

_	,				``	,			
MultiView	- Spectrum	1							•
Ref Level 26	5.50 dBm Offse	t 1.50 dB 🖷 RB	<b>W</b> 500 kHz						
<ul> <li>Att</li> </ul>	25 dB SWT	1.01 ms 👄 VB	W 2 MHz M	ode Auto Sweep					
TDF "1"									
1 Frequency	Sweep							N11517	O 1Pk View
20 dBm								MILI	15.59 dBm
LO GDIN			A	A CONTRACT A LAND AND AND AND AND AND AND AND AND AND					
10 dBm						minarad			
0.dBm									
o dom					/				
-10 dBm			Ţ.			12 V			
10 0.011									
-20 dBm									
20 00.0		<b>b</b>				h.by	and and a		
-20 dBm	March And	Mary Mary Mary	WW P			Т.	Mannahan	William .	
month	war marshine and							www.meda	
-40 dBm									month
40 0011									here
-50 dBm									
30 0011									
-60 dBm-									
-oo abiii									
-70 dBm									
CE 1 JEE CU			1001					L	
CF 1.755 GHZ			1001 pt	s	9	.0 MHZ/		3	pan 90.0 MHZ
	f Trc	X-Value		V-Value		Function		Eunction Re	sult
M1	1 1	L.760574 GH	z	15.59 dBm	ndB			26.0	dB
T1 T2	1	1.739985 GH	lz	-11.34 dBm	ndB down I	BW		30.03 M	Hz
<u> </u>	1	1.770015 GF	12	-9.77 dBm	Q Factor			5	3.0
							Measuring		<b>11.09.2022</b>

# LTE CA\_66C , 15MHz+15MHz Bandwidth, 64QAM (-26dBc BW)



## LTE CA\_66C,15MHz+20MHz (-26dBc BW)

	Emission Bandwidth (-26dBc) (MHz)					
	QPSK	16QAM	64QAM			
1755	34.41	34.41	34.51			

## LTE CA\_66C , 15MHz+20MHz Bandwidth,QPSK (-26dBc BW)



# LTE CA\_66C , 15MHz+20MHz Bandwidth,16QAM (-26dBc BW)





—	,				``	,			
MultiView	- Spectrun	n							
Ref Level 2	5.50 dBm Offse	et 1.50 dB 🖷 RB	<b>W</b> 500 kHz						
<ul> <li>Att</li> </ul>	25 dB SWT	1.01 ms 👄 VB	W 2 MHz M	ode Auto Sweep					
TDF "1"									
1 Frequency	Sweep				1	1	1		●1Pk View
00 d0								M1[1]	15.99 dBm
20 dBm-				MT.					1.746500 GHz
10 d9m			hours	W have we	mmmmm	my			
10 000				I 1/					
0 dBm				↓¥_					
			т	V V		12			
-10 dBm			1			¥.			
-20 dBm									
						h			
-30 dBm		where rolling	Numph V			- WM	manhan		
an a marthalt	manna	prive of the second					1.000	Mur	
-40 dBm									
10 0.011									Mar mar 11
-50 dBm									. and the contact
00 00.0									
-60 dBm									
oo ubiii									
-70 dBm									
CE 1 755 GHz			1001 pt	 s	1	0.5 MHz /	I	lSn	an 105.0 MHz
2 Marker Tab	e		1001 pt	•	1				
Type Re	f Trc	X-Value		Y-Value		Function		Function Re	sult
M1	1	1.7465 GH	z i	L5.99 dBm	ndB			26.0	dB
T1 T2	1	1.7378 GH	Z	-9.01 dBm	ndB down	BW		34.51 M	HZ 0.6
	1	1.77231 GH	۷	9.57 UDITI	Q Factor			50	11 00 2022
							Measuring		LX 11.09.2022

# LTE CA\_66C , 15MHz+20MHz Bandwidth, 64QAM (-26dBc BW)



## LTE CA\_66C,20MHz+5MHz (-26dBc BW)

Fraguaday (MHz)	Emission Bandwidth (-26dBc) (MHz)						
Frequency (MIRZ)	QPSK	16QAM	64QAM				
1755	24.28	24.13	24.28				

