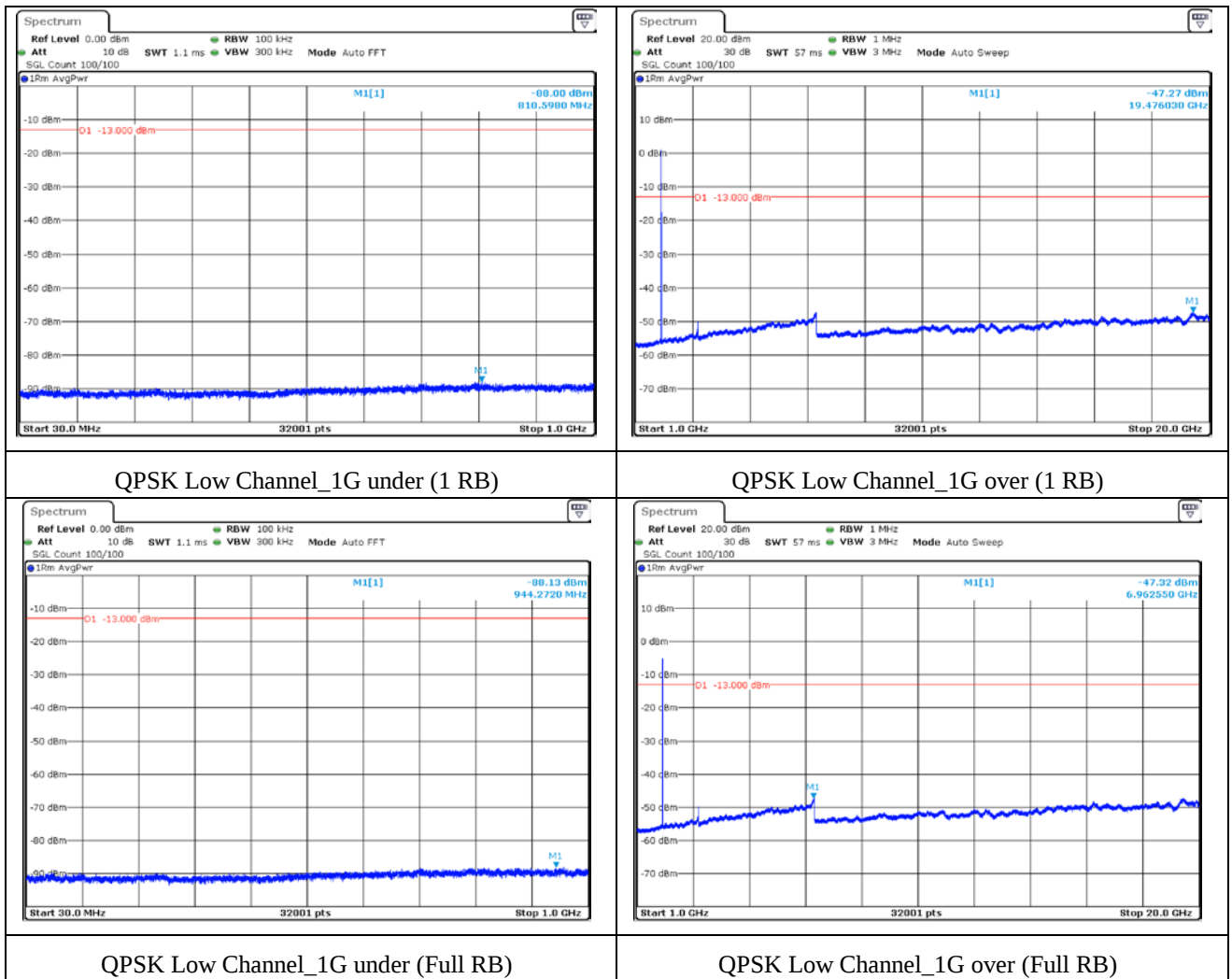
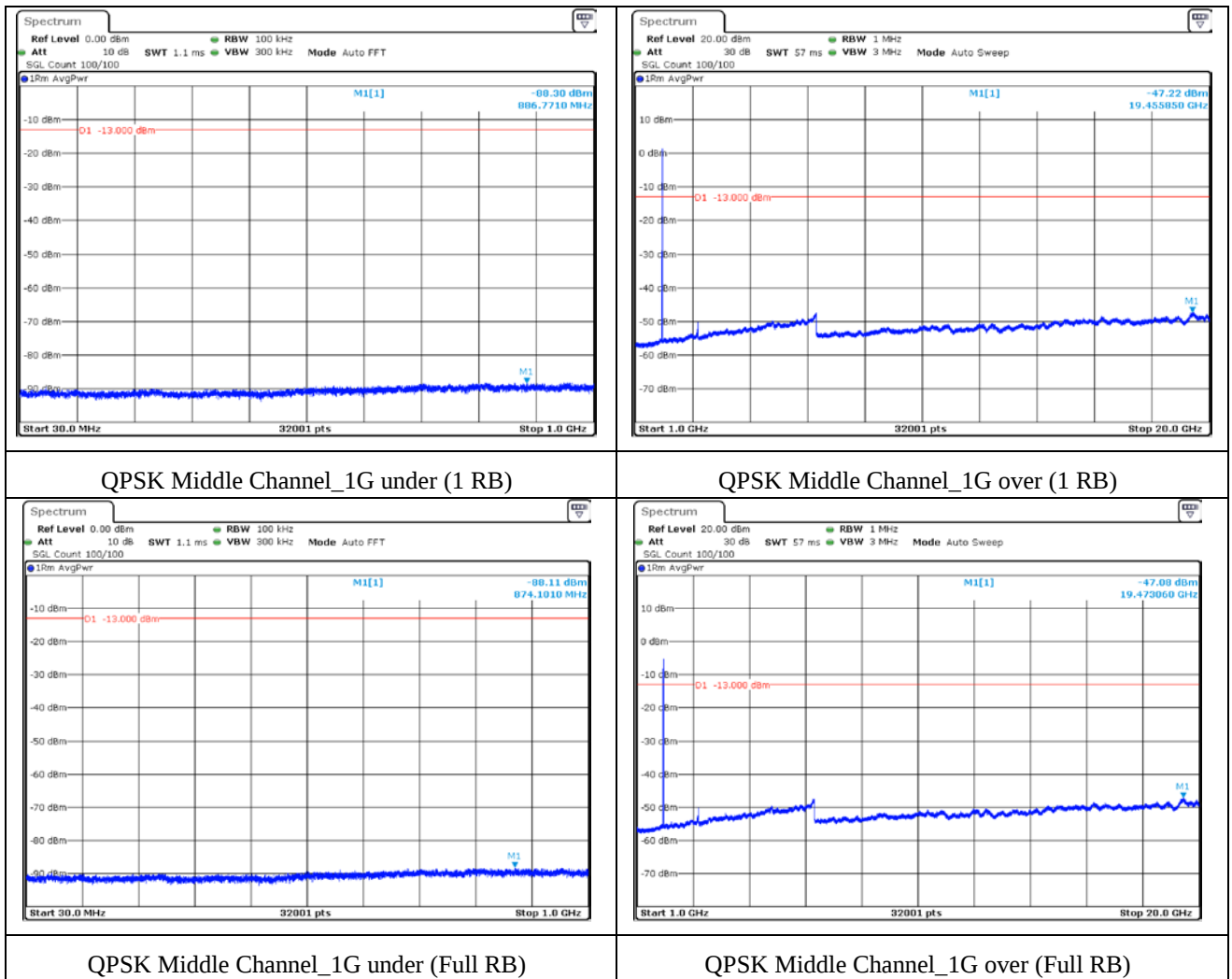
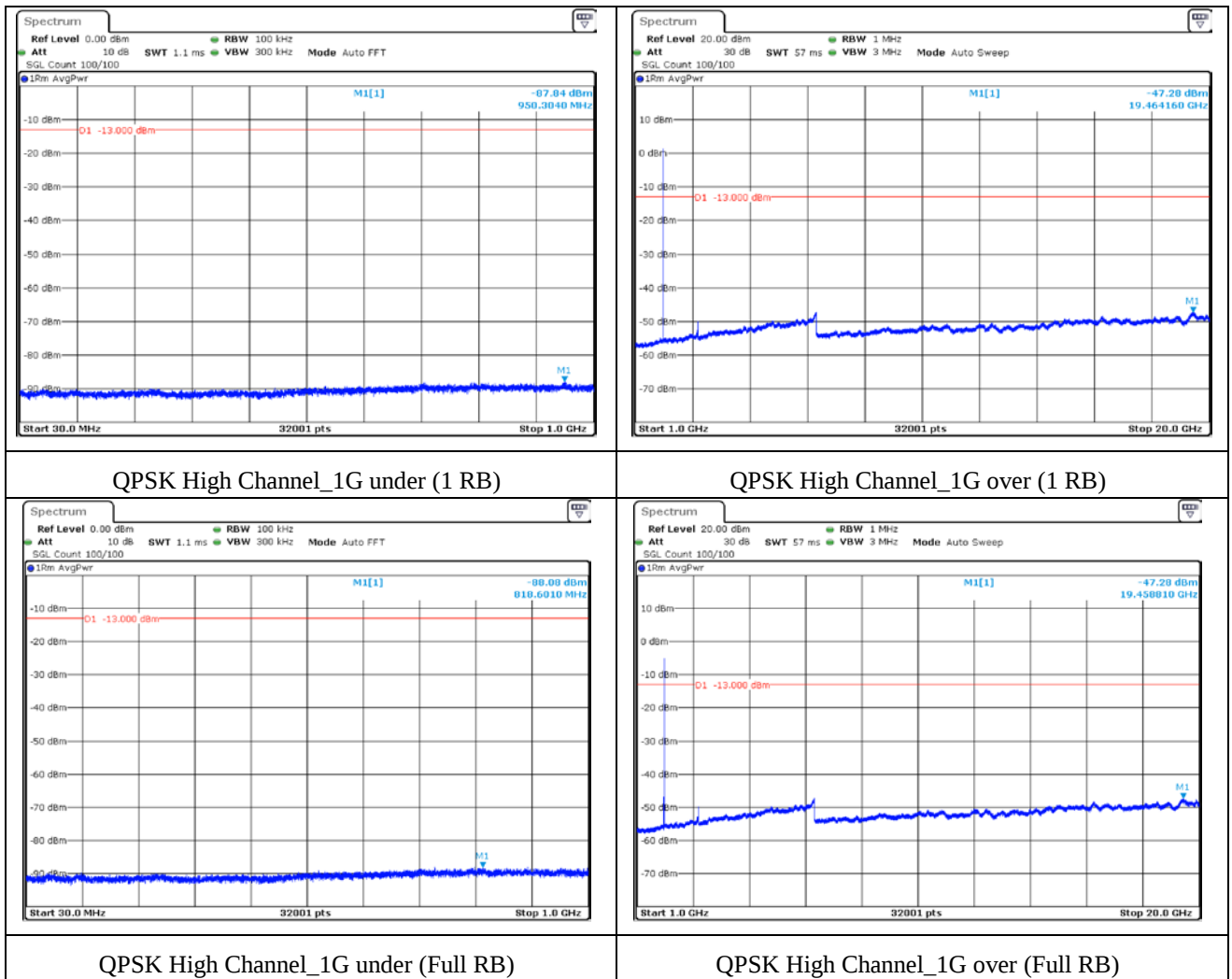


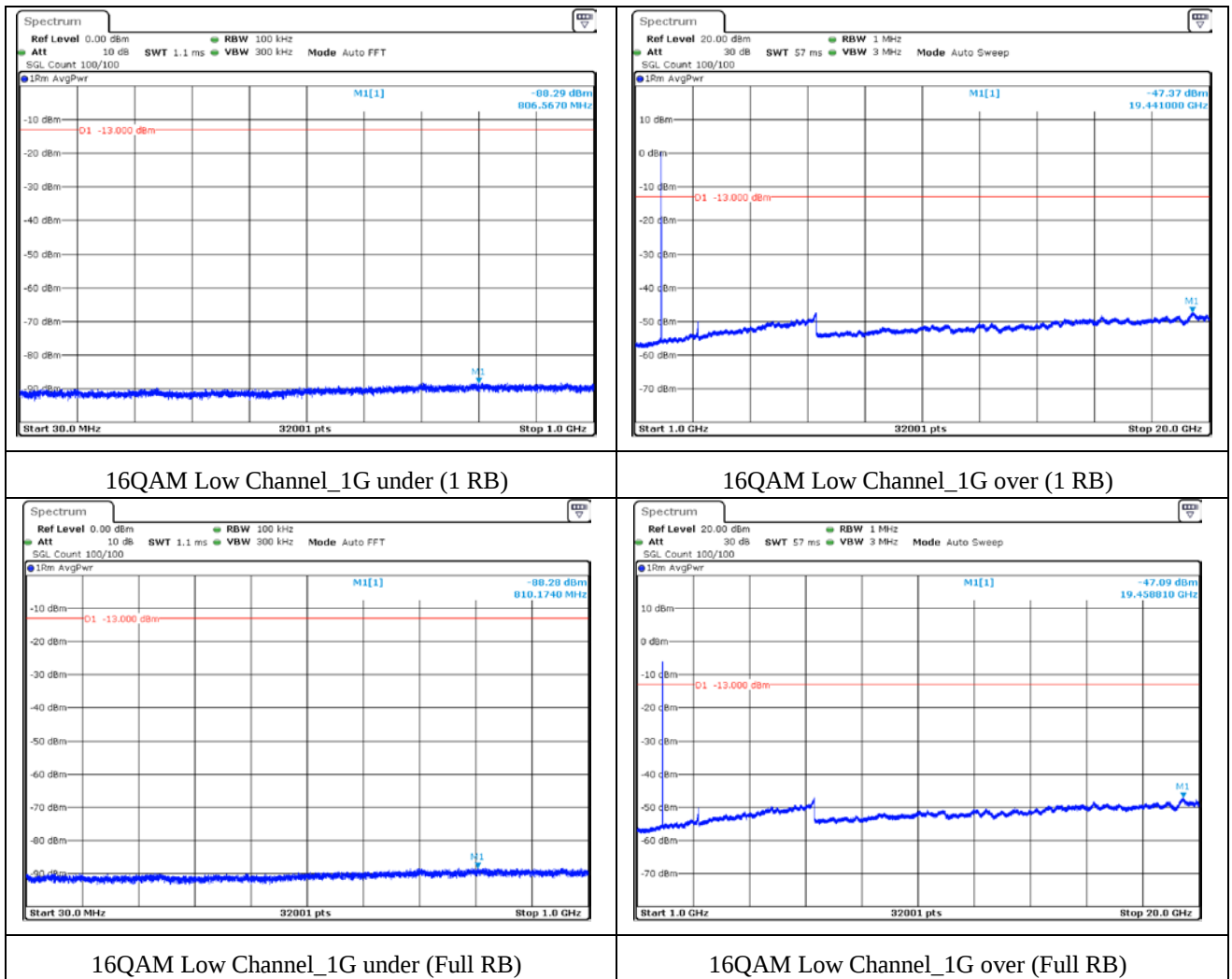
13.7 Test data for Band 2_Bandwidth 5 MHz

