

4.4 Channel Edge Measurement

4.4.1 Limits of Channel Edge 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 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 2388 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz; (iii) By a factor of not less than 70 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

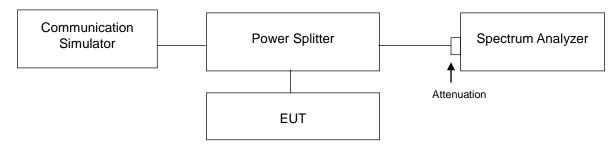
According to FCC 27.53(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log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



4.4.2 Test Setup





- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and s RB of the spectrum is >1% emission bandwidth and VB of the spectrum is \geq 3*RB.
- c. Record the max trace plot into the test report.



4.4.4 Test Results (Subcontract Item)

Channel		1312			Channel 1513	
Keysight Spectrum Analyzer - Swept SA RF S0 Ω DC Aarker 1.710000000000		ALIGN OFF #Avg Type: Log-Pwr	05:53:05 PM Jun 21, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N N	Peak Search	Date RF 50 Ω DC SENSE:INT ALIGN AUTO 12:42:00 AM Jun 15,2017 Marker 1.755000000000 GHz #Avg Type: Log-Pwr TRACE [1 2 3 4 5 6	Peak Search
Ref Offset 15 dB 0 dB/div Ref 35.00 dBm	PNO: Wide Trig: Free Run IFGain:Low #Atten: 30 dB	Mkr1	1.710 000 GHz -13.16 dBm	NextPeak	eak Ref Offset 15 dB Mkr1 1.755 000 GHz	NextPea
25.0				Next Pk Right		Next Pk Rig
5.00				Next Pk Left	ren 500	Next Pk L
5.00	• • • • • • • • • • • • • • • • • • •		DL1 -13.00 dBm	Marker Delta	eta 4.0 1 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	MarkerDe
25.0				Mkr→CF	CF 350	Mkr-
45.0				Mkr→RefLvi		Mkr→Ref
55.0			Span 5.000 MHz	More 1 of 2		M



LTE Band 4 Channel Bandwidth 1.4MHz 19957 Channel 1 RB Channel 20393 1 RB ■ Rx #F 560 oc Marker 1 1.709999000000 GHz IFGainLow #Atten: 30 dB Trig: FreeRun Barker 1 1.755002000000 GHz IFGainLow Trig: FreeRun #Atten: 30 dB ALIGN ALIGN OFF Peak Search Peak Search DET A NNN DET A N N N Mkr1 1.709 999 GHz -18.44 dBm Next Peal Mkr1 1.755 002 GHz -22.52 dBm Next Peak Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBn 10 c Next Pk Right Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta 34 0L1 -13.00 d will the Mkr→CF Mkr→CF Mkr→RefLvl Mkr→RefLvl More 1 of 2 More 1 of 2 Center 1.7550000 GHz #Res BW 13 kHz Center 1.7100000 GHz #Res BW 13 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 51 kHz #VBW 51 kHz 19957 6 RB 20393 6 RB Channel Channel Marker 1 1.709970000000 GHz Marker 1 1.709970000000 GHz ⊮Gaintow #Gaintow Marker 1 1.755012000000 GHz Marker 1 1.755012000000 GHz PNO:Wide ↓ ffGainLow #Atten: 30 dB ALIGN OFF #Avg Type: Log-Pwr 08:47:27 AM Jun 11, 2017 TRACE 1 2 3 4 5 6 ALIGN OFF #Avg Type: Log-Pwi 4:13 AM Jun 11, 2017 TRACE 1 2 3 4 5 6 Peak Search Peak Search Next Peak Mkr1 1.709 970 GHz -15.83 dBm Mkr1 1.755 012 GHz -19.26 dBm Next Peak Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 d Log 10 dB/div Next Pk Right Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta IL1 -13.00 d DL1 -13.00 d 1 • Mkr→CF Mkr→CF Mkr→RefLvl Mkr→RefLvl More 1 of 2 More 1 of 2 enter 1.7550000 GHz Res BW 13 kHz Center 1.7100000 GH #Res BW 13 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 51 kHz #VBW 51 kHz



