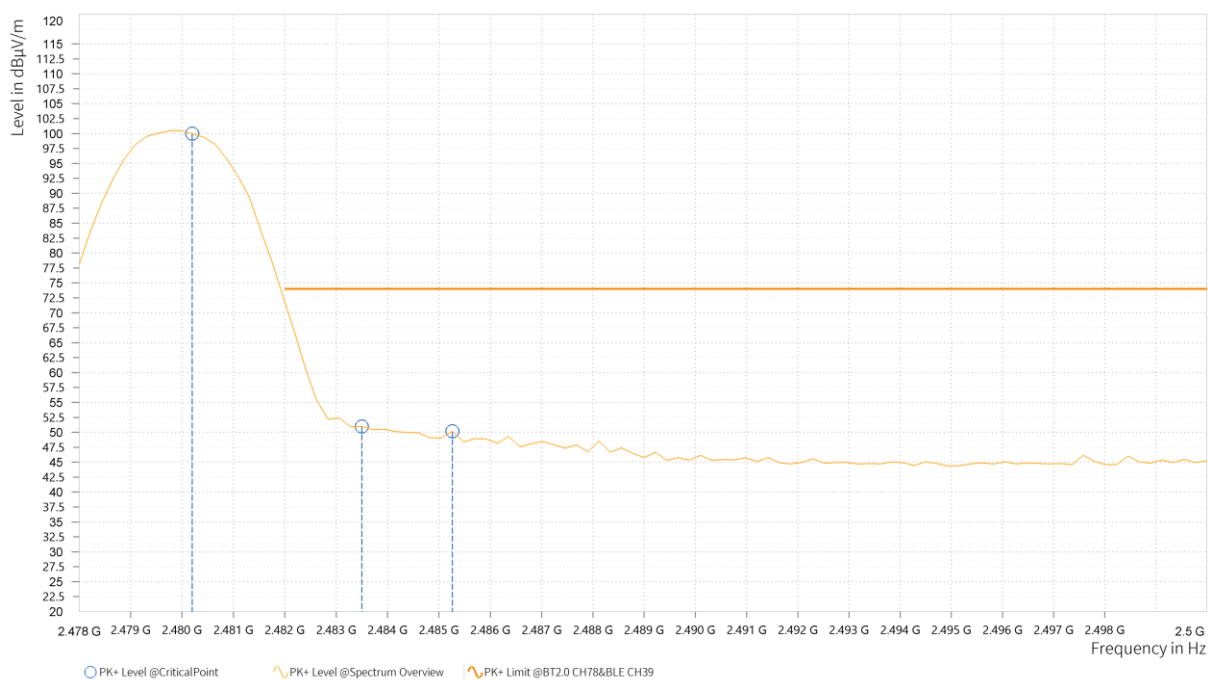


CHANNEL	TX Channel 78	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.200	99.98			6.73	H	42.5	1
6	2,483.500	50.97	74.00	23.03	6.74	H	91.5	1
6	2,485.260	50.18	74.00	23.82	6.75	H	4.5	1



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.760	93.82			6.72	H	43.8	1
6	2,483.500	31.12	54.00	22.88	6.74	H	5.2	1
6	2,484.600	31.09	54.00	22.91	6.75	H	5.2	1



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.980	94.00			6.73	V	123.7	2
6	2,483.500	46.51	74.00	27.49	6.74	V	2.5	2
6	2,484.160	47.08	74.00	26.92	6.74	V	171.5	2



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.760	88.03			6.72	V	124.9	2
6	2,483.500	30.76	54.00	23.24	6.74	V	173.8	2
6	2,485.040	30.80	54.00	23.20	6.75	V	0.9	2



REMARKS:

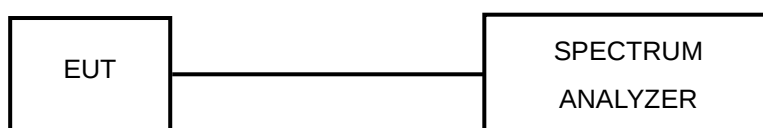
- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Limit value – Emission level.
- 2.480MHz: Fundamental frequency.

3.3 NUMBER OF HOPPING FREQUENCY USED

3.3.1 LIMIT OF HOPPING FREQUENCY USED

At least 15 channels frequencies, and should be equally spaced.

3.3.2 TEST SETUP



3.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	R&S	ESW 44	101973	Feb.25,22	Feb.24,24
Open Switch and Control Unit	R&S	OSP-B157W8	100836	N/A	N/A
Vector Signal Generator	R&S	SMBV100B	102176	Feb.16,22	Feb.15,24
Signal Generator	R&S	SMB100A03	182185	Feb.16,22	Feb.15,24
Wideband Radio Communication	R&S	CMW500	169399	Jun.26,22	Jun.25,24
Hygrothermograph	DELI	20210528	SZ015	Sep.06,22	Sep.05,24
PC	LENOVO	E14	HRSW0024	N/A	N/A
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.28,23	Oct.27,23
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.28,23	Oct.27,23
Test Software	EMC32	EMC32	N/A	N/A	N/A
Temperature Chamber	votsch	VT4002	58566078100050	May.31,22	May.30,24

NOTE:

1. The calibration interval of the above test instruments is 6 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in RF Oven room.

3.3.4 TEST PROCEDURES

- a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- c. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
- d. Set the SA on View mode and then plot the result on SA screen.
- e. Repeat above procedures until all frequencies measured were completed.

3.3.5 DEVIATION FROM TEST STANDARD

No deviation.

3.3.6 TEST RESULTS

There are 79 hopping frequencies in the hopping mode. Please refer to next two pages for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

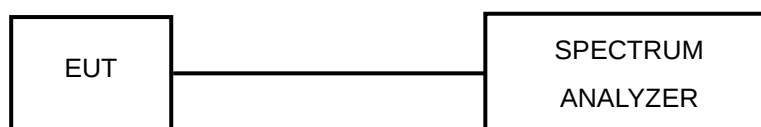
Please Refer to Appendix Of this test report.

3.4 DWELL TIME ON EACH CHANNEL

3.4.1 LIMIT OF DWELL TIME USED

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

3.4.2 TEST SETUP



3.4.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.4.4 TEST PROCEDURES

- Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
- Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
- Repeat above procedures until all different time-slot modes have been completed.



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3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 TEST RESULTS

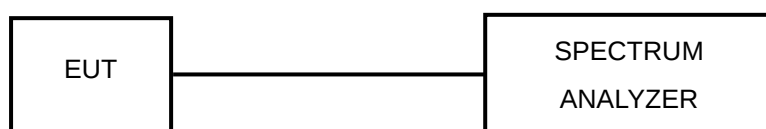
Please Refer to Appendix Of this test report.

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.



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

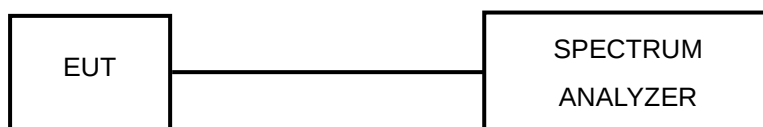
Please Refer to Appendix Of this test report.

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.



Test Report No.: PSU-QSU2306120115RF11

3.6.6 TEST RESULTS

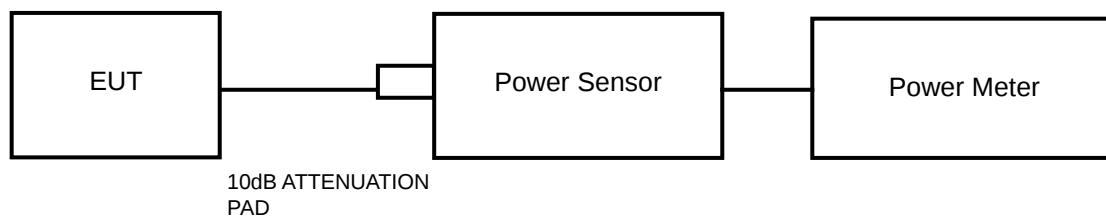
Please Refer to Appendix Of this test report.

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.



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.



3.7.7 TEST RESULTS

3.7.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix Of this test report.



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.



4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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

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

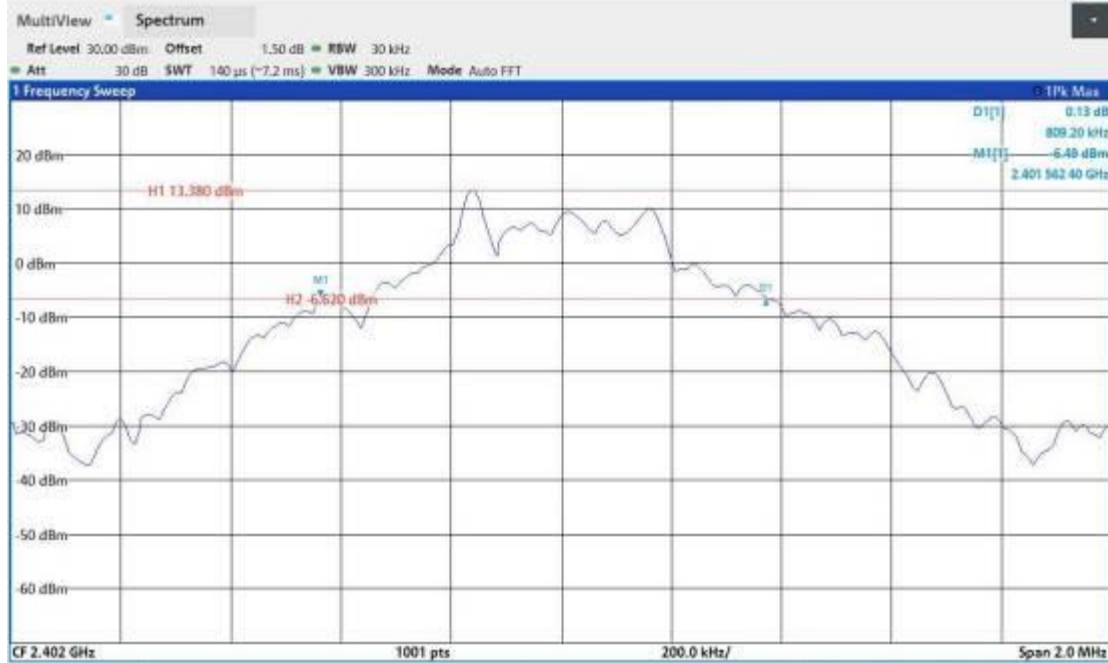
20DB EMISSION BANDWIDTH

TEST RESULT

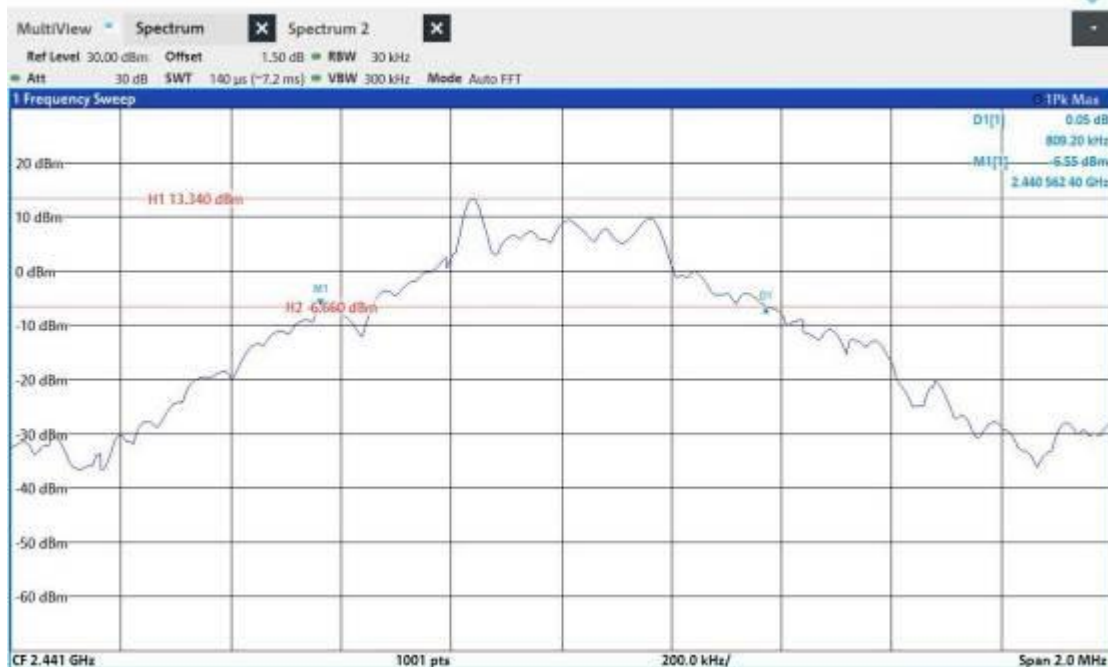
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.8092	2401.5624	2402.3717	---	PASS
		2441	0.8092	2440.5624	2441.3716	---	PASS
		2480	0.8092	2479.5604	2480.3696	---	PASS
2DH5	Ant1	2402	1.1169	2401.4286	2402.5455	---	PASS
		2441	1.1129	2440.4286	2441.5415	---	PASS
		2480	1.1129	2479.4286	2480.5415	---	PASS
3DH5	Ant1	2402	1.1489	2401.4186	2402.5675	---	PASS
		2441	1.1389	2440.4226	2441.5615	---	PASS
		2480	1.1389	2479.4226	2480.5615	---	PASS



