

QPSK (99% BW)

Ref 25 dBm Att 20 dB RBW 200 kHz VBW 1 MHz SMT 40 ms

Marker 1 [T1] 2.527500000 GHz 13.07 dBm

Marker 2 [T2] 2.526051692 GHz 11.62 dBm

Temp 1 [T1] 2.527500000 GHz 11.62 dBm

Temp 2 [T2] 2.526051692 GHz 11.62 dBm

Center 2.535 GHz 6 MHz/ Span 60 MHz

16QAM (99% BW)

Ref 25 dBm Att 20 dB RBW 200 kHz VBW 1 MHz SMT 40 ms

Marker 1 [T1] 2.527500000 GHz 13.14 dBm

Marker 2 [T2] 2.526051692 GHz 11.72 dBm

Temp 1 [T1] 2.527500000 GHz 11.72 dBm

Temp 2 [T2] 2.526051692 GHz 11.72 dBm

Center 2.535 GHz 6 MHz/ Span 60 MHz

QPSK (99% BW)

Center 707.5 MHz 500 kHz/ Span 5 MHz

16QAM (99% BW)

Center 707.5 MHz 500 kHz/ Span 5 MHz

QPSK (99% BW)

Ref 25 dBm RBW 30 KHz Marker 1 [T1] -31.13 dBm
*Att 20 dB VBW 100 KHz 710.00000000 MHz
*SWT 40 ms

Offset 9.5 dB Center 707.5 MHz 1 MHz/ span 10 MHz

Temp 1 [T1] 14.76 dBm
Temp 2 [T1] 14.07 dBm
Temp 3 [T1] 14.07 dBm

Temp 1 [T1] 14.76 dBm
Temp 2 [T1] 14.07 dBm
Temp 3 [T1] 14.07 dBm

16QAM (99% BW)

Ref 25 dBm RBW 30 KHz Marker 1 [T1] -31.26 dBm
*Att 20 dB VBW 100 KHz 710.00000000 MHz
*SWT 40 ms

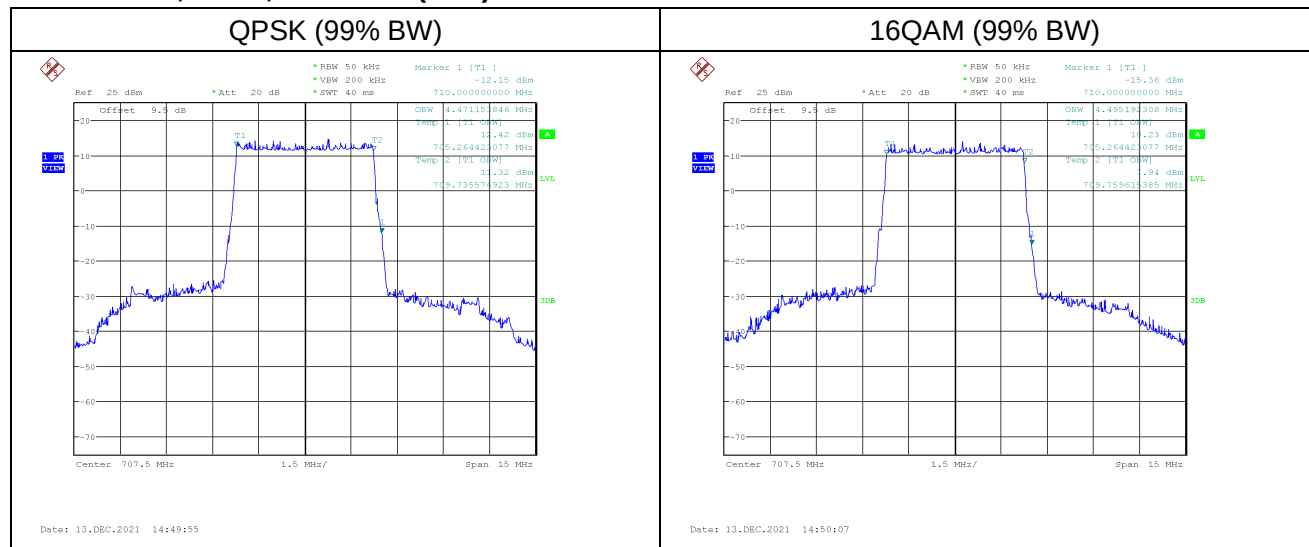
Offset 9.5 dB Center 707.5 MHz 1 MHz/ span 10 MHz

Temp 1 [T1] 14.84 dBm
Temp 2 [T1] 14.93 dBm
Temp 3 [T1] 14.93 dBm

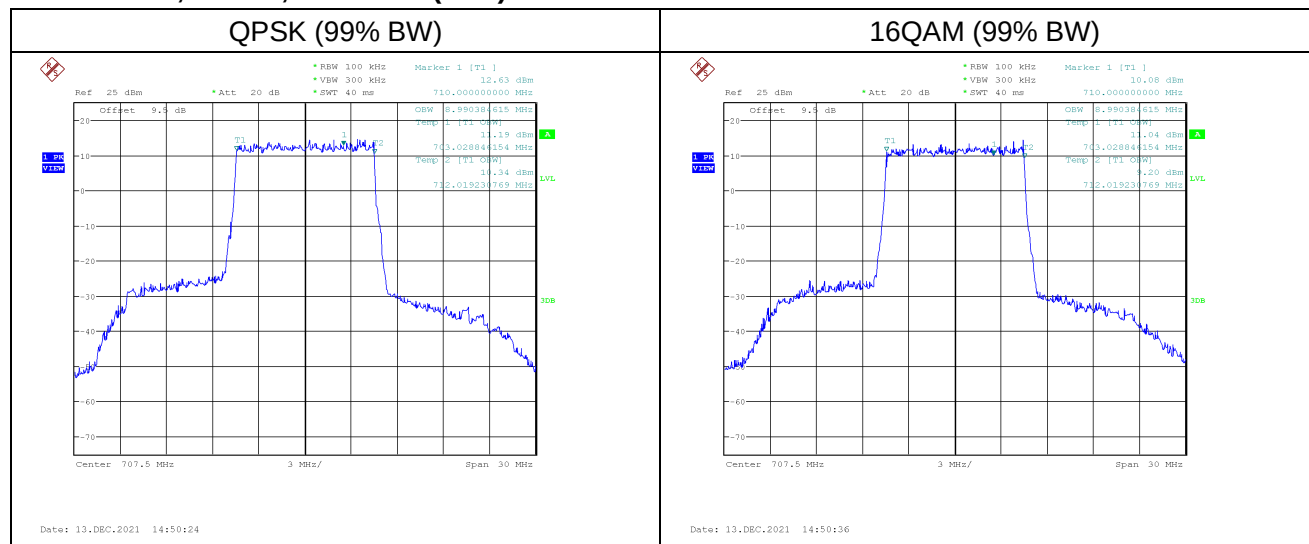
Temp 1 [T1] 14.84 dBm
Temp 2 [T1] 14.93 dBm
Temp 3 [T1] 14.93 dBm



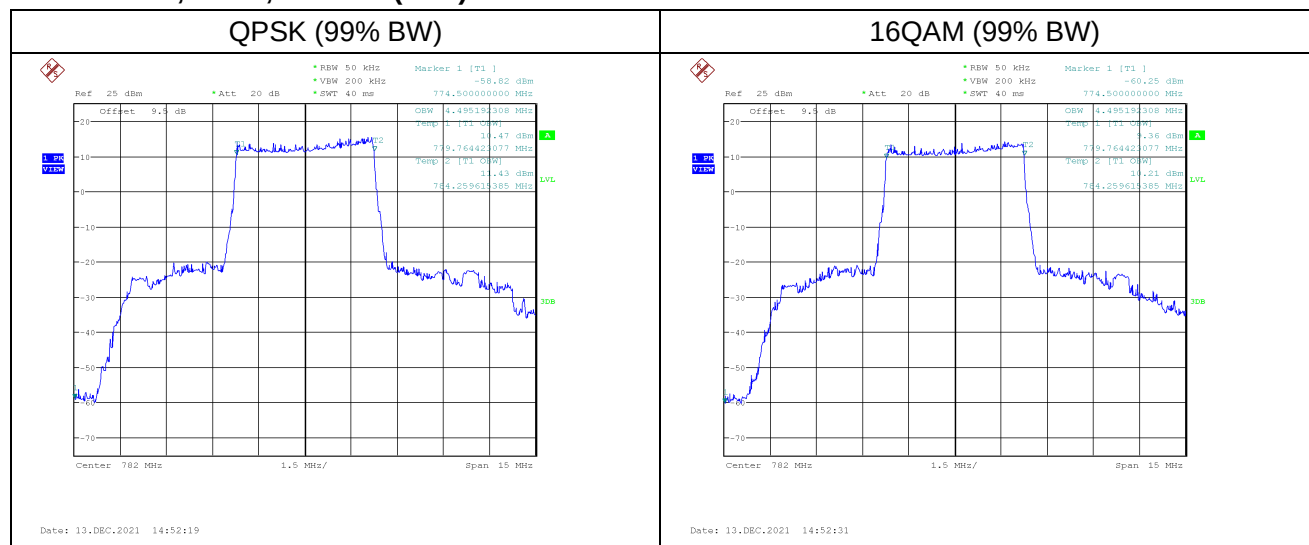
LTE band 12, 5MHz, 707.5MHz (99%)



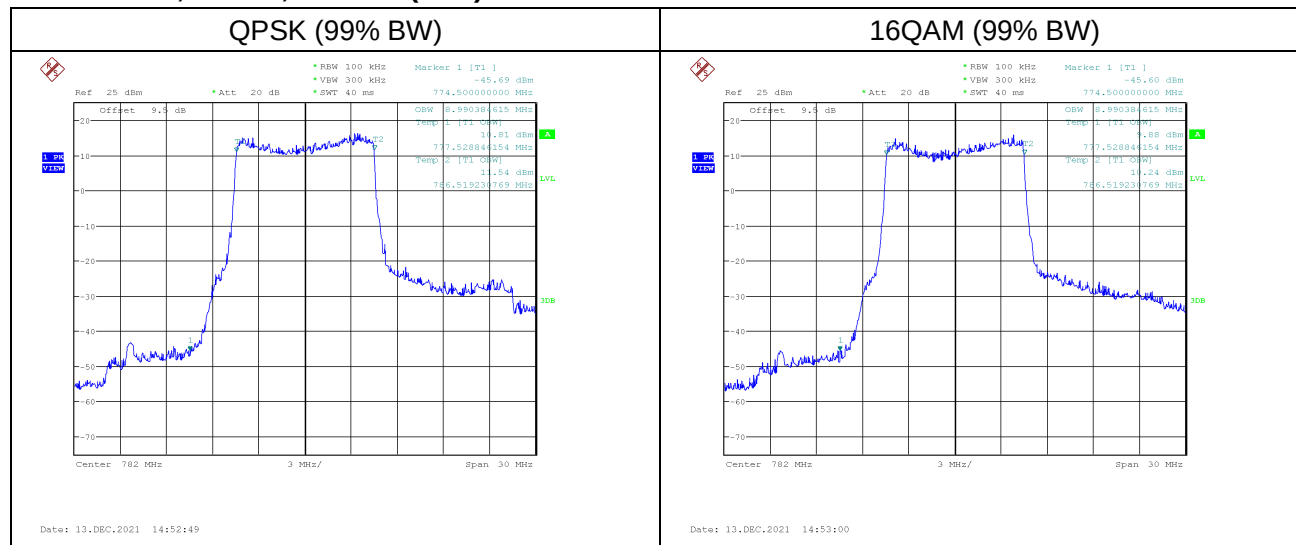
LTE band 12, 10MHz, 707.5MHz (99%)



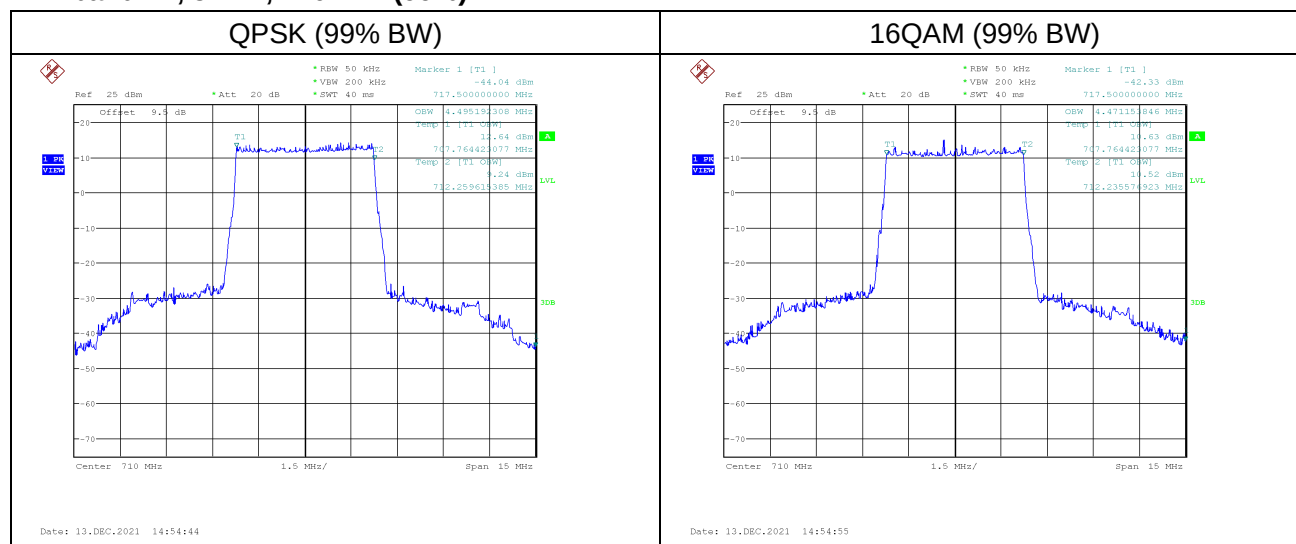
LTE band 13, 5MHz, 782MHz (99%)



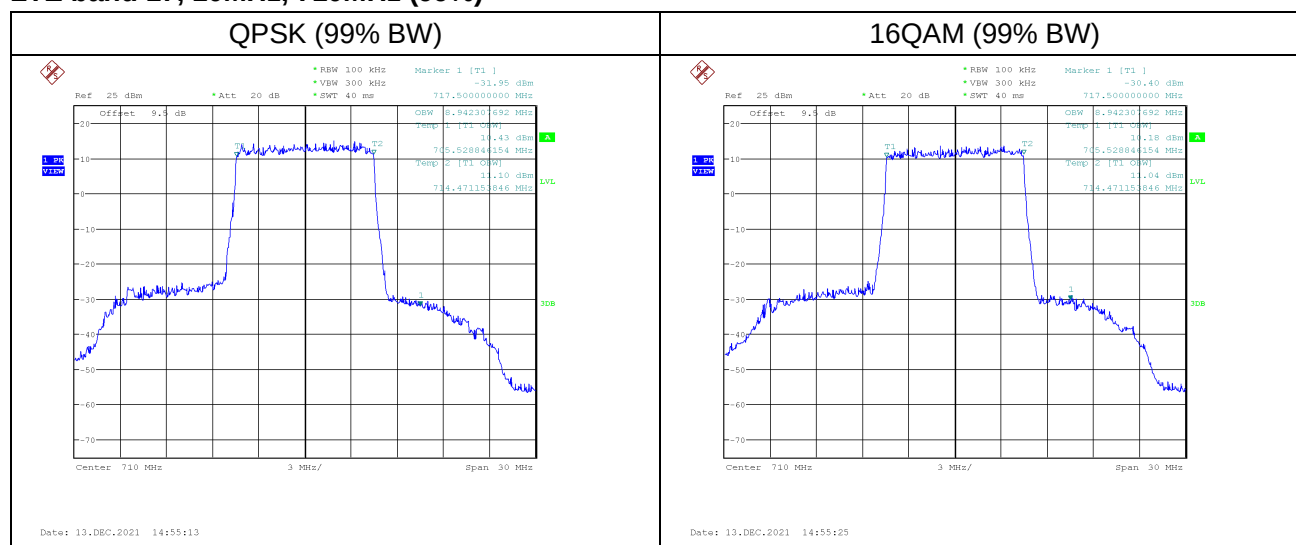
LTE band 13, 10MHz, 782MHz (99%)



LTE band 17, 5MHz, 710MHz (99%)

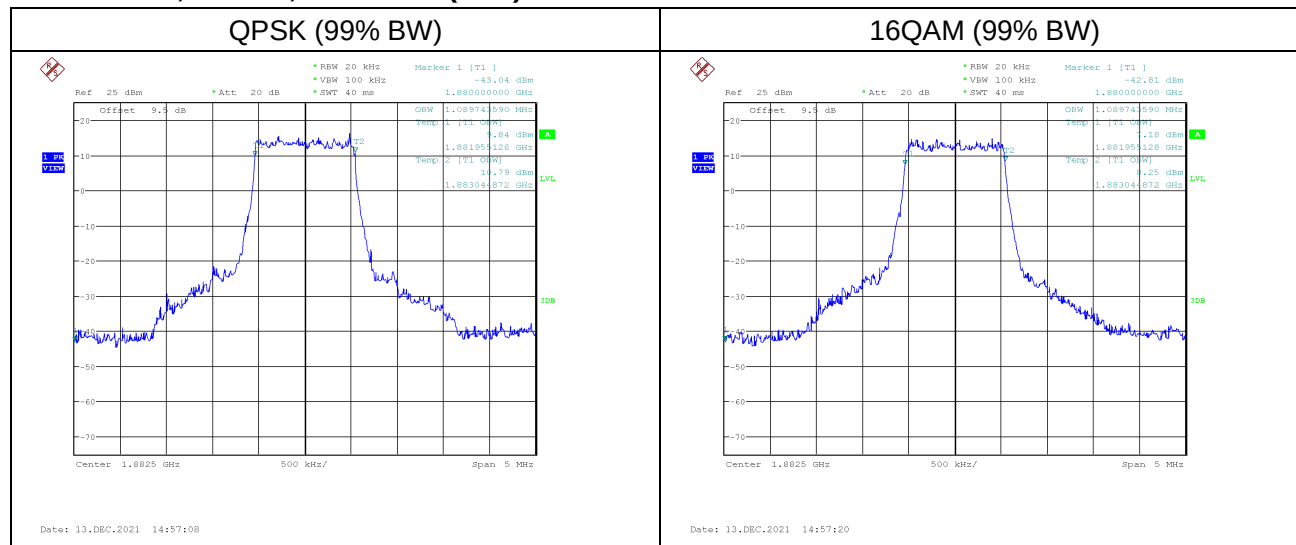


LTE band 17, 10MHz, 710MHz (99%)

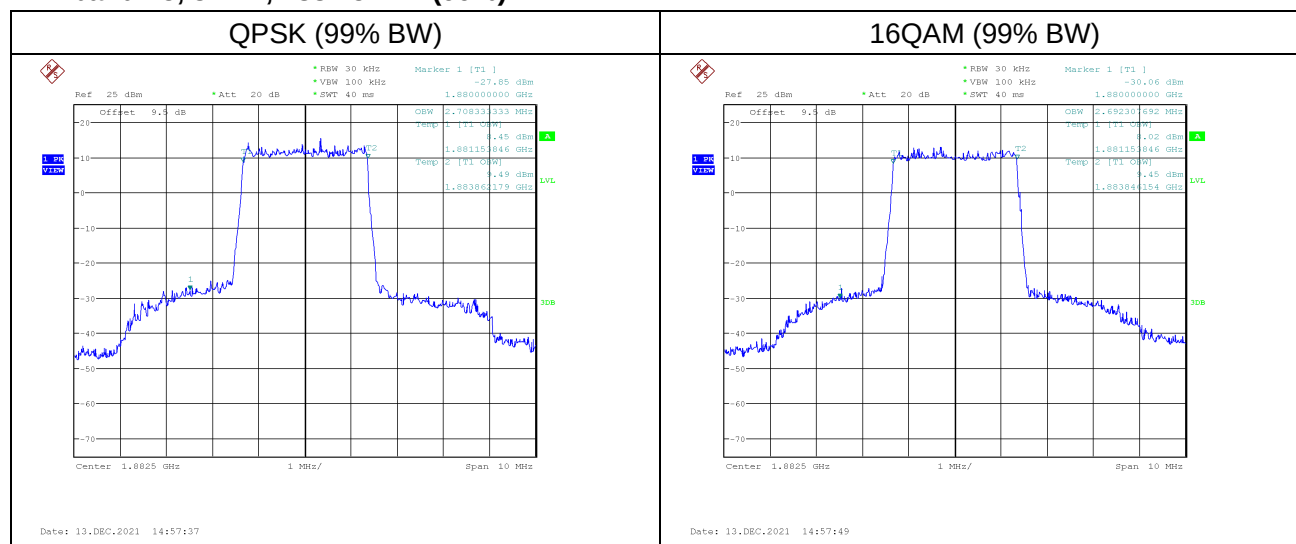




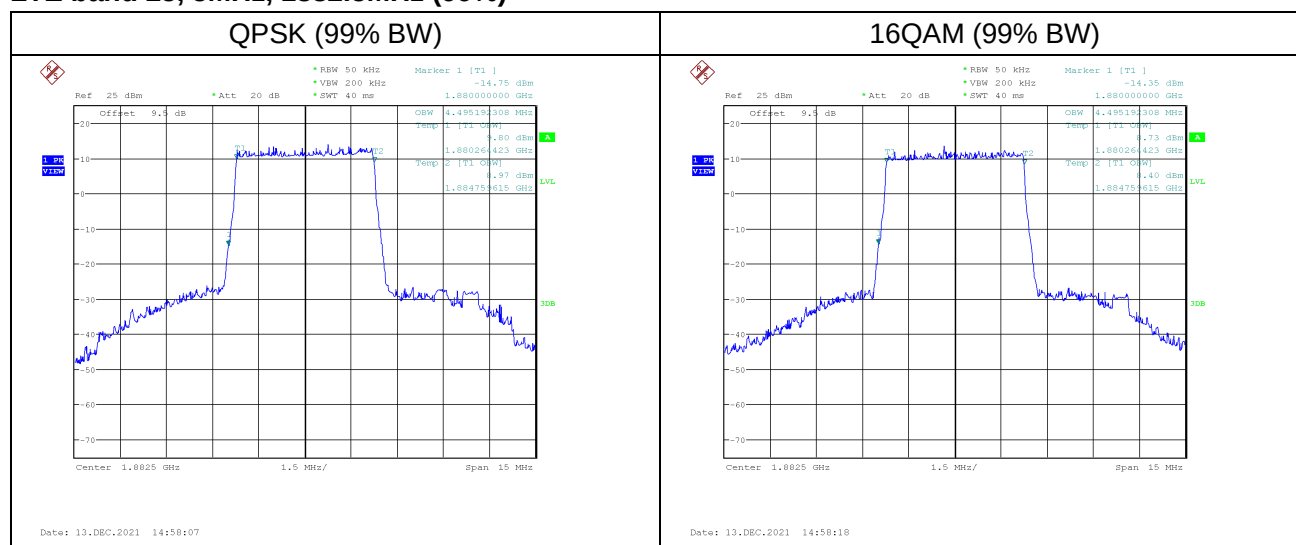
LTE band 25, 1.4MHz, 1882.5MHz(99%)



LTE band 25, 3MHz, 1882.5MHz (99%)



LTE band 25, 5MHz, 1882.5MHz (99%)



[illegible]

QPSK (99% BW)

Ref: 25 dBm Att: 20 dB BW: 200 KHz Marker 1 [T1] VSW: 1.000000000 GHz SWT: 40 ms

Offset: 9.4 dB Obs: 13.485574923 MHz Temp: 1 [T1] 0.000000000 GHz

14.45 dBm 1.07579269 GHz 1.24 dBm 1.089274846 GHz

Center: 1.0825 GHz 4.5 MHz/ Span: 45 MHz

16QAM (99% BW)

Ref: 25 dBm Att: 20 dB BW: 200 KHz Marker 1 [T1] VSW: 1.000000000 GHz SWT: 40 ms

Offset: 9.4 dB Obs: 13.485574923 MHz Temp: 1 [T1] 0.000000000 GHz

14.45 dBm 1.07579269 GHz 1.24 dBm 1.089274846 GHz

Center: 1.0825 GHz 4.5 MHz/ Span: 45 MHz

QPSK (99% BW)

Ref 25 dBm Att 20 dB BW 200 kHz Marker 1 [T1] VSW 1.000000000 GHz SWT 40 ms 1.880000000 GHz

Offset 9.4 dB Center 1.0025 GHz 6 MHz/ Span 60 MHz

Temp 2 [T1] 0.00000000 GHz 1.87 dBm 1.07355692 GHz 1.37 dBm 1.09153462 GHz

16QAM (99% BW)

