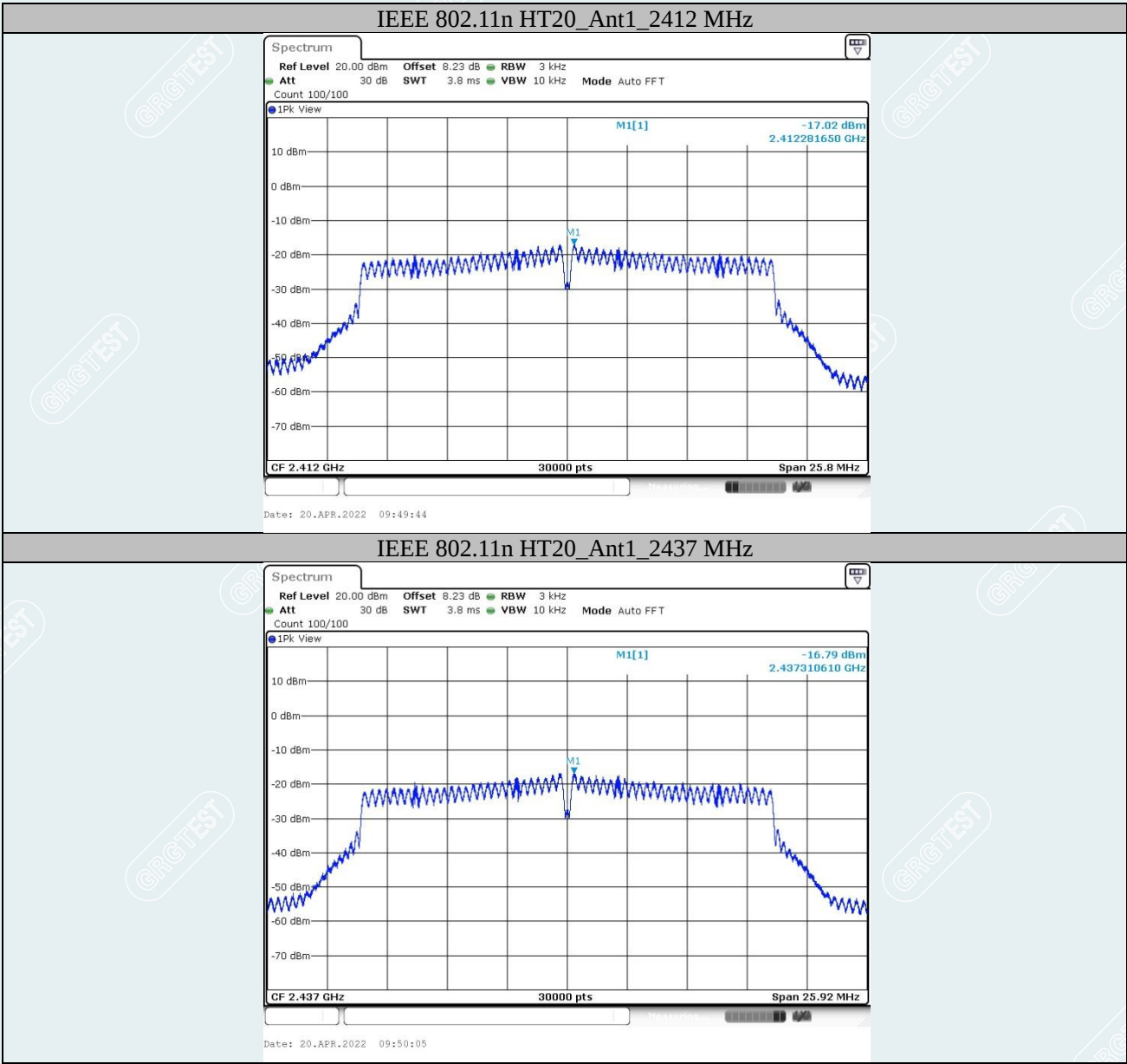
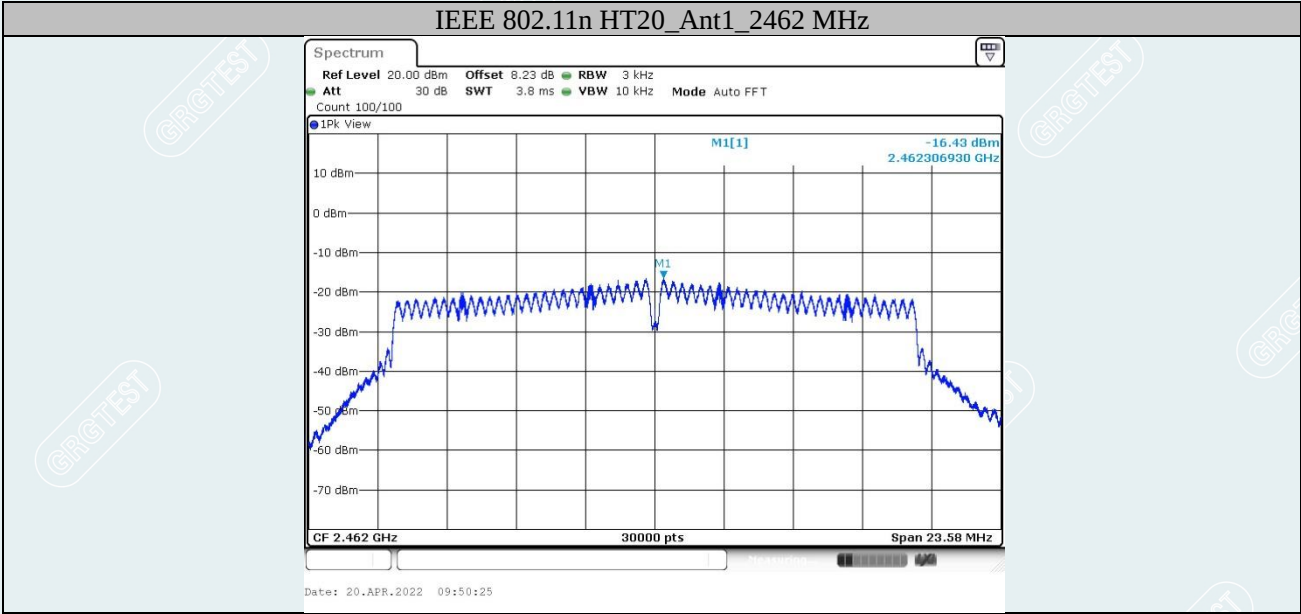






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10. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

10.1 LIMITS

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

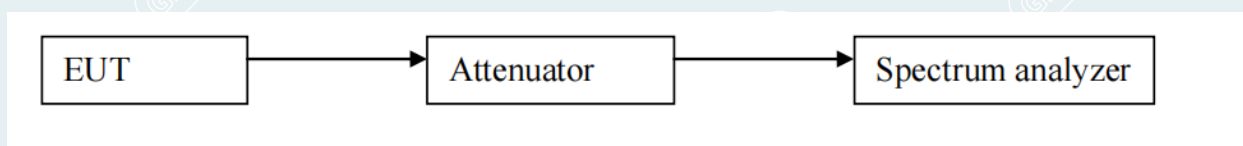
10.2 TEST PROCEDURES

Test procedures follow KDB 558074 D01 15.247 measurement guidance v05r02.

Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.

- 1) Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.
- 2) Set the spectrum analyzer: RBW =100kHz; VBW =300kHz, Frequency range = 30MHz to 26.5GHz; Sweep = auto; Detector Function = Peak; Trace = Max hold.
- 3) Measure and record the results in the test report.
- 4) The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

10.3 TEST SETUP



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

10.4 TEST RESULTS

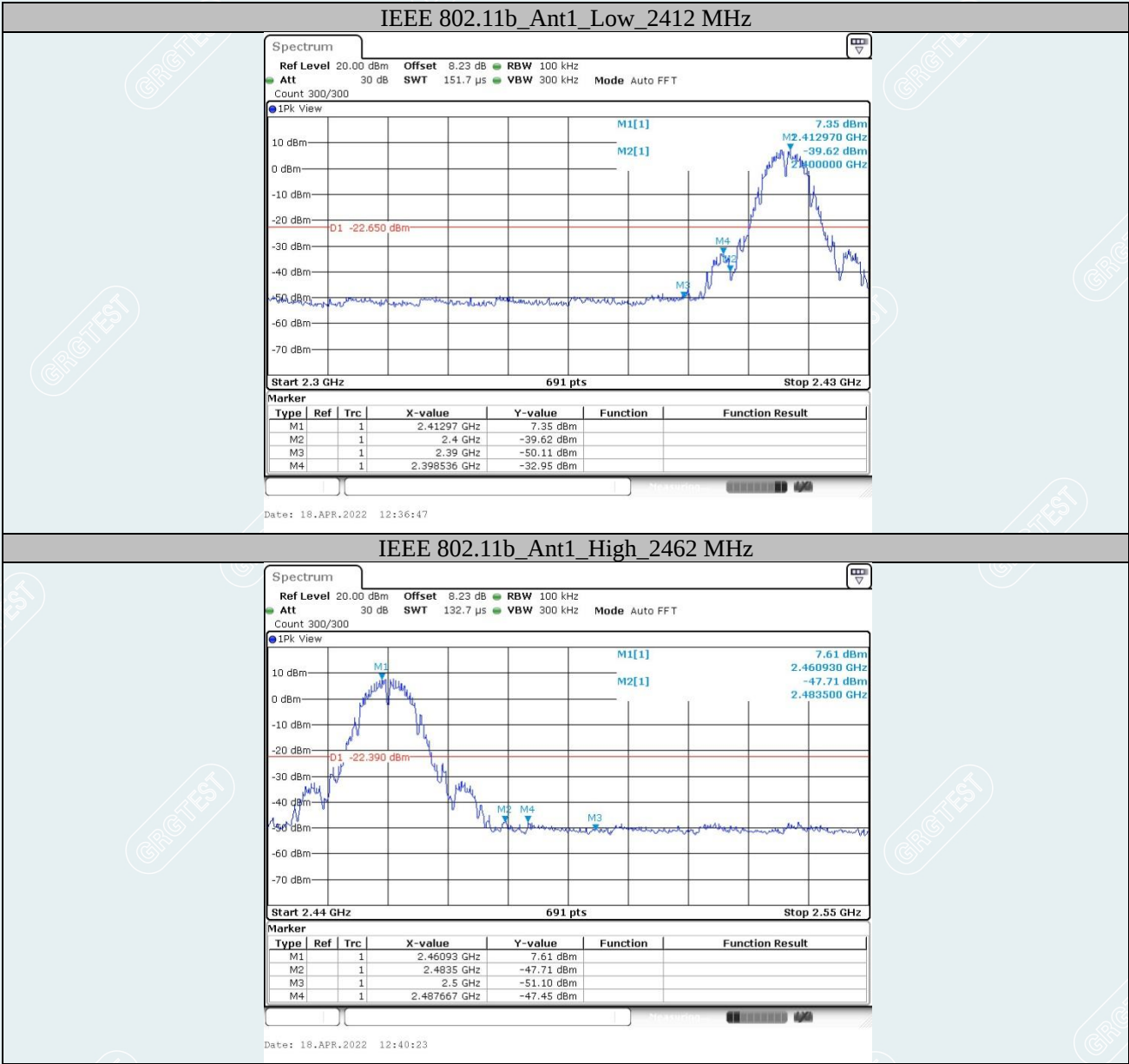
Environment: 22.6℃/48%RH
Tested By:Deng Weihao

Voltage:AC 120V/60Hz
Date: 2022-04-18

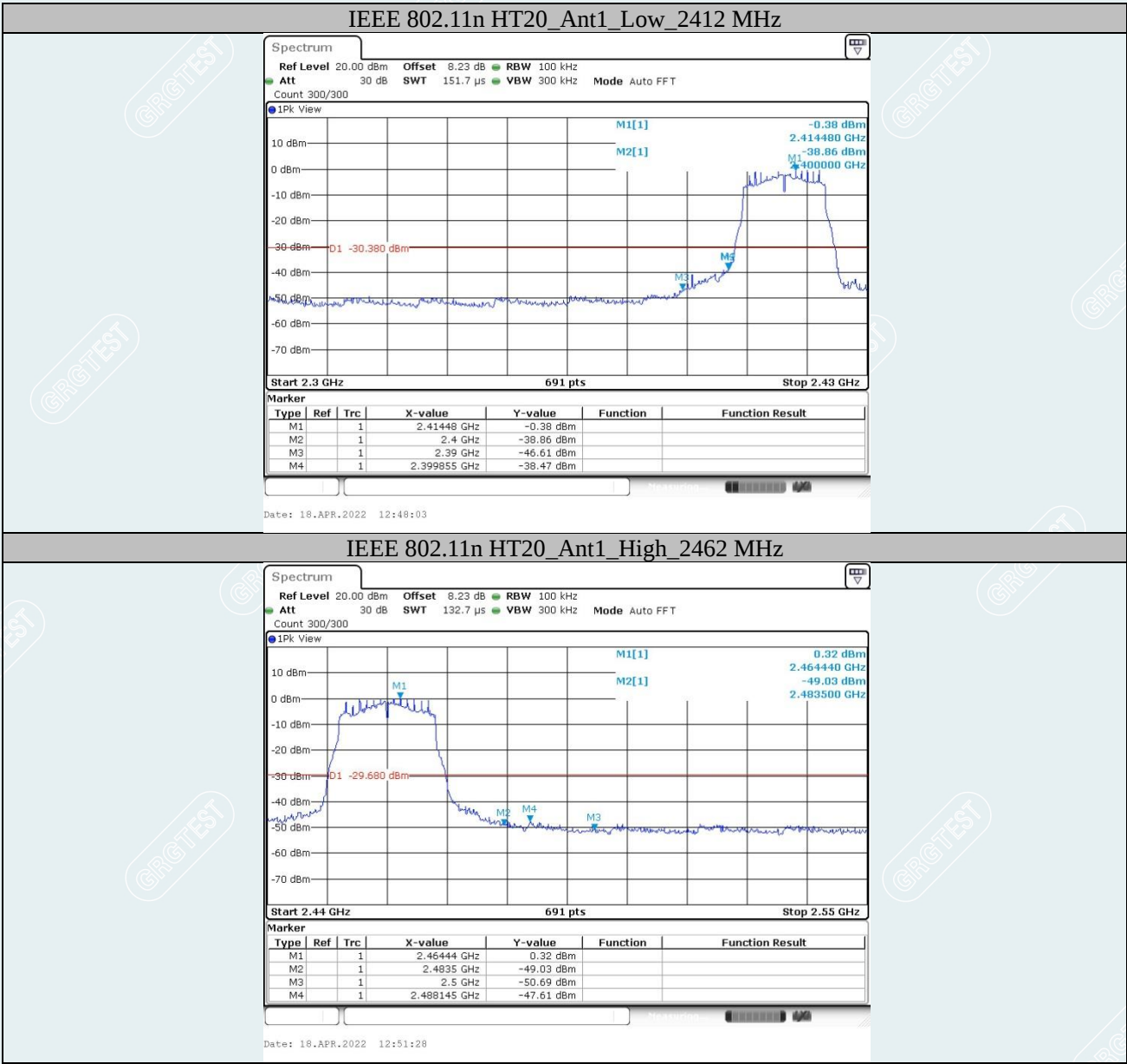
Band edge

TestMode	Antenna	Channel	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
IEEE 802.11b	Ant1	Low	2412	7.35	-32.95	≤-22.65	PASS
		High	2462	7.61	-47.45	≤-22.39	PASS
IEEE 802.11g	Ant1	Low	2412	-1.65	-36.82	≤-31.65	PASS
		High	2462	-0.35	-47.80	≤-30.35	PASS
IEEE 802.11n HT20	Ant1	Low	2412	-0.38	-38.47	≤-30.38	PASS
		High	2462	0.32	-47.61	≤-29.68	PASS

