



Test Report No.: W7L-P23030005RF01

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 TEST RESULTS

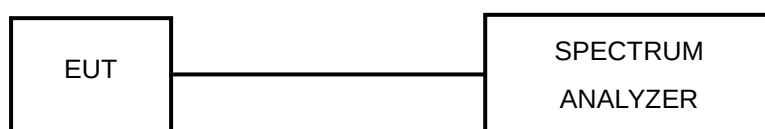
Please Refer to Appendix Of this test report

3.5 CHANNEL BANDWIDTH

3.5.1 LIMITS OF CHANNEL BANDWIDTH

For frequency hopping system operating in the 2400-2483.5MHz, If the 20dB bandwidth of hopping channel is greater than 25kHz, two-thirds 20dB bandwidth of hopping channel shall be a minimum limit for the hopping channel separation.

3.5.2 TEST SETUP



3.5.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.5.4 TEST PROCEDURE

- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- d. Repeat above procedures until all frequencies measured were complete.

3.5.5 DEVIATION FROM TEST STANDARD

No deviation.



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3.5.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.5.7 TEST RESULTS

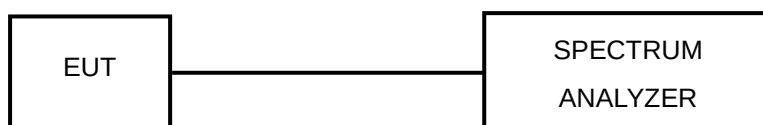
Please Refer to Appendix Of this test report.

3.6 HOPPING CHANNEL SEPARATION

3.6.1 LIMIT OF HOPPING CHANNEL SEPARATION

At least 25kHz or two-third of 20dB hopping channel bandwidth (whichever is greater).

3.6.2 TEST SETUP



3.6.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.6.4 TEST PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the MaxHold function record the separation of two adjacent channels.
4. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

3.6.5 DEVIATION FROM TEST STANDARD

No deviation.

3.6.6 TEST RESULTS

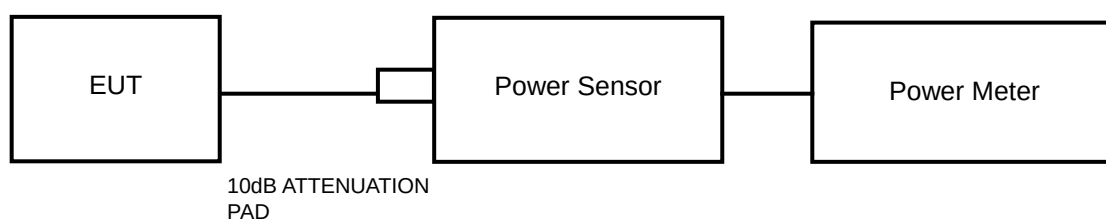
Please Refer to Appendix Of this test report.

3.7 MAXIMUM OUTPUT POWER

3.7.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Output Power Measurement is 125mW.

3.7.2 TEST SETUP



3.7.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.7.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.



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3.7.5 DEVIATION FROM TEST STANDARD

No deviation.

3.7.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



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3.7.7 TEST RESULTS

3.7.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix Of this test report.



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3.7.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

Please Refer to Appendix Of this test report.

3.8 OUT OF BAND MEASUREMENT

3.8.1 LIMITS OF OUT OF BAND MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100KHz RBW).

3.8.2 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Spectrum Analyzer was set RBW to 100 kHz and VBW to 300 kHz with suitable frequency span including 100 MHz bandwidth from band edge. Detector = PEAK and Trace mode = Max Hold. The band edges was measured and recorded.

3.8.4 DEVIATION FROM TEST STANDARD

No deviation.

3.8.5 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.8.6 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level. D2 line indicates the 20dB offset below D1. It shows compliance to the requirement.

Please Refer to Appendix Of this test report.



