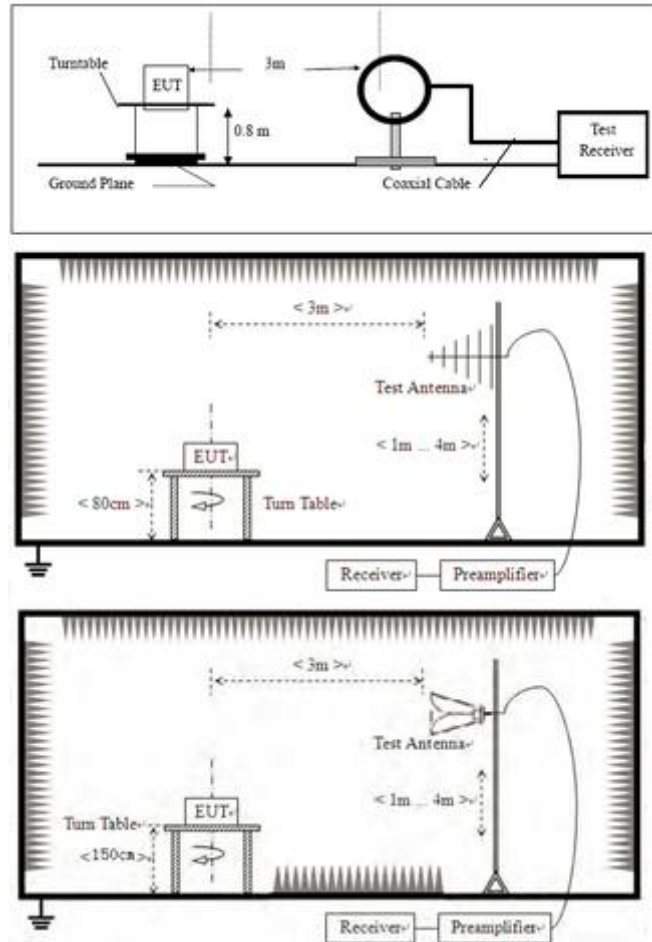


BLOCK DIAGRAM OF TEST SETUP



PROCEDURE

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

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- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark:

- 1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor + Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 4) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

TEST DATA

[Test Mode: above 1G]

[Test Mode: 8DPSK]

Remark: During the test, pre-scan the GFSK, Pi/4QPSK, 8-DPSK modulation, and found the 8-DPSK modulation which it is worse case.

Test channel:lowest						
Peak value:						
Frequency (MHz)	Read Level (dBuV)	Correct factor	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4804.00	52.14	2.38	54.52	74	-19.48	Vertical
7206.00	52	2.17	54.17	74	-19.83	Vertical
9608.00	51.75	2.06	53.81	74	-20.19	Vertical
12010.00	*			74		Vertical
14412.00	*			74		Vertical
4804.00	53.22	2.38	55.6	74	-18.4	Horizontal
7206.00	55.42	2.17	57.59	74	-16.41	Horizontal
9608.00	54.85	2.06	56.91	74	-17.09	Horizontal
12010.00	*			74		Horizontal
14412.00	*			74		Horizontal
Average value:						
Frequency (MHz)	Read Level (dBuV)	Correct factor	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4804.00	42.35	2.38	44.73	54	-9.27	Vertical
7206.00	43.16	2.17	45.33	54	-8.67	Vertical
9608.00	45.77	2.06	47.83	54	-6.17	Vertical
12010.00	*			54		Vertical
14412.00	*			54		Vertical
4804.00	42.69	2.38	45.07	54	-8.93	Horizontal
7206.00	43.94	2.17	46.11	54	-7.89	Horizontal
9608.00	41.7	2.06	43.76	54	-10.24	Horizontal
12010.00	*			54		Horizontal
14412.00	*			54		Horizontal
Test channel:Middle						
Peak value:						
Frequency (MHz)	Read Level (dBuV)	Correct factor	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4882.00	50.59	0.17	50.76	74	-23.24	Vertical
7323.00	50.02	1.43	51.45	74	-22.55	Vertical

9764.00	51.83	1.26	53.09	74	-20.91	Vertical
12205.00	*			74		Vertical
14646.00	*			74		Vertical
4882.00	52.63	0.17	52.8	74	-21.2	Horizontal
7323.00	57.1	1.43	58.53	74	-15.47	Horizontal
9764.00	51.76	1.26	53.02	74	-20.98	Horizontal
12205.00	*			74		Horizontal
14646.00	*			74		Horizontal
Average value:						
Frequency (MHz)	Read Level (dBuV)	Correct factor	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4882.00	40.49	0.17	40.66	54	-13.34	Vertical
7323.00	41.29	1.43	42.72	54	-11.28	Vertical
9764.00	39.75	1.26	41.01	54	-12.99	Vertical
12205.00	*			54		Vertical
14646.00	*			54		Vertical
4882.00	41.66	0.17	41.83	54	-12.17	Horizontal
7323.00	40.83	1.43	42.26	54	-11.74	Horizontal
9764.00	38.9	1.26	40.16	54	-13.84	Horizontal
12205.00	*			54		Horizontal
14646.00	*			54		Horizontal
Test channel: Highest						
Peak value:						
Frequency (MHz)	Read Level (dBuV)	Correct factor	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	52.56	1.04	53.6	74	-20.4	Vertical
7440.00	52.23	2.59	54.82	74	-19.18	Vertical
9920.00	51.79	2.74	54.53	74	-19.47	Vertical
12400.00	*			74		Vertical
14880.00	*			74		Vertical
4960.00	57.67	1.04	58.71	74	-15.29	Horizontal
7440.00	58.55	2.59	61.14	74	-12.86	Horizontal
9920.00	58.21	2.74	60.95	74	-13.05	Horizontal
12400.00	*			74		Horizontal
14880.00	*			74		Horizontal
Average						

value:						
Frequency (MHz)	Read Level (dBuV)	Correct factor	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	42.24	1.04	43.28	54	-10.72	Vertical
7440.00	42.19	2.59	44.78	54	-9.22	Vertical
9920.00	43.8	2.74	46.54	54	-7.46	Vertical
12400.00	*			54		Vertical
14880.00	*			54		Vertical
4960.00	47.63	1.04	48.67	54	-5.33	Horizontal
7440.00	43.51	2.59	46.1	54	-7.9	Horizontal
9920.00	42.48	2.74	45.22	54	-8.78	Horizontal
12400.00	*			54		Horizontal
14880.00	*			54		Horizontal
Test Result: Pass						

[Test Mode: TX mode (SE) below 1G]; [Polarity: Horizontal]