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

Conducted Spurious Emission:

Test Result

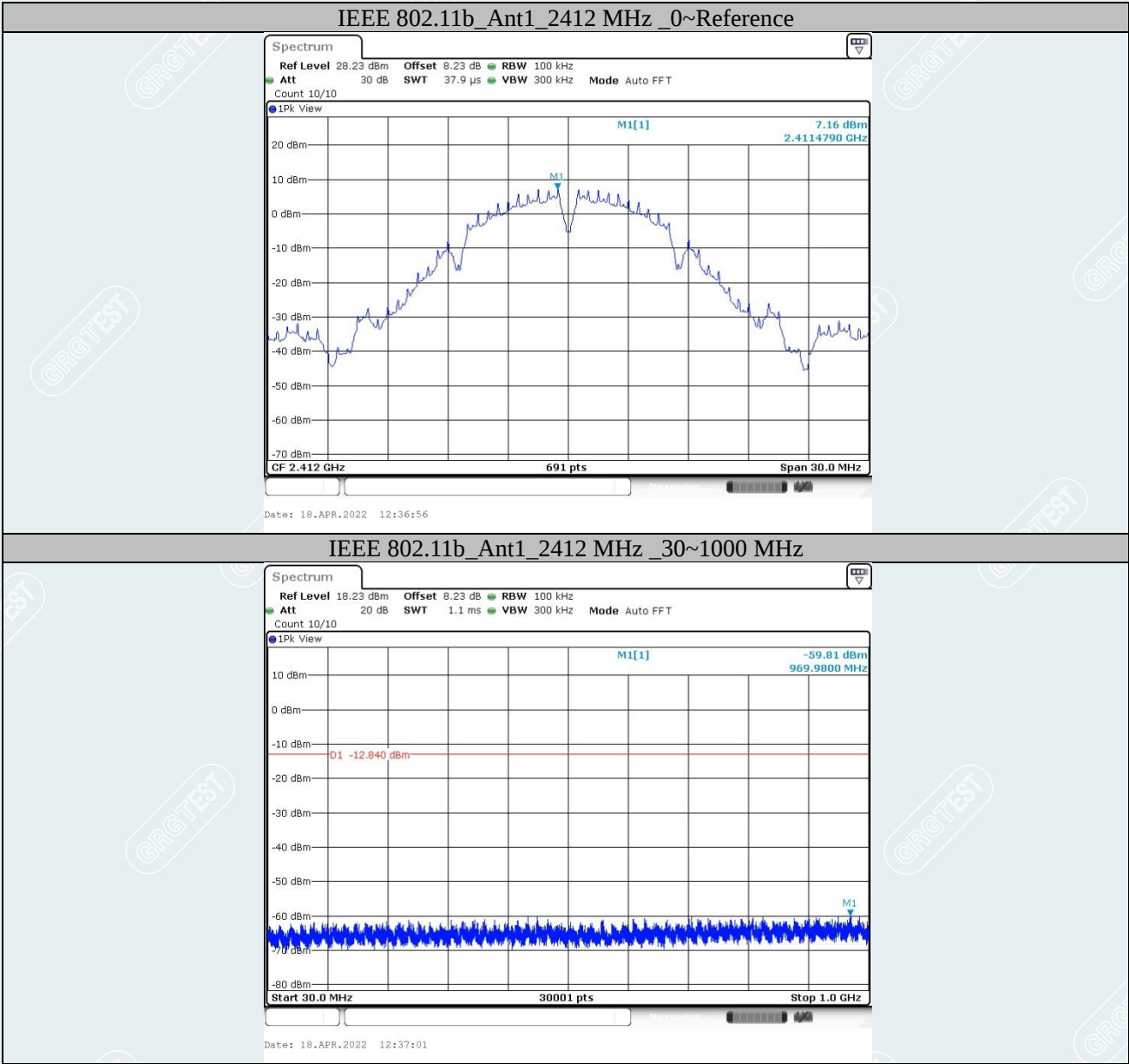
Environment: 22.6°C/48%RH

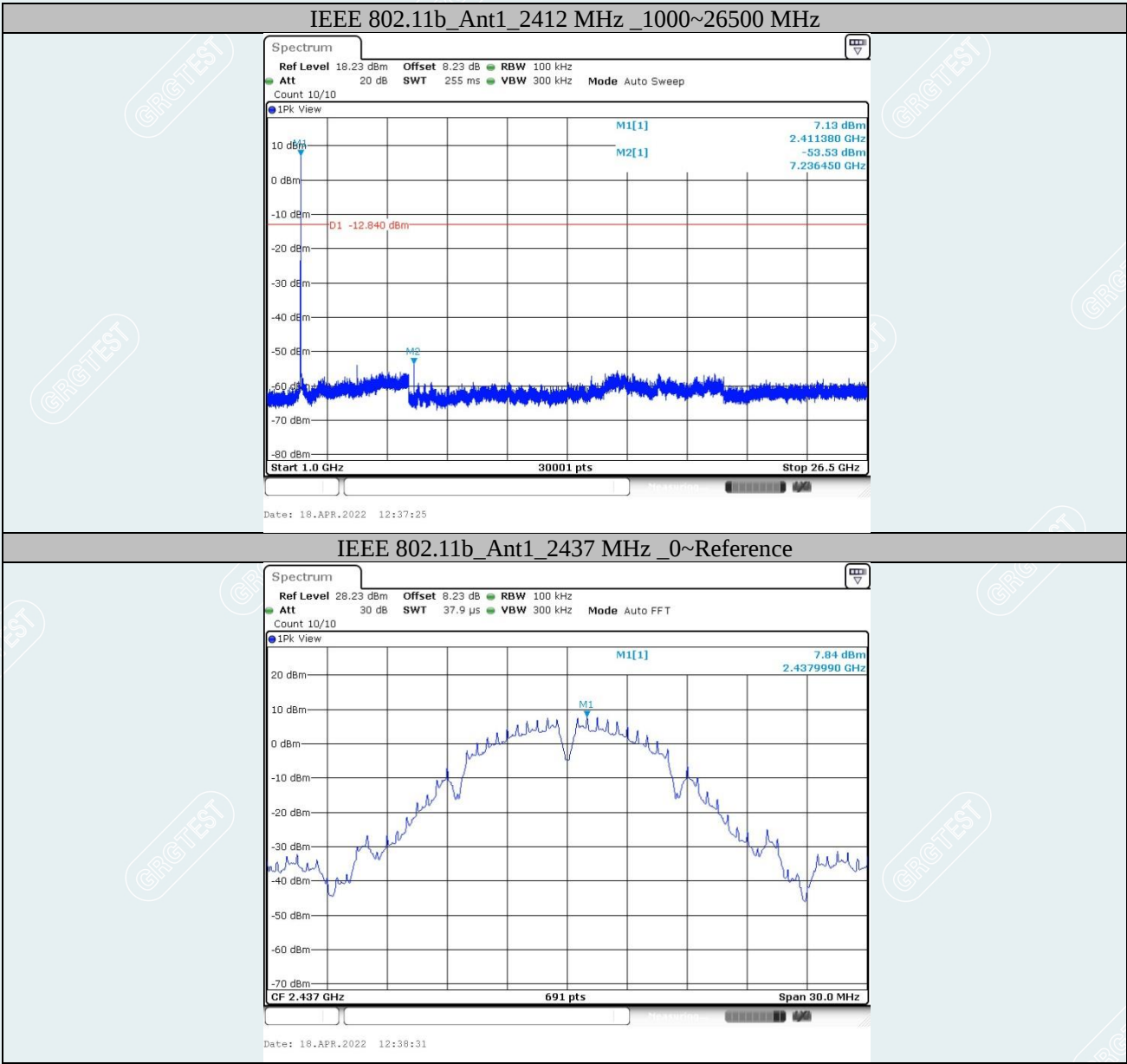
Tested By:Deng Weihao

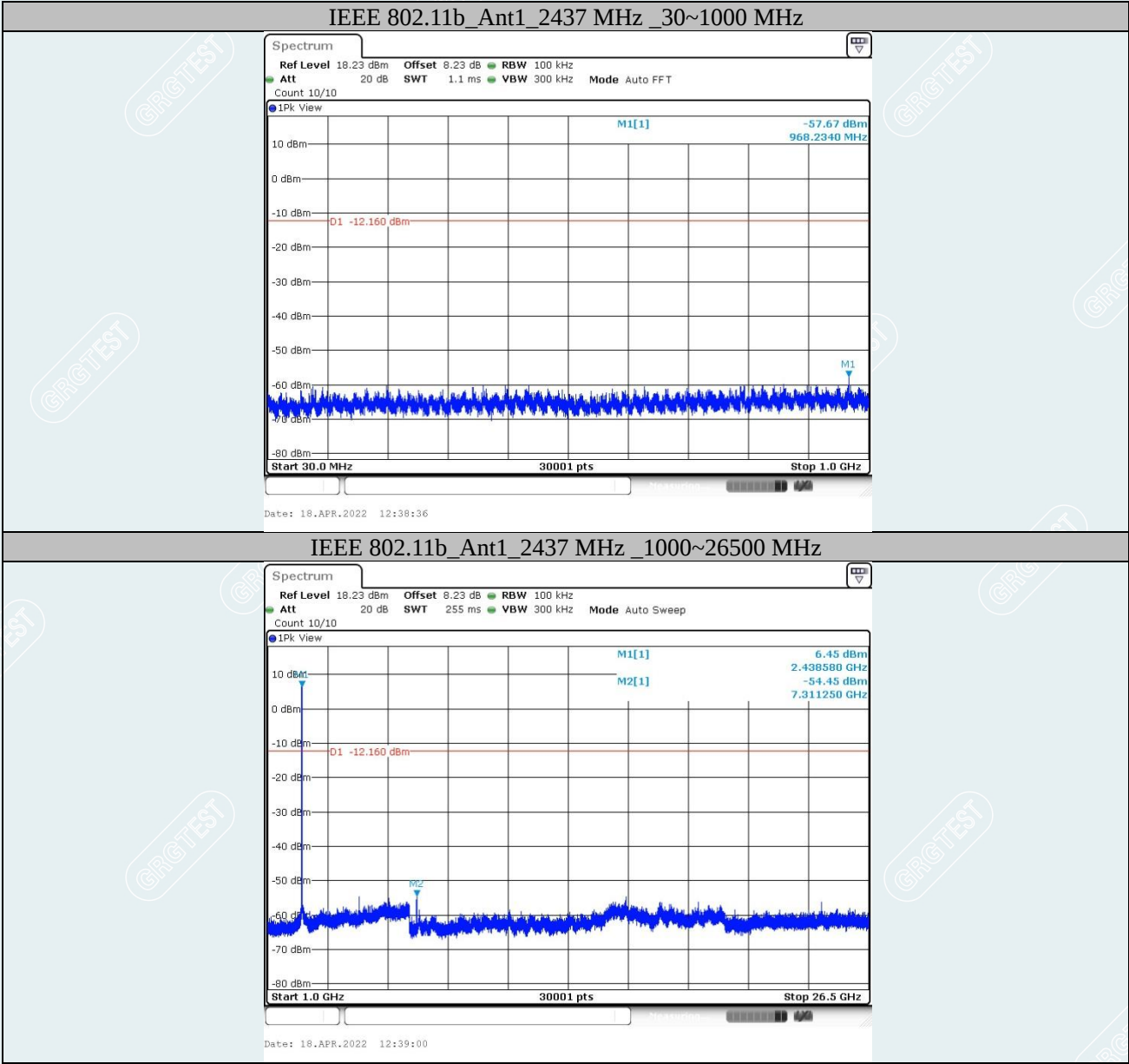
Voltage:AC 120V/60Hz

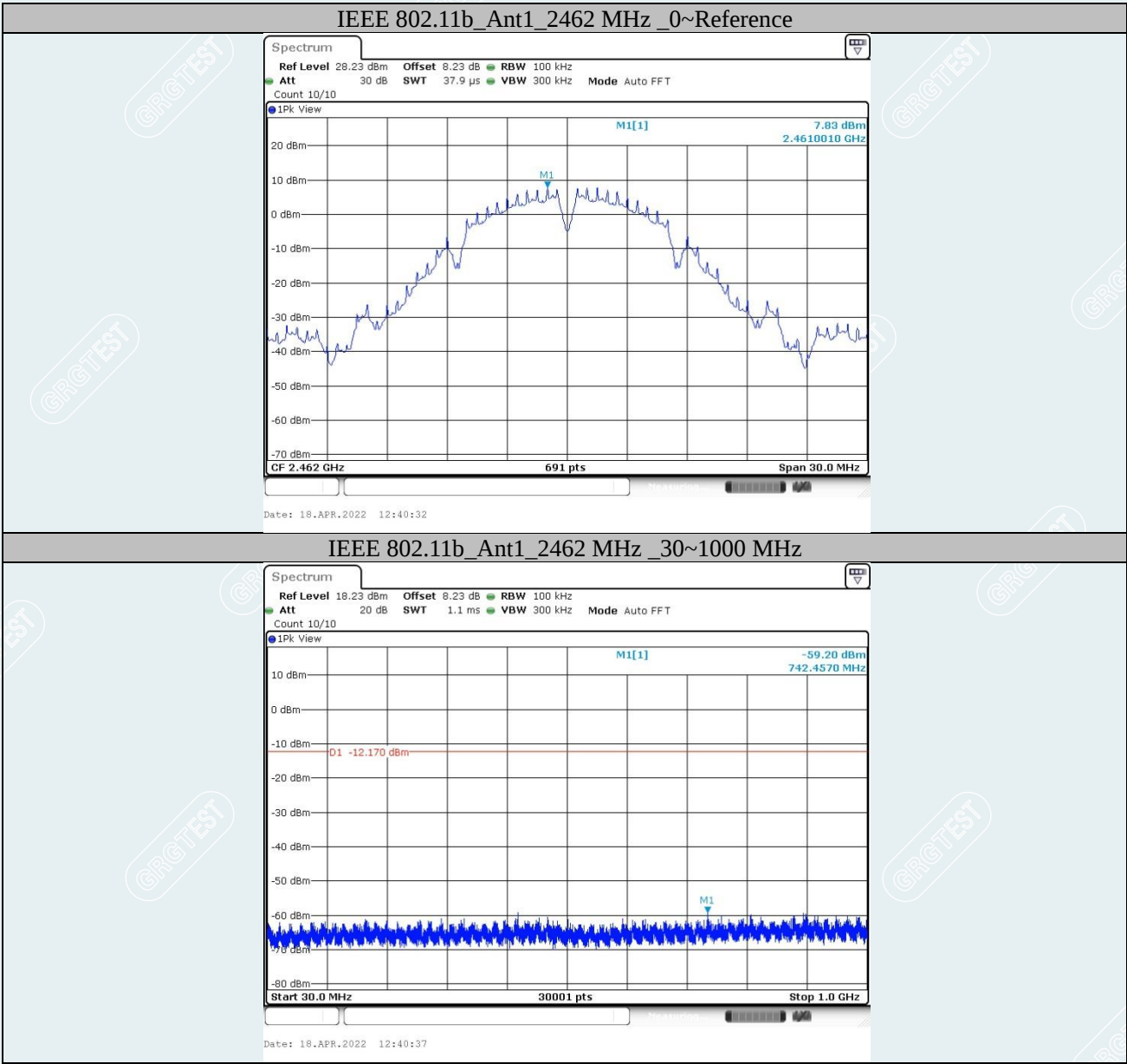
Date: 2022-04-18

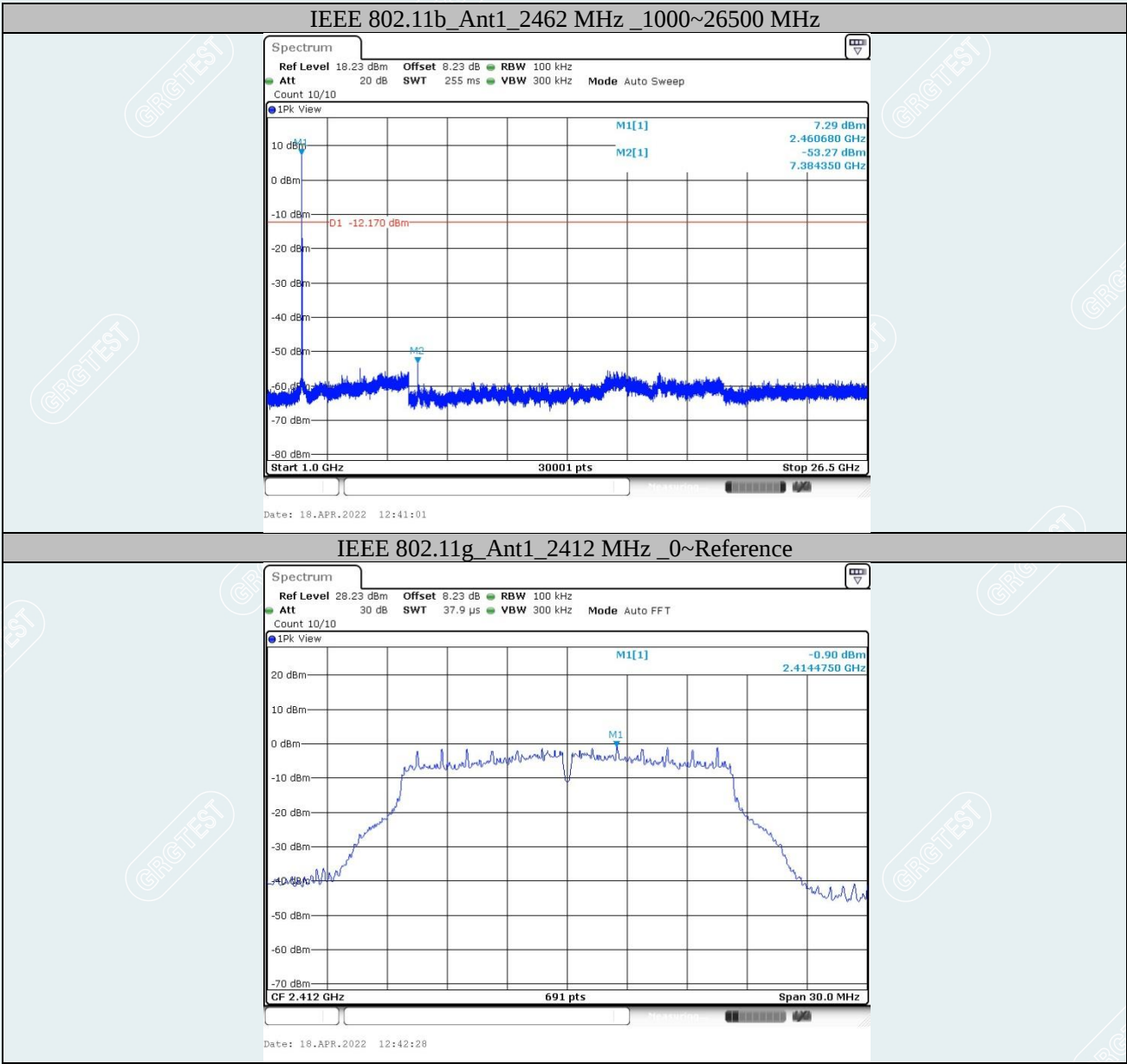
Test Mode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
IEEE 802.11b	Ant1	2412	Reference	7.16	7.16	---	PASS
			30~1000	7.16	-59.81	≤-12.84	PASS
			1000~26500	7.16	-53.53	≤-12.84	PASS
		2437	Reference	7.84	7.84	---	PASS
			30~1000	7.84	-57.67	≤-12.16	PASS
			1000~26500	7.84	-54.45	≤-12.16	PASS
		2462	Reference	7.83	7.83	---	PASS
			30~1000	7.83	-59.20	≤-12.17	PASS
			1000~26500	7.83	-53.27	≤-12.17	PASS
IEEE 802.11g	Ant1	2412	Reference	-0.90	-0.90	---	PASS
			30~1000	-0.90	-59.72	≤-20.90	PASS
			1000~26500	-0.90	-55.15	≤-20.90	PASS
		2437	Reference	-0.50	-0.50	---	PASS
			30~1000	-0.50	-59.42	≤-20.50	PASS
			1000~26500	-0.50	-54.82	≤-20.50	PASS
		2462	Reference	-0.27	-0.27	---	PASS
			30~1000	-0.27	-60.04	≤-20.27	PASS
			1000~26500	-0.27	-55.23	≤-20.27	PASS
IEEE 802.11n HT20	Ant1	2412	Reference	-0.19	-0.19	---	PASS
			30~1000	-0.19	-59.31	≤-20.19	PASS
			1000~26500	-0.19	-54.59	≤-20.19	PASS
		2437	Reference	0.06	0.06	---	PASS
			30~1000	0.06	-59.49	≤-19.94	PASS
			1000~26500	0.06	-55.36	≤-19.94	PASS
		2462	Reference	0.38	0.38	---	PASS
			30~1000	0.38	-59.30	≤-19.62	PASS
			1000~26500	0.38	-55.11	≤-19.62	PASS

