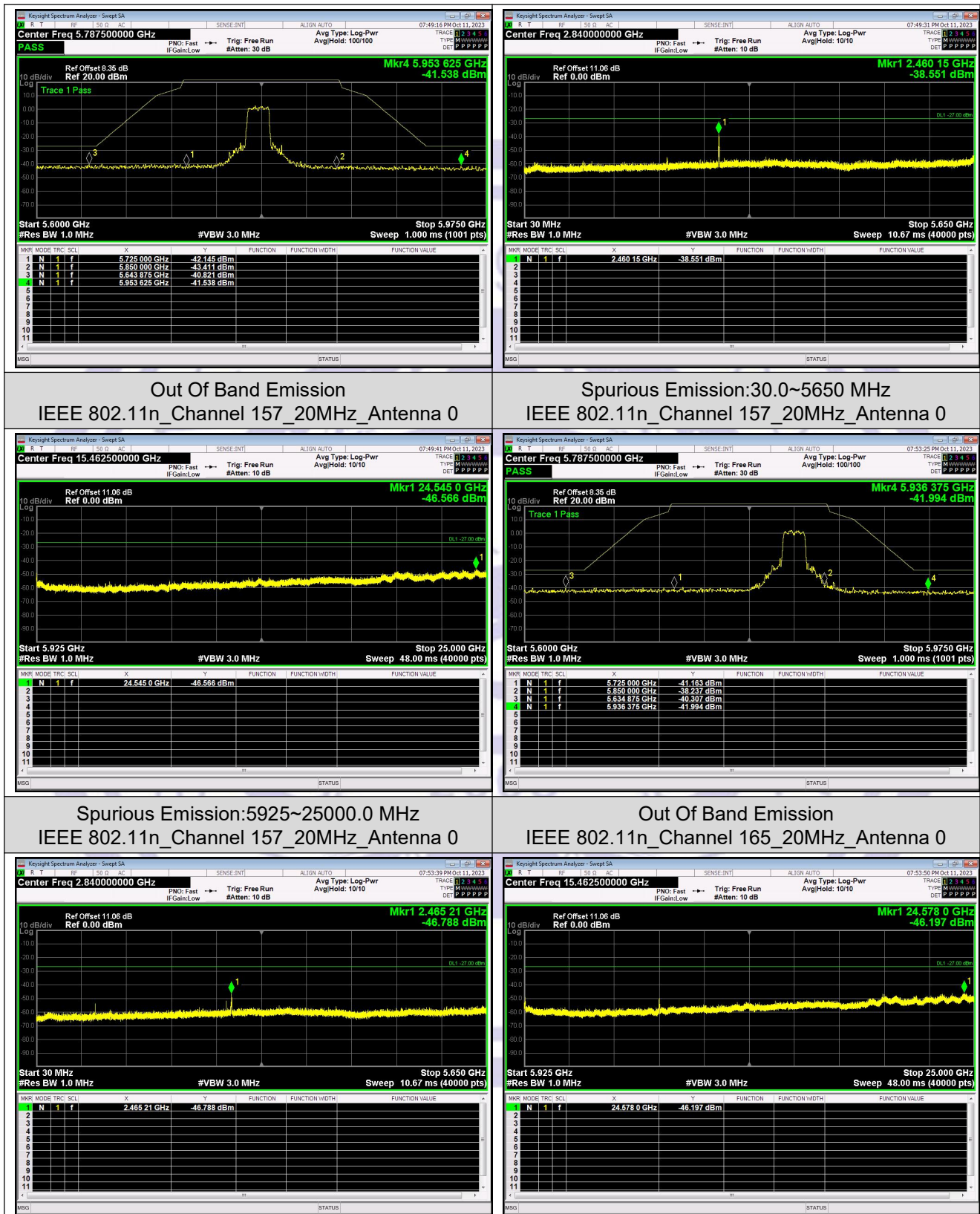
