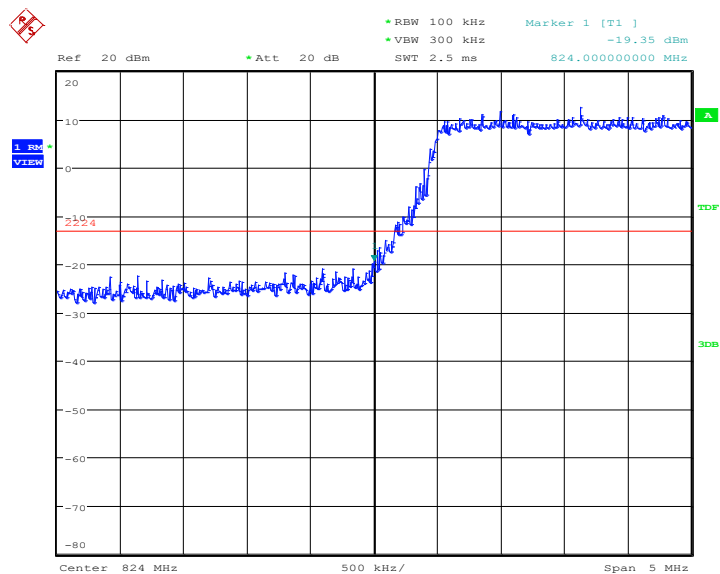
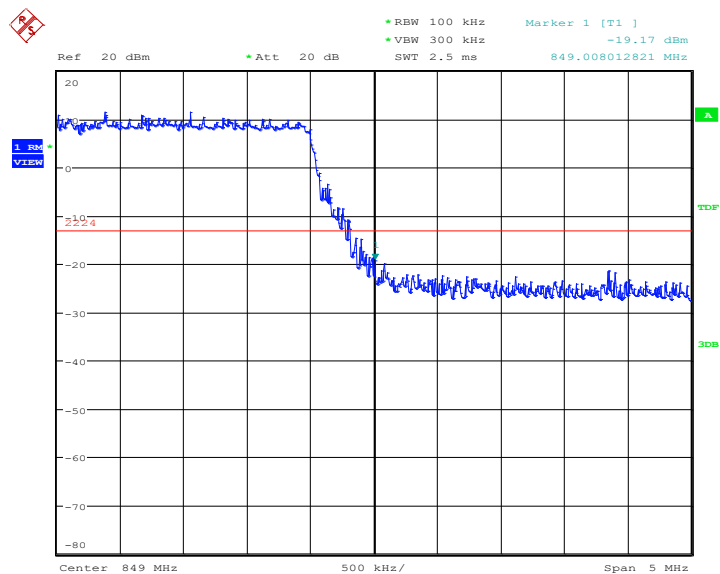


