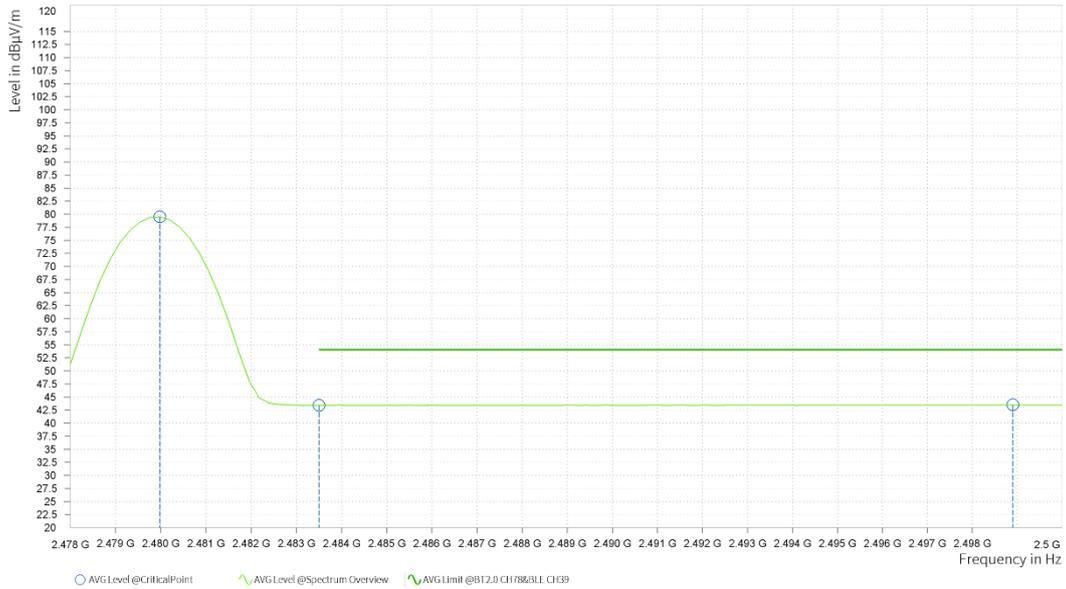




ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

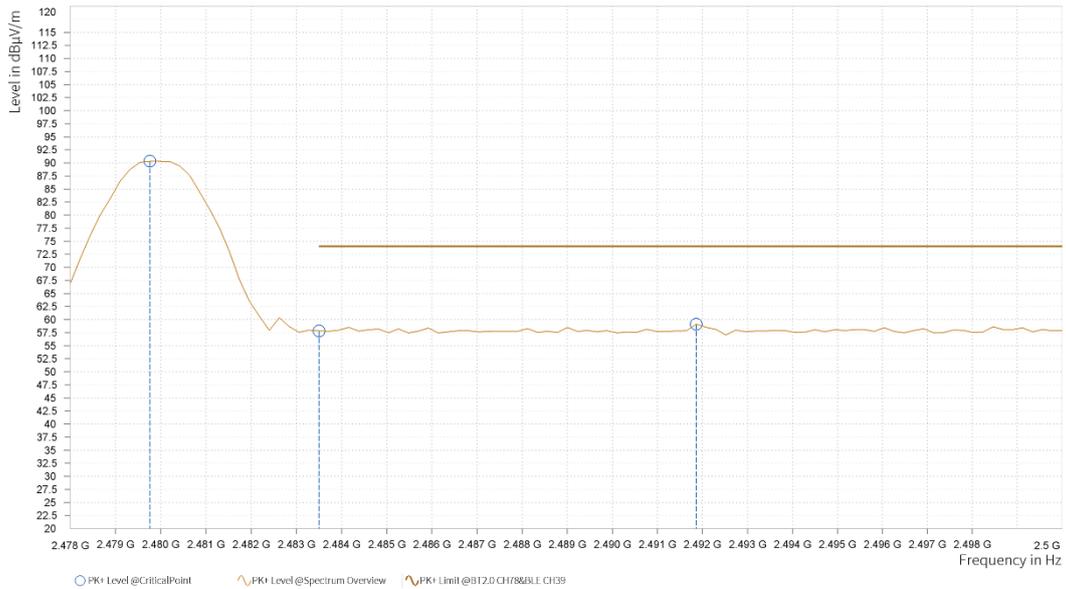
Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.980	79.49			37.87	H	176.5	1.00
6	2,483.500	43.41	54.00	10.59	37.88	H	176.5	1.00
6	2,498.900	43.49	54.00	10.51	37.91	H	1.3	2.00





ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

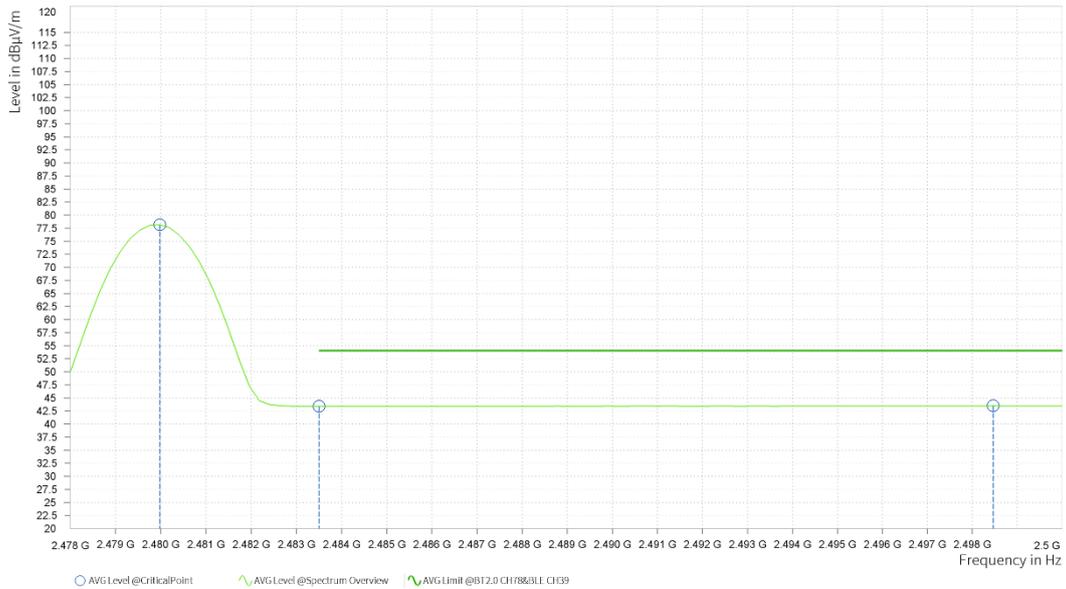
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.760	90.31			37.87	V	183.7	2.00
6	2,483.500	57.84	74.00	16.16	37.88	V	358.5	1.00
6	2,491.860	59.11	74.00	14.89	37.90	V	139.4	2.00





ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.980	78.18			37.87	V	186.1	2.00
6	2,483.500	43.40	54.00	10.60	37.88	V	311.5	1.00
6	2,498.460	43.51	54.00	10.49	37.91	V	5.1	1.00



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value – Emission level.
3. 2402MHz: Fundamental frequency.



