

9.6 CONDUCTED SUPRIOUS EMISSION

9.6.1 Applicable Standard

According to FCC Part 15.247(d) and KDB 558074 D01 15.247 MEAS GUIDANCE v05r02

9.6.2 Conformance Limit

According to FCC Part 15.247(d):

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted, provided the transmitter demonstrates compliance with the peak conducted power limits.

9.6.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

9.6.4 Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer

■ Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to DSS channel center frequency.

Set Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel.

Set the RBW = 100 kHz. Set the VBW \geq 3 x RBW.

Set Detector = peak. Set Sweep time = auto couple.

Set Trace mode = max hold. Allow trace to fully stabilize.

Use the peak marker function to determine the maximum Maximum conducted level.

Note that the channel found to contain the maximum conducted level can be used to establish the reference level.

■ Band-edge Compliance of RF Conducted Emissions

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation

Set RBW \geq 1% of the span=100kHz Set VBW \geq RBW

Set Sweep = auto Set Detector function = peak Set Trace = max hold

Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section.

Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.

■ Conducted Spurious RF Conducted Emission

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic.(30MHz to 25GHz). Set RBW = 100 kHz Set VBW \geq RBW

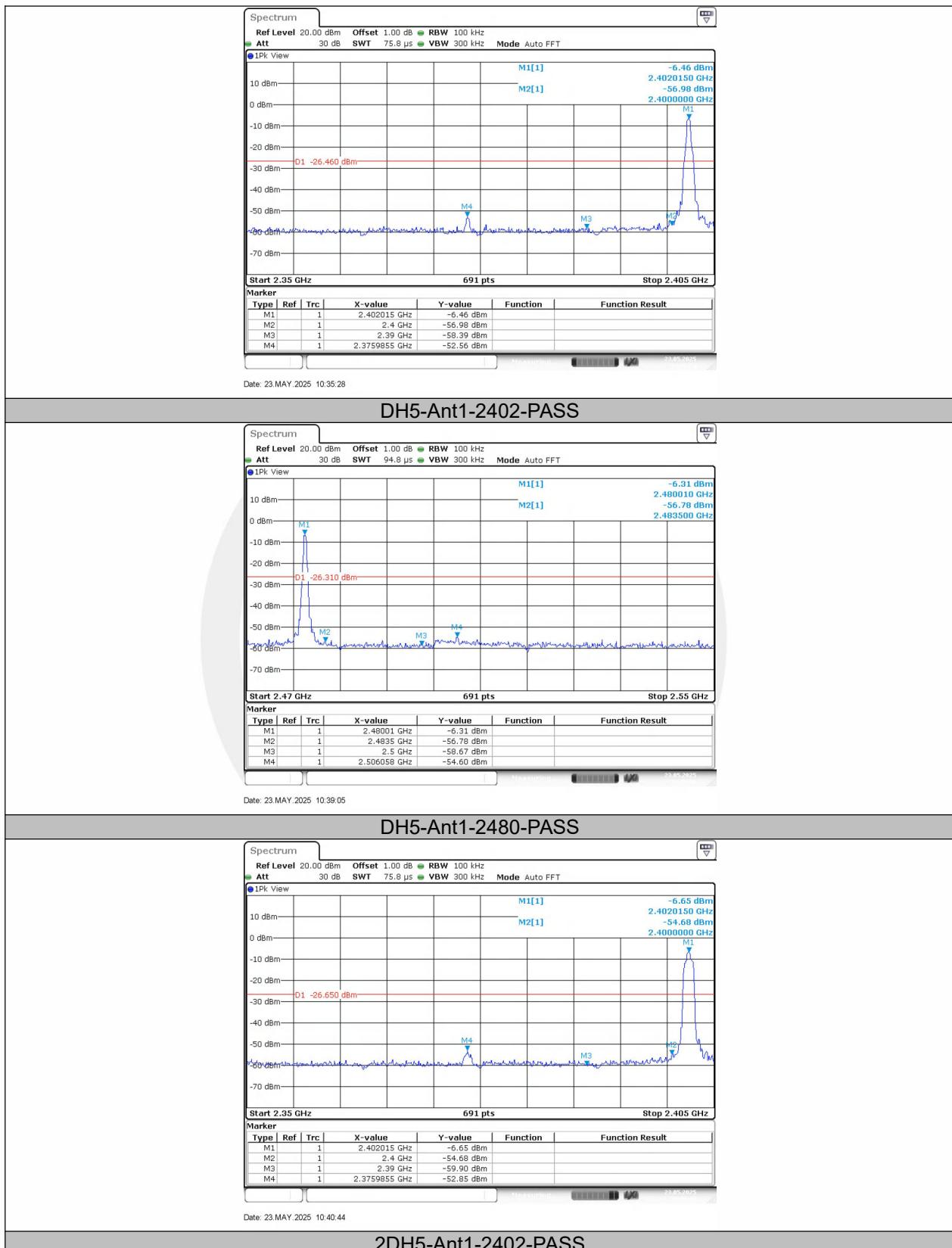
Set Sweep = auto Set Detector function = peak Set Trace = max hold

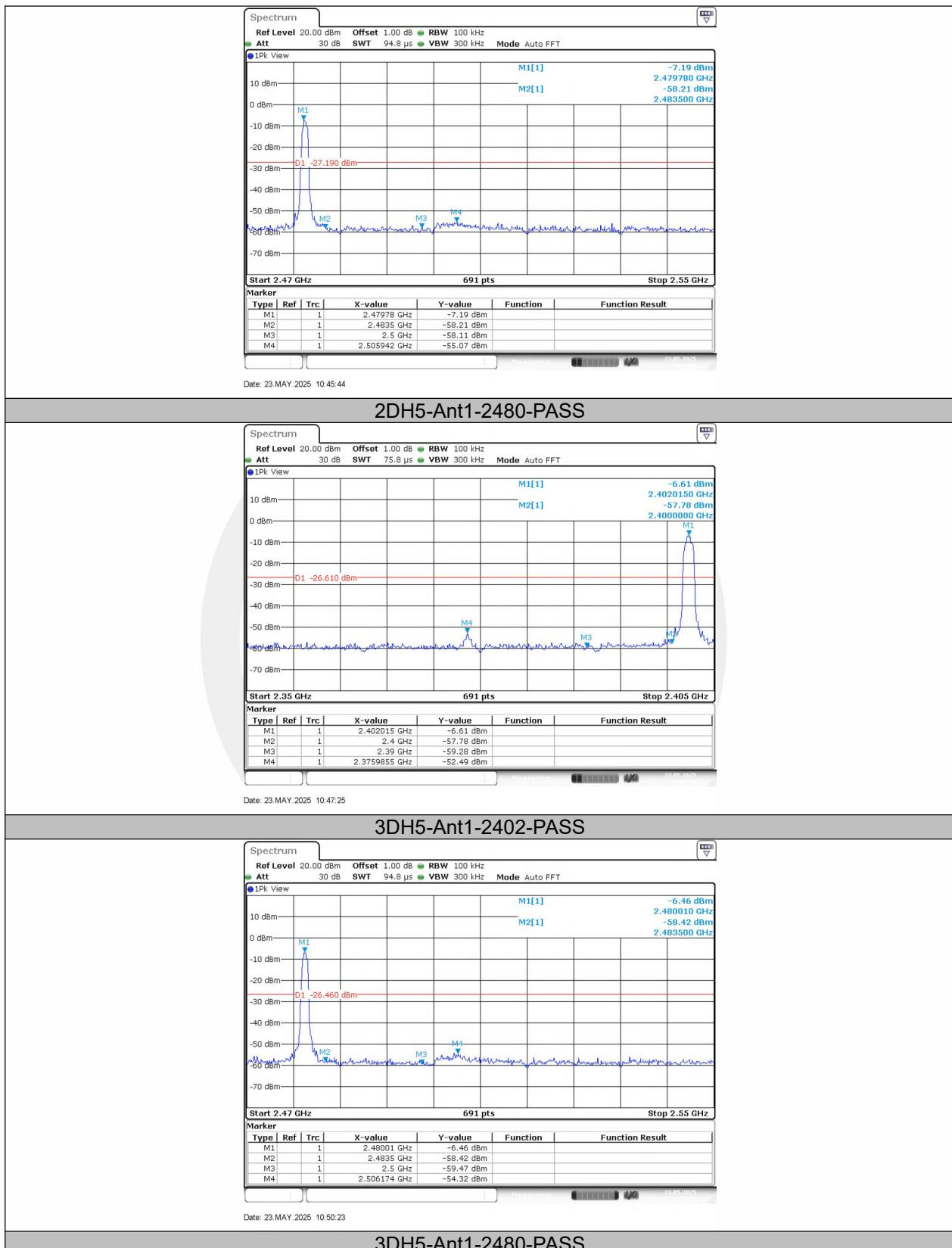
Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section.

