



Appendix Test Data for BT(BDR/EDR) (Conducted Measurement)

Product Name: Motorcycle Helmet Bluetooth Communication System

Trade Mark: MIDLAND

Test Model: LS2-SPECTRUM EVO

FCC ID: K6M-LS2

Environmental Conditions

Temperature:	23.5℃
Relative Humidity:	58%
ATM Pressure:	100.0 kPa
Test Engineer:	Allen Lai
Supervised by:	Max Zhang
NOTE	N/A

Appendix A: 20dB Emission Bandwidth

Test Result

Test Mode	Antenna	Frequency [MHz]	20db EBW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
DH5	Ant1	2402	0.951	2401.547	2402.498	---	---
DH5	Ant1	2441	0.948	2440.547	2441.495	---	---
DH5	Ant1	2480	0.930	2479.556	2480.486	---	---
2DH5	Ant1	2402	1.317	2401.349	2402.666	---	---
2DH5	Ant1	2441	1.314	2440.352	2441.666	---	---
2DH5	Ant1	2480	1.284	2479.379	2480.663	---	---
3DH5	Ant1	2402	1.281	2401.370	2402.651	---	---
3DH5	Ant1	2441	1.293	2440.364	2441.657	---	---
3DH5	Ant1	2480	1.302	2479.358	2480.660	---	---

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs





DH5-Ant1-2480



2DH5-Ant1-2402





2DH5-Ant1-2441



2DH5-Ant1-2480





3DH5-Ant1-2402



3DH5-Ant1-2441







Appendix B: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
DH5	Ant1	2402	0.87774	2401.5707	2402.4485	---	---
DH5	Ant1	2441	0.87523	2440.5735	2441.4487	---	---
DH5	Ant1	2480	0.88627	2479.5702	2480.4565	---	---
2DH5	Ant1	2402	1.1853	2401.4160	2402.6013	---	---
2DH5	Ant1	2441	1.1837	2440.4159	2441.5996	---	---
2DH5	Ant1	2480	1.1916	2479.4181	2480.6097	---	---
3DH5	Ant1	2402	1.1944	2401.4090	2402.6034	---	---
3DH5	Ant1	2441	1.1944	2440.4114	2441.6058	---	---
3DH5	Ant1	2480	1.1840	2479.4176	2480.6016	---	---

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs





DH5-Ant1-2480



2DH5-Ant1-2402



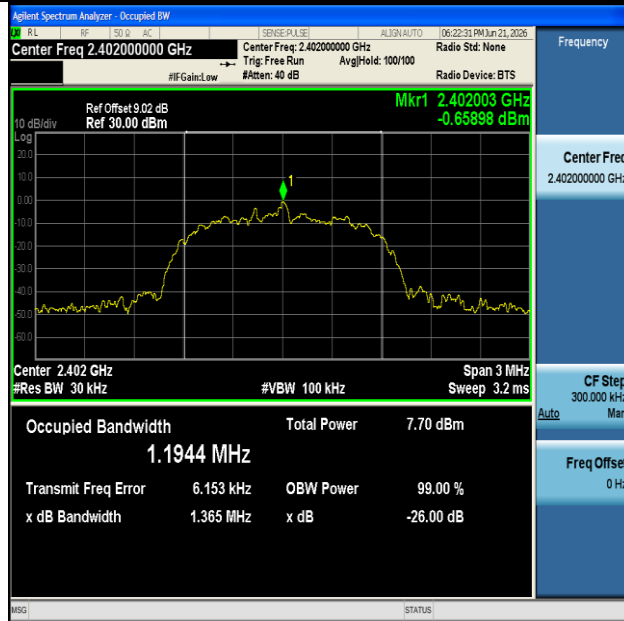


2DH5-Ant1-2441



2DH5-Ant1-2480



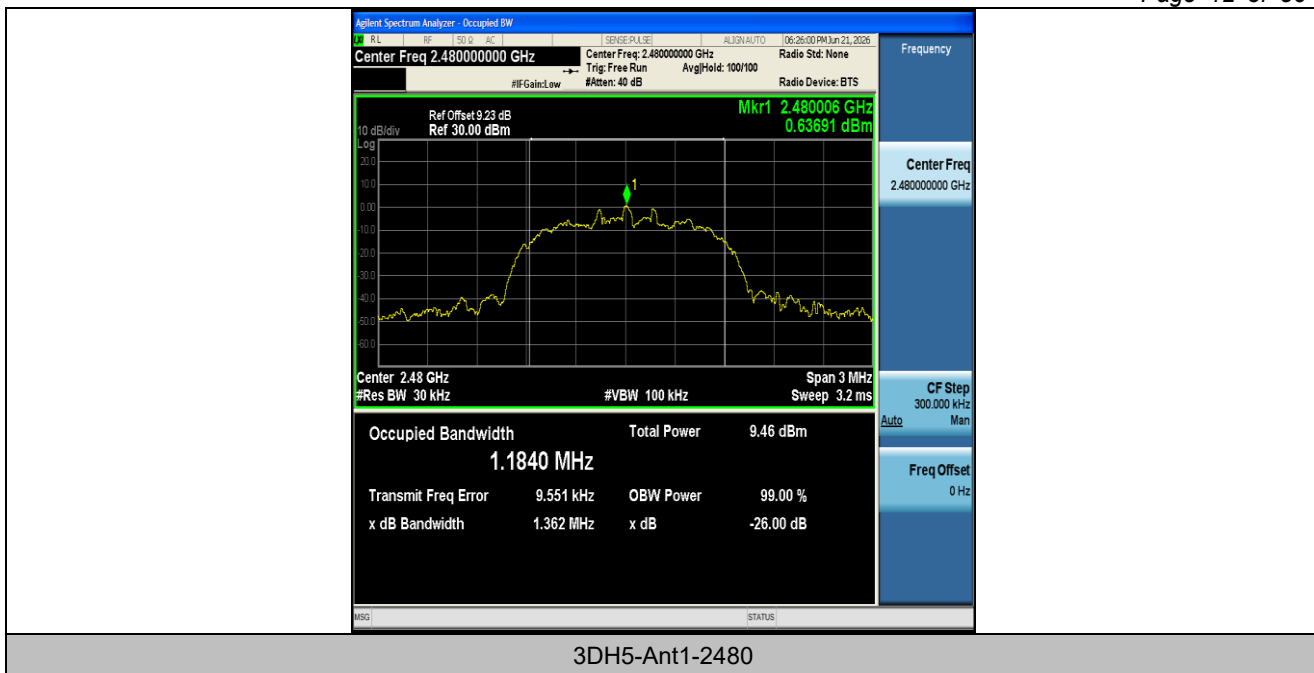


3DH5-Ant1-2402



3DH5-Ant1-2441







Appendix C: Maximum peak conducted output power

Test Result

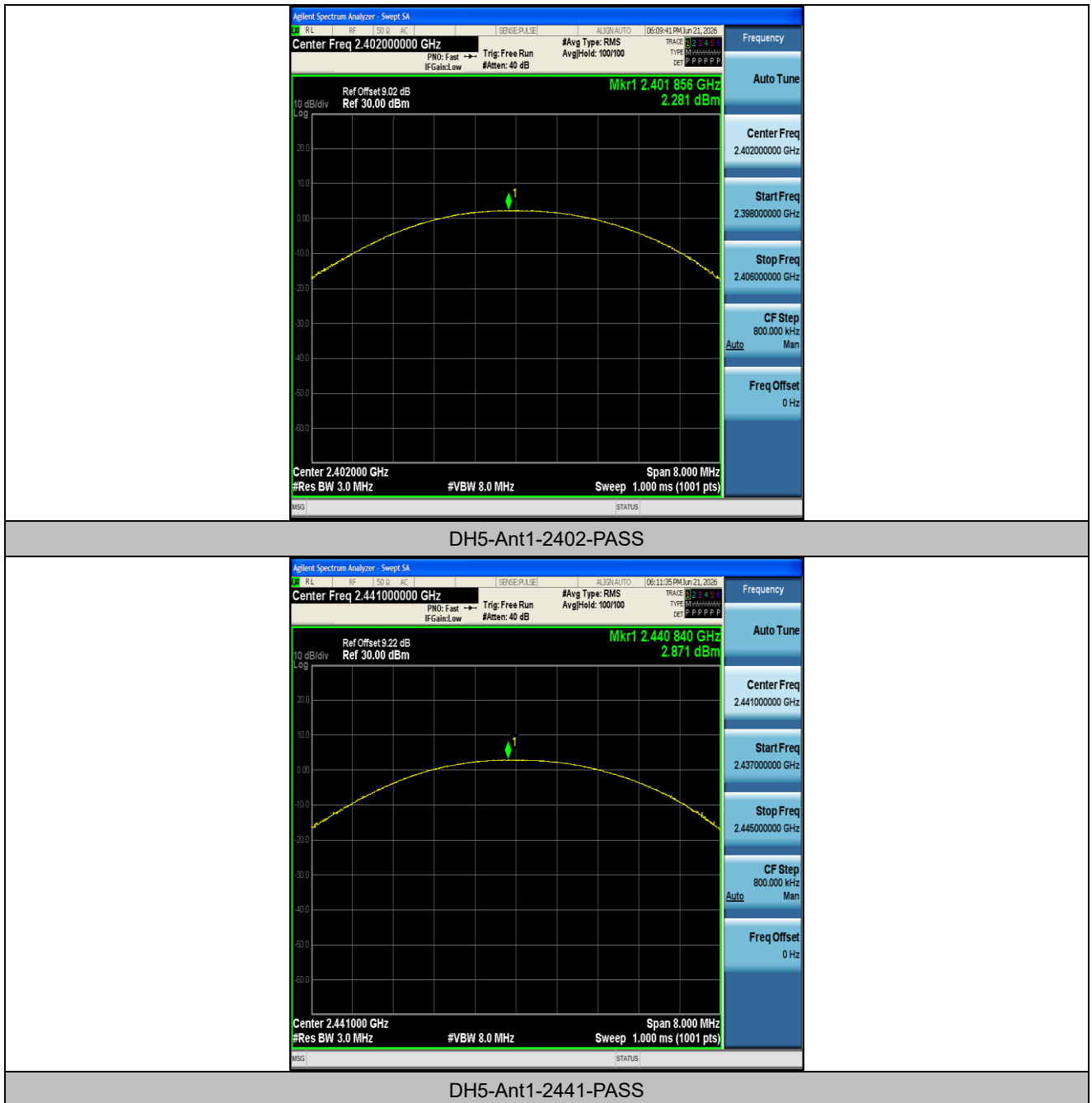
Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power [dBm]	Conducted Limit [dBm]	Verdict
DH5	Ant1	2402	2.28	≤30	PASS
DH5	Ant1	2441	2.87	≤30	PASS
DH5	Ant1	2480	3.41	≤30	PASS
2DH5	Ant1	2402	2.83	≤20.97	PASS
2DH5	Ant1	2441	3.68	≤20.97	PASS
2DH5	Ant1	2480	4.24	≤20.97	PASS
3DH5	Ant1	2402	3.23	≤20.97	PASS
3DH5	Ant1	2441	4.01	≤20.97	PASS
3DH5	Ant1	2480	4.54	≤20.97	PASS

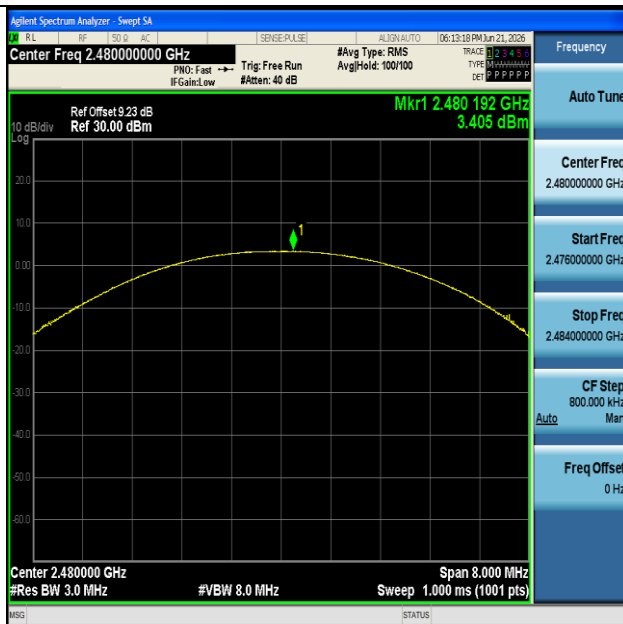
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



