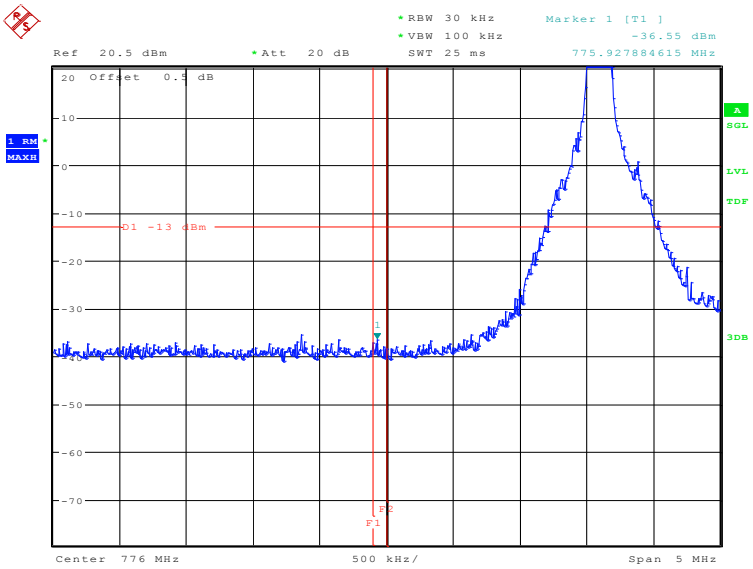
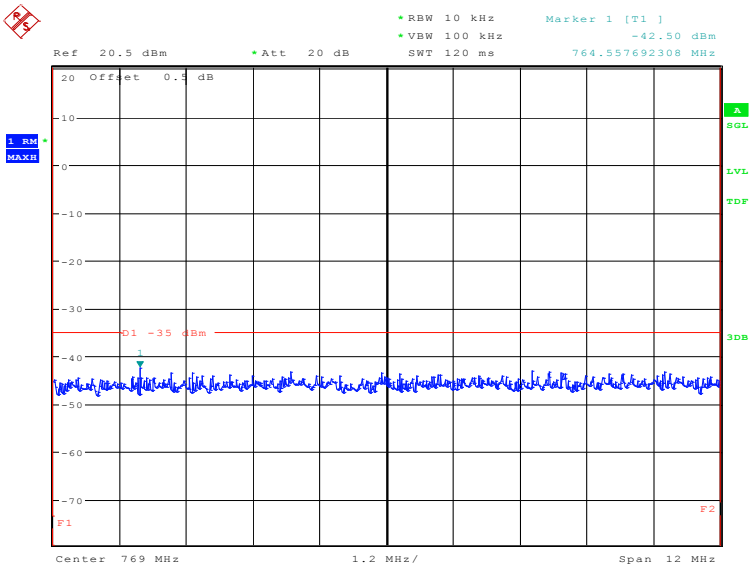
LOW BAND EDGE BLOCK-1RB-low_offset



Date: 23.OCT.2019 12:23:23



Date: 23.OCT.2019 12:23:38

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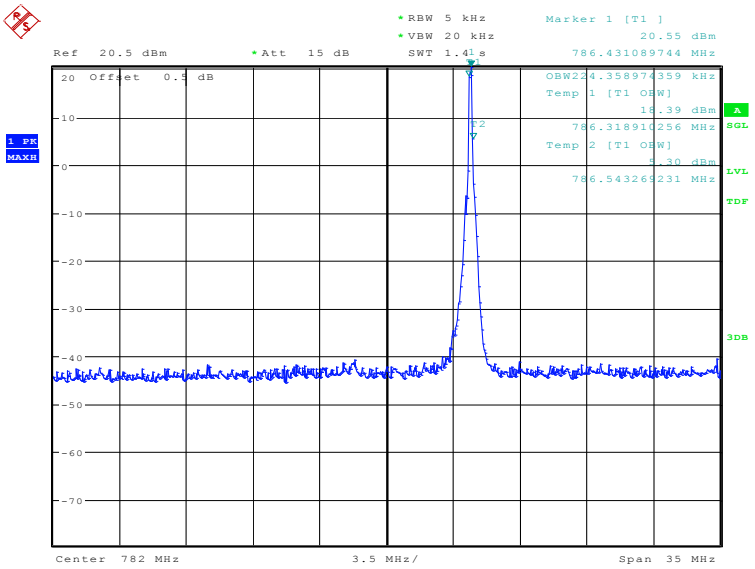
OBW: 1RB-high_offset



Date: 23.OCT.2019 12:25:41

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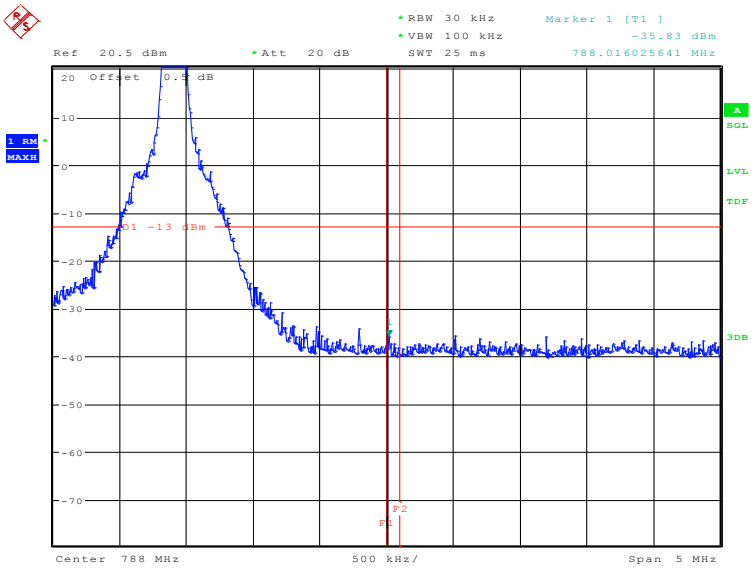
HIGH BAND EDGE BLOCK-1RB-high_offset



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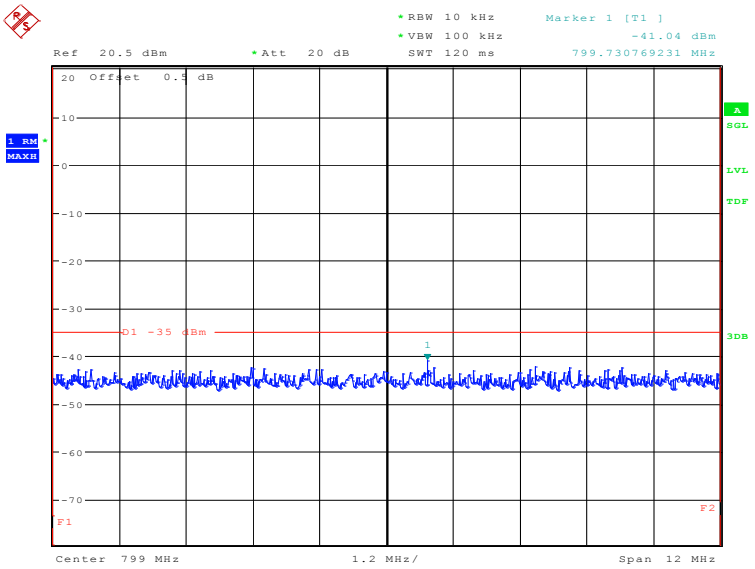

Date: 23.OCT.2019 12:26:11

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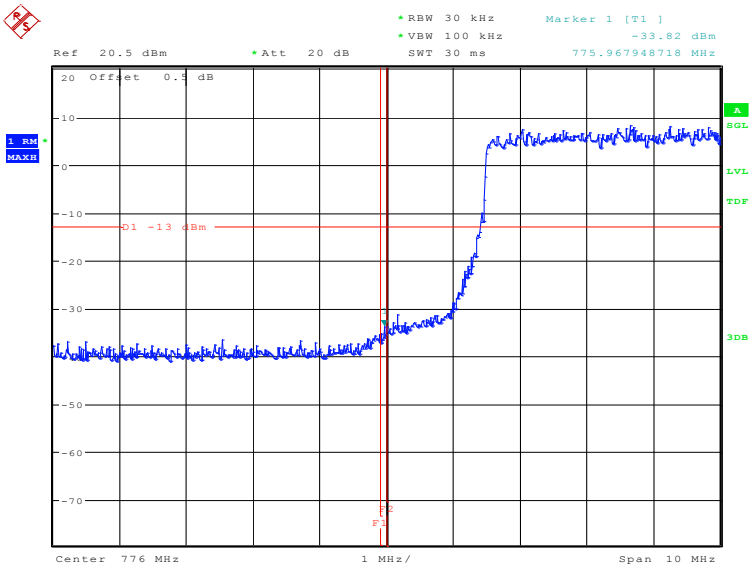
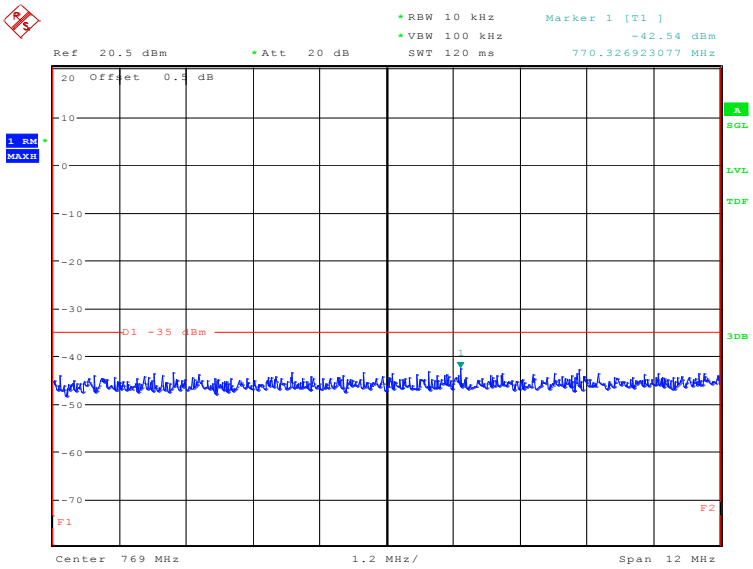
LOW BAND EDGE BLOCK-10MHz-100%RB



Date: 23.OCT.2019 12:24:07



Date: 23.OCT.2019 12:24:22

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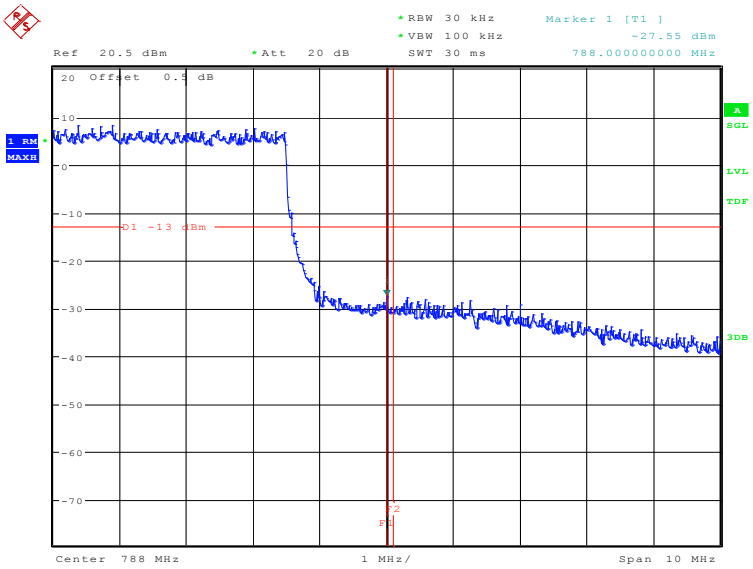
HIGH BAND EDGE BLOCK-10MHz-100%RB



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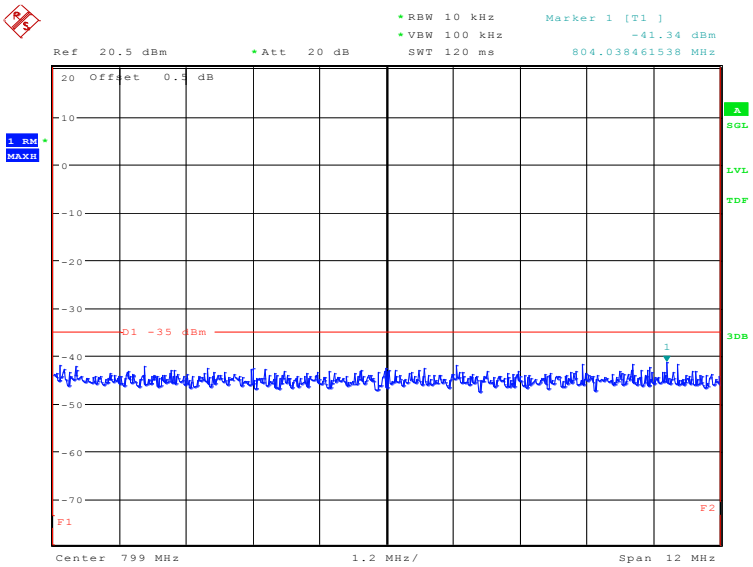