Radiated Emission Measurement

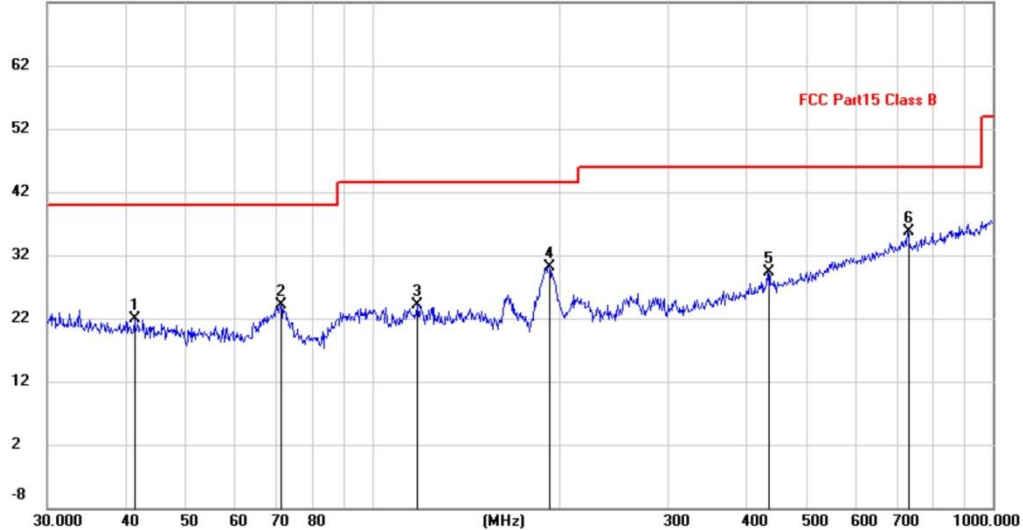
File :FCC-RE

Data :#8

Date: 2020/5/14 星期

Time: 上午 10:02:11

72.0 dBuV/m



Site

Polarization: **Horizontal**

Temperature:

Limit: FCC Part15 Class B

Power: DC3.7V

Humidity: %

EUT: Bluetooth Earphone

Distance:

M/N: TWS-587

Mode: BT mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		41.4215	-2.34	24.32	21.98	40.00	-18.02	QP		
2		71.3300	3.12	20.90	24.02	40.00	-15.98	QP		
3		118.1862	1.67	22.51	24.18	43.50	-19.32	QP		
4		192.4186	9.69	20.40	30.09	43.50	-13.41	QP		
5		434.0651	1.49	27.75	29.24	46.00	-16.76	QP		
6	*	729.3583	2.41	33.20	35.61	46.00	-10.39	QP		

*:Maximum data x:Over limit !:over margin

<Reference Only

Test Result: Pass

[Test Mode: TX mode (SE) below 1G]; [Polarity: Vertical]

Radiated Emission Measurement

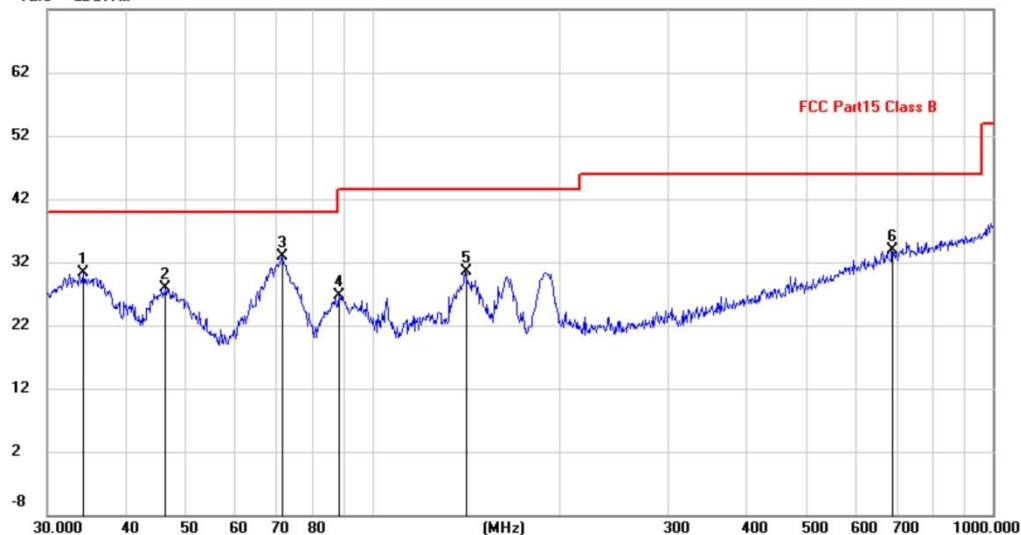
File: FCC-RE

Data: #7

Date: 2020/5/14 星期

Time: 上午 9:59:41

72.0 dBuV/m



Site

Polarization: **Vertical**

Temperature:

Limit: FCC Part15 Class B

Power: DC3.7V

Humidity: %

EUT: Bluetooth Earphone

Distance:

M/N: TWS-587

Mode: BT mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		34.2760	7.16	23.09	30.25	40.00	-9.75	QP		
2		46.5030	3.57	24.42	27.99	40.00	-12.01	QP		
3	*	71.5806	12.13	20.85	32.98	40.00	-7.02	QP		
4		88.3421	7.16	19.50	26.66	43.50	-16.84	QP		
5		141.3298	7.28	23.29	30.57	43.50	-12.93	QP		
6		687.1507	1.45	32.49	33.94	46.00	-12.06	QP		

