

8.2.9. LTE BAND 26 EMISSION MASK (FCC PART 90S)

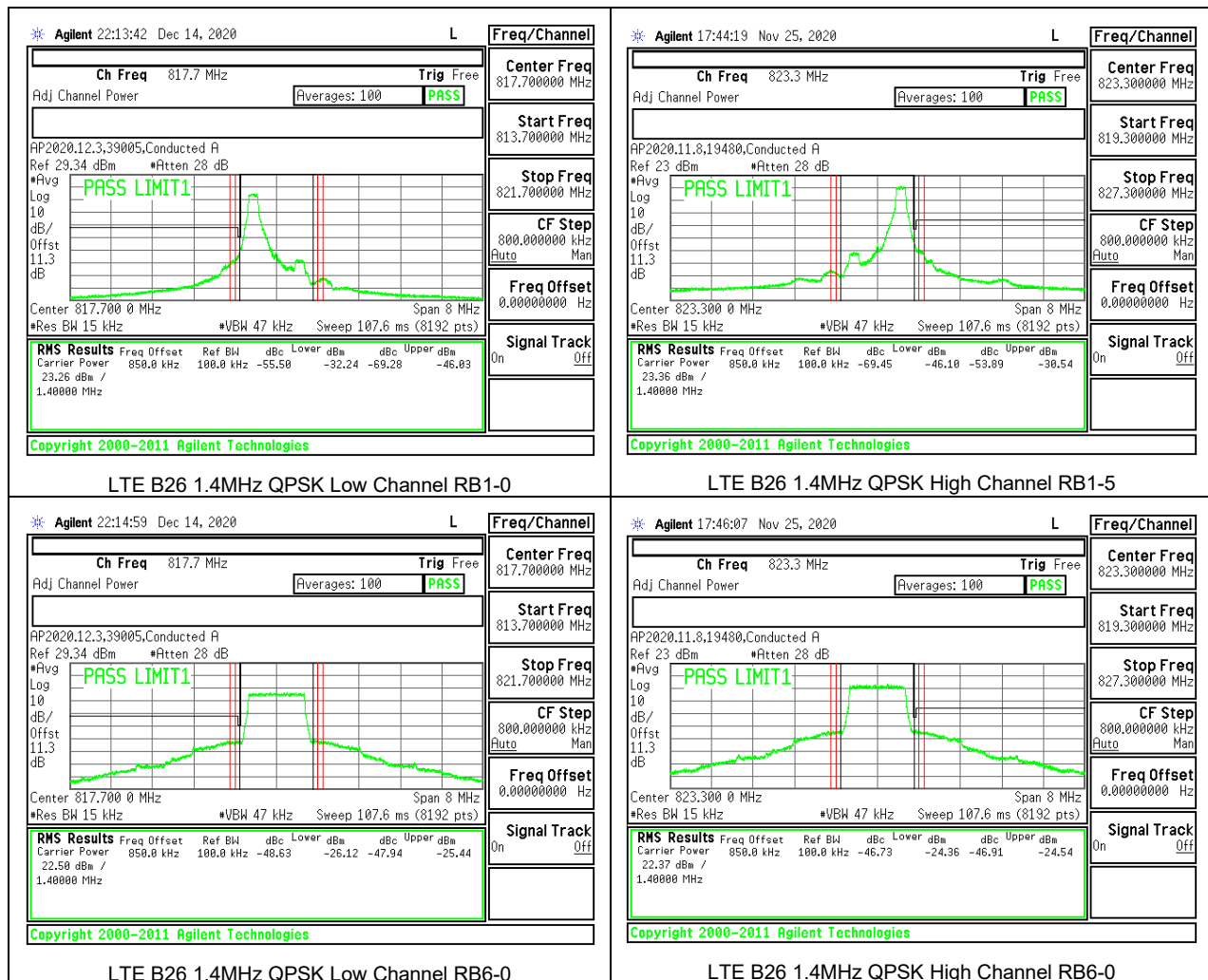
LIMITS

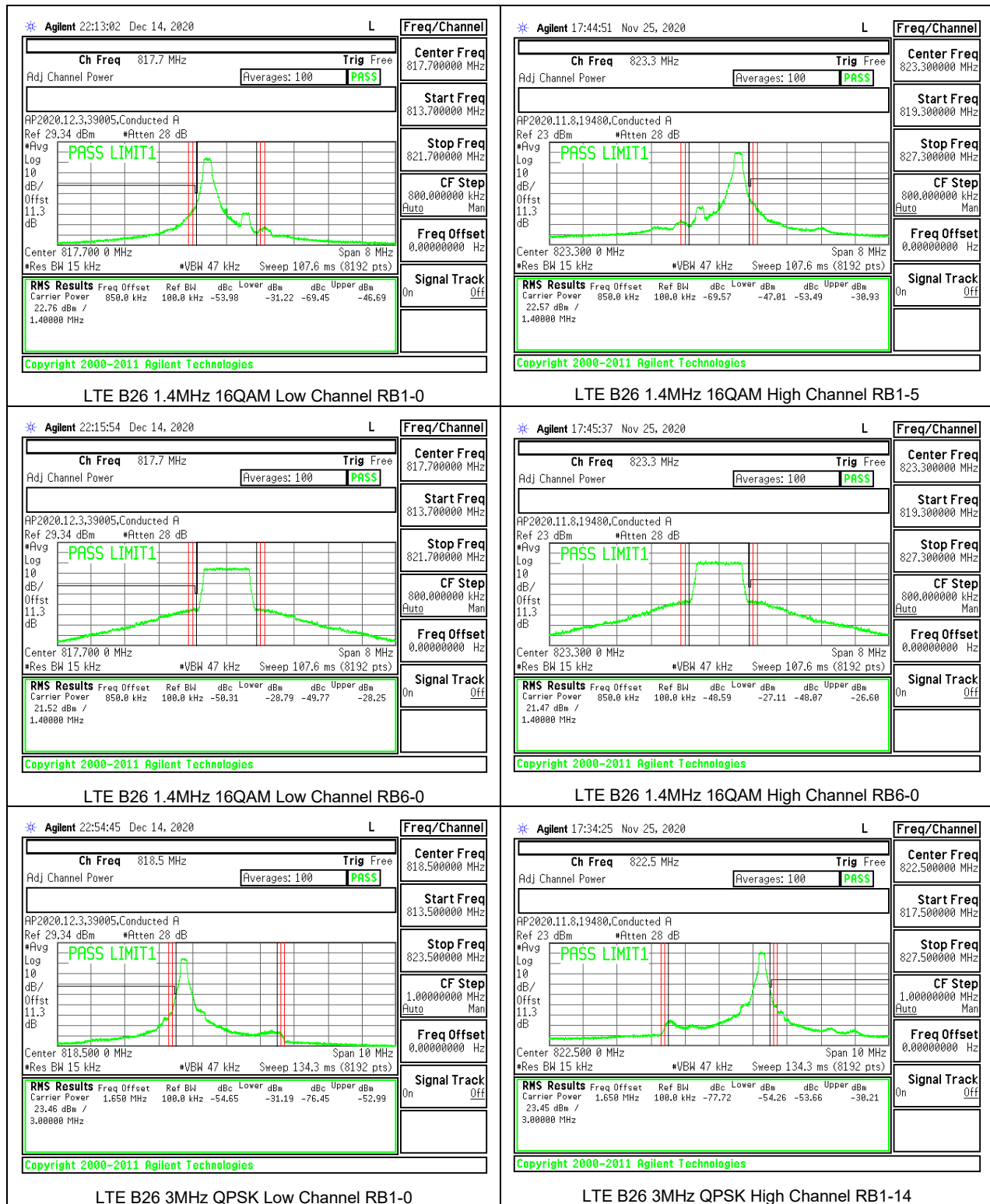
FCC: §90.691 Emission mask requirements for EA-based systems.

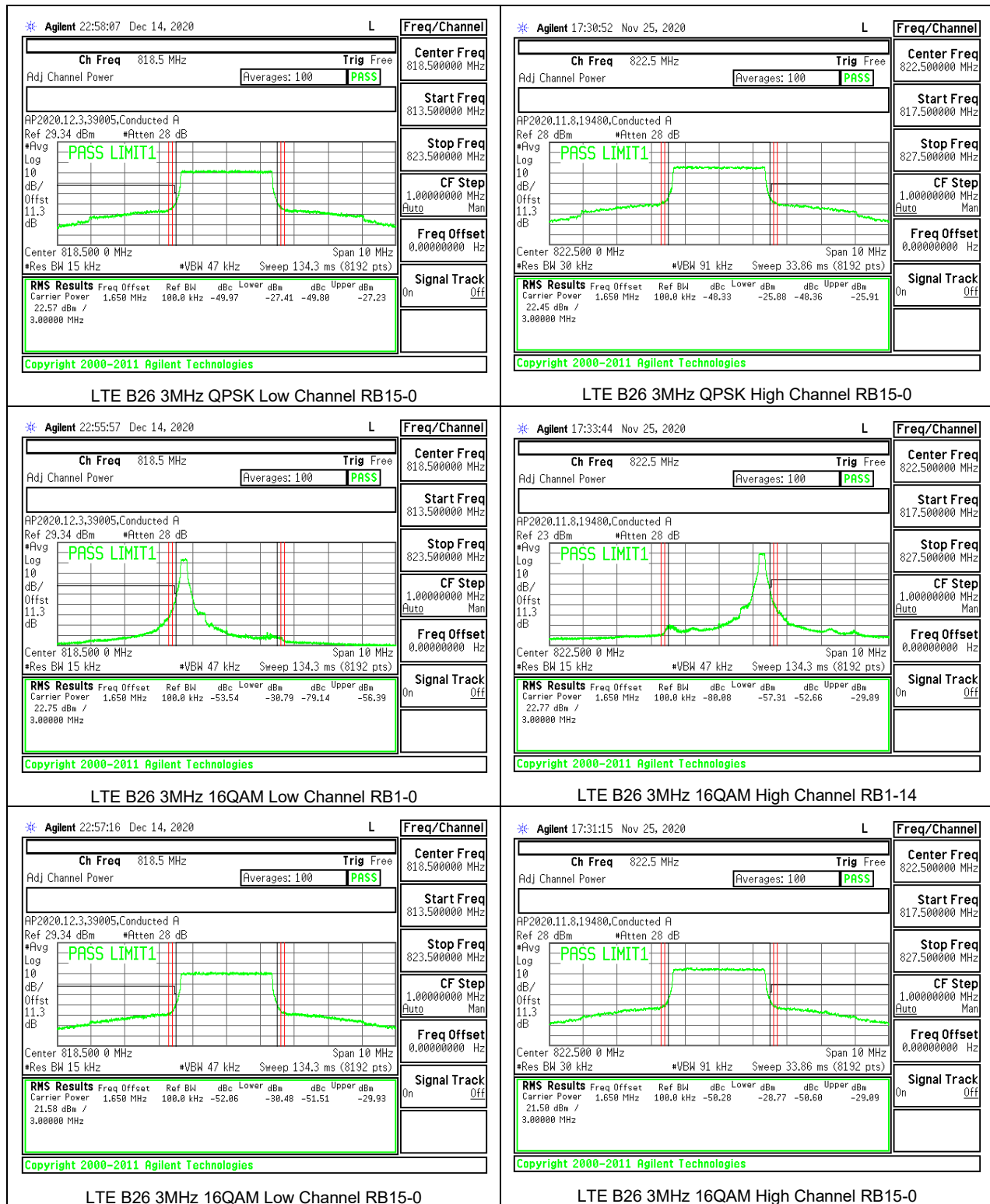
(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

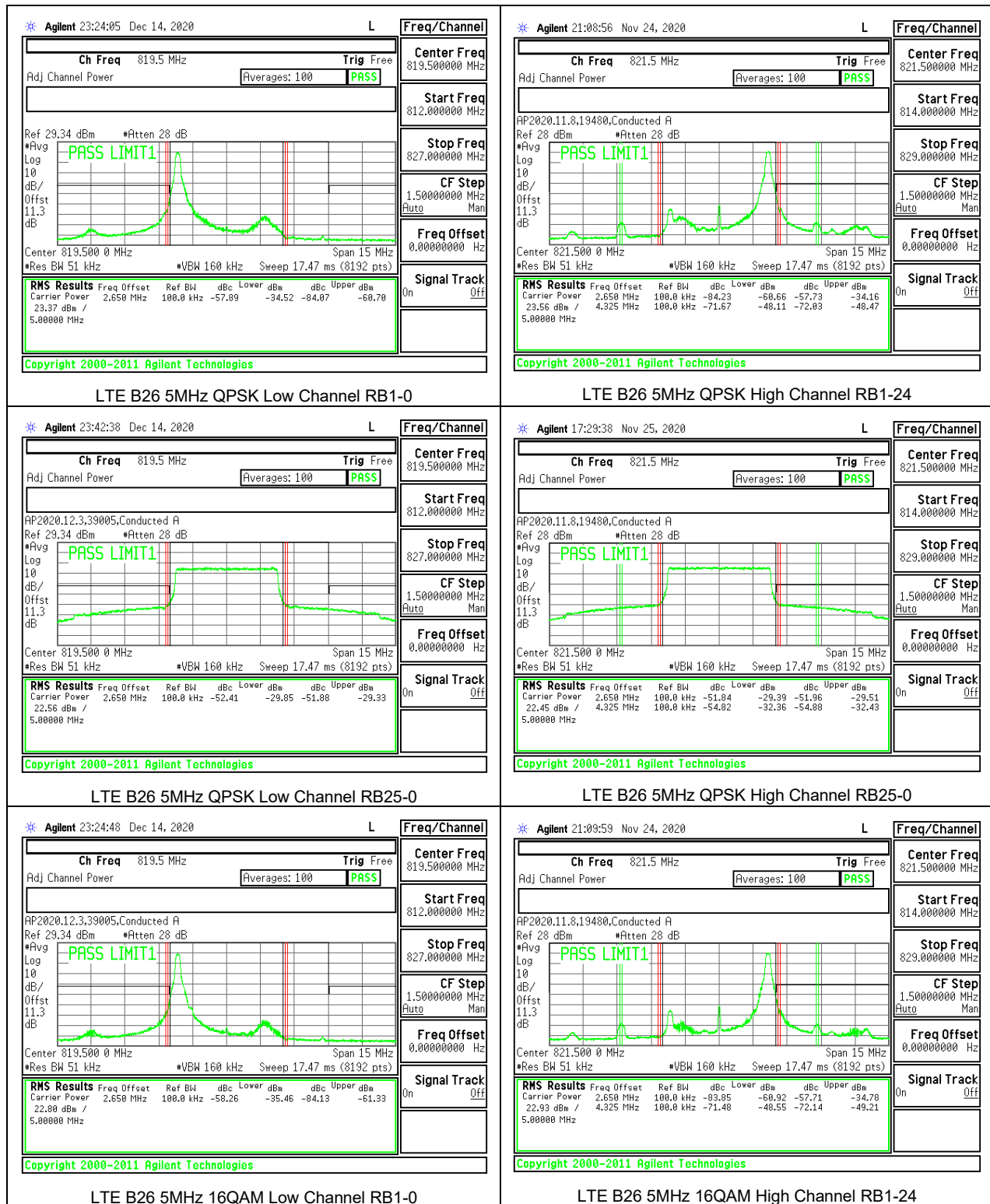
(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the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

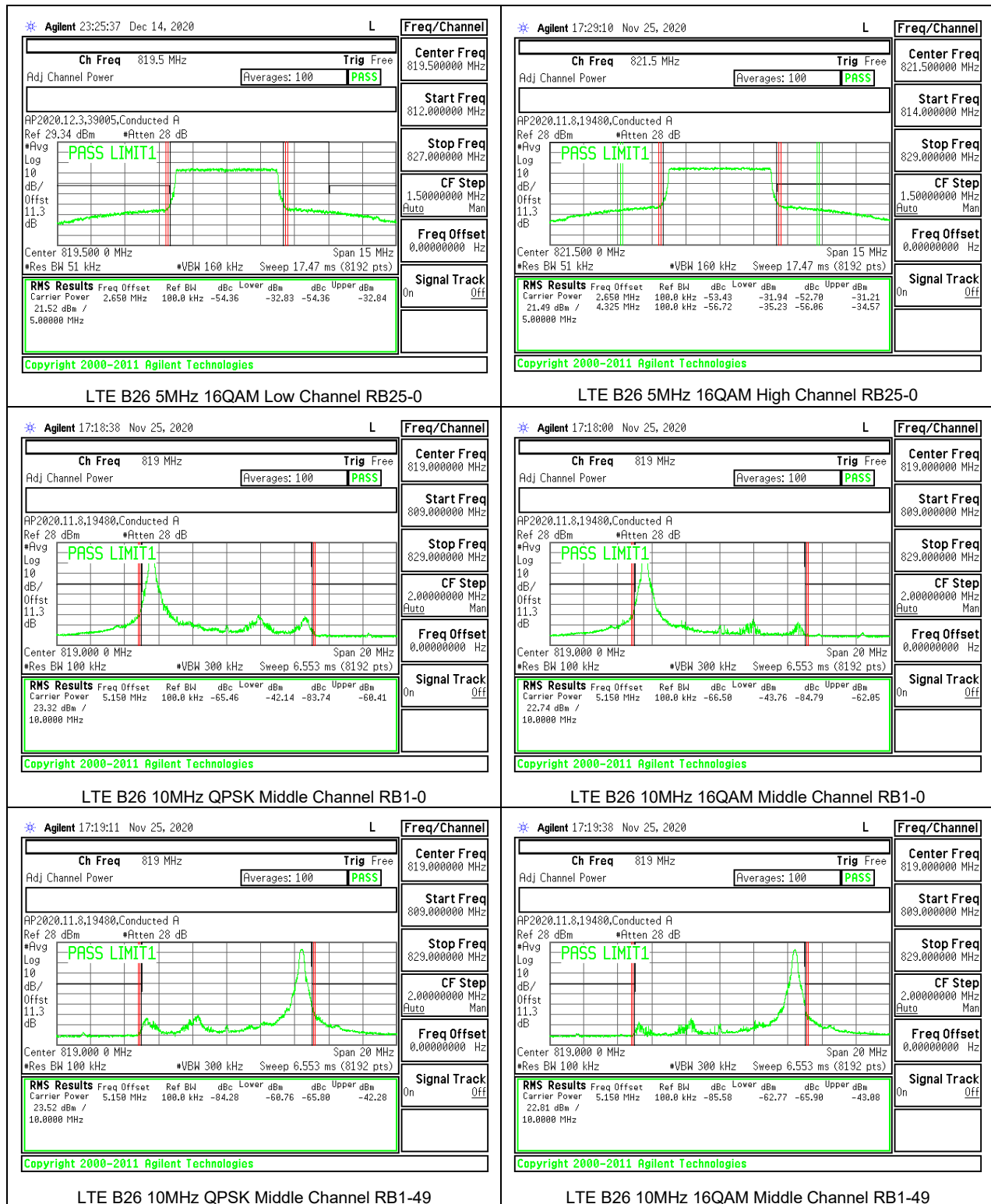
(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency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

