















9. OUTPUT POWER

9.1. LIMITS

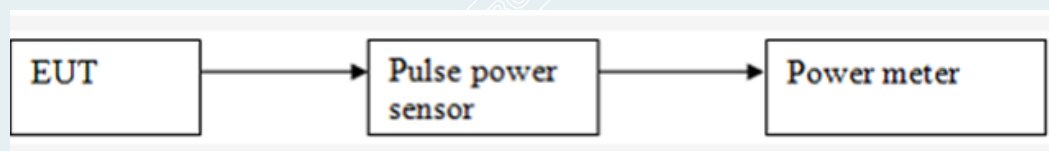
The FCC 15.407(a), The maximum conducted output power should not exceed:

Band	EUT Type	Limit
U-NII-1	Outdoor Access Point	1W(30dBm) (Max. e.i.r.p $\leq$ 125mW at any elevation angle above 30 degrees as measured from the horizon)
	Indoor Access Point	1W(30dBm)
	Fixed point-to-point Access Point	1W(30dBm)
	Mobile and Portable Client Device	250mW(23.98dBm)
U-NII-3	All Device	1W(30dBm)

9.2. TEST PROCEDURES

- 1) The RF output of EUT was connected to the broadband average RF power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 2) Set to the maximum power setting and enable the EUT transmit continuously.
- 3) Measure the conducted output power and record the results in the test report.

9.3. TEST SETUP



9.4. TEST RESULTS

Environmental Conditions	23.1℃/53%RH	Test Voltage	AC 120V/60Hz
Tested By	Qin Tingting	Tested Date	2022-04-07

TestMode	Antenna	Band	Frequency [MHz]	AVG Conducted Output Power with Duty Factor [dBm]	Limit[dBm]	Verdict
802.11a	Ant1	U-NII-1	5180	14.61	≤23.98	PASS
			5200	14.47	≤23.98	PASS
			5240	14.46	≤23.98	PASS
		U-NII-3	5745	14.00	≤30	PASS
			5785	13.63	≤30	PASS
			5825	13.32	≤30	PASS
802.11n HT20	Ant1	U-NII-1	5180	14.37	≤23.98	PASS
			5200	14.04	≤23.98	PASS
			5240	13.83	≤23.98	PASS
		U-NII-3	5745	13.52	≤30	PASS
			5785	13.10	≤30	PASS
			5825	12.86	≤30	PASS
802.11n HT40	Ant1	U-NII-1	5190	14.70	≤23.98	PASS
			5230	14.36	≤23.98	PASS
		U-NII-3	5755	14.50	≤30	PASS
			5795	13.92	≤30	PASS
802.11ac VHT20	Ant1	U-NII-1	5180	14.40	≤23.98	PASS
			5200	14.14	≤23.98	PASS
			5240	13.97	≤23.98	PASS
		U-NII-3	5745	13.48	≤30	PASS
			5785	13.28	≤30	PASS
			5825	13.00	≤30	PASS
802.11ac VHT40	Ant1	U-NII-1	5190	14.75	≤23.98	PASS
			5230	14.50	≤23.98	PASS
		U-NII-3	5755	14.25	≤30	PASS
			5795	14.11	≤30	PASS
802.11ac VHT80	Ant1	U-NII-1	5210	14.53	≤23.98	PASS
		U-NII-3	5775	14.02	≤30	PASS

Note: The Duty Cycle Factor has compensated in the test results.

10. POWER SPECTRAL DENSITY

10.1. LIMITS

FCC 15.407(a)

The maximum power spectral density should not exceed:

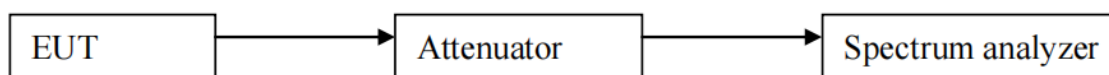
Band	EUT Type	Limit
U-NII-1	Outdoor Access Point	17dBm/MHz
	Indoor Access Point	17dBm/MHz
	Fixed point-to-point Access Point	17dBm/MHz
	Mobile and Portable Client Device	11dBm/MHz
U-NII-3	All Device	30dBm/500kHz

If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

10.2. TEST PROCEDURES

Spectrum Parameters	Setting
RBW	1MHz(For U-NII-1) 500kHz(For U-NII-3)
VBW	3MHz(For U-NII-1) 2MHz(For U-NII-3)
Span	encompass the entire 26 dB EBW or 99% OBW of the signal
Sweep Time	Auto
Number of Sweep Point	$\geq 2 \times \text{SPAN/RBW}$
Detector	RMS(power averaging)
Trace Average	≥ 100 traces

10.3. TEST SETUP



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10.4. TEST RESULTS

Environmental Conditions	23.1 °C/53%RH	Test Voltage	AC 120V/60Hz
Tested By	Qin Tingting	Tested Date	2022-01-14 to 2022-04-07

U-NII-1 :

TestMode	Antenna	Frequency [MHz]	Result+ Duty factor [dBm/MHz]	Limit[dBm/MHz]	Verdict
802.11a	Ant1	5180	3.36	≤11	PASS
		5200	3.00	≤11	PASS
		5240	2.77	≤11	PASS
802.11n HT20	Ant1	5180	2.32	≤11	PASS
		5200	2.42	≤11	PASS
		5240	1.50	≤11	PASS
802.11n HT40	Ant1	5190	-3.58	≤11	PASS
		5230	-2.19	≤11	PASS
802.11ac VHT20	Ant1	5180	3.03	≤11	PASS
		5200	1.94	≤11	PASS
		5240	2.87	≤11	PASS
802.11ac VHT40	Ant1	5190	-2.50	≤11	PASS
		5230	-2.52	≤11	PASS
802.11ac VHT80	Ant1	5210	-5.03	≤11	PASS

Note: The Duty Cycle Factor has compensated in the test results.