## LTE CA\_66C , 20MHz+5MHz Bandwidth,QPSK (-26dBc BW)



# LTE CA\_66C , 20MHz+5MHz Bandwidth,16QAM (-26dBc BW)





					•	,			
MultiView	Spectrun	1							-
Ref Level 26	.50 dBm Offse	et 1.50 dB 🖷 RB	<b>W</b> 500 kHz						
<ul> <li>Att</li> </ul>	25 dB SWT	1.01 ms 👄 VB	W 2 MHz M	ode Auto Sweep					
TDF "1"									
1 Frequency S	weep								O1Pk View
20. dBm						M1		M1[1]	19.02 dBm
20 0011					1	handring		-	1.7642160 GHZ
10.dBm			Mano	mound	monor				
10 0011									
0. d8m									
O GBIII			τį			T2			
-10 d9m			Ϋ́			Ý			
10 dbiii						1			
-20 dBm									
20 0011						I WW	maller marin		
-20 dBm	h. Marchallaum	Who who who have a	MAN				a man with the c	mounter	<b>7</b> 8
what what when	Plan Mar								which have a
-40 dBm									
40 0.011									
-50 dBm									
30 abiii									
-60 dBm-									
00 0011									
-70 dBm									
			1001					,	Data 75 O Mila
CF 1.755 GHZ	ā		1001 pt	\$	/				
Type Ref	E Trc	X-Value		Y-Value		Function		Eunction R	esult
M1	1	1.764216 GH	lz 1	.9.02 dBm	ndB			26.0	dB
T1 TO	1	1.742862 GH	Hz	-7.16 dBm	ndB down I	BW		24.28 M	Hz
12	1	1.70/138 GF	ΠZ	-7.99 dBm	ų Factor			/	2.1
							Measuring		11.09.2022

# LTE CA\_66C , 20MHz+5MHz Bandwidth, 64QAM (-26dBc BW)



### LTE CA\_66C,20MHz+10MHz (-26dBc BW)

	Emission Bandwidth (-26dBc) (MHz)						
	QPSK	16QAM	64QAM				
1755	29.40	29.22	29.31				

## LTE CA\_66C , 20MHz+10MHz Bandwidth,QPSK (-26dBc BW)



# LTE CA\_66C , 20MHz+10MHz Bandwidth,16QAM (-26dBc BW)





_					•	,			
MultiView	Spectru	ım							•
Ref Level 2	5.50 dBm Off	set 1.50 dB 🖷 RB	<b>W</b> 500 kHz						
<ul> <li>Att</li> </ul>	25 dB 🛚 SW	T 1.01 ms 👄 VB	W 2 MHz M	ode Auto Sweep					
TDF "1"									
1 Frequency	Sweep							N41543	O 1PK View
20 dBm					M1.			MILI	7620020 CH-
Lo dom				A	, minut	mon		-	.7630020 GH2
10 dBm			have	a manage	unding (				
10 0011					l V	}			
0. d9m					V				
o dani									
10 40			T1 ↓			T2			
-10 UBM									
00.45.0									
-20 dBm						la se ca	MARKET 1		
		. mallahan	what a			. Mar AMa	a man way way	Maynes	
-30 dBm	manna	Muthout at a re						- Went World	
40.000									www.
-40 dBm									XV.
									"han
-50 dBm									
-60 dBm									
-70 dBm									
CF 1.755 GHz			1001 pt	s	. 9	.0 MHz/	•		pan 90.0 MHz
2 Marker Tab	le								
Type Re	f Trc	X-Value	7	Y-Value		Function		Function Re	sult
T1	1	1 740435 GF	12	-9 68 dBm	naB down I	RW		29.31 M	ub Hz
T2	î	1.769745 Gł	 Hz	-10.91 dBm	Q Factor			6	D.1
	~					~	Measuring		11.09.2022

# LTE CA\_66C , 20MHz+10MHz Bandwidth, 64QAM (-26dBc BW)



## LTE CA\_66C,20MHz+15MHz (-26dBc BW)

	Emission Bandwidth (-26dBc) (MHz)					
Frequency (MIRZ)	Emission BandwidthQPSK16QA34.5134.5 <sup>-1</sup>	16QAM	64QAM			
1755	34.51	34.51	34.41			

#### LTE CA\_66C , 20MHz+15MHz Bandwidth,QPSK (-26dBc BW)



#### LTE CA\_66C , 20MHz+15MHz Bandwidth,16QAM (-26dBc BW)

		O1Pk \
	MI	M1[1] 15.14
Normannen	monountering	
	V	
T1 Y	T2	
	5.1m 1.6	
m Jall	man trum ward and	whether the second s
		warman
		"mul
1001 ata		
1001 pts	10.5 MHz7	Span 105.0
Y-Value	Function	Function Result
HZ 15.14 dBm Hz -11.99 dBm	ndB ndB down BW	26.0 dB 34.51 MHz
Hz -11.99 dBm Hz -12.37 dBm	ndB down BW Q Factor	34.51 MHz 51.2



					•	-			
MultiView	Spectrum	1							-
Ref Level 26.5	50 dBm Offse	t 1.50 dB 🖷 RB	<b>W</b> 500 kHz						
<ul> <li>Att</li> </ul>	25 dB SWT	1.01 ms 👄 VB	🛿 2 MHz 🛛 M	ode Auto Sweep					
TDF "1"									
1 Frequency Sv	veep								●1Pk View
00 d0m								M1[1]	15.65 dBm
20 ubm					MI				1.760350 GHz
10.40.0			menen	montan	ny forman	moning			
TO OBM									
U dBm			- 1			12			
			ті						
-10 dBm									
-20 dBm									
						Hund	mphysically and		
-30 dBm	the mean of	montham	Viv lake.			1. 1.00	" "WWWWWWW		
moundary	hall the all and a	.,						manne	
-40 dBm									
									Marine armels
-50 dBm									
oo ubiii									
co dou									
-60 dBm-									
-70 dBm									
CF 1.755 GHz			1001 pt	s	10	0.5 MHz/		Sp	an 105.0 MHz
2 Marker Table									
Type Ref	Trc	X-Value		Y-Value		Function		Function Re	sult
	1	1 7378 GH	<b>L</b> .	-11 31 dBm	naB down l	RW		34.41 MI	ав <b>Н 7</b>
T2	1	1.7722 GH	Z	-7.23 dBm	Q Factor	L + +		5:	1.2
							Measuring		11.09.2022

