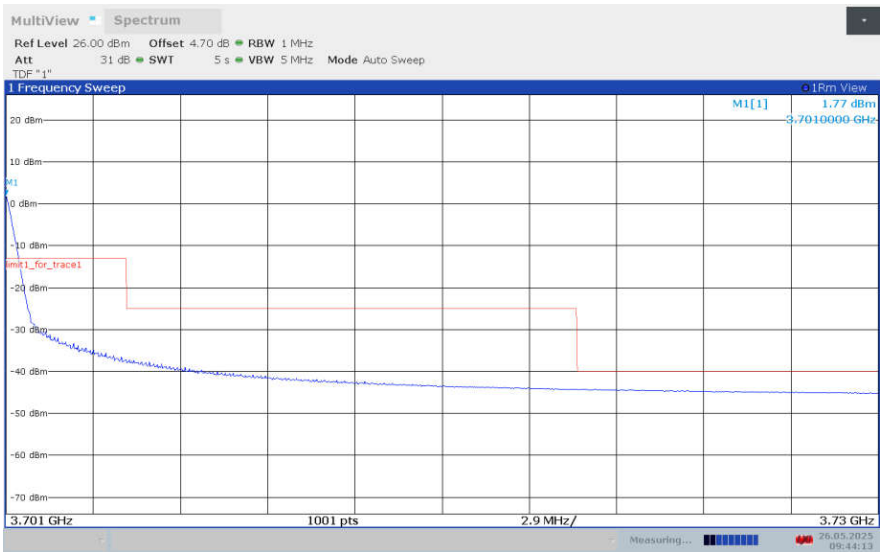
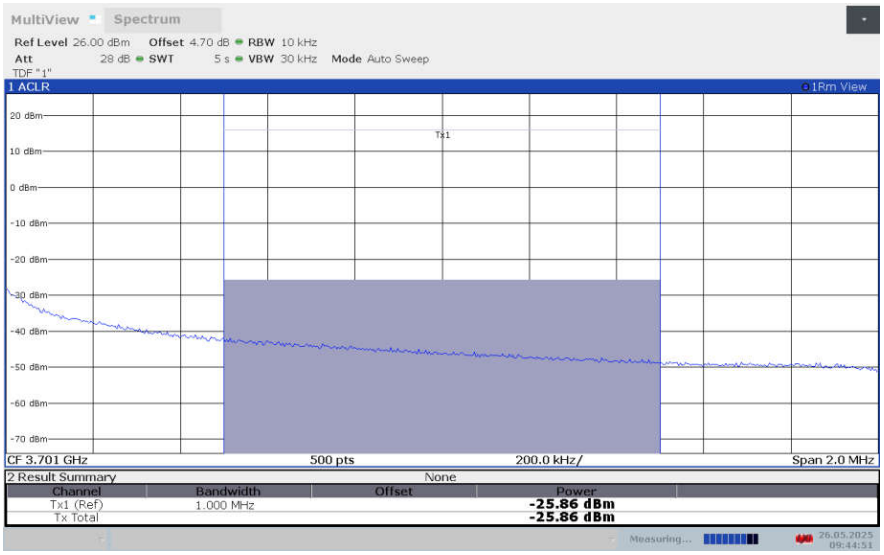
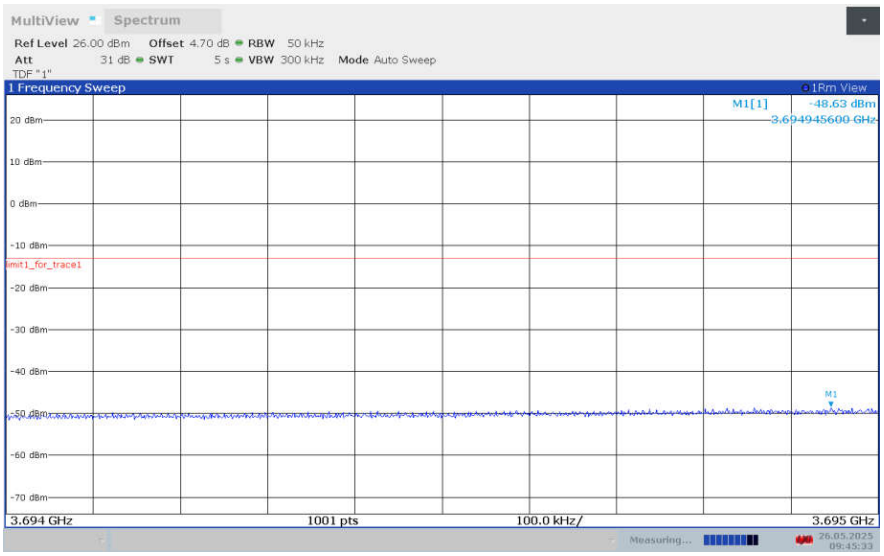
HIGH BAND EDGE BLOCK-1RB-HIGH_offset



