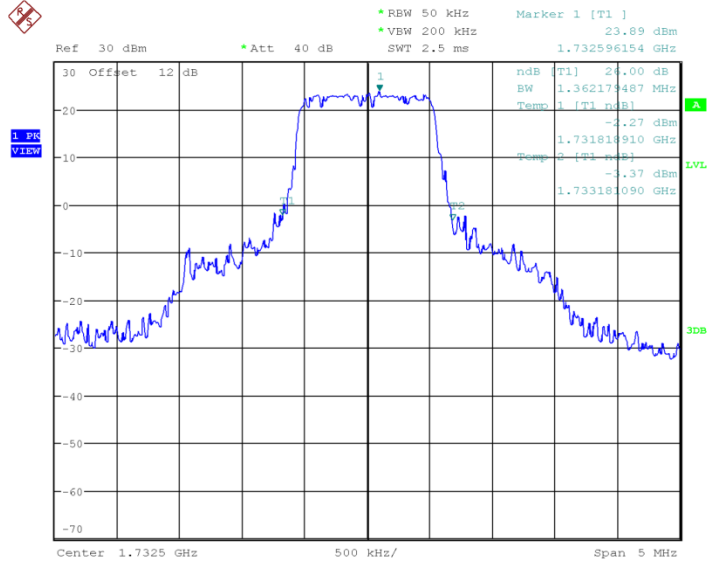


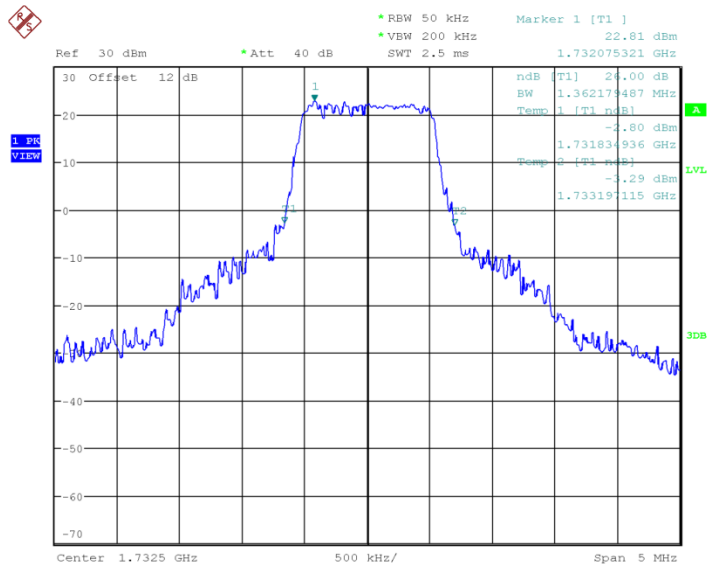
## LTE band 4, 1.4MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
1732.5	1362	1362



Date: 20.JAN.2003 05:13:22

## LTE band 4, 1.4MHz Bandwidth, QPSK (-26dBc BW)

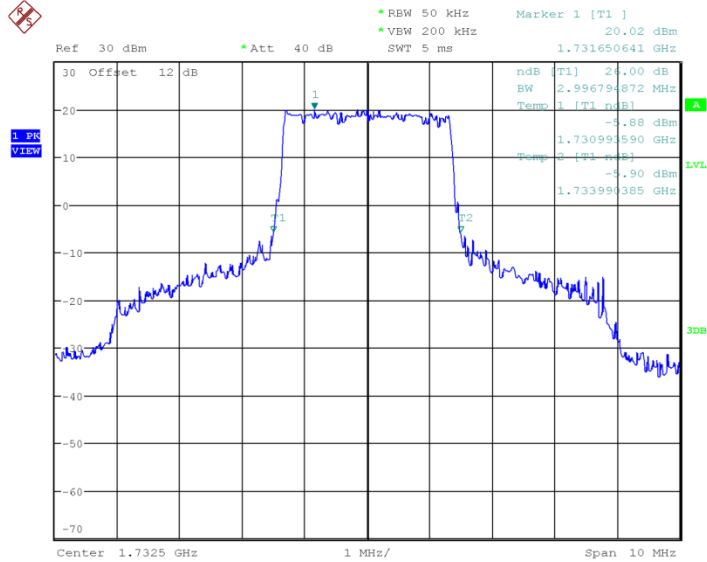


Date: 20.JAN.2003 05:13:37

## LTE band 4, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

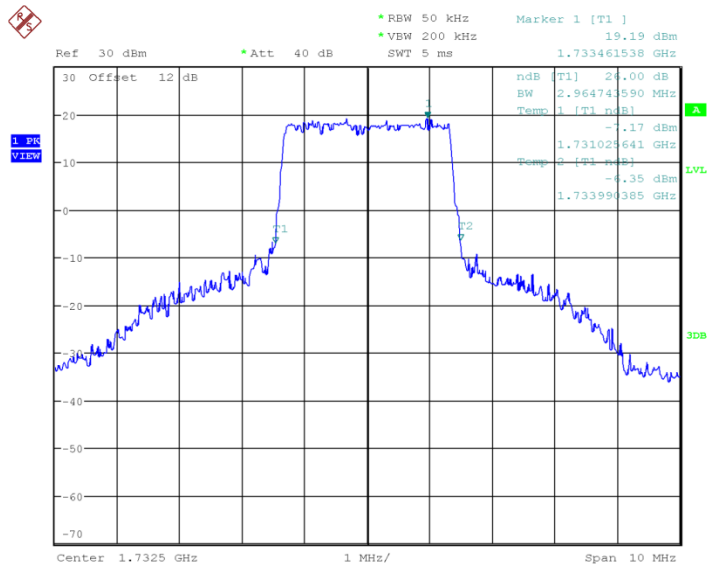
## LTE band 4, 3MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
1732.5	2997	2965



Date: 20.JAN.2003 05:14:01

## LTE band 4, 3MHz Bandwidth, QPSK (-26dBc BW)

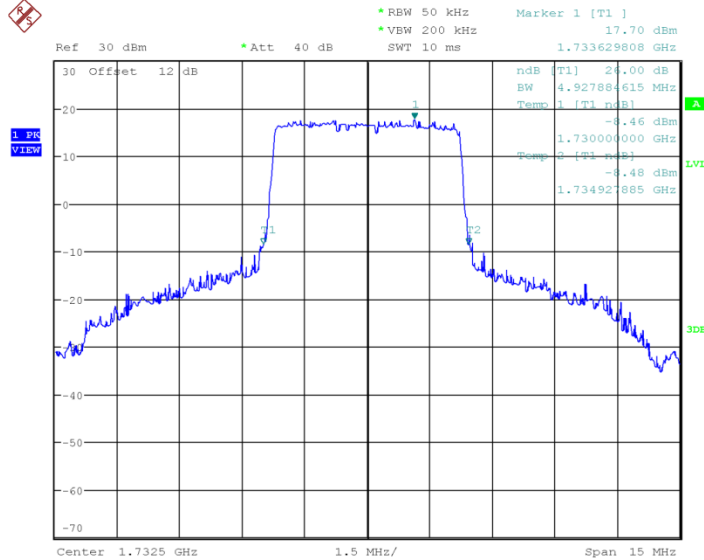


Date: 20.JAN.2003 05:14:28

## LTE band 4, 3MHz Bandwidth, 16QAM (-26dBc BW)

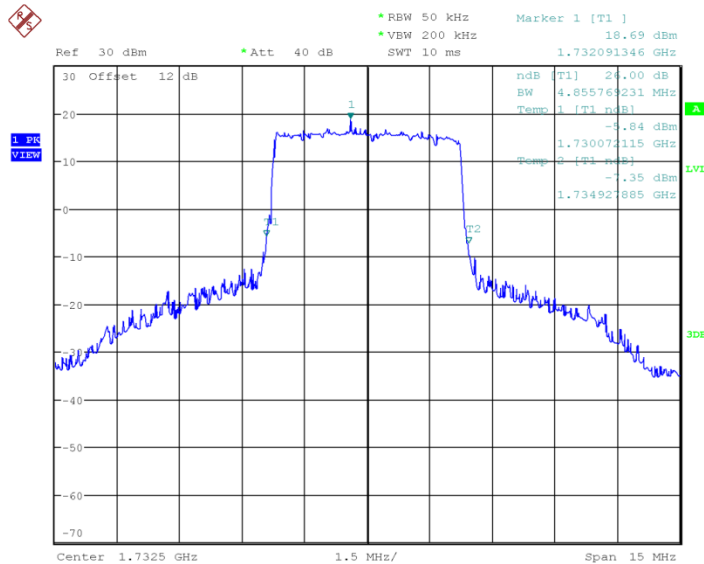
## LTE band 4, 5MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
1732.5	4928	4856



Date: 20.JAN.2003 05:15:09

## LTE band 4, 5MHz Bandwidth, QPSK (-26dBc BW)

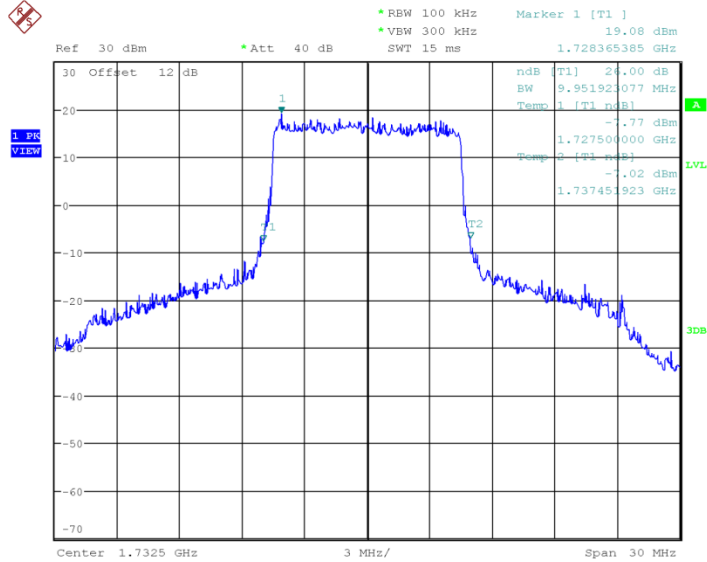


Date: 20.JAN.2003 05:15:25

## LTE band 4, 5MHz Bandwidth,16QAM (-26dBc BW)

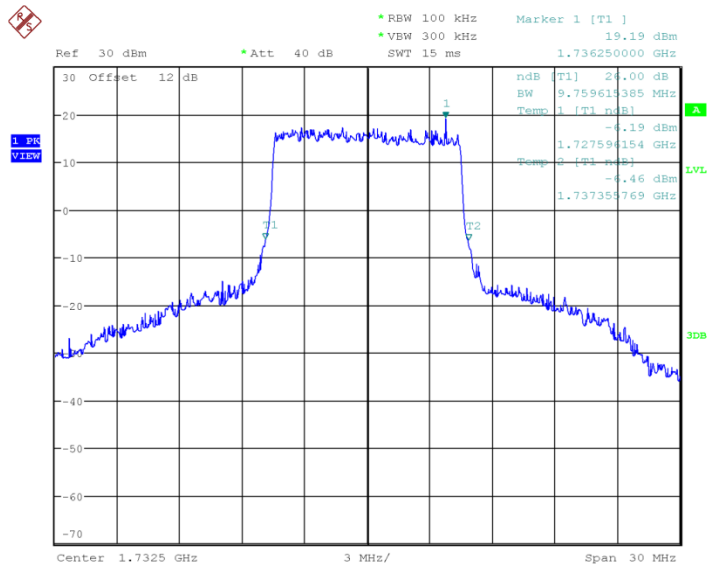
## LTE band 4, 10MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
1732.5	9952	9760



