4.8 SPURIOUS RF CONDUCTED EMISSIONS

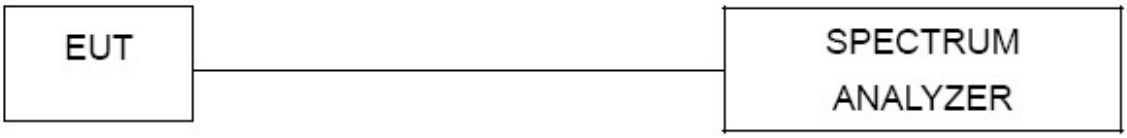
4.8.1 Conformance Limit

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.

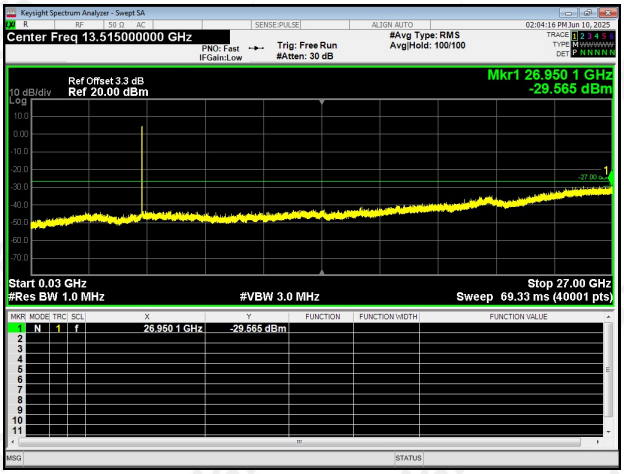
TEST RESULTS

Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
a	5180	-29.56	-27	Pass
a	5200	-29.13	-27	Pass
a	5240	-29.25	-27	Pass
n20	5180	-29.58	-27	Pass
n20	5200	-29.36	-27	Pass
n20	5240	-29.11	-27	Pass
n40	5190	-29.29	-27	Pass
n40	5230	-28.75	-27	Pass
ac20	5180	-29.59	-27	Pass
ac20	5200	-28.99	-27	Pass
ac20	5240	-29.23	-27	Pass
ac40	5190	-29.56	-27	Pass
ac40	5230	-29.01	-27	Pass
ac80	5210	-30.10	-27	Pass

