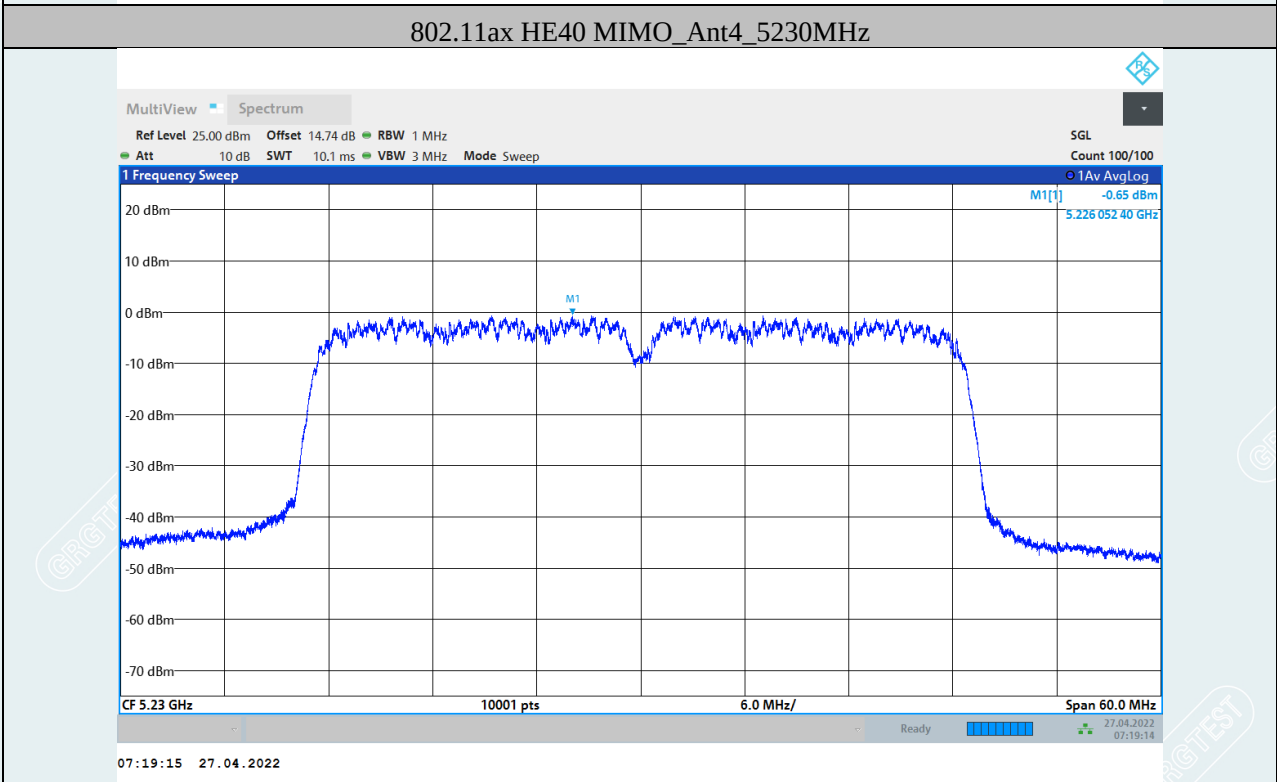