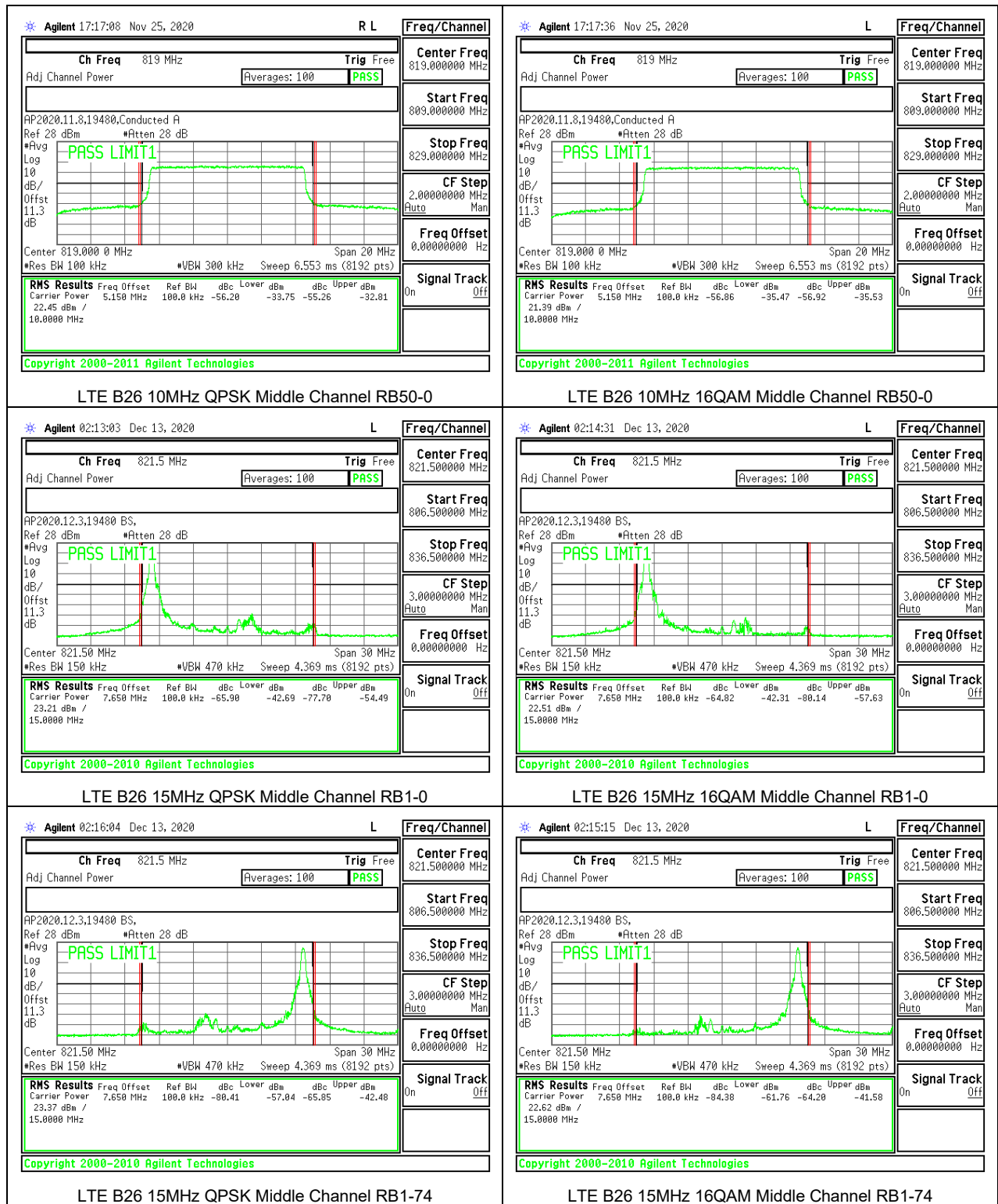


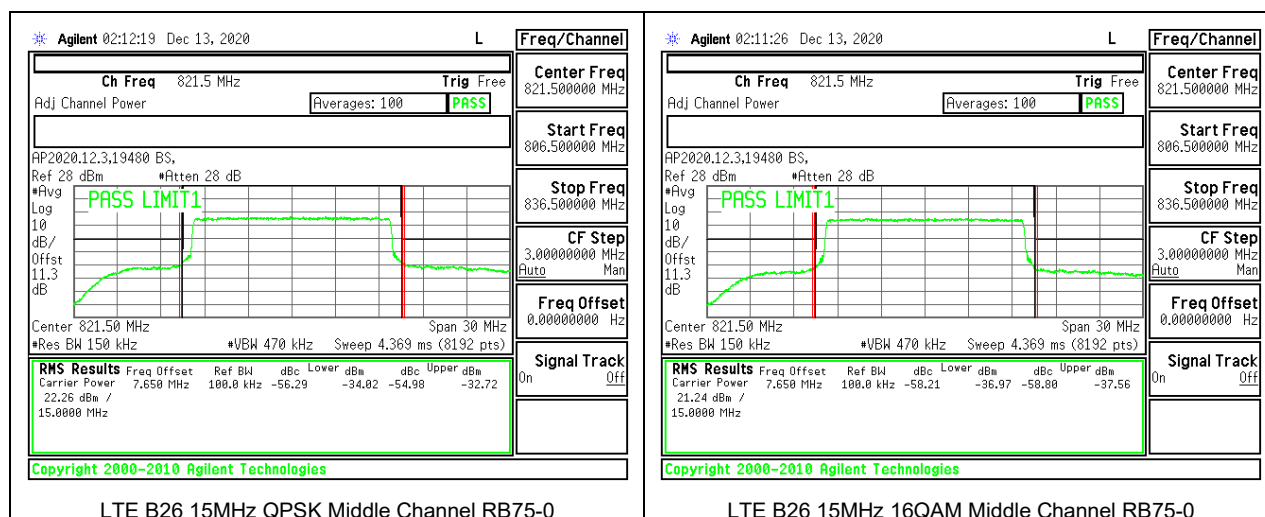










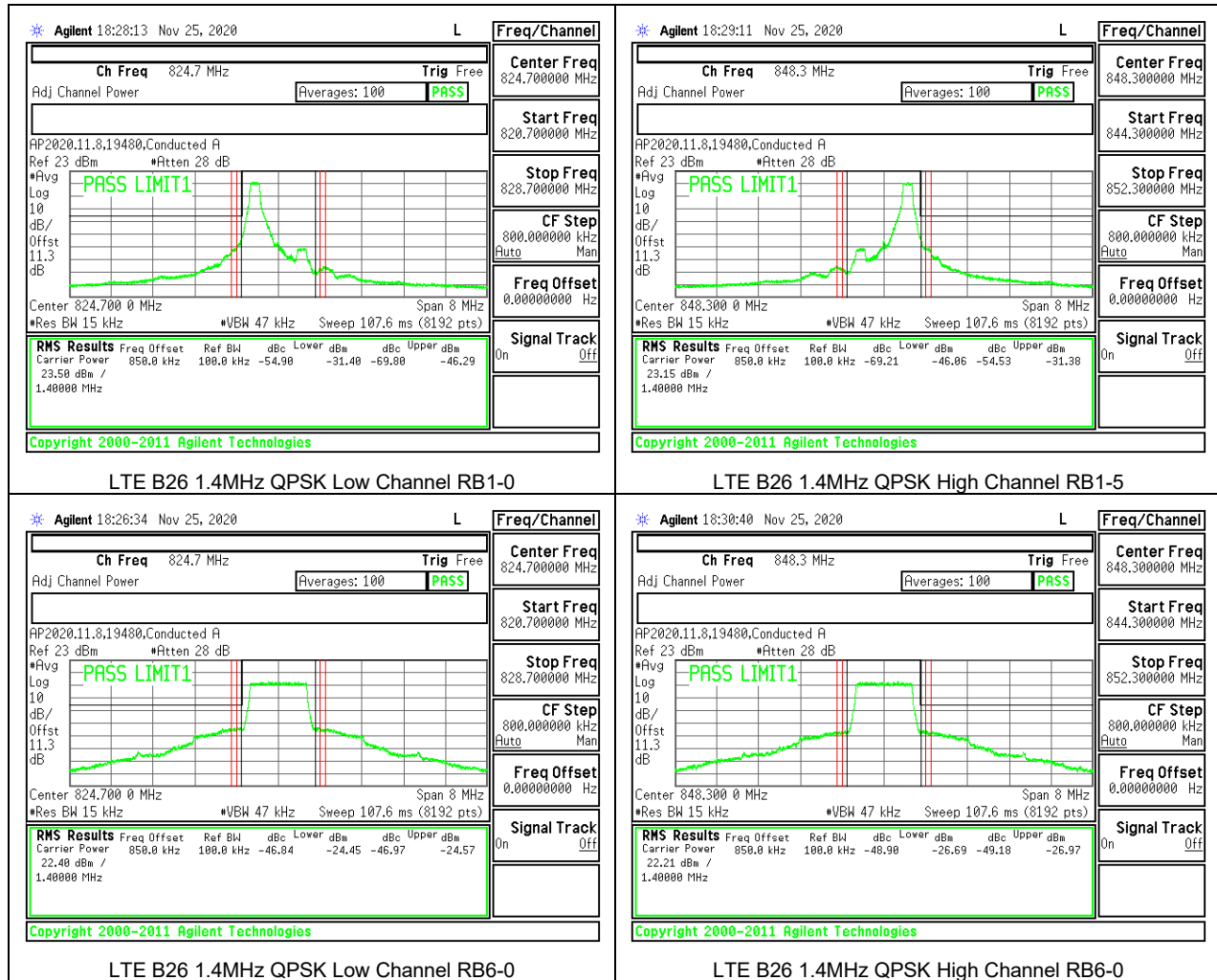


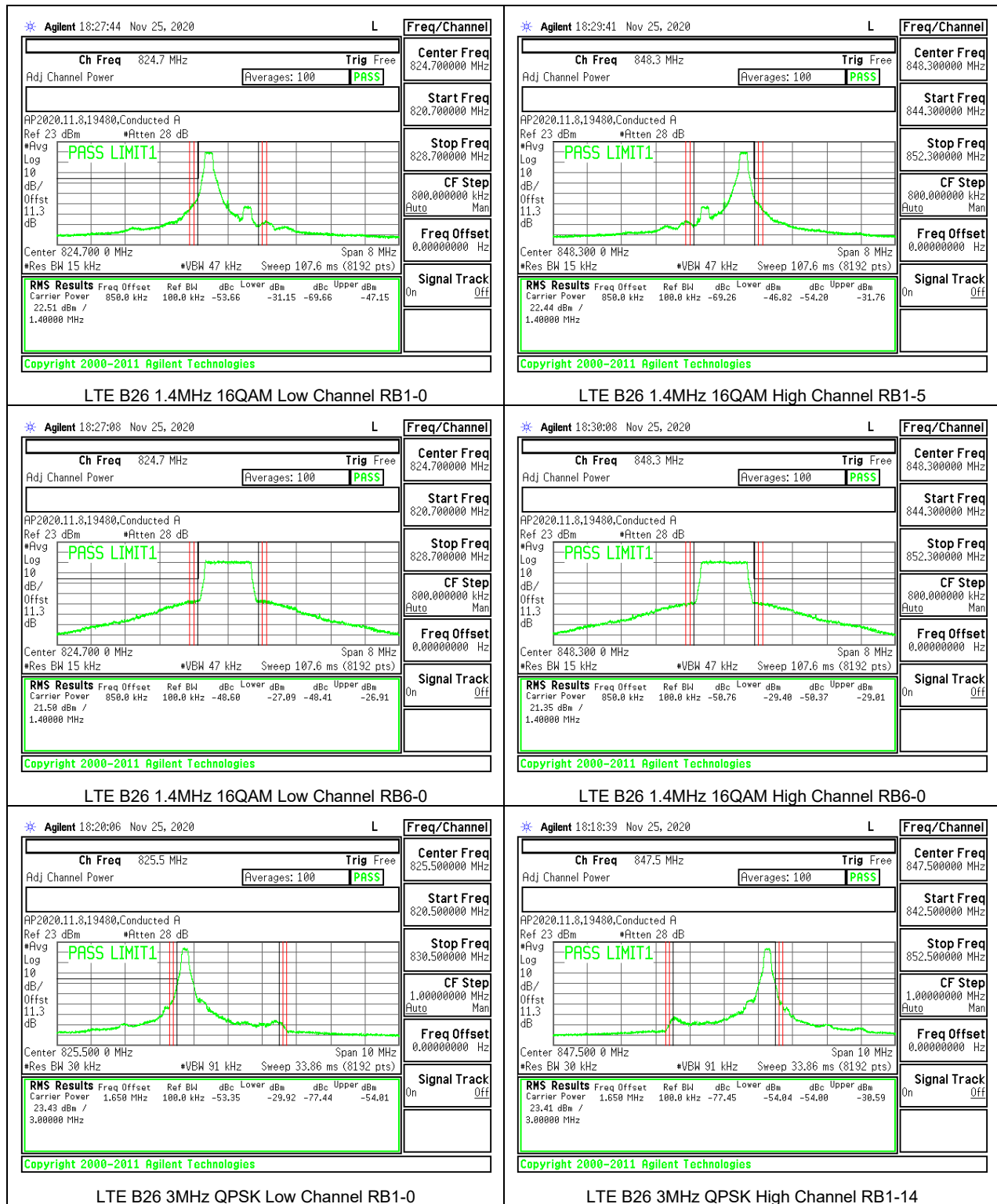
8.2.10. LTE BAND 26 BANDEDGE (FCC PART 22)

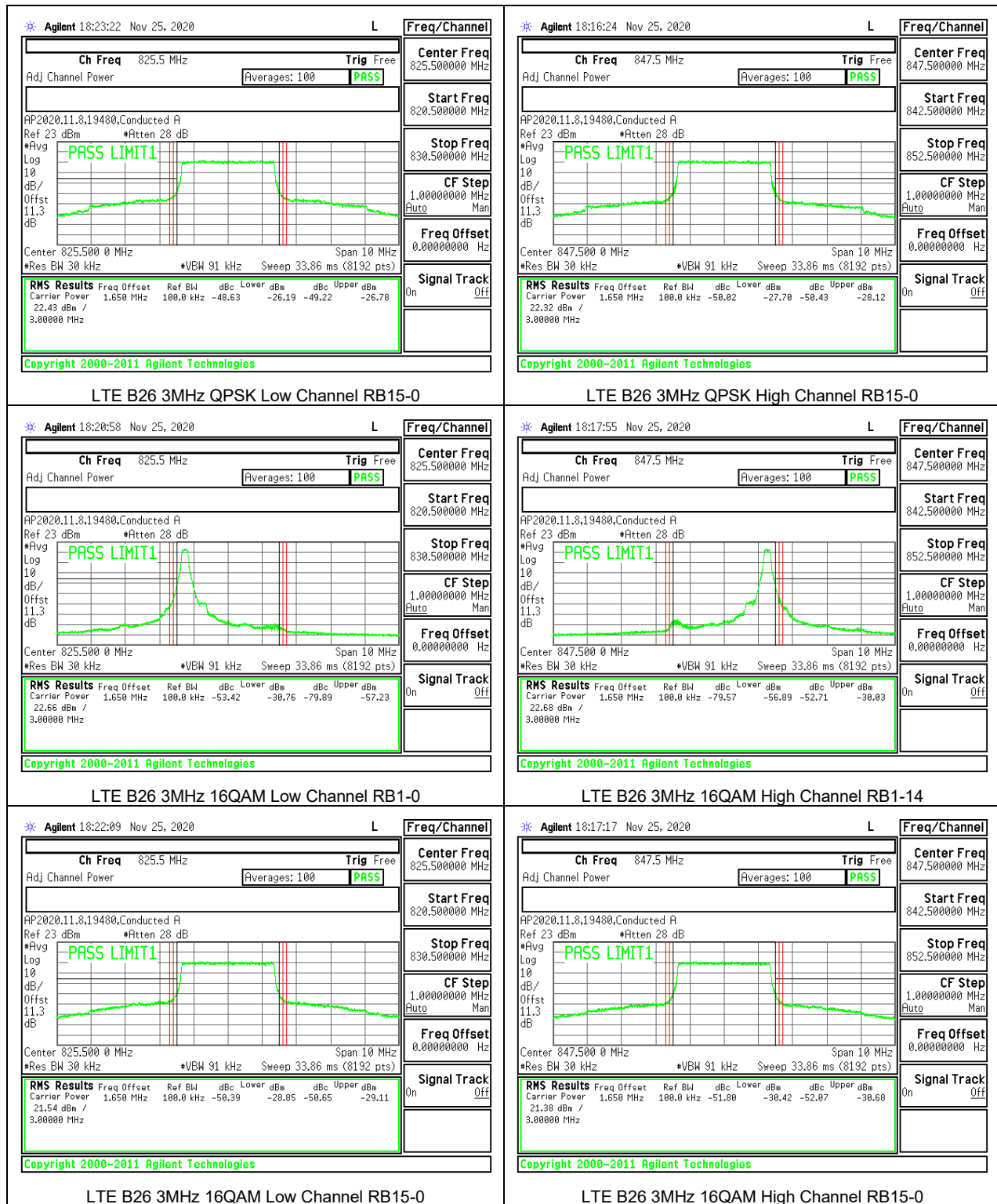
LIMITS

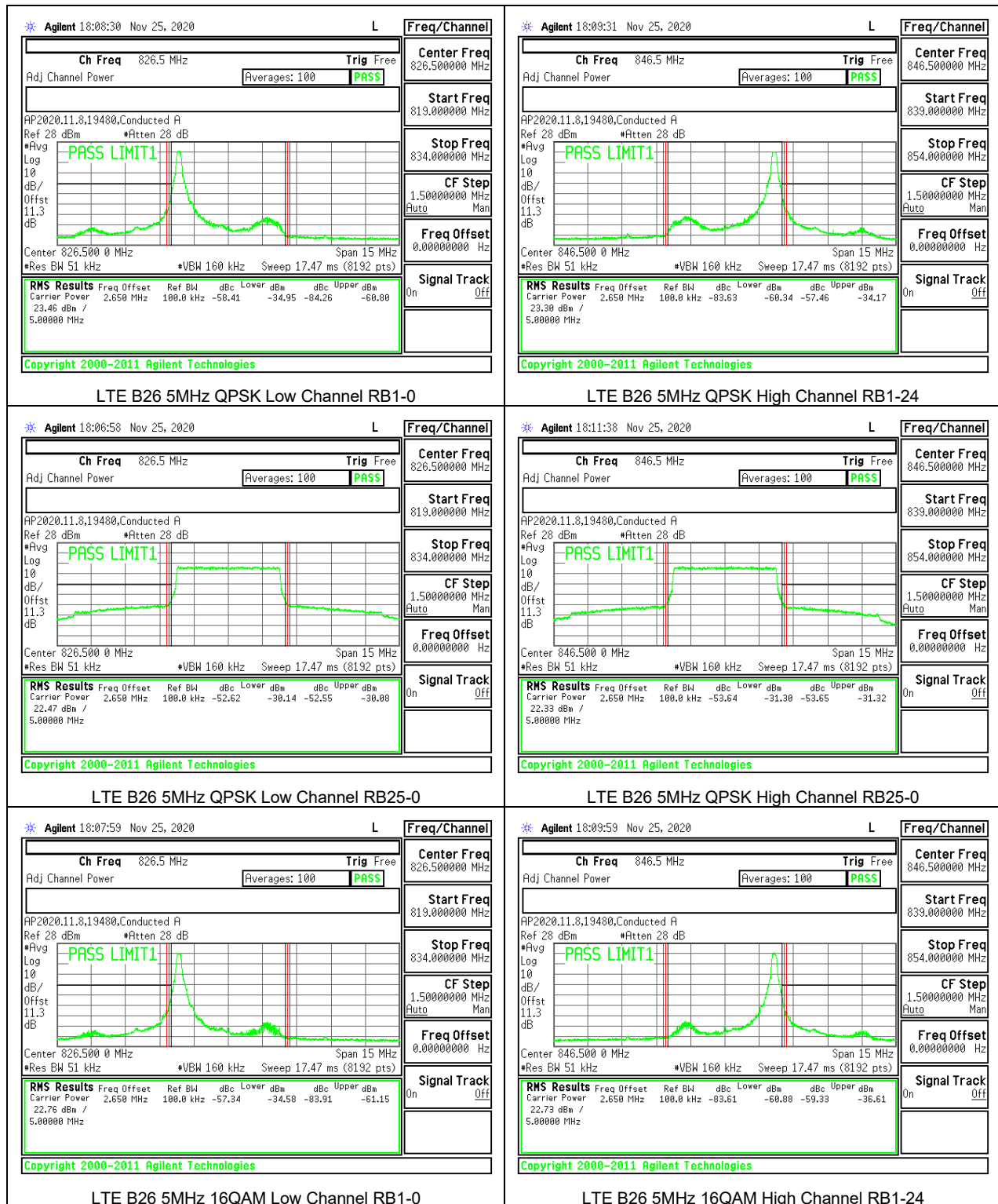
FCC: §22.917

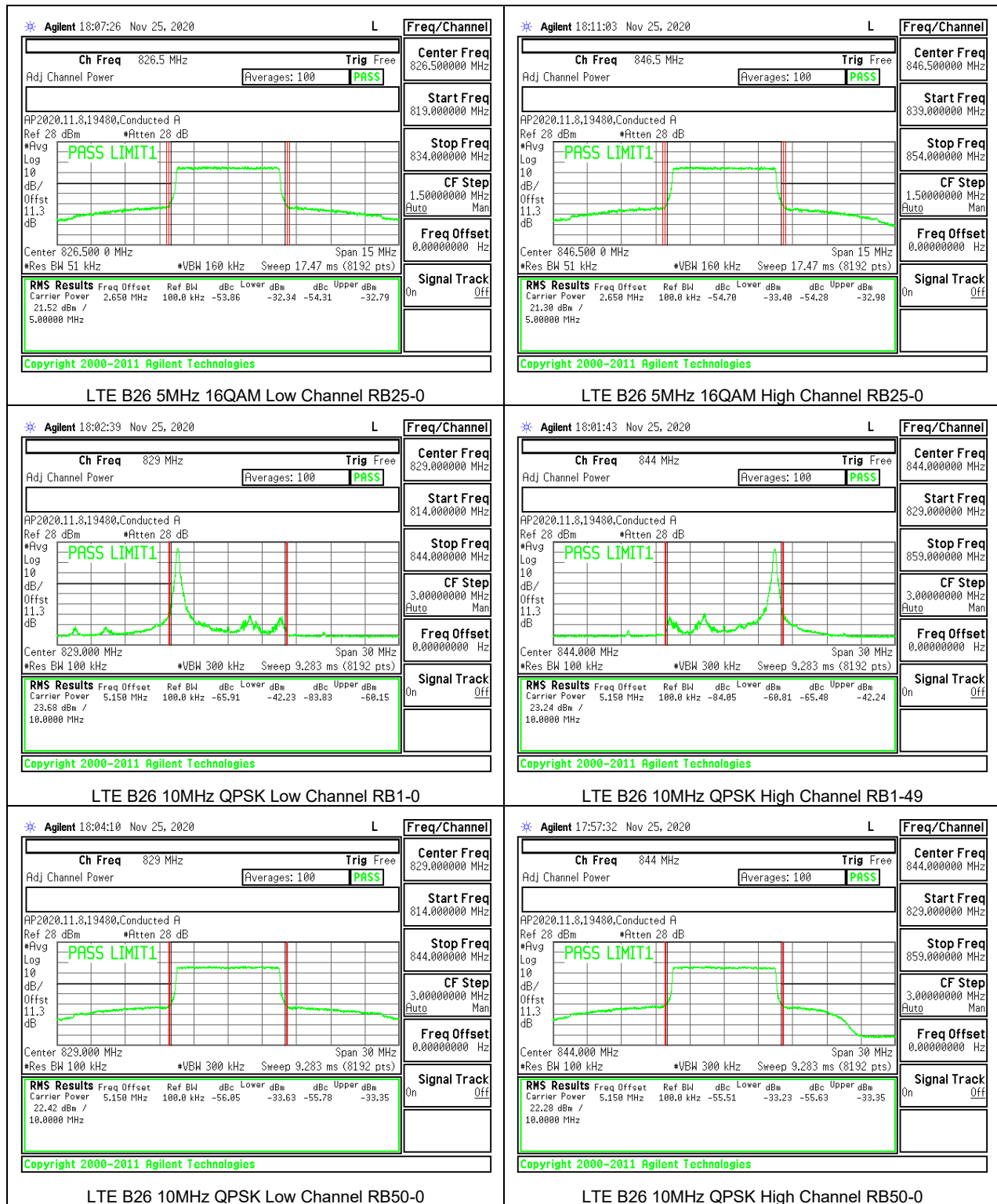
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

