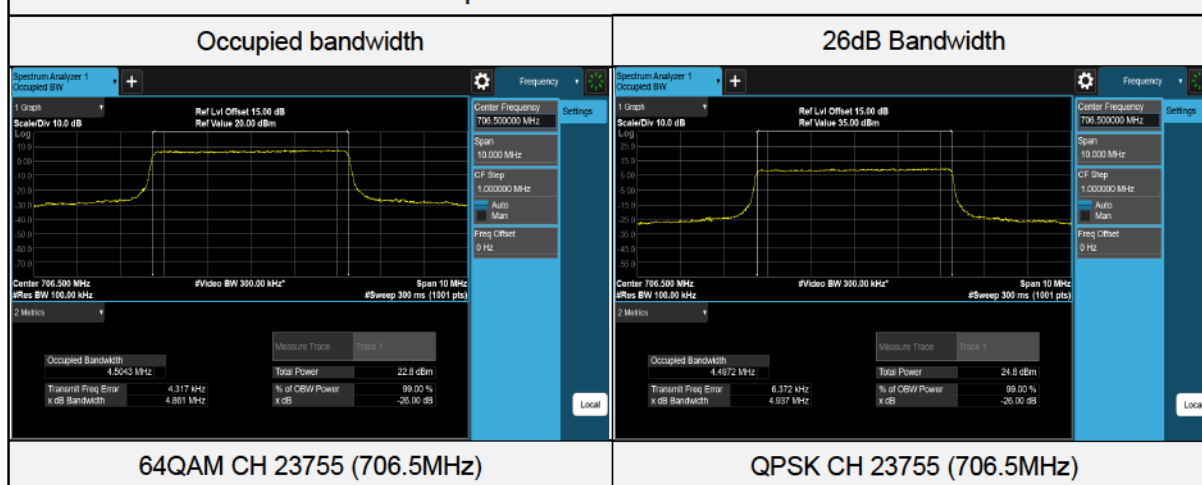


LTE Band 17 (Channel Bandwidth 5MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	23755	706.5	4.4972	4.937
QPSK	23790	710	4.4918	4.832
QPSK	23825	713.5	4.4957	4.865
16QAM	23755	706.5	4.5016	4.905
16QAM	23790	710	4.4857	4.830
16QAM	23825	713.5	4.4904	4.850
64QAM	23755	706.5	4.5043	4.861
64QAM	23790	710	4.4913	4.839
64QAM	23825	713.5	4.4956	4.875

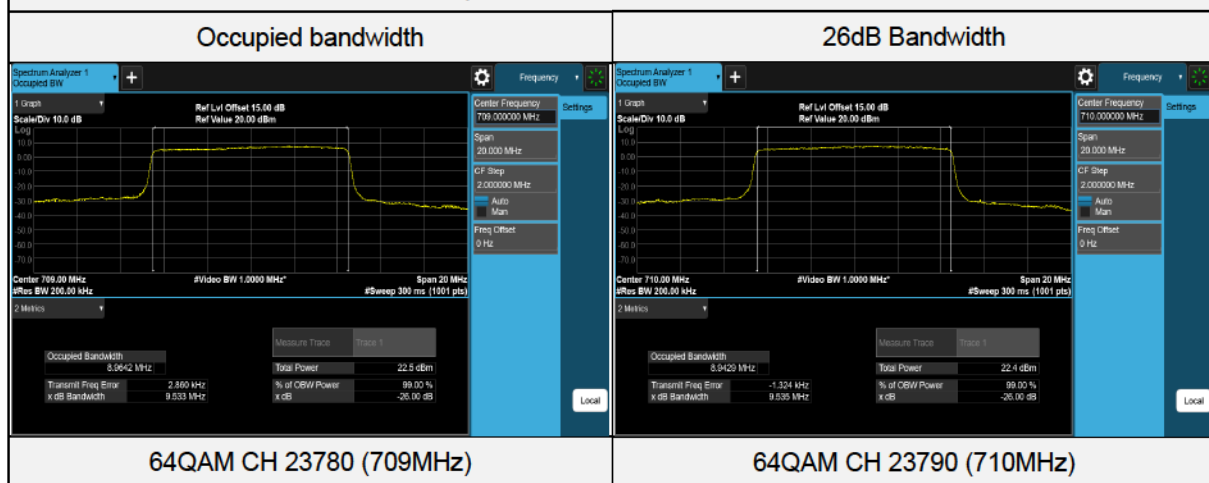
Spectrum Plot of Worst Value



LTE Band 17 (Channel Bandwidth 10MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	23780	709	8.9630	9.506
QPSK	23790	710	8.9451	9.505
QPSK	23800	711	8.9416	9.493
16QAM	23780	709	8.9569	9.515
16QAM	23790	710	8.9465	9.492
16QAM	23800	711	8.9428	9.507
64QAM	23780	709	8.9642	9.533
64QAM	23790	710	8.9429	9.535
64QAM	23800	711	8.9410	9.529

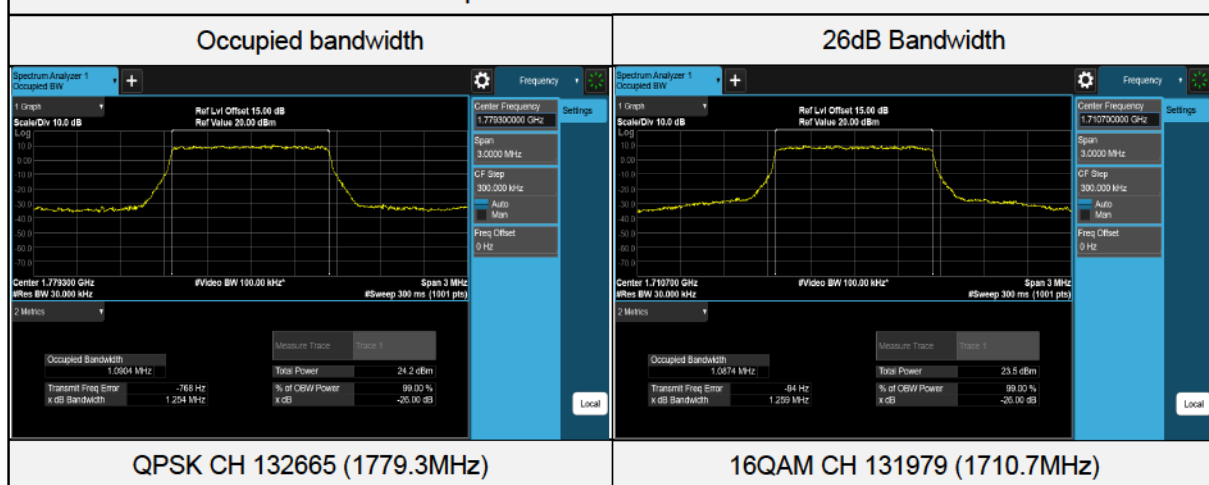
Spectrum Plot of Worst Value



LTE Band 66 (Channel Bandwidth 1.4MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	131979	1710.7	1.0877	1.254
QPSK	132322	1745	1.0900	1.257
QPSK	132665	1779.3	1.0904	1.254
16QAM	131979	1710.7	1.0874	1.259
16QAM	132322	1745	1.0870	1.253
16QAM	132665	1779.3	1.0871	1.254
64QAM	131979	1710.7	1.0883	1.258
64QAM	132322	1745	1.0874	1.253
64QAM	132665	1779.3	1.0880	1.253

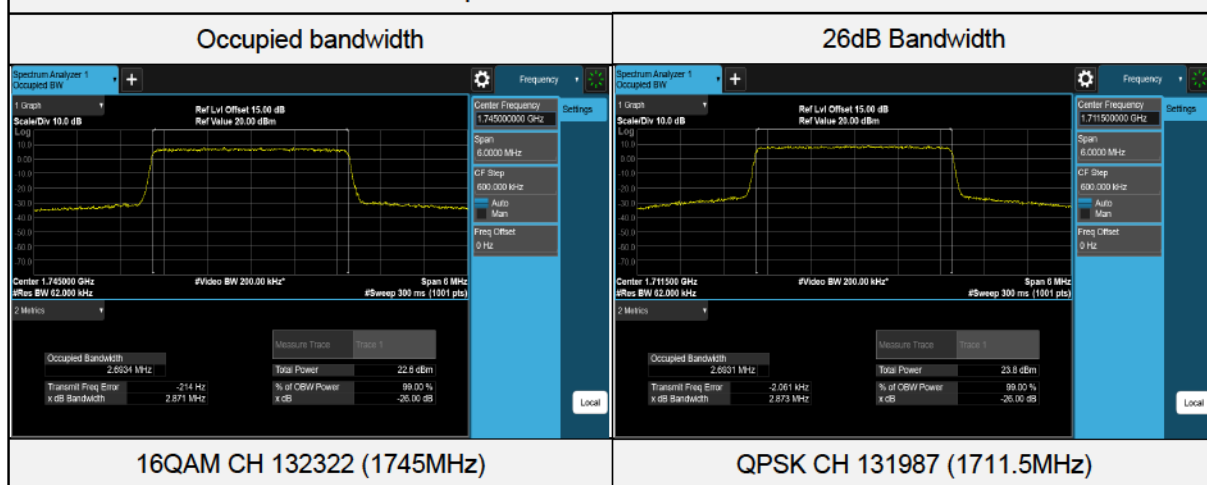
Spectrum Plot of Worst Value



LTE Band 66 (Channel Bandwidth 3MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	131987	1711.5	2.6931	2.873
QPSK	132322	1745	2.6897	2.870
QPSK	132657	1778.5	2.6905	2.863
16QAM	131987	1711.5	2.6931	2.860
16QAM	132322	1745	2.6934	2.871
16QAM	132657	1778.5	2.6914	2.869
64QAM	131987	1711.5	2.6899	2.858
64QAM	132322	1745	2.6882	2.861
64QAM	132657	1778.5	2.6901	2.858

