

5.1.1 Antenna Port Conducted Emissions – RF Output Power

Operator	Anthony Smith	QA	Adam Alger
Temperature	20.7°C	R.H. %	29.4%
Test Date	3/9/2023	Location	Conducted RF Bench
Requirement	FCC 15.247 RSS-247	Method	ANSI C63.10

Limits: <30dBm

Test Parameters

Frequency	2400-2483.5 MHz	Setup	Conducted
RBW	3 MHz	VBW	50 MHz
Detector(s)	Peak	Settings	Trace Max Hold

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960173	Cable	A.H. Systems, Inc.	SAC-26G-1	388	6/13/2023	6/12/2024	Active Verification
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	4/11/2023	4/11/2024	Active Calibration

EUT Parameters

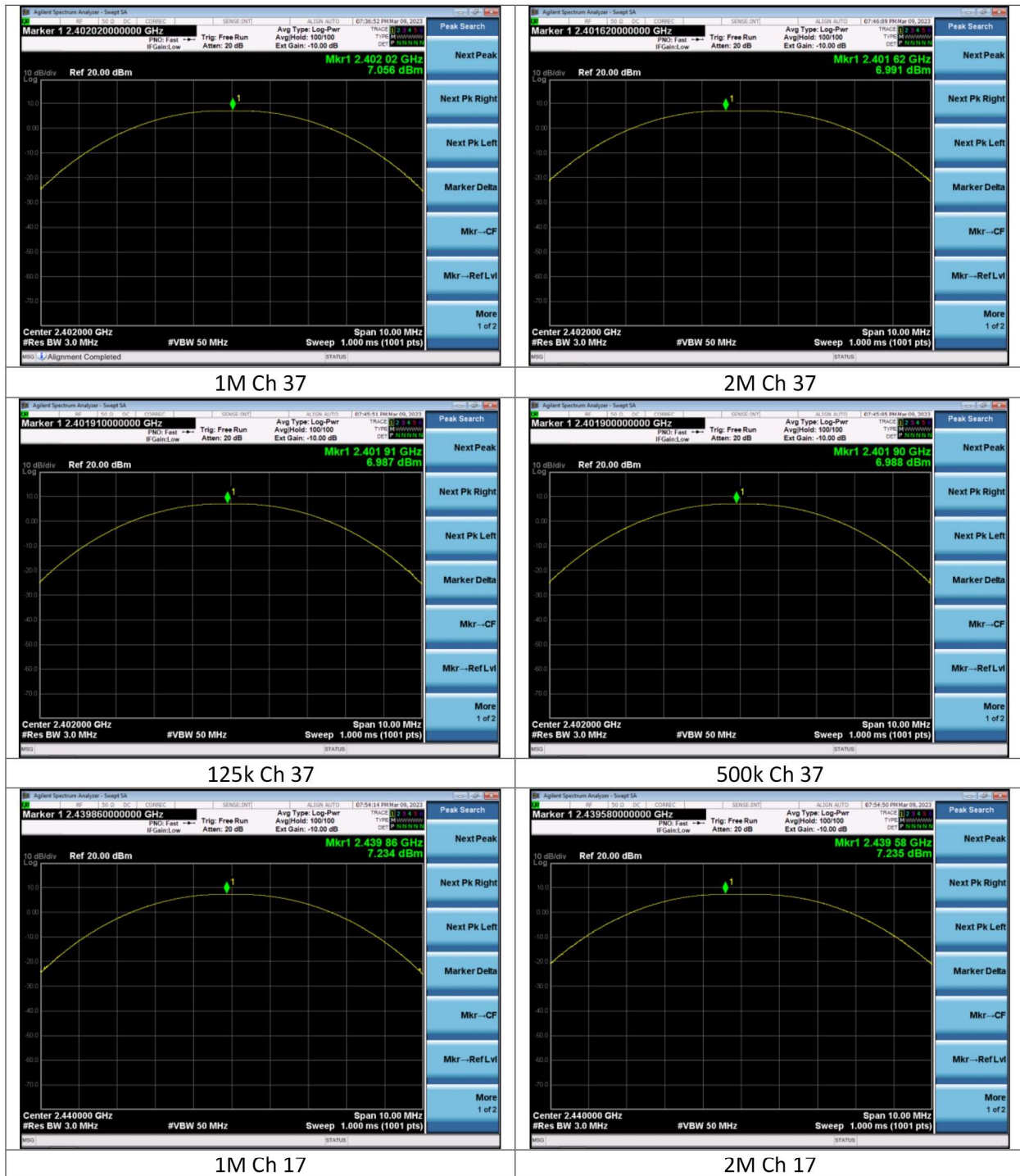
Input Power	12VDC	Mode	BLE – 125k, 500k, 1M, 2M
Frequency (MHz)	2402, 2440, 2480	Channel	37, 17, 39
Transmit Power Setting	7		