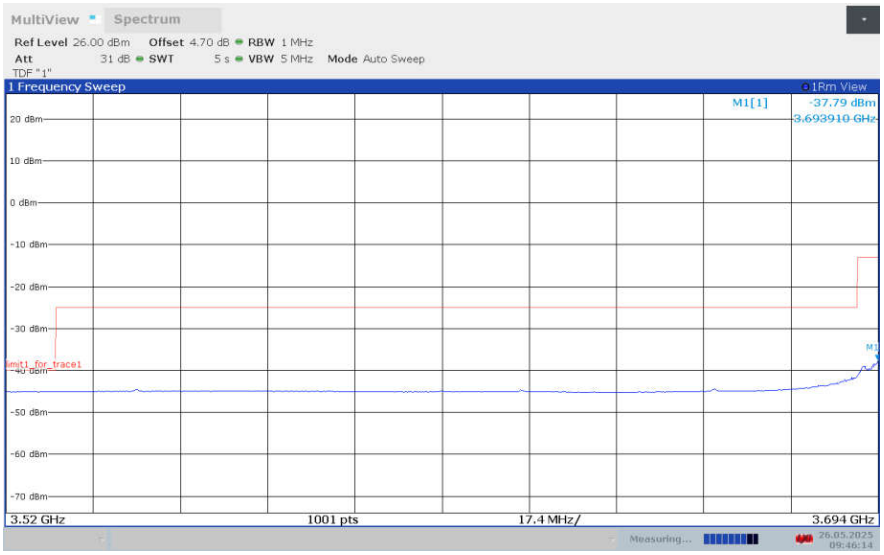
Channel power



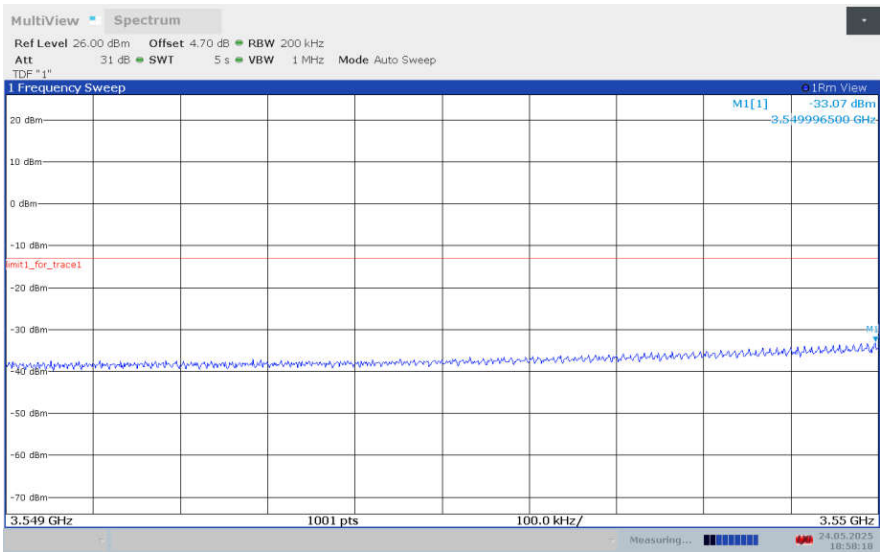
HIGH BAND EDGE BLOCK-1RB-HIGH_offset



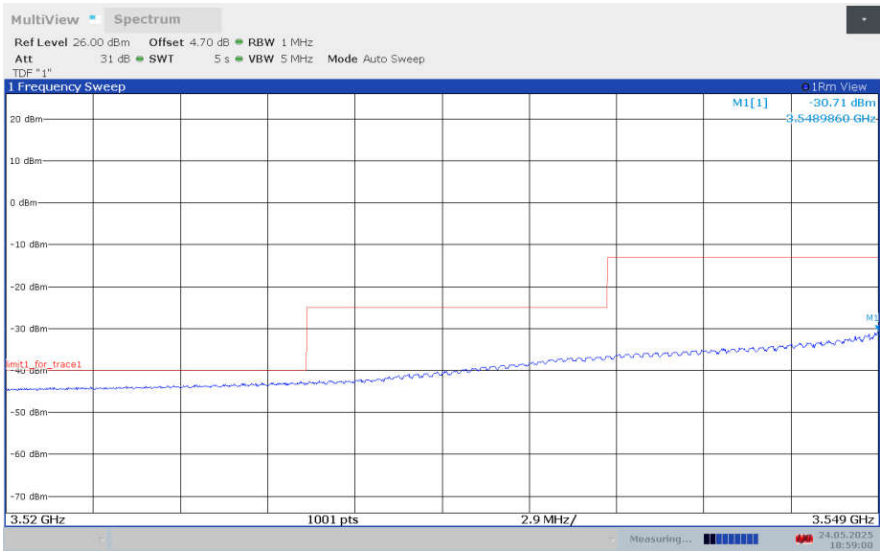
HIGH BAND EDGE BLOCK-1RB-HIGH_offset



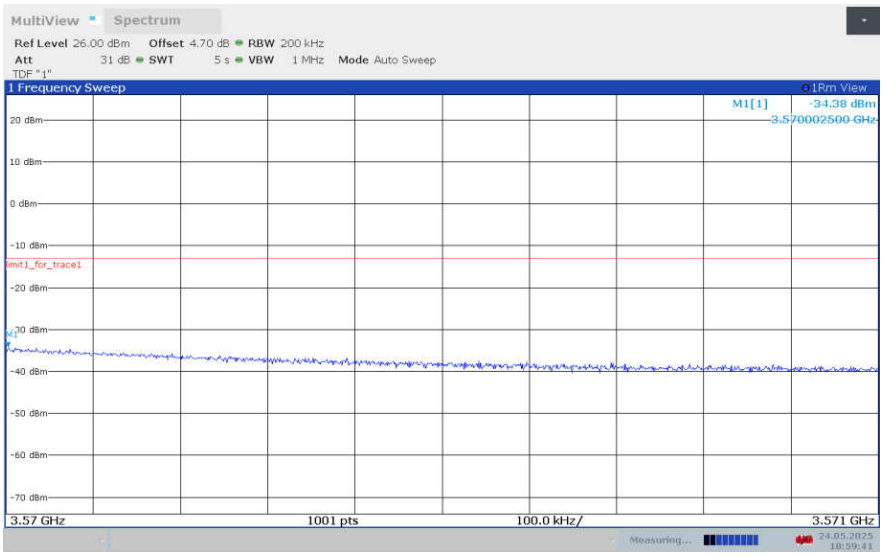
LOW BAND EDGE BLOCK-20MHz-100%RB



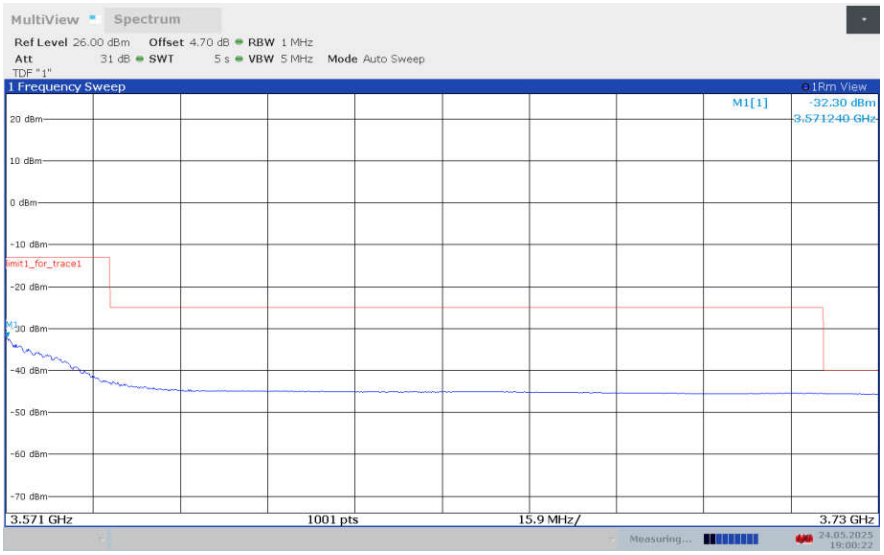
LOW BAND EDGE BLOCK-20MHz-100%RB



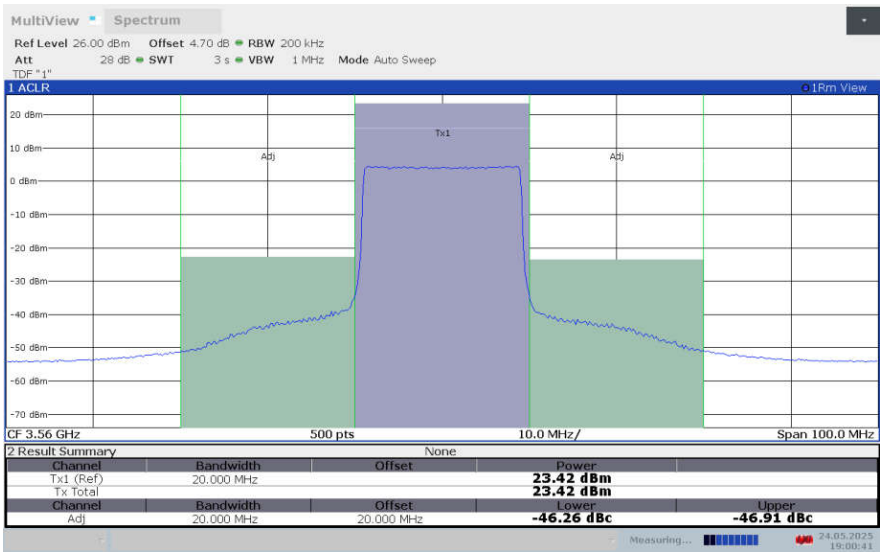
LOW BAND EDGE BLOCK-20MHz-100%RB



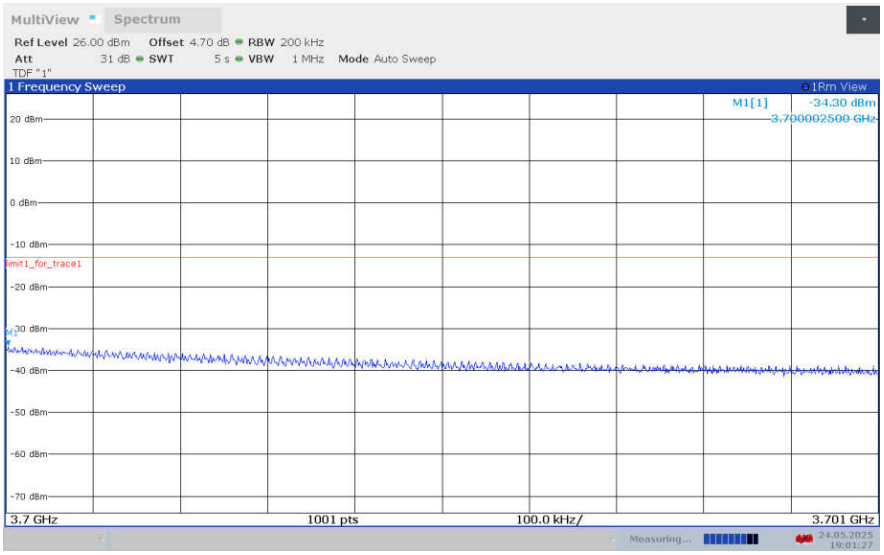
LOW BAND EDGE BLOCK-20MHz-100%RB



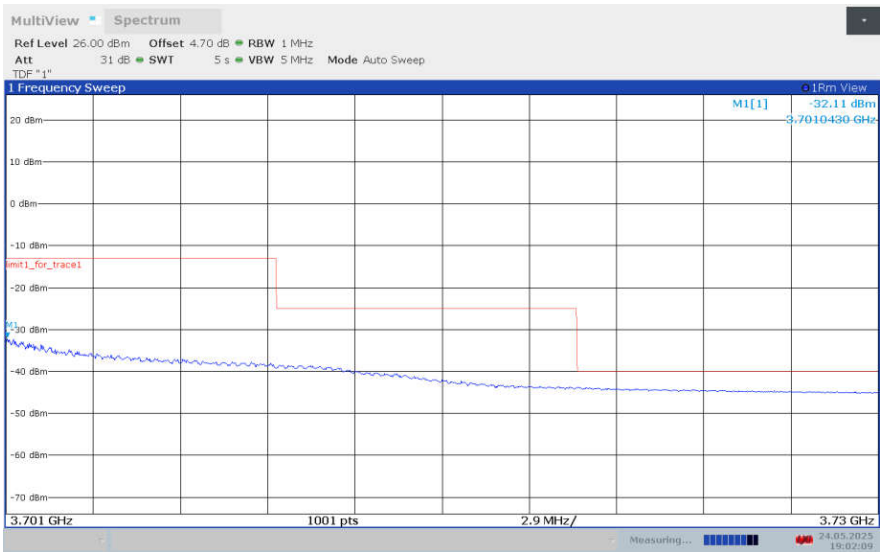
ACLR



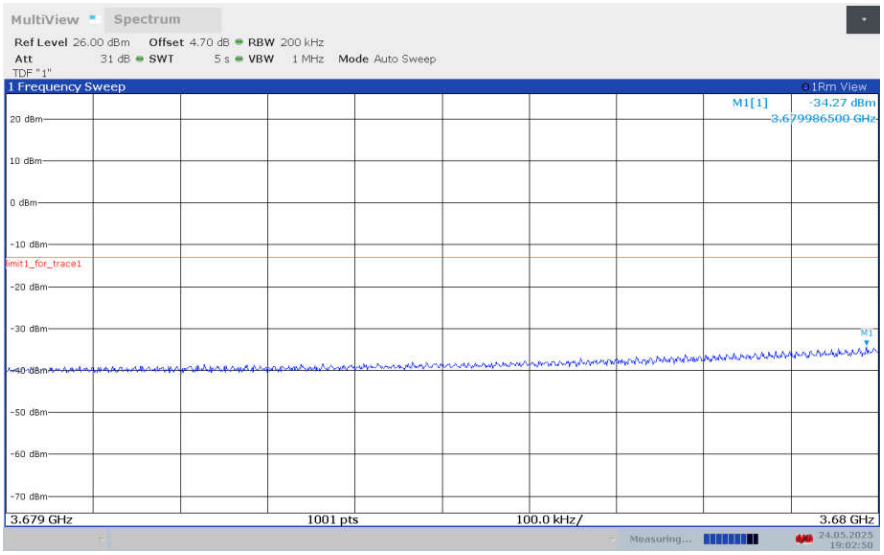
HIGH BAND EDGE BLOCK-20MHz-100%RB



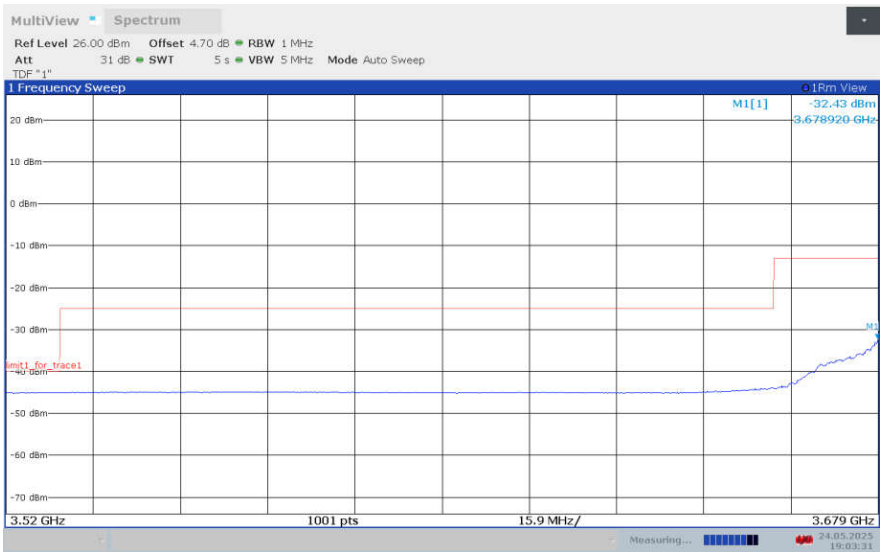
HIGH BAND EDGE BLOCK-20MHz-100%RB



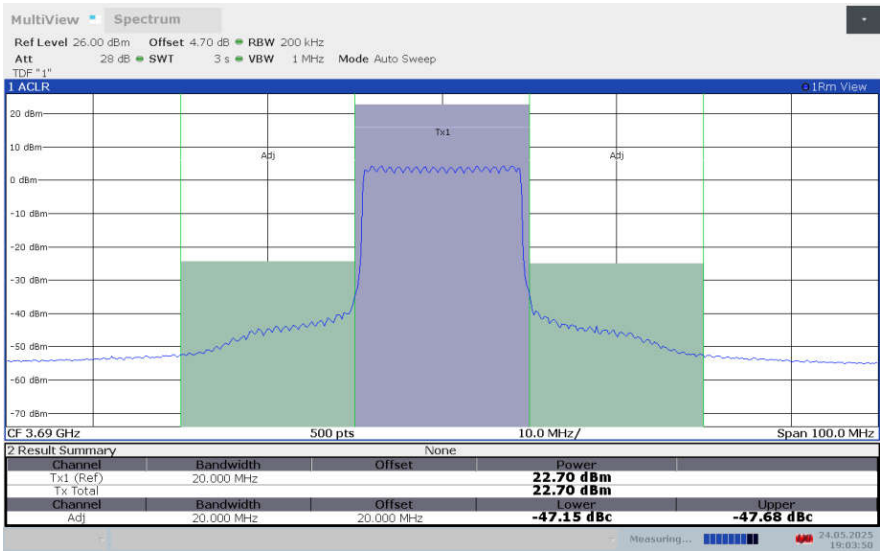
HIGH BAND EDGE BLOCK-20MHz-100%RB



HIGH BAND EDGE BLOCK-20MHz-100%RB

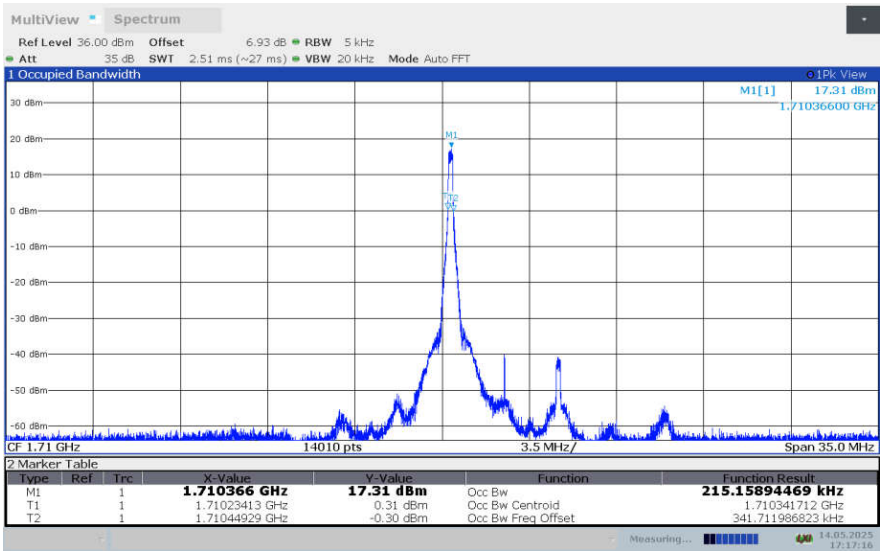


ACLR

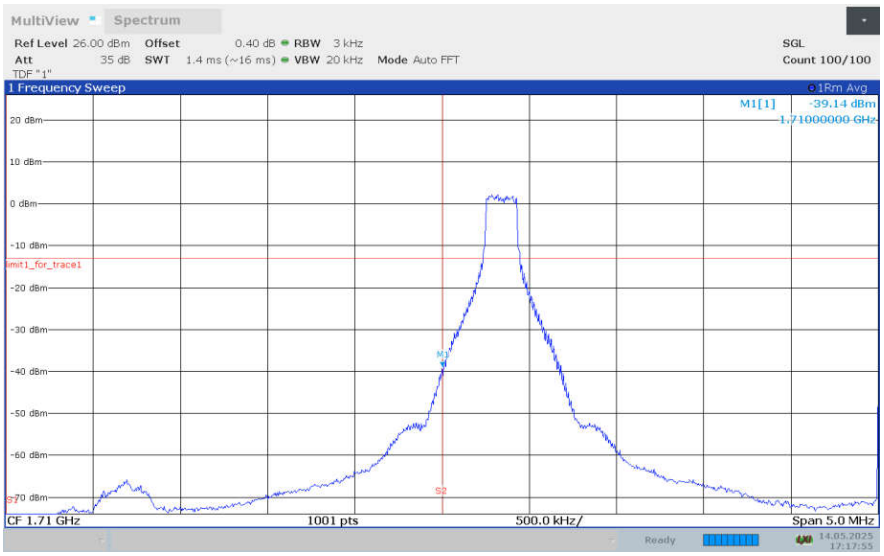


LTE band 66

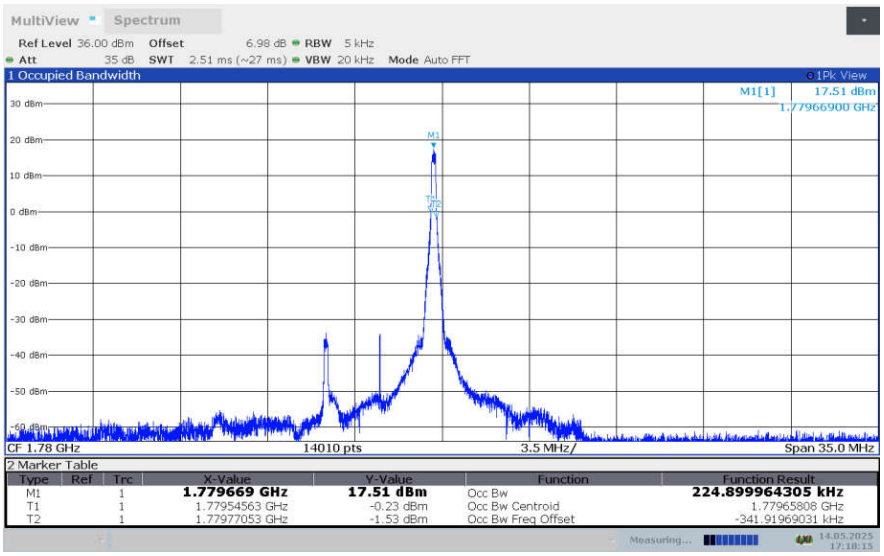
OBW: 1RB-LOW_offset_5MHz



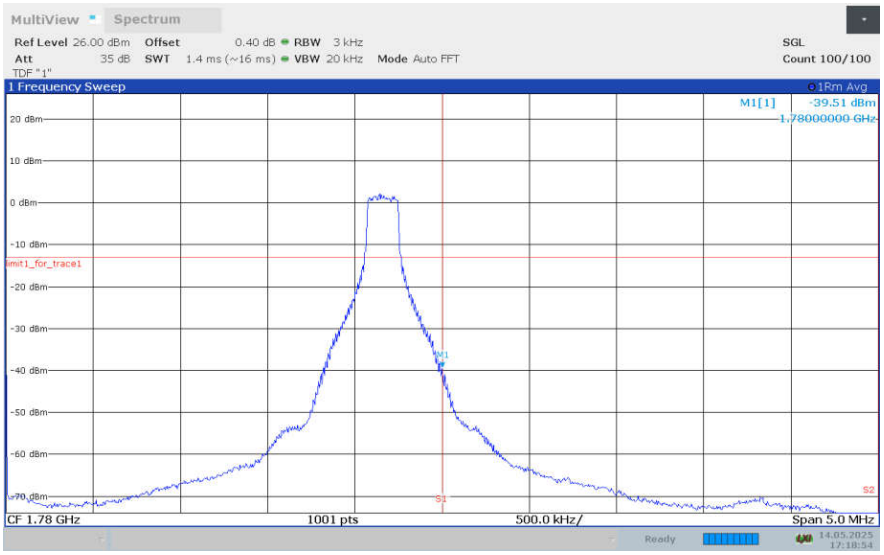
LOW BAND EDGE BLOCK-1RB-LOW_offset



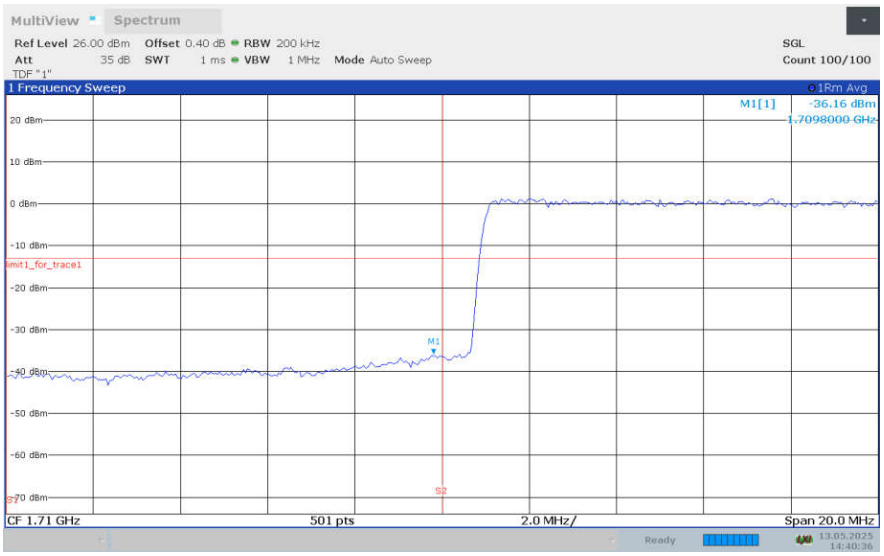
OBW: 1RB-HIGH_offset_5MHz



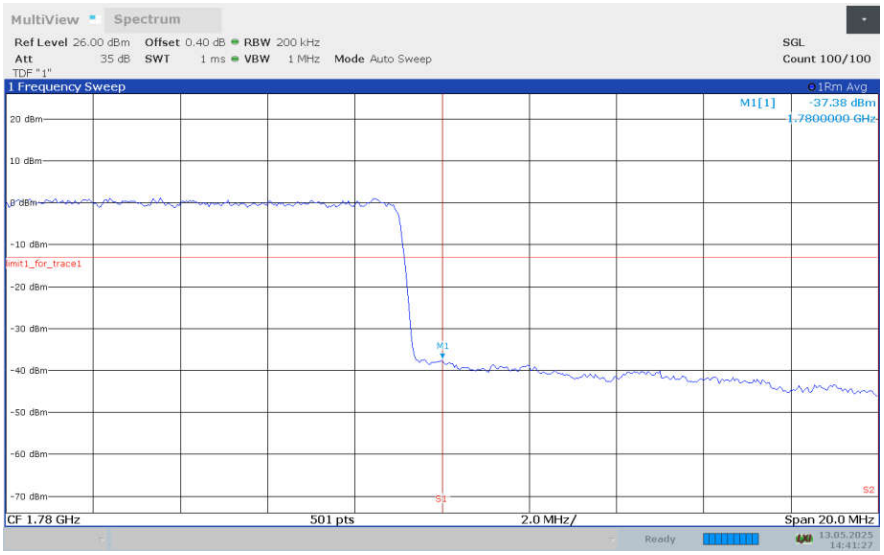
HIGH BAND EDGE BLOCK-1RB-HIGH_offset



LOW BAND EDGE BLOCK-20MHz-100%RB

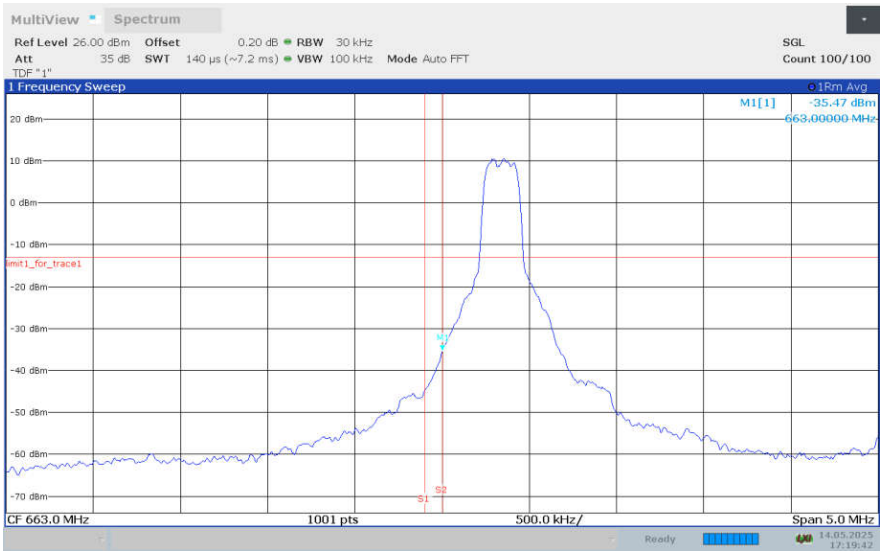


HIGH BAND EDGE BLOCK-20MHz-100%RB

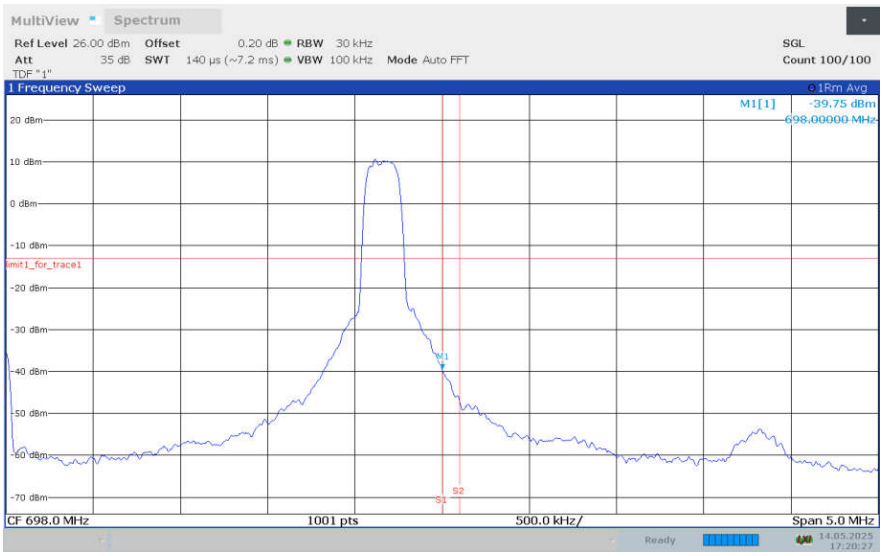


LTE band 71

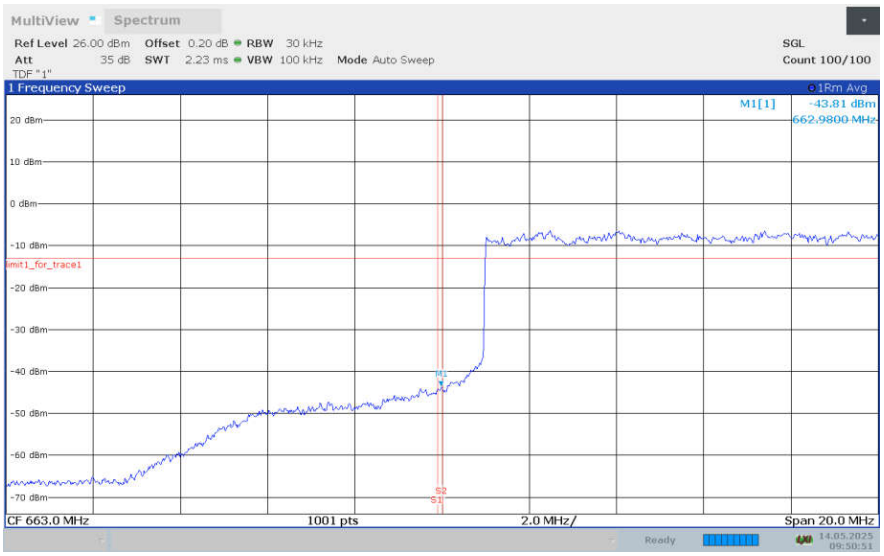
LOW BAND EDGE BLOCK-1RB-LOW_offset



