

Appendix: LORA FHSS

Contents

1. Duty Cycle..... 3

2. Maximum Peak Conducted Output Power..... 6

3. 20dB Bandwidth..... 9

4. Occupied Channel Bandwidth..... 12

5. Band Edge..... 15

6. Band Edge(Hopping)..... 18

7. Conducted RF Spurious Emission..... 21

8. Number of Hopping Channel..... 24

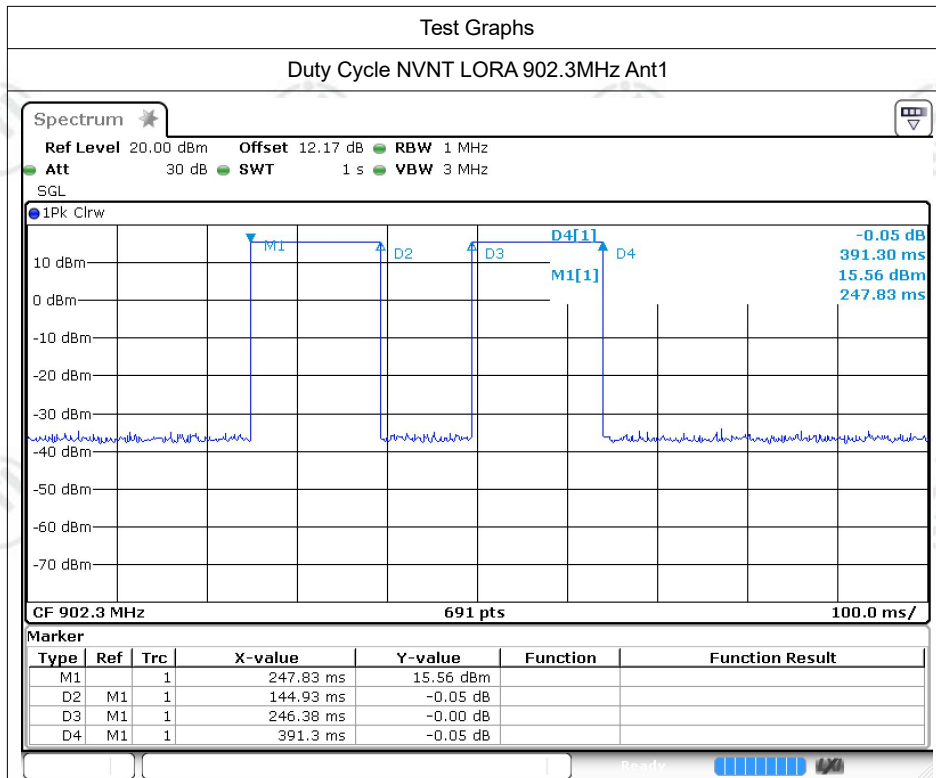
9. Dwell Time..... 26

10. Carrier Frequencies Separation..... 28

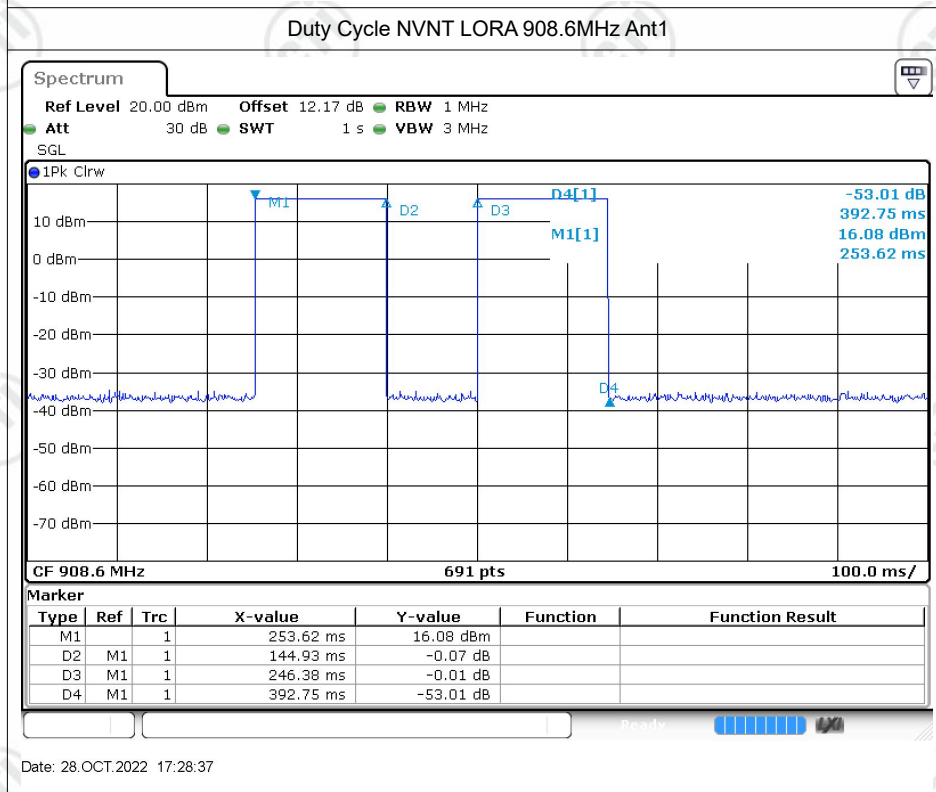
1. Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)
NVNT	LORA	902.3	Ant1	58.82
NVNT	LORA	908.6	Ant1	58.82
NVNT	LORA	914.9	Ant1	58.48

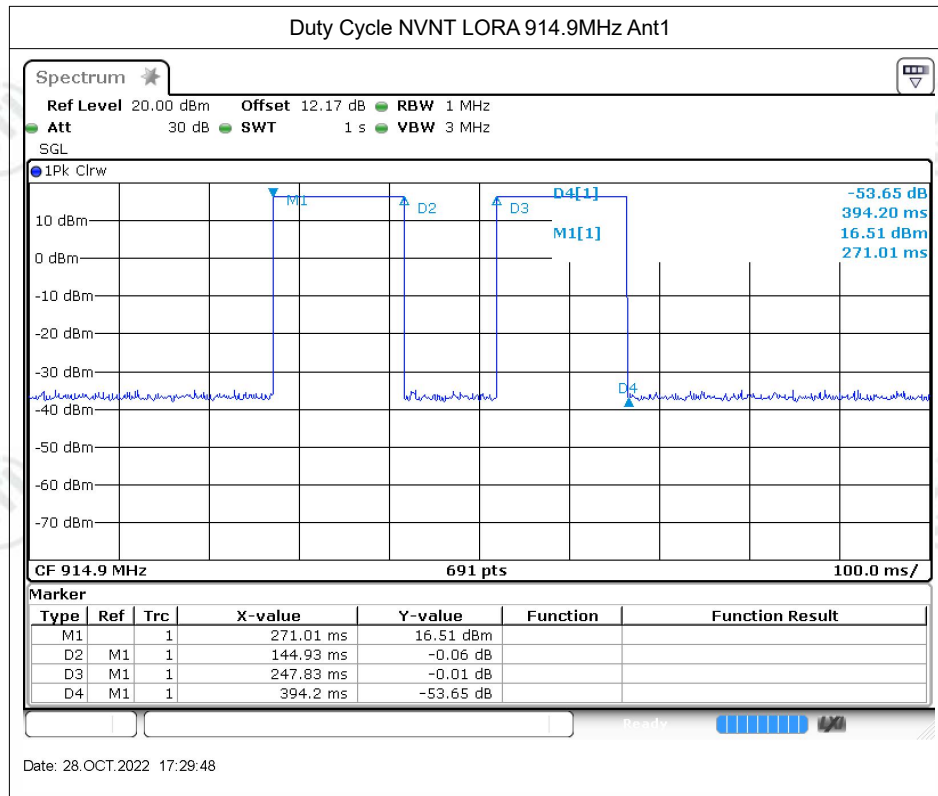
Note: $\text{duty cycle} = \text{TX}_{\text{on}} / (\text{TX}_{\text{on}} + \text{TX}_{\text{off}}) * 100\%$