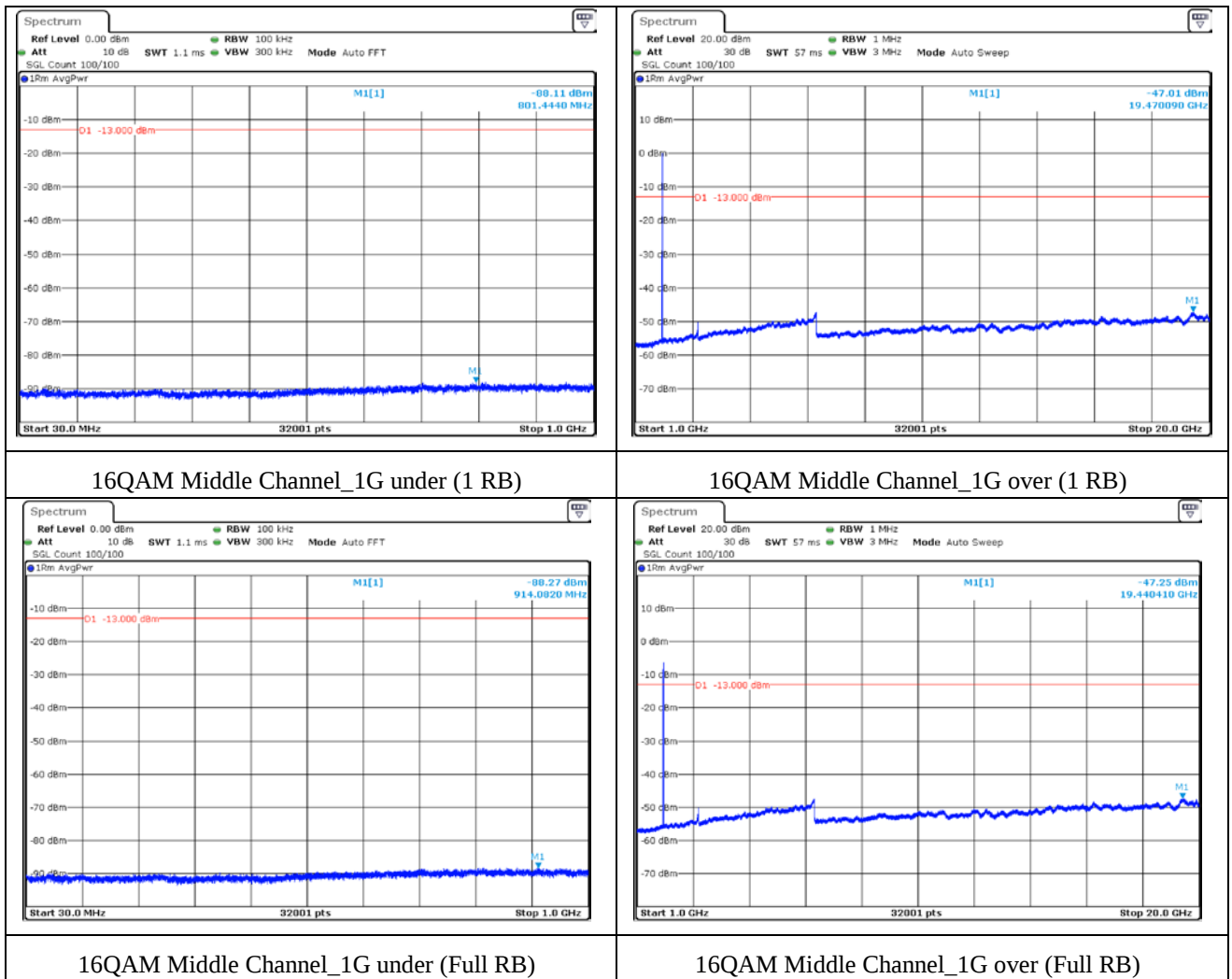
Test Mode	Channel	Frequency Range	Measured Value (dBm)	Cable Loss (dB)	Total Value (dBm)	Limit (dBm)	Result
LTE Band 2 QPSK							
1 RB	Low	30 MHz ~ 1 GHz	-88.00	20.53	-67.47	-13.00	PASS
		1 GHz ~ 20 GHz	-47.27	22.54	-24.73		PASS
	Middle	30 MHz ~ 1 GHz	-88.30	20.46	-67.84		PASS
		1 GHz ~ 20 GHz	-47.22	22.53	-24.69		PASS
	High	30 MHz ~ 1 GHz	-87.84	20.46	-67.38		PASS
		1 GHz ~ 20 GHz	-47.28	22.56	-24.72		PASS
Full RB	Low	30 MHz ~ 1 GHz	-88.13	20.45	-67.68	-13.00	PASS
		1 GHz ~ 20 GHz	-47.32	22.54	-24.78		PASS
	Middle	30 MHz ~ 1 GHz	-88.11	20.65	-67.46		PASS
		1 GHz ~ 20 GHz	-47.08	22.53	-24.55		PASS
	High	30 MHz ~ 1 GHz	-88.08	20.46	-67.62		PASS
		1 GHz ~ 20 GHz	-47.28	22.54	-24.74		PASS
LTE Band 2 16QAM							
1 RB	Low	30 MHz ~ 1 GHz	-88.29	20.66	-67.63	-13.00	PASS
		1 GHz ~ 20 GHz	-47.37	22.54	-24.83		PASS
	Middle	30 MHz ~ 1 GHz	-88.11	20.65	-67.46		PASS
		1 GHz ~ 20 GHz	-47.01	22.55	-24.46		PASS
	High	30 MHz ~ 1 GHz	-88.13	20.46	-67.67		PASS
		1 GHz ~ 20 GHz	-47.39	22.53	-24.86		PASS
Full RB	Low	30 MHz ~ 1 GHz	-88.28	20.68	-67.60	-13.00	PASS
		1 GHz ~ 20 GHz	-47.09	22.48	-24.61		PASS
	Middle	30 MHz ~ 1 GHz	-88.27	20.65	-67.62		PASS
		1 GHz ~ 20 GHz	-47.25	22.55	-24.70		PASS
	High	30 MHz ~ 1 GHz	-88.17	20.53	-67.64		PASS
		1 GHz ~ 20 GHz	-47.21	22.55	-24.66		PASS

