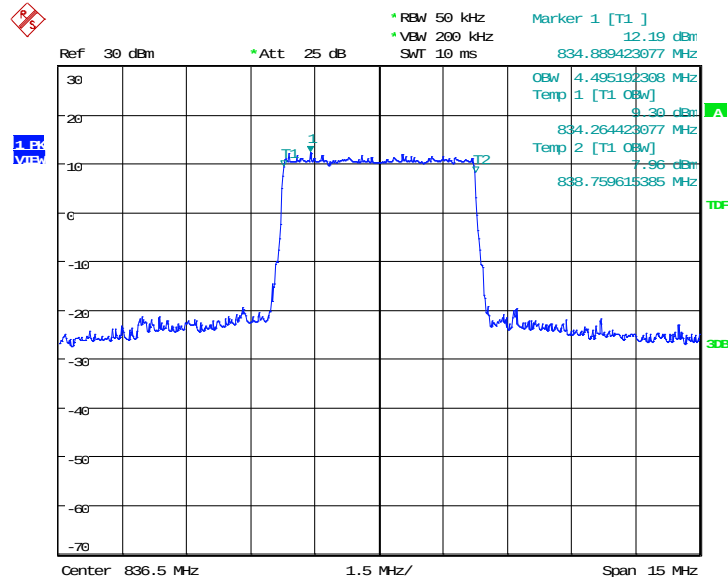


Date: 6.DEC.2019 05:59:55

LTE band 26(824MHz-849MHz), 5MHz (99% BW)

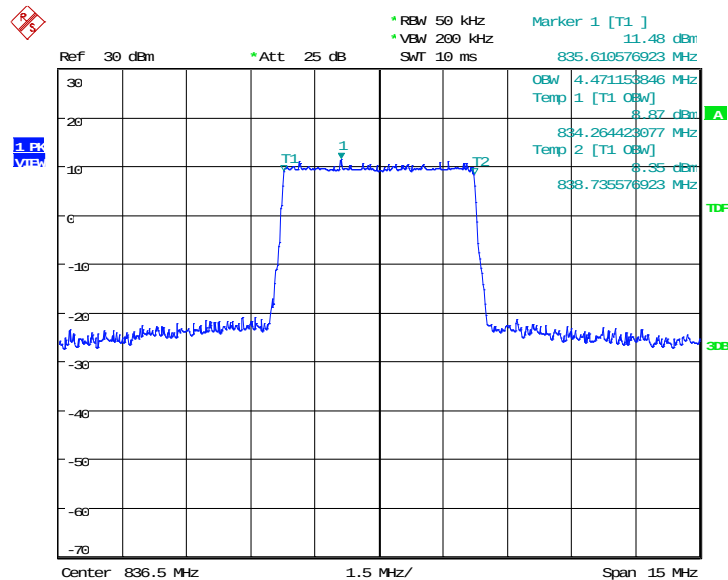
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	4495.19	4471.15	4471.15

LTE band 26(824MHz-849MHz), 5MHz Bandwidth, QPSK (99% BW)



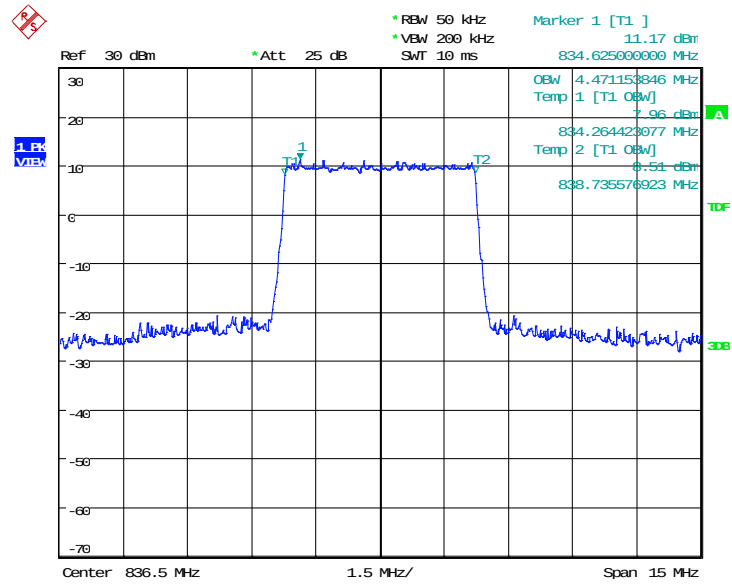
Date: 4.DEC.2019 13:48:23

LTE band 26(824MHz-849MHz), 5MHz Bandwidth,16QAM (99% BW)



Date: 4.DEC.2019 13:48:36

LTE band 26(824MHz-849MHz), 5MHz Bandwidth,64QAM (99% BW)

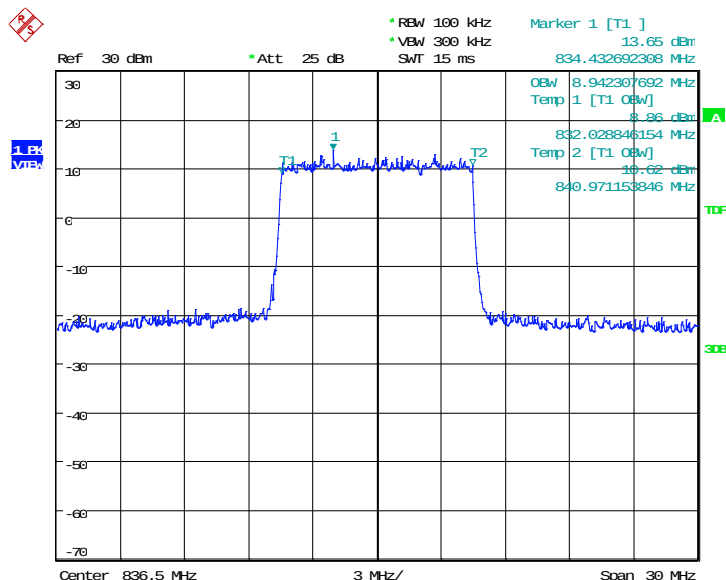


Date: 6.DEC.2019 06:02:38

LTE band 26(824MHz-849MHz), 10MHz (99% BW)

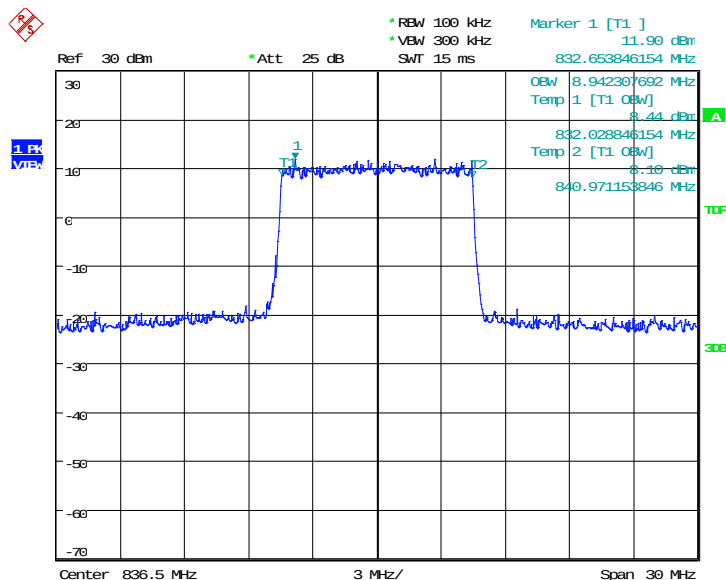
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	8942.31	8942.31	8942.31

LTE band 26(824MHz-849MHz), 10MHz Bandwidth, QPSK (99% BW)



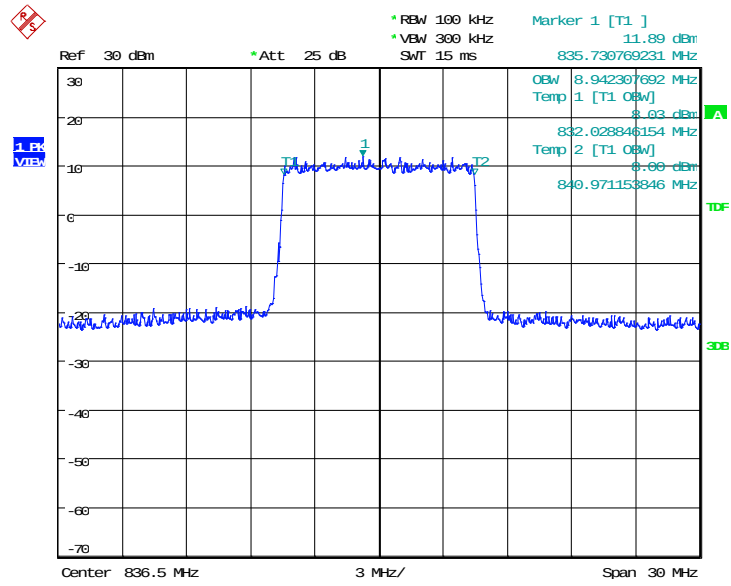
Date: 4.DEC.2019 13:52:43

LTE band 26(824MHz-849MHz), 10MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 13:52:57

LTE band 26(824MHz-849MHz), 10MHz Bandwidth, 64QAM (99% BW)

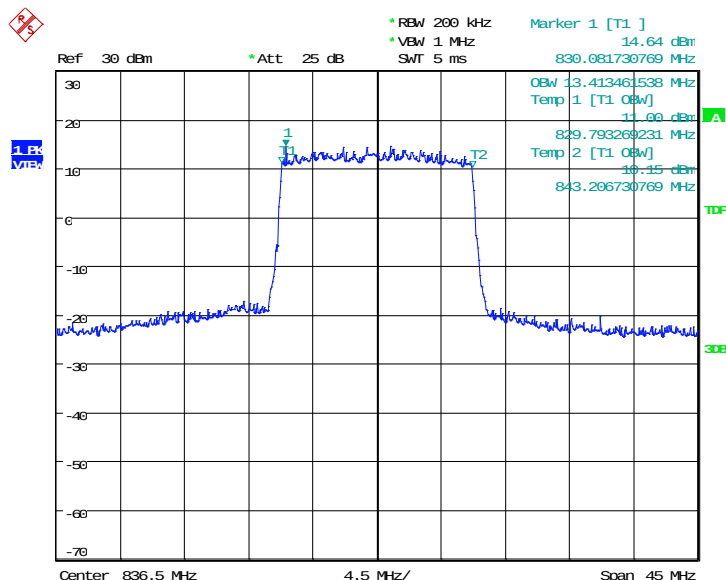


Date: 6.DEC.2019 06:05:21

LTE band 26(824MHz-849MHz), 15MHz (99% BW)

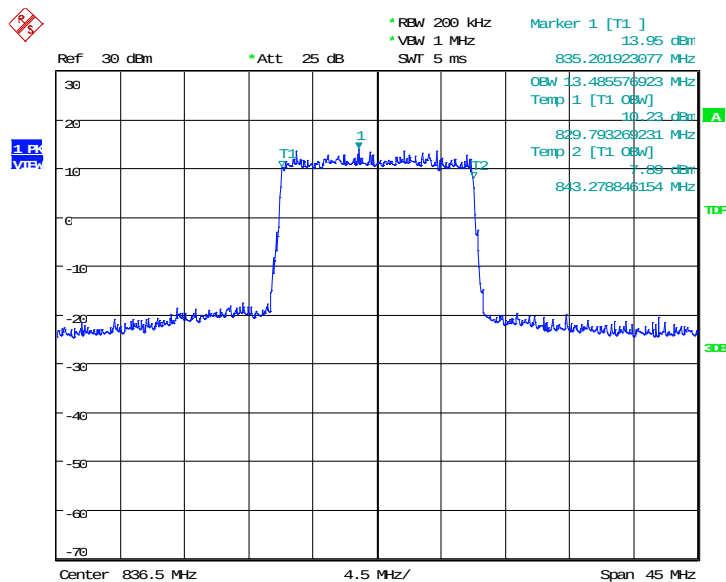
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	13413.46	13485.58	13485.58

LTE band 26(824MHz-849MHz), 15MHz Bandwidth, QPSK (99% BW)



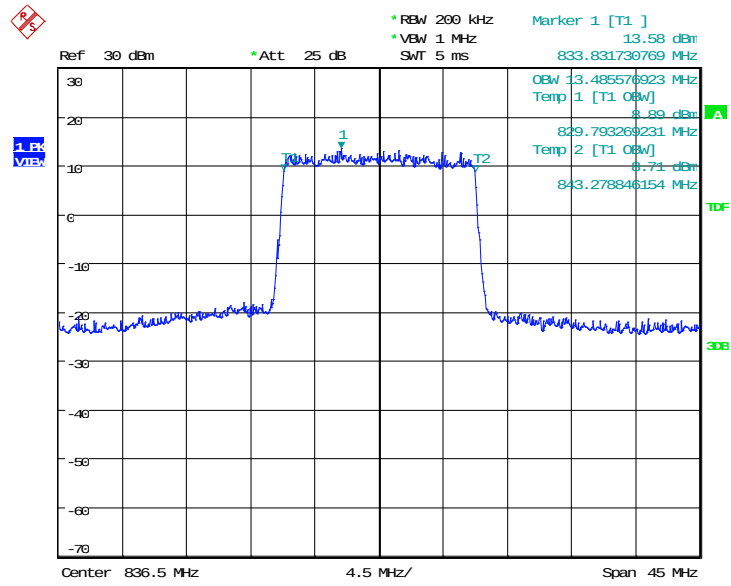
Date: 4.DEC.2019 13:57:01

LTE band 26(824MHz-849MHz), 15MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 13:57:15

LTE band 26(824MHz-849MHz), 15MHz Bandwidth, 64QAM (99% BW)

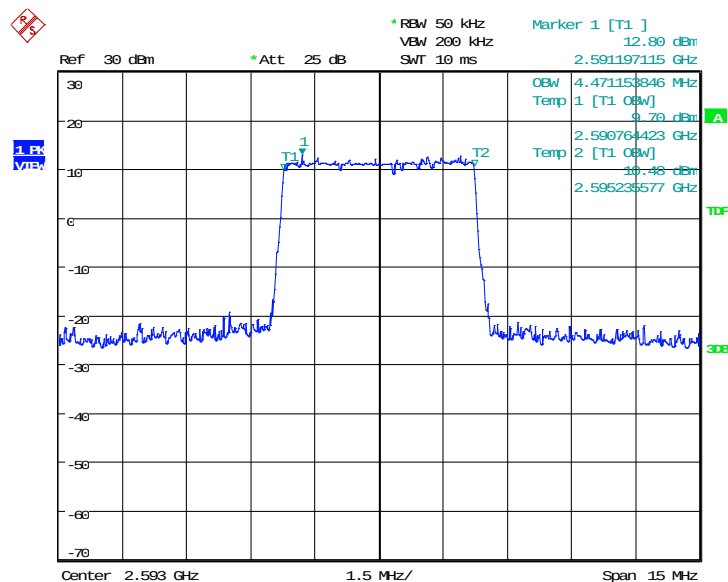


Normal Power

LTE band 41, 5MHz (99% BW)

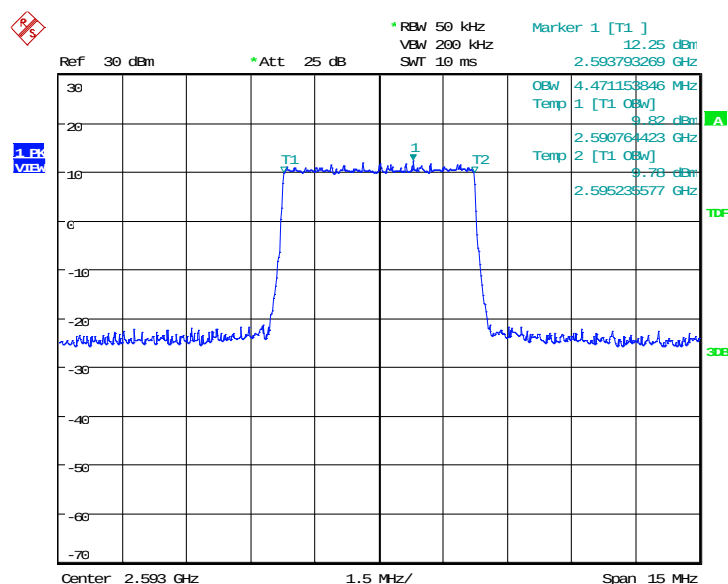
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	4471.15	4471.15	4471.15

LTE band 41, 5MHz Bandwidth, QPSK (99% BW)



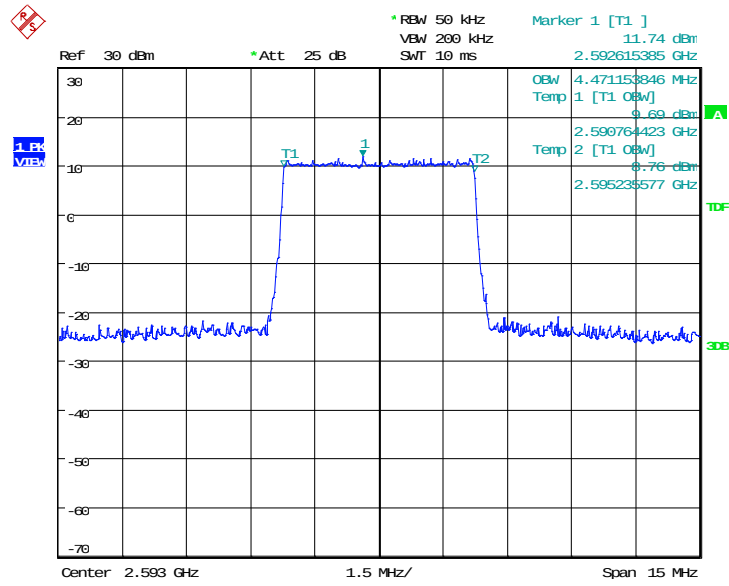
Date: 15.DEC.2019 07:47:39

LTE band 41, 5MHz Bandwidth,16QAM (99% BW)



Date: 15.DEC.2019 07:50:09

LTE band 41, 5MHz Bandwidth,64QAM (99% BW)

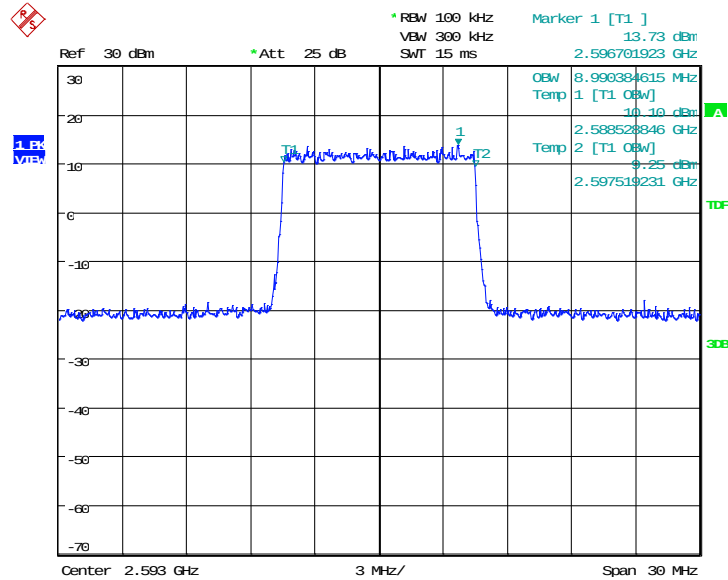


Date: 15.DEC.2019 07:50:34

LTE band 41, 10MHz (99% BW)

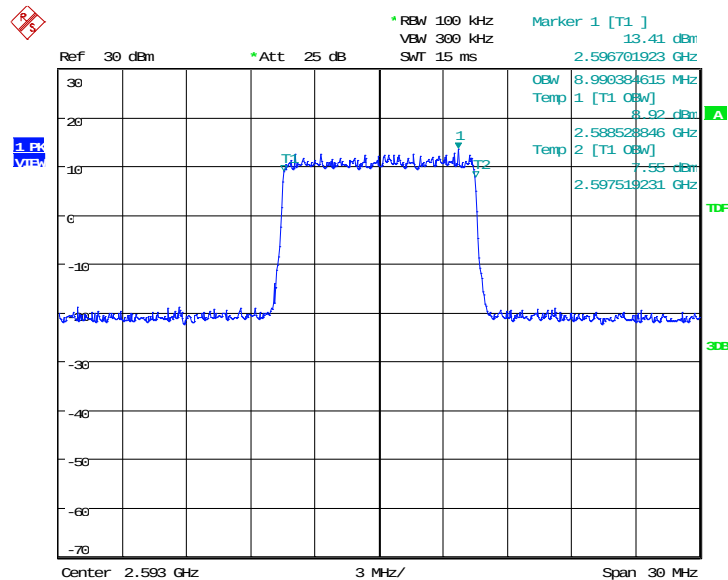
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	8990.38	8990.38	8990.38

LTE band 41, 10MHz Bandwidth, QPSK (99% BW)



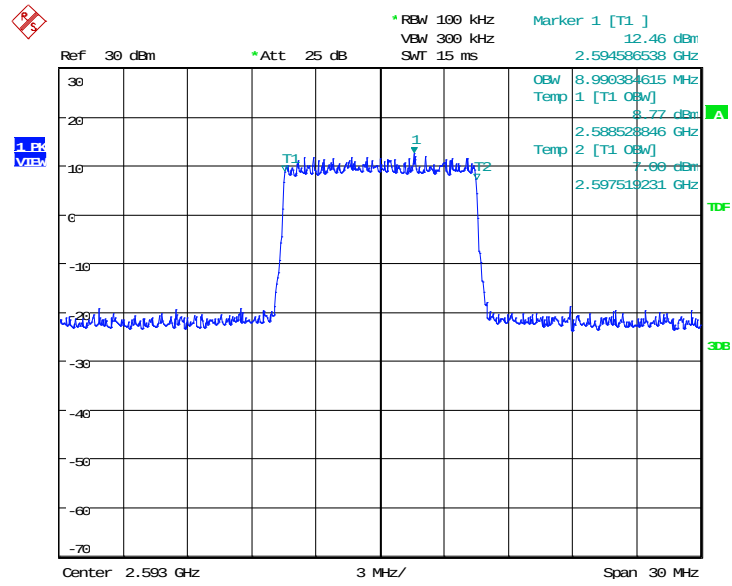
Date: 15.DEC.2019 07:52:03

LTE band 41, 10MHz Bandwidth, 16QAM (99% BW)



Date: 15.DEC.2019 07:54:04

LTE band 41, 10MHz Bandwidth, 64QAM (99% BW)

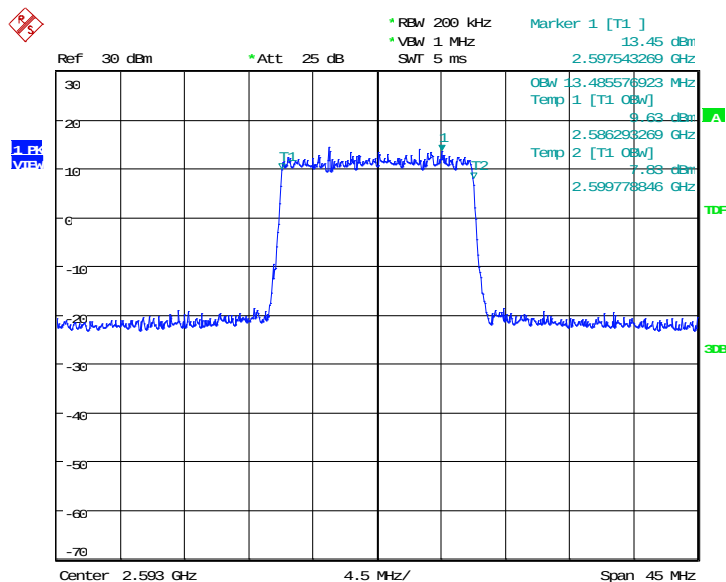


Date: 15.DEC.2019 07:54:19

LTE band 41, 15MHz (99% BW)

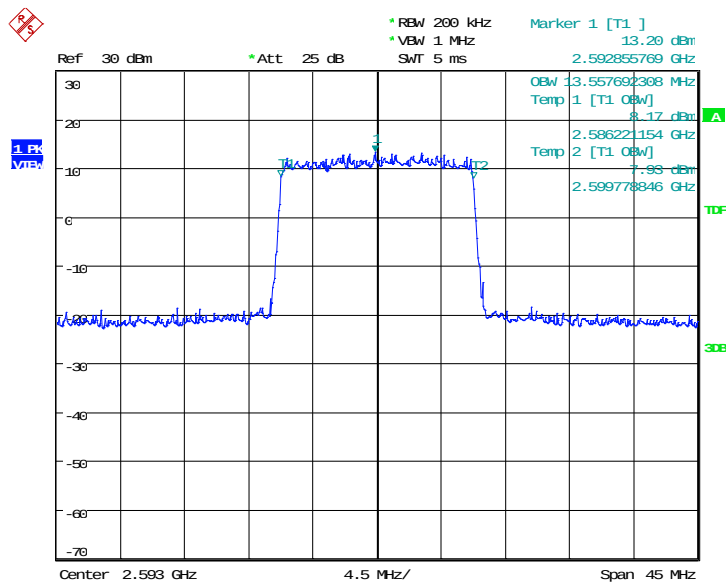
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	13485.58	13557.69	13485.58

LTE band 41, 15MHz Bandwidth, QPSK (99% BW)



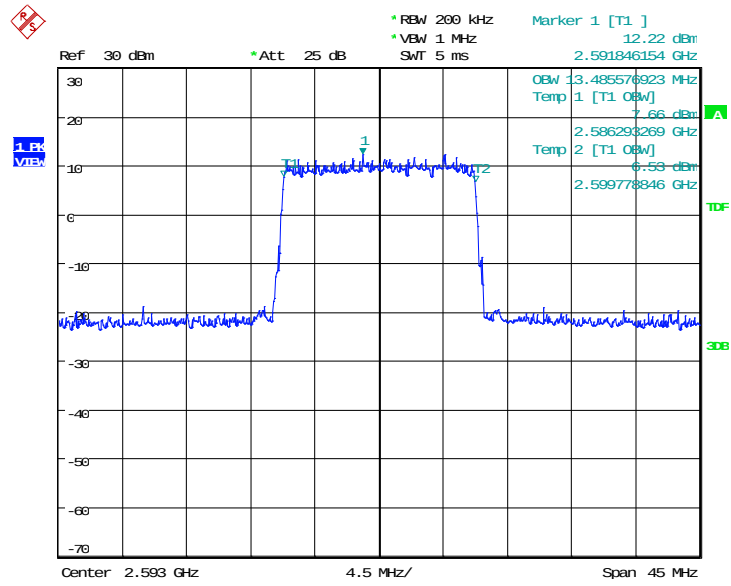
Date: 15.DEC.2019 07:57:05

LTE band 41, 15MHz Bandwidth, 16QAM (99% BW)



Date: 15.DEC.2019 08:00:41

LTE band 41, 15MHz Bandwidth, 64QAM (99% BW)

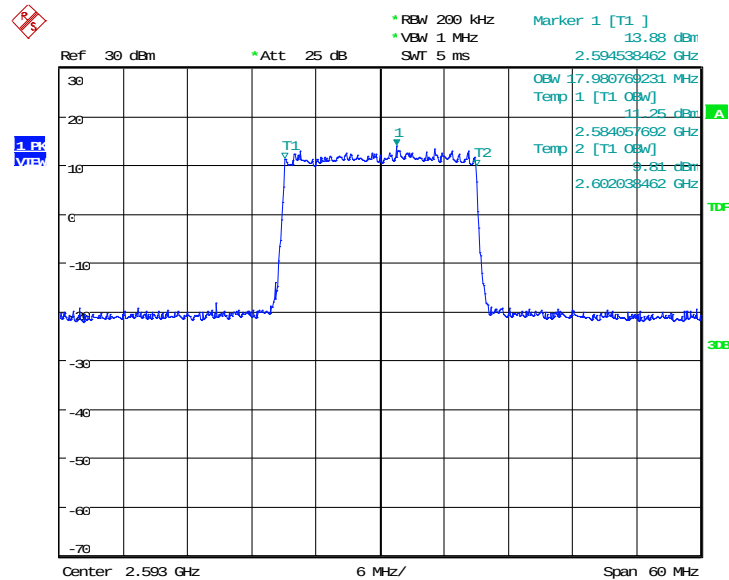


Date: 15.DEC.2019 07:59:46

LTE band 41, 20MHz (99% BW)