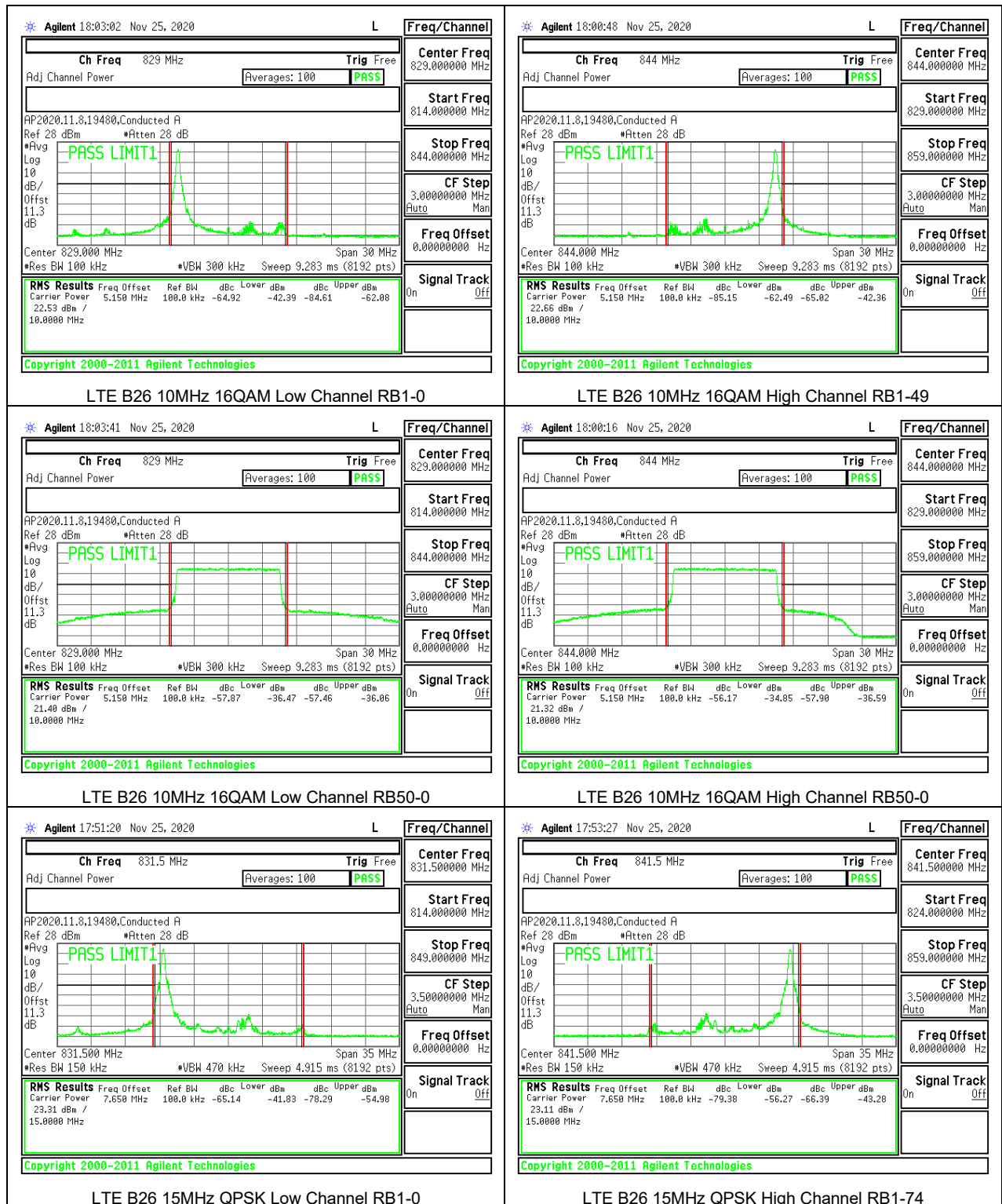


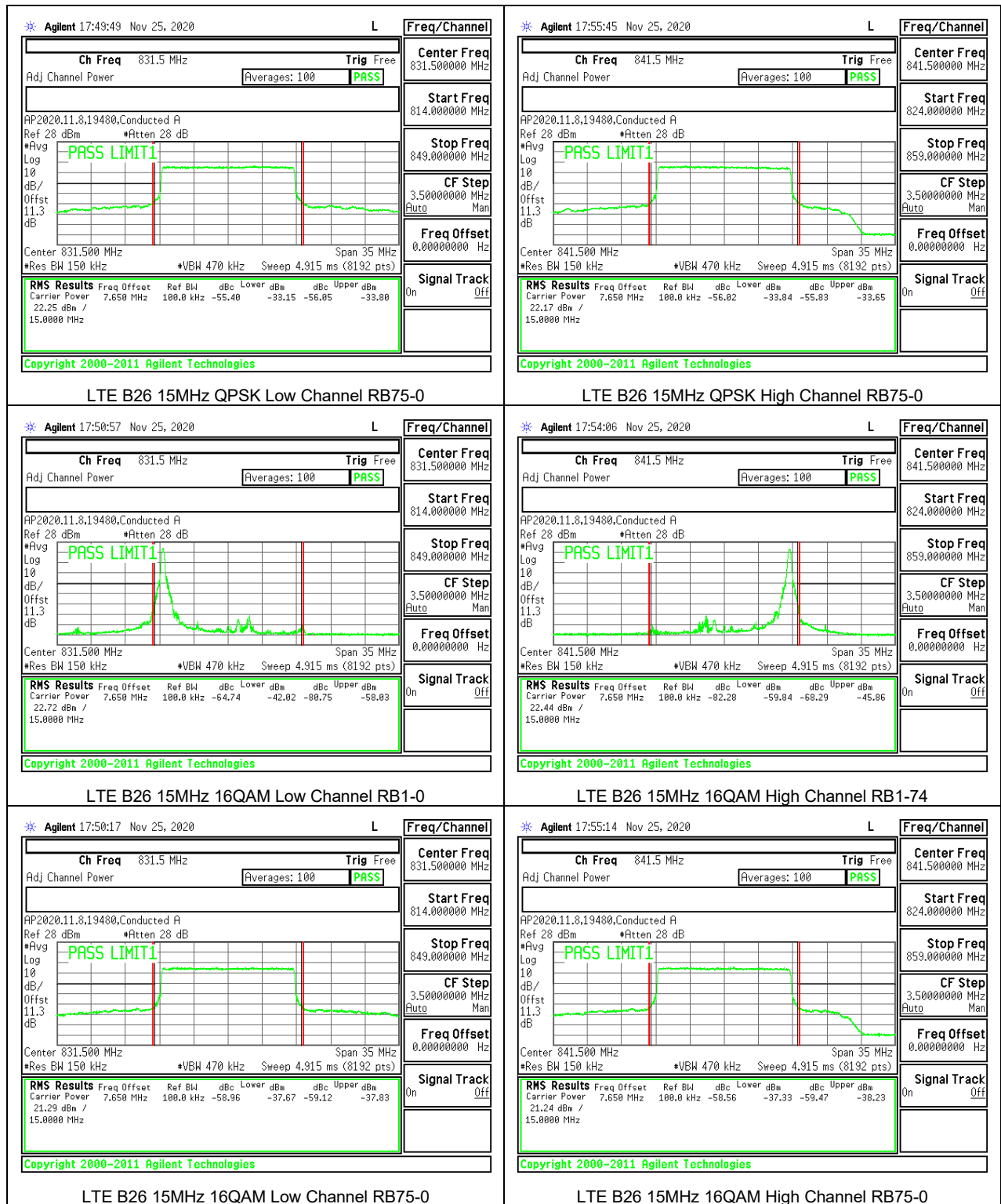


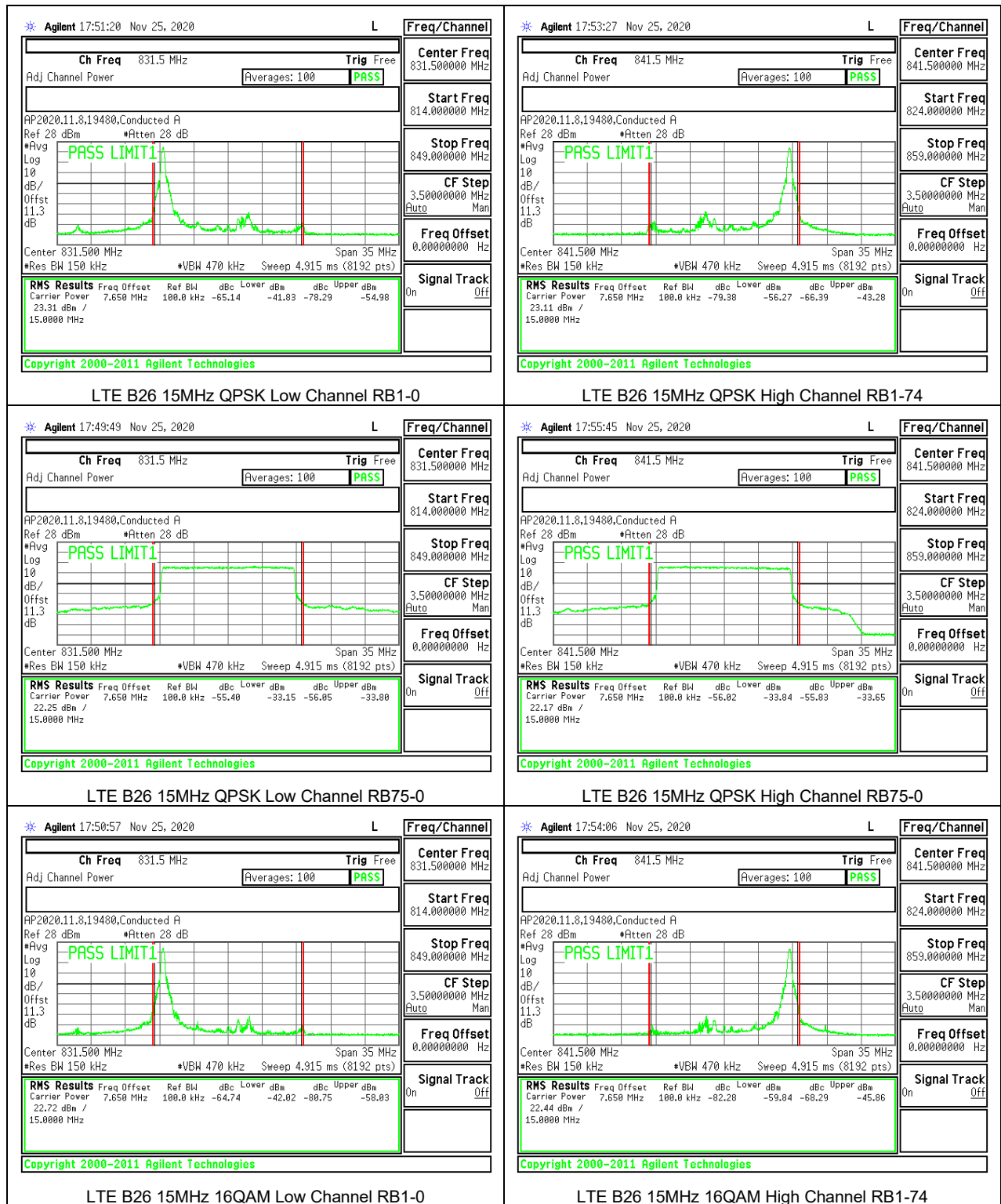


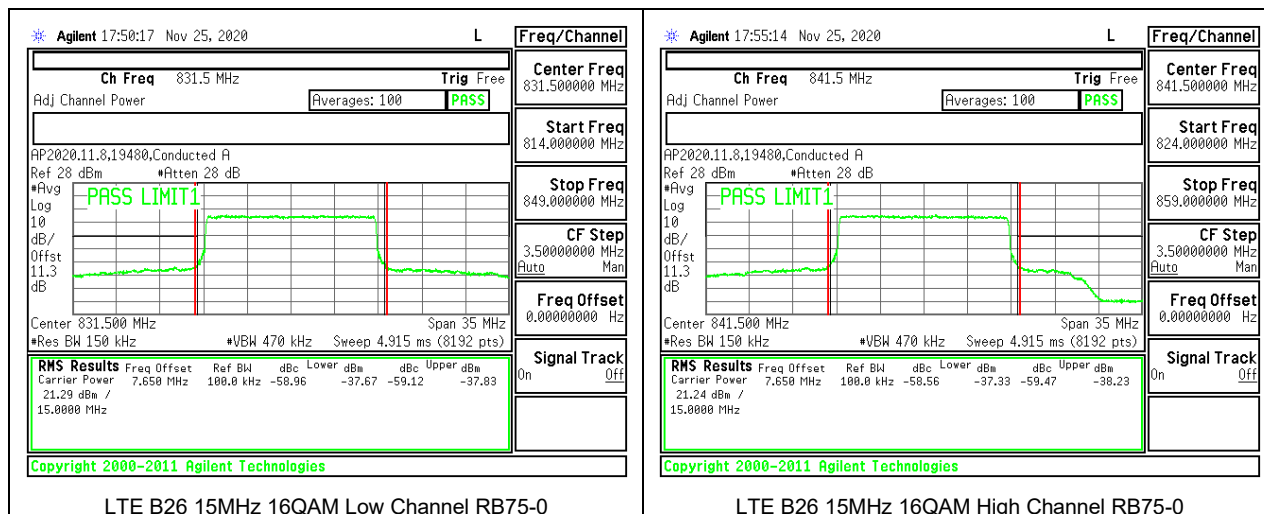




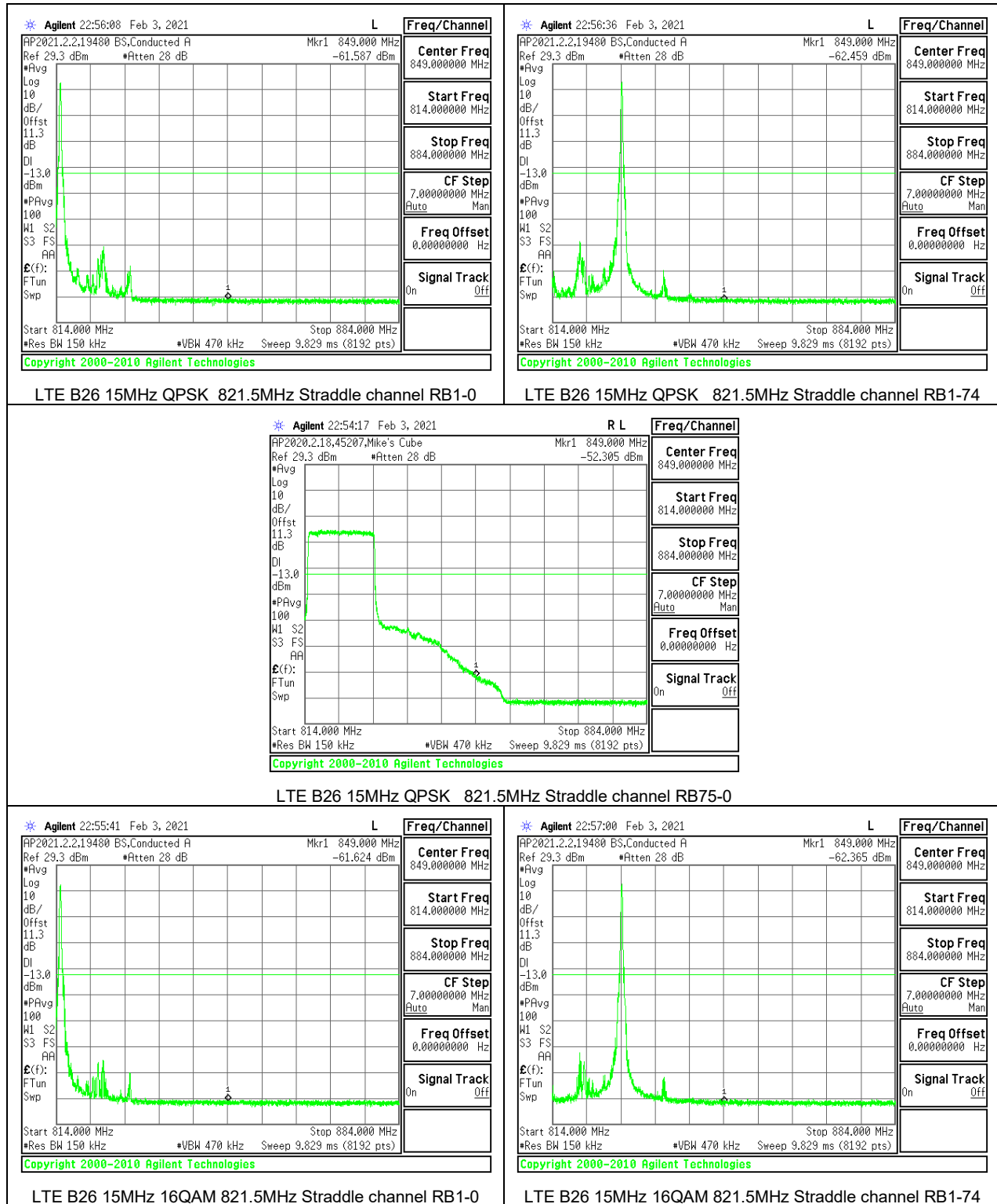


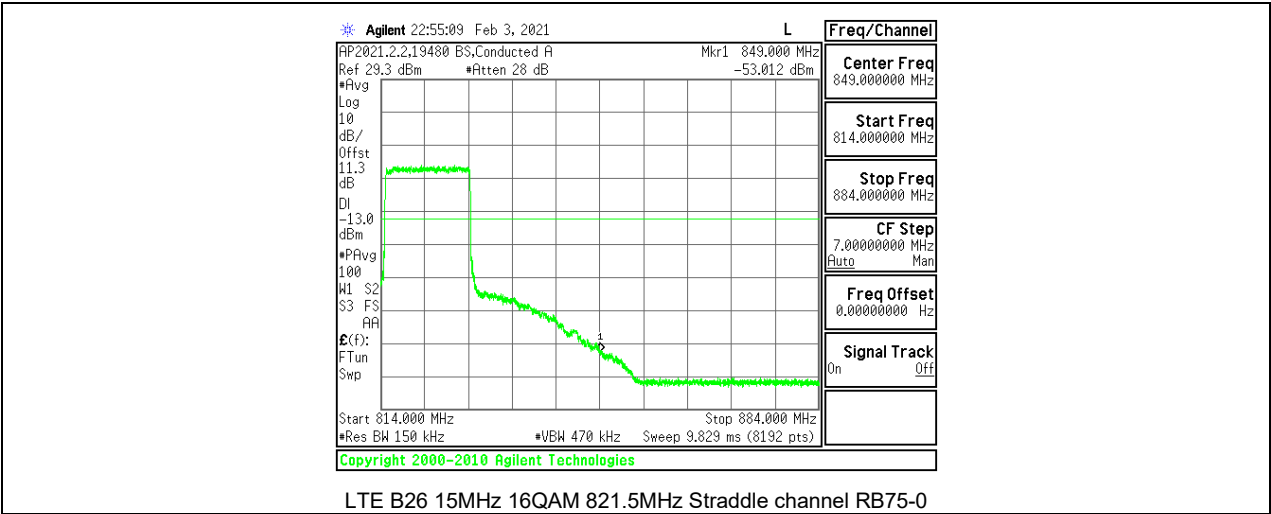






8.2.11. LTE BAND 26 15 MHz UPPER STRADDLE CHANNEL BANDEDGE (FCC PART 22)





8.2.12. LTE BAND 66 AND 5G NR BAND n66 BANDEDGE

LIMITS

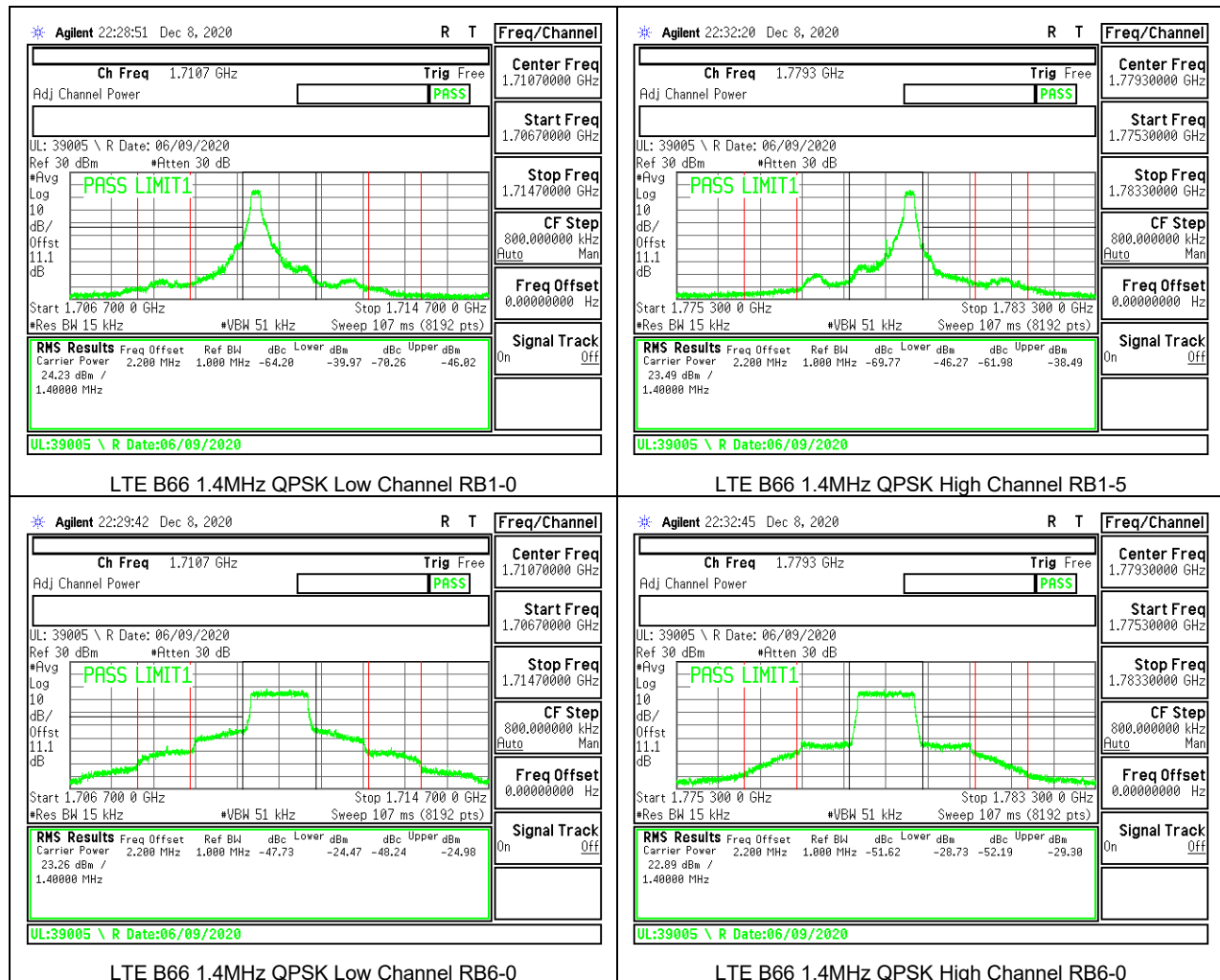
FCC: §27.53(h)

