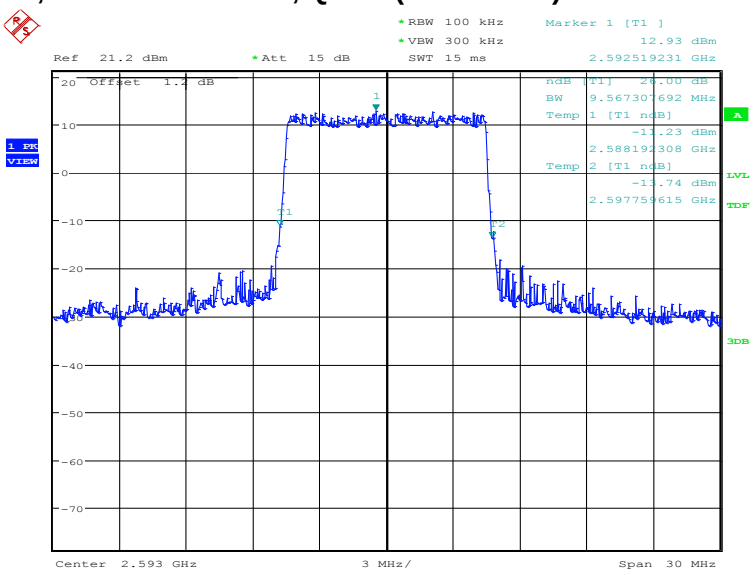
LTE band 41, 10MHz (-26dBc)

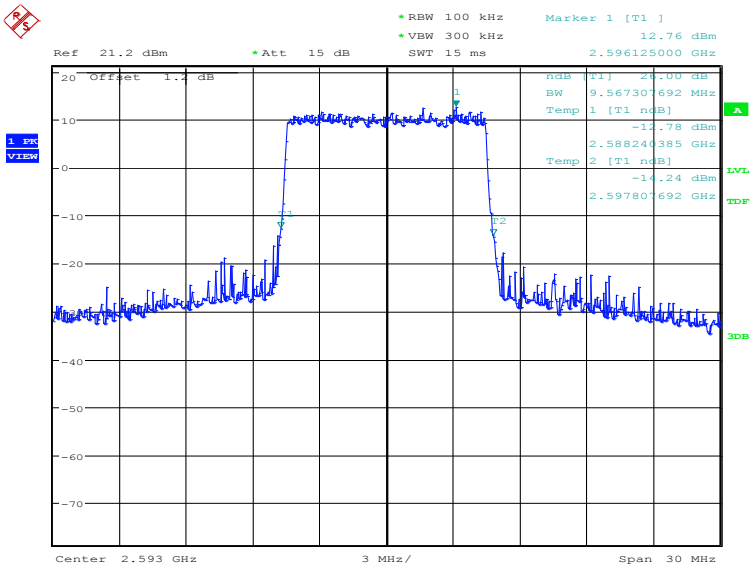
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	9567.31	9567.31

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



Date: 16.SEP.2022 12:03:32

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



Date: 16.SEP.2022 12:04:13

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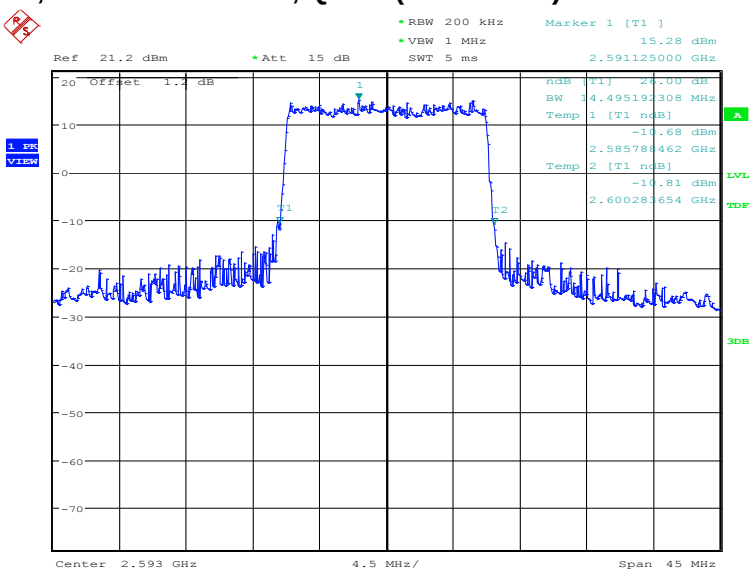
LTE band 41, 15MHz (-26dBc)

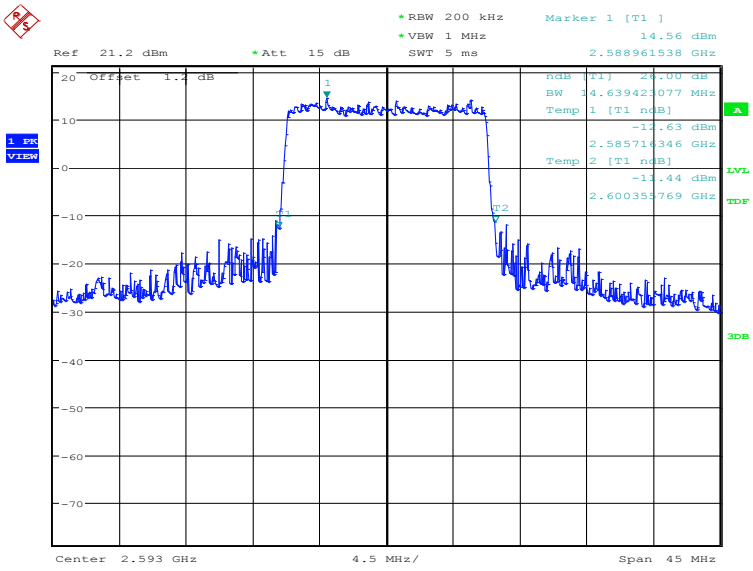
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	14495.19	14639.42

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



Date: 16.SEP.2022 12:04:56

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



Date: 16.SEP.2022 12:05:37

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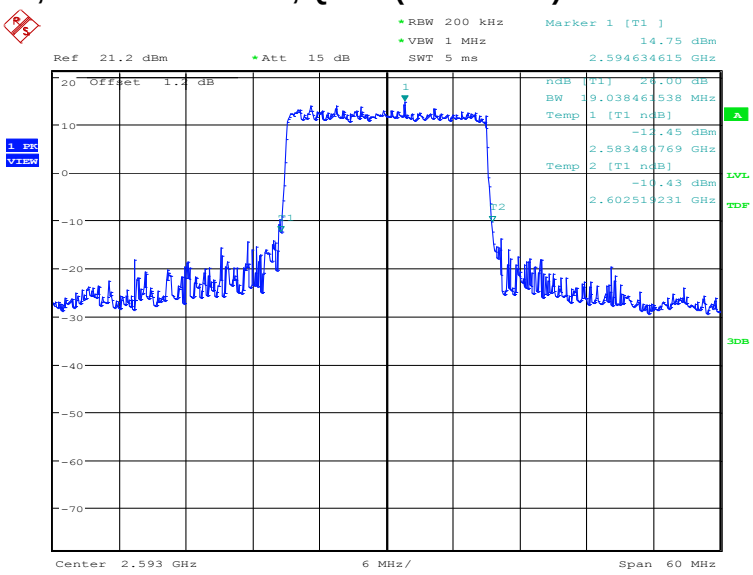
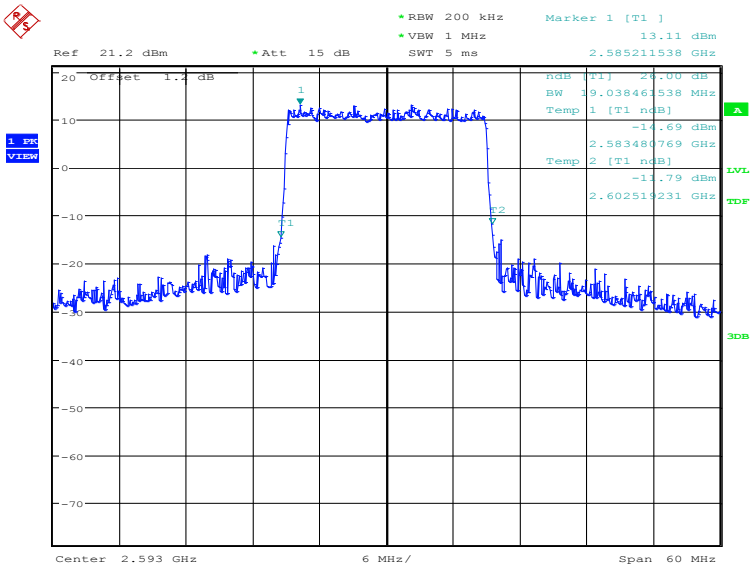
LTE band 41, 20MHz (-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	19038.46	19038.46

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



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



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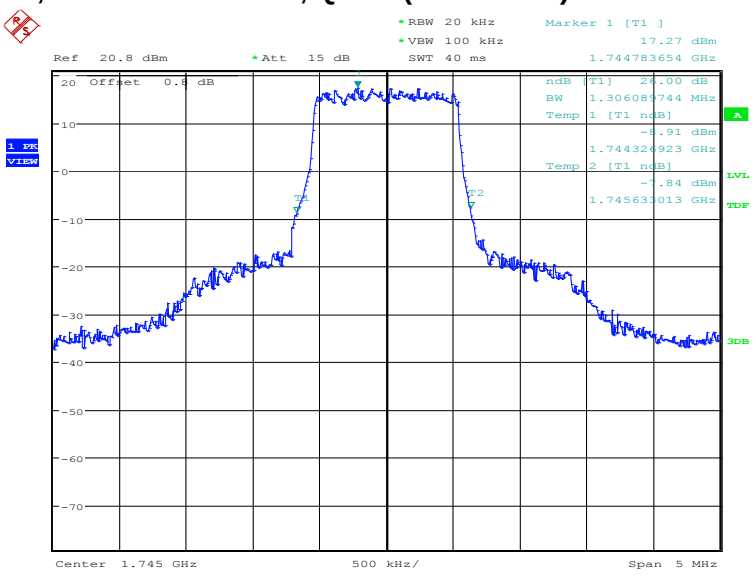
LTE band 66, 1.4MHz (-26dBc)

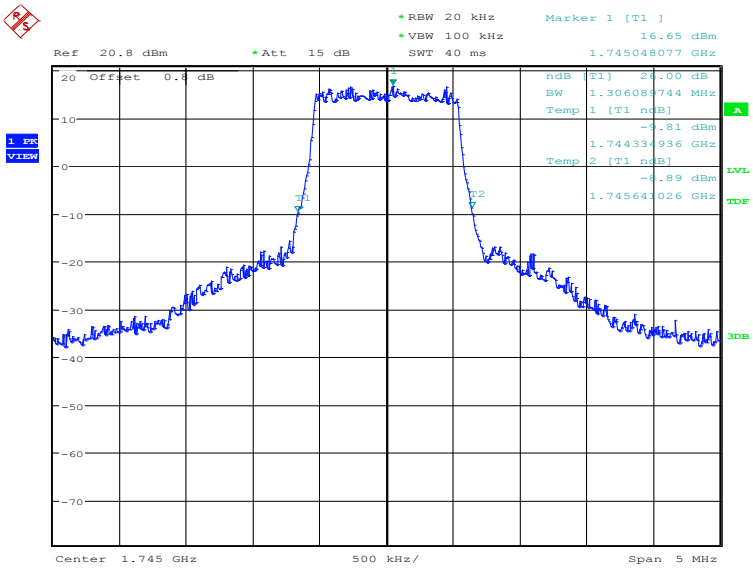
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1745.0	QPSK	16QAM
	1306.09	1306.09

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



Date: 16.SEP.2022 11:53:06

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



Date: 16.SEP.2022 11:53:46

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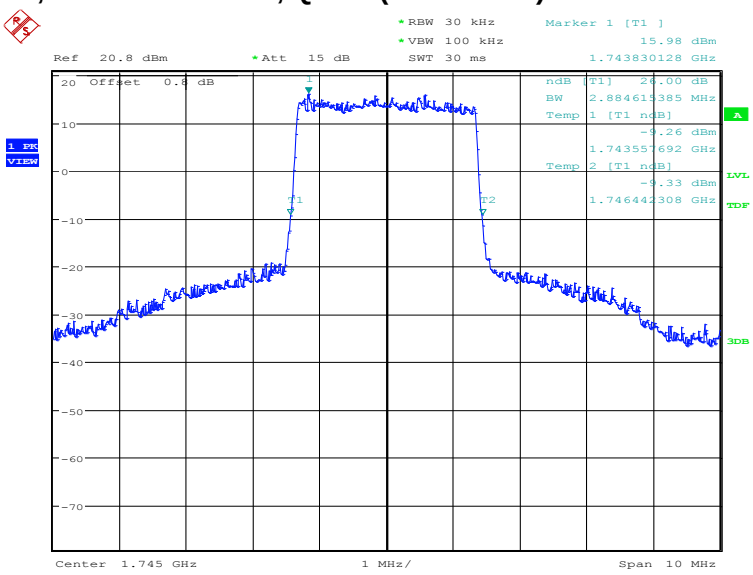
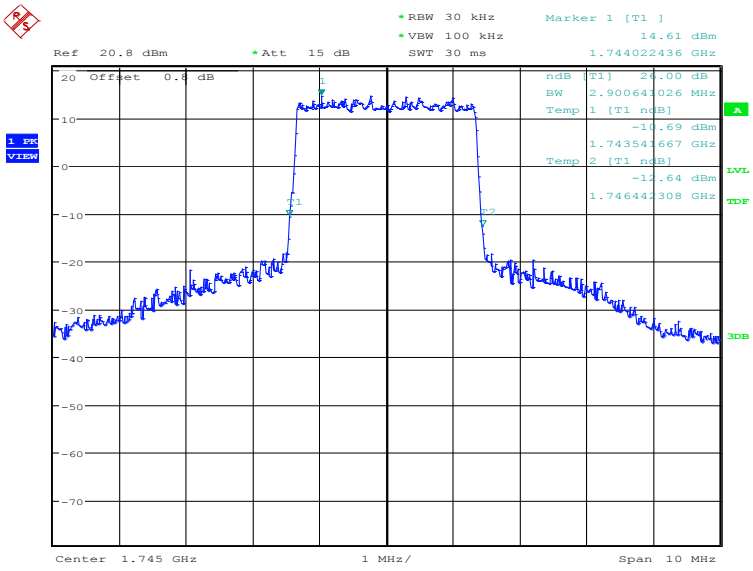
LTE band 66, 3MHz (-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1745.0	QPSK	16QAM
	2884.62	2900.64

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



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



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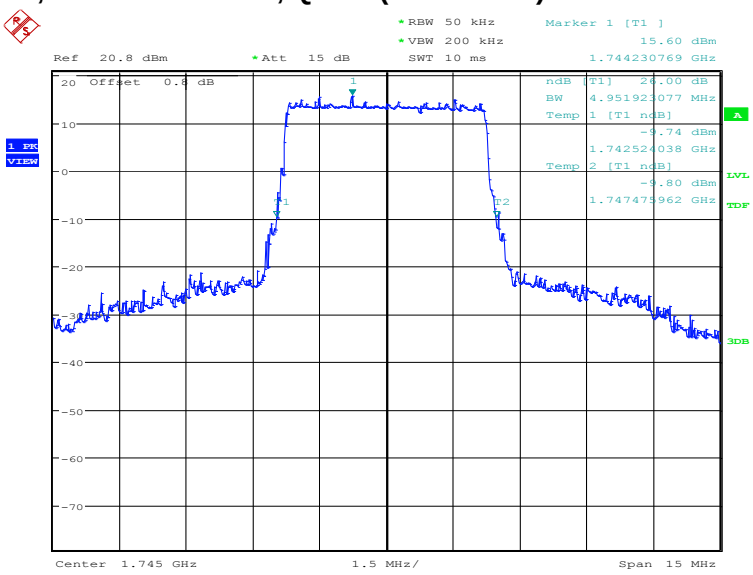
LTE band 66, 5MHz (-26dBc)

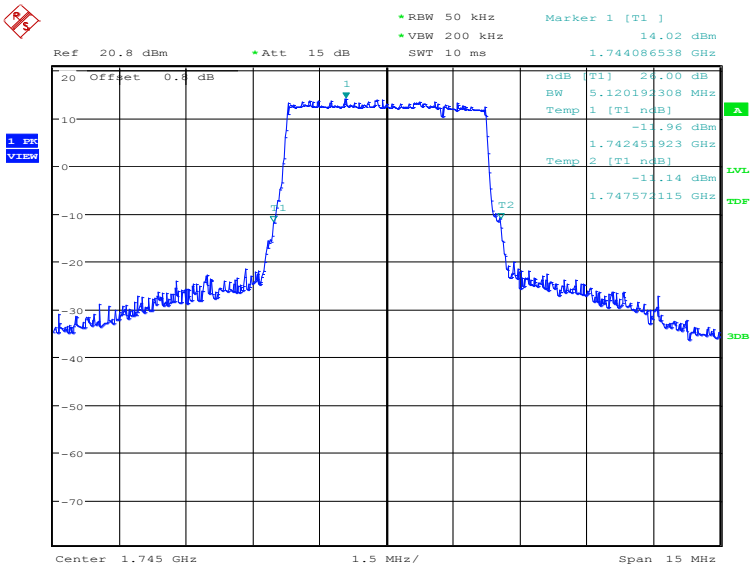
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1745.0	QPSK	16QAM
	4951.92	5120.19

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



Date: 16.SEP.2022 11:55:52

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



Date: 16.SEP.2022 11:56:32

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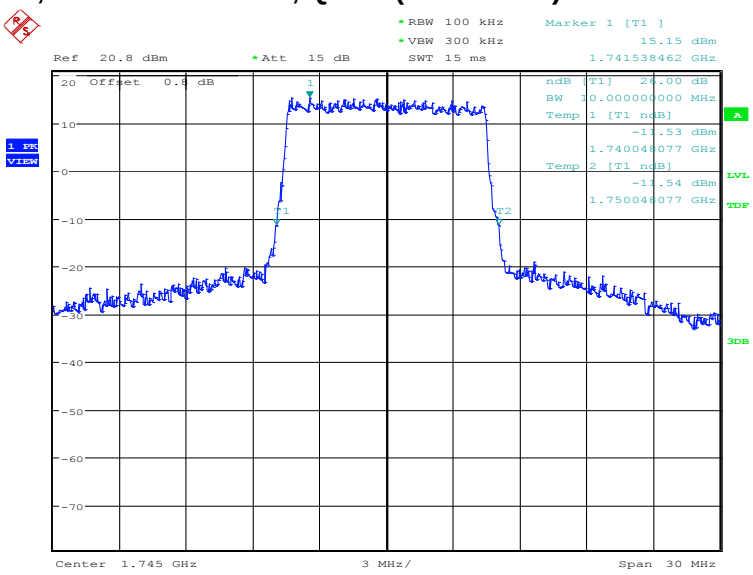
LTE band 66, 10MHz (-26dBc)

