

**LTE Band CA_41C, 20MHz+20MHz, QPSK, Channel 39750+39948**

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
17012.50	-46.20	2.90	14.50	-34.60	-25.00	H
17213.12	-45.75	2.90	14.50	-34.15	-25.00	H
17233.12	-46.37	3.20	14.50	-35.07	-25.00	H
17503.75	-43.76	2.90	12.80	-33.86	-25.00	H
17591.25	-43.96	3.30	12.80	-34.46	-25.00	H
17833.12	-43.41	3.60	12.80	-34.21	-25.00	H

LTE Band CA_41C, 20MHz+20MHz, QPSK, Channel 40521+40719

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
16950.62	-48.31	2.90	16.50	-34.71	-25.00	H
17173.75	-45.48	2.90	14.50	-33.88	-25.00	H
17226.25	-45.65	3.20	14.50	-34.35	-25.00	H
17512.50	-43.91	2.90	12.80	-34.01	-25.00	H
17583.12	-43.63	3.30	12.80	-34.13	-25.00	H
17776.88	-43.25	3.60	12.80	-34.05	-25.00	H

LTE Band CA_41C, 20MHz+20MHz, QPSK, Channel 41292+41490

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
16950.62	-48.75	2.90	16.50	-35.15	-25.00	H
17181.88	-46.68	2.90	14.50	-35.08	-25.00	H
17348.75	-45.41	3.20	14.50	-34.11	-25.00	H
17458.12	-45.64	2.90	14.50	-34.04	-25.00	H
17539.38	-43.83	2.90	12.80	-33.93	-25.00	H
17839.38	-44.09	3.60	12.80	-34.89	-25.00	H

**LTE Band CA_41C, 20MHz+20MHz, 16QAM, Channel 39750+39948**

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
16981.88	-48.55	2.90	16.50	-34.95	-25.00	H
17125.62	-45.81	2.90	14.50	-34.21	-25.00	H
17235.00	-45.88	3.20	14.50	-34.58	-25.00	H
17455.62	-45.66	2.90	14.50	-34.06	-25.00	H
17595.62	-43.51	3.30	12.80	-34.01	-25.00	H
17833.75	-43.25	3.60	12.80	-34.05	-25.00	H

LTE Band CA_41C, 20MHz+20MHz, 16QAM, Channel 40521+40719

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
16968.12	-48.83	2.90	16.50	-35.23	-25.00	H
17113.75	-46.39	2.90	14.50	-34.79	-25.00	H
17352.50	-45.23	3.20	14.50	-33.93	-25.00	H
17518.12	-43.85	2.90	12.80	-33.95	-25.00	H
17526.25	-44.67	2.90	12.80	-34.77	-25.00	H
17790.00	-43.65	3.60	12.80	-34.45	-25.00	H

LTE Band CA_41C, 20MHz+20MHz, 16QAM, Channel 41292+41490

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
17005.62	-46.58	2.90	14.50	-34.98	-25.00	H
17129.38	-46.43	2.90	14.50	-34.83	-25.00	H
17276.88	-45.97	3.20	14.50	-34.67	-25.00	H
17524.38	-44.76	2.90	12.80	-34.86	-25.00	H
17600.62	-44.29	3.30	12.80	-34.79	-25.00	H
17830.62	-43.17	3.60	12.80	-33.97	-25.00	H

**LTE Band CA_41C, 20MHz+20MHz, 64QAM, Channel 39750+39948**

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
17003.75	-47.28	2.90	14.50	-35.68	-25.00	H
17124.38	-46.43	2.90	14.50	-34.83	-25.00	H
17272.50	-45.95	3.20	14.50	-34.65	-25.00	H
17520.62	-44.60	2.90	12.80	-34.70	-25.00	H
17626.25	-44.09	3.30	12.80	-34.59	-25.00	H
17768.12	-43.97	3.60	12.80	-34.77	-25.00	H

LTE Band CA_41C, 20MHz+20MHz, 64QAM, Channel 40521+40719

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
16961.25	-48.28	2.90	16.50	-34.68	-25.00	H
17213.12	-46.19	2.90	14.50	-34.59	-25.00	H
17275.62	-46.13	3.20	14.50	-34.83	-25.00	H
17515.00	-44.63	2.90	12.80	-34.73	-25.00	H
17560.62	-44.26	2.90	12.80	-34.36	-25.00	H
17775.00	-43.36	3.60	12.80	-34.16	-25.00	H

LTE Band CA_41C, 20MHz+20MHz, 64QAM, Channel 41292+41490

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
16997.50	-48.67	2.90	16.50	-35.07	-25.00	H
17190.62	-46.13	2.90	14.50	-34.53	-25.00	H
17302.50	-45.91	3.20	14.50	-34.61	-25.00	H
17416.25	-45.80	2.90	14.50	-34.20	-25.00	H
17612.50	-43.78	3.30	12.80	-34.28	-25.00	H
17784.38	-43.67	3.60	12.80	-34.47	-25.00	H

Note: The maximum value of expanded measurement uncertainty for this test item is

$$U = 2.87\text{dB}(30\text{MHz}-3\text{GHz})/3.35\text{dB}(3\text{GHz}-18\text{GHz})/2.68\text{dB}(18\text{GHz}-40\text{GHz}), k = 2$$



A.3 FREQUENCY STABILITY

Reference

FCC: CFR Part 2.1055, 22.355, 24.235, 27.54, 90.213.

A.3.1 Method of Measurement

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMW500.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C.
3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on mid channel of all bands, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of the lower, higher and nominal voltage. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress.



A.3.2 Measurement results

LTE Band 2, 20MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	1850.280	1909.360	2.14	0.0012
40				-1.66	0.0009
30				-3.16	0.0017
20				-0.54	0.0003
10				-3.33	0.0018
0				-2.09	0.0011
-10				0.60	0.0003
-20				-1.79	0.0010
-30				2.43	0.0013

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	1850.280	1909.360	0.67	0.0004
4.45				3.02	0.0016

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

LTE Band 4, 20MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	1710.560	1754.480	3.12	0.0018
40				0.74	0.0004
30				-1.45	0.0008
20				1.93	0.0011
10				0.23	0.0001
0				-2.75	0.0016
-10				2.22	0.0013
-20				3.59	0.0021
-30				2.85	0.0016

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	1710.560	1754.480	1.17	0.0007
4.45				4.88	0.0028

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



LTE Band 5, 10MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	824.480	848.920	1.22	0.0015
40				1.37	0.0016
30				1.03	0.0012
20				-1.70	0.0020
10				1.13	0.0014
0				0.84	0.0010
-10				1.33	0.0016
-20				2.80	0.0034
-30				0.06	0.0001

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	824.480	848.920	0.96	0.0011
4.45				-0.54	0.0007

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

LTE Band 7, 20MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	2500.360	2569.540	2.51	0.0010
40				-4.23	0.0017
30				1.25	0.0005
20				0.42	0.0002
10				-4.74	0.0019
0				-2.06	0.0008
-10				-2.90	0.0011
-20				-5.24	0.0021
-30				5.98	0.0024

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	2500.360	2569.540	1.35	0.0005
4.45				0.10	0.0000

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



LTE Band 12, 10MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	699.480	715.570	1.03	0.0015
40				0.67	0.0009
30				0.56	0.0008
20				-0.70	0.0010
10				-0.74	0.0011
0				0.14	0.0002
-10				-0.09	0.0001
-20				-0.33	0.0005
-30				-1.92	0.0027

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	699.480	715.570	-0.47	0.0007
4.45				-0.87	0.0012

Expanded measurement uncertainty is 10Hz, k = 2

LTE Band 13, 10MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	777.620	786.651	0.32	0.0004
40				-2.99	0.0038
30				-0.96	0.0012
20				-0.64	0.0008
10				-0.73	0.0009
0				-1.25	0.0016
-10				-0.09	0.0001
-20				-2.43	0.0031
-30				1.92	0.0025

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	777.620	786.651	-0.19	0.0002
4.45				-1.59	0.0020

Expanded measurement uncertainty is 10Hz, k = 2



LTE Band 17, 10MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	704.650	715.740	0.55	0.0008
40				0.44	0.0006
30				-2.40	0.0034
20				-0.17	0.0002
10				1.15	0.0016
0				0.50	0.0007
-10				-0.83	0.0012
-20				-0.99	0.0014
-30				-0.04	0.0001

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	704.650	715.740	0.77	0.0011
4.45				-0.44	0.0006

Expanded measurement uncertainty is 10Hz, k = 2

LTE Band 26(814MHz-824MHz), 10MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	814.562	823.860	2.32	0.0028
40				1.37	0.0017
30				-0.92	0.0011
20				-0.57	0.0007
10				-1.75	0.0021
0				-0.79	0.0010
-10				-2.88	0.0035
-20				-2.37	0.0029
-30				-1.59	0.0019

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	814.562	823.860	0.22	0.0003
4.45				-0.92	0.0011

Expanded measurement uncertainty is 10Hz, k = 2



LTE band 26(824MHz-849MHz), 15MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	824.640	848.700	1.38	0.0016
40				0.59	0.0007
30				0.21	0.0003
20				-0.43	0.0005
10				1.43	0.0017
0				0.29	0.0003
-10				2.47	0.0030
-20				1.56	0.0019
-30				0.77	0.0009

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	824.640	848.700	0.52	0.0006
4.45				1.12	0.0013

Expanded measurement uncertainty is 10Hz, k = 2

LTE Band 38, 20MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	2570.880	2619.120	1.85	0.0007
40				1.70	0.0007
30				2.33	0.0009
20				2.52	0.0010
10				1.29	0.0005
0				0.26	0.0001
-10				2.48	0.0010
-20				-1.23	0.0005
-30				-1.03	0.0004

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	2570.880	2619.120	3.38	0.0013
4.45				1.07	0.0004

Expanded measurement uncertainty is 10Hz, k = 2



LTE Band 41, 20MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	2496.800	2689.200	0.25	0.0001
40				-5.24	0.0020
30				3.55	0.0014
20				3.83	0.0015
10				-0.40	0.0002
0				0.53	0.0002
-10				0.10	0.0000
-20				3.43	0.0013
-30				0.73	0.0003

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	2496.800	2689.200	4.89	0.0019
4.45				0.36	0.0001

Expanded measurement uncertainty is 10 Hz, k = 2

LTE Band 66, 20MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	1710.540	1779.560	1.02	0.0006
40				0.19	0.0001
30				0.93	0.0005
20				-2.75	0.0016
10				0.67	0.0004
0				2.53	0.0015
-10				-0.33	0.0002
-20				-0.90	0.0005
-30				-0.22	0.0001

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	1710.540	1779.560	0.79	0.0005
4.45				-0.12	0.0001

Expanded measurement uncertainty is 10Hz, k = 2



LTE band 7_CA, 20MHz+20MHz bandwidth QPSK(worst case of all bandwidths)

Frequency Error vs Voltage

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	2500.540	2569.480	5.21	0.0021
40				8.00	0.0032
30				10.17	0.0040
20				6.79	0.0027
10				4.24	0.0017
0				6.26	0.0025
-10				7.35	0.0029
-20				10.46	0.0041
-30				5.11	0.0020

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	2500.540	2569.480	3.31	0.0013
4.45				1.16	0.0005

Expanded measurement uncertainty is 10Hz, k = 2

LTE band 38_CA, 20MHz+20MHz bandwidth QPSK(worst case of all bandwidths)

Frequency Error vs Voltage

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	2570.620	2619.360	4.32	0.0017
40				-4.04	0.0016
30				-1.87	0.0007
20				0.43	0.0002
10				-2.63	0.0010
0				-1.13	0.0004
-10				-5.93	0.0023
-20				-6.44	0.0025
-30				4.86	0.0019

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	2570.620	2619.360	-1.46	0.0006
4.45				-4.08	0.0016

Expanded measurement uncertainty is 10Hz, k = 2



LTE band 41_CA, 20MHz+20MHz bandwidth QPSK(worst case of all bandwidths)

Frequency Error vs Voltage

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.87	2496.940	2689.060	6.84	0.0026
40				3.61	0.0014
30				-1.14	0.0004
20				-3.02	0.0012
10				-0.06	0.0000
0				5.78	0.0022
-10				-2.02	0.0008
-20				7.01	0.0027
-30				5.33	0.0021

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	2496.940	2689.060	5.67	0.0022
4.45				0.77	0.0003

Expanded measurement uncertainty is 10Hz, 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

