6.9 Radiated emissions (below 1GHz)

Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`
Test Limit:	

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100 **	3
88-216	150 **	3
216-960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

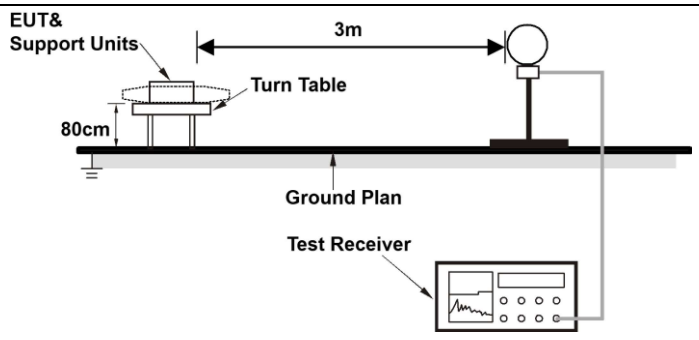
Test Method:	ANSI C63.10-2020 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020 section 6.6.4

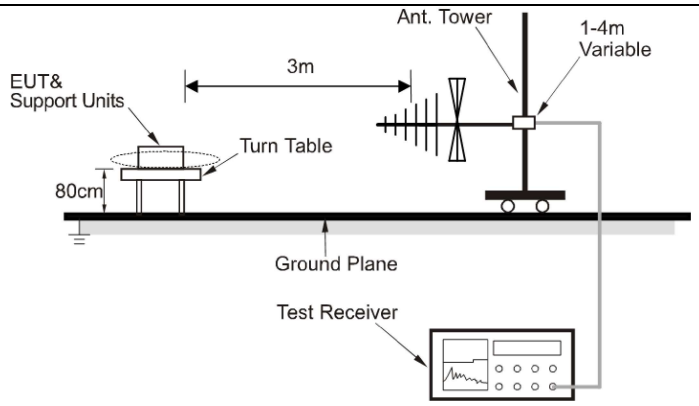
6.9.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1, Mode2				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report				

Note:
The amplitude of spurious emissions which are attenuated more than 20 dB below the limits are not reported.
All modes of operation of the EUT were investigated, and only the worst-case results are reported.
There were no emissions found below 30MHz within 20dB of the limit.

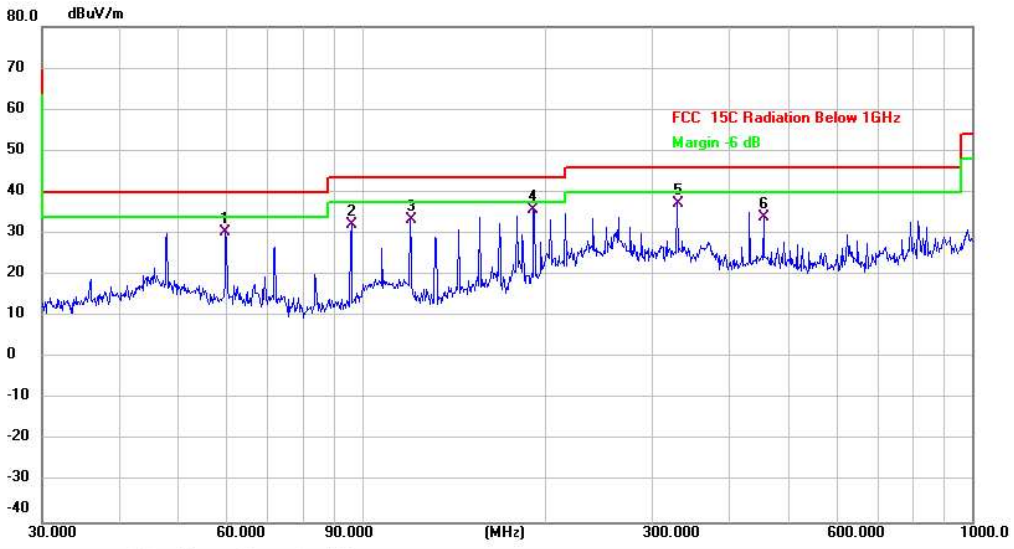
6.9.2 Test Setup Diagram:




Ant. Tower
1-4m
Variable
3m
EUT&
Support Units
Turn Table
80cm
Ground Plane
Test Receiver

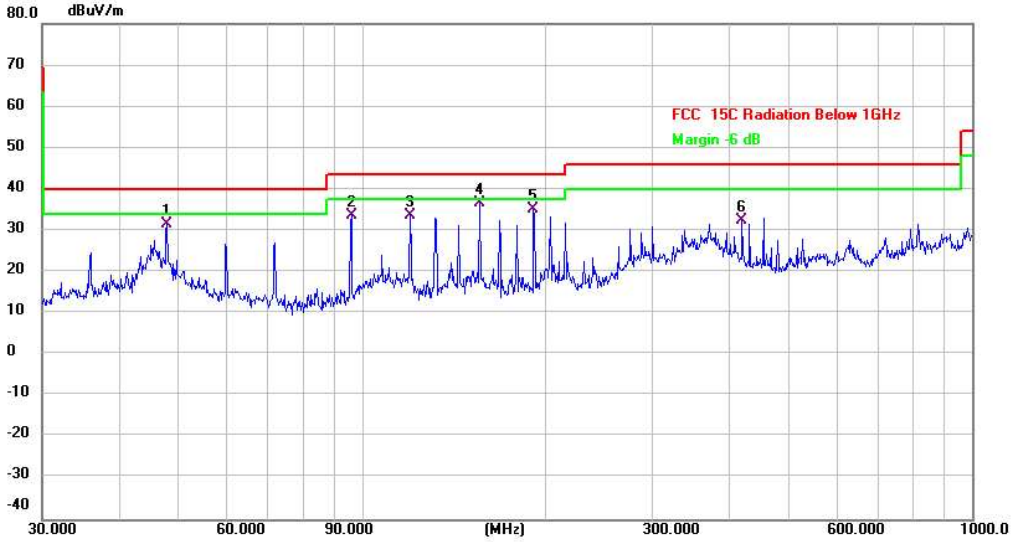
6.9.3 Test Data:

Mode2 / Polarization: Horizontal / CH: H



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		59.8588	40.05	-9.81	30.24	40.00	-9.76	QP	
2		96.0986	42.74	-10.56	32.18	43.50	-11.32	QP	
3		119.8556	42.66	-9.25	33.41	43.50	-10.09	QP	
4	*	191.7450	45.57	-9.88	35.69	43.50	-7.81	QP	
5		329.0390	42.79	-5.56	37.23	46.00	-8.77	QP	
6		455.9058	38.00	-4.11	33.89	46.00	-12.11	QP	

Mode2 / Polarization: Vertical / CH: H



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		47.9940	39.05	-7.53	31.52	40.00	-8.48	QP	
2		96.0986	44.36	-10.56	33.80	43.50	-9.70	QP	
3		119.8556	43.05	-9.25	33.80	43.50	-9.70	QP	
4	*	155.9101	47.00	-10.32	36.68	43.50	-6.82	QP	
5		191.7450	44.93	-9.88	35.05	43.50	-8.45	QP	
6		420.5803	37.29	-4.86	32.43	46.00	-13.57	QP	

6.10 Radiated emissions (above 1GHz)

Test Requirement:	In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`
Test Limit:	

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100 **	3
88-216	150 **	3
216-960	200 **	3
Above 960	500	3