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4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



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5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

6 APPENDIX

20DB EMISSION BANDWIDTH

TEST RESULT

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.849	2401.559	2402.408	---	---
		2441	0.852	2440.562	2441.414	---	---
		2480	0.846	2479.562	2480.408	---	---
2DH5	Ant1	2402	1.287	2401.364	2402.651	---	---
		2441	1.284	2440.367	2441.651	---	---
		2480	1.284	2479.364	2480.648	---	---
3DH5	Ant1	2402	1.299	2401.349	2402.648	---	---
		2441	1.257	2440.367	2441.624	---	---
		2480	1.257	2479.361	2480.618	---	---

TEST GRAPHS

DH5_Ant1_2402



DH5_Ant1_2441

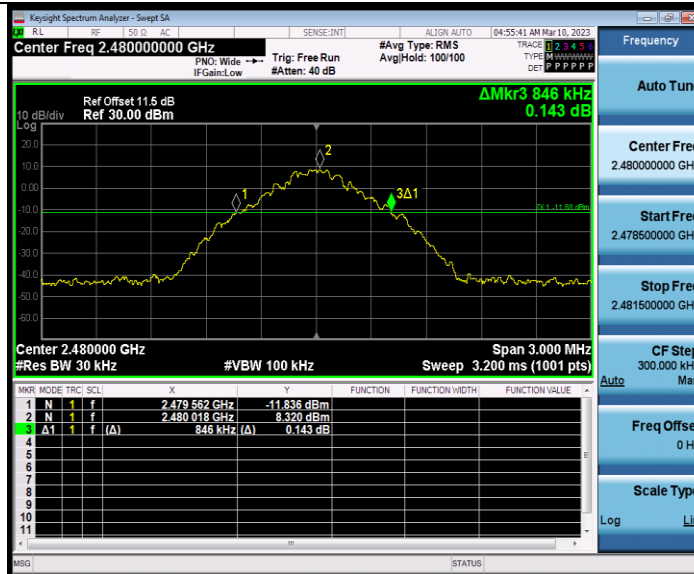


DH5_Ant1_2480



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2DH5_Ant1_2402



2DH5_Ant1_2441



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2DH5_Ant1_2480



3DH5_Ant1_2402



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3DH5_Ant1_2441



3DH5_Ant1_2480



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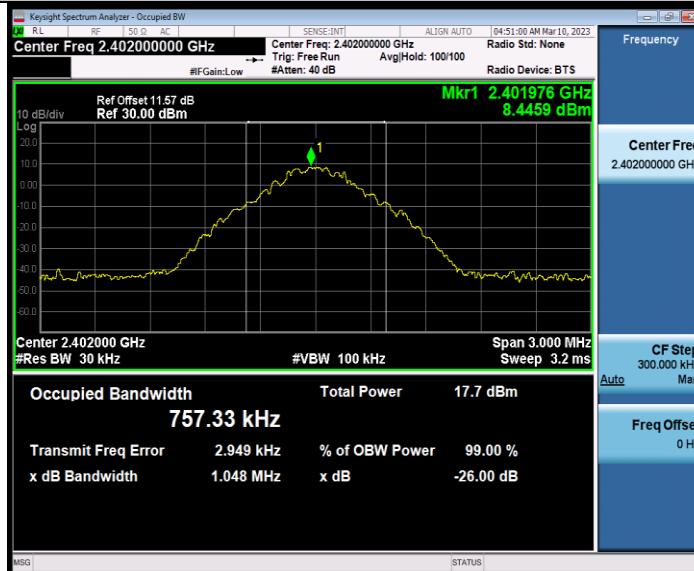
OCCUPIED CHANNEL BANDWIDTH

