

Appendix A

RF Test Data for 900MHz (Conducted Measurement)

Product Name: X2 range

Test Model: X280-220-230-290-265LR

Environmental Conditions

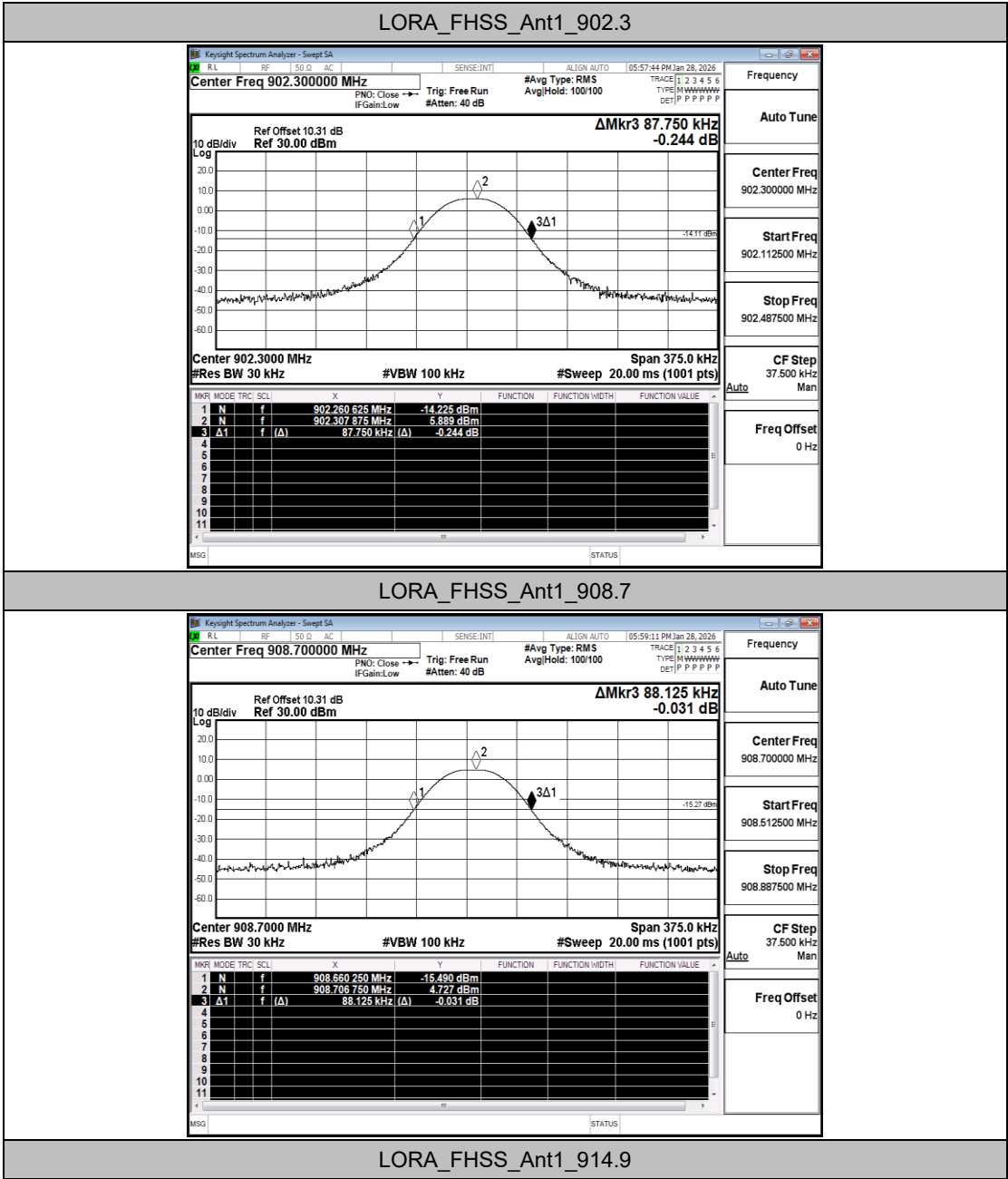
Temperature:	23.6°C
Relative Humidity:	53.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang hai
Supervised by:	Fengliu Tang