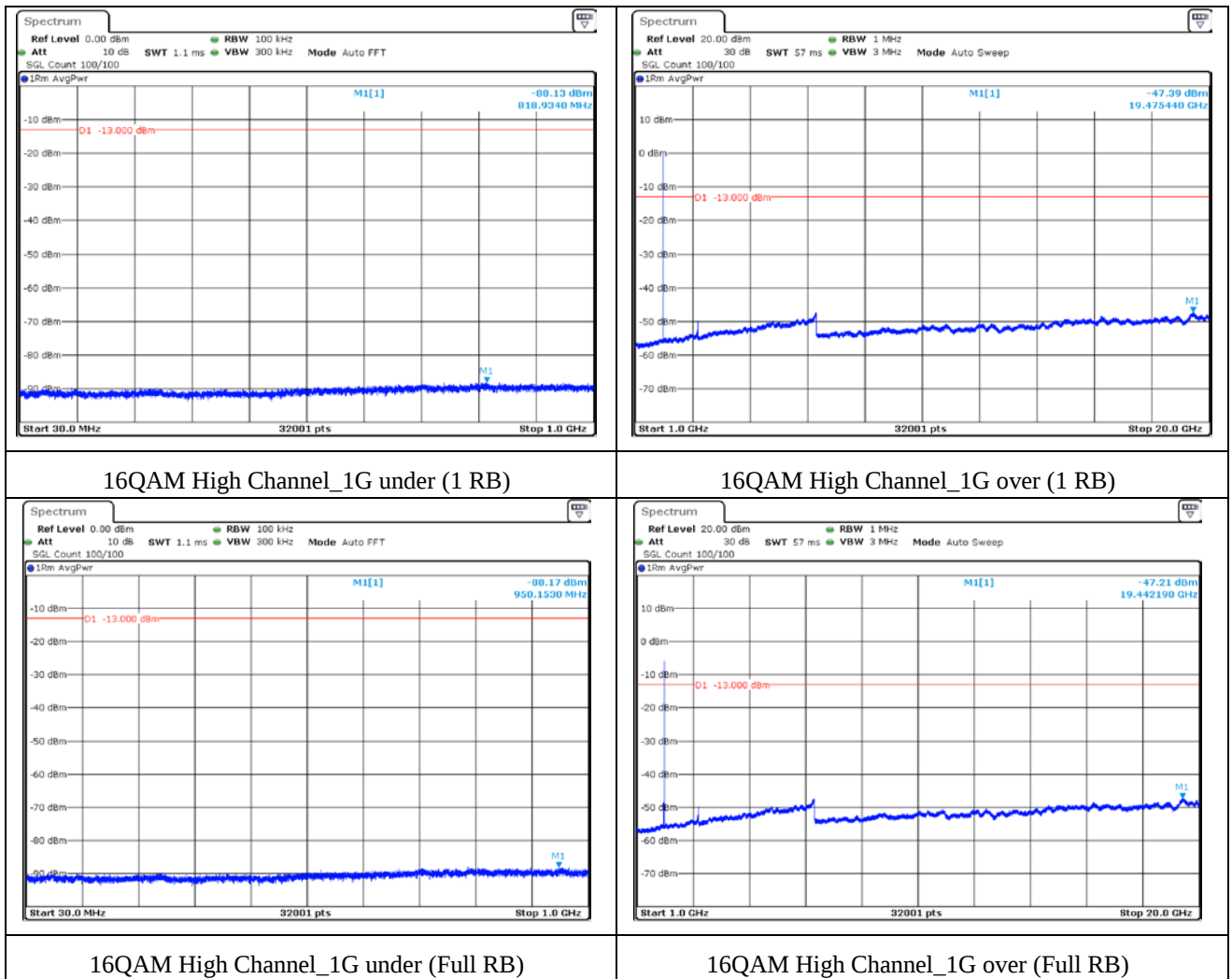






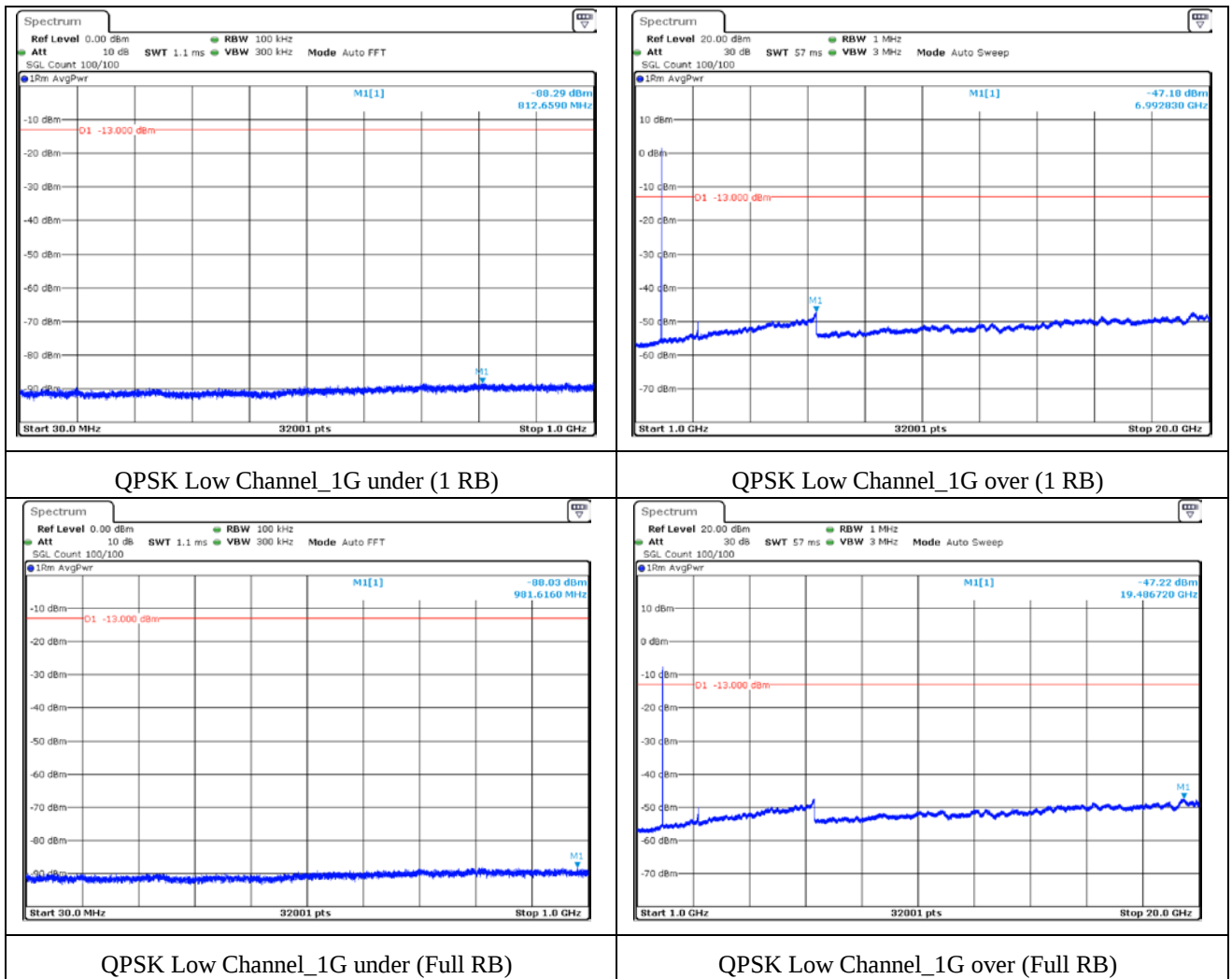


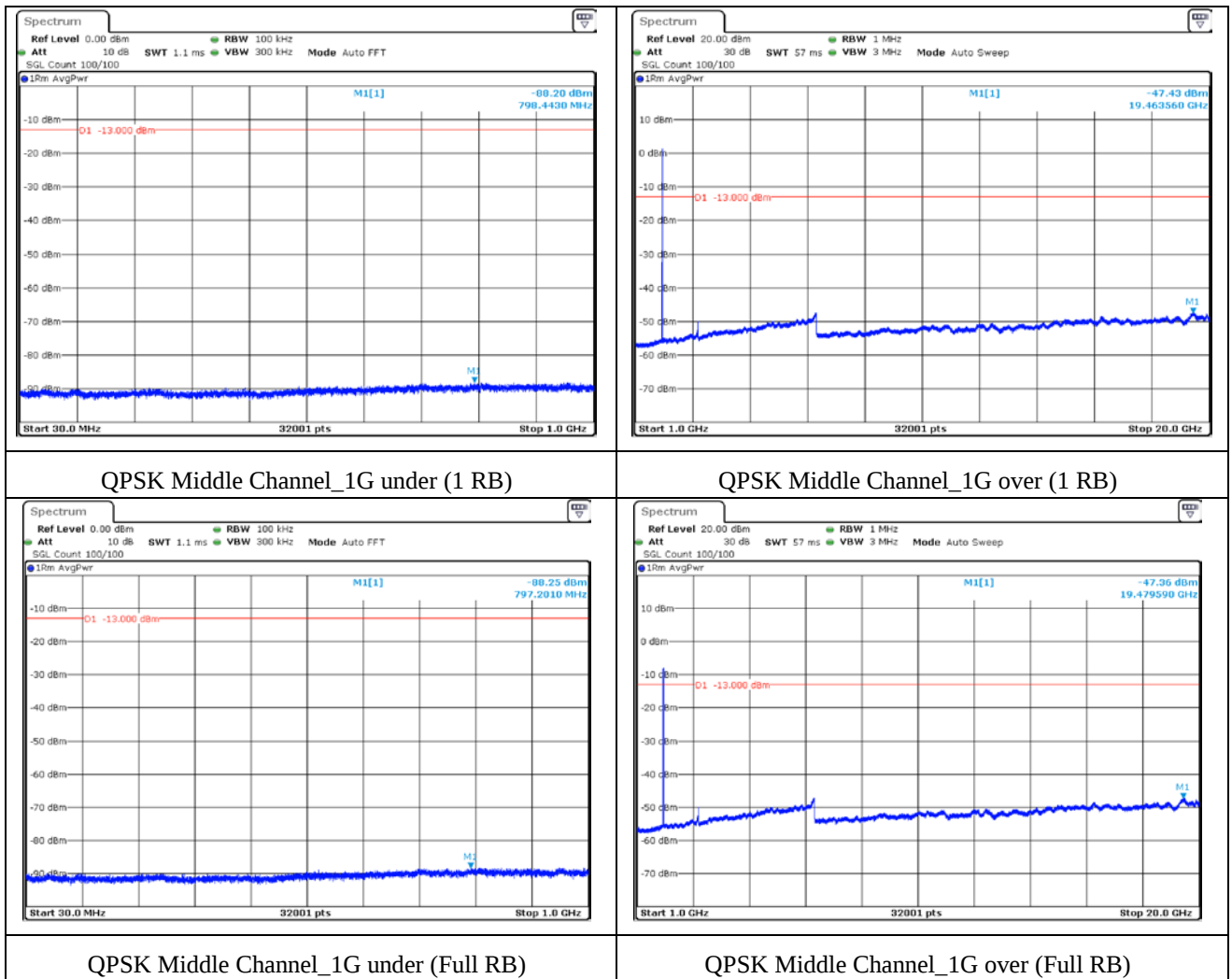


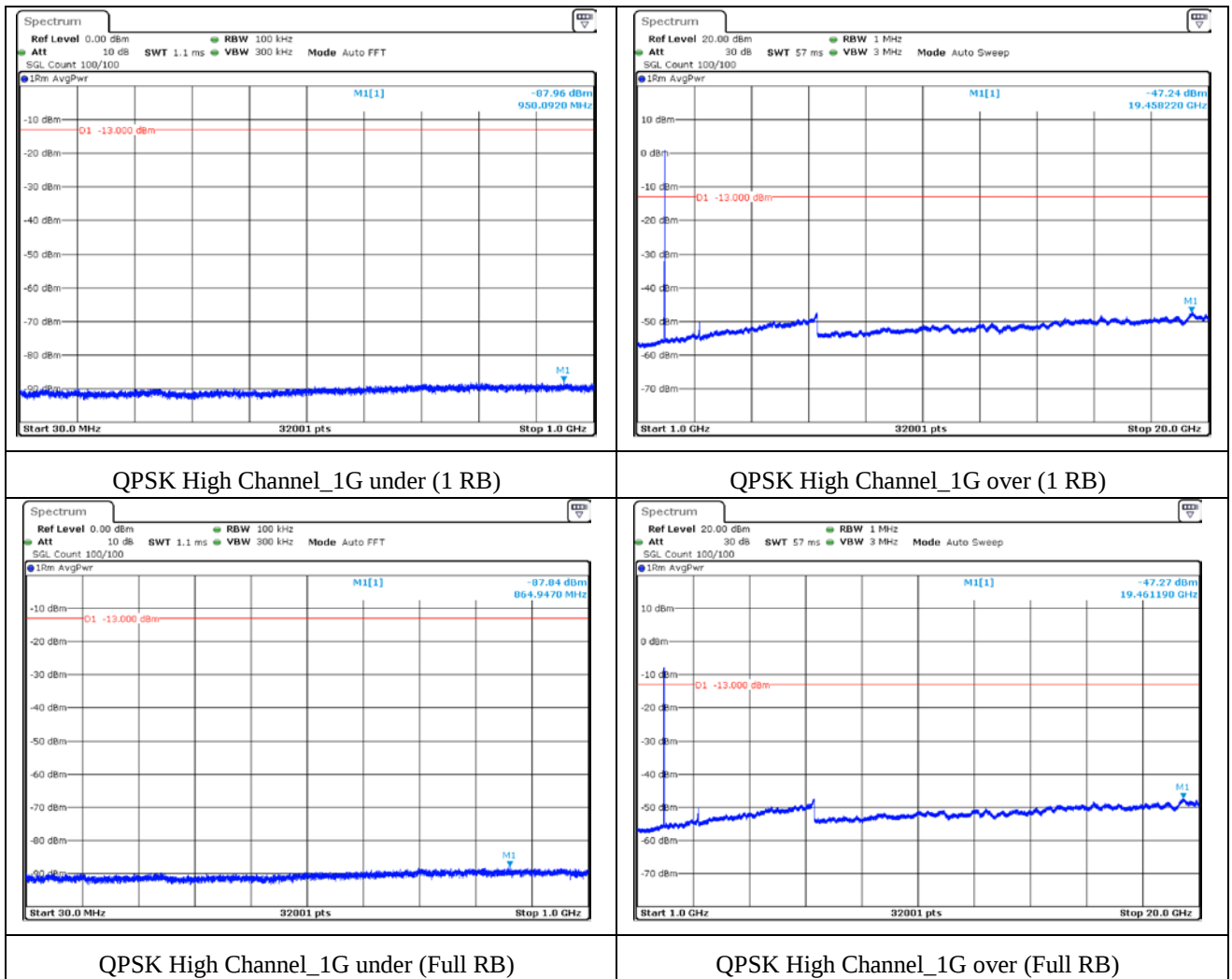


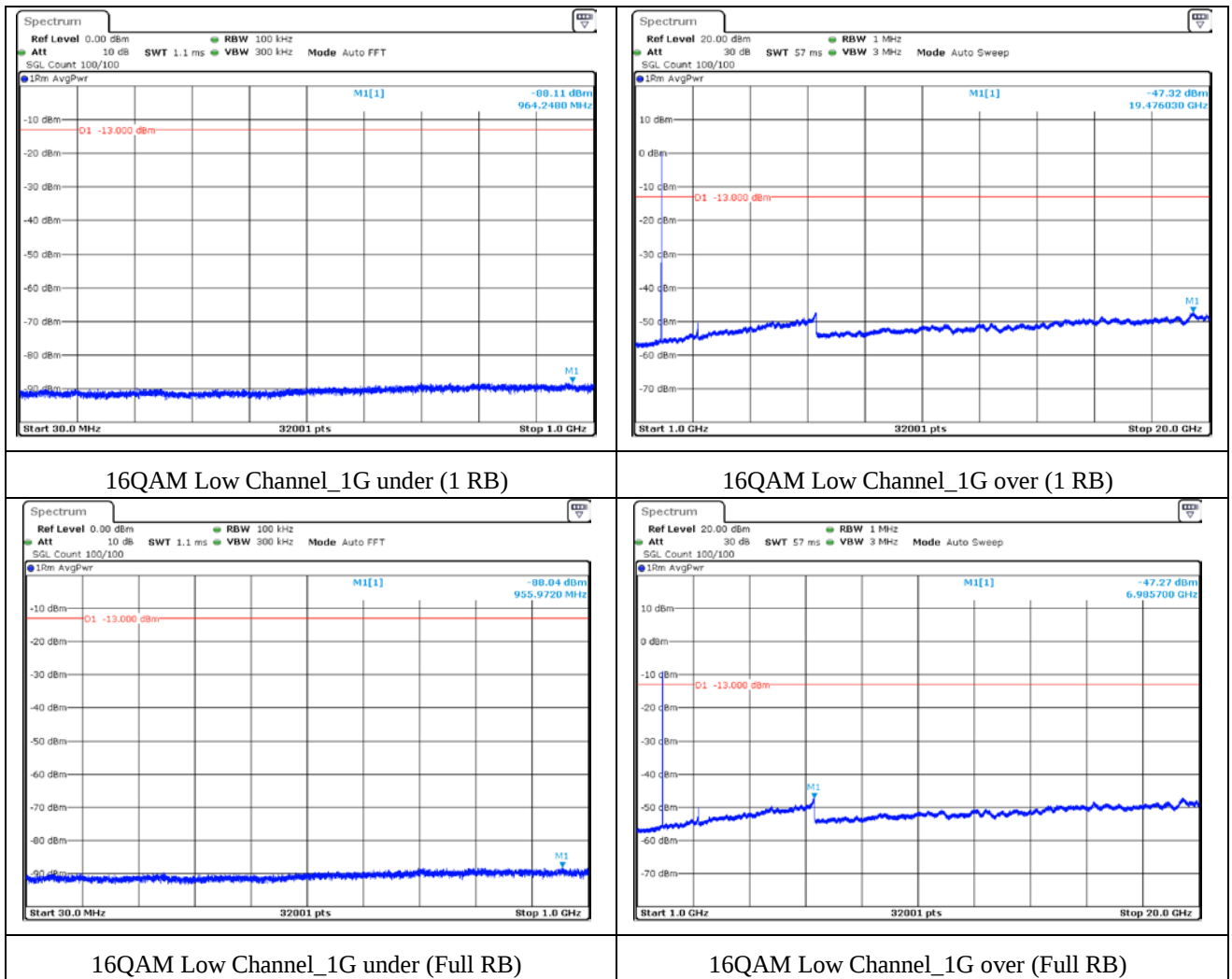
13.8 Test data for Band 2_Bandwidth 10 MHz