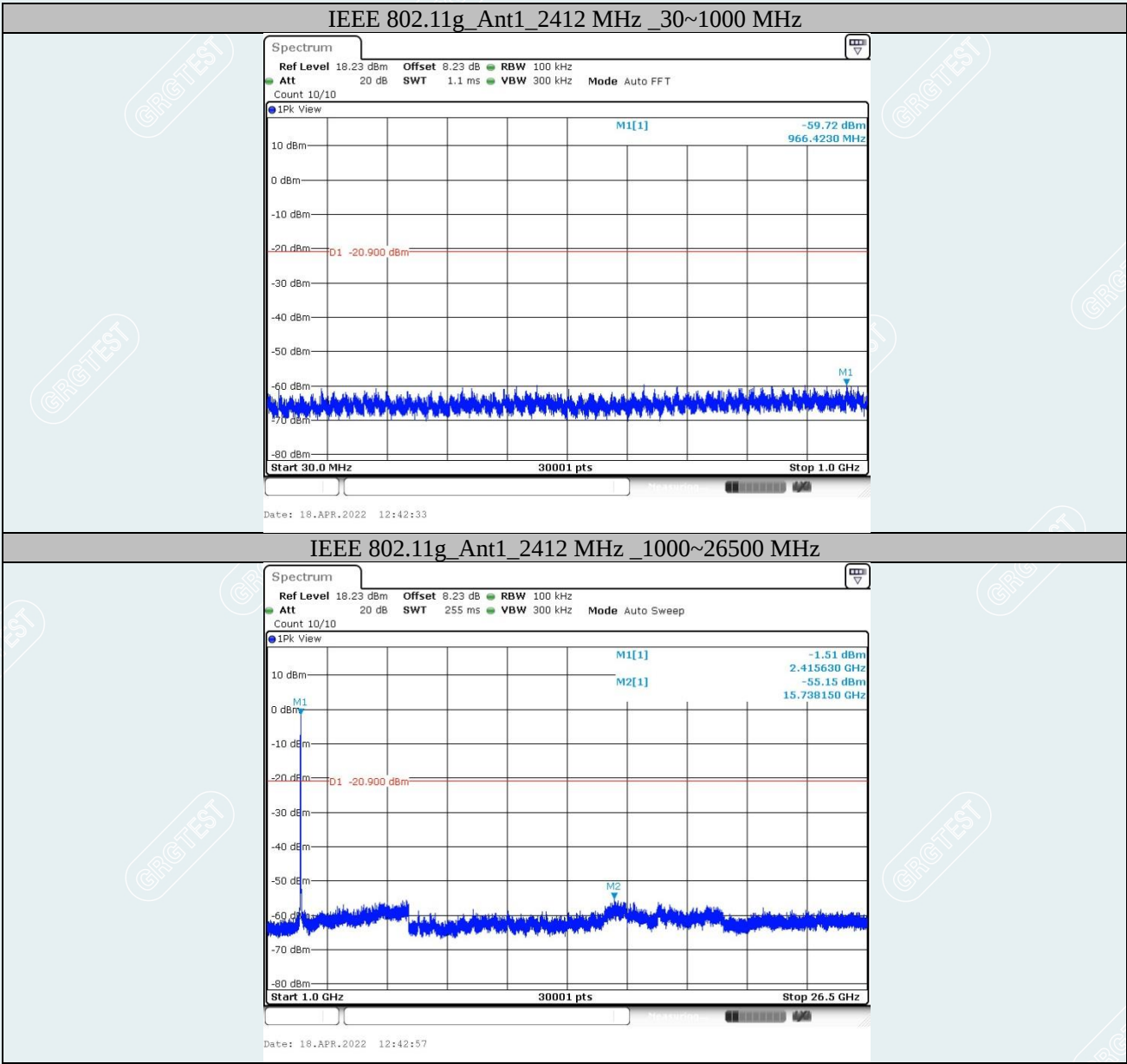


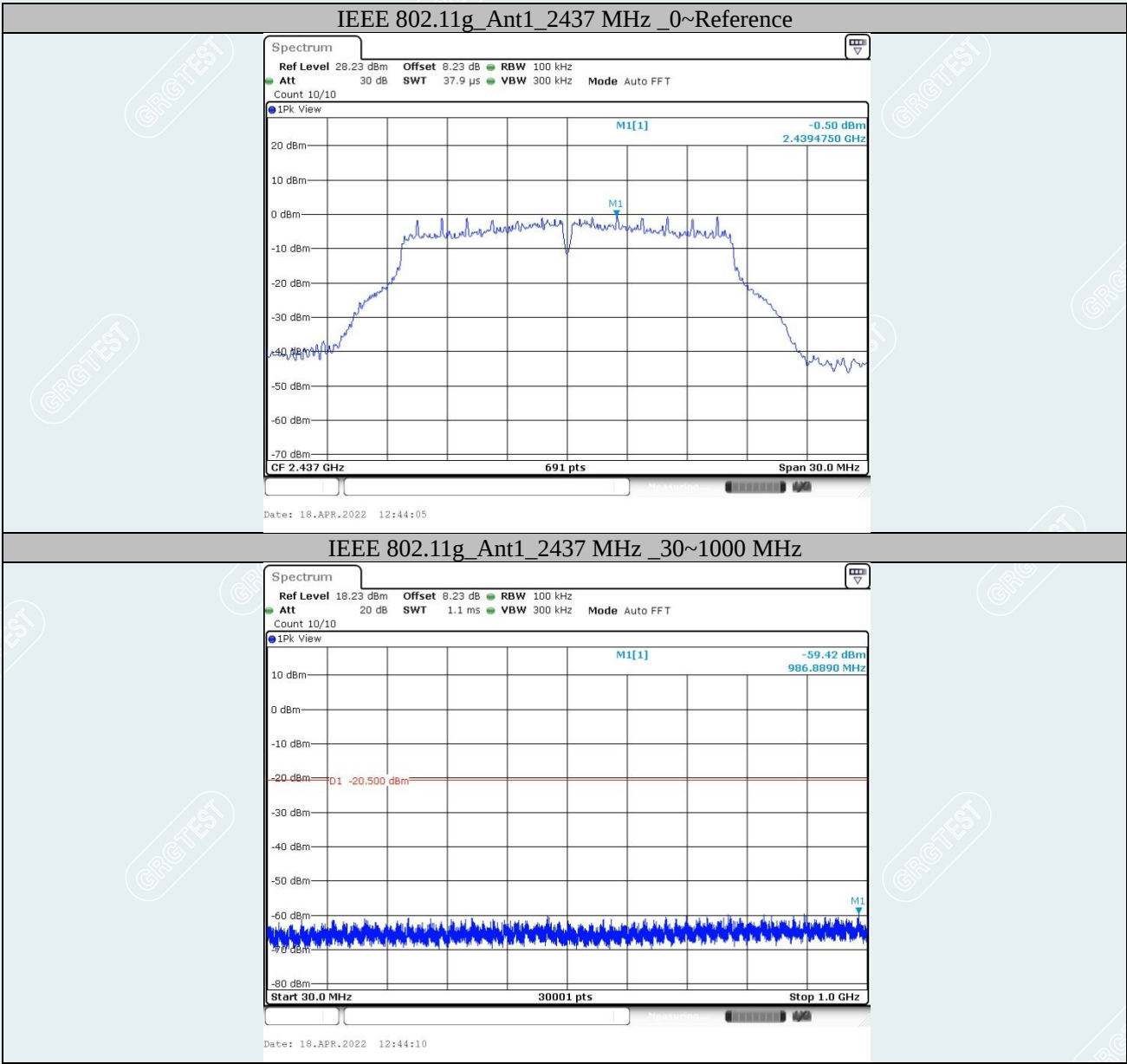


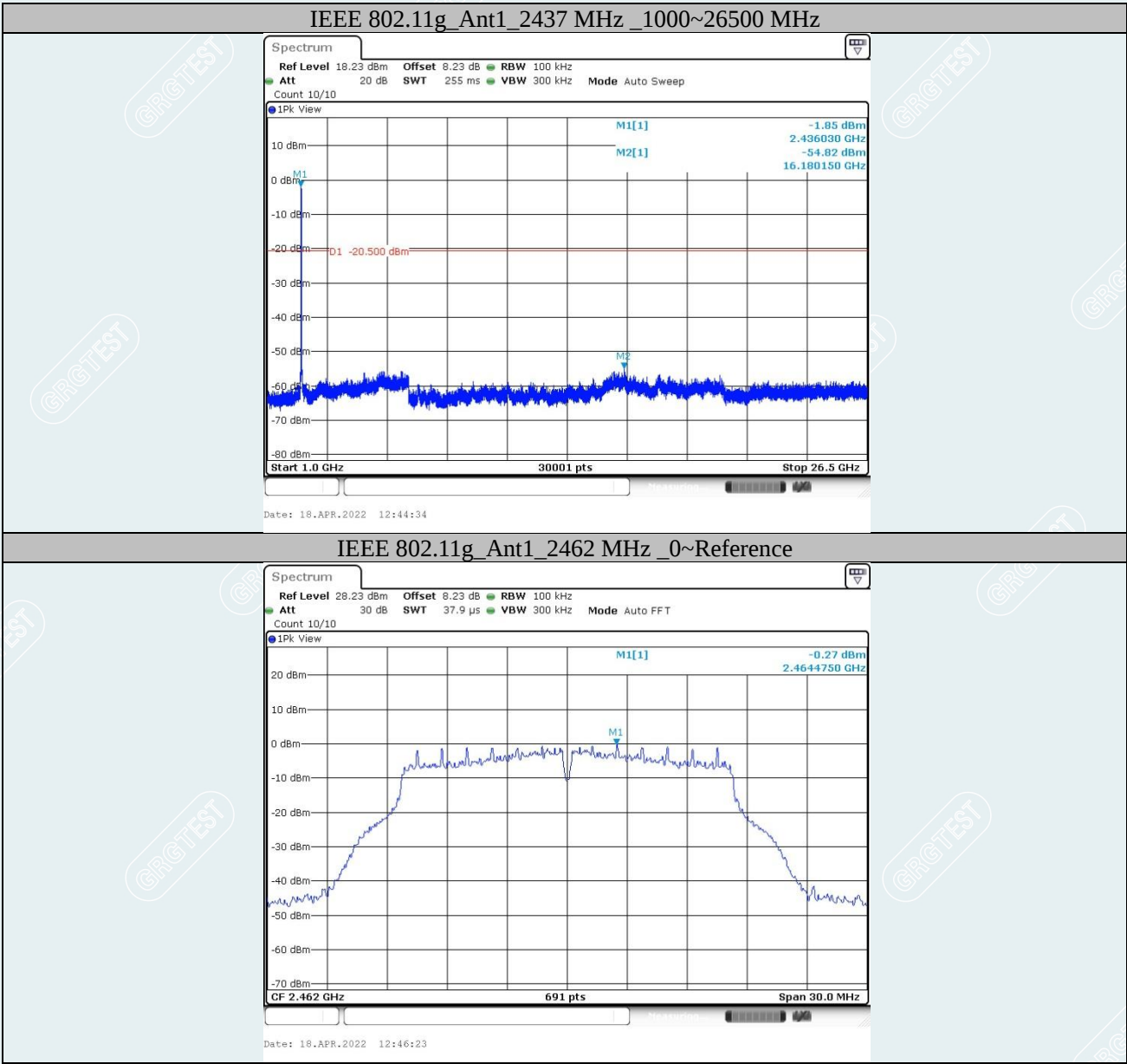


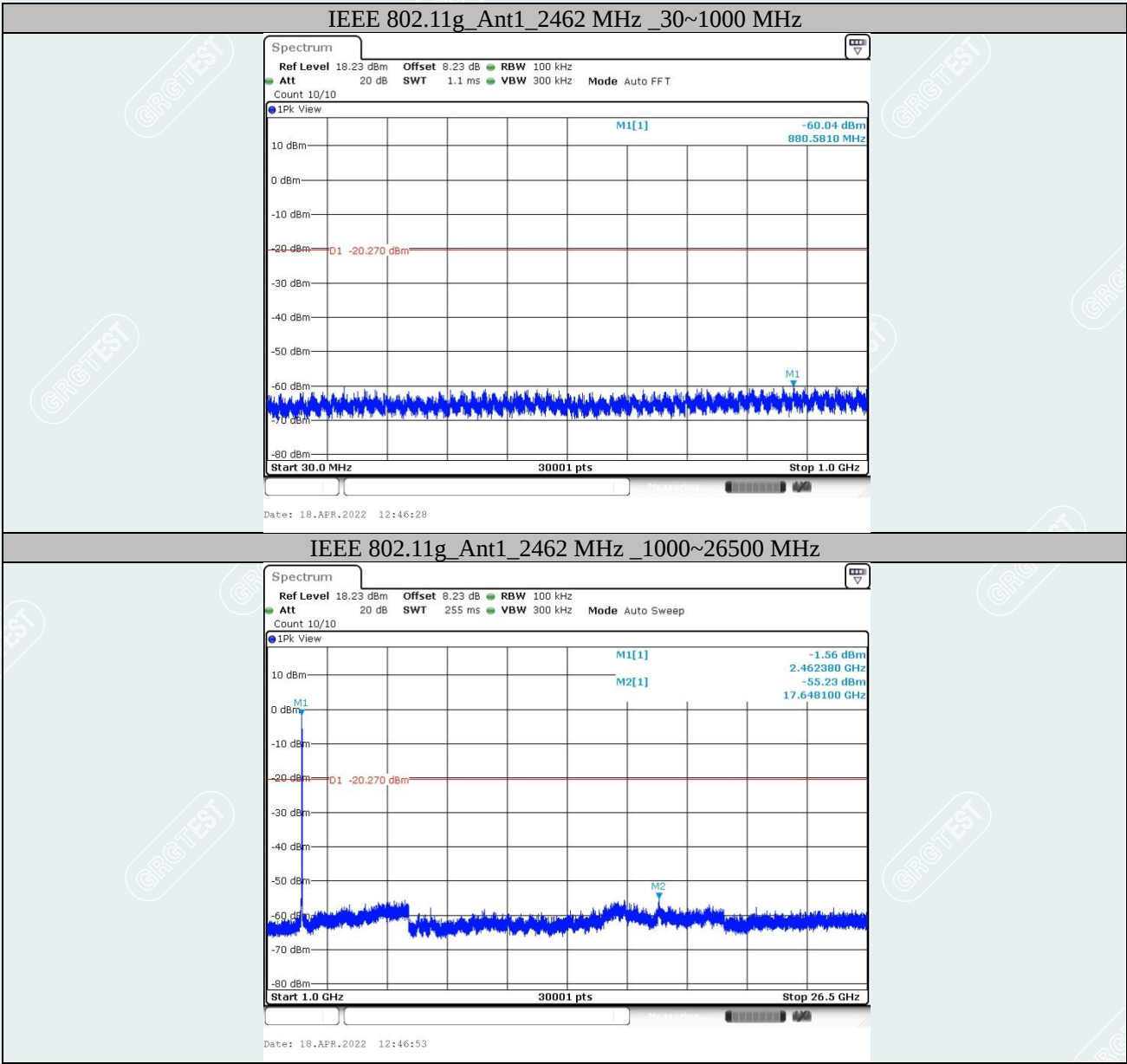


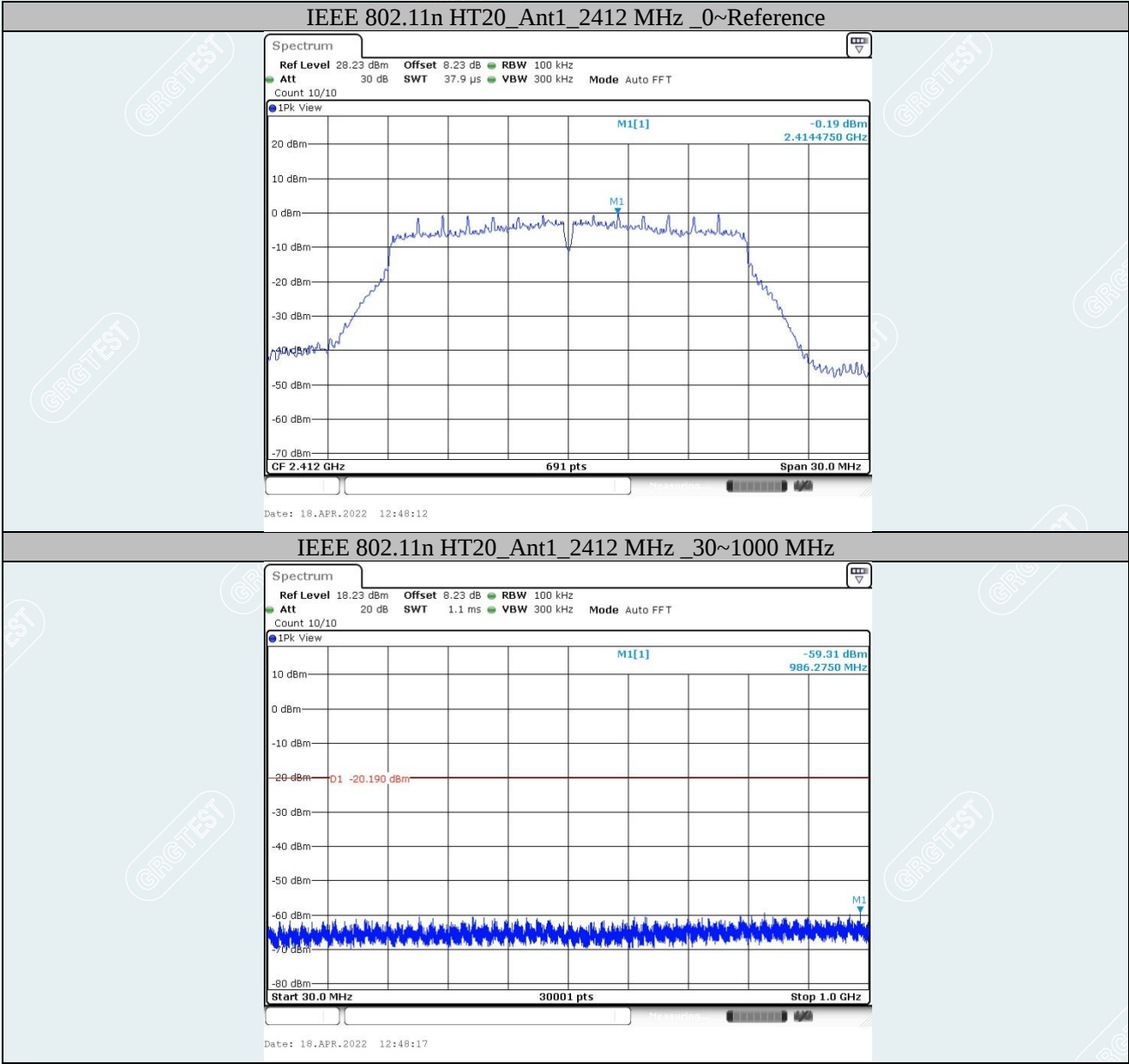


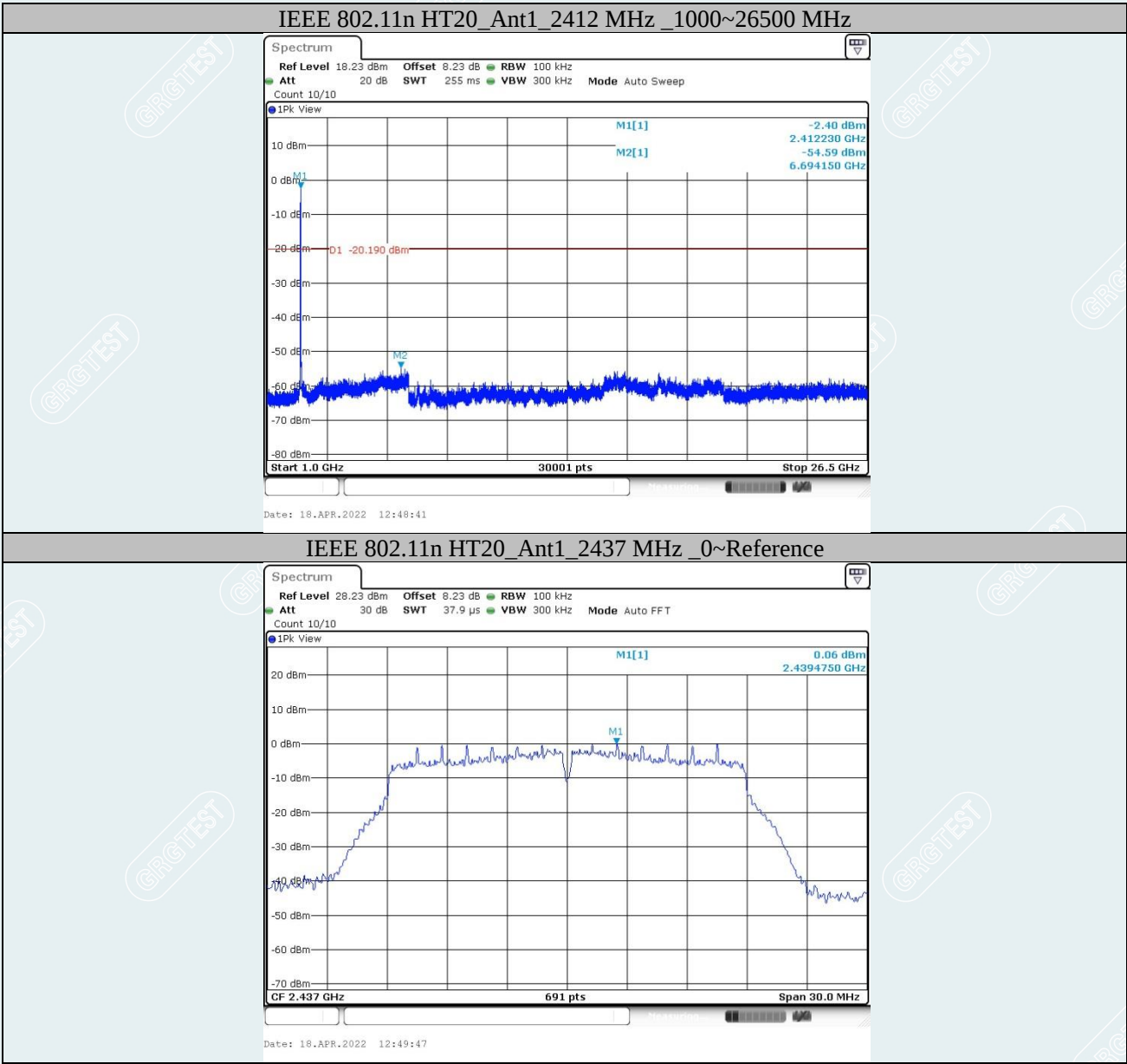


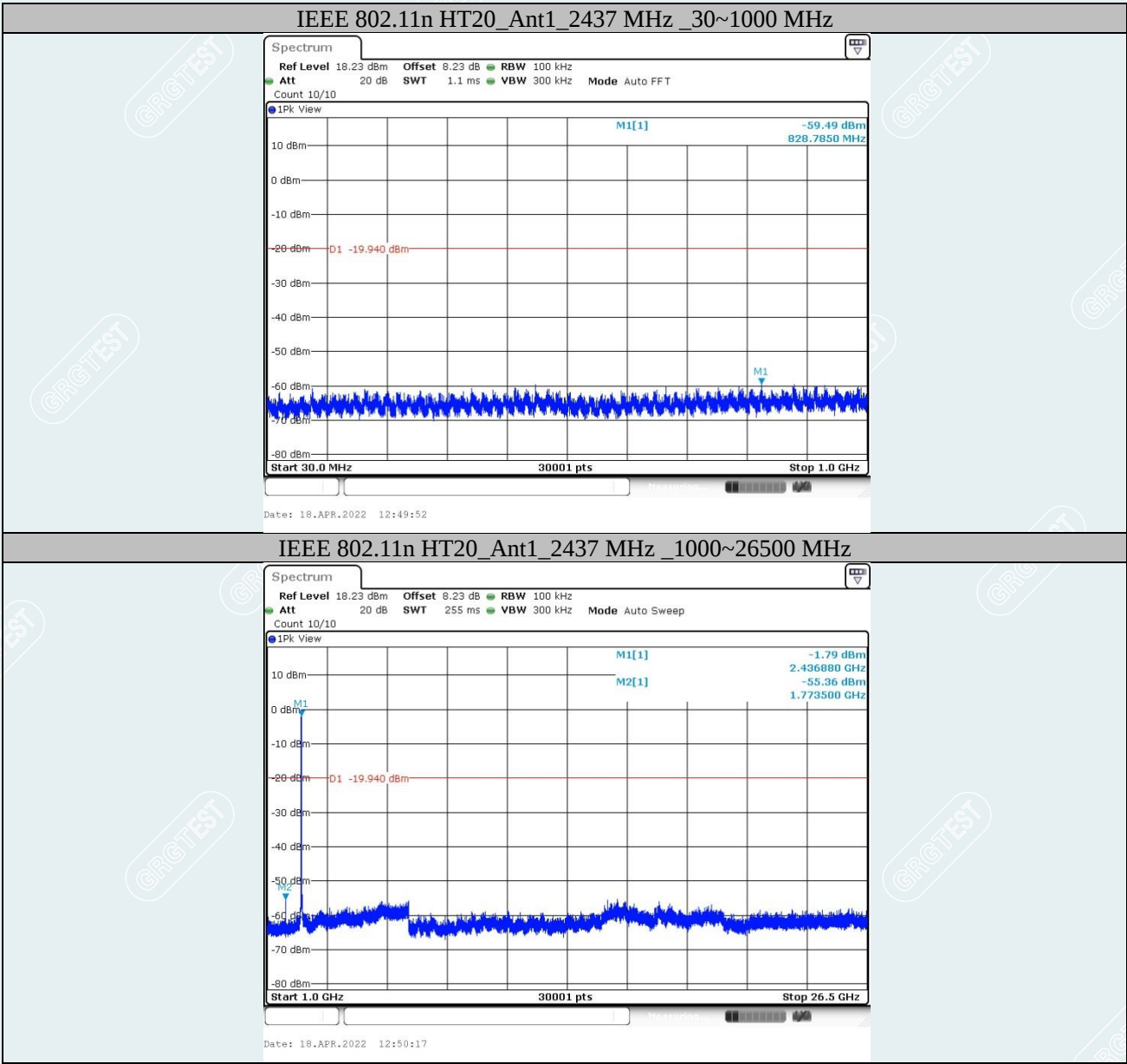


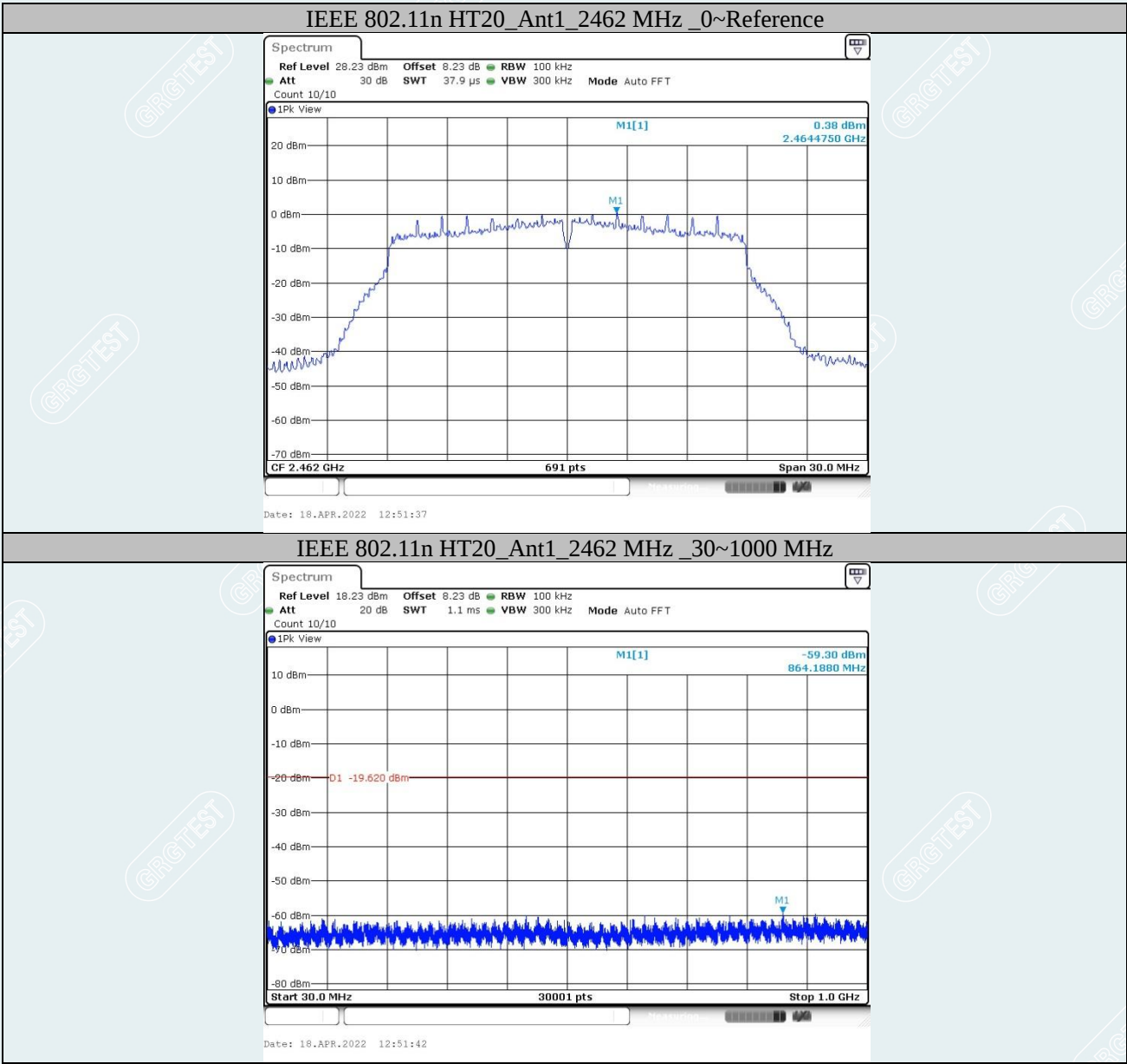


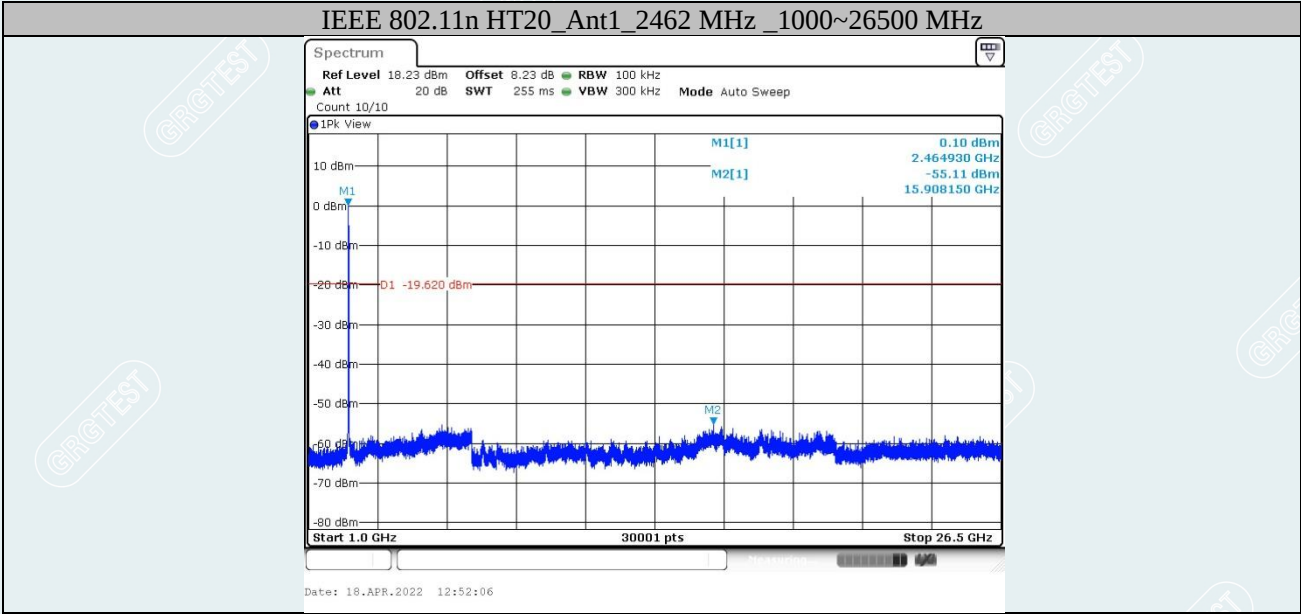












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11. RESTRICTED BANDS OF OPERATION

11.1 LIMITS

Section 15.247(d) In addition, Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 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	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	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	2655 - 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	
13.36 - 13.41			

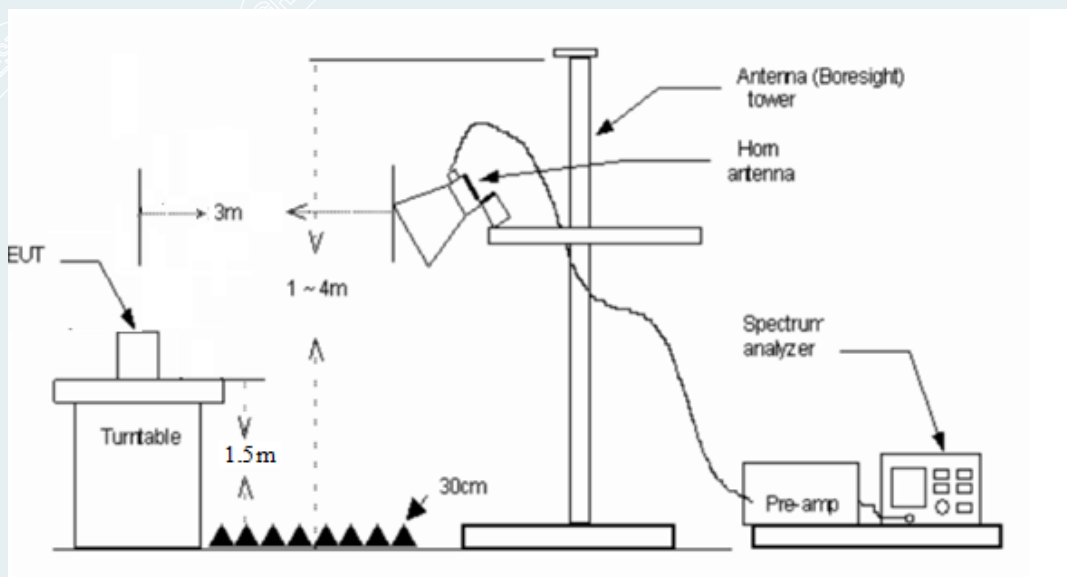
Frequency (MHz)	Quasi-peak(μ V/m)	Measurement distance(m)	Quasi-peak(dB μ V/m)@distance 3m