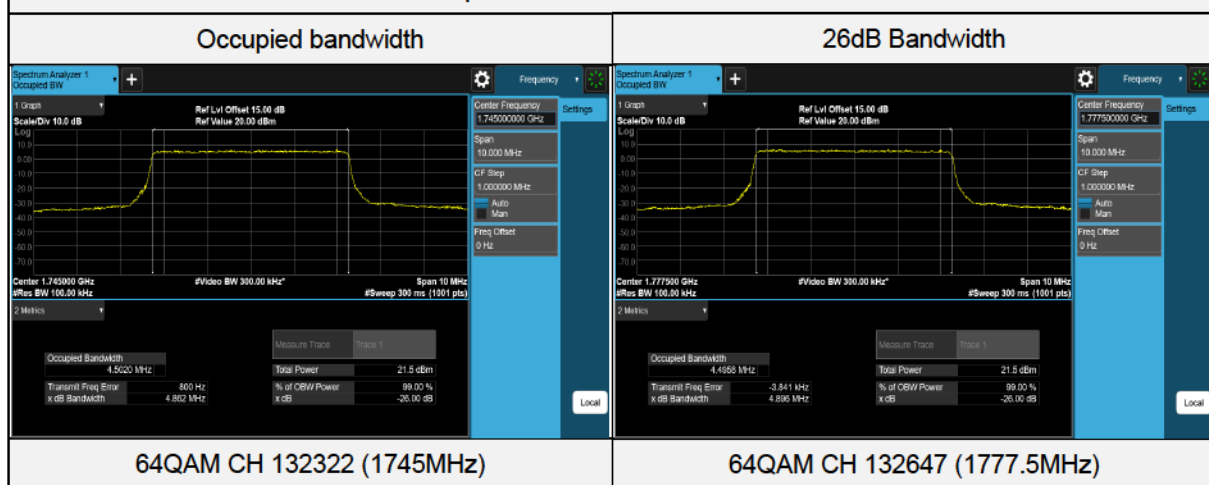
Spectrum Plot of Worst Value



LTE Band 66 (Channel Bandwidth 5MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	131997	1712.5	4.4984	4.865
QPSK	132322	1745	4.4958	4.893
QPSK	132647	1777.5	4.4956	4.870
16QAM	131997	1712.5	4.4967	4.859
16QAM	132322	1745	4.4947	4.865
16QAM	132647	1777.5	4.4901	4.858
64QAM	131997	1712.5	4.4980	4.861
64QAM	132322	1745	4.5020	4.862
64QAM	132647	1777.5	4.4958	4.896

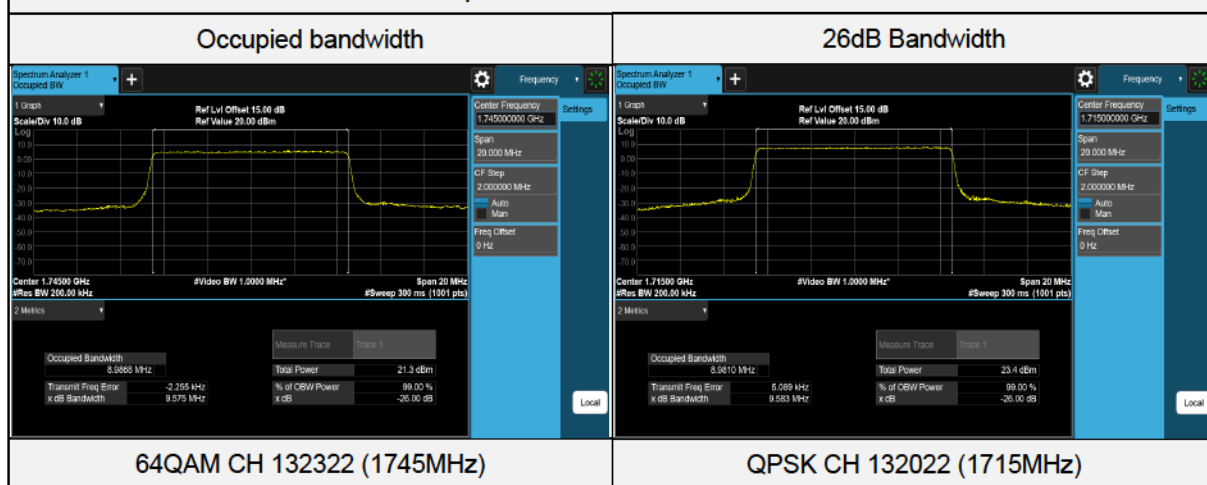
Spectrum Plot of Worst Value



LTE Band 66 (Channel Bandwidth 10MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	132022	1715	8.9810	9.583
QPSK	132322	1745	8.9813	9.569
QPSK	132622	1775	8.9757	9.548
16QAM	132022	1715	8.9722	9.563
16QAM	132322	1745	8.9799	9.539
16QAM	132622	1775	8.9757	9.524
64QAM	132022	1715	8.9762	9.575
64QAM	132322	1745	8.9868	9.575
64QAM	132622	1775	8.9822	9.579

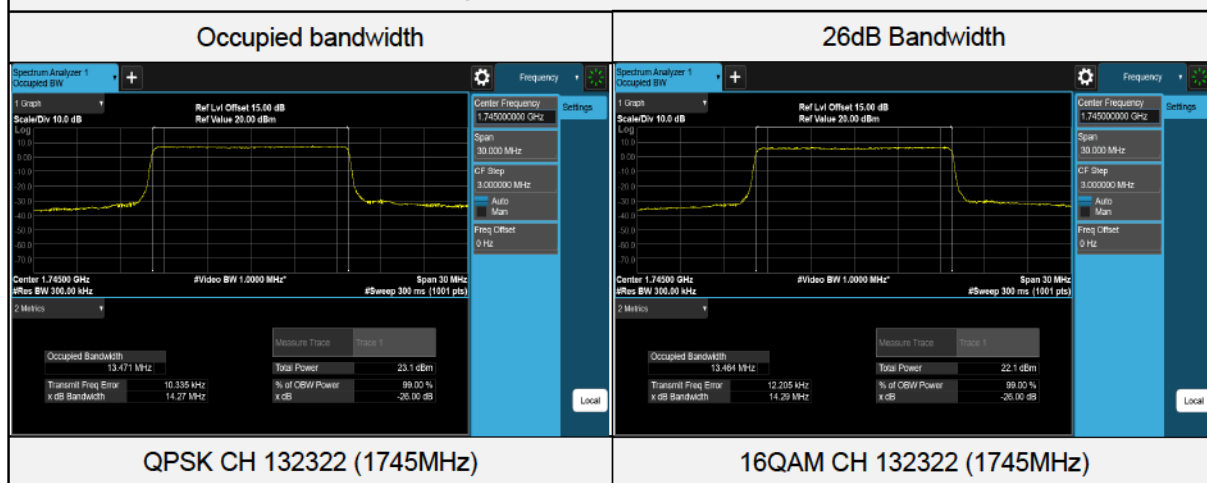
Spectrum Plot of Worst Value



LTE Band 66 (Channel Bandwidth 15MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	132047	1717.5	13.470	14.28
QPSK	132322	1745	13.471	14.27
QPSK	132597	1772.5	13.455	14.26
16QAM	132047	1717.5	13.459	14.28
16QAM	132322	1745	13.464	14.29
16QAM	132597	1772.5	13.452	14.28
64QAM	132047	1717.5	13.448	14.27
64QAM	132322	1745	13.462	14.29
64QAM	132597	1772.5	13.450	14.28

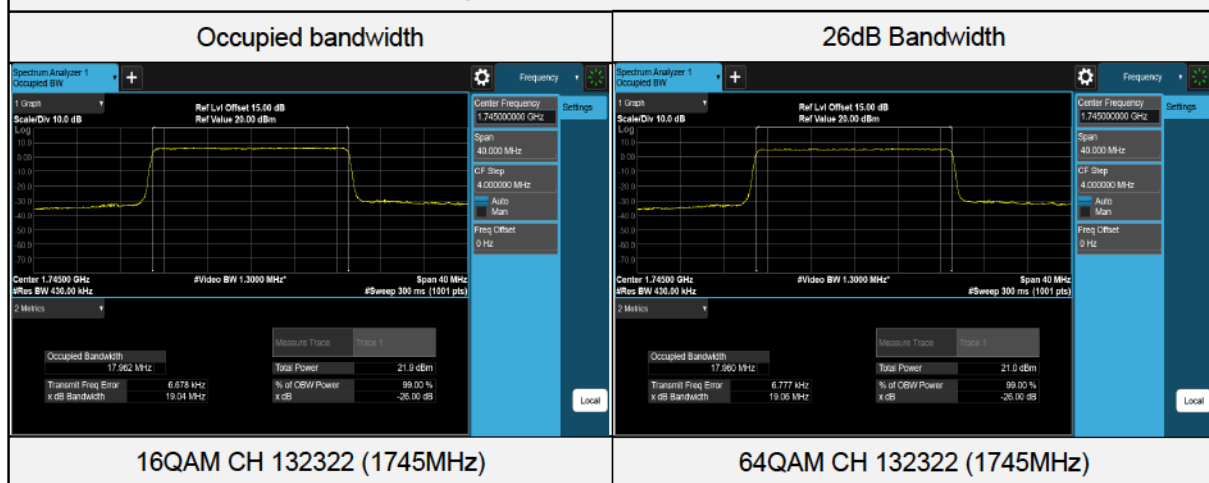
Spectrum Plot of Worst Value



LTE Band 66 (Channel Bandwidth 20MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	132072	1720	17.954	19.05
QPSK	132322	1745	17.955	19.04
QPSK	132572	1770	17.941	19.03
16QAM	132072	1720	17.957	19.05
16QAM	132322	1745	17.962	19.05
16QAM	132572	1770	17.948	19.03
64QAM	132072	1720	17.947	19.05
64QAM	132322	1745	17.960	19.06
64QAM	132572	1770	17.945	19.06

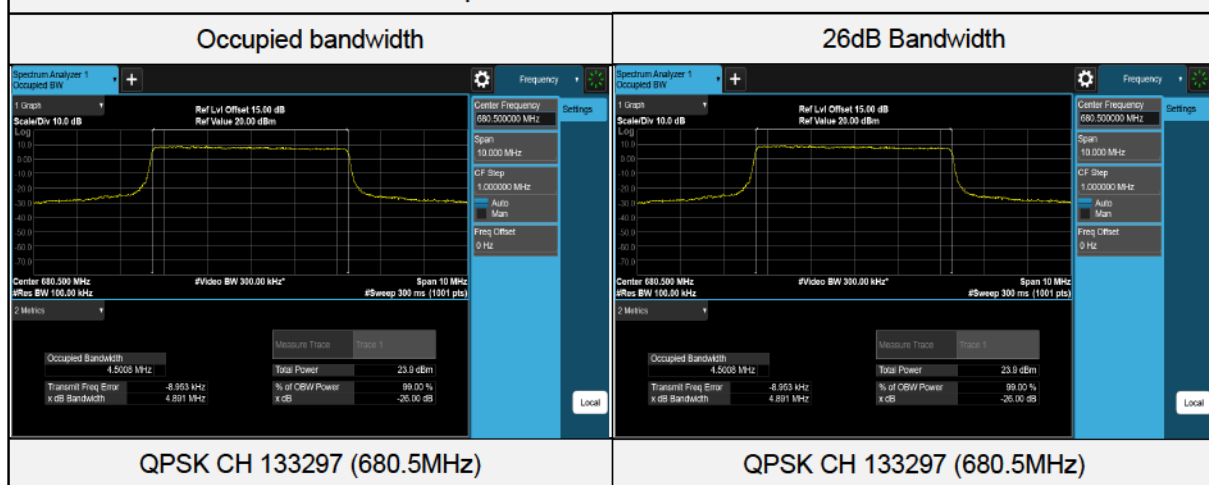
Spectrum Plot of Worst Value



LTE Band 71 (Channel Bandwidth 5MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	133147	665.5	4.4784	4.814
QPSK	133297	680.5	4.5008	4.891
QPSK	133447	695.5	4.4965	4.853
16QAM	133147	665.5	4.4793	4.821
16QAM	133297	680.5	4.4978	4.879
16QAM	133447	695.5	4.4937	4.847
64QAM	133147	665.5	4.4823	4.820
64QAM	133297	680.5	4.4994	4.857
64QAM	133447	695.5	4.4954	4.843

