

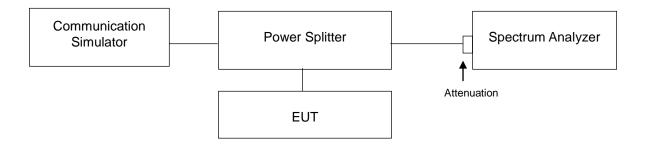


### 4.6 Peak to Average Ratio

### 4.5.1 Limits of Peak to Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

#### 4.5.2 Test Setup



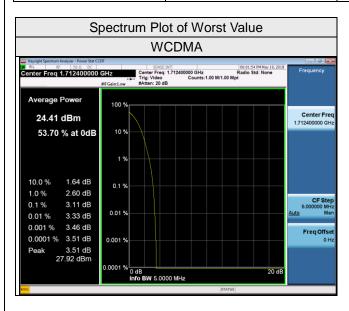
# 4.5.3 Test Procedures

- 1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
- 2. Set the number of counts to a value that stabilizes the measured CCDF curve;
- 3. Record the maximum PAPR level associated with a probability of 0.1%.



# 4.5.4 Test Results

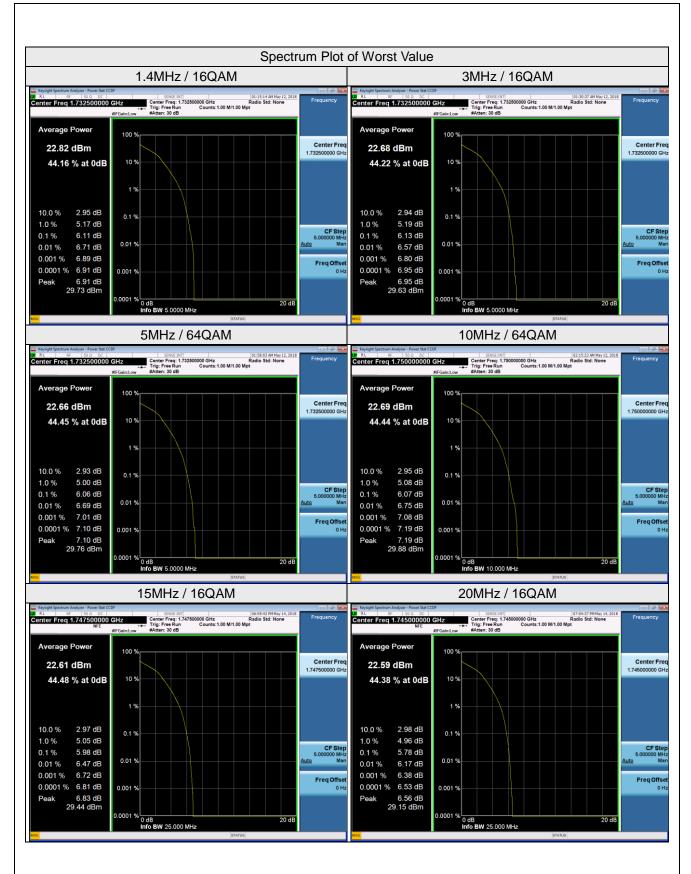
Channel		Peak to Average Ratio (dB)
Channel	Freq. (MHz)	WCDMA
1312	1712.4	3.11
1413	1732.6	3.10
1513	1752.6	2.83





