

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

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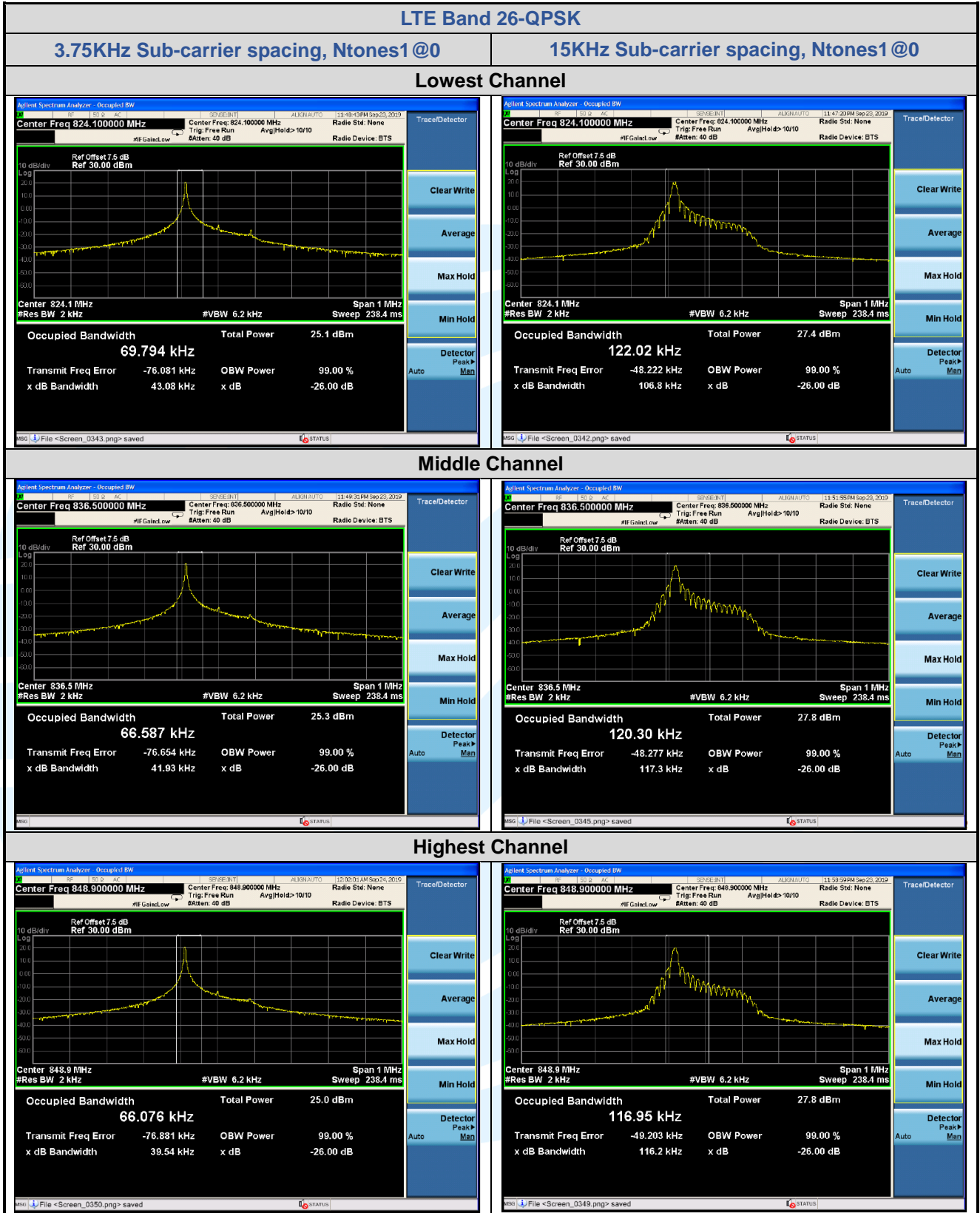
E-mail: info@uttlab.com