----- The following blanks -----

U-NII-3:

TestMode	Antenna	Frequency [MHz]	Result+ Duty factor [dBm/500kHz]	Limit[dBm/500kHz]	Verdict
802.11a	Ant1	5745	2.38	≤ 30	PASS
		5785	2.49	≤ 30	PASS
		5825	1.97	≤ 30	PASS
802.11n HT20	Ant1	5745	2.18	≤ 30	PASS
		5785	1.56	≤ 30	PASS
		5825	0.77	≤ 30	PASS
802.11n HT40	Ant1	5755	-0.51	≤ 30	PASS
		5795	-0.97	≤ 30	PASS
802.11ac VHT20	Ant1	5745	1.96	≤ 30	PASS
		5785	1.32	≤ 30	PASS
		5825	1.33	≤ 30	PASS
802.11ac VHT40	Ant1	5755	-0.65	≤ 30	PASS
		5795	-0.68	≤ 30	PASS
802.11ac VHT80	Ant1	5775	-3.98	≤ 30	PASS

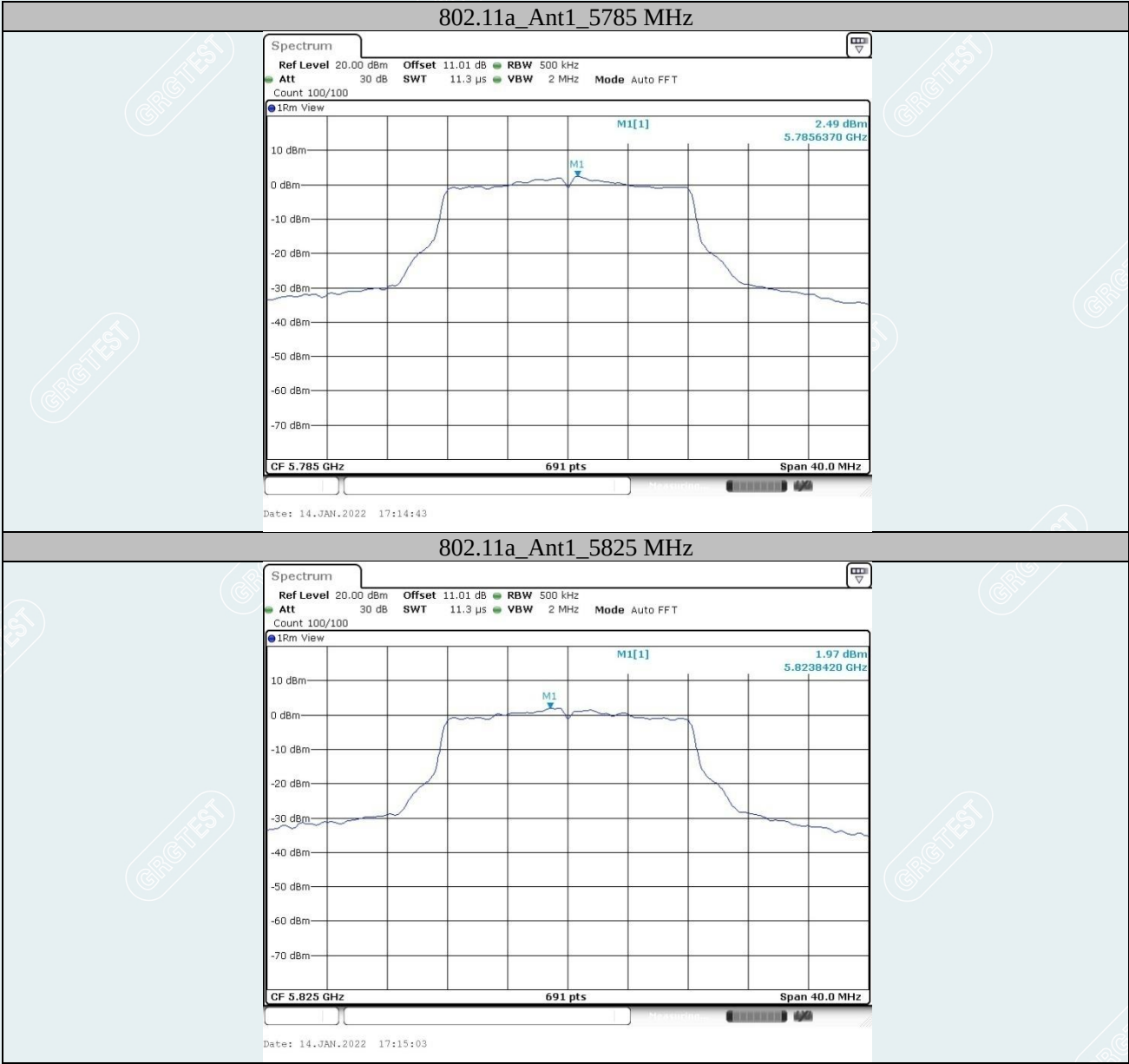
Note: The Duty Cycle Factor has compensated in the test results.