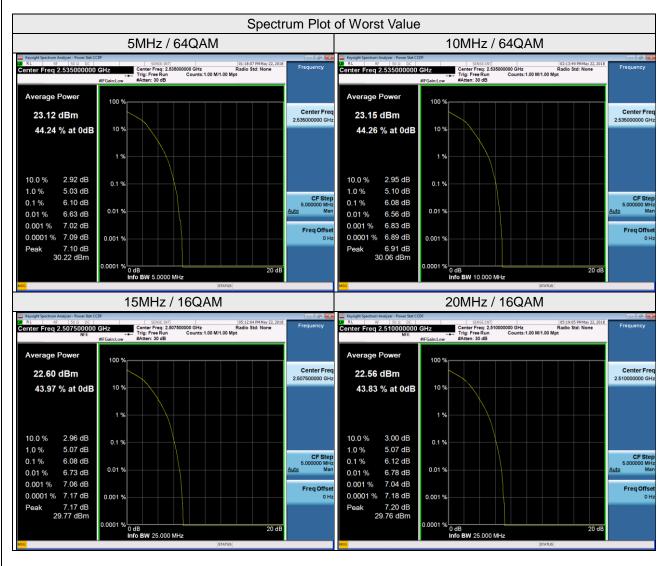
				LTE B	and 4					
	Channel Bandwidth 1.4MHz					Channel Bandwidth 3MHz				
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channel	Frequency	Peak To	Average F	Ratio (dB)	
Channel	(MHz)	QPSK	16QAM	64QAM	Charine	(MHz)	QPSK	16QAM	64QAM	
19957	1710.7	4.9	6.05	6.07	19965	1711.5	4.75	6.08	6.01	
20175	1732.5	4.9	6.11	6.10	20175	1732.5	4.74	6.13	6.06	
20393	1754.3	4.92	6.09	6.07	20385	1753.5	4.76	6.11	6.09	
	Channel Ba	andwidth 5	MHz			Channel Ba	ndwidth 1	0MHz		
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channel	Frequency	Peak To Average Ratio (di			
Charmer	(MHz)	QPSK	16QAM	64QAM	Criainiei	(MHz)	QPSK	16QAM	64QAM	
19975	1712.5	4.81	5.90	5.96	20000	1715	4.81	5.92	5.95	
20175	1732.5	4.86	5.98	6.06	20175	1732.5	4.92	6.06	6.04	
20375	1752.5	4.87	5.98	5.94	20350	1750	4.89	6.04	6.07	
	Channel Ba	ndwidth 1	5MHz			Channel Ba	ndwidth 2	0MHz		
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channel	Frequency	Peak To	Average F	Ratio (dB)	
Channel	(MHz)	QPSK	16QAM	64QAM	Chamilei	(MHz)	QPSK	16QAM	64QAM	
20025	1717.5	4.71	5.87	5.84	20050	1720	4.34	5.60	5.60	
20175	1732.5	4.76	5.97	5.96	20175	1732.5	4.43	5.70	5.70	
20325	1747.5	4.77	5.98	5.97	20300	1745	4.56	5.78	5.76	





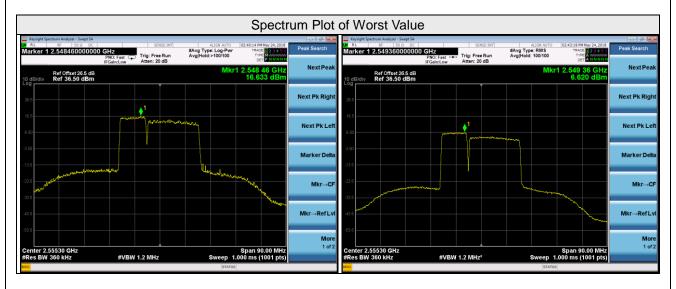


				LTE B	and 7				
	Channel Ba	andwidth 5	5MHz			Channel Ba	ndwidth 1	0MHz	
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channel	Frequency	Peak To	Average F	Ratio (dB)
Channel	(MHz)	QPSK	16QAM	64QAM	Channel	(MHz)	QPSK	16QAM	64QAM
20775	2502.5	4.86	5.76	5.76	20800	2505	4.98	5.78	5.83
21100	2535	4.98	6.01	6.10	21100 2535 4.92 6.04				6.08
21425	2567.5	4.6	6.02	6.04	21400	2565	4.84	5.99	6.00
	Channel Ba	ndwidth 1	5MHz			Channel Ba	ndwidth 2	0MHz	
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channel	Frequency	Peak To	Average F	Ratio (dB)
Channel	(MHz)	QPSK	16QAM	64QAM	Charinei	(MHz)	QPSK	16QAM	64QAM
20825	20825 2507.5 4.88 6.08 6.08				20850	2510	4.86	6.12	6.08
21100	2535	4.88	6.02	6.05	21100	2535	4.91	6.07	6.05
21375	2562.5	4.84	6.05	6.04	21350	2560	4.68	5.95	5.91