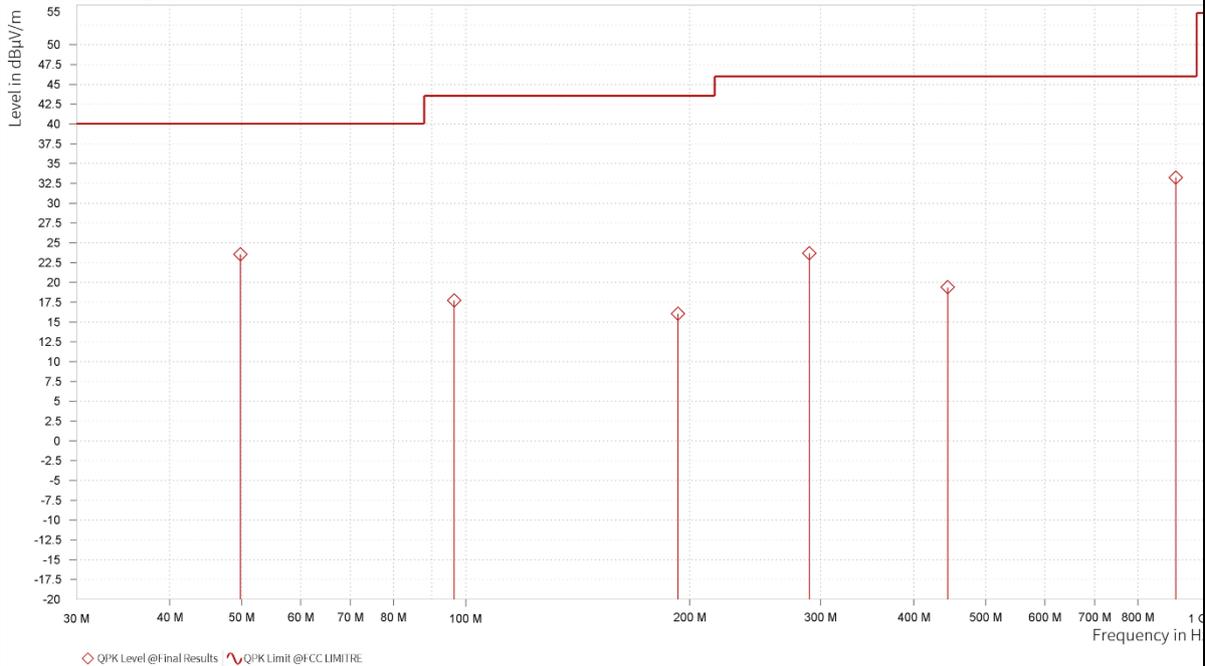
LEFT

BELOW 1GHz WORST-CASE DATA

BT_GFSK									
CHANNEL		Channel 39			DETECTOR FUNCTION		Quasi-Peak (QP)		
FREQUENCY RANGE		30MHz ~ 1GHz							
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M									
Rg	Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	49.788	23.55	40.00	16.45	-8.73	H	359.1	1.00	120.000
1	96.494	17.73	43.50	25.77	-11.67	H	359	2.00	120.000
1	192.815	16.04	43.50	27.46	-10.89	H	1	1.00	120.000
1	289.378	23.66	46.00	22.34	-6.58	H	271.8	1.00	120.000
1	444.239	19.38	46.00	26.62	-2.38	H	133.2	1.00	120.000
1	899.799	33.21	46.00	12.79	2.39	H	0.9	2.00	120.000

REMARKS:

1. Emission Level(dBuV/m) = Read Level(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission level.





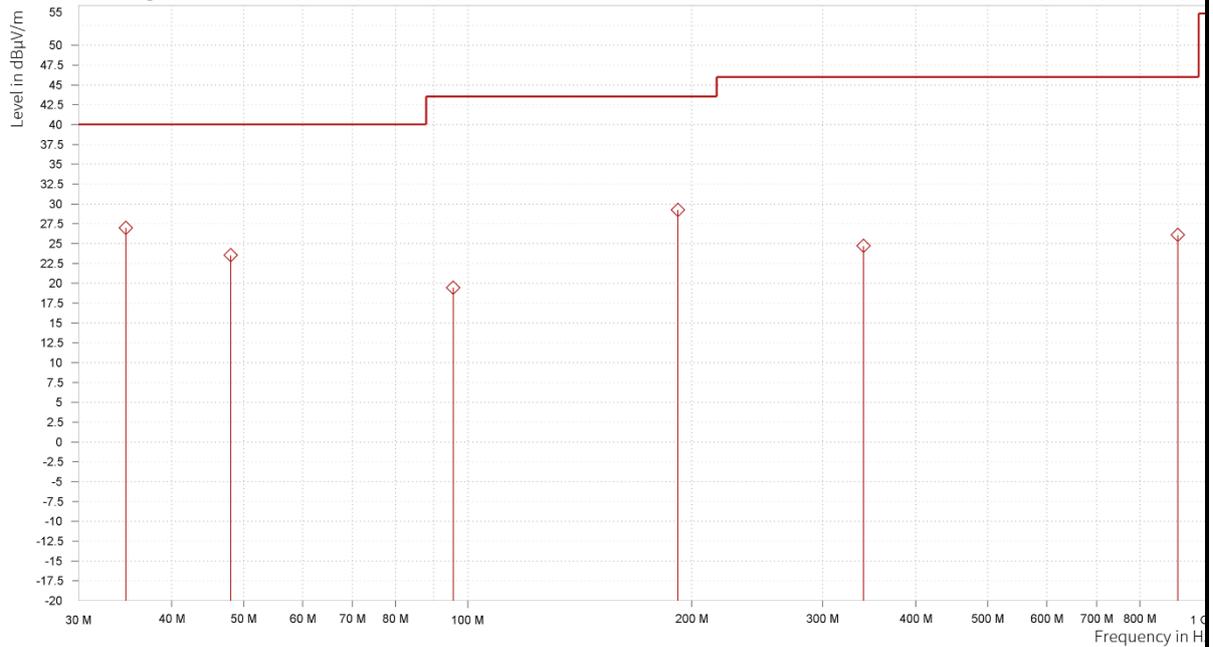
CHANNEL	Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	34.705	26.98	40.00	13.02	-13.51	V	4.3	1.00	120.000
1	48.042	23.52	40.00	16.48	-9.55	V	1	2.00	120.000
1	95.621	19.44	43.50	24.06	-11.86	V	1	1.00	120.000
1	191.602	29.24	43.50	14.26	-11.16	V	85.7	2.00	120.000
1	340.158	24.69	46.00	21.31	-4.79	V	359	1.00	120.000
1	899.751	26.08	46.00	19.92	2.17	V	133.2	1.00	120.000