LTE Band 4 **Channel Bandwidth 3MHz** 19965 1 RB 1 RB Channel Channel 20385 Robert Statement Statement Statement Trig: Free Run arker 1 1.709998000000 GHz FNO: Wide Trig: Free Run IFGainLow #Atten: 30 dB Kenjat Spanner RL RF 50 0 DC arker 1 1.755003000000 GHZ PR0: Wide IFGain.tow #Atten: 30 dB ALIGN OFF #Avg Type: Peak Search Peak Search TYPE MWWWW DET A NNNN TYPE MWWWW DET A NNNN NextPeal Next Peak Mkr1 1.709 998 GHz -13.82 dBm Mkr1 1.755 003 GHz -17.98 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 10 d Next Pk Righ Next Pk Right Next Pk Left Next Pk Left 10° Marker Delta Marker Delta XL1 -13.00 Mkr→CF Mkr→CF Mkr→RefLvl Mkr→RefLvl More 1 of 2 More 1 of 2 Center 1.7550000 GHz #Res BW 30 kHz Center 1.7100000 GHz #Res BW 30 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 100 kHz #VBW 100 kHz Channel Channel 19965 15 RB 20385 15 RB Ryget Spectra mergen 2000 R L 6F 500 DC GHz Marker 1 1.755007000000 GHz IFGainLow #Atten: 30 dB M RL BF 50 Ω DC Marker 1 1.709999000000 GHz PHO: Wide ↓ #GainLow #Atten: 30 dB 103 AMJun 11, 2017 ALIGN OFF #Avg Type: Log-Pwr ALIGN OFF #Avg Type: Log-Pwi 01 AM Jun 11, 201 Peak Search Peak Search NNNN Next Peak Next Peak Mkr1 1.709 999 GHz -15.97 dBm Mkr1 1.755 007 GHz -20.08 dBm Ref Offset 15 dB Ref 35.00 dBn Ref Offset 15 dB Ref 35.00 dBm 10 d Log 10 dB Next Pk Right Next Pk Right Next Pk Lef Next Pk Left Marker Delta Marker Delta . Kurry at sugar Mkr→CF Mkr→CF Mkr→RefLvl 45 Mkr→RefLvl More 1 of 2 More 1 of 2 Center 1.7550000 GHz Res BW 30 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 1.7100000 GHz #Res BW 30 kHz #VBW 100 kHz #VBW 100 kHz



LTE Band 4 **Channel Bandwidth 5MHz** 19975 1 RB 1 RB Channel Channel 20375 Kenjat Spanner RL RF 50 0 DC arker 1 1.755001000000 GHZ PR0: Wide IFGain.tow #Atten: 30 dB Rt SF SG DC arker 1 1.709998000000 GHz FN0: Wide Trig: Free Run IFGainLow #Atten: 30 dB ALIGN OFF ALIGN OFF #Avg Type: Log-Pwi Avg|Hold:>100/100 Peak Search Peak Search TYPE MWWWW DET A NNNN TYPE MWWW DET A N N N N NextPeal Next Peak Mkr1 1.709 998 GHz -17.913 dBm Mkr1 1.755 001 GHz -21.01 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 (Loc 10 di Next Pk Right Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta E1 -13.00 (DL1 -13.00 Mkr→CF Mkr→CF Mkr→RefLvl Mkr→RefLvl More 1 of 2 More 1 of 2 Center 1.7550000 GHz #Res BW 100 kHz Center 1.7100000 GHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 300 kHz* #VBW 300 kHz 25 RB Channel Channel 19975 20375 25 RB Marker 1 1.75500600000 GHz Marker 1 1.75500600000 GHz IFGainLow #Atten: 30 dB Key tags KF S0 ⊕ DC Marker 11.709971000000 GHz Trig: Free Run If SainLow Trig: Free Run 1 2 3 4 5 TRACE 1 2 3 4 5 TYPE MWWW DET A NNNN ALIGN OFF #Avg Type: Log-Pwr ALIGN OFF #Avg Type: Log-Pwr Avg|Hold:>100/100 Peak Search Peak Search AWWW NextPea Next Peak Mkr1 1.709 971 GHz -21.26 dBm Mkr1 1.755 006 GHz -16.097 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 c 10 di Next Pk Rig Next Pk Right Next Pk Lef Next Pk Left Marker Delt Marker Delta -13.00 (**∮**¹ Mkr→C Mkr→CF Mkr→RefLv Mkr→RefLvl 55. More 1 of 2 More 1 of 2 Center 1.7100000 GHz #Res BW 100 kHz Center 1.7550000 GHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 300 kHz #VBW 300 kHz* TATUS 🔀 Align Now All req