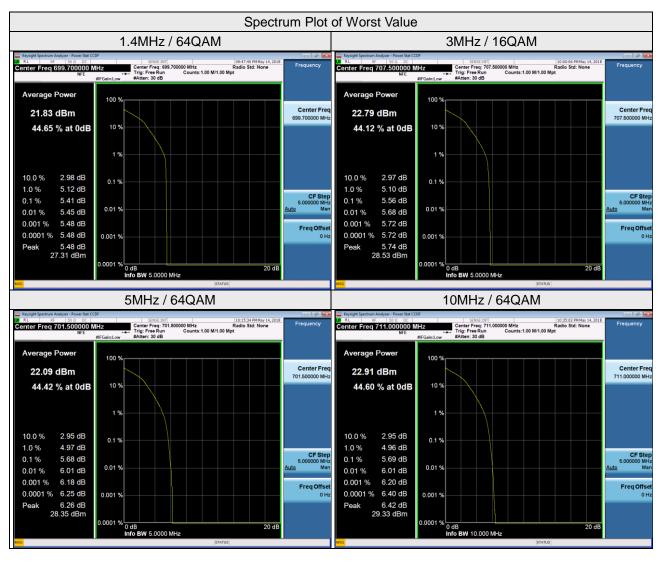


LTE CA_7C								
Peak to Average Ratio (dB)								
Channel	Freq. (MHz)	Peak Level	Average Level	Ratio (dB)				
21206+21350 2545.6+2560 16.63 6.62 10.01								



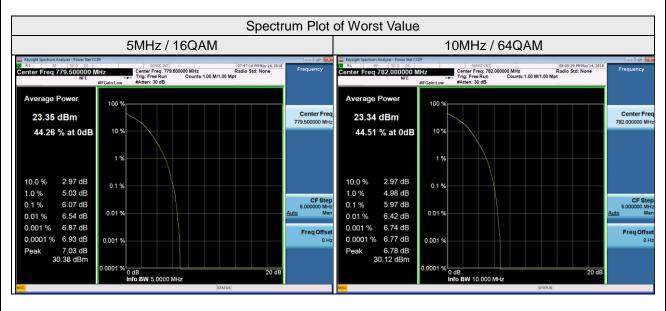


	LTE Band 12										
	Channel Bar	ndwidth 1	.4MHz		Channel Bandwidth 3MHz						
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channal	Frequency	Peak To	Average F	Ratio (dB)		
Channel	(MHz)	QPSK	16QAM	64QAM	Channel	Channel (MHz)	QPSK	16QAM	64QAM		
23017	699.7	4.47	5.34	5.41	23025	700.5	4.56	5.55	5.55		
23095	707.5	4.46	5.29	5.40	23095	707.5	4.54	5.56	5.55		
23173	715.3	4.43	5.28	5.37	23165	714.5	4.51	5.53	5.53		
	Channel Ba	andwidth 5	5MHz		Channel Bandwidth 10MHz						
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channel	Frequency	Peak To	Average F	Ratio (dB)		
Chamilei	(MHz)	QPSK	16QAM	64QAM	Charine	(MHz)	QPSK	16QAM	64QAM		
23035	701.5	4.69	5.64	5.68	23060	704	4.66	5.66	5.66		
23095	707.5	4.66	5.67	5.65	23095	707.5	4.66	5.64	5.66		
23155	713.5	4.64	5.62	5.64	23130	711	4.68	5.66	5.69		



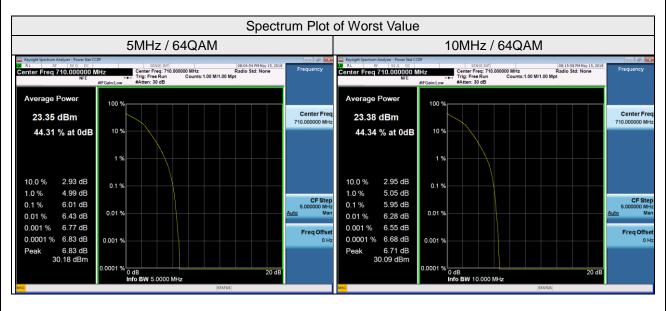


	LTE Band 13										
	Channel Ba	andwidth 5	5MHz			Channel Ba	ndwidth 1	0MHz			
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channel	Frequency	Peak To	Average F	Ratio (dB)		
Chamilei	(MHz)	QPSK	16QAM	64QAM	Chamilei	(MHz)	QPSK	16QAM	64QAM		
23205	779.5	4.88	6.07	5.94							
23230	782	4.85	6.04	5.98	23230	782	4.83	5.94	5.97		
23255	784.5	4.83	5.95	5.91							



