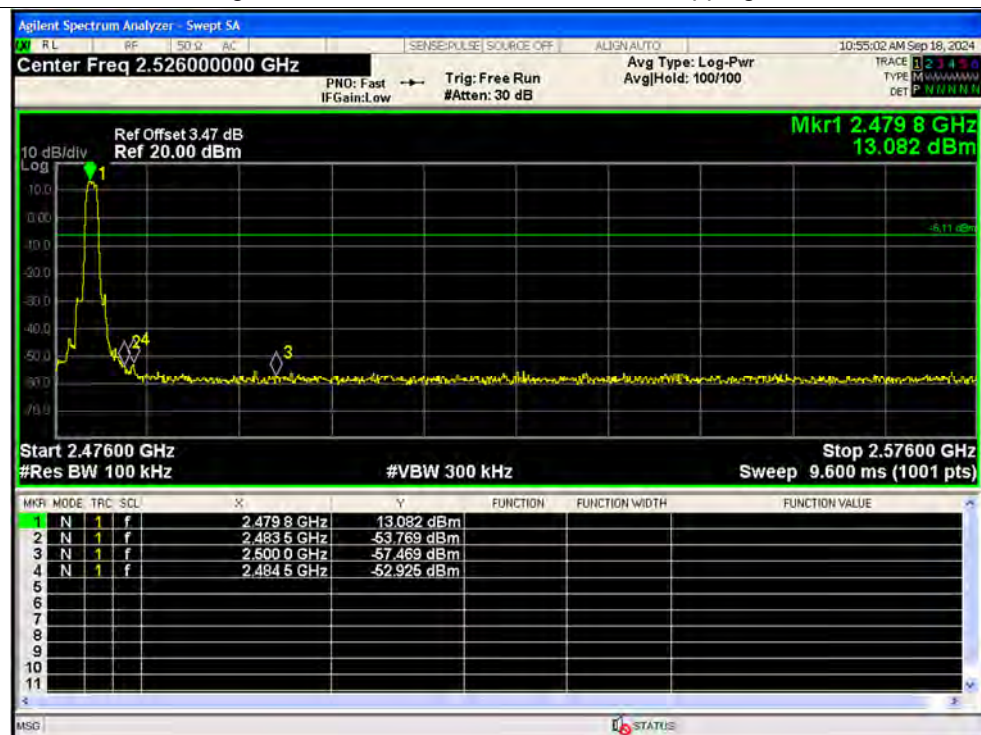


Band Edge NVNT 3-DH5 2480MHz Ant8 No-Hopping Ref



Band Edge NVNT 3-DH5 2480MHz Ant8 No-Hopping Emission

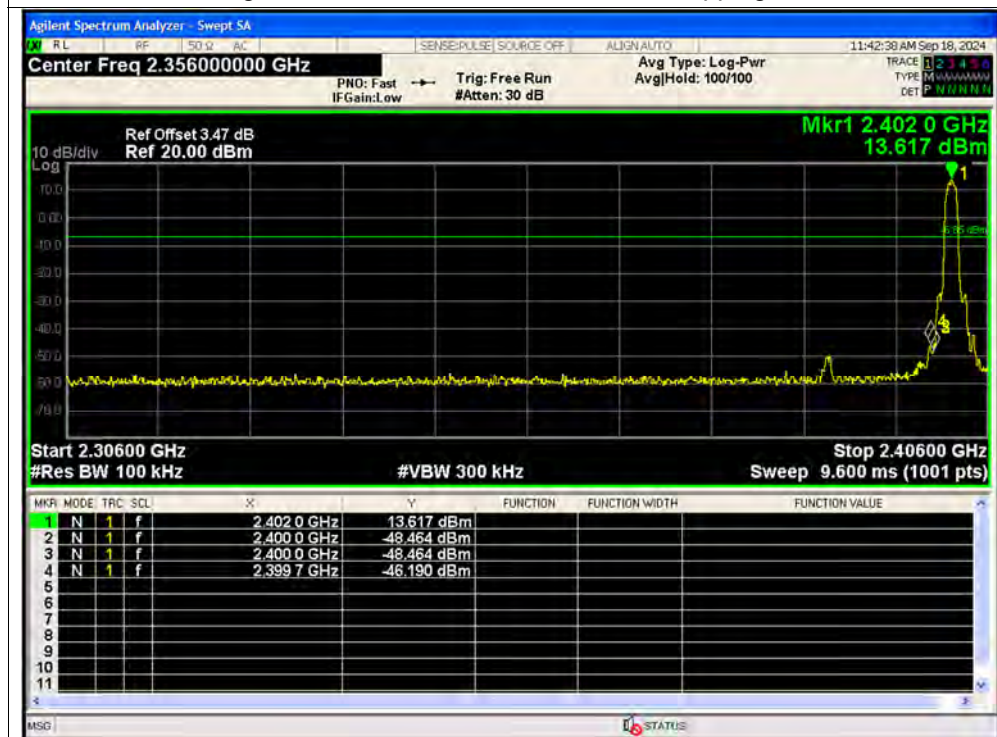




Band Edge NVNT 3-DH5 2402MHz Ant9 No-Hopping Ref



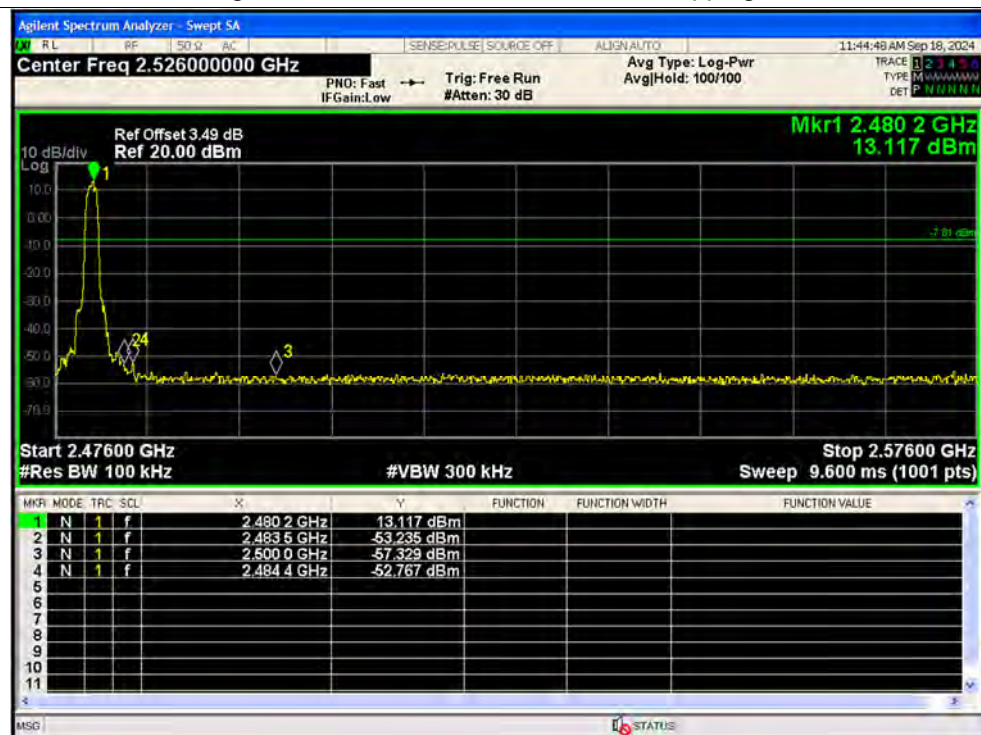
Band Edge NVNT 3-DH5 2402MHz Ant9 No-Hopping Emission