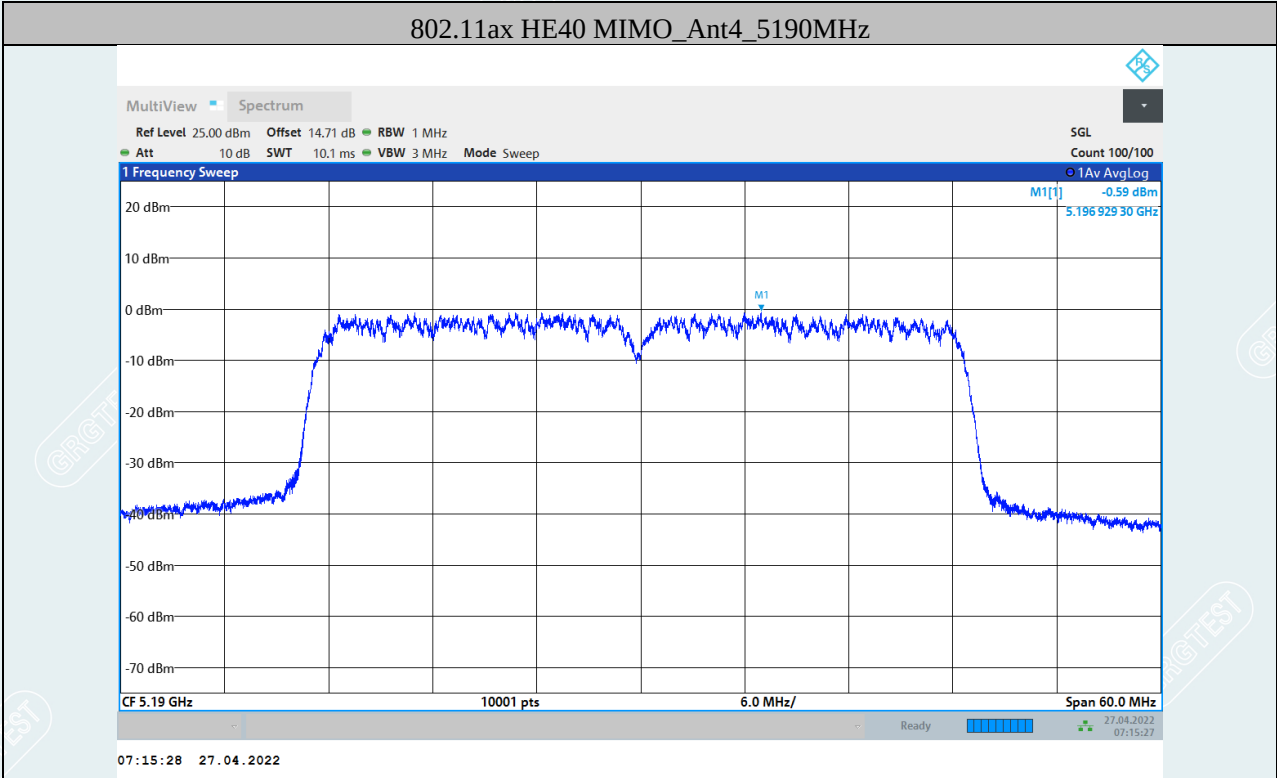