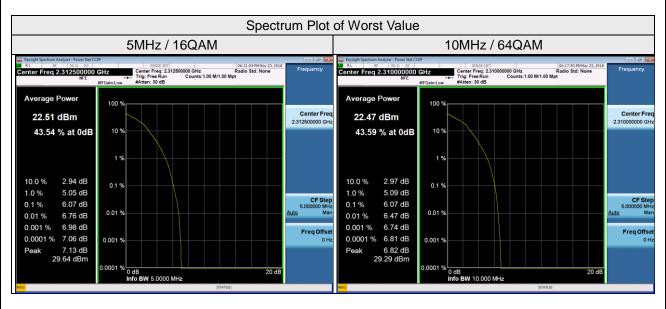


	LTE Band 17										
	Channel Bandwidth 5MHz					Channel Ba	ndwidth 1	0MHz			
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channel	Frequency	Peak To Average Ratio (dB)				
Chamilei	(MHz)	QPSK	16QAM	64QAM	Chamilei	(MHz)	QPSK	16QAM	64QAM		
23755	706.5	4.8	5.90	5.90	23780	709	4.83	5.91	5.93		
23790	710	4.89 5.99 6.01		23790	710	4.83	5.94	5.95			
23825	713.5	4.86	5.98	5.92	23800	711	4.84	5.92	5.94		



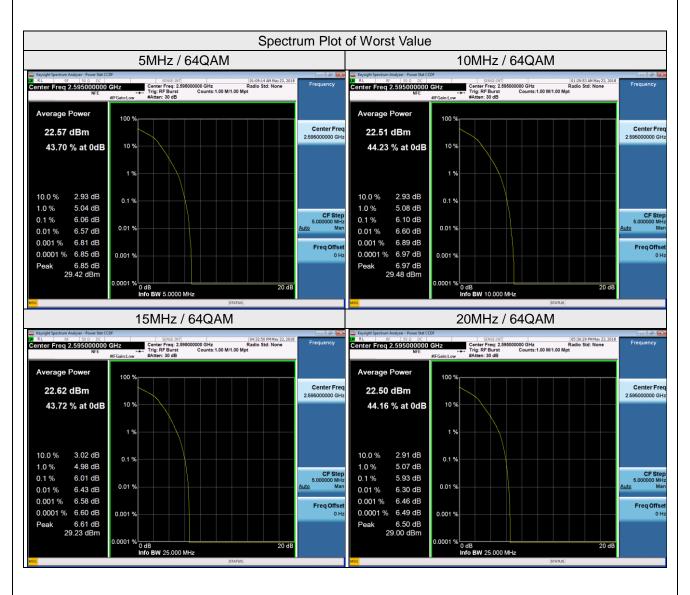


	LTE Band 30										
	Channel Ba	andwidth 5	5MHz			Channel Ba	ndwidth 1	0MHz			
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channel	Frequency	Peak To	Average F	Ratio (dB)		
Charmer	(MHz)	QPSK	16QAM	64QAM	Charine	(MHz)	QPSK	16QAM	64QAM		
27685	2307.5	4.91	6.00	6.03							
27710	2310	4.89	6.00	6.00	27710	2310	4.89	6.03	6.07		
27735	2312.5	4.9	6.07	6.07							