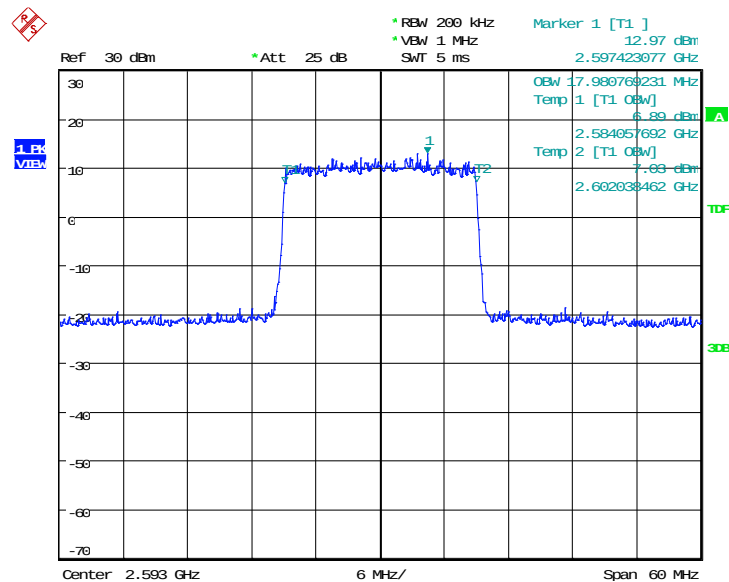
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
	QPSK	16QAM	64QAM
2593.0	17980.77	17980.77	17884.62

LTE band 41, 20MHz Bandwidth, QPSK (99% BW)



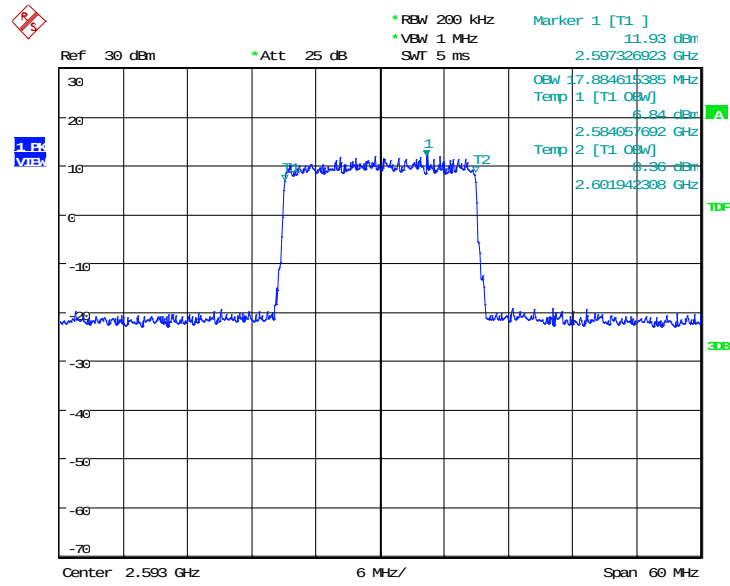
Date: 15.DEC.2019 08:01:47

LTE band 41, 20MHz Bandwidth, 16QAM (99% BW)



Date: 15.DEC.2019 08:04:34

LTE band 41, 20MHz Bandwidth, 64QAM (99% BW)



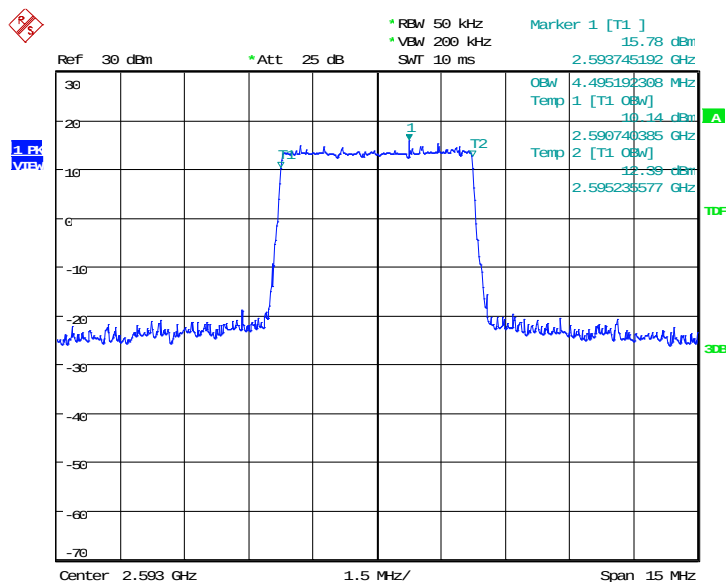
Date: 15.DEC.2019 08:04:15

HPUE

LTE band 41, 5MHz (99% BW)

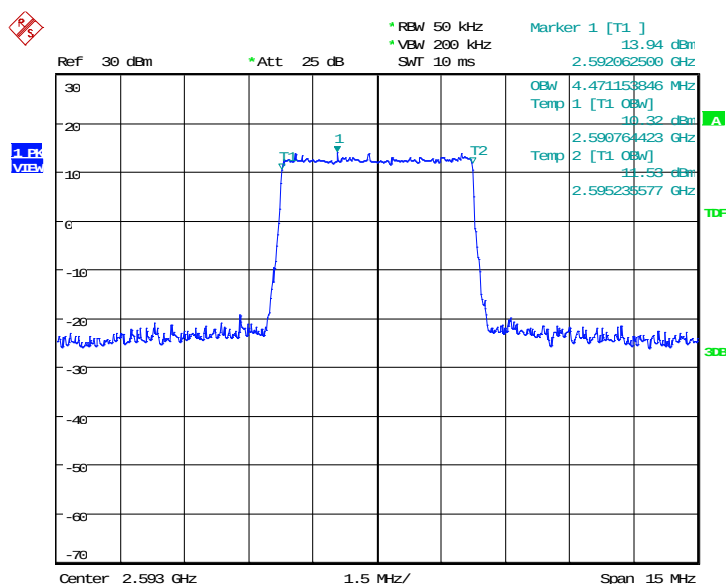
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	4495.19	4471.15	4471.15

LTE band 41, 5MHz Bandwidth, QPSK (99% BW)



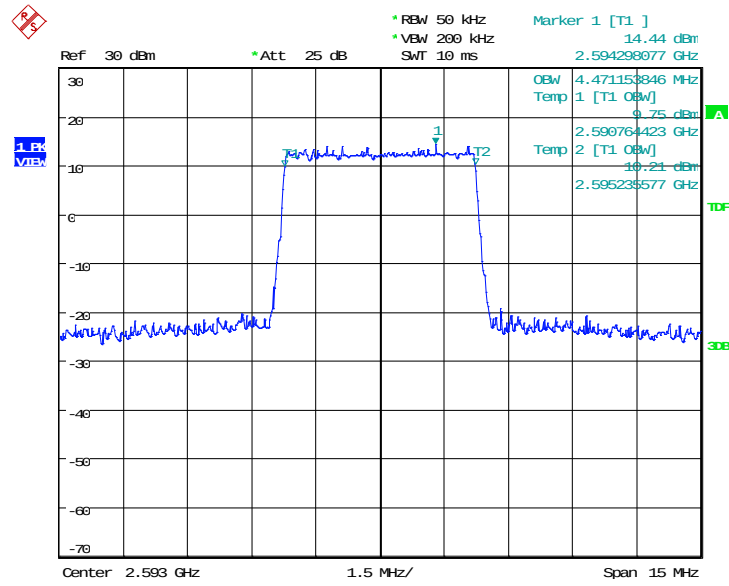
Date: 4.DEC.2019 12:49:21

LTE band 41, 5MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 12:49:35

LTE band 41, 5MHz Bandwidth,64QAM (99% BW)

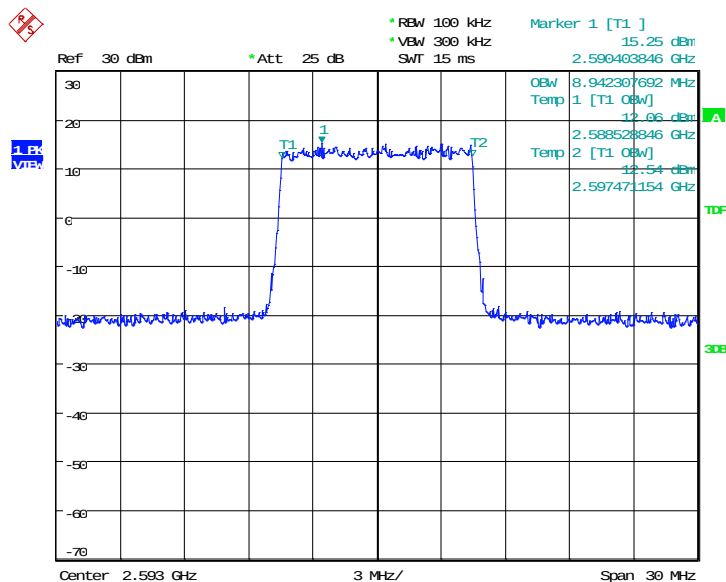


Date: 6.DEC.2019 05:46:06

LTE band 41, 10MHz (99% BW)

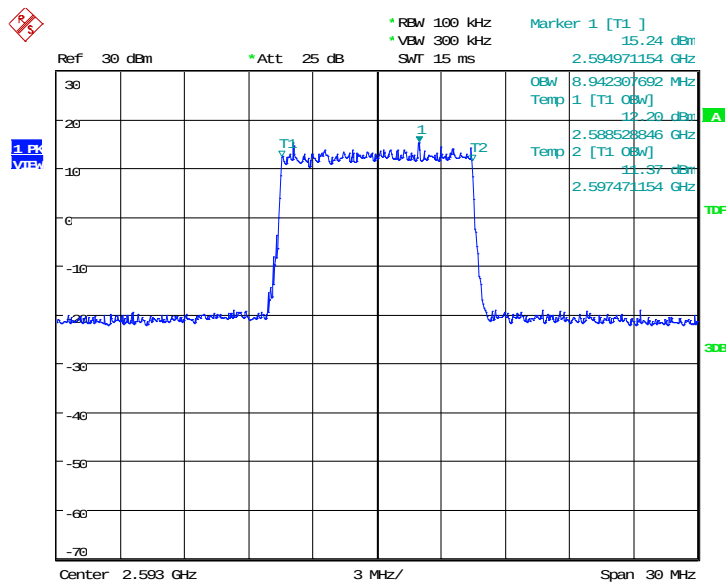
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	8942.31	8942.31	8942.31

LTE band 41, 10MHz Bandwidth, QPSK (99% BW)



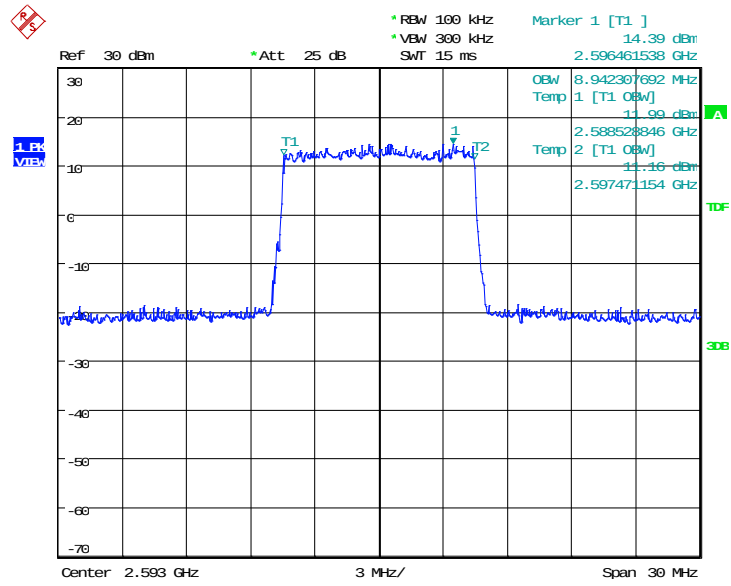
Date: 4.DEC.2019 12:53:42

LTE band 41, 10MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 12:53:56

LTE band 41, 10MHz Bandwidth, 64QAM (99% BW)

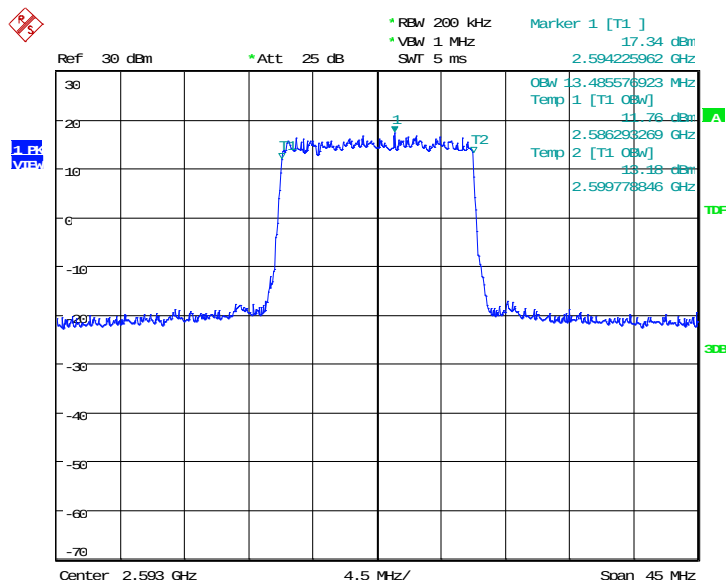


Date: 6.DEC.2019 05:48:49

LTE band 41, 15MHz (99% BW)

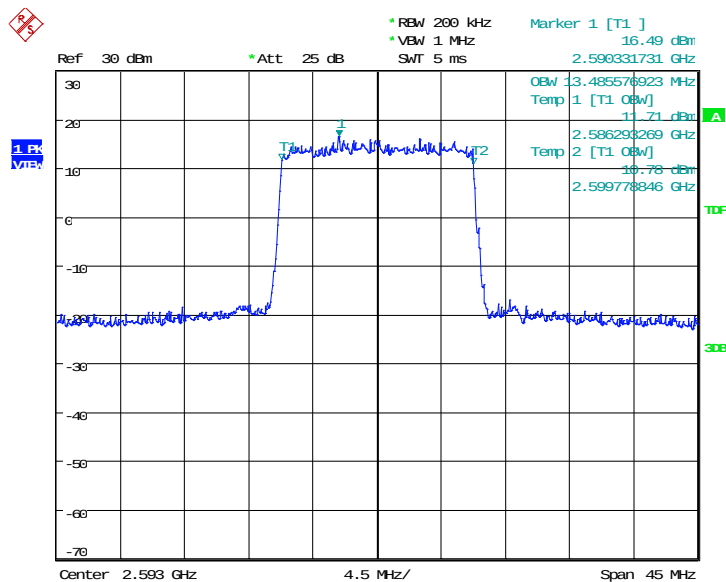
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	13485.58	13485.58	13485.58

LTE band 41, 15MHz Bandwidth, QPSK (99% BW)



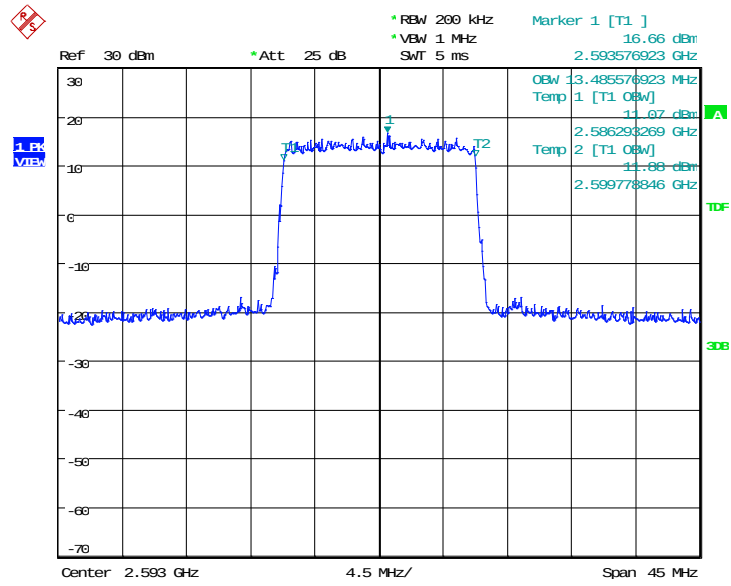
Date: 4.DEC.2019 12:58:01

LTE band 41, 15MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 12:58:14

LTE band 41, 15MHz Bandwidth, 64QAM (99% BW)

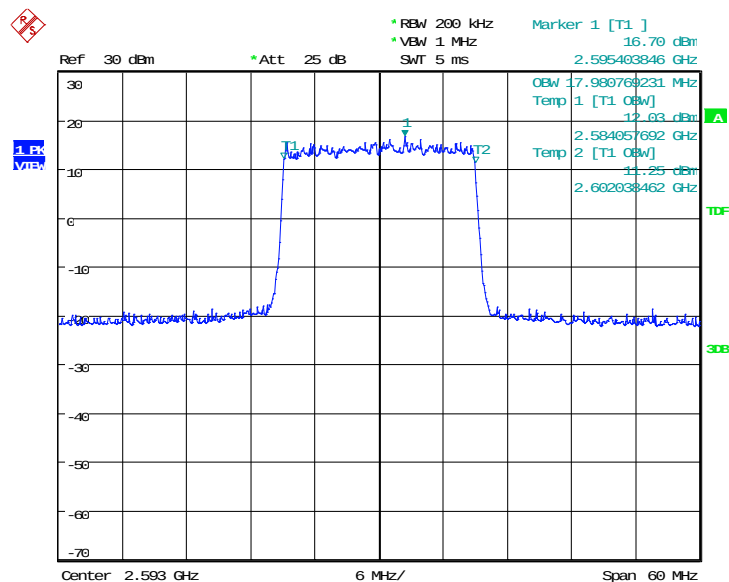


Date: 6.DEC.2019 05:51:34

LTE band 41, 20MHz (99% BW)

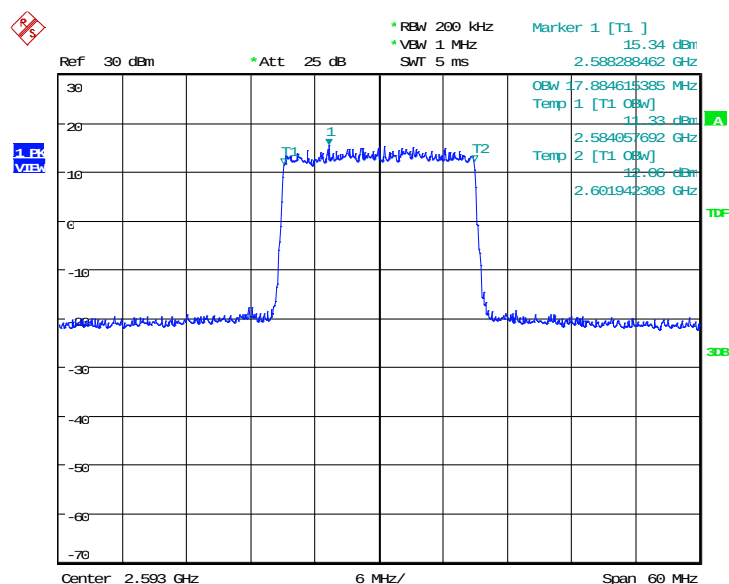
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	17980.77	17884.62	17884.62

LTE band 41, 20MHz Bandwidth, QPSK (99% BW)



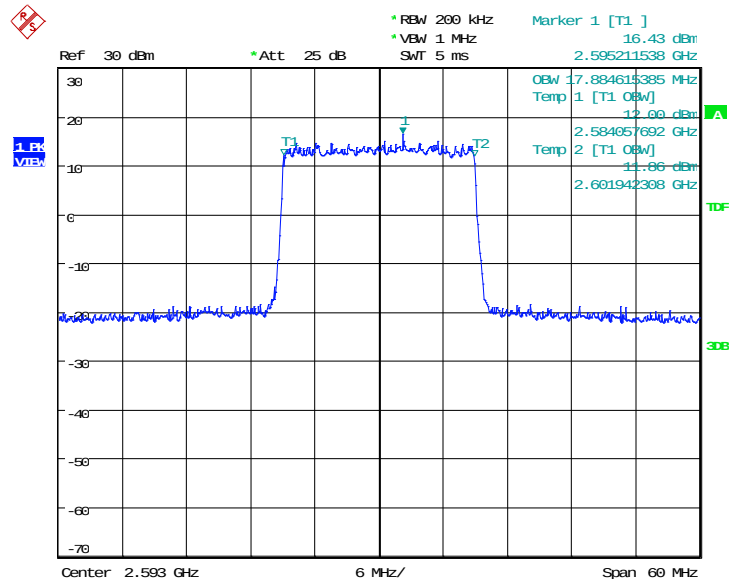
Date: 4.DEC.2019 13:02:22

LTE band 41, 20MHz Bandwidth, 16QAM (99% BW)



Date: 4.DEC.2019 13:02:36

LTE band 41, 20MHz Bandwidth, 64QAM (99% BW)

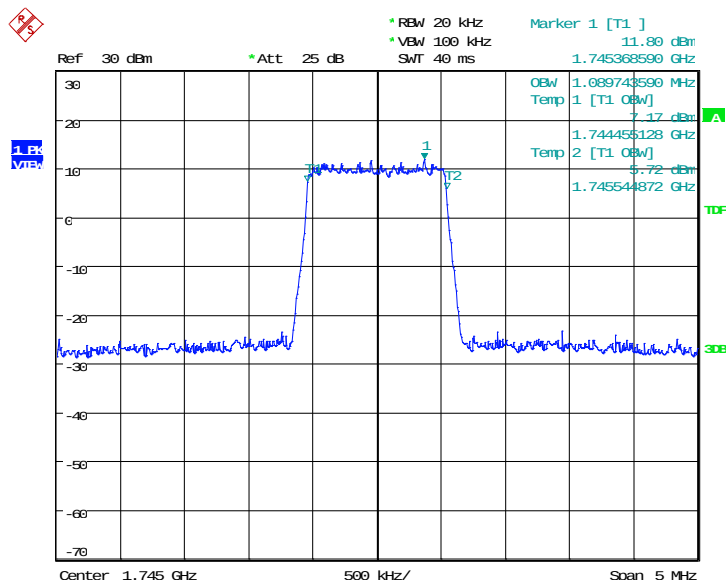


Date: 6.DEC.2019 05:54:20

LTE band 66, 1.4MHz (99% BW)

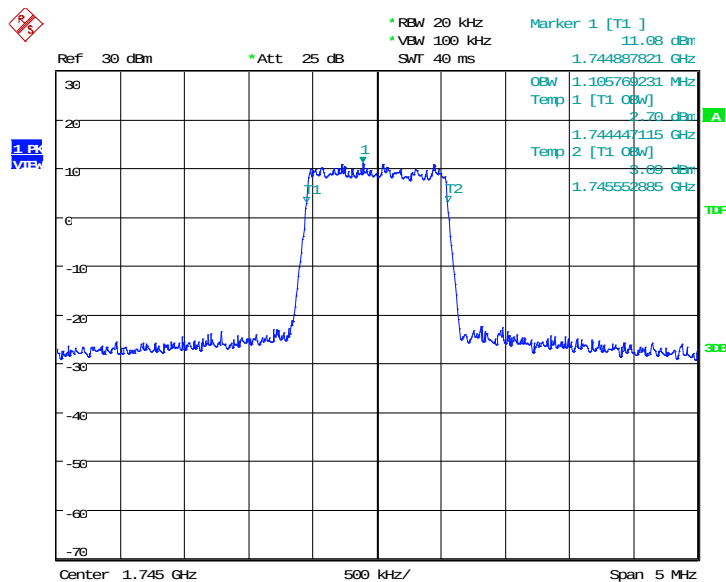
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1745.0	QPSK	16QAM	64QAM
	1089.74	1105.77	1089.74

LTE band 66, 1.4MHz Bandwidth, QPSK (99% BW)



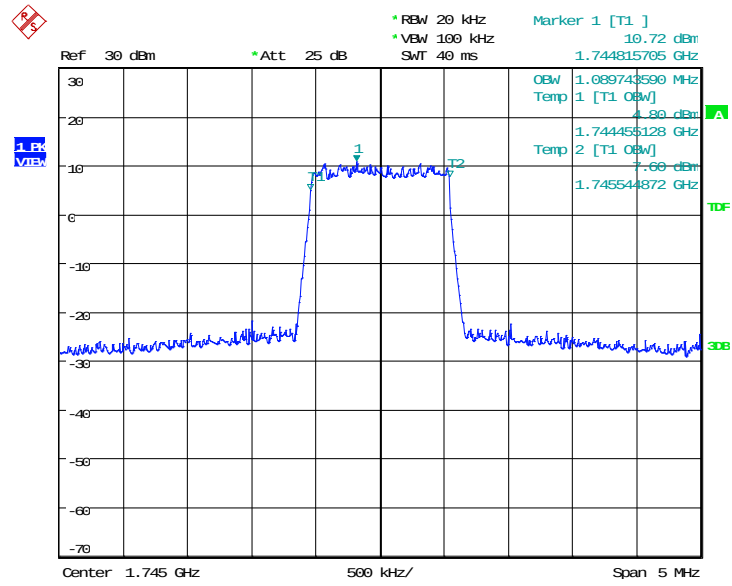
Date: 5.DEC.2019 11:20:20

LTE band 66, 1.4MHz Bandwidth, 16QAM (99% BW)



Date: 5.DEC.2019 11:20:34

LTE band 66, 1.4MHz Bandwidth, 64QAM (99% BW)

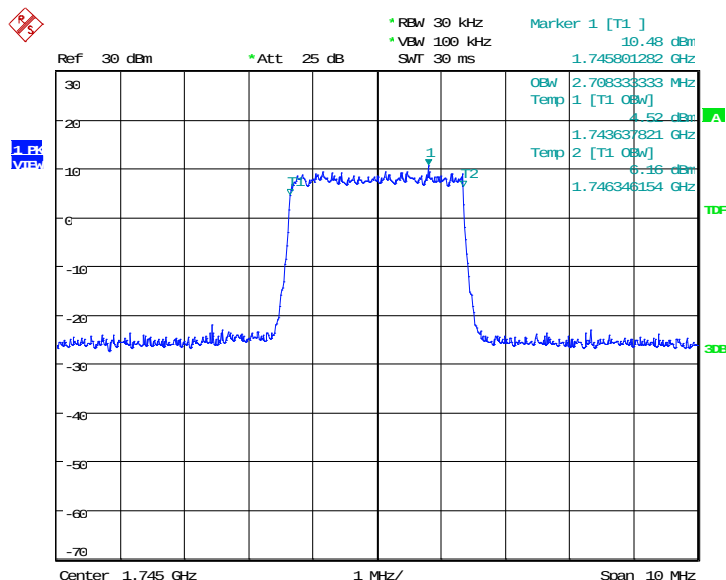


Date: 6.DEC.2019 06:22:20

LTE band 66, 3MHz (99% BW)

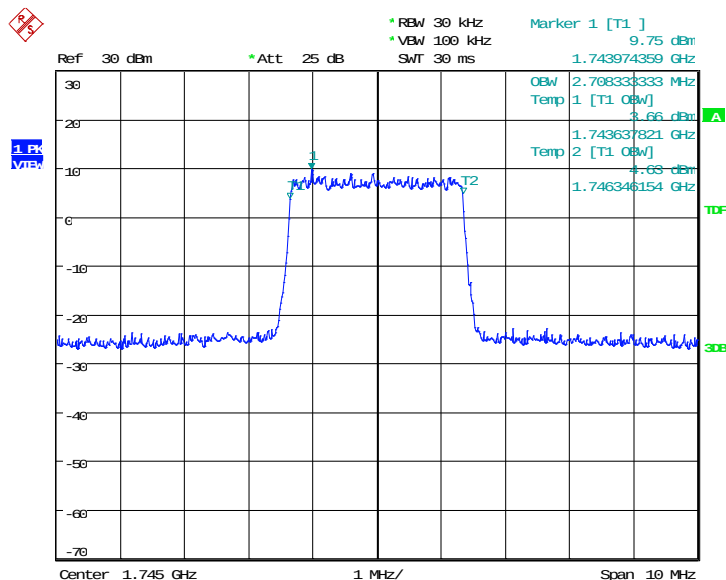
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1745.0	QPSK	16QAM	64QAM
	2708.33	2708.33	2692.31