Band Edge NVNT 3-DH5 2480MHz Ant9 No-Hopping Ref



Band Edge NVNT 3-DH5 2480MHz Ant9 No-Hopping Emission

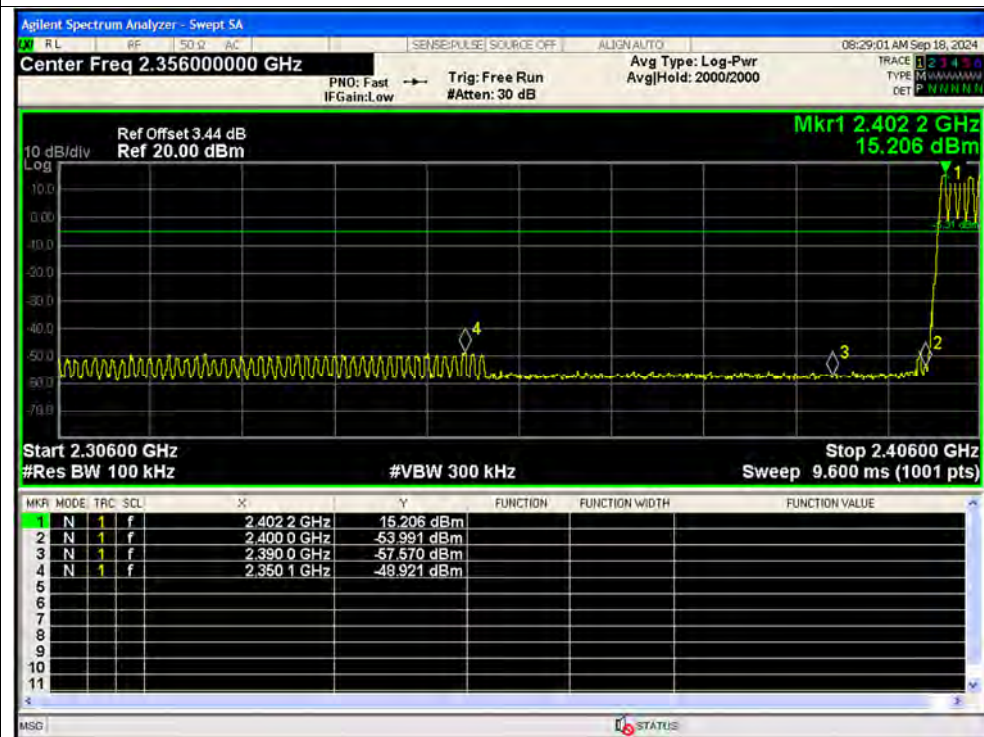


Test Graphs

Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



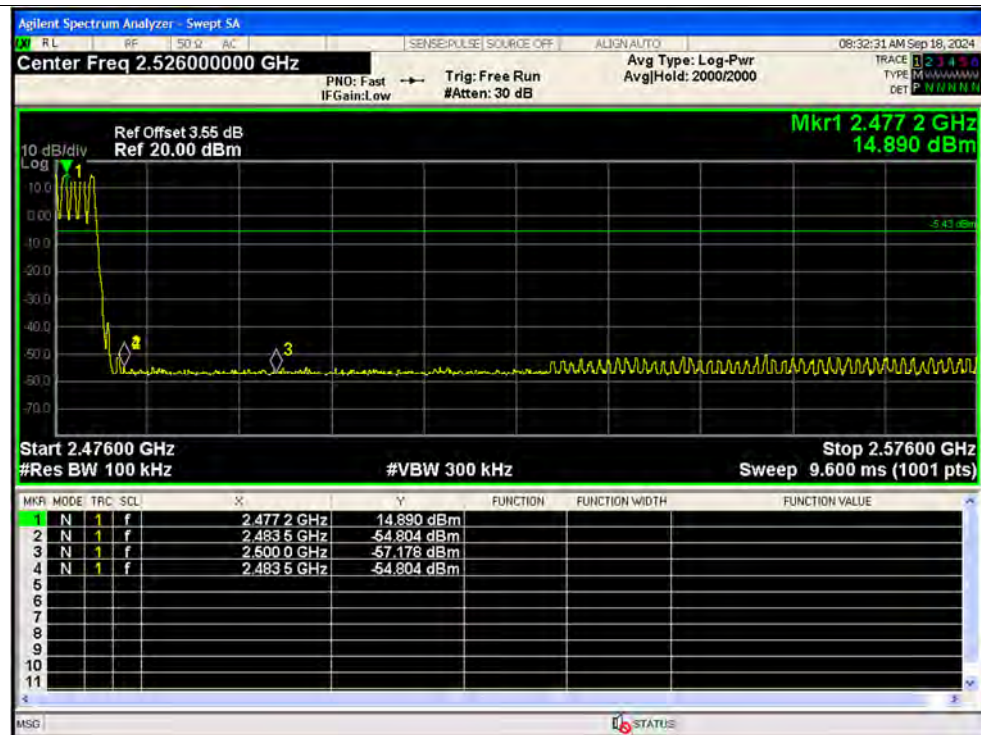
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission

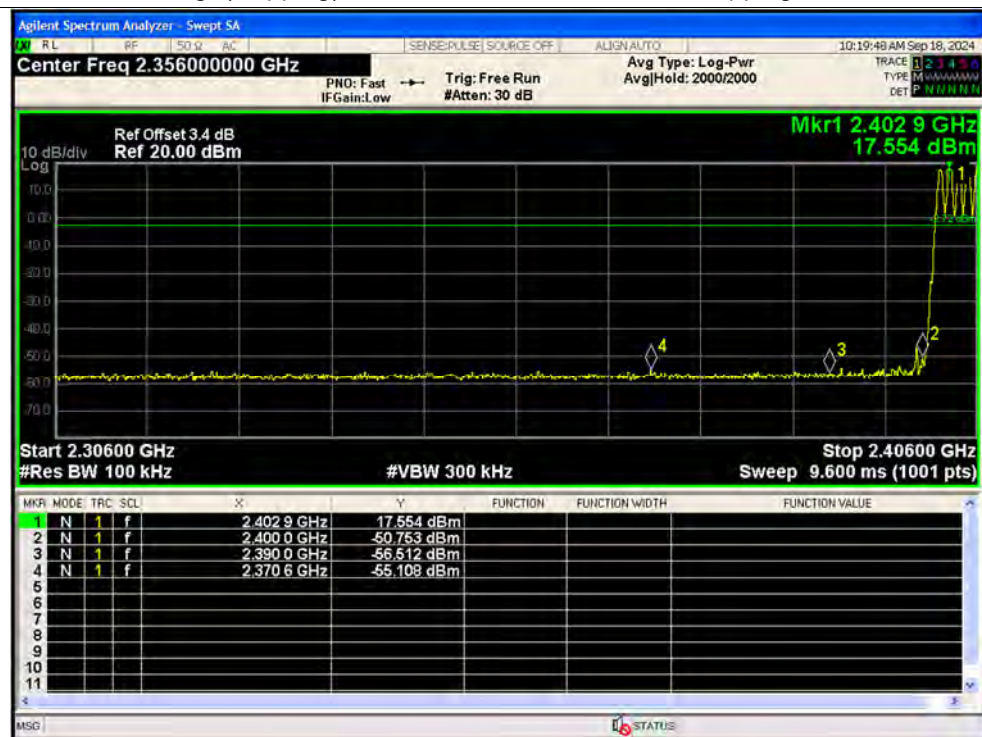




Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant8 Hopping Ref



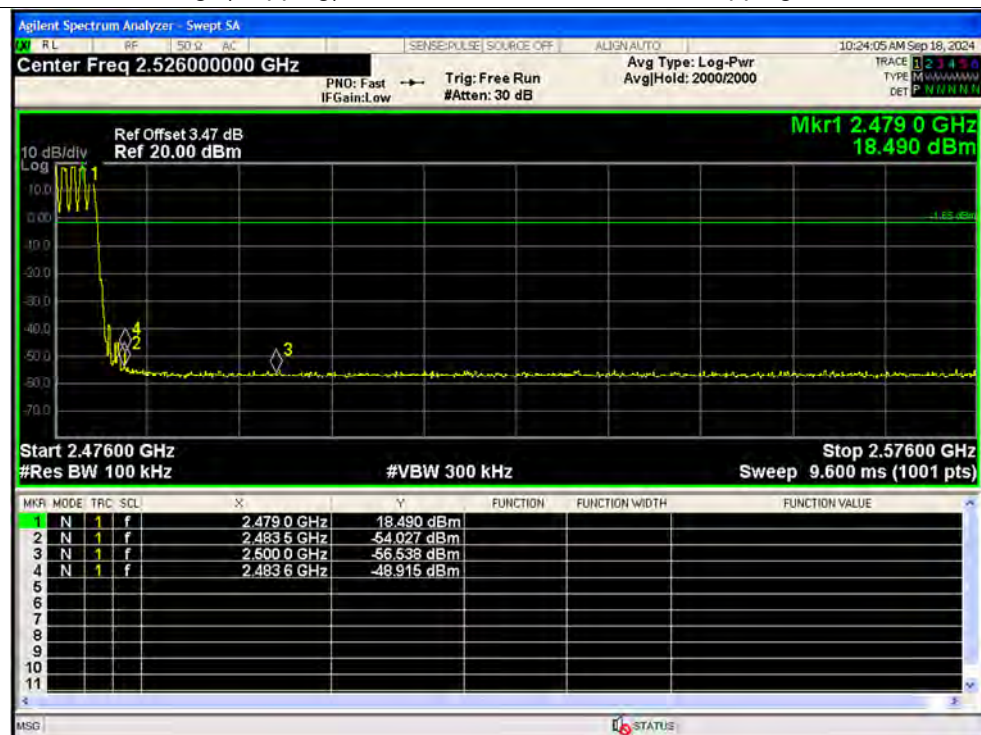
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant8 Hopping Emission



Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant8 Hopping Ref



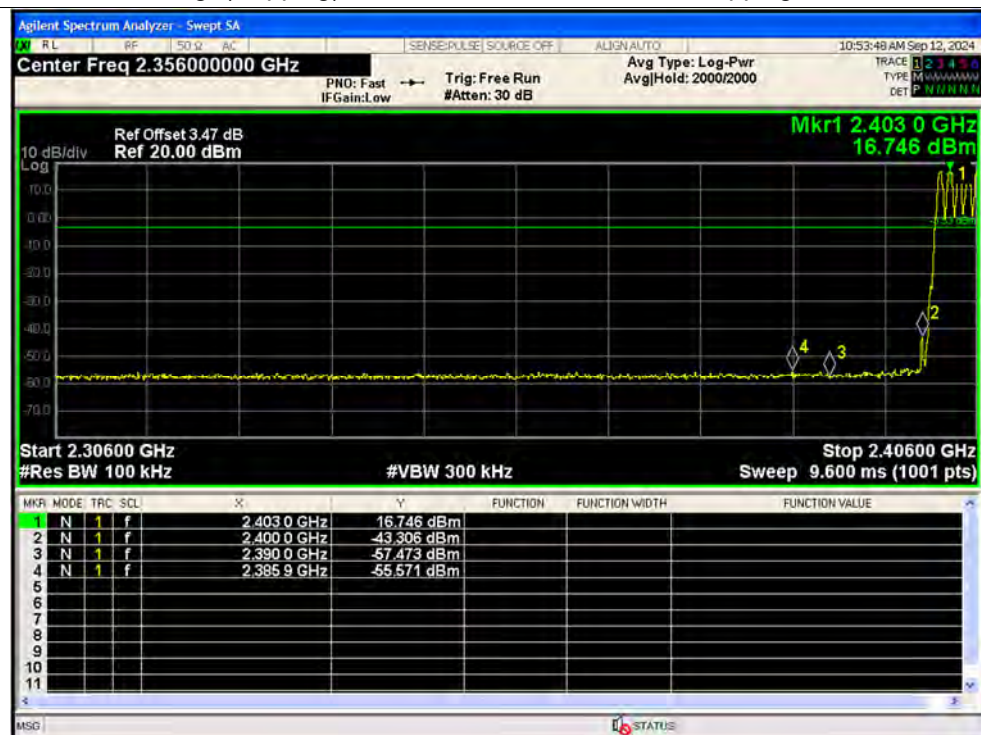
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant8 Hopping Emission



Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant9 Hopping Ref



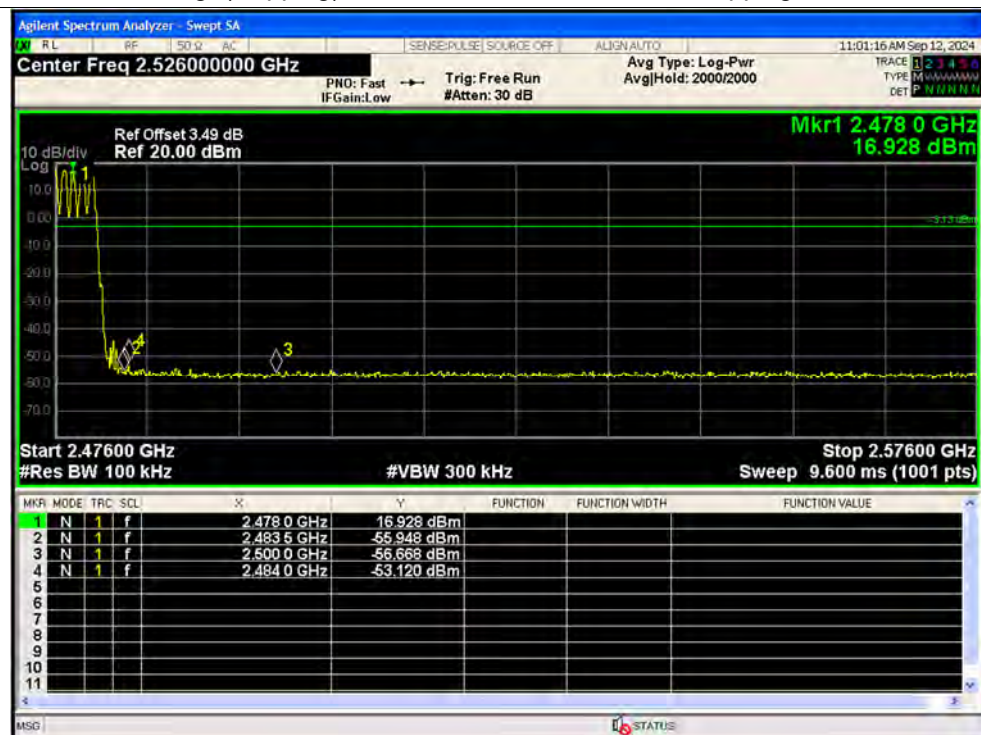
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant9 Hopping Emission



Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant9 Hopping Ref



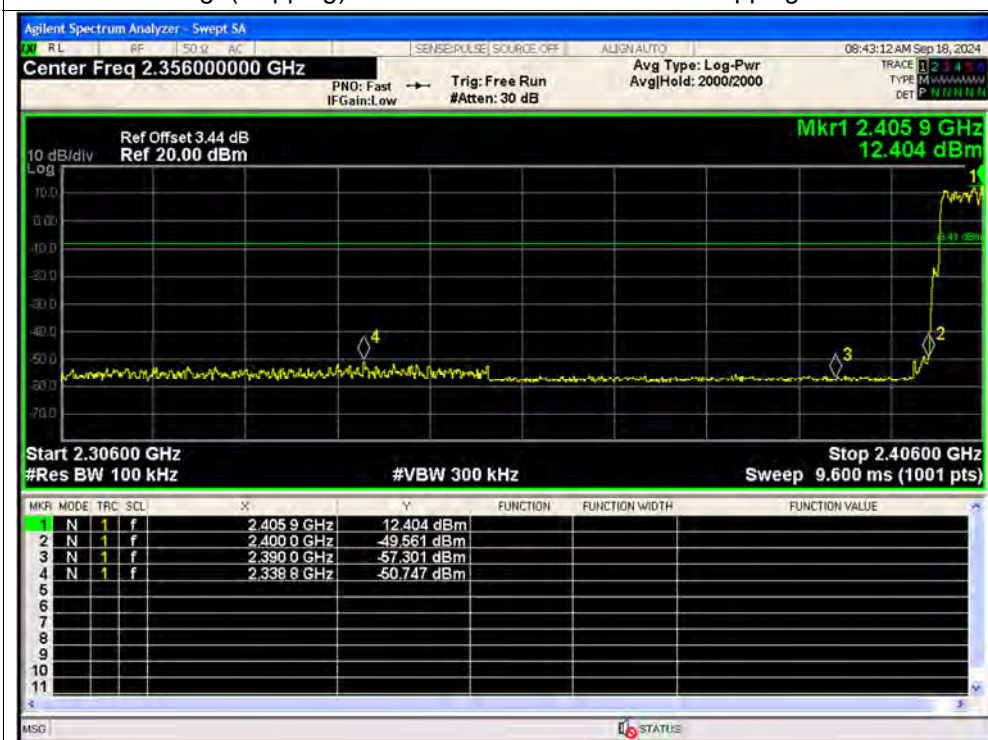
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant9 Hopping Emission



Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



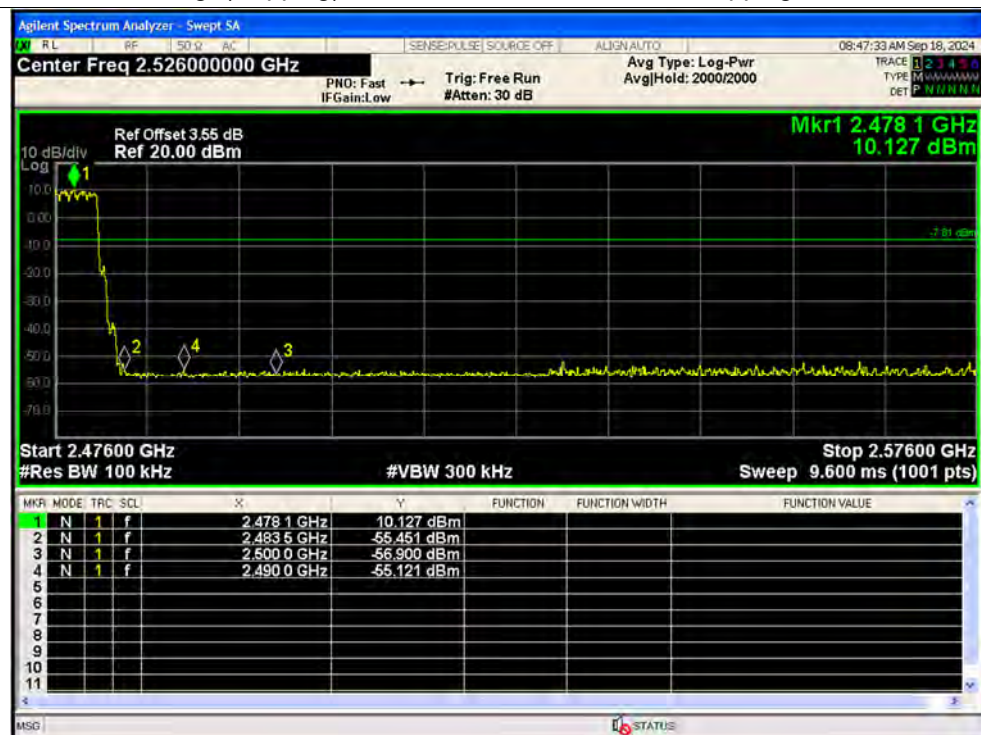
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission

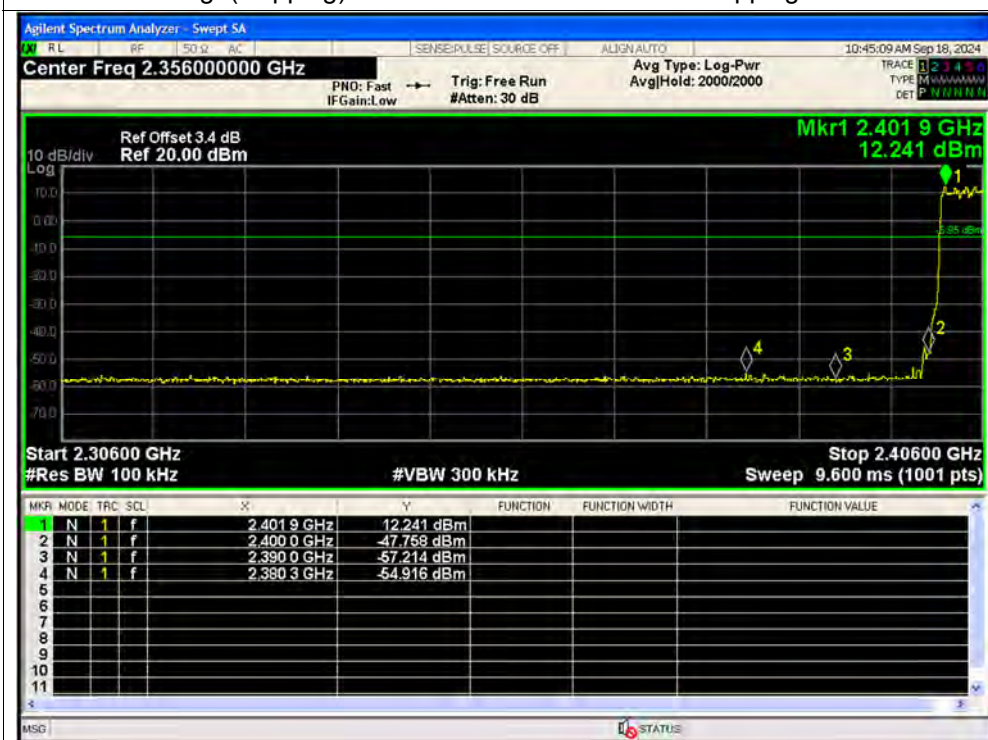




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant8 Hopping Ref



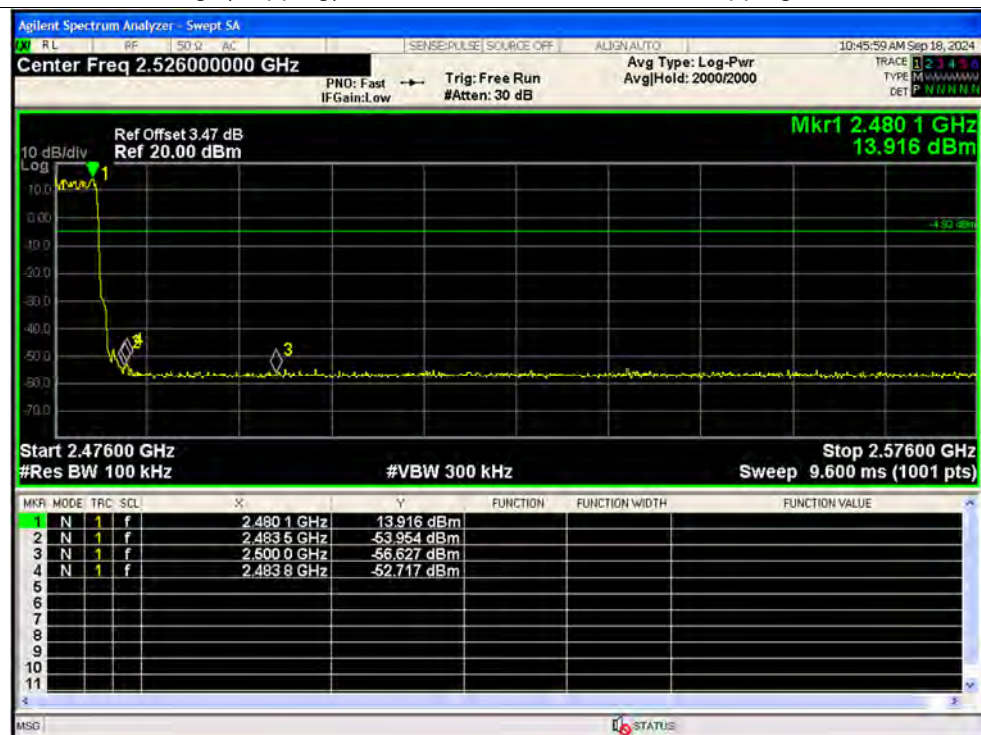
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant8 Hopping Emission



Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant8 Hopping Ref



Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant8 Hopping Emission

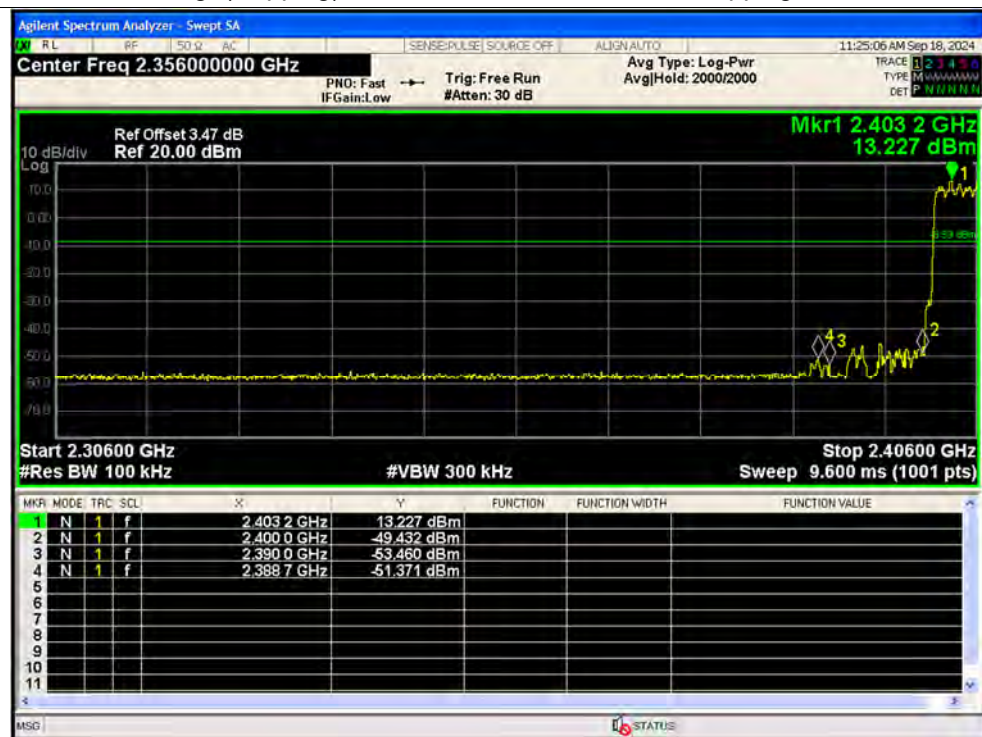




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant9 Hopping Ref



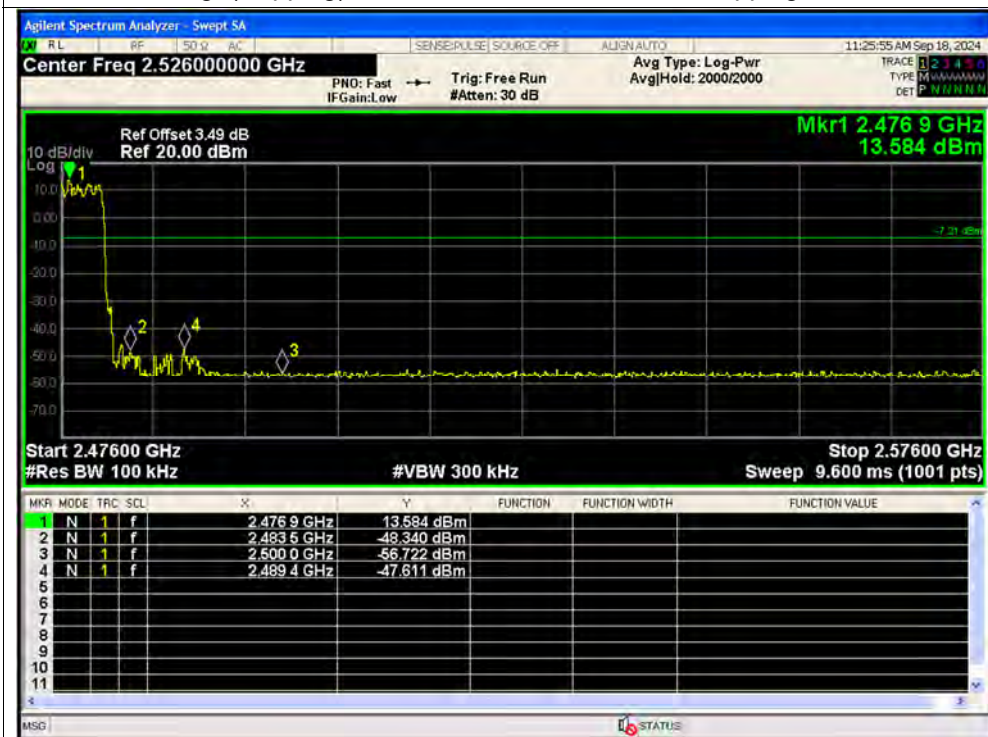
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant9 Hopping Emission



Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant9 Hopping Ref



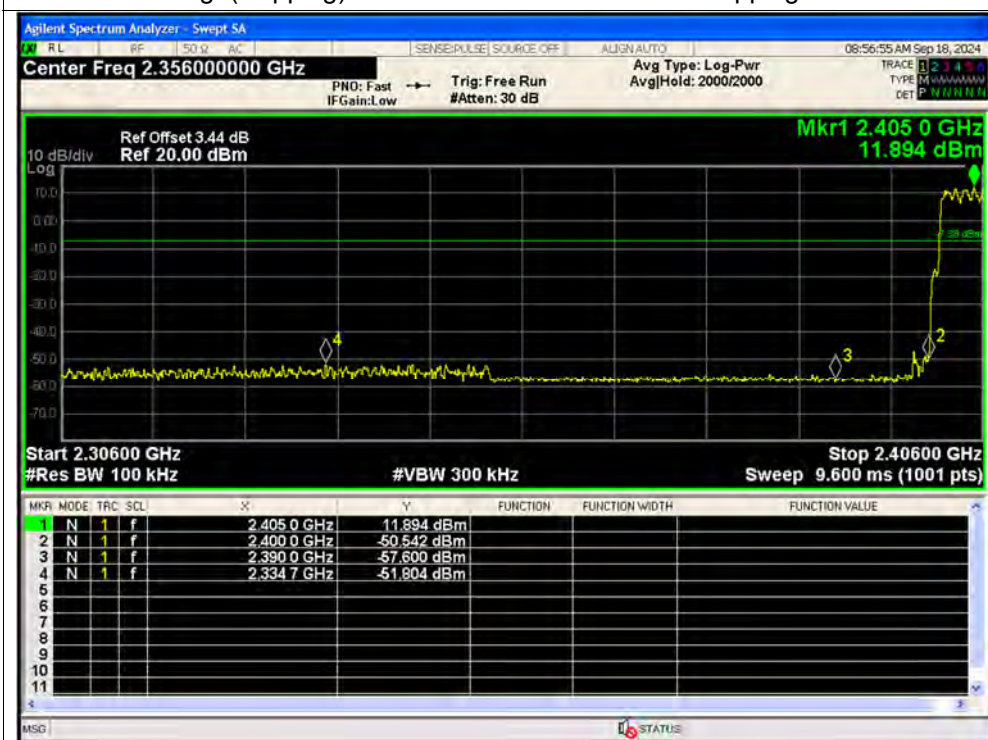
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant9 Hopping Emission



Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



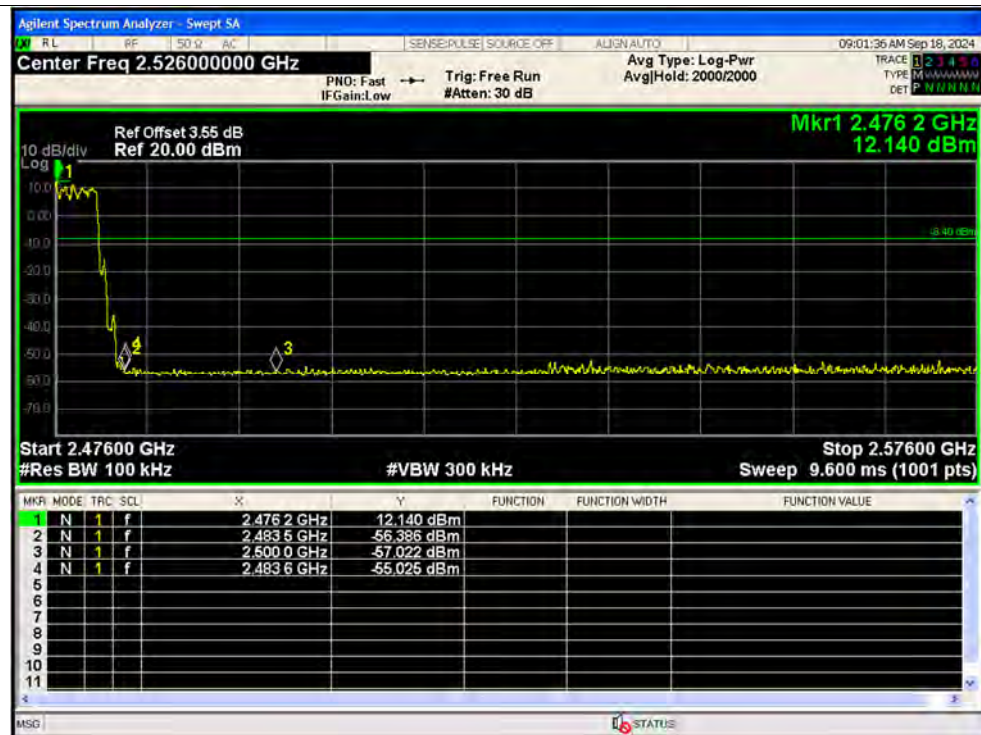
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Ref