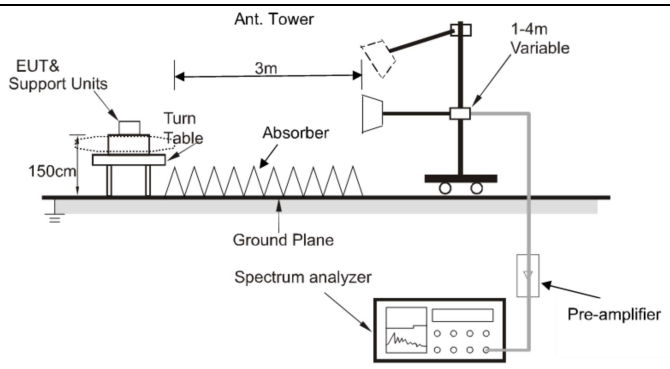
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Method:	ANSI C63.10-2020 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020 section 6.6.4

6.10.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1, Mode2				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report				
Note: Test frequency are from 1GHz to 25GHz, the amplitude of spurious emissions which are attenuated more than 20 dB below the limits are not reported. All modes of operation of the EUT were investigated, and only the worst-case results are reported.					

6.10.2 Test Setup Diagram:



6.10.3 Test Data:

Mode2 / Polarization: Horizontal / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4804.000	60.21	-7.70	52.51	74.00	-21.49	peak
2	*	4804.000	54.06	-7.70	46.36	54.00	-7.64	AVG
3		7206.000	49.33	0.84	50.17	74.00	-23.83	peak
4		7206.000	43.67	0.84	44.51	54.00	-9.49	AVG
5		9608.000	47.57	1.81	49.38	74.00	-24.62	peak
6		9608.000	41.45	1.81	43.26	54.00	-10.74	AVG

Mode2 / Polarization: Vertical / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4804.000	56.43	-7.70	48.73	74.00	-25.27	peak
2		4804.000	50.06	-7.70	42.36	54.00	-11.64	AVG
3		7206.000	48.14	0.84	48.98	74.00	-25.02	peak
4		7206.000	41.31	0.84	42.15	54.00	-11.85	AVG
5		9608.000	47.44	1.81	49.25	74.00	-24.75	peak
6	*	9608.000	41.81	1.81	43.62	54.00	-10.38	AVG

Mode2 / Polarization: Horizontal / CH: M

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4882.000	61.01	-7.84	53.17	74.00	-20.83	peak
2	*	4882.000	55.46	-7.84	47.62	54.00	-6.38	AVG
3		7323.000	47.71	0.61	48.32	74.00	-25.68	peak
4		7323.000	41.75	0.61	42.36	54.00	-11.64	AVG
5		9764.000	46.71	2.61	49.32	74.00	-24.68	peak
6		9764.000	41.01	2.61	43.62	54.00	-10.38	AVG

Mode2 / Polarization: Vertical / CH: M

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4882.000	59.07	-7.84	51.23	74.00	-22.77	peak
2	*	4882.000	53.41	-7.84	45.57	54.00	-8.43	AVG
3		7323.000	47.46	0.61	48.07	74.00	-25.93	peak
4		7323.000	41.64	0.61	42.25	54.00	-11.75	AVG
5		9764.000	47.20	2.61	49.81	74.00	-24.19	peak
6		9764.000	41.08	2.61	43.69	54.00	-10.31	AVG

Mode2 / Polarization: Horizontal / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4960.000	61.44	-7.73	53.71	74.00	-20.29	peak
2	*	4960.000	55.35	-7.73	47.62	54.00	-6.38	AVG
3		7440.000	48.10	0.78	48.88	74.00	-25.12	peak
4		7440.000	41.90	0.78	42.68	54.00	-11.32	AVG
5		9920.000	48.18	2.47	50.65	74.00	-23.35	peak
6		9920.000	41.89	2.47	44.36	54.00	-9.64	AVG

Mode2 / Polarization: Vertical / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4960.000	60.65	-7.73	52.92	74.00	-21.08	peak
2	*	4960.000	54.41	-7.73	46.68	54.00	-7.32	AVG
3		7440.000	48.00	0.78	48.78	74.00	-25.22	peak
4		7440.000	41.58	0.78	42.36	54.00	-11.64	AVG
5		9920.000	48.63	2.47	51.10	74.00	-22.90	peak
6		9920.000	42.77	2.47	45.24	54.00	-8.76	AVG