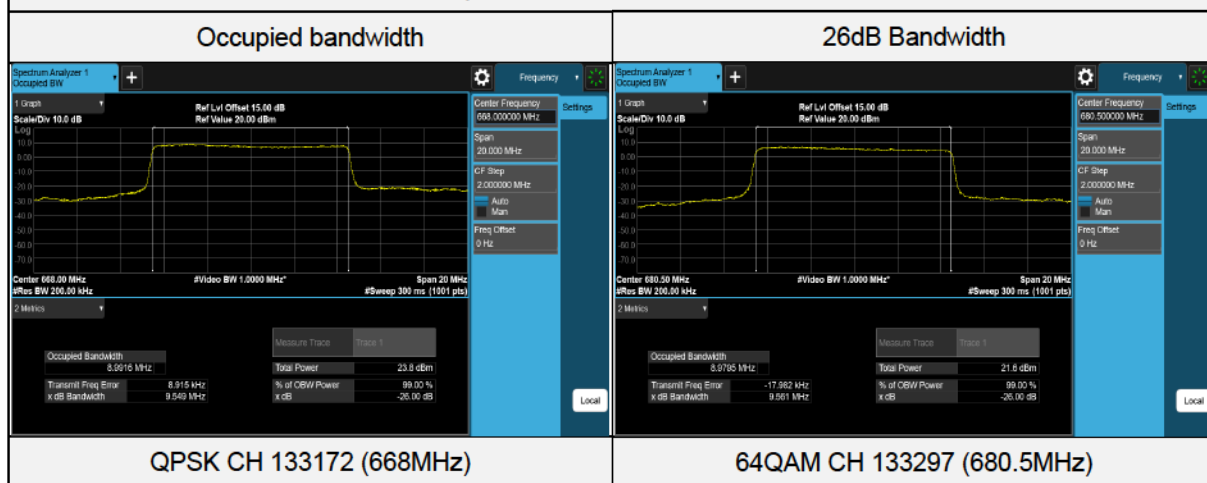
Spectrum Plot of Worst Value



LTE Band 71 (Channel Bandwidth 10MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	133172	668	8.9916	9.549
QPSK	133297	680.5	8.9754	9.528
QPSK	133422	693	8.9619	9.546
16QAM	133172	668	8.9912	9.527
16QAM	133297	680.5	8.9744	9.526
16QAM	133422	693	8.9527	9.524
64QAM	133172	668	8.9860	9.558
64QAM	133297	680.5	8.9795	9.561
64QAM	133422	693	8.9612	9.532

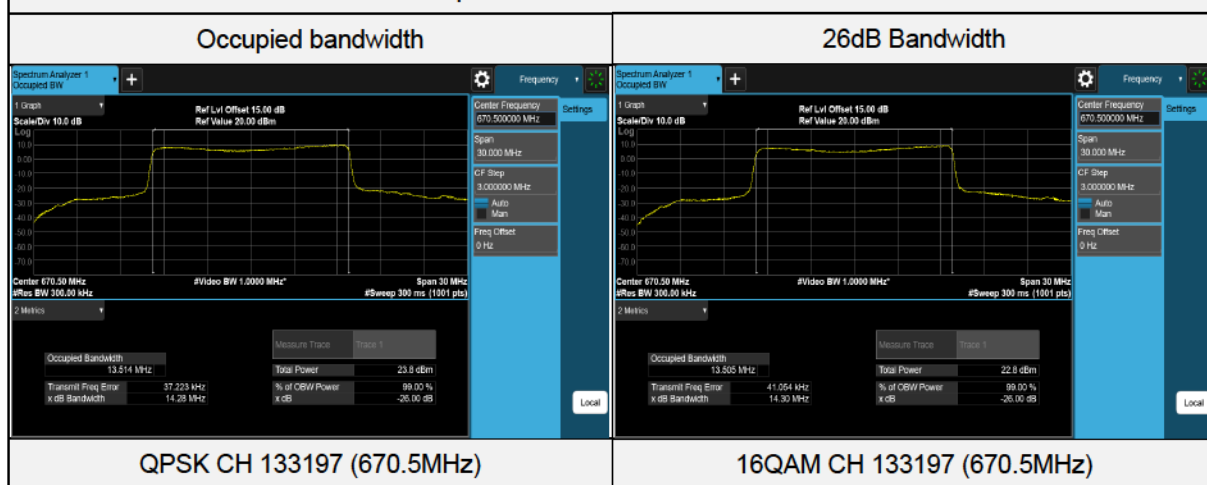
Spectrum Plot of Worst Value



LTE Band 71 (Channel Bandwidth 15MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	133197	670.5	13.514	14.28
QPSK	133297	680.5	13.430	14.24
QPSK	133397	690.5	13.447	14.24
16QAM	133197	670.5	13.505	14.30
16QAM	133297	680.5	13.434	14.24
16QAM	133397	690.5	13.438	14.27
64QAM	133197	670.5	13.499	14.26
64QAM	133297	680.5	13.423	14.26
64QAM	133397	690.5	13.432	14.26

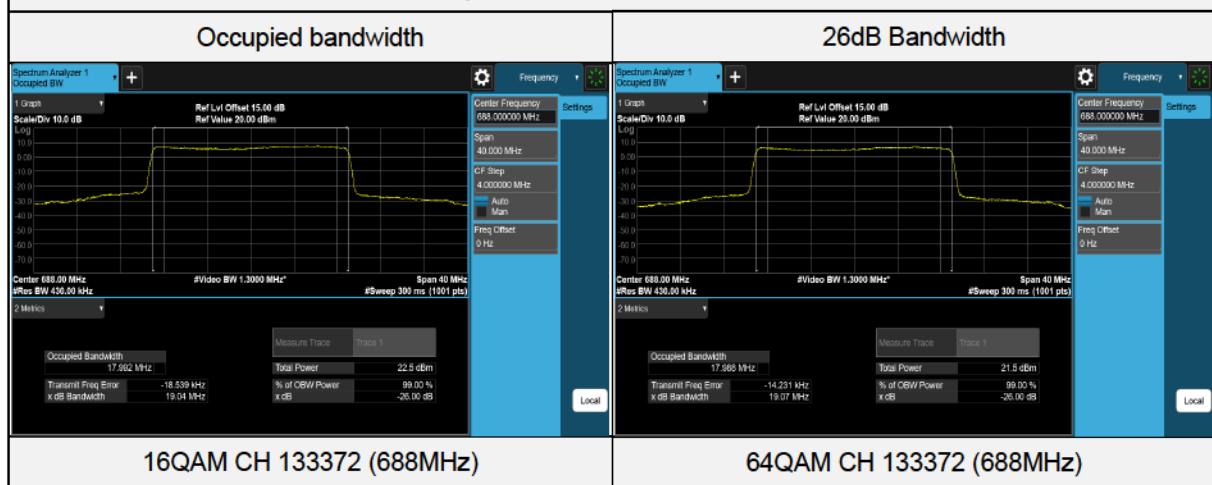
Spectrum Plot of Worst Value



LTE Band 71 (Channel Bandwidth 20MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	133222	673	17.947	19.02
QPSK	133297	680.5	17.905	19.02
QPSK	133372	688	17.987	19.06
16QAM	133222	673	17.960	19.01
16QAM	133297	680.5	17.917	19.02
16QAM	133372	688	17.992	19.04
64QAM	133222	673	17.949	19.02
64QAM	133297	680.5	17.909	19.00
64QAM	133372	688	17.988	19.07

Spectrum Plot of Worst Value



4.5 Channel Edge / Out-of-Band Emissions Measurement

4.5.1 Limits of Band Edge / Out-of-Band Emissions Measurement

For LTE Band 4, LTE Band 66:

According to FCC 27.53(h), for operations in the 1695-1710MHz, 1710-1755MHz, 1755-1780 MHz, 1915-1920MHz, 1995-2000 MHz, 2000-2020MHz, 2110-2155MHz, 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 $43 + 10 \log (P)$ dB. However, in the 1 megahertz 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.

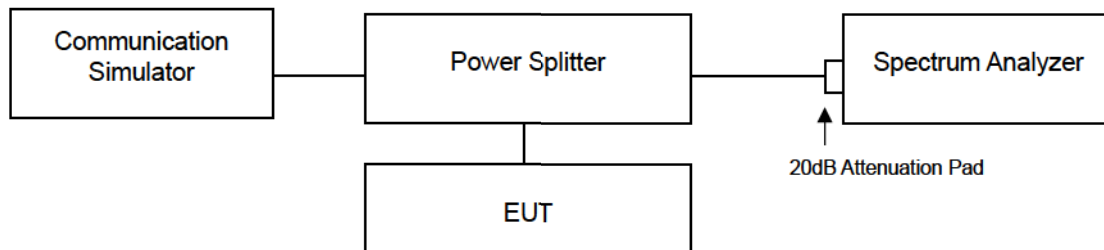
For LTE Band 7:

According to FCC 27.53(m)(4) regulations, any transmit power of any emission outside of the channel edge must be attenuated below the transmitting power (P) by a 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. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5MHz. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed.

For LTE Band 12, LTE Band 17, LTE Band 71:

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.