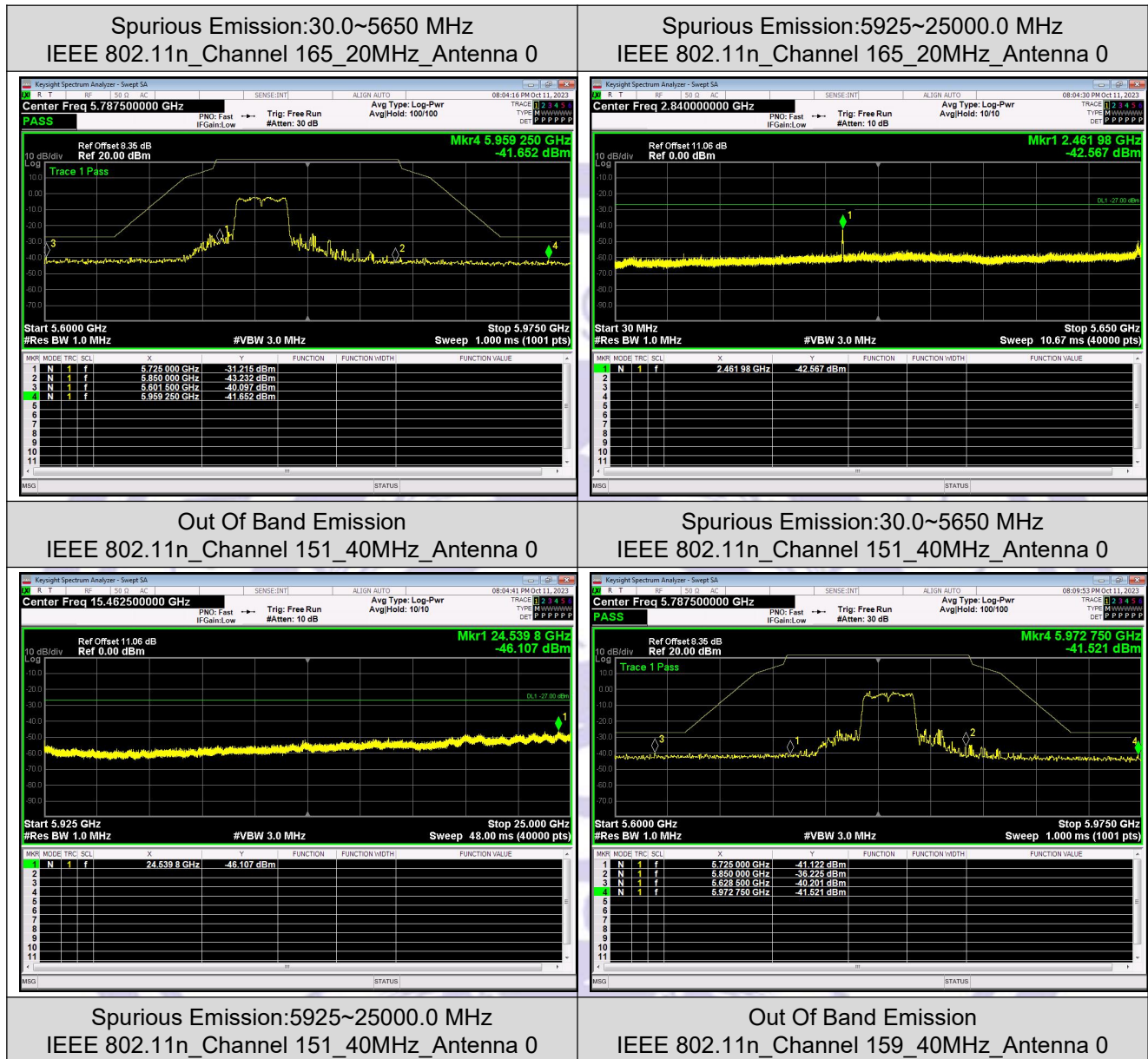
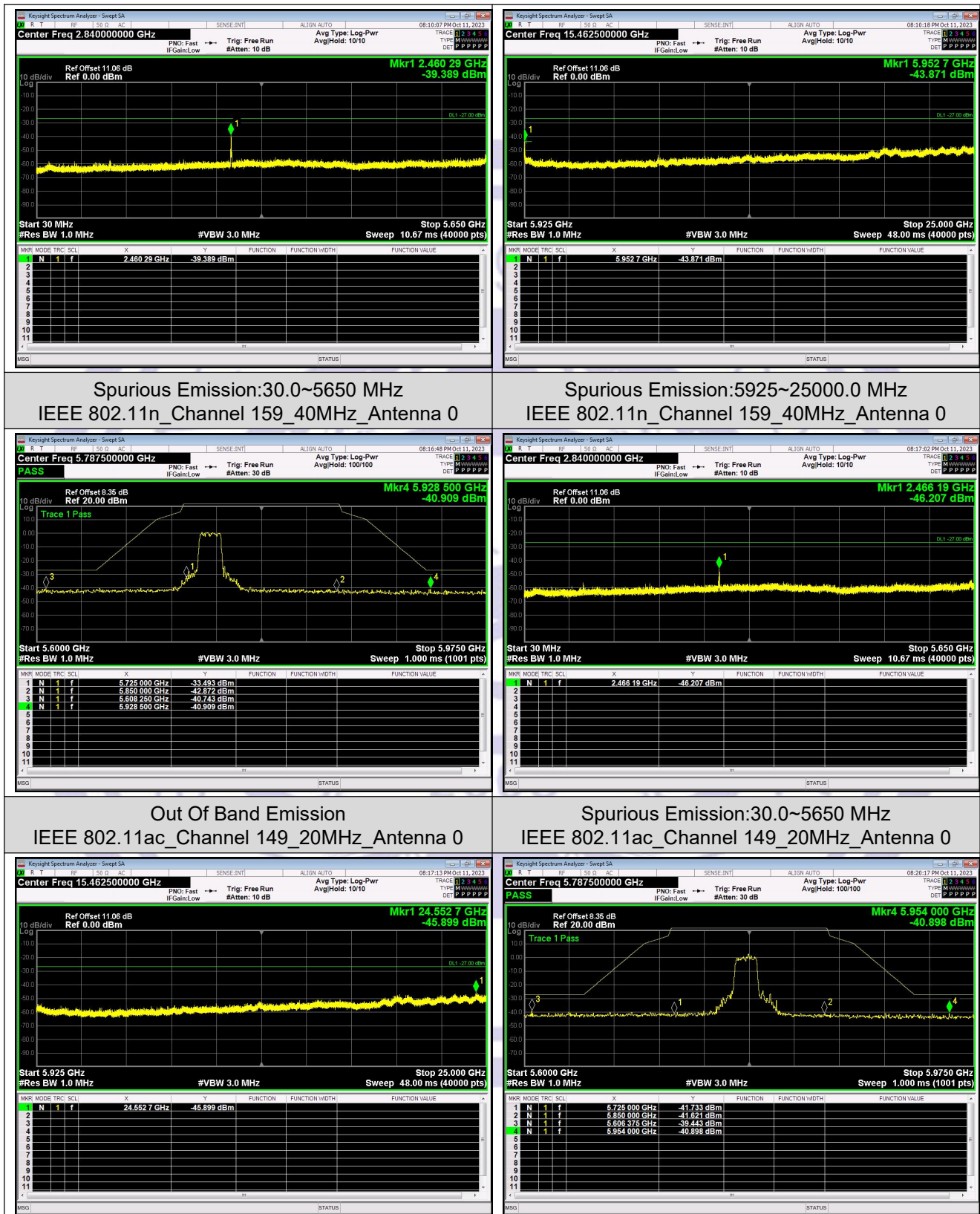