LTE band 66, 3MHz Bandwidth, QPSK (99% BW)



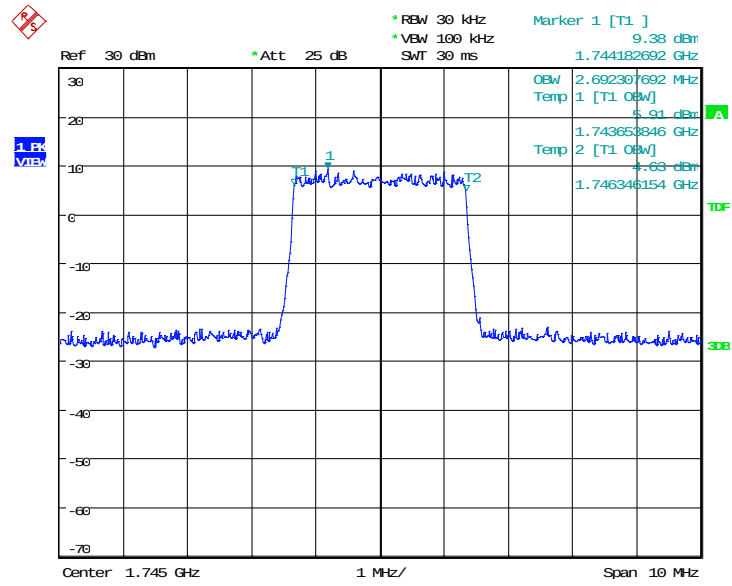
Date: 5.DEC.2019 11:24:41

LTE band 66, 3MHz Bandwidth, 16QAM (99% BW)



Date: 5.DEC.2019 11:24:55

LTE band 66, 3MHz Bandwidth, 64QAM (99% BW)

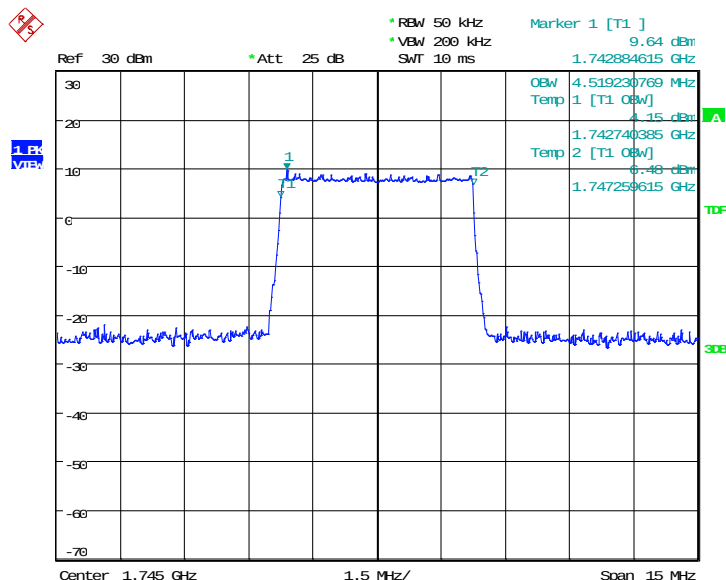


Date: 6.DEC.2019 06:25:03

LTE band 66, 5MHz (99% BW)

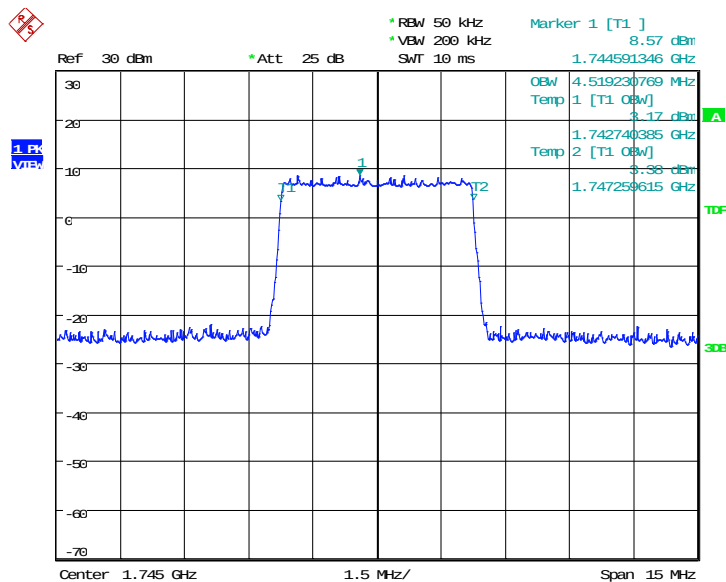
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1745.0	QPSK	16QAM	64QAM
	4519.23	4519.23	4519.23

LTE band 66, 5MHz Bandwidth, QPSK (99% BW)



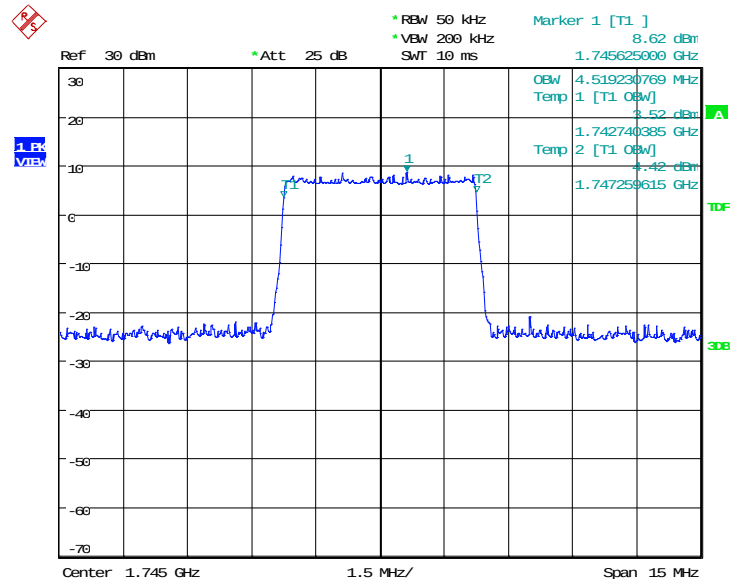
Date: 5.DEC.2019 11:28:59

LTE band 66, 5MHz Bandwidth,16QAM (99% BW)



Date: 5.DEC.2019 11:29:13

LTE band 66, 5MHz Bandwidth,64QAM (99% BW)

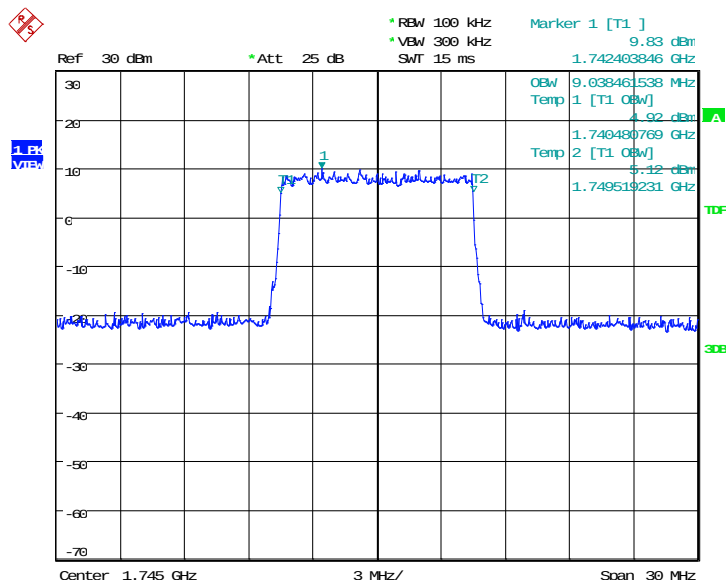


Date: 6.DEC.2019 06:27:48

LTE band 66, 10MHz (99% BW)

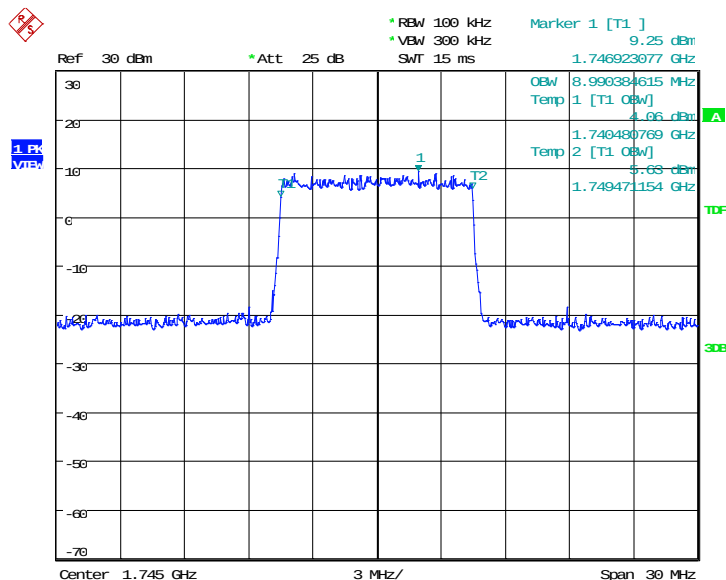
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1745.0	QPSK	16QAM	64QAM
	9038.46	8990.38	9038.46

LTE band 66, 10MHz Bandwidth, QPSK (99% BW)



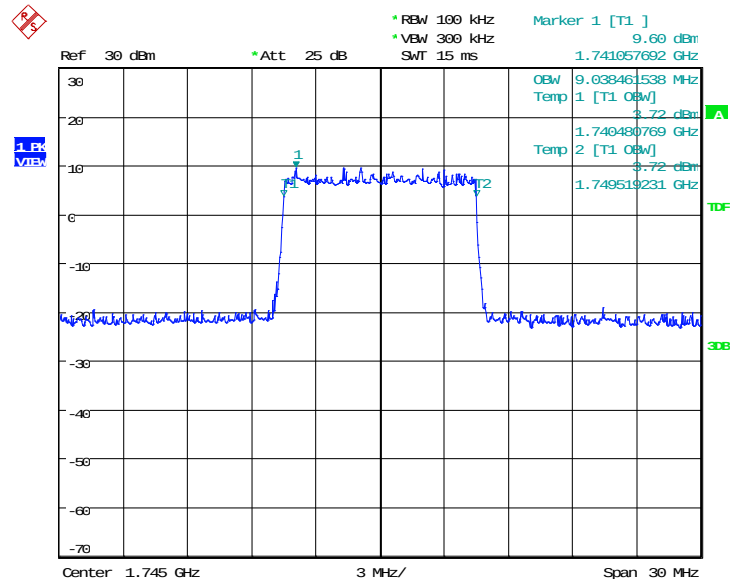
Date: 5.DEC.2019 11:33:20

LTE band 66, 10MHz Bandwidth, 16QAM (99% BW)



Date: 5.DEC.2019 11:33:33

LTE band 66, 10MHz Bandwidth, 64QAM (99% BW)

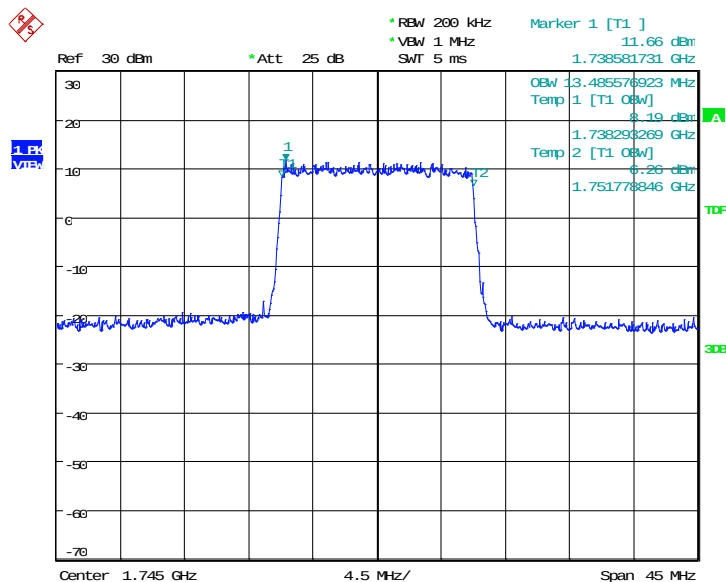


Date: 6.DEC.2019 06:30:33

LTE band 66, 15MHz (99% BW)

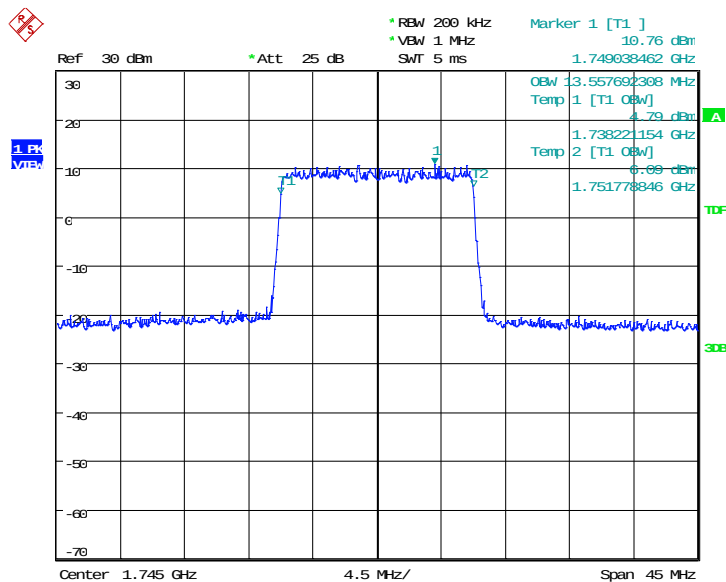
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1745.0	QPSK	16QAM	64QAM
	13485.58	13557.69	13485.58

LTE band 66, 15MHz Bandwidth, QPSK (99% BW)



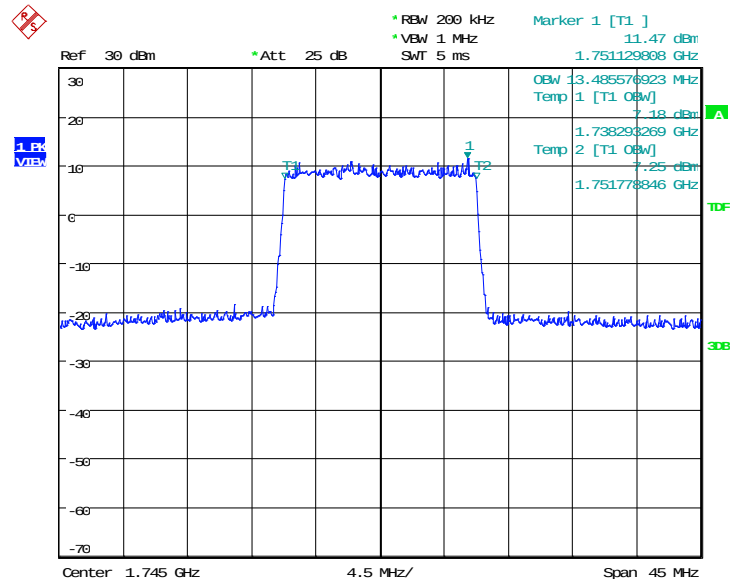
Date: 5.DEC.2019 11:37:40

LTE band 66, 15MHz Bandwidth, 16QAM (99% BW)



Date: 5.DEC.2019 11:37:54

LTE band 66, 15MHz Bandwidth, 64QAM (99% BW)

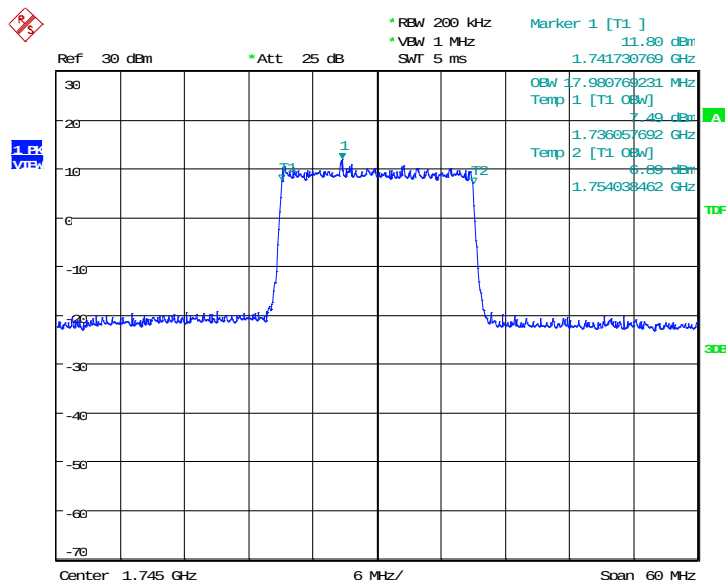


Date: 6.DEC.2019 06:33:16

LTE band 66, 20MHz (99% BW)

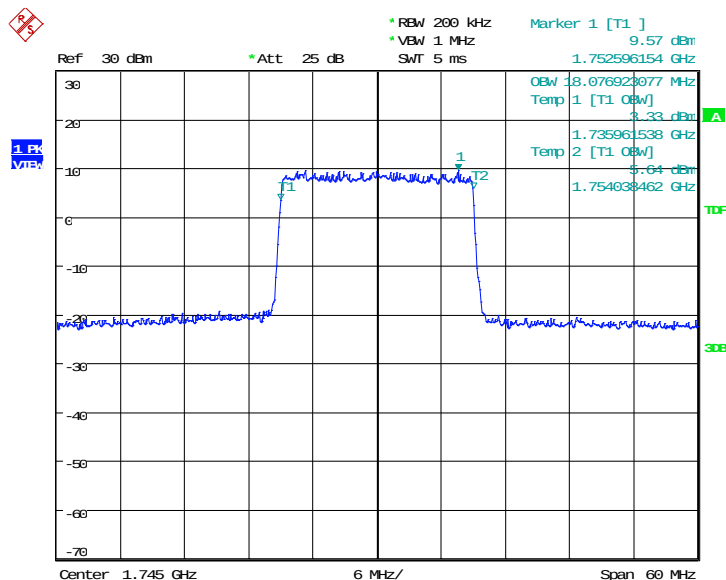
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1745.0	QPSK	16QAM	64QAM
	17980.77	18076.92	17980.77

LTE band 66, 20MHz Bandwidth, QPSK (99% BW)



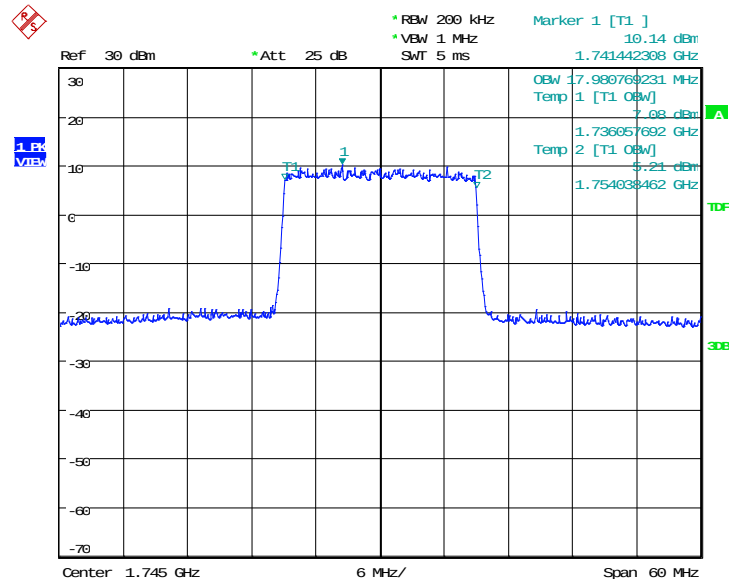
Date: 5.DEC.2019 11:42:30

LTE band 66, 20MHz Bandwidth, 16QAM (99% BW)



Date: 5.DEC.2019 11:42:44

LTE band 66, 20MHz Bandwidth, 64QAM (99% BW)

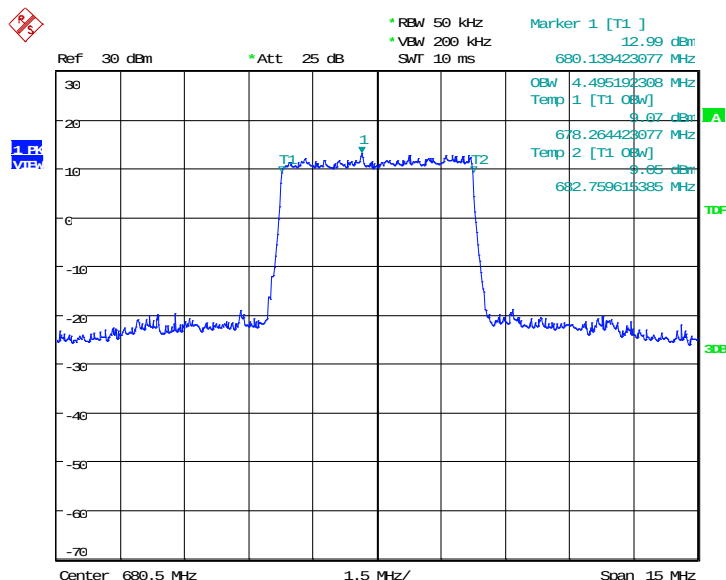


Date: 6.DEC.2019 06:35:59

LTE band 71, 5MHz (99% BW)

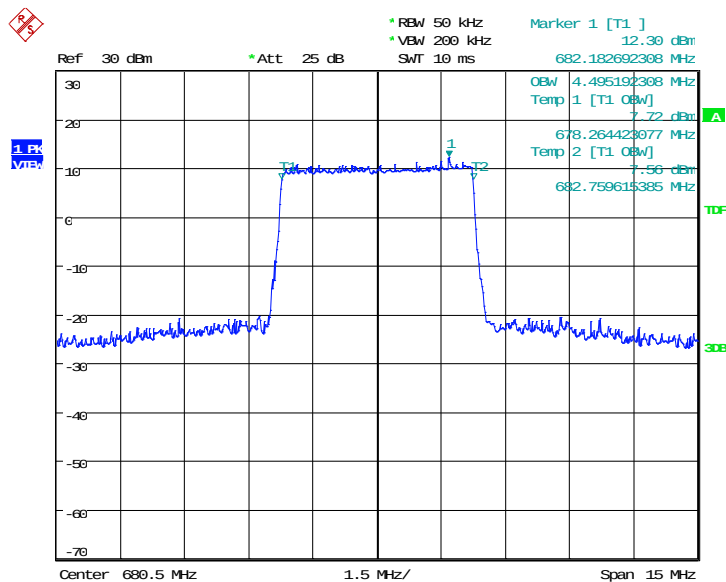
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
680.5	QPSK	16QAM	64QAM
	4495.19	4495.19	4495.19

LTE band 71, 5MHz Bandwidth, QPSK (99% BW)



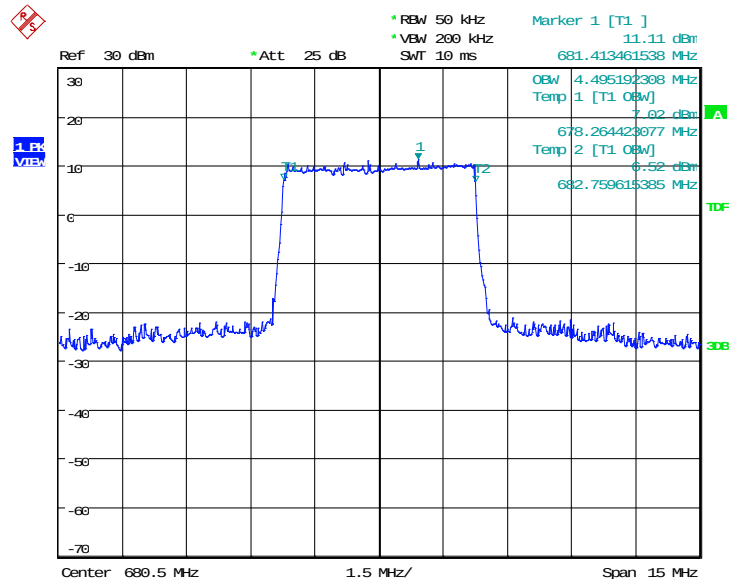
Date: 15.DEC.2019 09:59:27

LTE band 71, 5MHz Bandwidth, 16QAM (99% BW)



Date: 15.DEC.2019 10:01:35

LTE band 71, 5MHz Bandwidth,64QAM (99% BW)

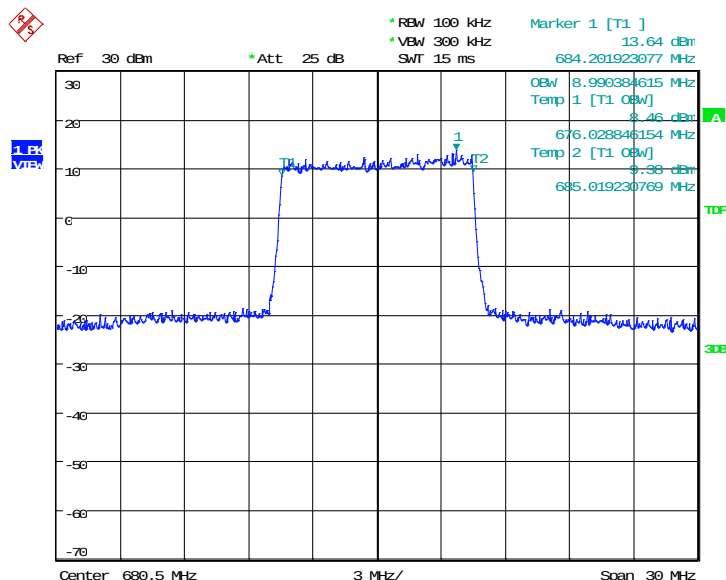


Date: 15.DEC.2019 10:01:57

LTE band 71, 10MHz (99% BW)

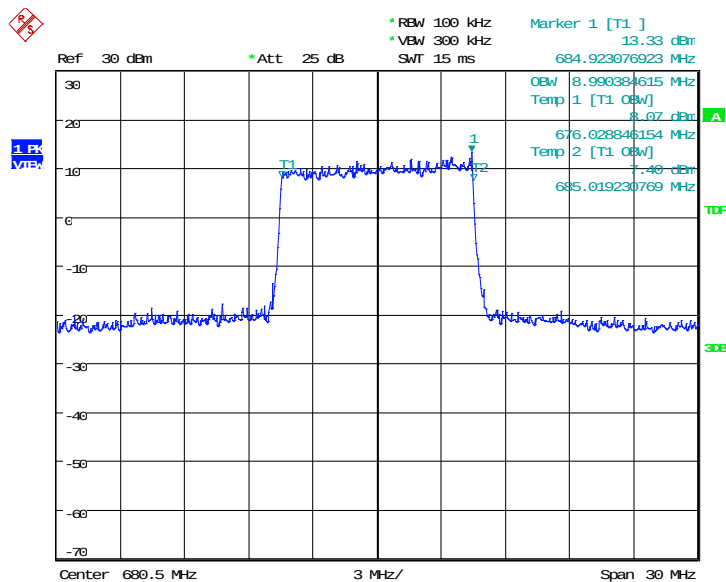
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
680.5	QPSK	16QAM	64QAM
	8990.38	8990.38	9038.46

LTE band 71, 10MHz Bandwidth, QPSK (99% BW)