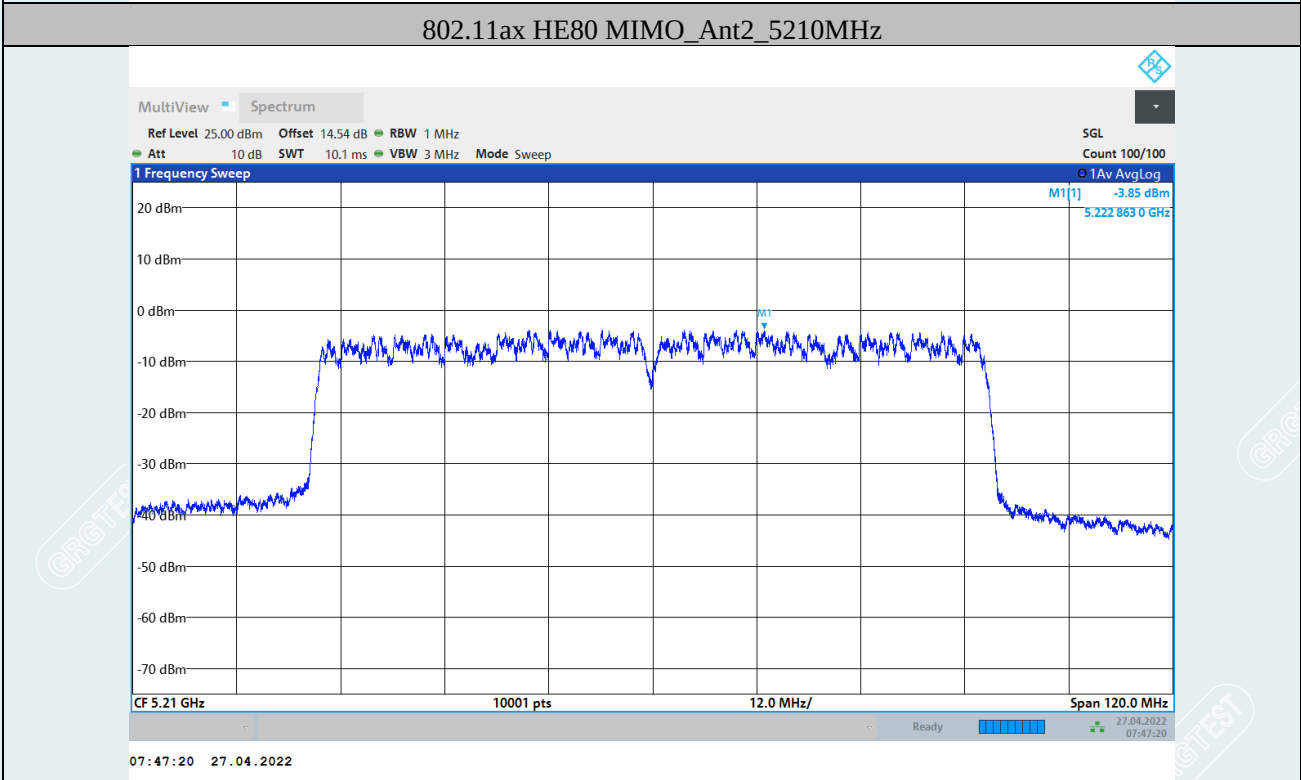
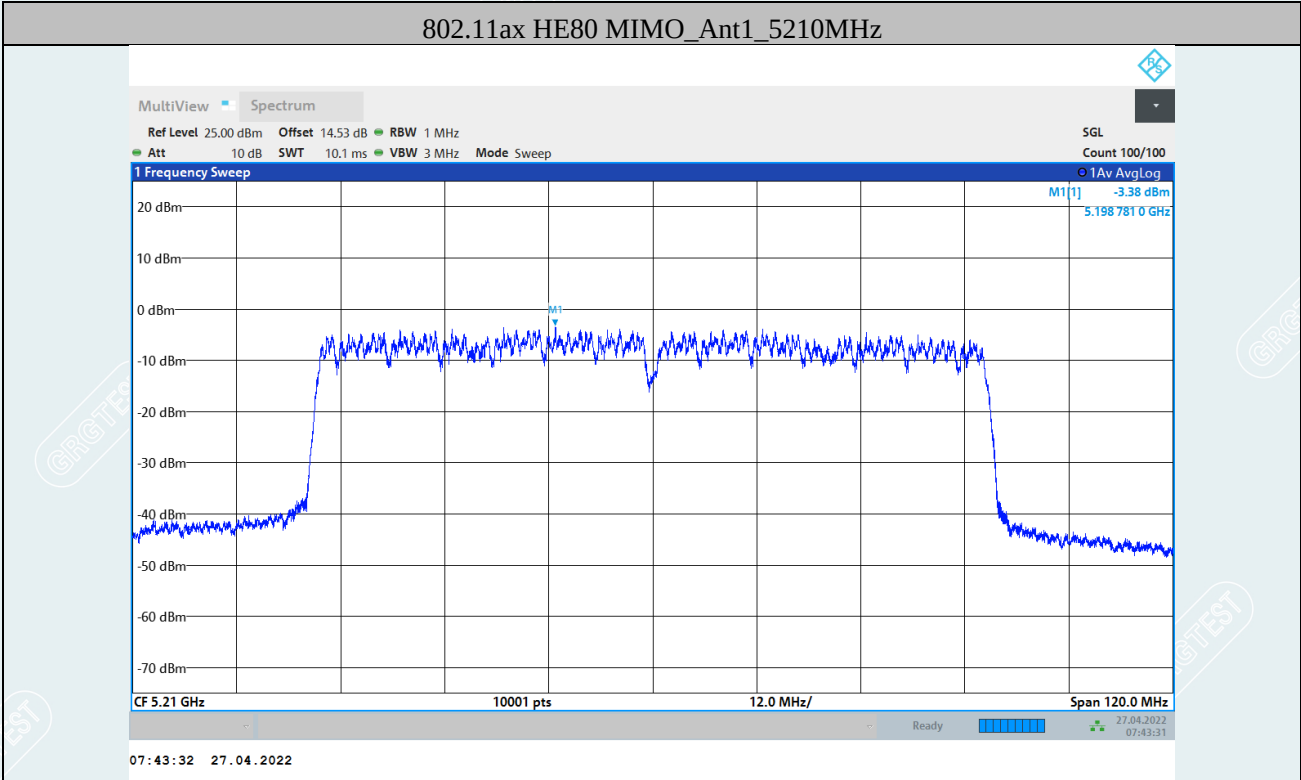
