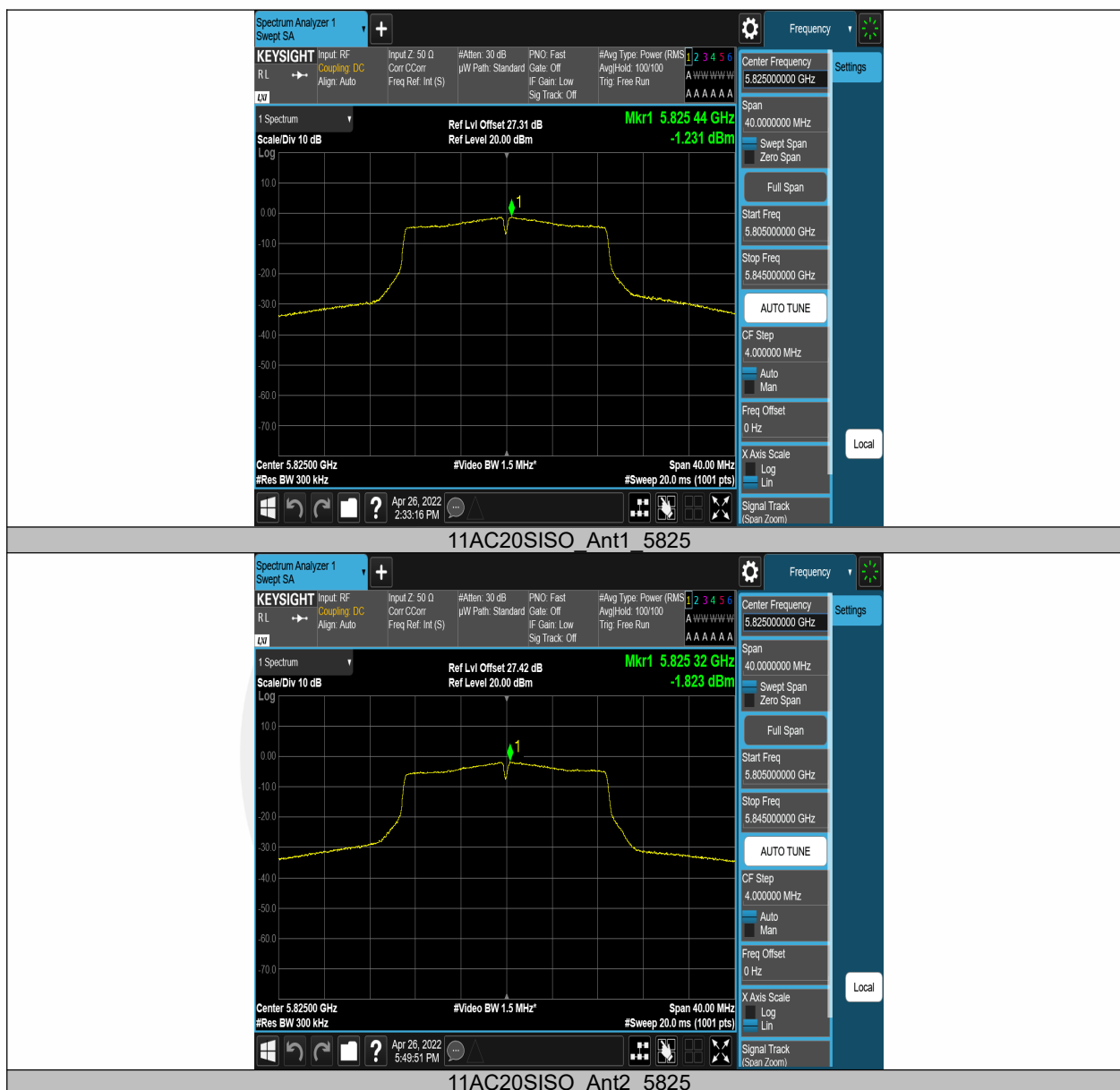
















8.4 FREQUENCY STABILITY

8.4.1 Applicable Standard

According to FCC Part 15.407(g)
ANSI C63.10 Section 6.8

8.4.2 Conformance 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.

8.4.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.4.4 Test Procedure

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously

Set RBW = 10 kHz.

Set Span= Entire absence of modulation emissions band

Set the video bandwidth (VBW) =30 kHz. width

Set Detector = Peak.

Set Trace mode = max hold.

Set Sweep = auto couple.

Allow the trace to stabilize.

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

Beginning at each temperature level specified in user manual , the frequency shall be measured within one minute after application of primary power to the transmitter and at intervals of no more than one minute thereafter until ten minutes have elapsed or until sufficient measurements are obtained to indicate clearly that the frequency has stabilized within the applicable tolerance, whichever time period is greater. During each test, the ambient temperature shall not be allowed to rise more than 10° centigrade above the respective beginning ambient temperature level

Measure and record the results in the test report.

8.4.5 Test Results

Voltage								
TestMode	Antenna	Frequency[MHz]	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	Ant1	5180	NV	NT	-40000.00	-7.722008	20	PASS
			LV	NT	-60000.00	-11.583012	20	PASS
			HV	NT	-60000.00	-11.583012	20	PASS
	Ant2	5180	NV	NT	-40000.00	-7.722008	20	PASS
			LV	NT	-60000.00	-11.583012	20	PASS
			HV	NT	-60000.00	-11.583012	20	PASS
	Ant1	5220	NV	NT	-60000.00	-11.494253	20	PASS
			LV	NT	-60000.00	-11.494253	20	PASS
			HV	NT	-60000.00	-11.494253	20	PASS
	Ant2	5220	NV	NT	-60000.00	-11.494253	20	PASS
			LV	NT	-60000.00	-11.494253	20	PASS
			HV	NT	-60000.00	-11.494253	20	PASS
	Ant1	5240	NV	NT	-60000.00	-11.450382	20	PASS
			LV	NT	-60000.00	-11.450382	20	PASS
			HV	NT	-60000.00	-11.450382	20	PASS
	Ant2	5240	NV	NT	-60000.00	-11.450382	20	PASS
			LV	NT	-60000.00	-11.450382	20	PASS
			HV	NT	-40000.00	-7.633588	20	PASS
	Ant1	5745	NV	NT	-60000.00	-10.443864	20	PASS
			LV	NT	-80000.00	-13.925152	20	PASS
			HV	NT	-60000.00	-10.443864	20	PASS
	Ant2	5745	NV	NT	-40000.00	-6.962576	20	PASS
			LV	NT	-40000.00	-6.962576	20	PASS
			HV	NT	-60000.00	-10.443864	20	PASS
	Ant1	5785	NV	NT	-60000.00	-10.371651	20	PASS
			LV	NT	-60000.00	-10.371651	20	PASS
			HV	NT	-60000.00	-10.371651	20	PASS
	Ant2	5785	NV	NT	-60000.00	-10.371651	20	PASS
			LV	NT	-40000.00	-6.914434	20	PASS
			HV	NT	-60000.00	-10.371651	20	PASS
	Ant1	5825	NV	NT	-80000.00	-13.733906	20	PASS
			LV	NT	-60000.00	-10.300429	20	PASS
			HV	NT	-60000.00	-10.300429	20	PASS
	Ant2	5825	NV	NT	-60000.00	-10.300429	20	PASS
			LV	NT	-60000.00	-10.300429	20	PASS
			HV	NT	-60000.00	-10.300429	20	PASS
11N20SISO	Ant1	5180	NV	NT	-40000.00	-7.722008	20	PASS
			LV	NT	-40000.00	-7.722008	20	PASS
			HV	NT	-40000.00	-7.722008	20	PASS
	Ant2	5180	NV	NT	-40000.00	-7.722008	20	PASS
			LV	NT	-40000.00	-7.722008	20	PASS
			HV	NT	-40000.00	-7.722008	20	PASS
	Ant1	5220	NV	NT	-40000.00	-7.662835	20	PASS
			LV	NT	-40000.00	-7.662835	20	PASS
			HV	NT	-40000.00	-7.662835	20	PASS
	Ant2	5220	NV	NT	-40000.00	-7.662835	20	PASS
			LV	NT	-60000.00	-11.494253	20	PASS
			HV	NT	-40000.00	-7.662835	20	PASS
	Ant1	5240	NV	NT	-20000.00	-3.816794	20	PASS
			LV	NT	-20000.00	-3.816794	20	PASS
			HV	NT	-20000.00	-3.816794	20	PASS

	Ant2	5240	NV	NT	-60000.00	-11.450382	20	PASS
			LV	NT	-60000.00	-11.450382	20	PASS
			HV	NT	-40000.00	-7.633588	20	PASS
	Ant1	5745	NV	NT	-40000.00	-6.962576	20	PASS
			LV	NT	-60000.00	-10.443864	20	PASS
			HV	NT	-60000.00	-10.443864	20	PASS
	Ant2	5745	NV	NT	-40000.00	-6.962576	20	PASS
			LV	NT	-80000.00	-13.925152	20	PASS
			HV	NT	-40000.00	-6.962576	20	PASS
	Ant1	5785	NV	NT	-60000.00	-10.371651	20	PASS
			LV	NT	-60000.00	-10.371651	20	PASS
			HV	NT	-40000.00	-6.914434	20	PASS
	Ant2	5785	NV	NT	-60000.00	-10.371651	20	PASS
			LV	NT	-60000.00	-10.371651	20	PASS
			HV	NT	-40000.00	-6.914434	20	PASS
	Ant1	5825	NV	NT	-60000.00	-10.300429	20	PASS
			LV	NT	-60000.00	-10.300429	20	PASS
			HV	NT	-40000.00	-6.866953	20	PASS
	Ant2	5825	NV	NT	-80000.00	-13.733906	20	PASS
			LV	NT	-40000.00	-6.866953	20	PASS
			HV	NT	-40000.00	-6.866953	20	PASS
11N40SISO	Ant1	5190	NV	NT	-80000.00	-15.414258	20	PASS
			LV	NT	-40000.00	-7.707129	20	PASS
			HV	NT	-40000.00	-7.707129	20	PASS
	Ant2	5190	NV	NT	-40000.00	-7.707129	20	PASS
			LV	NT	-40000.00	-7.707129	20	PASS
			HV	NT	-40000.00	-7.707129	20	PASS
	Ant1	5230	NV	NT	-40000.00	-7.648184	20	PASS
			LV	NT	-40000.00	-7.648184	20	PASS
			HV	NT	-40000.00	-7.648184	20	PASS
	Ant2	5230	NV	NT	-40000.00	-7.648184	20	PASS
			LV	NT	-40000.00	-7.648184	20	PASS
			HV	NT	-40000.00	-7.648184	20	PASS
	Ant1	5755	NV	NT	-40000.00	-6.950478	20	PASS
			LV	NT	-80000.00	-13.900956	20	PASS
			HV	NT	-80000.00	-13.900956	20	PASS
	Ant2	5755	NV	NT	-80000.00	-13.900956	20	PASS
			LV	NT	-40000.00	-6.950478	20	PASS
			HV	NT	-40000.00	-6.950478	20	PASS
	Ant1	5795	NV	NT	-80000.00	-13.805004	20	PASS
			LV	NT	-80000.00	-13.805004	20	PASS
			HV	NT	-80000.00	-13.805004	20	PASS
	Ant2	5795	NV	NT	-80000.00	-13.805004	20	PASS
			LV	NT	-80000.00	-13.805004	20	PASS
			HV	NT	-40000.00	-6.902502	20	PASS
11AC20SISO	Ant1	5180	NV	NT	-60000.00	-11.583012	20	PASS
			LV	NT	-40000.00	-7.722008	20	PASS
			HV	NT	-40000.00	-7.722008	20	PASS
	Ant2	5180	NV	NT	-40000.00	-7.722008	20	PASS
			LV	NT	-40000.00	-7.722008	20	PASS
			HV	NT	-40000.00	-7.722008	20	PASS
	Ant1	5220	NV	NT	-40000.00	-7.662835	20	PASS
			LV	NT	-40000.00	-7.662835	20	PASS
			HV	NT	-40000.00	-7.662835	20	PASS
	Ant2	5220	NV	NT	-40000.00	-7.662835	20	PASS
			NV	NT	-40000.00	-7.662835	20	PASS
			NV	NT	-40000.00	-7.662835	20	PASS

