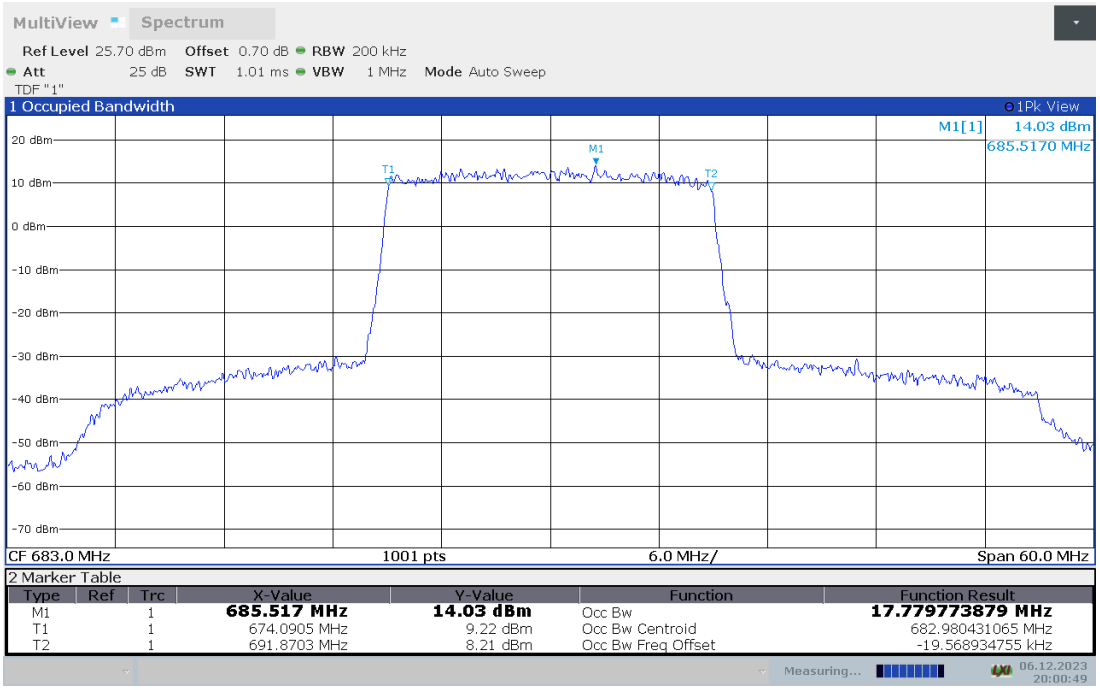
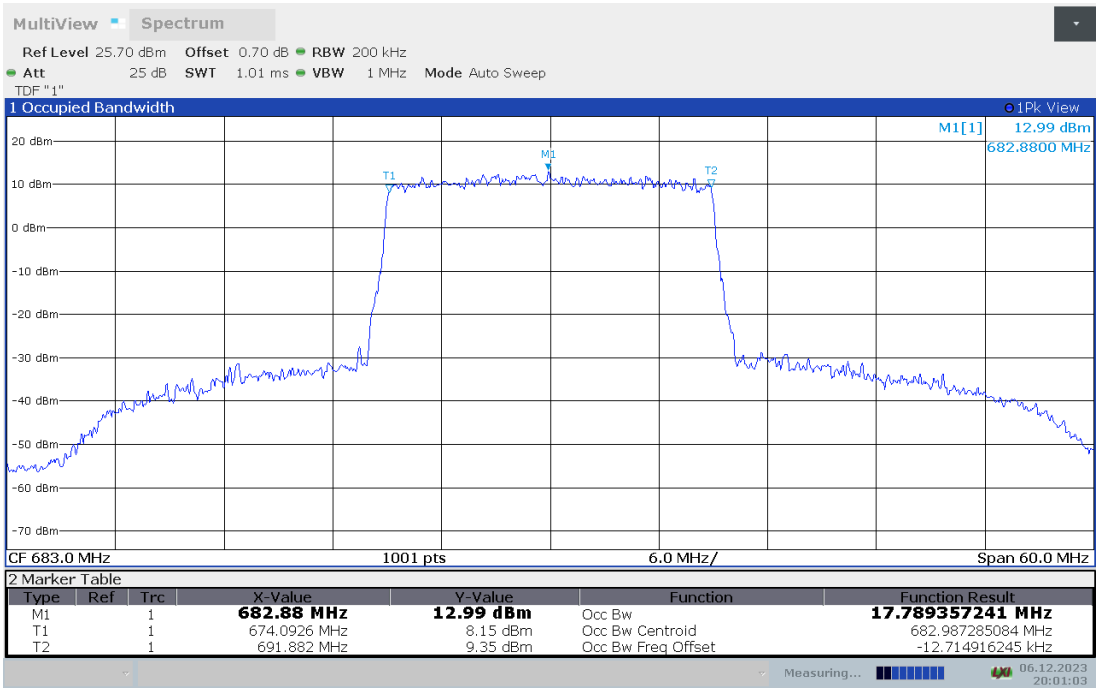
LTE band 71,20MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%)(MHz)	
	QPSK	16QAM
683	17.780	17.789

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



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



Note: Expanded measurement uncertainty is U = 3428 Hz, k = 2

A.5 EMISSION BANDWIDTH

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.

The measurement method is from ANSI C63.26:

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.

b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.

c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.

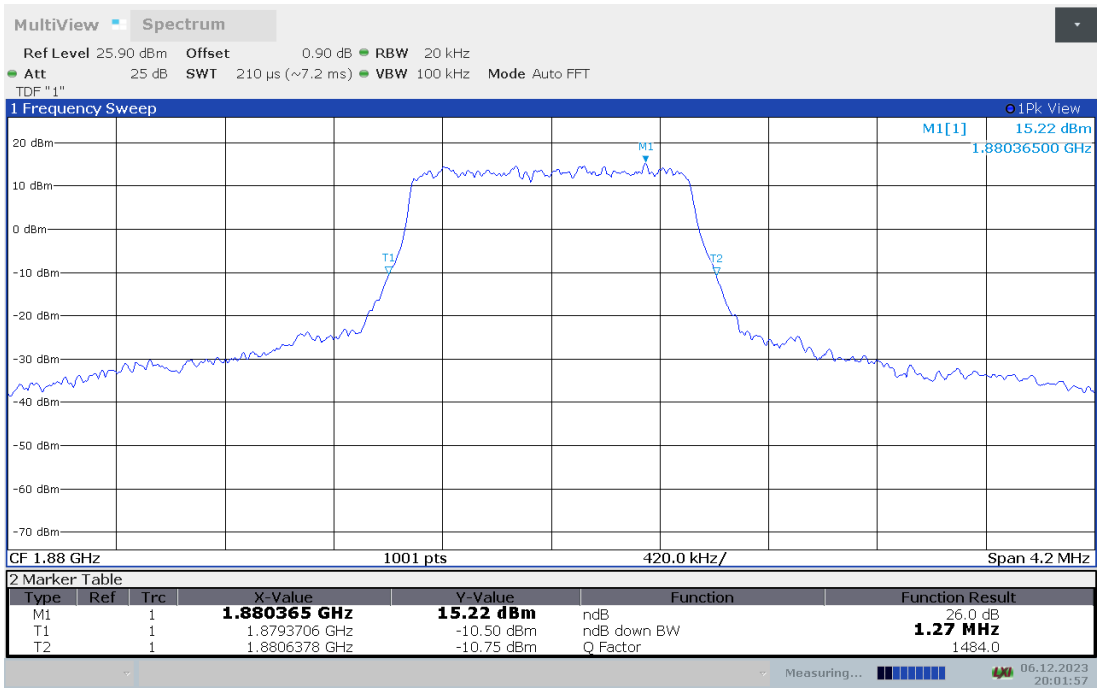
d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “−X dB” requirement, i.e., if the requirement calls for measuring the −26 dB OBW,the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.

e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.

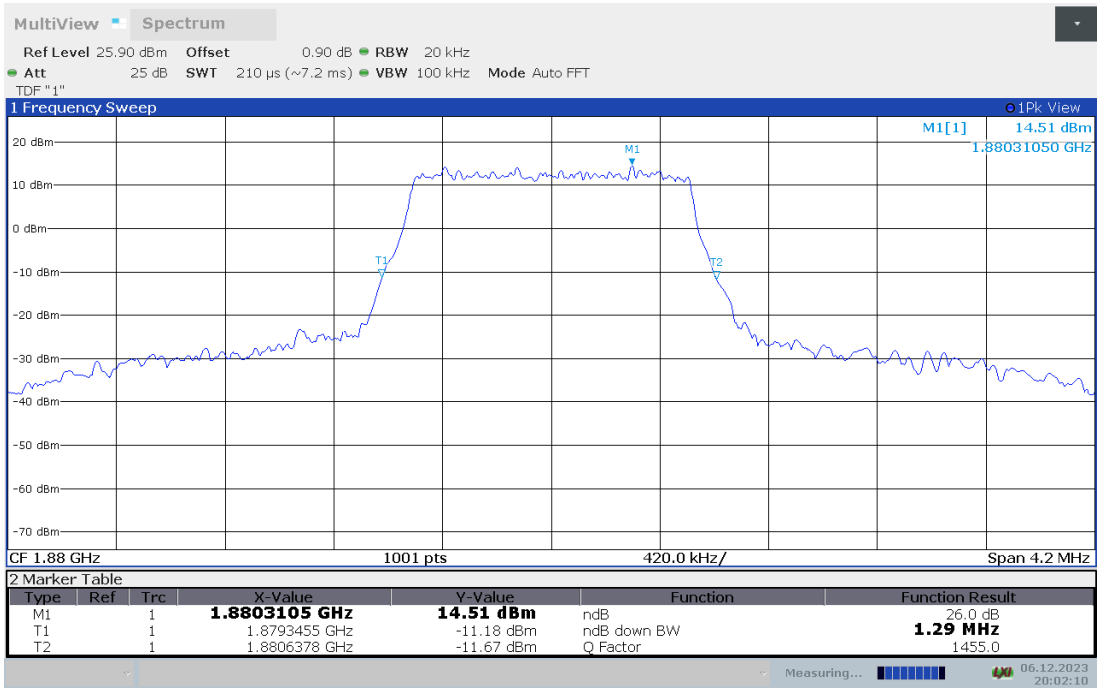
LTE band 2,1.4MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	1.267	1.292

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



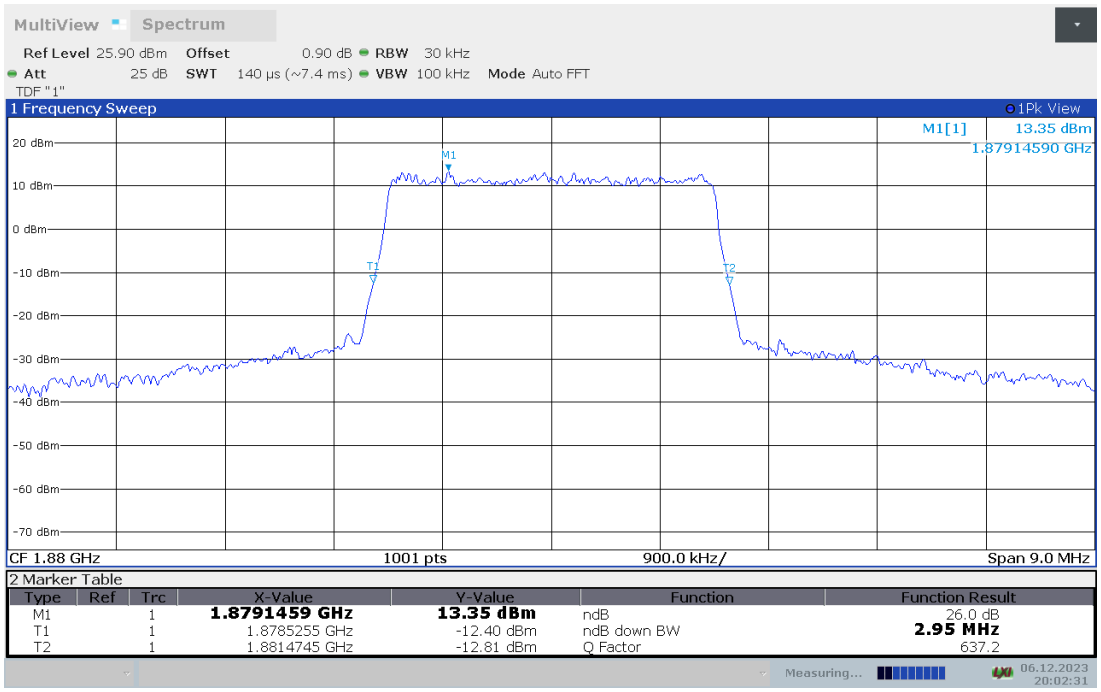
LTE band 2 , 1.4MHz Bandwidth, MID, 16QAM (-26dBc BW)



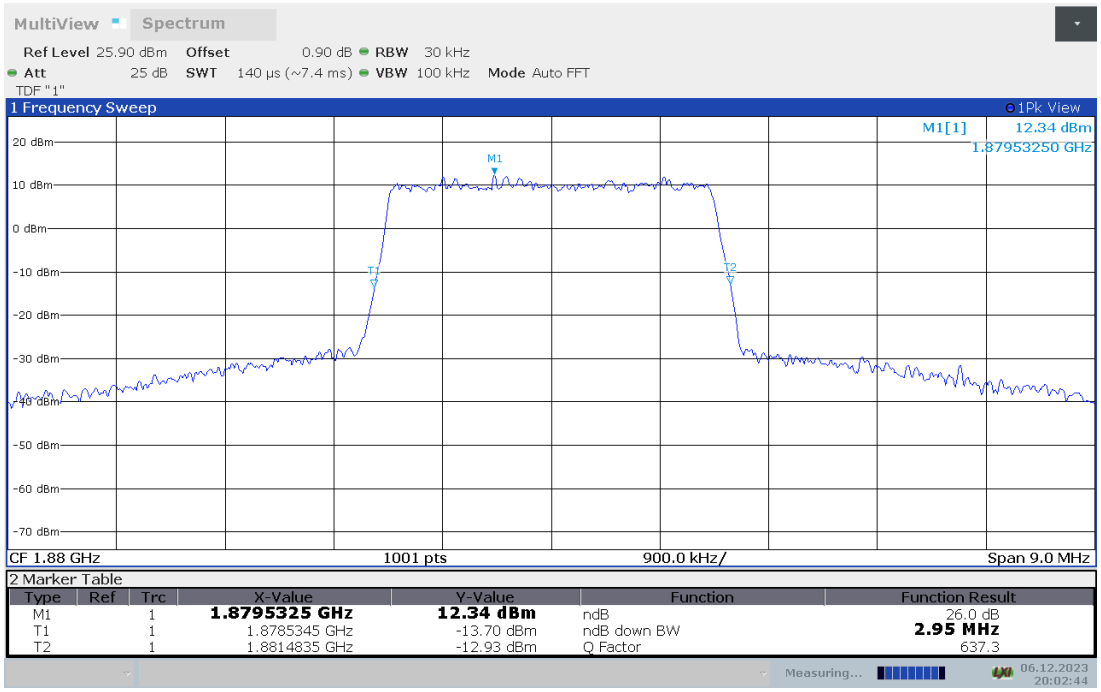
LTE band 2,3MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	2.949	2.949

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



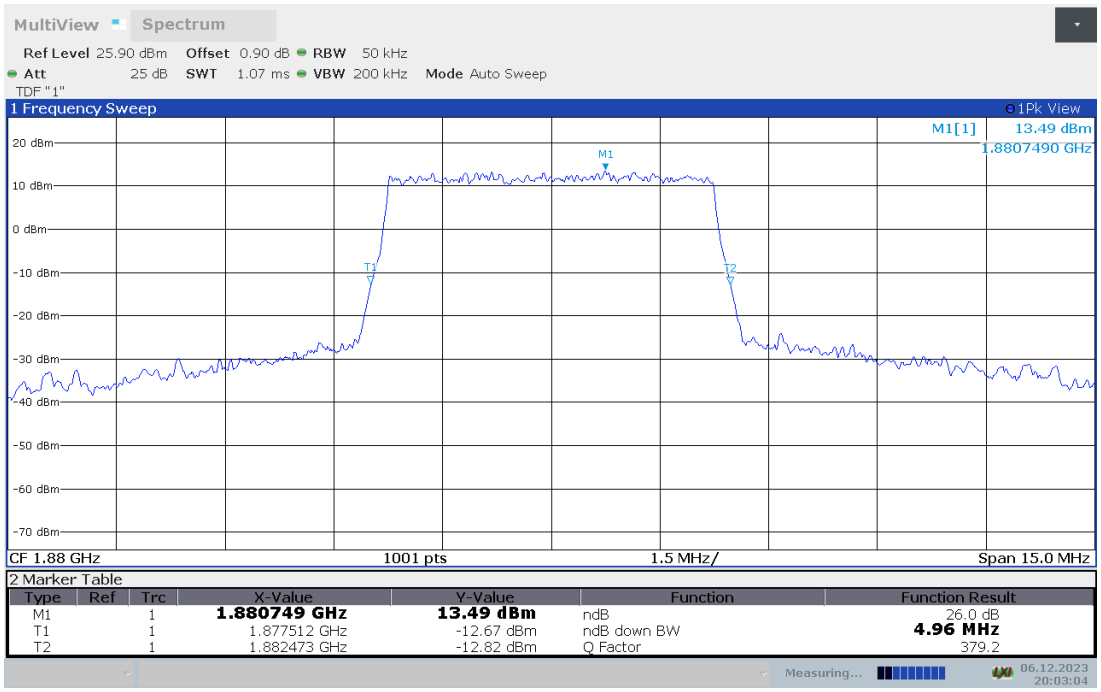
LTE band 2 , 3MHz Bandwidth, MID, 16QAM (-26dBc BW)



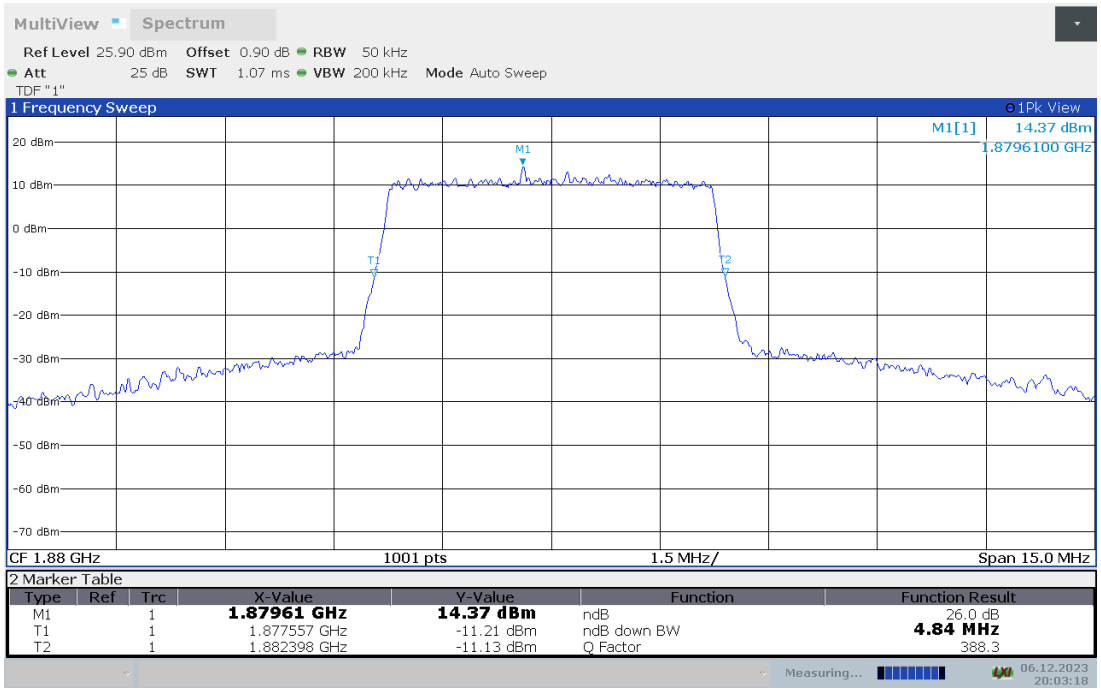
LTE band 2,5MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	4.960	4.840

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



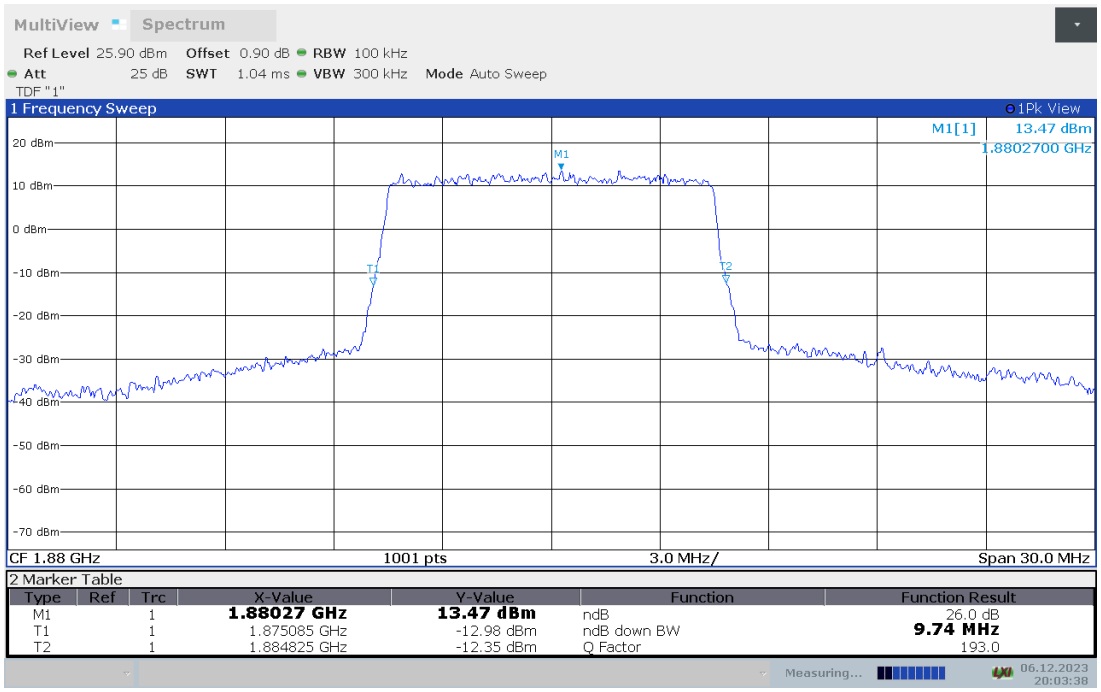
LTE band 2 , 5MHz Bandwidth, MID, 16QAM (-26dBc BW)



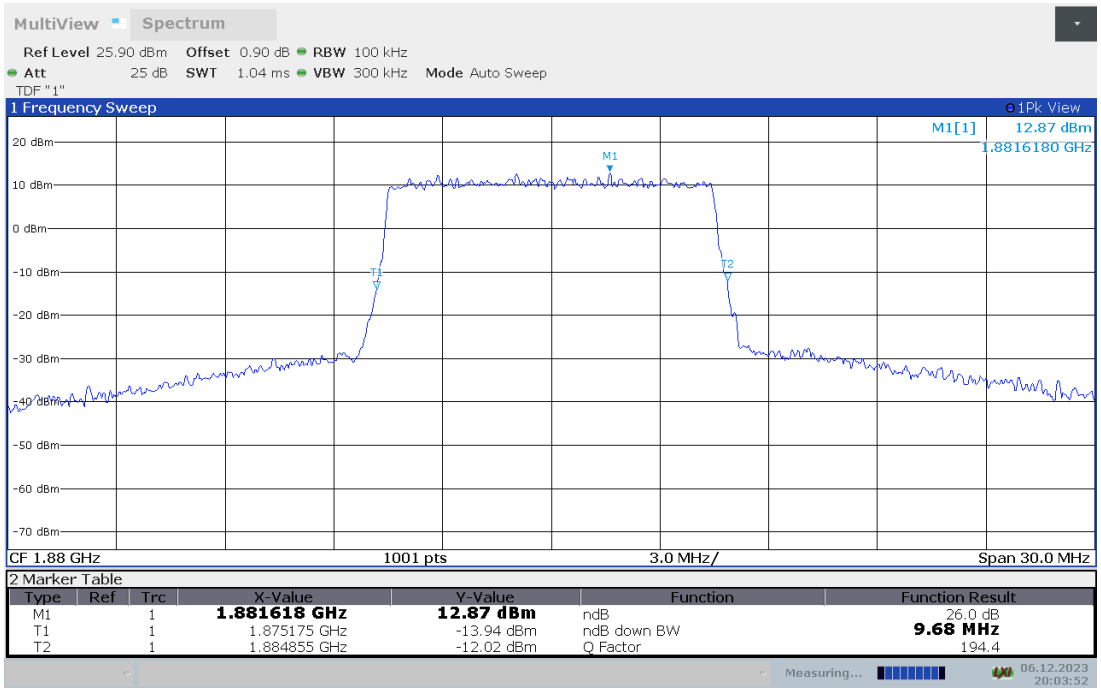
LTE band 2,10MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	9.740	9.680

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



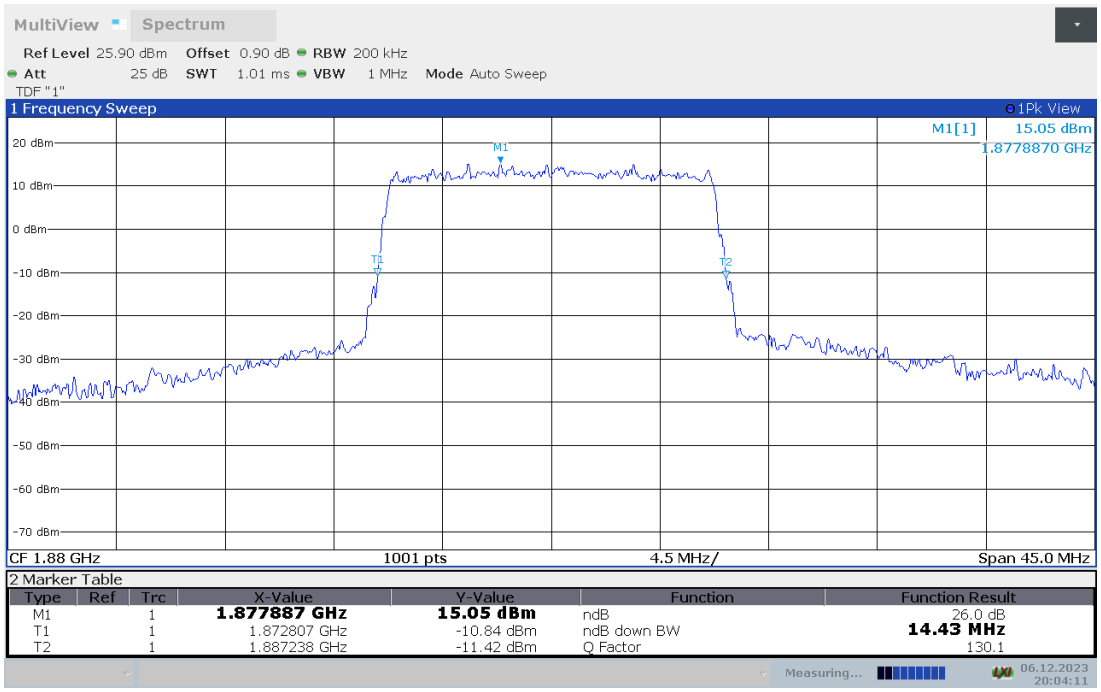
LTE band 2 , 10MHz Bandwidth, MID, 16QAM (-26dBc BW)



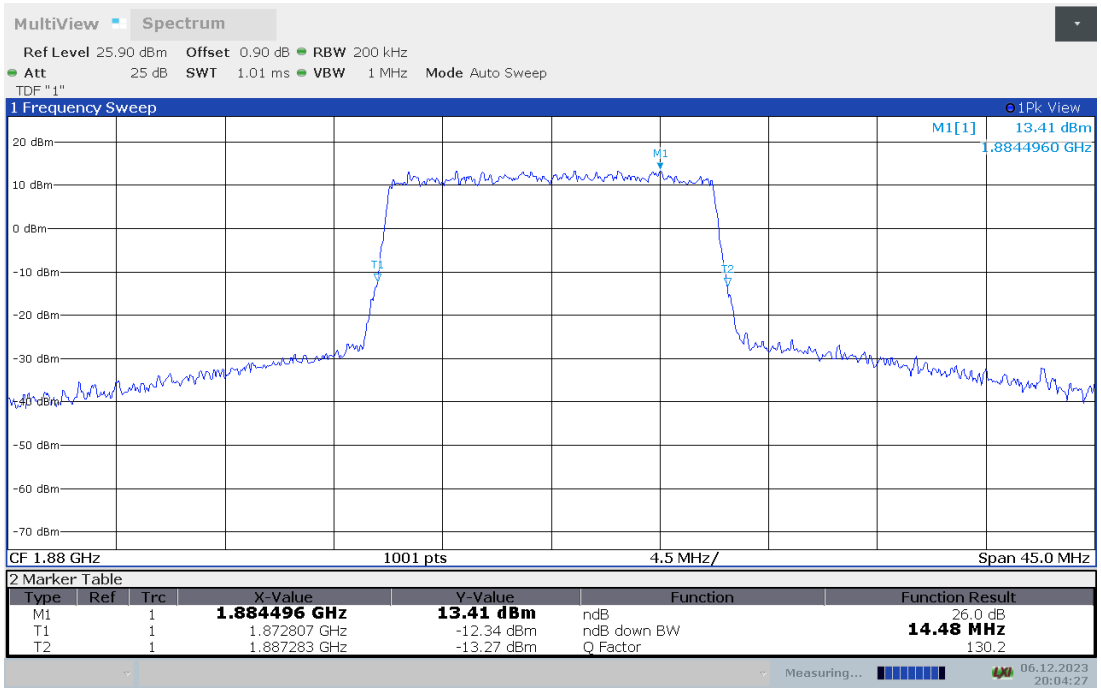
LTE band 2,15MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	14.431	14.476

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



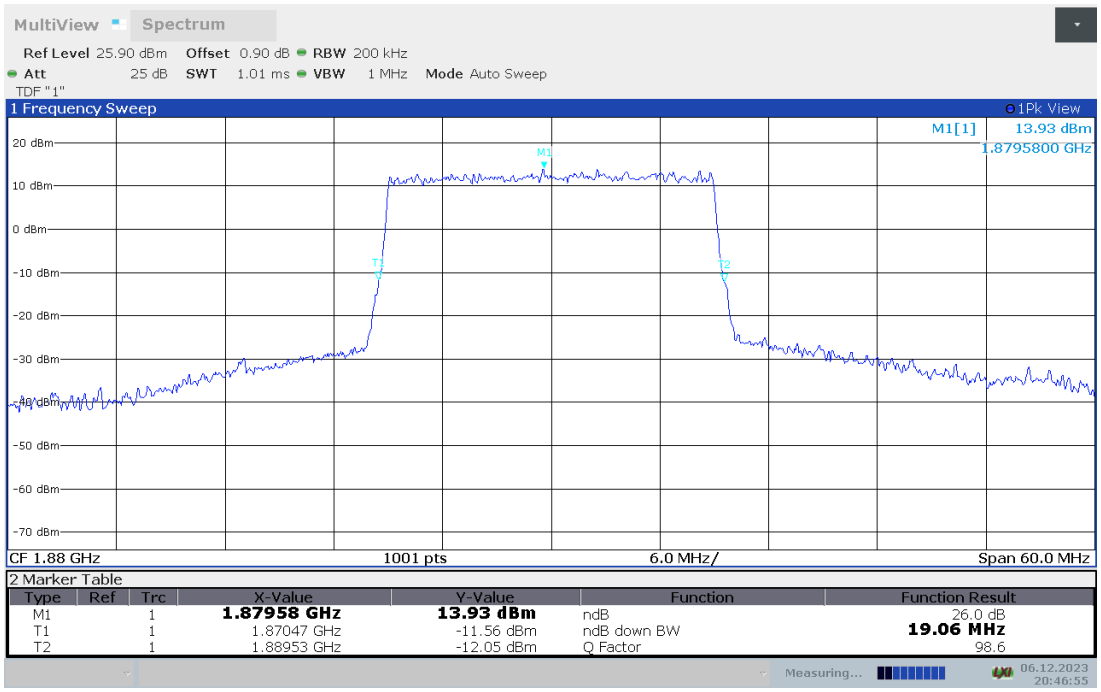
LTE band 2 , 15MHz Bandwidth, MID, 16QAM (-26dBc BW)



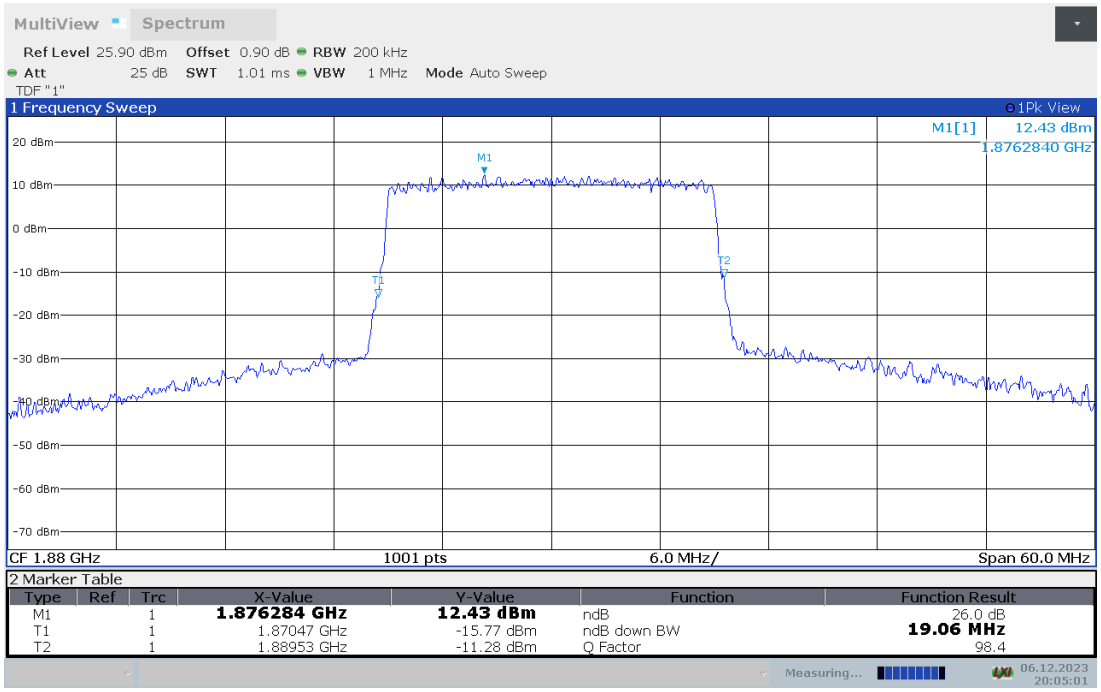
LTE band 2,20MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	19.061	19.061

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



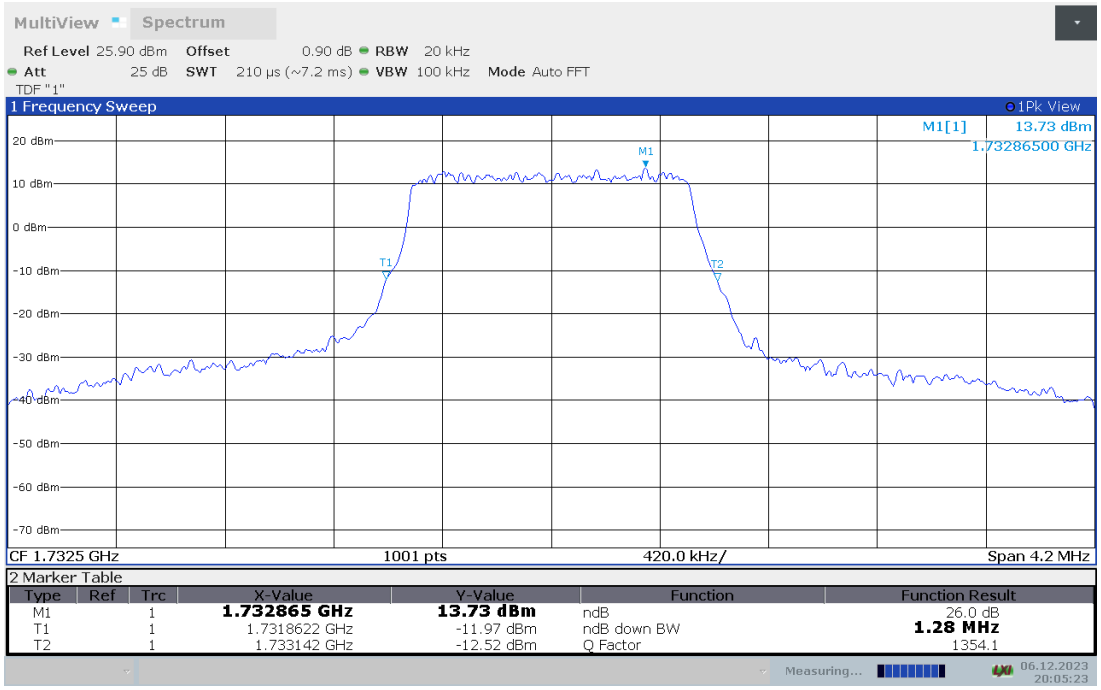
LTE band 2 , 20MHz Bandwidth, MID, 16QAM (-26dBc BW)



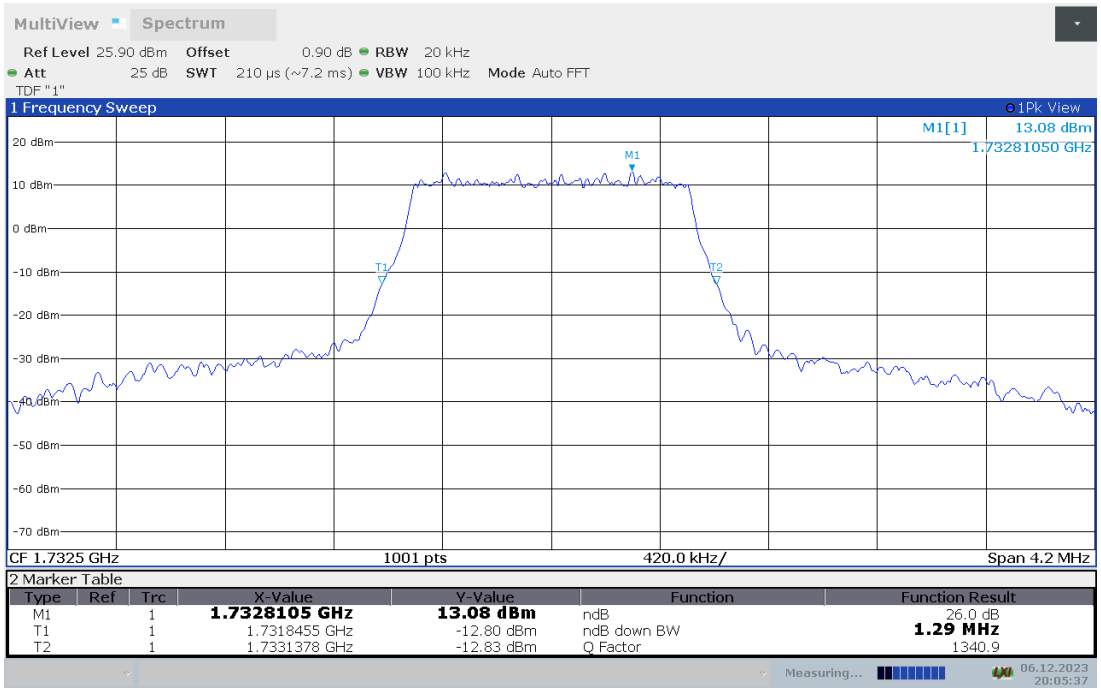
LTE band 4,1.4MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1732.5	1.280	1.292

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



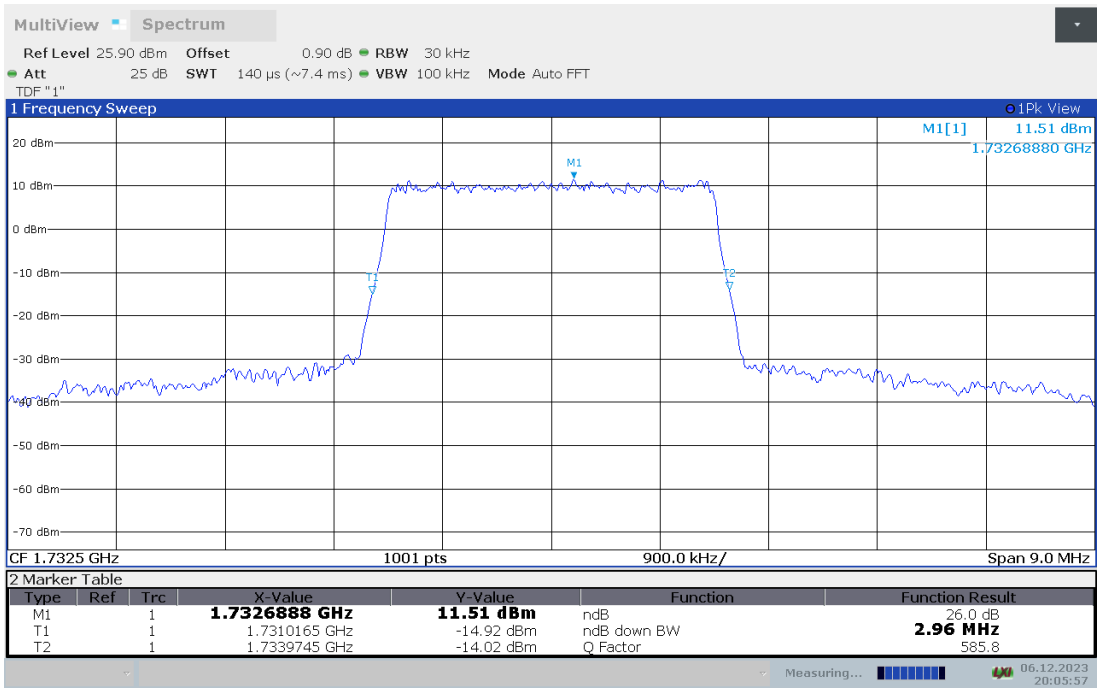
LTE band 4 , 1.4MHz Bandwidth, MID, 16QAM (-26dBc BW)



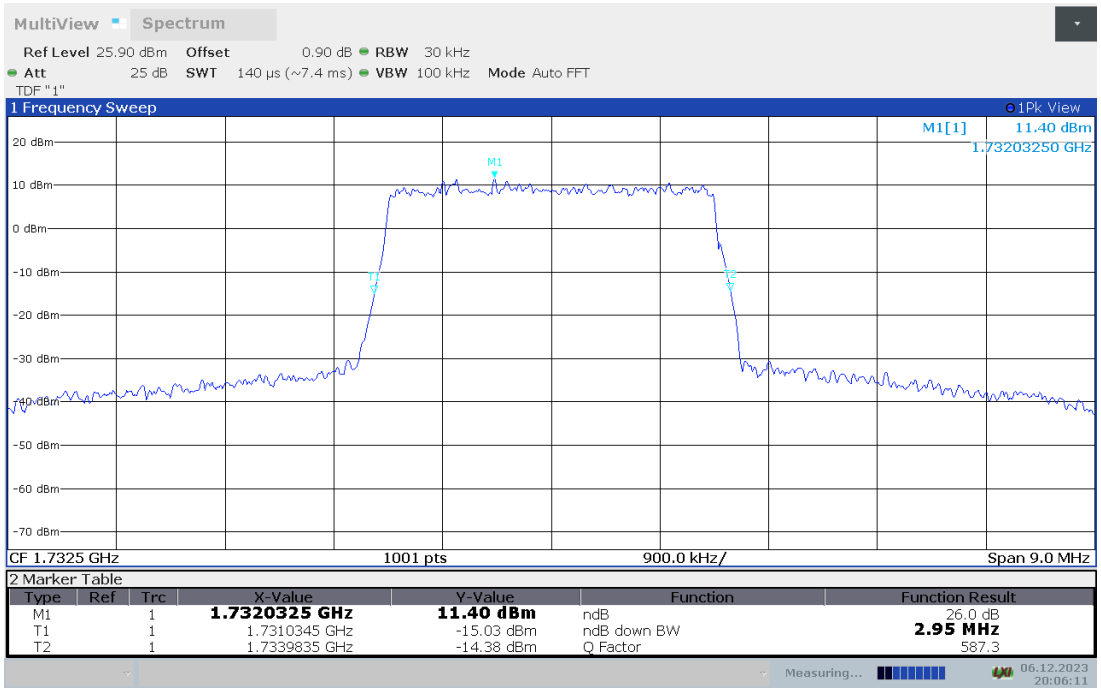
LTE band 4,3MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1732.5	2.958	2.949

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



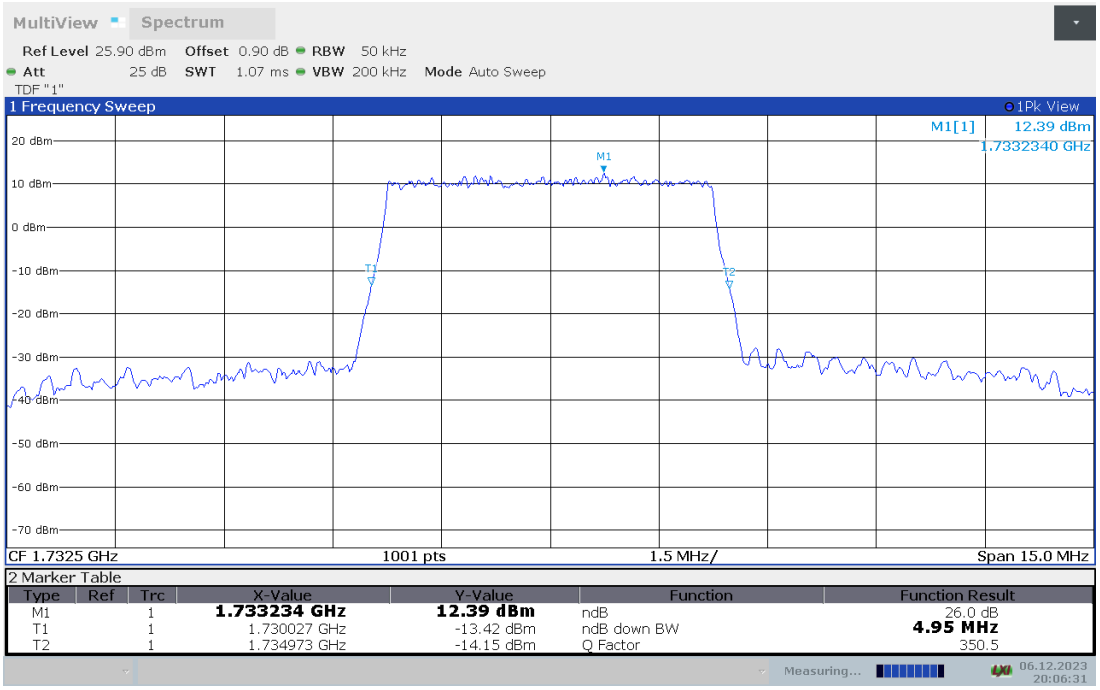
LTE band 4 , 3MHz Bandwidth, MID, 16QAM (-26dBc BW)



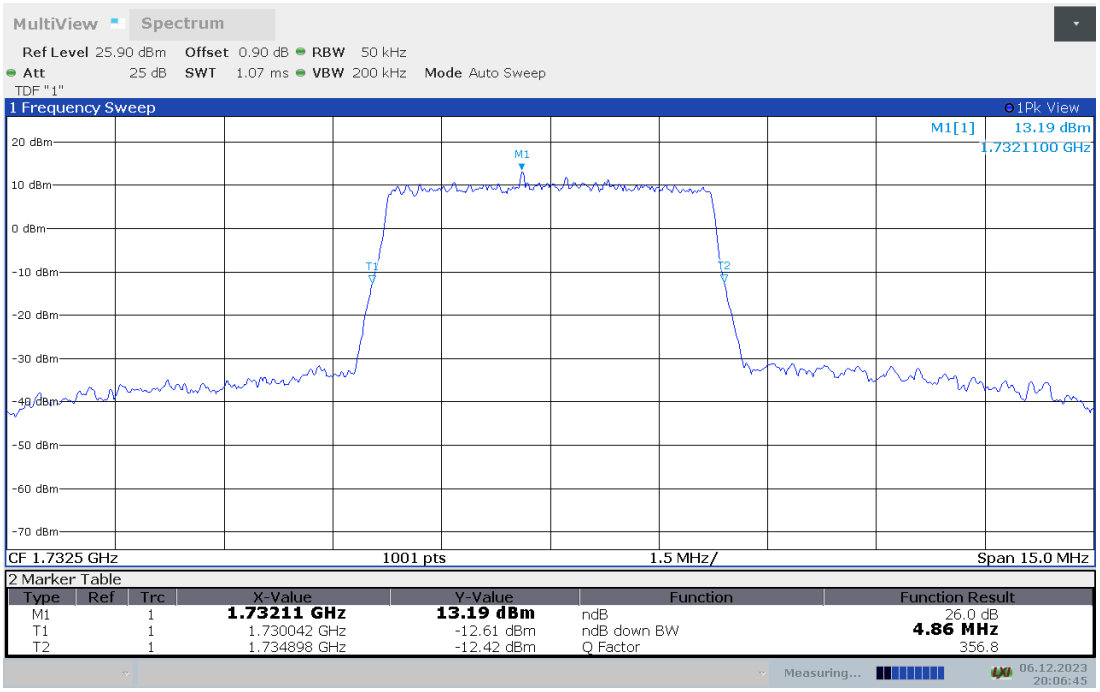
LTE band 4,5MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1732.5	4.945	4.855