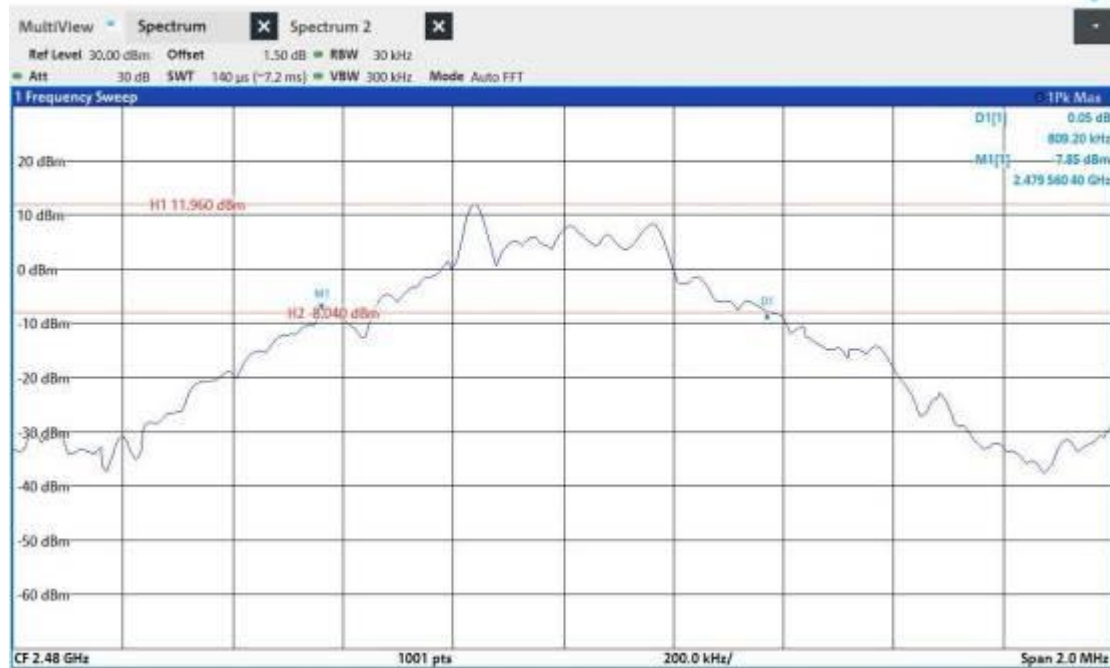
TEST GRAPHS



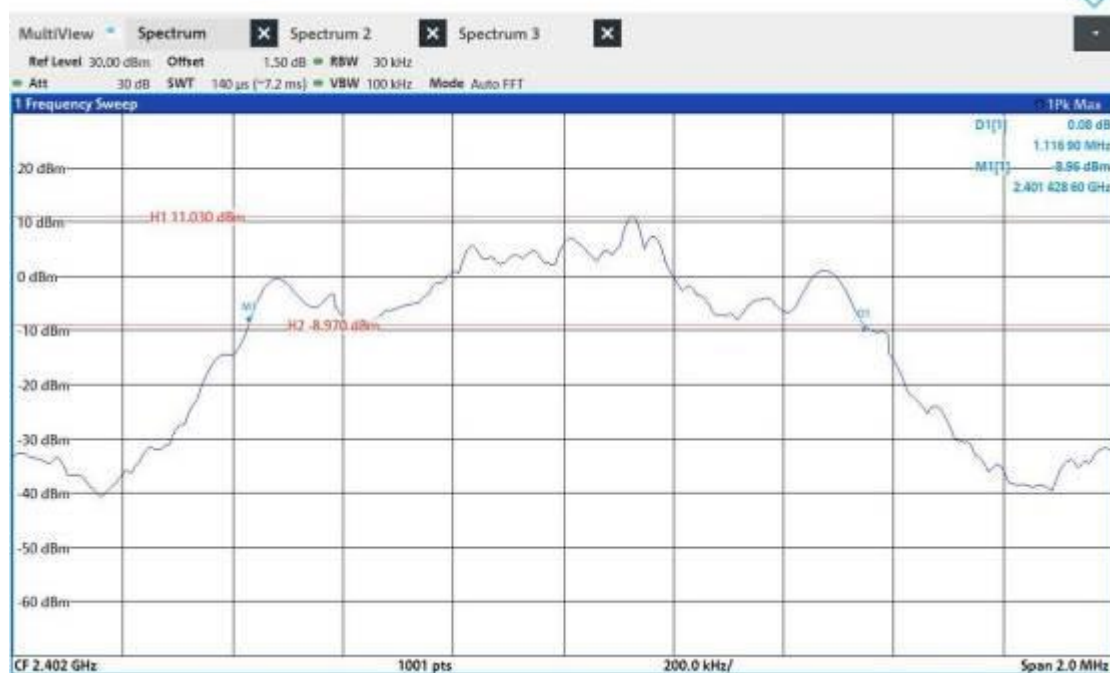
DH5_Ant1_2402



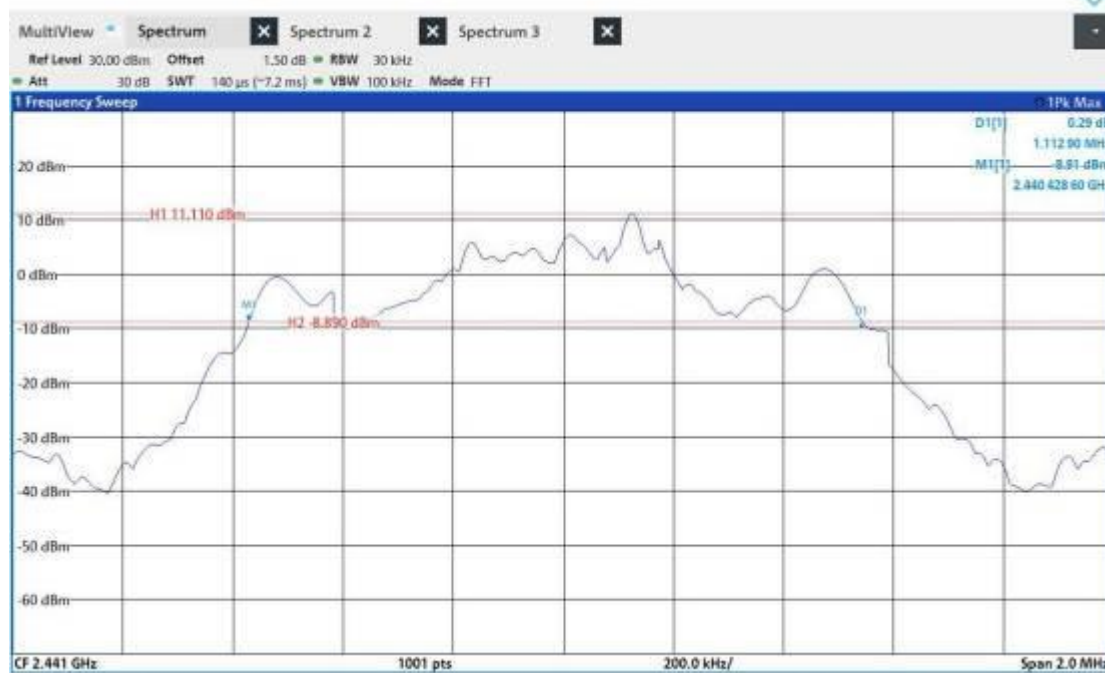
DH5_Ant1_2441



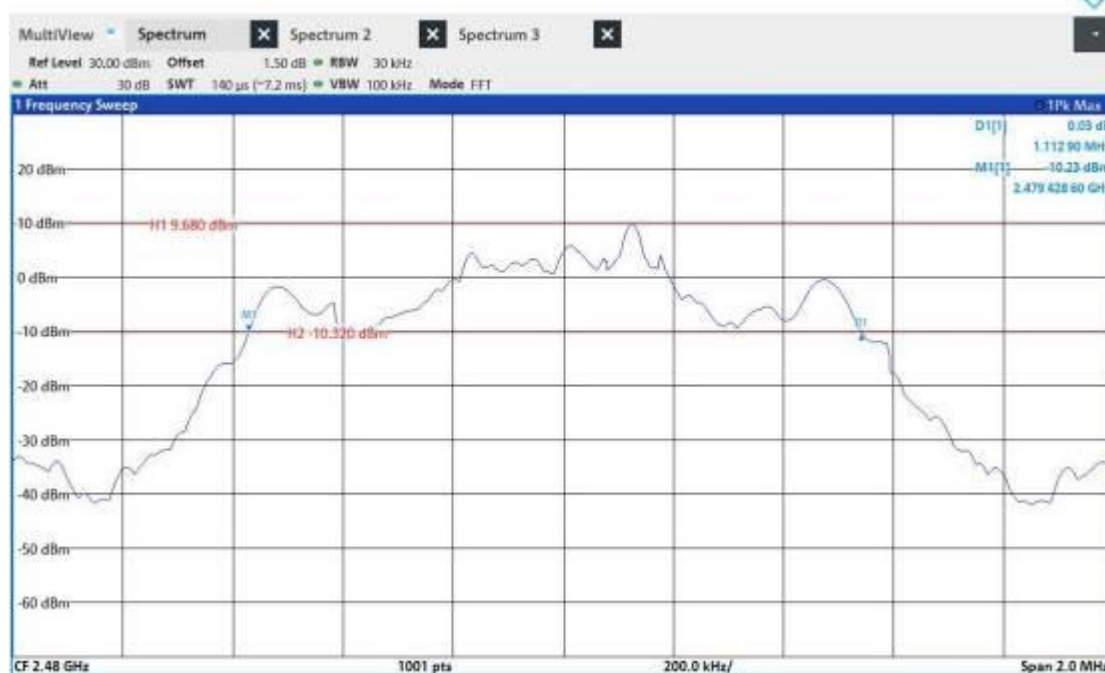
DH5_Ant1_2480



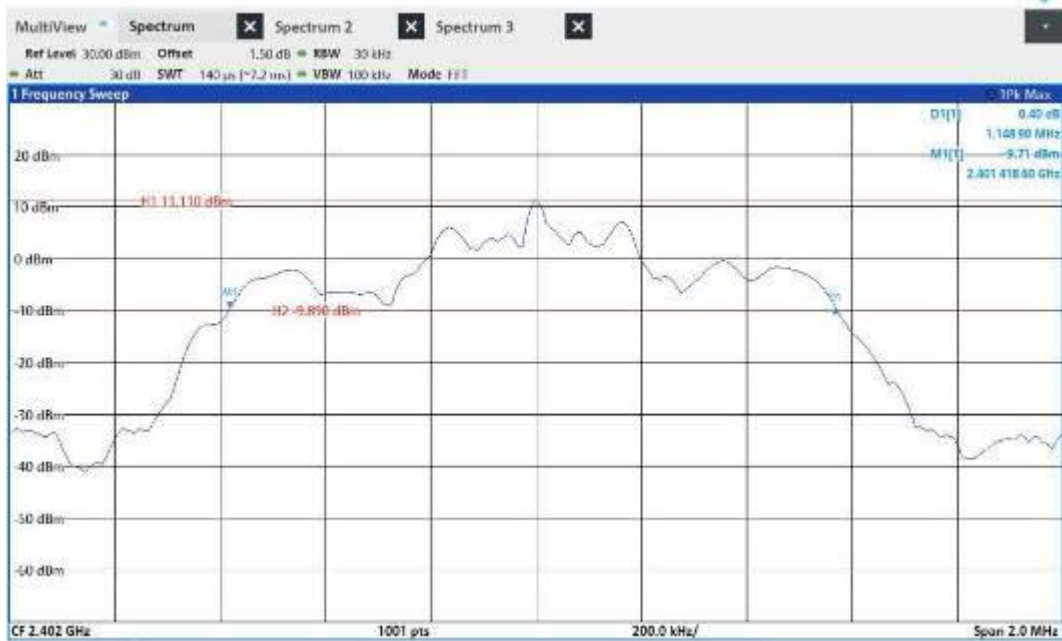
2DH5_Ant1_2402



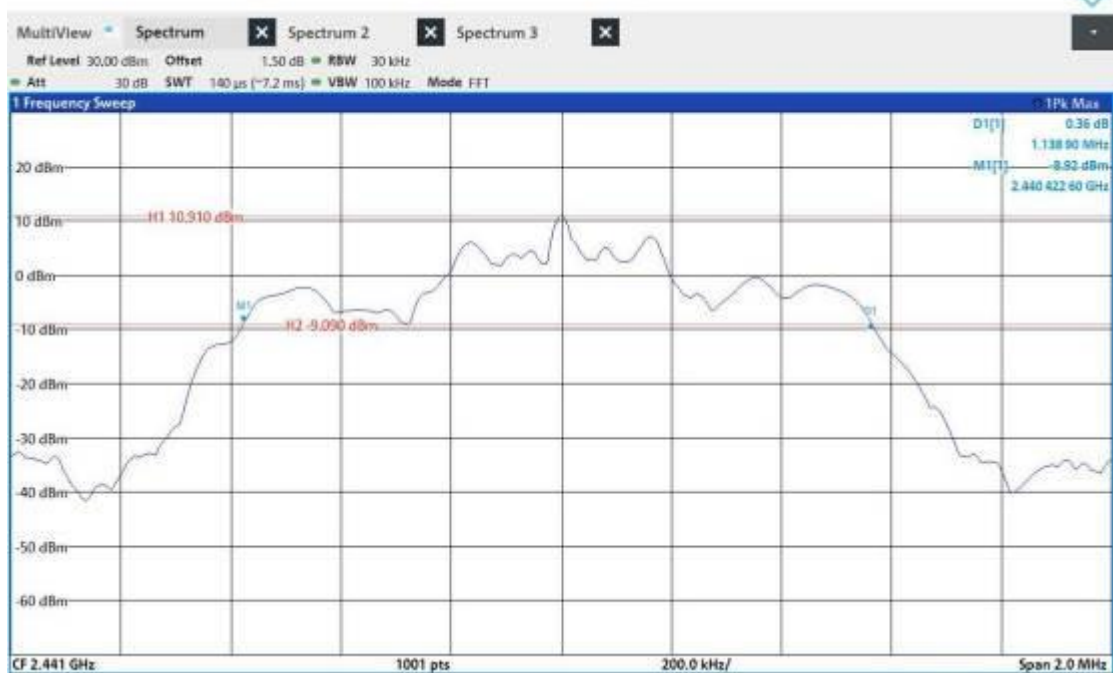
2DH5_Ant1_2441



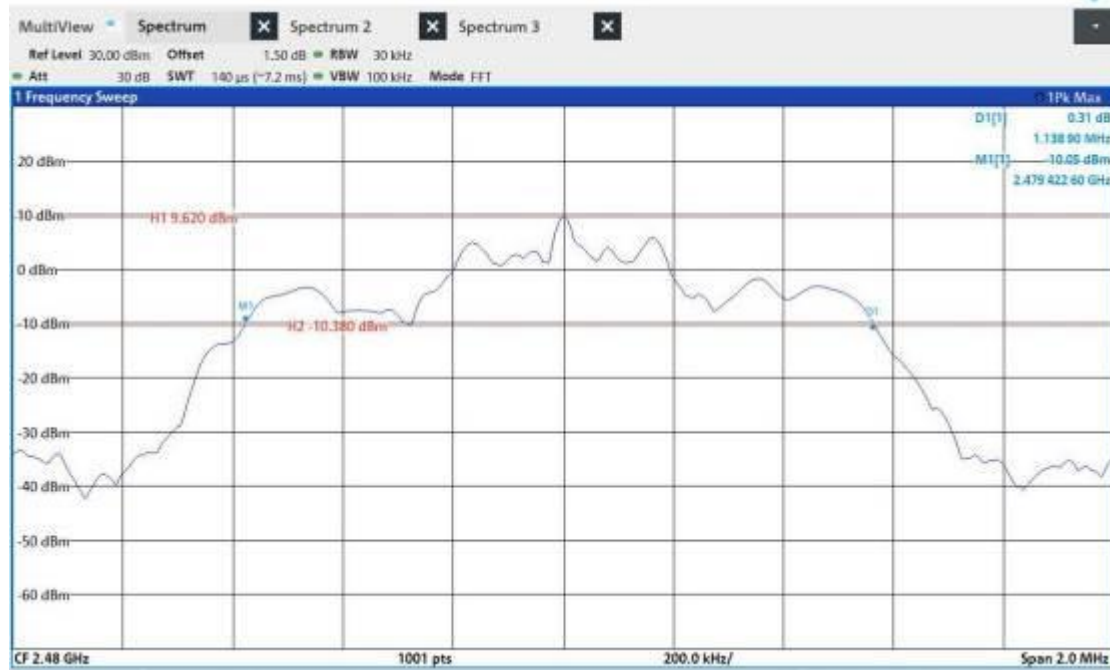
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480

OCCUPIED CHANNEL BANDWIDTH

TEST RESULT

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.8331	2401.5613	2402.3944	---	PASS
		2441	0.8392	2440.5612	2441.4004	---	PASS
		2480	0.8368	2479.5590	2480.3958	---	PASS
2DH5	Ant1	2402	1.0837	2401.4478	2402.5315	---	PASS
		2441	1.0825	2440.4474	2441.5299	---	PASS
		2480	1.0768	2479.4479	2480.5247	---	PASS
3DH5	Ant1	2402	1.1024	2401.4395	2402.5419	---	PASS
		2441	1.1027	2440.4404	2441.5431	---	PASS
		2480	1.1019	2479.4385	2480.5404	---	PASS



TEST GRAPHS



DH5_Ant1_2402



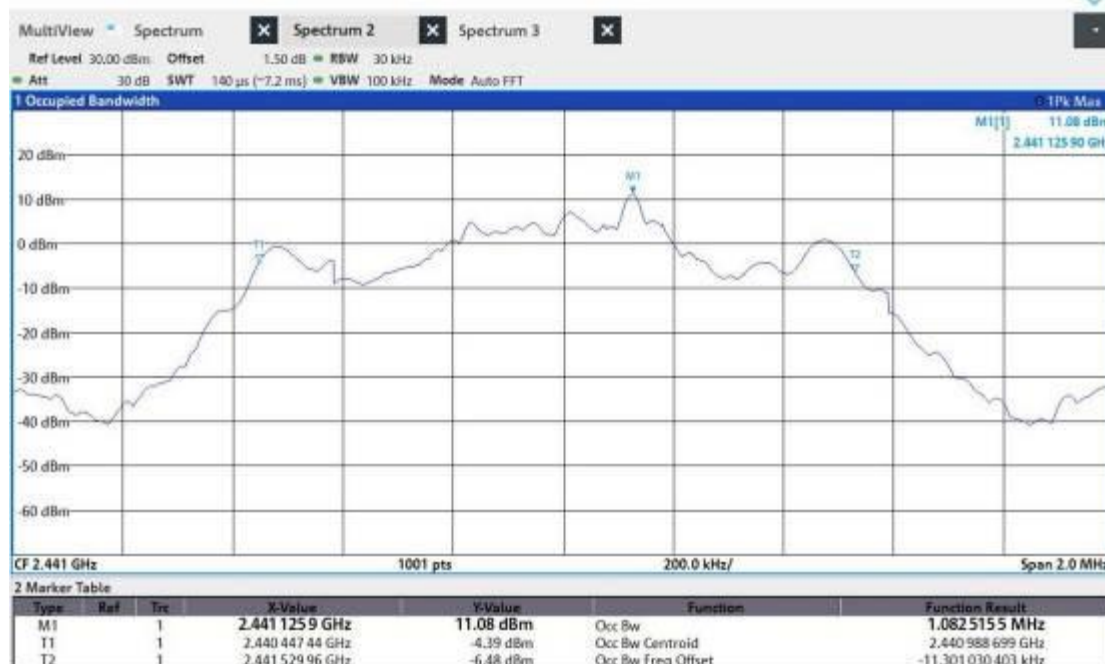
DH5_Ant1_2441



DH5_Ant1_2480



2DH5_Ant1_2402



2DH5_Ant1_2441



2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480

MAXIMUM CONDUCTED OUTPUT POWER

TEST RESULT PEAK

TestMode	Antenna	Channel	Peak Power[dBm]	Peak Power[mw]	Conducted Limit[mw]	Verdict	Power setting
DH5	Ant1	2402	16.73	47.10	≤125	PASS	4
		2441	16.32	42.85	≤125	PASS	4
		2480	15.36	34.36	≤125	PASS	4
2DH5	Ant1	2402	15.83	38.28	≤125	PASS	4
		2441	15.61	36.39	≤125	PASS	4
		2480	14.56	28.58	≤125	PASS	4
3DH5	Ant1	2402	15.72	37.33	≤125	PASS	4
		2441	15.51	35.56	≤125	PASS	4
		2480	14.56	28.58	≤125	PASS	4

TEST RESULT AVERAGE

TestMode	Antenna	Channel	Average Power	Conducted Limit[dBm]	Verdict	Power setting
DH5	Ant1	2402	15.21	/	PASS	4
		2441	14.69	/	PASS	4
		2480	13.82	/	PASS	4
2DH5	Ant1	2402	12.65	/	PASS	4
		2441	12.26	/	PASS	4
		2480	11.47	/	PASS	4
3DH5	Ant1	2402	12.54	/	PASS	4
		2441	12.48	/	PASS	4
		2480	12.45	/	PASS	4



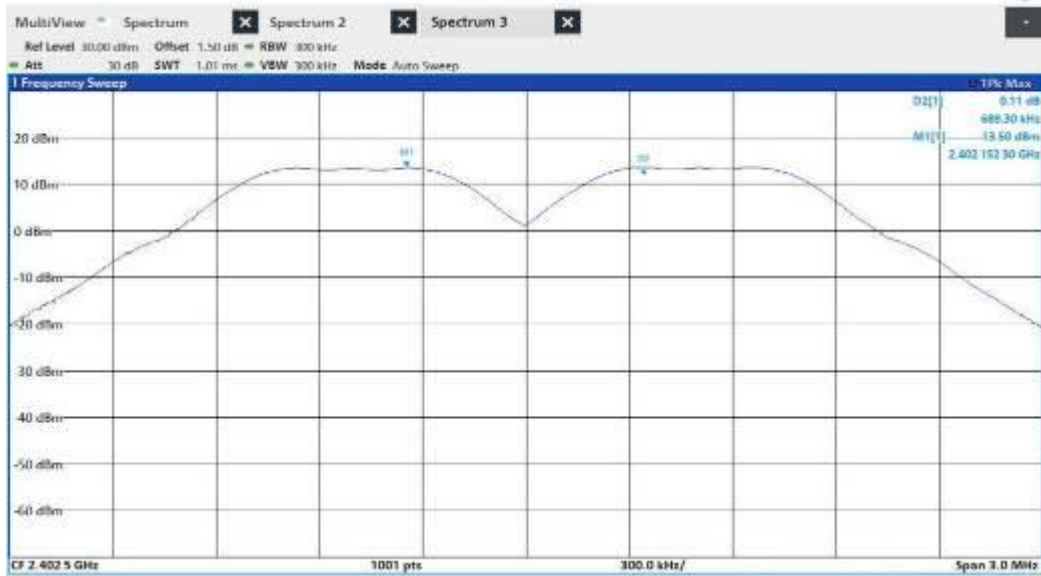
CARRIER FREQUENCY SEPARATION

TEST RESULT

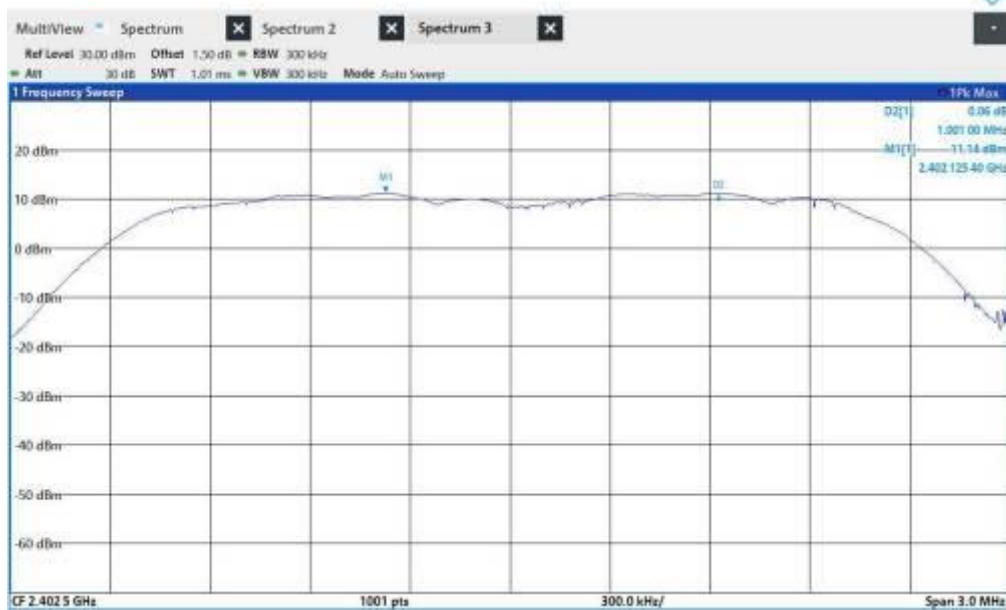
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	Hop	0.6983	≥ 0.6321	PASS
2DH5	Ant1	Hop	1.0010	≥ 0.8743	PASS
3DH5	Ant1	Hop	1.0010	≥ 0.8636	PASS



