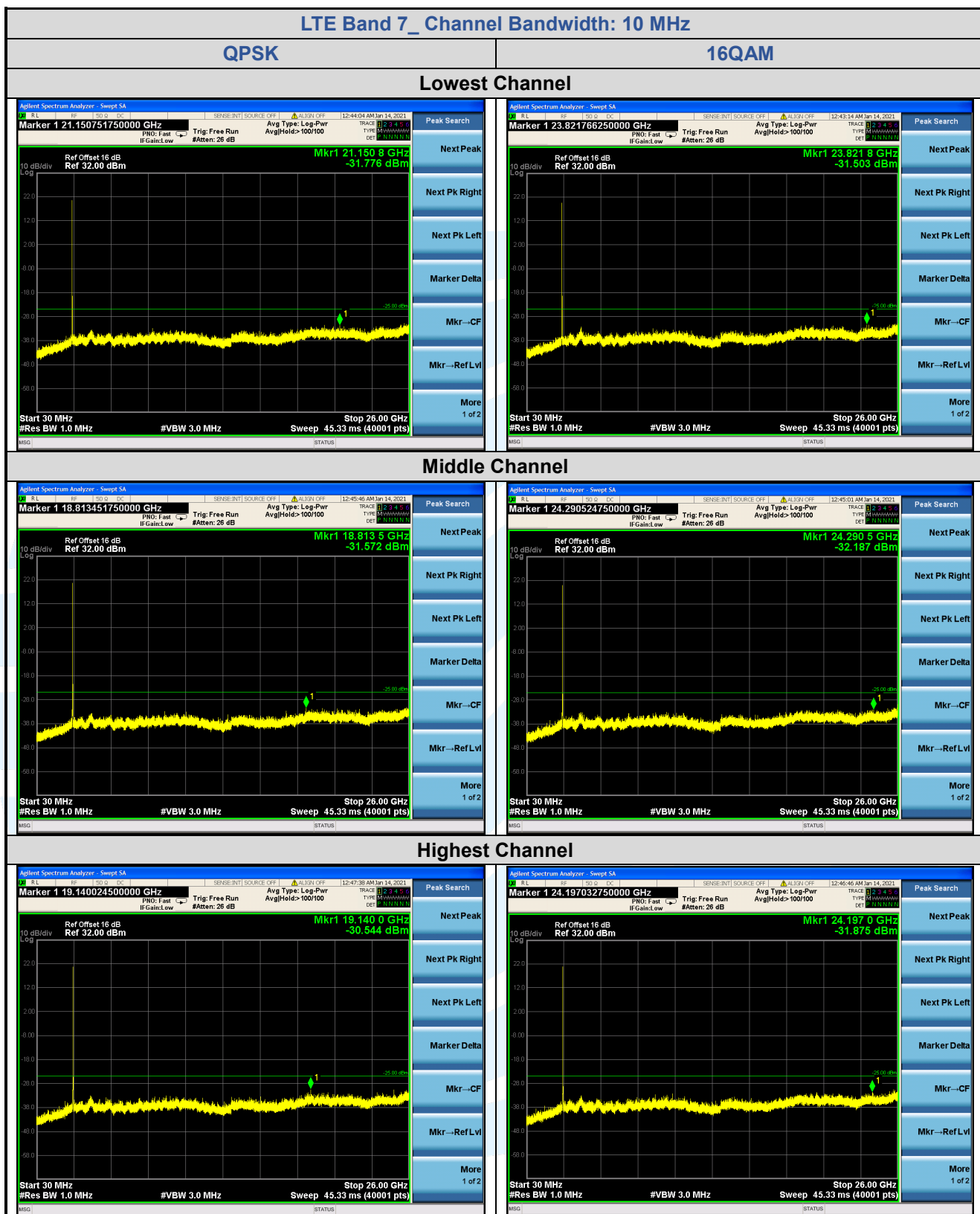
