LTE band 5
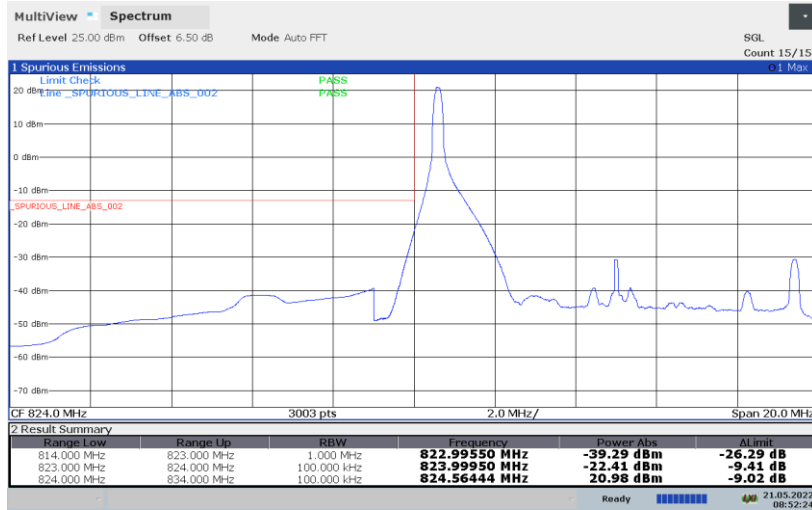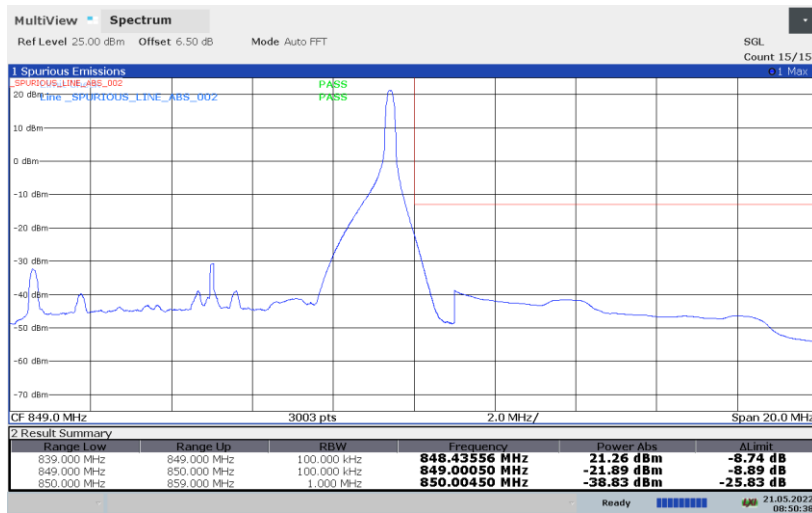**LOW BAND EDGE BLOCK-1RB-low_offset**

HIGH BAND EDGE BLOCK-1RB-high_offset

LOW BAND EDGE BLOCK-10MHz-100%RB

MultiView	Spectrum						SGL Count 15/15
Ref Level 25.00 dBm Offset 6.50 dB		Mode Auto FFT					

1 Spurious Emissions

Limit Check — PASS
Line _SPURIOUS_LINE_ABS_002 — PASS

_SPURIOUS_LINE_ABS_002

CF 824.0 MHz   3003 pts   2.0 MHz/   Span 20.0 MHz

2 Result Summary

Range Low	Range Up	RBW	Frequency	Power Abs	ALimit
814.000 MHz	823.000 MHz	1.000 MHz	822.99550 MHz	-27.79 dBm	-14.79 dB
823.000 MHz	824.000 MHz	100.000 kHz	823.99950 MHz	-35.23 dBm	-22.23 dB
824.000 MHz	834.000 MHz	100.000 kHz	832.19680 MHz	3.45 dBm	-26.55 dB

Ready   21.05.2022 08:53:09

HIGH BAND EDGE BLOCK-10MHz-100%RB

MultiView	Spectrum						SGL Count 15/15
Ref Level 25.00 dBm Offset 6.50 dB		Mode Auto FFT					

1 Spurious Emissions

_SPURIOUS_LINE_ABS_002 — PASS
Line _SPURIOUS_LINE_ABS_002 — PASS

CF 849.0 MHz   3003 pts   2.0 MHz/   Span 20.0 MHz

2 Result Summary

Range Low	Range Up	RBW	Frequency	Power Abs	ALimit
839.000 MHz	849.000 MHz	100.000 kHz	845.31868 MHz	3.95 dBm	-26.05 dB
849.000 MHz	850.000 MHz	100.000 kHz	849.00050 MHz	-34.86 dBm	-21.86 dB
850.000 MHz	859.000 MHz	1.000 MHz	850.31918 MHz	-26.42 dBm	-13.42 dB

Ready   21.05.2022 08:51:19

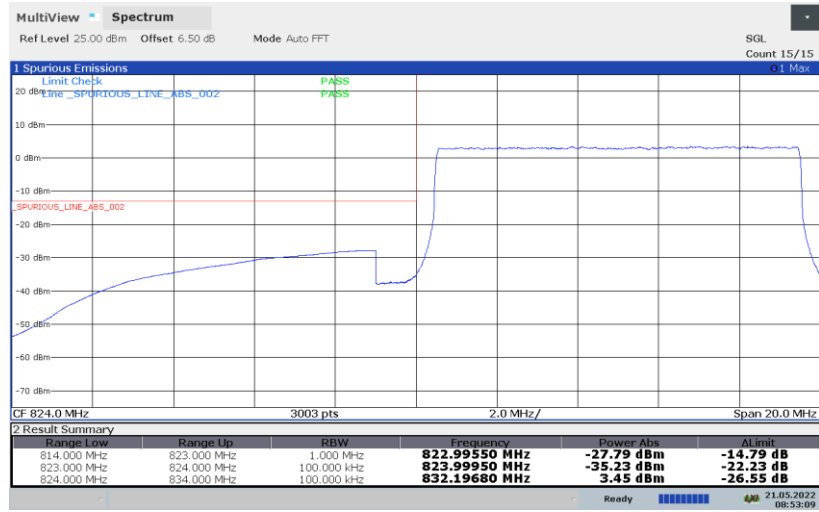**LTE band 12**
LOW BAND EDGE BLOCK-1RB-low_offset