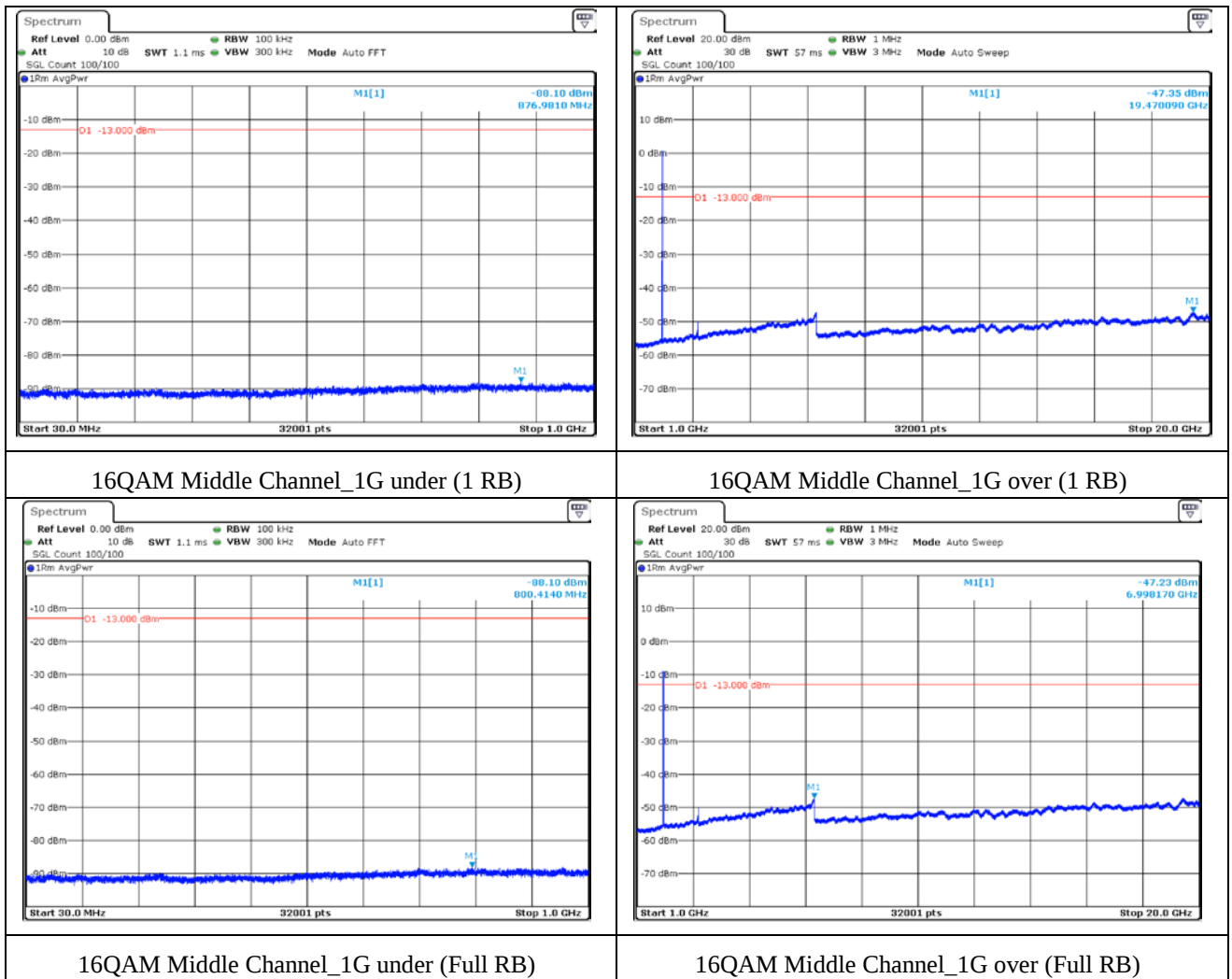
Test Mode	Channel	Frequency Range	Measured Value (dBm)	Cable Loss (dB)	Total Value (dBm)	Limit (dBm)	Result
LTE Band 2 QPSK							
1 RB	Low	30 MHz ~ 1 GHz	-88.29	20.46	-67.83	-13.00	PASS
		1 GHz ~ 20 GHz	-47.18	22.54	-24.64		PASS
	Middle	30 MHz ~ 1 GHz	-88.20	20.46	-67.74		PASS
		1 GHz ~ 20 GHz	-47.43	22.55	-24.88		PASS
	High	30 MHz ~ 1 GHz	-87.96	20.65	-67.31		PASS
		1 GHz ~ 20 GHz	-47.24	22.55	-24.69		PASS
Full RB	Low	30 MHz ~ 1 GHz	-88.03	20.46	-67.57	-13.00	PASS
		1 GHz ~ 20 GHz	-47.22	22.54	-24.68		PASS
	Middle	30 MHz ~ 1 GHz	-88.25	20.50	-67.75		PASS
		1 GHz ~ 20 GHz	-47.36	22.53	-24.83		PASS
	High	30 MHz ~ 1 GHz	-87.84	20.46	-67.38		PASS
		1 GHz ~ 20 GHz	-47.27	22.53	-24.74		PASS
LTE Band 2 16QAM							
1 RB	Low	30 MHz ~ 1 GHz	-88.11	20.70	-67.41	-13.00	PASS
		1 GHz ~ 20 GHz	-47.32	22.54	-24.78		PASS
	Middle	30 MHz ~ 1 GHz	-88.10	20.65	-67.45		PASS
		1 GHz ~ 20 GHz	-47.35	22.54	-24.81		PASS
	High	30 MHz ~ 1 GHz	-88.17	20.52	-67.65		PASS
		1 GHz ~ 20 GHz	-47.27	22.54	-24.73		PASS
Full RB	Low	30 MHz ~ 1 GHz	-88.04	20.70	-67.34	-13.00	PASS
		1 GHz ~ 20 GHz	-47.27	22.55	-24.72		PASS
	Middle	30 MHz ~ 1 GHz	-88.10	20.67	-67.43		PASS
		1 GHz ~ 20 GHz	-47.23	22.52	-24.71		PASS
	High	30 MHz ~ 1 GHz	-88.18	20.65	-67.53		PASS
		1 GHz ~ 20 GHz	-47.35	22.54	-24.81		PASS