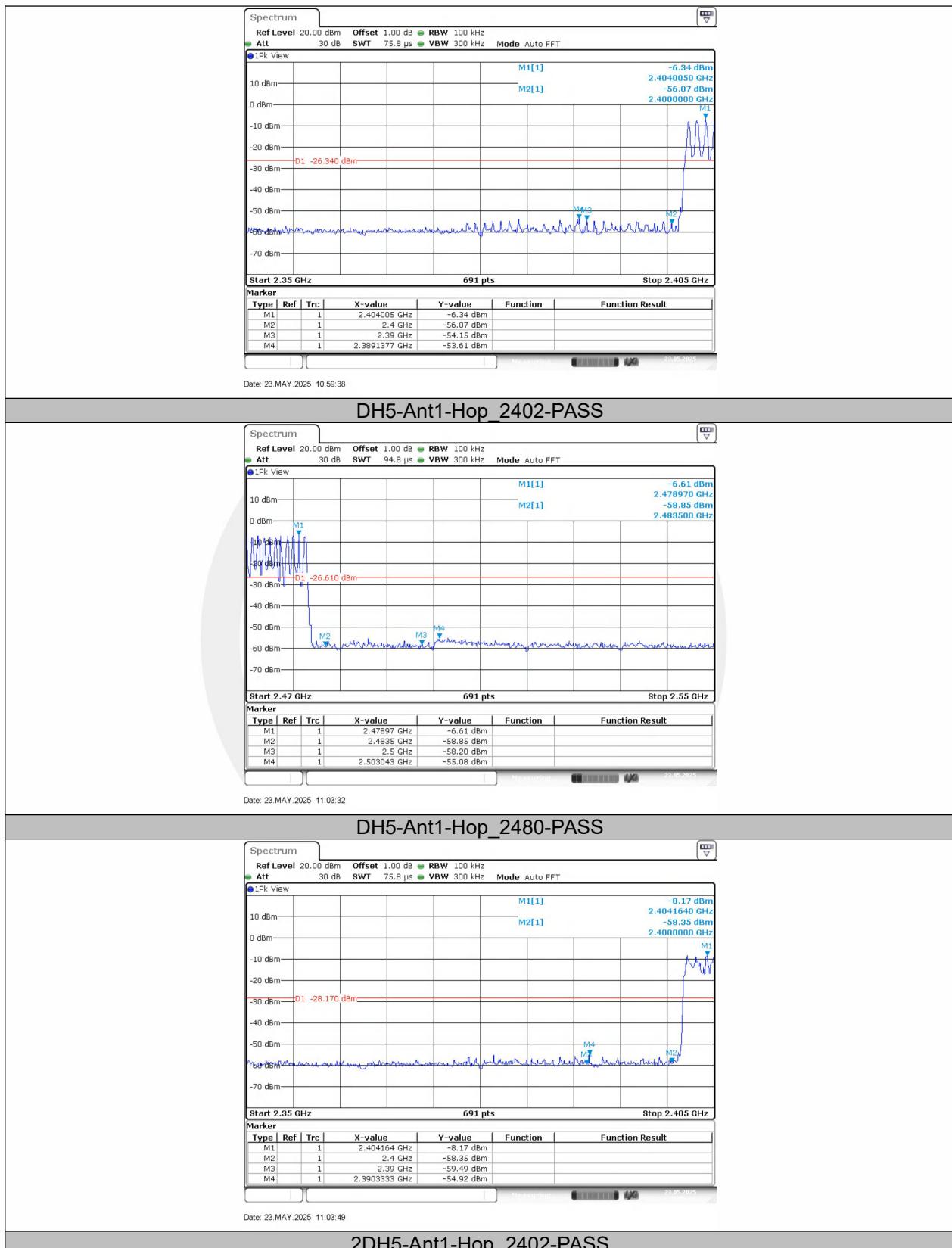
9.6.5 Test Results

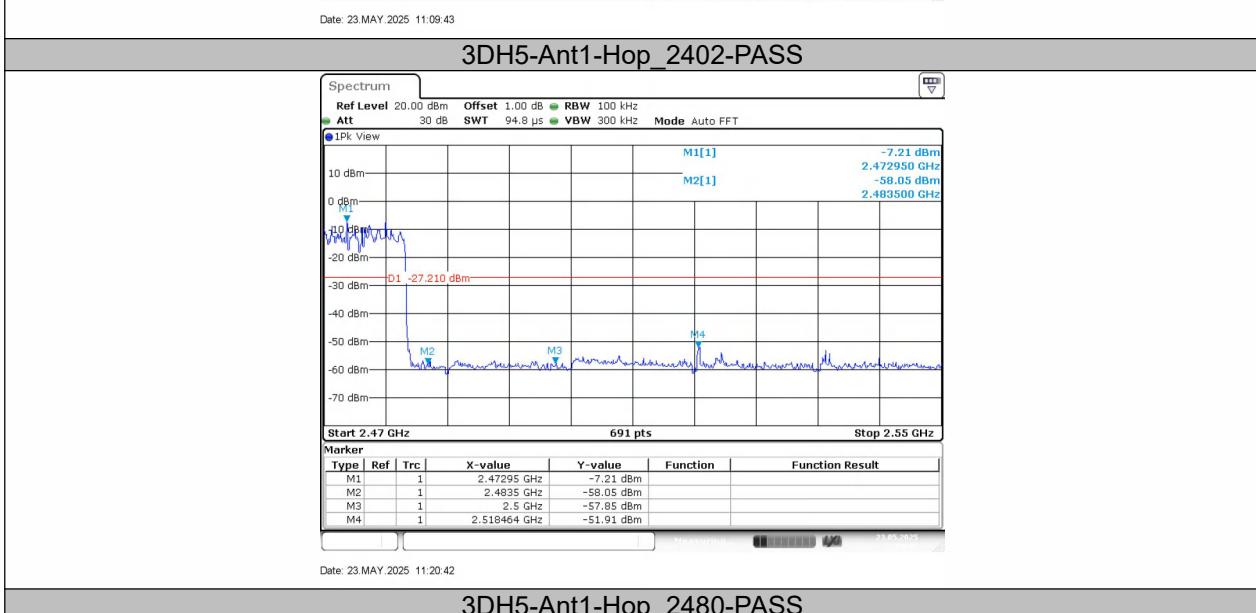
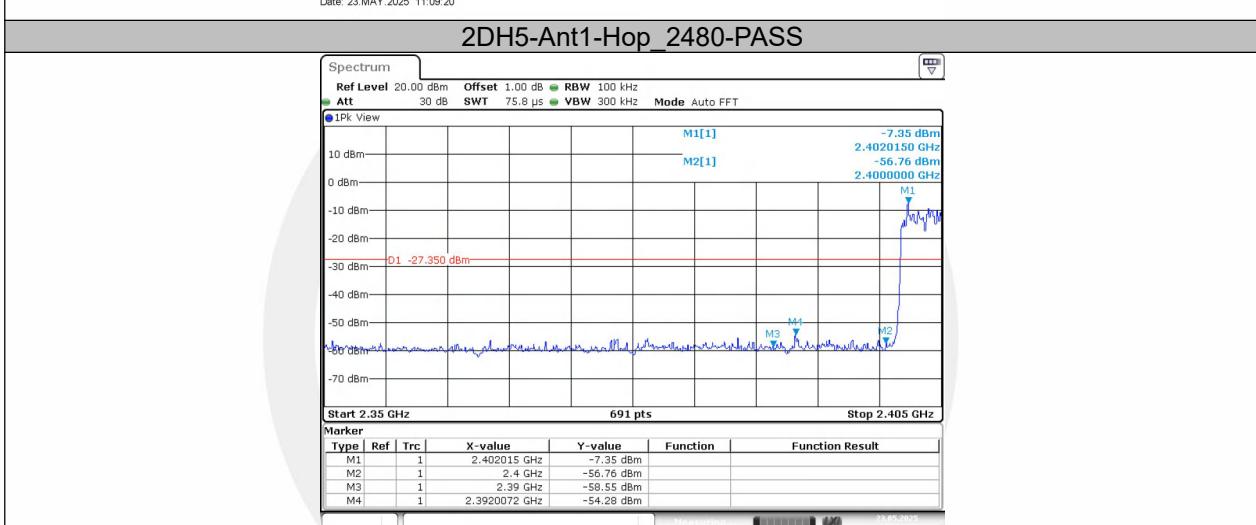
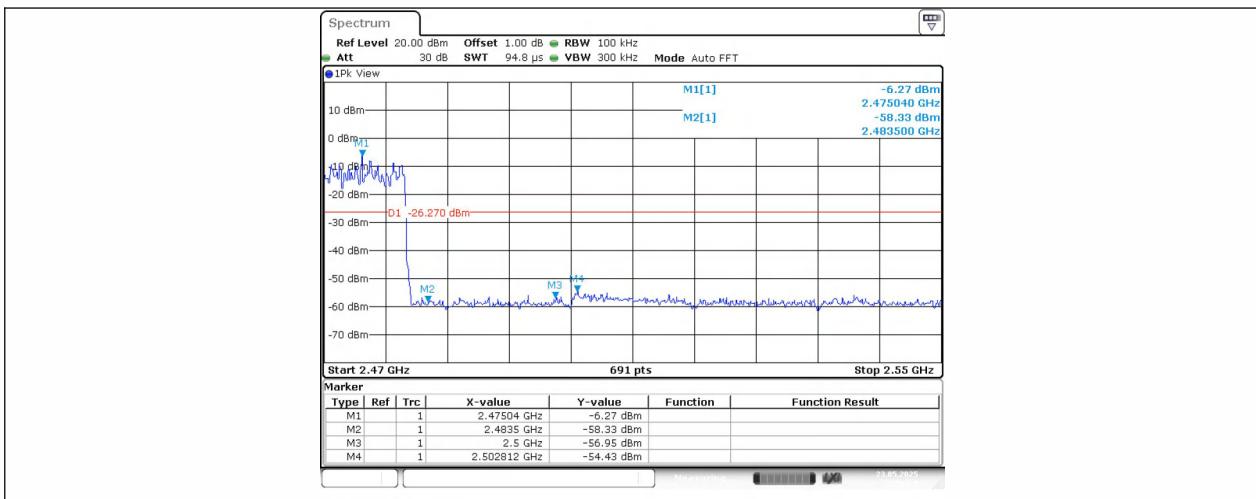
Band edge measurements

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-6.46	-52.56	≤-26.46	PASS
DH5	Ant1	High	2480	-6.31	-54.6	≤-26.31	PASS
2DH5	Ant1	Low	2402	-6.65	-52.85	≤-26.65	PASS
2DH5	Ant1	High	2480	-7.19	-55.07	≤-27.19	PASS
3DH5	Ant1	Low	2402	-6.61	-52.49	≤-26.61	PASS
3DH5	Ant1	High	2480	-6.46	-54.32	≤-26.46	PASS
DH5	Ant1	Low	Hop_2402	-6.34	-53.61	≤-26.34	PASS
DH5	Ant1	High	Hop_2480	-6.61	-55.08	≤-26.61	PASS
2DH5	Ant1	Low	Hop_2402	-8.17	-54.92	≤-28.17	PASS
2DH5	Ant1	High	Hop_2480	-6.27	-54.43	≤-26.27	PASS
3DH5	Ant1	Low	Hop_2402	-7.35	-54.28	≤-27.35	PASS
3DH5	Ant1	High	Hop_2480	-7.21	-51.91	≤-27.21	PASS