0.009-0.490	2400/F(kHz)	300	128.5~93.8
0.490-1.705	24000/F(kHz)	30	73.8~63
1.705-30.0	30	30	69.5
30~88	100	3	40
88~216	150	3	43.5
216~960	200	3	46
Above 960	500	3	54

11.2 TEST PROCEDURES

Test procedures follow KDB 558074 D01 15.247 measurement guidance v05r02.

- 1) The EUT is placed on a turntable, which is 1.5m above the ground plane.
- 2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4) Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - a) The frequency above 1GHz, for Peak detector: Set RBW=1MHz, RBW=3MHz.
 - b) The frequency above 1GHz, for Avg detector: Set RBW=1MHz, if the EUT is configured to transmit with duty cycle $\geq 98\%$, set $VBW \leq RBW/100$ (i.e., 10kHz) but not less than 10 Hz, Where duty cycle is defined in section 2.9. If the EUT duty cycle is $< 98\%$, set $VBW \geq 1/T$, Where T is defined in section 2.9.
- 5) Repeat the procedures until all the PEAK and AVERAGE versus polarization are measured.

11.3 TEST SETUP



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

11.4 TEST RESULTS

IEEE 802.11b mode

Lowest Channel

Frequency 2412MHz

Environment: 25°C/60%RH

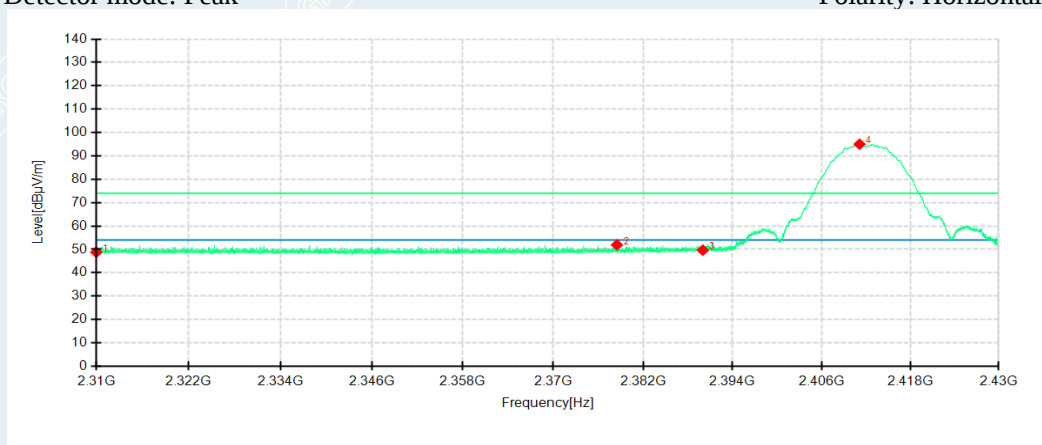
Tested By: Chen Xiacong

Detector mode: Peak

Voltage: AC 120V/60Hz

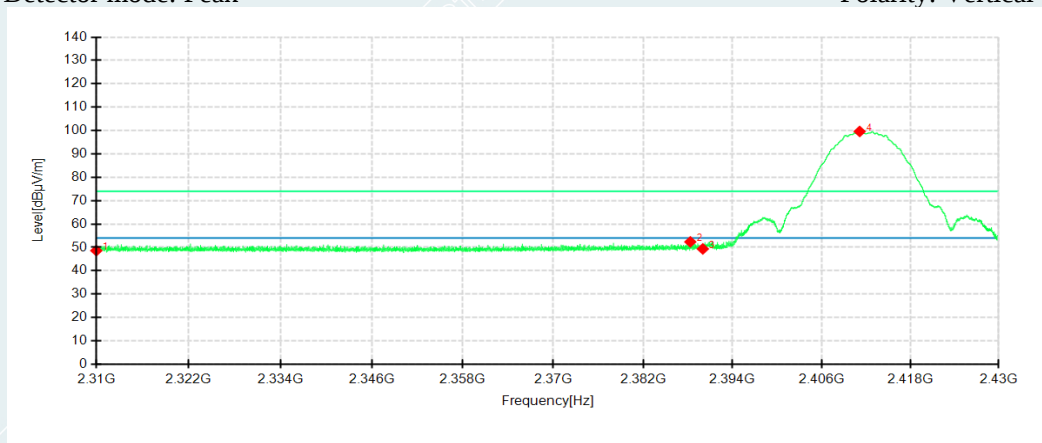
Date: 2022-01-13

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2310.0000	45.29	48.77	3.48	74.00	25.23	200	184	Horizontal	/
2	2378.5080	48.30	51.91	3.61	74.00	22.09	200	33	Horizontal	/
3	2390.0000	45.83	49.64	3.81	74.00	24.36	200	218	Horizontal	/
4	2411.1240	90.97	95.01	4.04	74.00	-21.01	100	251	Horizontal	No limit
1	2310.0000	45.12	48.60	3.48	74.00	25.40	200	300	Vertical	/
2	2388.3240	48.58	52.36	3.78	74.00	21.64	200	142	Vertical	/
3	2390.0000	45.53	49.34	3.81	74.00	24.66	100	218	Vertical	/
4	2411.1360	95.57	99.61	4.04	74.00	-25.61	200	272	Vertical	No limit