Date: 28.OCT.2022 17:25:29



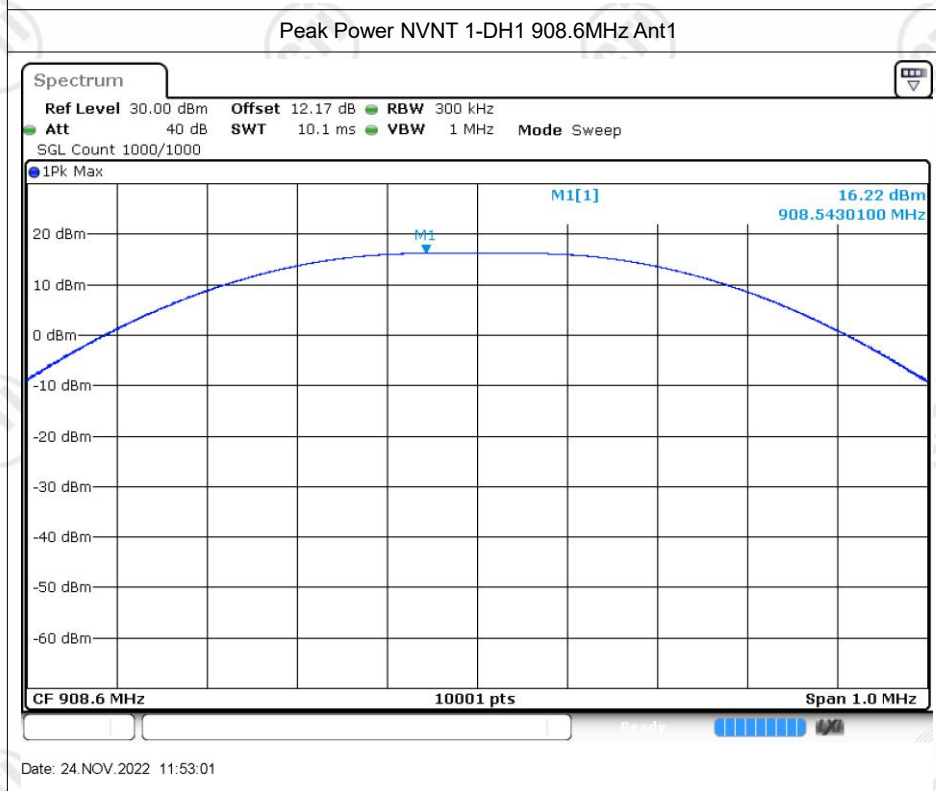
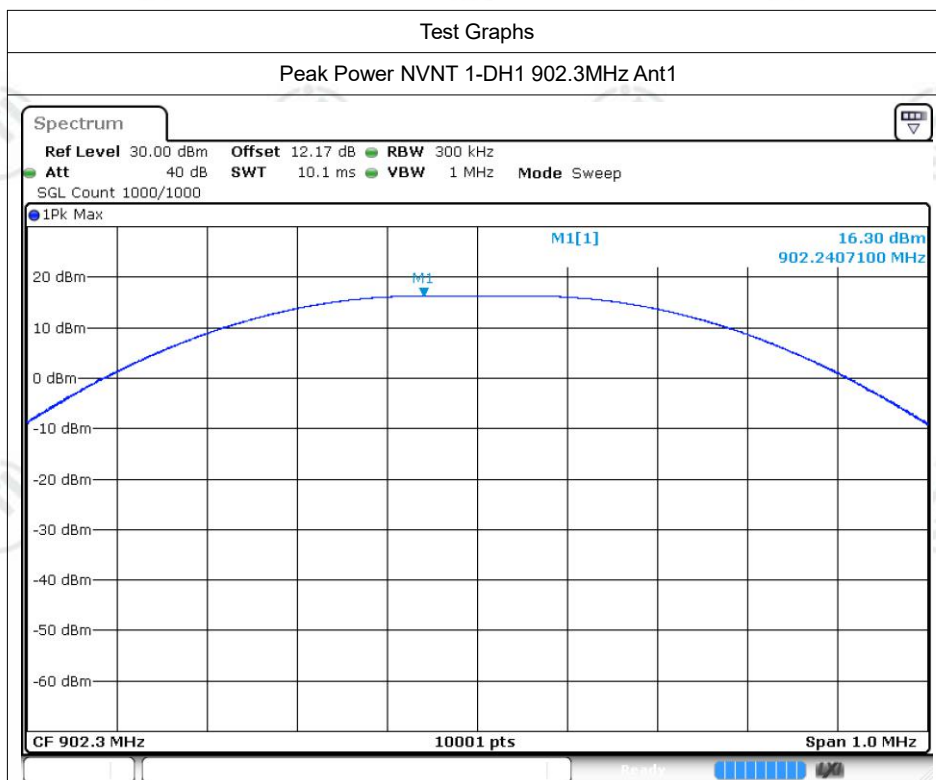
Date: 28.OCT.2022 17:28:37