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



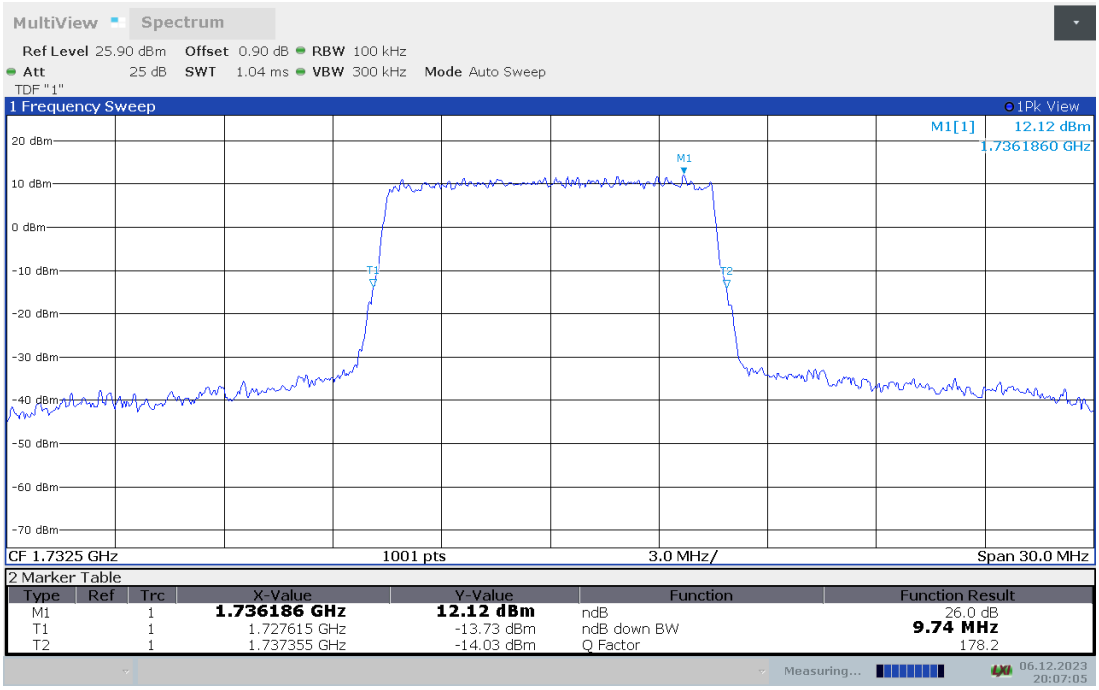
LTE band 4 , 5MHz Bandwidth, MID, 16QAM (-26dBc BW)



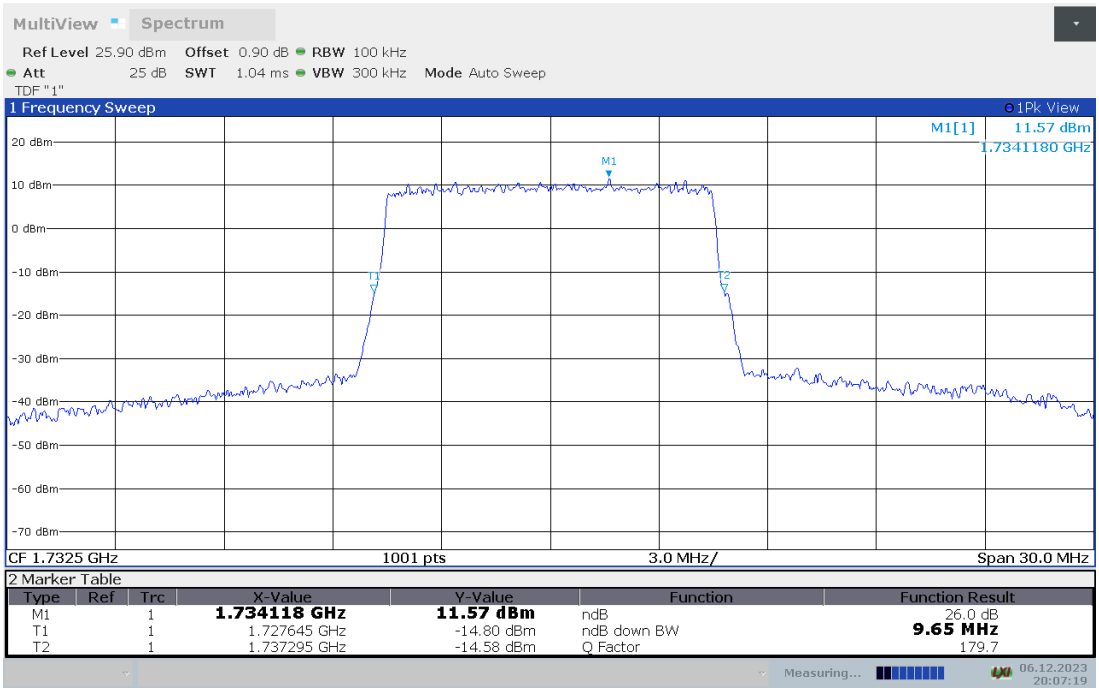
LTE band 4,10MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1732.5	9.740	9.650

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



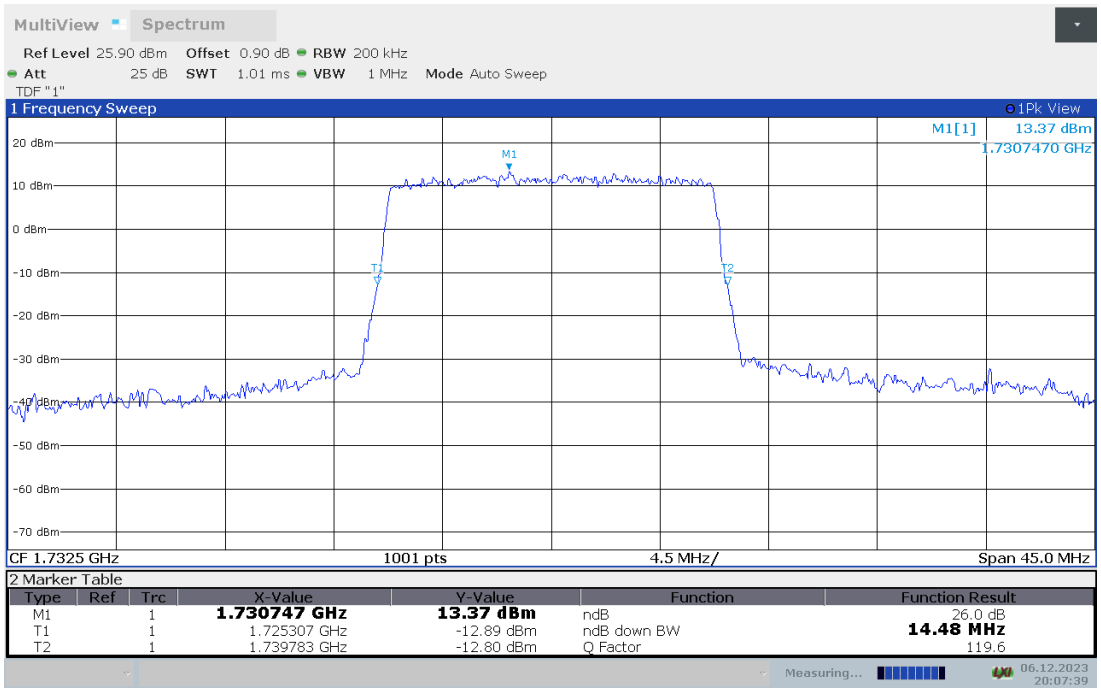
LTE band 4 , 10MHz Bandwidth, MID, 16QAM (-26dBc BW)



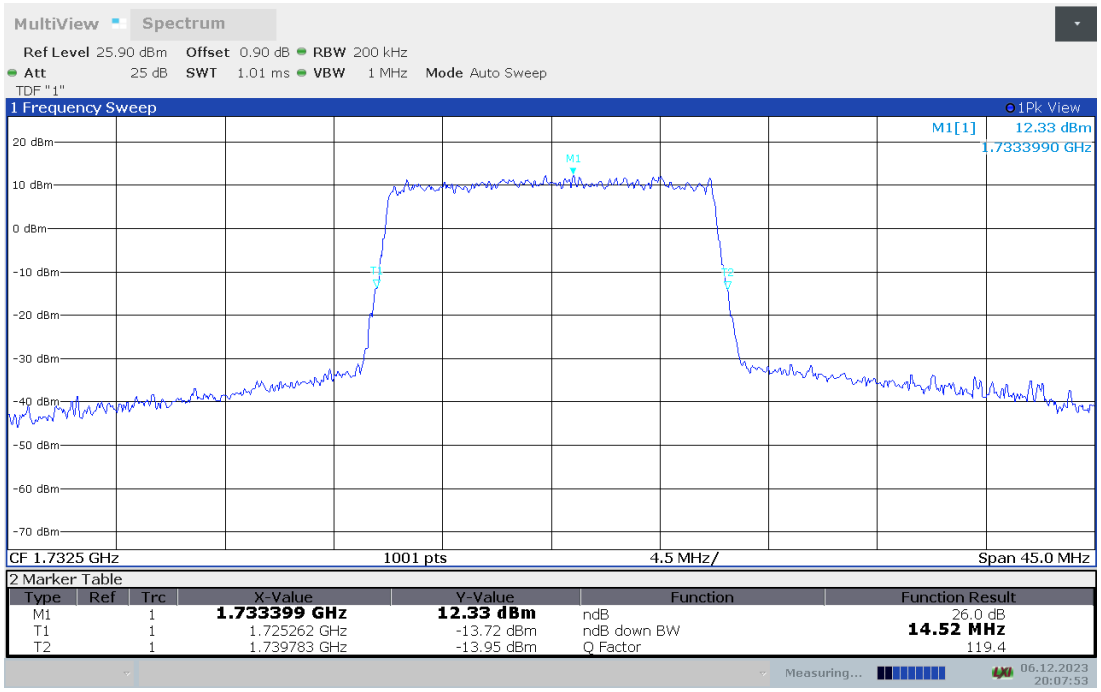
LTE band 4,15MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1732.5	14.476	14.520

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



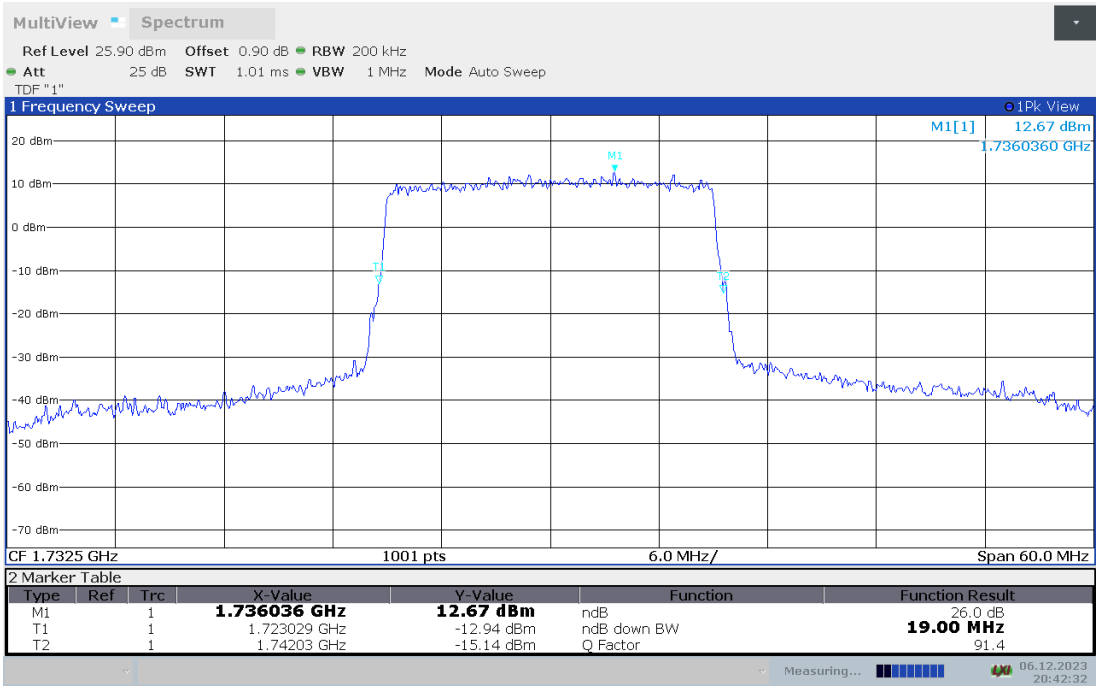
LTE band 4 , 15MHz Bandwidth, MID, 16QAM (-26dBc BW)



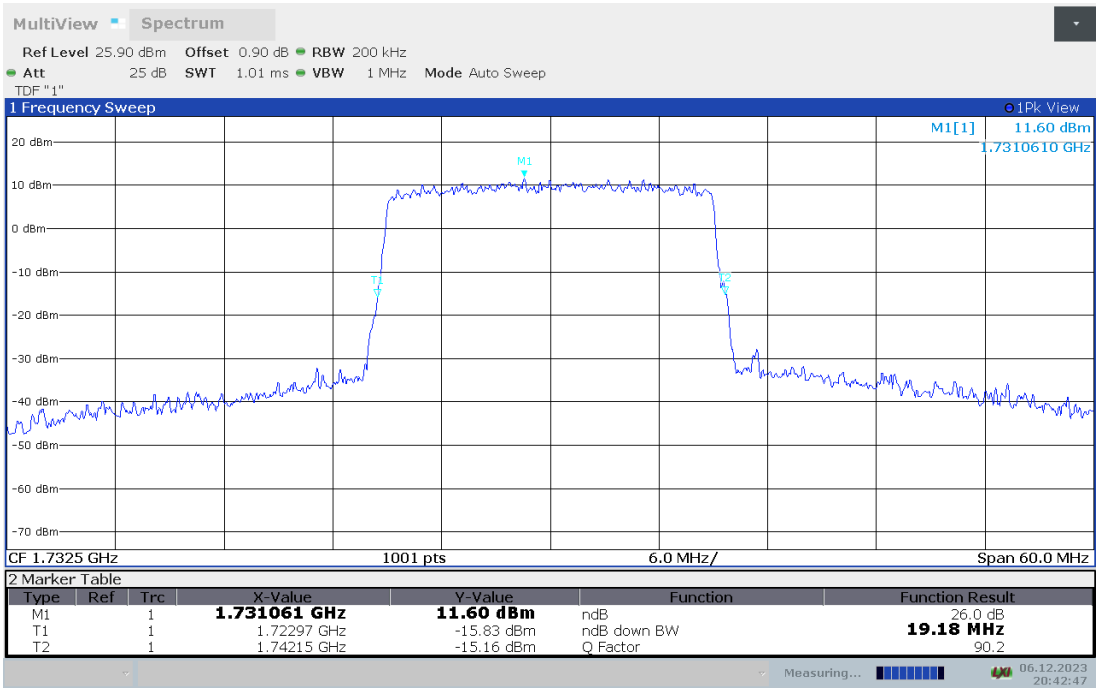
LTE band 4,20MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1732.5	19.001	19.181

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



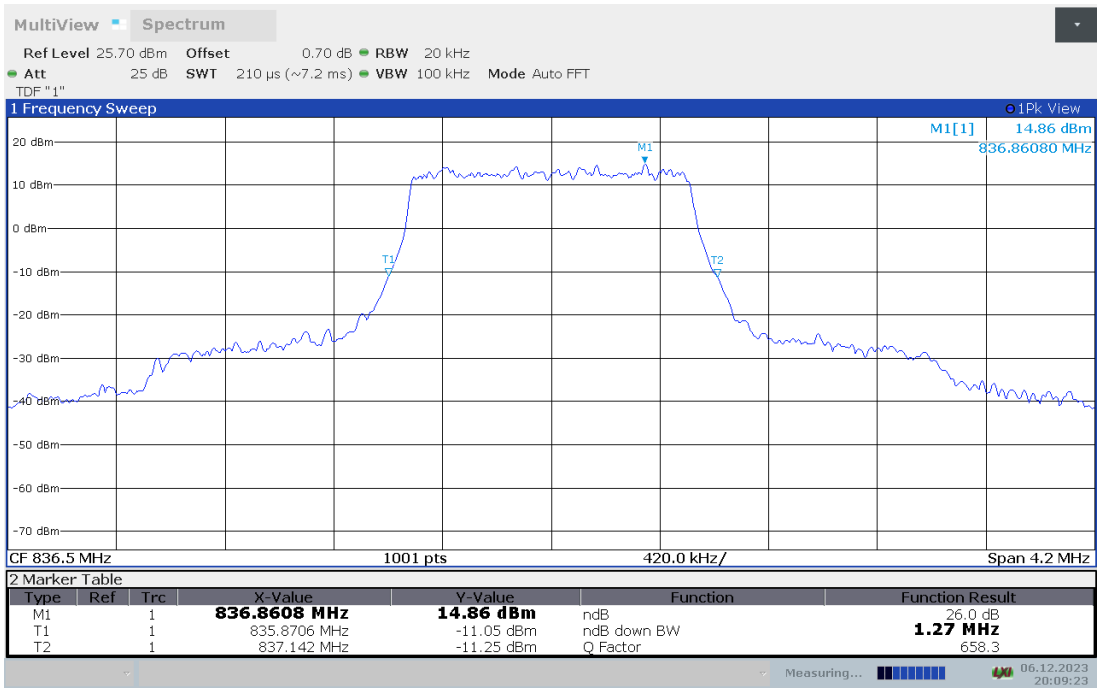
LTE band 4 , 20MHz Bandwidth, MID, 16QAM (-26dBc BW)



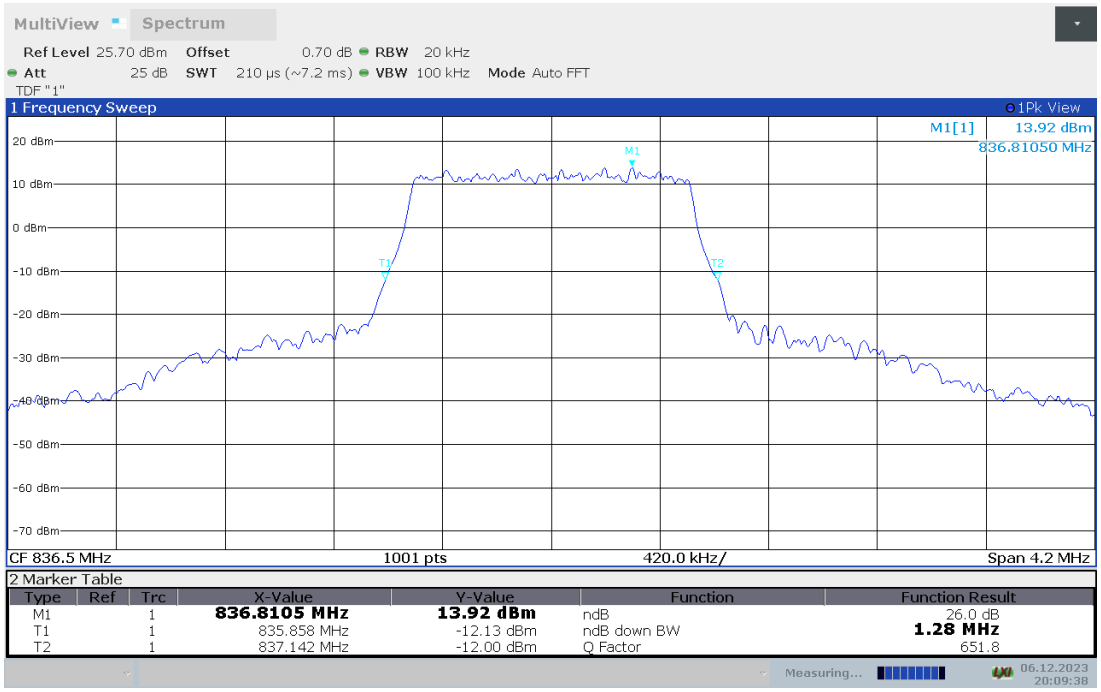
LTE band 5,1.4MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	1.271	1.284

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



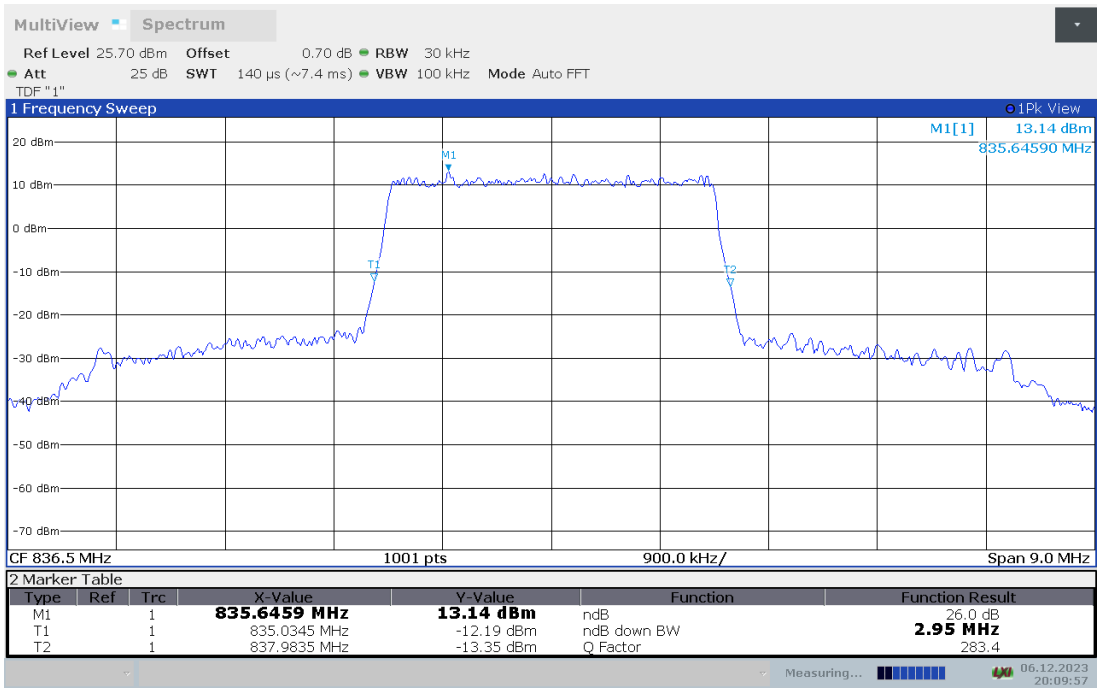
LTE band 5 , 1.4MHz Bandwidth, MID, 16QAM (-26dBc BW)



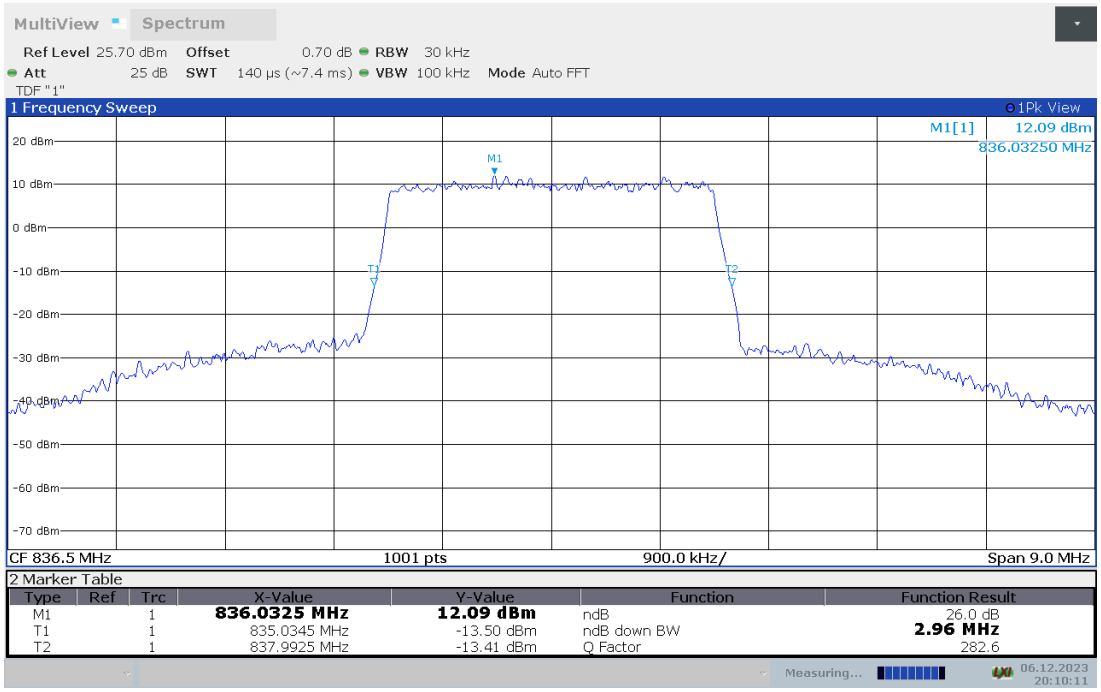
LTE band 5,3MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	2.949	2.958

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



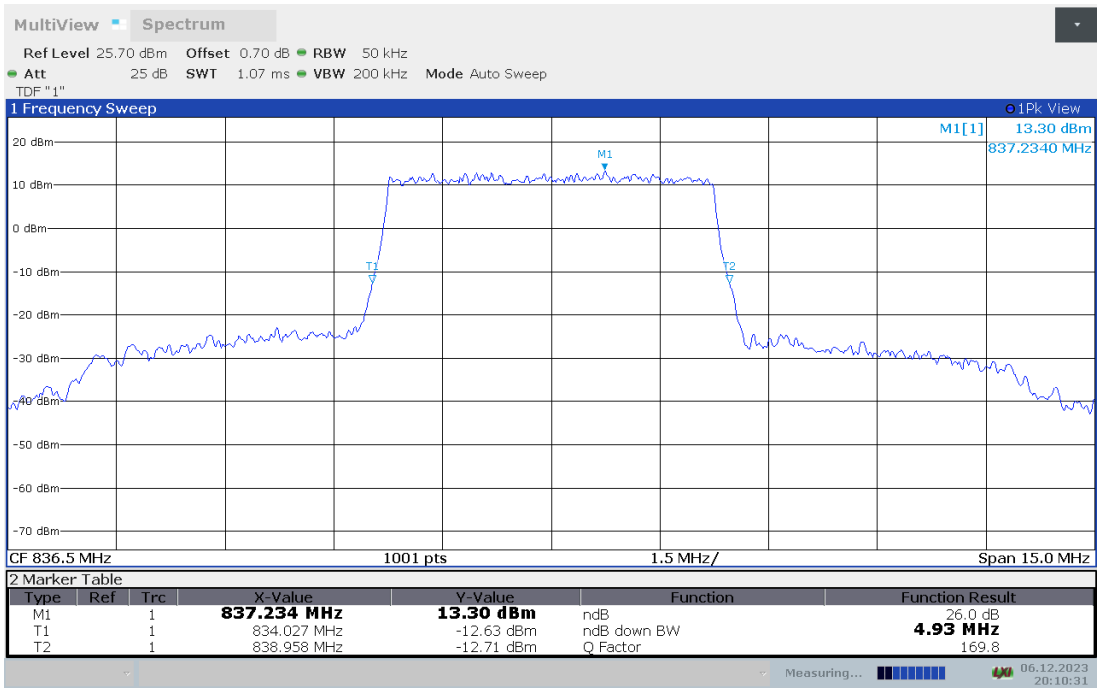
LTE band 5 , 3MHz Bandwidth, MID, 16QAM (-26dBc BW)



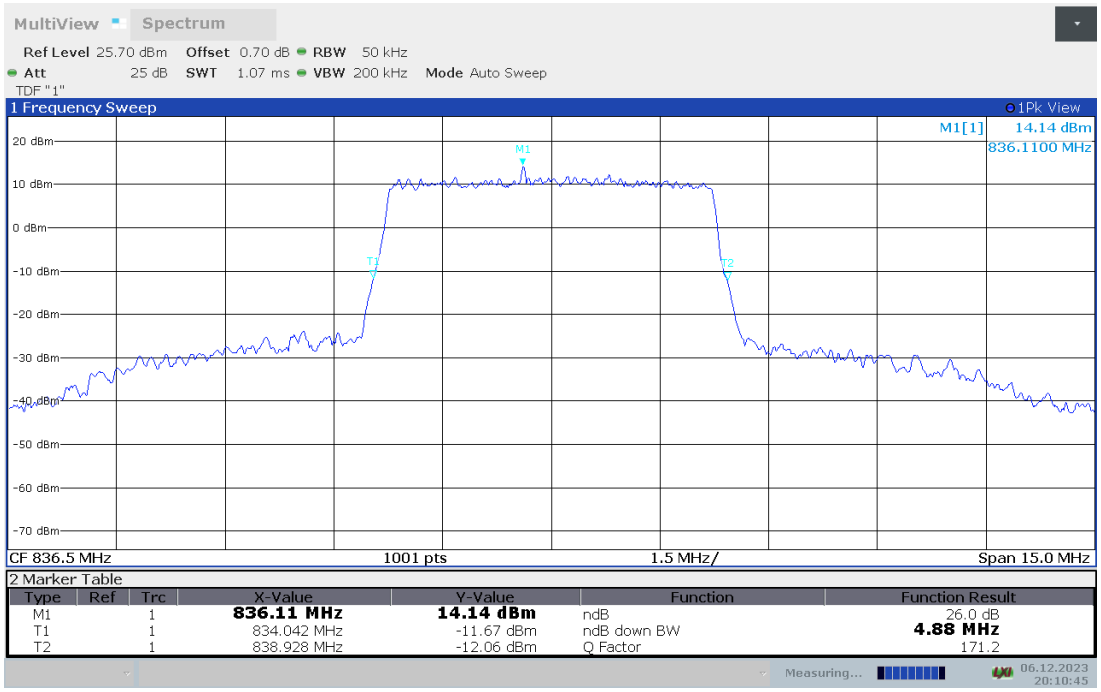
LTE band 5,5MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	4.930	4.885

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



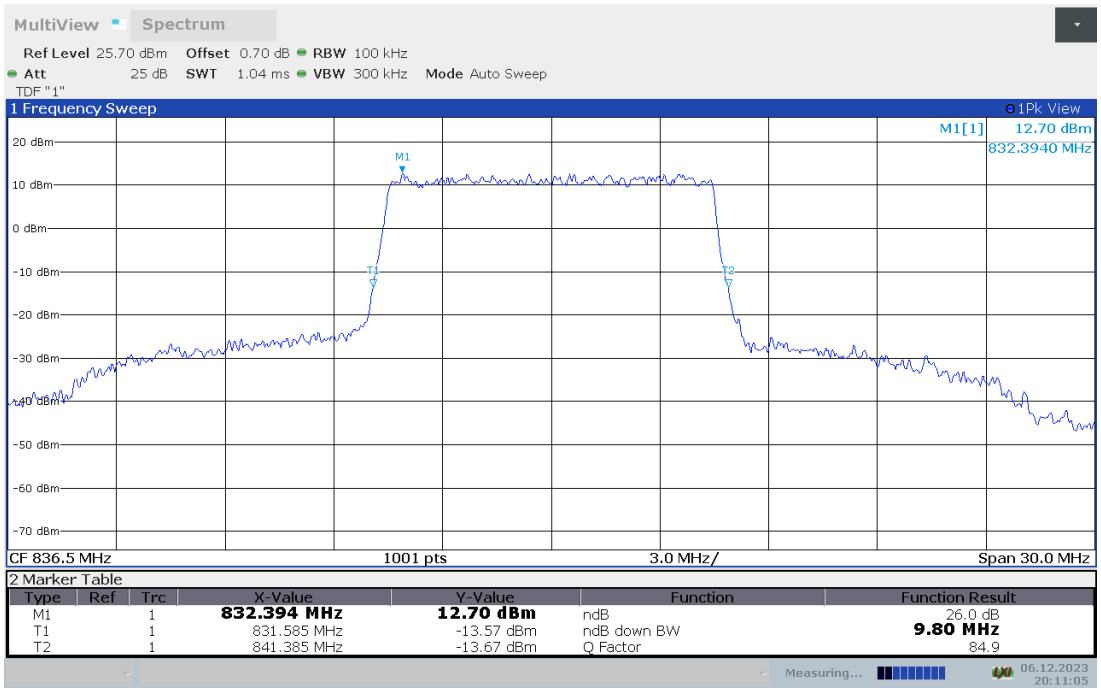
LTE band 5 , 5MHz Bandwidth, MID, 16QAM (-26dBc BW)



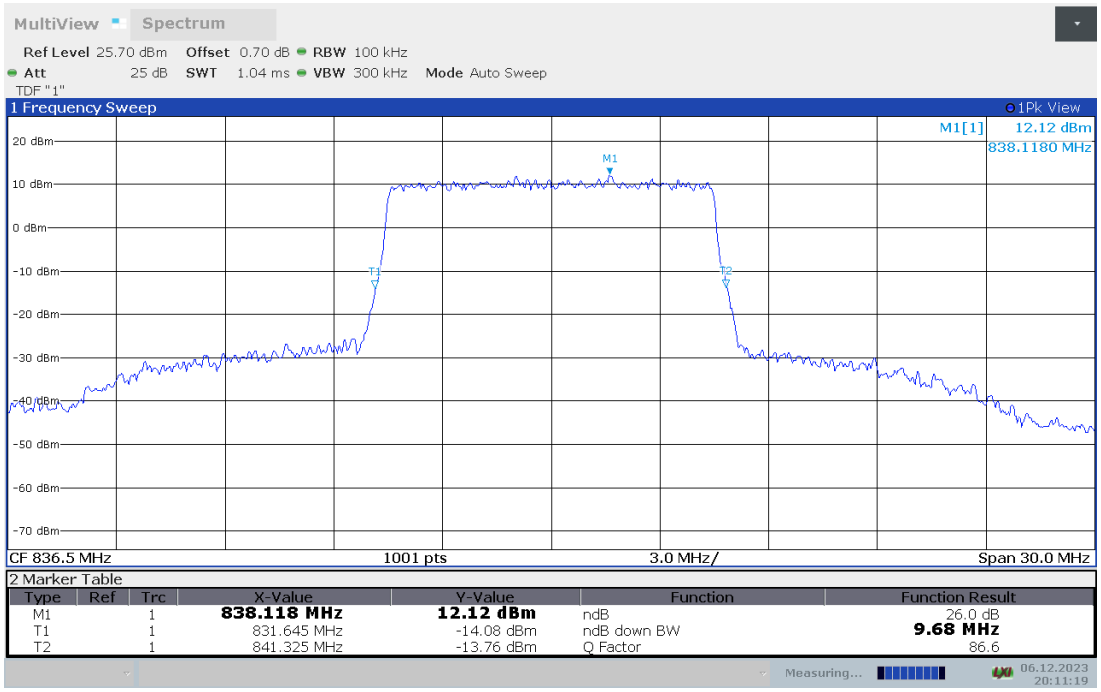
LTE band 5,10MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	9.800	9.680

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



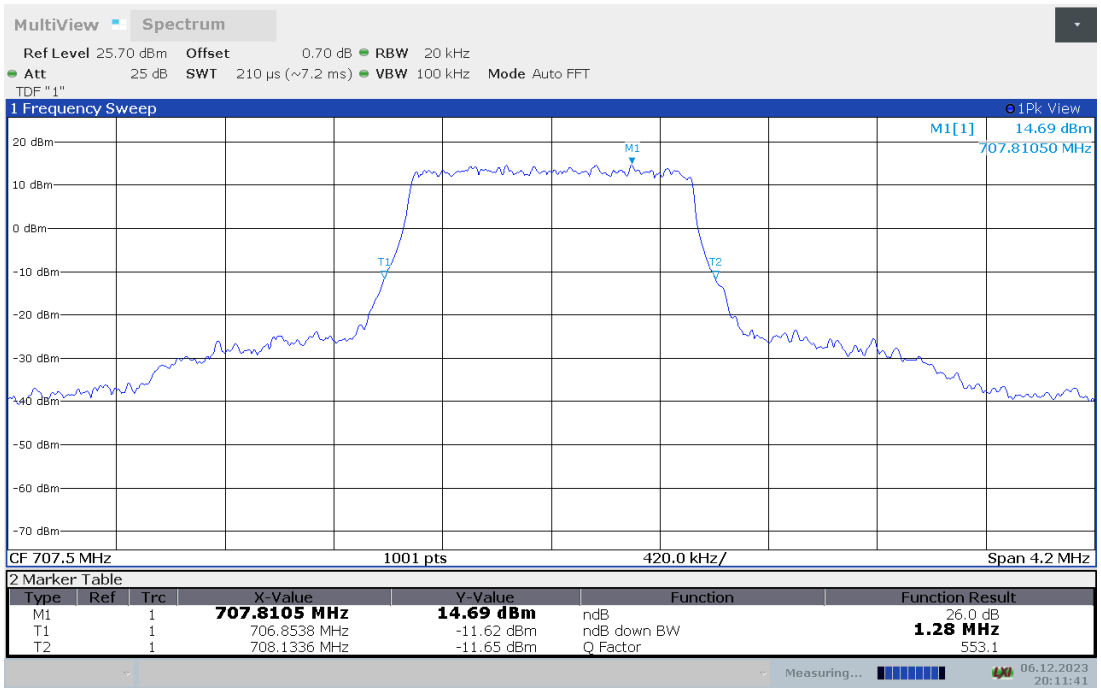
LTE band 5 , 10MHz Bandwidth, MID, 16QAM (-26dBc BW)



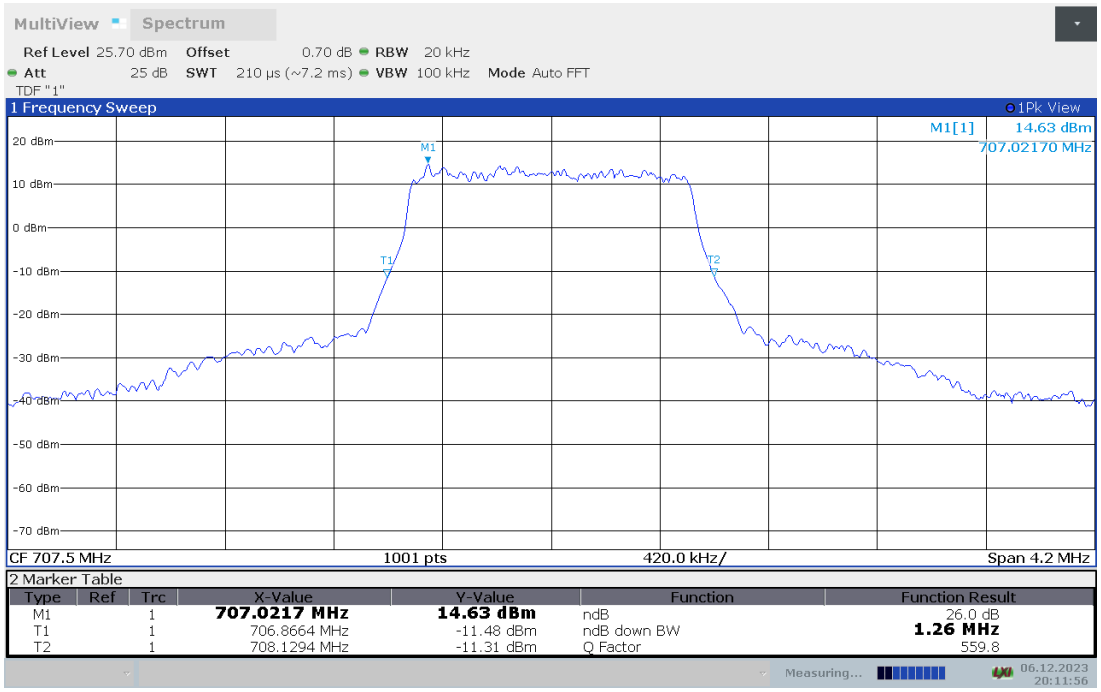
LTE band 12,1.4MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
707.5	1.280	1.263

LTE band 12 , 1.4MHz Bandwidth, MID, QPSK (-26dBc BW)



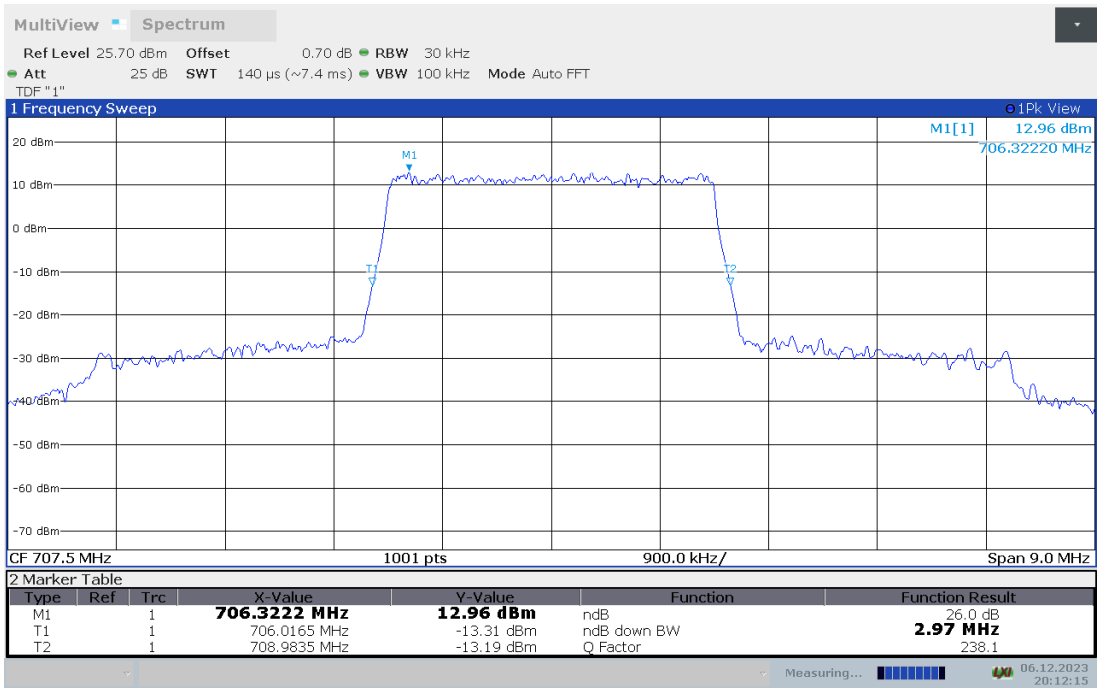
LTE band 12 , 1.4MHz Bandwidth, MID, 16QAM (-26dBc BW)



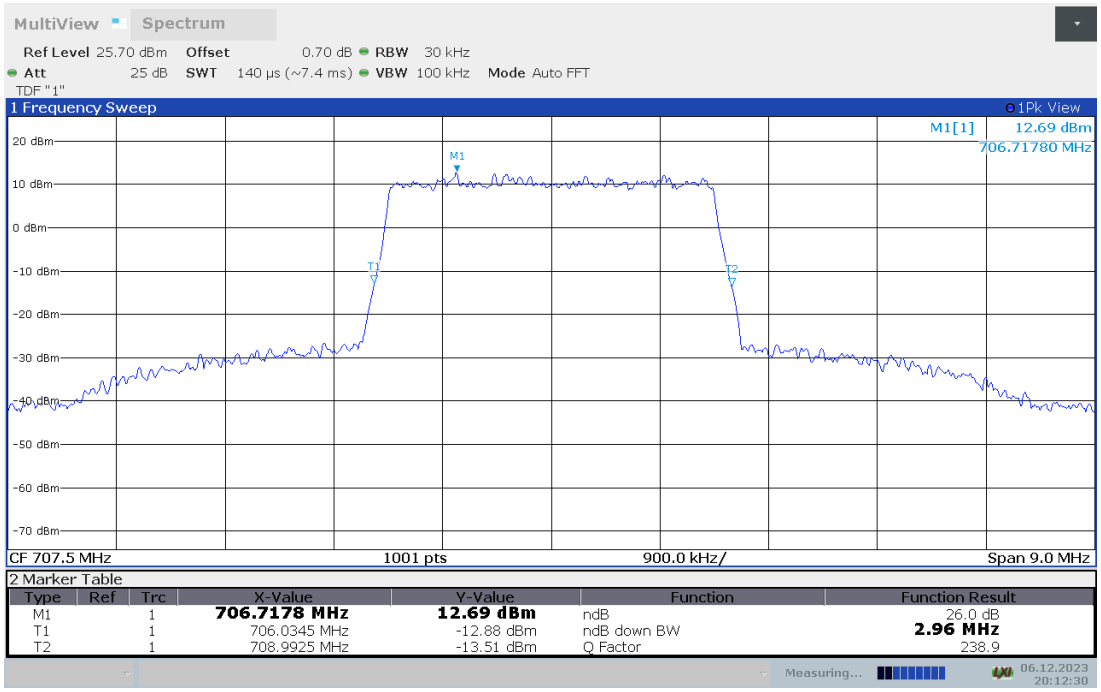
LTE band 12,3MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
707.5	2.967	2.958

LTE band 12 , 3MHz Bandwidth, MID, QPSK (-26dBc BW)



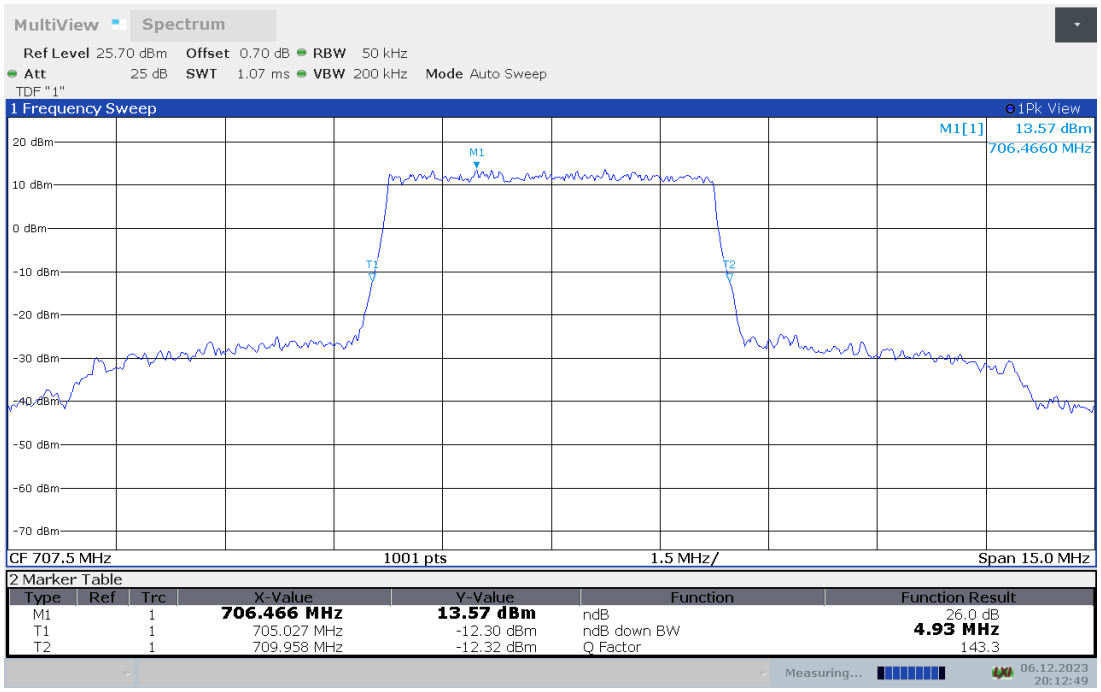
LTE band 12 , 3MHz Bandwidth, MID, 16QAM (-26dBc BW)



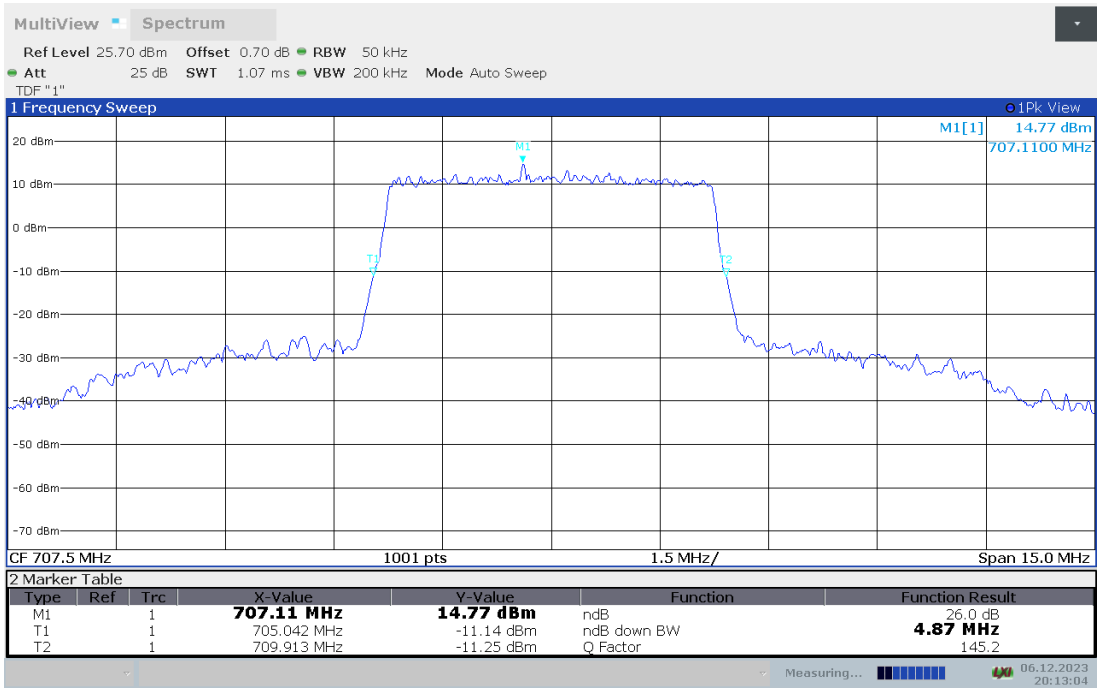
LTE band 12,5MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
707.5	4.930	4.870

LTE band 12 , 5MHz Bandwidth, MID, QPSK (-26dBc BW)