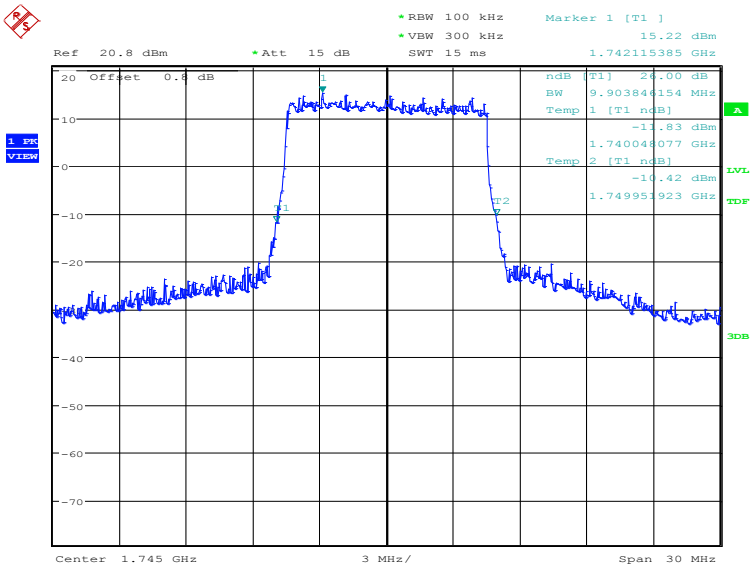
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1745.0	QPSK	16QAM
	10000.00	9903.85

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



Date: 16.SEP.2022 11:57:14

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



Date: 16.SEP.2022 11:57:55

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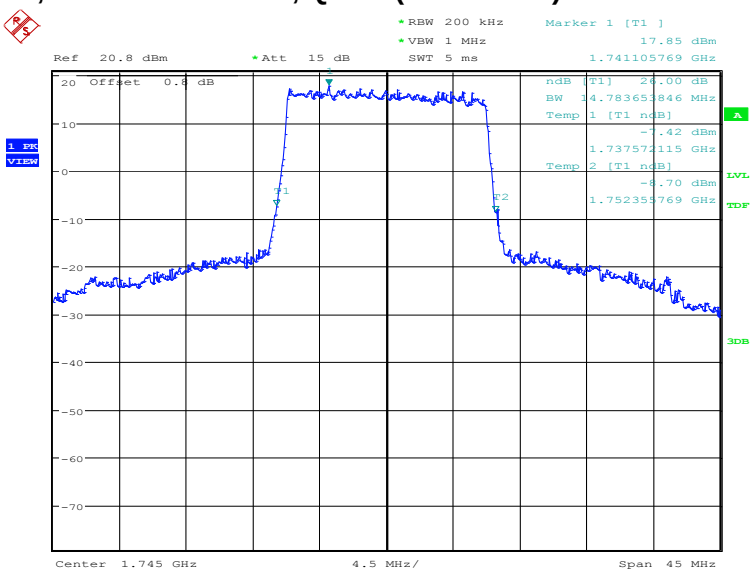
LTE band 66, 15MHz (-26dBc)

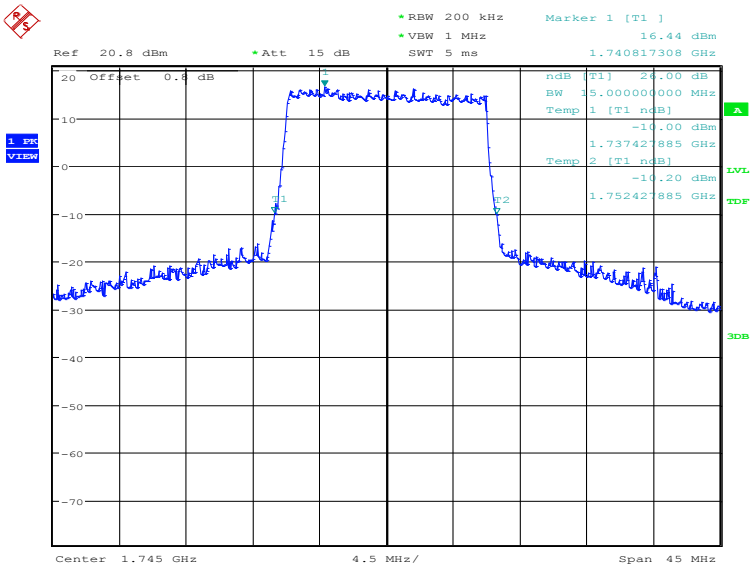
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1745.0	QPSK	16QAM
	14783.65	15000.00

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



Date: 16.SEP.2022 11:58:37

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



Date: 16.SEP.2022 11:59:18

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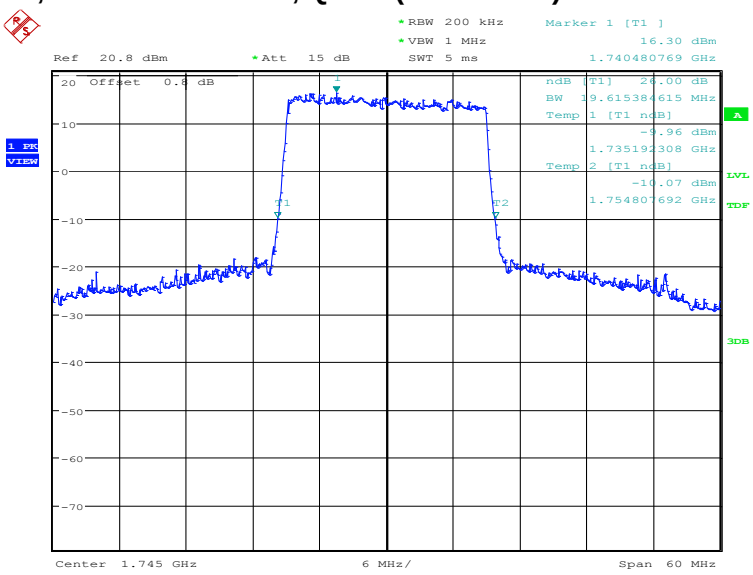
LTE band 66, 20MHz (-26dBc)

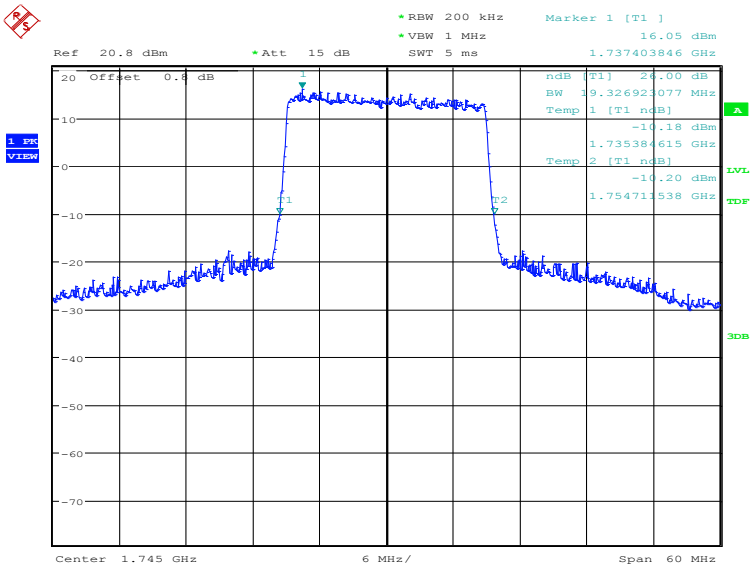
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1745.0	QPSK	16QAM
	19615.38	19326.92

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



Date: 16.SEP.2022 12:00:00

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



Date: 16.SEP.2022 12:00:41

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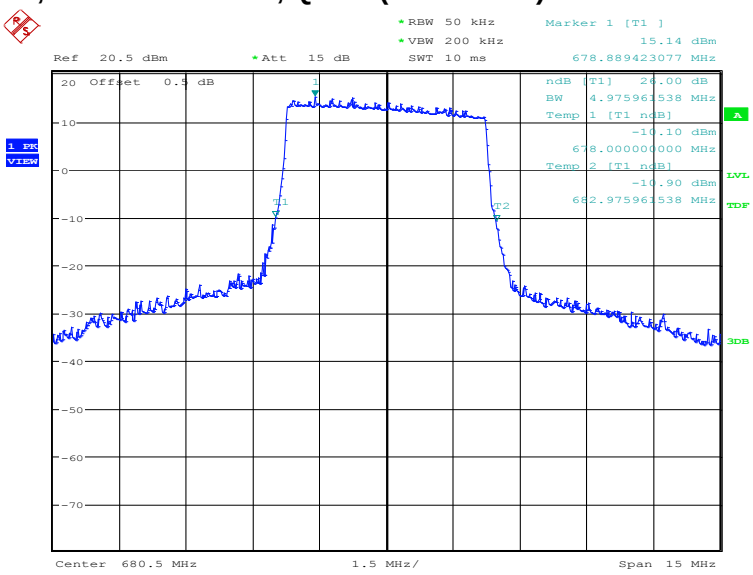
LTE band 71, 5MHz (-26dBc)

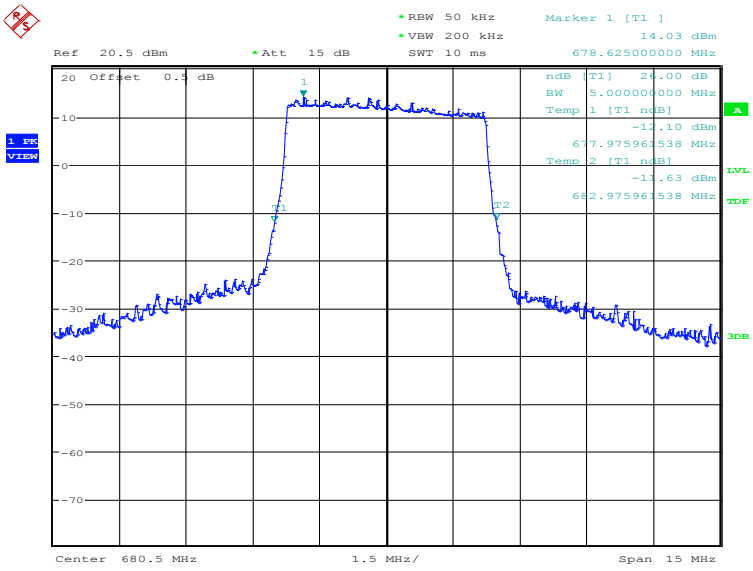
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
680.5	QPSK	16QAM
	4975.96	5000.00

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



Date: 16.SEP.2022 11:19:37

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



Date: 16.SEP.2022 11:20:17

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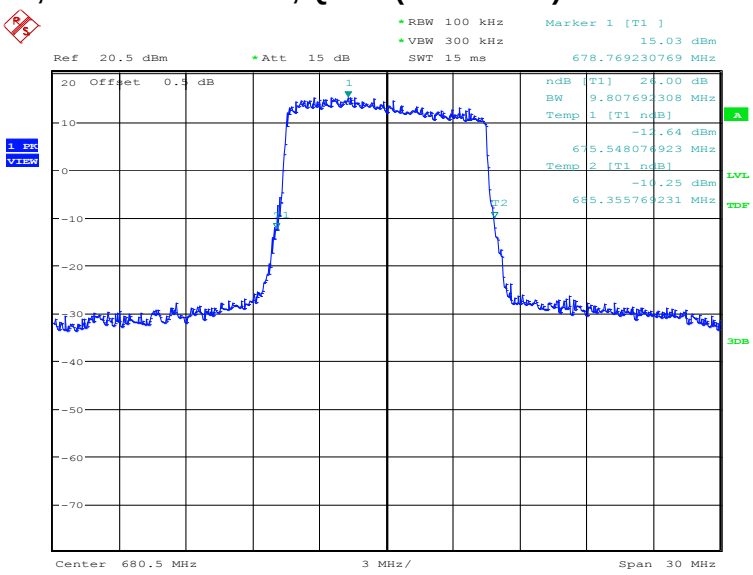
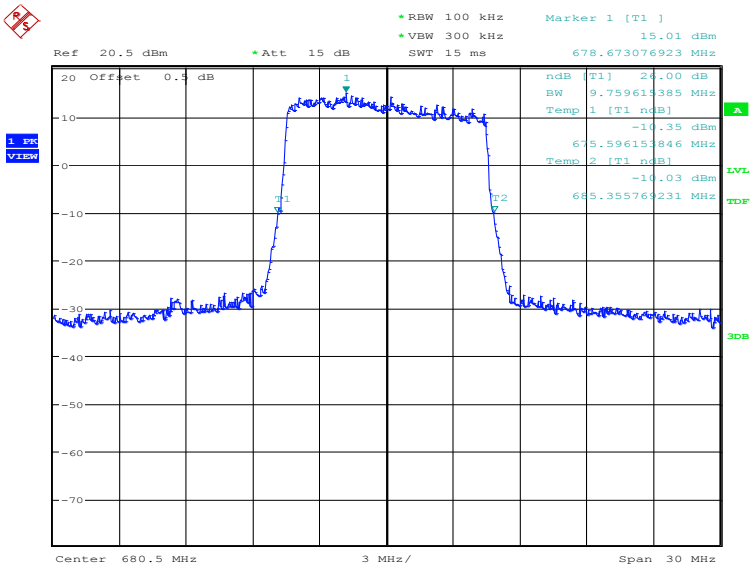
LTE band 71, 10MHz (-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
680.5	QPSK	16QAM
	9807.69	9759.62

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



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



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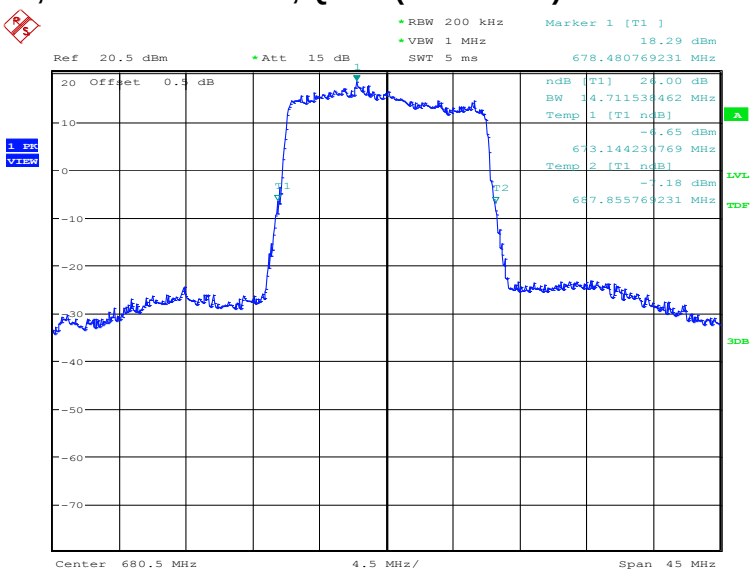
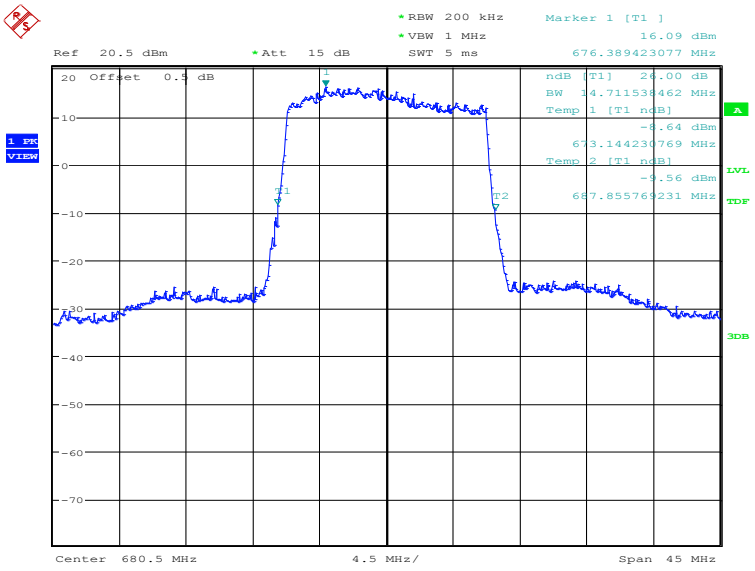
LTE band 71, 15MHz (-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
680.5	QPSK	16QAM
	14711.54	14711.54

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



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



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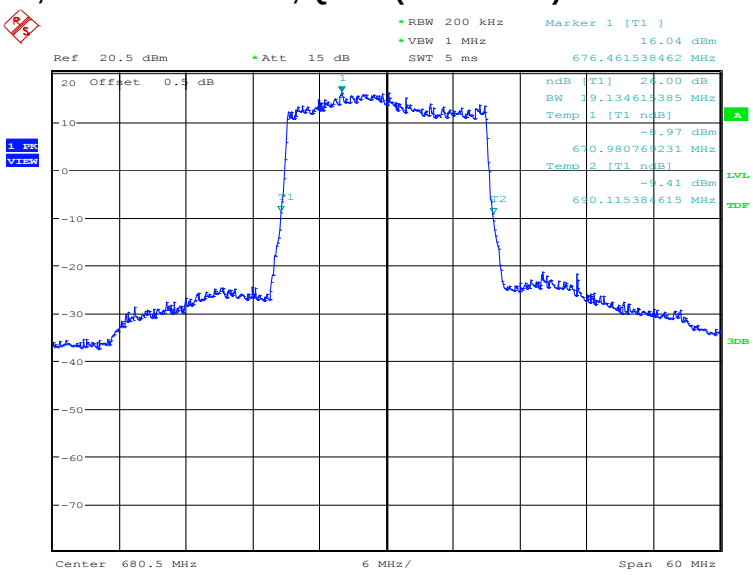
LTE band 71, 20MHz (-26dBc)

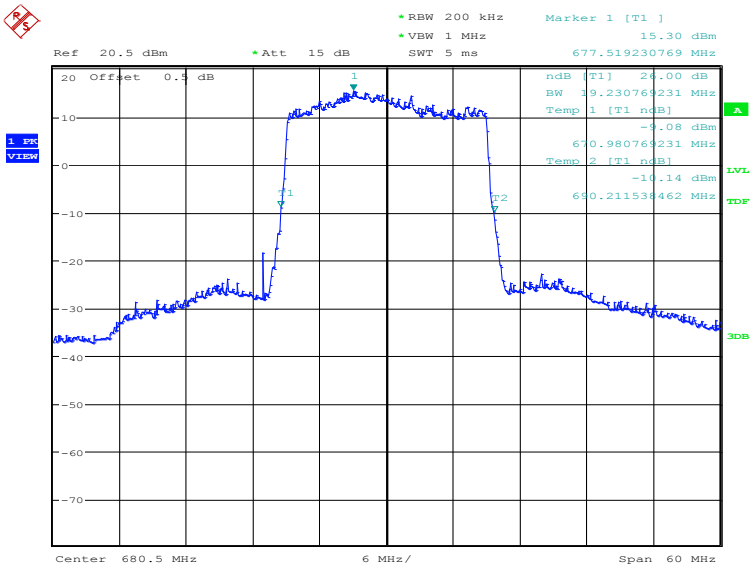
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
680.5	QPSK	16QAM
	19134.62	19230.77

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



Date: 16.SEP.2022 11:23:44

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



Date: 16.SEP.2022 11:24:24

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

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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(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 + 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(g) states for 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 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 $116\text{Log}_{10}(f/6.1)$ decibels or 50 + 10 $\text{Log}_{10}(P)$ 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 + $10\text{Log}_{10}(P)$ 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.