			LV	NT	-40000.00	-7.662835	20	PASS
			HV	NT	-40000.00	-7.662835	20	PASS
	Ant1	5240	NV	NT	-40000.00	-7.633588	20	PASS
			LV	NT	-40000.00	-7.633588	20	PASS
			HV	NT	-60000.00	-11.450382	20	PASS
			NV	NT	-40000.00	-7.633588	20	PASS
	Ant2	5240	LV	NT	-20000.00	-3.816794	20	PASS
			HV	NT	-40000.00	-7.633588	20	PASS
			NV	NT	-60000.00	-10.443864	20	PASS
			LV	NT	-40000.00	-6.962576	20	PASS
			HV	NT	-60000.00	-10.443864	20	PASS
	Ant1	5745	NV	NT	-60000.00	-10.443864	20	PASS
			LV	NT	-40000.00	-6.962576	20	PASS
			HV	NT	-40000.00	-6.962576	20	PASS
	Ant2	5745	NV	NT	-60000.00	-10.443864	20	PASS
			LV	NT	-40000.00	-6.962576	20	PASS
			HV	NT	-40000.00	-6.962576	20	PASS
	Ant1	5785	NV	NT	-40000.00	-6.914434	20	PASS
			LV	NT	-60000.00	-10.371651	20	PASS
			HV	NT	-60000.00	-10.371651	20	PASS
	Ant2	5785	NV	NT	-60000.00	-10.371651	20	PASS
			LV	NT	-40000.00	-6.914434	20	PASS
			HV	NT	-60000.00	-10.371651	20	PASS
	Ant1	5825	NV	NT	-40000.00	-6.866953	20	PASS
			LV	NT	-60000.00	-10.300429	20	PASS
			HV	NT	-60000.00	-10.300429	20	PASS
	Ant2	5825	NV	NT	-40000.00	-6.866953	20	PASS
			LV	NT	-40000.00	-6.866953	20	PASS
			HV	NT	-40000.00	-6.866953	20	PASS
11AC40SISO	Ant1	5190	NV	NT	-40000.00	-7.707129	20	PASS
			LV	NT	-40000.00	-7.707129	20	PASS
			HV	NT	-40000.00	-7.707129	20	PASS
	Ant2	5190	NV	NT	-40000.00	-7.707129	20	PASS
			LV	NT	-40000.00	-7.707129	20	PASS
			HV	NT	-40000.00	-7.707129	20	PASS
	Ant1	5230	NV	NT	-40000.00	-7.648184	20	PASS
			LV	NT	-40000.00	-7.648184	20	PASS
			HV	NT	-40000.00	-7.648184	20	PASS
	Ant2	5230	NV	NT	-40000.00	-7.648184	20	PASS
			LV	NT	-40000.00	-7.648184	20	PASS
			HV	NT	-80000.00	-15.296367	20	PASS
	Ant1	5755	NV	NT	-80000.00	-13.900956	20	PASS
			LV	NT	-80000.00	-13.900956	20	PASS
			HV	NT	-80000.00	-13.900956	20	PASS
	Ant2	5755	NV	NT	-80000.00	-13.900956	20	PASS
			LV	NT	-40000.00	-6.950478	20	PASS
			HV	NT	-80000.00	-13.900956	20	PASS
	Ant1	5795	NV	NT	-80000.00	-13.805004	20	PASS
			LV	NT	-80000.00	-13.805004	20	PASS
			HV	NT	-80000.00	-13.805004	20	PASS
	Ant2	5795	NV	NT	-40000.00	-6.902502	20	PASS
			LV	NT	-40000.00	-6.902502	20	PASS
			HV	NT	-40000.00	-6.902502	20	PASS
11AC80SISO	Ant1	5210	NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	0.00	0.000000	20	PASS
	Ant2	5210	NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS

	Ant1	5775	HV	NT	0.00	0.000000	20	PASS
			NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	0.00	0.000000	20	PASS
	Ant2	5775	NV	NT	-80000.00	-13.852814	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	0.00	0.000000	20	PASS



TestMode	Antenna	Frequency[MHz]	Temperature					Verdict
			Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	
11A	Ant1	5180	NV	0	-60000.00	-11.583012	20	PASS
			NV	10	-40000.00	-7.722008	20	PASS
			NV	20	-60000.00	-11.583012	20	PASS
			NV	30	-40000.00	-7.722008	20	PASS
			NV	40	-40000.00	-7.722008	20	PASS
			NV	50	-40000.00	-7.722008	20	PASS
	Ant2	5180	NV	0	-20000.00	-3.861004	20	PASS
			NV	10	-40000.00	-7.722008	20	PASS
			NV	20	-40000.00	-7.722008	20	PASS
			NV	30	-60000.00	-11.583012	20	PASS
			NV	40	-60000.00	-11.583012	20	PASS
			NV	50	-60000.00	-11.583012	20	PASS
	Ant1	5220	NV	0	-60000.00	-11.494253	20	PASS
			NV	10	-60000.00	-11.494253	20	PASS
			NV	20	-60000.00	-11.494253	20	PASS
			NV	30	-60000.00	-11.494253	20	PASS
			NV	40	-60000.00	-11.494253	20	PASS
			NV	50	-40000.00	-7.662835	20	PASS
	Ant2	5220	NV	0	-60000.00	-11.494253	20	PASS
			NV	10	-60000.00	-11.494253	20	PASS
			NV	20	-40000.00	-7.662835	20	PASS
			NV	30	-60000.00	-11.494253	20	PASS
			NV	40	-40000.00	-7.662835	20	PASS
			NV	50	-60000.00	-11.494253	20	PASS
	Ant1	5240	NV	0	-60000.00	-11.450382	20	PASS
			NV	10	-60000.00	-11.450382	20	PASS
			NV	20	-60000.00	-11.450382	20	PASS
			NV	30	-40000.00	-7.633588	20	PASS
			NV	40	-40000.00	-7.633588	20	PASS
			NV	50	-60000.00	-11.450382	20	PASS
	Ant2	5240	NV	0	-60000.00	-11.450382	20	PASS
			NV	10	-60000.00	-11.450382	20	PASS
			NV	20	-60000.00	-11.450382	20	PASS
			NV	30	-60000.00	-11.450382	20	PASS
			NV	40	-60000.00	-11.450382	20	PASS
			NV	50	-40000.00	-7.633588	20	PASS
	Ant1	5745	NV	0	-60000.00	-11.450382	20	PASS
			NV	10	-60000.00	-11.450382	20	PASS
			NV	20	-60000.00	-11.450382	20	PASS
			NV	30	-60000.00	-10.443864	20	PASS
			NV	40	-80000.00	-13.925152	20	PASS
			NV	50	-60000.00	-10.443864	20	PASS
	Ant2	5745	NV	0	-60000.00	-10.443864	20	PASS
			NV	10	-60000.00	-10.443864	20	PASS
			NV	20	-80000.00	-13.925152	20	PASS
			NV	30	-40000.00	-6.962576	20	PASS
			NV	40	-60000.00	-10.443864	20	PASS
			NV	50	-40000.00	-6.962576	20	PASS
	Ant1	5745	NV	0	-60000.00	-10.443864	20	PASS
			NV	10	-60000.00	-10.443864	20	PASS
			NV	20	-80000.00	-13.925152	20	PASS
			NV	30	-40000.00	-6.962576	20	PASS
			NV	40	-60000.00	-10.443864	20	PASS
			NV	50	-40000.00	-6.962576	20	PASS
	Ant2	5745	NV	0	-60000.00	-10.443864	20	PASS
			NV	10	-60000.00	-10.443864	20	PASS
			NV	20	-80000.00	-13.925152	20	PASS
			NV	30	-40000.00	-6.962576	20	PASS
			NV	40	-60000.00	-10.443864	20	PASS
			NV	50	-40000.00	-6.962576	20	PASS

	Ant1	5785	NV	30	-60000.00	-10.371651	20	PASS
			NV	40	-60000.00	-10.371651	20	PASS
			NV	50	-60000.00	-10.371651	20	PASS
			NV	0	-80000.00	-13.828868	20	PASS
			NV	10	-60000.00	-10.371651	20	PASS
			NV	20	-80000.00	-13.828868	20	PASS
	Ant2	5785	NV	30	-80000.00	-13.828868	20	PASS
			NV	40	-60000.00	-10.371651	20	PASS
			NV	50	-60000.00	-10.371651	20	PASS
			NV	0	-60000.00	-10.371651	20	PASS
			NV	10	-60000.00	-10.371651	20	PASS
			NV	20	-80000.00	-13.828868	20	PASS
	Ant1	5825	NV	30	-40000.00	-6.866953	20	PASS
			NV	40	-60000.00	-10.300429	20	PASS
			NV	50	-60000.00	-10.300429	20	PASS
			NV	0	-60000.00	-10.300429	20	PASS
			NV	10	-40000.00	-6.866953	20	PASS
			NV	20	-60000.00	-10.300429	20	PASS
	Ant2	5825	NV	30	-60000.00	-10.300429	20	PASS
			NV	40	-60000.00	-10.300429	20	PASS
			NV	50	-60000.00	-10.300429	20	PASS
			NV	0	-40000.00	-6.866953	20	PASS
			NV	10	-60000.00	-10.300429	20	PASS
			NV	20	-60000.00	-10.300429	20	PASS
11N20SISO	Ant1	5180	NV	30	-40000.00	-7.722008	20	PASS
			NV	40	-40000.00	-7.722008	20	PASS
			NV	50	-40000.00	-7.722008	20	PASS
			NV	0	-40000.00	-7.722008	20	PASS
			NV	10	-40000.00	-7.722008	20	PASS
			NV	20	-40000.00	-7.722008	20	PASS
	Ant2	5180	NV	30	-40000.00	-7.722008	20	PASS
			NV	40	-40000.00	-7.722008	20	PASS
			NV	50	-40000.00	-7.722008	20	PASS
			NV	0	-60000.00	-11.583012	20	PASS
			NV	10	-60000.00	-11.583012	20	PASS
			NV	20	-40000.00	-7.722008	20	PASS
	Ant1	5220	NV	30	-20000.00	-3.861004	20	PASS
			NV	40	-60000.00	-11.583012	20	PASS
			NV	50	-40000.00	-7.722008	20	PASS
			NV	0	-40000.00	-7.662835	20	PASS
			NV	10	-40000.00	-7.662835	20	PASS
			NV	20	-40000.00	-7.662835	20	PASS
	Ant2	5220	NV	30	-40000.00	-7.662835	20	PASS
			NV	40	-40000.00	-7.662835	20	PASS
			NV	50	-60000.00	-11.494253	20	PASS
			NV	0	-40000.00	-7.662835	20	PASS
			NV	10	-40000.00	-7.662835	20	PASS
			NV	20	-40000.00	-7.662835	20	PASS
	Ant1	5240	NV	30	-40000.00	-7.662835	20	PASS
			NV	40	-60000.00	-11.494253	20	PASS
			NV	50	-40000.00	-7.662835	20	PASS
			NV	0	-40000.00	-7.633588	20	PASS
	Ant1	5240	NV	10	-20000.00	-3.816794	20	PASS
			NV	20	-40000.00	-7.633588	20	PASS
			NV	30	-20000.00	-3.816794	20	PASS
			NV	40	-20000.00	-3.816794	20	PASS