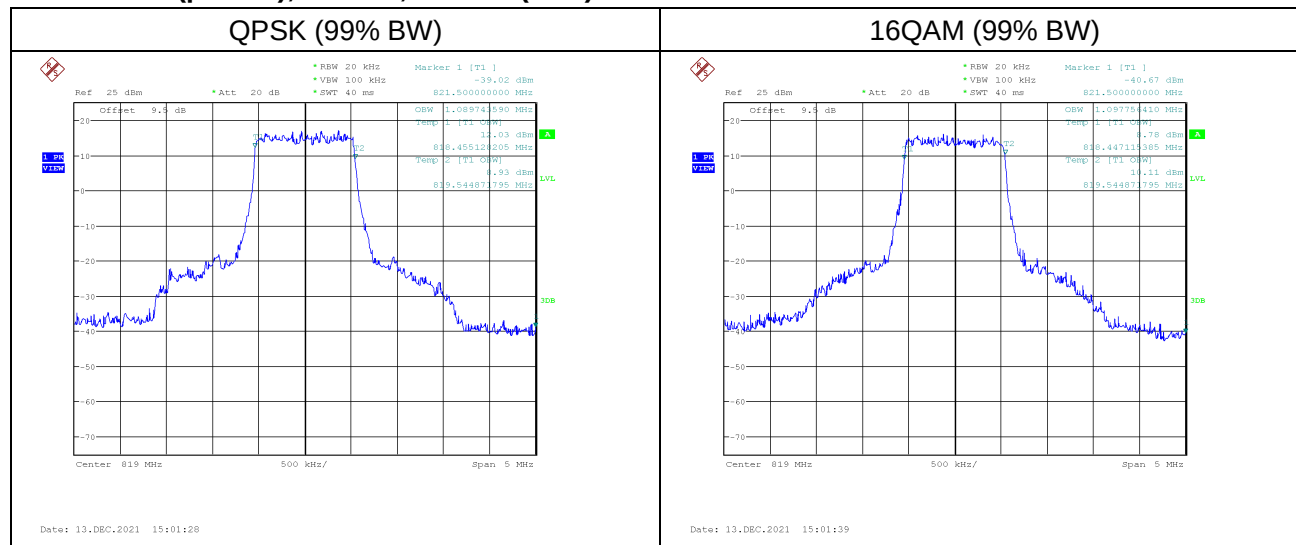
Ref 25 dBm Att 20 dB BW 200 kHz Marker 1 [T1] VSW 1.000000000 GHz SWT 40 ms 1.880000000 GHz

Offset 9.4 dB Center 1.0025 GHz 6 MHz/ Span 60 MHz

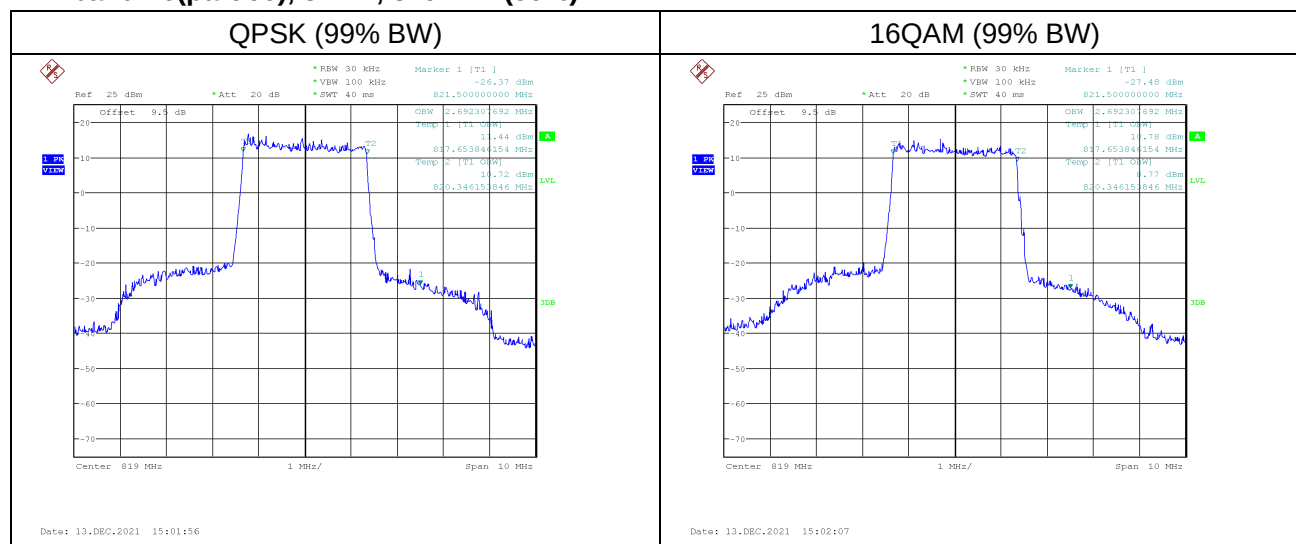
Temp 2 [T1] 0.00000000 GHz 10.54 dBm 1.07355692 GHz 1.86 dBm 1.09153462 GHz



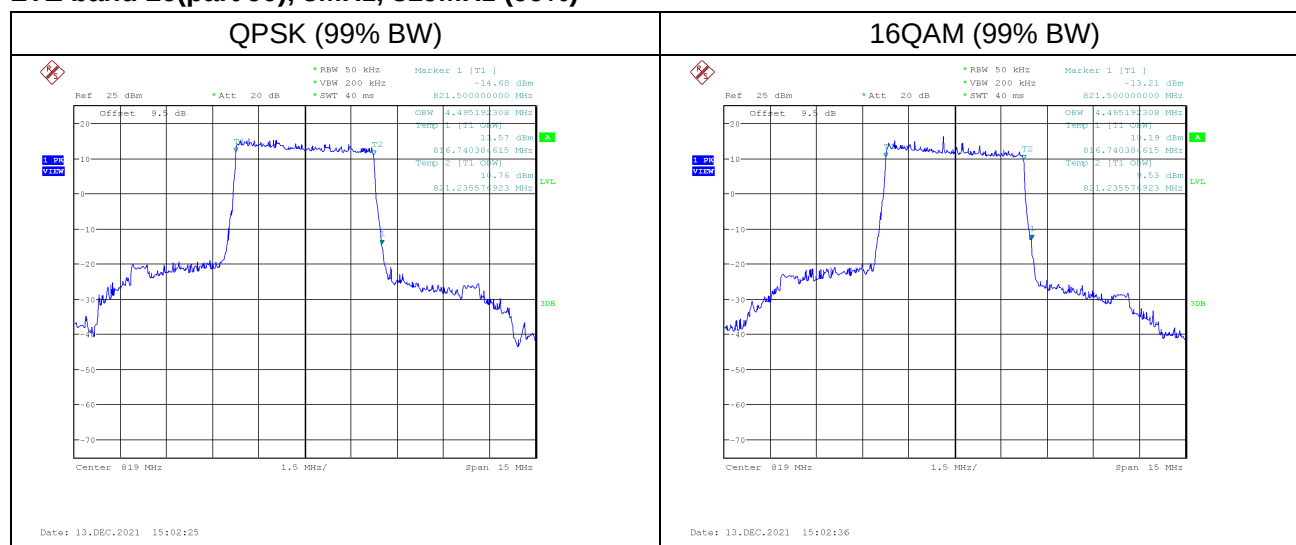
LTE band 26(part 90), 1.4MHz, 819MHz(99%)



LTE band 26(part 90), 3MHz, 819MHz (99%)



LTE band 26(part 90), 5MHz, 819MHz (99%)



QPSK (99% BW)

Ref 25 dBm • Att 20 dB • PSW 100 KHz Marker 1 [T1] 12.16 dBm
 • VBW 300 KHz 821.500000000 MHz
 • SWT 40 ms

Offset 9.3 dB Offset 8.990384615 MHz ZENP 1 [T1] 0dBm 11.36 dBm
 844.480764231 MHz Temp 2 [T1] 0dBm 14.39 dBm
 823.471151846 MHz

Center 819 MHz 3 MHz/ Span 30 MHz

16QAM (99% BW)

Ref 25 dBm • Att 20 dB • PSW 100 KHz Marker 1 [T1] 10.12 dBm
 • VBW 300 KHz 821.500000000 MHz
 • SWT 40 ms

Offset 9.3 dB Offset 8.990384615 MHz ZENP 1 [T1] 0dBm 14.37 dBm
 844.480764231 MHz Temp 2 [T1] 0dBm 14.57 dBm
 823.471151846 MHz

Center 819 MHz 3 MHz/ Span 30 MHz

QPSK (99% BW)

Ref: 25 dBm • Att: 20 dB • RBW 50 KHz Marker 1 [T1] • VBW 200 KHz -37.08 dBm
 • SWT 40 ms 2.585500000 GHz

Offset: 9.4 dB OBW: 4.471150446 MHz
 Temp: 1 [T1] 0.0001 4.32 dBm
 2.590764423 GHz
 Temp: 2 [T1] 0.0001 4.67 dBm
 2.595234577 GHz

Center: 2.593 GHz 1.5 MHz/ Span: 15 MHz

Date: 13.DEC.2021 15:04:54

16QAM (99% BW)

Ref: 25 dBm • Att: 20 dB • RBW 50 KHz Marker 1 [T1] • VBW 200 KHz -38.76 dBm
 • SWT 40 ms 2.585500000 GHz

Offset: 9.4 dB OBW: 4.471150446 MHz
 Temp: 1 [T1] 0.0001 4.35 dBm
 2.590764423 GHz
 Temp: 2 [T1] 0.0001 4.50 dBm
 2.595234577 GHz

Center: 2.593 GHz 1.5 MHz/ Span: 15 MHz

Date: 13.DEC.2021 15:05:05

QPSK (99% BW)

Ref 25 dBm Att 20 dB

Offset 9.5 dB

OSW 8.942301692 MHz

Temp 1 [T1] 0.34 dBm

Temp 2 [T2] 2.58524846 GHz

Temp 3 [T3] 4.23 dBm

Temp 4 [T4] 2.597471154 GHz

Center 2.593 GHz Span 30 MHz

16QAM (99% BW)

Ref 25 dBm Att 20 dB

Offset 9.5 dB

OSW 8.942301692 MHz

Temp 1 [T1] 0.49 dBm

Temp 2 [T2] 2.58524846 GHz

Temp 3 [T3] 4.22 dBm

Temp 4 [T4] 2.597471154 GHz

Center 2.593 GHz Span 30 MHz

QPSK (99% BW)

QPSK (99% BW) spectrum plot showing a signal centered at 2.593 GHz. The plot displays a clear signal structure with a peak level of approximately -10 dBm. The signal is centered at 2.593 GHz, with a span of 45 MHz. The plot shows a clear signal structure with a peak level of approximately -10 dBm. The signal is centered at 2.593 GHz, with a span of 45 MHz.

Ref 25 dBm Att 20 dB RBW 200 KHz Marker 1 [T1] -17.90 dBm
 VBW 1 MHz 2.585500000 GHz
 SWT 40 ms

Offset 9.3 dB ChBW 3.485574923 MHz Temp 1 [T1] 0.001 19.40 dBm
 2.586231269 GHz Temp 2 [T1] 0.001 19.19 dBm
 2.599778846 GHz

Center 2.593 GHz 4.5 MHz/ Span 45 MHz

16QAM (99% BW)

16QAM (99% BW) spectrum plot showing a signal centered at 2.593 GHz. The plot displays a clear signal structure with a peak level of approximately -10 dBm. The signal is centered at 2.593 GHz, with a span of 45 MHz. The plot shows a clear signal structure with a peak level of approximately -10 dBm. The signal is centered at 2.593 GHz, with a span of 45 MHz.

Ref 25 dBm Att 20 dB RBW 200 KHz Marker 1 [T1] -17.31 dBm
 VBW 1 MHz 2.585500000 GHz
 SWT 40 ms

Offset 9.3 dB ChBW 3.485574923 MHz Temp 1 [T1] 0.001 11.20 dBm
 2.586231269 GHz Temp 2 [T1] 0.001 4.61 dBm
 2.599778846 GHz

Center 2.593 GHz 4.5 MHz/ Span 45 MHz

[illegible]

6.5. Emission Bandwidth

Reference

CFR Part 2.1049,22.917(b),24.238(a),27.53(g),27.53(h), 27.53(m),90.209(b)

6.5.1 Emission Bandwidth Results

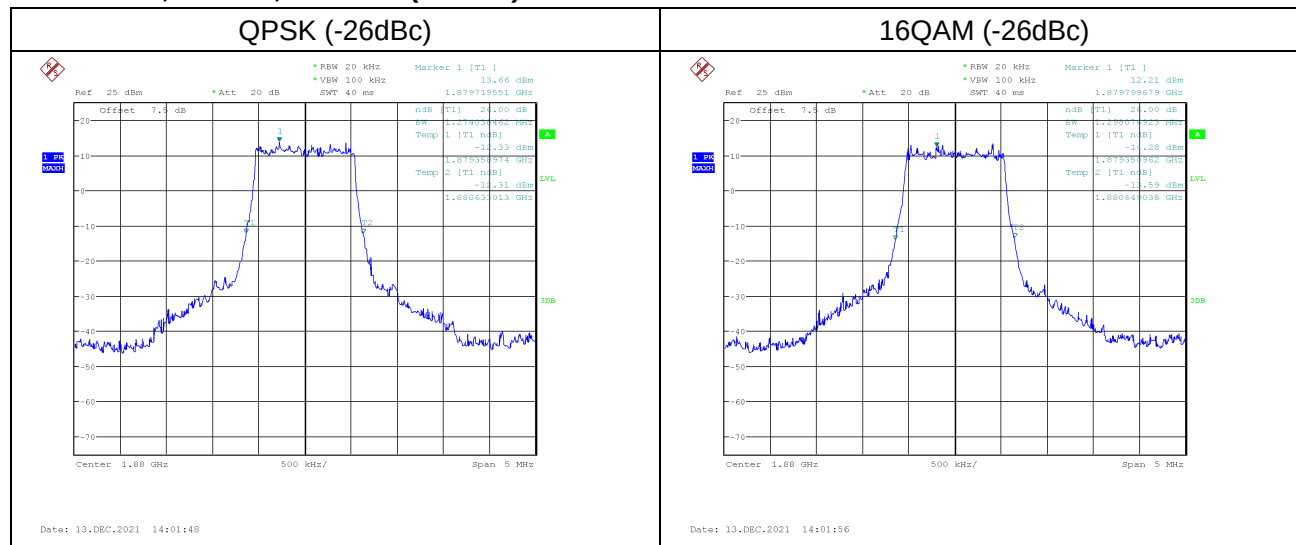
The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

Band	Range	BandWidth	Frequency(MHz)	QPSK(MHz)	Q16(MHz)
FDD02	MidRange	1.4	1880	1.27	1.30
FDD02	MidRange	3	1880	2.98	2.95
FDD02	MidRange	5	1880	4.90	4.95
FDD02	MidRange	10	1880	9.71	9.76
FDD02	MidRange	15	1880	14.64	14.64
FDD02	MidRange	20	1880	19.23	19.33
FDD04	MidRange	1.4	1732.5	1.26	1.28
FDD04	MidRange	3	1732.5	2.95	2.93
FDD04	MidRange	5	1732.5	4.98	4.93
FDD04	MidRange	10	1732.5	9.76	9.76
FDD04	MidRange	15	1732.5	14.50	14.57
FDD04	MidRange	20	1732.5	19.23	19.13
FDD05	MidRange	1.4	836.5	1.29	1.28
FDD05	MidRange	3	836.5	2.93	2.95
FDD05	MidRange	5	836.5	4.83	4.86
FDD05	MidRange	10	836.5	9.66	9.57
FDD07	MidRange	5	2535	4.90	4.90
FDD07	MidRange	10	2535	9.62	9.81
FDD07	MidRange	15	2535	14.42	14.50
FDD07	MidRange	20	2535	19.23	19.23
FDD12	MidRange	1.4	707.5	1.27	1.30
FDD12	MidRange	3	707.5	2.96	2.98

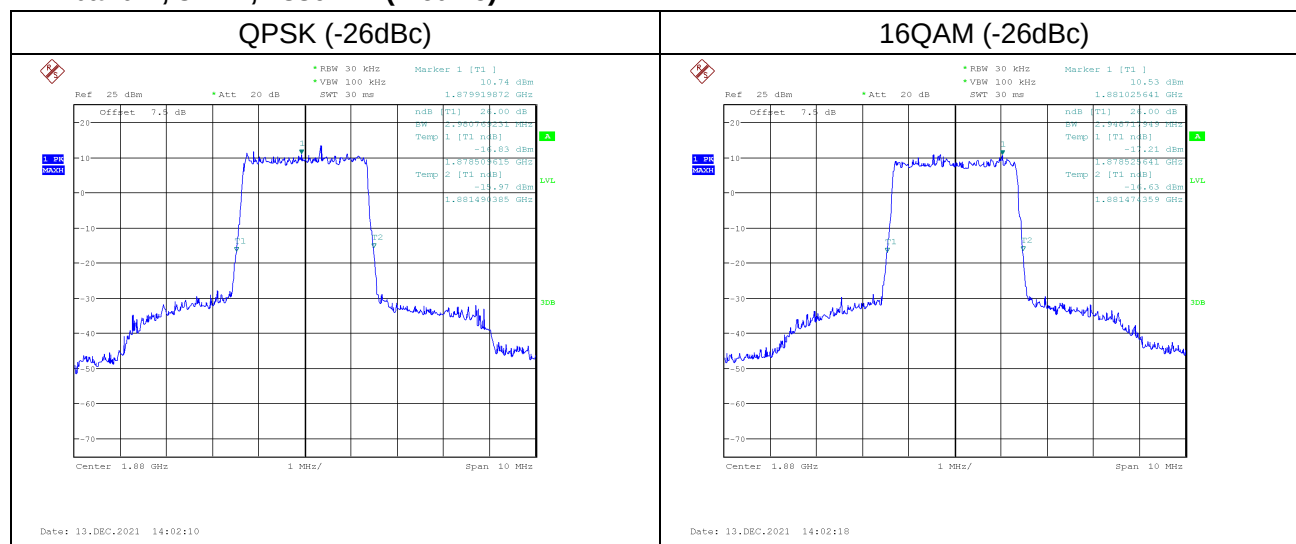
FDD12	MidRange	5	707.5	4.95	4.90
FDD12	MidRange	10	707.5	9.66	9.66
FDD13	MidRange	5	782	4.95	4.93
FDD13	MidRange	10	782	9.71	9.66
FDD17	MidRange	5	710	4.93	4.93
FDD17	MidRange	10	710	9.71	9.71
FDD25	MidRange	1.4	1882.5	1.28	1.28
FDD25	MidRange	3	1882.5	2.96	2.93
FDD25	MidRange	5	1882.5	4.95	4.90
FDD25	MidRange	10	1882.5	9.86	9.66
FDD25	MidRange	15	1882.5	14.50	14.57
FDD25	MidRange	20	1882.5	19.13	19.13
FDD26A	MidRange	1.4	819	1.28	1.30
FDD26A	MidRange	3	819	2.95	2.93
FDD26A	MidRange	5	819	4.95	4.95
FDD26A	MidRange	10	819	9.71	9.71
TDD41	MidRange	5	2593	4.93	4.88
TDD41	MidRange	10	2593	9.57	9.66
TDD41	MidRange	15	2593	14.57	14.71
TDD41	MidRange	20	2593	19.13	19.23



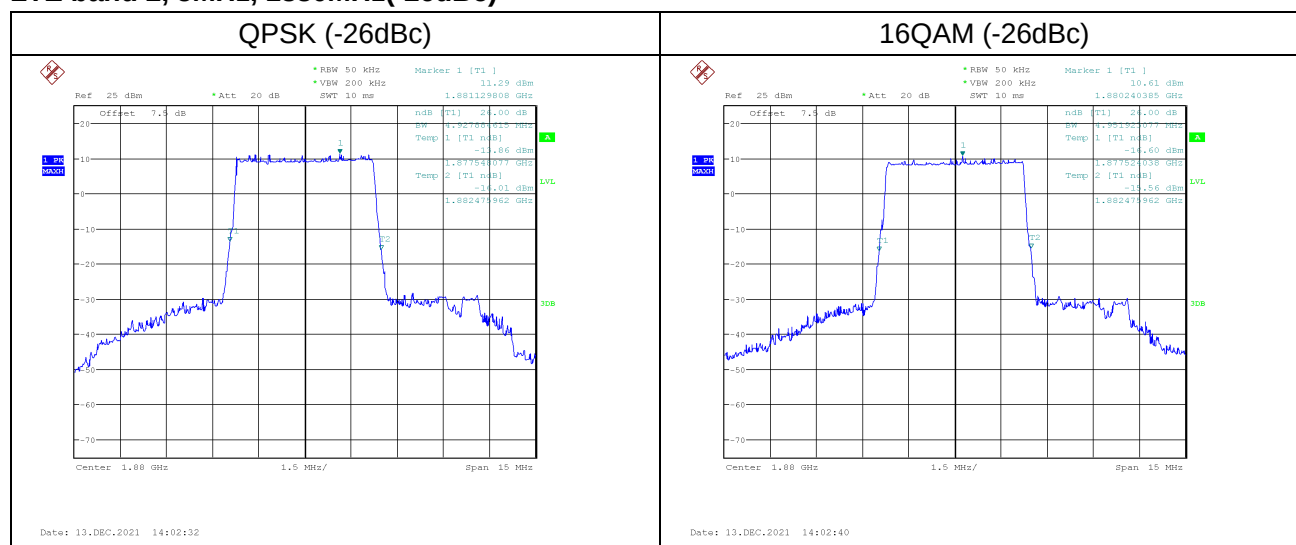
LTE band 2, 1.4MHz, 1880MHz(-26dBc)



LTE band 2, 3MHz, 1880MHz(-26dBc)

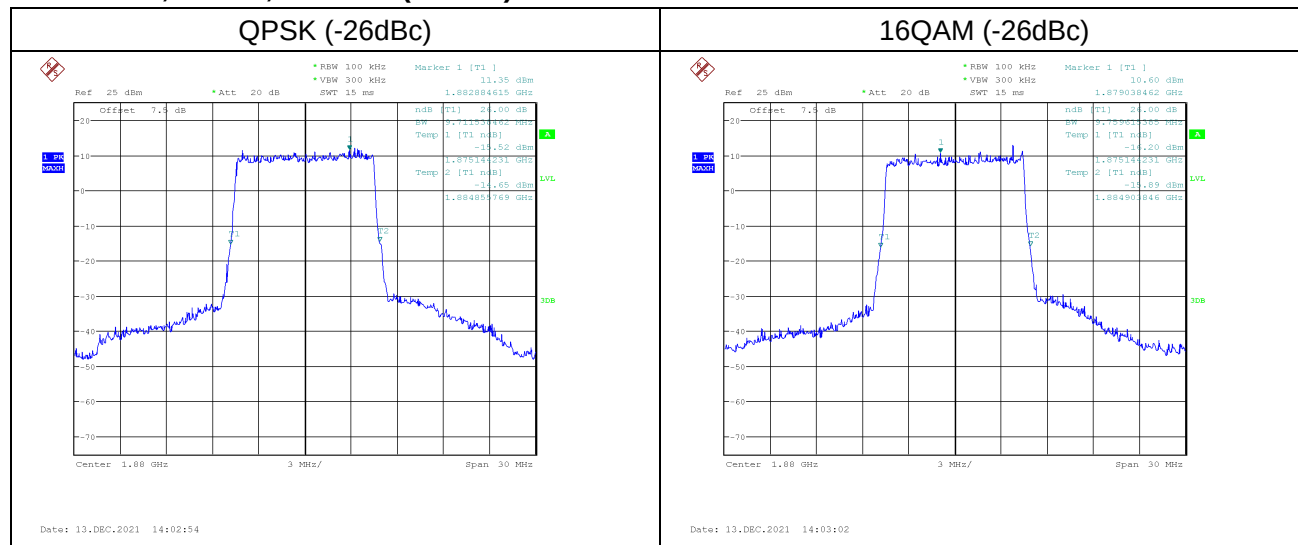


LTE band 2, 5MHz, 1880MHz(-26dBc)