# LTE CA\_66C , 20MHz+15MHz Bandwidth, 64QAM (-26dBc BW)



### LTE CA\_66C,20MHz+20MHz (-26dBc BW)

	Emission Bandwidth (-26dBc) (MHz)					
	QPSK	16QAM	64QAM			
1755	39.44	39.44	39.32			

## LTE CA\_66C , 20MHz+20MHz Bandwidth,QPSK (-26dBc BW)



# LTE CA\_66C , 20MHz+20MHz Bandwidth,16QAM (-26dBc BW)







# LTE CA\_66C , 20MHz+20MHz Bandwidth, 64QAM (-26dBc BW)

Note: Expanded measurement uncertainty is U = 3428 Hz, k = 2



# A.5 BAND EDGE COMPLIANCE

## Reference

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

## A.5.1 Measurement limit

Part 22.917 For operations in the 824–849MHz band, the FCC limit is 43 +10 log (P)dB below the transmitter power(P) in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

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  $43 + 10 \log(P) dB$ .

Part 27.53(m) 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 + 10log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part 27.53(g) states for operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 +10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

# A.5.2Measurement Procedure

The testing follows ANSI C63.26

a) The EUT was connected to spectrum analyzer and system simulator via a power divider.

b) The band edges of low and high channels for the highest RF powers were measured.

c) Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.

d) Set spectrum analyzer with RMS detector.

e) The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

f) Checked that all the results comply with the emission limit line.

#### A.5.3 Measurement result

# Only worst case result is given below





# LTE band 2 LOW BAND EDGE BLOCK-1RB-low\_offset







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

MultiView Spectrum	1							•
Ref Level 25.00 dBm Offset	t 7.00 dB I	Mode Auto FFT						SGL
								Count 15/15
1 Spurious Emissions								o1 Max
Limit Check		PA	SS					
20 dBnLine _SPURIOUS_LINE_	ABS_UUZ	PA	ss					
10 dBm								
0 d0m					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		mining	
o ubili								
-10 dBm								
_SPURIOUS_LINE_ABS_002								
-20 dBm								
-30 dBm				1			1	
				1				
-40 dBm				/			,	
-50 dBm								
-60 dBm								
- 70 dBm								
-70 0811								
CF 1.85 GHz		3003 pts	i	5	.0 MHz/		5	pan 50.0 MHz
2 Result Summary					•			
Range Low	Range Up	RB	W	Frequen	CV	Power Abs	;	ΔLimit
1.825 GHz	1.849 GHz	1.000	MHz	1.84899	GHz	-34.31 dBr	n -2	1.31 dB
1.849 GHz	1.850 GHz	200.000	) kHz	1.84993	GHz	-39.15 dBr	n -20	6.15 dB
1.850 GHz	1.875 GHz	200.000	) kHz	1.86600	GHZ	1.89 dBr	n -2	8.11 dB
7					~	Ready		02.09.2022 10:02:50

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

MultiView Spectr Ref Level 25.00 dBm Of	um fset 7.00 dB	<b>10de</b> Auto FFT			SGL Count 15/15
1 Spurious Emissions		2102			O1 Max
20 dBm		PASS			
20 dbiLine _SPORIOUS_LIN	NE_ABS_002	PASS			
10 dBm					
0 dBm		when my hard and the second			
-10 dBm					
-20 dBm					
-30 dBm					
-40 dBm					
-50 dBm					
-60 dBm					
-70 dBm					
CF 1.91 GHz		3003 pts	5.0 MHz/	I	Span 50.0 MHz
2 Result Summary					
Range Low	Range Up	RBW	Frequency	Power Abs	∆Limit
1.885 GHz 1.910 GHz 1.911 GHz	1.910 GHz 1.911 GHz 1.935 GHz	200.000 kHz 200.000 kHz 1.000 MHz	1.89685 GHz 1.91000 GHz 1.91101 GHz	1.98 dBm -38.25 dBm -33.32 dBm	-28.02 dB -25.25 dB -20.32 dB
~			-	Ready	02.09.2022