# LOW BAND EDGE BLOCK-10MHz-100%RB



Date: 27.MAY.2021 14:29:49

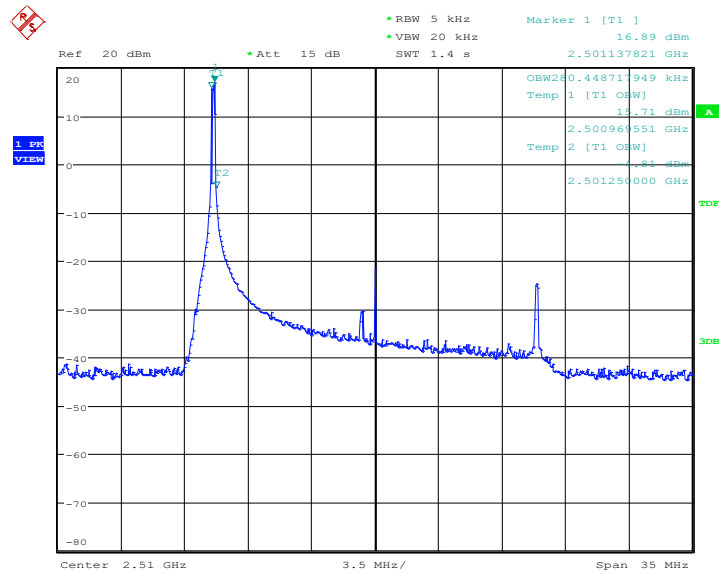
# HIGH BAND EDGE BLOCK-10MHz-100%RB



Date: 27.MAY.2021 14:30:35

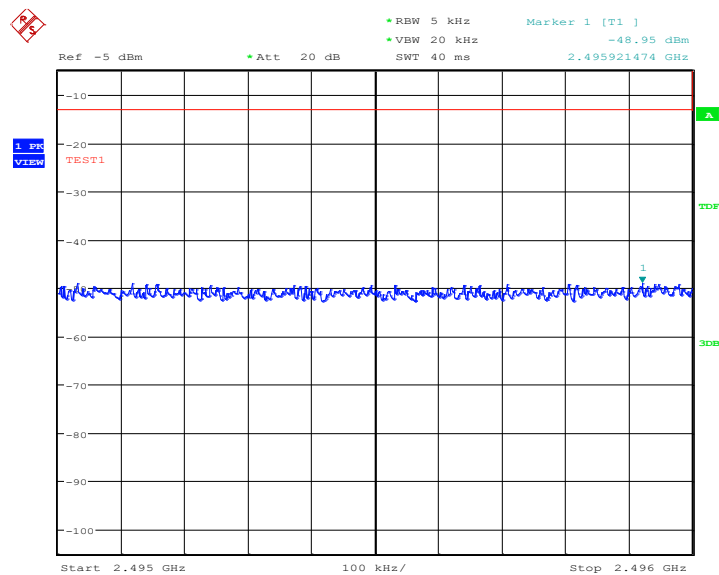
# LTE band 7

## OBW: 1RB-low\_offset

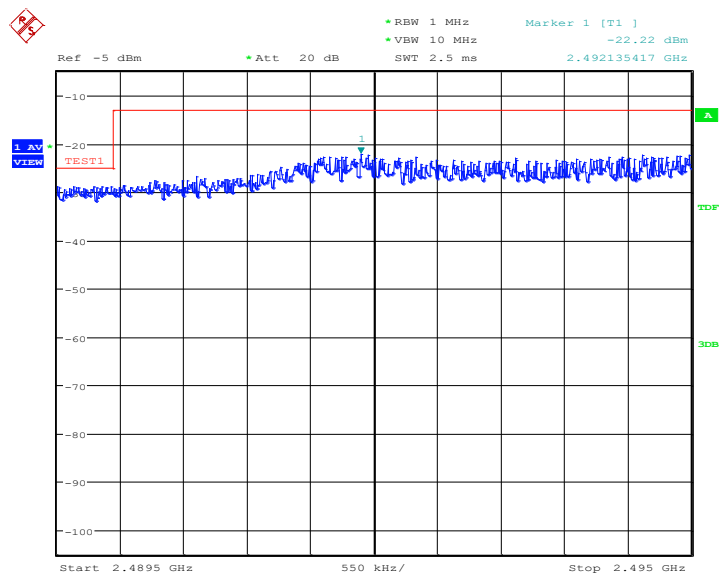


Date: 3.JUN.2021 12:15:39

## LOW BAND EDGE BLOCK-1RB-low\_offset

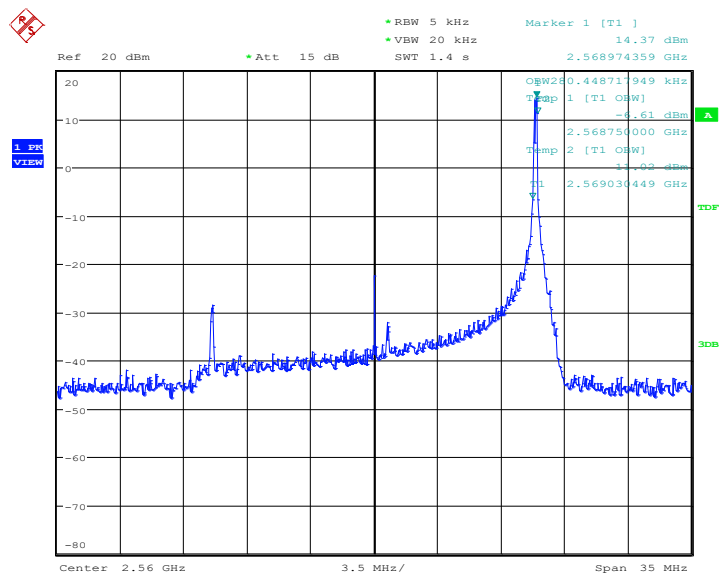


Date: 3.JUN.2021 12:28:04



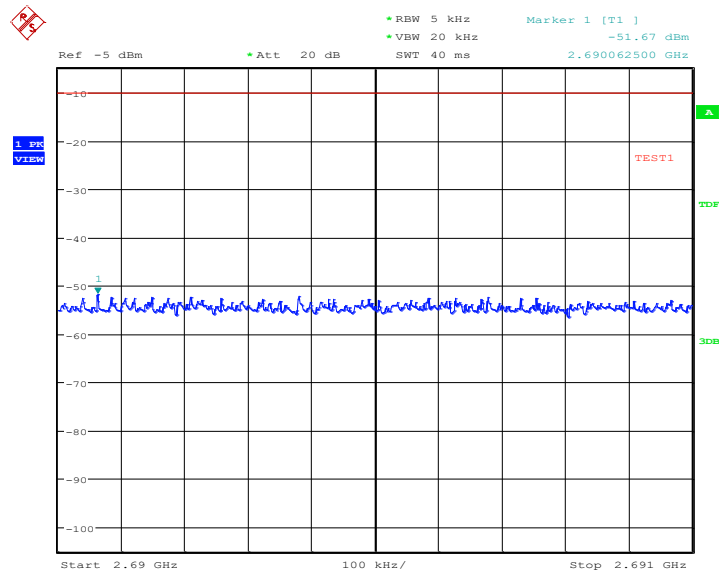
Date: 3.JUN.2021 12:27:00

### OBW: 1RB-high\_offset

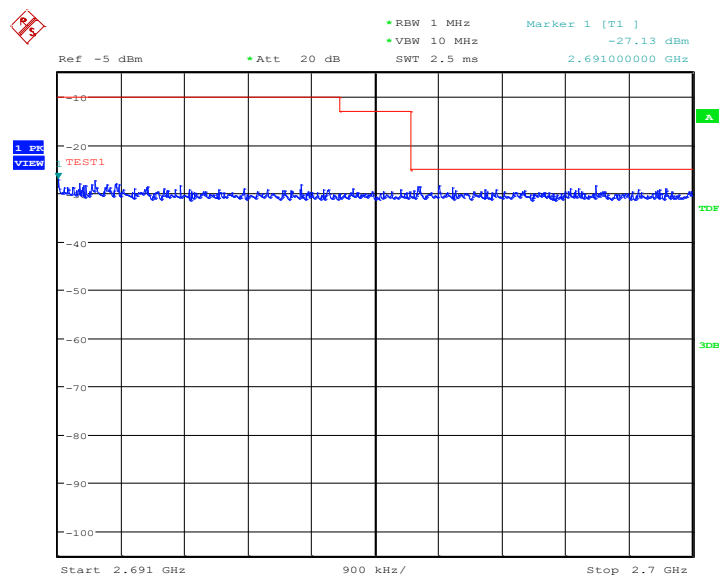


Date: 3.JUN.2021 12:16:17

# HIGH BAND EDGE BLOCK-1RB-high\_offset

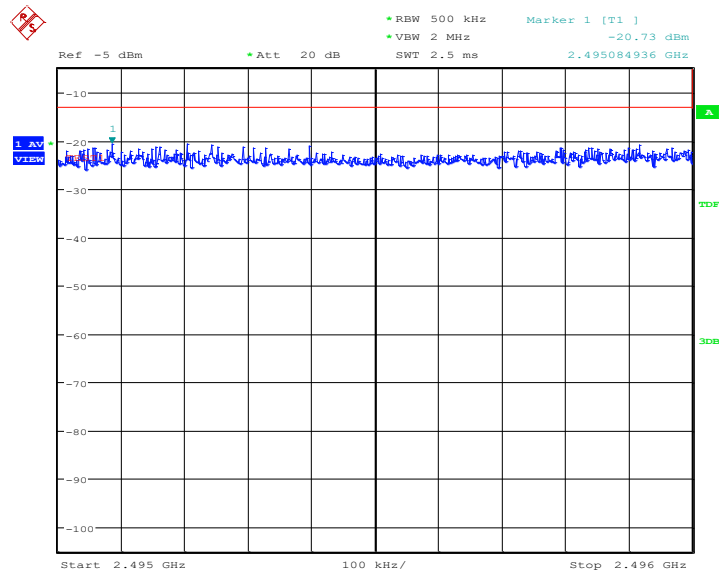


Date: 3.JUN.2021 12:17:20