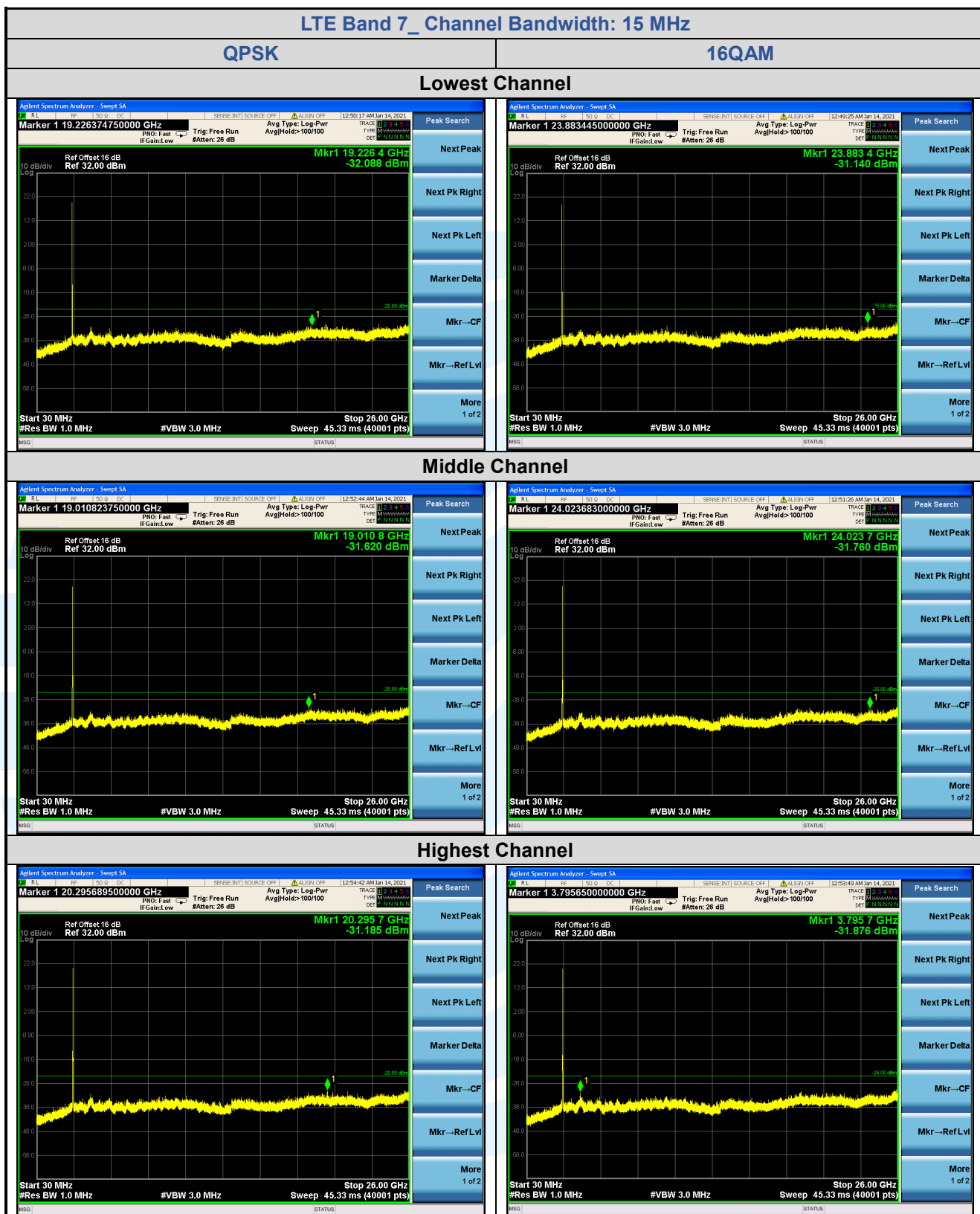
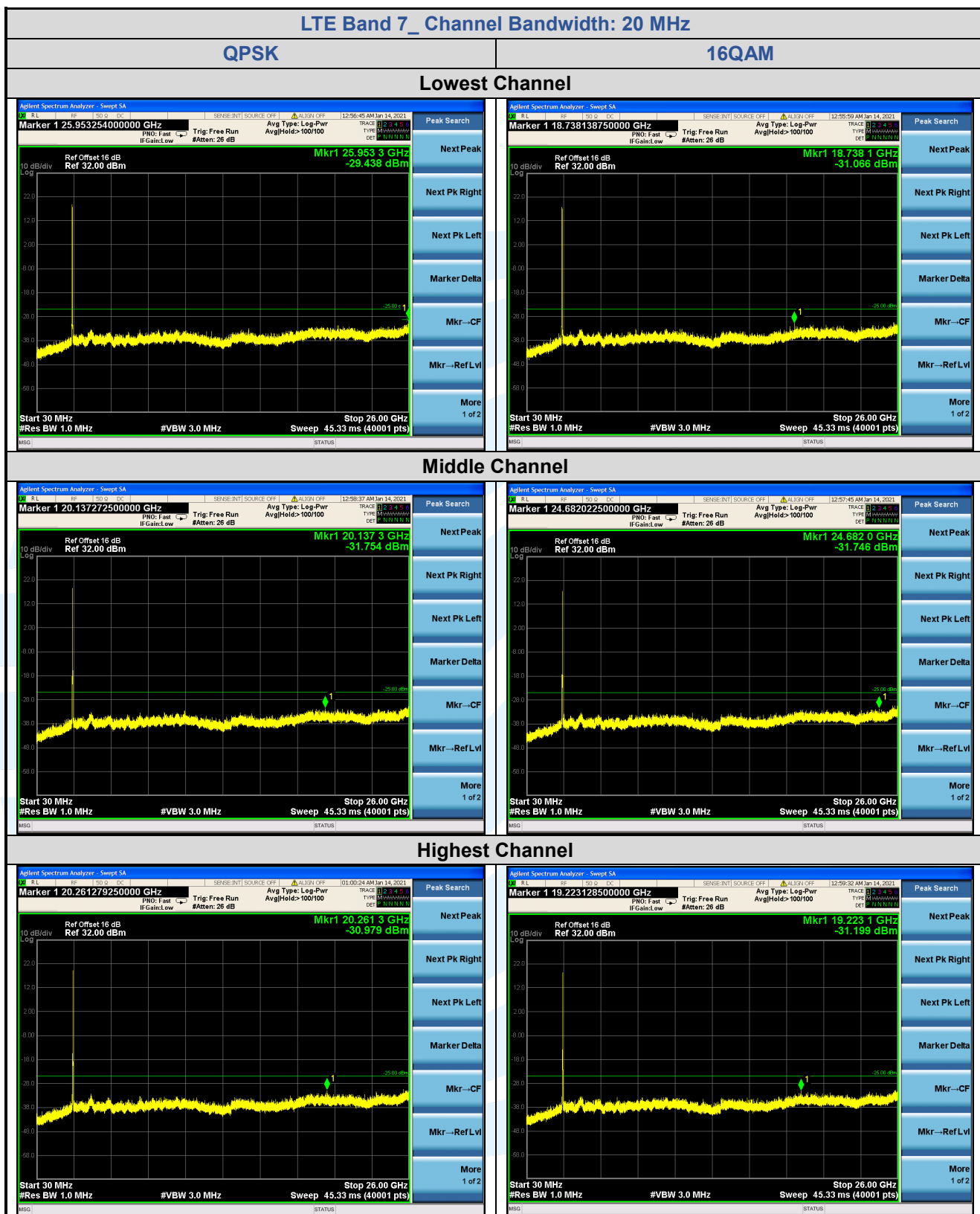