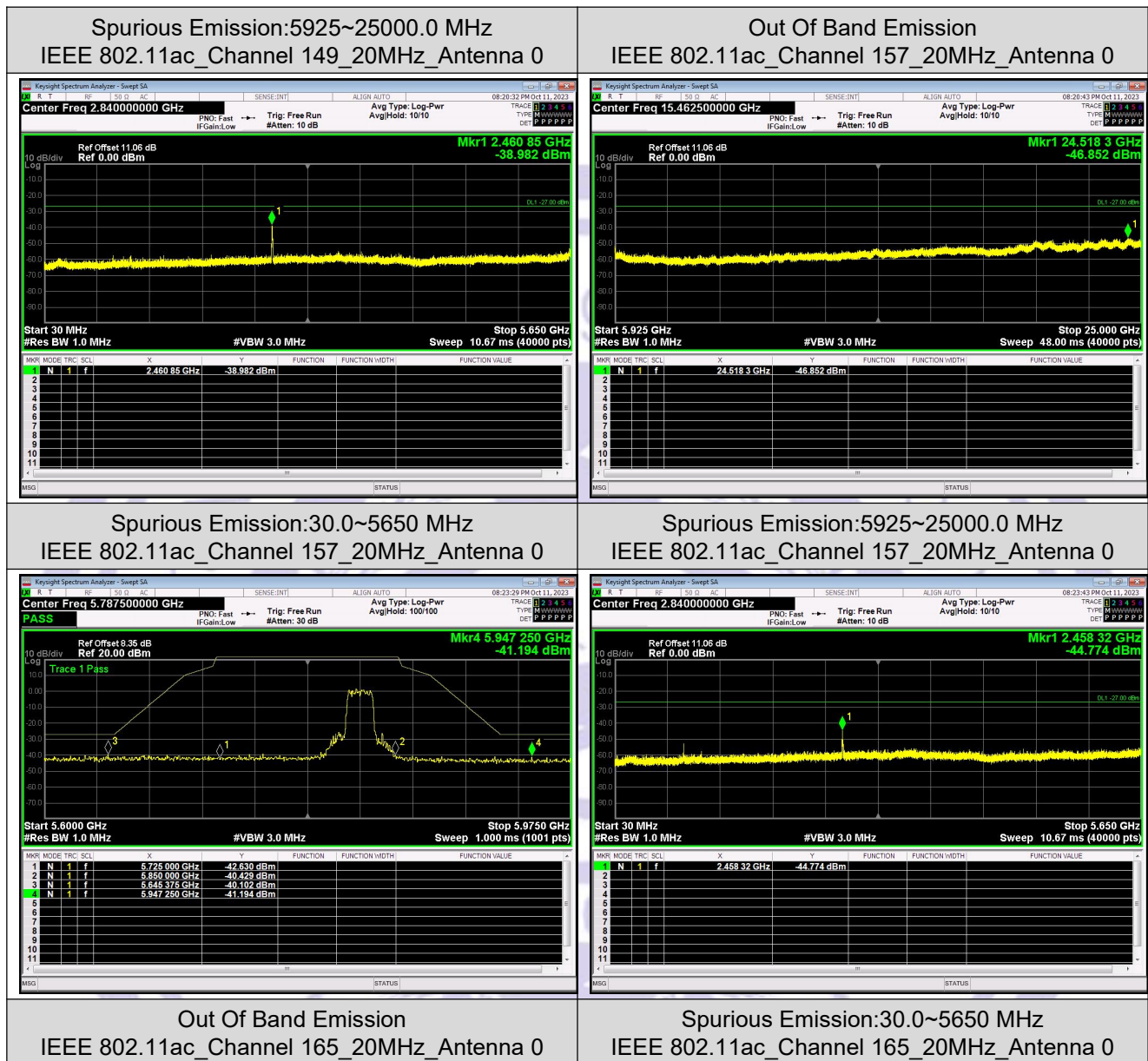