# LTE band 4 LOW BAND EDGE BLOCK-1RB-low\_offset







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



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

MultiView Spectrum Ref Level 25.00 dBm Offse	n et 7.00 dB Mode Au	to FFT			SGL Count 15/15
1 Spurious Emissions					o1 Max
_SPURIOUS_LINE_ABS_002		PASS			
20 dBm_ine _SPURIOUS_LINE_	ABS_UUZ	PASS			
10 dBm					
0 dBm					
-10 dBm					
-20 dBm					
-30 dBm					
-40 dBm				~	
-50 dBm					
-60 dBm					
-70 dBm					
CF 1.755 GHz	3	003 pts	5.0 MHz/	1	Span 50.0 MHz
2 Result Summary					
Range Low 1.730 GHz 1.755 GHz 1.756 GHz	Range Up 1.755 GHz 1.756 GHz 1.780 GHz	RBW 200.000 kHz 200.000 kHz 1.000 MHz	Frequency 1.74133 GHz 1.75500 GHz 1.75678 GHz	Power Abs 1.87 dBm -40.46 dBm -35.70 dBm	ΔLimit -28.13 dB -27.46 dB -22.70 dB
~				🗸 Ready	02.09.2022





# LTE band 5 LOW BAND EDGE BLOCK-1RB-low\_offset







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

MultiView Spectru	um									•
Ref Level 25.00 dBm Off	<b>set</b> 6.50 dB	Mode Auto FFT							SGL	
									Count 15/	15
1 Spurious Emissions									●1 Ma	ах
Limit Check	_	PASS								
20 dBnLine _SPURIOUS_LIN	E_ABS_UUZ	PASS								
10 dBm										
0. d8m				ſ					m	
o ubiii										
-10 dBm										_
_SPURIOUS_LINE_ABS_002										
-20 dBm										
										$\backslash$
										$\mathbf{X}$
-30 dBm				(						- 4
			hand							
-40 dBm									-	
-50 dBm										
-60 dBm										
- 70 dBm-										
CF 824.0 MHz		3003 pts			2	.0 MHz/		S	pan 20.0 M	Hz
2 Result Summary						,				
Papel ow	Pangelln	DBW			Frequen	CV	Dower Ab	c	Al imit	
814.000 MHz	823.000 MHz	1.000 MF	12	82	2.99550	MHz	-24.02 dB	m -1:	L.O2 dB	
823.000 MHz	824.000 MHz	100.000 kH		82	3.99950	MHz	-31.17 dB	m -18	3.17 dB	
824.000 MHz	834.000 MHz	100.000 kH	Ηz	83	0.33866	MHz	3.43 dBi	m -20	5.57 dB	
_						_	Boodu		<b>4 02.09.2</b> 0	122
V							Reduy		10:14	:06

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

MultiView Spectronic Ref Level 25.00 dBm Of	rum ifset 6.50 dB Mo	ode Auto FFT			SGL Count 15/15
1 Spurious Emissions					o1 Max
_SPURIOUS_LINE_ABS_002		PASS			
<sup>20</sup> ubiLine _SPURIOUS_LI	NE_ABS_002	PASS			
10 dBm					
0 dBm					
-10 dBm					
-20 dBm					
30 dBm					
40 d0m					
-50 dBm					
-60 dBm					
-70 dBm					
CF 849.0 MHz		3003 pts	2.0 MHz/		Span 20.0 MHz
2 Result Summary					
Range Low 839.000 MHz 849.000 MHz 850.000 MHz	Range Up 849.000 MHz 850.000 MHz 859.000 MHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz	Frequency 840.59341 MHz 849.03147 MHz 850.00450 MHz	Power Abs 3.22 dBm -31.86 dBm -23.45 dBm	∆Limit -26.78 dB -18.86 dB -10.45 dB
~				🗸 Ready	02.09.2022





# LTE band 12 LOW BAND EDGE BLOCK-1RB-low\_offset

MultiView 📑 Spectru	m							•
Ref Level 25.00 dBm Offse	et 6.50 dB	Mode Auto FFT						SGL
								Count 15/15
1 Spurious Emissions								o1 Max
Limit Check		PAS	S	~				
20 abriline _SPURIOUS_LINE	_ABS_UUZ	PAS	s	Λ				
10 dBm								
U dBm				$\mathcal{T}$				
-10 dBm				+				
_SPURIOUS_LINE_ABS_002				/				
-20 dBm				$ \longrightarrow $				
-20 d9m						n		
-30 0611				1				Λ
-40 dBm			, P		VVII ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Mala	m	the
-50 dBm							v • • •	· ~ ~ `
-60 dBm								
-70 dBm								
CF 699.0 MHz		3003 pts		2	.0 MHz/		S	pan 20.0 MHz
2 Result Summary					<b>`</b>			
Range Low	Range Up	RBV	V	Frequen	CV	Power Abs	;	∆Limit
689.000 MHz	698.000 MHz	1.000	MHz	697.99550	MHz	-32.41 dBr	n -19	9.41 dB
698.000 MHz	699.000 MHz	100.000	kHz	698.99950	MHz	-22.00 dBr	n -9	9.00 dB
699.000 MHz	709.000 MHz	100.000	kHz	699.57443	MHZ	20.75 dBr	n -9	J.25 aB
						Ready		02.09.2022