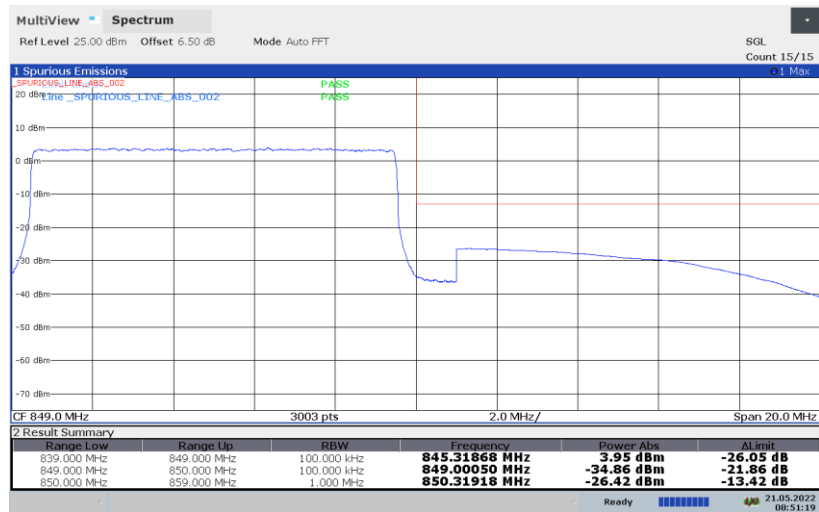**HIGH BAND EDGE BLOCK-1RB-high_offset**
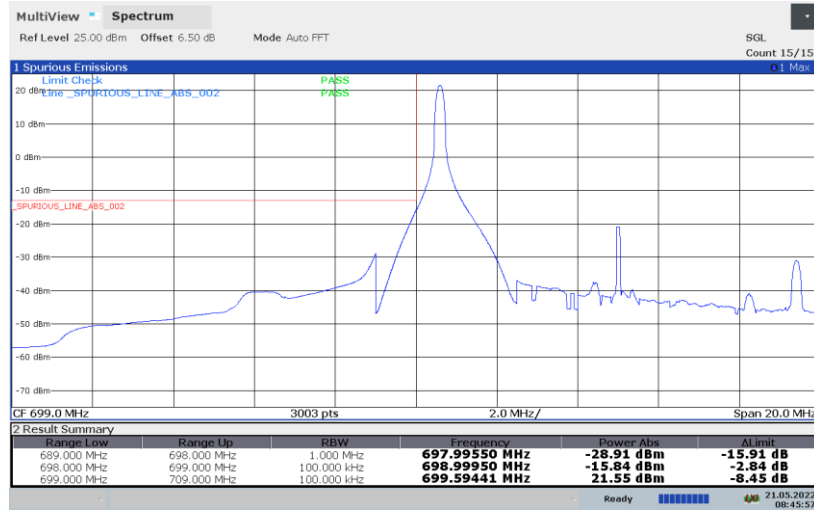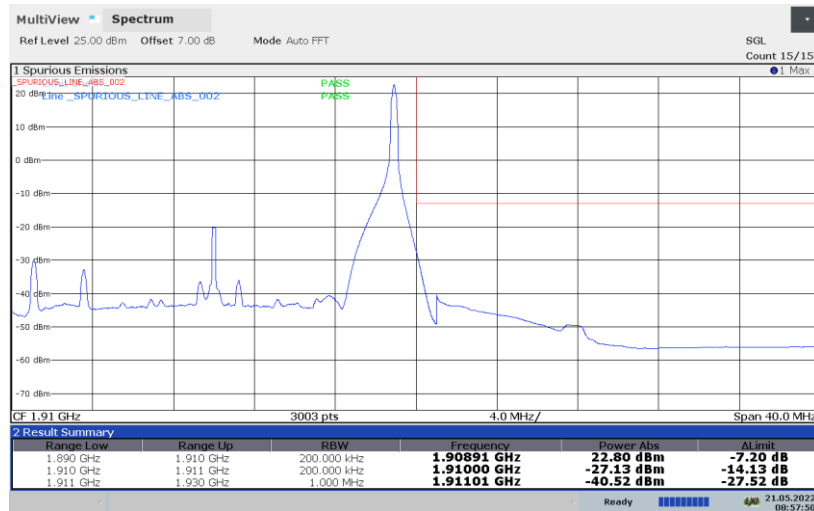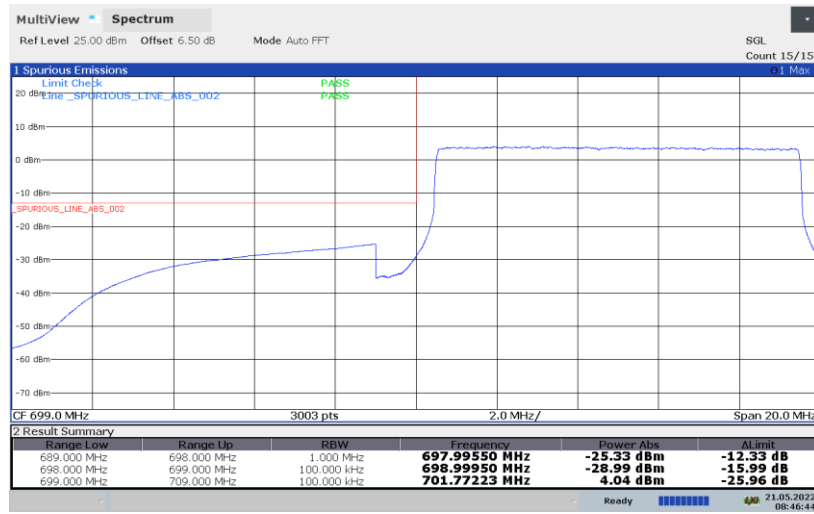