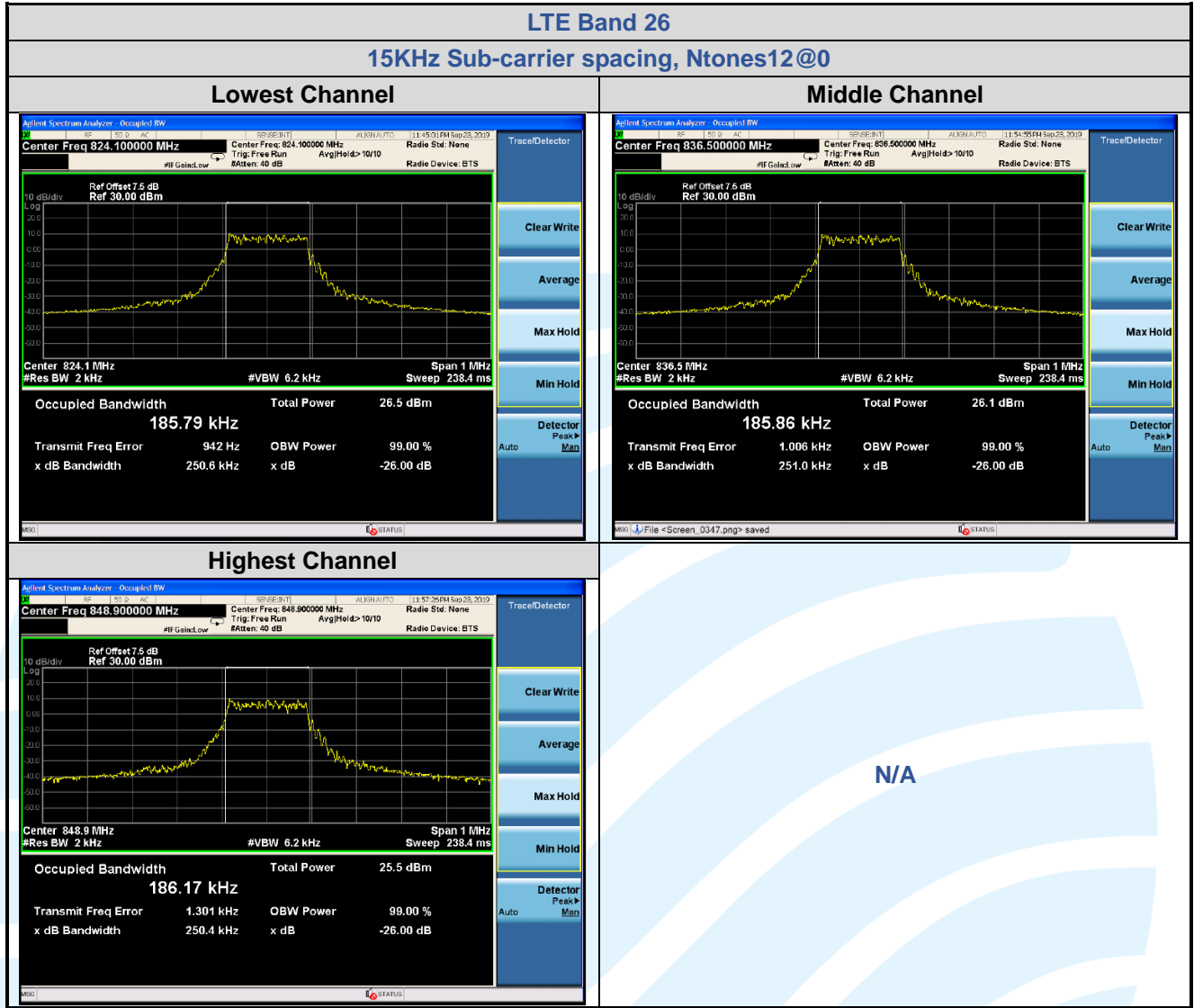
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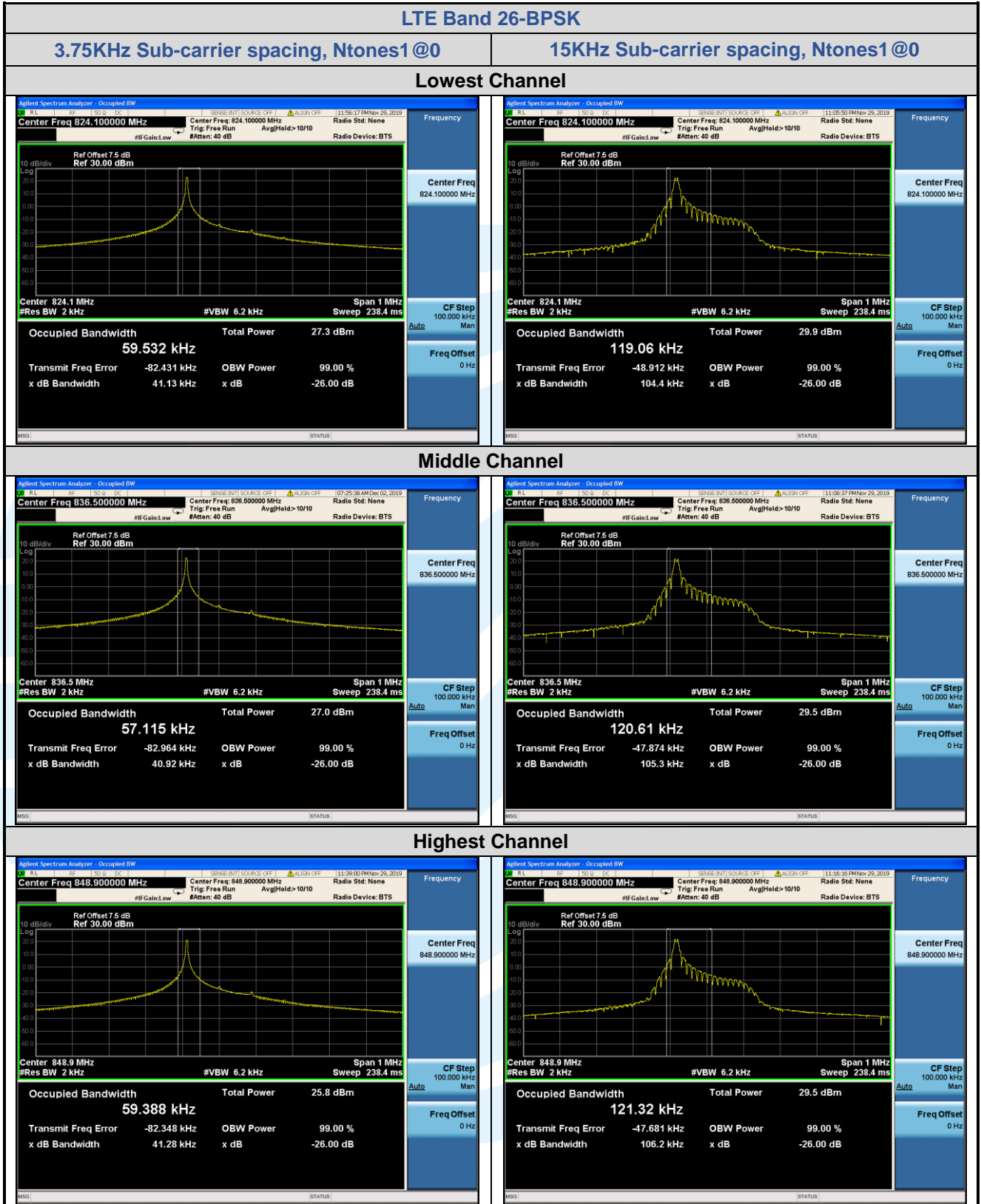
UTTR-RF-RSS4G-V1.0

5.5.7 LTE Band 26

LTE Band 26								
Modulation	Sub-carrier spacing (KHz)	Ntones	Bandwidth(KHz) for low/mid/high channel					
			26791/824.1		26915/836.5		27039/848.9	
			99% ( KHz)	-26dBc (KHz)	99% (KHz)	-26dBc (KHz)	99% (KHz)	-26dBc (KHz)
QPSK	3.75	1@0	69.794	43.08	66.587	41.93	66.076	39.54
QPSK	15	1@0	122.02	106.8	120.3	117.3	116.95	116.2
QPSK	15	12@0	185.79	250.6	185.86	251.0	186.17	250.4
BPSK	3.75	1@0	59.532	41.13	59.388	41.28	57.115	40.92
BPSK	15	1@0	119.06	104.4	120.61	105.3	121.32	106.2