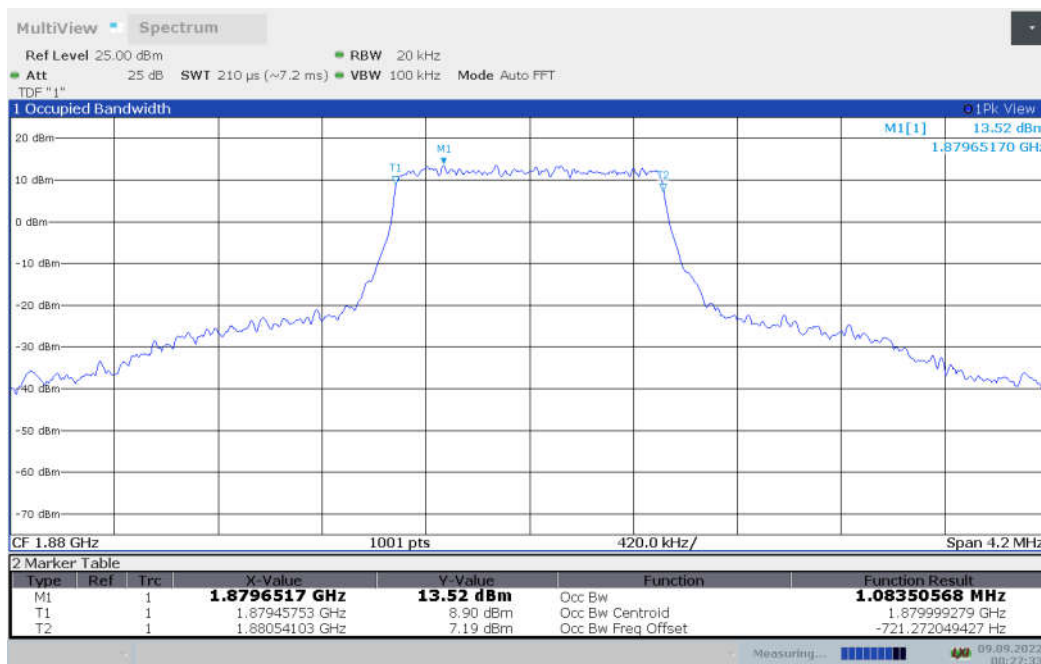
Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the US Cellular/PCS frequency bands. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the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

- a) 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).
- b) 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.
- c) 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 10log (OBW / RBW) below the reference level.
- d) Set the detection mode to peak, and the trace mode to max hold.
- e) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

LTE band 2, 1.4MHz (99% BW)

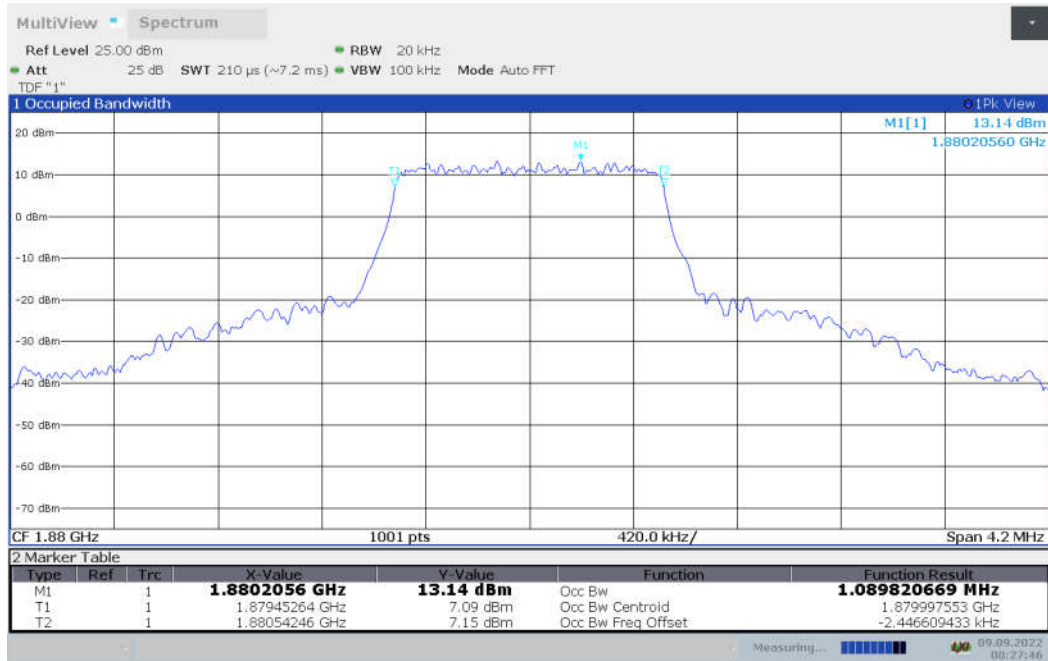
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
	QPSK	16QAM	64QAM
1880.0	1.083	1.090	1.086

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

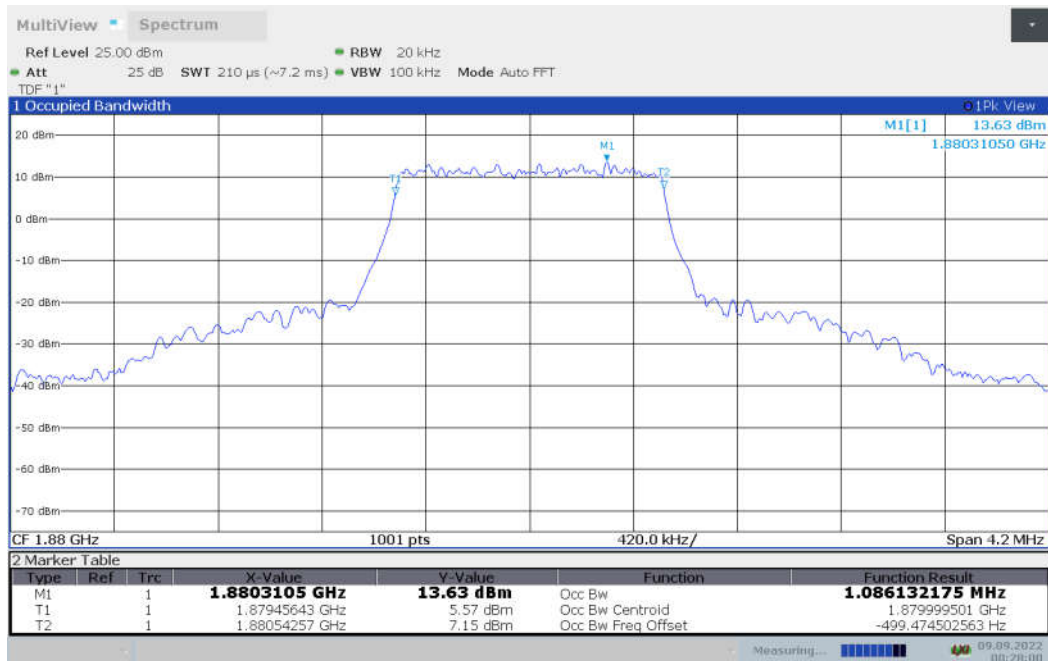




LTE band 2, 1.4MHz Bandwidth, 16QAM (99% BW)



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

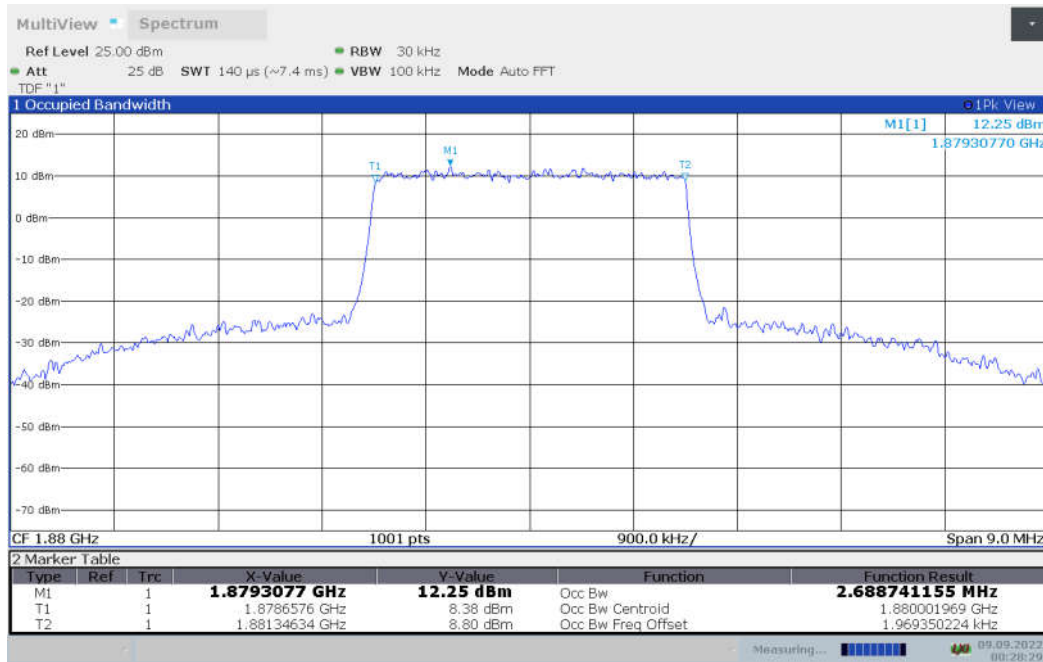




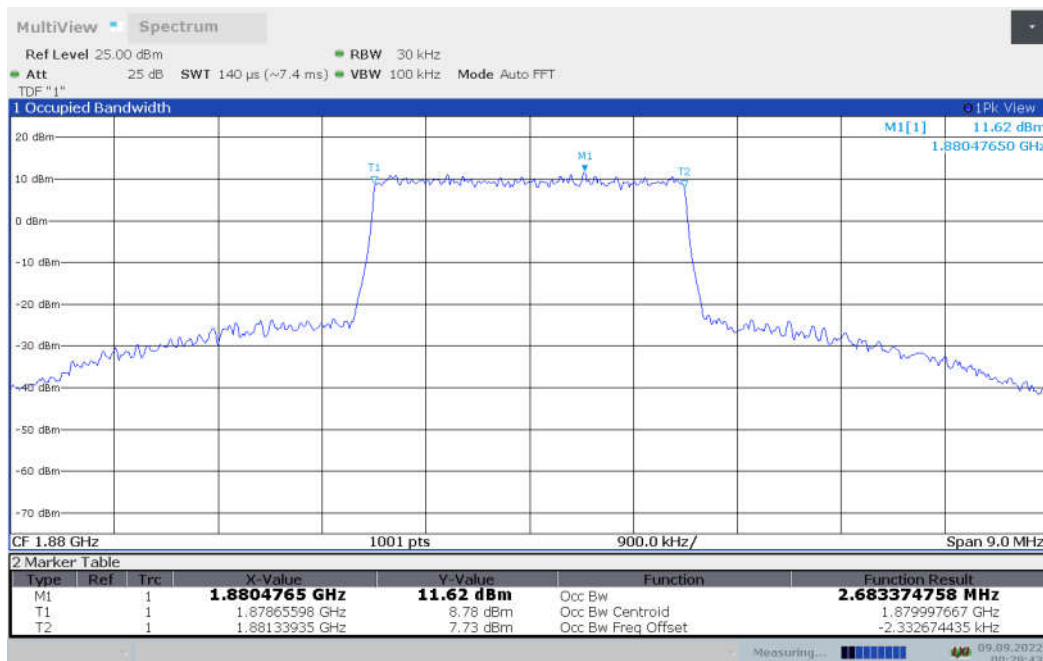
LTE band 2, 3MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
	QPSK	16QAM	64QAM
1880.0	2.688	2.683	2.682

