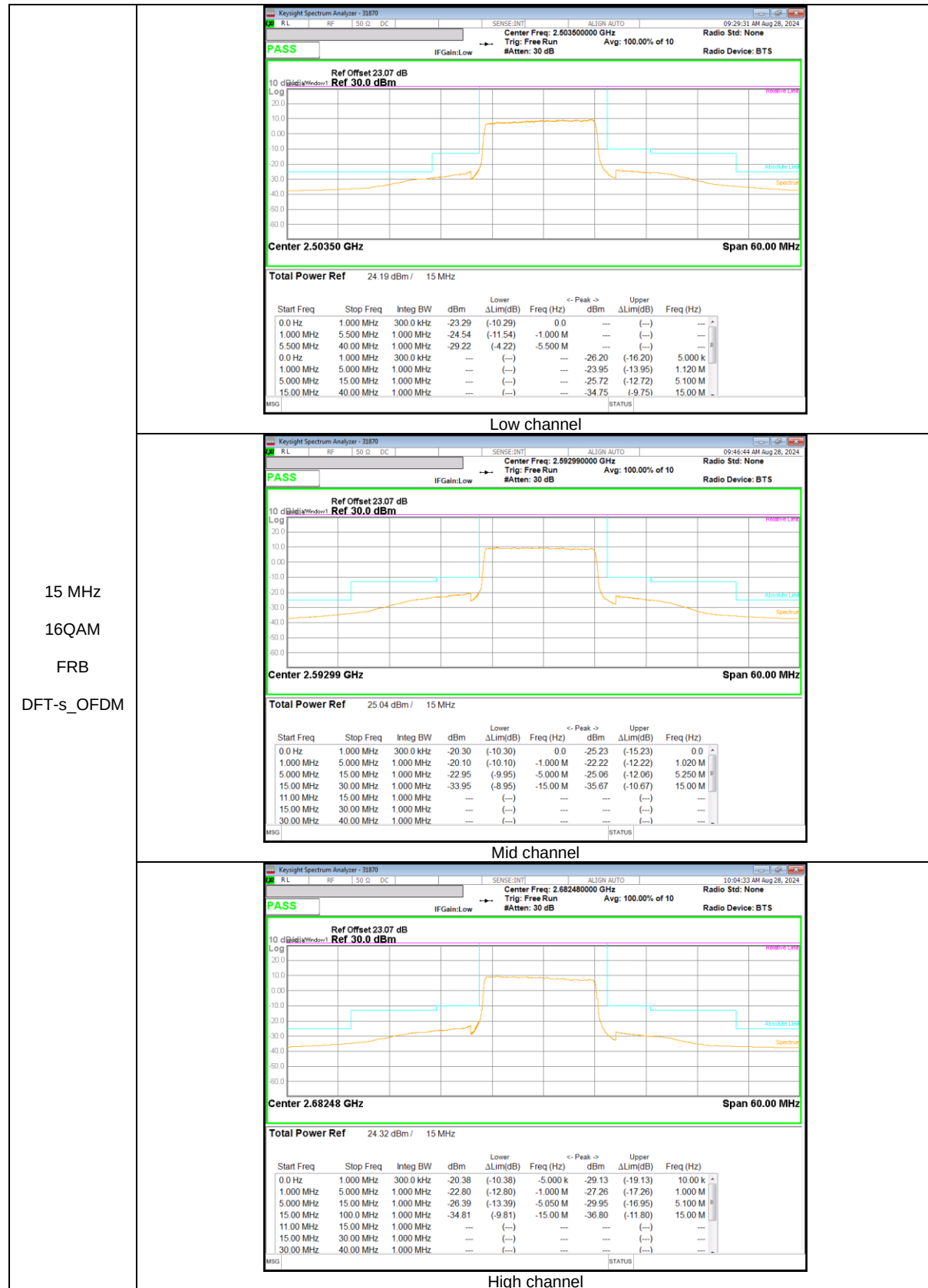
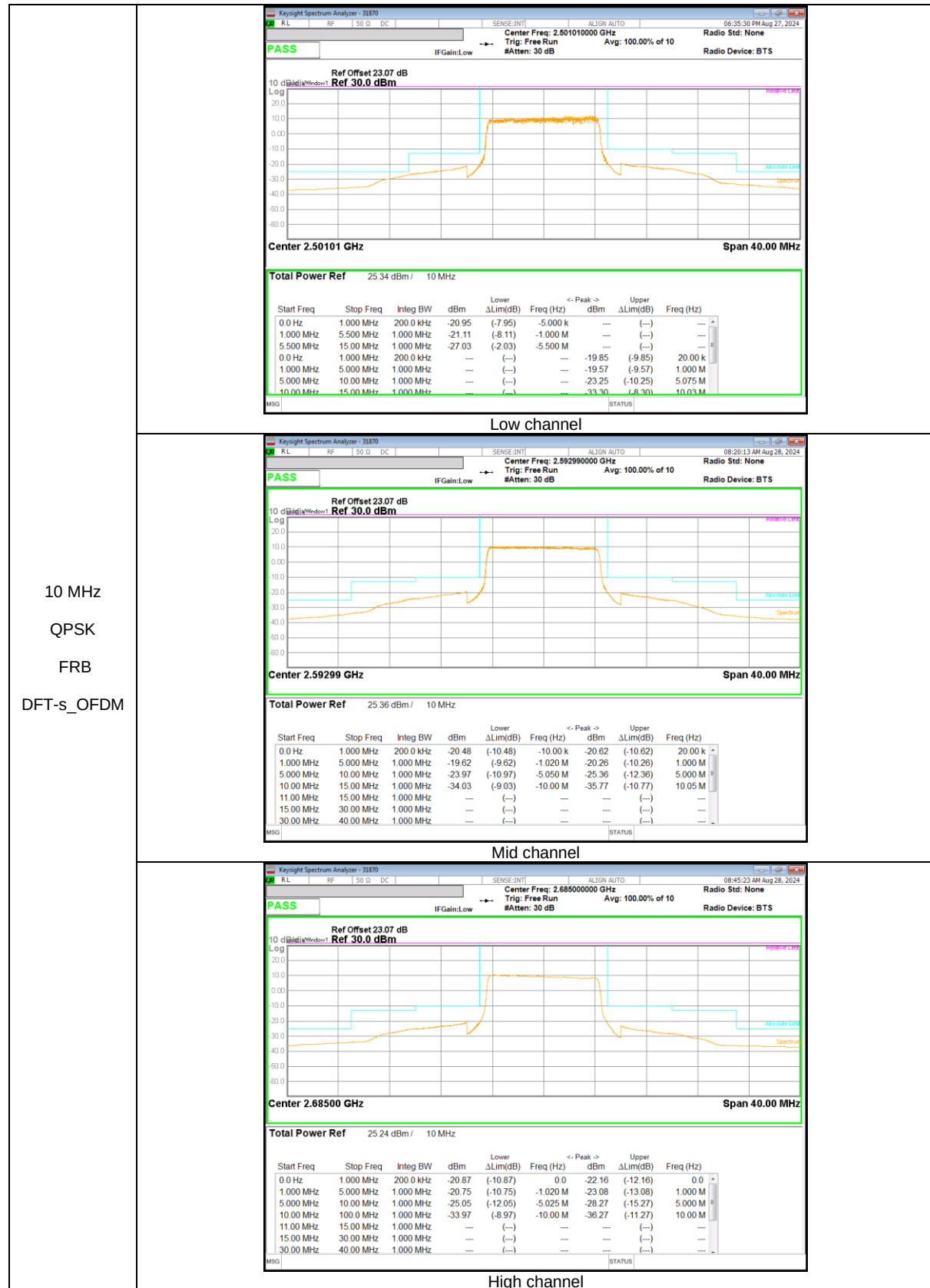
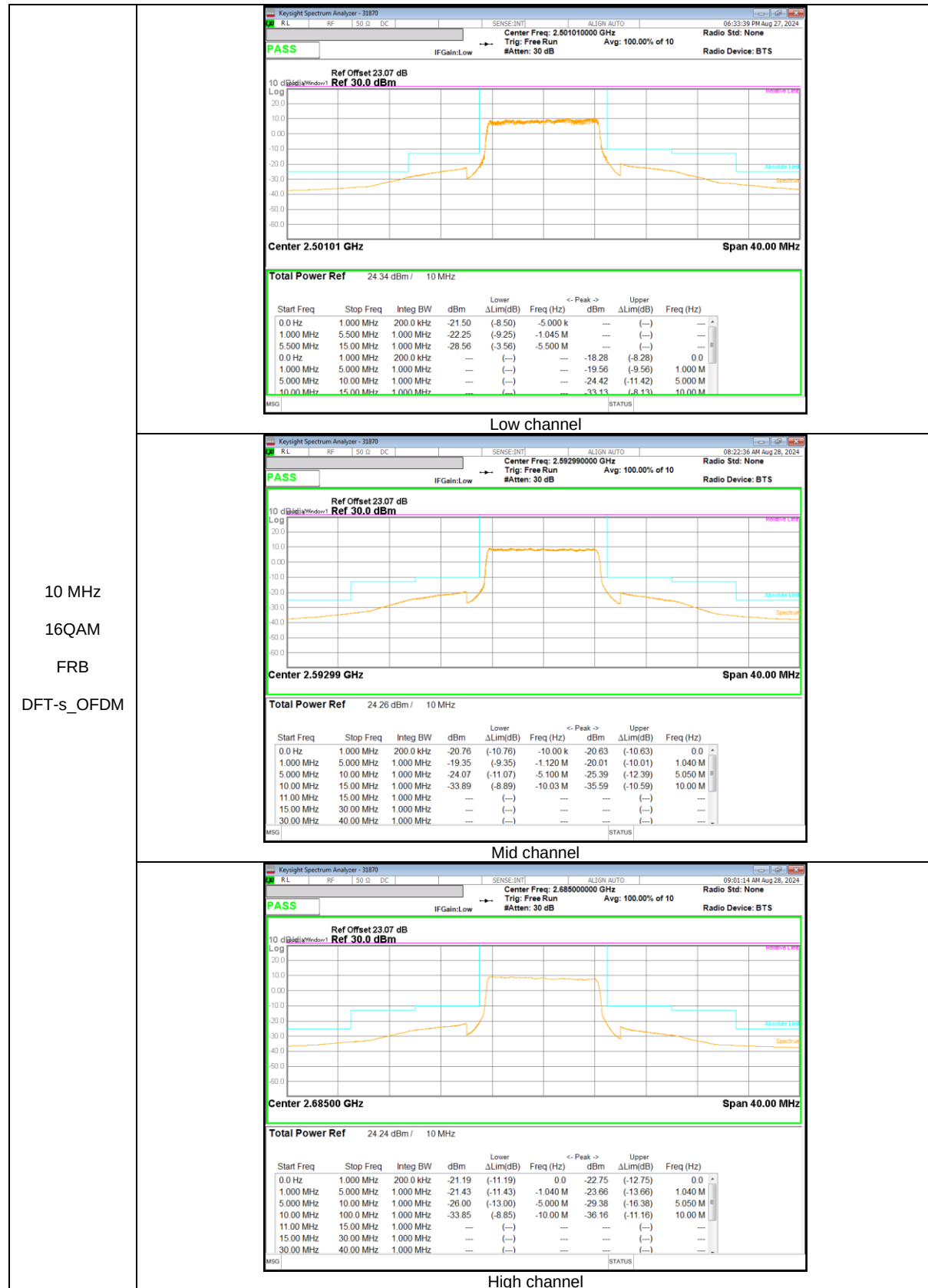