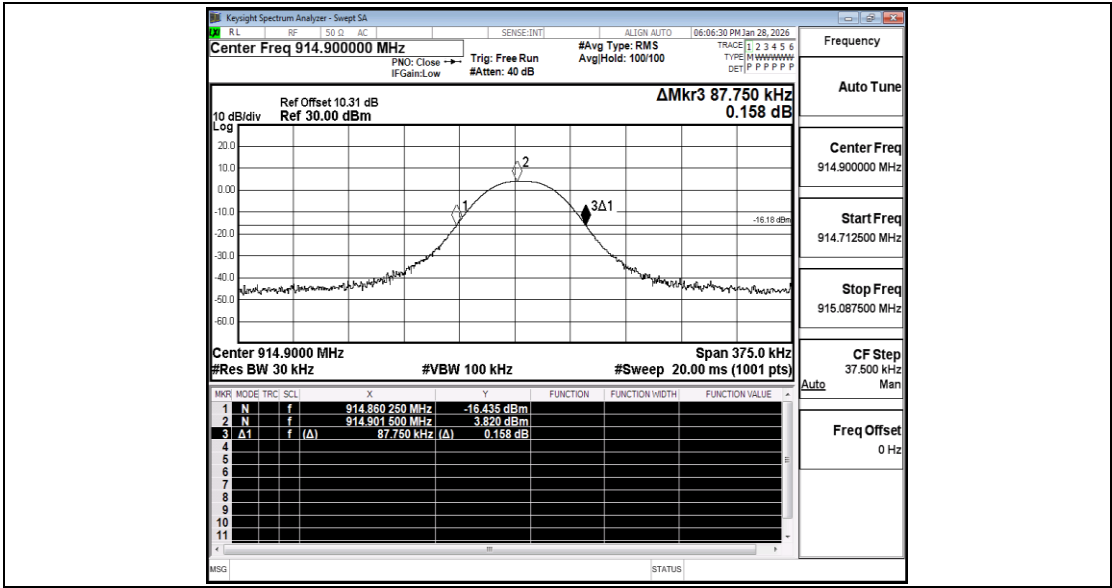
A.1 20dB Emission Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
LORA_FHSS	Ant1	902.3	0.088	902.261	902.348	≤0.5	PASS
		908.7	0.088	908.660	908.748	≤0.5	PASS
		914.9	0.088	914.860	914.948	≤0.5	PASS