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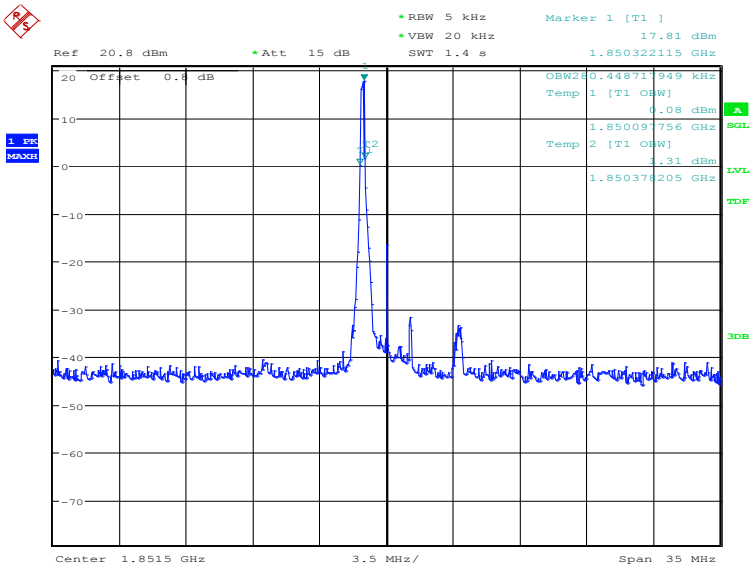
A.6.2 Measurement result

Only the worst case result is given below

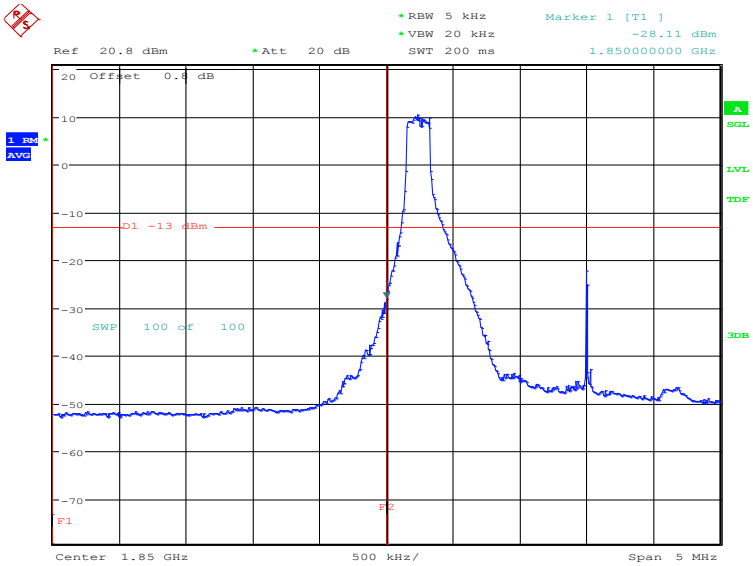
LTE band 2

OBW: 1RB-low_offset



Date: 10.NOV.2022 07:42:26

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 10.NOV.2022 07:43:40

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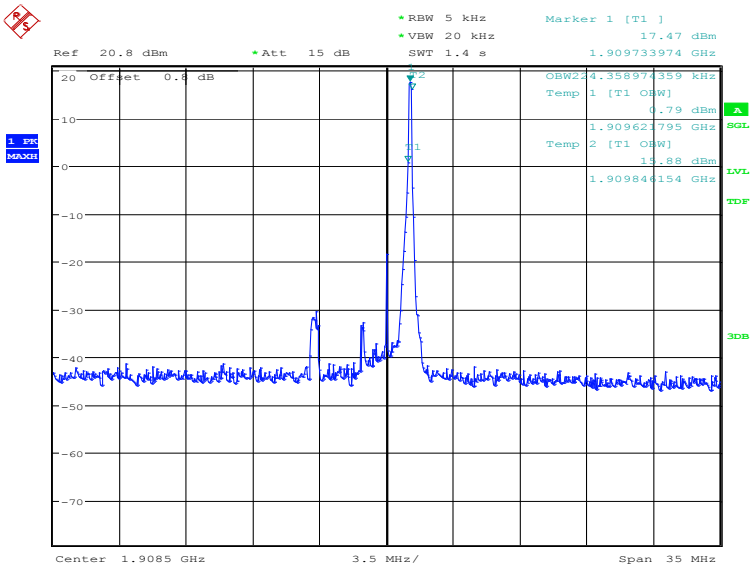
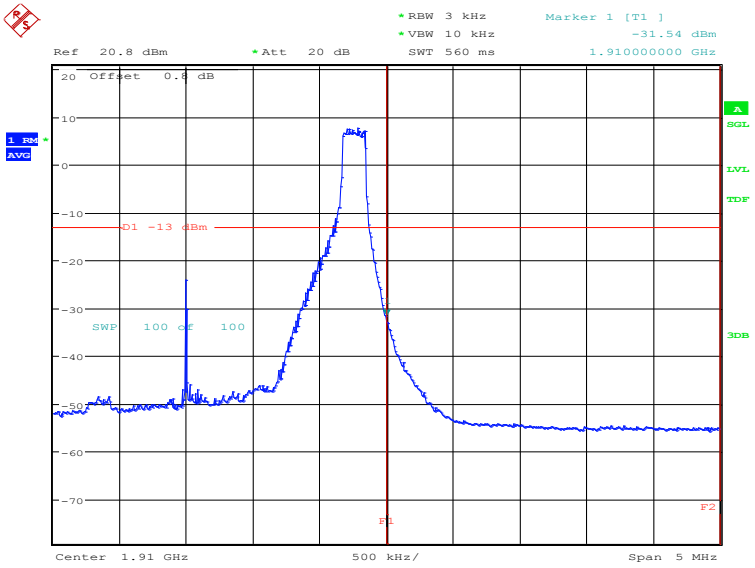
OBW: 1RB-high_offset



Date: 10.NOV.2022 07:47:22

HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 10.NOV.2022 07:48:36

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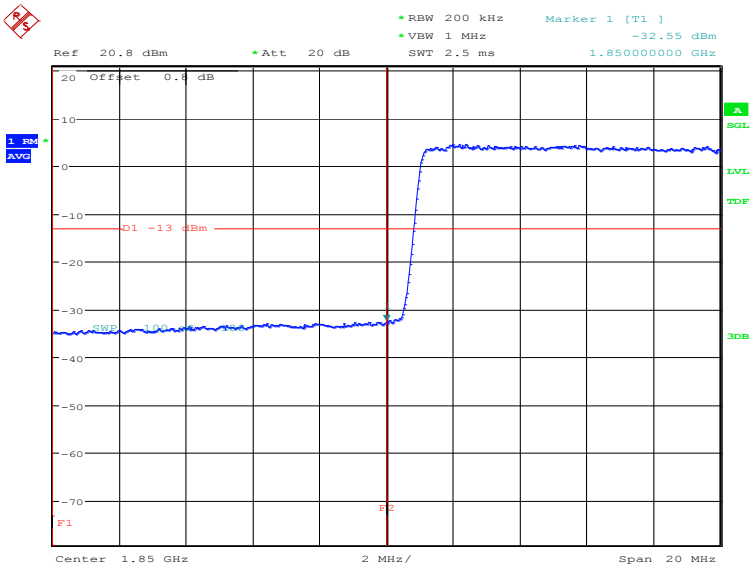
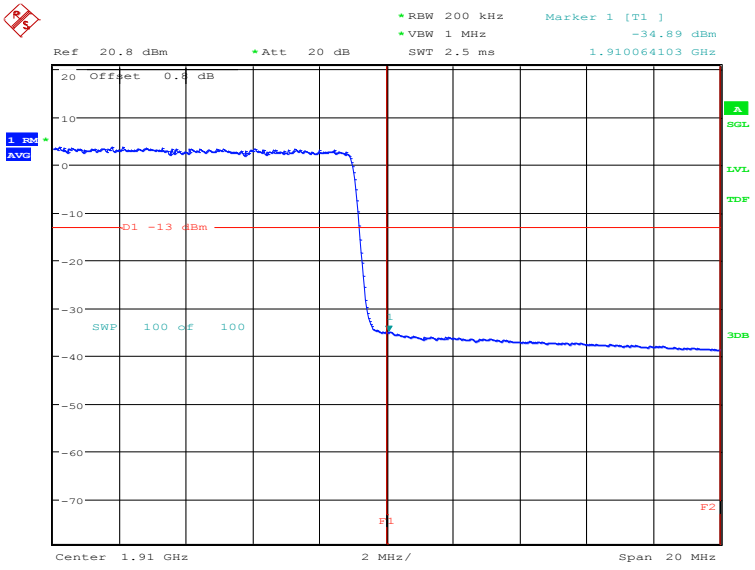
LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 10.NOV.2022 07:44:16

HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 10.NOV.2022 07:49:11

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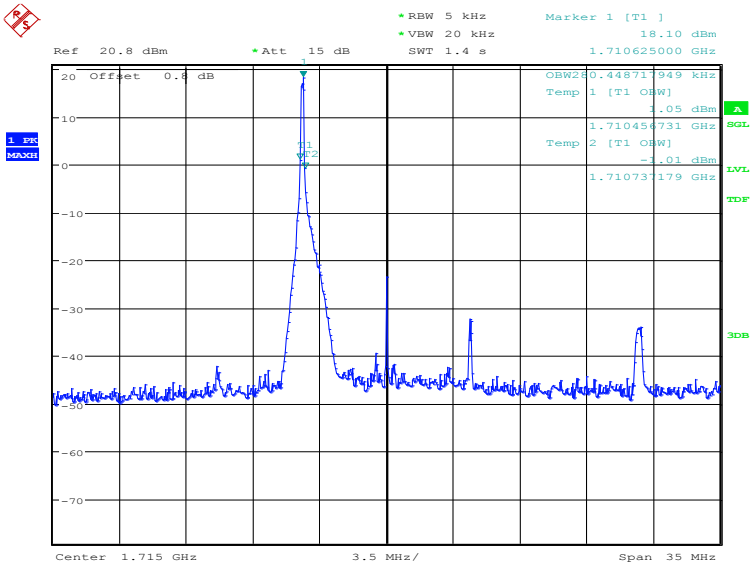
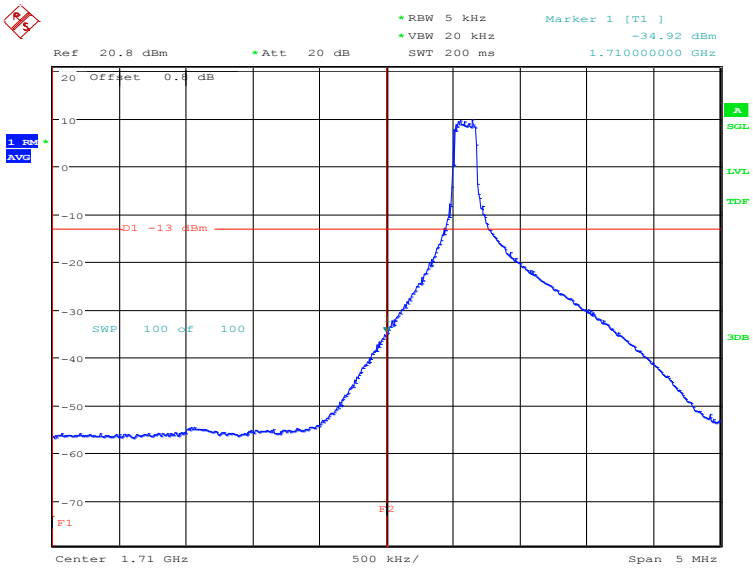
LTE band 4

OBW: 1RB-low_offset



Date: 10.NOV.2022 07:51:28

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 10.NOV.2022 07:52:42

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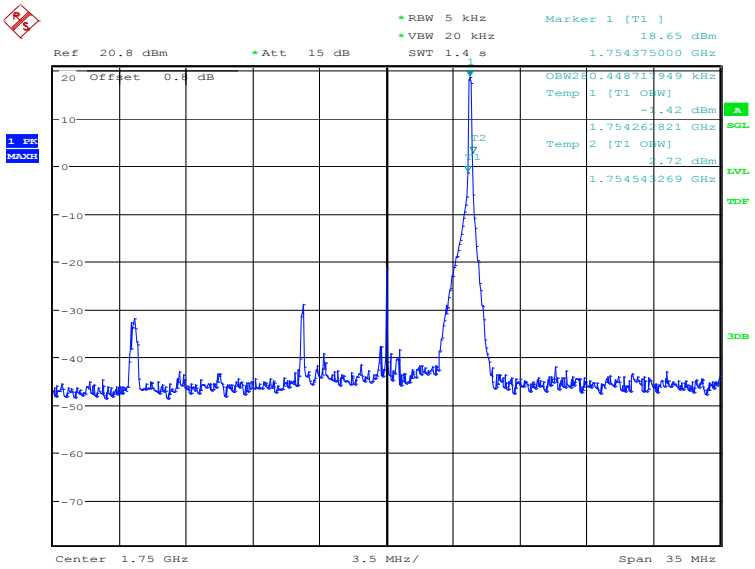
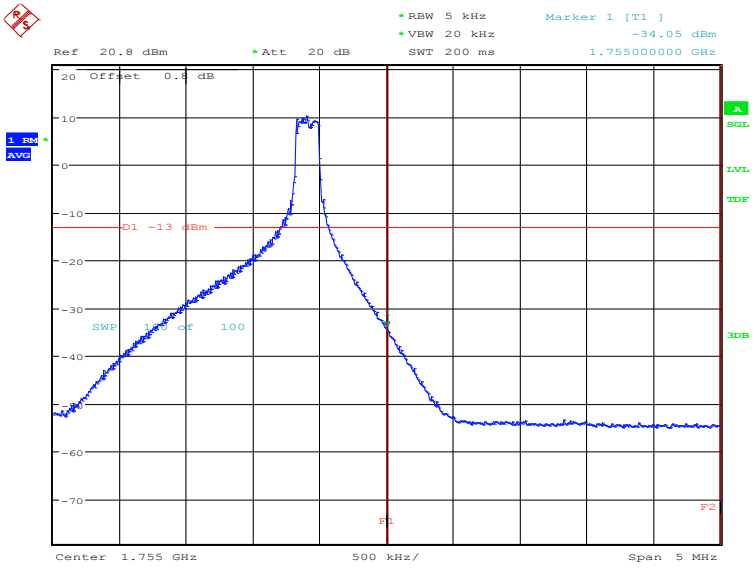
OBW: 1RB-high_offset



HIGH BAND EDGE BLOCK-1RB-high_offset



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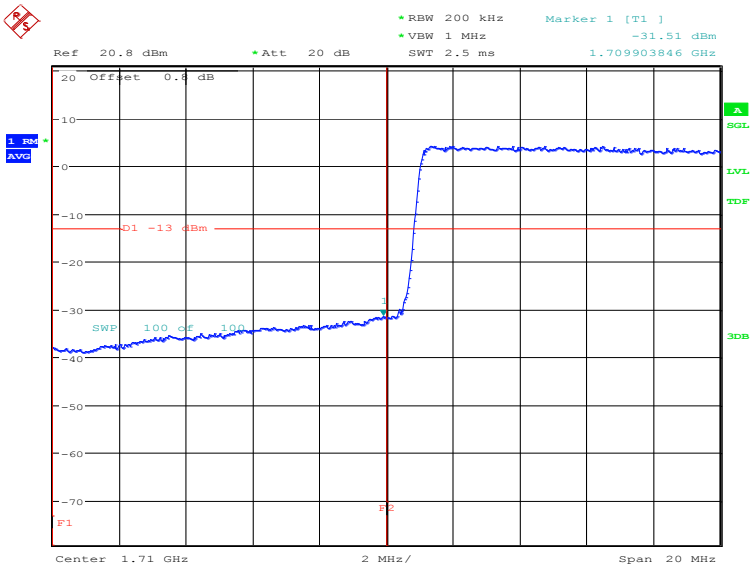
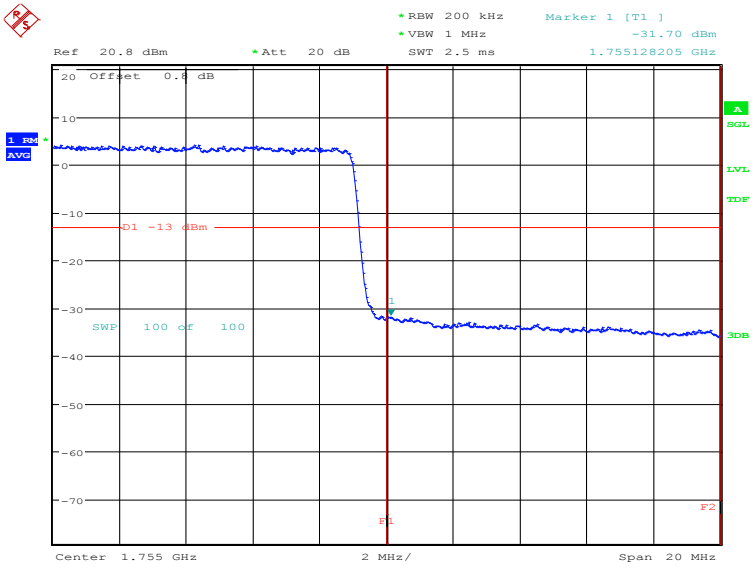
LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 10.NOV.2022 07:54:54

HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 10.NOV.2022 07:58:59

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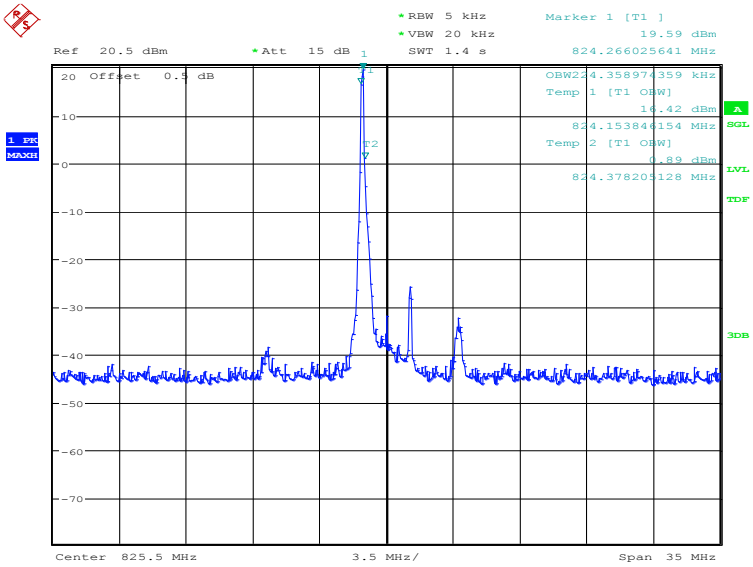
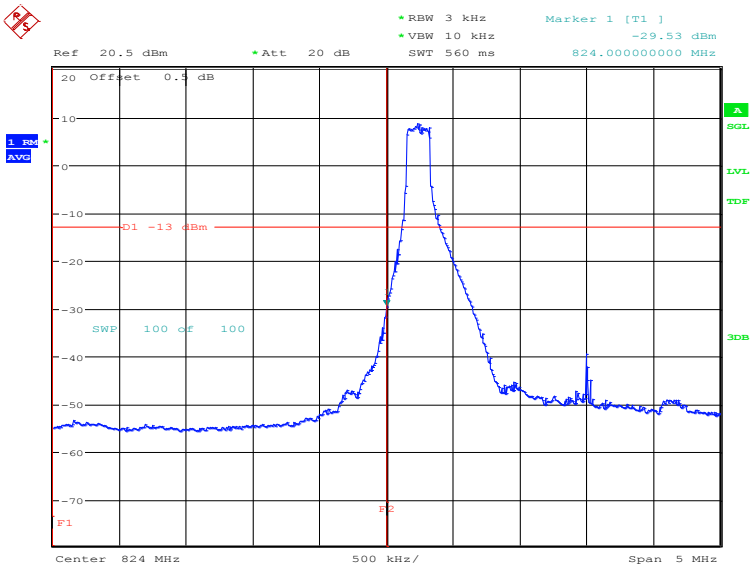
LTE band 5

OBW: 1RB-low_offset



Date: 10.NOV.2022 08:01:24

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 10.NOV.2022 08:02:38

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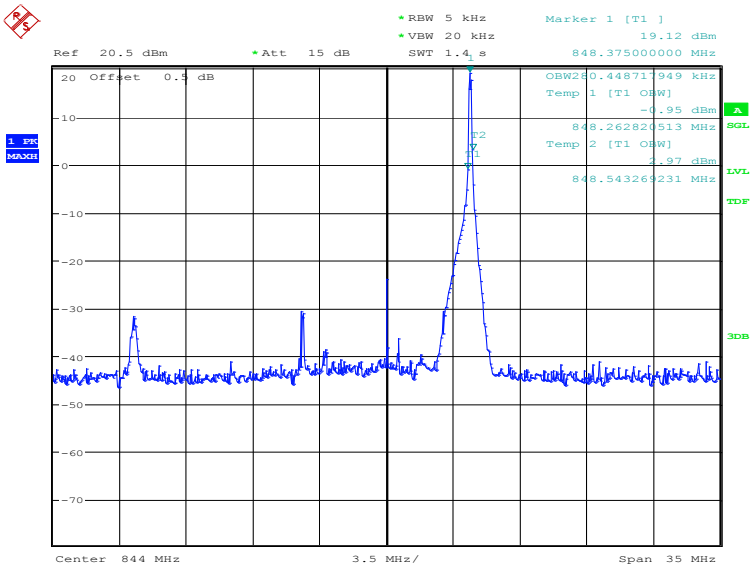
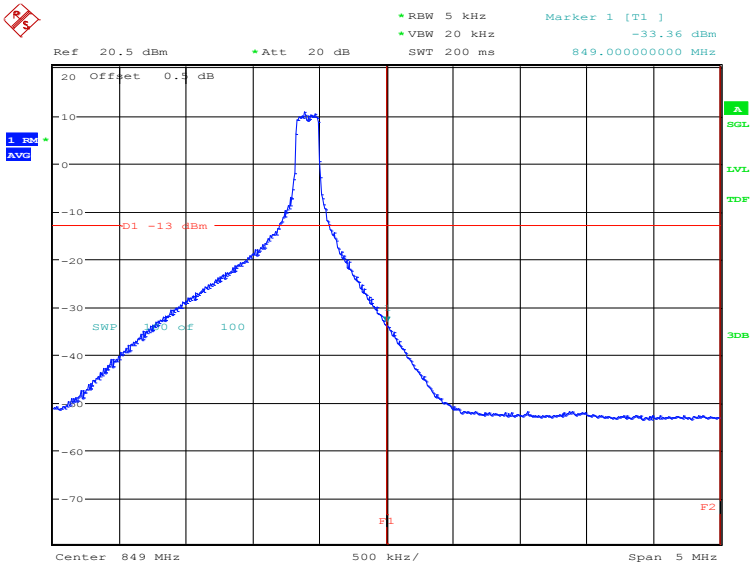
OBW: 1RB-high_offset



Date: 10.NOV.2022 08:04:47

HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 10.NOV.2022 08:06:02

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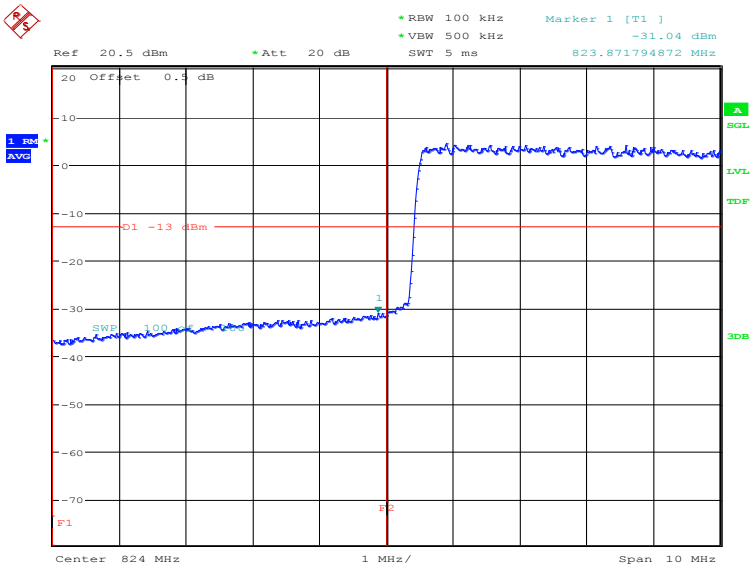
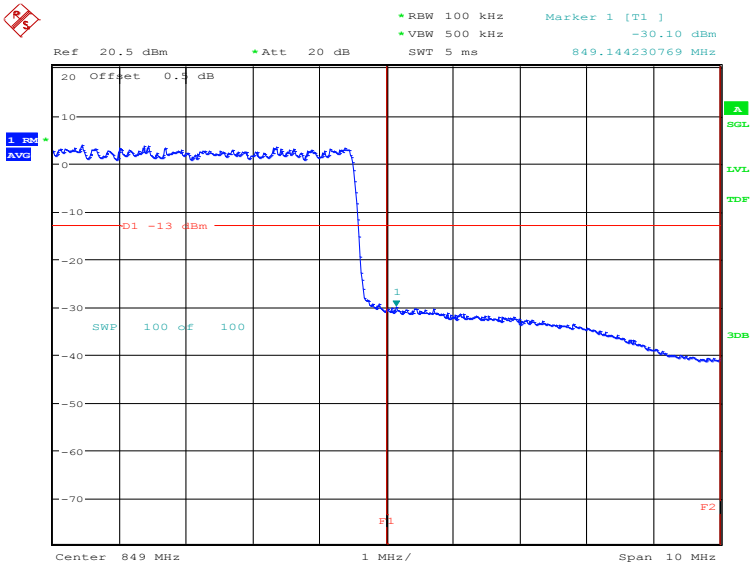
LOW BAND EDGE BLOCK-10MHz-100%RB



Date: 10.NOV.2022 08:03:14

HIGH BAND EDGE BLOCK-10MHz-100%RB



Date: 10.NOV.2022 08:06:35

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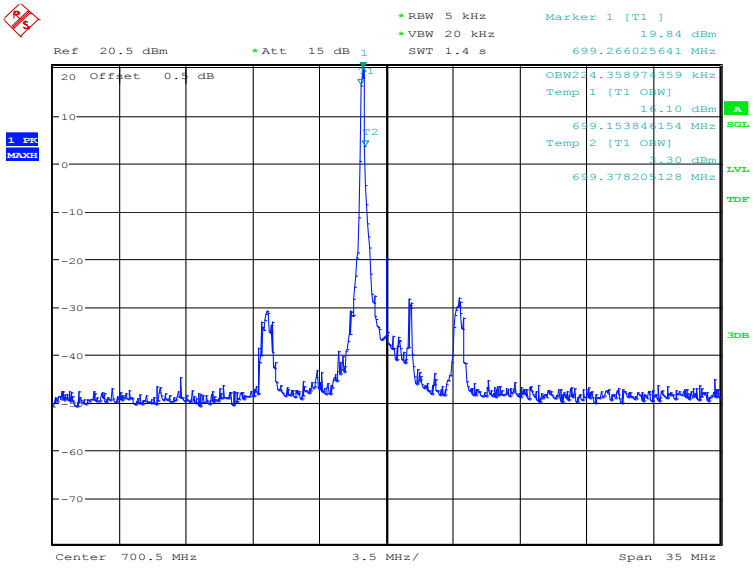
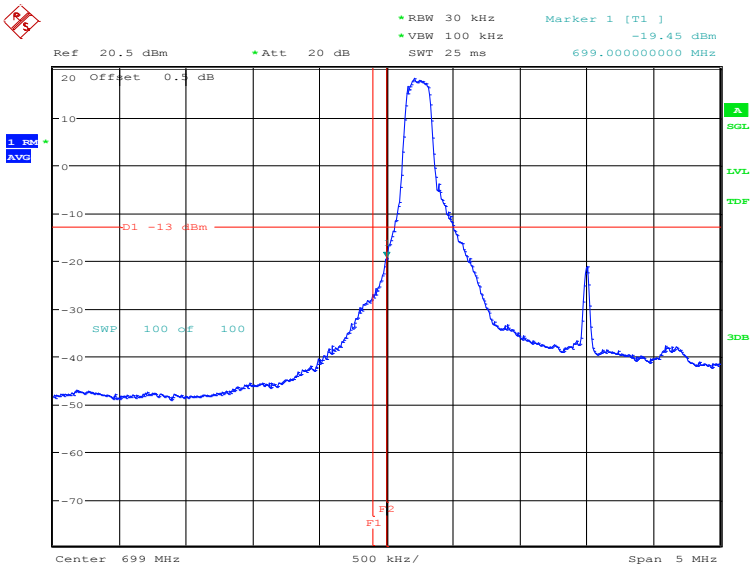
LTE band 12

OBW: 1RB-low_offset



Date: 10.NOV.2022 08:08:52

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 10.NOV.2022 08:09:11

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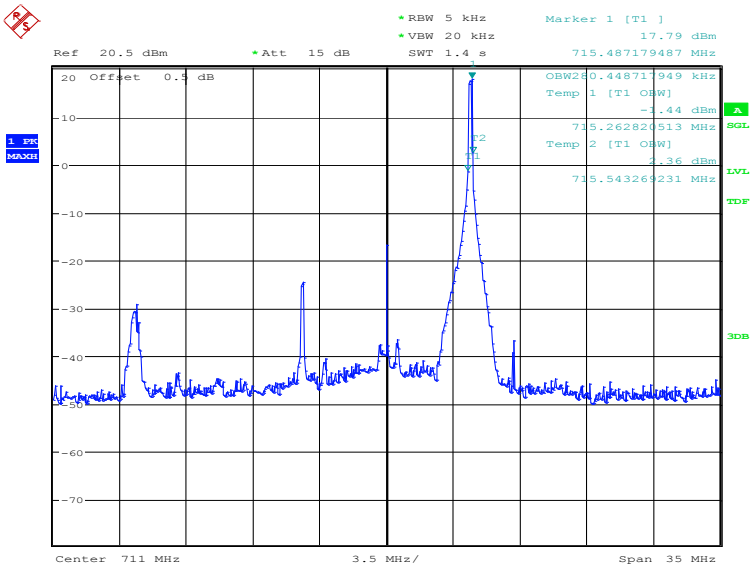
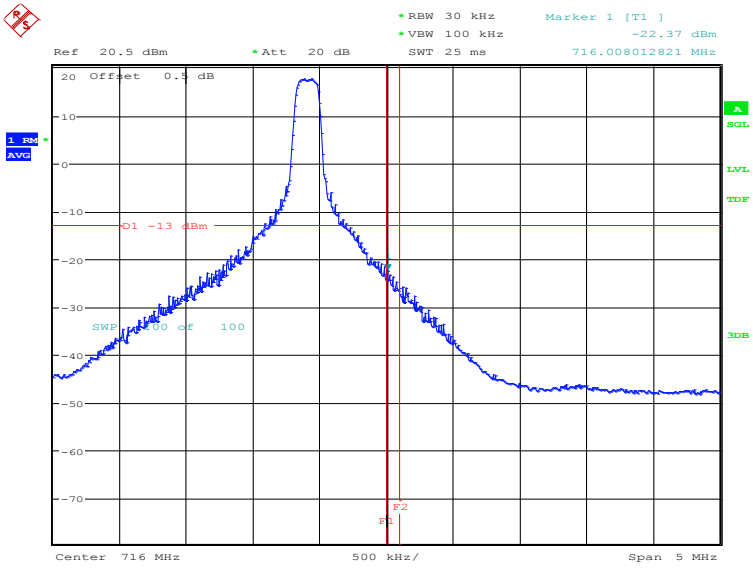
OBW: 1RB-high_offset



HIGH BAND EDGE BLOCK-1RB-high_offset



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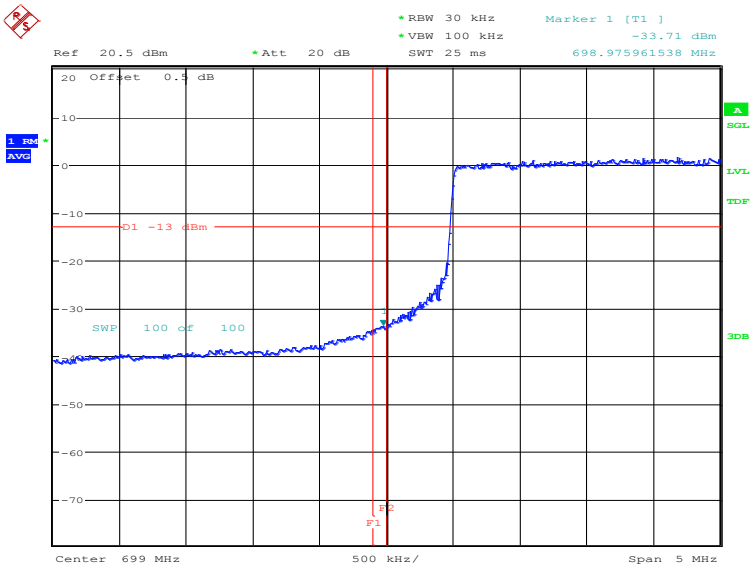
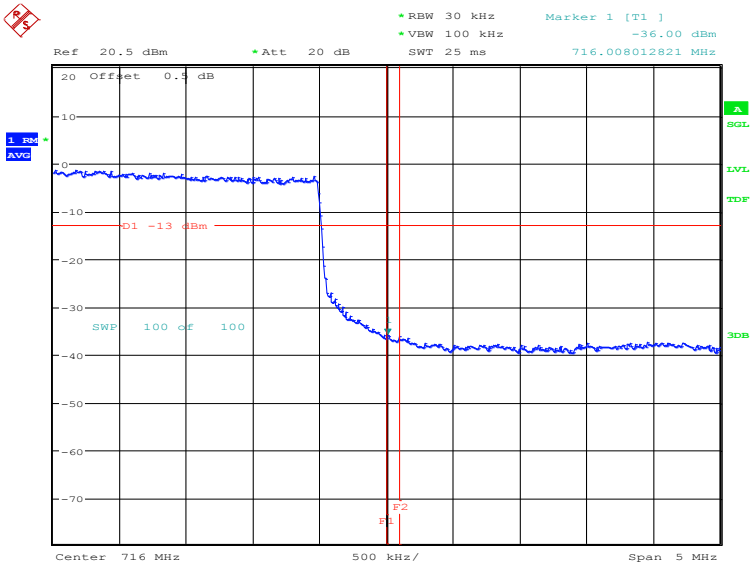
LOW BAND EDGE BLOCK-10MHz-100%RB



Date: 16.SEP.2022 12:12:59

HIGH BAND EDGE BLOCK-10MHz-100%RB



Date: 16.SEP.2022 12:14:31

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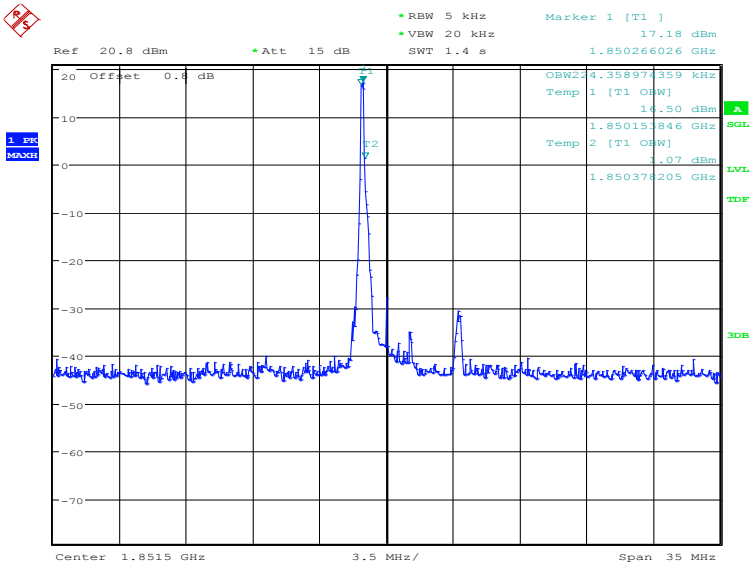
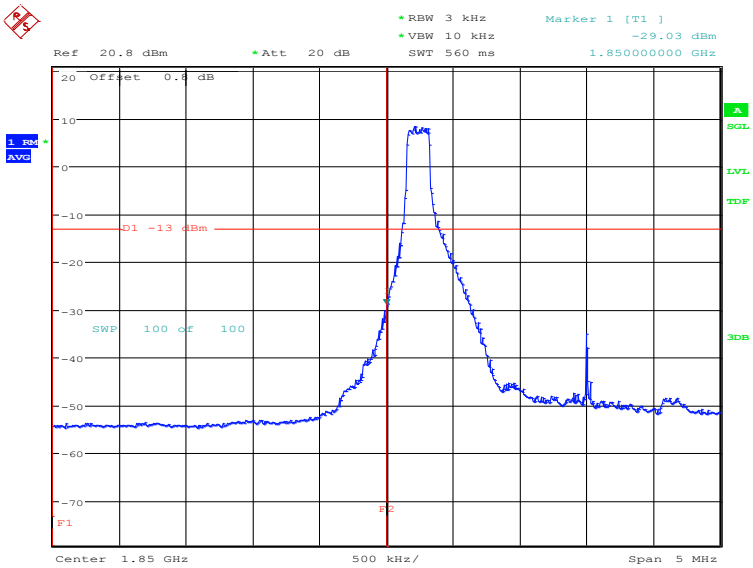
LTE band 25