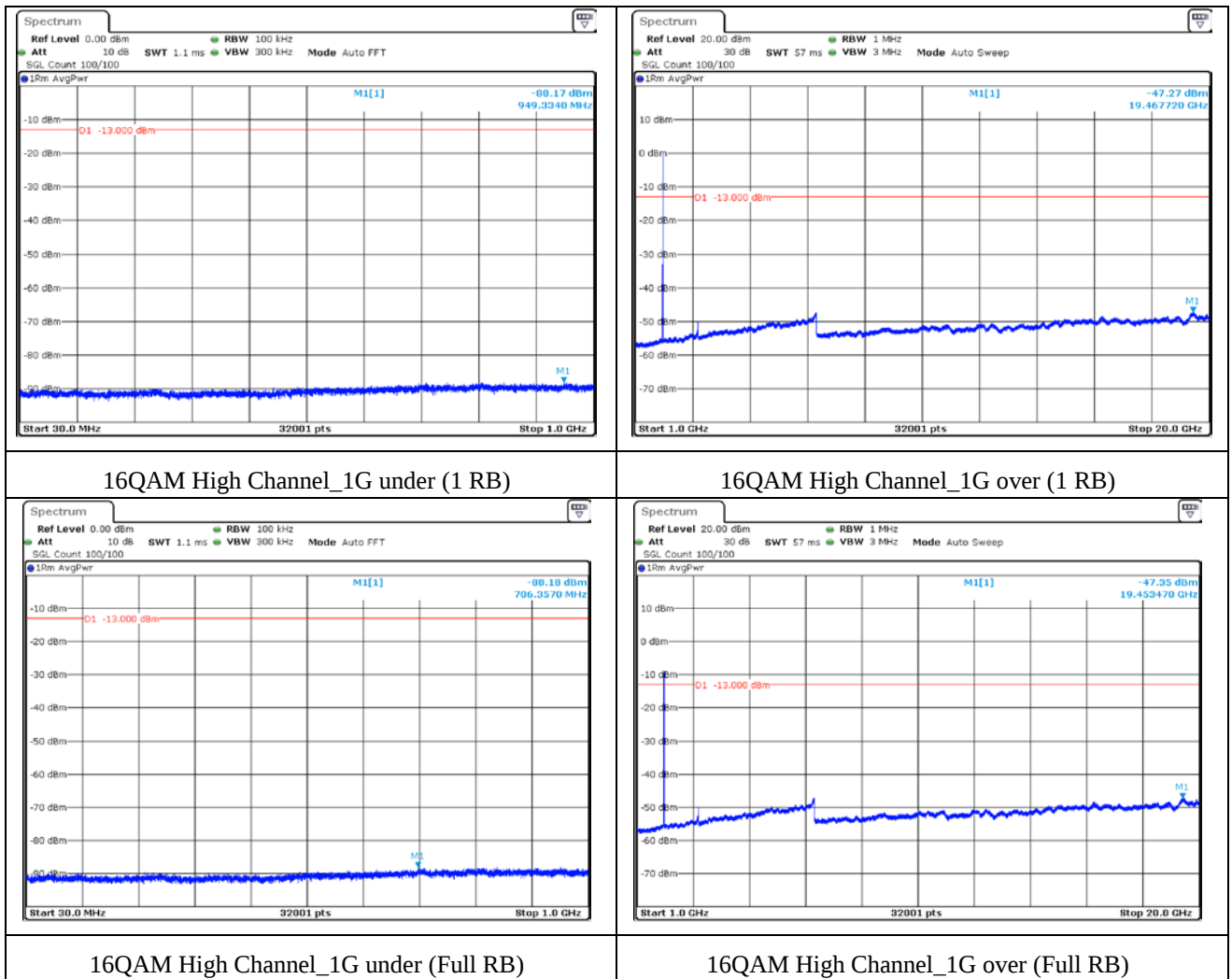






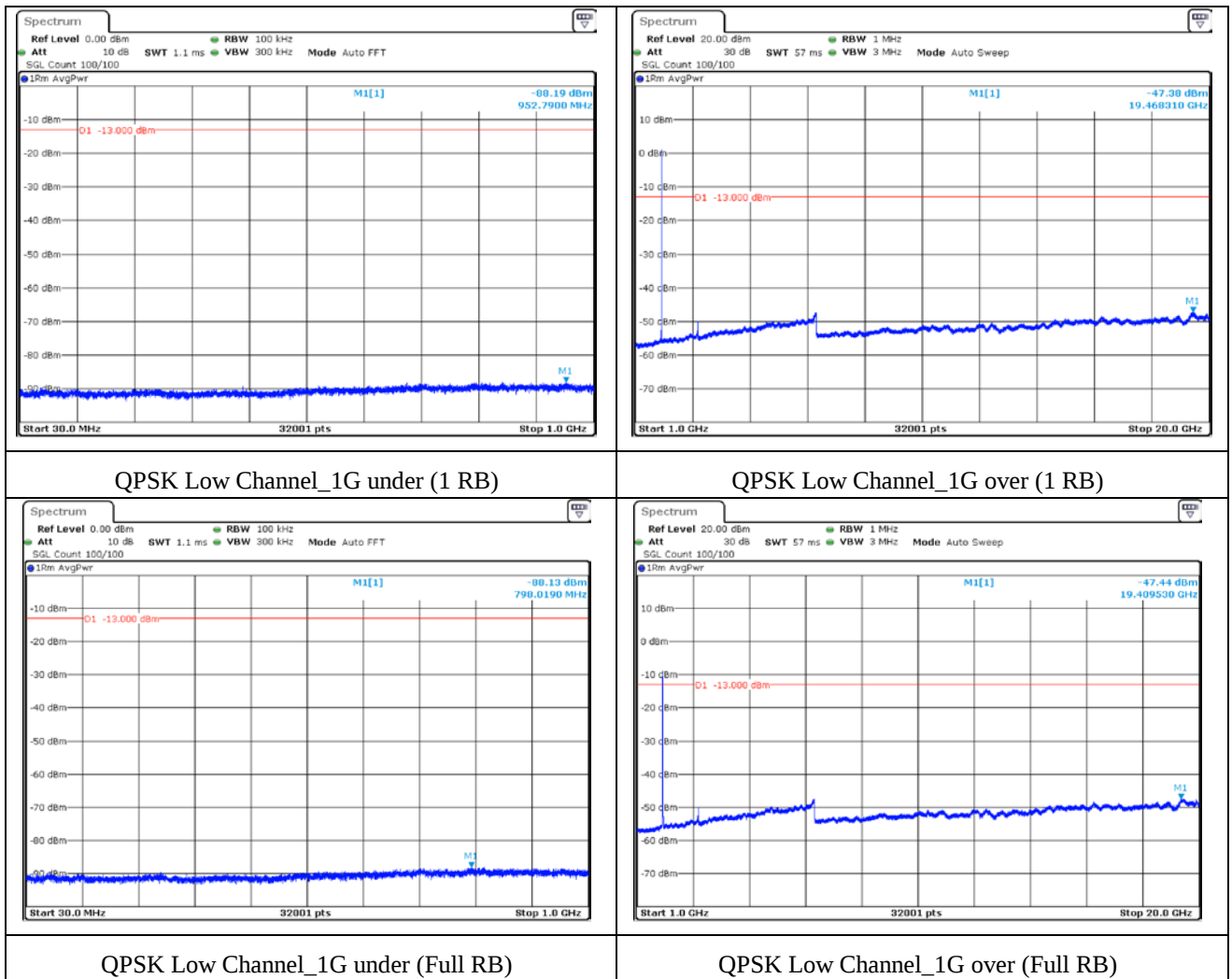


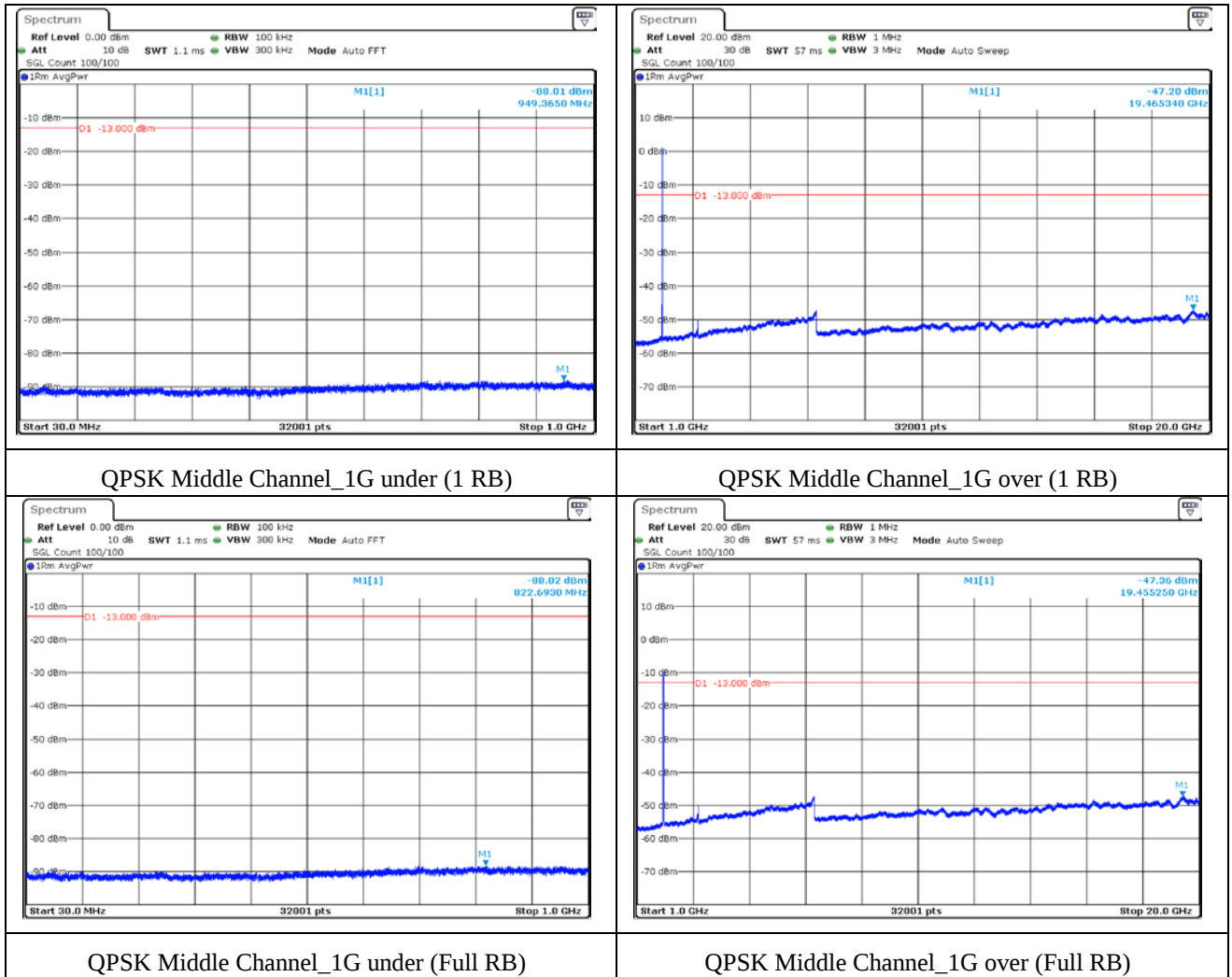


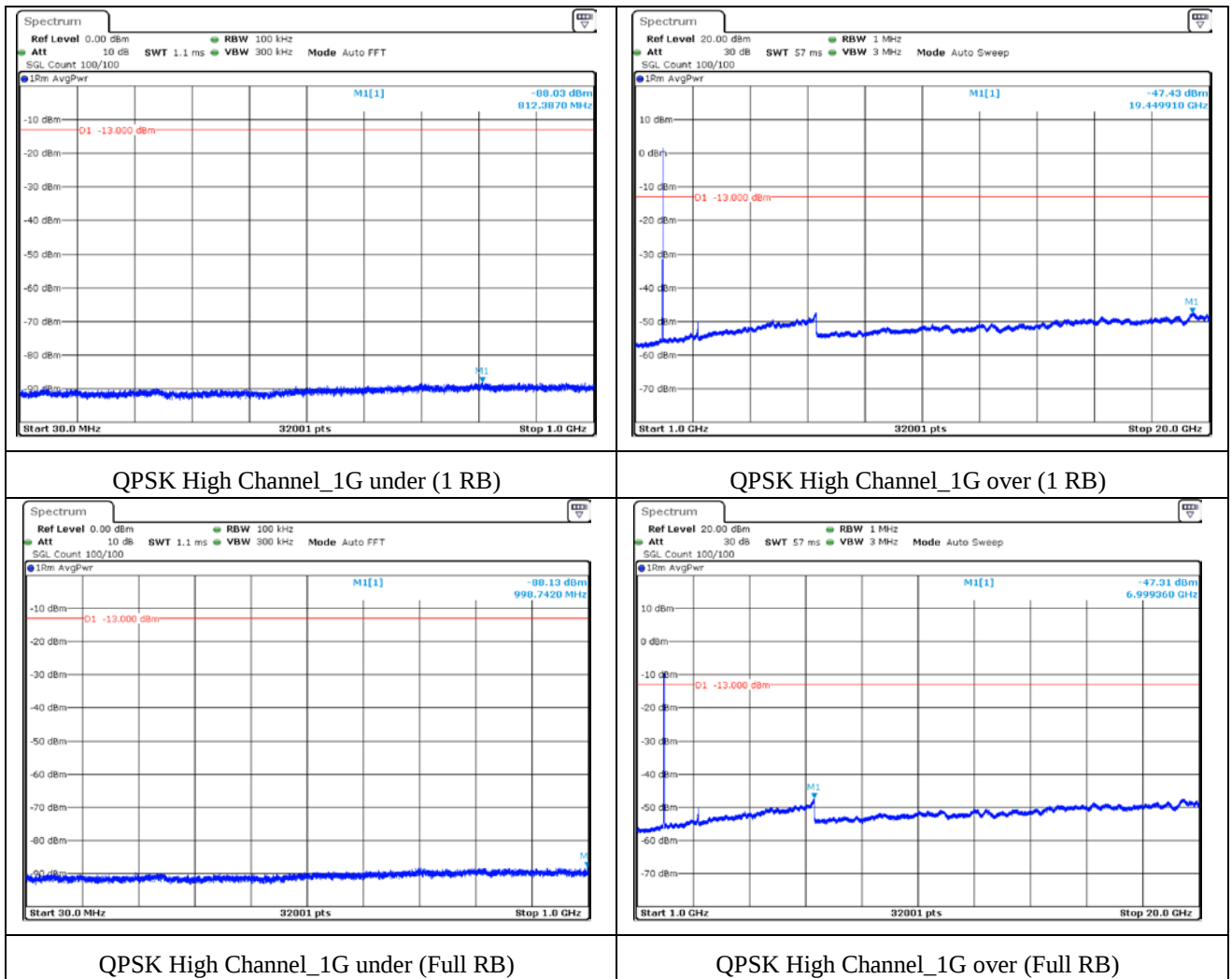


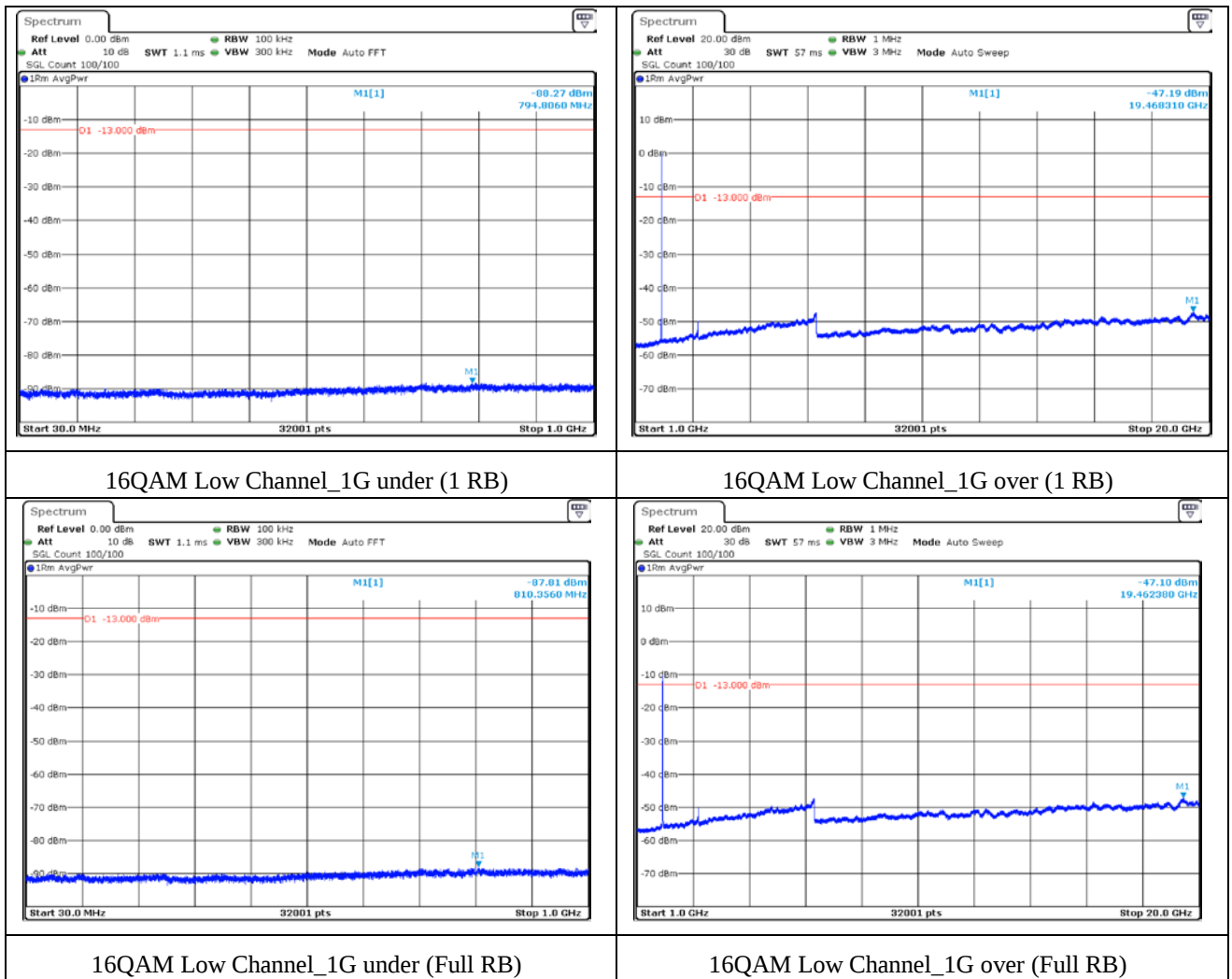
13.9 Test data for Band 2_Bandwidth 15 MHz

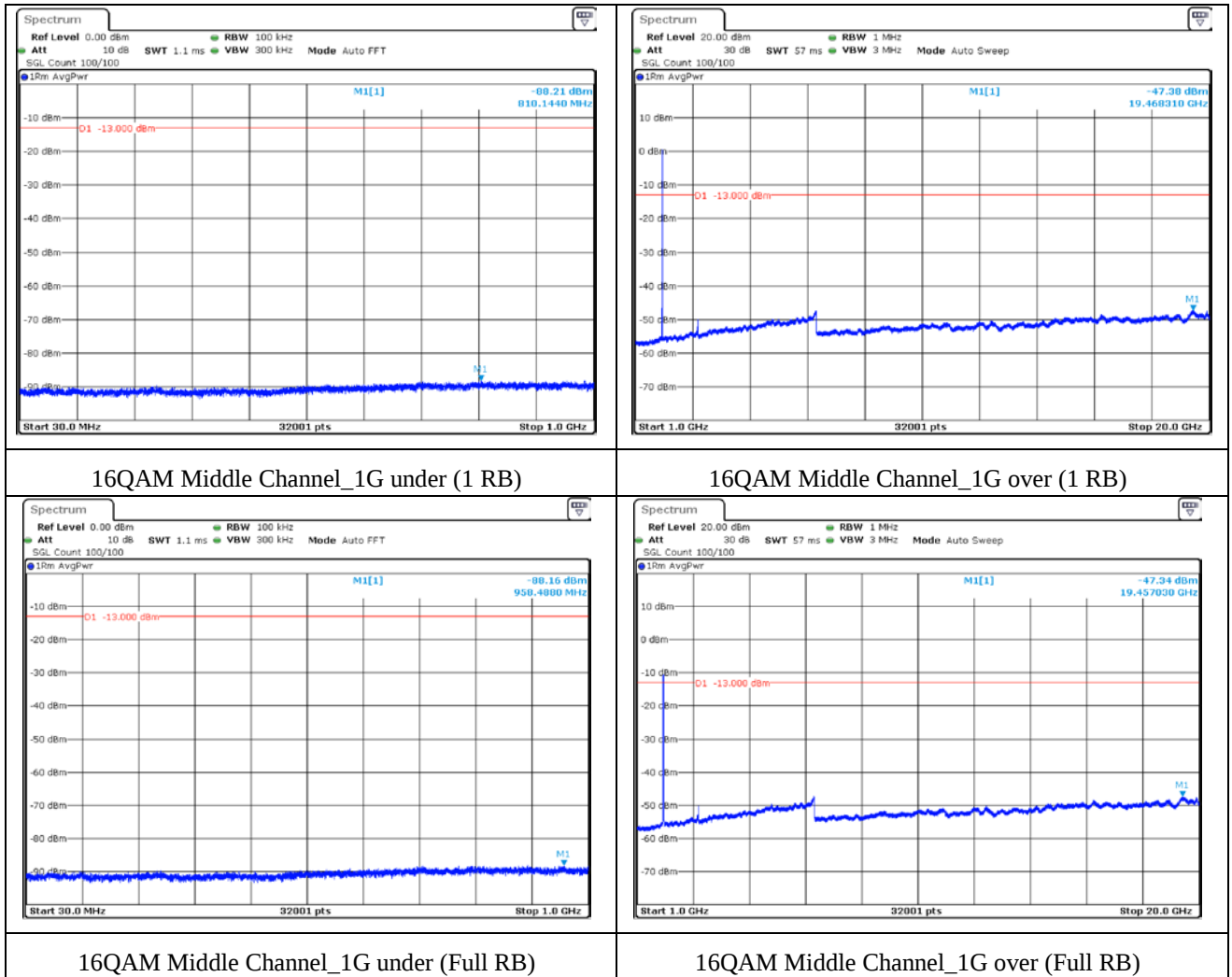
Test Mode	Channel	Frequency Range	Measured Value (dBm)	Cable Loss (dB)	Total Value (dBm)	Limit (dBm)	Result
LTE Band 2 QPSK							
1 RB	Low	30 MHz ~ 1 GHz	-88.19	20.46	-67.73	-13.00	PASS
		1 GHz ~ 20 GHz	-47.38	22.52	-24.86		PASS
	Middle	30 MHz ~ 1 GHz	-88.01	20.68	-67.33		PASS
		1 GHz ~ 20 GHz	-47.20	22.55	-24.65		PASS
	High	30 MHz ~ 1 GHz	-88.03	20.65	-67.38		PASS
		1 GHz ~ 20 GHz	-47.43	22.52	-24.91		PASS
Full RB	Low	30 MHz ~ 1 GHz	-88.13	20.46	-67.67	-13.00	PASS
		1 GHz ~ 20 GHz	-47.44	22.49	-24.95		PASS
	Middle	30 MHz ~ 1 GHz	-88.02	20.46	-67.56		PASS
		1 GHz ~ 20 GHz	-47.36	22.52	-24.84		PASS
	High	30 MHz ~ 1 GHz	-88.13	20.46	-67.67		PASS
		1 GHz ~ 20 GHz	-47.31	22.51	-24.80		PASS
LTE Band 2 16QAM							
1 RB	Low	30 MHz ~ 1 GHz	-88.27	20.46	-67.81	-13.00	PASS
		1 GHz ~ 20 GHz	-47.19	22.55	-24.64		PASS
	Middle	30 MHz ~ 1 GHz	-88.21	20.65	-67.56		PASS
		1 GHz ~ 20 GHz	-47.38	22.53	-24.85		PASS
	High	30 MHz ~ 1 GHz	-88.20	20.50	-67.70		PASS
		1 GHz ~ 20 GHz	-47.20	22.55	-24.65		PASS
Full RB	Low	30 MHz ~ 1 GHz	-87.81	20.65	-67.16	-13.00	PASS
		1 GHz ~ 20 GHz	-47.10	22.55	-24.55		PASS
	Middle	30 MHz ~ 1 GHz	-88.16	20.45	-67.71		PASS
		1 GHz ~ 20 GHz	-47.34	22.54	-24.80		PASS
	High	30 MHz ~ 1 GHz	-88.13	20.68	-67.45		PASS
		1 GHz ~ 20 GHz	-47.37	22.53	-24.84		PASS