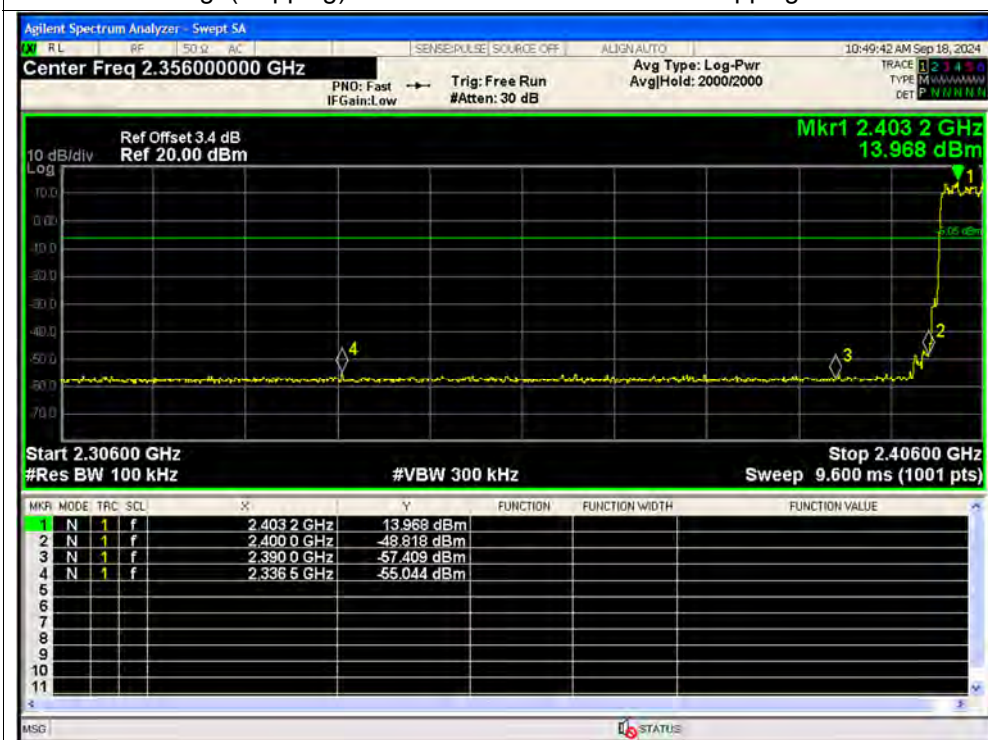
Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant8 Hopping Ref



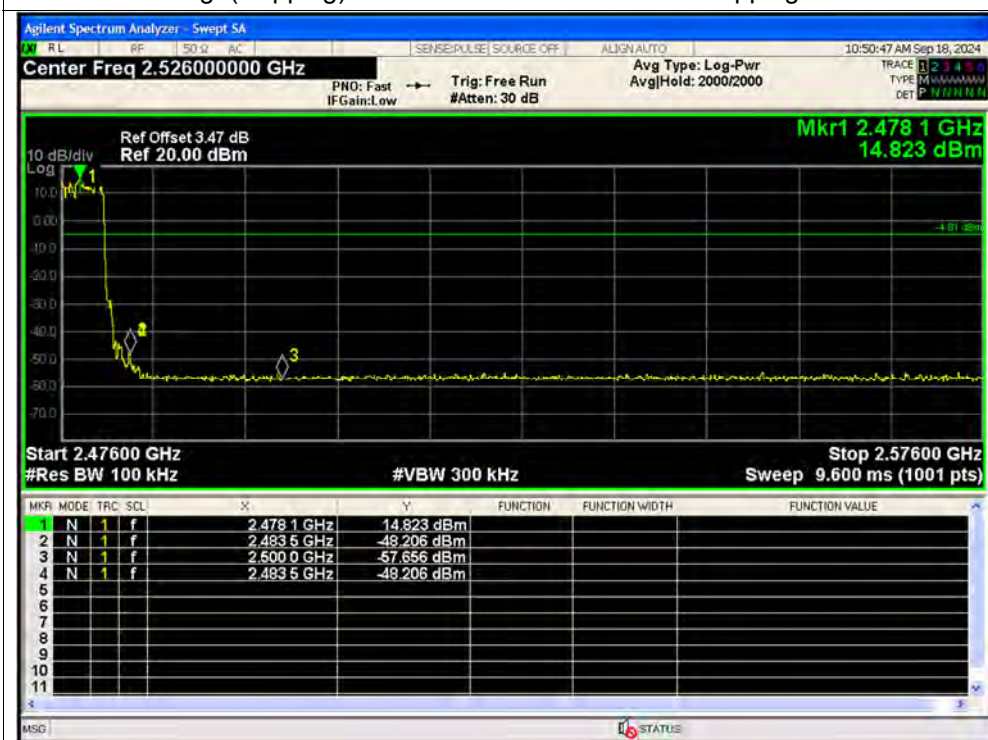
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant8 Hopping Emission



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant8 Hopping Ref



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant8 Hopping Emission

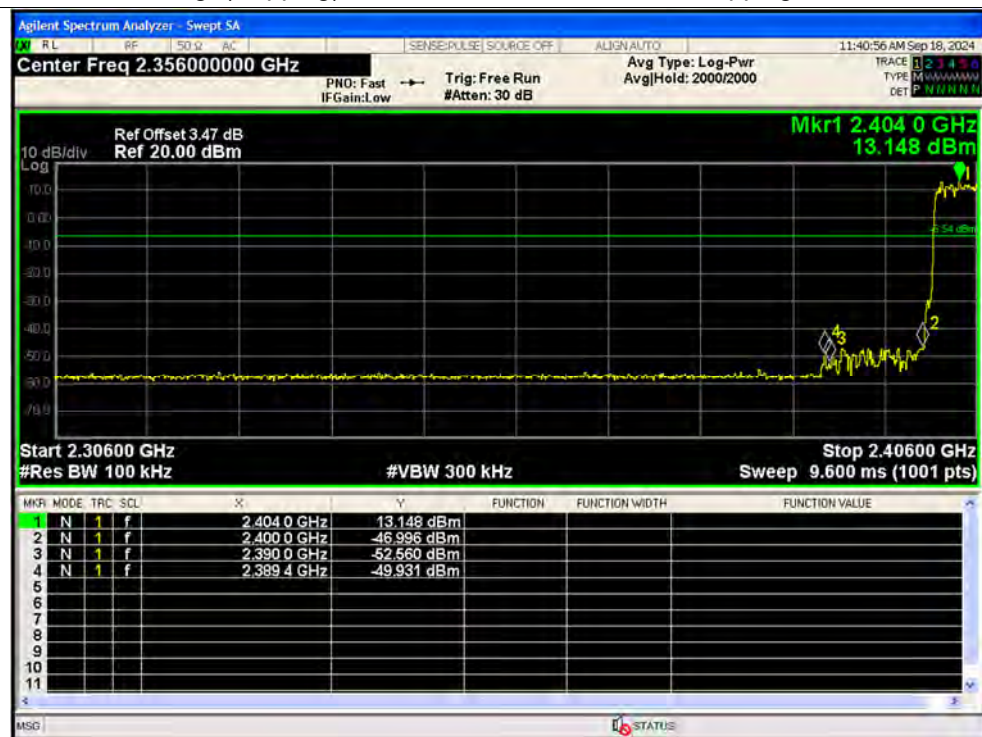




Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant9 Hopping Ref



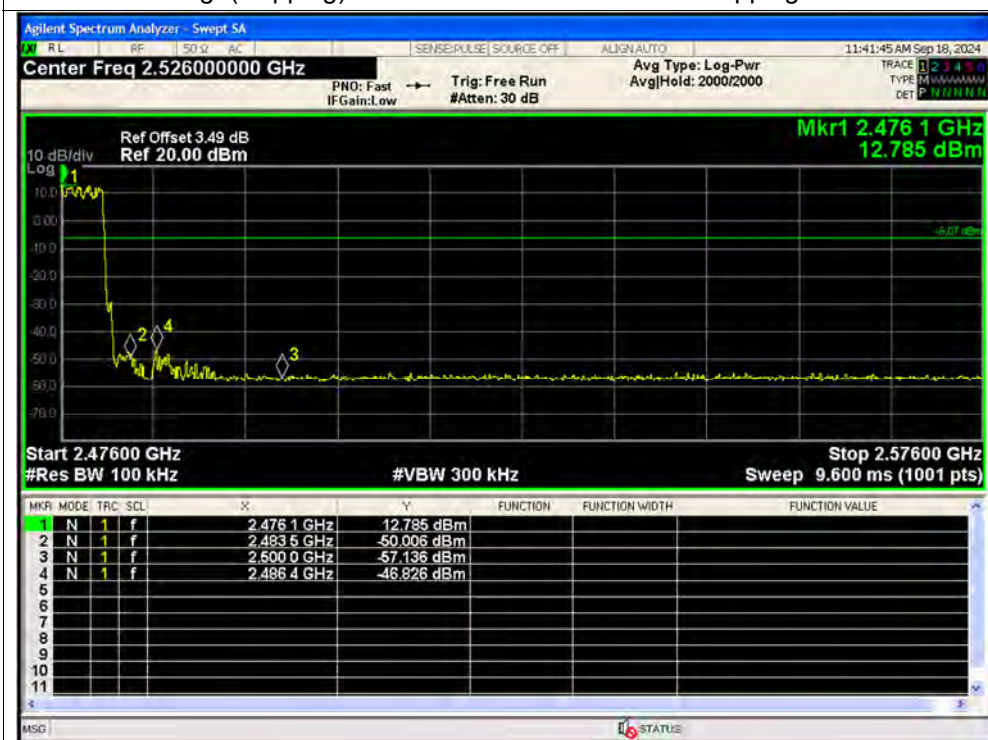
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant9 Hopping Emission



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant9 Hopping Ref



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant9 Hopping Emission





A.10. Conducted Emission

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: EUT + Adapter + Data line + BT TX

Test voltage: AC 120V/60Hz

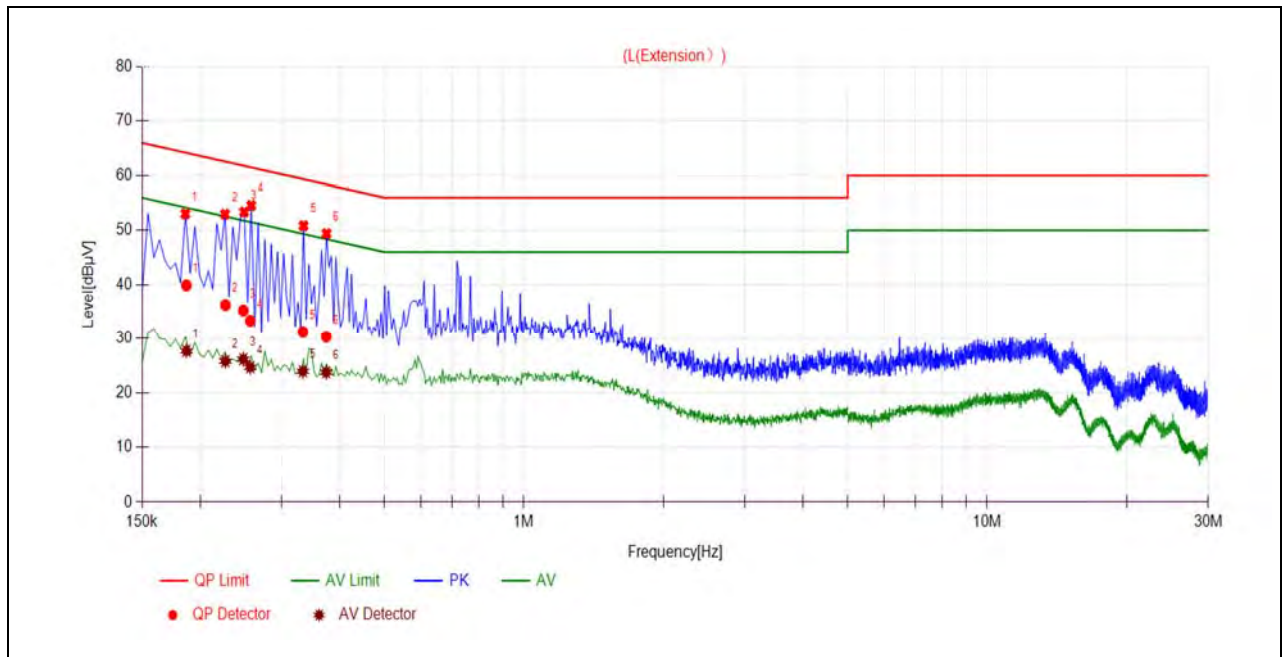
The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V]} = U_R + L_{\text{Cable loss}} \text{ [dB]} + A_{\text{Factor}}$$