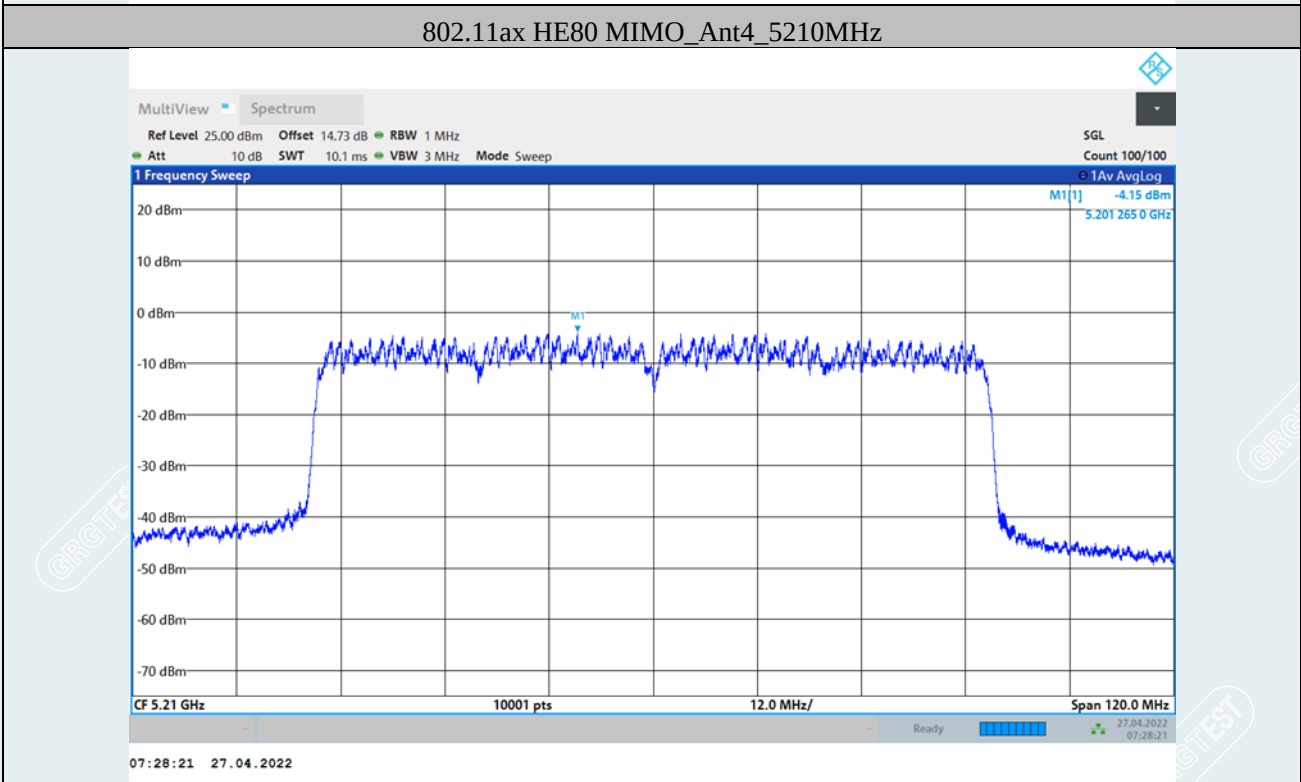