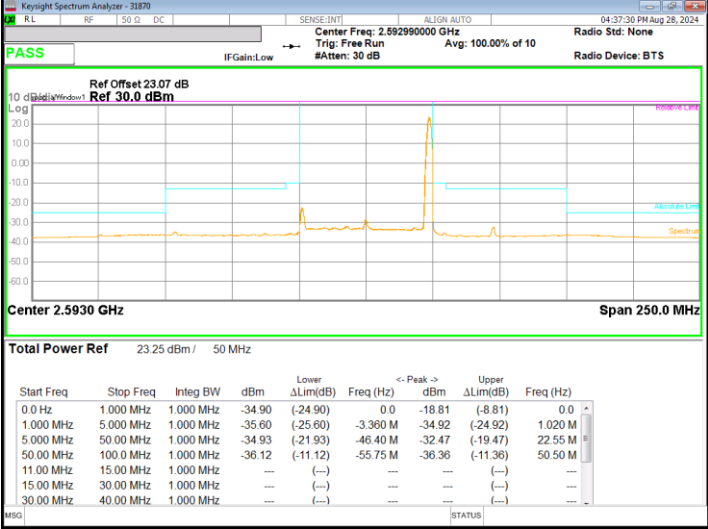


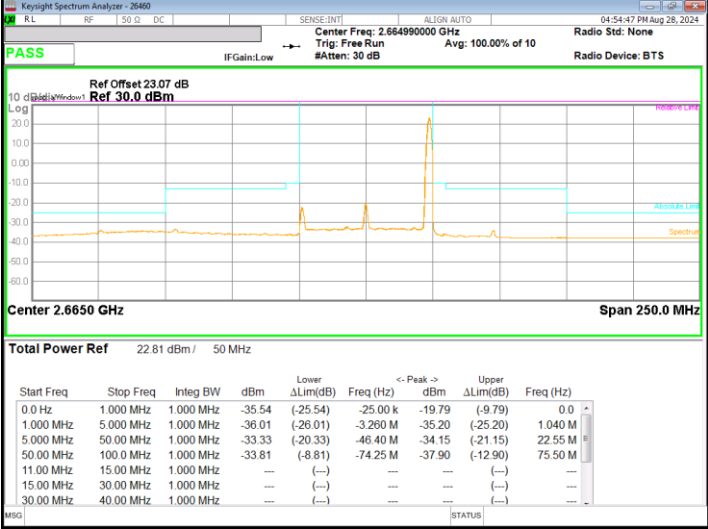




NR Band n41 (PC2) 1 RB (Worst Case)



50 MHz QPSK 1RB Offste 0 DFT-s_OFDM	 Mid channel
50 MHz QPSK 1RB Offste 132 DFT-s_OFDM	 Mid channel

50 MHz QPSK 1RB Offste 0 DFT-s_OFDM	 High channel
50 MHz QPSK 1RB Offste 132 DFT-s_OFDM	 High channel

8.5. CONDUCTED SPURIOUS EMISSIONS

RULE PART(S)

FCC: §27.53

LIMITS

§27.53:

(a) (4) For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

(i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz;

(iii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2360 and 2365 MHz, and not less than $70 + 10 \log (P)$ dB above 2365 MHz.

(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.

(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.

(h) The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

(m) (4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less 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.

(l)(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. 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.

(n)(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. 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, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. 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.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01

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.

- a) Set the RBW = 100 kHz for emission below 1 GHz and 1 MHz for emissions above 1 GHz
(Tests were performed 1MHz [Worst case], to sweep 1 time for all frequency range)
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = auto couple;
- e) Detector = rms;
- f) Ensure that the number of measurement points = Max (40001);
- g) Trace Mode = average(WCDMA, LTE FDD, 5G NR FDD), Max hold(LTE TDD, 5G NR TDD);

NOTE1

UMTS: It was tested at REL 99 as worst case (the highest output power and density).

LTE: It was tested at 1RB QPSK as worst case (the highest output power and density).

5G NR: All Waveforms (CP-OFDM vs DFT-s_OFDM) and modulations ($\pi/2$ BPSK, QPSK, 16QAM, 64QAM, 256QAM) were investigated to determine the worst case configuration. All Modes of operation were investigated and the worst case configuration results are reported in this section.

NOTE2

Please refer to section 5.4 for bandwidth and RB setting about LTE, 5G NR bands.

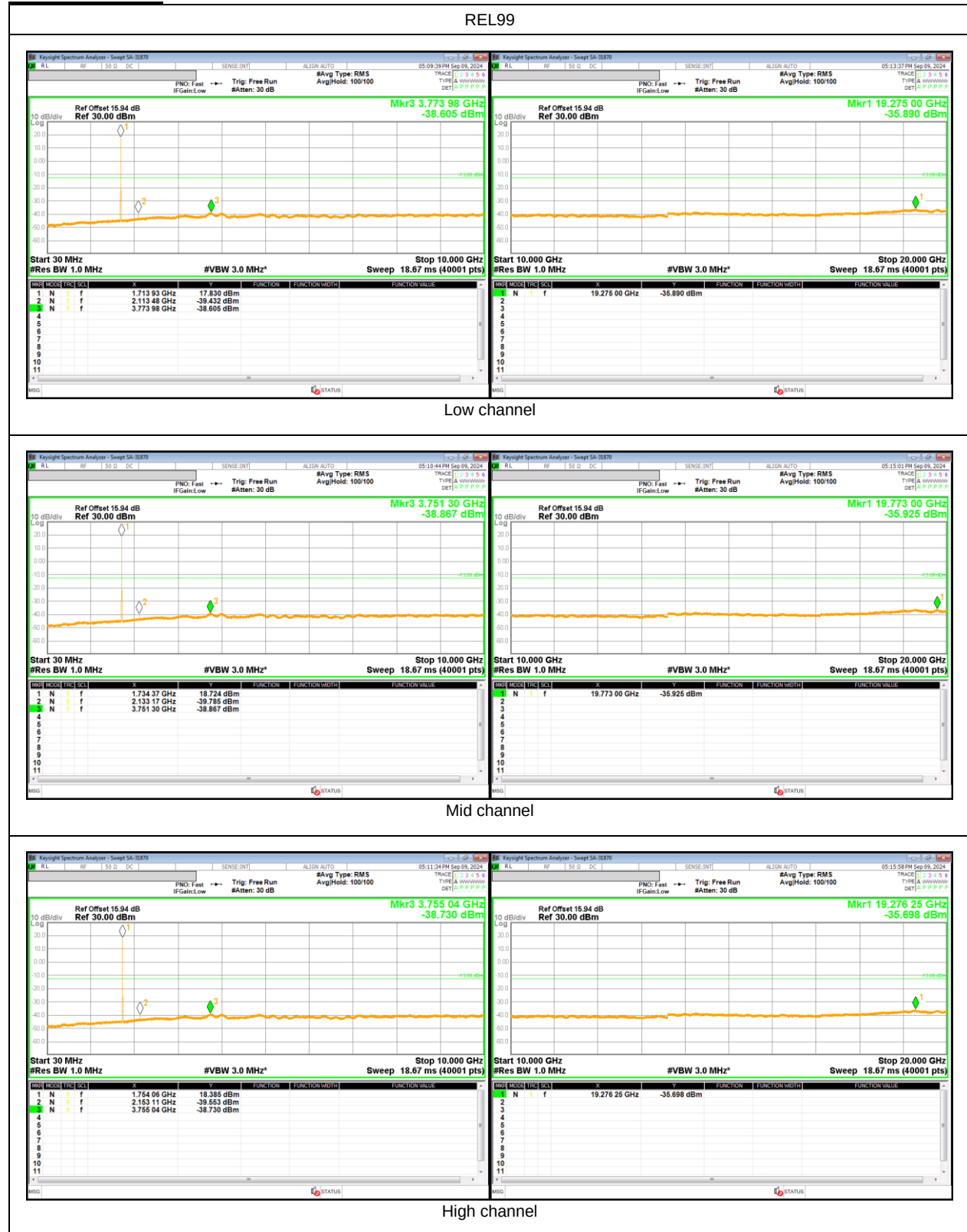
RESULTS

See the following pages.