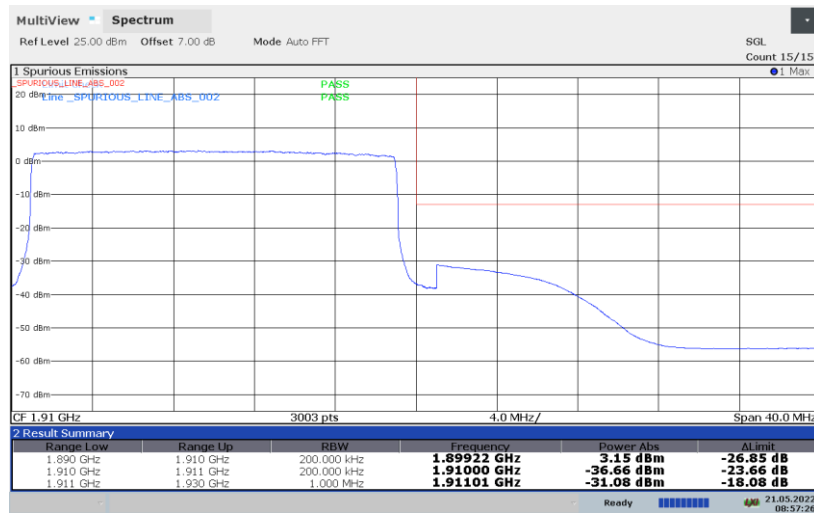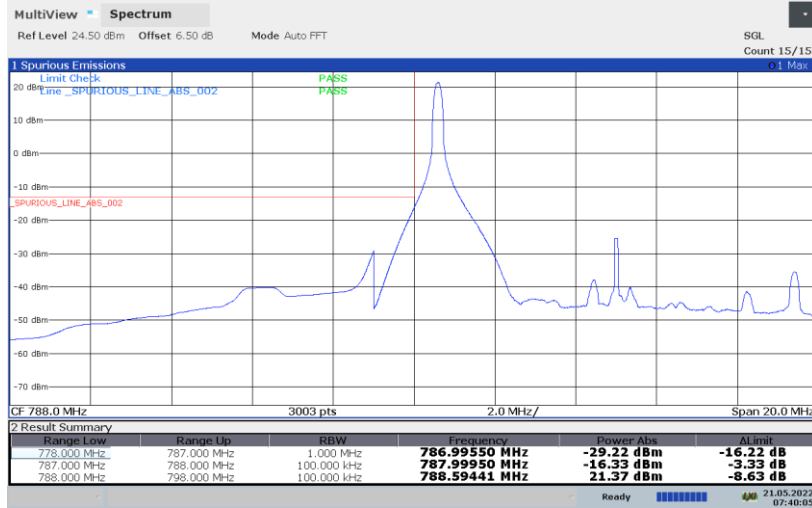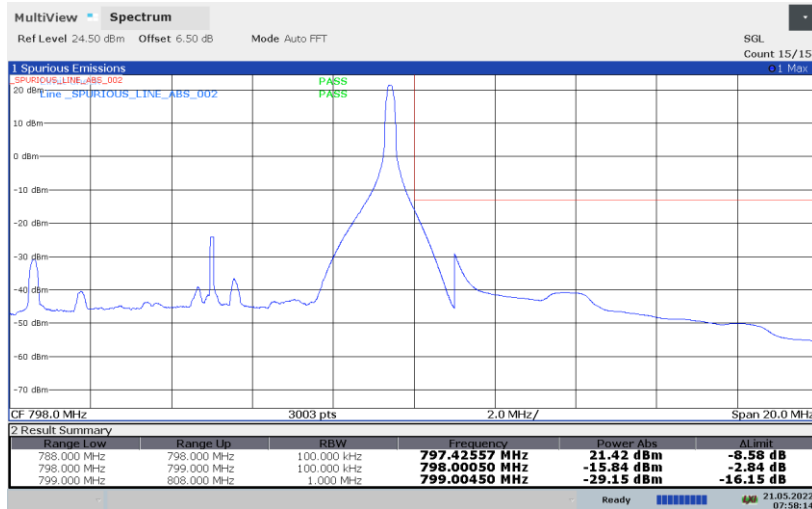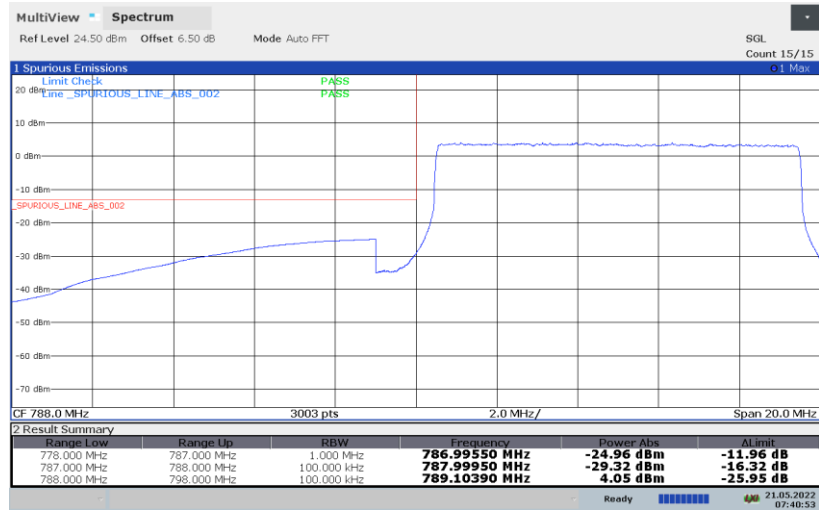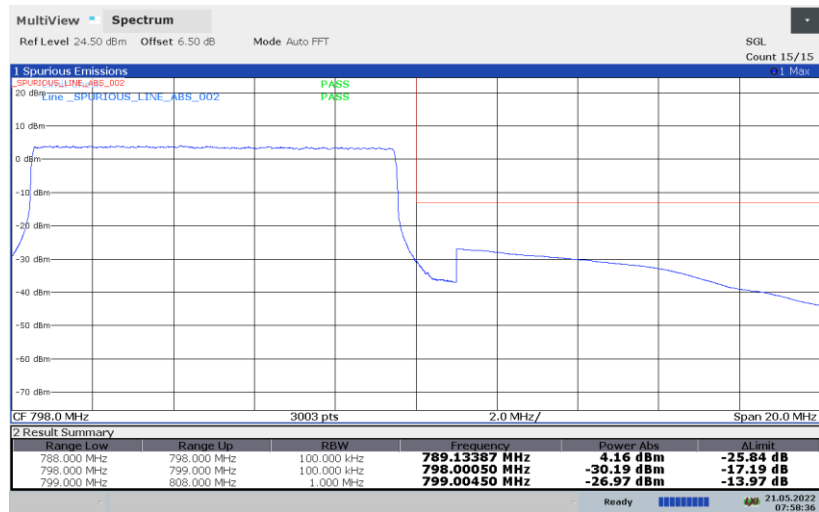
LOW BAND EDGE BLOCK-10MHz-100%RB