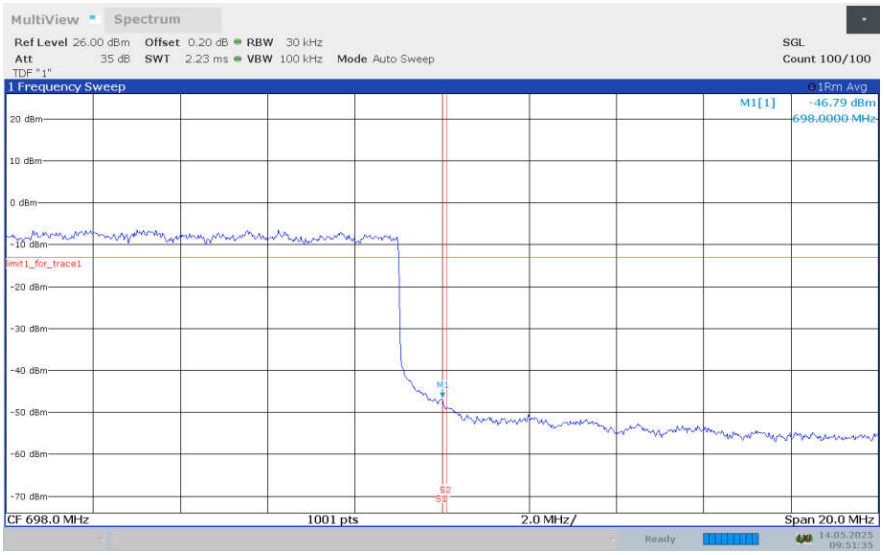
HIGH BAND EDGE BLOCK-1RB-HIGH_offset



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. Determine frequency range for measurements: From CFR 2.1051 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the mobile station equipment tested, this equates to a frequency range of 13 MHz to 9 GHz, data taken from 10 MHz to 25 GHz.
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 set to 30001 which is greater than 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.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Part 27.53(m)(4) 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 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5MHz. 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 27.53(a) states for mobile and portable stations operating in the 2305–2315 MHz and 2350–2360 MHz bands: By a factor of not less than: 43 +10 log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337MHz; By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz; By a fac tor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365MHz. Part 90.691

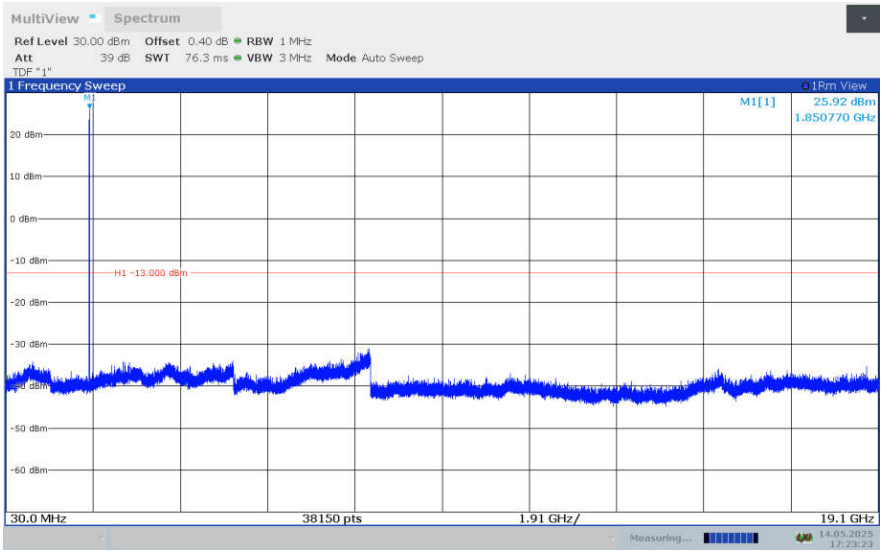
states that out-of-band emission requirement shall apply only to the “outer” channels included in an EA licenses and spectrum are attached to internal channels used by incumbent licensees. The emission limits are as follows: For any frequency removed from the EA licensee's frequency block by up to and 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