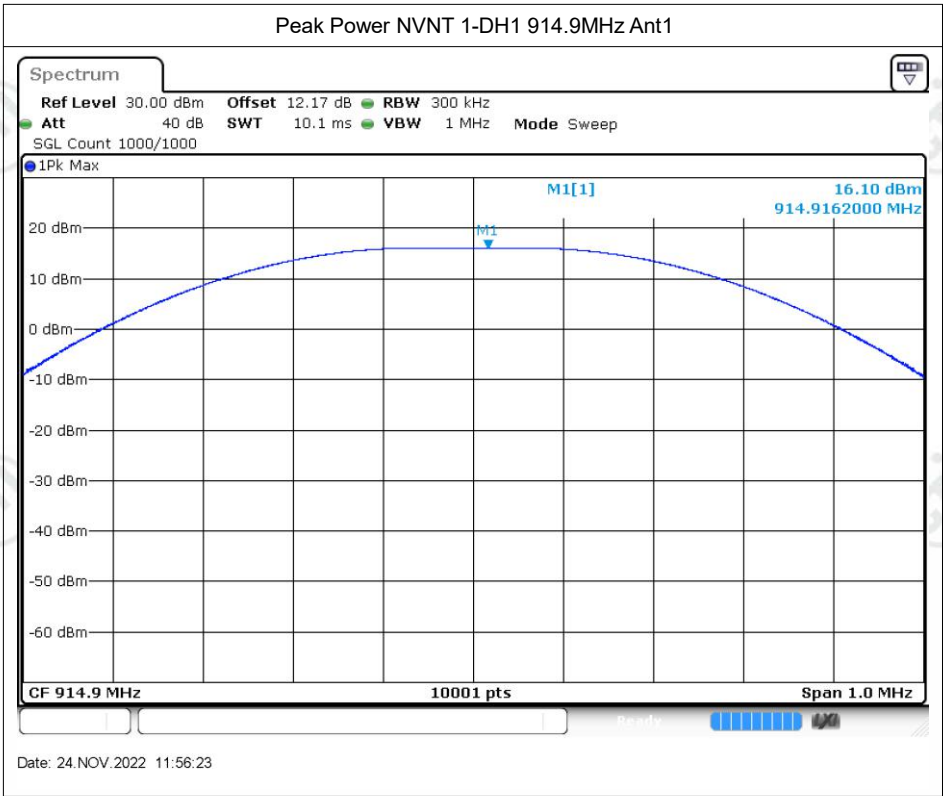


2. Maximum Peak Conducted Output Power

Condition	Frequency (MHz)	Antenna	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)	Verdict
NVNT	902.3	Ant1	16.30	21.00	Pass
NVNT	908.6	Ant1	16.22	21.00	Pass
NVNT	914.9	Ant1	16.10	21.00	Pass

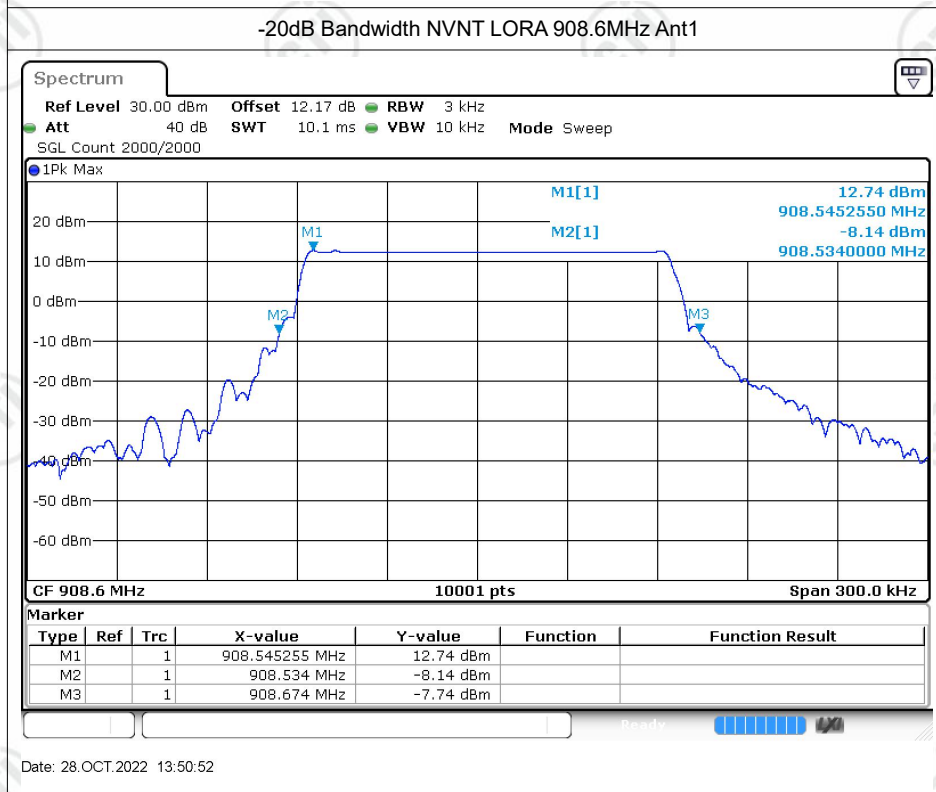
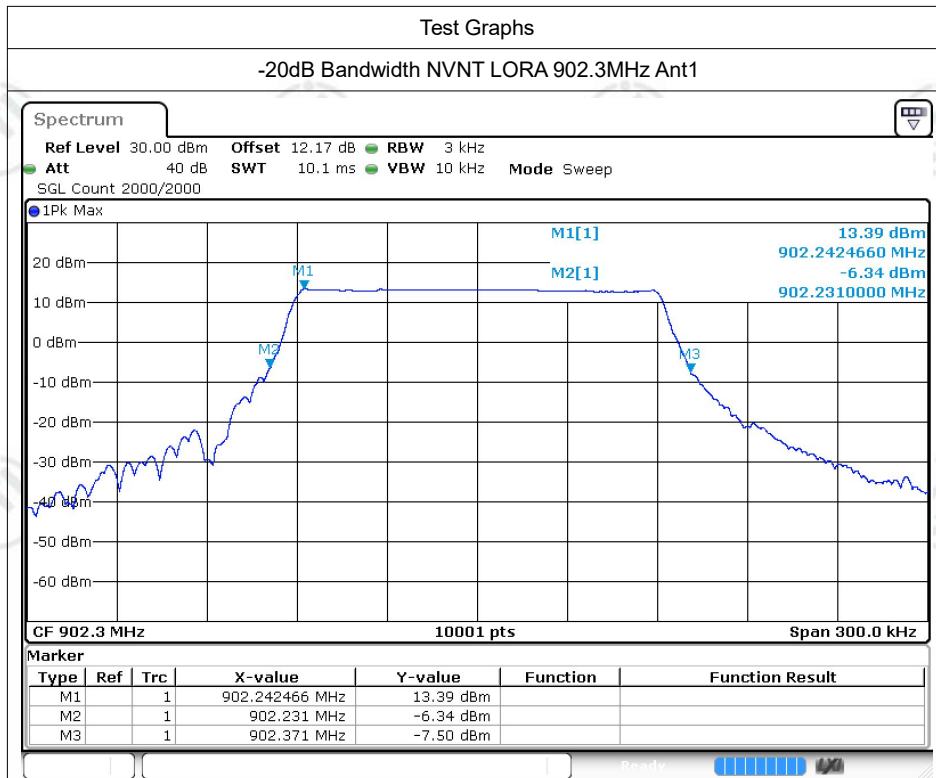
Note: The Maximum Peak Conducted Output Power has been added dutycycle fator.