Date: 23.OCT.2019 12:26:55

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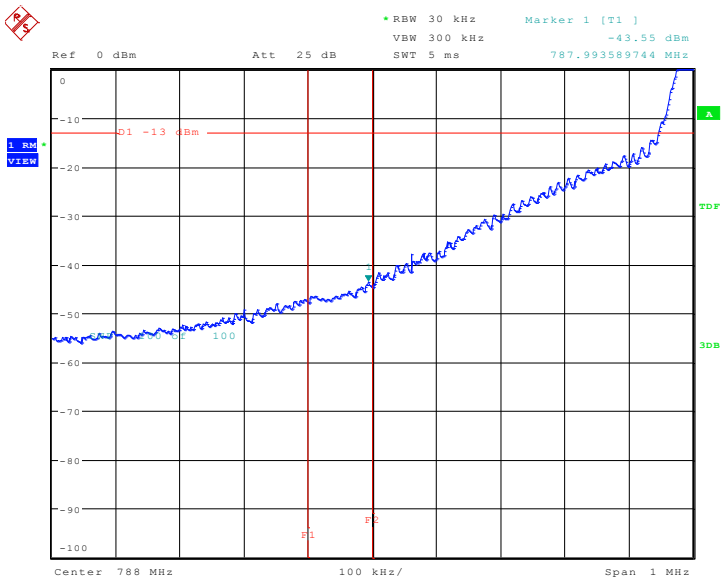
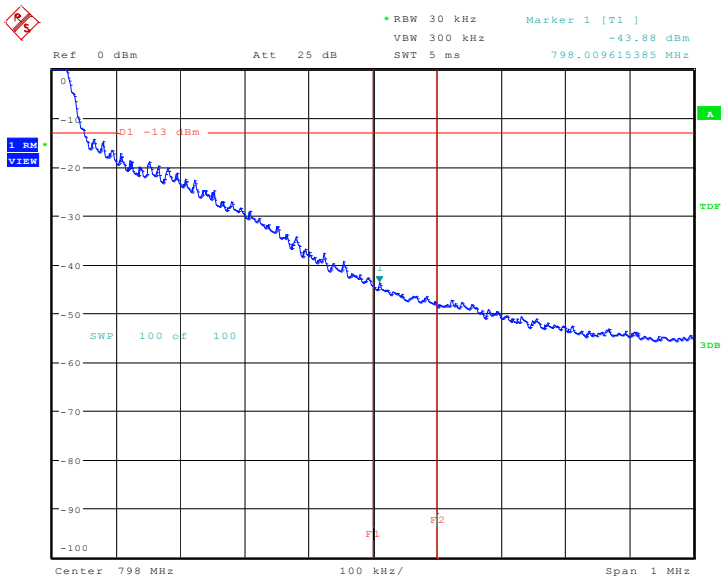
LTE band 14

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 23.OCT.2019 16:49:30

HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 23.OCT.2019 16:50:28

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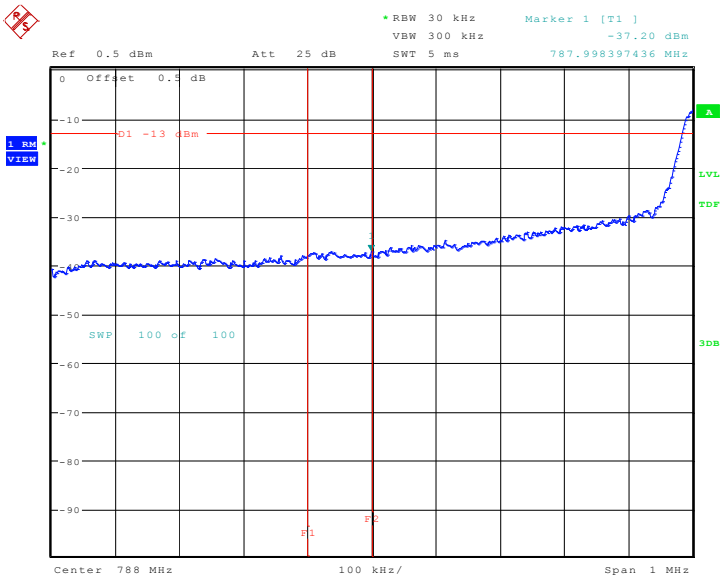
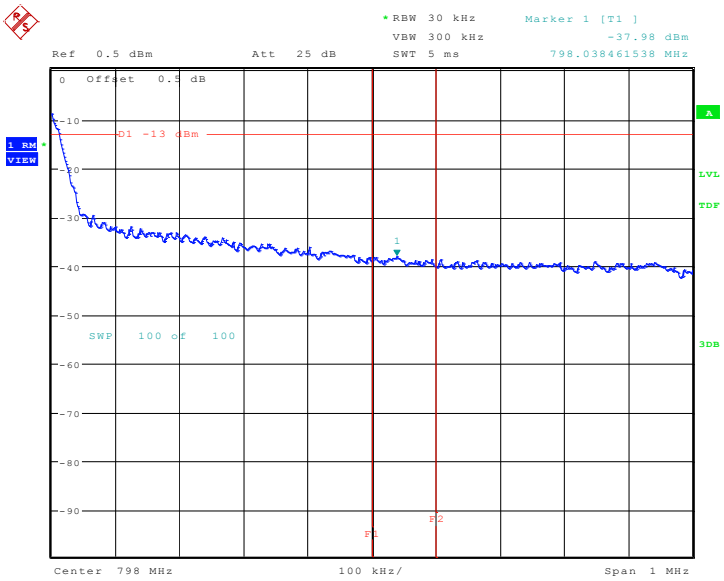
LOW BAND EDGE BLOCK-10MHz-100%RB



Date: 5.SEP.2019 15:53:43

HIGH BAND EDGE BLOCK-10MHz-100%RB



Date: 5.SEP.2019 15:57:26

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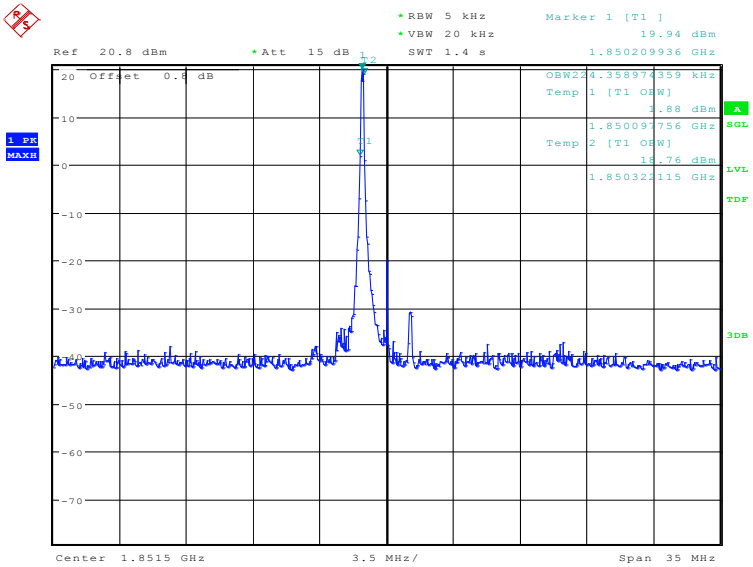
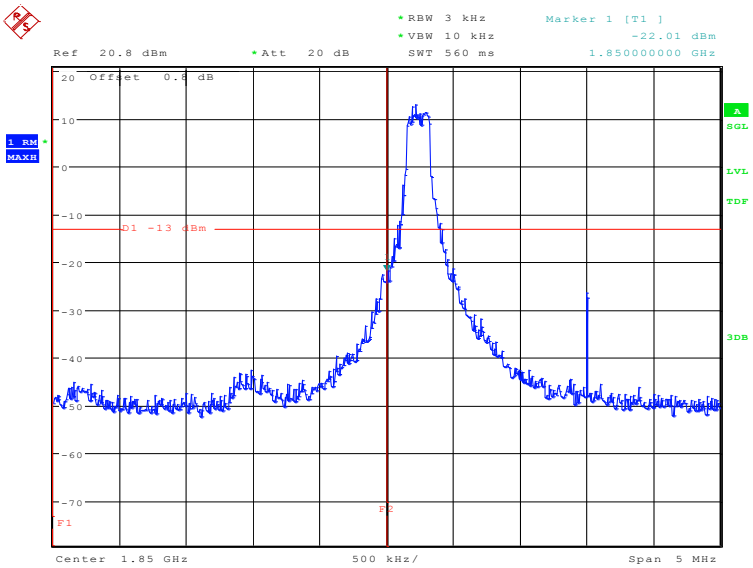
LTE band 25

OBW: 1RB-low_offset



Date: 23.OCT.2019 11:46:18

LOW BAND EDGE BLOCK-1RB-low_offset



Date: 23.OCT.2019 11:46:34

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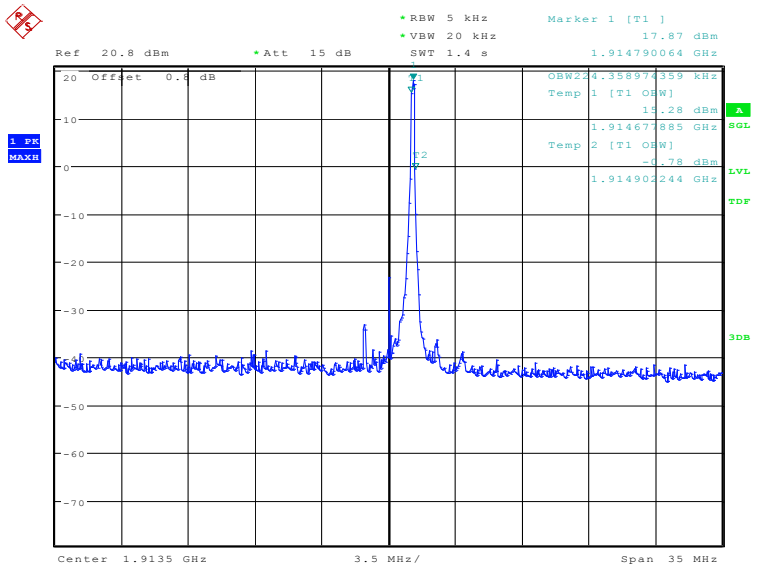
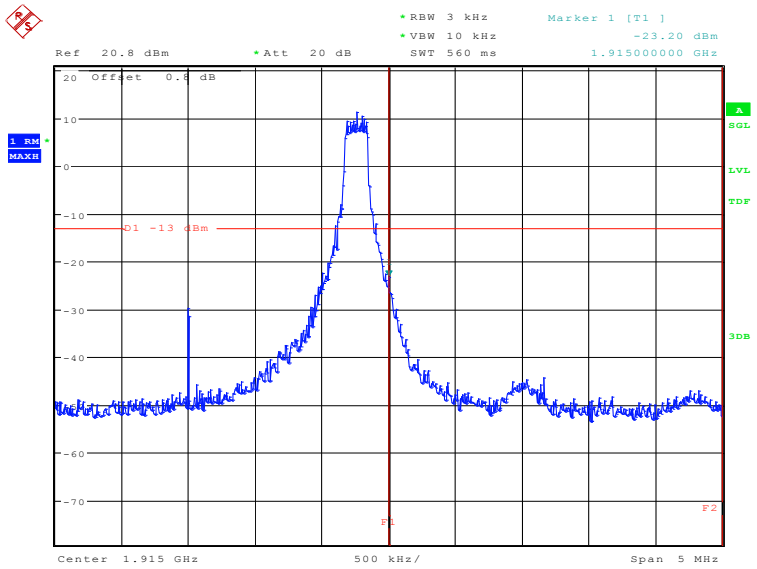
OBW: 1RB-high_offset