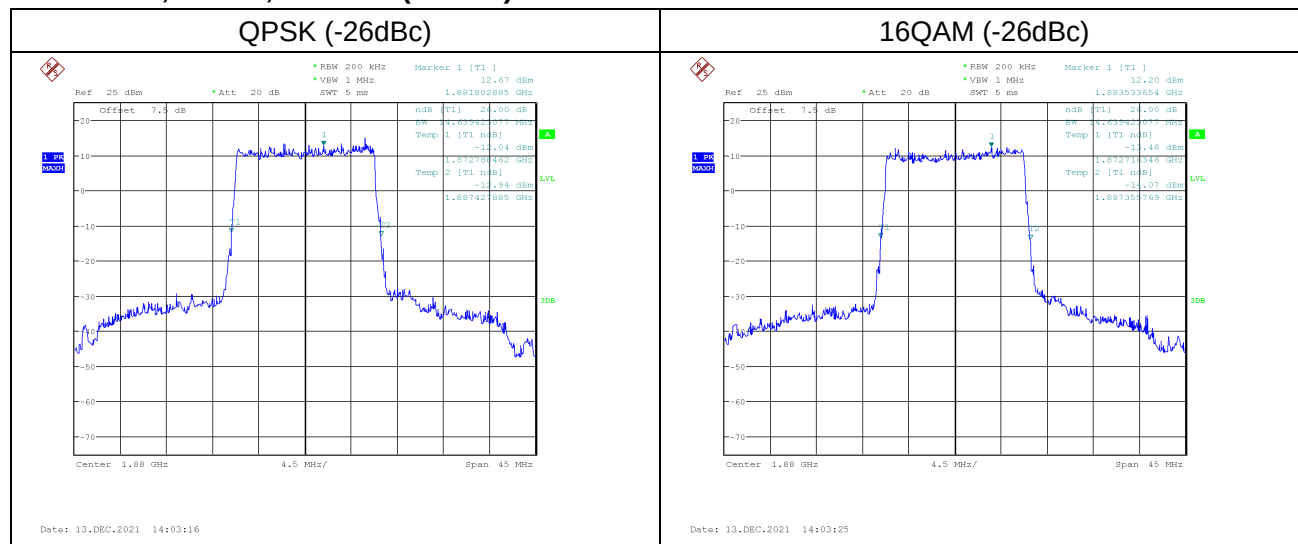




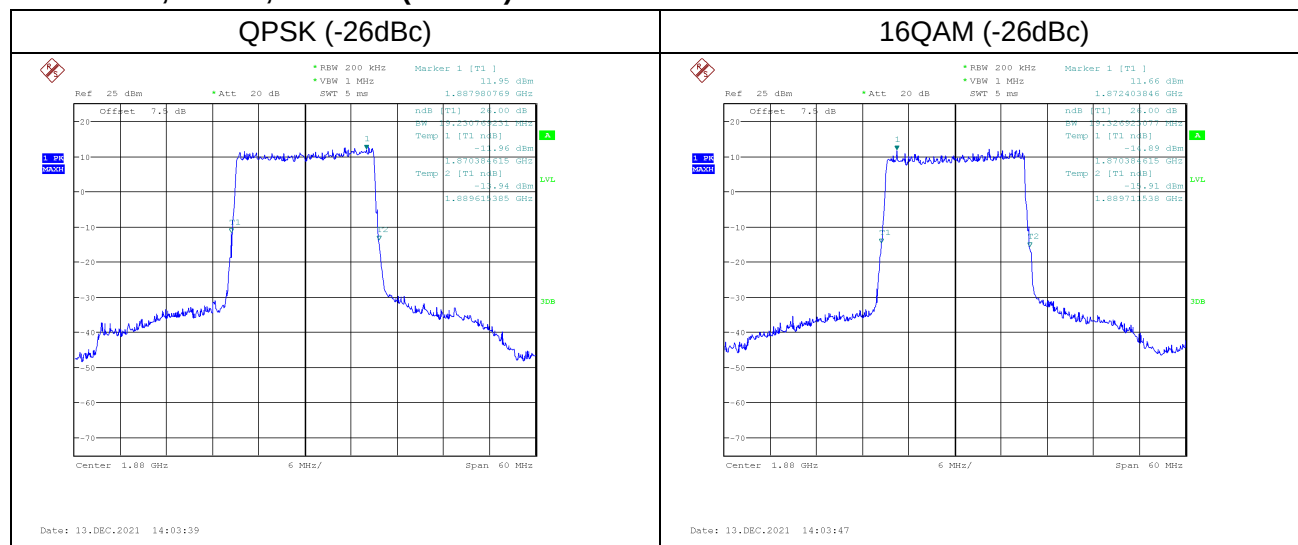
LTE band 2, 10MHz, 1880MHz(-26dBc)



LTE band 2, 15MHz, 1880MHz(-26dBc)

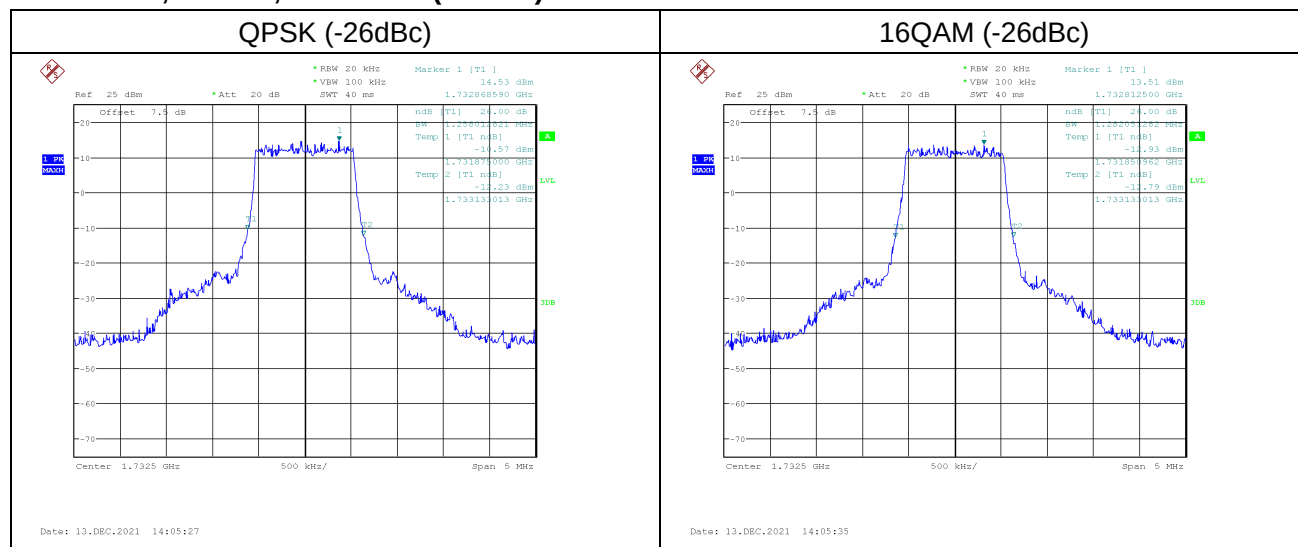


LTE band 2, 20MHz, 1880MHz(-26dBc)

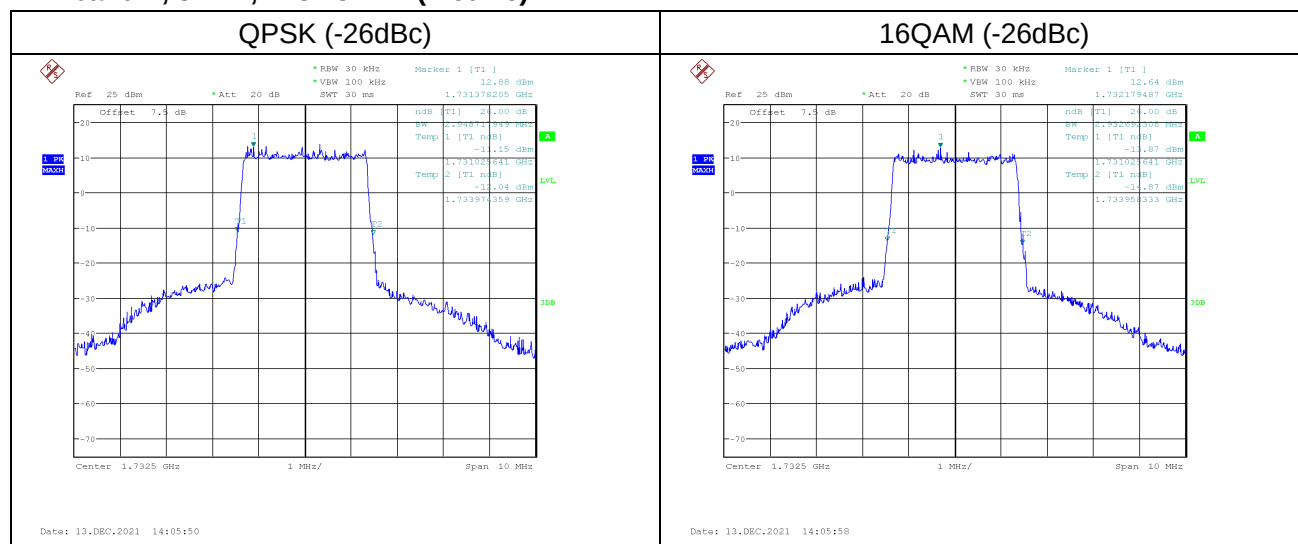




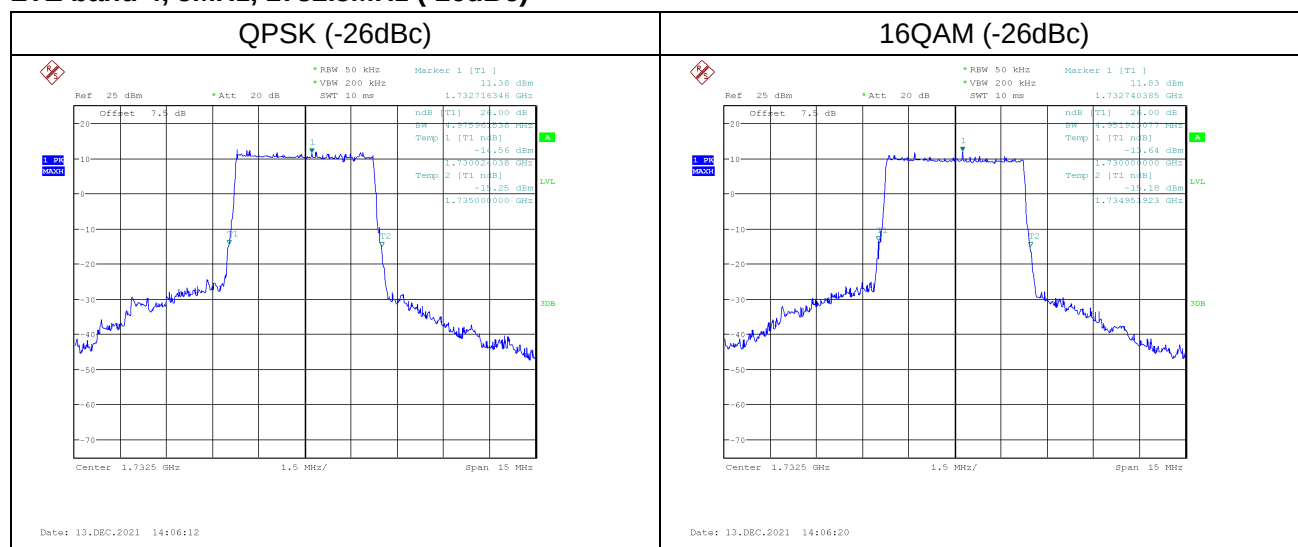
LTE band 4, 1.4MHz, 1732.5MHz(-26dBc)



LTE band 4, 3MHz, 1732.5MHz (-26dBc)

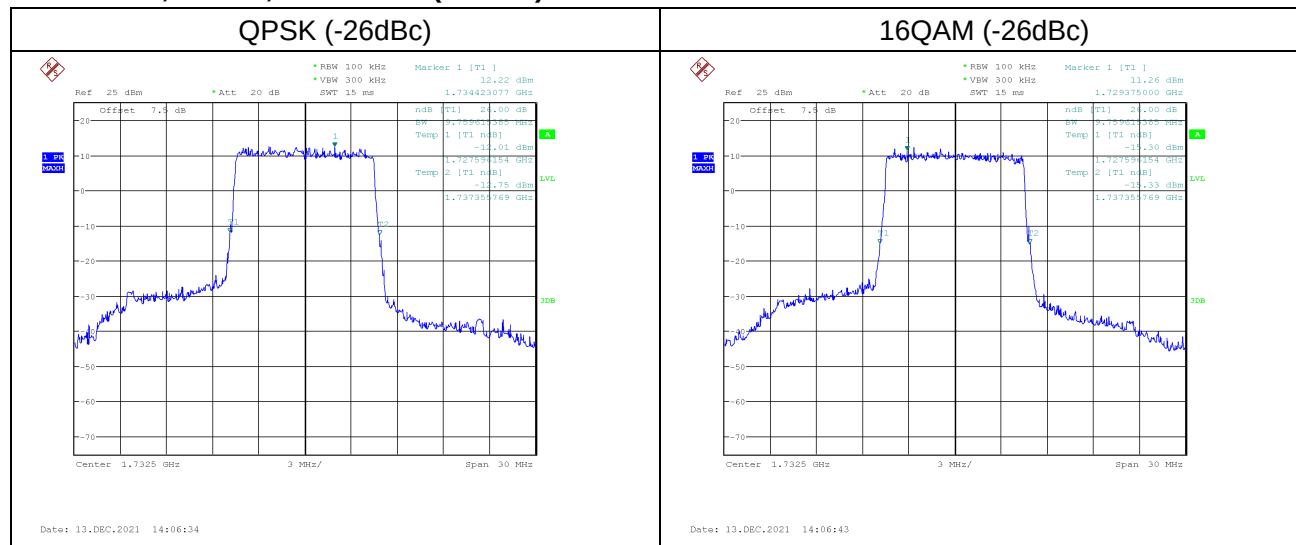


LTE band 4, 5MHz, 1732.5MHz (-26dBc)

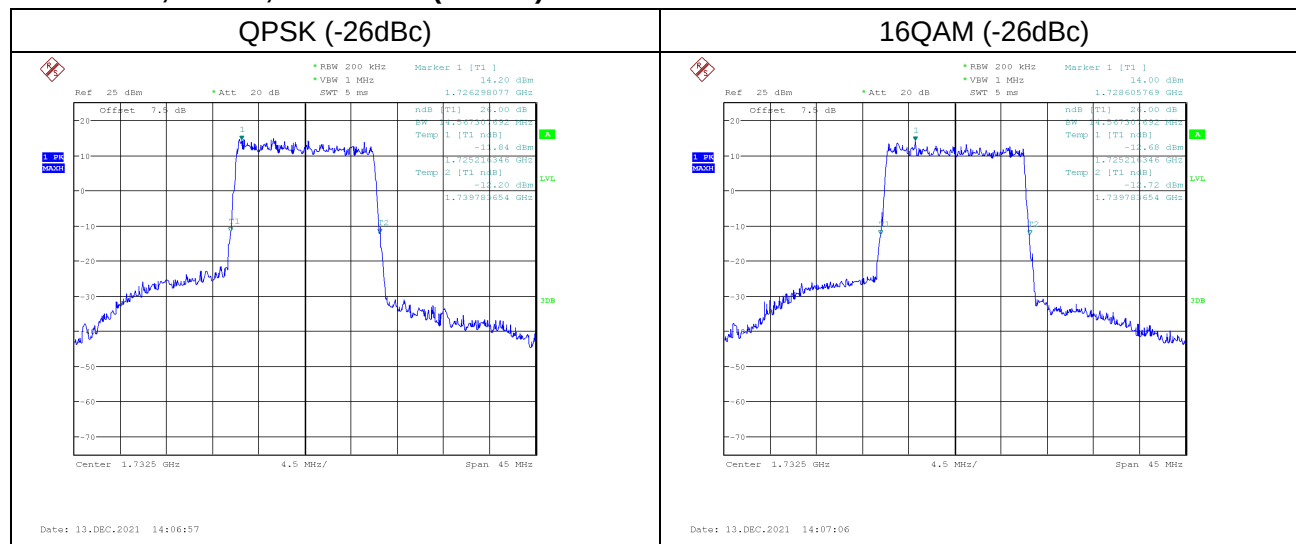




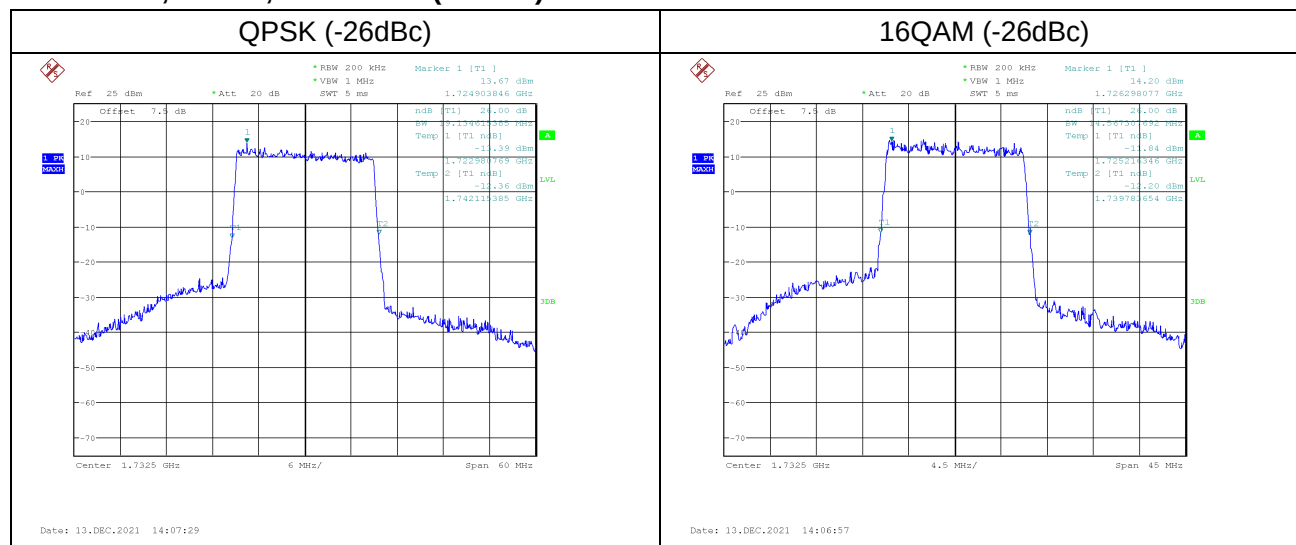
LTE band 4, 10MHz, 1732.5MHz (-26dBc)



LTE band 4, 15MHz, 1732.5MHz (-26dBc)



LTE band 4, 20MHz, 1732.5MHz (-26dBc)



QPSK (-26dBc)

Ref 25 dBm • Att 20 dB • RBW 20 KHz Marker 1 [T1] 15.01 dBm
 • VBW 100 KHz • SWT 40 ms 836.363782051 MHz

Offset 7.5 dB nB [T1] 24.00 dB BW 1.250000000 MHz Temp 1 [T1 nB] -11.61 dBm
 836.350000000 MHz Temp 2 [T1 nB] -11.85 dBm
 837.149034462 MHz

Center 836.5 MHz 500 KHz/ Span 5 MHz

16QAM (-26dBc)

Ref 25 dBm • Att 20 dB • RBW 20 KHz Marker 1 [T1] 14.56 dBm
 • VBW 100 KHz • SWT 40 ms 836.267628205 MHz

Offset 7.5 dB nB [T1] 24.00 dB BW 1.250000000 MHz Temp 1 [T1 nB] -11.11 dBm
 836.250000000 MHz Temp 2 [T1 nB] -11.83 dBm
 837.133018821 MHz

Center 836.5 MHz 500 KHz/ Span 5 MHz

[illegible]

QPSK (-26dBc)

Ref 25 dBm Att 20 dB

RBW 50 kHz VBW 200 kHz SWT 10 ms

Marker 1 [T1] 13.62 dBm 834.600961538 MHz

dB [T1] 24.00 dB BW 4.88876769 MHz Temp 1 [T1] nA/B -11.02 dBm 834.02213385 MHz Temp 2 [T1] nA/B -11.00 dBm 835.903044154 MHz

Center 836.5 MHz 1.5 MHz/ Span 15 MHz

16QAM (-26dBc)

Ref 25 dBm Att 20 dB

RBW 50 kHz VBW 200 kHz SWT 10 ms

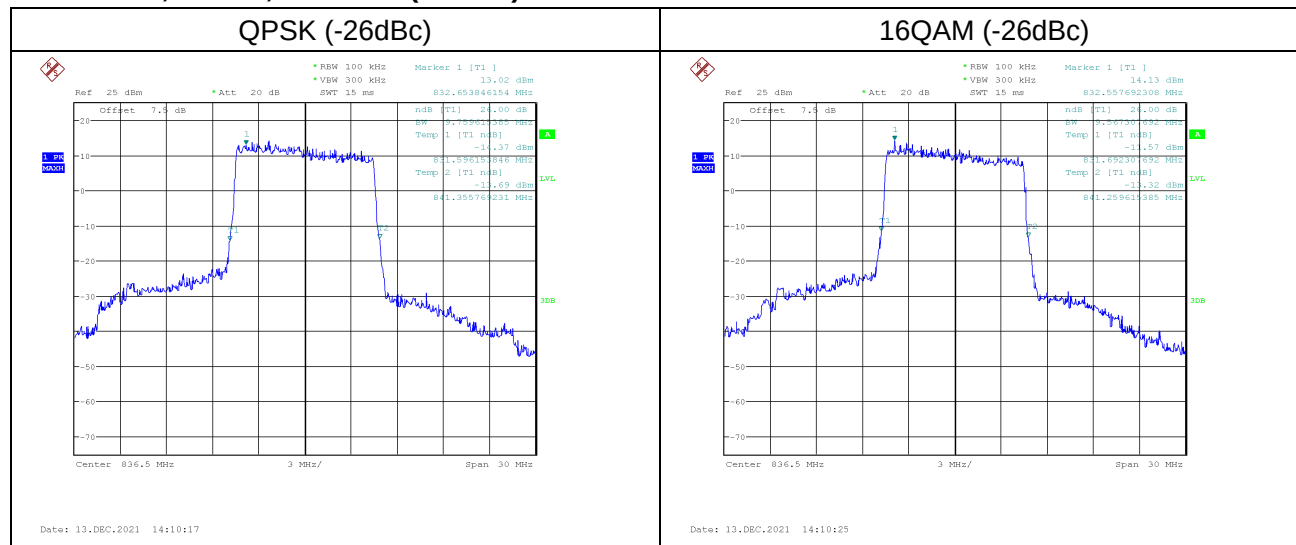
Marker 1 [T1] 12.06 dBm 834.408653846 MHz

dB [T1] 24.00 dB BW 4.88876769 MHz Temp 1 [T1] nA/B -11.62 dBm 834.040049683 MHz Temp 2 [T1] nA/B -13.30 dBm 835.903044154 MHz

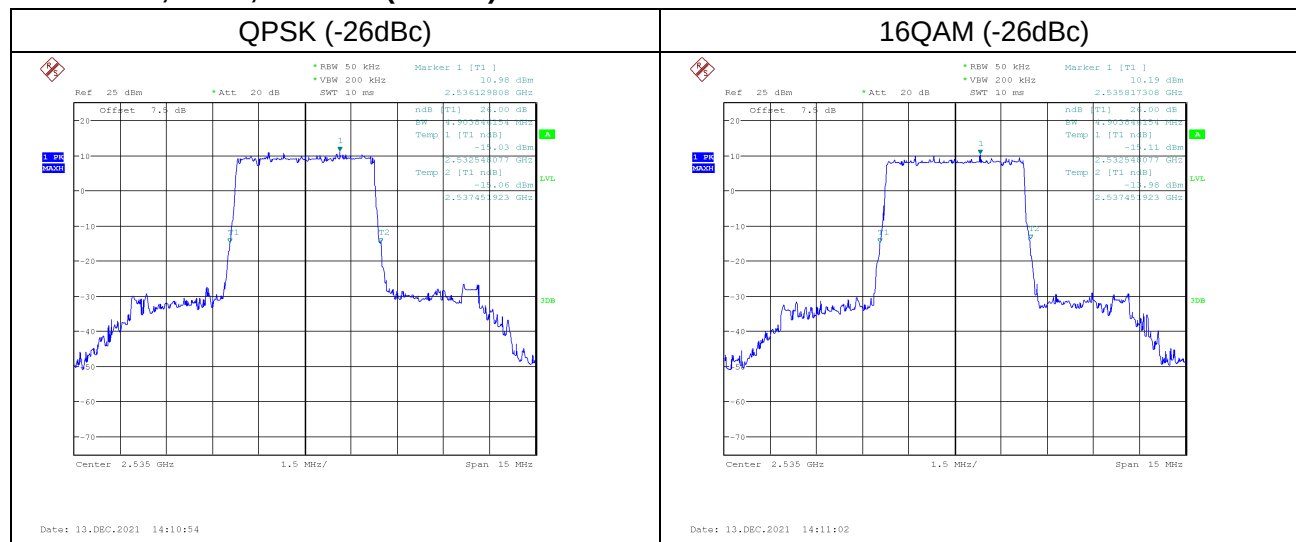
Center 836.5 MHz 1.5 MHz/ Span 15 MHz



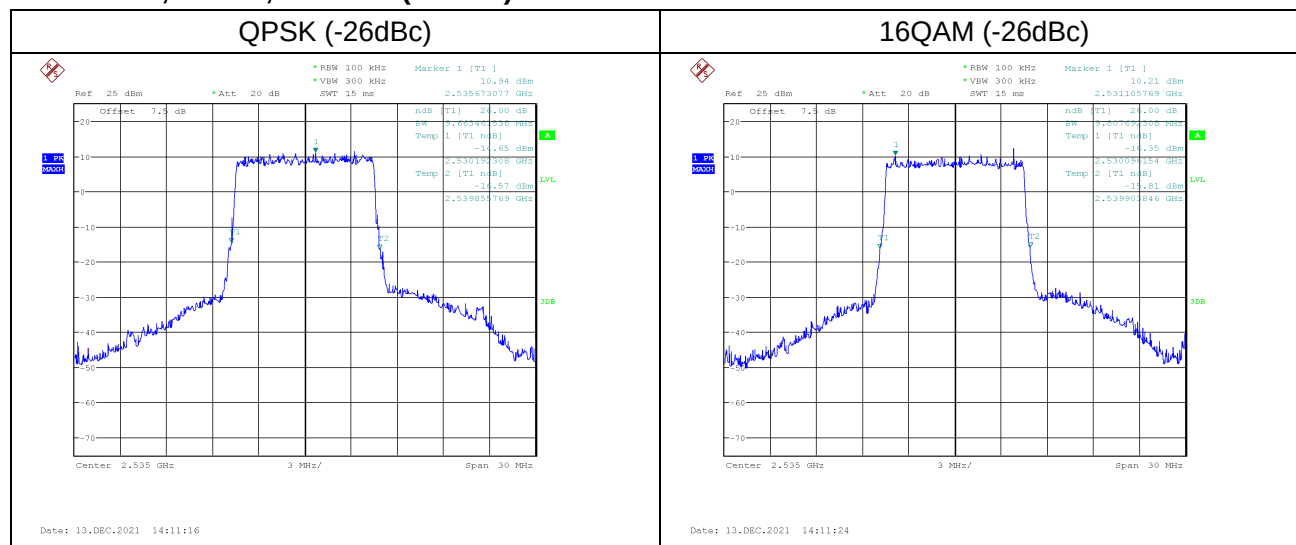
LTE band 5, 10MHz, 836.5MHz(-26dBc)