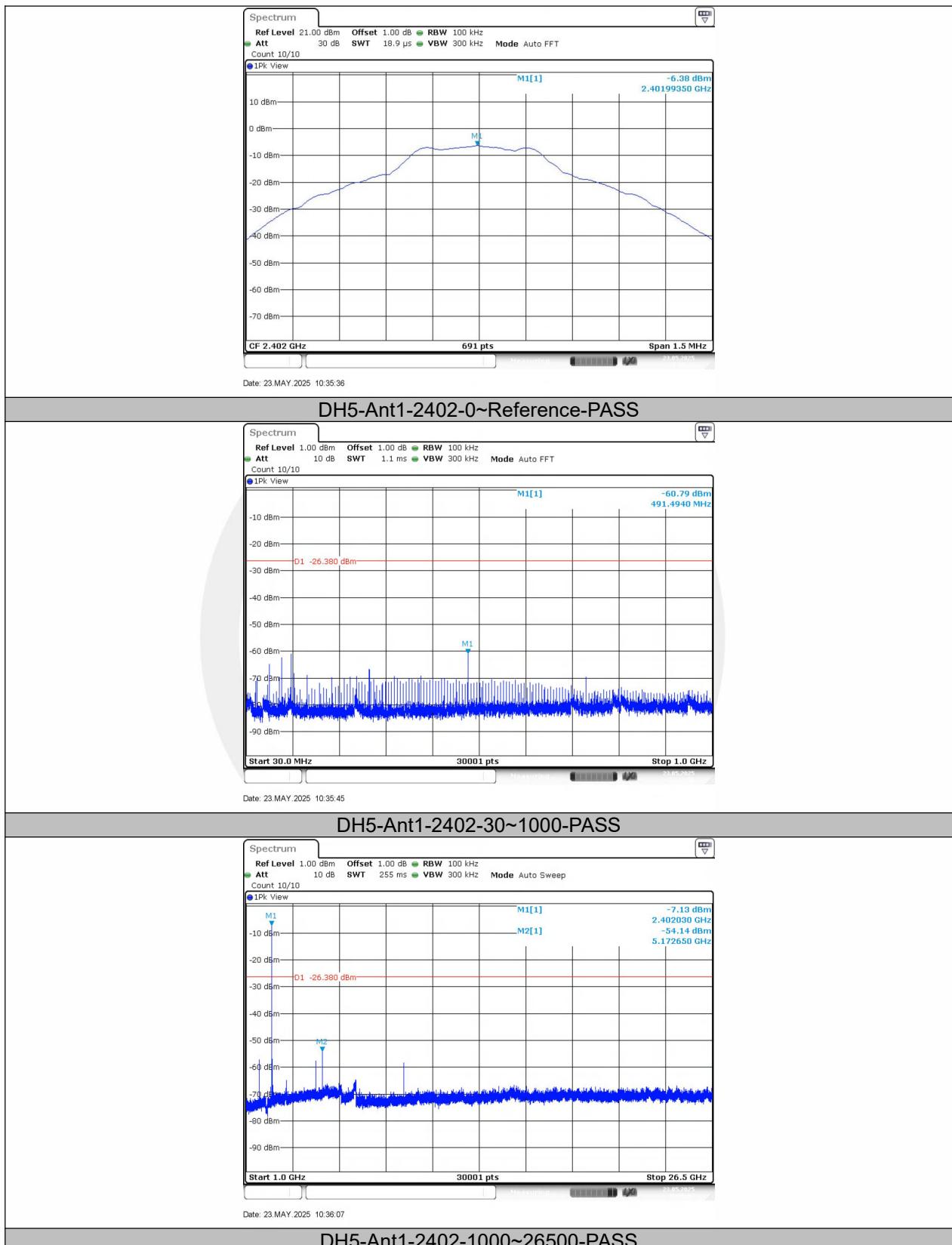


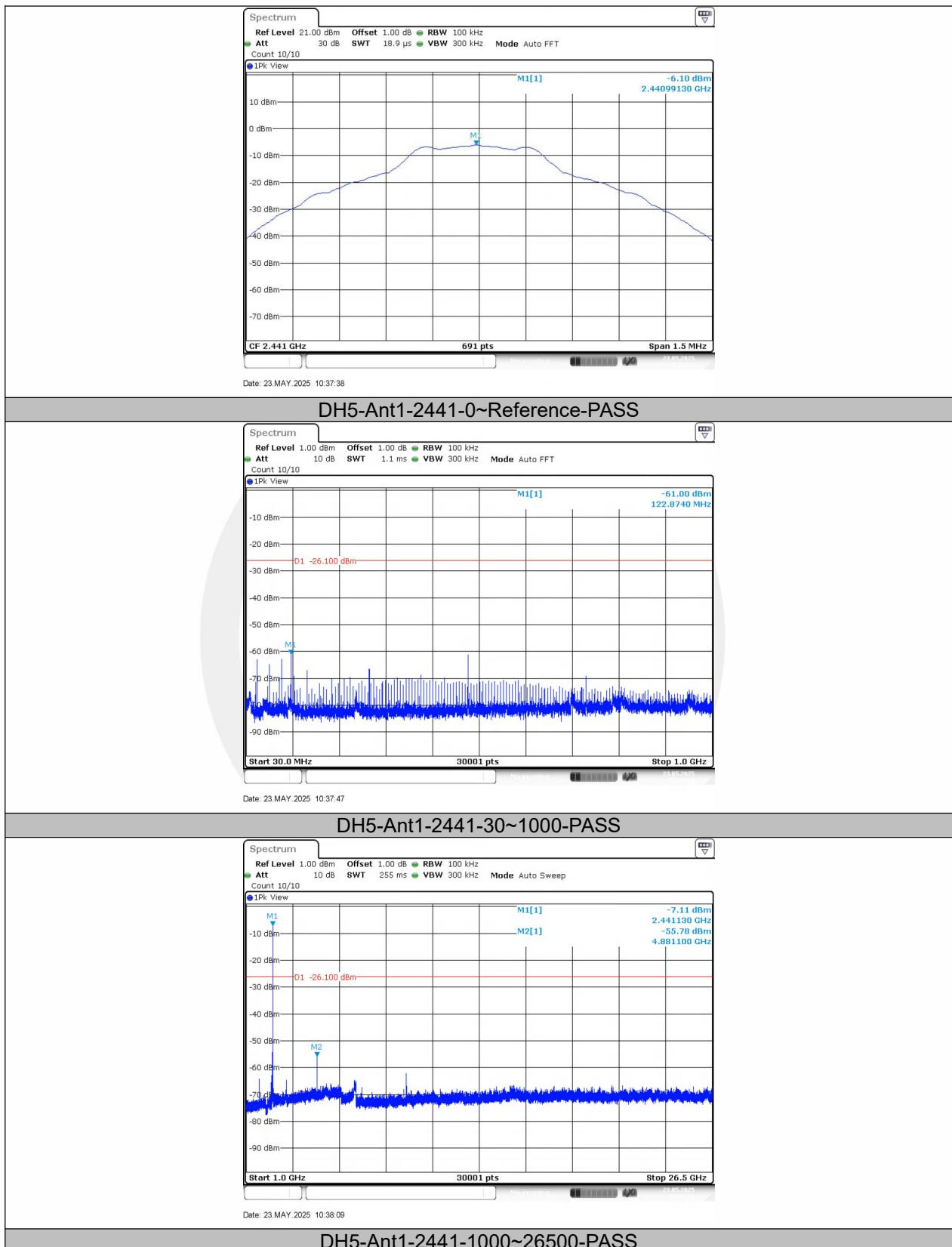


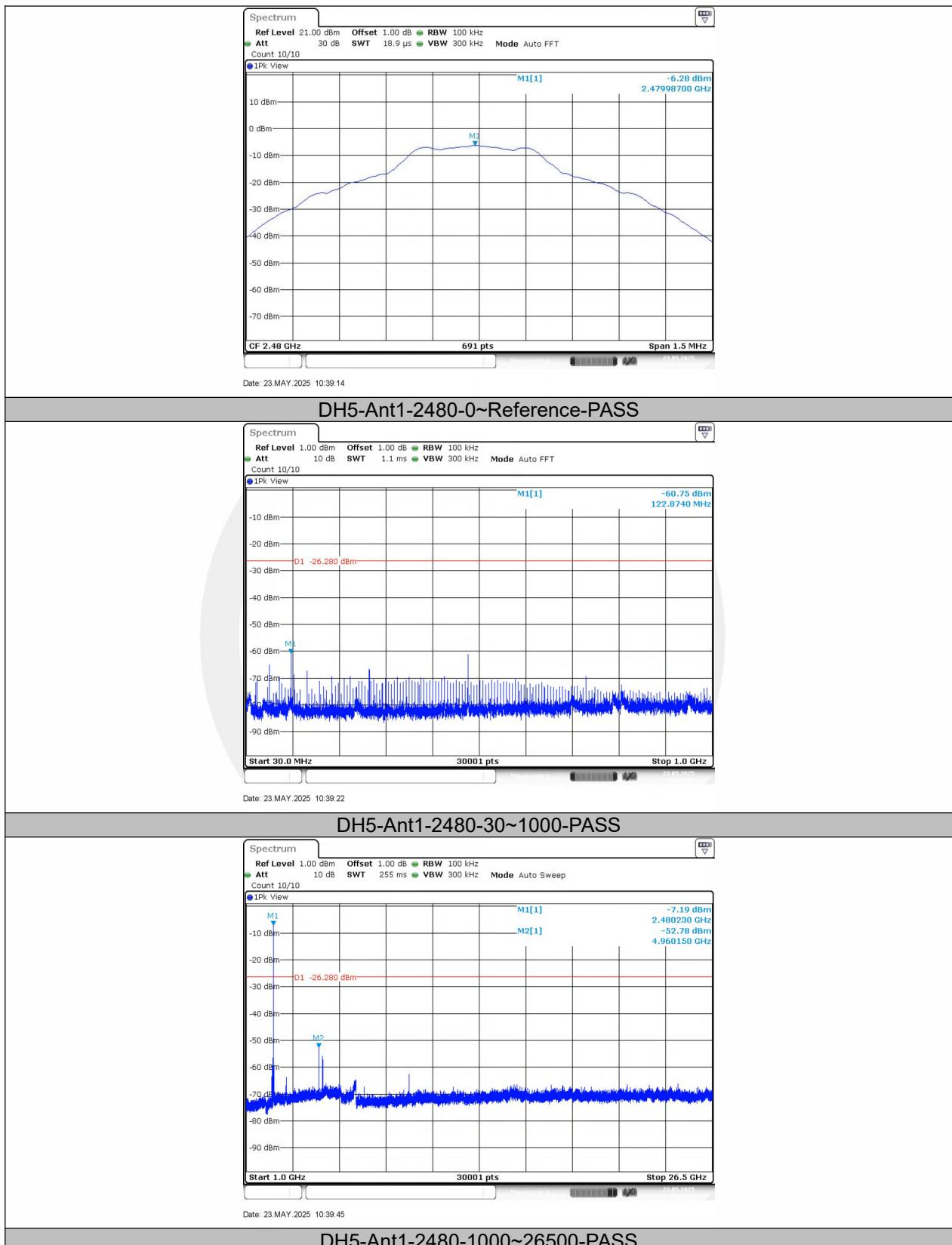


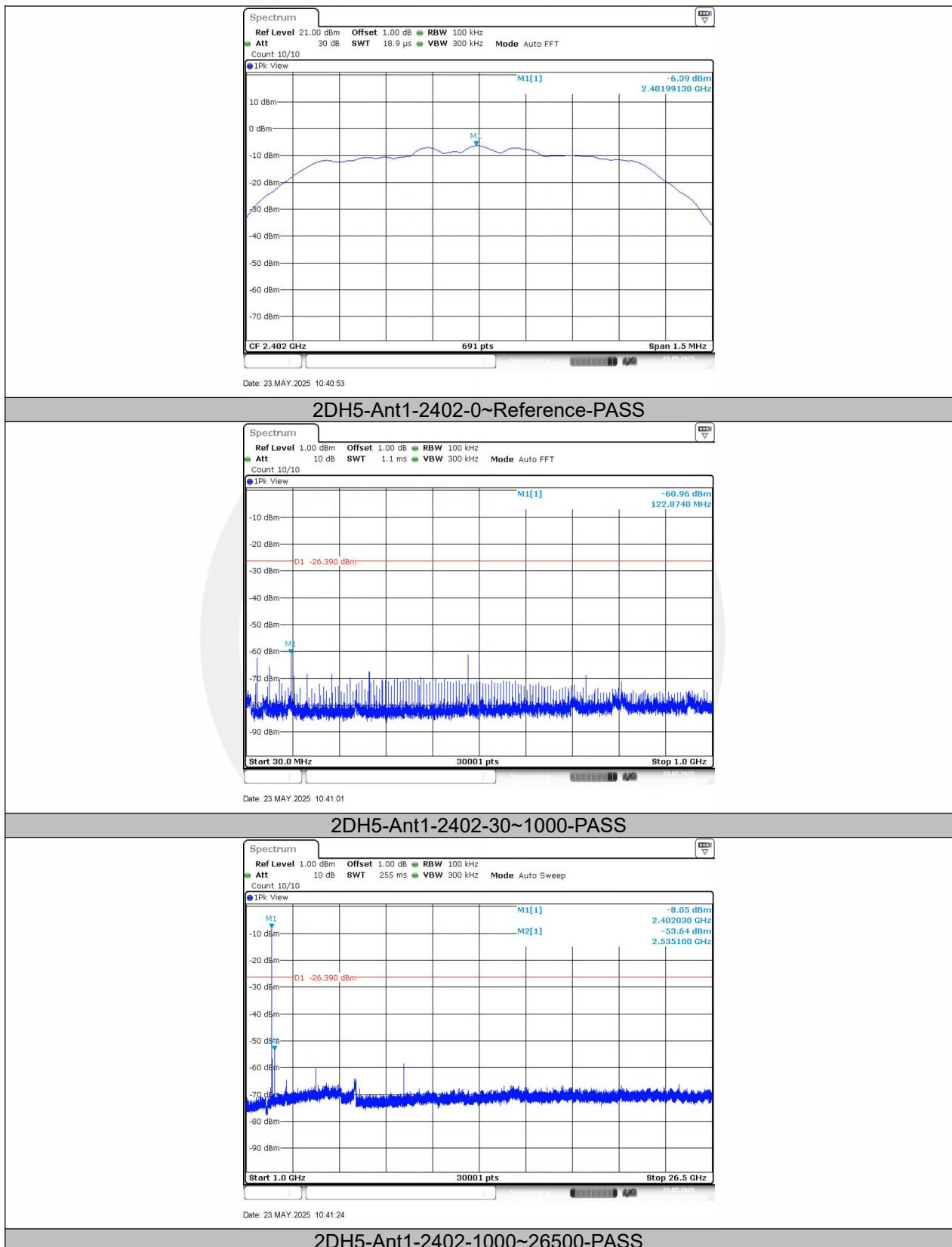
Conducted Spurious Emission

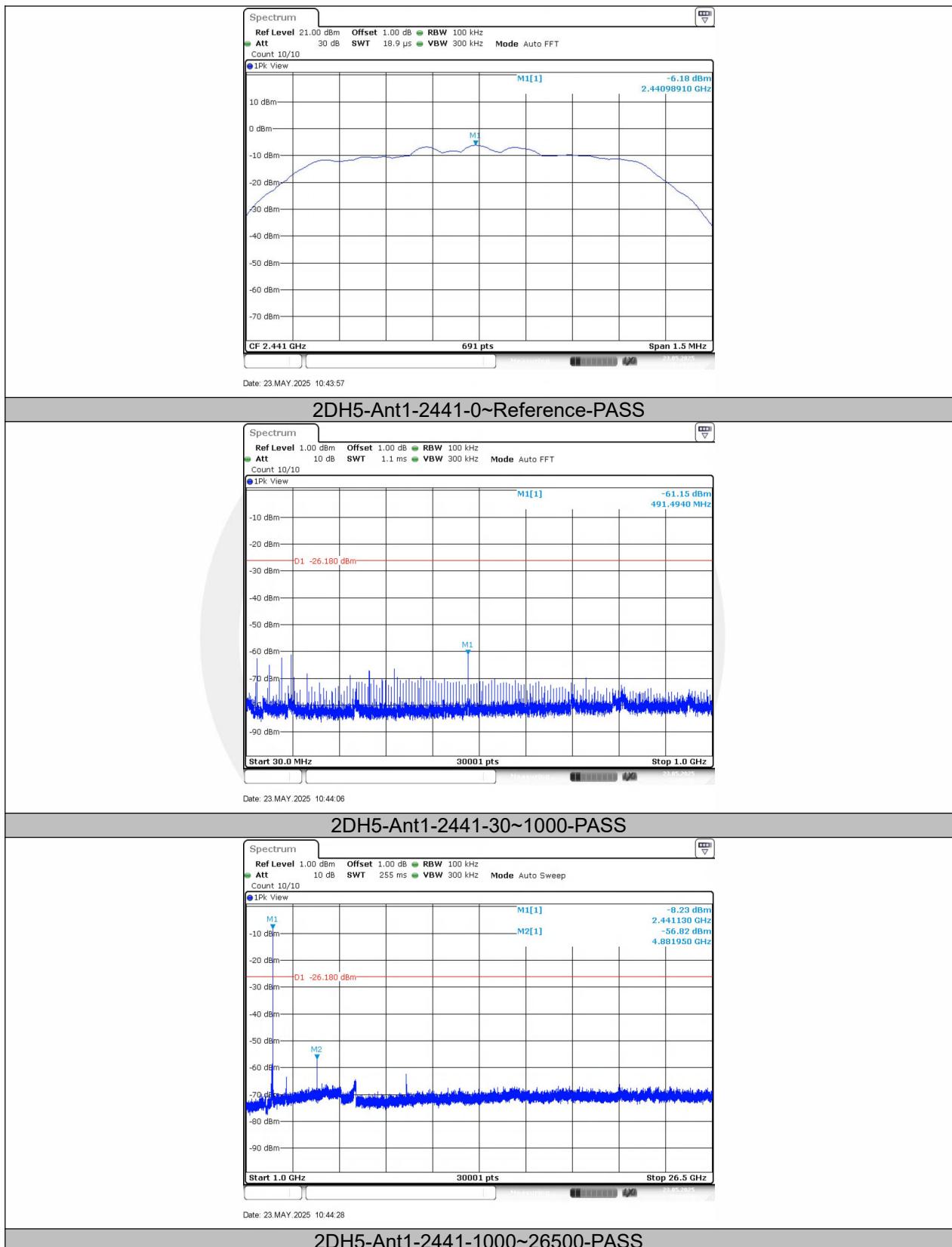
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-6.38	-6.38	---	PASS
			30~1000	-6.38	-60.79	≤-26.38	PASS
			1000~26500	-6.38	-54.14	≤-26.38	PASS
		2441	Reference	-6.10	-6.10	---	PASS
			30~1000	-6.10	-61	≤-26.1	PASS
			1000~26500	-6.10	-55.78	≤-26.1	PASS
		2480	Reference	-6.28	-6.28	---	PASS
			30~1000	-6.28	-60.75	≤-26.28	PASS
			1000~26500	-6.28	-52.78	≤-26.28	PASS
2DH5	Ant1	2402	Reference	-6.39	-6.39	---	PASS
			30~1000	-6.39	-60.96	≤-26.39	PASS
			1000~26500	-6.39	-53.64	≤-26.39	PASS
		2441	Reference	-6.18	-6.18	---	PASS
			30~1000	-6.18	-61.15	≤-26.18	PASS
			1000~26500	-6.18	-56.82	≤-26.18	PASS
		2480	Reference	-6.33	-6.33	---	PASS
			30~1000	-6.33	-60.73	≤-26.33	PASS
			1000~26500	-6.33	-52.28	≤-26.33	PASS
3DH5	Ant1	2402	Reference	-6.40	-6.40	---	PASS
			30~1000	-6.40	-60.8	≤-26.4	PASS
			1000~26500	-6.40	-56.93	≤-26.4	PASS
		2441	Reference	-6.19	-6.19	---	PASS
			30~1000	-6.19	-60.63	≤-26.19	PASS
			1000~26500	-6.19	-57.76	≤-26.19	PASS
		2480	Reference	-6.38	-6.38	---	PASS
			30~1000	-6.38	-60.77	≤-26.38	PASS
			1000~26500	-6.38	-52	≤-26.38	PASS