Date: 23.OCT.2019 11:48:43

HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 23.OCT.2019 11:48:59

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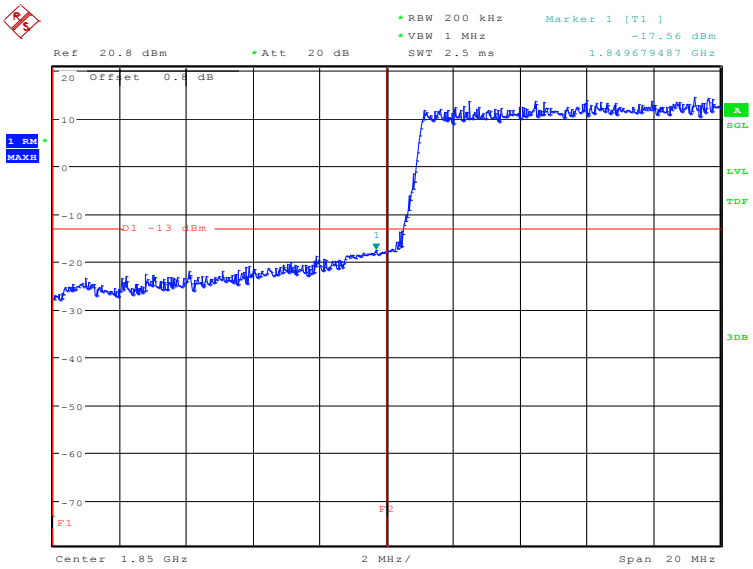
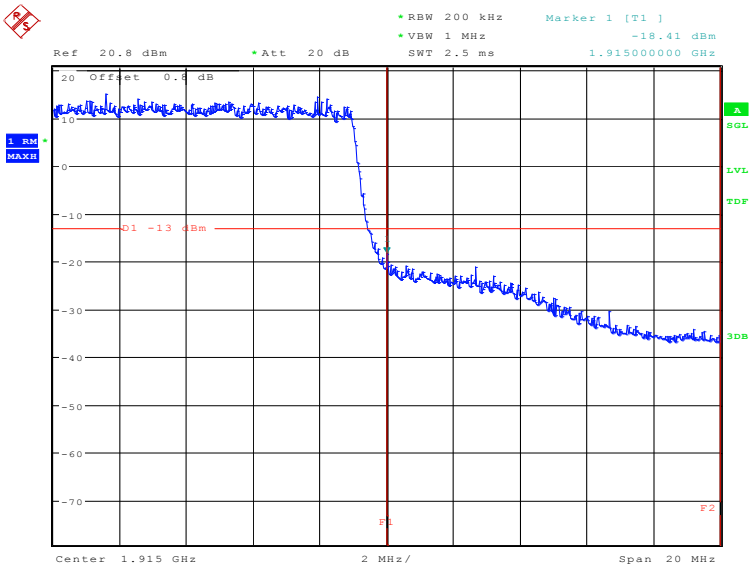
LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 23.OCT.2019 11:47:06

HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 23.OCT.2019 11:49:30

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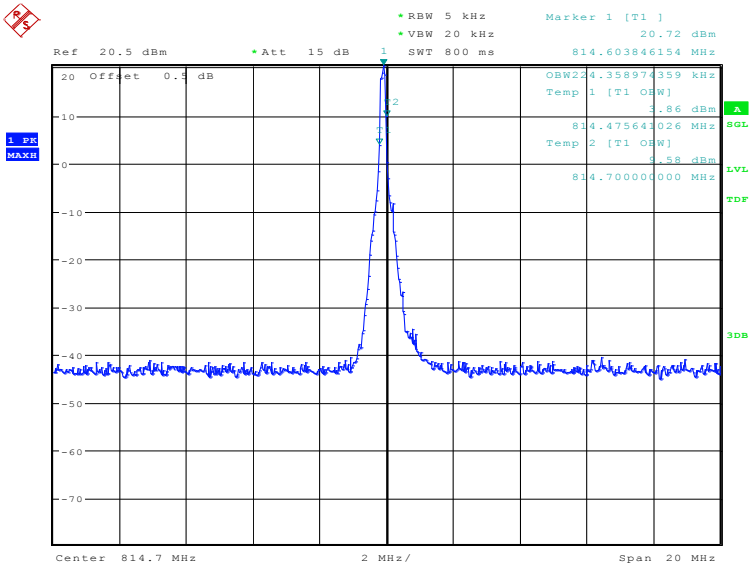
LTE band 26(814MHz~824MHz)

OBW: 1RB-low_offset



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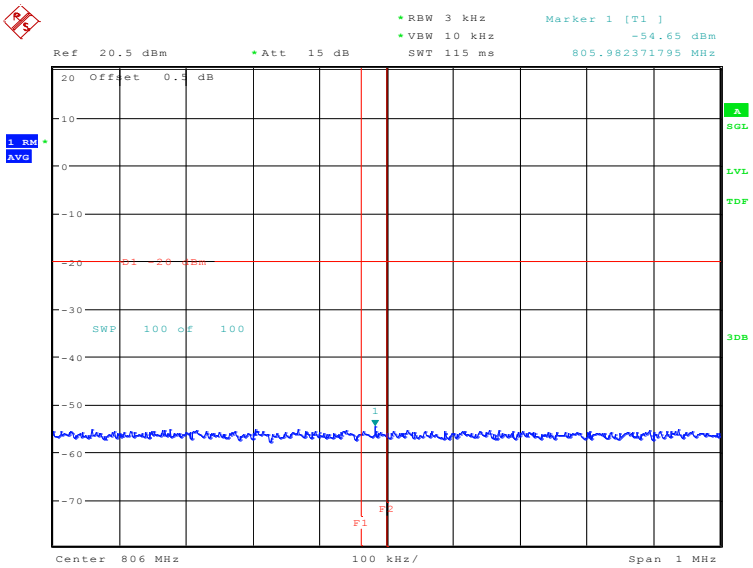
LOW BAND EDGE BLOCK-1RB-low_offset



Date: 23.OCT.2019 15:51:03

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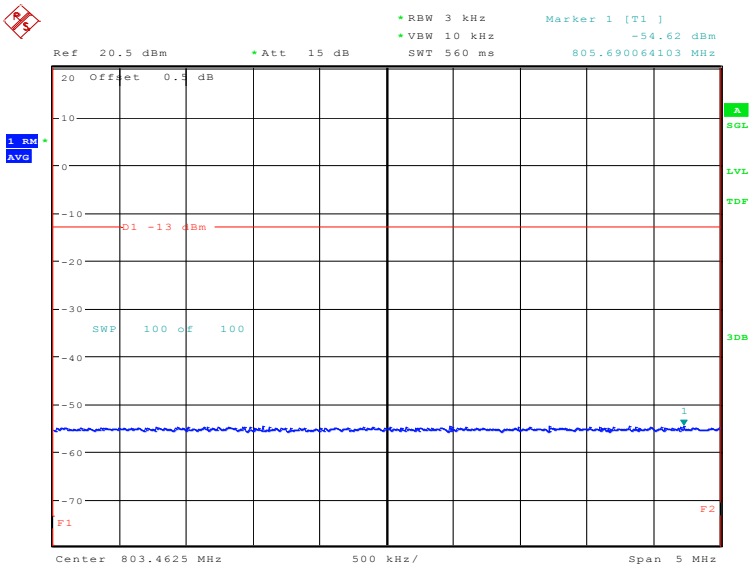
LOW Emission Mask -1RB-low_offset



Date: 23.OCT.2019 15:52:17

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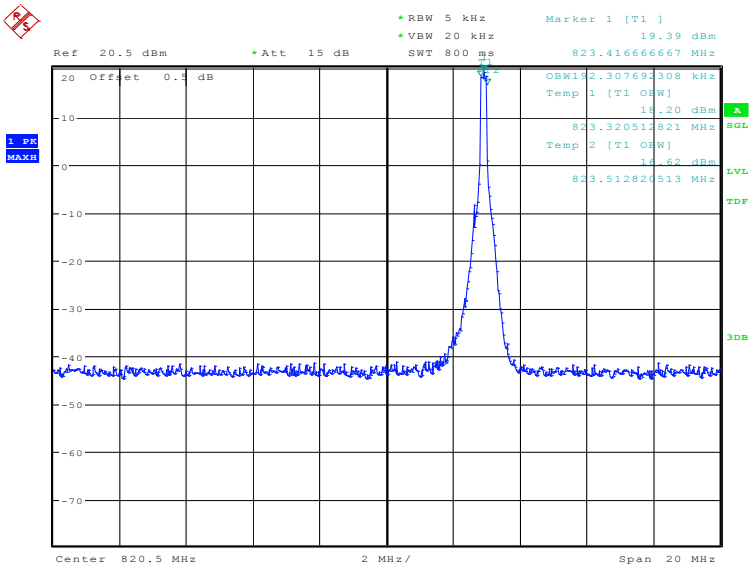
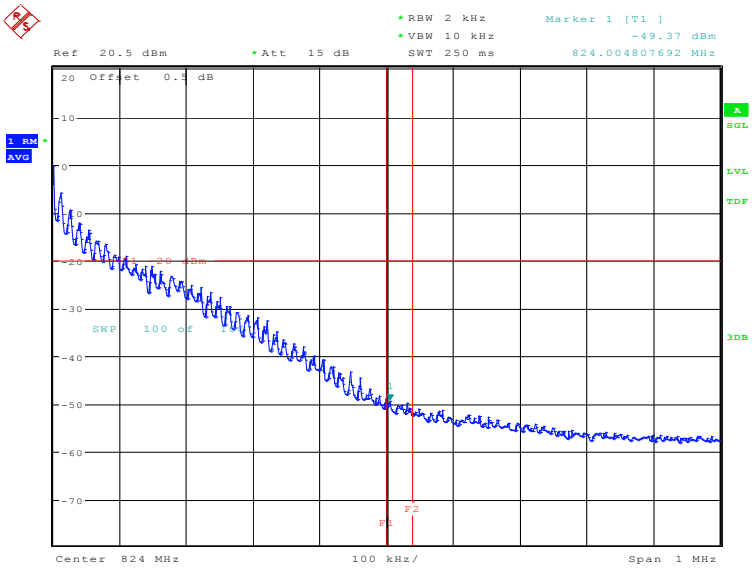
OBW: 1RB-high_offset



Date: 23.OCT.2019 15:54:24

HIGH BAND EDGE BLOCK-1RB-high_offset



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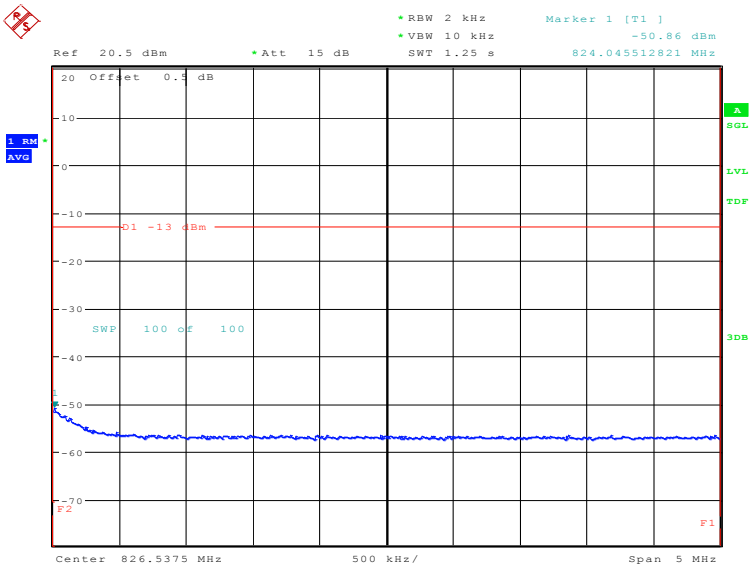
HIGH Emission Mask -1RB-high_offset



Date: 23.OCT.2019 15:57:23

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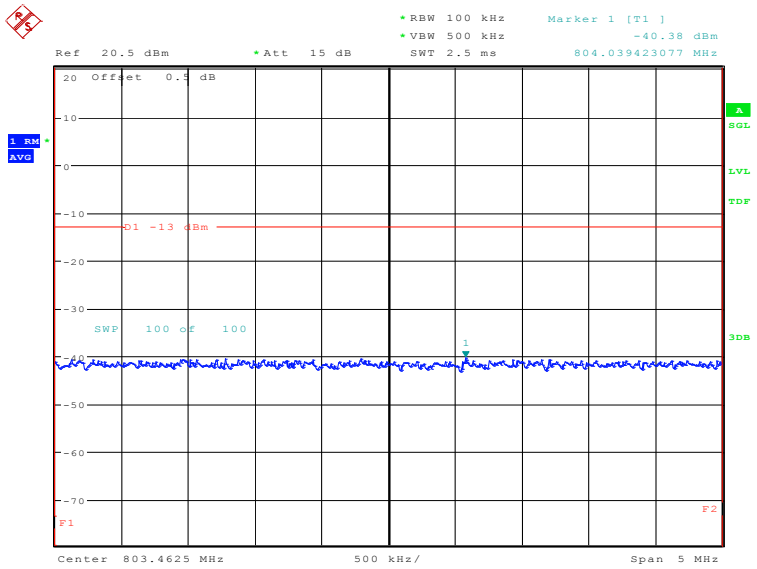
LOW Emission Mask -10MHz-100%RB