IEEE 802.11b mode**Lowest Channel**

Frequency 2412MHz

Environment: 25°C/60%RH

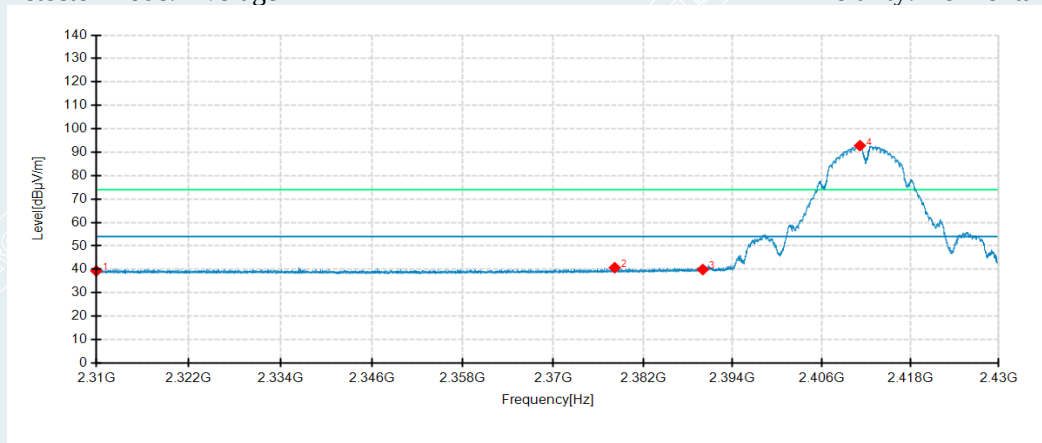
Tested By: Chen Xiaocong

Detector mode: Average

Voltage: AC 120V/60Hz

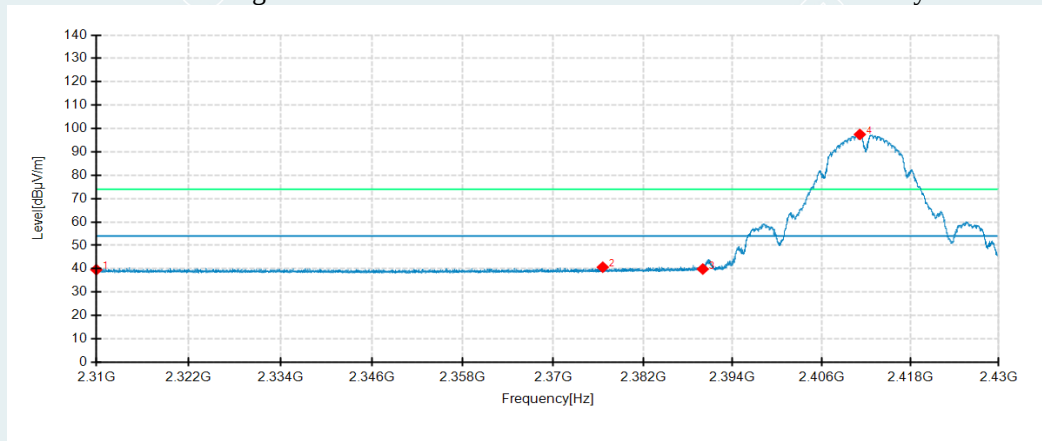
Date: 2022-01-13

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2310.0000	35.83	39.31	3.48	54.00	14.69	100	328	Horizontal	/
2	2378.2080	37.09	40.70	3.61	54.00	13.30	100	163	Horizontal	/
3	2390.0000	36.09	39.90	3.81	54.00	14.10	100	142	Horizontal	/
4	2411.1720	88.77	92.81	4.04	54.00	-38.81	100	252	Horizontal	No limit
1	2310.0000	36.12	39.60	3.48	54.00	14.40	200	190	Vertical	/
2	2376.6120	37.08	40.66	3.58	54.00	13.34	200	156	Vertical	/
3	2390.0000	36.06	39.87	3.81	54.00	14.13	200	266	Vertical	/
4	2411.1600	93.44	97.48	4.04	54.00	-43.48	200	272	Vertical	No limit

IEEE 802.11b mode**Highest Channel**

Frequency 2462MHz

Environment: 25°C/60%RH

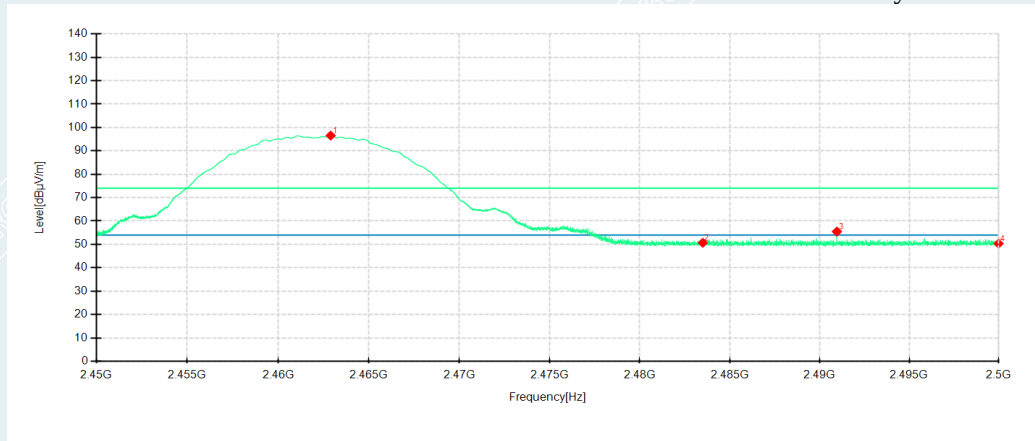
Tested By: Chen Xiacong

Detector mode: Peak

Voltage: AC 120V/60Hz

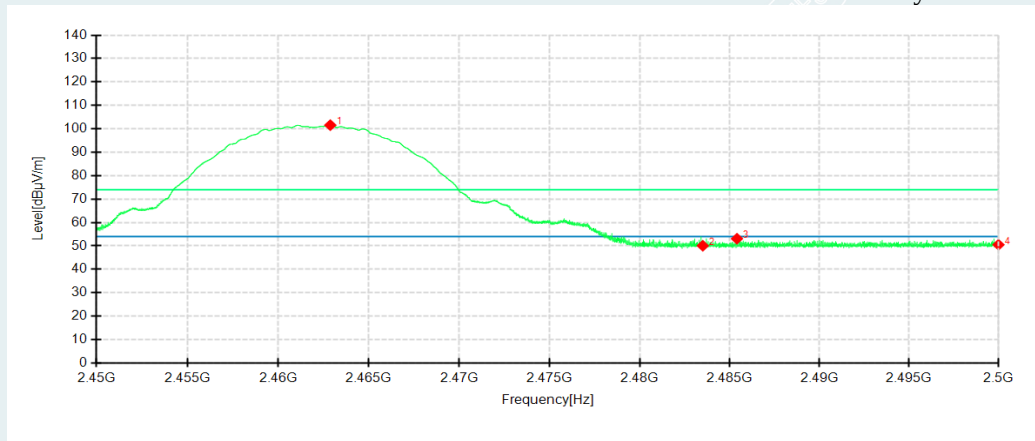
Date: 2022-01-13

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2462.8950	92.26	96.53	4.27	74.00	-22.53	100	245	Horizontal	No limit
2	2483.5000	46.34	50.67	4.33	74.00	23.33	100	142	Horizontal	/
3	2490.9650	51.11	55.46	4.35	74.00	18.54	200	218	Horizontal	/
4	2500.0000	45.95	50.33	4.38	74.00	23.67	200	218	Horizontal	/
1	2462.8700	97.29	101.56	4.27	74.00	-27.56	200	272	Vertical	No limit
2	2483.5000	45.74	50.07	4.33	74.00	23.93	200	142	Vertical	/
3	2485.4000	48.73	53.07	4.34	74.00	20.93	200	321	Vertical	/
4	2500.0000	46.12	50.50	4.38	74.00	23.50	200	142	Vertical	/

IEEE 802.11b mode**Highest Channel**

Frequency 2462MHz

Environment: 25°C/60%RH

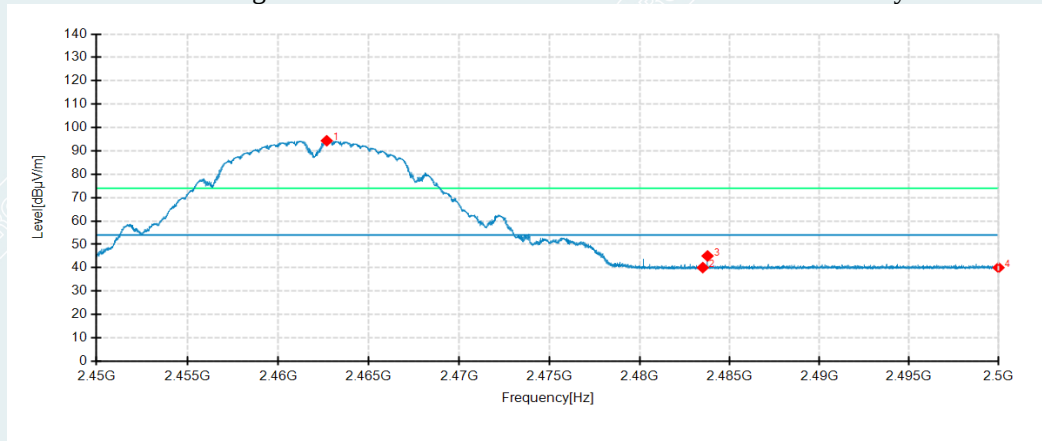
Tested By: Chen Xiacong

Detector mode: Average

Voltage: AC 120V/60Hz

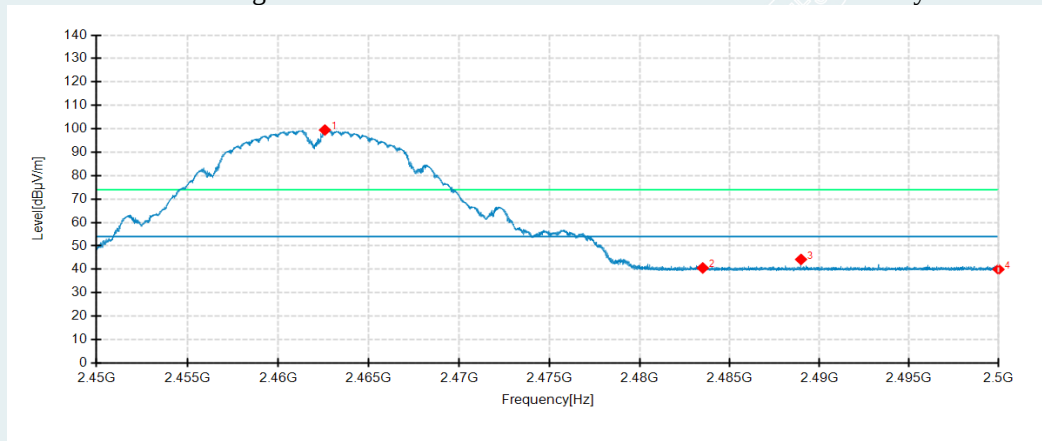
Date: 2022-01-13

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2462.6750	90.08	94.35	4.27	54.00	-40.35	100	251	Horizontal	No limit
2	2483.5000	35.72	40.05	4.33	54.00	13.95	100	142	Horizontal	/
3	2483.7650	40.70	45.03	4.33	54.00	8.97	100	149	Horizontal	/
4	2500.0000	35.66	40.04	4.38	54.00	13.96	100	244	Horizontal	/
1	2462.5750	95.21	99.48	4.27	54.00	-45.48	200	272	Vertical	No limit
2	2483.5000	36.25	40.58	4.33	54.00	13.42	200	300	Vertical	/
3	2488.9700	39.87	44.22	4.35	54.00	9.78	100	218	Vertical	/
4	2500.0000	35.60	39.98	4.38	54.00	14.02	200	341	Vertical	/