4.5.2 Test Setup

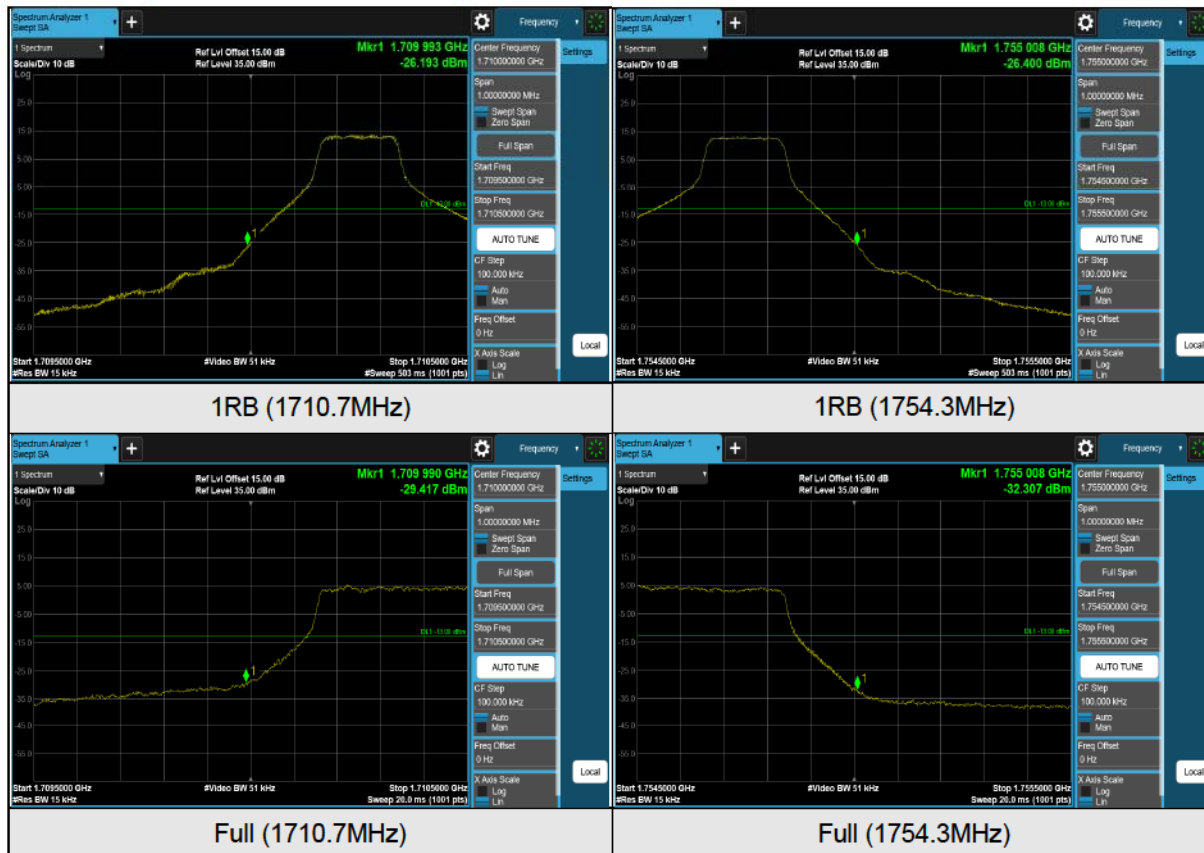


4.5.3 Test Procedures

- The EUT was set up for the rated peak power. The power was measured with Spectrum Analyzer. Band edge measurements were done at 2 channels: low and high operational frequency range.
- Measurement refer to ANSI C63.26 section 5.7.2 & 5.7.3 and FCC Part 27 section 27.53.
- Measure 5 MHz and 10 MHz channel bandwidth modes for LTE Band 7, extend the 1% range from 1M to 2M above and below the channel edge, then lower the limit further by $10 \log (1000/100) = 10\text{dB}$ (i.e. $-10 + -10 = -20\text{dB}$) to compensate for the integration from 100k to 1M, measure referring to ANSI C63.26 Section 5.7.2 (a)(1).
- Record the max trace plot into the test report.

4.5.4 Test Results

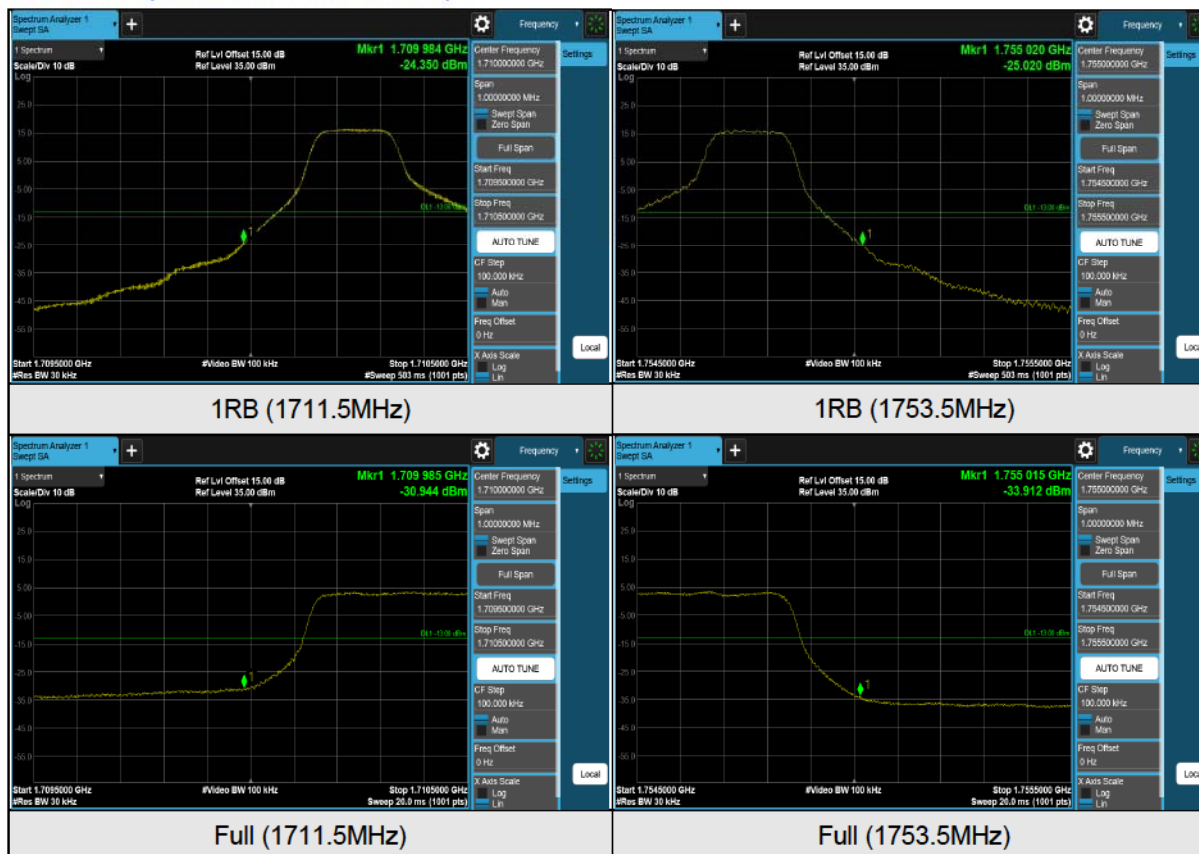
LTE Band 4 (Channel Bandwidth 1.4MHz)



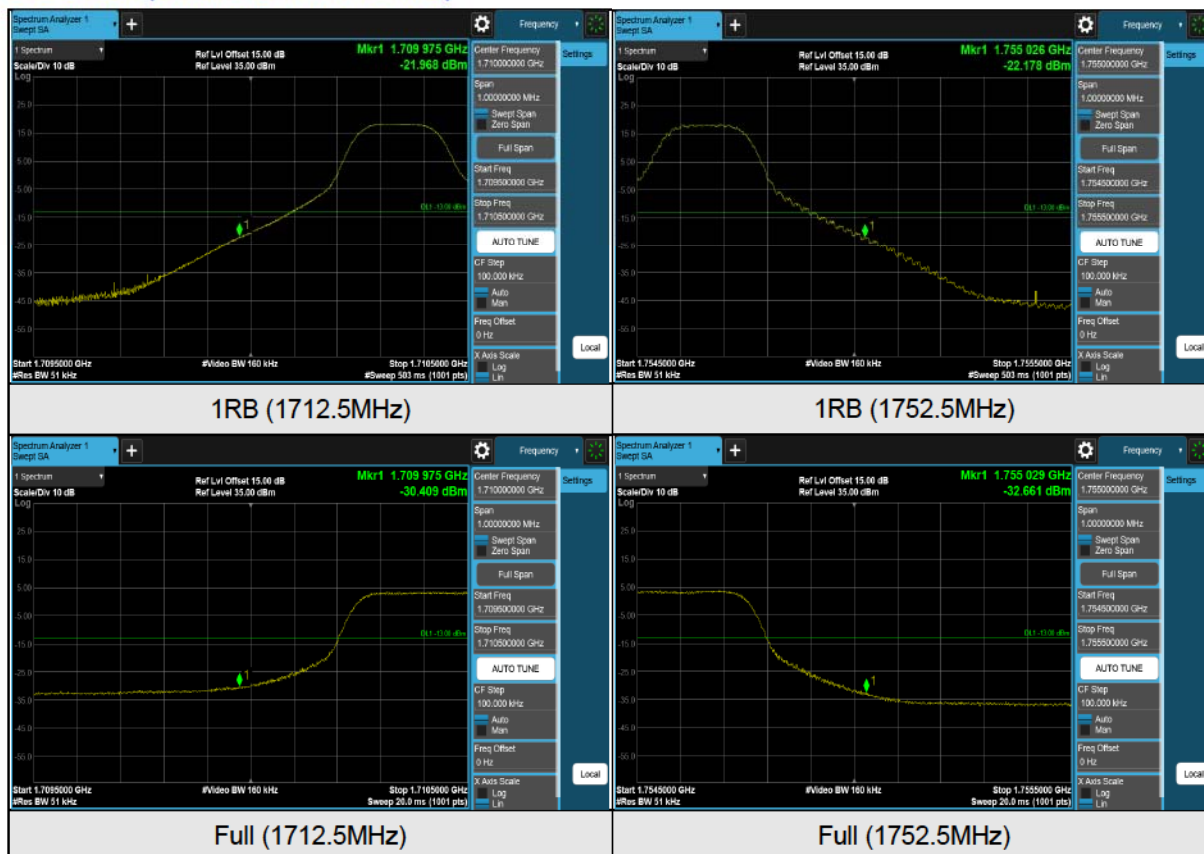


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LTE Band 4 (Channel Bandwidth 3MHz)