*:Maximum data x:Over limit !:over margin

<Reference Only

Test Result: Pass

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10 APPENDIX

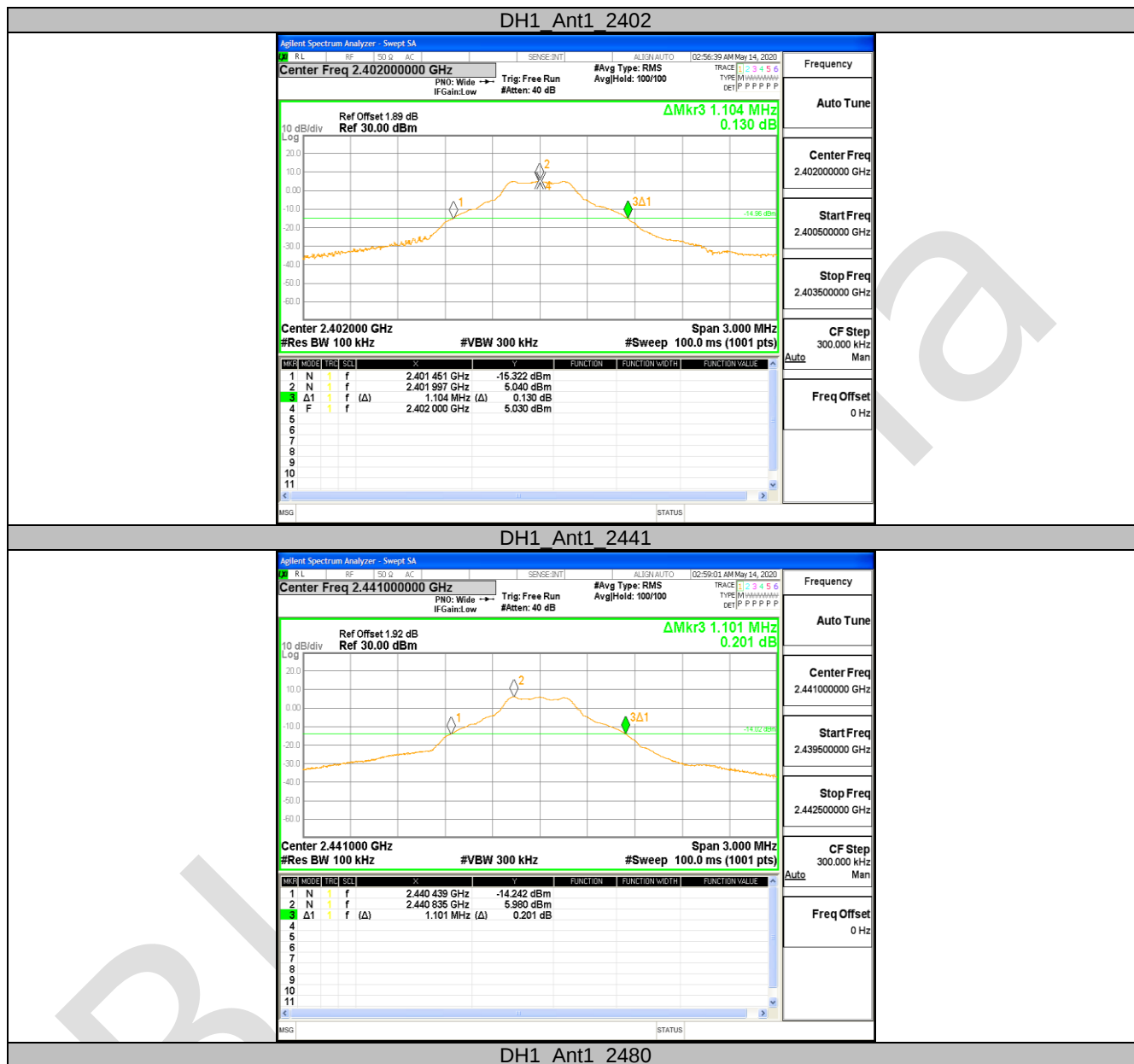
Appendix2

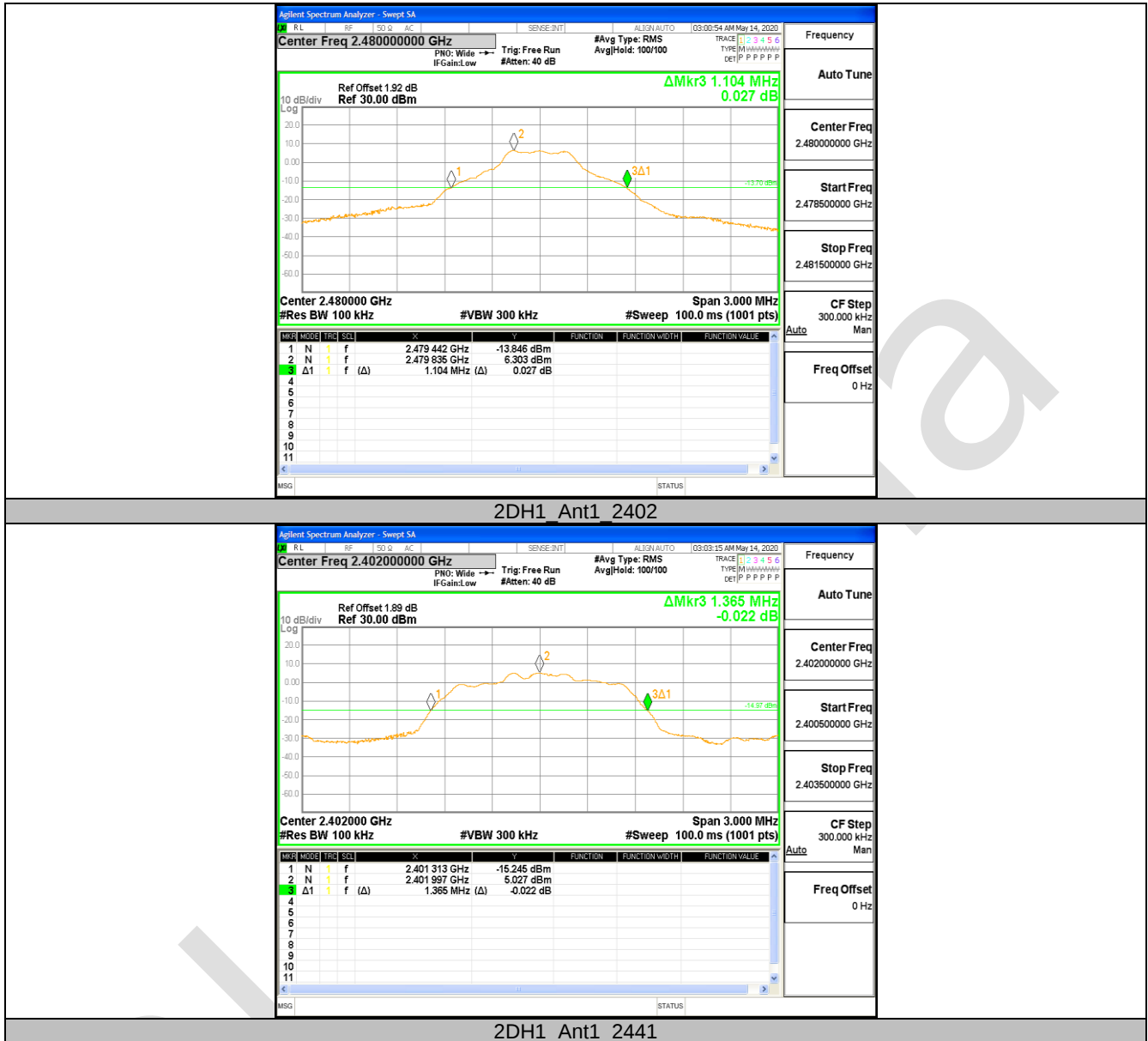
10.1 APPENDIX A: 20DB EMISSION BANDWIDTH