LTE band 7, 5MHz, 2535MHz(-26dBc)

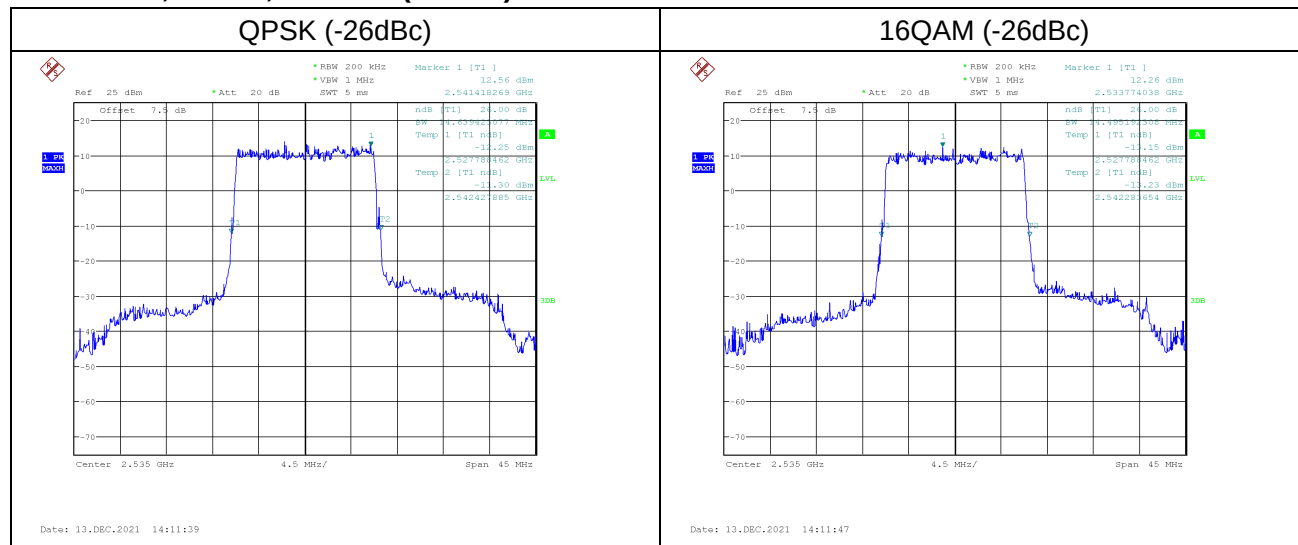


LTE band 7, 10MHz, 2535MHz(-26dBc)

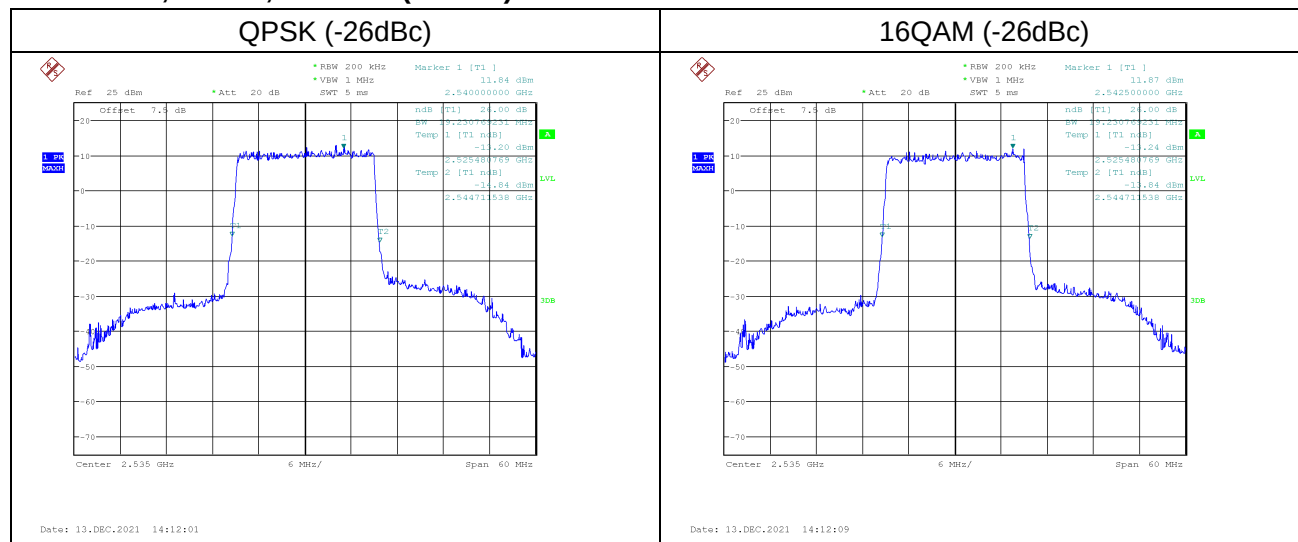




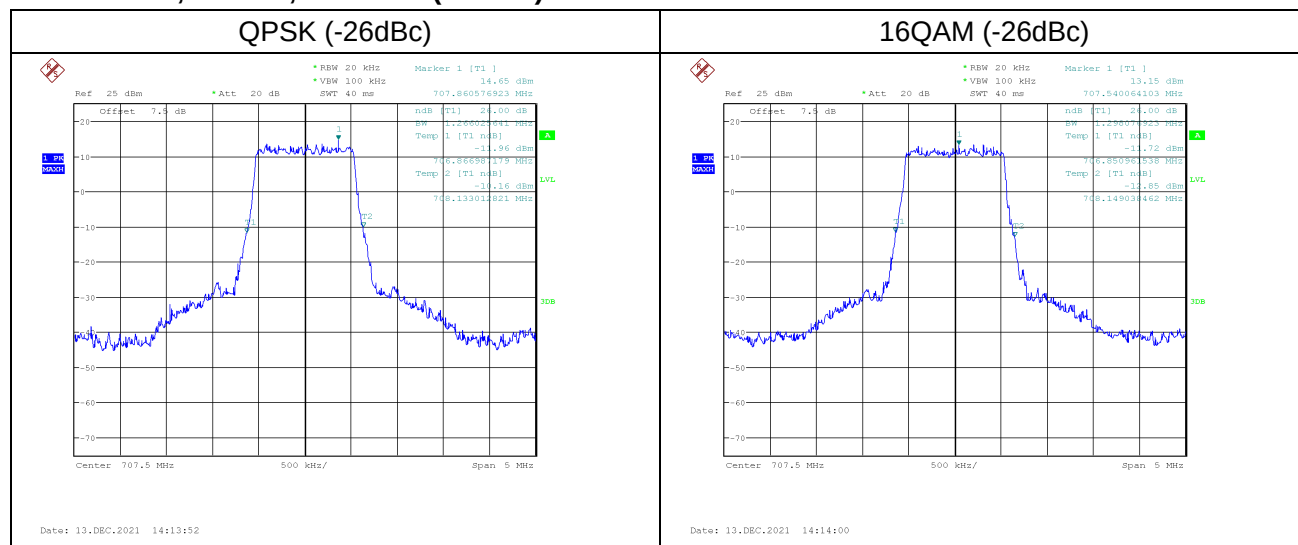
LTE band 7, 15MHz, 2535MHz(-26dBc)



LTE band 7, 20MHz, 2535MHz(-26dBc)

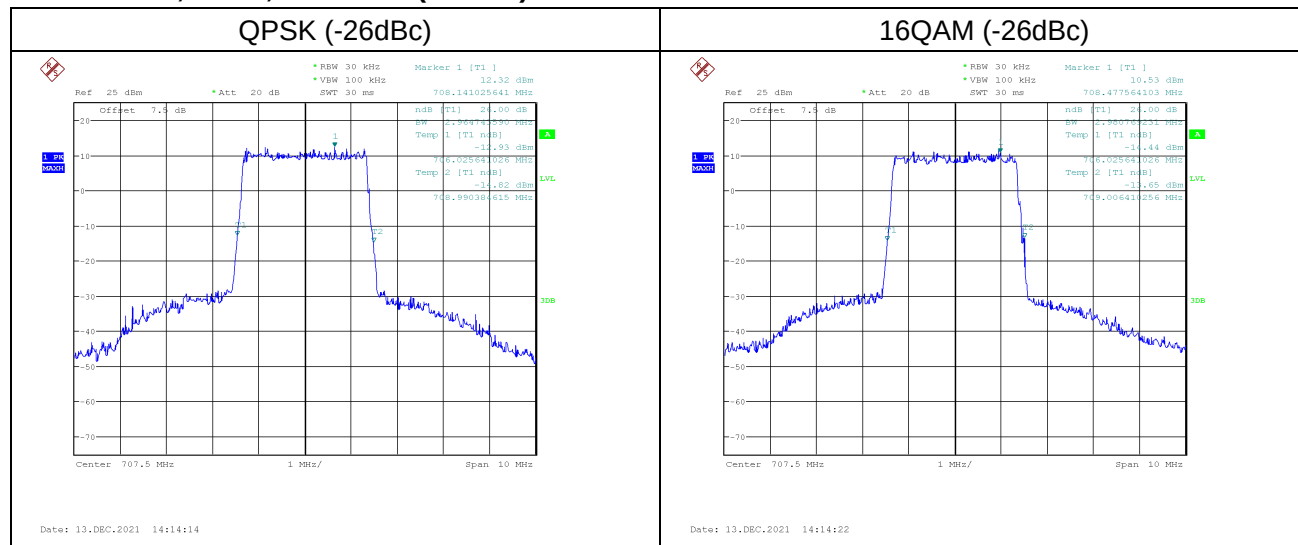


LTE band 12, 1.4MHz, 707.5MHz(-26dBc)

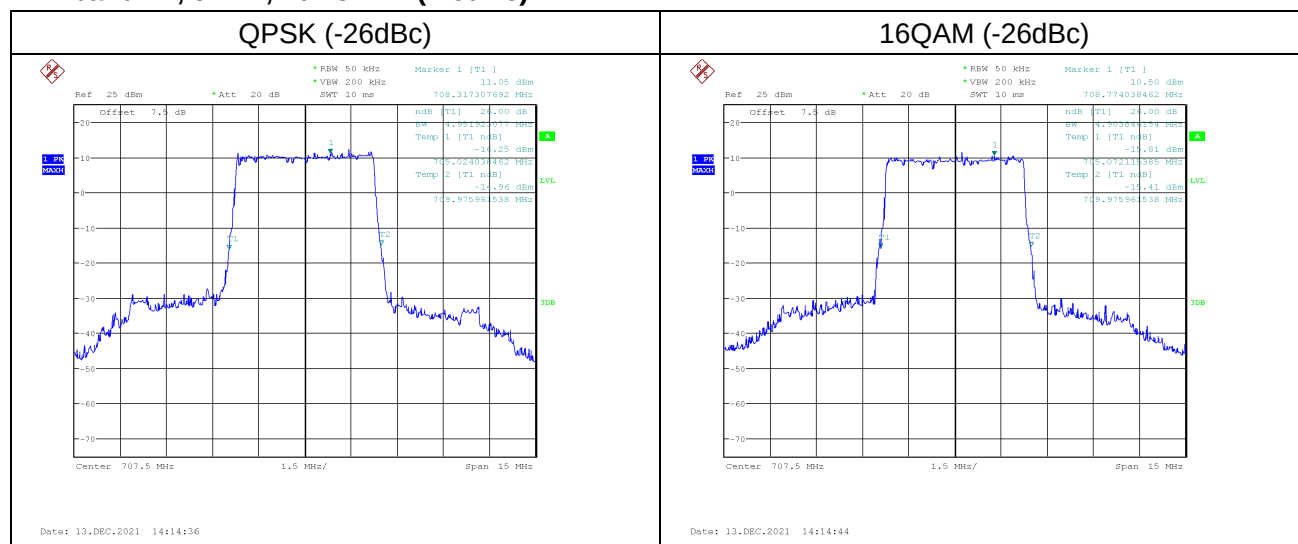




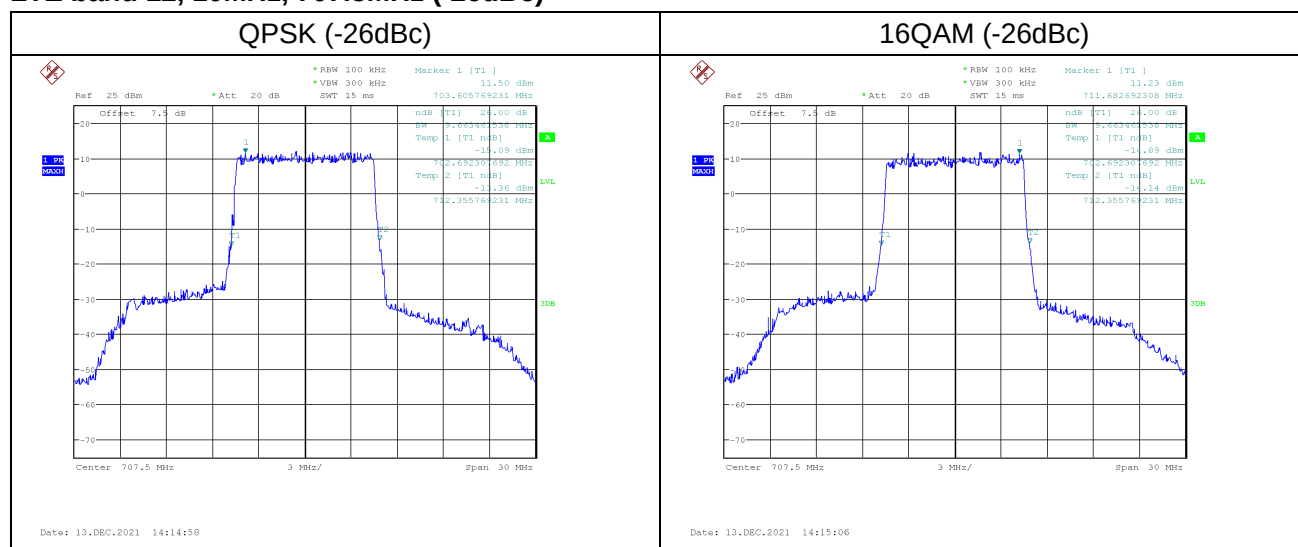
LTE band 12, 3MHz, 707.5MHz (-26dBc)



LTE band 12, 5MHz, 707.5MHz (-26dBc)

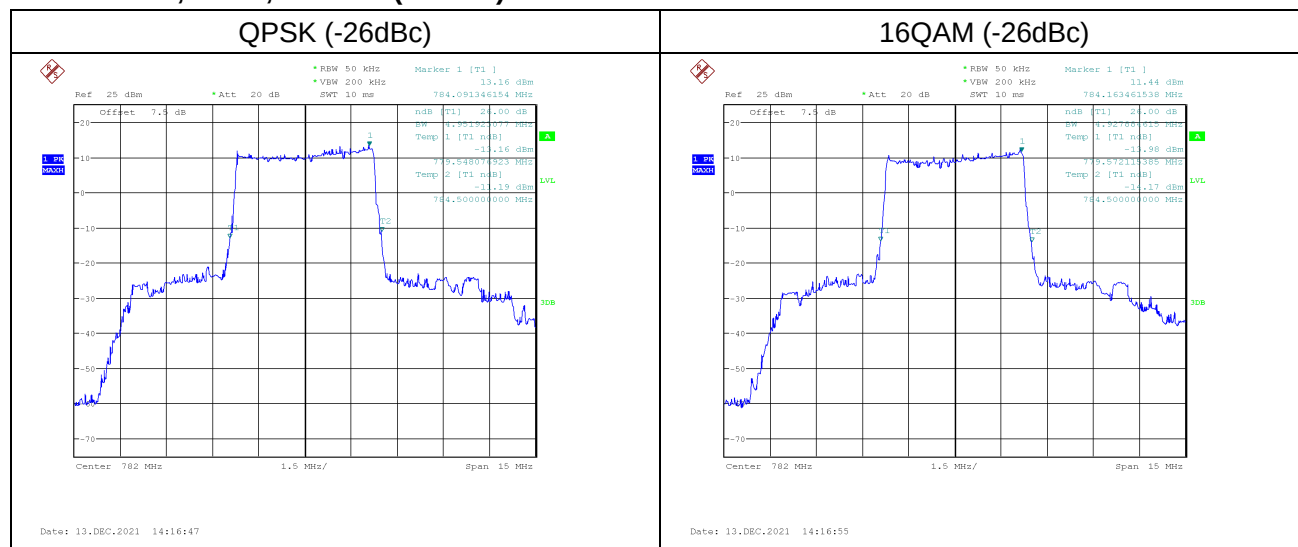


LTE band 12, 10MHz, 707.5MHz (-26dBc)

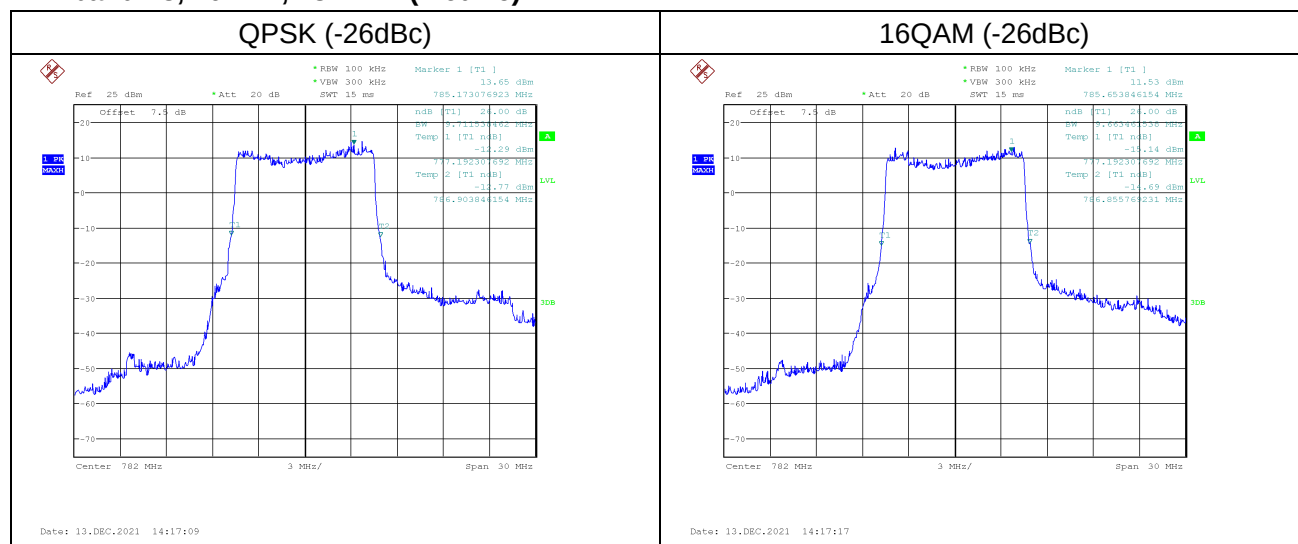




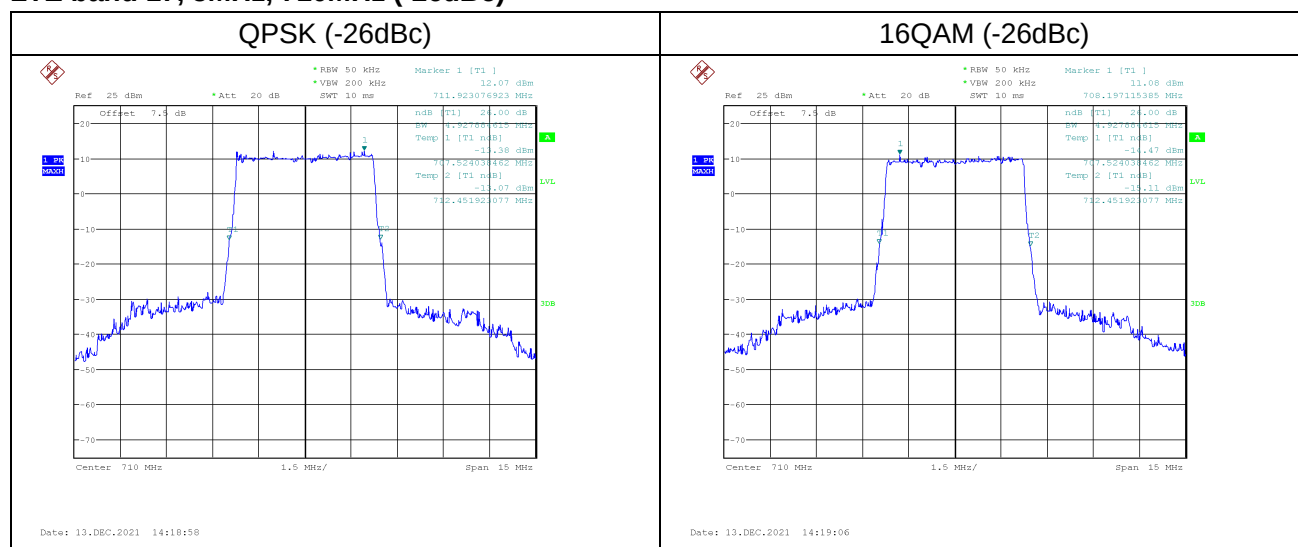
LTE band 13, 5MHz, 782MHz (-26dBc)



LTE band 13, 10MHz, 782MHz (-26dBc)

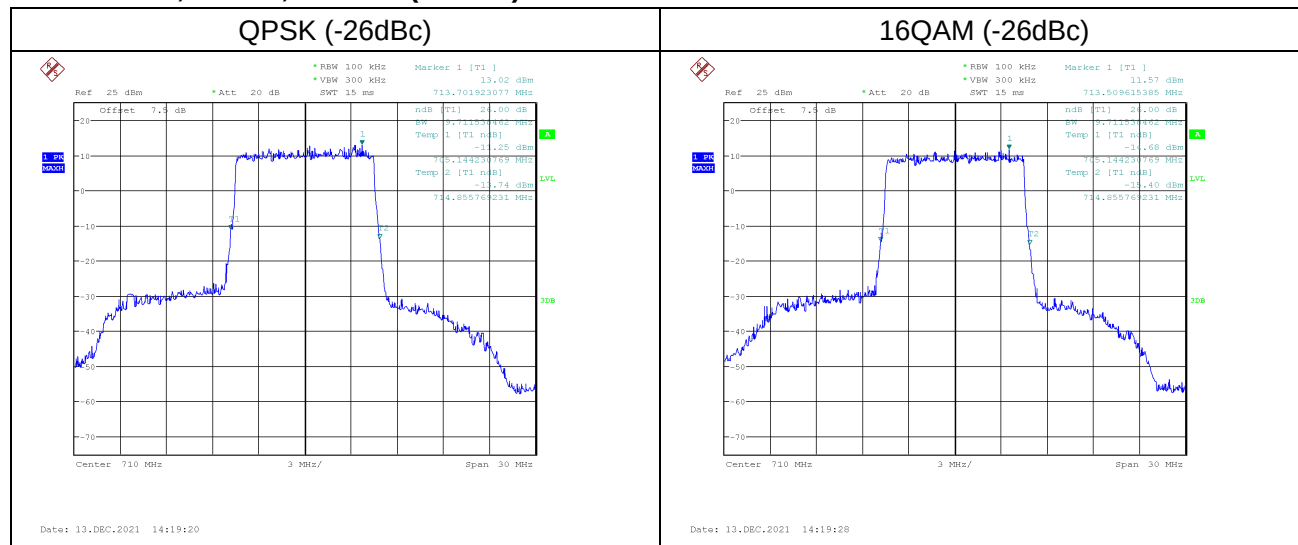


LTE band 17, 5MHz, 710MHz (-26dBc)