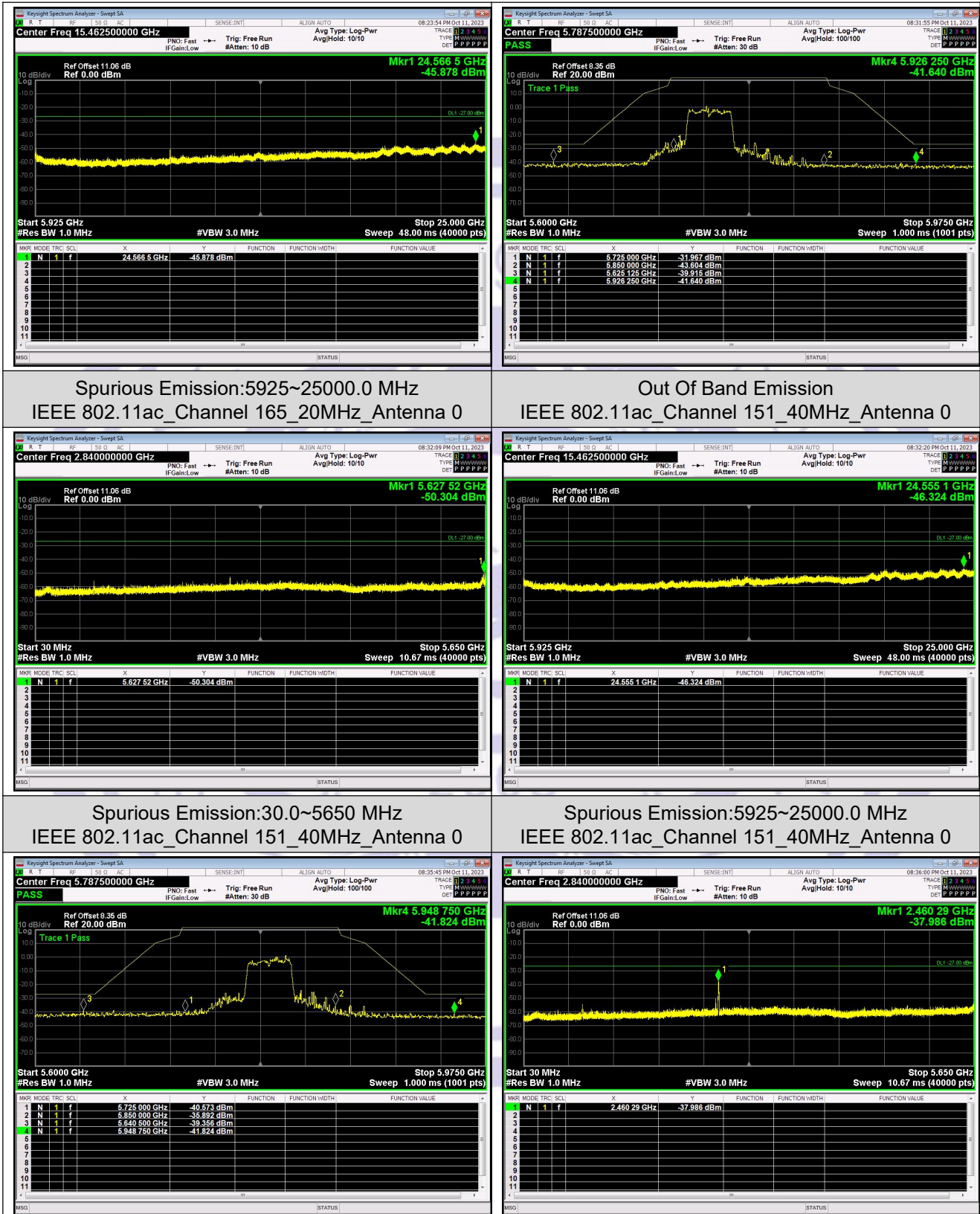