Test Result

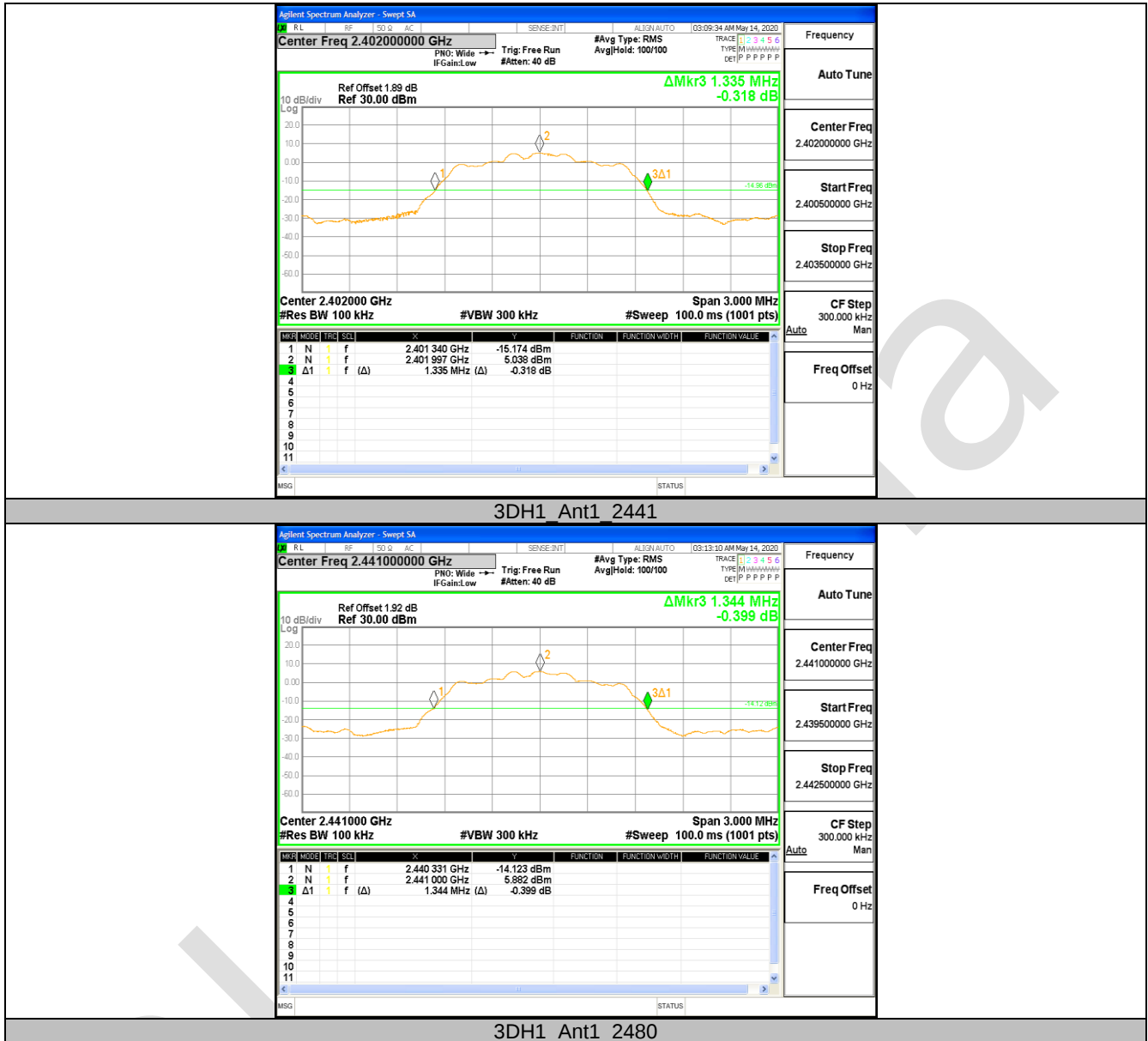
TestMode	Antenna	Channel	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	1.104	2401.451	2402.555	---	PASS
		2441	1.101	2440.439	2441.540	---	PASS
		2480	1.104	2479.442	2480.546	---	PASS
2DH1	Ant1	2402	1.365	2401.313	2402.678	---	PASS
		2441	1.365	2440.304	2441.669	---	PASS
		2480	1.392	2479.298	2480.690	---	PASS
3DH1	Ant1	2402	1.335	2401.340	2402.675	---	PASS
		2441	1.344	2440.331	2441.675	---	PASS
		2480	1.371	2479.307	2480.678	---	PASS