Test Graphs



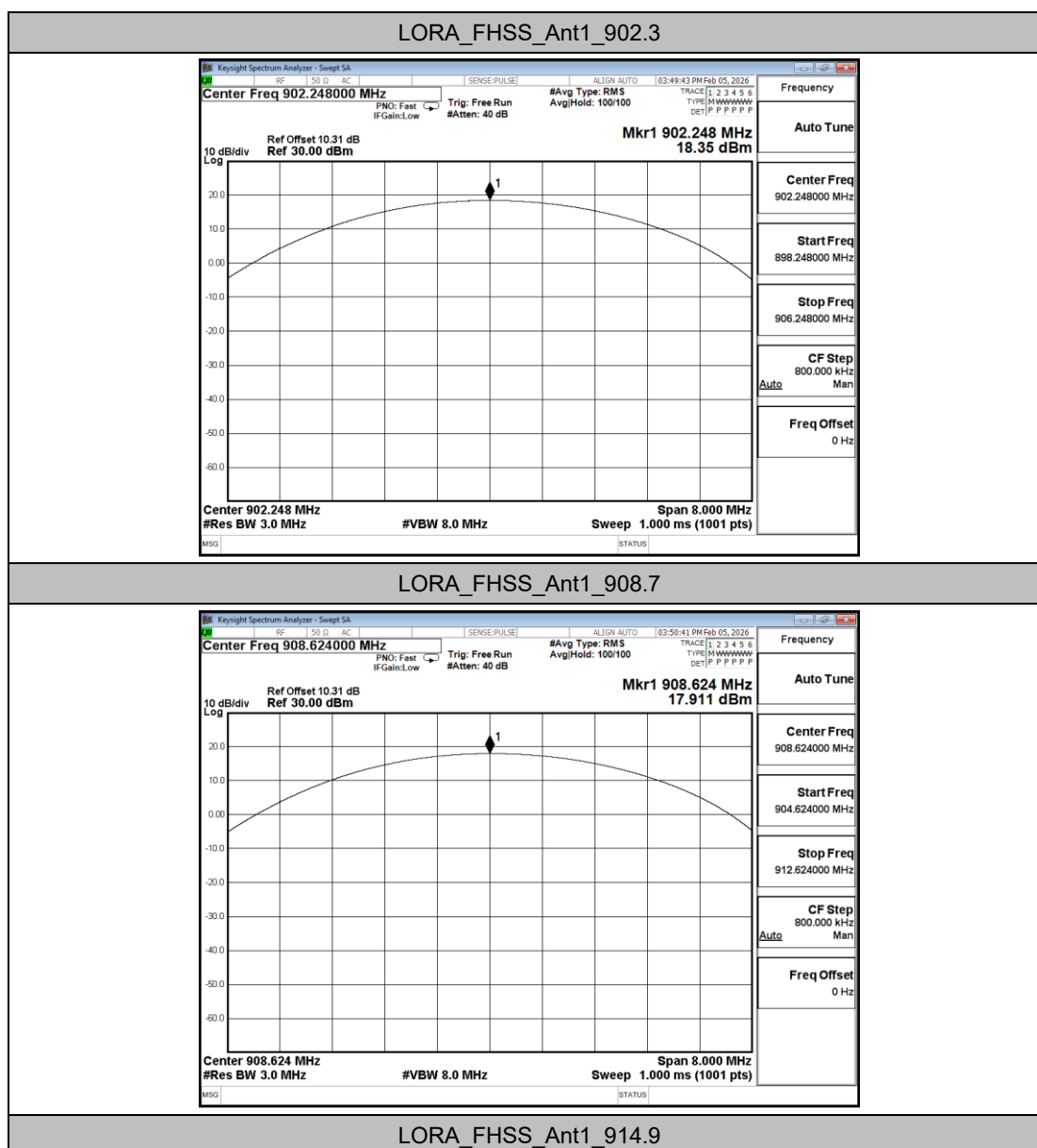


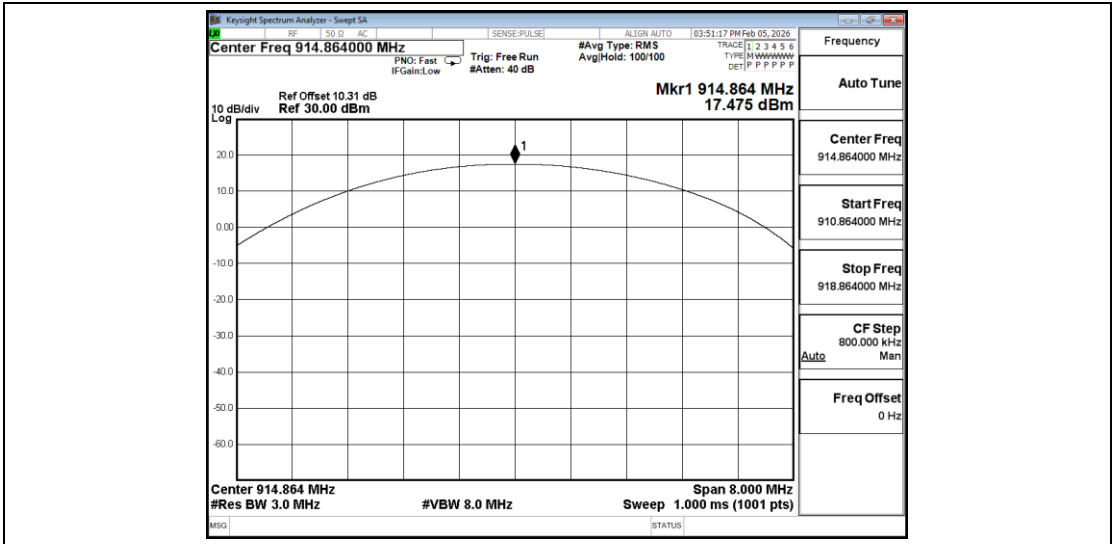
A.2 Maximum Peak conducted output power

Test Result Peak

Test Mode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
LORA_FHSS	Ant1	902.3	18.35	≤30	PASS
		908.7	17.91	≤30	PASS
		914.9	17.48	≤30	PASS