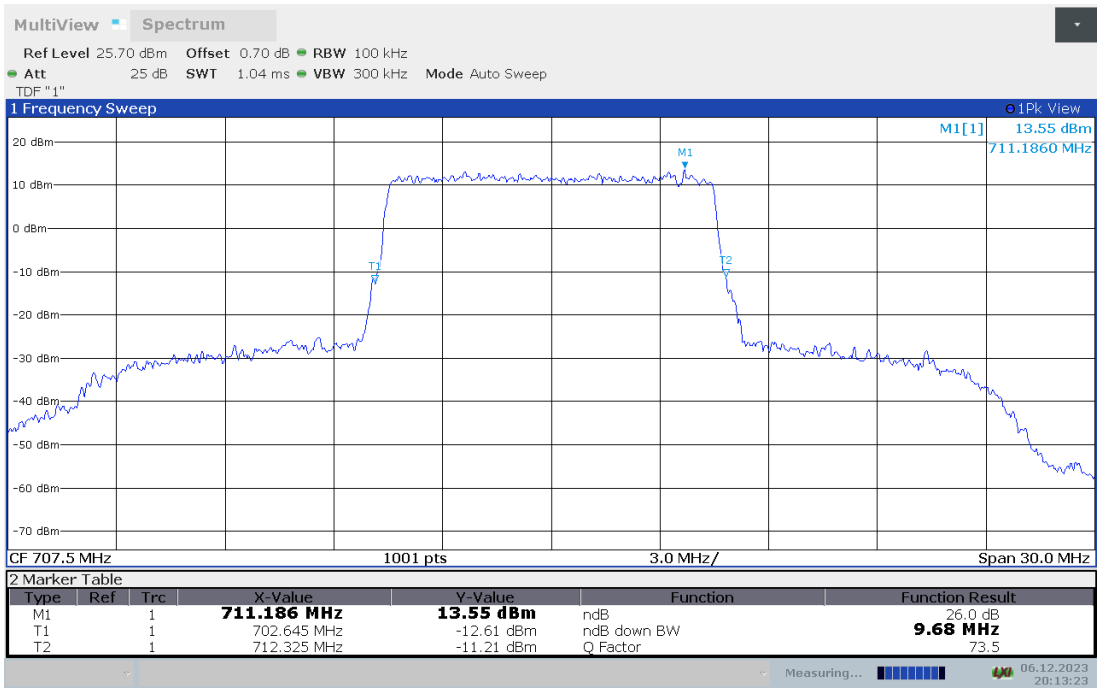
LTE band 12 , 5MHz Bandwidth, MID, 16QAM (-26dBc BW)



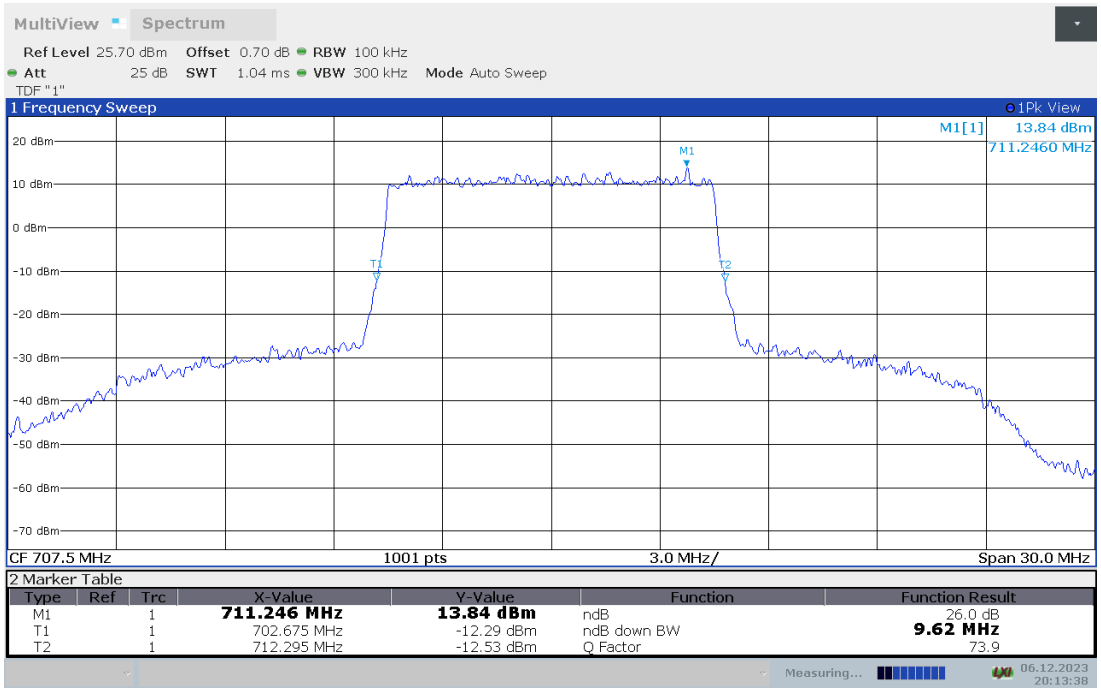
LTE band 12,10MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
707.5	9.680	9.620

LTE band 12 , 10MHz Bandwidth, MID, QPSK (-26dBc BW)



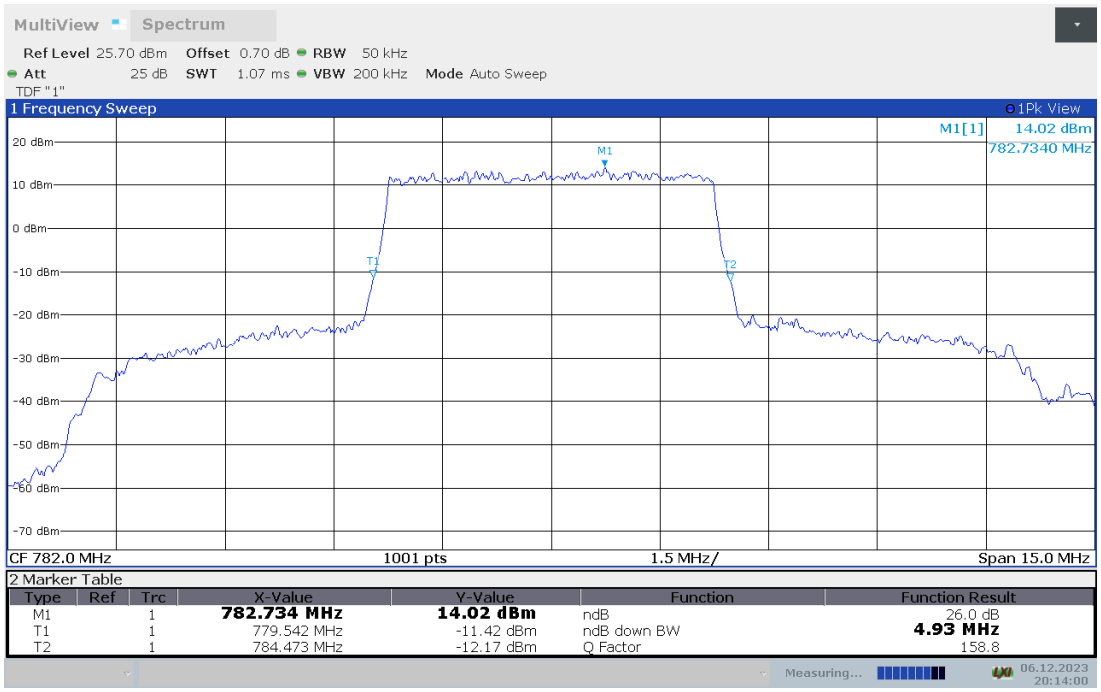
LTE band 12 , 10MHz Bandwidth, MID, 16QAM (-26dBc BW)



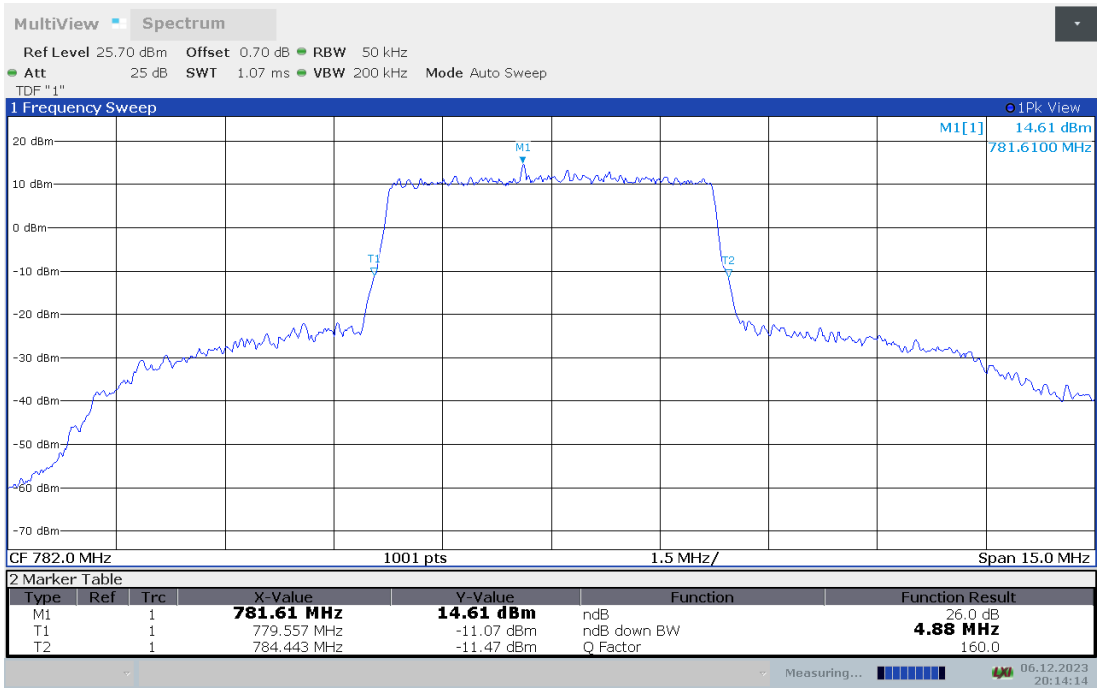
LTE band 13,5MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
782	4.930	4.885

LTE band 13 , 5MHz Bandwidth, MID, QPSK (-26dBc BW)



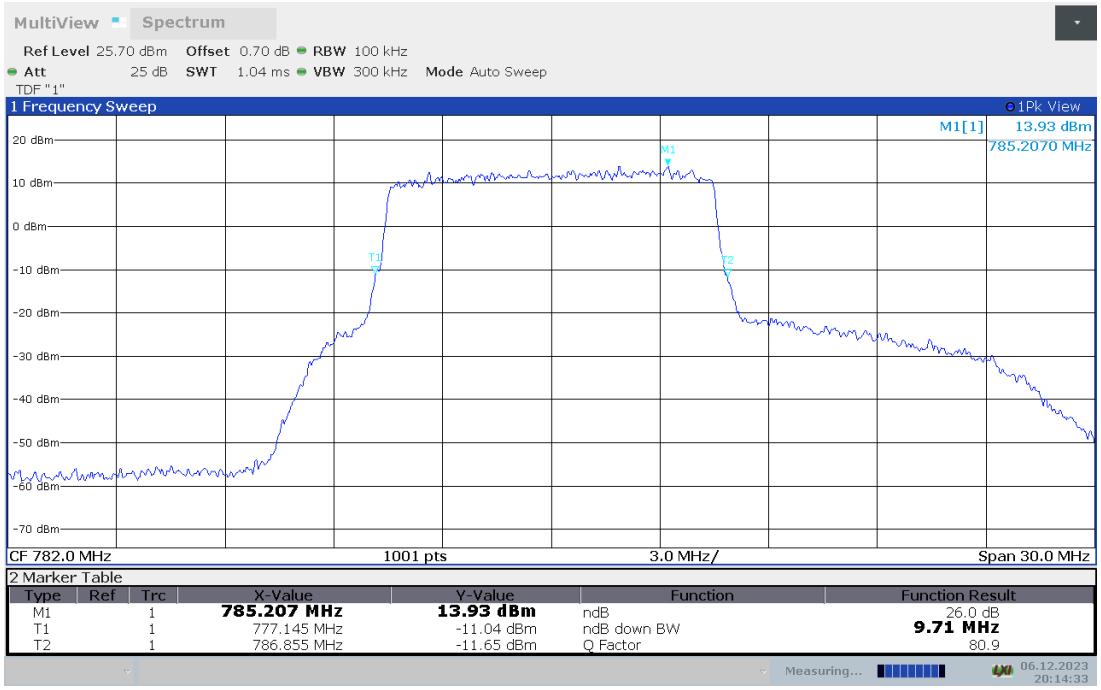
LTE band 13 , 5MHz Bandwidth, MID, 16QAM (-26dBc BW)



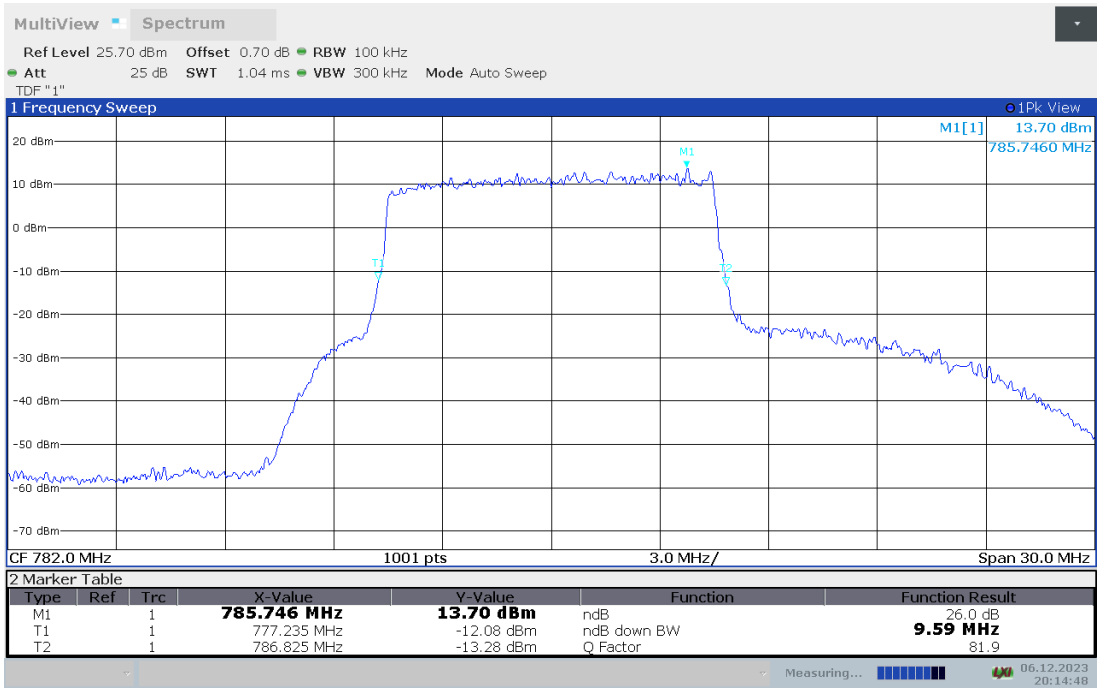
LTE band 13,10MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
782	9.710	9.590

LTE band 13 , 10MHz Bandwidth, MID, QPSK (-26dBc BW)



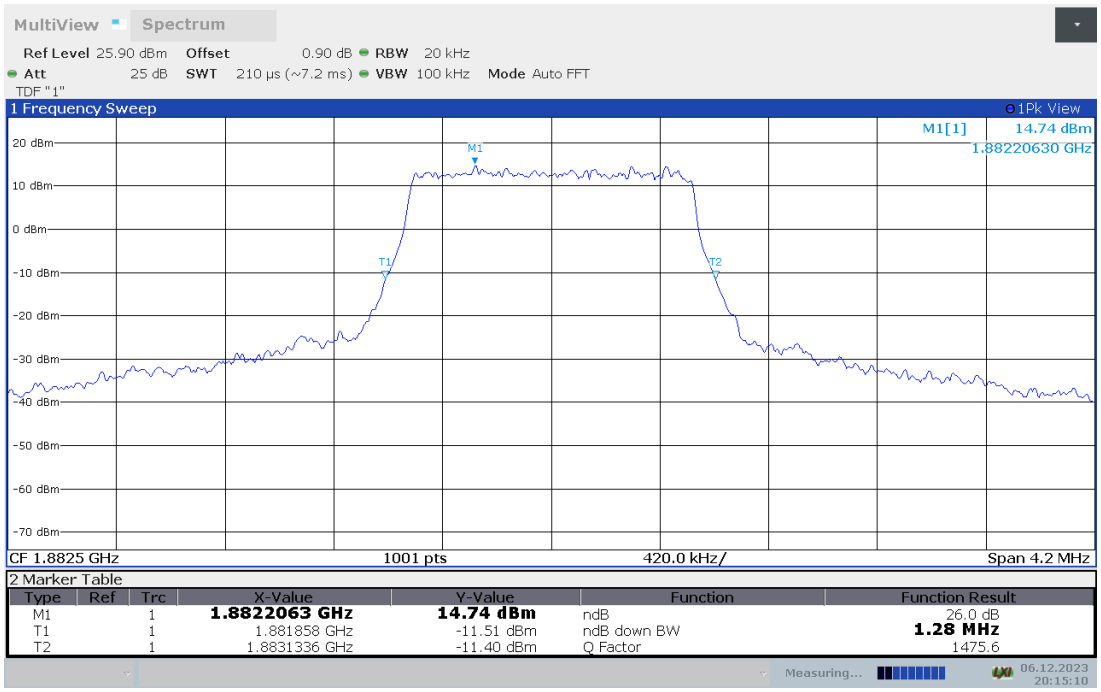
LTE band 13 , 10MHz Bandwidth, MID, 16QAM (-26dBc BW)



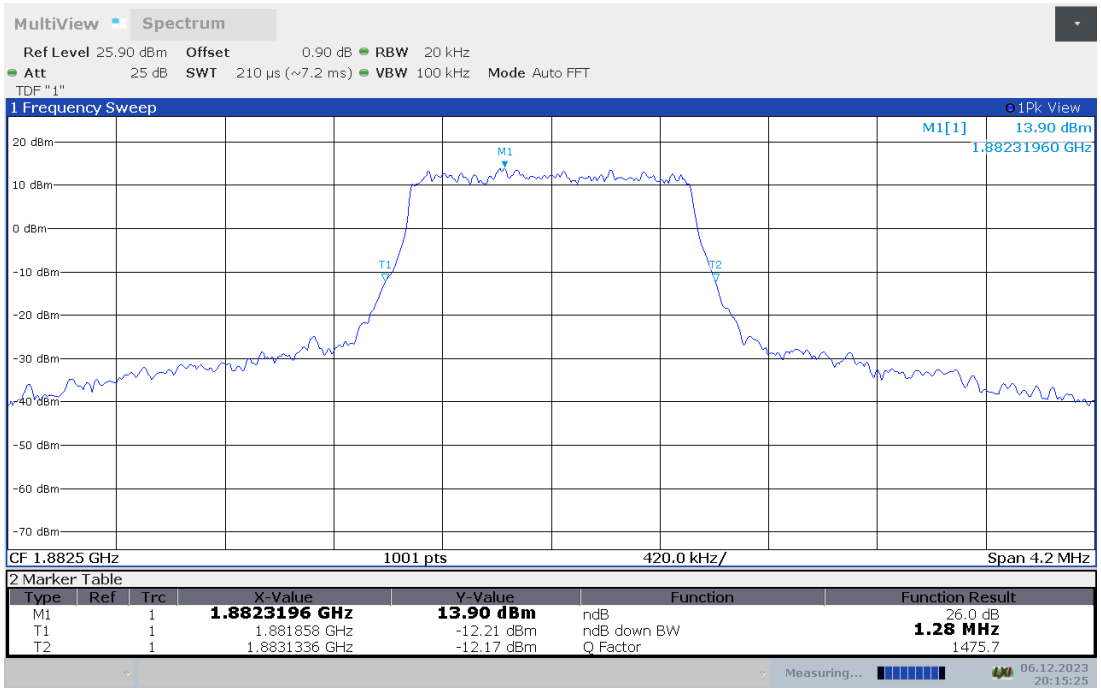
LTE band 25,1.4MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1882.5	1.276	1.276

LTE band 25 , 1.4MHz Bandwidth, MID, QPSK (-26dBc BW)



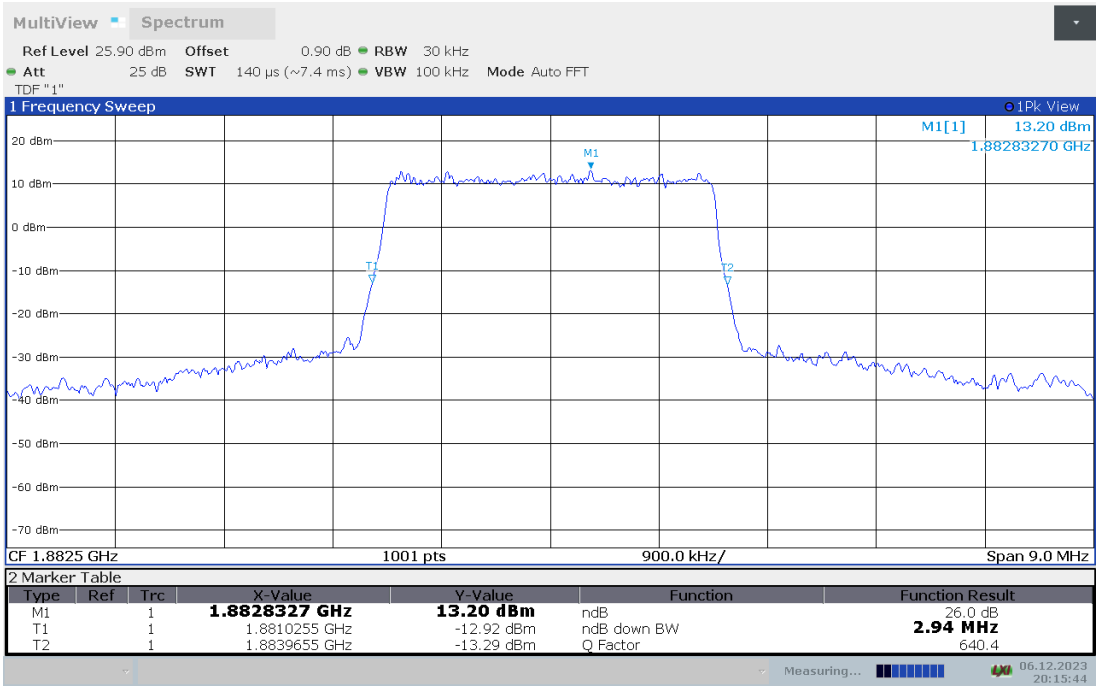
LTE band 25 , 1.4MHz Bandwidth, MID, 16QAM (-26dBc BW)



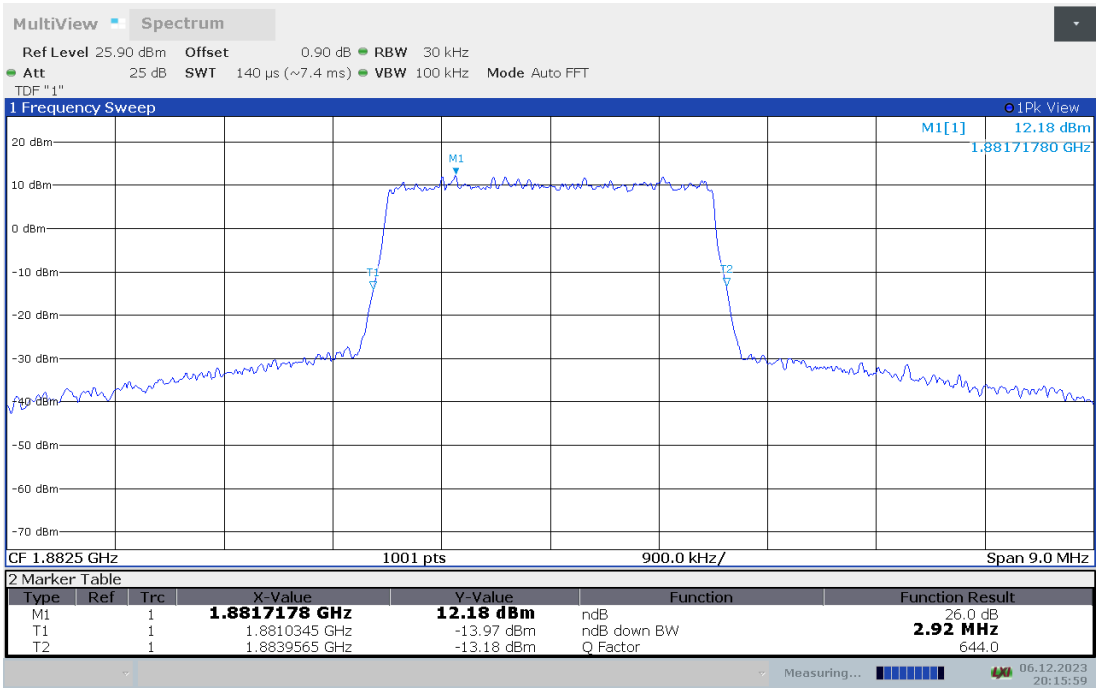
LTE band 25,3MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1882.5	2.940	2.922

LTE band 25 , 3MHz Bandwidth, MID, QPSK (-26dBc BW)



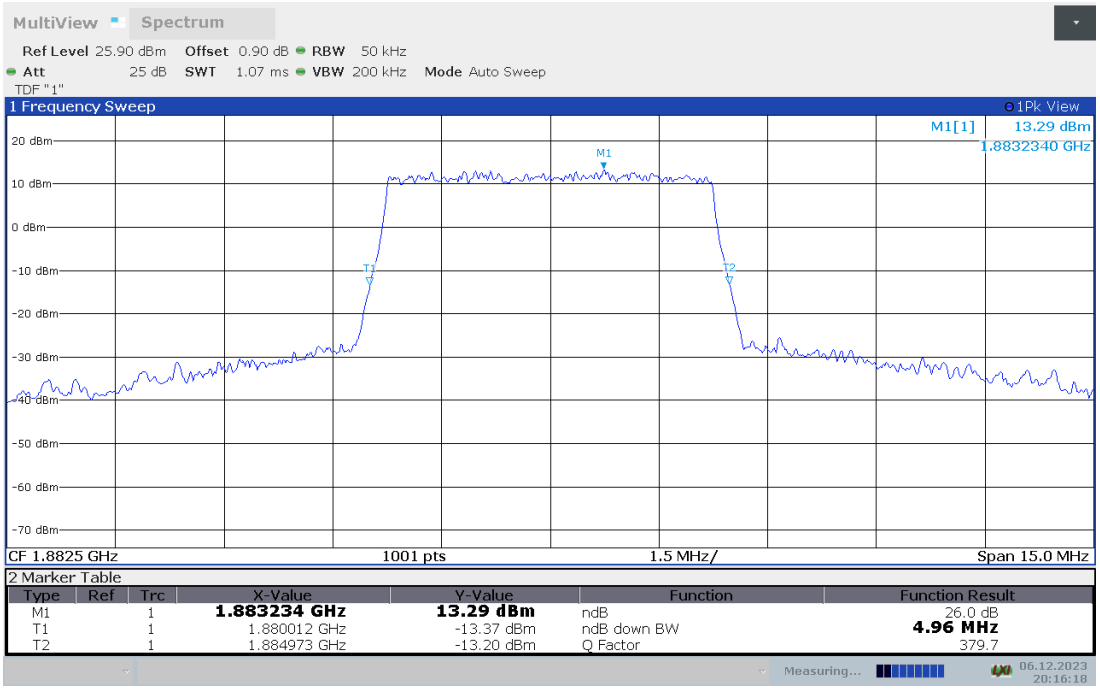
LTE band 25 , 3MHz Bandwidth, MID, 16QAM (-26dBc BW)



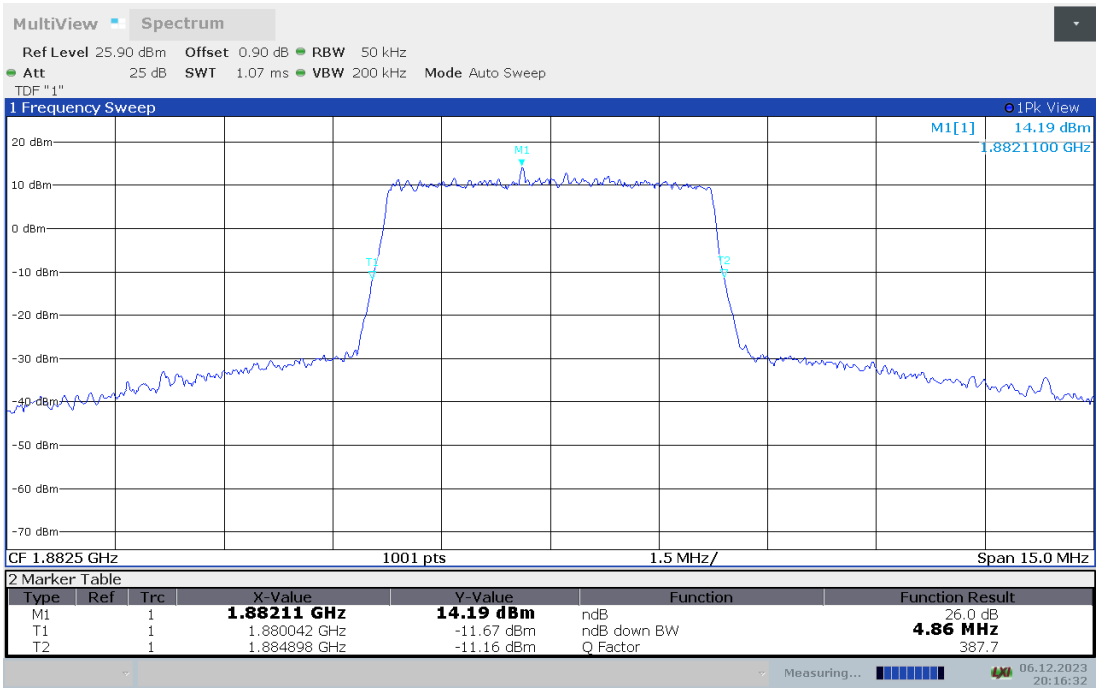
LTE band 25,5MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1882.5	4.960	4.855

LTE band 25 , 5MHz Bandwidth, MID, QPSK (-26dBc BW)



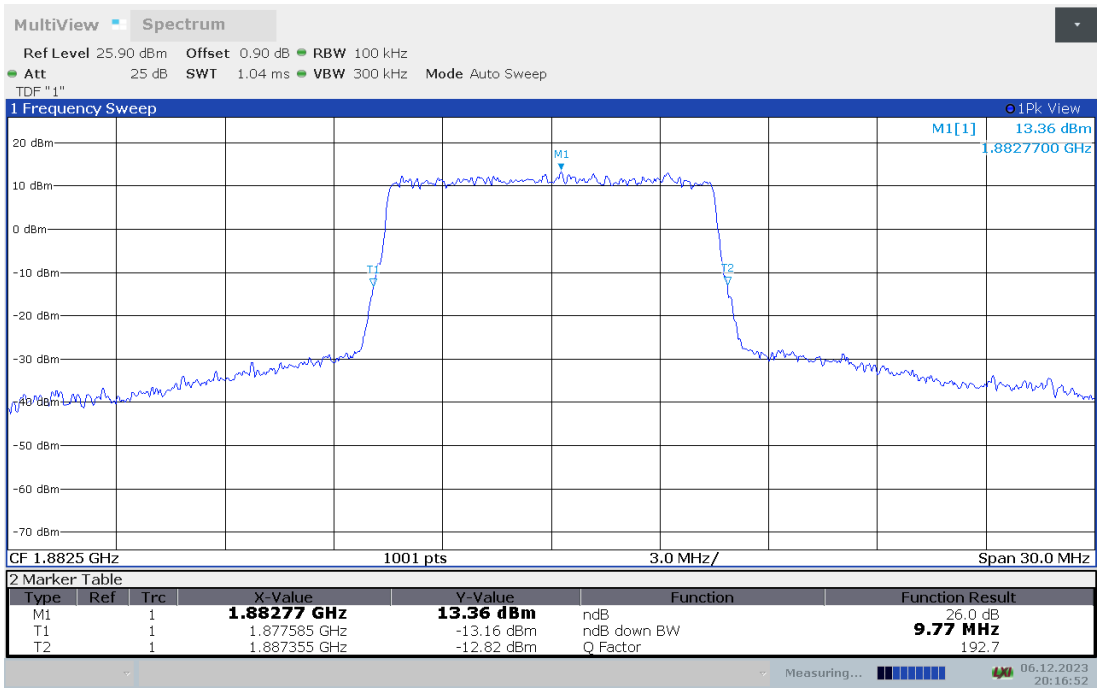
LTE band 25 , 5MHz Bandwidth, MID, 16QAM (-26dBc BW)



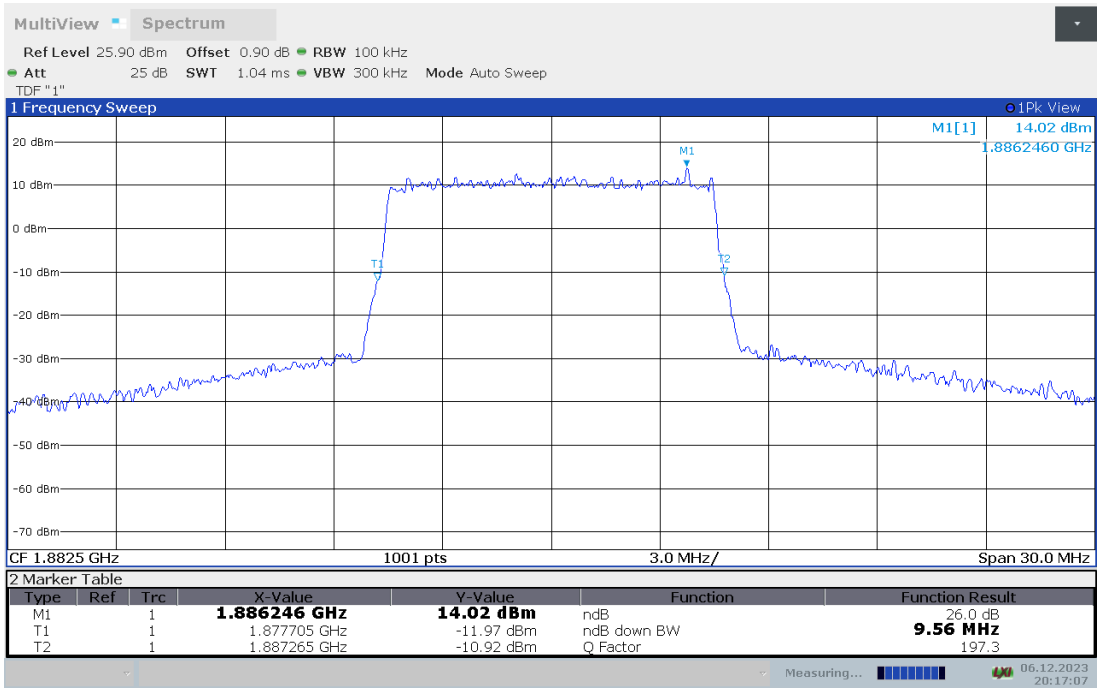
LTE band 25,10MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1882.5	9.770	9.560

LTE band 25 , 10MHz Bandwidth, MID, QPSK (-26dBc BW)



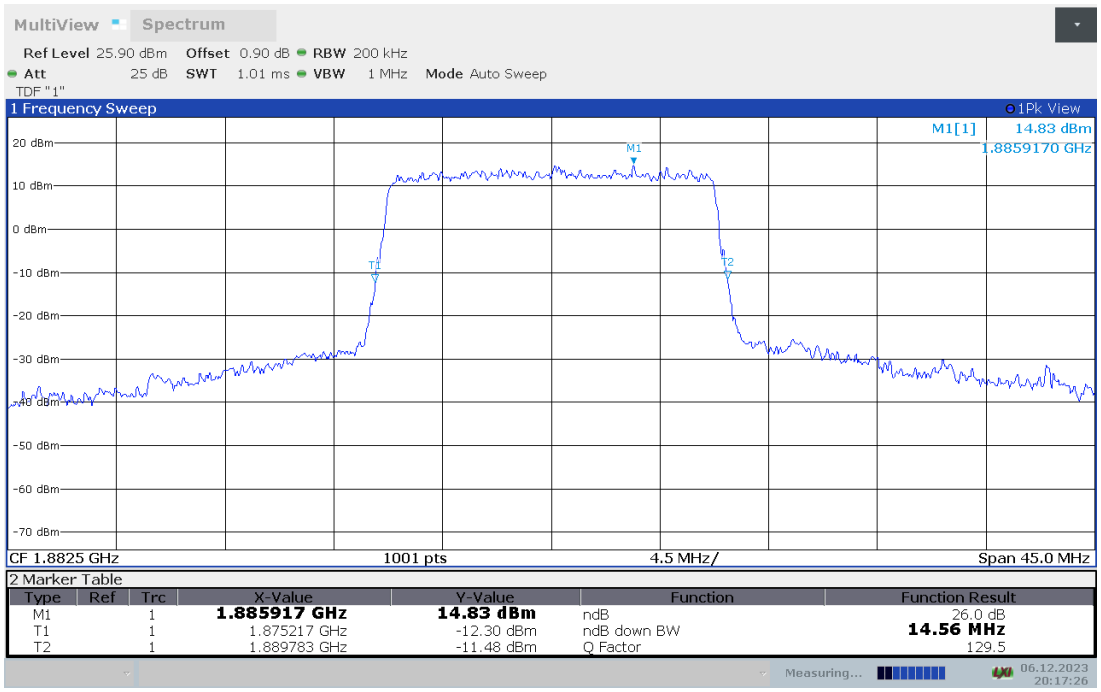
LTE band 25 , 10MHz Bandwidth, MID, 16QAM (-26dBc BW)



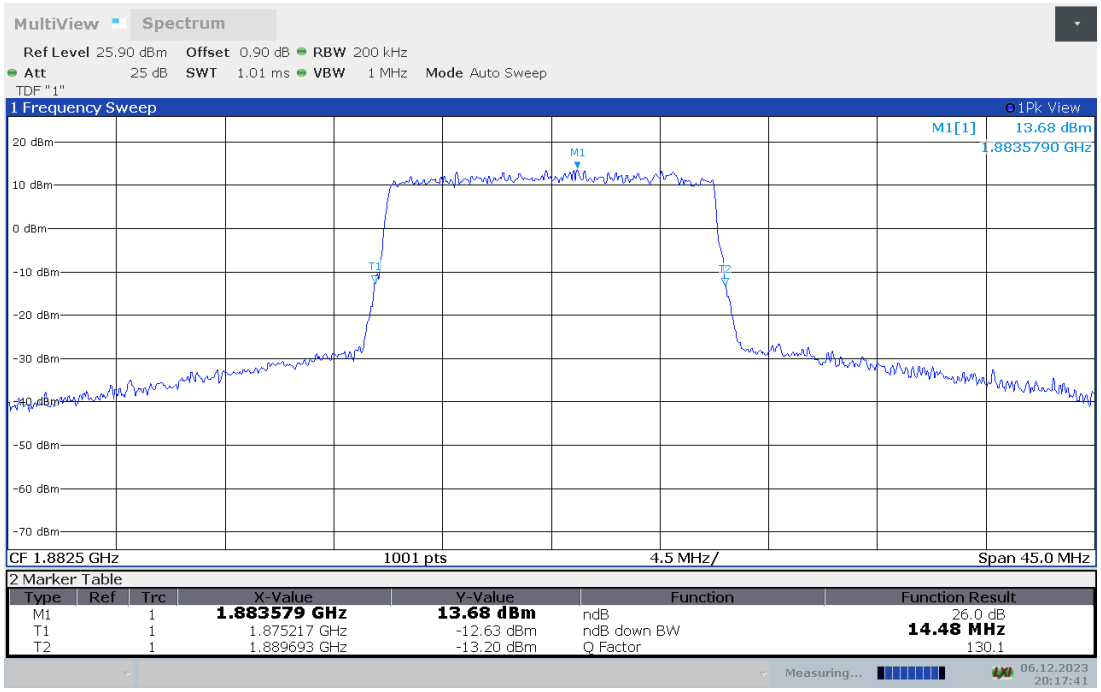
LTE band 25,15MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1882.5	14.565	14.476

LTE band 25 , 15MHz Bandwidth, MID, QPSK (-26dBc BW)



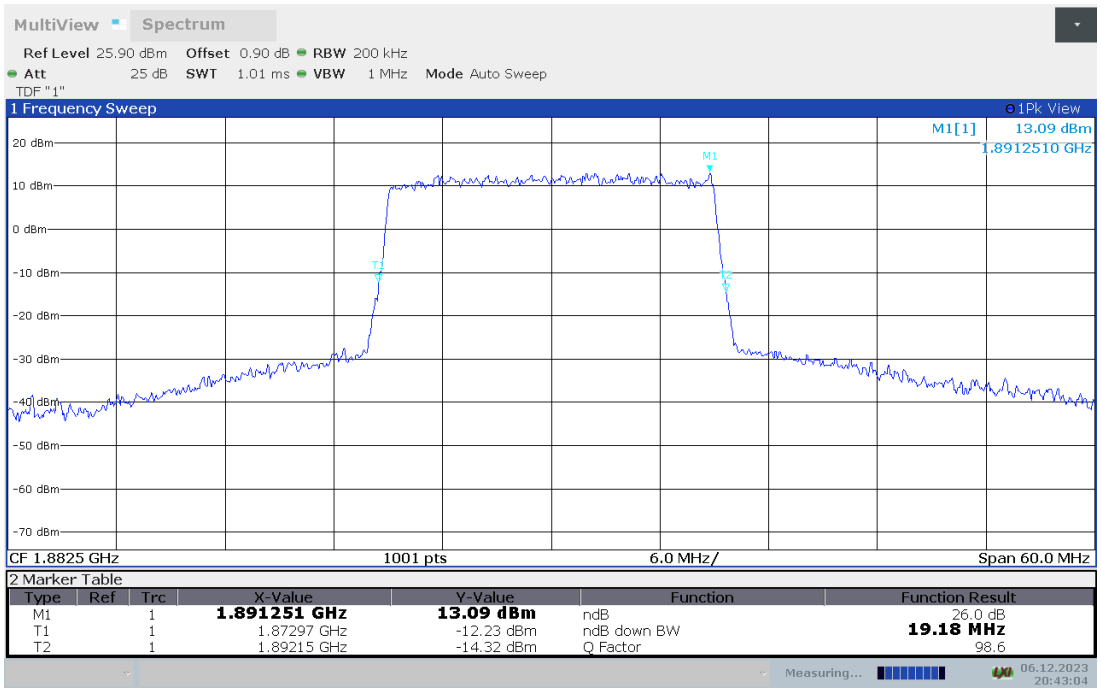
LTE band 25 , 15MHz Bandwidth, MID, 16QAM (-26dBc BW)



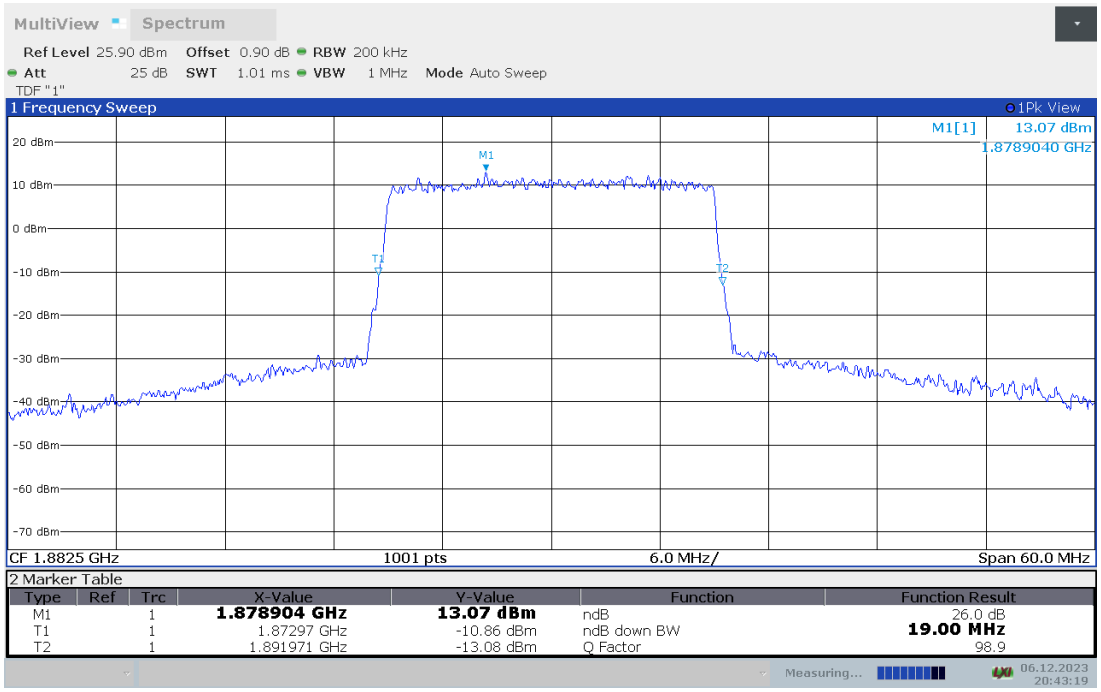
LTE band 25,20MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1882.5	19.181	19.001

LTE band 25 , 20MHz Bandwidth, MID, QPSK (-26dBc BW)



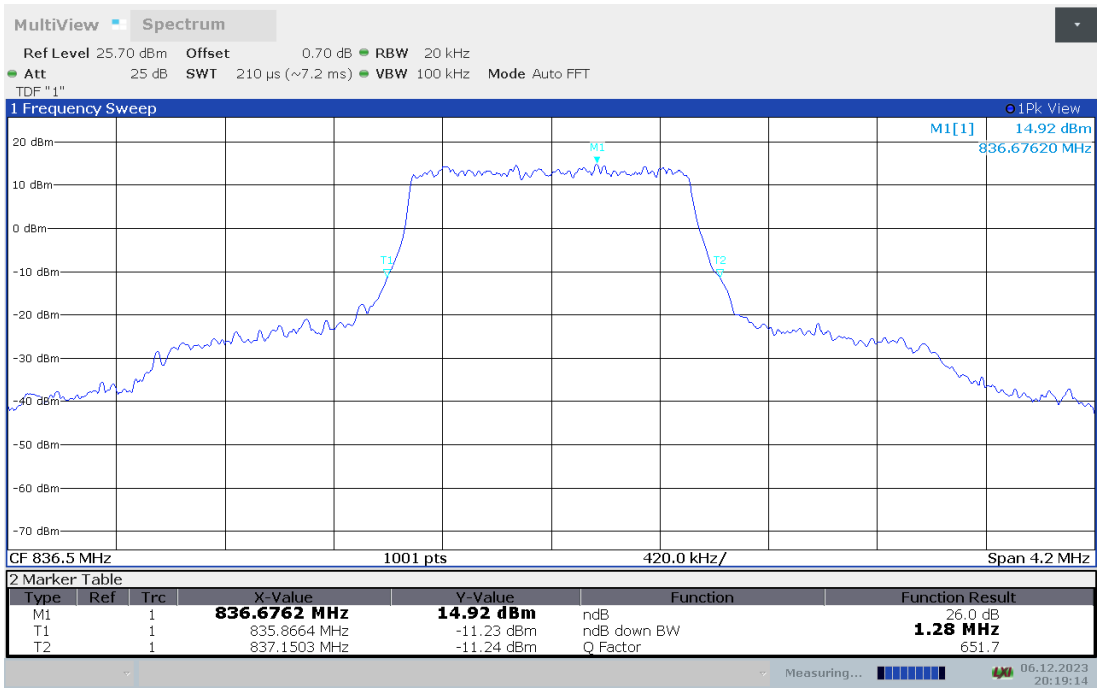
LTE band 25 , 20MHz Bandwidth, MID, 16QAM (-26dBc BW)



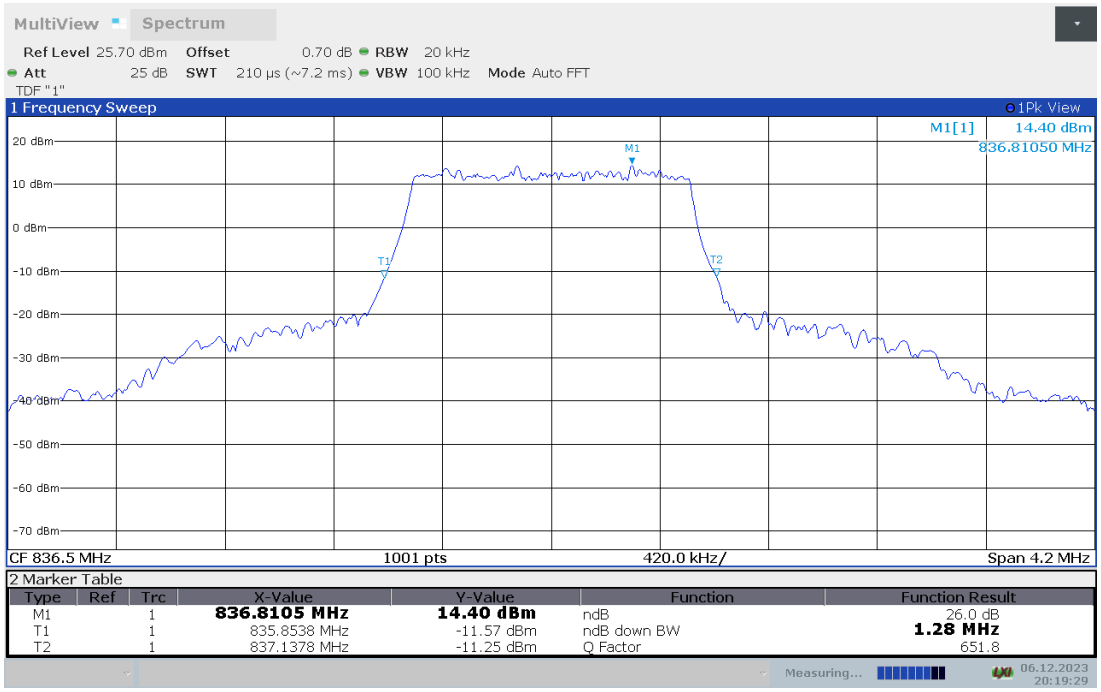
LTE band 26(824MHz-849MHz), 1.4MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	1.284	1.284