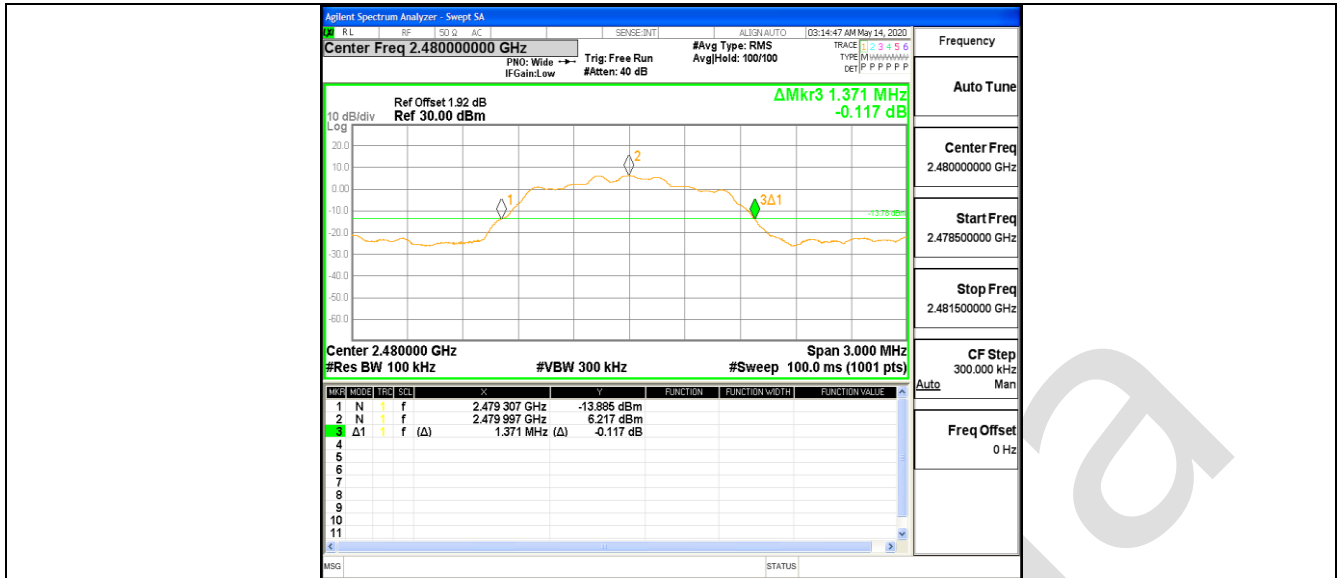
Test Graphs









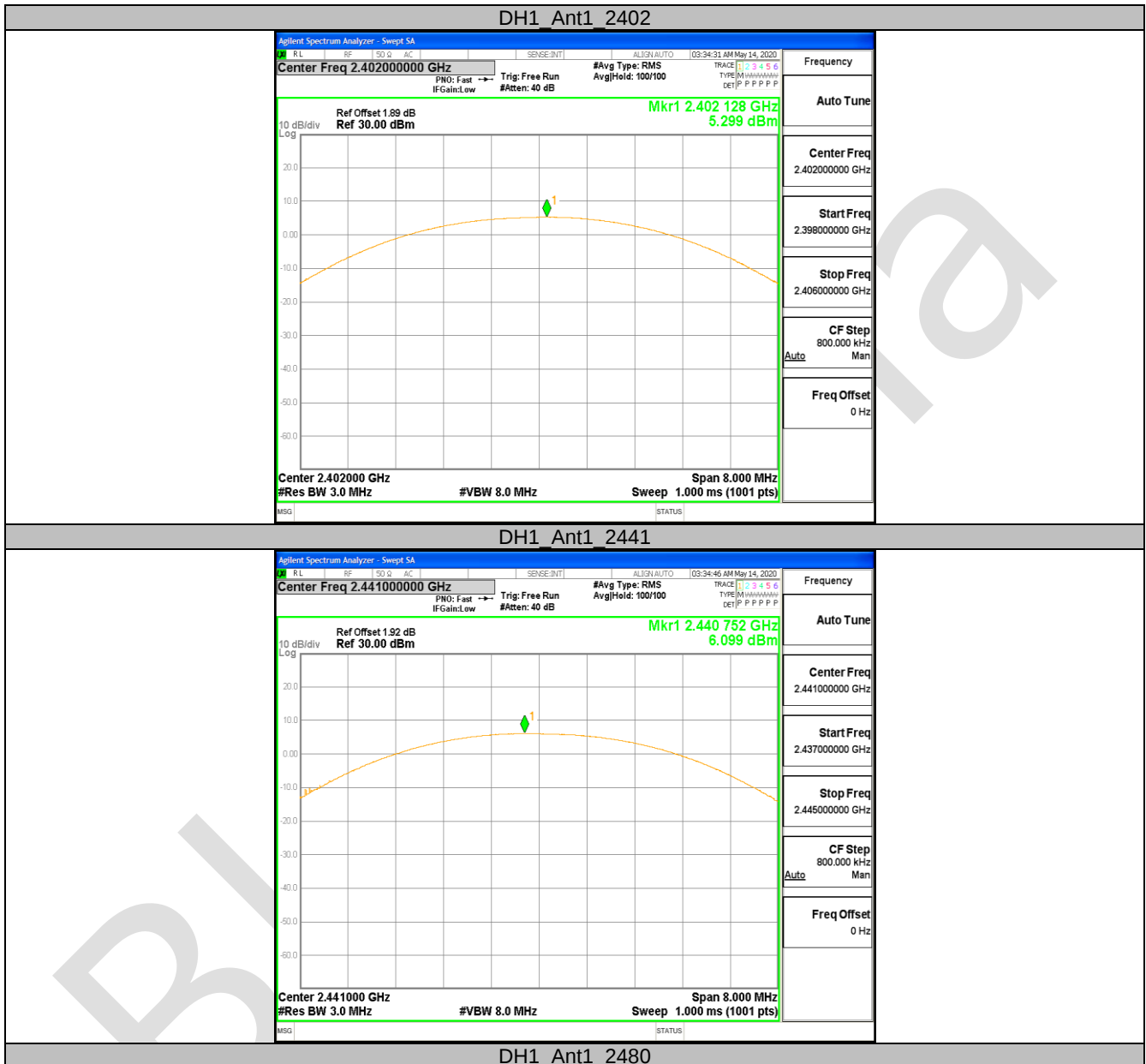


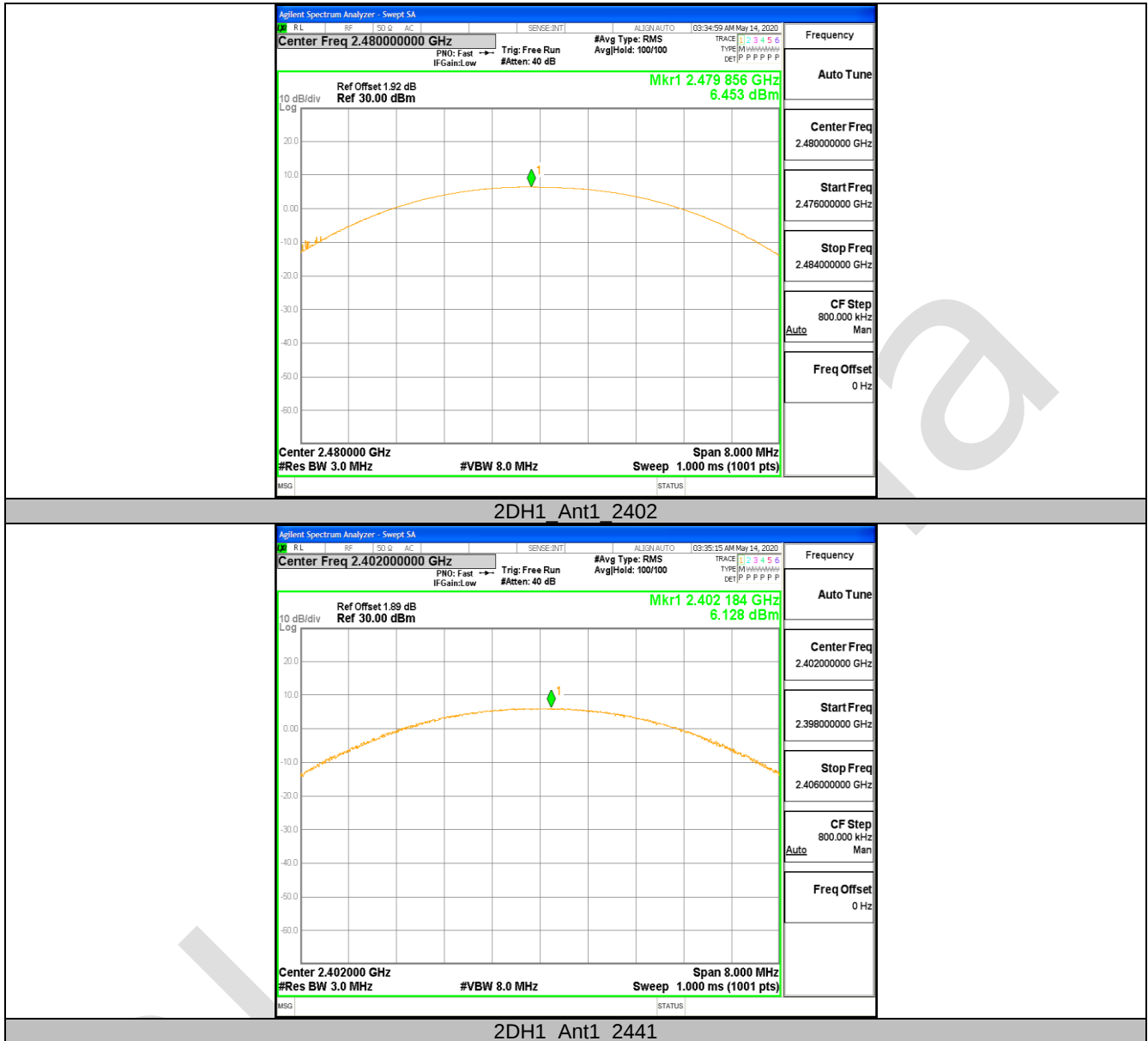
10.2 APPENDIXC: MAXIMUM CONDUCTED OUTPUT POWER

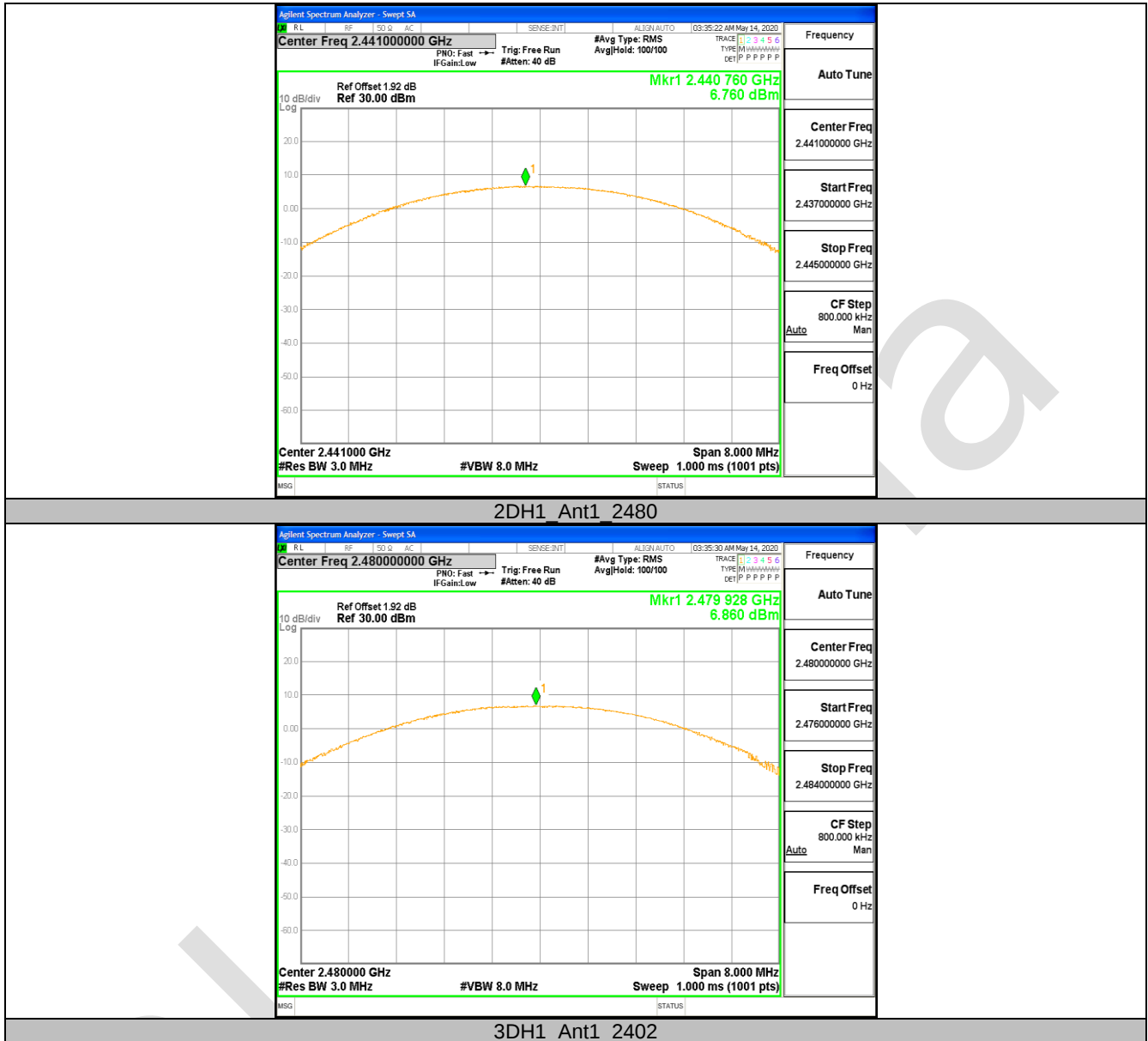
Test Result

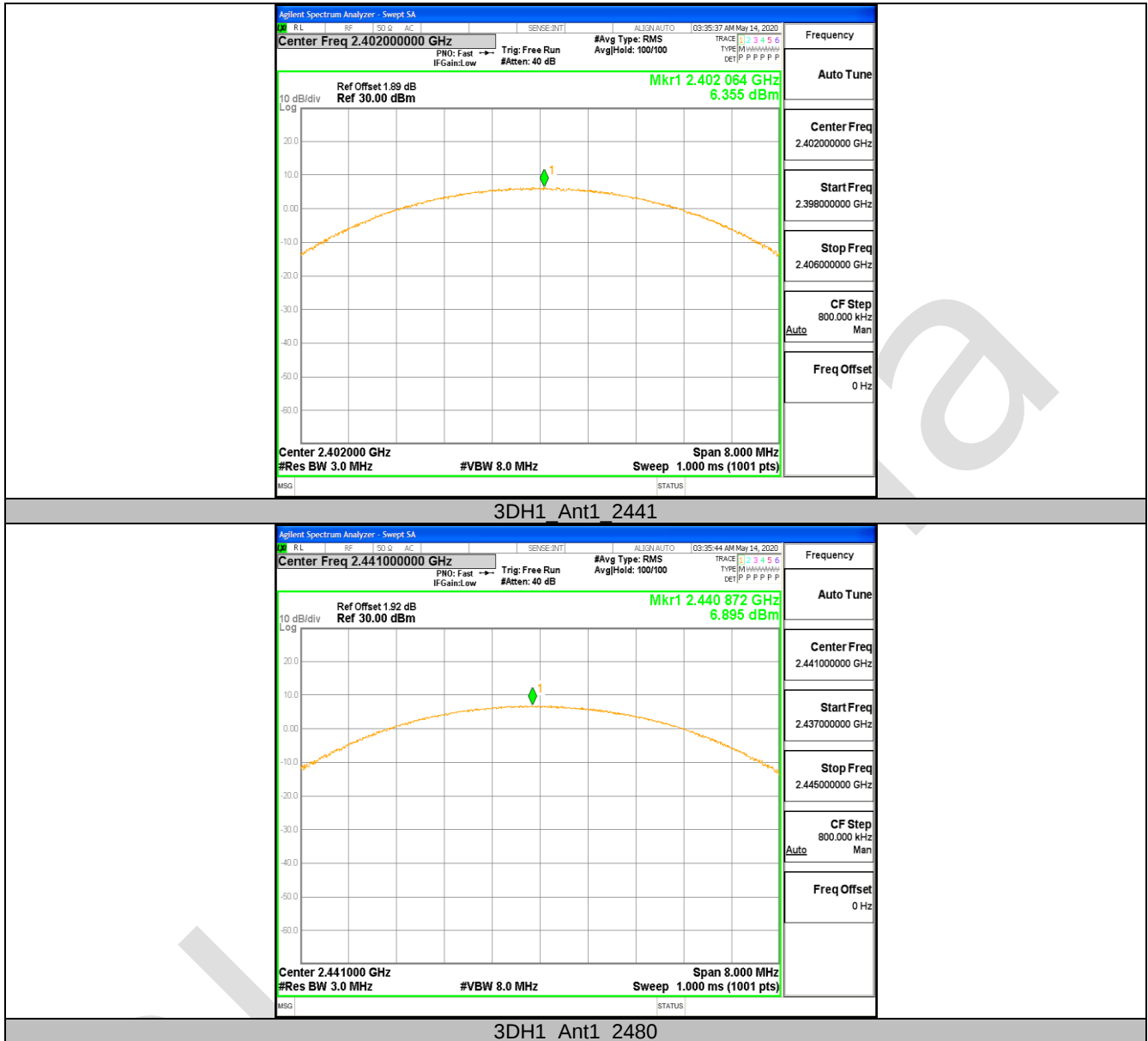
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH1	Ant1	2402	5.3	<=20.97	PASS
		2441	6.1	<=20.97	PASS
		2480	6.45	<=20.97	PASS
2DH1	Ant1	2402	6.13	<=20.97	PASS
		2441	6.76	<=20.97	PASS
		2480	6.86	<=20.97	PASS
3DH1	Ant1	2402	6.36	<=20.97	PASS
		2441	6.9	<=20.97	PASS
		2480	7.09	<=20.97	PASS