8.5.1. OUT OF BAND EMISSIONS RESULT

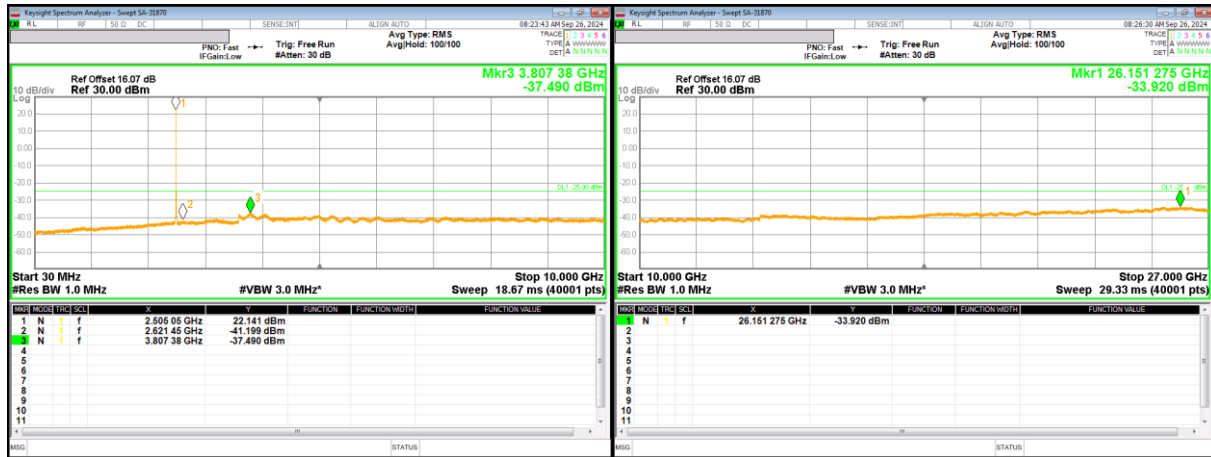
WCDMA Band 4

REL99

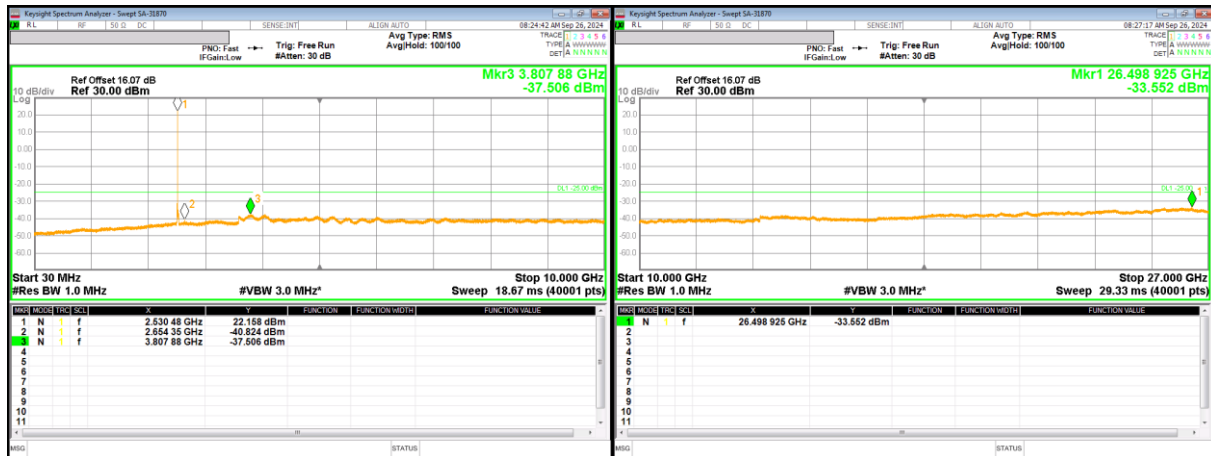


LTE Band 7

10 MHz QPSK



Low channel



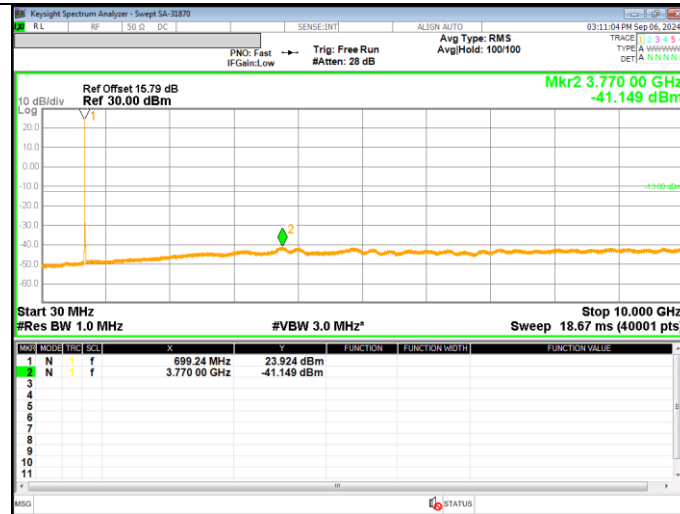
Mid channel



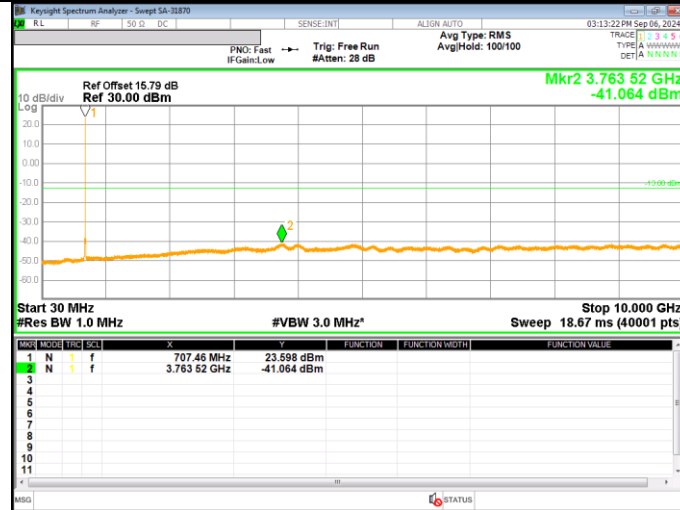
High channel

LTE Band 12

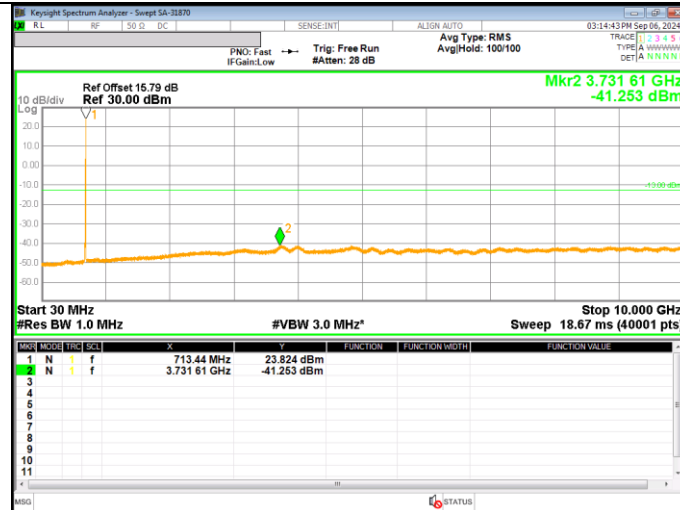
5 MHz QPSK



Low channel



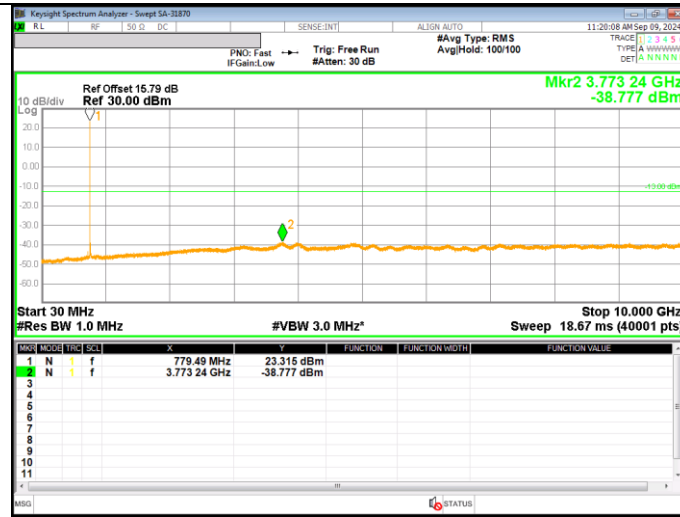
Mid channel



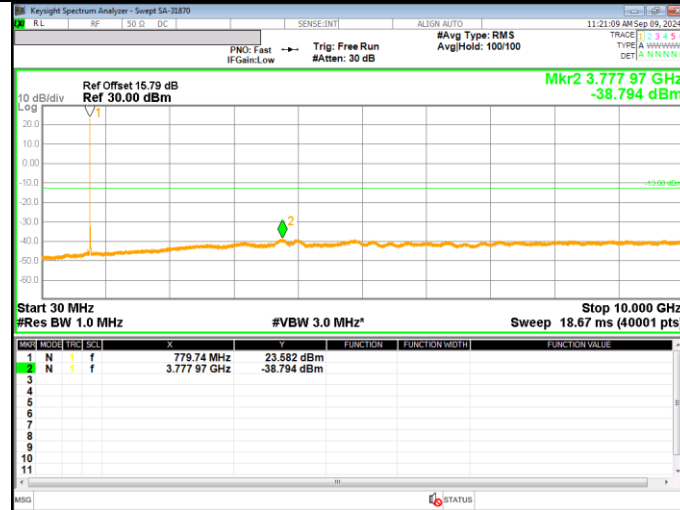
High channel

LTE Band 13

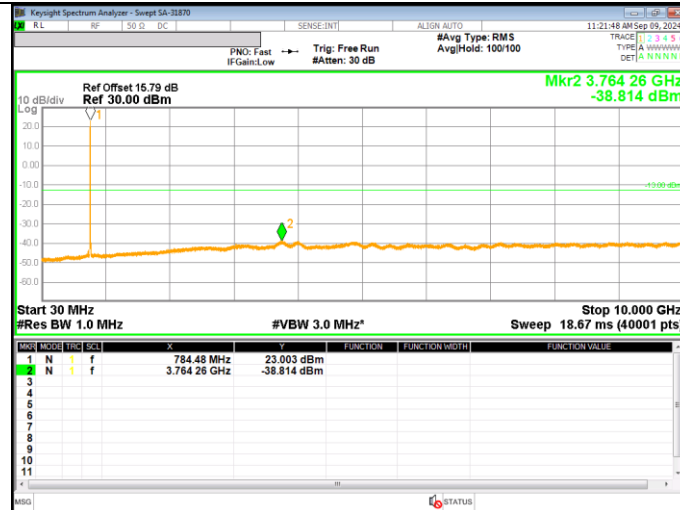
5 MHz QPSK



Low channel



Mid channel



High channel

LTE Band 30

5 MHz QPSK



Low channel



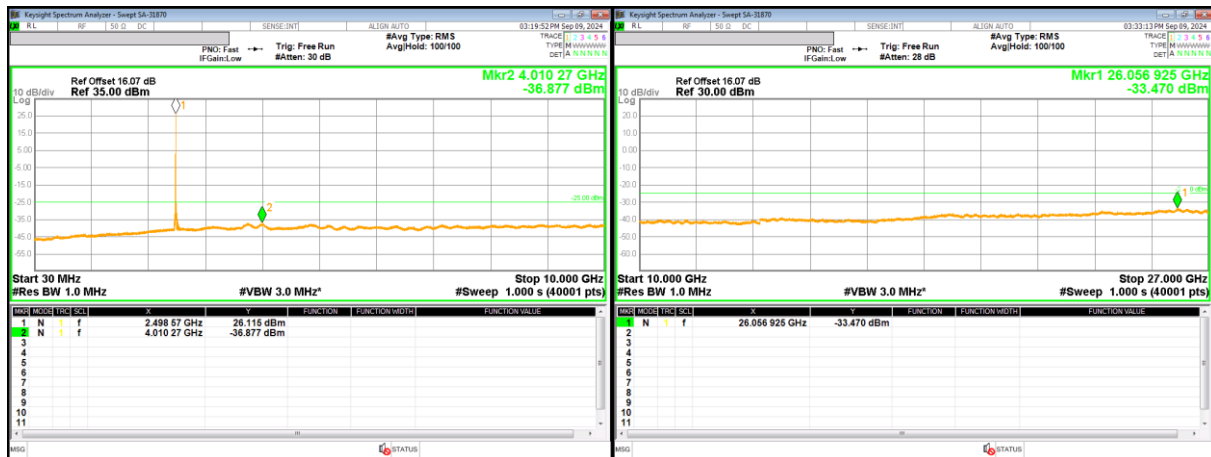
Mid channel



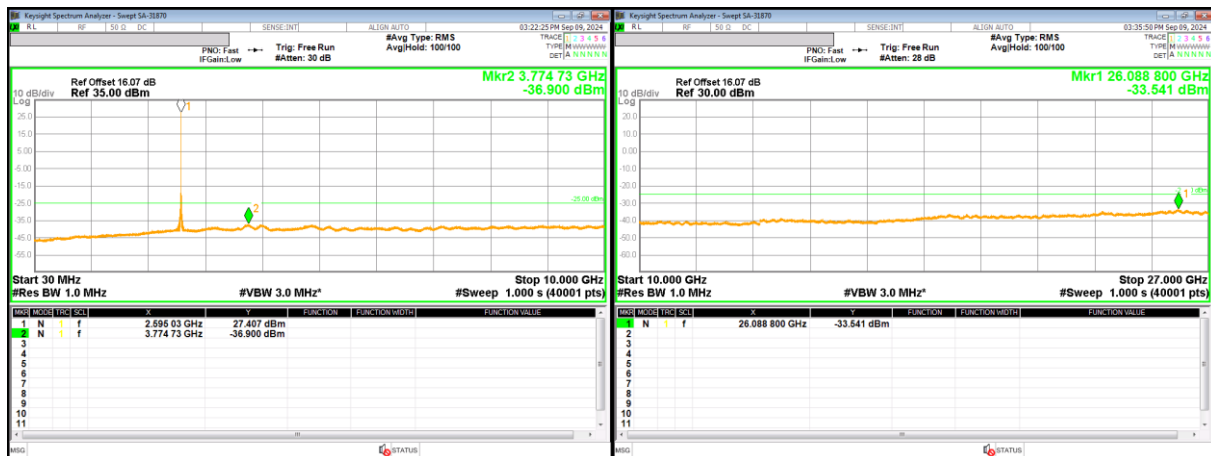
High channel

LTE Band 41(PC2)