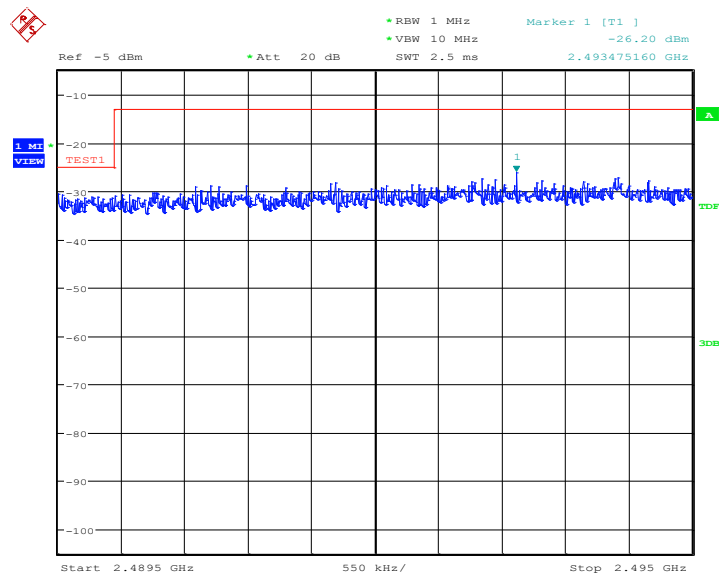


Date: 3.JUN.2021 12:18:06

## LOW BAND EDGE BLOCK-20MHz-100%RB

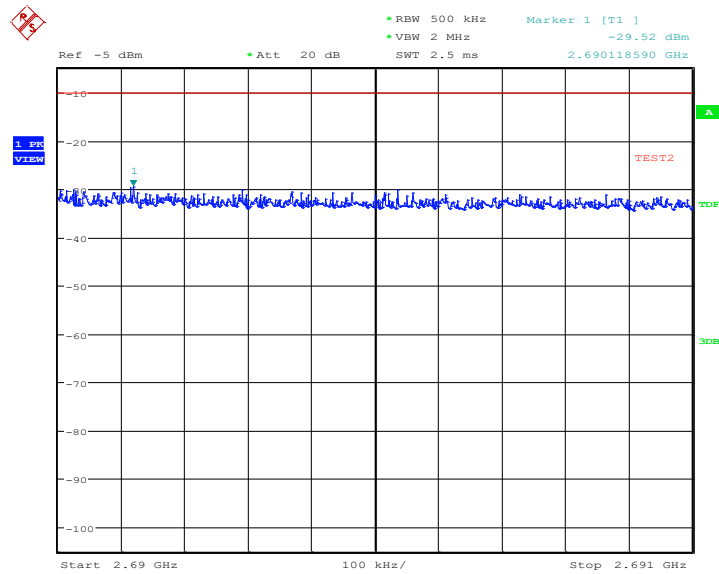


Date: 3.JUN.2021 12:22:02

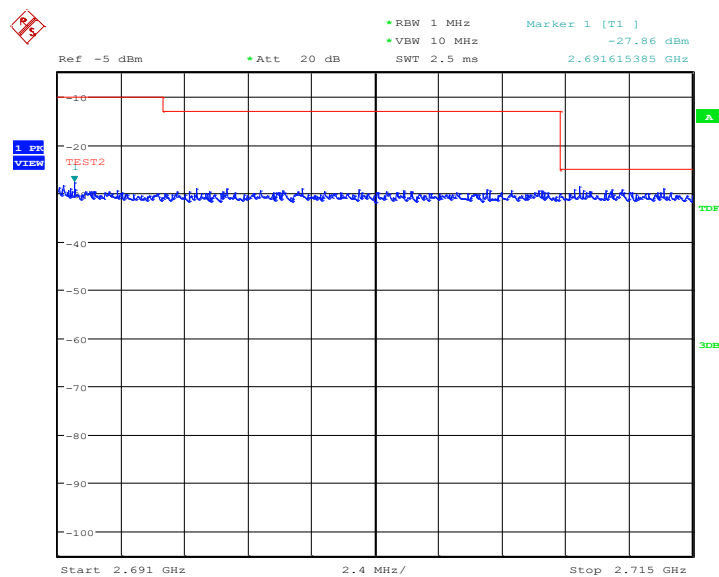


Date: 3.JUN.2021 12:25:16

# HIGH BAND EDGE BLOCK-20MHz-100%RB



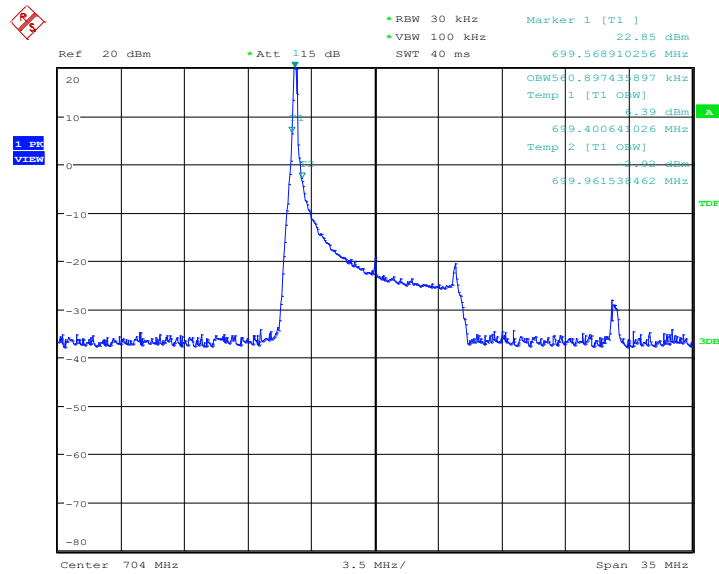
Date: 3.JUN.2021 12:20:09



Date: 3.JUN.2021 12:19:08

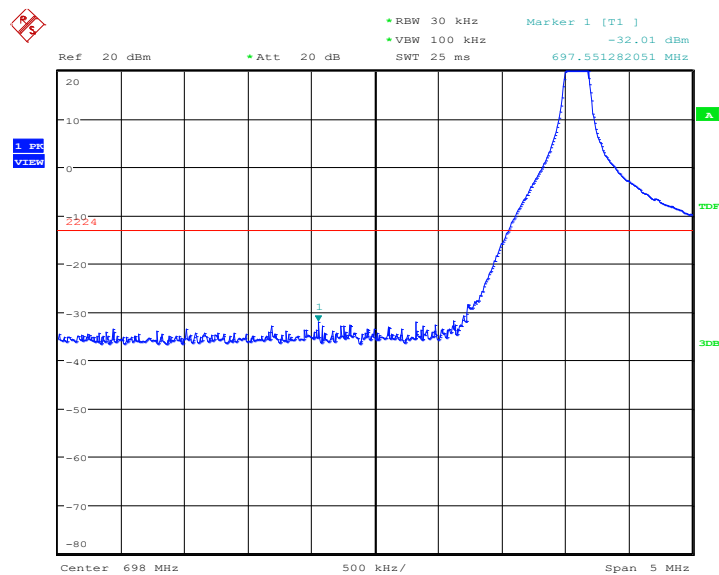
# LTE band 12

## OBW: 1RB-low\_offset



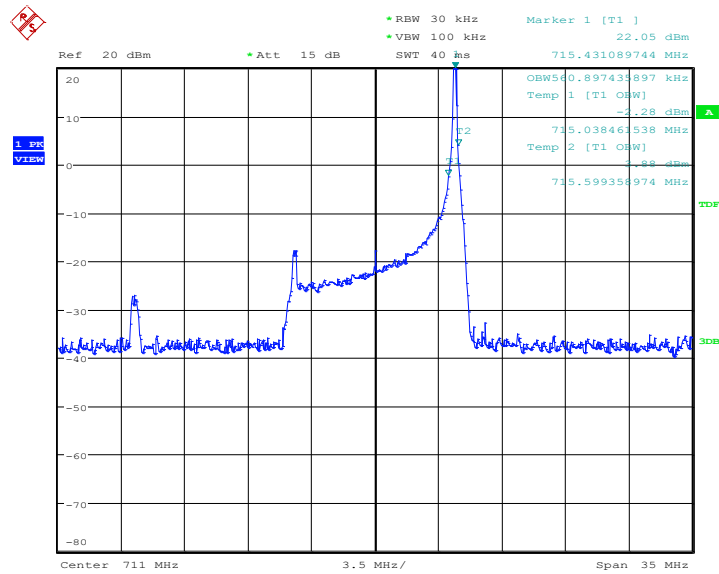
Date: 3.JUN.2021 12:29:56

## LOW BAND EDGE BLOCK-1RB-low\_offset



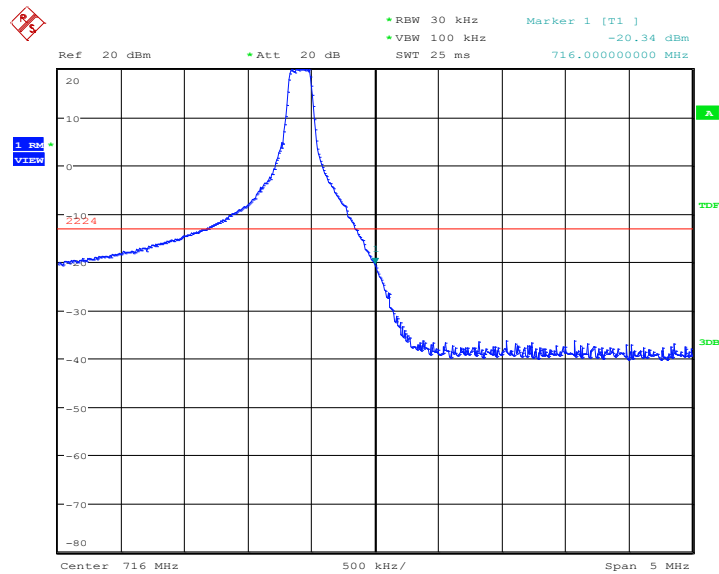
Date: 3.JUN.2021 12:34:40

### OBW: 1RB-high\_offset



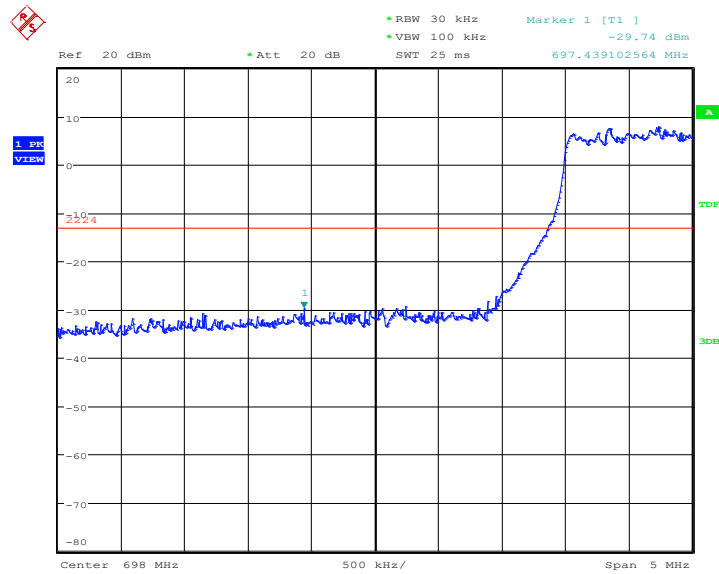