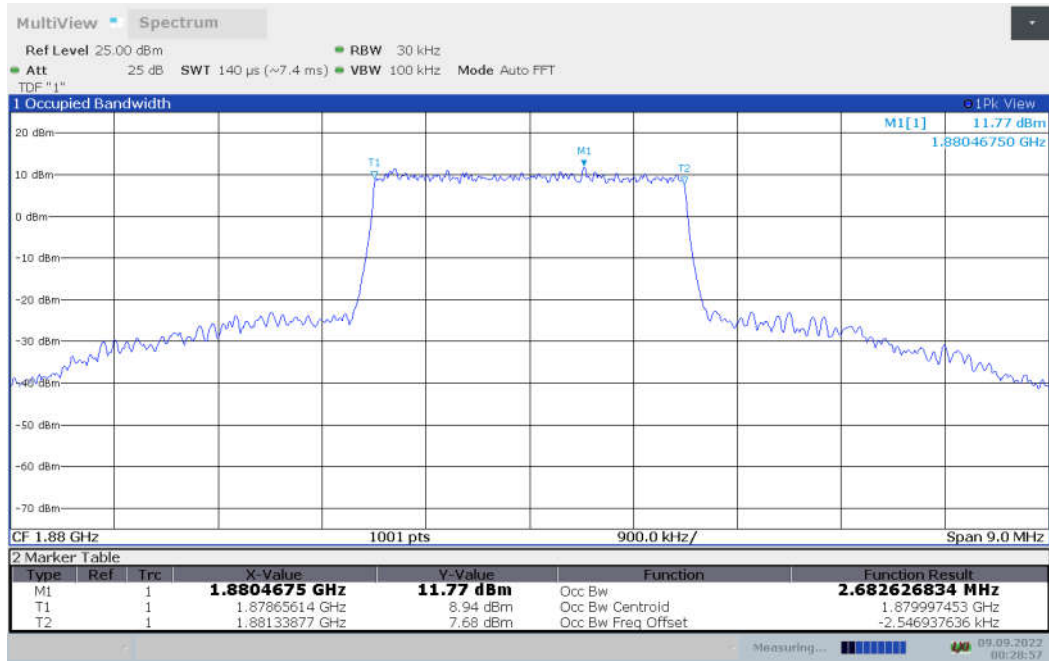
LTE band 2, 3MHz Bandwidth, QPSK (99% BW)



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



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

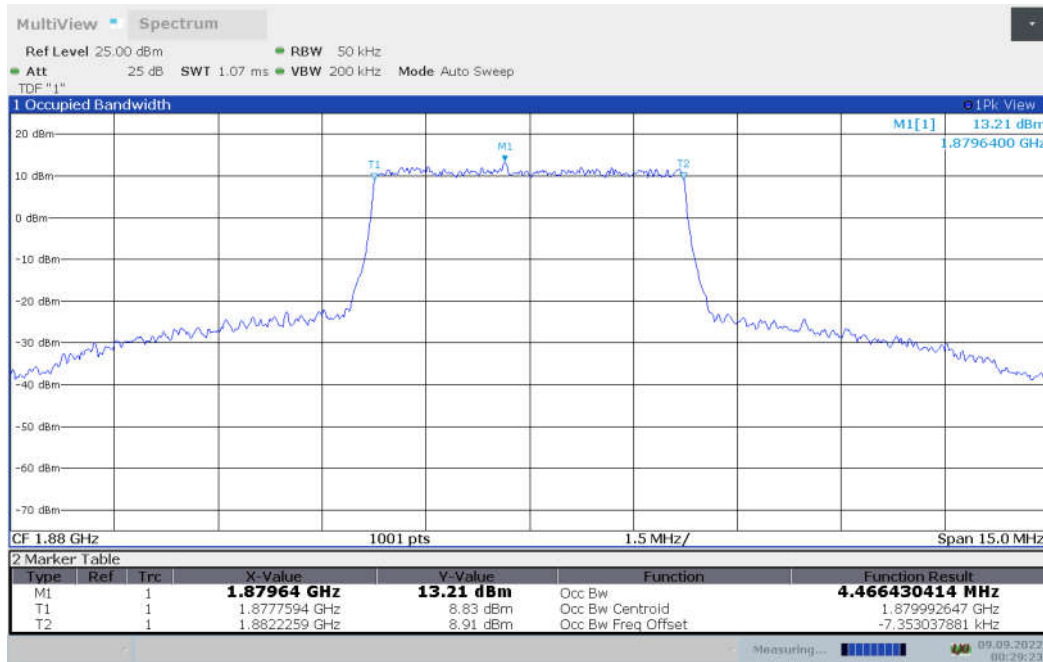




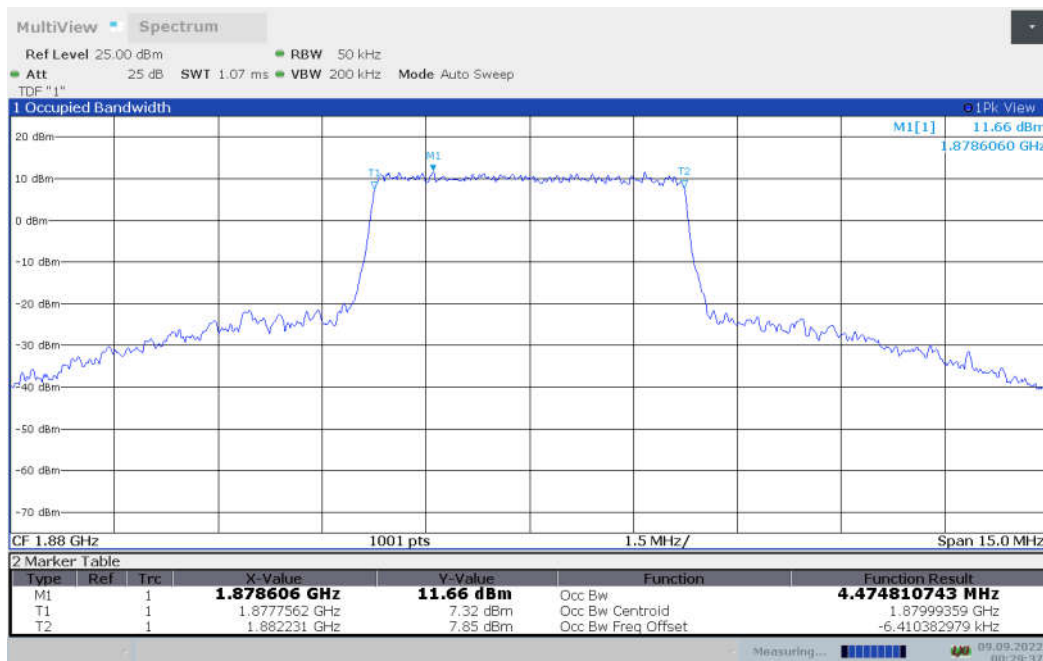
LTE band 2, 5MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
	1880.0	QPSK	16QAM
4.466		4.475	4.475

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

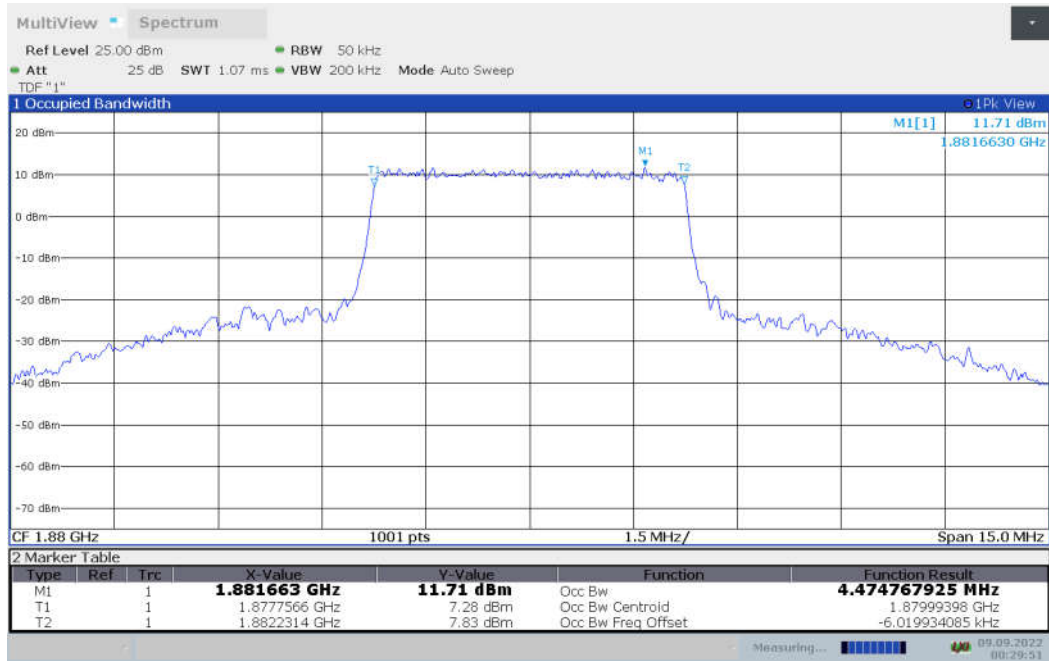


LTE band 2, 5MHz Bandwidth,16QAM (99% BW)





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

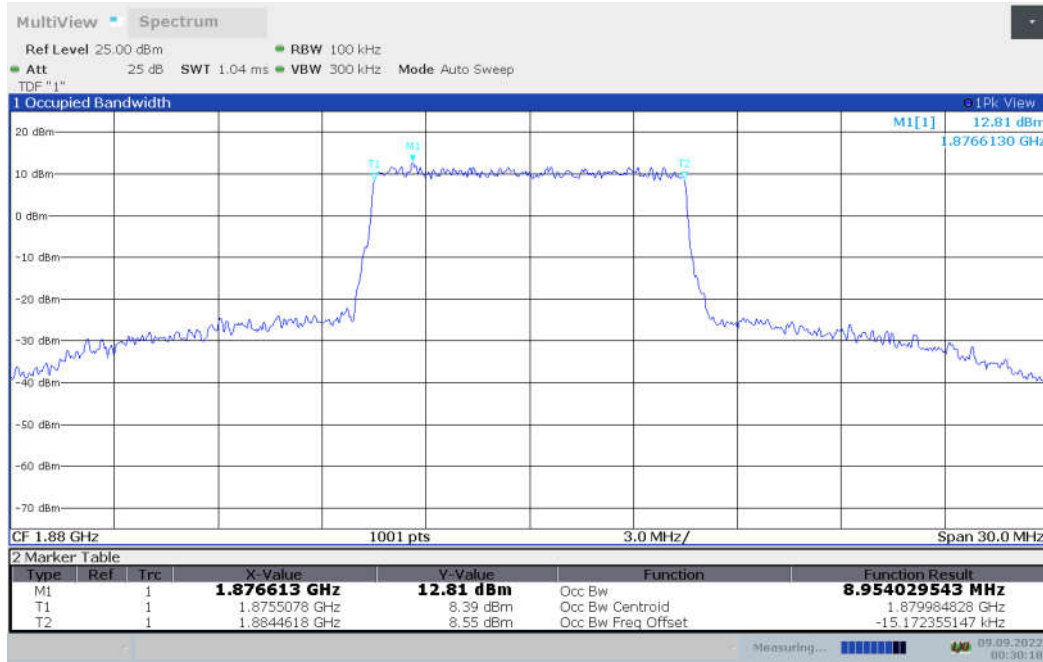




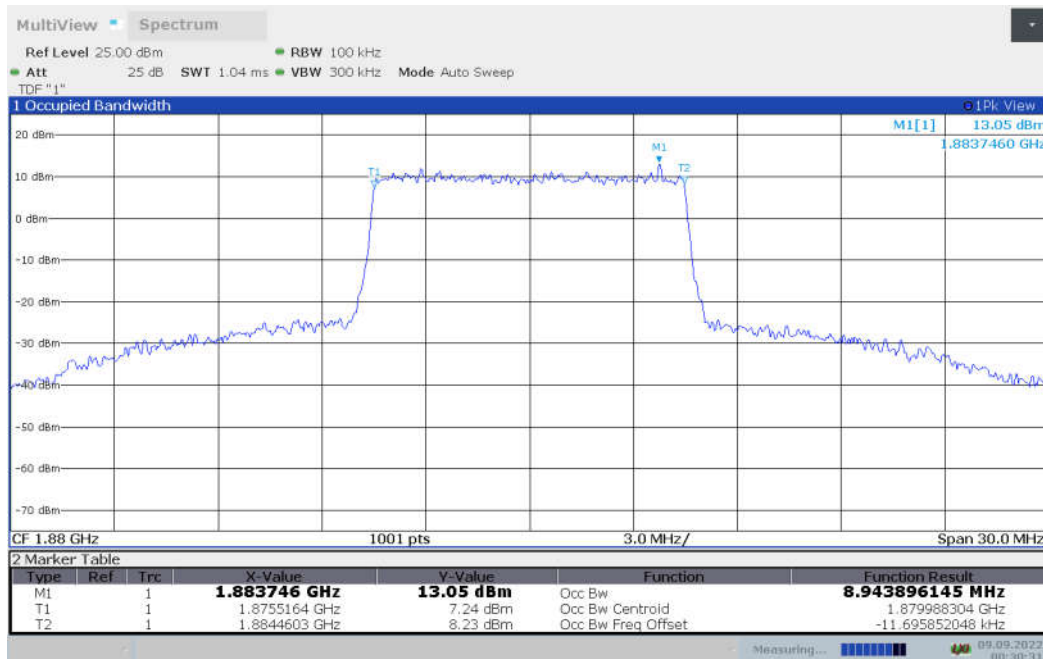
LTE band 2, 10MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
	QPSK	16QAM	64QAM
1880.0	8.954	8.944	8.946