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



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

MultiView         Spect           Ref Level         25.00 dBm         0	rum Hfset 6.50 dB	Mode Auto FFT				SGL Count 15/15
1 Spurious Emissions						O1 Max
SPURIOUS LINE ABS_002		PASS				o 1 max
20 dBm ine SPURTOUS	INE ABS UUZ	PASS				
10 dBm						
mannan						
0 dBm						
-10 dBm						
-20 dBm						
-30 dBm						
40 dbm			hand			
-40 ubm						
-50 UBM						
-60 dBm						
-70 dBm						
CF 716.0 MHz		3003 pts	2.0 N	4Hz/		Span 20.0 MHz
2 Result Summary						
Range Low	Range Up	RBW	Frequency		Power Abs	ΔLimit
706.000 MHz	716.000 MHz	100.000 kHz	707.06394 M	Hz	3.31 dBm	-26.69 dB
716.000 MHz	717.000 MHz	100.000 kHz	716.00050 M	Hz -	32.81 dBm	-19.81 dB
717.000 MHz	726.000 MHz	1.000 MHz	717.00450 M	Hz -	25.80 dBm	-12.80 dB
					Ready	02.09.2022





# LTE band 13 LOW BAND EDGE BLOCK-1RB-low\_offset







# EDGE BLOCK-10MHz-100%RB

MultiView	Spectrum	1							•
Ref Level 25.	00 dBm Offset	t 6.50 dB	Mode Auto FFT						SGL
									Count 15/15
1 Spurious Em	issions		1 1						o1 Max
Limit Che	ck		PA	SS					
20 dBnLine _SPI	JRIOUS_LINE_	ABS_UUZ	PA	55					
10 dBm									
10 000									
				manner manner	monument	hang			
0 dBm									
10 10									
-10 dBm-									
_SPURIOUS_LINE_/	ABS_002								
-20 dBm									
-30 dBm			1						
			- A A A A A A A A A A A A A A A A A A A						
40 d0		1							
-40 dBm									
-50 dBm									
		m							
-60 dBm		- and a start of the							
70 Jp									
-70 uBm									
CF 782.5 MHz			2103 pt		3	.1 MHz/			Span 31.0 MHz
2 Desult Sum	nany		100 pt	-		/			
2 Result Juli	ow	Pange Un	DE	14/	Eroquer		Dowor th	c	Al insit
767,000 M	.0w		100.00		776 99500	MHZ	-21 05 AD	m _1	8 95 dB
	/ITZ /LI=	777.000 MHZ	100.00	0 КГ12 0 Г.Ш.Э	783 33867	/ MH7	-31.95 UD	m -1	6 74 dB
777.000 P	/ITZ /Uz	707.000 MHZ 709.000 MH <del>-</del>	100.00	0 КПZ 0 ГШ⇒	787 05446	MHZ	-30 84 dB	m -1	7 84 dB
737.000 P	/11 12	790.000 MINZ	100.00		/0/.00440		-30.04 00		/107 00
							Ready		02.09.2022 10:23:49





# LTE band 66 LOW BAND EDGE BLOCK-1RB-low\_offset







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



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







# LTE CA\_5B LOW BAND EDGE BLOCK-1RB-low\_offset







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



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

MultiView Spectrum Ref Level 30.00 dBm Offset	6.50 dB Mode Auto FF	т			SGL Count 15/15
1 Spurious Emissions		D t loo			O1 Max
_SPORIOUSILLINELABS_002	P.C. 000	PASS			
Line_SPORIOUS_LINE_A	AB5_002	PASS			
20 dBm					
10 dBm					
manna	mining				
0 dBm		Alan and a start and a start and a start a sta			
-10 dBm	<u>\</u>				
-20 dBm					
20 0011	k				
	TV TV				
-30 dBm					
		a mon	$\sim$ .m		
-40 dBm					
			1 4		
-50 dBm				<u></u>	
-60 dBm				mun	·······
oo abiii					
CE 849.0 MHz	94003	ints	5.0 MHz/		Span 50.0 MHz
2 Result Summary	, 1000	<u>1</u>	,		
Range Low	Range Up	RBW Frequ	ency	Power Abs	Al imit
824.000 MHz 84	49.000 MHz 200.	000 kHz 834.2172	26 MHz	5.96 dBm	-24.04 dB
849.000 MHz 85	50.000 MHz 200.	000 kHz 849.0000	)2 MHz -3	30.98 dBm	-17.98 dB
850.000 MHz 87	74.000 MHz 200.	000 kHz 850.1420	<u>00 MHz -3</u>	32.78 dBm	-19.78 dB
				Ready	12.08.2022