Date: 20.JAN.2003 05:15:43

## LTE band 4, 10MHz Bandwidth, QPSK (-26dBc BW)

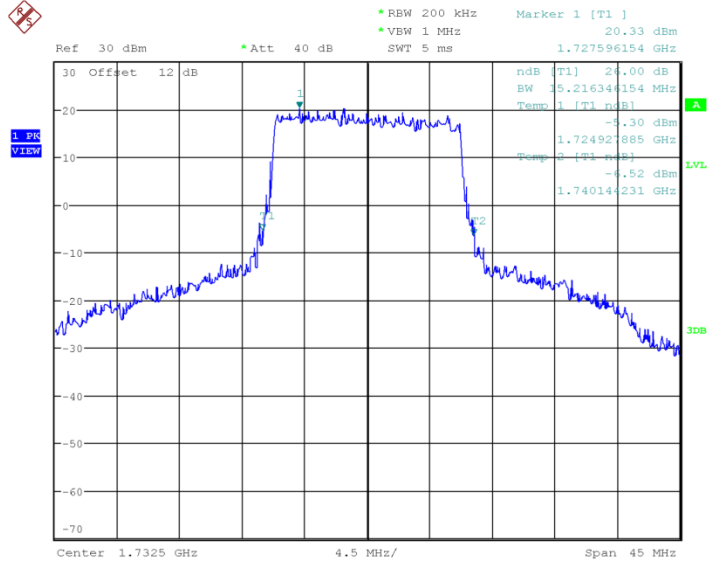


Date: 20.JAN.2003 05:15:56

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

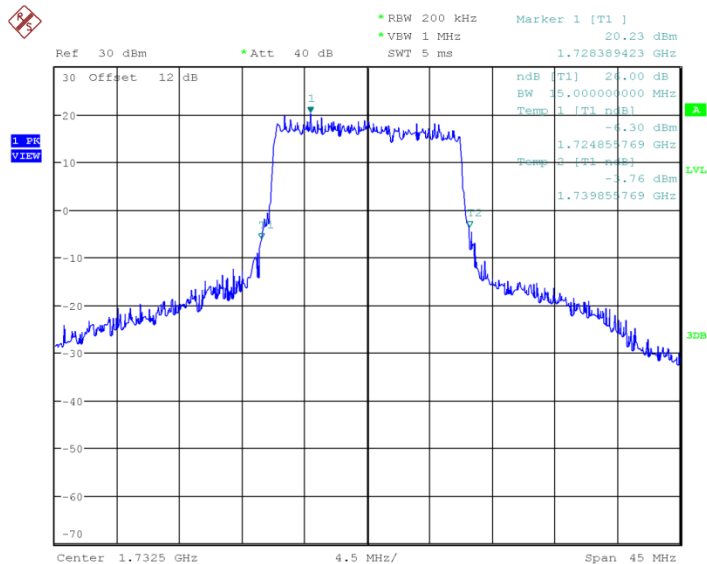
## LTE band 4, 15MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	1732.5	QPSK
	15216	15000



Date: 20.JAN.2003 05:16:15

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

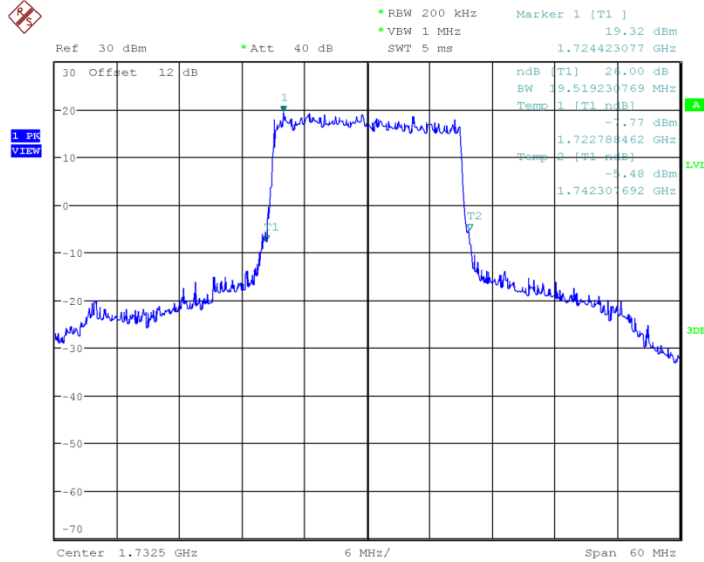


Date: 20.JAN.2003 05:16:28

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

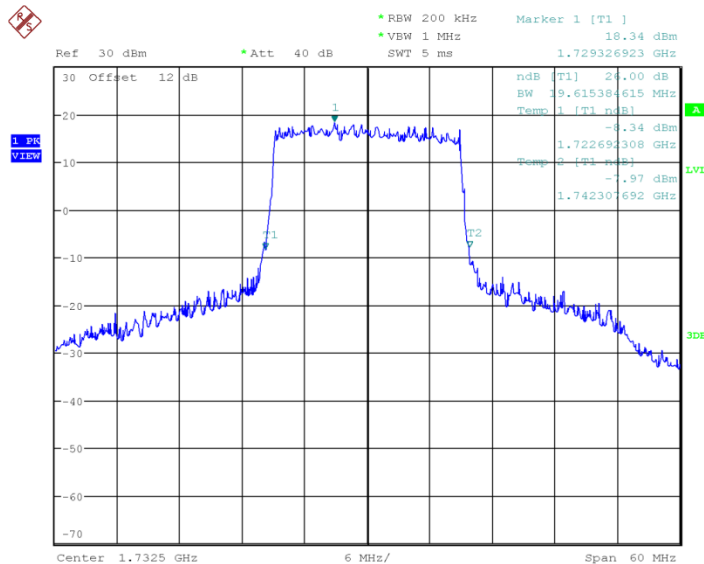
## LTE band 4, 20MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
1732.5	19519	19615



Date: 20.JAN.2003 05:16:47

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

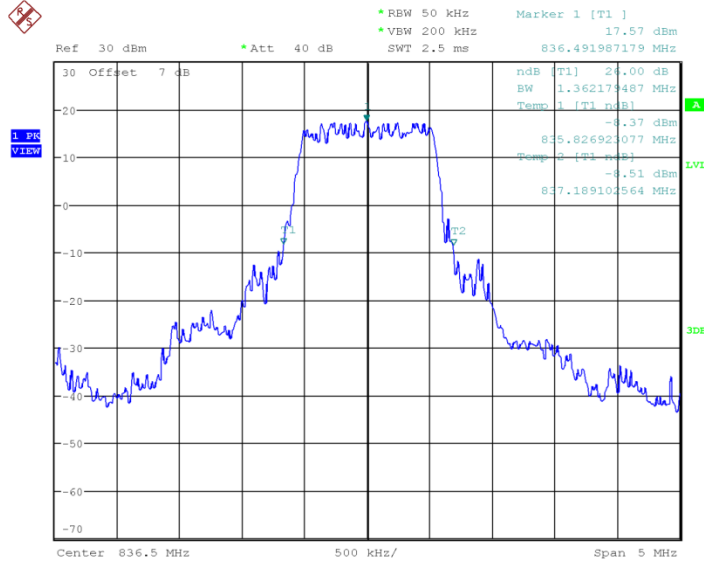


Date: 20.JAN.2003 05:17:00

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

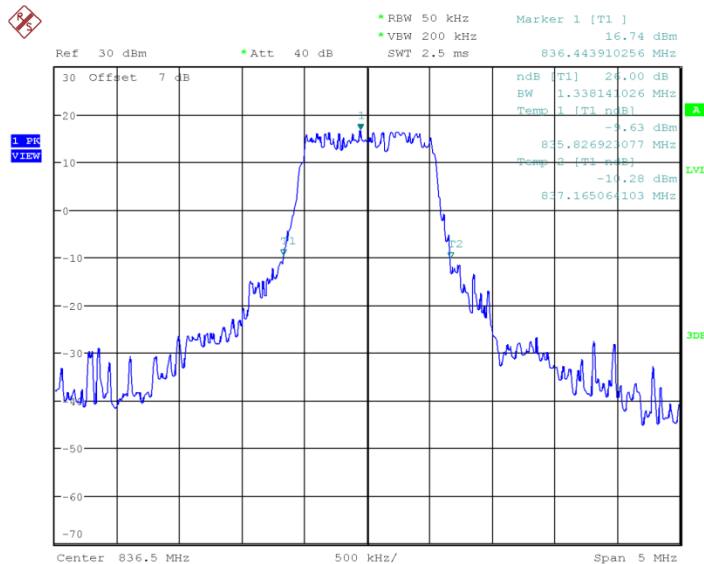
## LTE band 5, 1.4MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
836.5	1362	1338



Date: 20.JAN.2003 06:35:54

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

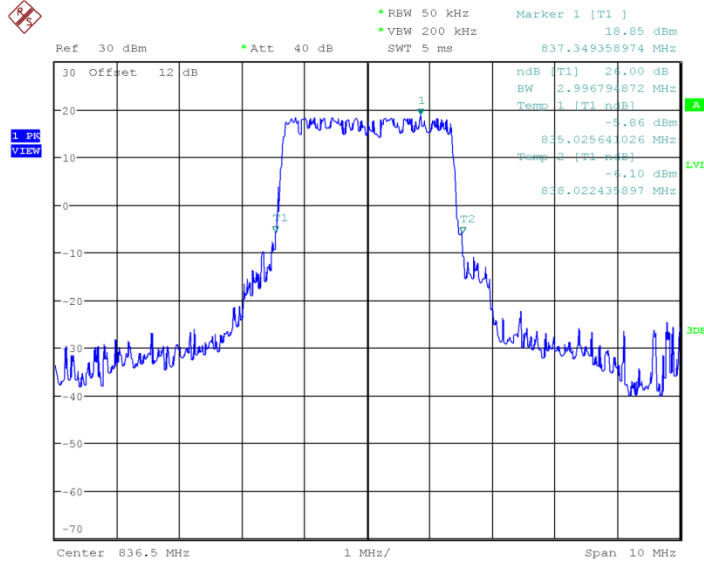


Date: 20.JAN.2003 06:36:09

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

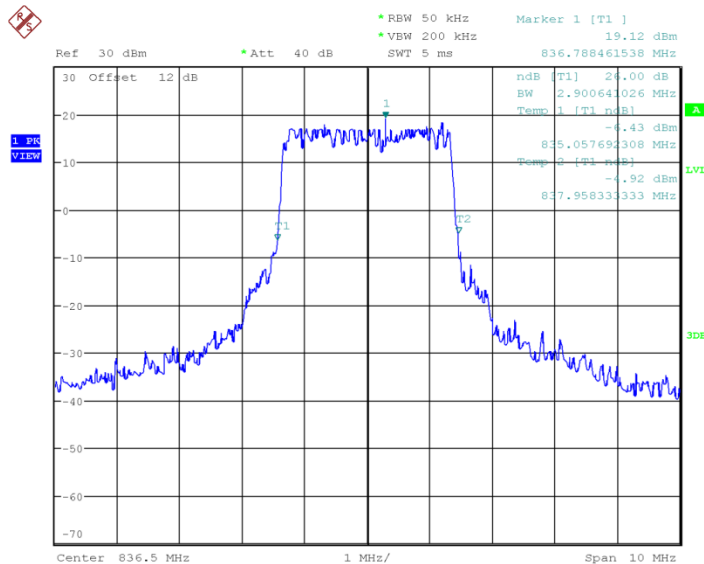
## LTE band 5, 3MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
836.5	2997	2901