OBW: 1RB-low_offset



Date: 10.NOV.2022 08:19:09

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 10.NOV.2022 08:20:23

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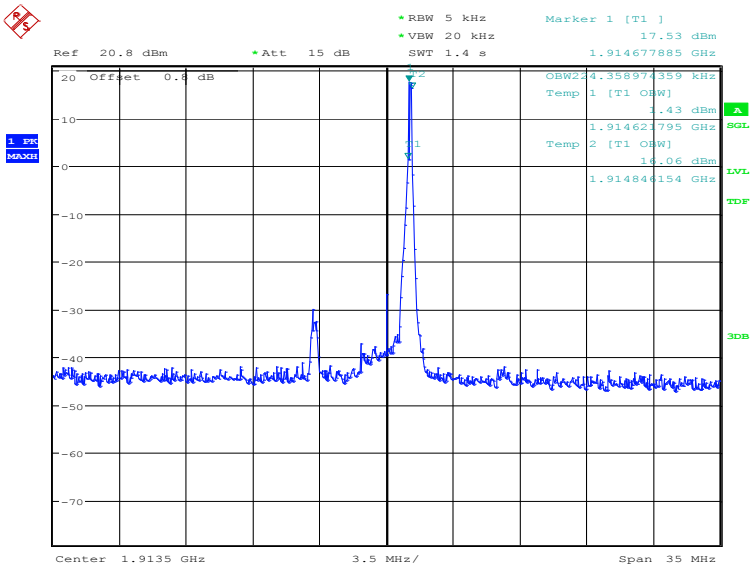
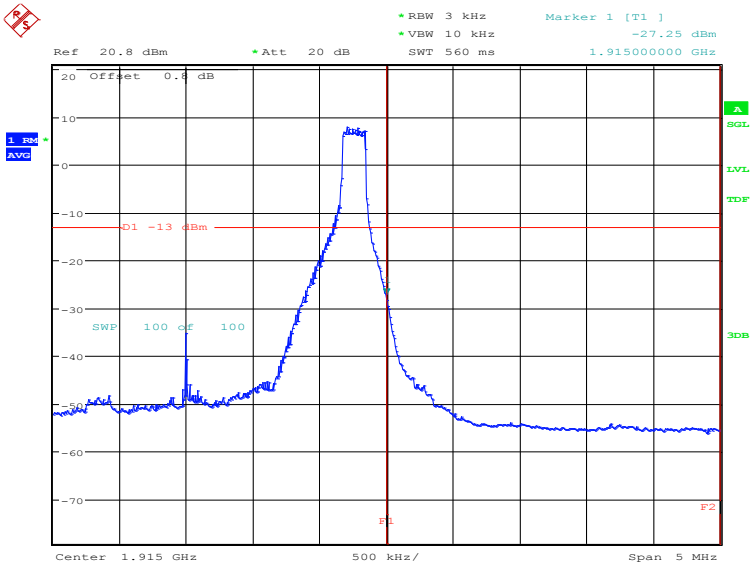
OBW: 1RB-high_offset



Date: 10.NOV.2022 08:21:00

HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 10.NOV.2022 08:22:14

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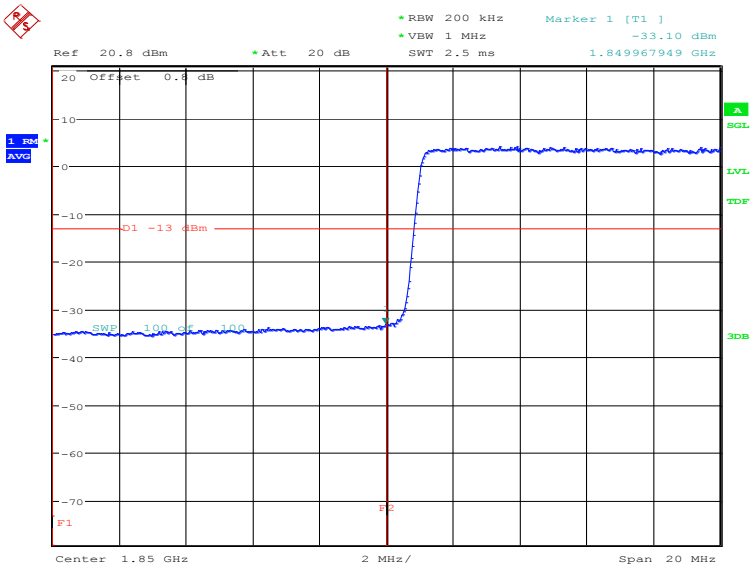
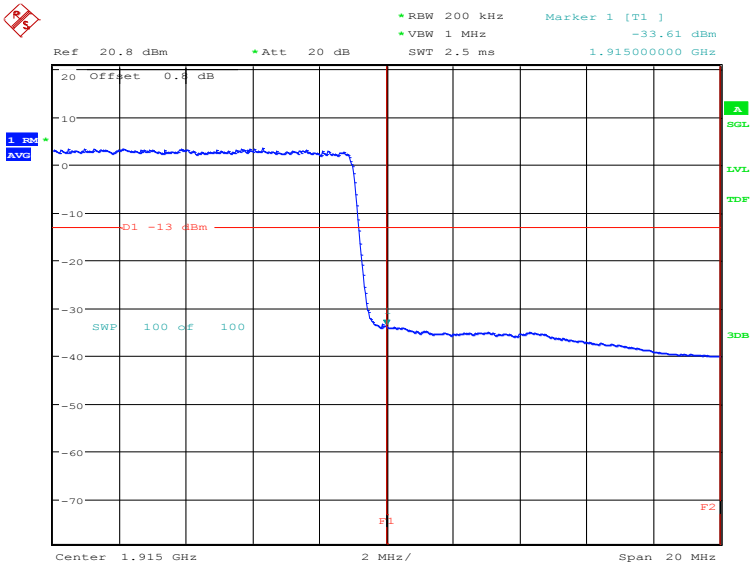
LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 16.SEP.2022 12:16:06

HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 16.SEP.2022 12:17:39

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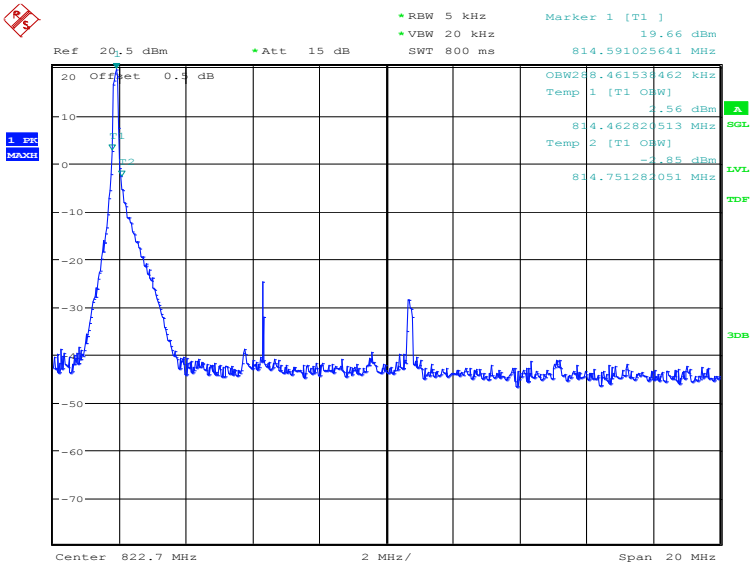
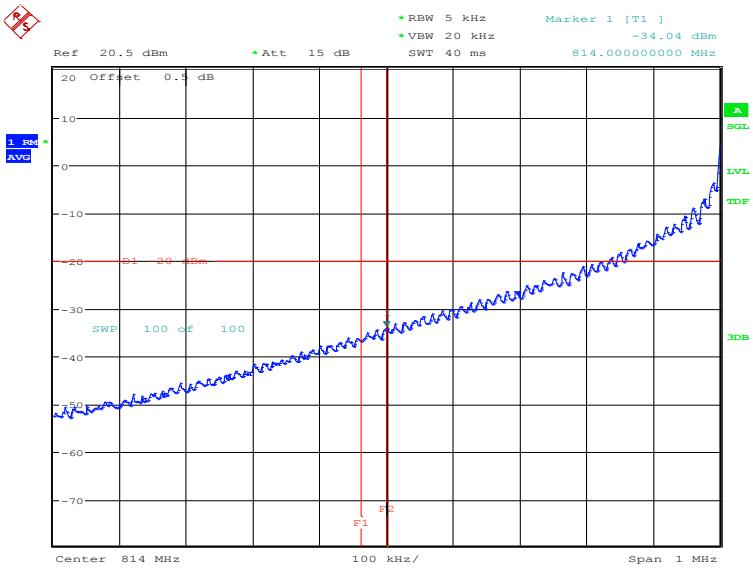
LTE band 26(814MHz~824MHz)

OBW: 1RB-low_offset



Date: 10.NOV.2022 08:43:27

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 10.NOV.2022 08:44:50

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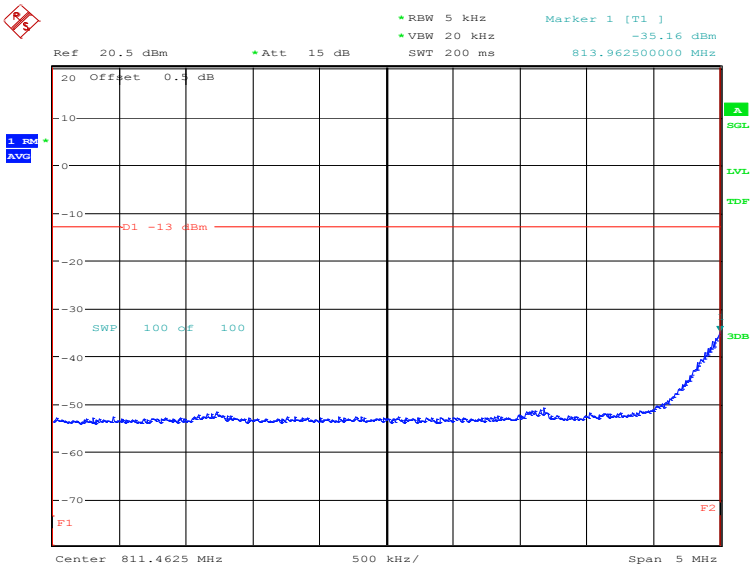
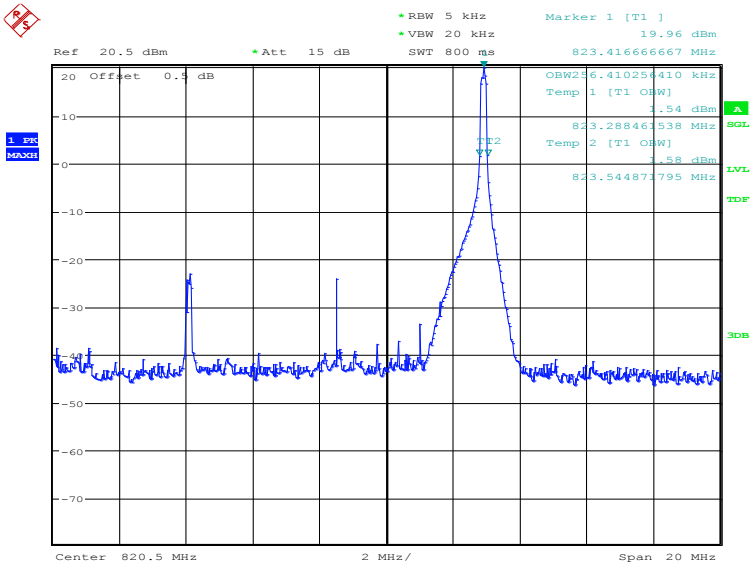
LOW Emission Mask -1RB-low_offset



Date: 10.NOV.2022 08:46:32

OBW: 1RB-high_offset



Date: 10.NOV.2022 08:47:08

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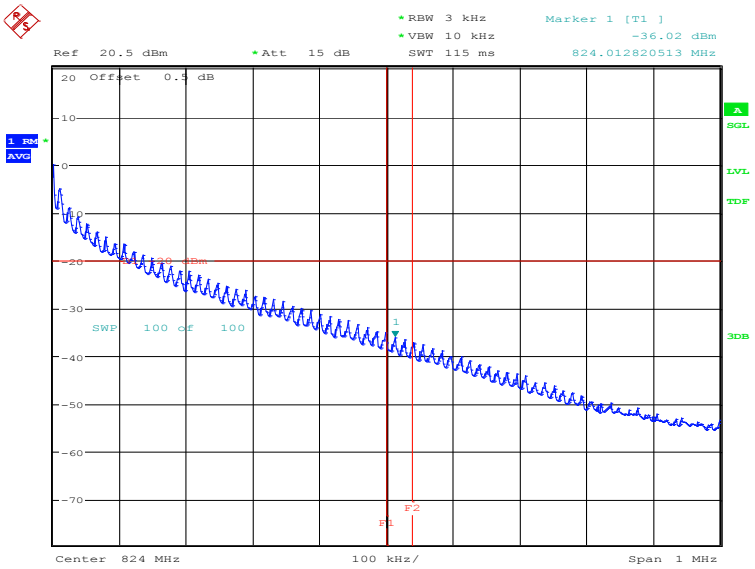
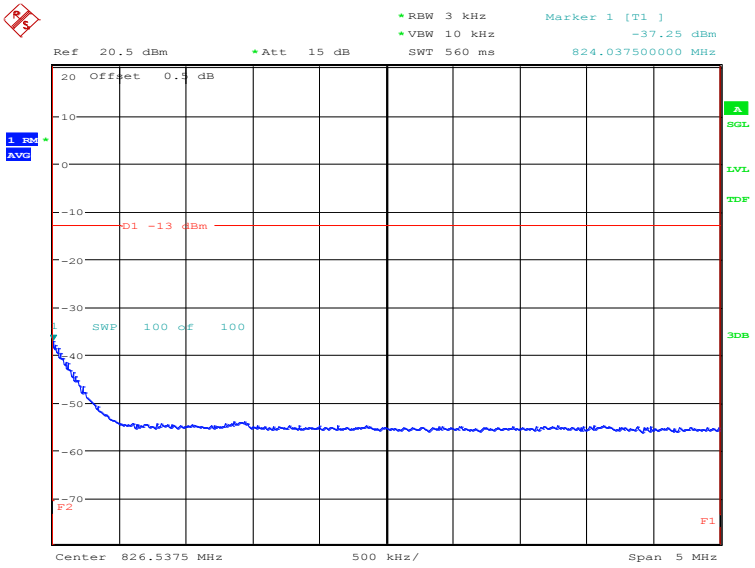
HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 10.NOV.2022 08:48:39

HIGH Emission Mask -1RB-high_offset



Date: 10.NOV.2022 08:50:56

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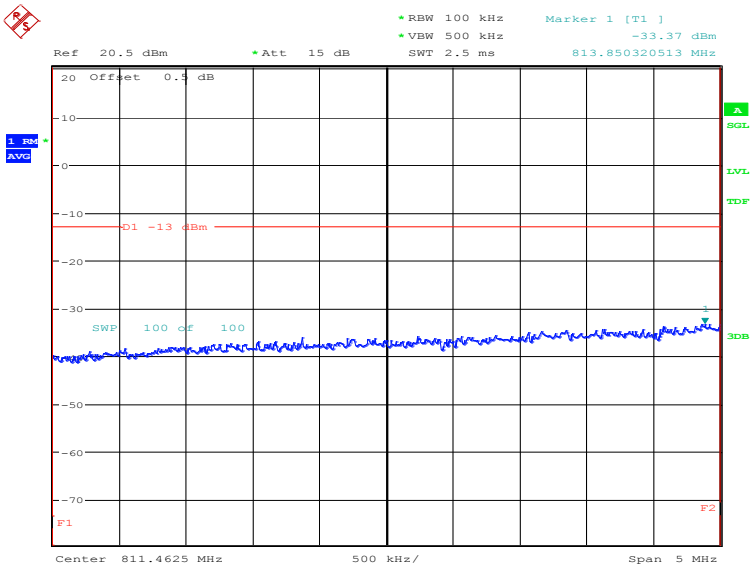
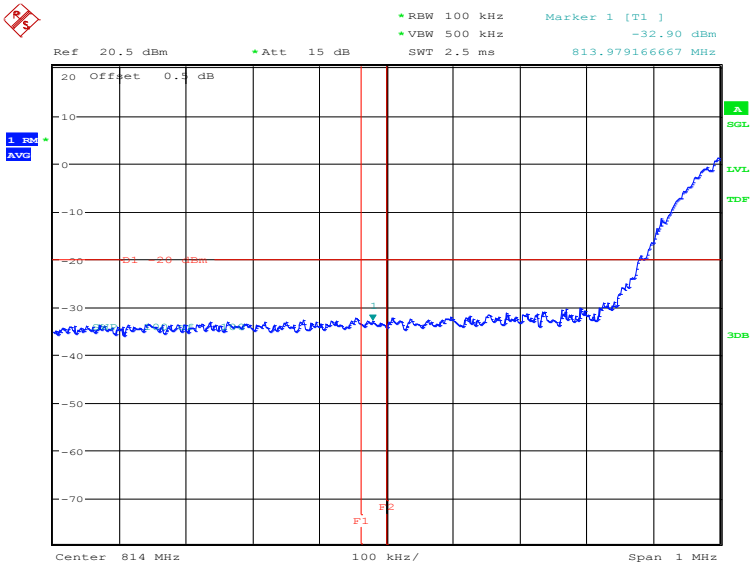
LOW Emission Mask -10MHz-100%RB