5 MHz QPSK



Low channel



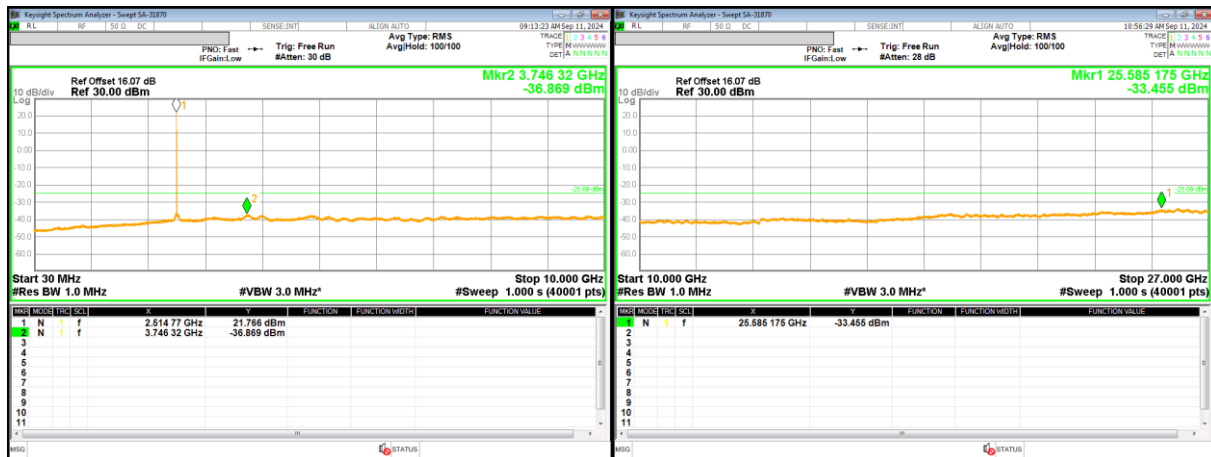
Mid channel



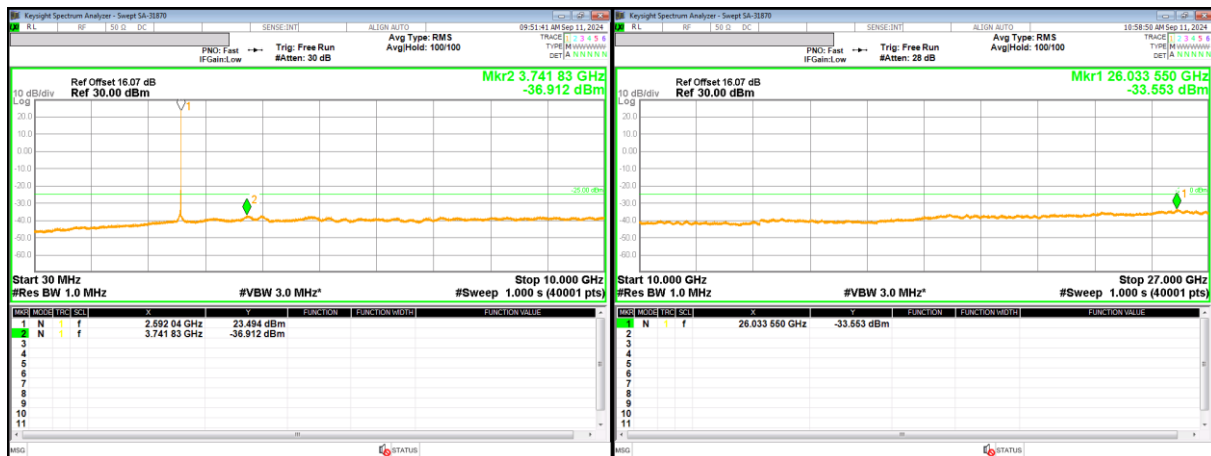
High channel

LTE Band 41C (UL CA)

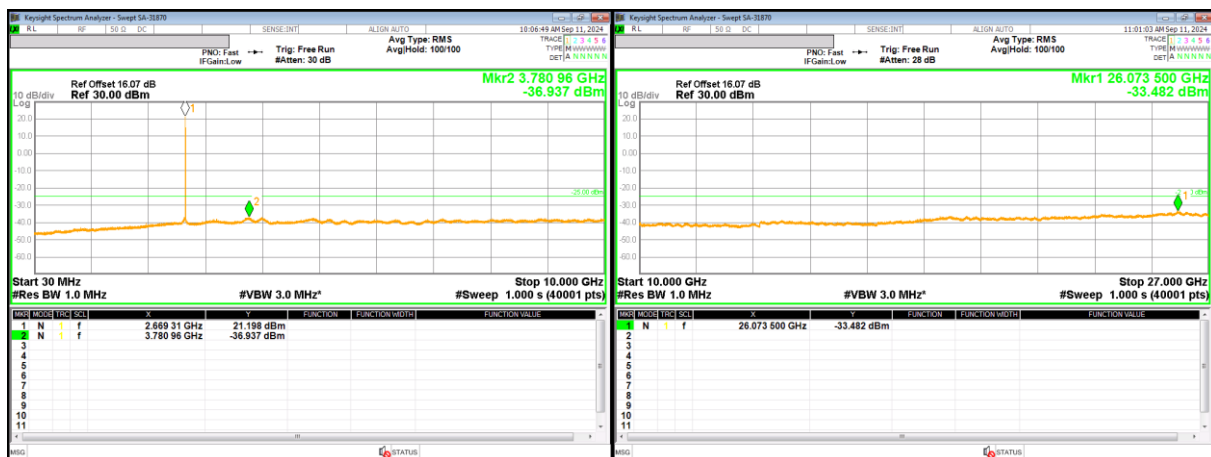
20+20 MHz QPSK



Low channel



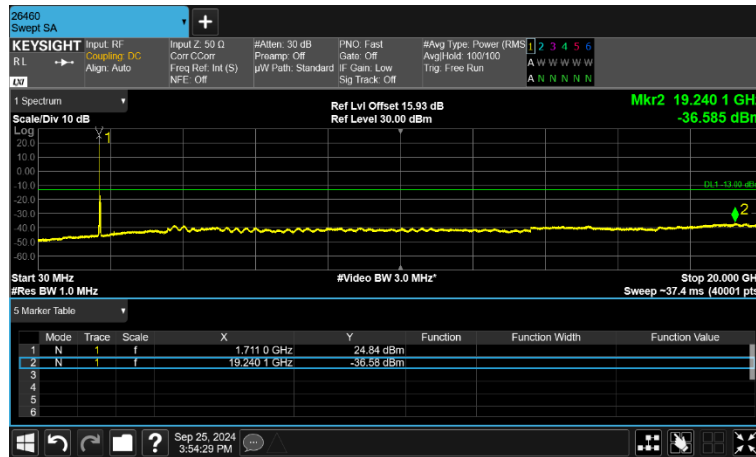
Mid channel



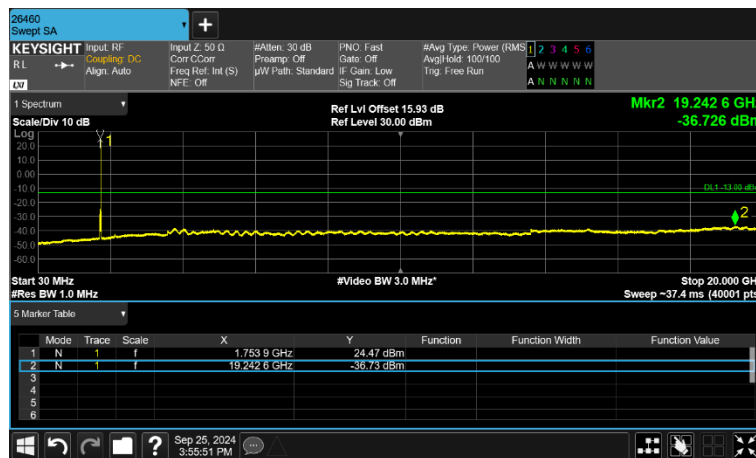
High channel

LTE Band 66 (ANT B)