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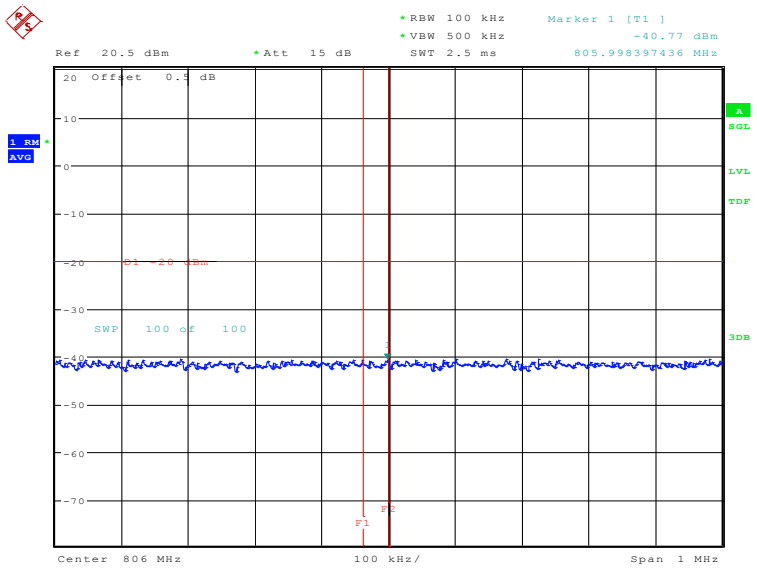
LOW BAND EDGE BLOCK-10MHz-100%RB



Date: 23.OCT.2019 15:52:46

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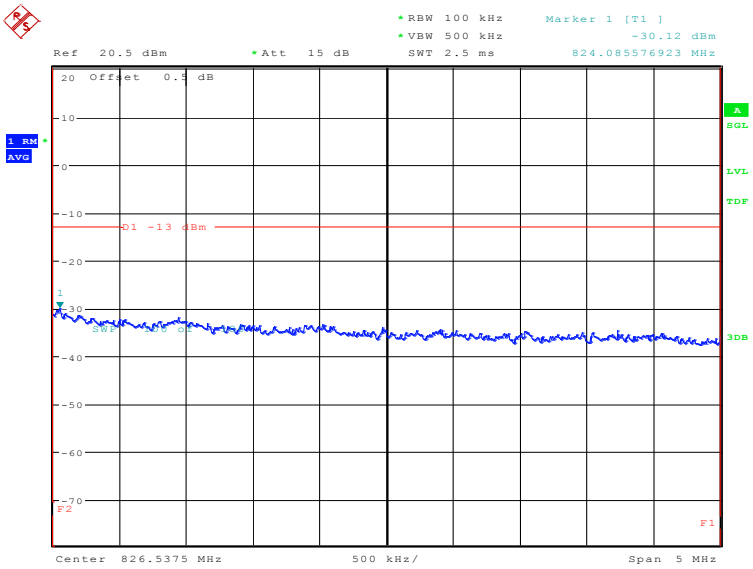
HIGH Emission Mask -10MHz-100%RB



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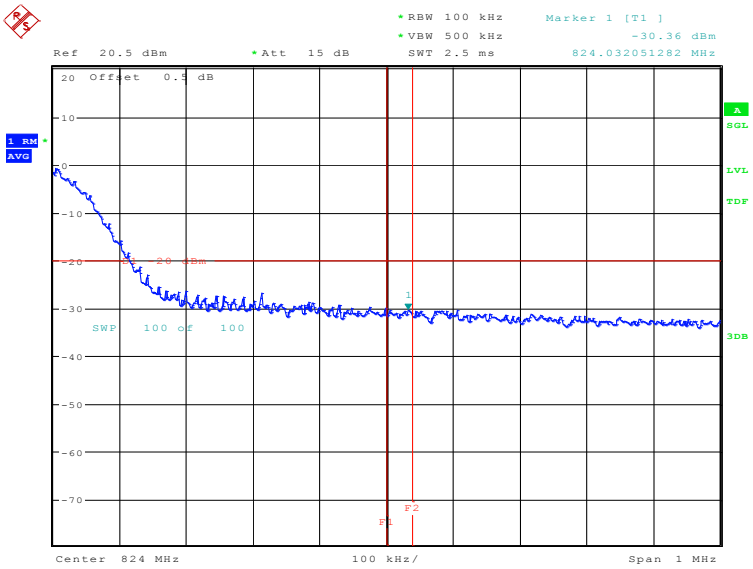
HIGH BAND EDGE BLOCK-10MHz-100%RB



Date: 23.OCT.2019 15:57:53

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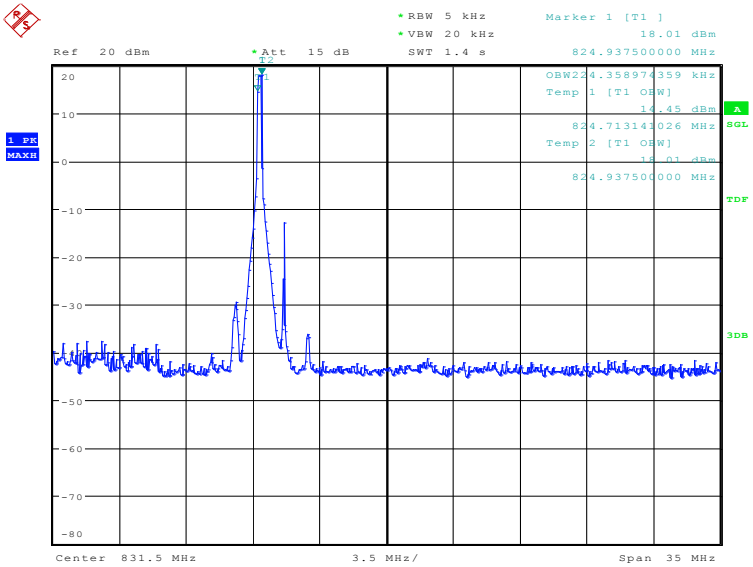
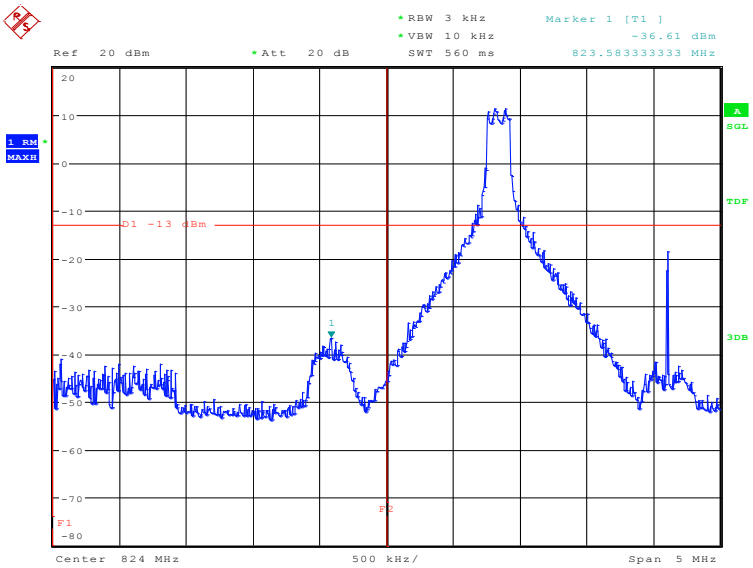
LTE band 26(824MHz~849MHz)

OBW: 1RB-low_offset



Date: 23.OCT.2019 15:38:22

LOW BAND EDGE BLOCK-1RB-low_offset



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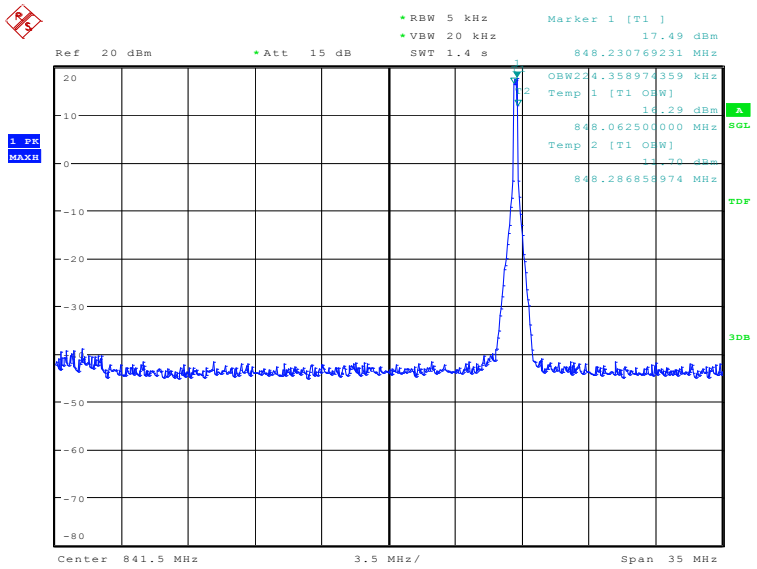
OBW: 1RB-high_offset



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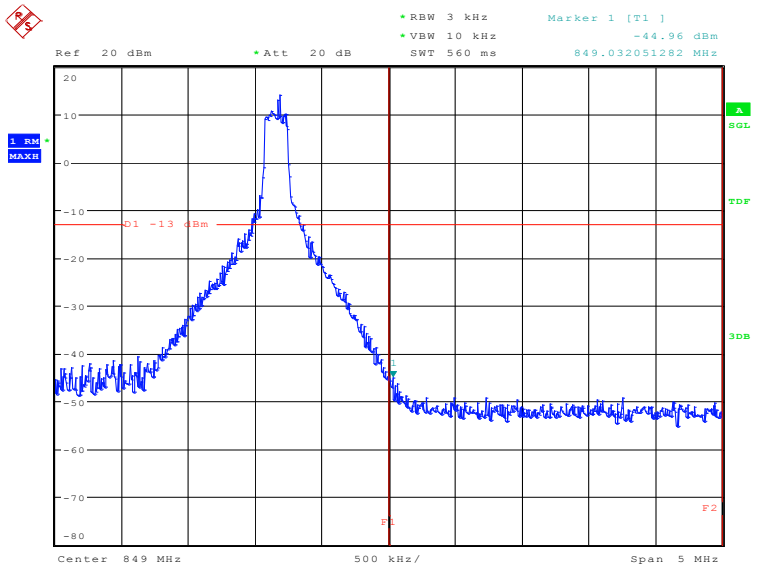
HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 23.OCT.2019 15:40:42

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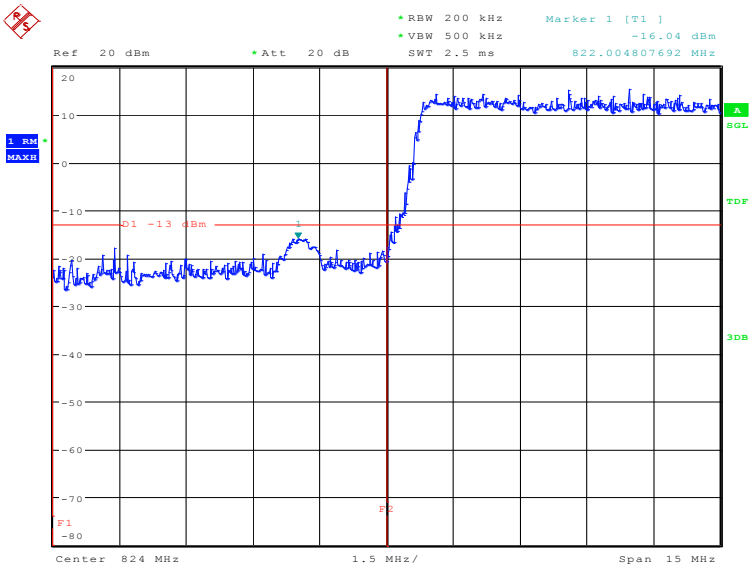
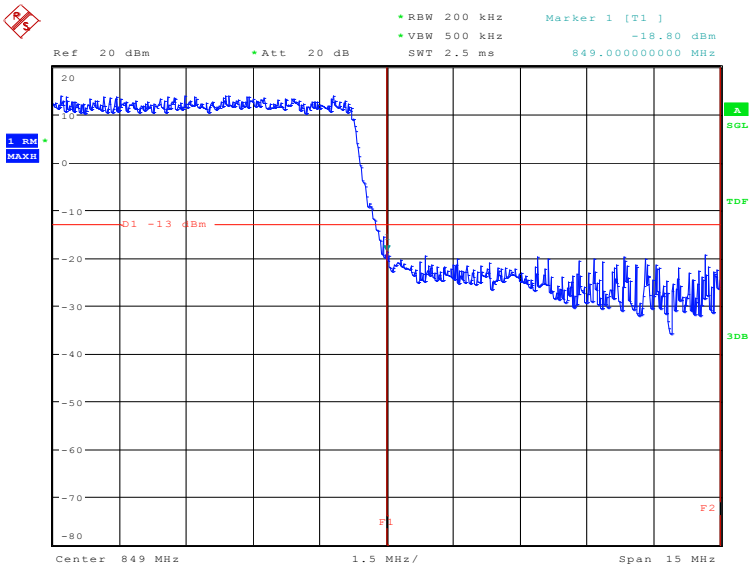
LOW BAND EDGE BLOCK-15MHz-100%RB