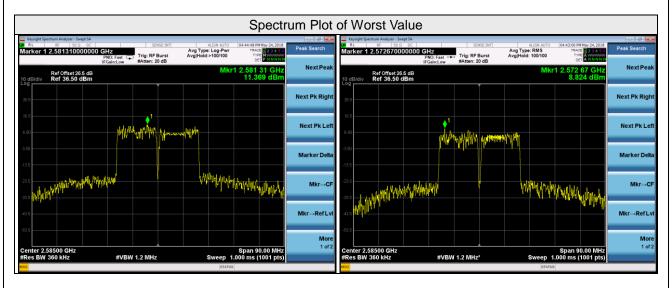


	LTE Band 38										
	Channel Ba	andwidth 5	5MHz			Channel Ba	ndwidth 1	0MHz			
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channal	Frequency	Peak To	Average F	Ratio (dB)		
Channel	(MHz)	QPSK	16QAM	64QAM	Channel	(MHz)	QPSK	16QAM	64QAM		
37775	2572.5	4.93	5.93	5.91	37800	2575	4.92	6.05	6.09		
38000	2595	4.84	5.97	6.06	38000 2595 4.95 6.06			6.06	6.10		
38225	2617.5	4.9	5.94	6.06	38200	2615	4.9	6.04	6.06		
	Channel Ba	ndwidth 1	5MHz		Channel Bandwidth 20MHz						
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channal	Frequency	Peak To	Average F	Ratio (dB)		
Channel	(MHz)	QPSK	16QAM	64QAM	Channel	(MHz)	QPSK	16QAM	64QAM		
37825	37825 2577.5 4.78 5.92 5.96				37850	2580	4.72	5.87	5.85		
38000	2595	4.77	5.94	6.01	38000	2595	4.75	5.90	5.93		
38175	2612.5	4.77	5.95	5.97	38150	2610	4.64	5.92	5.90		



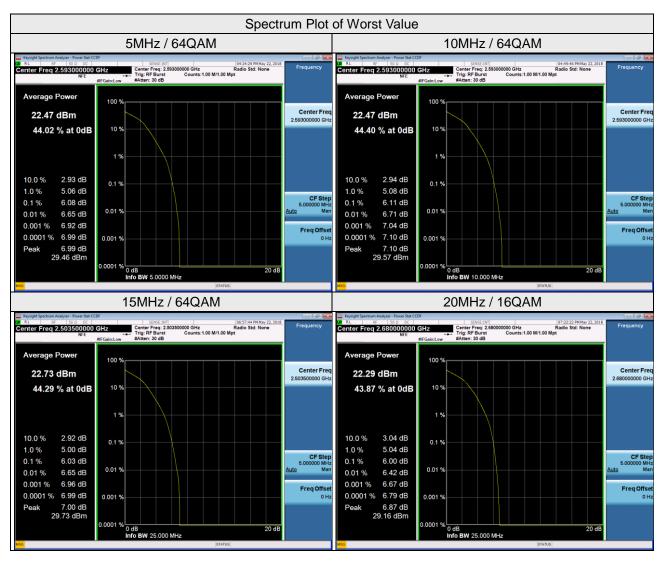


LTE CA_38C									
Channal	Peak to Average Ratio (dB)								
Channel	Freq. (MHz)	Peak Level	Average Level	Ratio (dB)					
37825+37975 2577.5+2592.5 11.37 8.82 2.55									



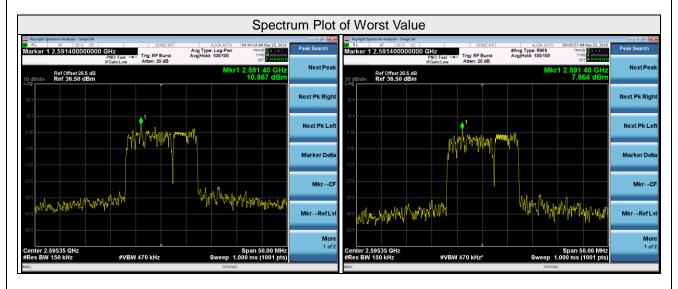


	LTE Band 41										
	Channel Ba	andwidth 5	5MHz			Channel Ba	ndwidth 1	0MHz			
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channal	Frequency	Peak To	Average F	Ratio (dB)		
Channel	(MHz)	QPSK	16QAM	64QAM	Channel	(MHz)	QPSK	16QAM	64QAM		
39675	2498.5	4.88	5.93	5.89	39700	2501	4.95	6.06	6.10		
40620	2593	3.6	5.95	6.08	50620	2593	4.95	6.05	6.11		
41565	2687.5	3.64	5.94	6.06	41540	2685	4.93	6.10	6.11		
	Channel Ba	ndwidth 1	5MHz		Channel Bandwidth 20MHz						
Channel	Frequency	Peak To	Average F	Ratio (dB)	Channel	Frequency	Peak To	Average F	Ratio (dB)		
Channel	(MHz)	QPSK	16QAM	64QAM	Charinei	(MHz)	QPSK	16QAM	64QAM		
39725	2503.5	4.86	6.01	6.03	39750	2506	4.77	5.99	5.94		
40620	2593	4.75	5.97	6.02	40620	2593	4.79	5.97	5.93		
41515	2682.5	4.86	6.01	5.98	41490	2680	4.77	6.00	5.93		