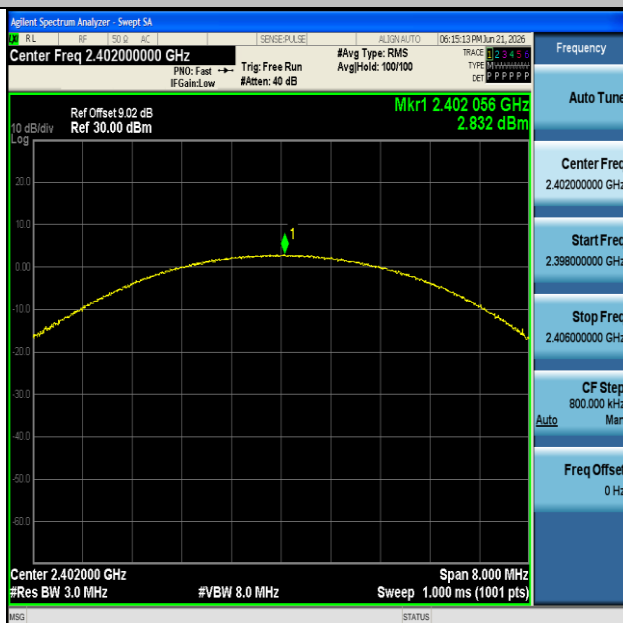


Test Graphs



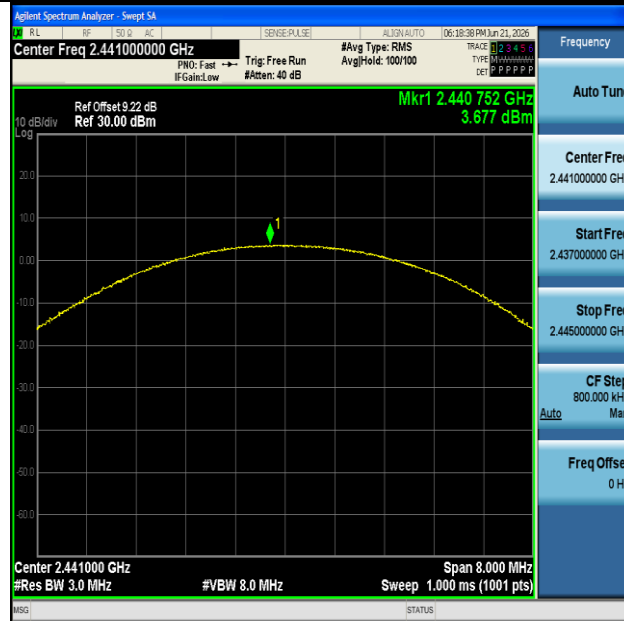


DH5-Ant1-2480-PASS

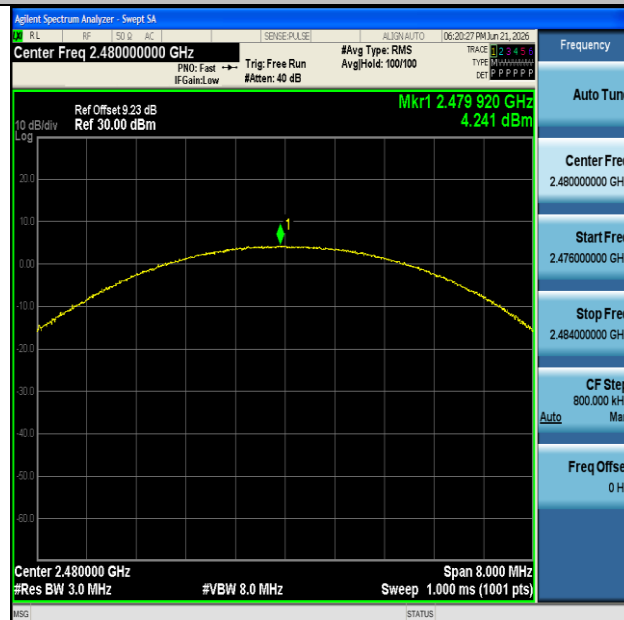


2DH5-Ant1-2402-PASS



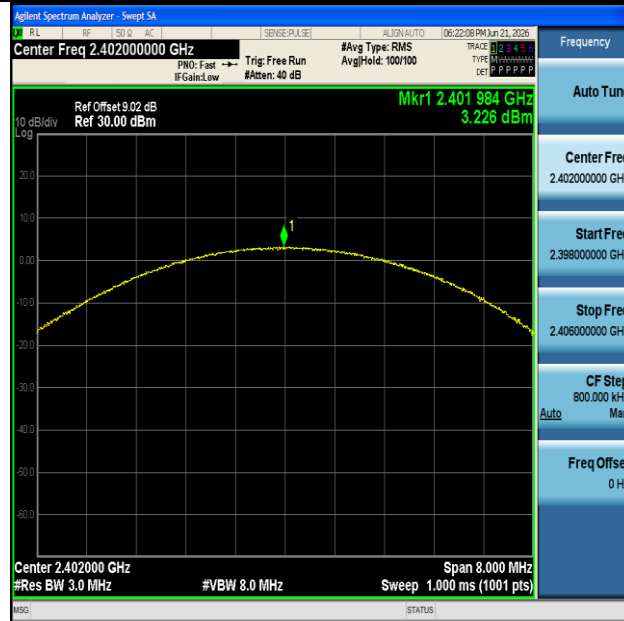


2DH5-Ant1-2441-PASS

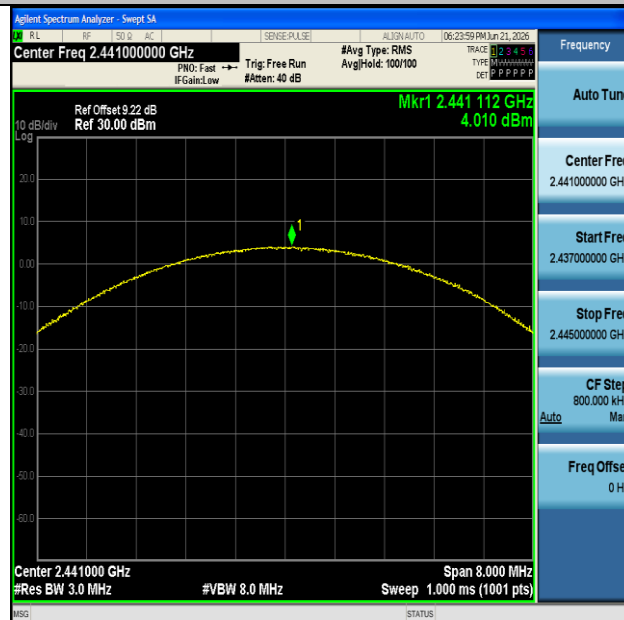


2DH5-Ant1-2480-PASS



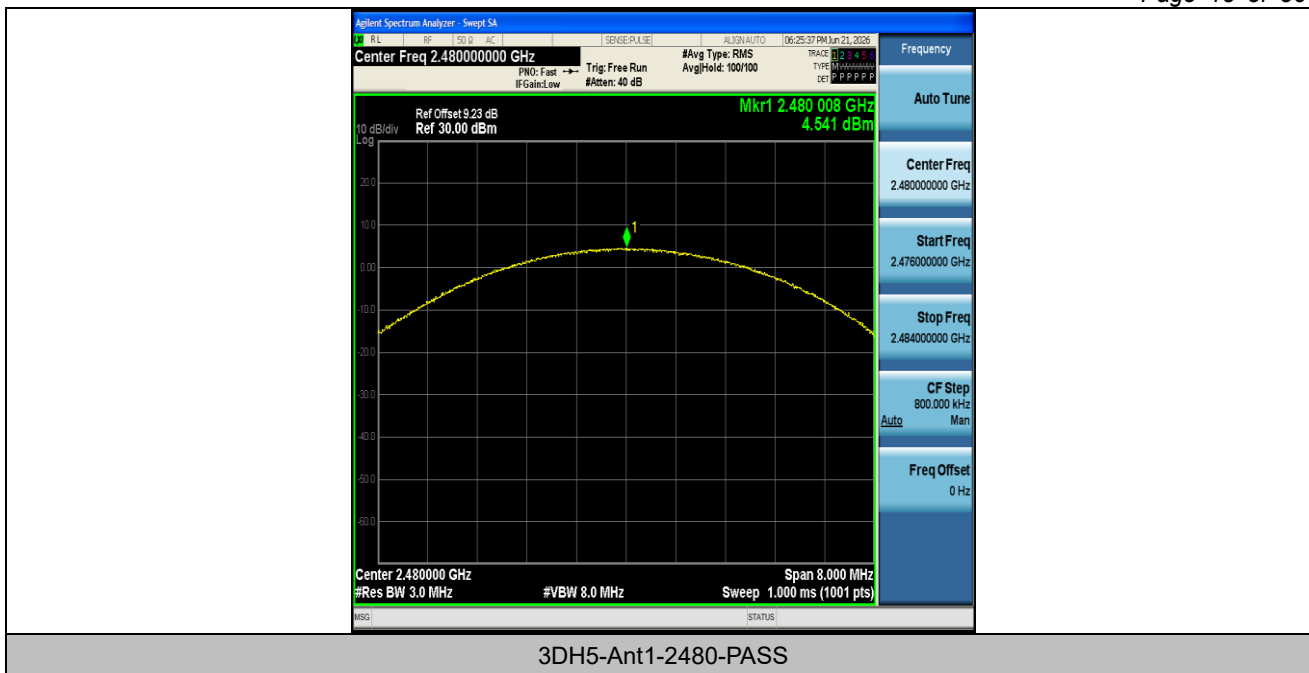


3DH5-Ant1-2402-PASS



3DH5-Ant1-2441-PASS





3DH5-Ant1-2480-PASS





Appendix D: Carrier frequency separation

Test Result

Test Mode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
DH5	Ant1	Hop	0.978	≥ 0.951	PASS
2DH5	Ant1	Hop	1.022	≥ 0.878	PASS
3DH5	Ant1	Hop	1.168	≥ 0.868	PASS

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Agilent Spectrum Analyzer - Sweep SA

Center Freq 2.441500000 GHz

Ref Offset 9.22 dB
Ref 30.00 dBm

ΔMkr2 978 kHz
-0.068 dB

Start 2.4405000 GHz
Stop 2.4425000 GHz

#Res BW 300 kHz
#VBW 300 kHz

Sweep 1.000 ms (1001 pts)

Agilent Spectrum Analyzer - Sweep 5A

Center Freq 2.441500000 GHz

Ref Offset 3.22 dB

Ref 30.00 dBm

Trig: Free Run

#Avg Type: RMS

Avg/Hold: 5000/6000

FW: Fast

IF Gain: Low

#Atten: 40 dB

AL333A/UTO

06:33:00 PM Jun 21, 2026

TRACE 0 3 4 5 0

TYPE: Continuous

DEF: P P P P P P

Frequency

Auto Tune

Center Freq 2.441500000 GHz

Start Freq 2.440500000 GHz

Stop Freq 2.442500000 GHz

CF Step 200.000 kHz

Auto

Man

Freq Offset 0 Hz

Start 2.440500 GHz

#Res BW 300 kHz

#VBW 300 kHz

Stop 2.442500 GHz

Sweep 1.000 ms (1001 pts)

MSG: (STATUS)

2DH5-Ant1-Hop-PASS







Appendix E: Time of occupancy

Test Result

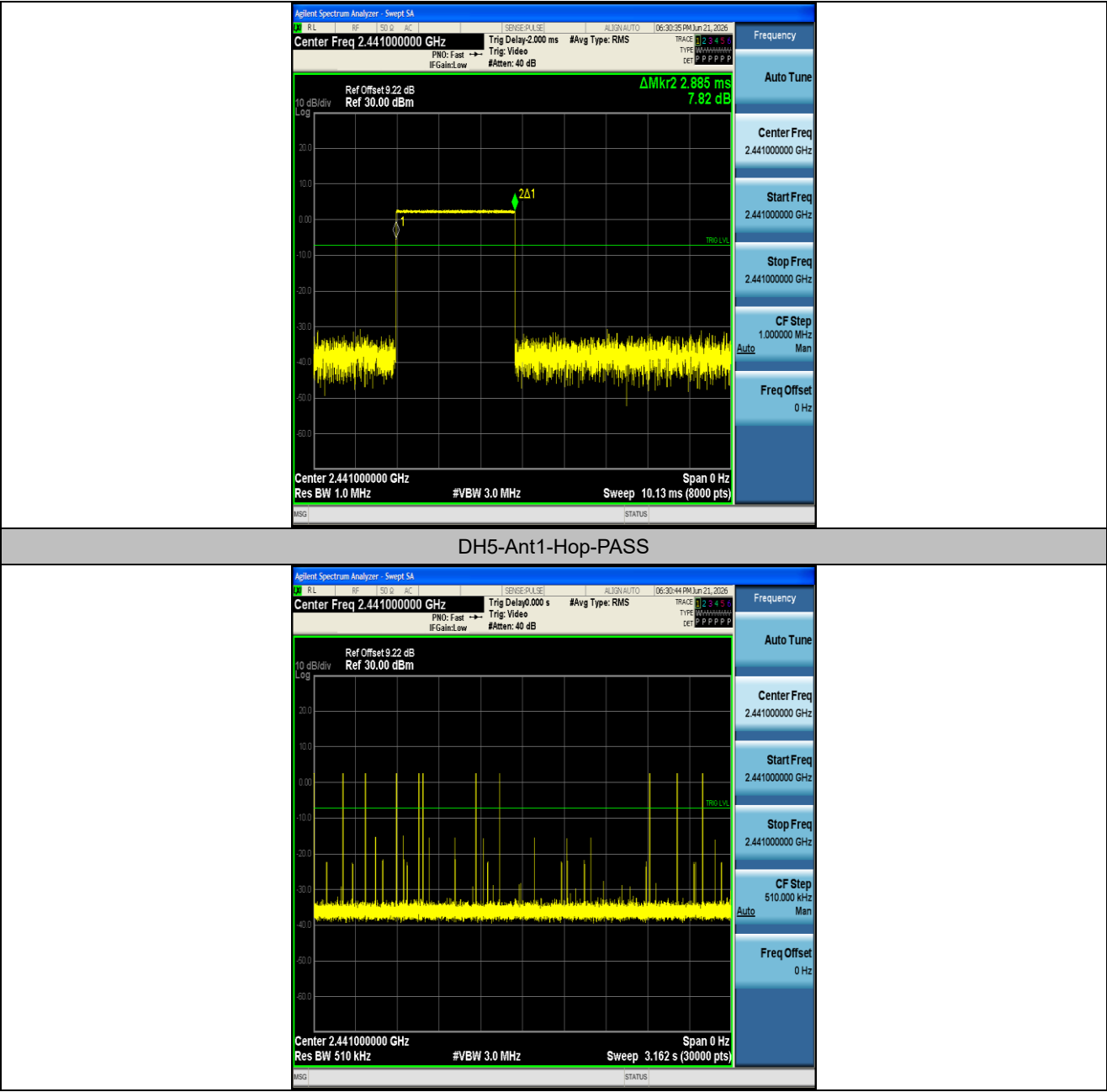
Test Mode	Antenna	Frequency [MHz]	Burst Width [ms]	TotalHops [Num]	Result [s]	Limit [s]	Verdict
DH5	Ant1	Hop	2.885	110	0.317	≤0.4	PASS
2DH5	Ant1	Hop	2.892	130	0.376	≤0.4	PASS
3DH5	Ant1	Hop	2.894	120	0.347	≤0.4	PASS