REMARKS:

1. Emission Level(dBuV/m) = Read Level(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission level.





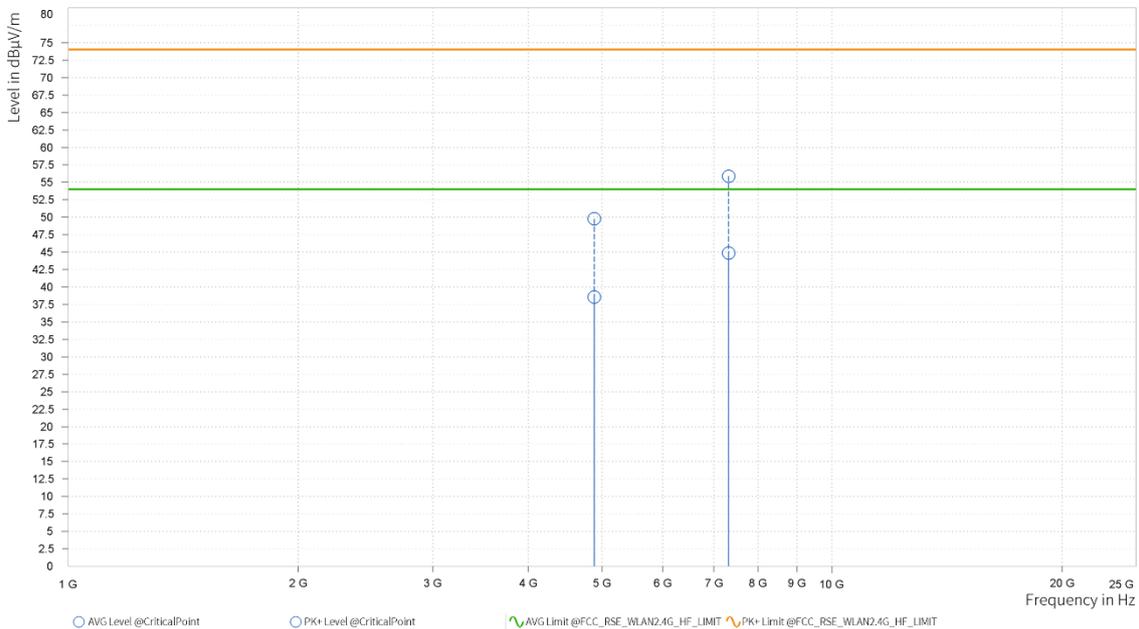
ABOVE 1GHz WORST-CASE DATA

Note: All other emissions that greater than 20dB below the limit were not recorded.

BT_GFSK			
CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

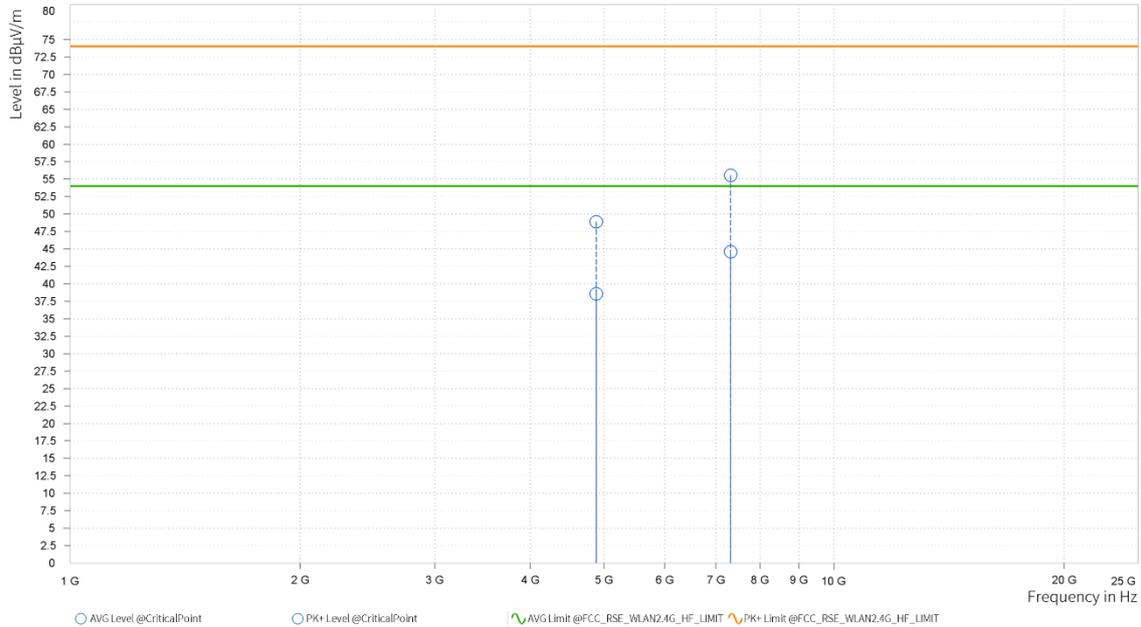
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,882.000	49.77	74.00	24.23	38.58	54.00	15.42	14.77	H	359	2.00
2	7,323.000	55.87	74.00	18.13	44.89	54.00	9.11	21.12	H	36.7	2.00