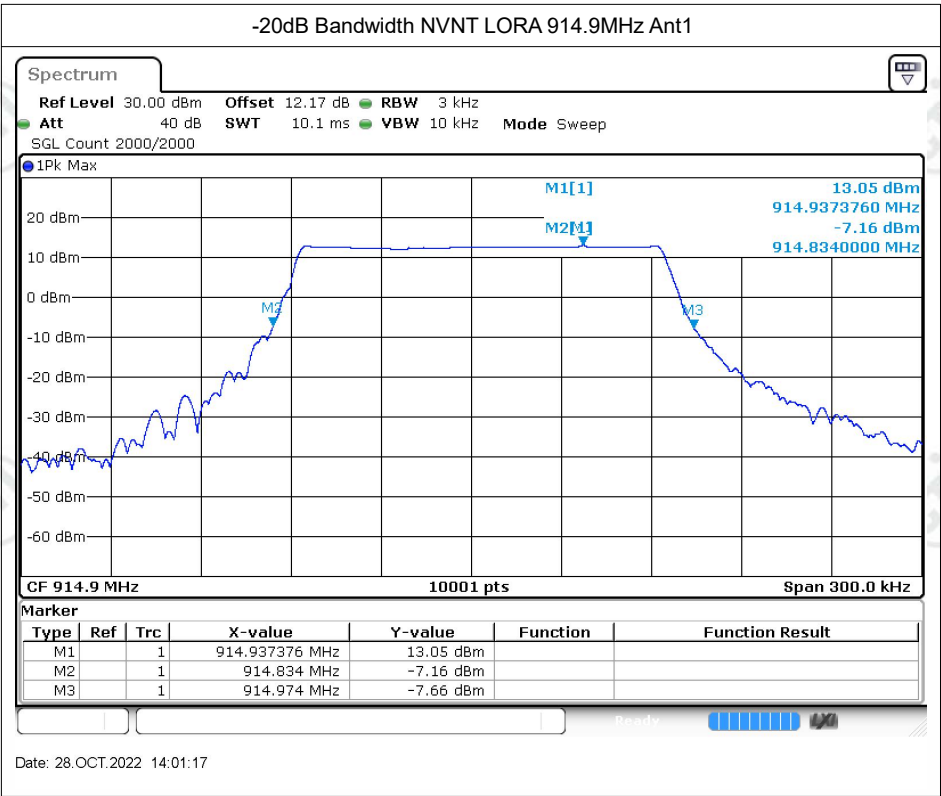




3. 20dB Bandwidth

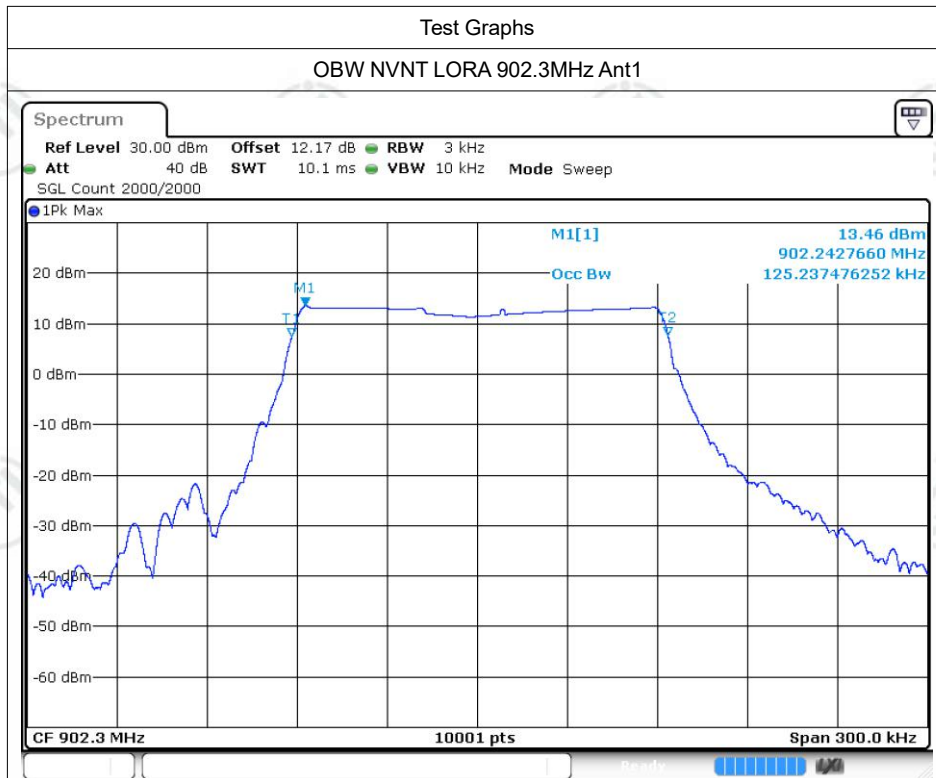
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Verdict
NVNT	LORA	902.3	Ant1	0.140	Pass
NVNT	LORA	908.6	Ant1	0.139	Pass
NVNT	LORA	914.9	Ant1	0.139	Pass



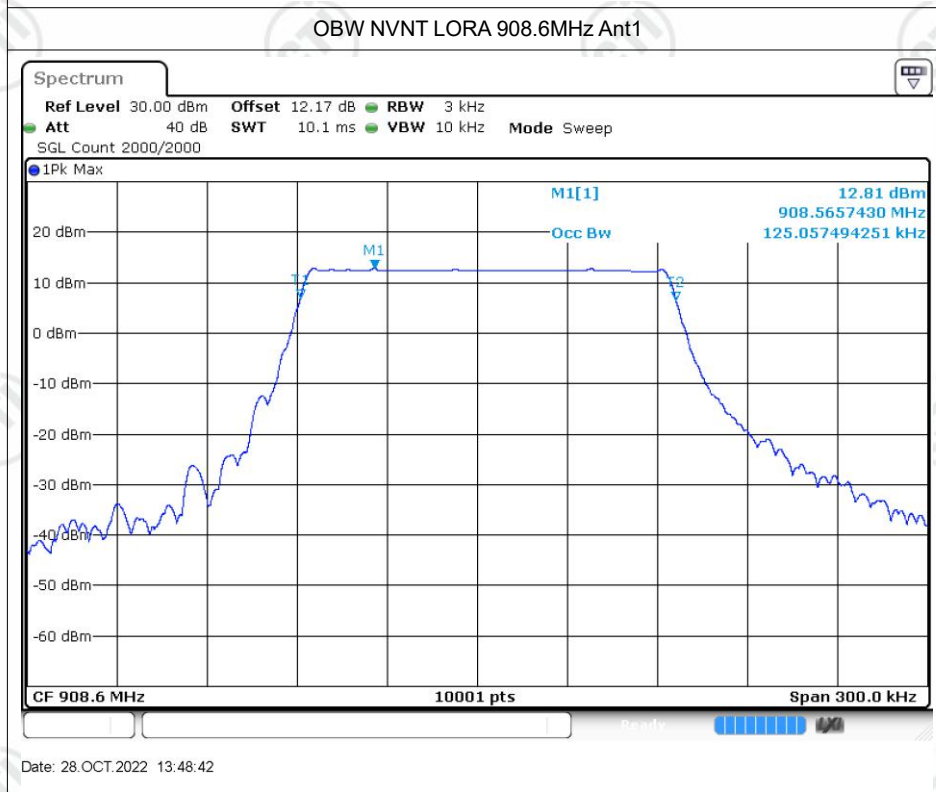


4. Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	LORA	902.3	Ant1	0.125
NVNT	LORA	908.6	Ant1	0.125
NVNT	LORA	914.9	Ant1	0.125