Test Graphs



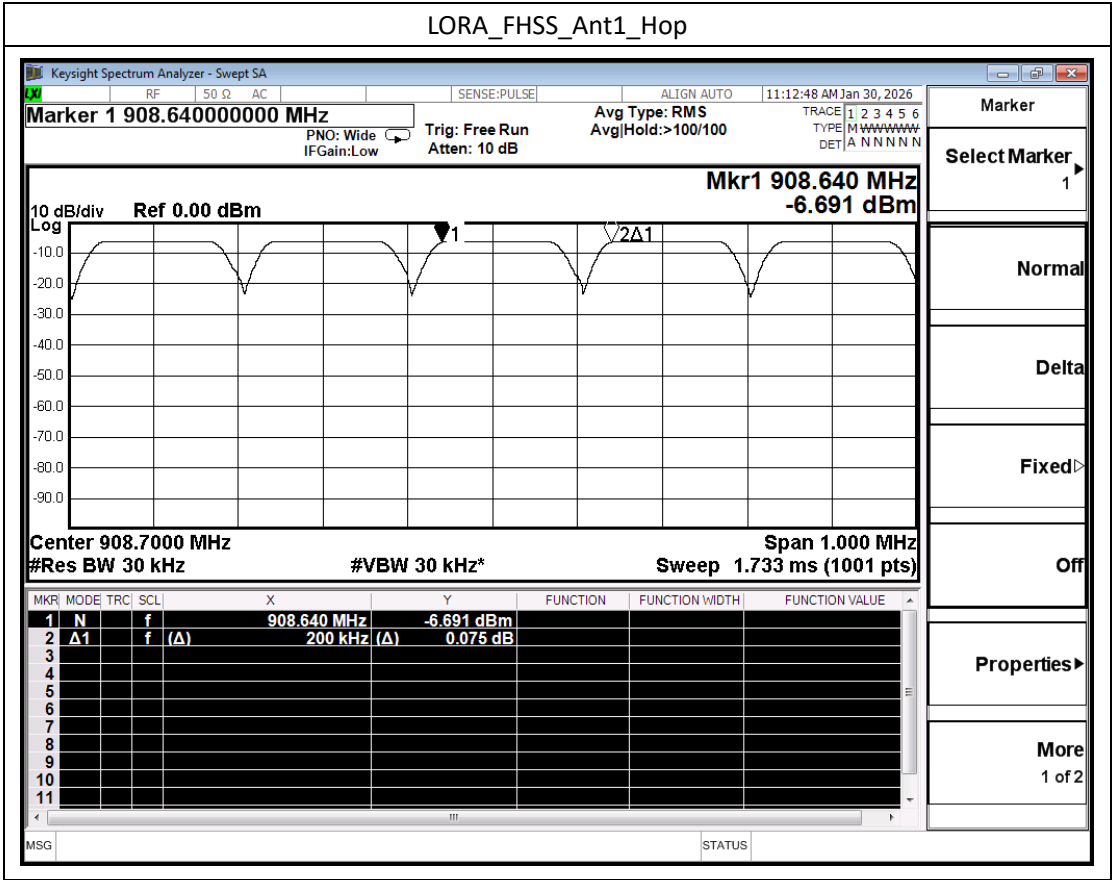


A.3 Carrier frequency separation

Test Result

TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
LORA_FHSS	Ant1	Hop	0.200	0.088	Verdict