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

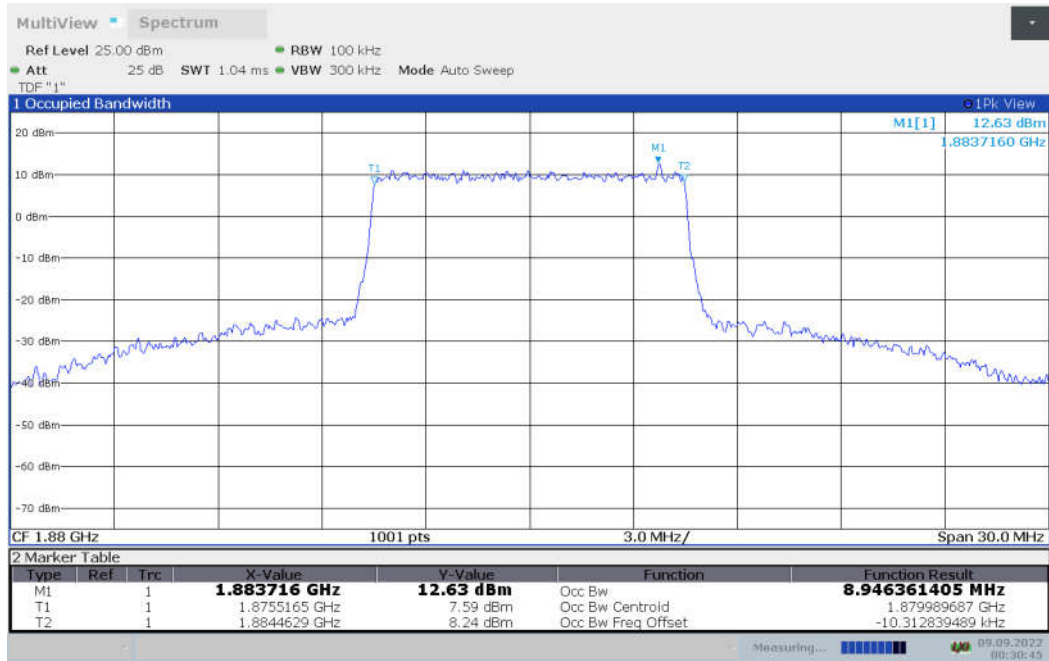


LTE band 2, 10MHz Bandwidth, 16QAM (99% BW)





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

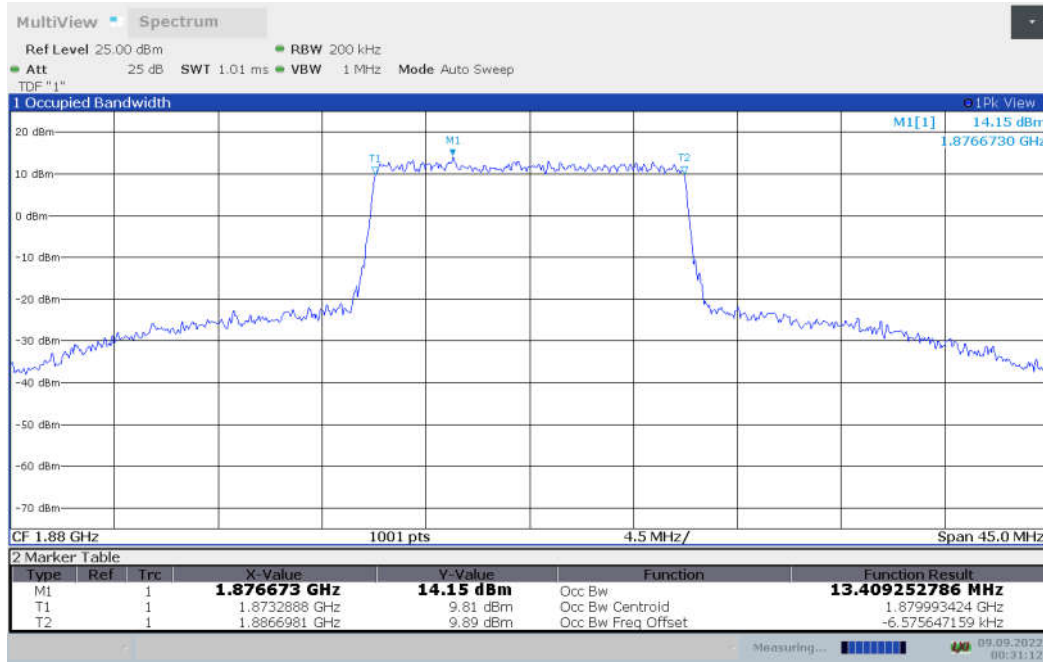




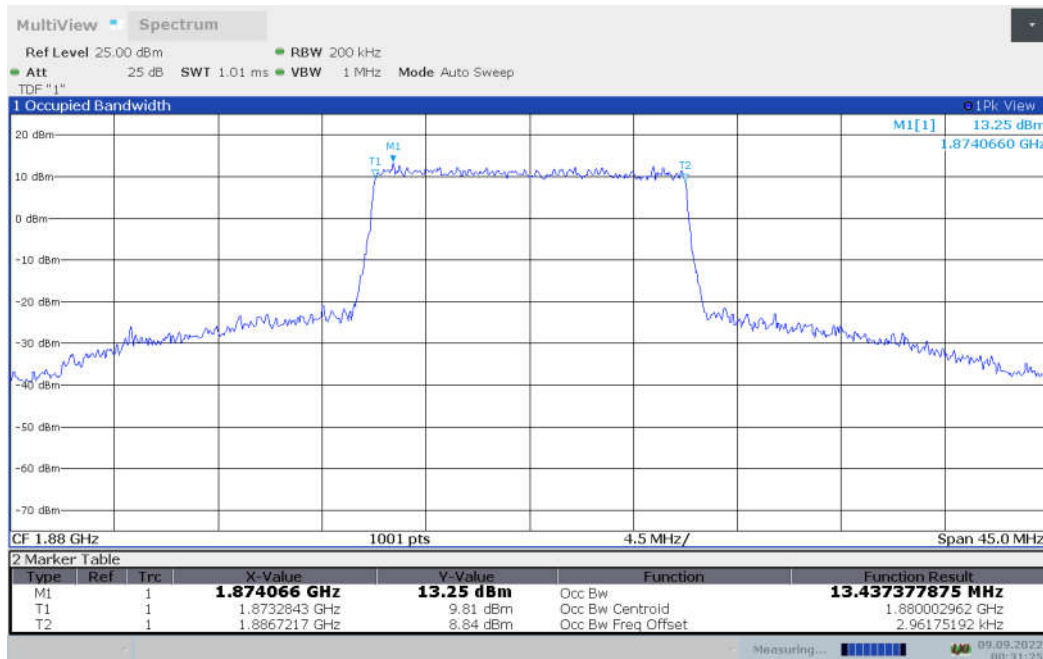
LTE band 2, 15MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
1880.0	QPSK	16QAM	64QAM
	13.409	13.437	13.427

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

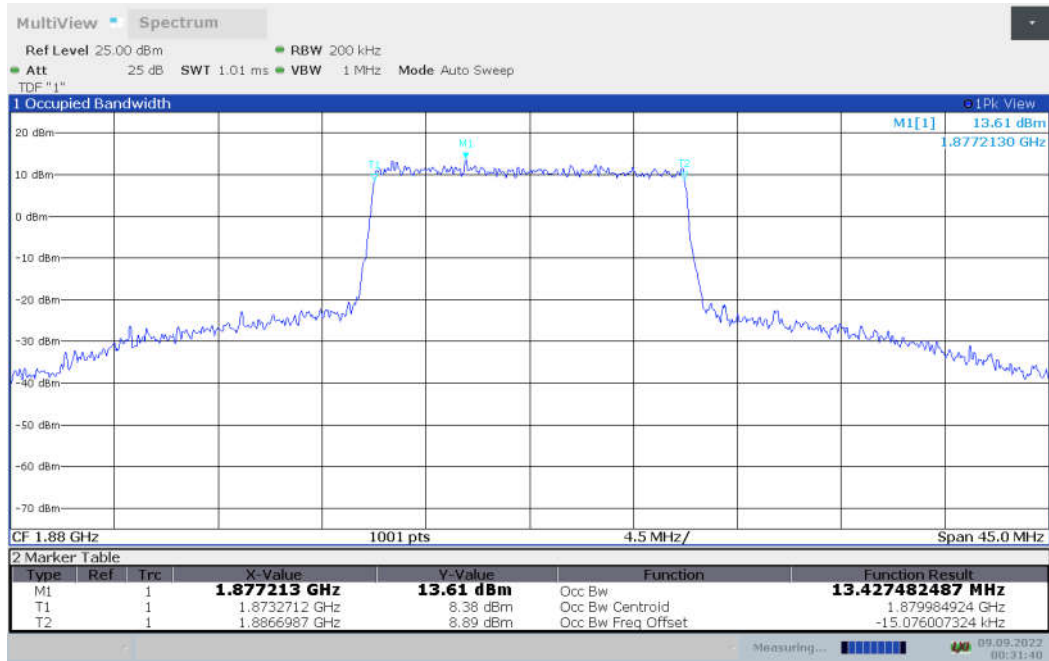


LTE band 2, 15MHz Bandwidth, 16QAM (99% BW)





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

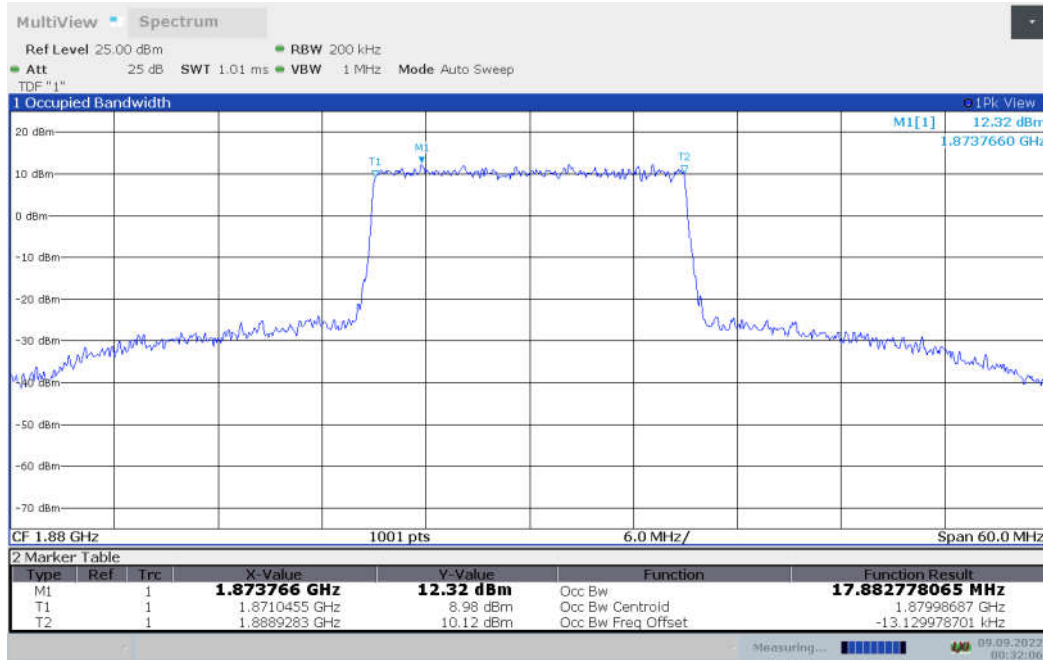




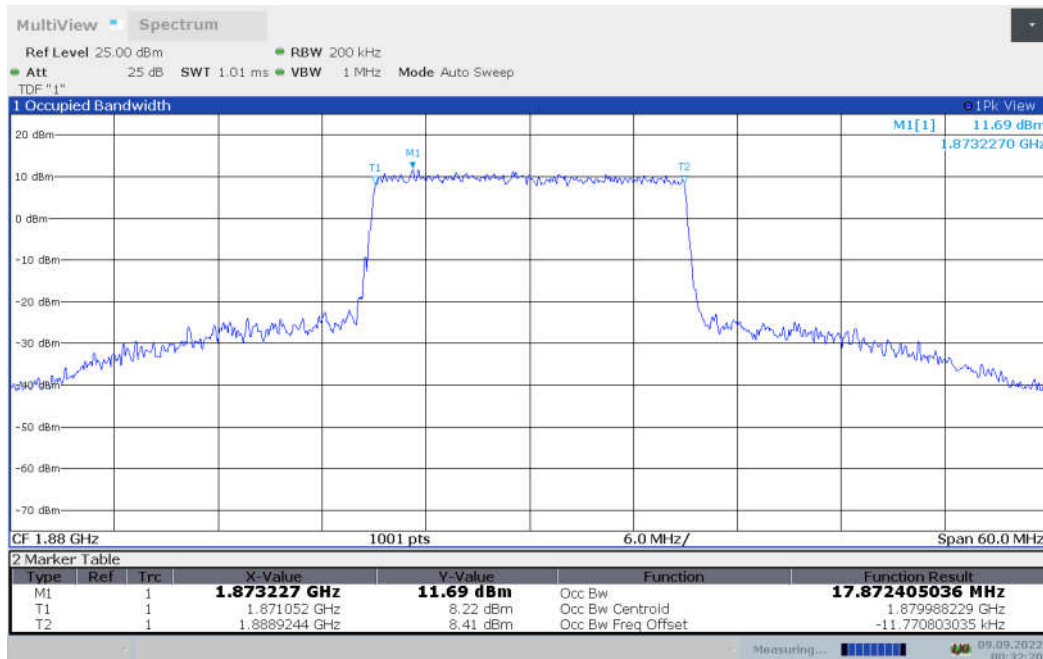
LTE band 2, 20MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)		
	1880.0	QPSK	16QAM
	17.883	17.872	17.919