U_R : Receiver Reading

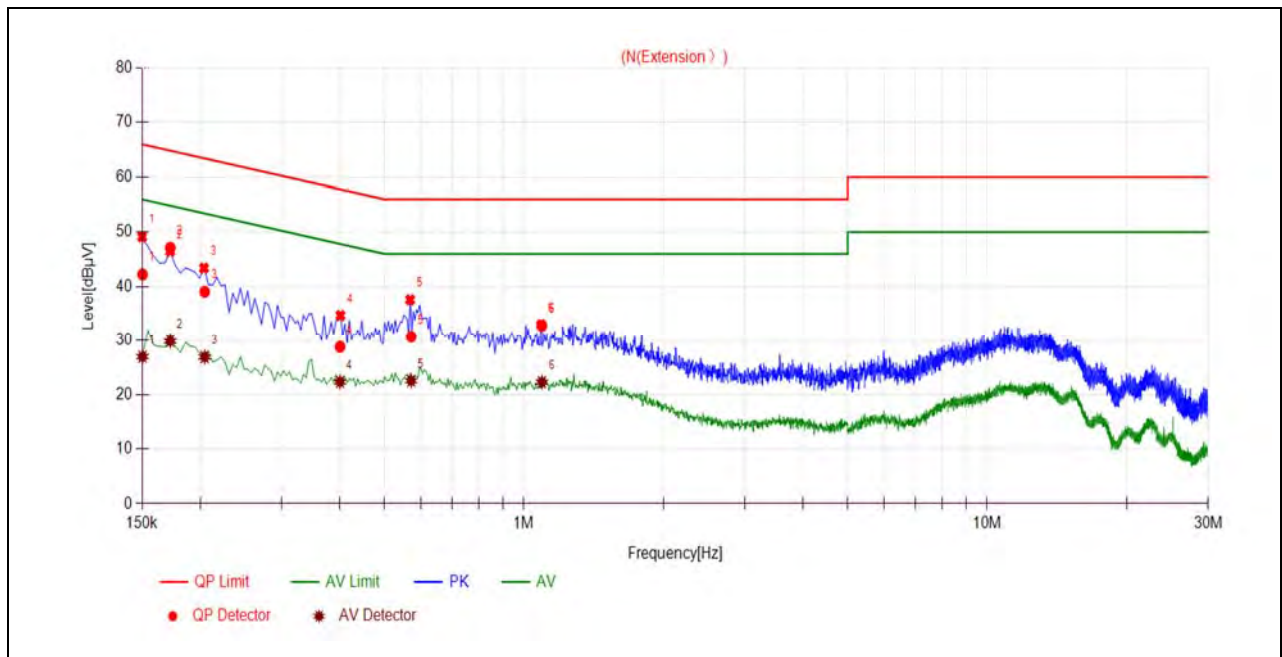
A_{Factor} : Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1869	39.88	27.67	64.17	54.17	Line	PASS
2	0.2269	36.25	25.77	62.56	52.56		PASS
3	0.2480	35.24	26.14	61.83	51.83		PASS
4	0.2567	33.33	24.67	61.54	51.54		PASS
5	0.3335	31.23	23.92	59.36	49.36		PASS
6	0.3745	30.33	23.71	58.40	48.40		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1503	42.23	26.98	65.98	55.98	Neutral	PASS
2	0.1725	47.12	29.87	64.84	54.84		PASS
3	0.2047	39.07	26.89	63.42	53.42		PASS
4	0.4011	28.81	22.31	57.83	47.83		PASS
5	0.5713	30.71	22.52	56.00	46.00		PASS
6	1.0939	32.82	22.27	56.00	46.00		PASS

**A.11. Restricted Frequency Bands**

The lowest and highest channels are tested to verify the Restricted Frequency Bands.

The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V/m]} = U_R + A_T + A_{\text{Factor}} \text{ [dB]}; A_T = L_{\text{Cable loss}} \text{ [dB]} - G_{\text{preamp}} \text{ [dB]}$$

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

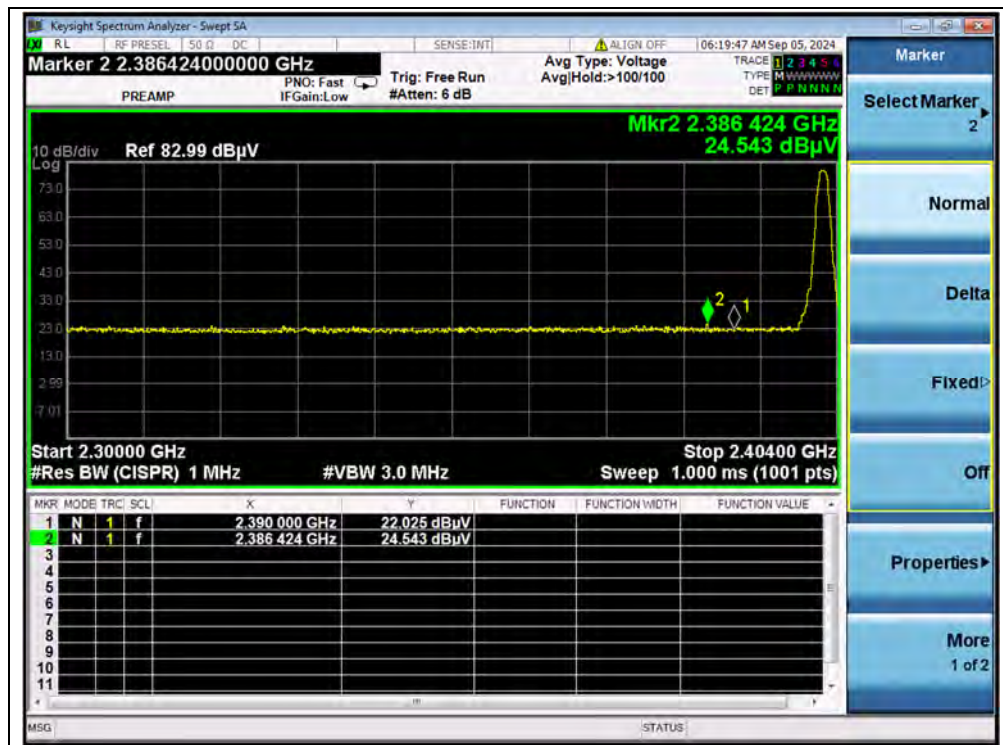
A_{Factor} : Antenna Factor at 3m

Note 1: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (horizontal) was recorded in this test report.

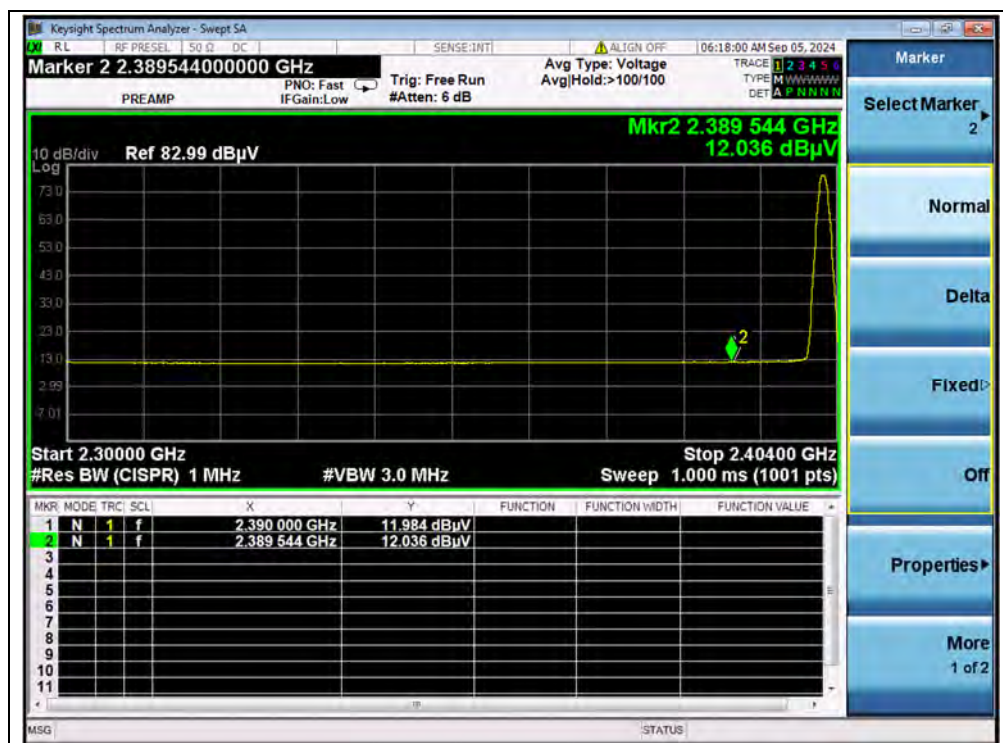
Note 2: All test modes were considered and evaluated respectively by performing full test, only the worst data were recorded.