Photographs of the test setup

Refer to Appendix - Test Setup Photos

Photographs of the EUT

Refer to Appendix - EUT Photos

Appendix

Appendix A: 20dB Emission Bandwidth

Test Result

Test Mode	Antenna	Frequency [MHz]	20db EBW [MHz]
DH5	Ant1	2402	0.960
		2441	0.957
		2480	1.005
2DH5	Ant1	2402	1.350
		2441	1.335
		2480	1.299

Test Graphs

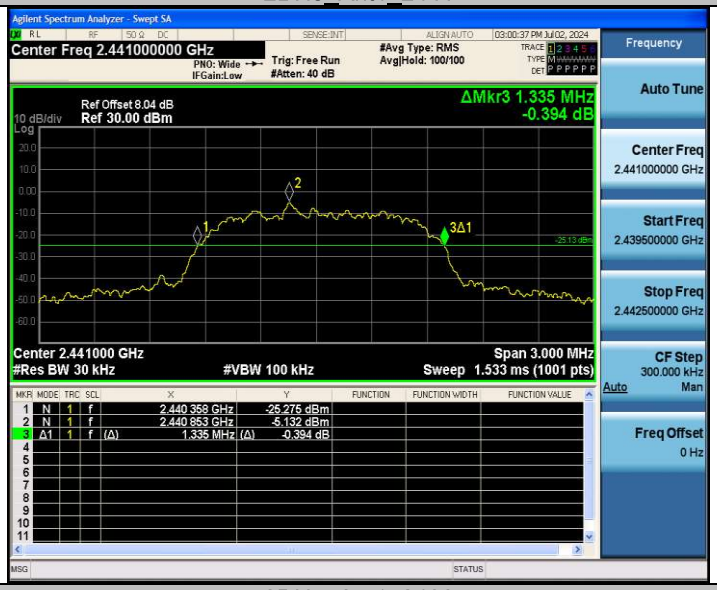
DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480

2DH5_Ant1_2402

2DH5_Ant1_2441



2DH5_Ant1_2480

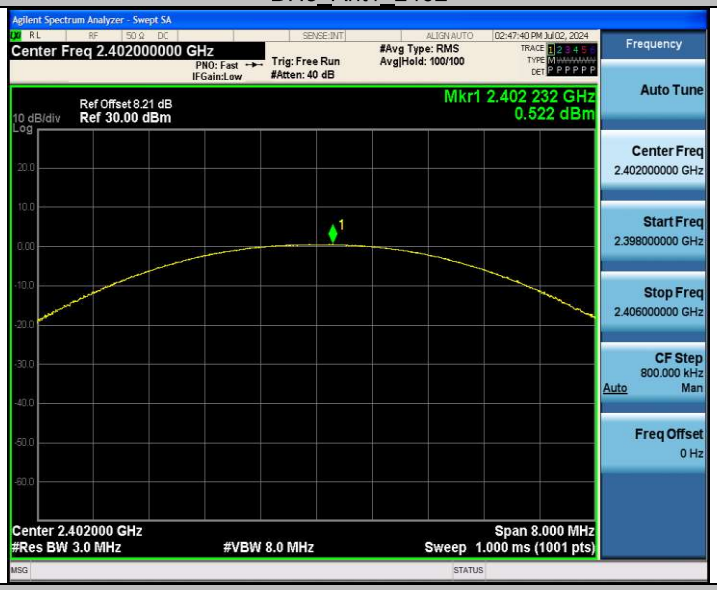
Appendix B: Maximum conducted output power