IEEE 802.11g mode**Lowest Channel**

Frequency 2412MHz

Environment: 25°C/60%RH

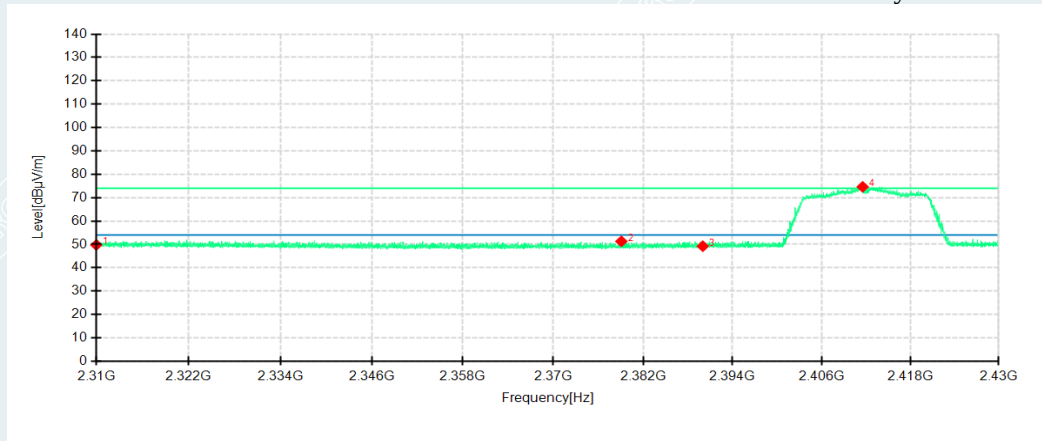
Tested By: Lu Qiang

Detector mode: Peak

Voltage: AC 120V/60Hz

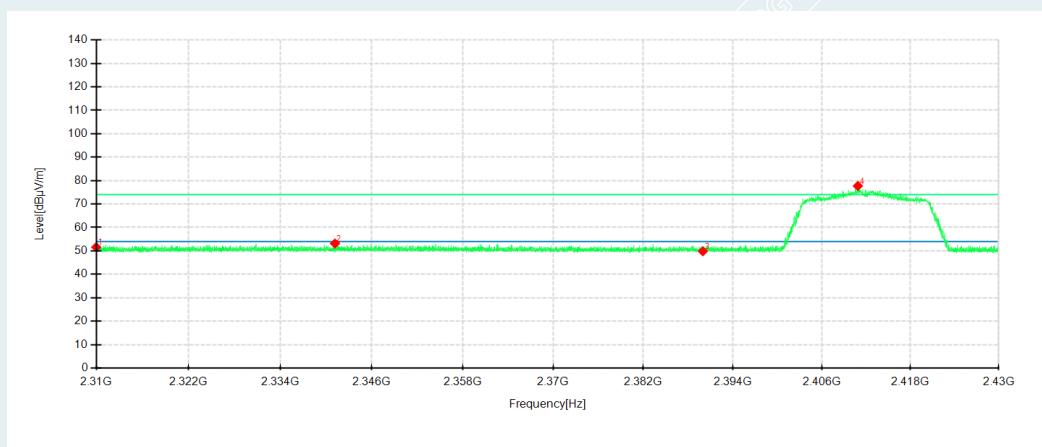
Date: 2022-04-12

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2310.0000	45.81	49.74	3.93	74.00	24.26	150	360	Horizontal	/
2	2379.0960	48.21	51.29	3.08	74.00	22.71	150	296	Horizontal	/
3	2390.0000	46.08	49.21	3.13	74.00	24.79	150	101	Horizontal	/
4	2411.5440	71.34	74.63	3.29	74.00	-0.63	150	96	Horizontal	No limit
1	2310.0000	47.08	51.59	4.51	74.00	22.41	100	40	Vertical	/
2	2341.1640	48.52	53.14	4.62	74.00	20.86	100	154	Vertical	/
3	2390.0000	45.56	49.83	4.27	74.00	24.17	100	8	Vertical	/
4	2410.8840	73.67	77.72	4.05	74.00	-3.72	100	112	Vertical	No limit

IEEE 802.11g mode**Lowest Channel**

Frequency 2412MHz

Environment: 25°C/60%RH

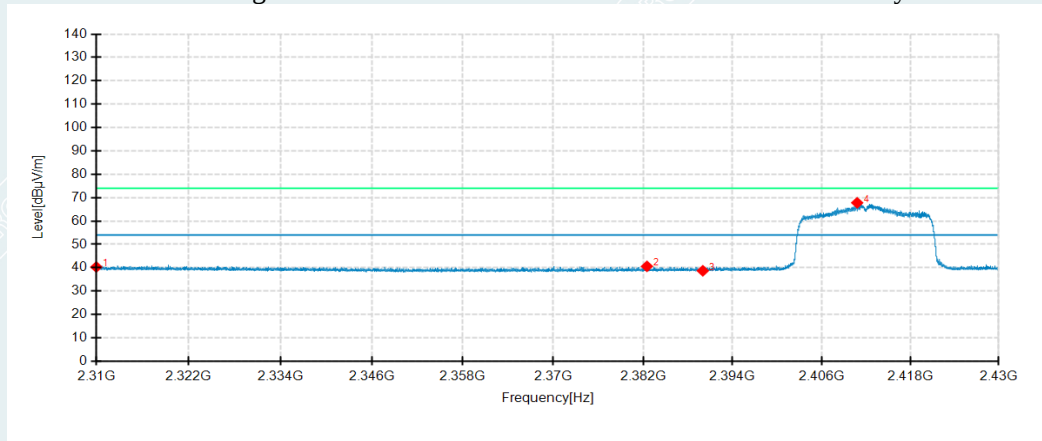
Tested By: Lu Qiang

Detector mode: Average

Voltage: AC 120V/60Hz

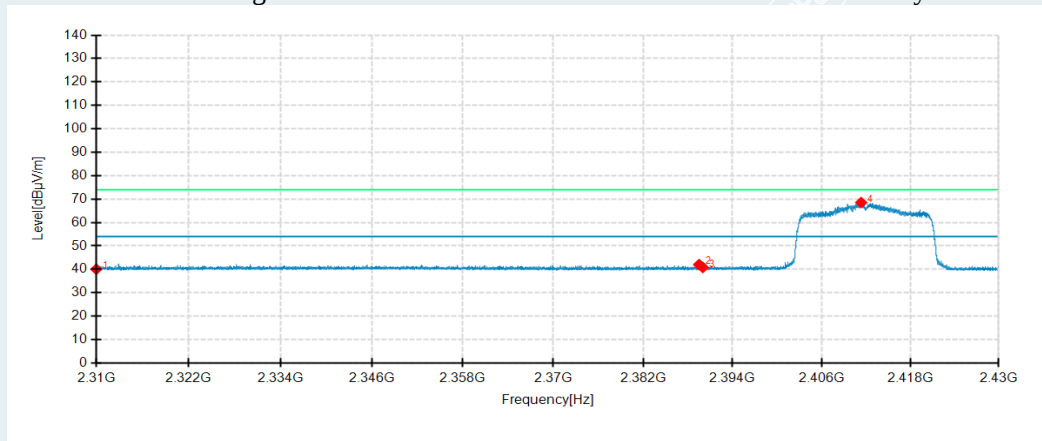
Date: 2022-04-12

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2310.0000	36.38	40.31	3.93	54.00	13.69	150	267	Horizontal	/
2	2382.5160	37.49	40.59	3.10	54.00	13.41	150	354	Horizontal	/
3	2390.0000	35.56	38.69	3.13	54.00	15.31	150	114	Horizontal	/
4	2410.8000	64.50	67.79	3.29	54.00	-13.79	150	95	Horizontal	No limit
1	2310.0000	35.54	40.05	4.51	54.00	13.95	150	176	Vertical	/
2	2389.5000	37.77	42.05	4.28	54.00	11.95	150	265	Vertical	/
3	2390.0000	36.54	40.81	4.27	54.00	13.19	150	212	Vertical	/
4	2411.3400	64.49	68.53	4.04	54.00	-14.53	150	111	Vertical	No limit

IEEE 802.11g mode**Highest Channel**

Frequency 2462MHz

Environment: 25°C/60%RH

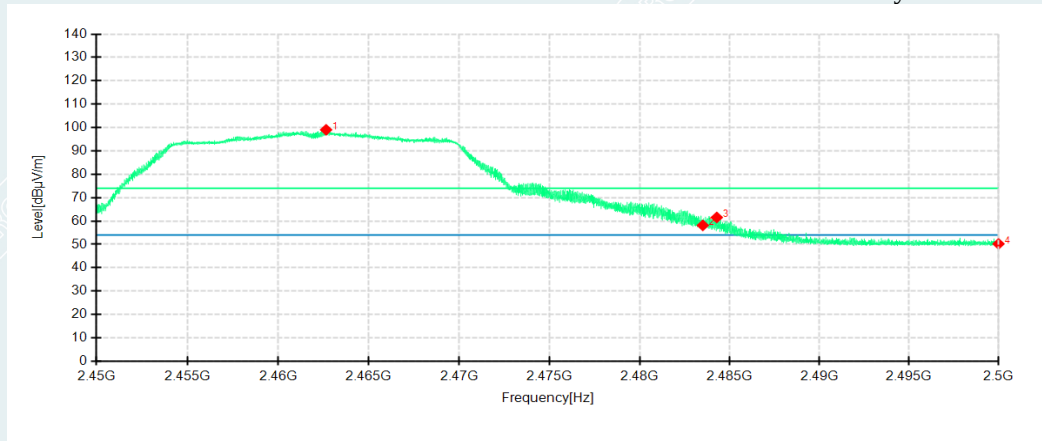
Tested By: Chen Xiacong

Detector mode: Peak

Voltage: AC 120V/60Hz

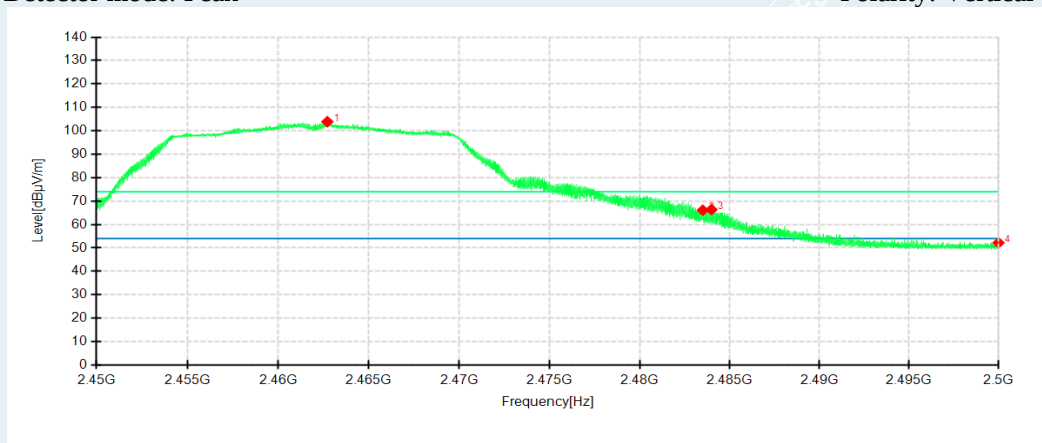
Date: 2022-01-13

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2462.6400	94.75	99.02	4.27	74.00	-25.02	100	251	Horizontal	No limit
2	2483.5000	53.80	58.13	4.33	74.00	15.87	100	251	Horizontal	/
3	2484.2800	57.19	61.52	4.33	74.00	12.48	100	251	Horizontal	/
4	2500.0000	45.83	50.21	4.38	74.00	23.79	200	74	Horizontal	/
1	2462.7100	99.63	103.90	4.27	74.00	-29.90	200	272	Vertical	No limit
2	2483.5000	61.75	66.08	4.33	74.00	7.92	200	258	Vertical	/
3	2483.9850	62.05	66.38	4.33	74.00	7.62	200	258	Vertical	/
4	2500.0000	47.82	52.20	4.38	74.00	21.80	200	272	Vertical	/

IEEE 802.11g mode**Highest Channel**

Frequency 2462MHz

Environment: 25°C/60%RH

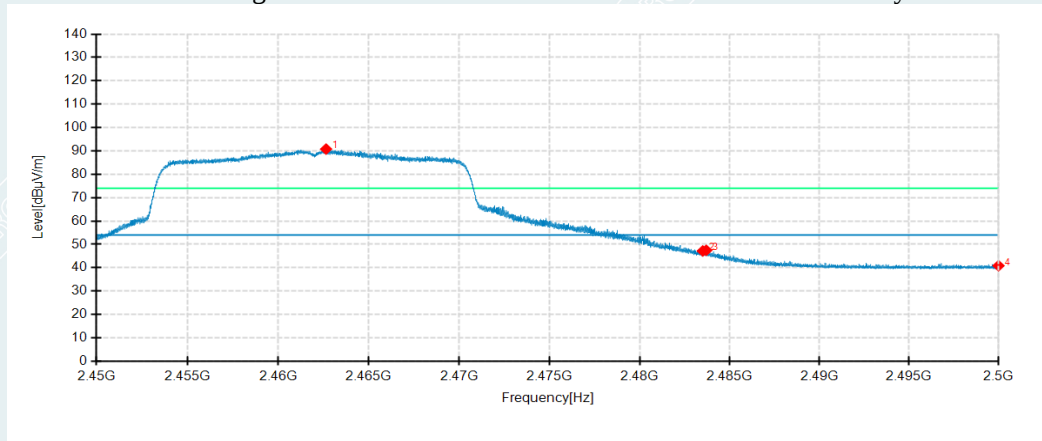
Tested By: Chen Xiacong

Detector mode: Average

Voltage: AC 120V/60Hz

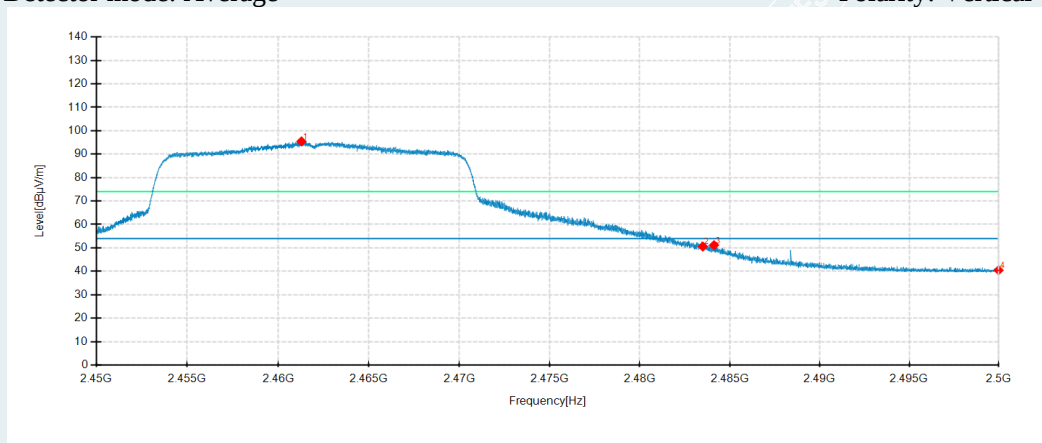
Date: 2022-01-13

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2462.6400	86.51	90.78	4.27	54.00	-36.78	100	246	Horizontal	No limit
2	2483.5000	42.84	47.17	4.33	54.00	6.83	100	253	Horizontal	/
3	2483.6950	43.13	47.46	4.33	54.00	6.54	200	204	Horizontal	/
4	2500.0000	36.48	40.86	4.38	54.00	13.14	100	142	Horizontal	/
1	2461.2850	91.21	95.47	4.26	54.00	-41.47	200	272	Vertical	No limit
2	2483.5000	46.25	50.58	4.33	54.00	3.42	200	272	Vertical	/
3	2484.1250	46.83	51.16	4.33	54.00	2.84	200	259	Vertical	/
4	2500.0000	36.10	40.48	4.38	54.00	13.52	100	74	Vertical	/