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



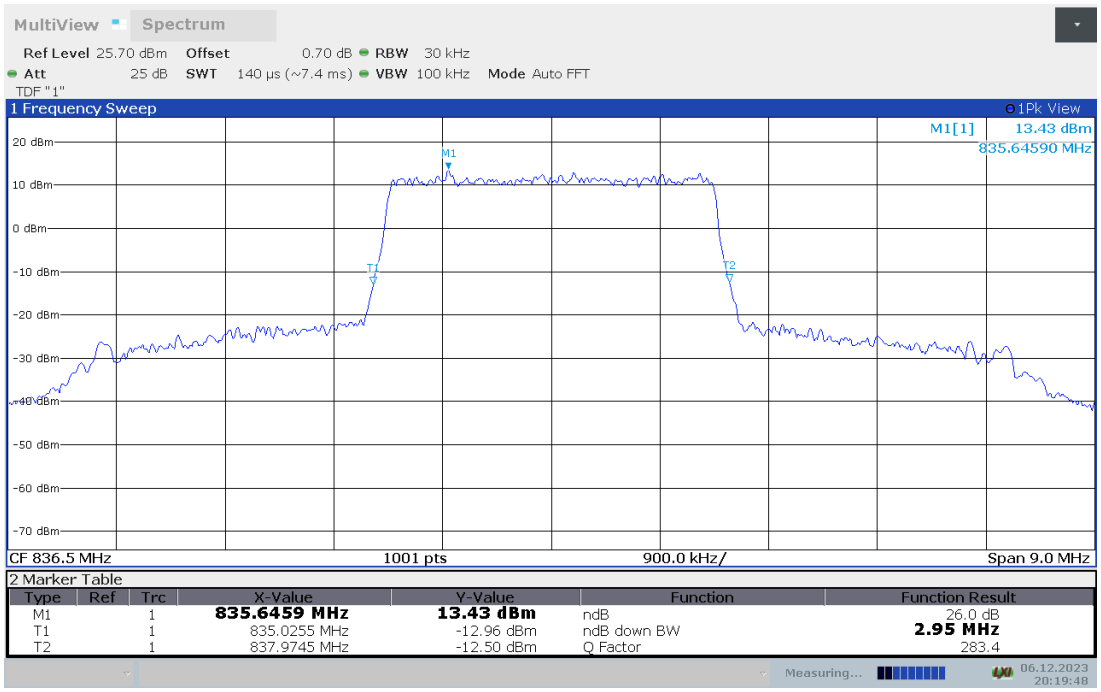
LTE band 26 , 1.4MHz Bandwidth, MID, 16QAM (-26dBc BW)



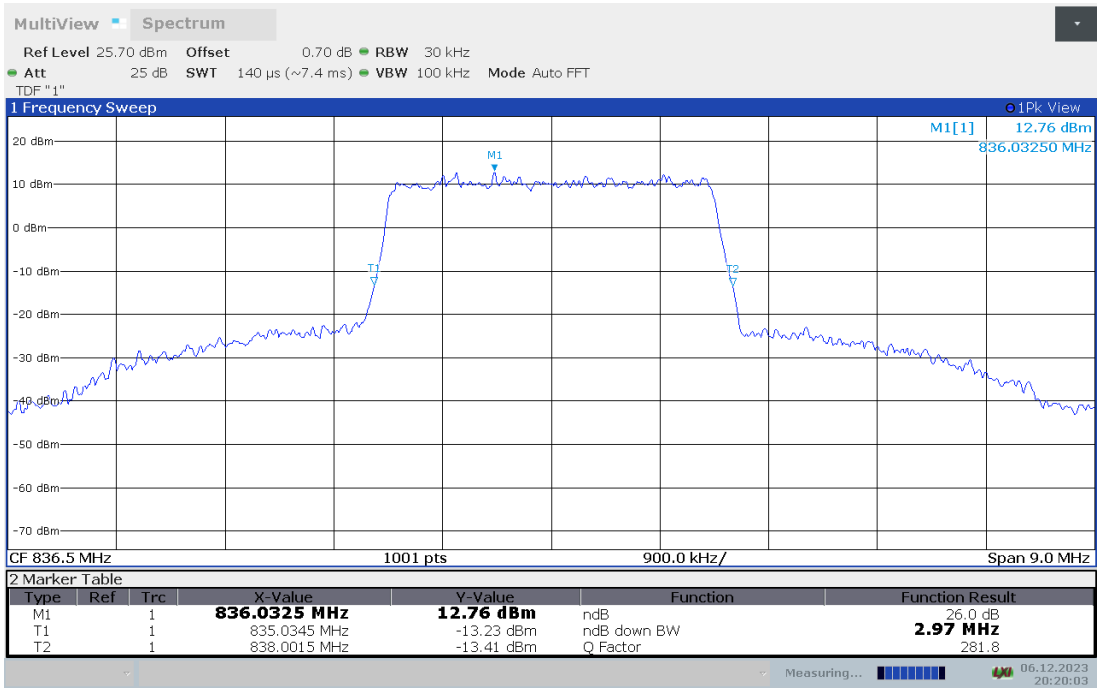
LTE band 26(824MHz-849MHz), 3MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	2.949	2.967

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



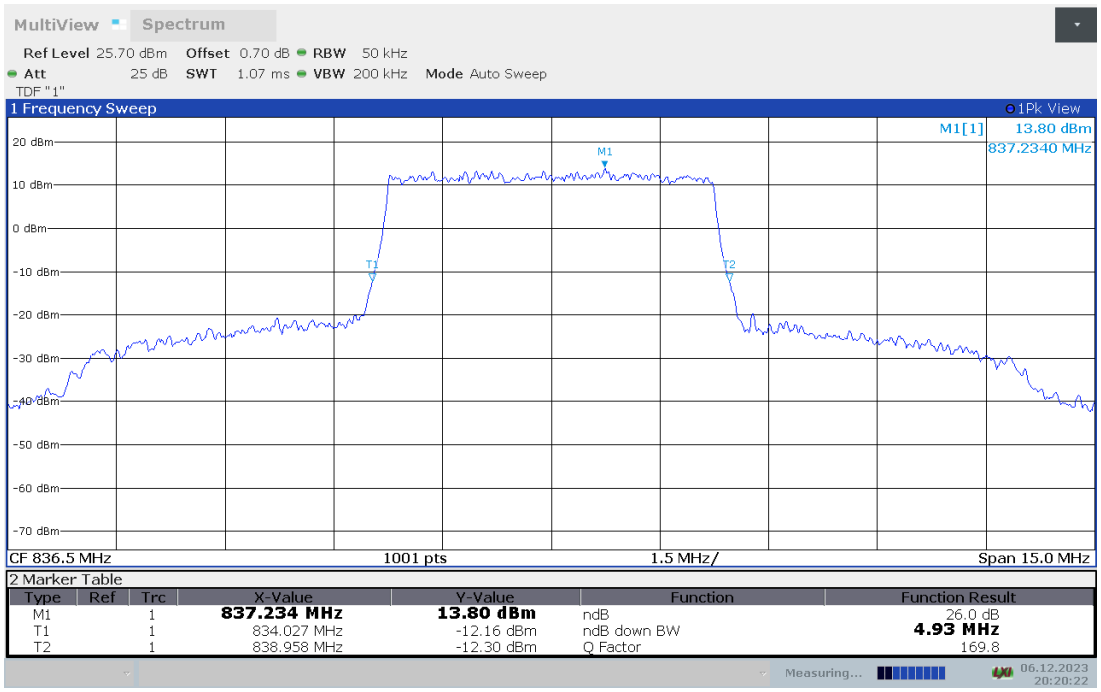
LTE band 26 , 3MHz Bandwidth, MID, 16QAM (-26dBc BW)



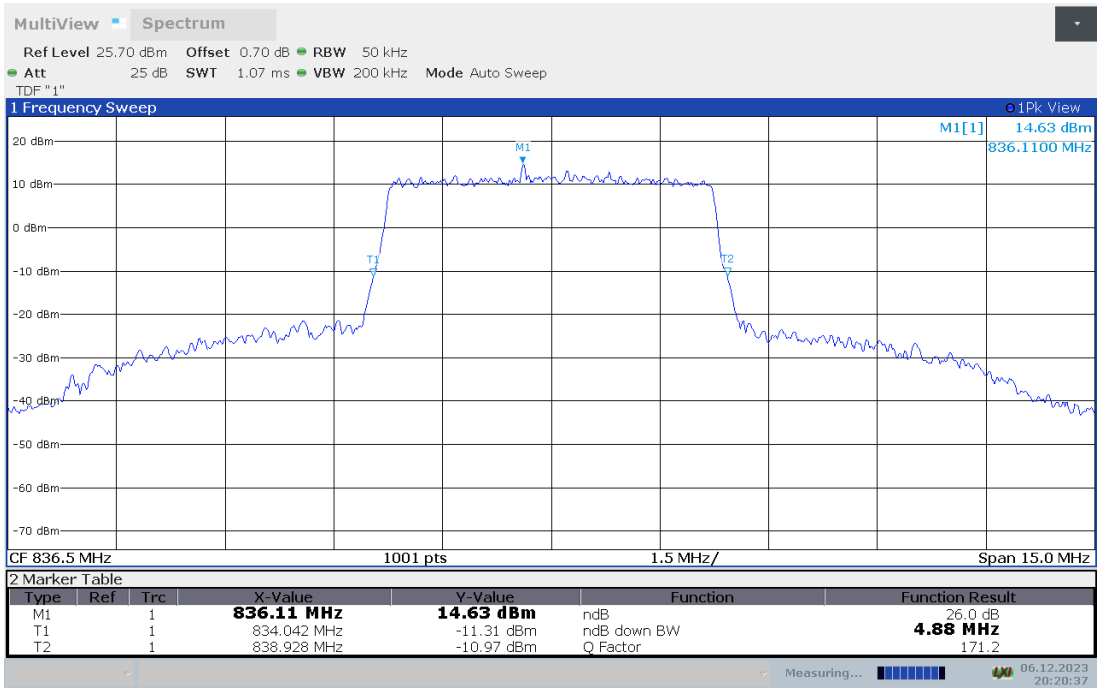
LTE band 26(824MHz-849MHz), 5MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	4.930	4.885

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



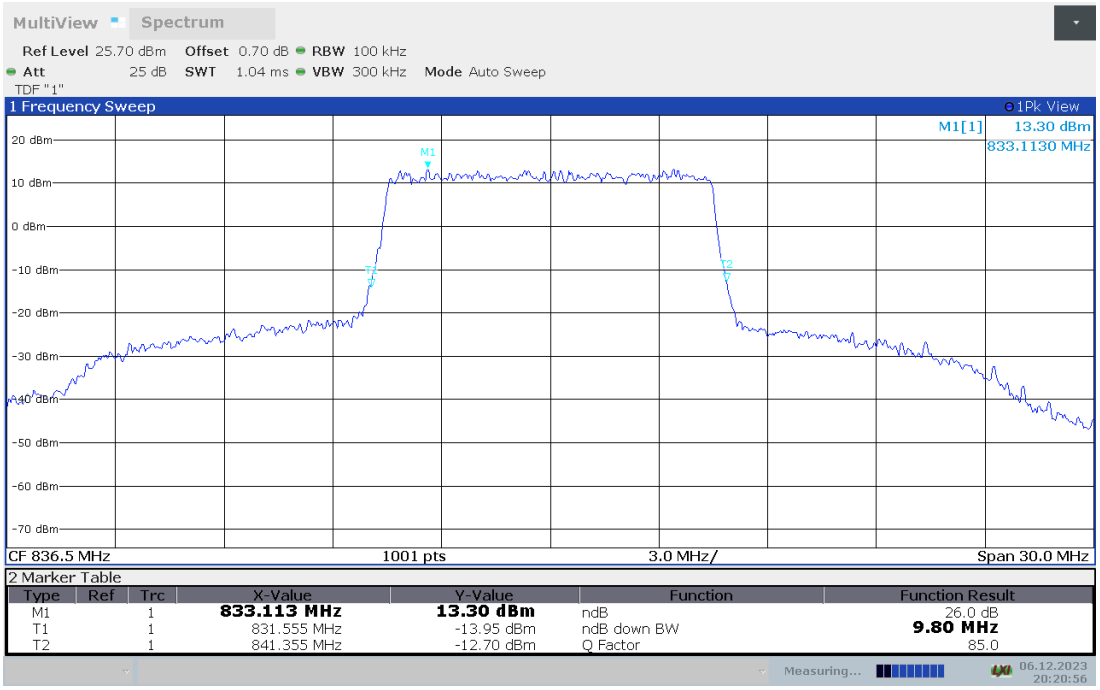
LTE band 26 , 5MHz Bandwidth, MID, 16QAM (-26dBc BW)



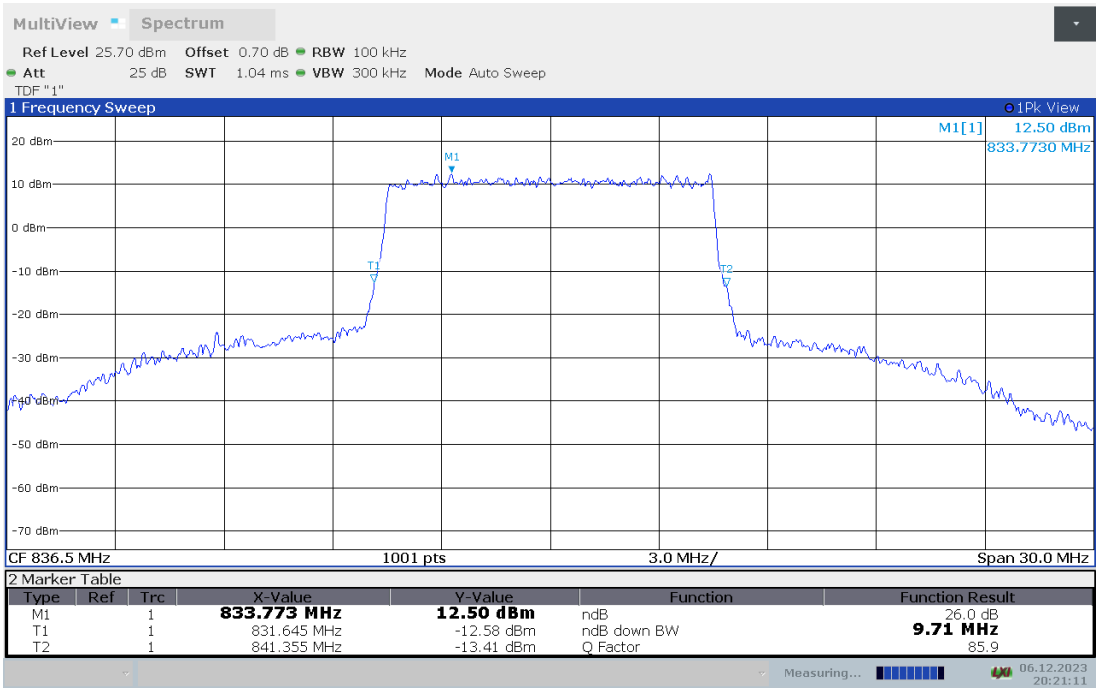
LTE band 26(824MHz-849MHz), 10MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	9.800	9.710

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



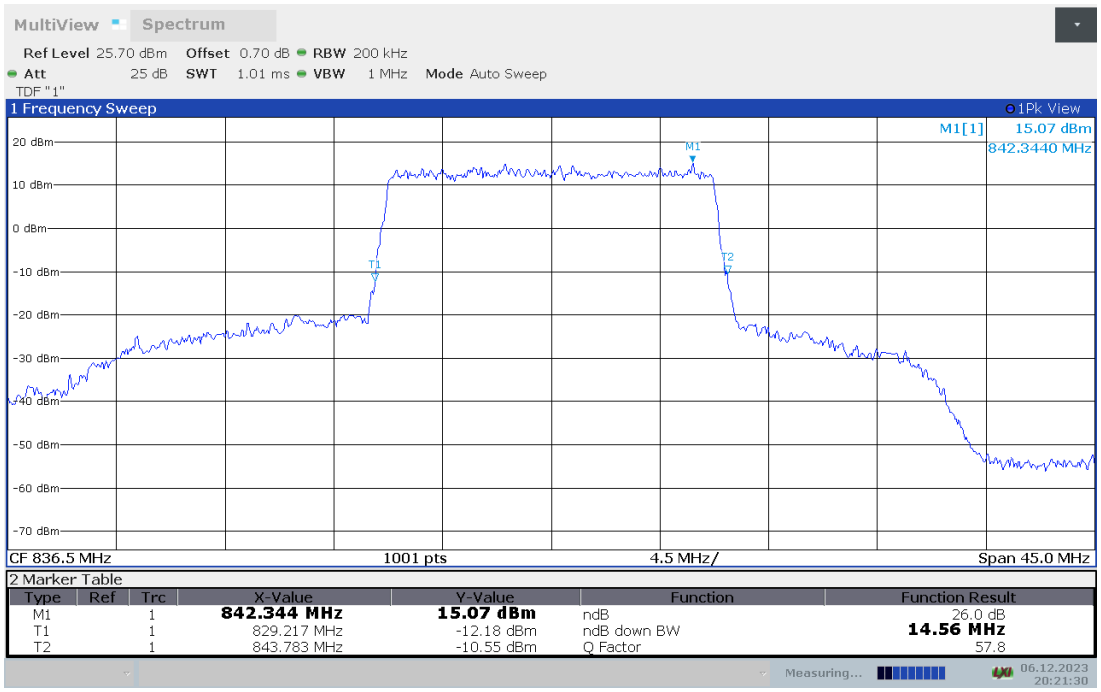
LTE band 26 , 10MHz Bandwidth, MID, 16QAM (-26dBc BW)



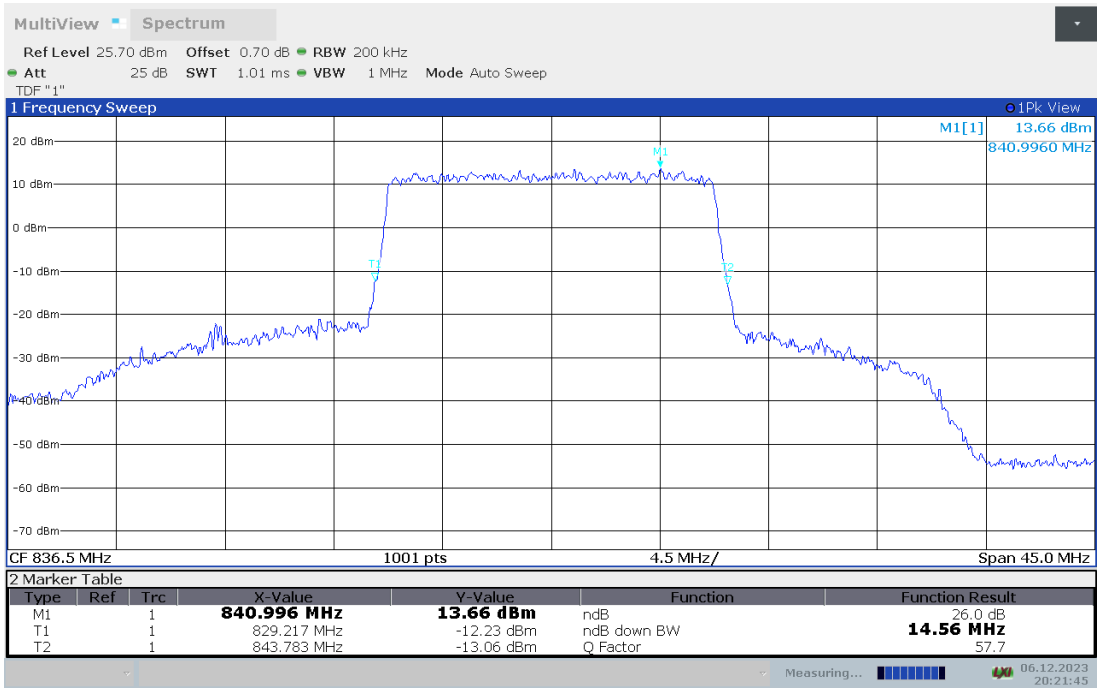
LTE band 26(824MHz-849MHz), 15MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	14.565	14.565

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



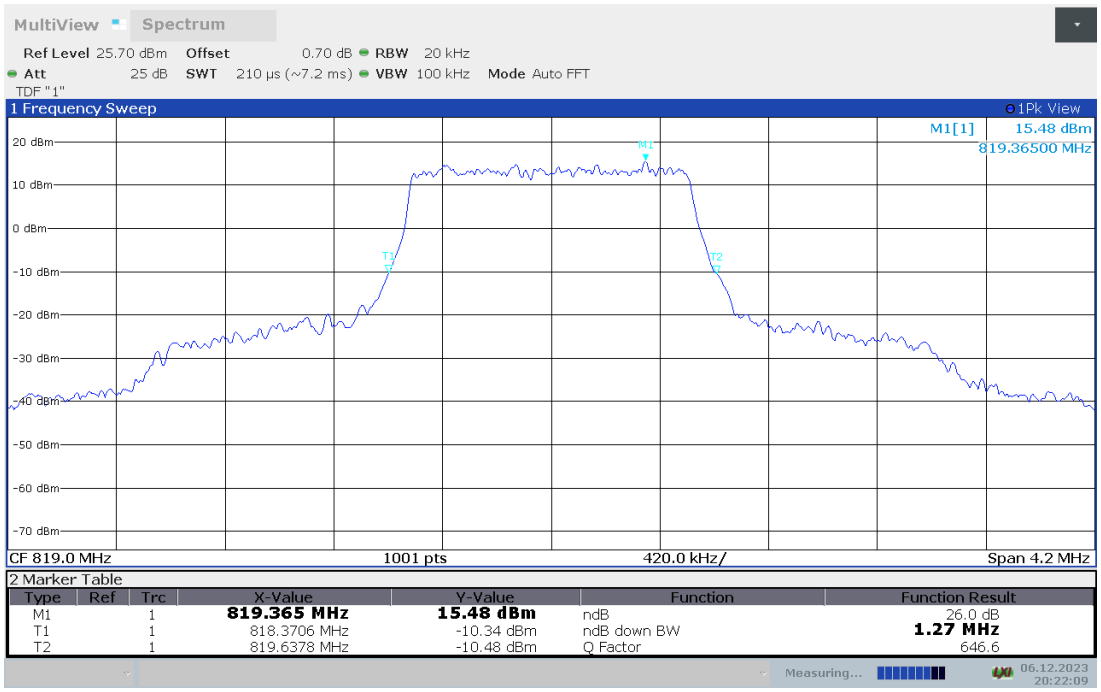
LTE band 26 , 15MHz Bandwidth, MID, 16QAM (-26dBc BW)



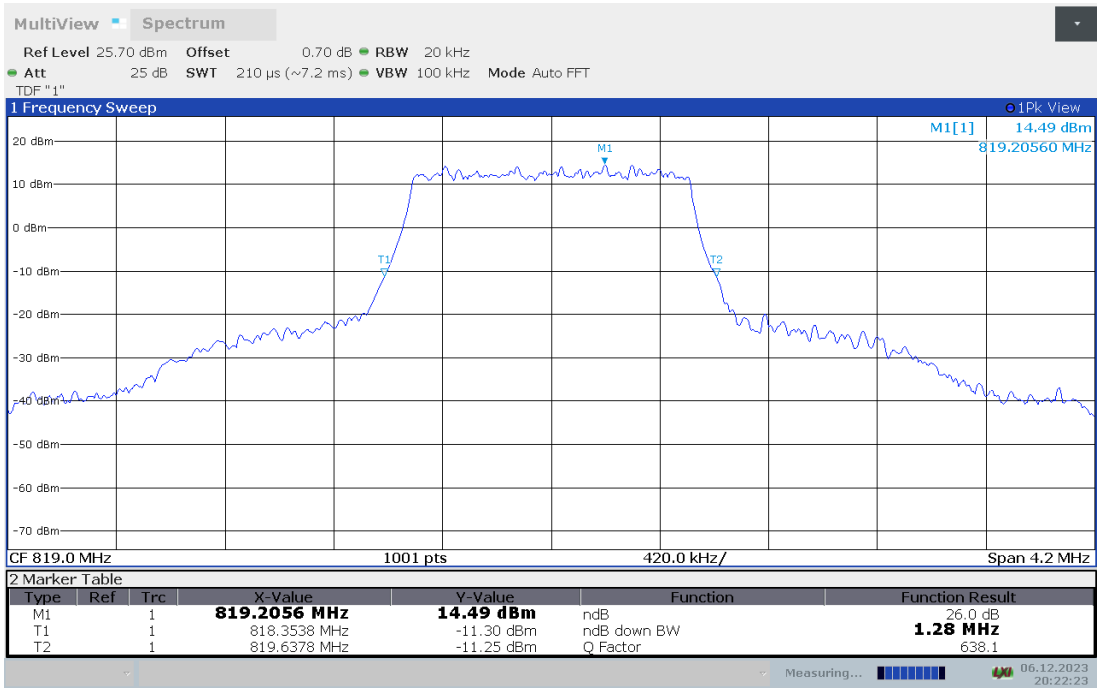
LTE band 26(814MHz-824MHz), 1.4MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
819	1.267	1.284

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



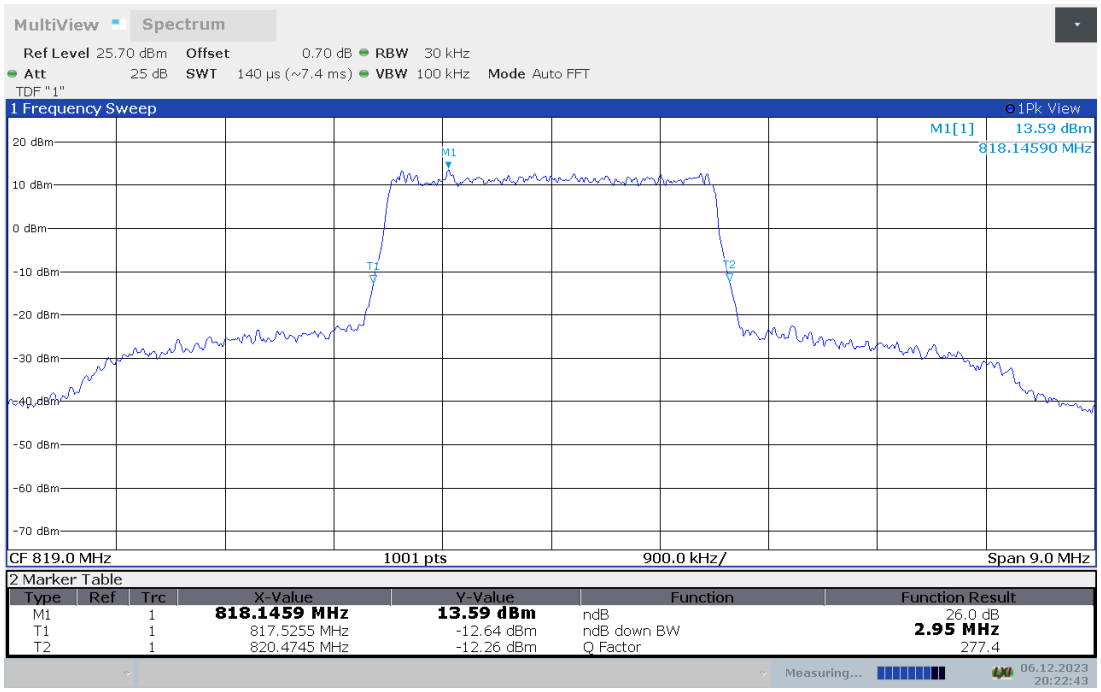
LTE band 26 , 1.4MHz Bandwidth, MID, 16QAM (-26dBc BW)



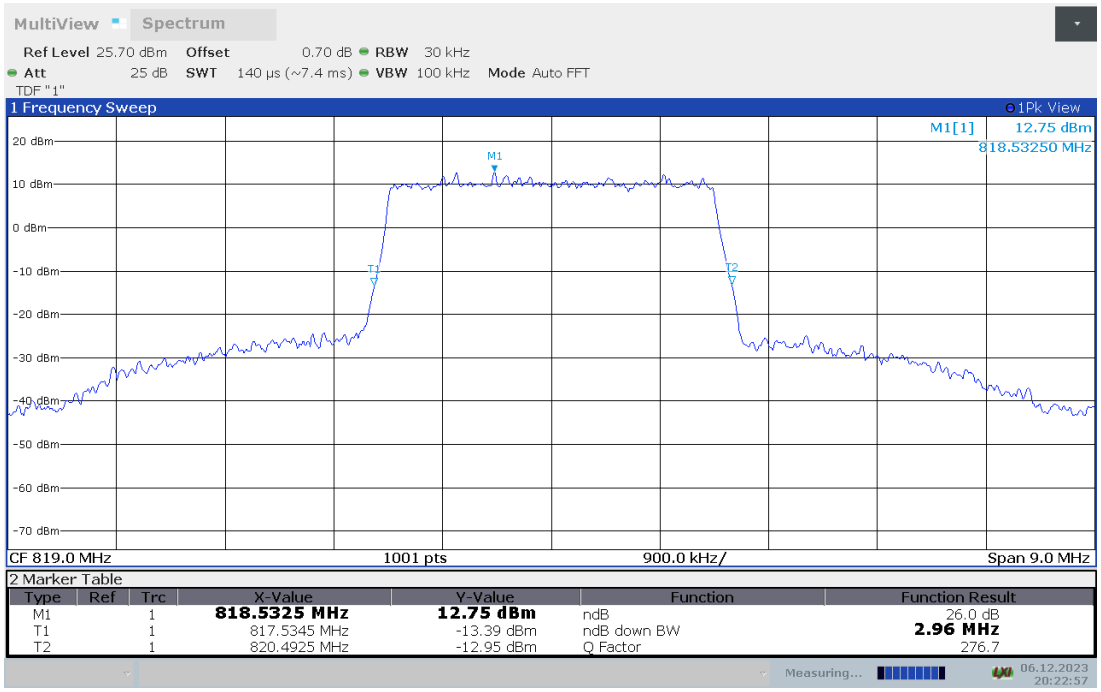
LTE band 26(814MHz-824MHz), 3MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
819	2.949	2.958

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



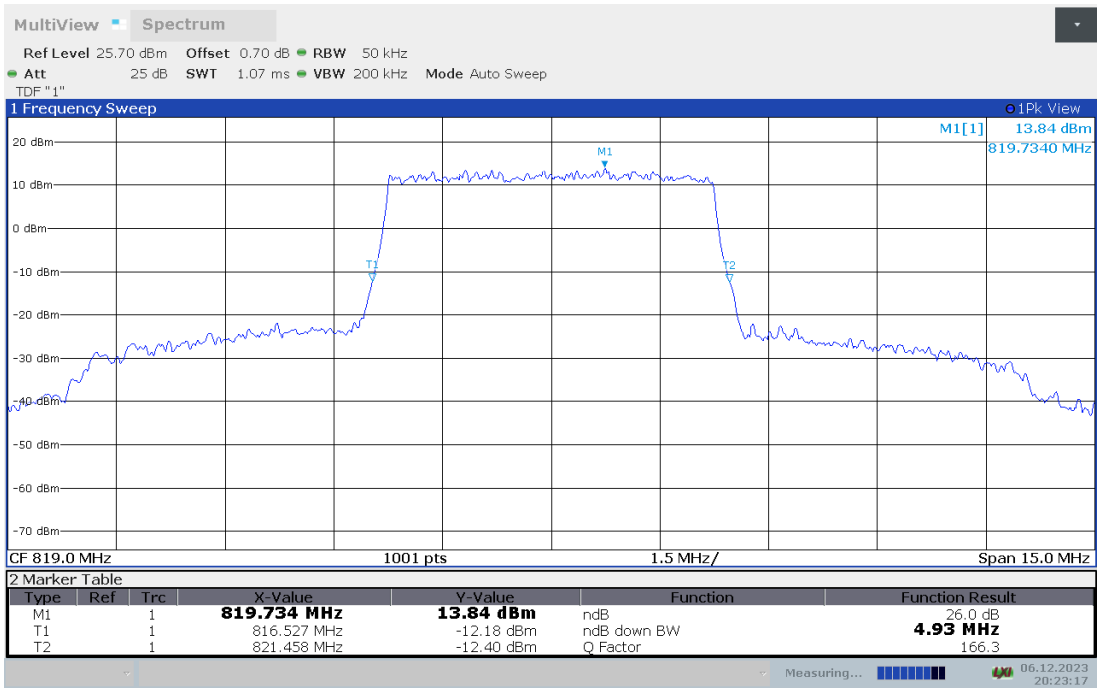
LTE band 26 , 3MHz Bandwidth, MID, 16QAM (-26dBc BW)



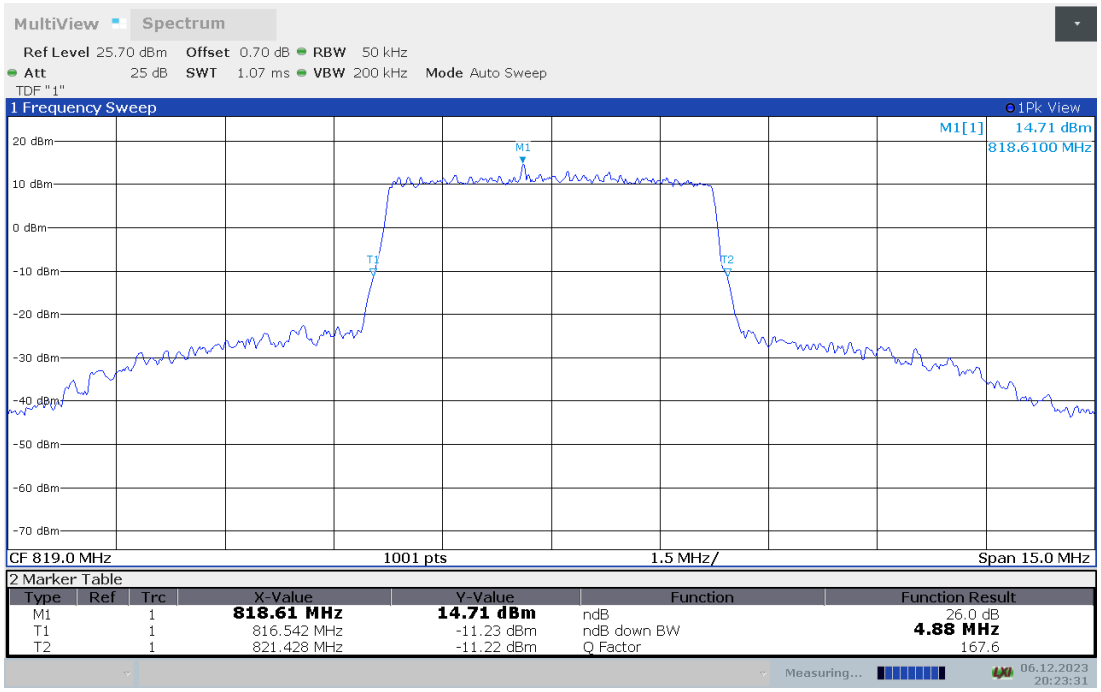
LTE band 26(814MHz-824MHz), 5MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
819	4.930	4.885

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



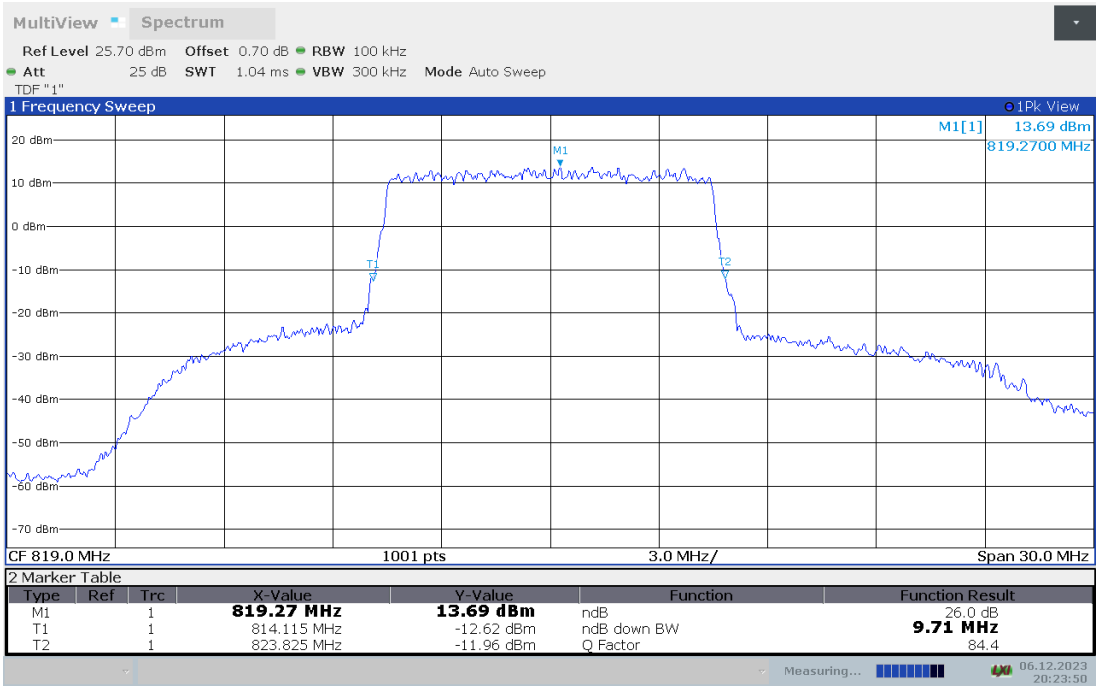
LTE band 26 , 5MHz Bandwidth, MID, 16QAM (-26dBc BW)



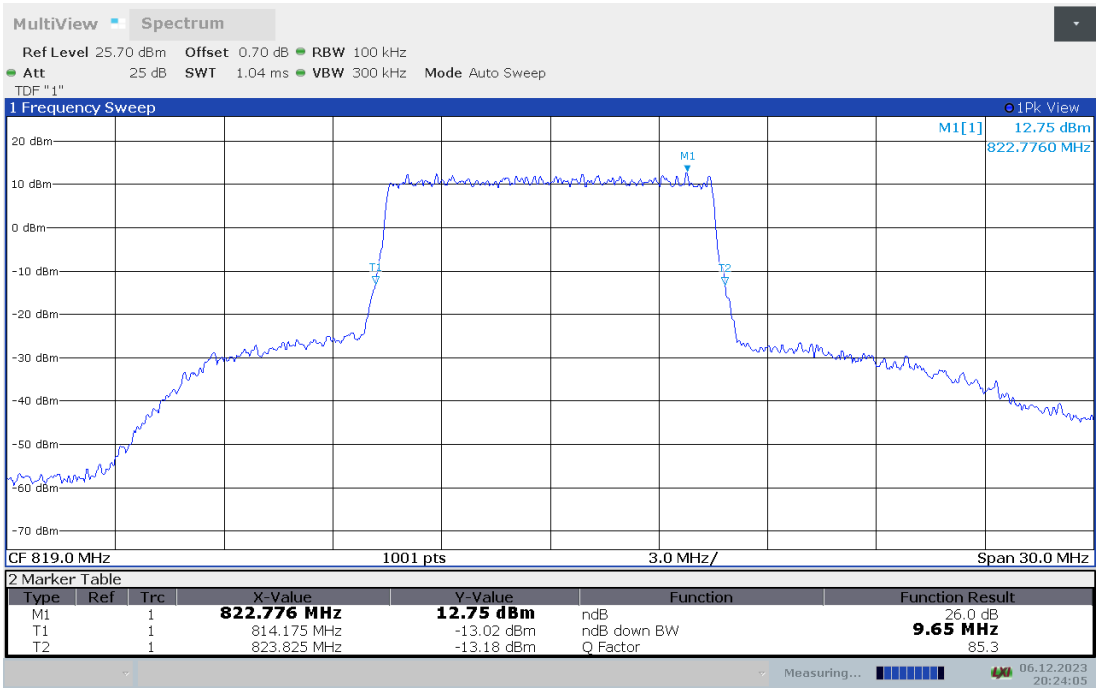
LTE band 26(814MHz-824MHz), 10MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
819	9.710	9.650

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



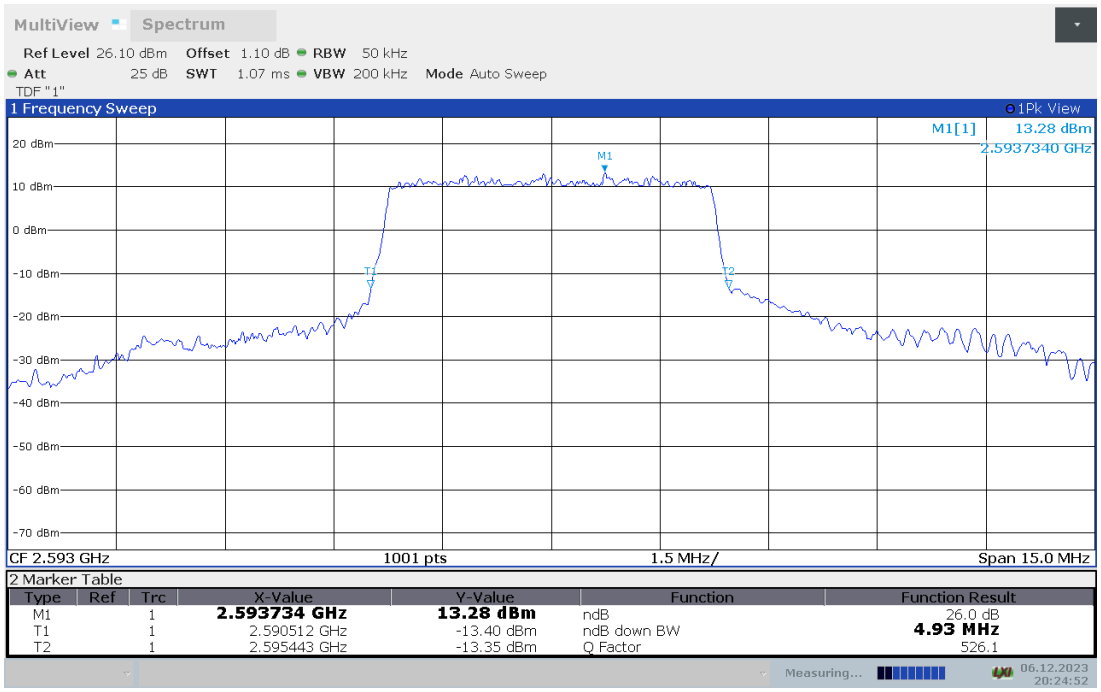
LTE band 26 , 10MHz Bandwidth, MID, 16QAM (-26dBc BW)



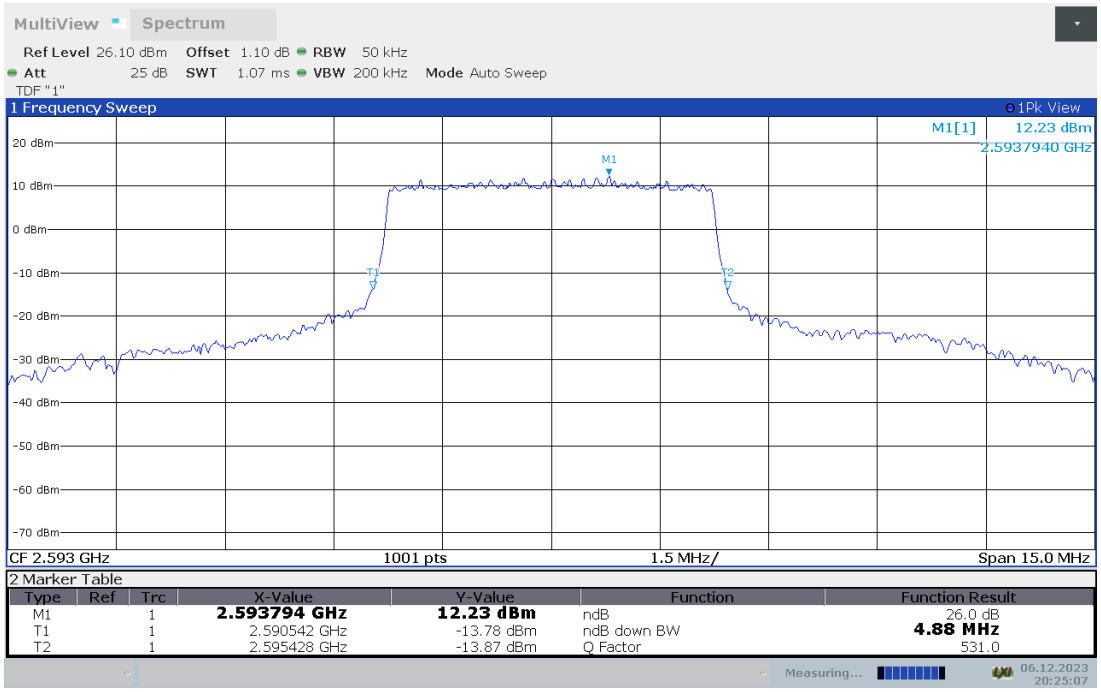
LTE band 41,5MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
2593	4.930	4.885

LTE band 41 , 5MHz Bandwidth, MID, QPSK (-26dBc BW)



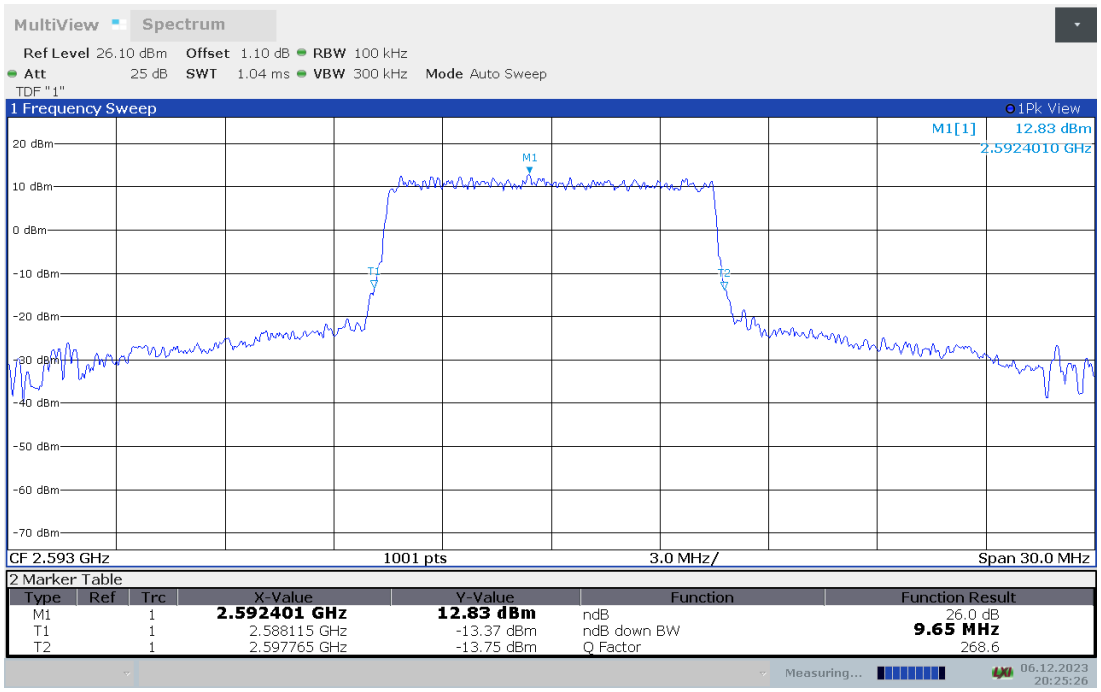
LTE band 41 , 5MHz Bandwidth, MID, 16QAM (-26dBc BW)



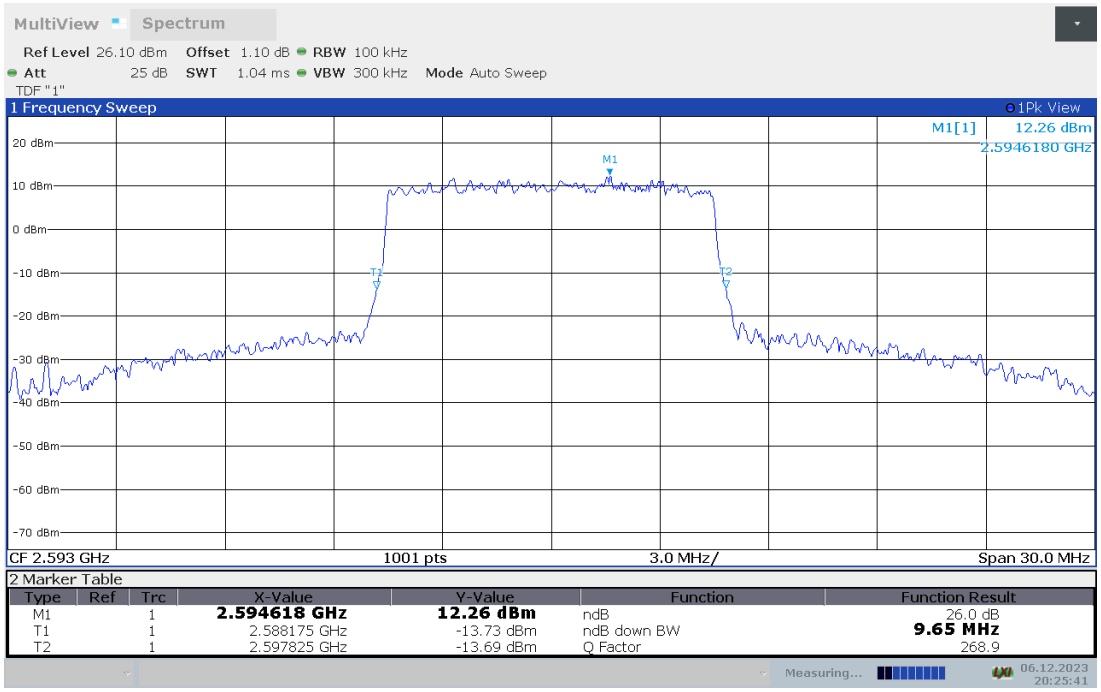
LTE band 41,10MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
2593	9.650	9.650

LTE band 41 , 10MHz Bandwidth, MID, QPSK (-26dBc BW)