Date: 3.JUN.2021 12:30:32

### HIGH BAND EDGE BLOCK-1RB-high\_offset



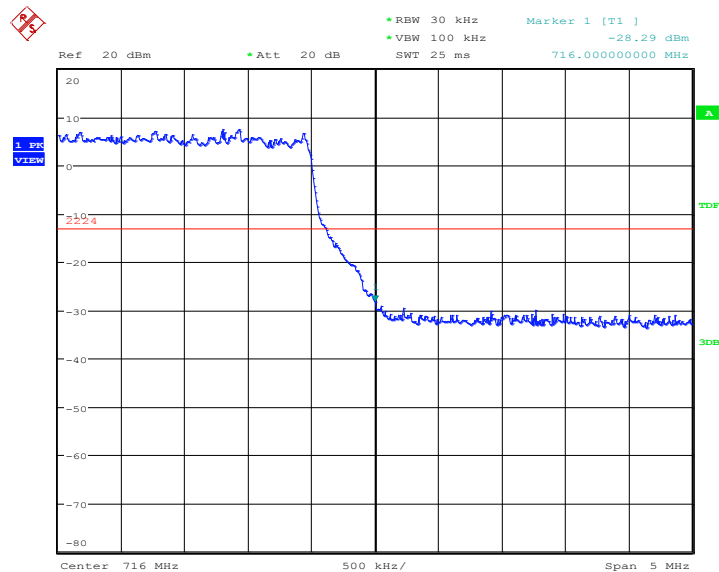
Date: 3.JUN.2021 12:31:35

# LOW BAND EDGE BLOCK-10MHz-100%RB



Date: 3.JUN.2021 12:33:40

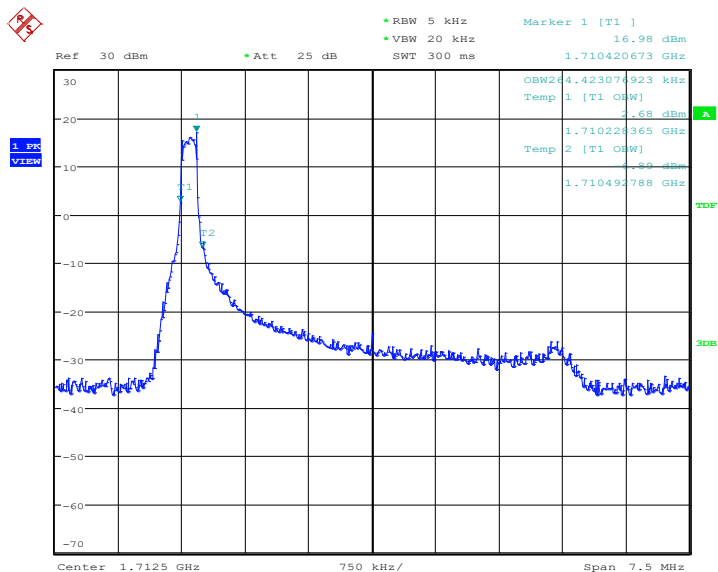
# HIGH BAND EDGE BLOCK-10MHz-100%RB



Date: 3.JUN.2021 12:32:07

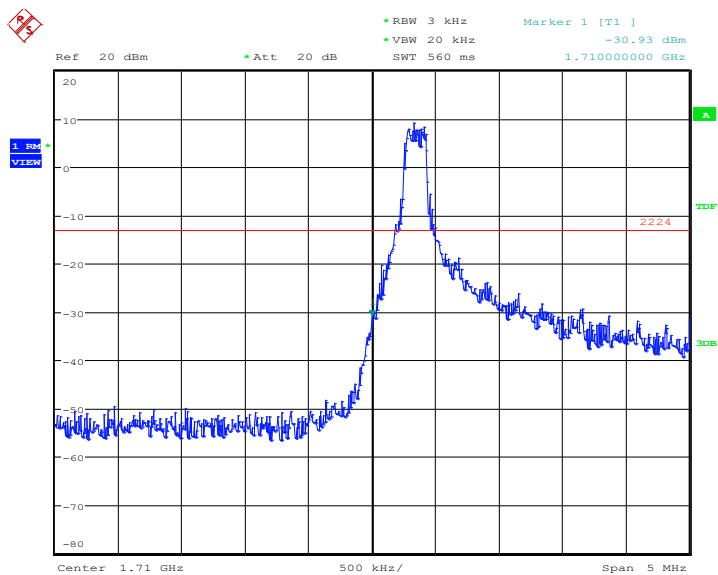
# LTE band 66

## OBW: 1RB-low\_offset



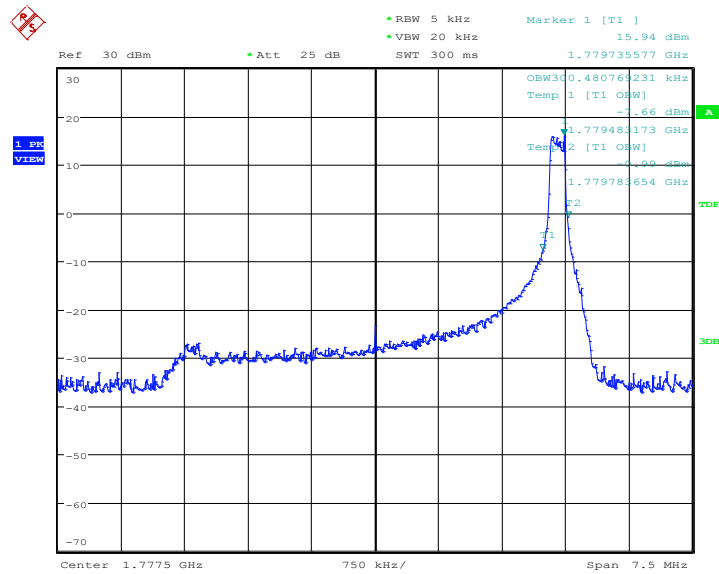
Date: 27.MAY.2021 14:27:40

## LOW BAND EDGE BLOCK-1RB-low\_offset

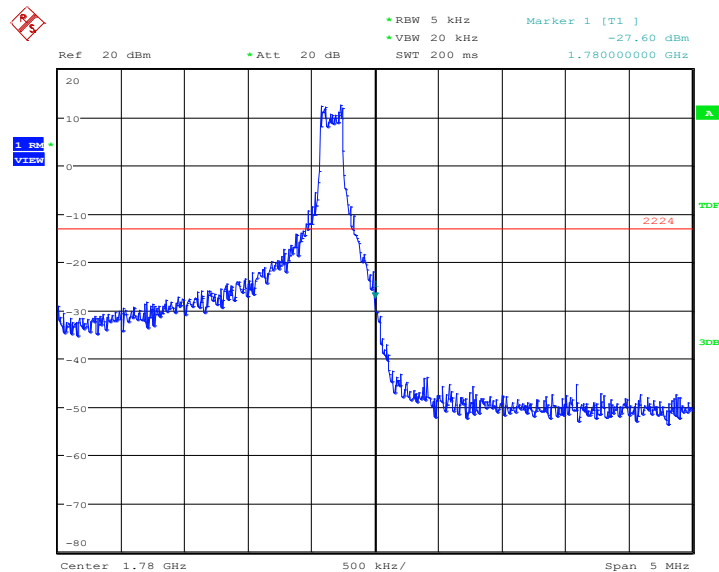


Date: 27.MAY.2021 14:28:24

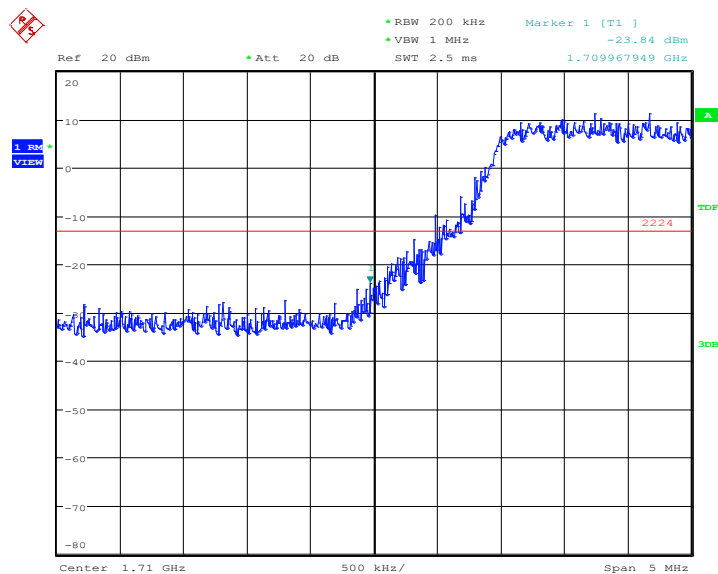
### OBW: 1RB-high\_offset



### HIGH BAND EDGE BLOCK-1RB-high\_offset

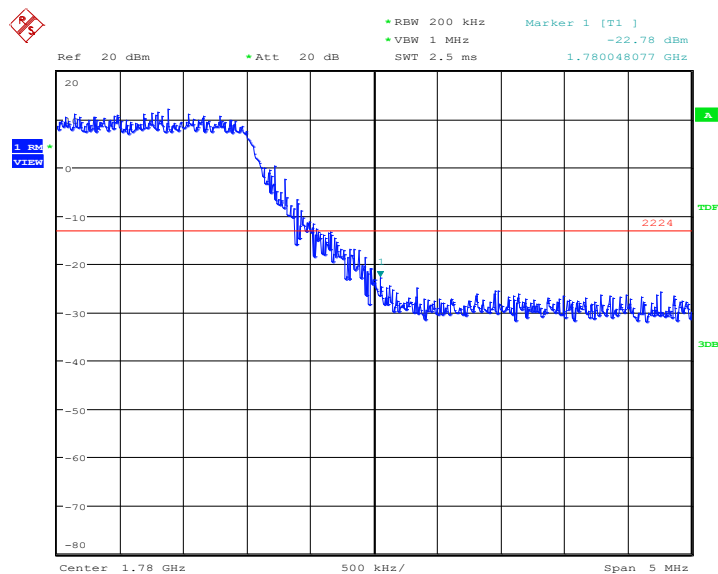


## LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 27.MAY.2021 14:39:07

## HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 27.MAY.2021 14:39:53

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

## **A.7 CONDUCTED SPURIOUS EMISSION**

### **Reference**

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

#### **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 than  $43 + 10 \log(P)$  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.

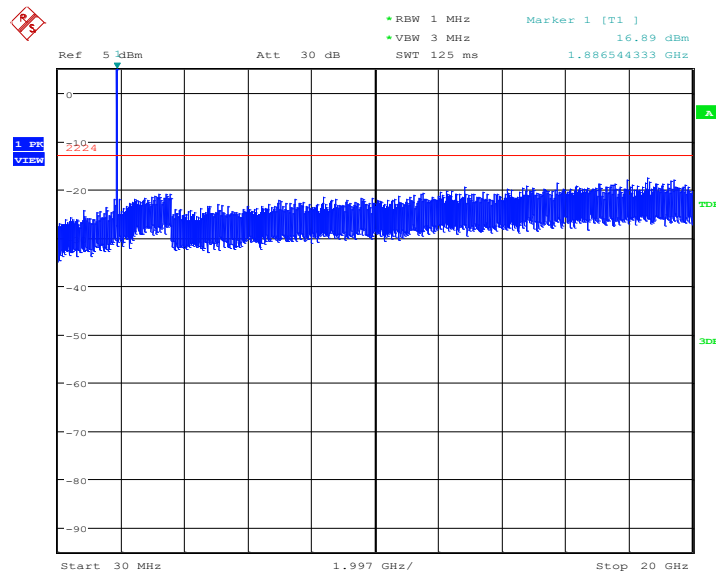
### A. 7.3 Measurement result

Only worst case result is given below

LTE band 2 : 30MHz – 20GHz

Spurious emission limit –13dBm.