LTE Band 4 Channel Bandwidth 10MHz 20000 1 RB Channel 1 RB Channel 20350 Robert Statement Statement Statement Trig: Free Run arker 1 1.709999000000 GHz FNO: Wide Trig: Free Run IFGainLow #Atten: 30 dB Kenjat Spanner RL RF 50 0 DC arker 1 1.755006000000 GHZ PR0: Wide IFGain.tow #Atten: 30 dB #Avg Type: Peak Search Avg Type: RMS Avg Hold:>100/100 Peak Search TYPE MWWWW DET A NNNN TYPE MWWWW NextPeal Next Peak Mkr1 1.709 999 GHz -31.64 dBm Mkr1 1.755 006 GHz -23.029 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 (Loc 10 di Next Pk Righ Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta .1 -13.00 (XL1 -13.00 Mkr→CF Mkr→CF Mkr→RefLvl Mkr→RefLvl More 1 of 2 More 1 of 2 Center 1.7550000 GHz #Res BW 100 kHz Center 1.7100000 GHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 300 kHz #VBW 300 kHz* Channel Channel 20000 50 RB 20350 50 RB Ryget Spectra mergen variable for the form of the for Marker 11.709778000000 GHz Marker 11.709778000000 GHz PK0:Wide ↓ IFGeinLow #Atten: 30 dB 4:47 AMJun 11, 2017 TRACE 1 2 3 4 5 6 ALIGN OFF #Avg Type: Log-Pwr Avg|Hold:>100/100 6:26 AM Jun 11, 201 ALIGN OFF Peak Search Peak Search DET A NNNN DET A N NNN Next Peak Next Peak Mkr1 1.709 778 GHz -13.24 dBm Mkr1 1.755 005 GHz -17.333 dBm Ref Offset 15 dB Ref 35.00 dBn Ref Offset 15 dB Ref 35.00 dBn 10 d Log 10 dB Next Pk Right Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta ۲ 0L1 -13.00 Mkr→CF Mkr→CF Mkr→RefLvl 45 Mkr→RefLvl More 1 of 2 More 1 of 2 Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 1.7550000 GHz Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 1.7100000 GHz #Res BW 100 kHz #VBW 300 kHz #VBW 300 kHz*



LTE Band 4 Channel Bandwidth 15MHz 20025 1 RB 1 RB Channel Channel 20325 ----Kenjat Spanner RL RF 50 0 DC arker 1 1.755002000000 GHZ PR0: Wide IFGain.tow #Atten: 30 dB Rt SF SG DC arker 1 1.709988000000 GHz Trig: Free Run IFGainLow Trig: Free Run ALIGN OFF #Avg Type: Log-Pwr #Avg Type: Peak Search Trace/Detect TYPE MWWWW DET A NNNN TYPE MWWW DET A N N N N Select Trace Next Peak Mkr1 1.709 988 GHz -38.894 dBm Mkr1 1.755 002 GHz -41.53 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 (Loc 10 di Clear Writ Next Pk Right Trace Aver Next Pk Left Max Hol Marker Delta .1 -13.0 DL1 -13.00 Min Hold Mkr→CF View Blank View Mkr→RefLvl More 1 of 3 More 1 of 2 Center 1.7550000 GHz #Res BW 150 kHz Center 1.7100000 GHz #Res BW 150 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 470 kHz #VBW 470 kHz Channel Channel 20025 75 RB 20325 75 RB Rsp. = # 8 ± 5 ≤ 50 ≥ CC Marker 1 1.755149000000 GHz IFGeinLow #Atten: 30 dB Marker 11.709896000000 GHz Marker 11.709896000000 GHz PK0:Wide ↓ IFGeinLow #Atten: 30 dB 10:30:36 AM Jun 11, 201 TRACE 1 2 3 4 5 6 ALIGN OFF #Avg Type: Log-Pwr ALIGN OFF #Avg Type: Log-Pwi Peak Search Trace/Detector YPE MWWW DET A NNNN Select Trace Next Peak Mkr1 1.709 896 GHz -17.975 dBm Mkr1 1.755 149 GHz -18.24 dBm Ref Offset 15 dB Ref 35.00 dBn Ref Offset 15 dB Ref 35.00 dBm 10 d Log 10 dB/div Clear Writ Next Pk Right Trace Average Next Pk Left Max Hold Marker Delta .1 -13.00 \mathbf{A}^1 Min Hold Mkr→CF View Blank View Mkr→RefLvl 45. More 1 of 3 More 1 of 2 Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 1.7550000 GHz Res BW 150 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 1.7100000 GHz #Res BW 150 kHz #VBW 470 kHz #VBW 470 kHz



LTE Band 4 Channel Bandwidth 20MHz 20050 1 RB 20300 1 RB Channel Channel ----Kenjat Spanner RL RF 50 Ω DC arker 1 1.755011000000 GHZ PR0: Wide IFGain.tow #Atten: 30 dB Rt SF SG DC arker 1 1.709982000000 GHz Trig: Free Run IFGainLow Trig: Free Run ALIGN OFF #Avg Type: Log-Pwr #Avg Type: Trace/Detect Trace/Detect TYPE MWWWW DET A NNNN TYPE MWWW DET A N N N N Select Trace Select Trace Mkr1 1.709 982 GHz -42.16 dBm Mkr1 1.755 011 GHz -41.995 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 10 di Clear Writ Clear Wri Trace Aver Trace Avera Max Hol Max Ho L1 -13.00 0.1 -13.00 Min Hold Min Hol ٥ ٠ View Blank View View Blank View More 1 of 3 More 1 of 3 Center 1.7550000 GHz #Res BW 180 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 1.7100000 GHz #Res BW 180 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 560 kHz #VBW 560 kHz Channel Channel 20050 100 RB 20300 100 RB Ryged Spachan ar given and the second Ryget Spectra mergen 2000 R L 6F 500 DC Marker 1 1.755024000000 GHz IFGainLow Trig: Free Run IFGainLow 10:43:17 AM Jun 11, 201 ALIGN OFF ALIGN OFF #Avg Type: Log-Pwi Peak Search Peak Search Next Peak Next Peak Mkr1 1.709 994 GHz -21.54 dBm Mkr1 1.755 024 GHz -18.34 dBm Ref Offset 15 dB Ref 35.00 dBn Ref Offset 15 dB Ref 35.00 dBm 10 d Log 10 dB Next Pk Right Next Pk Right Next Pk Lef Next Pk Left Marker Delta Marker Delta -13.00 (**→**¹= Mkr→CF Mkr→CF Mkr→RefLvl 45 Mkr→RefLvl More 1 of 2 More 1 of 2 Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 1.7550000 GHz Res BW 180 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 1.7100000 GHz #Res BW 180 kHz #VBW 560 kHz #VBW 560 kHz