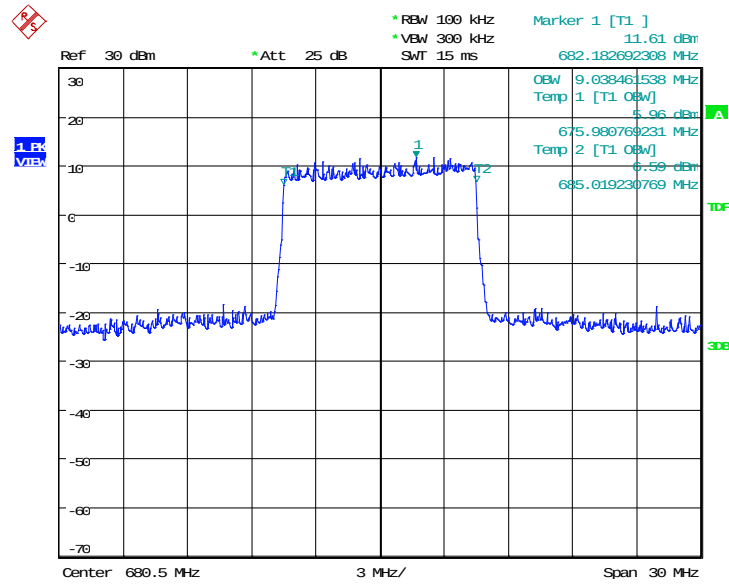
Date: 15.DEC.2019 10:03:03

LTE band 71, 10MHz Bandwidth, 16QAM (99% BW)



Date: 15.DEC.2019 10:05:28

LTE band 71, 10MHz Bandwidth, 64QAM (99% BW)

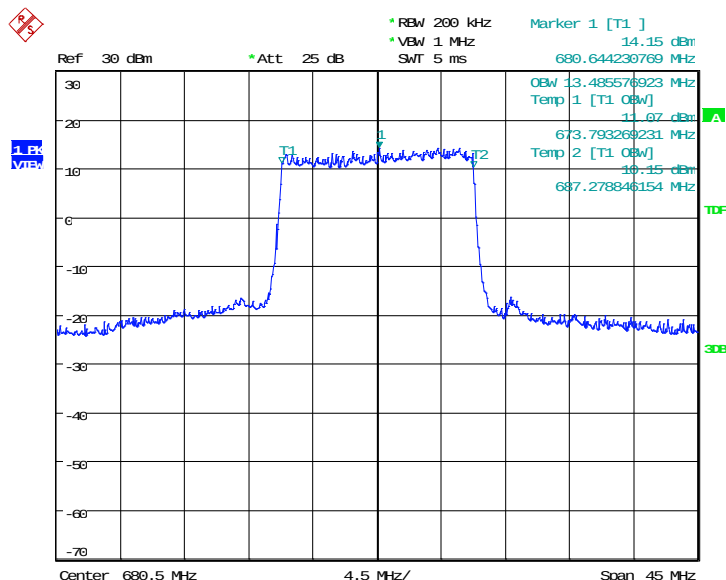


Date: 15.DEC.2019 10:05:02

LTE band 71, 15MHz (99% BW)

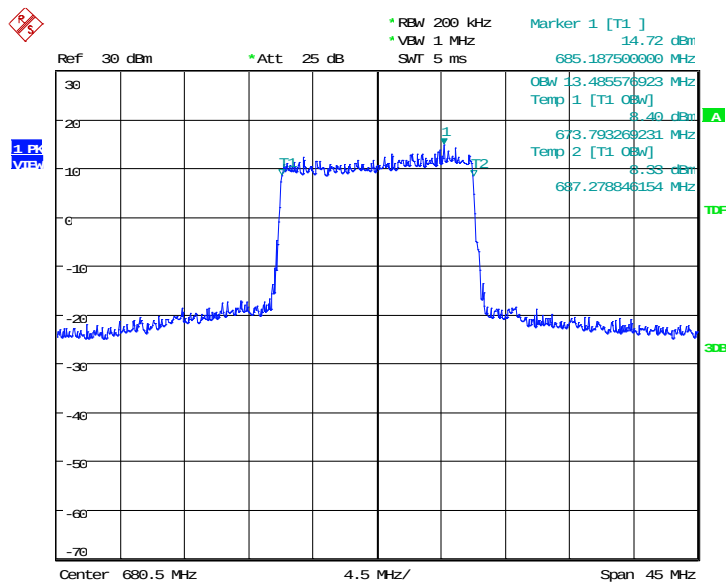
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
680.5	QPSK	16QAM	64QAM
	13485.58	13485.58	13485.58

LTE band 71, 15MHz Bandwidth, QPSK (99% BW)



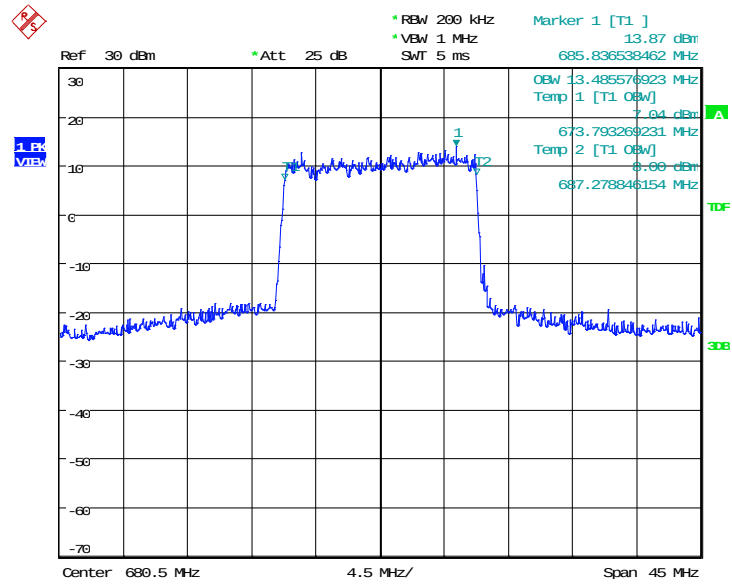
Date: 15.DEC.2019 10:06:32

LTE band 71, 15MHz Bandwidth, 16QAM (99% BW)



Date: 15.DEC.2019 10:08:32

LTE band 71, 15MHz Bandwidth, 64QAM (99% BW)

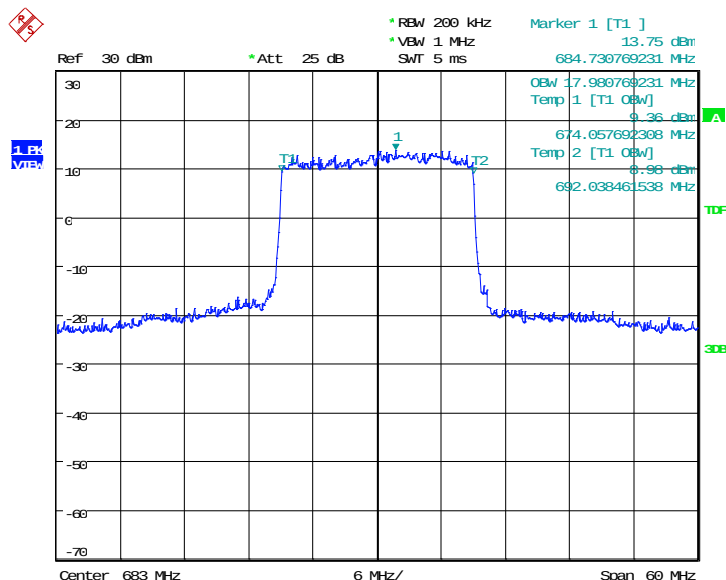


Date: 15.DEC.2019 10:08:48

LTE band 71, 20MHz (99% BW)

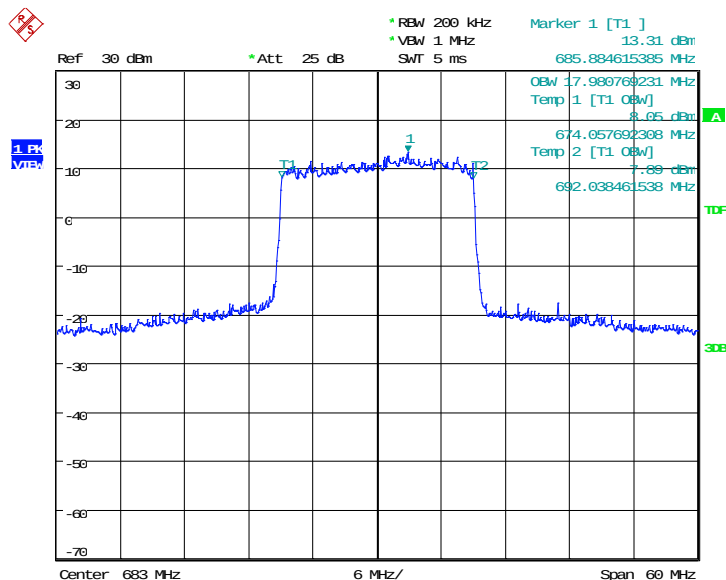
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
683.0	QPSK	16QAM	64QAM
	17980.77	17980.77	17980.77

LTE band 71, 20MHz Bandwidth, QPSK (99% BW)



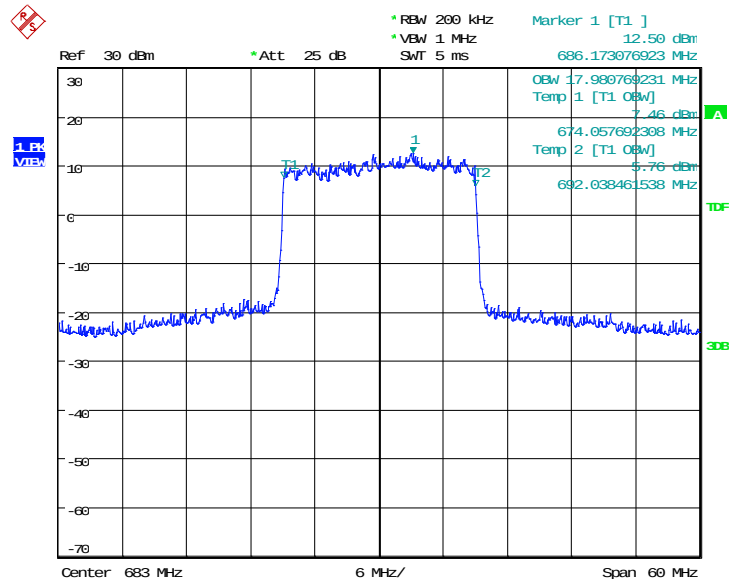
Date: 15.DEC.2019 10:27:21

LTE band 71, 20MHz Bandwidth, 16QAM (99% BW)



Date: 15.DEC.2019 10:29:25

LTE band 71, 20MHz Bandwidth, 64QAM (99% BW)

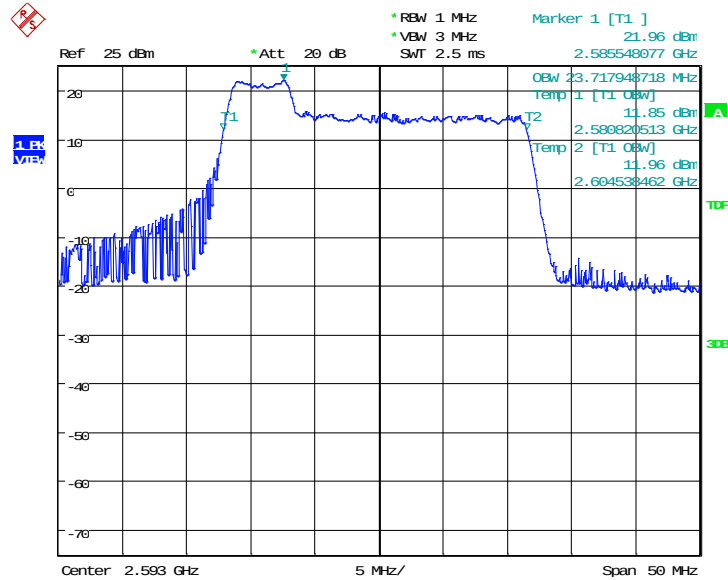


Date: 15.DEC.2019 10:29:52

LTE Band CA_41C, 5MHz+20MHz (99% BW)

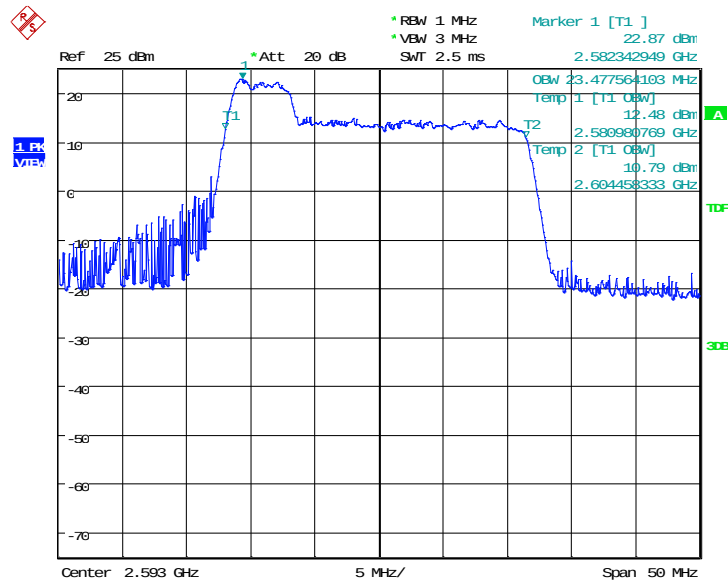
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	23717.95	23477.56	23477.56

LTE Band CA_41C, 5MHz+20MHz Bandwidth, QPSK (99% BW)



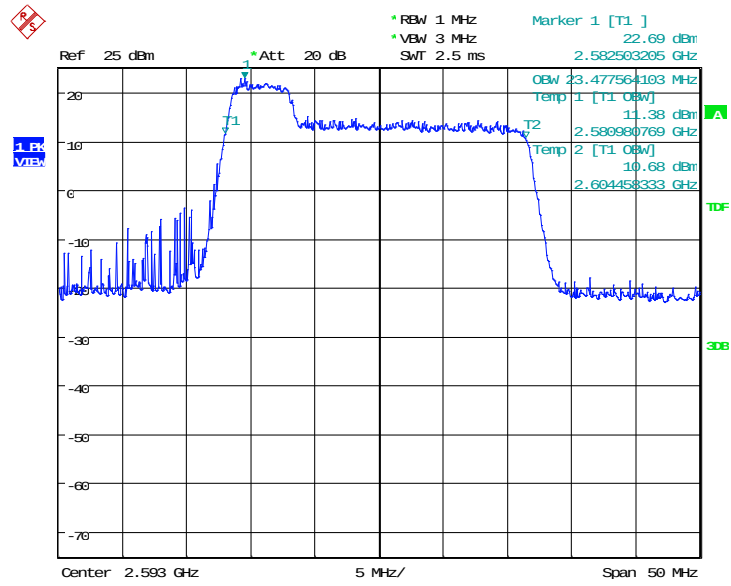
Date: 11. JUN. 2019 06:20:42

LTE Band CA_41C, 5MHz+20MHz Bandwidth, 16QAM (99% BW)



Date: 11. JUN. 2019 06:22:02

LTE Band CA_41C, 5MHz+20MHz Bandwidth, 64QAM (99% BW)

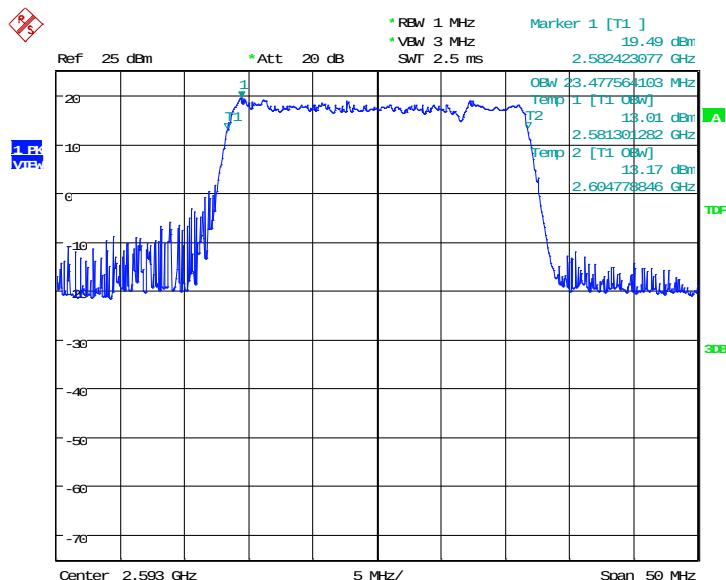


Date: 11.JUN.2019 06:22:19

LTE Band CA_41C, 20MHz+5MHz (99% BW)

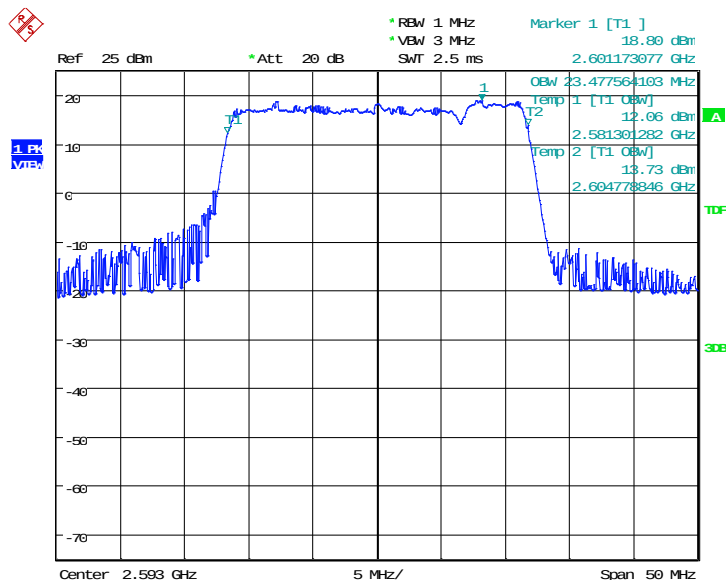
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	23477.56	23477.56	23397.44

LTE Band CA_41C, 20MHz+5MHz Bandwidth, QPSK (99% BW)



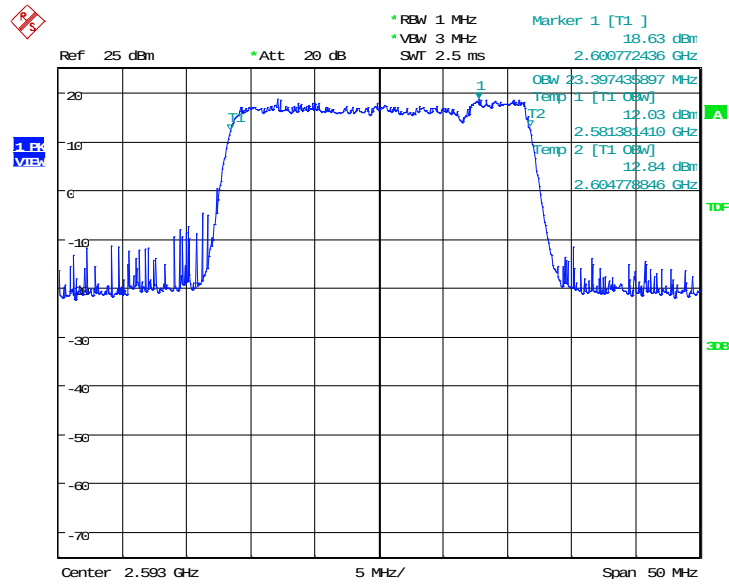
Date: 11. JUN. 2019 06:34:32

LTE Band CA_41C, 20MHz+5MHz Bandwidth, 16QAM (99% BW)



Date: 11. JUN. 2019 06:33:52

LTE Band CA_41C, 20MHz+5MHz Bandwidth, 64QAM (99% BW)

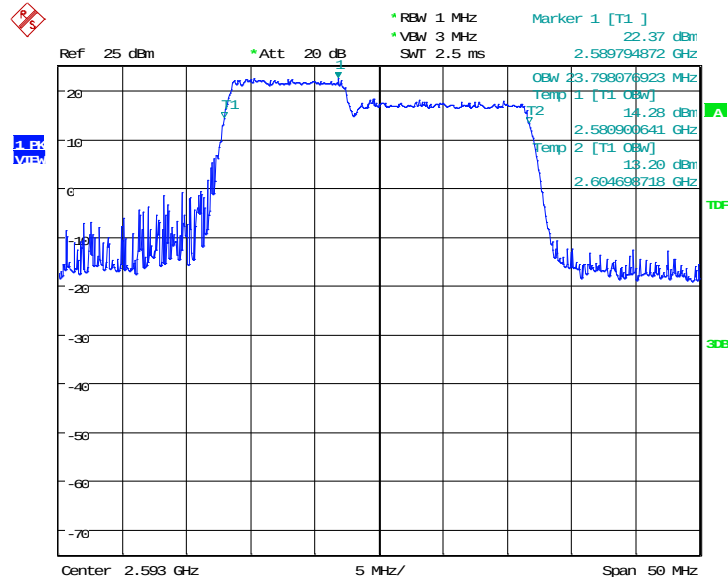


Date: 11.JUN.2019 06:33:10

LTE Band CA_41C, 10MHz+15MHz (99% BW)

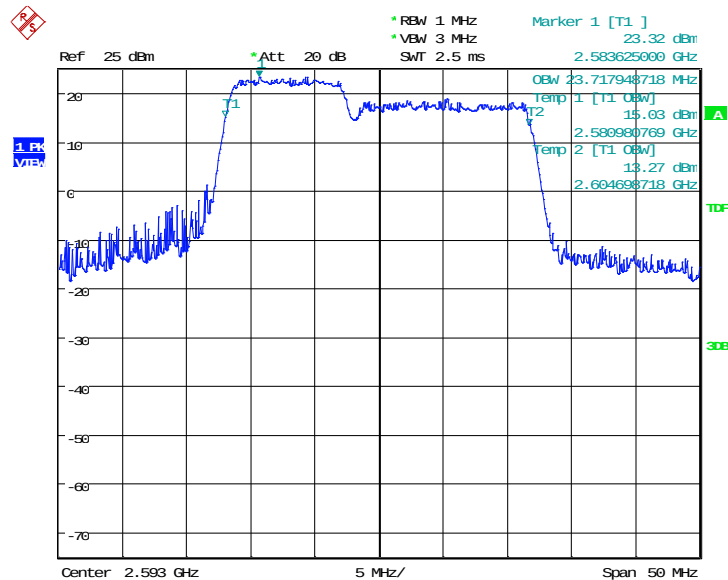
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	23798.08	23717.95	23717.95

LTE Band CA_41C, 10MHz+15MHz Bandwidth, QPSK (99% BW)



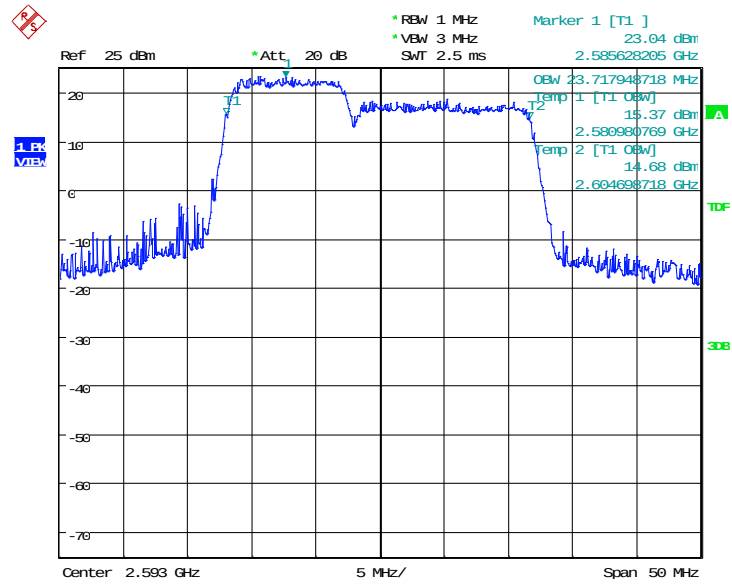
Date: 11. JUN. 2019 06:36:57

LTE Band CA_41C, 10MHz+15MHz Bandwidth, 16QAM (99% BW)



Date: 11. JUN. 2019 06:37:37

LTE Band CA_41C, 10MHz+15MHz Bandwidth, 64QAM (99% BW)

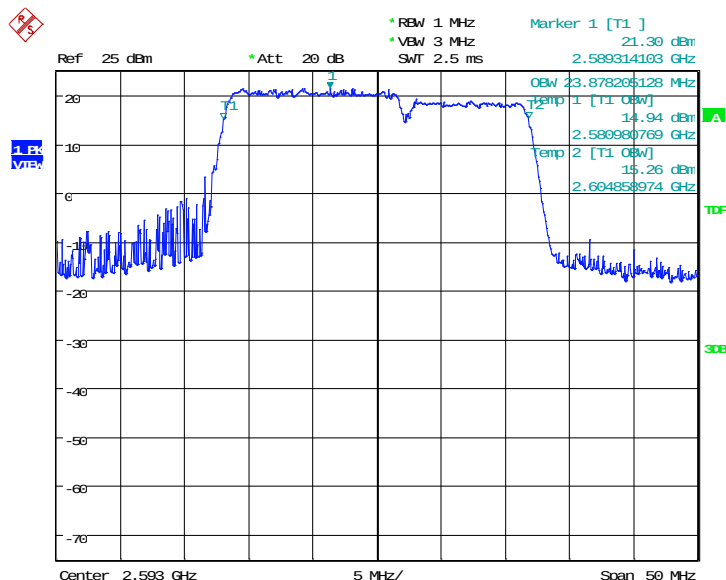


Date: 11.JUN.2019 06:37:51

LTE Band CA_41C, 15MHz+10MHz (99% BW)

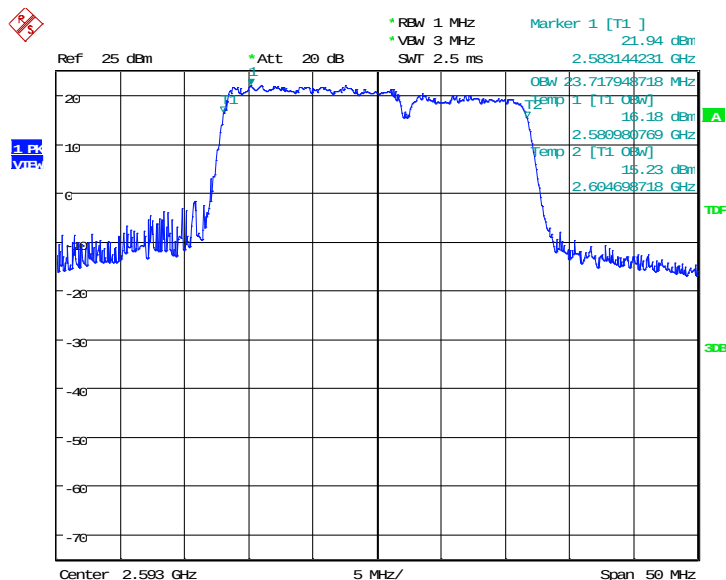
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	23878.21	23717.95	23637.82

LTE Band CA_41C, 15MHz+10MHz Bandwidth, QPSK (99% BW)



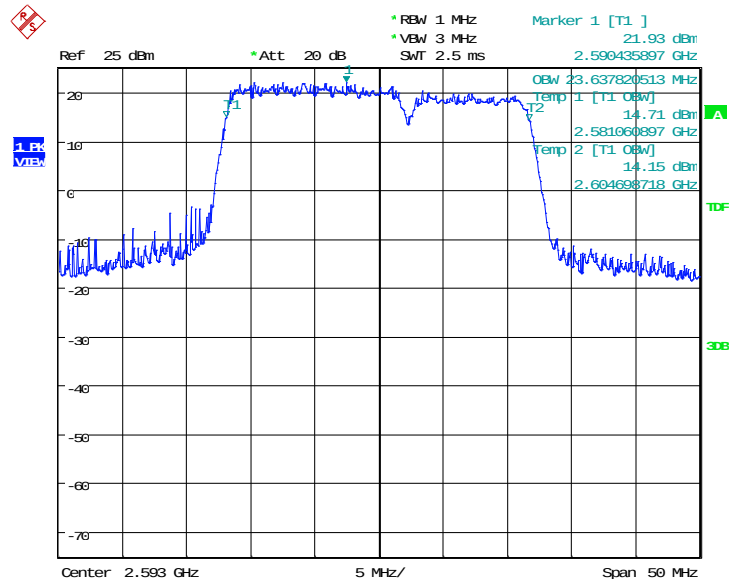
Date: 11. JUN. 2019 06:44:04

LTE Band CA_41C, 15MHz+10MHz Bandwidth, 16QAM (99% BW)