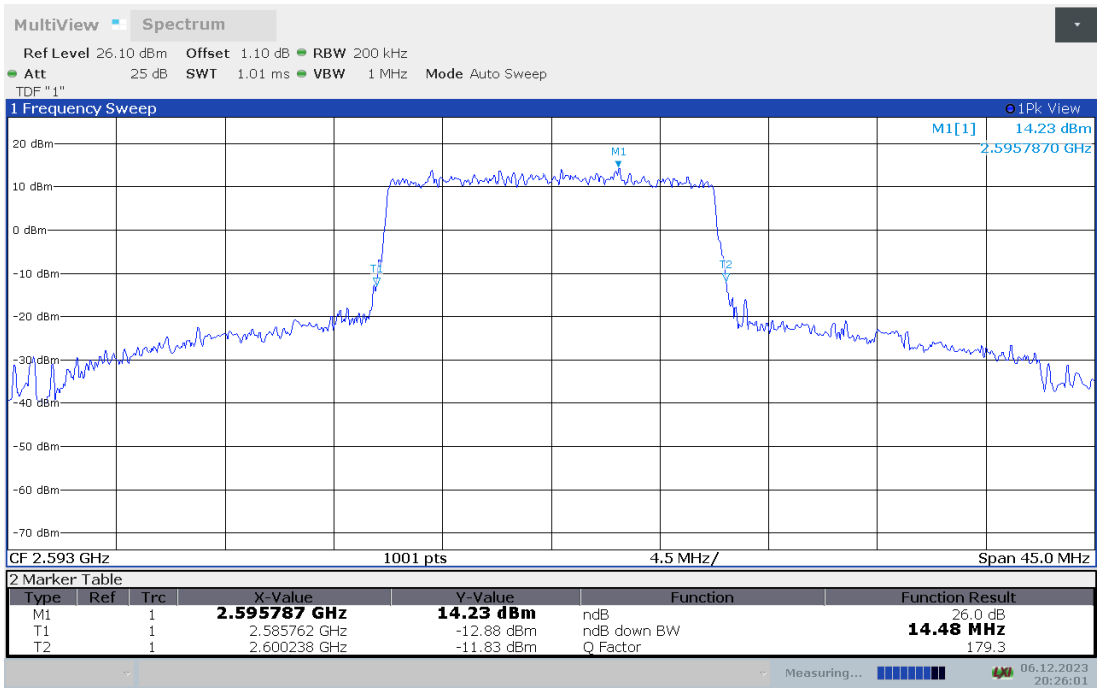
LTE band 41 , 10MHz Bandwidth, MID, 16QAM (-26dBc BW)



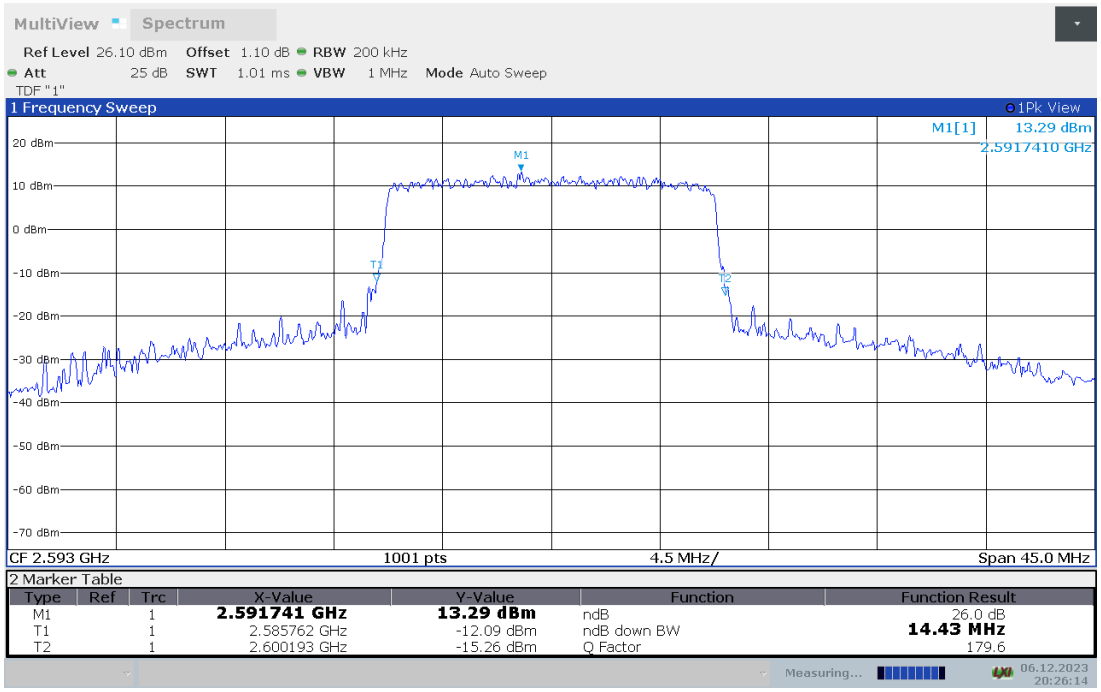
LTE band 41,15MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
2593	14.476	14.431

LTE band 41 , 15MHz Bandwidth, MID, QPSK (-26dBc BW)



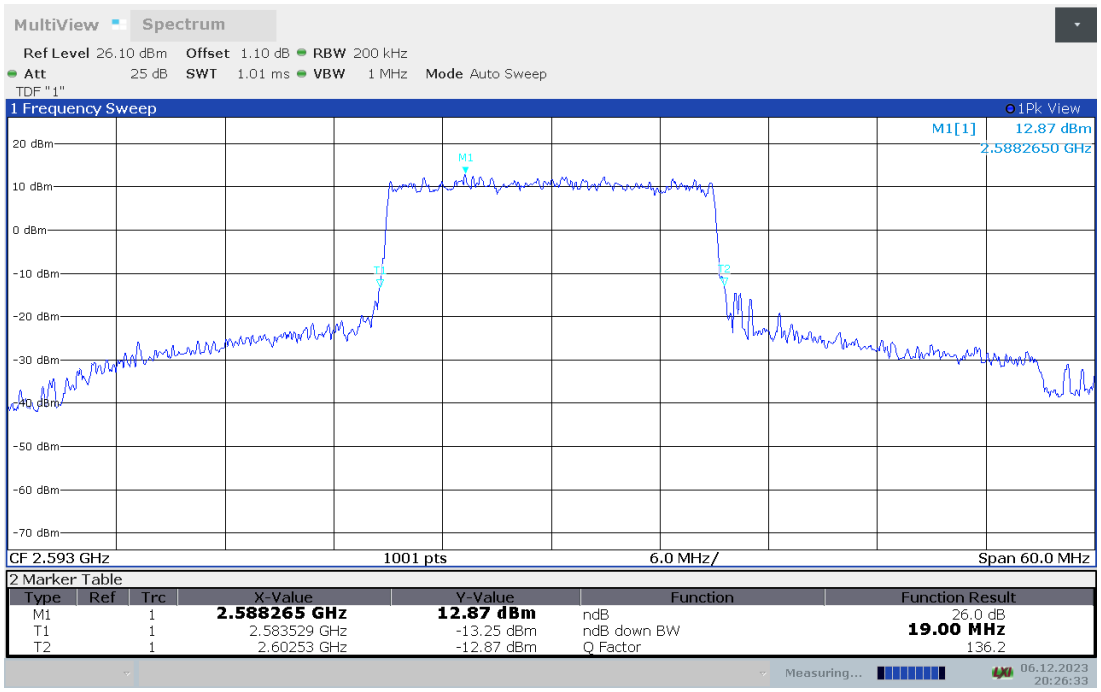
LTE band 41 , 15MHz Bandwidth, MID, 16QAM (-26dBc BW)



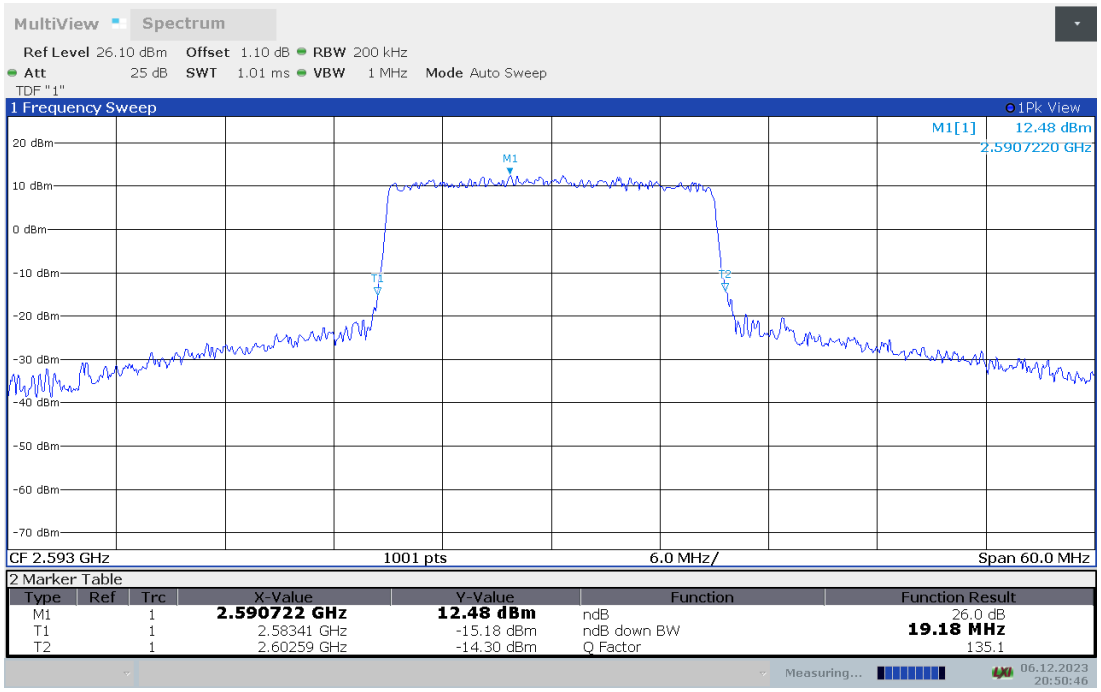
LTE band 41,20MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
2593	19.001	19.181

LTE band 41 , 20MHz Bandwidth, MID, QPSK (-26dBc BW)



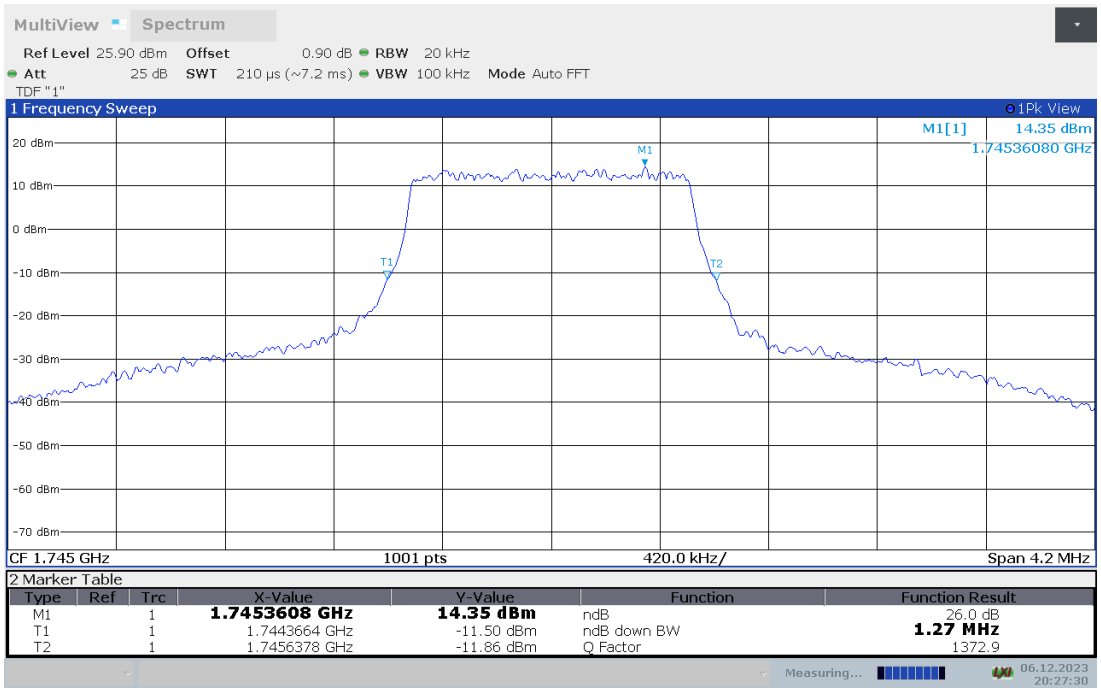
LTE band 41 , 20MHz Bandwidth, MID, 16QAM (-26dBc BW)



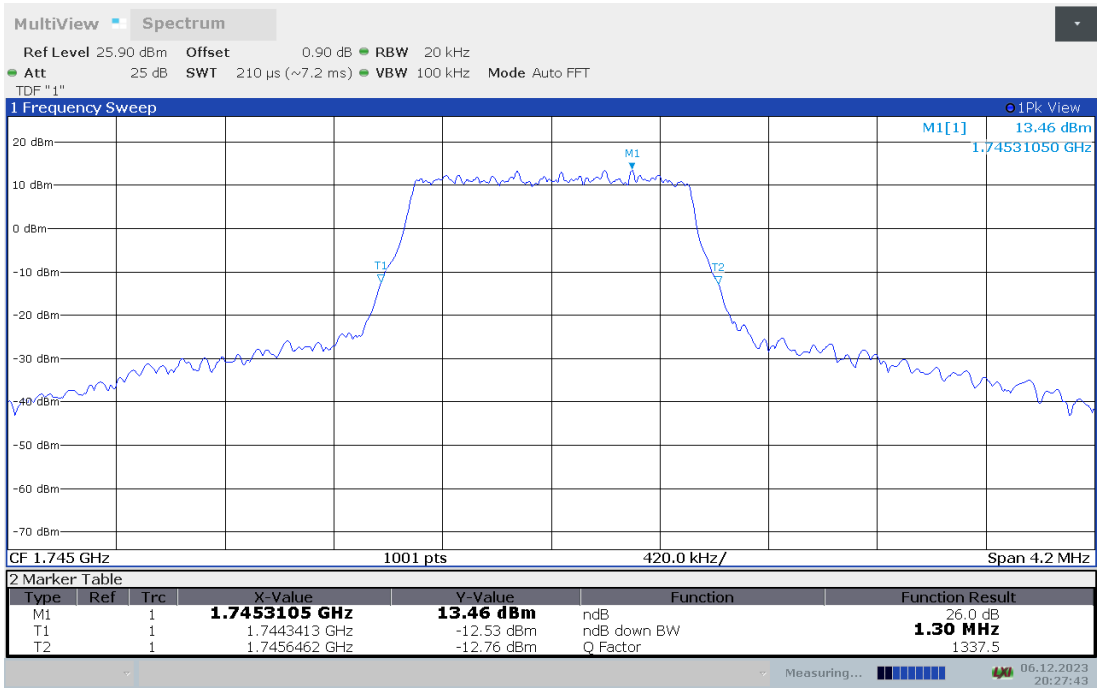
LTE band 66,1.4MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1745	1.271	1.305

LTE band 66 , 1.4MHz Bandwidth, MID, QPSK (-26dBc BW)



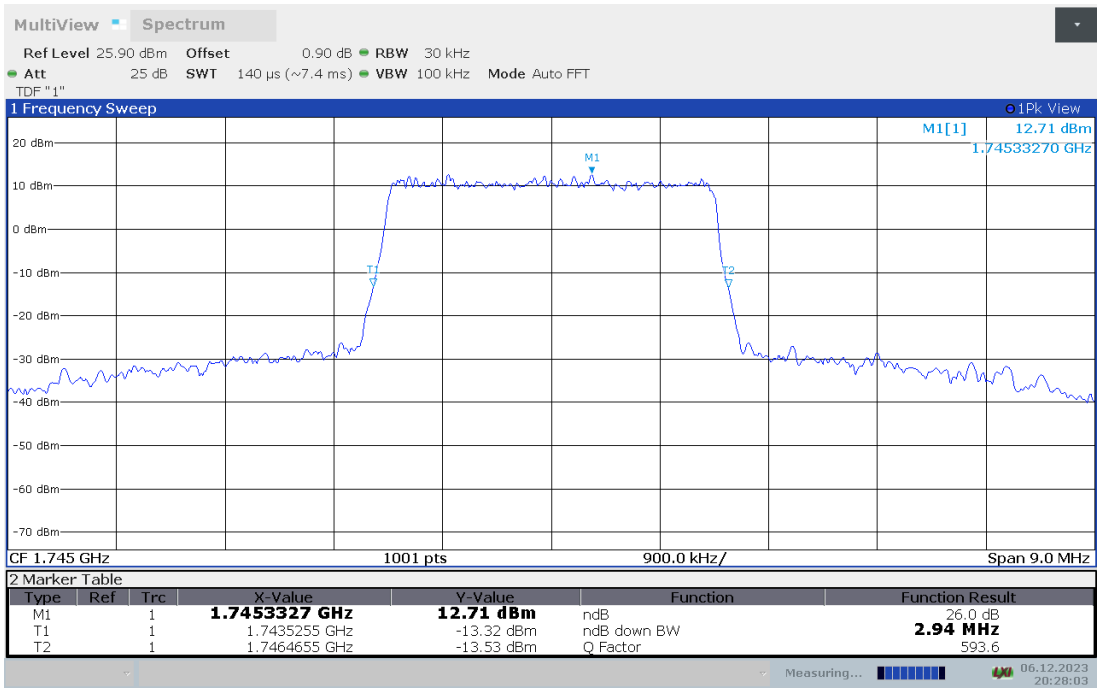
LTE band 66 , 1.4MHz Bandwidth, MID, 16QAM (-26dBc BW)



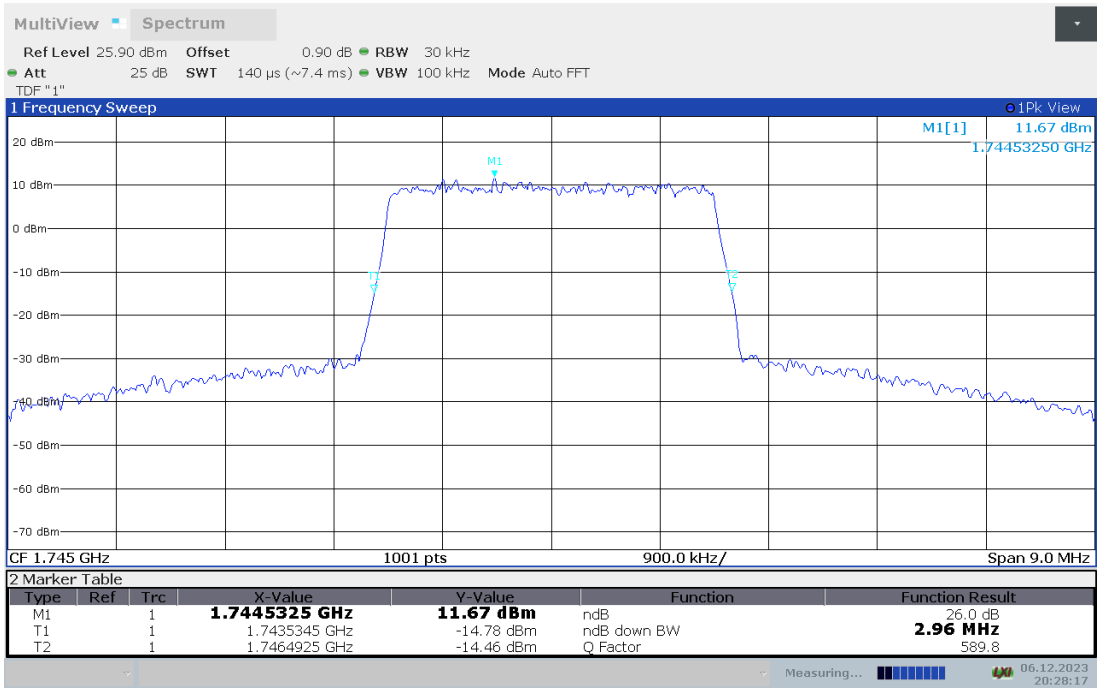
LTE band 66,3MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1745	2.940	2.958

LTE band 66 , 3MHz Bandwidth, MID, QPSK (-26dBc BW)



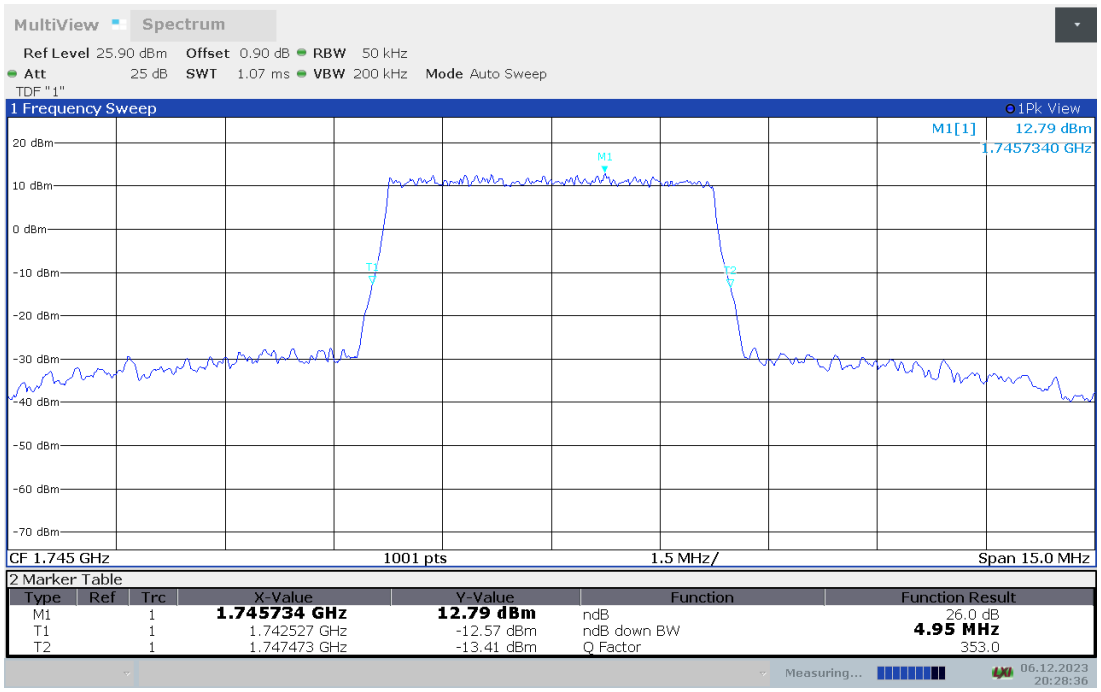
LTE band 66 , 3MHz Bandwidth, MID, 16QAM (-26dBc BW)



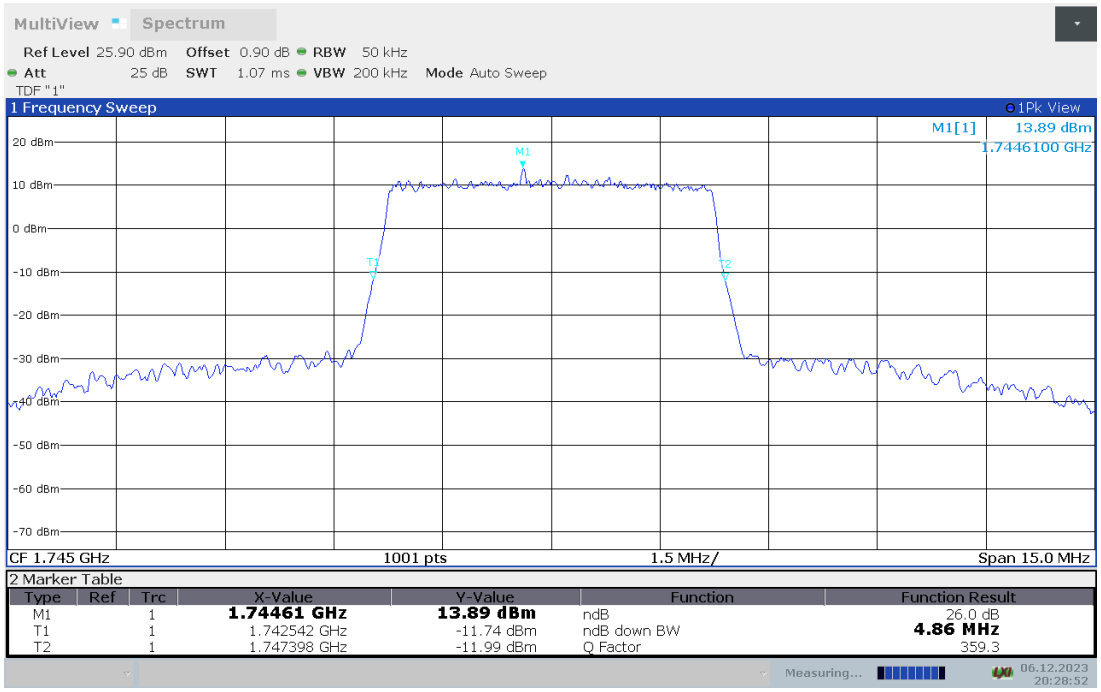
LTE band 66,5MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1745	4.945	4.855

LTE band 66 , 5MHz Bandwidth, MID, QPSK (-26dBc BW)



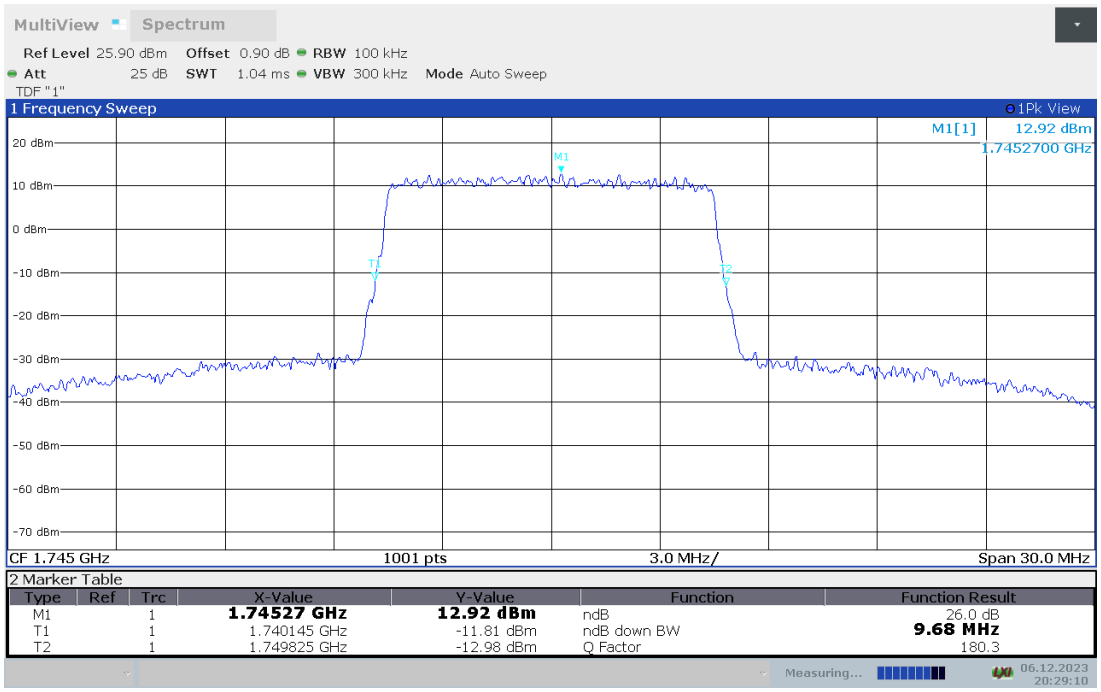
LTE band 66 , 5MHz Bandwidth, MID, 16QAM (-26dBc BW)



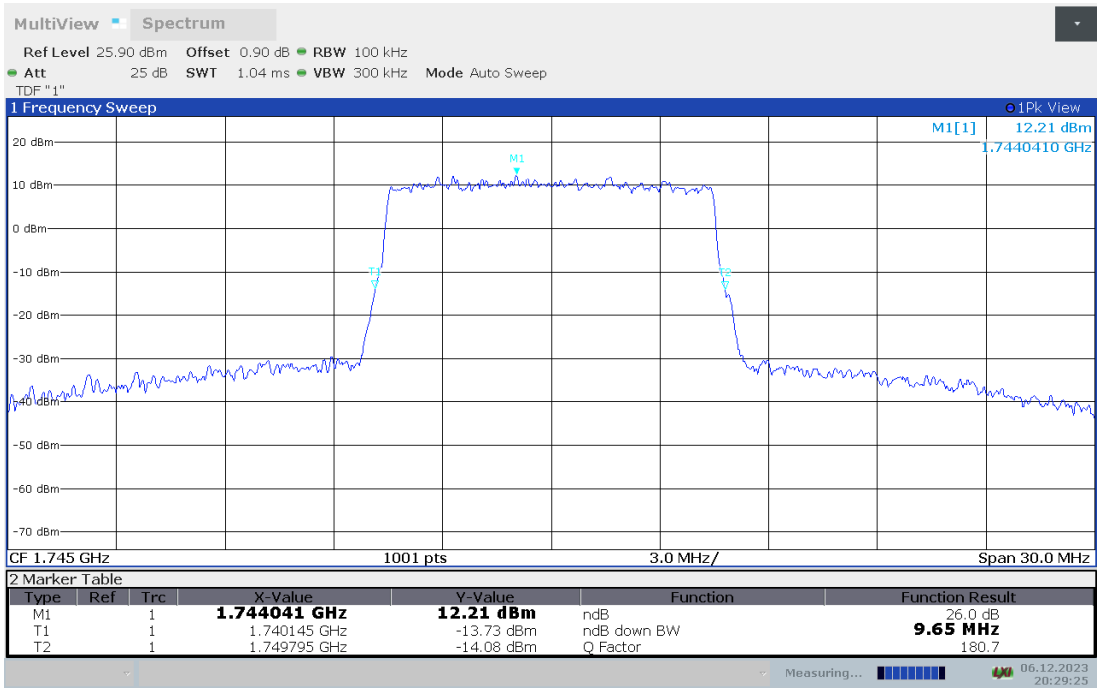
LTE band 66,10MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1745	9.680	9.650

LTE band 66 , 10MHz Bandwidth, MID, QPSK (-26dBc BW)



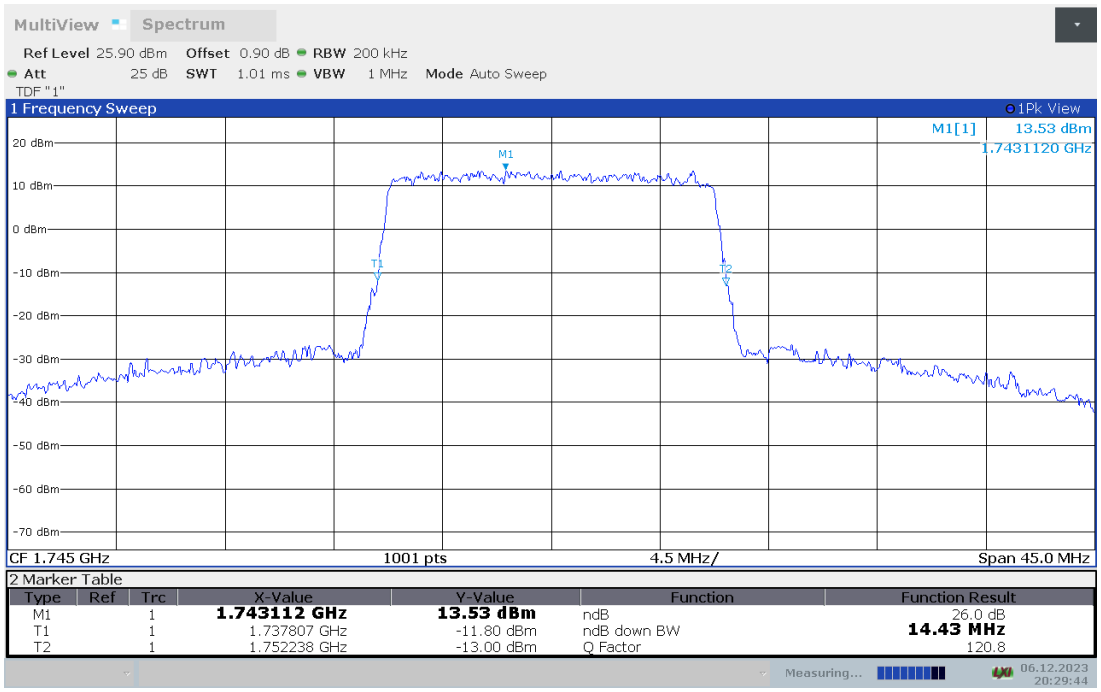
LTE band 66 , 10MHz Bandwidth, MID, 16QAM (-26dBc BW)



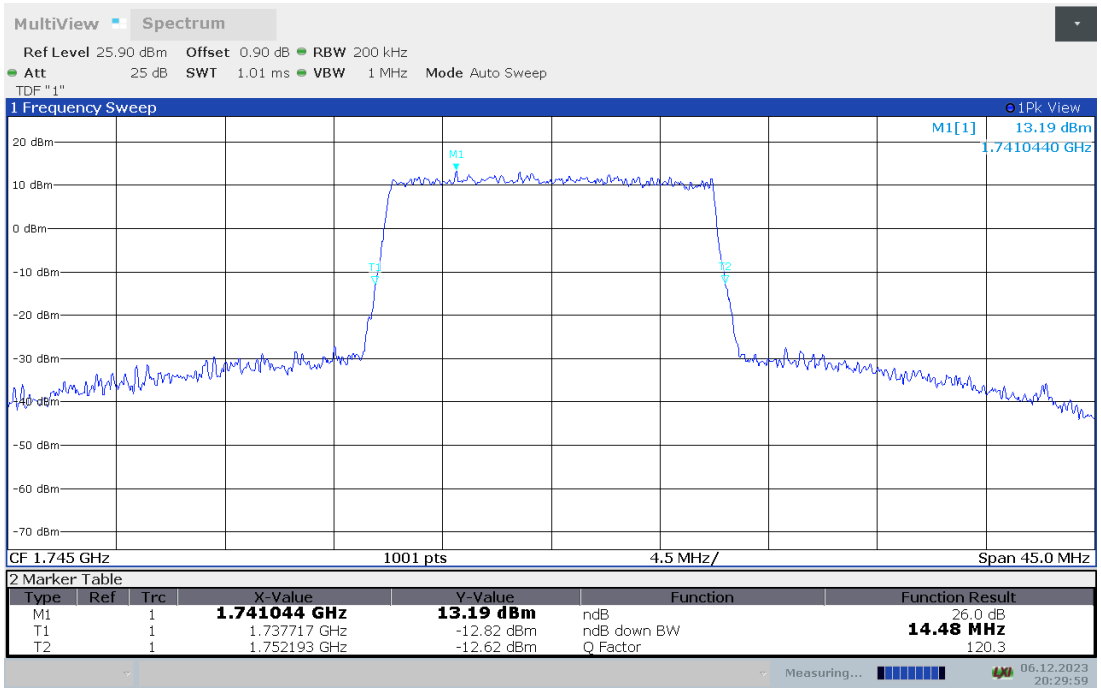
LTE band 66,15MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1745	14.431	14.476

LTE band 66 , 15MHz Bandwidth, MID, QPSK (-26dBc BW)



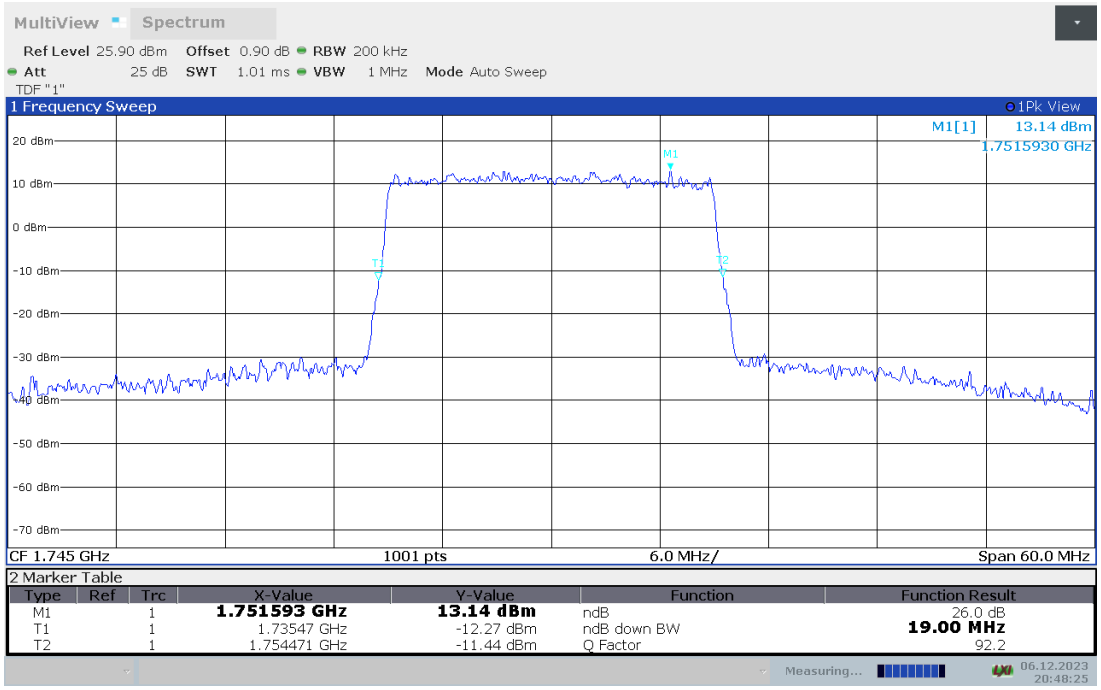
LTE band 66 , 15MHz Bandwidth, MID, 16QAM (-26dBc BW)



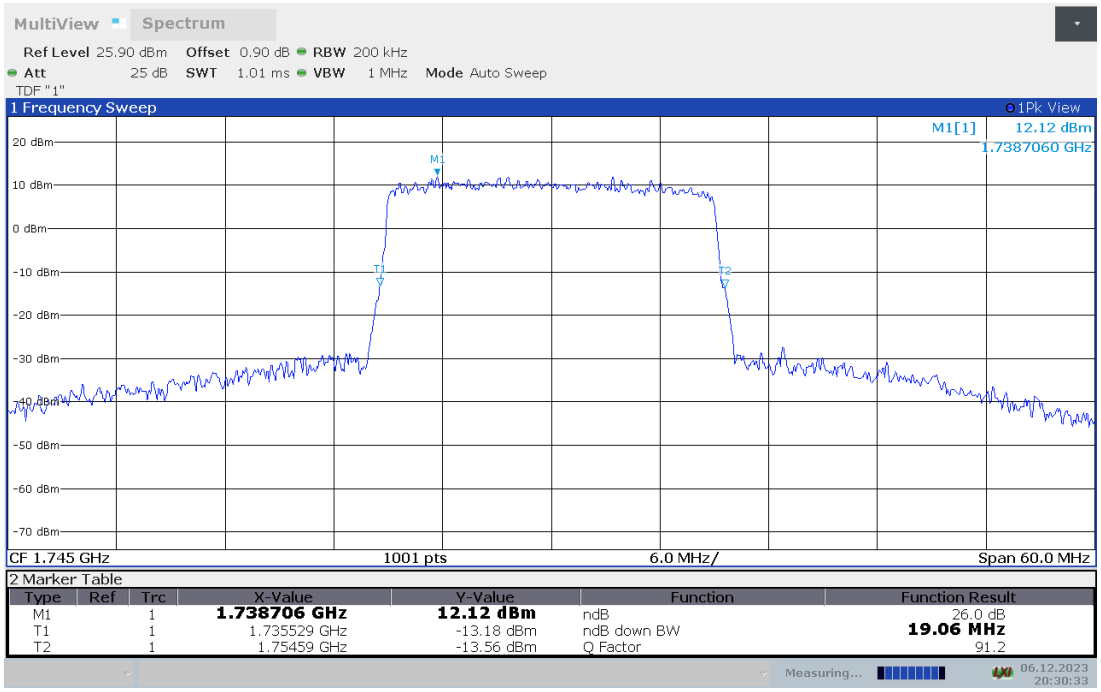
LTE band 66,20MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1745	19.001	19.061

LTE band 66 , 20MHz Bandwidth, MID, QPSK (-26dBc BW)



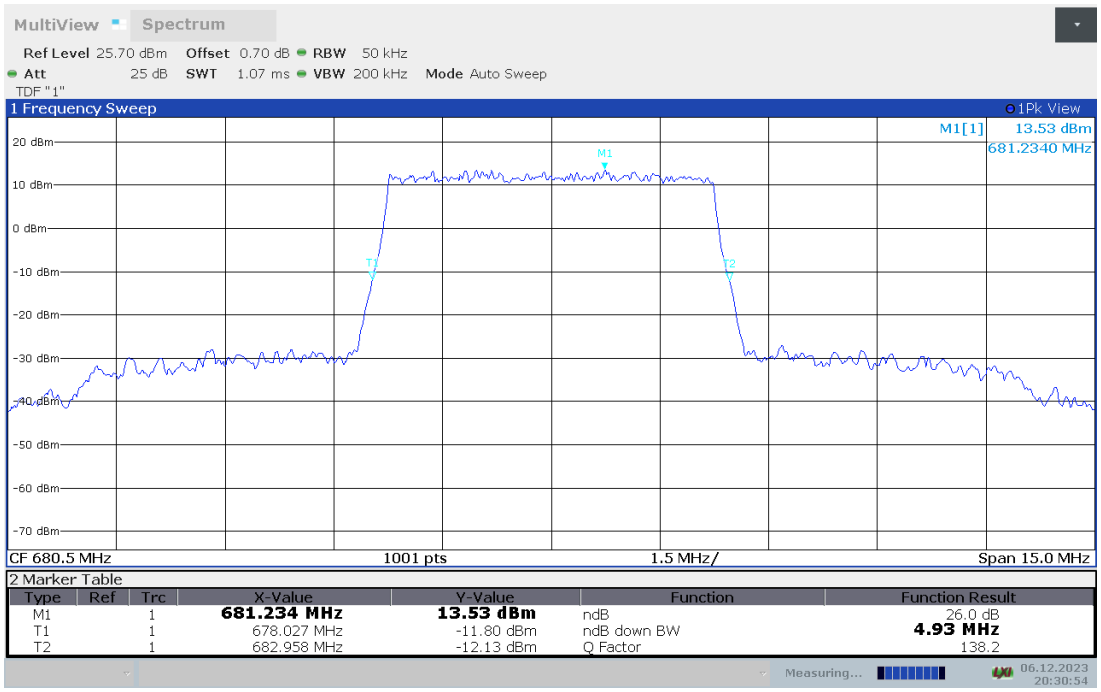
LTE band 66 , 20MHz Bandwidth, MID, 16QAM (-26dBc BW)



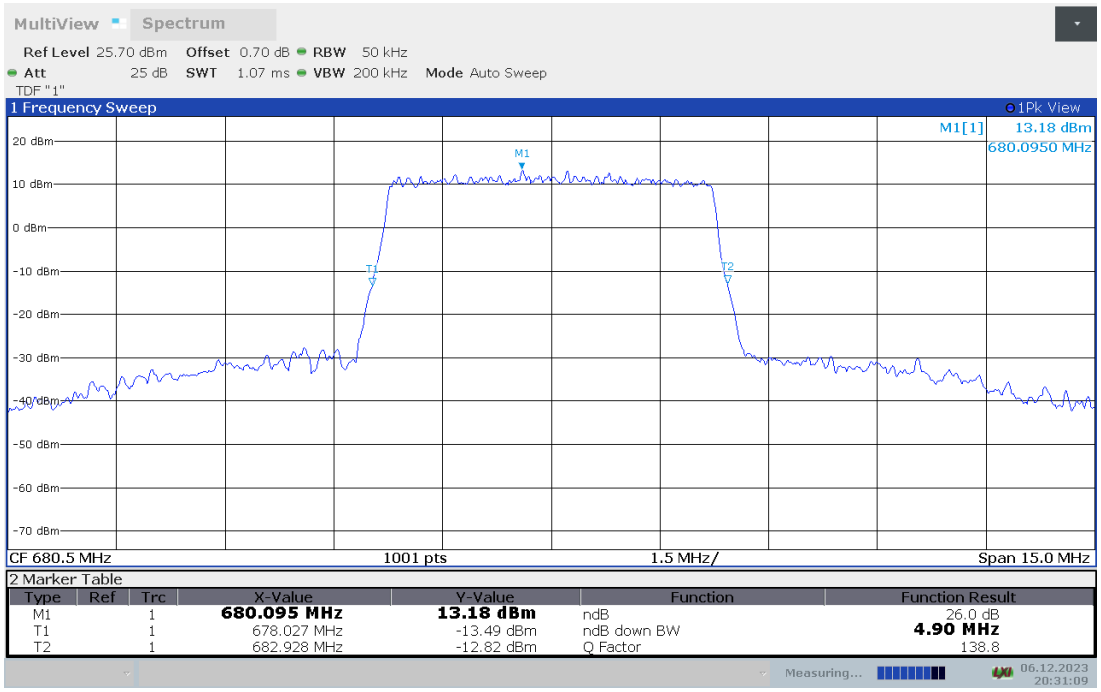
LTE band 71,5MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
680.5	4.930	4.900

LTE band 71 , 5MHz Bandwidth, MID, QPSK (-26dBc BW)



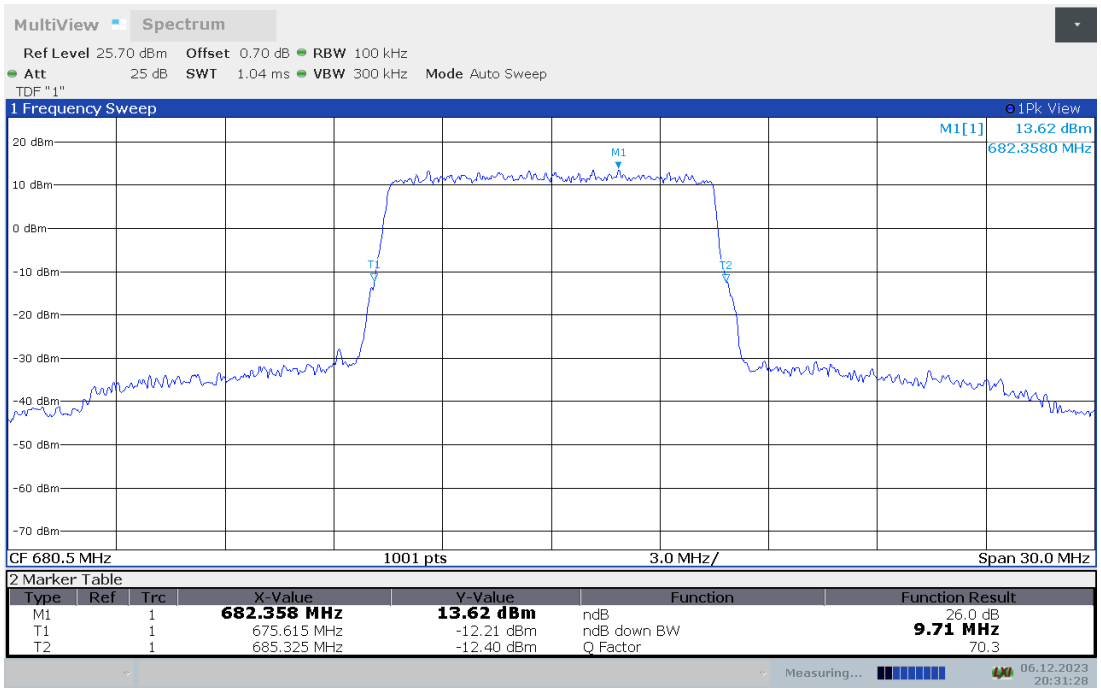
LTE band 71 , 5MHz Bandwidth, MID, 16QAM (-26dBc BW)



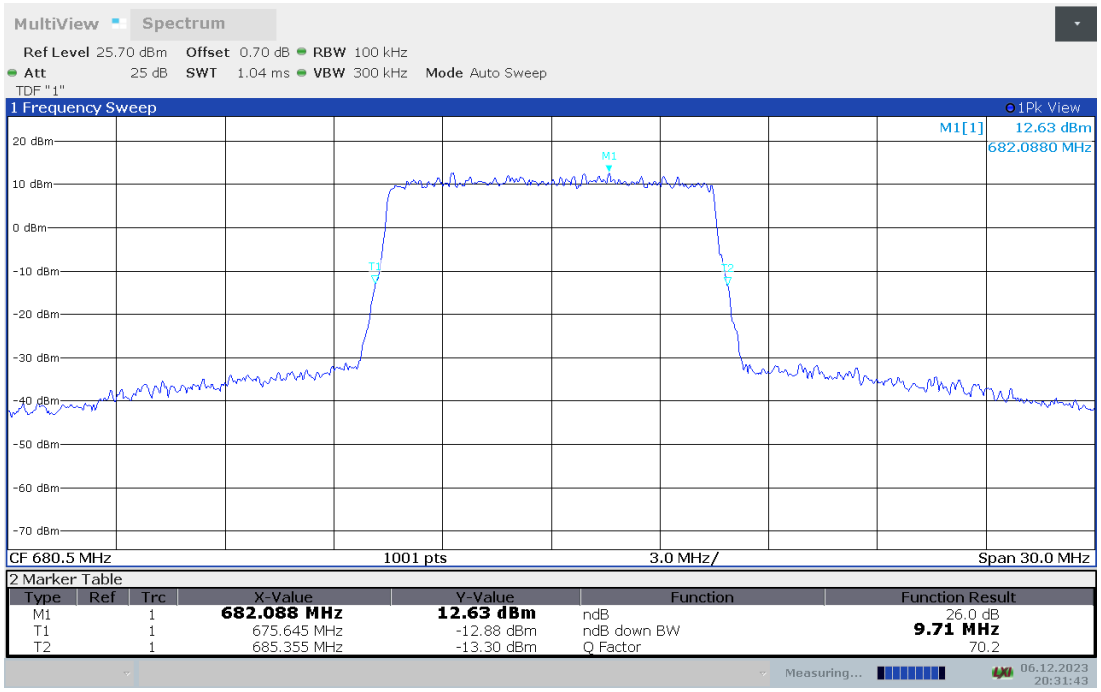
LTE band 71,10MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
680.5	9.710	9.710