Test Graphs

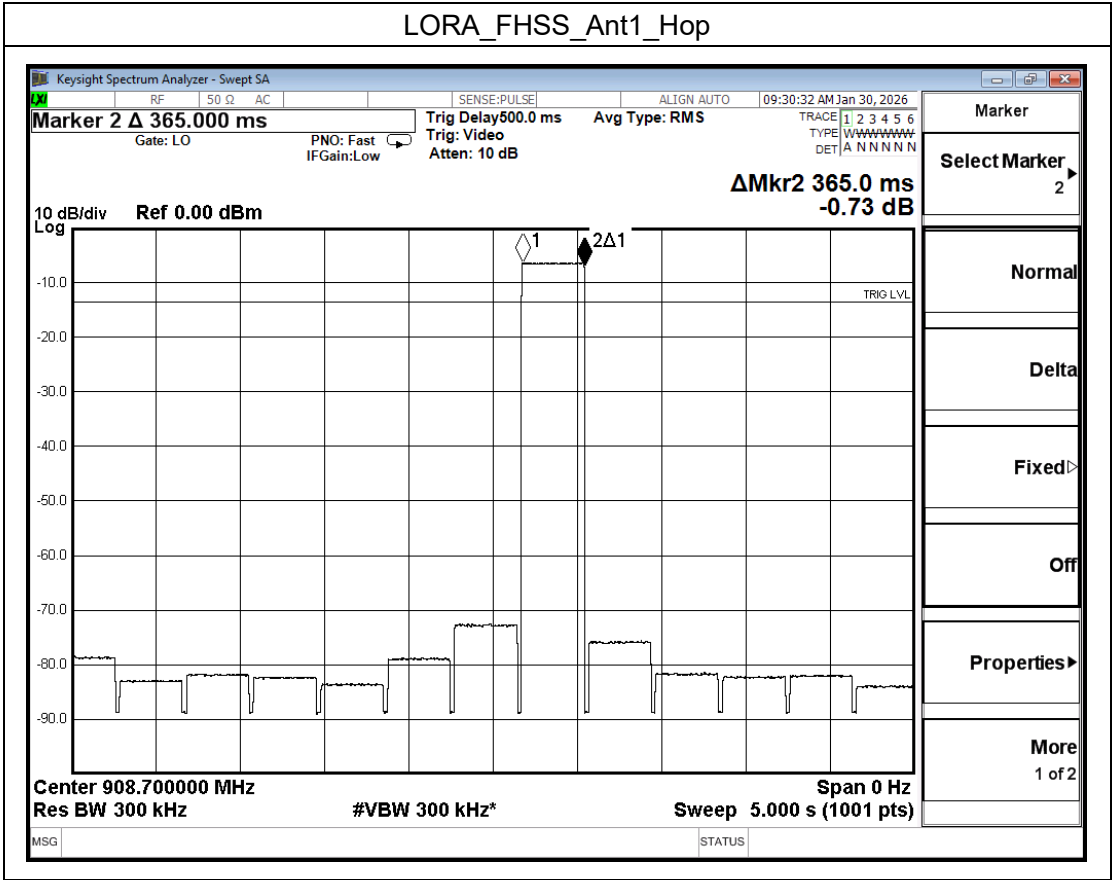


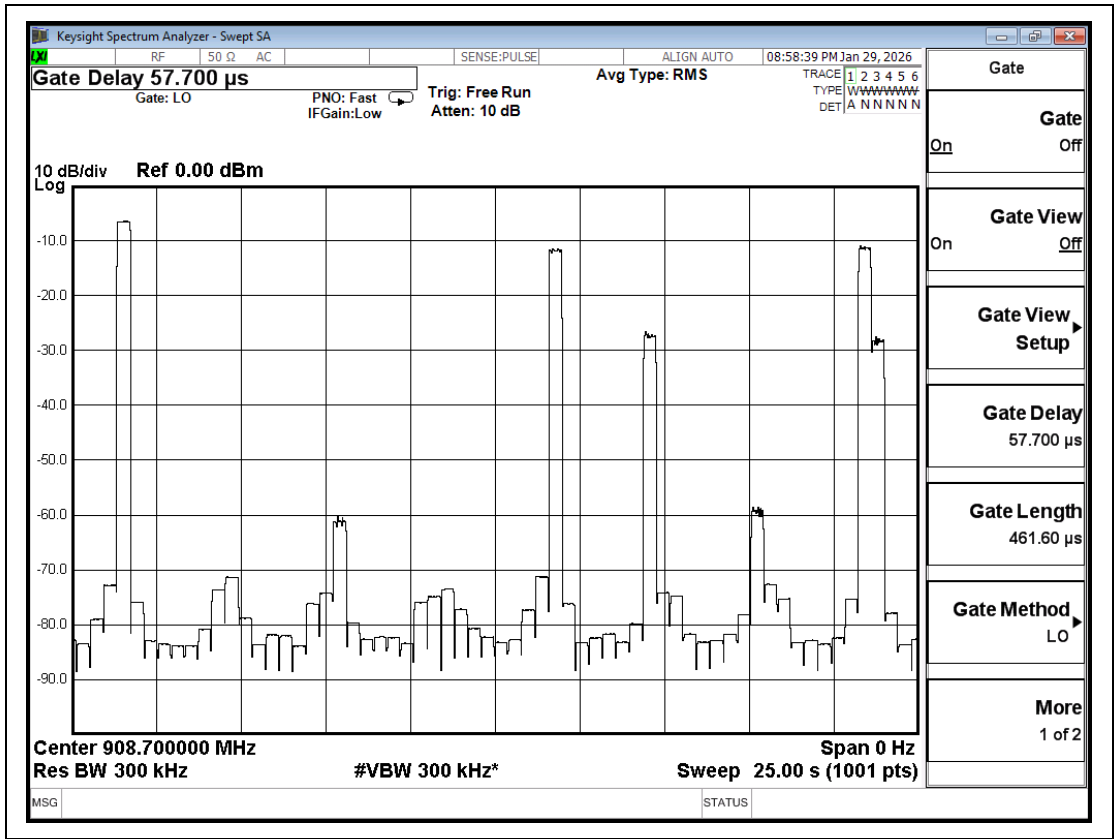
A.4 Time of occupancy

Test Result

TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
LORA_FHSS	Ant1	Hop	365.0	1	0.365	≤0.4	PASS