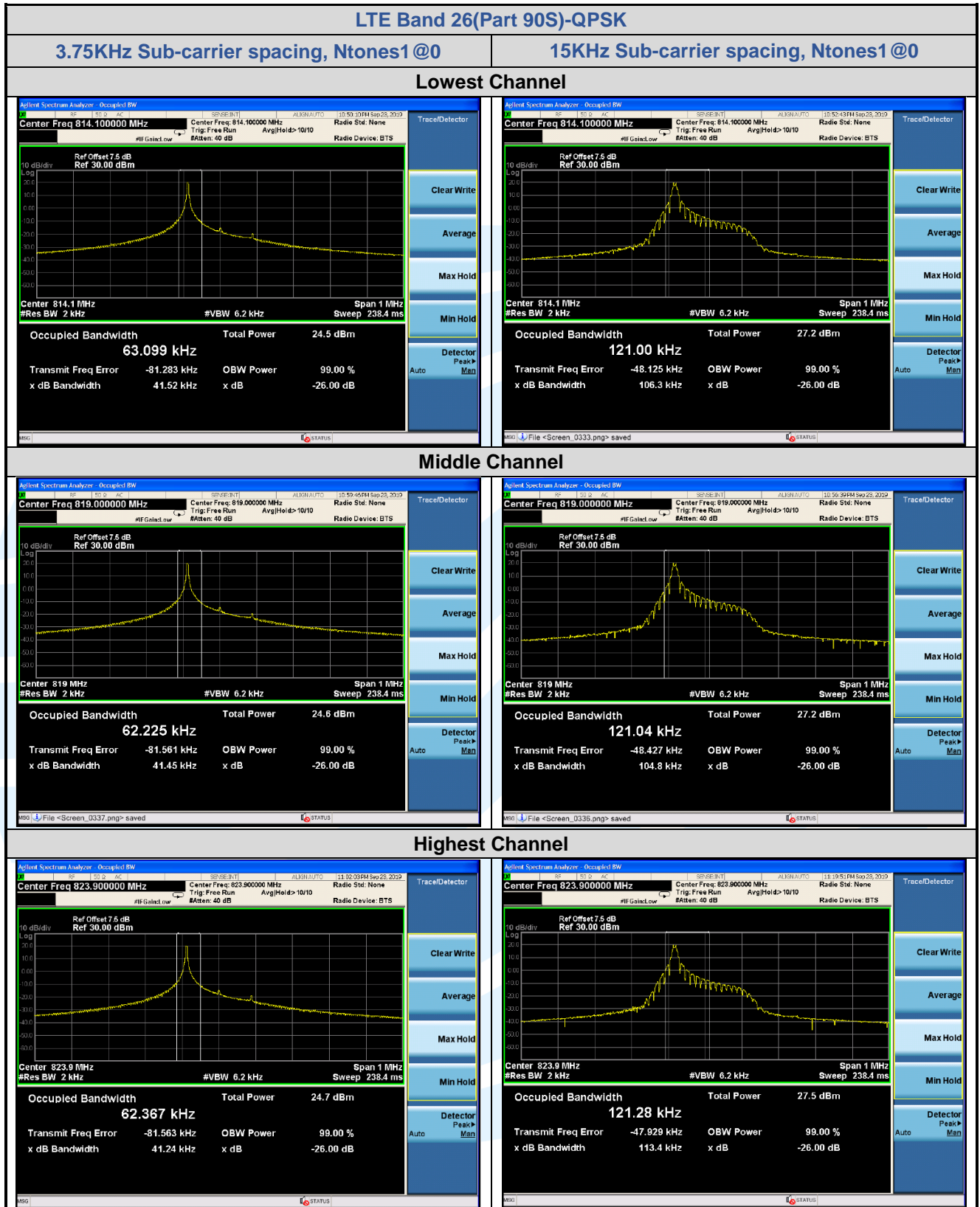


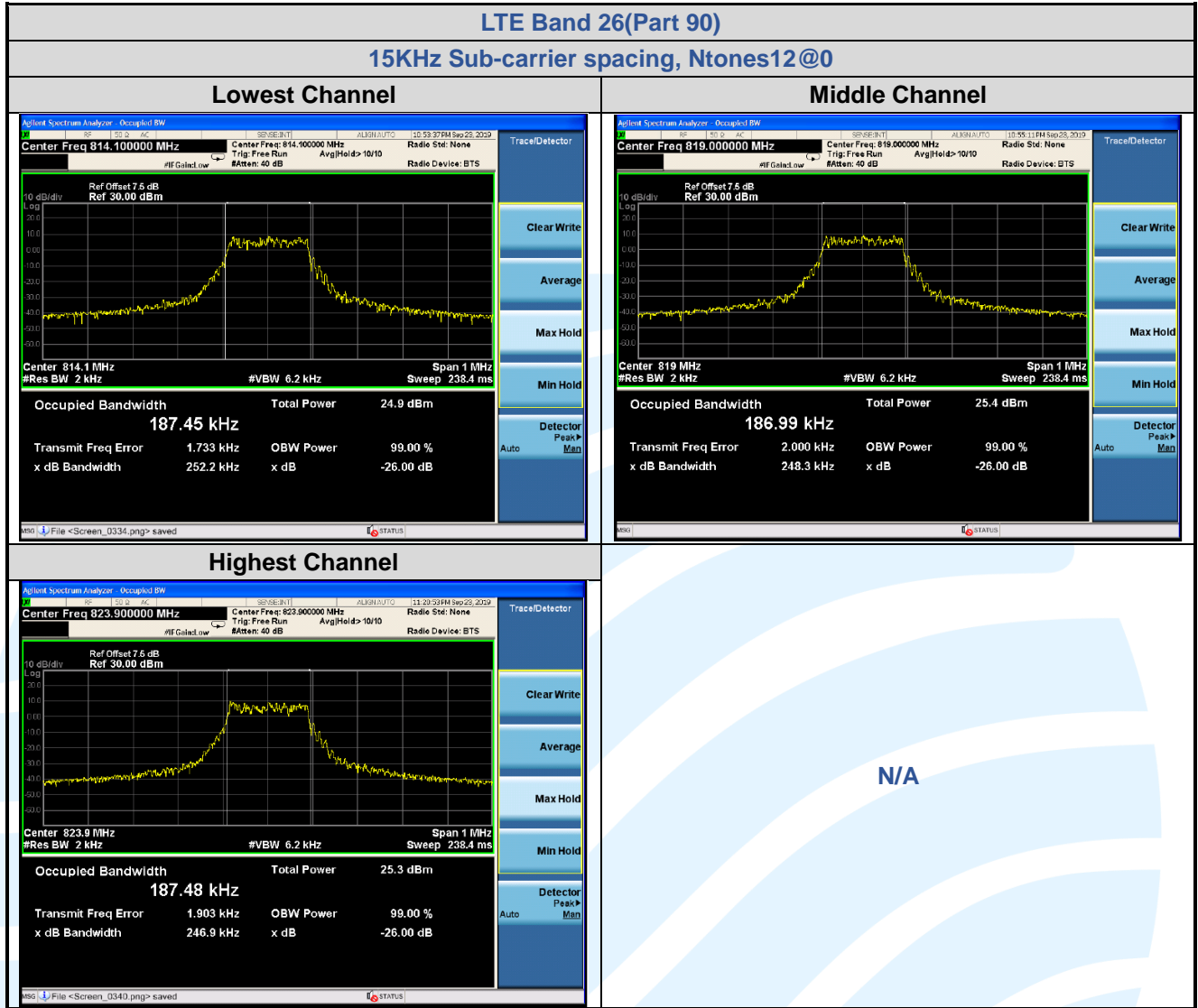




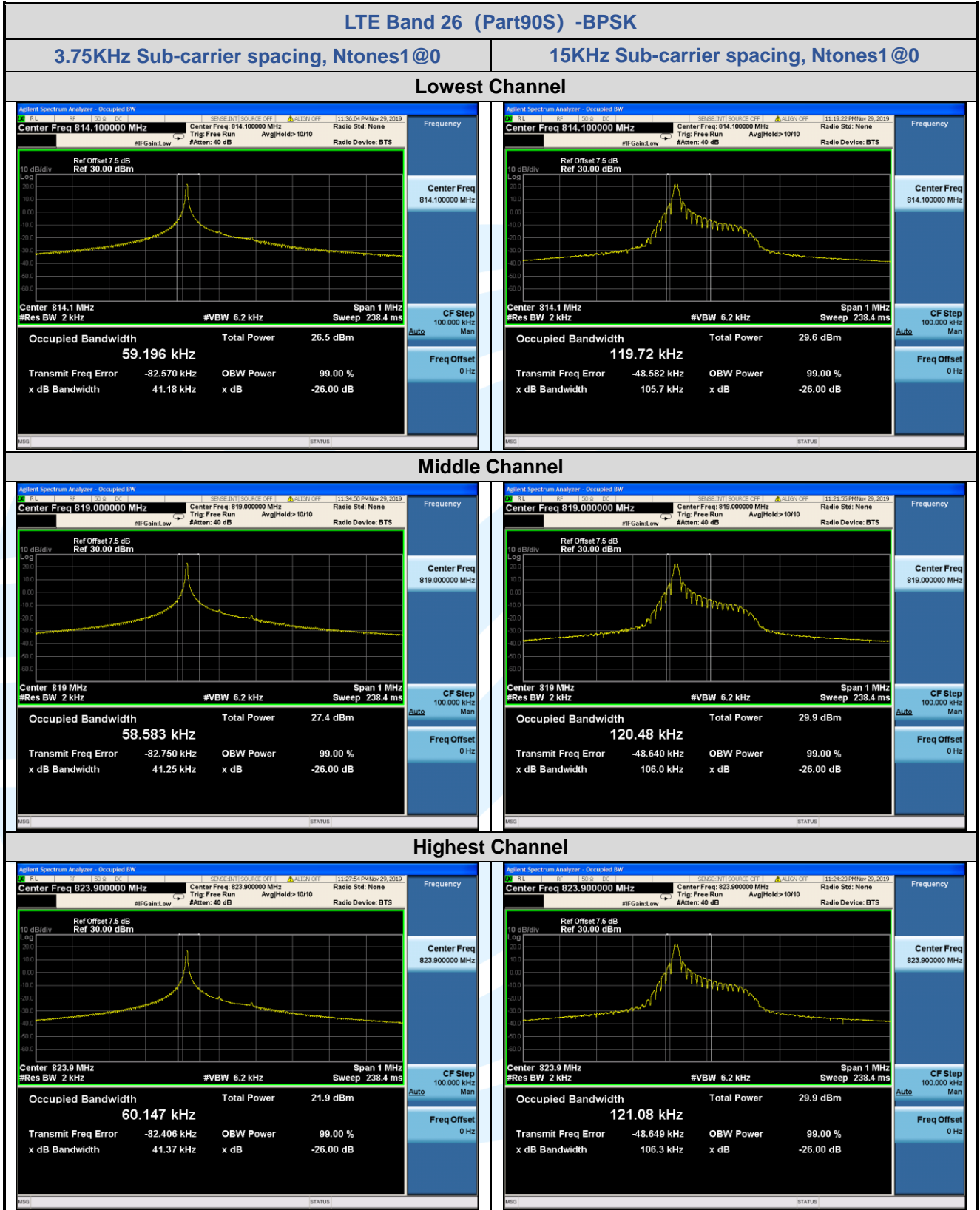
**5.5.8 LTE Band 26 (Part 90S)**

LTE Band 26(Part 90S)								
Modulation	Sub-carrier spacing (KHz)	Ntones	Bandwidth(KHz) for low/mid/high channel					
			26691/814.1		26740/819		26789/823.9	
			99% ( KHz)	-26dBc (KHz)	99% (KHz)	-26dBc (KHz)	99% (KHz)	-26dBc (KHz)
QPSK	3.75	1@0	63.099	41.520	62.225	41.450	62.367	41.240
QPSK	15	1@0	121.000	106.300	121.04	104.800	121.280	113.400
QPSK	15	12@0	187.45	252.200	186.99	248.300	187.48	246.900
BPSK	3.75	1@0	59.196	41.18	58.583	41.25	60.147	41.37
BPSK	15	1@0	119.72	105.7	120.48	106.0	121.08	106.3