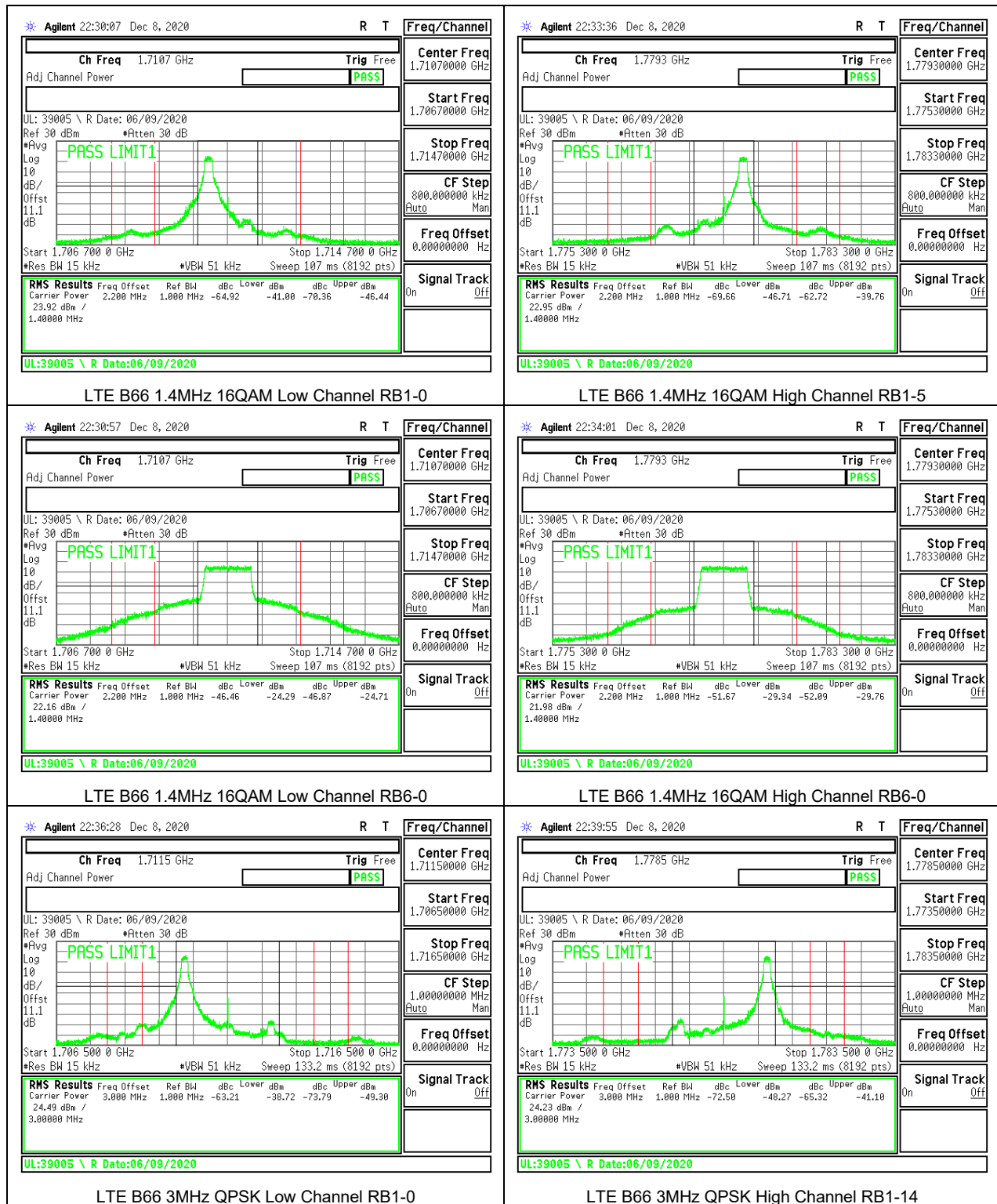
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

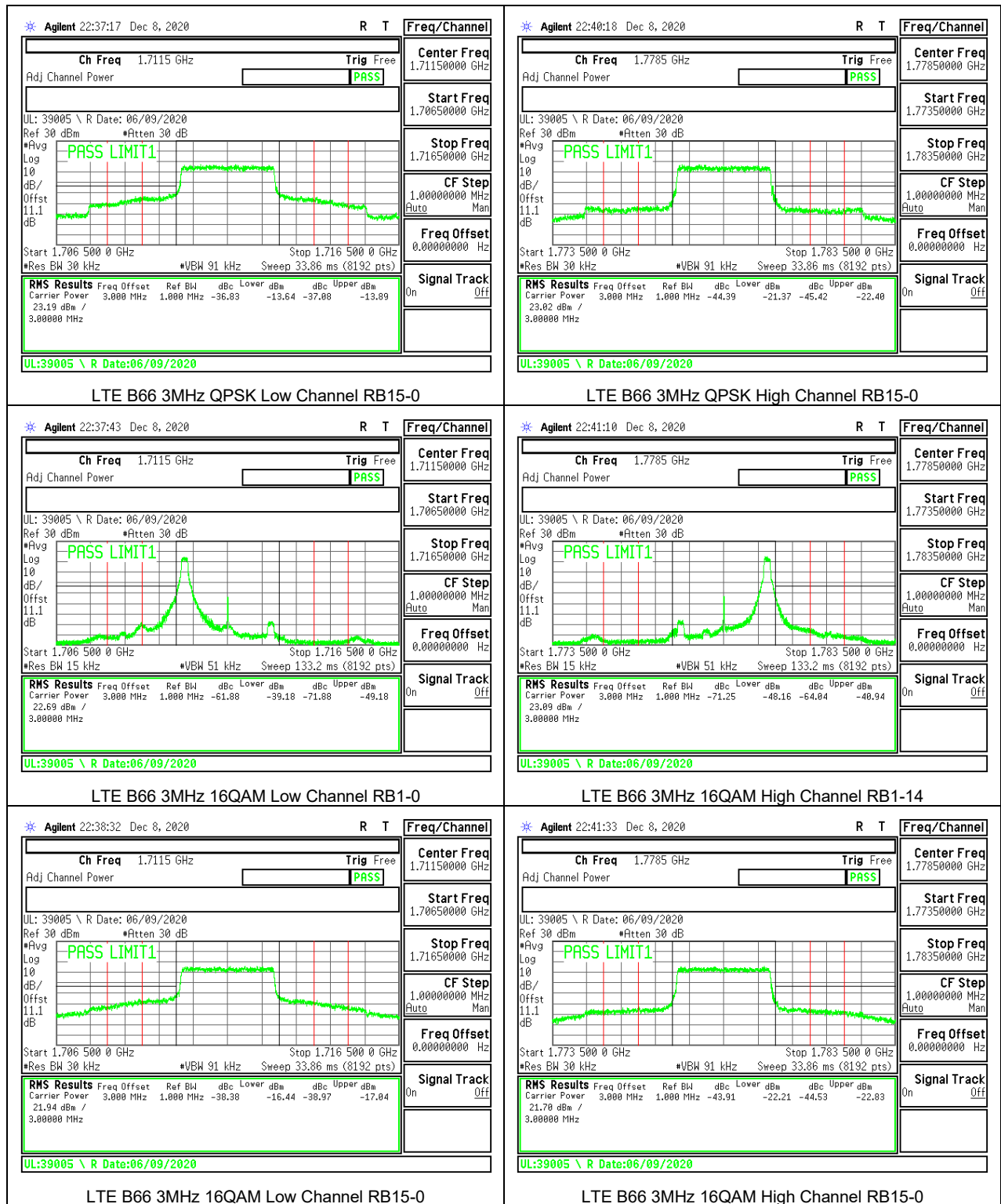
ISED: RSS139§6.6

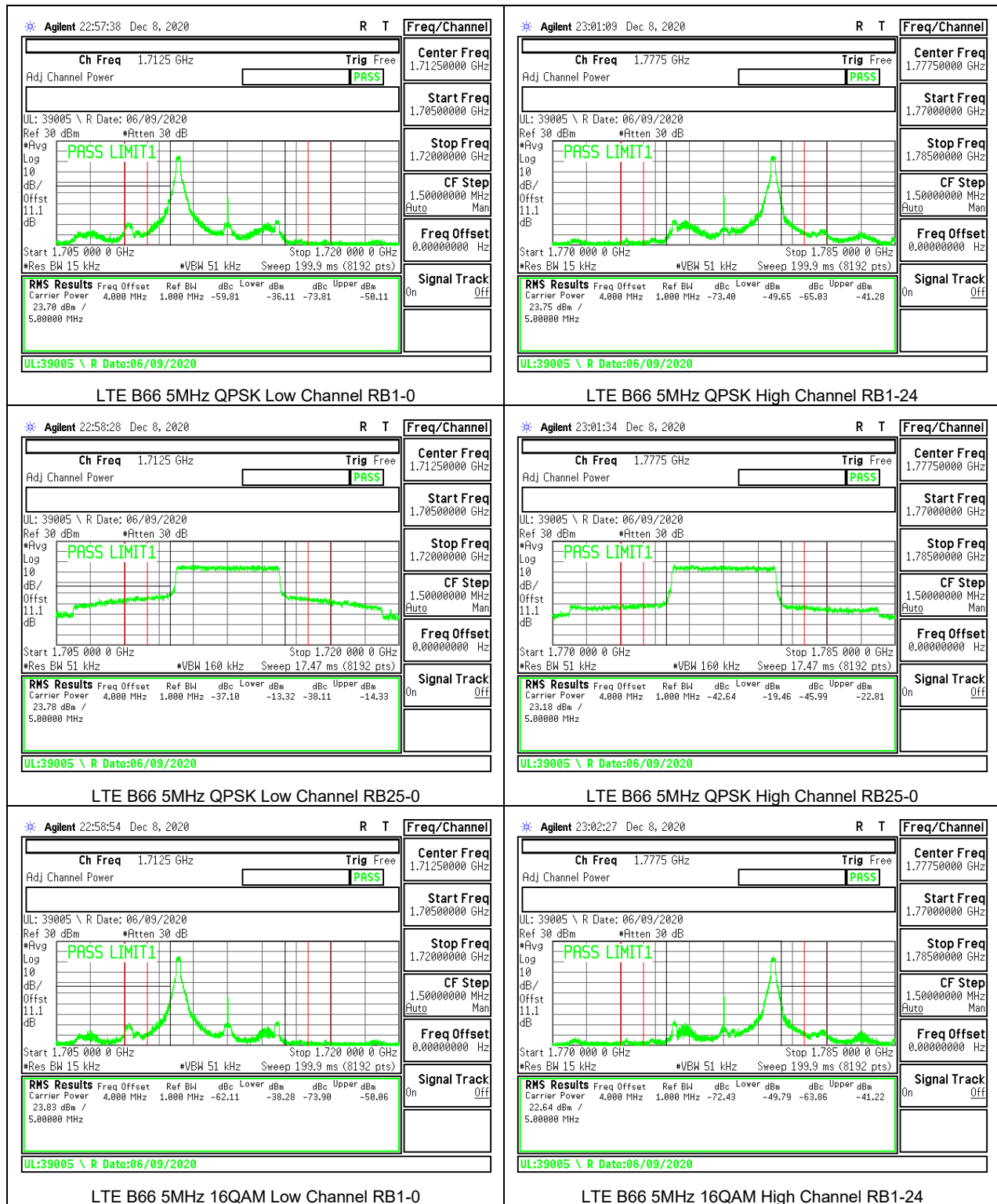
- (i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, Footnote 2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in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