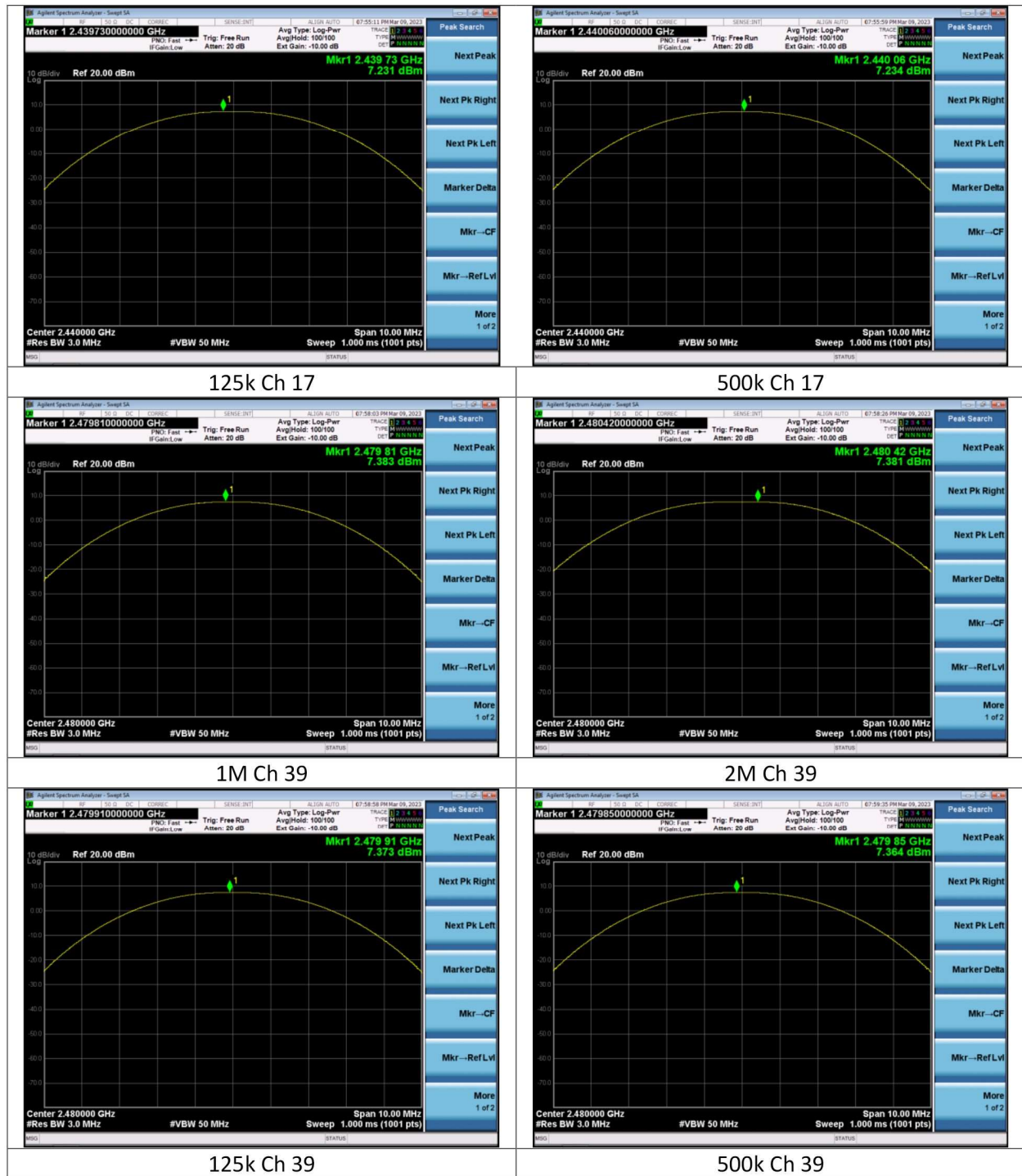
Data

Table

Channel	Mode	Peak Conducted Power (dBm)	Limit (dBm)	Margin (dB)
37	1M	7.1	30.0	22.9
17	1M	7.2	30.0	22.8
39	1M	7.4	30.0	22.6
37	2M	7.0	30.0	23.0
17	2M	7.2	30.0	22.8
39	2M	7.4	30.0	22.6
37	125k	7.0	30.0	23.0
17	125k	7.2	30.0	22.8
39	125k	7.4	30.0	22.6
37	500k	7.0	30.0	23.0
17	500k	7.2	30.0	22.8
39	500k	7.4	30.0	22.6