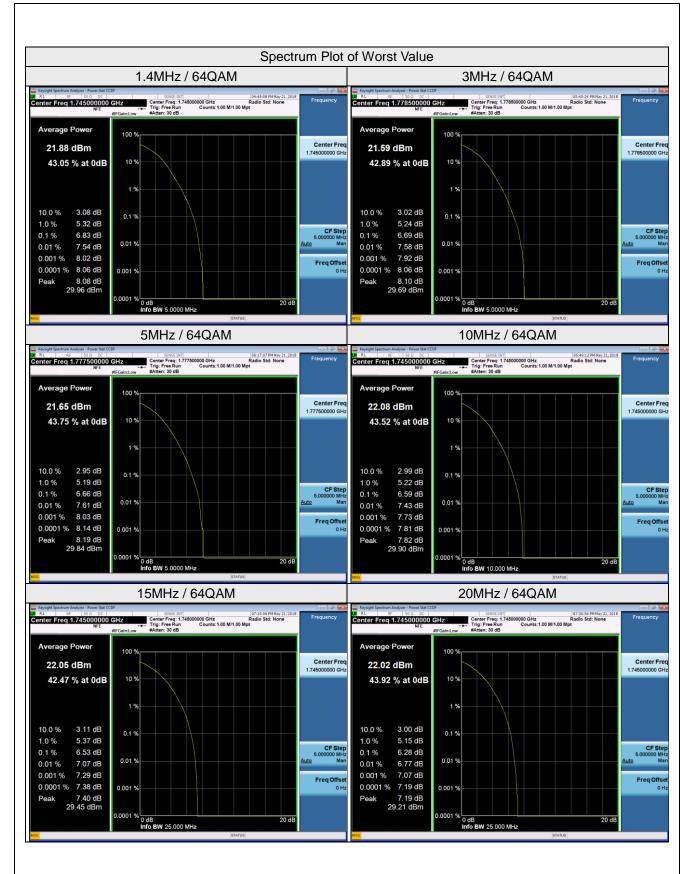
LTE CA_41C								
Peak to Average Ratio (dB)								
Channel	Channel Freq. (MHz) Peak Level Average Level Ratio (dB							
39700+39772 2501+2508.2 10.87 7.86 3.00								





LTE Band 66											
Channel Bandwidth 1.4MHz					Channel Bandwidth 3MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency	Peak To Average Ratio (dB)				
		QPSK	16QAM	64QAM	Channel	(MHz)	QPSK	16QAM	64QAM		
131979	1710.7	4.9	6.11	6.77	131987	1711.5	4.66	6.01	6.68		
132322	1745	4.9	6.06	6.83	132322	1745	4.67	6.05	6.67		
132665	1779.3	4.9	6.09	6.83	132657	1778.5	4.61	6.02	6.69		
	Channel Bandwidth 5MHz					Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Observal	Frequency	Peak To Average Ratio (dB)				
		QPSK	16QAM	64QAM	Channel	(MHz)	QPSK	16QAM	64QAM		
131997	1712.5	4.64	5.92	6.54	132022	1715	4.57	5.74	6.57		
132322	1745	4.86	6.05	6.61	132322	1745	4.77	5.96	6.59		
132647	1777.5	4.79	6.00	6.66	132622	1775	4.64	5.92	6.57		
	Channel Bandwidth 15MHz					Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Observal	Frequency	Peak To Average Ratio (dB)				
		QPSK	16QAM	64QAM	Channel	(MHz)	QPSK	16QAM	64QAM		
132047	1717.5	4.44	5.44	6.36	132072	1720	4.13	5.31	6.10		
132322	1745	4.64	5.83	6.53	132322	1745	4.17	5.48	6.28		
132597	1772.5	4.59	5.66	6.47	132572	1770	4.14	5.35	6.11		