TEST RESULT

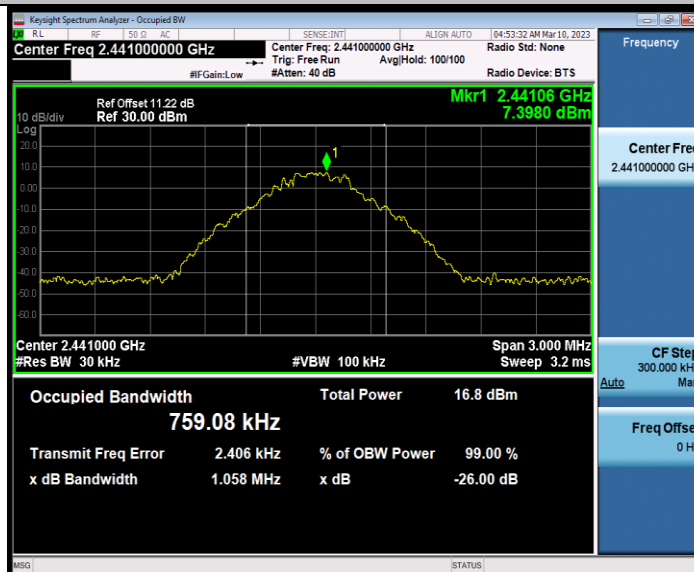
TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.75733	2401.6243	2402.3816	---	---
		2441	0.75908	2440.6229	2441.3820	---	---
		2480	0.76673	2479.6157	2480.3824	---	---
2DH5	Ant1	2402	1.1641	2401.4145	2402.5786	---	---
		2441	1.1615	2440.4157	2441.5772	---	---
		2480	1.1632	2479.4136	2480.5768	---	---
3DH5	Ant1	2402	1.1615	2401.4220	2402.5835	---	---
		2441	1.1656	2440.4152	2441.5808	---	---
		2480	1.1648	2479.4178	2480.5826	---	---