LTE band 71 , 10MHz Bandwidth, MID, QPSK (-26dBc BW)



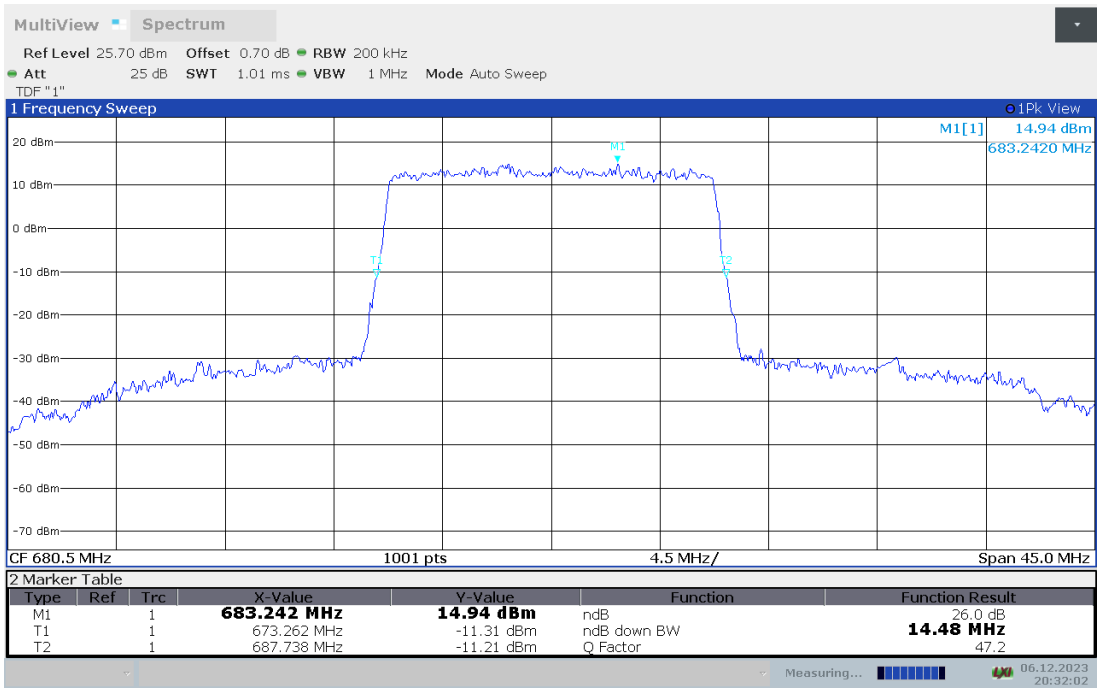
LTE band 71 , 10MHz Bandwidth, MID, 16QAM (-26dBc BW)



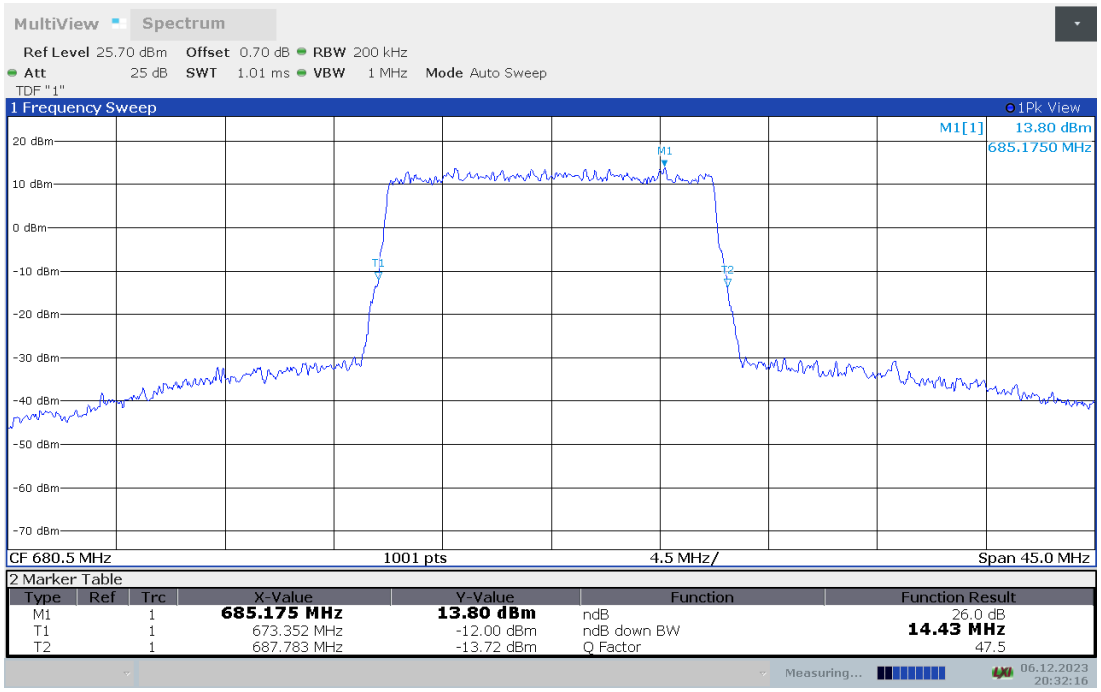
LTE band 71,15MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
680.5	14.476	14.431

LTE band 71 , 15MHz Bandwidth, MID, QPSK (-26dBc BW)



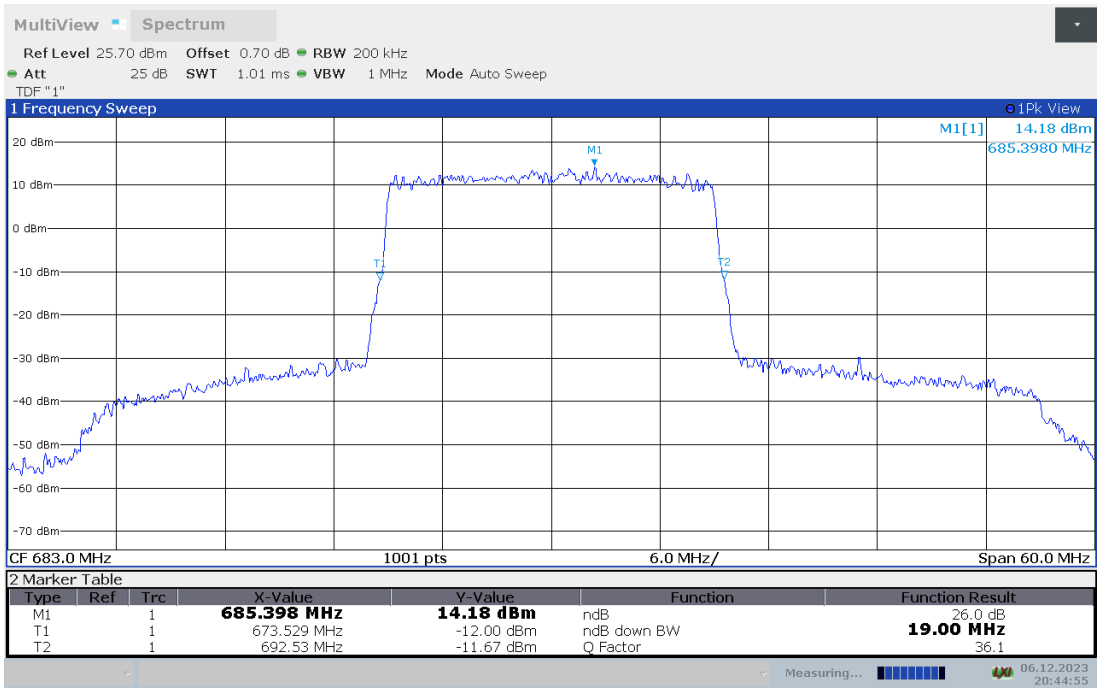
LTE band 71 , 15MHz Bandwidth, MID, 16QAM (-26dBc BW)



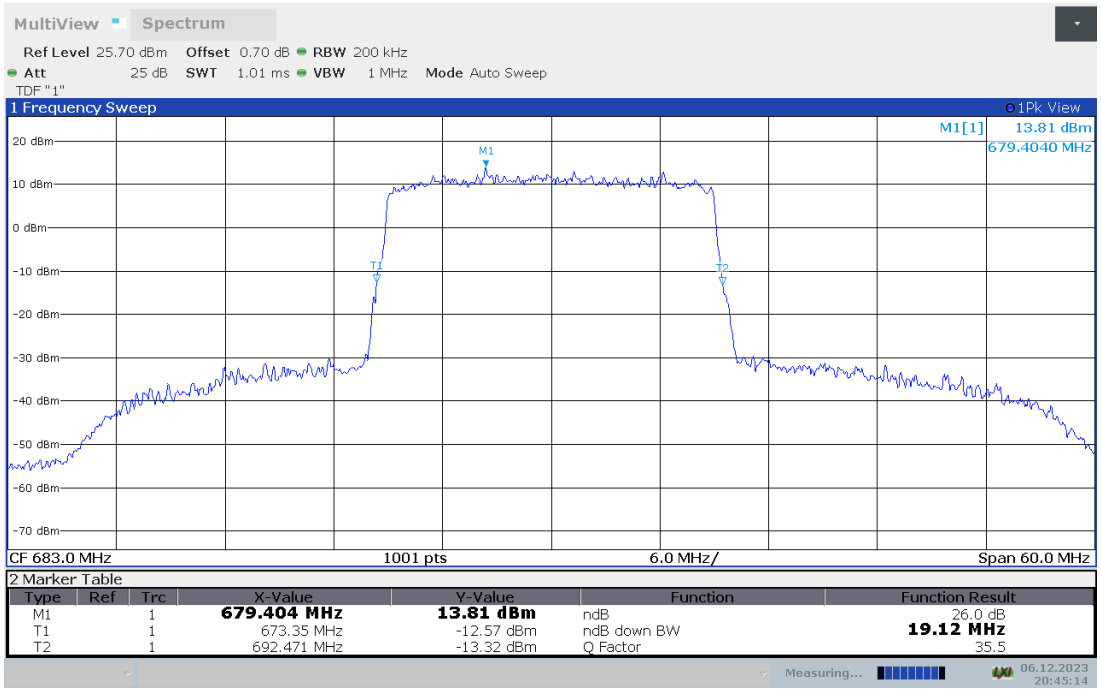
LTE band 71,20MHz(-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
683	19.001	19.121

LTE band 71 , 20MHz Bandwidth, MID, QPSK (-26dBc BW)



LTE band 71 , 20MHz Bandwidth, MID, 16QAM (-26dBc BW)



Note: Expanded measurement uncertainty is U = 3428 Hz, k = 2

A.6 BAND EDGE COMPLIANCE

A.6.1 Measurement limit

Part 22.917,Part 24.238 and Part 27.53(h) specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10 log(P) dB.

Part 27.53(c) specifies On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB; On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations; Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed; Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

Part 27.53(g) specifies operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Part 27.53(m) specifies for mobile digital stations, the attenuation factor shall be not less than 40+ 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part 90.691 states that out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency

removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

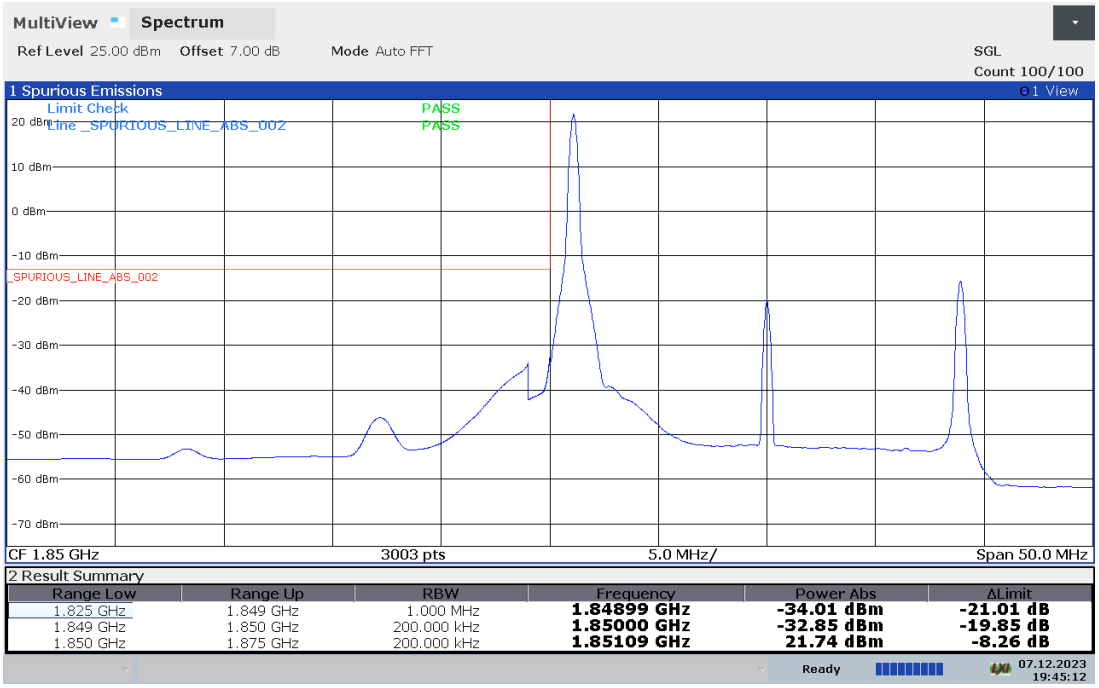
The spectrum analyzer readings are corrected by [10 log (1/duty cycle)] for the non-continuous transmitting scenario.