HIGH BAND EDGE BLOCK-10MHz-100%RB

LTE band 14
LOW BAND EDGE BLOCK-1RB-low_offset

HIGH BAND EDGE BLOCK-1RB-high_offset

LOW BAND EDGE BLOCK-10MHz-100%RB

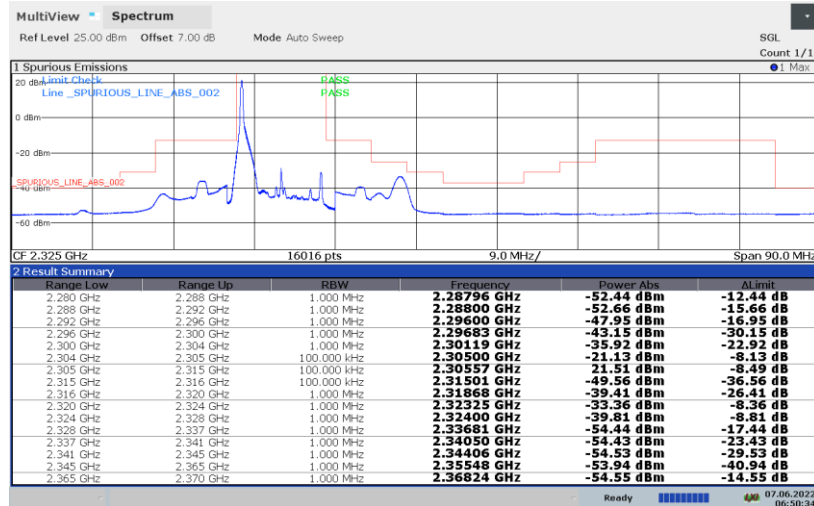**HIGH BAND EDGE BLOCK-10MHz-100%RB**

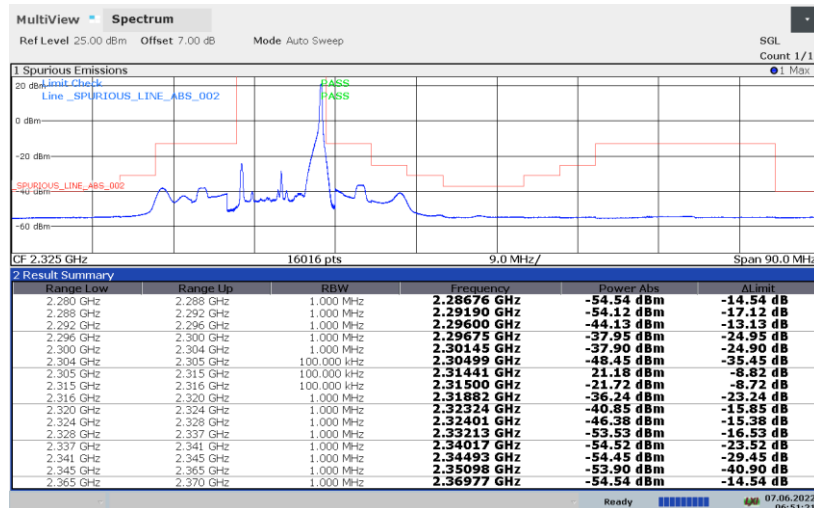**LTE band 30**
LOW BAND EDGE BLOCK-1RB-low_offset