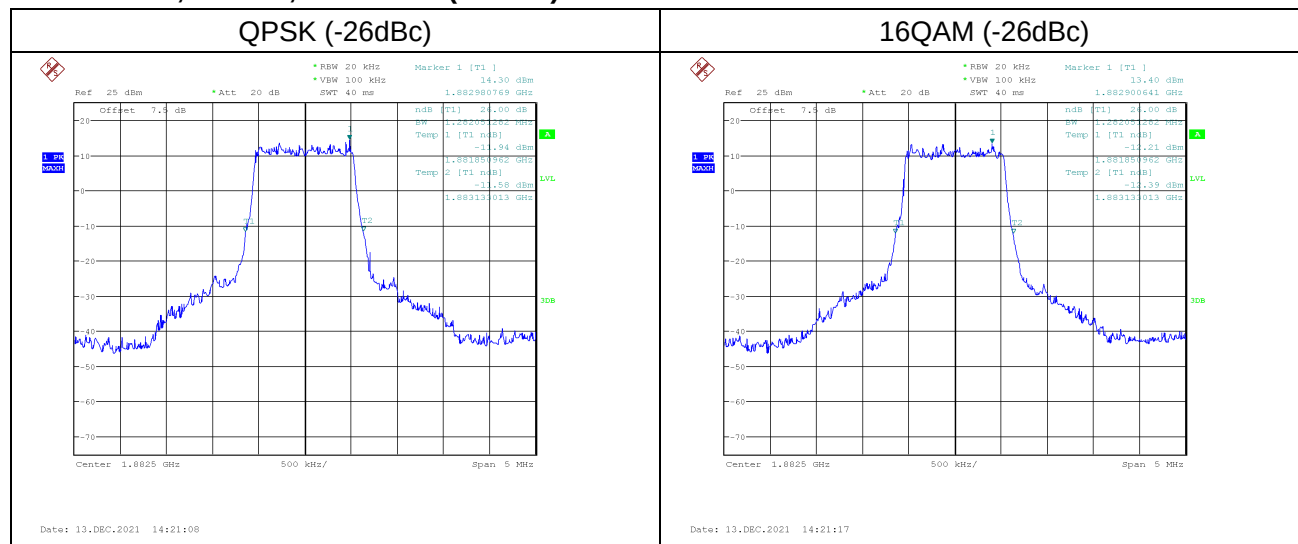




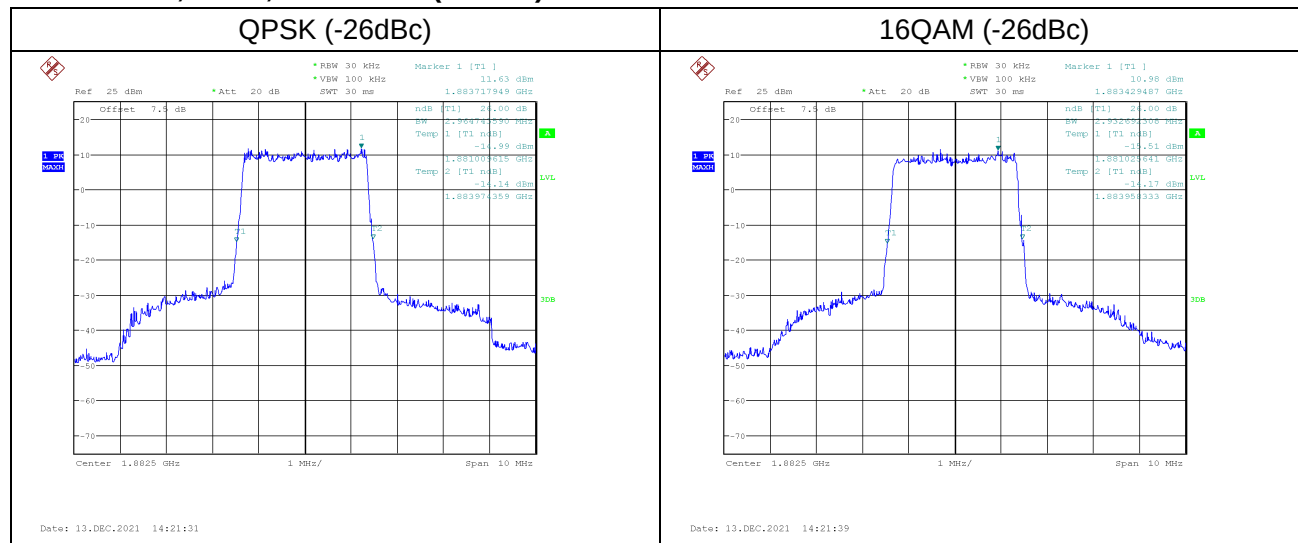
LTE band 17, 10MHz, 710MHz (-26dBc)



LTE band 25, 1.4MHz, 1882.5MHz(-26dBc)

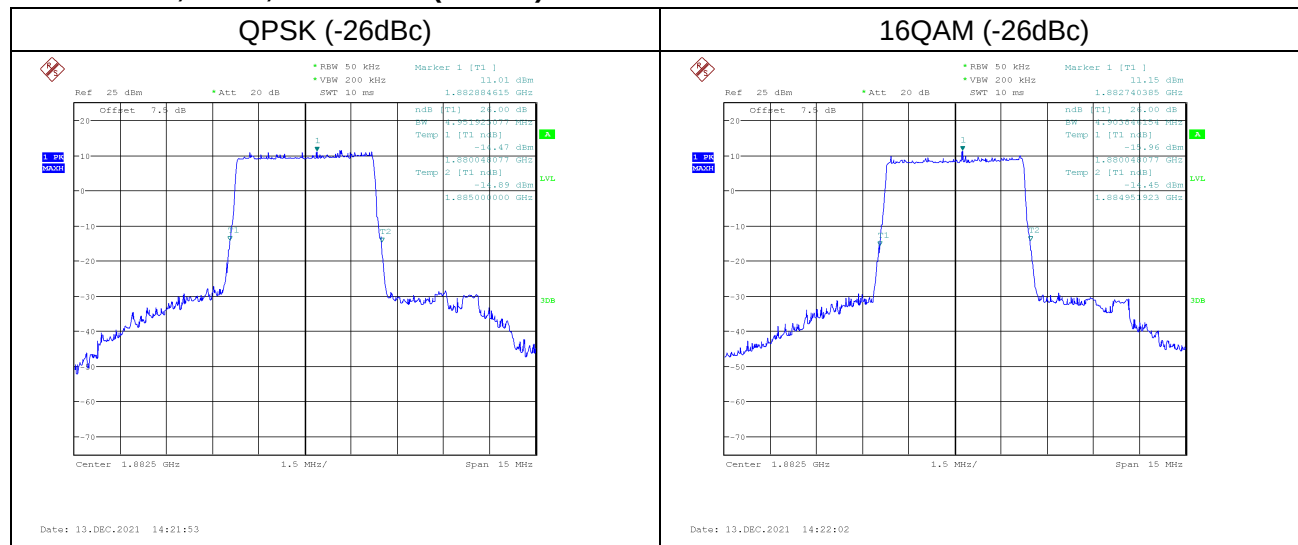


LTE band 25, 3MHz, 1882.5MHz (-26dBc)

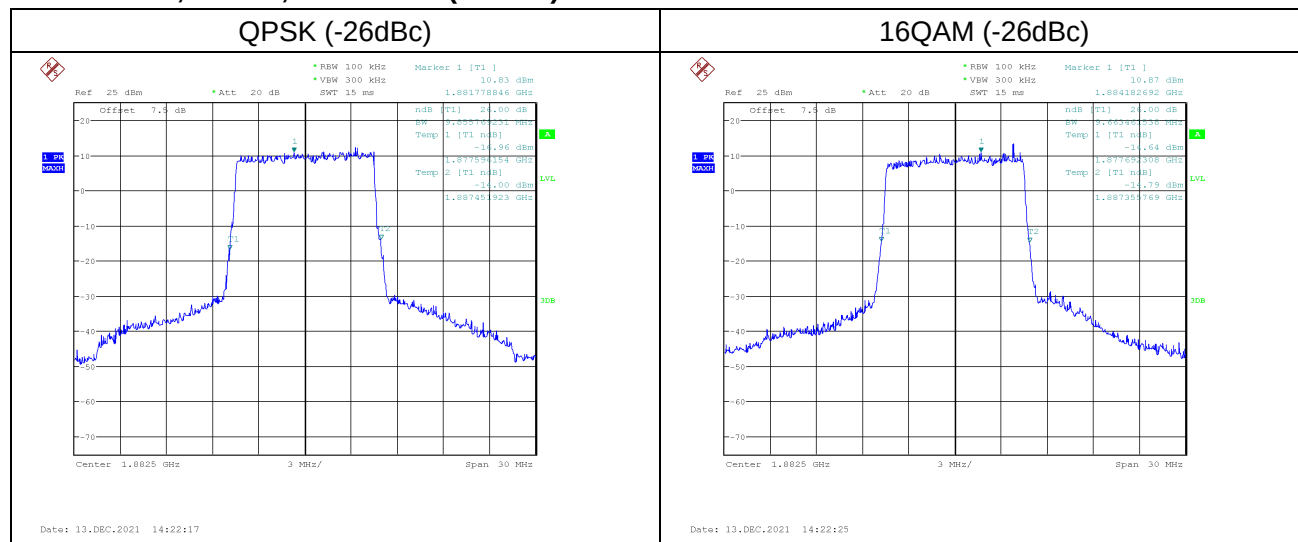




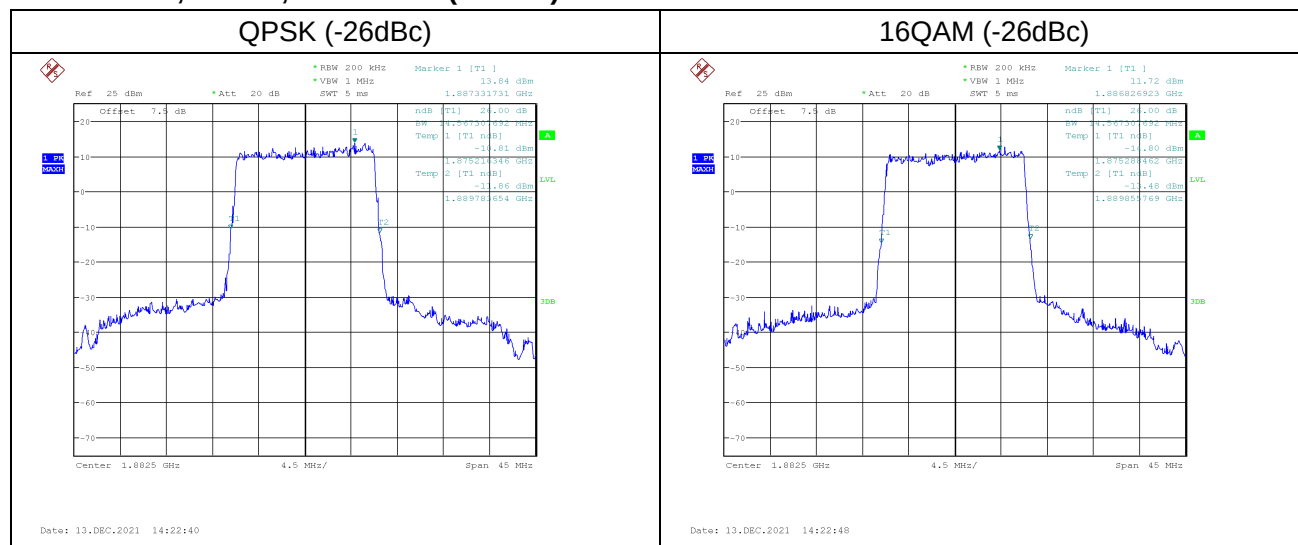
LTE band 25, 5MHz, 1882.5MHz (-26dBc)

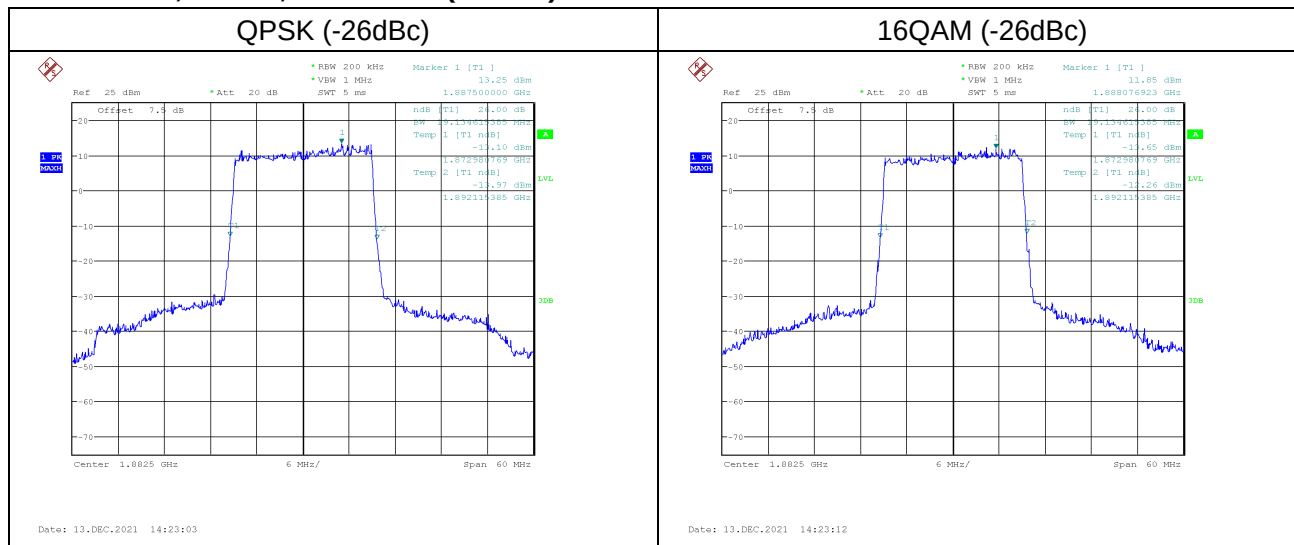


LTE band 25, 10MHz, 1882.5MHz (-26dBc)

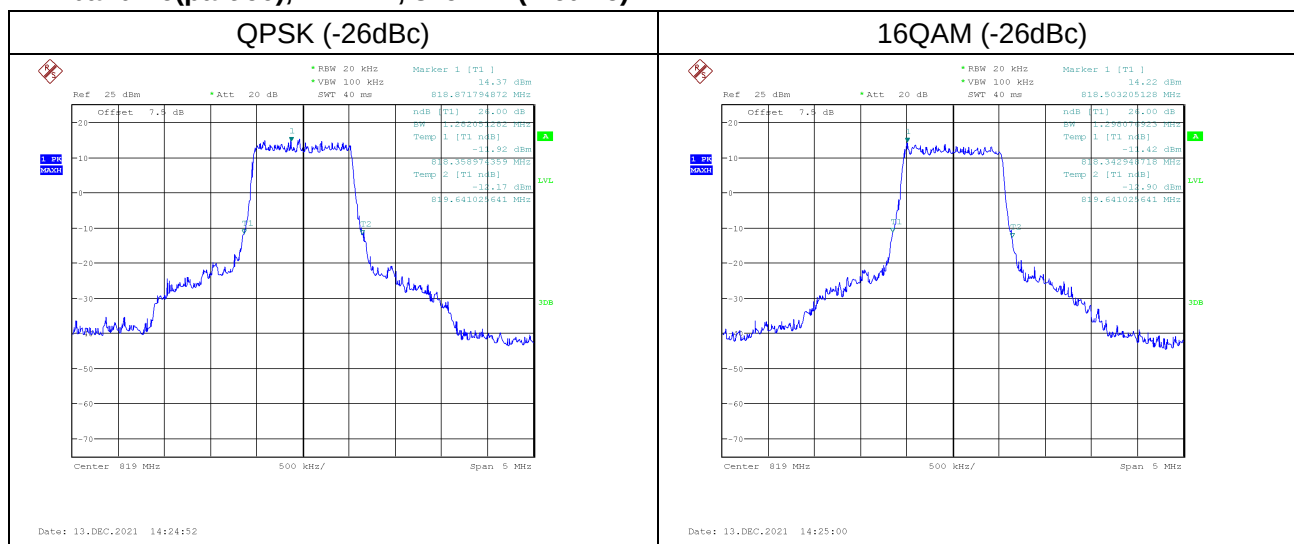


LTE band 25, 15MHz, 1882.5MHz (-26dBc)

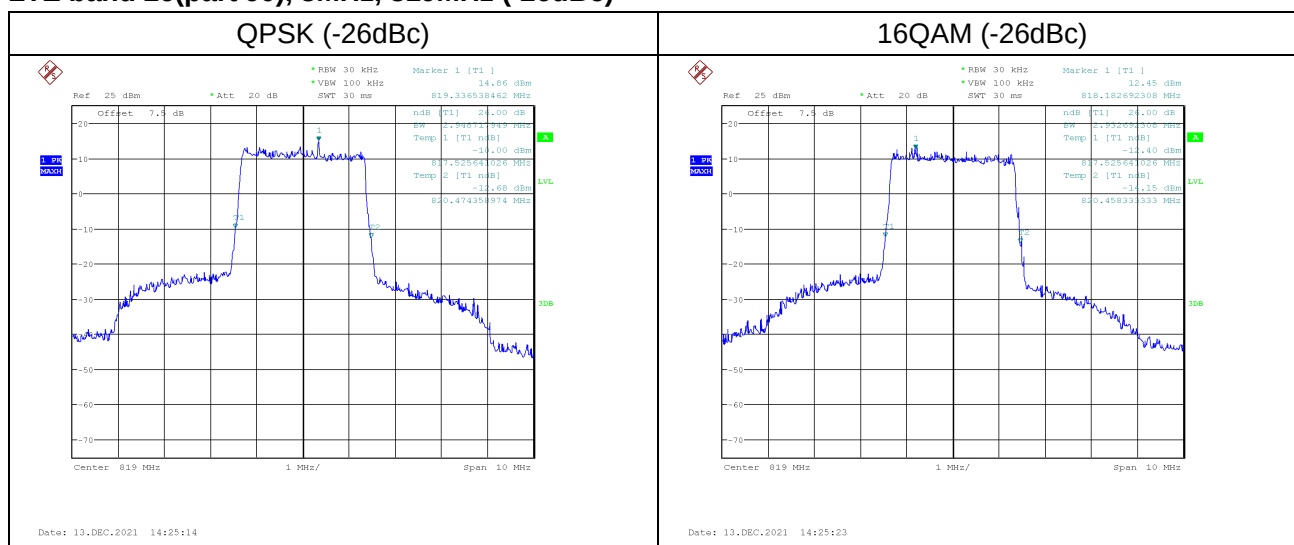




LTE band 26(part 90), 1.4MHz, 819MHz(-26dBc)



LTE band 26(part 90), 3MHz, 819MHz (-26dBc)



QPSK (-26dBc)

Ref 25 dBm

Att 20 dB

RBW 50 KHz

VBW 200 KHz

SWT 10 ms

Marker 1 [T1]

13.17 dBm

816.90853846 MHz

Offset 7.5 dB

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100

nB [T1]

24.00 dB

SW 4.551521077 MHz

Temp 1 [T1 nB]

-14.23 dBm

816.509091000 MHz

Temp 2 [T1 nB]

-11.87 dBm

821.451521077 MHz

1.99

MAX

Center 819 MHz

1.5 MHz/

Span 15 MHz

Date: 13.DEC.2021 14:25:37

16QAM (-26dBc)

Ref 25 dBm

Att 20 dB

RBW 50 KHz

VBW 200 KHz

SWT 10 ms

Marker 1 [T1]

12.62 dBm

816.836538462 MHz

Offset 7.5 dB

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nB [T1]

24.00 dB

SW 4.551521077 MHz

Temp 1 [T1 nB]

-14.07 dBm

816.524033462 MHz

Temp 2 [T1 nB]

-11.91 dBm

821.475961538 MHz

1.99

MAX

Center 819 MHz

1.5 MHz/

Span 15 MHz

Date: 13.DEC.2021 14:25:45

QPSK (-26dBc)

Ref 25 dBm Att 20 dB RBW 100 KHz Marker 1 [T1] 13.90 dBm
 VBW 300 KHz SWF 15 ms 815.730769231 MHz
 Offset 7.5 dB nB [T1] 24.00 dB BW 9.711534462 MHz
 Temp 1 [T1 nB] -14.15 dBm 814.096131844 MHz
 Temp 2 [T1 nB] -12.62 dBm 815.807692308 MHz

LVL 30B
 Center 819 MHz 3 MHz/ Span 30 MHz

16QAM (-26dBc)

Ref 25 dBm Att 20 dB RBW 100 KHz Marker 1 [T1] 12.07 dBm
 VBW 300 KHz SWF 15 ms 815.823076923 MHz
 Offset 7.5 dB nB [T1] 24.00 dB BW 9.711534462 MHz
 Temp 1 [T1 nB] -14.66 dBm 814.096131844 MHz
 Temp 2 [T1 nB] -11.53 dBm 815.807692308 MHz

LVL 30B
 Center 819 MHz 3 MHz/ Span 30 MHz

Date: 13.DEC.2021 14:26:00

Date: 13.DEC.2021 14:26:08

QPSK (-26dBc)

Ref 25 dBm Att 20 dB

RBW 50 KHz
VBW 200 KHz
SWT 10 ms

Marker 1 [T1] 10.21 dBm
2.591750000 GHz

Offset 7.5 dB

dB [T1] 24.00 dBm
BW 1.570000000 MHz
Temp 1 [T1.nB] -14.84 dBm
2.590549338 GHz
Temp 2 [T1.nB] -14.57 dBm
2.595451923 GHz

Center 2.593 GHz 1.5 MHz/ Span 15 MHz

Date: 13.DEC.2021 14:27:50

16QAM (-26dBc)

Ref 25 dBm Att 20 dB

RBW 50 KHz
VBW 200 KHz
SWT 10 ms

Marker 1 [T1] 9.56 dBm
2.591223154 GHz

Offset 7.5 dB

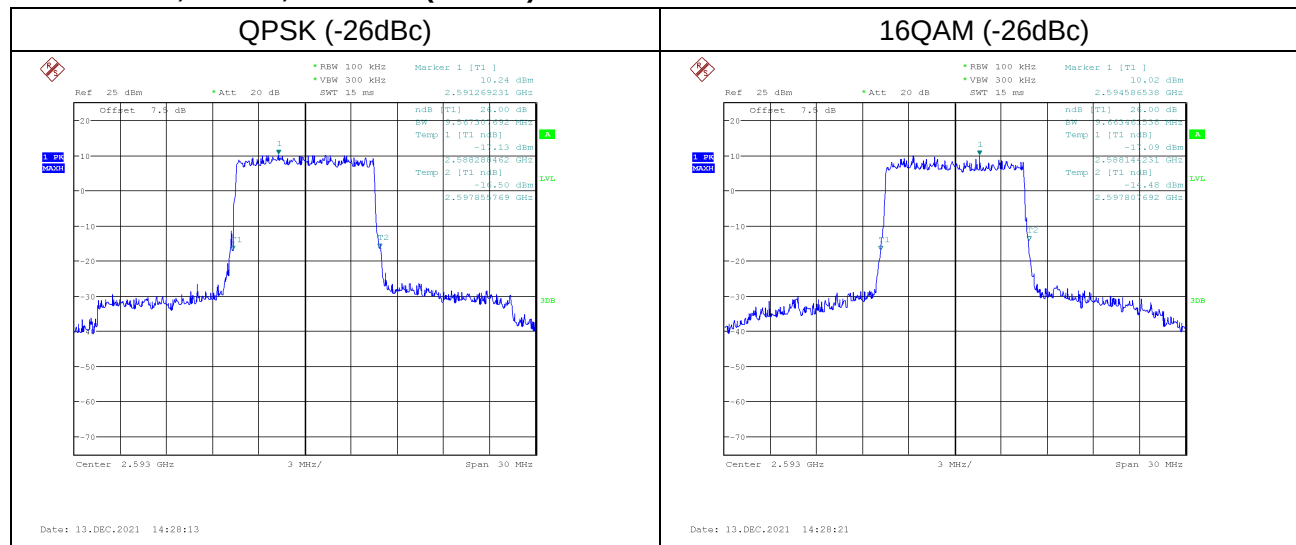
dB [T1] 24.00 dBm
BW 1.570000000 MHz
Temp 1 [T1.nB] -14.65 dBm
2.590549338 GHz
Temp 2 [T1.nB] -14.94 dBm
2.595451923 GHz