Date: 20.JAN.2003 05:19:13

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



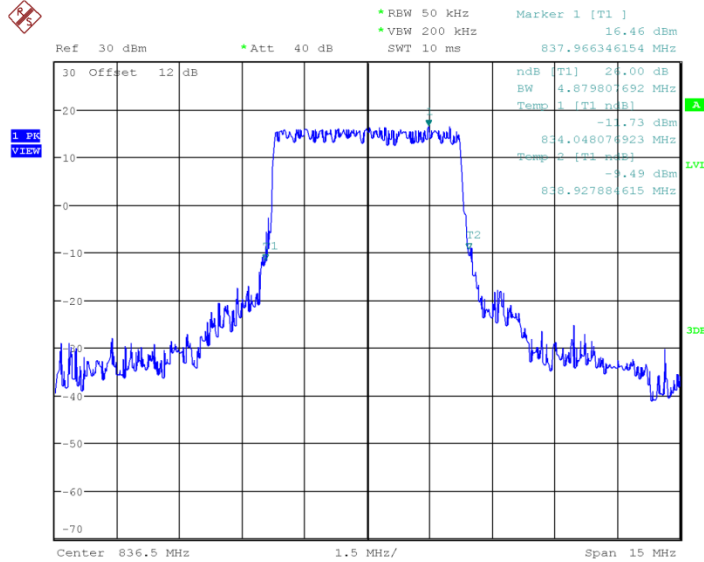
Date: 20.JAN.2003 05:19:28

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



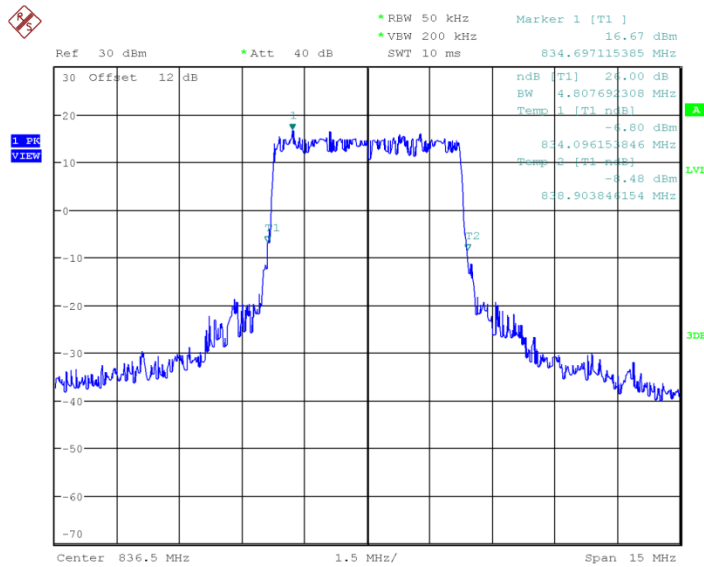
## LTE band 5, 5MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
836.5	4880	4808



Date: 20.JAN.2003 05:19:51

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

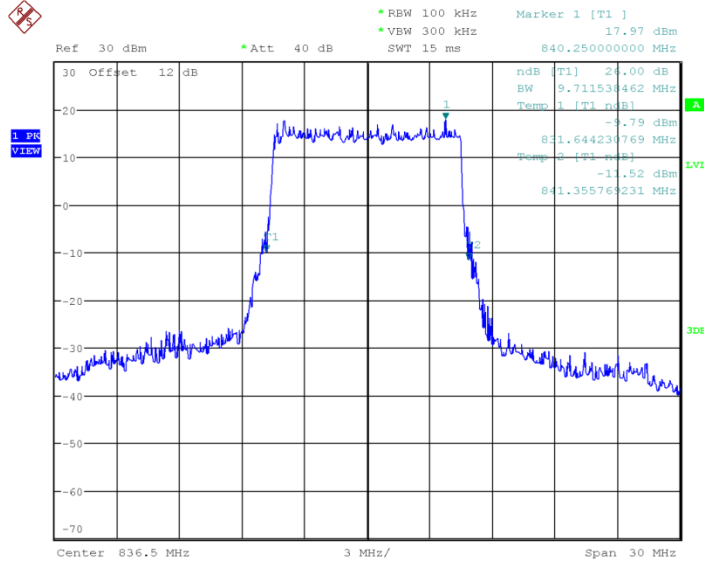


Date: 20.JAN.2003 05:20:09

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

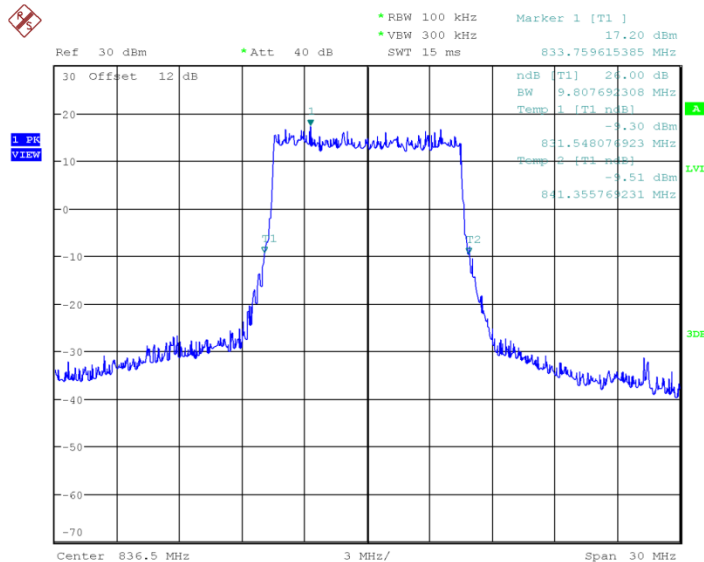
## LTE band 5, 10MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
836.5	9712	9808



Date: 20.JAN.2003 05:20:28

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



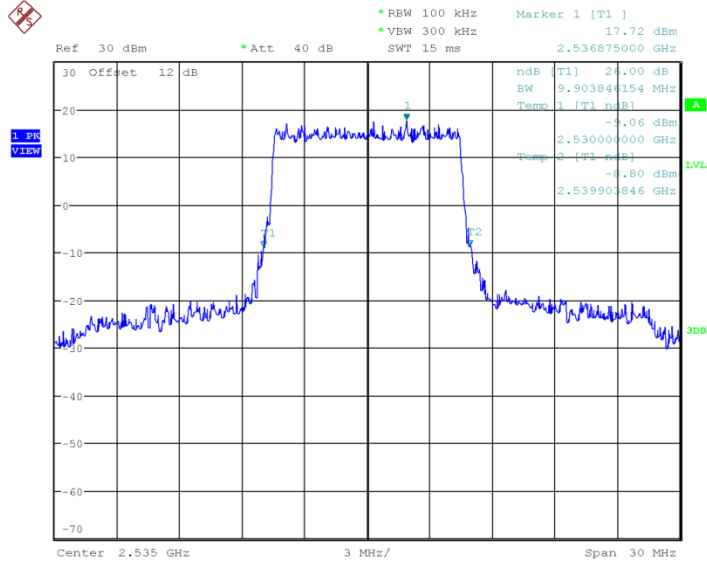
Date: 20.JAN.2003 05:20:41

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



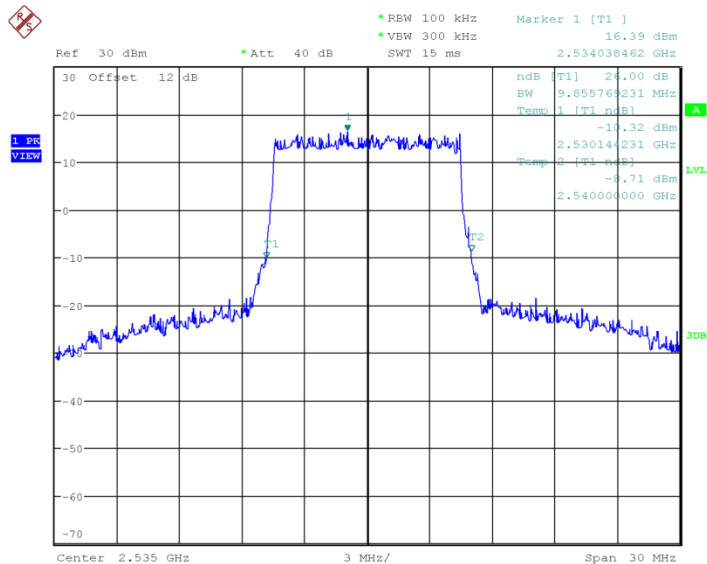
## LTE band 7, 10MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
2535.0	9904	9856



Date: 20.JAN.2003 05:21:38

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

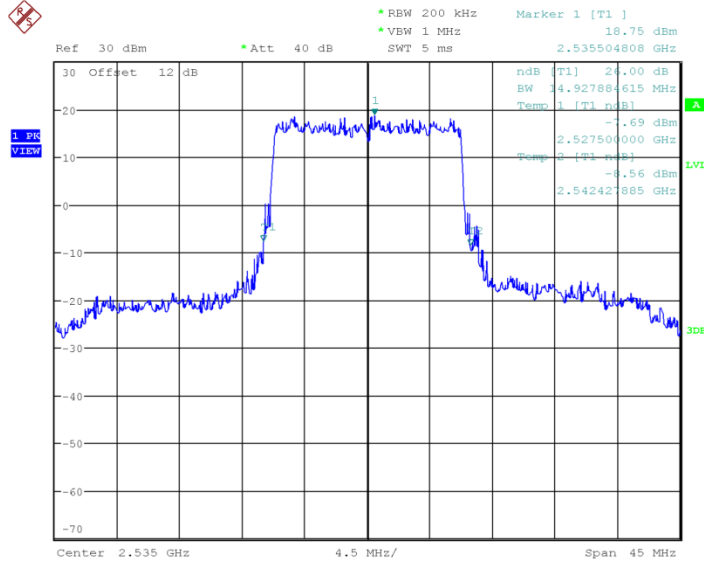


Date: 20.JAN.2003 05:21:51

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

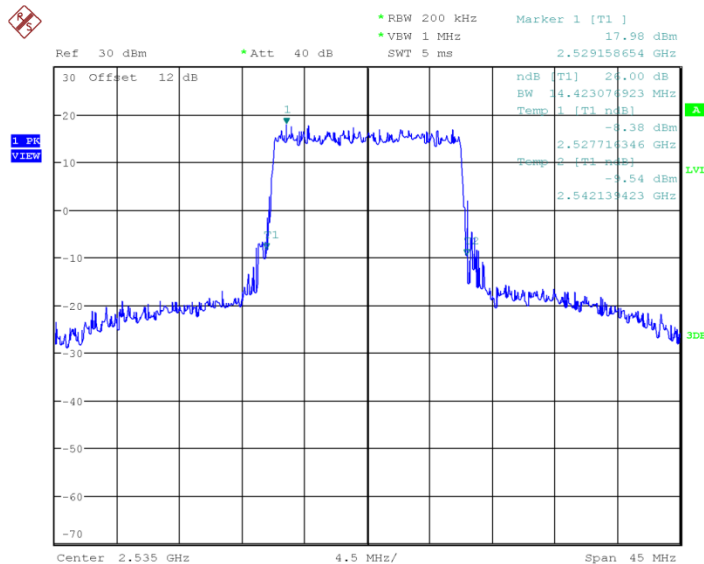
## LTE band 7, 15MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	2535.0	QPSK
14928		14423



Date: 20.JAN.2003 05:22:11

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

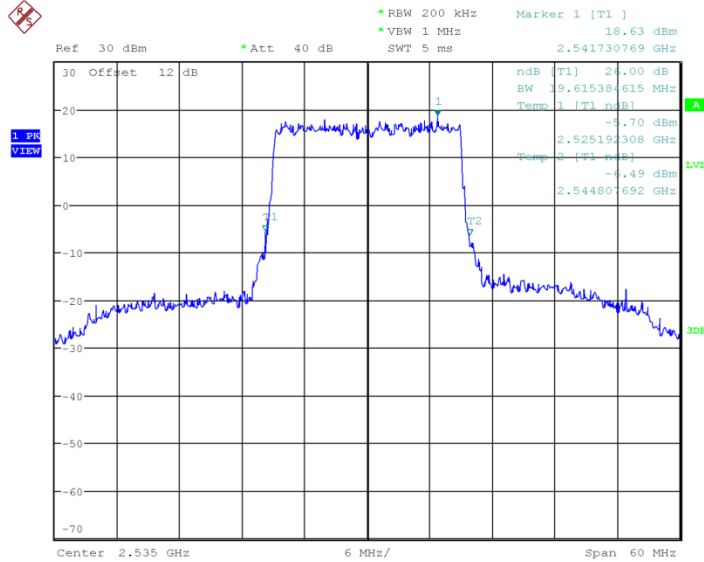


Date: 20.JAN.2003 05:22:24

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

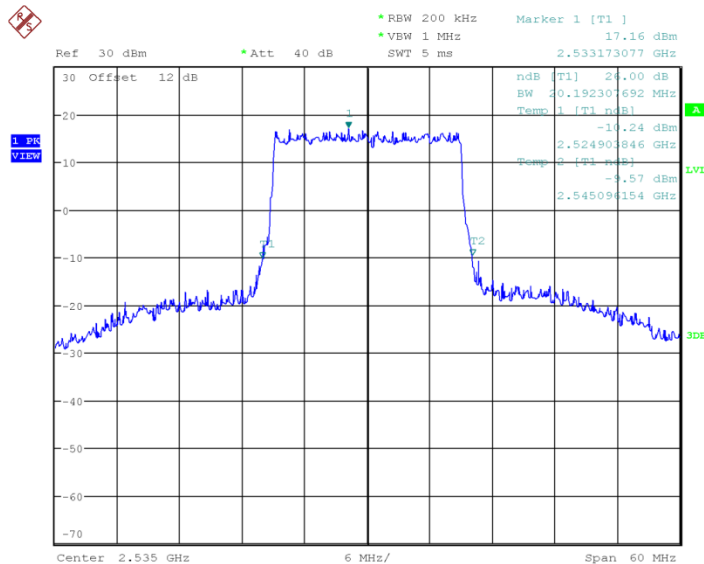
## LTE band 7, 20MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
2535.0	19615	20192