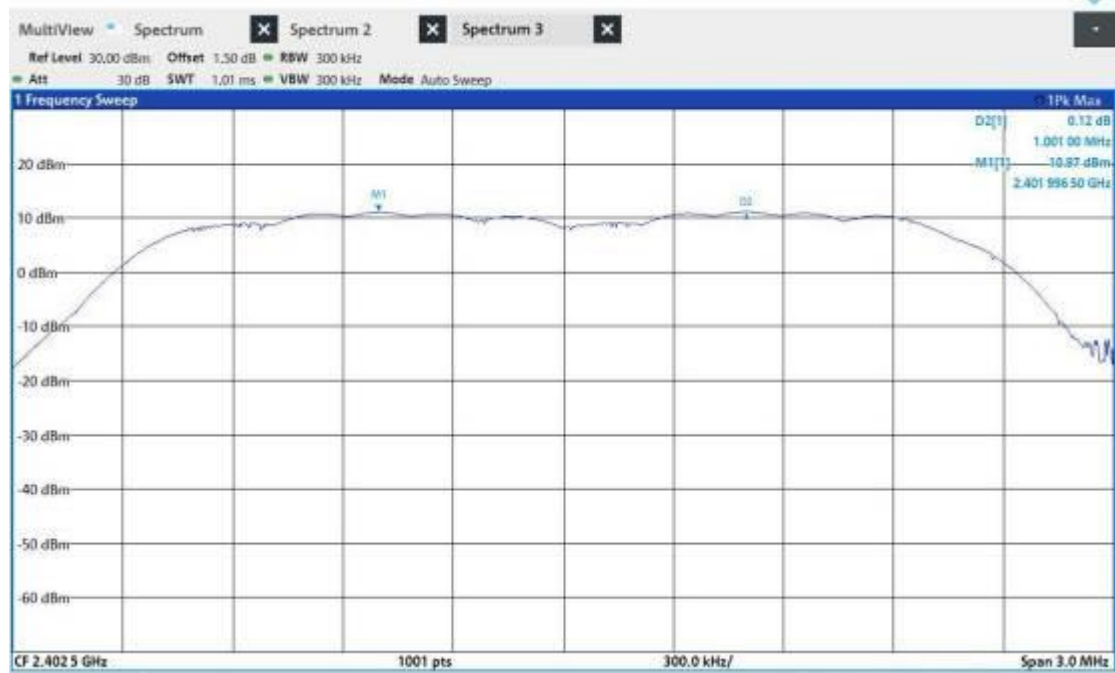
TEST GRAPHS



DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

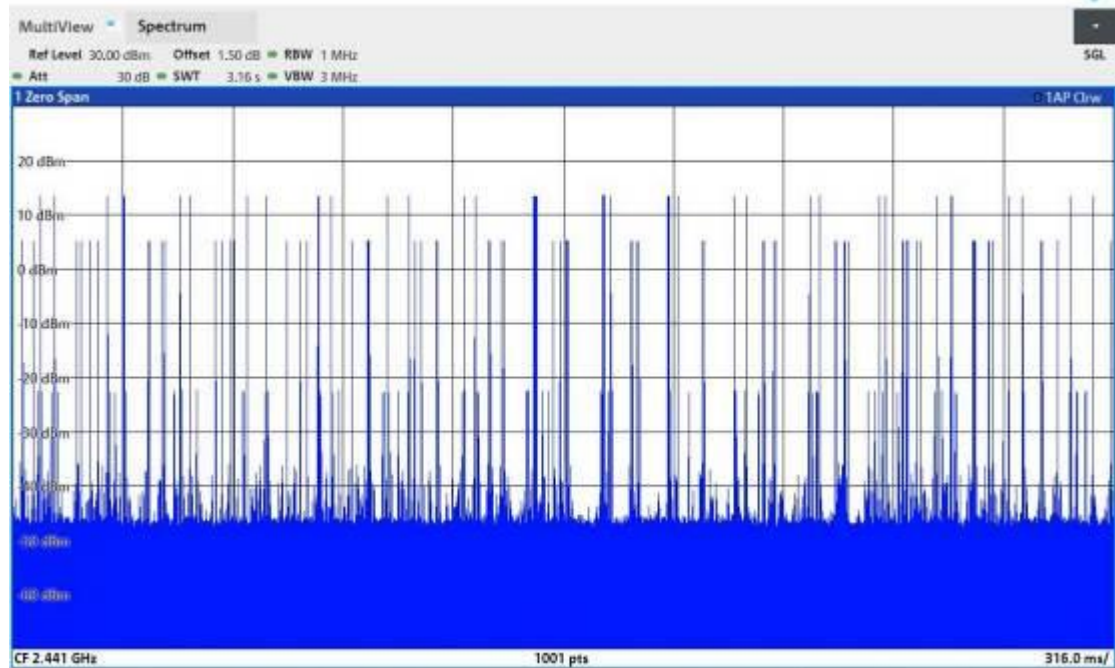
TIME OF OCCUPANCY

TEST RESULT

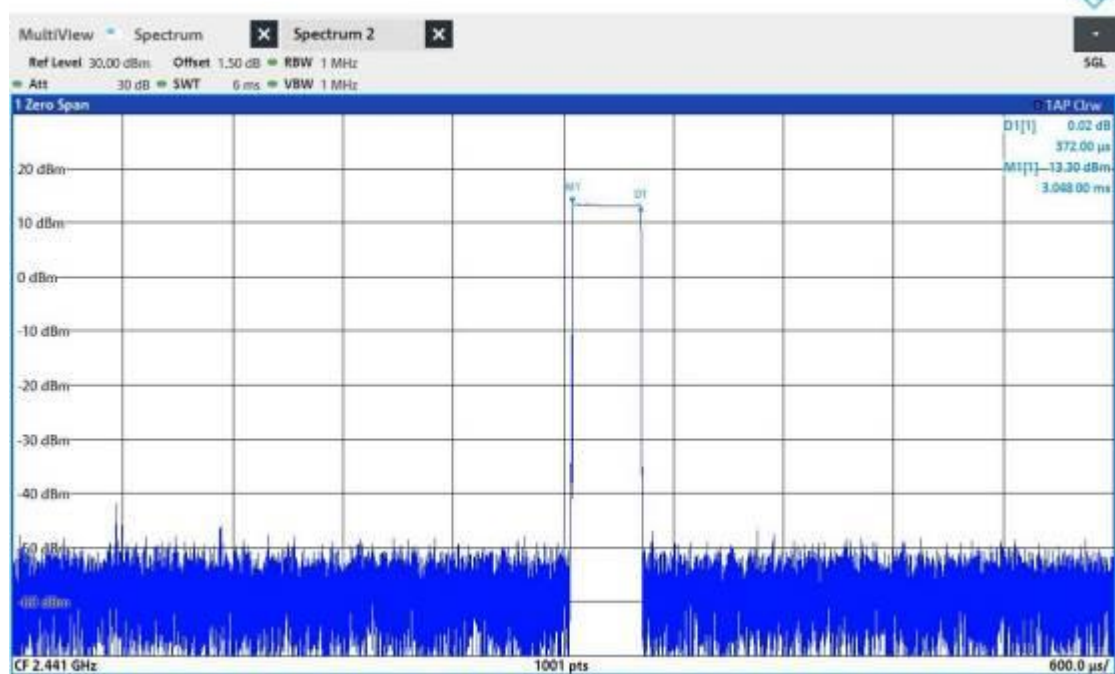
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.372	320	0.119	≤0.4	PASS
DH3	Ant1	Hop	1.630	200	0.326	≤0.4	PASS
DH5	Ant1	Hop	2.880	120	0.346	≤0.4	PASS
2DH1	Ant1	Hop	0.380	380	0.144	≤0.4	PASS
2DH3	Ant1	Hop	1.630	200	0.326	≤0.4	PASS
2DH5	Ant1	Hop	2.895	130	0.376	≤0.4	PASS
3DH1	Ant1	Hop	0.380	360	0.137	≤0.4	PASS
3DH3	Ant1	Hop	1.630	230	0.375	≤0.4	PASS
3DH5	Ant1	Hop	2.880	130	0.374	≤0.4	PASS