Date: 28.OCT.2022 11:02:10

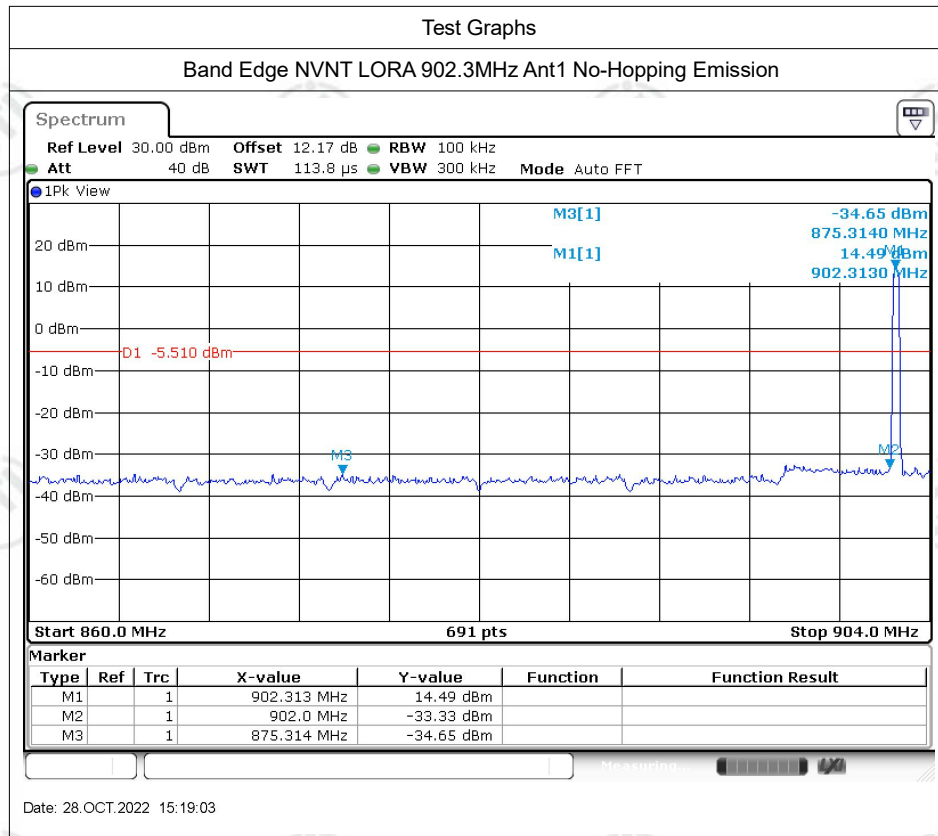


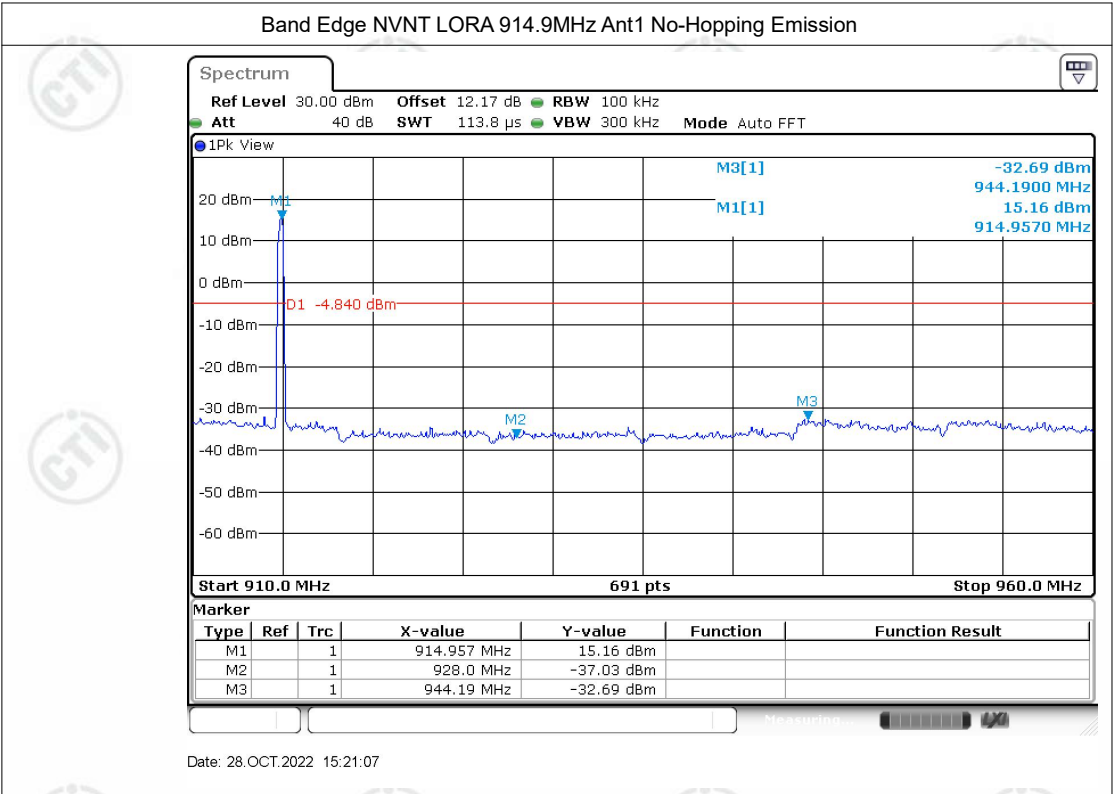
Date: 28.OCT.2022 13:48:42



5. Band Edge

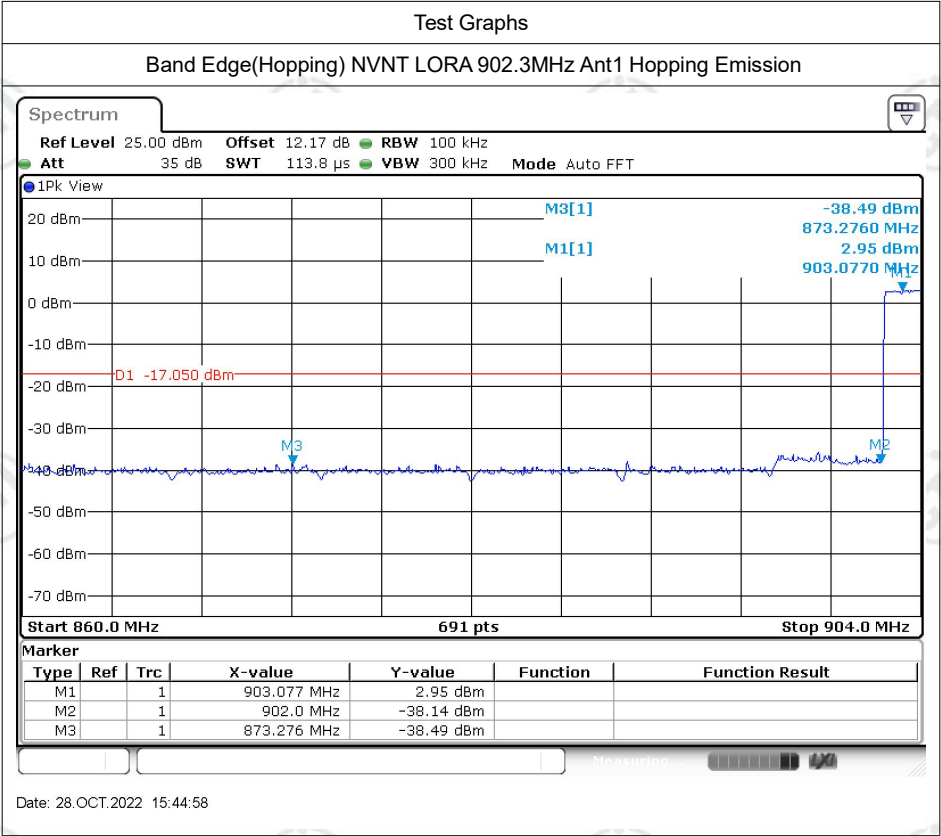
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	LORA	902.3	Ant1	No-Hopping	-33.33	-5.51	Pass
NVNT	LORA	914.9	Ant1	No-Hopping	-37.03	-4.84	Pass