Date: 20.JAN.2003 05:22:43

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

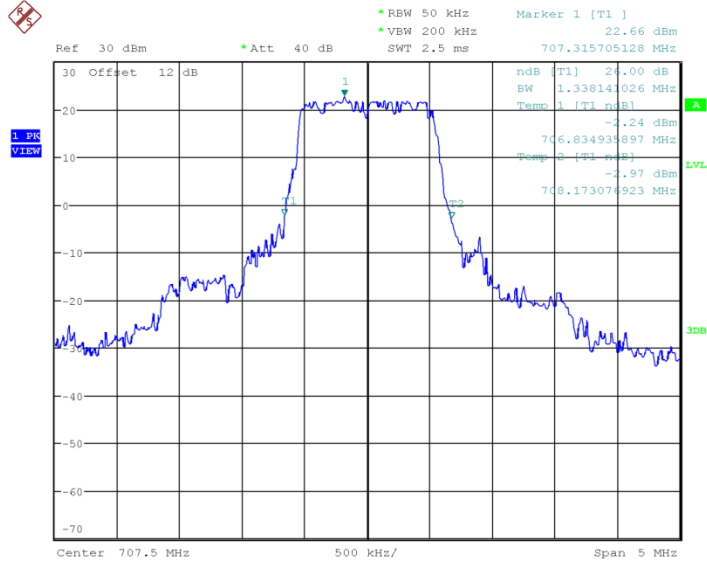


Date: 20.JAN.2003 05:22:56

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

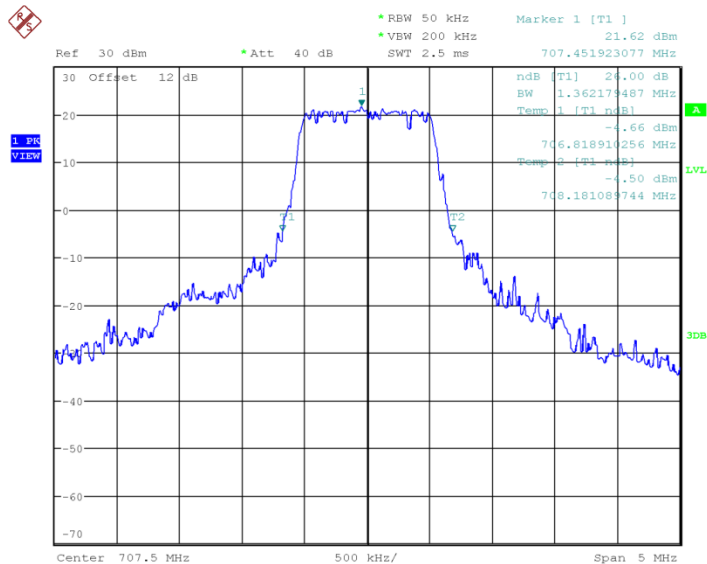
## LTE band 12, 1.4MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
707.5	1338	1362



Date: 20.JAN.2003 05:31:14

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

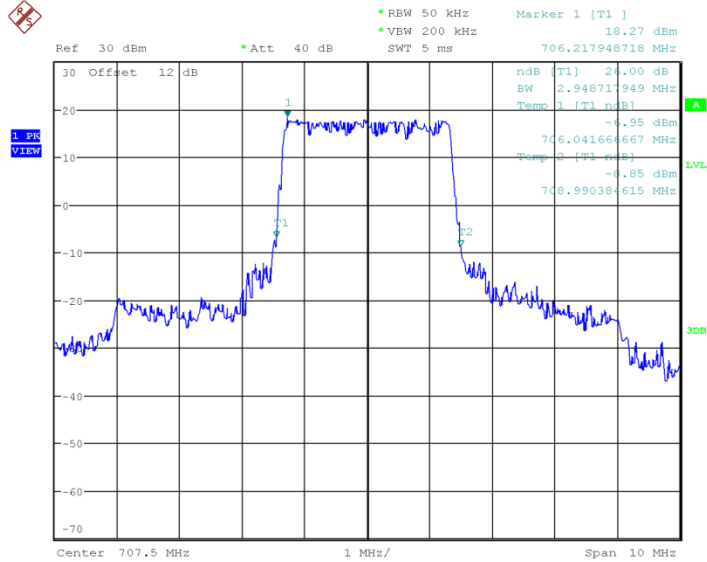


Date: 20.JAN.2003 05:31:31

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

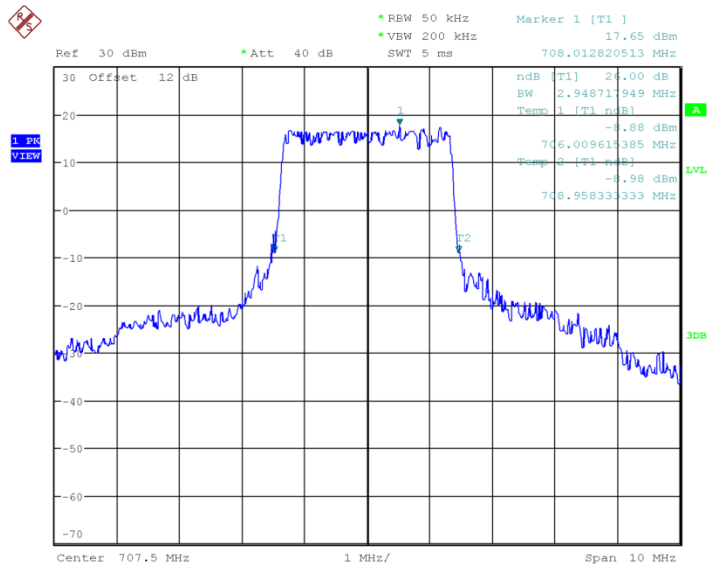
## LTE band 12, 3MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
707.5	2949	2949



Date: 20.JAN.2003 05:25:50

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



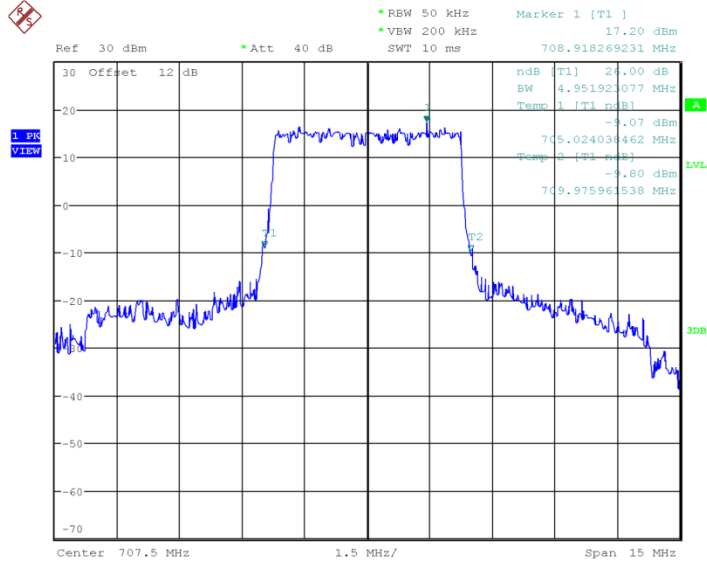
Date: 20.JAN.2003 05:26:12

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



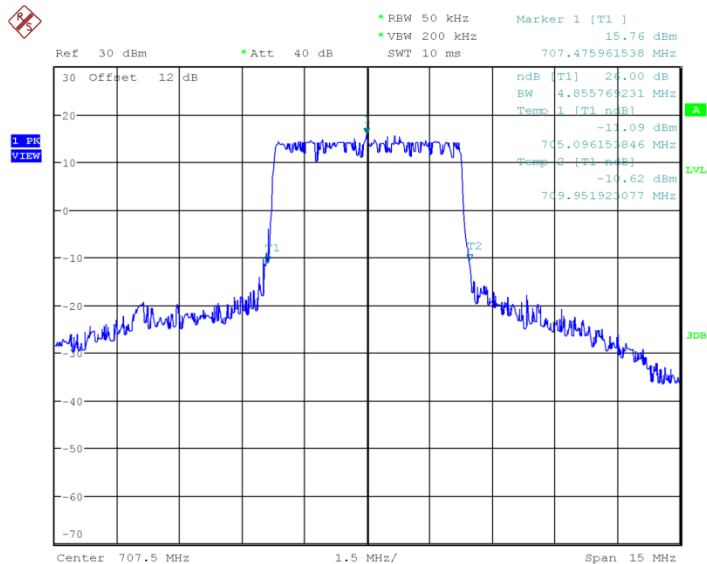
## LTE band 12, 5MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
707.5	4952	4856



Date: 20.JAN.2003 05:26:35

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

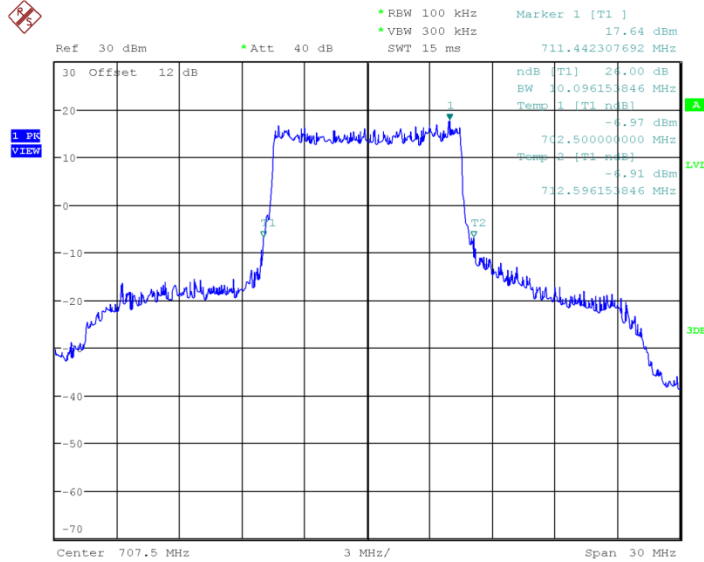


Date: 20.JAN.2003 05:26:54

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

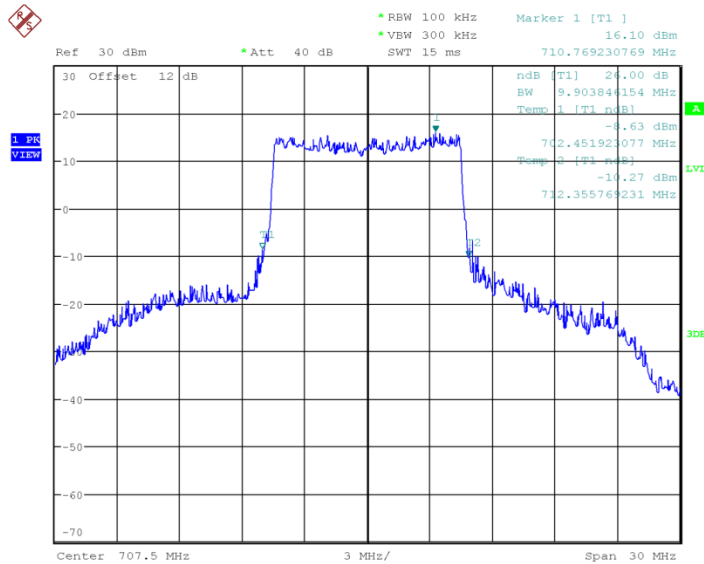
## LTE band 12, 10MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)( kHz)	
	QPSK	16QAM
707.5	10096	9904



Date: 20.JAN.2003 05:27:12

## LTE band 12, 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 20.JAN.2003 05:27:25

## 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  $43+10\log(P)$  dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

According to KDB 971168 6.0, 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.

