

4.8 SPURIOUS RF CONDUCTED EMISSIONS

4.8.1 Conformance Limit

Frequency Band (MHz)	Limit
5150 - 5250	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5250 - 5350	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5470 - 5725	Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm
5725 - 5850	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

4.8.2 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

4.8.3 Test Setup



4.8.4 Test Procedure

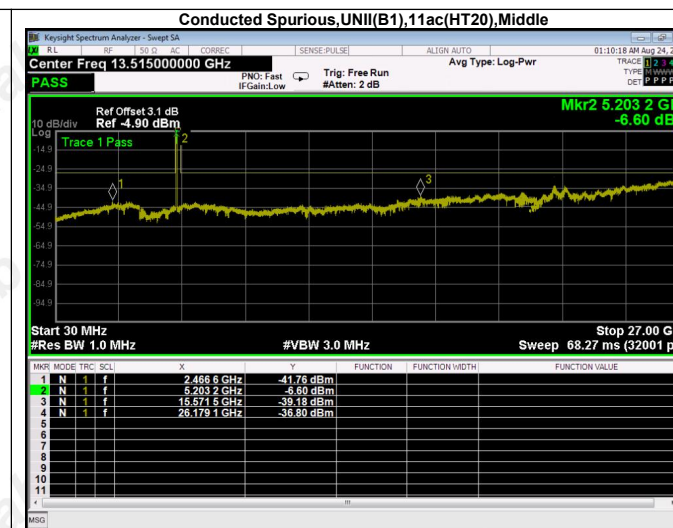
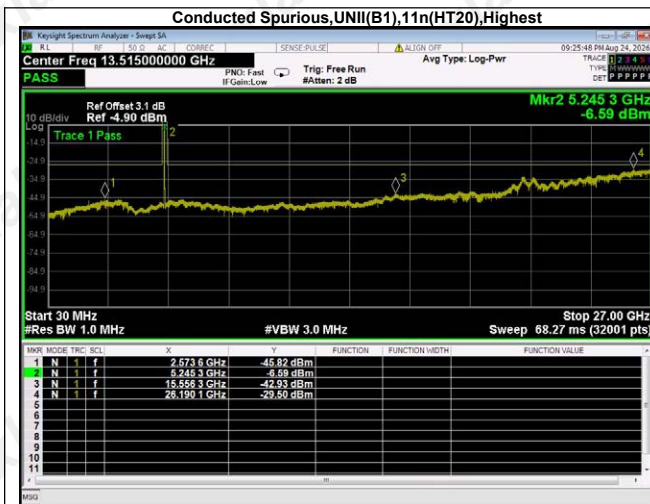
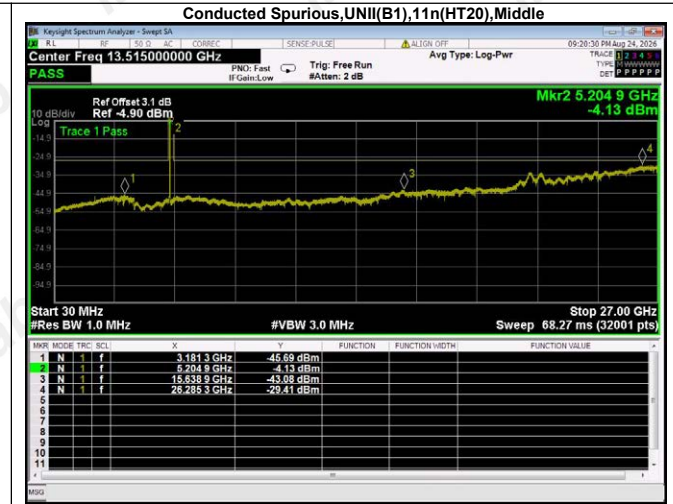
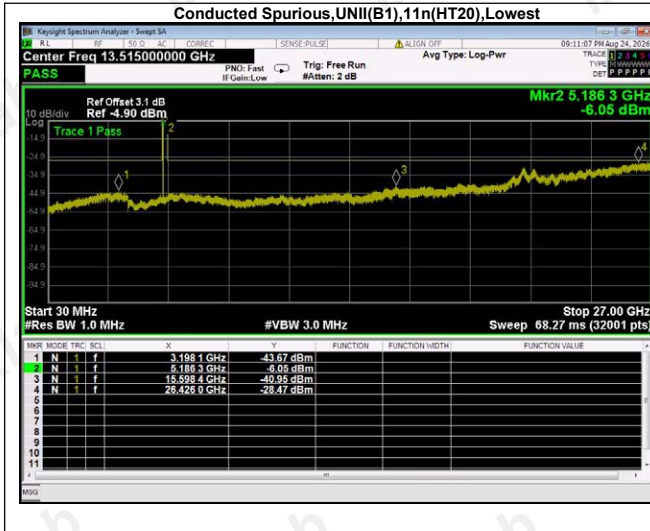
The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2020 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=1MHz and VBW= 3MHz to measure the peak field strength, and measure frequency range from 30MHz to 40GHz.