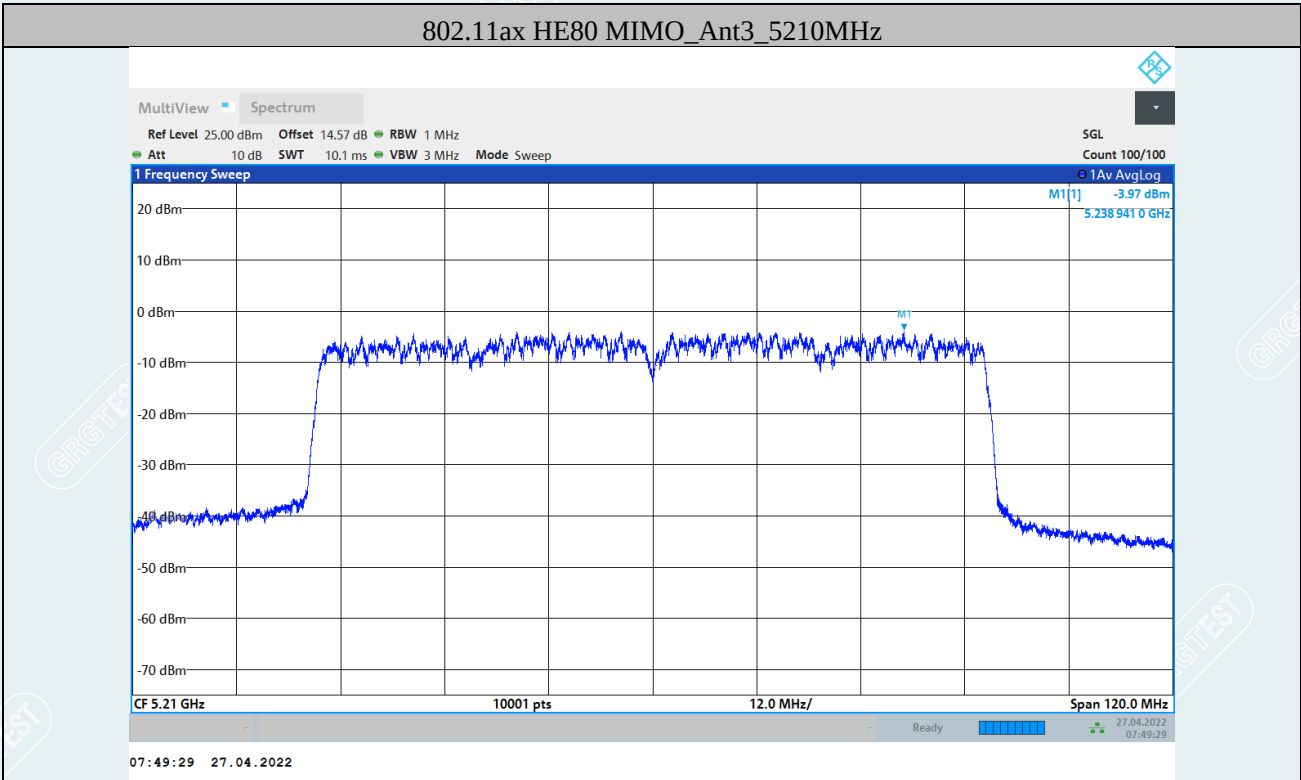