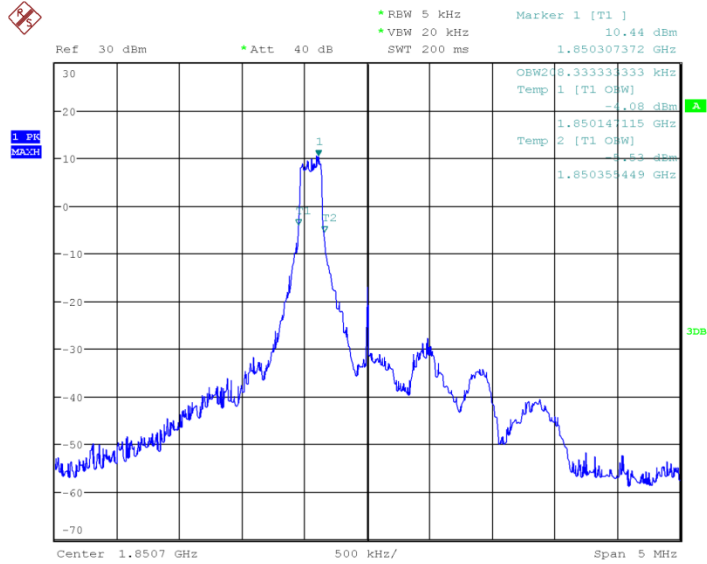
Part 27.53(m) states that for mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log(P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log(P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel 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

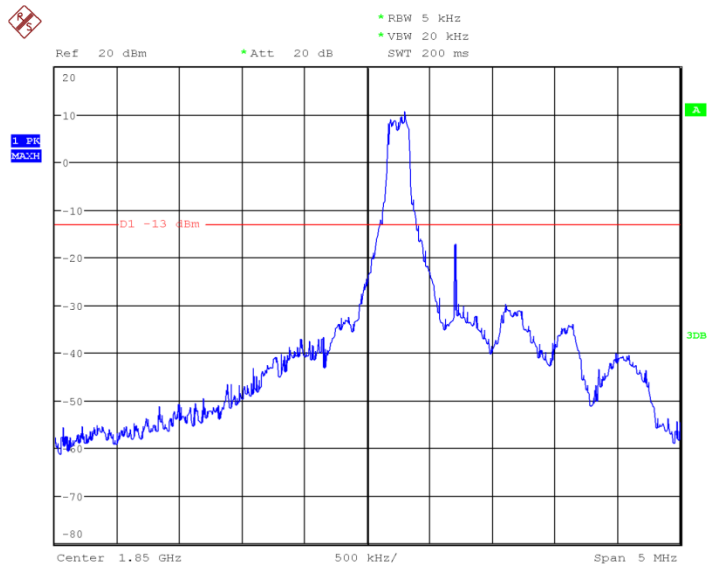
LTE band 2

OBW: 1RB-low\_offset



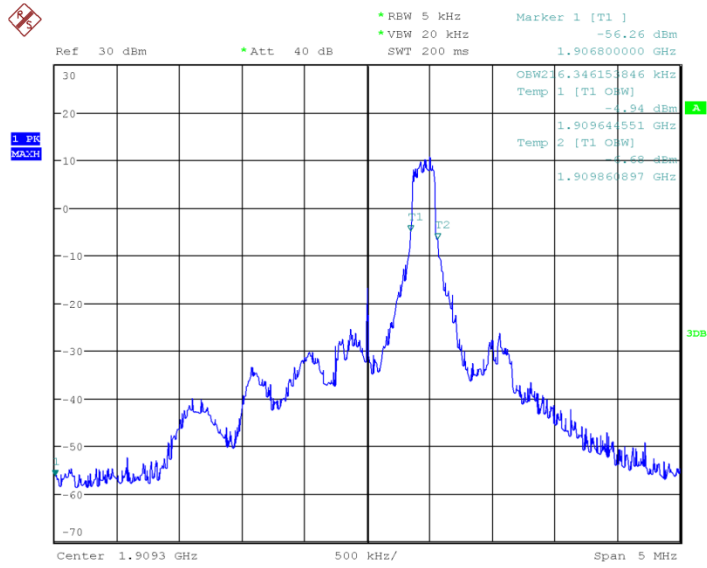
Date: 21.JAN.2003 03:06:26

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



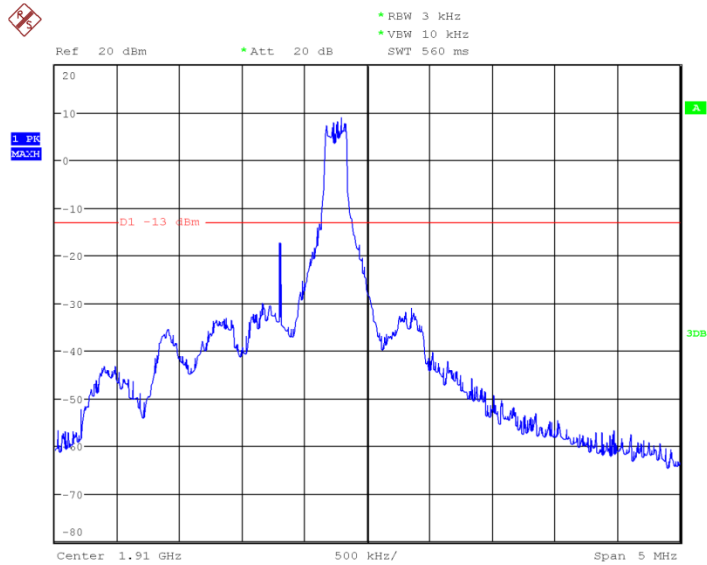
Date: 21.JAN.2003 03:06:48

## OBW: 1RB-high\_offset



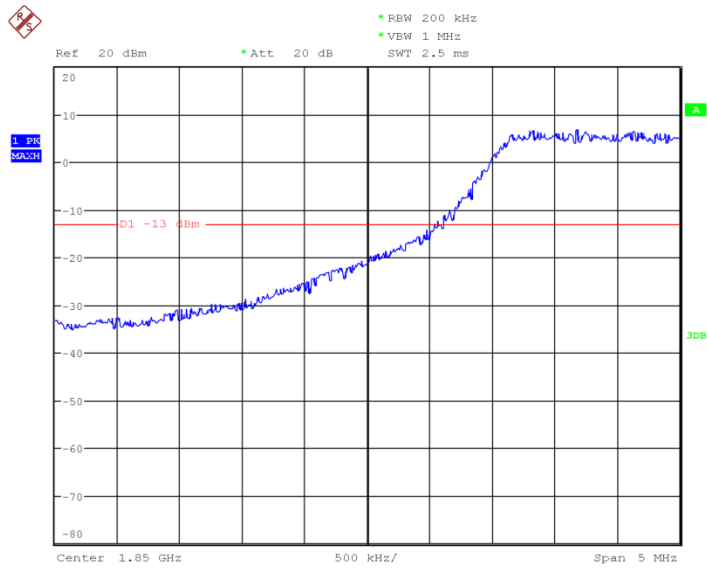
Date: 8.AUG.2017 16:34:37

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



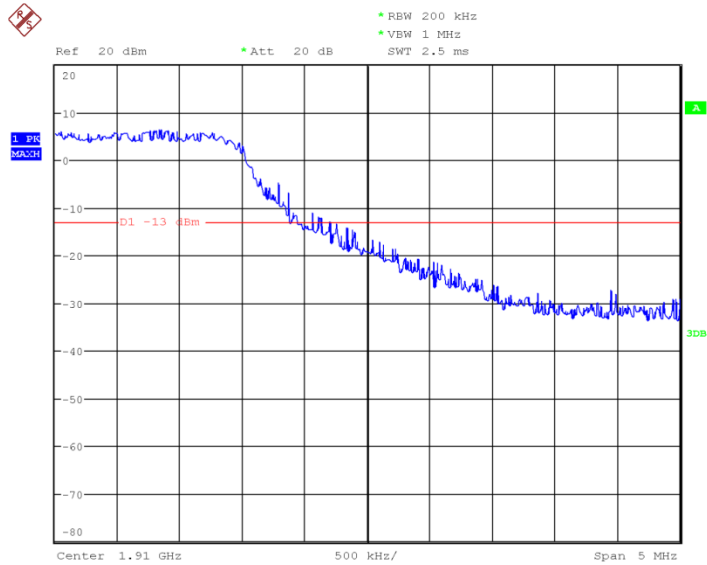
Date: 8.AUG.2017 16:34:59

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



Date: 20.JAN.2003 06:45:21

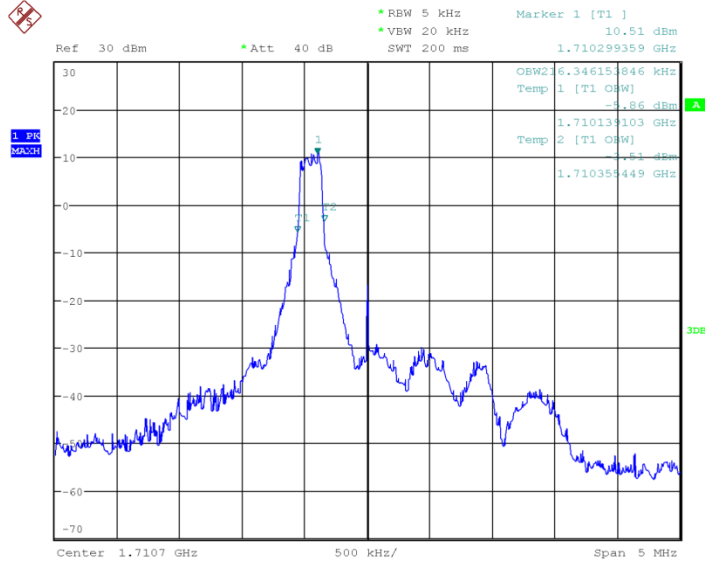
## HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 20.JAN.2003 06:46:35