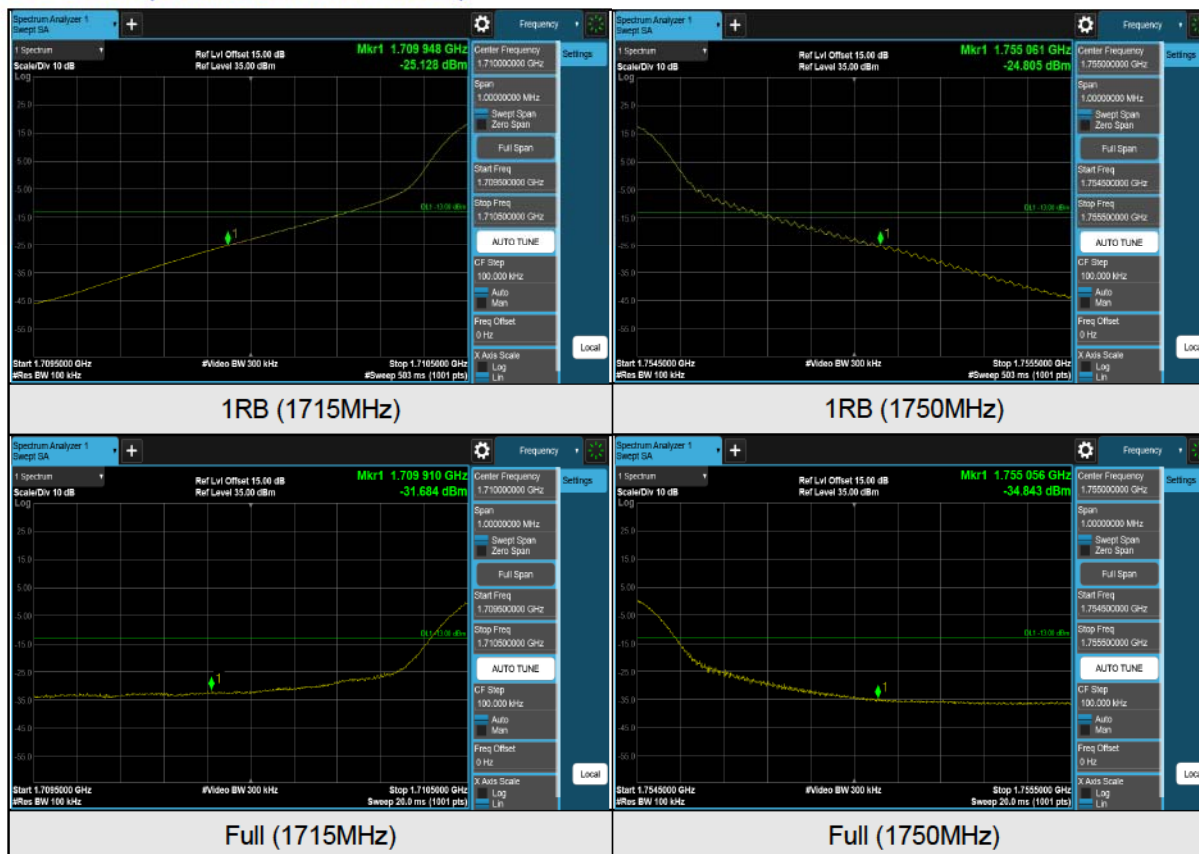
LTE Band 4 (Channel Bandwidth 5MHz)



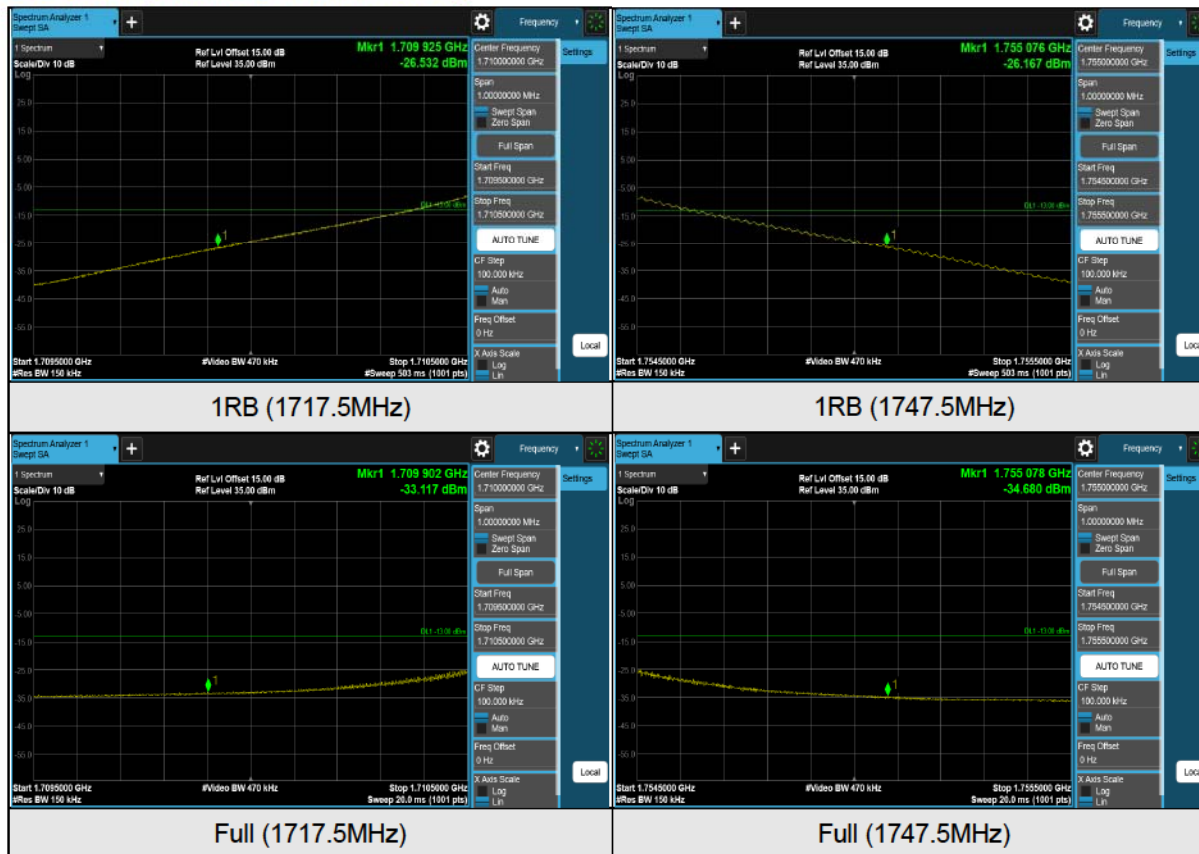


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LTE Band 4 (Channel Bandwidth 10MHz)



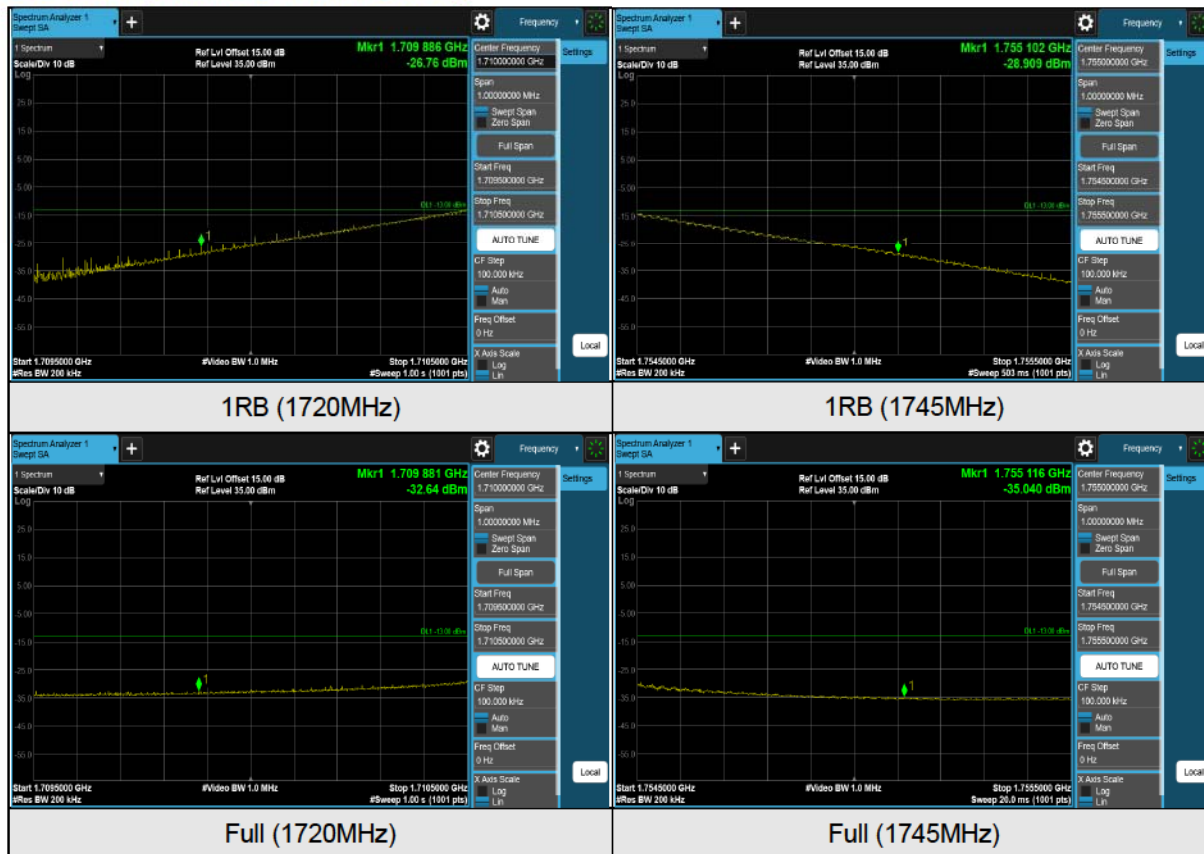
LTE Band 4 (Channel Bandwidth 15MHz)