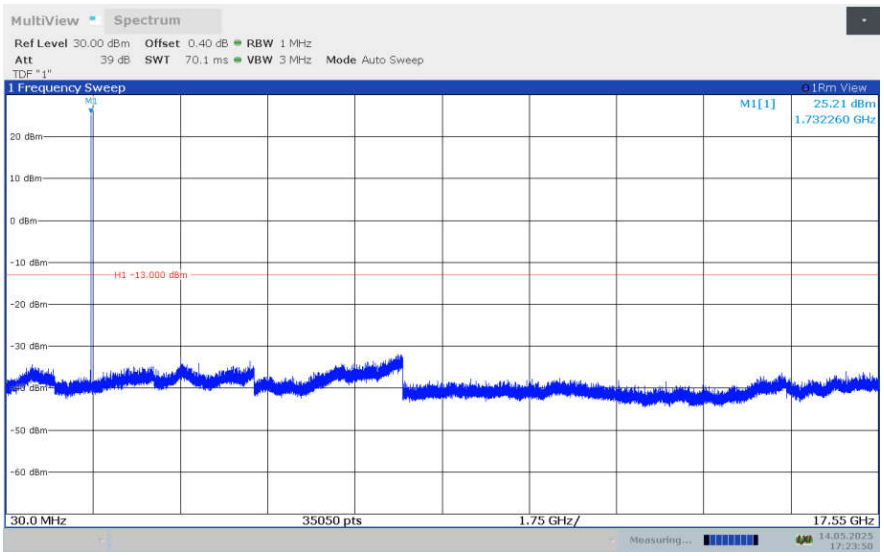
LTE band 2

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



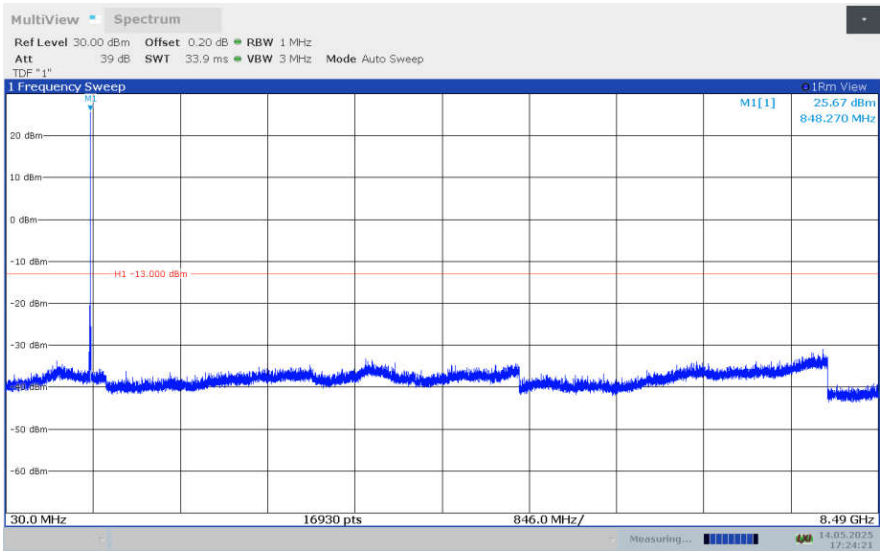
LTE band 4

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



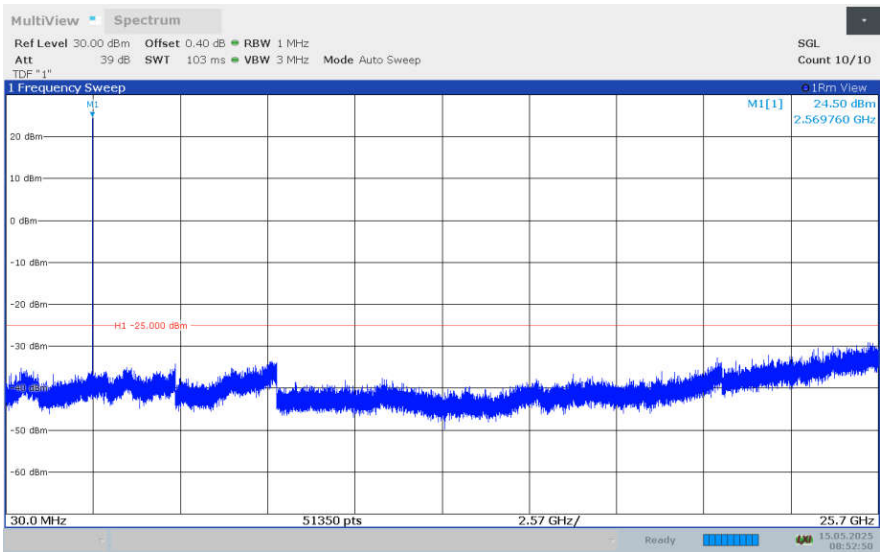
LTE band 5

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



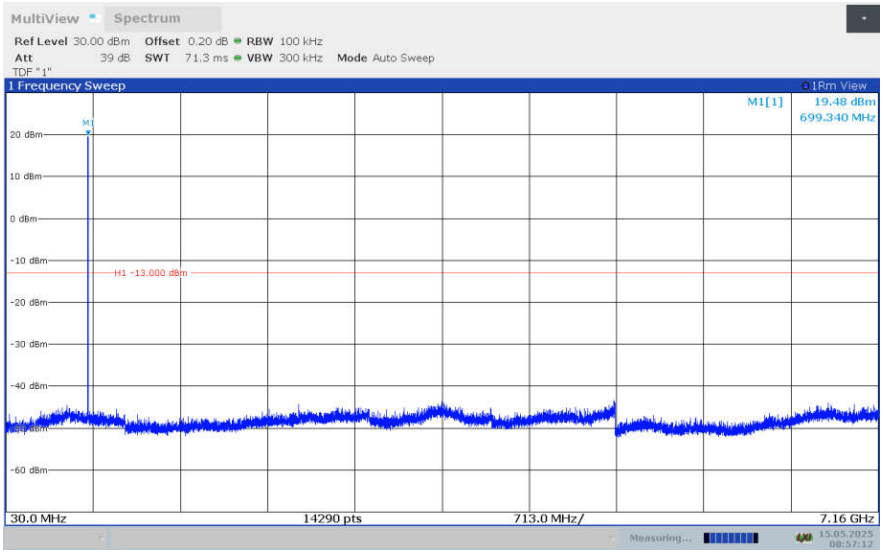
LTE band 7

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



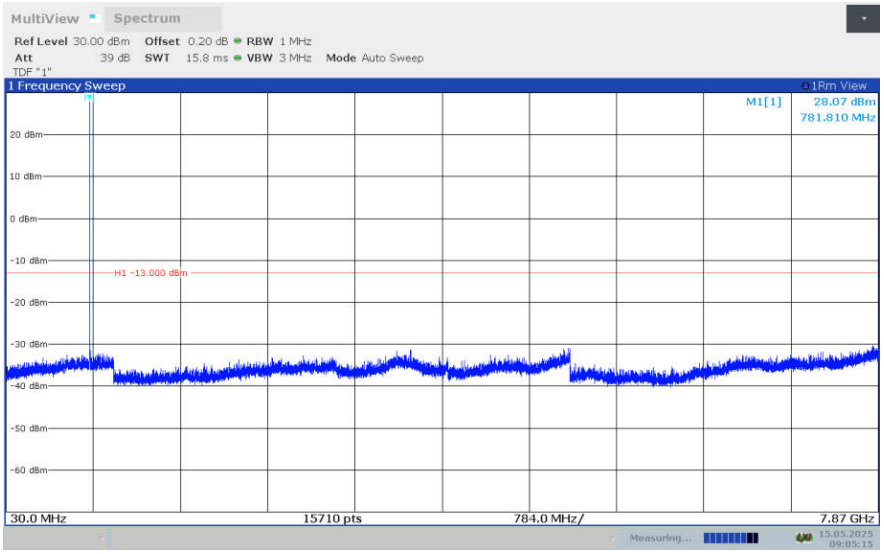
LTE band 12

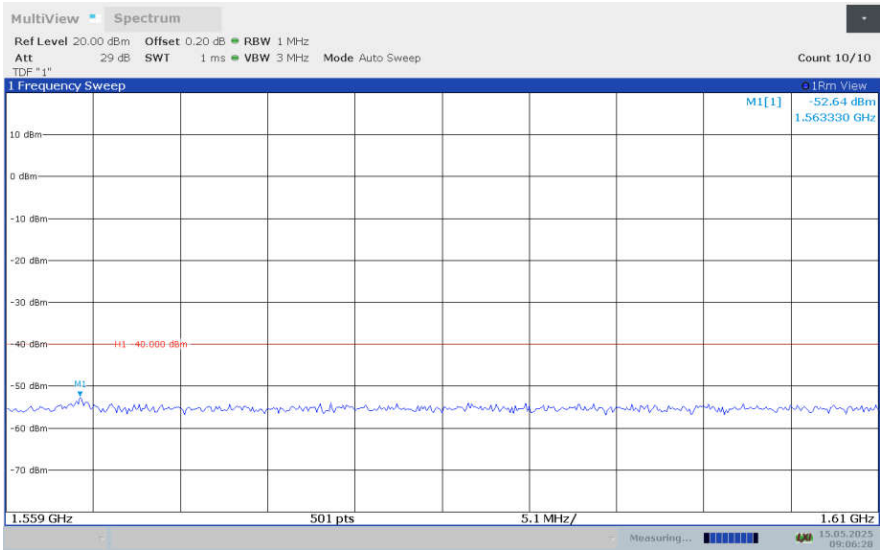
NOTE: peak above the limit line is the carrier frequency.



LTE band 13

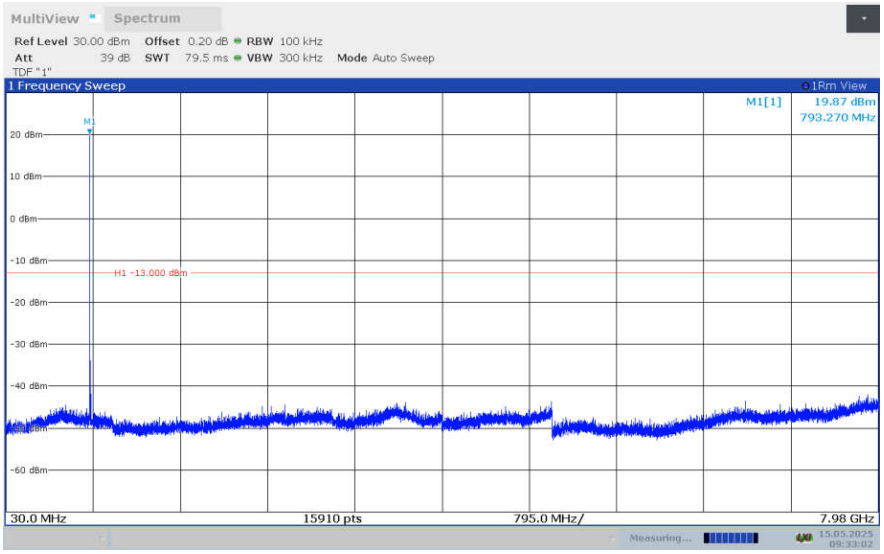
NOTE: peak above the limit line is the carrier frequency.