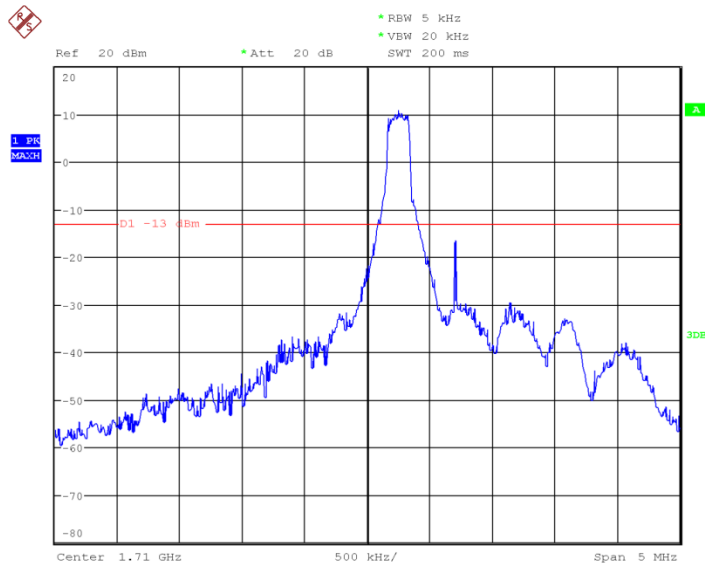
## LTE band 4

### OBW: 1RB-low\_offset



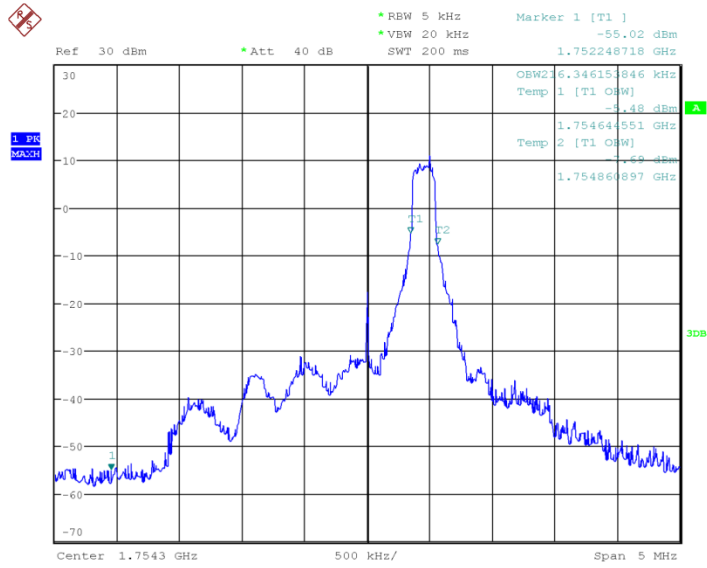
Date: 21.JAN.2003 03:09:03

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



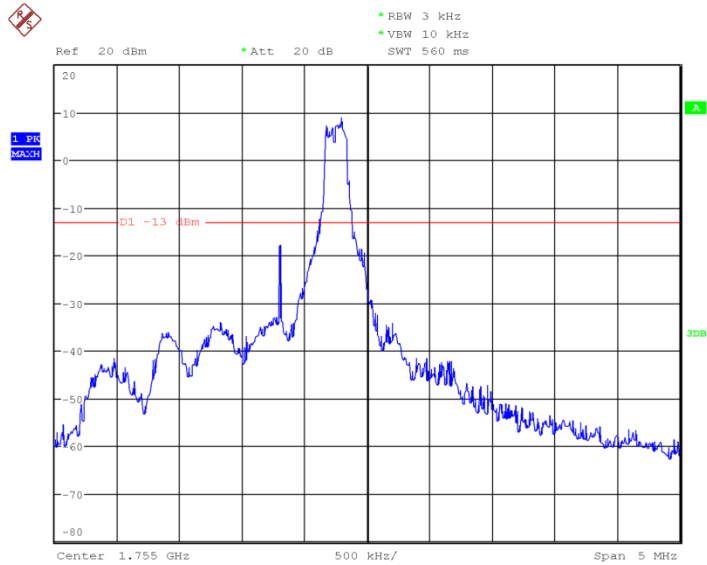
Date: 21.JAN.2003 03:09:25

## OBW: 1RB-high\_offset



Date: 8.AUG.2017 16:37:37

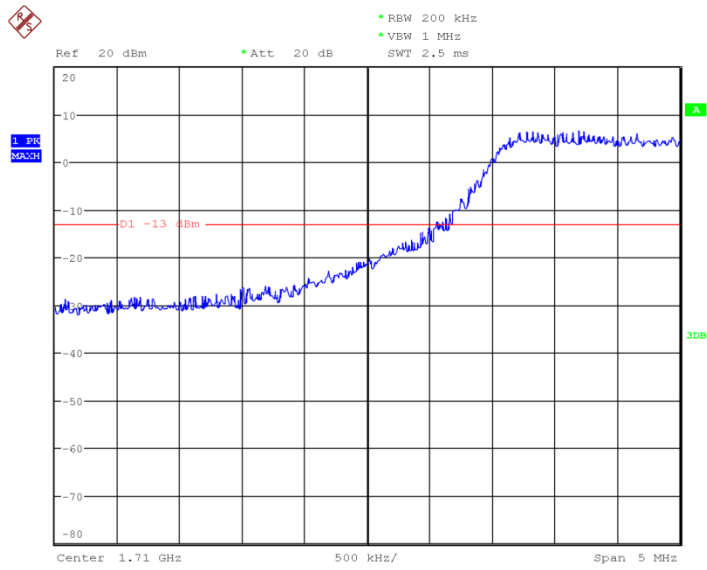
## HIGH BAND EDGE BLOCK-1RB-high\_offset