			NV	40	-20000.00	-3.816794	20	PASS
			NV	50	-40000.00	-7.633588	20	PASS
	Ant2	5240	NV	0	-60000.00	-11.450382	20	PASS
			NV	10	-20000.00	-3.816794	20	PASS
			NV	20	-60000.00	-11.450382	20	PASS
			NV	30	-40000.00	-7.633588	20	PASS
			NV	40	-40000.00	-7.633588	20	PASS
			NV	50	-40000.00	-7.633588	20	PASS
			NV	0	-40000.00	-6.962576	20	PASS
			NV	10	-60000.00	-10.443864	20	PASS
	Ant1	5745	NV	20	-60000.00	-10.443864	20	PASS
			NV	30	-60000.00	-10.443864	20	PASS
			NV	40	-60000.00	-10.443864	20	PASS
			NV	50	-40000.00	-6.962576	20	PASS
			NV	0	-60000.00	-10.443864	20	PASS
			NV	10	-60000.00	-10.443864	20	PASS
	Ant2	5745	NV	20	-60000.00	-10.443864	20	PASS
			NV	30	-40000.00	-6.962576	20	PASS
			NV	40	-40000.00	-6.962576	20	PASS
			NV	50	-60000.00	-10.443864	20	PASS
			NV	0	-60000.00	-10.371651	20	PASS
			NV	10	-60000.00	-10.371651	20	PASS
	Ant1	5785	NV	20	-60000.00	-10.371651	20	PASS
			NV	30	-60000.00	-10.371651	20	PASS
			NV	40	-40000.00	-6.914434	20	PASS
			NV	50	-60000.00	-10.371651	20	PASS
			NV	0	-60000.00	-10.371651	20	PASS
			NV	10	-80000.00	-13.828868	20	PASS
	Ant2	5785	NV	20	-60000.00	-10.371651	20	PASS
			NV	30	-40000.00	-6.914434	20	PASS
			NV	40	-60000.00	-10.371651	20	PASS
			NV	50	-40000.00	-6.914434	20	PASS
			NV	0	-40000.00	-6.866953	20	PASS
			NV	10	-60000.00	-10.300429	20	PASS
	Ant1	5825	NV	20	-60000.00	-10.300429	20	PASS
			NV	30	-60000.00	-10.300429	20	PASS
			NV	40	-60000.00	-10.300429	20	PASS
			NV	50	-80000.00	-13.733906	20	PASS
			NV	0	-40000.00	-6.866953	20	PASS
			NV	10	-60000.00	-10.300429	20	PASS
	Ant2	5825	NV	20	-40000.00	-6.866953	20	PASS
			NV	30	-40000.00	-6.866953	20	PASS
			NV	40	-40000.00	-6.866953	20	PASS
			NV	50	-60000.00	-10.300429	20	PASS
11N40SISO	Ant1	5190	NV	0	-40000.00	-7.707129	20	PASS
			NV	10	-40000.00	-7.707129	20	PASS
			NV	20	-40000.00	-7.707129	20	PASS
			NV	30	-40000.00	-7.707129	20	PASS
			NV	40	-40000.00	-7.707129	20	PASS
			NV	50	-40000.00	-7.707129	20	PASS
	Ant2	5190	NV	0	-40000.00	-7.707129	20	PASS
			NV	10	-40000.00	-7.707129	20	PASS
			NV	20	-40000.00	-7.707129	20	PASS
			NV	30	-40000.00	-7.707129	20	PASS
			NV	40	-40000.00	-7.707129	20	PASS
			NV	50	-40000.00	-7.707129	20	PASS

	Ant1	5230	NV	50	-40000.00	-7.707129	20	PASS
			NV	0	-40000.00	-7.648184	20	PASS
			NV	10	-40000.00	-7.648184	20	PASS
			NV	20	-80000.00	-15.296367	20	PASS
			NV	30	-40000.00	-7.648184	20	PASS
			NV	40	-40000.00	-7.648184	20	PASS
			NV	50	-40000.00	-7.648184	20	PASS
	Ant2	5230	NV	0	-80000.00	-15.296367	20	PASS
			NV	10	-40000.00	-7.648184	20	PASS
			NV	20	-40000.00	-7.648184	20	PASS
			NV	30	-40000.00	-7.648184	20	PASS
			NV	40	-40000.00	-7.648184	20	PASS
			NV	50	-40000.00	-7.648184	20	PASS
	Ant1	5755	NV	0	-80000.00	-13.900956	20	PASS
			NV	10	-40000.00	-6.950478	20	PASS
			NV	20	-80000.00	-13.900956	20	PASS
			NV	30	-80000.00	-13.900956	20	PASS
			NV	40	-80000.00	-13.900956	20	PASS
			NV	50	-80000.00	-13.900956	20	PASS
	Ant2	5755	NV	0	-80000.00	-13.900956	20	PASS
			NV	10	-80000.00	-13.900956	20	PASS
			NV	20	-40000.00	-6.950478	20	PASS
			NV	30	-80000.00	-13.900956	20	PASS
			NV	40	-40000.00	-6.950478	20	PASS
			NV	50	-40000.00	-6.950478	20	PASS
	Ant1	5795	NV	0	-80000.00	-13.805004	20	PASS
			NV	10	-40000.00	-6.902502	20	PASS
			NV	20	-80000.00	-13.805004	20	PASS
			NV	30	-80000.00	-13.805004	20	PASS
			NV	40	-80000.00	-13.805004	20	PASS
			NV	50	-80000.00	-13.805004	20	PASS
	Ant2	5795	NV	0	-40000.00	-6.902502	20	PASS
			NV	10	-40000.00	-6.902502	20	PASS
			NV	20	-40000.00	-6.902502	20	PASS
			NV	30	-80000.00	-13.805004	20	PASS
			NV	40	-80000.00	-13.805004	20	PASS
			NV	50	-40000.00	-6.902502	20	PASS
11AC20SISO	Ant1	5180	NV	0	-60000.00	-11.583012	20	PASS
			NV	10	-60000.00	-11.583012	20	PASS
			NV	20	-40000.00	-7.722008	20	PASS
			NV	30	-40000.00	-7.722008	20	PASS
			NV	40	-60000.00	-11.583012	20	PASS
			NV	50	-20000.00	-3.861004	20	PASS
	Ant2	5180	NV	0	-40000.00	-7.722008	20	PASS
			NV	10	-40000.00	-7.722008	20	PASS
			NV	20	-40000.00	-7.722008	20	PASS
			NV	30	-60000.00	-11.583012	20	PASS
			NV	40	-40000.00	-7.722008	20	PASS
			NV	50	-60000.00	-11.583012	20	PASS
	Ant1	5220	NV	0	-40000.00	-7.662835	20	PASS
			NV	10	-40000.00	-7.662835	20	PASS
			NV	20	-40000.00	-7.662835	20	PASS
			NV	30	-60000.00	-11.494253	20	PASS
			NV	40	-40000.00	-7.662835	20	PASS
			NV	50	-40000.00	-7.662835	20	PASS

11AC40SISO	Ant2	5220	NV	0	-60000.00	-11.494253	20	PASS
			NV	10	-40000.00	-7.662835	20	PASS
			NV	20	-40000.00	-7.662835	20	PASS
			NV	30	-40000.00	-7.662835	20	PASS
			NV	40	-40000.00	-7.662835	20	PASS
			NV	50	-60000.00	-11.494253	20	PASS
	Ant1	5240	NV	0	-40000.00	-7.633588	20	PASS
			NV	10	-40000.00	-7.633588	20	PASS
			NV	20	-40000.00	-7.633588	20	PASS
			NV	30	-40000.00	-7.633588	20	PASS
			NV	40	-40000.00	-7.633588	20	PASS
			NV	50	-60000.00	-11.450382	20	PASS
	Ant2	5240	NV	0	-60000.00	-11.450382	20	PASS
			NV	10	-40000.00	-7.633588	20	PASS
			NV	20	-60000.00	-11.450382	20	PASS
			NV	30	-40000.00	-7.633588	20	PASS
			NV	40	-40000.00	-7.633588	20	PASS
			NV	50	-40000.00	-7.633588	20	PASS
	Ant1	5745	NV	0	-60000.00	-10.443864	20	PASS
			NV	10	-80000.00	-13.925152	20	PASS
			NV	20	-60000.00	-10.443864	20	PASS
			NV	30	-40000.00	-6.962576	20	PASS
			NV	40	-40000.00	-6.962576	20	PASS
			NV	50	-60000.00	-10.443864	20	PASS
	Ant2	5745	NV	0	-60000.00	-10.443864	20	PASS
			NV	10	-60000.00	-10.443864	20	PASS
			NV	20	-40000.00	-6.962576	20	PASS
			NV	30	-80000.00	-13.925152	20	PASS
			NV	40	-40000.00	-6.962576	20	PASS
			NV	50	-40000.00	-6.962576	20	PASS
	Ant1	5785	NV	0	-60000.00	-10.371651	20	PASS
			NV	10	-40000.00	-6.914434	20	PASS
			NV	20	-60000.00	-10.371651	20	PASS
			NV	30	-60000.00	-10.371651	20	PASS
			NV	40	-60000.00	-10.371651	20	PASS
			NV	50	-60000.00	-10.371651	20	PASS
	Ant2	5785	NV	0	-40000.00	-6.914434	20	PASS
			NV	10	-60000.00	-10.371651	20	PASS
			NV	20	-40000.00	-6.914434	20	PASS
			NV	30	-40000.00	-6.914434	20	PASS
			NV	40	-60000.00	-10.371651	20	PASS
			NV	50	-40000.00	-6.914434	20	PASS
	Ant1	5825	NV	0	-40000.00	-6.866953	20	PASS
			NV	10	-60000.00	-10.300429	20	PASS
			NV	20	-60000.00	-10.300429	20	PASS
			NV	30	-40000.00	-6.866953	20	PASS
			NV	40	-80000.00	-13.733906	20	PASS
			NV	50	-60000.00	-10.300429	20	PASS
	Ant2	5825	NV	0	-40000.00	-6.866953	20	PASS
			NV	10	-40000.00	-6.866953	20	PASS
			NV	20	-40000.00	-6.866953	20	PASS
			NV	30	-60000.00	-10.300429	20	PASS
			NV	40	-60000.00	-10.300429	20	PASS
			NV	50	-80000.00	-13.733906	20	PASS
11AC40SISO	Ant1	5190	NV	0	0.00	0.000000	20	PASS

			NV	10	-40000.00	-7.707129	20	PASS
			NV	20	-40000.00	-7.707129	20	PASS
			NV	30	-40000.00	-7.707129	20	PASS
			NV	40	-40000.00	-7.707129	20	PASS
			NV	50	-40000.00	-7.707129	20	PASS
	Ant2	5190	NV	0	-40000.00	-7.707129	20	PASS
			NV	10	-40000.00	-7.707129	20	PASS
			NV	20	-40000.00	-7.707129	20	PASS
			NV	30	-40000.00	-7.707129	20	PASS
			NV	40	-40000.00	-7.707129	20	PASS
			NV	50	-40000.00	-7.707129	20	PASS
	Ant1	5230	NV	0	-40000.00	-7.648184	20	PASS
			NV	10	-40000.00	-7.648184	20	PASS
			NV	20	-40000.00	-7.648184	20	PASS
			NV	30	-40000.00	-7.648184	20	PASS
			NV	40	-40000.00	-7.648184	20	PASS
			NV	50	-40000.00	-7.648184	20	PASS
	Ant2	5230	NV	0	-40000.00	-7.648184	20	PASS
			NV	10	-40000.00	-7.648184	20	PASS
			NV	20	-40000.00	-7.648184	20	PASS
			NV	30	-40000.00	-7.648184	20	PASS
			NV	40	-40000.00	-7.648184	20	PASS
			NV	50	0.00	0.000000	20	PASS
	Ant1	5755	NV	0	-80000.00	-13.900956	20	PASS
			NV	10	-80000.00	-13.900956	20	PASS
			NV	20	-80000.00	-13.900956	20	PASS
			NV	30	-80000.00	-13.900956	20	PASS
			NV	40	-80000.00	-13.900956	20	PASS
			NV	50	-80000.00	-13.900956	20	PASS
	Ant2	5755	NV	0	-40000.00	-6.950478	20	PASS
			NV	10	-40000.00	-6.950478	20	PASS
			NV	20	-80000.00	-13.900956	20	PASS
			NV	30	-40000.00	-6.950478	20	PASS
			NV	40	-40000.00	-6.950478	20	PASS
			NV	50	-40000.00	-6.950478	20	PASS
	Ant1	5795	NV	0	-80000.00	-13.805004	20	PASS
			NV	10	-80000.00	-13.805004	20	PASS
			NV	20	-80000.00	-13.805004	20	PASS
			NV	30	-80000.00	-13.805004	20	PASS
			NV	40	-80000.00	-13.805004	20	PASS
			NV	50	-80000.00	-13.805004	20	PASS
	Ant2	5795	NV	0	-80000.00	-13.805004	20	PASS
			NV	10	-80000.00	-13.805004	20	PASS
			NV	20	-40000.00	-6.902502	20	PASS
			NV	30	-80000.00	-13.805004	20	PASS
			NV	40	-40000.00	-6.902502	20	PASS
			NV	50	-80000.00	-13.805004	20	PASS
11AC80SISO	Ant1	5210	NV	0	0.00	0.000000	20	PASS
			NV	10	0.00	0.000000	20	PASS
			NV	20	0.00	0.000000	20	PASS
			NV	30	0.00	0.000000	20	PASS
			NV	40	0.00	0.000000	20	PASS
			NV	50	0.00	0.000000	20	PASS
	Ant2	5210	NV	0	0.00	0.000000	20	PASS
			NV	10	0.00	0.000000	20	PASS

			NV	20	-80000.00	-15.355086	20	PASS
			NV	30	0.00	0.000000	20	PASS
			NV	40	0.00	0.000000	20	PASS
			NV	50	0.00	0.000000	20	PASS
	Ant1	5775	NV	0	0.00	0.000000	20	PASS
			NV	10	-80000.00	-13.852814	20	PASS
			NV	20	0.00	0.000000	20	PASS
			NV	30	-80000.00	-13.852814	20	PASS
			NV	40	-80000.00	-13.852814	20	PASS
			NV	50	-80000.00	-13.852814	20	PASS
	Ant2	5775	NV	0	0.00	0.000000	20	PASS
			NV	10	0.00	0.000000	20	PASS
			NV	20	0.00	0.000000	20	PASS
			NV	30	0.00	0.000000	20	PASS
			NV	40	0.00	0.000000	20	PASS
			NV	50	0.00	0.000000	20	PASS

8.5 UNDESIRABLE RADIATED SPURIOUS EMISSION

8.5.1 Applicable Standard

According to FCC Part 15.407 (b)
According to 789033 D02 Section II(G)

8.5.2 Conformance Limit

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: 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.