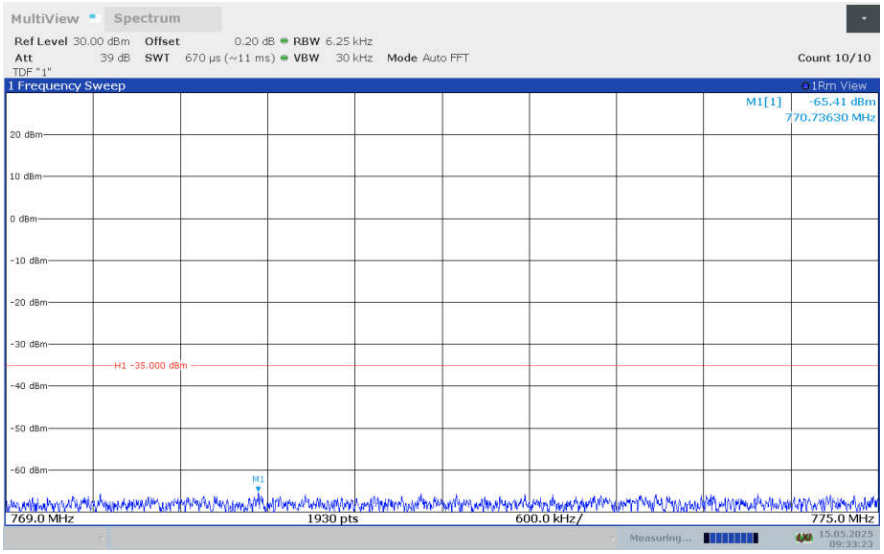


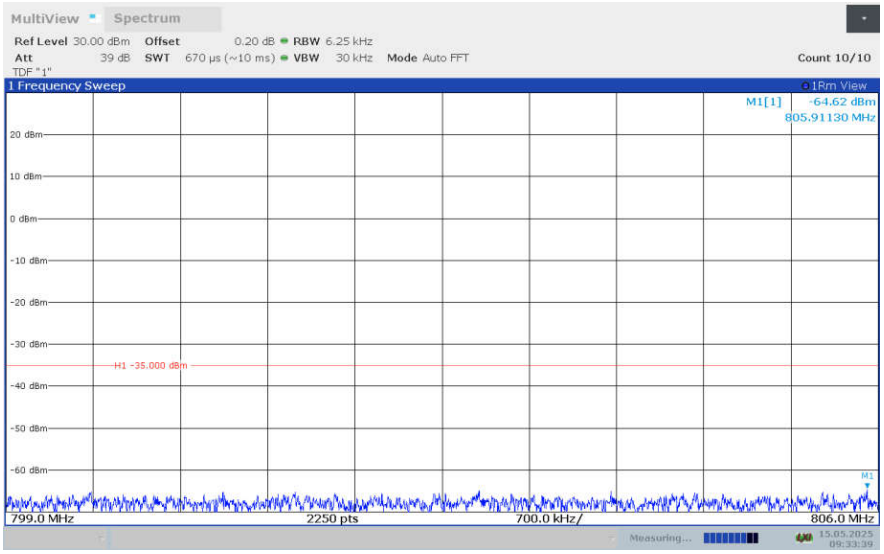


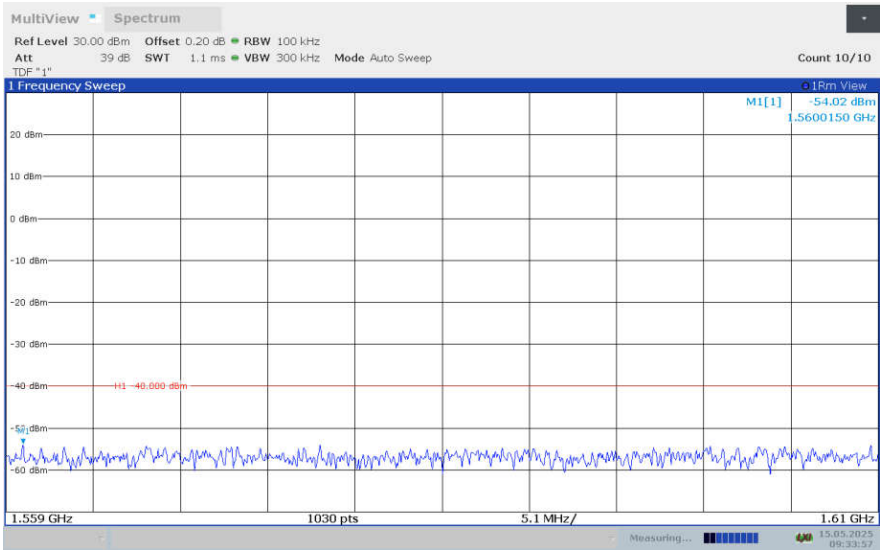
LTE band 14

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



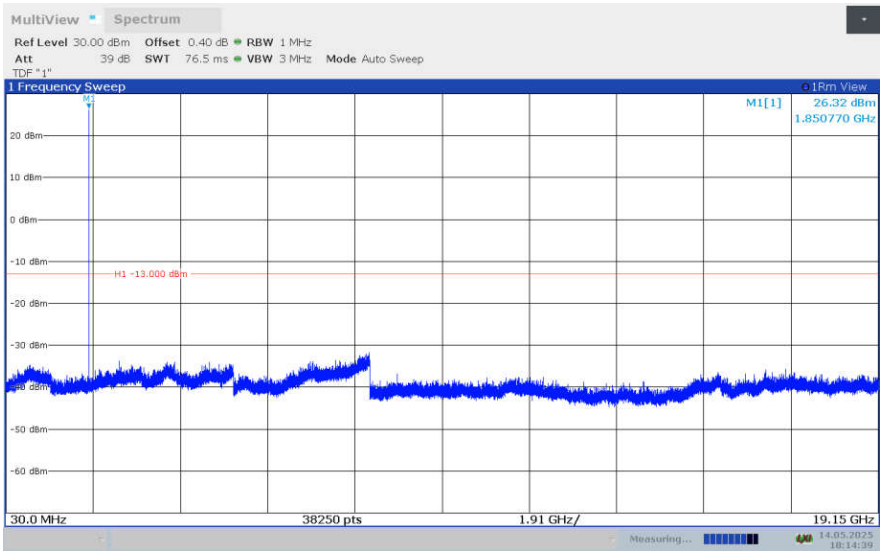






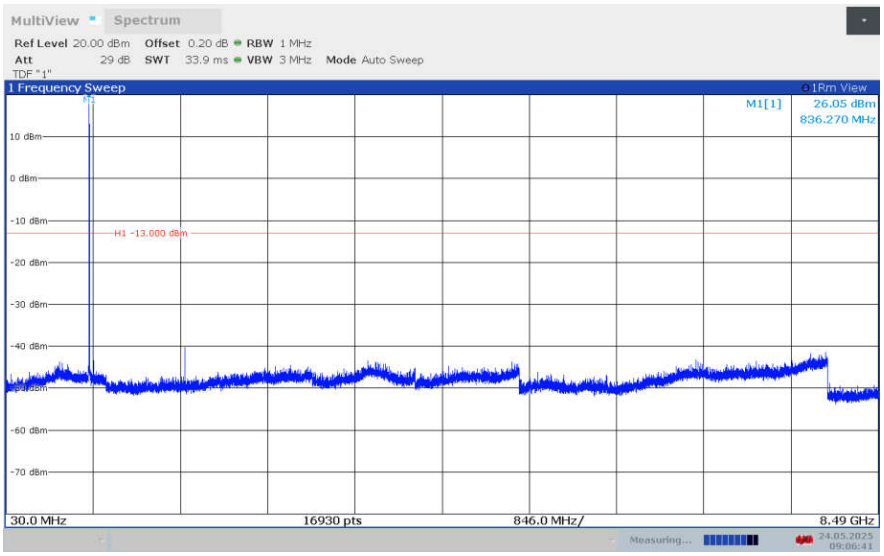
LTE band 25

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



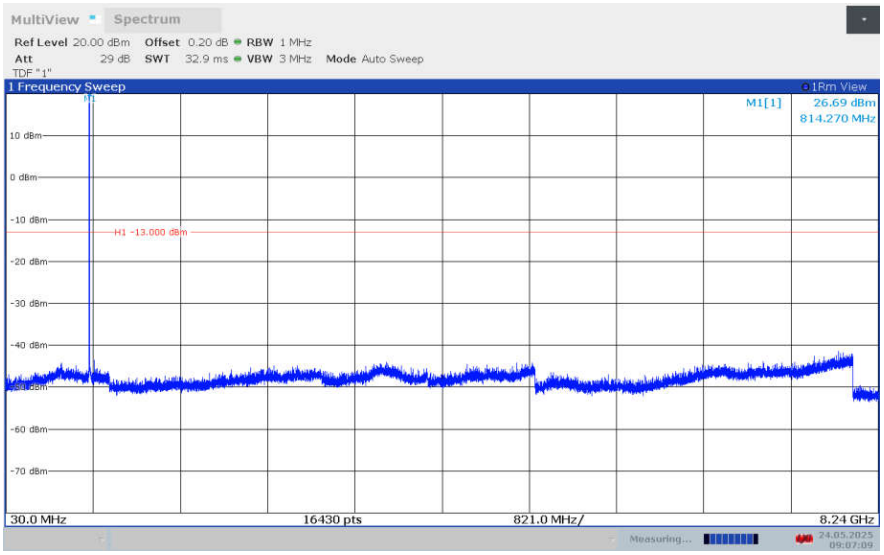
LTE band 26_Part22

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



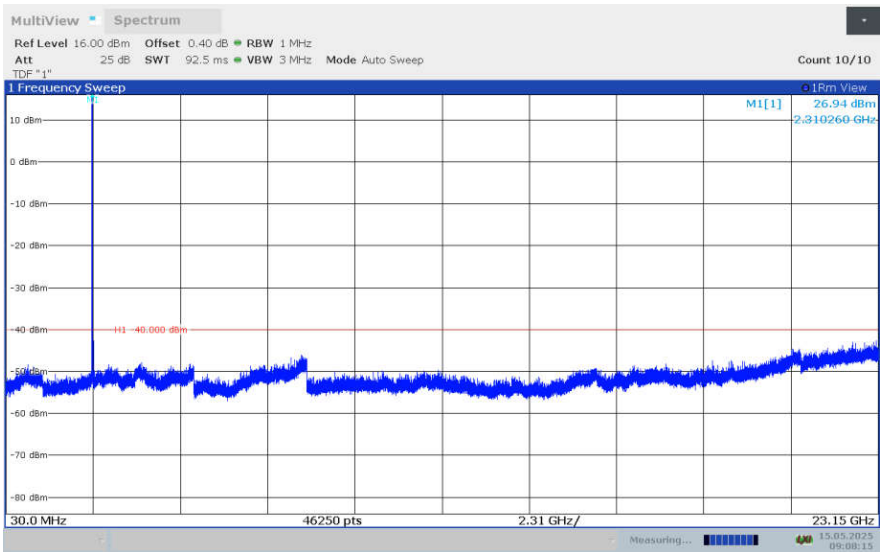
LTE band 26_Part90

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



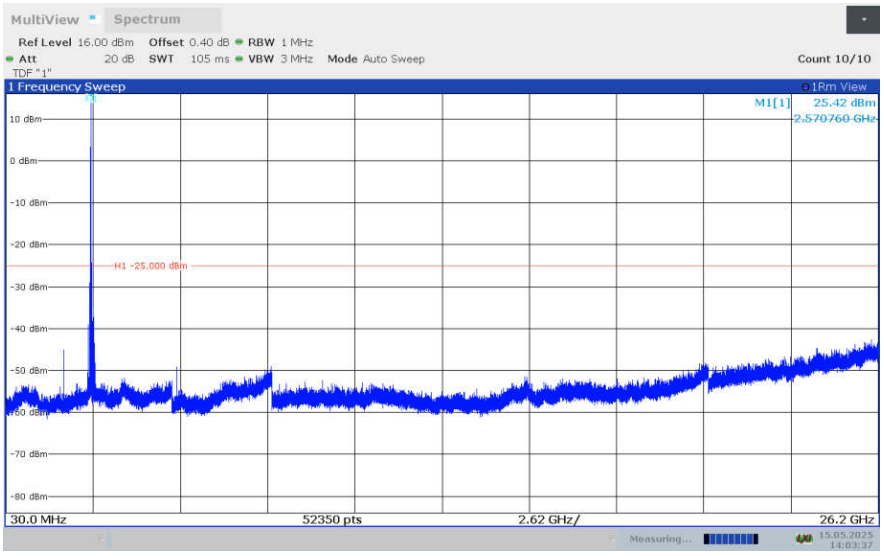
LTE band 30

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



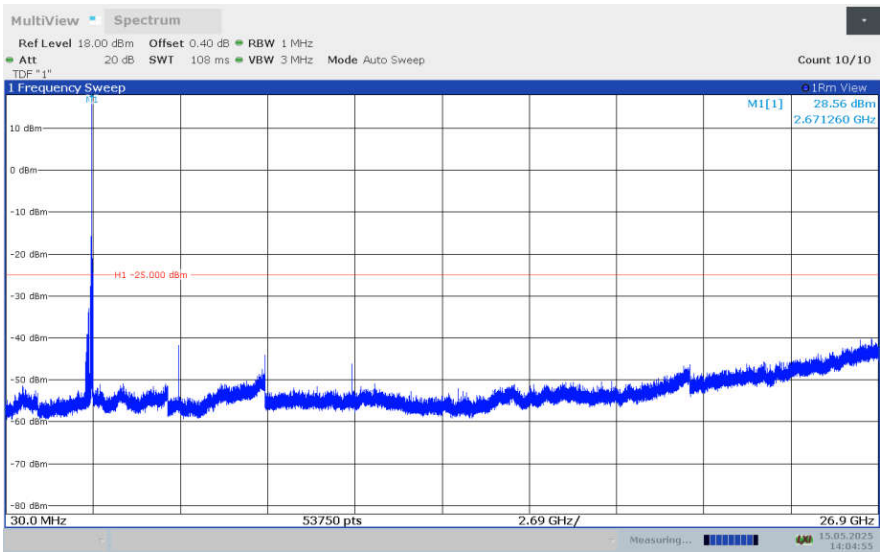
LTE band 38

