

ANNEX A.4. OCCUPIED BANDWIDTH

Reference

FCC: CFR Part 2.1049(h) (i)

A.4.1 Occupied Bandwidth Results

Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the US Cellular/PCS frequency bands. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

The measurement method is from KDB 971168 4:

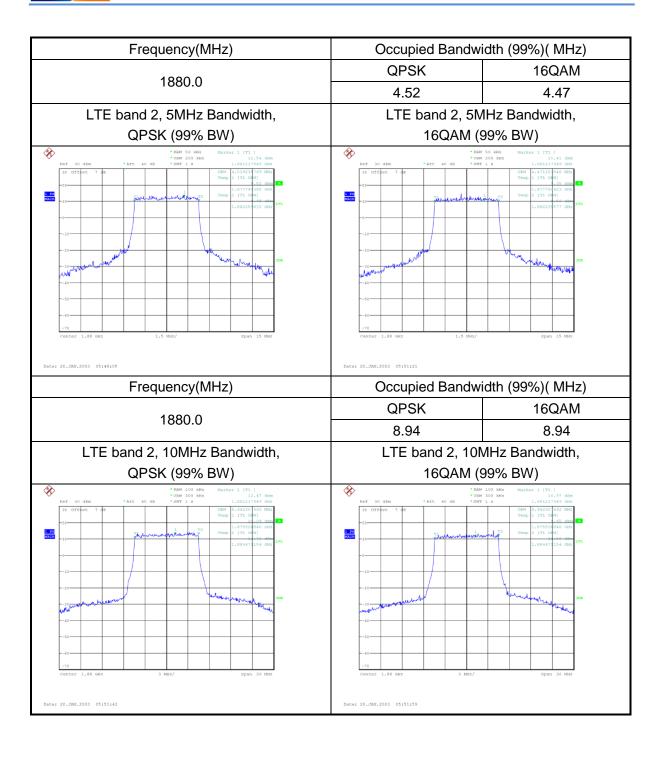
- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.
- d) Set the detection mode to peak, and the trace mode to max hold.
- e) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.



Occupied Bandwidth Measurement Results:

LTE t	pand 2	
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1880.0	QPSK 16QAM	
1880.0	1.09 1.09	
LTE band 2, 1.4MHz Bandwidth,	LTE band 2, 1.4MHz Bandwidth,	
QPSK (99% BW)	16QAM (99% BW)	
* PRHV 20 MHz * ATE 40 dB * SVPY 1 s 1.07772272 GHz 38 Offwet 7 dB	*ARE 30 dBm *AEE 40 dB *3071 3 mm 1.97732372 dBs 1.	
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1880.0	QPSK 16QAM 2.69 2.69	
LTE band 2, 3MHz Bandwidth,	LTE band 2, 3MHz Bandwidth,	
QPSK (99% BW)	16QAM (99% BW)	
*PAW 30 kHz Marker 1 [Tl] *YEW 100 kHz 12,00 dmm	*RBW 30 kHz Marker 1 [T1] *YBW 100 kHz 10.59 dRes	
Neg 30 dim	Net 30 date	
-150 -160 -160 -170 -170 -170 -170 -170 -170 -170 -17	506070 Center 1.86 GHz 1 184z/ Span 10 MHz	







Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1880.0	QPSK 16QAM	
	13.56 13.56	
LTE band 2, 15MHz Bandwidth,	LTE band 2, 15MHz Bandwidth,	
QPSK (99% BW)	16QAM (99% BW)	
*RBM 200 kMz Marker 1 [71] *VSM 1 NSE	* PRH 200 MRs Marker 1 [TI] * VINH 1 MRC 10 MRs * 1.0 (1 dim * Not 30 dim * Att 40 dB * 45W7 1 s 1.0 (127949 GHz 30 Off et 7 dB OBW 3.557654 308 MRs	
Temp 1 (171 cells) 4.6 de service de servic	Temp 1 (TZ 04)	
1880.0	QPSK 16QAM	
	17.89 17.98	
LTE band 2, 20MHz Bandwidth,	LTE band 2, 20MHz Bandwidth,	
QPSK (99% BW)	16QAM (99% BW)	
*PRM 200 AME 1 [71] 1 3.26 dim 15.25	** PABM 200 MNe ** MacKer 1 (T1) **YOW 1 Nete** 1 (T1) **PABM 1 Nete** 1 (T1) **PABM 2 (
Date: 20.JNN.2003 05:53:00	Date: 20.JAN.2003 05:53:16	



LTE I	band 4	
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1732.5	QPSK	16QAM
1732.3	1.09	1.09
LTE band 4, 1.4MHz Bandwidth,	LTE band 4, 1.4	MHz Bandwidth,
QPSK (99% BW)	16QAM (
RET 30 dBM **AEE 40 dB **SWT 1 a 1.735000000 dBE 1.7350000000 dBE 1.73500000000 dBE 1.7350000000 dBE 1.73500000000 dBE 1.73500000000 dBE 1.7350000000 dBE 1.73500000000 dBE 1.7350000000 dBE 1.7350000000 dBE 1.73500000000 dBE 1.735000000000000000000000000000000000000		OBW 1.09775410 NHz Temp 1 (T1 OBM) 4.99 dnm 2. 1.73194115 GHz
Frequency(MHz)	Occupied Bandw	idth (99%)(MHz)
4700 5	QPSK	16QAM
1732.5	2.69	2.69
LTE band 4, 3MHz Bandwidth,	LTE band 4, 3N	1Hz Bandwidth,
QPSK (99% BW)	16QAM (99% BW)
** ***********************************		30 Mts
Date: 20.JAN.2003 05:54:18	Date: 20.JAN.2003 05:54:34	