The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209 The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log (uV/m)	300
0.490-1.705	24000/F(KHz)	20 log (uV/m)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

The provisions of §15.205 apply to intentional radiators operating under this section, 15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

Remark: 1. Emission level in dBuV/m=20 log (uV/m)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

8.5.3 Test Configuration

Test according to clause 6.2 radio frequency test setup

8.5.4 Test Procedure

■ Unwanted Emissions Measurements below 1000 MHz

Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

The EUT was placed on a turn table which is 0.8m above ground plane.

And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

Repeat above procedures until all frequency measured was complete.

We use software control the EUT, Let EUT hopping on and transmit with highest power, All the modes have been tested and the worst result was reported.

Use the following spectrum analyzer settings:

Set RBW=120kHz for $f < 1$ GHz(30MHz to 1GHz), 200Hz for $f < 150$ KHz(9KHz to 150KHz), 9KHz for < 30 MHz

(150KHz to 30KHz).

Set the VBW > RBW.

Detector = Peak.

Trace mode = max hold.

Follow the guidelines in ANSI C63.10-2013 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. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.

Repeat above procedures until all frequency measured was complete.

■ Unwanted Maximum peak Emissions Measurements above 1000 MHz

Maximum emission levels are measured by setting the analyzer as follows:

RBW = 1 MHz.

VBW $\geq$ 3 MHz.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately $1/x$, where x is the duty cycle. For example, at 50 percent duty cycle, the measurement time will increase by a factor of two relative to measurement time for continuous transmission.

■ Unwanted Average Emissions Measurements above 1000 MHz

Method VB (Averaging using reduced video bandwidth): Alternative method.

RBW = 1 MHz.

Video bandwidth. • If the EUT is configured to transmit with duty cycle $\geq$ 98 percent, set $VBW \leq RBW/100$ (i.e., 10 kHz) but not less than 10 Hz.

• If the EUT duty cycle is < 98 percent, set $VBW \geq 1/T$, where T is defined in section II.B.1.a).

Video bandwidth mode or display mode • The instrument shall be set to ensure that video filtering is applied in the power domain. Typically, this requires setting the detector mode to RMS and setting the Average-VBW Type to Power (RMS).

• As an alternative, the analyzer may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some analyzers require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of $1/x$, where x is the duty cycle. For example, use at least 200 traces if the duty cycle is 25 percent. (If a specific emission is demonstrated to be continuous—i.e., 100 percent duty cycle—rather than turning on and off with the transmit cycle, at least 50 traces shall be averaged.)

■ Band edge measurements.

Unwanted band-edge emissions may be measured using either of the special band-edge measurement techniques (the marker-delta or integration methods) described below. Note that the marker-delta method is primarily a radiated measurement technique that requires the 99% occupied bandwidth edge to be within 2 MHz of the authorized band edge, whereas the integration method can be used in either a radiated or conducted measurement without any special requirement with regards to the displacement of the unwanted emission(s) relative to the authorized bandwidth.

Marker-Delta Method.

The marker-delta method, as described in ANSI C63.10, can be used to perform measurements of the radiated unwanted emissions level of emissions provided that the 99% occupied bandwidth of the fundamental is within 2 MHz of the authorized band-edge.

8.5.5 Test Results

Temperature:	28.1° C
Relative Humidity:	43%
ATM Pressure:	1011 mbar

■ Spurious Emission below 30MHz(9KHz to 30MHz)

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
--	--	--	--	--	--	--	--

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40 \log(\text{Specific distance} / \text{test distance})$ (dB);

Limit line = Specific limits(dBuV) + distance extrapolation factor

- ☒ For Undesirable radiated Spurious Emission in U-NII – 1
All the modes 802.11a/n/ac has been tested and the worst result antenna 1 802.11ac recorded as below:
- : ☒ Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)

Test mode: 802.11ac Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
6599.403	V	49.62	-45.61	-27	-18.61
11138.7	V	57.74	-37.49	-27	-10.49
17932.49	V	66.3	-28.93	-27	-1.93
5418.7	H	46.79	-48.44	-27	-21.44
11106.55	H	57.14	-38.09	-27	-11.09
17968.81	H	66.57	-28.66	-27	-1.66

Test mode: 802.11ac Frequency(MHz): 5200

Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
6103.087	V	47.68	-47.55	-27	-20.55
11256.83	V	57.51	-37.72	-27	-10.72
17916.94	V	65.6	-29.63	-27	-2.63
5832.326	H	46.17	-49.06	-27	-22.06
11232.45	H	57.98	-37.25	-27	-10.25
17922.12	H	66.1	-29.13	-27	-2.13

Test mode: 802.11ac Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
6899.79	V	50.73	-44.5	-27	-17.5
11190.33	V	57.98	-37.25	-27	-10.25
17867.82	V	66.01	-29.22	-27	-2.22
5775.29	H	45.42	-49.81	-27	-22.81
11182.24	H	57.19	-38.04	-27	-11.04
17872.98	H	65.73	-29.5	-27	-2.5

Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Test mode: 802.11ac

Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
6599.403	V	49.62	31.93	74	54	-24.38	-22.07
11138.7	V	57.74	40.66	74	54	-16.26	-13.34
17932.49	V	66.3	50.22	74	54	-7.7	-3.78
5418.7	H	46.79	28.74	74	54	-27.21	-25.26
11106.55	H	57.14	40.09	74	54	-16.86	-13.91
17968.81	H	66.57	50.33	74	54	-7.43	-3.67

Test mode: 802.11ac

Frequency(MHz): 5200

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
6103.087	V	47.68	30.15	74	54	-26.32	-23.85
11256.83	V	57.51	40.29	74	54	-16.49	-13.71
17916.94	V	65.6	50.63	74	54	-8.4	-3.37
5832.326	H	46.17	29.28	74	54	-27.83	-24.72
11232.45	H	57.98	40.99	74	54	-16.02	-13.01
17922.12	H	66.1	50.15	74	54	-7.9	-3.85

Test mode: 802.11ac

Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
6899.79	V	50.73	32.88	74	54	-23.27	-21.12
11190.33	V	57.98	39.99	74	54	-16.02	-14.01
17867.82	V	66.01	50.93	74	54	-7.99	-3.07
5775.29	H	45.42	28.69	74	54	-28.58	-25.31
11182.24	H	57.19	40.33	74	54	-16.81	-13.67
17872.98	H	65.73	50.54	74	54	-8.27	-3.46

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
 - (2) Emission Level= Reading Level+Correct Factor.
 - (3) Correct Factor= Ant_F + Cab_L - Preamp
 - (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

● ☒ Undesirable radiated Undesirable radiated Spurious Emission in Band Edge

Test mode: 802.11ac Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol.	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5116.038	H	58.74	-36.49	-27	Pass
5122.895	V	59.18	-36.05	-27	Pass

Test mode: 802.11ac Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol.	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5356.732	H	61.17	-34.06	-27	Pass
5354.328	V	60.65	-34.58	-27	Pass

Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).

(2) Emission Level= Reading Level+Probe Factor +Cable Loss.

(3) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77

d is the measurement distance in 3 meters

Test mode: 802.11ac Frequency(MHz): 5180

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
5116.038	H	58.74	74	40.66	54
5122.895	V	59.18	74	41.15	54

Test mode: 802.11ac Frequency(MHz): 5240

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
5356.732	H	61.17	74	43.11	54
5354.328	V	60.65	74	42.68	54

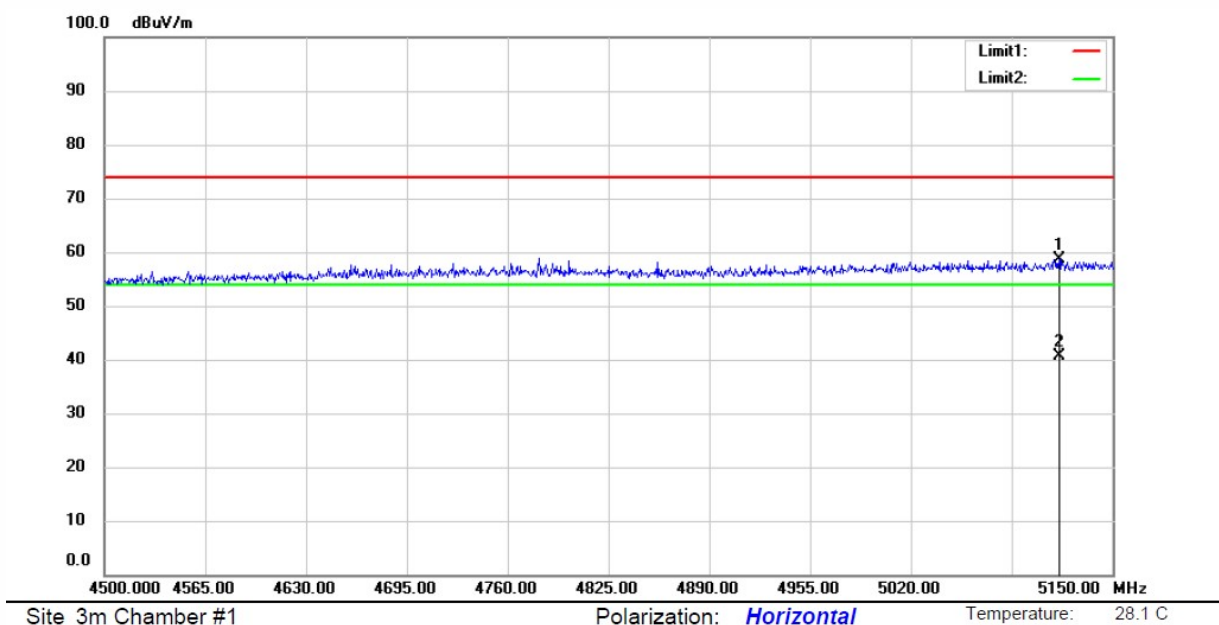
Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).

(2) Emission Level= Reading Level+Correct Factor.