Test Result Peak

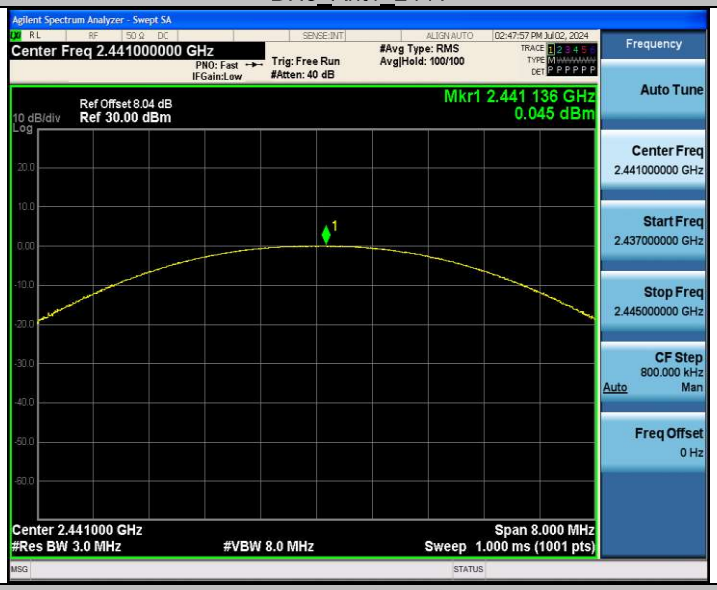
Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	0.52	≤20.97	PASS
		2441	0.05	≤20.97	PASS
		2480	0.71	≤20.97	PASS
2DH5	Ant1	2402	1.28	≤20.97	PASS
		2441	0.69	≤20.97	PASS
		2480	1.43	≤20.97	PASS