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Test Graphs

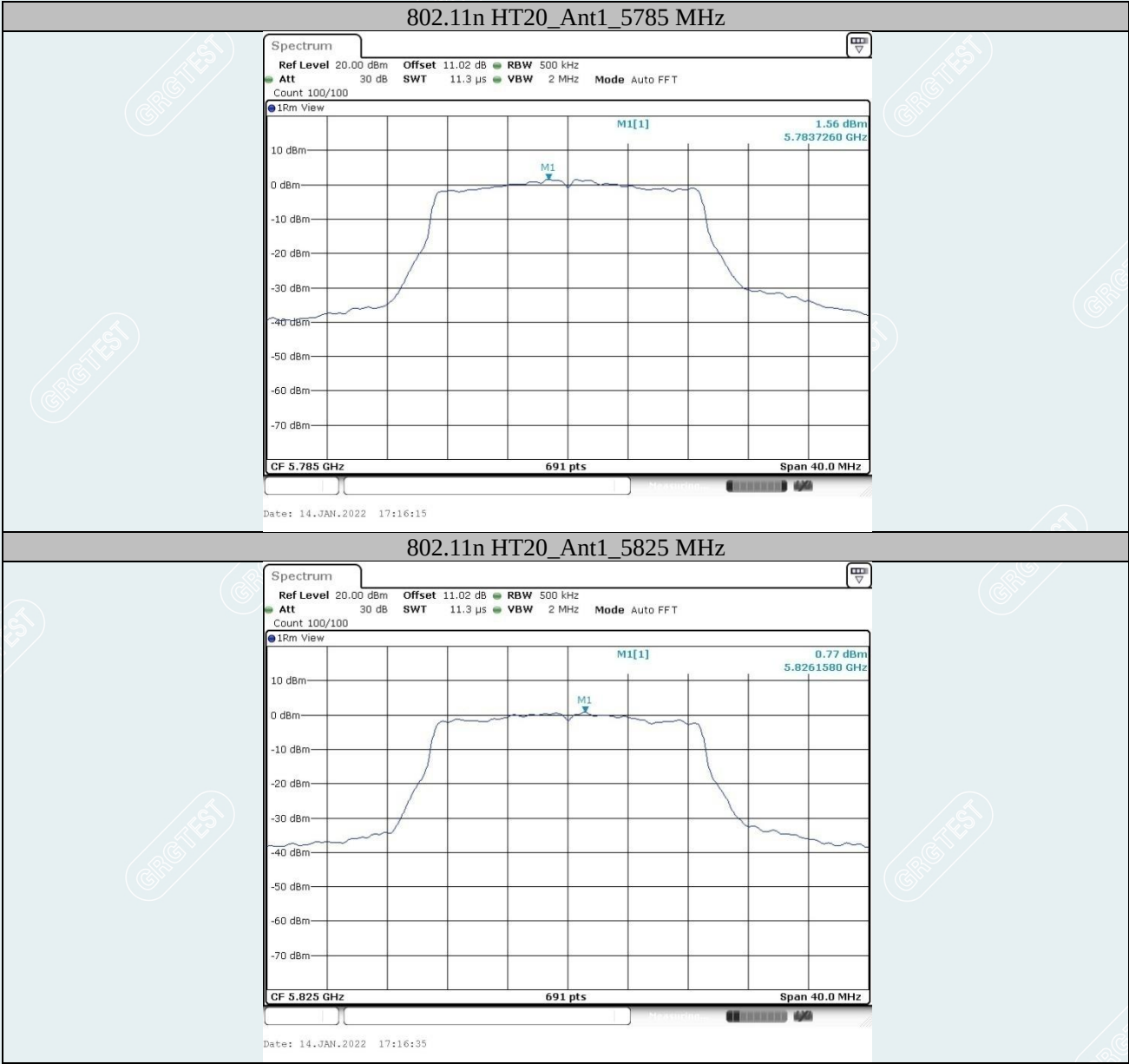




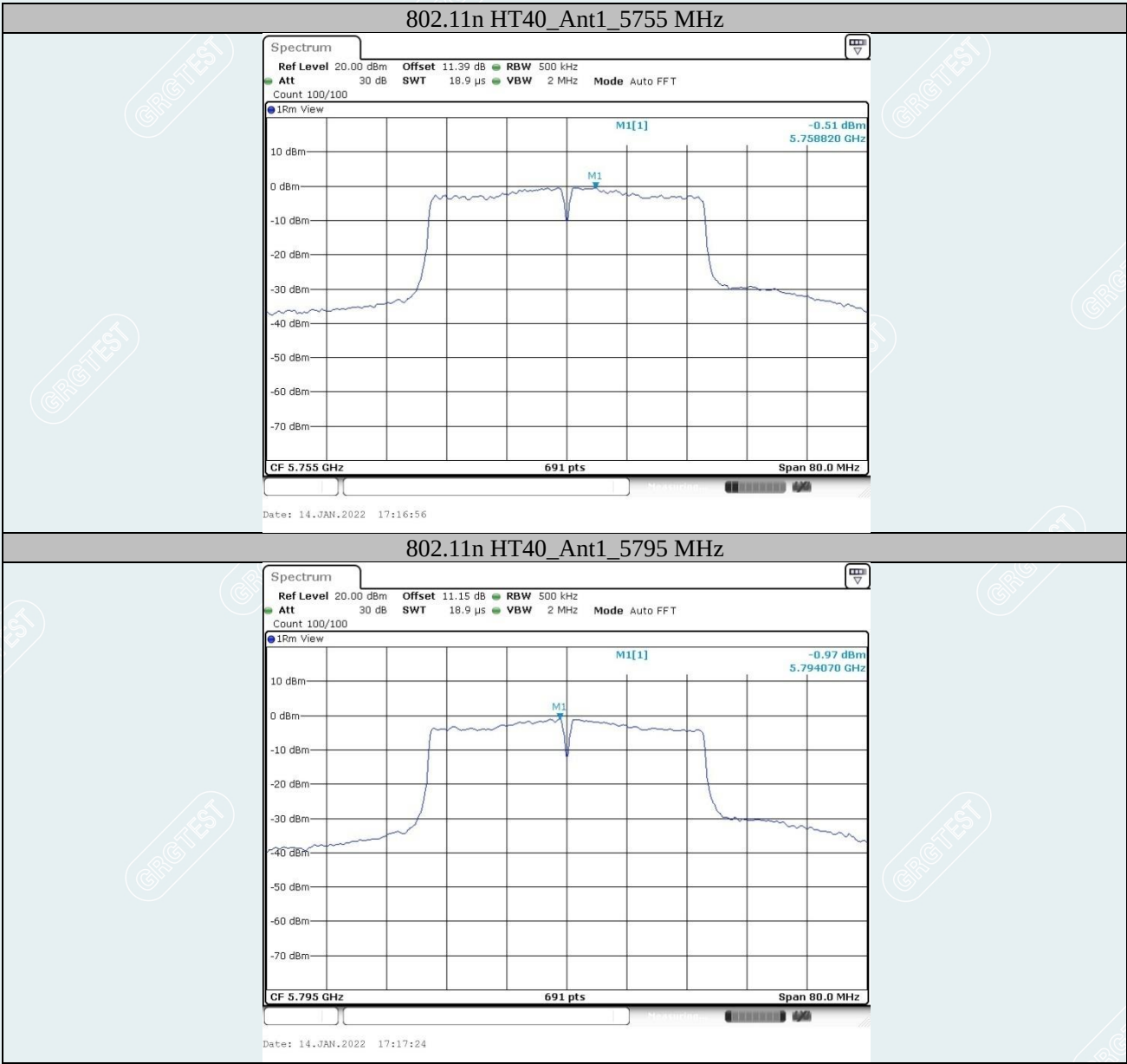






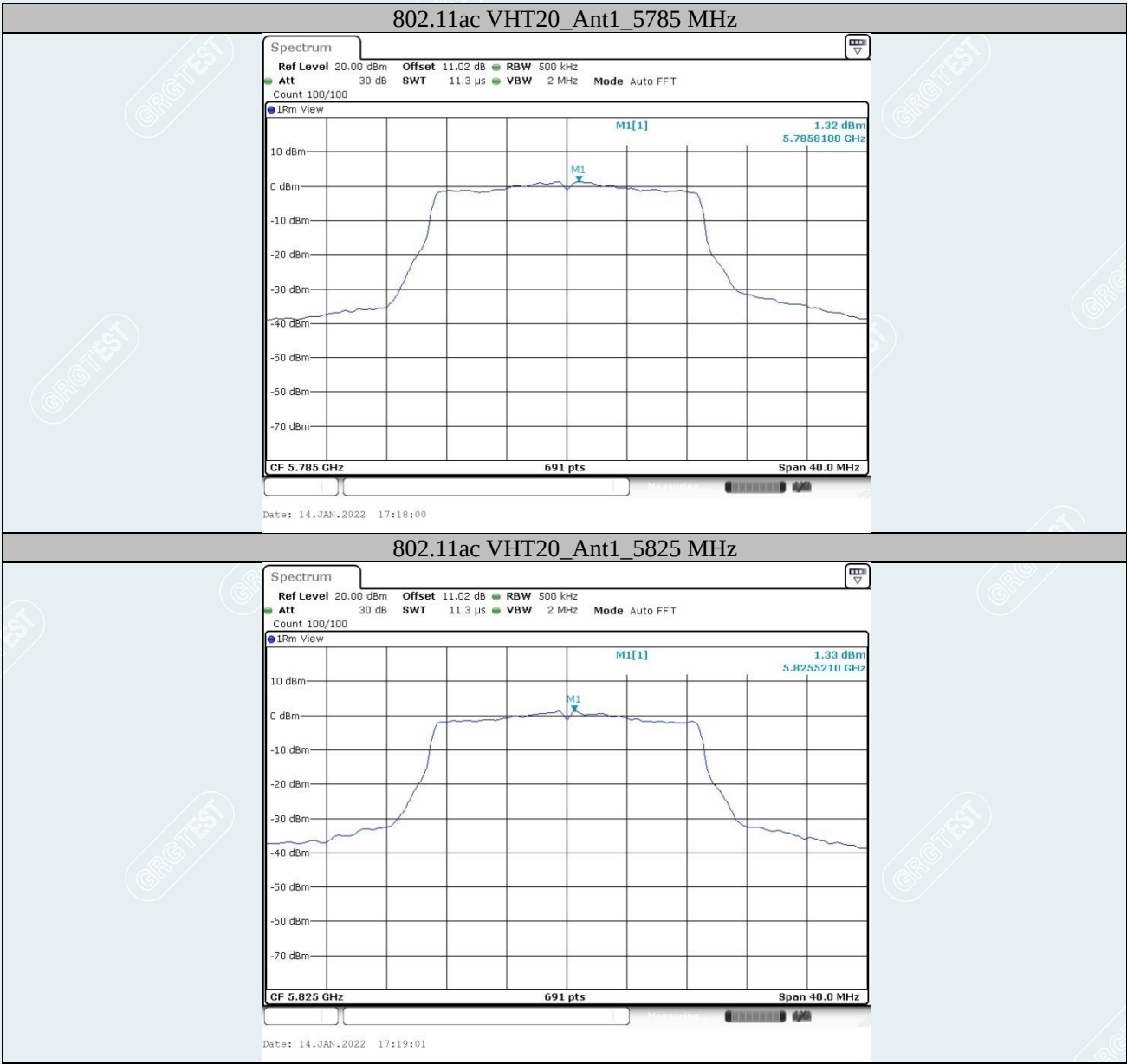




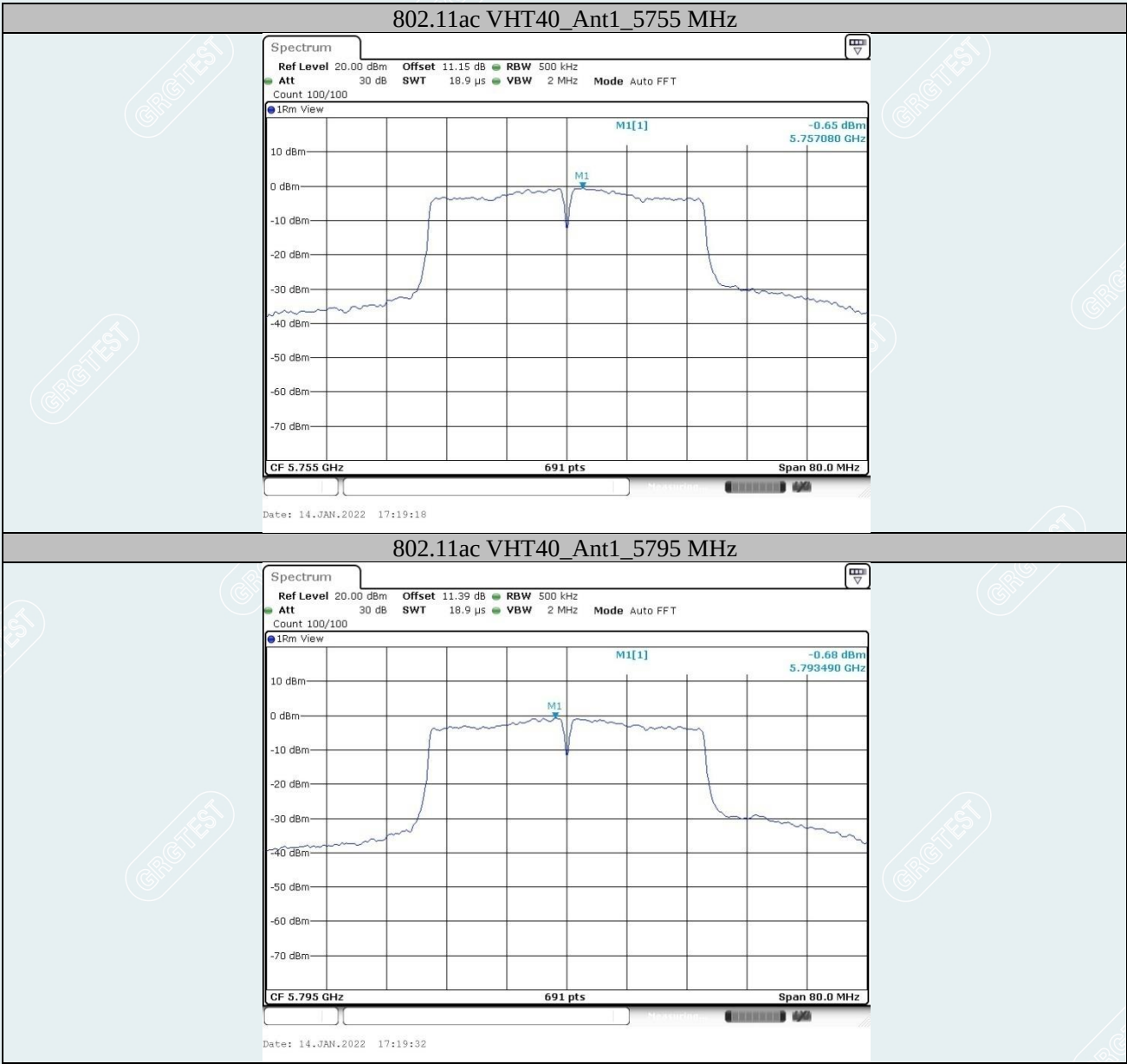


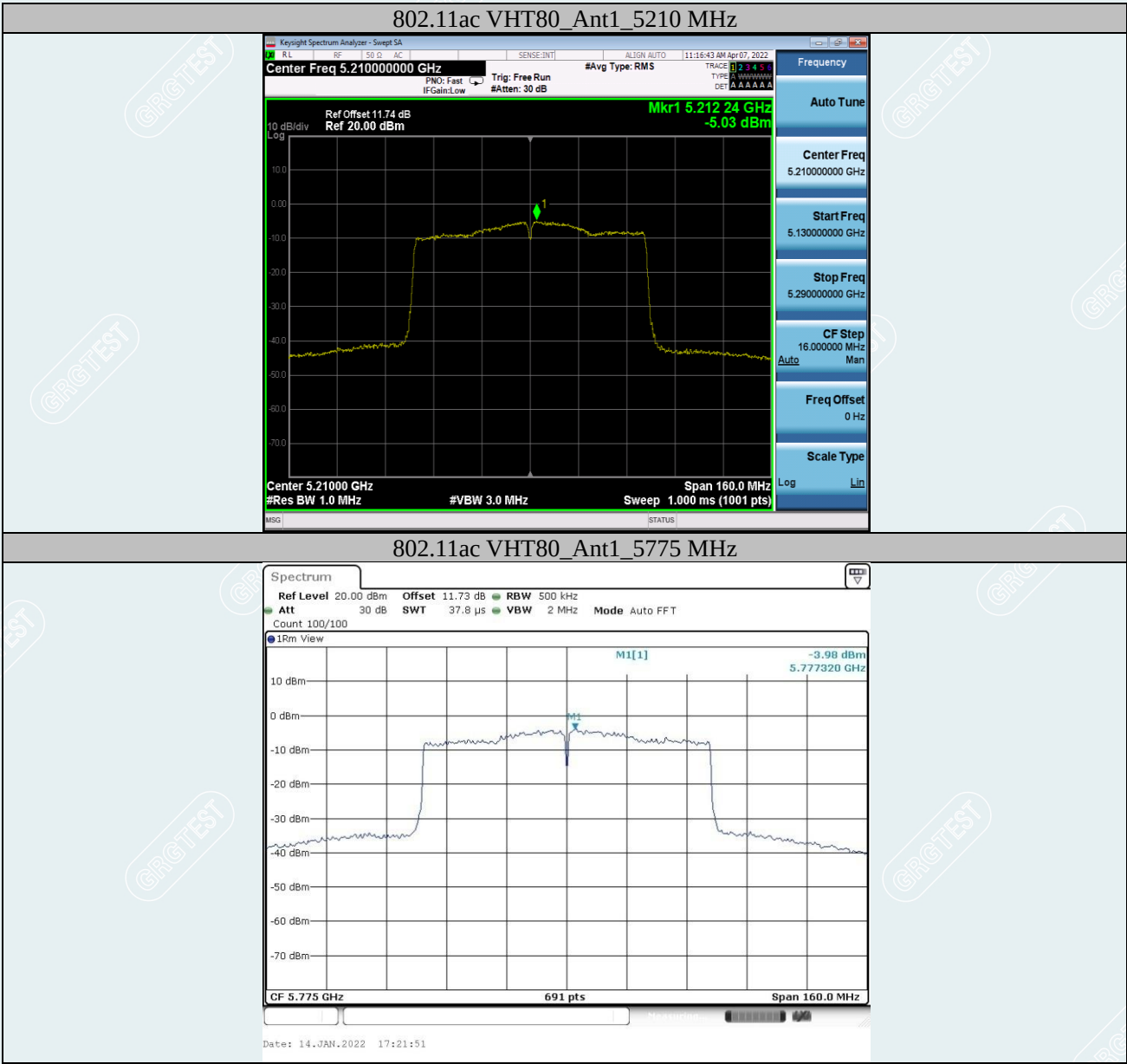












11. FREQUENCY STABILITY

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 users 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.

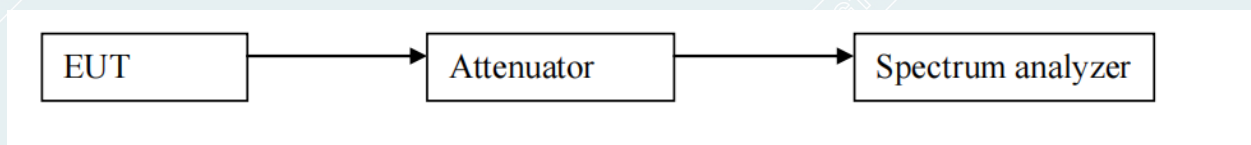