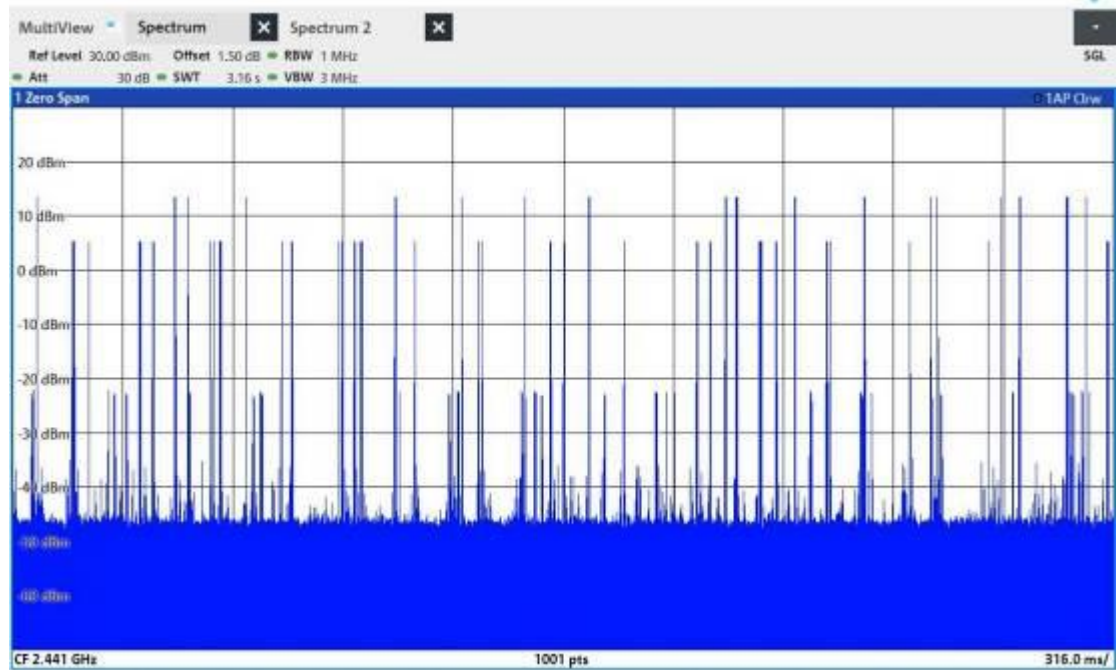
TEST GRAPHS



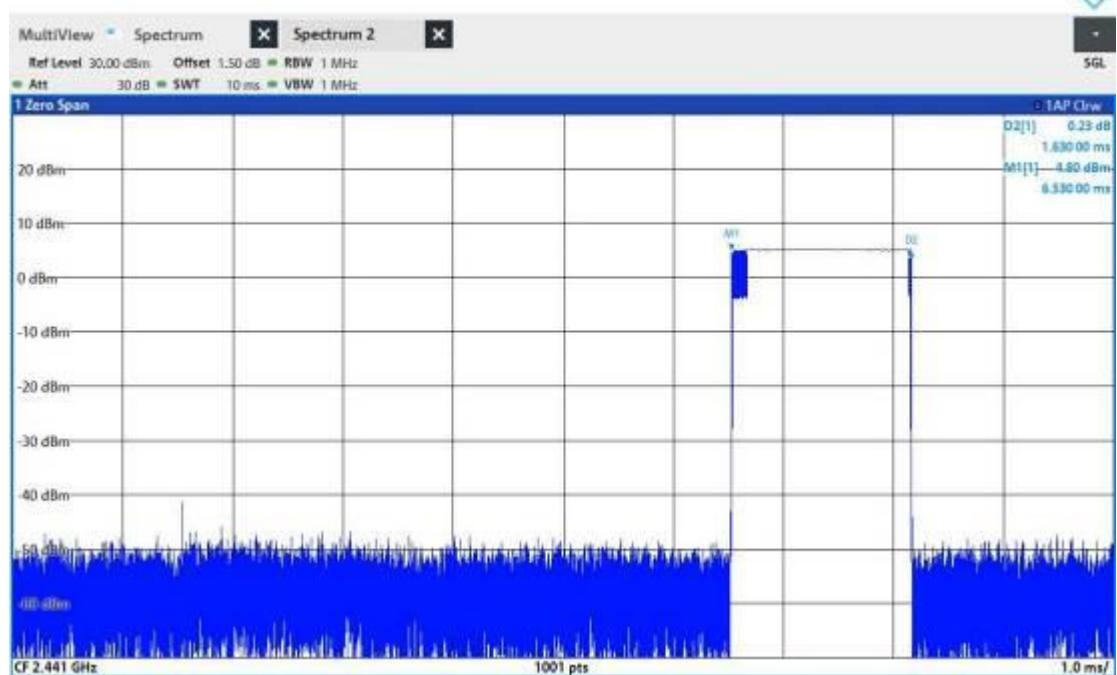
DH1_Ant1_Hop



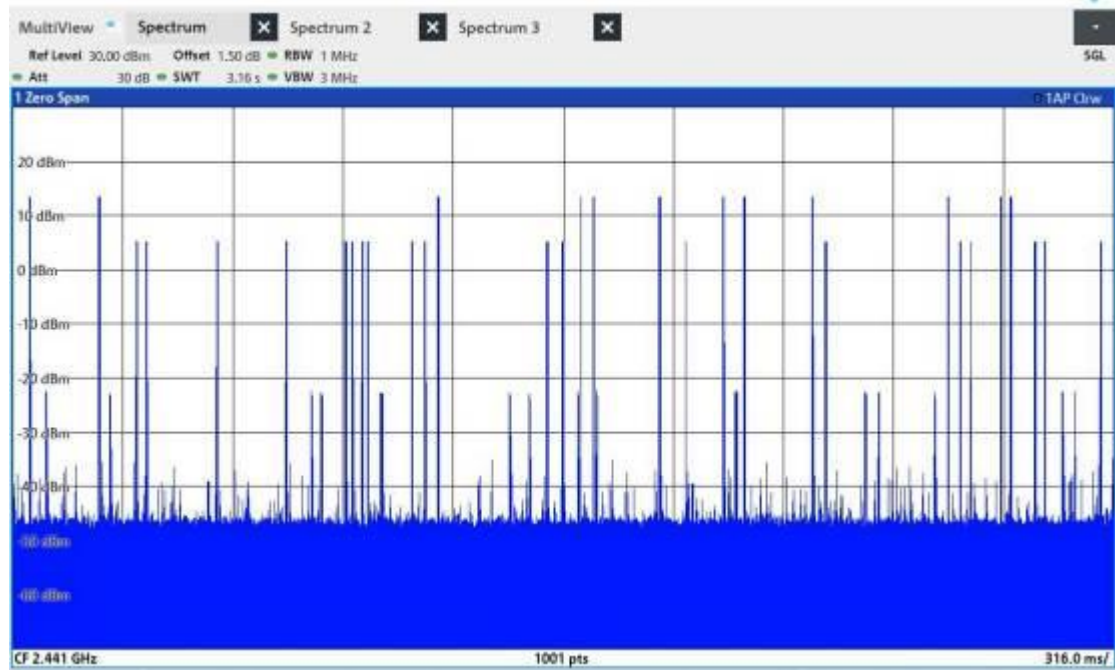
DH1_Ant1_Hop



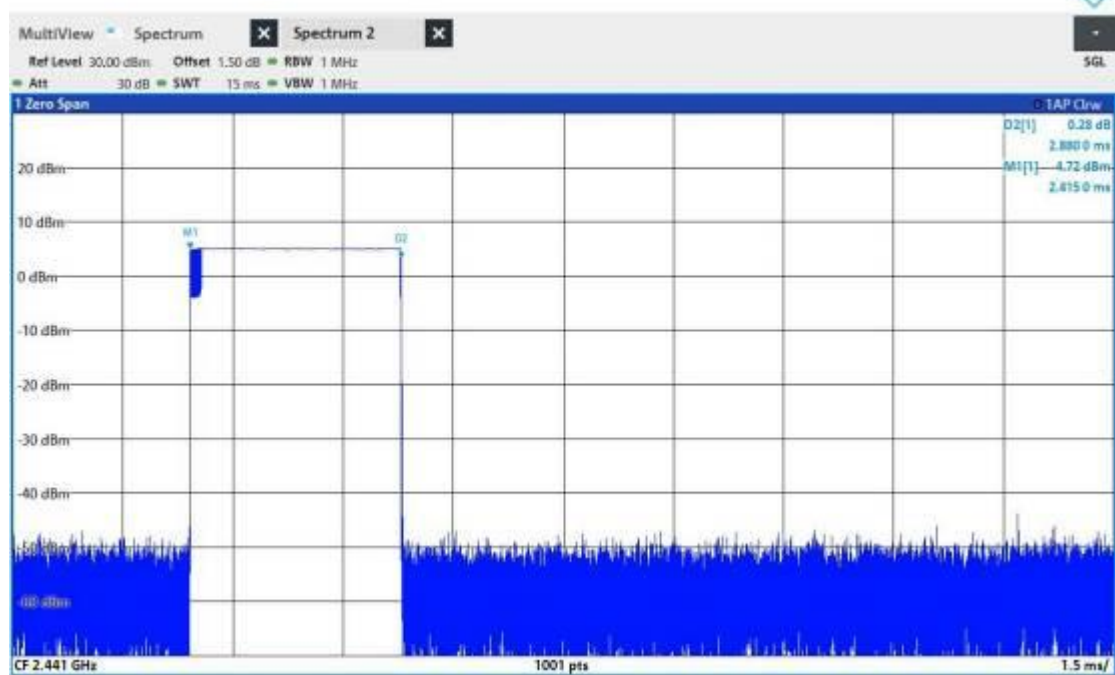
DH3_Ant1_Hop



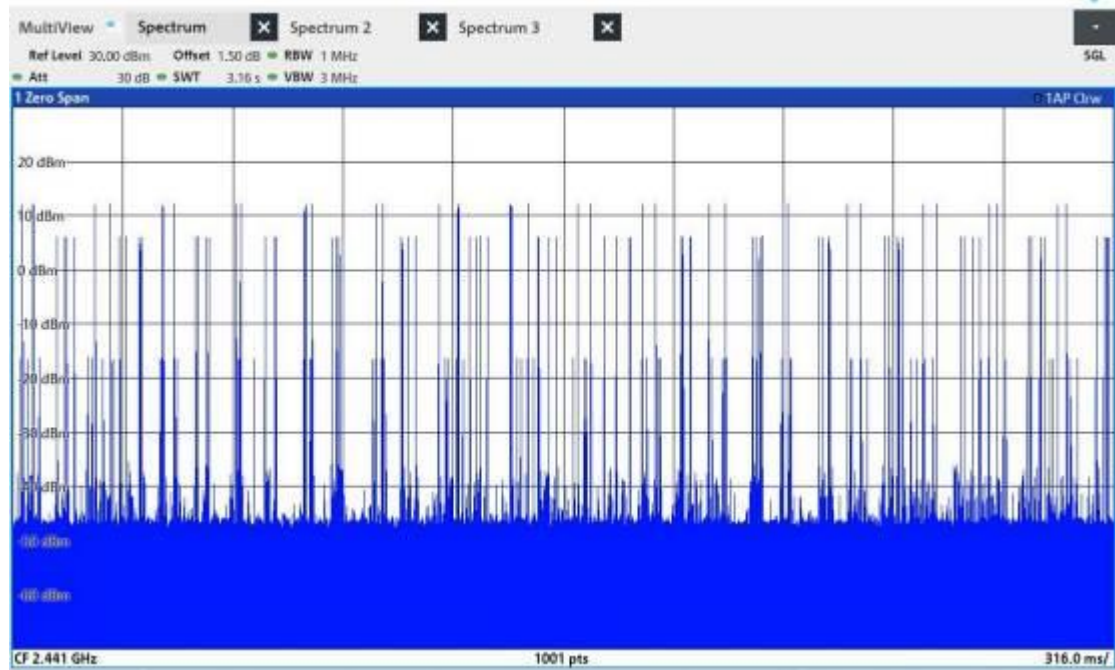
DH3_Ant1_Hop



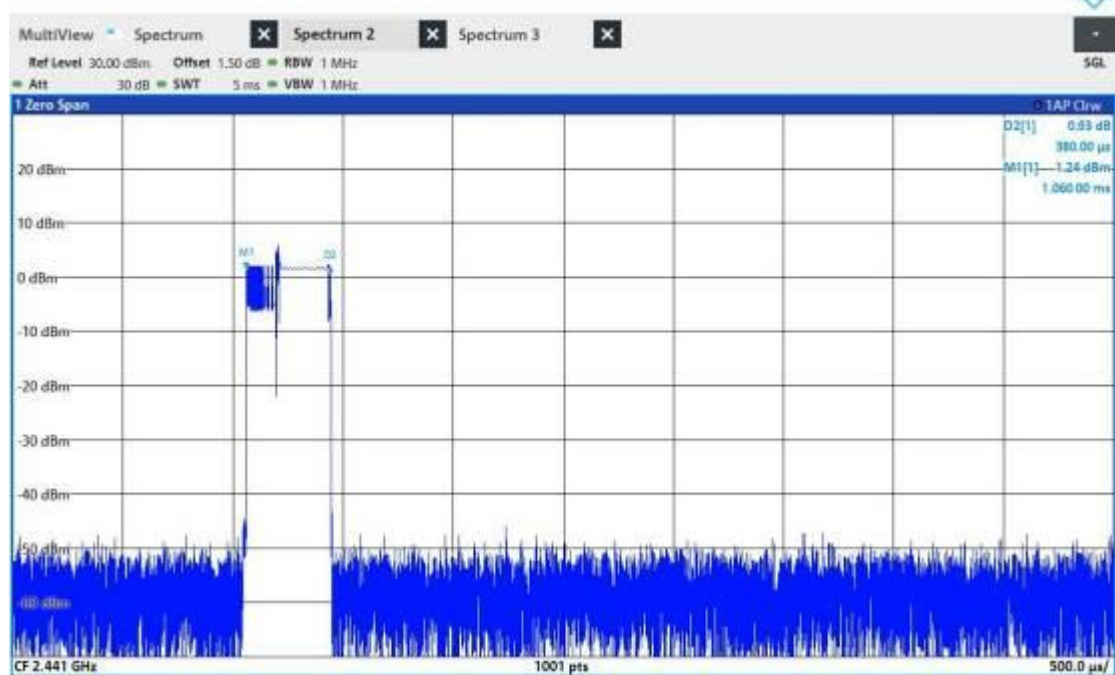
DH5_Ant1_Hop



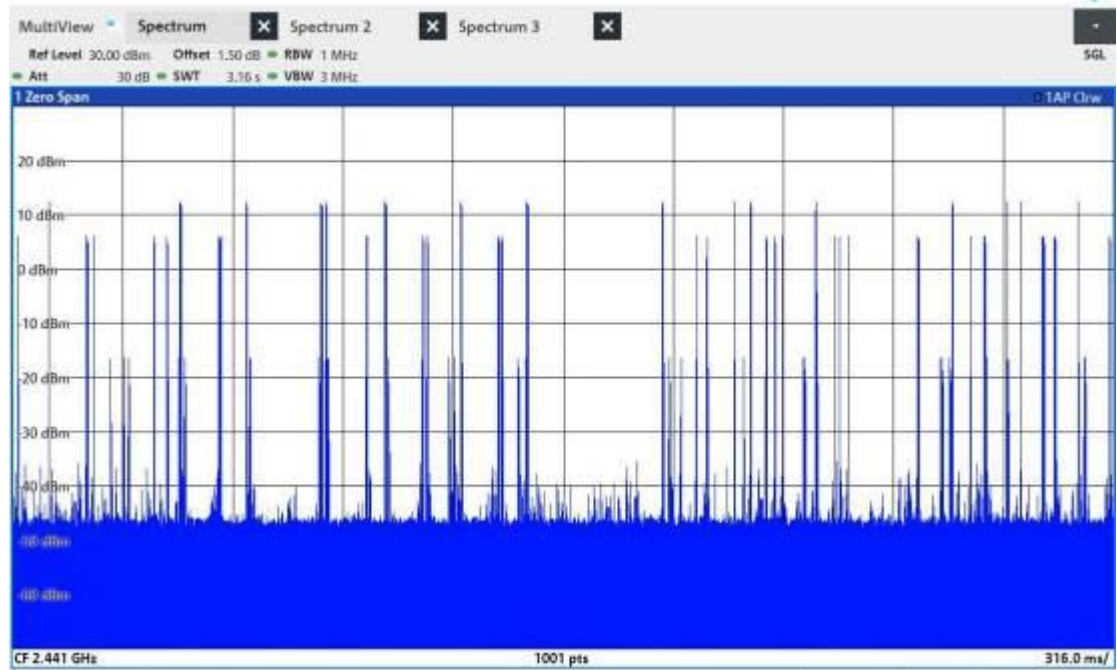
DH5_Ant1_Hop



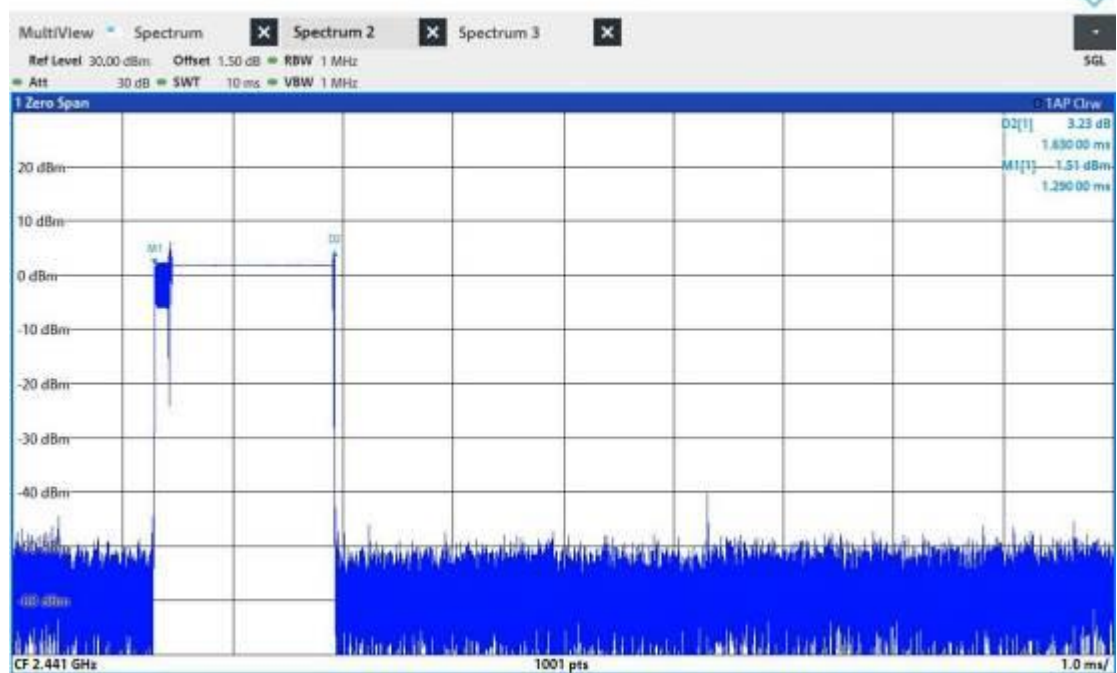
2DH1_Ant1_Hop



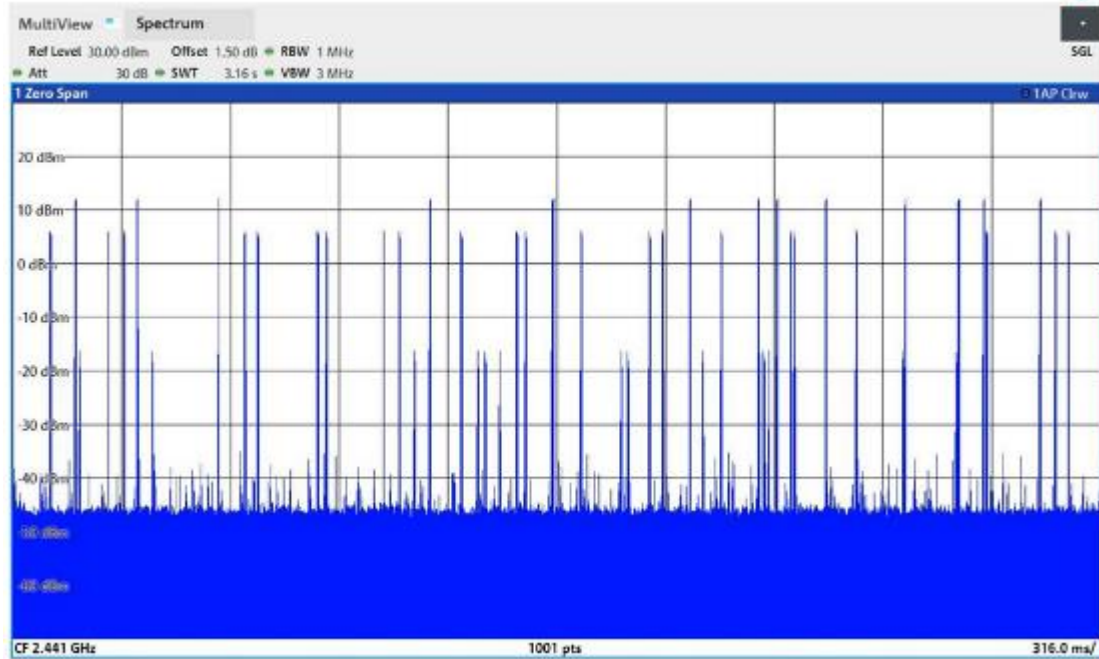
2DH1_Ant1_Hop



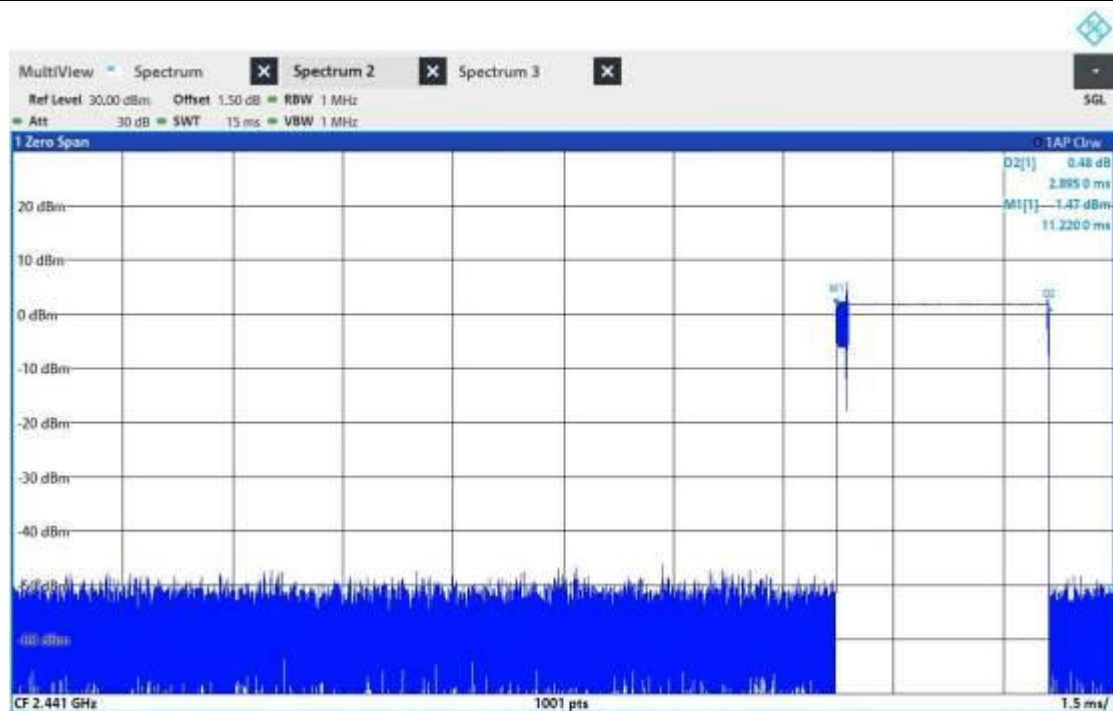
2DH3_Ant1_Hop



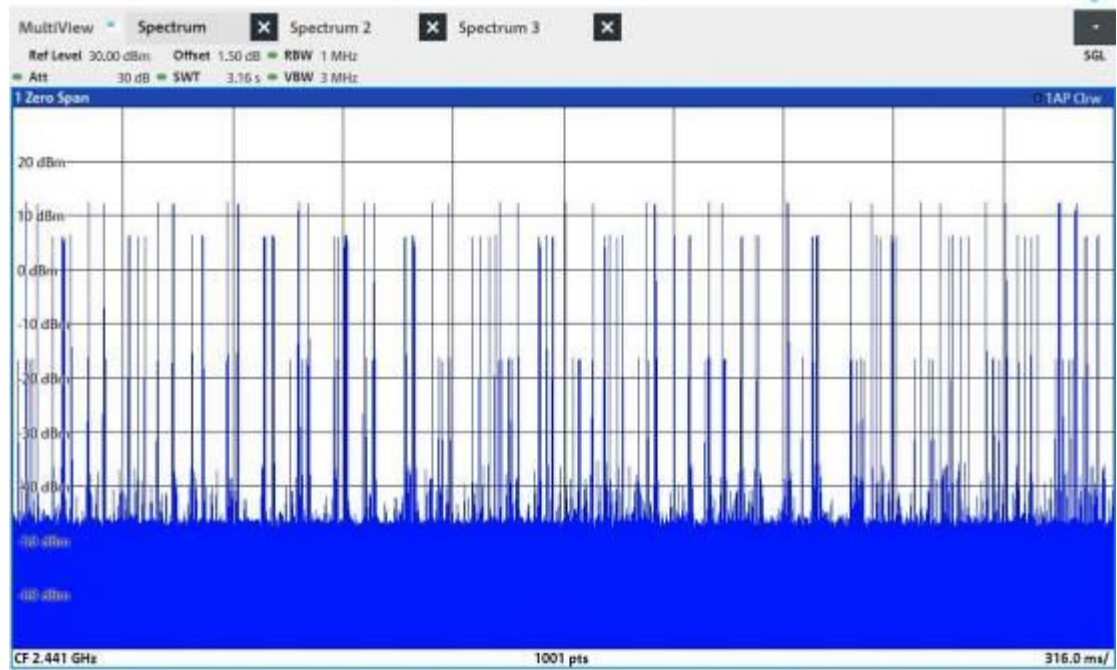
2DH3_Ant1_Hop



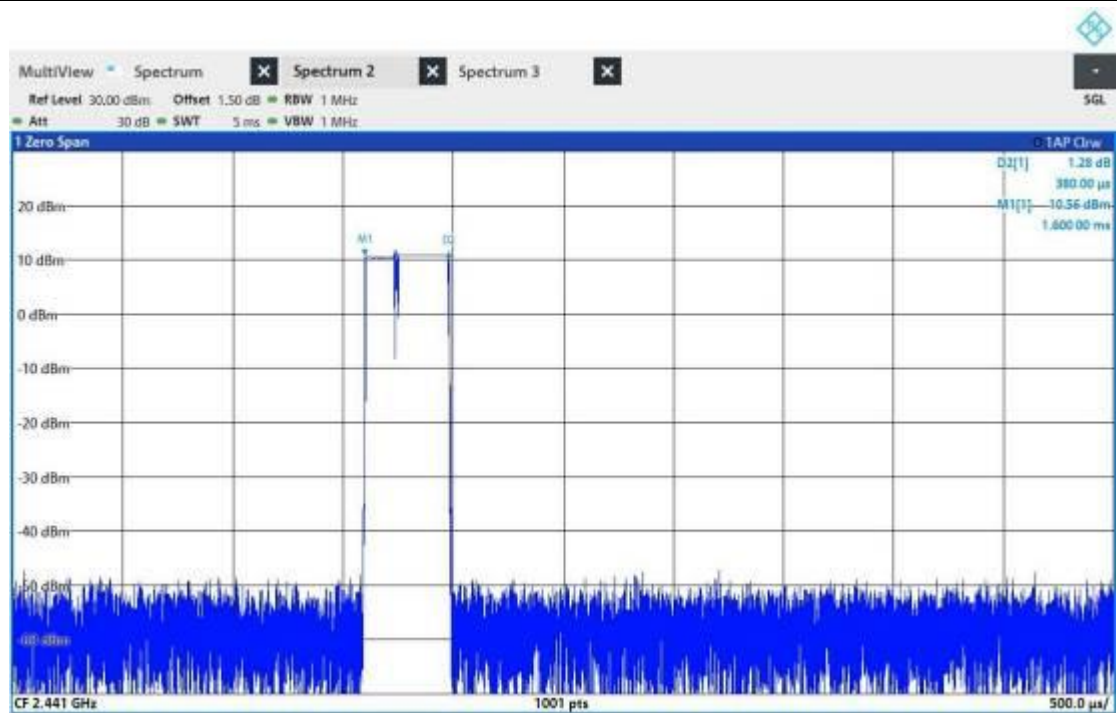
2DH5_Ant1_Hop



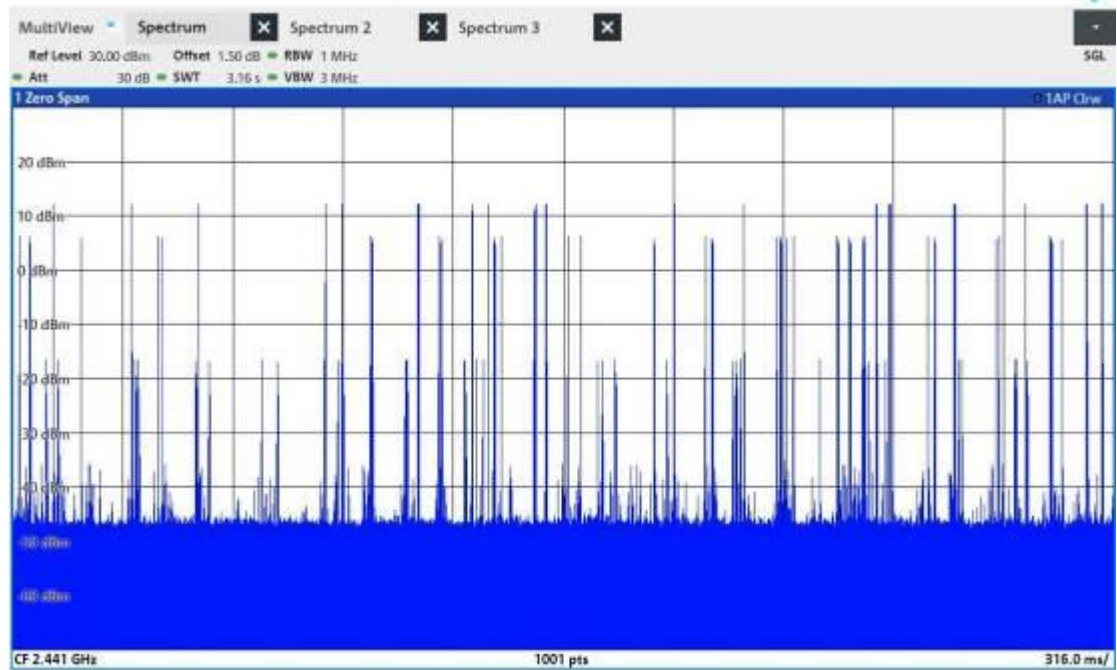
2DH5_Ant1_Hop



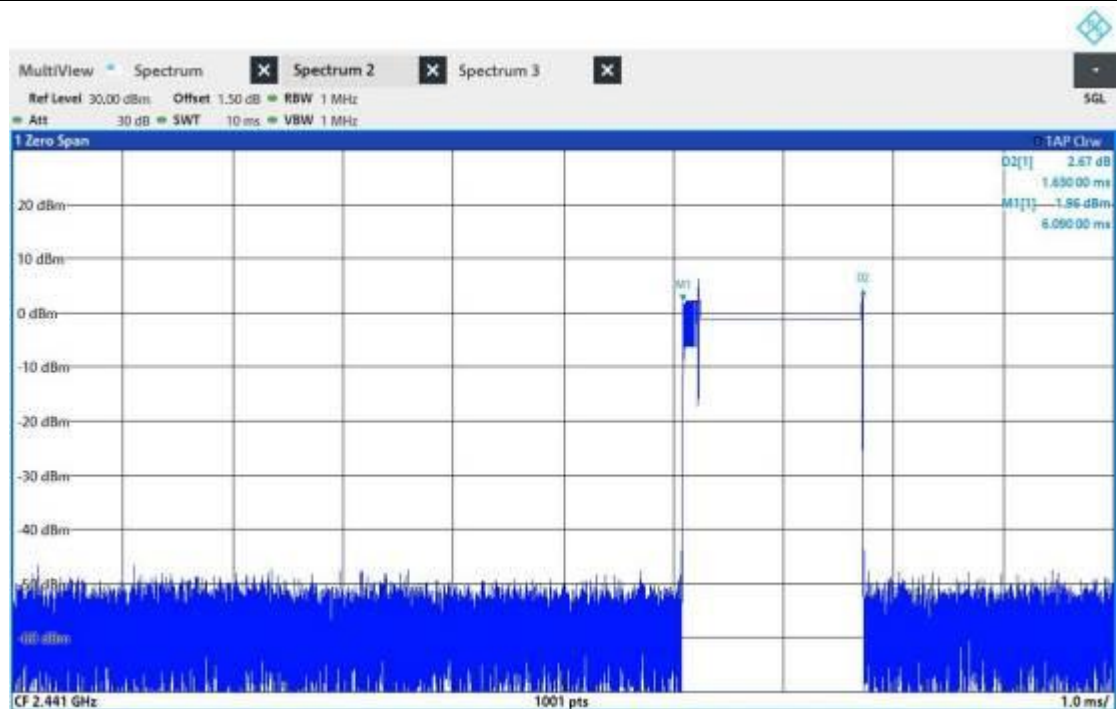
3DH1_Ant1_Hop



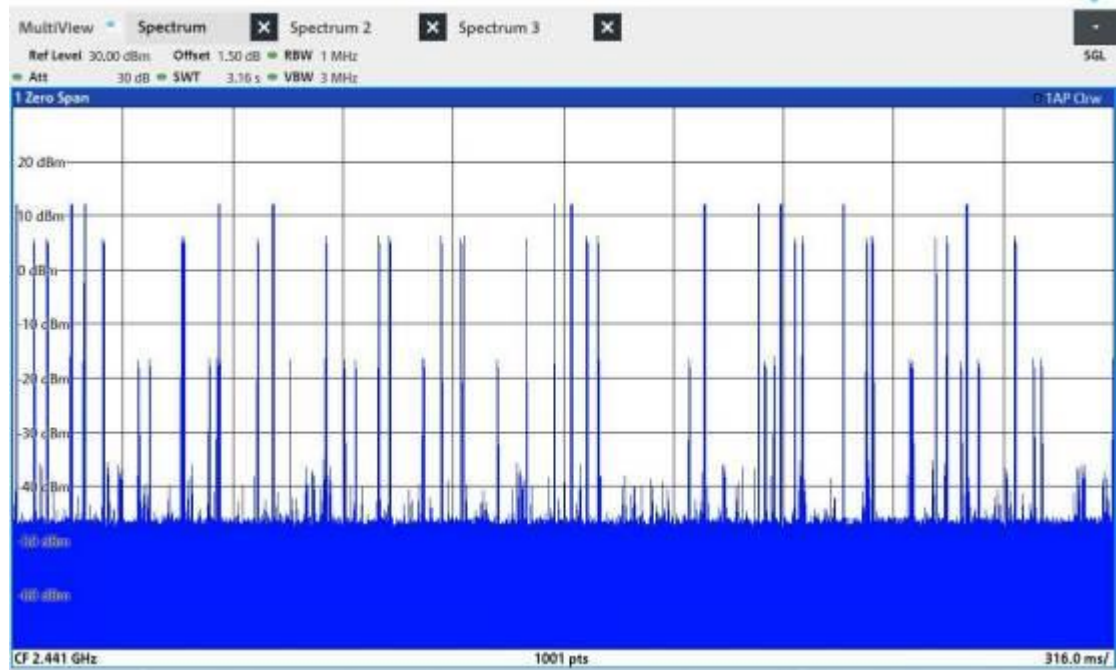
3DH1_Ant1_Hop



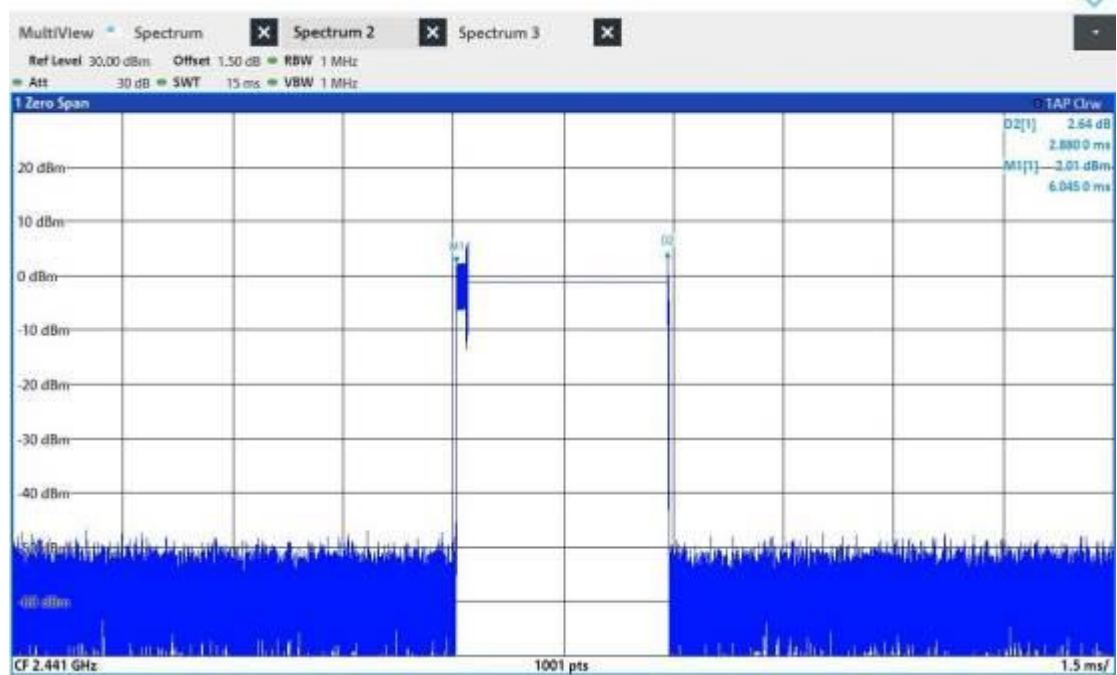
3DH3_Ant1_Hop



3DH3_Ant1_Hop



3DH5_Ant1_Hop



3DH5_Ant1_Hop