Date: 16.SEP.2022 12:47:33

LOW BAND EDGE BLOCK-10MHz-100%RB



Date: 16.SEP.2022 12:47:11

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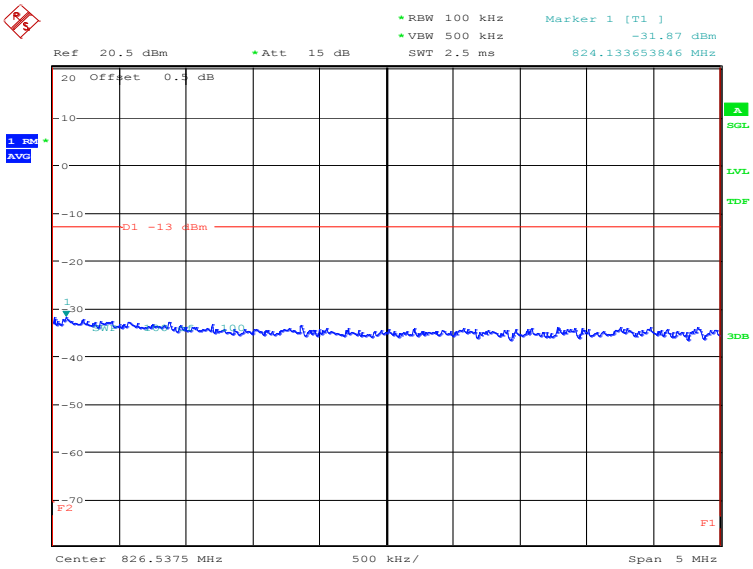
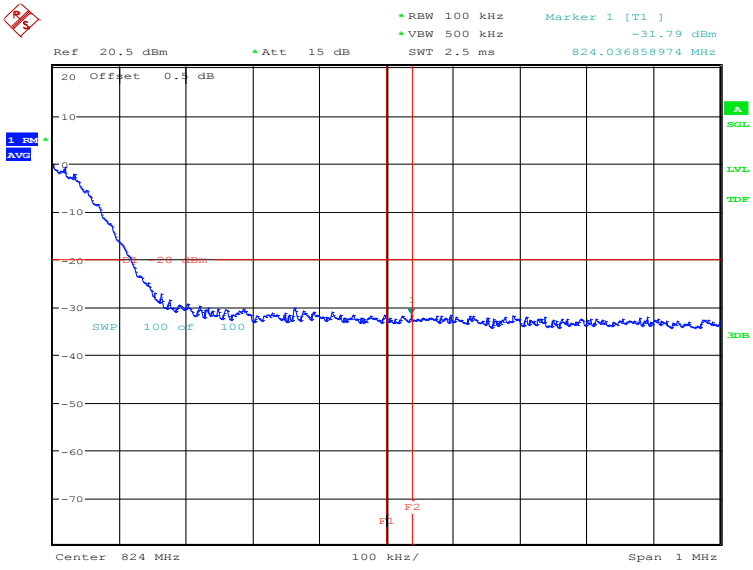
HIGH Emission Mask -10MHz-100%RB



Date: 16.SEP.2022 12:49:30

HIGH BAND EDGE BLOCK-10MHz-100%RB



Date: 16.SEP.2022 12:49:08

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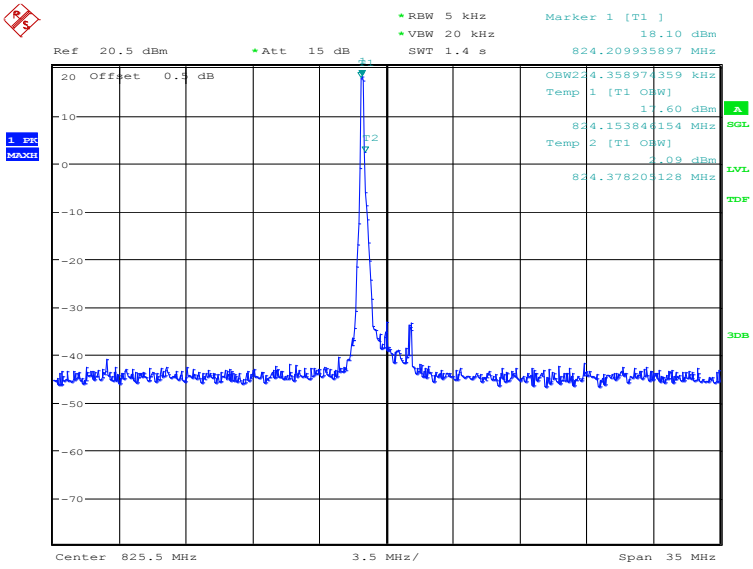
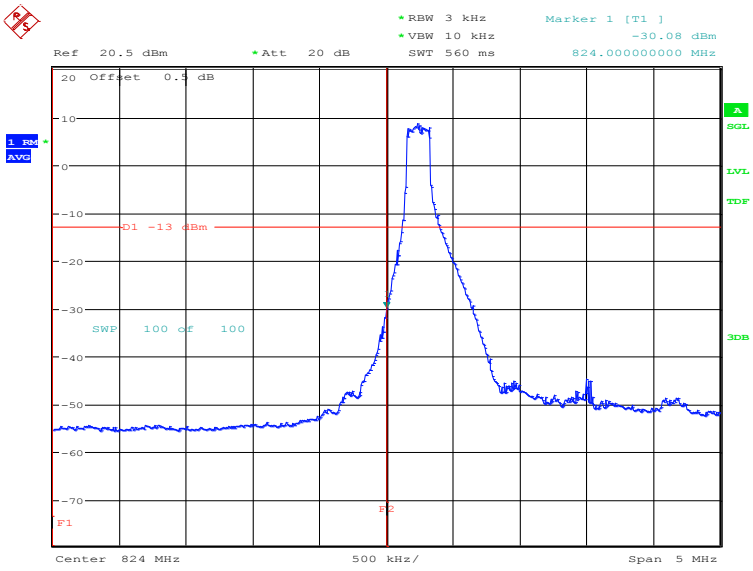
LTE band 26(824MHz~849MHz)

OBW: 1RB-low_offset



Date: 10.NOV.2022 08:22:51

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 10.NOV.2022 08:24:05

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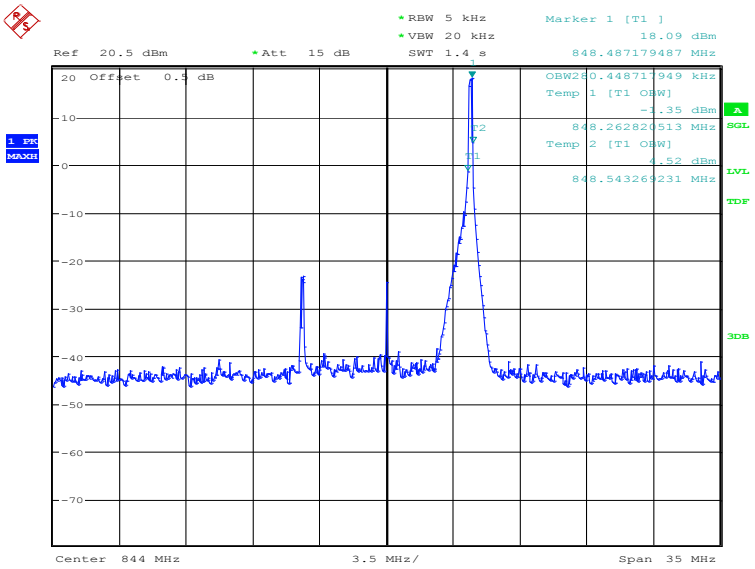
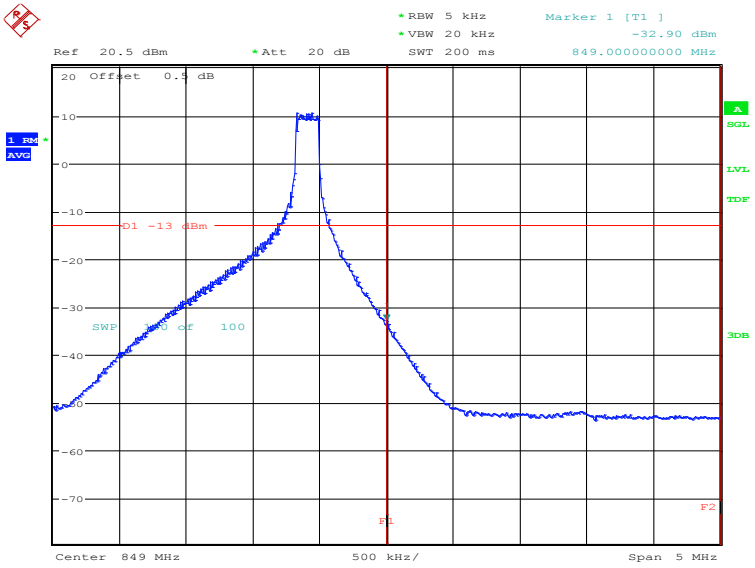
OBW: 1RB-high_offset



Date: 10.NOV.2022 08:25:40

HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 10.NOV.2022 08:26:54

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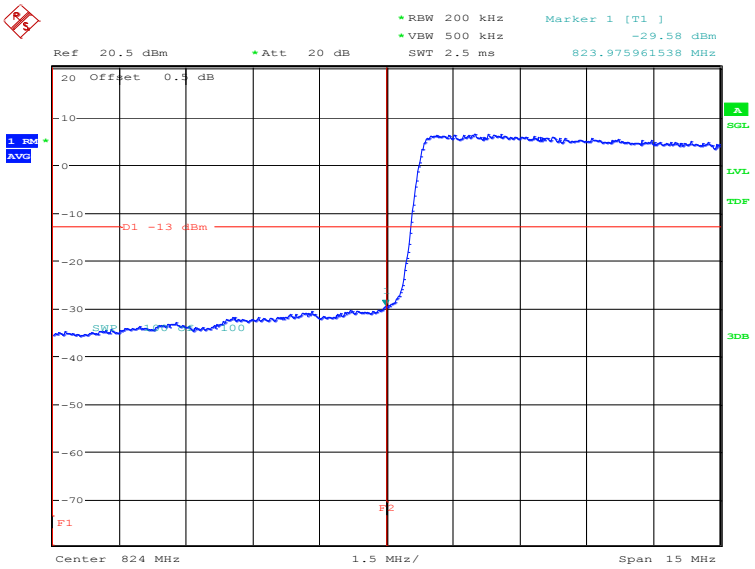
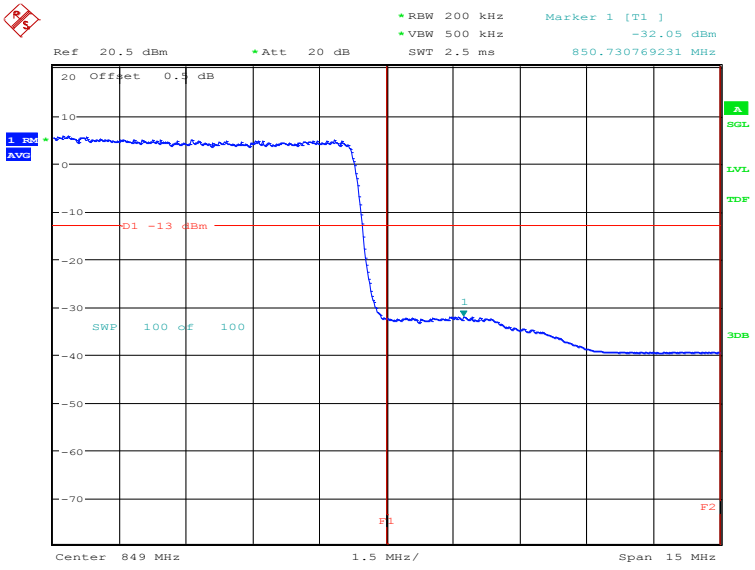
LOW BAND EDGE BLOCK-15MHz-100%RB



Date: 16.SEP.2022 12:19:14

HIGH BAND EDGE BLOCK-15MHz-100%RB



Date: 16.SEP.2022 12:20:47

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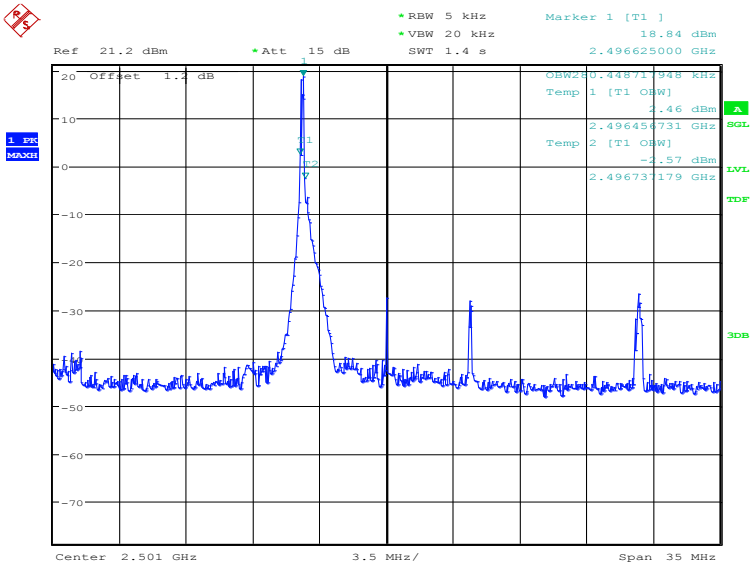
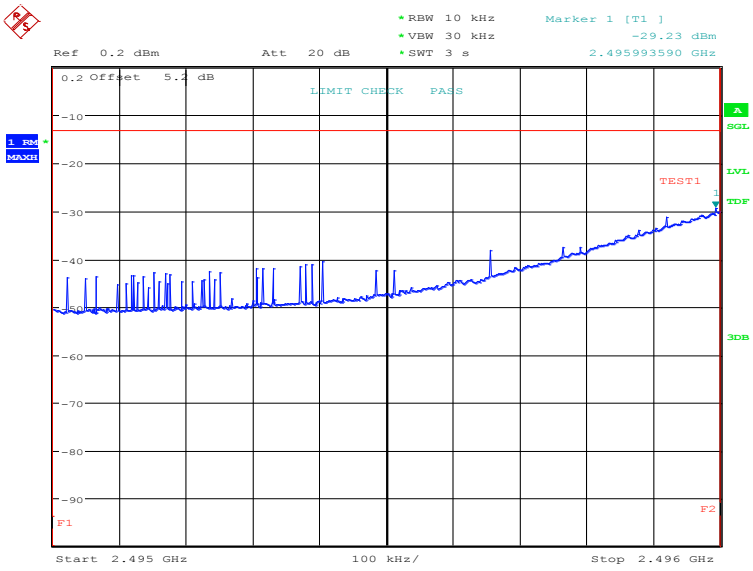
LTE band 41

OBW: 1RB-low_offset



Date: 10.NOV.2022 08:31:57

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 10.NOV.2022 08:32:38

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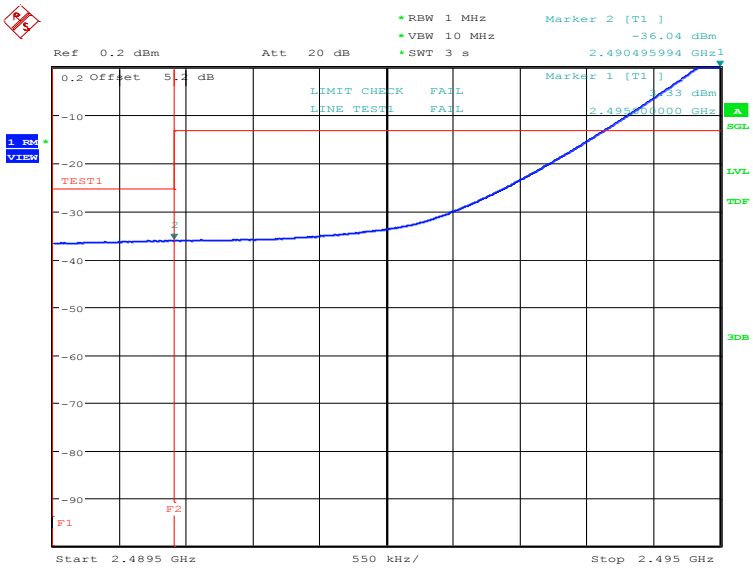
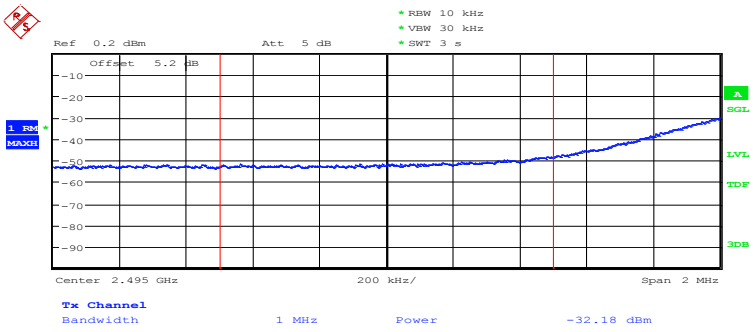


Date: 10.NOV.2022 08:33:22



Date: 10.NOV.2022 08:33:39

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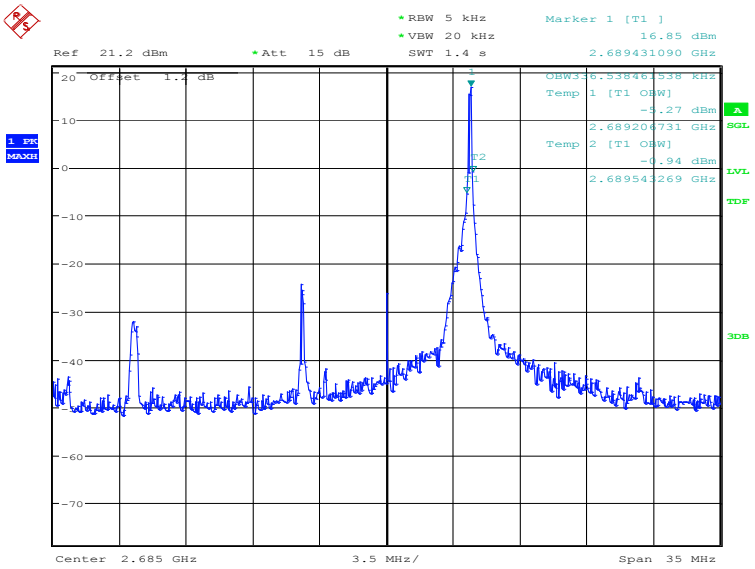
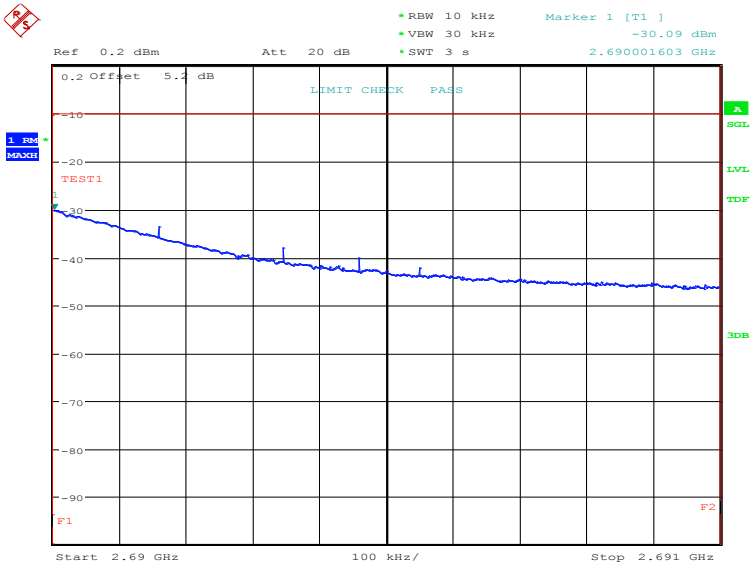
OBW: 1RB-high_offset