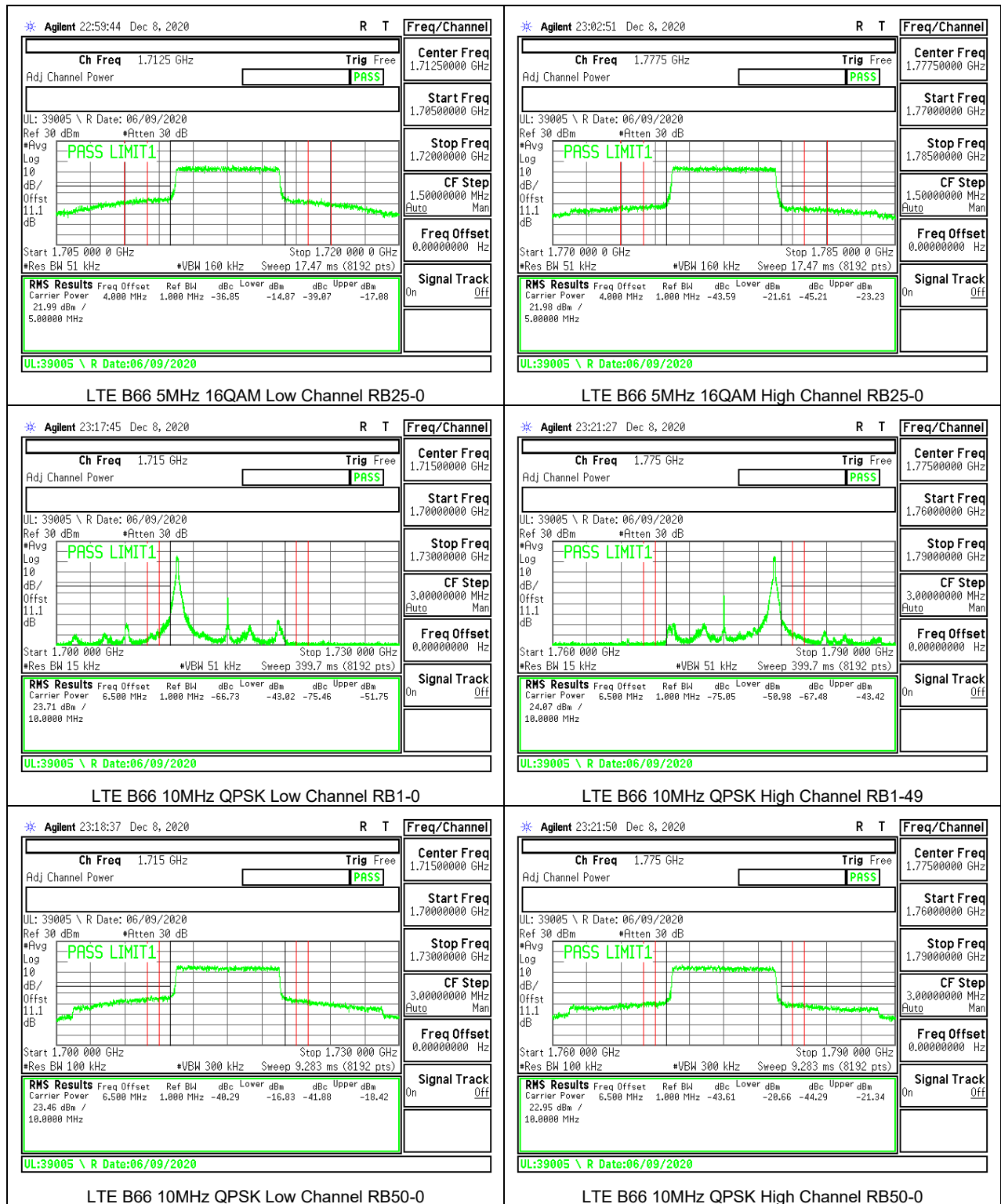
LTE BAND 66 BANDEDGE

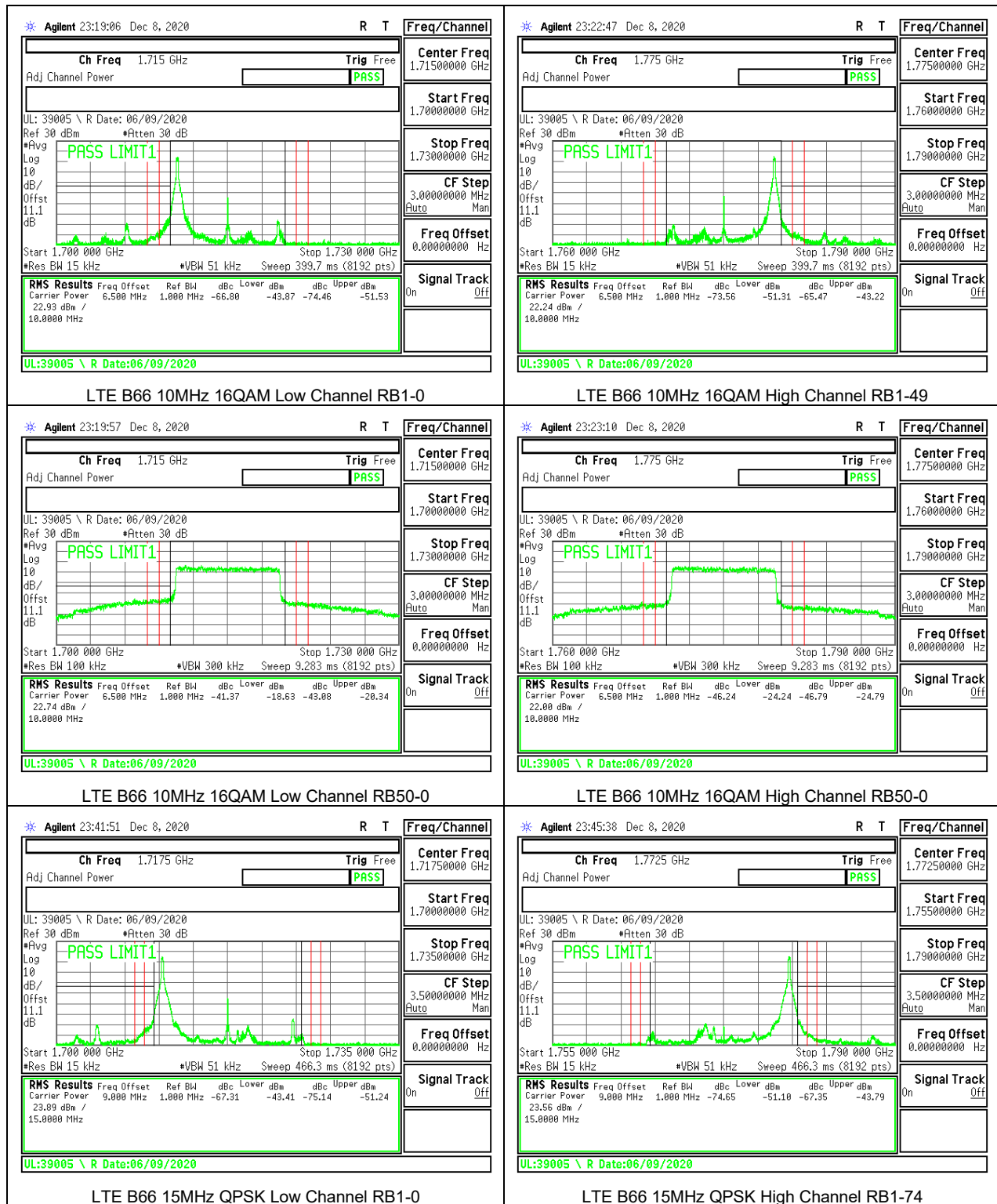


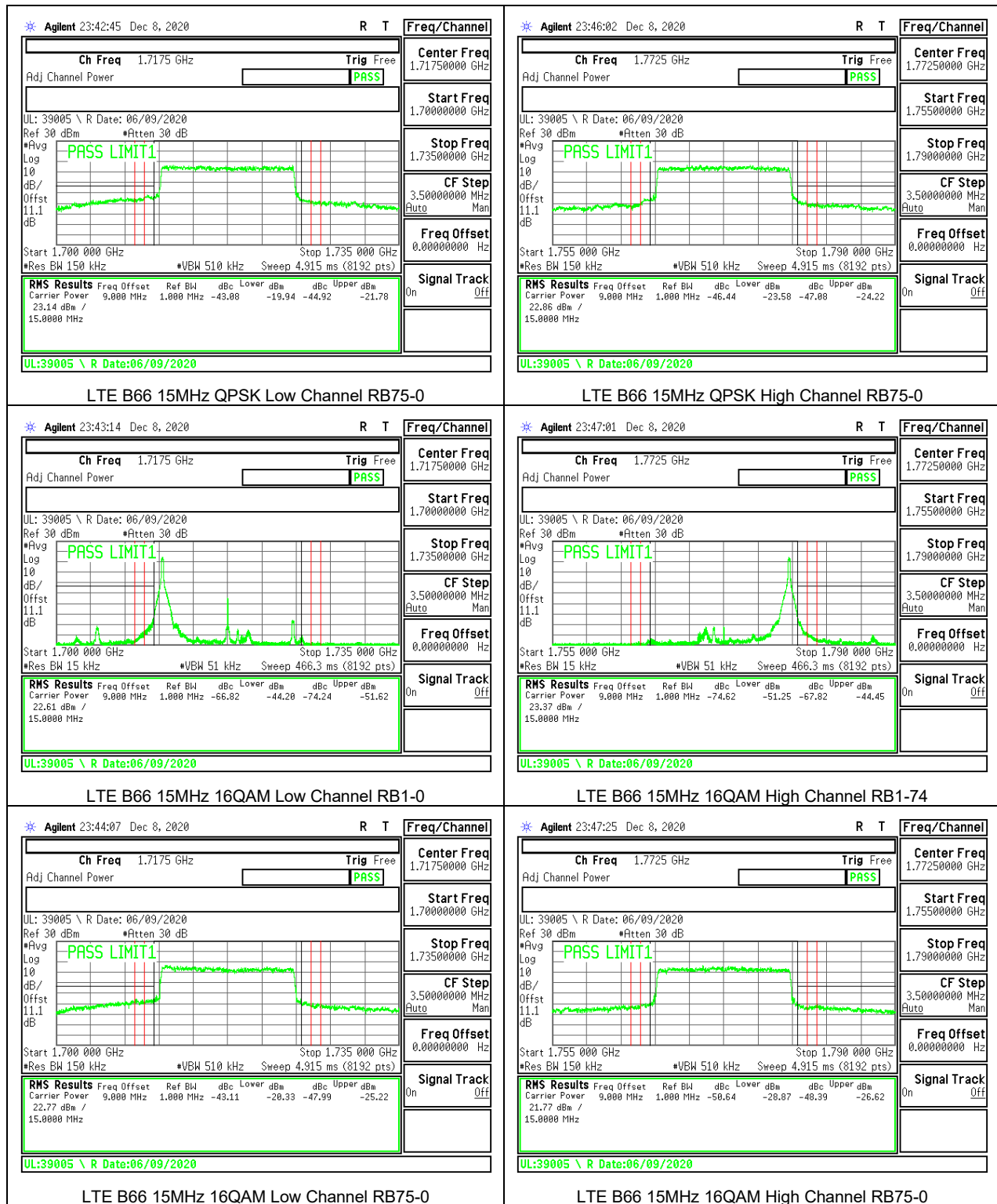


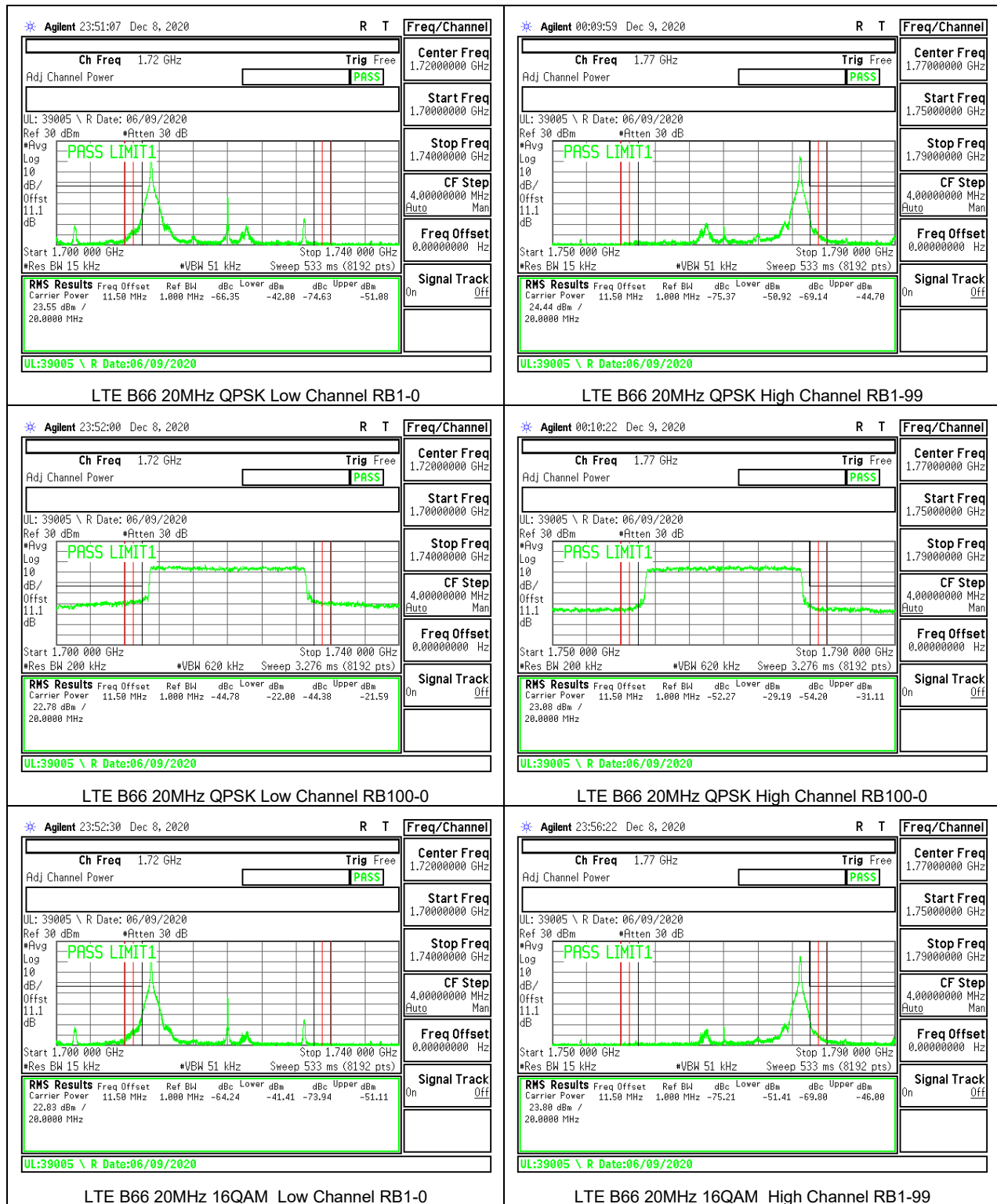


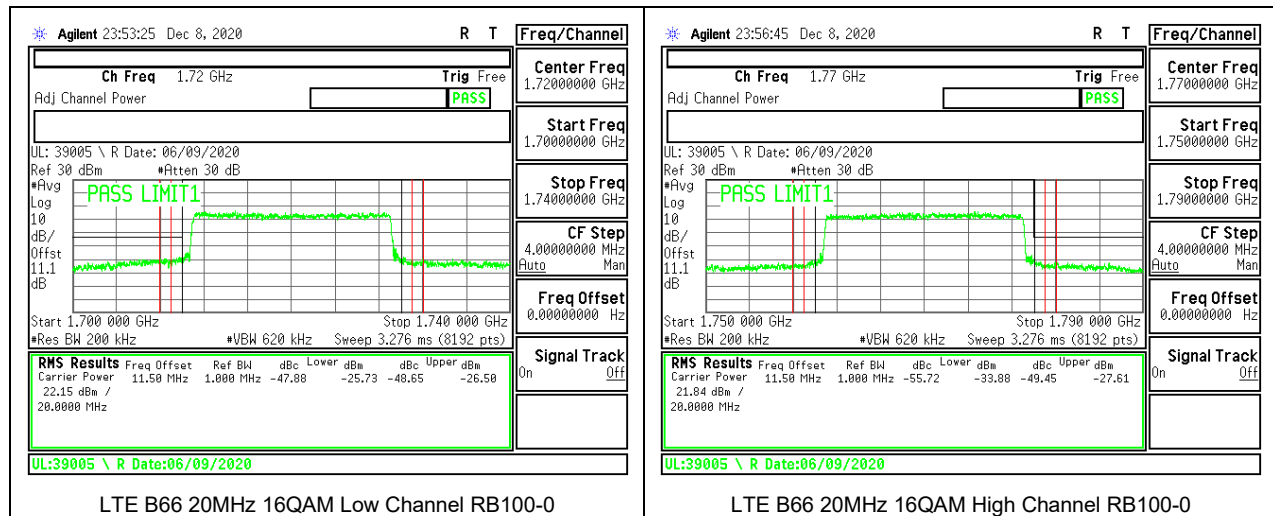




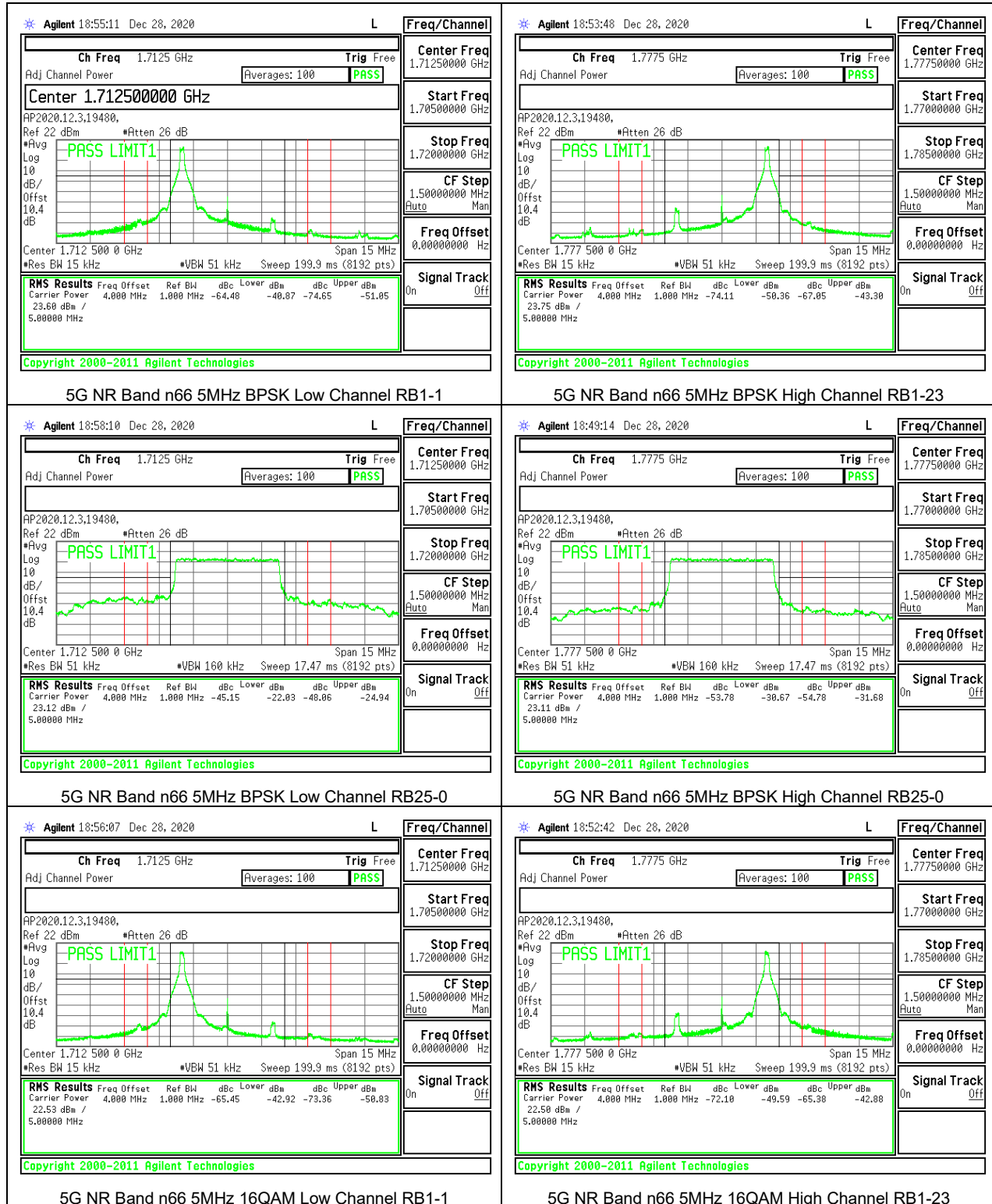


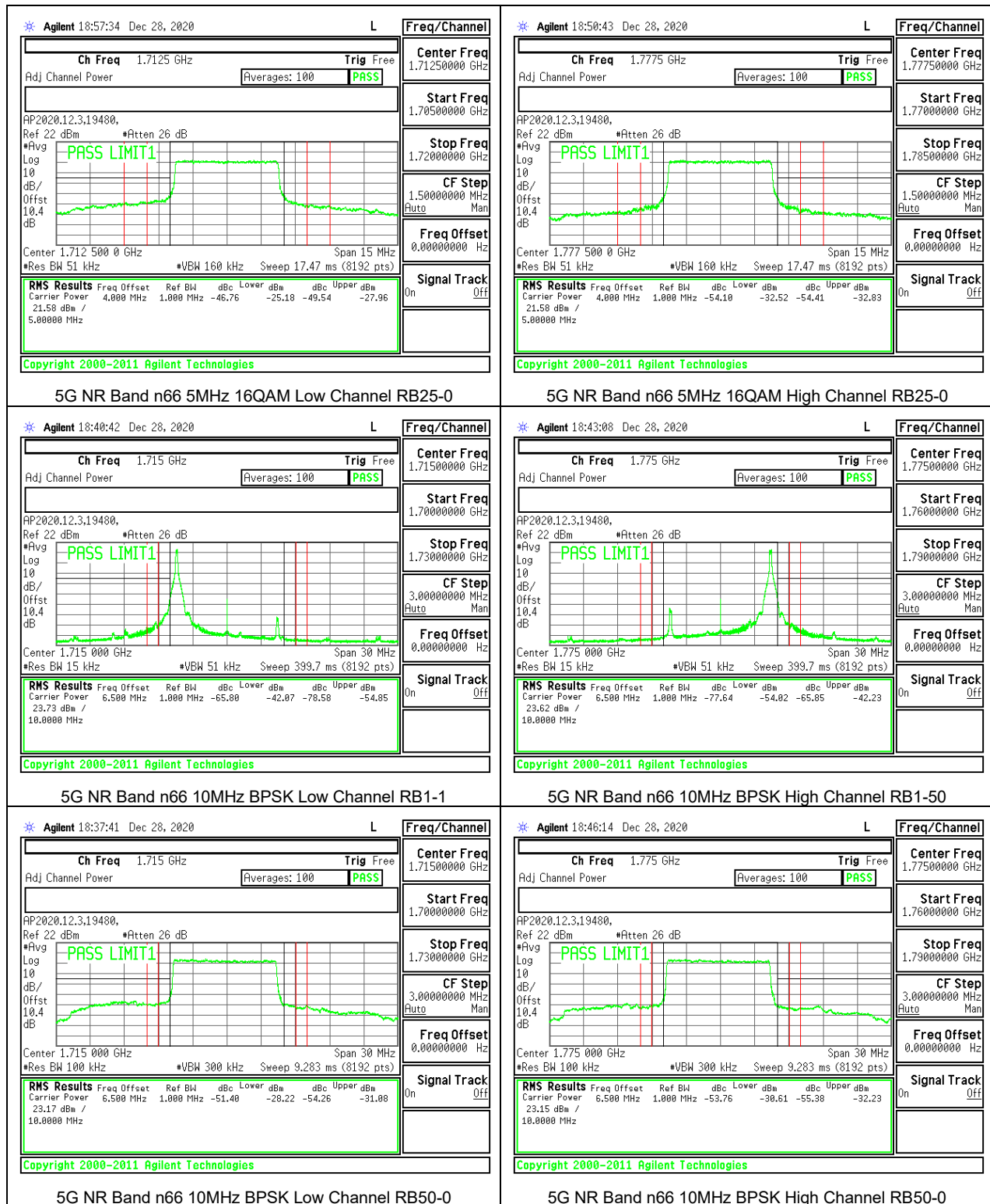


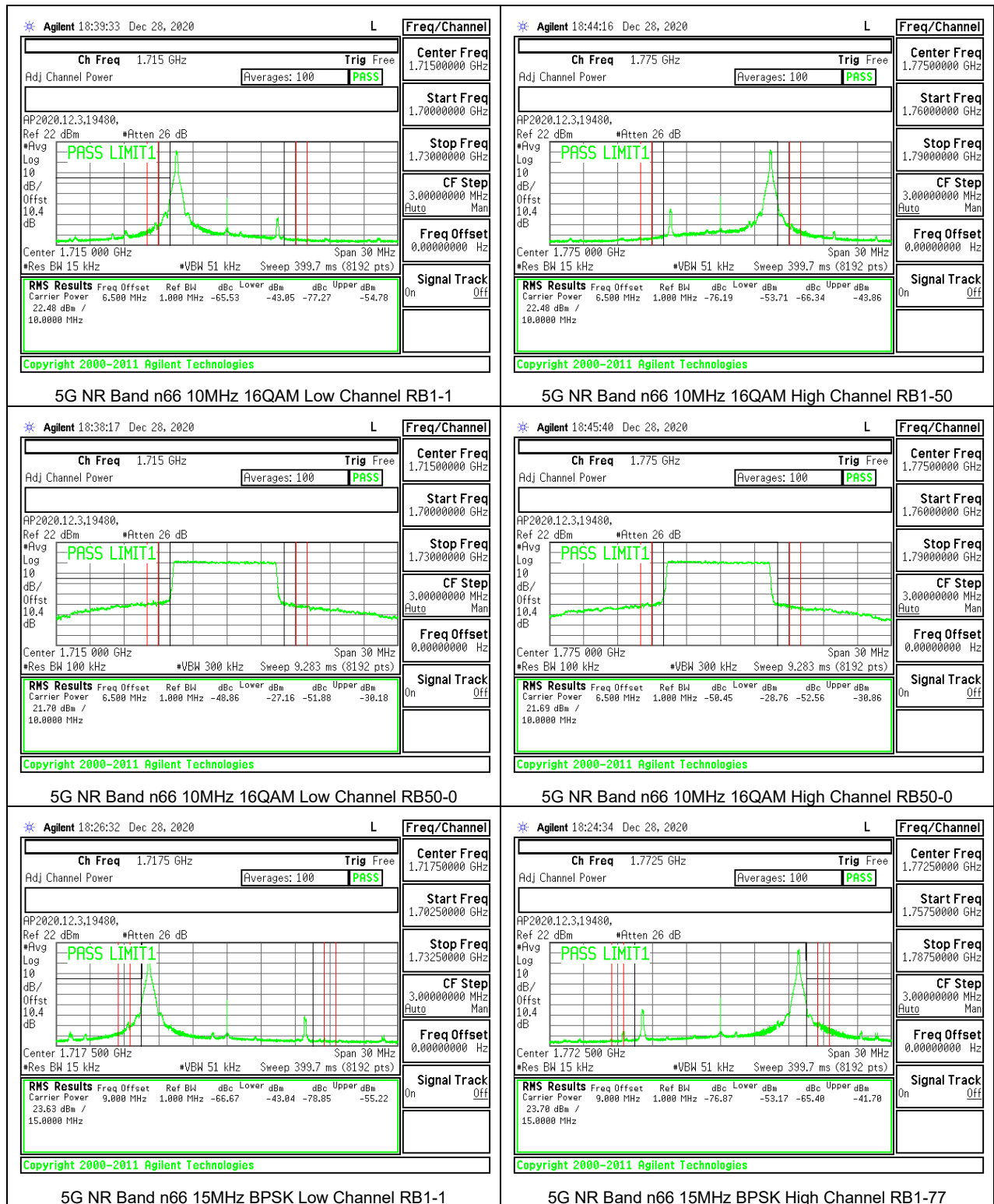


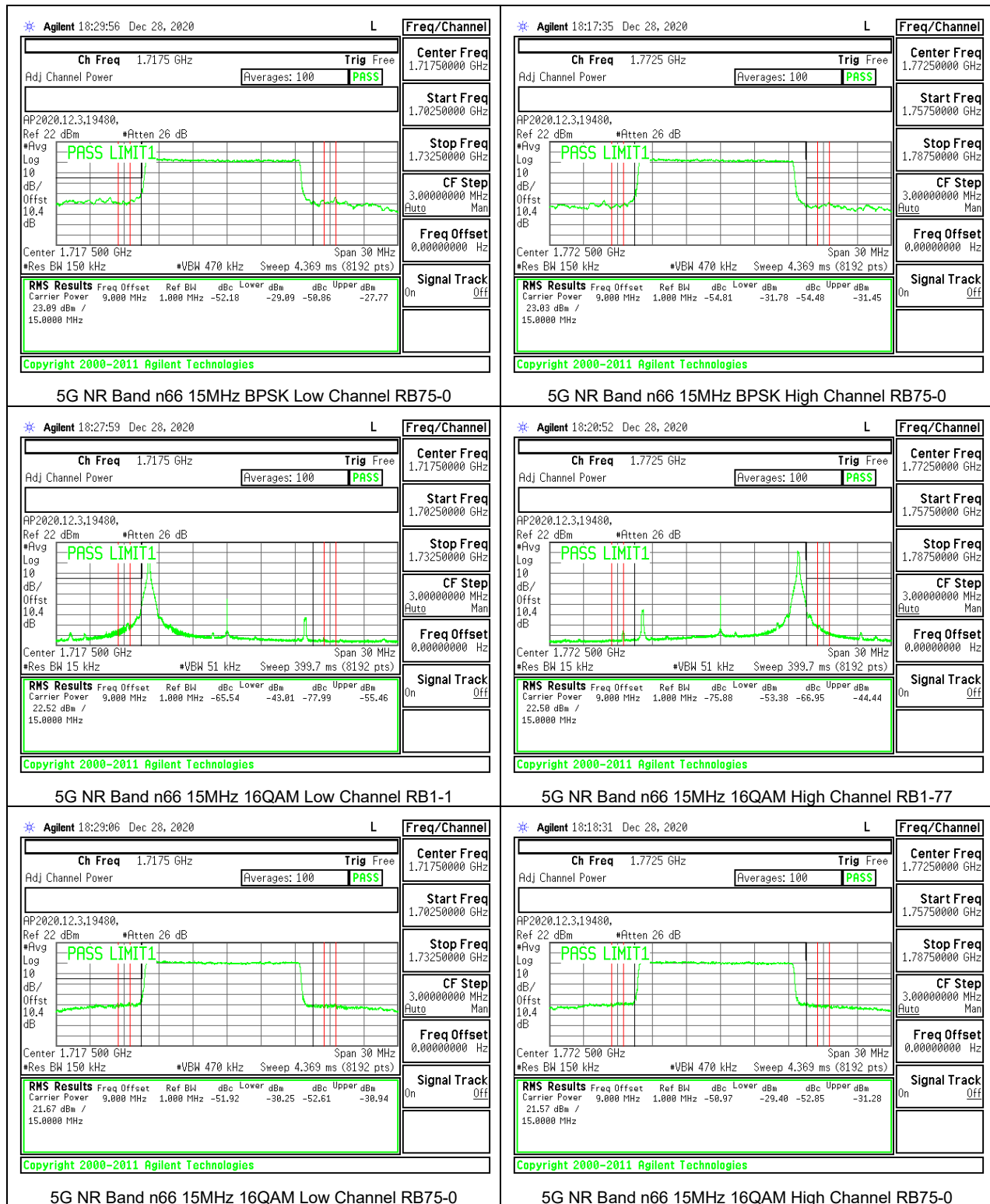


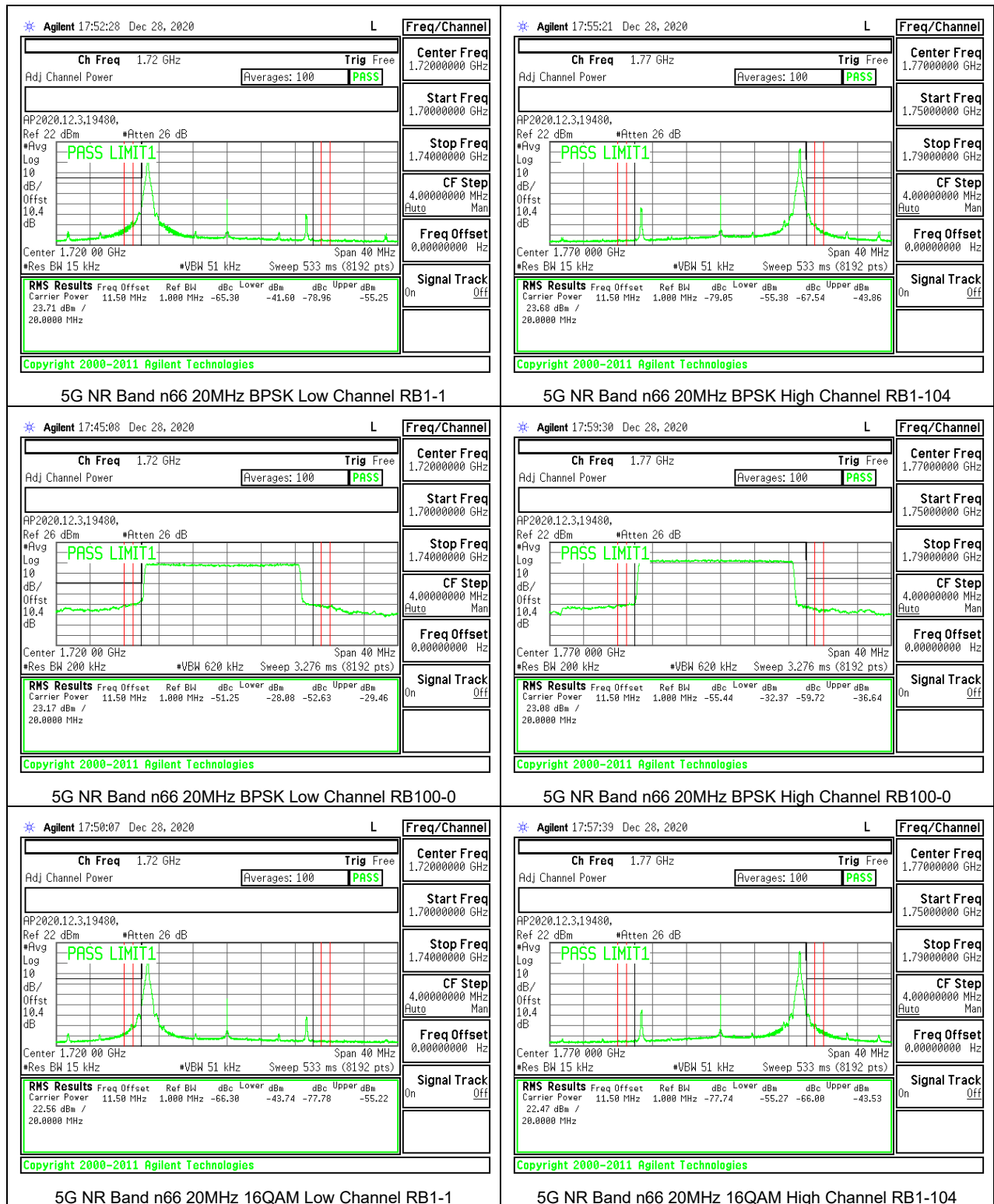
5G NR BAND n66 BANDEDGE

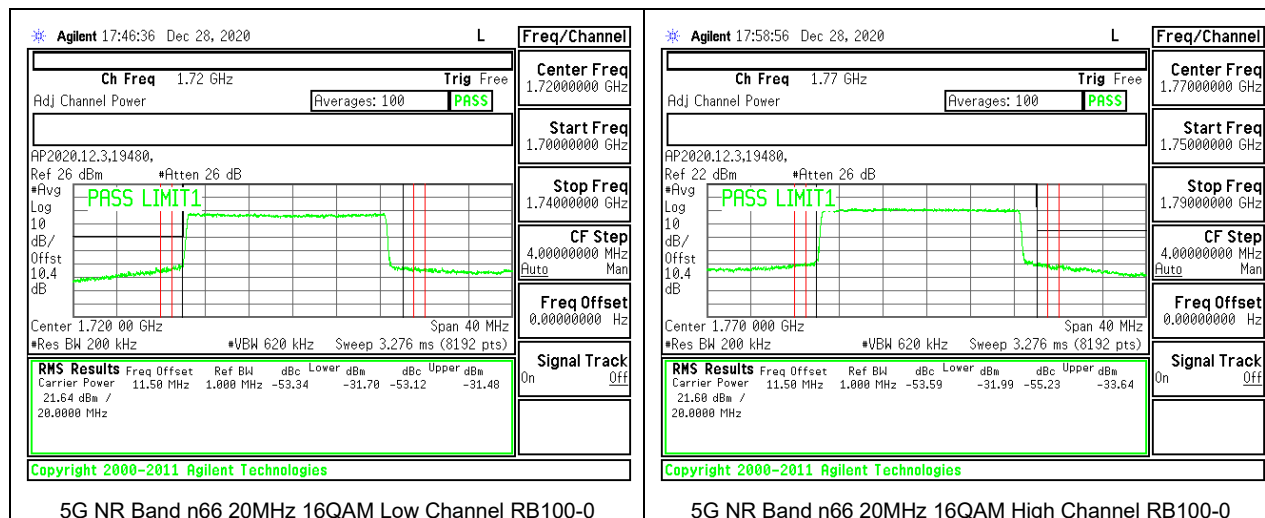












8.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.917, §24.238, §27.53 and §90.691

ISED: RSS130§4.7, RSS132§5.5; RSS133§6.5, RSS139§6.6

LIMITS

FCC: §22.917, §24.238, §27.53 (g), (h), §90.691

The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.

RSS130§4.7, RSS132§5.5, RSS133§6.5, RSS139§6.6

The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

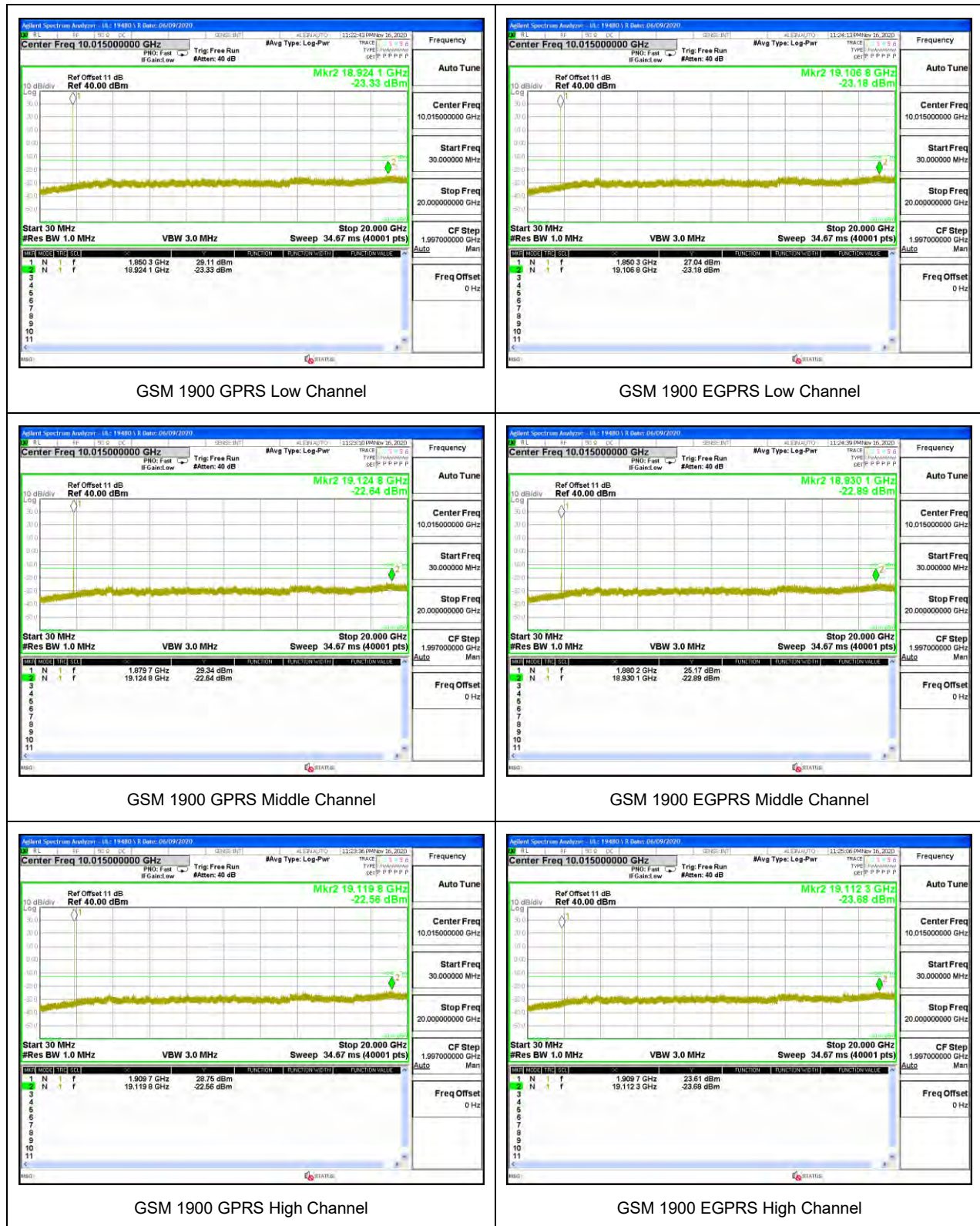
- Set display line at -13 dBm, -25dBm and -40dBm according to the band Limit
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.
(NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