Test Graphs



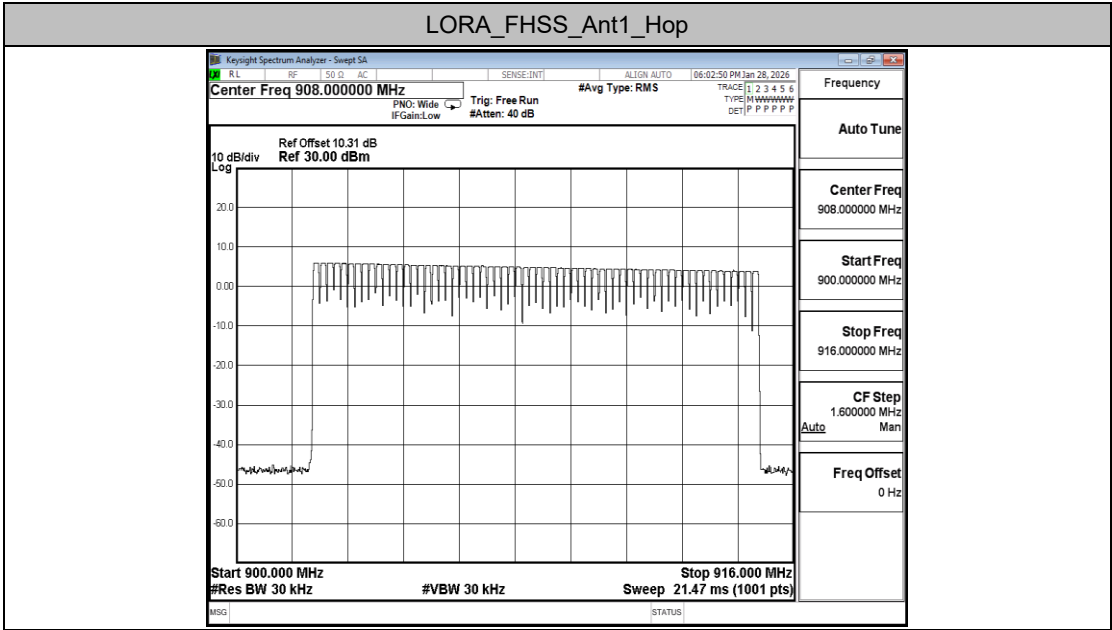


A.5 Number of hopping channels

Test Result

TestMode	Antenna	Freq(MHz)	Result[Num]	Limit[Num]	Verdict
LORA_FHSS	Ant1	Hop	64	≥50	PASS