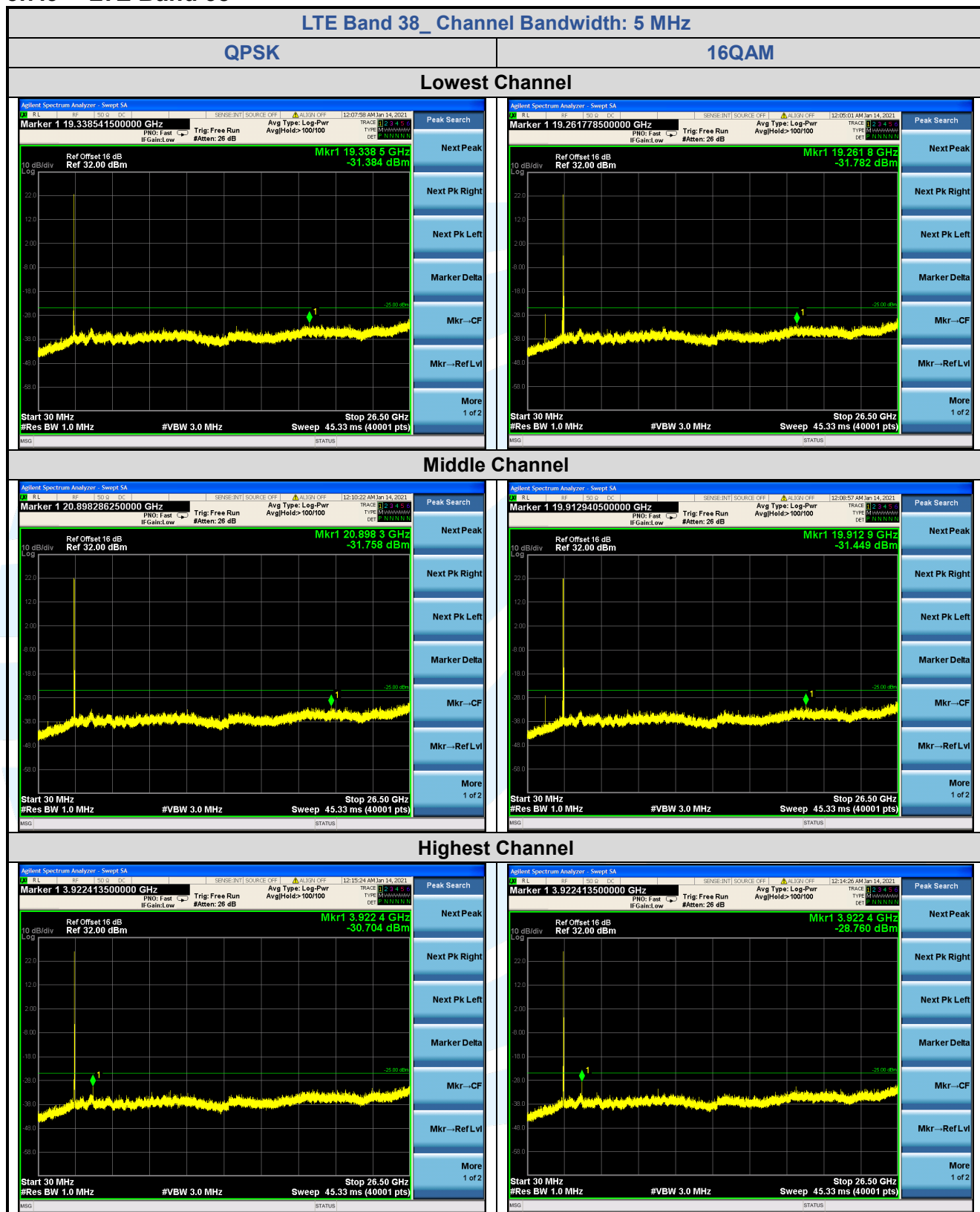