- c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- d) Turn 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

----- The following blanks -----

11.4. TEST RESULTS

Tested By	Qin Tingting	Tested Date	2022-01-13 to 2022-04-07
Environmental Conditions	23.1°C/53%RH	Test Voltage	AC 120V/60Hz

Voltage								
TestMode	Antenna	Frequency (MHz)	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
802.11a	Ant1	5180	NV	NT	13000	2.509653	20	PASS
			LV	NT	13000	2.509653	20	PASS
			HV	NT	13000	2.509653	20	PASS
		5200	NV	NT	13000	2.500000	20	PASS
			LV	NT	13000	2.500000	20	PASS
			HV	NT	13000	2.500000	20	PASS
		5240	NV	NT	14000	2.671756	20	PASS
			LV	NT	14000	2.671756	20	PASS
			HV	NT	14000	2.671756	20	PASS
		5745	NV	NT	15000	2.610966	20	PASS
			LV	NT	16000	2.785030	20	PASS
			HV	NT	16000	2.785030	20	PASS
		5785	NV	NT	14000	2.420052	20	PASS
			LV	NT	14000	2.420052	20	PASS
			HV	NT	15000	2.592913	20	PASS
		5825	NV	NT	15000	2.575107	20	PASS
			LV	NT	16000	2.746781	20	PASS
			HV	NT	16000	2.746781	20	PASS
802.11n HT20	Ant1	5180	NV	NT	14000	2.702703	20	PASS
			LV	NT	14000	2.702703	20	PASS
			HV	NT	14000	2.702703	20	PASS
		5200	NV	NT	13000	2.500000	20	PASS
			LV	NT	14000	2.692308	20	PASS
			HV	NT	14000	2.692308	20	PASS
		5240	NV	NT	13000	2.480916	20	PASS
			LV	NT	13000	2.480916	20	PASS
			HV	NT	13000	2.480916	20	PASS
		5745	NV	NT	15000	2.610966	20	PASS
			LV	NT	14000	2.436902	20	PASS
			HV	NT	14000	2.436902	20	PASS