Test Graphs

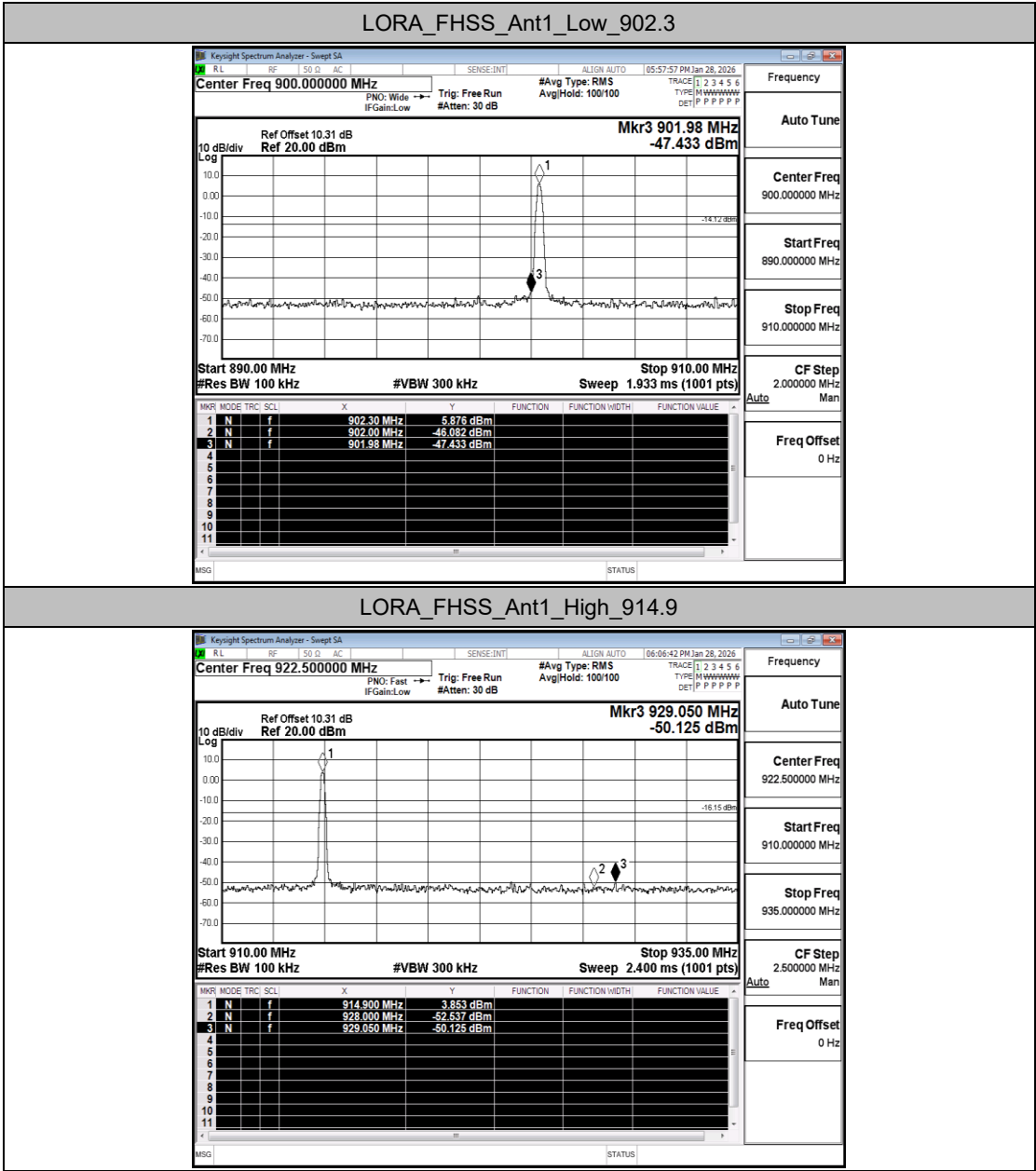


A.6 Band edge measurements

Test Result

TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
LORA_FHSS	Ant1	Low	902.3	5.88	-47.43	≤-14.12	PASS
		High	914.9	3.85	-50.13	≤-16.15	PASS
		Low	HOP_902.3	4.92	-50.09	≤-15.08	PASS
		High	HOP_914.9	4.51	-50.45	≤-15.49	PASS

Test Graphs



LORA_FHSS_Ant1_High_914.9

Center Freq 922.500000 MHz

Ref Offset 10.31 dB

Ref 20.00 dBm

Mkr3 929.050 MHz

-50.125 dBm

Start 910.00 MHz

Stop 935.00 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.400 ms (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		914.900 MHz	3.853 dBm			
2	N	f		928.000 MHz	-52.537 dBm			
3	N	f		929.050 MHz	-50.125 dBm			