Date: 23.OCT.2019 15:39:07

HIGH BAND EDGE BLOCK-15MHz-100%RB



Date: 23.OCT.2019 15:41:11

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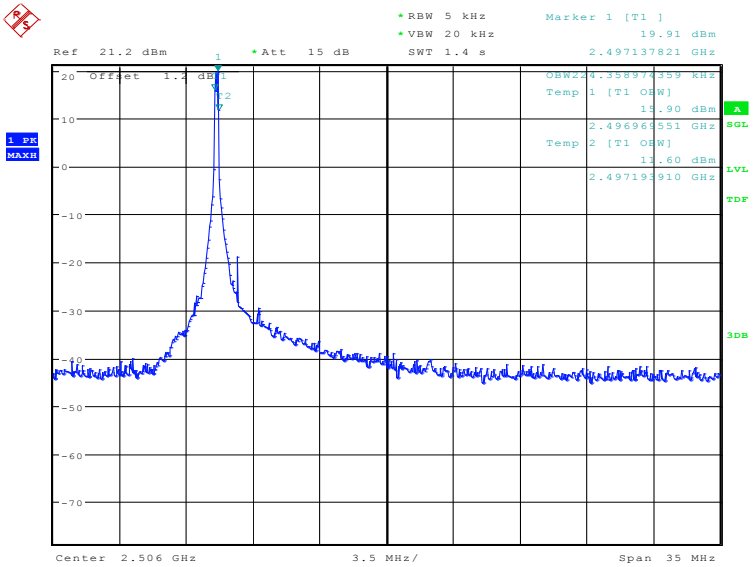
LTE band 41(PC2)

OBW: 1RB-low_offset



Date: 23.OCT.2019 11:52:43

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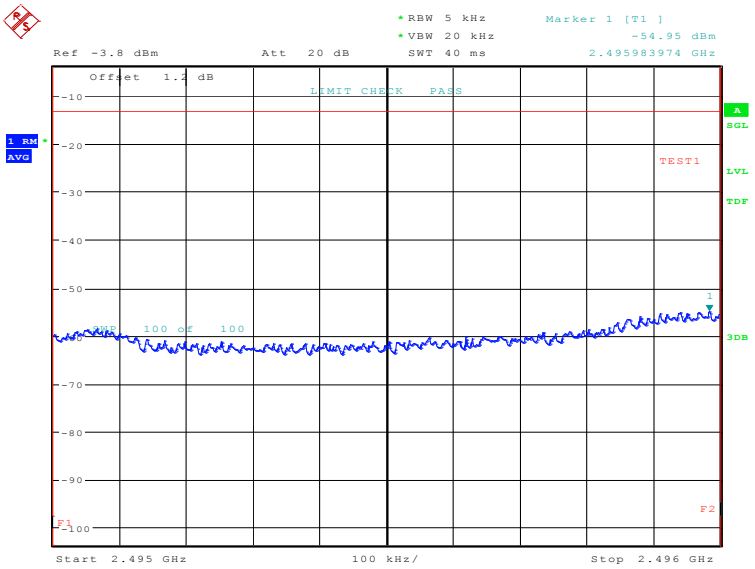
LOW BAND EDGE BLOCK-1RB-low_offset



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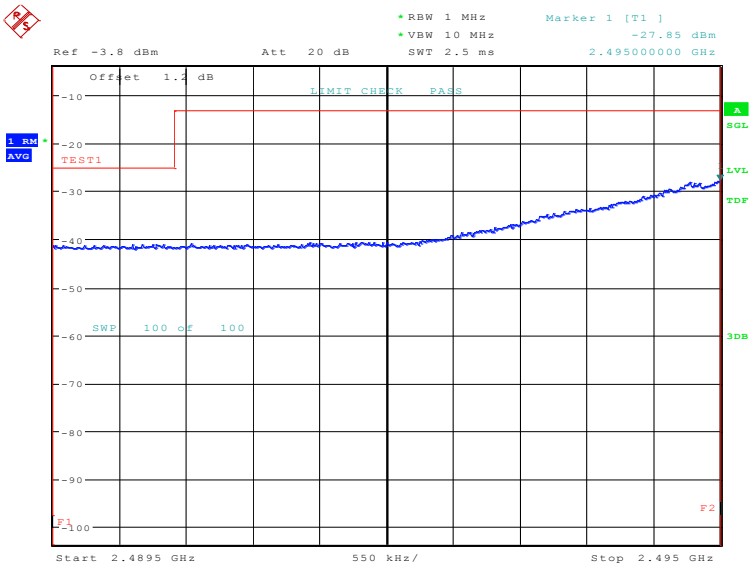

Date: 23.OCT.2019 11:53:19

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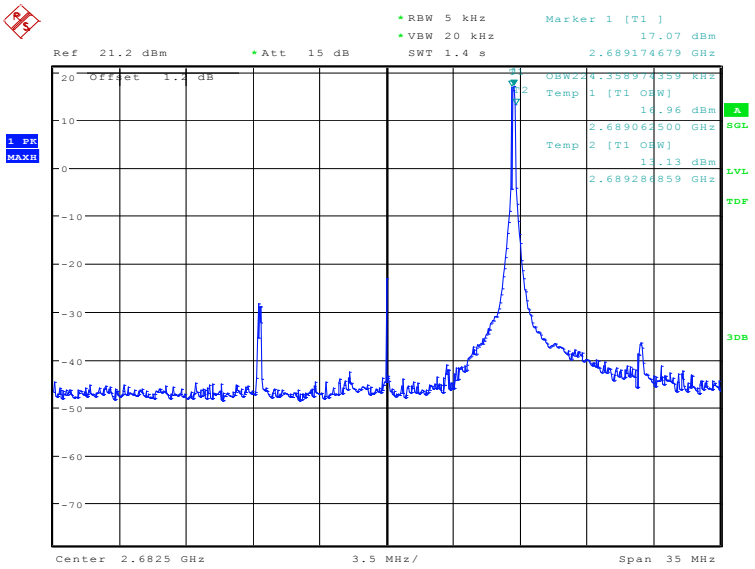
OBW: 1RB-high_offset



Date: 23.OCT.2019 11:56:32

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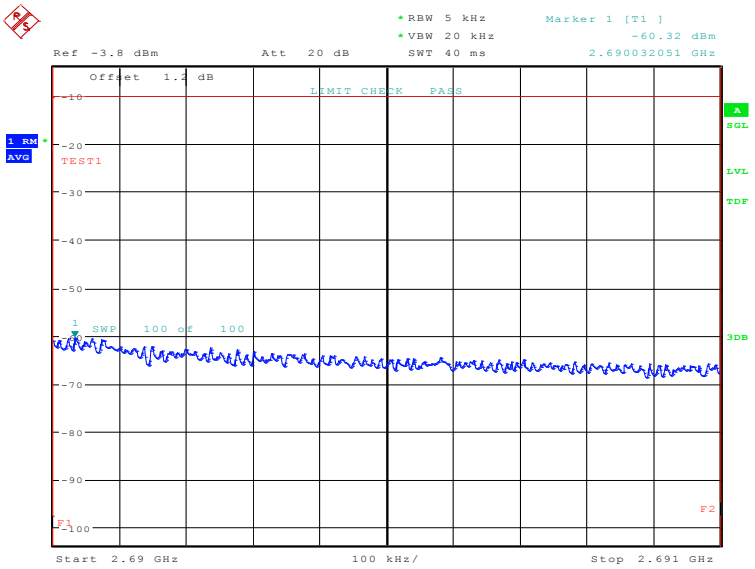
HIGH BAND EDGE BLOCK-1RB-high_offset



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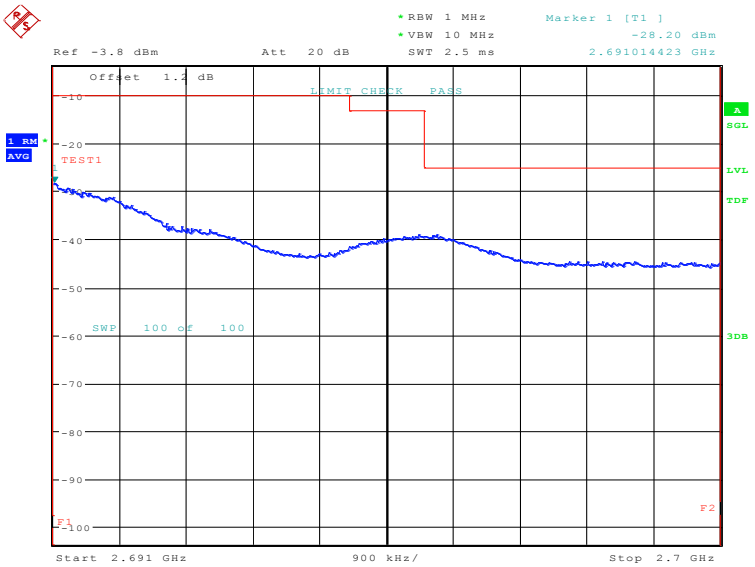

Date: 23.OCT.2019 11:57:07

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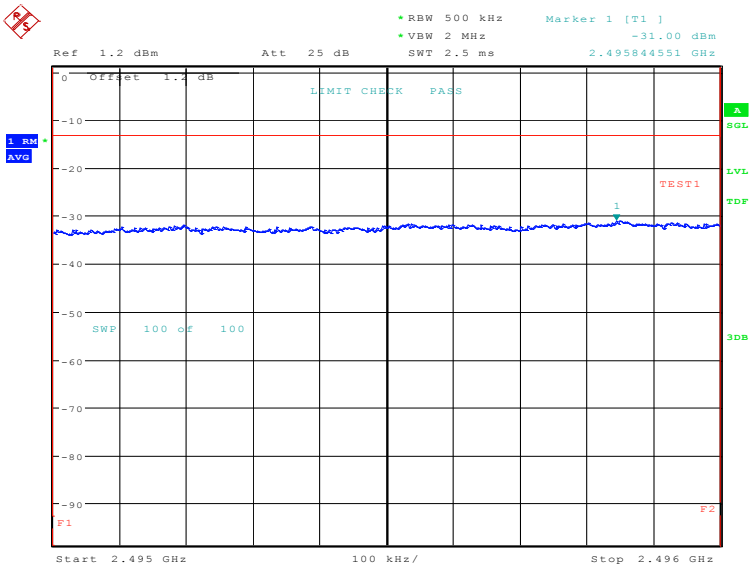
LOW BAND EDGE BLOCK-20MHz-100%RB



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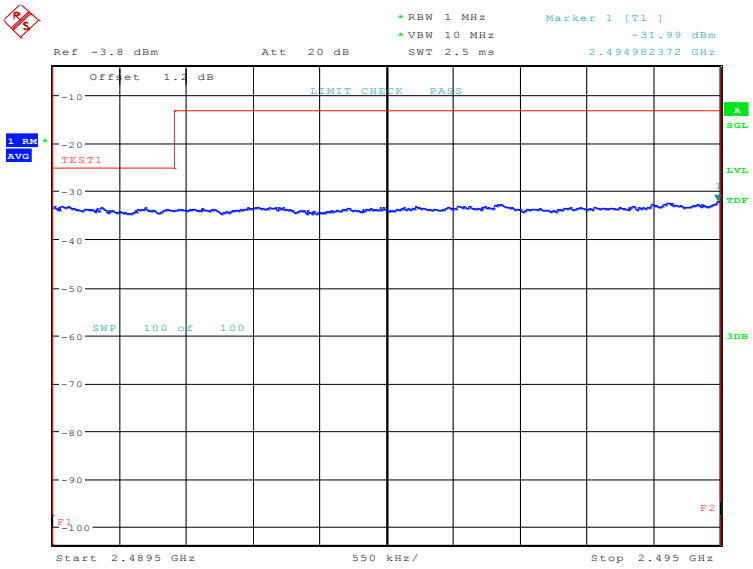

Date: 23.OCT.2019 11:54:07

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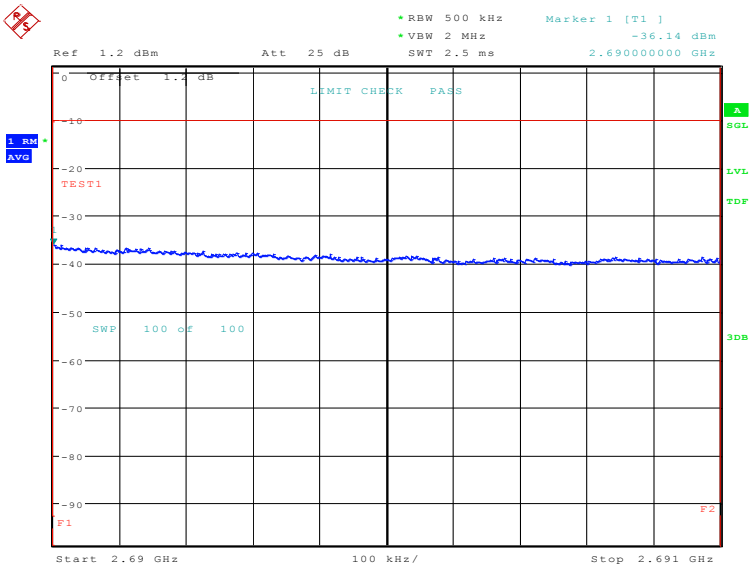
HIGH BAND EDGE BLOCK-20MHz-100%RB