RESULTS

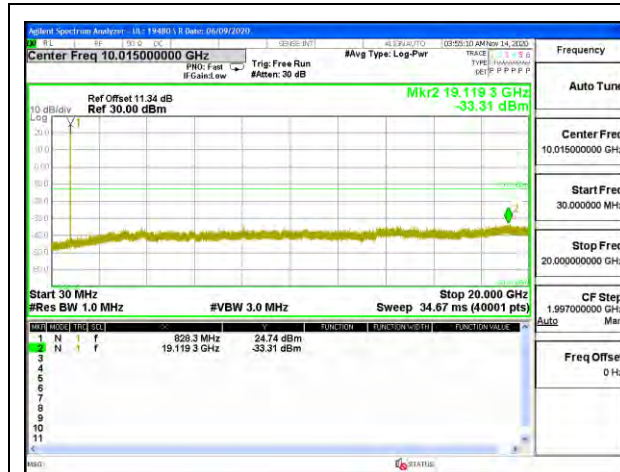
8.3.1. GSM 850



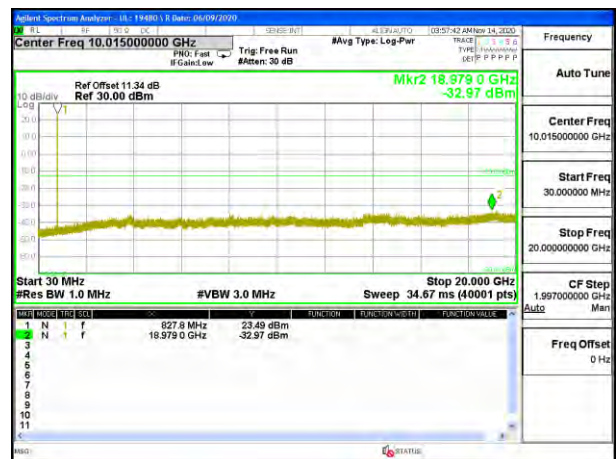
8.3.2. GSM 1900



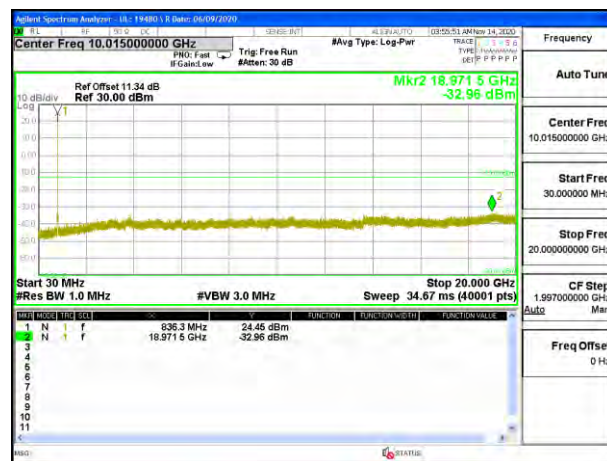
8.3.3. WCDMA BAND 5



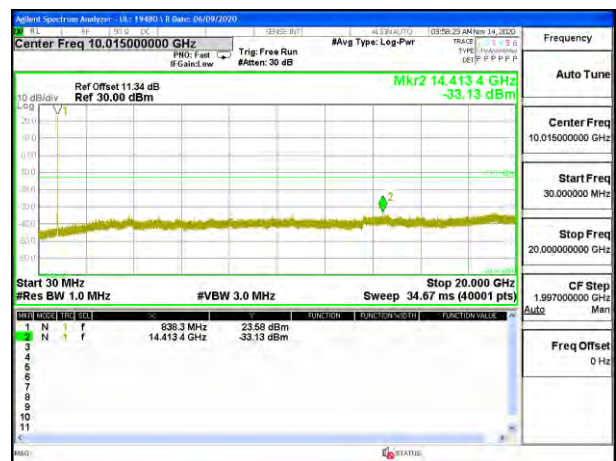
WCDMA Band 5 Rel 99 Low Channel



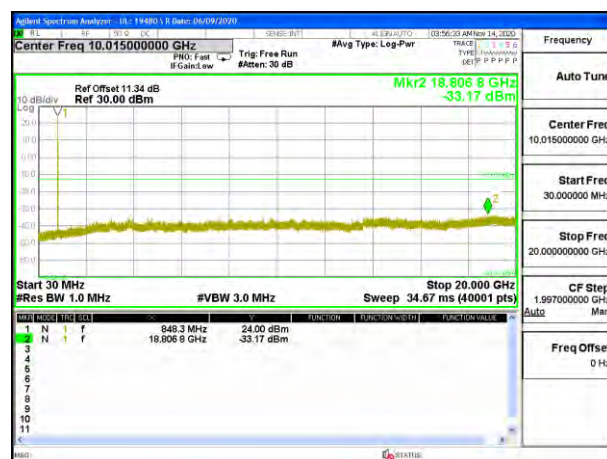
WCDMA Band 5 HSDPA Low Channel



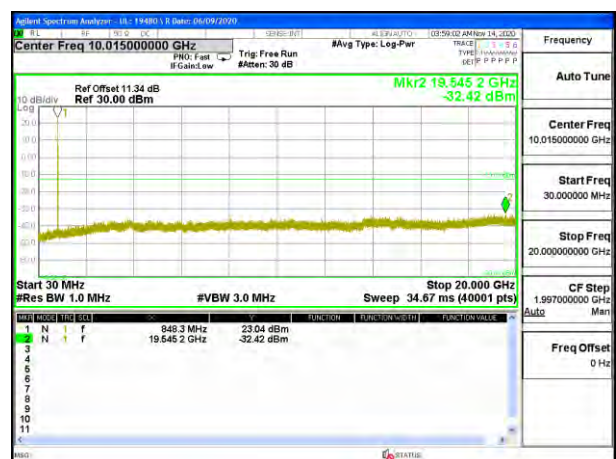
WCDMA Band 5 Rel 99 Middle Channel



WCDMA Band 5 HSDPA Middle Channel

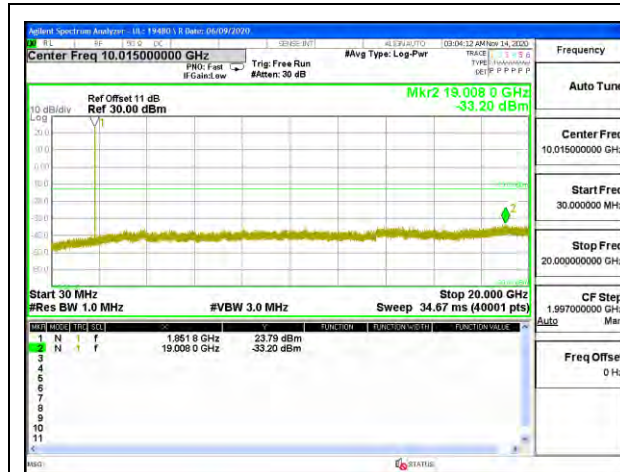


WCDMA Band 5 Rel 99 High Channel

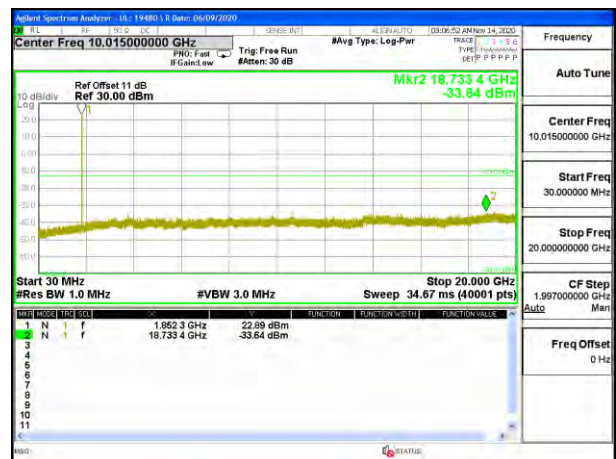


WCDMA Band 5 HSDPA High Channel

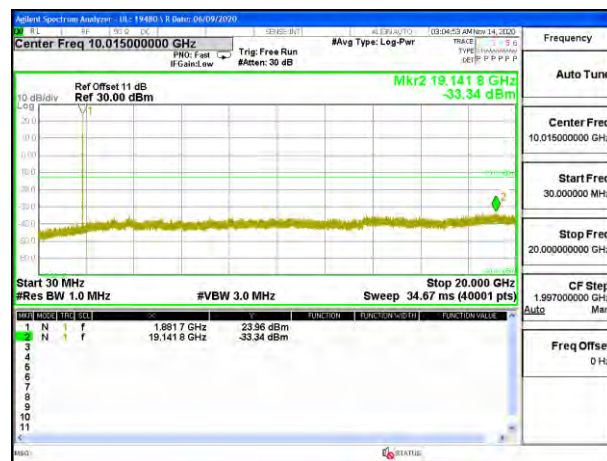
8.3.4. WCDMA BAND 2



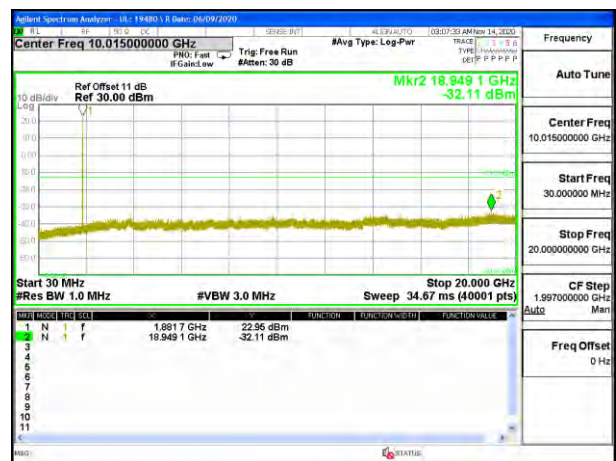
WCDMA Band 2 Rel 99 Low Channel



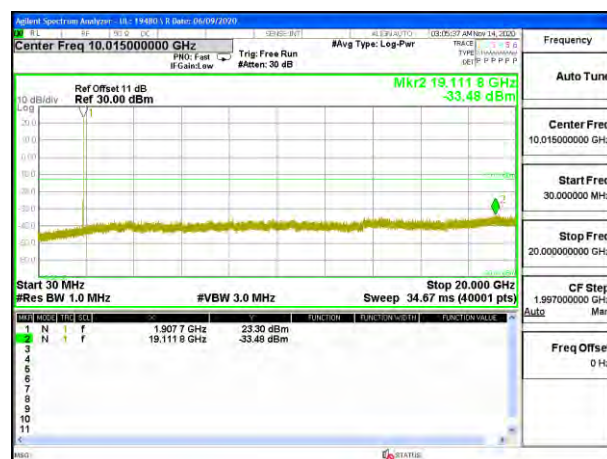
WCDMA Band 2 HSDPA Low Channel



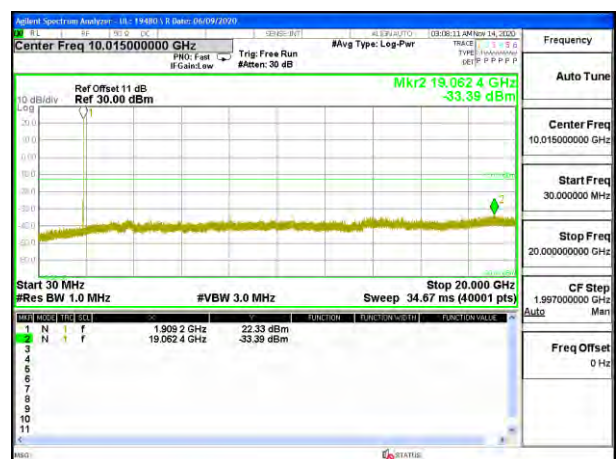
WCDMA Band 2 Rel 99 Middle Channel



WCDMA Band 2 HSDPA Middle Channel



WCDMA Band 2 Rel 99 High Channel



WCDMA Band 2 HSDPA High Channel

8.3.5. WCDMA BAND 4



8.3.6. LTE BAND 2

LIMITS

FCC: §24.238

The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.