Frequency(MHz)	Occupied Bandw	idth (99%)(MHz)
1722.5	QPSK	16QAM
1732.5	4.50	4.50
LTE band 4, 5MHz Bandwidth,	LTE band 4, 5N	/IHz Bandwidth,
QPSK (99% BW)	16QAM (99% BW)
*PRM 50 MHz 1 [71] 1	* ABA	1 50 Mile Starker 2 (71.) 200 Mile 1.735000000 GHz 1.735000000 GHz 1.735000000 GHz 7mmp 1 (71.0MH) 2.735000000 GHz 7mmp 2 (71.0MH) 2.735000000 GHz 2.735000000 GHz 2.735000000 GHz 2.735000000 GHz 2.7350000000 GHz 2.735000000000000000000000000000000000000
Frequency(MHz)	Occupied Bandw	idth (99%)(MHz)
4700.5	QPSK	16QAM
1732.5	8.94	8.94
LTE band 4, 10MHz Bandwidth, QPSK (99% BW)	LTE band 4, 10MHz Bandwidth, 16QAM (99% BW)	
PART 100 MHz **PART 100 MHz** **BRC 30 GBm** **ARC 40 GB** **JRV7 1.8 1.735000000 GBc 138 Off-ect 7 B 10	* VB8	1 100 Mar Maximur 1 (T1) 300 Mar 1,3,27 dm 1,73,000,000 Max 2 0 1,730,000,000 Max Twop 1 (T1 own) 1,730,000,000 Max T2 Temp 2 (T1 own) 1,730,000,000 Max 1,730,000,000 Max 1,730,000,000 Max 1,730,000,000 Max 300 300 300 300 300 300 300 3



Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1722 5	QPSK	16QAM
1732.5	13.56	13.49
LTE band 4, 15MHz Bandwidth,	LTE band 4, 15N	ИНz Bandwidth,
QPSK (99% BW)	16QAM (9	99% BW)
# FAM 200 MHz		200 Mis Marker 1 [T] 1 Mer 11-200 dies 1 1 2 3 dies 1 1 2 3 2 3 2 3 3 2 3 2 3 2 3 2 3 2 3 2
Frequency(MHz)	Occupied Bandwi	dth (99%)(MHz)
4722.5	QPSK	16QAM
1732.5	17.89	17.89
LTE band 4, 20MHz Bandwidth,	LTE band 4, 20N	//Hz Bandwidth,
QPSK (99% BW)	16QAM (99% BW)	
# PARK 200 MHz		OBW 17.98076 231 NRts Temp 1 [T1 OBW] 1.106 dBm A 1.72355 692 GRs



LTE	band 5	
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
836.5	QPSK	16QAM
030.3	1.09	1.10
LTE band 5, 1.4MHz Bandwidth,	LTE band 5, 1.4	MHz Bandwidth,
QPSK (99% BW)		(99% BW)
** PART 200 MNE ** PART 200 MN	Ref 30 dBm *Att 40 dB *3	DM 20 Mer 100 Mer 101 - 26.06 dim 101 - 26.06
Frequency(MHz)	Occupied Bandy	vidth (99%)(MHz)
836.5	QPSK	16QAM
	2.69	2.69
LTE band 5, 3MHz Bandwidth,		MHz Bandwidth,
QPSK (99% BW)	16QAM (99% BW)	
** **PRY 100 MHz** ** ** ** ** ** ** ** ** ** ** ** **		BM 30 Mer. MacNet 1 (77.) 4-3.46 diss mat 100 Mer. 82.1-000 (color) Mer. 98 (2.000 (color)



Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
836.5	QPSK	16QAM
630.5	4.47	4.47
LTE band 5, 5MHz Bandwidth,	LTE band 5, 5	MHz Bandwidth,
QPSK (99% BW)	16QAM (99% BW)	
* ** *** **** **** **** ***** ***** ****	**PAM 50 MHz	
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
836.5	QPSK	16QAM
LTE band 5, 10MHz Bandwidth,	9.03 8.94 LTE band 5, 10MHz Bandwidth,	
QPSK (99% BW) *PBM 100 MHz Machine 1 [71.]	<i>⊗</i> .	(99% BW) RBM 100 kHz Marker 1 [T1]
# VRM 300 bits		780 300 MHz -12.73 dBm 841,5000000000000000000000000000000000000



LTE	band 7	
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
2535.0	QPSK	16QAM
2333.0	4.49	4.47
LTE band 7, 5MHz Bandwidth,	LTE band 7, 5M	Hz Bandwidth,
QPSK (99% BW)	16QAM (9	
**PRW 50 MHz	** ** ** ** ** ** ** ** ** ** ** ** **	200 kHz -34.02 dBm
Frequency(MHz)	Occupied Bandwi	dth (99%)(MHz)
2535.0	QPSK	16QAM
2555.0	8.99	8.99
LTE band 7, 10MHz Bandwidth,	LTE band 7, 10M	
QPSK (99% BW) ***********************************	16QAM (9	9% BW)
YOW 300 MHz	** *********************************	300 kHz -25.59 dBm
Date: 20.JAN.2003 06:02:48	Date: 20 JAN 2002 06:03-04	
uste: 20unn.2003 08:02:48	Date: 20.JAN.2003 06:03:04	



Frequency(MHz)	Occupied Bandwidth (99%)(MHz)
2535.0	QPSK 16QAM
	13.36 13.36
LTE band 7, 15MHz Bandwidth,	LTE band 7, 15MHz Bandwidth,
QPSK (99% BW)	16QAM (99% BW)
* FRW 200 MHz	* PAWM 200 kMz Marker 1 [T]] * YWH 1 19856.86 dbm Ref 30 dbm * Att 40 db * SWT 1s 2.25750000 GHz
38 Office 7 8	38 Offwet 7
0505.0	QPSK 16QAM
2535.0	18.07 18.07
LTE band 7, 20MHz Bandwidth,	LTE band 7, 20MHz Bandwidth,
QPSK (99% BW)	16QAM (99% BW)
*PRM 200 AME 1 [71] 1 33.56 dim 23.56 dim 25.575 dim 25	* PRM 200 AND * Not 10.61 SBm PME 30 dBm * ARE 40 dB * SWF 1 B - 20
Date: 20.JAN.2003 06:04:02	Date: 20.JAN.2003 06:04:18