TEST GRAPHS

DH5_Ant1_2402



DH5_Ant1_2441

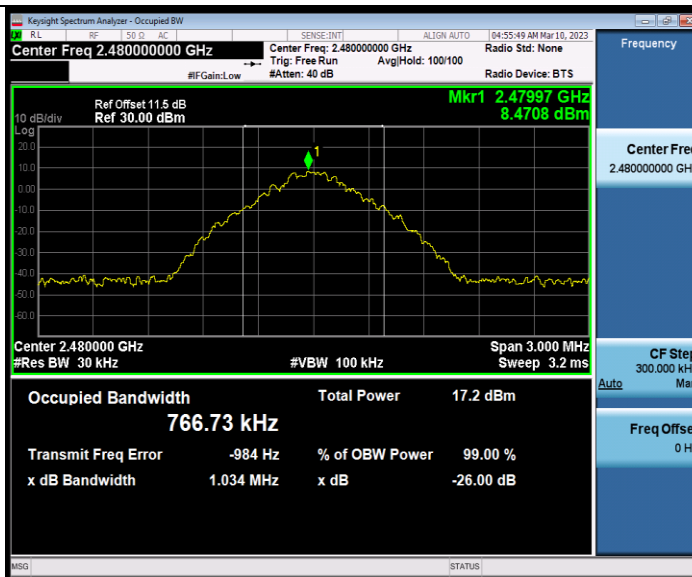


DH5_Ant1_2480

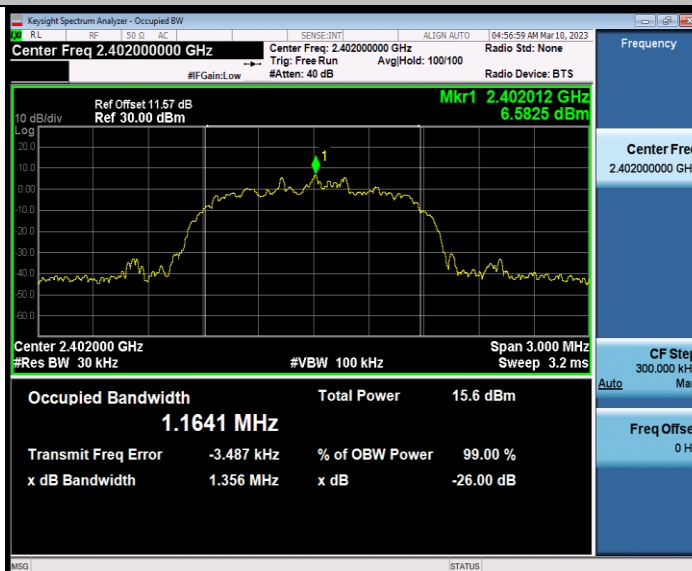


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2DH5_Ant1_2402



2DH5_Ant1_2441



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2DH5_Ant1_2480



3DH5_Ant1_2402

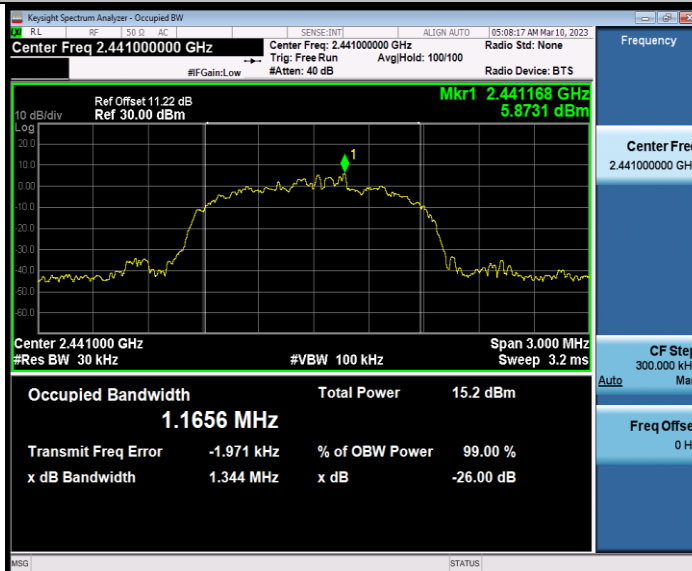


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3DH5_Ant1_2441



3DH5_Ant1_2480



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MAXIMUM CONDUCTED OUTPUT POWER

TEST RESULT

TestMode	Antenna	Frequency [MHz]	Average power [dBm]	Peak Power [dBm]	Peak Power [mw]	Conducted Limit [dBm]	EIRP [dBm]	EIRP [mw]	EIRP Limit [dBm]	Verdict	Power Setting
DH5	Ant1	2402	9.65	10.37	10.89	≤20.97	6.67	4.65	≤36.00	PASS	Default
		2441	9.70	10.35	10.84	≤20.97	6.65	4.62	≤36.00	PASS	Default
		2480	9.89	10.41	10.99	≤20.97	6.71	4.69	≤36.00	PASS	Default
2DH5	Ant1	2402	6.70	9.29	8.49	≤20.97	5.59	3.62	≤36.00	PASS	Default
		2441	6.82	9.61	9.14	≤20.97	5.91	3.90	≤36.00	PASS	Default
		2480	6.78	9.55	9.02	≤20.97	5.85	3.85	≤36.00	PASS	Default
3DH5	Ant1	2402	6.62	9.24	8.39	≤20.97	5.54	3.58	≤36.00	PASS	Default
		2441	6.92	9.64	9.20	≤20.97	5.94	3.93	≤36.00	PASS	Default
		2480	6.89	9.50	8.91	≤20.97	5.8	3.80	≤36.00	PASS	Default
Note:EIRP=Peak Power+Gain											

SPOT CHECK

TestMode	Antenna	Frequency [MHz]	Average power [dBm]	Peak Power [dBm]	Peak Power [mw]	Conducted Limit [dBm]	EIRP [dBm]	EIRP [mw]	EIRP Limit [dBm]	Verdict	Power Setting
DH5	Ant1	2402	9.53	10.16	10.38	≤20.97	6.46	4.43	≤36.00	PASS	Default
		2441	9.41	10.11	10.26	≤20.97	6.41	4.38	≤36.00	PASS	Default
		2480	9.58	10.23	10.54	≤20.97	6.53	4.50	≤36.00	PASS	Default



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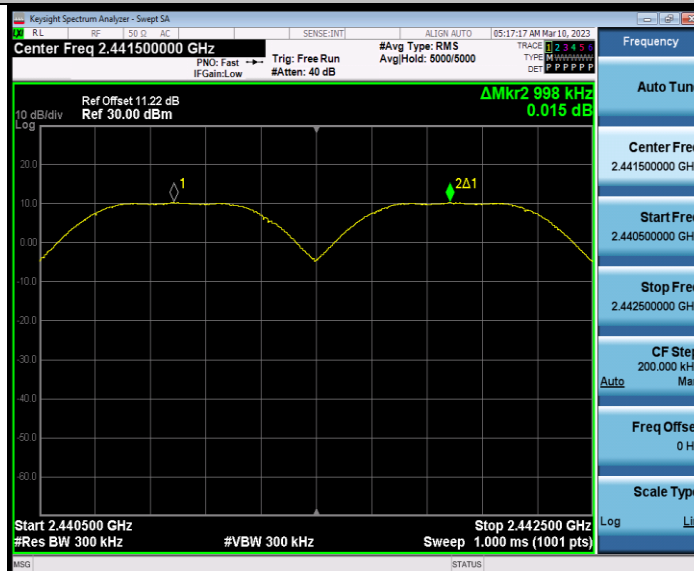
CARRIER FREQUENCY SEPARATION

