LTE band 4, 10MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1732.5	9.856	9.808

LTE band 4, 10MHz Bandwidth, QPSK (-26dBc BW)
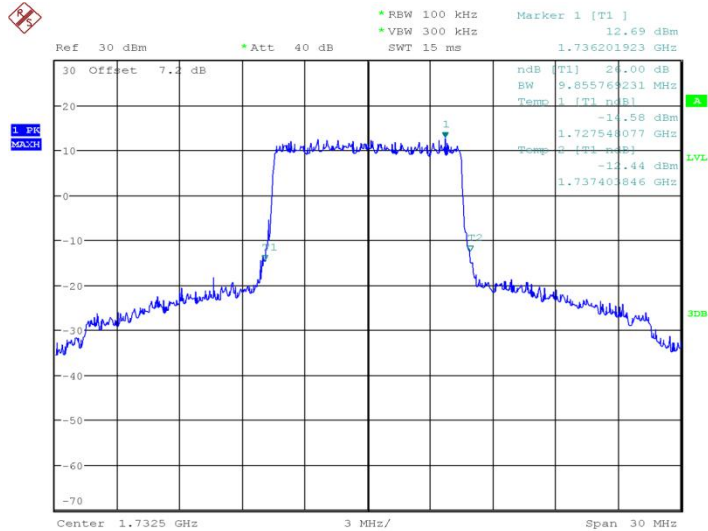
IF Overload
Date: 2.JAN.2003 09:09:57

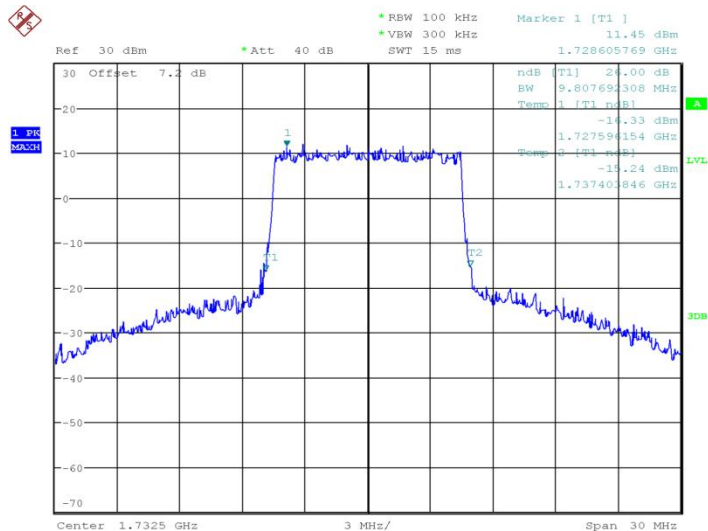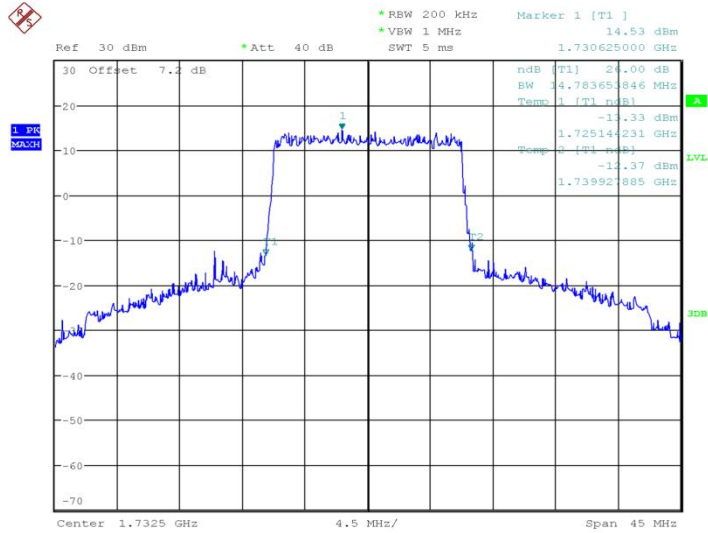**LTE band 4, 10MHz Bandwidth, 16QAM (-26dBc BW)**

IF Overload
Date: 2.JAN.2003 09:10:10
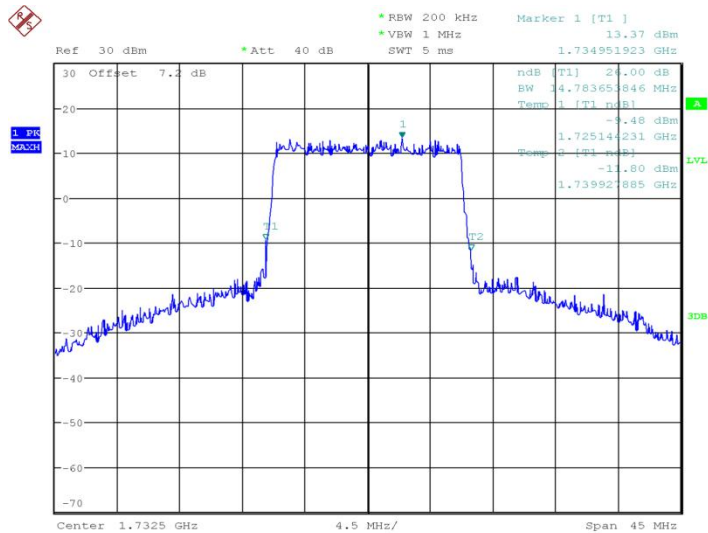
LTE band 4, 15MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1732.5	14.784	14.784

LTE band 4, 15MHz Bandwidth, QPSK (-26dBc BW)

LTE band 4, 15MHz Bandwidth, 16QAM (-26dBc BW)

LTE band 4, 20MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1732.5	19.231	19.423

LTE band 4, 20MHz Bandwidth, QPSK (-26dBc BW)
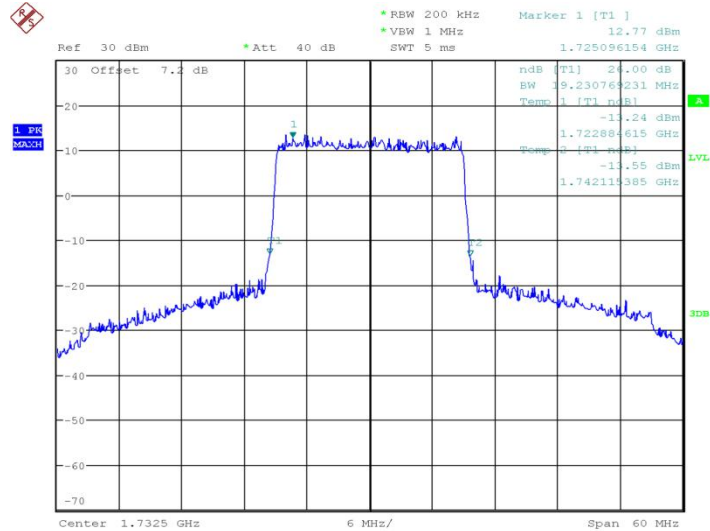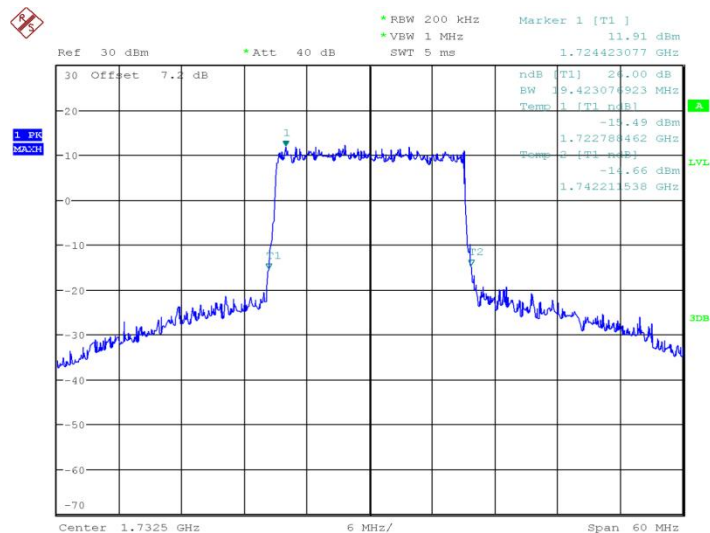
LTE band 4, 20MHz Bandwidth, 16QAM (-26dBc BW)

LTE band 5, 1.4MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	1.322	1.282

LTE band 5, 1.4MHz Bandwidth, QPSK (-26dBc BW)
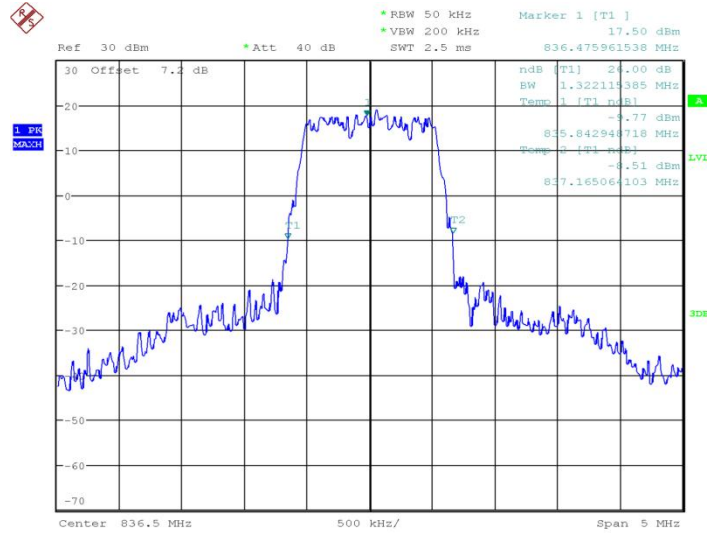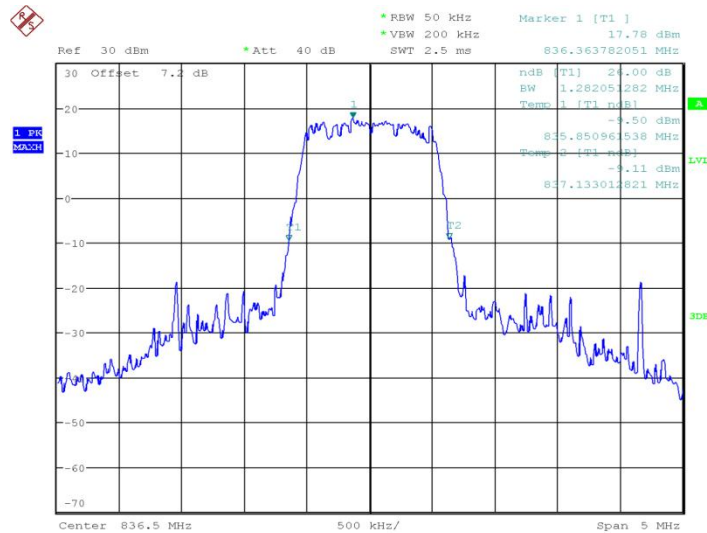
LTE band 5, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

LTE band 5, 3MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	2.885	2.885

LTE band 5, 3MHz Bandwidth, QPSK (-26dBc BW)

LTE band 5, 3MHz Bandwidth, 16QAM (-26dBc BW)

LTE band 5, 5MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
836.5	4.856	4.784