11. FREQUENCY STABILITY

11.1. LIMITS

According to §15.407(g), 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 user's manual.

11.2. TEST PROCEDURES

(1) Frequency stability with respect to ambient temperature

- a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in §ANSI C63.10-2013(5.6).
- b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

- c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.
- e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.
- f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.
- g) Measure the frequency at each of frequencies specified in §ANSI C63.10-2013(5.6).
- h) Switch OFF the EUT but do not switch OFF the oscillator heater.
- i) Lower the chamber temperature by not more than 10°C, and allow the temperature inside the chamber to stabilize.
- j) Repeat step f) through step i) down to the lowest specified temperature.

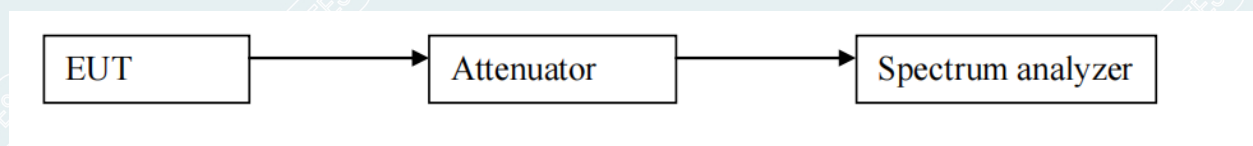
(2) Frequency stability when varying supply voltage

- a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

- b) Tune the EUT to one of the number of frequencies required in §ANSI C63.10-2013(5.6). Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- c) Measure the frequency at each of the frequencies specified in §ANSI C63.10-2013(5.6).
- d) Repeat the above procedure at 85% and 115% of the nominal supply voltage as described in §ANSI C63.10-2013(5.13).

11.3. TEST SETUP



11.4. TEST RESULTS

Tested By	Liu lingfeng	Tested Date	2022/4/20~2022/4/21
Environmental Conditions	23.9°C/47%RH	Test Voltage	AC120V/60Hz

Voltage									
Test Mode	Antenna	Frequency (MHz)	Voltage [Vdc]	Temperature (°C)	Measured Frequency (MHz)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
802.11 a	Ant1	5180	NV	NT	5179.98	-20000	-3.86	20	PASS
		5180	LV	NT	5179.96	-40000	-7.72	20	PASS
		5180	HV	NT	5179.96	-40000	-7.72	20	PASS
	Ant1	5200	NV	NT	5199.96	-40000	-7.69	20	PASS
		5200	LV	NT	5199.96	-40000	-7.69	20	PASS
		5200	HV	NT	5199.94	-60000	-11.54	20	PASS
	Ant1	5240	NV	NT	5239.96	-40000	-7.63	20	PASS
		5240	LV	NT	5239.98	-20000	-3.82	20	PASS
		5240	HV	NT	5239.96	-40000	-7.63	20	PASS
	Ant2	5180	NV	NT	5179.94	-60000	-11.58	20	PASS
		5180	LV	NT	5179.96	-40000	-7.72	20	PASS
		5180	HV	NT	5179.96	-40000	-7.72	20	PASS
	Ant2	5200	NV	NT	5199.94	-60000	-11.54	20	PASS
		5200	LV	NT	5199.98	-20000	-3.85	20	PASS
		5200	HV	NT	5199.96	-40000	-7.69	20	PASS
	Ant2	5240	NV	NT	5239.96	-40000	-7.63	20	PASS
		5240	LV	NT	5239.96	-40000	-7.63	20	PASS
		5240	HV	NT	5239.98	-20000	-3.82	20	PASS
	Ant3	5180	NV	NT	5179.94	-60000	-11.58	20	PASS
		5180	LV	NT	5179.96	-40000	-7.72	20	PASS
		5180	HV	NT	5179.96	-40000	-7.72	20	PASS
	Ant3	5200	NV	NT	5199.96	-40000	-7.69	20	PASS
		5200	LV	NT	5199.98	-20000	-3.85	20	PASS
		5200	HV	NT	5199.96	-40000	-7.69	20	PASS
	Ant3	5240	NV	NT	5239.96	-40000	-7.63	20	PASS
		5240	LV	NT	5239.96	-40000	-7.63	20	PASS
		5240	HV	NT	5239.94	-60000	-11.45	20	PASS
	Ant4	5180	NV	NT	5179.96	-40000	-7.72	20	PASS
		5180	LV	NT	5179.96	-40000	-7.72	20	PASS
		5180	HV	NT	5179.98	-20000	-3.86	20	PASS
	Ant4	5200	NV	NT	5199.94	-60000	-11.54	20	PASS
		5200	LV	NT	5199.94	-60000	-11.54	20	PASS
		5200	HV	NT	5199.96	-40000	-7.69	20	PASS
	Ant4	5240	NV	NT	5239.96	-40000	-7.63	20	PASS