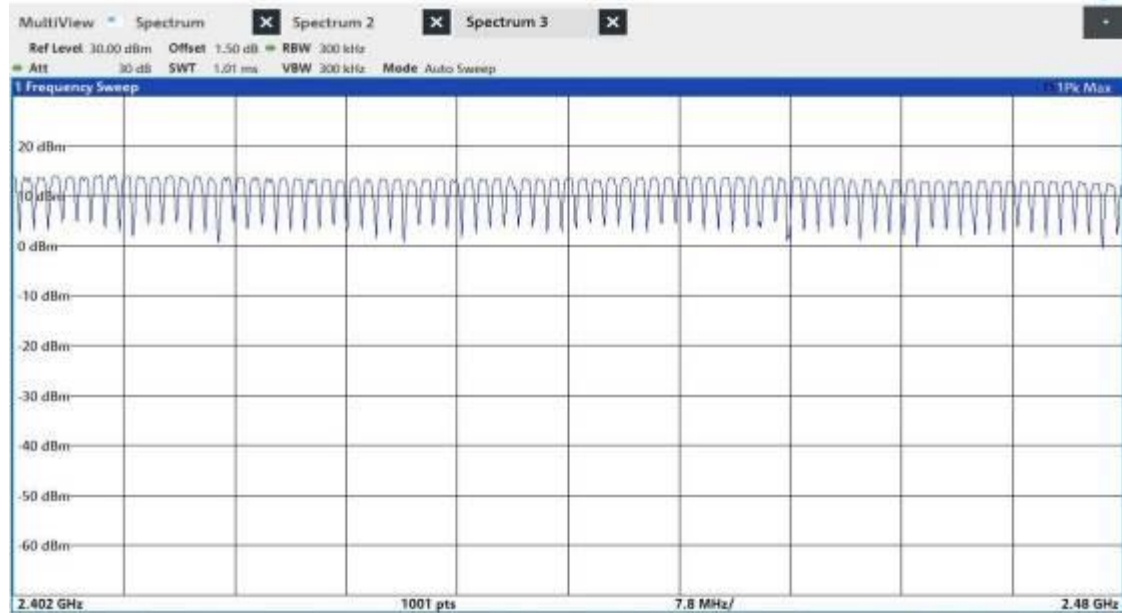
NUMBER OF HOPPING CHANNELS

TEST RESULT

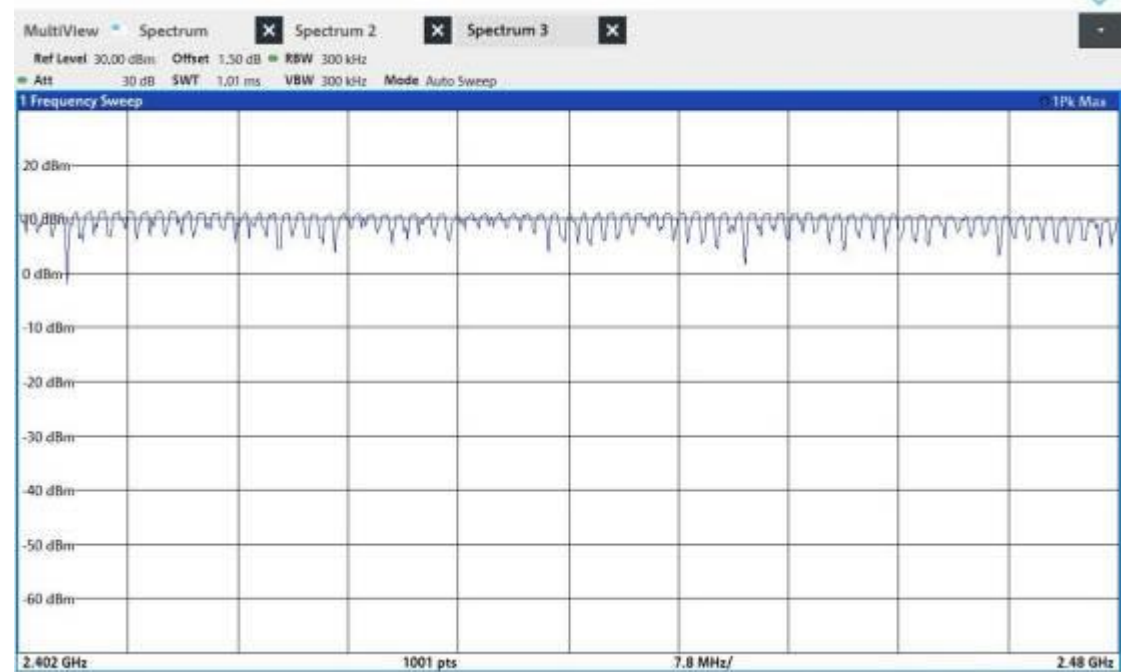
TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥ 15	PASS
2DH5	Ant1	Hop	79	≥ 15	PASS
3DH5	Ant1	Hop	79	≥ 15	PASS



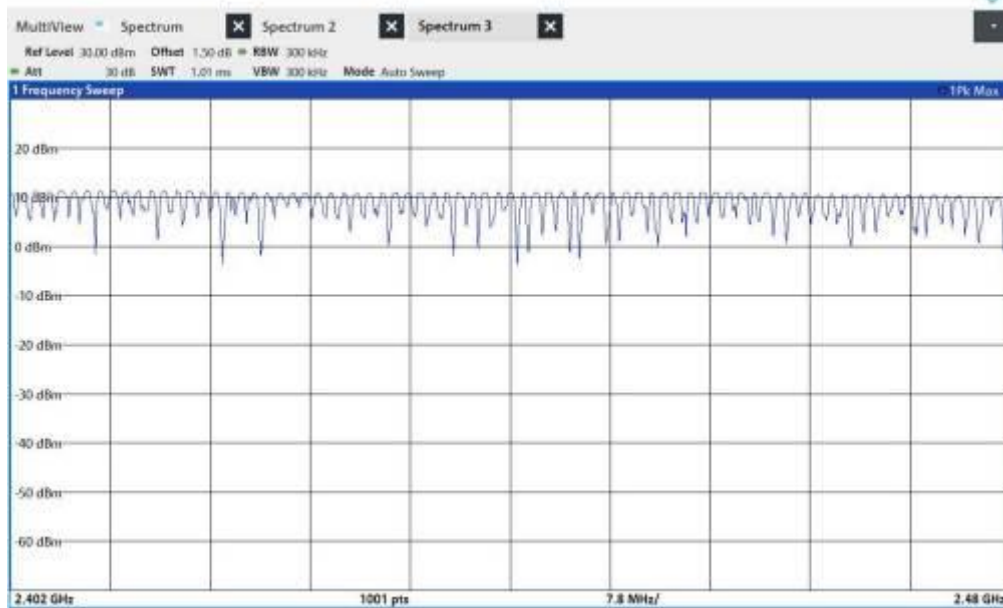
TEST GRAPHS



DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

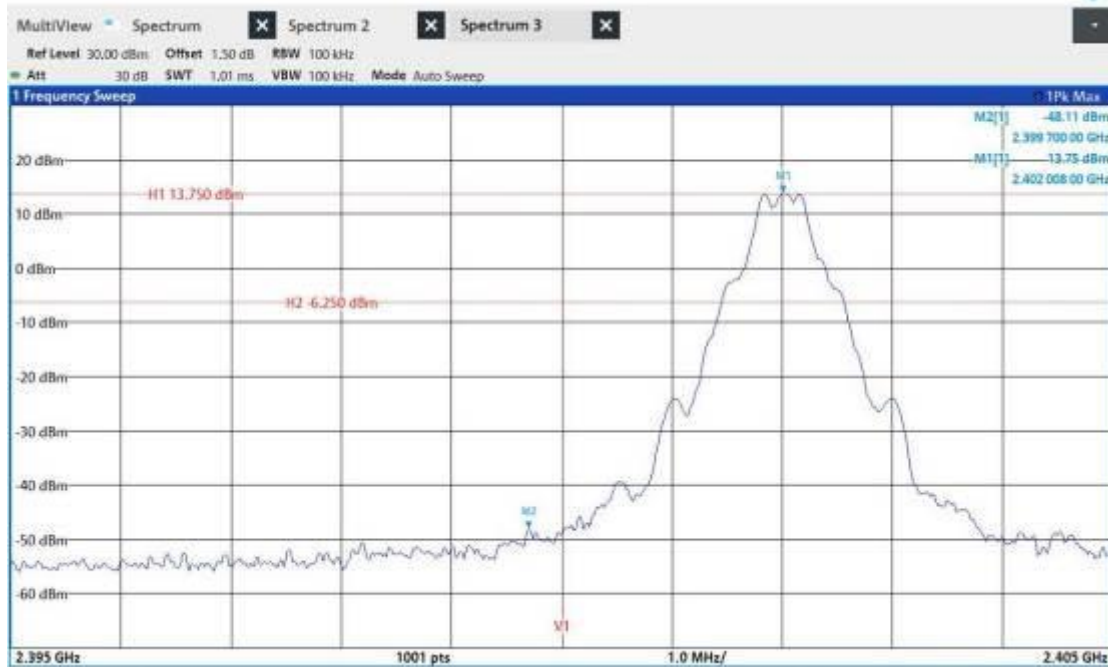
BAND EDGE MEASUREMENTS

TEST RESULT

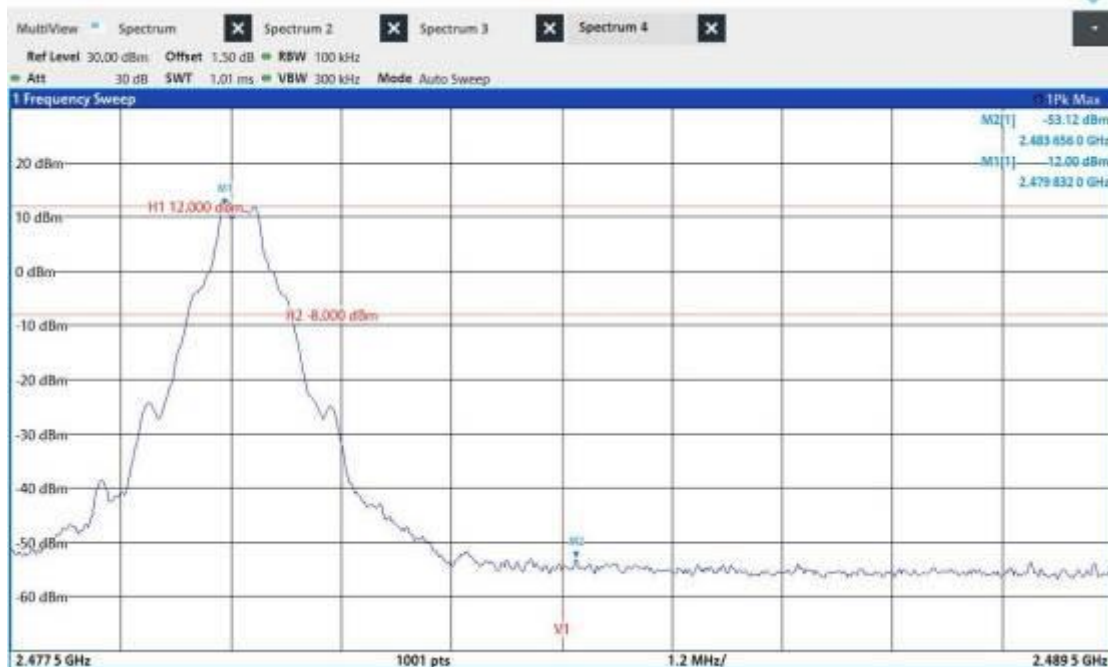
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	13.75	-48.11	≤-6.25	PASS
		High	2480	12.00	-53.12	≤-8.00	PASS
		Low	Hop_2402	13.68	-48.67	≤-6.32	PASS
		High	Hop_2480	11.97	-54.15	≤-8.03	PASS
2DH5	Ant1	Low	2402	11.03	-40.72	≤-8.97	PASS
		High	2480	9.70	-52.54	≤-10.30	PASS
		Low	Hop_2402	10.96	-30.94	≤-9.04	PASS
		High	Hop_2480	9.53	-37.76	≤-10.47	PASS
3DH5	Ant1	Low	2402	11.23	-39.38	≤-8.770	PASS
		High	2480	9.64	-49.78	≤-10.36	PASS
		Low	Hop_2402	10.16	-44.34	≤-9.84	PASS
		High	Hop_2480	11.23	-40.50	≤-8.77	PASS