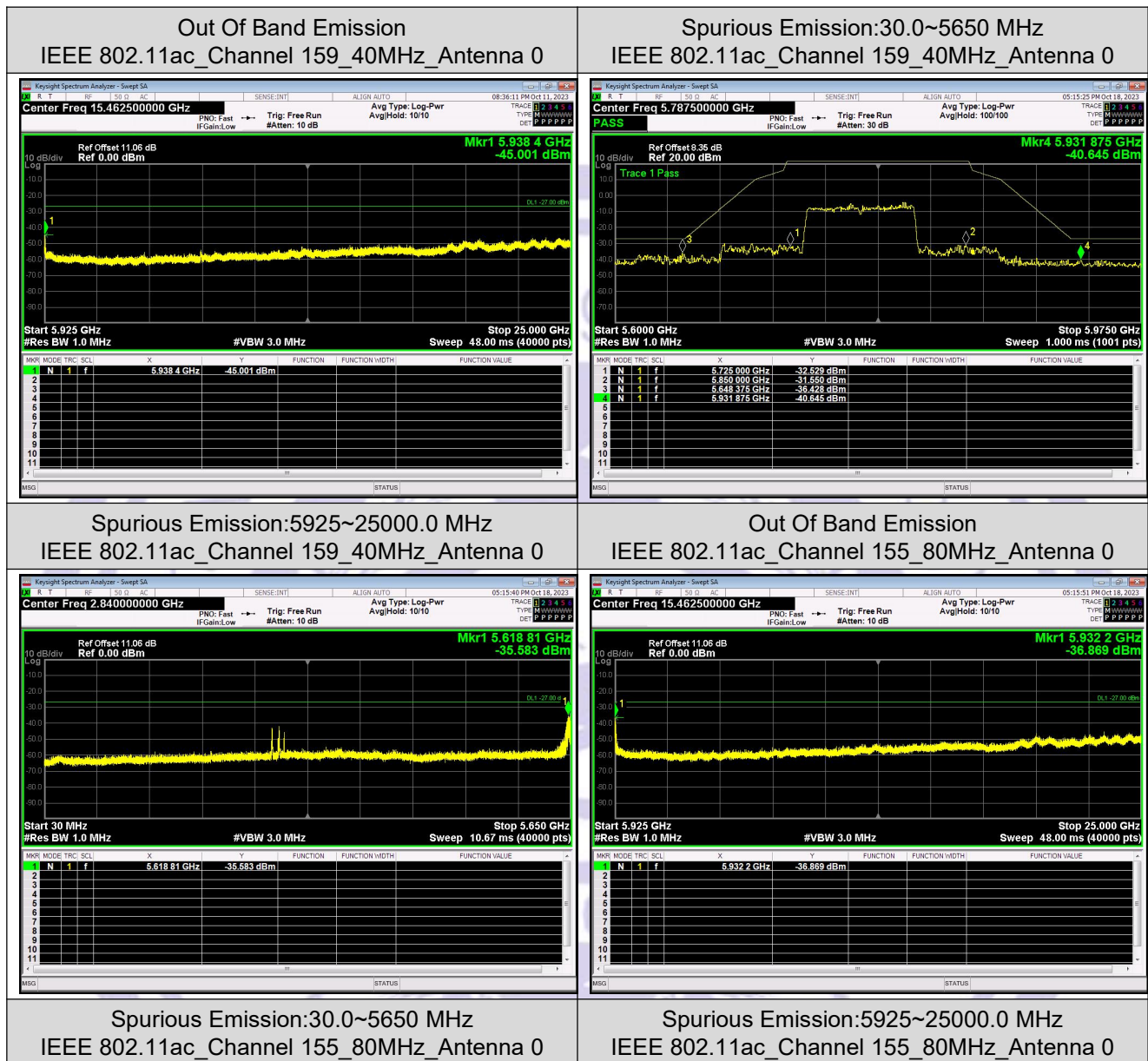










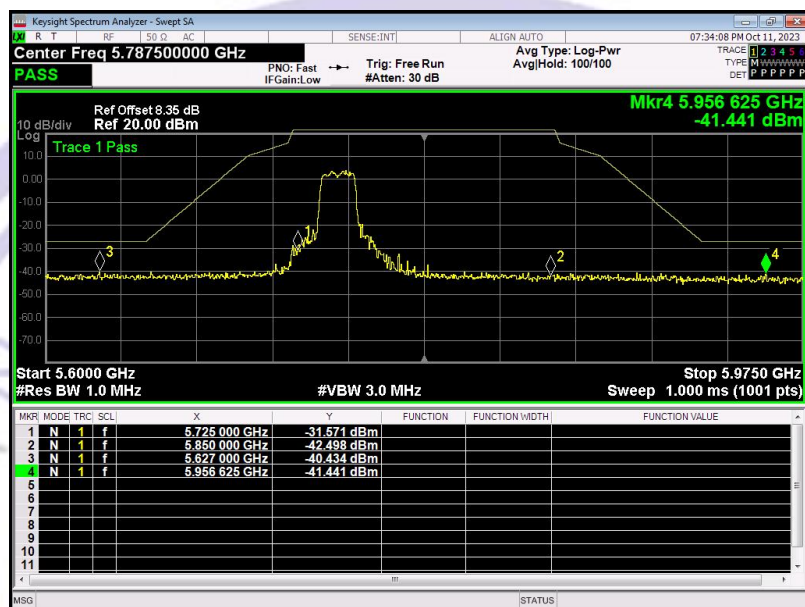