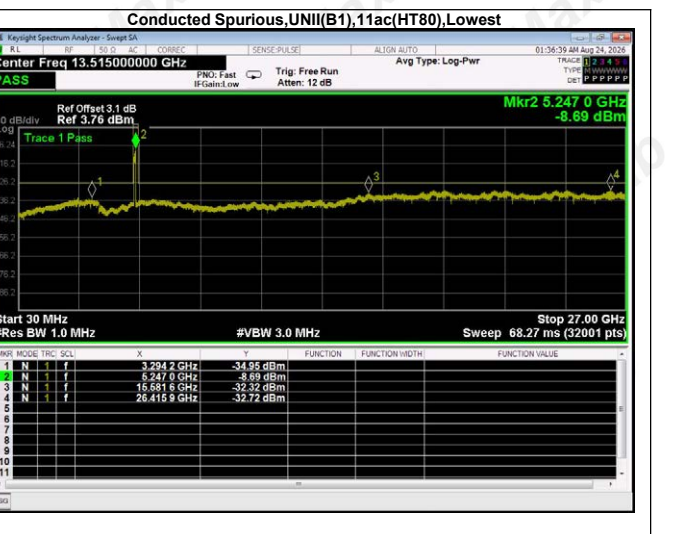
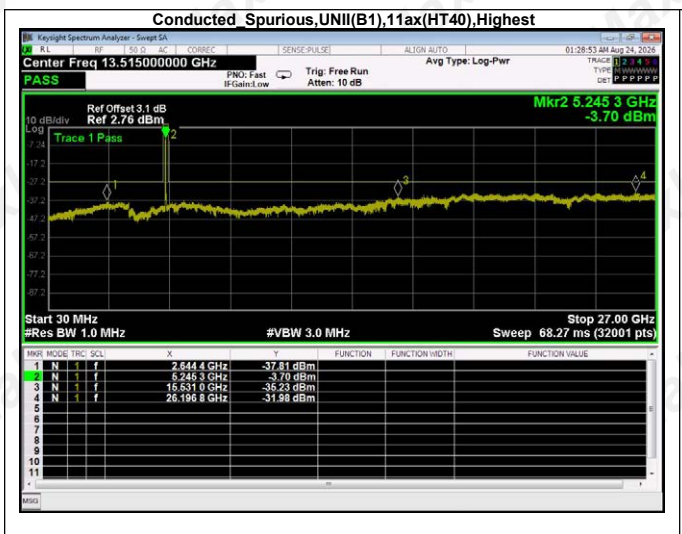
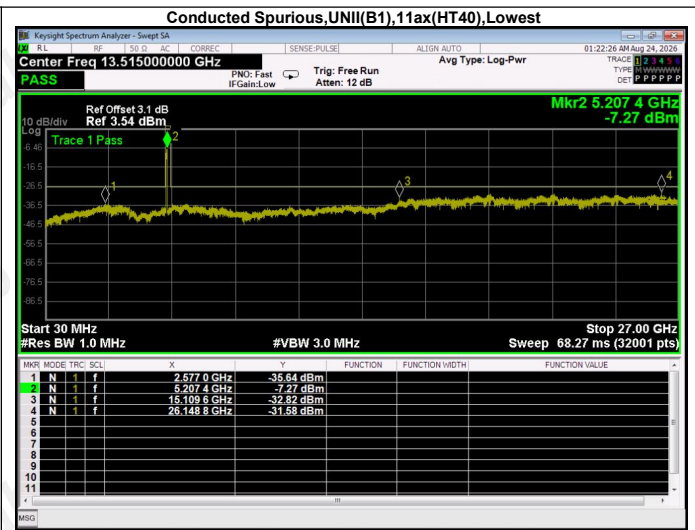
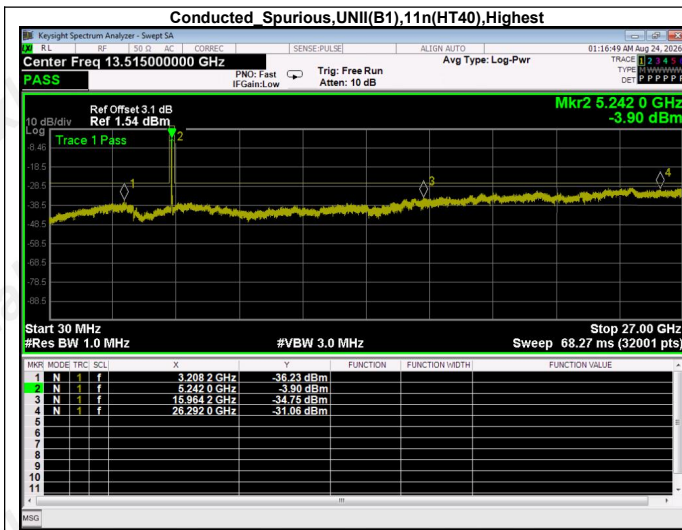
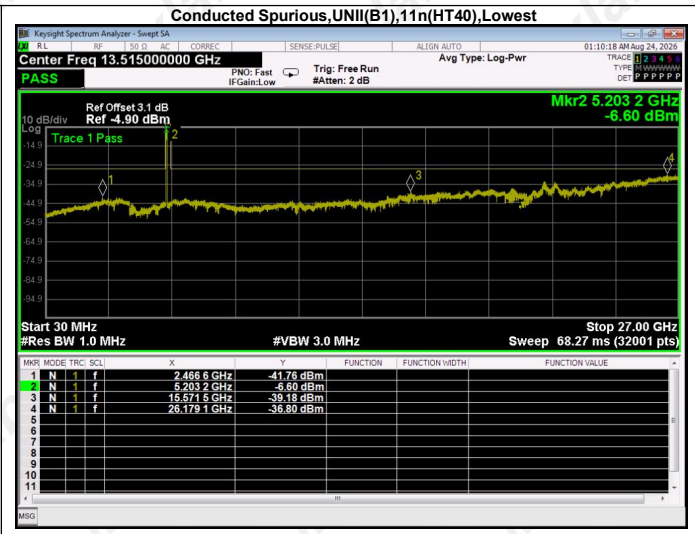
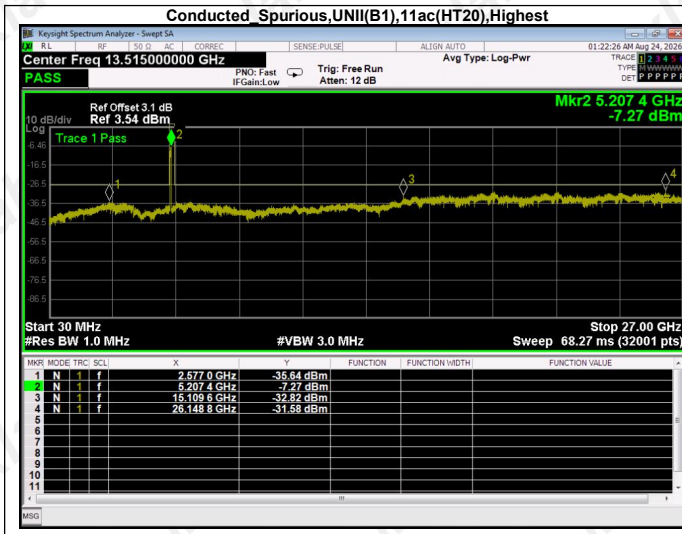
4.8.5 Test Results

Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and band edge measurement data.