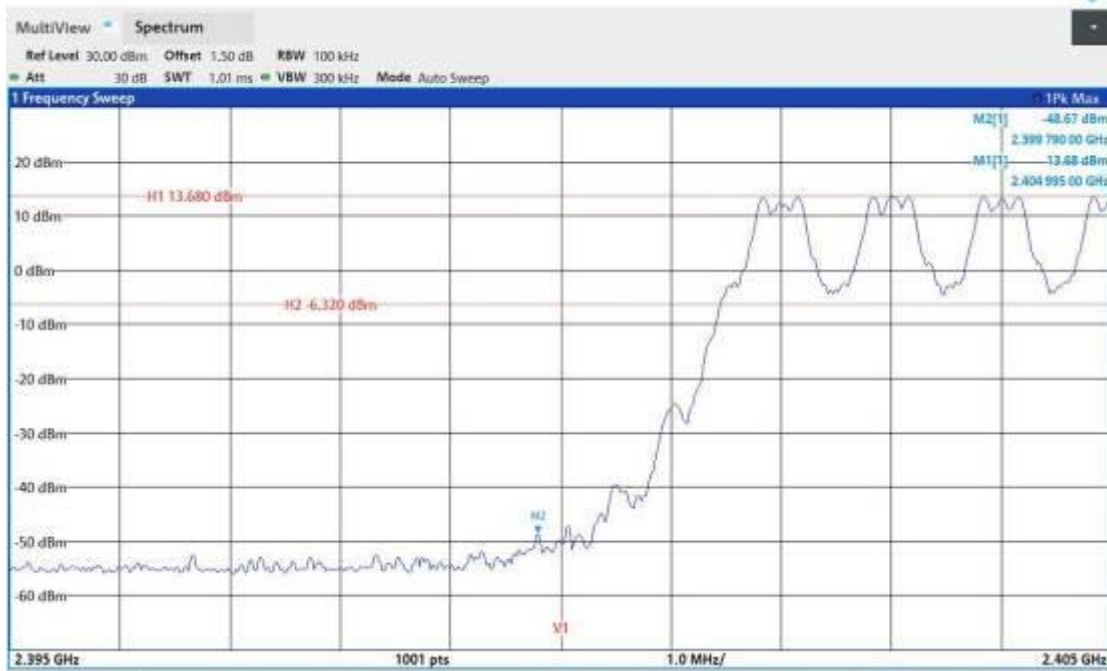
TEST GRAPHS



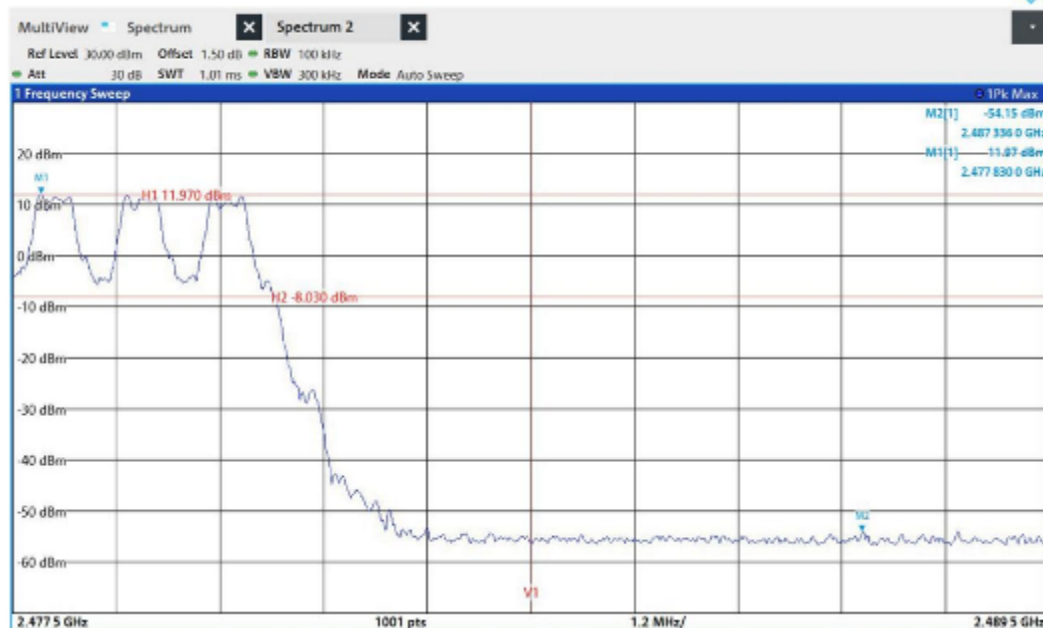
DH5_Ant1_Low_2402



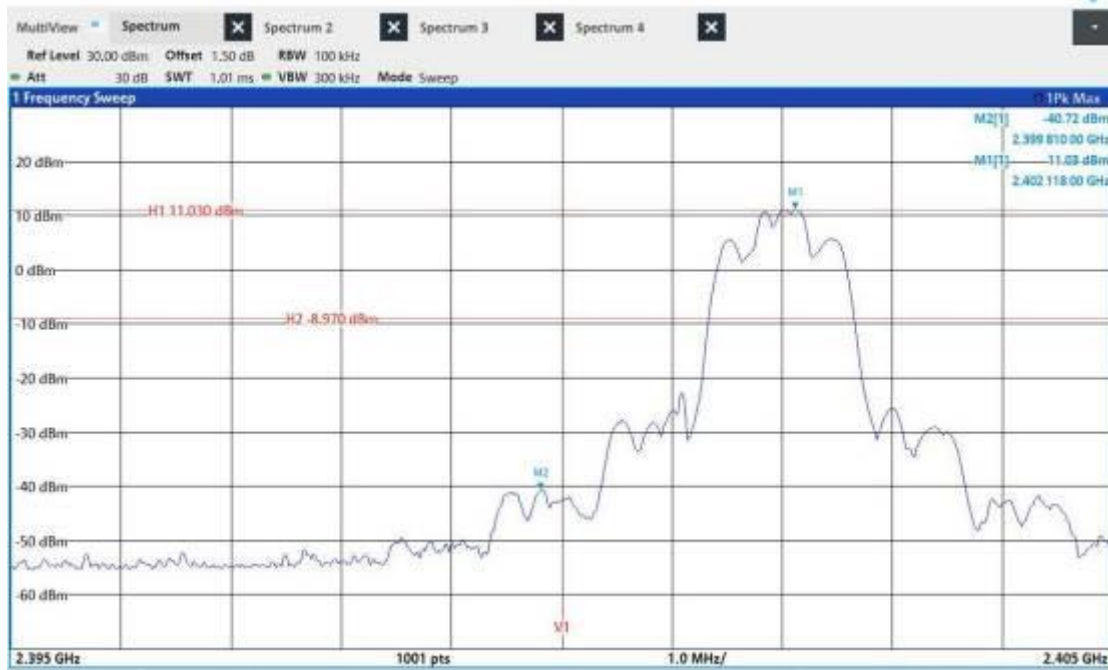
DH5_Ant1_High_2480



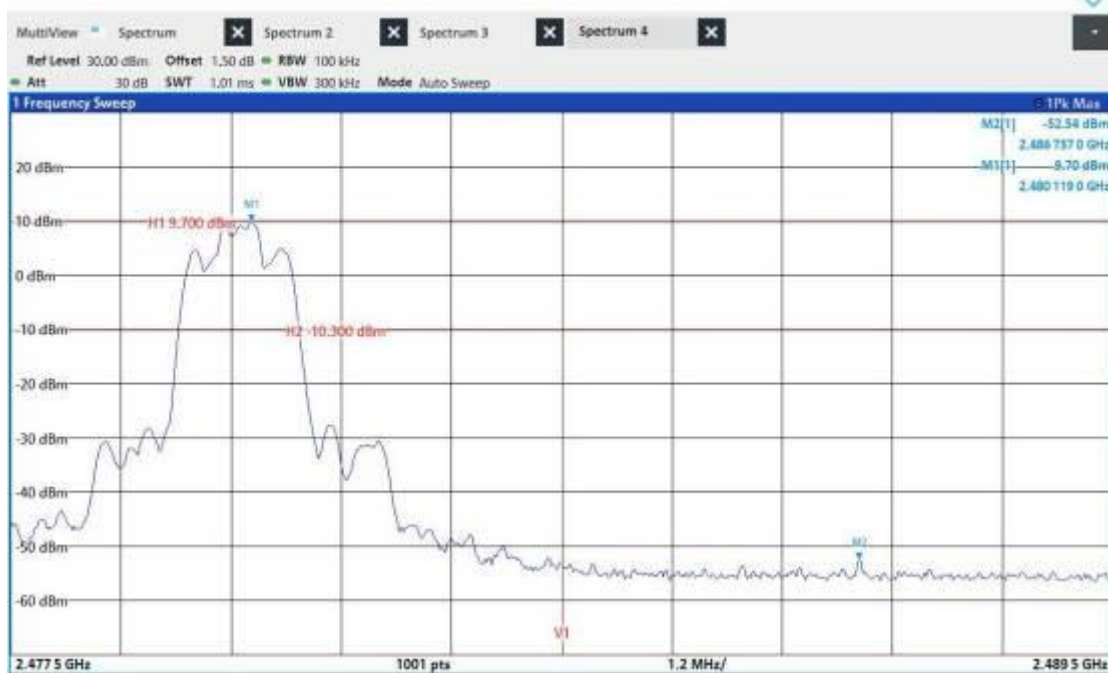
DH5_Ant1_Low_Hop_2402



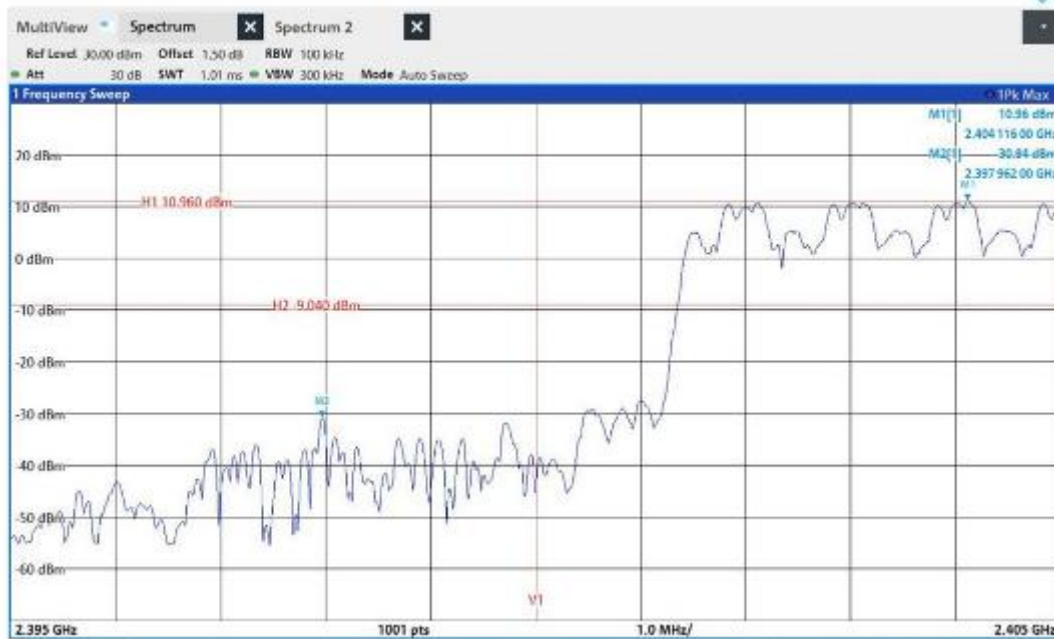
DH5_Ant1_High_Hop_2480



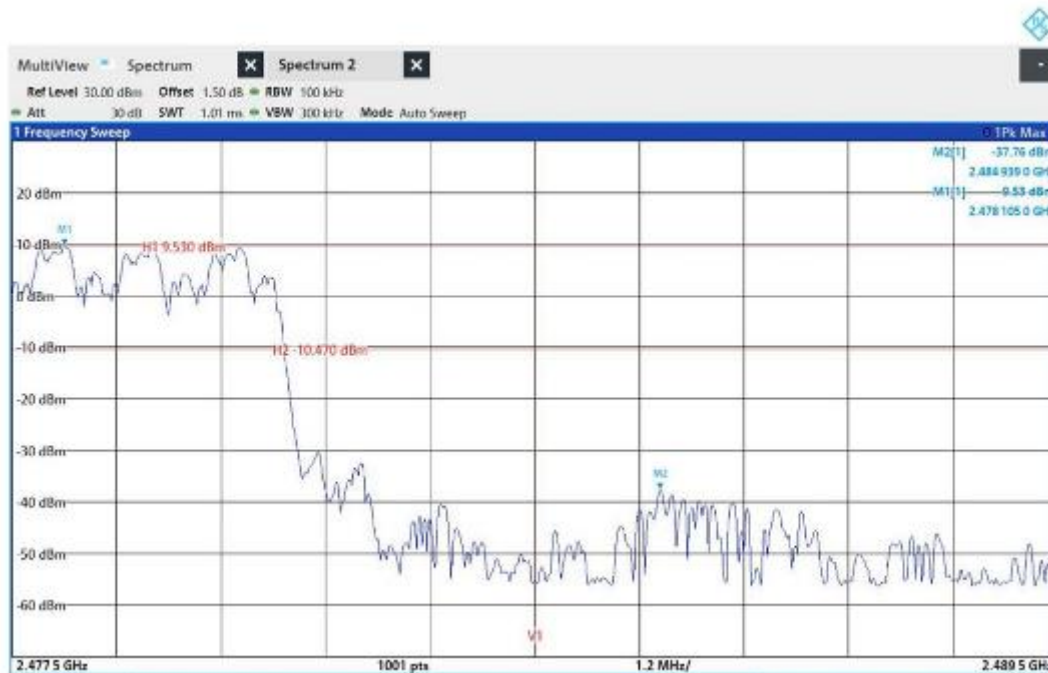
2DH5_Ant1_Low_2402



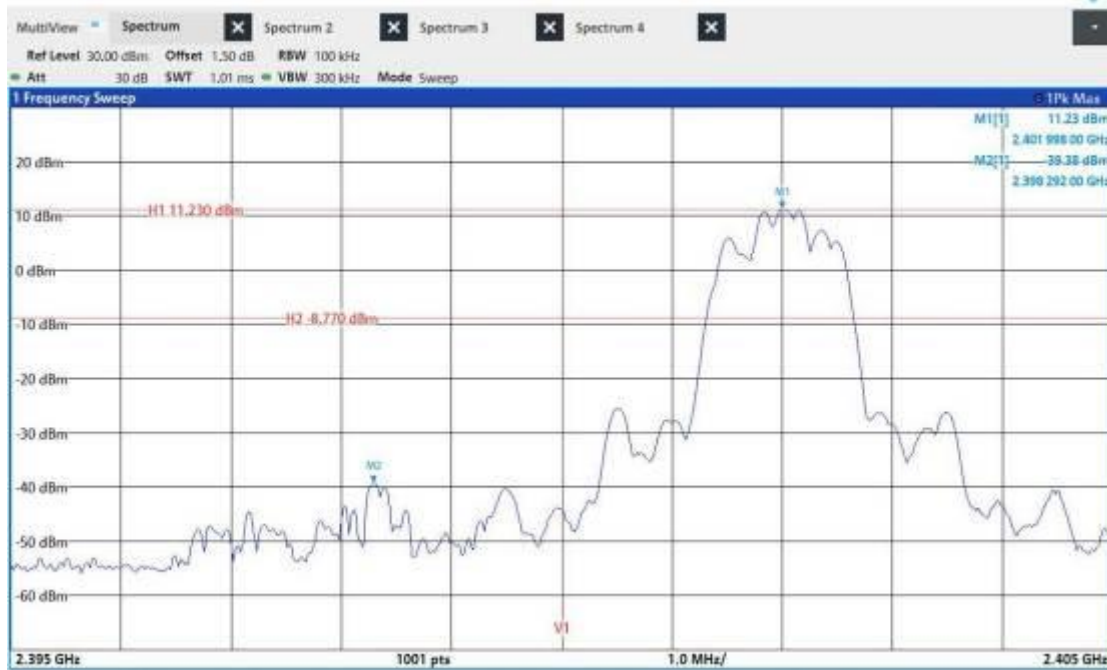
2DH5_Ant1_High_2480



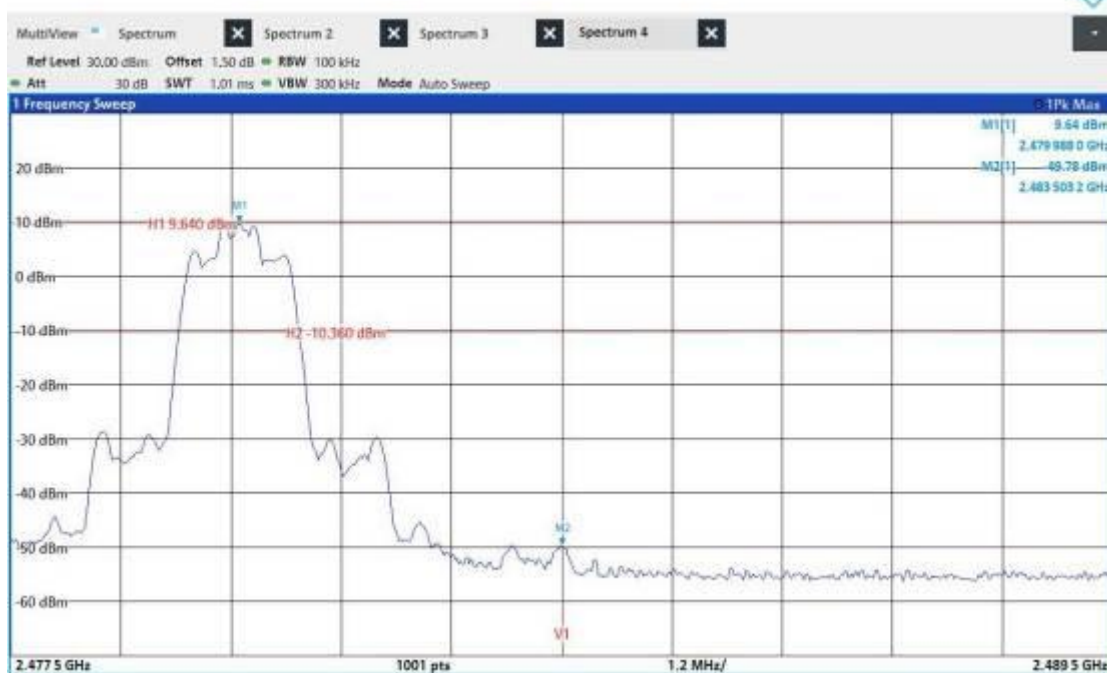
2DH5_Ant1_Low_Hop_2402



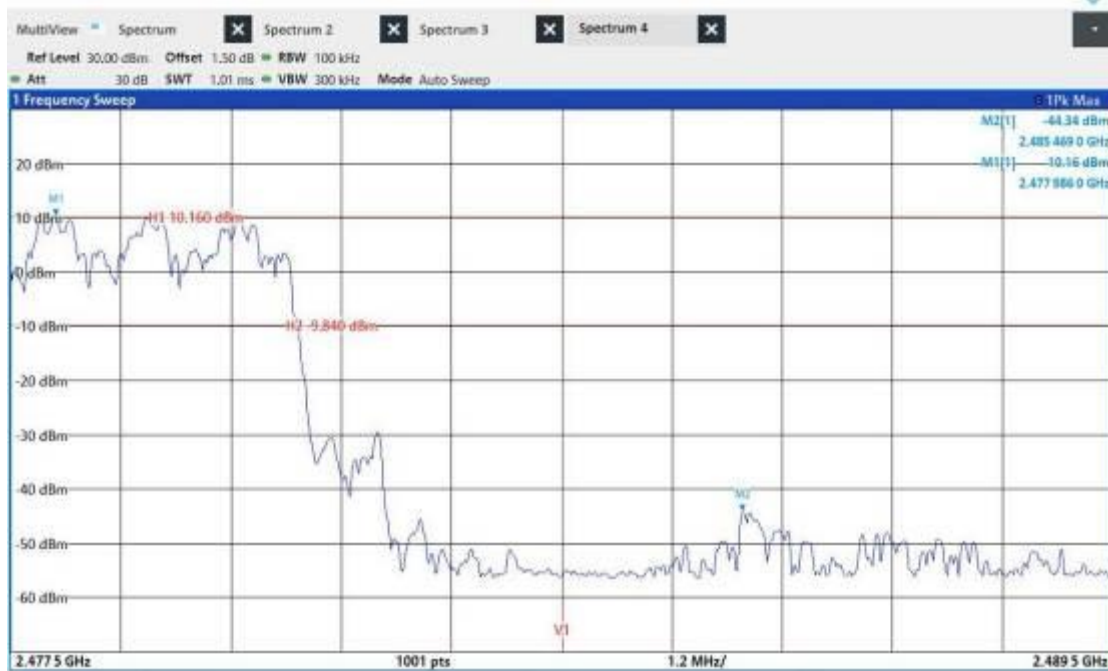
2DH5_Ant1_High_Hop_2480



3DH5_Ant1_Low_2402



3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480

CONDUCTED SPURIOUS EMISSION

TEST RESULT

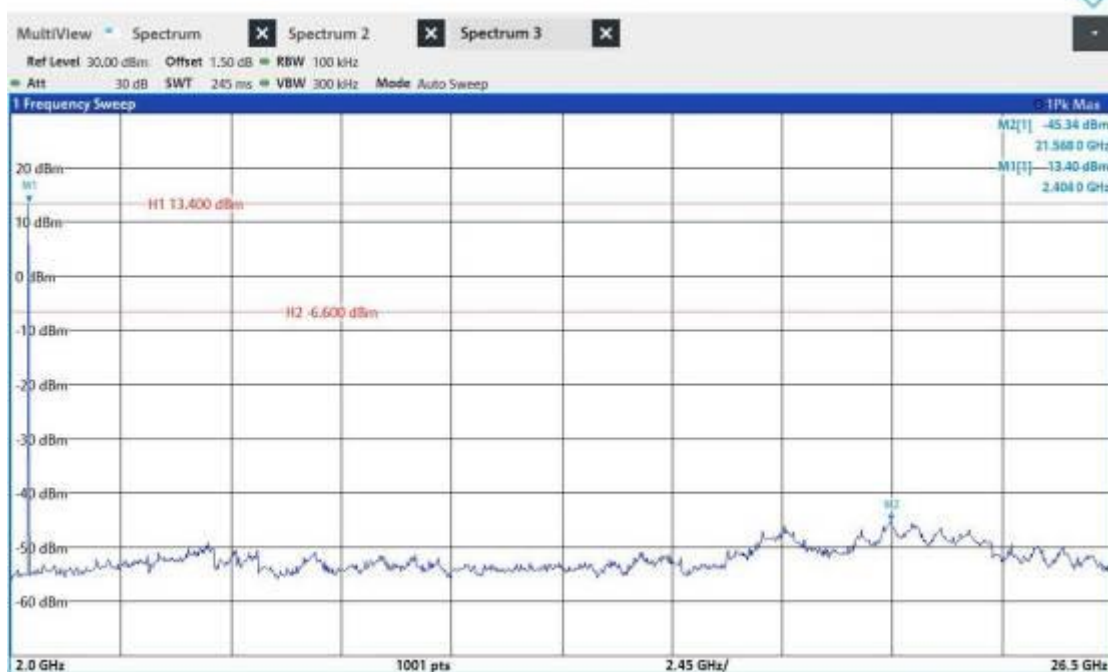
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	30~3000	13.42	-51.15	≤-6.58	PASS
			2000~26500	13.40	-45.34	≤-6.60	PASS
		2441	30~3000	13.34	-51.80	≤-6.66	PASS
			2000~26500	13.35	-45.34	≤-6.65	PASS
		2480	30~3000	12.02	-51.36	≤-7.98	PASS
			2000~26500	12.05	-45.08	≤-7.95	PASS
2DH5	Ant1	2402	30~3000	10.88	-51.89	≤-9.12	PASS
			2000~26500	10.99	-45.01	≤-9.01	PASS
		2441	30~3000	10.94	-51.12	≤-9.06	PASS
			2000~26500	10.99	-44.90	≤-9.01	PASS
		2480	30~3000	9.56	-52.02	≤-10.44	PASS
			2000~26500	9.68	-45.23	≤-10.32	PASS
3DH5	Ant1	2402	30~3000	11.04	-50.93	≤-9.96	PASS
			2000~26500	11.00	-45.41	≤-9.00	PASS
		2441	30~3000	11.04	-51.94	≤-9.96	PASS
			2000~26500	10.87	-45.55	≤-9.13	PASS
		2480	30~3000	9.63	-51.75	≤-10.37	PASS
			2000~26500	11.18	-44.47	≤-8.82	PASS