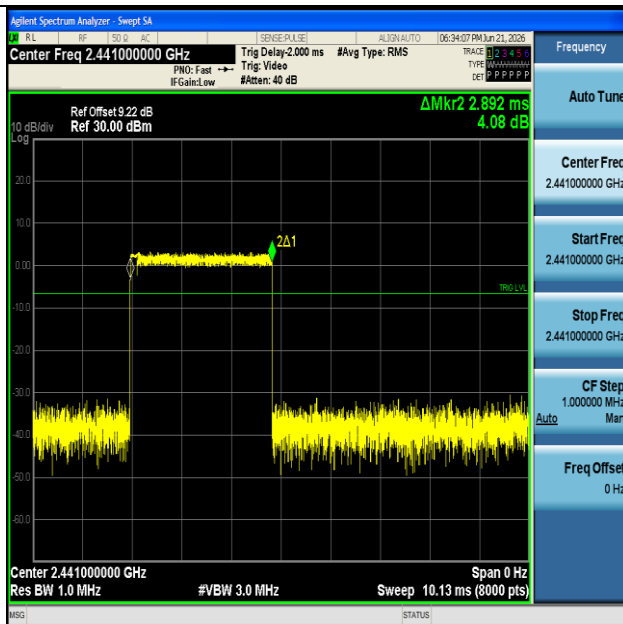
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



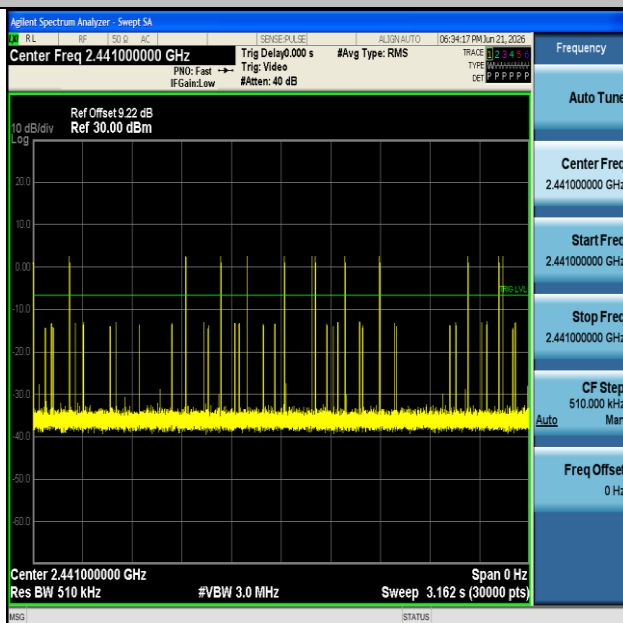


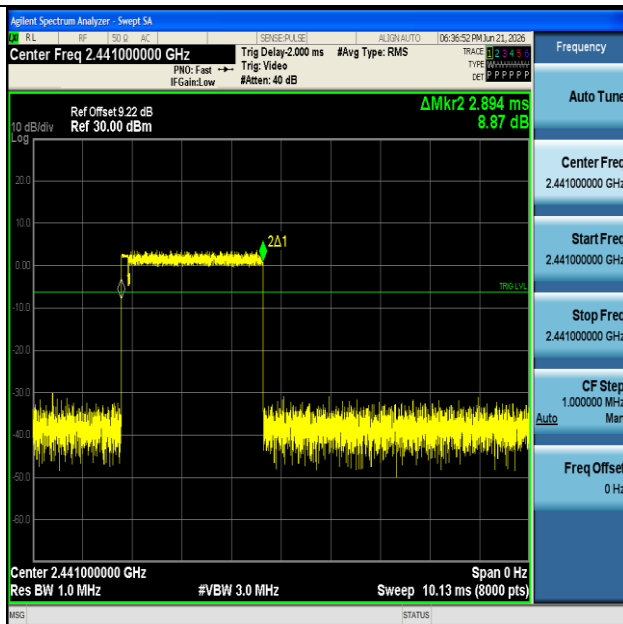
Test Graphs



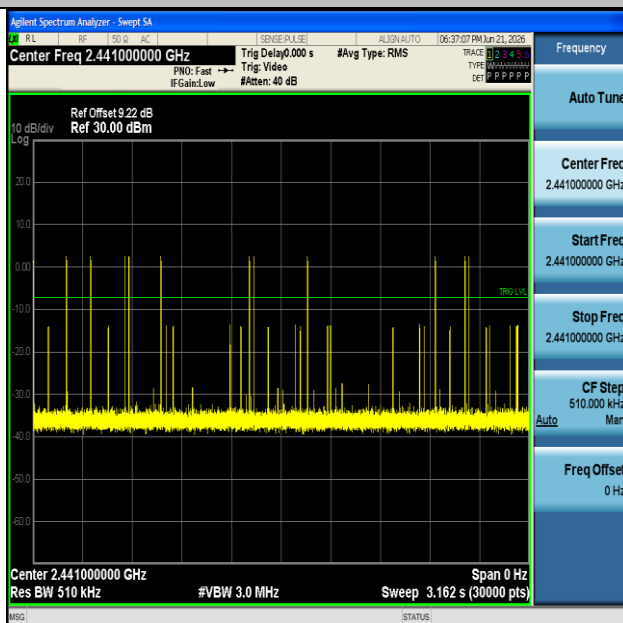


2DH5-Ant1-Hop-PASS





3DH5-Ant1-Hop-PASS





Appendix F: Number of hopping channels

Test Result

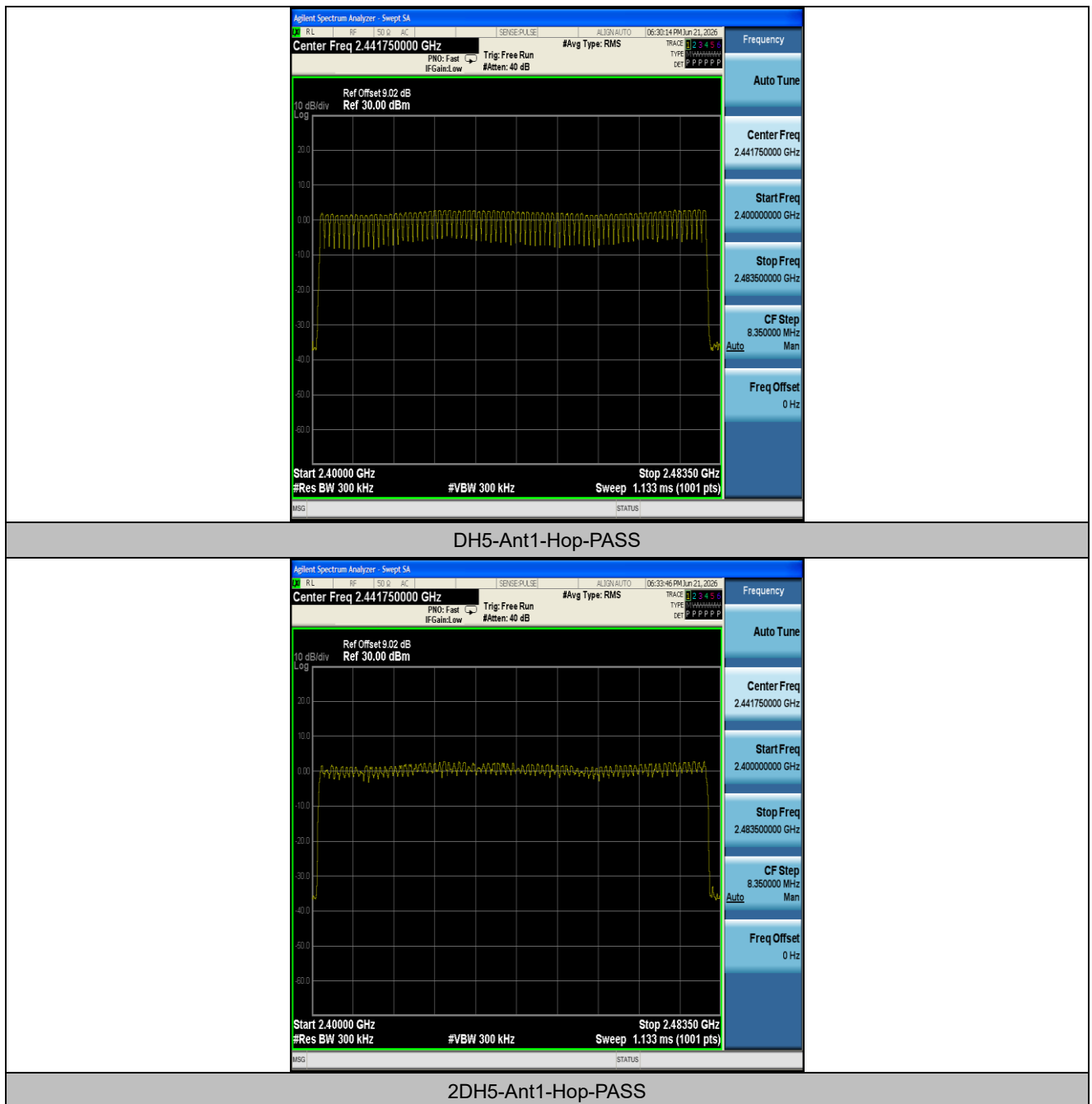
Test Mode	Antenna	Frequency [MHz]	Result [Num]	Limit [Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

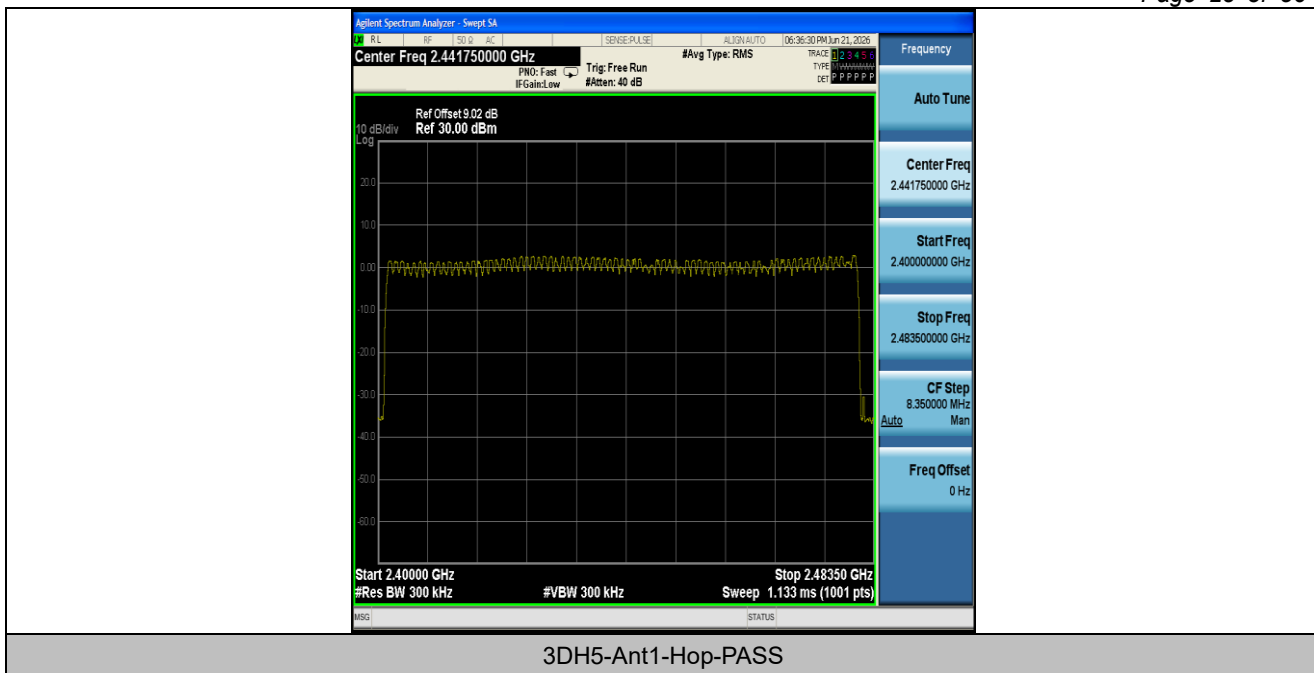
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs