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



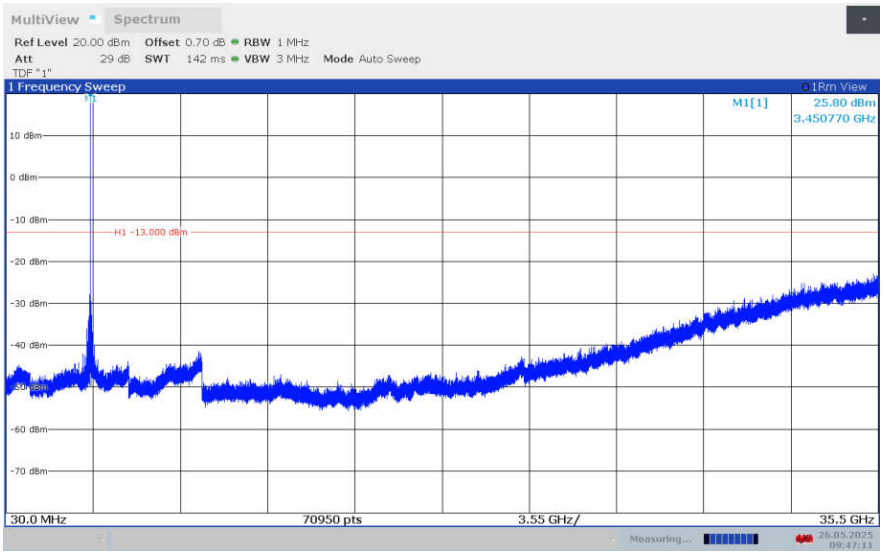
LTE band 41

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



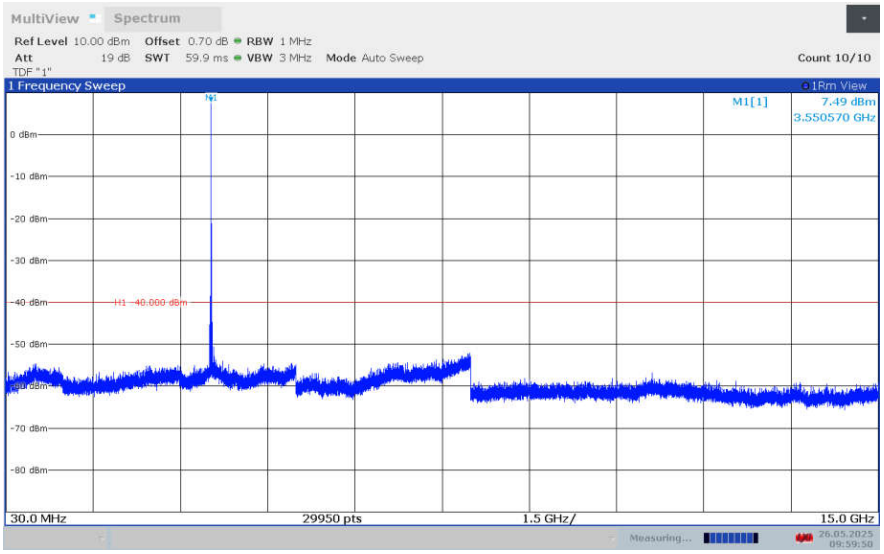
LTE band 42_Part27

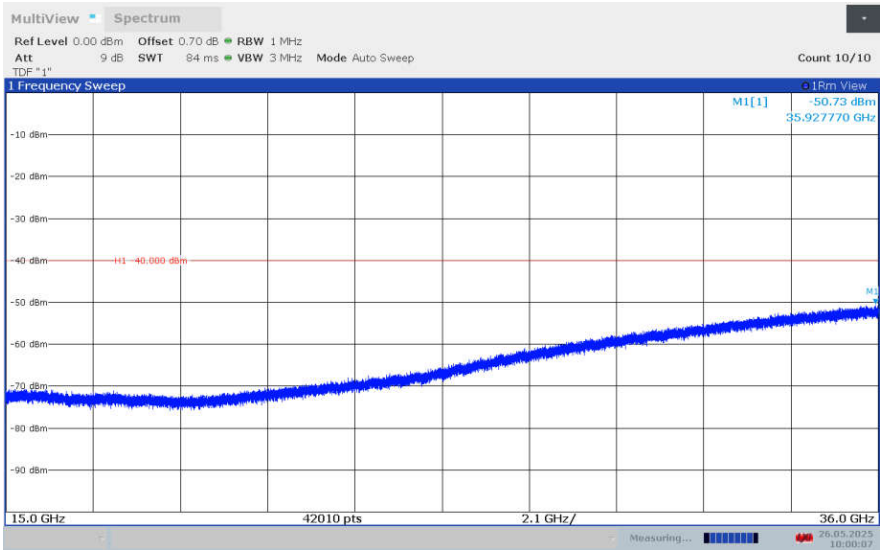
NOTE: peak above the limit line is the carrier frequency.



LTE band 42_Part96

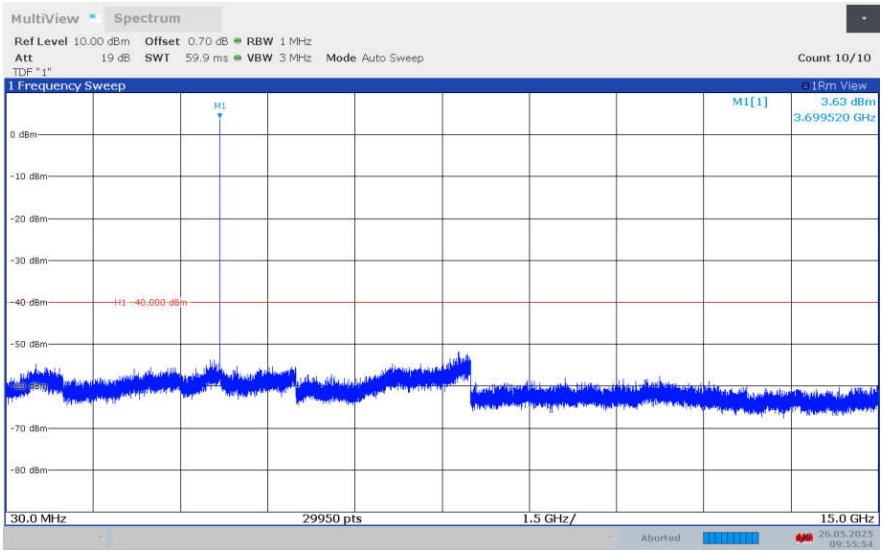
NOTE: peak above the limit line is the carrier frequency.

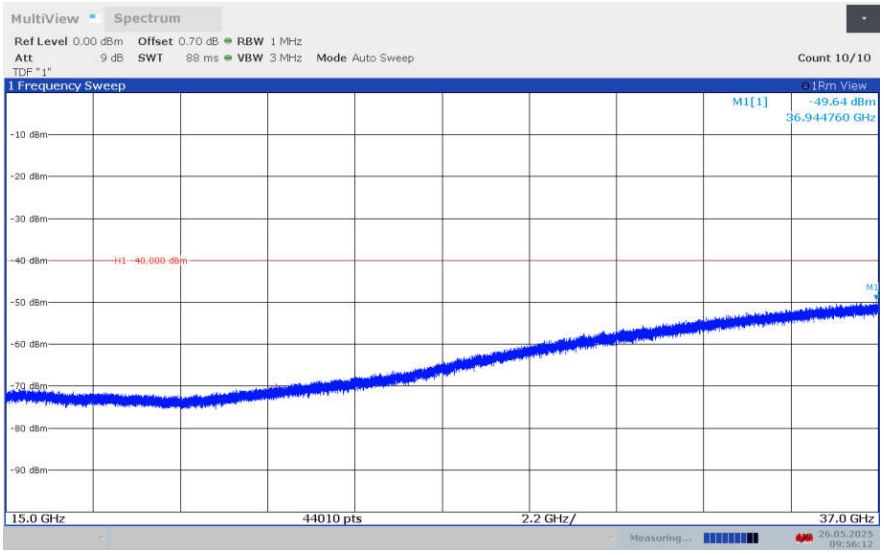




LTE band 43_Part96

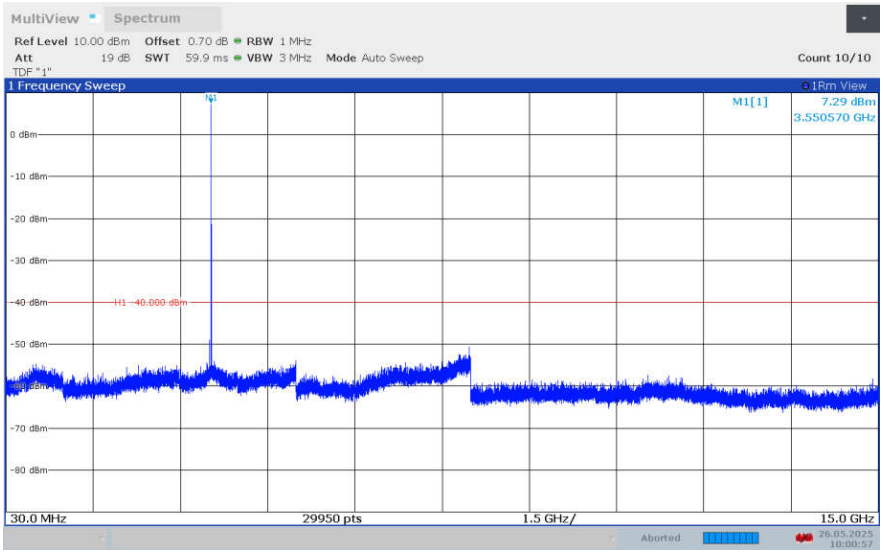
NOTE: peak above the limit line is the carrier frequency.

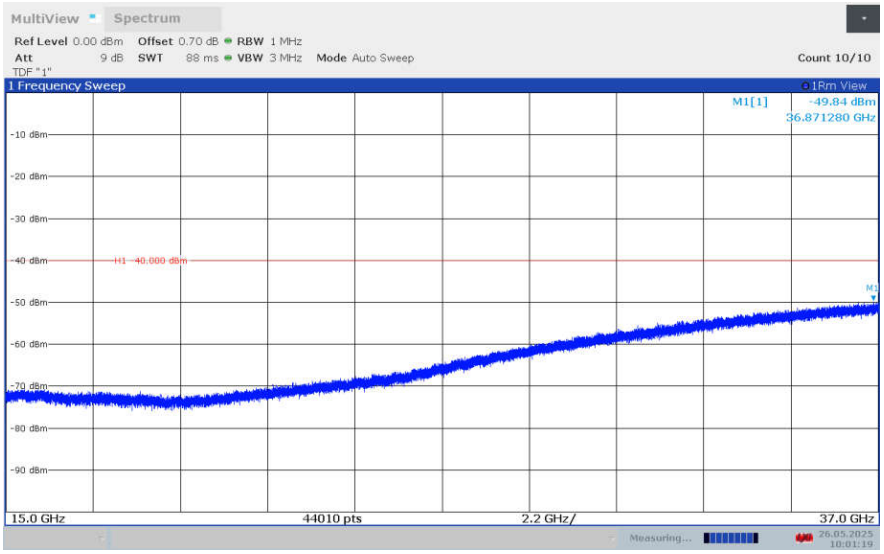




LTE band 48

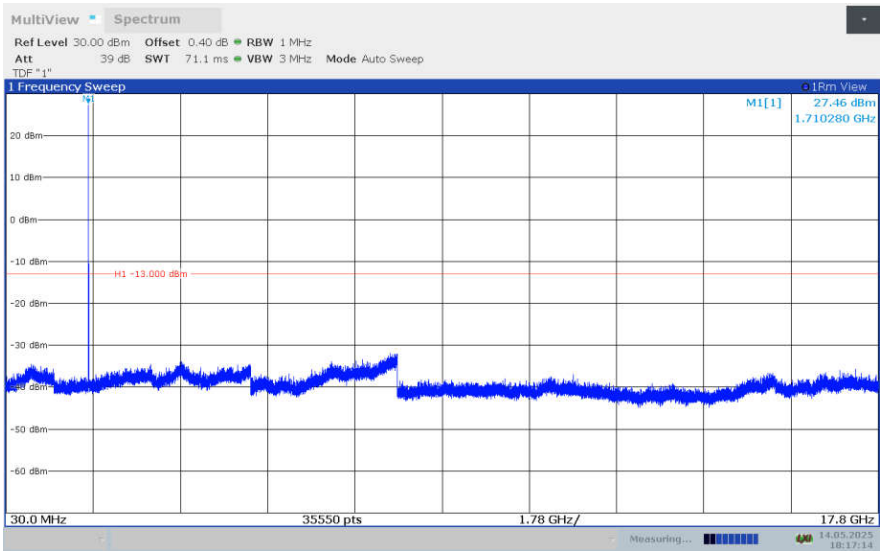
NOTE: peak above the limit line is the carrier frequency.