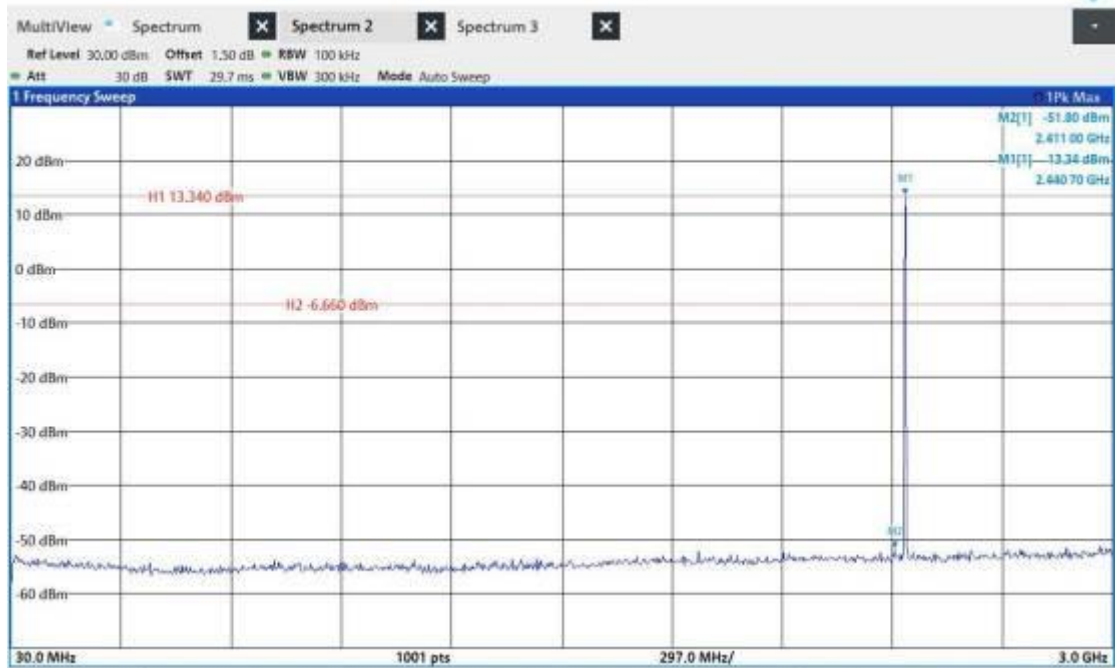
TEST GRAPHS



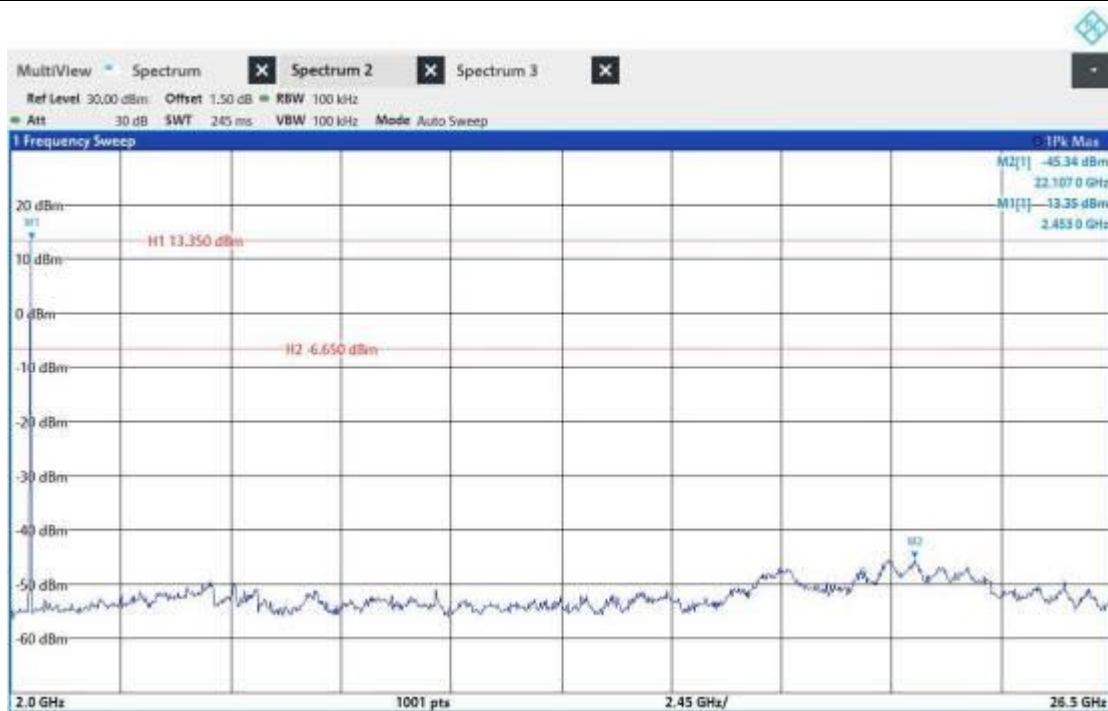
DH5_Ant1_2402_30~3000



DH5_Ant1_2402_2000~26500



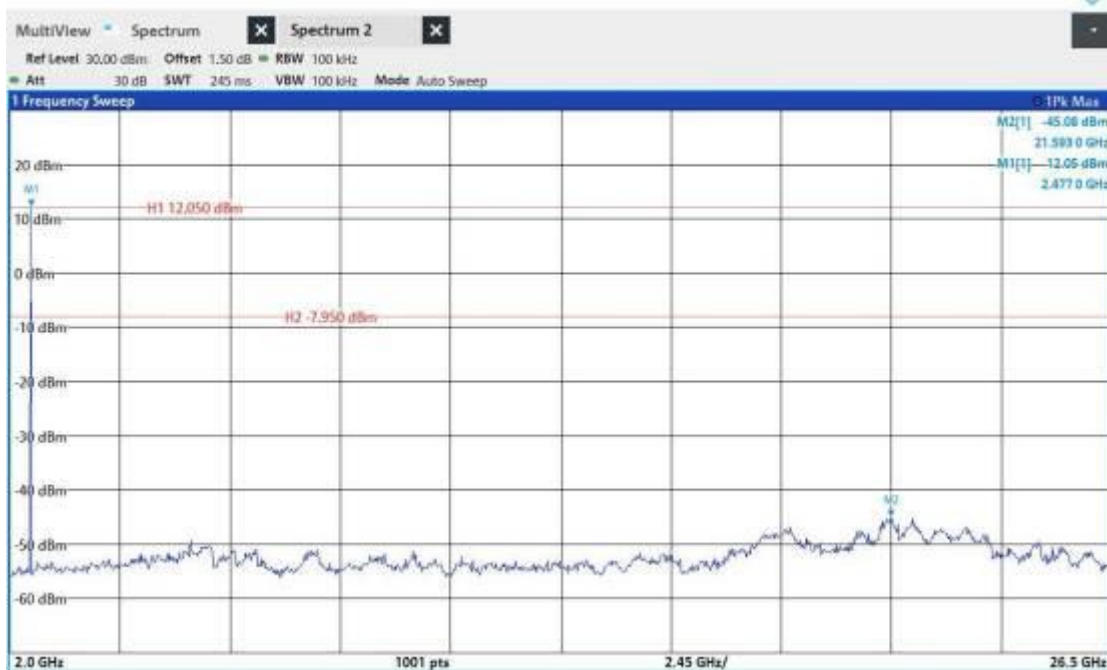
DH5_Ant1_2441_30~3000



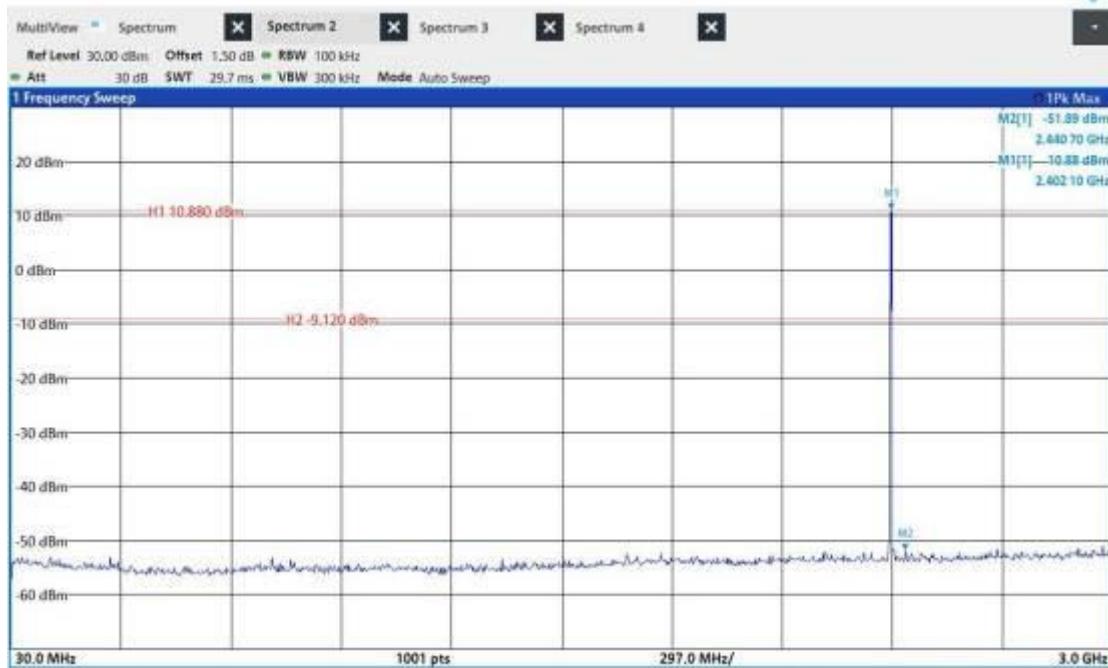
DH5_Ant1_2441_2000~26500



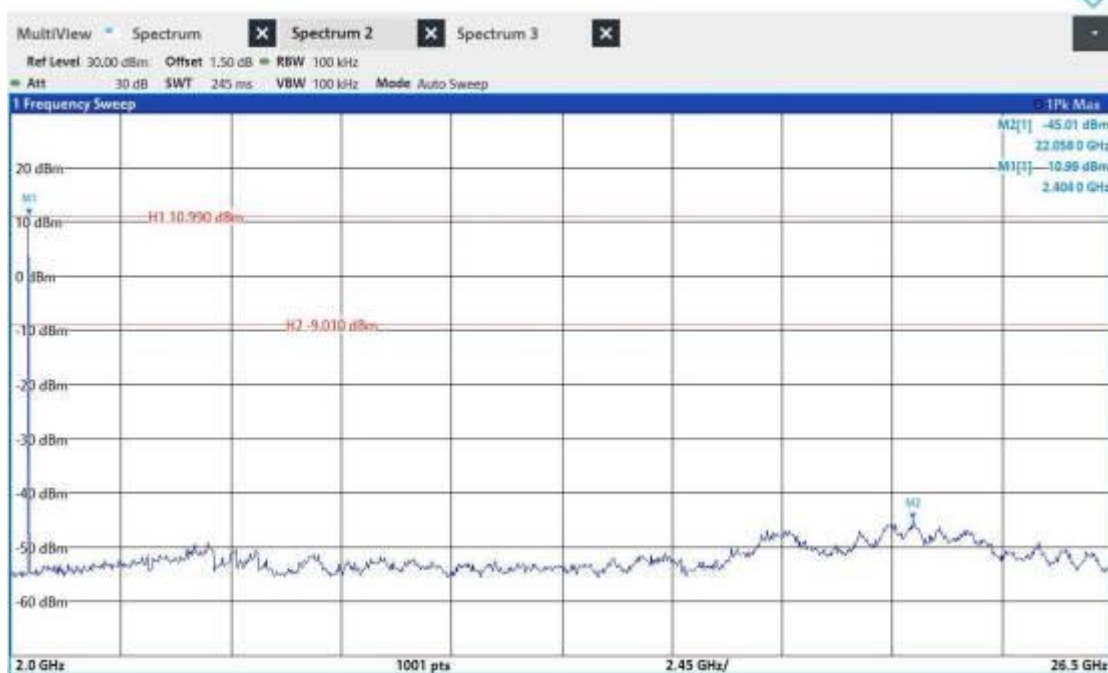
DH5_Ant1_2480_30~3000



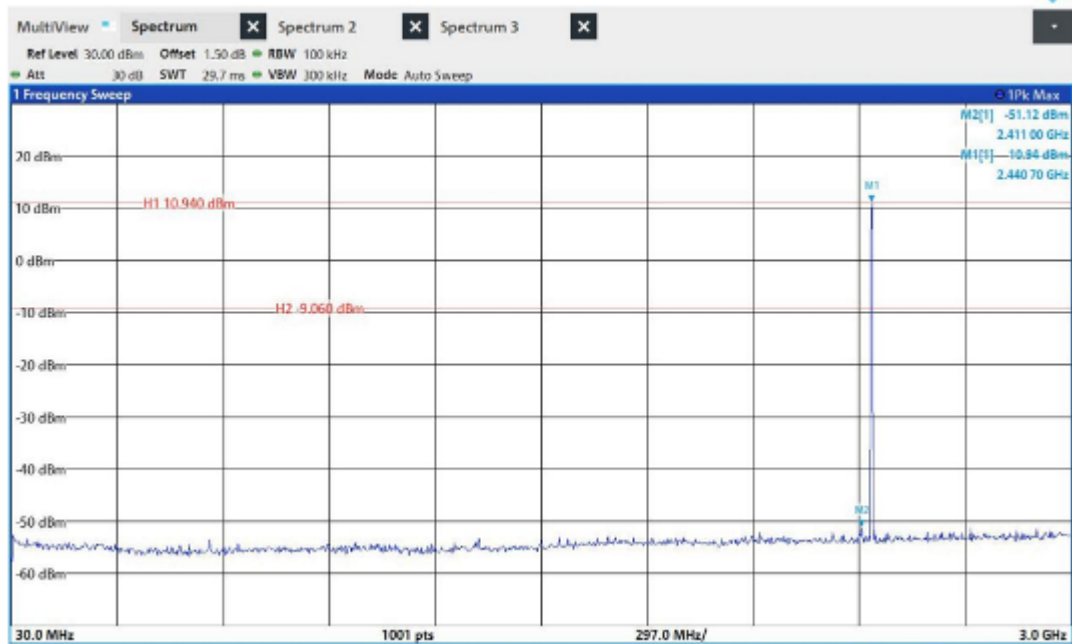
DH5_Ant1_2480_2000~26500



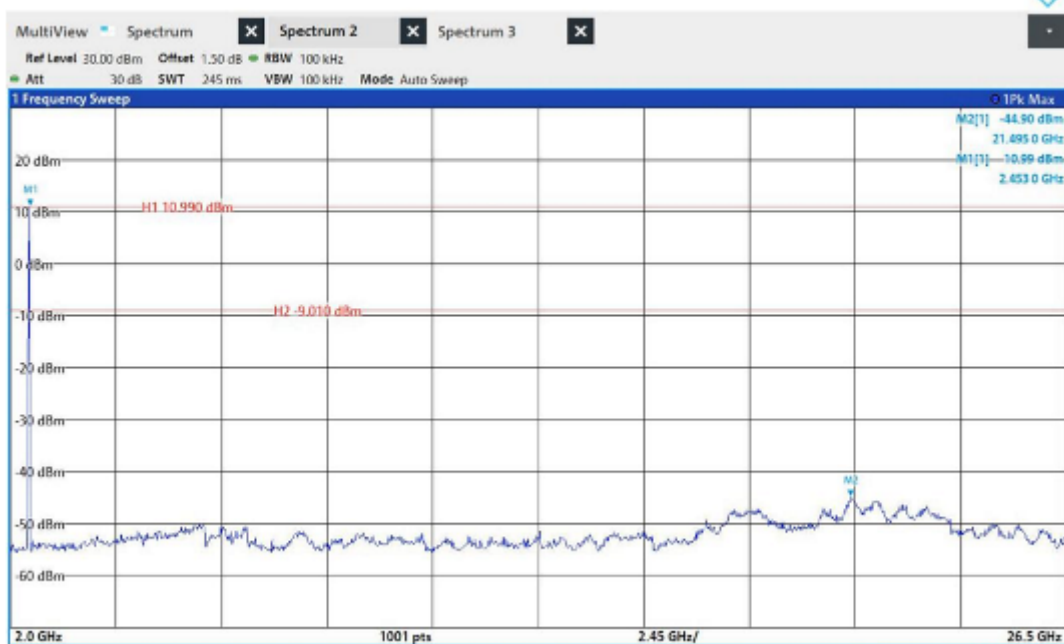
2DH5_Ant1_2402_30~3000



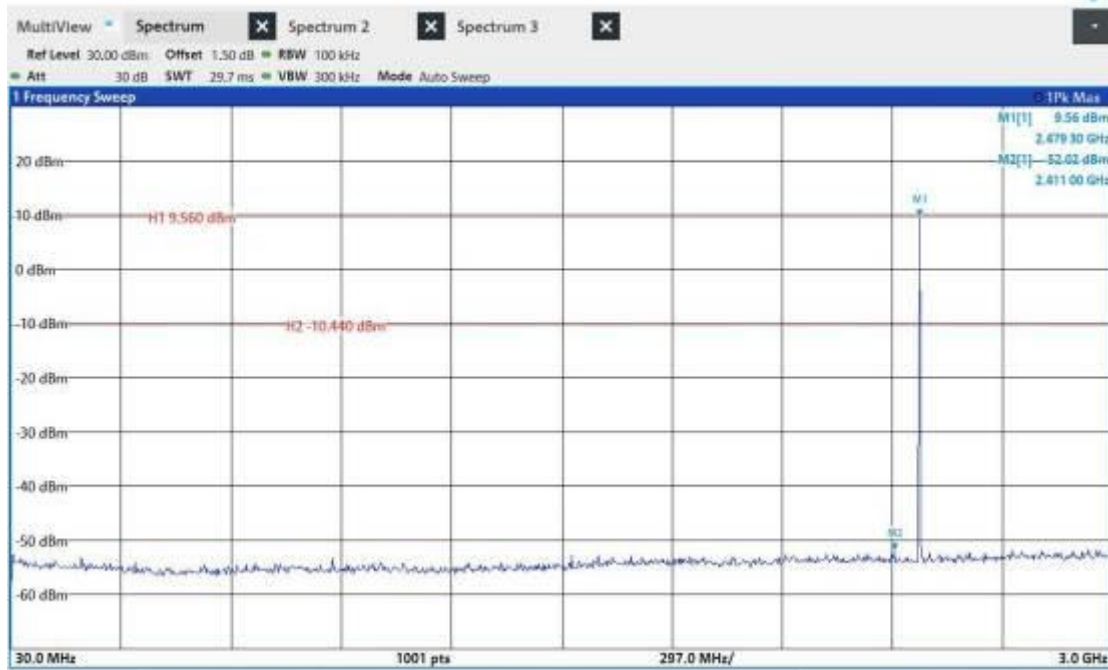
2DH5_Ant1_2402_2000~26500



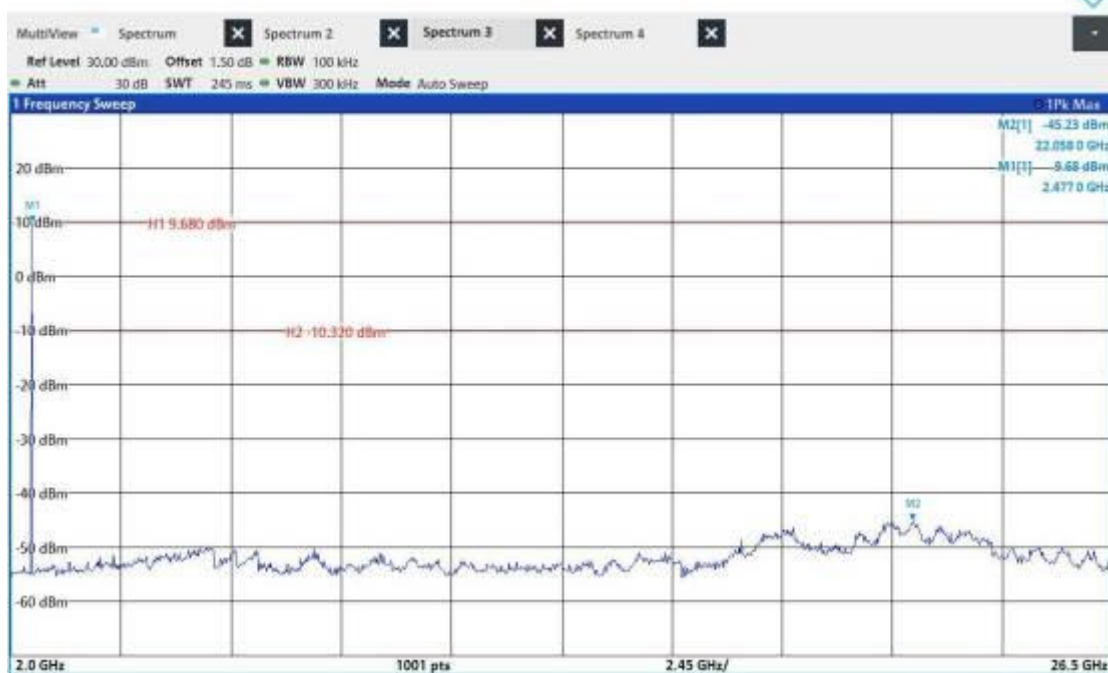
2DH5_Ant1_2441_30~3000



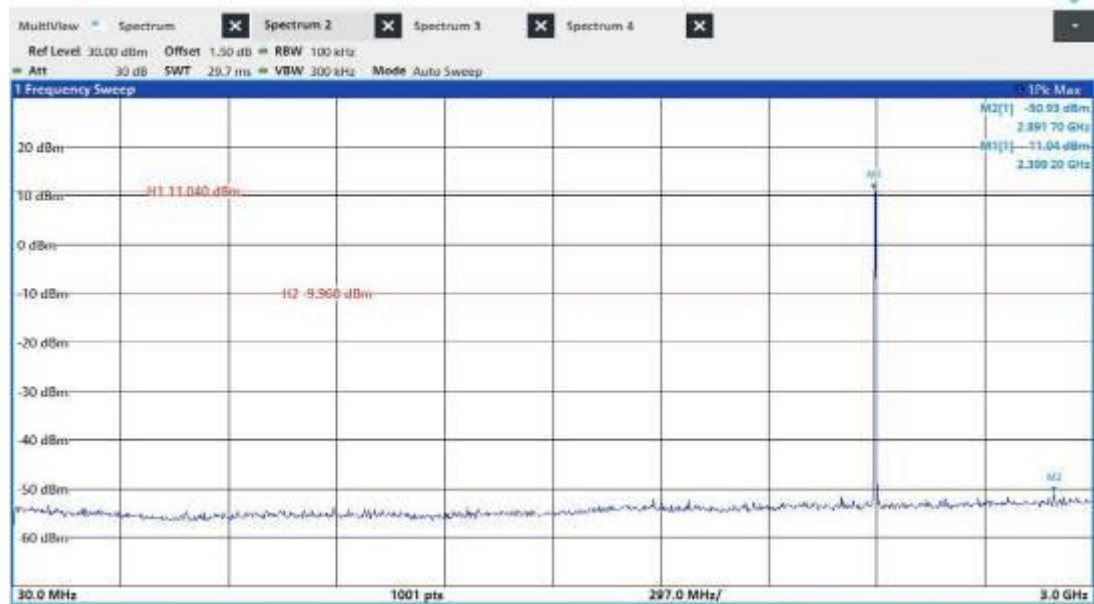
2DH5_Ant1_2441_2000~26500



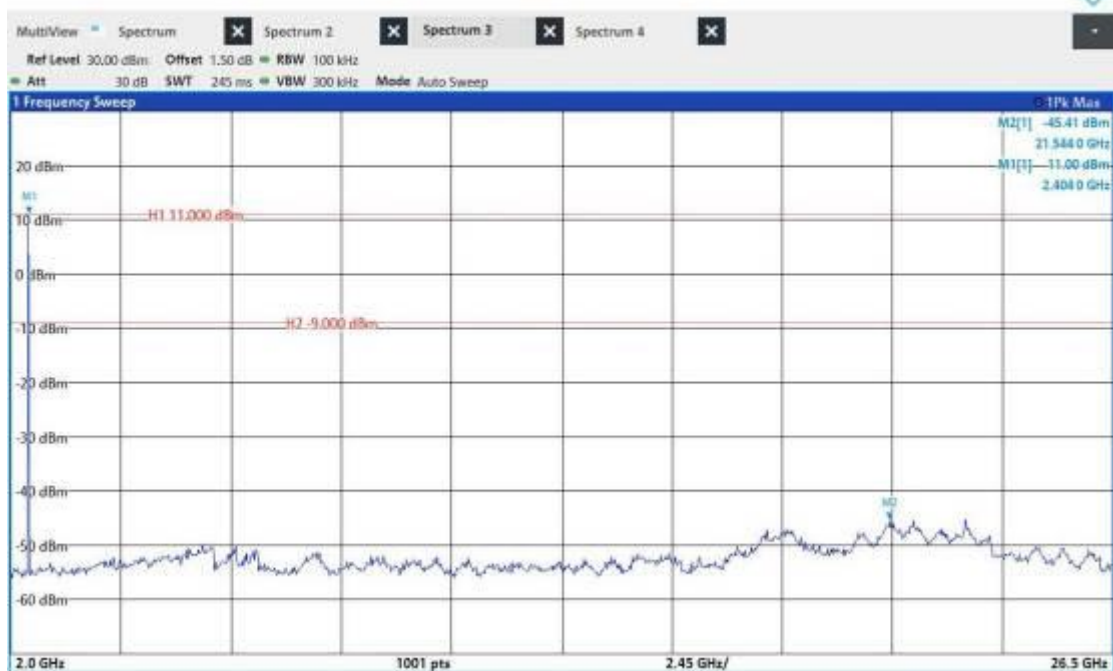
2DH5_Ant1_2480_30~3000