TEST RESULT

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.998	≥ 0.852	PASS
2DH5	Ant1	Hop	1.002	≥ 0.858	PASS
3DH5	Ant1	Hop	1.018	≥ 0.866	PASS

TEST GRAPHS

DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop



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TIME OF OCCUPANCY

TEST RESULT

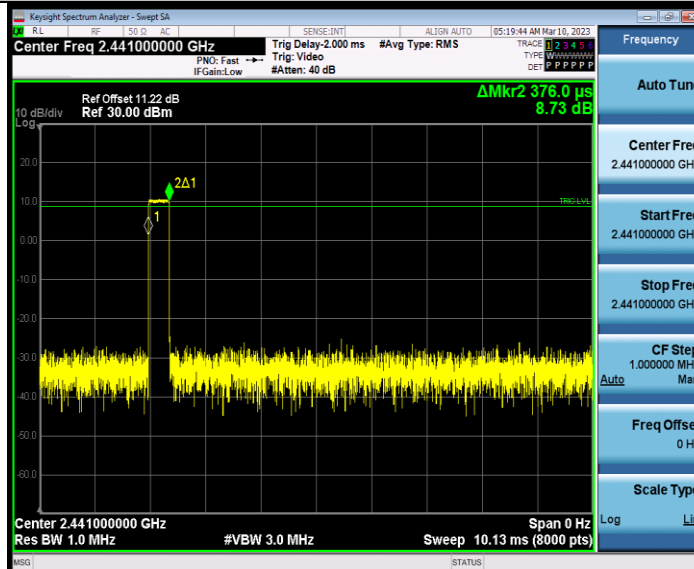
TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.376	320	0.12	≤0.4	PASS
DH3	Ant1	Hop	1.633	160	0.261	≤0.4	PASS
DH5	Ant1	Hop	2.880	106.67	0.307	≤0.4	PASS
2DH1	Ant1	Hop	0.384	320	0.123	≤0.4	PASS
2DH3	Ant1	Hop	1.637	160	0.262	≤0.4	PASS
2DH5	Ant1	Hop	2.883	106.67	0.308	≤0.4	PASS
3DH1	Ant1	Hop	0.385	320	0.123	≤0.4	PASS
3DH3	Ant1	Hop	1.635	160	0.262	≤0.4	PASS
3DH5	Ant1	Hop	2.885	106.67	0.308	≤0.4	PASS

NOTE: TotalHops =[1600/(Send and receive Number*79)]*0.4*79;

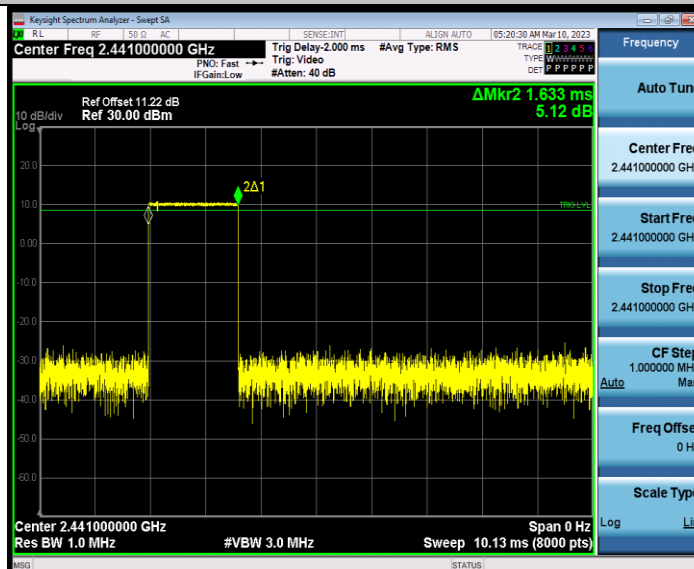
Send and receive Number : DH1/2DH1/3DH1=2; DH3/2DH3/3DH3=4; DH5/2DH5/3DH5=6