IEEE 802.11n HT20 mode**Lowest Channel**

Frequency 2412MHz

Environment: 25°C/60%RH

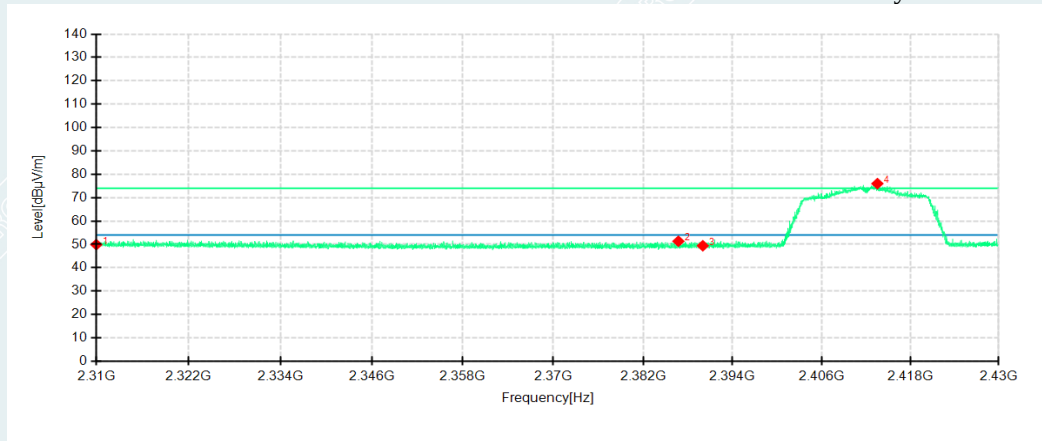
Tested By: Lu Qiang

Detector mode: Peak

Voltage: AC 120V/60Hz

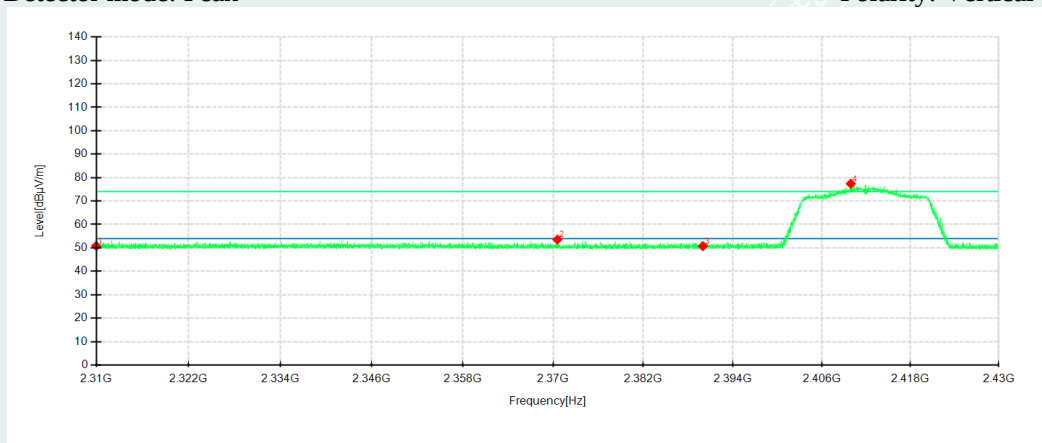
Date: 2022-04-12

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2310.0000	45.97	49.90	3.93	74.00	24.10	150	96	Horizontal	/
2	2386.7280	48.21	51.33	3.12	74.00	22.67	150	271	Horizontal	/
3	2390.0000	46.27	49.40	3.13	74.00	24.60	150	187	Horizontal	/
4	2413.5360	72.68	75.99	3.31	74.00	-1.99	150	96	Horizontal	No limit
1	2310.0000	46.34	50.85	4.51	74.00	23.15	100	264	Vertical	/
2	2370.5760	49.12	53.58	4.46	74.00	20.42	100	29	Vertical	/
3	2390.0000	46.48	50.75	4.27	74.00	23.25	100	195	Vertical	/
4	2409.9240	73.34	77.40	4.06	74.00	-3.40	100	114	Vertical	No limit

IEEE 802.11n HT20 mode**Lowest Channel**

Frequency 2412MHz

Environment: 25°C/60%RH

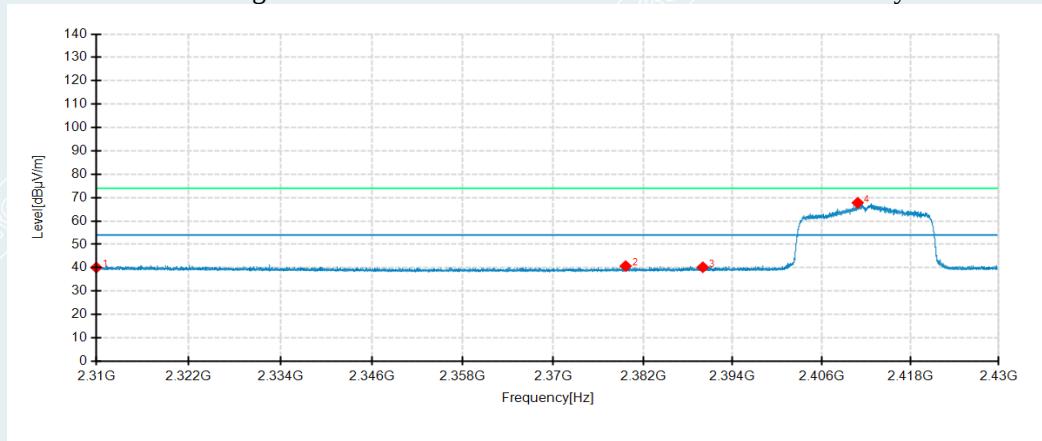
Tested By: Lu Qiang

Detector mode: Average

Voltage: AC 120V/60Hz

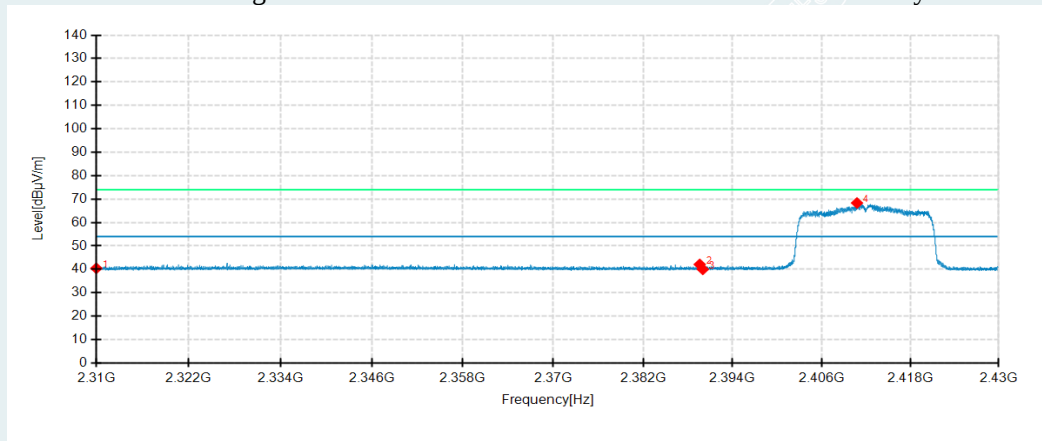
Date: 2022-04-12

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2310.0000	36.14	40.07	3.93	54.00	13.93	150	94	Horizontal	/
2	2379.6720	37.62	40.71	3.09	54.00	13.29	150	327	Horizontal	/
3	2390.0000	37.08	40.21	3.13	54.00	13.79	150	108	Horizontal	/
4	2410.8720	64.53	67.82	3.29	54.00	-13.82	150	94	Horizontal	No limit
1	2310.0000	35.92	40.43	4.51	54.00	13.57	150	8	Vertical	/
2	2389.5840	37.83	42.11	4.28	54.00	11.89	150	36	Vertical	/
3	2390.0000	35.72	39.99	4.27	54.00	14.01	150	120	Vertical	/
4	2410.7760	64.28	68.33	4.05	54.00	-14.33	150	110	Vertical	No limit

IEEE 802.11n HT20 mode**Highest Channel**

Frequency 2462MHz

Environment: 25°C/60%RH

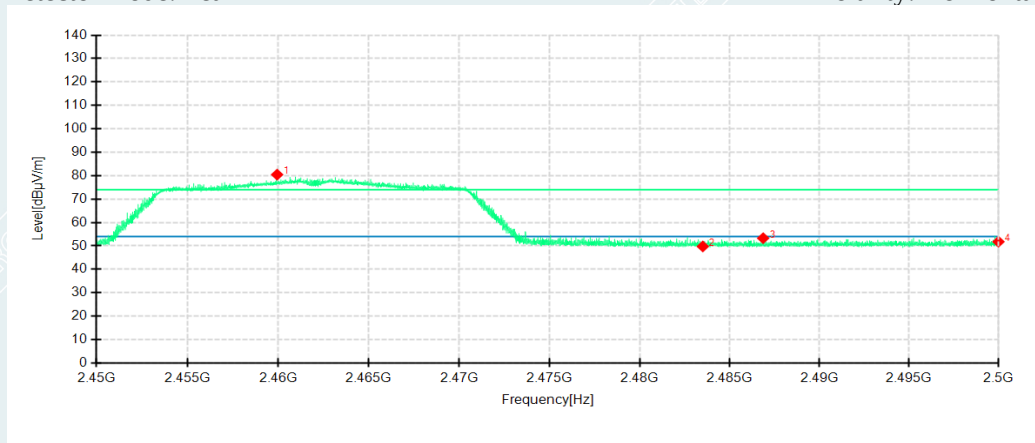
Tested By: Lu Qiang

Detector mode: Peak

Voltage: AC 120V/60Hz

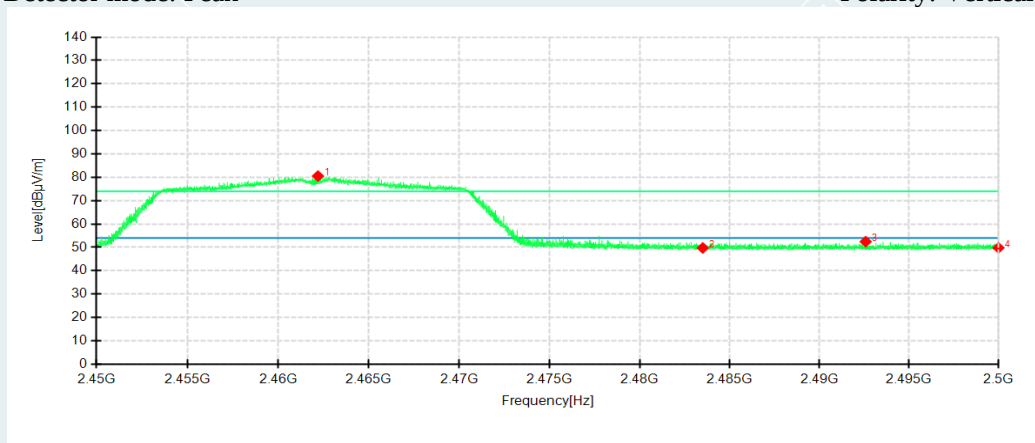
Date: 2022-04-12

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/ m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2459.9400	76.59	80.45	3.86	74.00	-6.45	150	95	Horizontal	No limit
2	2483.5000	45.45	49.78	4.33	74.00	24.22	150	95	Horizontal	/
3	2486.8600	48.91	53.30	4.39	74.00	20.70	150	95	Horizontal	/
4	2500.0000	47.14	51.79	4.65	74.00	22.21	150	95	Horizontal	/
1	2462.1900	76.90	80.51	3.61	74.00	-6.51	150	111	Vertical	No limit
2	2483.5000	46.05	49.74	3.69	74.00	24.26	150	258	Vertical	/
3	2492.5750	48.74	52.46	3.72	74.00	21.54	150	99	Vertical	/
4	2500.0000	46.04	49.79	3.75	74.00	24.21	150	261	Vertical	/

IEEE 802.11n HT20 mode**Highest Channel**

Frequency 2462MHz

Environment: 25°C/60%RH

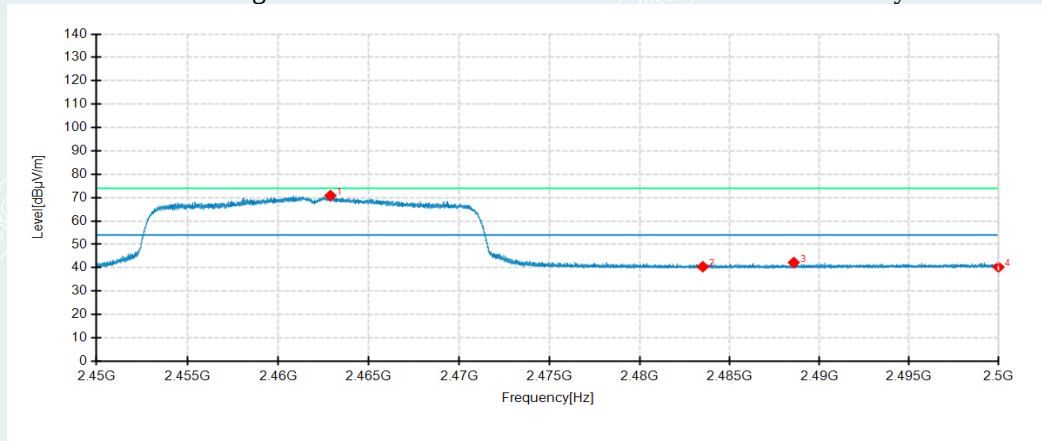
Tested By: Lu Qiang

Detector mode: Average

Voltage: AC 120V/60Hz

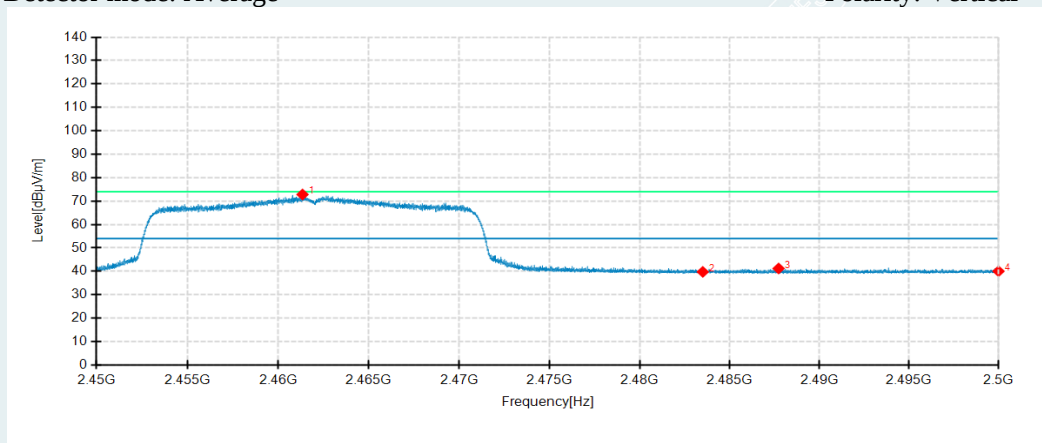
Date: 2022-04-12

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/ m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2462.8800	66.96	70.88	3.92	54.00	-16.88	150	95	Horizontal	No limit
2	2483.5000	36.10	40.43	4.33	54.00	13.57	150	274	Horizontal	/
3	2488.5650	37.81	42.24	4.43	54.00	11.76	150	310	Horizontal	/
4	2500.0000	35.61	40.26	4.65	54.00	13.74	150	303	Horizontal	/
1	2461.3400	69.19	72.80	3.61	54.00	-18.80	150	113	Vertical	No limit
2	2483.5000	36.08	39.77	3.69	54.00	14.23	150	175	Vertical	/
3	2487.7200	37.51	41.22	3.71	54.00	12.78	150	265	Vertical	/
4	2500.0000	36.28	40.03	3.75	54.00	13.97	150	60	Vertical	/

APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM

Please refer to the attached document E202112276794-19-Test photo.

APPENDIX B. PHOTOGRAPH OF THE EUT

Please refer to the attached document E202112276794-20-EUT photo.

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