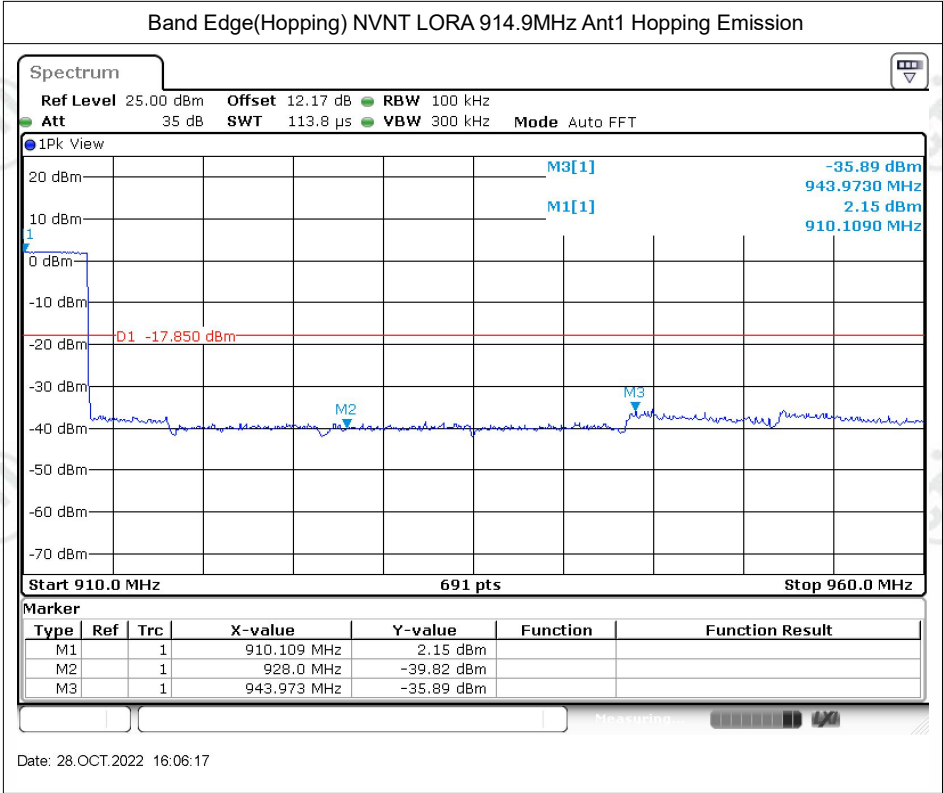




6. Band Edge(Hopping)

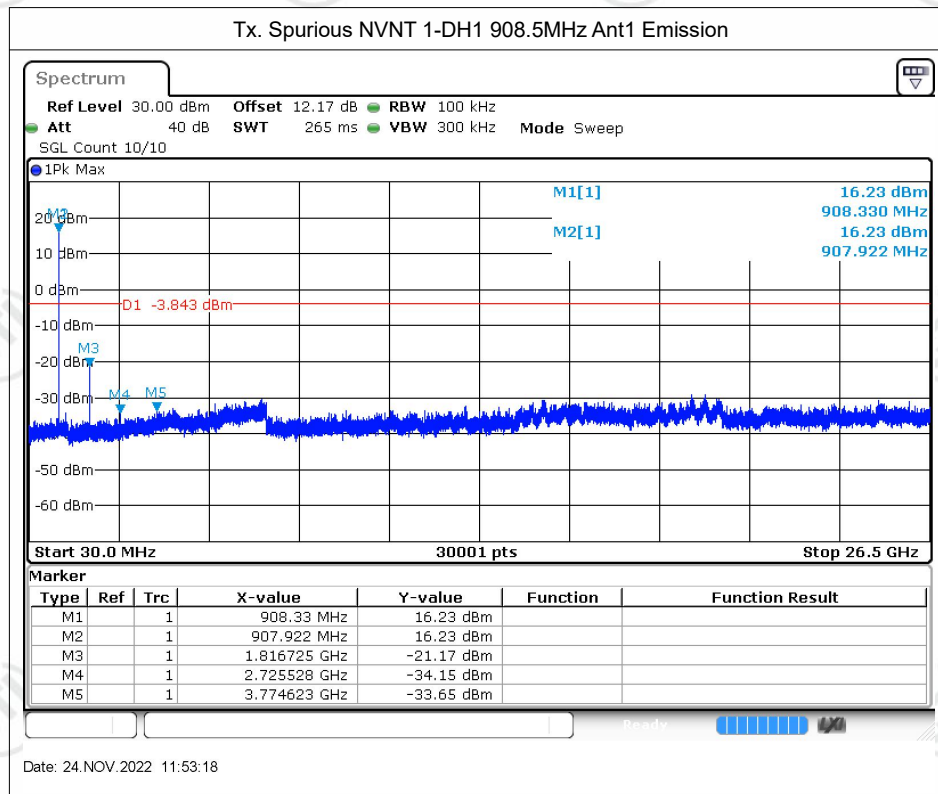
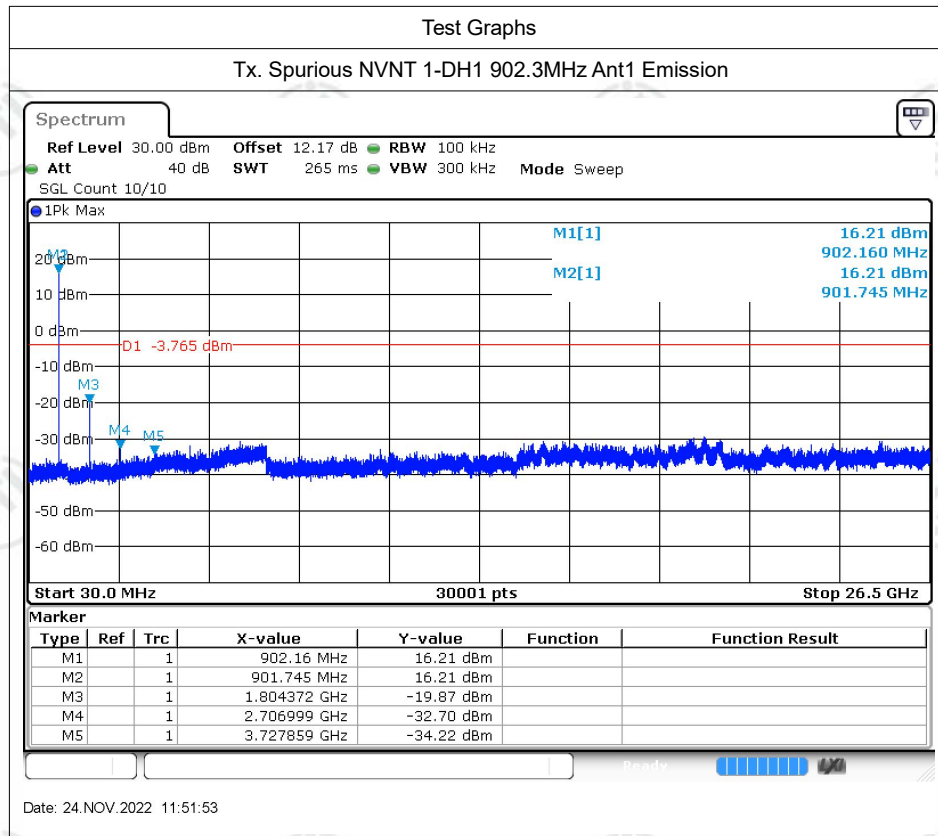
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	LORA	902.3	Ant1	Hopping	-38.13	-17.05	Pass
NVNT	LORA	914.9	Ant1	Hopping	-39.82	-17.85	Pass