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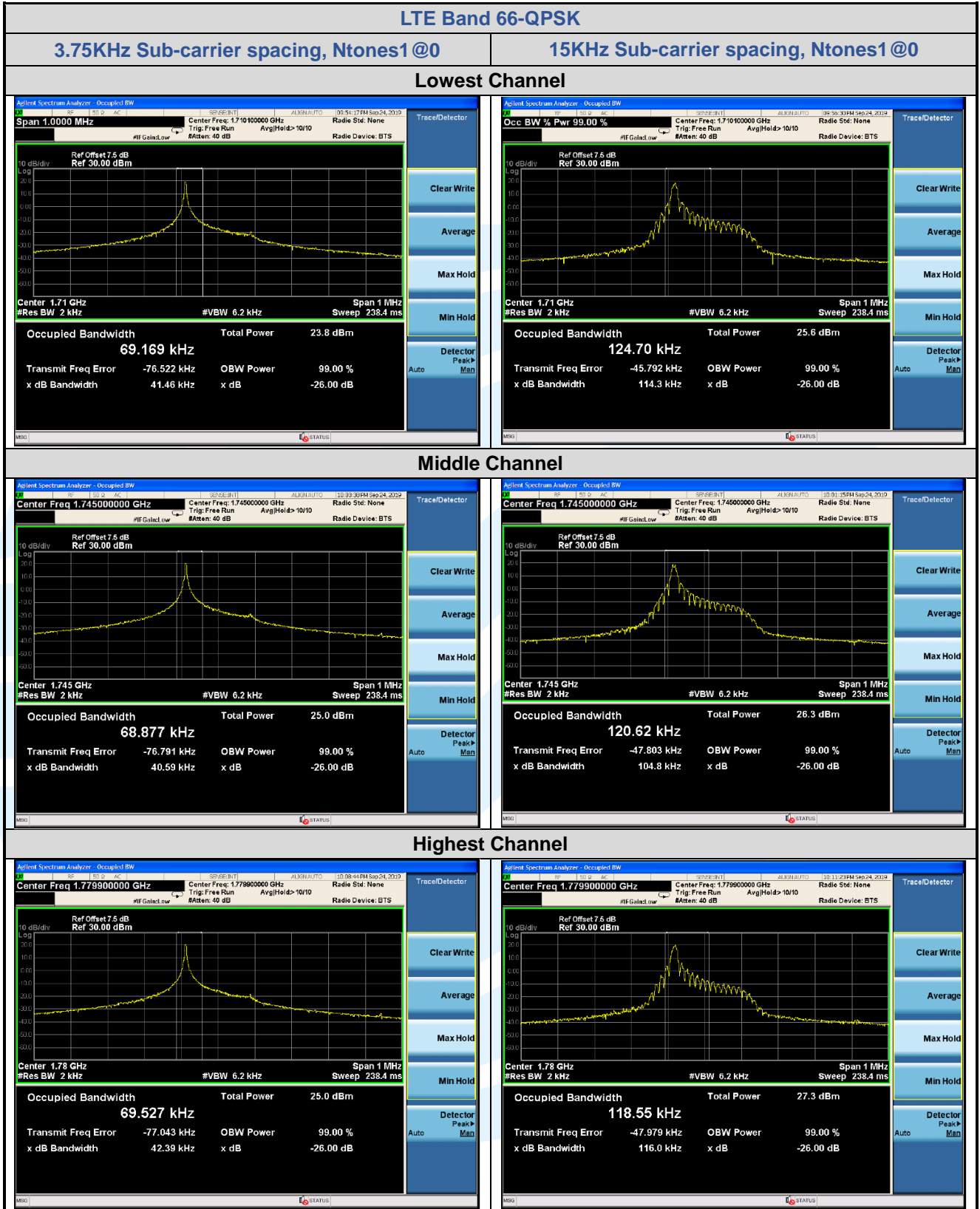
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