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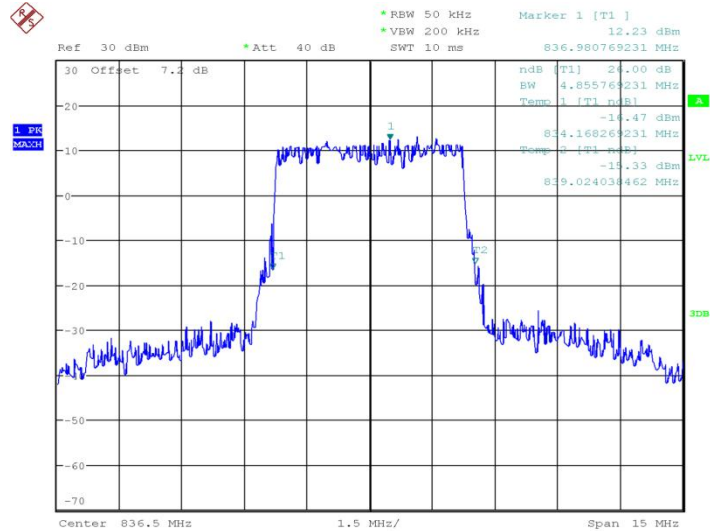
LTE band 5, 5MHz Bandwidth,16QAM (-26dBc BW)

LTE band 5, 10MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
836.5	9.712	9.760

LTE band 5, 10MHz Bandwidth, QPSK (-26dBc BW)
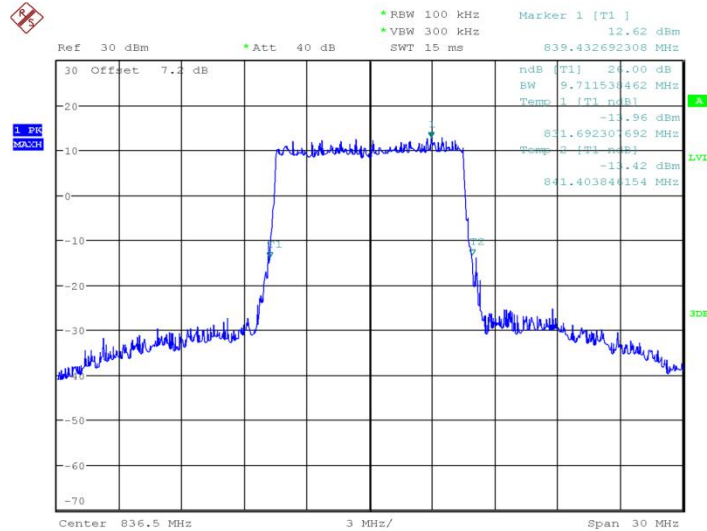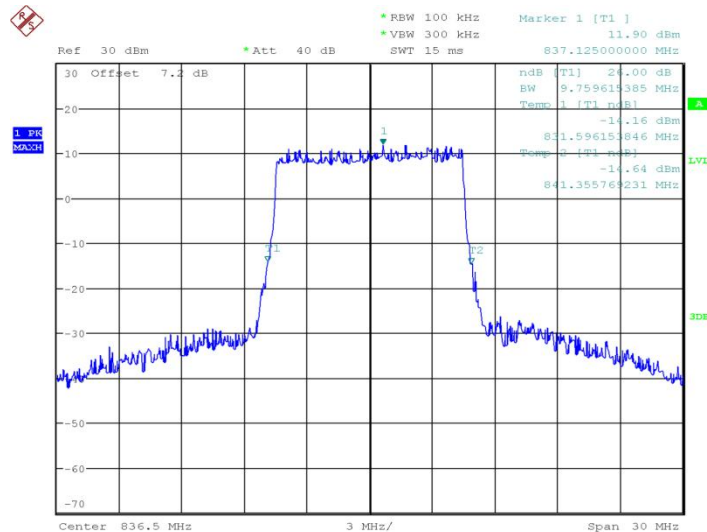
LTE band 5, 10MHz Bandwidth, 16QAM (-26dBc BW)

LTE band 7, 5MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
2535.0	4.976	4.904

LTE band 7, 5MHz Bandwidth, QPSK (-26dBc BW)
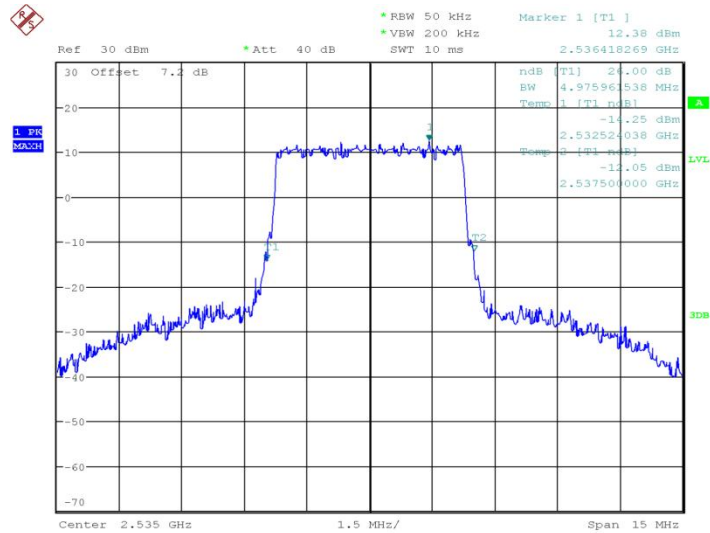
IF Overload
Date: 2.JAN.2003 09:22:35
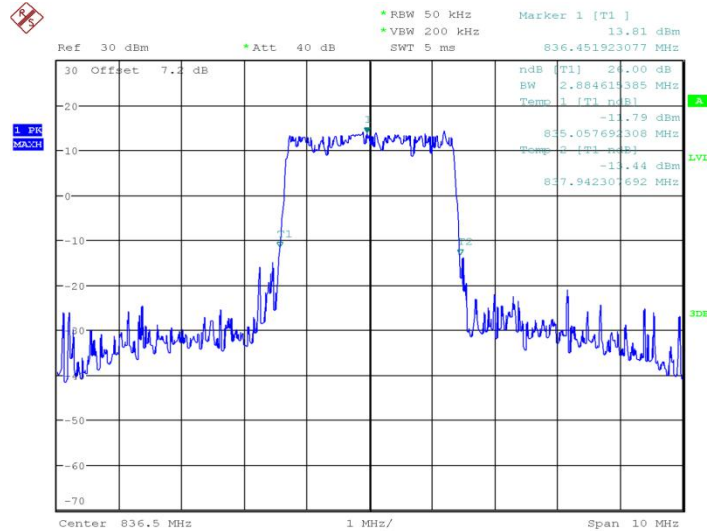
LTE band 7, 5MHz Bandwidth,16QAM (-26dBc BW)
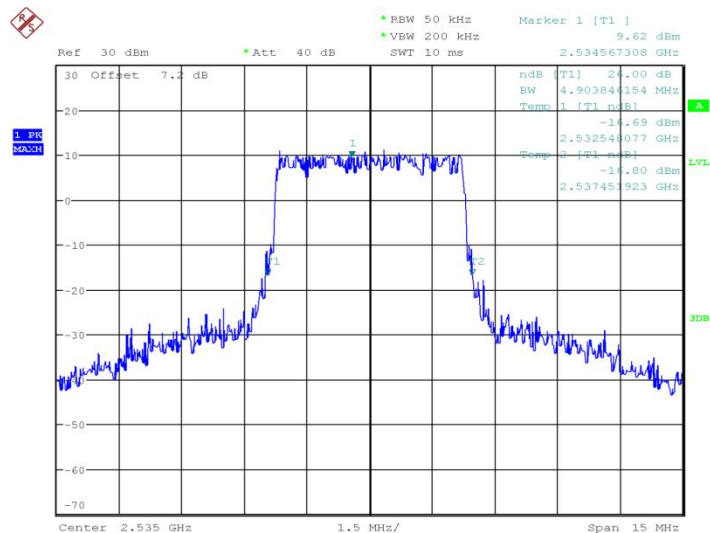
IF Overload
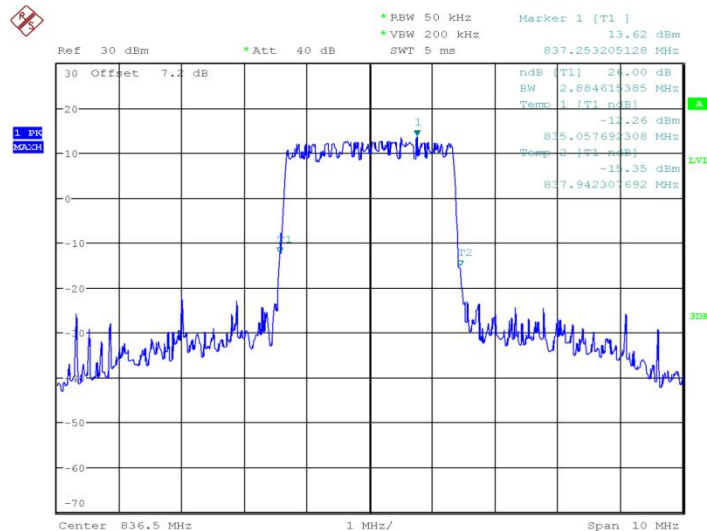Date: 2.JAN.2003 09:22:48
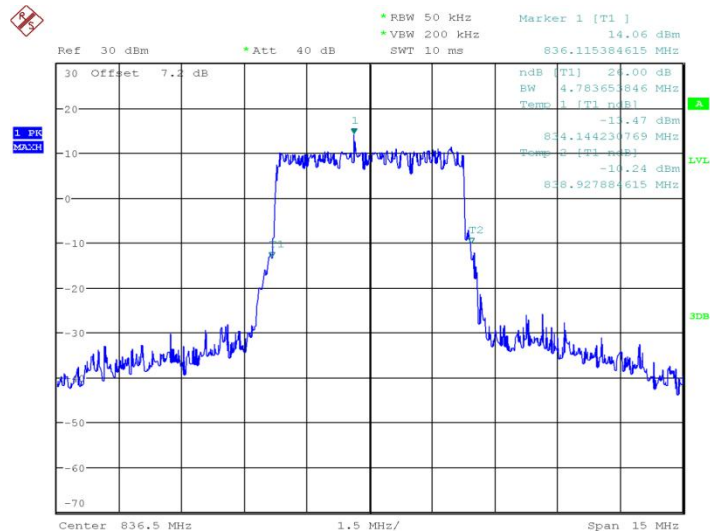
LTE band 7, 10MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
2535.0	9.904	9.760

LTE band 7, 10MHz Bandwidth, QPSK (-26dBc BW)
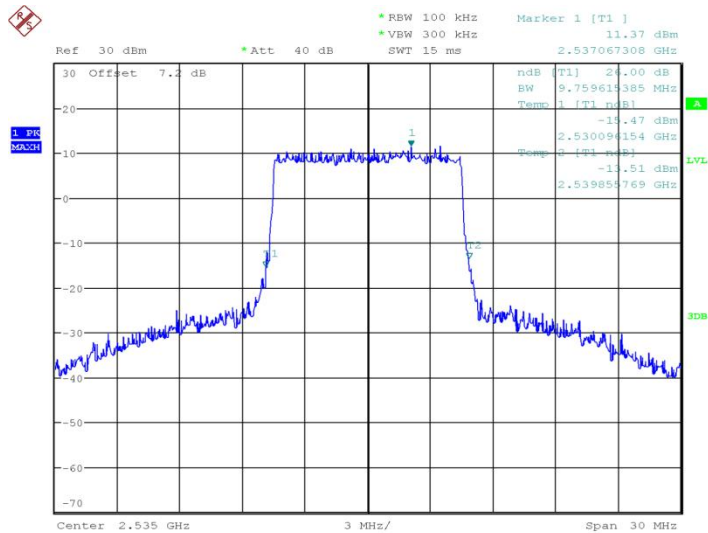
LTE band 7, 10MHz Bandwidth, 16QAM (-26dBc BW)