TEST GRAPHS

DH1_Ant1_Hop



DH3_Ant1_Hop

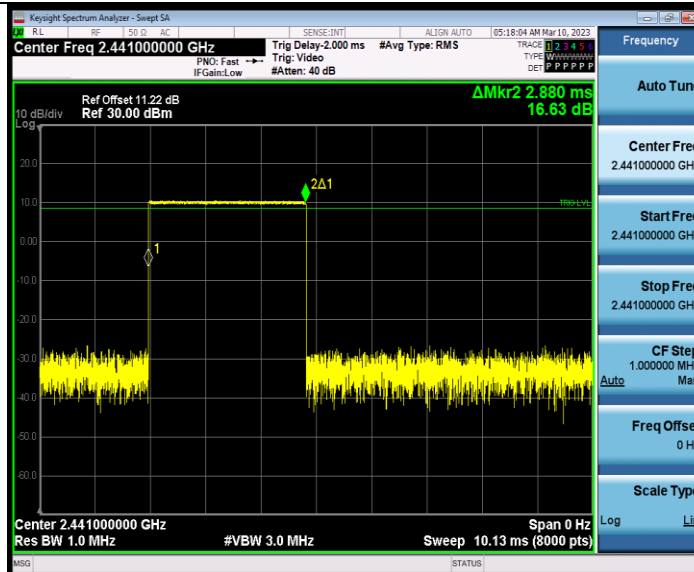


DH5_Ant1_Hop

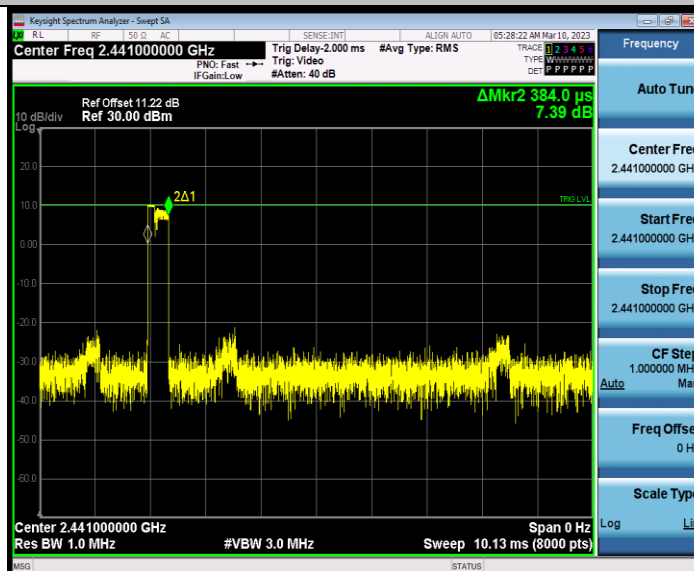


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2DH1_Ant1_Hop

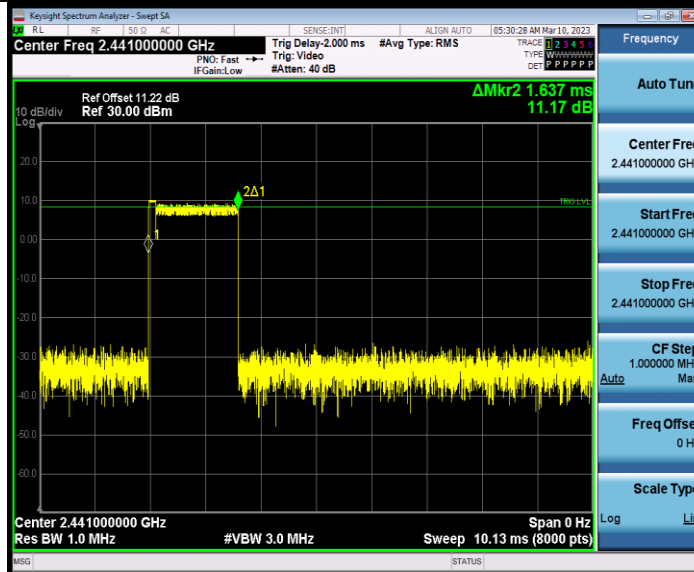


2DH3_Ant1_Hop