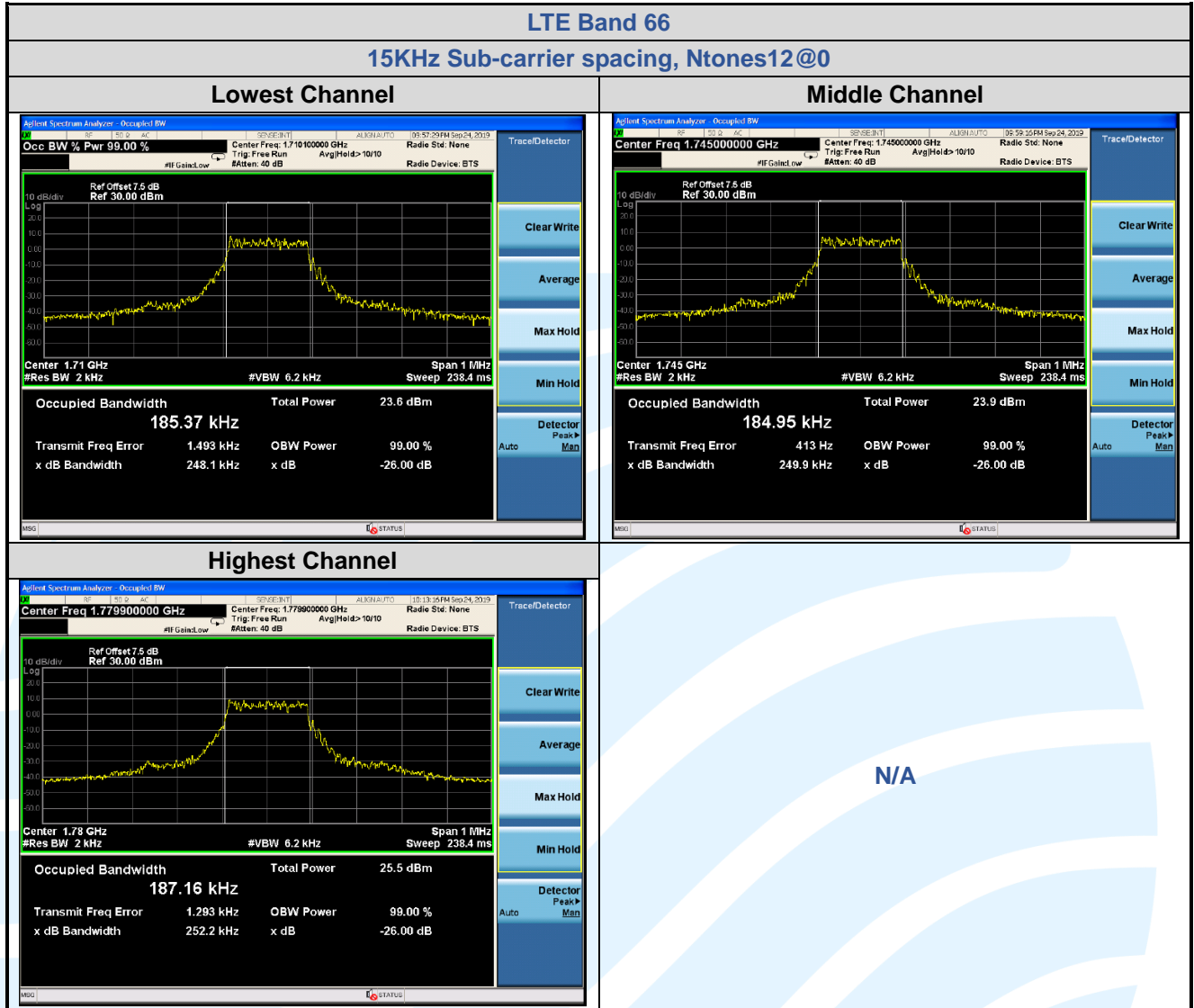
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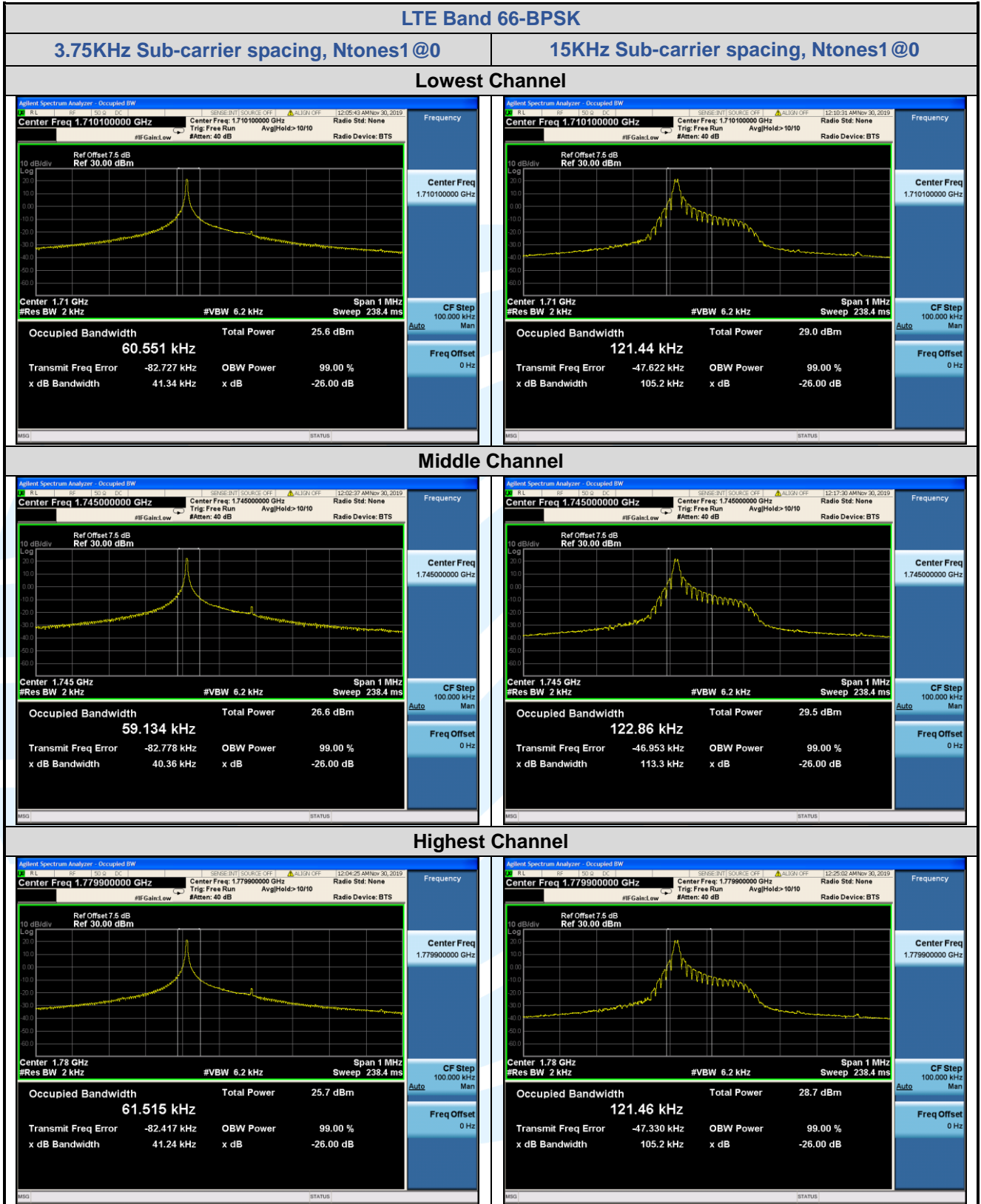
UTTR-RF-RSS4G-V1.0