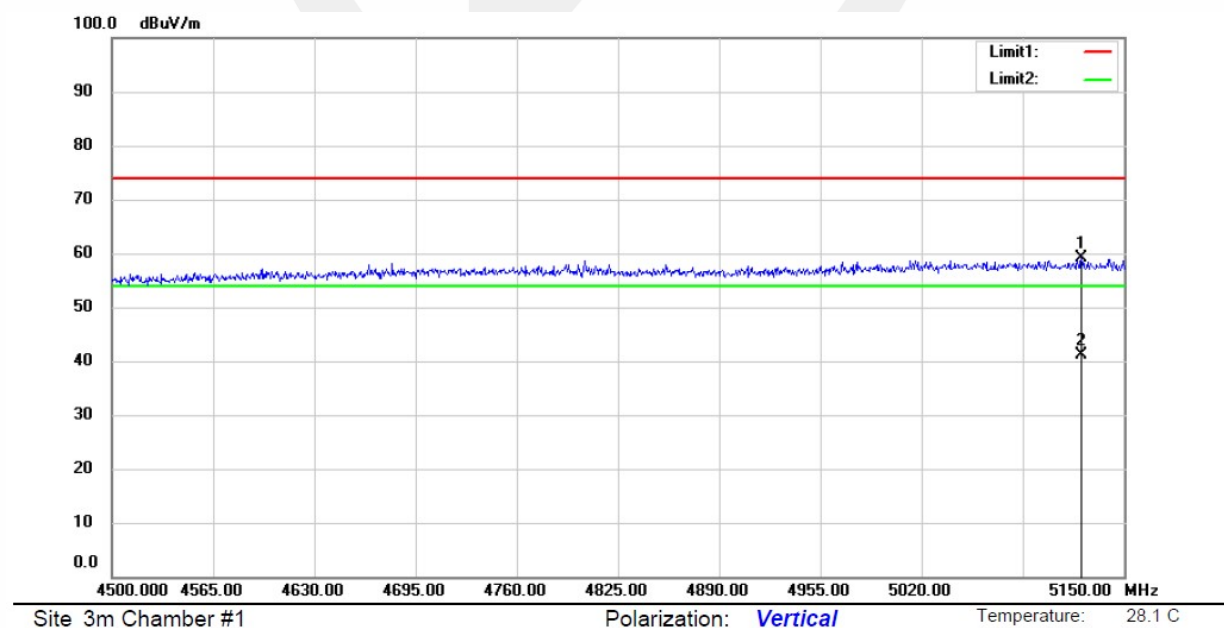
(3) Correct Factor= Ant_F + Cab_L - Preamp

(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

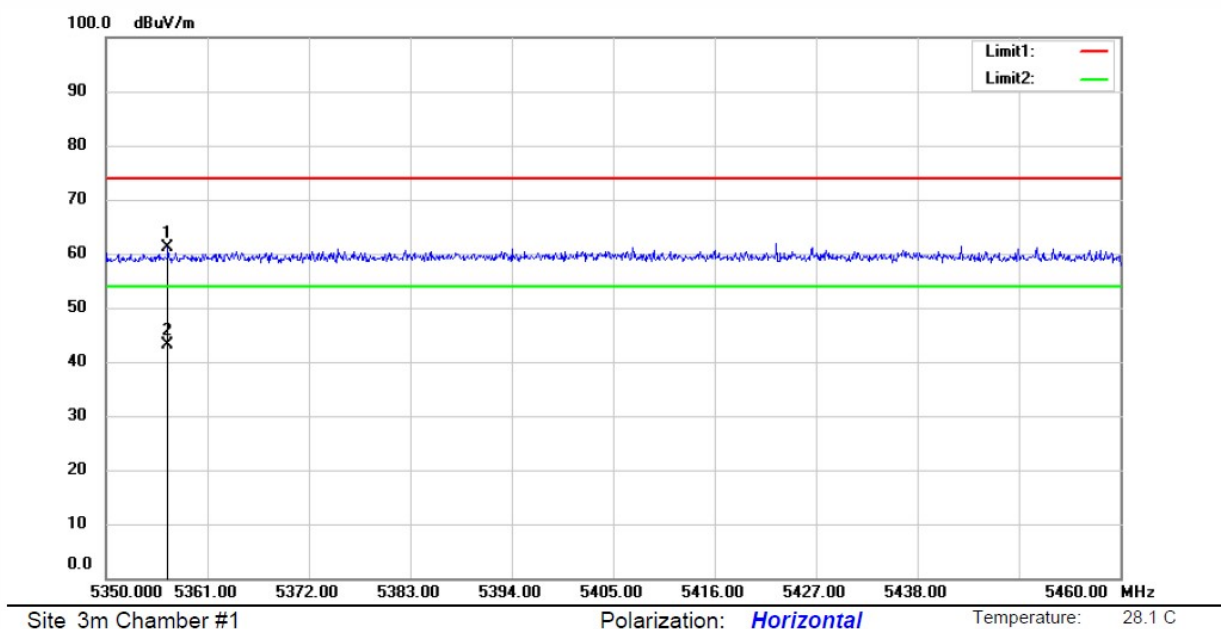
U-NII - 1			
Test Model	Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)		
	☒ 802.11ac	☐ 802.11n(HT20)	☐ 802.11n(HT40)
	☒ 5180	☐ 5200	☐ 5240
	Ant.Pol		H



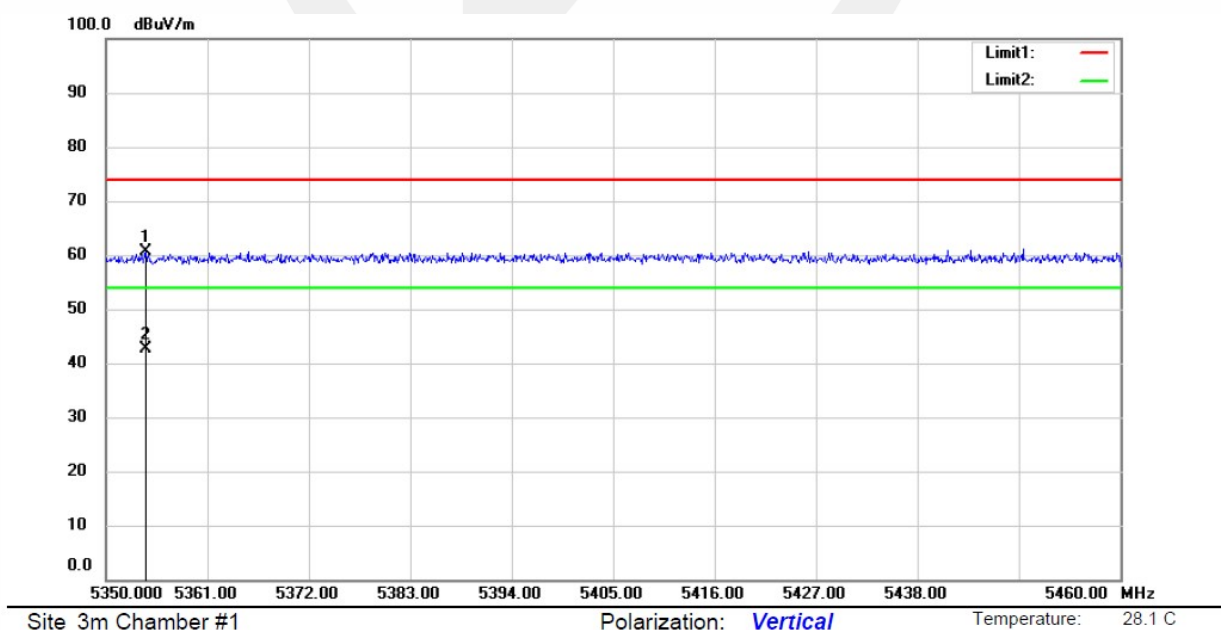
U-NII - 1			
Test Model	Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)		
	☒ 802.11ac	☐ 802.11n(HT20)	☐ 802.11n(HT40)
	☒ 5180	☐ 5200	☐ 5240
	Ant.Pol		V



U-NII - 1			
Test Model	Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz)		
	☒ 802.11ac	☐ 802.11n(HT20)	☐ 802.11n(HT40)
	☐ 5180	☐ 5200	☒ 5240
	Ant.Pol		H



U-NII - 1			
Test Model	Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz)		
	☒ 802.11ac	☐ 802.11n(HT20)	☐ 802.11n(HT40)
	☐ 5180	☐ 5200	☒ 5240
	Ant.Pol		V



☒ For Undesirable radiated Spurious Emission in U-NII -3

■ All the modes 802.11a/n/ac has been tested and the worst result antenna 1 802.11ac recorded as below:

● ☒ Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)

Test mode: 802.11ac Frequency(MHz): 5745

Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
6148.235	V	47.31	-47.92	-27	-20.92
11029.77	V	57.81	-37.42	-27	-10.42
17914.36	V	66.53	-28.7	-27	-1.7
5500.757	H	46.46	-48.77	-27	-21.77
11276.37	H	58.3	-36.93	-27	-9.93
17893.66	H	66.3	-28.93	-27	-1.93

Test mode: 802.11ac Frequency(MHz): 5785

Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
5675.18	V	43.48	-51.75	-27	-24.75
10384.7	V	52.09	-43.14	-27	-16.14
17989.59	V	65.24	-29.99	-27	-2.99
5589.71	H	44.06	-51.17	-27	-24.17
11074.49	H	57.66	-37.57	-27	-10.57
17979.2	H	65.97	-29.26	-27	-2.26

Test mode: 802.11ac Frequency(MHz): 5825

Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
5475.38	V	45.36	-49.87	-27	-22.87
11140.31	V	57.76	-37.47	-27	-10.47
17955.83	V	66.42	-28.81	-27	-1.81
5428.11	H	51.18	-44.05	-27	-17.05
12202.2	H	57.2	-38.03	-27	-11.03
17966.21	H	66.61	-28.62	-27	-1.62

Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).

(2) Emission Level= Reading Level+Probe Factor +Cable Loss.

(3) EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77

d is the measurement distance in 3 meters

Frequency: 802.11ac

Frequency(MHz): 5745

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
6148.235	V	47.31	28.29	74.00	54.00	-26.69	-25.71
11029.77	V	57.81	39.92	74.00	54.00	-16.19	-14.08
17914.36	V	66.53	50.49	74.00	54.00	-7.47	-3.51
5500.757	H	46.46	29.03	74.00	54.00	-27.54	-24.97
11276.37	H	58.3	40.29	74.00	54.00	-15.7	-13.71
17893.66	H	66.3	50.33	74.00	54.00	-7.7	-3.67

Frequency: 802.11ac

Frequency(MHz): 5785

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
4780.563	V	43.48	25.55	74.00	54.00	-30.52	-28.45
8588.607	V	52.09	34.17	74.00	54.00	-21.91	-19.83
17854.91	V	65.24	50.29	74.00	54.00	-8.76	-3.71
4802.722	H	44.06	26.42	74.00	54.00	-29.94	-27.58
11061.69	H	57.66	39.72	74.00	54.00	-16.34	-14.28
17878.15	H	65.97	50.93	74.00	54.00	-8.03	-3.07

Frequency: 802.11ac

Frequency(MHz): 5825

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
5383.574	V	45.36	28.63	74.00	54.00	-28.64	-25.37
11250.32	V	57.76	39.99	74.00	54.00	-16.24	-14.01
17997.39	V	66.42	50.50	74.00	54.00	-7.58	-3.50
7199.268	H	51.18	33.22	74.00	54.00	-22.82	-20.78
11196.80	H	57.2	40.23	74.00	54.00	-16.8	-13.77
17955.83	H	66.61	50.21	74.00	54.00	-7.39	-3.79

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
 - (2) Emission Level= Reading Level+Correct Factor.
 - (3) Correct Factor= Ant_F + Cab_L - Preamp
 - (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

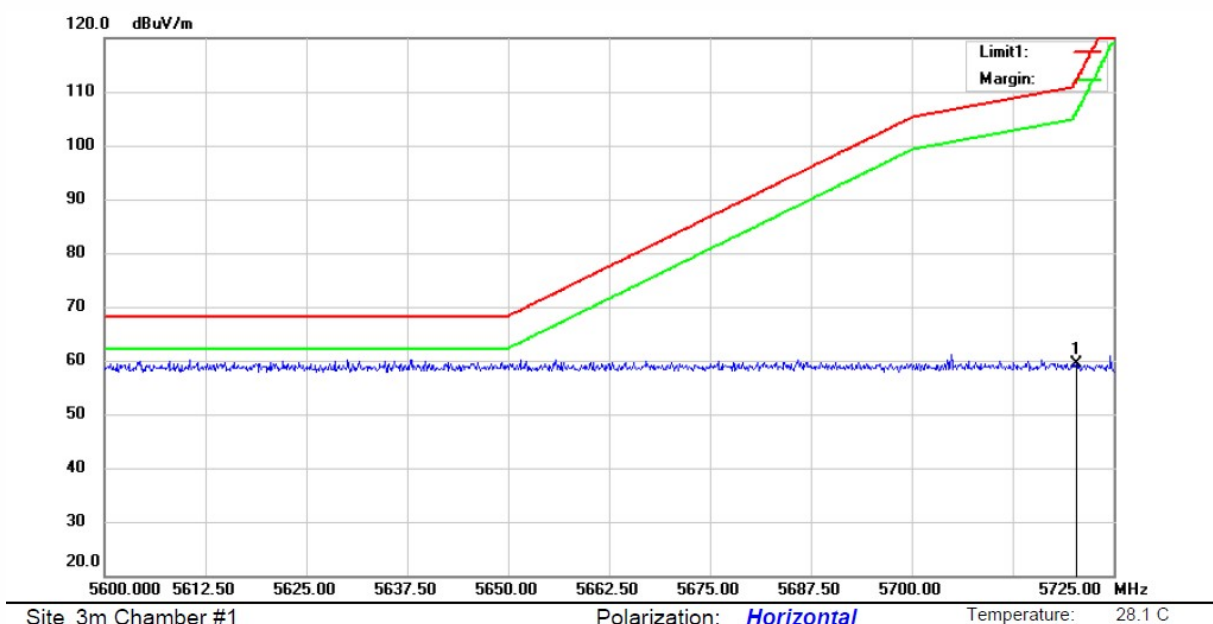
● ☒ Undesirable radiated Spurious Emission in band edge