Plots





5.1.2 Antenna Port Conducted Emissions – Emissions in Restricted Frequency Bands

Operator	Anthony Smith	QA	Adam Alger
Temperature	22.2°C	R.H. %	21.2%
Test Date	3/20/2023	Location	Bench
Requirement	FCC 15.247 RSS-247	Method	ANSI C63.10 § 11.12.2 Cabinet Radiation method

Limits:

Frequency (MHz)	Quasi Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Peak Limit (dBμV/m)
30-88	40.0	-	-
88-216	43.5	-	-
216-960	46.0	-	-
960-1000	54.0	-	-
1000-25000	-	54.0	74.0

Test Parameters

Frequency	1-25 GHz	Setup	Conducted
RBW	1 MHz	VBW	3 MHz
Detector(s)	Peak, Average	Settings	Peak – Max Hold Average – Trace Average

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960172	Cable	A.H. Systems, Inc.	SAC-26G-1	387	6/13/2023	6/12/2024	Active Verification
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	4/11/2023	4/11/2024	Active Calibration

EUT Parameters

Input Power	12VDC	Mode	BLE – Packet Length 255
Frequency (MHz)	2402, 2440, 2480	Channel	37, 17, 39
Data Rate	1M, 2M (Worst Case Rates)		

Data

Table

Mode	On Time (ms)	Period (ms)	Duty Cycle (%)	Avg VBW (Hz)	DC Correction (dB)
1M	2.137	2.5	85.5	468	0.7
2M	1.078	1.875	57.5	928	2.4

Band Edge

Peak

Mode/Channel	Freq (MHz)	Meas. (dBm)	Ant. Gain (dBi)	Corrected Meas. (dBm)	Limit (dBm)	Margin (dB)
1M/Low	2378.04	-52.1	3.1	-49.0	-21.2	27.8
2M/Low	2388.9	-49.8	3.1	-46.7	-21.2	25.5
1M/High	2483.5	-37.9	3.1	-34.8	-21.2	13.6
2M/High	2483.5	-36.4	3.1	-33.3	-21.2	12.1

Mode/Channel	Freq (MHz)	Meas. (dBm)	Ant. Gain (dBi)	Duty Cycle Correction	Corrected Meas. (dBm)	Limit (dBm)	Margin (dB)
1M/Low	2346.1	-59.5	3.1	0.7	-55.7	-41.2	14.5
1M/Mid	2383.9	-58.7	3.1	0.7	-54.9	-41.2	13.7
1M/High	2352.1	-58.9	3.1	0.7	-55.1	-41.2	13.9
2M/Low	2389.9	-61.6	3.1	2.4	-56.1	-41.2	14.9
2M/Mid	2384.2	-60.2	3.1	2.4	-54.7	-41.2	13.5
2M/High	2351.8	-61.4	3.1	2.4	-55.9	-41.2	14.7
1M/Low	2497.9	-58.9	3.1	0.7	-55.1	-41.2	13.9
1M/Mid	2496.2	-58.3	3.1	0.7	-54.5	-41.2	13.3
1M/High	2483.5	-50.9	3.1	0.7	-47.1	-41.2	5.9
2M/Low	2497.8	-61.2	3.1	2.4	-55.7	-41.2	14.5
2M/Mid	2495.9	-60.1	3.1	2.4	-54.6	-41.2	13.4
2M/High	2483.5	-48.2	3.1	2.4	-42.7	-41.2	1.5