Date: 8.AUG.2017 16:37:59

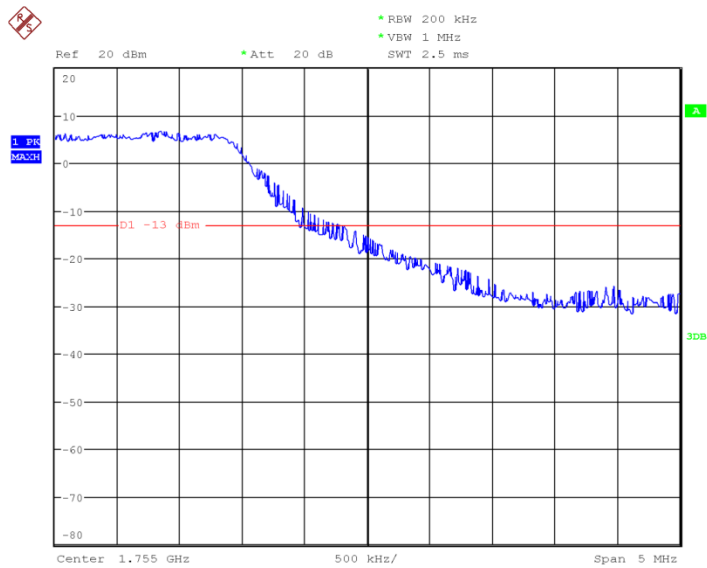


## LOW BAND EDGE BLOCK-20MHz-100%RB



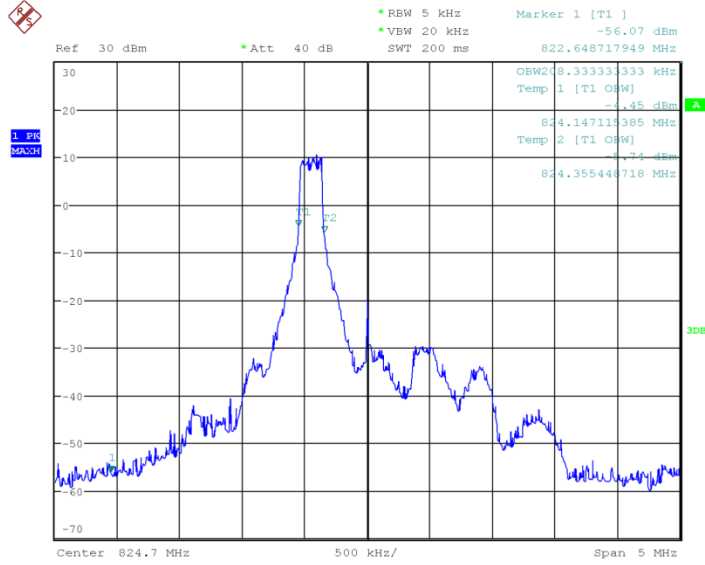
Date: 21.JAN.2003 03:09:57

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



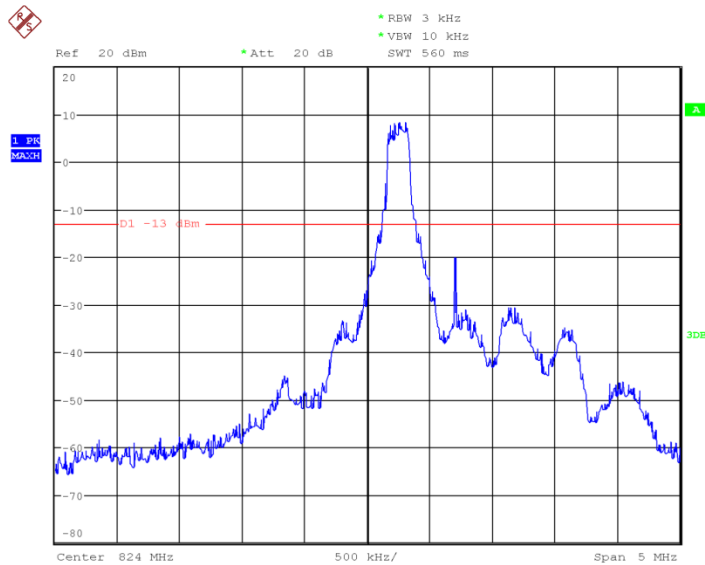
Date: 21.JAN.2003 03:11:11

## LTE band 5 OBW: 1RB-low\_offset



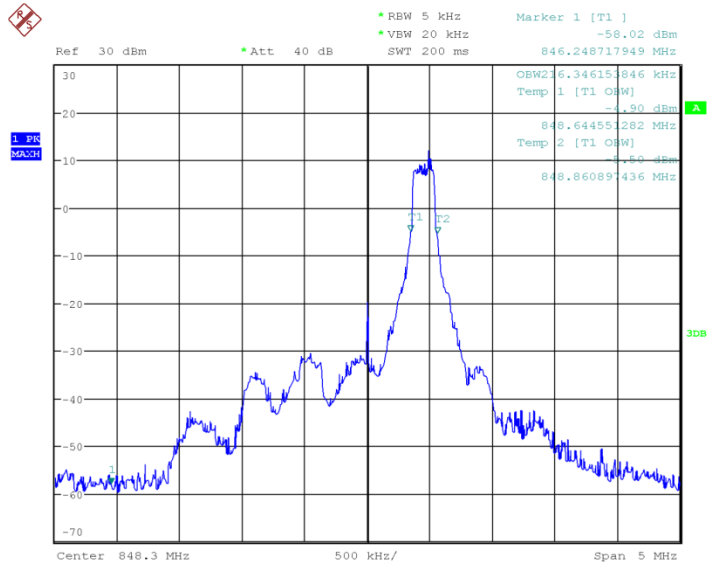
Date: 8.AUG.2017 16:55:28

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



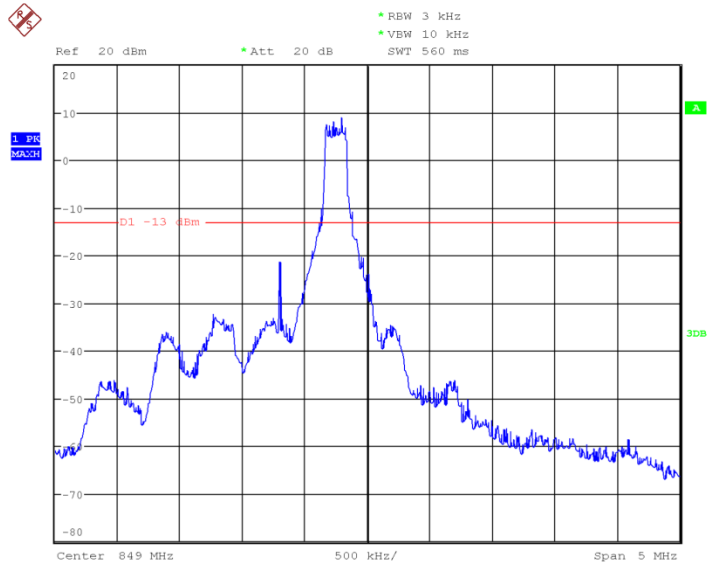
Date: 8.AUG.2017 16:55:50

## OBW: 1RB-high\_offset



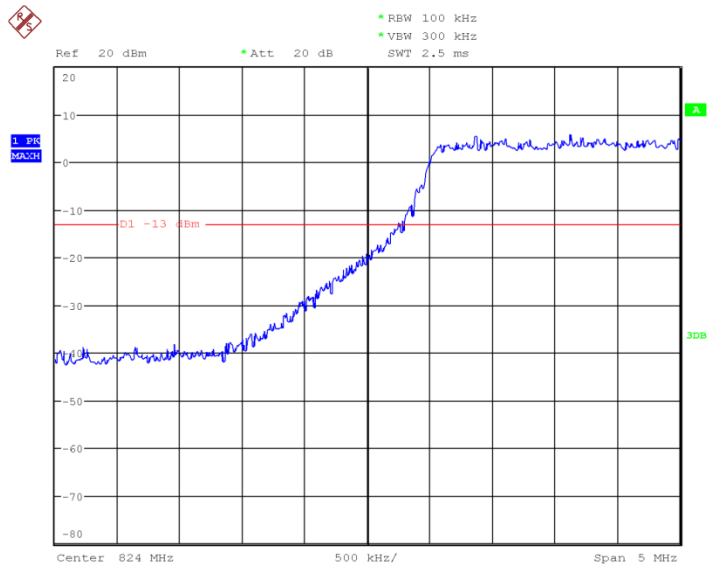
Date: 8.AUG.2017 16:42:21

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



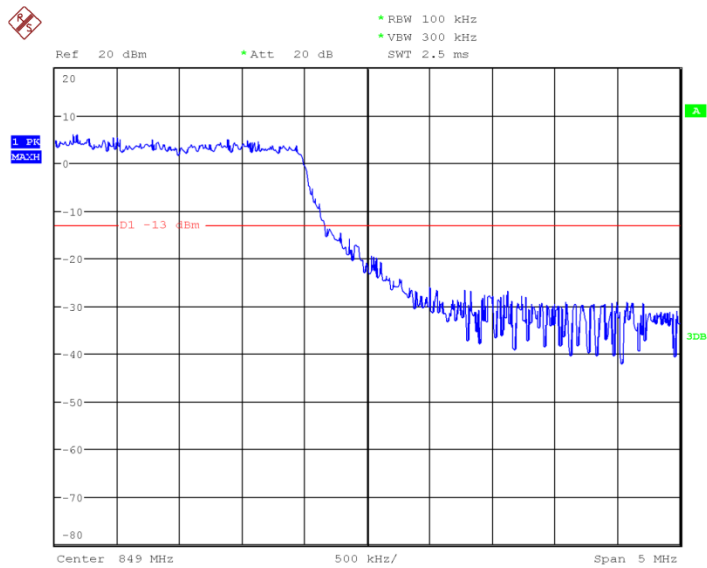
Date: 8.AUG.2017 16:42:43

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



Date: 20.JAN.2003 06:52:33

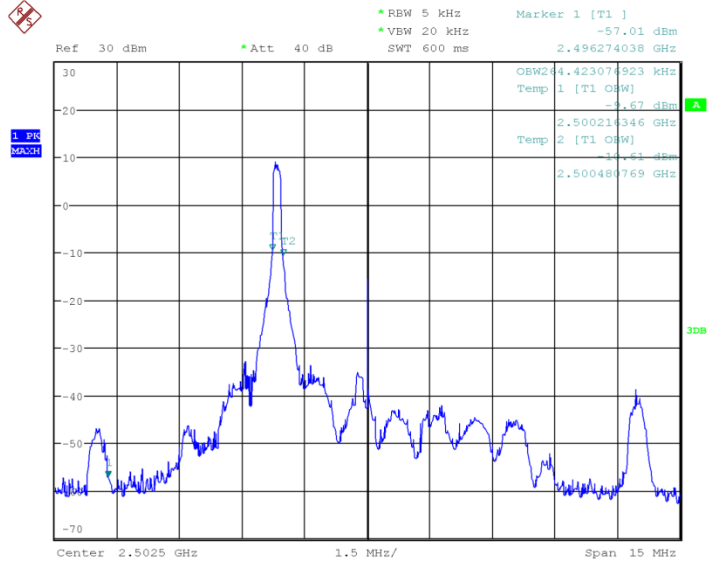
## HIGH BAND EDGE BLOCK-QPSK-10MHz-100%RB



Date: 20.JAN.2003 06:53:46

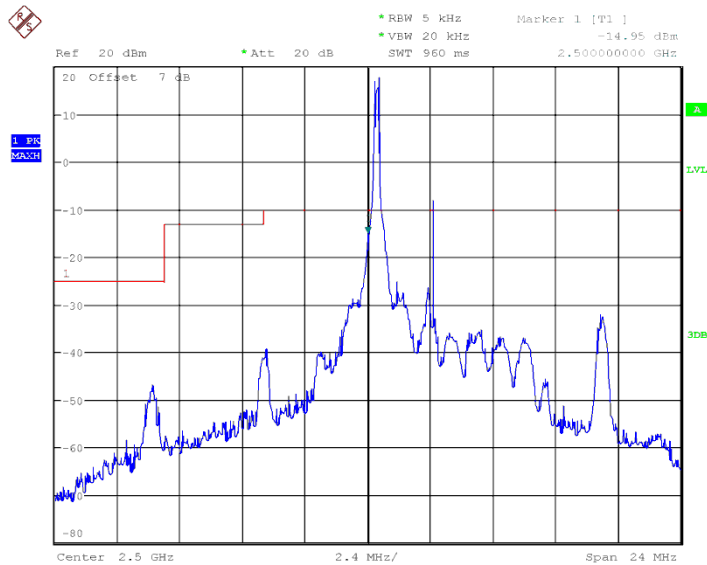
## LTE band 7

### OBW: 1RB-low\_offset



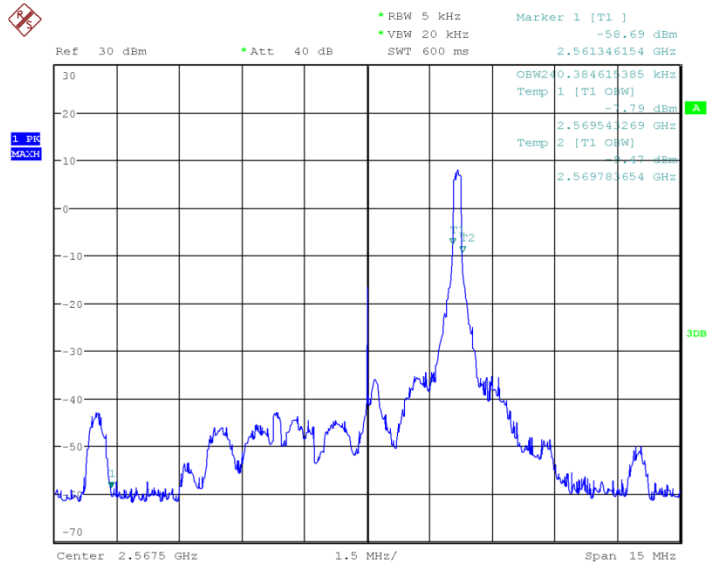
Date: 8.AUG.2017 16:43:44

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



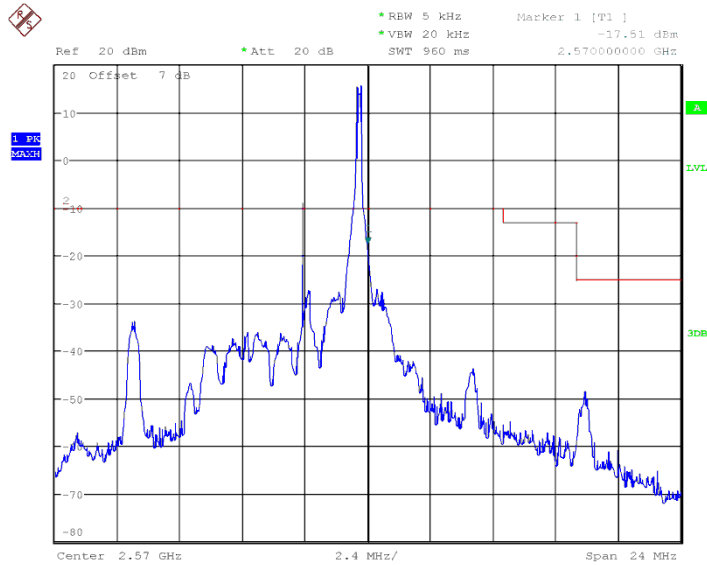
Date: 15.SEP.2017 19:58:02

## OBW: 1RB-high\_offset



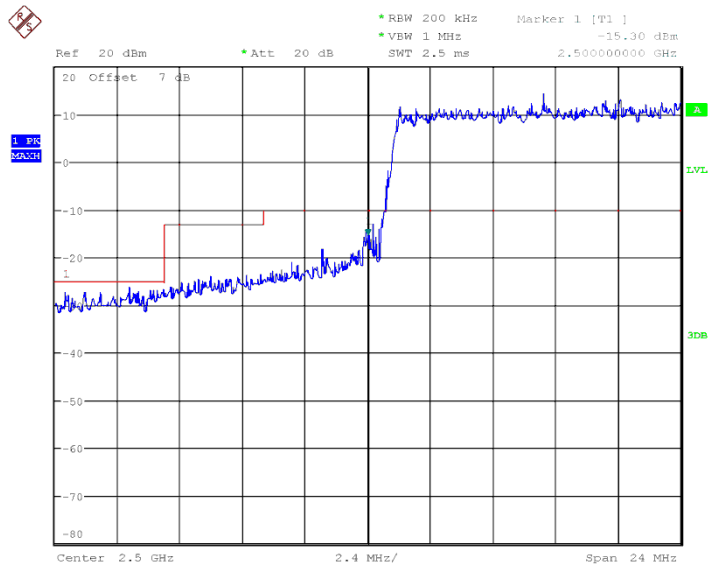
Date: 8.AUG.2017 16:45:08

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



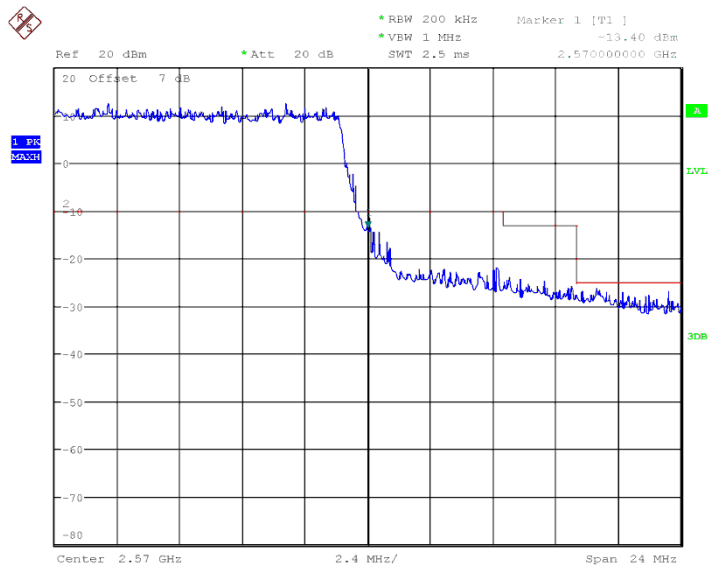
Date: 15.SEP.2017 19:56:21

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



Date: 15.SEP.2017 20:03:50

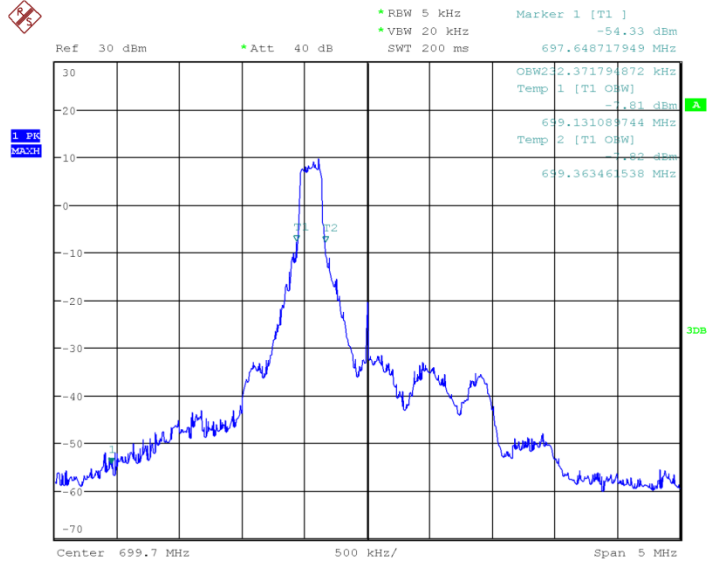
## HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 15.SEP.2017 20:06:49