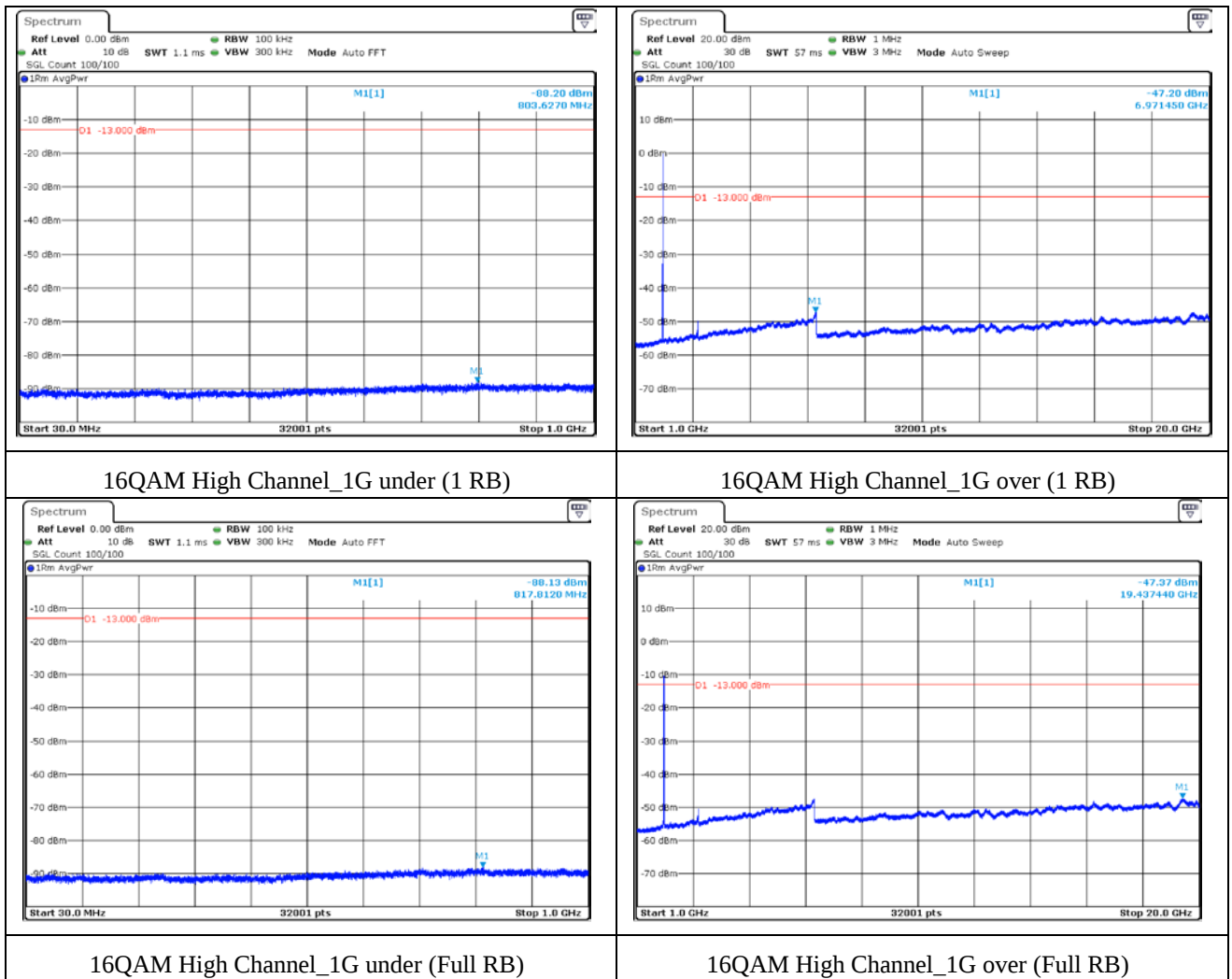






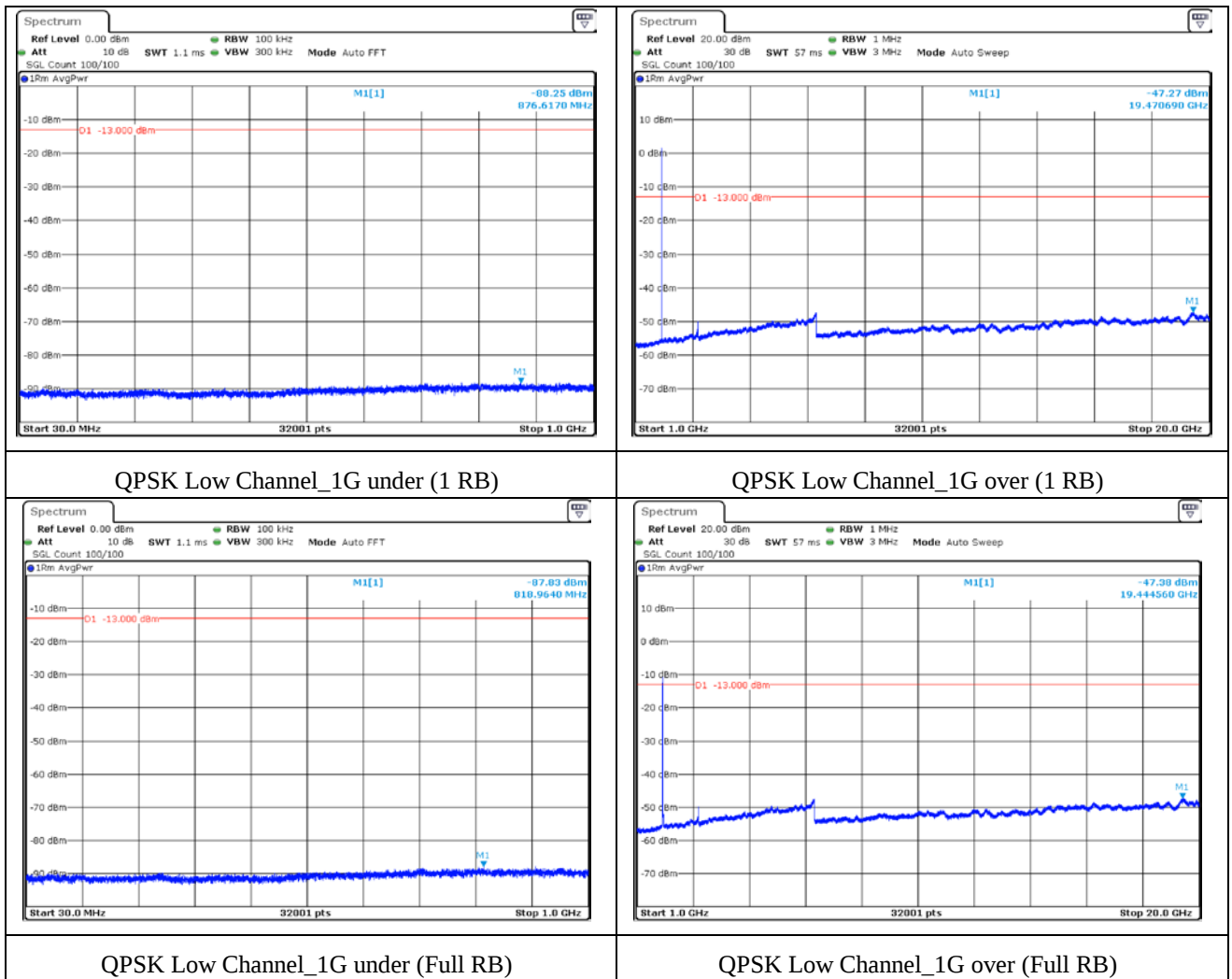


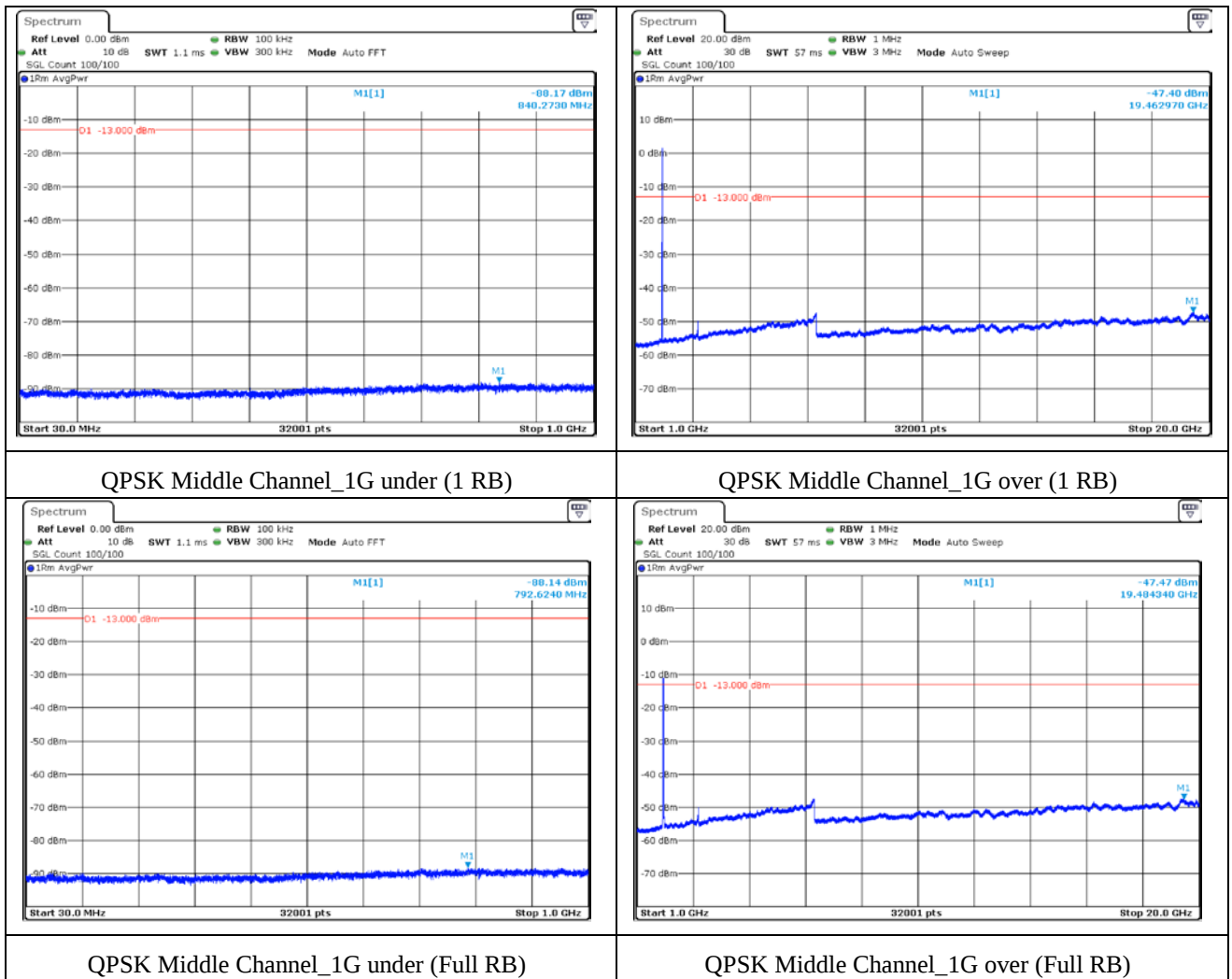


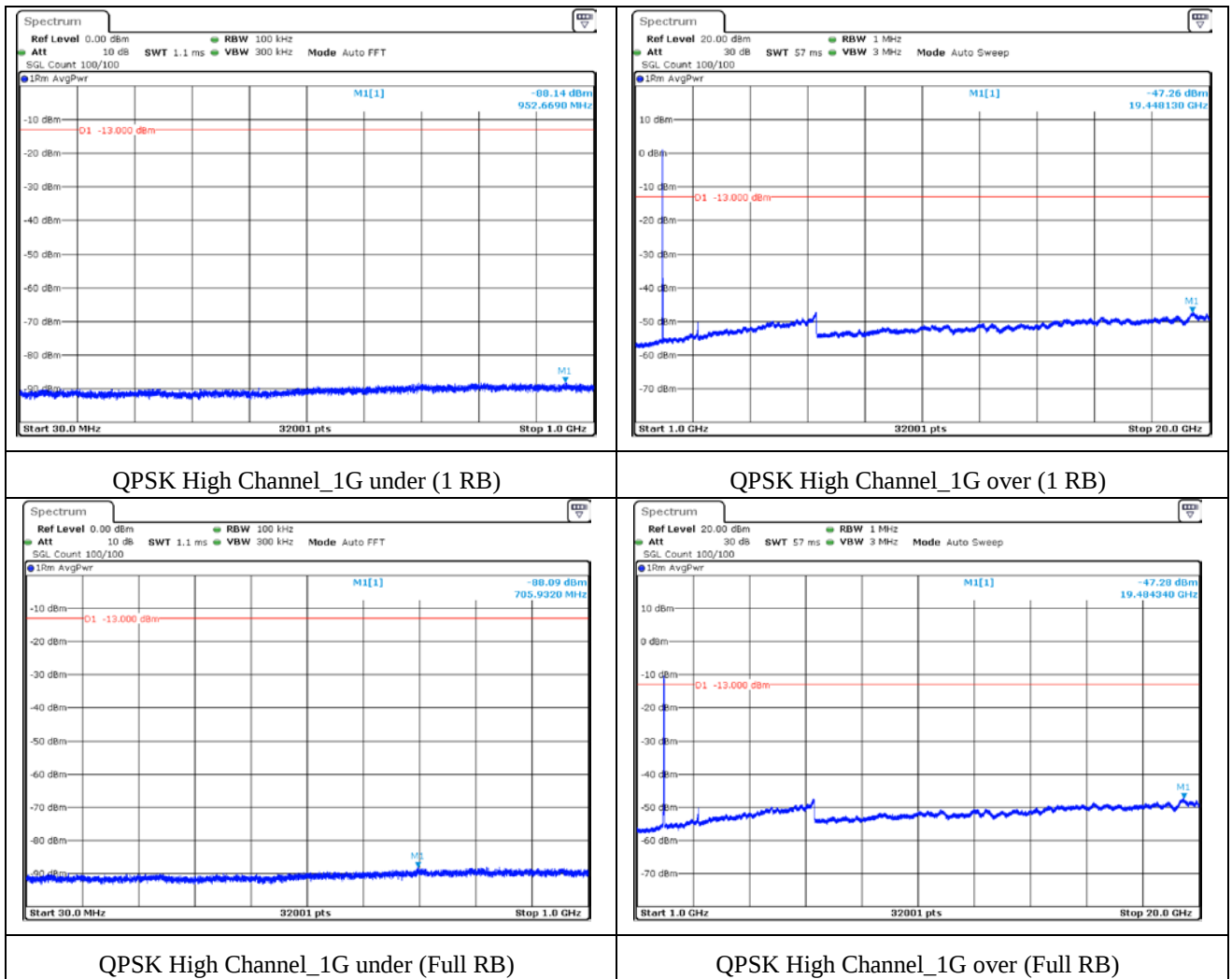


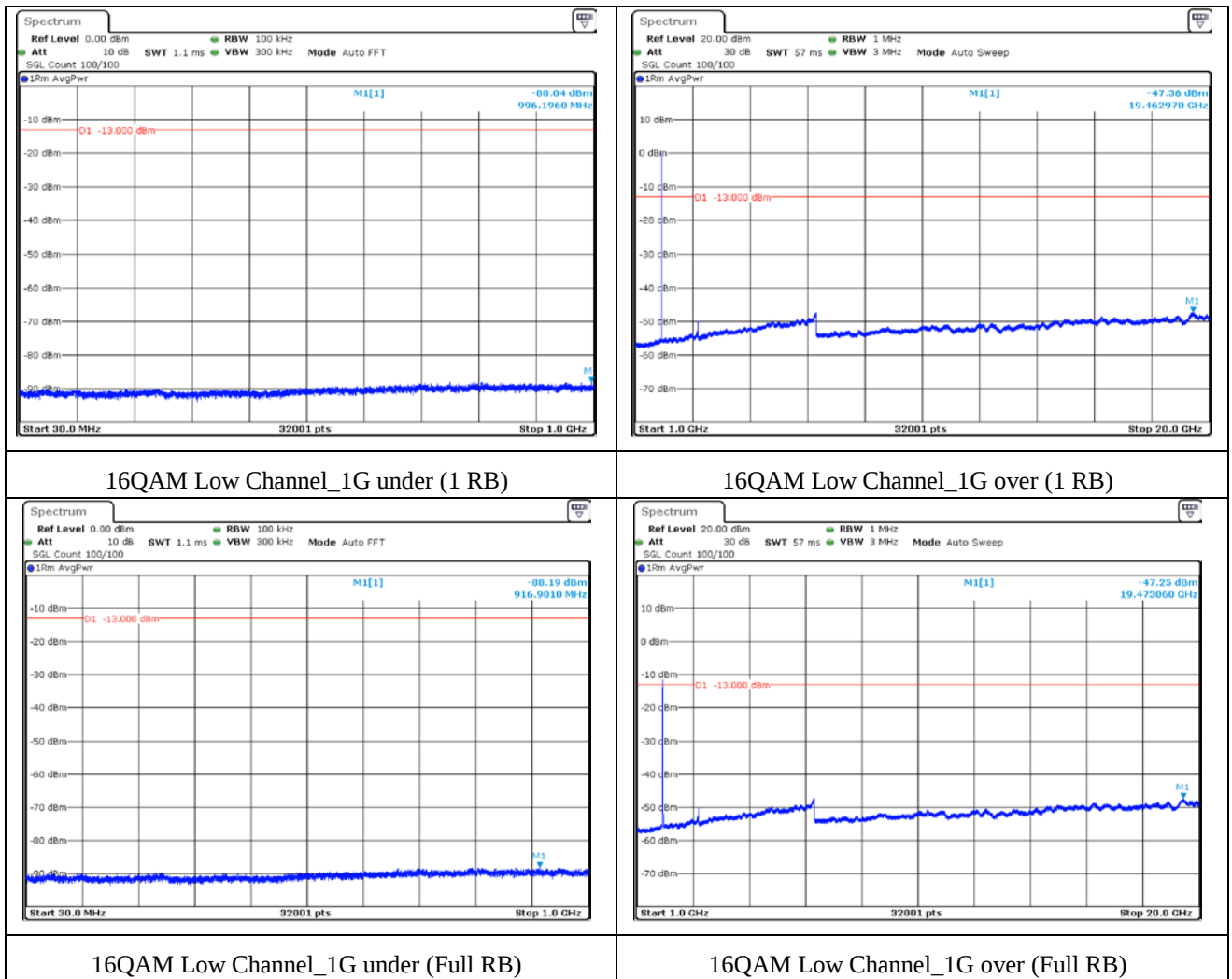
13.10 Test data for Band 2_Bandwidth 20 MHz

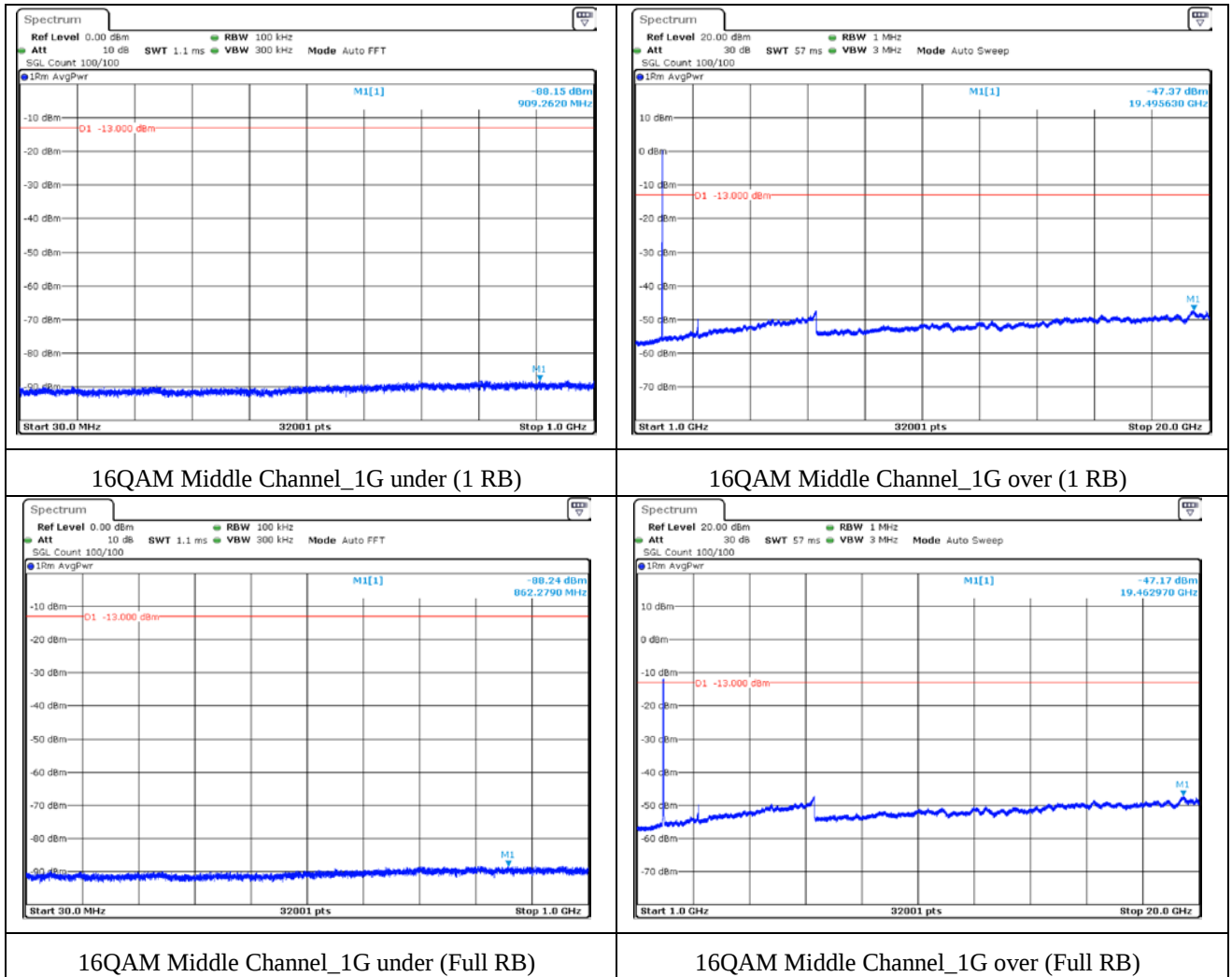
Test Mode	Channel	Frequency Range	Measured Value (dBm)	Cable Loss (dB)	Total Value (dBm)	Limit (dBm)	Result
LTE Band 2 QPSK							
1 RB	Low	30 MHz ~ 1 GHz	-88.25	20.53	-67.72	-13.00	PASS
		1 GHz ~ 20 GHz	-47.27	22.55	-24.72		PASS
	Middle	30 MHz ~ 1 GHz	-88.17	20.45	-67.72		PASS
		1 GHz ~ 20 GHz	-47.40	22.53	-24.87		PASS
	High	30 MHz ~ 1 GHz	-88.14	20.53	-67.61		PASS
		1 GHz ~ 20 GHz	-47.26	22.55	-24.71		PASS
Full RB	Low	30 MHz ~ 1 GHz	-87.83	20.48	-67.35	-13.00	PASS