LTE b	and 12	
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
707.5	QPSK	16QAM
101.5	1.09	1.09
LTE band 12, 1.4MHz Bandwidth,	LTE band 12, 1.4	MHz Bandwidth,
QPSK (99% BW)	16QAM (
*PRIM 70 MHz - 41.19 dime - 41.		20 MHz
Frequency(MHz)	Occupied Bandw	idth (99%)(MHz)
707.5	QPSK	16QAM
101.5	2.69	2.68
LTE band 12, 3MHz Bandwidth,	LTE band 12, 3	MHz Bandwidth,
QPSK (99% BW)	16QAM (
*PRM 30 MHz		100 kHz -40.10 dBm
Date: 20.JAN.2003 06:06:39	Date: 20.JAN.2003 06:06:55	



Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
707.5	QPSK	16QAM
	4.49	4.47
LTE band 12, 5MHz Bandwidth,	LTE band 12, 5	MHz Bandwidth,
QPSK (99% BW)	16QAM (99% BW)	
**RANK 50 888 **AEE 40 GB **SNY 1 8 **T12.000000000 9888 Nef 30 dism **AEE 40 GB **SNY 1 8 **T12.000000000 9888 30 Offeet 7 48 **T12.000000000 9888 T12.000000000 9888 T12.000000000 9888 T12.000000000 9888 T12.000000000 9888 T12.000000000 9888 T12.000000000 9888 T12.0000000000 9888 T12.0000000000 9888 T12.000000000 9888 T12.0000000000 9888 T12.00000000000 9888 T12.00000000000 9888 T12.00000000000 9888 T12.000000000000 9888 T12.00000000000 9888 T12.00000000000 9888 T12.000000000000 9888 T12.00000000000 9888 T12.000000000000 9888 T12.000000000000000000000000000000000000	* A1	W 50 ANE MacNor 1 [72] J W 200 MHz 72.2-65.54 dlim 72.1 a 72.2-600000000 Helt 72.1 a 72.2-600000000 Helt 72.2 a 72.2-6000000000 Helt 72.2 a 72.2-6000000000 Helt 72.2 a 72.2-60000000000 Helt 72.2 a 72.2-600000000000000000000000000000000000
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
707 5	QPSK	16QAM
707.5	9.04	9.04
LTE band 12, 10MHz Bandwidth, QPSK (99% BW)	LTE band 12, 10MHz Bandwidth, 16QAM (99% BW)	
**PRI 100 MHz	* VI	MI 100 MHz Marker 1 (T.) Machine 1 - 11.14 dim MI 300 MHz T12.500000000 1015 T12.500000000 1015 T02.500000000 1015 T02.500000000 1015 T02.5000000000 1015 T02.5000000000000 T02.500000000000000 T02.500000000000000000000000000000000000



ANNEX A.5. EMISSION BANDWIDTH

Reference

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

A.5.1Emission Bandwidth Results

East China Institute of Telecommunications

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.



Emission Bandwidth Measurement Results:

LTE	band 2	
Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
1880.0	QPSK	16QAM
1000.0	1.39	1.35
LTE band 2, 1.4MHz Bandwidth,	LTE band 2, 1.4l	MHz Bandwidth,
QPSK (-26dBc BW)	16QAM (-2	6dBc BW)
*Att 40 dB *Att 40 dB *BY7 2.5 me 1.87993346 dBt 1.9621 dB 9041	* ABM	50 Min Macker 2 (71) 200 Min 1801/6022 GHz 2.5 Me 1.0801/6022 GHz 2.5 Me 1.08062 GHz 2.6 GHz 2.7 Min 1.0 Hz 2.7 Min 1.0 Hz 2.8 Min 1.0 Hz 2.9 Min 1.0 Hz 2.0 Min 1.0 Hz 2.
Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
1880.0	QPSK 2.98	16QAM 2.99
LTE band 2, 3MHz Bandwidth,	LTE band 2, 3M	
QPSK (-26dBc BW)	16QAM (-2	
* RBW 50 kHz Marker 1 [Tl] * YBW 200 kHz 21.86 dBm	* RBW * VBW	50 kHz Marker 1 [T1] 200 kHz 19.84 dBm
PACE 40 GB SWY 5 PM 1.000336533 GHz 38 Office 12 GB 1	10	5 mm 1.07542002 GHE 1.0754200
Date: 20.JAN.2003 05:10:14	Date: 20.JAN.2003 05:10:30	



Frequency(MHz)	Occupied Bandwidt	h (-26dBc)(MHz)
1880.0	QPSK	16QAM
1000.0	4.97 4.90	
LTE band 2, 5MHz Bandwidth,	LTE band 2, 5MHz Bandwidth,	
QPSK (-26dBc BW)	16QAM (-26dBc BW)	
* PARM 50 ANE * TARY 50 ANE *	* ARM * ART 40 dB * SWY 1 30 Offer 32 dB * ART 40 dB * SWY 1 10	00 kHz 17.11 dBm
Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
1880.0	QPSK 16QAM 9.90 9.90	
LTE band 2, 10MHz Bandwidth,		
QPSK (-26dBc BW)	LTE band 2, 10MHz Bandwidth, 16QAM (-26dBc BW)	
*PBH 100 MRs Harker 1 [T1] *VPM 100 MRs 16.31 dam	* RBH : * VSBH :	.00 kHz Marker 1 [Tl]
Act 40 dB SW7 15 me	Net 30 dim	5 ms 1.883076923 GHz ndB [T1] 24.00 dB BW 9.90364154 HHz Temp 1 [T1 ndB]



Frequency(MHz)	Occupied Bandwid	th (-26dBc)(MHz)
1880.0	QPSK	16QAM
100010	14.64 14.64	
LTE band 2, 15MHz Bandwidth, QPSK (-26dBc BW)	LTE band 2, 15MHz Bandwidth, 16QAM (-26dBc BW)	
*PRM 200 kNz	*PAM** *P	1.875889423 GME ndB
Frequency(MHz)	Occupied Bandwid	th (-26dBc)(MHz)
1880.0	QPSK	16QAM
LTE band 2, 20MHz Bandwidth, QPSK (-26dBc BW)	19.81 19.42 LTE band 2, 20MHz Bandwidth, 16QAM (-26dBc BW)	
* PRM 200 NMz Marker 1 [71] * NMM 1 NME 1,0830 diem * Att 40 dB WPW 1 NME 1,08260280 dBz 10 Offict 12 dB NM 2 NM	* PAM * YEM* * SEC * SE	5 ms 1.883461538 GME ndB [71] 24.00 dB BW 9.423074923 MHz Term: 1 [71 ndB]