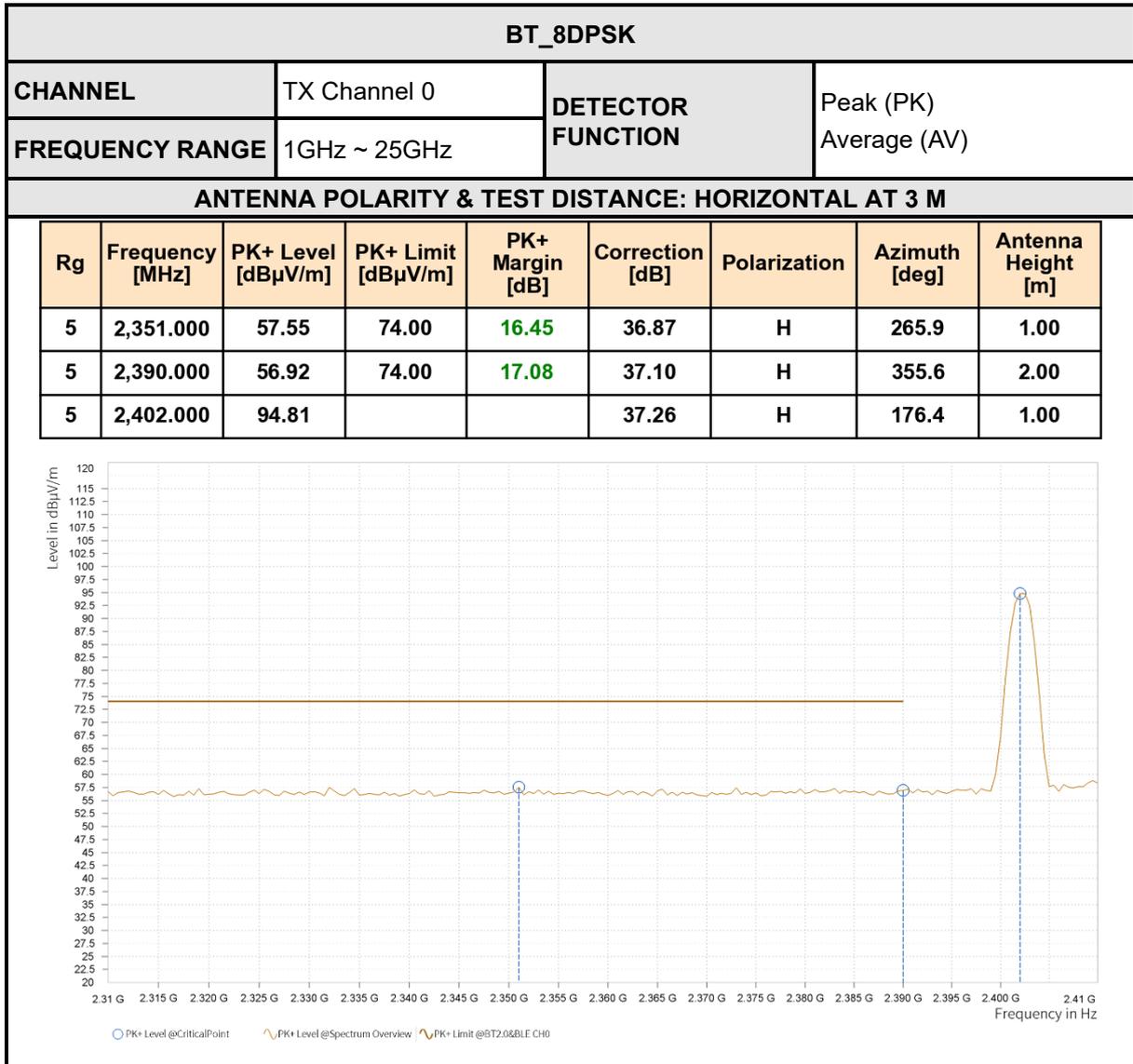
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,882.000	48.89	74.00	25.11	38.56	54.00	15.44	14.77	V	359	2.00
2	7,323.000	55.57	74.00	18.43	44.61	54.00	9.39	21.12	V	261.5	2.00



REMARKS:

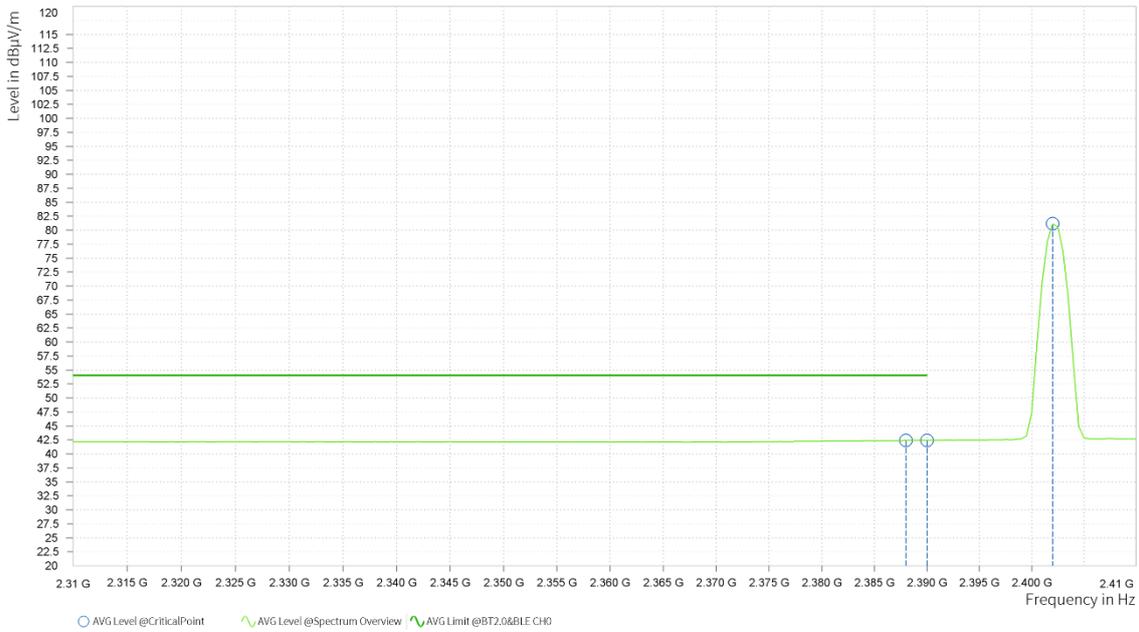
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value – Emission level.
3. 2402MHz: Fundamental frequency.





ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

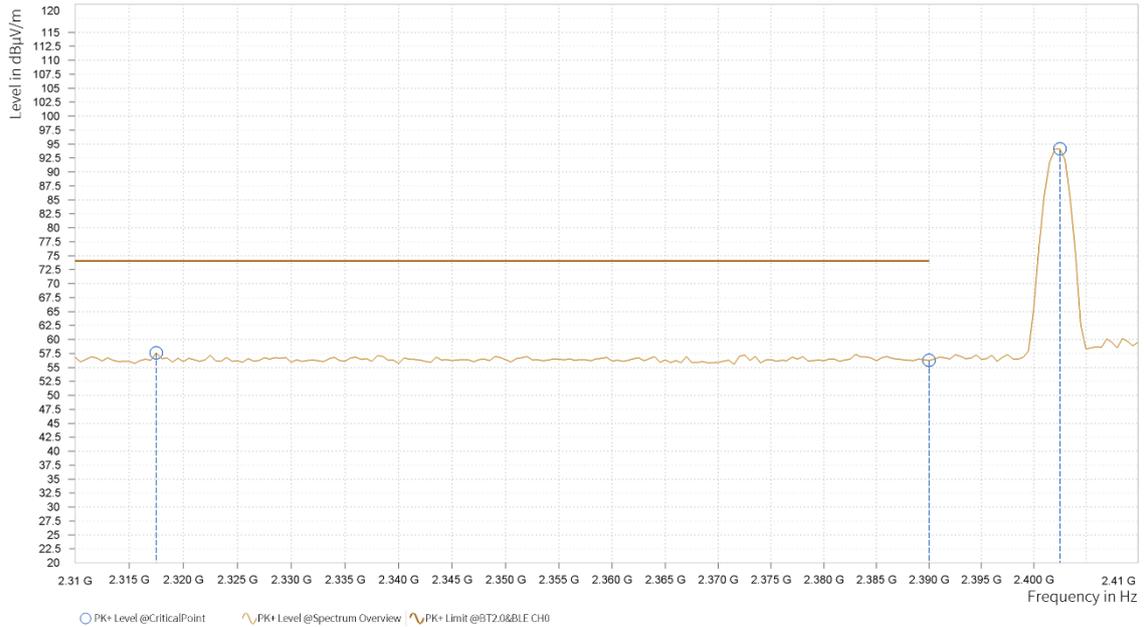
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,388.000	42.40	54.00	11.60	37.07	H	359.1	1.00
5	2,390.000	42.41	54.00	11.59	37.10	H	88	1.00
5	2,402.000	81.16			37.26	H	42.6	1.00





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]
5	2,317.500	57.61	74.00	16.39	36.94	V	359	1.00
5	2,390.000	56.23	74.00	17.77	37.10	V	229.1	2.00
5	2,402.500	94.12			37.27	V	229.1	2.00





ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,389.500	42.43	54.00	11.57	37.09	V	348.6	1.00
5	2,390.000	42.45	54.00	11.55	37.10	V	85.5	1.00
5	2,402.000	81.39			37.26	V	227.9	2.00



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value – Emission level.
3. 2402MHz: Fundamental frequency.

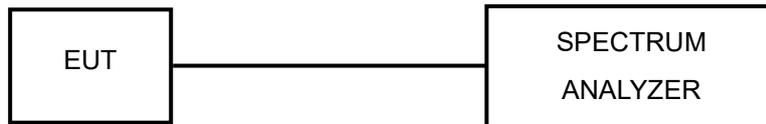


3.3 NUMBER OF HOPPING FREQUENCY USED

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	Mar.28,24	Mar.27,26
Open Switch and Control Unit	R&S	OSP-B157W8	100836	N/A	N/A
Vector Signal Generator	R&S	SMBV100B	102176	Mar.29,24	Mar.28,26
Signal Generator	R&S	SMB100A03	182185	Mar.29,24	Mar.28,26
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.19,24	Jun.18,26
Hygrothermograph	DELI	20210528	SZ015	Sep.06,23	Sep.05,25
PC	LENOVO	E14	HRSW0024	N/A	N/A
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.27,24	Apr.26,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.27,24	Apr.26,25
Test Software	EMC32	EMC32	N/A	N/A	N/A
Temperature Chamber	votsch	VT4002	58566078100050	May.30,24	May.29,26
Power Meter	R&S	NRX	102380	Mar.28,24	Mar.27,26
Power Meter probe	R&S	NRP6A	102942	Mar.28,24	Mar.27,26

NOTE:

1. The calibration interval of the above test instruments is 12 /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.

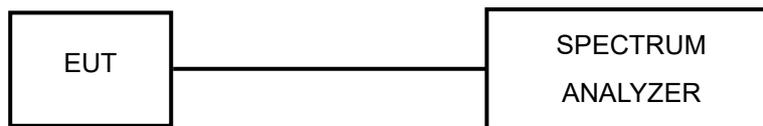


3.4 DWELL TIME ON EACH CHANNEL

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

- 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. 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.
- d. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
- e. 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

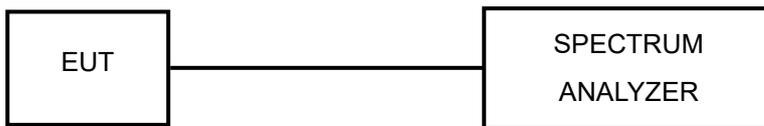


3.5 CHANNEL BANDWIDTH

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.

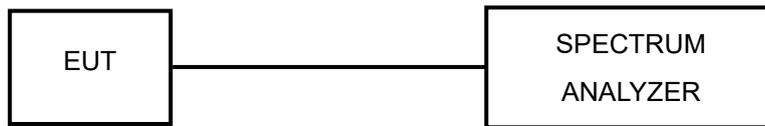


3.6 HOPPING CHANNEL SEPARATION

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.

3.6.6 TEST RESULTS

Please Refer to Appendix of this test report.

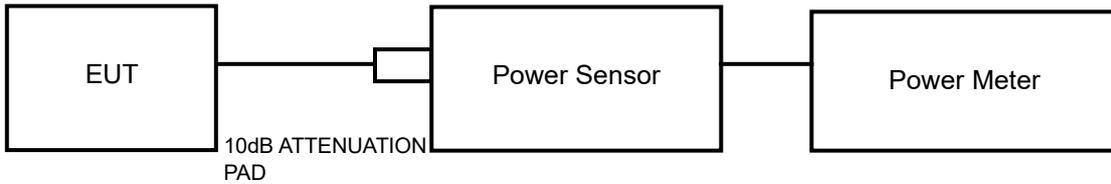


3.7 MAXIMUM OUTPUT POWER

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).