GFSK Mode

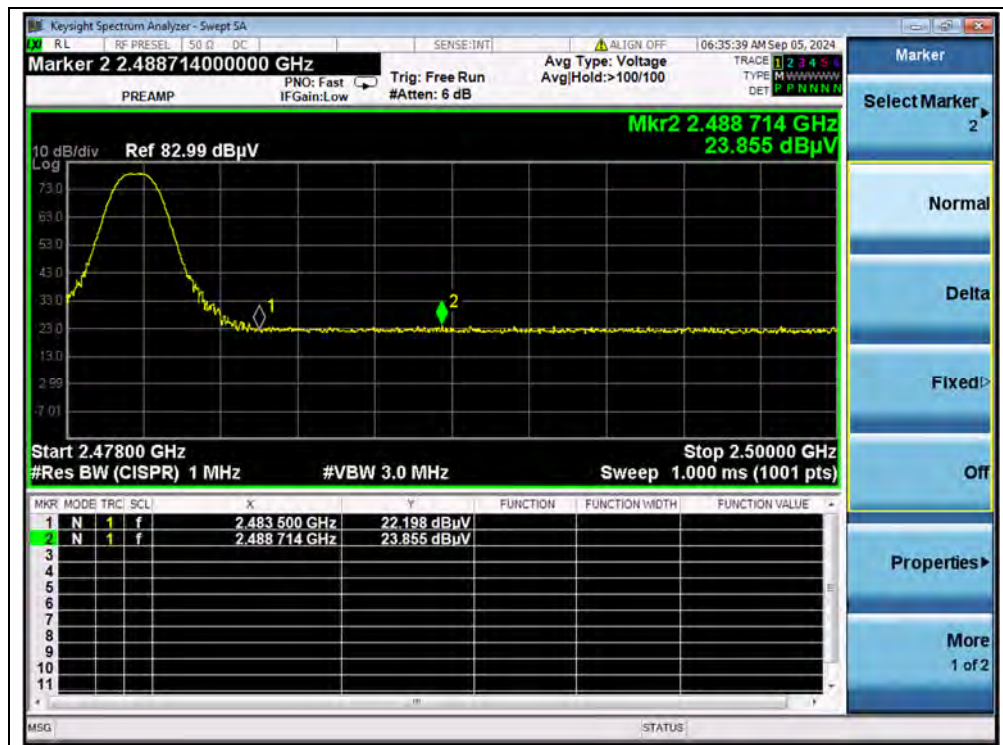
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
0	2386.42	PK	24.54	6.74	27.20	58.48	74	PASS
0	2389.54	AV	12.04	6.74	27.20	45.98	54	PASS
78	2488.71	PK	23.86	6.74	27.20	57.80	74	PASS
78	2483.70	AV	12.44	6.74	27.20	46.38	54	PASS



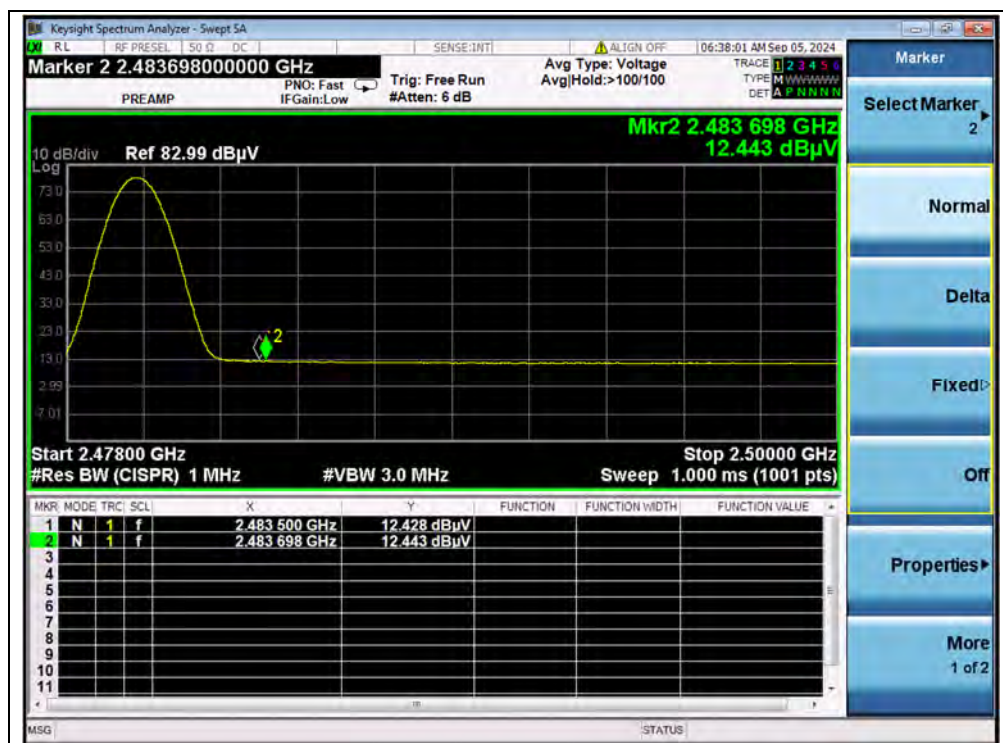
(PEAK, Channel 0, GFSK)



(AVERAGE, Channel 0, GFSK)



(PEAK, Channel 78, GFSK)

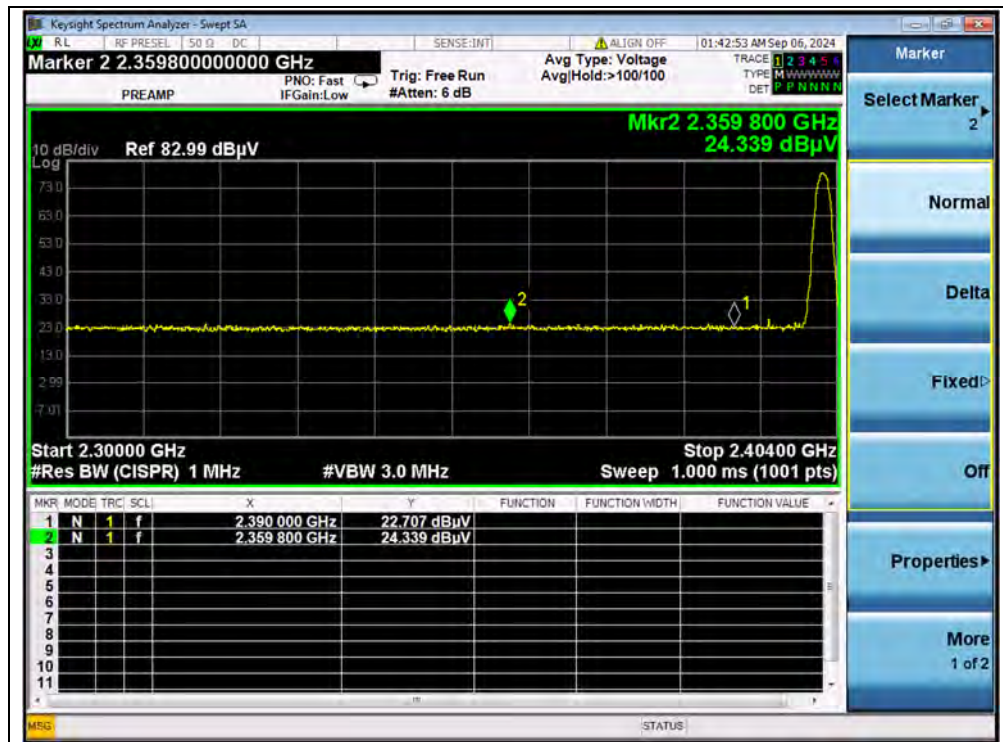


(AVERAGE, Channel 78, GFSK)

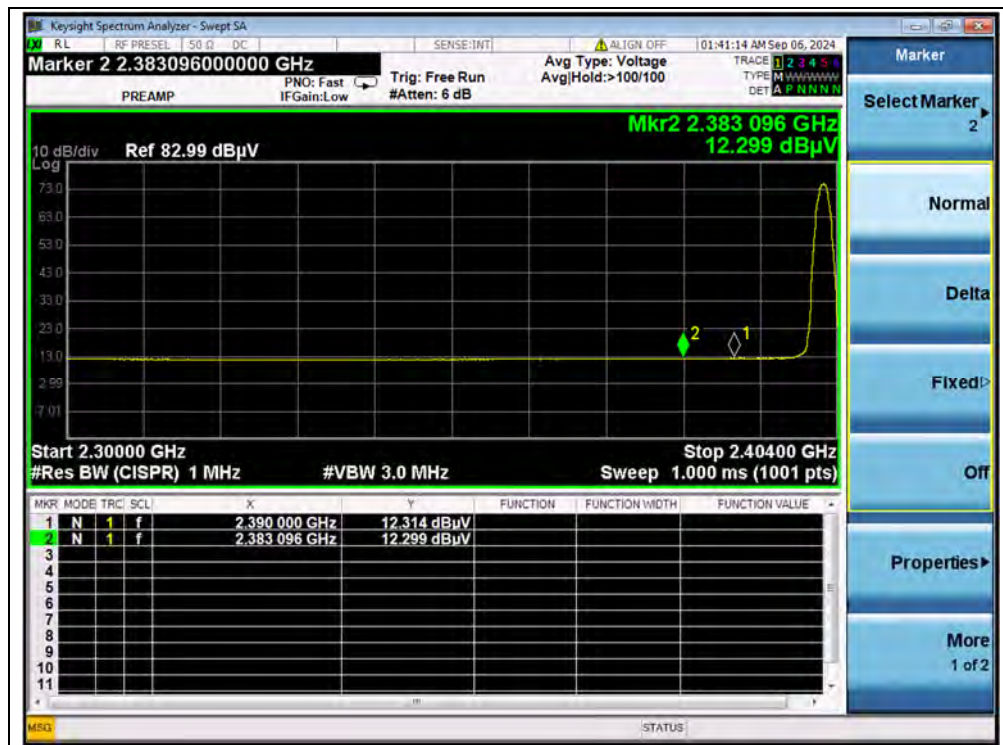


8-DPSK Mode

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
0	2359.80	PK	24.34	6.74	27.20	58.28	74	PASS
0	2390.00	AV	12.31	6.74	27.20	46.25	54	PASS
78	2485.44	PK	24.18	6.74	27.20	58.12	74	PASS
78	2483.74	AV	12.51	6.74	27.20	46.45	54	PASS