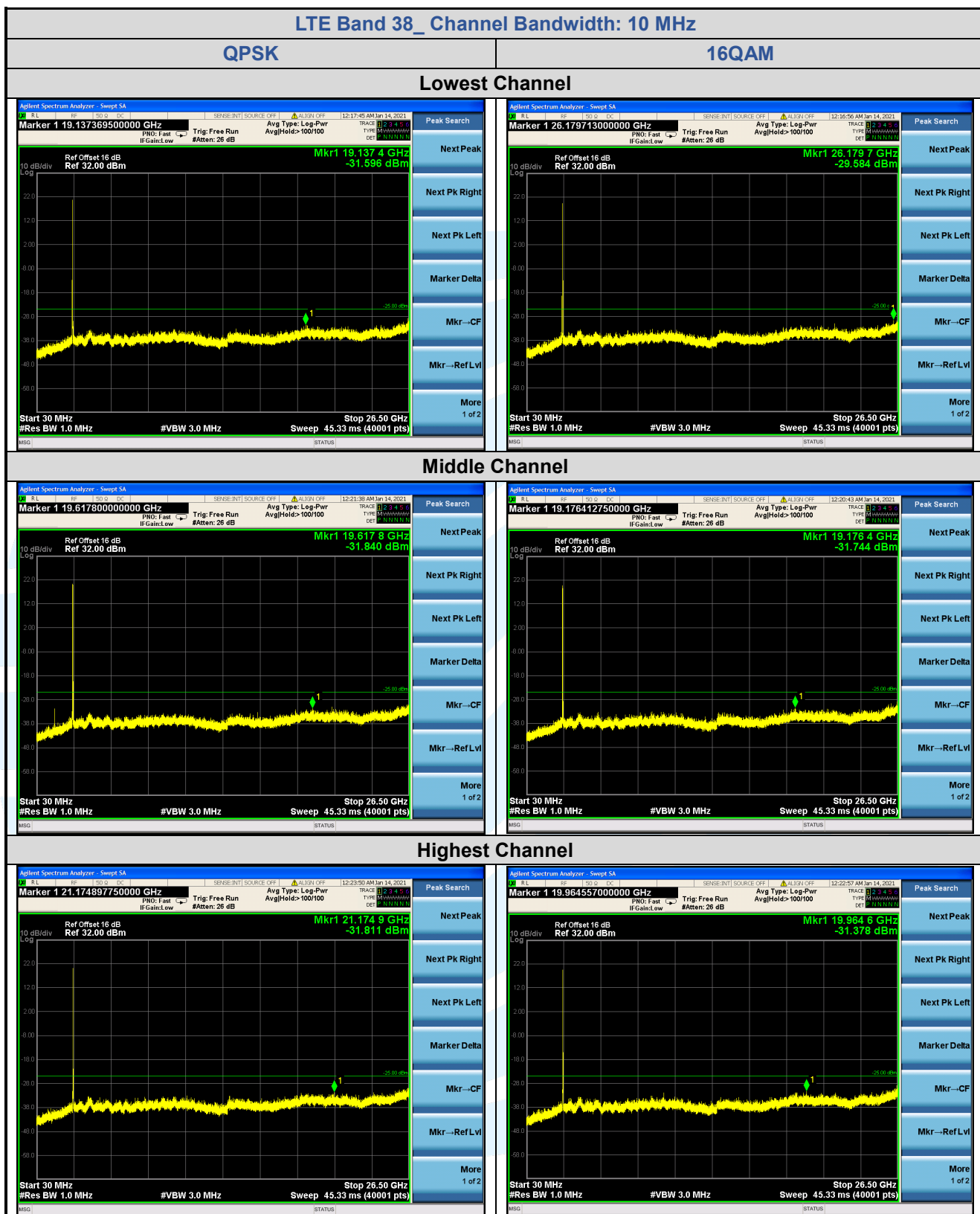


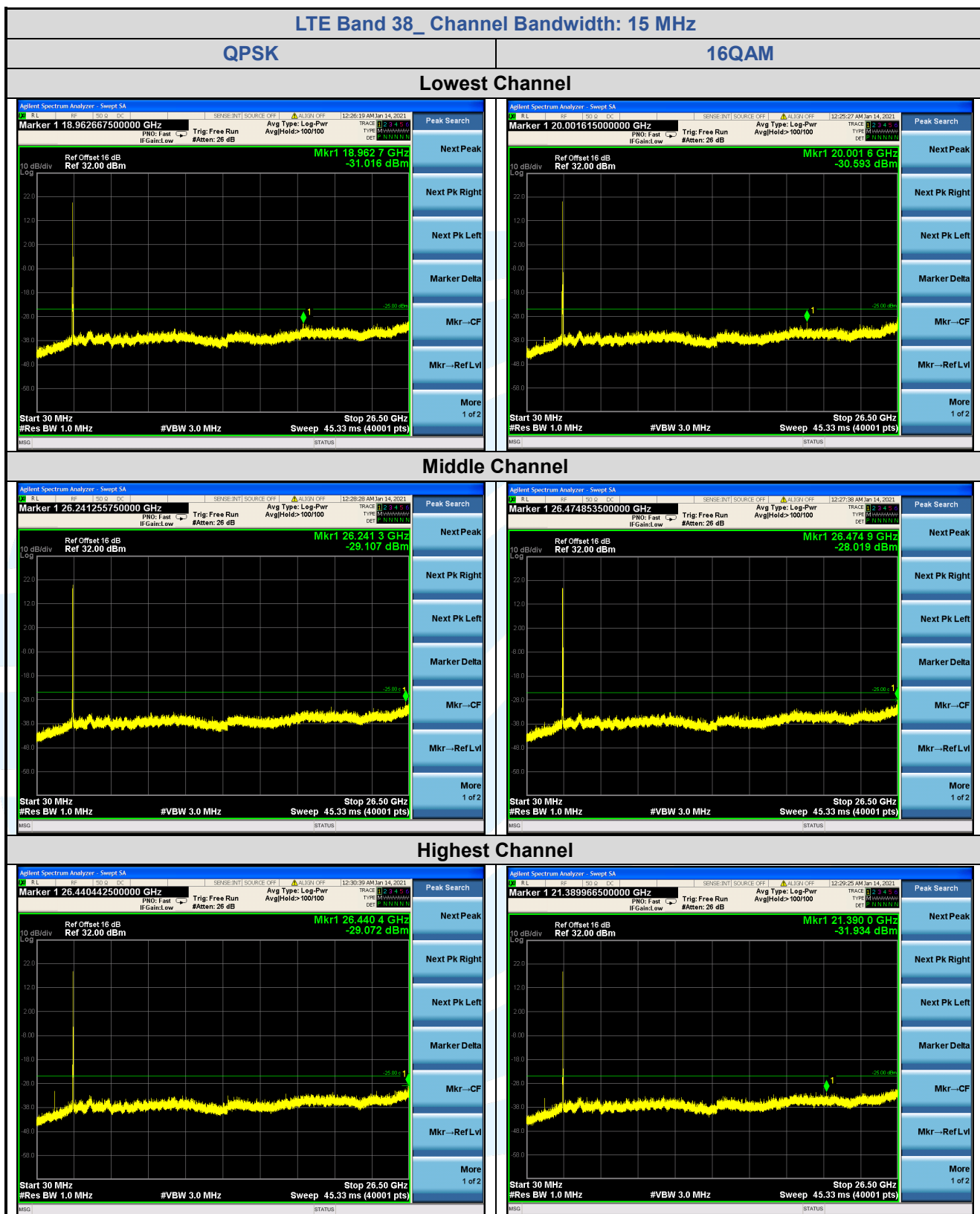


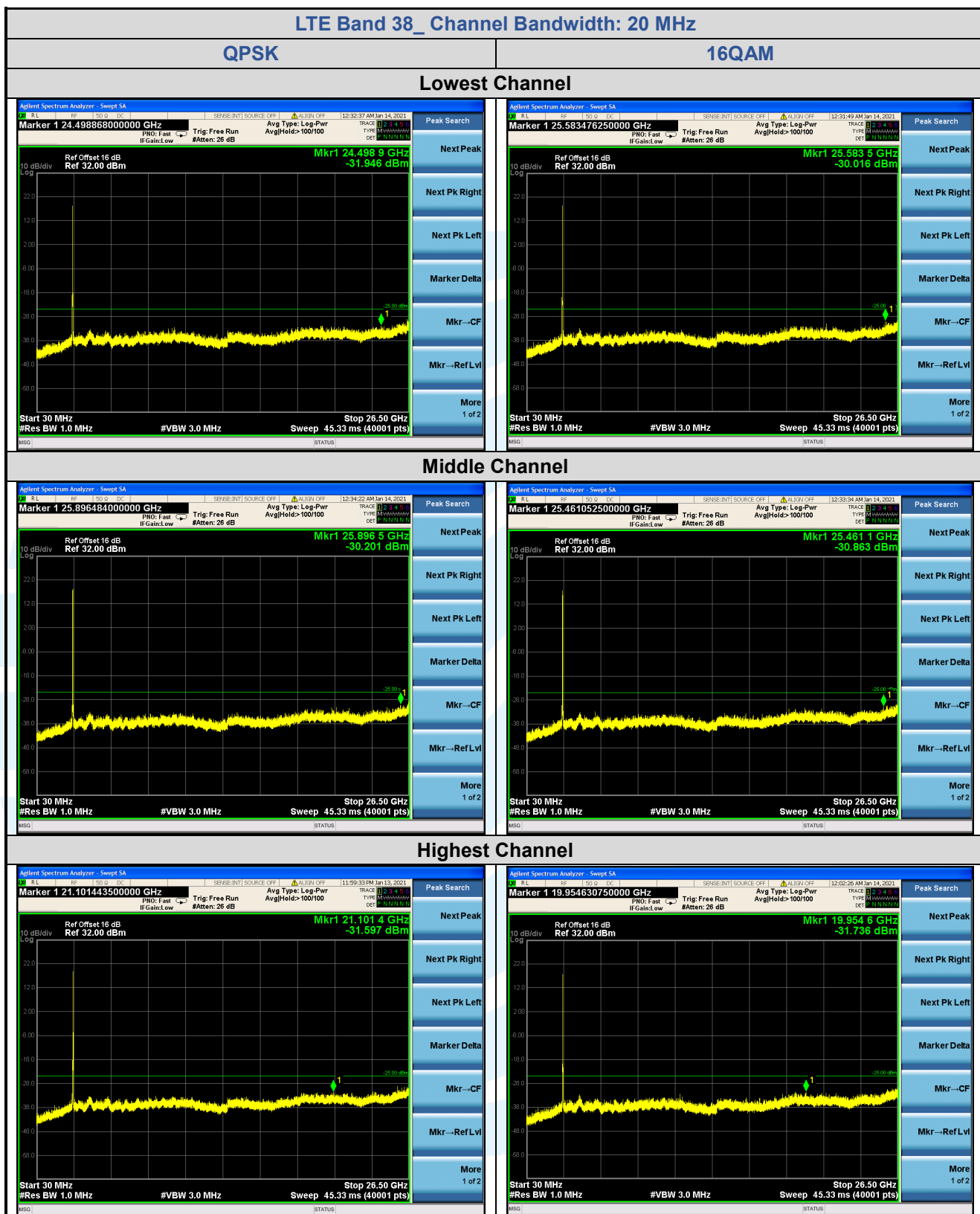


5.7.3 LTE Band 38









5.8 FIELD STRENGTH OF SPURIOUS RADIATION

Test Requirement: LTE Band 4 : FCC 47 CFR Part 27.53(h)
LTE Band 7 & Band 38: FCC 47 CFR Part 27.53(m)(4)

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

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009 MHz-30 MHz	Peak	10 kHz	30 KHz	Peak
30 MHz-1 GHz	Quasi-peak	100 kHz	300 KHz	Peak
Above 1 GHz	Peak	1 MHz	3 MHz	Peak

Limits:

FCC 47 CFR 27.53(h)(1):

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13 dBm.

FCC 47 CFR Part 27.53(m)(4):

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 $55 + 10 \log(P)$ dB. The emission limit equal to -25 dBm.

Test Setup: Refer to section 4.2.1 for details.

Test Procedures: KDB 971168 D01v03r01 Section 7

Equipment Used: Refer to section 3 for details.