Date: 10.NOV.2022 08:34:15

HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 10.NOV.2022 08:34:56

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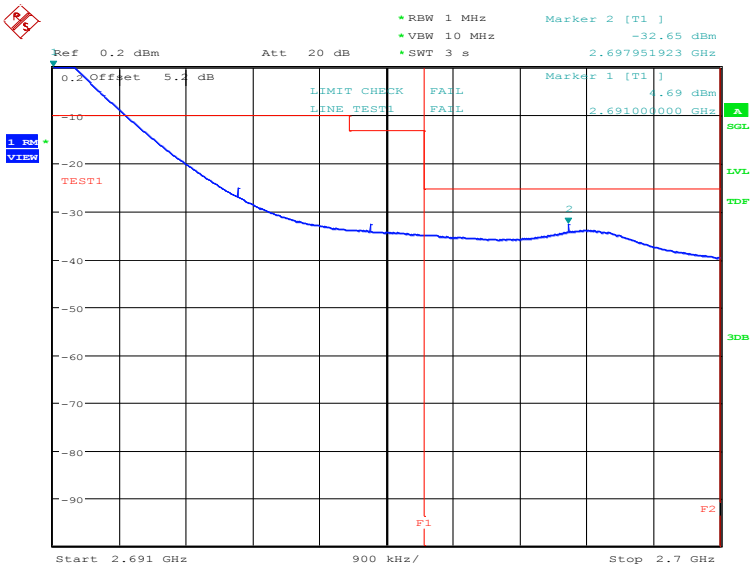
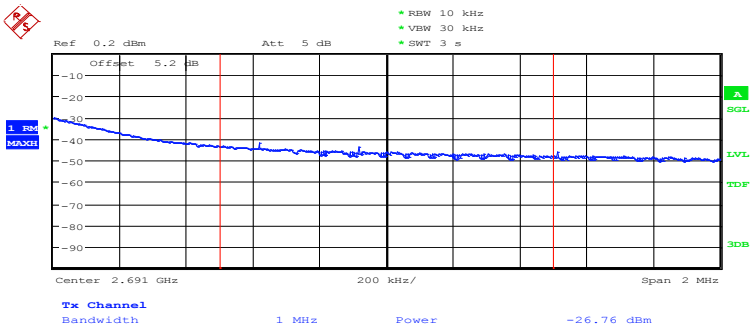


Date: 10.NOV.2022 08:35:42



Date: 10.NOV.2022 08:36:00

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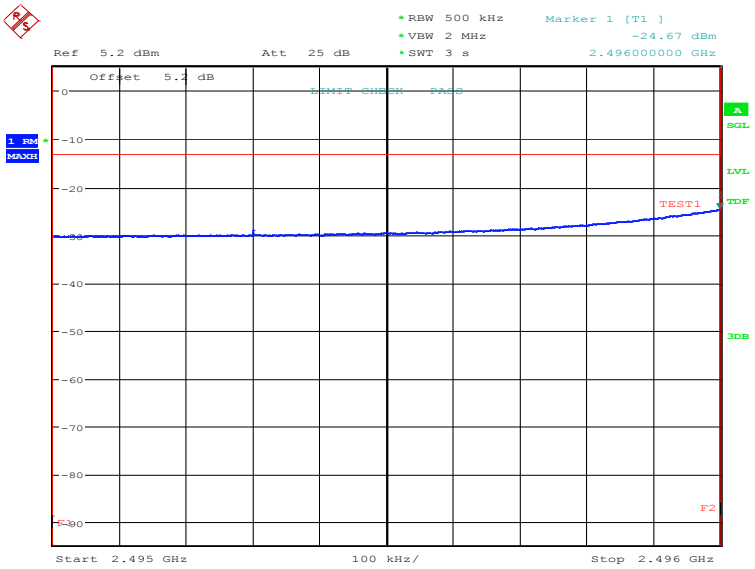
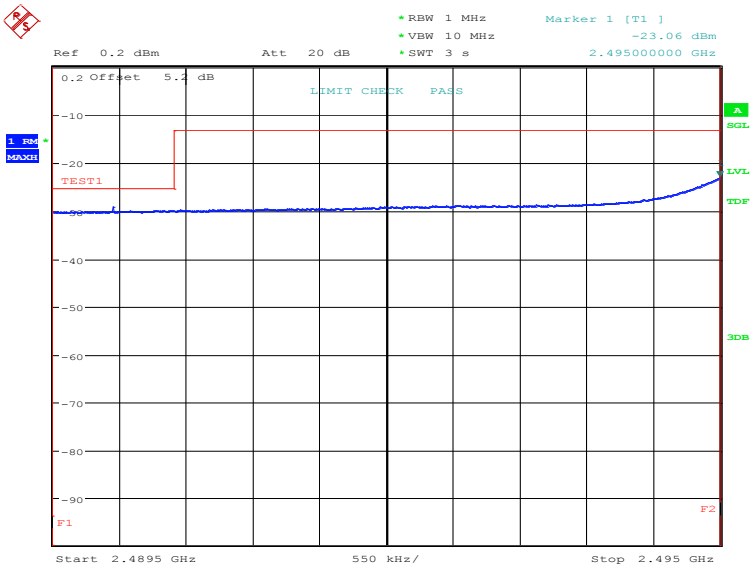
LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 16.SEP.2022 12:26:35



Date: 16.SEP.2022 12:27:14

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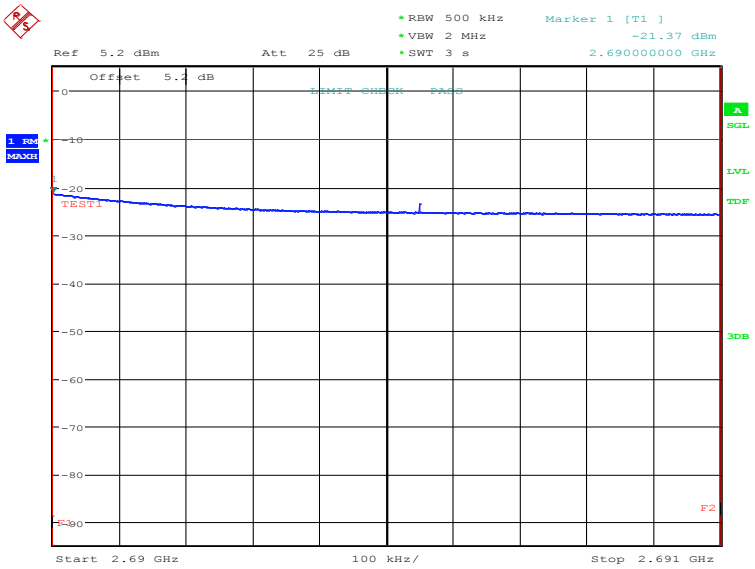
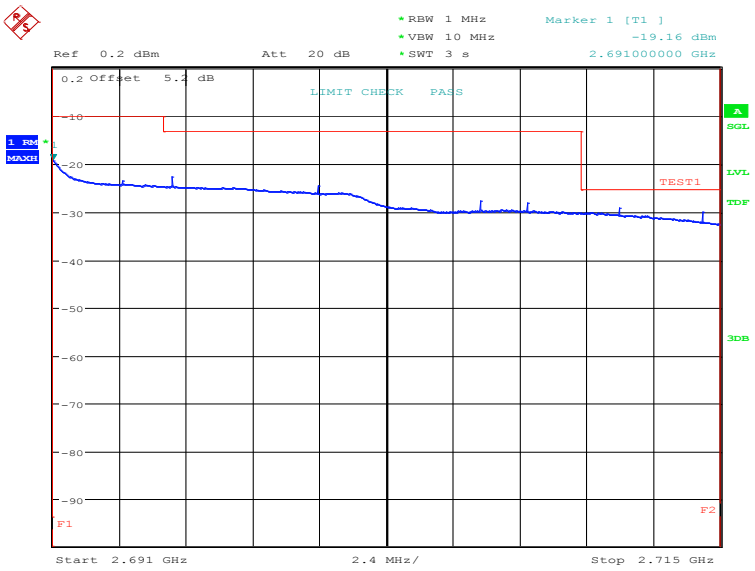
HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 16.SEP.2022 12:29:11



Date: 16.SEP.2022 12:29:50

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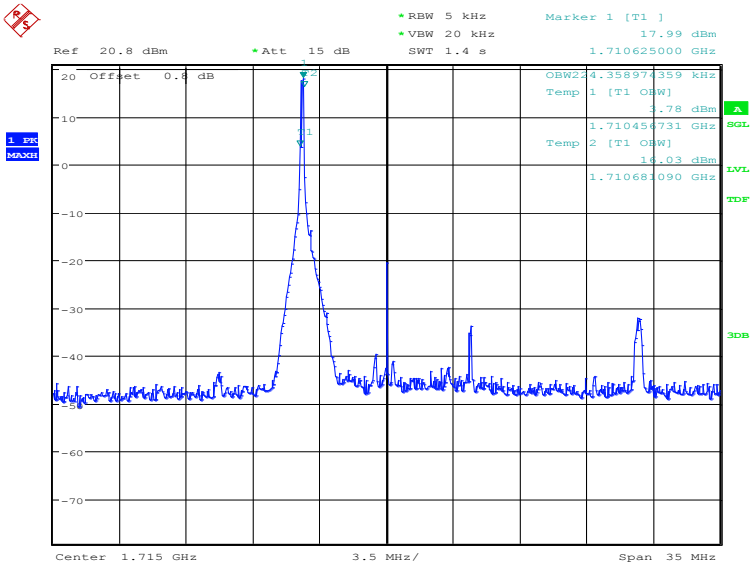
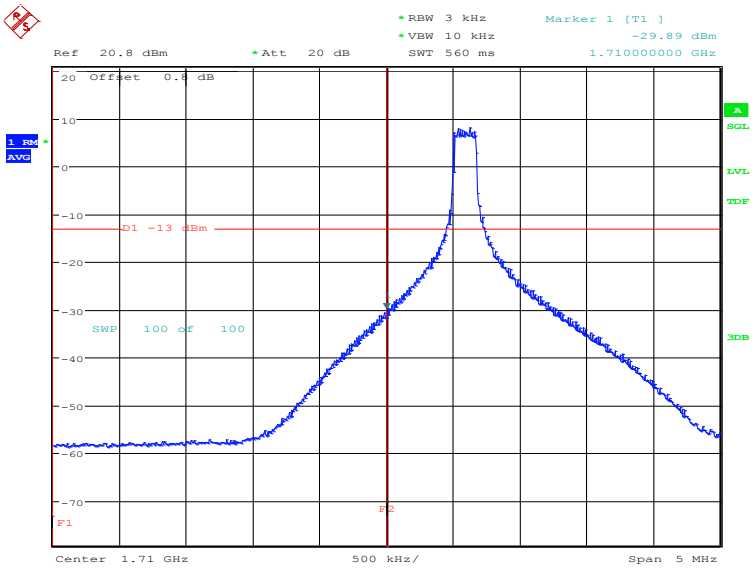
LTE band 66

OBW: 1RB-low_offset



Date: 10.NOV.2022 08:27:32

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 10.NOV.2022 08:28:46

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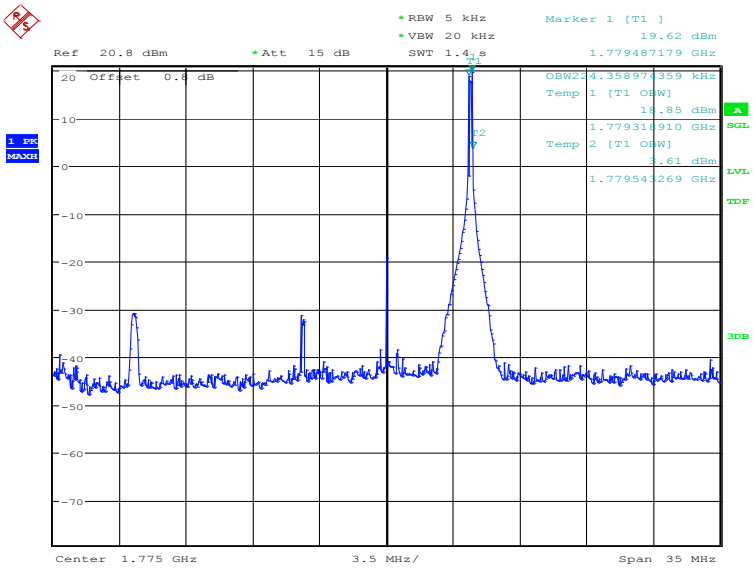
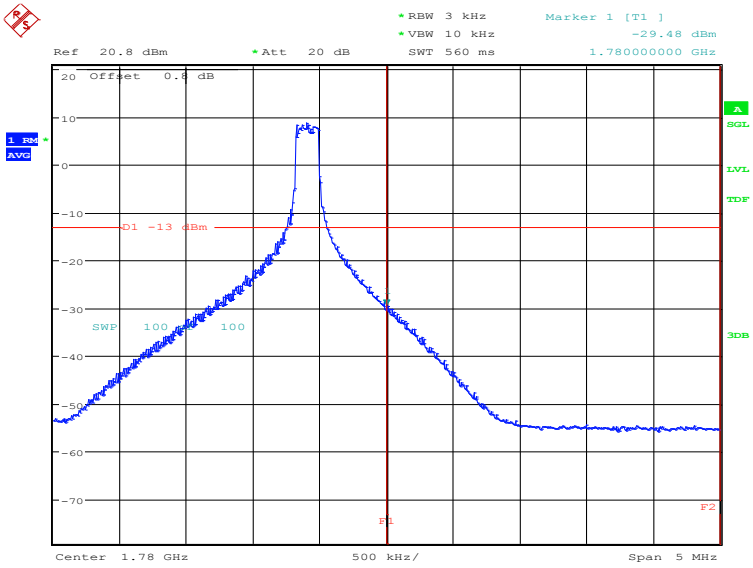
OBW: 1RB-high_offset



Date: 10.NOV.2022 08:29:22

HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 10.NOV.2022 08:30:36

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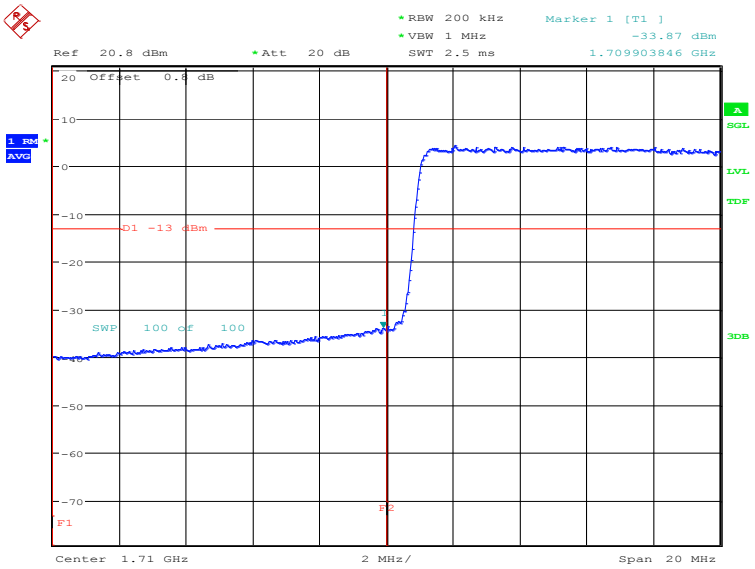
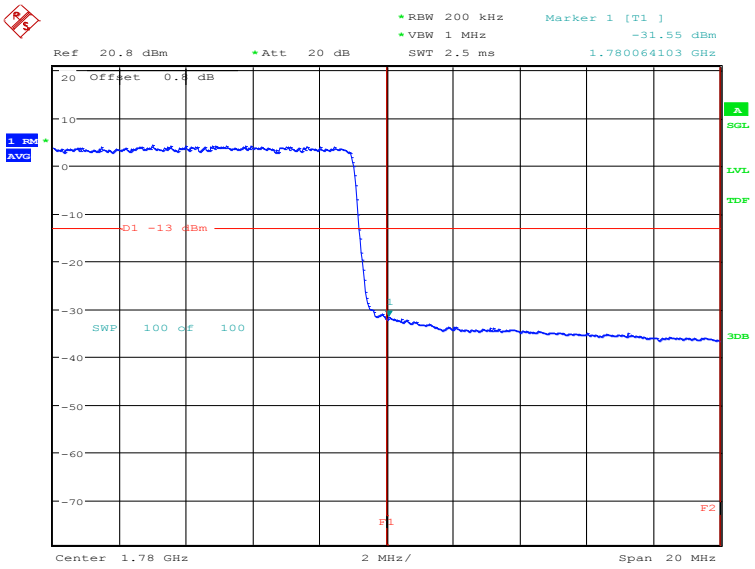
LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 16.SEP.2022 12:22:22

HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 16.SEP.2022 12:23:55

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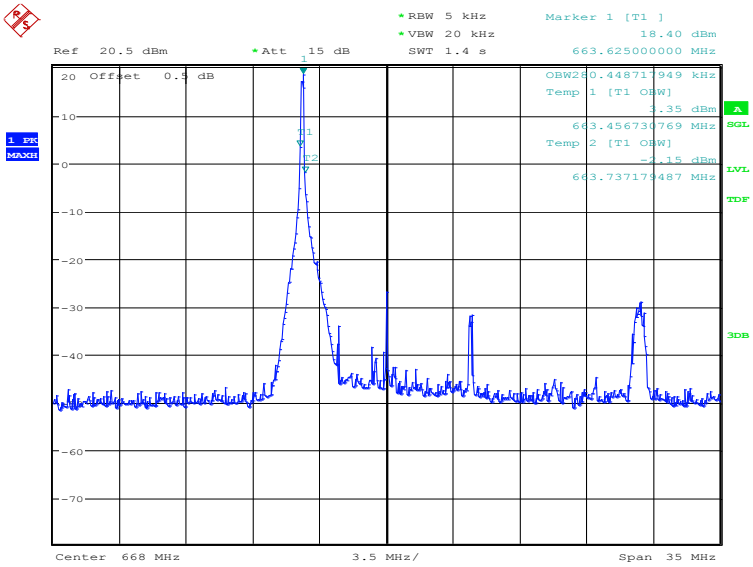
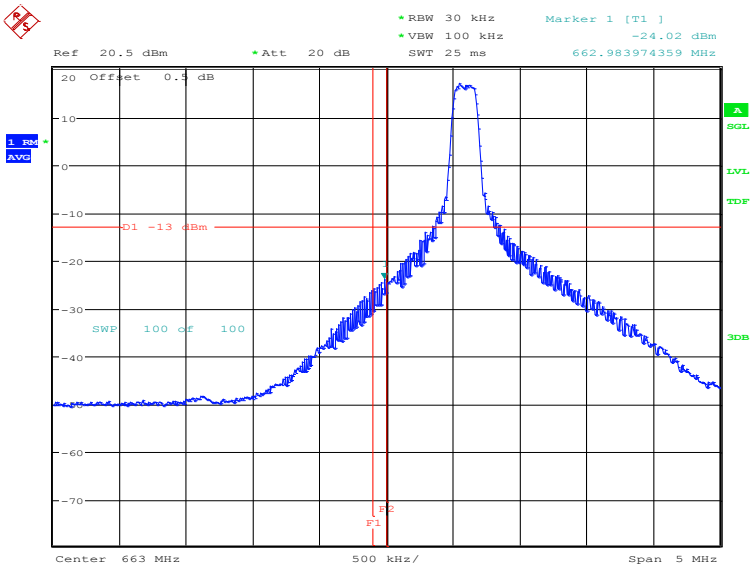
LTE band 71