Spurious

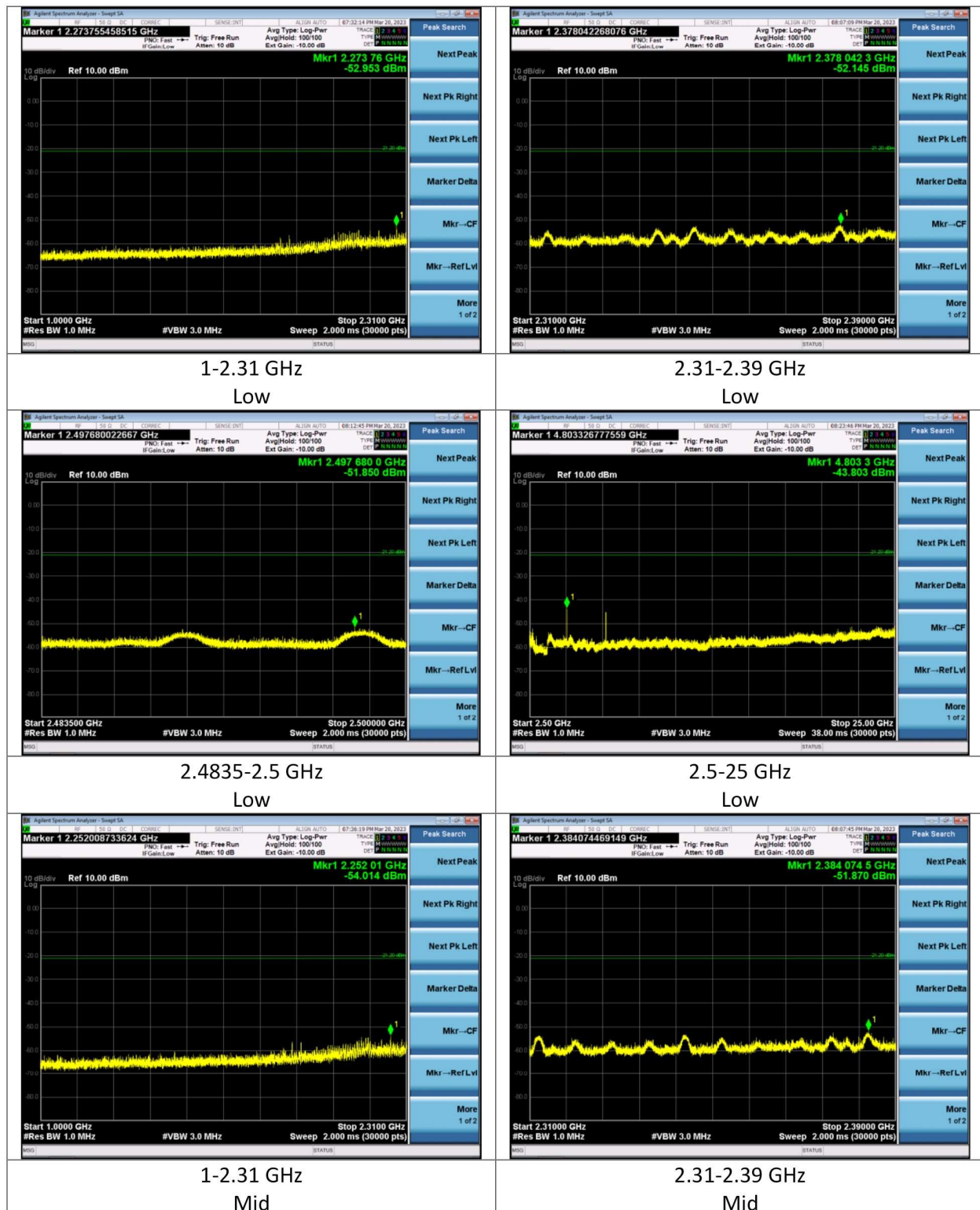
Peak

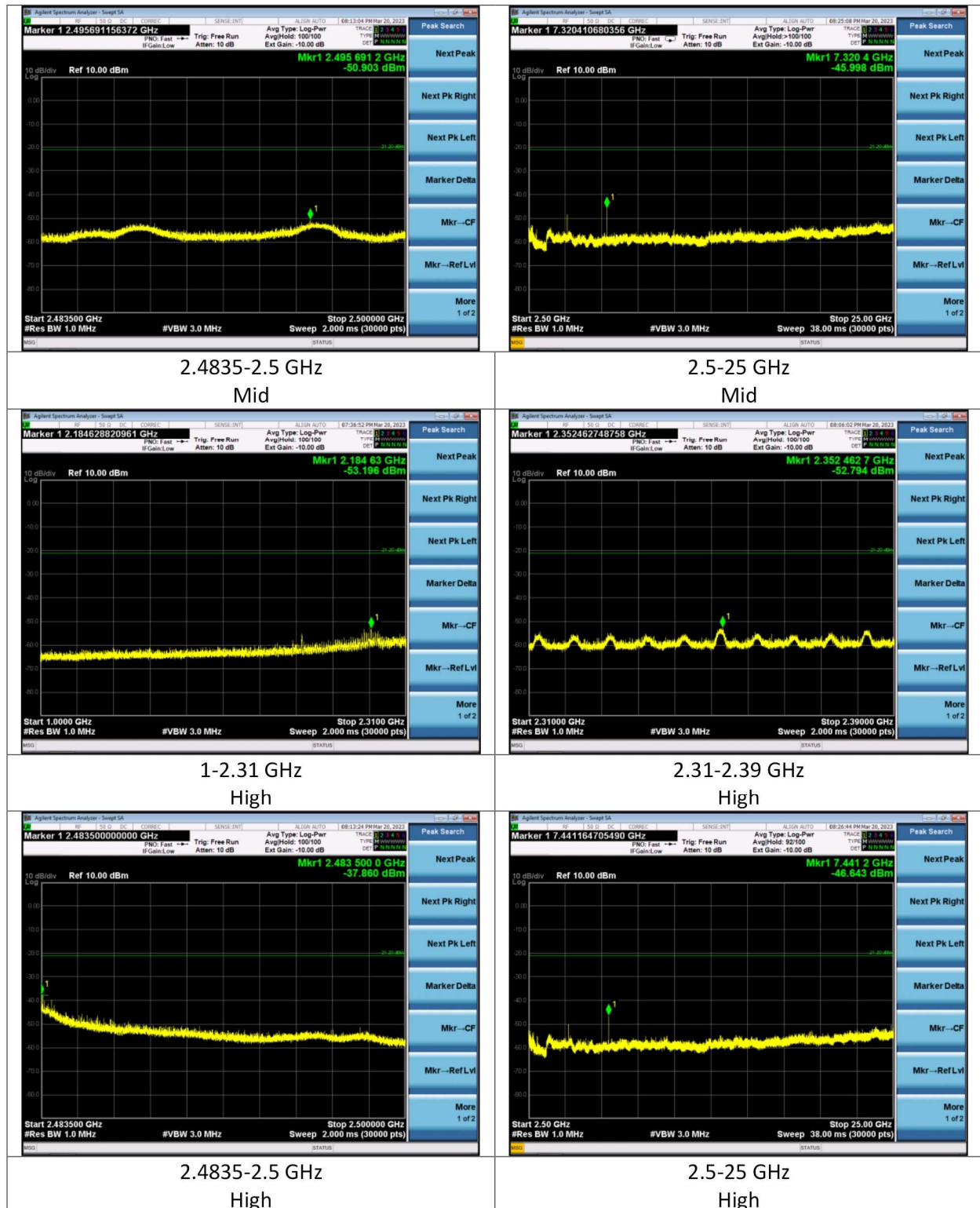
Mode/Channel	Freq (MHz)	Meas. (dBm)	Ant. Gain (dBi)	Corrected Meas. (dBm)	Limit (dBm)	Margin (dB)
1M/Low	4803.3	-43.8	3.1	-40.7	-21.2	19.5
1M/Mid	7320.4	-45.9	3.1	-42.8	-21.2	21.6
1M/High	7441.2	-46.6	3.1	-43.5	-21.2	22.3
2M/Low	4804.8	-43.8	3.1	-40.7	-21.2	19.5
2M/Mid	7318.9	-46.0	3.1	-42.9	-21.2	21.7
2M/High	7441.9	-46.9	3.1	-43.8	-21.2	22.6

Mode/Channel	Freq (MHz)	Meas. (dBm)	Ant. Gain (dBi)	Duty Cycle Correction	Corrected Meas. (dBm)	Limit (dBm)	Margin (dB)
1M/Low	4804.3	-47.5	3.1	0.7	-43.7	-41.2	2.5
1M/Mid	7319.4	-50.9	3.1	0.7	-47.1	-41.2	5.9
1M/High	7440.9	-51.6	3.1	0.7	-47.8	-41.2	6.6
2M/Low	4803.9	-51.1	3.1	2.4	-45.6	-41.2	4.4
2M/Mid	7319.0	-53.9	3.1	2.4	-48.4	-41.2	7.2
2M/High	7441.7	-54.1	3.1	2.4	-48.6	-41.2	7.4

Plots

1M Peak – Worst Case 1-25 GHz, no change in 30-1000 MHz





2.4835-2.5 GHz
Mid

2.5-25 GHz
Mid

1-2.31 GHz
High

2.31-2.39 GHz
High

2.4835-2.5 GHz
High

2.5-25 GHz
High

1M Average - Worst Case 1-25 GHz, no change in 30-1000 MHz