LTE band 7, 15MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
2535.0	14.495	14.423

LTE band 7, 15MHz Bandwidth, QPSK (-26dBc BW)
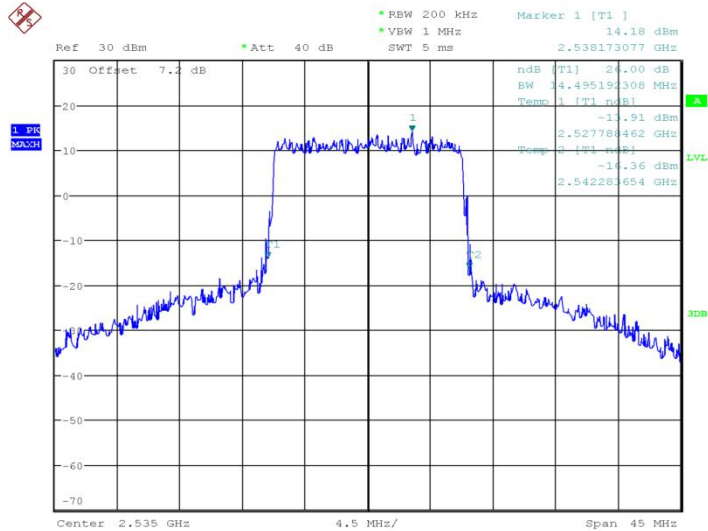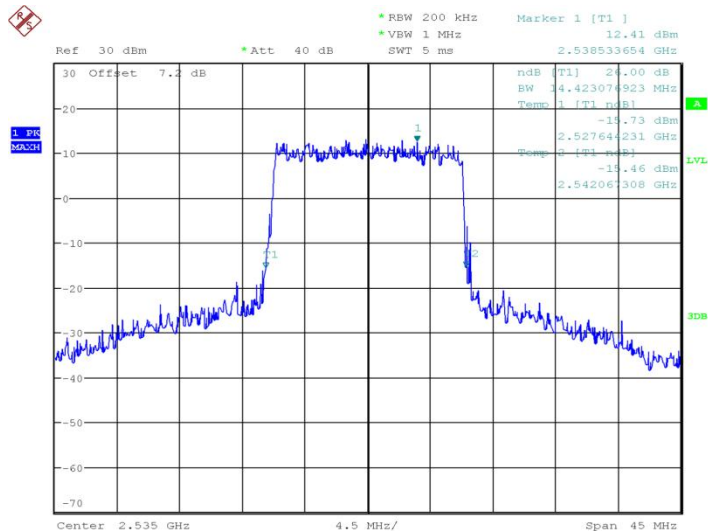
LTE band 7, 15MHz Bandwidth, 16QAM (-26dBc BW)

LTE band 7, 20MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
2535.0	19.231	19.231

LTE band 7, 20MHz Bandwidth, QPSK (-26dBc BW)
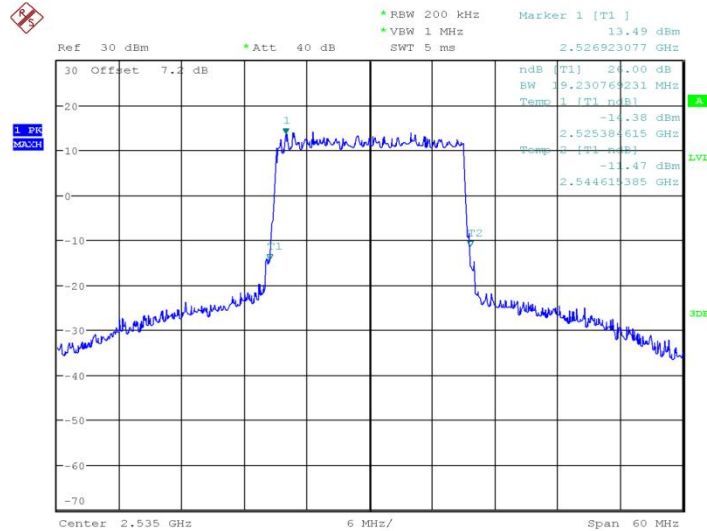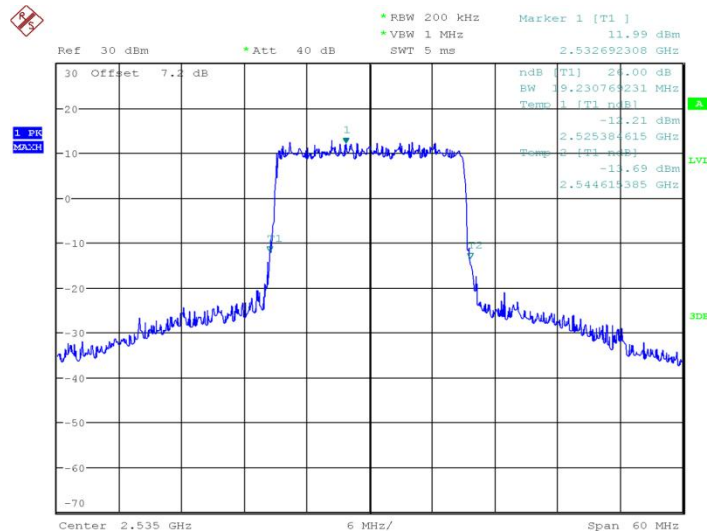
LTE band 7, 20MHz Bandwidth, 16QAM (-26dBc BW)

LTE band 12, 1.4MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
707.5	1.322	1.388

LTE band 12, 1.4MHz Bandwidth, QPSK (-26dBc BW)
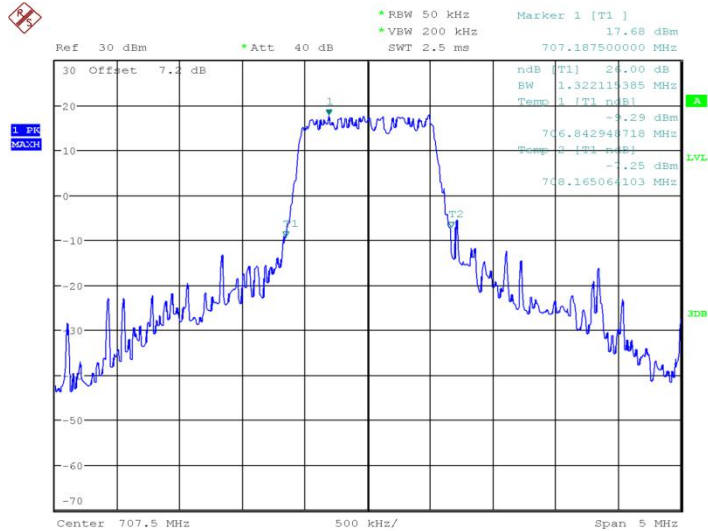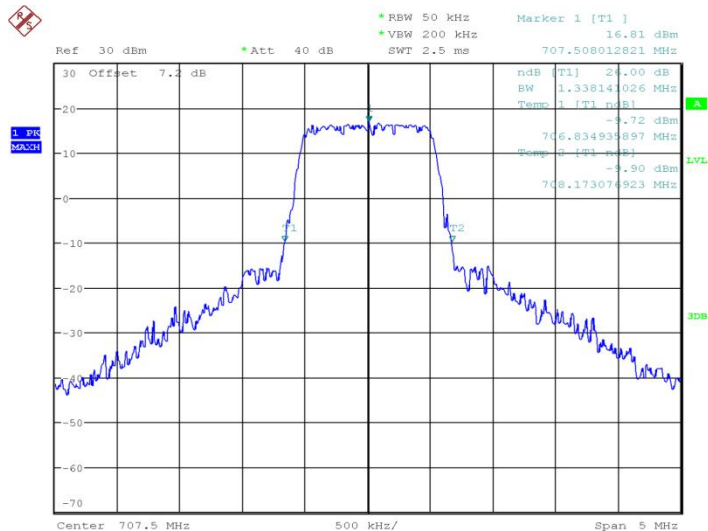
LTE band 12, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

LTE band 12, 3MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
707.5	2.885	2.885

LTE band 12, 3MHz Bandwidth, QPSK (-26dBc BW)
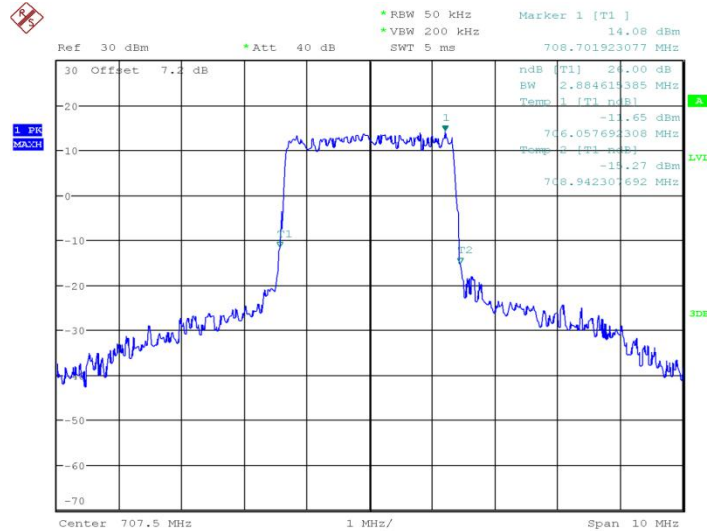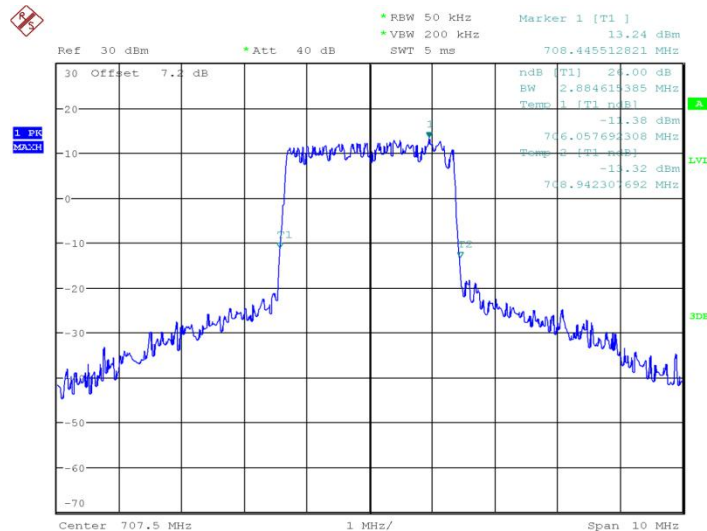
LTE band 12, 3MHz Bandwidth, 16QAM (-26dBc BW)

LTE band 12, 5MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
707.5	4.928	4.880