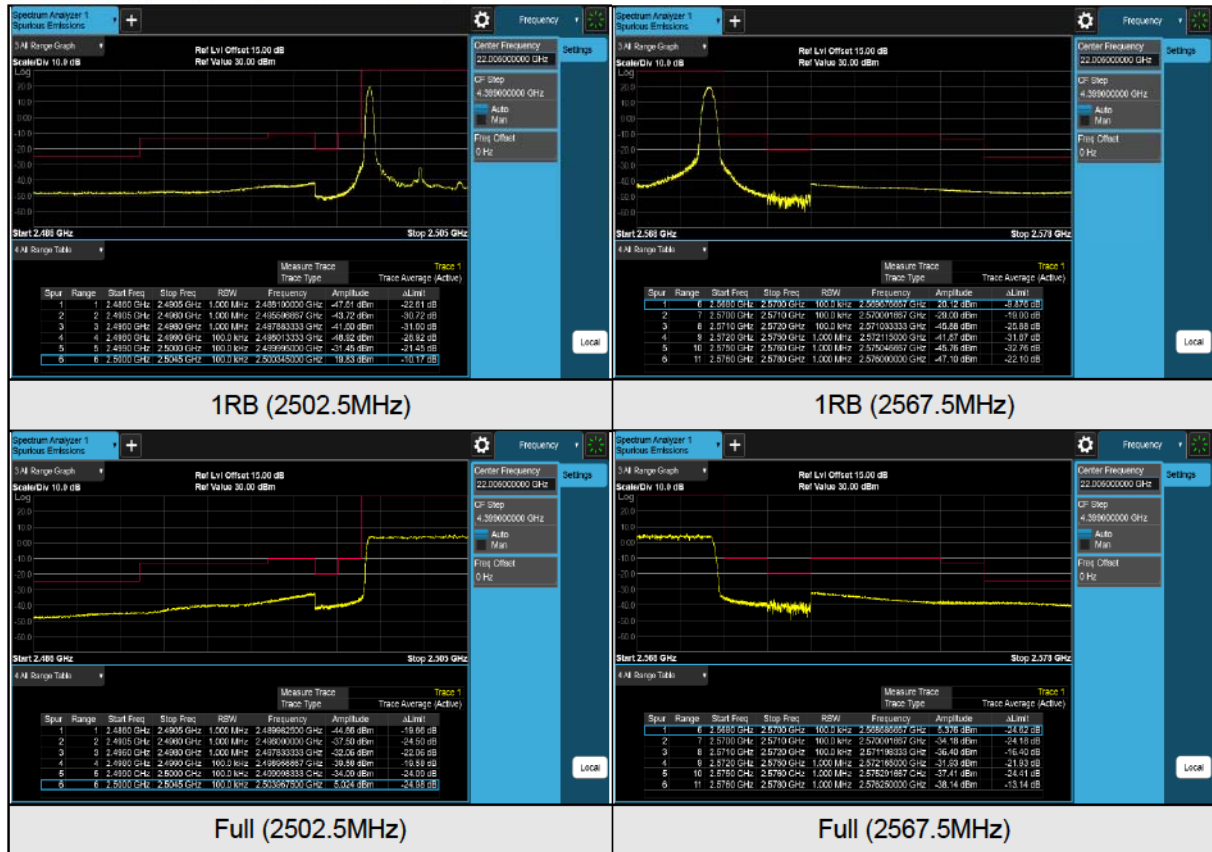


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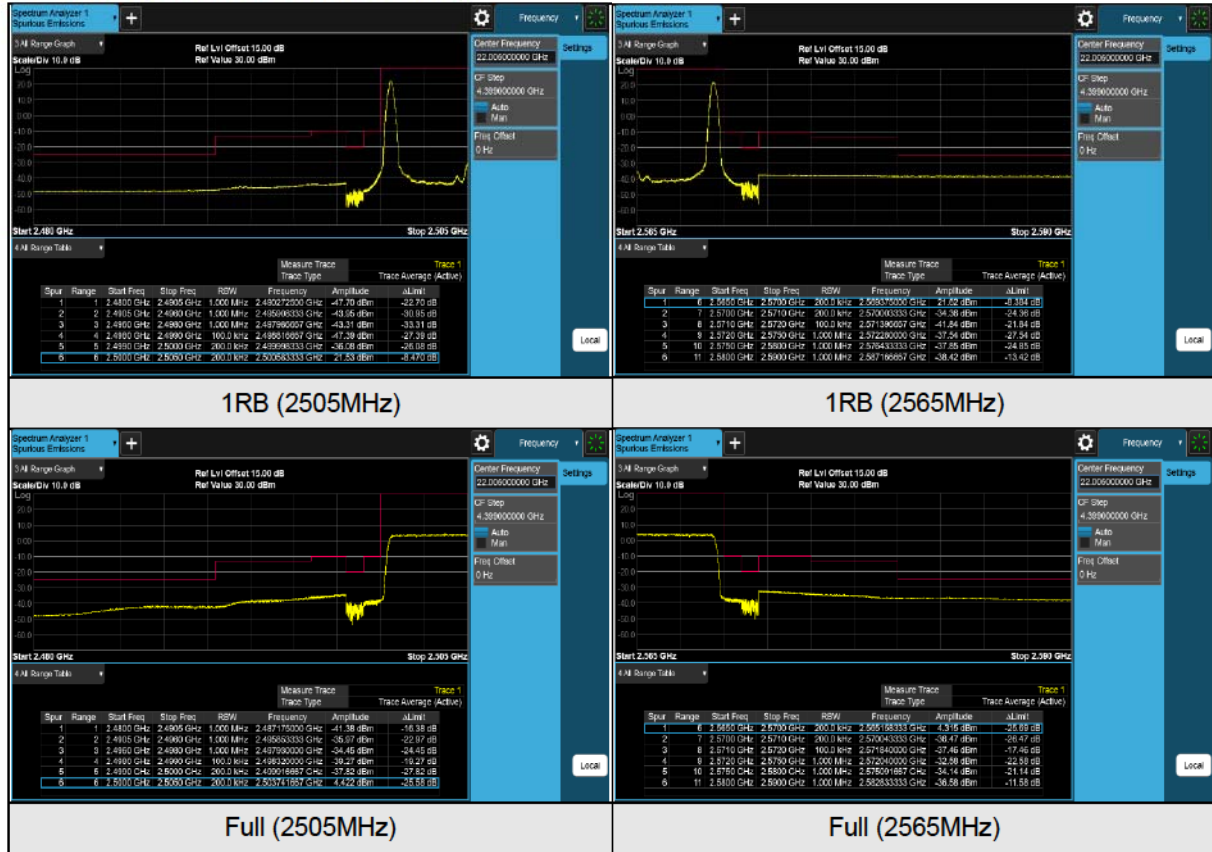
LTE Band 4 (Channel Bandwidth 20MHz)



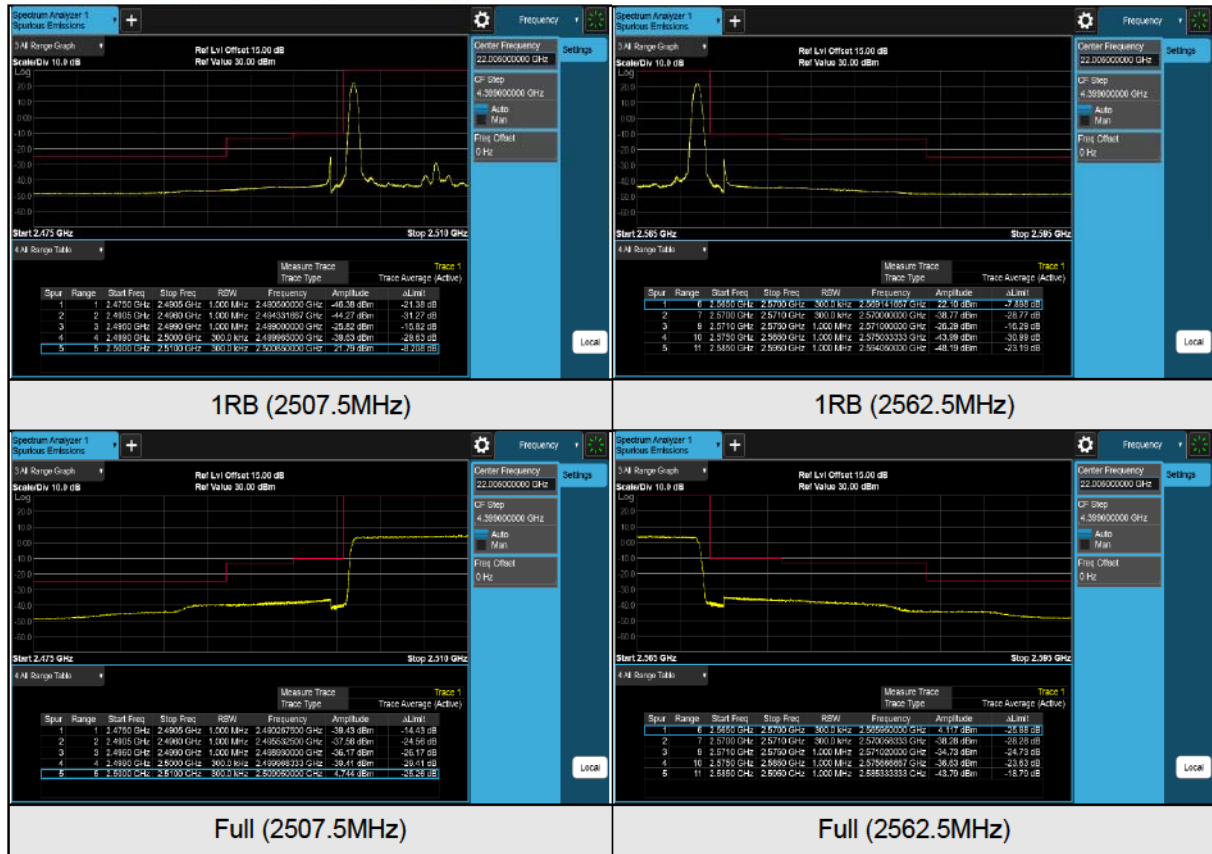
LTE Band 7 (Channel Bandwidth 5MHz)



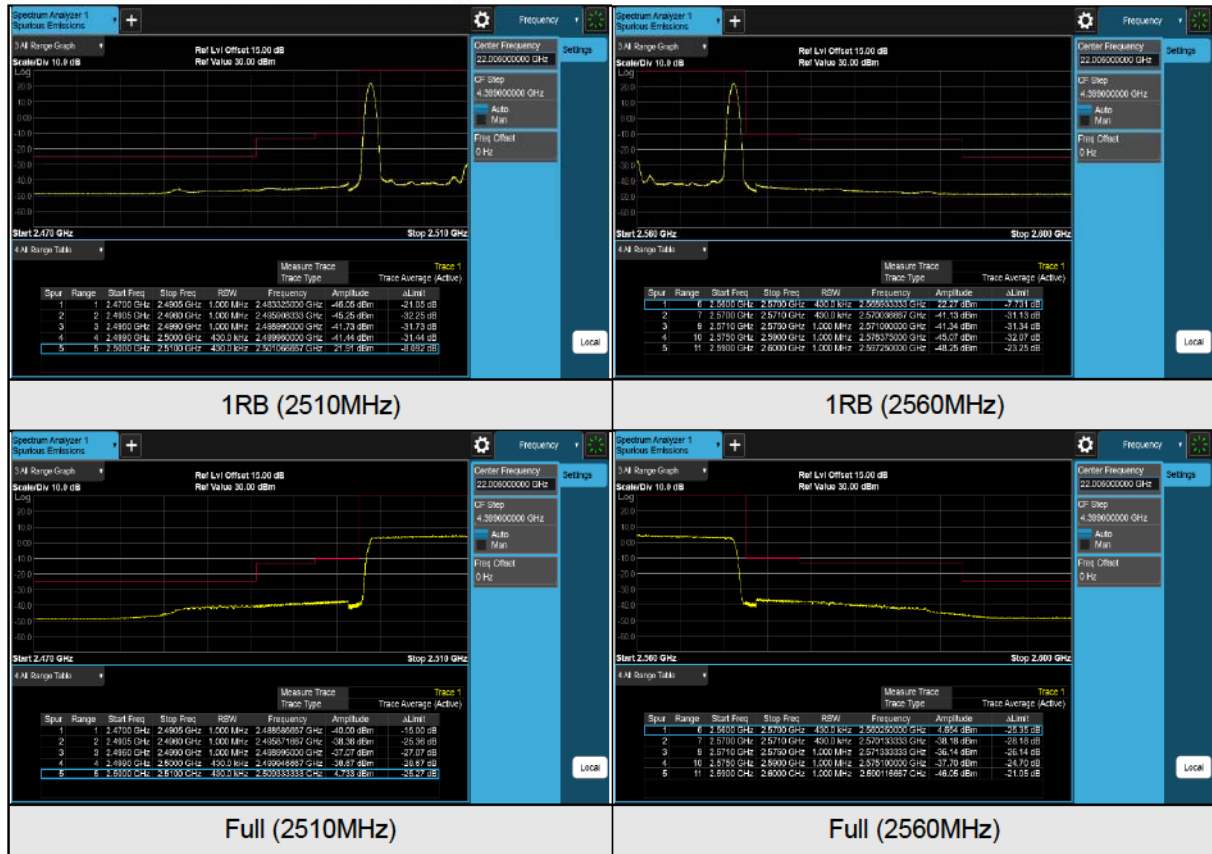
LTE Band 7 (Channel Bandwidth 10MHz)