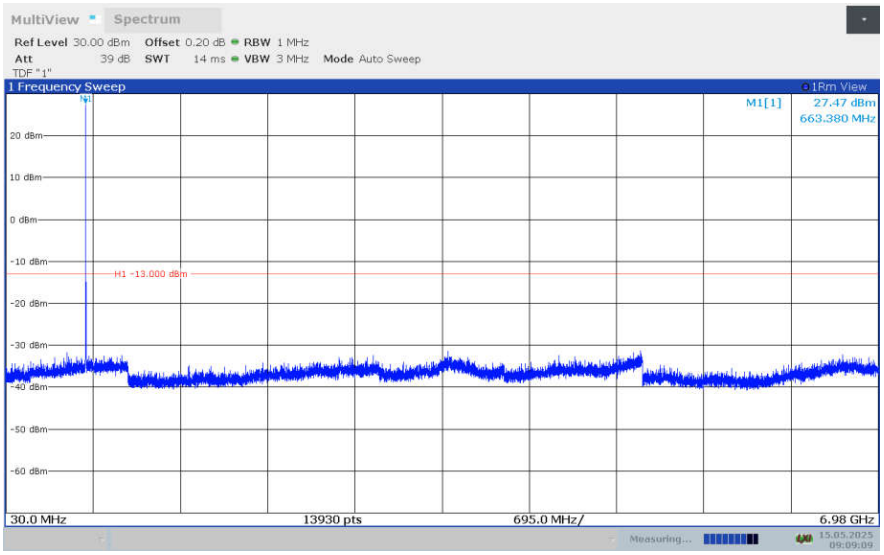
LTE band 66

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



LTE band 71

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



A.8 PEAK-TO-AVERAGE POWER RATIO

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

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) Set the measurement interval to 1 ms

e)Record the maximum PAPR level associated with a probability of 0.1%

A.8.1 Measurement limit

not exceed 13 dB

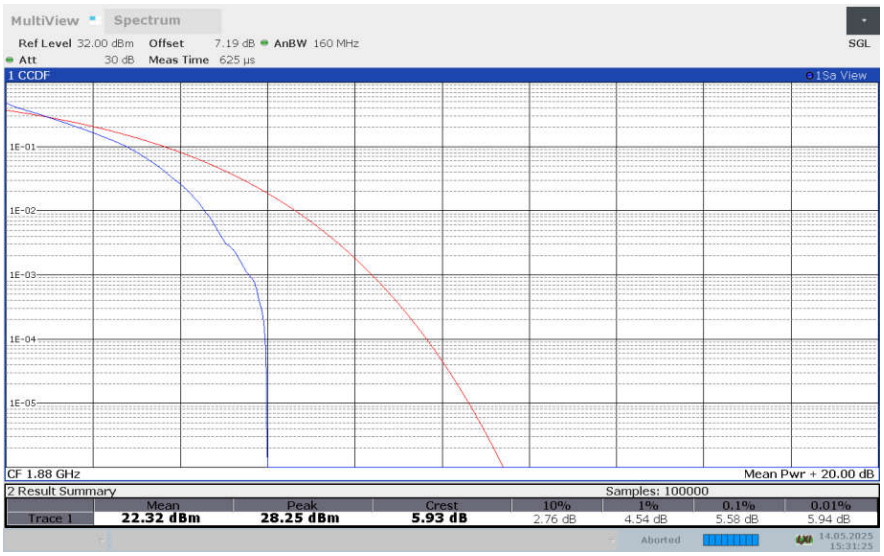
A.8.2 Measurement results

Only worst case result is given below

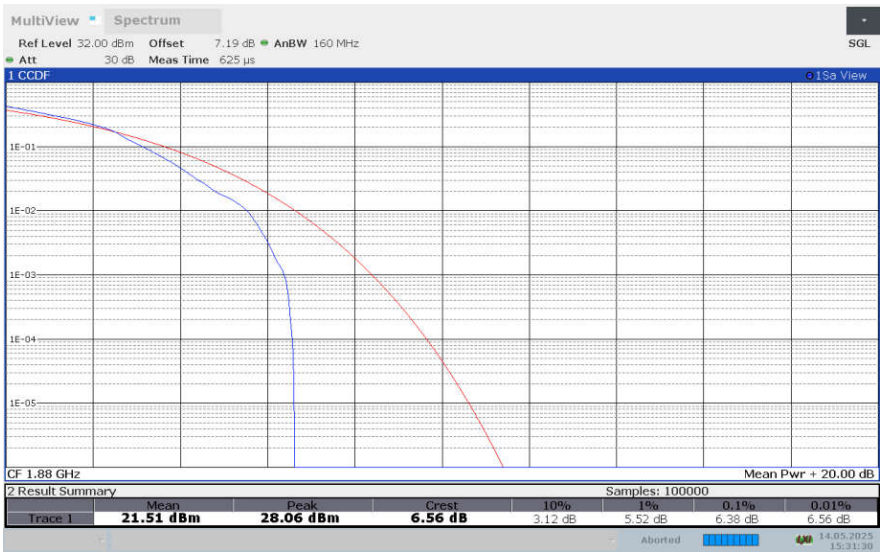
LTE band 2, 1.4MHz

Frequency (MHz)	RB	PAPR (dB)			
		QPSK	16QAM	64QAM	256QAM
1880	100%,0	5.58	6.38	6.56	7.00

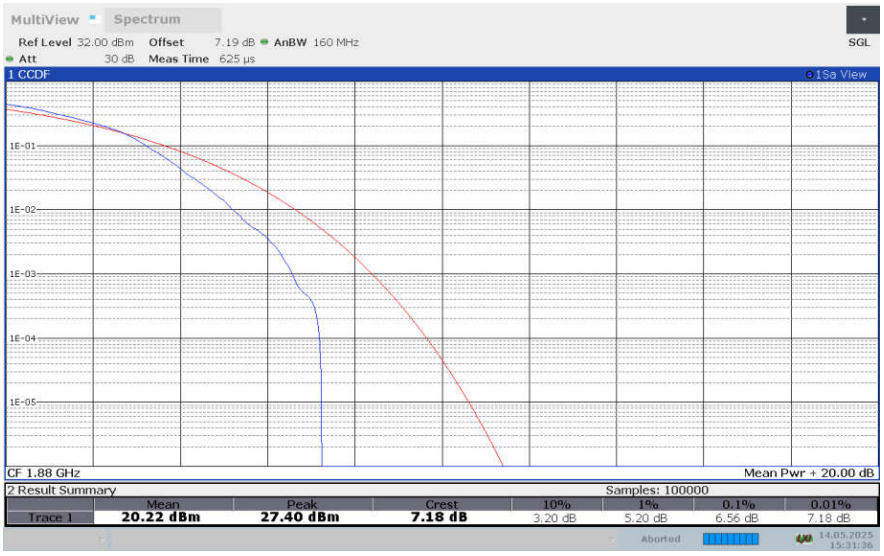
LTE band 2 , 1.4MHz Bandwidth,QPSK



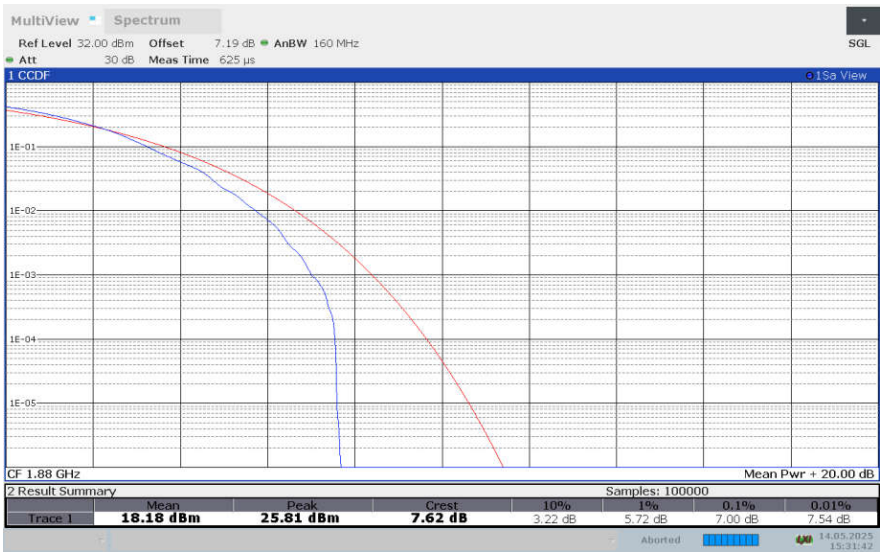
LTE band 2 , 1.4MHz Bandwidth,16QAM



LTE band 2 , 1.4MHz Bandwidth,64QAM



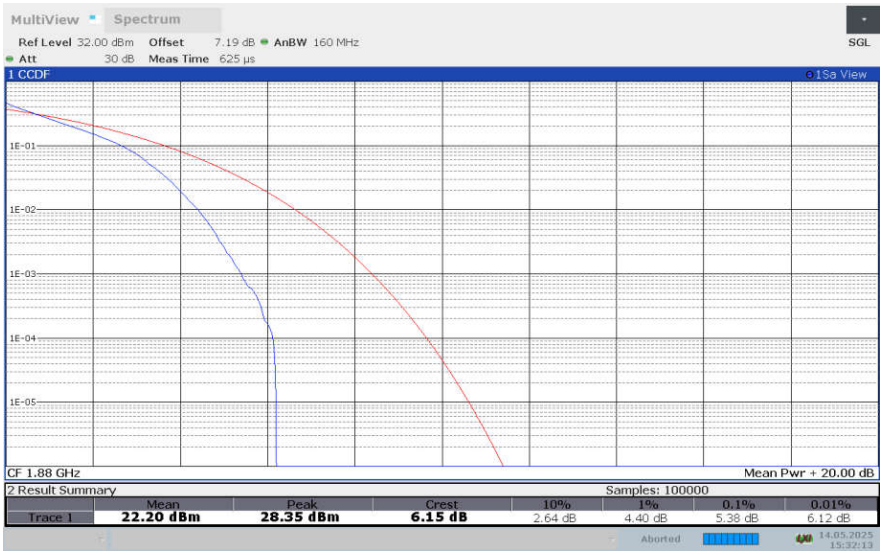
LTE band 2 , 1.4MHz Bandwidth,256QAM



LTE Band 2, 3MHz

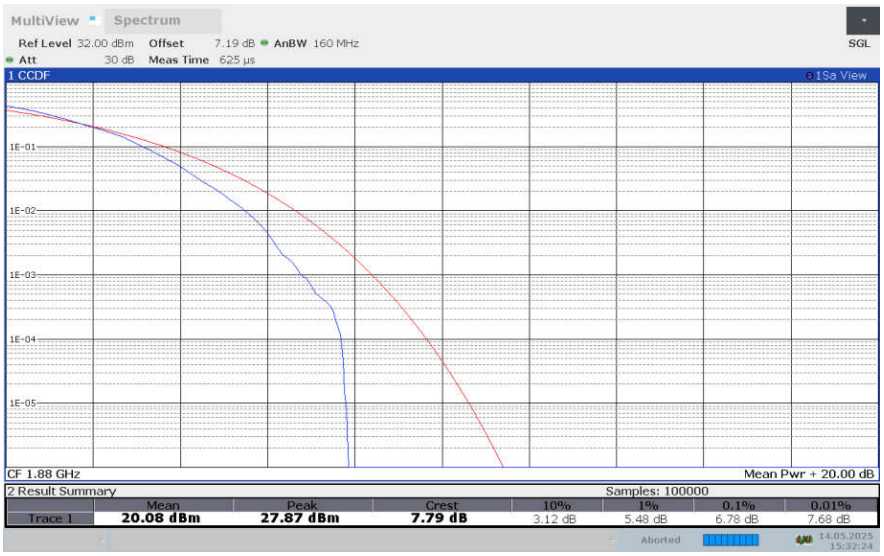
Frequency (MHz)	RB	PAPR (dB)			
		QPSK	16QAM	64QAM	256QAM
1880	100%,0	5.38	6.38	6.78	6.90

LTE band 2 , 3MHz Bandwidth,QPSK

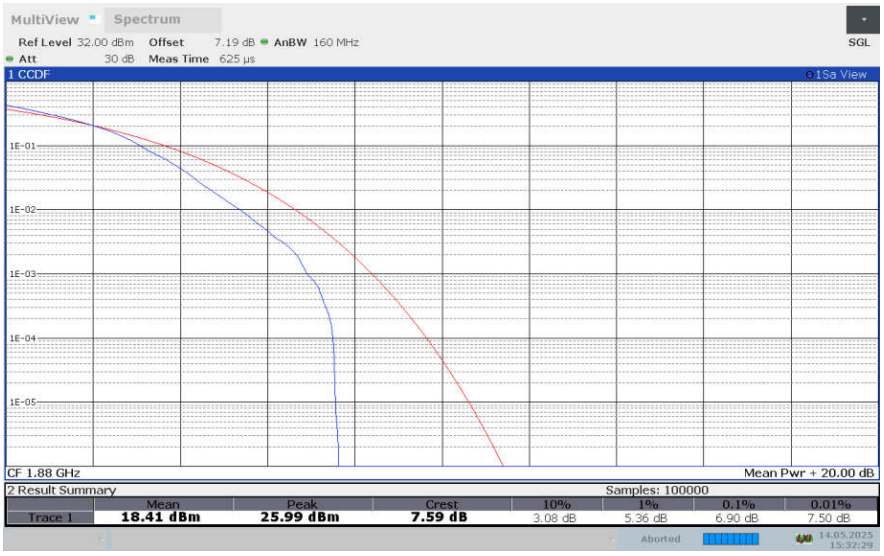


LTE band 2 , 3MHz Bandwidth,16QAM

LTE band 2 , 3MHz Bandwidth,64QAM



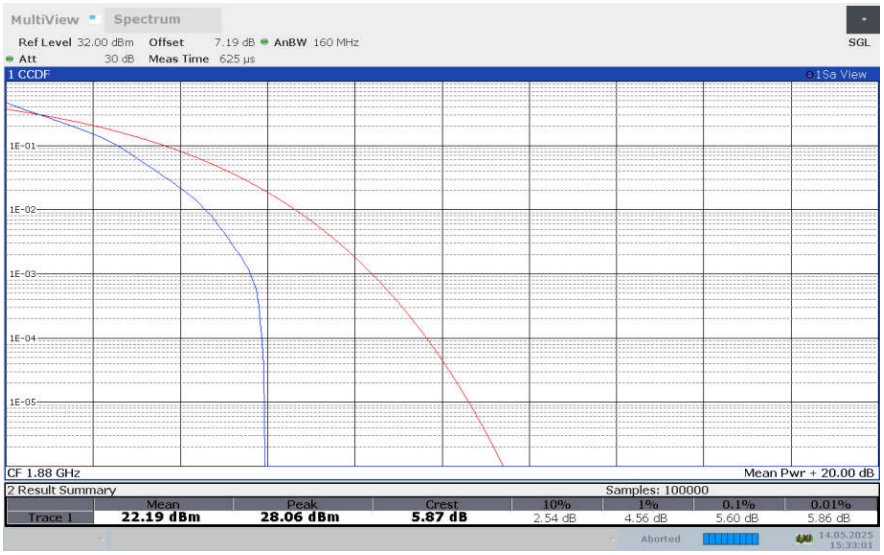
LTE band 2 , 3MHz Bandwidth,256QAM



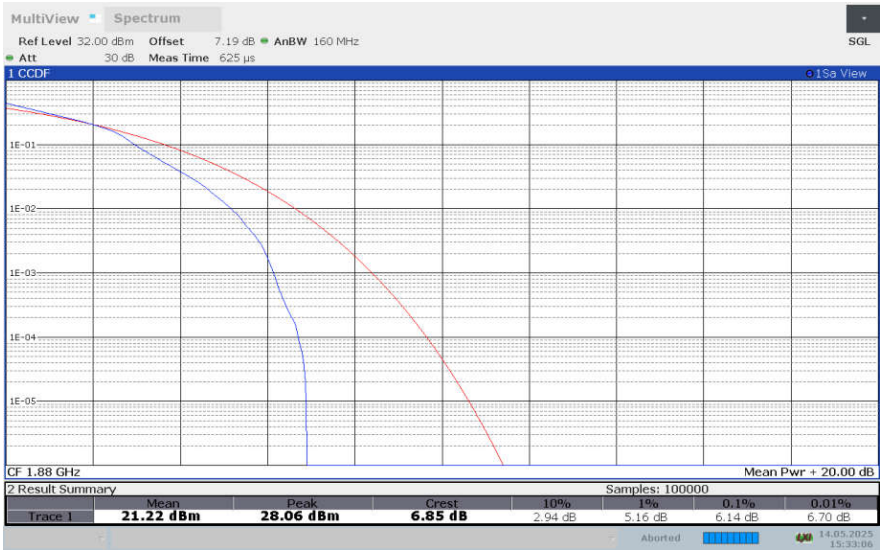
LTE Band 2, 5MHz

Frequency (MHz)	RB	PAPR (dB)			
		QPSK	16QAM	64QAM	256QAM
1880	100%,0	5.60	6.14	6.76	7.08