LTE band 12, 5MHz Bandwidth, QPSK (-26dBc BW)
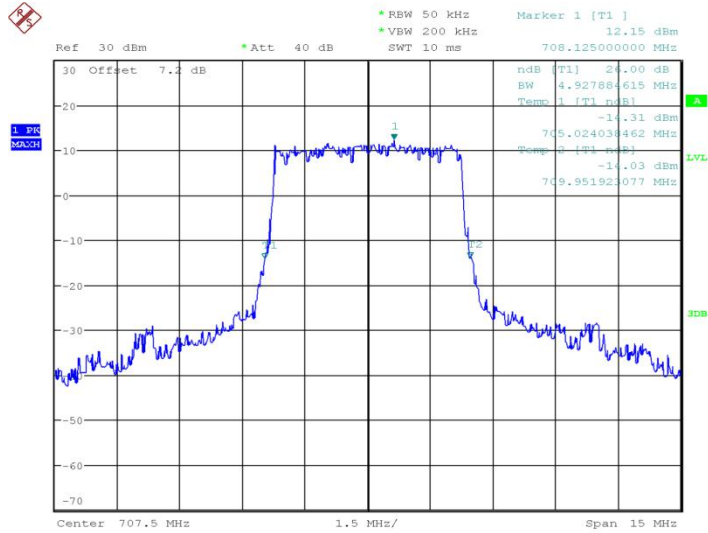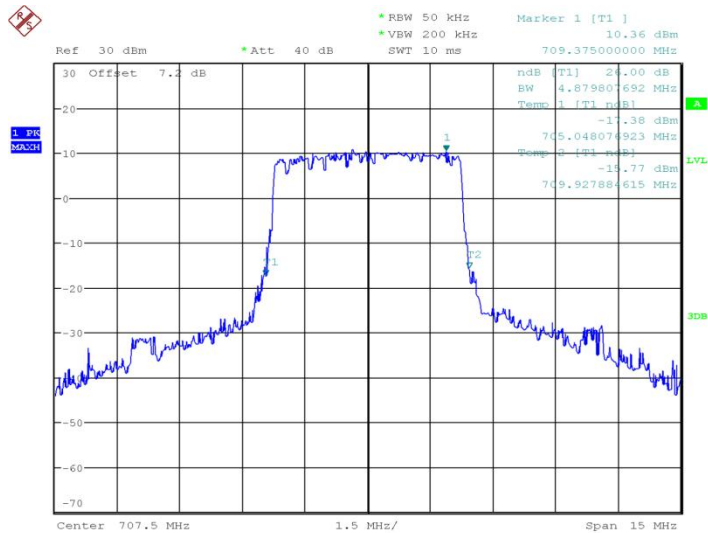
LTE band 12, 5MHz Bandwidth,16QAM (-26dBc BW)

LTE band 12, 10MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
707.5	9.615	9.615

LTE band 12, 10MHz Bandwidth, QPSK (-26dBc BW)
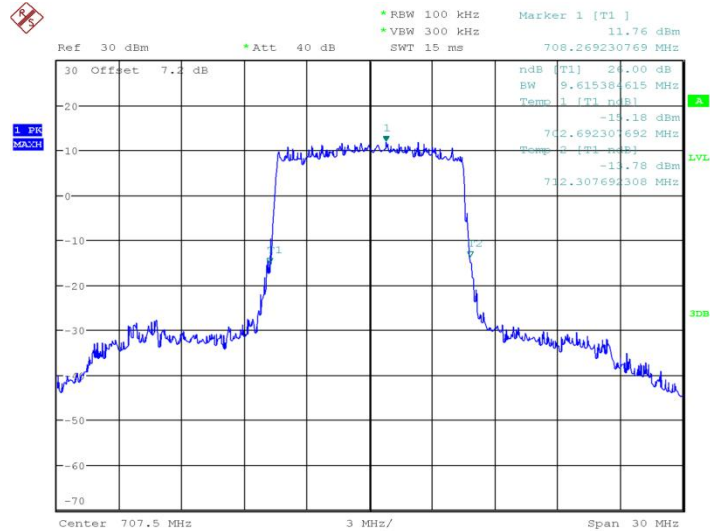
LTE band 12, 10MHz Bandwidth, 16QAM (-26dBc BW)
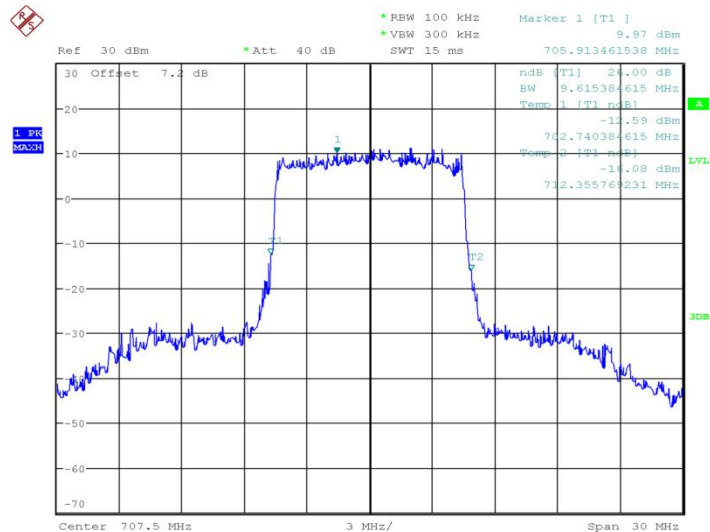
ANNEX A.6.   BAND EDGE COMPLIANCE

Reference

FCC: CFR Part 22.917(b),24.238(a), 27.53(g),27.53(h), 27.53(m)

A.6.1 Measurement limit

Part 22.917(b),24.238(a), 27.53(g),27.53(h), 27.53(m) state that on any frequency outside frequency band of the US Cellular/PCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log (P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

According to KDB 971168 6, a relaxation of the reference bandwidth is often provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is often implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

Part 27.53(m) states that 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.

A.6.2 Measurement result

Only worst case result is given below

LTE band 2

OBW: 1RB-low_offset
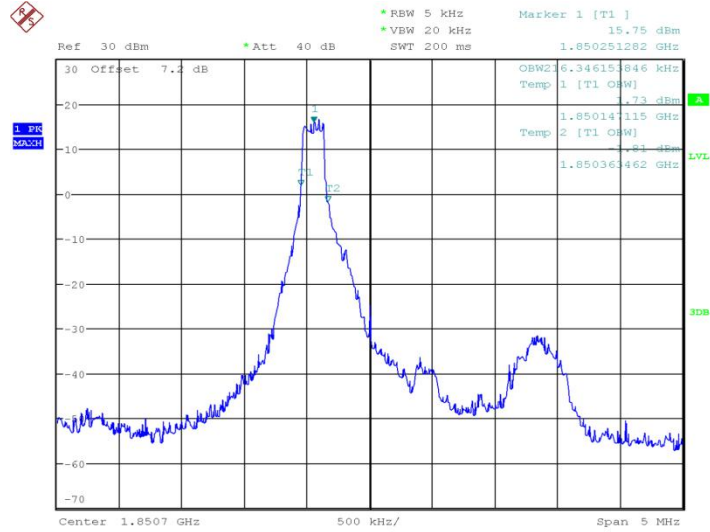
IF Overload
Date: 2.JAN.2003 10:25:57

LOW BAND EDGE BLOCK-1RB-low_offset
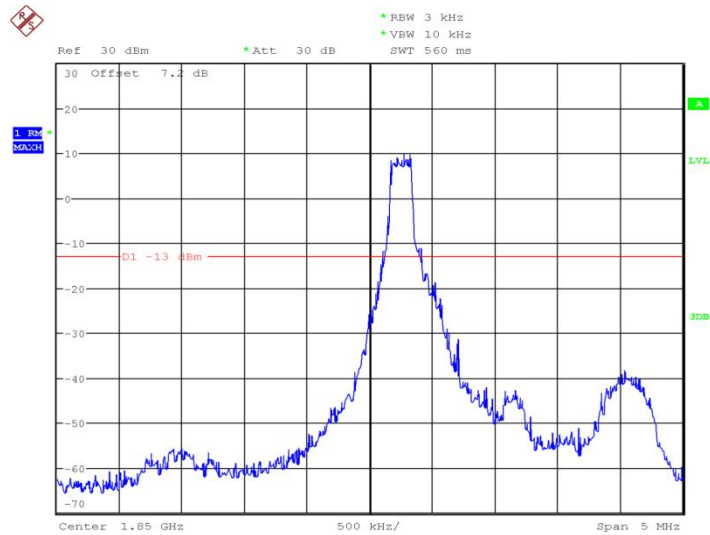
IF Overload
Date: 2.JAN.2003 10:26:20

OBW: 1RB-high_offset

```
                          *RBW 5 kHz        Marker 1 [T1 ]
                          *VBW 20 kHz               15.93 dBm
     Ref  30 dBm   *Att 40 dB   SWT 200 ms    1.909732692 GHz

    30 Offset  7.2 dB                     OBW 2.371794872 kHz
                                          Temp 1 [T1 OBW]
   -20                                           -1.93 dBm
                                           1.909620526 GHz
   -10                                     Temp 2 [T1 OBW]
                                                 -1.91 dBm
    0                                      1.909860897 GHz

  -10

  -20

  -30

  -40

  -50

  -60

  -70
     Center 1.9093 GHz    500 kHz/        Span 5 MHz
```
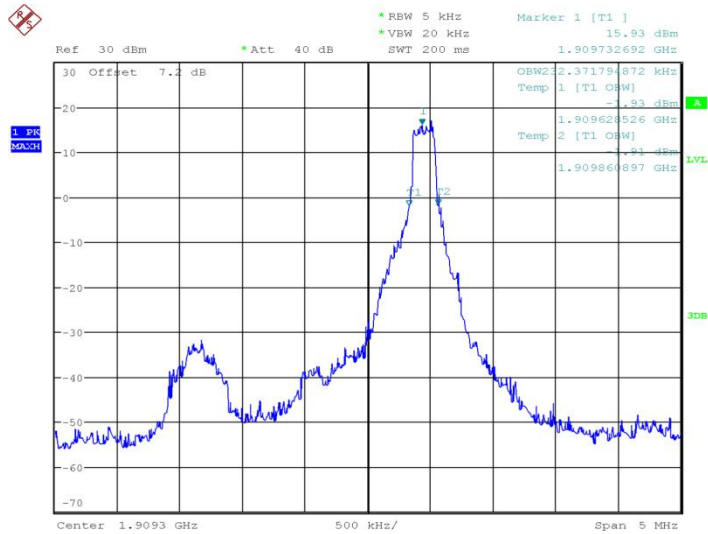
IF Overload
Date: 2.JAN.2003 10:27:25

HIGH BAND EDGE BLOCK-1RB-high_offset

```
                          *RBW 3 kHz
                          *VBW 10 kHz
     Ref  30 dBm   *Att 30 dB   SWT 560 ms

    30 Offset  7.2 dB

   -20

   -10

    0

  -10    D1 -13 dBm

  -20

  -30

  -40

  -50

  -60

  -70
     Center 1.91 GHz     500 kHz/         Span 5 MHz
```
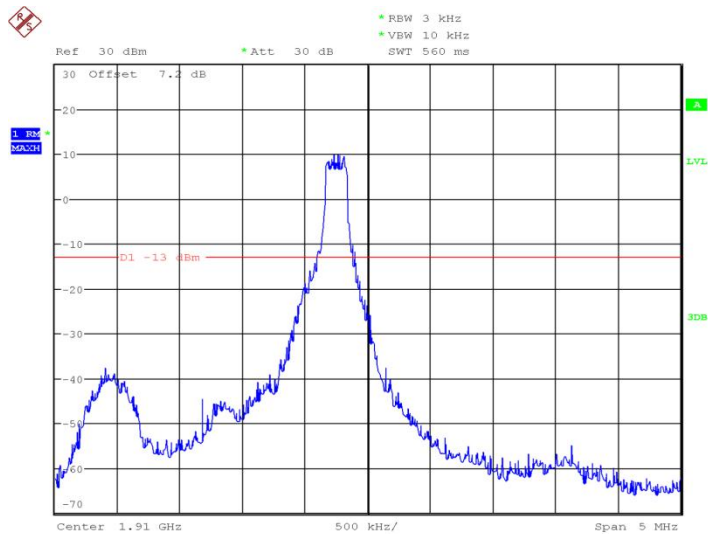
IF Overload
Date: 2.JAN.2003 10:27:48