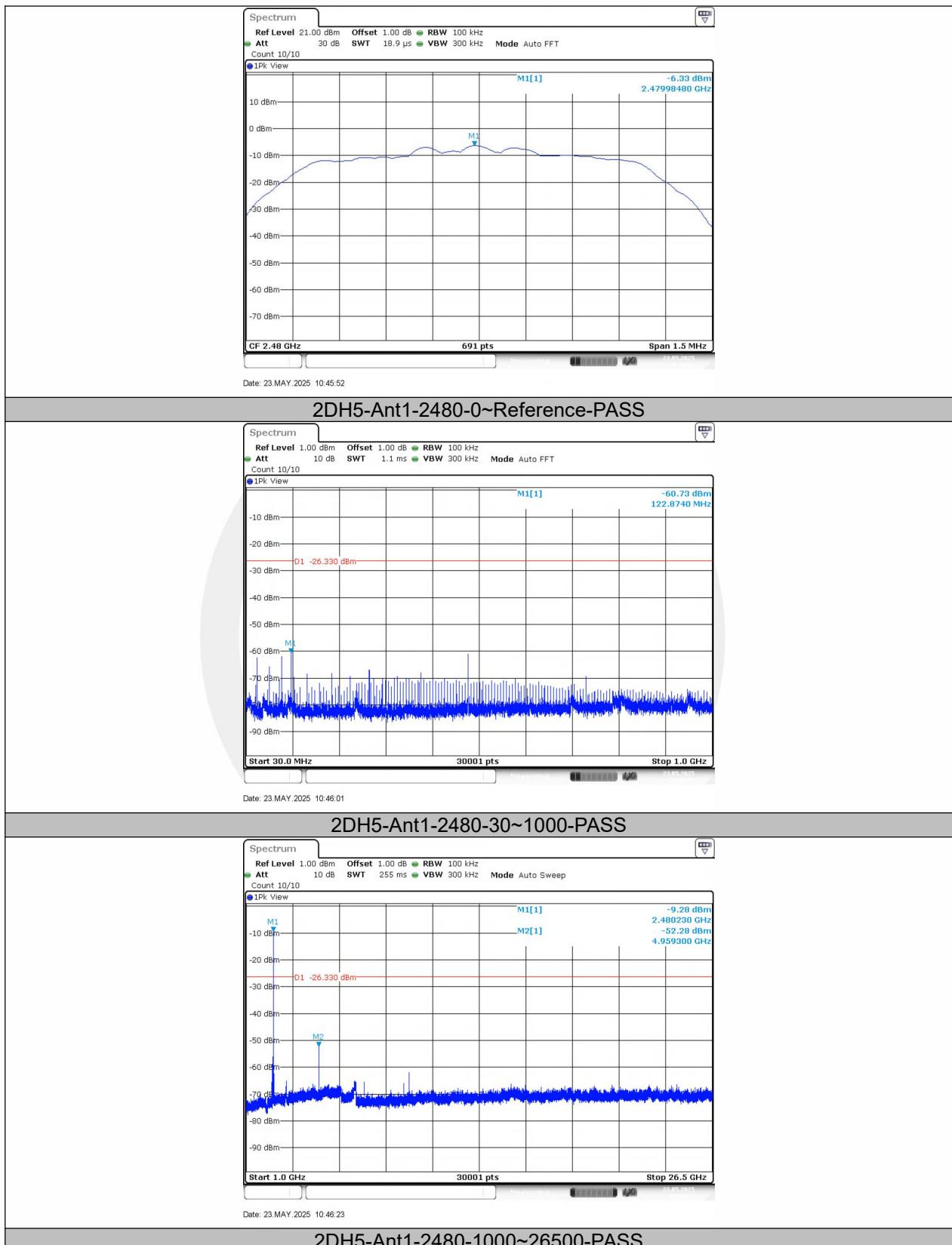


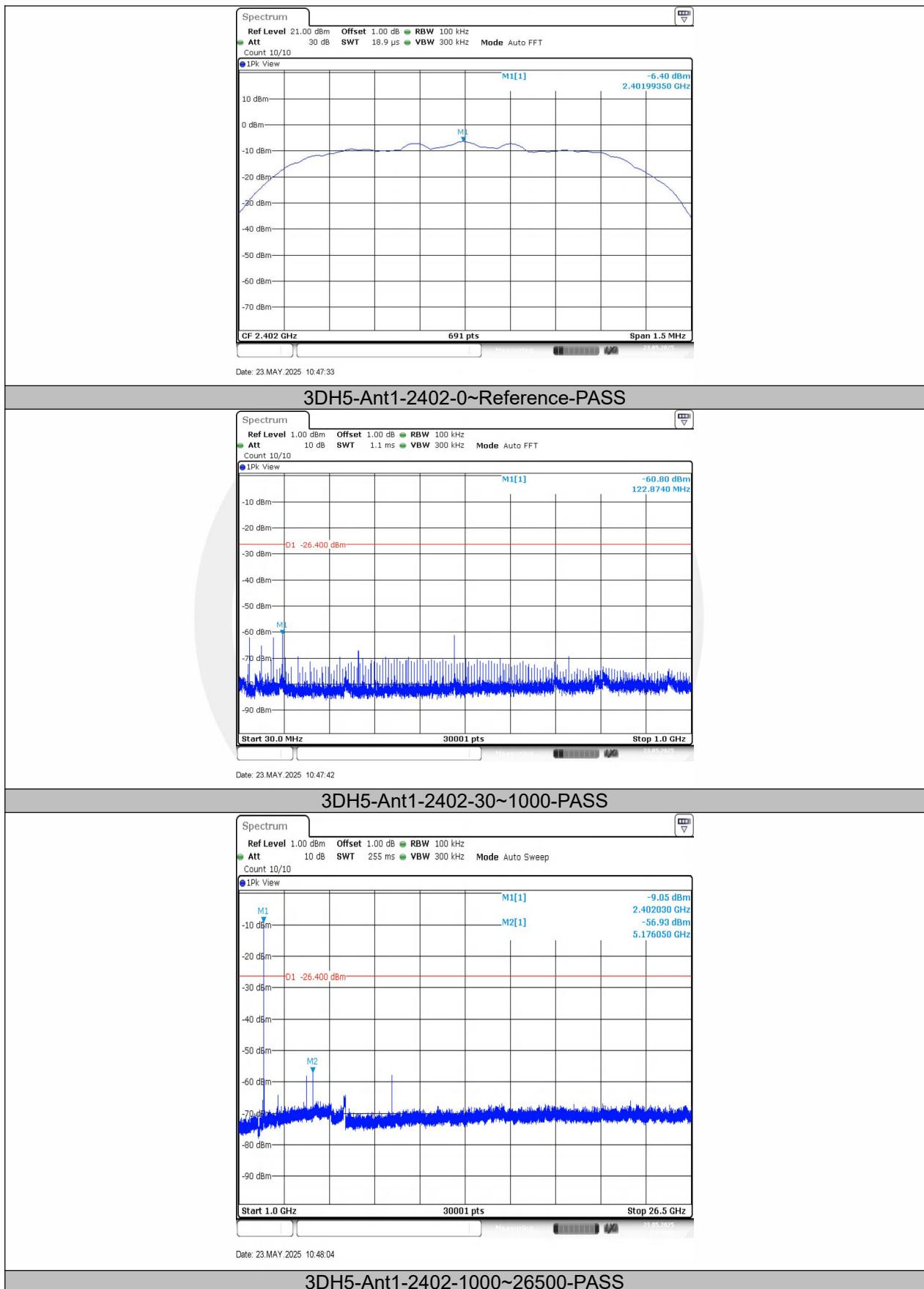


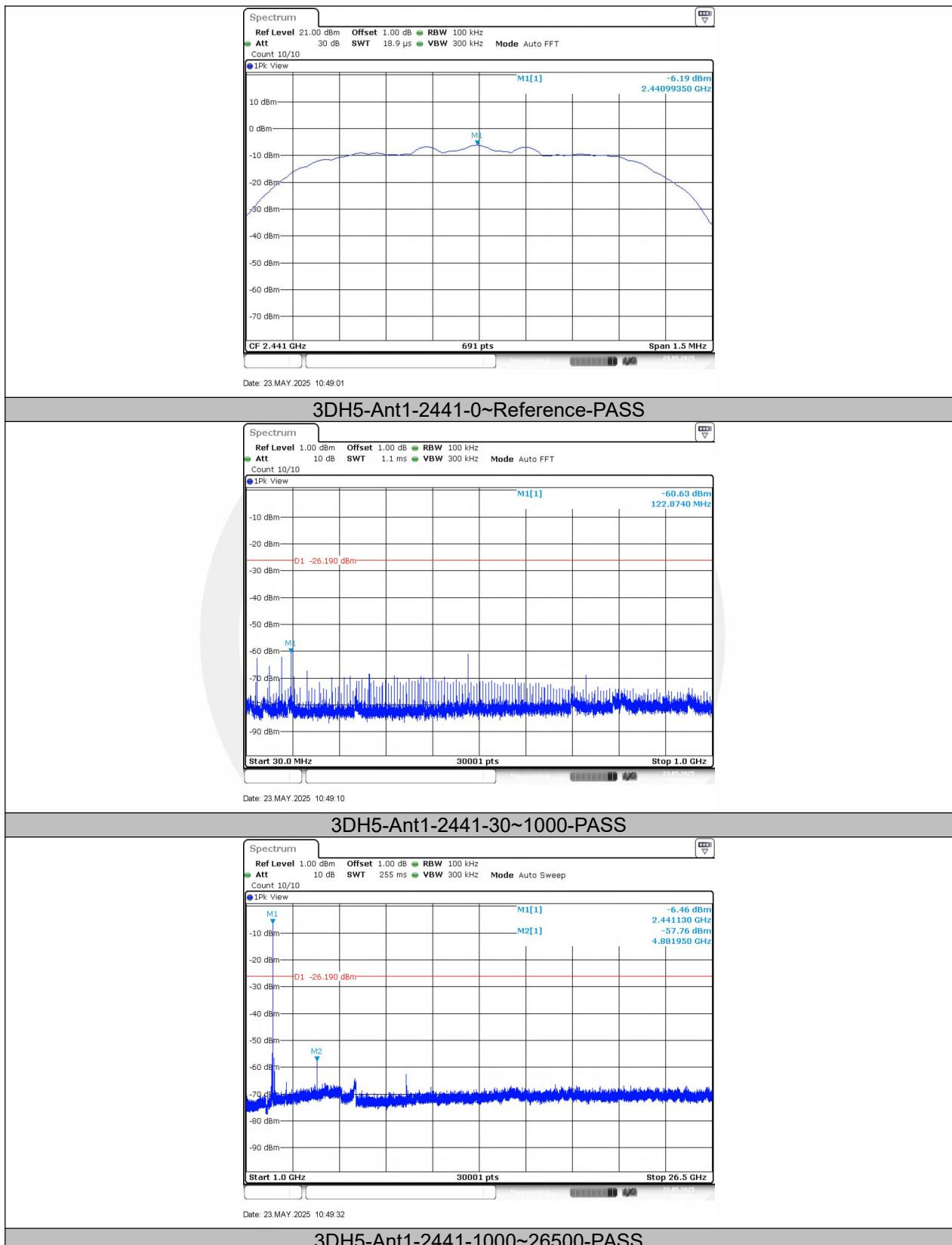


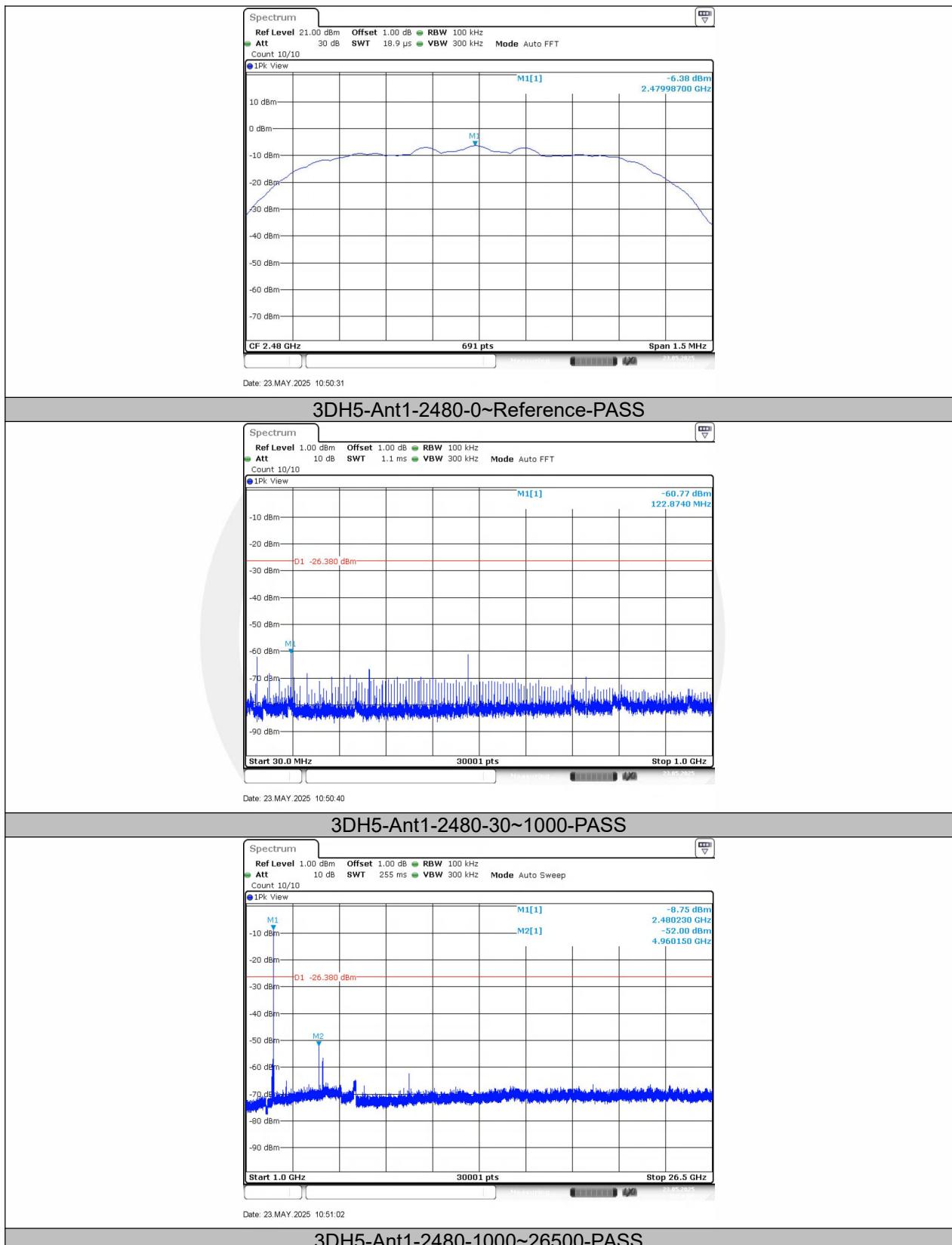












9.7 RADIATED SPURIOUS EMISSION

9.7.1 Applicable Standard

According to FCC Part 15.247(d) and 15.209 and KDB 558074 D01 15.247 MEAS GUIDANCE v05r02

9.7.2 Conformance Limit

According to FCC Part 15.247(d): 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)).
According to FCC Part15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

According to FCC Part15.205, the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

Restricted Frequency(MHz)	Field Strength (μ V/m)	Field Strength ($\text{dB}\mu$ V/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log (μ V/m)	300
0.490-1.705	24000/F(KHz)	20 log (μ V/m)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

9.7.3 Test Configuration

Test according to clause 7.2 radio frequency test setup 2

9.7.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

For Above 1GHz:

The EUT was placed on a turn table which is 1.5m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

For Below 1GHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 100 kHz for

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

For Below 30MHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 9kHz

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

For Below 150KHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 200Hz

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Repeat above procedures until all frequency measured was complete.