HIGH BAND EDGE BLOCK-1RB-high_offset

LOW BAND EDGE BLOCK-10MHz-100%RB

HIGH BAND EDGE BLOCK-10MHz-100%RB
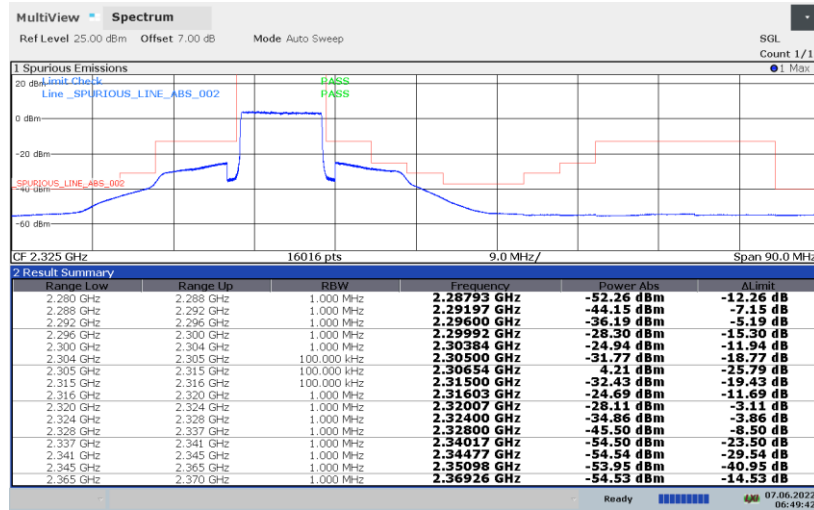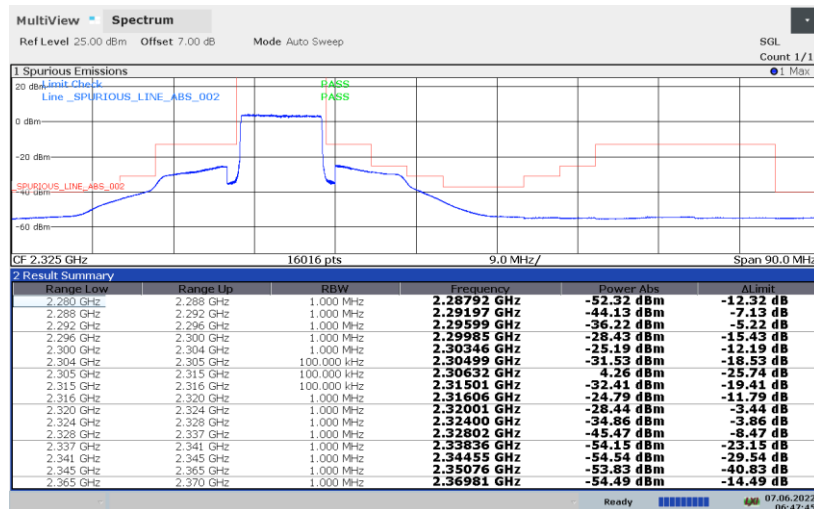

Note: Expanded measurement uncertainty is U = 0.49dB(100KHz-2GHz)/1.21dB(2GHz-26.5GHz), k = 1.96

A.7 CONDUCTED SPURIOUS EMISSION

Reference

FCC: CFR Part 2.1051, 22.917, 24.238, 27.53, 90.535.

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 2490.5 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 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 onall 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 factor 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 2365 MHz.
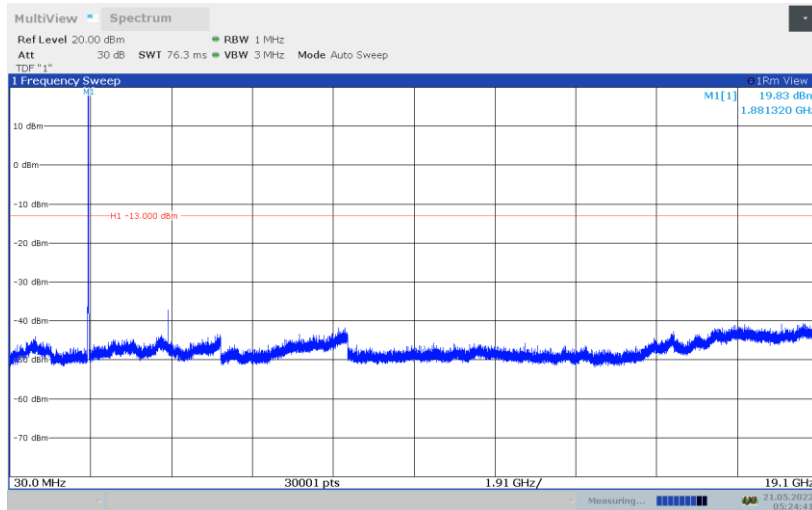
A. 7.3 Measurement result

Only worst case result is given below

LTE band 2 : 30MHz – 19.1GHz

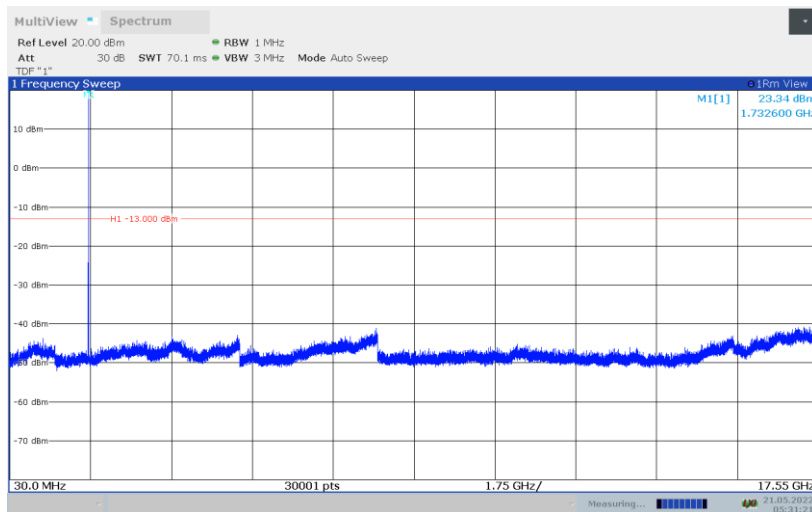Spurious emission limit –13dBm.

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

LTE band 4 : 30MHz – 17.55GHz
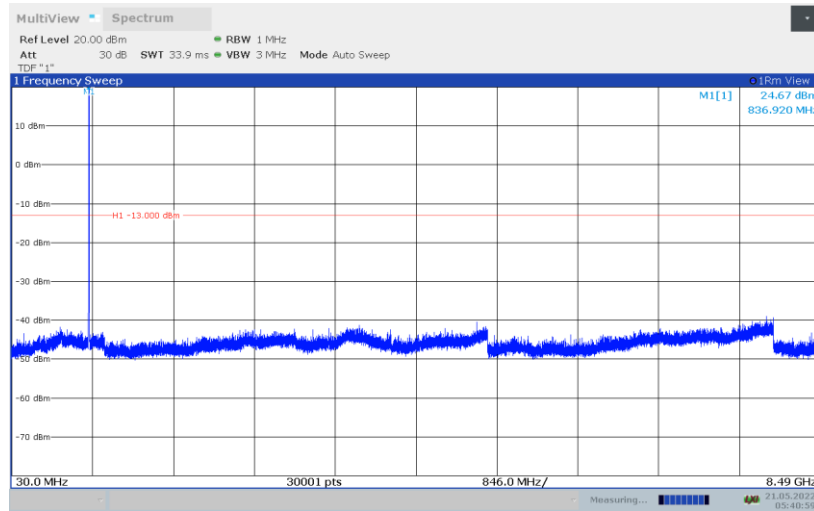
Spurious emission limit –13dBm.