LOW BAND EDGE BLOCK-20MHz-100%RB

```
                                        * RBW  200 kHz
                                        * VBW  1 MHz
   Ref   30 dBm        * Att  30 dB     SWT  2.5 ms
   30 Offset  7.2 dB
   -20
   -10
   0
   -10        D1 -13 dBm
   -20
   -30
   -40
   -50
   -60
   -70
   Center  1.85 GHz        500 kHz/              Span 5 MHz
```
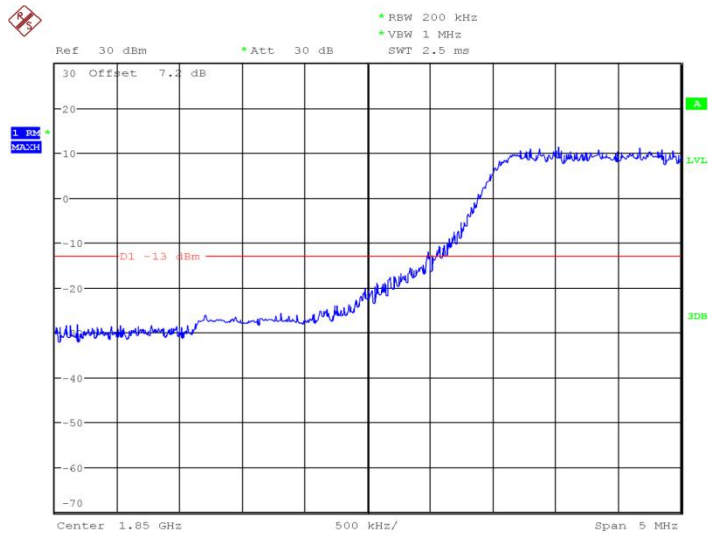
IF Overload
Date: 2.JAN.2003 10:26:51

HIGH BAND EDGE BLOCK-20MHz-100%RB

```
                                        * RBW  200 kHz
                                        * VBW  1 MHz
   Ref   30 dBm        * Att  30 dB     SWT  2.5 ms
   30 Offset  7.2 dB
   -20
   -10
   0
   -10        D1 -13 dBm
   -20
   -30
   -40
   -50
   -60
   -70
   Center  1.91 GHz        500 kHz/              Span 5 MHz
```
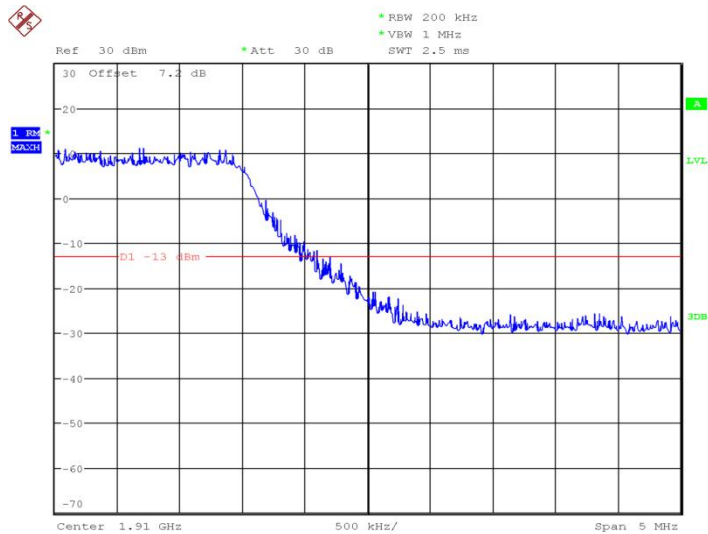
IF Overload
Date: 2.JAN.2003 10:28:18

LTE band 4
OBW: 1RB-low_offset
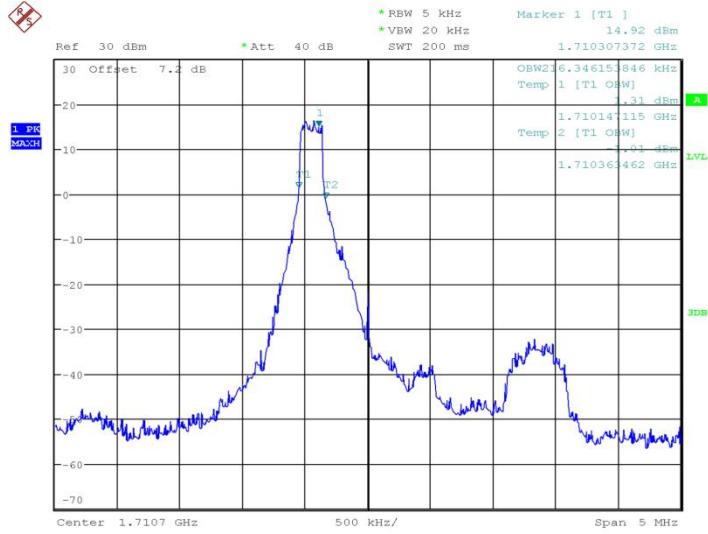
LOW BAND EDGE BLOCK-1RB-low_offset

OBW: 1RB-high_offset

HIGH BAND EDGE BLOCK-1RB-high_offset

LOW BAND EDGE BLOCK-20MHz-100%RB


```
                                              *RBW  200 kHz
                                              *VBW  1 MHz
Ref   30 dBm          *Att  30 dB            SWT  2.5 ms
30 Offset   7.2 dB
```

IF Overload
Date: 2.JAN.2003 10:31:24

HIGH BAND EDGE BLOCK-20MHz-100%RB


```
                                              *RBW  200 kHz
                                              *VBW  1 MHz
Ref   30 dBm          *Att  30 dB            SWT  2.5 ms
30 Offset   7.2 dB
```
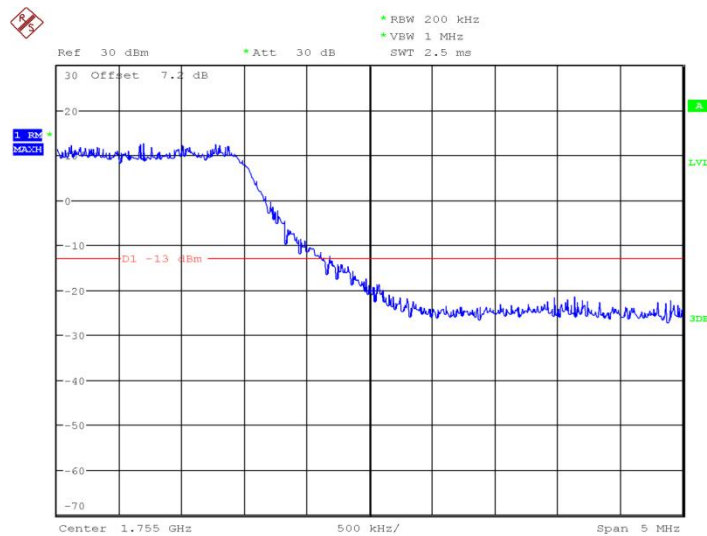
IF Overload
Date: 2.JAN.2003 10:32:48

LTE band 5

OBW: 1RB-low_offset
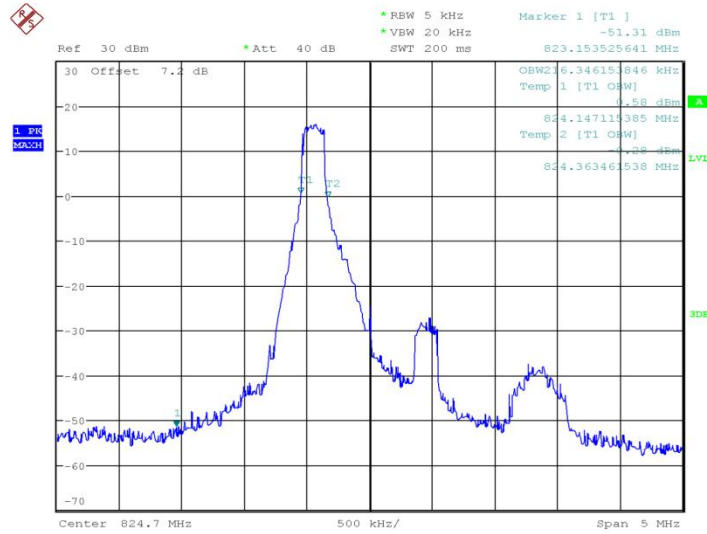
LOW BAND EDGE BLOCK-1RB-low_offset

OBW: 1RB-high_offset

HIGH BAND EDGE BLOCK-1RB-high_offset

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


```
                              * RBW 100 kHz
                              * VBW 300 kHz
Ref  30 dBm      * Att  30 dB   SWT 2.5 ms
30 Offset  7.2 dB
                                              A
-20
1 RM                                          LVL
MAXH  -10
0
-10
D1 -13 dBm
-20                                           3DB
-30
-40
-50
-60
-70
Center  824 MHz      500 kHz/      Span 5 MHz
```
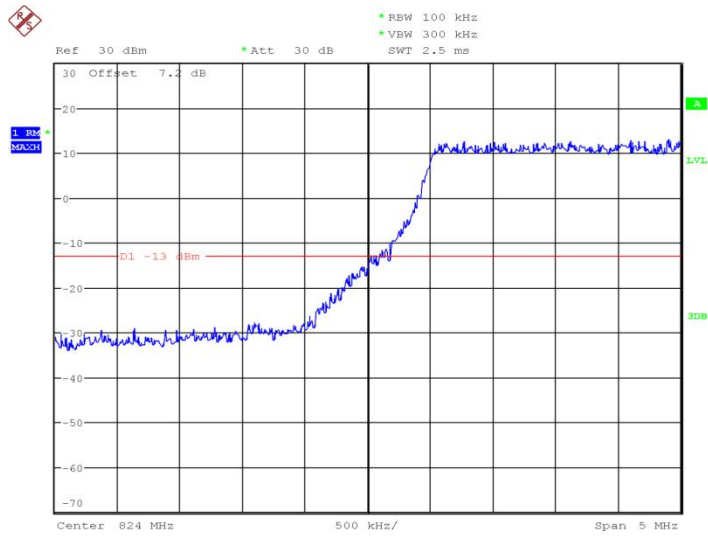
IF Overload
Date: 2.JAN.2003 10:36:28

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


```
                              * RBW 100 kHz
                              * VBW 300 kHz
Ref  30 dBm      * Att  30 dB   SWT 2.5 ms
30 Offset  7.2 dB
                                              A
-20
1 RM                                          LVL
MAXH
0
-10
D1 -13 dBm
-20
-30                                           3DB
-40
-50
-60
-70
Center  849 MHz      500 kHz/      Span 5 MHz
```
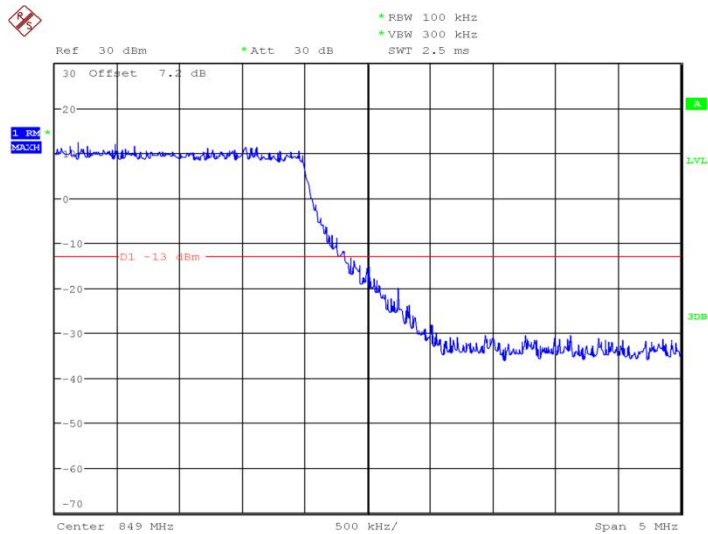
IF Overload
Date: 2.JAN.2003 10:37:53