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

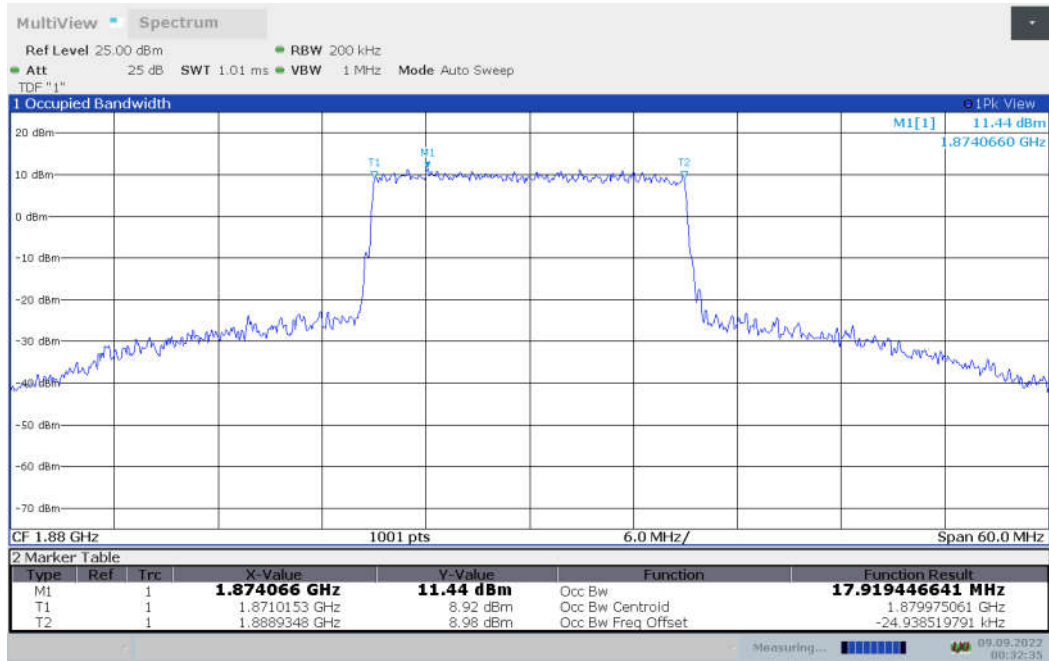


LTE band 2, 20MHz Bandwidth, 16QAM (99% BW)





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

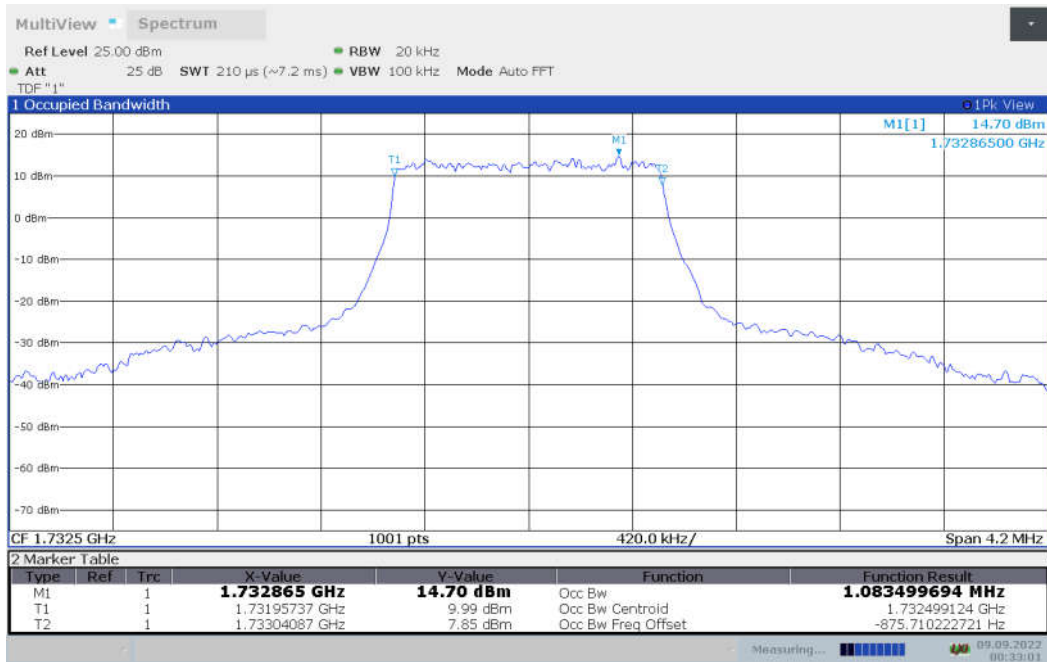




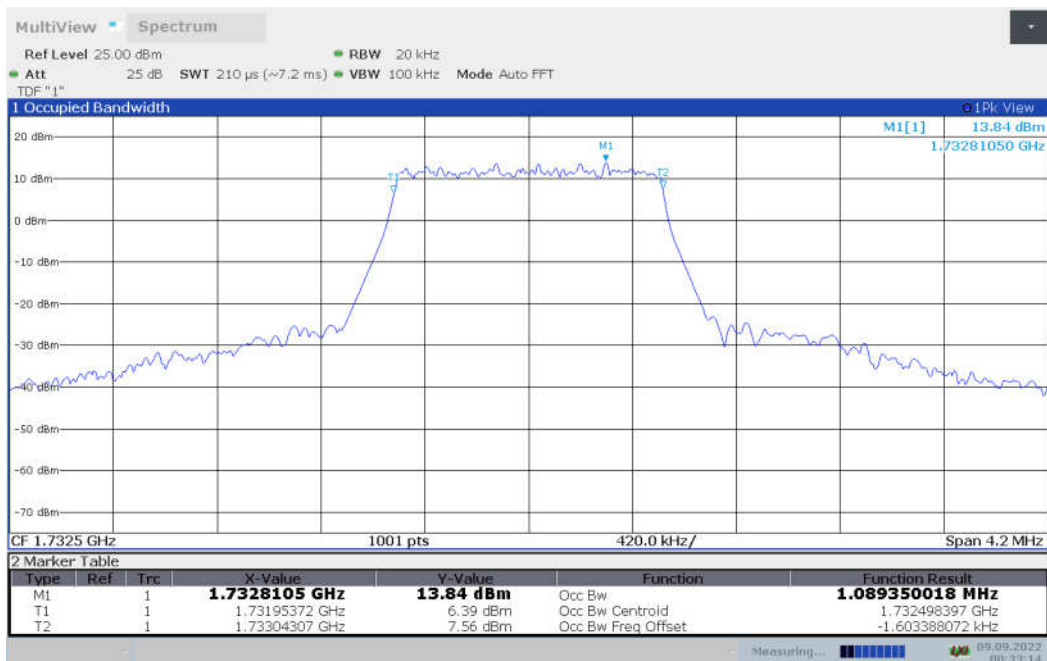
LTE band 4, 1.4MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1732.5	QPSK	16QAM	64QAM
	1.083	1.089	1.086

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

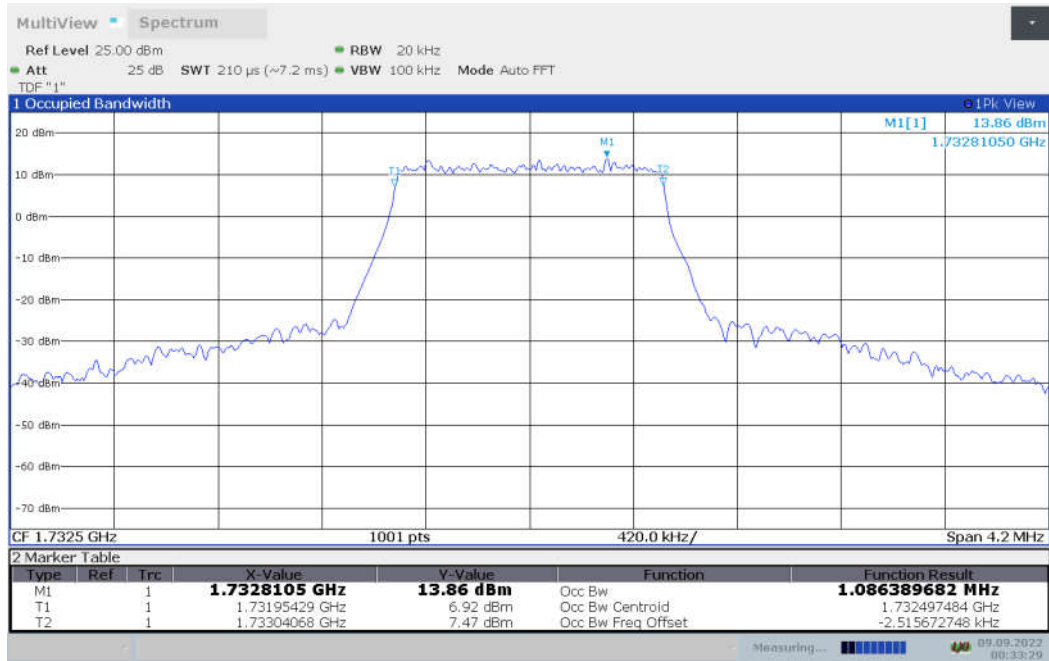


LTE band 4, 1.4MHz Bandwidth, 16QAM (99% BW)