Center 2.593 GHz 1.5 MHz/ Span 15 MHz

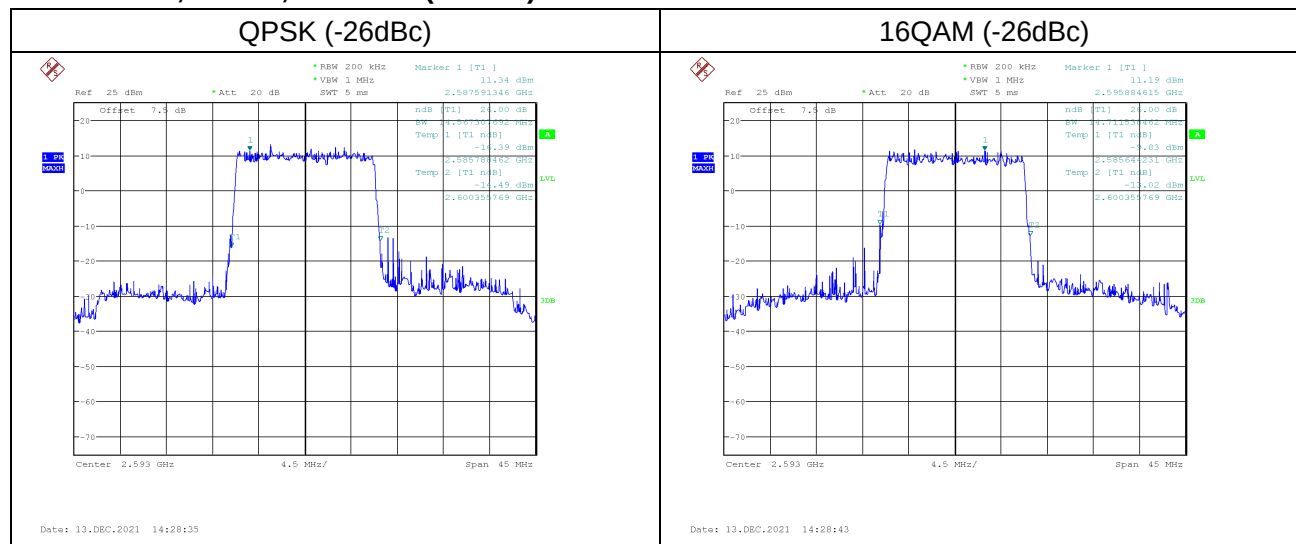
Date: 13.DEC.2021 14:27:58



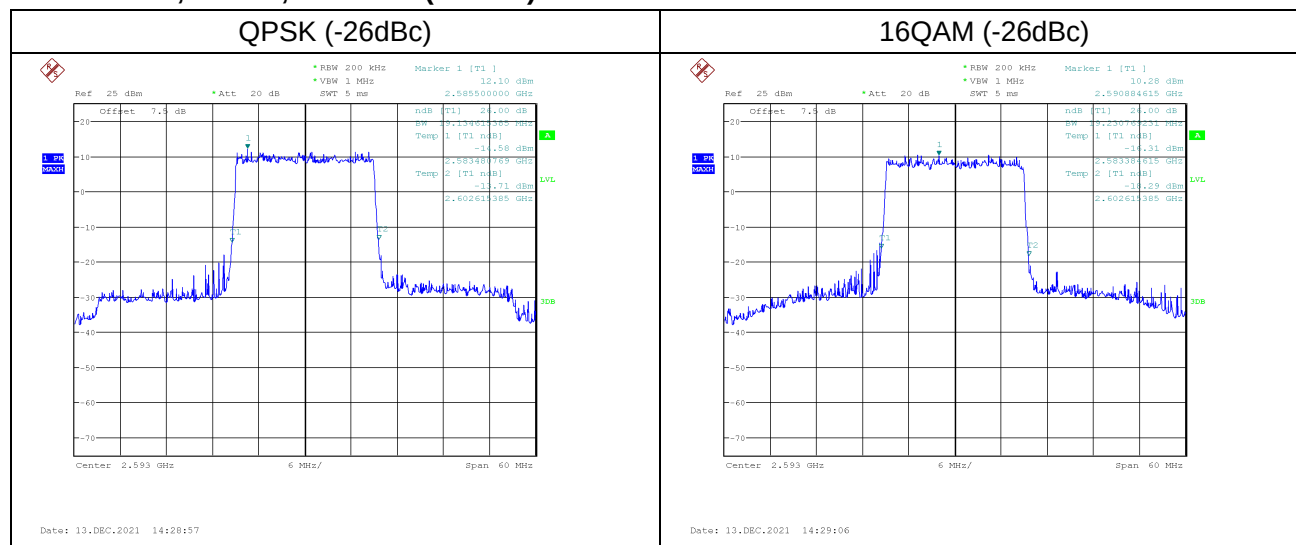
LTE band 41, 10MHz, 2593MHz (-26dBc)



LTE band 41, 15MHz, 2593MHz (-26dBc)



LTE band 41, 20MHz, 2593MHz (-26dBc)



6.6. Band Edge Compliance

Reference

CFR Part 2.1049, 22.917(b), 24.238, 27.53(g), 27.53(h), 27.53(m), 90.669

6.6.1 Measurement limit

Part 27.53(g), 27.53(h), 27.53(m) state that on any frequency outside frequency band of the US Cellular/PCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least $43 + 10 \log(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

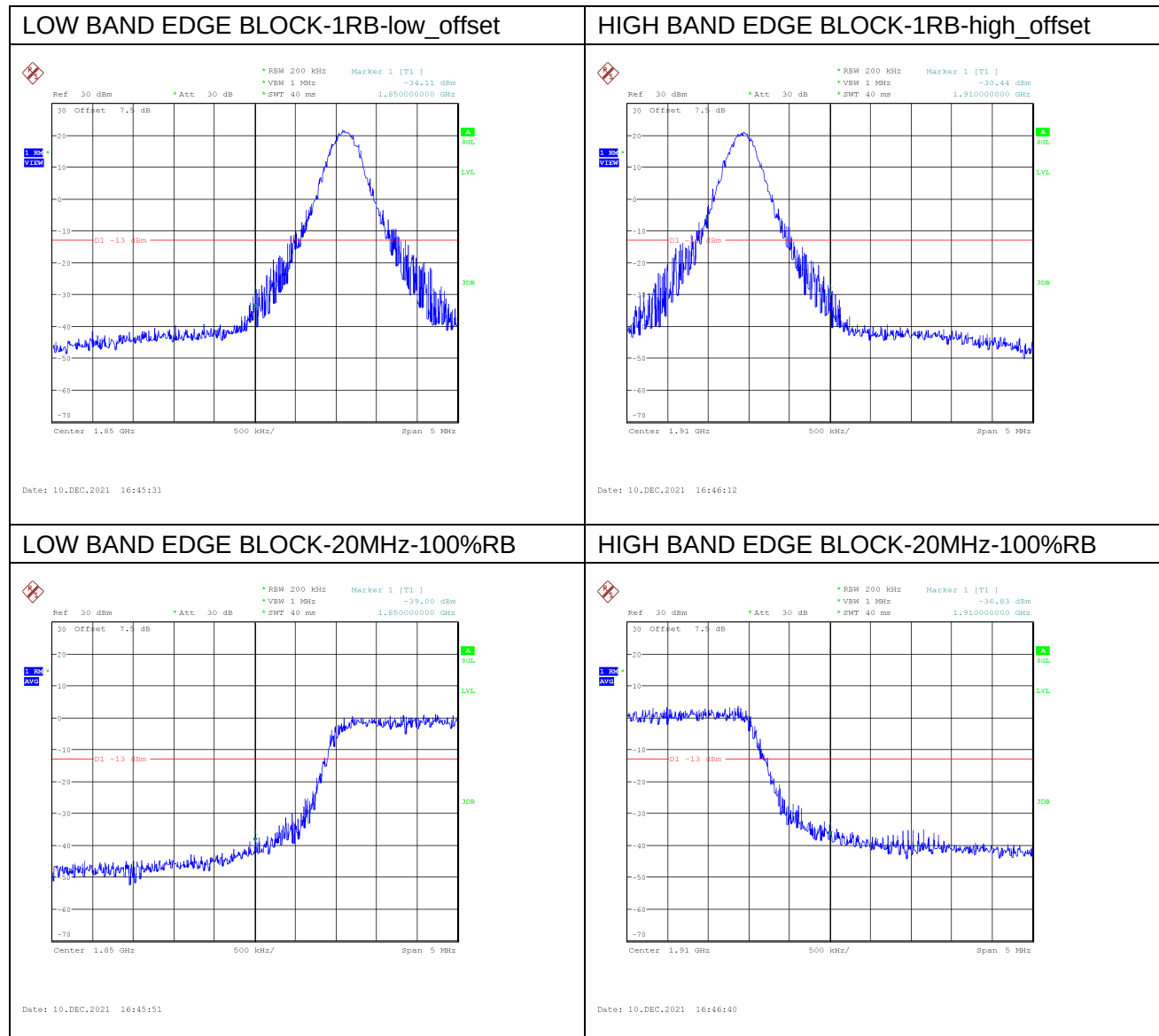
According to KDB 971168 6, a relaxation of the reference bandwidth is often provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is often implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

Part 27.53(m) states that 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 than $43 + 10 \log(P)$ 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.

6.6.2 Measurement result

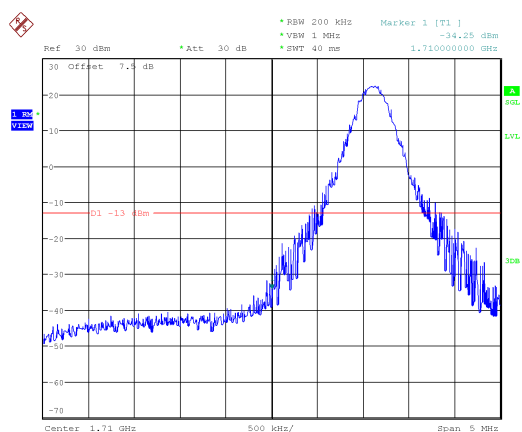
Only worst case result is given below

LTE band 2



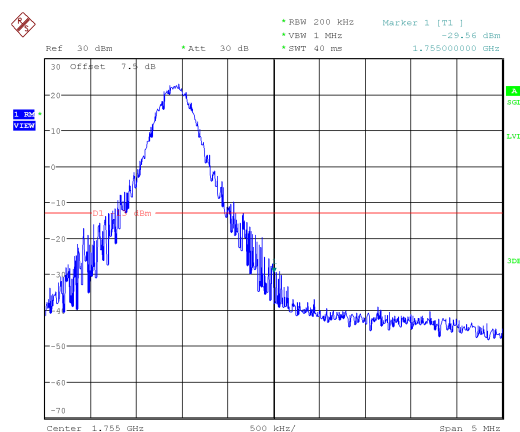
LTE band 4

LOW BAND EDGE BLOCK-1RB-low_offset



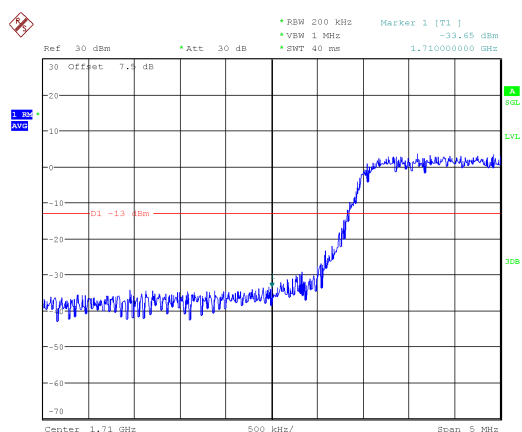
Date: 10.DEC.2021 16:47:24

HIGH BAND EDGE BLOCK-1RB-high_offset



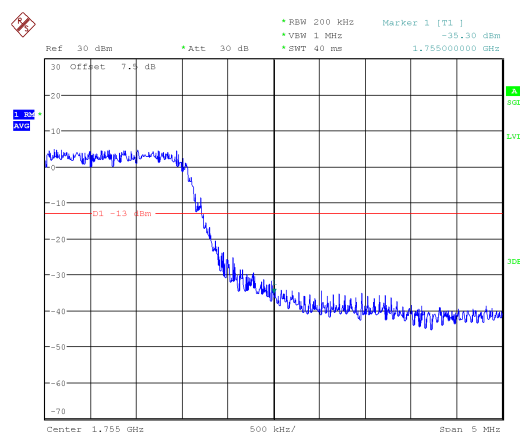
Date: 10.DEC.2021 16:48:05

LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 10.DEC.2021 16:47:44

HIGH BAND EDGE BLOCK-20MHz-100%RB

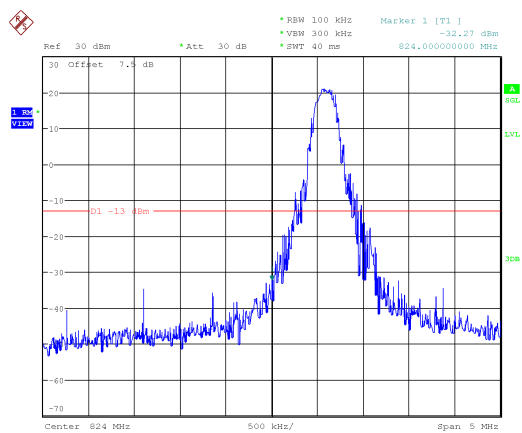


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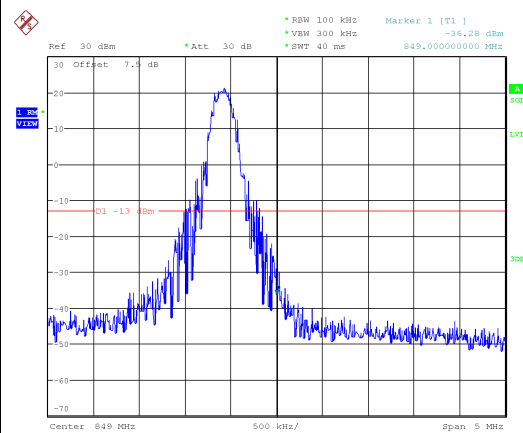
LTE band 5

LOW BAND EDGE BLOCK-1RB-low_offset



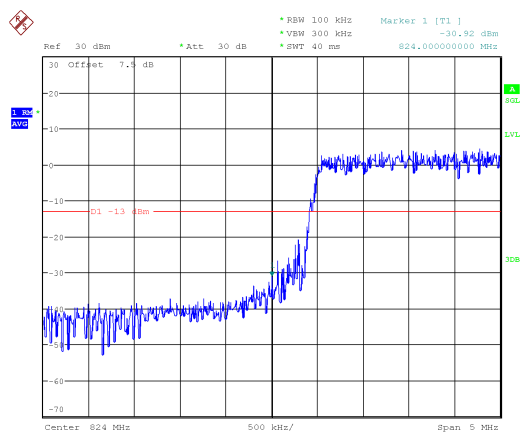
Date: 13.DEC.2021 09:43:32

HIGH BAND EDGE BLOCK-1RB-high_offset



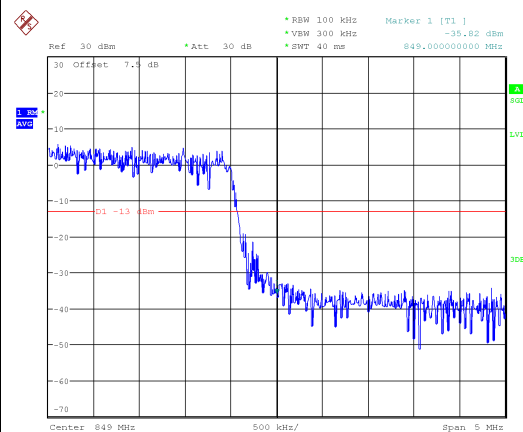
Date: 13.DEC.2021 09:44:13

LOW BAND EDGE BLOCK-20MHz-100%RB



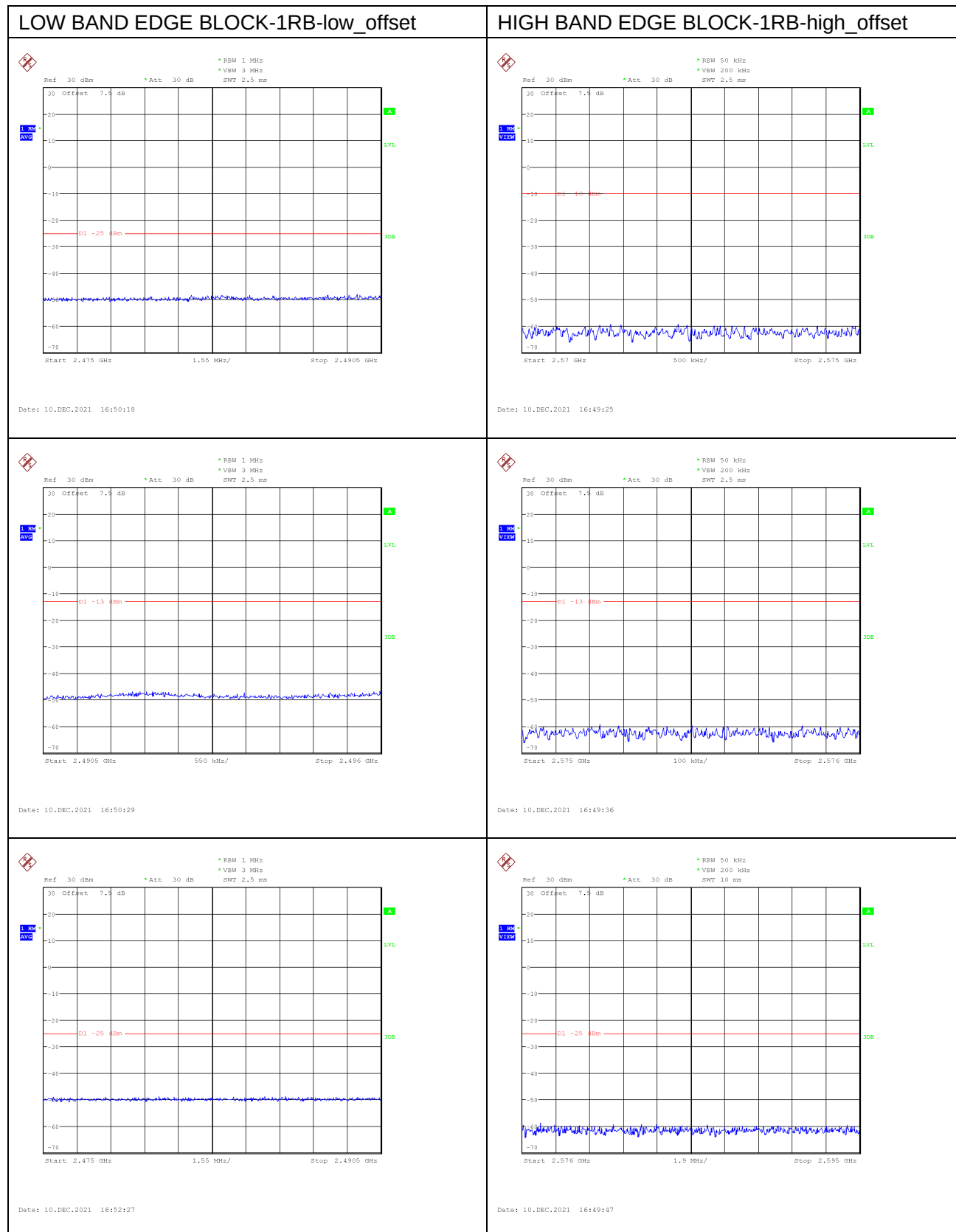
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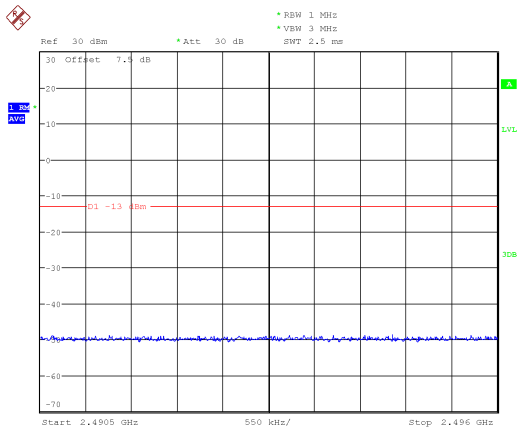
HIGH BAND EDGE BLOCK-20MHz-100%RB



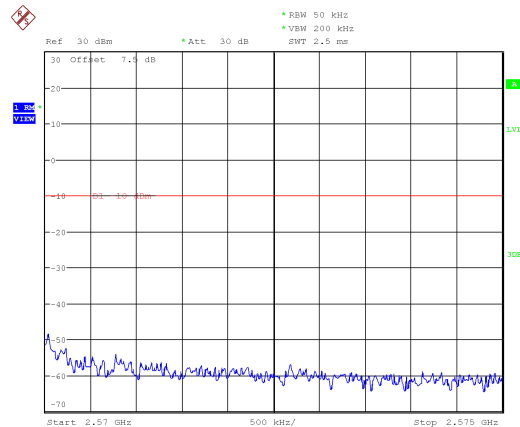
Date: 13.DEC.2021 09:44:42

LTE band 7

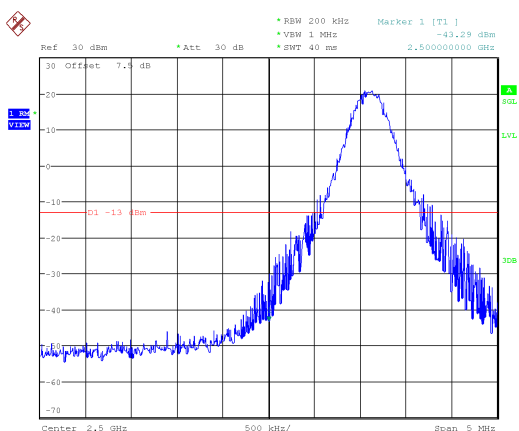




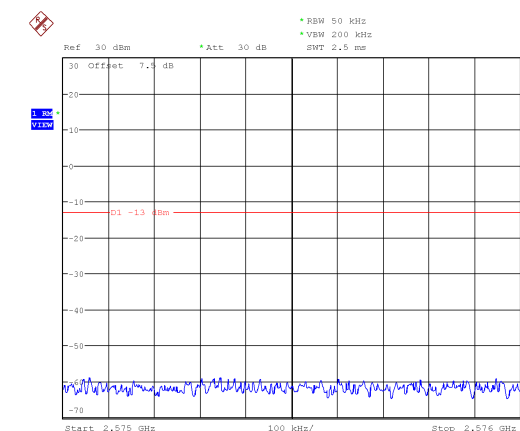
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Date: 10.DEC.2021 16:51:45

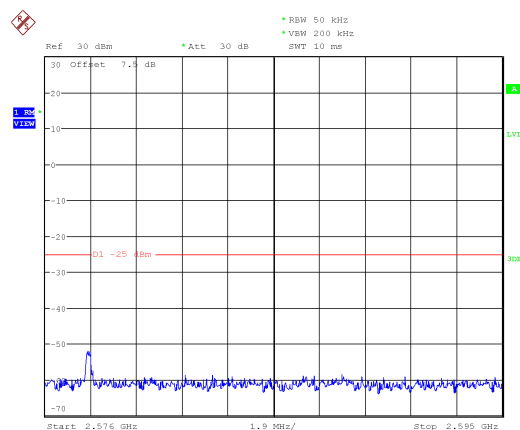


Date: 10.DEC.2021 16:50:08



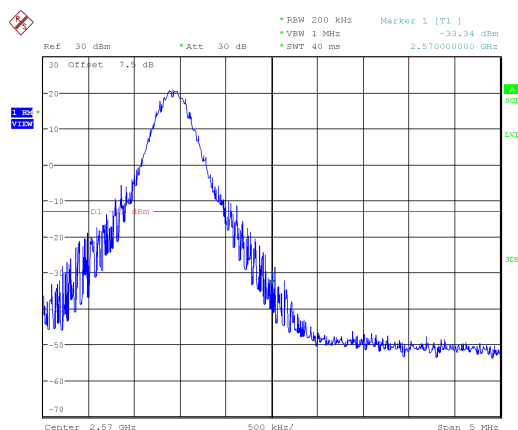
Date: 10.DEC.2021 16:51:57

/



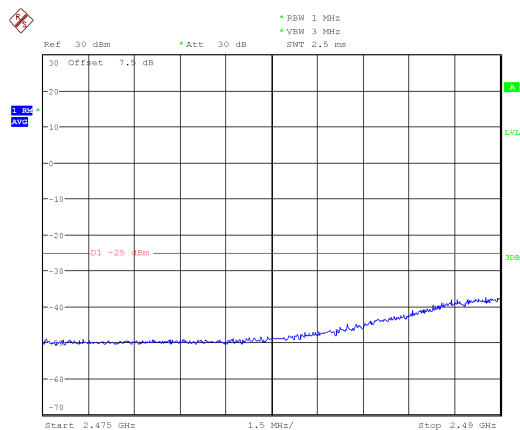
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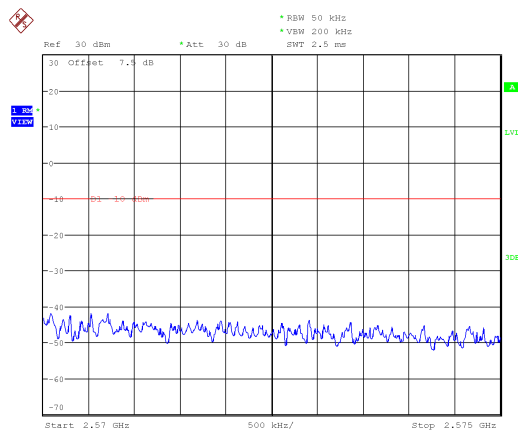
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LOW BAND EDGE BLOCK-20MHz-100%RB