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

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

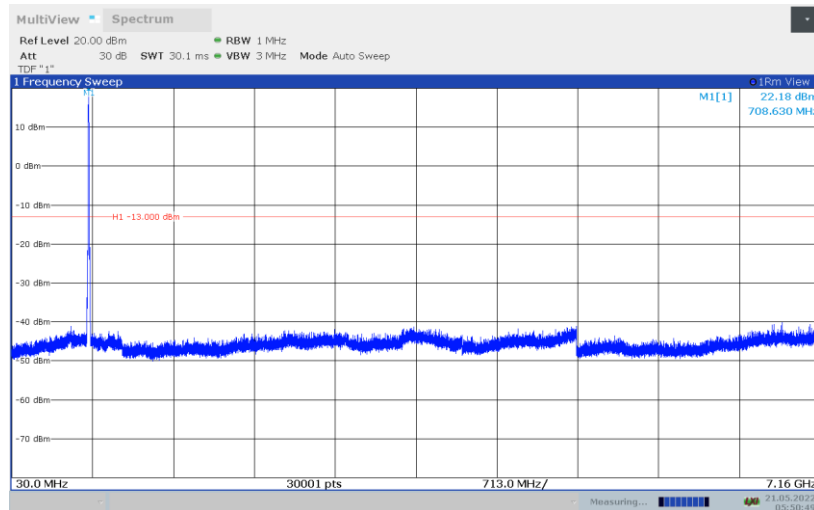Spurious emission limit –25dBm.

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

LTE band 12: 30MHz – 7.16GHz
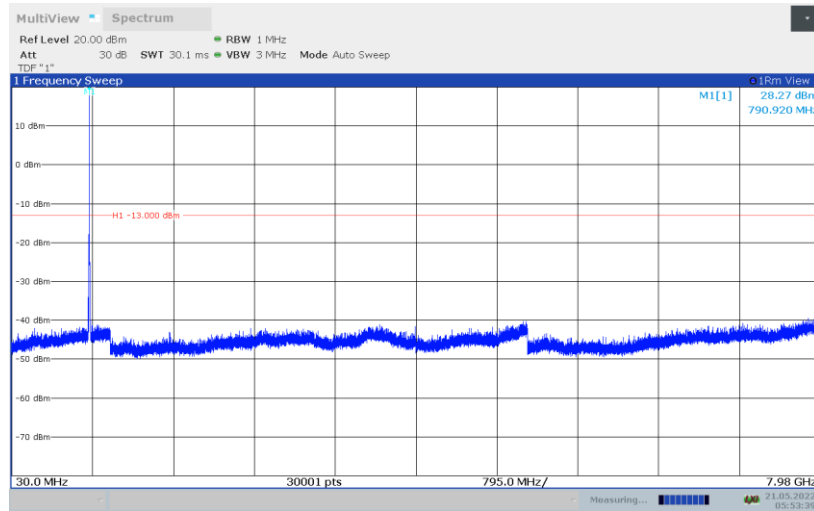
Spurious emission limit –13dBm.

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

LTE band 14: 30MHz – 7.98GHz
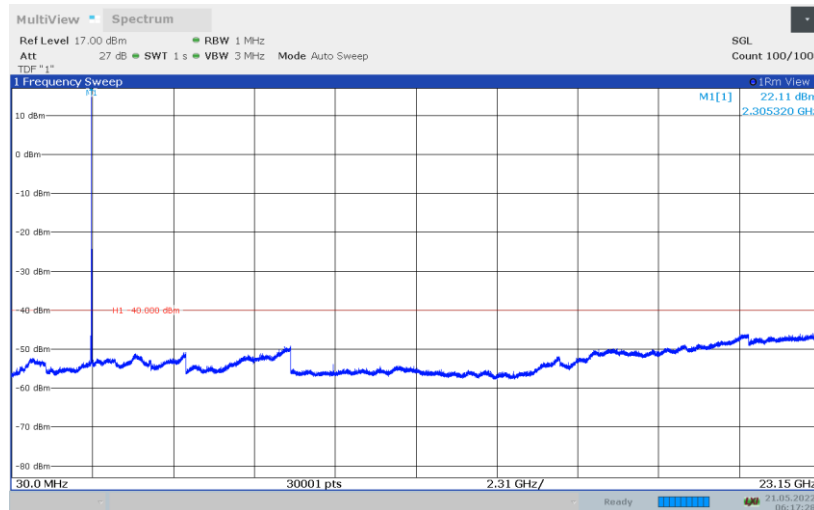
Spurious emission limit –13dBm.

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

LTE band 30: 30MHz – 23.15GHz

Spurious emission limit –40dBm.

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

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

A.8 PEAK-TO-AVERAGE POWER RATIO

Reference

FCC: CFR Part 24.232, 27.50(d), KDB971168 D01(5.7).