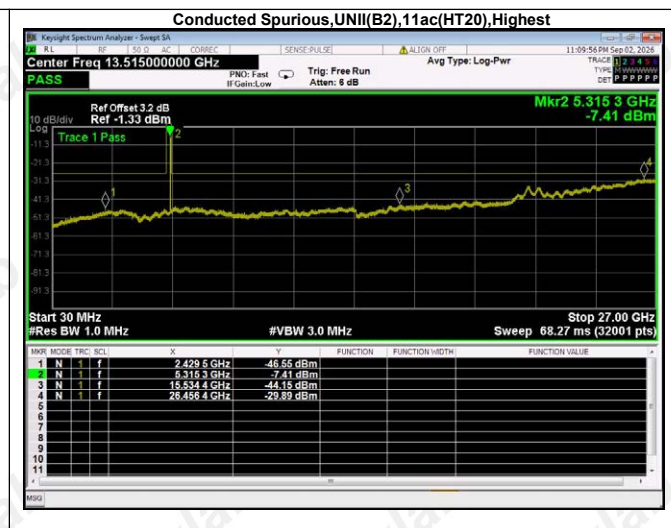
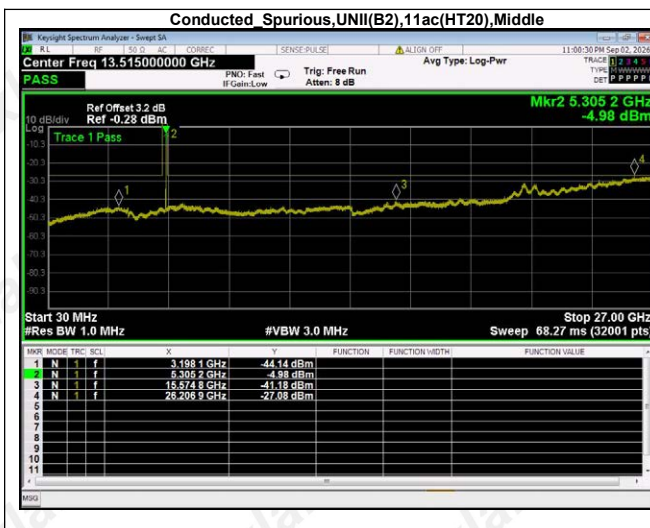
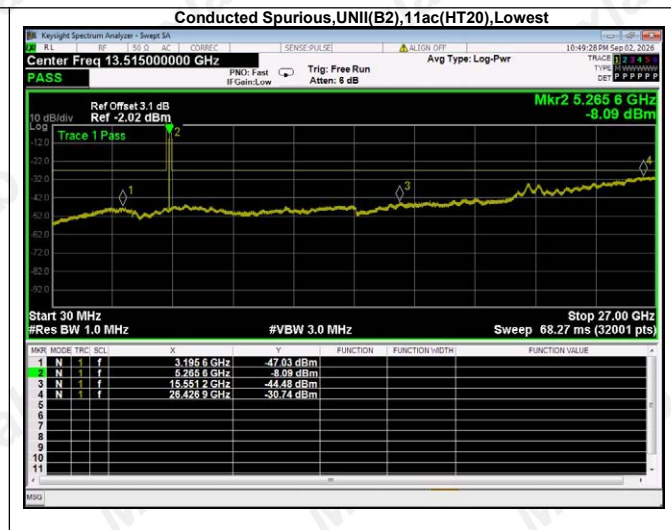
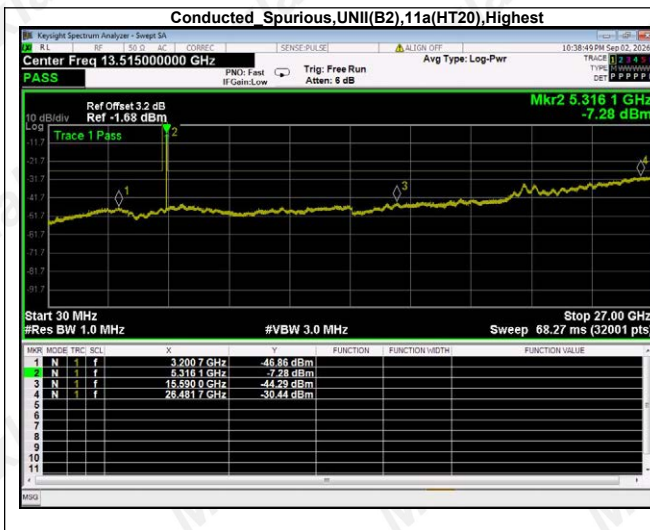
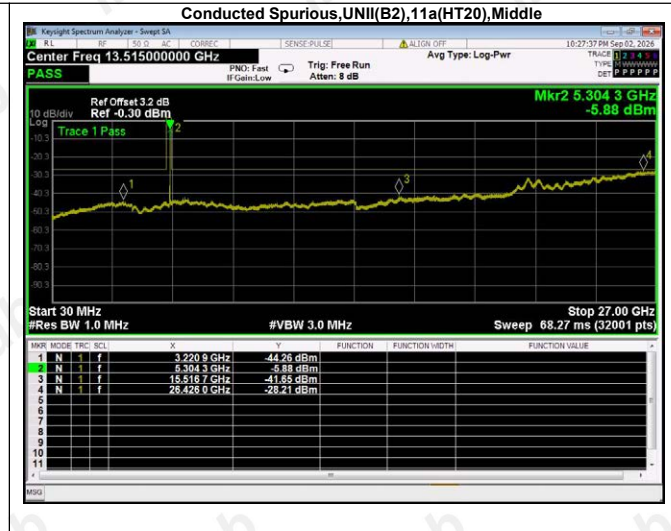
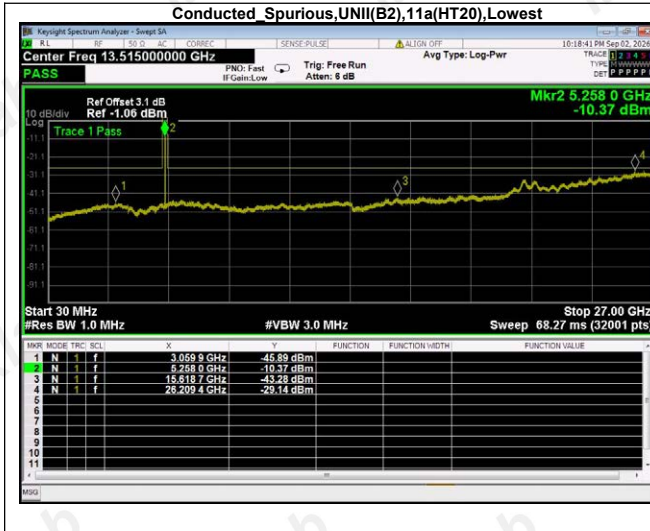
At 26.5GHz to 40GHz, the amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