Test plot as follows:

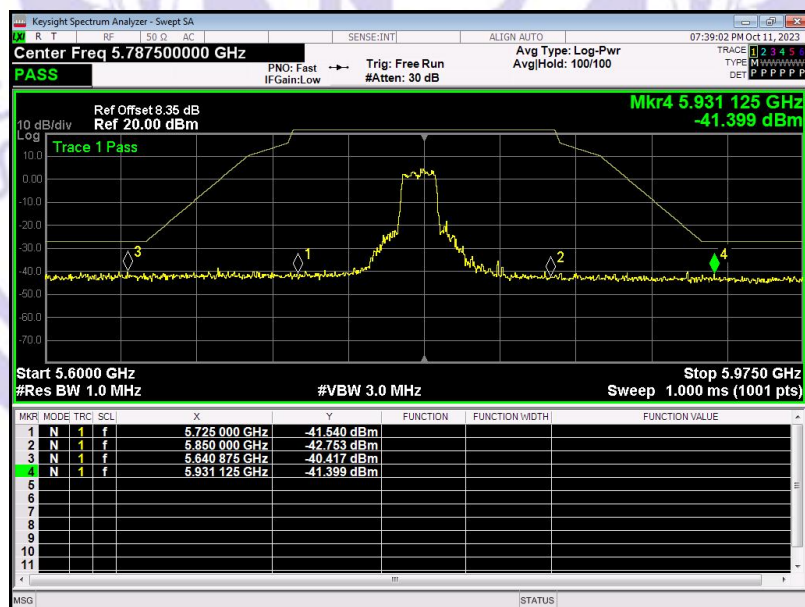
We test all the modes and recorded the worst mode