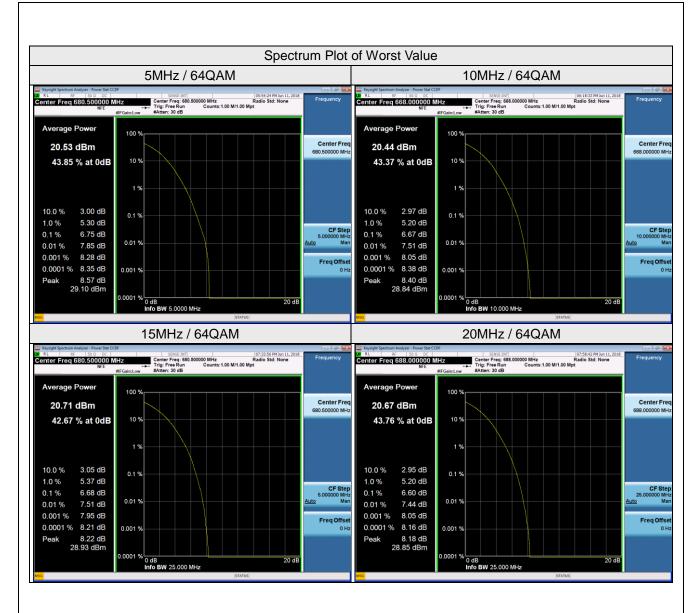






LTE Band 71											
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			01	Frequency	Peak To Average Ratio (dB)				
		QPSK	16QAM	64QAM	Channel	(MHz)	QPSK	16QAM	64QAM		
133147	665.5	4.89	6.08	4.65	133172	668	4.85	6.12	6.67		
133297	680.5	4.85	6.07	6.75	133297	680.5	4.82	6.12	6.63		
133447	695.5	4.93	6.09	6.63	133422	693	4.85	6.02	6.64		
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency	Peak To Average Ratio (dB)				
		QPSK	16QAM	64QAM	Challie	(MHz)	QPSK	16QAM	64QAM		
133197	670.5	4.96	6.24	6.63	133222	673	4.65	5.92	6.56		
133297	680.5	5.24	6.10	6.68	133297	680.5	4.74	5.97	6.49		
133397	690.5	4.99	6.11	6.64	133372	688	4.81	6.00	6.60		







#### 4.7 Conducted Spurious Emissions

#### 4.7.1 Limits of Conducted Spurious Emissions Measurement

According to FCC 27.53(a)(4) For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands: (i) 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 on all frequencies between 2328 and 2337 MHz; (ii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz; (iii) 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.

According to FCC 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the 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, in accordance with the following:

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
- (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
- (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

According to FCC 27.53(f) For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

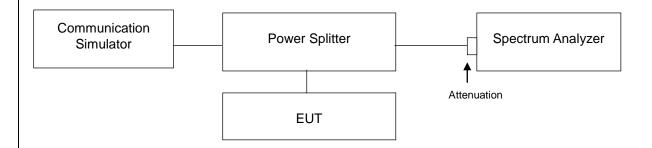
According to FCC 27.53(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (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.

According to FCC 27.53(h) AWS emission limits— General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

According to FCC 27.53(v)(4) 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.



# 4.7.2 Test Setup

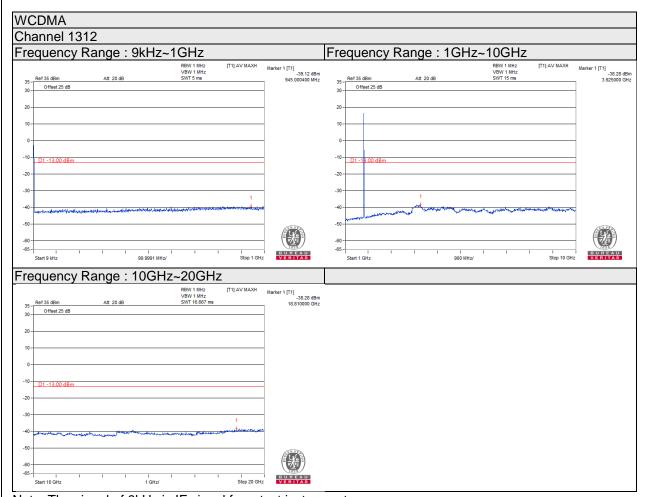


# 4.7.3 Test Procedure

- a. All measurements were done at 3 channels: low, middle and high operational frequency range.
- b. When the spectrum scanned from 9 kHz to the tenth harmonic of the highest fundamental frequency, it shall be connected to the 20dB pad attenuated the carried frequency.



### 4.7.5 Test Results



Note: The signal of 9kHz is IF signal from test instrument.