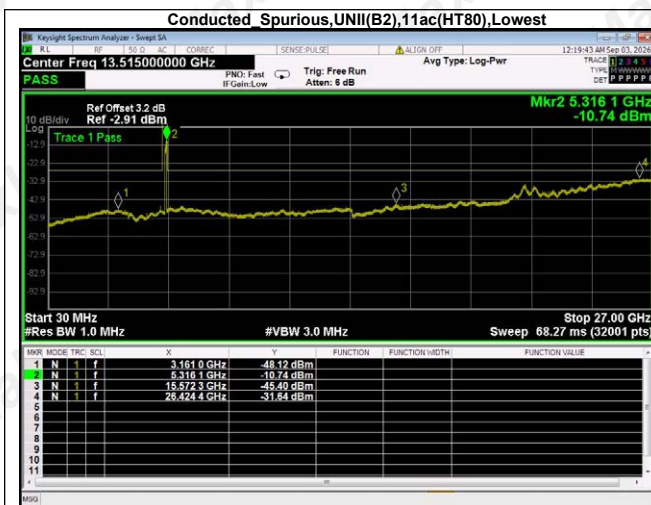
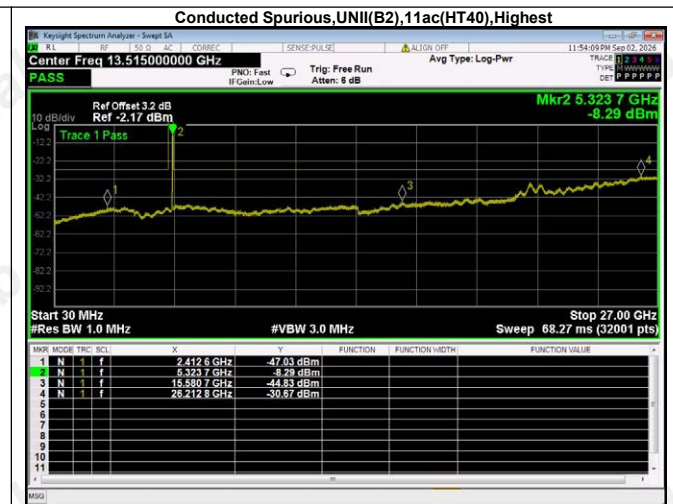
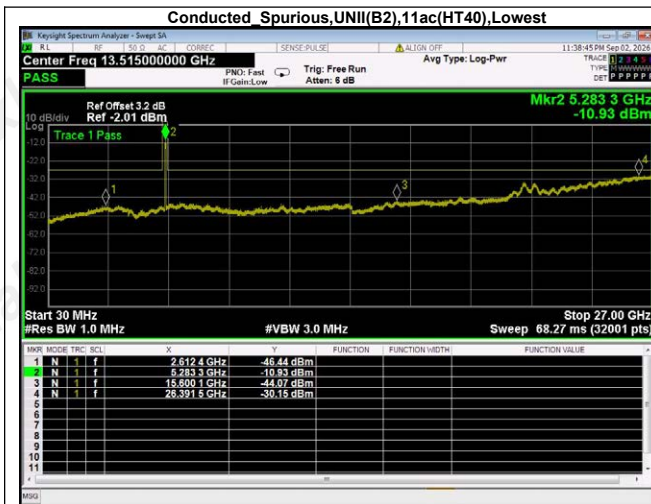
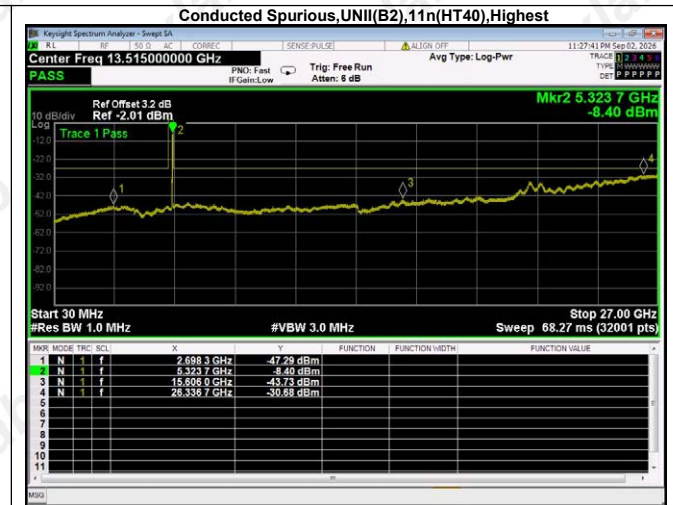
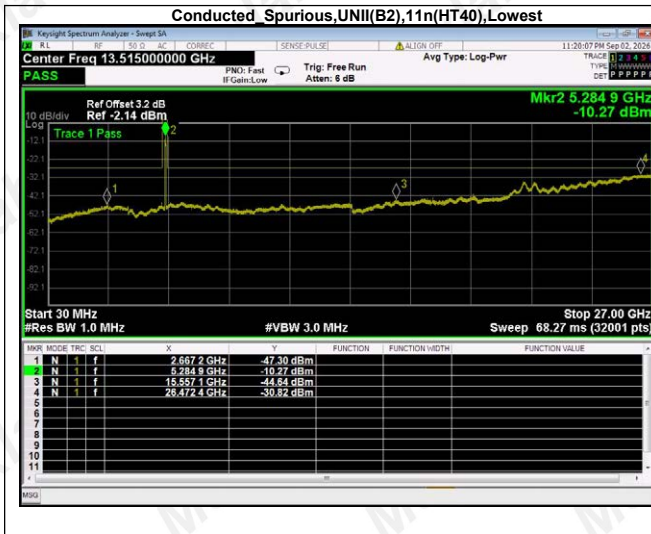
U-NII 1 (5.18-5.24GHz)



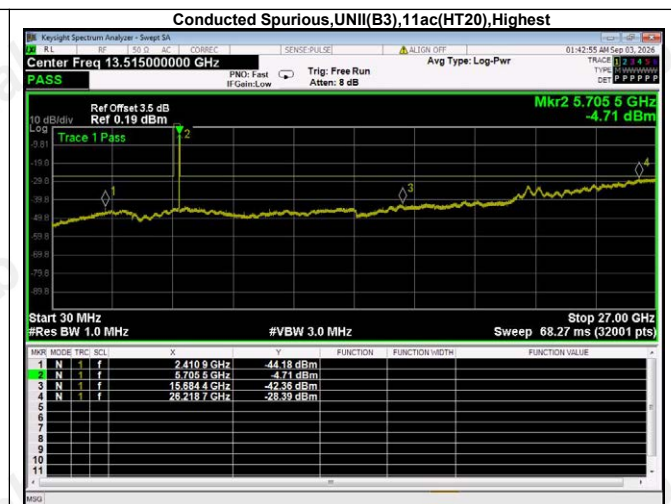
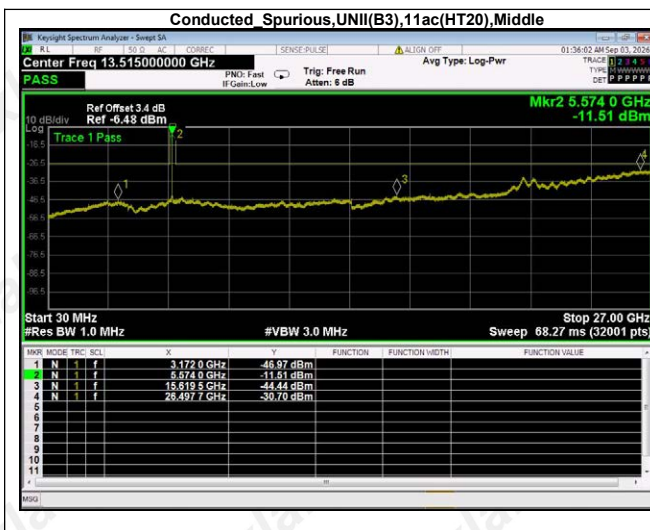
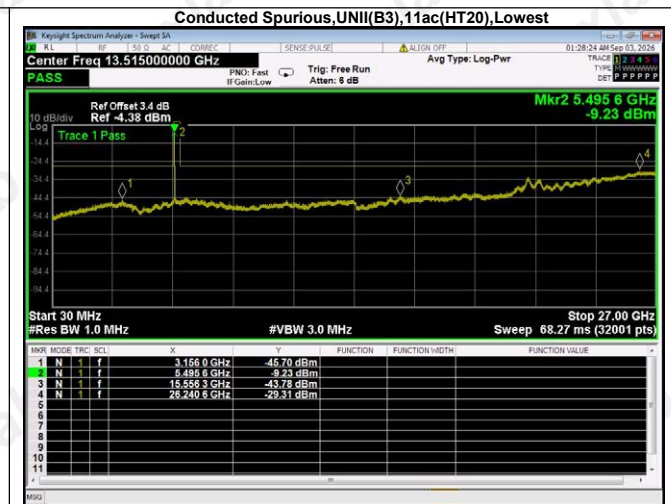
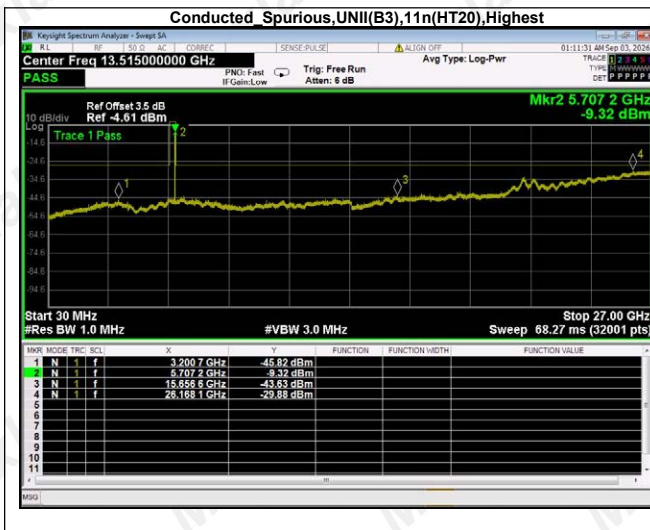
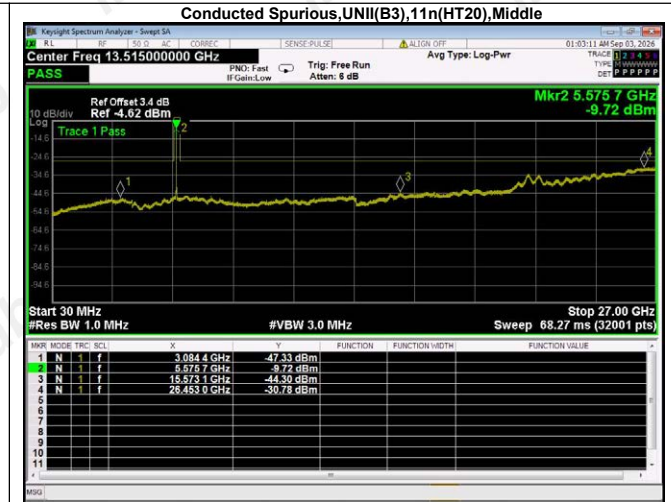
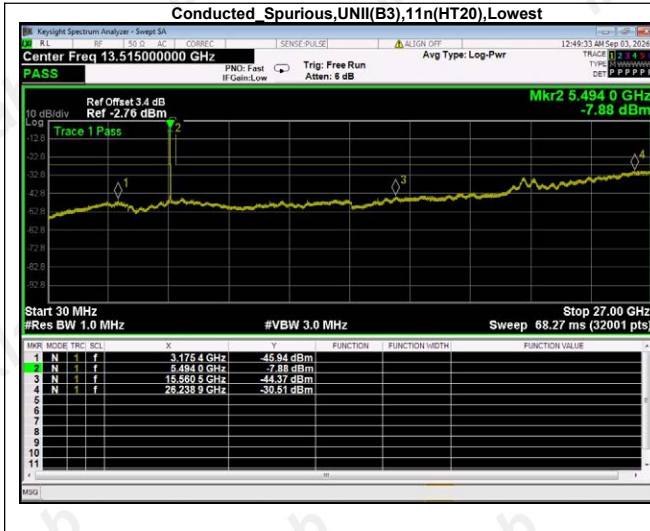