Appendix G: Band edge measurements

Test Result

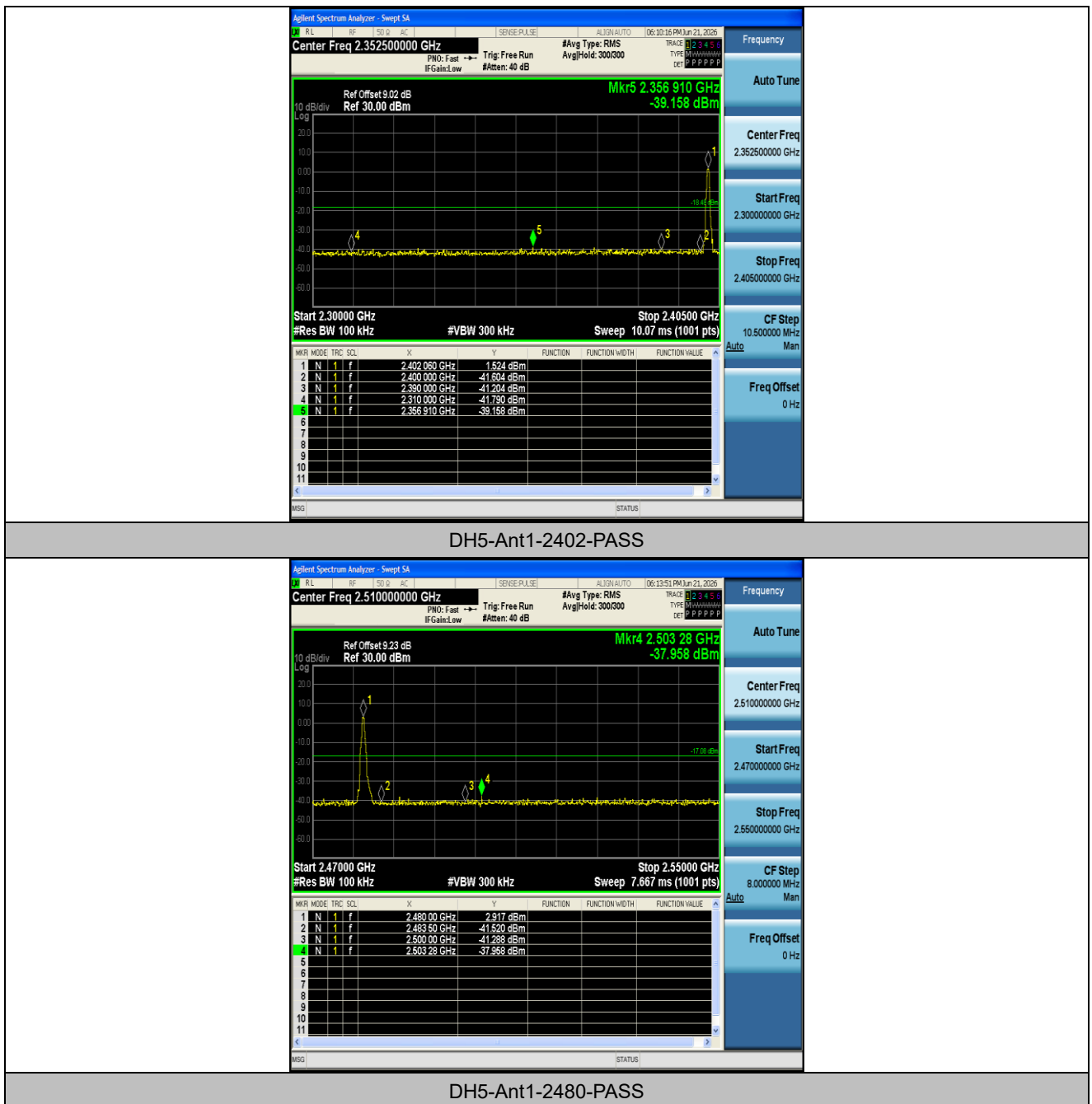
Test Mode	Antenna	Ch.Name	Frequency [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	1.52	-39.16	≤-18.48	PASS
DH5	Ant1	High	2480	2.92	-37.96	≤-17.08	PASS
DH5	Ant1	Low	Hop_2402	0.55	-38.32	≤-19.45	PASS
DH5	Ant1	High	Hop_2480	1.99	-38.1	≤-18.01	PASS
2DH5	Ant1	Low	2402	1.25	-38.45	≤-18.75	PASS
2DH5	Ant1	High	2480	-0.14	-38.46	≤-20.14	PASS
2DH5	Ant1	Low	Hop_2402	-2.25	-38.74	≤-22.25	PASS
2DH5	Ant1	High	Hop_2480	-1.28	-38.34	≤-21.28	PASS
3DH5	Ant1	Low	2402	0.68	-39.39	≤-19.33	PASS
3DH5	Ant1	High	2480	2.64	-32.87	≤-17.36	PASS
3DH5	Ant1	Low	Hop_2402	-2.86	-38.39	≤-22.86	PASS
3DH5	Ant1	High	Hop_2480	2.76	-31.85	≤-17.24	PASS

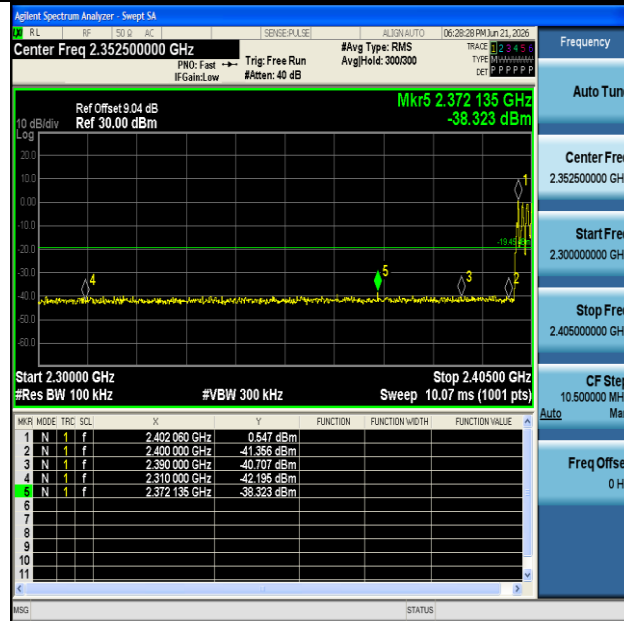
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