Test mode:		Frequency:			
802.11ac		5745			
Freq. (MHz)	Ant.Pol.	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5720.488	H	59.48	-35.75	17.01	Pass
5721.100	V	60.84	-34.39	18.77	Pass

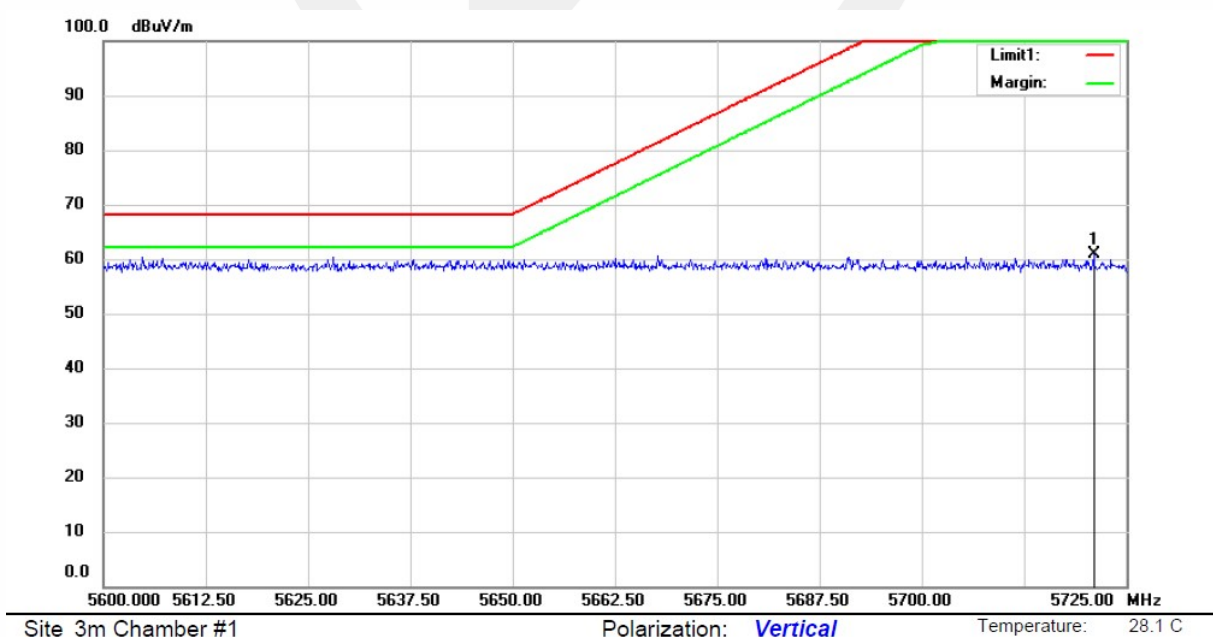
Test mode:		Frequency:			
802.11ac		5825			
Freq. (MHz)	Ant.Pol.	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5852.288	H	59.90	-35.33	23.41	Pass
5855.650	V	60.29	-34.94	15.13	Pass

Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
 (2) Emission Level= Reading Level+Probe Factor +Cable Loss.
 (3) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77
 d is the measurement distance in 3 meters

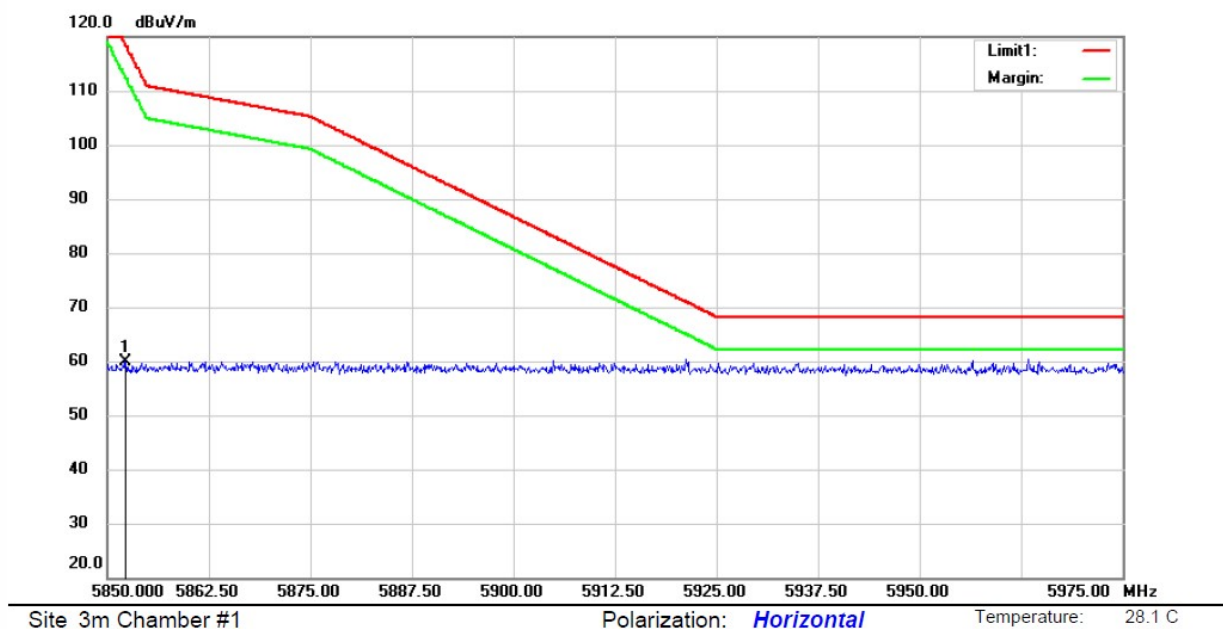
Test Model U-NII -3
 Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☒ 802.11ac ☐ 802.11n(HT20) ☐ 802.11n(HT40)
☒ 5745 Ant.Pol H



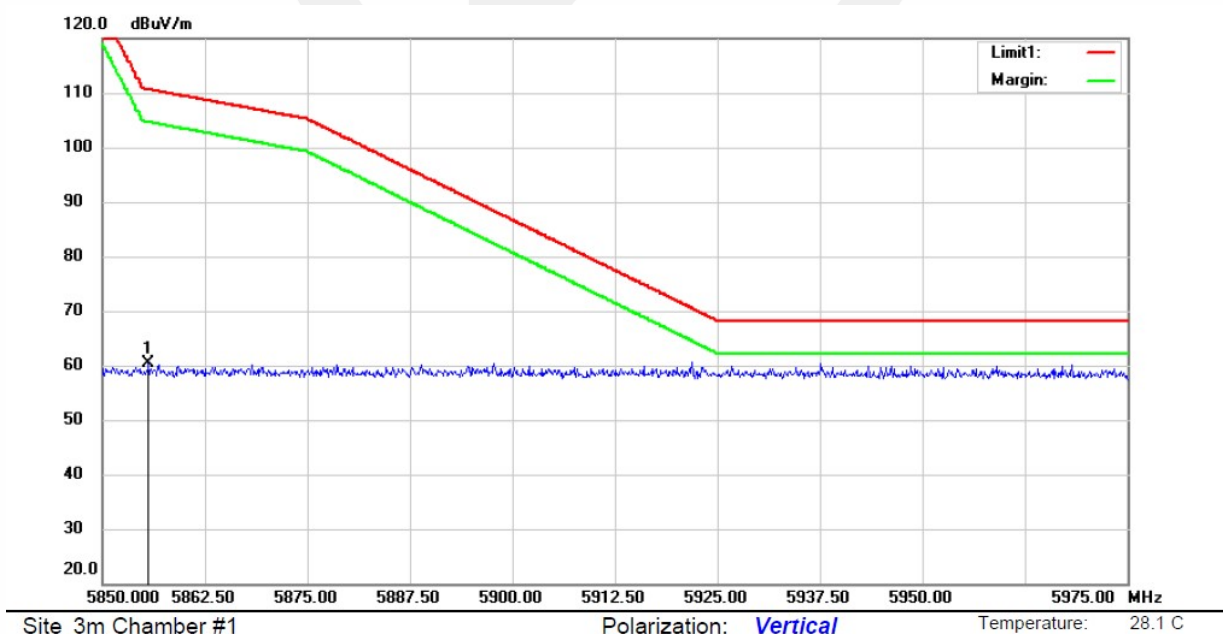
Test Model U-NII -3
 Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☒ 802.11ac ☐ 802.11n(HT20) ☐ 802.11n(HT40)
☒ 5745 Ant.Pol V



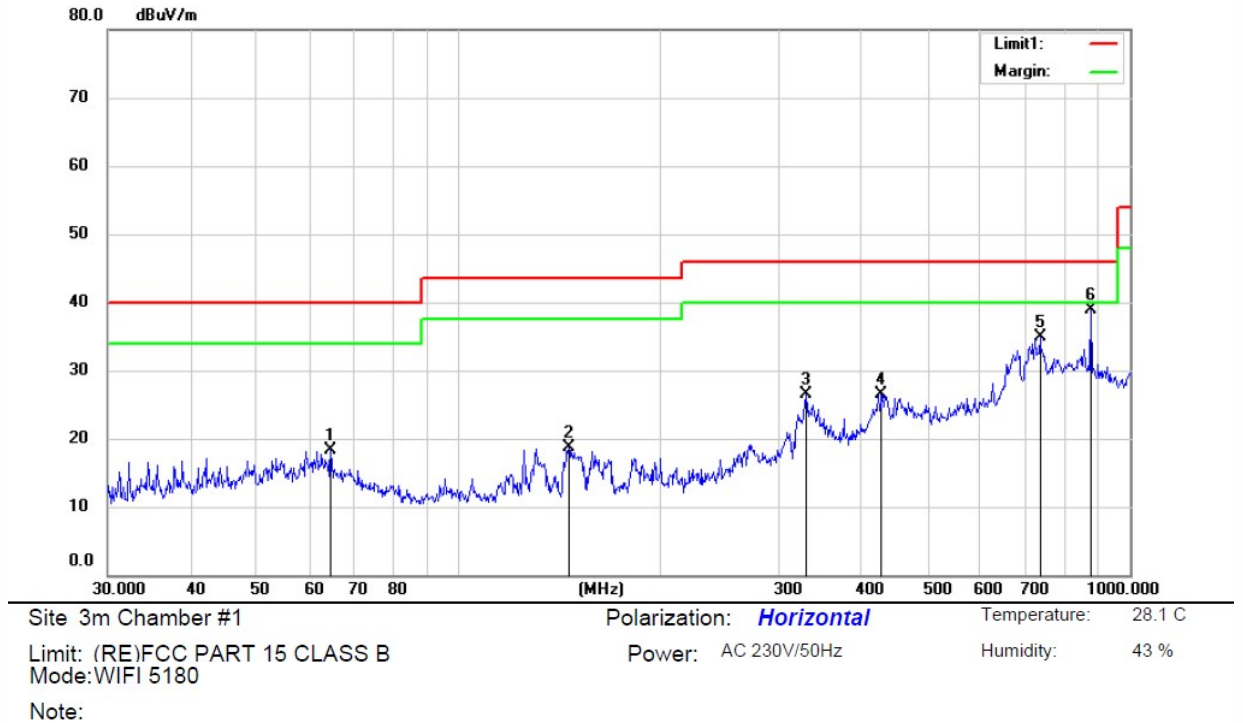
U-NII -3
 Test Model Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☒ 802.11ac ☐ 802.11n(HT20) ☐ 802.11n(HT40)
☒ 5825 Ant.Pol H



U-NII -3
 Test Model Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☒ 802.11ac ☐ 802.11n(HT20) ☐ 802.11n(HT40)
☒ 5825 Ant.Pol V