9.7.5 Test Results

■ Spurious Emission below 30MHz (9KHz to 30MHz)

Temperature:	25° C
Relative Humidity:	60%
ATM Pressure:	1011 mbar

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
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Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible

limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance} / \text{test distance})$ (dB);

Limit line=Specific limits(dBuV) + distance extrapolation factor

■ Spurious Emission Above 1GHz (1GHz to 25GHz)

Bluetooth (GFSK, $\pi/4$ -DQPSK, 8DPSK) mode have been tested, and the worst result(GFSK) was report as below:

Test mode:	GFSK	Frequency:	Channel 0: 2402MHz		
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Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
4803.75	V	49.03	74.00	24.97	peak
9877.5	V	62.66	74.00	11.34	peak
13681.875	V	65.14	74.00	8.86	peak
4803.91	V	42.73	54.00	11.27	AVG
9877.5	V	42.05	54.00	11.95	AVG
13681.875	V	43.26	54.00	10.74	AVG
4803.75	H	52.35	74.00	21.65	peak
9905.625	H	62.96	74.00	11.04	peak
14546.25	H	65.10	74.00	8.90	peak
4803.96	H	48.25	54.00	5.75	AVG
9905.625	H	42.97	54.00	11.03	AVG
14546.25	H	45.79	54.00	8.21	AVG

Test mode:	GFSK	Frequency:	Channel 39: 2441MHz		
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Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
4880.625	V	52.06	74.00	21.94	peak
9990	V	62.45	74.00	11.55	peak
13702.5	V	66.31	74.00	7.69	peak
4881.974	V	47.04	54.00	6.96	AVG
9990	V	42.39	54.00	11.61	AVG
13702.5	V	43.65	54.00	10.35	AVG
4880.625	H	53.96	74.00	20.04	peak
11353.125	H	62.67	74.00	11.33	peak
14557.5	H	65.32	74.00	8.68	peak
4882.024	H	50.96	54.00	3.04	AVG
11353.125	H	43.61	54.00	10.39	AVG
14557.5	H	46.92	54.00	7.08	AVG

Test mode:	GFSK	Frequency:	Channel 78: 2480MHz		
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Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
4959.375	V	49.65	74.00	24.35	peak
9980.625	V	63.04	74.00	10.96	peak
13696.875	V	65.96	74.00	8.04	peak
4960.024	V	44.13	54.00	9.87	AVG
9980.625	V	42.34	54.00	11.66	AVG
13696.875	V	44.21	54.00	9.79	AVG
4959.375	H	53.39	74.00	20.61	peak
11338.125	H	63.03	74.00	10.97	peak
16921.875	H	65.76	74.00	8.24	peak
4960.004	H	50.25	54.00	3.75	AVG
11338.125	H	44.26	54.00	9.74	AVG
16921.875	H	45.96	54.00	8.04	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).

(2) Emission Level= Reading Level+Probe Factor +Cable Loss.

(3) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

■ Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz
 Bluetooth (GFSK, $\pi/4$ -DQPSK, 8DPSK, Hopping) mode have been tested, and the worst result(GFSK, Hopping) was report as below:

Test mode: GFSK Frequency: Channel 0: 2402MHz

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
2388.05	V	45.05	74.00	28.95	peak
2388.052	V	37.76	54.00	16.24	AVG
2388.39	H	44.98	74.00	29.02	peak
2388.399	H	37.86	54.00	16.14	AVG

Test mode: GFSK Frequency: Channel 78: 2480MHz

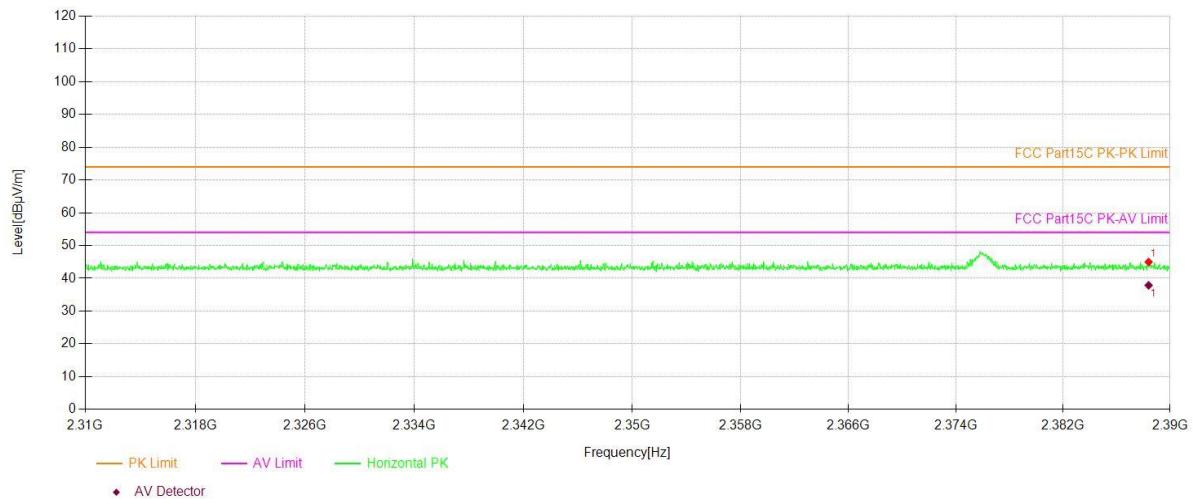
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
2483.69	V	50.80	74.00	23.20	peak
2483.699	V	38.52	54.00	15.48	AVG
2483.65	H	50.67	74.00	23.33	peak
2483.656	H	38.21	54.00	15.79	AVG

Test mode: GFSK Frequency: Hopping

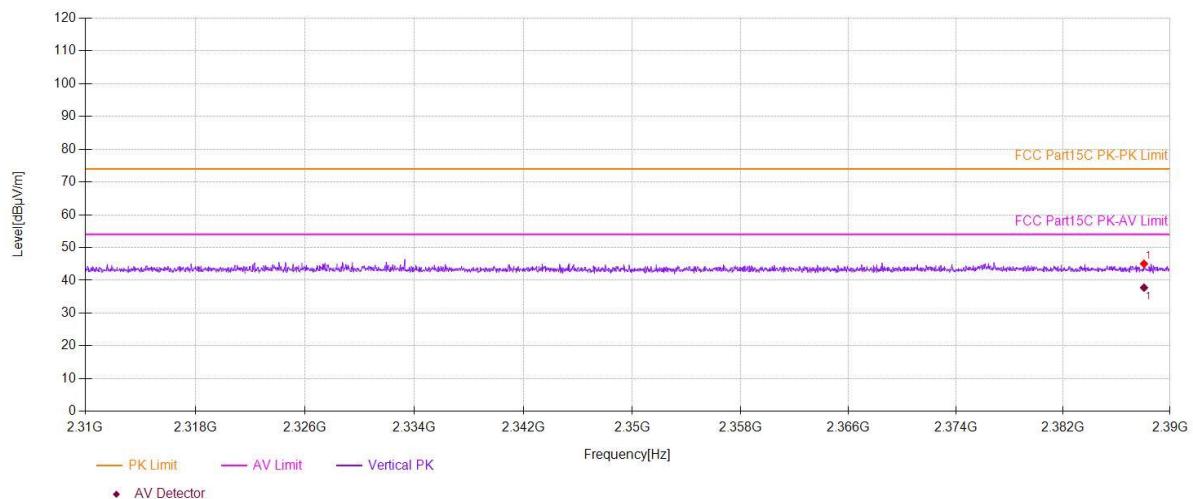
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
2390.00	V	43.32	74.00	30.68	peak
2483.50	V	43.80	74.00	30.20	peak
2390.00	V	37.53	54.00	16.47	AVG
2483.50	V	38.51	54.00	15.49	AVG
2390.00	H	43.83	74.00	30.17	peak
2483.50	H	44.20	74.00	29.80	peak
2390.00	H	37.87	54.00	16.13	AVG
2483.50	H	38.40	54.00	15.60	AVG

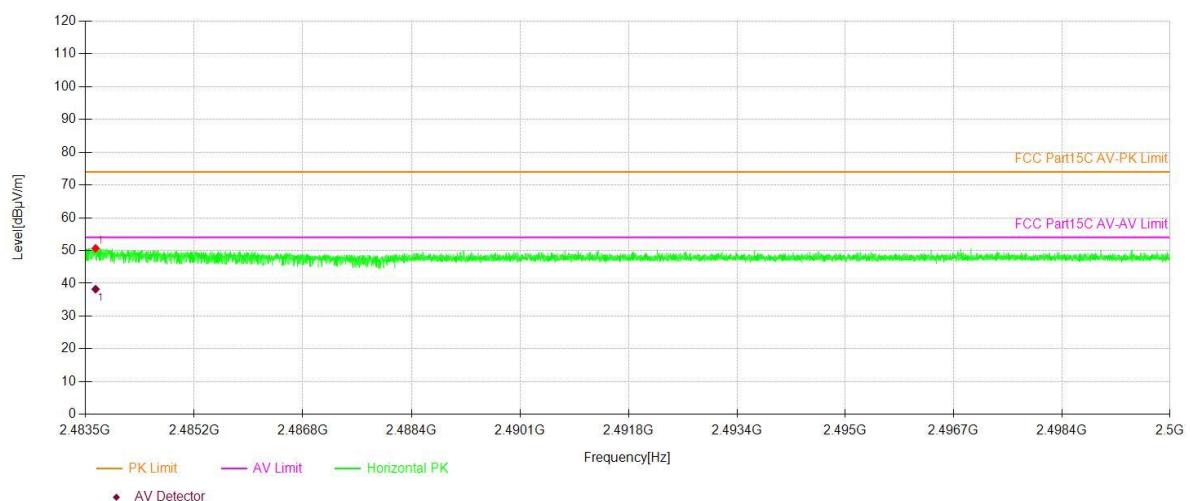
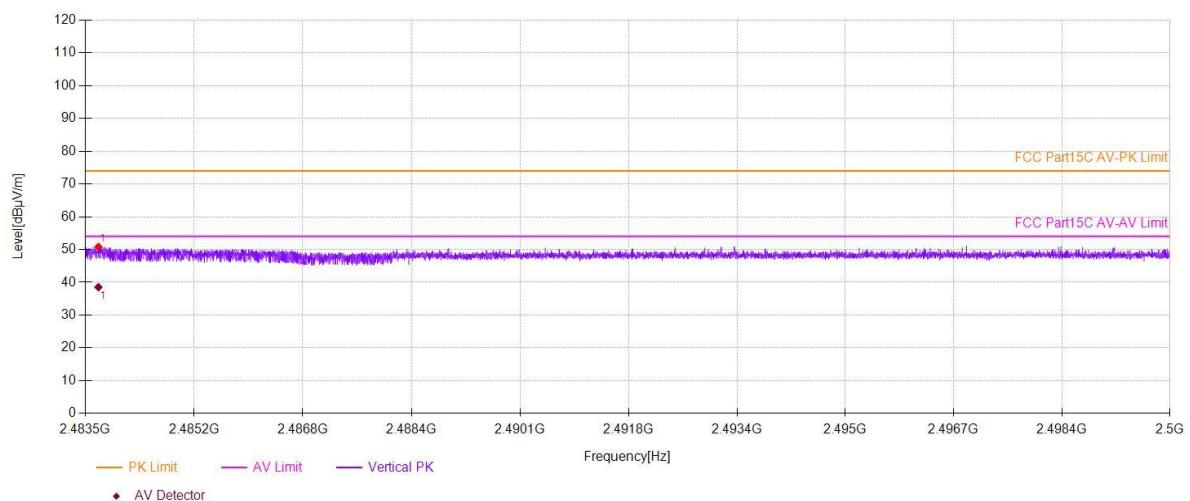
Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
 (2) Emission Level= Reading Level+Probe Factor +Cable Loss.
 (3) Data of measurement within this frequency range shown “ -- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Test Model	Spurious Emission in Restricted Band 2310-2390MHz
	BT
	Channel 0: 2402MHz
	GFSK Test By: CZF