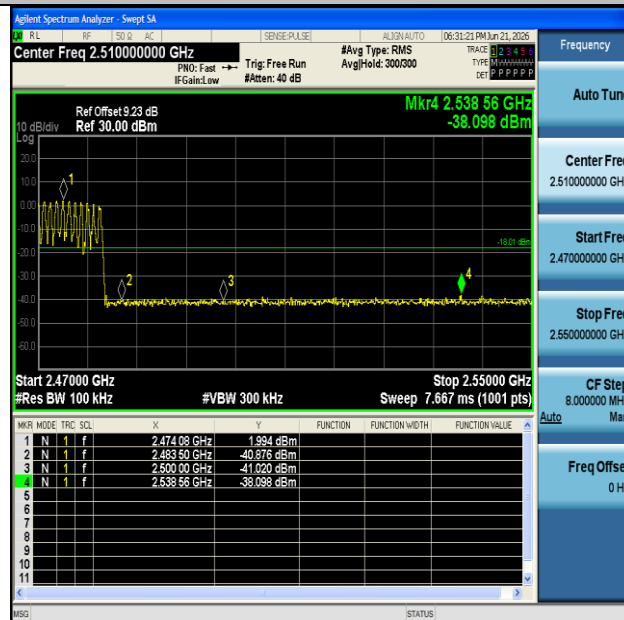


Test Graphs



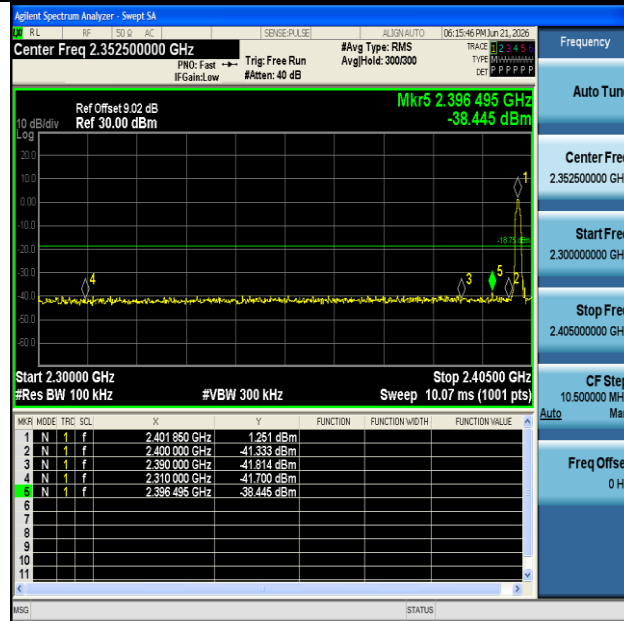


DH5-Ant1-Hop_2402-PASS

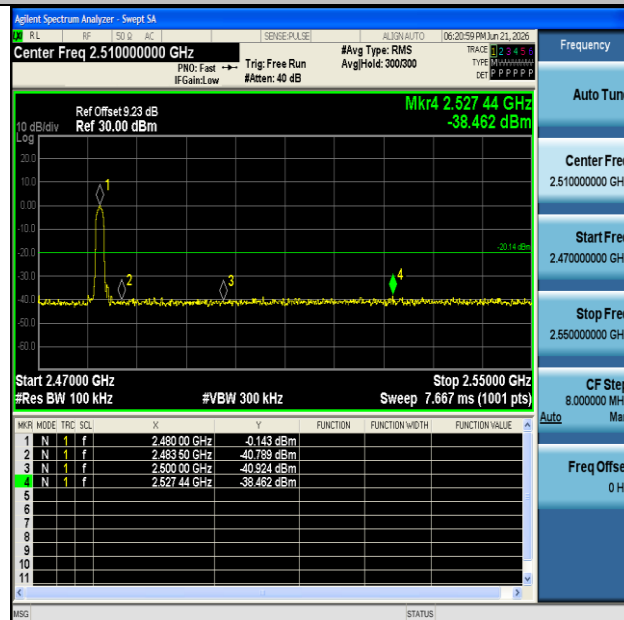


DH5-Ant1-Hop_2480-PASS



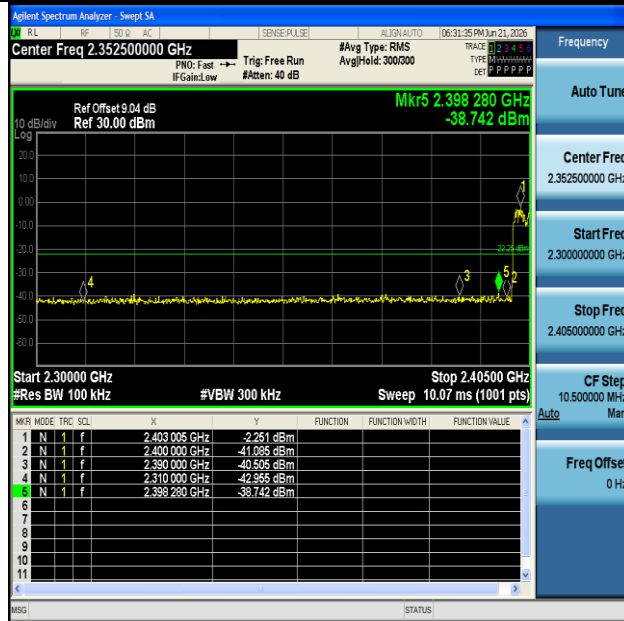


2DH5-Ant1-2402-PASS

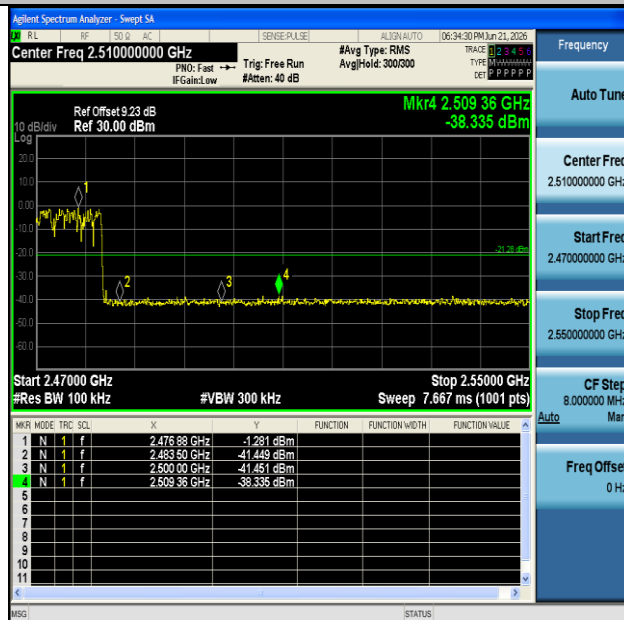


2DH5-Ant1-2480-PASS



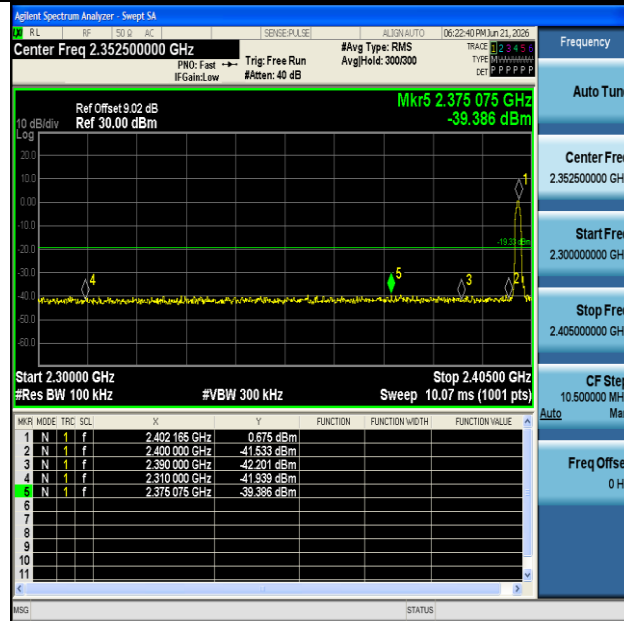


2DH5-Ant1-Hop_2402-PASS

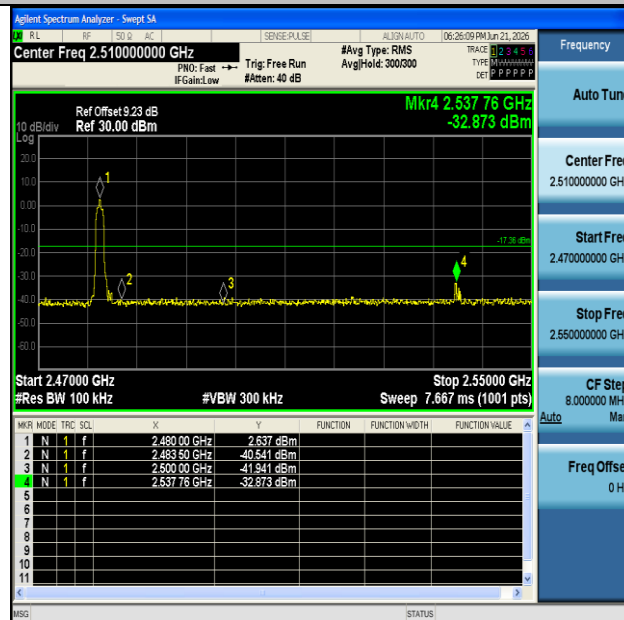


2DH5-Ant1-Hop_2480-PASS



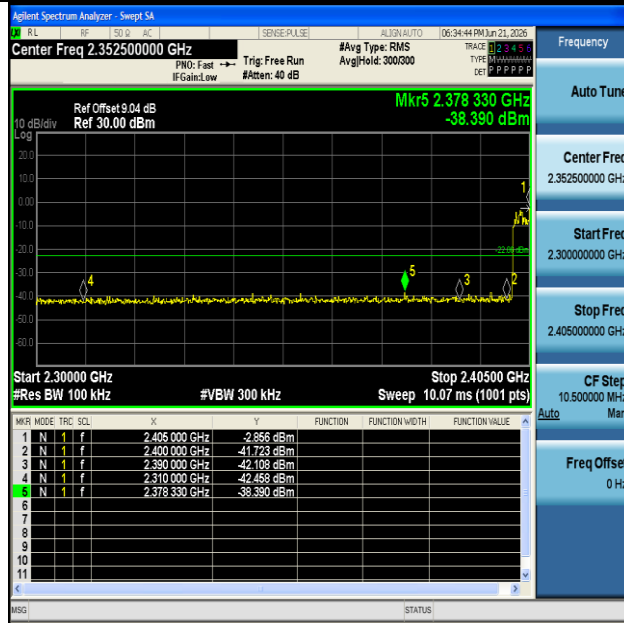


3DH5-Ant1-2402-PASS

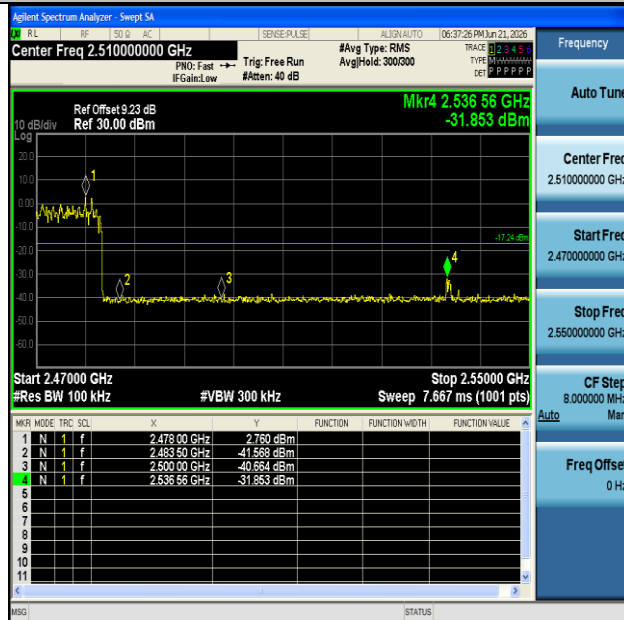


3DH5-Ant1-2480-PASS





3DH5-Ant1-Hop_2402-PASS



3DH5-Ant1-Hop_2480-PASS





Appendix H: Conducted Spurious Emission

Test Result

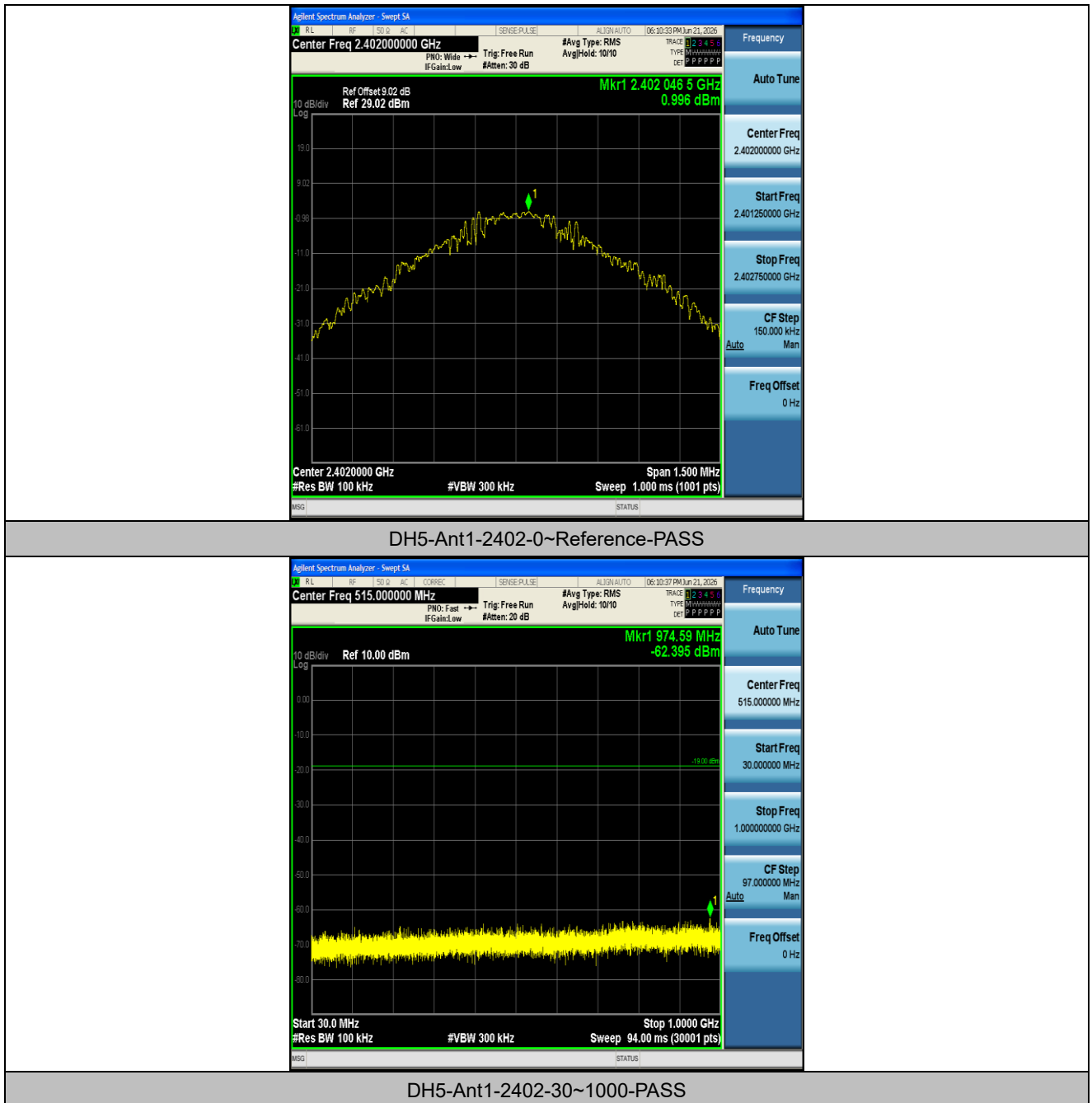
Test Mode	Antenna	Frequency [MHz]	Freq. Range [MHz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	0~Reference	1.00	1.00	---	PASS
DH5	Ant1	2402	30~1000	1.00	-62.4	≤-19	PASS
DH5	Ant1	2402	1000~26500	1.00	-37.47	≤-19	PASS
DH5	Ant1	2441	0~Reference	2.09	2.09	---	PASS
DH5	Ant1	2441	30~1000	2.09	-63.06	≤-17.91	PASS
DH5	Ant1	2441	1000~26500	2.09	-37.29	≤-17.91	PASS
DH5	Ant1	2480	0~Reference	2.69	2.69	---	PASS
DH5	Ant1	2480	30~1000	2.69	-62.55	≤-17.31	PASS
DH5	Ant1	2480	1000~26500	2.69	-37.51	≤-17.31	PASS
2DH5	Ant1	2402	0~Reference	-1.69	-1.69	---	PASS
2DH5	Ant1	2402	30~1000	-1.69	-62.09	≤-21.69	PASS
2DH5	Ant1	2402	1000~26500	-1.69	-37.84	≤-21.69	PASS
2DH5	Ant1	2441	0~Reference	0.48	0.48	---	PASS
2DH5	Ant1	2441	30~1000	0.48	-62.2	≤-19.52	PASS
2DH5	Ant1	2441	1000~26500	0.48	-36.97	≤-19.52	PASS
2DH5	Ant1	2480	0~Reference	2.79	2.79	---	PASS
2DH5	Ant1	2480	30~1000	2.79	-61.86	≤-17.21	PASS
2DH5	Ant1	2480	1000~26500	2.79	-37.26	≤-17.21	PASS
3DH5	Ant1	2402	0~Reference	-1.87	-1.87	---	PASS
3DH5	Ant1	2402	30~1000	-1.87	-62.48	≤-21.87	PASS
3DH5	Ant1	2402	1000~26500	-1.87	-37.59	≤-21.87	PASS
3DH5	Ant1	2441	0~Reference	0.53	0.53	---	PASS
3DH5	Ant1	2441	30~1000	0.53	-63.06	≤-19.47	PASS
3DH5	Ant1	2441	1000~26500	0.53	-36.39	≤-19.47	PASS
3DH5	Ant1	2480	0~Reference	1.58	1.58	---	PASS
3DH5	Ant1	2480	30~1000	1.58	-62.19	≤-18.42	PASS
3DH5	Ant1	2480	1000~26500	1.58	-37.64	≤-18.42	PASS

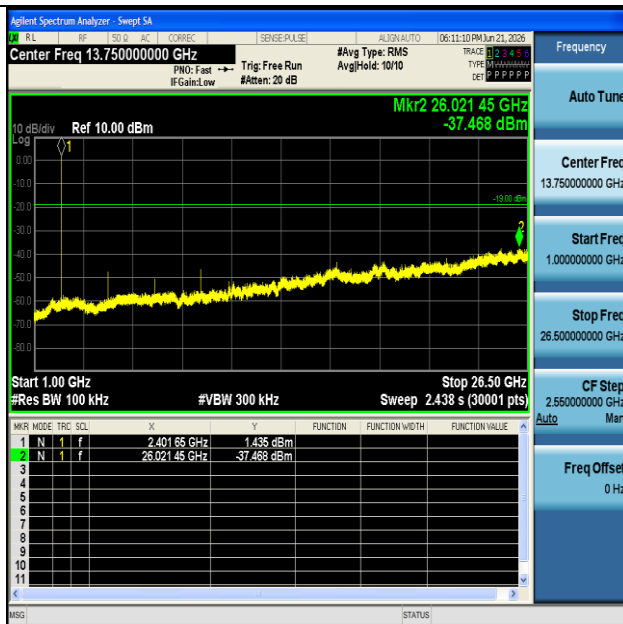
Note: offset(dB) in Reference test plots = cable loss(dB) + attenuator factor(dB); For spurious emissions plots from 30MHz to 26.5GHz, the cable loss and attenuator factors have been set in the 'Input Correction' of the Spectrum Analyzer during the test.