LTE b	pand 4	
Frequency(MHz)	Occupied Bandwic	th (-26dBc)(MHz)
1732.5	QPSK	16QAM
1732.3	1.36	1.36
LTE band 4, 1.4MHz Bandwidth,	LTE band 4, 1.4	
QPSK (-26dBc BW)	16QAM (-26dBc BW)	
*ARM 50 MHz 2 (71) 2 23.89 dbm 2 3.40 dbm 2	* ∧BM	1 50 MHz Marker I [71] 2.0 Mer 122.61 dbm 2.5 Me 1.772075921 dets 8 W 1.36277487 90 db 8 W 1.36277487 90 db 1.773187 906 dbt 1.773187 906 dbt 1.773187 10 dbt 1.773187 10 dbt 1.7733197 115 dbt 200 db
Frequency(MHz)	Occupied Bandwid	dth (-26dBc)(MHz)
1732.5	QPSK	16QAM
1702.0	2.99 2.96	
LTE band 4, 3MHz Bandwidth,	LTE band 4, 3MHz Bandwidth,	
QPSK (-26dBc BW)	16QAM (-2	26dBc BW)
**RATE 40 dB	* Page 30 dBm * Att 40 dB 307 30 000 000 12 dB 307 30 000 000 000 000 000 000 000 000	## 10 Mile Marker 1 [TI] 15.19 diss 15.19 diss 15.19 diss 15.19 diss 15.10 diss 1
Date: 20.JNM.2003 05:14:01	Date: 20.JNN.2003 05:14:28	



MHz) M S n,
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Frequency(MHz)	Occupied Bandwid	th (-26dBc)(MHz)
4-00-	QPSK 16QAM	
1732.5	15.22	15.00
LTE band 4, 15MHz Bandwidth,	LTE band 4, 15MHz Bandwidth,	
QPSK (-26dBc BW)	16QAM (-26dBc BW)	
* PRBW 200 MHz Marker 1 [71] * YBW 1 1984 Ref 30 dBm * Att 40 dB dBW 5 mm 1.72759454 GHz	*RBW 200 kHz Marker 1 [71] *VBW 1 NHz 200 class 20.23 diss Ref 30 diss *Att 40 dB SW7 5 ms 1.728398423 SHz	
3e Offet 12 dB	30 Offet 12 dB	ndB [T1] 24.00 dB BW 15.000000000 MHz Temp 1 [T1 ndB]
10 10 10 10 10 10 10 10 10 10 10 10 10 1	20 Missing with way to	-4.30 dBm 1.724857769 GHz Tone 3 (71 n s) -1.76 dBm
1.74014 251 GHz	-0-	1.73985 769 GHE
When the world will be a seen and the seen a	-10-	Marane,
100 Marie 100 Ma	-22 -22 Linghing White Local	WANTED BY WANTED BY WANTED TO THE STATE OF T
40	40	
-50	50	
	60	
Center 1.7325 GHz 4.5 MHz/ Span 45 MHz	Center 1.7325 GHz 4.5 MHz/	Span 45 MHz
Date: 20.JNN.2003 (5:16:15	Date: 20.JAN.2003 05:16:28	
Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
1732.5	QPSK	16QAM
1732.3	19.52	19.61
LTE band 4, 20MHz Bandwidth,	LTE band 4, 20MHz Bandwidth,	
QPSK (-26dBc BW)	16QAM (-2	6dBc BW)
**PARM 200 MNz	* ABA	200 MHz Marker 1 [T1] 1 1907 10-34 dism 5 ma
Date: 20.JAN.2003 05:16:47	Date: 20.JAN.2003 05:17:00	



LTE	band 5	
Frequency(MHz)	Occupied Bandwid	dth (-26dBc)(MHz)
836.5	QPSK	16QAM
650.5	1.36	1.34
LTE band 5, 1.4MHz Bandwidth,	LTE band 5, 1.4MHz Bandwidth,	
QPSK (-26dBc BW)	16QAM (-26dBc BW)	
* PSW 50 kMz	* AB	W 50 Mdr Marker 1 (77) # 20 Mdr 16,74 dam # 2.5 am 1036.449710296 felte ## 1.53814.002 felt ## 1.58814.002 fe
Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
836.5	QPSK 16QAM 2.99 2.90	
LTE bond 5 2MUz Dondwidth		
LTE band 5, 3MHz Bandwidth, QPSK (-26dBc BW)	LTE band 5, 3MHz Bandwidth, 16QAM (-26dBc BW)	
* PROM 50 ANE * 10.05 dime * ART 40 dB	* VB	M 50 Mdr Marker 1 [71] M 200 Mr 19-12 dam 7 5 ma 80-1704415-18 Mdr 19-12 dam 8



Net 30 dim *Att 40 db SMY 38 Offict 32 dB -26 -26 -27 db SMY -27 -28 -28 -28 -28 -28 -28 -28 -28 -28 -28	50 AME Marker 1 [7], 1 50 AME Marker 1 [7], 1 10 me 83-4-69713-580-MHz 10 me 83-4-69713-580-MHz 10 me 13 M 1,60768-300-MHz 10 me 173 AME 173 AME
LTE band 5, 5M 16QAM (-2 PME 30 dBm *ALE 40 dB *PME 30 OFFMEL 12 dB -10 -10 -10 -10 -10 -10 -10 -10 -10 -1	Hz Bandwidth, 6dBc BW) 50 MB: Marker 1 [7]] 500 MB: Share
16QAM (-2	50 Min
* Pase * Pase * Vote *	50 M/s
Net 30 dim *Att 40 db SMY 38 Offict 32 dB -26 -26 -27 db SMY -27 -28 -28 -28 -28 -28 -28 -28 -28 -28 -28	200 MHZ
Occupied Bandwid	th (-26dBc)(MHz)
QPSK 16QAM	
9.71 9.81	
LTE band 5, 10MHz Bandwidth, 16QAM (-26dBc BW)	
Ref 30 dBm *Att 40 dB SWT 30 Offet 12 dB	100 MHz 102 1 [71] 300 MHz 17.20 dim 15 ms 633.79961508 MHz 16 171 24.00 dB 18 9.007637308 MHz 171 171 1811 25.1.000763730 MHz 25.1.000763730 MHz 25.1.000763730 MHz 25.1.000763730 MHz 25.1.000763730 MHz 25.1.000763730 MHz
	# ROM