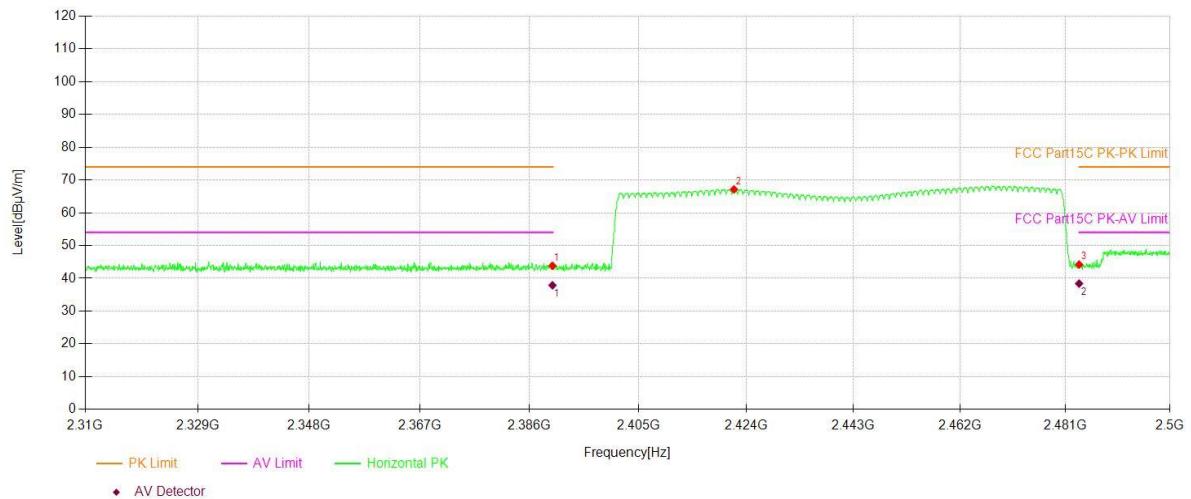


Test Model	Spurious Emission in Restricted Band 2310-2390MHz
	BT
	Channel 0: 2402MHz
	GFSK Test By: CZF

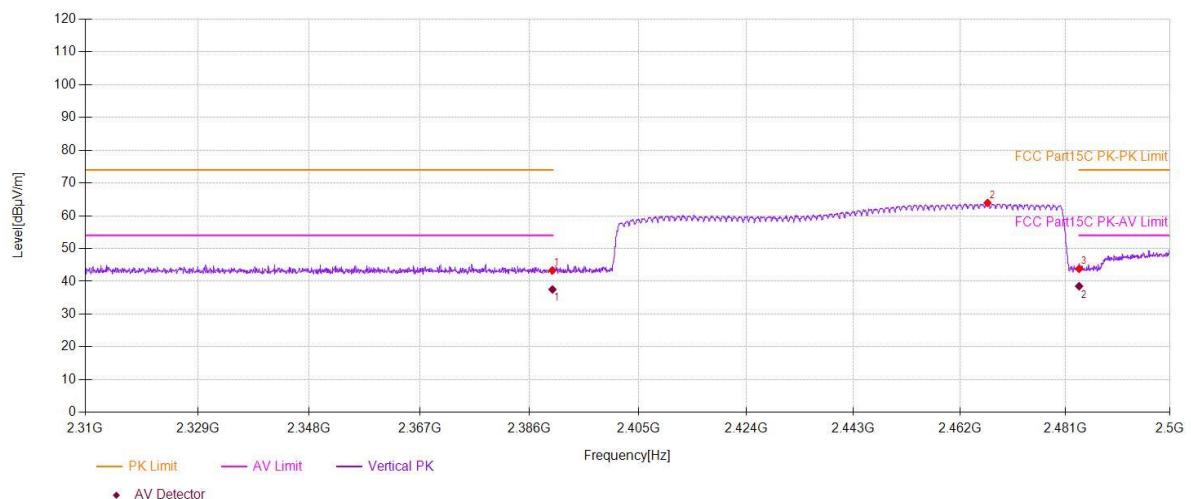


Test Model
Spurious Emission in Restricted Band 2483.5-2500MHz
BT
Channel 78: 2480MHz
GFSK
Test By: CZF
H

Test Model
Spurious Emission in Restricted Band 2483.5-2500MHz
BT
Channel 78: 2480MHz
GFSK
Test By: CZF
V


Test Model	Spurious Emission in Restricted Band 2310-2390MHz and 2400-2483.5MHz		
	BT Hopping	GFSK Test By: CZF	H



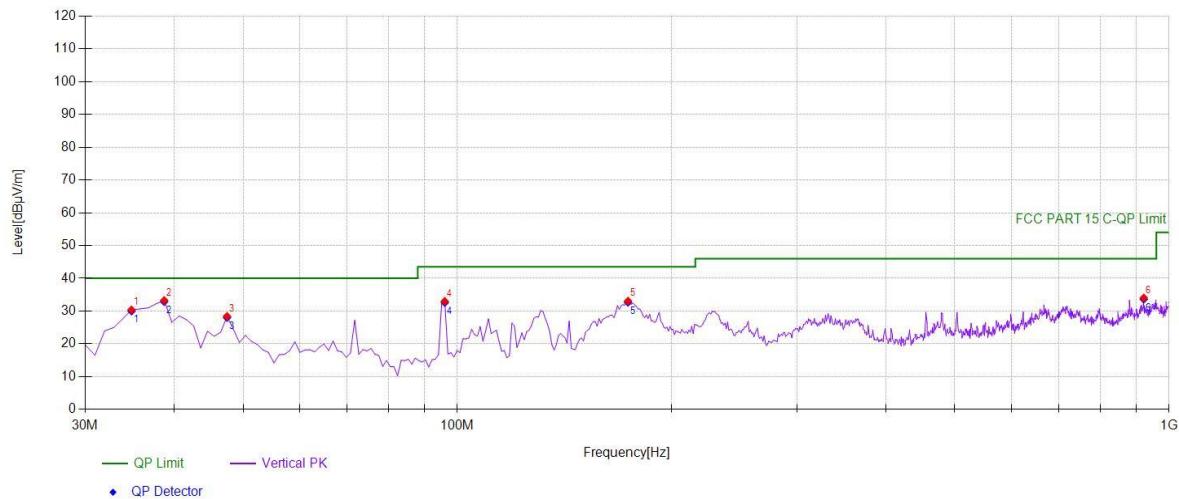
Test Model	Spurious Emission in Restricted Band 2310-2390MHz and 2400-2483.5MHz		
	BT Hopping	GFSK Test By: CZF	V



■ Spurious Emission below 1GHz (30MHz to 1GHz)

Bluetooth (GFSK, $\pi/4$ -DQPSK, 8DPSK) mode have been tested, and the worst result(GFSK) was report as below:

Test mode: GFSK Frequency: Channel 0: 2402MHz

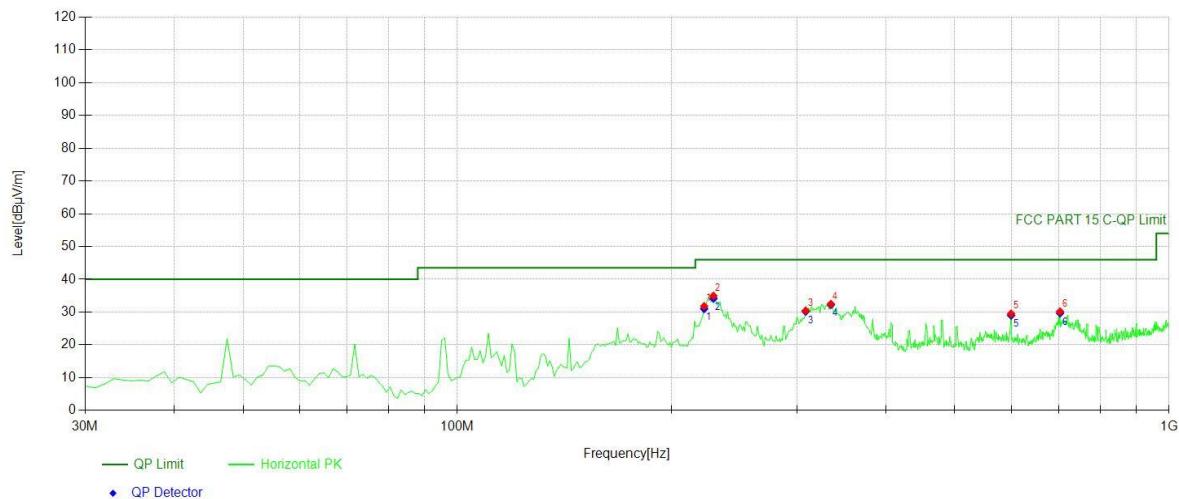


Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	34.8549	54.55	-24.15	30.40	PK	40.00	9.60	Vertical
2	38.7387	56.91	-23.63	33.28	PK	40.00	6.72	Vertical
3	47.4775	50.81	-22.39	28.42	PK	40.00	11.58	Vertical
4	96.026	56.84	-23.83	33.01	PK	43.50	10.49	Vertical
5	173.703	57.96	-24.87	33.09	PK	43.50	10.41	Vertical
6	921.351	42.64	-8.61	34.03	PK	46.00	11.97	Vertical

Final Data List

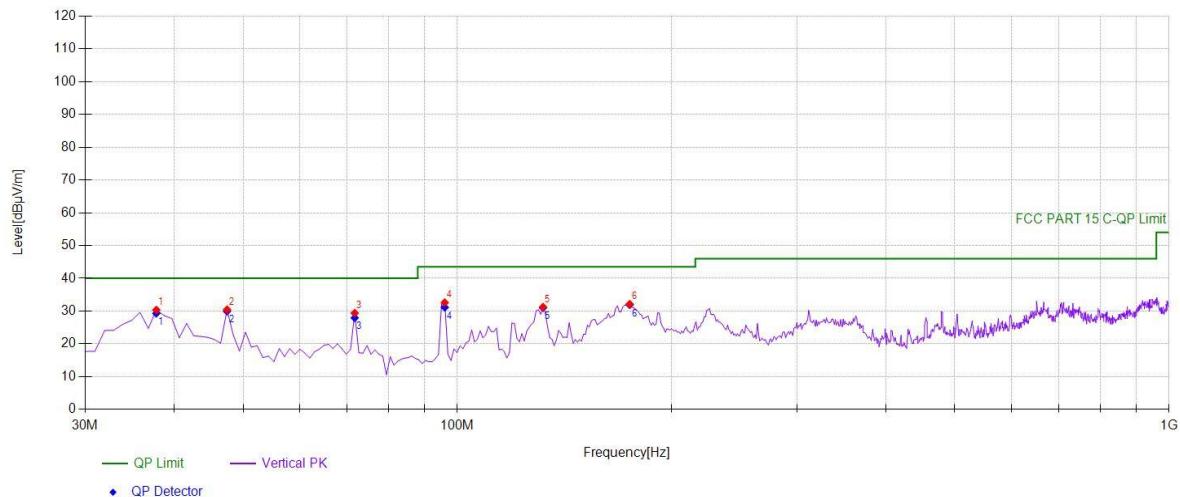
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	34.8549	-24.15	30.00	40.00	10.00
2	38.7387	-23.63	32.88	40.00	7.12
3	47.4775	-22.39	28.02	40.00	11.98
4	96.026	-23.83	32.61	43.50	10.89
5	173.7037	-24.87	32.69	43.50	10.81
6	921.3514	-8.61	33.63	46.00	12.37



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	222.252	54.09	-22.29	31.80	PK	46.00	14.20	Horizontal
2	229.049	56.99	-22.04	34.95	PK	46.00	11.05	Horizontal
3	308.668	50.18	-19.75	30.43	PK	46.00	15.57	Horizontal
4	334.884	51.12	-18.64	32.48	PK	46.00	13.52	Horizontal
5	599.96	41.62	-12.10	29.52	PK	46.00	16.48	Horizontal
6	702.882	42.01	-11.84	30.17	PK	46.00	15.83	Horizontal

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	222.2523	-22.29	30.99	46.00	15.01
2	229.049	-22.04	34.14	46.00	11.86
3	308.6687	-19.75	30.16	46.00	15.84
4	334.8849	-18.64	32.21	46.00	13.79
5	599.96	-12.10	29.00	46.00	17.00
6	702.8829	-11.84	29.65	46.00	16.35