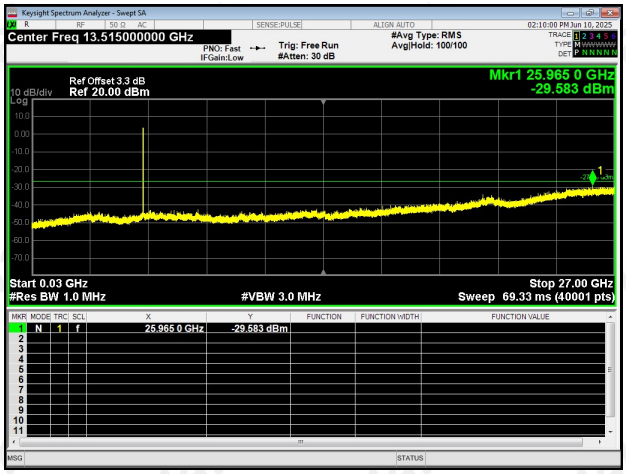
5.2G

Test Plot

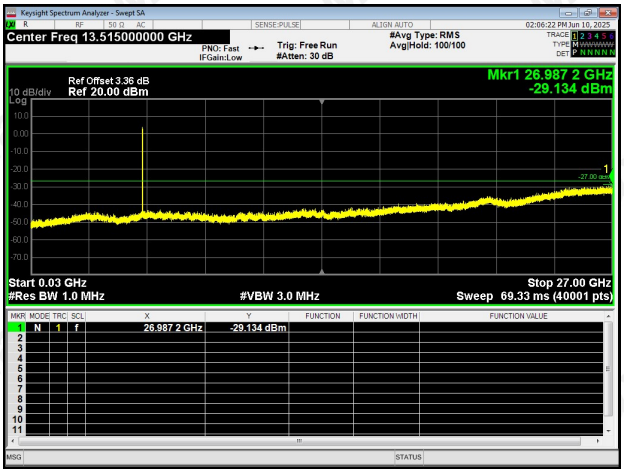
802.11a on channel 36



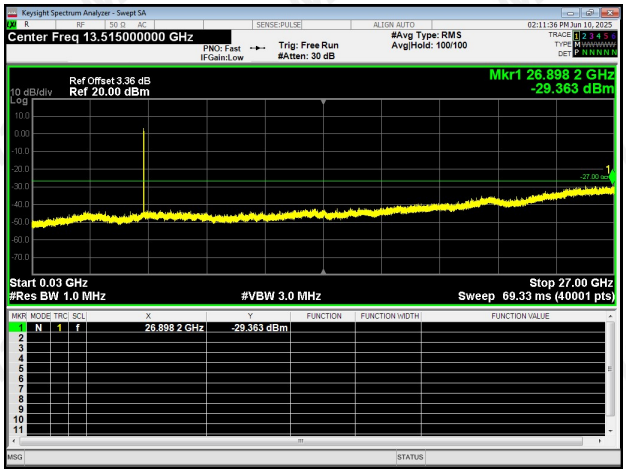
802.11n20 on channel 36



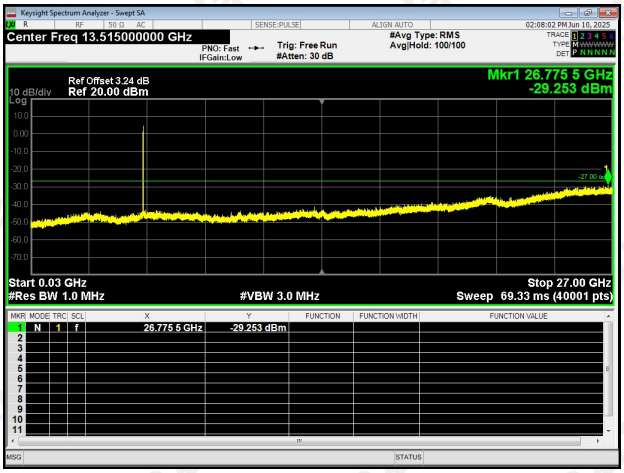
802.11a on channel 40



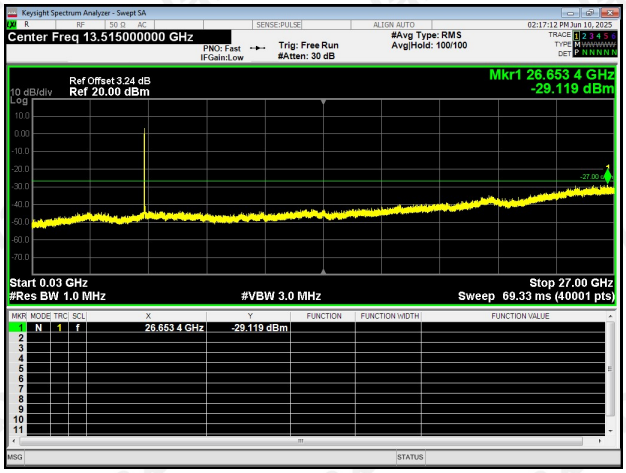
802.11n20 on channel 40



802.11a on channel 48

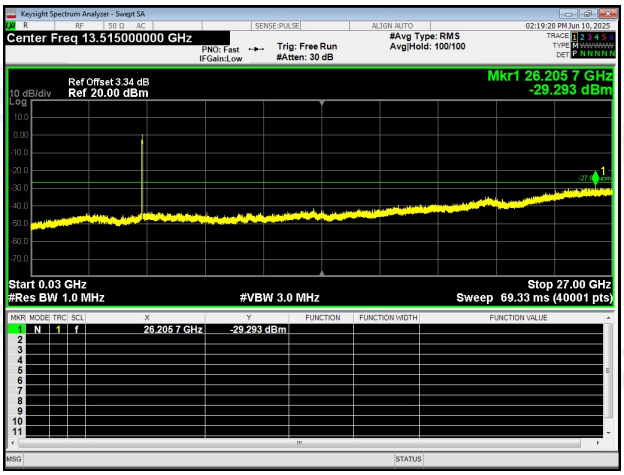


802.11n20 on channel 48

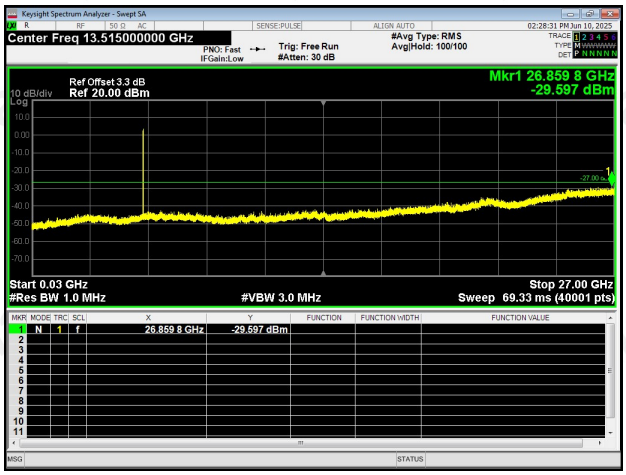


Test Plot

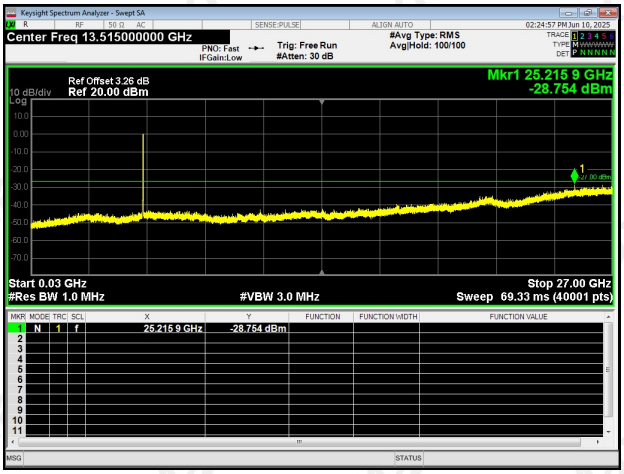
802.11n40 on channel 38



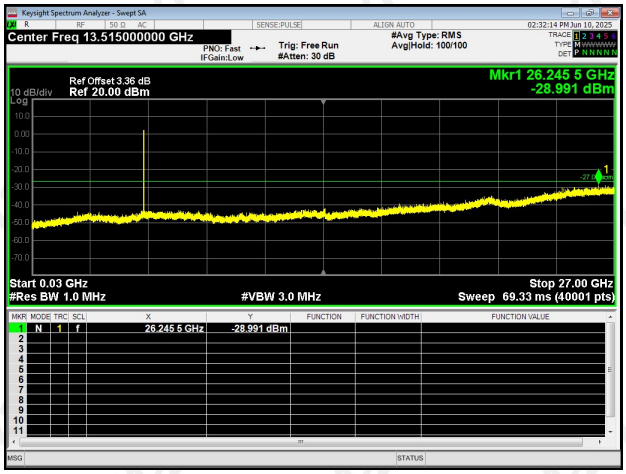
802.11ac20 on channel 36