Test Result: Pass

The measurement data as follows:

5.8.1 LTE Band 4

LTE Band 4_20 MHz_QPSK							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
Lowest Channel							
1	54.901	-69.43	-5.36	-74.79	-13.00	-61.79	Horizontal
2	250.486	-79.77	1.67	-78.10	-13.00	-65.10	Horizontal
3	693.910	-80.28	11.18	-69.10	-13.00	-56.10	Horizontal
4	3440.000	-52.19	5.94	-46.25	-13.00	-33.25	Horizontal
5	6880.000	-46.59	12.17	-34.42	-13.00	-21.42	Horizontal
6	54.135	-70.74	-5.34	-76.08	-13.00	-63.08	Vertical
7	502.247	-69.64	7.38	-62.26	-13.00	-49.26	Vertical
8	932.141	-79.40	13.19	-66.21	-13.00	-53.21	Vertical
9	3440.000	-44.11	5.75	-38.36	-13.00	-25.36	Vertical
10	6880.000	-42.34	12.31	-30.03	-13.00	-17.03	Vertical
Middle Channel							
1	54.135	-68.73	-5.31	-74.04	-13.00	-61.04	Horizontal
2	607.181	-80.11	9.51	-70.60	-13.00	-57.60	Horizontal
3	815.635	-80.00	11.99	-68.01	-13.00	-55.01	Horizontal