A.6.2 Measurement result

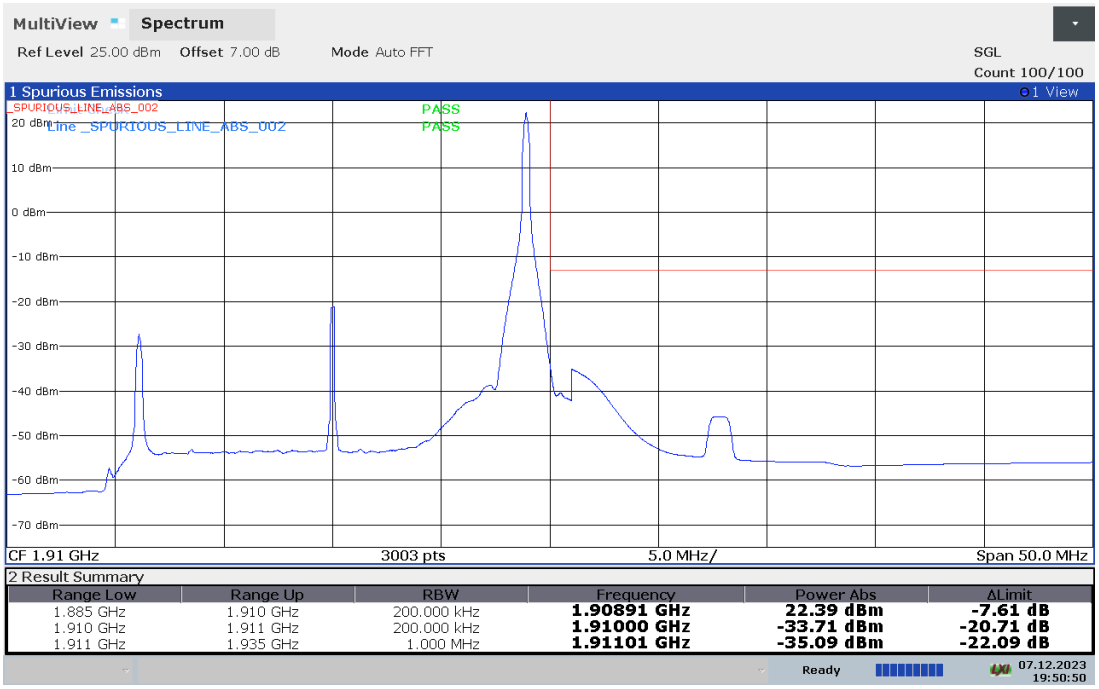
Only worst case result is given below

LTE band 2

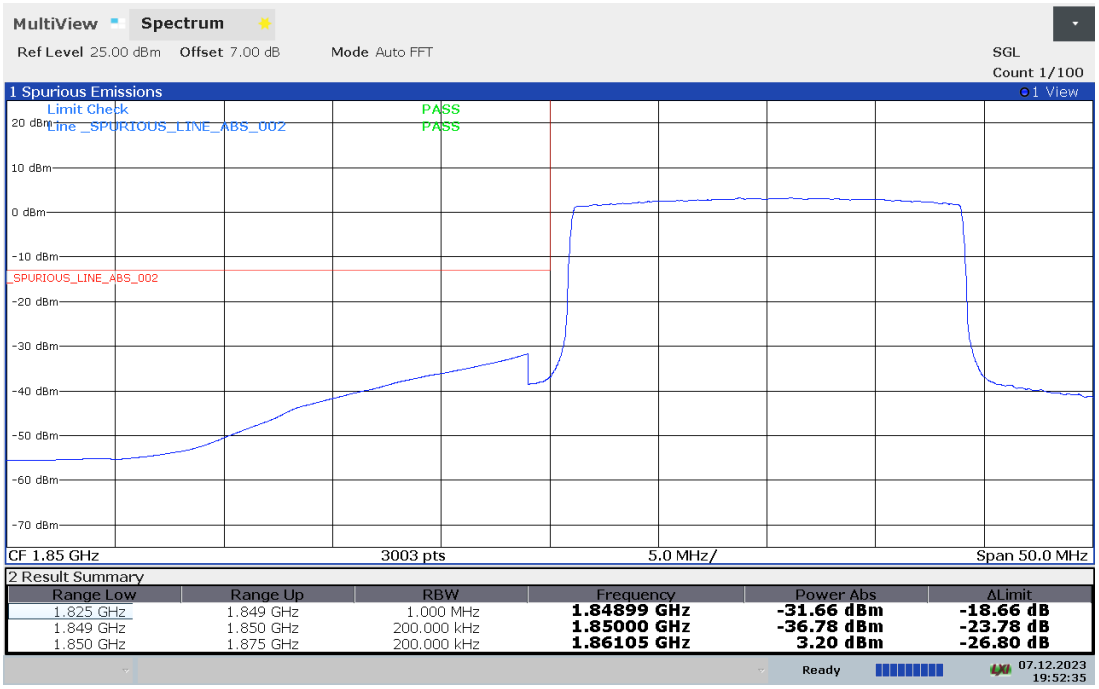
LOW BAND EDGE BLOCK-1RB-low_offset



HIGH BAND EDGE BLOCK-1RB-high_offset



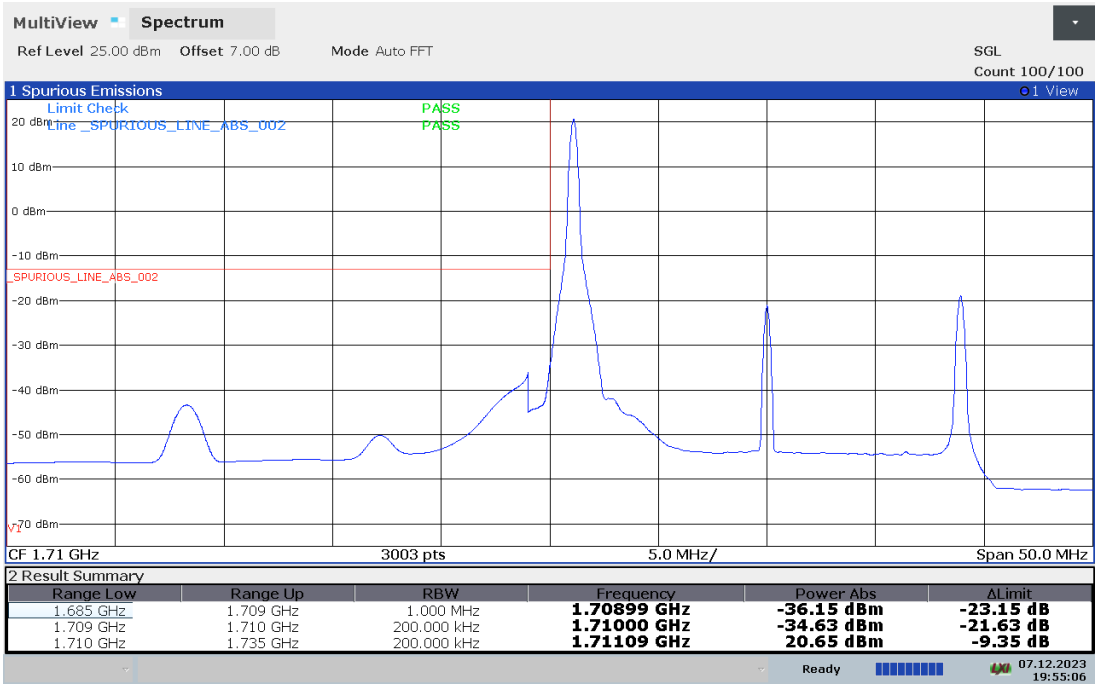
LOW BAND EDGE BLOCK-20MHz-100%RB



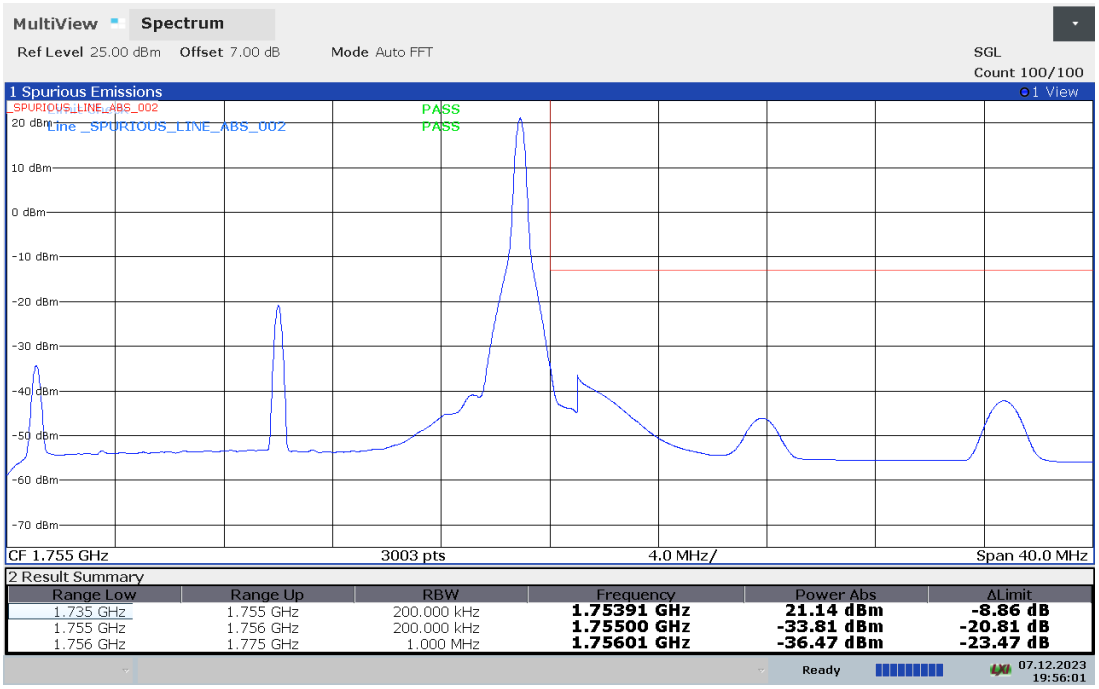
HIGH BAND EDGE BLOCK-20MHz-100%RB

LTE band 4

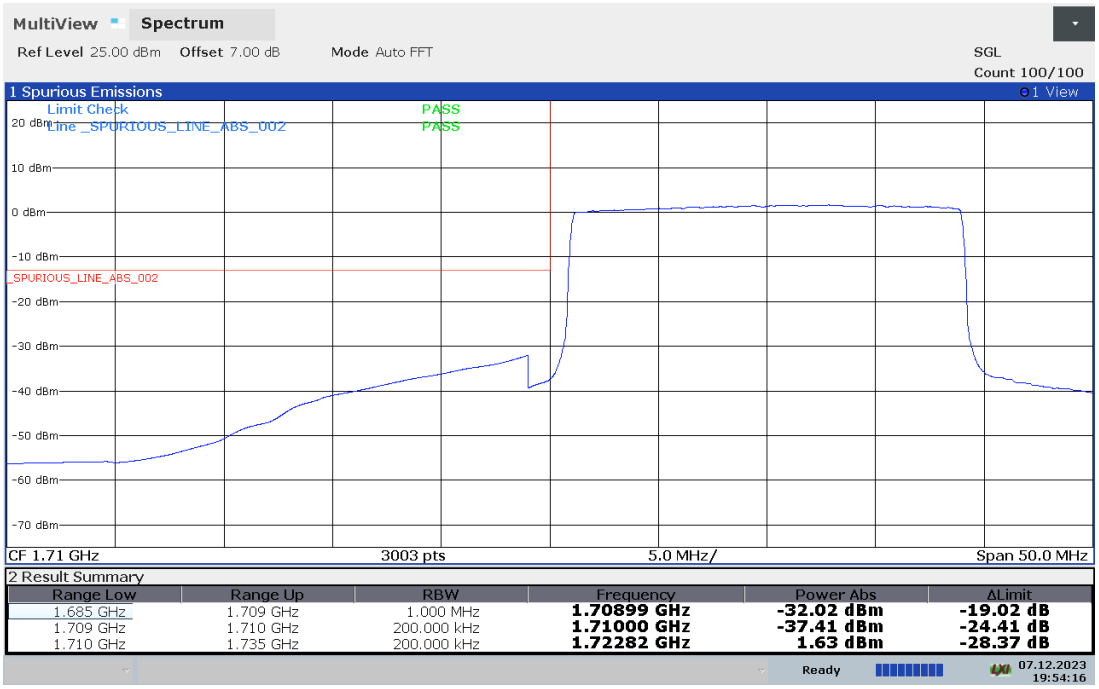
LOW BAND EDGE BLOCK-1RB-low_offset



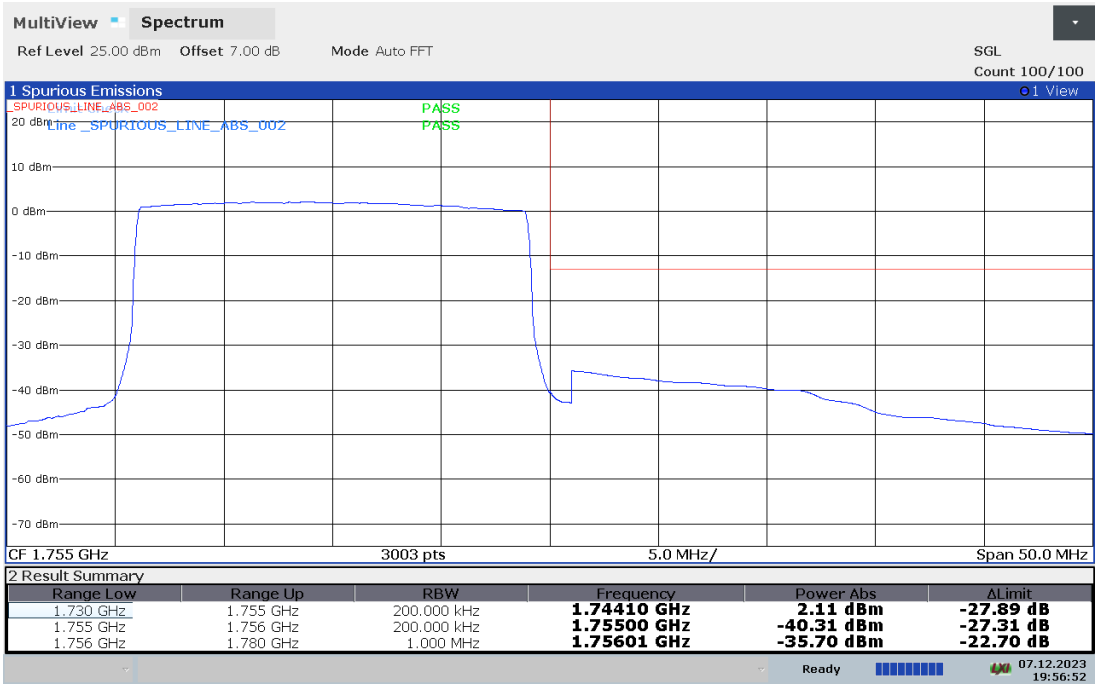
HIGH BAND EDGE BLOCK-1RB-high_offset



LOW BAND EDGE BLOCK-20MHz-100%RB

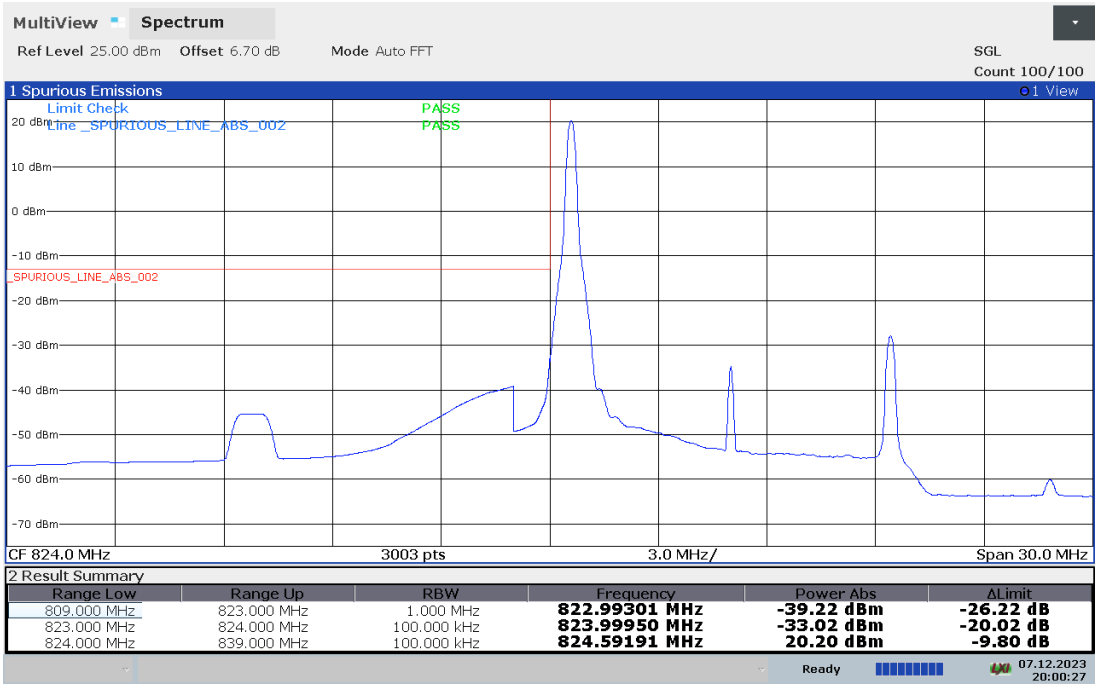


HIGH BAND EDGE BLOCK-20MHz-100%RB

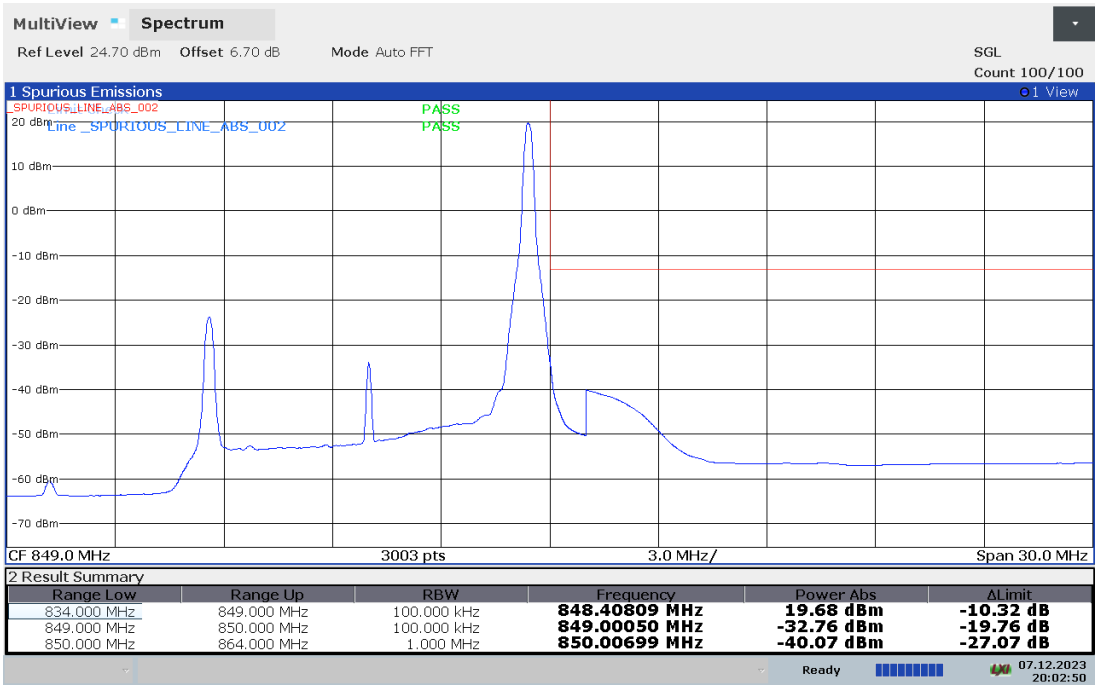


LTE band 5

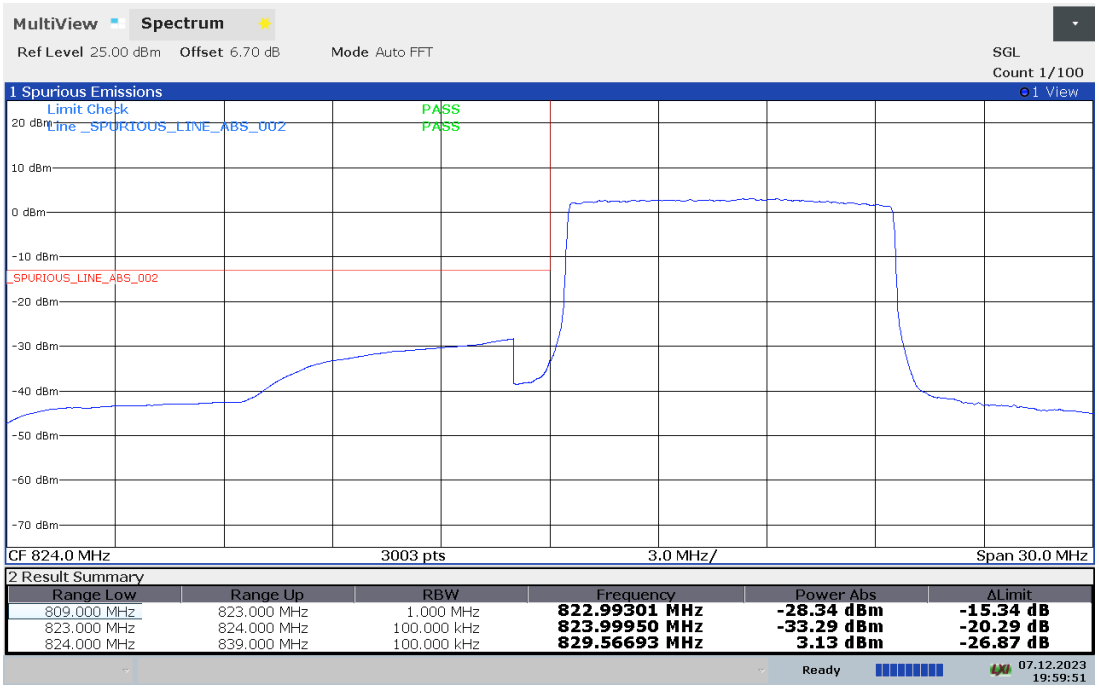
LOW BAND EDGE BLOCK-1RB-low_offset



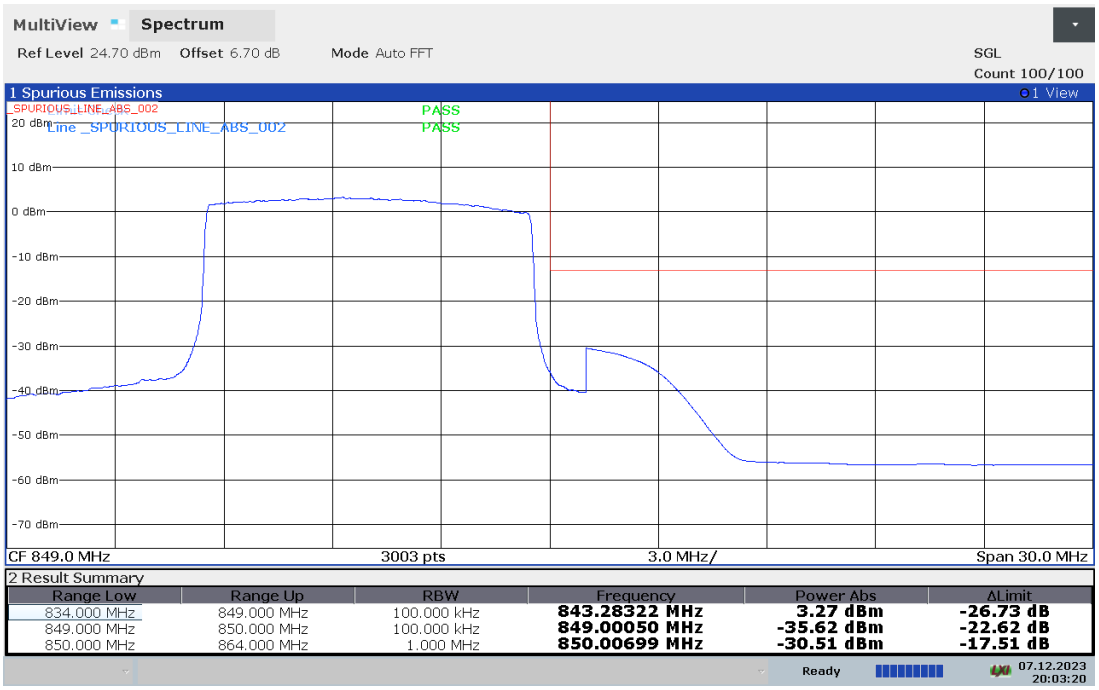
HIGH BAND EDGE BLOCK-1RB-high_offset



LOW BAND EDGE BLOCK-10MHz-100%RB

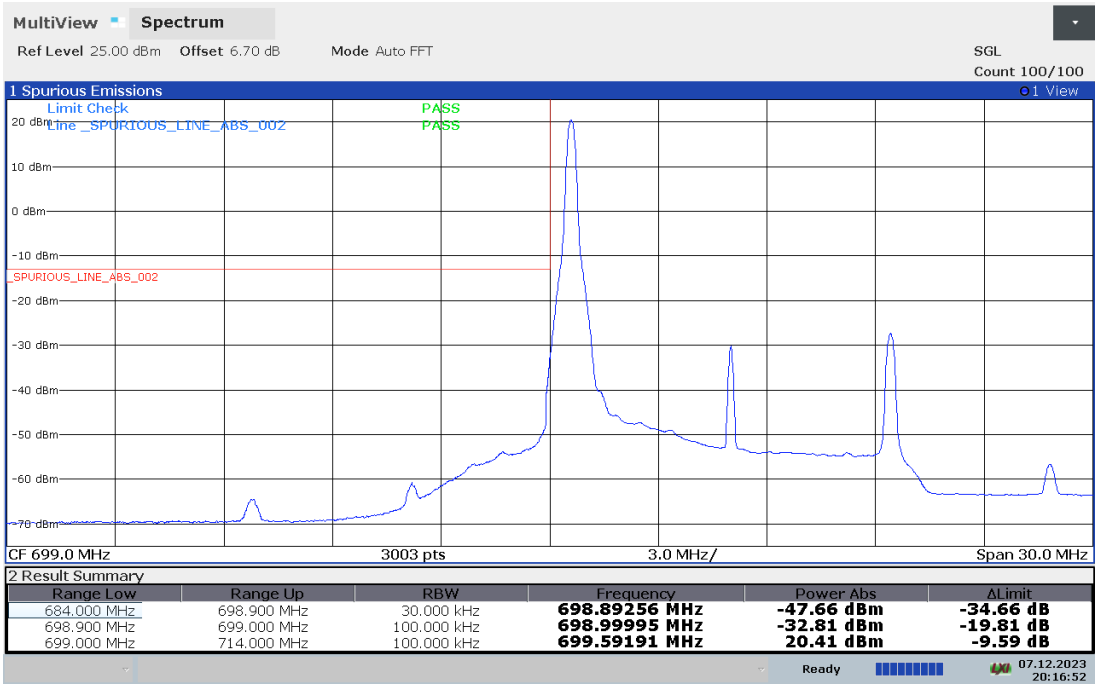


HIGH BAND EDGE BLOCK-10MHz-100%RB

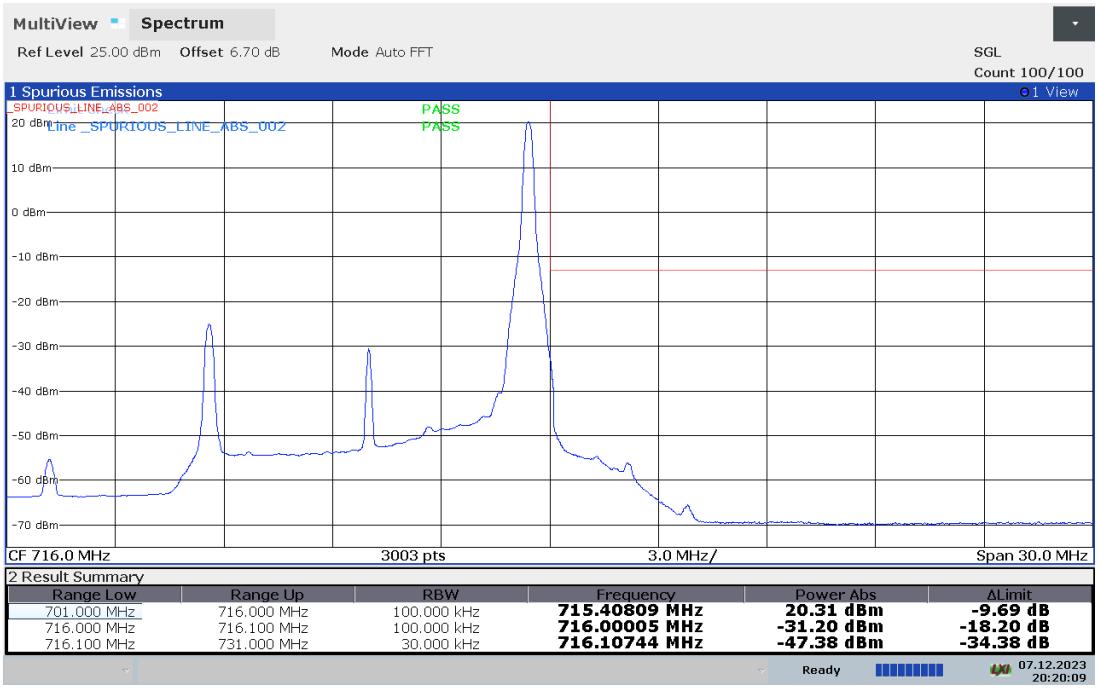


LTE band 12

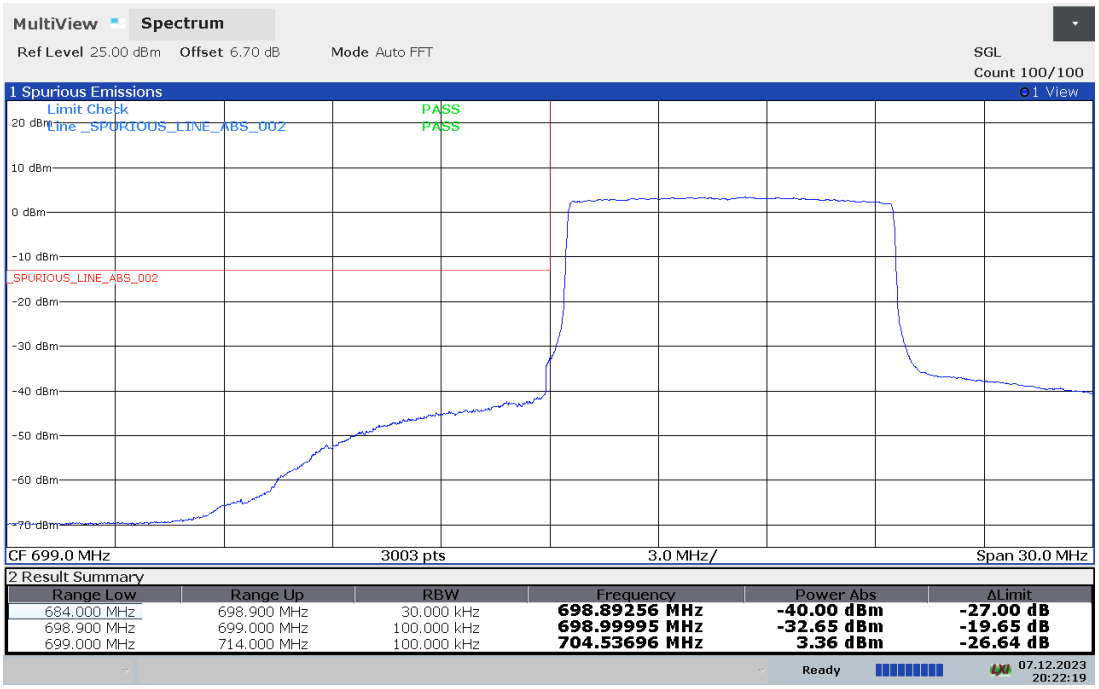
LOW BAND EDGE BLOCK-1RB-low_offset



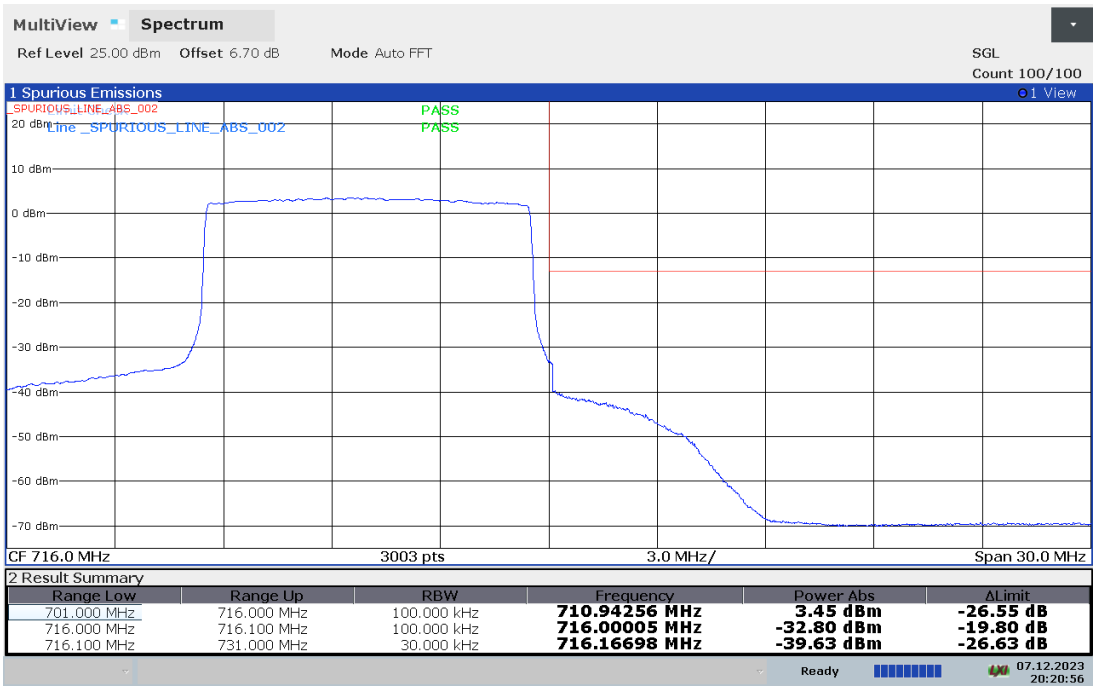
HIGH BAND EDGE BLOCK-1RB-high_offset



LOW BAND EDGE BLOCK-10MHz-100%RB

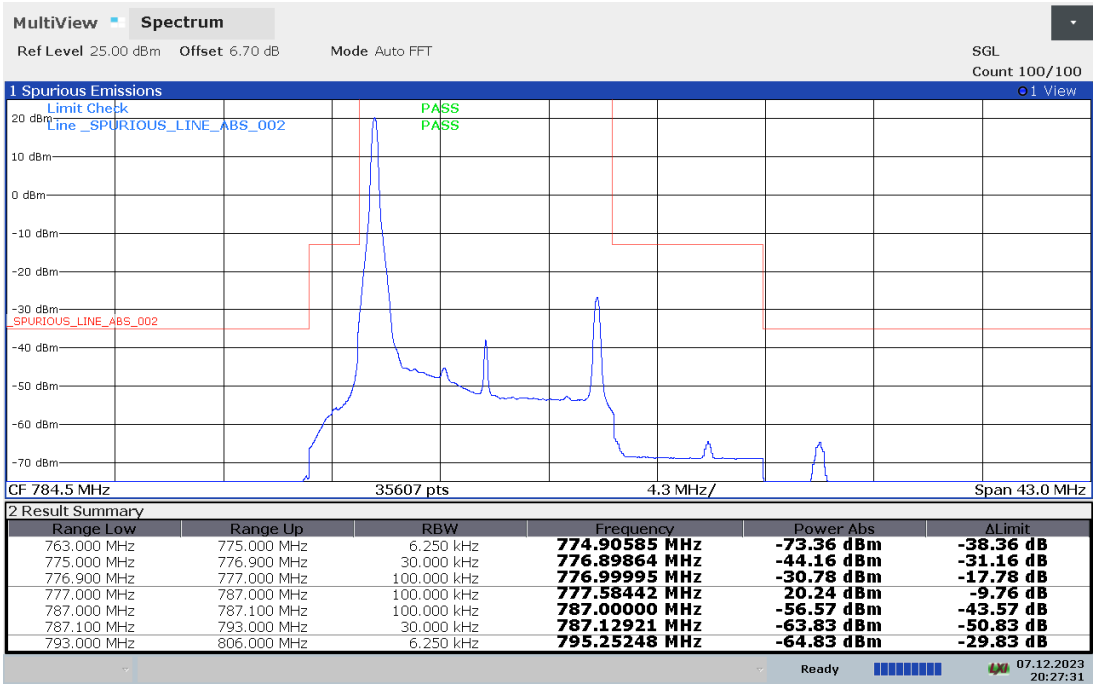


HIGH BAND EDGE BLOCK-10MHz-100%RB

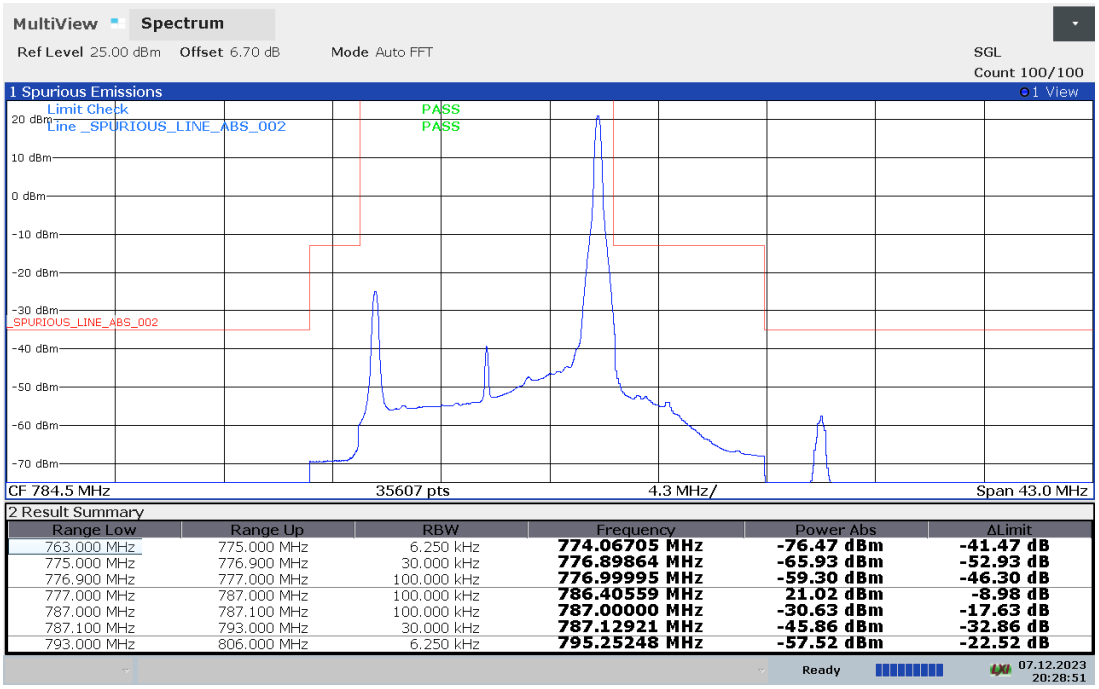


LTE band 13

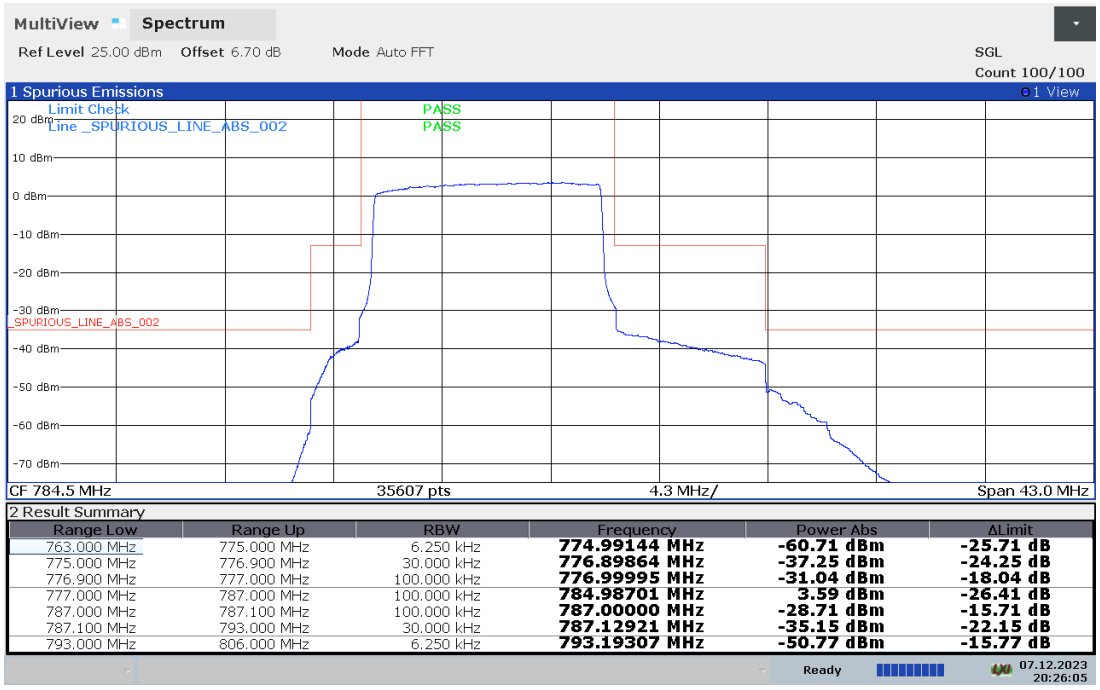
LOW BAND EDGE BLOCK-1RB-low_offset



HIGH BAND EDGE BLOCK-1RB-high_offset

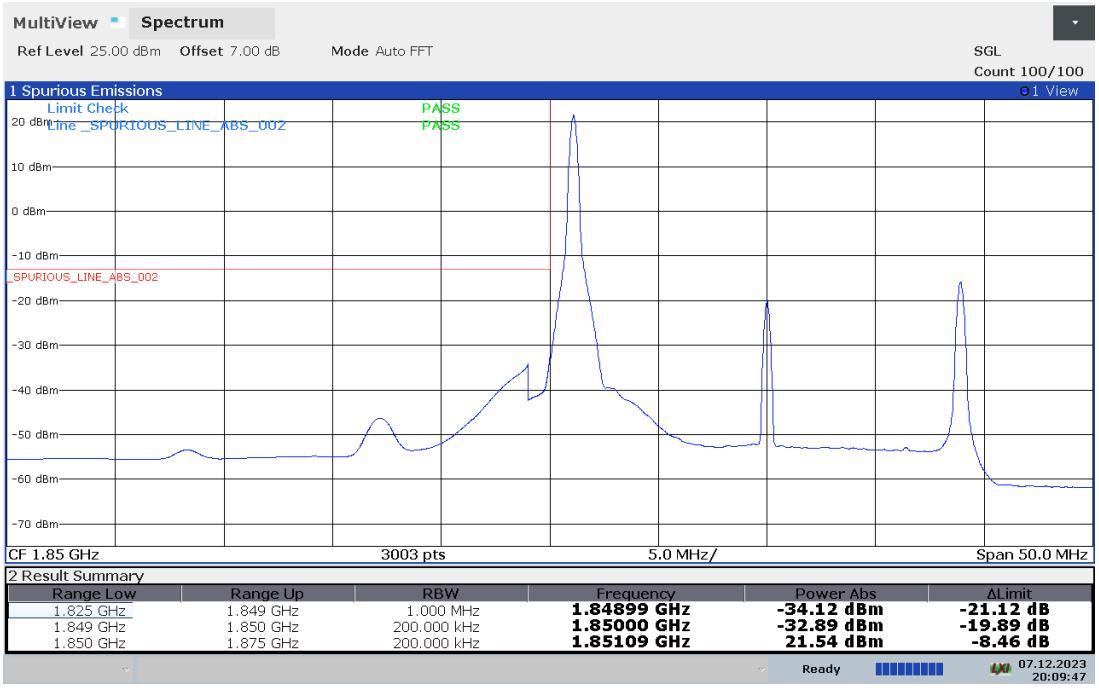


EDGE BLOCK-10MHz-100%RB

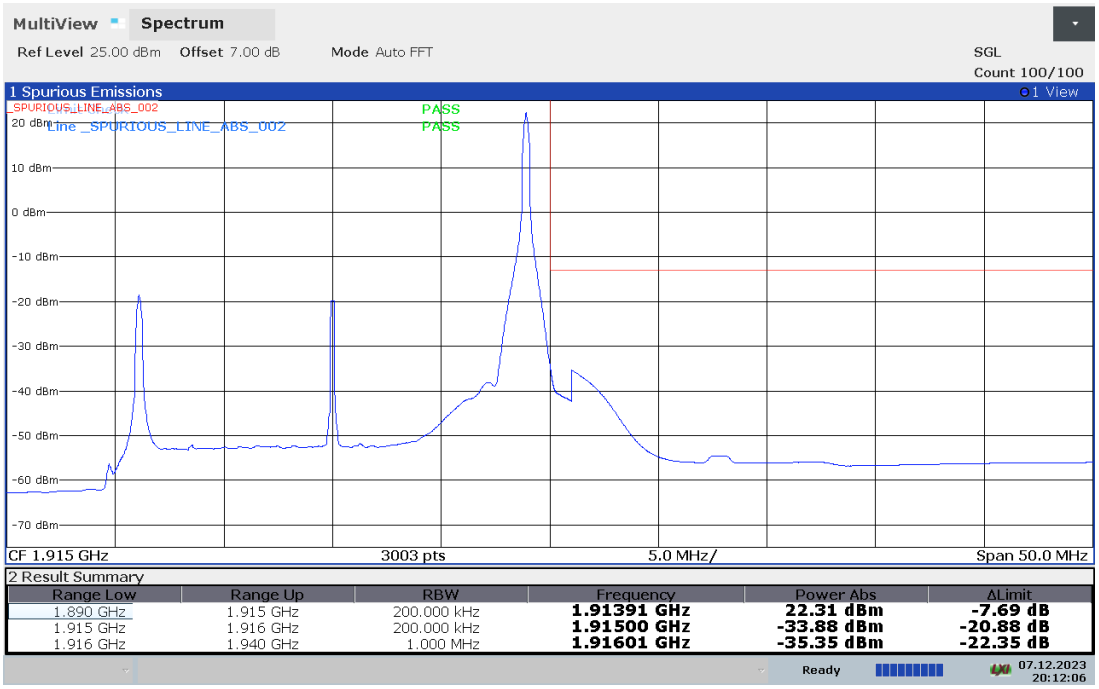


LTE band 25

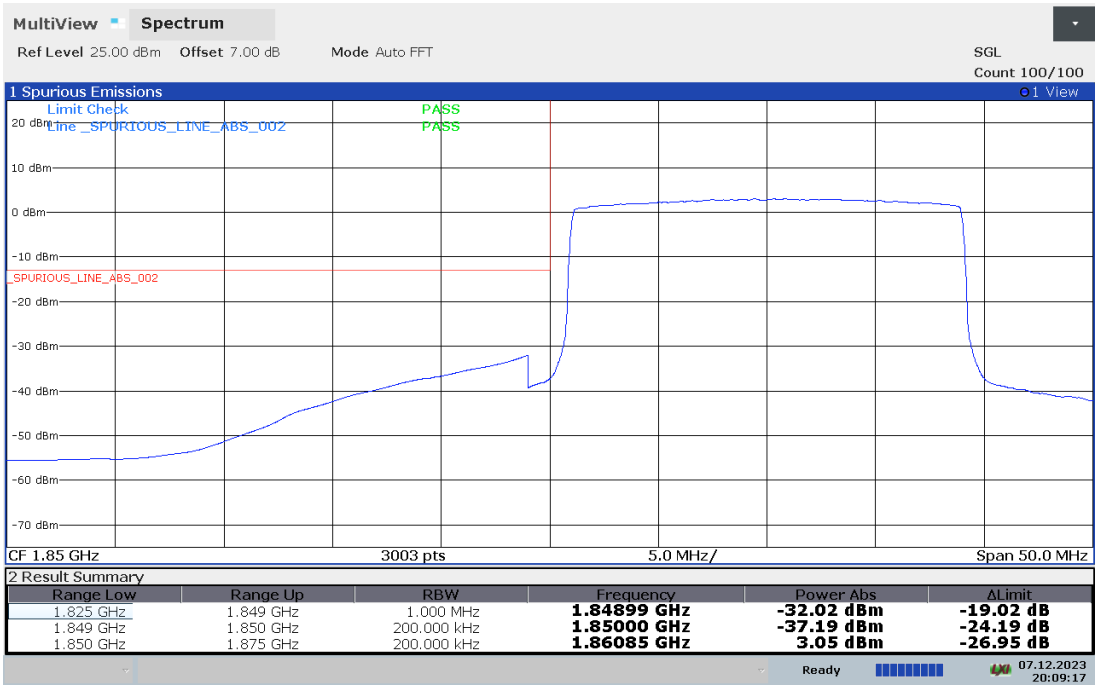
LOW BAND EDGE BLOCK-1RB-low_offset



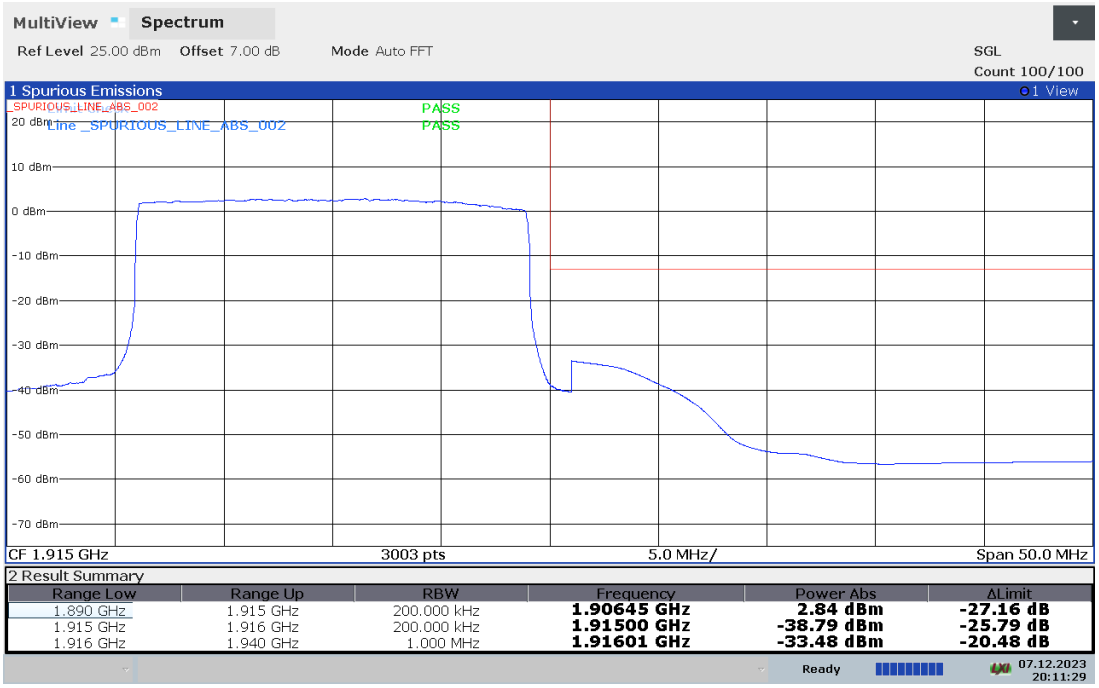
HIGH BAND EDGE BLOCK-1RB-high_offset



LOW BAND EDGE BLOCK-20MHz-100%RB

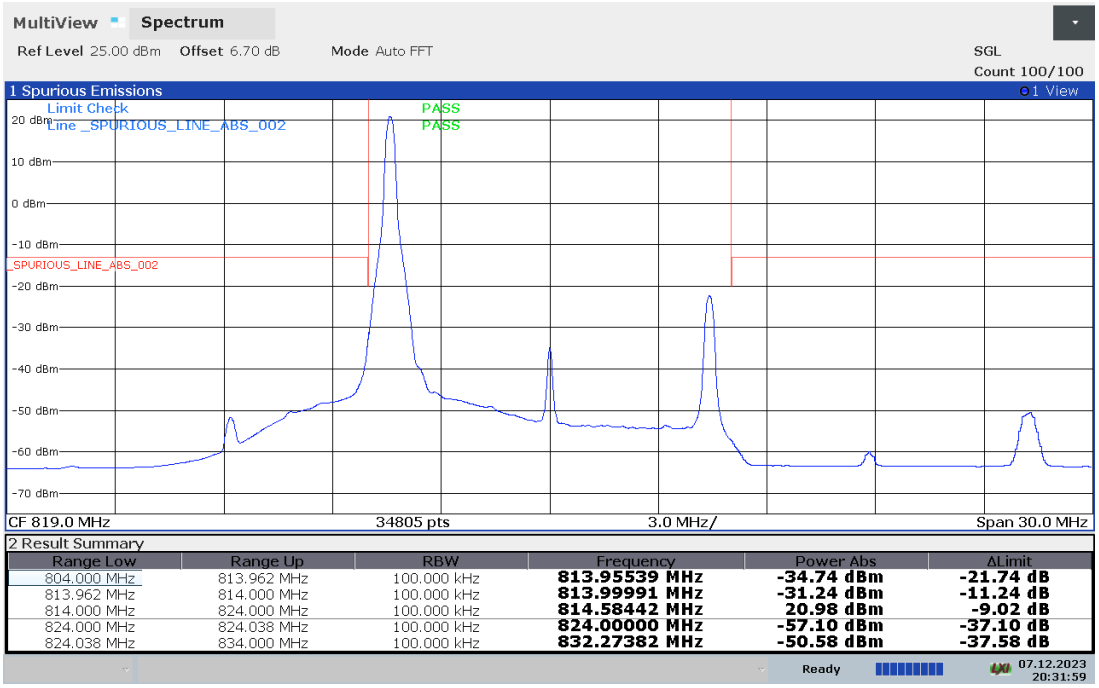


HIGH BAND EDGE BLOCK-20MHz-100%RB

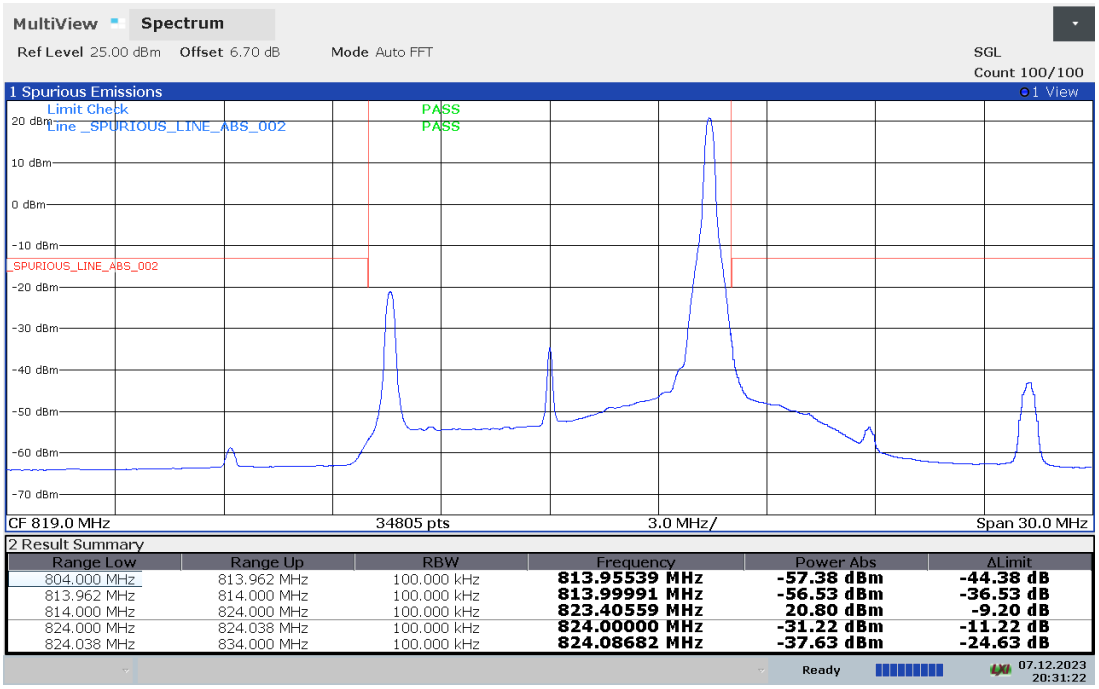


LTE band 26(814MHz-824MHz)

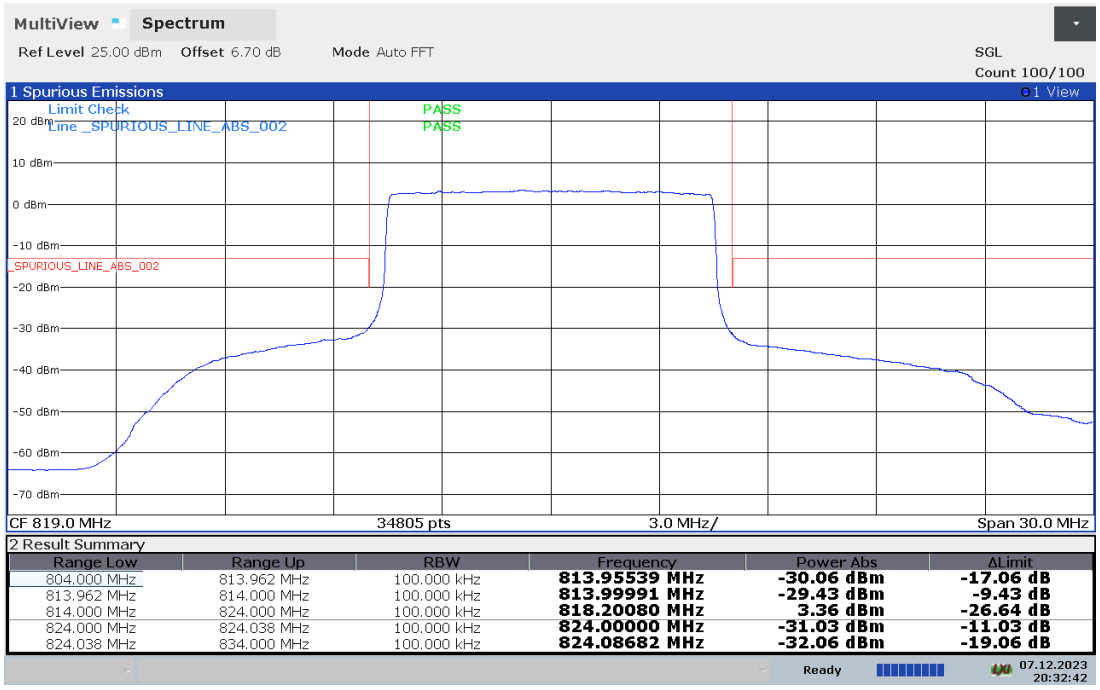
LOW BAND EDGE BLOCK-1RB-low_offset



HIGH BAND EDGE BLOCK-1RB-high_offset

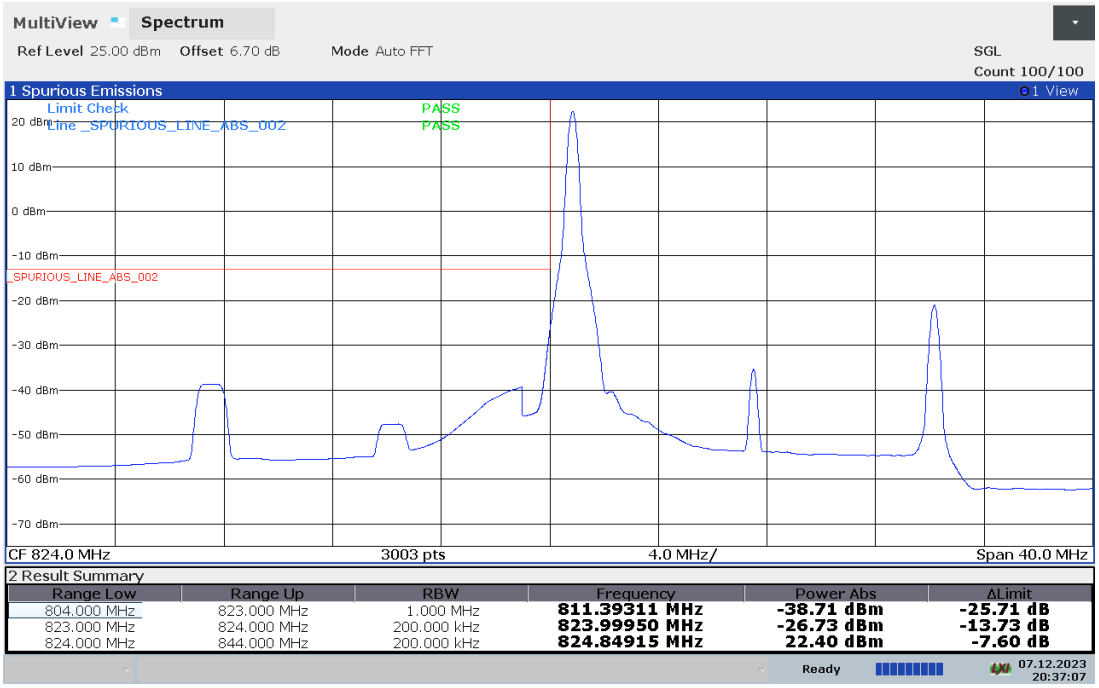


BAND EDGE BLOCK-10MHz-100%RB

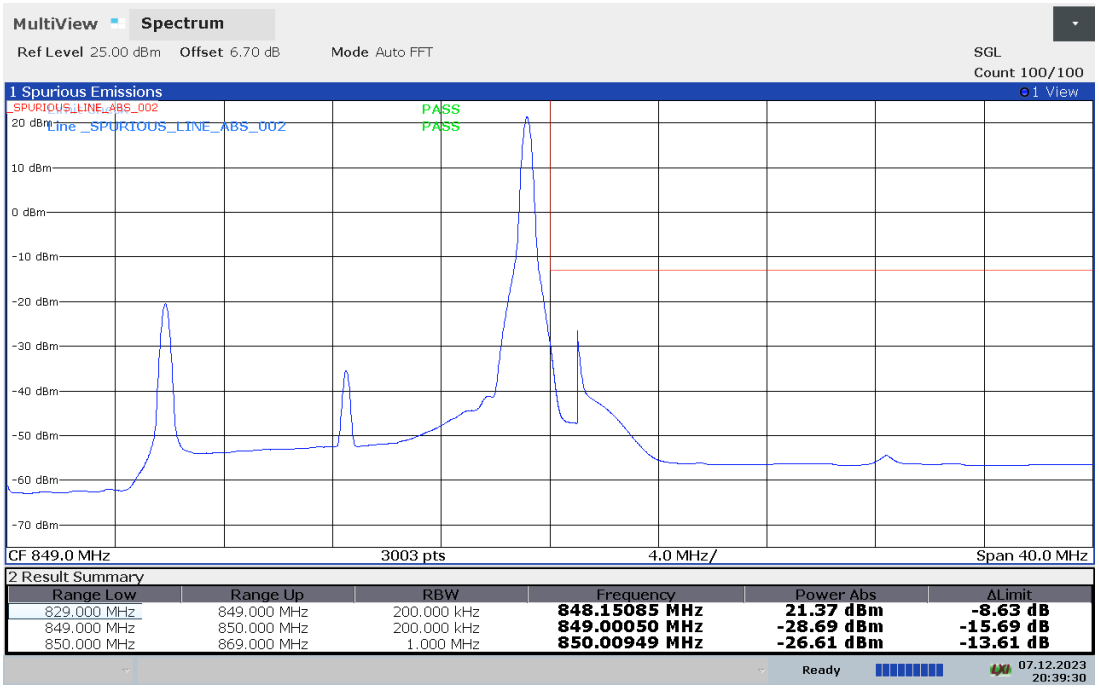


LTE band 26(824MHz-849MHz)