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

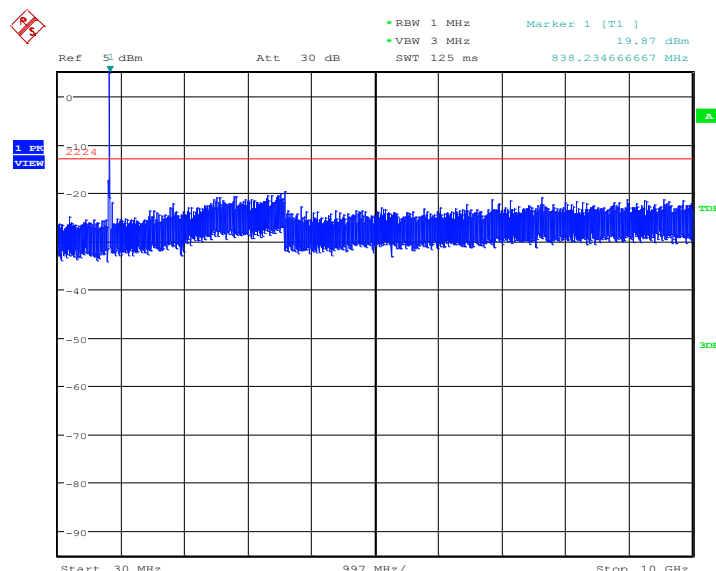


Date: 27.MAY.2021 13:57:18

LTE band 5 : 30MHz – 10GHz

Spurious emission limit –13dBm.

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

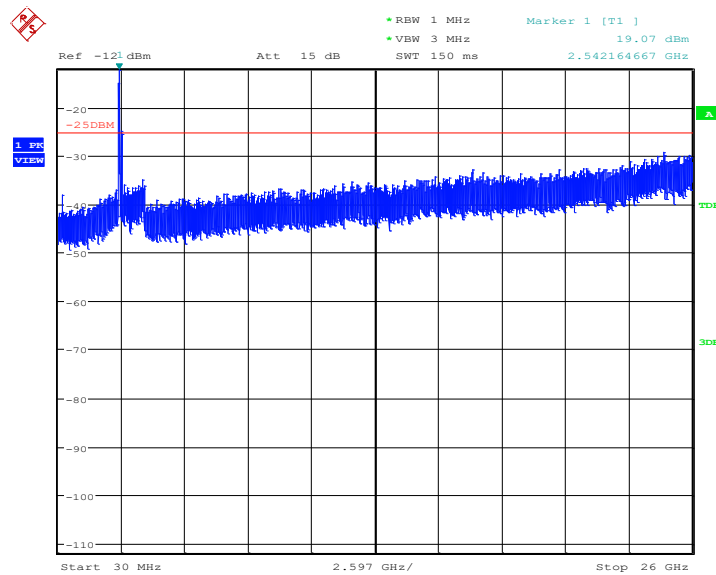


Date: 27.MAY.2021 13:55:24

### LTE band 7: 30MHz – 26GHz

Spurious emission limit –25dBm.

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

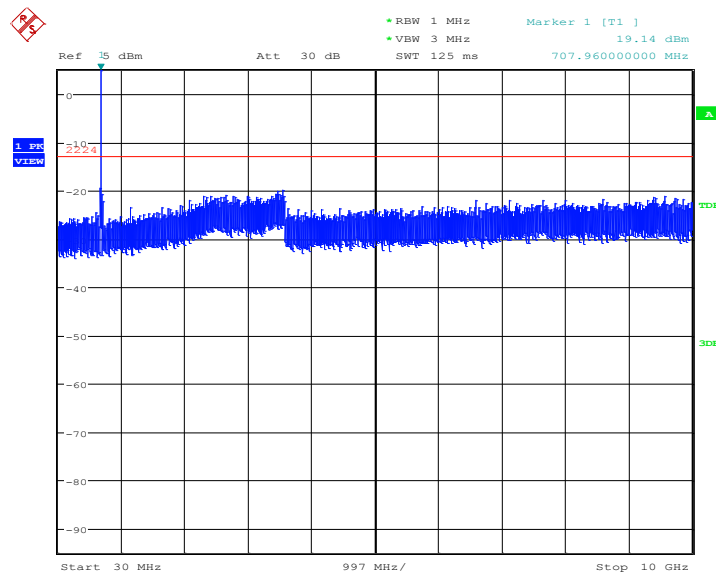


Date: 27.MAY.2021 13:54:29

### LTE band 12: 30MHz – 10GHz

Spurious emission limit –13dBm.

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

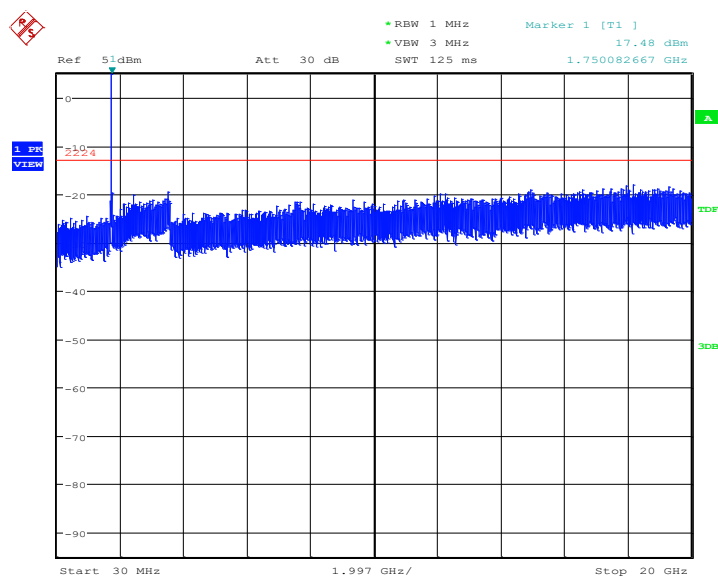


Date: 27.MAY.2021 14:00:08

# LTE band 66: 30MHz – 20GHz

Spurious emission limit –13dBm.