Date: 11. JUN. 2019 06:43:22

LTE Band CA_41C, 15MHz+10MHz Bandwidth, 64QAM (99% BW)

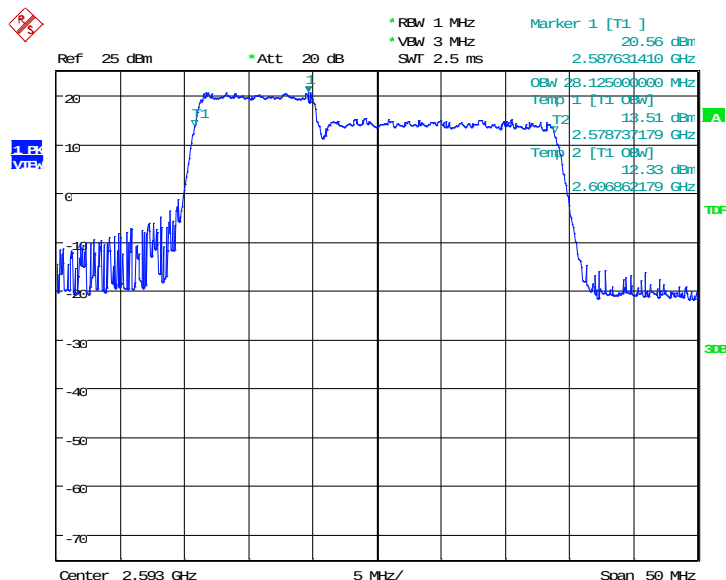


Date: 11.JUN.2019 06:42:41

LTE Band CA_41C, 10MHz+20MHz (99% BW)

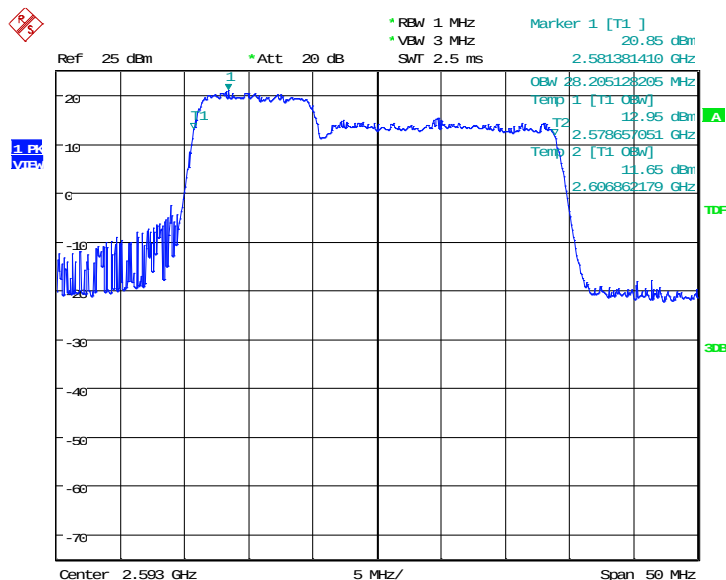
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	28125.00	28205.13	28125.00

LTE Band CA_41C, 10MHz+20MHz Bandwidth, QPSK (99% BW)



Date: 11. JUN. 2019 06:46:09

LTE Band CA_41C, 10MHz+20MHz Bandwidth, 16QAM (99% BW)



Date: 11. JUN. 2019 06:46:55

* RBW 1 MHz
 * VBW 3 MHz
 * Att 20 dB
 * SWT 2.5 ms

Marker 1 [T1]
 20.62 dBm
 2.581221154 GHz

Ref 25 dBm
 20.62 dBm
 2.581221154 GHz

OBW 28.125000000 MHz
 Temp 1 [T1 OBW]
 13.86 dBm
 2.578731719 GHz
 T2
 Temp 2 [T1 OBW]
 9.96 dBm
 2.606862179 GHz

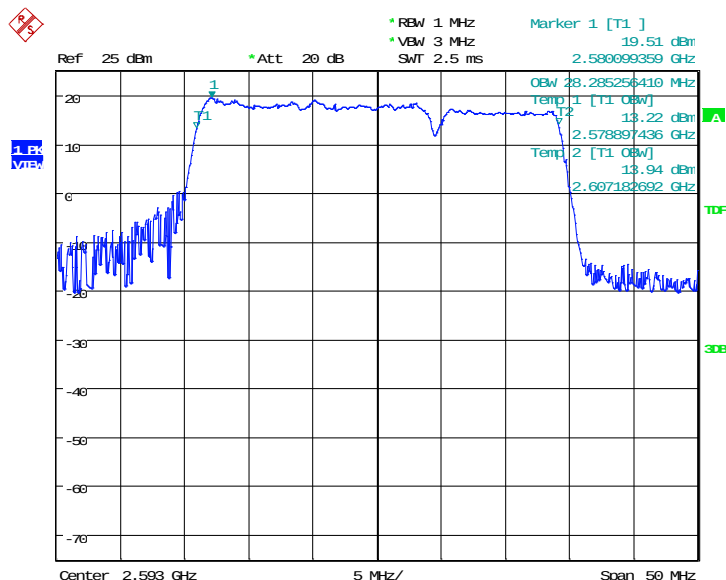
Center 2.593 GHz
 5 MHz/
 Span 50 MHz

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LTE Band CA_41C, 20MHz+10MHz (99% BW)

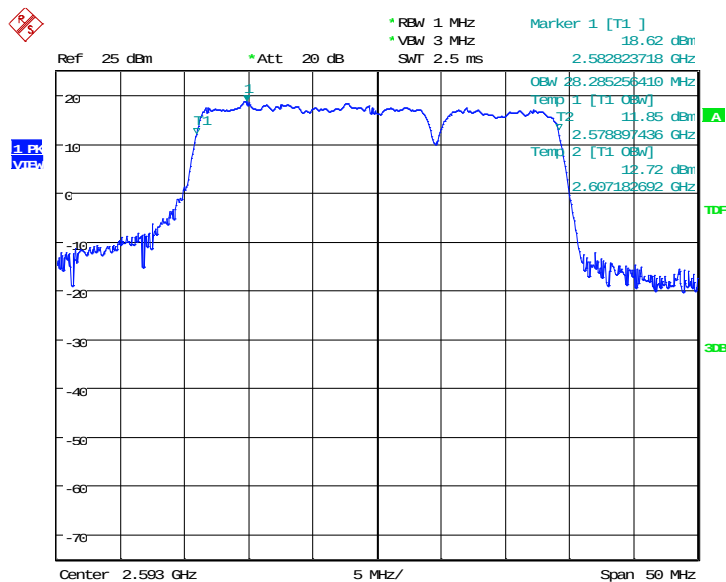
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	28285.26	28285.26	28205.13

LTE Band CA_41C, 20MHz+10MHz Bandwidth, QPSK (99% BW)



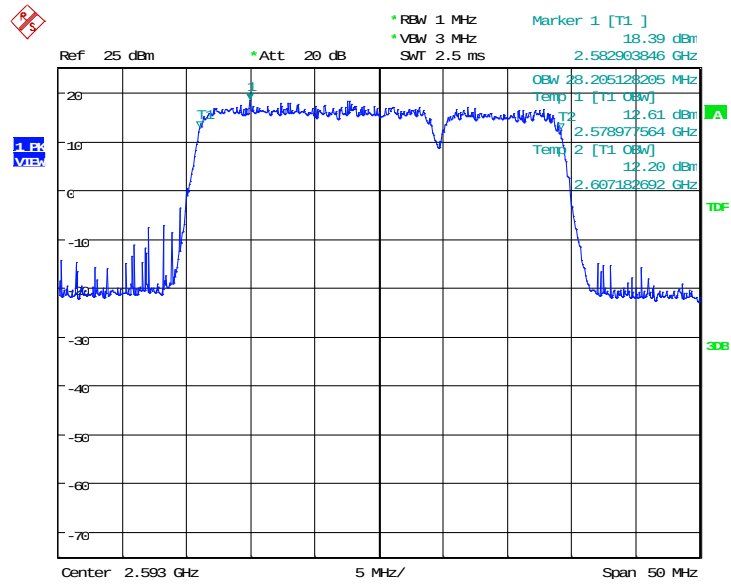
Date: 11. JUN. 2019 06:56:41

LTE Band CA_41C, 20MHz+10MHz Bandwidth, 16QAM (99% BW)



Date: 11. JUN. 2019 06:55:19

LTE Band CA_41C, 20MHz+10MHz Bandwidth, 64QAM (99% BW)

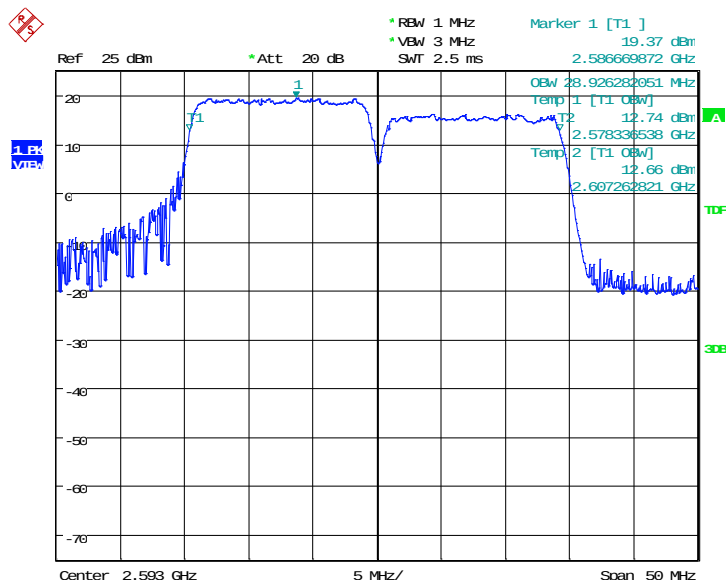


Date: 11.JUN.2019 06:53:18

LTE Band CA_41C, 15MHz+15MHz (99% BW)

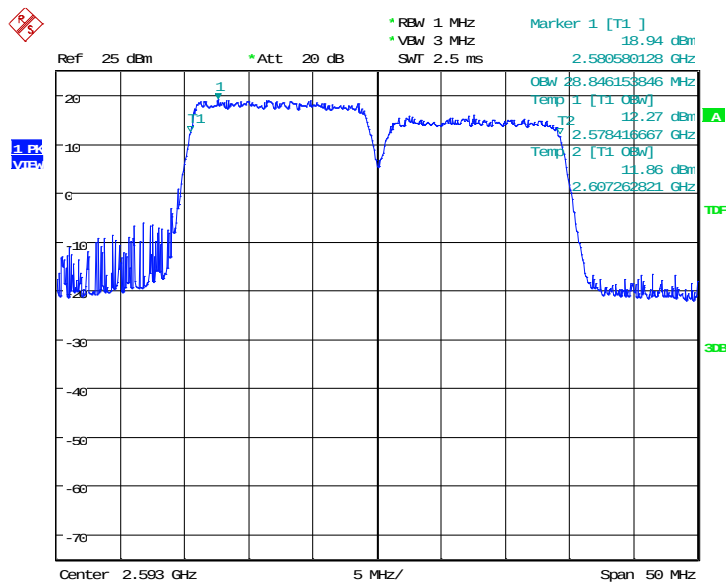
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	28926.28	28846.15	28685.90

LTE Band CA_41C, 15MHz+15MHz Bandwidth, QPSK (99% BW)



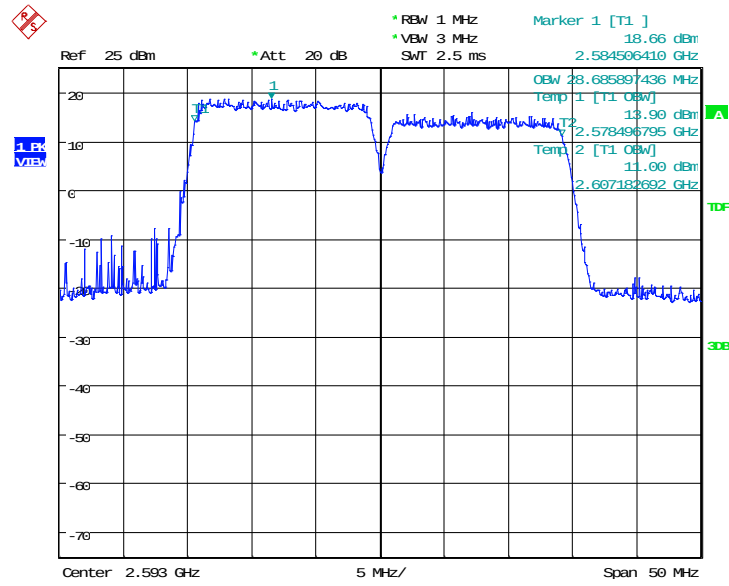
Date: 11. JUN. 2019 06:58:43

LTE Band CA_41C, 15MHz+15MHz Bandwidth, 16QAM (99% BW)



Date: 11. JUN. 2019 06:59:26

LTE Band CA_41C, 15MHz+15MHz Bandwidth, 64QAM (99% BW)

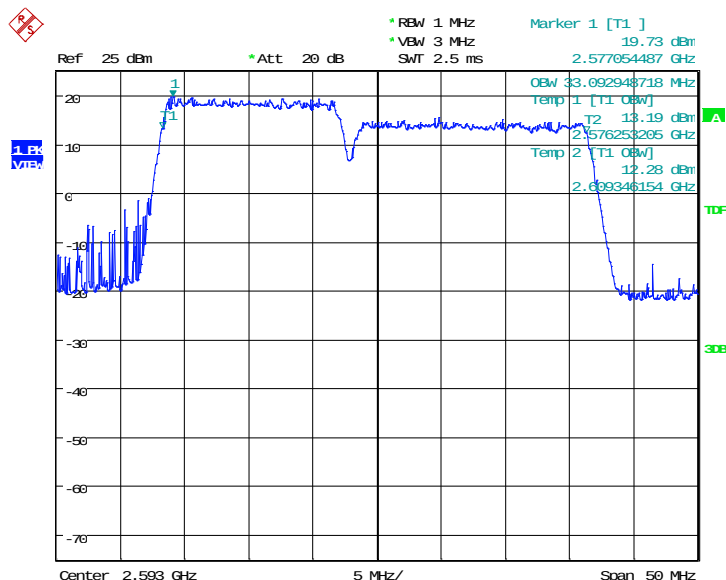


Date: 11.JUN.2019 06:59:42

LTE Band CA_41C, 15MHz+20MHz (99% BW)

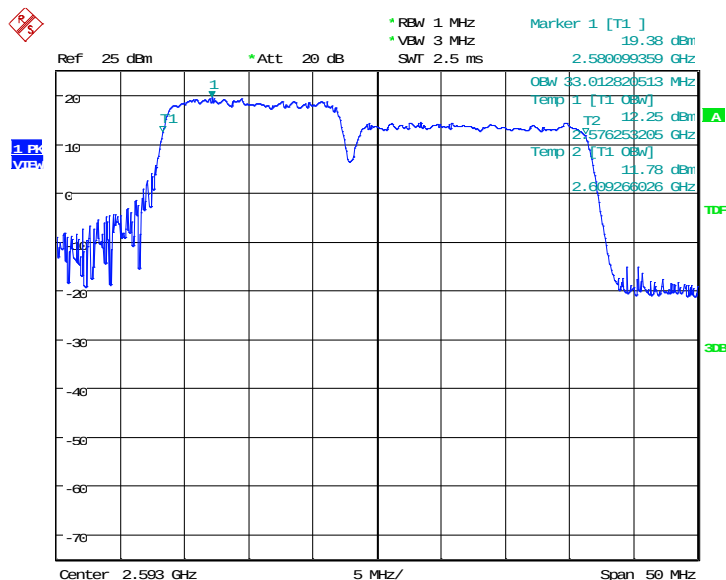
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	33092.95	33012.82	32852.56

LTE Band CA_41C, 15MHz+20MHz Bandwidth, QPSK (99% BW)



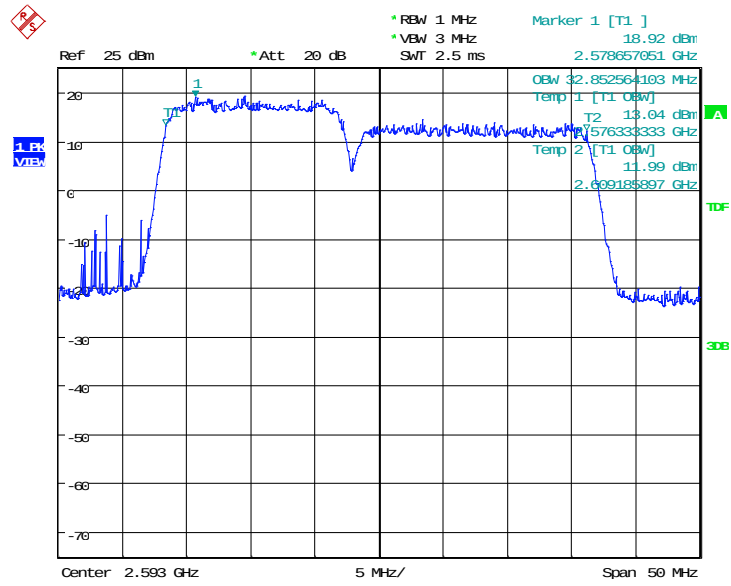
Date: 11.JUN.2019 07:07:56

LTE Band CA_41C, 15MHz+20MHz Bandwidth, 16QAM (99% BW)



Date: 11.JUN.2019 07:07:20

LTE Band CA_41C, 15MHz+20MHz Bandwidth, 64QAM (99% BW)

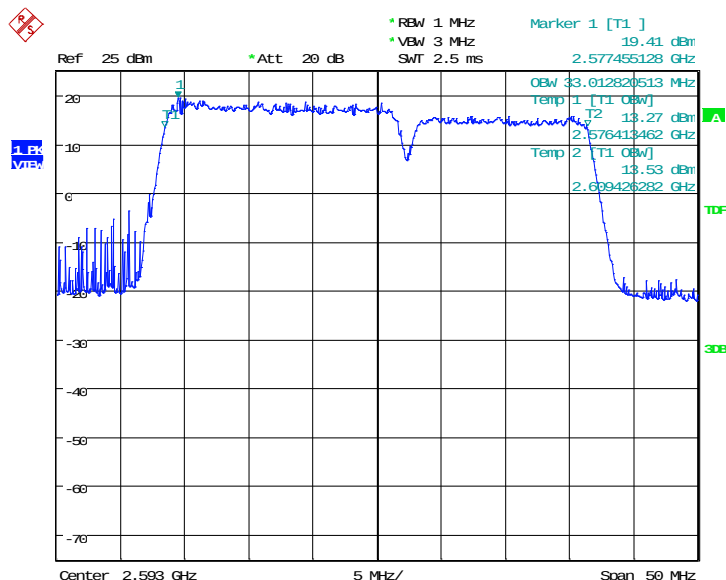


Date: 11.JUN.2019 07:06:01

LTE Band CA_41C, 20MHz+15MHz (99% BW)

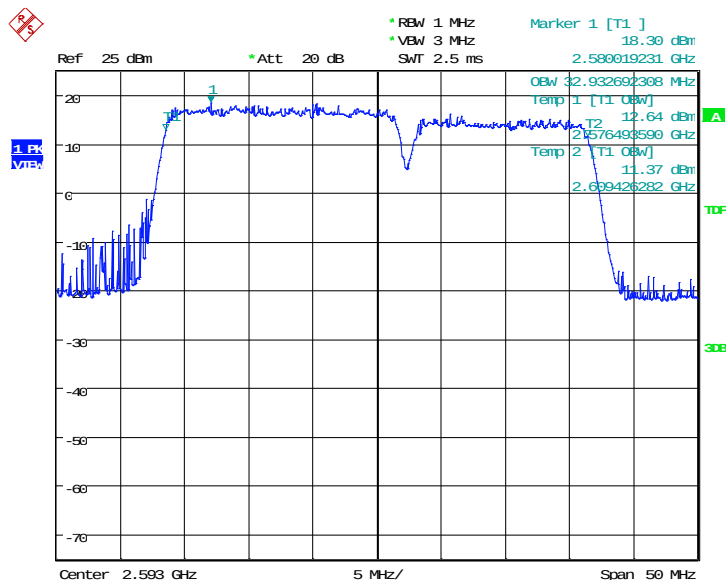
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	33012.82	32932.69	33012.82

LTE Band CA_41C, 20MHz+15MHz Bandwidth, QPSK (99% BW)



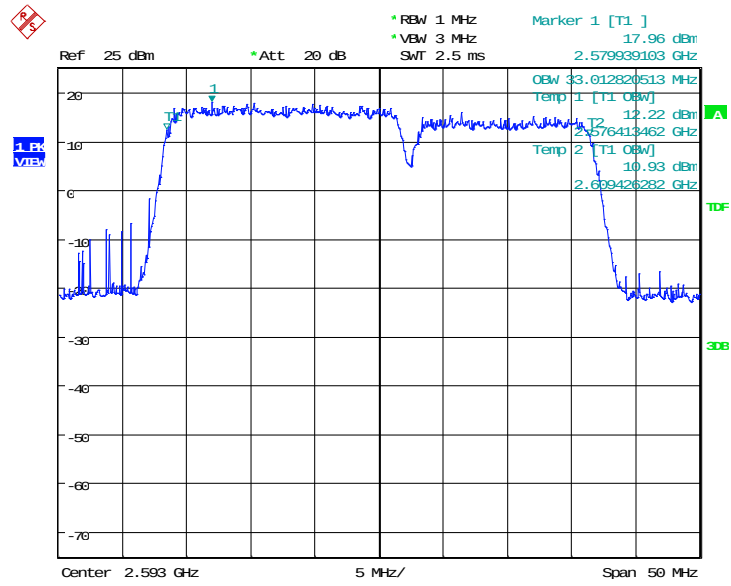
Date: 11. JUN. 2019 07:09:07

LTE Band CA_41C, 20MHz+15MHz Bandwidth, 16QAM (99% BW)



Date: 11. JUN. 2019 07:09:42

LTE Band CA_41C, 20MHz+15MHz Bandwidth, 64QAM (99% BW)

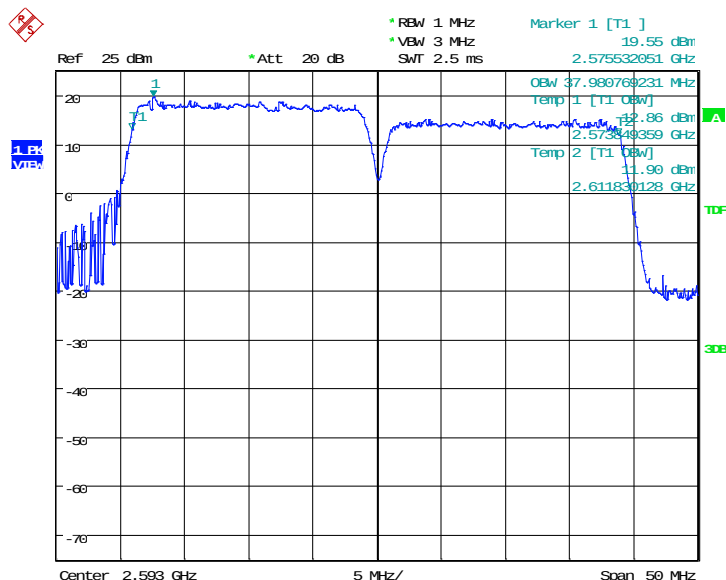


Date: 11.JUN.2019 07:09:56

LTE Band CA_41C, 20MHz+20MHz (99% BW)

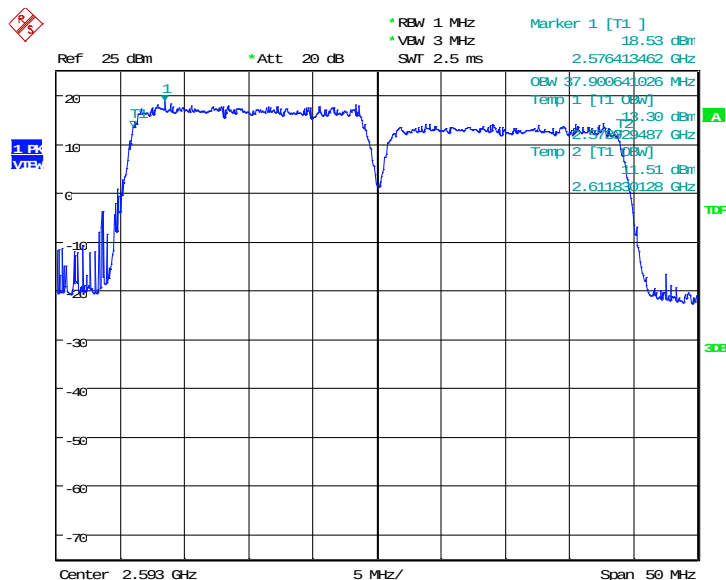
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
2593.0	QPSK	16QAM	64QAM
	37980.77	37900.64	37820.51

LTE Band CA_41C, 20MHz+20MHz Bandwidth, QPSK (99% BW)



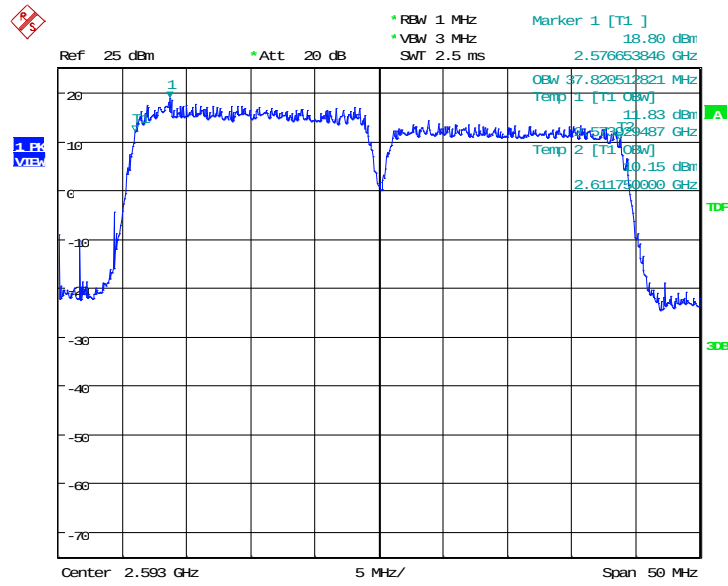
Date: 11.JUN.2019 07:15:52

LTE Band CA_41C, 20MHz+20MHz Bandwidth, 16QAM (99% BW)



Date: 11.JUN.2019 07:15:14

LTE Band CA_41C, 20MHz+20MHz Bandwidth, 64QAM (99% BW)



Date: 11.JUN.2019 07:14:56

Note: Expanded measurement uncertainty is $U = 3428 \text{ Hz}$, $k = 2$

A.5 EMISSION BANDWIDTH

Reference

FCC: CFR Part 2.1049, 22.917, 24.238, 27.53, 90.1215.