LTE	band 7	
Frequency(MHz)	Occupied Bandwid	th (-26dBc)(MHz)
2535.0	QPSK	16QAM
2535.0	4.88	4.81
LTE band 7, 5MHz Bandwidth,	LTE band 7, 5MHz Bandwidth,	
QPSK (-26dBc BW)	16QAM (-26dBc BW)	
*PAM 50 MHz 1(71] *YAW 200 MHz 17.37 dbm *Att 40 dB	* ABA	50 MHz Marker 1 [71] 200 MHz 10 me
Frequency(MHz)	Date: 20.JAN.2003 05:21:20	th (-26dBc)(MHz)
i requericy(ivii iz)	Occupied Bandwidth (-26dBc)(MHz) QPSK 16QAM	
2535.0	9.91 9.86	
LTE band 7, 10MHz Bandwidth, QPSK (-26dBc BW)	LTE band 7, 10MHz Bandwidth, 16QAM (-26dBc BW)	
* PARM 100 MHz * Nerfect 1 [T] 1	* ABA	100 MHz Markwr 1 [21] 1 300 MHz 2,5340 MHz 26,30 dfm 2,5340 MHz 27,5340 MHz 27 dfm 27
Date: 20.JAN.2003 05:21:38	Date: 20.JAN.2003 05:21:51	



QPSK 14.93 LTE band 7, 15M 16QAM (-2) **PRM*********************************	6dBc BW) 100 Mts
LTE band 7, 15N 16QAM (-20 30 dBm *Act 40 dB ** YUN 2007 BM7 30 dBm *Act 40 dB ** SW7 30 dBm ** Act 40 dBm ** Act 40 dB ** SW7 30 dBm ** Act 40 dBm ** Act 40 dBm ** Act 40 dBm ** Act 40 dBm *	HAZ Bandwidth, 6dBc BW) 100 Max MarXer 1 [73.3] 100 M
16QAM (-20	TOO MAR MEXICUS 1 [72] NOTE 37,990 dime NOTE 25,5925,5664, GHTS NOTE 124,500 dim NOTE 124,500 dim NOTE 124,500 dim NOTE 125,500 dime NOTE
- PAM	100 MHz
30 dlm *Att 40 dl 3777 Office 12 dl 40	7.90 dime 12.500,000-04 dire 10.00 (21) (24,00 dis 10.10 (24,000-04) 304 10.10 (24,000-
NN.2003 05122124	
Occupied Bandwidth (-26dBc)(MHz)	
QPSK 16QAM	
19.62 20.19	
LTE band 7, 20MHz Bandwidth, 16QAM (-26dBc BW)	
30 dlm *Att 40 dl SW7	mes 2.533173077 GHz ndB T1) 24.00 dB BW 30.192307 692 Mdz Temp 1 T1 ndB1
	*VBW : 30 dBm *Att 40 dB SWT !



LTE	band 12	
Frequency(MHz)	Occupied Bandwi	dth (-26dBc)(MHz)
707.5	QPSK 16QAN 1.34 1.36	
707.5		
LTE band 12, 1.4MHz Bandwidth, QPSK (-26dBc BW)	LTE band 12, 1.4MHz Bandwidth, 16QAM (-26dBc BW)	
**PRIM 50 kHz	* VE	18 50 bNz Markor 1 [T1] 18 200 bNz 701-631323071 bits 17 2-5 be 701-631323071 bits 18 1 1-06217467 bits 18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
707.5	2.95	2.95
LTE band 12, 3MHz Bandwidth, QPSK (-26dBc BW)		MHz Bandwidth, 26dBc BW)
### 50 MHz Marker 1 [T] ### 50 MHz 18.27 dbm ### 700 MHz 18.27	* VE	M 50 MHz Markor 1 [T1] M 200 MHz 137,65 dims 70 5 mm 700-01220013 MHz M 200 MHz 137,65 dims 700-01220013 MHz M 200 MHz 137,65 dims 700-0001300 MHz 700-0001300 MHz 700-0001300 MHz 700-0001300 MHz 700-0001300 MHz M 200



Frequency(MHz)	Occupied Bandwidth (-2	6dBc)(MHz)
707.5	QPSK 16QAM	
707.5	4.95 4.86	
LTE band 12, 5MHz Bandwidth,	LTE band 12, 5MHz Bandwidth,	
QPSK (-26dBc BW)	16QAM (-26dBc BW)	
PBH 50 Mix **NarBer 1 [71] dim **YBH 200 Mix** **TON, 918250333 Mix** **PBH 50 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 91825033 Mix** **TON, 9182503	Net 30 dBm	Marker 1 (TI) 18.76 dim 18.76 dim 707. 4790(5.30) Middle 19.74 (5.00) Middle 19.75 (5.00) Middle 19.75 (5.00) Middle 19.75 (5.00) Middle 20.75 (5.0
Frequency(MHz)	Occupied Bandwidth (-26dBc)(MHz)	
707.5	QPSK 16QAM 10.10 9.91	
LTE band 12, 10MHz Bandwidth,	LTE band 12, 10MHz I	Bandwidth,
QPSK (-26dBc BW)	16QAM (-26dBc BW)	
**PRW 100 ANE **YNW 300 NOTE **T1.4 d d de **YNW 300 NOTE **T1.4 d d de **YNW 300 NOTE **T1.4 d d de **YNW 300 NOTE **T1.4 d d d d d d d d d d d d d d d d d d d	PRET 30 dBm *AEE 40 dB SWY 15 ms 30 Offset 32 dB SWY 15 ms -20 -	Mexicor 1 (73.) 16:10 diss 710.16920769 Mes 100 (73.) 100 (70.) 10
Date: 20.JAN.2003 05:27:12	Date: 20.JAN.2003 05:27:25	



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.