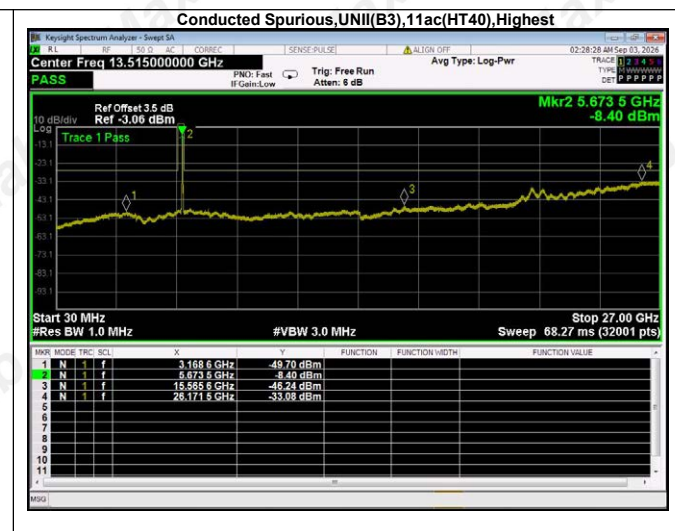
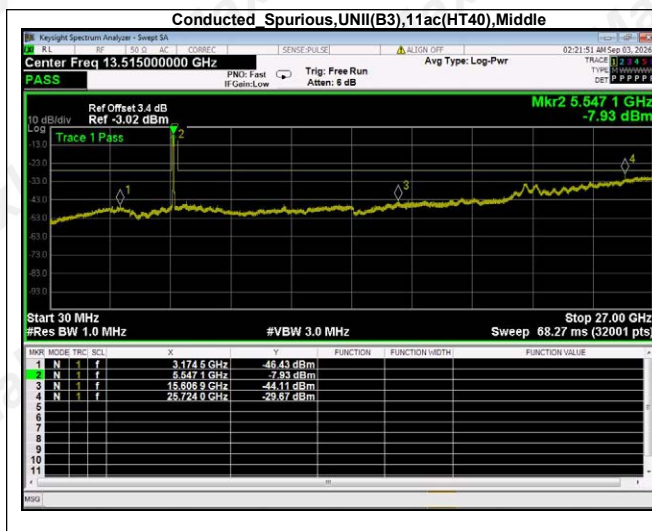
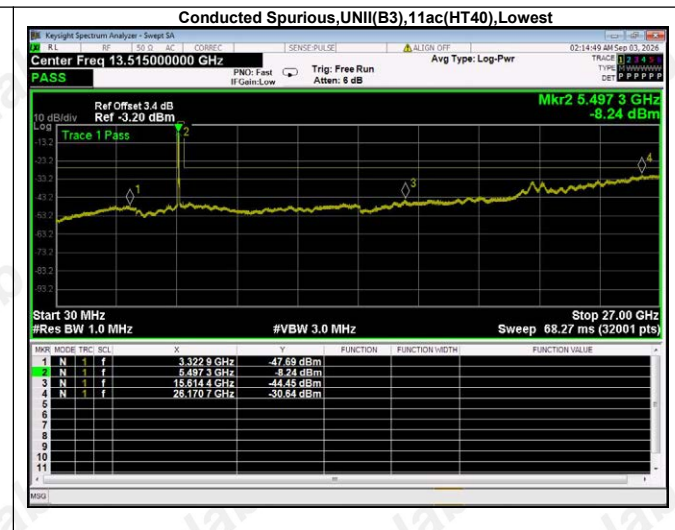
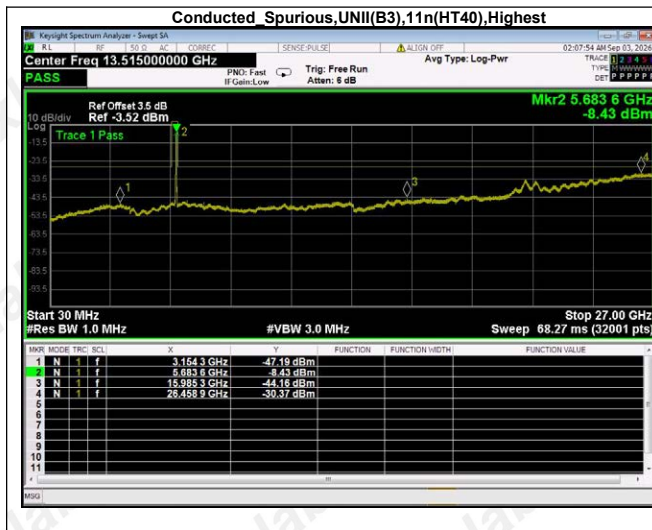
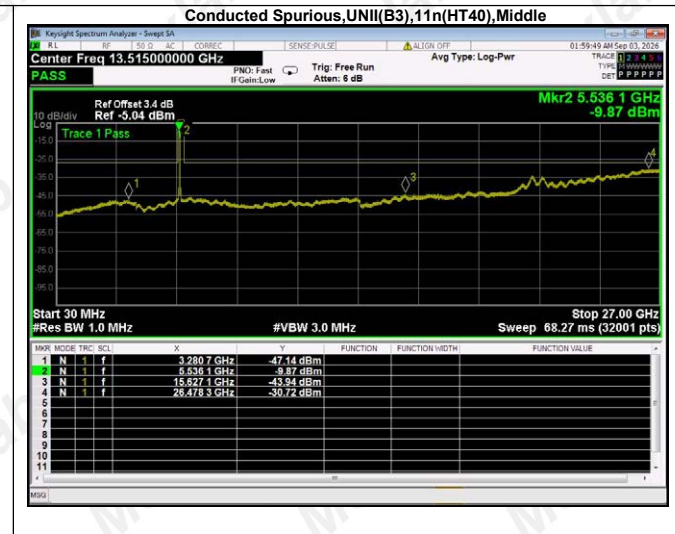
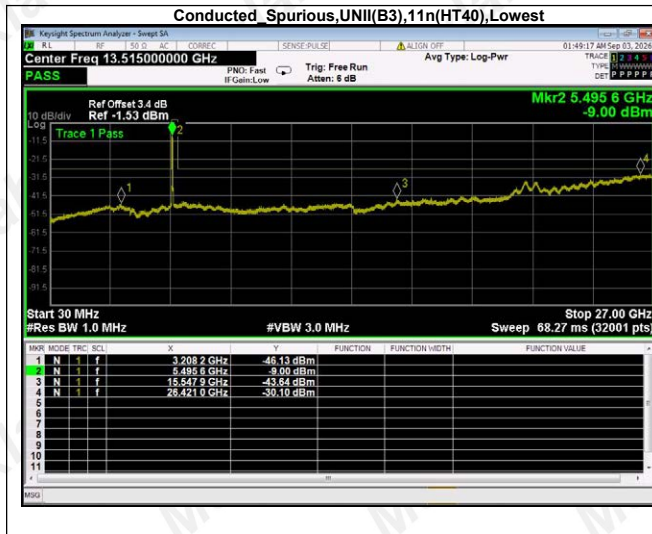
U-NII 2A (5.26-5.32GHz)