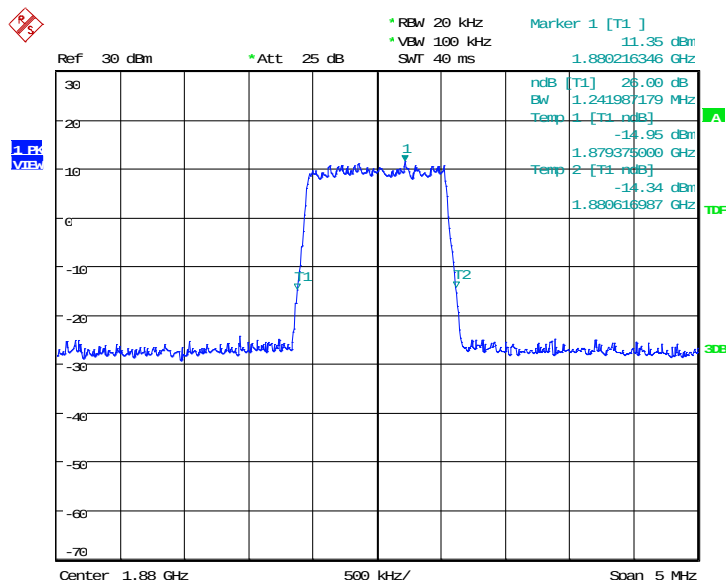
A.5.1 Emission Bandwidth Results

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

LTE band 2, 1.4MHz (-26dBc BW)

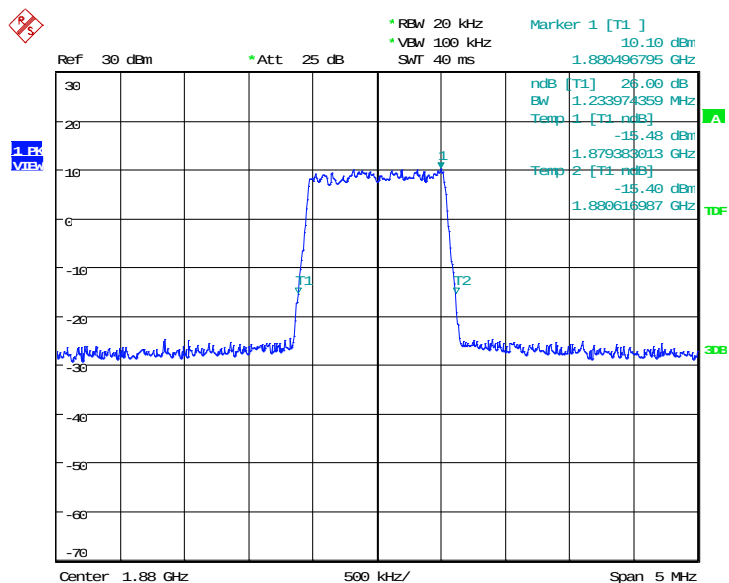
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	1241.99	1233.97	1241.99

LTE band 2, 1.4MHz Bandwidth, QPSK (-26dBc BW)



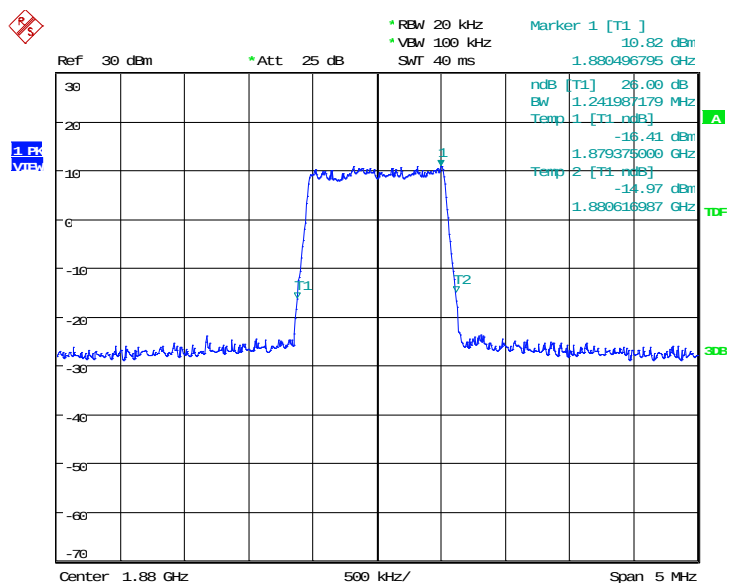
Date: 4.DEC.2019 07:00:03

LTE band 2, 1.4MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 07:00:19

LTE band 2, 1.4MHz Bandwidth, 64QAM (-26dBc BW)

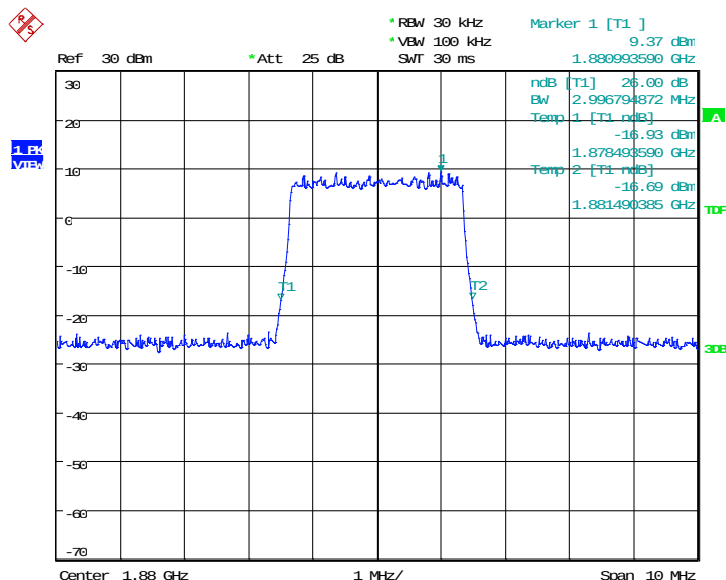


Date: 5.DEC.2019 13:29:44

LTE band 2, 3MHz (-26dBc BW)

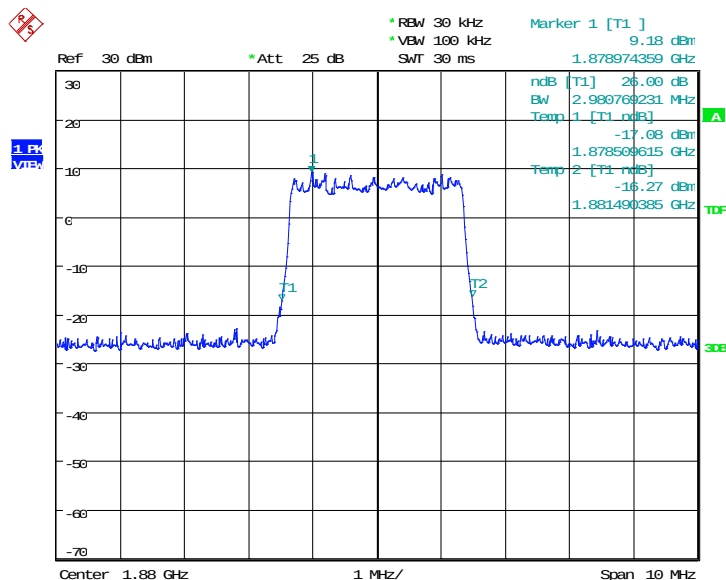
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	2996.79	2980.77	2996.79

LTE band 2, 3MHz Bandwidth, QPSK (-26dBc BW)



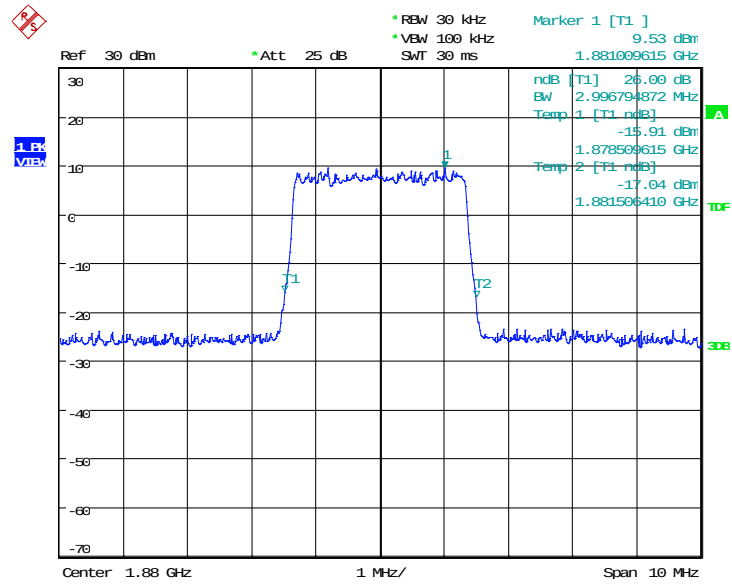
Date: 4.DEC.2019 07:04:23

LTE band 2, 3MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 07:04:39

LTE band 2, 3MHz Bandwidth, 64QAM (-26dBc BW)

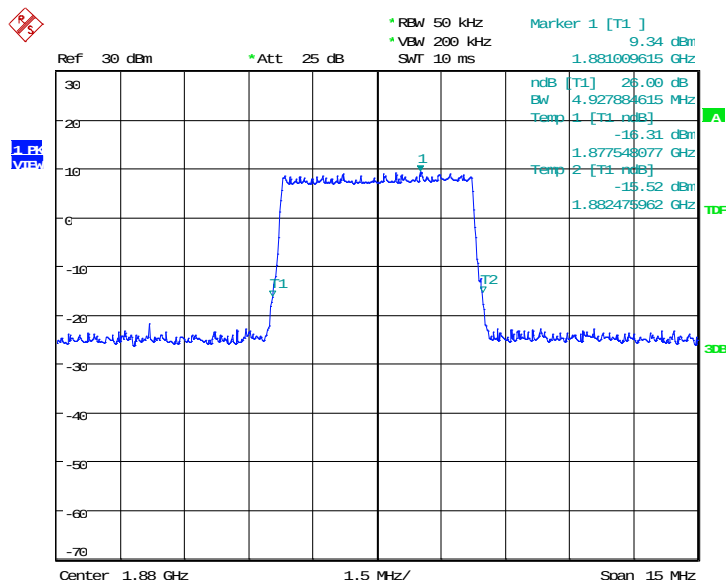


Date: 5.DEC.2019 13:33:14

LTE band 2, 5MHz (-26dBc BW)

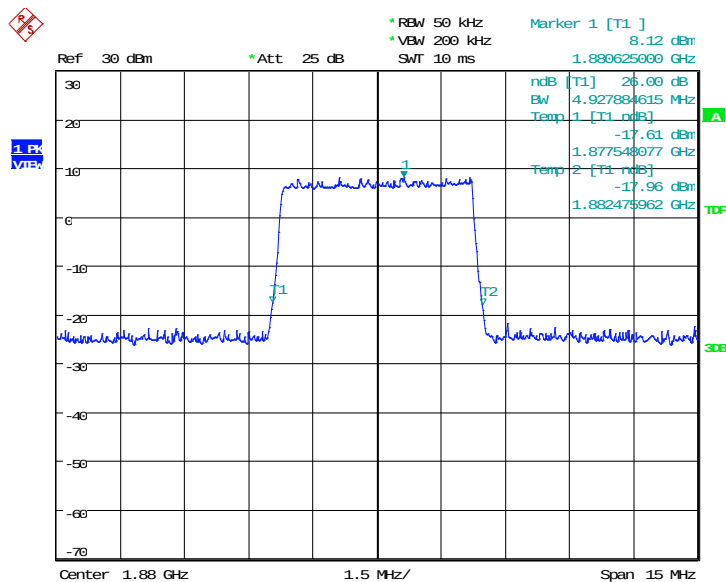
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	4927.88	4927.88	4927.88

LTE band 2, 5MHz Bandwidth, QPSK (-26dBc BW)



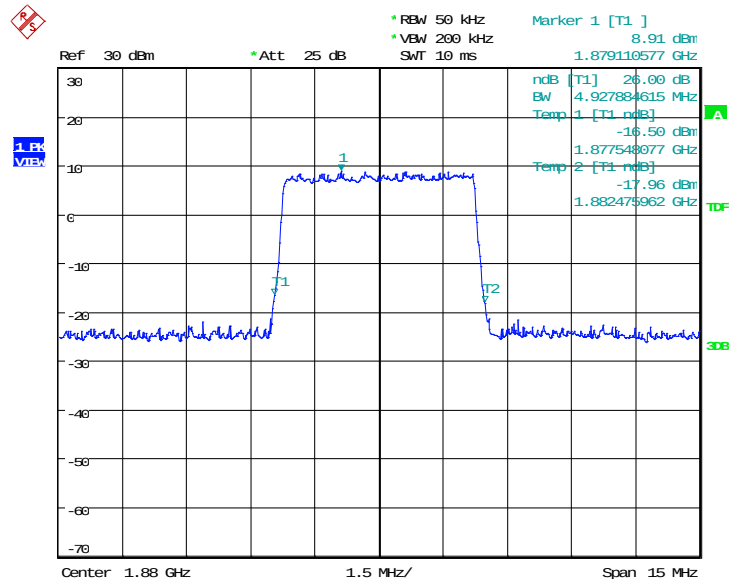
Date: 4.DEC.2019 07:08:43

LTE band 2, 5MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 07:08:59

LTE band 2, 5MHz Bandwidth,64QAM (-26dBc BW)

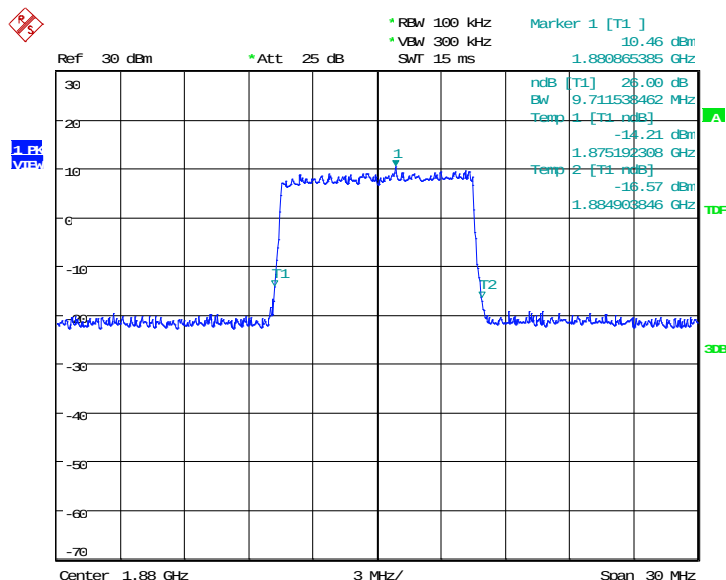


Date: 5.DEC.2019 13:36:46

LTE band 2, 10MHz (-26dBc BW)

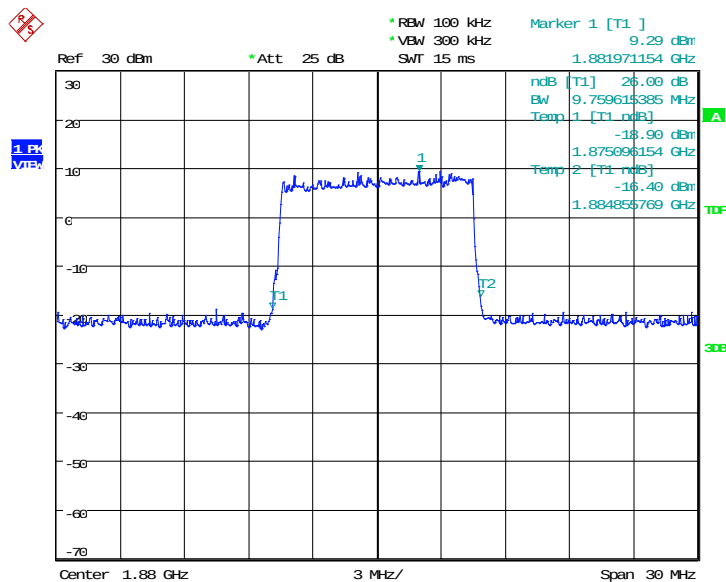
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	9711.54	9759.62	9807.69

LTE band 2, 10MHz Bandwidth, QPSK (-26dBc BW)



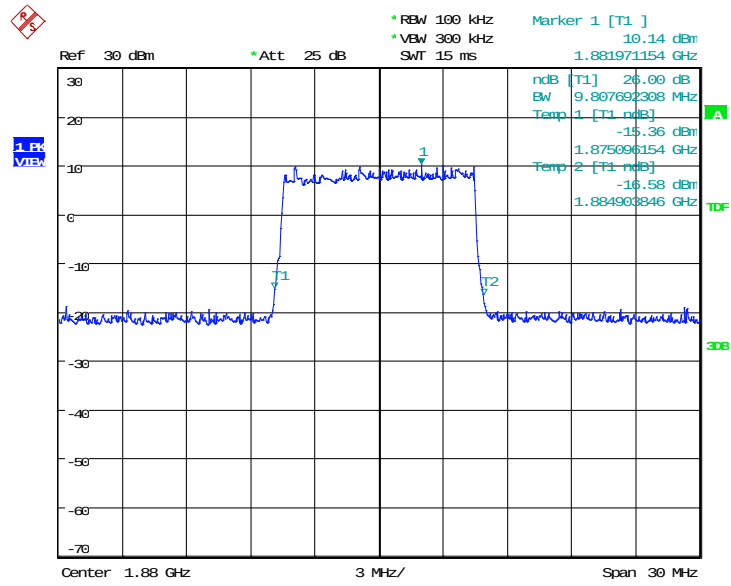
Date: 4.DEC.2019 07:13:01

LTE band 2, 10MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 07:13:17

LTE band 2, 10MHz Bandwidth, 64QAM (-26dBc BW)

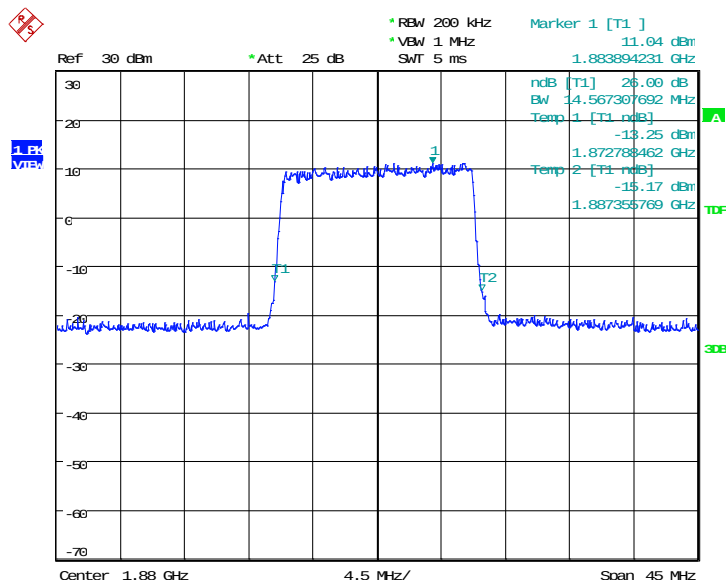


Date: 5.DEC.2019 13:40:16

LTE band 2, 15MHz (-26dBc BW)

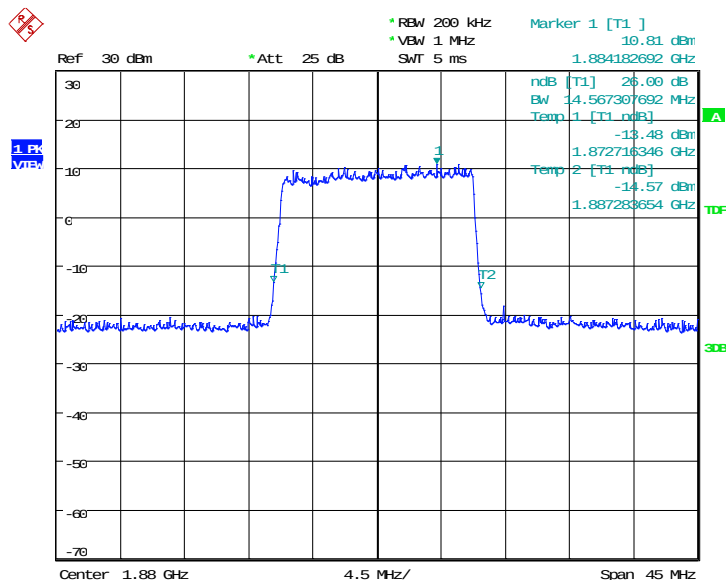
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	14567.31	14567.31	14495.19

LTE band 2, 15MHz Bandwidth, QPSK (-26dBc BW)



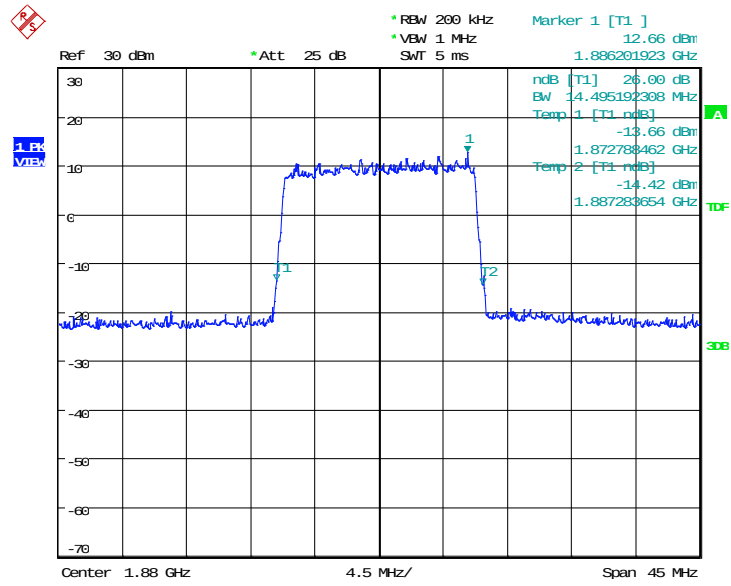
Date: 4.DEC.2019 07:17:20

LTE band 2, 15MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 07:17:36

LTE band 2, 15MHz Bandwidth, 64QAM (-26dBc BW)

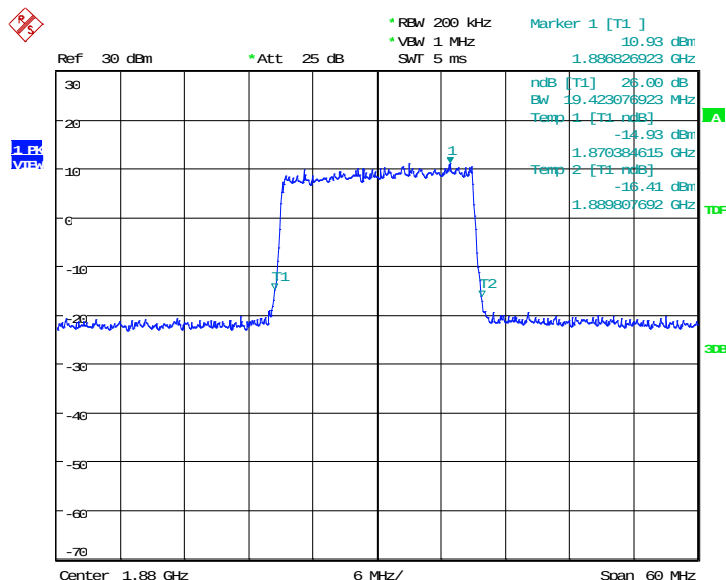


Date: 5.DEC.2019 13:43:47

LTE band 2, 20MHz (-26dBc BW)

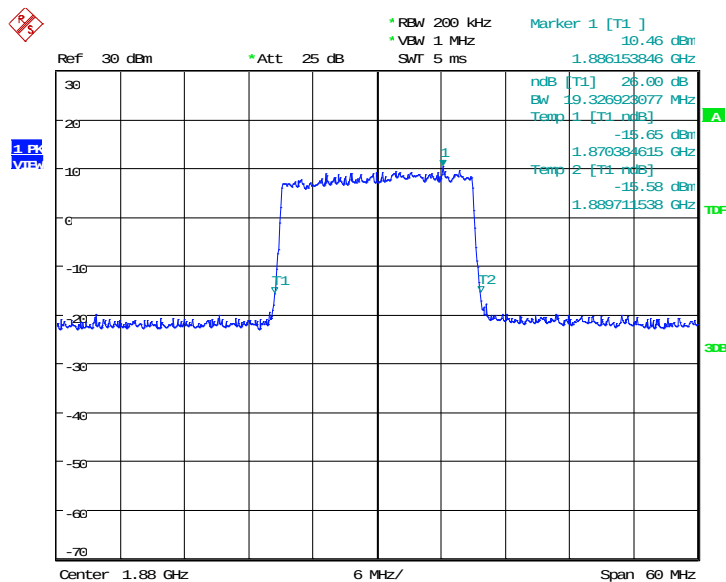
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	19423.08	19326.92	19423.08

LTE band 2, 20MHz Bandwidth, QPSK (-26dBc BW)



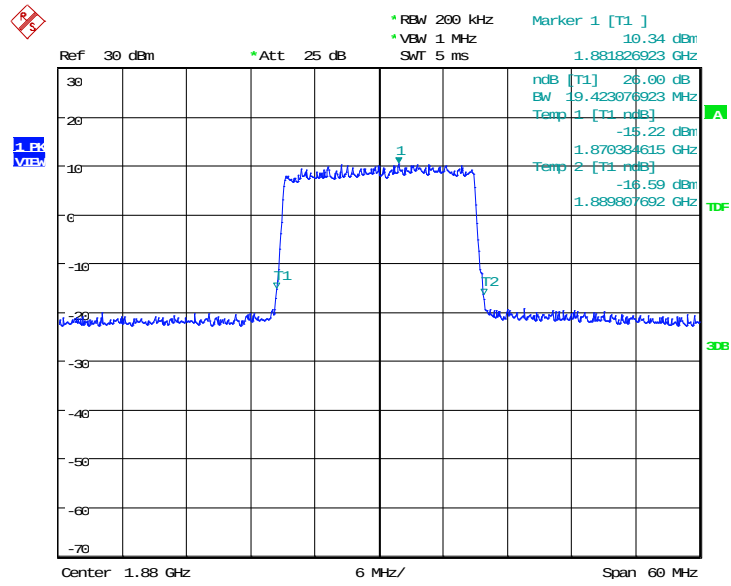
Date: 4.DEC.2019 07:22:08

LTE band 2, 20MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 07:22:24

LTE band 2, 20MHz Bandwidth, 64QAM (-26dBc BW)

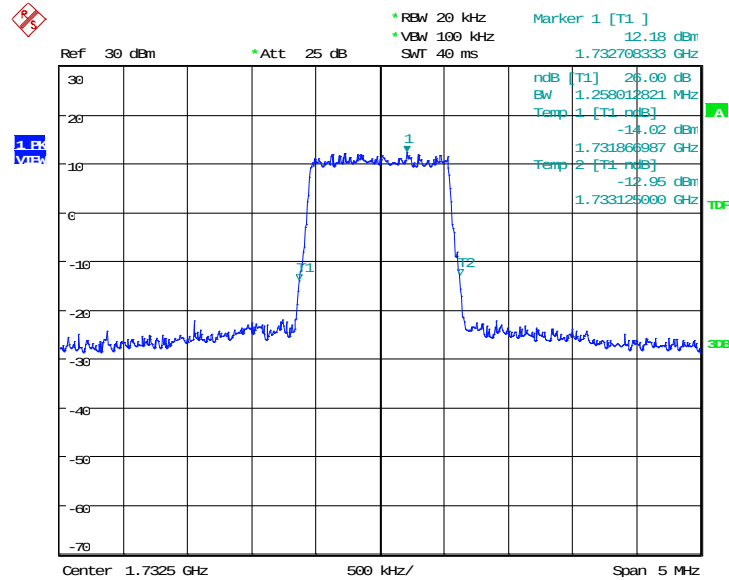


Date: 5.DEC.2019 13:47:15

LTE band 4, 1.4MHz (-26dBc BW)