# LTE CA\_66B LOW BAND EDGE BLOCK-1RB-low\_offset







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



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





# LTE CA\_66C LOW BAND EDGE BLOCK-1RB-low\_offset







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



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





# LTE band 2@CA\_2A-5A

# 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+10MHz-100%RB

MultiView	Spectrum								•
Ref Level 27. Att	00 dBm Offse 36 dB • SWT	t 1.00 dB • RBV 50 ms • VBV	V 200 kHz V 1 MHz Mo	de Auto Sweep				s	GL ount 100/100
1 Frequency S	Sweep								o1Rm Max
20 dBm								M1[1]	-38.23 dBm 84999000 GHz
10 dBm									
0 dBm								m	
						/			
-10 dBm									
limit1_for_trace1						J.			
-20 dBm									
					. ~(	www.			
-30 dBm				м	1 MAN				
-40 dBm	Momm	mmutul	Munut	Anora					
-50 dBm									
-60 dBm									
00 0000									
5170 dBm				5	c.				
CF 1.85 GHz	1		501 pts		50	0.0 kHz/	1	1	Span 5.0 MHz
							Ready		23.09.2022 03:29:17

## HIGH BAND EDGE BLOCK-20MHz+10MHz-100%RB





# LTE band 5@CA\_2A-5A

# 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+10MHz-100%RB

MultiView	Spectrum	1							•
Att	00 dBm 37 dB <b>= SWT</b>	<ul> <li>RBW</li> <li>50 ms</li> <li>VBW</li> </ul>	100 kHz 500 kHz <b>Mode</b>	Auto Sweep				:	SGL Count 100/100
1 Frequency S	weep								o 1 Rm Max
20 dBm								M1[1]	-33.31 dBm 824.00000 MHz
10 dBm									
0 dBm						mmm	mmm	mm	m
-10 dBm									
limit1_for_trace1					N				
-20 dBm					No WAR				
-30 dBm									
-40 dBm	mm	Mummun	mm	m~~m <sup>m</sup>					
-50 dBm									
-60 dBm									
5170 dBm				s	2				
CF 824.0 MHz	1	1	501 pts		50	1 0.0 kHz/	1	1	Span 5.0 MHz
	v					~	Ready		23.09.2022 03:30:00

## HIGH BAND EDGE BLOCK-20MHz+10MHz-100%RB




# LTE band 2@CA\_2A-13A

# OBW: 1RB-LOW\_offset

















# LOW BAND EDGE BLOCK-20MHz+10MHz-100%RB

MultiView	Spectrum								•
Att	36 dB • SWT	50 ms • VBV	V 1 MHz Mo	de Auto Sweep					ount 100/100
1 Frequency S	weep								●1Rm Max
20 dBm								M1[1] 1	-37.73 dBm 85000000 GHz
10 dBm									
0 dBm									
-10 dBm									
limit1_for_trace1									
-20 dBm						www			
-30 dBm				M	1 mm MMM				
-40 dBm	marken	m	mmm	Mummun	v*				
-50 dBm									
-60 dBm									
S170 dBm				s	2				
CF 1.85 GHz	1	1	501 pts		50	0.0 kHz/	1	1	Span 5.0 MHz
	¥					~	Ready		23.09.2022 03:39:32

#### HIGH BAND EDGE BLOCK-20MHz+10MHz-100%RB





# LTE band 13@CA\_2A-13A

# OBW: 1RB-LOW\_offset

















#### LOW BAND EDGE BLOCK-20MHz+10MHz-100%RB



#### HIGH BAND EDGE BLOCK-20MHz+10MHz-100%RB





# LTE band 4@CA\_4A-13A

# OBW: 1RB-LOW\_offset















#### LOW BAND EDGE BLOCK-20MHz+10MHz-100%RB

MultiView	Spectrum	1							
Ref Level 27.	00 dBm	• RBW 2	200 kHz	Auto Curren				s	GL
TDF "1"	37 db 🖶 5WI	50 ms 🖶 VBW	I MHZ Mode	Auto Sweep					ount 100/100
1 Frequency S	Sweep								o1Rm Max
								M1[1]	-39.40 dBm
20 dBm									709999000 GHz
10 dBm									
0.40.00									
U UBM						/			
-10 dBm									
limit1 for trace1						<i>[</i>			
-20 d8m						1			
20 000						www			
-30 dBm					MA	WNY			
				м	-martine				
-40 dBm	m. m. M. m.		Mana	month	C				
-50 dBm									
-60 dBm									
				s	2				
5.170 dBm									
CF 1.71 GHz			501 pts		50	0.0 kHz/			Span 5.0 MHz
							Ready		23.09.2022 04:54:16

#### HIGH BAND EDGE BLOCK-20MHz+10MHz-100%RB





# LTE band 13@CA\_4A-13A

# OBW: 1RB-LOW\_offset

















#### LOW BAND EDGE BLOCK-20MHz+10MHz-100%RB



#### HIGH BAND EDGE BLOCK-20MHz+10MHz-100%RB





# LTE band 5@CA\_5A-66A

# OBW: 1RB-LOW\_offset















#### LOW BAND EDGE BLOCK-10MHz+20MHz-100%RB

MultiView	Spectrum	• RBW :	100 kHz	Auto Curron				:	SGL
TDF "1"	37 db 🖷 5991	SU ms - VBW S	SOU KHZ Mode	Auto Sweep				1	Lount 1007100
1 Frequency S	weep						1		●1Rm Max
20 dBm								M1[1]	-34.97 dBm 823.99000 MHz
10 dBm									
0.40m						M-0000 -0000	m	h	Anno Aleman
o ubiii									
-10 dBm									
limit1_for_trace1									
-20 dBm					/				
					and the second sec				
-30 dBm				M	N N				
-40 dBm									
-50 dBm	min			~~~~~					
-60 dBm									
5.170 dBm				s	2				
CF 824.0 MHz	1	1	501 pts		50	  0.0 kHz/	1	1	Span 5.0 MHz
	v						Ready		23.09.2022 05:03:46