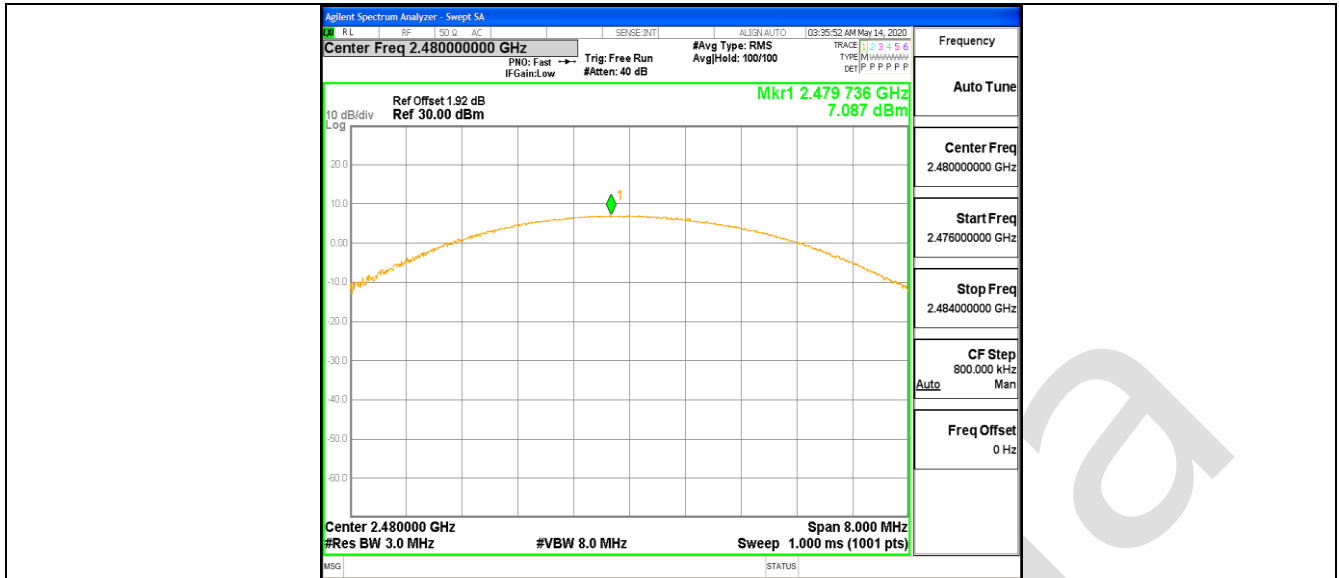
Test Graphs











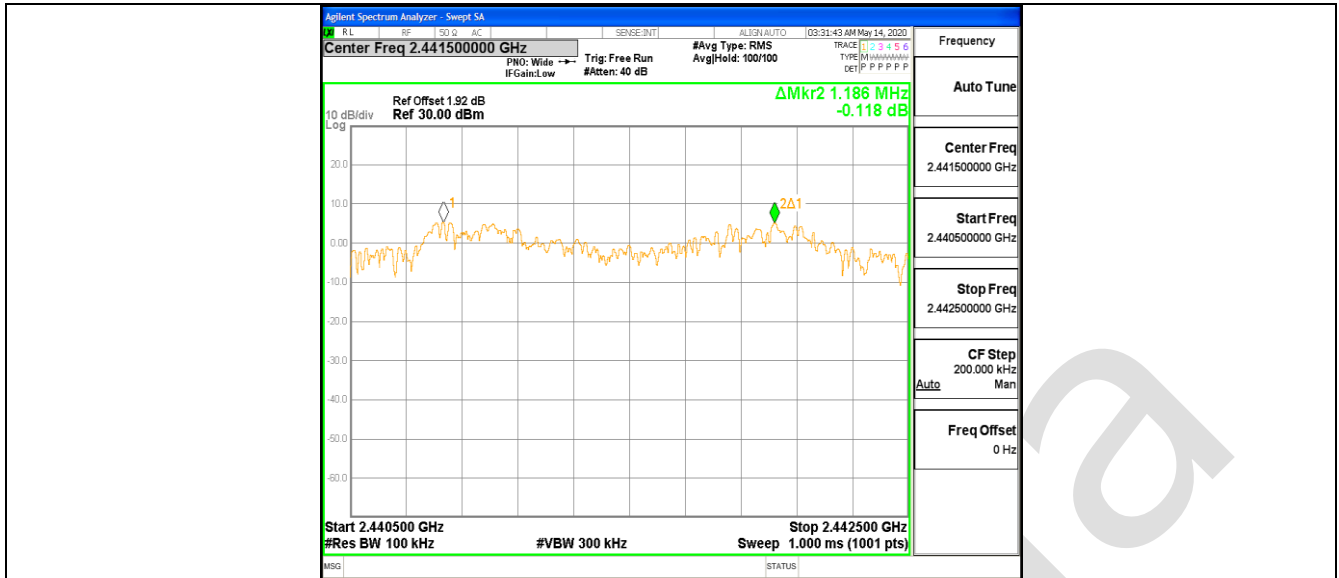
10.3 APPENDIXD: CARRIER FREQUENCY SEPARATION

Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Hop	0.83	≥ 0.736	PASS
2DH1	Ant1	Hop	1.16	≥ 0.928	PASS
3DH1	Ant1	Hop	1.186	≥ 0.914	PASS