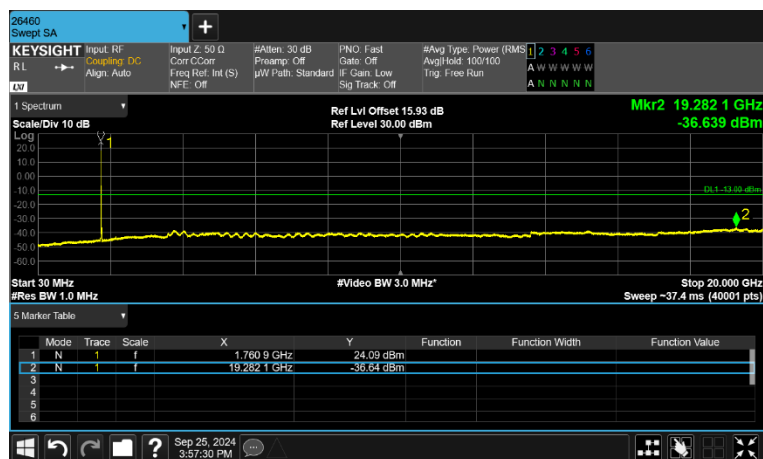
20 MHz QPSK



Low channel



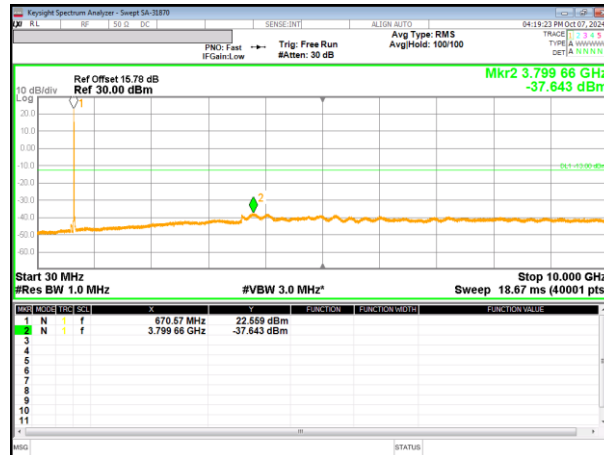
Mid channel



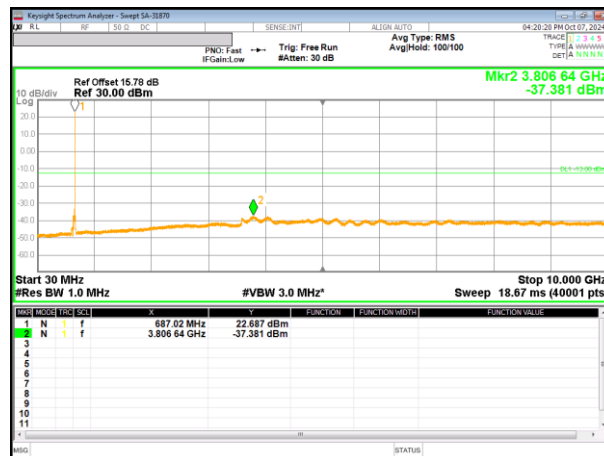
High channel

LTE Band 71

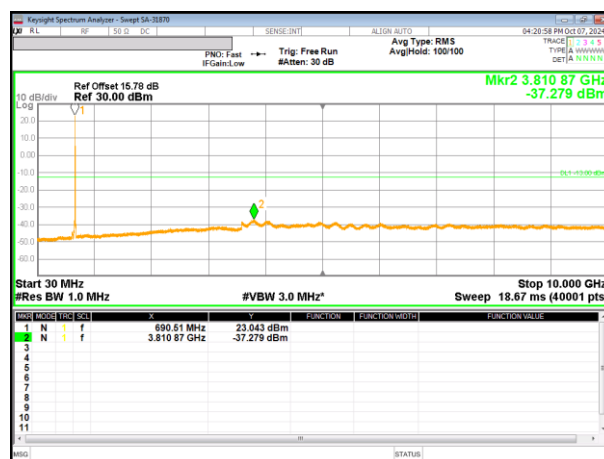
15 MHz QPSK



Low channel



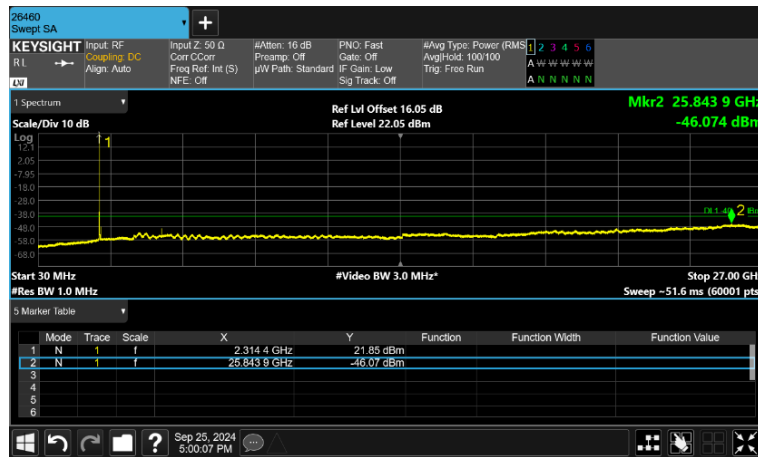
Mid channel



High channel

NR Band n30

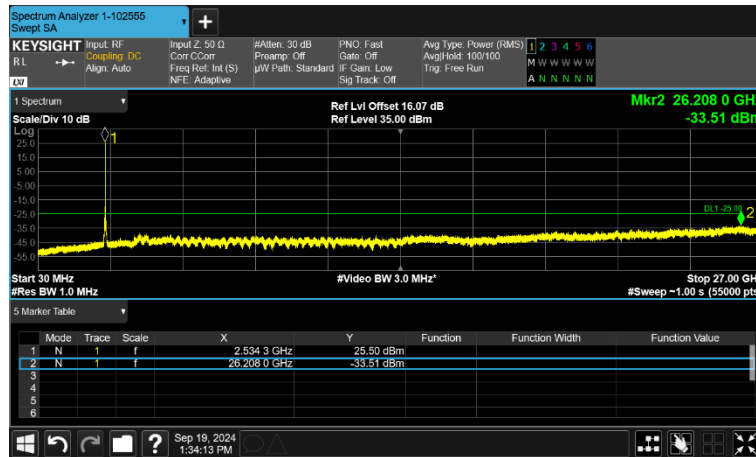
10 MHz QPSK DFT-s_OFDM



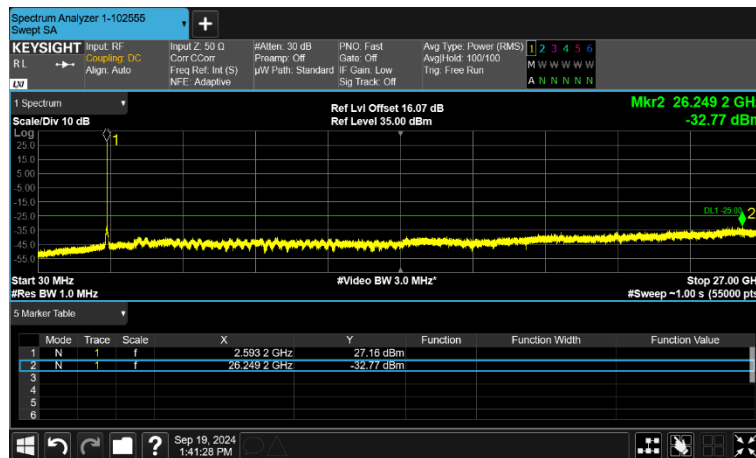
Mid channel

NR Band n41 (PC2)

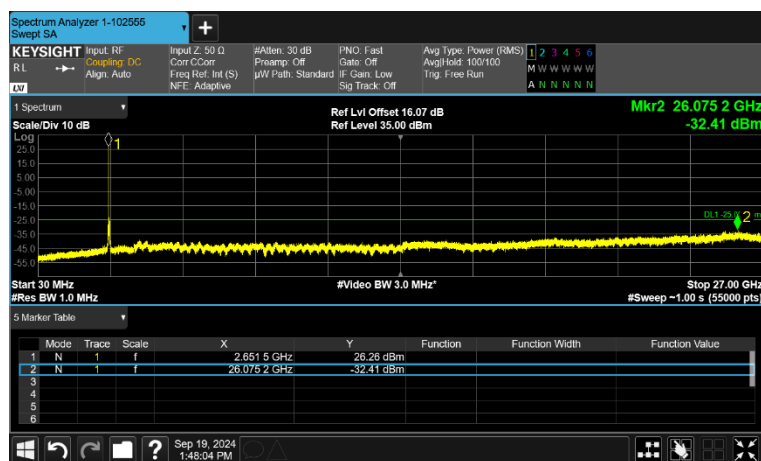
40 MHz QPSK DFT-s_OFDM



Low channel



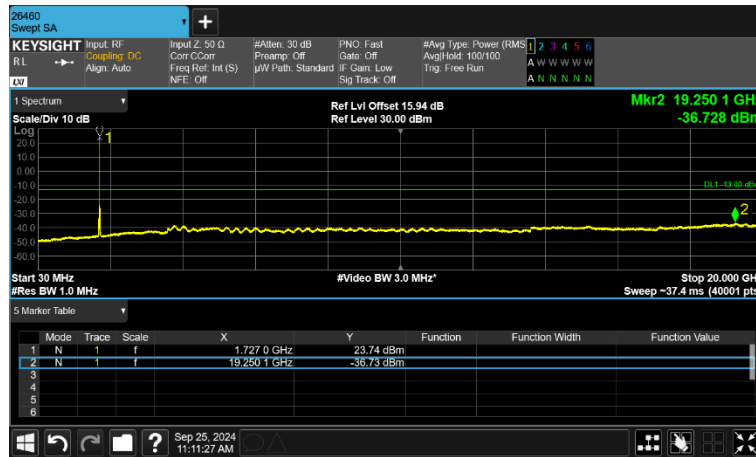
Mid channel



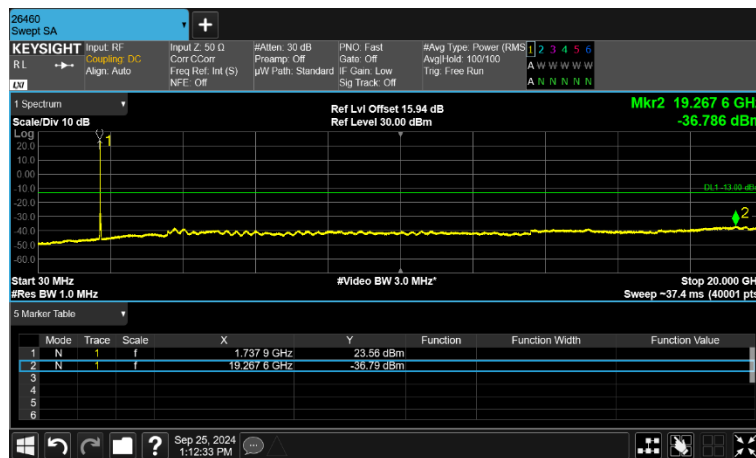
High channel

NR Band n66 (ANT A)