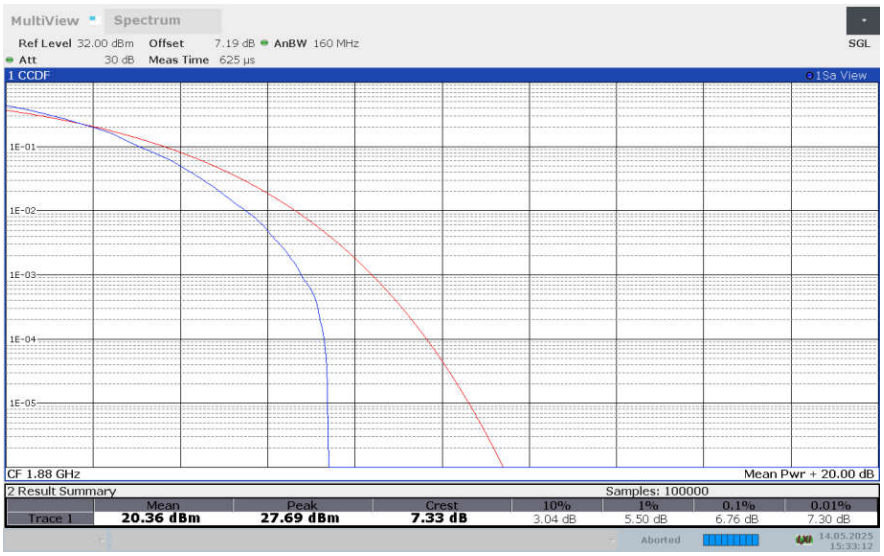
LTE band 2 , 5MHz Bandwidth,QPSK



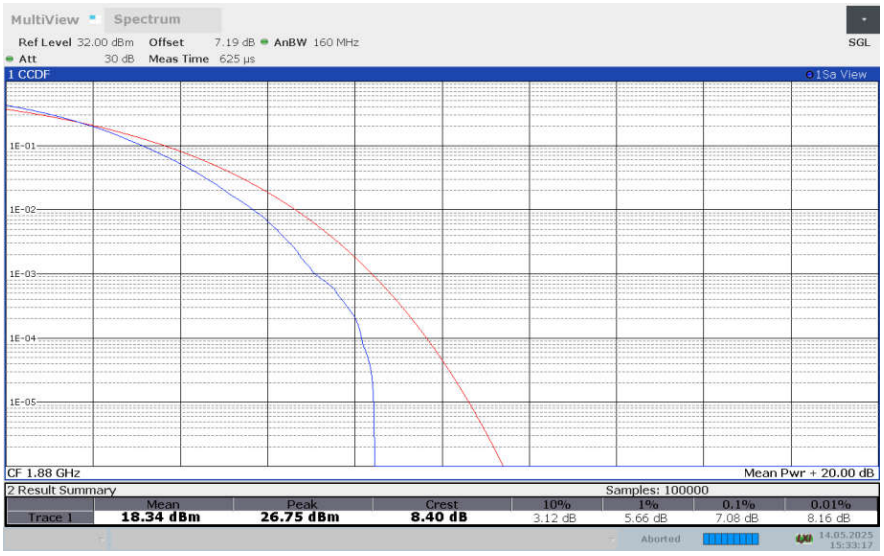
LTE band 2 , 5MHz Bandwidth,16QAM



LTE band 2 , 5MHz Bandwidth,64QAM



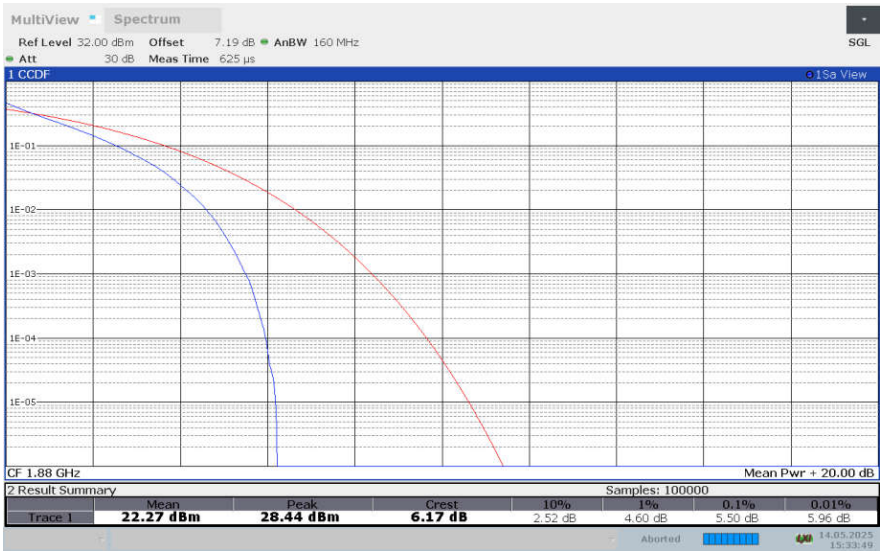
LTE band 2 , 5MHz Bandwidth,256QAM



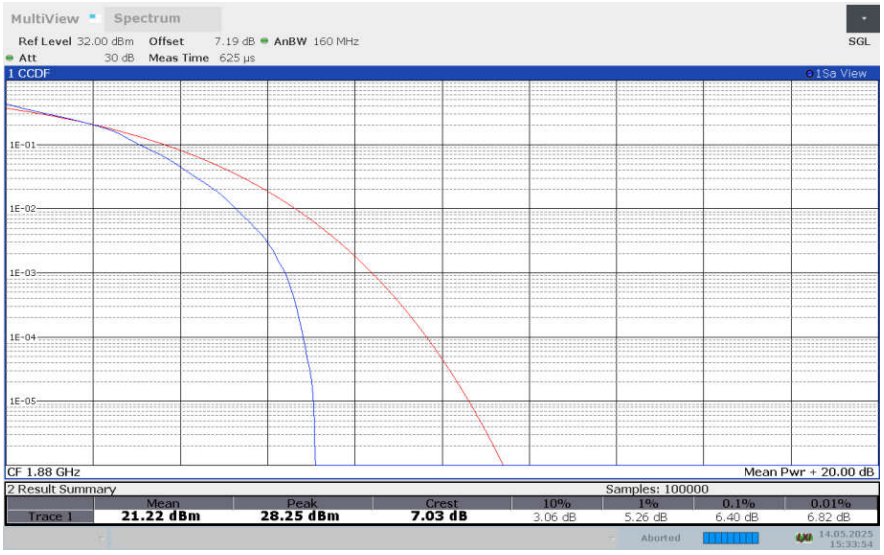
LTE Band 2, 10MHz

Frequency (MHz)	RB	PAPR (dB)			
		QPSK	16QAM	64QAM	256QAM
1880	100%,0	5.50	6.40	6.72	7.08

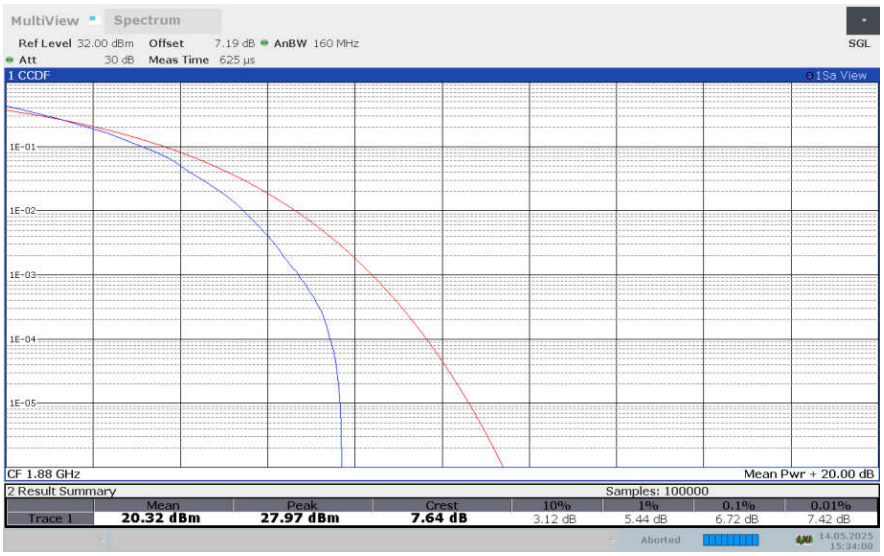
LTE band 2 , 10MHz Bandwidth,QPSK



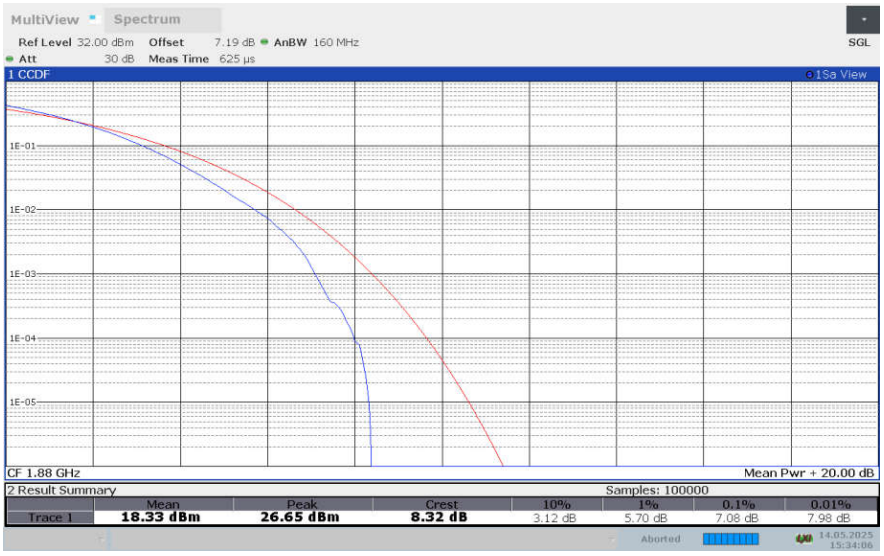
LTE band 2 , 10MHz Bandwidth,16QAM



LTE band 2 , 10MHz Bandwidth,64QAM



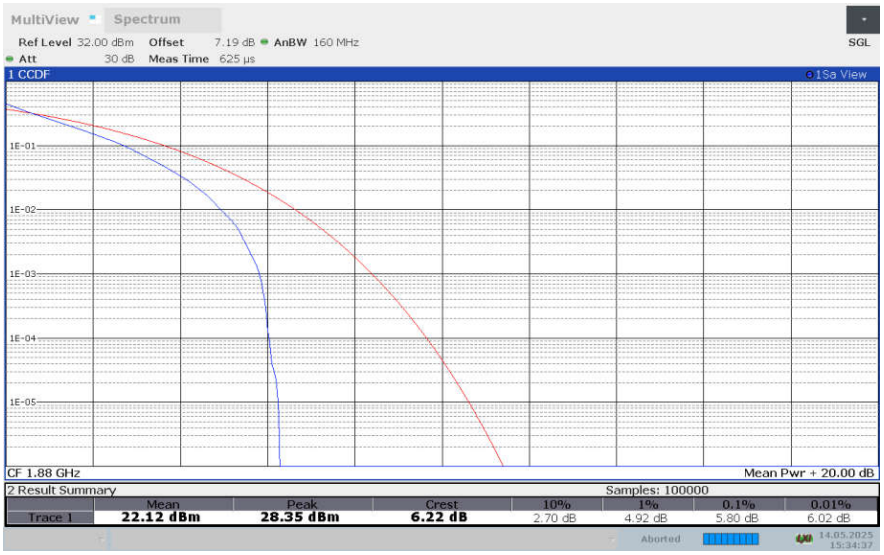
LTE band 2 , 10MHz Bandwidth,256QAM



LTE Band 2, 15MHz

Frequency (MHz)	RB	PAPR (dB)			
		QPSK	16QAM	64QAM	256QAM
1880	100%,0	5.80	6.38	6.68	7.08

LTE band 2 , 15MHz Bandwidth,QPSK



LTE band 2 , 15MHz Bandwidth,16QAM