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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	1.041	2401.481	2402.522	---	---
		2441	0.936	2440.529	2441.465	---	---
		2480	1.056	2479.454	2480.510	---	---
2DH5	Ant1	2402	1.197	2401.385	2402.582	---	---
		2441	1.185	2440.385	2441.570	---	---
		2480	1.272	2479.358	2480.630	---	---
3DH5	Ant1	2402	1.308	2401.334	2402.642	---	---
		2441	1.188	2440.403	2441.591	---	---
		2480	1.260	2479.346	2480.606	---	---



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

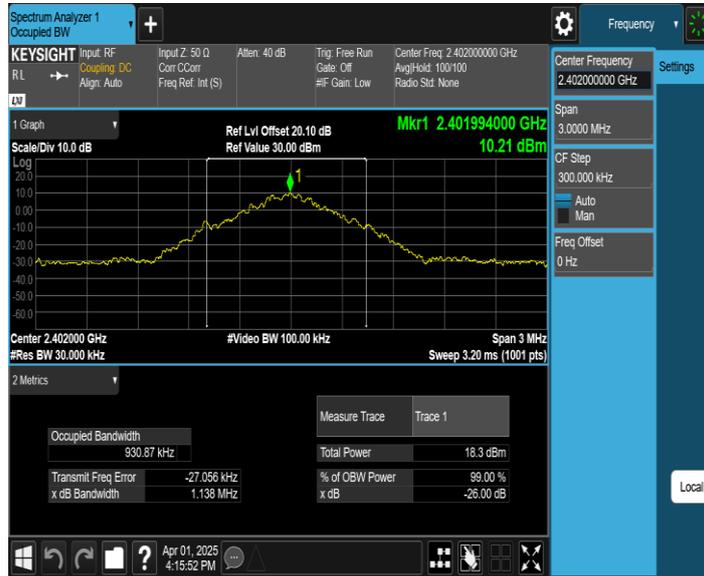
TEST RESULT

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.9309	2401.5075	2402.4384	---	---
		2441	0.8976	2440.5566	2441.4542	---	---
		2480	0.9066	2479.5242	2480.4308	---	---
2DH5	Ant1	2402	1.1560	2401.4048	2402.5608	---	---
		2441	1.1724	2440.3971	2441.5695	---	---
		2480	1.1801	2479.3967	2480.5768	---	---
3DH5	Ant1	2402	1.1807	2401.3964	2402.5771	---	---
		2441	1.1908	2440.3930	2441.5838	---	---
		2480	1.1870	2479.3955	2480.5825	---	---