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

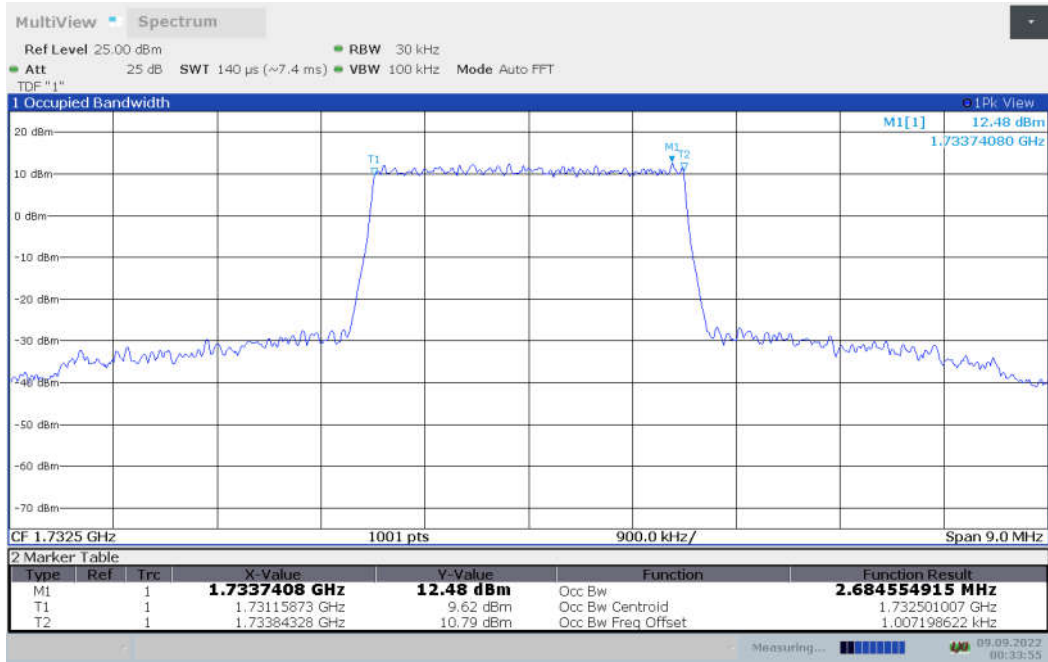




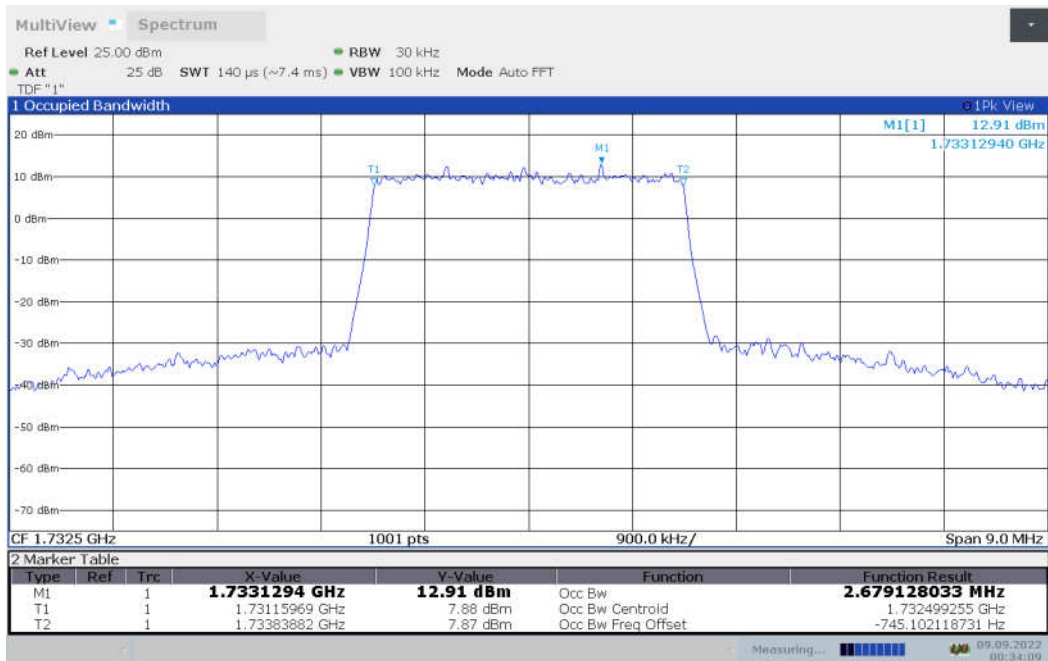
LTE band 4, 3MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1732.5	QPSK	16QAM	64QAM
	2.685	2.679	2.679

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

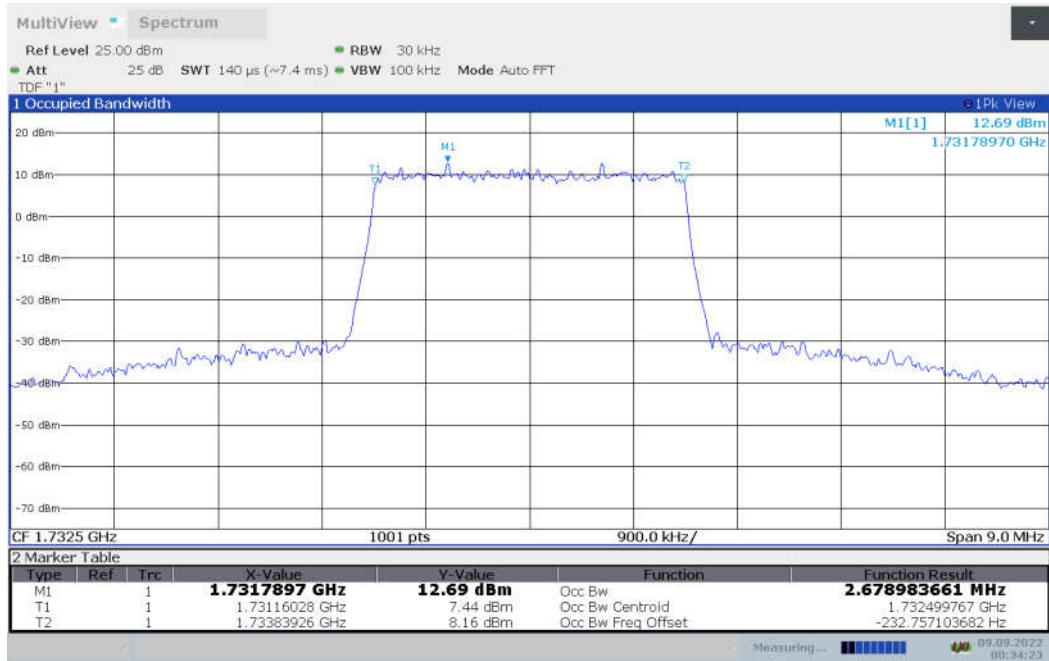


LTE band 4, 3MHz Bandwidth, 16QAM (99% BW)





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

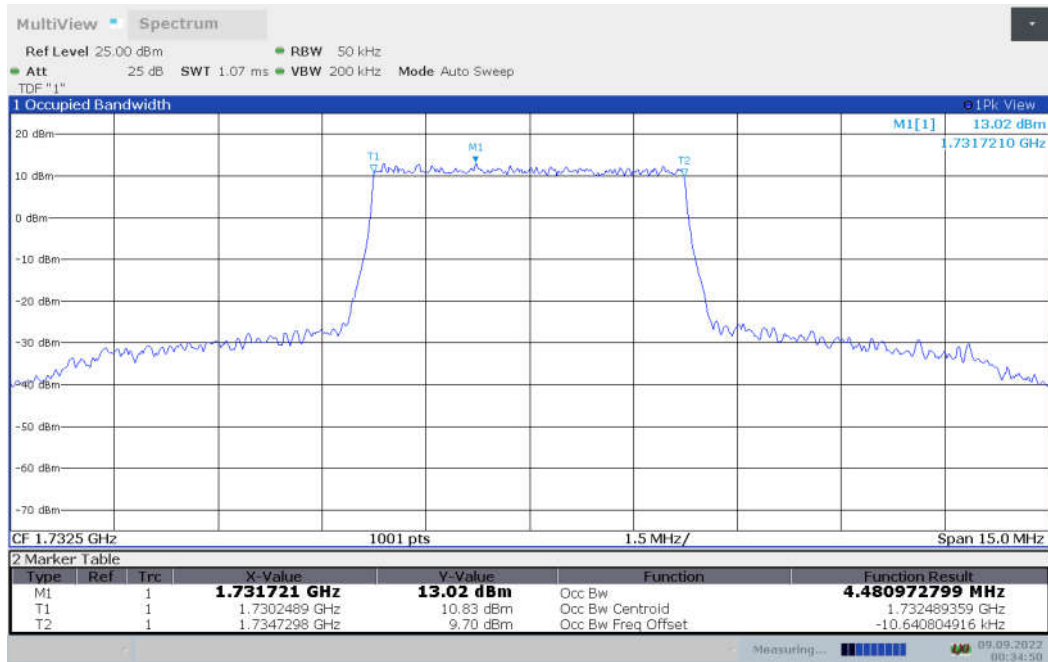




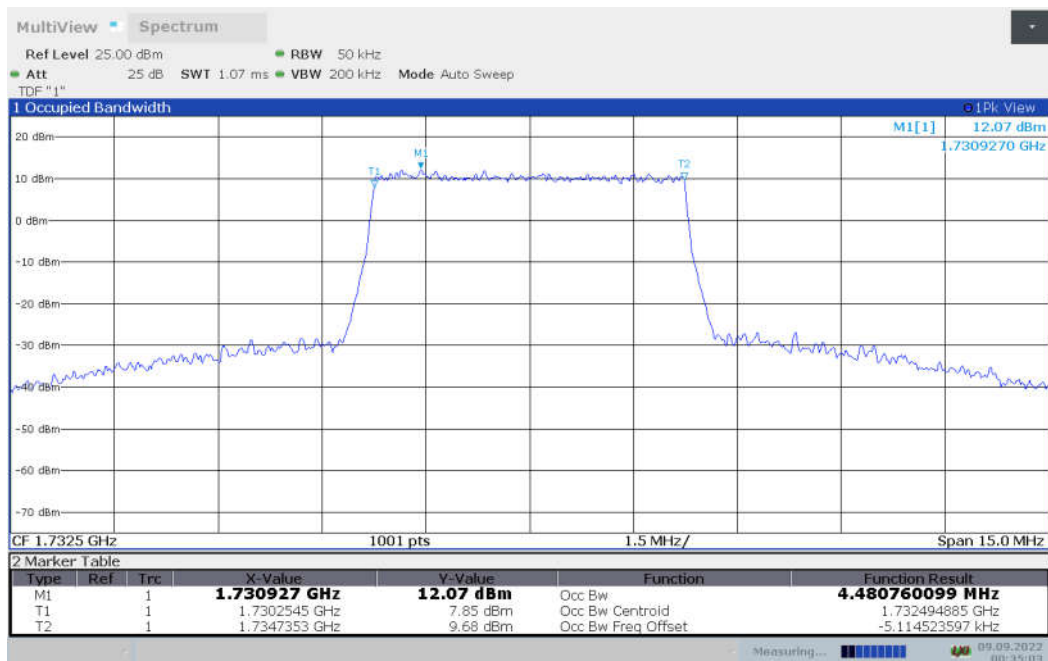
LTE band 4, 5MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1732.5	QPSK	16QAM	64QAM
	4.481	4.481	4.480

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

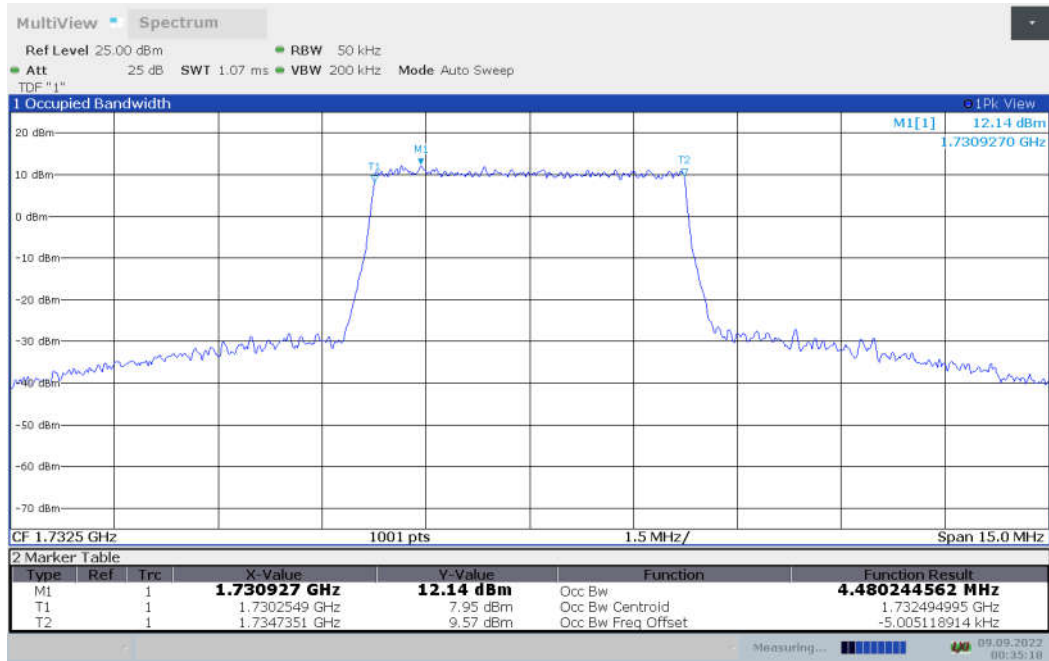


LTE band 4, 5MHz Bandwidth,16QAM (99% BW)