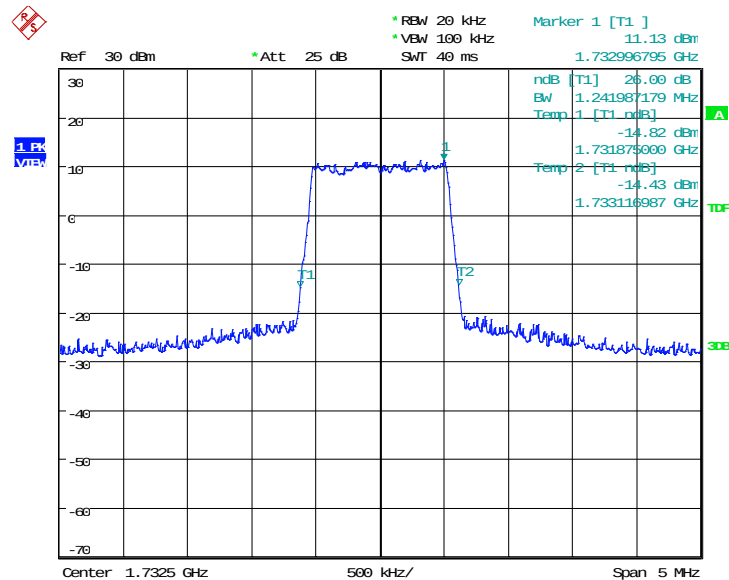
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	1258.01	1241.99	1241.99

LTE band 4, 1.4MHz Bandwidth, QPSK (-26dBc BW)



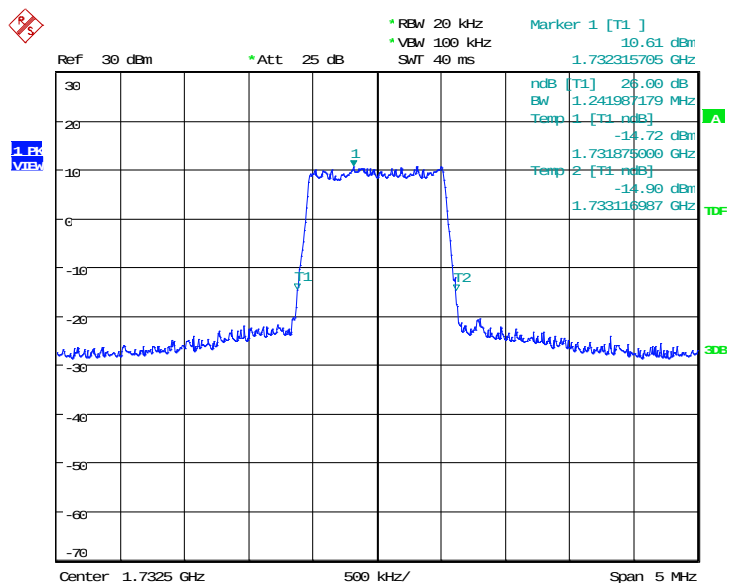
Date: 4.DEC.2019 07:28:03

LTE band 4, 1.4MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 07:28:19

LTE band 4, 1.4MHz Bandwidth, 64QAM (-26dBc BW)

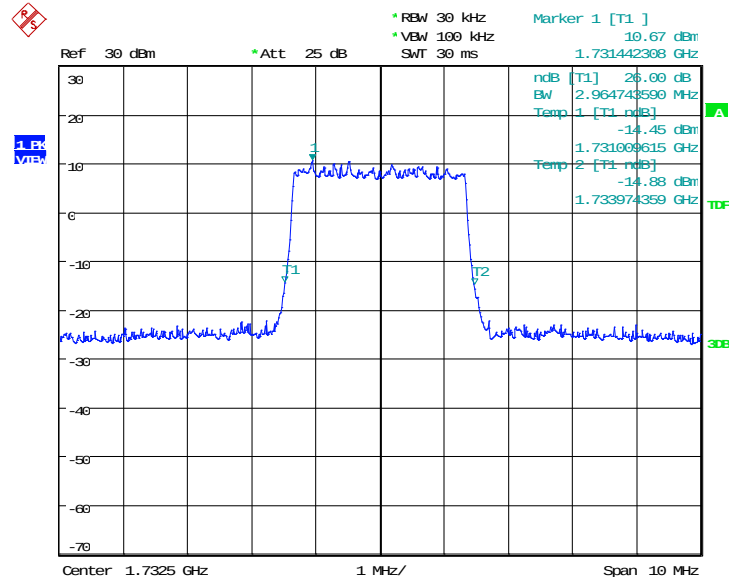


Date: 5.DEC.2019 13:51:52

LTE band 4, 3MHz (-26dBc BW)

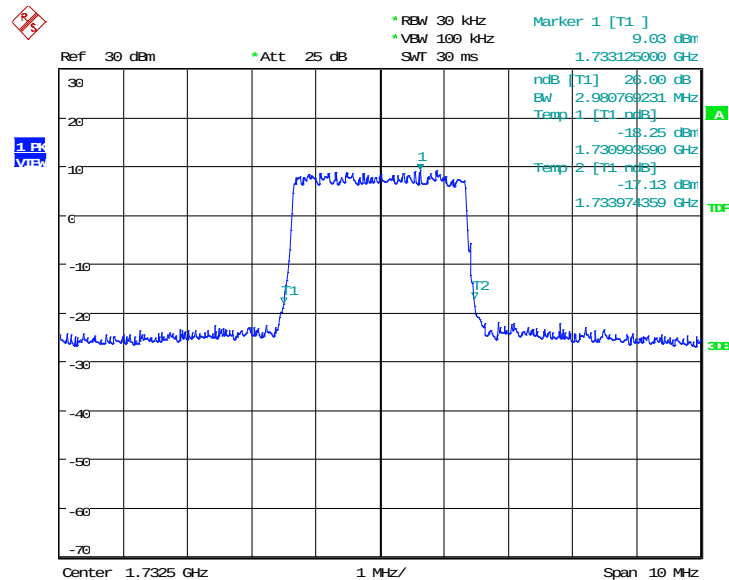
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	2964.74	2980.77	2980.77

LTE band 4, 3MHz Bandwidth, QPSK (-26dBc BW)



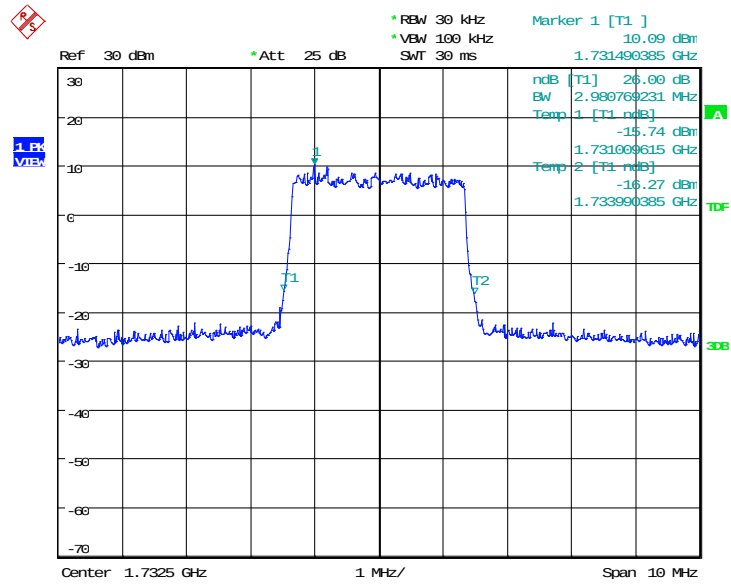
Date: 4.DEC.2019 07:32:21

LTE band 4, 3MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 07:32:36

LTE band 4, 3MHz Bandwidth, 64QAM (-26dBc BW)

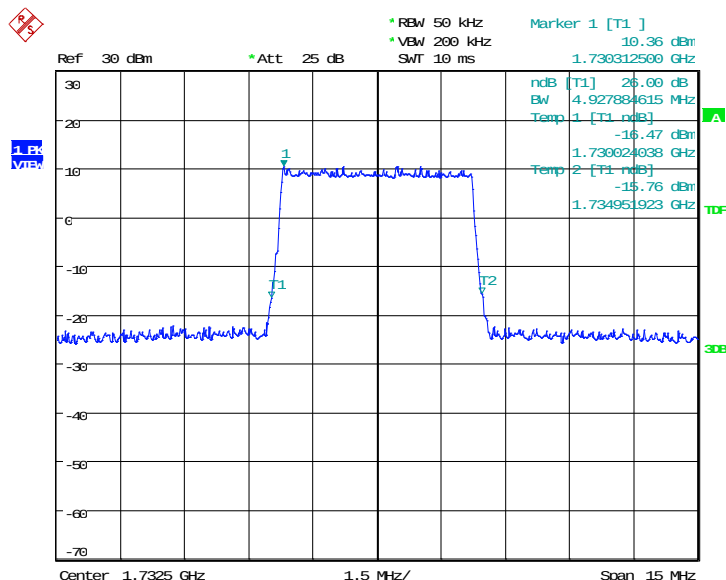


Date: 5.DEC.2019 13:55:21

LTE band 4, 5MHz (-26dBc BW)

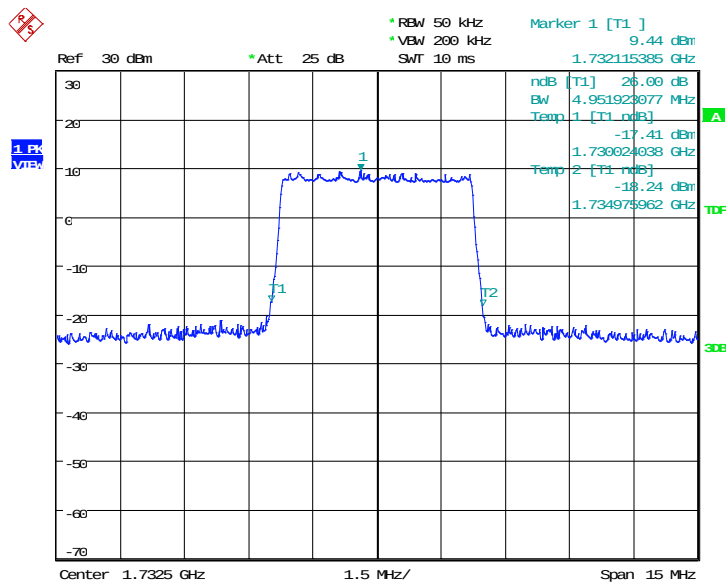
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	4927.88	4951.92	4951.92

LTE band 4, 5MHz Bandwidth, QPSK (-26dBc BW)



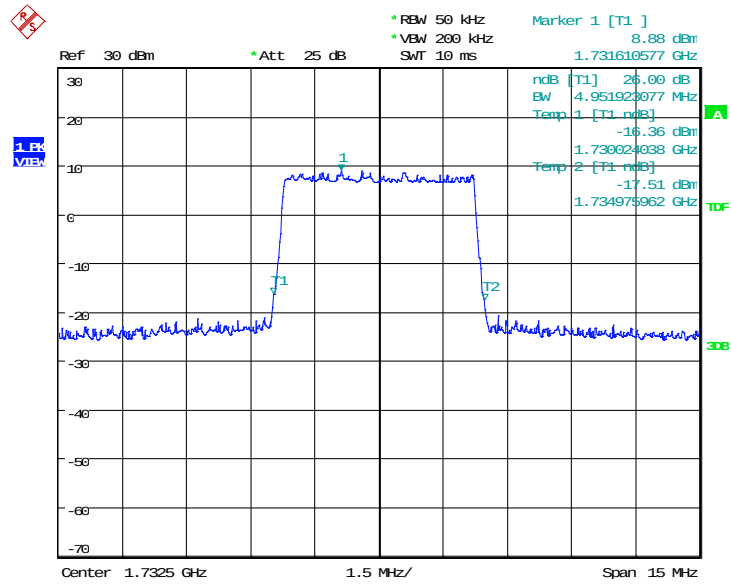
Date: 4.DEC.2019 07:36:39

LTE band 4, 5MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 07:36:54

LTE band 4, 5MHz Bandwidth,64QAM (-26dBc BW)

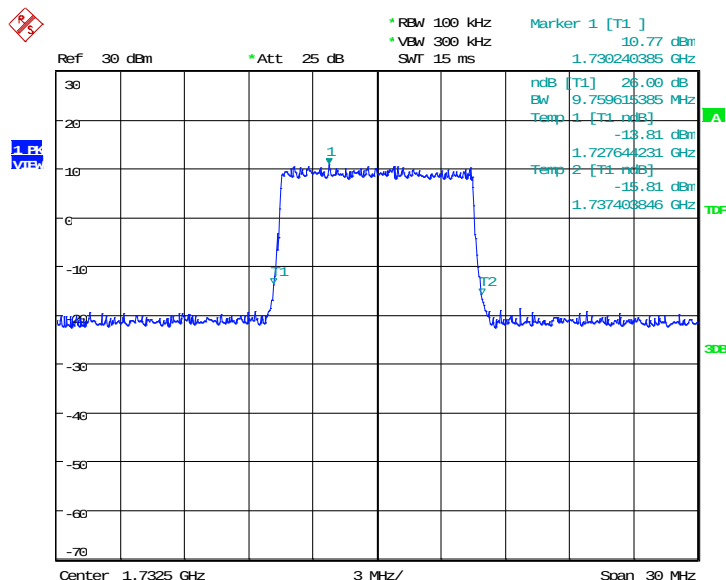


Date: 5.DEC.2019 13:58:49

LTE band 4, 10MHz (-26dBc BW)

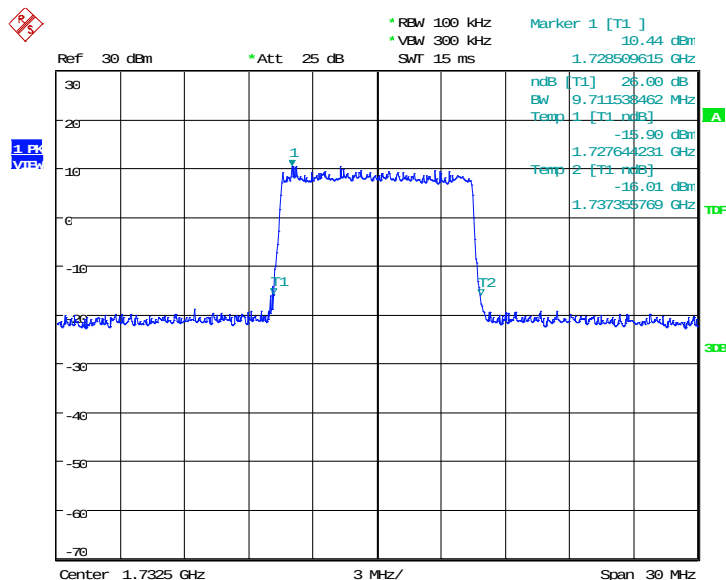
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	9759.62	9711.54	9711.54

LTE band 4, 10MHz Bandwidth, QPSK (-26dBc BW)



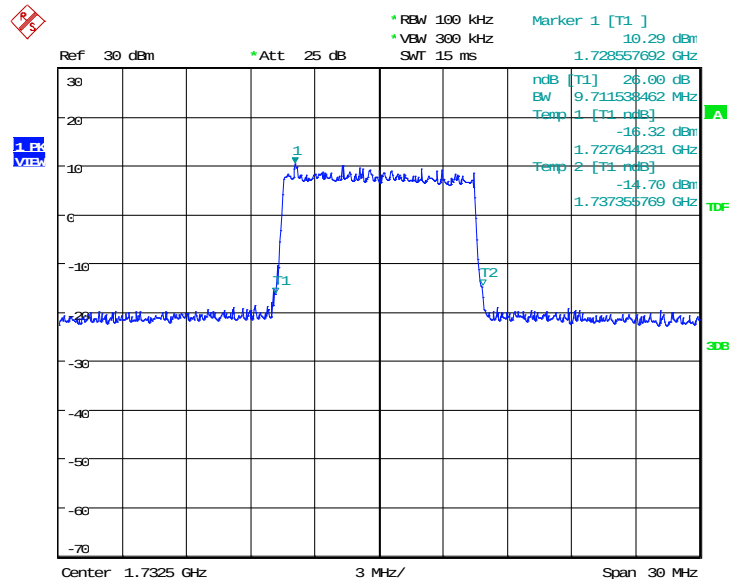
Date: 4.DEC.2019 07:40:59

LTE band 4, 10MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 07:41:15

LTE band 4, 10MHz Bandwidth, 64QAM (-26dBc BW)

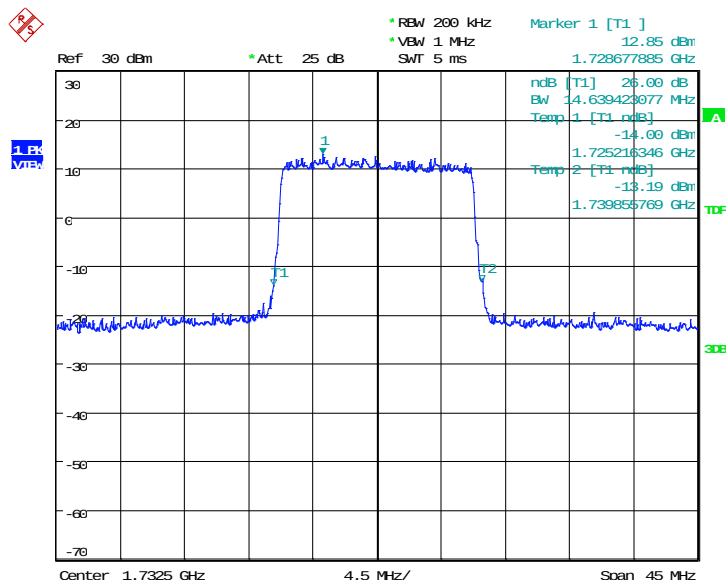


Date: 5.DEC.2019 14:02:18

LTE band 4, 15MHz (-26dBc BW)

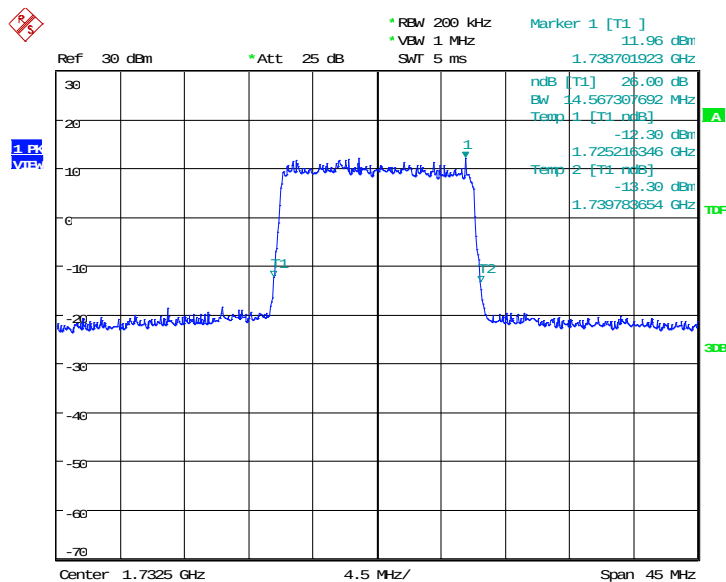
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	14639.42	14567.31	14711.54

LTE band 4, 15MHz Bandwidth, QPSK (-26dBc BW)



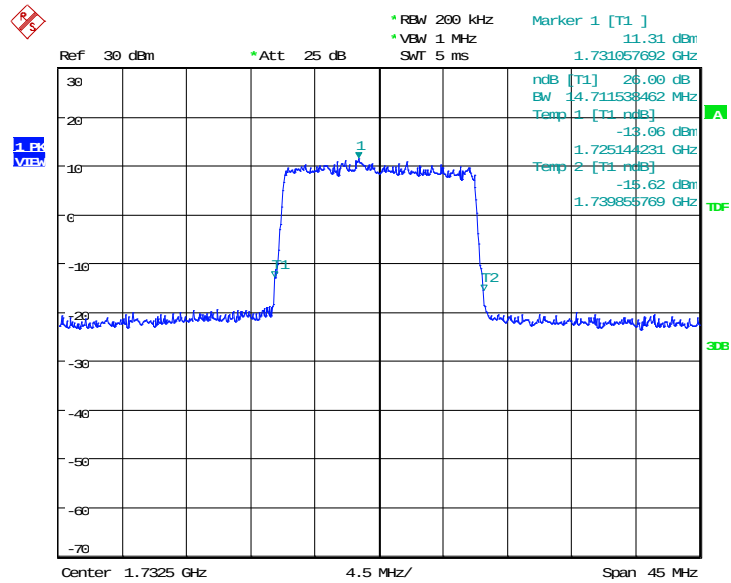
Date: 4.DEC.2019 07:45:20

LTE band 4, 15MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 07:45:36

LTE band 4, 15MHz Bandwidth, 64QAM (-26dBc BW)

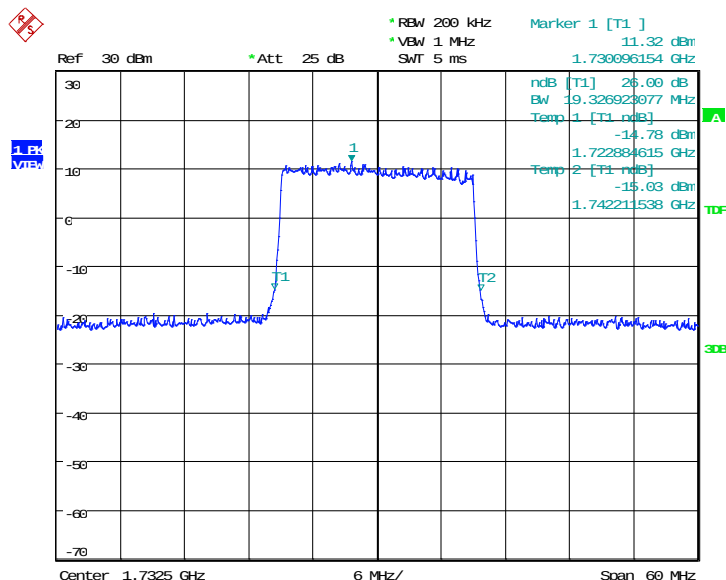


Date: 5.DEC.2019 14:05:48

LTE band 4, 20MHz (-26dBc BW)

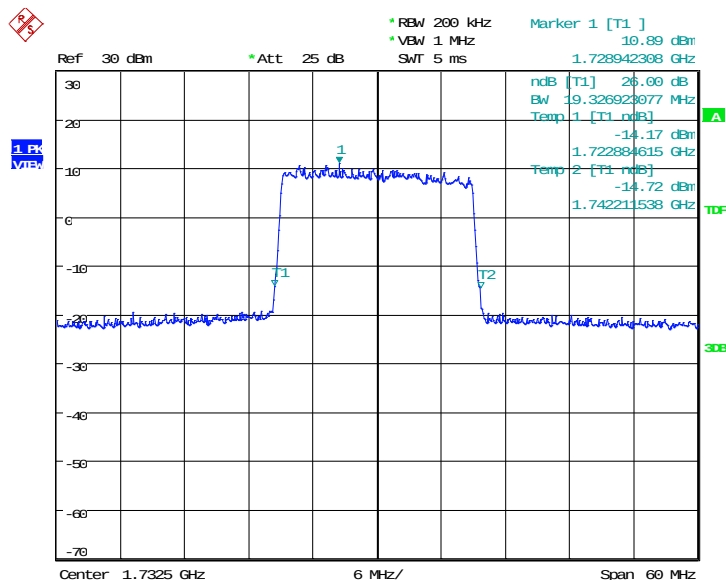
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
1732.5	QPSK	16QAM	64QAM
	19326.92	19326.92	19423.08

LTE band 4, 20MHz Bandwidth, QPSK (-26dBc BW)



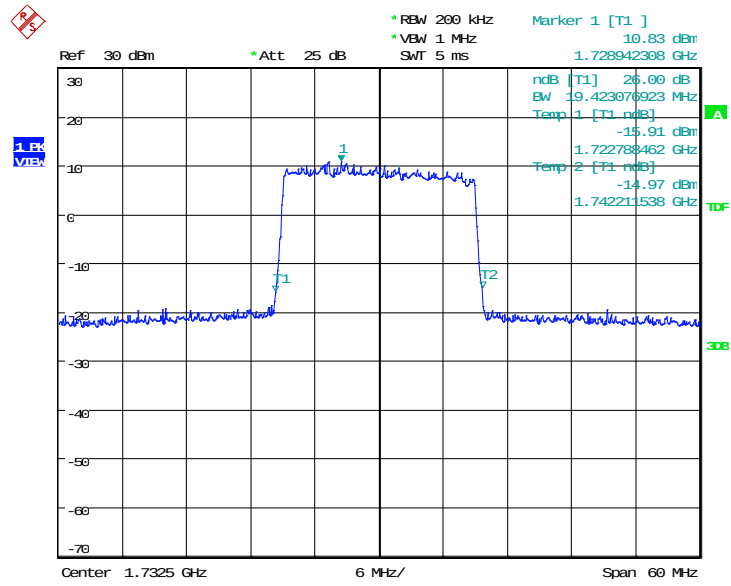
Date: 5.DEC.2019 12:48:41

LTE band 4, 20MHz Bandwidth, 16QAM (-26dBc BW)



Date: 5.DEC.2019 12:48:57

LTE band 4, 20MHz Bandwidth, 64QAM (-26dBc BW)

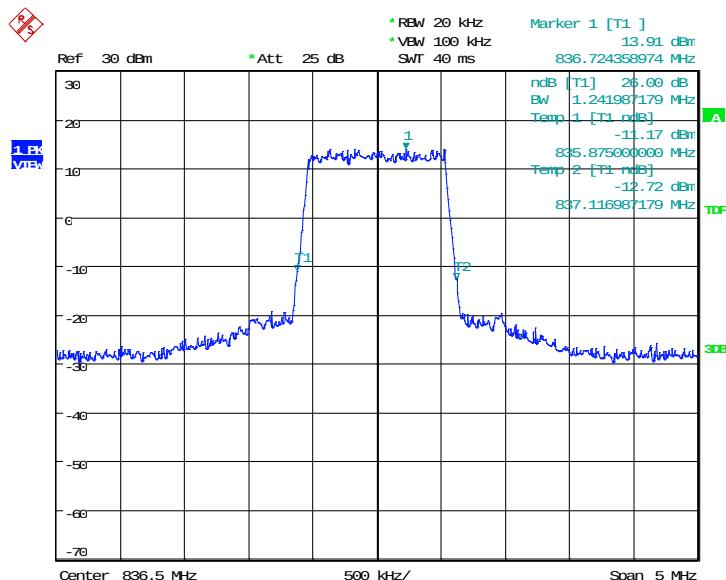


Date: 5.DEC.2019 14:25:40

LTE band 5, 1.4MHz (-26dBc BW)

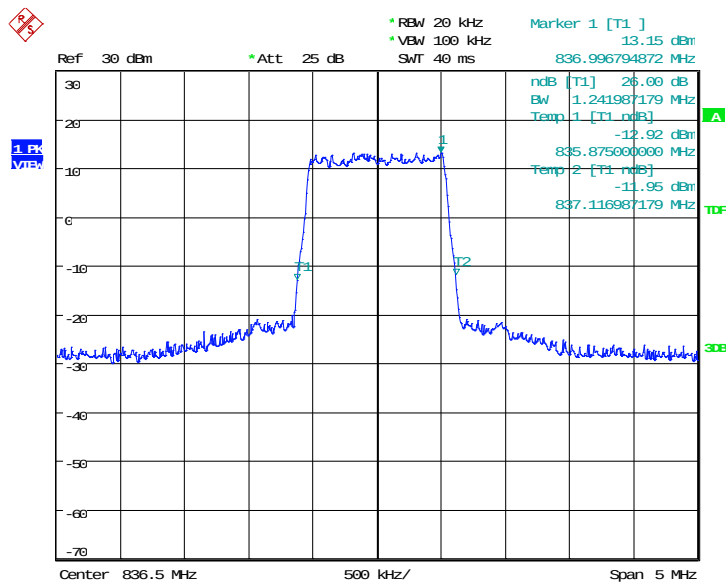
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	1241.99	1241.99	1241.99

LTE band 5, 1.4MHz Bandwidth, QPSK (-26dBc BW)