2.601 GHz

ALimit -24.16 dB -15.79 dB -16.35 dB -19.17 dB -20.95 dB -26.75 dB -27.86 dB -28.34 dB

LTE Band 7 Channel Bandwidth 5MHz 20775 1 RB Channel 21425 1 RB Channel MultiView Spectrum Ref Level 30.00 dBm Offset 15.1 MultiView E Spectrum Ref Level 30.00 dBm Offset 15.00 Mode A Mode RIOUS_LINE 466 GHz Result Summ Range Lo 2 466 GH 9 MHz 001 pt 1.1 MHz/ 2.601 GHz 7005 r 2.505 GHz 56 GH Range Up 2.490 GHz 2.495 GHz 2.496 GHz 2.496 GHz 2.499 GHz 2.500 GHz 2.500 GHz 2.505 GHz RBW ALimit -10.27 dB -9.08 dB -9.59 dB -25.80 dB -25.02 dB -25.31 dB -34.79 dB RBW ALimit -34.71 dB -45.45 dB -24.57 dB -27.87 dB -25.91 dB -10.93 dB -50.47 dB -9.54 dB Frequency 2.56966 GHz 2.57000 GHz 2.57000 GHz 2.57399 GHz 2.57500 GHz 2.57834 GHz 2.58100 GHz Power Abs 19.73 dBm -19.08 dBm -19.59 dBm -43.17 dBm -59.14 dBm -59.14 dBm -60.31 dBm -59.79 dBm Frequency 2.49012 GHz 2.49496 GHz 2.49600 GHz 2.49600 GHz 2.49604 GHz 2.50000 GHz 2.50000 GHz Power Abs -59.71 dBm -58.45 dBm -37.57 dBm -37.87 dBm -35.91 dBm -20.93 dBm -20.47 dBm 20.46 dBm 2.466 GHz 2.490 GHz 2.495 GHz 2.496 GHz 2.496 GHz 2.496 GHz 2.499 GHz 2.500 GHz 2.500 GHz 200.000 kHz 200.000 kHz 100.000 kHz 200.000 kHz 200.000 kHz 100.000 kHz 100.000 kHz 2.570 GHz 2.570 GHz 2.575 GHz 2.575 GHz 2.575 GHz 2.575 GHz 2.581 GHz 2.581 GHz 2.581 GHz 100.000 kHz 100.000 kHz 100.000 kHz 200.000 kHz 200.000 kHz 200.000 kHz 200.000 kHz 570 GHz 570 GHz 571 GHz 575 GHz 575 GHz 581 GHz te: 20.JUN.2017 23:34:21 Date: 20.JUN.2017 23:50:01 Channel Bandwidth 5MHz 20775 25 RB 25 RB Channel Channel 21425 MultiView E Spectrum MultiView B Spectrum Mode Auto Sw Mode Auto Swe

2.56 GHz

560 GHz 570 GHz 570 GHz 571 GHz 575 GHz 575 GHz 581 GHz

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2.505 GHz

ALimit -24.03 dB -26.17 dB -23.18 dB -26.46 dB -21.89 dB -19.63 dB -59.41 dB -24.01 dB

Power Abs -49.03 dBm -39.17 dBm -36.18 dBm -36.46 dBm -31.89 dBm -29.63 dBm -29.41 dBm -2.99 dBm 9001 pts

Range U

2.570 GHz 2.570 GHz 2.571 GHz 2.575 GHz 2.575 GHz 2.575 GHz 2.581 GHz 2.581 GHz 2.601 GHz RBW

100.000 kHz 100.000 kHz 100.000 kHz 200.000 kHz 200.000 kHz 200.000 kHz 200.000 kHz 200.000 kHz L1 MHz

Power Abs 5.84 dBm -26.79 dBm -26.35 dBm -29.17 dBm -40.21 dBm -39.75 dBm -52.86 dBm -53.34 dBm

Frequency 2.56777 GHz 2.57000 GHz 2.57104 GHz 2.57500 GHz 2.57500 GHz 2.58100 GHz 2.58100 GHz