LTE band 7
OBW: 1RB-low_offset
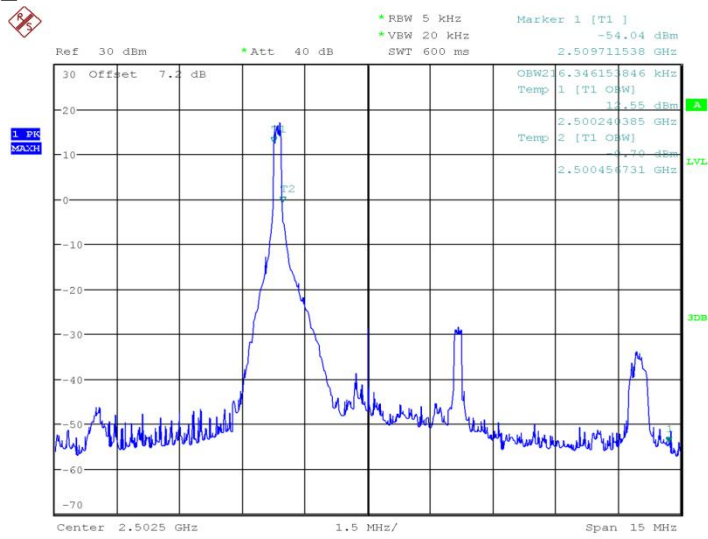
IF Overload
Date: 2.JAN.2003 10:39:18
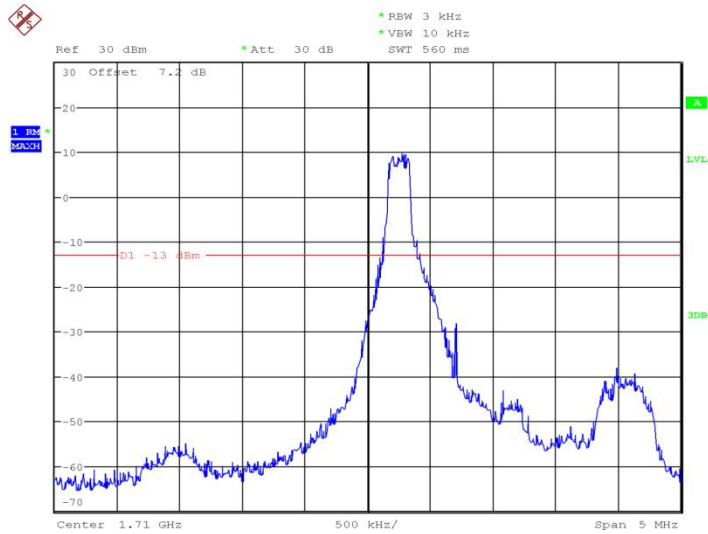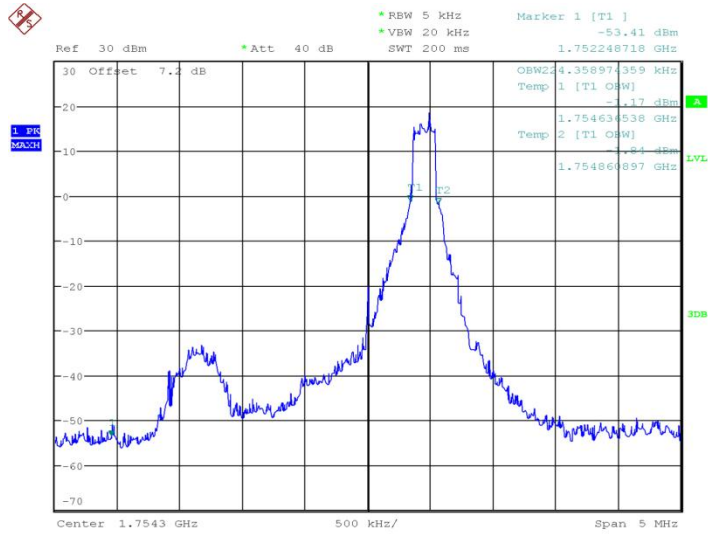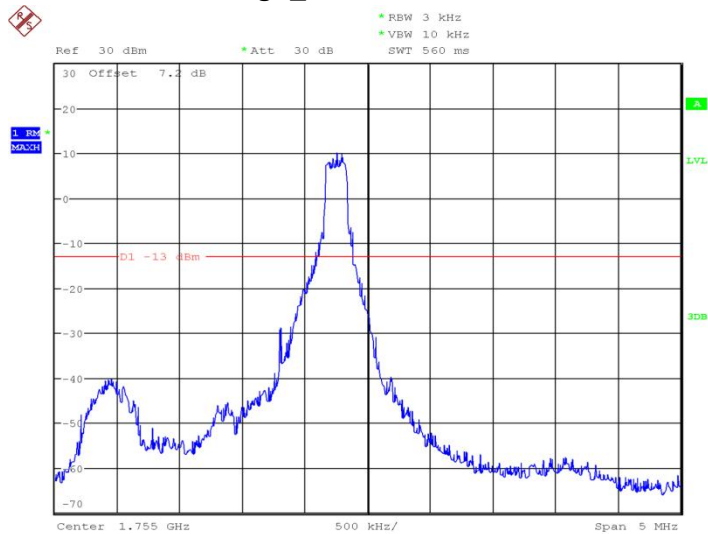
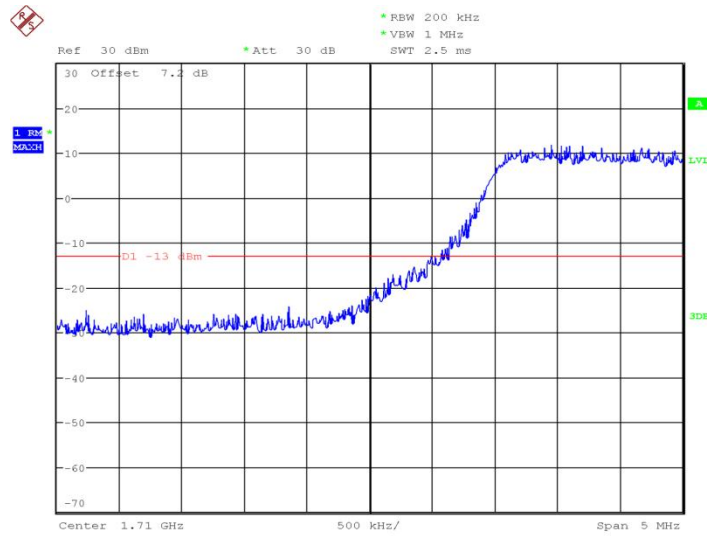**LOW BAND EDGE BLOCK-1RB-low_offset**
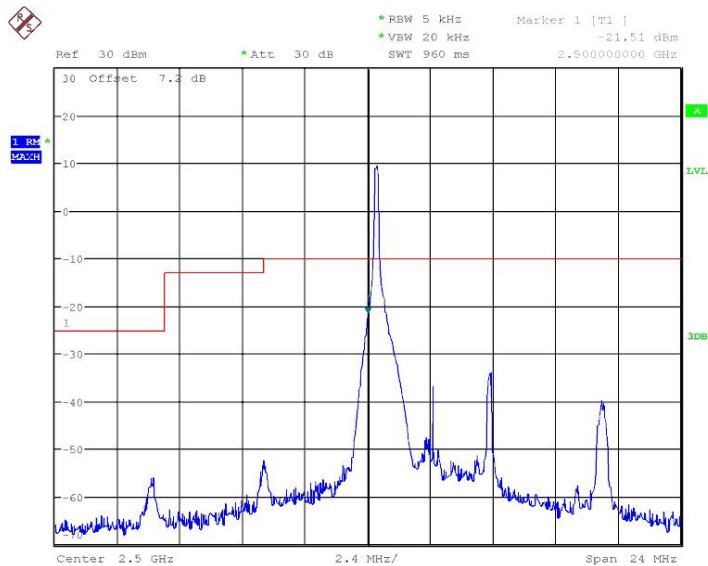
IF Overload
Date: 2.JAN.2003 11:34:21

OBW: 1RB-high_offset


```
                                    * RBW  5 kHz      Marker 1 [T1 ]
                                    * VBW  20 kHz             -56.27 dBm
Ref   30 dBm     * Att   40 dB      SWT 600 ms         2.562475962 GHz
30  Offset  7.2 dB                               OBW 240.384615385 kHz
                                                 Temp 1 [T1 OBW]
-20                                                       -1.20 dBm
                                                     2.569541269 GHz
-10                                              Temp 2 [T1 OBW]
                                                         -1.97 dBm
0                                                    2.569781654 GHz
-10
-20
-30
-40
-50
-60
-70
Center  2.5675 GHz          1.5 MHz/          Span  15 MHz
```
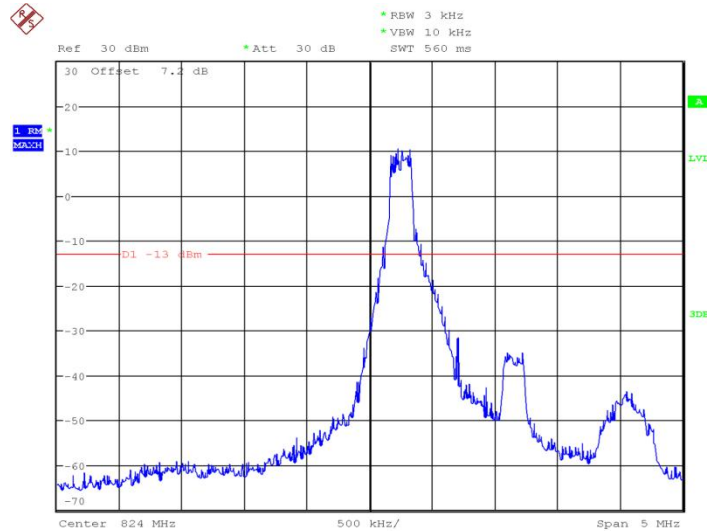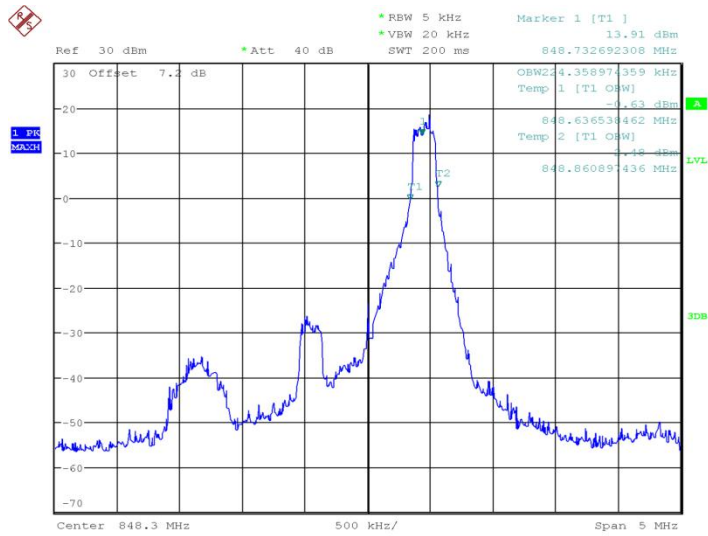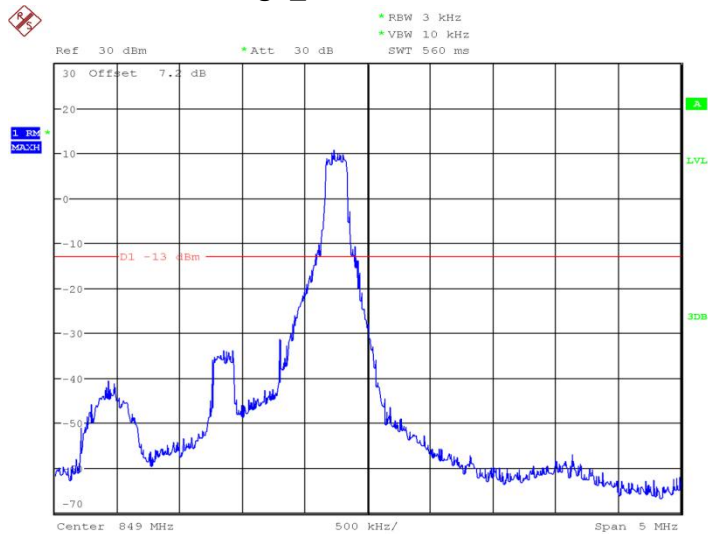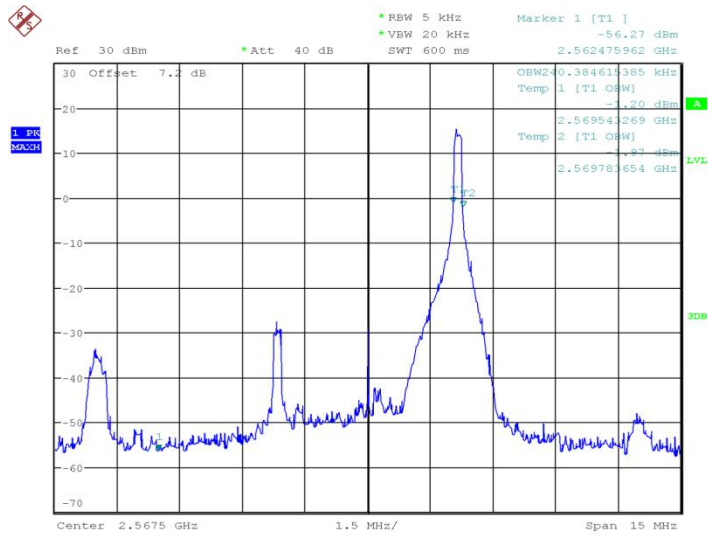
IF Overload