Test Graphs

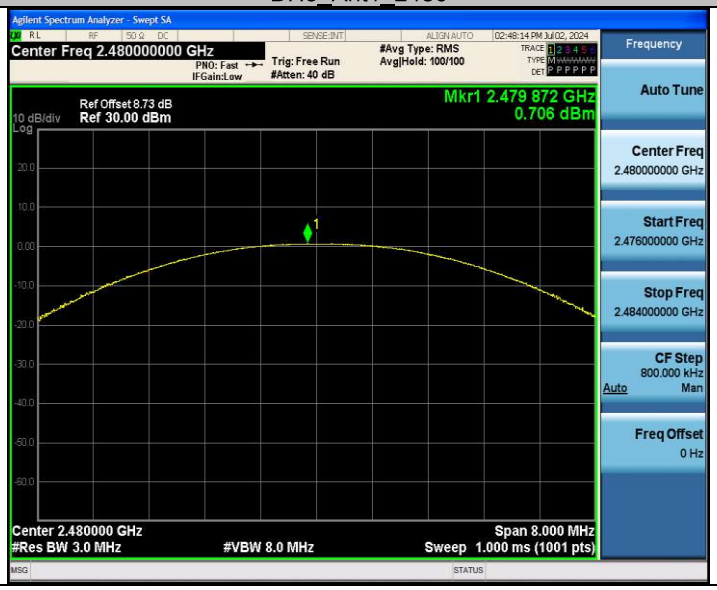
DH5_Ant1_2402



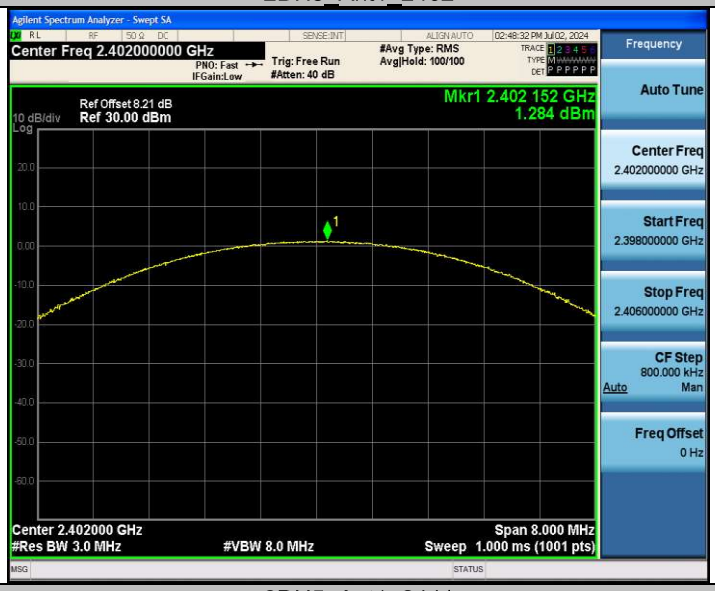
DH5_Ant1_2441



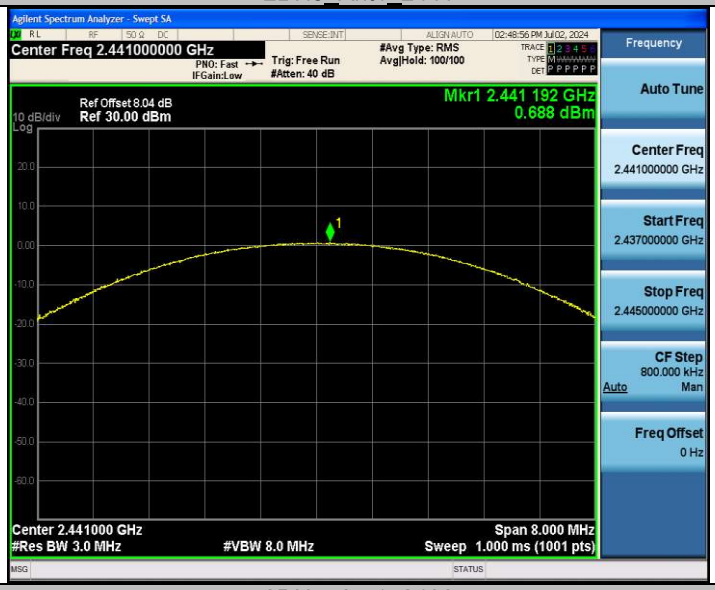
DH5_Ant1_2480



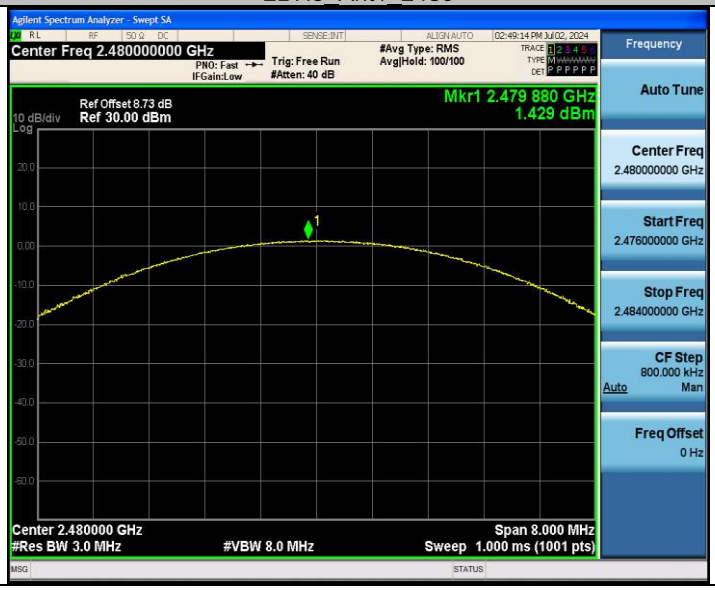
2DH5_Ant1_2402



2DH5_Ant1_2441



2DH5_Ant1_2480



Appendix C: Carrier frequency separation

Test Result

Test Mode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
DH5	Ant1	Hop	1	≥0.670	PASS
2DH5	Ant1	Hop	1	≥0.900	PASS