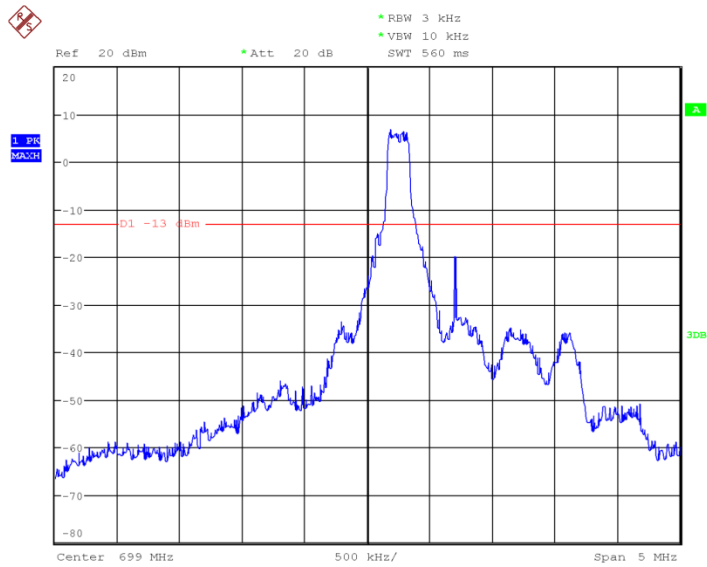
## LTE band 12

### OBW: 1RB-low\_offset



Date: 8.AUG.2017 16:58:15

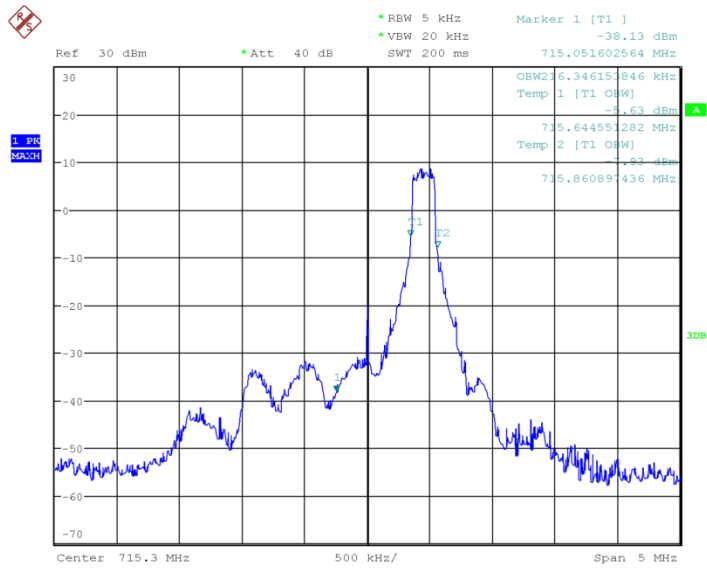
### LOW BAND EDGE BLOCK-1RB-low\_offset



Date: 8.AUG.2017 16:58:37

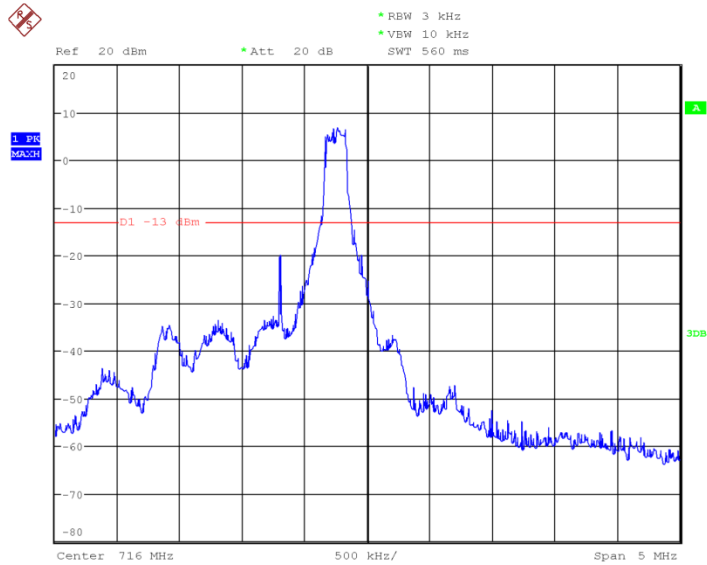


## OBW: 1RB-high\_offset



Date: 8.AUG.2017 16:52:24

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



Date: 8.AUG.2017 16:52:46



## **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.

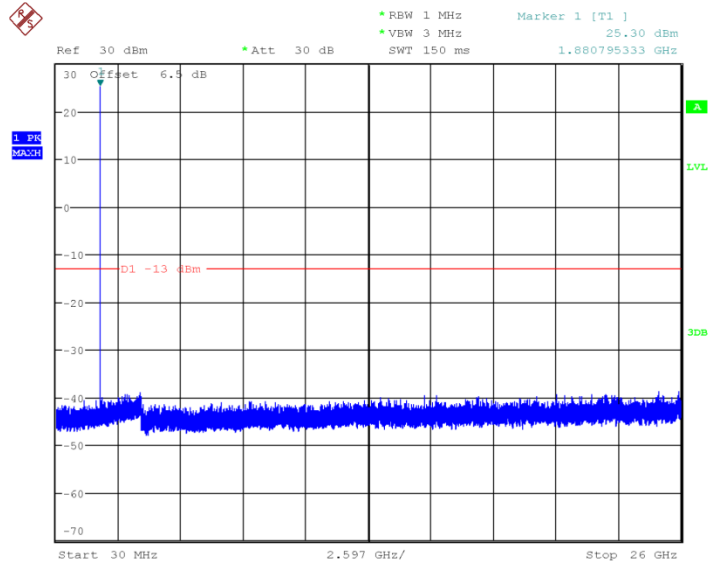
Part 27.53(m)(4) specifies for mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel 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

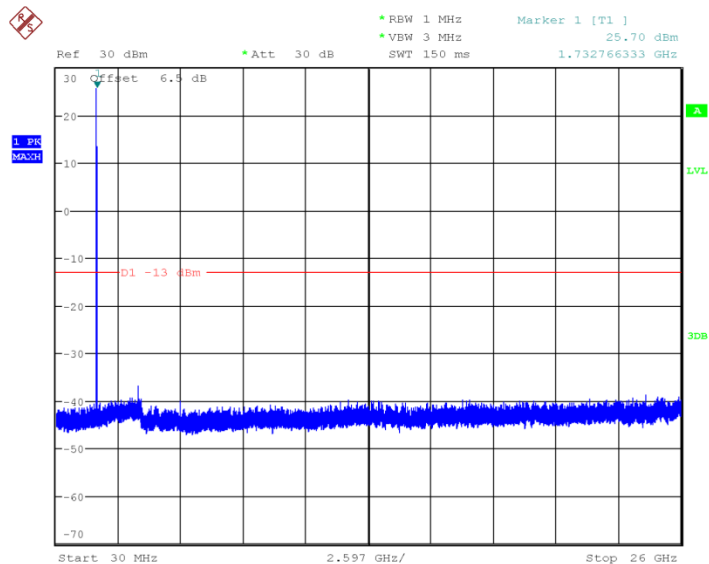
Spurious emission limit -13dBm.



Date: 6.SEP.2017 16:19:56

### LTE band 4: 30MHz – 20GHz

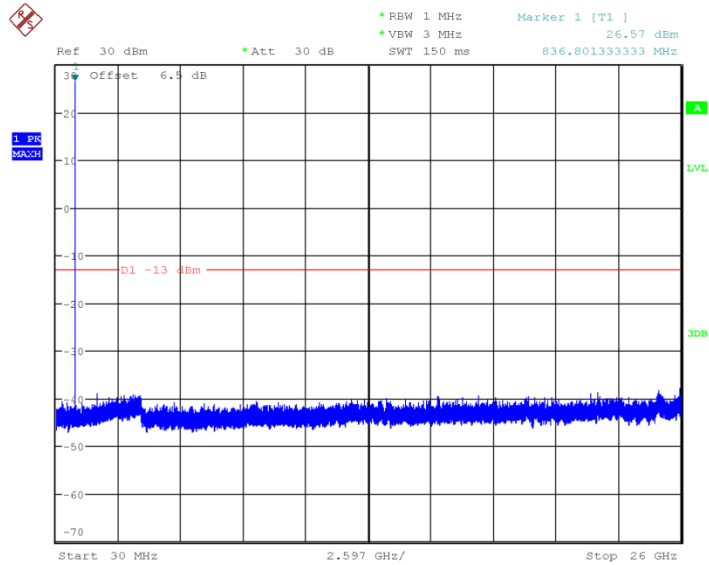
Spurious emission limit -13dBm.



Date: 6.SEP.2017 16:20:22

## LTE band 5: 30MHz – 10GHz

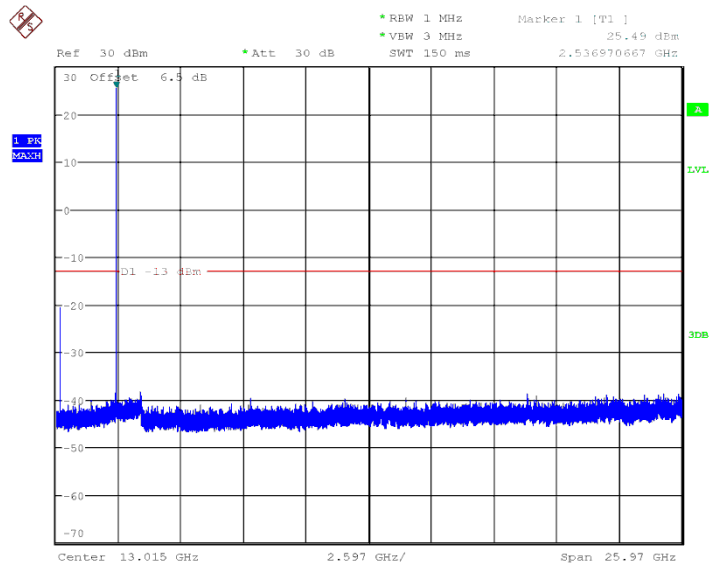
Spurious emission limit –13dBm.



Date: 6.SEP.2017 16:20:48

## LTE band 7: 30MHz – 26GHz

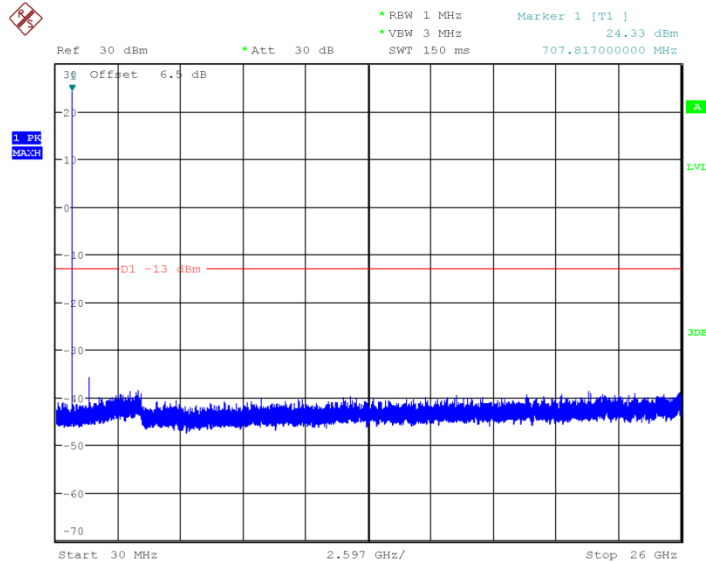
Spurious emission limit –13dBm.



Date: 6.SEP.2017 16:29:41

## LTE band 12: 30MHz – 10GHz

Spurious emission limit –13dBm.



Date: 6.SEP.2017 16:23:19

## 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 v02r02 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  $\geq$  signal's occupied bandwidth;
- c) Set the number of counts to a value that stabilizes the measured CCDF curve;
- d) Set the measurement interval to 1 ms
- e) Record the maximum PAPR level associated with a probability of 0.1%

### A.8.1 Measurement limit

not exceed 13 dB

**A.8.2 Measurement results**
**LTE band 2, 20MHz**

Frequency(MHz)	PAPR(dB)	
1860.0	QPSK	16QAM
	5.90	6.98

**LTE band 4, 20MHz**

Frequency(MHz)	PAPR(dB)	
1745.0	QPSK	16QAM
	4.98	6.66

**LTE band 5, 10MHz**

Frequency(MHz)	PAPR(dB)	
836.5	QPSK	16QAM
	4.98	6.66

**LTE band 7, 20MHz**

Frequency(MHz)	PAPR(dB)	
2510.0	QPSK	16QAM
	6.79	7.31

**LTE band 12,10MHz**

Frequency(MHz)	PAPR(dB)	
707.5	QPSK	16QAM
	4.99	6.05

## **ANNEX B. Deviations from Prescribed Test Methods**

No deviation from Prescribed Test Methods.

**\*\*\*\*\*End The Report\*\*\*\*\***