802.11a

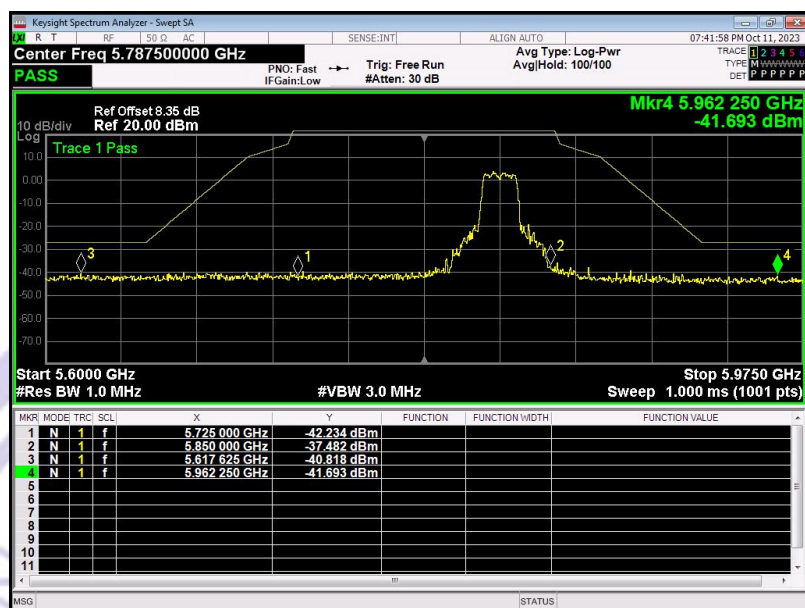
Lowest channel



Middle channel



Highest channel



12 Frequency Stability Measurement

12.1 Test Standard and Limit

FCC

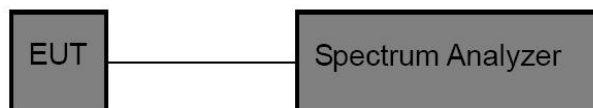
Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

IC

If the frequency stability of the licence-exempt radio apparatus is not specified in the applicable RSS, the fundamental emissions of the radio apparatus should be kept within at least the central 80% of its permitted operating frequency band in order to minimize the possibility of out-of-band operation. In addition, its occupied bandwidth shall be entirely outside the restricted bands and the prohibited TV bands of 54-72 MHz, 76-88 MHz, 174-216 MHz, and 470-602 MHz, unless otherwise indicated.

12.2 Test Setup



12.3 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f)/f_c \times 10^6$ ppm and the limit is less than ± 20 ppm (IEEE 802.11n specification).

6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value

7. Extreme temperature is -20°C~50°C.

12.4 Test Data

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)			Δ Frequency (MHz)		
			802.11a	802.11n HT20	802.11ac VHT20	802.11a	802.11 n HT20	802.11 ac VHT20
132V	-20 °C	5190	5179.831365	5179.83284	5179.83109	0.168635	0.16716	0.16891
		5230	5199.841315	5199.834177	5199.832415	0.158685	0.165823	0.167585
		5240	5239.835227	5239.833652	5239.831127	0.164773	0.166348	0.168873
108V	-20 °C	5190	5179.361365	5179.83284	5179.83109	0.638635	0.16716	0.16891
		5230	5199.721315	5199.834177	5199.832415	0.278685	0.165823	0.167585
		5240	5239.415227	5239.833652	5239.831127	0.584773	0.166348	0.168873
120V	25 °C	5190	5179.361365	5179.83284	5179.83109	0.638635	0.16716	0.16891
		5230	5191.631315	5199.834177	5199.832415	8.368685	0.165823	0.167585
		5240	5233.655227	5239.833652	5239.831127	6.344773	0.166348	0.168873
132V	50 °C	5190	5174.051365	5179.83284	5179.83109	5.948635	0.16716	0.16891
		5230	5197.531315	5199.834177	5199.832415	2.468685	0.165823	0.167585
		5240	5237.325227	5239.833652	5239.831127	2.674773	0.166348	0.168873
108V	50 °C	5190	5174.631365	5179.83284	5179.83109	5.368635	0.16716	0.16891
		5230	5197.531315	5199.834177	5199.832415	2.468685	0.165823	0.167585
		5240	5235.635227	5239.833652	5239.831127	4.364773	0.166348	0.168873