4	3465.000	-48.65	6.02	-42.63	-13.00	-29.63	Horizontal
5	6930.000	-47.39	12.24	-35.15	-13.00	-22.15	Horizontal
6	53.756	-72.06	-5.34	-77.40	-13.00	-64.40	Vertical
7	502.247	-70.02	7.38	-62.64	-13.00	-49.64	Vertical
8	945.334	-80.92	13.17	-67.75	-13.00	-54.75	Vertical
9	3465.000	-50.81	5.87	-44.94	-13.00	-31.94	Vertical
10	6930.000	-42.21	12.36	-29.85	-13.00	-16.85	Vertical
Highest Channel							
1	53.756	-69.26	-5.28	-74.54	-13.00	-61.54	Horizontal
2	104.798	-76.21	-3.21	-79.42	-13.00	-66.42	Horizontal
3	958.714	-81.91	14.49	-67.42	-13.00	-54.42	Horizontal
4	3490.000	-48.92	6.11	-42.81	-13.00	-29.81	Horizontal
5	6980.000	-48.37	12.31	-36.06	-13.00	-23.06	Horizontal
6	53.379	-71.93	-5.35	-77.28	-13.00	-64.28	Vertical
7	250.486	-78.06	1.67	-76.39	-13.00	-63.39	Vertical
8	502.247	-71.26	7.38	-63.88	-13.00	-50.88	Vertical
9	3490.000	-42.39	5.99	-36.40	-13.00	-23.40	Vertical
10	6980.000	-44.62	12.41	-32.21	-13.00	-19.21	Vertical