- Undesirable radiated Spurious Emission below 1GHz (30MHz to 1GHz)
All the modes 802.11a/n/ac has been tested and the worst result 802.11a recorded as below:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		64.6311	30.39	-12.11	18.28	40.00	-21.72	QP		
2		146.2452	32.72	-14.09	18.63	43.50	-24.87	QP		
3		329.1833	34.83	-8.30	26.53	46.00	-19.47	QP		
4		427.4568	32.29	-5.75	26.54	46.00	-19.46	QP		
5		735.4578	34.90	-0.06	34.84	46.00	-11.16	QP		
6	*	875.2470	37.13	1.76	38.89	46.00	-7.11	QP		



Site 3m Chamber #1

Polarization: **Vertical**

Temperature: 28.1 C

Limit: (RE)FCC PART 15 CLASS B

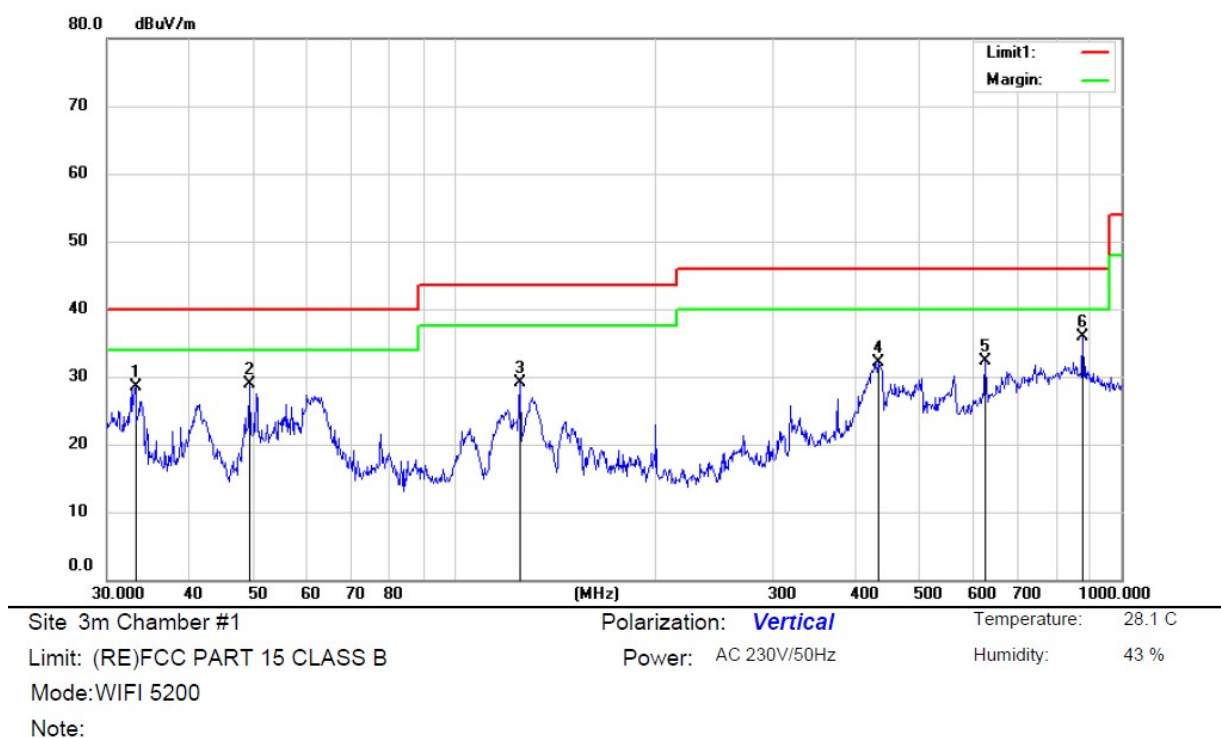
Power: AC 230V/50Hz

Humidity: 43 %

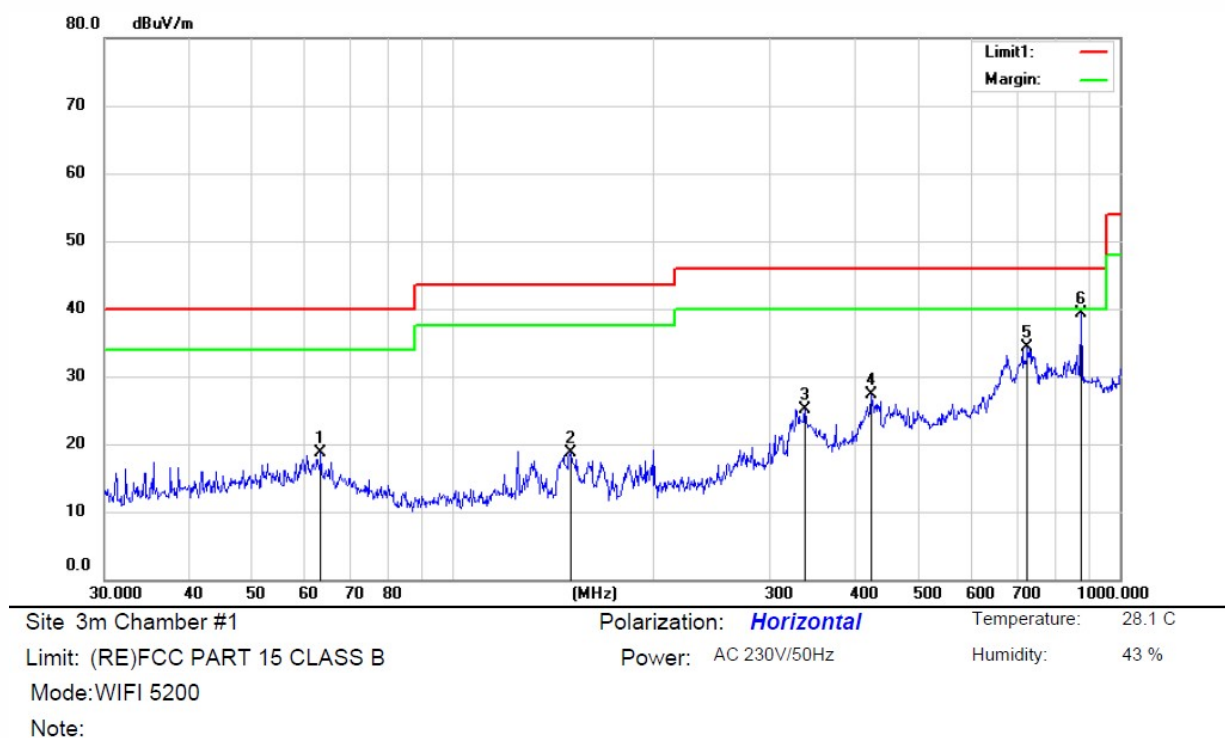
Mode:WIFI 5180

Note:

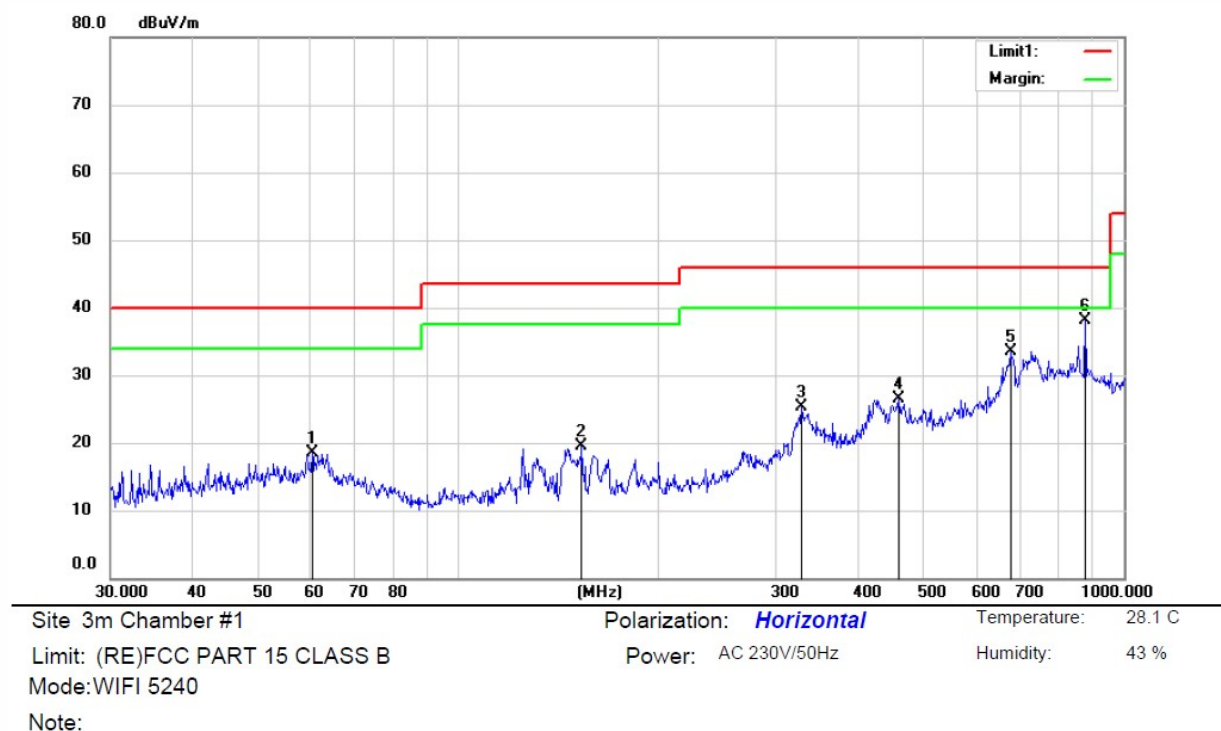
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		33.3133	41.70	-14.25	27.45	40.00	-12.55	QP		
2		54.1185	41.98	-11.96	30.02	40.00	-9.98	QP		
3		125.0066	45.71	-14.39	31.32	43.50	-12.18	QP		
4		200.0732	36.88	-13.63	23.25	43.50	-20.25	QP		
5		424.8418	38.51	-5.87	32.64	46.00	-13.36	QP		
6	*	875.2470	34.36	1.76	36.12	46.00	-9.88	QP		