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)		Δ Frequency (MHz)	
			802.11n HT40	802.11ac VHT40	802.11n HT40	802.11ac VHT40
132V	-20°C	5190	5189.829439	5189.83254	0.170561	0.16746
		5230	5229.830852	5229.833415	0.169148	0.166585
108V	-20°C	5190	5183.829439	5189.83254	6.170561	0.16746
		5230	5229.830852	5229.833415	0.169148	0.166585
120V	25°C	5190	5187.829439	5189.83254	2.170561	0.16746
		5230	5226.830852	5229.833415	3.169148	0.166585
132V	50°C	5190	5183.829439	5189.83254	6.170561	0.16746
		5230	5226.830852	5229.833415	3.169148	0.166585
108V	50°C	5190	5187.829439	5189.83254	2.170561	0.16746
		5230	5228.830852	5229.833415	1.169148	0.166585

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)	Δ Frequency (MHz)
			802.11ac VHT80	802.11ac VHT80
132V	-20°C	5210	5209.827677	0.172323
108V		5210	5203.827677	6.172323
120V	25°C	5210	5205.827677	4.172323
132V	50°C	5210	5207.827677	2.172323
108V	50°C	5210	5206.827677	3.172323

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)			Δ Frequency (MHz)		
			802.11a	802.11n HT20	802.11ac VHT20	802.11a	802.11 n HT20	802.11 ac VHT20
132V	-20 °C	5745	5744.816977	5744.820652	5745.228387	0.183023	0.179348	-0.228387
		5785	5784.820402	5784.821614	5784.831565	0.179598	0.178386	0.168435
		5825	5824.821277	5824.823539	5824.830815	0.178723	0.176461	0.169185
108V	-20 °C	5745	5746.816977	5743.820652	5745.228387	-1.816977	1.179348	-0.228387
		5785	5786.820402	5784.821614	5784.831565	-1.820402	0.178386	0.168435
		5825	5826.821277	5823.823539	5824.830815	-1.821277	1.176461	0.169185
120V	25 °C	5745	5747.816977	5743.820652	5745.228387	-2.816977	1.179348	-0.228387
		5785	5787.820402	5787.821614	5784.831565	-2.820402	-2.821614	0.168435
		5825	5827.821277	5826.823539	5824.830815	-2.821277	-1.823539	0.169185
132V	50 °C	5745	5747.816977	5746.820652	5745.228387	-2.816977	-1.820652	-0.228387
		5785	5787.820402	5789.821614	5784.831565	-2.820402	-4.821614	0.168435
		5825	5826.821277	5829.823539	5824.830815	-1.821277	-4.823539	0.169185
108V	50 °C	5745	5746.816977	5749.820652	5745.228387	-1.816977	-4.820652	-0.228387
		5785	5786.820402	5789.821614	5784.831565	-1.820402	-4.821614	0.168435
		5825	5826.821277	5829.823539	5824.830815	-1.821277	-4.823539	0.169185

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)		Δ Frequency (MHz)	
			802.11n HT40	802.11ac VHT40	802.11n HT40	802.11ac VHT40
132V	-20°C	5755	5754.826389	5754.816064	0.173611	0.183936
		5795	5794.834265	5794.812477	0.165735	0.187523
108V	-20°C	5755	5754.826389	5754.816064	0.173611	0.183936
		5795	5794.834265	5794.812477	0.165735	0.187523
120V	25°C	5755	5754.826389	5754.816064	0.173611	0.183936
		5795	5794.834265	5794.812477	0.165735	0.187523
132V	50°C	5755	5754.826389	5754.816064	0.173611	0.183936
		5795	5794.834265	5794.812477	0.165735	0.187523
108V	50°C	5755	5754.826389	5754.816064	0.173611	0.183936
		5795	5794.834265	5794.812477	0.165735	0.187523

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)	Δ Frequency (MHz)
			802.11ac VHT80	802.11ac VHT80
132V	-20°C	5775	5774.822589	0.177411
108V		5775	5776.822589	-1.822589
120V	25°C	5775	5778.822589	-3.822589
132V	50°C	5775	5779.822589	-4.822589
108V	50°C	5775	5772.822589	2.177411

13 TRANSMISSION IN THE ABSENCE OF DATA

13.1 STANDARD REQUIREMENT

According to S15.407(c)

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

TEST RESULT

No non-compliance noted. Refer to the theory of operation.

14 Antenna Requirement

14.1 Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203
Requirement	1) 15.203 requirement: 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, 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. According to RSS-GEN section 6.8 The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list. For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below). When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer. The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

14.2 Antenna Connected Construction

The antenna is PCB Antenna which permanently attached, and the best case gain of the antenna is 5.9 dBi. It complies with the standard requirement.

15 TEST SETUP & EUT PHOTOGRAPH

Please see the attachment for details.

----- End of Report -----