Test Graphs





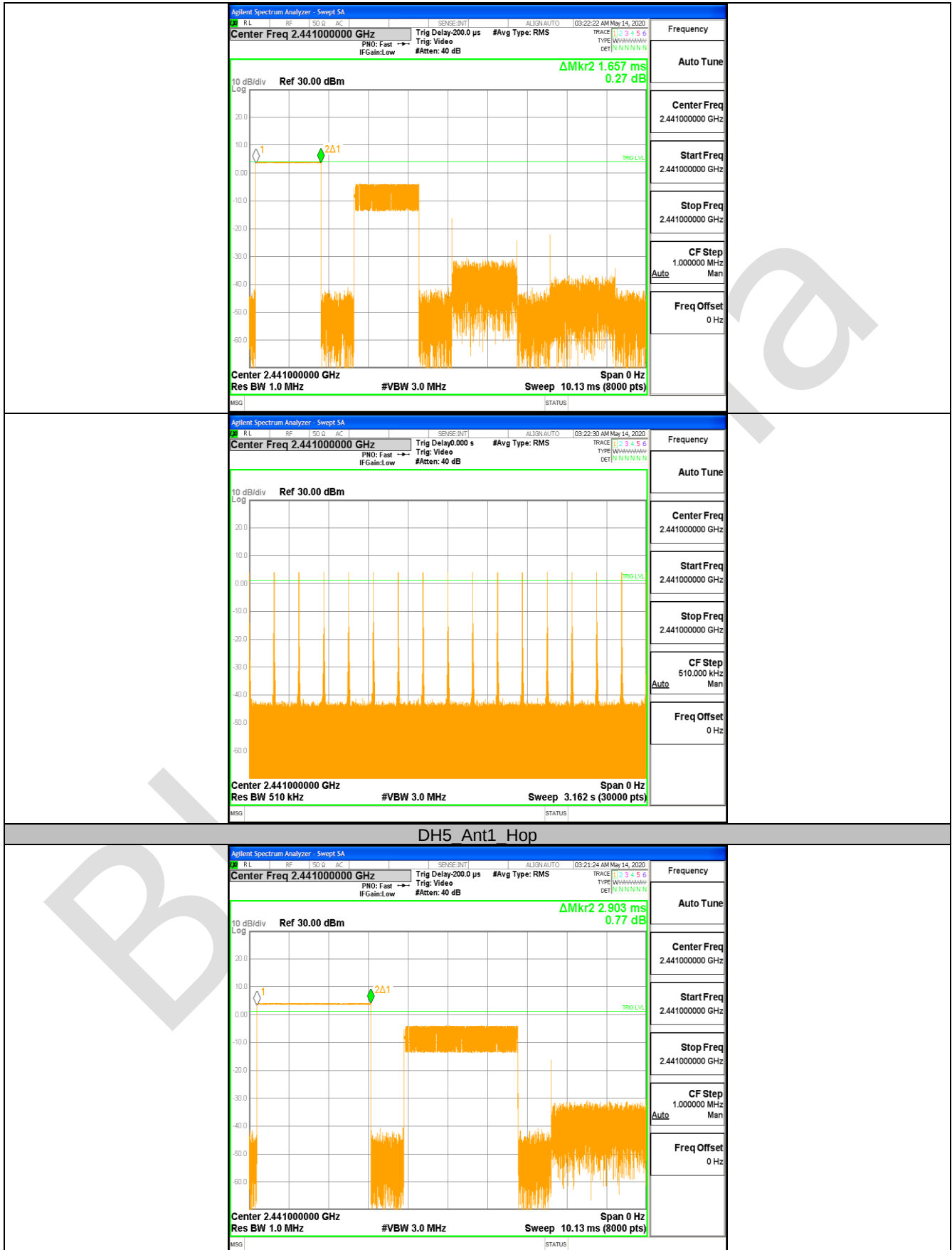
10.4 APPENDIXE: TIME OF OCCUPANCY

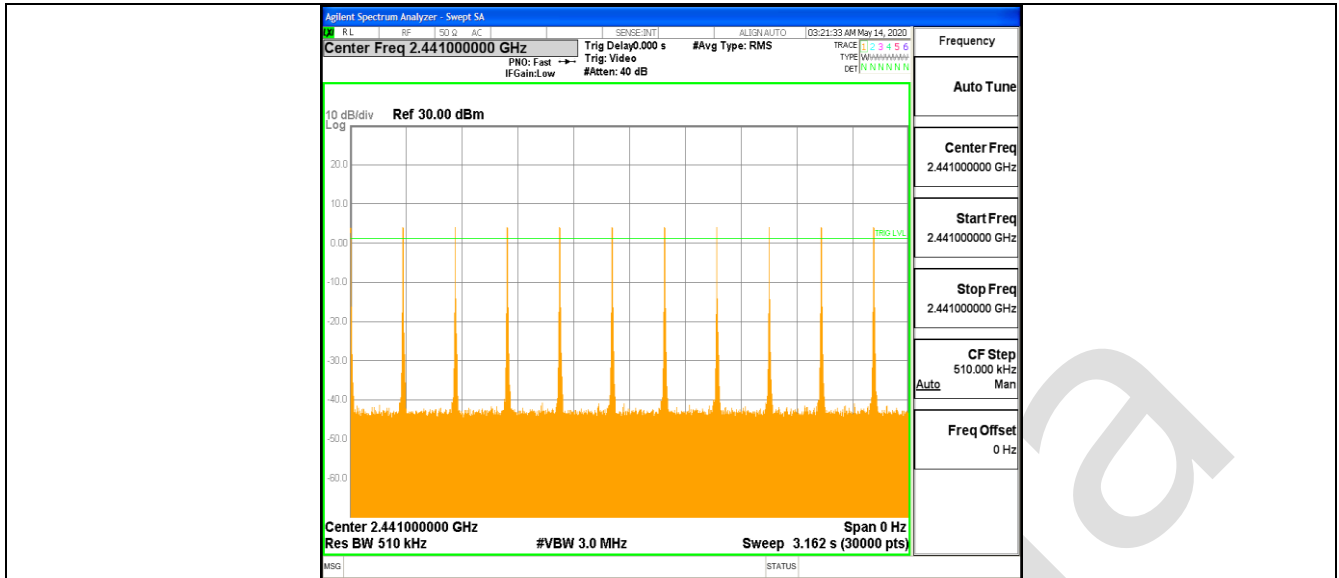
Test Result

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.40	330	0.132	≤ 0.4	PASS
DH3	Ant1	Hop	1.66	170	0.282	≤ 0.4	PASS
DH5	Ant1	Hop	2.90	110	0.319	≤ 0.4	PASS

Test Graphs





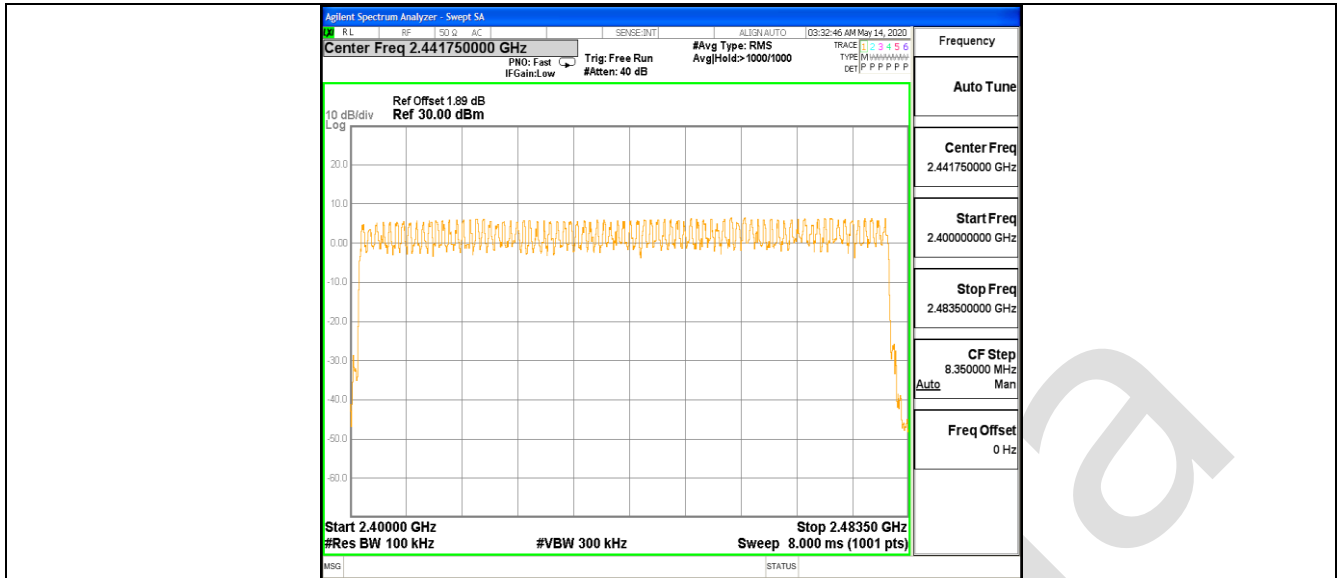


10.5 APPENDIXF: NUMBER OF HOPPING CHANNELS**Test Result**

TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH1	Ant1	Hop	79	≥ 15	PASS
2DH1	Ant1	Hop	79	≥ 15	PASS
3DH1	Ant1	Hop	79	≥ 15	PASS

Test Graphs





10.6 APPENDIX G: BAND EDGE MEASUREMENTS

Test Result

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	Low	2402	4.92	-56.25	<=-15.08	PASS
		High	2480	6.30	-55.68	<=-13.7	PASS
		Low	Hop_2402	5.21	-55.66	-14.79	PASS
		High	Hop_2480	5.85	-54.75	-14.15	PASS
2DH1	Ant1	Low	2402	4.95	-56.04	<=-15.05	PASS
		High	2480	6.28	-55.86	<=-13.72	PASS
		Low	Hop_2402	4.73	-55.12	-15.27	PASS
		High	Hop_2480	6.28	-55.17	-13.73	PASS
3DH1	Ant1	Low	2402	4.96	-55.93	<=-15.05	PASS
		High	2480	6.16	-55.21	<=-13.84	PASS
		Low	Hop_2402	4.90	-56.13	-15.1	PASS
		High	Hop_2480	5.27	-55.04	-14.73	PASS

Test Graphs