2.466 GHz

ult Summa Range Low 2.466 GHz 2.490 GHz 2.495 GHz 2.496 GHz 2.496 GHz 2.499 GHz 2.499 GHz 2.500 GHz 2.500 GHz

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17005 pt

RBW

200.000 kHz 200.000 kHz 100.000 kHz 200.000 kHz 200.000 kHz 100.000 kHz 100.000 kHz Frequency 2.49049 GHz 2.49500 GHz 2.49600 GHz 2.49600 GHz 2.49791 GHz 2.50000 GHz 2.50000 GHz 2.50435 GHz

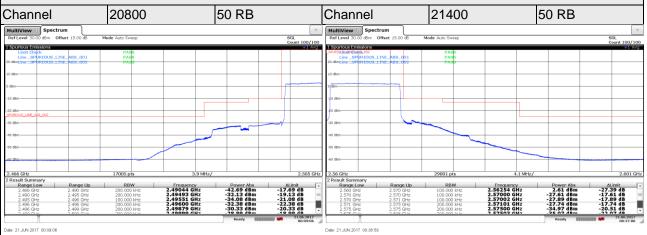
Range Up 2.490 GHz 2.495 GHz 2.496 GHz 2.496 GHz 2.499 GHz 2.500 GHz 2.500 GHz 2.505 GHz



LTE Band 7 Channel Bandwidth 10MHz 20800 Channel 1 RB Channel 21400 1 RB MultiView Spectrum Ref Level 30.00 dBm Offset MultiView Spectrum Ref Level 30.00 dBm Offset 15. dada Auto Su 2.466 GHz Result Summ Range Lo 17005 pt 2.505 GHz 29001 pts 4.1 MHz/ 2.601 GHz .9 MHz/ 2.56 GHz 2 Result S Range Up 2.490 GHz 2.495 GHz 2.496 GHz 2.496 GHz 2.496 GHz 2.499 GHz RBW . Range Up RBW Frequency 2.56941 GHz 2.57000 GHz 2.57074 GHz 2.57308 GHz 2.57500 GHz Frequency 2.49045 GHz 2.49177 GHz 2.49600 GHz 2.49600 GHz 2.49600 GHz 2.49619 GHz Power Ab -59.55 dB -33.97 dB -45.01 dB -40.90 dB 19.80 dBi -32.87 dBi -47.73 dBi -56.44 dBi ALIMIT -34.55 dE -20.97 dE -32.01 dE -30.90 dE -25.38 dE 100.000 kHz 100.000 kHz 100.000 kHz 200.000 kHz 200.000 kHz 200.000 kHz 100.000 kHz 200.000 kHz 2.495 GHz 2.495 GHz 2.496 GHz 2.496 GHz 1

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Channel Bandwidth 10MHz



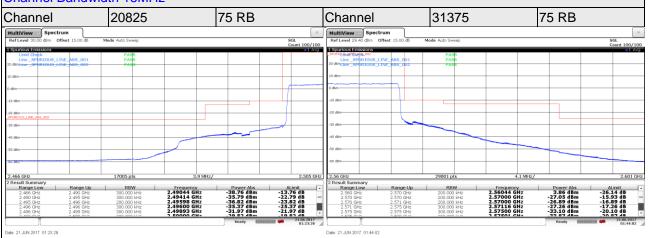
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LTE Band 7 Channel Bandwidth 15MHz Channel 20825 1 RB Channel 31375 1 RB MultiView Spectrum Ref Level 30.00 dBm Offset 15. MultiView Spectrum Ref Level 29.40 dBm Offset 15. Mode Auto S Mode Auto SGL SGL 40 dBm-2.466 GHz 2.466 GHz 2.466 GHz 2.495 GHz 2.495 GHz 2.495 GHz 2.496 GHz 2.496 GHz 17005 pt .9 MHz/ 2.505 GHz 2.56 GHz 2 Result Su 9001 pts 1.1 MHz/ 2.601 GHz RBW 300.000 kHz 300.000 kHz 200.000 kHz 300.000 kHz 300.000 kHz • Range Up 2.490 GHz 2.495 GHz 2.496 GHz 2.496 GHz 2.496 GHz 2.499 GHz Frequency 2.48751 GHz 2.49419 GHz 2.49593 GHz 2.49600 GHz 2.49900 GHz Power Abs -36.46 dBm -35.77 dBm -57.06 dBm -55.61 dBm -47.18 dBm 21 52 dBm ALimit -11.46 dB -22.77 dB -44.06 dB -45.61 dB -37.18 dB ange Lo Range Up RBW 200.000 kHz 200.000 kHz 200.000 kHz 300.000 kHz 300.000 kHz Frequency 2.56916 GHz 2.57000 GHz 2.57057 GHz 2.57392 GHz 2.57500 GHz Power Abs 21.82 dBm -34.49 dBm -46.04 dBm -57.61 dBm -58.35 dBm ALimit -8.18 dB -15.93 dB -22.69 dB -24.29 dB -27.10 dB -2.570 GHz 2.571 GHz 2.575 GHz 2.575 GHz