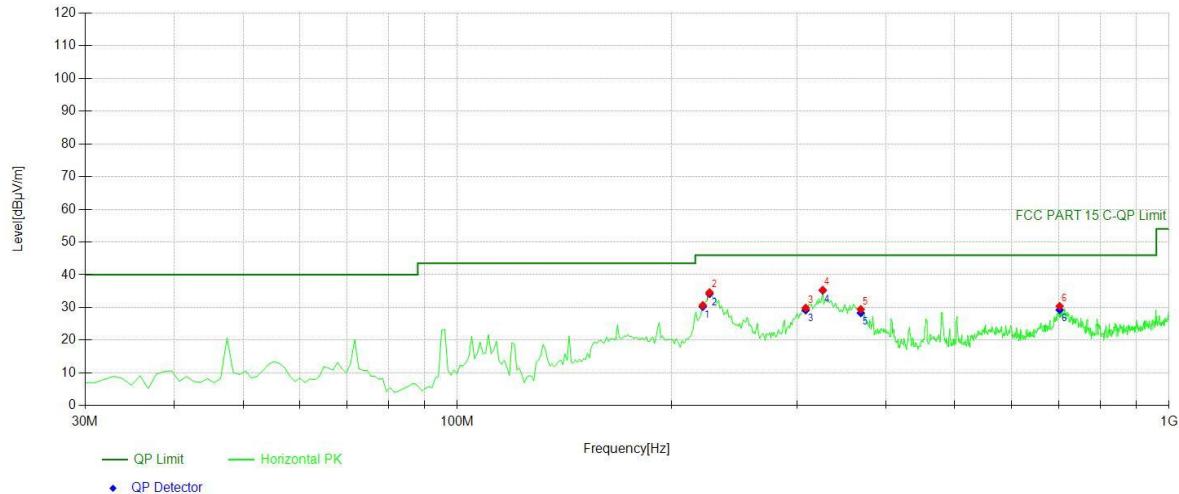
Test mode: GFSK Frequency: Channel 39: 2441MHz


Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	37.7678	54.12	-23.76	30.36	PK	40.00	9.64	Vertical
2	47.4775	52.85	-22.39	30.46	PK	40.00	9.54	Vertical
3	71.7518	54.43	-25.03	29.40	PK	40.00	10.60	Vertical
4	96.026	56.43	-23.83	32.60	PK	43.50	10.90	Vertical
5	131.952	56.55	-25.31	31.24	PK	43.50	12.26	Vertical
6	174.674	56.94	-24.82	32.12	PK	43.50	11.38	Vertical

Final Data List

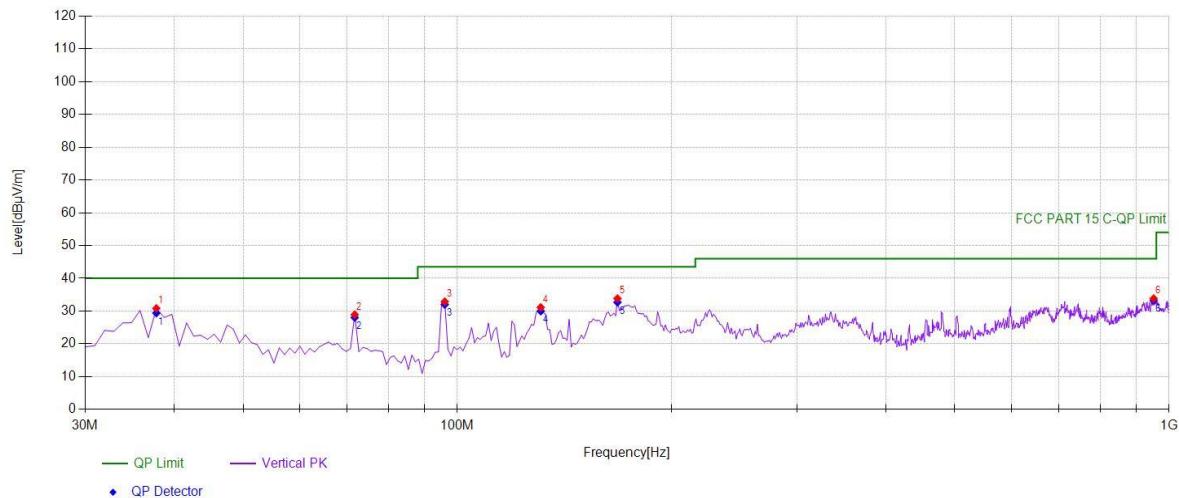
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	37.7678	-23.76	29.32	40.00	10.68
2	47.4775	-22.39	29.96	40.00	10.04
3	71.7518	-25.03	27.94	40.00	12.06
4	96.026	-23.83	31.14	43.50	12.36
5	131.952	-25.31	31.03	43.50	12.47
6	174.6747	-24.82	31.91	43.50	11.59



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	221.281	53.02	-22.33	30.69	PK	46.00	15.31	Horizontal
2	226.136	56.77	-22.16	34.61	PK	46.00	11.39	Horizontal
3	308.668	49.62	-19.75	29.87	PK	46.00	16.13	Horizontal
4	326.146	54.52	-19.17	35.35	PK	46.00	10.65	Horizontal
5	368.868	47.39	-17.94	29.45	PK	46.00	16.55	Horizontal
6	701.911	42.26	-11.86	30.40	PK	46.00	15.60	Horizontal

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	221.2813	-22.33	30.25	46.00	15.75
2	226.1361	-22.16	34.17	46.00	11.83
3	308.6687	-19.75	29.19	46.00	16.81
4	326.1461	-19.17	35.21	46.00	10.79
5	368.8689	-17.94	28.34	46.00	17.66
6	701.9119	-11.86	29.29	46.00	16.71

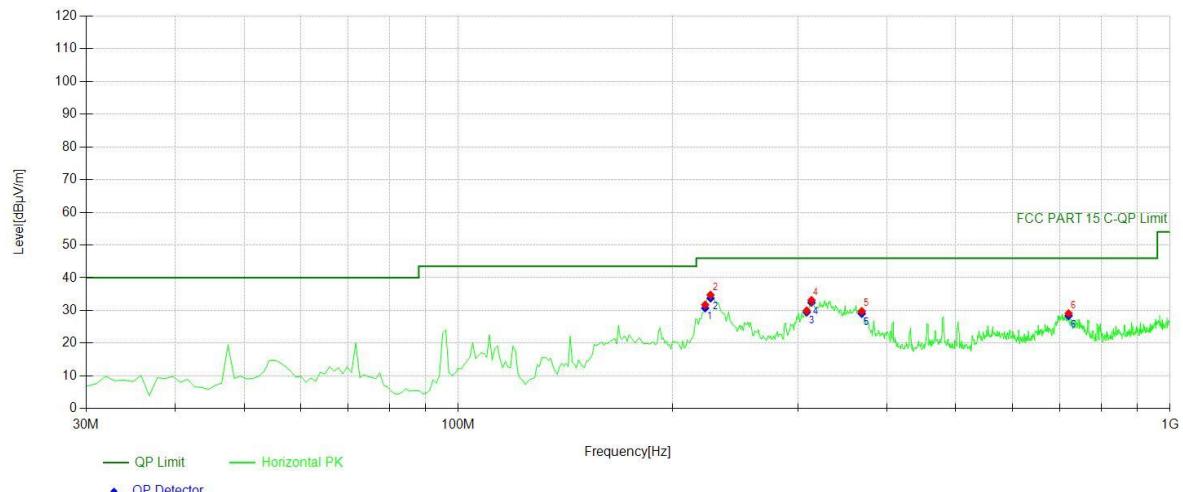
Test mode: GFSK Frequency: Channel 78: 2480MHz


Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	37.7678	54.60	-23.76	30.84	PK	40.00	9.16	Vertical
2	71.7518	53.96	-25.03	28.93	PK	40.00	11.07	Vertical
3	96.026	56.73	-23.83	32.90	PK	43.50	10.60	Vertical
4	130.981	56.38	-25.25	31.13	PK	43.50	12.37	Vertical
5	167.877	58.96	-25.13	33.83	PK	43.50	9.67	Vertical
6	951.451	42.32	-8.49	33.83	PK	46.00	12.17	Vertical

Final Data List

NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	37.7678	-23.76	29.41	40.00	10.59
2	71.7518	-25.03	28.03	40.00	11.97
3	96.026	-23.83	32.00	43.50	11.50
4	130.981	-25.25	29.99	43.50	13.51
5	167.8779	-25.13	32.69	43.50	10.81
6	951.4515	-8.49	33.23	46.00	12.77



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	222.252	54.03	-22.29	31.74	PK	46.00	14.26	Horizontal
2	226.136	56.91	-22.16	34.75	PK	46.00	11.25	Horizontal
3	308.668	49.71	-19.75	29.96	PK	46.00	16.04	Horizontal
4	313.523	52.80	-19.67	33.13	PK	46.00	12.87	Horizontal
5	368.868	47.71	-17.94	29.77	PK	46.00	16.23	Horizontal
6	720.360	40.83	-11.73	29.10	PK	46.00	16.90	Horizontal

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	222.2523	-22.29	30.73	46.00	15.27
2	226.1361	-22.16	33.74	46.00	12.26
3	308.6687	-19.75	29.49	46.00	16.51
4	313.5235	-19.67	32.41	46.00	13.59
5	368.8689	-17.94	29.05	46.00	16.95
6	720.3604	-11.73	28.38	46.00	17.62

9.8 CONDUCTED EMISSION TEST

9.8.1 Applicable Standard

According to FCC Part 15.207(a)

9.8.2 Conformance Limit

Conducted Emission Limit		
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

9.8.3 Test Configuration

Test according to clause 7.3 conducted emission test setup

9.8.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Repeat above procedures until all frequency measured were complete.

9.8.5 Test Results

N/A

9.9 ANTENNA APPLICATION

9.9.1 Antenna Requirement

Standard	Requirement
FCC CRF Part 15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

9.9.2 Result

PASS

- Antenna use a permanently attached antenna which is not replaceable.
- Not using a standard antenna jack or electrical connector for antenna replacement
- The antenna has to be professionally installed (please provide method of installation)

Note: Please refer to the attached document Internal Photos to show the antenna connector.

Detail of factor for radiated emission

Frequency(MHz)	Ant_F(dB)	Cab_L(dB)	Preamp(dB)	Correct Factor(dB)
0.009	20.6	0.03	\	20.63
0.15	20.7	0.1	\	20.8
1	20.9	0.15	\	21.05
10	20.1	0.28	\	20.38
30	18.8	0.45	\	19.25
30	11.7	0.62	27.9	-15.58
100	12.5	1.02	27.8	-14.28
300	12.9	1.91	27.5	-12.69
600	19.2	2.92	27	-4.88
800	21.1	3.54	26.6	-1.96
1000	22.3	4.17	26.2	0.27
1000	25.6	1.76	41.4	-14.04
3000	28.9	3.27	43.2	-11.03
5000	31.1	4.2	44.6	-9.3
8000	36.2	5.95	44.7	-2.55
10000	38.4	6.3	43.9	0.8
12000	38.5	7.14	42.3	3.34
15000	40.2	8.15	41.4	6.95
18000	45.4	9.02	41.3	13.12
18000	37.9	1.81	47.9	-8.19
21000	37.9	1.95	48.7	-8.85
25000	39.3	2.01	42.8	-1.49
28000	39.6	2.16	46.0	-4.24
31000	41.2	2.24	44.5	-1.06
34000	41.5	2.29	46.6	-2.81
37000	43.8	2.30	46.4	-0.3
40000	43.2	2.50	42.2	3.5

--- End of Report ---