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

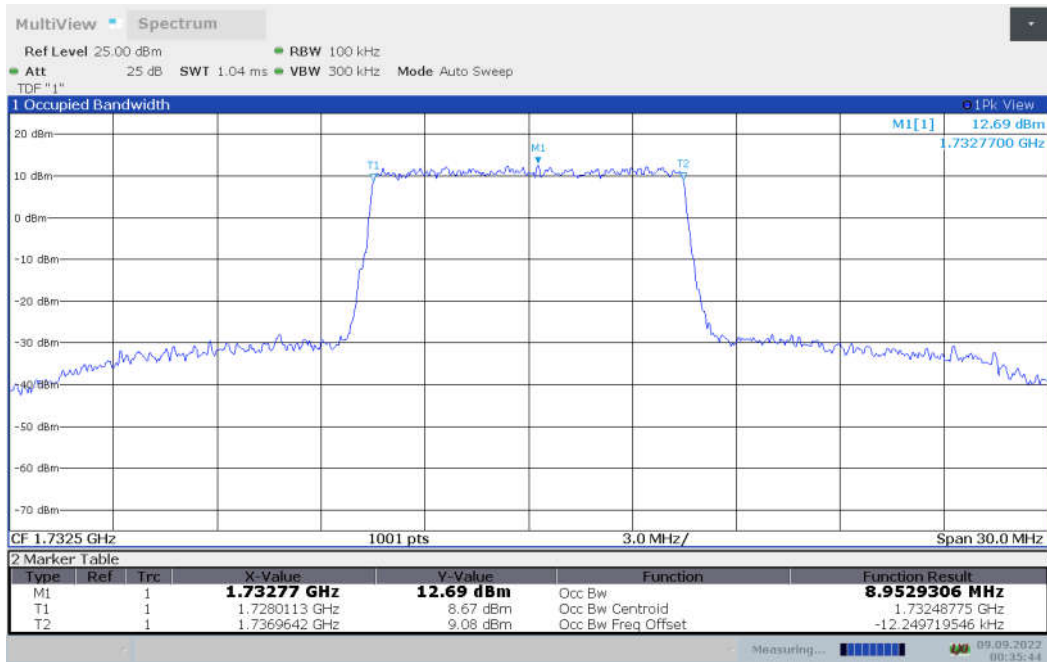




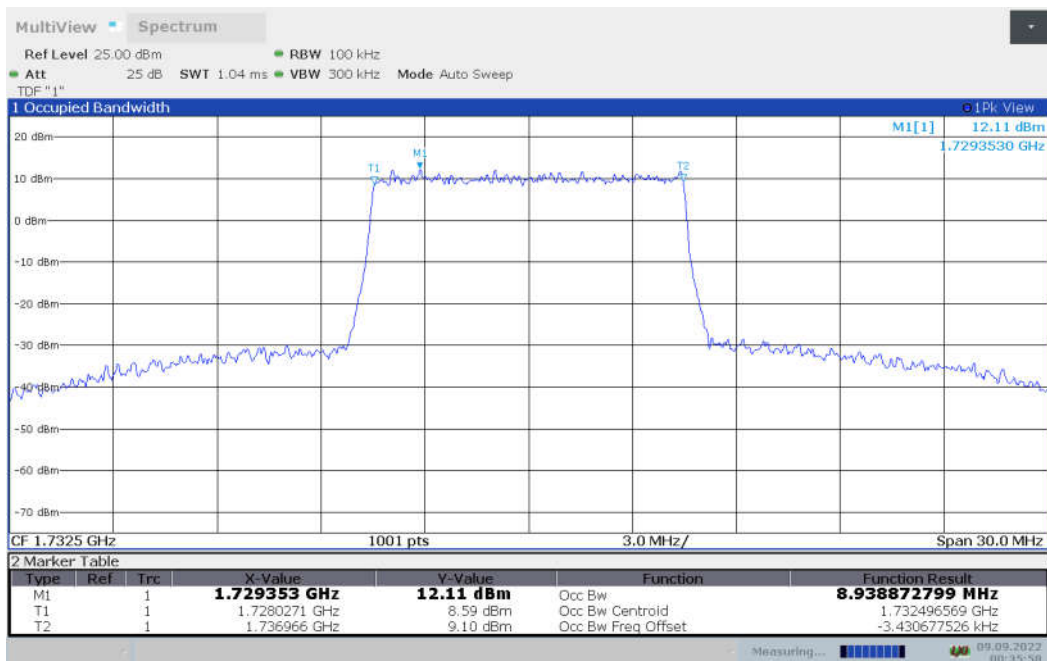
LTE band 4, 10MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1732.5	QPSK	16QAM	64QAM
	8.953	8.939	8.948

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

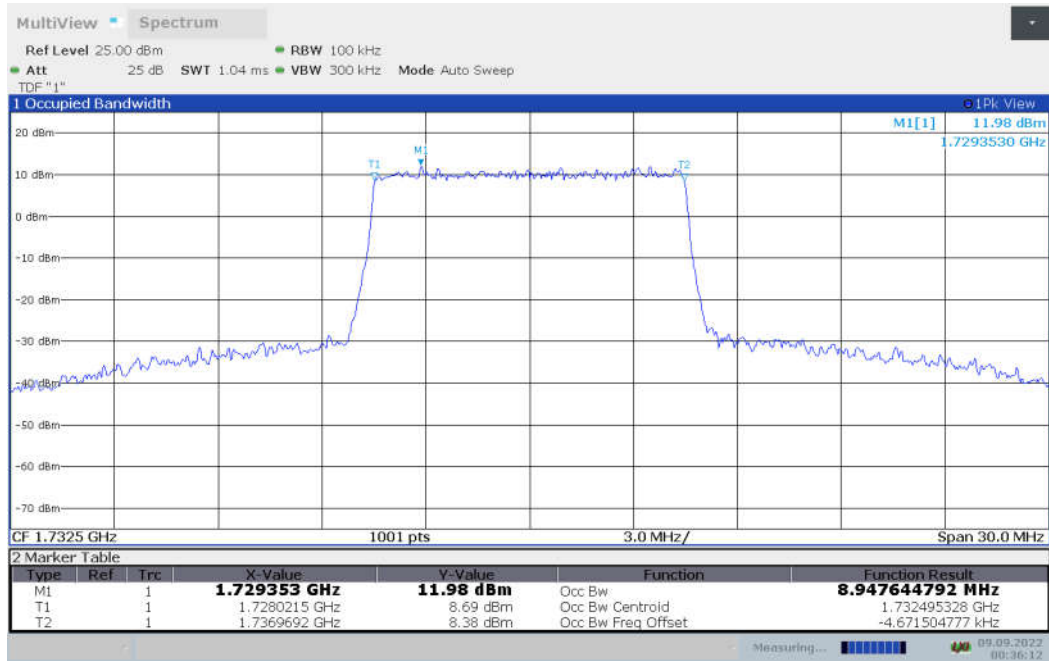


LTE band 4, 10MHz Bandwidth, 16QAM (99% BW)





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

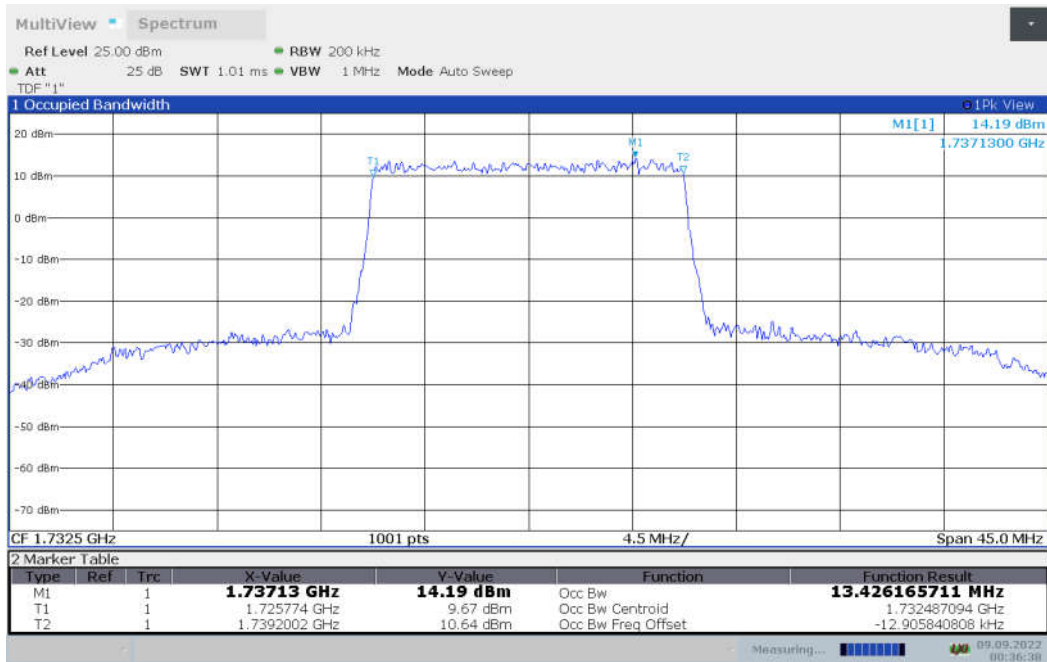




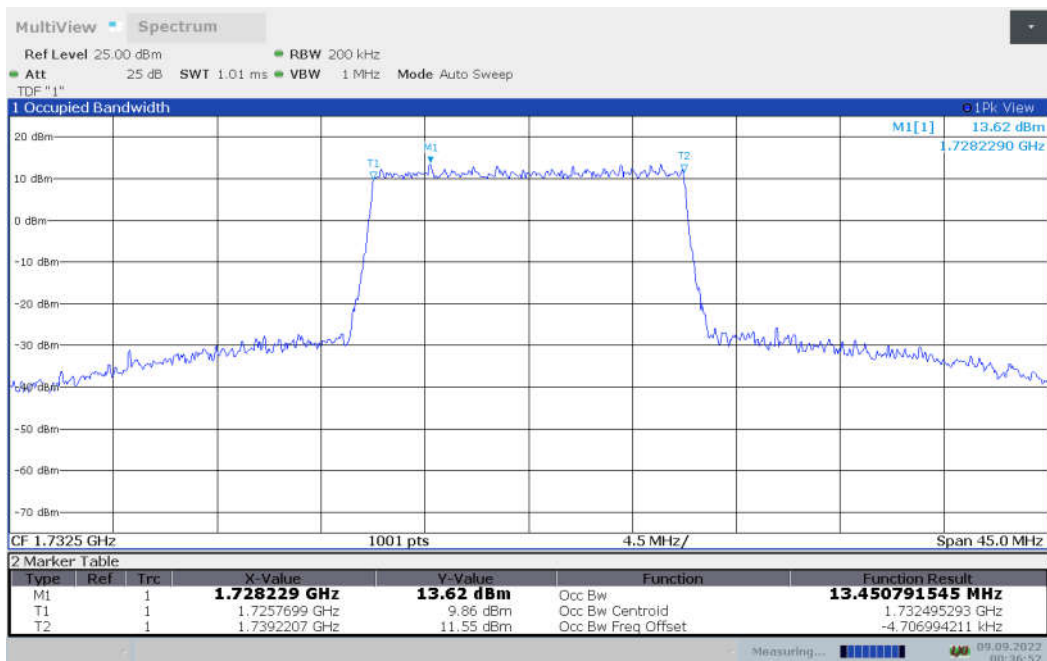
LTE band 4, 15MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1732.5	QPSK	16QAM	64QAM
	13.426	13.451	13.416

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

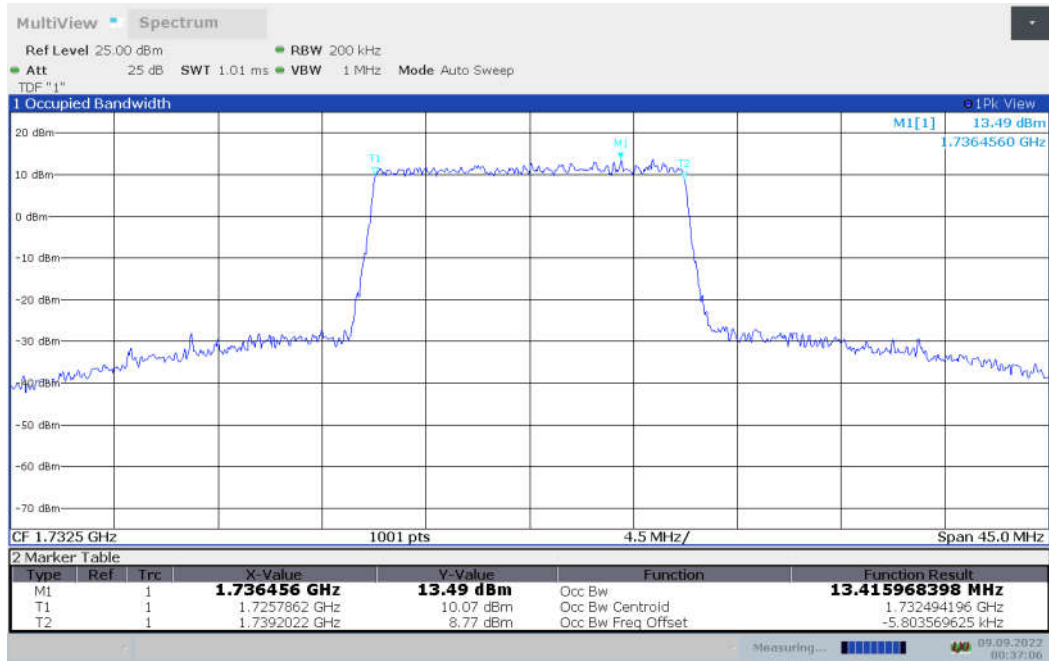


LTE band 4, 15MHz Bandwidth, 16QAM (99% BW)