ISED: RSS133§6.5

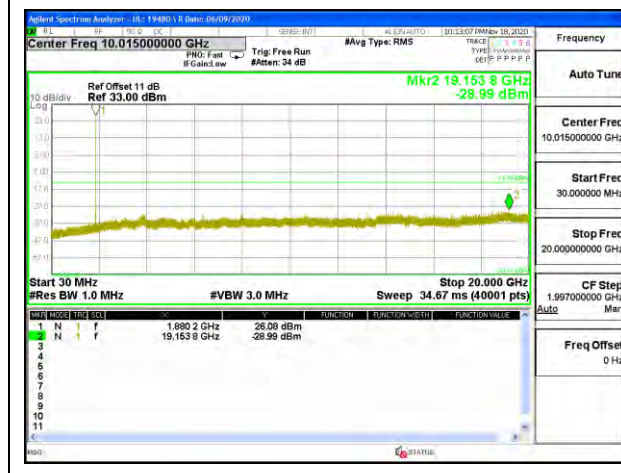
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



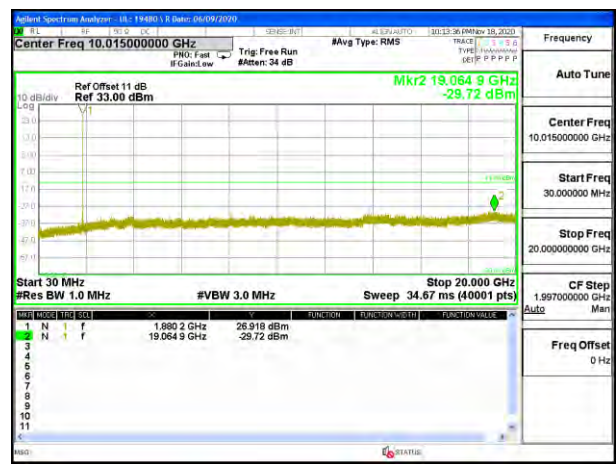
LTE B2 1.4MHz QPSK Low Channel RB1-0



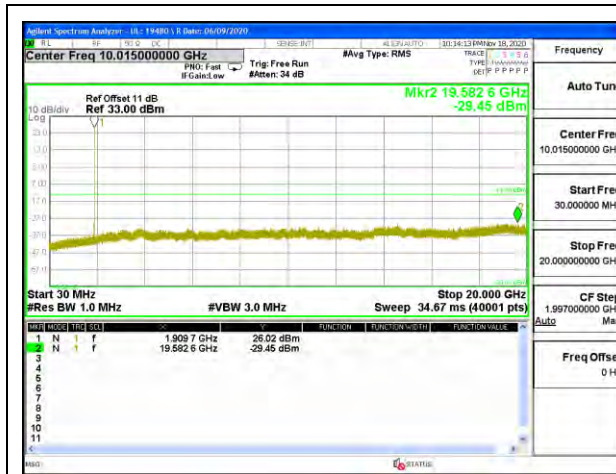
LTE B2 1.4MHz 16QAM Low Channel RB1-0



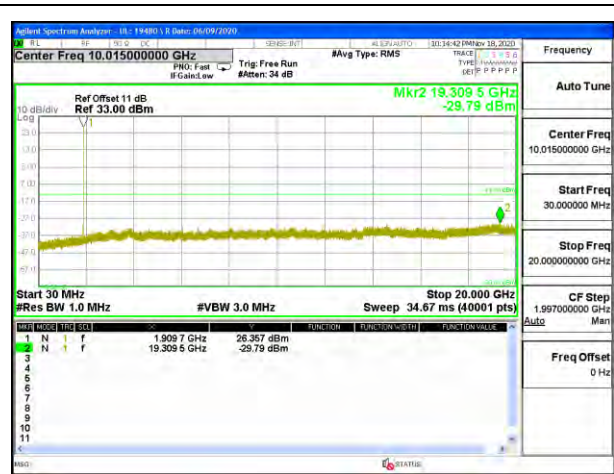
LTE B2 1.4MHz QPSK Middle Channel RB1-0



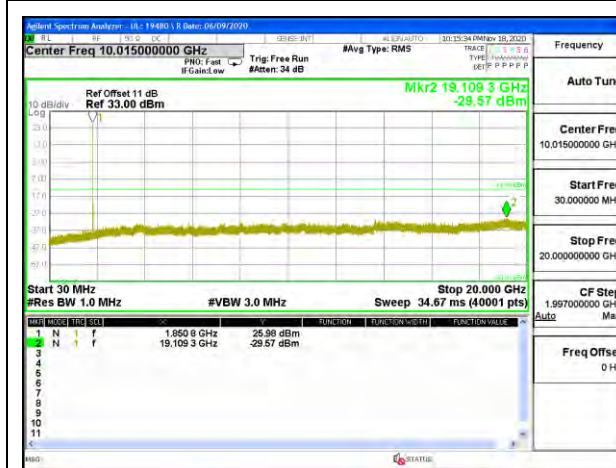
LTE B2 1.4MHz 16QAM Middle Channel RB1-0



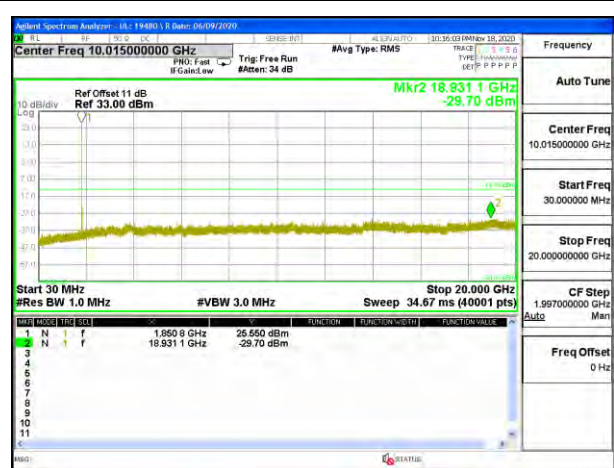
LTE B2 1.4MHz QPSK High Channel RB1-0



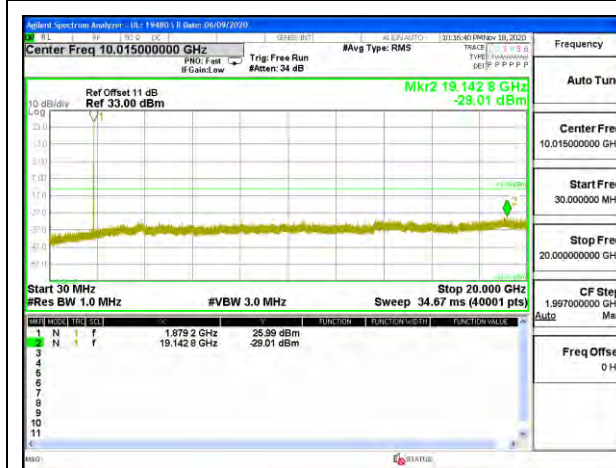
LTE B2 1.4MHz 16QAM High Channel RB1-0



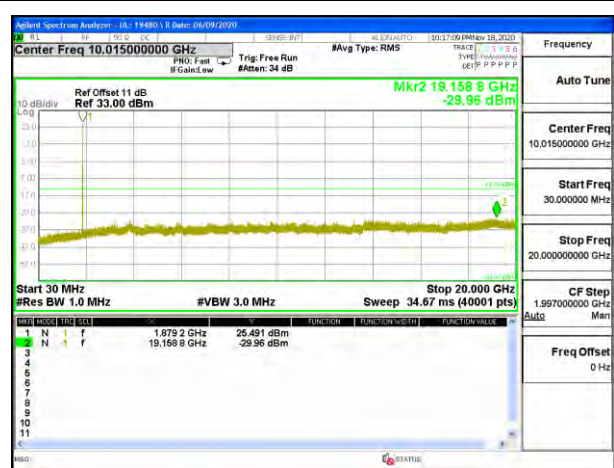
LTE B2 3MHz QPSK Low Channel RB1-0



LTE B2 3MHz 16QAM Low Channel RB1-0



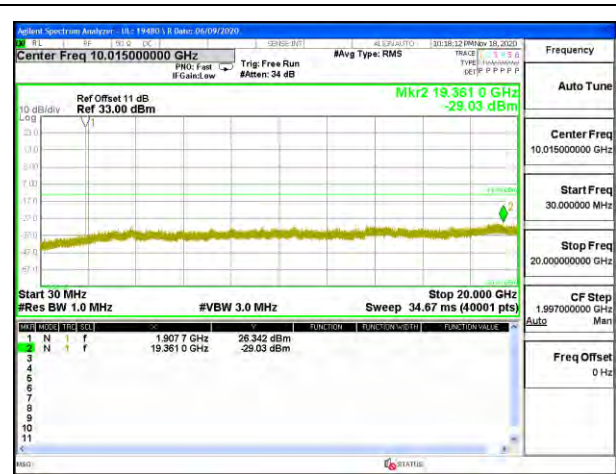
LTE B2 3MHz QPSK Middle Channel RB1-0



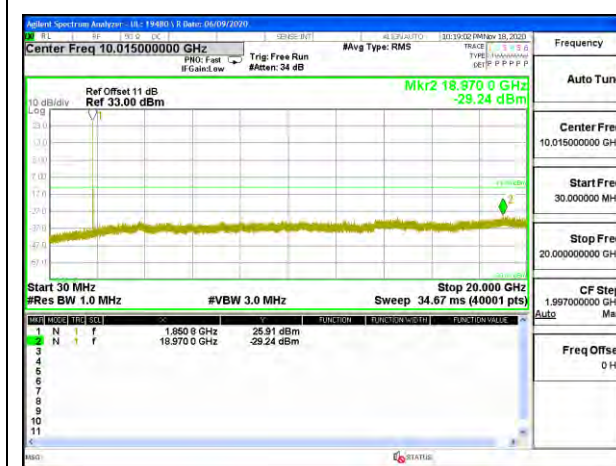
LTE B2 3MHz 16QAM Middle Channel RB1-0



LTE B2 3MHz QPSK High Channel RB1-0



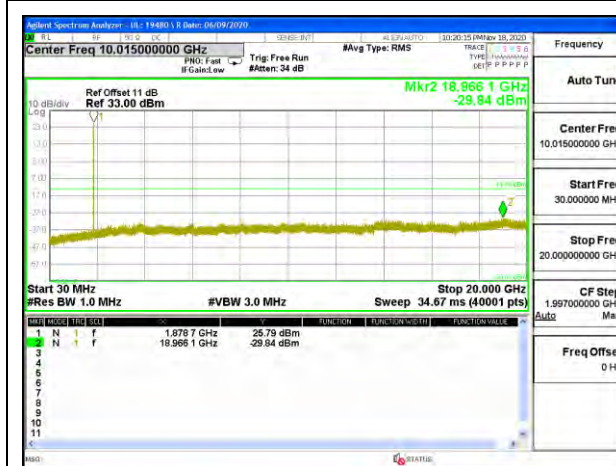
LTE B2 3MHz 16QAM High Channel RB1-0



LTE B2 5MHz QPSK Low Channel RB1-0



LTE B2 5MHz 16QAM Low Channel RB1-0

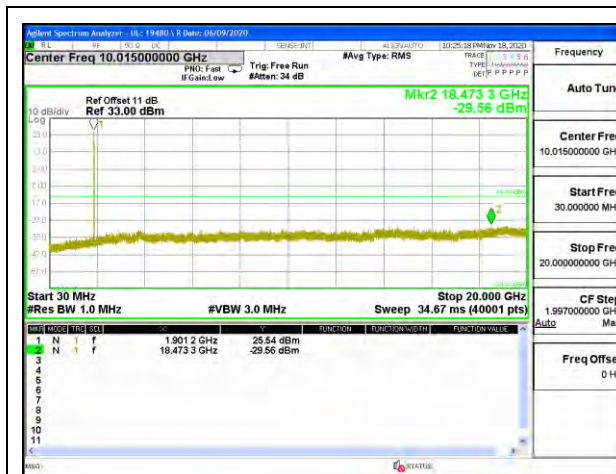


LTE B2 5MHz QPSK Middle Channel RB1-0

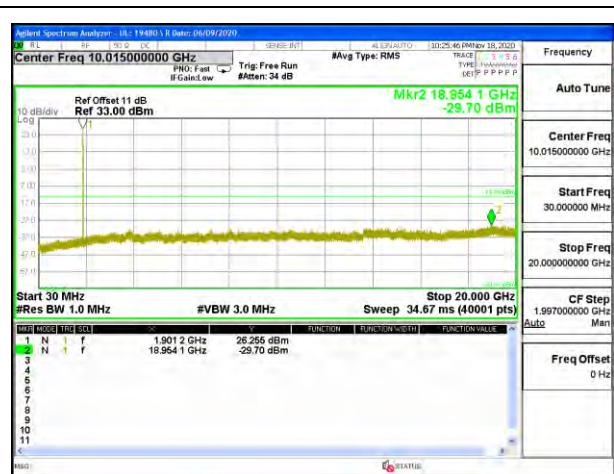


LTE B2 5MHz 16QAM Middle Channel RB1-0

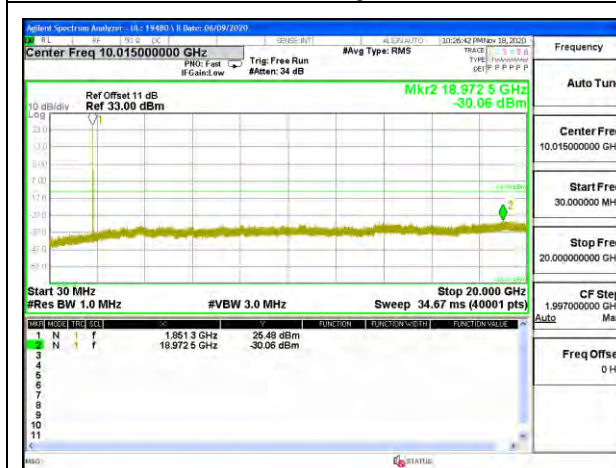




LTE B2 10MHz QPSK High Channel RB1-0



LTE B2 10MHz 16QAM High Channel RB1-0



LTE B2 15MHz QPSK Low Channel RB1-0



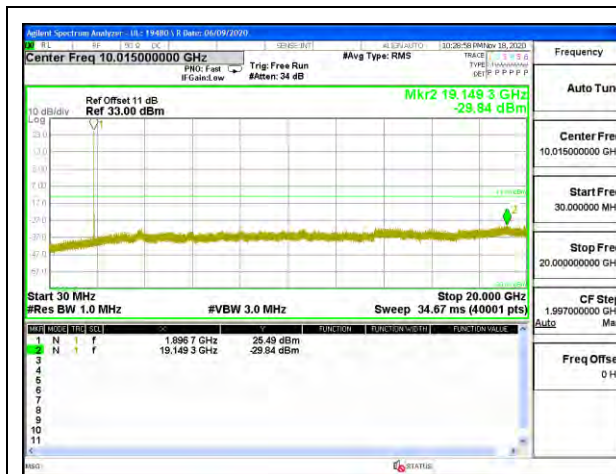
LTE B2 15MHz 16QAM Low Channel RB1-0



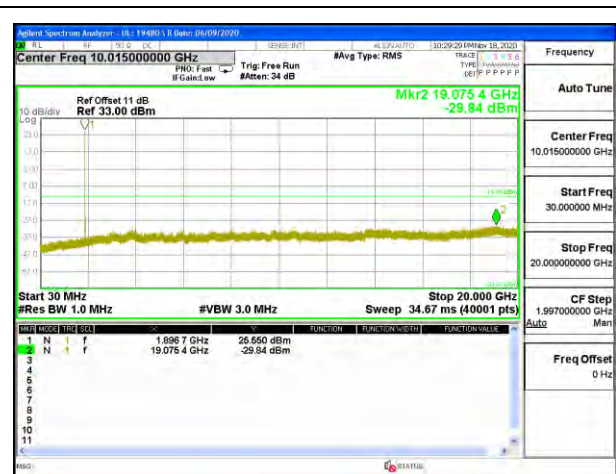
LTE B2 15MHz QPSK Middle Channel RB1-0



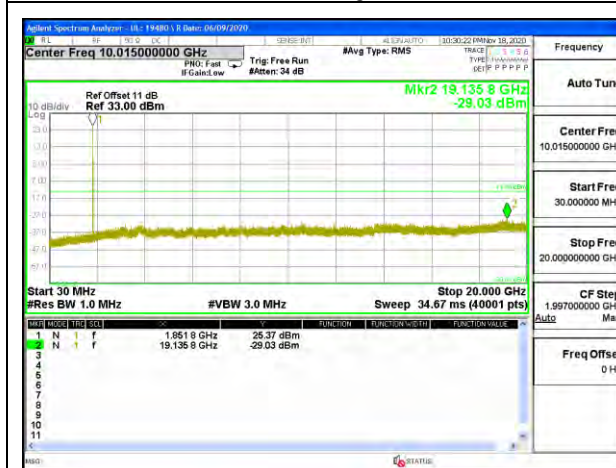
LTE B2 15MHz 16QAM Middle Channel RB1-0



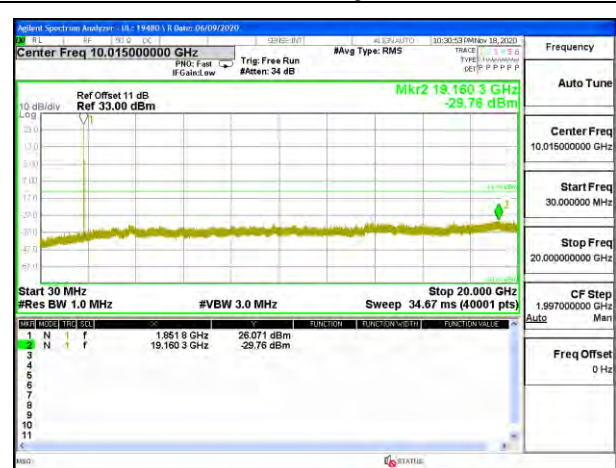
LTE B2 15MHz QPSK High Channel RB1-0



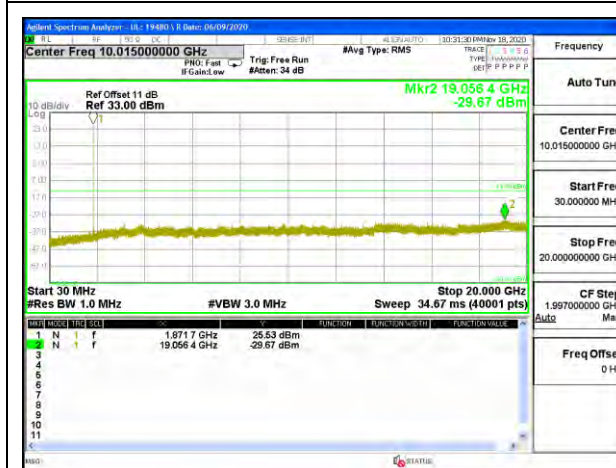
LTE B2 15MHz 16QAM High Channel RB1-0



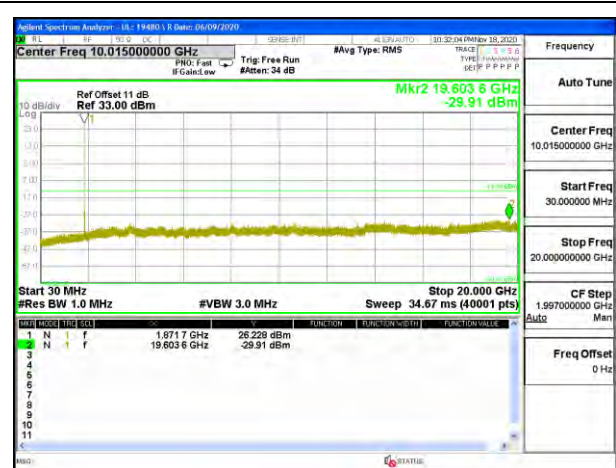
LTE B2 20MHz QPSK Low Channel RB1-0



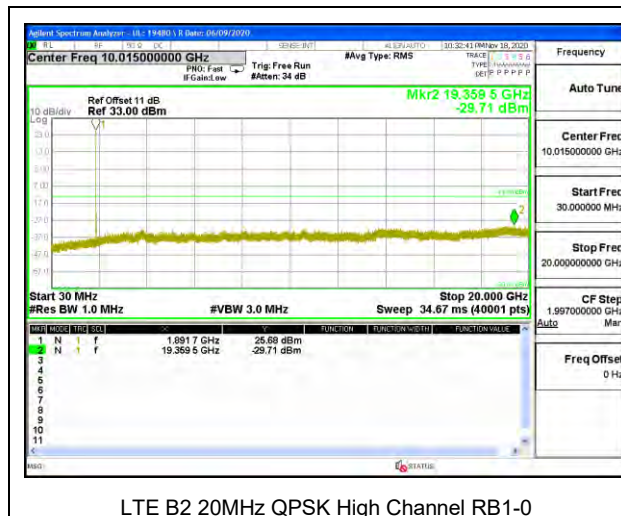
LTE B2 20MHz 16QAM Low Channel RB1-0



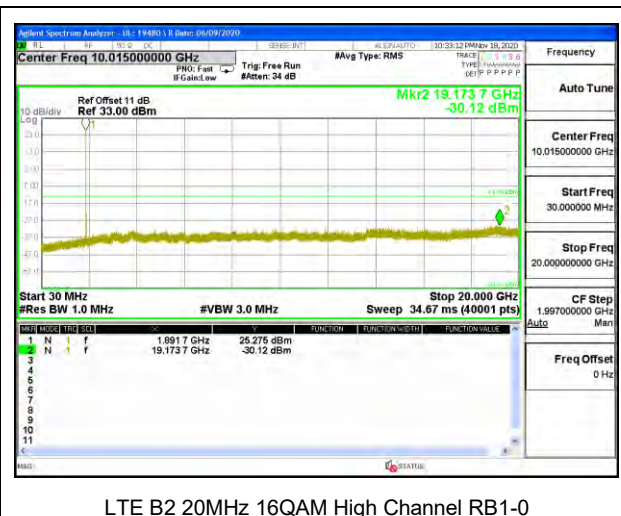
LTE B2 20MHz QPSK Middle Channel RB1-0



LTE B2 20MHz 16QAM Middle Channel RB1-0



LTE B2 20MHz QPSK High Channel RB1-0



LTE B2 20MHz 16QAM High Channel RB1-0

8.3.7. LTE BAND 5 AND 5G NR BAND n5

LIMITS

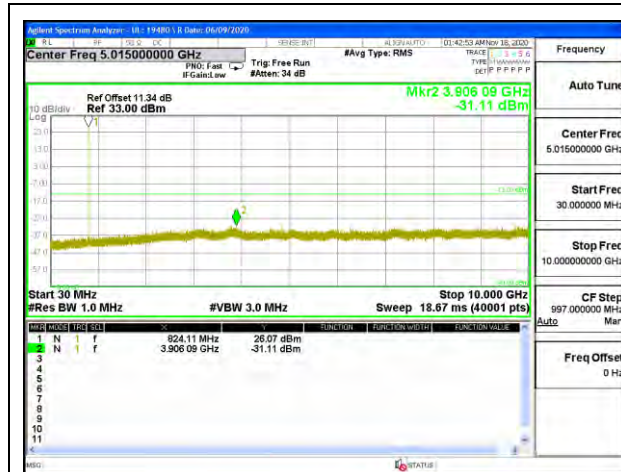
FCC: \$22.917

The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.