LTE Band 7 (Channel Bandwidth 15MHz)

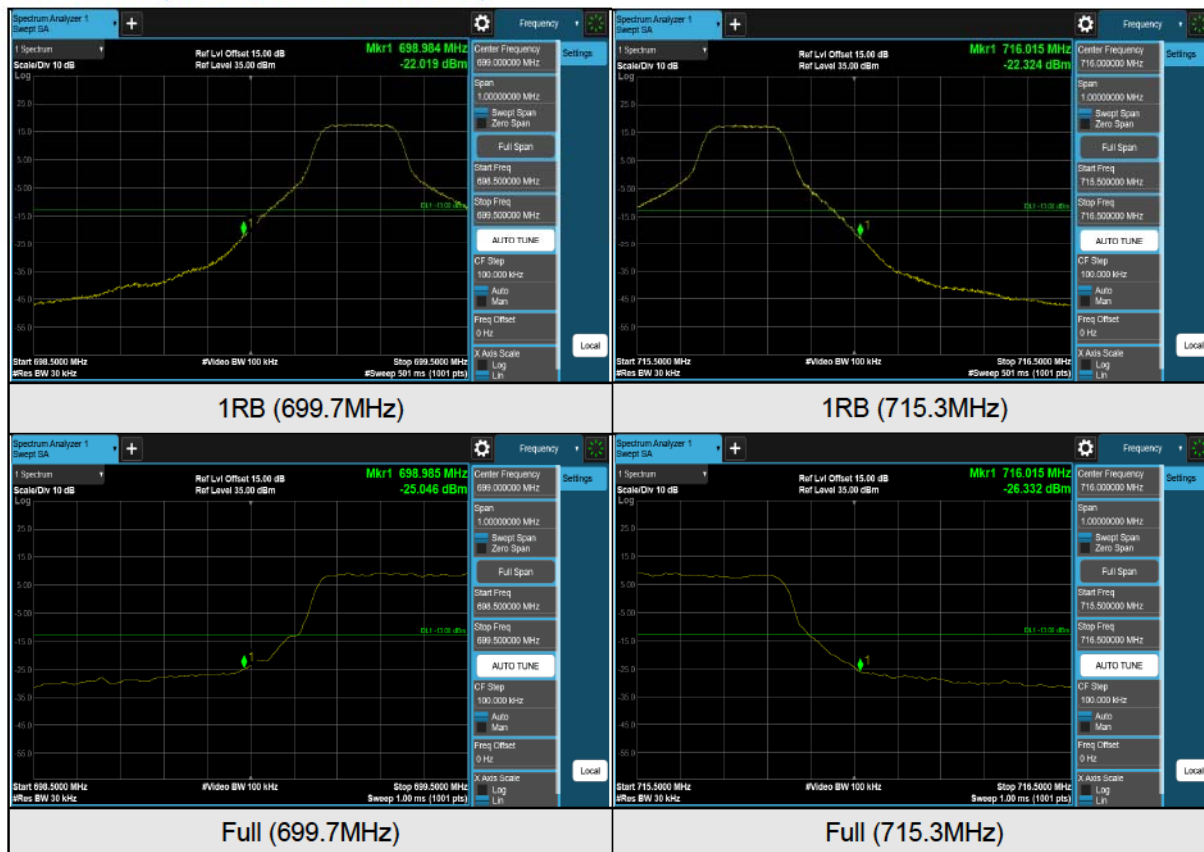


LTE Band 7 (Channel Bandwidth 20MHz)



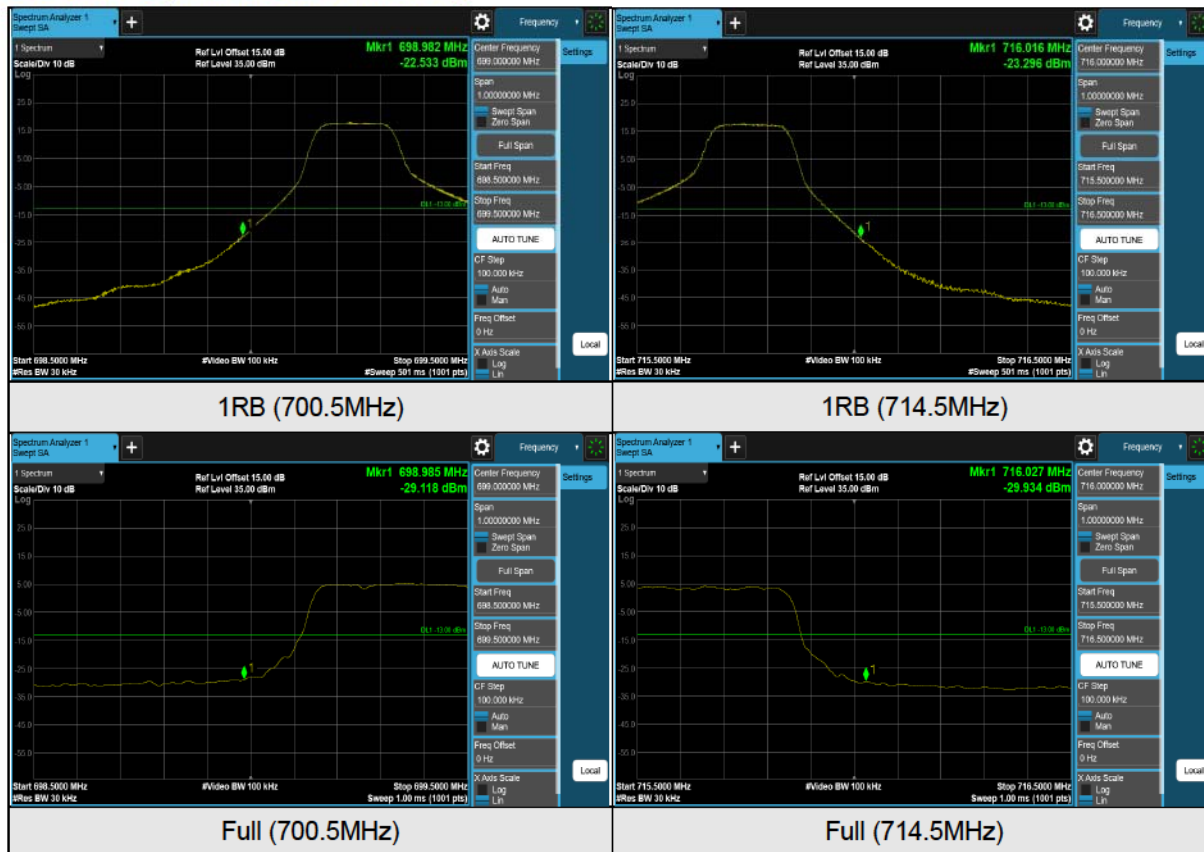


LTE Band 12 (Channel Bandwidth 1.4MHz)





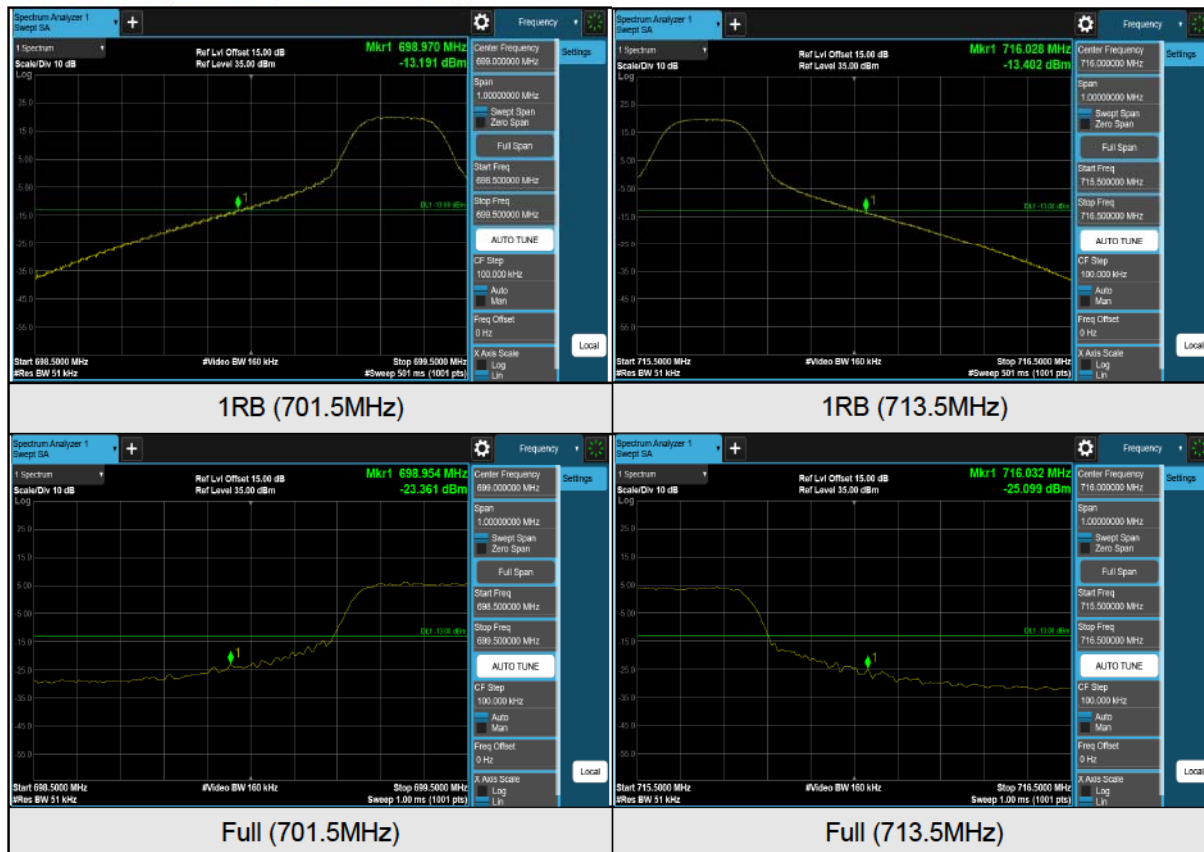
LTE Band 12 (Channel Bandwidth 3MHz)