		5240	LV	NT	5239.96	-40000	-7.63	20	PASS
		5240	HV	NT	5239.94	-60000	-11.45	20	PASS

Temperature									
Test Mode	Antenna	Temperature	Voltage [Vdc]	Temperature (°C)	Measured Frequency (MHz)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
802.11 a	Ant1	5180	NV	-5	5179.93	-70000	-13.51	20	PASS
		5180	NV	0	5179.93	-70000	-13.51	20	PASS
		5180	NV	10	5179.97	-30000	-5.79	20	PASS
		5180	NV	20	5179.96	-40000	-7.72	20	PASS
		5180	NV	30	5180.03	30000	5.79	20	PASS
		5180	NV	40	5180.04	40000	7.72	20	PASS
		5180	NV	45	5180.01	10000	1.93	20	PASS
	Ant1	5200	NV	-5	5200.05	50000	9.62	20	PASS
		5200	NV	0	5199.92	-80000	-15.38	20	PASS
		5200	NV	10	5200.01	10000	1.92	20	PASS
		5200	NV	20	5199.94	-60000	-11.54	20	PASS
		5200	NV	30	5199.95	-50000	-9.62	20	PASS
		5200	NV	40	5199.94	-60000	-11.54	20	PASS
		5200	NV	45	5199.94	-60000	-11.54	20	PASS
	Ant1	5240	NV	-5	5239.96	-40000	-7.63	20	PASS
		5240	NV	0	5240.03	30000	5.73	20	PASS
		5240	NV	10	5240.05	50000	9.54	20	PASS
		5240	NV	20	5239.96	-40000	-7.63	20	PASS
		5240	NV	30	5239.93	-70000	-13.36	20	PASS
		5240	NV	40	5239.96	-40000	-7.63	20	PASS
		5240	NV	45	5239.96	-40000	-7.63	20	PASS
	Ant2	5180	NV	-5	5179.94	-60000	-11.58	20	PASS
		5180	NV	0	5179.96	-40000	-7.72	20	PASS
		5180	NV	10	5179.98	-20000	-3.86	20	PASS
		5180	NV	20	5180	0	0.00	20	PASS
		5180	NV	30	5180.05	50000	9.65	20	PASS
		5180	NV	40	5180.02	20000	3.86	20	PASS
		5180	NV	45	5179.98	-20000	-3.86	20	PASS
	Ant2	5200	NV	-5	5200.06	60000	11.54	20	PASS
		5200	NV	0	5199.95	-50000	-9.62	20	PASS
		5200	NV	10	5200.02	20000	3.85	20	PASS
		5200	NV	20	5199.98	-20000	-3.85	20	PASS
		5200	NV	30	5199.97	-30000	-5.77	20	PASS
		5200	NV	40	5199.92	-80000	-15.38	20	PASS
		5200	NV	45	5199.91	-90000	-17.31	20	PASS
	Ant2	5240	NV	-5	5239.97	-30000	-5.73	20	PASS
		5240	NV	0	5240.06	60000	11.45	20	PASS
		5240	NV	10	5240.06	60000	11.45	20	PASS