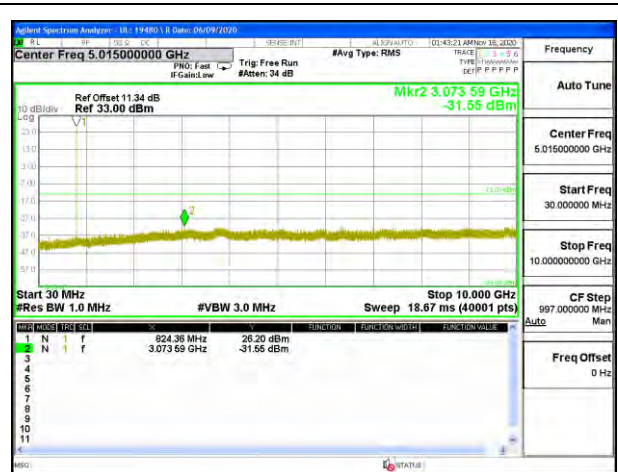
ISED: RSS132\$5.5

The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.

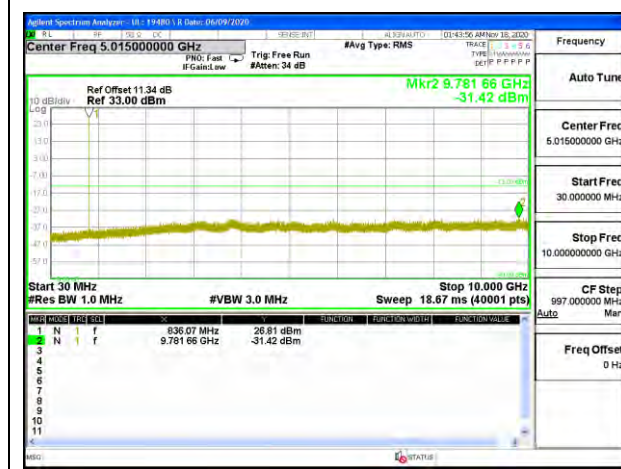
LTE BAND 5



LTE B5 1.4MHz QPSK Low Channel RB1-0



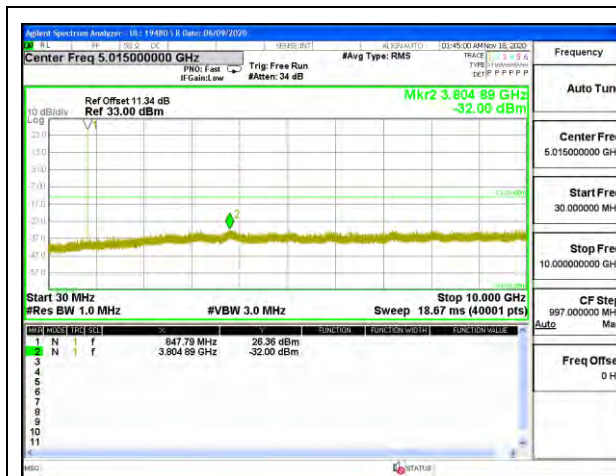
LTE B5 1.4MHz 16QAM Low Channel RB1-0



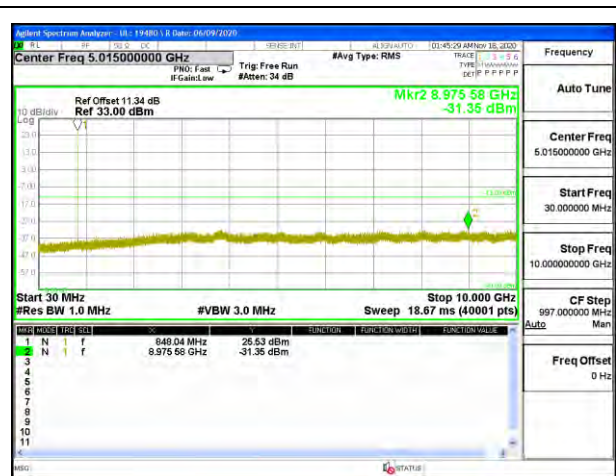
LTE B5 1.4MHz QPSK Middle Channel RB1-0



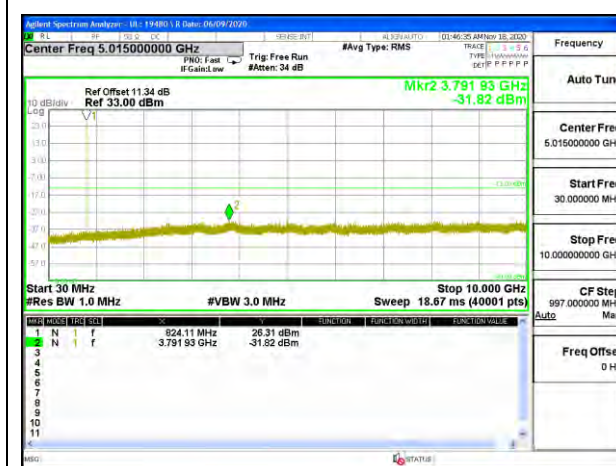
LTE B5 1.4MHz 16QAM Middle Channel RB1-0



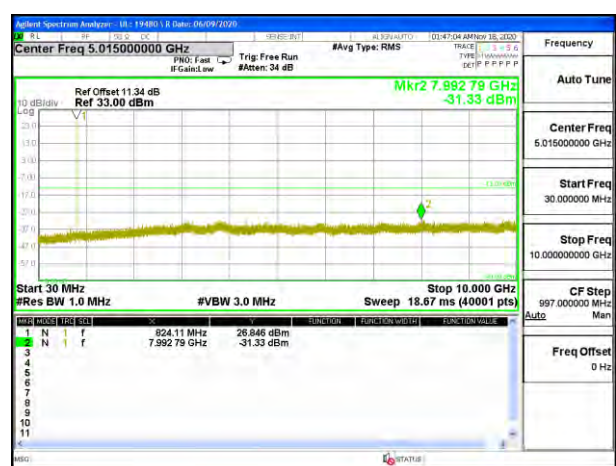
LTE B5 1.4MHz QPSK High Channel RB1-0



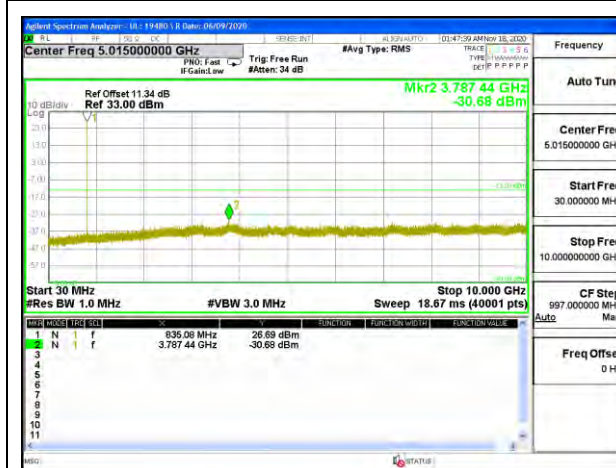
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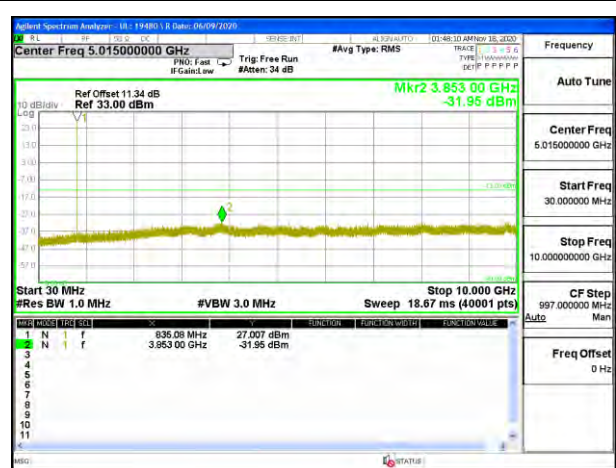
LTE B5 3MHz QPSK Low Channel RB1-0



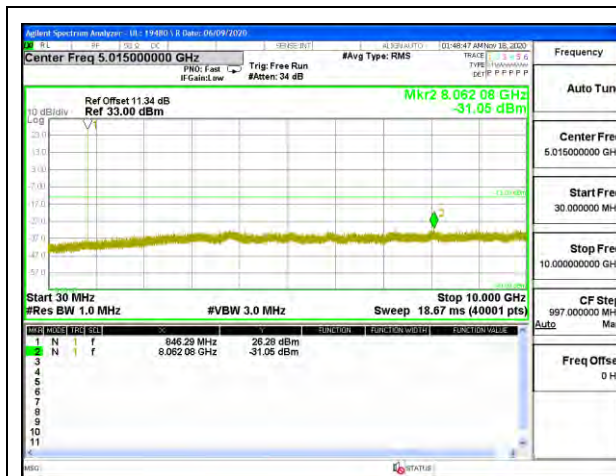
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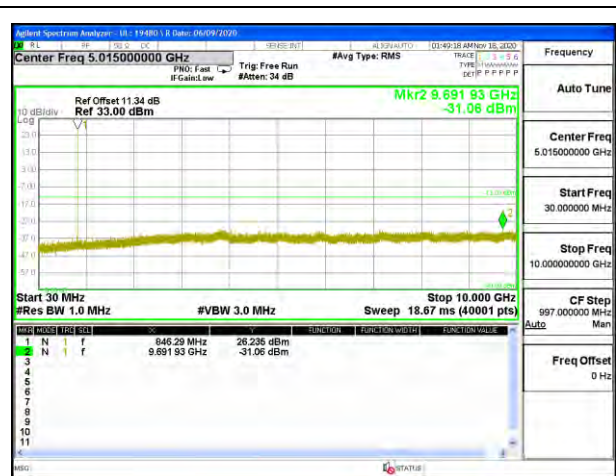
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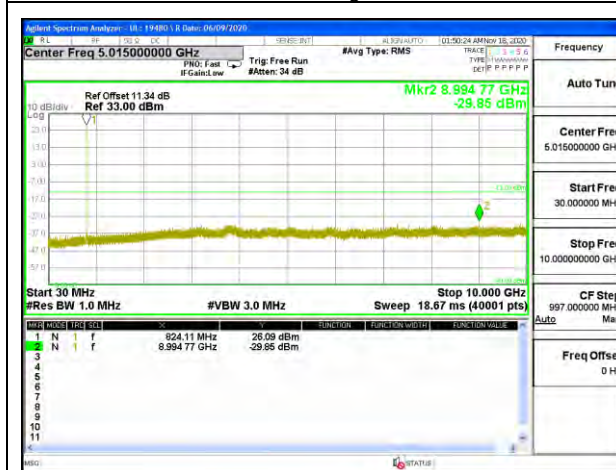
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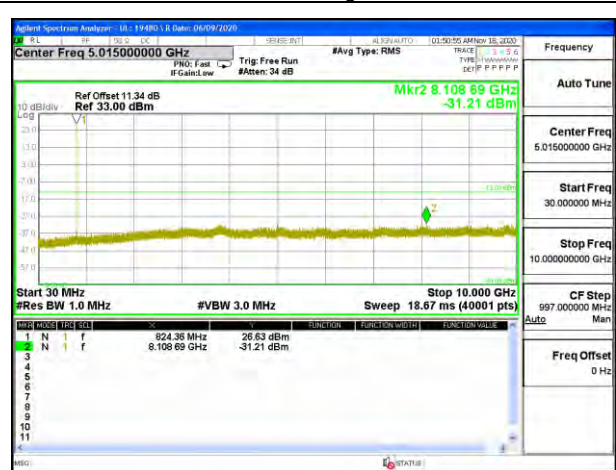
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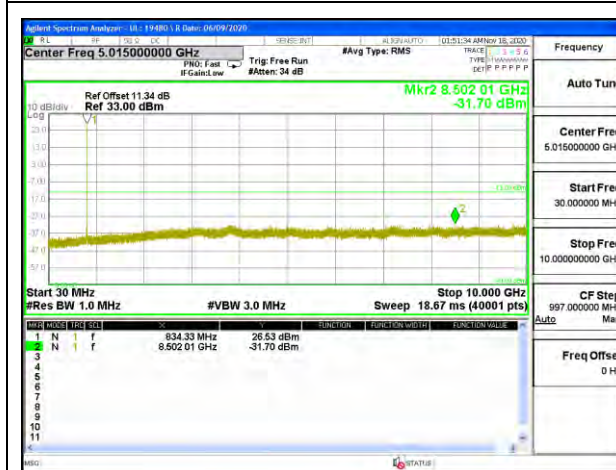
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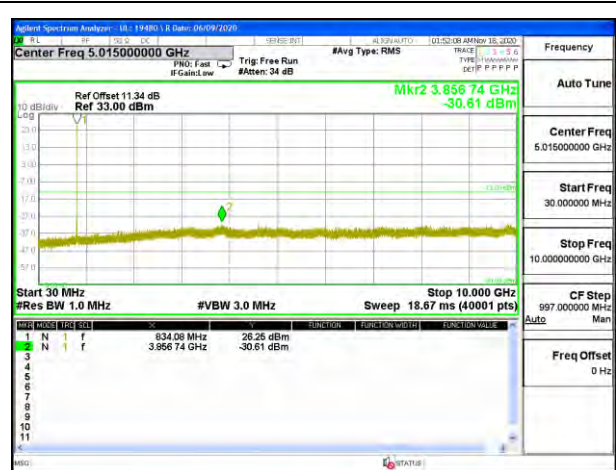
LTE B5 5MHz QPSK Low Channel RB1-0



LTE B5 5MHz 16QAM Low Channel RB1-0



LTE B5 5MHz QPSK Middle Channel RB1-0



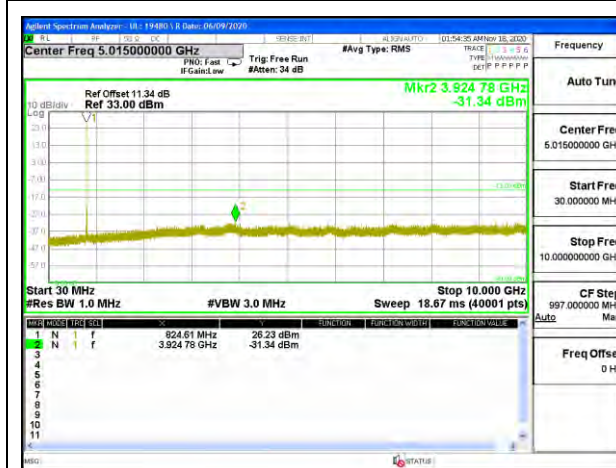
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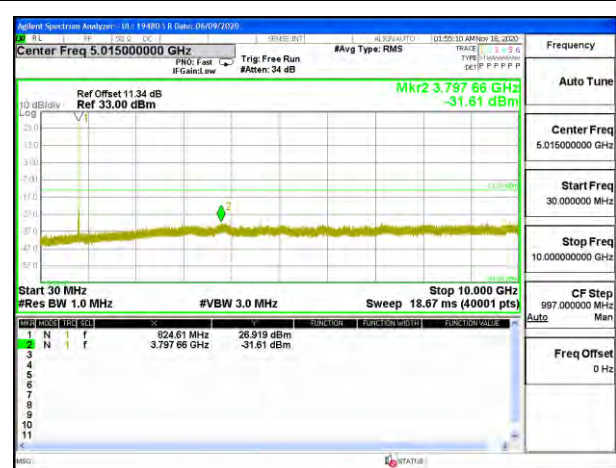
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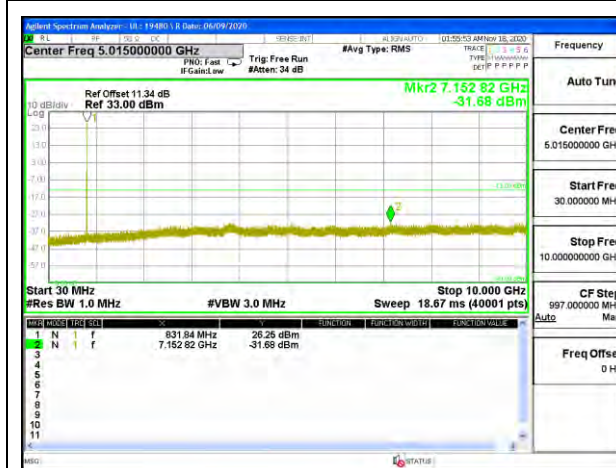
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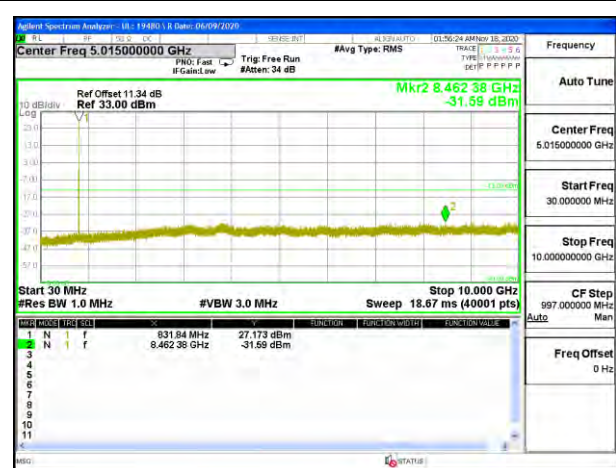
LTE B5 10MHz QPSK Low Channel RB1-0



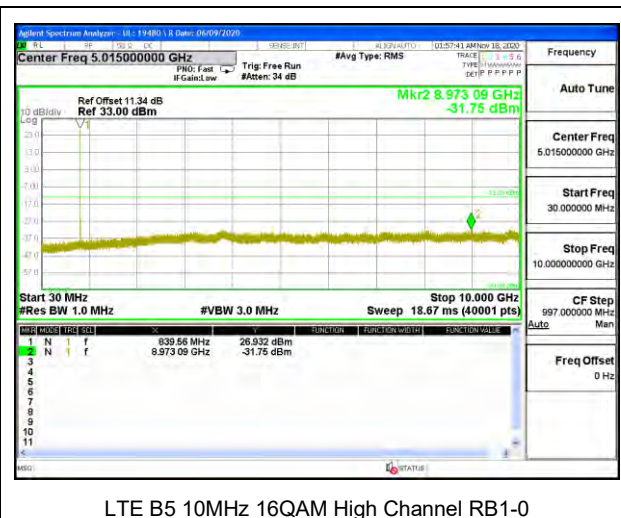
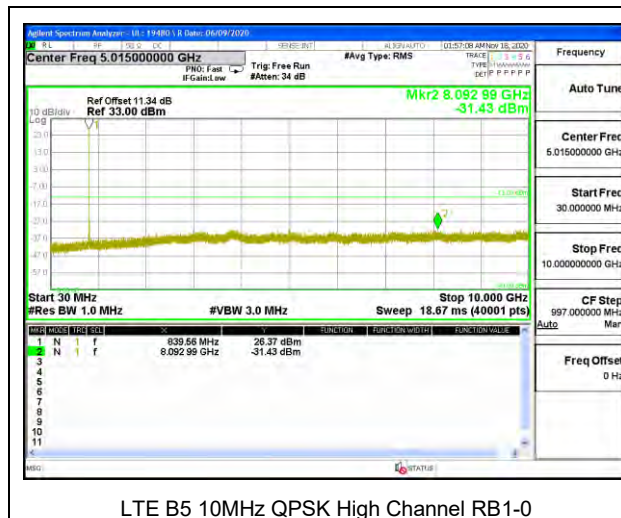
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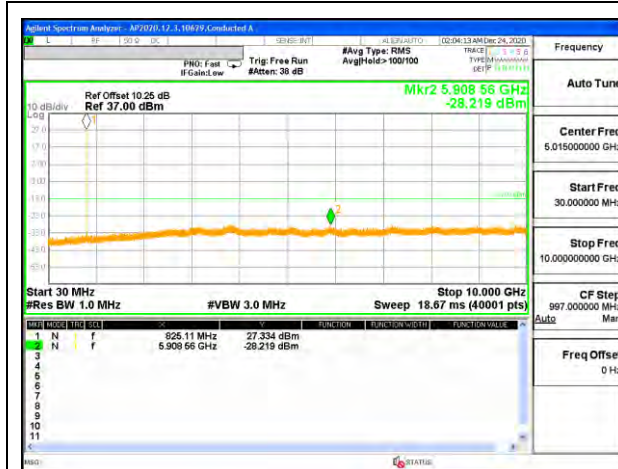
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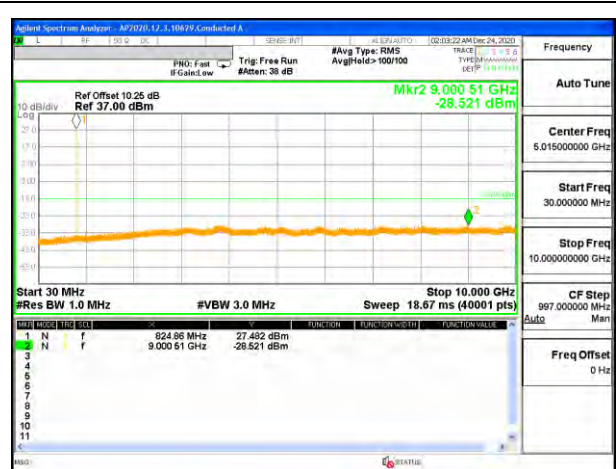
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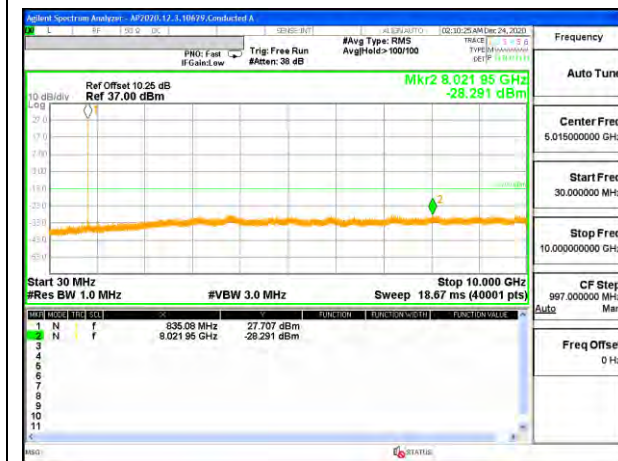
5G NR BAND n5



5G NR Band n5 5MHz BPSK Low Channel RB1-1



5G NR Band n5 5MHz 16QAM Low Channel RB1-1



5G NR Band n5 5MHz BPSK Middle Channel RB1-1



5G NR Band n5 5MHz 16QAM Middle Channel RB1-1



5G NR Band n5 5MHz BPSK High Channel RB1-1



5G NR Band n5 5MHz 16QAM High Channel RB1-1