Date: 21.JUN.2017 00:49:49

Channel Bandwidth 15MHz



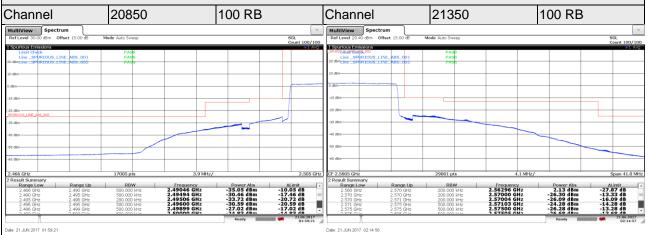
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LTE Band 7 Channel Bandwidth 20MHz 20850 Channel 1 RB Channel 21350 1 RB MultiView Spectrum Ref Level 30.00 dBm Offset MultiView E Spectrum Ref Level 29.40 dBm Offset 15.0 2.466 GHz Result Summ Range Lo CF 2.5805 GH 2 Result Sumr 29001 pt 4.1 MHz/ Span 41.0 MHz 17005 pt .9 MHz/ 2.505 GHz Range Up 2.490 GHz 2.495 GHz 2.496 GHz 2.496 GHz 2.496 GHz 2.499 GHz . ae Lo Range Up RBW RBW Power Abs -46.21 dBn -36.31 dBn -56.81 dBn -53.10 dBn Frequency 2.48329 GHz 2.49219 GHz 2.49599 GHz 2.49600 GHz 2.49900 GHz ALimit -21.21 dB -23.31 dB -43.81 dB -43.10 dB -36.28 dB Frequency 2.56892 GHz 2.57000 GHz 2.57075 GHz 2.57423 GHz 2.57423 GHz Power Abs 21.20 dBn -38.79 dBn -49.59 dBn -55.48 dBn -56.73 dBn 200.000 kHz 200.000 kHz 200.000 kHz 500.000 kHz 500.000 kHz 500.000 kHz 200.000 kHz 500.000 kHz 2.495 GHz 2.495 GHz 2.496 GHz 1 Date: 21.JUN.2017 02:11:29

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Channel Bandwidth 20MHz





LTE Band 12 Channel Bandwidth 1.4MHz 23017 1 RB 1 RB Channel Channel 23173 Reveal approximation of the second of the se RE BF 500 DC arker 1 716.002000000 MHz IFGain:Low #Atten: 30 dB ALIGN OFF #Avg Type: Peak Search Peak Search TYPE MWWWW DET A NNNN TYPE MWWWW NextPeal Next Peak Mkr1 699.000 MHz -23.69 dBm Mkr1 716.002 MHz -23.95 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 (Loc 10 di Next Pk Righ Next Pk Right Next Pk Lef Next Pk Left Marker Delta Marker Delta XL1 -13.00 13.0 Mkr→CF Mkr→CF Mkr→RefLvl Mkr→RefLvl More 1 of 2 More 1 of 2 Center 699.0000 MHz #Res BW 30 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 716.0000 MHz #Res BW 30 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 100 kHz #VBW 100 kHz Channel Channel 23017 6 RB 23173 6 RB R1 PF 55.0 0C Marker 1 698.979000000 MHz PRO: Mid. Trig: Free Run IFGeinLow Ryget Spectra Marrier 0.00 R L 6F 500 DC Marker 1 716.003000000 MHz IFGainLow #Atten: 30 dB ALIGN OFF #Avg Type: Log-Pwr 50 PM Jun 13, 201 ALIGN OFF #Avg Type: Log-Pw 1:38 PM Jun 13, 2017 TRACE 1 2 3 4 5 6 Peak Search Peak Search DET A NNNN DET A N NNN Next Peak Next Peak Mkr1 698.979 MHz -24.56 dBm Mkr1 716.003 MHz -19.43 dBm Ref Offset 15 dB Ref 35.00 dBn Ref Offset 15 dB Ref 35.00 dBm 10 d Log 10 dB Next Pk Right Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta Mkr→CF Mkr→CF Mkr→RefLvl 45. Mkr→RefLvl More 1 of 2 More 1 of 2 Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 699.0000 MHz #Res BW 30 kHz Center 716.0000 MHz Res BW 30 kHz #VBW 100 kHz #VBW 100 kHz