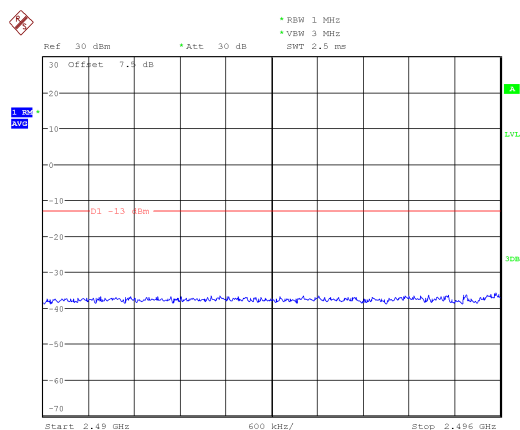


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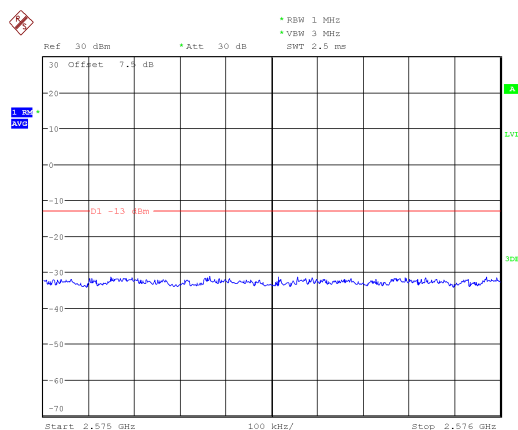
HIGH BAND EDGE BLOCK-20MHz-100%RB



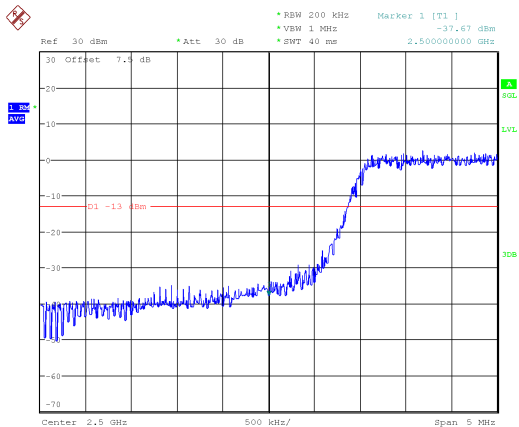
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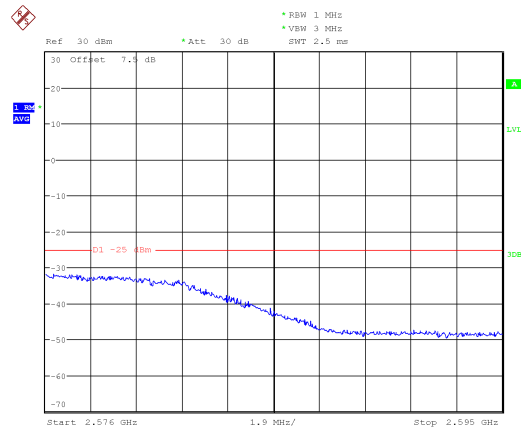
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Date: 10.DEC.2021 16:53:20

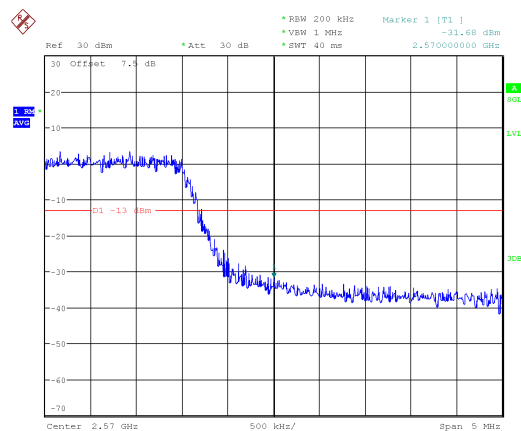


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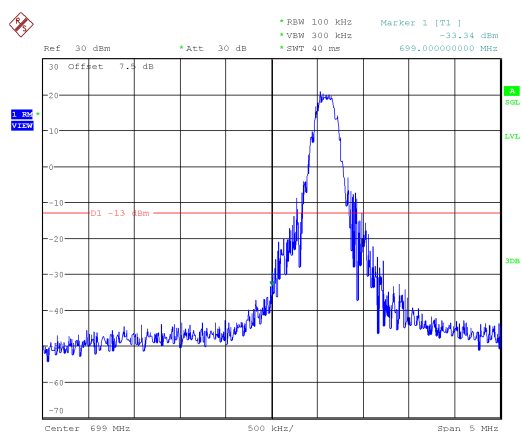
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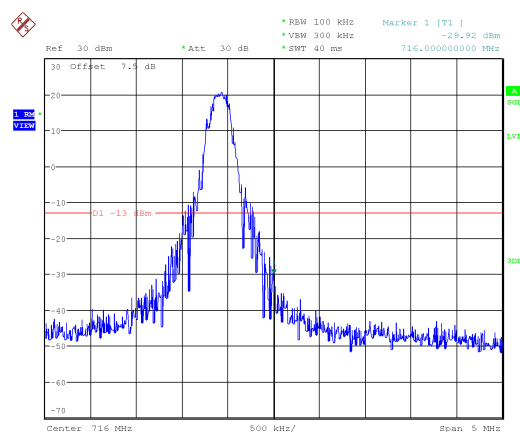
LTE band 12

LOW BAND EDGE BLOCK-1RB-low_offset



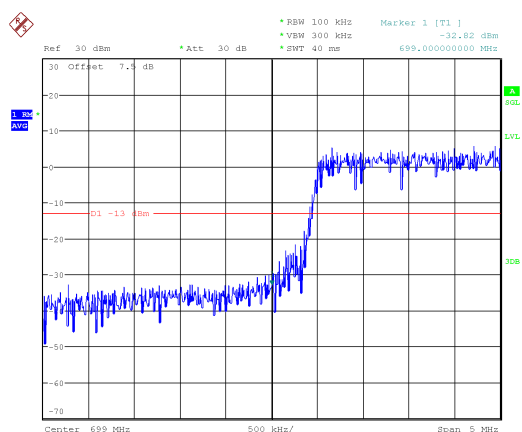
Date: 13.DEC.2021 09:46:35

HIGH BAND EDGE BLOCK-1RB-high_offset



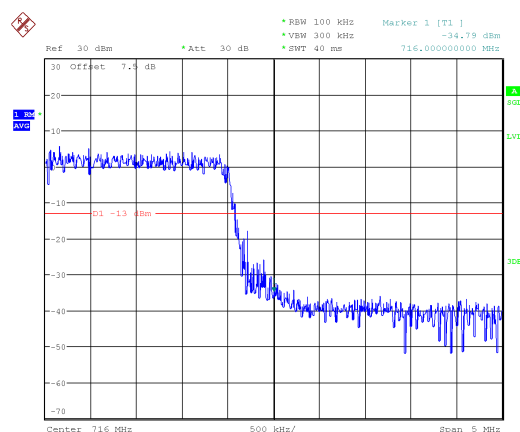
Date: 13.DEC.2021 09:47:16

LOW BAND EDGE BLOCK-20MHz-100%RB



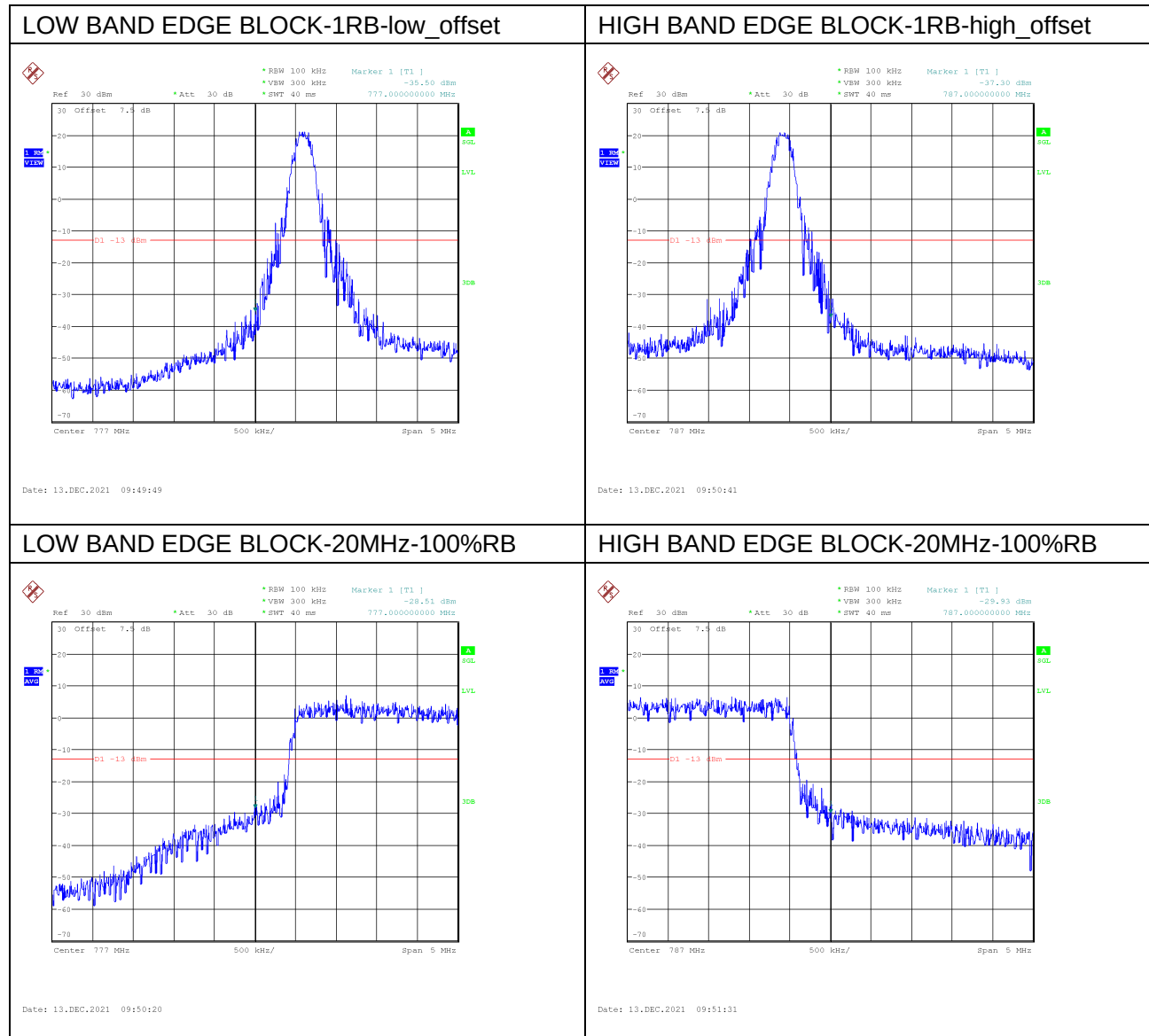
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HIGH BAND EDGE BLOCK-20MHz-100%RB

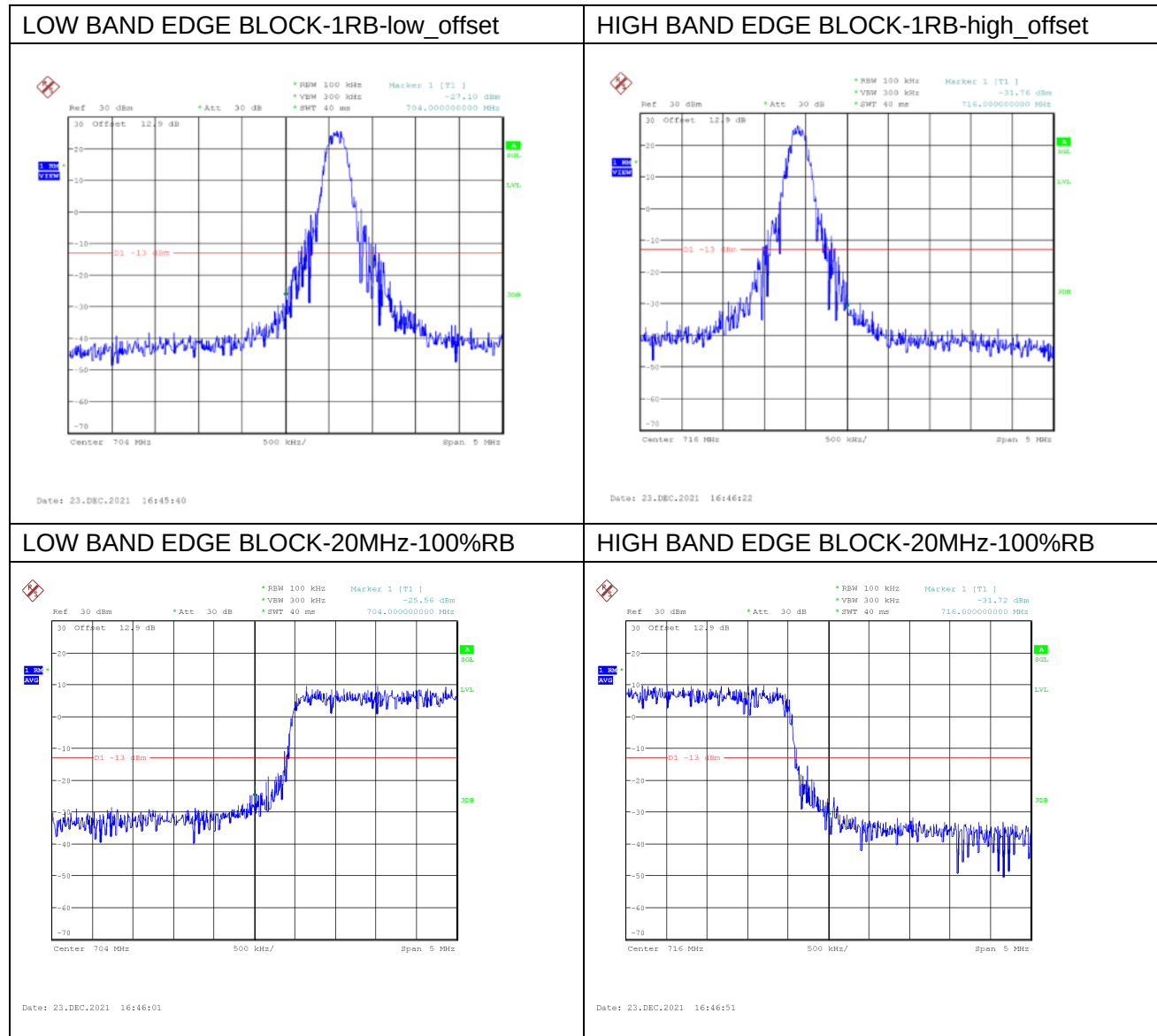


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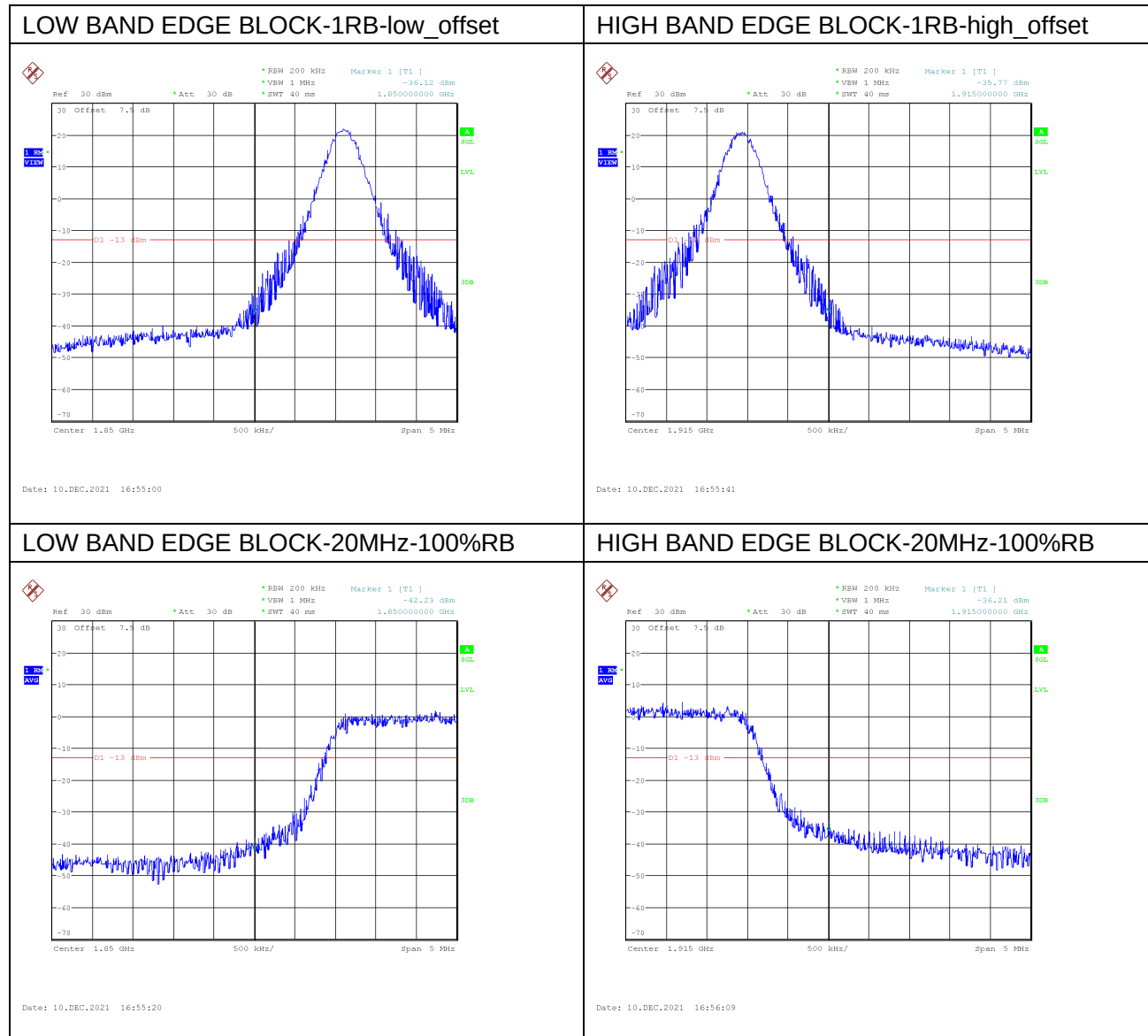
LTE band 13