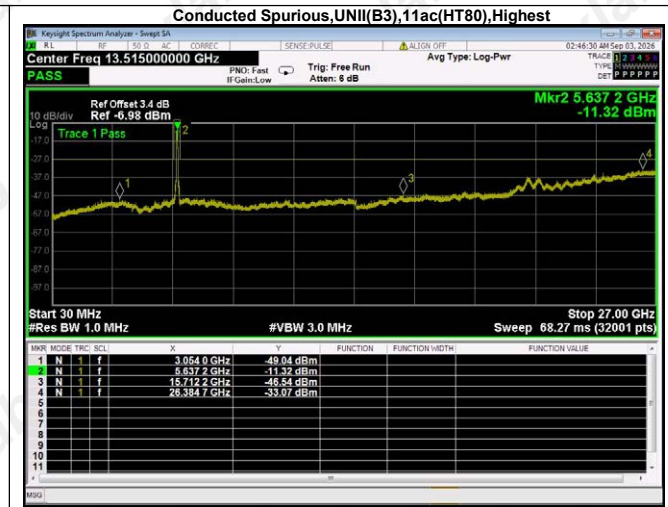
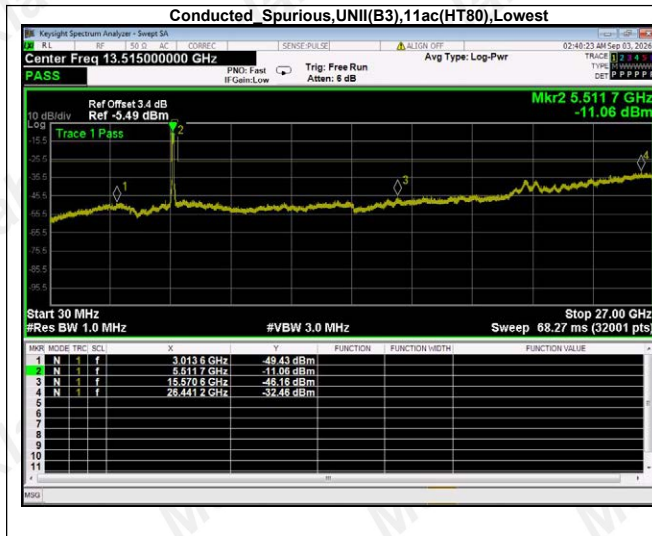