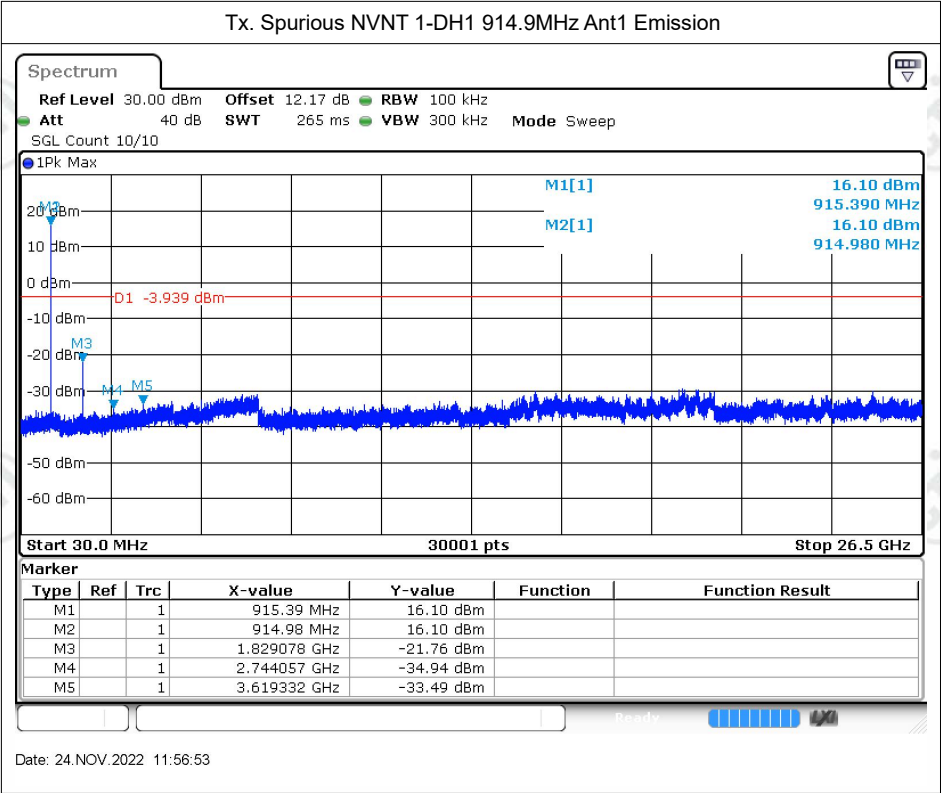




7. Conducted RF Spurious Emission

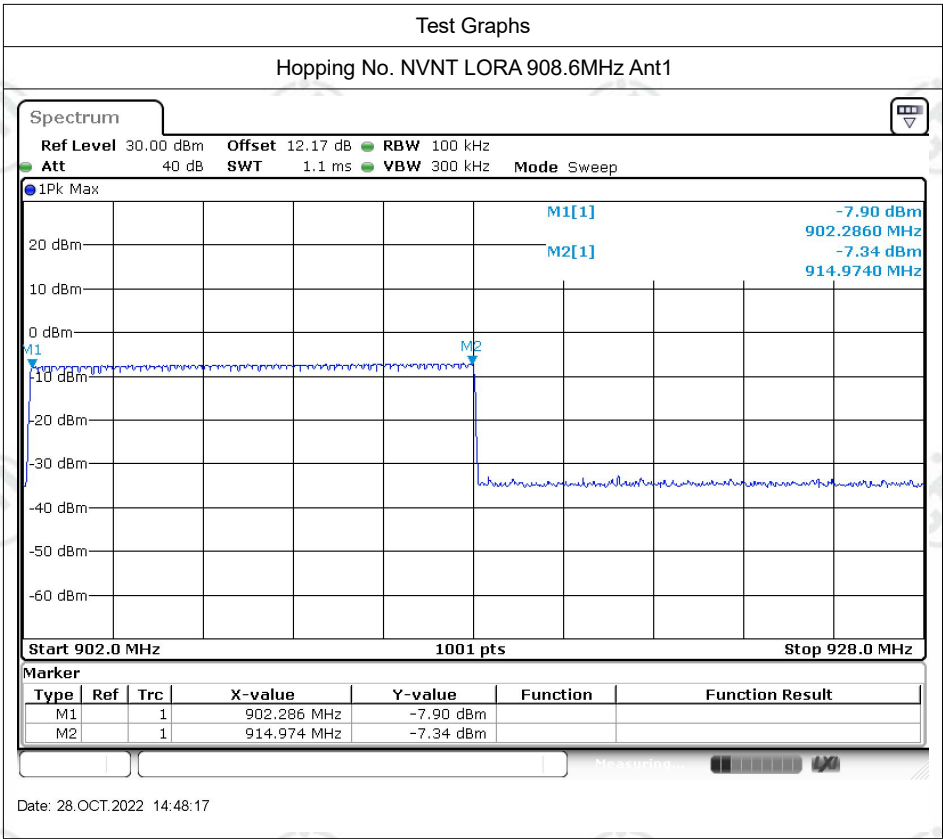
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	902.3	Ant1	-19.87	-20	Pass
NVNT	1-DH1	908.5	Ant1	-21.17	-20	Pass
NVNT	1-DH1	914.9	Ant1	-21.76	-20	Pass