5.5.9 LTE Band 66

LTE Band 66								
Modulation	Sub-carrier spacing (KHz)	Ntones	Bandwidth(KHz) for low/mid/high channel					
			131973/1710.1		132322/1745.0		132671/1779.9	
			99% ( KHz)	-26dBc (KHz)	99% (KHz)	-26dBc (KHz)	99% (KHz)	-26dBc (KHz)
QPSK	3.75	1@0	61.169	41.46	68.877	40.590	69.527	42.39
QPSK	15	1@0	124.7	114.3	120.62	104.8	118.55	116.0
QPSK	15	12@0	185.37	248.1	184.85	249.9	187.16	252.2
BPSK	3.75	1@0	60.551	41.34	59.134	40.36	61.515	41.24
BPSK	15	1@0	121.44	105.2	122.86	113.3	121.46	105.2

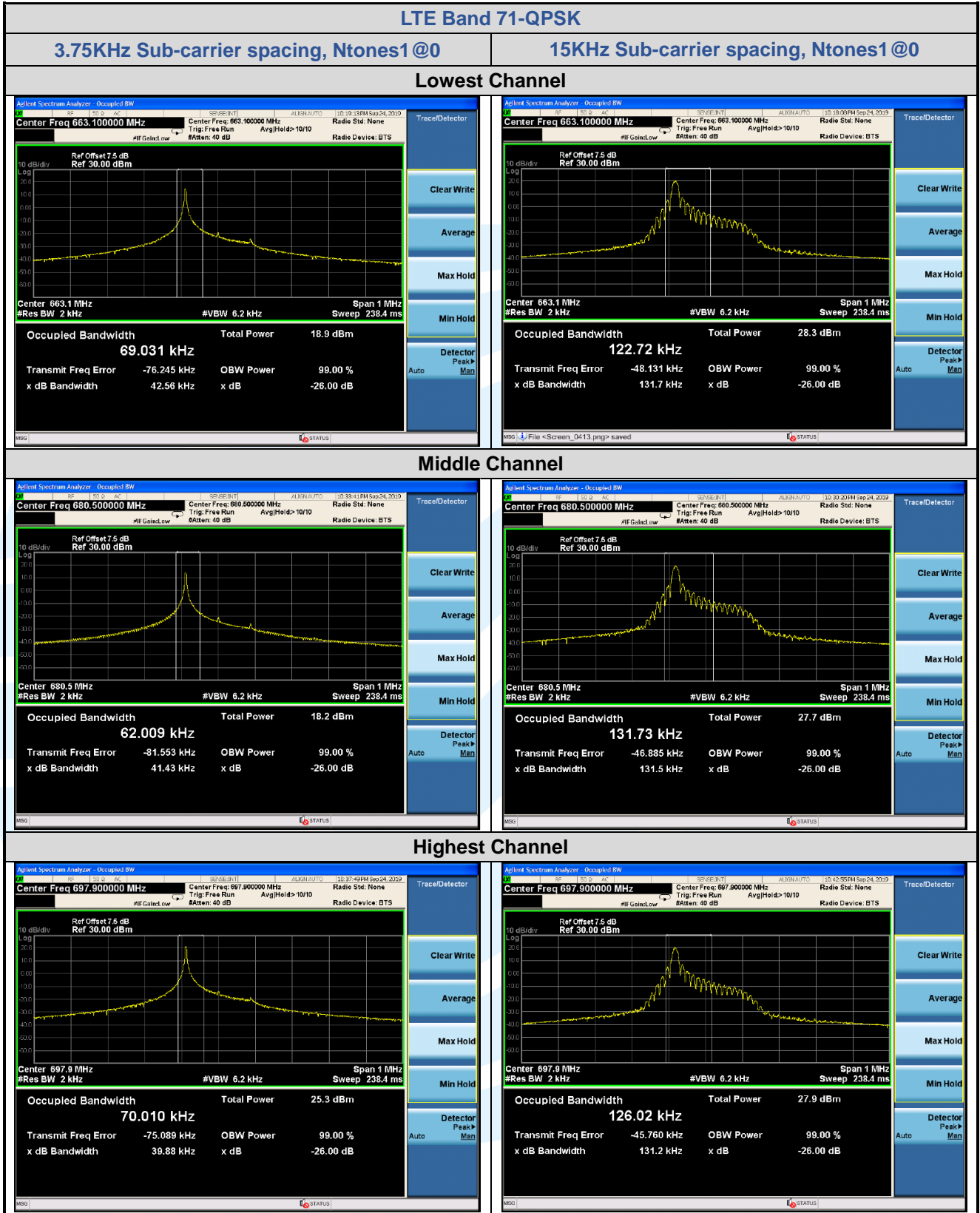


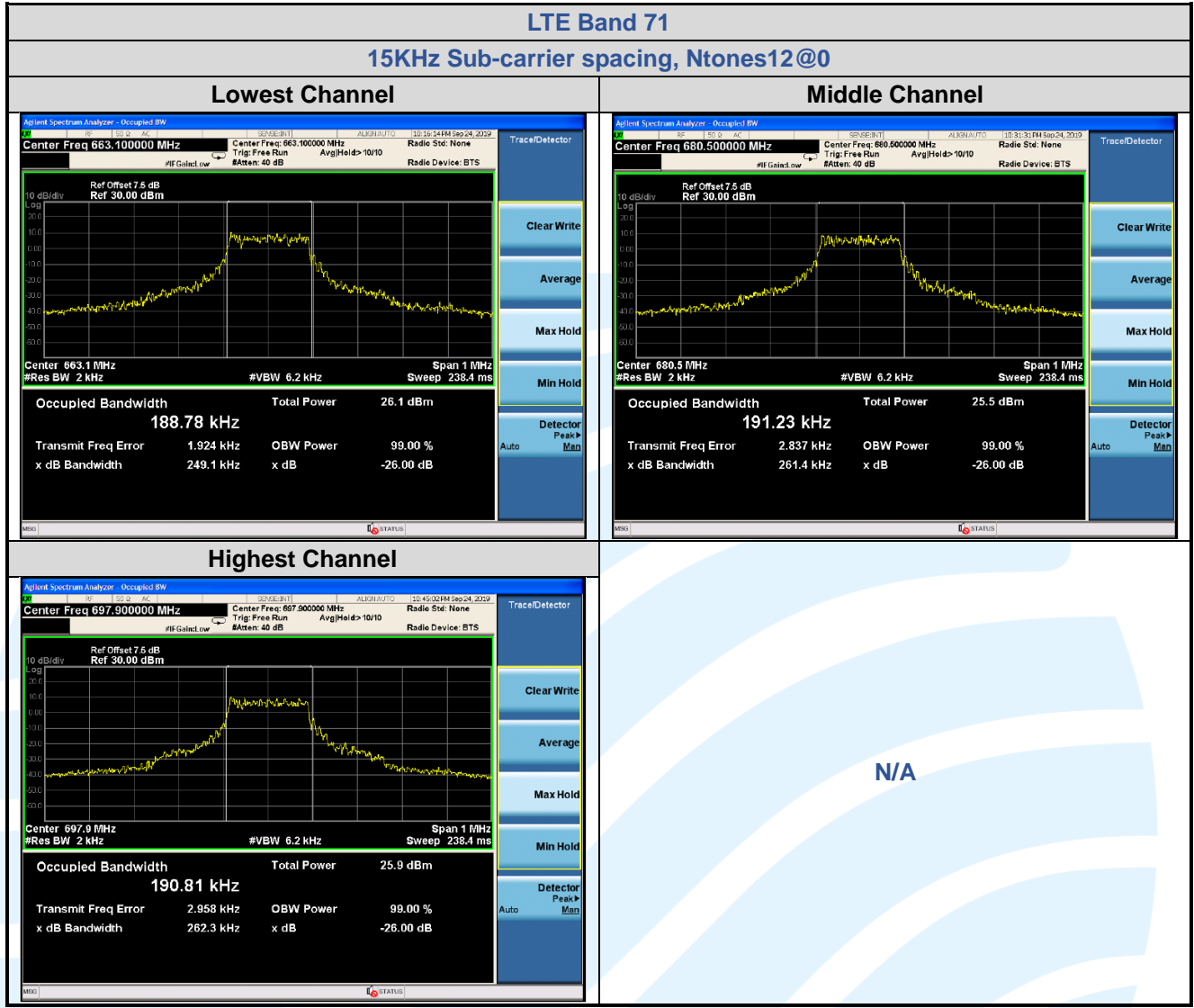




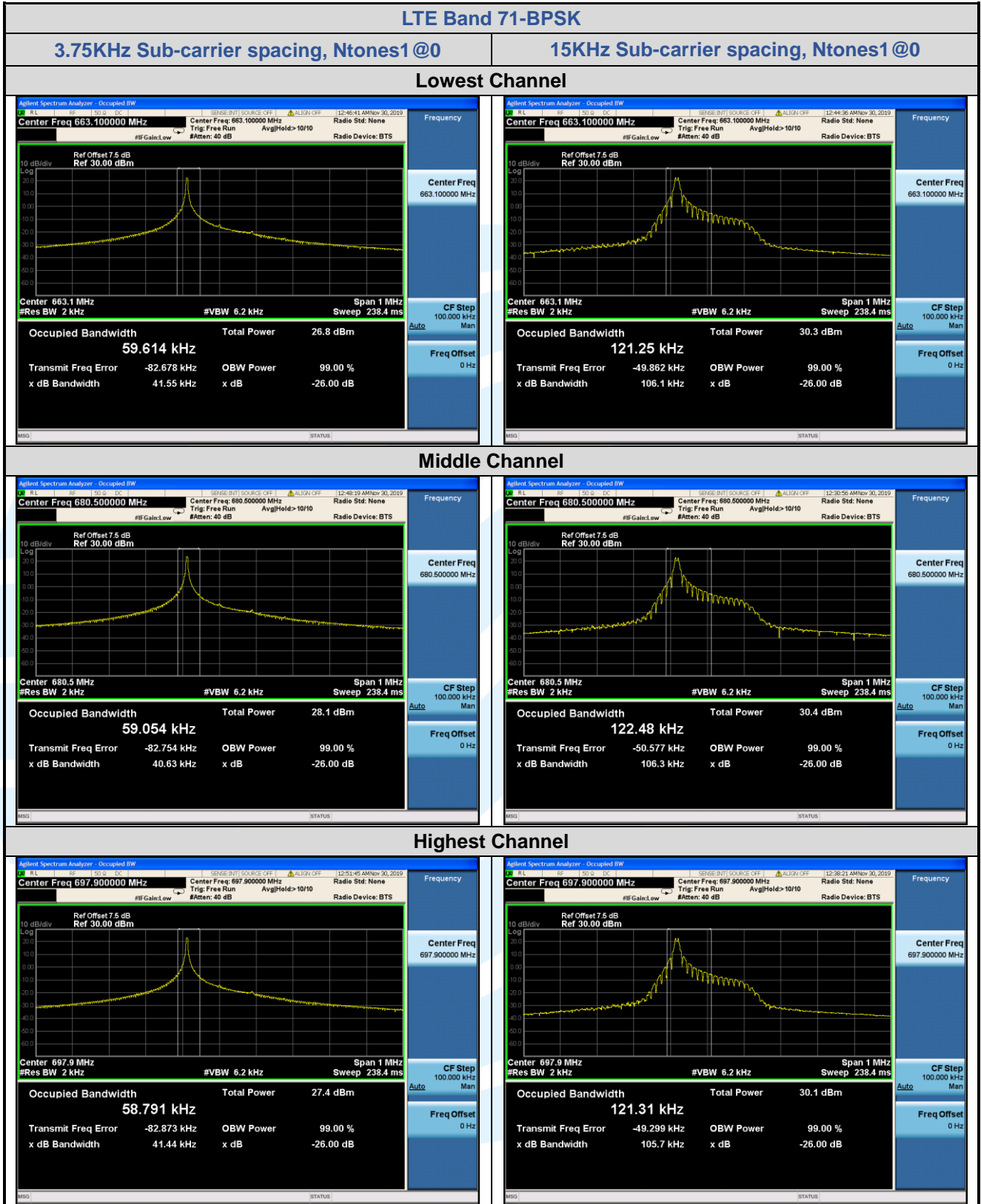
5.5.10 LTE Band 71

LTE Band 71								
Modulation	Sub-carrier spacing (KHz)	Ntones	Bandwidth(KHz) for low/mid/high channel					
			133123/663.1		133297/680.5		133471/697.9	
			99% (KHz)	-26dBc (KHz)	99% (KHz)	-26dBc (KHz)	99% (KHz)	-26dBc (KHz)
QPSK	3.75	1@0	69.031	42.560	62.009	41.430	70.010	39.880
QPSK	15	1@0	122.720	131.700	131.730	131.500	126.020	131.200
QPSK	15	12@0	188.780	249.100	191.230	261.400	190.810	262.300
BPSK	3.75	1@0	59.614	41.55	59.054	40.63	58.791	41.44
BPSK	15	1@0	121.25	106.1	122.48	106.3	121.31	105.7









## 5.6 BAND EDGE AT ANTENNA TERMINALS

**Test Requirement:** **LTE Band 2 & LTE Band 25:** FCC 47 CFR Part 24.238(a)  
**LTE Band 4 & LTE Band 66:** FCC 47 CFR Part 27.53(h)(1)  
**LTE Band 5 & LTE Band 26:** FCC 47 CFR Part 22.917(a)  
**LTE Band 12 & Band 71:** FCC 47 CFR Part 27.53(g)  
**LTE Band 13:** FCC 47 CFR Part 27.53(c)(2)  
**LTE Band 26:** FCC 47 CFR Part 90.691

**LTE Band 2 & LTE Band 25:** RSS-133 Issue 6, Section 6.5  
**LTE Band 4 & LTE Band 66:** RSS-139 Issue 3, Section 6.6  
**LTE Band 5:** RSS-132 Issue 3, Section 5.5  
**LTE Band 12 & LTE Band 13 & Band 71:** RSS-130 Issue 2, Section 4.7

**Test Method:** ANSI C63.26-2015 & KDB 971168 D01v03r01

**Limit:**

**FCC 47 CFR Part 24.238(a), 27.53(h)(1), 22.917(a) :**

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 emission limit equal to -13 dBm.