LTE Band 12 **Channel Bandwidth 3MHz** 23025 1 RB 1 RB Channel Channel 23165 Review spectrum RL 8F 58.0 DC arker 1 699.000000000 MHz FR0: Wide IFGainLow Trig: Free Run #Atten: 30 dB Kenjat Spanner RL RF 50 0 DC arker 1 716.001000000 MHz FRO: Wide IFGain.tow #Atten: 30 dB #Avg Type: Lo ALIGN OFF Peak Search Peak Search TYPE MWWWW DET A NNNN TYPE MWWWW Mkr1 699.000 MHz -18.19 dBm NextPeal Next Peak Mkr1 716.001 MHz -19.48 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 (Loc 10 di Next Pk Righ Next Pk Right Next Pk Lef Next Pk Left Marker Delta Marker Delta XL1 -13.00 25 Mkr→CF Mkr→CF Mkr→RefLvl Mkr→RefLvl More 1 of 2 More 1 of 2 Center 699.0000 MHz #Res BW 30 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 716.0000 MHz #Res BW 30 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 100 kHz #VBW 100 kHz Channel Channel 23025 15 RB 23165 15 RB Ryged Spachan ar given and the second 5-59 PM Jun 13, 2017 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET A N N N N N ALIGN OFF #Avg Type: Log-Pw 57 PM Jun 13, 201 ALIGN OFF #Avg Type: Log-Pwi Peak Search Peak Search DET A N N N N Next Peak Next Peak Mkr1 698.999 MHz -25.79 dBm Mkr1 716.009 MHz -23.50 dBm Ref Offset 15 dB Ref 35.00 dBn Ref Offset 15 dB Ref 35.00 dBm 10 d Log 10 dB Next Pk Right Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta Mkr→CF Mkr→CF Mkr→RefLvl 45. Mkr→RefLvl More 1 of 2 More 1 of 2 Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 699.0000 MHz #Res BW 30 kHz Center 716.0000 MHz Res BW 30 kHz #VBW 100 kHz #VBW 100 kHz



LTE Band 12 **Channel Bandwidth 5MHz** 23035 1 RB 1 RB Channel Channel 23155 Reveal approximation of the second se RKD # 50 DC arker 1 716.004000000 MHz IFGain.tow #Atten: 30 dB #Avg Type: Lo ALIGN OFF Peak Search Peak Search TYPE MWWWW DET A NNNN TYPE MWWWW NextPeal Next Peak Mkr1 698.999 MHz -26.95 dBm Mkr1 716.004 MHz -25.26 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 (Loc 10 di Next Pk Righ Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta L1 -13.00 c 0L1 -13.00 Mkr→CF Mkr→CF Mkr→RefLvl Mkr→RefLvl More 1 of 2 More 1 of 2 Center 699.0000 MHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 716.0000 MHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 300 kHz #VBW 300 kHz 25 RB Channel Channel 23035 23155 25 RB Nega V Spettan Response and a set of the se Rygettigettim mergen 2000 R L 6F 500 DC Marker 1 716.010000000 MHz IFGainLow #Atten: 30 dB ALIGN OFF #Avg Type: Log-Pw ALIGN OFF #Avg Type: Log-Pwr 01 PMJun 13, 201 Peak Search Peak Search DET A N NNN Next Peak Next Peak Mkr1 698.994 MHz -21.68 dBm Mkr1 716.010 MHz -20.78 dBm Ref Offset 15 dB Ref 35.00 dBn Ref Offset 15 dB Ref 35.00 dBm 10 d Log 10 dB Next Pk Right Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta ۵ Mkr→CF Mkr→CF Mkr→RefLvl 45. Mkr→RefLvl More 1 of 2 More 1 of 2 Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 699.0000 MHz #Res BW 100 kHz Center 716.0000 MHz Res BW 100 kHz #VBW 300 kHz #VBW 300 kHz



LTE Band 12 Channel Bandwidth 10MHz 23060 1 RB 1 RB Channel Channel 23155 Reveal approximation of the second se Keylet Spanner S0 © DC arker 1 716.011000000 MHz FRO: Wide IFGain.tow #Atten: 30 dB #Avg Type: Lo ALIGN OFF Peak Search Peak Search TYPE MWWWW DET A NNNN TYPE MWWWW NextPeal Next Peak Mkr1 698.999 MHz -35.99 dBm Mkr1 716.011 MHz -36.98 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 (Loc 10 di Next Pk Righ Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta K.1 -13.00 d XL1 -13.00 25 Mkr→CF Mkr→CF Mkr→RefLvl Mkr→RefLvl More 1 of 2 More 1 of 2 Center 699.0000 MHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 716.0000 MHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 300 kHz #VBW 300 kHz Channel Channel 23060 50 RB 23155 50 RB R1 PF 55.0 0C Marker 1 698.953000000 MHz PRO: Mide Trig: Free Run IFGein.Low IFGein.Low #Atten: 30 dB Rygettigettim margine 500 0C R L 6F 500 0C Marker 1 716.007000000 MHz ⊮FGainLow #Atten: 30 dB 53 PM Jun 13, 201 ALIGN OFF ALIGN OFF #Avg Type: Log-Pw 5:39 PM Jun 13, 2017 TRACE 1 2 3 4 5 6 Peak Search Peak Search DET A N NN Next Peak Next Peak Mkr1 698.953 MHz -24.94 dBm Mkr1 716.007 MHz -23.13 dBm Ref Offset 15 dB Ref 35.00 dBn Ref Offset 15 dB Ref 35.00 dBn 10 d Log 10 dB/div Next Pk Right Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta **♦**¹ Mkr→CF Mkr→CF Mkr→RefLvl 45. Mkr→RefLvl More 1 of 2 More 1 of 2 Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 699.0000 MHz #Res BW 100 kHz Center 716.0000 MHz Res BW 100 kHz #VBW 300 kHz #VBW 300 kHz