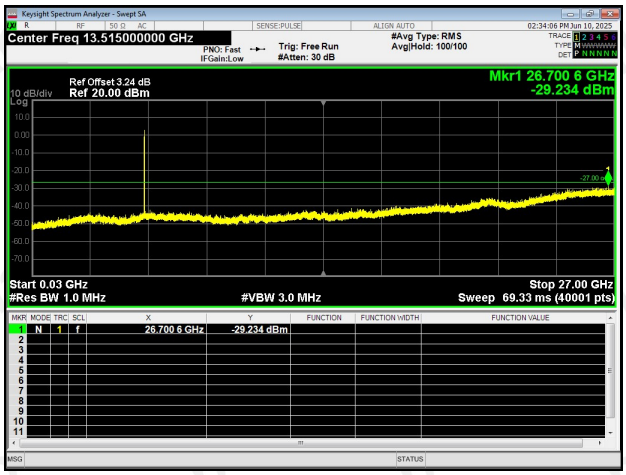
802.11n40 on channel 46



802.11ac20 on channel 40

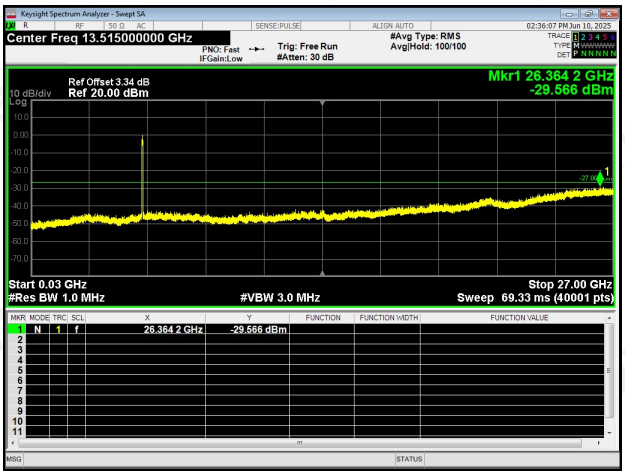


802.11ac20 on channel 48

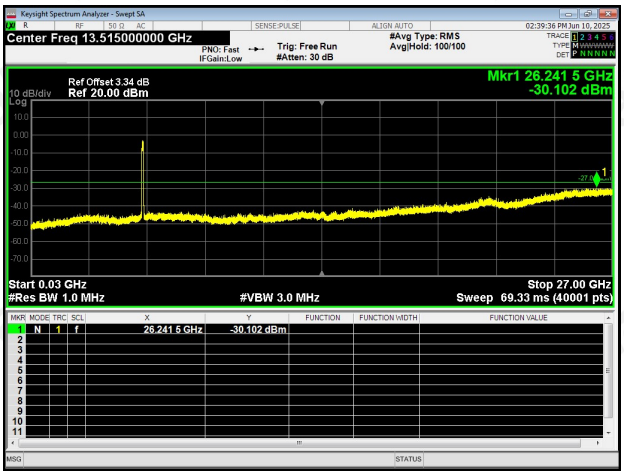


Test Plot

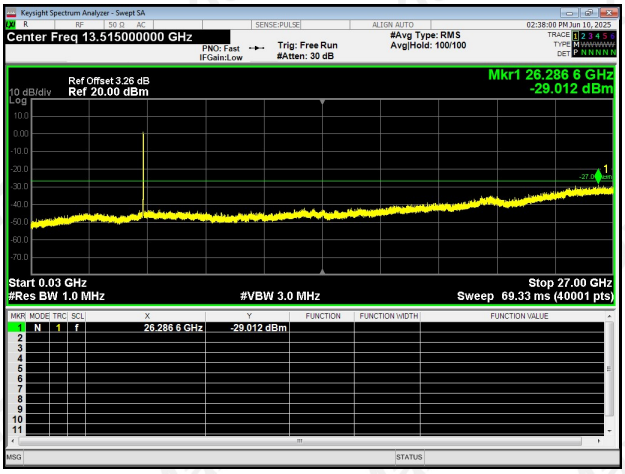
802.11ac40 on channel 38



802.11ac80 on channel 42



802.11ac40 on channel 46

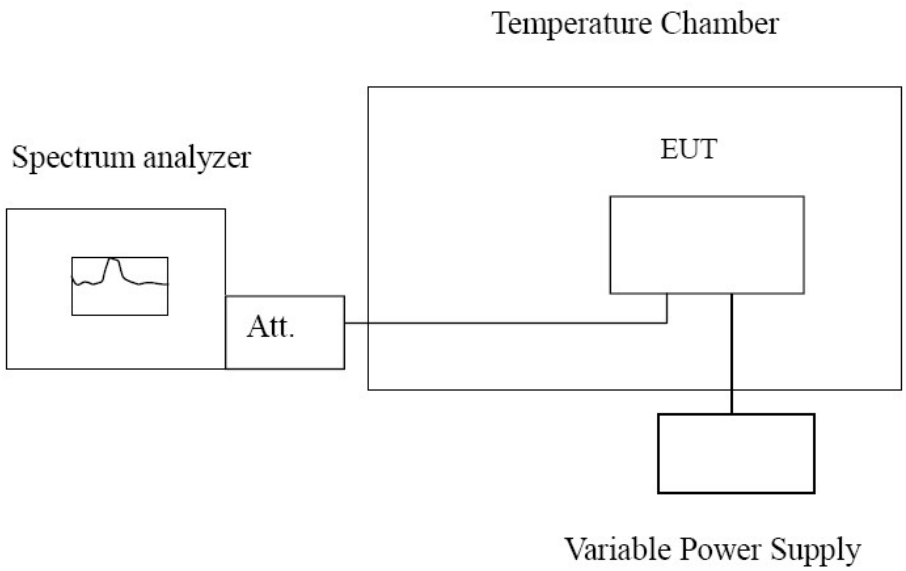


4.9 Frequency Stability

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℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability under Voltage Variations:
Set chamber temperature to 25℃. 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 (±15%) and endpoint, record the maximum frequency change.

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage (V)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
120.0	-30	67.33	0.013	Within the band of operation	Pass
	-20	86.15	0.017		
	-10	49.26	0.010		
	0	91.26	0.018		
	10	74.35	0.014		
	20	50.29	0.010		
	30	41.77	0.008		
	40	105.73	0.020		
	50	94.27	0.018		
138.0	25	53.79	0.010		
102.0	25	64.25	0.012		

4.10 Antenna Requiremen

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 is 4.31 dBi.

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 **********