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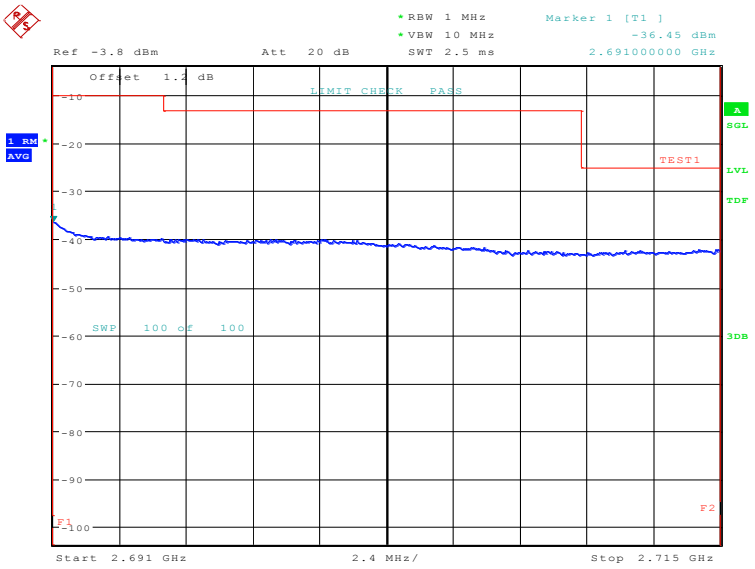

Date: 23.OCT.2019 11:57:59

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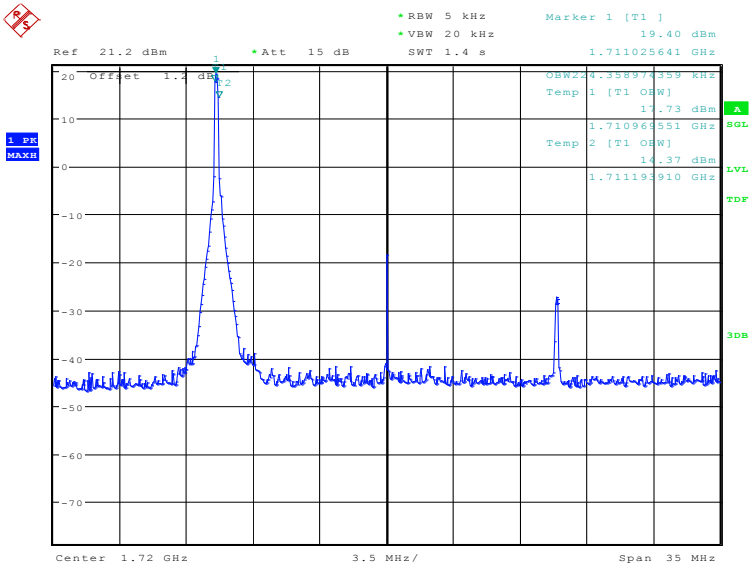
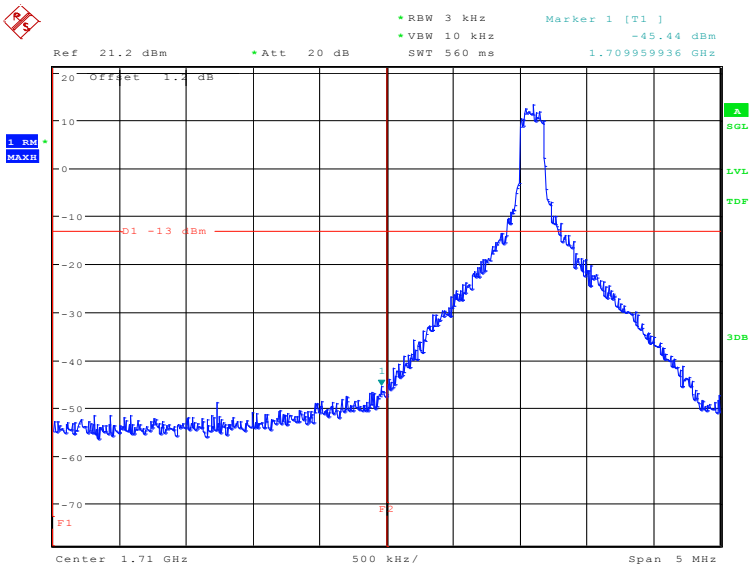
LTE band 66

OBW: 1RB-low_offset



Date: 23.OCT.2019 12:05:07

LOW BAND EDGE BLOCK-1RB-low_offset



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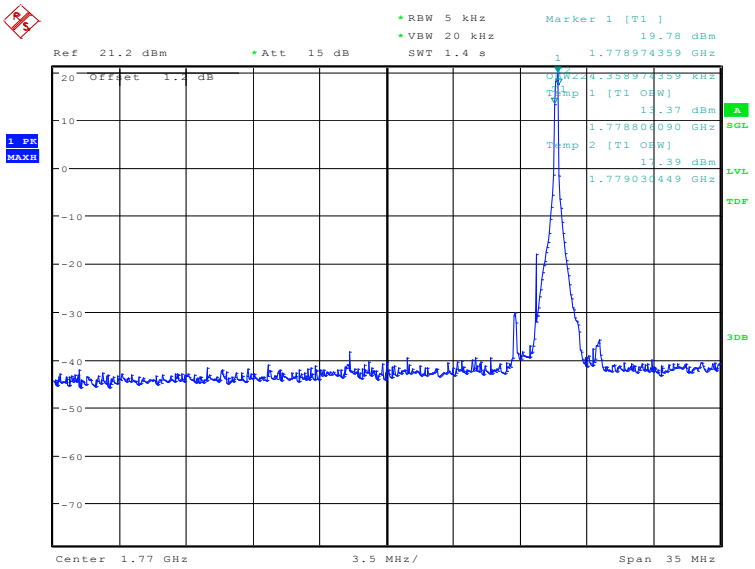
OBW: 1RB-high_offset



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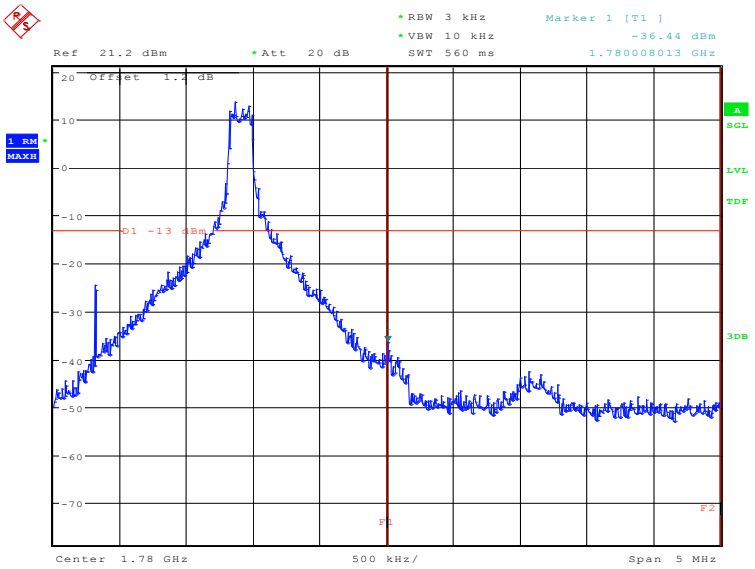

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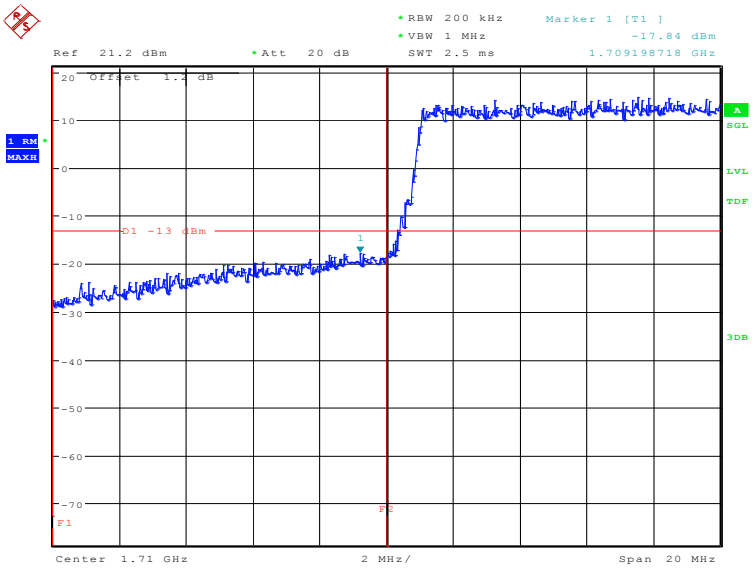
LOW BAND EDGE BLOCK-20MHz-100%RB



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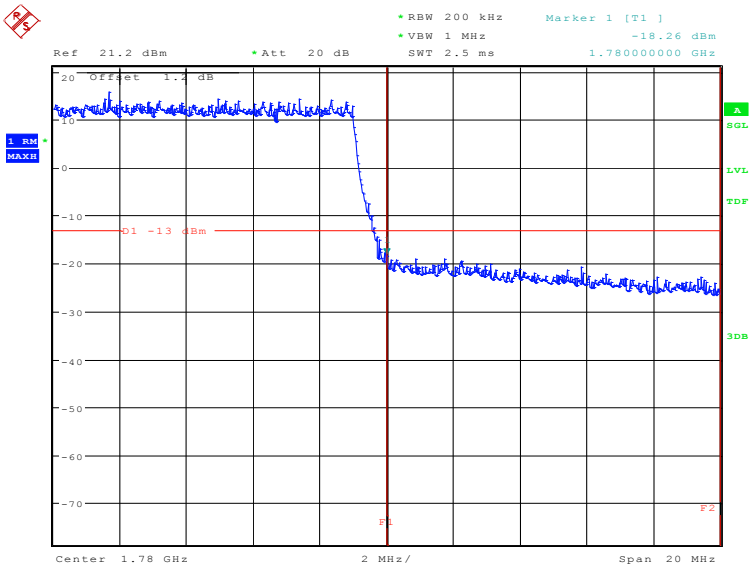
HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 23.OCT.2019 12:07:56

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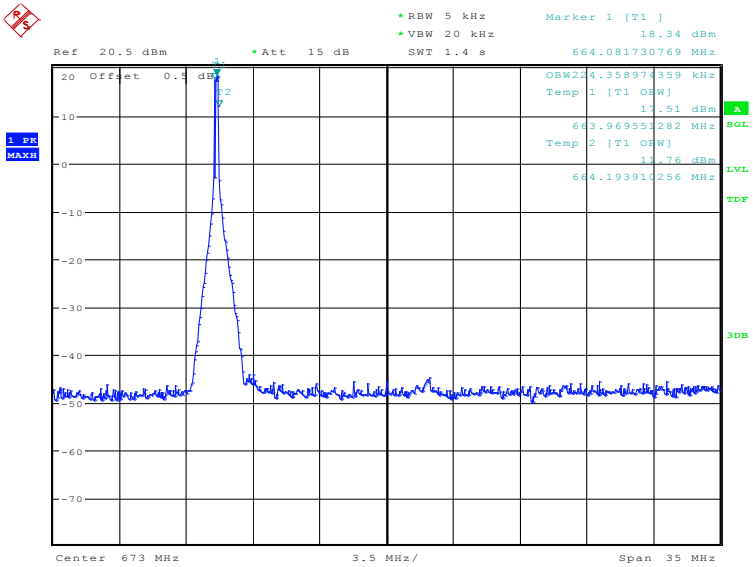
LTE band 71

OBW: 1RB-low_offset



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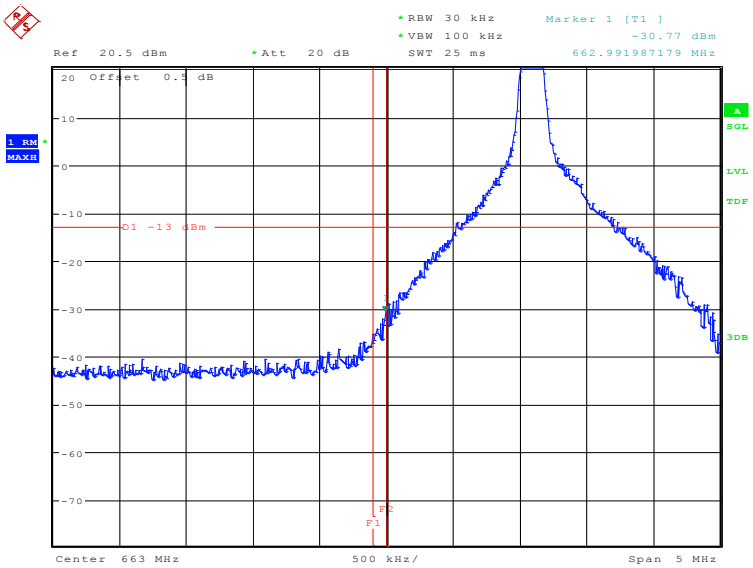
LOW BAND EDGE BLOCK-1RB-low_offset