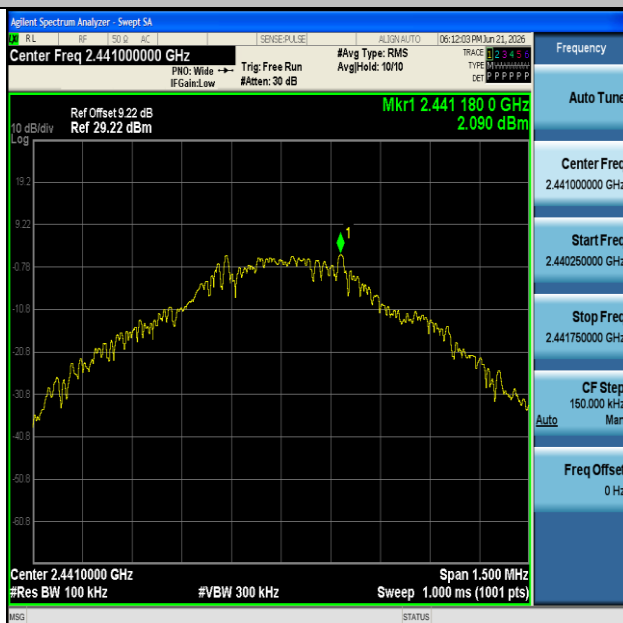


Test Graphs



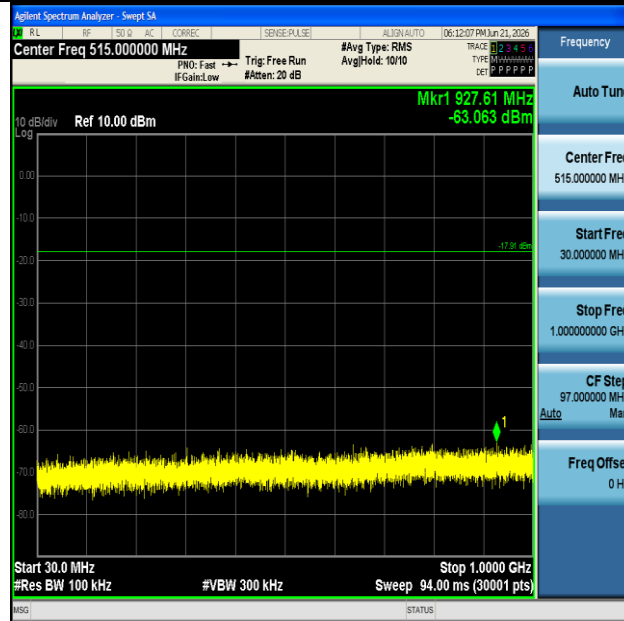


DH5-Ant1-2402-1000~26500-PASS



DH5-Ant1-2441-0~Reference-PASS



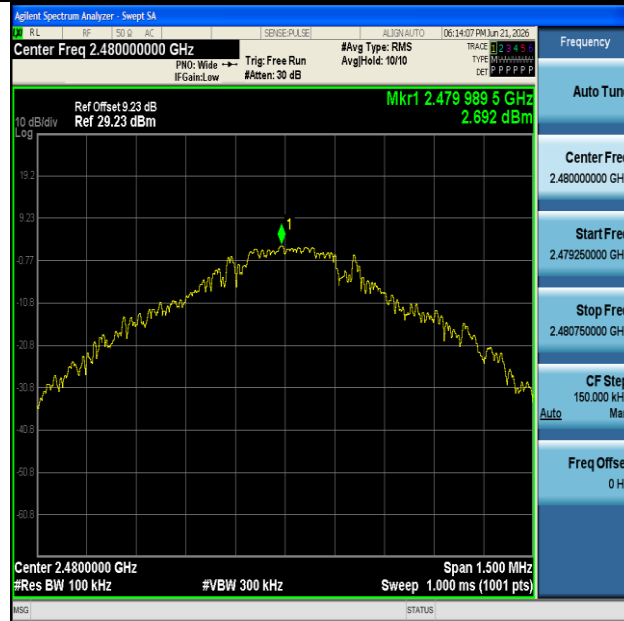


DH5-Ant1-2441-30~1000-PASS

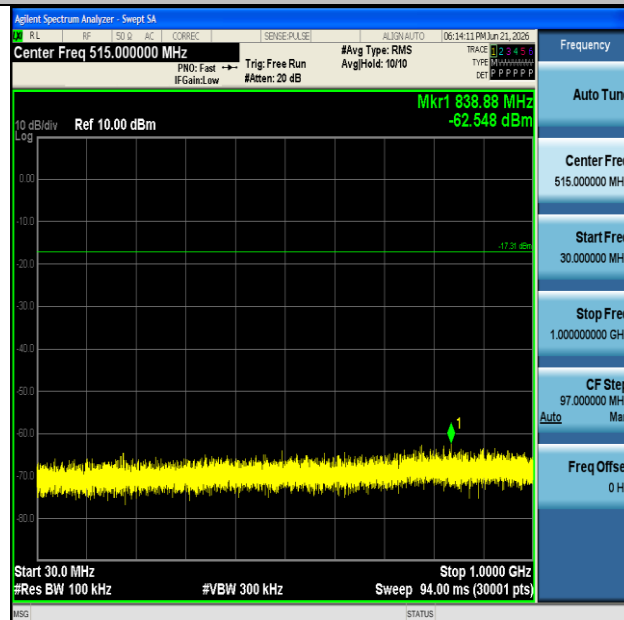


DH5-Ant1-2441-1000~26500-PASS



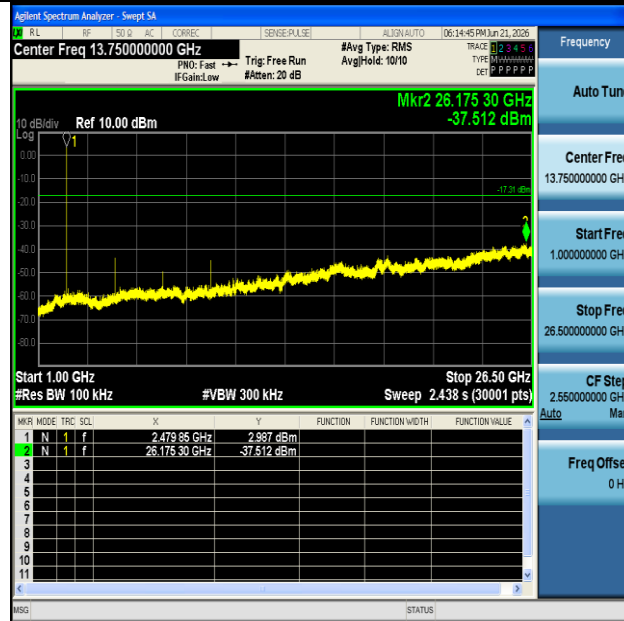


DH5-Ant1-2480-0~Reference-PASS

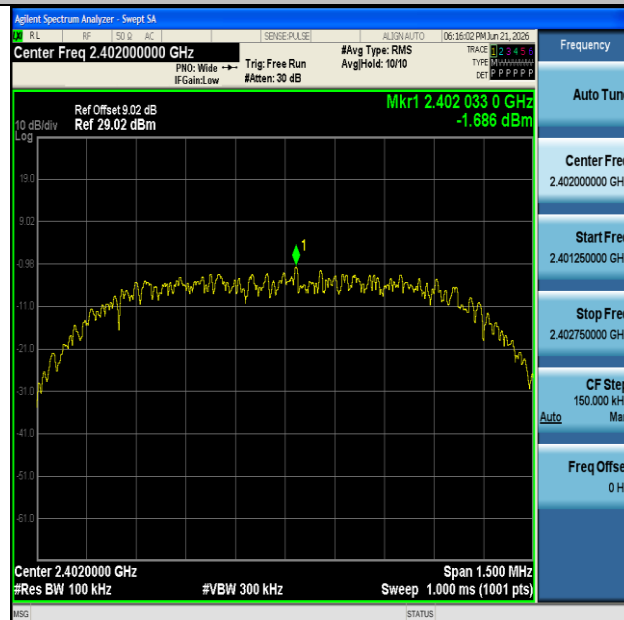


DH5-Ant1-2480-30~1000-PASS



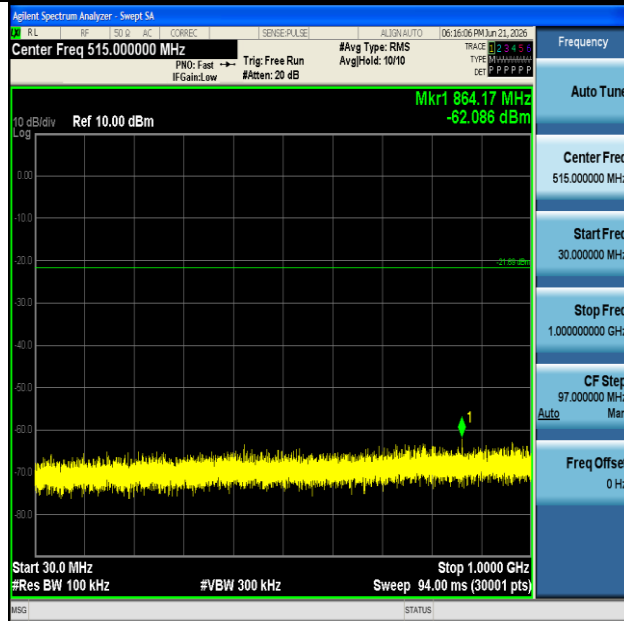


DH5-Ant1-2480-1000~26500-PASS

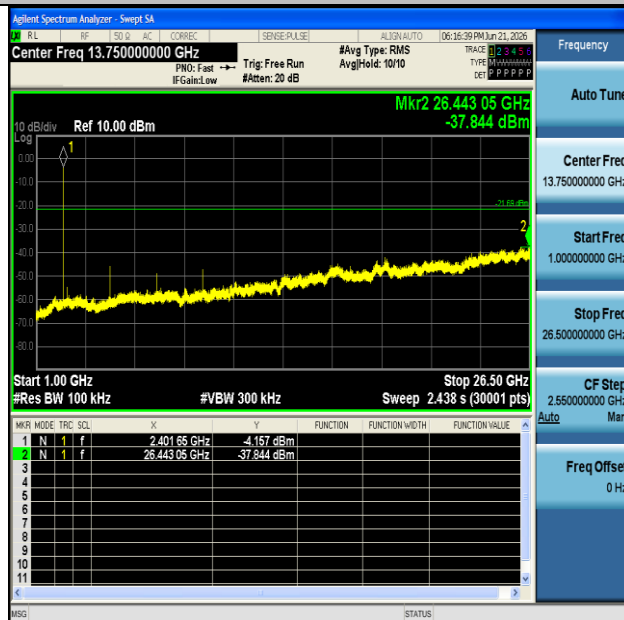


2DH5-Ant1-2402-0~Reference-PASS



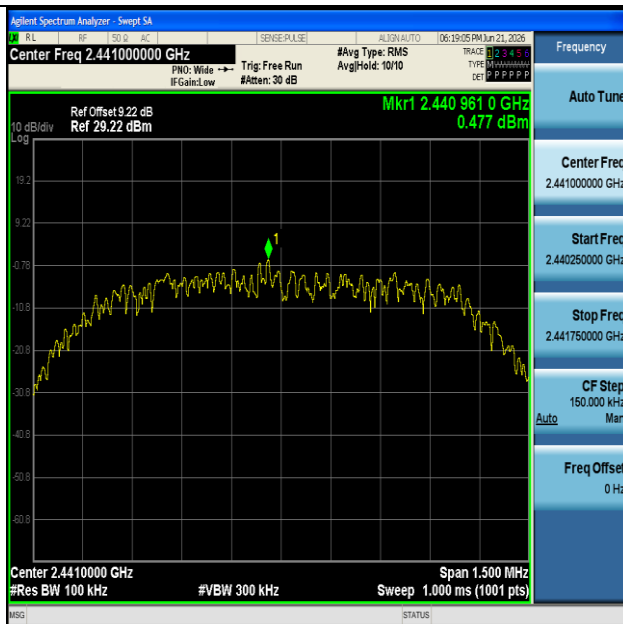


2DH5-Ant1-2402-30~1000-PASS

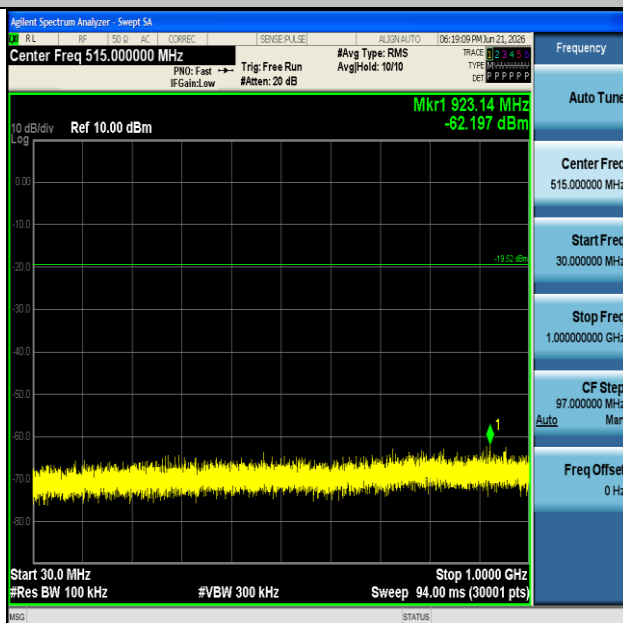


2DH5-Ant1-2402-1000~26500-PASS



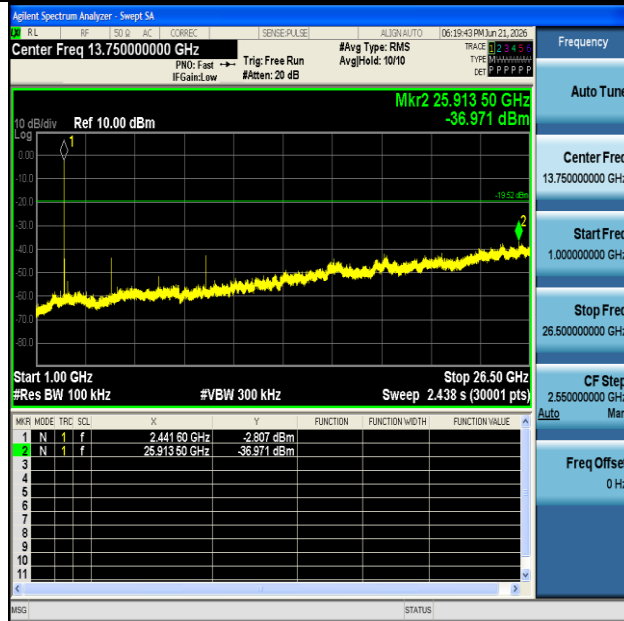


2DH5-Ant1-2441-0~Reference-PASS



2DH5-Ant1-2441-30~1000-PASS



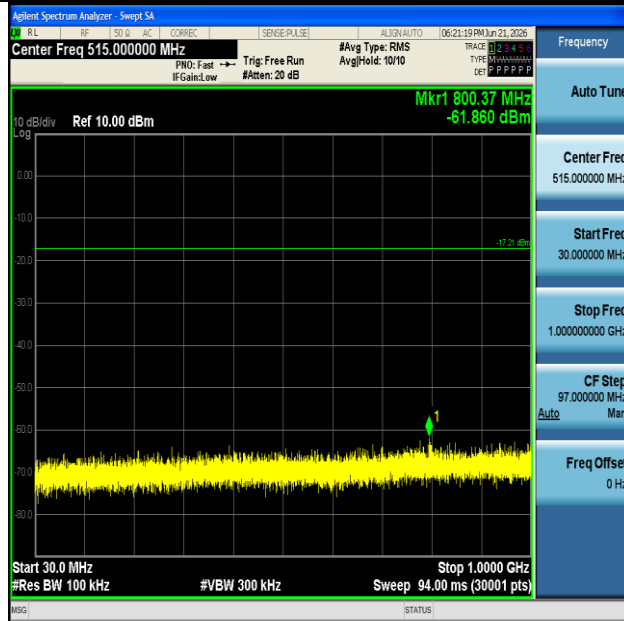