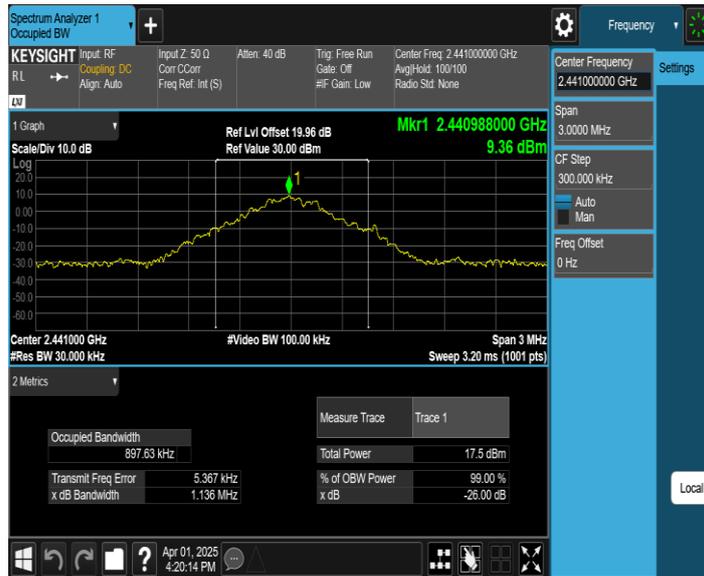


TEST GRAPHS

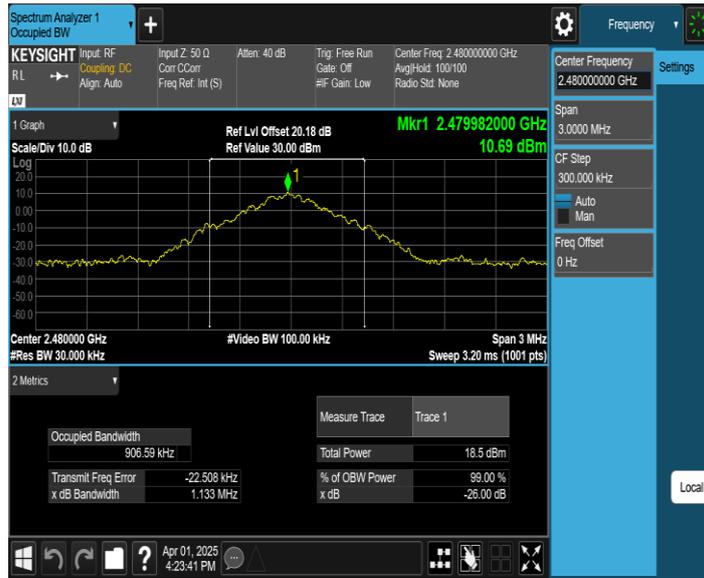
DH5_Ant1_2402



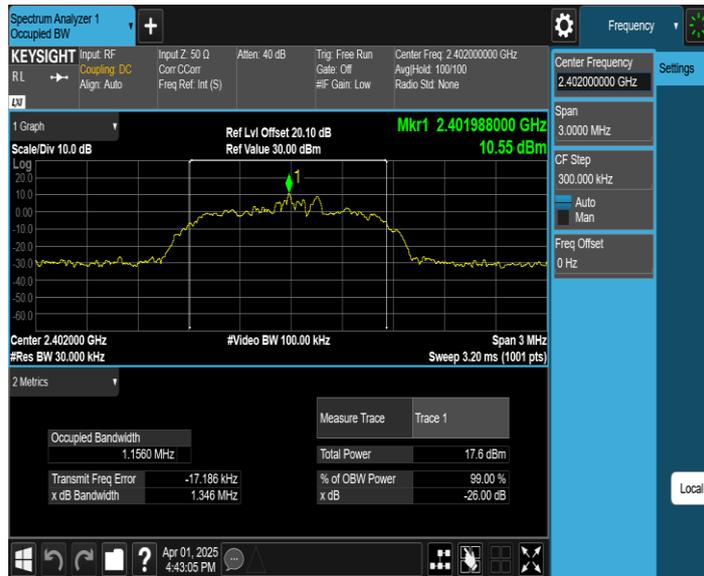
DH5_Ant1_2441



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 AND EIRP 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	10.63	12.37	17.26	≤20.97	5.47	3.52	≤36.00	PASS	3
		2441	10.61	11.45	13.96	≤20.97	4.55	2.85	≤36.00	PASS	3
		2480	10.35	12.53	17.91	≤20.97	5.63	3.66	≤36.00	PASS	3
2DH5	Ant1	2402	7.60	12.36	17.22	≤20.97	5.46	3.52	≤36.00	PASS	3
		2441	7.59	11.42	13.87	≤20.97	4.52	2.83	≤36.00	PASS	3
		2480	7.37	12.11	16.26	≤20.97	5.21	3.32	≤36.00	PASS	3
3DH5	Ant1	2402	7.60	12.35	17.18	≤20.97	5.45	3.51	≤36.00	PASS	3
		2441	7.63	11.40	13.80	≤20.97	4.5	2.82	≤36.00	PASS	3
		2480	7.37	12.14	16.37	≤20.97	5.24	3.34	≤36.00	PASS	3

Note: EIRP=Peak Power+Gain



CARRIER FREQUENCY SEPARATION

TEST RESULT

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1	≥ 0.704	PASS
2DH5	Ant1	Hop	0.978	≥ 0.848	PASS
3DH5	Ant1	Hop	1.002	≥ 0.872	PASS



TEST GRAPHS

DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop



TIME OF OCCUPANCY

TEST RESULT

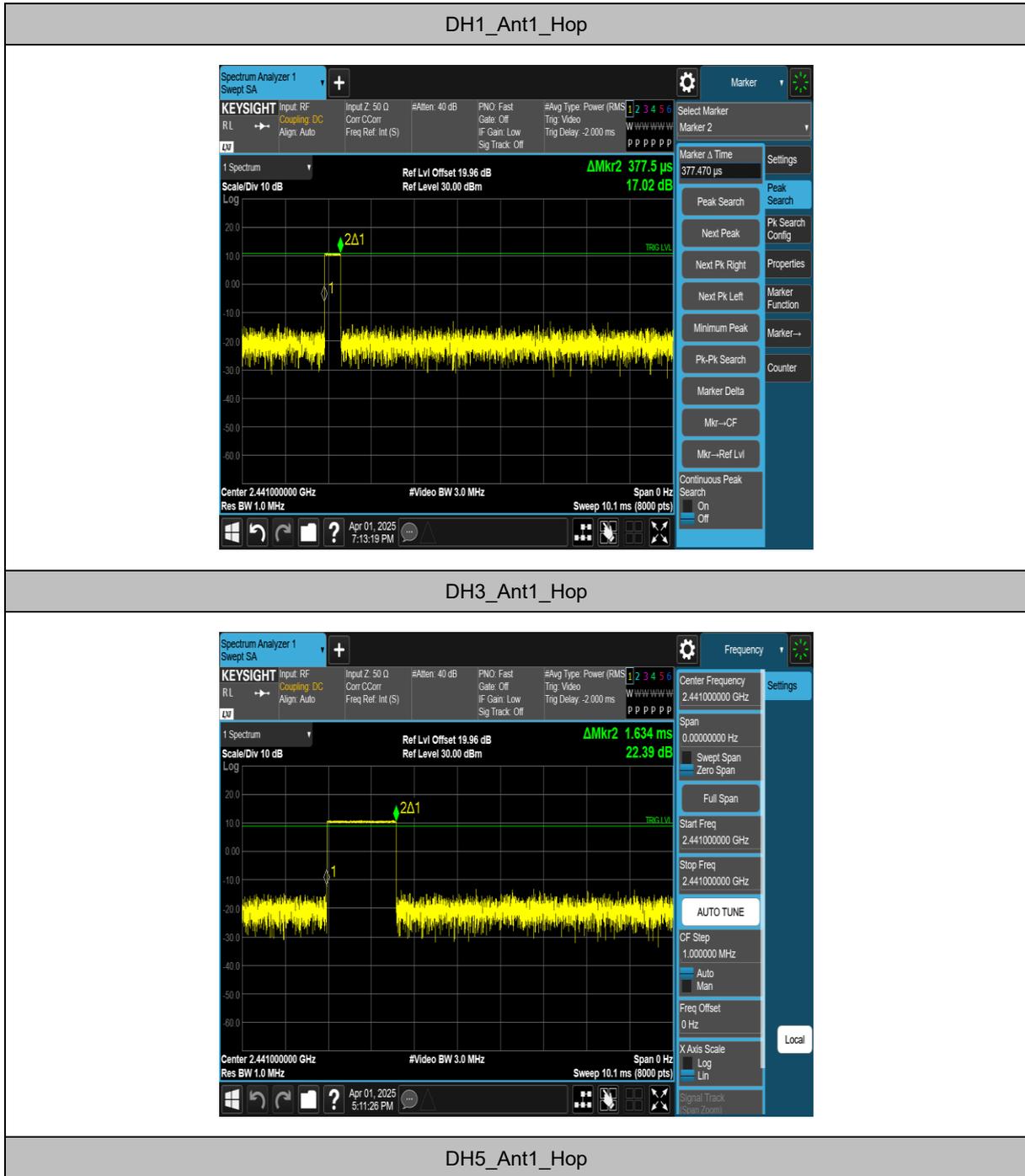
TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.378	320	0.121	≤0.4	PASS
DH3	Ant1	Hop	1.634	160	0.261	≤0.4	PASS
DH5	Ant1	Hop	2.882	106	0.305	≤0.4	PASS
2DH1	Ant1	Hop	0.386	320	0.124	≤0.4	PASS
2DH3	Ant1	Hop	1.640	160	0.262	≤0.4	PASS
2DH5	Ant1	Hop	2.888	106	0.306	≤0.4	PASS
3DH1	Ant1	Hop	0.387	320	0.124	≤0.4	PASS
3DH3	Ant1	Hop	1.638	160	0.262	≤0.4	PASS
3DH5	Ant1	Hop	2.888	106	0.306	≤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