Date: 2.JAN.2003 10:40:44

HIGH BAND EDGE BLOCK-1RB-high_offset


```
                                    * RBW  5 kHz      Marker 1 [T1 ]
                                    * VBW  20 kHz             -22.36 dBm
Ref   30 dBm     * Att   30 dB      SWT 960 ms         2.570000000 GHz
30  Offset  7.2 dB
-20
-10
0
-10
-20
-30
-40
-50
-60
Center  2.57 GHz            2.4 MHz/          Span  24 MHz
```
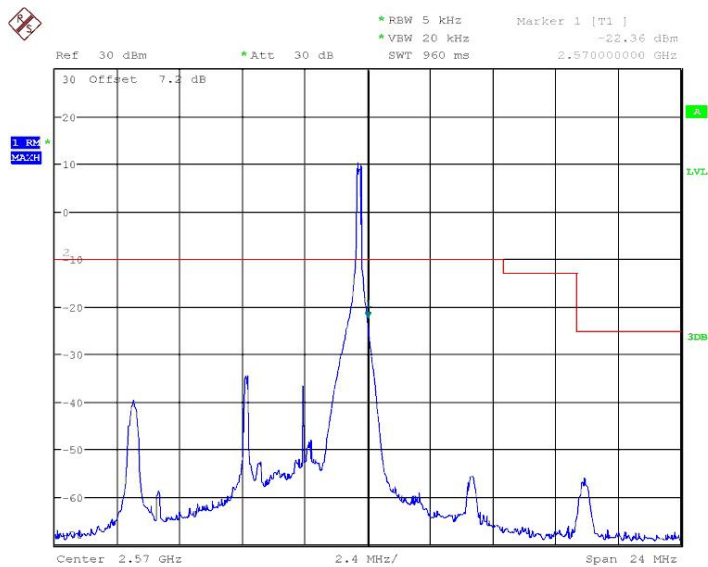
IF Overload

Date: 2.JAN.2003 11:35:45

LOW BAND EDGE BLOCK-20MHz-100%RB

```
                                    * RBW 200 kHz    Marker 1 [T1 ]
                                    * VBW 1 MHz              -18.37 dBm
        Ref  30 dBm      * Att 30 dB   SWT 2.5 ms      2.500000000 GHz

        30 Offset  7.2 dB
```
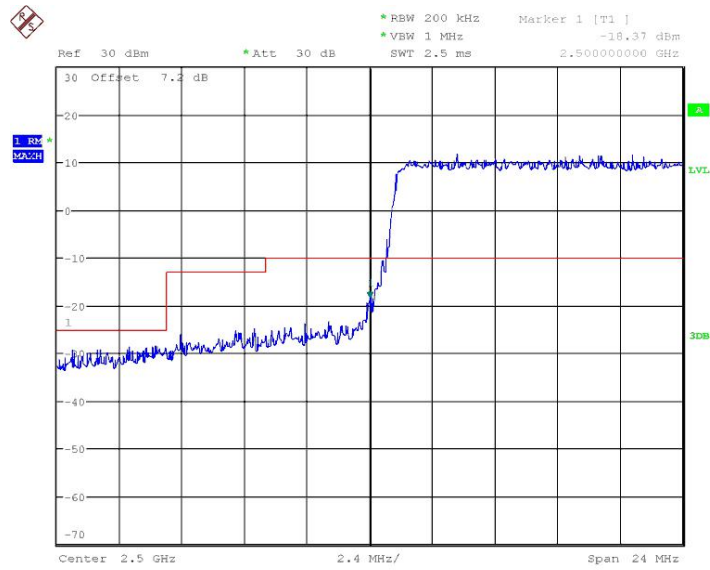
IF Overload
Date: 2.JAN.2003 11:32:33

HIGH BAND EDGE BLOCK-20MHz-100%RB

```
                                    * RBW 200 kHz    Marker 1 [T1 ]
                                    * VBW 1 MHz              -19.40 dBm
        Ref  30 dBm      * Att 30 dB   SWT 2.5 ms      2.570000000 GHz

        30 Offset  7.2 dB
```
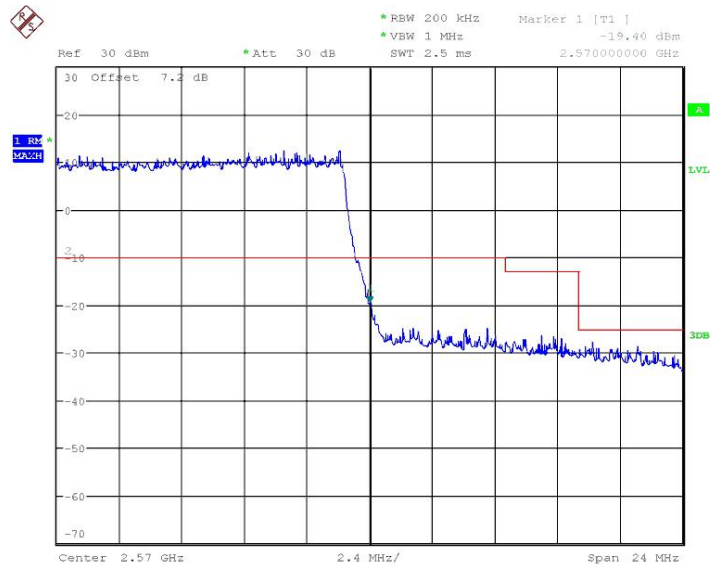
IF Overload
Date: 2.JAN.2003 11:31:08

LTE band 12
OBW: 1RB-low_offset
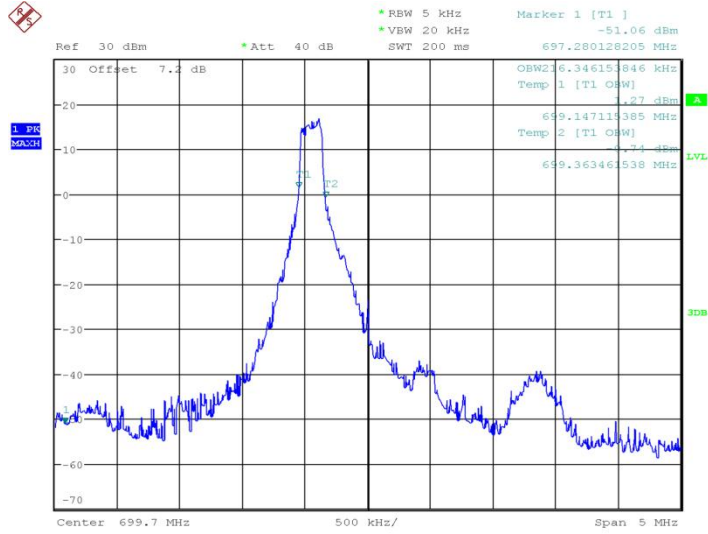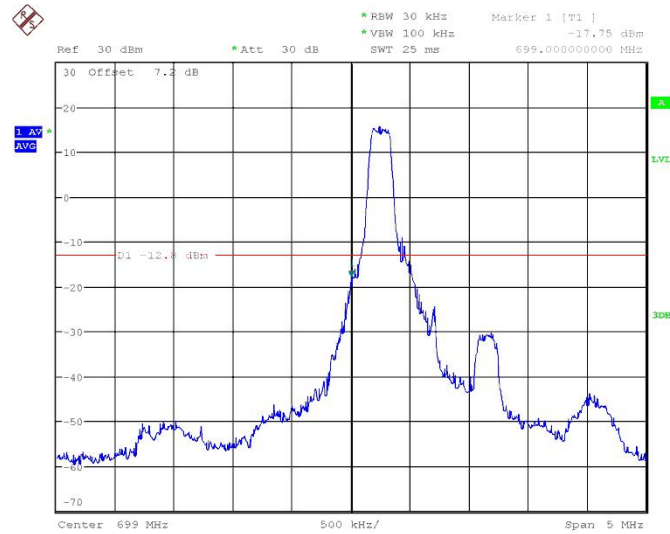
LOW BAND EDGE BLOCK-1RB-low_offset