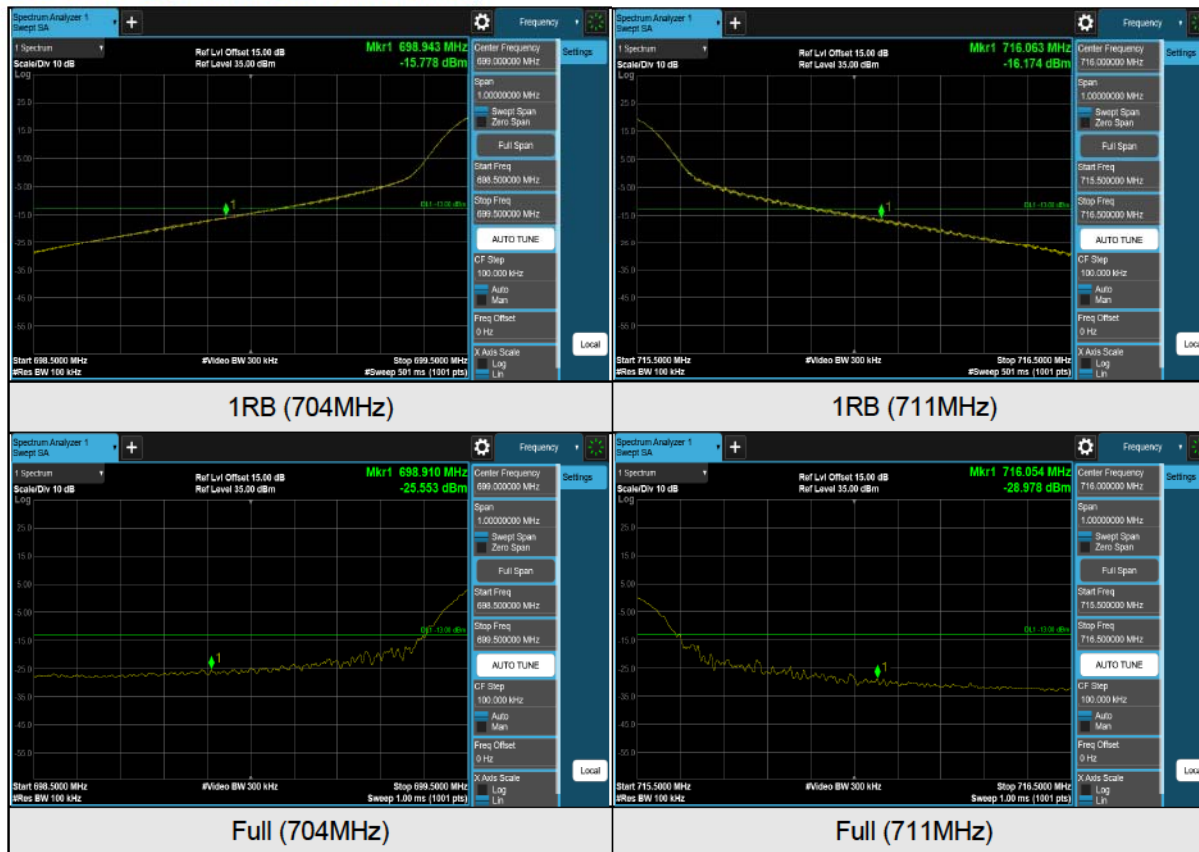
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LTE Band 12 (Channel Bandwidth 5MHz)



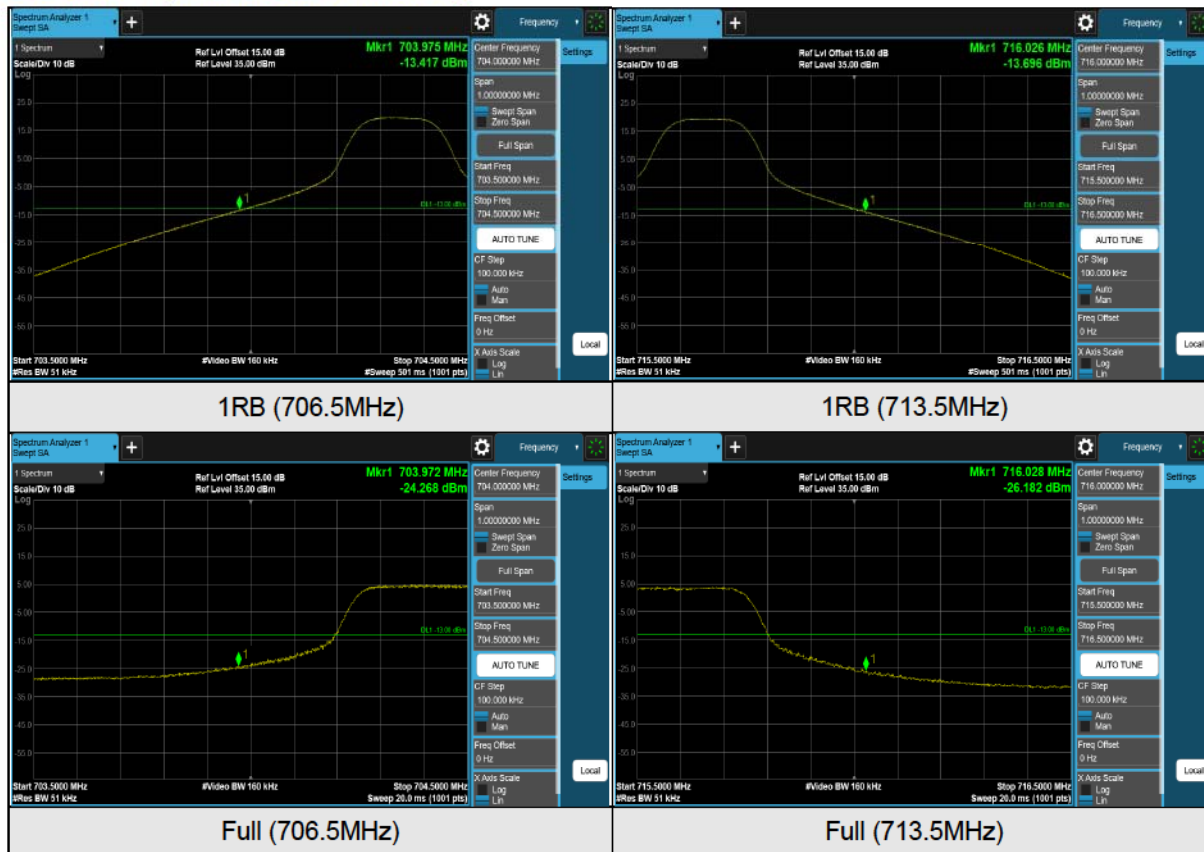


LTE Band 12 (Channel Bandwidth 10MHz)



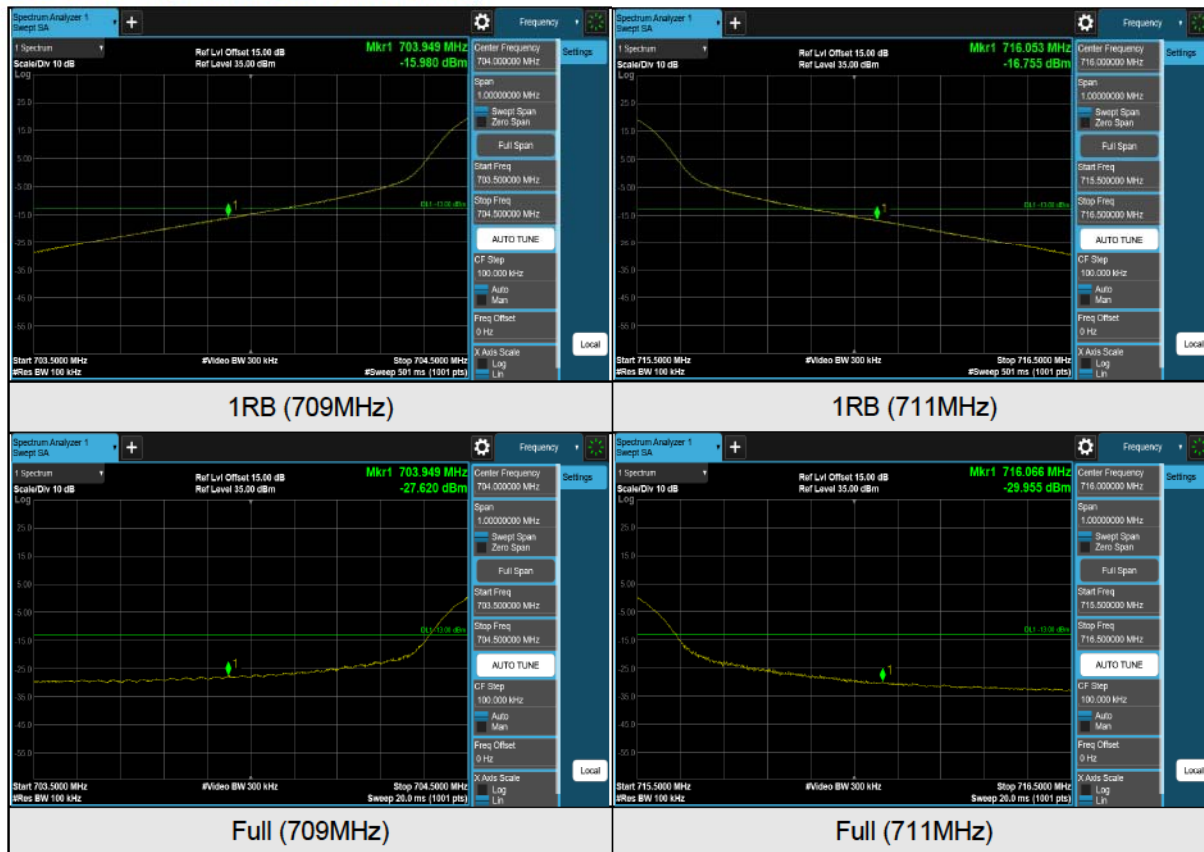


LTE Band 17 (Channel Bandwidth 5MHz)





LTE Band 17 (Channel Bandwidth 10MHz)





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LTE Band 66 (Channel Bandwidth 1.4MHz)