OBW: 1RB-low_offset



Date: 10.NOV.2022 07:38:47

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 10.NOV.2022 07:39:06

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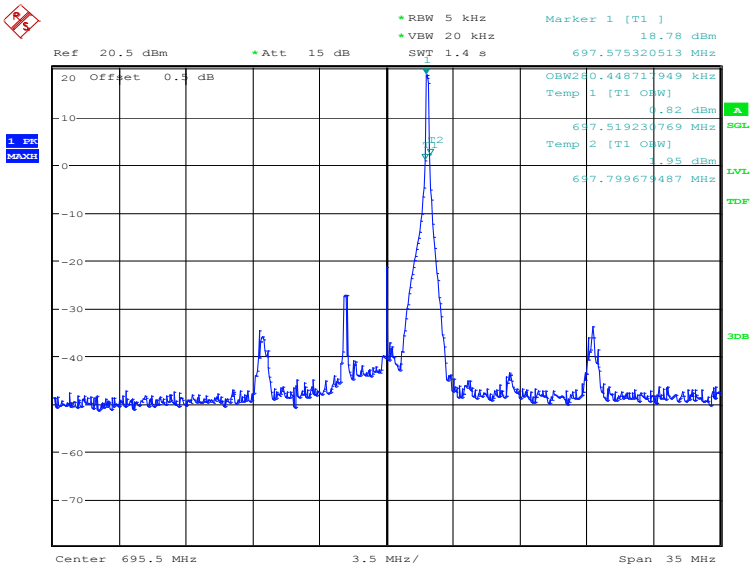
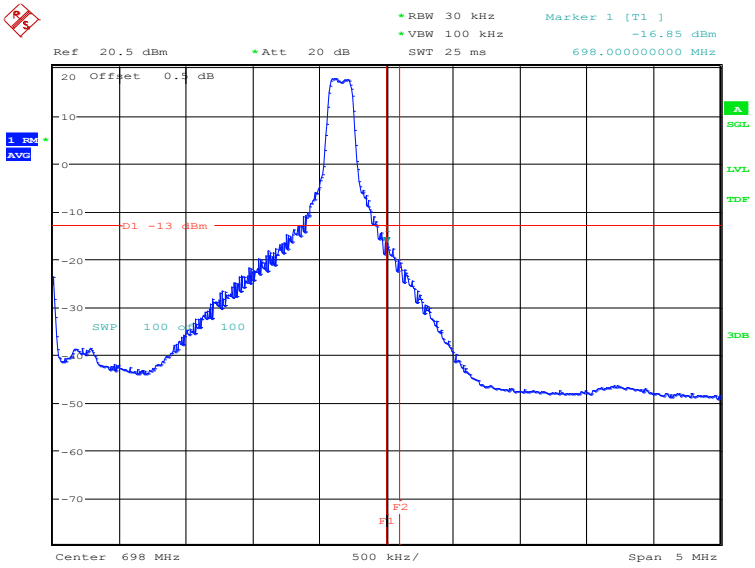
OBW: 1RB-high_offset



Date: 10.NOV.2022 07:40:38

HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 10.NOV.2022 07:40:57

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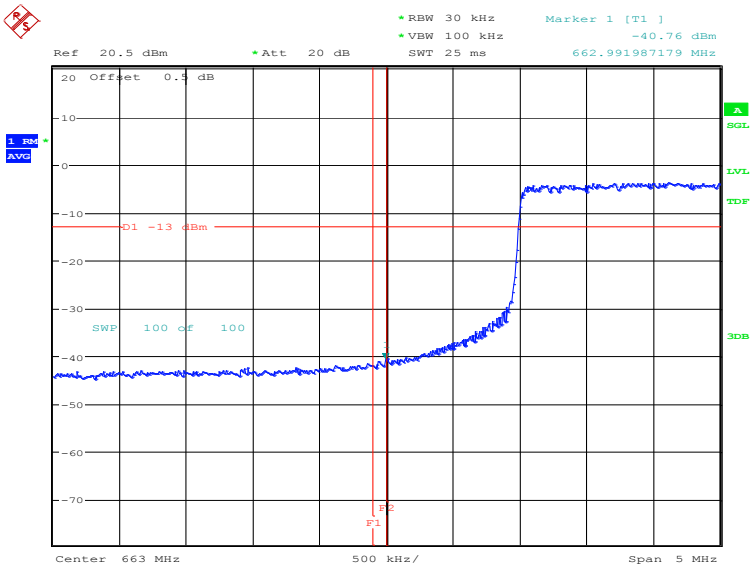
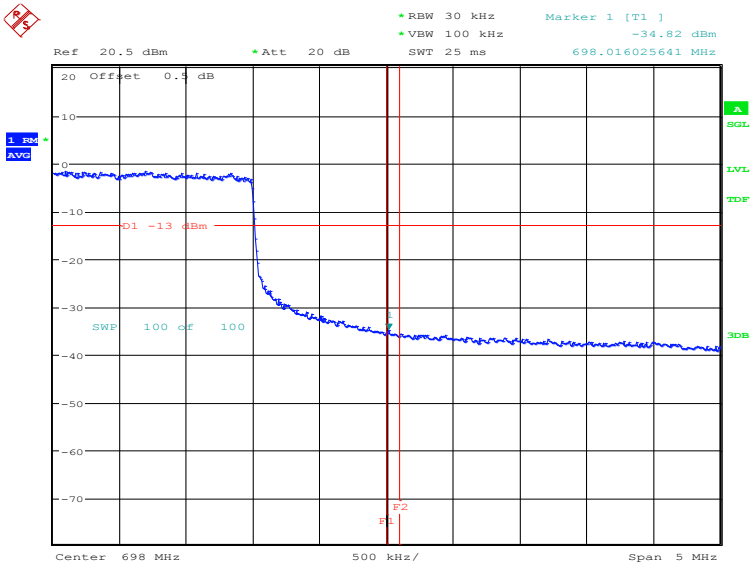
LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 16.SEP.2022 12:08:46

HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 16.SEP.2022 12:10:19

Note: Expanded measurement uncertainty is U = 0.622 dB, k = 2.

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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(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 + 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(g) states for 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 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 $116Log_{10}(f/6.1)$ decibels or 50 + 10 $Log_{10}(P)$ 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.

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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 + $10Log_{10}$(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.

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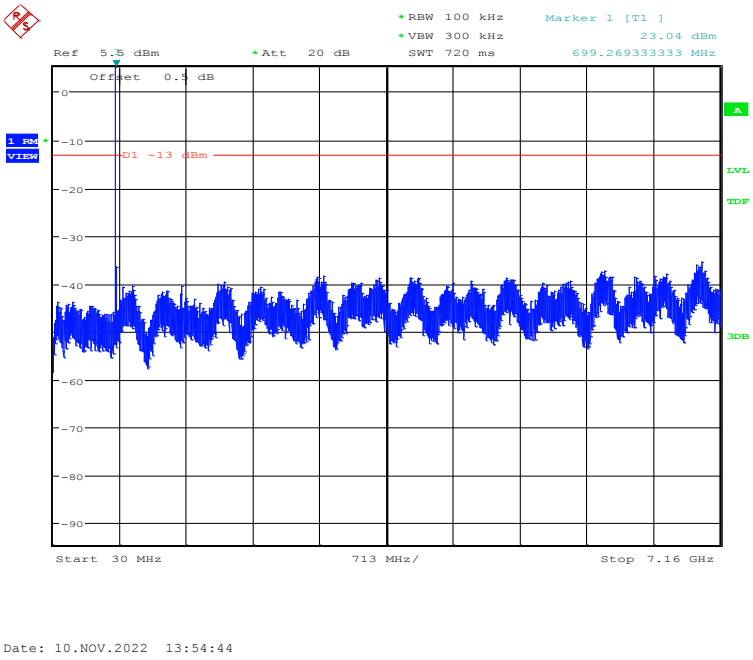
A. 7.3 Measurement result

Only the worst case result is given below

LTE band 12: 30MHz – 7.16GHz

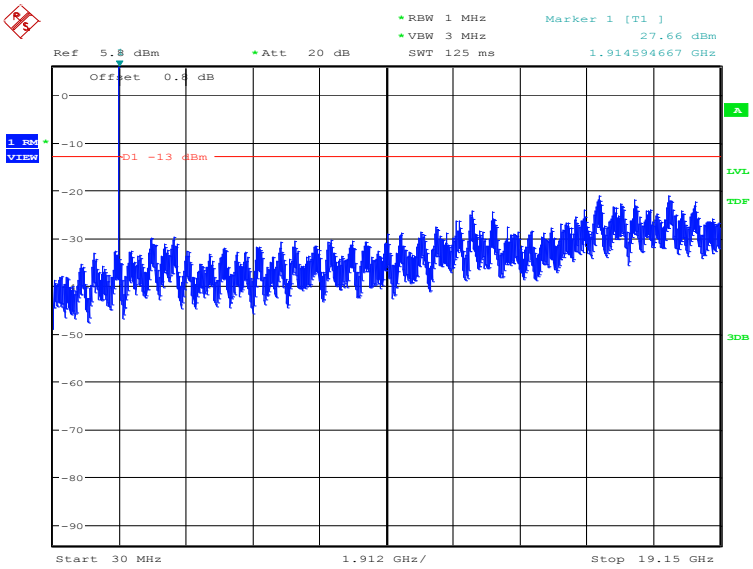
NOTE: peak above the limit line is the carrier frequency.



Date: 10.NOV.2022 13:54:44

LTE band 25: 30MHz – 19.15GHz

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



Date: 10.NOV.2022 08:37:18

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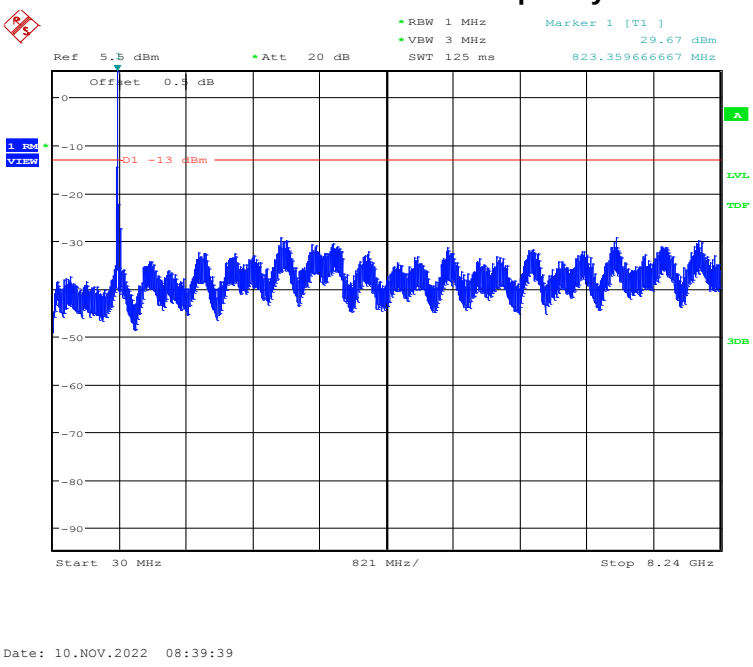
LTE band 26(814MHz~824MHz): 30MHz – 8.24GHz

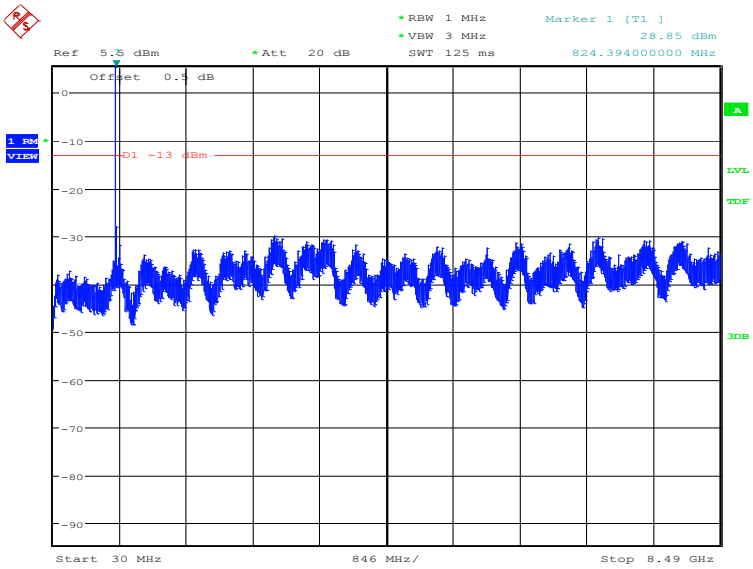
NOTE: peak above the limit line is the carrier frequency.



Date: 10.NOV.2022 08:39:39

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

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



Date: 10.NOV.2022 08:38:01

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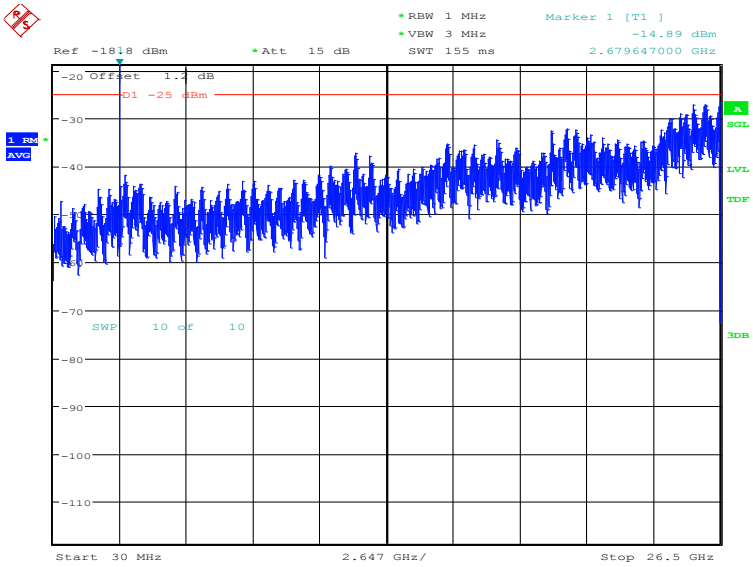
LTE band 41: 30MHz – 26.5GHz

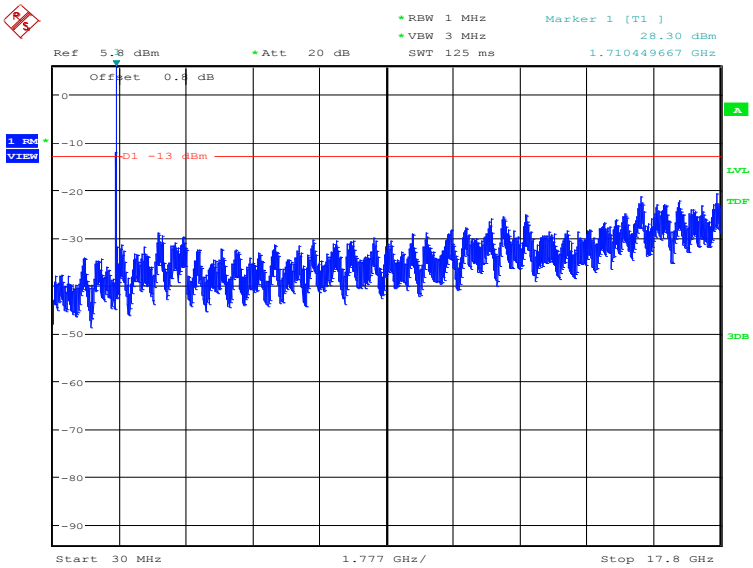
NOTE: peak above the limit line is the carrier frequency.



Date: 10.NOV.2022 08:55:34

LTE band 66: 30MHz – 17.8GHz

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



Date: 10.NOV.2022 08:41:03

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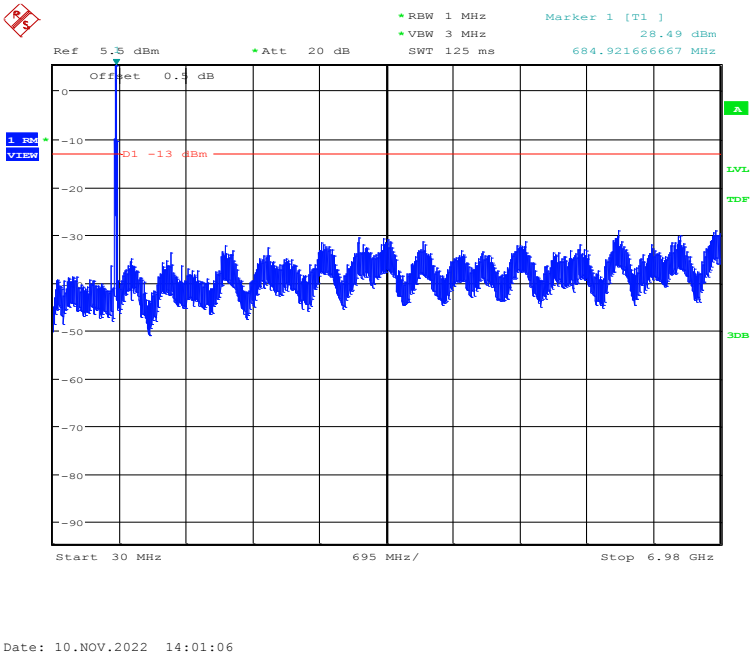
LTE band 71: 30MHz – 6.98GHz

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



Note: Expanded measurement uncertainty is U = 0.622 dB, k = 2.

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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%.

LTE band 12, 10MHz

Frequency(MHz)	PAPR(dB)		
707.5	QPSK	16QAM	64QAM
	6.03	6.76	6.92

LTE band 25, 20MHz

Frequency(MHz)	PAPR(dB)		
1882.5	QPSK	16QAM	64QAM
	6.76	7.37	7.50

LTE band 41, 20MHz

Frequency (MHz)	PAPR (dB)		
2593.0	QPSK	16QAM	64QAM
	8.21	8.91	9.07

LTE band 66, 20MHz

Frequency(MHz)	PAPR(dB)		
1745.0	QPSK	16QAM	64QAM
	6.44	7.18	7.21

LTE band 71, 20MHz

Frequency(MHz)	PAPR(dB)		
680.5	QPSK	16QAM	64QAM
	6.09	6.92	7.05

Note: Expanded measurement uncertainty is U = 0.578 dB, k = 2.

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Annex B: Accreditation Certificate

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ilac-MRA

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 600118-0

Telecommunication Technology Labs, CAICT
Beijing
China

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2022-10-01 through 2023-09-30
Effective Dates

DEPARTMENT OF COMMERCE · UNITED STATES OF AMERICA

For the National Voluntary Laboratory Accreditation Program

*****END OF REPORT*****

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