		1 GHz ~ 20 GHz	-47.38	22.53	-24.85		PASS
	Middle	30 MHz ~ 1 GHz	-88.14	20.46	-67.68		PASS
		1 GHz ~ 20 GHz	-47.47	22.55	-24.92		PASS
	High	30 MHz ~ 1 GHz	-88.09	20.46	-67.63		PASS
		1 GHz ~ 20 GHz	-47.28	22.53	-24.75		PASS
LTE Band 2 16QAM							
1 RB	Low	30 MHz ~ 1 GHz	-88.04	20.58	-67.46	-13.00	PASS
		1 GHz ~ 20 GHz	-47.36	22.54	-24.82		PASS
	Middle	30 MHz ~ 1 GHz	-88.15	20.66	-67.49		PASS
		1 GHz ~ 20 GHz	-47.37	22.52	-24.85		PASS
	High	30 MHz ~ 1 GHz	-87.60	20.65	-66.95		PASS
		1 GHz ~ 20 GHz	-47.17	22.54	-24.63		PASS
Full RB	Low	30 MHz ~ 1 GHz	-88.19	20.46	-67.73	-13.00	PASS
		1 GHz ~ 20 GHz	-47.25	22.52	-24.73		PASS
	Middle	30 MHz ~ 1 GHz	-88.24	20.46	-67.78		PASS
		1 GHz ~ 20 GHz	-47.17	22.54	-24.63		PASS
	High	30 MHz ~ 1 GHz	-87.94	20.46	-67.48		PASS
		1 GHz ~ 20 GHz	-47.18	22.56	-24.62		PASS