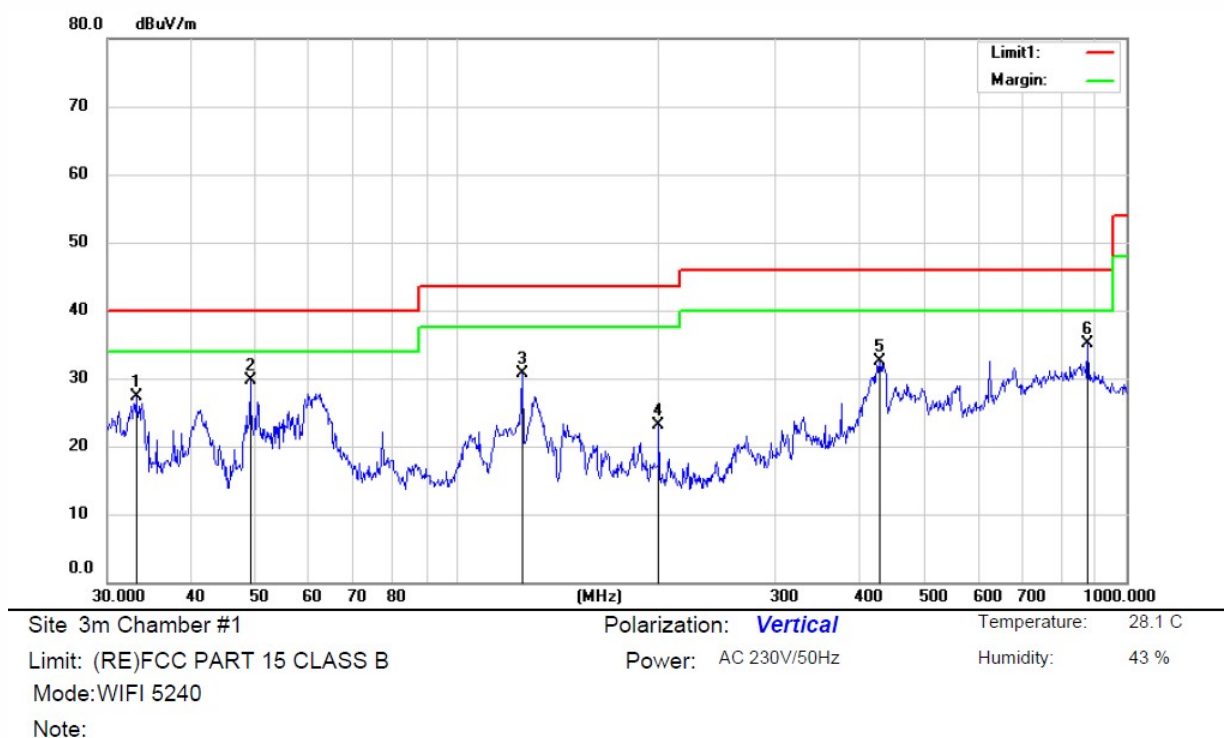
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		33.0950	42.71	-14.29	28.42	40.00	-11.58	QP		
2		49.1435	41.08	-12.22	28.86	40.00	-11.14	QP		
3		125.0066	43.50	-14.39	29.11	43.50	-14.39	QP		
4		432.5457	37.80	-5.70	32.10	46.00	-13.90	QP		
5		625.0780	34.81	-2.49	32.32	46.00	-13.68	QP		
6	*	875.2470	34.08	1.76	35.84	46.00	-10.16	QP		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree Comment
1		63.4243	30.74	-12.08	18.66	40.00	-21.34	QP		
2		150.4718	32.41	-13.77	18.64	43.50	-24.86	QP		
3		337.9554	33.02	-7.88	25.14	46.00	-20.86	QP		
4		424.6556	33.10	-5.88	27.22	46.00	-18.78	QP		
5		729.0386	34.46	-0.15	34.31	46.00	-11.69	QP		
6	*	875.2470	37.64	1.76	39.40	46.00	-6.60	QP		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		60.4124	30.44	-12.00	18.44	40.00	-21.56	QP		
2		153.4020	33.32	-13.87	19.45	43.50	-24.05	QP		
3		328.3187	33.66	-8.34	25.32	46.00	-20.68	QP		
4		459.9201	32.32	-5.91	26.41	46.00	-19.59	QP		
5		676.9860	34.83	-1.27	33.56	46.00	-12.44	QP		
6	*	875.2470	36.31	1.76	38.07	46.00	-7.93	QP		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		33.0950	41.52	-14.29	27.23	40.00	-12.77	QP		
2	*	49.1435	41.91	-12.22	29.69	40.00	-10.31	QP		
3		125.0066	45.10	-14.39	30.71	43.50	-12.79	QP		
4		199.9856	36.64	-13.63	23.01	43.50	-20.49	QP		
5		429.3346	38.12	-5.66	32.46	46.00	-13.54	QP		
6		875.2470	33.37	1.76	35.13	46.00	-10.87	QP		

8.6 POWER LINE CONDUCTED EMISSIONS

8.6.1 Applicable Standard

According to FCC Part 15.207(a)

8.6.2 Conformance Limit

Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

8.6.3 Test Configuration

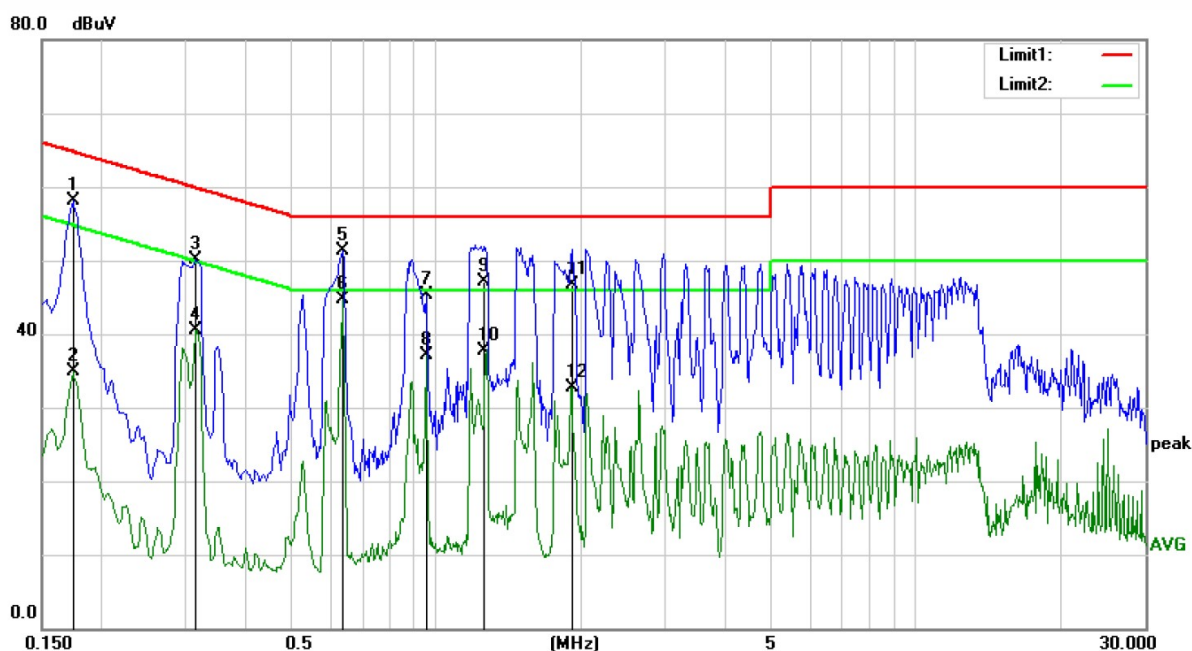
Test according to clause 6.3 conducted emission test setup

8.6.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Repeat above procedures until all frequency measured were complete.

8.6.5 Test Results

Pass



Site Conduction #2

Phase: **L1**

Temperature: 25.1

Limit: (CE)FCC PART 15 class B_QP

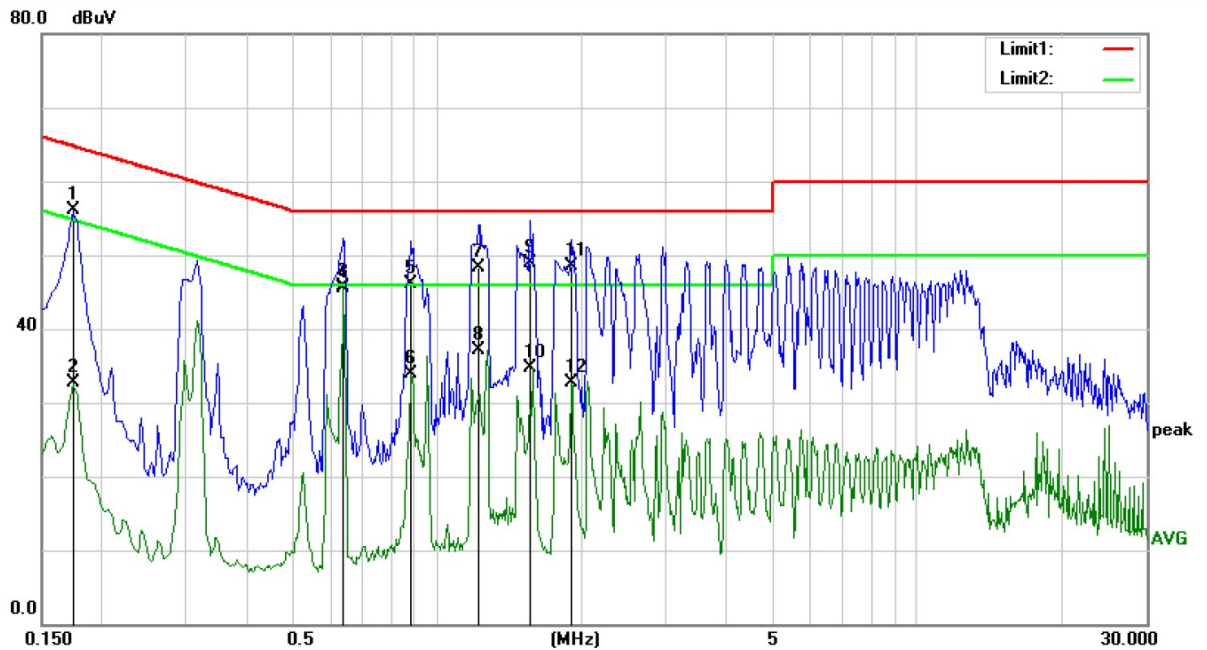
Power: AC 120V/60Hz

Humidity: 45 %

Mode: charging

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1740	47.70	10.48	58.18	64.77	-6.59	QP	
2		0.1740	24.34	10.48	34.82	54.77	-19.95	AVG	
3		0.3140	39.78	10.38	50.16	59.86	-9.70	QP	
4		0.3140	30.14	10.38	40.52	49.86	-9.34	AVG	
5		0.6380	41.07	10.31	51.38	56.00	-4.62	QP	
6	*	0.6380	34.43	10.31	44.74	46.00	-1.26	AVG	
7		0.9500	34.91	10.37	45.28	56.00	-10.72	QP	
8		0.9500	26.66	10.37	37.03	46.00	-8.97	AVG	
9		1.2620	36.83	10.37	47.20	56.00	-8.80	QP	
10		1.2620	27.43	10.37	37.80	46.00	-8.20	AVG	
11		1.9100	36.49	10.31	46.80	56.00	-9.20	QP	
12		1.9100	22.47	10.31	32.78	46.00	-13.22	AVG	



Site Conduction #2

Phase: **N**

Temperature: 25.1

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

Humidity: 45 %

Mode: charging

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1740	45.54	10.48	56.02	64.77	-8.75	QP	
2		0.1740	22.20	10.48	32.68	54.77	-22.09	AVG	
3		0.6380	35.39	10.31	45.70	56.00	-10.30	QP	
4	*	0.6380	35.15	10.31	45.46	46.00	-0.54	AVG	
5		0.8820	35.85	10.35	46.20	56.00	-9.80	QP	
6		0.8820	23.50	10.35	33.85	46.00	-12.15	AVG	
7		1.2220	37.92	10.38	48.30	56.00	-7.70	QP	
8		1.2220	26.74	10.38	37.12	46.00	-8.88	AVG	
9		1.5660	38.55	10.35	48.90	56.00	-7.10	QP	
10		1.5660	24.32	10.35	34.67	46.00	-11.33	AVG	
11		1.9060	38.29	10.31	48.60	56.00	-7.40	QP	
12		1.9060	22.45	10.31	32.76	46.00	-13.24	AVG	

8.7 ANTENNA APPLICATION

8.7.1 Antenna Requirement

Standard	Requirement
FCC CRF Part 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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

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. And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

8.7.2 Result

PASS.

- The EUT has 2 Internal Antennas: The two antennas are 0.8 dBi (with cable loss)
- Note:
- ☒ Antennas use a permanently attached antenna which is not replaceable.
 - ☐ Not using a standard antenna jack or electrical connector for antenna replacement
 - ☐ The antenna has to be professionally installed (please provide method of installation)

Which in accordance to section 15.203, please refer to the internal photos.

Detail of factor for radiated emission

Frequency(MHz)	Ant_F(dB)	Cab_L(dB)	Preamp(dB)	Correct Factor(dB)
0.009	20.6	0.03	\	20.63
0.15	20.7	0.1	\	20.8
1	20.9	0.15	\	21.05
10	20.1	0.28	\	20.38
30	18.8	0.45	\	19.25
30	11.7	0.62	27.9	-15.58
100	12.5	1.02	27.8	-14.28
300	12.9	1.91	27.5	-12.69
600	19.2	2.92	27	-4.88
800	21.1	3.54	26.6	-1.96
1000	22.3	4.17	26.2	0.27
1000	25.6	1.76	41.4	-14.04
3000	28.9	3.27	43.2	-11.03
5000	31.1	4.2	44.6	-9.3
8000	36.2	5.95	44.7	-2.55
10000	38.4	6.3	43.9	0.8
12000	38.5	7.14	42.3	3.34
15000	40.2	8.15	41.4	6.95
18000	45.4	9.02	41.3	13.12
18000	37.9	1.81	47.9	-8.19
21000	37.9	1.95	48.7	-8.85
25000	39.3	2.01	42.8	-1.49
28000	39.6	2.16	46.0	-4.24
31000	41.2	2.24	44.5	-1.06
34000	41.5	2.29	46.6	-2.81
37000	43.8	2.30	46.4	-0.3
40000	43.2	2.50	42.2	3.5

----- END OF REPORT -----