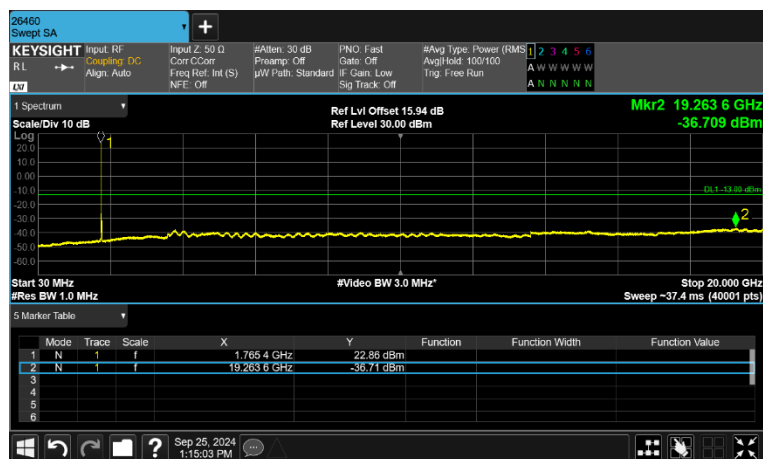
15 MHz QPSK DFT-s_OFDM



Low channel



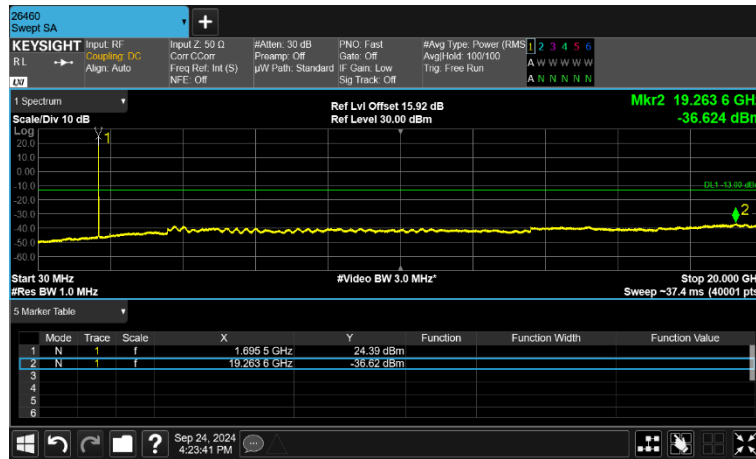
Mid channel



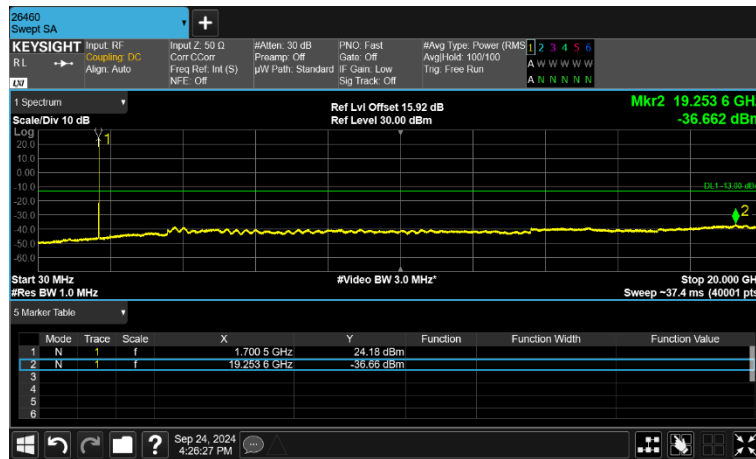
High channel

NR Band n70

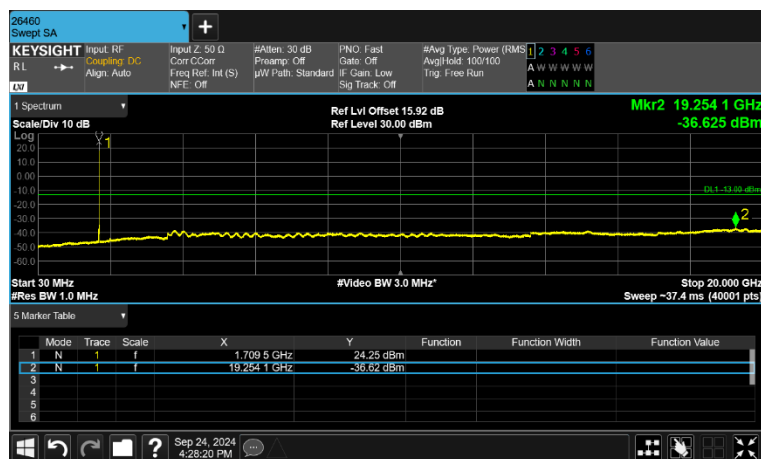
5 MHz QPSK DFT-s_OFDM



Low channel



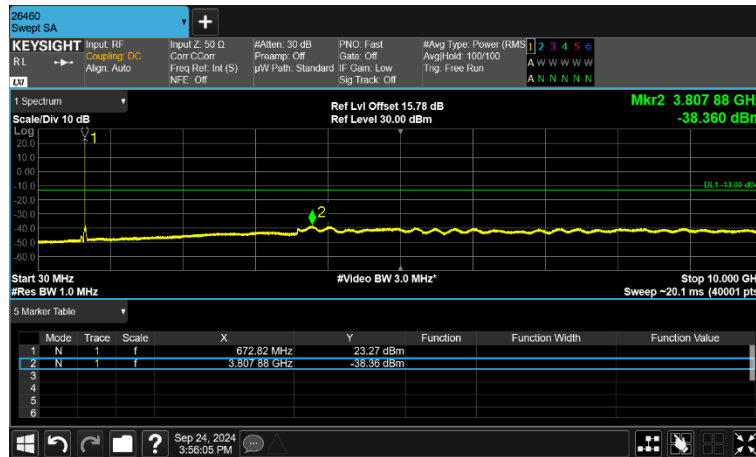
Mid channel



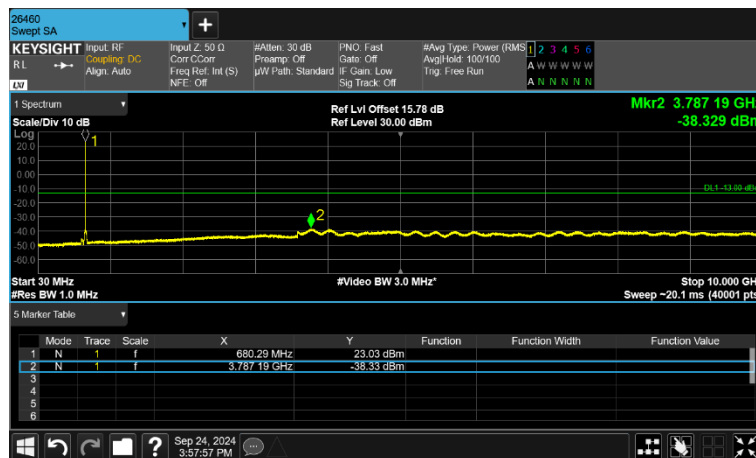
High channel

NR Band n71

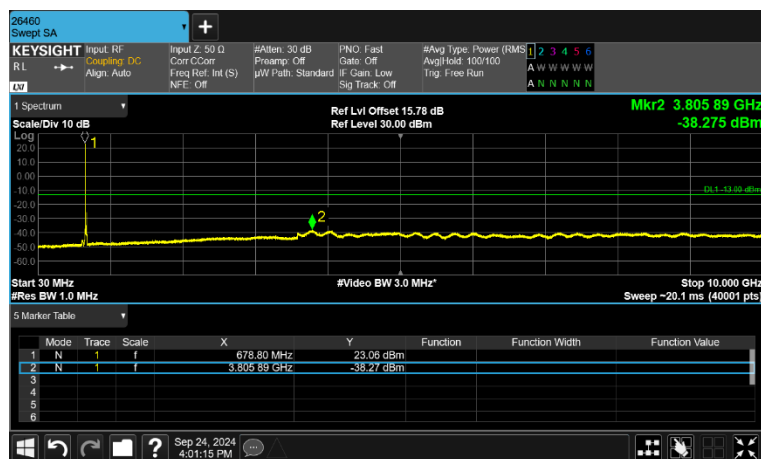
20 MHz QPSK DFT-s_OFDM



Low channel



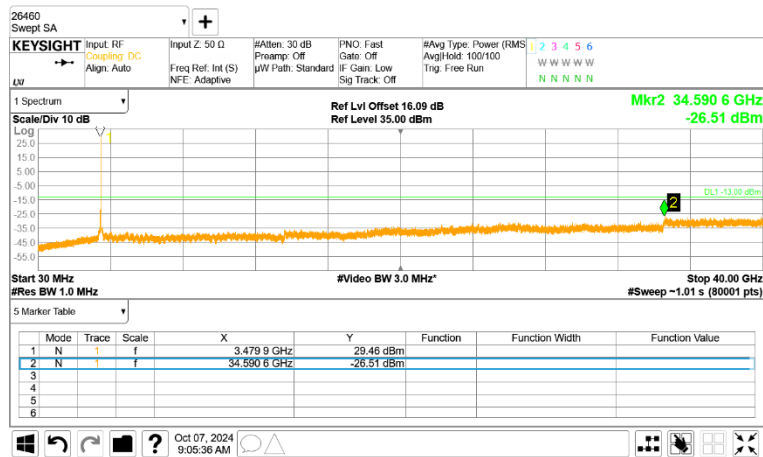
Mid channel



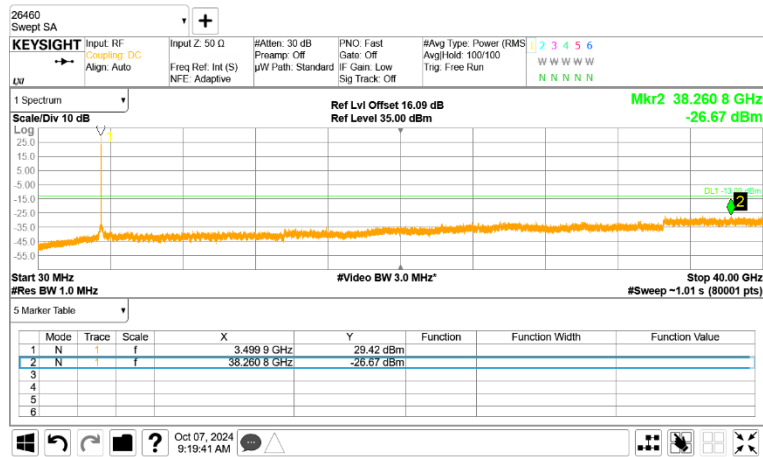
High channel

NR Band n77 (PC2, 3450-3550 MHz)

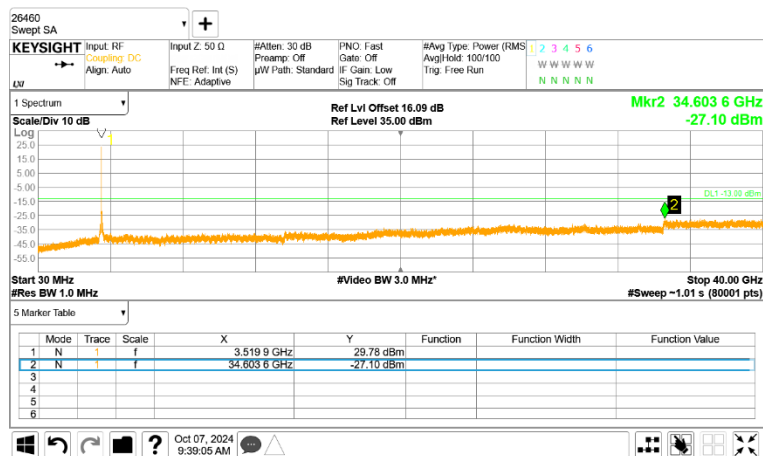
60 MHz QPSK DFT-s_OFDM



Low channel



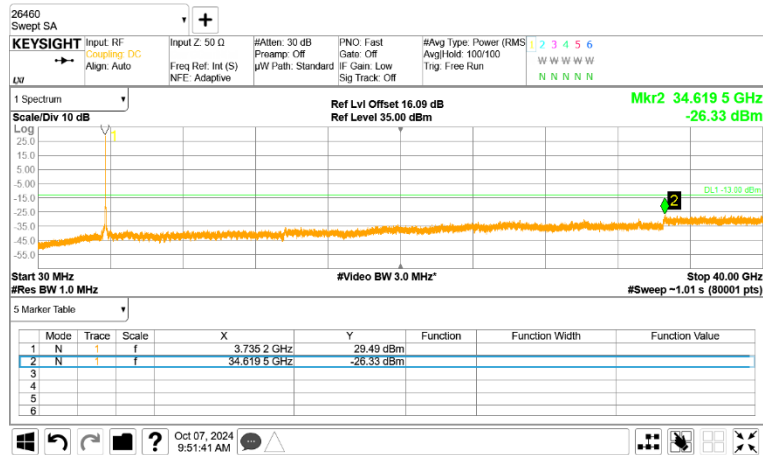
Mid channel



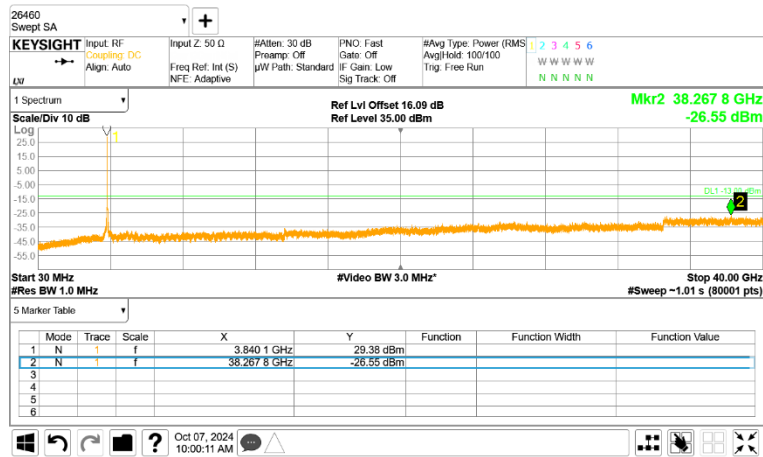
High channel

NR Band n77 (PC2, 3700-3980 MHz)

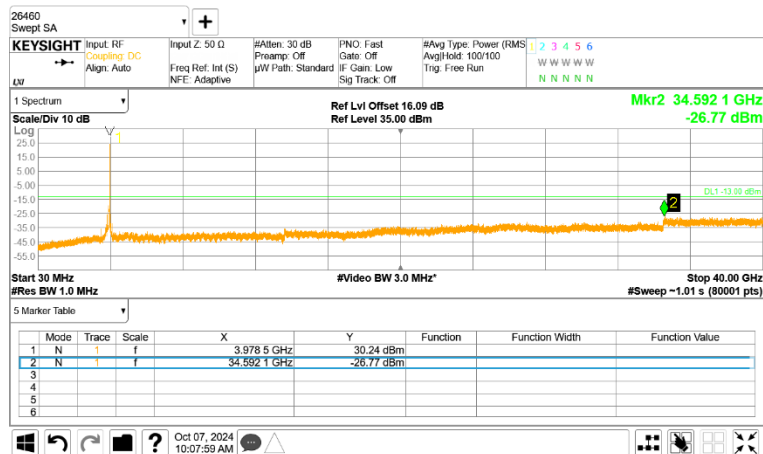
70 MHz QPSK DFT-s_OFDM



Low channel



Mid channel



High channel

8.6. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §27.54

LIMITS

Part 27.54

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01

NOTE

Test were performed each lowest or highest frequency on the modulation condition of more wide bandwidth.(Please refer to OBW results)

RESULTS

See the following pages.