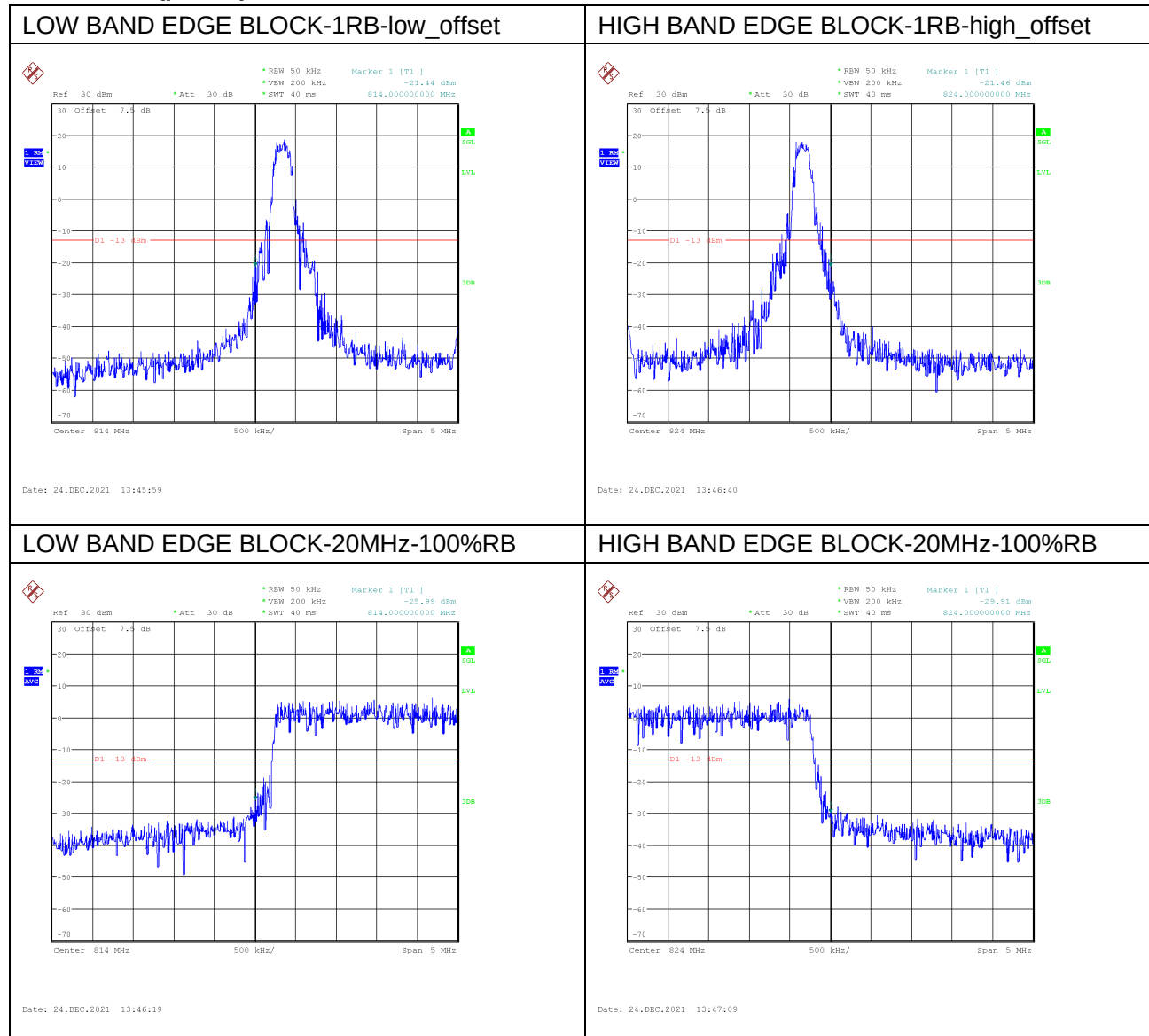
LTE band 17



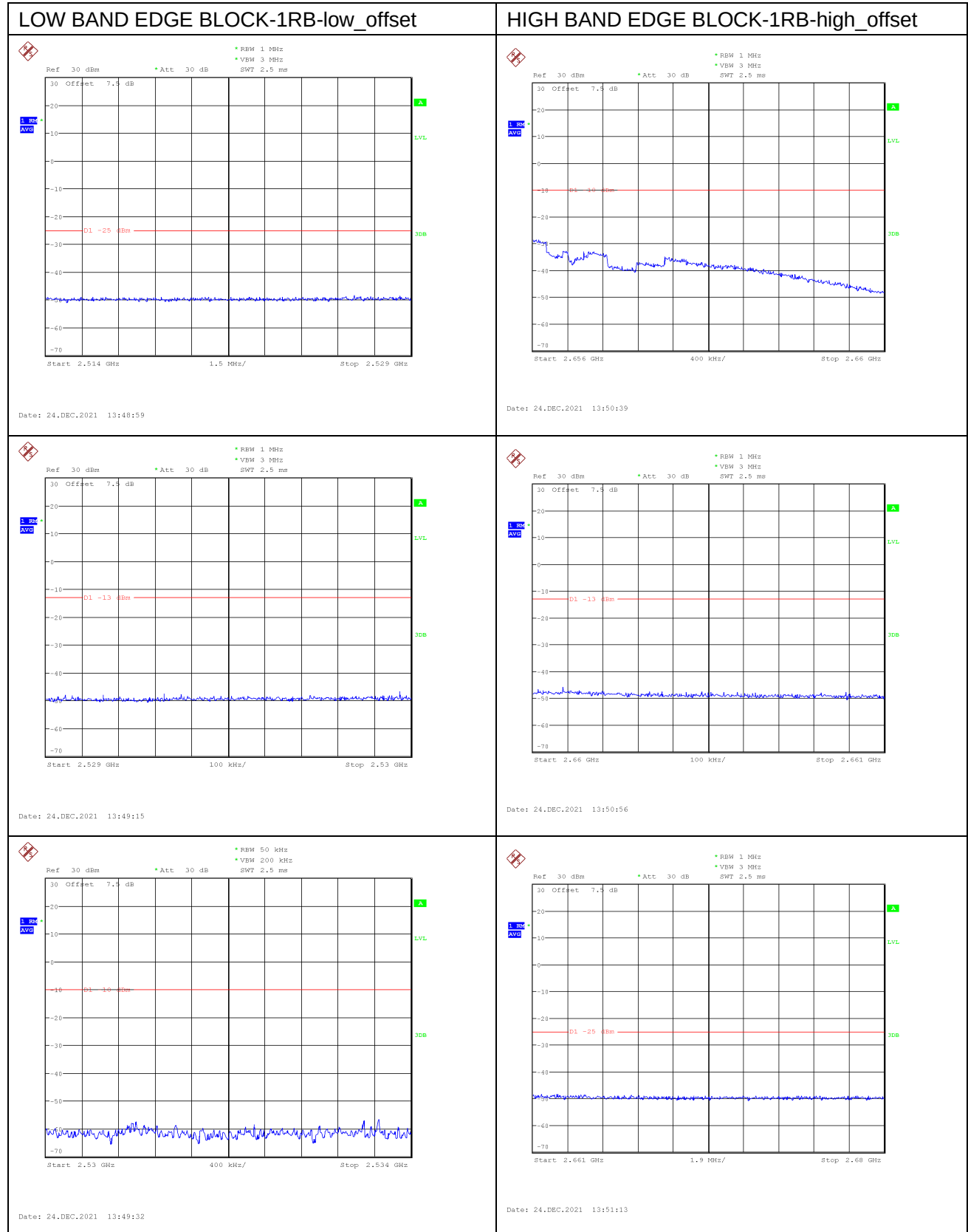
LTE band 25

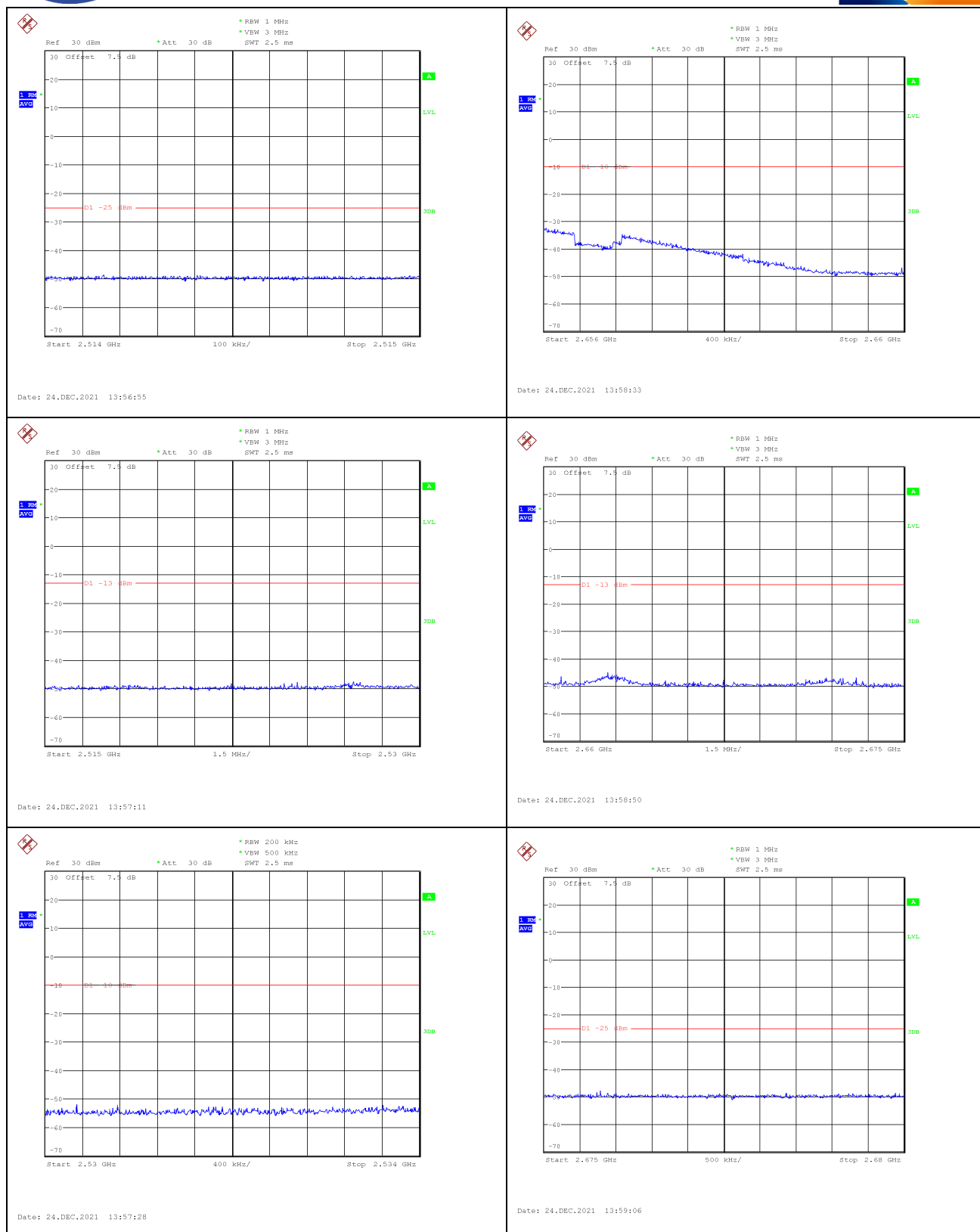


LTE band 26(part90)

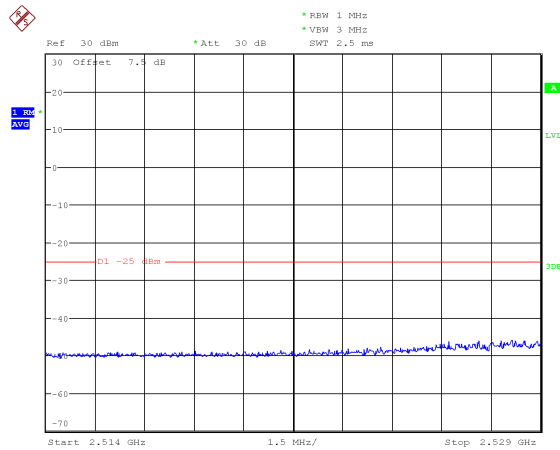


LTE band 41



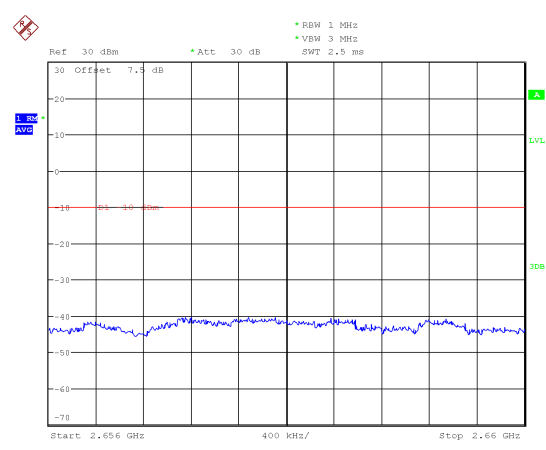


LOW BAND EDGE BLOCK-20MHz-100%RB

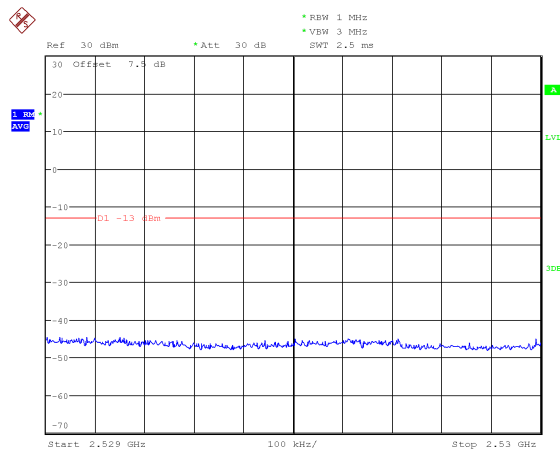


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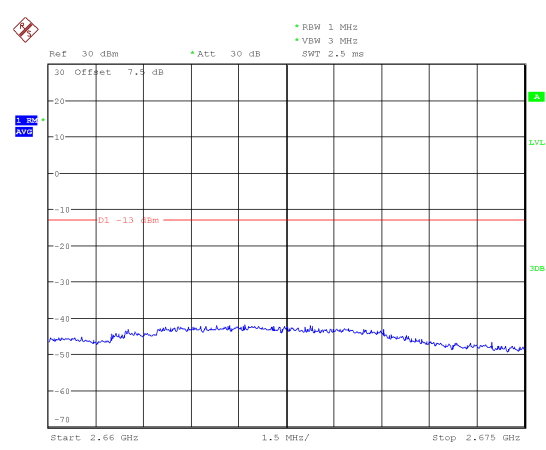
HIGH BAND EDGE BLOCK-20MHz-100%RB



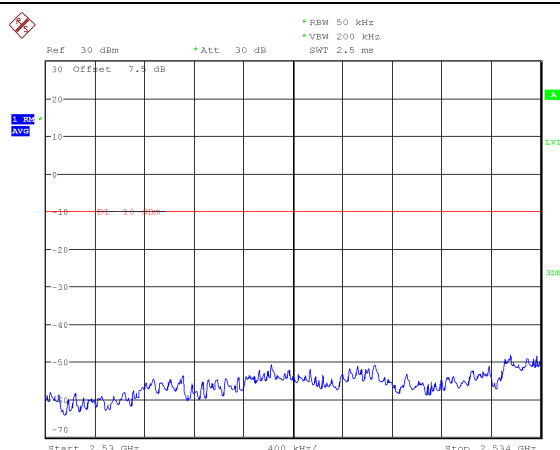
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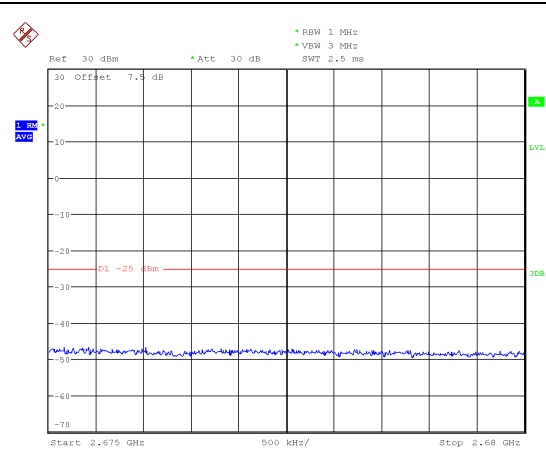
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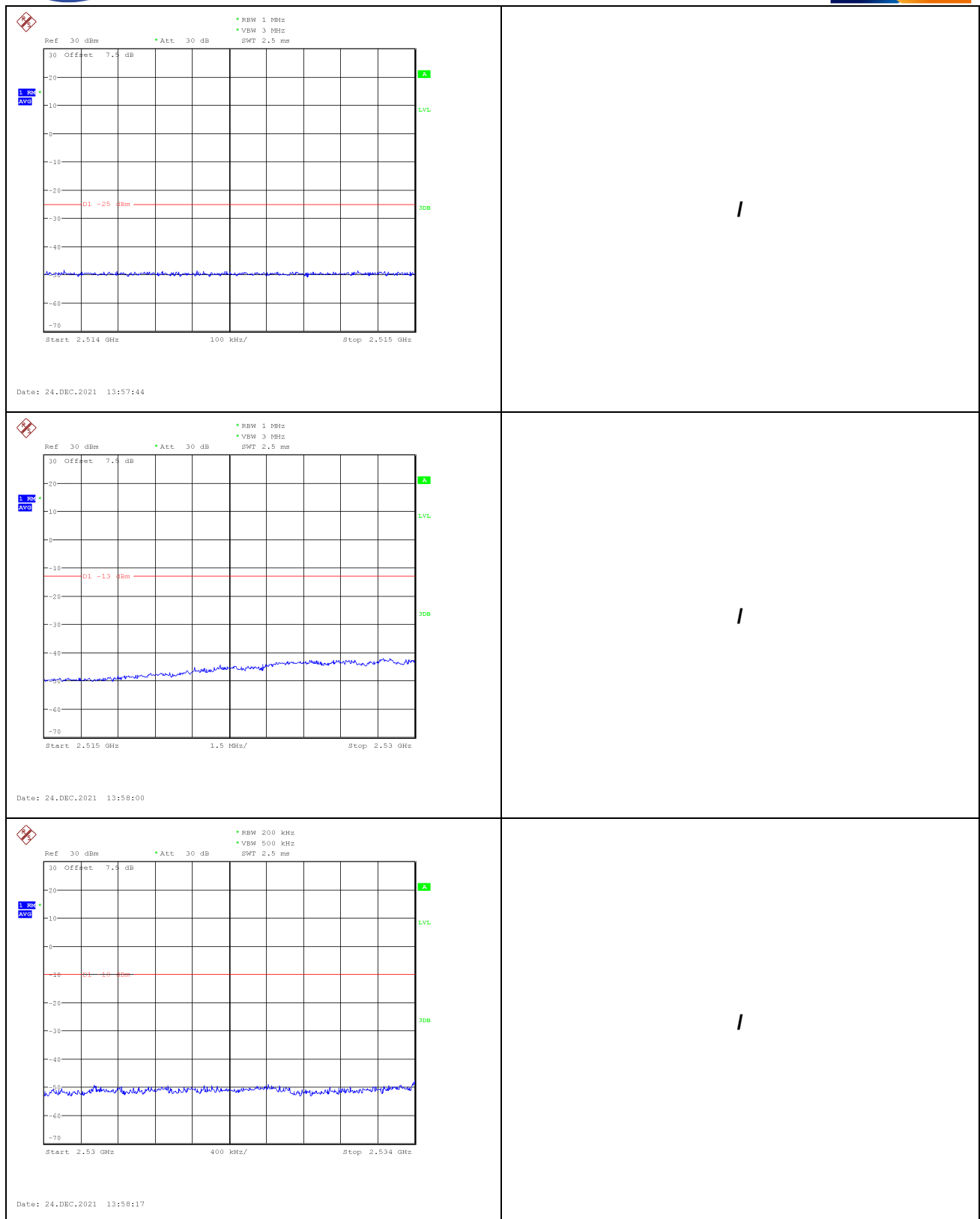
Date: 24.DEC.2021 13:59:39



Date: 24.DEC.2021 13:50:22



Date: 24.DEC.2021 13:59:56



6.7. Conducted Spurious Emission

6.7.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the mobile station equipment tested, this equates to a frequency range of 13 MHz to 9 GHz, data taken from 10 MHz to 25 GHz.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.
3. The number of sweep points of spectrum analyzer is set to 30001 which is greater than span/RBW.

6.7.2 Measurement Limit

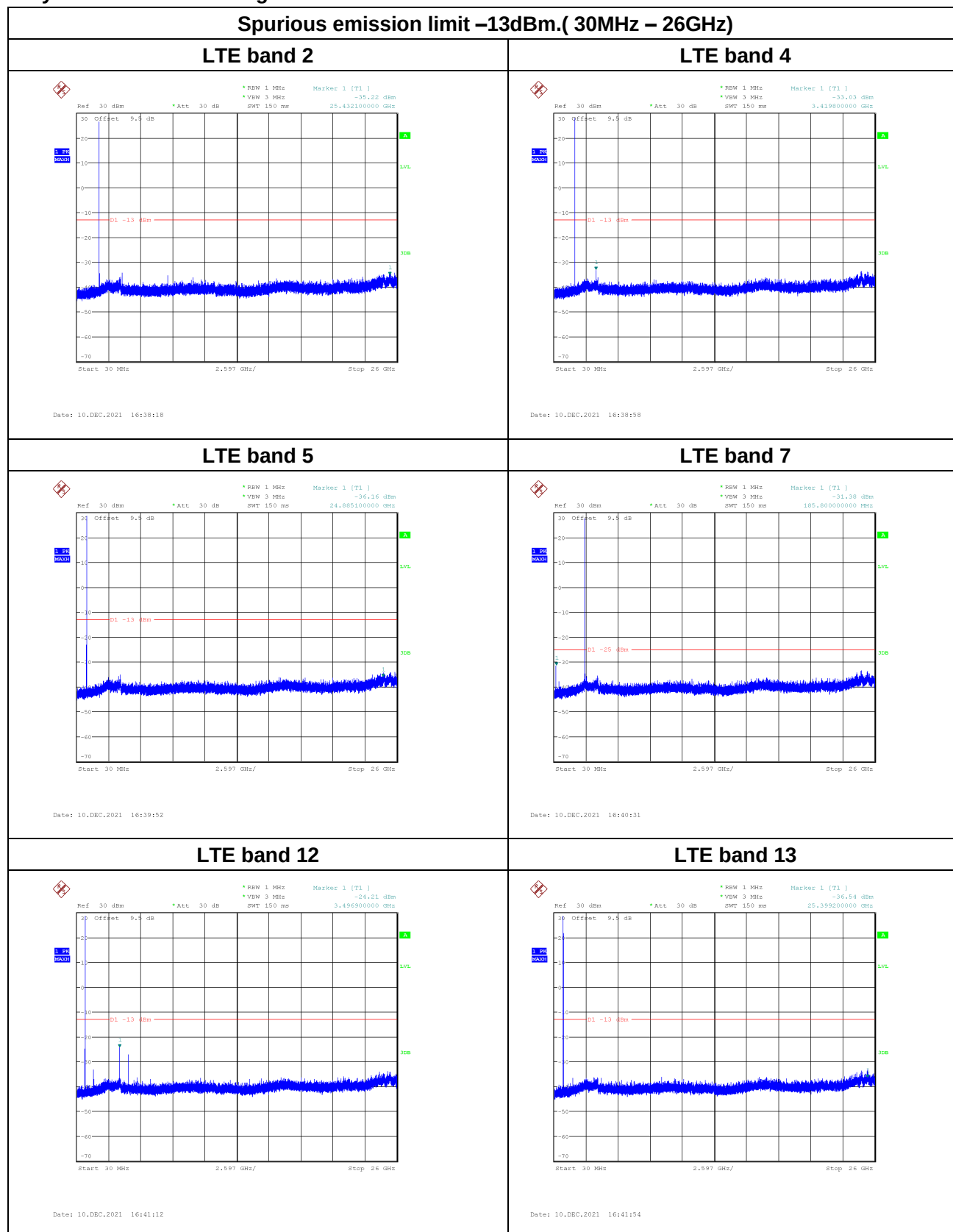
Part 27.53(g), 27.53(h), 27.53(m) specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

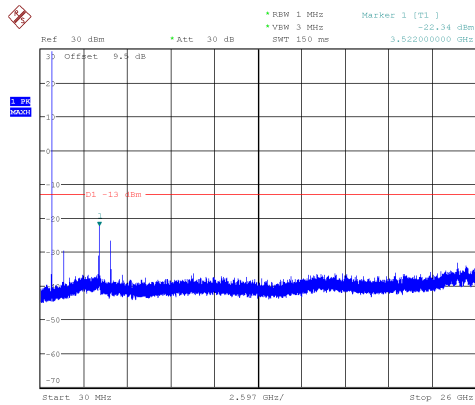
Part 27.53(m)(4) specifies for mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, 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 than $43 + 10 \log(P)$ 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.

6.7.3 Measurement result

Only worst case result is given below

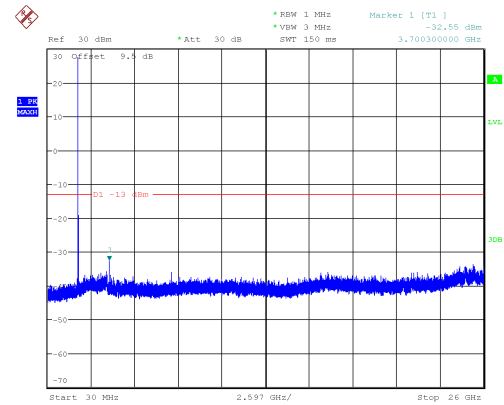


LTE band 17



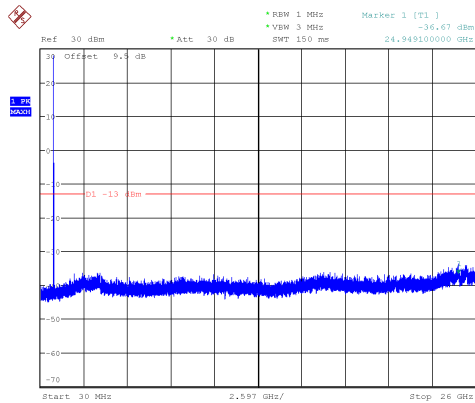
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LTE band 25



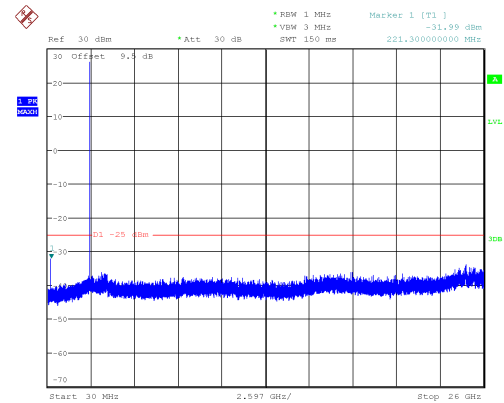
Date: 10.DEC.2021 16:43:22

LTE band 26(part90)



Date: 10.DEC.2021 16:44:02

LTE band 41



Date: 14.DEC.2021 09:11:32

6.8. Peak-To-Average Power Ratio

Reference

CFR Part 2.1049,24.232 (d),24.238, 27.50(a)

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

According to KDB 971168 5.7:

- Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
- Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Set the measurement interval to 1 ms
- Record the maximum PAPR level associated with a probability of 0.1%

6.8.1 Measurement results

Band	Range	BandWidth	RbMode	QPSK(dBm)	Q16(dBm)
FDD02	MidRange	20	fullRB	4.94	6.31
FDD04	MidRange	20	fullRB	4.90	6.38
FDD05	MidRange	10	fullRB	5.26	6.12
FDD07	MidRange	20	fullRB	4.90	6.22
FDD12	MidRange	10	fullRB	5.29	6.12
FDD13	MidRange	10	fullRB	5.54	6.25
FDD17	MidRange	10	fullRB	5.29	6.19
FDD25	MidRange	20	fullRB	5.00	6.38
FDD26(part 90)	MidRange	10	fullRB	5.03	5.87
TDD41	MidRange	20	fullRB	7.76	10.16

7. Test Equipment List

Conducted Test System

Item	Equipment Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Universal Radio Communication Tester	CMW500	148874	R&S	2021-05-10	1 year
2	Vector Signal Analyzer	FSQ26	101091	R&S	2021-05-10	1 year
3	DC Power Supply	ZUP60-14	LOC-220Z006-0007	TDL-Lambda	2021-05-09	1 year
4	Eagle Test Software	Eagle V3.1 FCC BT/WIFI	N/A	ECIT	N/A	N/A

Radiated Emission Test System

Item	Equipment Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. Interval
1	Universal Radio Communication Tester	CMW500	104178	R&S	2021-05-10	1 year
2	Test Receiver	ESU40	100307	R&S	2021-05-10	1 year
3	TRILOG Antenna	VULB9163	VULB9163-515	Schwarzbeck	2020-02-28	2 years
4	Double Ridged Guide Antenna	ETS-3117	135890	ETS	2020-02-28	2 years
5	2-Line V-Network	ENV216	101380	R&S	2021-05-10	1 year
6	RF Signal Generator	SMF100A	102314	R&S	2021-05-10	1 year
7	Amplifier	SCU08	10146	R&S	2021-05-10	1 year
8	EMI Test Software	EMC32 V9.15.00	NA	R&S	NA	NA

Anechoic chamber

Fully anechoic chamber by ETS.

Annex A: Measurement Uncertainty

Measurement uncertainty for all the testing in this report are within the limit specified in 3IN documents.
The detailed measurement uncertainty to see the column, k=2

Measurement Items	Range	Confidence Level	Calculated Uncertainty
Peak Output Power-Conducted	2412MHz-2462MHz	95%	0.544dB
Peak Power Spectral Density	2412MHz-2462MHz	95%	0.502dB
Occupied 6dB Bandwidth	2412MHz-2462MHz	95%	69.26kHz
Band Edges-Conducted	2412MHz-2462MHz	95%	0.544dB
Conducted Emission	30MHz-2GHz	95%	0.90dB
Conducted Emission	2GHz-3.6GHz	95%	0.88dB
Conducted Emission	3.6GHz-8GHz	95%	0.96dB
Conducted Emission	8GHz-20GHz	95%	0.94dB
Conducted Emission	20GHz-22GHz	95%	0.88dB
Conducted Emission	22GHz-26GHz	95%	0.86dB
Transmitter Spurious Emission-Radiated	9KHz-30MHz	95%	5.66dB
Transmitter Spurious Emission-Radiated	30MHz-1000MHz	95%	4.98dB
Transmitter Spurious Emission-Radiated	1000MHz -18000MHz	95%	5.06dB
Transmitter Spurious Emission-Radiated	18000MHz -40000MHz	95%	5.20dB
AC Power line Conducted Emission	0.15MHz-30MHz	95%	3.66 dB

Annex B: Accreditation Certificate



Accredited Laboratory

A2LA has accredited

INDUSTRIAL INTERNET INNOVATION CENTER (SHANGHAI) CO., LTD.

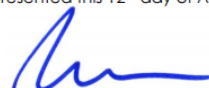
Shanghai, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

Presented this 12th day of April 2021.



Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3682.01
Valid to February 28, 2023

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

*****END OF REPORT*****