		5240	NV	20	5240	0	0.00	20	PASS
		5240	NV	30	5239.95	-50000	-9.54	20	PASS
		5240	NV	40	5239.94	-60000	-11.45	20	PASS
		5240	NV	45	5239.93	-70000	-13.36	20	PASS
	Ant3	5180	NV	-5	5179.95	-50000	-9.65	20	PASS
		5180	NV	0	5179.99	-10000	-1.93	20	PASS
		5180	NV	10	5179.99	-9999.999999	-1.93	20	PASS
		5180	NV	20	5180.04	40000	7.72	20	PASS
		5180	NV	30	5180.07	70000	13.51	20	PASS
		5180	NV	40	5180	0	0.00	20	PASS
		5180	NV	45	5179.95	-50000	-9.65	20	PASS
	Ant3	5200	NV	-5	5200.07	70000	13.46	20	PASS
		5200	NV	0	5199.98	-20000	-3.85	20	PASS
		5200	NV	10	5200.03	30000	5.77	20	PASS
		5200	NV	20	5200.02	20000	3.85	20	PASS
		5200	NV	30	5199.99	-9999.999999	-1.92	20	PASS
		5200	NV	40	5200	0	0.00	20	PASS
		5200	NV	45	5199.94	-60000	-11.54	20	PASS
	Ant3	5240	NV	-5	5239.98	-20000	-3.82	20	PASS
		5240	NV	0	5240.09	90000	17.18	20	PASS
		5240	NV	10	5240.07	70000	13.36	20	PASS
		5240	NV	20	5240.04	40000	7.63	20	PASS
		5240	NV	30	5239.97	-30000	-5.73	20	PASS
		5240	NV	40	5239.92	-80000	-15.27	20	PASS
		5240	NV	45	5239.96	-40000	-7.63	20	PASS
	Ant4	5180	NV	-5	5179.96	-40000	-7.72	20	PASS
		5180	NV	0	5180.02	20000	3.86	20	PASS
		5180	NV	10	5180	0	0.00	20	PASS
		5180	NV	20	5180.08	80000	15.44	20	PASS
		5180	NV	30	5180.05	50000	9.65	20	PASS
		5180	NV	40	5179.98	-20000	-3.86	20	PASS
		5180	NV	45	5179.92	-80000	-15.44	20	PASS
	Ant4	5200	NV	-5	5200.08	80000	15.38	20	PASS
		5200	NV	0	5200.01	9999.999999	1.92	20	PASS
		5200	NV	10	5200.04	40000	7.69	20	PASS
		5200	NV	20	5200.06	60000	11.54	20	PASS
		5200	NV	30	5200.01	10000	1.92	20	PASS
		5200	NV	40	5200.06	60000	11.54	20	PASS
		5200	NV	45	5199.99	-10000	-1.92	20	PASS
	Ant4	5240	NV	-5	5239.99	-9999.999999	-1.91	20	PASS
		5240	NV	0	5240.05	50000	9.54	20	PASS
		5240	NV	10	5240.08	80000	15.27	20	PASS

		5240	NV	20	5240.08	80000	15.27	20	PASS
		5240	NV	30	5239.99	-9999.999998	-1.91	20	PASS
		5240	NV	40	5239.97	-30000	-5.73	20	PASS
		5240	NV	45	5239.99	-10000	-1.91	20	PASS

Note: 1.This report records the worst case of temperature change test observation time 0/2/5/10min .

2.Test Voltage-NV: AC120V/60Hz, Test Voltage-LV: AC102V/60Hz, Test Voltage-HV: AC138V/60Hz.

3.Temperature Range: -5℃~45℃, Temperature-NT: 24℃.

APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM

Please refer to the attached document E202203219481-1 Test setup photo.

APPENDIX B. PHOTOGRAPH OF THE EUT

Please refer to the attached document E202203219481-1 EUT Photo.

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