#### HIGH BAND EDGE BLOCK-10MHz+20MHz-100%RB





# LTE band 66@CA\_5A-66A

# OBW: 1RB-LOW\_offset















# No.I22N01500-RF-LTE

#### LOW BAND EDGE BLOCK-10MHz+20MHz-100%RB



#### HIGH BAND EDGE BLOCK-10MHz+20MHz-100%RB





# LTE band 13@CA\_13A-66A

# OBW: 1RB-LOW\_offset

















#### LOW BAND EDGE BLOCK-10MHz+20MHz-100%RB

MultiView	Spectrum	PRW	30 kHz							-
Att	37 dB • SWT	50 ms • VBW 2	200 kHz Mode	Auto Sweep						Count 100/100
1 Frequency S	weep	1								o1Rm Max
00.10									M1[1]	-43.01 dBm 777.00000 MHz
20 dBm-										
10 dBm										
0 dBm										N 0 1
							mm	man	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mulu.
-10 dBm										
limit1_for_trace1										
-20 dBm					_					
-30 dBm					_	F				
						السر				
-40 dBm					_M)					
50 d0m				And ~	1					
-50 ubm		MA.,	hampton	MAN TO T						
-60 dBm	mm	mm	Are here a second							
-70 dBm				S1	S	2				
CF 777.0 MHz	I	I	501 pts			50	0.0 kHz/	I		Span 5.0 MHz
	v						v	Ready		4.09.2022 06:30:34

#### HIGH BAND EDGE BLOCK-10MHz+20MHz-100%RB





# LTE band 66@CA\_13A-66A

### OBW: 1RB-LOW\_offset

















# LOW BAND EDGE BLOCK-10MHz+20MHz-100%RB



#### HIGH BAND EDGE BLOCK-10MHz+20MHz-100%RB



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



# A.6 CONDUCTED SPURIOUS EMISSION

# Reference

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

# A.6.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

- Determine frequency range for measurements: From CFR 2.1051 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. 6.2 Measurement Limit

Part 22.917, Part 24.238 and Part 27.53(h) specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P) dB$ .

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Part 27.53(m)(4) specifies for mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part 27.53(a) states for mobile and portable stations operating in the 2305–2315 MHz and 2350– 2360 MHz bands: By a factor of not less than: 43 +10 log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB onall frequencies between 2328 and 2337MHz; By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 ©Copyright. All rights reserved by SAICT.



# No.I22N01500-RF-LTE

+ 10 log (P) dB on all frequencies between 2296 and 2300MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz; By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.



A. 6.3 Measurement result

Only worst case result is given below

LTE band 2 : 30MHz – 19.1GHz

Spurious emission limit –13dBm.

MultiView	Spectrum								•
Ref Level 20.0	D0 dBm	RBV	V 1 MHz						
Att TDF "1"	30 dB <b>SWT</b> 7	′6.3 ms ● <b>VBV</b>	/ 3 MHz Mode	Auto Sweep					
1 Frequency S	weep			1		1		1	o1Rm View
P.	1							M1[1]	25.06 dBm
10 d0m									1.871150 GHz
10 UBIII									
0 dBm									
-10 dBm	u1 -12 000 de								
	11 13.000 00								
-20 dBm									
-30 dBm									
-40 dBm									
	Second and and	الفريق ا	المراجع ويرجعها المراجع					المراولية المحالين وراقلي و	الالتعالي وإنائيل ويستنابل وسأبلك
an distant distant and a		The second s	A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWN	Infahren orgeheit	al and story devices and solution	ويقرق وملاقل ومقاطع وفالمتأ	والمراجعة والمراجعة والترجع والتعد	and the second s	
		and the second		and the second second			and the second s		
-60 dBm									
-70 dBm			1						
30.0 MHz			30001 p	ts	1.	.91 GHz/	1	1	19.1 GHz
	~					~	Measuring		01.09.2022



# LTE band 4 : 30MHz – 17.55GHz

Spurious emission limit -13dBm.

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



# LTE band 5: 30MHz – 8.49GHz

Spurious emission limit –25dBm.





# LTE band 12: 30MHz - 7.16GHz

Spurious emission limit -13dBm.