Frequency

Auto Tune

Center Freq 922.500000 MHz

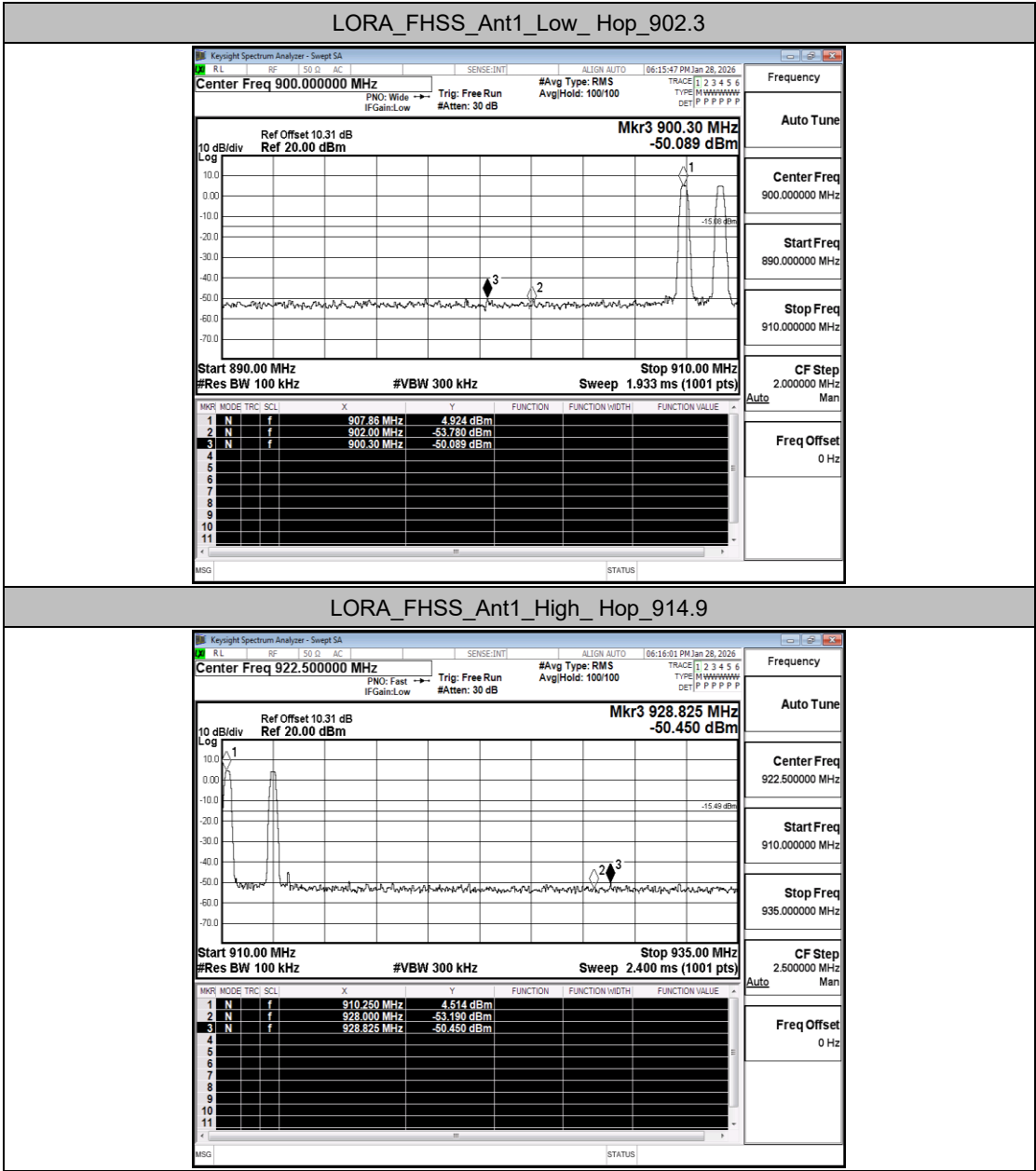
Start Freq 910.000000 MHz

Stop Freq 935.000000 MHz

CF Step 2.500000 MHz

Auto Man

Freq Offset 0 Hz



A.7 Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
LORA_FHSS	Ant1	902.3	Reference	5.84	5.84	---	PASS
			30~1000	5.84	-55.37	≤-14.16	PASS
			1000~26500	5.84	-24.01	≤-14.16	PASS
		908.7	Reference	4.68	4.68	---	PASS
			30~1000	4.68	-56.86	≤-15.32	PASS
			1000~26500	4.68	-28.71	≤-15.32	PASS
		914.9	Reference	3.79	3.79	---	PASS
			30~1000	3.79	-58.65	≤-16.21	PASS
			1000~26500	3.79	-28.28	≤-16.21	PASS

Test Graphs