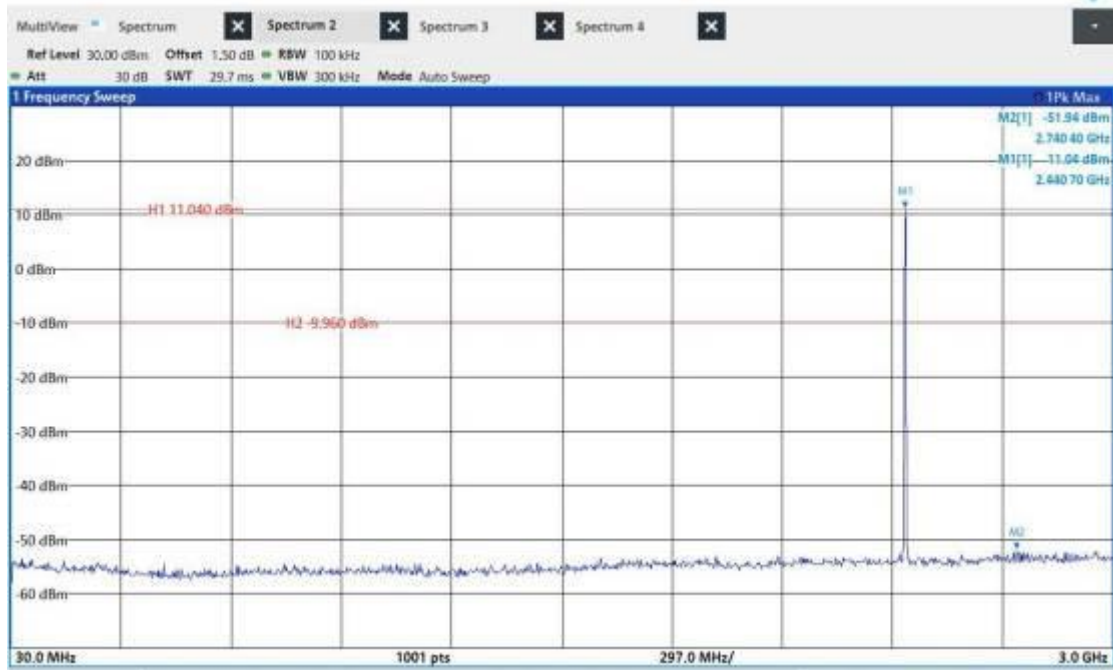
2DH5_Ant1_2480_2000~26500



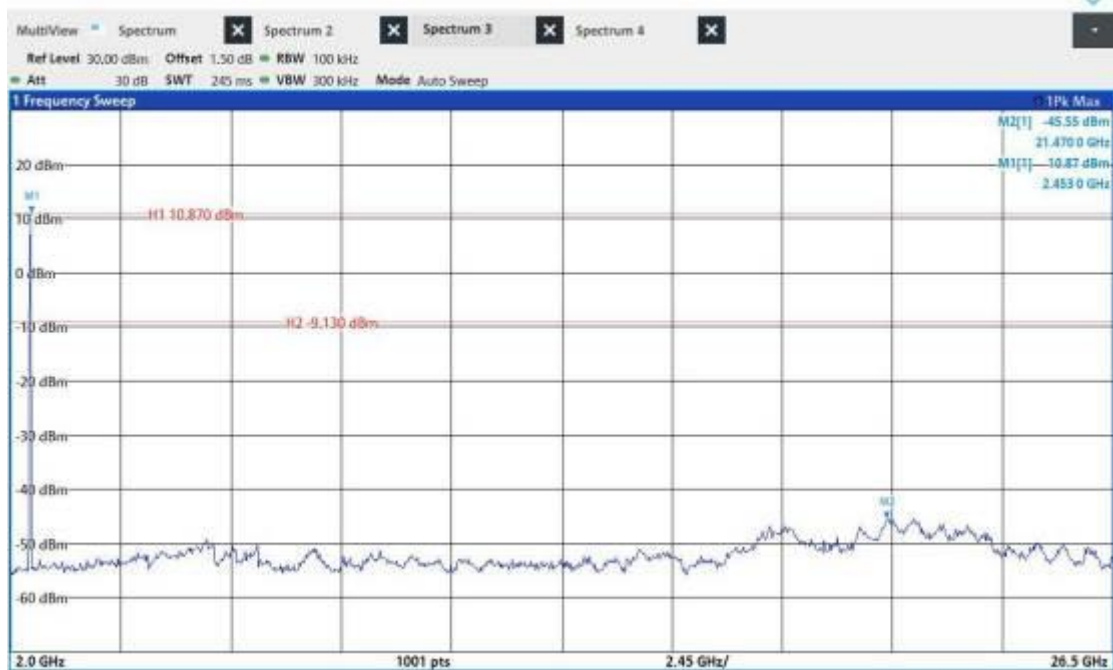
3DH5_Ant1_2402_30~3000



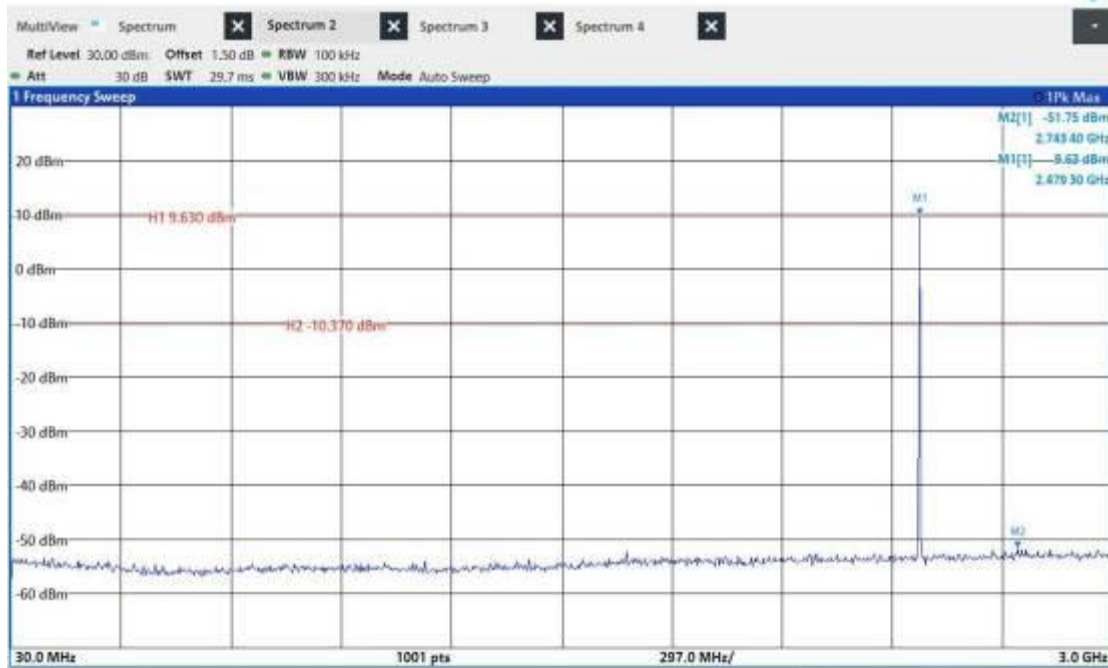
3DH5_Ant1_2402_2000~26500



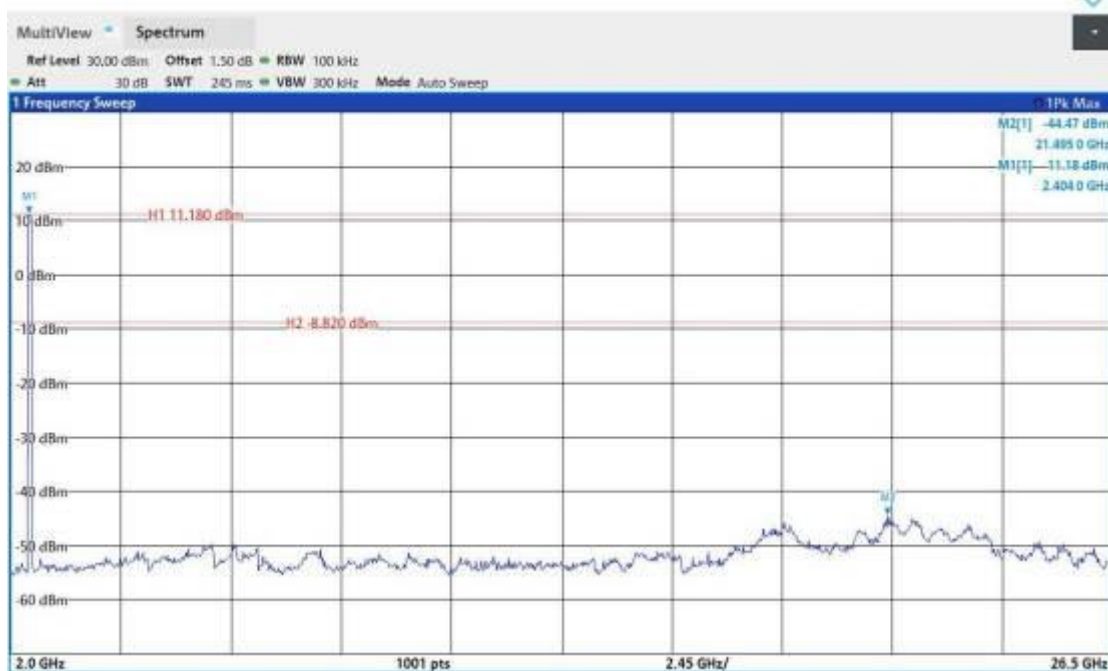
3DH5_Ant1_2441_30~3000



3DH5_Ant1_2441_2000~26500



3DH5_Ant1_2480_30~3000



3DH5_Ant1_2480_2000~26500



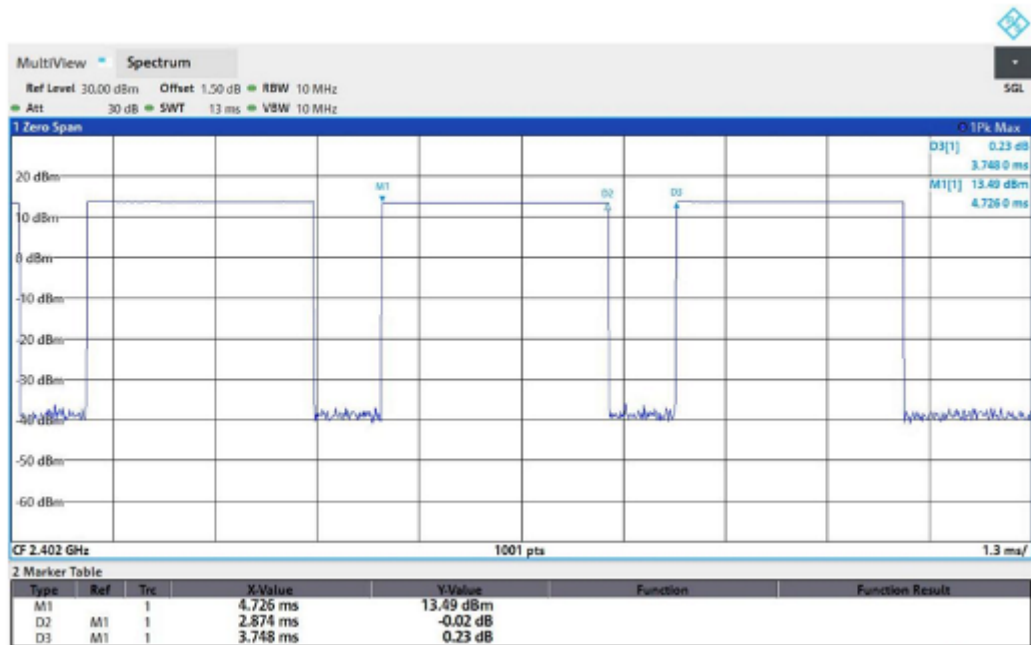
DUTY CYCLE

TEST RESULT

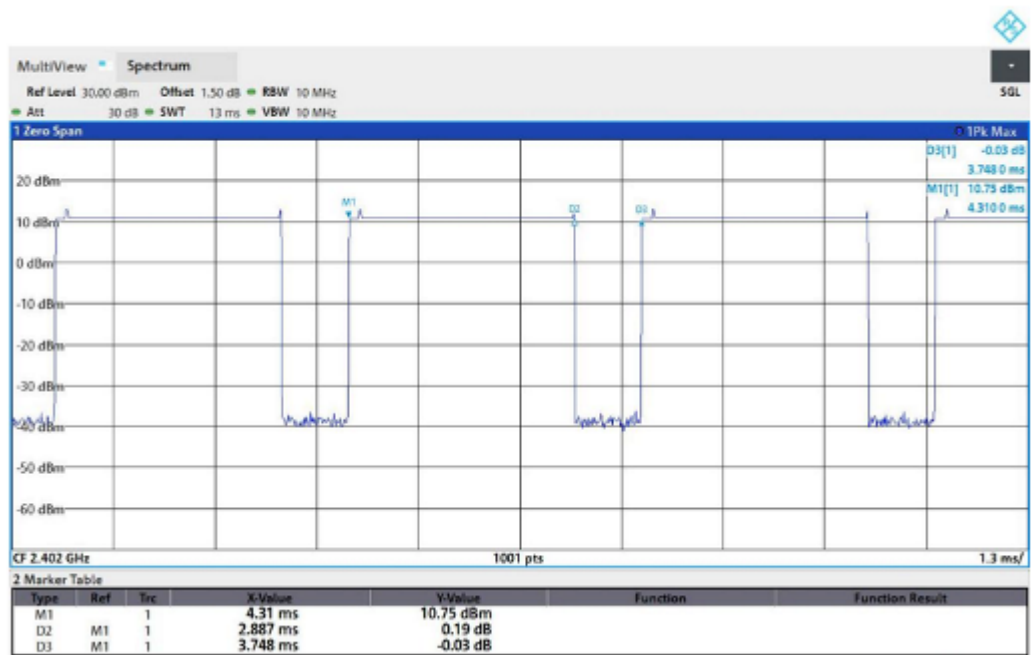
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
DH5	Ant1	2441	2.8740	3.7480	0.7668	76.68	1.15	---	PASS
2DH5	Ant1	2441	2.8870	3.7480	0.7703	77.03	1.13	---	PASS
3DH5	Ant1	2441	2.8850	3.7475	0.7698	76.98	1.14	---	PASS



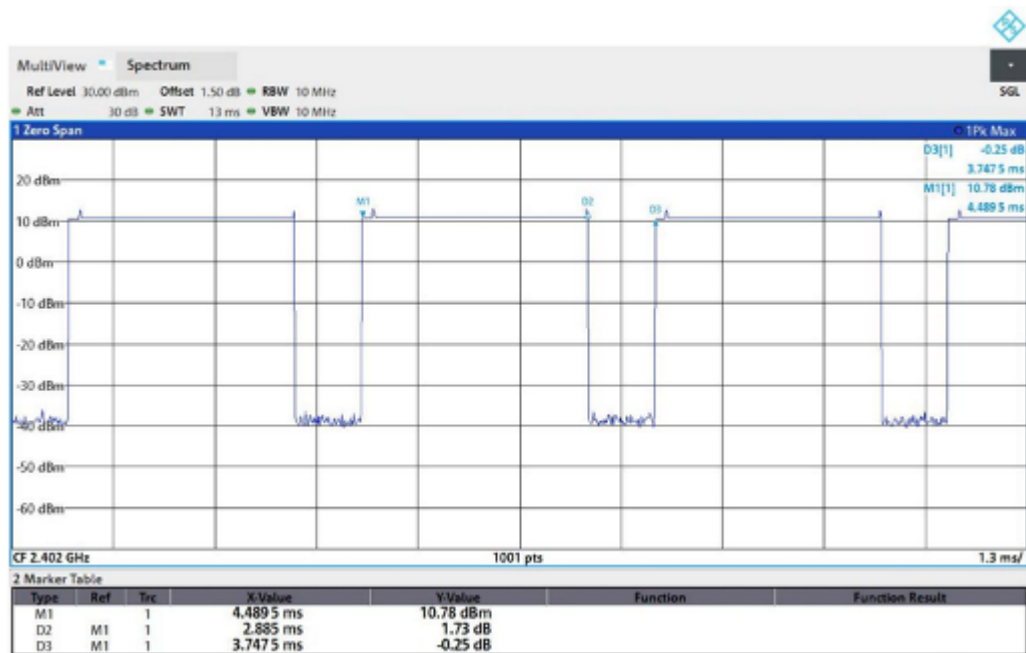
TEST GRAPHS



DH5_Ant1_2402



2DH5_Ant1_2402



3DH5_Ant1_2402