LTE Band 13 **Channel Bandwidth 5MHz** 23205 1 RB 1 RB Channel Channel 23255 Review spectrum RL 8F 58.0 DC arker 1 776.996000000 MHz FR0: Wide IFGainLow Trig: Free Run #Atten: 30 dB RK BF 500 DC arker 1 787.006000000 MHz IFGaint.ow #Atten: 30 dB #Avg Type: Lo ALIGN OFF #Avg Type: Log-Pw Peak Search Peak Search TYPE MWWWW DET A NNNN TYPE MWWW DET A N N N N NextPeal Next Peak Mkr1 776.996 MHz -27.17 dBm Mkr1 787.006 MHz -27.75 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 (Loc 10 di Next Pk Righ Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta L1 -13.00 c 0L1 -13.00 Mkr→CF Mkr→CF Mkr→RefLvl Mkr→RefLvl More 1 of 2 More 1 of 2 Center 777.0000 MHz #Res BW 100 kHz Center 787.0000 MHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 300 kHz #VBW 300 kHz 25 RB Channel Channel 23205 23255 25 RB Report Spectra Response and a second Ryged Spectra Mary No. 20 R L 67 500 DC Marker 1 787.001000000 MHz IFGainLow #Atten: 30 dB ALIGN OFF ALIGN OFF #Avg Type: Log-Pwr 19 PM Jun 13, 201 Peak Search Peak Search YPE MWWW TYPE NNNN Next Peak Next Peak Mkr1 777.000 MHz -28.06 dBm Mkr1 787.001 MHz -28.98 dBm Ref Offset 15 dB Ref 35.00 dBn Ref Offset 15 dB Ref 35.00 dBm 10 d Log 10 dB Next Pk Right Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta Mkr→CF Mkr→CF Mkr→RefLvl 45 Mkr→RefLvl More 1 of 2 More 1 of 2 Center 777.0000 MHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 787.0000 MHz Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 300 kHz #VBW 300 kHz



LTE Band 13 Channel Bandwidth 10MHz 23230 1 RB Channel 1 RB Channel 23230 Review spectrum RL 8F 58.0 DC arker 1 776.998000000 MHz FR0: Wide IFGainLow Trig: Free Run #Atten: 30 dB RK BF 500 DC arker 1 787.002000000 MHz IFGain.tow #Atten: 30 dB #Avg Type: Lo ALIGN OFF #Avg Type: Log-Pw Peak Search Peak Search TYPE MWWWW DET A NNNN TYPE MWWW DET A N N N N NextPeal Next Peak Mkr1 776.998 MHz -37.64 dBm Mkr1 787.002 MHz -37.23 dBm Ref Offset 15 dB Ref 35.00 dBm Ref Offset 15 dB Ref 35.00 dBm 10 (Loc 10 di Next Pk Right Next Pk Right 25 Next Pk Lef Next Pk Left Marker Delta Marker Delta K.1 -13.00 d DL1 -13.00 25 Mkr→CF Mkr→CF Mkr→RefLvl Mkr→RefLvl More 1 of 2 More 1 of 2 Center 777.0000 MHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 787.0000 MHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 300 kHz #VBW 300 kHz Channel Channel 23230 50 RB 23230 50 RB ■ Rsp. pp. 5960 more and an angle of the second se Ryged Spectra Marrier 0.00 R L 6F 500 DC Marker 1 787.003000000 MHz IFGainLow #Atten: 30 dB ALIGN OFF TRACE 1 2 3 4 5 6 ALIGN OFF #Avg Type: Log-Pwr 5:28 PM Jun 13, 201 Peak Search Peak Search DET A NNNN DET A N NNN Next Peak Next Peak Mkr1 776.994 MHz -30.78 dBm Mkr1 787.003 MHz -27.81 dBm Ref Offset 15 dB Ref 35.00 dBn Ref Offset 15 dB Ref 35.00 dBm 10 d Log 10 dB/div Next Pk Right Next Pk Right Next Pk Left Next Pk Left Marker Delta Marker Delta Mkr→CF Mkr→CF Mkr→RefLvl 45. Mkr→RefLvl More 1 of 2 More 1 of 2 Center 777.0000 MHz #Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) Center 787.0000 MHz Res BW 100 kHz Span 1.000 MHz #Sweep 1.000 s (1001 pts) #VBW 300 kHz #VBW 300 kHz