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 $\geq$ 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%

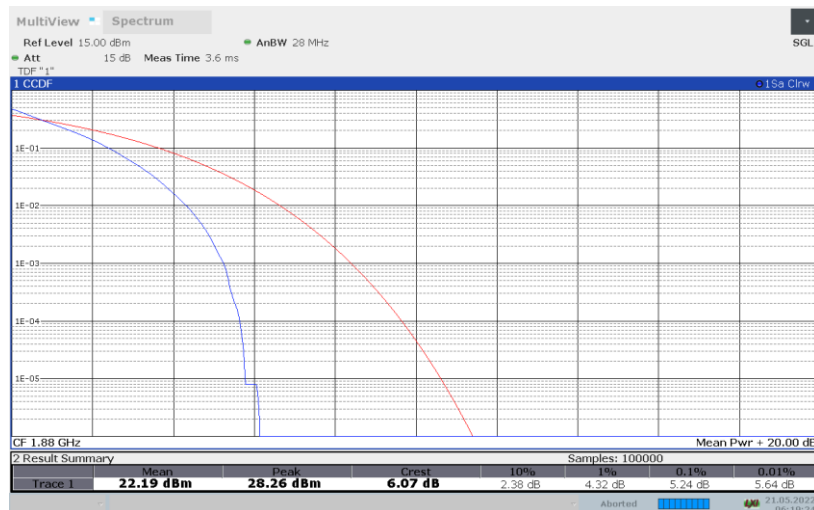**A.8.1 Measurement limit**

not exceed 13 dB

A.8.2 Measurement results

Only worst case result is given below

LTE band 2

Frequency(MHz)	Bandwidth(MHz)	PAPR(dB)		
		QPSK	16QAM	64QAM
1880.0	20	5.24	5.96	6.02

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

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

LTE band 2, 20MHz Bandwidth, 64QAM (PAPR)

LTE band 4

Frequency(MHz)	Bandwidth(MHz)	PAPR(dB)		
		QPSK	16QAM	64QAM
1732.5	20	5.44	6.14	6.16

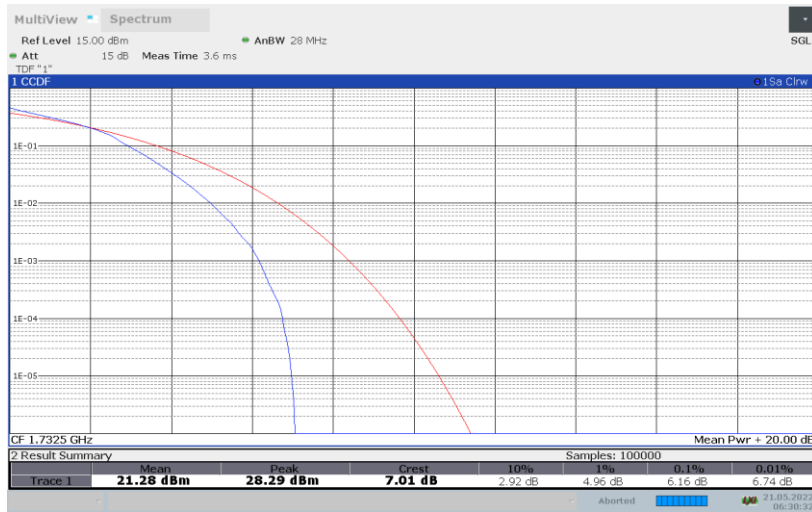**LTE band 4, 20MHz Bandwidth, QPSK (PAPR)**
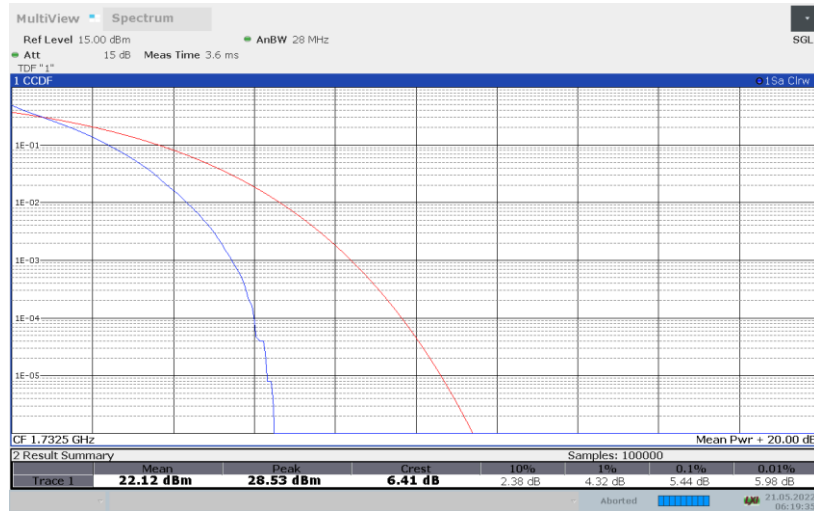
LTE band 4, 20MHz Bandwidth, 16QAM (PAPR)

LTE band 4, 20MHz Bandwidth, 64QAM (PAPR)

LTE band 5

Frequency(MHz)	Bandwidth(MHz)	PAPR(dB)		
		QPSK	16QAM	64QAM
826.5	20	5.04	5.88	5.90

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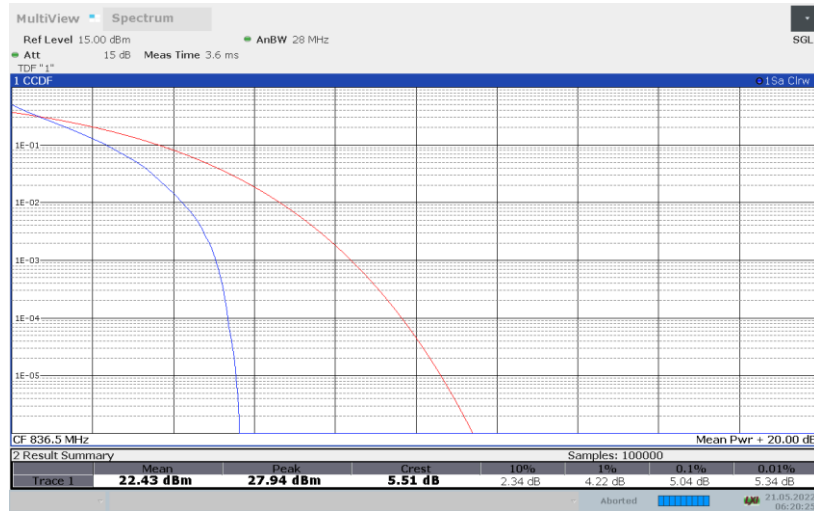
LTE band 5, 10MHz Bandwidth, 16QAM (PAPR)