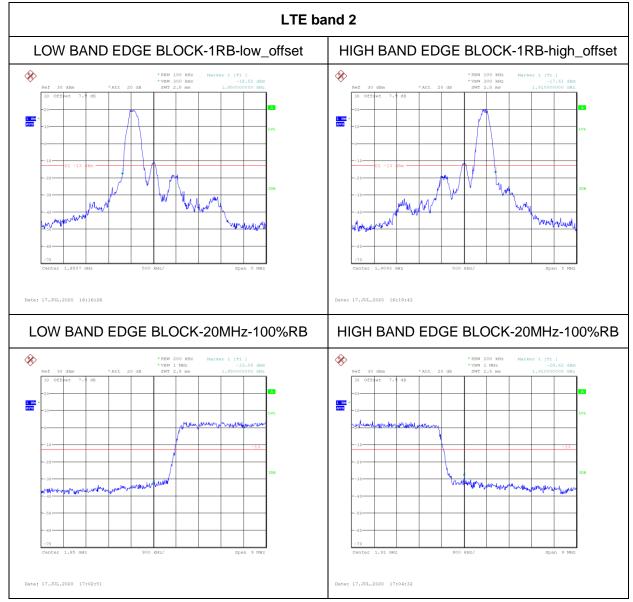
Part 27.53(m) states that for mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and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

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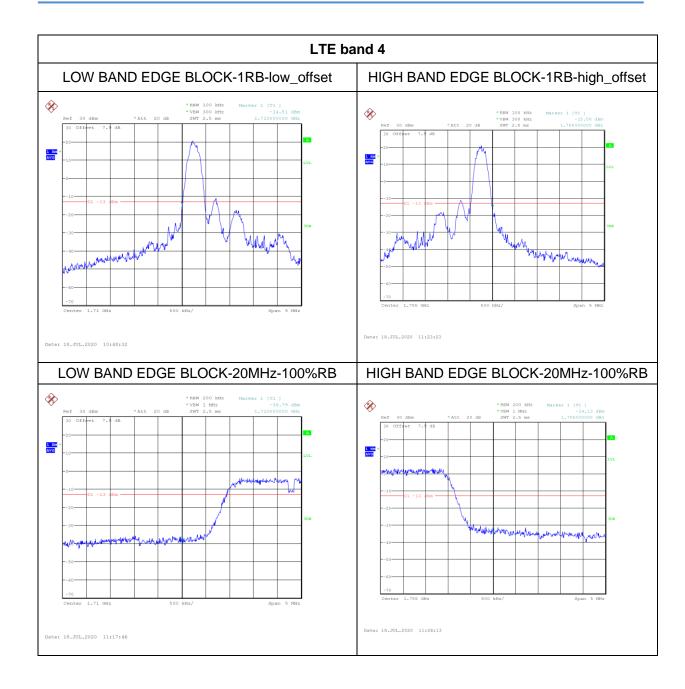