8.6.1. FREQUENCY STABILITY RESULT

WCDMA Band 4 (Lowest Frequency: HSDPA / Highest Frequency: HSDPA)

Test Date	2024-09-03
Test Engineer	31870

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.3105	1754.6900		
Extreme (50C)		1710.3105	1754.6900	49.5	0.029
Extreme (40C)		1710.3106	1754.6901	58.1	0.034
Extreme (30C)		1710.3106	1754.6901	51.3	0.030
Extreme (10C)		1710.3105	1754.6900	30.5	0.018
Extreme (0C)		1710.3105	1754.6900	33.1	0.019
Extreme (-10C)		1710.3105	1754.6900	36.6	0.021
Extreme (-20C)		1710.3105	1754.6900	37.3	0.022
Extreme (-30C)		1710.3105	1754.6900	40.2	0.023
20C	15%	1710.3105	1754.6900	38.1	0.022
	-15%	1710.3106	1754.6900	22.8	0.013
	End Point	1710.3106	1754.6900	20.3	0.012

LTE Band 7 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Test Date	2024-09-05
Test Engineer	31870

Limit		2500	2570	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2500.2465	2569.7505		
Extreme (50C)		2500.2465	2569.7505	30.2	0.012
Extreme (40C)		2500.2465	2569.7505	28.3	0.011
Extreme (30C)		2500.2465	2569.7505	21.5	0.008
Extreme (10C)		2500.2465	2569.7505	15.3	0.006
Extreme (0C)		2500.2465	2569.7505	21.6	0.009
Extreme (-10C)		2500.2465	2569.7505	19.5	0.008
Extreme (-20C)		2500.2465	2569.7505	23.5	0.009
Extreme (-30C)		2500.2465	2569.7505	20.3	0.008
20C	15%	2500.2465	2569.7505	16.6	0.007
	-15%	2500.2465	2569.7505	25.3	0.010
	End Point	2500.2465	2569.7505	15.5	0.006

LTE Band 12 (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)

Test Date	2024-09-06
Test Engineer	31870

Limit		699	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	699.1545	715.8445		
Extreme (50C)		699.1545	715.8445	45.2	0.064
Extreme (40C)		699.1545	715.8445	33.8	0.048
Extreme (30C)		699.1545	715.8445	35.1	0.050
Extreme (10C)		699.1545	715.8445	25.6	0.036
Extreme (0C)		699.1545	715.8445	22.8	0.032
Extreme (-10C)		699.1545	715.8445	31.6	0.045
Extreme (-20C)		699.1545	715.8445	29.4	0.042
Extreme (-30C)		699.1545	715.8445	33.8	0.048
20C	15%	699.1545	715.8445	41.3	0.058
	-15%	699.1545	715.8445	26.6	0.038
	End Point	699.1545	715.8445	19.4	0.027

LTE Band 13 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

Test Date	2024-09-06
Test Engineer	31870

Limit		777	787	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	777.2565	786.7505		
Extreme (50C)		777.2566	786.7506	51.2	0.065
Extreme (40C)		777.2565	786.7505	45.3	0.058
Extreme (30C)		777.2565	786.7505	31.5	0.040
Extreme (10C)		777.2565	786.7505	26.3	0.034
Extreme (0C)		777.2565	786.7505	30.4	0.039
Extreme (-10C)		777.2565	786.7505	38.5	0.049
Extreme (-20C)		777.2565	786.7505	33.2	0.042
Extreme (-30C)		777.2565	786.7505	36.4	0.047
20C	15%	777.2566	786.7505	28.3	0.036
	-15%	777.2565	786.7505	15.6	0.020
	End Point	777.2565	786.7505	21.3	0.027

LTE Band 30 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

Test Date	2024-09-10
Test Engineer	31870

Limit		2305	2315	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2305.2490	2314.7505		
Extreme (50C)		2305.2490	2314.7505	38.1	0.016
Extreme (40C)		2305.2490	2314.7505	40.3	0.017
Extreme (30C)		2305.2490	2314.7505	36.3	0.016
Extreme (10C)		2305.2490	2314.7505	30.2	0.013
Extreme (0C)		2305.2490	2314.7505	21.6	0.009
Extreme (-10C)		2305.2490	2314.7505	25.3	0.011
Extreme (-20C)		2305.2490	2314.7505	29.4	0.013
Extreme (-30C)		2305.2490	2314.7505	30.1	0.013
20C	15%	2305.2490	2314.7505	33.9	0.015
	-15%	2305.2490	2314.7505	18.6	0.008
	End Point	2305.2490	2314.7505	21.3	0.009

LTE Band 41 (PC2, Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Test Date	2024-09-12
Test Engineer	31870

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2496.2530	2689.7430		
Extreme (50C)		2496.2530	2689.7430	38.6	0.015
Extreme (40C)		2496.2530	2689.7430	34.5	0.013
Extreme (30C)		2496.2530	2689.7430	30.2	0.012
Extreme (10C)		2496.2530	2689.7430	25.6	0.010
Extreme (0C)		2496.2530	2689.7430	26.7	0.010
Extreme (-10C)		2496.2530	2689.7430	29.5	0.011
Extreme (-20C)		2496.2530	2689.7430	30.3	0.012
Extreme (-30C)		2496.2530	2689.7430	29.8	0.011
20C	15%	2496.2530	2689.7430	33.9	0.013
	-15%	2496.2530	2689.7430	20.6	0.008
	End Point	2496.2530	2689.7430	21.4	0.008

LTE Band 66 (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)

Test Date	2024-09-13
Test Engineer	31870

Limit		1710	1780	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.1560	1779.8435		
Extreme (50C)		1710.1560	1779.8435	45.6	0.026
Extreme (40C)		1710.1560	1779.8435	43.1	0.025
Extreme (30C)		1710.1560	1779.8435	40.2	0.023
Extreme (10C)		1710.1560	1779.8435	38.4	0.022
Extreme (0C)		1710.1560	1779.8435	30.2	0.017
Extreme (-10C)		1710.1560	1779.8435	31.6	0.018
Extreme (-20C)		1710.1560	1779.8435	36.1	0.021
Extreme (-30C)		1710.1560	1779.8435	35.8	0.021
20C	15%	1710.1560	1779.8435	43.4	0.025
	-15%	1710.1560	1779.8435	29.4	0.017
	End Point	1710.1560	1779.8435	28.4	0.016

LTE Band 71 (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)

Test Date	2024-09-13
Test Engineer	31870

Limit		663	698	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	663.2540	697.7485		
Extreme (50C)		663.2540	697.7485	38.4	0.056
Extreme (40C)		663.2540	697.7485	35.6	0.052
Extreme (30C)		663.2540	697.7485	40.2	0.059
Extreme (10C)		663.2540	697.7485	31.3	0.046
Extreme (0C)		663.2540	697.7485	29.5	0.043
Extreme (-10C)		663.2540	697.7485	30.2	0.044
Extreme (-20C)		663.2540	697.7485	34.2	0.050
Extreme (-30C)		663.2540	697.7485	36.5	0.054
20C	15%	663.2540	697.7485	40.6	0.060
	-15%	663.2540	697.7485	29.1	0.043
	End Point	663.2540	697.7485	26.5	0.039

NR Band n30 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Test Date	2024-09-23
Test Engineer	31870

Limit		2305	2315	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2305.2545	2314.7485		
Extreme (50C)		2305.2545	2314.7485	41.2	0.018
Extreme (40C)		2305.2545	2314.7485	35.6	0.015
Extreme (30C)		2305.2545	2314.7485	31.7	0.014
Extreme (10C)		2305.2545	2314.7485	25.9	0.011
Extreme (0C)		2305.2545	2314.7485	30.5	0.013
Extreme (-10C)		2305.2545	2314.7485	28.8	0.012
Extreme (-20C)		2305.2545	2314.7485	33.6	0.015
Extreme (-30C)		2305.2545	2314.7485	34.2	0.015
20C	15%	2305.2545	2314.7485	43.5	0.019
	-15%	2305.2545	2314.7485	29.8	0.013
	End Point	2305.2545	2314.7485	25.6	0.011

NR Band n41 (PC2, Lowest Frequency: QPSK / Highest Frequency: QPSK)

Test Date	2024-09-24
Test Engineer	31870

Normal (20C)		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2496.7060	2689.3010		
Extreme (50C)		2496.7060	2689.3010	48.3	0.019
Extreme (40C)		2496.7060	2689.3010	49.5	0.019
Extreme (30C)		2496.7060	2689.3010	42.7	0.016
Extreme (10C)		2496.7060	2689.3010	35.6	0.014
Extreme (0C)		2496.7060	2689.3010	30.5	0.012
Extreme (-10C)		2496.7060	2689.3010	28.3	0.011
Extreme (-20C)		2496.7060	2689.3010	30.5	0.012
Extreme (-30C)		2496.7060	2689.3010	33.1	0.013
20C	15%	2496.7060	2689.3010	39.4	0.015
	-15%	2496.7060	2689.3010	26.3	0.010
	End Point	2496.7060	2689.3010	22.2	0.009

NR Band n66 (Lowest Frequency: QPSK / Highest Frequency: QPSK)

Test Date	2024-09-25
Test Engineer	31870

Limit		1710	1780	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.2535	1779.7480		
Extreme (50C)		1710.2536	1779.7481	55.1	0.032
Extreme (40C)		1710.2536	1779.7481	51.3	0.029
Extreme (30C)		1710.2535	1779.7480	48.5	0.028
Extreme (10C)		1710.2535	1779.7480	40.3	0.023
Extreme (0C)		1710.2535	1779.7480	38.6	0.022
Extreme (-10C)		1710.2535	1779.7480	40.2	0.023
Extreme (-20C)		1710.2535	1779.7480	36.4	0.021
Extreme (-30C)		1710.2535	1779.7480	33.6	0.019
20C	15%	1710.2536	1779.7480	31.5	0.018
	-15%	1710.2536	1779.7480	28.1	0.016
	End Point	1710.2535	1779.7480	21.1	0.012

NR Band n70 (Lowest Frequency: QPSK / Highest Frequency: QPSK)

Test Date	2024-09-26
Test Engineer	31870

Limit		1695	1710	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1695.2585	1709.7425		
Extreme (50C)		1695.2585	1709.7425	48.5	0.028
Extreme (40C)		1695.2585	1709.7425	42.7	0.025
Extreme (30C)		1695.2585	1709.7425	38.1	0.022
Extreme (10C)		1695.2585	1709.7425	29.3	0.017
Extreme (0C)		1695.2585	1709.7425	31.2	0.018
Extreme (-10C)		1695.2585	1709.7425	33.5	0.020
Extreme (-20C)		1695.2585	1709.7425	25.9	0.015
Extreme (-30C)		1695.2585	1709.7425	26.8	0.016
20C	15%	1695.2585	1709.7425	38.4	0.023
	-15%	1695.2585	1709.7425	20.3	0.012
	End Point	1695.2585	1709.7425	22.4	0.013

NR Band n71 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Test Date	2024-09-26
Test Engineer	31870

Limit		663	698	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	663.2535	697.7570		
Extreme (50C)		663.2536	697.7571	57.5	0.084
Extreme (40C)		663.2536	697.7571	53.4	0.078
Extreme (30C)		663.2535	697.7570	48.1	0.071
Extreme (10C)		663.2535	697.7570	40.5	0.060
Extreme (0C)		663.2535	697.7570	36.6	0.054
Extreme (-10C)		663.2535	697.7570	30.5	0.045
Extreme (-20C)		663.2535	697.7570	33.1	0.049
Extreme (-30C)		663.2535	697.7570	29.4	0.043
20C	15%	663.2536	697.7570	37.5	0.055
	-15%	663.2536	697.7570	24.3	0.036
	End Point	663.2535	697.7570	21.3	0.031

NR Band n77 (PC2, 3450-3550 MHz) (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Test Date	2024-09-27
Test Engineer	31870

Limit		3450	3550	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	3450.7145	3549.2785		
Extreme (50C)		3450.7146	3549.2786	55.8	0.016
Extreme (40C)		3450.7146	3549.2786	51.3	0.015
Extreme (30C)		3450.7145	3549.2785	46.7	0.013
Extreme (10C)		3450.7145	3549.2785	40.5	0.012
Extreme (0C)		3450.7145	3549.2785	33.8	0.010
Extreme (-10C)		3450.7145	3549.2785	30.6	0.009
Extreme (-20C)		3450.7145	3549.2785	32.8	0.009
Extreme (-30C)		3450.7145	3549.2785	27.6	0.008
20C	15%	3450.7146	3549.2785	34.8	0.010
	-15%	3450.7146	3549.2785	25.1	0.007
	End Point	3450.7145	3549.2785	20.6	0.006

NR Band n77 (PC2, 3700-3980 MHz) (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)

Test Date	2024-09-27
Test Engineer	31870

Limit		3700	3980	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	3700.6880	3979.2945		
Extreme (50C)		3700.6881	3979.2946	51.5	0.013
Extreme (40C)		3700.6880	3979.2945	48.3	0.013
Extreme (30C)		3700.6880	3979.2945	43.5	0.011
Extreme (10C)		3700.6880	3979.2945	37.6	0.010
Extreme (0C)		3700.6880	3979.2945	33.3	0.009
Extreme (-10C)		3700.6880	3979.2945	27.5	0.007
Extreme (-20C)		3700.6880	3979.2945	31.1	0.008
Extreme (-30C)		3700.6880	3979.2945	26.1	0.007
20C	15%	3700.6881	3979.2945	47.5	0.012
	-15%	3700.6880	3979.2945	28.1	0.007
	End Point	3700.6880	3979.2945	23.1	0.006

9. RADIATED RESULTS

9.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §27.50

LIMITS

§27.50:

(a)(3) Mobile and portable stations. (i) For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not

(b)(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

(c) (10) - Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

(d)(4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

(h) The following power limits shall apply in the BRS and EBS:

(2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

(j)(3) Mobile and portable stations are limited to 1 Watt EIRP. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(k)(3) Mobile devices are limited to 1Watt (30 dBm) EIRP. Mobile devices operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

TEST PROCEDURE

ANSI / TIA / EIA 603 E Clause 2.2.17; ESU40 setting reference to 971168 D01 v03r01

For radiated output power measurement with a ESU40:

- a) Set the RBW $\geq$ OBW;
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span $\geq 2 \times$ RBW;
- d) Sweep time = auto couple or 1 second;
- e) Detector = rms;
- f) Ensure that the number of measurement points $\geq$ span/RBW;
- g) Trace Mode = max hold(WCDMA), average(LTE, 5G NR);

TEST RESULTS

See the following pages.