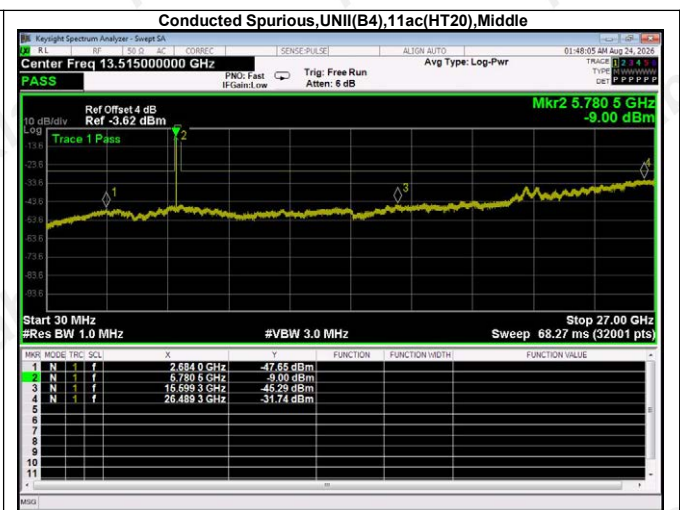
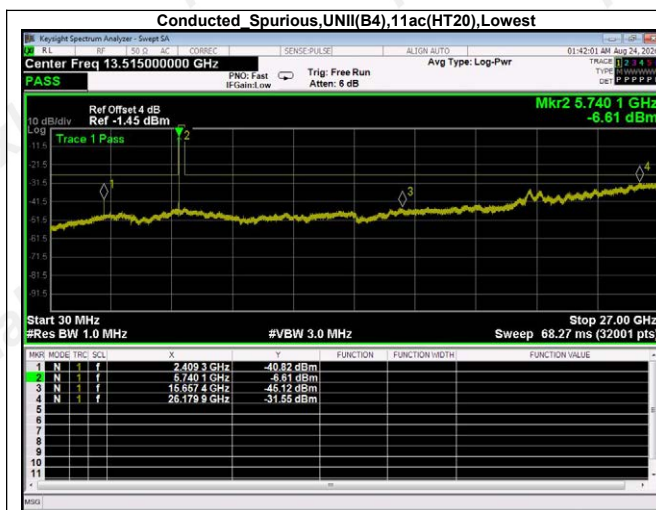
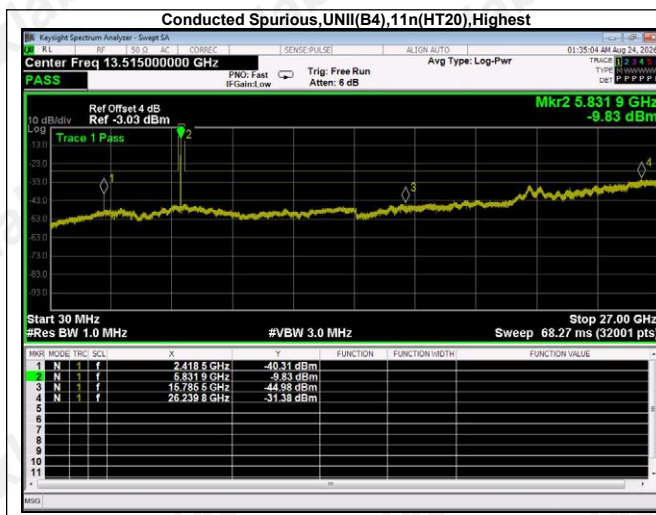
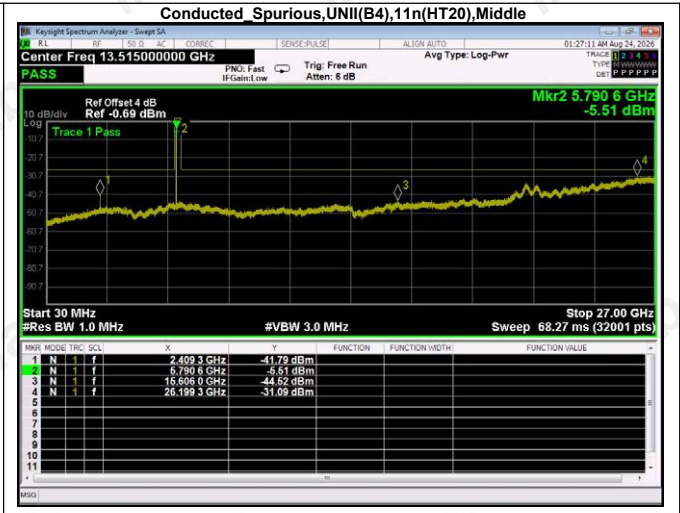
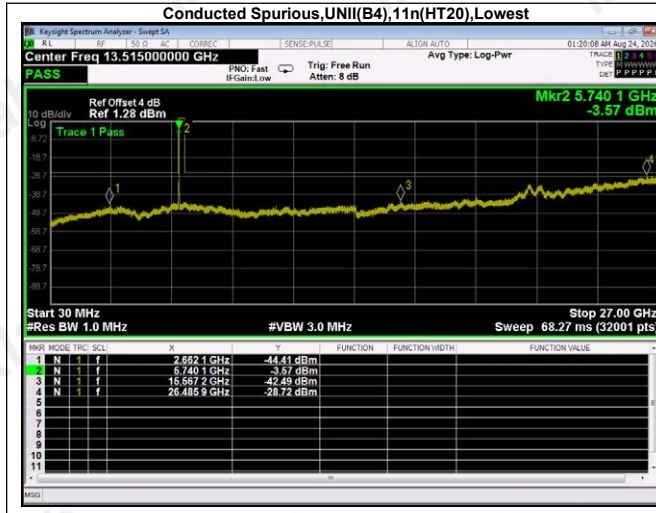
U-NII 2C (5.500GHz-5.700GHz)

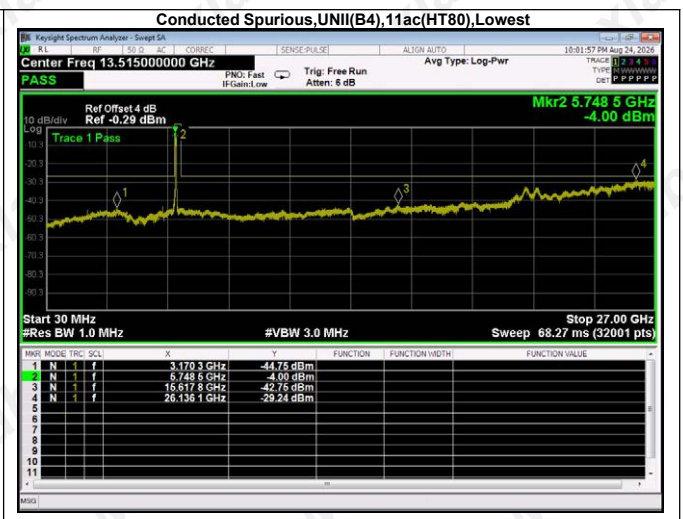
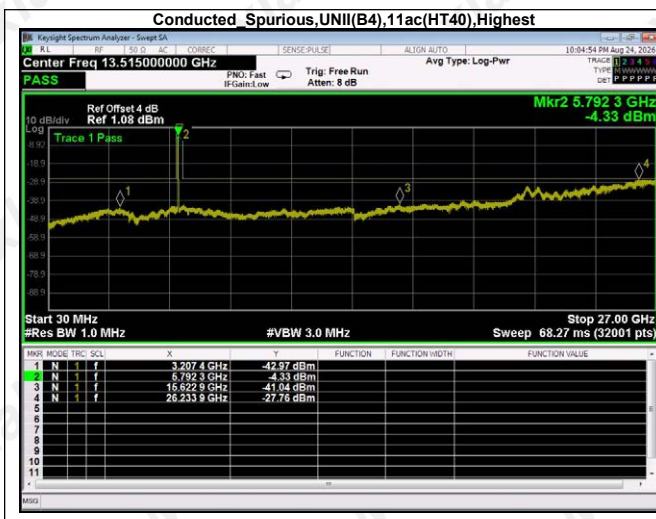
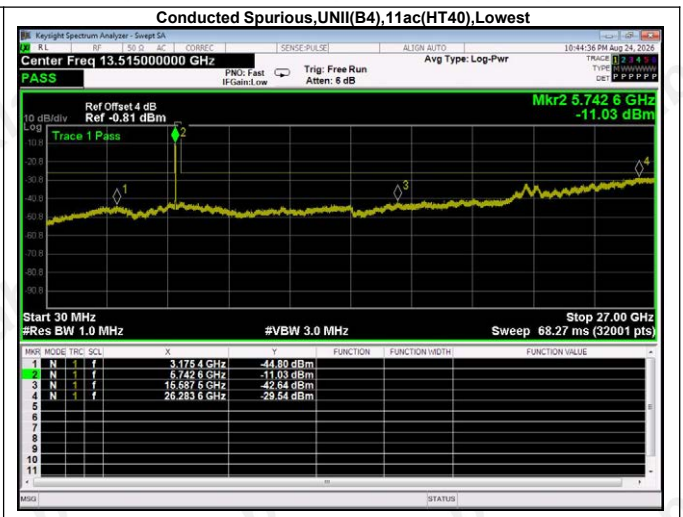
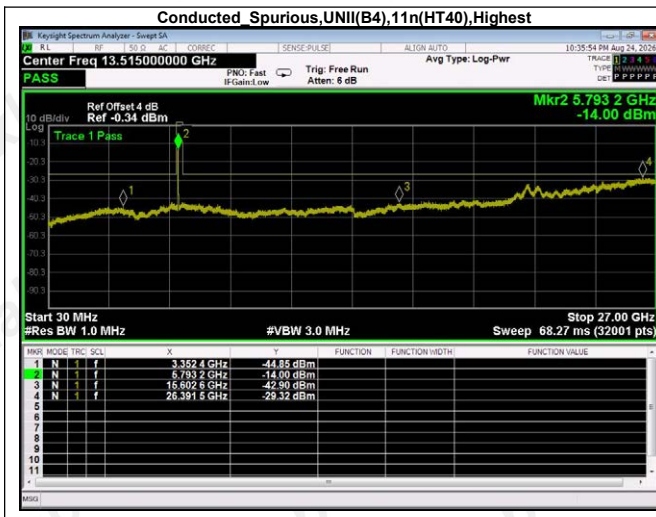
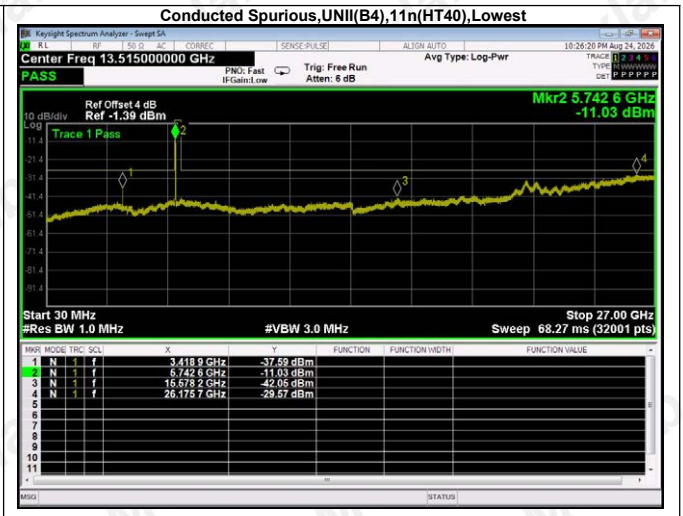
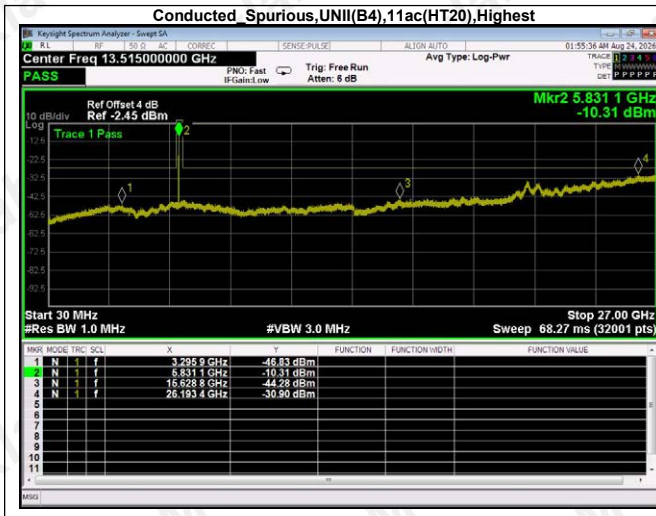