2DH5-Ant1-2441-1000~26500-PASS

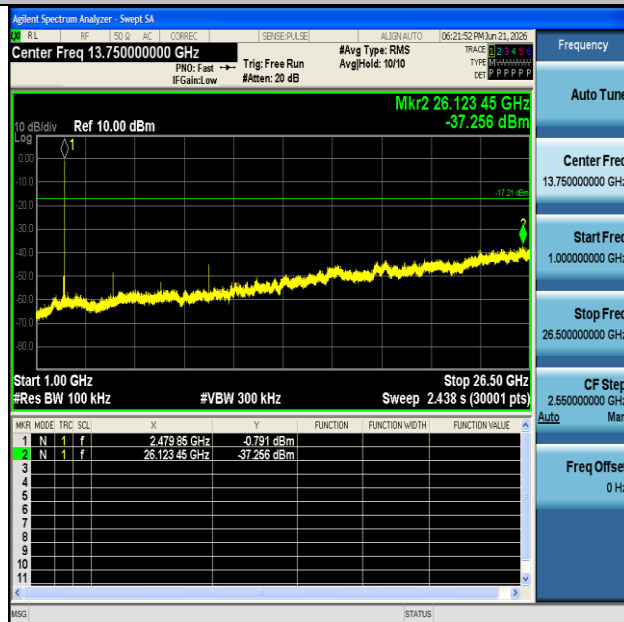


2DH5-Ant1-2480-0~Reference-PASS



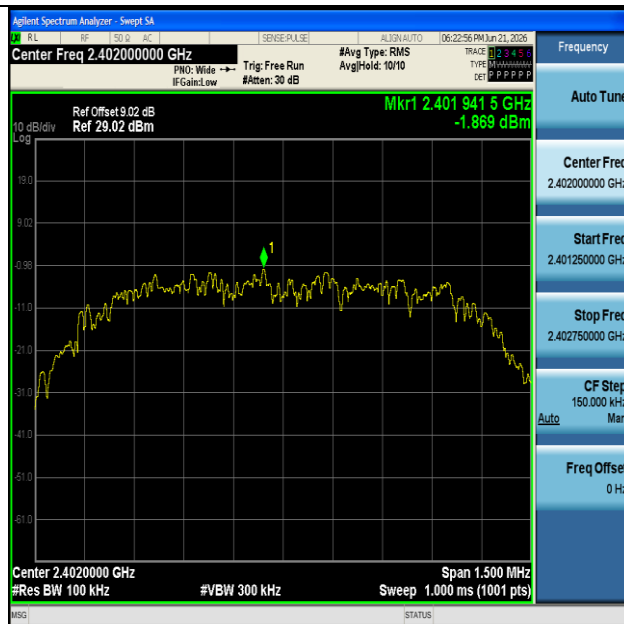


2DH5-Ant1-2480-30~1000-PASS

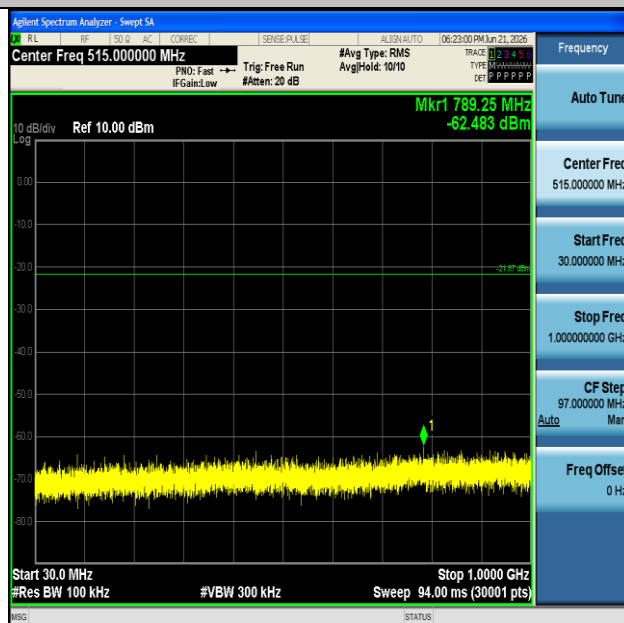


2DH5-Ant1-2480-1000~26500-PASS



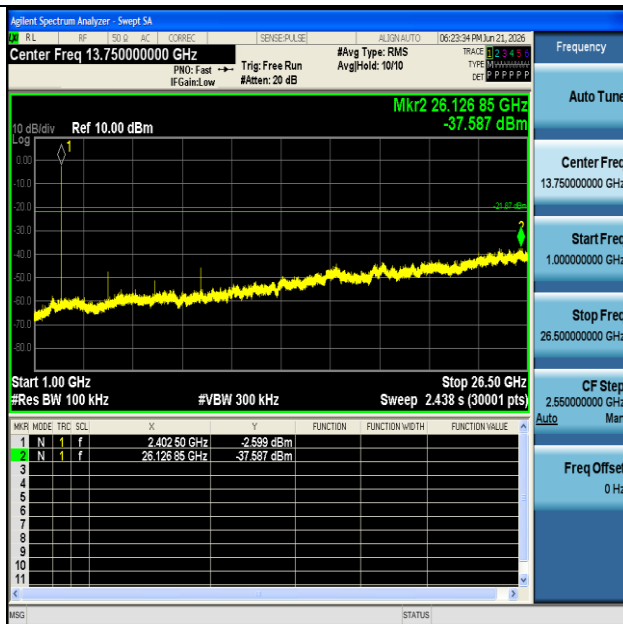


3DH5-Ant1-2402-0~Reference-PASS

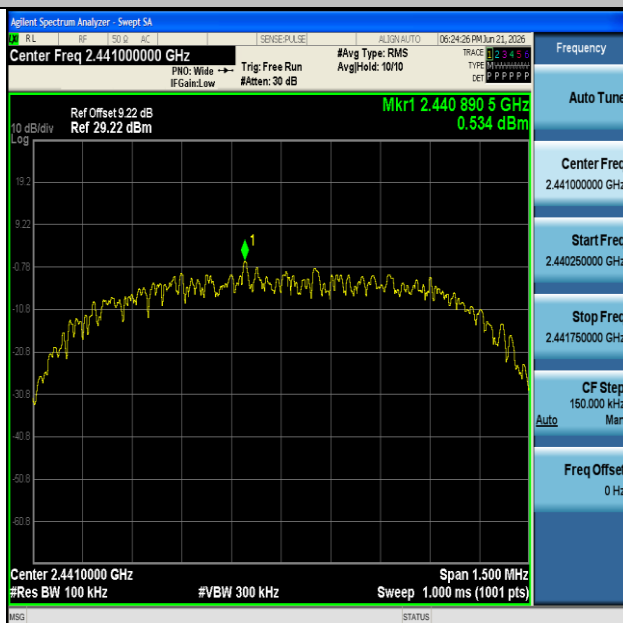


3DH5-Ant1-2402-30~1000-PASS



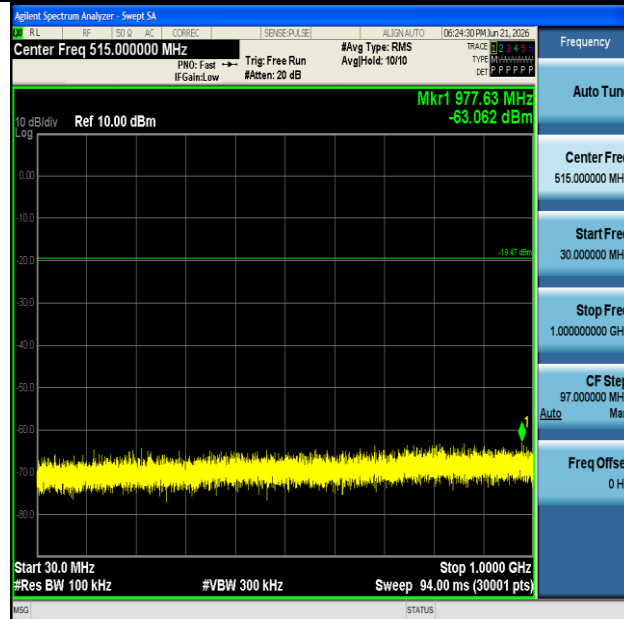


3DH5-Ant1-2402-1000~26500-PASS

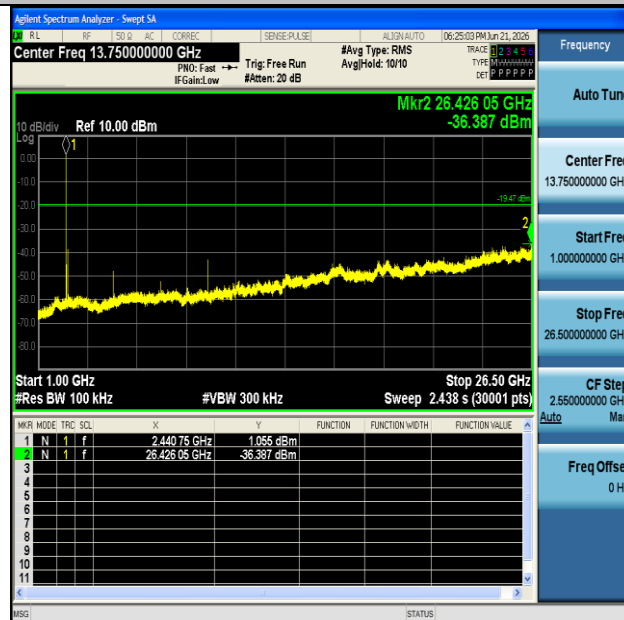


3DH5-Ant1-2441-0~Reference-PASS



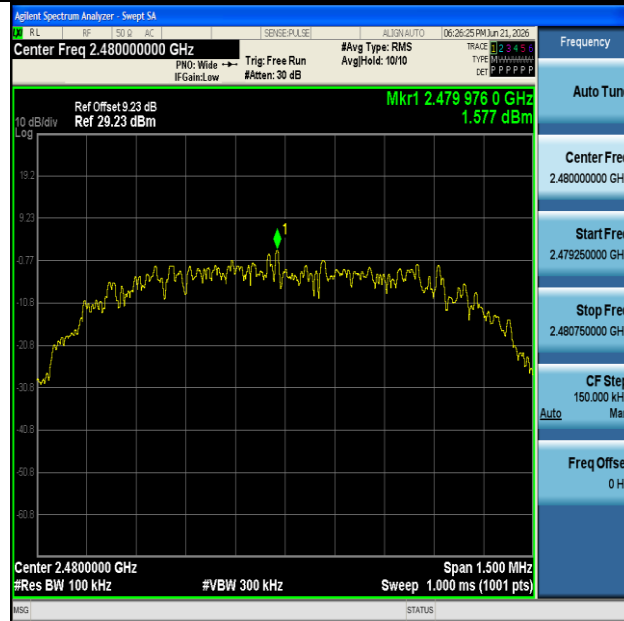


3DH5-Ant1-2441-30~1000-PASS

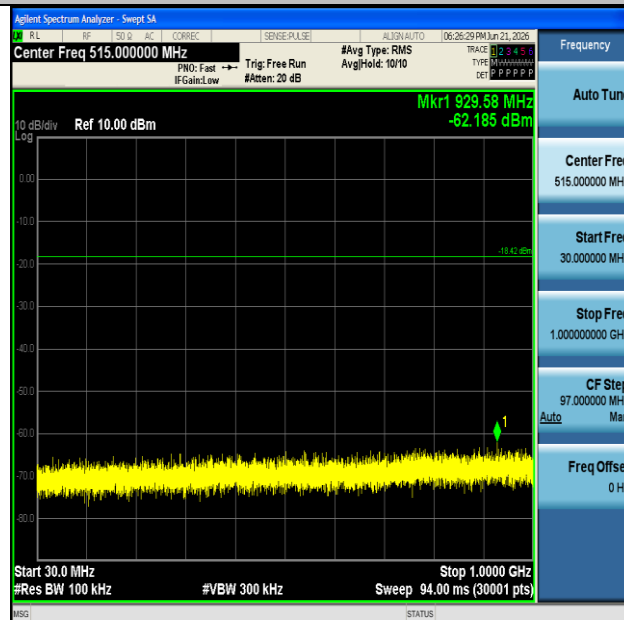


3DH5-Ant1-2441-1000~26500-PASS



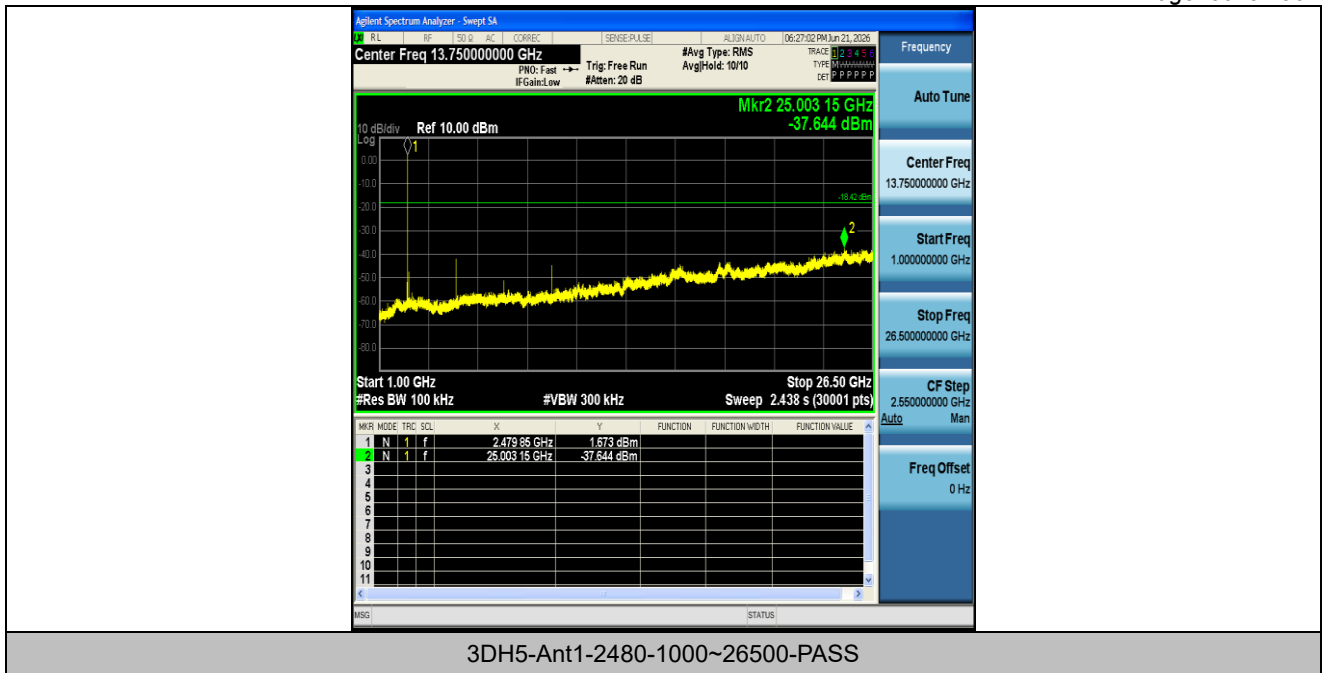


3DH5-Ant1-2480-0~Reference-PASS



3DH5-Ant1-2480-30~1000-PASS







Appendix I: Duty Cycle

Test Result

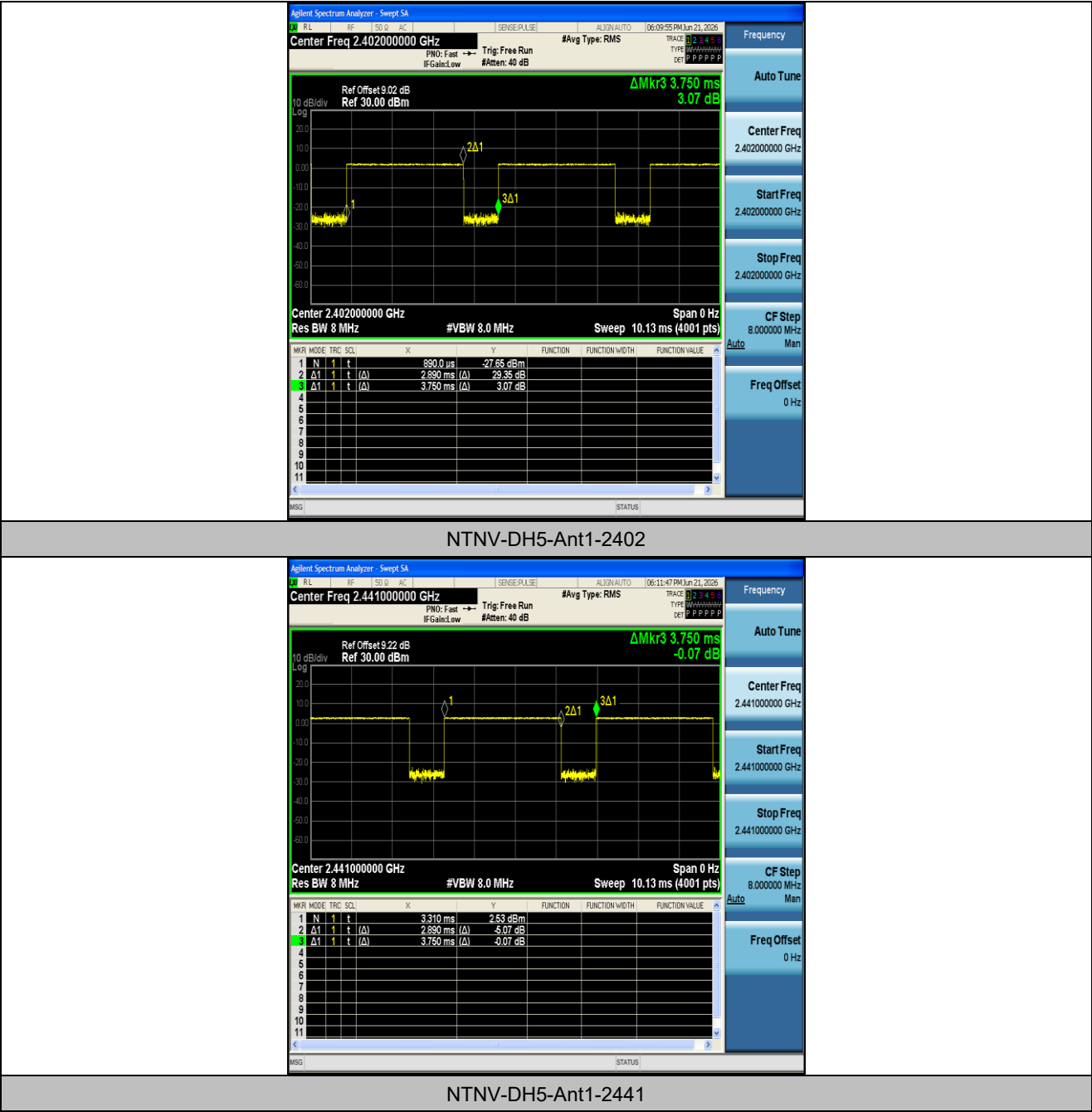