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

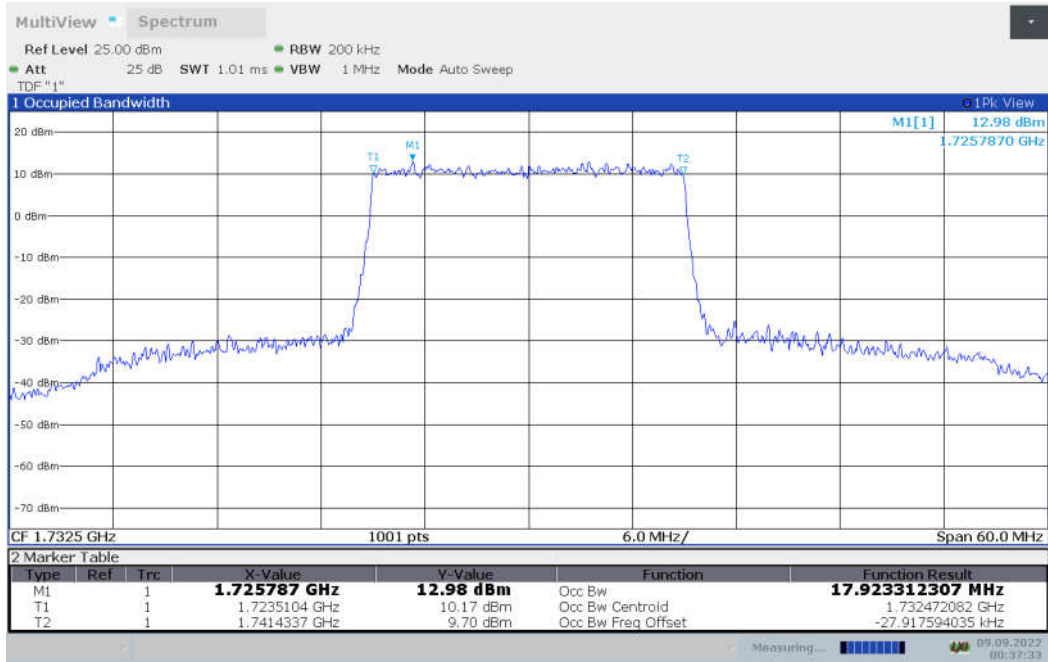




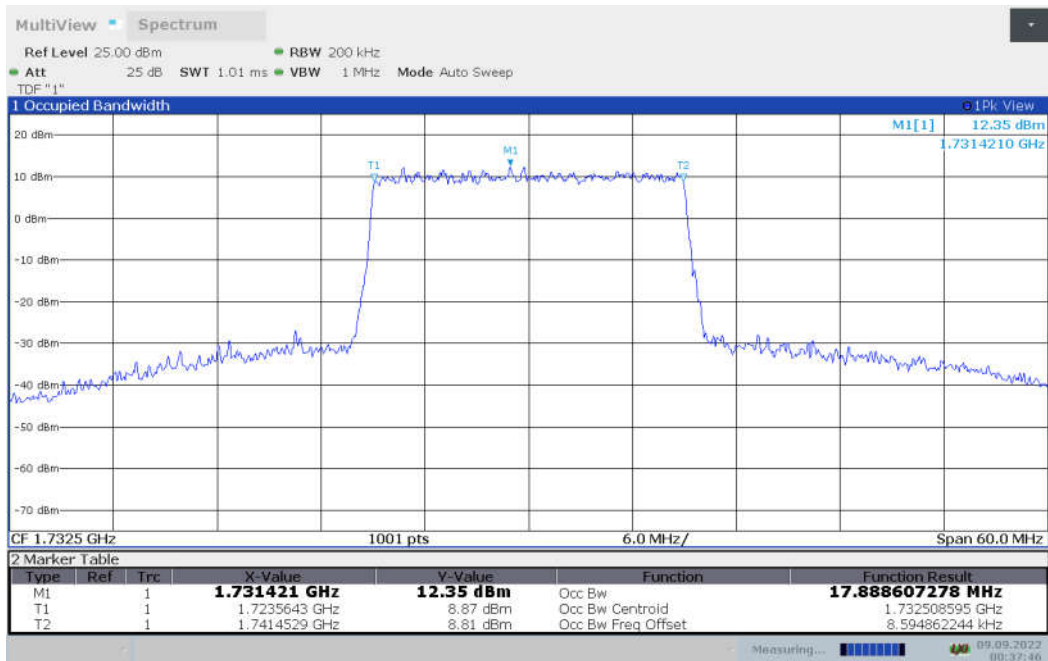
LTE band 4, 20MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1732.5	QPSK	16QAM	64QAM
	17.922	17.889	17.899

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

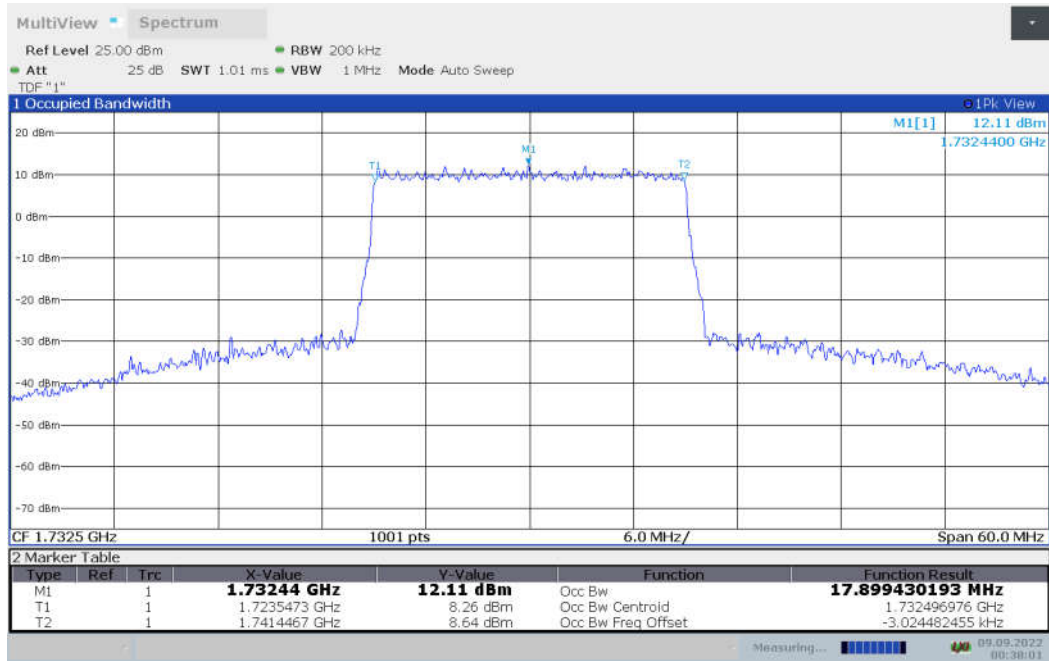


LTE band 4, 20MHz Bandwidth, 16QAM (99% BW)





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

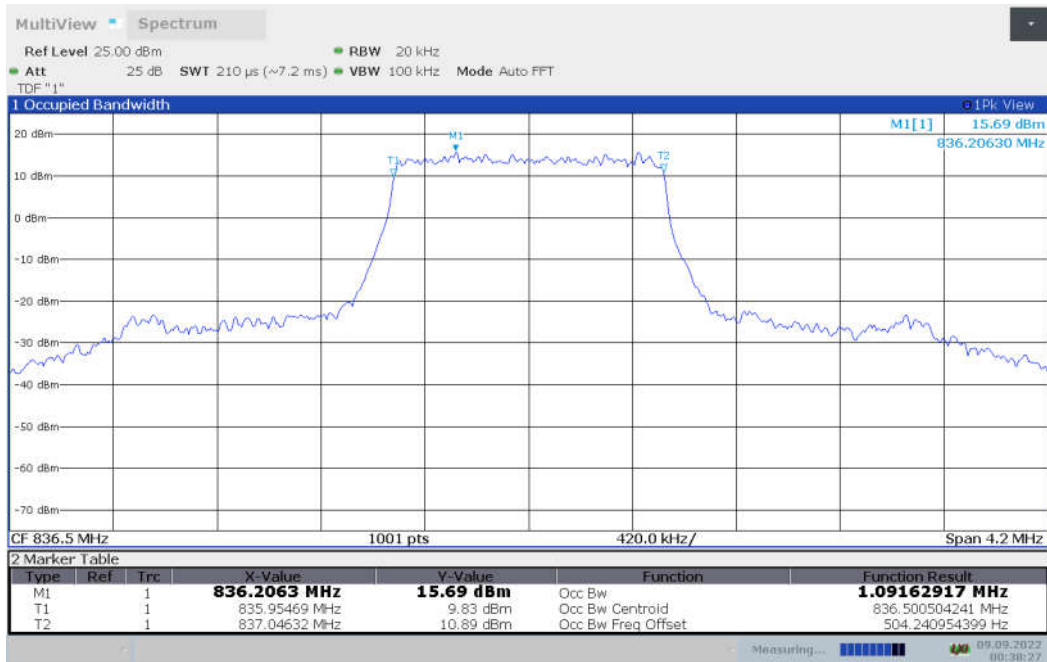




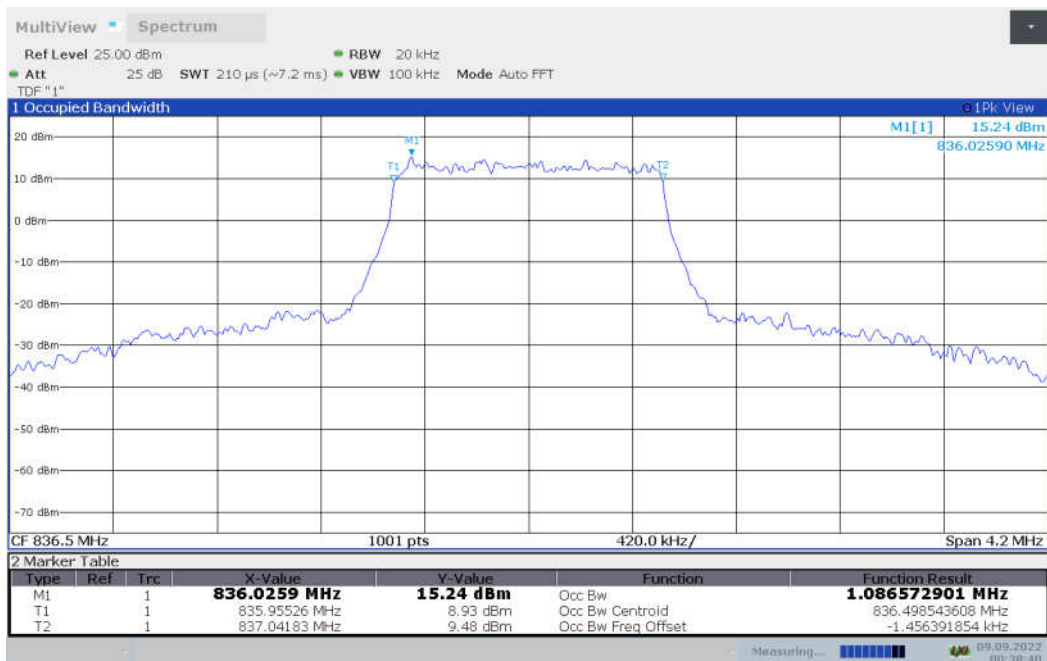
LTE band 5, 1.4MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
836.5	1.091	1.087	1.087

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



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





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