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



Date: 27.MAY.2021 14:02:56

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

## 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.

- Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
- Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Set the measurement interval to 1 ms
- Record the maximum PAPR level associated with a probability of 0.1%

#### A.8.1 Measurement limit

not exceed 13 dB

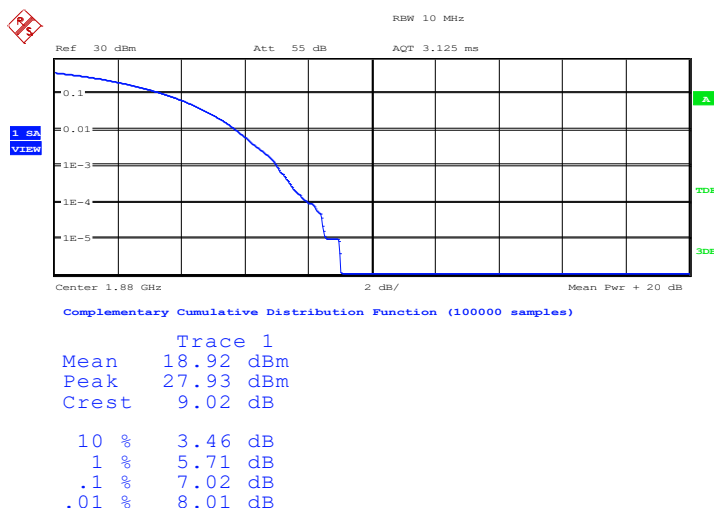
#### A.8.2 Measurement results

Only worst case result is given below

##### LTE band 2

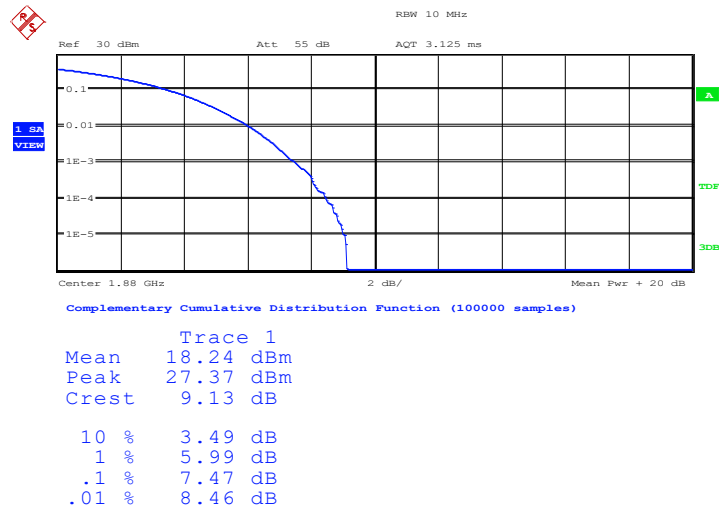
| Frequency(MHz) | Bandwidth(MHz) | PAPR(dB) |       |
|----------------|----------------|----------|-------|
|                |                | QPSK     | 16QAM |
| 1880.0         | 20             | 7.02     | 7.47  |

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



Date: 27.MAY.2021 13:44:14

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

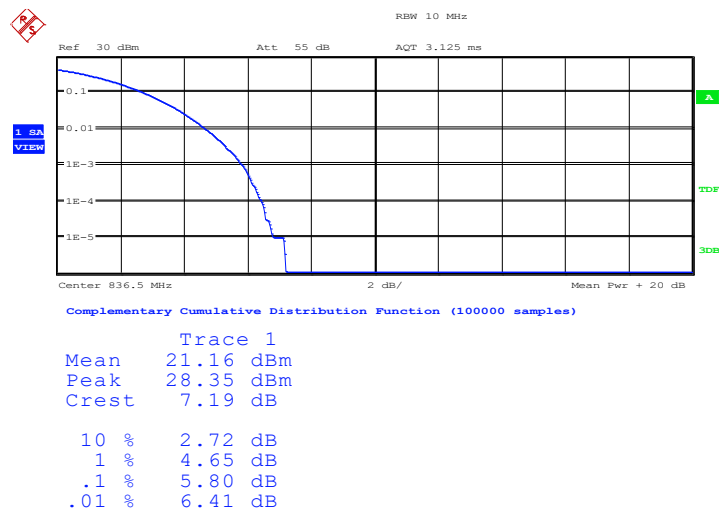


Date: 27.MAY.2021 13:44:20

### LTE band 5

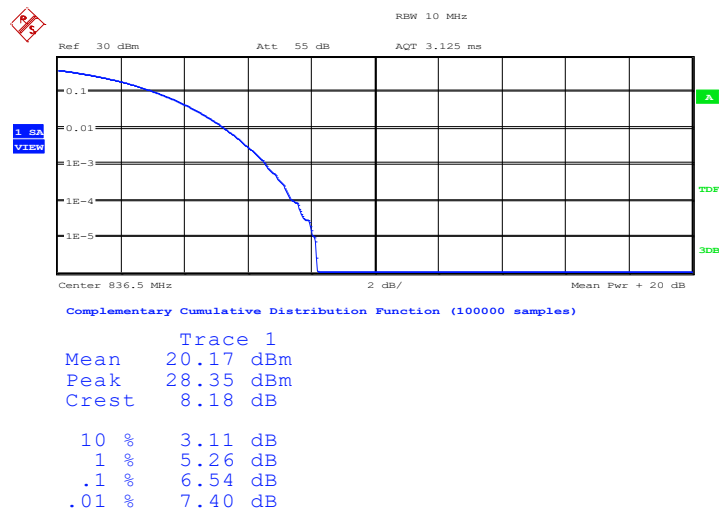
| Frequency(MHz) | Bandwidth(MHz) | PAPR(dB) |       |
|----------------|----------------|----------|-------|
|                |                | QPSK     | 16QAM |
| 836.5          | 10             | 5.80     | 6.54  |

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



Date: 27.MAY.2021 13:42:29

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

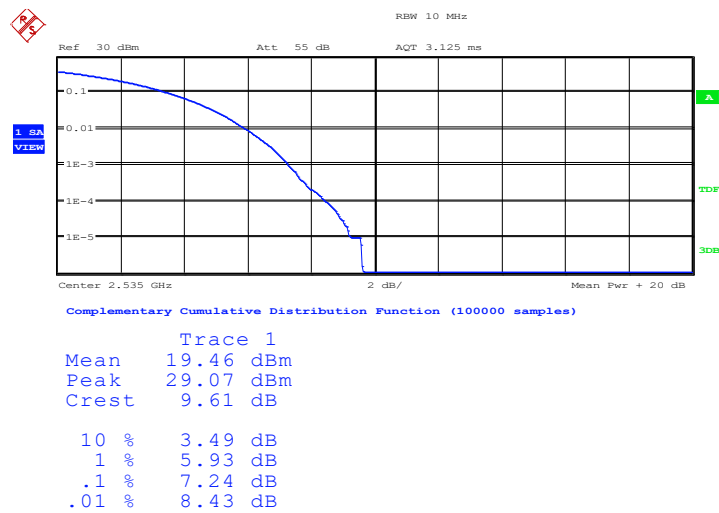


Date: 27.MAY.2021 13:42:35

### LTE band 7

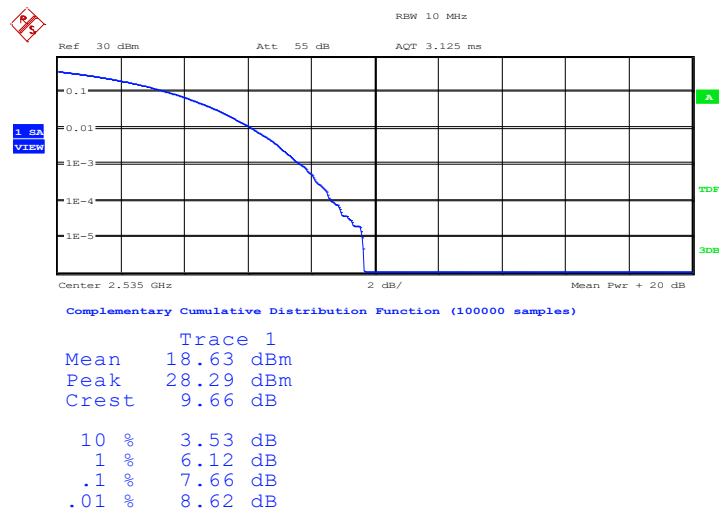
| Frequency(MHz) | Bandwidth(MHz) | PAPR(dB) |       |
|----------------|----------------|----------|-------|
|                |                | QPSK     | 16QAM |
| 2535.0         | 20             | 7.24     | 7.66  |