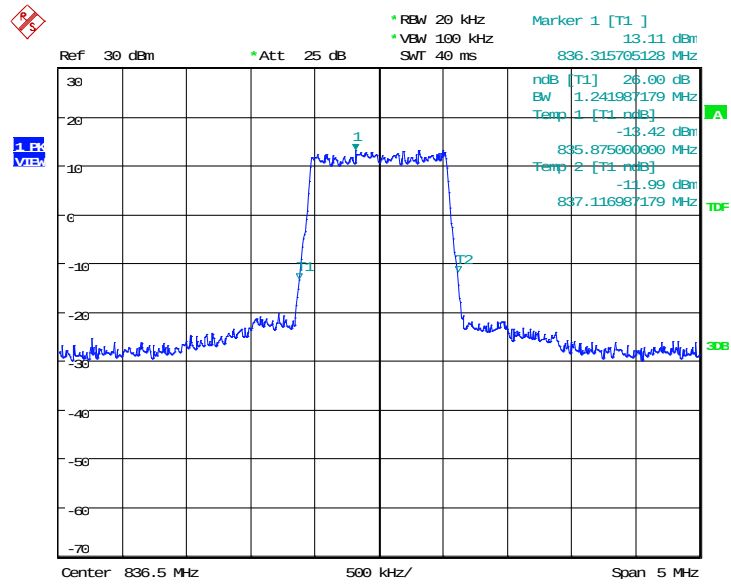
Date: 4.DEC.2019 06:42:39

LTE band 5, 1.4MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 06:42:54

LTE band 5, 1.4MHz Bandwidth, 64QAM (-26dBc BW)

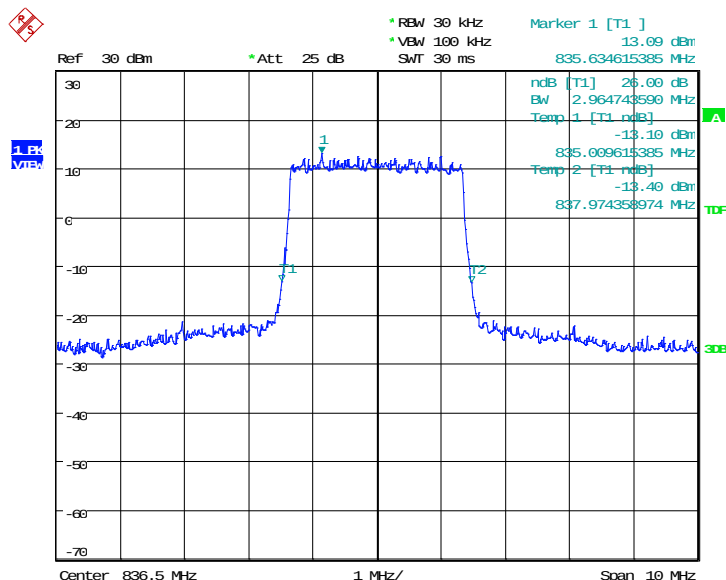


Date: 5.DEC.2019 13:15:45

LTE band 5, 3MHz (-26dBc BW)

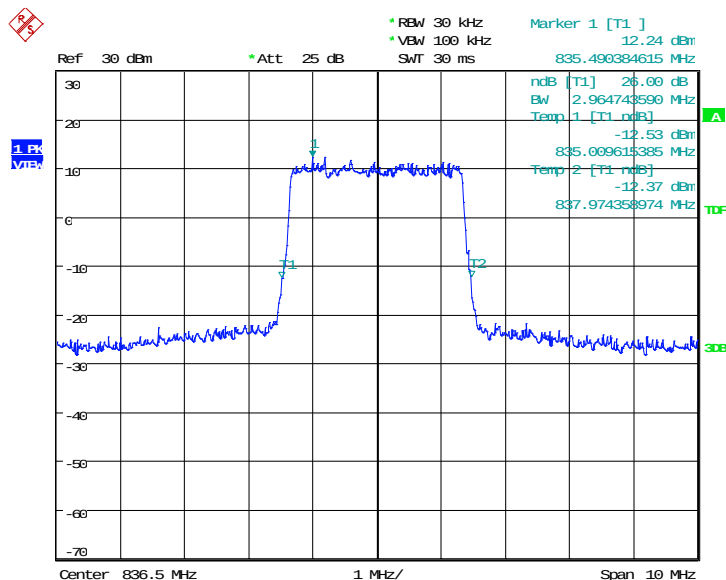
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	2964.74	2964.74	2964.74

LTE band 5, 3MHz Bandwidth, QPSK (-26dBc BW)



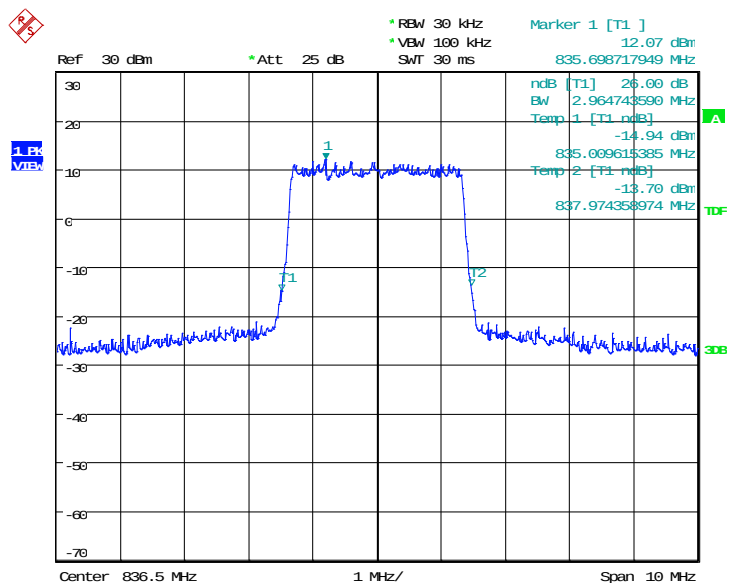
Date: 4.DEC.2019 06:46:59

LTE band 5, 3MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 06:47:15

LTE band 5, 3MHz Bandwidth, 64QAM (-26dBc BW)

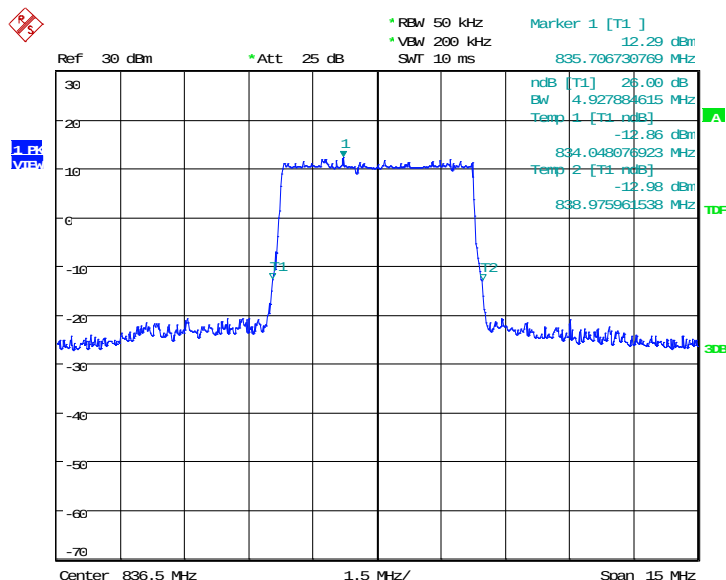


Date: 5.DEC.2019 13:19:13

LTE band 5, 5MHz (-26dBc BW)

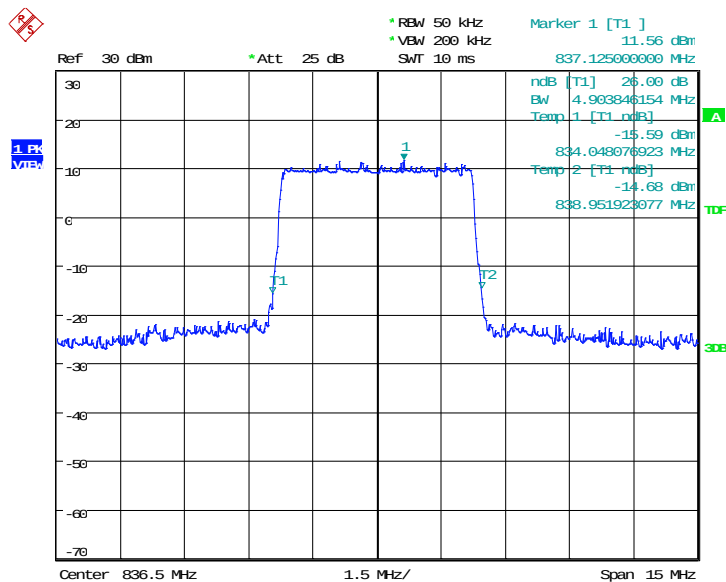
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	4927.88	4903.85	4879.81

LTE band 5, 5MHz Bandwidth, QPSK (-26dBc BW)



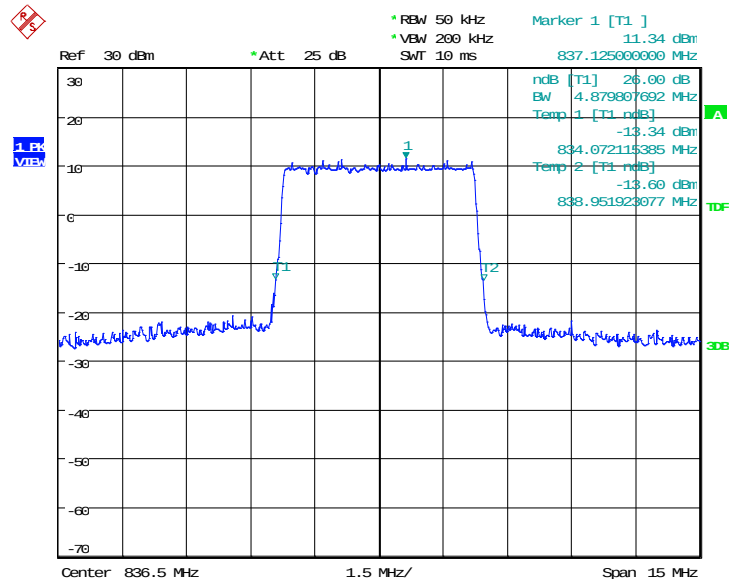
Date: 4.DEC.2019 06:51:20

LTE band 5, 5MHz Bandwidth,16QAM (-26dBc BW)



Date: 4.DEC.2019 06:51:36

LTE band 5, 5MHz Bandwidth,64QAM (-26dBc BW)

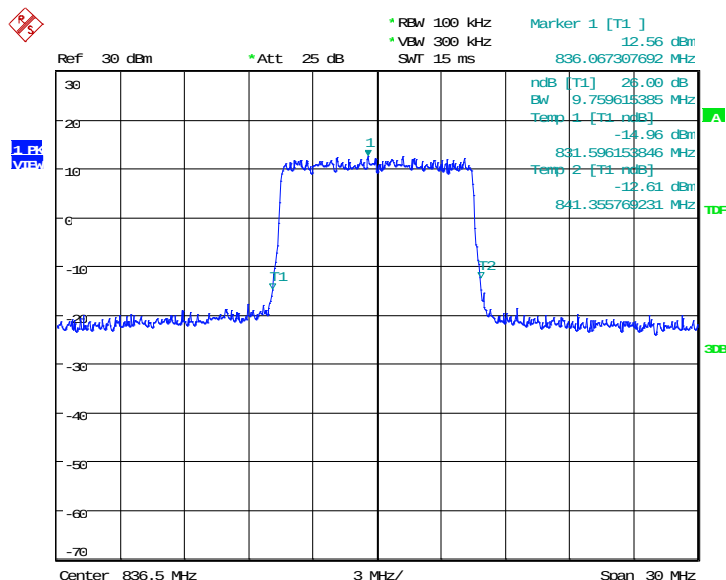


Date: 5.DEC.2019 13:22:40

LTE band 5, 10MHz (-26dBc BW)

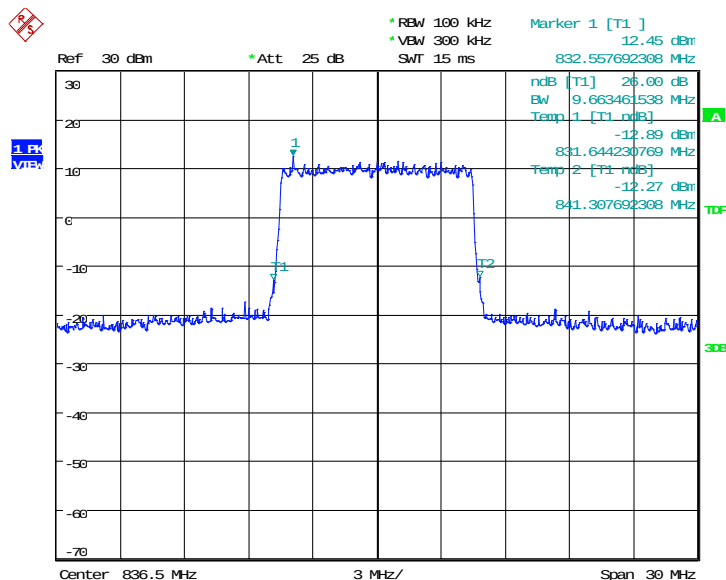
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
836.5	QPSK	16QAM	64QAM
	9759.62	9663.46	9711.54

LTE band 5, 10MHz Bandwidth, QPSK (-26dBc BW)



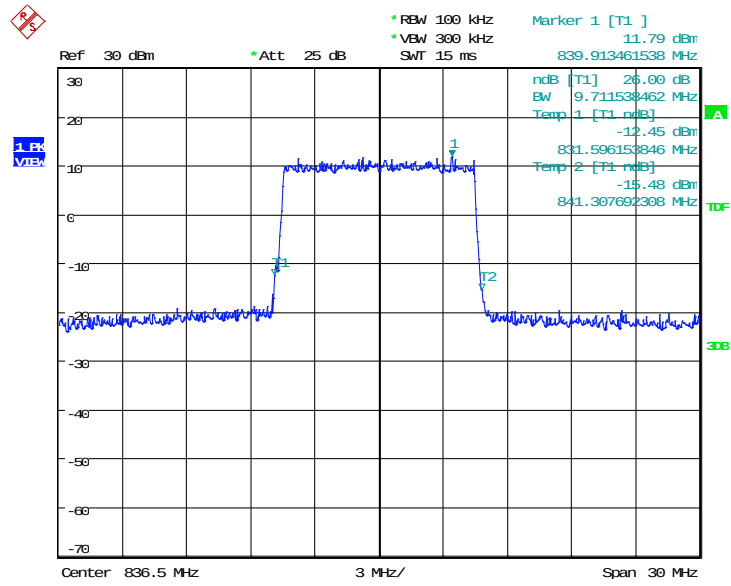
Date: 4.DEC.2019 06:55:41

LTE band 5, 10MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 06:55:57

LTE band 5, 10MHz Bandwidth, 64QAM (-26dBc BW)

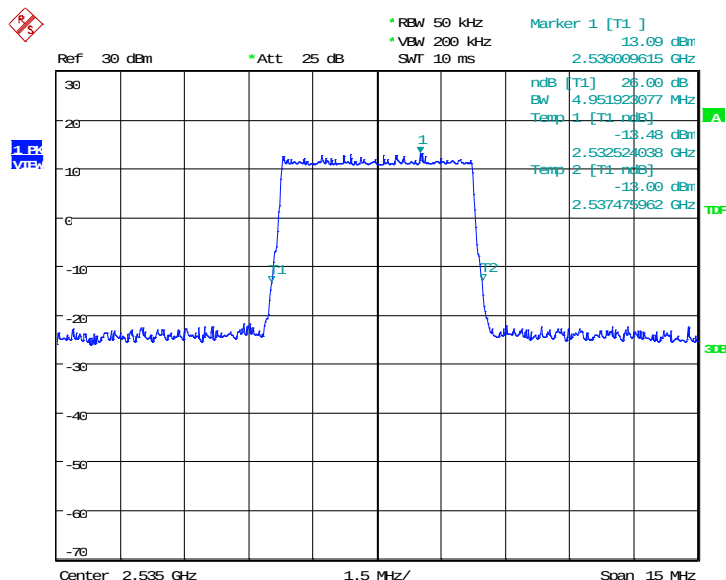


Date: 5.DEC.2019 13:26:10

LTE band 7, 5MHz (-26dBc BW)

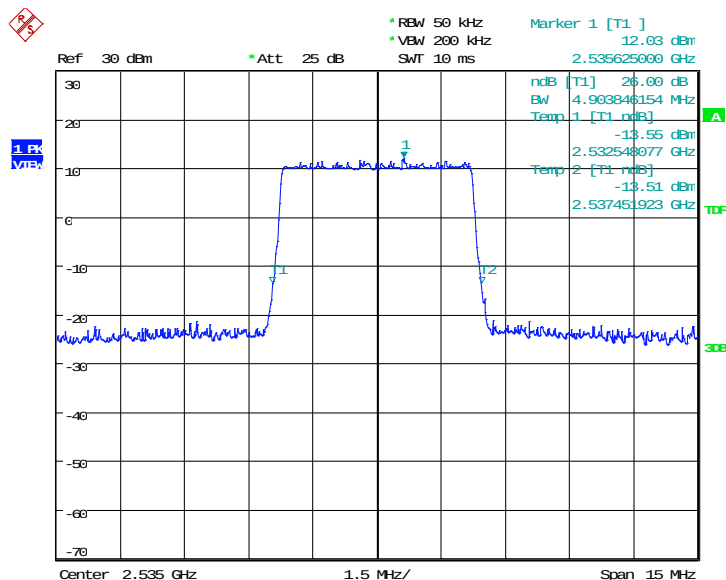
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
2535.0	QPSK	16QAM	64QAM
	4951.92	4903.85	4927.88

LTE band 7, 5MHz Bandwidth, QPSK (-26dBc BW)



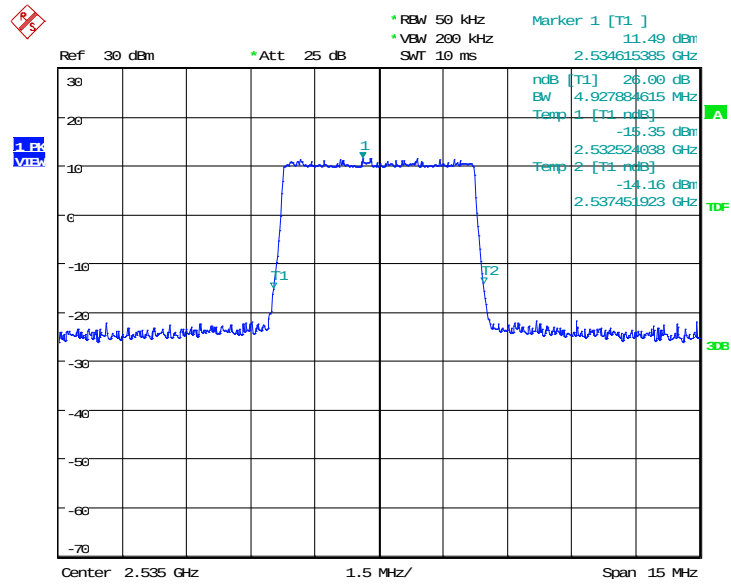
Date: 4.DEC.2019 06:16:32

LTE band 7, 5MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 06:16:47

LTE band 7, 5MHz Bandwidth,64QAM (-26dBc BW)

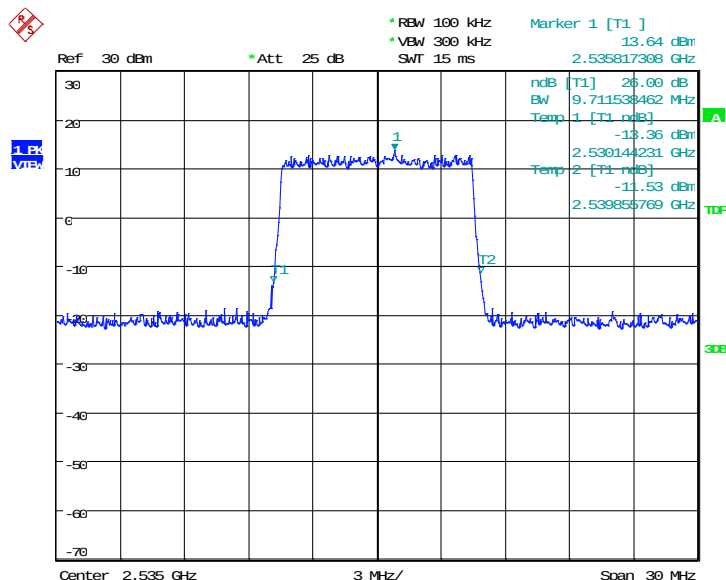


Date: 5.DEC.2019 13:00:38

LTE band 7, 10MHz (-26dBc BW)

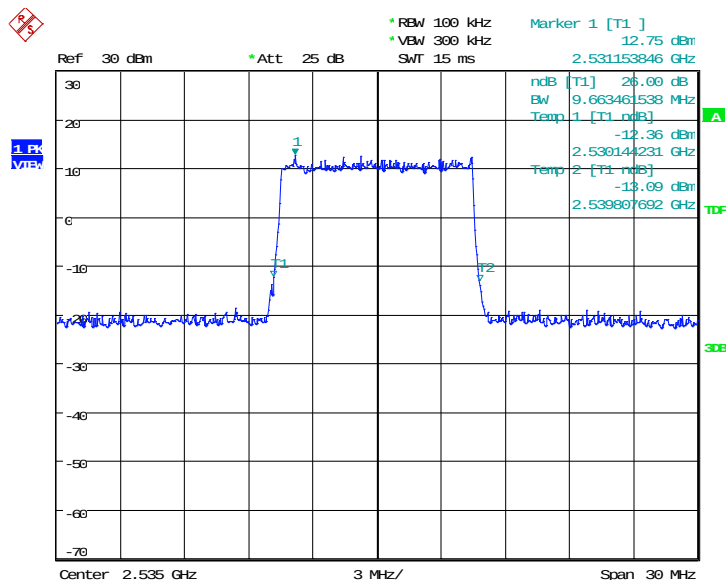
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
2535.0	QPSK	16QAM	64QAM
	9711.54	9663.46	9663.46

LTE band 7, 10MHz Bandwidth, QPSK (-26dBc BW)



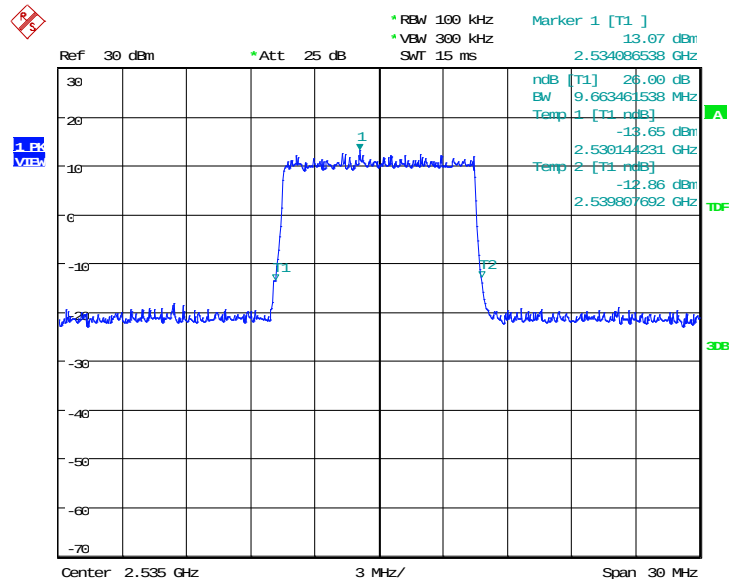
Date: 4.DEC.2019 06:20:52

LTE band 7, 10MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 06:21:08

LTE band 7, 10MHz Bandwidth, 64QAM (-26dBc BW)

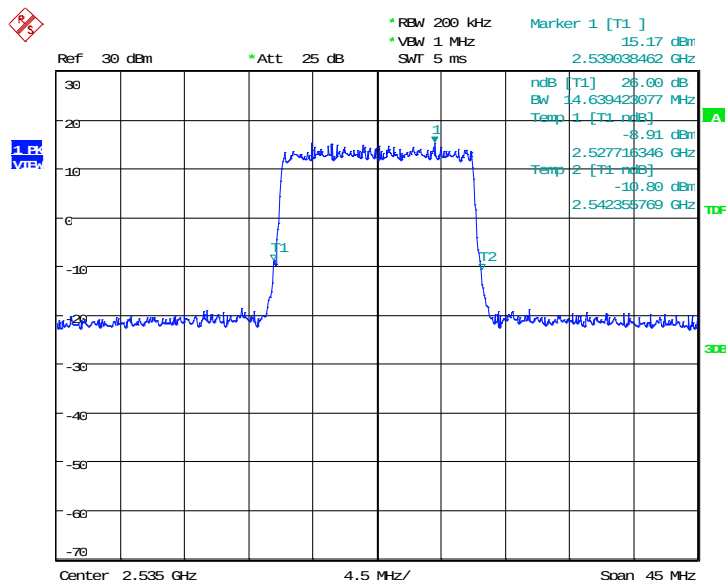


Date: 5.DEC.2019 13:04:08

LTE band 7, 15MHz (-26dBc BW)

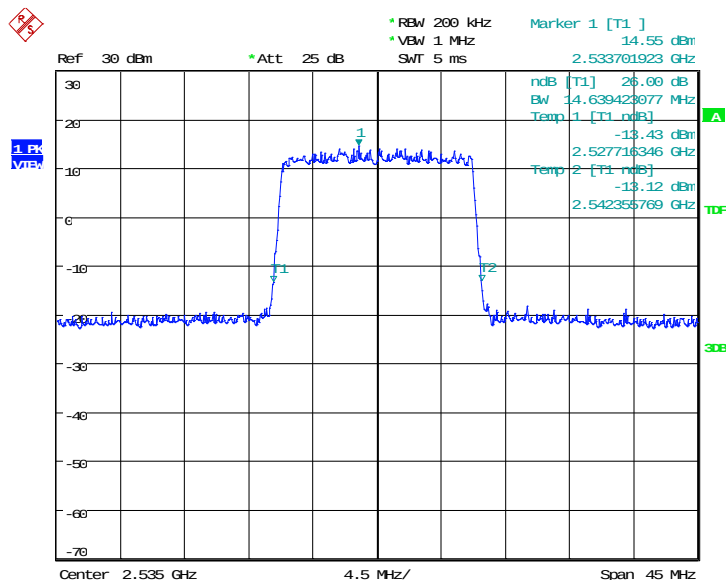
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(kHz)		
2535.0	QPSK	16QAM	64QAM
	14639.42	14639.42	14567.31

LTE band 7, 15MHz Bandwidth, QPSK (-26dBc BW)



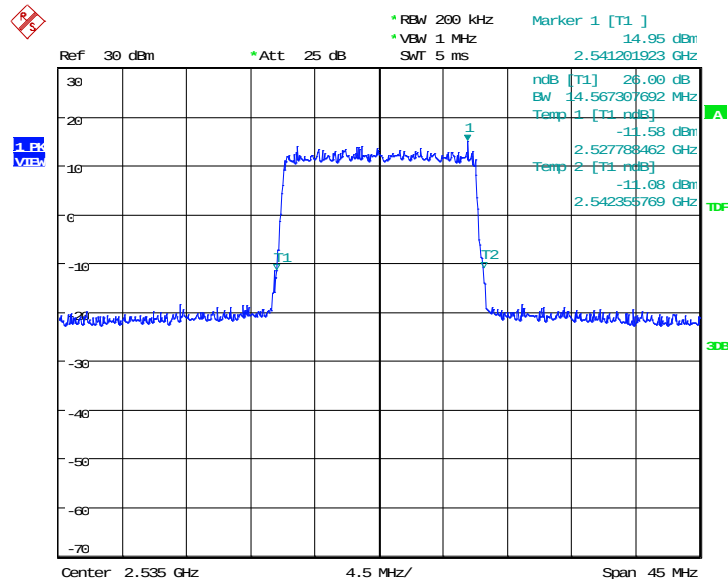
Date: 4.DEC.2019 06:25:10

LTE band 7, 15MHz Bandwidth, 16QAM (-26dBc BW)



Date: 4.DEC.2019 06:25:26

LTE band 7, 15MHz Bandwidth, 64QAM (-26dBc BW)



Date: 5.DEC.2019 13:07:35