**FCC 47 CFR Part 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.

**FCC 47 CFR Part 27.53(c)(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;

**FCC 47 CFR Part 90.691:**

(a)(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $116 \log_{10}(f/6.1)$  decibels or  $50 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(a)(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

**RSS-130 Issue 2, Section 4.7,**

General unwanted emissions limits: The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least  $43 + 10 \log_{10} p$  (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

Additional unwanted emissions limits:

In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746- 756 MHz and 777-787 MHz shall also comply with the following restrictions:

- a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:
  - i.  $76 + 10 \log_{10} p$  (watts), dB, for base and fixed equipment, and
  - ii.  $65 + 10 \log_{10} p$  (watts), dB, for mobile and portable equipment.
- b) The e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.

**RSS-132 Issue 3, Section 5.5,**

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts).

After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

**RSS-133 Issue 6, Section 6.5,**

In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$ (watts).

After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

**RSS-139 Issue 3, Section 6.6,**

In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block,2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least  $43 + 10 \log_{10} p$  (watts) dB.

After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least  $43 + 10 \log_{10} p$  (watts) dB.

**Test Procedure:**

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.

For each band edge measurement:

- 1) Set the spectrum analyzer span to include the block edge frequency.
- 2) Set a marker to point the corresponding band edge frequency in each test case.
- 3) Set display line at -13 dBm
- 4) Set resolution bandwidth to at least 1% of emission bandwidth.
- 5) Set spectrum analyzer with RMS detector.
- 6) Record the max trace plot into the test report

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

**Test Setup:** Refer to section 4.2.2 for details.

**Instruments Used:** Refer to section 3 for details

**Test Mode:** Link mode

**Test Results:** Pass

5.6.1 LTE Band 2