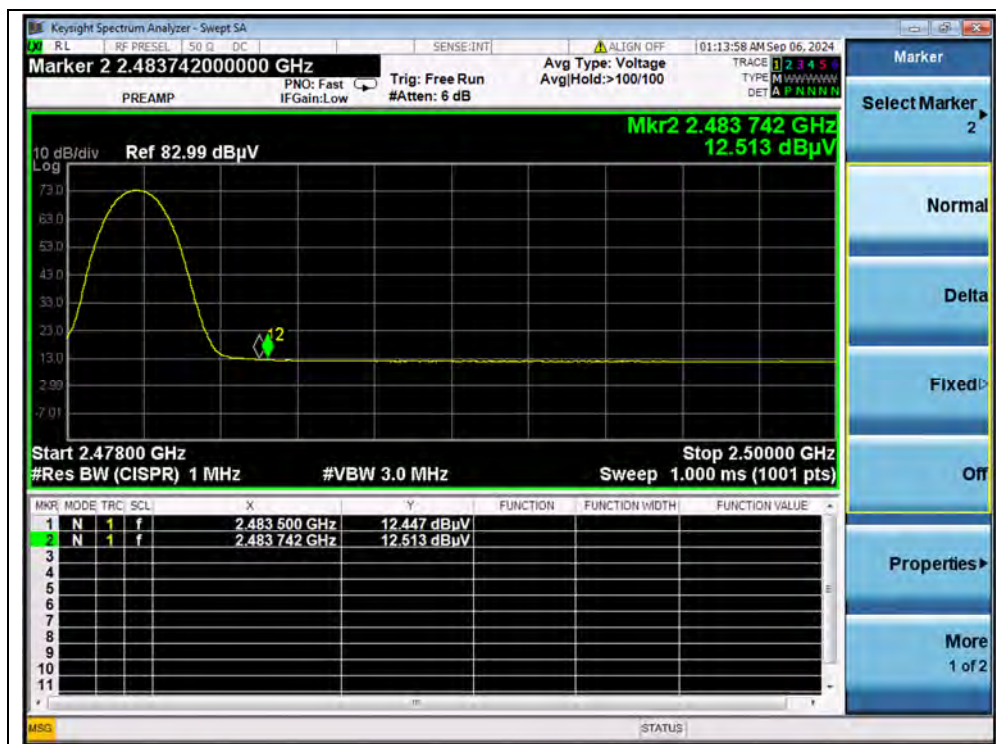
(PEAK, Channel 0, 8-DPSK)



(AVERAGE, Channel 0, 8-DPSK)



(PEAK, Channel 78, 8-DPSK)



(AVERAGE, Channel 78, 8-DPSK)



A.12. Radiated Emission

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

$$E [\text{dB}\mu\text{V/m}] = U_R + A_T + A_{\text{Factor}} [\text{dB}]; A_T = L_{\text{Cable loss}} [\text{dB}] - G_{\text{preamp}} [\text{dB}]$$

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

A_{Factor} : Antenna Factor at 3m

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note3: For the frequency, which started from 18GHz to 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 4: All test modes were considered and evaluated respectively by performing full test, only the worst data were recorded.

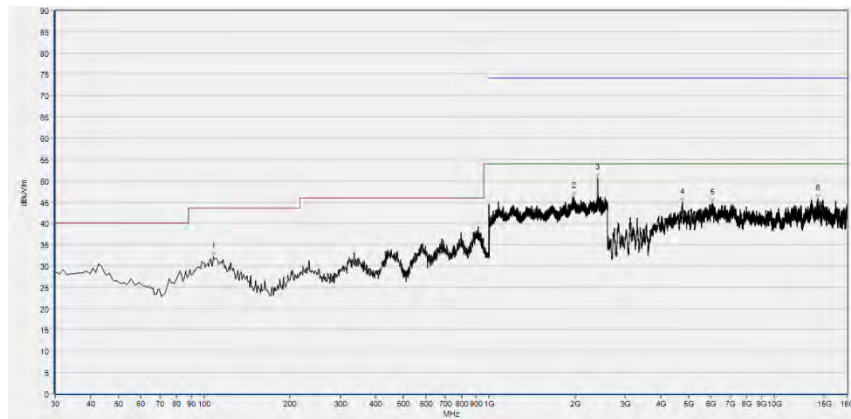
Field strength of fundamental:

Frequency (MHz)	Reading_Peak (dB μ V/m)	Antenna Factor (dB)	Path Loss (dB)	Final_Peak (dB μ V/m)	Antenna Polarity
2480.14	65.53	27.20	6.74	99.47	Horizontal

The field strength (the lowest) of fundamenta is more than 20dB higher than the unwanted emissions, in accordance with FCC part 15.215(b).

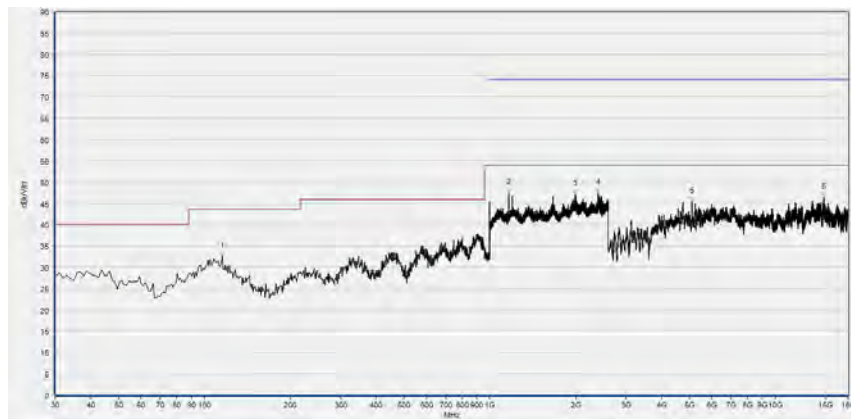
**GFSK Mode**

Plots for Channel 0



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
107.600	32.14	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1981.333	46.33	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2401.600	50.68	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4743.680	44.99	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
6058.840	44.76	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
14190.040	45.80	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

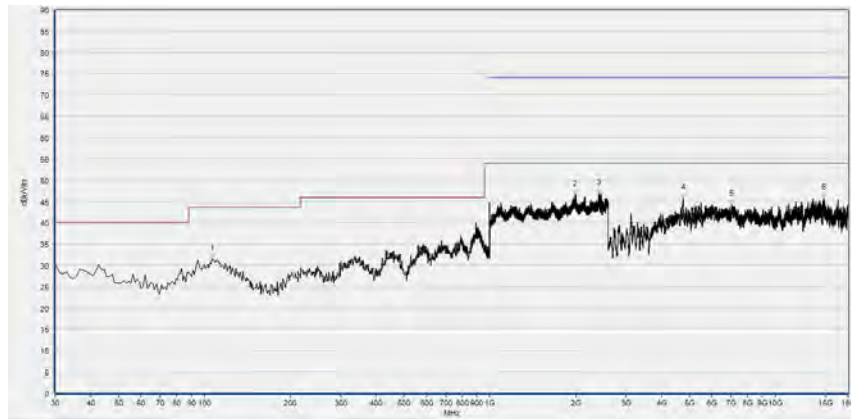


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
115.360	32.45	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1166.400	47.38	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1993.067	47.02	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
2401.067	47.44	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5107.120	45.41	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
14778.320	46.37	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

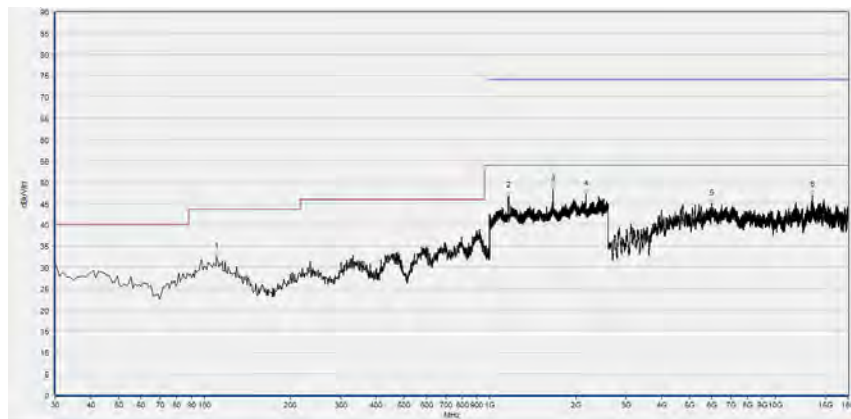


Plot for Channel 39



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
106.630	31.58	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1995.733	46.60	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2408.533	46.87	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4749.840	45.67	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
7044.440	44.32	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
14787.560	45.75	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

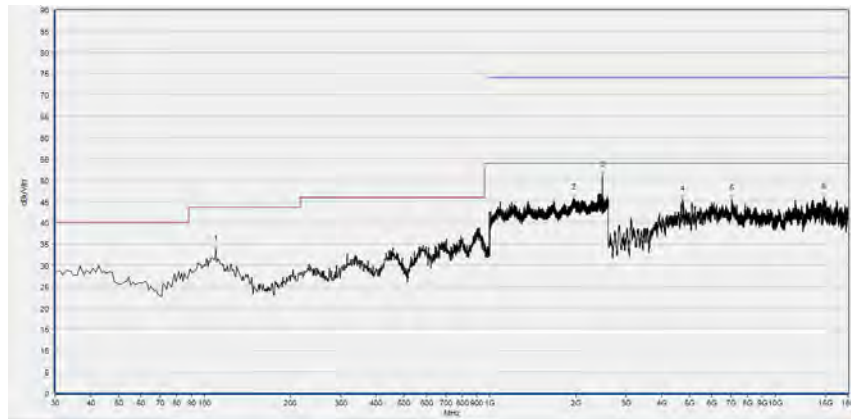


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
110.510	32.41	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1165.333	46.79	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1662.933	48.20	N/A	35.51	74.00	N/A	54.00	Horizontal	PASS
2166.400	47.17	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
6000.320	44.90	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
13484.720	46.95	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Vertical, 30MHz to 18GHz)

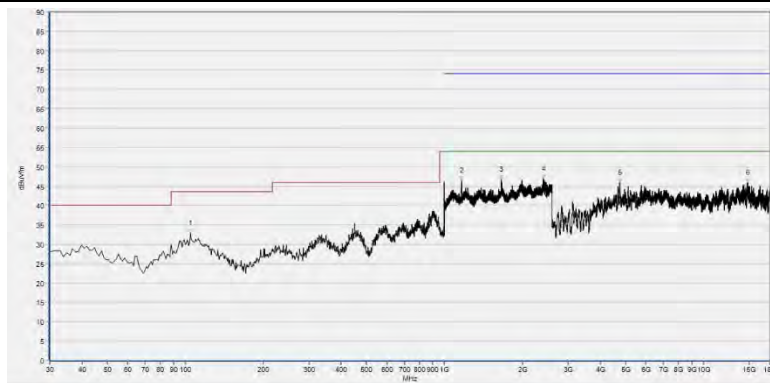


Plot for Channel 78



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
109.540	33.67	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1971.200	45.71	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2479.467	51.04	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4740.600	45.41	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
7032.120	45.63	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
14806.040	45.96	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
104.690	32.90	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1165.333	46.40	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1659.200	46.75	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
2413.867	46.98	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4743.680	45.91	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
14759.840	45.85	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

END OF REPORT