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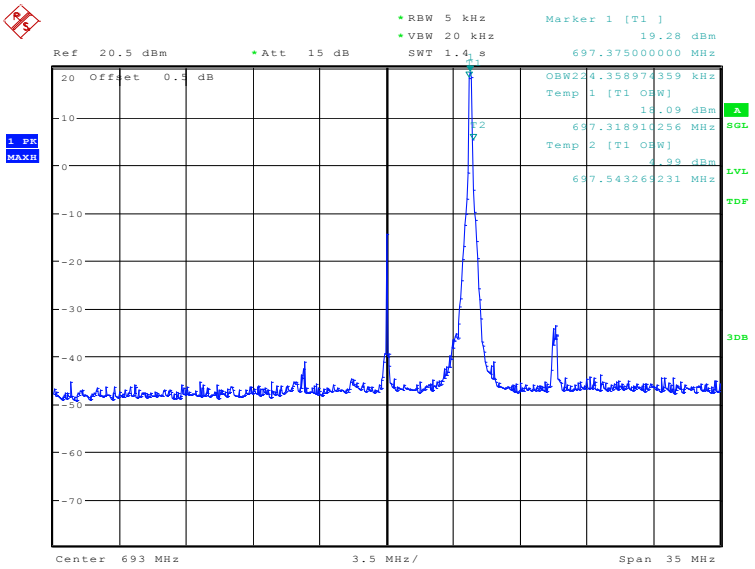

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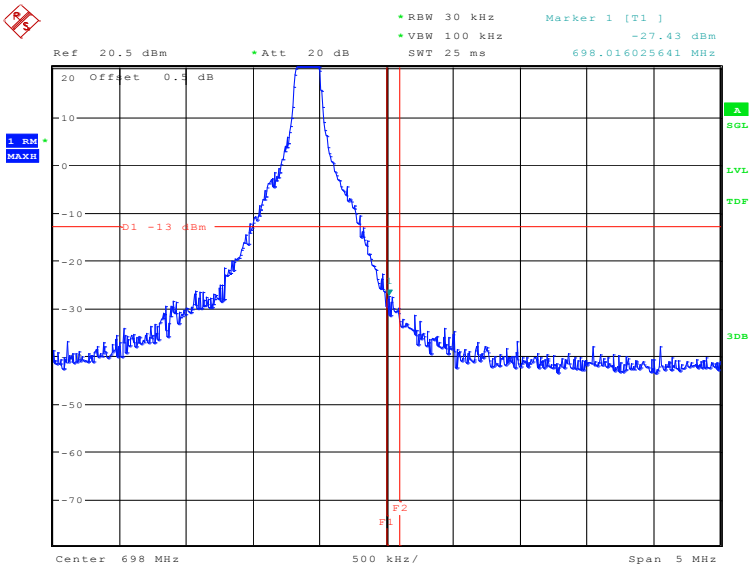

Date: 23.OCT.2019 13:20:02

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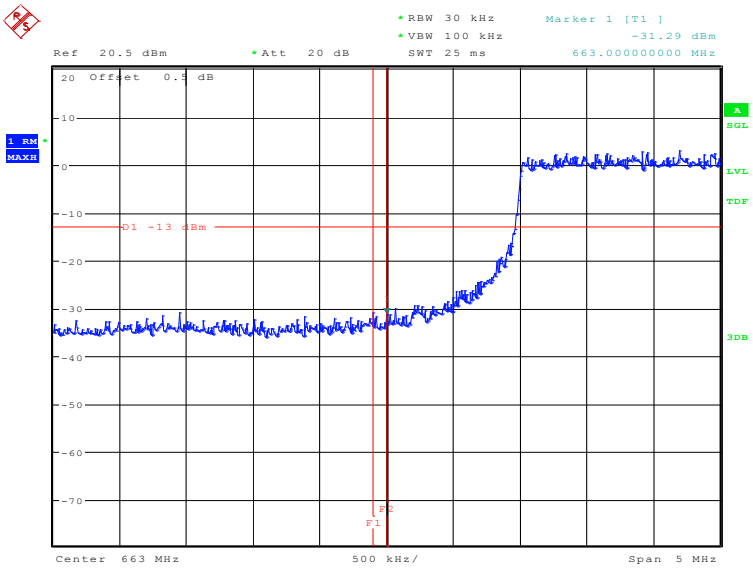
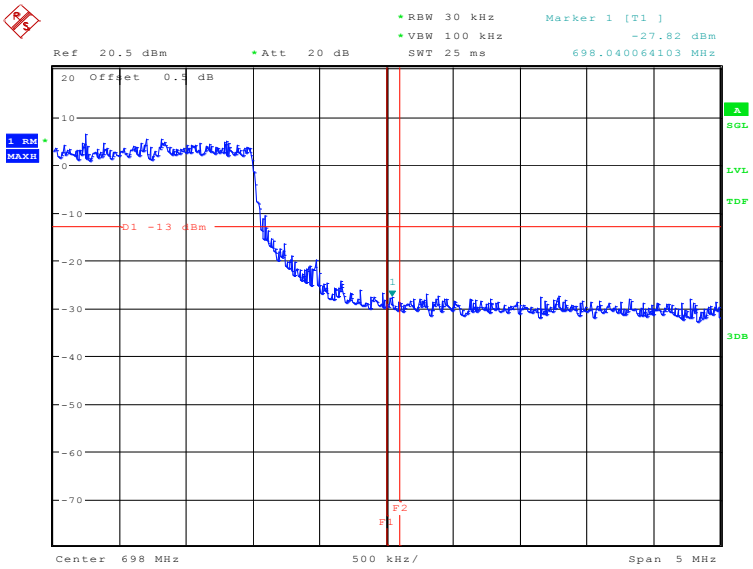
LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 23.OCT.2019 12:46:21

HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 23.OCT.2019 13:22:07

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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. Determine frequency range for measurements: From CFR 2.1057 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(c) states for operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the 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, in accordance with the following:(1) 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;(2) 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;(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 +

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10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.

Part 90.543 states that For operations in the 758–768 MHz and the 788–798 MHz bands, the power of any emission outside the 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, in accordance with the following: (1) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations. (2) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations. (3) On any frequency between 775–788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB. (4) Compliance with the provisions of paragraphs (e)(1) and (2) 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. (5) Compliance with the provisions of paragraph (e)(3) 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 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. 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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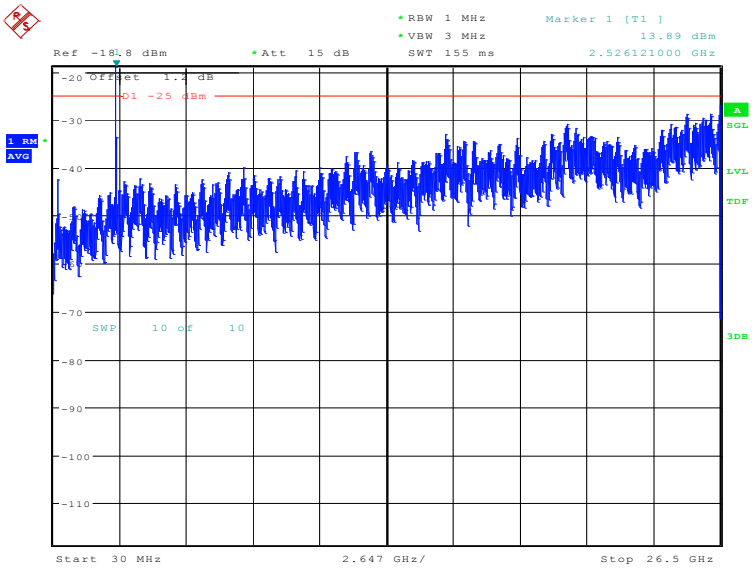
A. 7.2 Measurement result

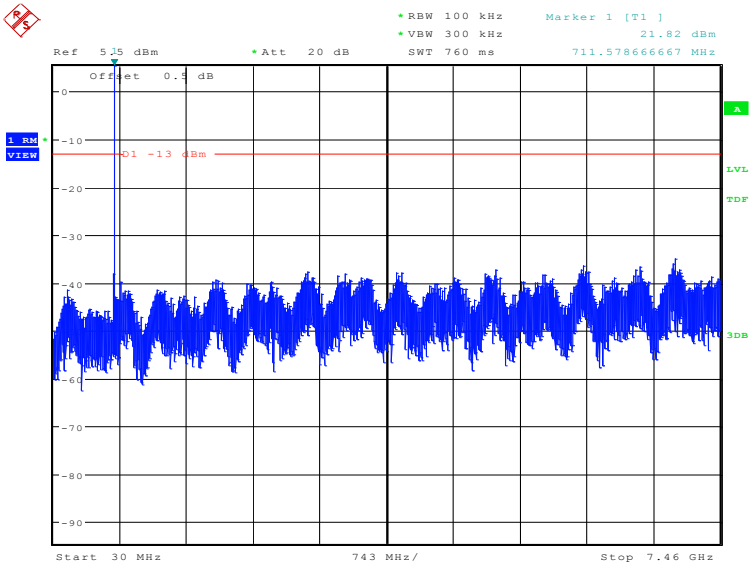
Only the worst case result is given below

LTE band 7: 30MHz – 26.5GHz



Date: 23.OCT.2019 11:41:47

LTE band 12: 30MHz – 7.46GHz



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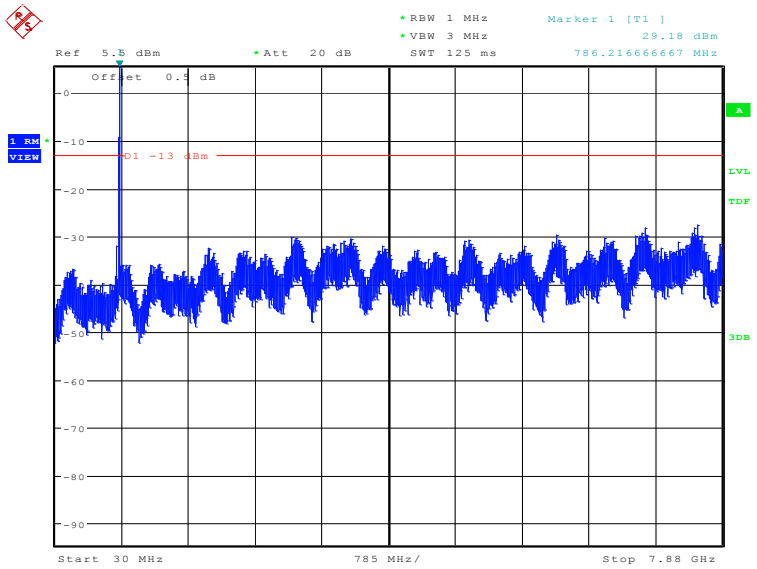
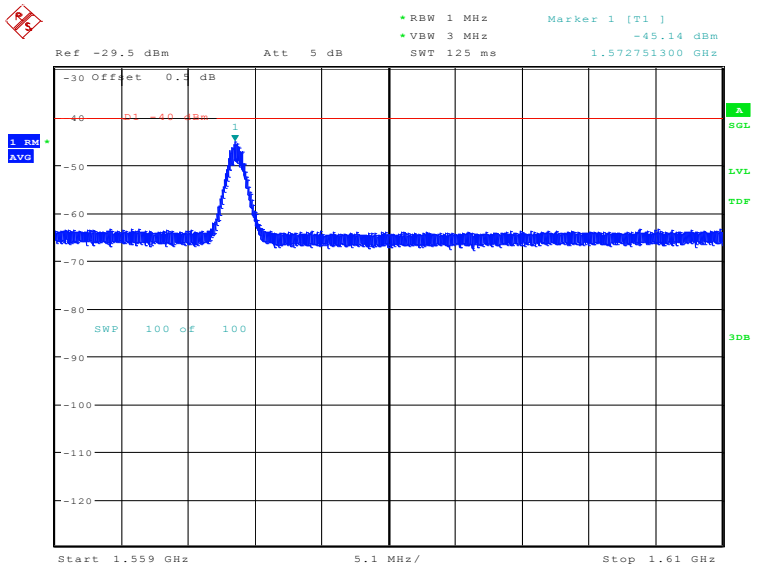
LTE band 13: 30MHz – 7.88GHz