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

MultiView	Spectrum								
Ref Level 20.	00 dBm	RBW	1 MHz						
Att TDF "1"	30 dB <b>SWT</b> 3	30.1 ms 🖷 VBW	3 MHz Mode	Auto Sweep					
1 Frequency S	weep					1			o1Rm View
ĥ	İ							M1[1]	27.28 dBm
10 d0m									705.540 MHz
10 0800									
0 dBm									
-10 dBm	U1 12 000 db	~							
	111 13.000 00								
-20 dBm									
-30 dBm									
-40 dBm									
and the second second	the barry and the	المعاملة والمراجع والمراجع	Jekile Jine Produces with the	and the party of the party of the	and a first of the second second state	أوقفته ومعالينا فبلغا فرم		a succession of the state	(Jacomposite States and a state of the
MARINER IN	Construction of the second s	Figrad particulation and star products	and the second	Construction of the second	and the second se	and the second strength and the	and a second	ing constrait out the state of	and the second se
-30 0011									
-60 dBm									
-70 dBm	1								
30.0 MHz	I		30001 pt	is is	71	3.0 MHz/			7.16 GHz
			20001 p	-		/			

# LTE band 13: 30MHz – 7.87GHz

Spurious emission limit –13dBm.





# LTE band 66: 30MHz – 17.8GHz

Spurious emission limit –13dBm.

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



# LTE CA\_5B: 30MHz – 8.49GHz

Spurious emission limit –13dBm.





# LTE CA\_66B: 30MHz - 17.8GHz

Spurious emission limit -13dBm.

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



# LTE CA\_66C: 30MHz - 17.8GHz

Spurious emission limit –13dBm.







# A.7 PEAK-TO-AVERAGE POWER RATIO

#### Reference

FCC: CFR Part 24.232, 27.50, KDB971168 D01.

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.

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.7.1 Measurement limit

not exceed 13 dB

A.7.2 Measurement results

Only worst case result is given below

#### LTE band 2

Eroquopov(MHz)		PAPR(dB)				
Frequency(MHZ)	Danuwiutii(ivinz)	QPSK	16QAM	64QAM		
1880.0	20	5.42	6.14	6.14		

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





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



#### LTE band 2, 20MHz Bandwidth, 64QAM (PAPR)





# LTE band 4

Fraguaday (MHz)	Pandwidth(MHz)		PAPR(dB)	
Frequency(MHZ)	Danuwiutii(ivinz)	QPSK	16QAM	64QAM
1732.5	20	5.50	6.30	6.32

# LTE band 4, 20MHz Bandwidth, QPSK (PAPR)



# LTE band 4, 20MHz Bandwidth, 16QAM (PAPR)





#### LTE band 4, 20MHz Bandwidth, 64QAM (PAPR)





#### LTE band 5

Fraguaday (MHz)	Pandwidth(MHz)		PAPR(dB)	
Frequency(MHZ)	banuwiutii(ivinz)	QPSK	16QAM	64QAM
826.5	10	4.86	5.06	5.74

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



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




#### LTE band 5, 10MHz Bandwidth, 64QAM (PAPR)





### LTE band 12

	Pondwidth(MHz)	PAPR(dB)		
Frequency(IVIHZ)	banuwiutii(ivinz)	QPSK 16QAM	64QAM	
707.5	10	4.90	5.76	5.74

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



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





LTE band 12, 10MHz Bandwidth, 64QAM (PAPR)





### LTE band 13

	Dondwidth (MI Iz)	PAPR(dB)		
	Danuwiutii(ivinz)	QPSK 16QAM	64QAM	
782.0	10	4.88	5.74	5.68

### LTE band 13, 10MHz Bandwidth, QPSK (PAPR)



# LTE band 13, 10MHz Bandwidth, 16QAM (PAPR)





LTE band 13, 10MHz Bandwidth, 64QAM (PAPR)





#### LTE band 66

	Dondwidth (MI I=)	PAPR(dB)		
	Danuwiutii(ivinz)	QPSK 160	16QAM	64QAM
1745.0	20	5.46	6.28	6.18

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



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





# LTE band 66, 20MHz Bandwidth, 64QAM (PAPR)





### LTE CA\_5B,10MHz+10MHz

Frequency (MHz)		PAPR (dB)	
	QPSK	16QAM	64QAM
836.5	6.06	6.76	6.76

## LTE CA\_5B, QPSK (PAPR)



## LTE CA\_5B, 16QAM (PAPR)





# No.I22N01500-RF-LTE

# LTE CA\_5B, 64QAM (PAPR)





## LTE CA\_66B,10MHz+10MHz

Frequency (MHz)		PAPR (dB)	
	QPSK	16QAM	64QAM
1755	6.58	7.12	7.04

## LTE CA\_66B, QPSK (PAPR)



# LTE CA\_66B 16QAM (PAPR)





# No.I22N01500-RF-LTE

# LTE CA\_66B, 64QAM (PAPR)





## LTE CA\_66C,20MHz+20MHz

Frequency (MHz)		PAPR (dB)	
	QPSK	16QAM	64QAM
1755	6.36	7.14	7.12

## LTE CA\_66C, QPSK (PAPR)



# LTE CA\_66C 16QAM (PAPR)





# No.I22N01500-RF-LTE

# LTE CA\_66C, 64QAM (PAPR)



Note: Expanded measurement uncertainty is *U* = 0.48, *k* = 2 \*\*\***END OF REPORT**\*\*\*