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5.8.2 LTE Band 7

LTE Band 7_ 20 MHz_ QPSK							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
Lowest Channel							
1	54.135	-68.07	-5.31	-73.38	-25.00	-48.38	Horizontal
2	502.247	-70.12	6.85	-63.27	-25.00	-38.27	Horizontal
3	952.000	-80.07	14.62	-65.45	-25.00	-40.45	Horizontal
4	5020.000	-48.52	8.68	-39.84	-25.00	-14.84	Horizontal
5	7530.000	-43.94	13.00	-30.94	-25.00	-5.94	Horizontal
6	149.968	-75.63	-2.19	-77.82	-25.00	-52.82	Vertical
7	502.247	-70.38	7.38	-63.00	-25.00	-38.00	Vertical
8	793.028	-79.96	10.93	-69.03	-25.00	-44.03	Vertical
9	5020.000	-47.77	8.98	-38.79	-25.00	-13.79	Vertical
10	7530.000	-43.80	13.10	-30.70	-25.00	-5.70	Vertical
Middle Channel							
1	54.135	-70.39	-5.31	-75.70	-25.00	-50.70	Horizontal
2	535.038	-79.27	7.98	-71.29	-25.00	-46.29	Horizontal
3	952.000	-80.68	14.62	-66.06	-25.00	-41.06	Horizontal
4	5070.000	-44.31	8.86	-35.45	-25.00	-10.45	Horizontal
5	7605.000	-48.98	13.16	-35.82	-25.00	-10.82	Horizontal
6	54.135	-71.68	-5.34	-77.02	-25.00	-52.02	Vertical
7	149.968	-76.84	-2.19	-79.03	-25.00	-54.03	Vertical
8	502.247	-70.05	7.38	-62.67	-25.00	-37.67	Vertical
9	5070.000	-48.09	9.18	-38.91	-25.00	-13.91	Vertical
10	7605.000	-46.85	13.26	-33.59	-25.00	-8.59	Vertical
Highest Channel							
1	54.135	-68.80	-5.31	-74.11	-25.00	-49.11	Horizontal
2	102.612	-74.15	-3.18	-77.33	-25.00	-52.33	Horizontal
3	952.000	-81.45	14.62	-66.83	-25.00	-41.83	Horizontal
4	5120.000	-47.09	9.03	-38.06	-25.00	-13.06	Horizontal
5	7680.000	-52.60	13.31	-39.29	-25.00	-14.29	Horizontal
6	53.756	-71.27	-5.34	-76.61	-25.00	-51.61	Vertical
7	149.968	-77.61	-2.19	-79.80	-25.00	-54.80	Vertical
8	502.247	-70.79	7.38	-63.41	-25.00	-38.41	Vertical
9	5120.000	-51.30	9.37	-41.93	-25.00	-16.93	Vertical
10	7680.000	-54.56	13.41	-41.15	-25.00	-16.15	Vertical