LTE band 5, 10MHz Bandwidth, 64QAM (PAPR)

LTE band 12

Frequency(MHz)	Bandwidth(MHz)	PAPR(dB)		
		QPSK	16QAM	64QAM
707.5	10	5.04	5.84	5.82

LTE band 12, 10MHz Bandwidth, QPSK (PAPR)
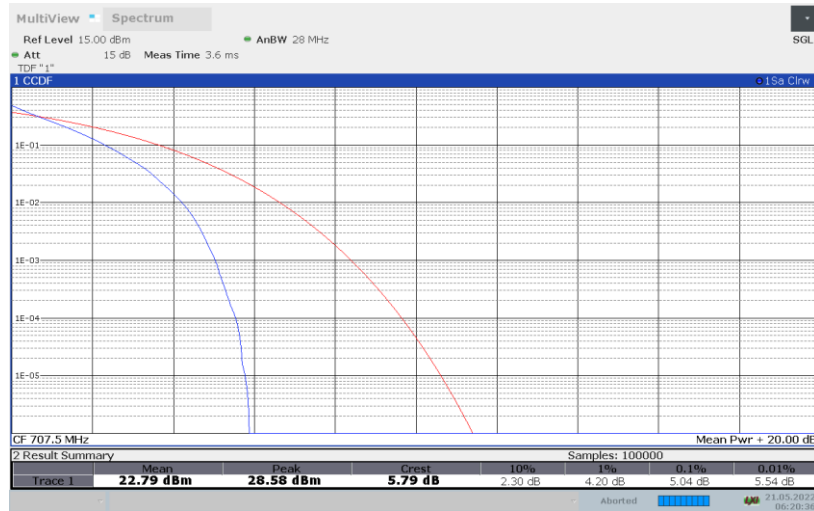
LTE band 12, 10MHz Bandwidth, 16QAM (PAPR)

LTE band 12, 10MHz Bandwidth, 64QAM (PAPR)

LTE band 14

Frequency(MHz)	Bandwidth(MHz)	PAPR(dB)		
		QPSK	16QAM	64QAM
793.0	10	4.96	5.82	5.86

LTE band 14, 10MHz Bandwidth, QPSK (PAPR)

LTE band 14, 10MHz Bandwidth, 16QAM (PAPR)

LTE band 14, 10MHz Bandwidth, 64QAM (PAPR)

LTE band 30

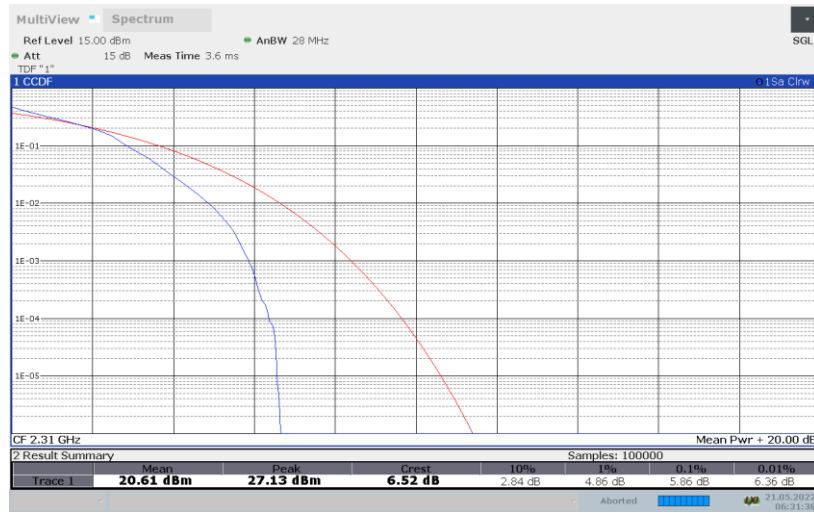| Frequency(MHz)	Bandwidth(MHz)	PAPR(dB)		
		QPSK	16QAM	64QAM
2310.0	20	4.92	5.88	5.86

LTE band 30, 10MHz Bandwidth, QPSK (PAPR)
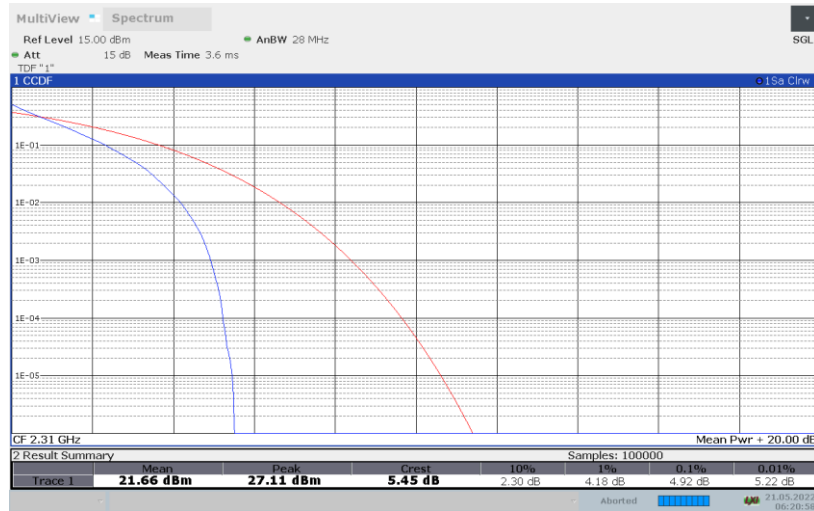
LTE band 30, 10MHz Bandwidth, 16QAM (PAPR)

LTE band 30, 10MHz Bandwidth, 64QAM (PAPR)

Note: Expanded measurement uncertainty is $U = 0.48$, $k = 2$

END OF REPORT