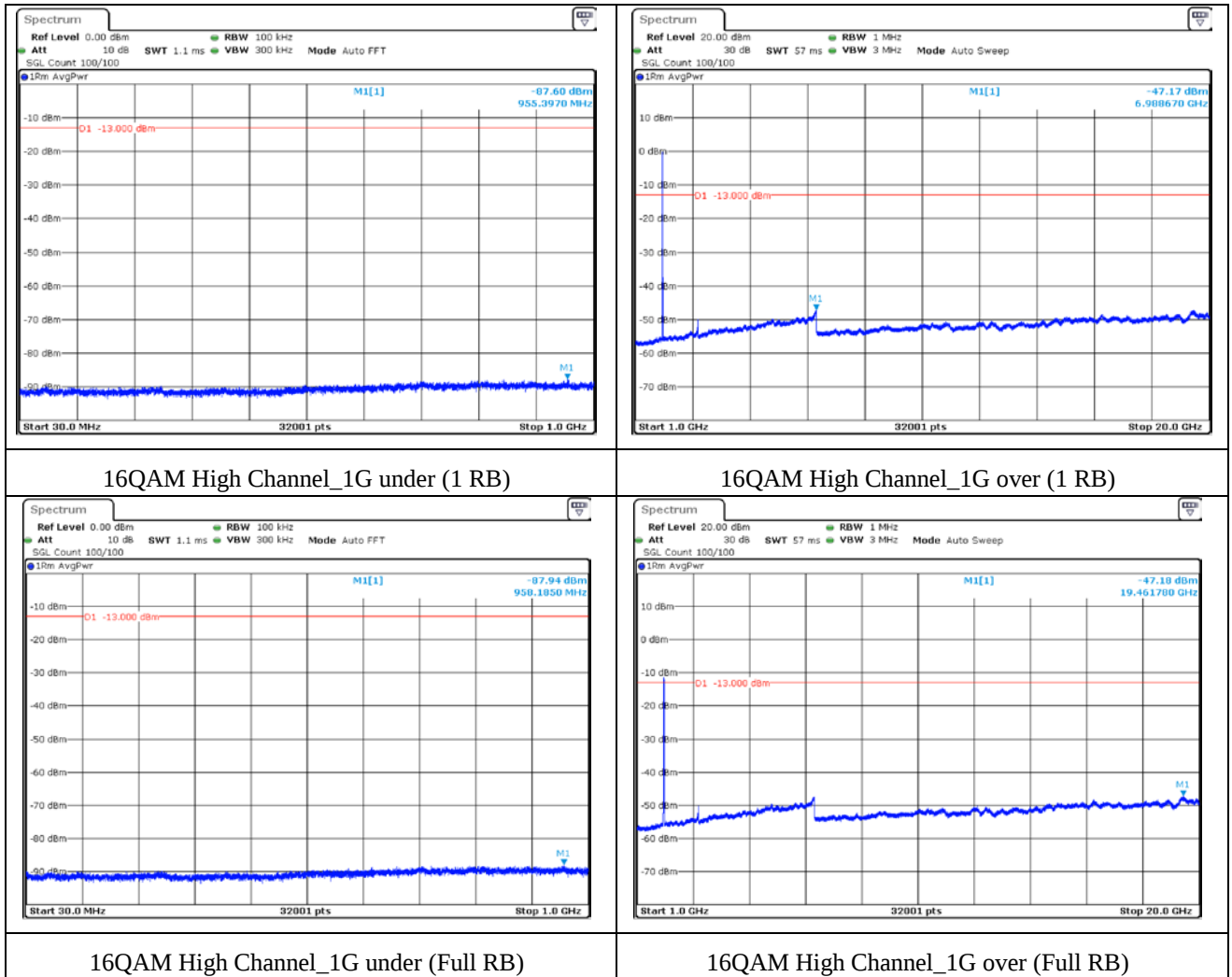






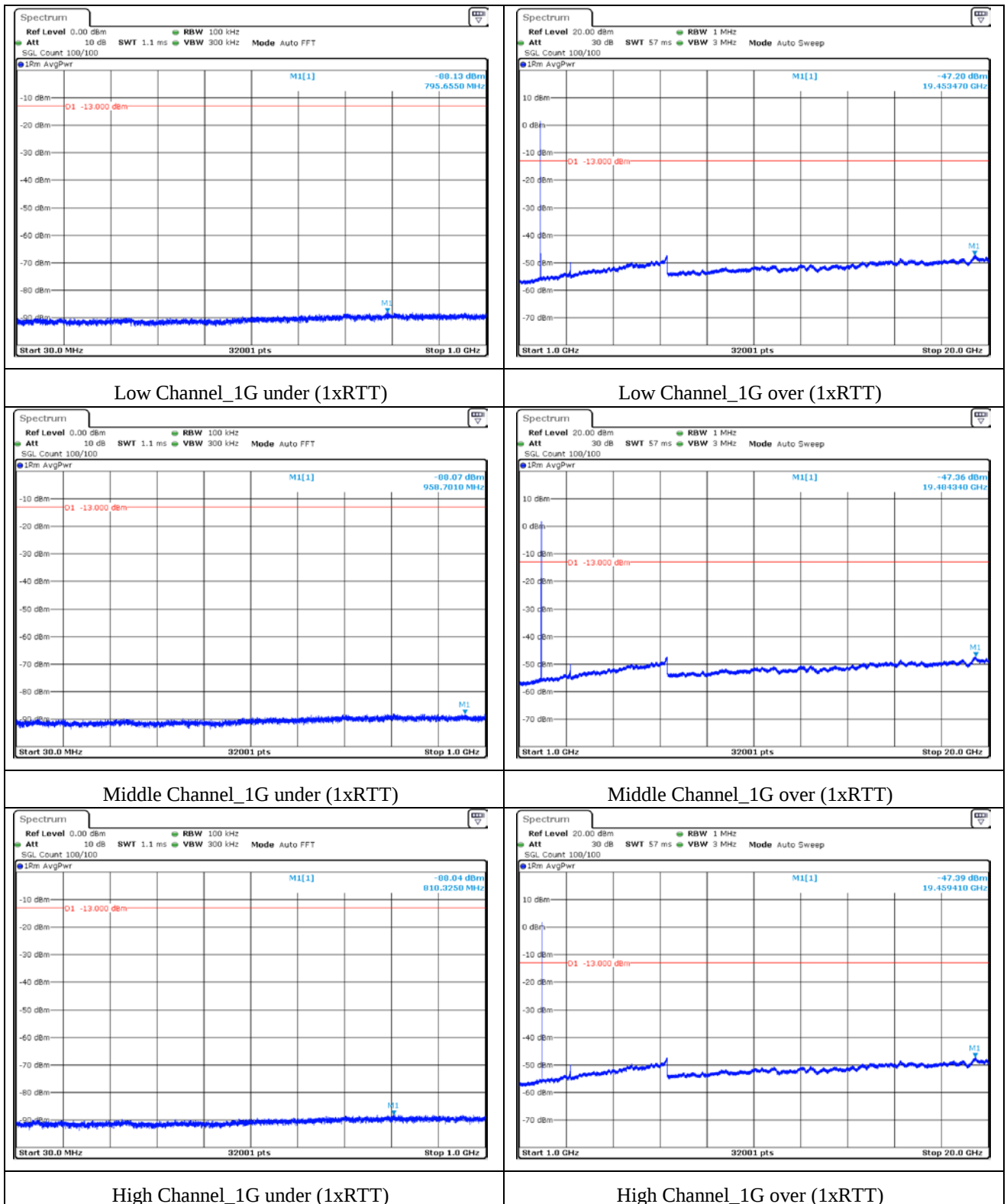






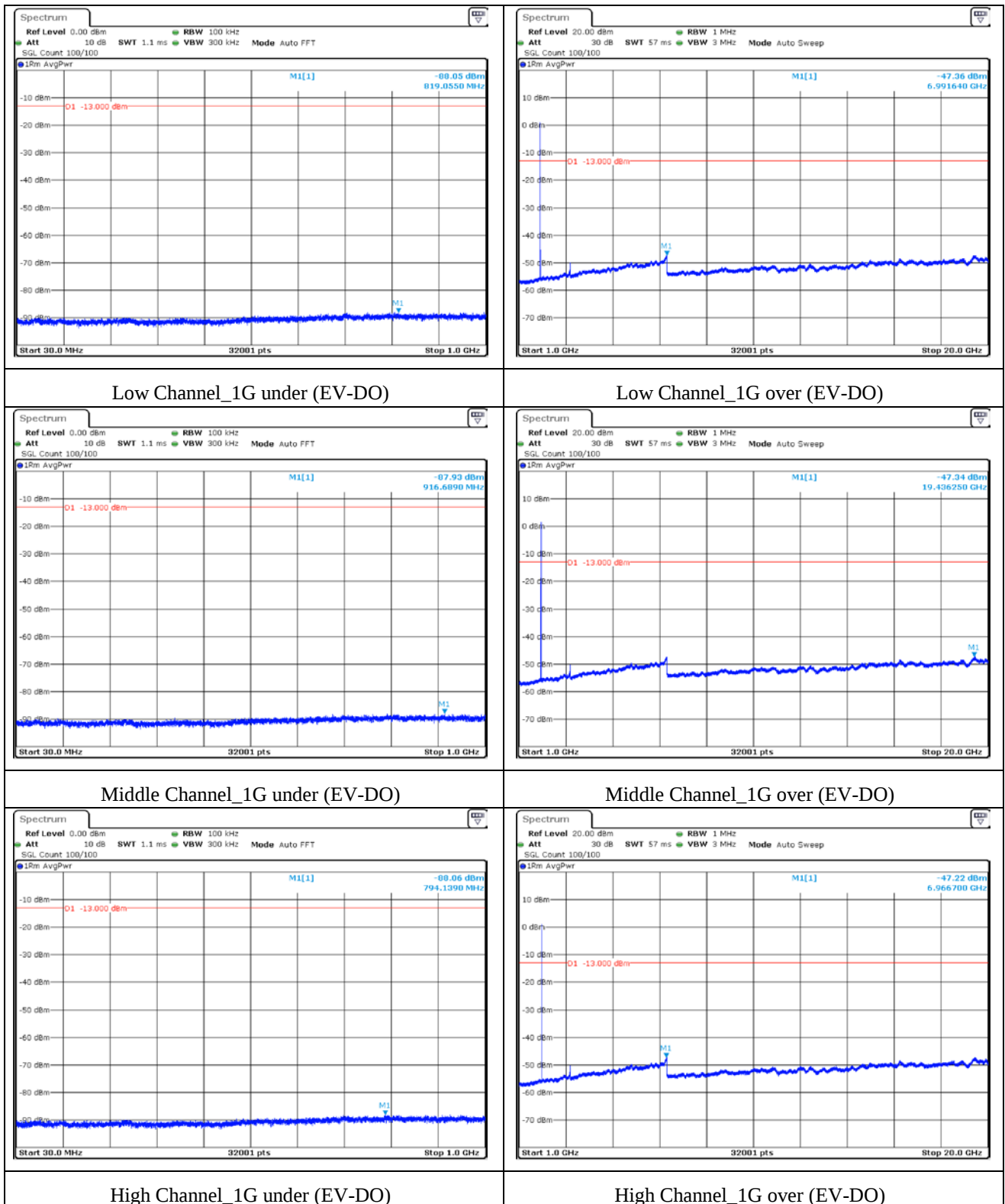
13.11 Test data for CDMA_1xRTT

Test Mode	Channel	Frequency Range	Measured Value (dBm)	Cable Loss (dB)	Total Value (dBm)	Limit (dBm)	Result
1xRTT	Low	30 MHz ~ 1 GHz	-88.13	20.45	-67.68	-13.00	PASS
		1 GHz ~ 20 GHz	-47.20	22.53	-24.67		PASS
	Middle	30 MHz ~ 1 GHz	-88.07	20.66	-67.41		PASS
		1 GHz ~ 20 GHz	-47.36	22.55	-24.81		PASS
	High	30 MHz ~ 1 GHz	-88.04	20.46	-67.58		PASS
		1 GHz ~ 20 GHz	-47.39	22.53	-24.86		PASS



13.12 Test data for CDMA_EV-DO

Test Mode	Channel	Frequency Range	Measured Value (dBm)	Cable Loss (dB)	Total Value (dBm)	Limit (dBm)	Result
EV-DO	Low	30 MHz ~ 1 GHz	-88.05	20.46	-67.59	-13.00	PASS
		1 GHz ~ 20 GHz	-47.36	21.80	-25.56		PASS
	Middle	30 MHz ~ 1 GHz	-87.93	20.58	-67.35		PASS
		1 GHz ~ 20 GHz	-47.34	22.52	-24.82		PASS
	High	30 MHz ~ 1 GHz	-88.06	20.45	-67.61		PASS
		1 GHz ~ 20 GHz	-47.22	21.79	-25.43		PASS



14. FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

14.1 Operating environment

Temperature : 23 °C
Relative humidity : 47 % R.H.

14.2 Test set-up

1. Frequency Stability (Voltage Variation)

+20 °C temperature and $\pm 15\%$ supply voltage variations. If a product is specified to operate over a range of input voltage then the -15% variation is applied to the lowermost voltage and the $+15\%$ is applied to the uppermost voltage.

- (1) Vary primary supply voltage from $\pm 15\%$ of the nominal value for other than hand carried battery equipment.
- (2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery-operating end point which shall be specified by the manufacturer.

2. Frequency Stability (Temperature Variation)

Turn EUT off and set chamber temperature to $-30\text{ }^{\circ}\text{C}$ and then allow sufficient time (approximately 20 to 30 minutes after chamber reach the assigned temperature) for EUT to stabilize. Turn ON EUT and measure the EUT operating frequency and then turn off the EUT after the measurement. The temperature in the chamber was raised $10\text{ }^{\circ}\text{C}$ step from $-30\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$. Repeat above method for frequency measurements every $10\text{ }^{\circ}\text{C}$ step and then record all measured frequencies on each temperature step.

14.3 Test Date

April 20, 2021 ~ April 30, 2021

14.4 Test data for Band 2

14.4.1 Test data for Voltage(V)

Temperature(° C)	Power(VDC)	Center Freq.	Measured Freq.	PPM
23	4.00	1 880 000 000	1 879 999 994	-0.003 2
	3.90		1 879 999 993	-0.003 7
	4.10		1 879 999 994	-0.003 2

14.4.2 Test data for Temperature(° C)

Temperature(° C)	Power(VDC)	Center Freq.	Measured Freq.	PPM
-30	4.00	1 880 000 000	1 879 999 992	-0.004 3
-20			1 879 999 993	-0.003 7
-10			1 879 999 994	-0.003 2
0			1 879 999 994	-0.003 2
10			1 879 999 992	-0.004 3
20			1 879 999 993	-0.003 7
30			1 879 999 993	-0.003 7
40			1 879 999 949	-0.027 1
50			1 879 999 960	-0.021 3

14.5 Test data for CDMA

14.5.1 Test data for Voltage(V)

Temperature(° C)	Power(VDC)	Center Freq.	Measured Freq.	PPM
23	4.00	1 880 000 000	1 880 000 008	0.004 3
	3.90		1 880 000 007	0.003 7
	4.10		1 880 000 008	0.004 3

14.5.2 Test data for Temperature(° C)

Temperature(° C)	Power(VDC)	Center Freq.	Measured Freq.	PPM
-30	4.00	1 880 000 000	1 879 999 995	-0.002 7
-20			1 879 999 993	-0.003 7
-10			1 879 999 996	-0.002 1
0			1 880 000 003	0.001 6
10			1 880 000 004	0.002 1
20			1 880 000 006	0.003 2
30			1 880 000 005	0.002 7
40			1 880 000 051	0.027 1
50			1 880 000 044	0.023 4

15. LIST OF TEST EQUIPMENT

Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
FSV30	Rohde & Schwarz	Signal Analyzer	101372	Jul. 15, 2020 (1Y)
CS20-23-436/20	PULSAER MICROWAVE CORPORATION	Broadband Directional Coupler	1147	Jul. 15, 2020 (1Y)
MT8821C	ANRITSU	Radio Communication Analyzer	6261849029	Jul. 15, 2020 (1Y)
E5515C	Agilent	Wireless Connectivity Tester	MY48360785	Feb. 09, 2021 (1Y)
GP-4303D	LG Precision Co.,Ltd	DC Power Supply	5071069	Jan. 06, 2021 (1Y)
PSL-2KP	ESPEC	Environmental Test Chamber	14009407	Feb. 16, 2020 (1Y)
ESU	Rohde & Schwarz	EMI Test Receiver	100261	Mar. 16, 2020 (1Y)
310N	Sonoma Instrument	AMPLIFIER	392756	Oct. 16, 2020 (1Y)
SCU18	Rohde & Schwarz	Signal Conditioning unit	102266	Jul. 15, 2020 (1Y)
HLA 6121	TESEQ	Loop Antenna	50841	Apl. 06, 2020 (2Y)
VULB9163	Schwarzbeck	TRILOG Broadband Antenna	777	Apr. 08, 2020 (2Y)
HLP-2008	TDK RF Solutions	Hybrid Antenna	131316	Feb. 27, 2020 (2Y)
BBHA9120D	Schwarzbeck	Horn Antenna	9120D-1349	Nov. 20, 2020 (1Y)
AH-118	Com-Power	Horn Antenna	10050061	Oct. 15, 2020 (1Y)
HPF 1.5GHz	Rohde & Schwarz	High Pass Filter	N/A	Feb. 08, 2021 (1Y)
HPF 3GHz	Rohde & Schwarz	High Pass Filter	N/A	Feb. 08, 2021 (1Y)
MA-4640-XPET	Innco Systems GmbH	Antenna Master	MA4640/652	N/A
DT2000-2t	Innco Systems GmbH	Turn Table	N/A	N/A