U-NII 3 (5.745GHz-5.825GHz)



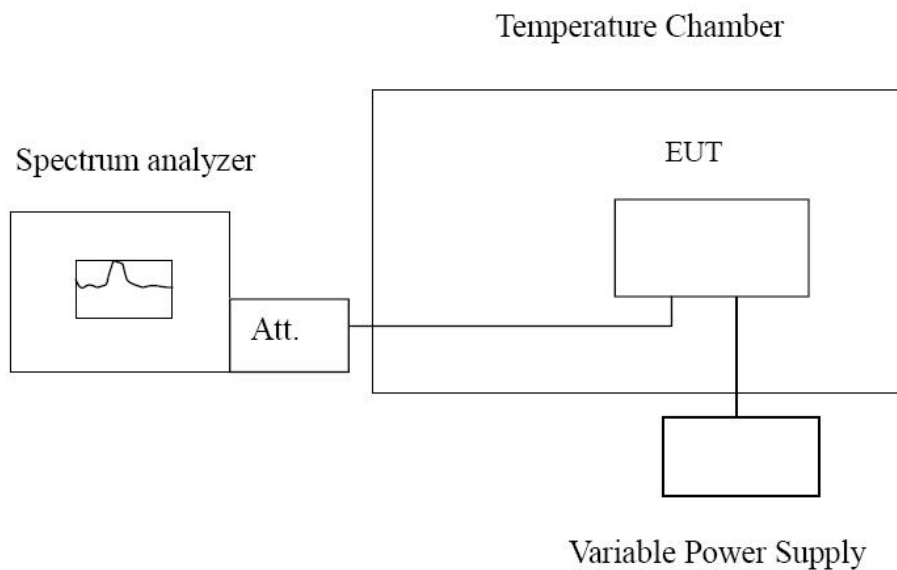


4.9 Frequency Stability

Limit

Manufacturers 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 users manual.

TEST CONFIGURATION



TEST PROCEDURE

Frequency Stability under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Frequency Stability under Voltage Variations:

Set chamber temperature to 25°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
52	-30	58.65	0.011	Within the band of operation	Pass
	-20	74.52	0.014		
	-10	85.65	0.017		
	0	88.65	0.017		
	10	94.52	0.018		
	20	85.65	0.017		
	30	72.65	0.014		
	40	71.65	0.014		
	50	62.32	0.012		
46.8	25	55.86	0.011	Within the band of operation	Pass
57.2	25	51.86	0.010		

Reference Frequency: 802.11ac channel=52 frequency=5260MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
52	-30	65.41	0.012	Within the band of operation	Pass
	-20	66.85	0.013		
	-10	71.42	0.014		
	0	76.54	0.015		
	10	84.52	0.016		
	20	95.54	0.018		
	30	89.65	0.017		
	40	76.65	0.015		
	50	63.21	0.012		
46.8	25	54.52	0.010	Within the band of operation	Pass
57.2	25	51.68	0.010		

Reference Frequency: 802.11ac channel=100 frequency=5500MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
52	-30	76.54	0.014	Within the band of operation	Pass
	-20	79.65	0.014		
	-10	81.24	0.015		
	0	85.63	0.016		
	10	88.54	0.016		
	20	98.65	0.018		
	30	92.35	0.017		
	40	87.65	0.016		
	50	77.65	0.014		
46.8	25	74.65	0.014	Within the band of operation	Pass
57.2	25	65.42	0.012		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
52	-30	65.52	0.06552	Within the band of operation	Pass
	-20	74.41	0.07441		
	-10	56.65	0.05665		
	0	66.85	0.06685		
	10	87.41	0.08741		
	20	92.62	0.09262		
	30	88.65	0.08865		
	40	85.41	0.08541		
	50	74.65	0.07465		
46.8	25	65.42	0.06542	Within the band of operation	Pass
57.2	25	63.21	0.06321		

4.10 Antenna Requirement

Standard Applicable

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. 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

Test Result:

The maximum gain of antenna was 5.70 dBi.

No need meets FCC part 15.203 antenna requirements as this device is subject to the professional installation instruction requirements as described in the User Manual.

Remark: The antenna gain is provided by the customer, if the data provided by the customer is not accurate, MAXLAB Testing Co.,Ltd. does not assume any responsibility.

5 Test Setup Photos of the EUT

Reference to the appendix I for details.

6 Photos of the EUT

Reference to the appendix II for details.

***** End of Report *****