		5785	NV	NT	15000	2.592913	20	PASS
			LV	NT	14000	2.420052	20	PASS
			HV	NT	14000	2.420052	20	PASS
		5825	NV	NT	14000	2.403433	20	PASS
			LV	NT	15000	2.575107	20	PASS
			HV	NT	15000	2.575107	20	PASS
802.11n HT40	Ant1	5190	NV	NT	13000	2.504817	20	PASS
			LV	NT	13000	2.504817	20	PASS
			HV	NT	13000	2.504817	20	PASS
		5230	NV	NT	13000	2.48566	20	PASS
			LV	NT	13000	2.48566	20	PASS
			HV	NT	14000	2.676864	20	PASS
		5755	NV	NT	15000	2.606429	20	PASS
			LV	NT	16000	2.780191	20	PASS
			HV	NT	16000	2.780191	20	PASS
		5795	NV	NT	16000	2.761001	20	PASS
			LV	NT	16000	2.761001	20	PASS
			HV	NT	16000	2.761001	20	PASS
802.11ac VHT20	Ant1	5180	NV	NT	14000	2.702703	20	PASS
			LV	NT	14000	2.702703	20	PASS
			HV	NT	15000	2.895753	20	PASS
		5200	NV	NT	14000	2.692308	20	PASS
			LV	NT	15000	2.884615	20	PASS
			HV	NT	15000	2.884615	20	PASS
		5240	NV	NT	14000	2.671756	20	PASS
			LV	NT	14000	2.671756	20	PASS
			HV	NT	15000	2.862595	20	PASS
		5745	NV	NT	16000	2.785030	20	PASS
			LV	NT	16000	2.785030	20	PASS
			HV	NT	16000	2.785030	20	PASS
		5785	NV	NT	16000	2.765774	20	PASS
			LV	NT	16000	2.765774	20	PASS
			HV	NT	16000	2.765774	20	PASS
		5825	NV	NT	15000	2.575107	20	PASS
			LV	NT	16000	2.746781	20	PASS
			HV	NT	16000	2.746781	20	PASS
802.11ac VHT40	Ant1	5190	NV	NT	14000	2.697495	20	PASS
			LV	NT	14000	2.697495	20	PASS
			HV	NT	14000	2.697495	20	PASS
		5230	NV	NT	13000	2.485660	20	PASS
			LV	NT	13000	2.485660	20	PASS
			HV	NT	14000	2.676864	20	PASS

		5755	NV	NT	15000	2.606429	20	PASS
			LV	NT	14000	2.432667	20	PASS
			HV	NT	14000	2.432667	20	PASS
		5795	NV	NT	16000	2.761001	20	PASS
			LV	NT	15000	2.588438	20	PASS
			HV	NT	14000	2.415876	20	PASS
802.11ac VHT80	Ant1	5210	NV	NT	13000	2.495202	20	PASS
			LV	NT	13000	2.495202	20	PASS
			HV	NT	13000	2.495202	20	PASS
		5775	NV	NT	15000	2.597403	20	PASS
			LV	NT	14000	2.424242	20	PASS
			HV	NT	14000	2.424242	20	PASS

Temperature								
TestMode	Antenna	Frequency (MHz)	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
802.11a	Ant1	5180	NV	0	13000	2.509653	20	PASS
			NV	10	13000	2.509653	20	PASS
			NV	20	13000	2.509653	20	PASS
			NV	30	13000	2.509653	20	PASS
			NV	40	13000	2.509653	20	PASS
			NV	50	13000	2.509653	20	PASS
		5200	NV	0	13000	2.500000	20	PASS
			NV	10	13000	2.500000	20	PASS
			NV	20	14000	2.692308	20	PASS
			NV	30	14000	2.692308	20	PASS
			NV	40	14000	2.692308	20	PASS
			NV	50	13000	2.500000	20	PASS
		5240	NV	0	14000	2.671756	20	PASS
			NV	10	14000	2.671756	20	PASS
			NV	20	14000	2.671756	20	PASS
			NV	30	14000	2.671756	20	PASS
			NV	40	14000	2.671756	20	PASS
			NV	50	14000	2.671756	20	PASS
		5745	NV	0	16000	2.785030	20	PASS
			NV	10	16000	2.785030	20	PASS
			NV	20	16000	2.785030	20	PASS
			NV	30	16000	2.785030	20	PASS
			NV	40	16000	2.785030	20	PASS
			NV	50	16000	2.785030	20	PASS
		5785	NV	0	16000	2.765774	20	PASS

			NV	10	16000	2.765774	20	PASS
			NV	20	16000	2.765774	20	PASS
			NV	30	16000	2.765774	20	PASS
			NV	40	16000	2.765774	20	PASS
			NV	50	16000	2.765774	20	PASS
		5825	NV	0	16000	2.746781	20	PASS
			NV	10	16000	2.746781	20	PASS
			NV	20	16000	2.746781	20	PASS
			NV	30	16000	2.746781	20	PASS
			NV	40	16000	2.746781	20	PASS
			NV	50	16000	2.746781	20	PASS
802.11n HT20	Ant1	5180	NV	0	14000	2.702703	20	PASS
			NV	10	14000	2.702703	20	PASS
			NV	20	14000	2.702703	20	PASS
			NV	30	14000	2.702703	20	PASS
			NV	40	14000	2.702703	20	PASS
			NV	50	14000	2.702703	20	PASS
		5200	NV	0	14000	2.692308	20	PASS
			NV	10	14000	2.692308	20	PASS
			NV	20	14000	2.692308	20	PASS
			NV	30	14000	2.692308	20	PASS
			NV	40	15000	2.884615	20	PASS
			NV	50	14000	2.692308	20	PASS
		5240	NV	0	13000	2.480916	20	PASS
			NV	10	13000	2.480916	20	PASS
			NV	20	13000	2.480916	20	PASS
			NV	30	13000	2.480916	20	PASS
			NV	40	13000	2.480916	20	PASS
			NV	50	13000	2.480916	20	PASS
		5745	NV	0	14000	2.436902	20	PASS
			NV	10	14000	2.436902	20	PASS
			NV	20	14000	2.436902	20	PASS
			NV	30	14000	2.436902	20	PASS
			NV	40	14000	2.436902	20	PASS
			NV	50	14000	2.436902	20	PASS
		5785	NV	0	15000	2.592913	20	PASS
			NV	10	15000	2.592913	20	PASS
			NV	20	15000	2.592913	20	PASS
			NV	30	15000	2.592913	20	PASS
			NV	40	15000	2.592913	20	PASS
			NV	50	15000	2.592913	20	PASS
		5825	NV	0	15000	2.575107	20	PASS