### LTE band 7, 20MHz Bandwidth, QPSK (PAPR)



Date: 27.MAY.2021 13:41:38

### LTE band 7, 20MHz Bandwidth, 16QAM (PAPR)

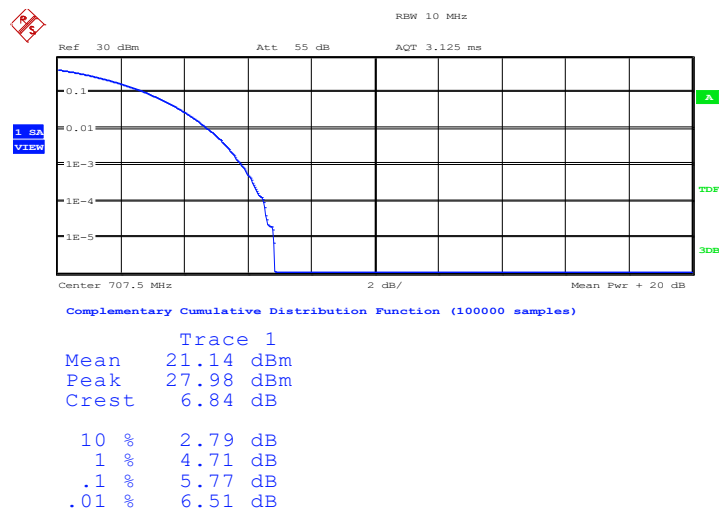


Date: 27.MAY.2021 13:41:44

### LTE band 12

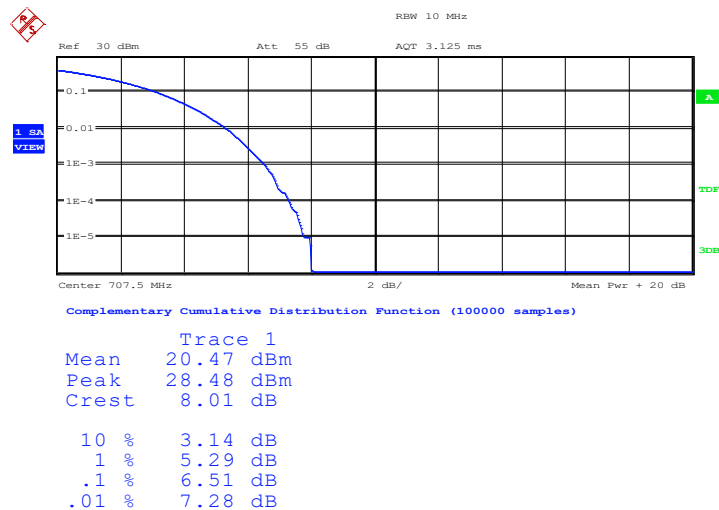
| Frequency(MHz) | Bandwidth(MHz) | PAPR(dB) |       |
|----------------|----------------|----------|-------|
|                |                | QPSK     | 16QAM |
| 707.5          | 10             | 5.77     | 6.51  |

### LTE band 12, 10MHz Bandwidth, QPSK (PAPR)



Date: 27.MAY.2021 13:46:56

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

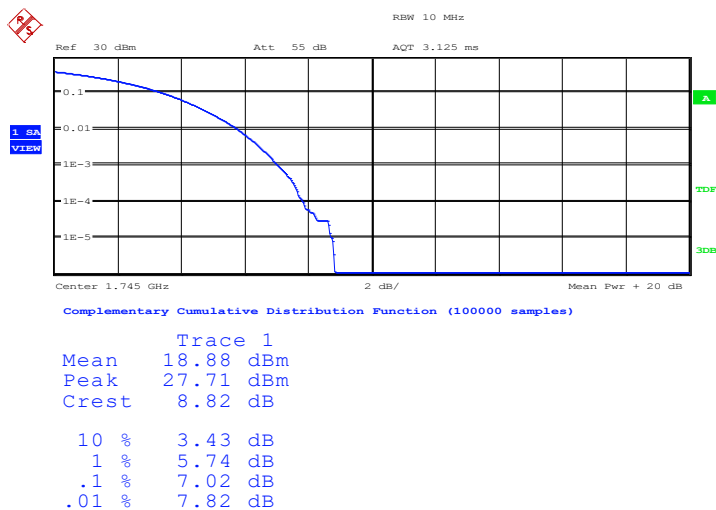


Date: 27.MAY.2021 13:47:02

### LTE band 66

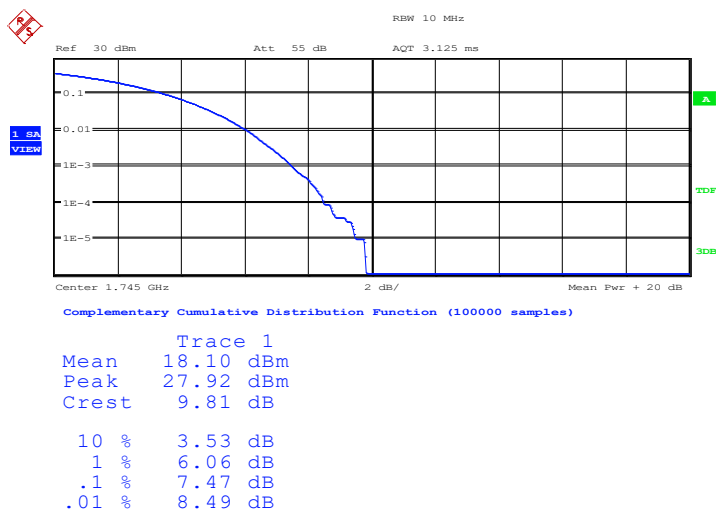
| Frequency(MHz) | Bandwidth(MHz) | PAPR(dB) |       |
|----------------|----------------|----------|-------|
|                |                | QPSK     | 16QAM |
| 1745.0         | 20             | 7.02     | 7.47  |

### LTE band 66, 20MHz Bandwidth, QPSK (PAPR)



Date: 27.MAY.2021 13:49:36

### LTE band 66, 20MHz Bandwidth, 16QAM (PAPR)



Date: 27.MAY.2021 13:49:42

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

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