9.1.1. ERP/EIRP RESULT

WCDMA

Band	Mode	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
Band 4	REL99	1712.40	19.73	H	4.31	9.51	24.93	311.17	30.00	-5.07
		1732.60	20.33	H	4.33	9.60	25.61	363.92	30.00	-4.39
		1752.60	19.61	H	4.36	9.68	24.94	311.89	30.00	-5.06
	HSDPA	1712.40	19.30	H	4.31	9.51	24.50	281.84	30.00	-5.50
		1732.60	20.04	H	4.33	9.60	25.32	340.41	30.00	-4.68
		1752.60	19.45	H	4.36	9.68	24.78	300.61	30.00	-5.22

LTE Band 7

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
20	QPSK	2510.00	20.39	H	5.25	9.98	25.13	325.84	33.00	-7.87	1/99
		2535.00	20.64	H	5.28	9.93	25.30	338.84	33.00	-7.70	1/99
		2560.00	20.85	H	5.30	9.91	25.46	351.56	33.00	-7.54	1/10
	16-QAM	2510.00	19.30	H	5.25	9.98	24.03	252.93	33.00	-8.97	1/99
		2535.00	19.89	H	5.28	9.93	24.55	285.10	33.00	-8.45	1/99
		2560.00	19.99	H	5.30	9.91	24.60	288.40	33.00	-8.40	1/99
15	QPSK	2507.50	19.94	H	5.25	9.99	24.69	294.44	33.00	-8.31	1/10
		2535.00	20.47	H	5.28	9.93	25.13	325.84	33.00	-7.87	1/10
		2562.50	20.87	H	5.30	9.91	25.48	353.18	33.00	-7.52	1/10
	16-QAM	2507.50	19.21	H	5.25	9.99	23.96	248.89	33.00	-9.04	1/74
		2535.00	19.61	H	5.28	9.93	24.27	267.30	33.00	-8.73	1/10
		2562.50	19.92	H	5.30	9.91	24.52	283.14	33.00	-8.48	1/10
10	QPSK	2505.00	19.95	H	5.24	9.99	24.70	295.12	33.00	-8.30	1/25
		2535.00	20.20	H	5.28	9.93	24.86	306.20	33.00	-8.14	1/10
		2565.00	20.80	H	5.31	9.91	25.40	346.74	33.00	-7.60	1/10
	16-QAM	2505.00	19.19	H	5.24	9.99	23.94	247.74	33.00	-9.06	1/10
		2535.00	19.30	H	5.28	9.93	23.96	248.89	33.00	-9.04	1/25
		2565.00	19.93	H	5.31	9.91	24.53	283.79	33.00	-8.47	1/10
5	QPSK	2502.50	19.34	H	5.24	10.00	24.09	256.45	33.00	-8.91	1/10
		2535.00	20.35	H	5.28	9.93	25.01	316.96	33.00	-7.99	1/24
		2567.50	20.12	H	5.31	9.91	24.72	296.48	33.00	-8.28	1/10
	16-QAM	2502.50	18.57	H	5.24	10.00	23.32	214.78	33.00	-9.68	1/10
		2535.00	19.37	H	5.28	9.93	24.03	252.93	33.00	-8.97	1/10
		2567.50	19.37	H	5.31	9.91	23.97	249.46	33.00	-9.03	1/24

LTE Band 12

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
10	QPSK	704.00	24.10	H	2.79	-1.34	19.97	99.31	34.77	-14.80	1/10
		707.50	24.10	H	2.79	-1.34	19.97	99.31	34.77	-14.80	1/10
		711.00	23.42	H	2.80	-1.33	19.29	84.92	34.77	-15.48	1/10
	16-QAM	704.00	22.77	H	2.79	-1.34	18.64	73.11	34.77	-16.13	1/10
		707.50	22.78	H	2.79	-1.34	18.65	73.28	34.77	-16.12	1/25
		711.00	22.46	H	2.80	-1.33	18.33	68.08	34.77	-16.44	1/25
5	QPSK	701.50	23.87	H	2.78	-1.35	19.74	94.19	34.77	-15.03	1/12
		707.50	23.55	H	2.79	-1.34	19.42	87.50	34.77	-15.35	1/12
		713.50	23.28	H	2.81	-1.32	19.15	82.22	34.77	-15.62	1/10
	16-QAM	701.50	22.49	H	2.78	-1.35	18.36	68.55	34.77	-16.41	1/24
		707.50	22.69	H	2.79	-1.34	18.56	71.78	34.77	-16.21	1/12
		713.50	22.34	H	2.81	-1.32	18.21	66.22	34.77	-16.56	1/12
3	QPSK	700.50	23.39	H	2.78	-1.35	19.26	84.33	34.77	-15.51	1/10
		707.50	23.79	H	2.79	-1.34	19.66	92.47	34.77	-15.11	1/10
		714.50	23.32	H	2.81	-1.32	19.19	82.99	34.77	-15.58	1/8
	16-QAM	700.50	22.60	H	2.78	-1.35	18.47	70.31	34.77	-16.30	1/14
		707.50	22.40	H	2.79	-1.34	18.27	67.14	34.77	-16.50	1/14
		714.50	22.34	H	2.81	-1.32	18.21	66.22	34.77	-16.56	1/10
1.4	QPSK	699.70	23.44	H	2.78	-1.35	19.30	85.11	34.77	-15.47	1/10
		707.50	23.47	H	2.79	-1.34	19.34	85.90	34.77	-15.43	1/10
		715.30	23.18	H	2.81	-1.32	19.06	80.54	34.77	-15.71	1/3
	16-QAM	699.70	22.52	H	2.78	-1.35	18.38	68.87	34.77	-16.39	1/10
		707.50	22.58	H	2.79	-1.34	18.45	69.98	34.77	-16.32	1/10
		715.30	22.09	H	2.81	-1.32	17.97	62.66	34.77	-16.80	1/3

LTE Band 13

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
10	QPSK	782.00	23.26	H	2.93	-1.19	19.14	82.04	34.77	-15.63	1/10
	16-QAM	782.00	22.34	H	2.93	-1.19	18.22	66.37	34.77	-16.55	1/10
5	QPSK	779.50	23.21	H	2.93	-1.19	19.09	81.10	34.77	-15.68	1/12
		782.00	23.23	H	2.93	-1.19	19.11	81.47	34.77	-15.66	1/12
		784.50	22.44	H	2.94	-1.18	18.32	67.92	34.77	-16.45	1/12
	16-QAM	779.50	21.84	H	2.93	-1.19	17.72	59.16	34.77	-17.05	1/12
		782.00	21.78	H	2.93	-1.19	17.66	58.34	34.77	-17.11	1/24
		784.50	21.45	H	2.94	-1.18	17.33	54.08	34.77	-17.44	1/24

LTE Band 30

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
10	QPSK	2310.00	17.14	H	5.03	9.71	21.83	152.41	24.00	-2.17	1/49
	16-QAM	2310.00	17.08	H	5.03	9.71	21.77	150.31	24.00	-2.23	1/49
5	QPSK	2307.50	17.03	H	5.02	9.70	21.71	148.25	24.00	-2.29	1/24
		2310.00	16.91	H	5.03	9.71	21.60	144.54	24.00	-2.40	1/12
		2312.50	16.65	H	5.03	9.73	21.34	136.14	24.00	-2.66	1/12
		2307.50	16.76	H	5.02	9.70	21.44	139.32	24.00	-2.56	1/24
	16-QAM	2310.00	16.69	H	5.03	9.71	21.38	137.40	24.00	-2.62	1/24
		2312.50	16.50	H	5.03	9.73	21.19	131.52	24.00	-2.81	1/24

LTE Band 41 (PC2)

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
20	QPSK	2506.00	22.13	H	5.25	10.07	26.95	495.45	33.00	-6.05	1/49
		2593.00	22.91	H	5.34	9.97	27.54	567.54	33.00	-5.46	1/49
		2680.00	22.03	H	5.43	10.04	26.64	461.32	33.00	-6.36	1/49
	16-QAM	2506.00	21.39	H	5.25	10.07	26.21	417.83	33.00	-6.79	1/0
		2593.00	21.77	H	5.34	9.97	26.40	436.52	33.00	-6.60	1/49
		2680.00	20.97	H	5.43	10.04	25.58	361.41	33.00	-7.42	1/0
15	QPSK	2503.50	22.43	H	5.24	10.07	27.26	532.11	33.00	-5.74	1/37
		2593.00	22.38	H	5.34	9.97	27.01	502.34	33.00	-5.99	1/37
		2682.50	22.02	H	5.43	10.05	26.64	461.32	33.00	-6.36	1/37
	16-QAM	2503.50	21.44	H	5.24	10.07	26.27	423.64	33.00	-6.73	1/37
		2593.00	21.80	H	5.34	9.97	26.43	439.54	33.00	-6.57	1/37
		2682.50	20.95	H	5.43	10.05	25.57	360.58	33.00	-7.43	1/37
10	QPSK	2501.00	22.40	H	5.24	10.07	27.23	528.45	33.00	-5.77	1/49
		2593.00	22.41	H	5.34	9.97	27.04	505.82	33.00	-5.96	1/49
		2685.00	22.23	H	5.43	10.05	26.85	484.17	33.00	-6.15	1/0
	16-QAM	2501.00	21.38	H	5.24	10.07	26.21	417.83	33.00	-6.79	1/0
		2593.00	21.60	H	5.34	9.97	26.23	419.76	33.00	-6.77	1/49
		2685.00	21.23	H	5.43	10.05	25.85	384.59	33.00	-7.15	1/0
5	QPSK	2498.50	22.51	H	5.23	10.07	27.35	543.25	33.00	-5.65	1/24
		2593.00	22.18	H	5.34	9.97	26.81	479.73	33.00	-6.19	1/0
		2687.50	21.67	H	5.44	10.06	26.28	424.62	33.00	-6.72	1/12
	16-QAM	2498.50	21.87	H	5.23	10.07	26.71	468.81	33.00	-6.29	1/12
		2593.00	21.49	H	5.34	9.97	26.12	409.26	33.00	-6.88	1/0
		2687.50	20.51	H	5.44	10.06	25.12	325.09	33.00	-7.88	1/12

LTE Band 41C (UL CA)

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB	
											PCC	SCC
40	QPSK	2515.90	19.28	H	5.26	9.97	23.99	250.61	33.00	-9.01	1/99	1/0
		2593.00	19.16	H	5.34	9.91	23.73	236.05	33.00	-9.27	1/99	1/0
		2670.00	14.83	H	5.43	9.87	19.28	84.72	33.00	-13.72	1/99	1/0
		2515.90	18.77	H	5.26	9.97	23.47	222.33	33.00	-9.53	1/99	1/0
	16-QAM	2593.00	18.23	H	5.34	9.91	22.81	190.99	33.00	-10.19	1/99	1/0
		2670.00	14.22	H	5.43	9.87	18.67	73.62	33.00	-14.33	1/99	1/0