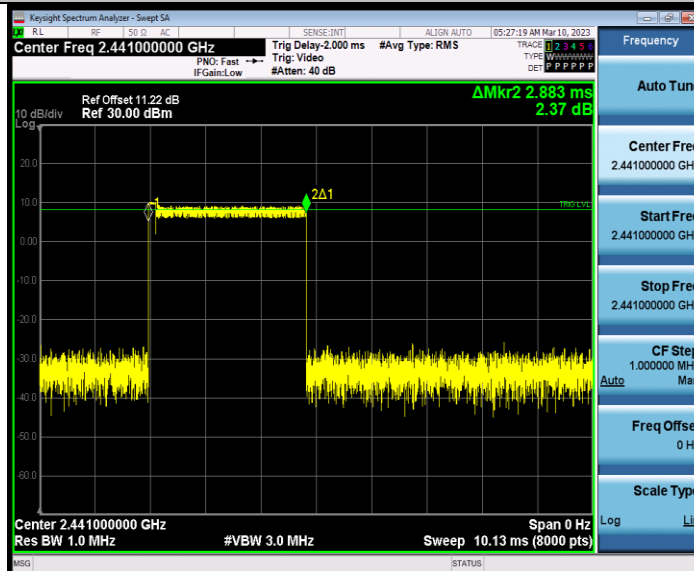


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2DH5_Ant1_Hop

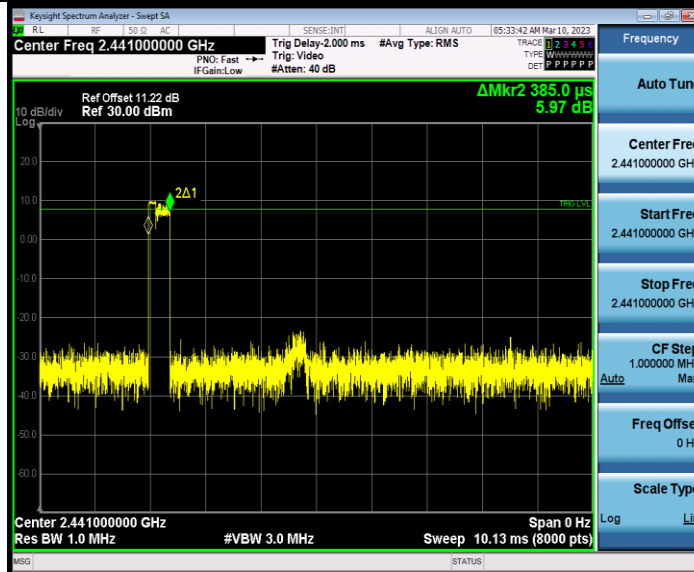


3DH1_Ant1_Hop

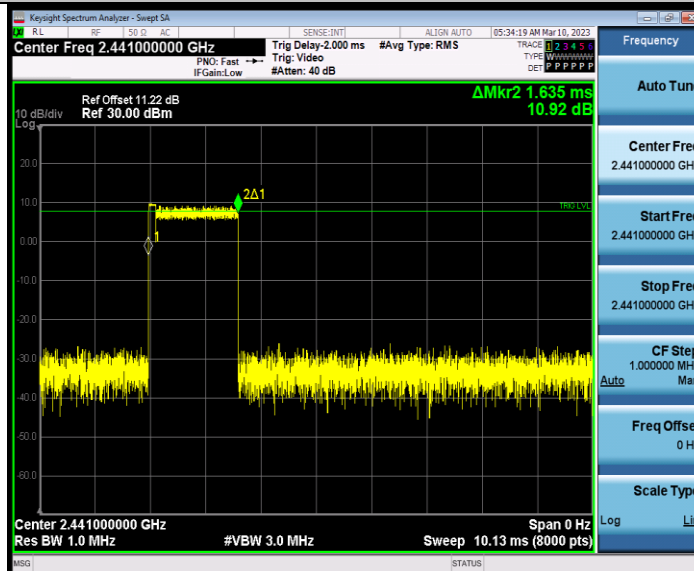


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3DH3_Ant1_Hop



3DH5_Ant1_Hop