Test Mode	Antenna	Frequency [MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor [dB]
DH5	Ant1	2402	2.89	3.75	77.07	1.13
DH5	Ant1	2441	2.89	3.75	77.07	1.13
DH5	Ant1	2480	2.88	3.74	77.01	1.13
2DH5	Ant1	2402	2.89	3.75	77.07	1.13
2DH5	Ant1	2441	2.89	3.74	77.27	1.12
2DH5	Ant1	2480	2.89	3.75	77.07	1.13
3DH5	Ant1	2402	2.90	3.75	77.33	1.12
3DH5	Ant1	2441	2.90	3.75	77.33	1.12
3DH5	Ant1	2480	2.90	3.75	77.33	1.12

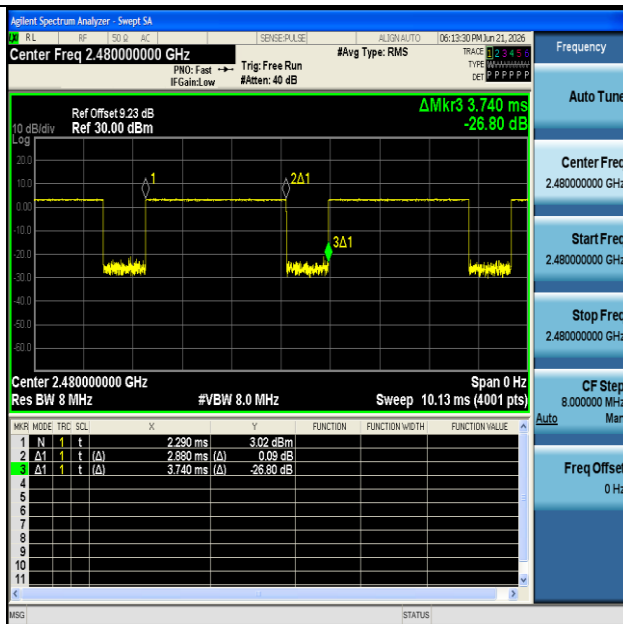
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



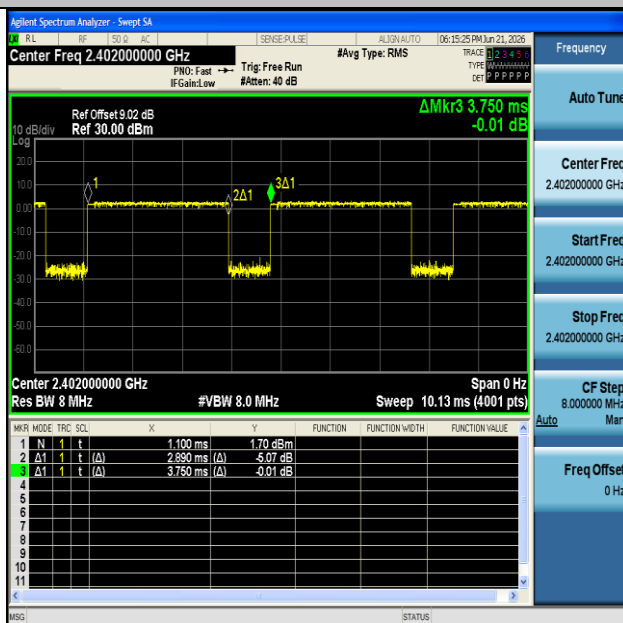


Test Graphs



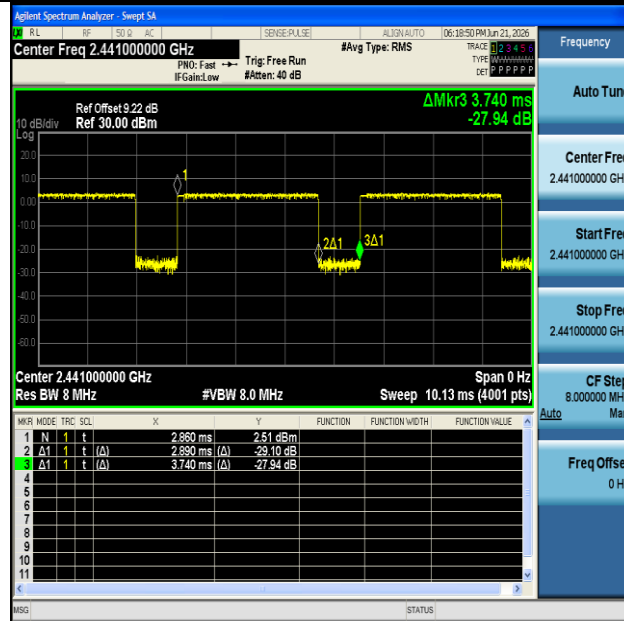


NTNV-DH5-Ant1-2480

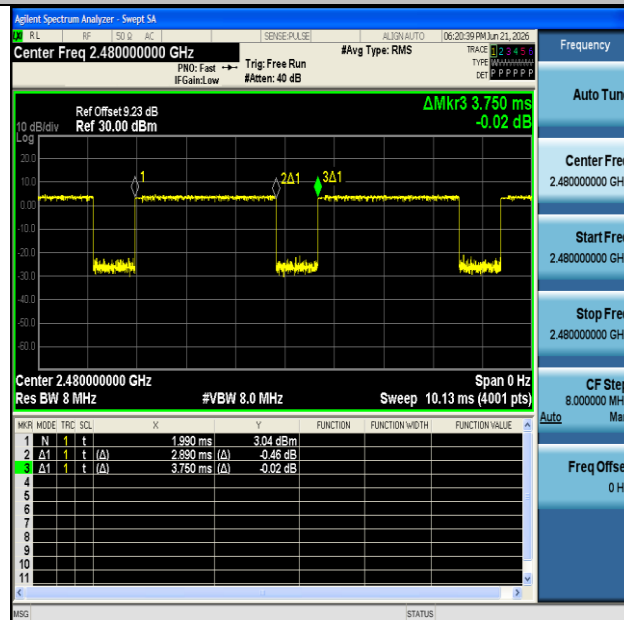


NTNV-2DH5-Ant1-2402





NTNV-2DH5-Ant1-2441

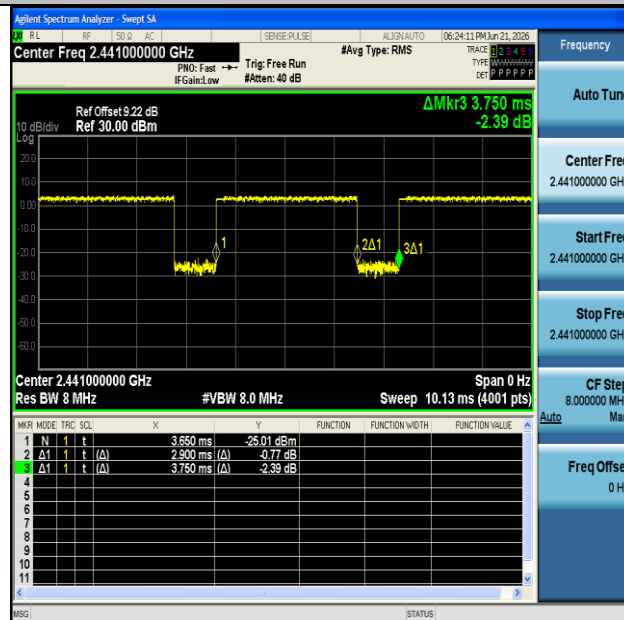


NTNV-2DH5-Ant1-2480



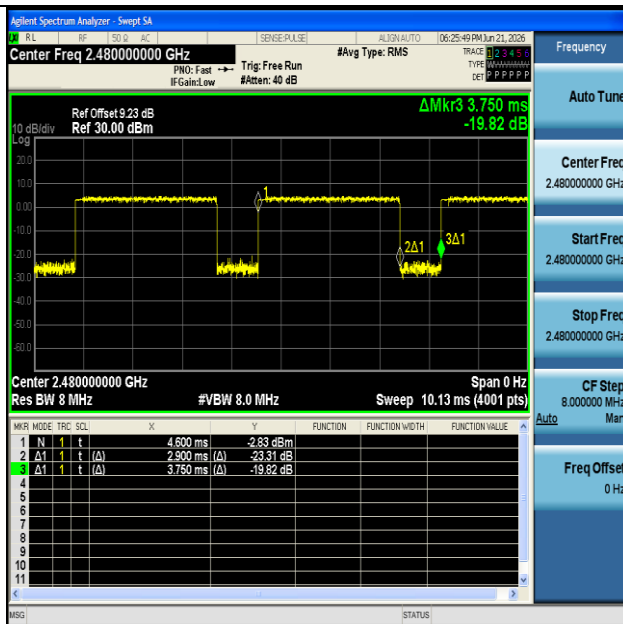


NTNV-3DH5-Ant1-2402



NTNV-3DH5-Ant1-2441





NTNV-3DH5-Ant1-2480