OBW: 1RB-high_offset

HIGH BAND EDGE BLOCK-1RB-high_offset

LOW BAND EDGE BLOCK-10MHz-100%RB


```
                                        * RBW  100 kHz
                                        * VBW  300 kHz
Ref   30 dBm        * Att  30 dB       SWT  2.5 ms
30  Offset   7.2 dB
```

```
Center  699 MHz              500 kHz/              Span 5 MHz
```
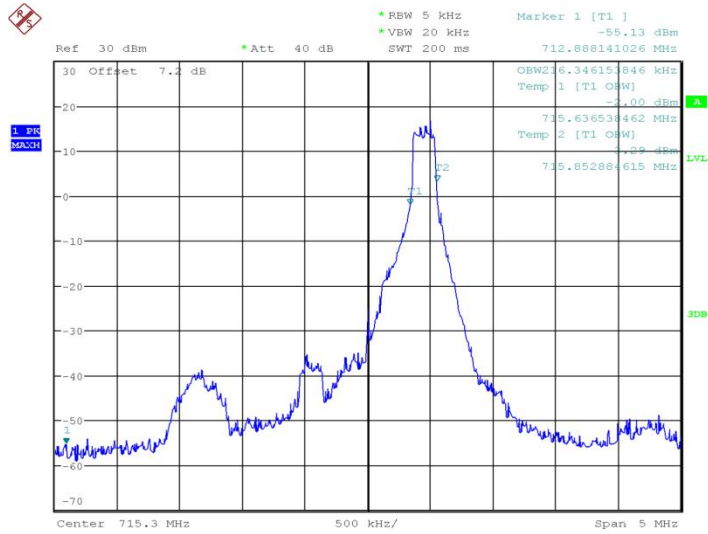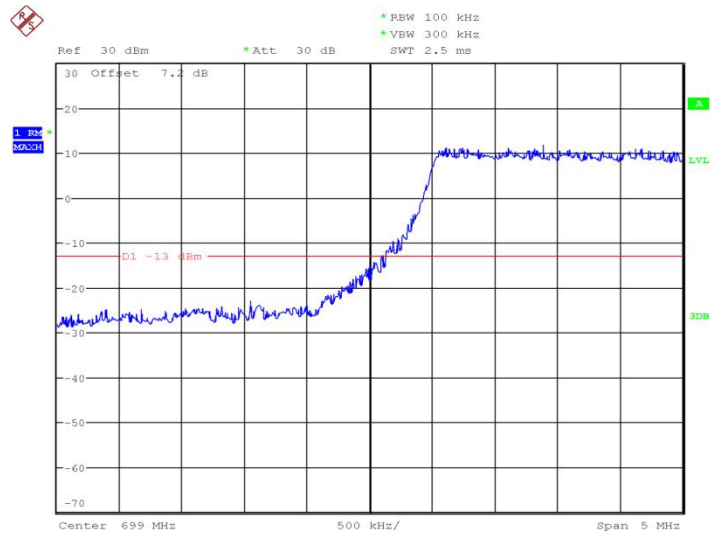
IF Overload
Date: 2.JAN.2003 10:43:30

HIGH BAND EDGE BLOCK-10MHz-100%RB


```
                                        * RBW  100 kHz
                                        * VBW  300 kHz
Ref   30 dBm        * Att  30 dB       SWT  2.5 ms
30  Offset   7.2 dB
```

```
Center  716 MHz              500 kHz/              Span 5 MHz
```
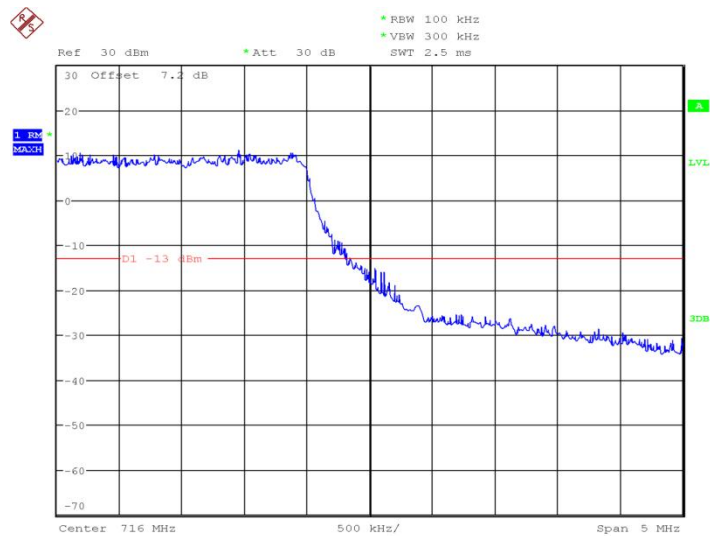
IF Overload
Date: 2.JAN.2003 10:44:55

ANNEX A.7.　　CONDUCTED SPURIOUS EMISSION

Reference

FCC: CFR Part 22.917(b),24.238(a), 27.53(g),27.53(h), 27.53(m)

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(b),24.238(a), 27.53(g),27.53(h), 27.53(m) 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.
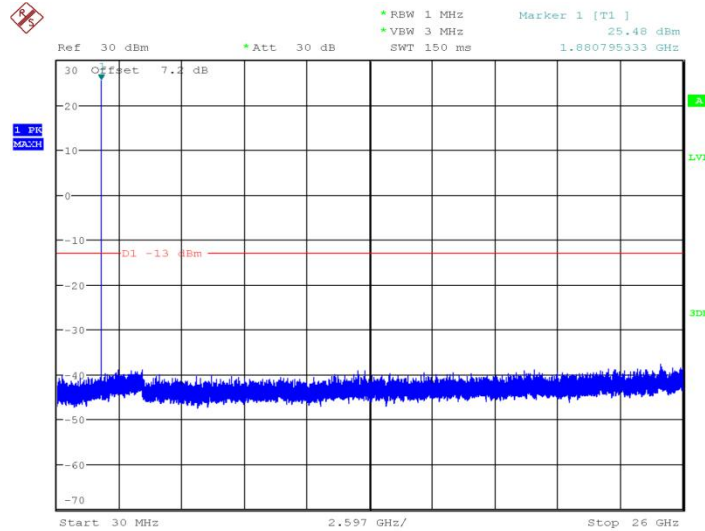
A. 7.3 Measurement result

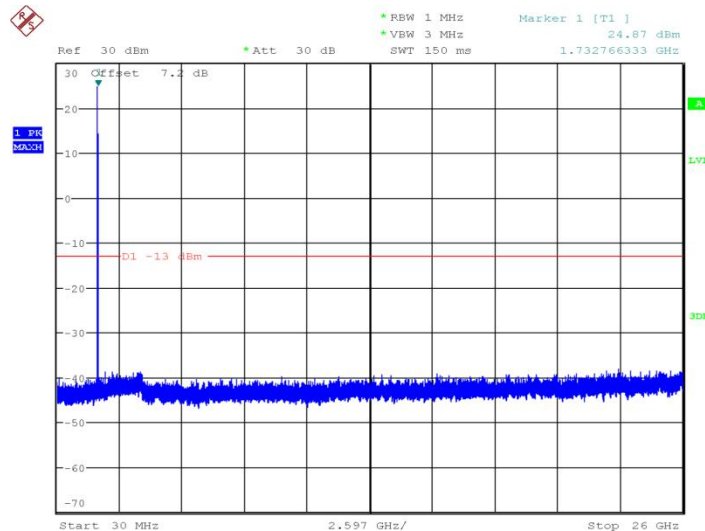**Only worst case result is given below**

LTE band 2: 30MHz – 20GHz

Spurious emission limit –13dBm.

LTE band 4: 30MHz – 20GHz

Spurious emission limit –13dBm.

LTE band 5: 30MHz – 10GHz

Spurious emission limit –13dBm.
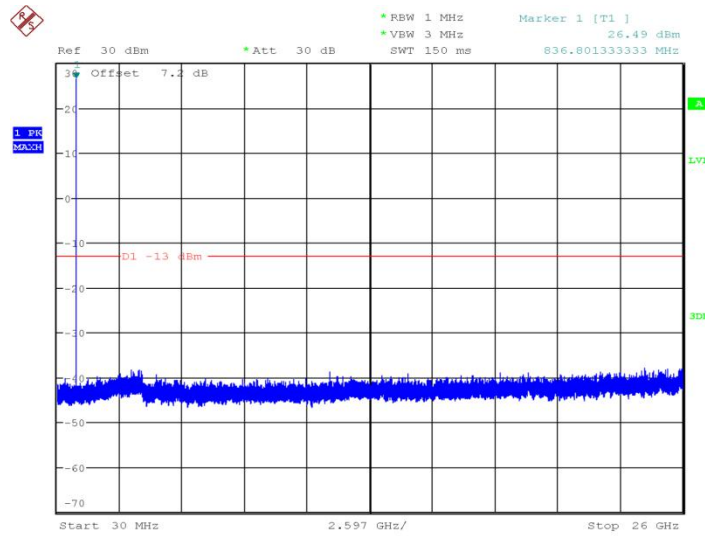
LTE band 7: 30MHz – 26GHz

Spurious emission limit –13dBm.
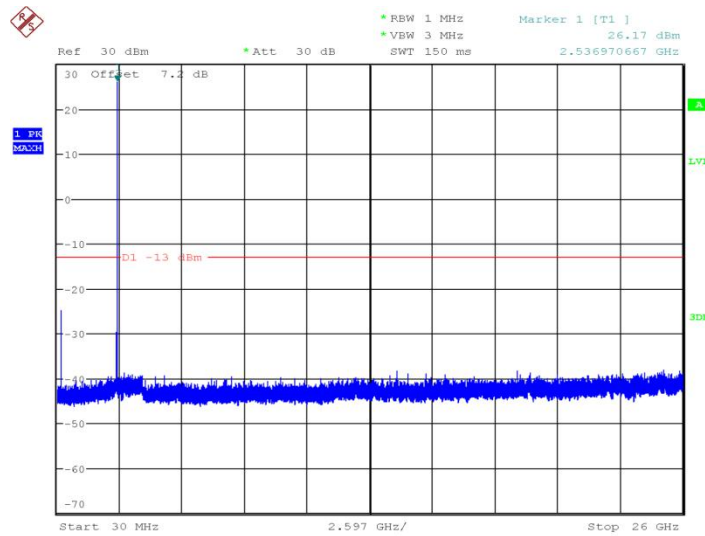
LTE band 12: 30MHz – 10GHz

Spurious emission limit –13dBm.
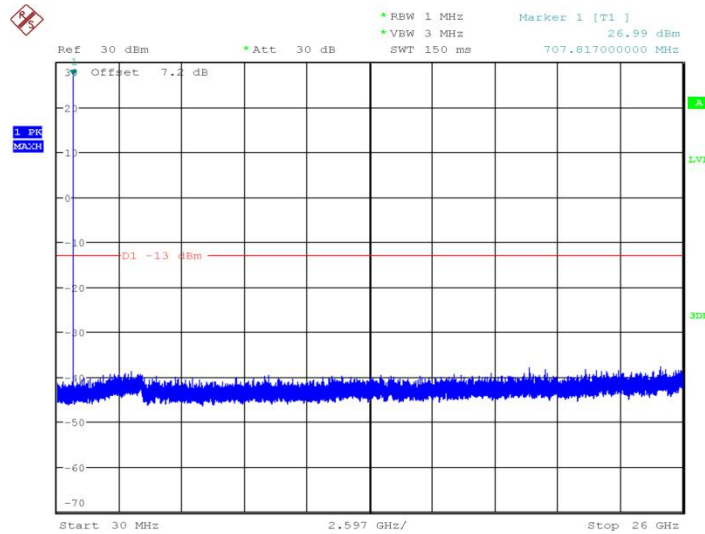
ANNEX A.8.   PEAK-TO-AVERAGE POWER RATIO

Reference

FCC: CFR Part 24.232 (d), 27.50(a)

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:

a)Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;

b) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;

c) Set the number of counts to a value that stabilizes the measured CCDF curve;

d) Set the measurement interval to 1 ms

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

A.8.1 Measurement limit

not exceed 13 dB

A.8.2 Measurement results

LTE band 2, 20MHz

Frequency(MHz)	PAPR(dB)	
	QPSK	16QAM
1860.0	4.9	6.31

LTE band 4, 20MHz

Frequency(MHz)	PAPR(dB)	
	QPSK	16QAM
1745.0	4.97	6.15

LTE band 5, 10MHz

Frequency(MHz)	PAPR(dB)	
	QPSK	16QAM
824.7	5.48	6.19

LTE band 7, 20MHz

Frequency(MHz)	PAPR(dB)	
	QPSK	16QAM
2510.0	4.94	6.15

LTE band 12,10MHz

Frequency(MHz)	PAPR(dB)	
	QPSK	16QAM
707.5	5.48	6.51

ANNEX B.　Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

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