A.6.2 Measurement result

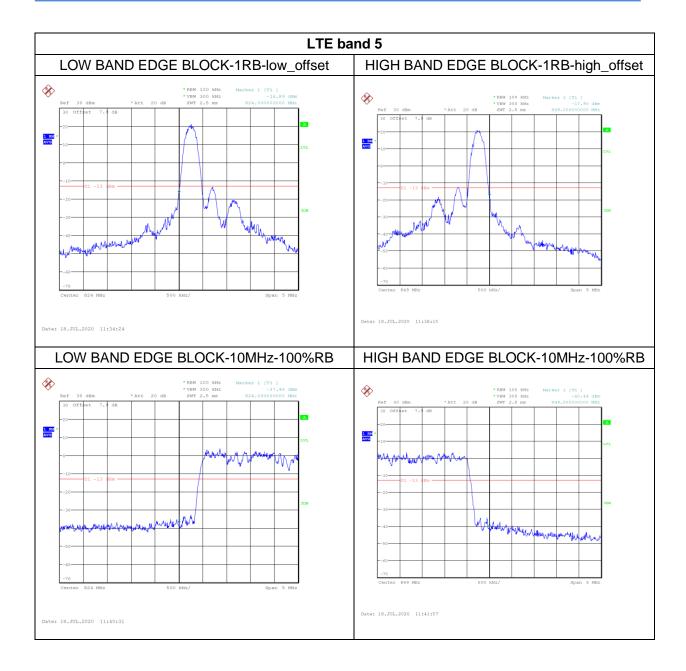
Only worst case result is given below



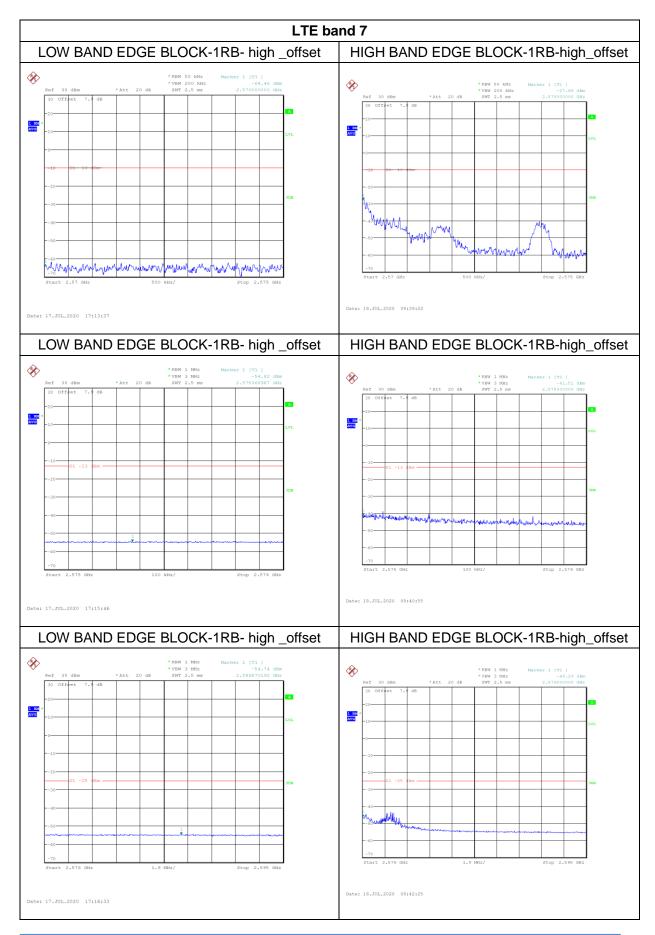




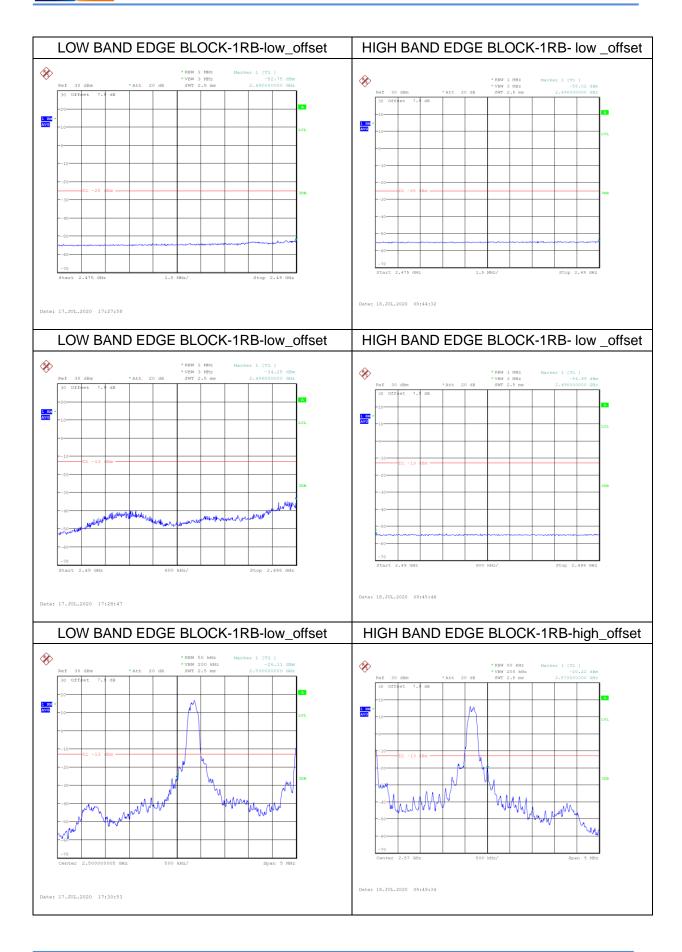




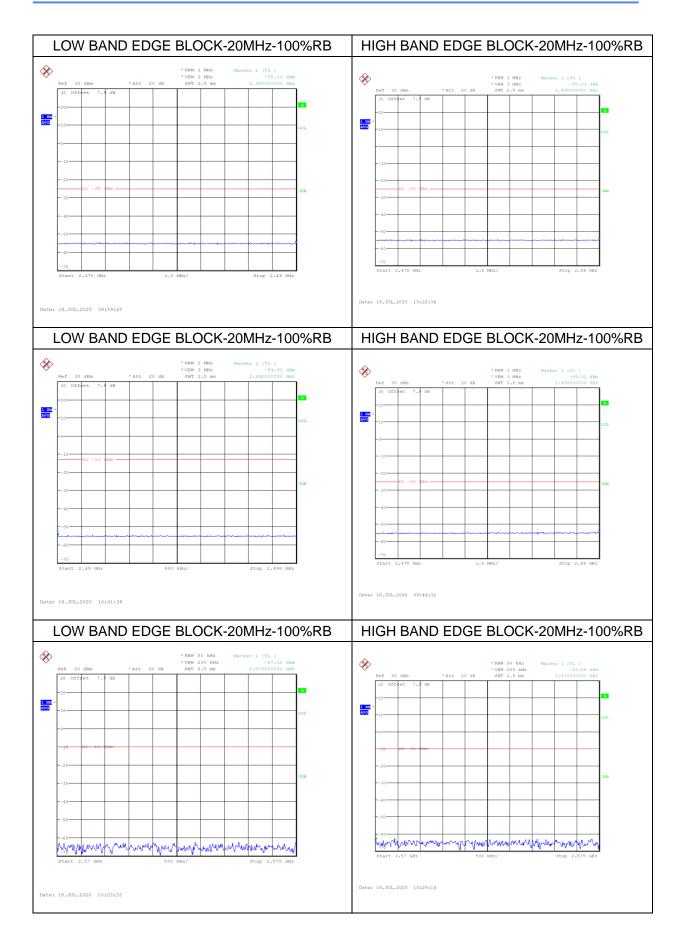




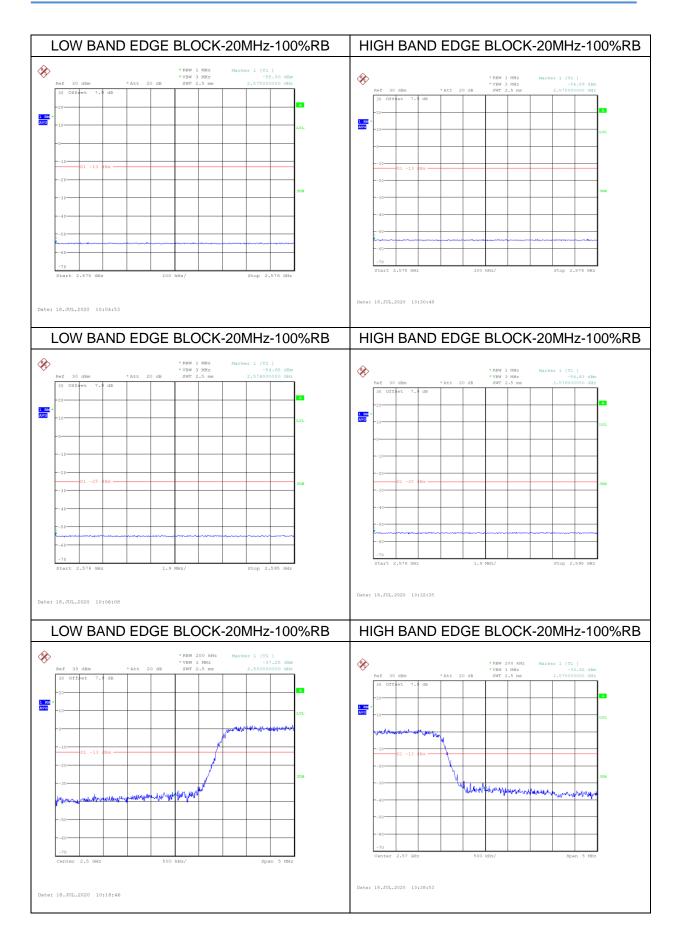




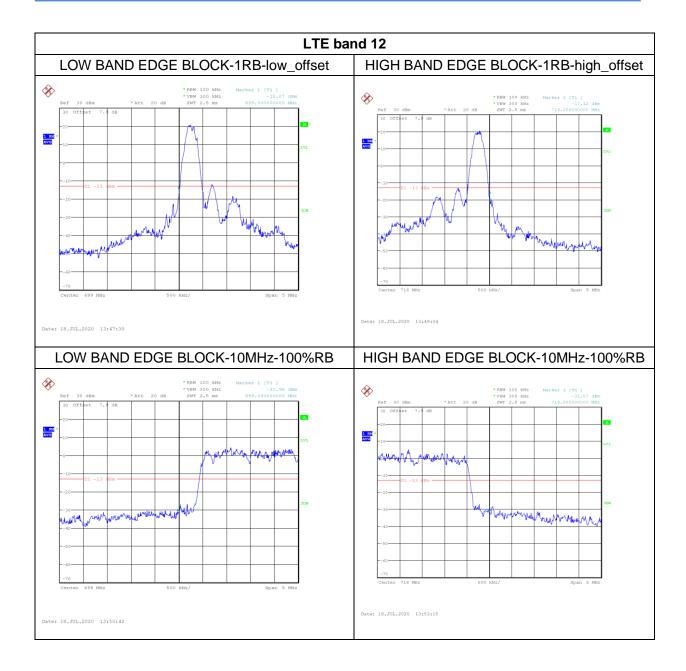














ANNEX A.7. CONDUCTED SPURIOUS EMISSION

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.

- 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.

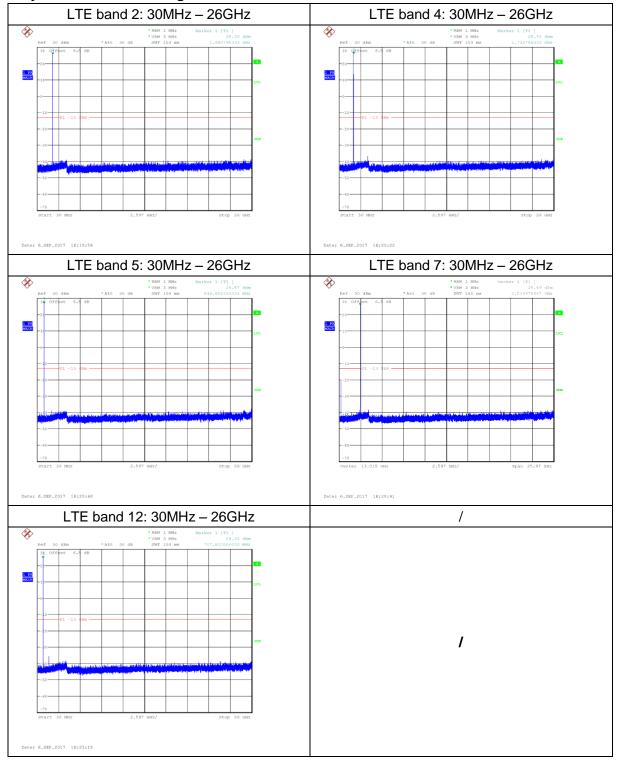
The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. 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





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)	PAPF	R(dB)
1880.0	QPSK	16QAM
1000.0	5.90	6.98

LTE band 4. 20MHz

Frequency(MHz)	PAPR(dB)	
1732.5	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)	Frequency(MHz) PAPR(dB)	
2535.0	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.



ANNEX C. Detailed Test Results

ANNEX C.1. Main Terms

Verdict	Verdict of each test cases.
Test cases	Test cases identification number and description in ETSI EN 300 328 test
	specification and ETSI specification.

ANNEX C.2. Terms used in Condition column

Tnom	Normal temperature
Tmin	Low temperature
Tmax	High temperature
Vnom	Normal voltage

ANNEX C.3. Terms used in Verdict column

Р	Pass, the EUT complies with the essential requirements in the standard.
NM	Not measure, the test was not measured by ECIT.
NA	Not applicable, the test was not applicable.
F	Fail, the EUT does not comply with the essential requirements in the standard.

ANNEX C.4. Terms used in Note column

EUT ID	EUT ID (e.g N01, N02) is used to identify the EUT tested used for each test
EOLID	cases as specified in section 3 of this test report.
Lab Code	Lab code is used to identify the subcontracted lab if this test cases is performed
	in the subcontracted lab.

Subcontracted test lab code: N/A



ANNEX D. Accreditation Certificate





Accredited Laboratory

A2LA has accredited

EAST CHINA INSTITUTE OF TELECOMMUNICATIONS

Shanghai, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017

General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 6th day of May 2019.

Vice President, Accreditation Services For the Accreditation Council Certificate Number 3682.01 Valid to February 28, 2021

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation

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