Date: 23.OCT.2019 12:30:23

LTE band 13: 1559MHz – 1610MHz



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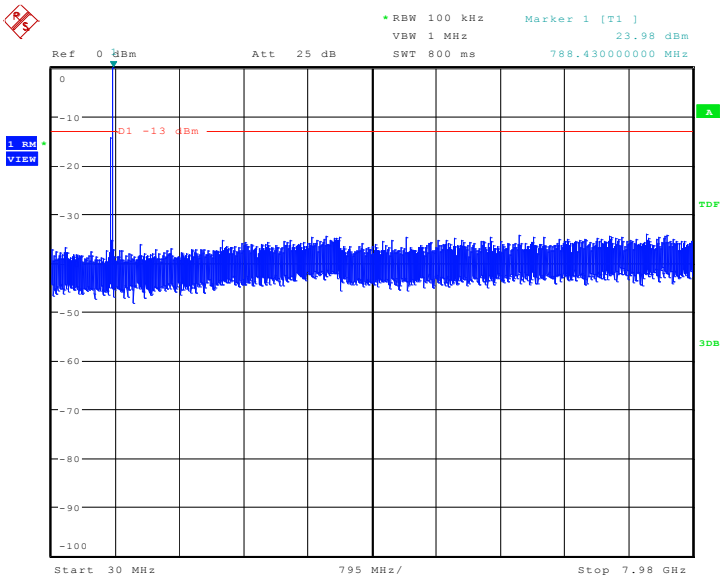
LTE band 14: 30MHz – 7.98GHz



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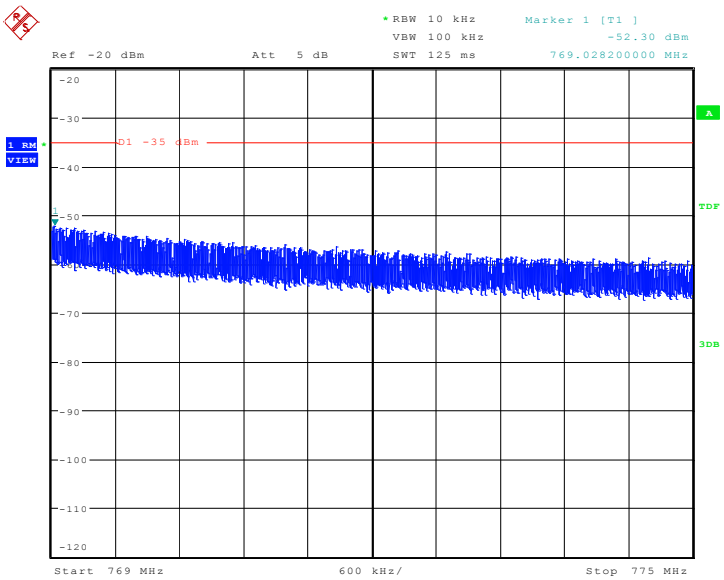

Date: 23.OCT.2019 16:42:54

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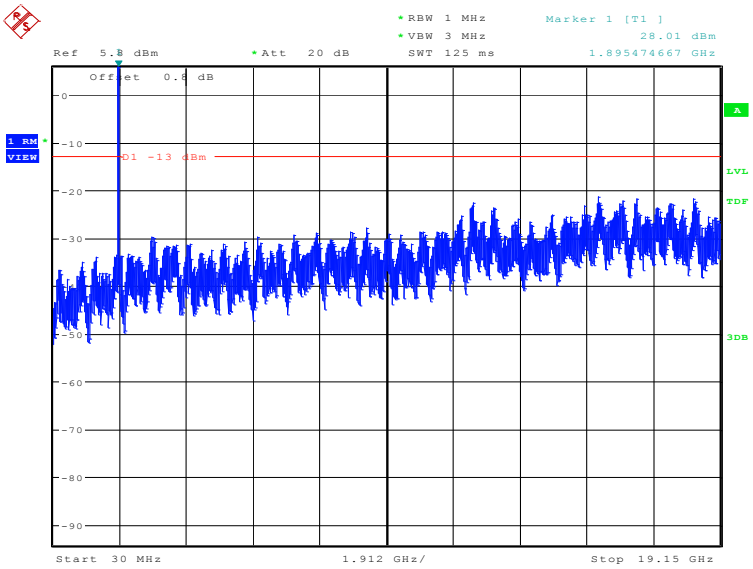
LTE band 25: 30MHz – 19.15GHz



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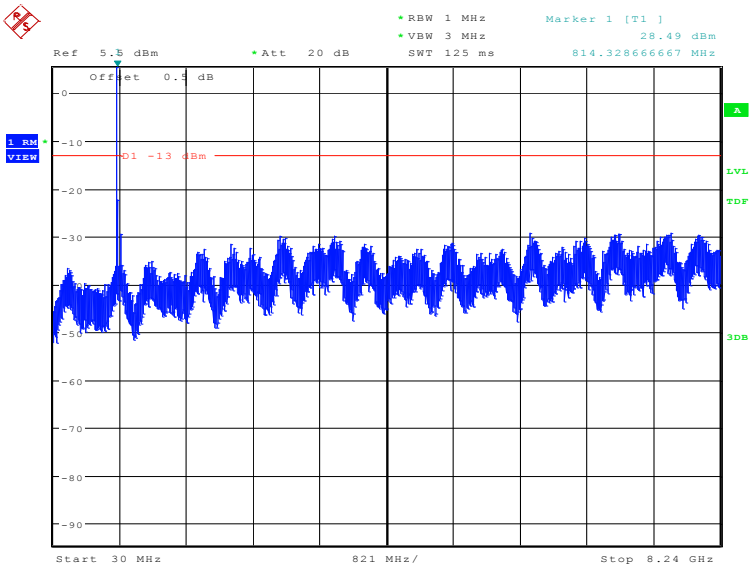
LTE band 26(814MHz~824MHz): 30MHz – 8.24GHz



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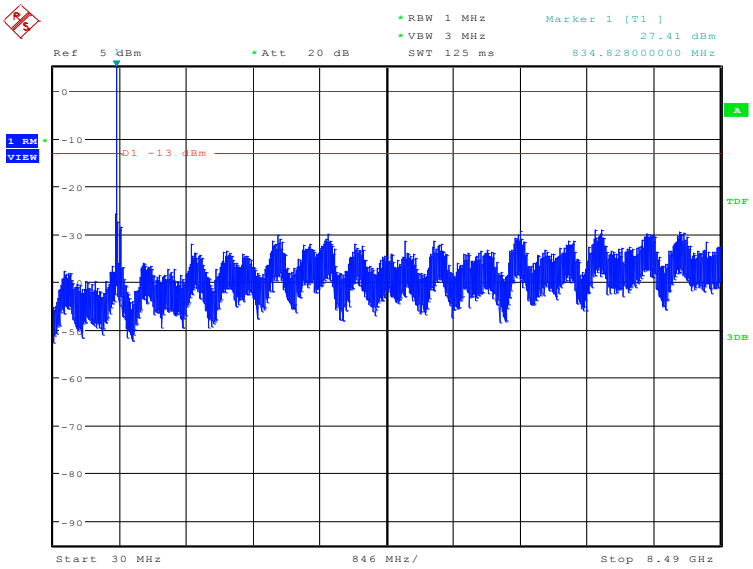
LTE band 26(824MHz~849MHz): 30MHz – 8.49GHz



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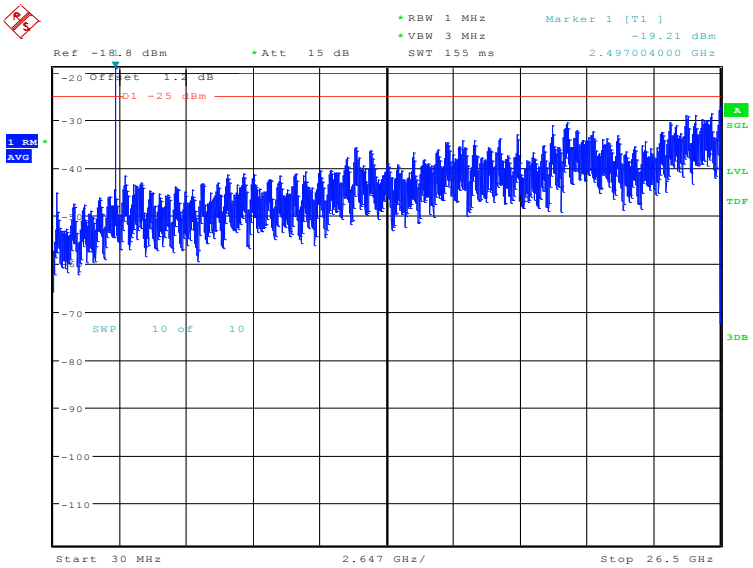
LTE band 41(PC2): 30MHz – 26.5GHz



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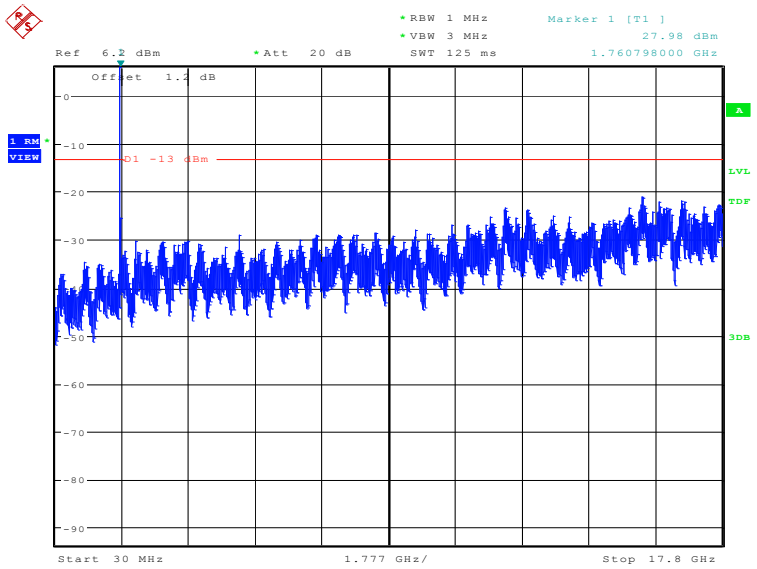
LTE band 66: 30MHz – 17.8GHz



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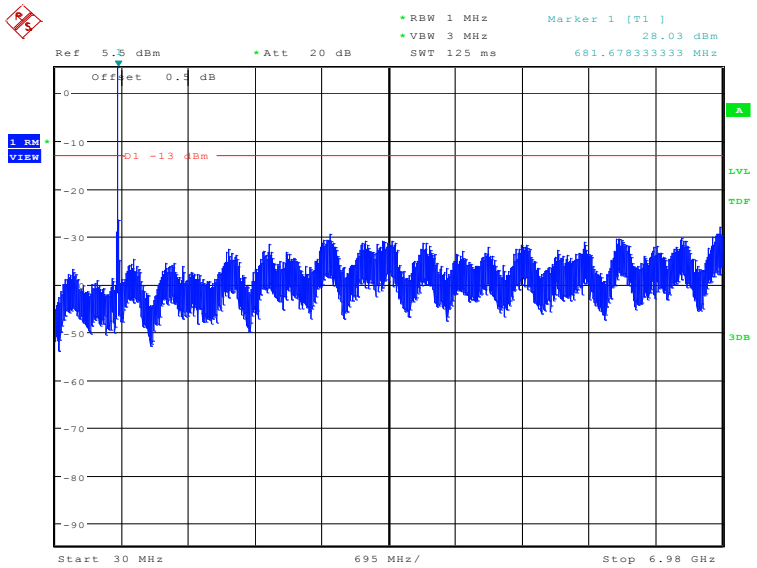
LTE band 71: 30MHz – 6.98GHz



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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.

According to KDB 971168 5.7.1:

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 1ms;

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

UAT Measurement Results:

LTE band 7, 20MHz

Frequency (MHz)	PAPR (dB)		
2535.0	QPSK	16QAM	64QAM
	6.76	7.31	7.37

LTE band 12, 10MHz

Frequency (MHz)	PAPR (dB)		
707.5	QPSK	16QAM	64QAM
	5.32	5.99	6.57

LTE band 13, 10MHz

Frequency (MHz)	PAPR (dB)		
782.0	QPSK	16QAM	64QAM
	5.22	6.12	6.70

LTE band 25, 20MHz

Frequency (MHz)	PAPR (dB)		
1882.5	QPSK	16QAM	64QAM
	6.83	7.47	7.69

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LTE band 41, 20MHz

Frequency (MHz)	PAPR (dB)		
2593.0	QPSK	16QAM	64QAM
	8.17	8.85	9.04

LTE band 66, 20MHz

Frequency (MHz)	PAPR (dB)		
1745.0	QPSK	16QAM	64QAM
	6.47	7.34	7.40

LTE band 71, 20MHz

Frequency (MHz)	PAPR (dB)		
680.5	QPSK	16QAM	64QAM
	6.57	7.28	8.37

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ANNEX B: Accreditation Certificate

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

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 17025:2005. 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).

2019-09-26 through 2020-09-30
Effective Dates

DEPARTMENT OF COMMERCE · UNITED STATES OF AMERICA

For the National Voluntary Laboratory Accreditation Program

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

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