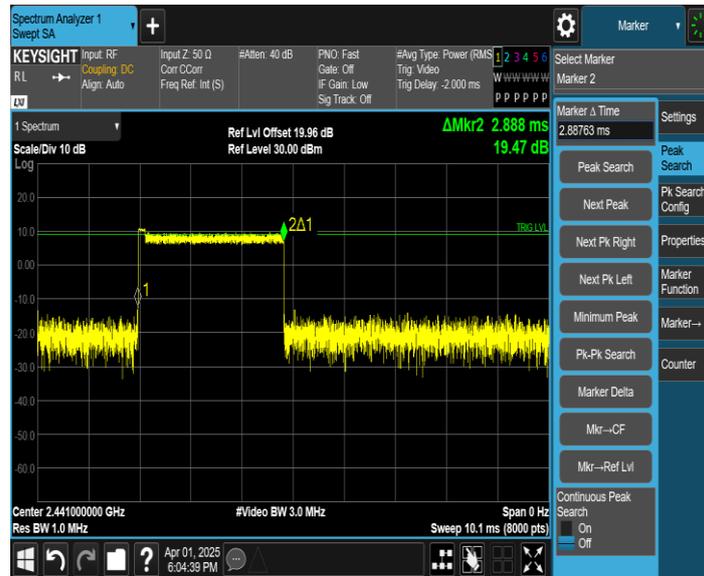
2DH1_Ant1_Hop



2DH3_Ant1_Hop



2DH5_Ant1_Hop



3DH1_Ant1_Hop



3DH3_Ant1_Hop



3DH5_Ant1_Hop





NUMBER OF HOPPING CHANNELS

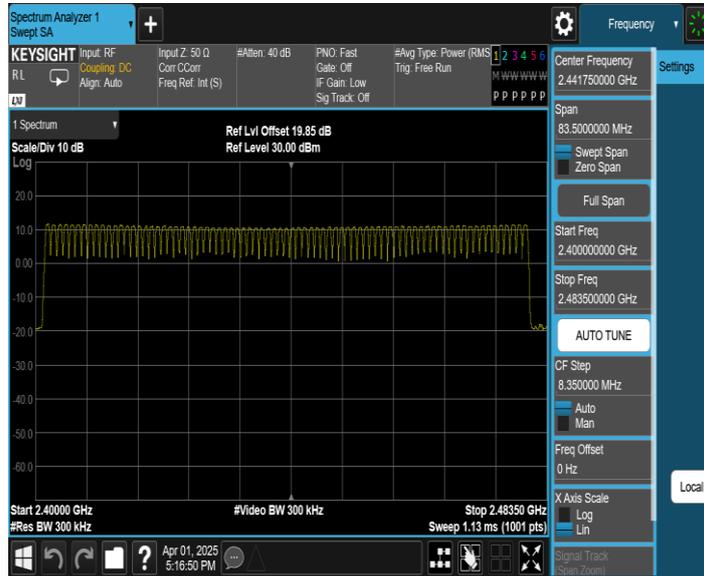
TEST RESULT

TestMode	Antenna	Frequency[MHz]	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

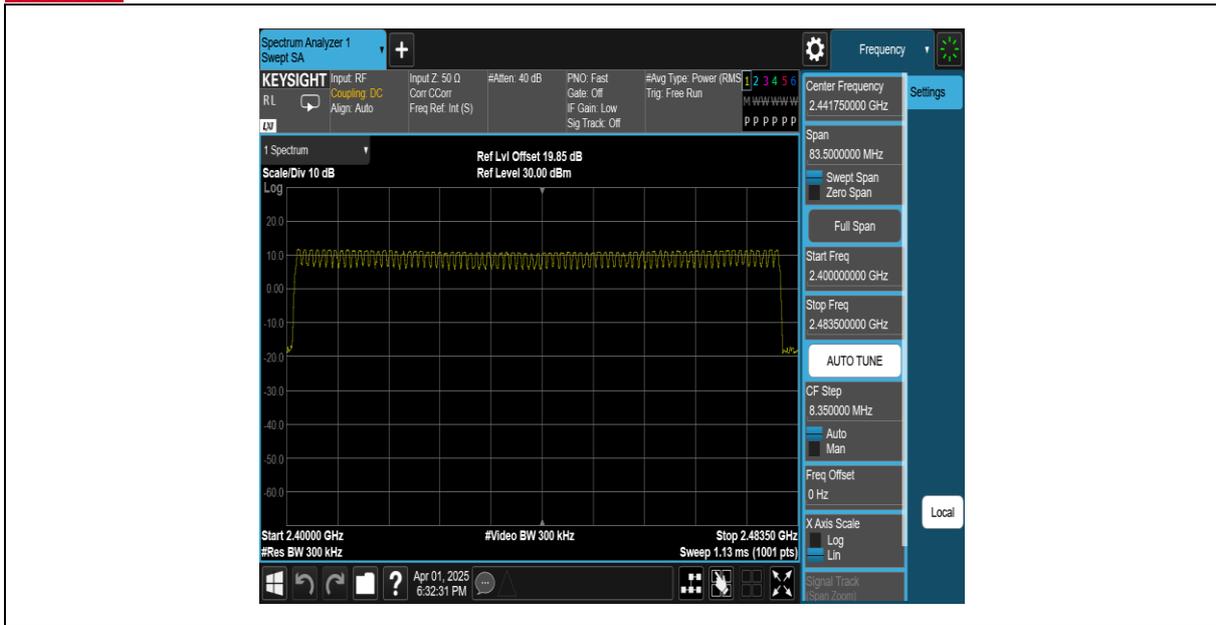
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop





BAND EDGE MEASUREMENTS

TEST RESULT

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	11.81	-29.84	≤-8.19	PASS
		High	2480	11.37	-31.21	≤-8.63	PASS
		Low	Hop_2402	10.79	-30.82	≤-9.21	PASS
		High	Hop_2480	10.92	-31.1	≤-9.08	PASS
2DH5	Ant1	Low	2402	11.82	-31.36	≤-8.18	PASS
		High	2480	10.23	-31.41	≤-9.77	PASS
		Low	Hop_2402	6.37	-31.69	≤-13.64	PASS
		High	Hop_2480	5.88	-31.02	≤-14.12	PASS
3DH5	Ant1	Low	2402	10.37	-31.71	≤-9.63	PASS
		High	2480	9.11	-30.91	≤-10.89	PASS
		Low	Hop_2402	11.29	-31.93	≤-8.71	PASS
		High	Hop_2480	4.41	-31.19	≤-15.59	PASS



TEST GRAPHS

DH5_Ant1_Low_2402



DH5_Ant1_High_2480



DH5_Ant1_Low_Hop_2402