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5.8.3 LTE Band 38

LTE Band 38_20 MHz_QPSK							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
Lowest Channel							
1	43.845	-72.58	-2.60	-75.18	-25.00	-50.18	Horizontal
2	55.288	-68.98	-5.39	-74.37	-25.00	-49.37	Horizontal
3	952.000	-81.80	14.62	-67.18	-25.00	-42.18	Horizontal
4	5160.000	-49.10	9.17	-39.93	-25.00	-14.93	Horizontal
5	7740.000	-52.11	13.43	-38.68	-25.00	-13.68	Horizontal
6	55.678	-72.80	-5.31	-78.11	-25.00	-53.11	Vertical
7	149.968	-77.02	-2.19	-79.21	-25.00	-54.21	Vertical
8	502.247	-70.07	7.38	-62.69	-25.00	-37.69	Vertical
9	5160.000	-51.55	9.53	-42.02	-25.00	-17.02	Vertical
10	7740.000	-57.37	13.53	-43.84	-25.00	-18.84	Vertical
Middle Channel							
1	47.703	-70.58	-4.10	-74.68	-25.00	-49.68	Horizontal
2	793.028	-80.48	11.90	-68.58	-25.00	-43.58	Horizontal
3	958.714	-81.26	14.49	-66.77	-25.00	-41.77	Horizontal
4	5190.000	-49.18	9.27	-39.91	-25.00	-14.91	Horizontal
5	7785.000	-54.27	13.51	-40.76	-25.00	-15.76	Horizontal
6	47.703	-73.01	-4.64	-77.65	-25.00	-52.65	Vertical
7	502.247	-70.46	7.38	-63.08	-25.00	-38.08	Vertical
8	906.304	-80.64	13.01	-67.63	-25.00	-42.63	Vertical
9	5190.000	-55.42	9.65	-45.77	-25.00	-20.77	Vertical
10	7785.000	-56.43	13.61	-42.82	-25.00	-17.82	Vertical
Highest Channel							
1	32.870	-80.52	2.43	-78.09	-25.00	-53.09	Horizontal
2	324.864	-80.80	3.63	-77.17	-25.00	-52.17	Horizontal
3	952.000	-81.03	14.62	-66.41	-25.00	-41.41	Horizontal
4	5220.000	-45.15	9.42	-35.73	-25.00	-10.73	Horizontal
5	7830.000	-53.11	13.61	-39.50	-25.00	-14.50	Horizontal
6	34.527	-79.09	1.32	-77.77	-25.00	-52.77	Vertical
7	350.972	-77.32	4.70	-72.62	-25.00	-47.62	Vertical
8	932.141	-76.39	13.19	-63.20	-25.00	-38.20	Vertical
9	5220.000	-54.90	9.80	-45.10	-25.00	-20.10	Vertical
10	7830.000	-59.11	13.71	-45.40	-25.00	-20.40	Vertical

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5.9 FREQUENCY STABILITY

Test Requirement: FCC 47 CFR Part 2.1055 &
FCC 47 CFR Part 22.355 &
FCC 47 CFR Part 24.235 &
FCC 47 CFR Part 27.54,

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

Limits:

FCC 47 CFR Part 22.355, FCC 47 CFR Part 90.213

The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

FCC 47 CFR Part 24.235, FCC 47 CFR Part 27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Setup: Refer to section 4.2.2 for details.

Test Procedures:

- 1) Use CMW 500 or CMU 200 with Frequency Error measurement capability.
 - a) Temp. = -30° to $+50^{\circ}\text{C}$
 - b) Voltage = low voltage, 3.45 Vdc, Normal, 3.8 Vdc and High voltage, 4.4 Vdc.

- 2) Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until $+50^{\circ}\text{C}$ is reached.

- 3) Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

Equipment Used: Refer to section 3 for details.

Test Result: Pass

5.9.1 LTE Band 4

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature ($^{\circ}\text{C}$)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
LTE Band 4 / 20MHz / Full RB							
QPSK	20175 / 1732.5	VL	TN	32	0.0185	N/A	Pass
		VN		26	0.0150		Pass
		VH		25	0.0144		Pass
		VN	50	25	0.0144		Pass
			40	27	0.0156		Pass
			30	31	0.0179		Pass
			20	21	0.0121		Pass
			10	26	0.0150		Pass
			0	19	0.0110		Pass
			-10	21	0.0121		Pass
			-20	23	0.0133		Pass
			-30	26	0.0150		Pass

5.9.2 LTE Band 7

Modulation	Channel/ Frequency	Voltage	Temperature	Deviation	Deviation	Limit	Result
	(MHz)	(Vdc)	(°C)	(Hz)	(ppm)	(ppm)	
LTE Band 7 / 20MHz / Full RB							
QPSK	21100 / 2535	VL	TN	-28	-0.0110	N/A	Pass
		VN		-31	-0.0122		Pass
		VH		-25	-0.0099		Pass
		VN	50	-34	-0.0134		Pass
			40	-22	-0.0087		Pass
			30	-26	-0.0103		Pass
			20	-31	-0.0122		Pass
			10	-32	-0.0126		Pass
			0	-25	-0.0099		Pass
			-10	-23	-0.0091		Pass
			-20	-31	-0.0122		Pass
			-30	-25	-0.0099		Pass

5.9.3 LTE Band 38

Modulation	Channel/ Frequency	Voltage	Temperature	Deviation	Deviation	Limit	Result
	(MHz)	(Vdc)	(°C)	(Hz)	(ppm)	(ppm)	
LTE Band 38 / 20MHz / Full RB							
QPSK	38000 / 2595	VL	TN	25	0.0096	N/A	Pass
		VN		31	0.0119		Pass
		VH		19	0.0073		Pass
		VN	50	25	0.0096		Pass
			40	26	0.0100		Pass
			30	30	0.0116		Pass
			20	24	0.0092		Pass
			10	23	0.0089		Pass
			0	31	0.0119		Pass
			-10	23	0.0089		Pass
			-20	26	0.0100		Pass
			-30	25	0.0096		Pass

APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

*** End of Report ***

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