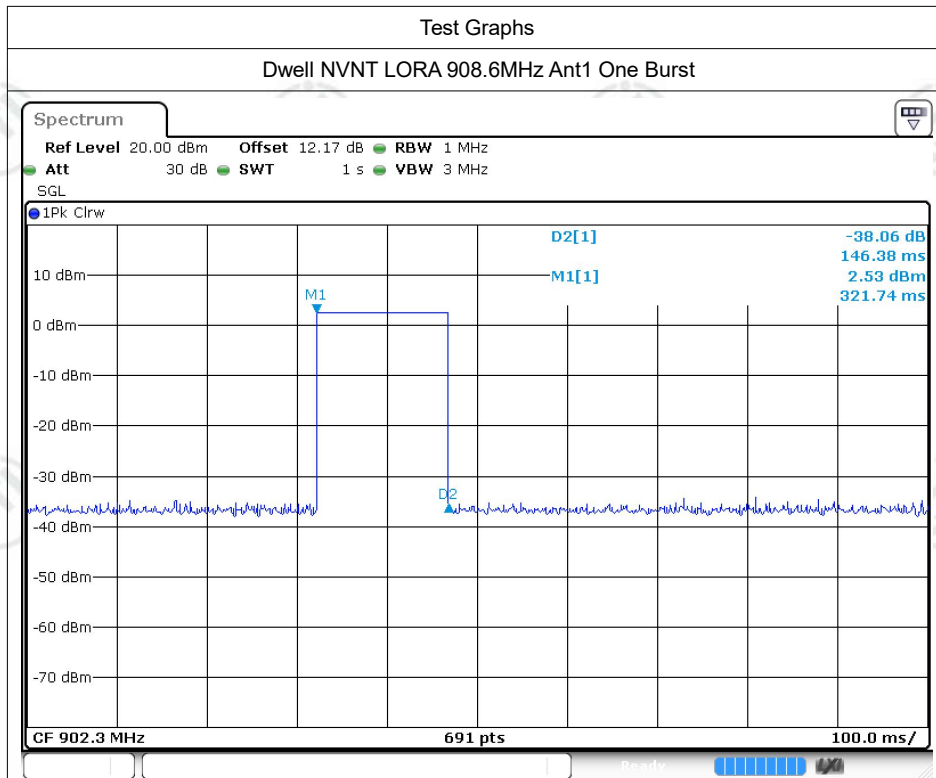
8. Number of Hopping Channel

Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	LORA	Ant1	64	50	Pass

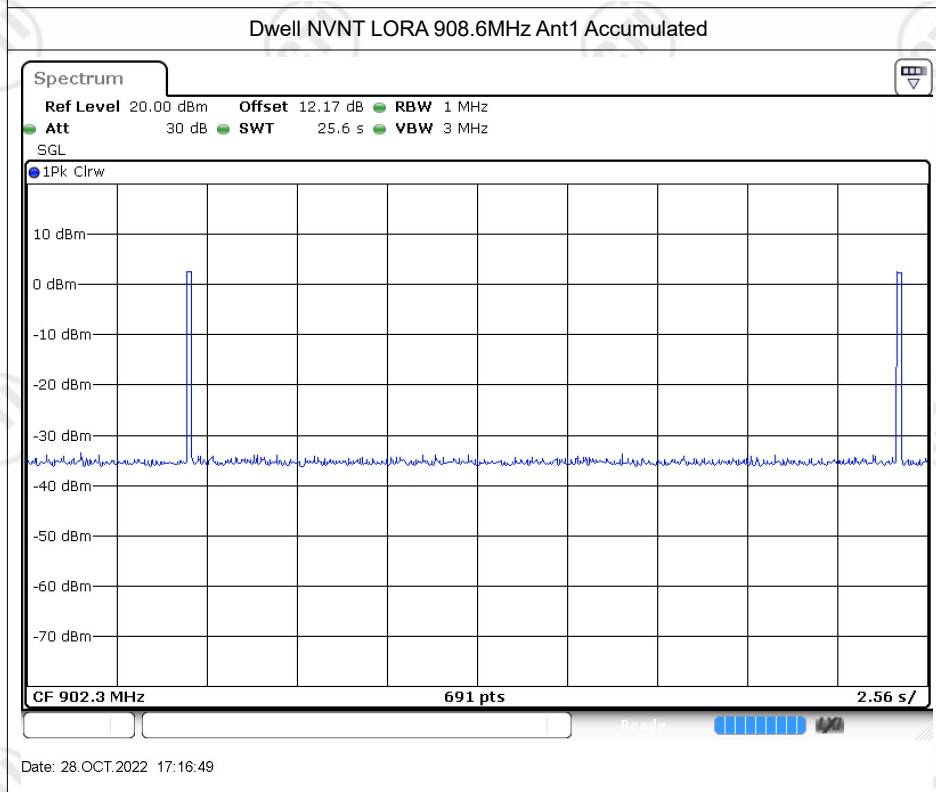


9. Dwell Time

Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	LORA	902.3	Ant1	146.3	292.6	2	25600	400	Pass



Date: 28.OCT.2022 17:14:23

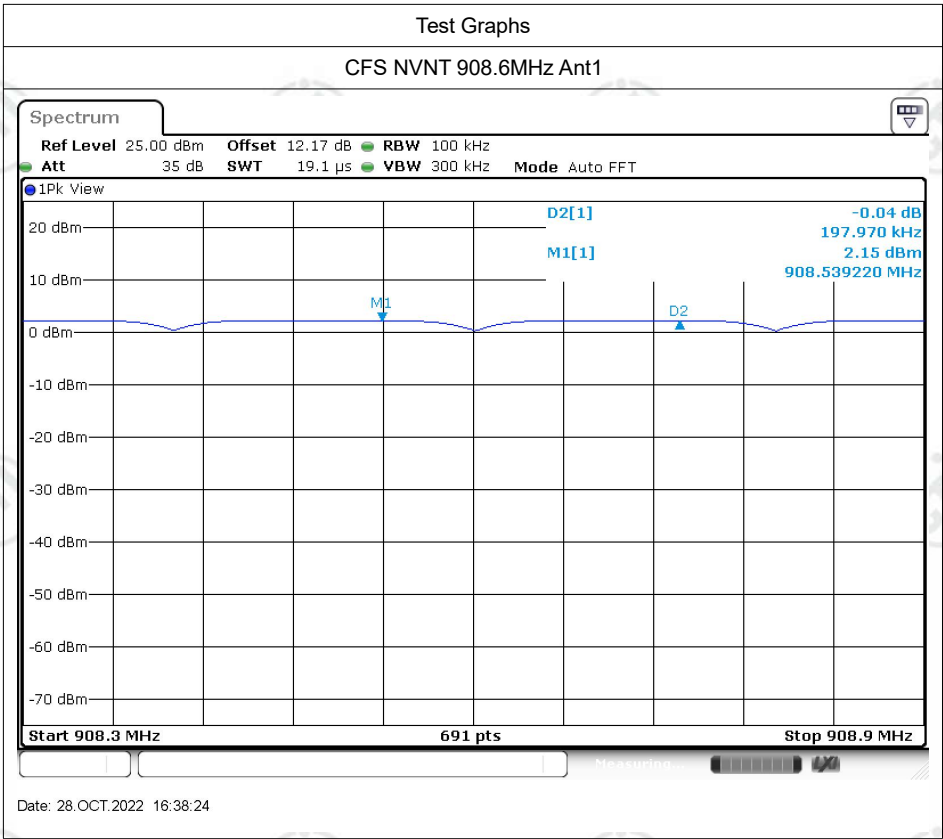


Date: 28.OCT.2022 17:16:49

10. Carrier Frequencies Separation

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	FHSS	Ant1	908.639	908.736	0.197	0.139	Pass

Note: Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.



*** End of Report ***