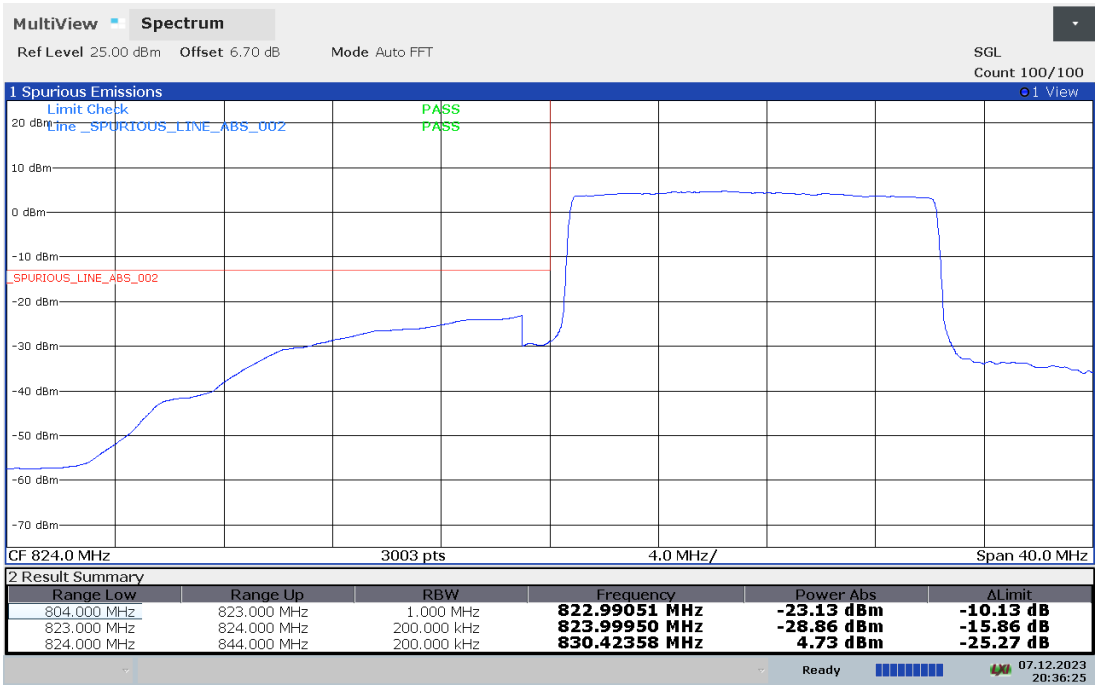
LOW BAND EDGE BLOCK-1RB-low_offset



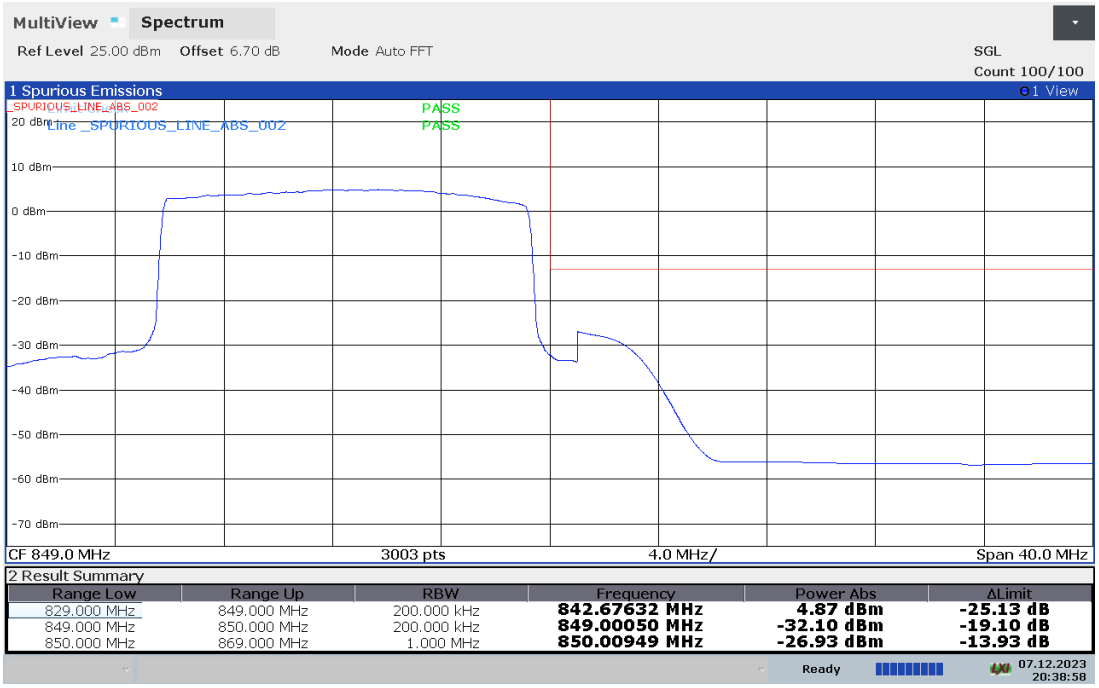
HIGH BAND EDGE BLOCK-1RB-high_offset



LOW BAND EDGE BLOCK-15MHz-100%RB

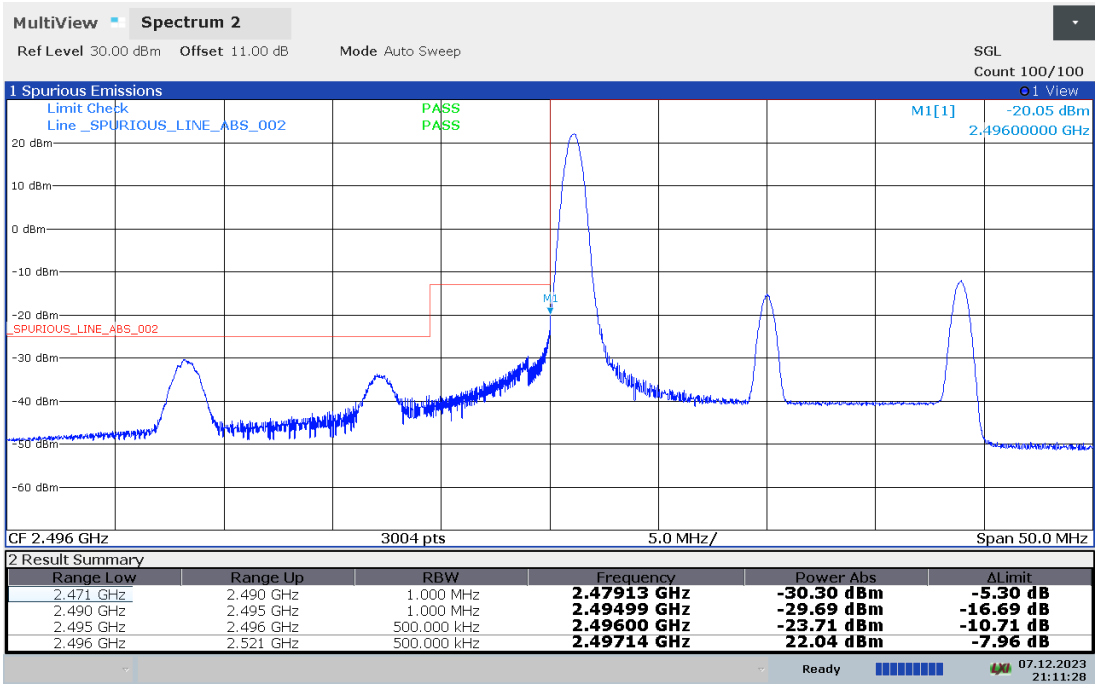


HIGH BAND EDGE BLOCK-15MHz-100%RB

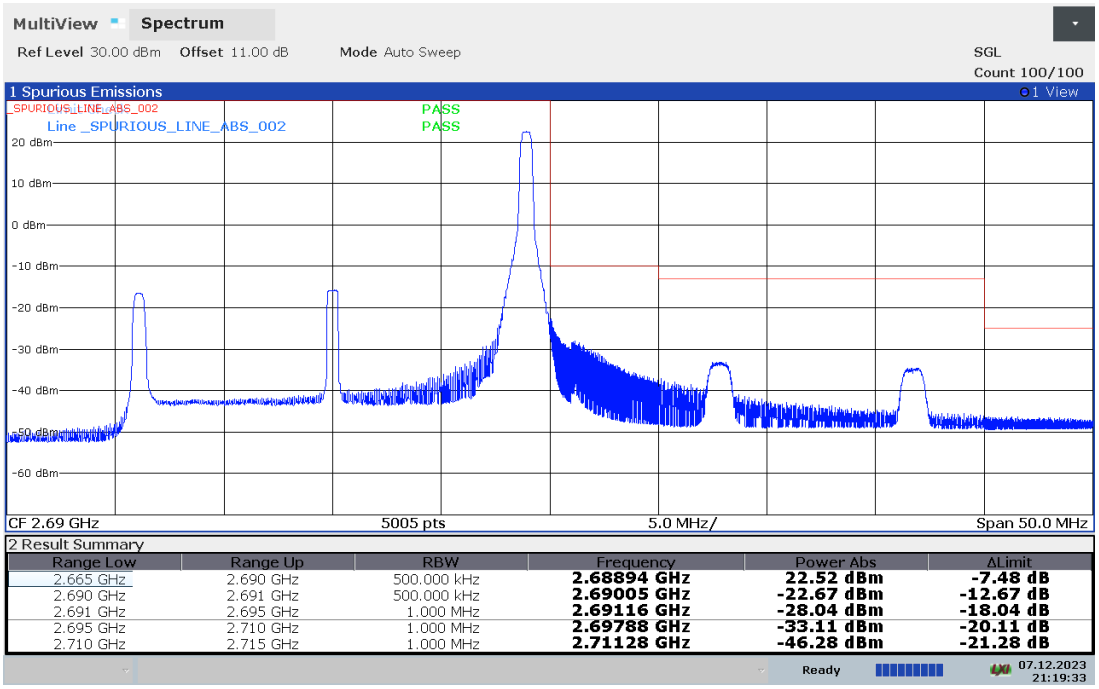


LTE band 41

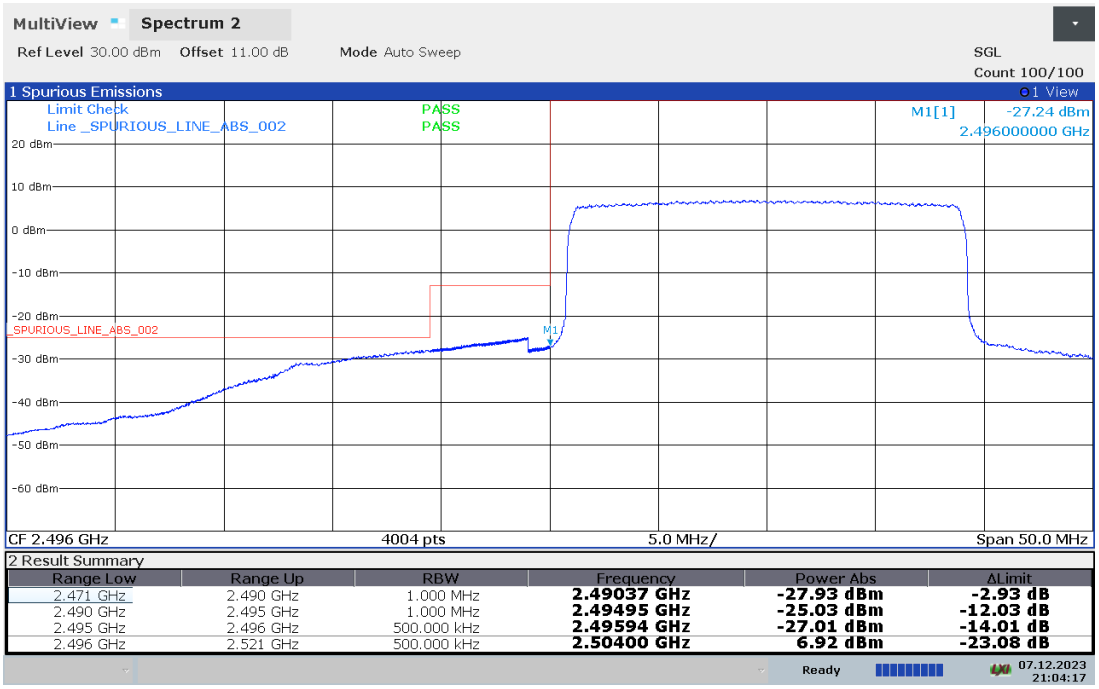
LOW BAND EDGE BLOCK-1RB-low_offset



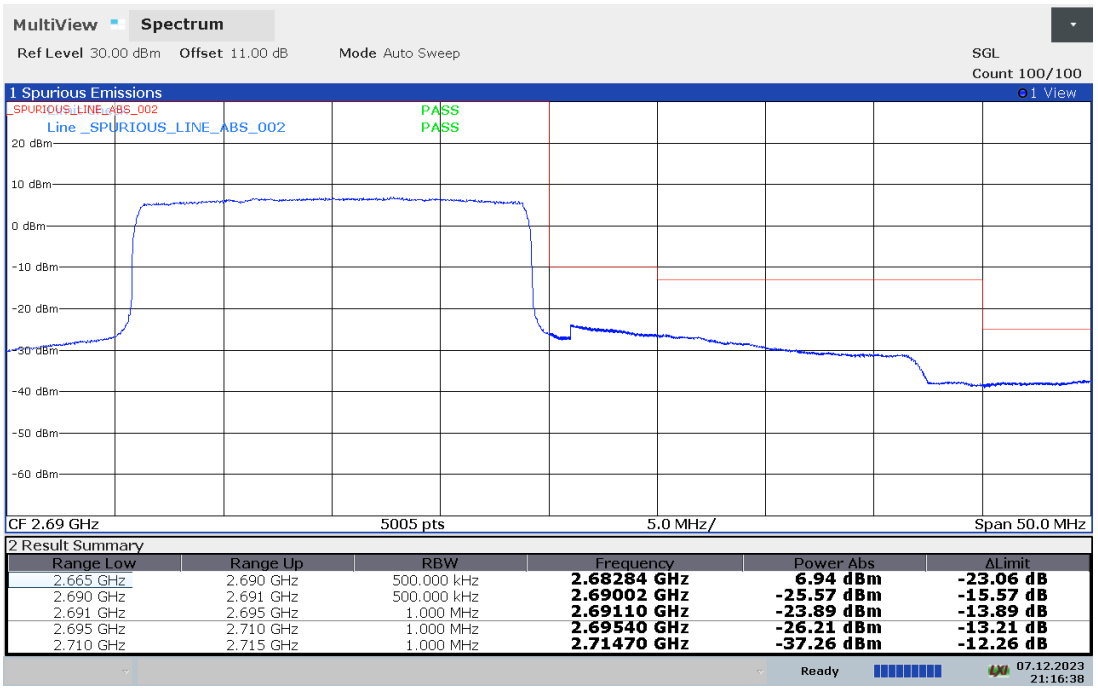
HIGH BAND EDGE BLOCK-1RB-high_offset



LOW BAND EDGE BLOCK-20MHz-100%RB

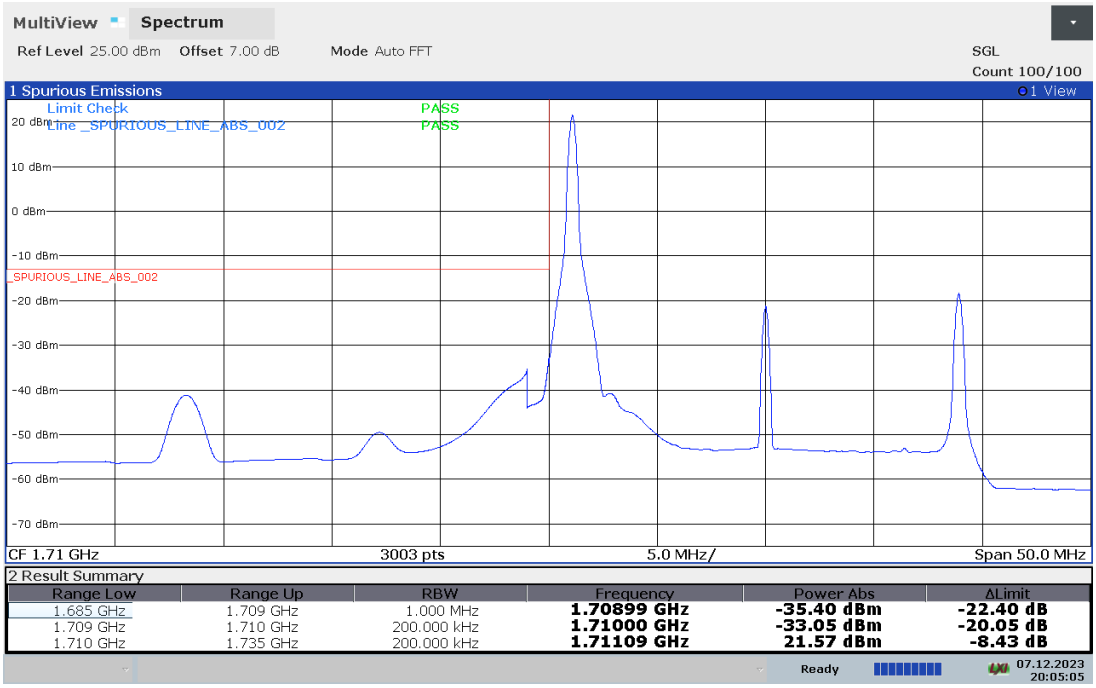


HIGH BAND EDGE BLOCK-20MHz-100%RB

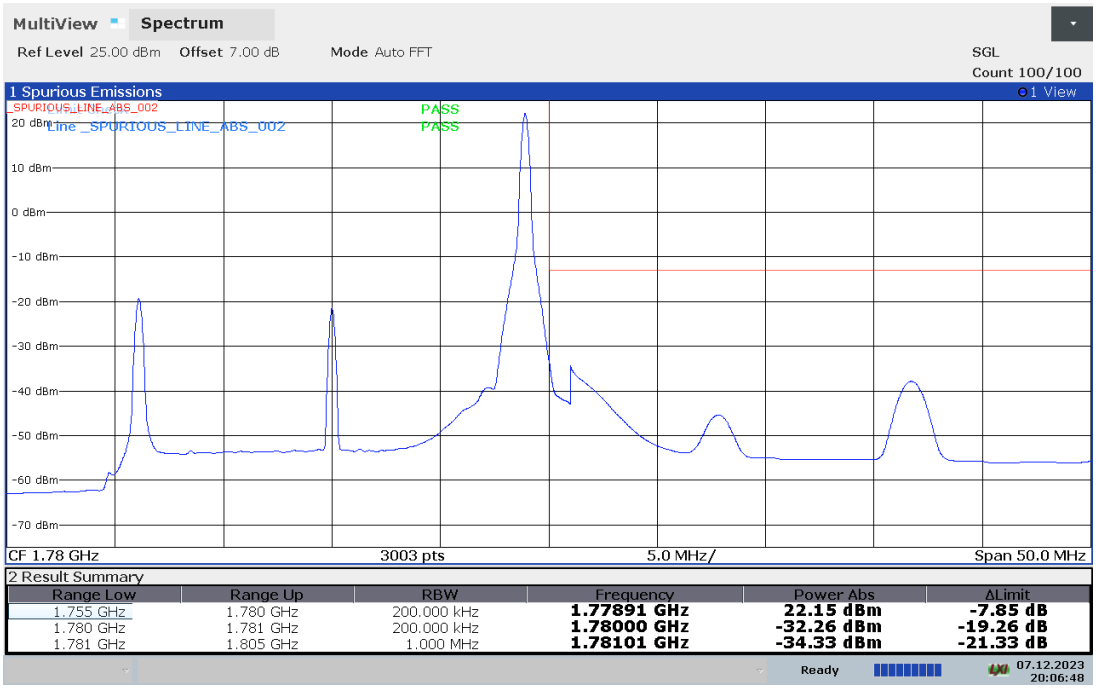


LTE band 66

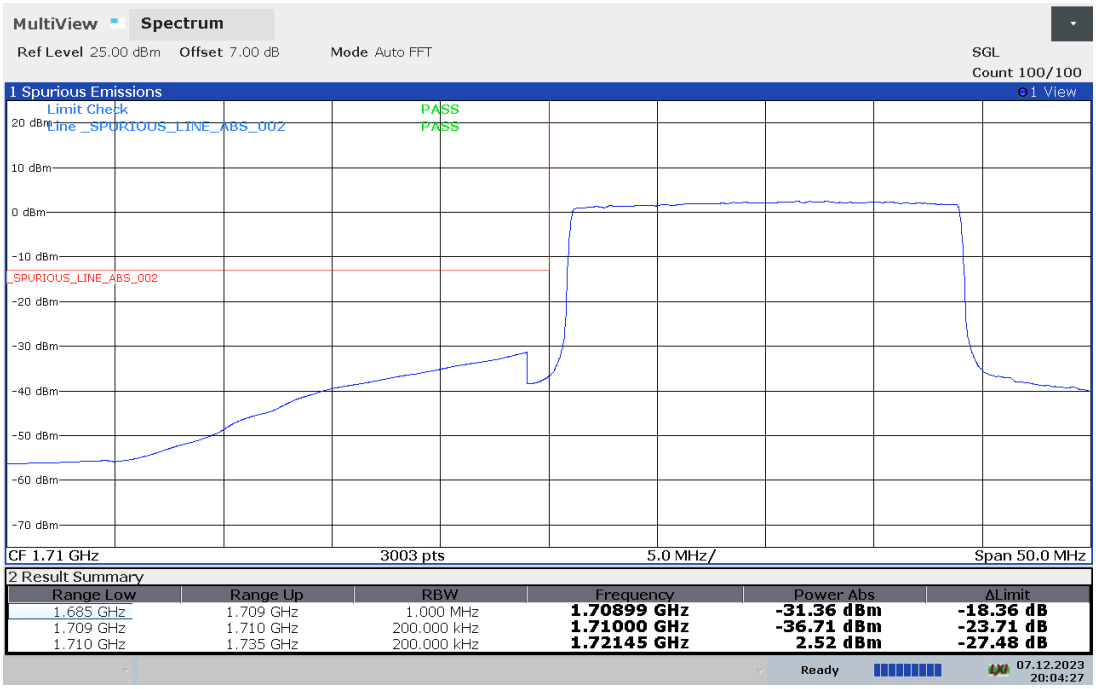
LOW BAND EDGE BLOCK-1RB-low_offset



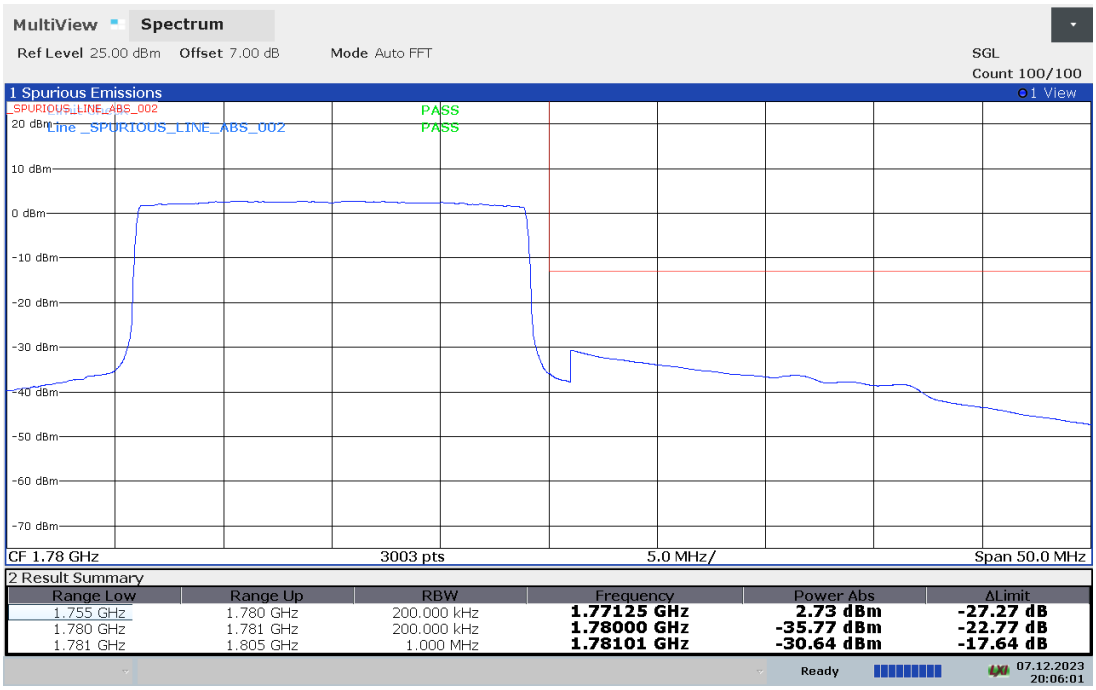
HIGH BAND EDGE BLOCK-1RB-high_offset



LOW BAND EDGE BLOCK-20MHz-100%RB

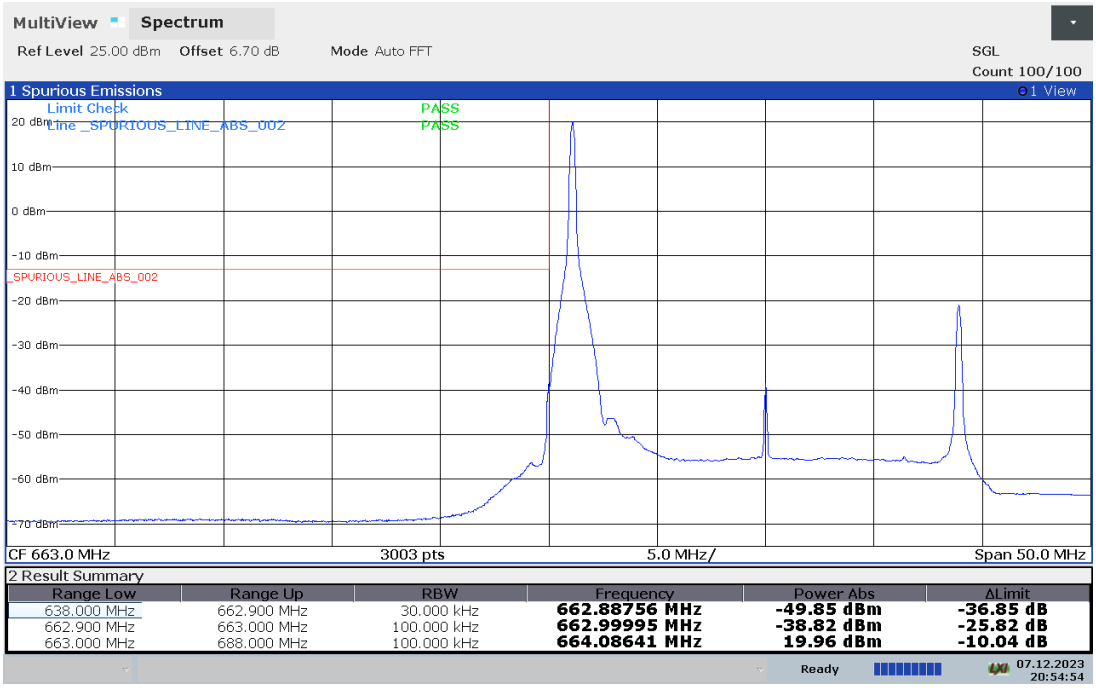


HIGH BAND EDGE BLOCK-20MHz-100%RB

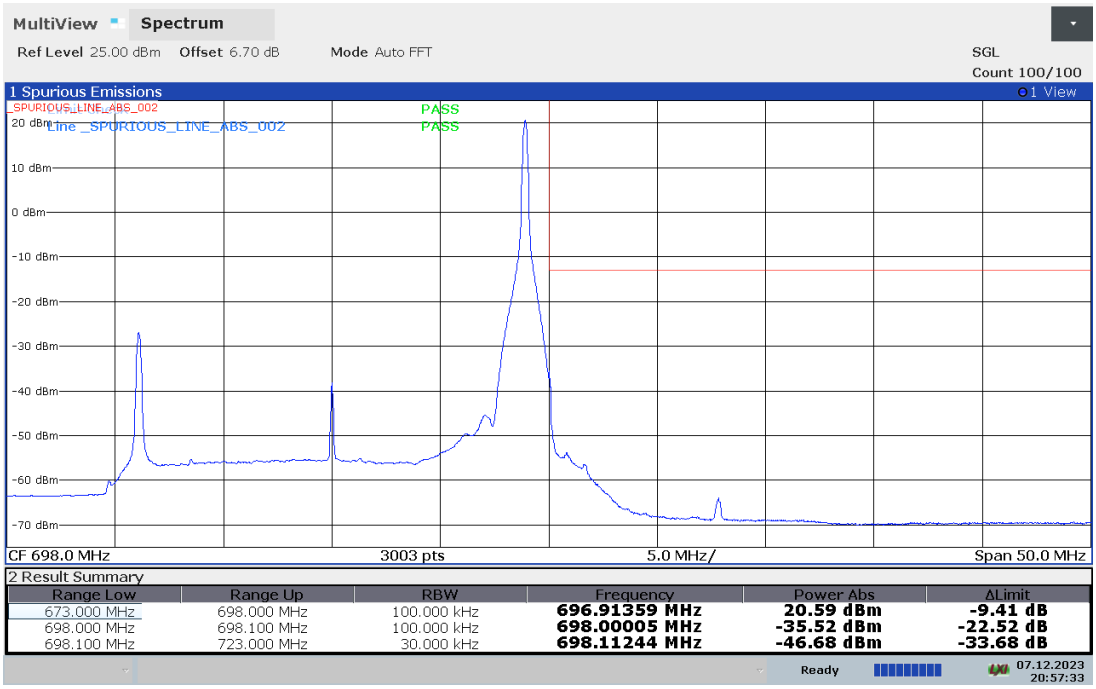


LTE band 71

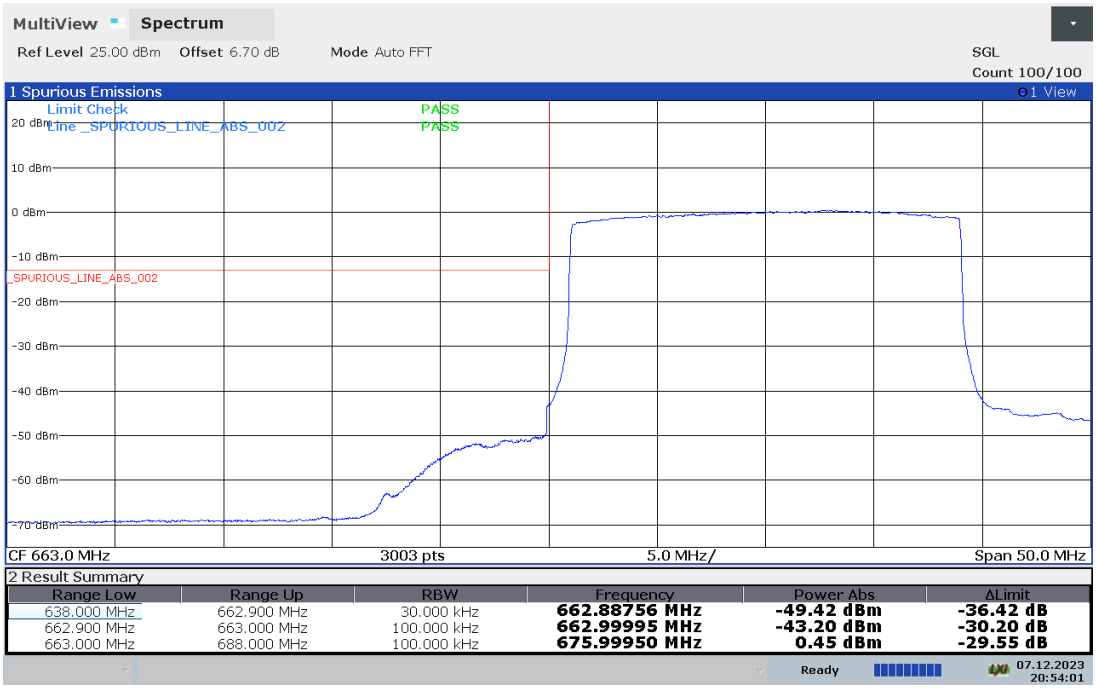
LOW BAND EDGE BLOCK-1RB-low_offset



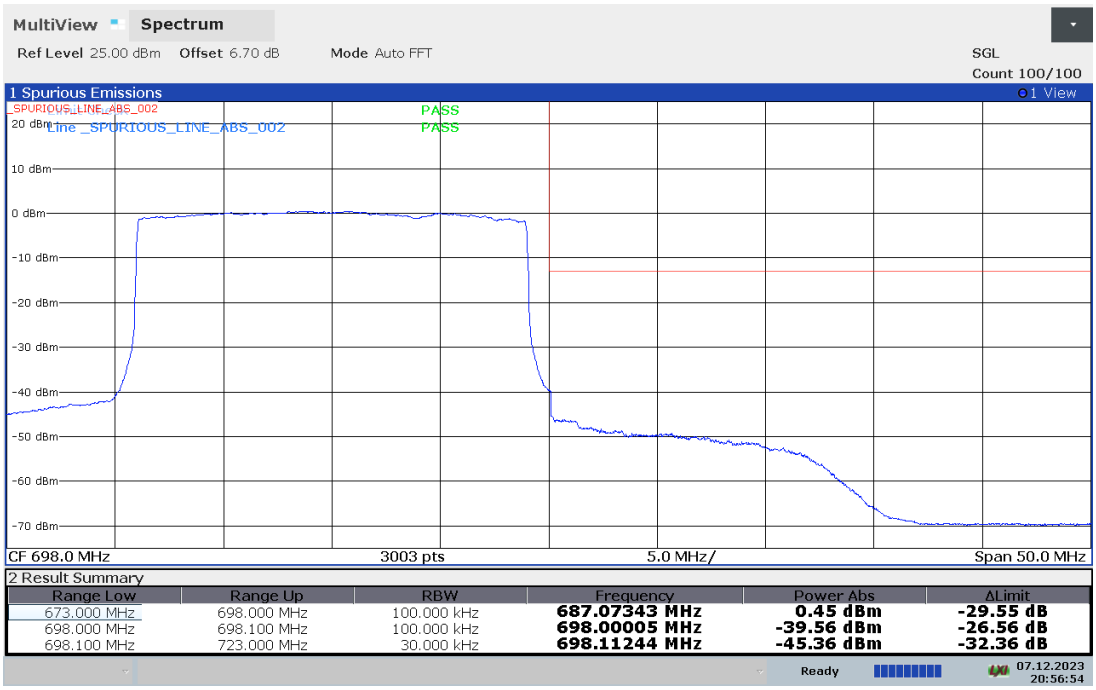
HIGH BAND EDGE BLOCK-1RB-high_offset



LOW BAND EDGE BLOCK-20MHz-100%RB



HIGH BAND EDGE BLOCK-20MHz-100%RB



Note: Expanded measurement uncertainty is U = 0.49dB(100KHz-2GHz)/1.21dB(2GHz-26.5GHz), k = 1.96

A.7 CONDUCTED SPURIOUS EMISSION

A.7.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. In measuring unwanted emissions, the spectrum shall be investigated from 30 MHz or the lowest radio frequency signal generated in the equipment, whichever is lower, without going below 9 kHz, up to at least the frequency given below:
   a) If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
   b) If the equipment operates at or above 10 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.
3. The number of sweep points of spectrum analyzer is greater than 2×span/RBW

A. 7.2 Measurement Limit

Part 22.917,Part 24.238 and Part 27.53(h) specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10 log(P) dB.

Part 27.53(c) specifies On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB; On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations; Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed; Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

Part 27.53(g) specifies operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Part 27.53(m) specifies for mobile digital stations, the attenuation factor shall be not less than 40+ 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below

2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
Part 90.691 states that out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

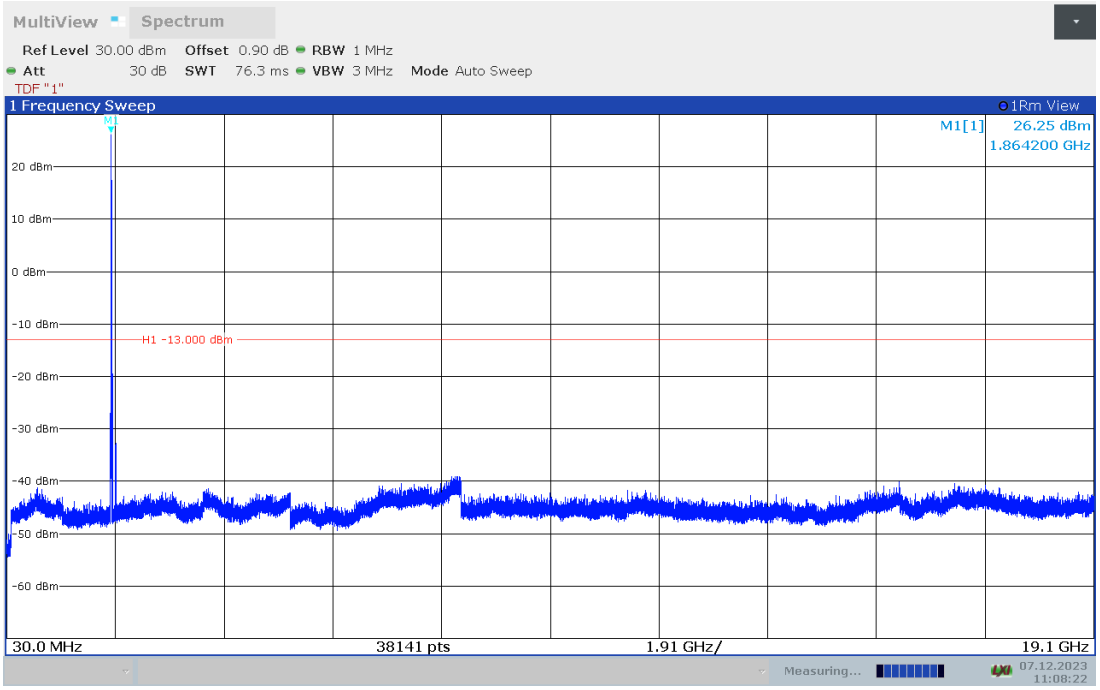
A. 7.3 Measurement result

Only worst case result is given below

LTE band 2 : 30MHz – 19.1GHz

Spurious emission limit –13dBm.

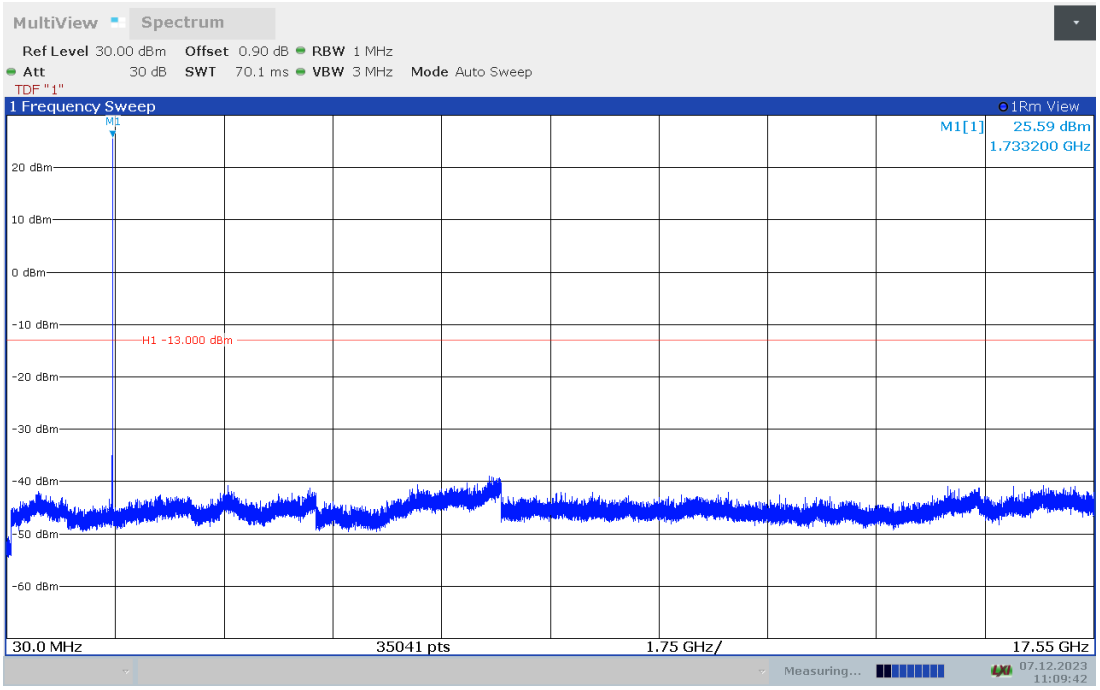
NOTE: peak above the limit line is the carrier frequency.



LTE band 4 : 30MHz – 17.55GHz

Spurious emission limit –13dBm.

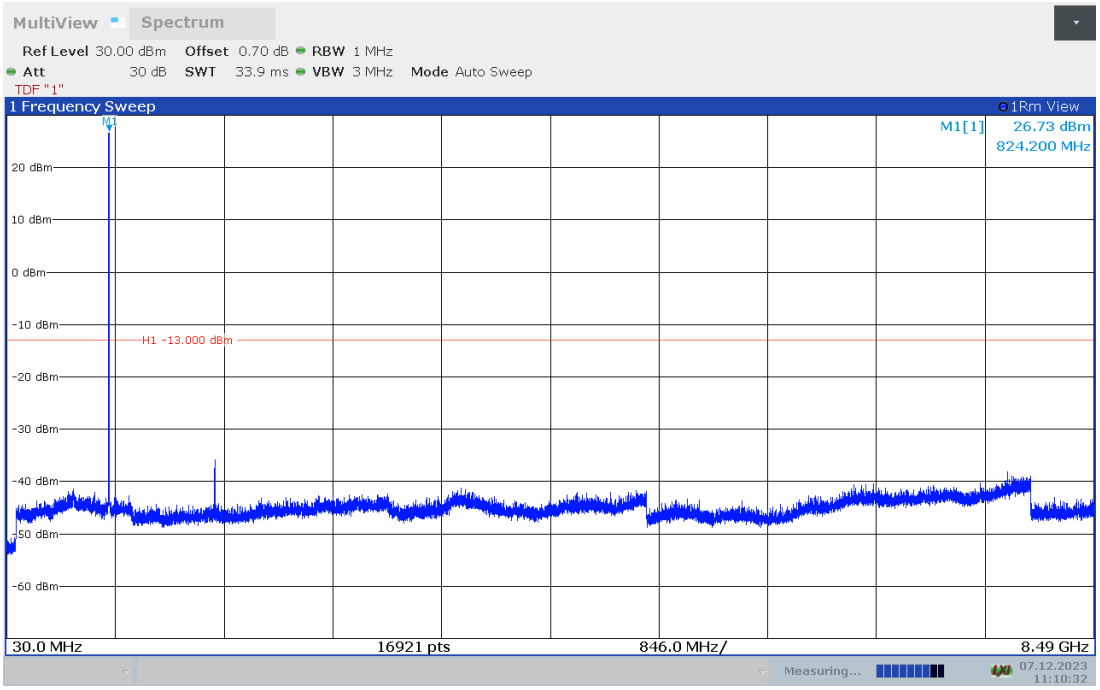
NOTE: peak above the limit line is the carrier frequency.



LTE band 5 20MHz QPSK: 30MHz – 8.49GHz

Spurious emission limit –25dBm.

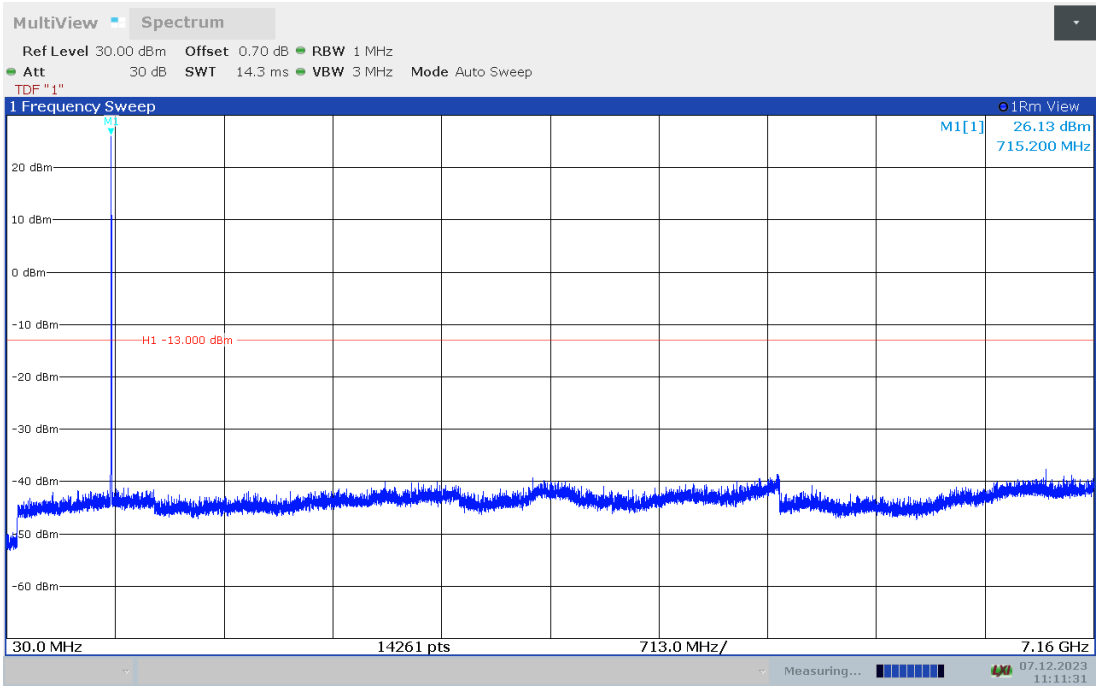
NOTE: peak above the limit line is the carrier frequency.



LTE band 12: 30MHz – 7.16GHz

Spurious emission limit –13dBm.

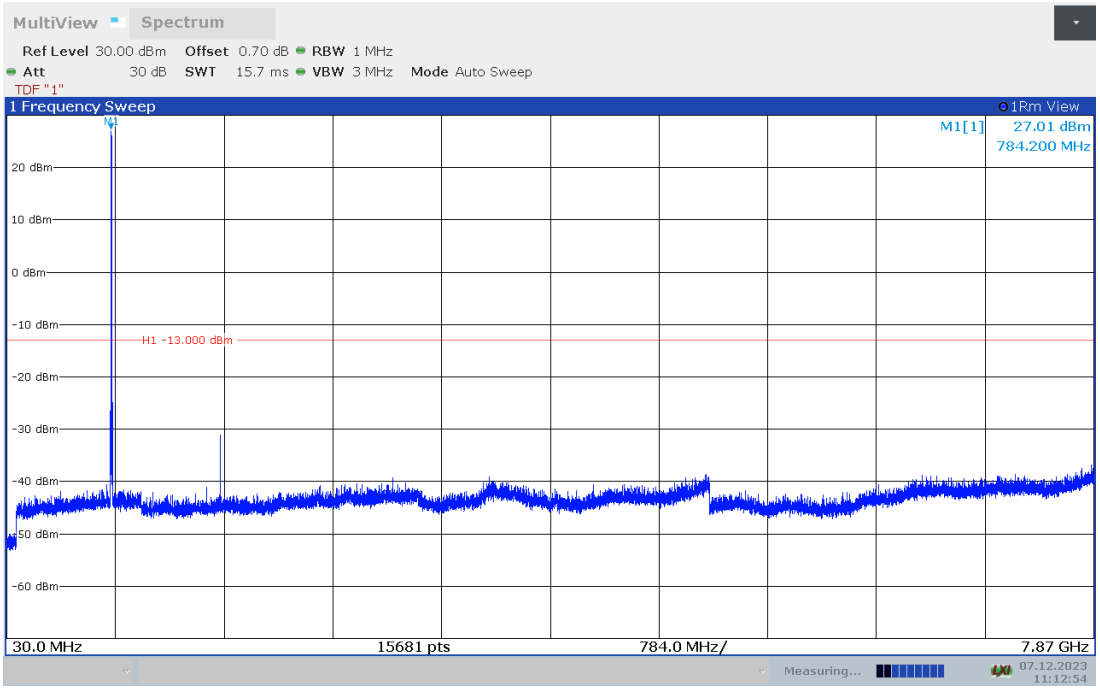
NOTE: peak above the limit line is the carrier frequency.



LTE band 13: 30MHz – 7.87GHz

Spurious emission limit –13dBm.

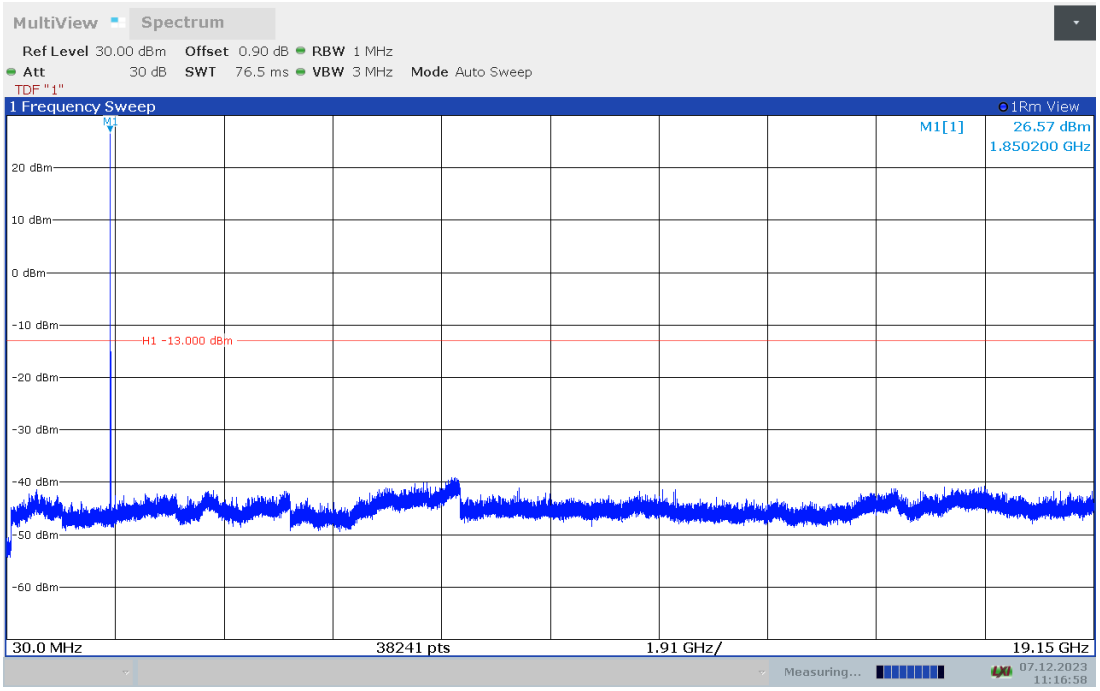
NOTE: peak above the limit line is the carrier frequency.



LTE band 25: 30MHz – 19.15GHz

Spurious emission limit –13dBm.

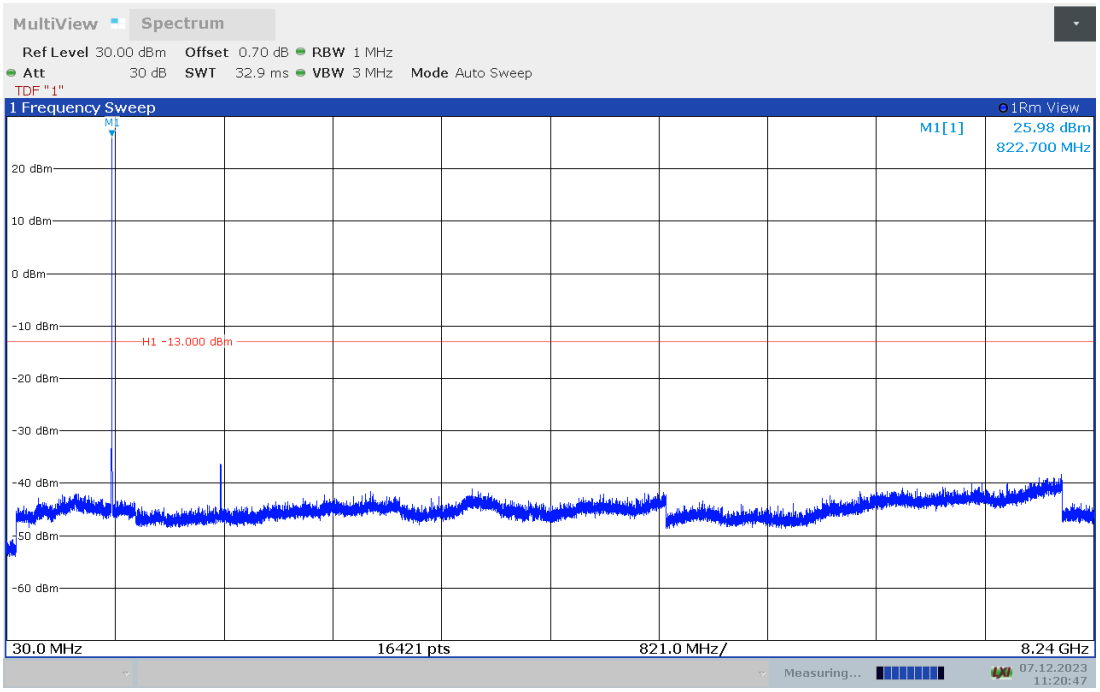
NOTE: peak above the limit line is the carrier frequency.



LTE band 26(814MHz-824MHz): 30MHz – 8.24GHz

Spurious emission limit –13dBm.

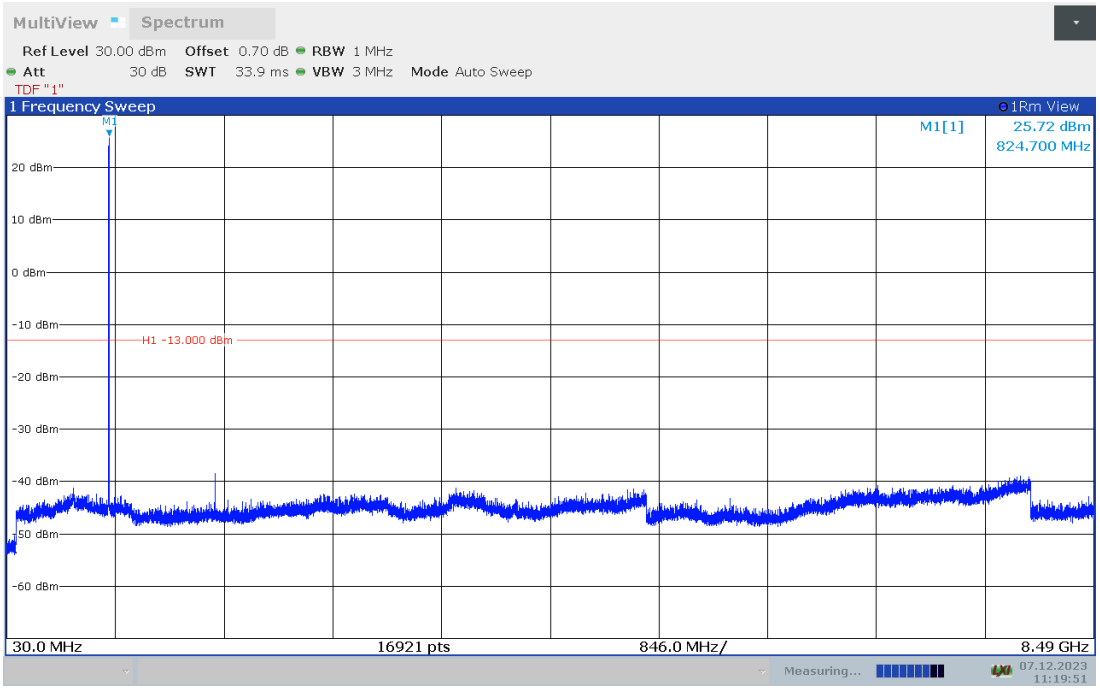
NOTE: peak above the limit line is the carrier frequency.



LTE band 26(824MHz-849MHz): 30MHz – 8.49GHz

Spurious emission limit –13dBm.

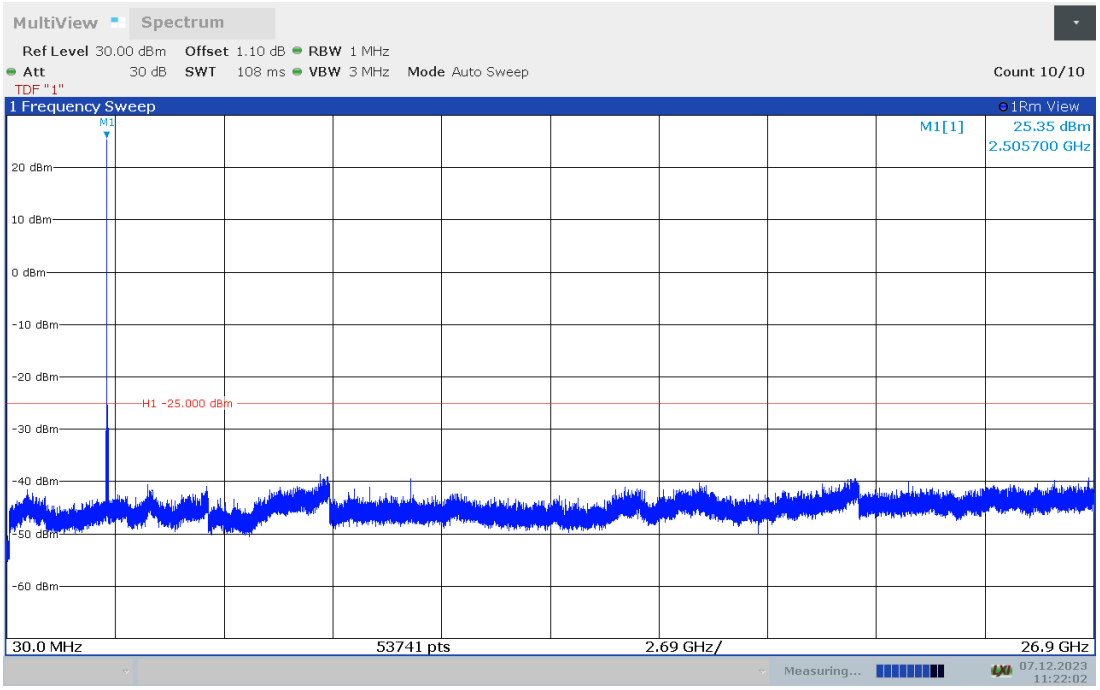
NOTE: peak above the limit line is the carrier frequency.



LTE band 41: 30MHz – 26.9GHz

Spurious emission limit –25dBm.

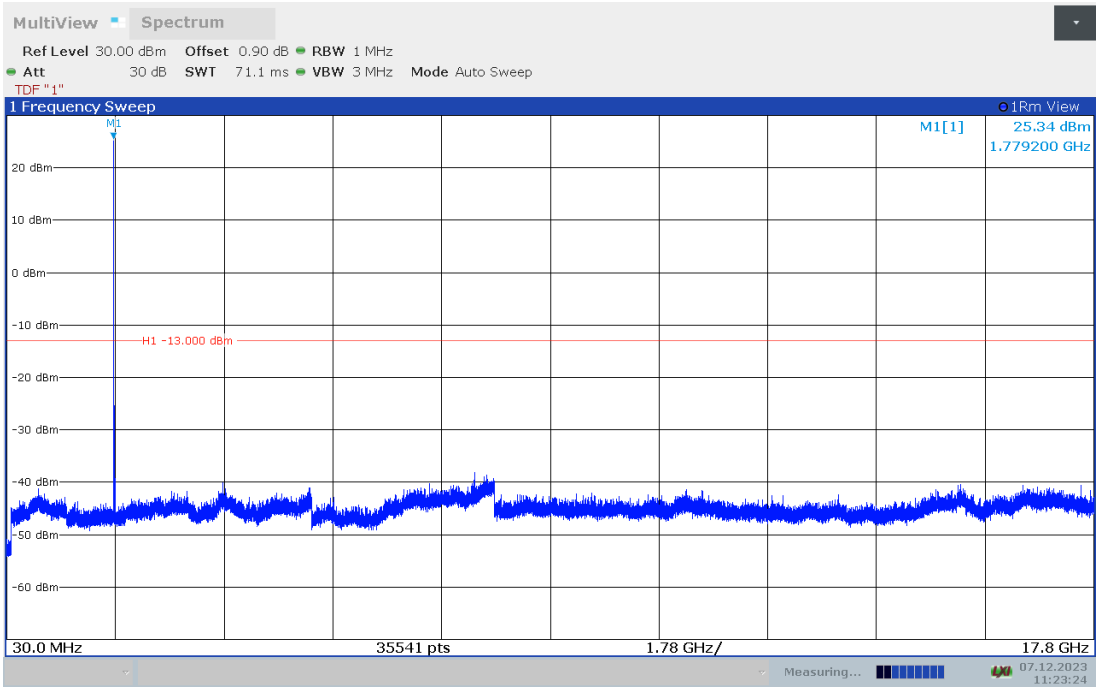
NOTE: peak above the limit line is the carrier frequency.



LTE Band 66: 30MHz – 17.8GHz

Spurious emission limit –13dBm.

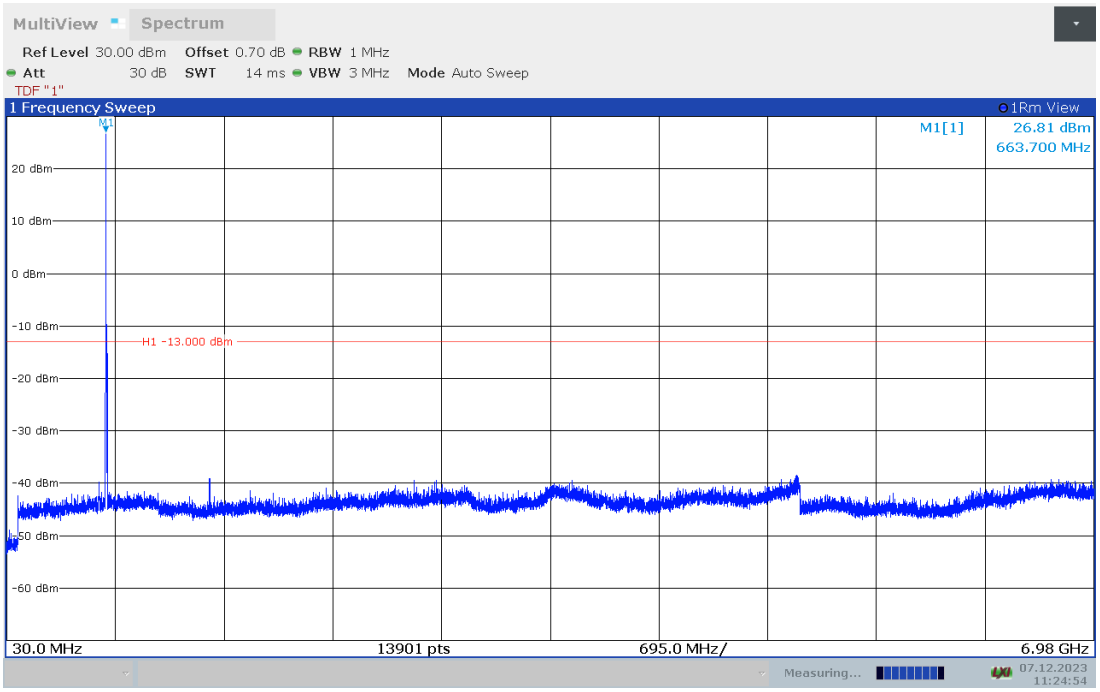
NOTE: peak above the limit line is the carrier frequency.



LTE Band 71: 30MHz – 6.98GHz

Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.



A.8 PEAK-TO-AVERAGE POWER RATIO

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB

a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
b) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
c) Set the number of counts to a value that stabilizes the measured CCDF curve;
d) Record the maximum PAPR level associated with a probability of 0.1%.

Measurement results

Only worst case result is given below

LTE band 2

Frequency(MHz)	Bandwidth(MHz)	PAPR(dB)	
		QPSK	16QAM
1880.0	20	5.82	6.70

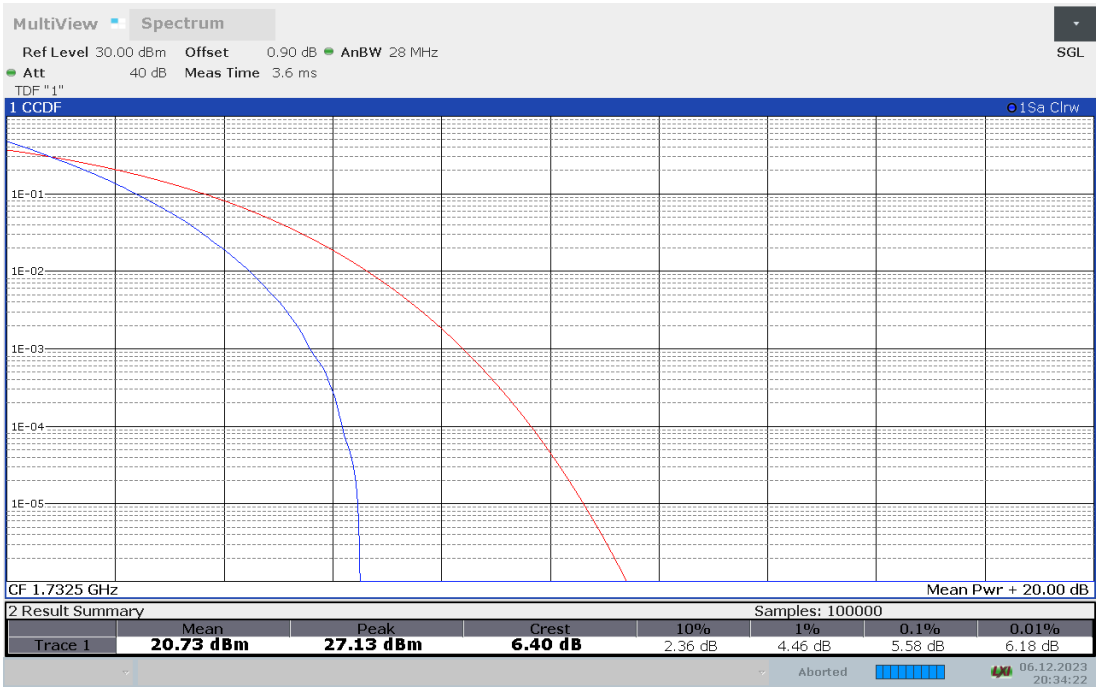
LTE band 2, 20MHz Bandwidth, QPSK (PAPR)

LTE band 2, 20MHz Bandwidth, 16QAM (PAPR)

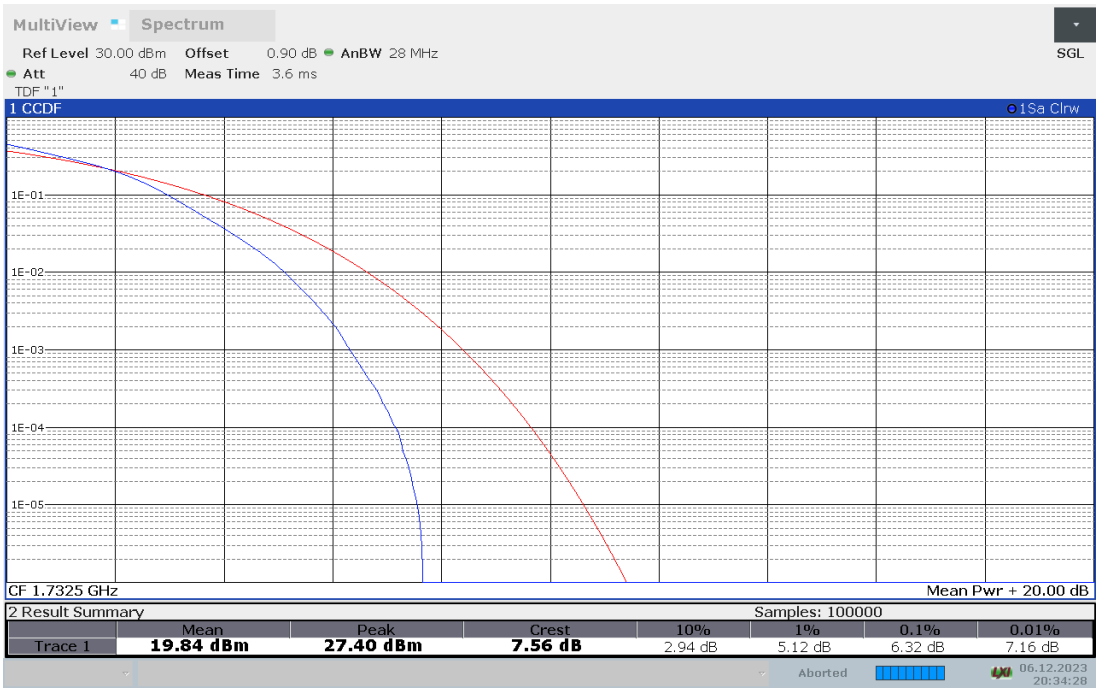
LTE band 4

Frequency(MHz)	Bandwidth(MHz)	PAPR(dB)	
		QPSK	16QAM
1732.5	20	5.58	6.32

LTE band 4, 20MHz Bandwidth, QPSK (PAPR)



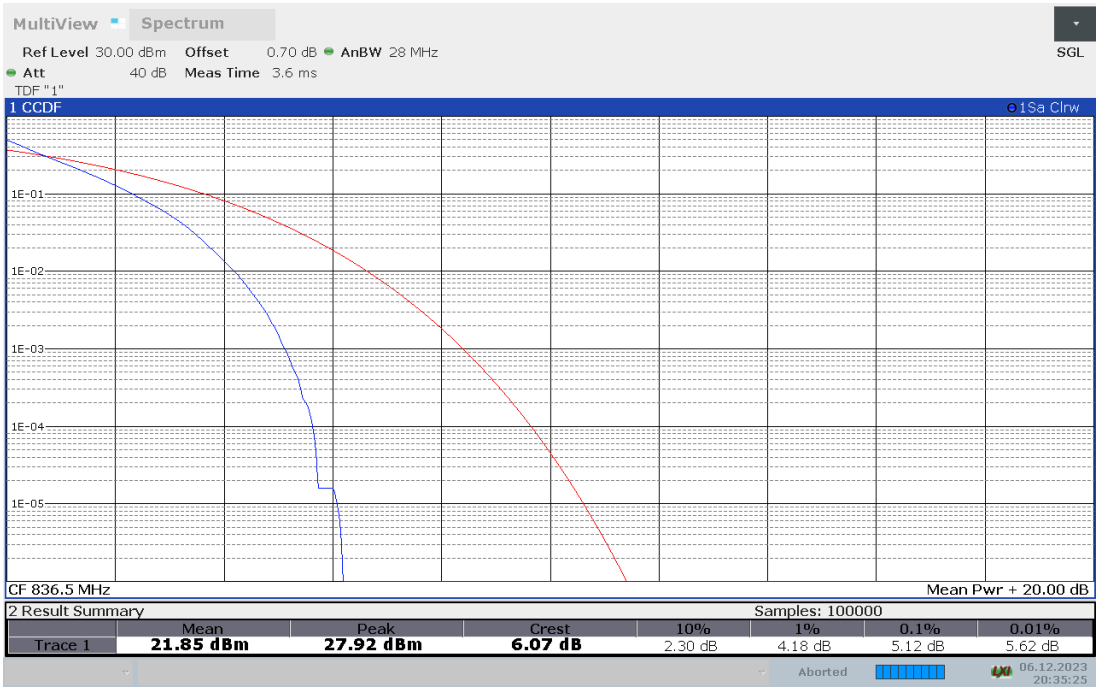
LTE band 4, 20MHz Bandwidth, 16QAM (PAPR)



LTE band 5

Frequency(MHz)	Bandwidth(MHz)	PAPR(dB)	
		QPSK	16QAM
826.5	10	5.12	6.02

LTE band 5, 10MHz Bandwidth, QPSK (PAPR)



LTE band 5, 10MHz Bandwidth, 16QAM (PAPR)