802.11n HT40	Ant1	5190	NV	10	15000	2.575107	20	PASS
			NV	20	16000	2.746781	20	PASS
			NV	30	15000	2.575107	20	PASS
			NV	40	16000	2.746781	20	PASS
			NV	50	16000	2.746781	20	PASS
			NV	0	14000	2.697495	20	PASS
		5230	NV	10	14000	2.697495	20	PASS
			NV	20	14000	2.697495	20	PASS
			NV	30	14000	2.697495	20	PASS
			NV	40	14000	2.697495	20	PASS
			NV	50	14000	2.697495	20	PASS
			NV	0	14000	2.676864	20	PASS
		5755	NV	10	14000	2.676864	20	PASS
			NV	20	14000	2.676864	20	PASS
			NV	30	14000	2.676864	20	PASS
			NV	40	15000	2.868069	20	PASS
			NV	50	14000	2.676864	20	PASS
			NV	0	16000	2.780191	20	PASS
802.11ac VHT20	Ant1	5795	NV	10	16000	2.780191	20	PASS
			NV	20	16000	2.780191	20	PASS
			NV	30	16000	2.780191	20	PASS
			NV	40	16000	2.780191	20	PASS
			NV	50	16000	2.780191	20	PASS
			NV	0	16000	2.761001	20	PASS
		5180	NV	10	16000	2.761001	20	PASS
			NV	20	16000	2.761001	20	PASS
			NV	30	17000	2.933563	20	PASS
			NV	40	17000	2.933563	20	PASS
			NV	50	17000	2.933563	20	PASS
		5200	NV	0	15000	2.895753	20	PASS
			NV	10	15000	2.895753	20	PASS
			NV	20	15000	2.895753	20	PASS
			NV	30	15000	2.895753	20	PASS
			NV	40	15000	2.895753	20	PASS
			NV	50	15000	2.895753	20	PASS
		5240	NV	0	15000	2.884615	20	PASS
			NV	10	15000	2.884615	20	PASS
			NV	20	15000	2.884615	20	PASS
			NV	30	15000	2.884615	20	PASS
			NV	40	15000	2.884615	20	PASS
			NV	50	15000	2.884615	20	PASS
		5200	NV	0	15000	2.862595	20	PASS
			NV	10	15000	2.862595	20	PASS
			NV	20	15000	2.862595	20	PASS
			NV	30	15000	2.862595	20	PASS
			NV	40	15000	2.862595	20	PASS
			NV	50	15000	2.862595	20	PASS

			NV	10	15000	2.862595	20	PASS
			NV	20	15000	2.862595	20	PASS
			NV	30	15000	2.862595	20	PASS
			NV	40	15000	2.862595	20	PASS
			NV	50	15000	2.862595	20	PASS
		5745	NV	0	16000	2.78503	20	PASS
			NV	10	16000	2.78503	20	PASS
			NV	20	16000	2.78503	20	PASS
			NV	30	17000	2.959095	20	PASS
			NV	40	16000	2.78503	20	PASS
			NV	50	16000	2.78503	20	PASS
		5785	NV	0	16000	2.765774	20	PASS
			NV	10	16000	2.765774	20	PASS
			NV	20	16000	2.765774	20	PASS
			NV	30	17000	2.938634	20	PASS
			NV	40	16000	2.765774	20	PASS
			NV	50	16000	2.765774	20	PASS
		5825	NV	0	16000	2.746781	20	PASS
			NV	10	16000	2.746781	20	PASS
			NV	20	16000	2.746781	20	PASS
			NV	30	16000	2.746781	20	PASS
			NV	40	17000	2.918455	20	PASS
			NV	50	17000	2.918455	20	PASS
802.11ac VHT40	Ant1	5190	NV	0	14000	2.697495	20	PASS
			NV	10	14000	2.697495	20	PASS
			NV	20	14000	2.697495	20	PASS
			NV	30	14000	2.697495	20	PASS
			NV	40	14000	2.697495	20	PASS
			NV	50	14000	2.697495	20	PASS
		5230	NV	0	14000	2.676864	20	PASS
			NV	10	14000	2.676864	20	PASS
			NV	20	14000	2.676864	20	PASS
			NV	30	14000	2.676864	20	PASS
			NV	40	14000	2.676864	20	PASS
			NV	50	14000	2.676864	20	PASS
		5755	NV	0	15000	2.606429	20	PASS
			NV	10	15000	2.606429	20	PASS
			NV	20	15000	2.606429	20	PASS
			NV	30	15000	2.606429	20	PASS
			NV	40	15000	2.606429	20	PASS
			NV	50	15000	2.606429	20	PASS
		5795	NV	0	15000	2.588438	20	PASS

802.11ac VHT80	Ant1		NV	10	15000	2.588438	20	PASS
			NV	20	15000	2.588438	20	PASS
			NV	30	15000	2.588438	20	PASS
			NV	40	15000	2.588438	20	PASS
			NV	50	15000	2.588438	20	PASS
		5210	NV	0	13000	2.495202	20	PASS
			NV	10	13000	2.495202	20	PASS
			NV	20	13000	2.495202	20	PASS
			NV	30	13000	2.495202	20	PASS
			NV	40	13000	2.495202	20	PASS
			NV	50	13000	2.495202	20	PASS
		5775	NV	0	15000	2.597403	20	PASS
			NV	10	15000	2.597403	20	PASS
			NV	20	15000	2.597403	20	PASS
			NV	30	15000	2.597403	20	PASS
			NV	40	15000	2.597403	20	PASS
			NV	50	15000	2.597403	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: 0℃~50℃, Temperature-NT: 24℃.

----- The following blanks -----

APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM

Please refer to the attached document E202112276794-Test photo-15.6.

APPENDIX B. PHOTOGRAPH OF THE EUT

Please refer to the attached document E202112276794-EUT photo-15.6.

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