

Test Report

Verified code: 210809

Report No.: E202303101204-1

Customer: Anhui Ronds Science & Technology Incorporated Company

Address: #59, branch road of biomedical park, high-tech district, Hefei, Anhui, China

Sample Name: Wireless Data Collector

Sample Model: RH570

Receive Sample Date: Mar.24,2023

Test Date: Apr.07,2023 ~ Apr.13,2023

Reference Document: CFR 47, FCC Part 15 Subpart C
RADIO FREQUENCY DEVICES:Subpart C—Intentional Radiators

Test Result: Pass

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Wu Haoting

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Xiao Liang

GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2023-06-21

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REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E202303101204-1	Original Issue	2023-04-22

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1. TEST RESULT SUMMARY

Standard	Item	Limit / Severity / Requirement	Result
CFR 47, FCC Part 15 Subpart C (§15.247) ANSI C63.10:2013 KDB 558074 D01 v05r02	Antenna Requirement	§15.203	PASS
	Conducted Emissions	§15.207 (a)	PASS
	Radiated Spurious Emission	§15.247(d) §15.205 §15.209	PASS
	6 dB Bandwidth	§15.247 (a)(2)	PASS
	Maximum Peak Output Power	§15.247(b)(3)	PASS
	Power Spectral Density	§15.247(e)	PASS
	Conducted band edges and Spurious Emission	§15.247(d)	PASS
	Restricted bands of operation	§15.205 §15.209 §15.247(d)	PASS

Note: The EUT 2.4G WiFi antenna is External fixed antenna. The max gain of 2.4G WiFi Antenna is 11dBi ,which accordance 15.203 is considered sufficient to comply with the provisions of this section.

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2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

Name: Anhui Ronds Science & Technology Incorporated Company
Address: #59, branch road of biomedical park, high-tech district, Hefei, Anhui, China

2.2 MANUFACTURER

Name: Anhui Ronds Science & Technology Incorporated Company
Address: #59, branch road of biomedical park, high-tech district, Hefei, Anhui, China

2.3 FACTORY

Name: Anhui Ronds Science & Technology Incorporated Company
Address: #59, branch road of biomedical park, high-tech district, Hefei, Anhui, China

2.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Product Name: Wireless Data Collector
Product Model: RH570
Adding Model: /
Trade Name: Ronds
FCC ID: 2AKW5-RH570
Power Supply: 100~240VAC (50/60Hz)
Frequency Band: 2412MHz-2462MHz for 802.11b/g/n HT20
Modulation Type: DSSS for 802.11b mode;
OFDM for 802.11g mode;
OFDM for 802.11n mode.
Antenna Specification: External fixed antenna with 11dBi gain (Max)
Temperature Range: -40℃~+70℃
Hardware Version: RH570_FCC_HW_V1_01
Software Version: RH570_FCC_SW_V1_01
Sample submitting way: ☒ Provided by customer ☐ Sampling
Sample No: E202303101204-0001, E202303101204-0003
Note: /

2.5 CHANNEL LIST

CH01 - CH11 for IEEE 802.11b, IEEE 802.11g, IEEE 802.11n HT20							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

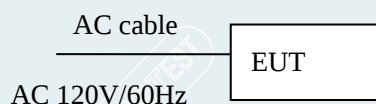
2.6 TEST OPERATION MODE

Mode No.	Description of the modes
1	2.4G Wi-Fi TX mode

2.7 LOCAL SUPPORTIVE INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Note
Cable				
AC cable	/	/	/	UnShielded, 1.6m

2.8 CONFIGURATION OF SYSTEM UNDER TEST



Test software:

Software version	Test level
MobaXterm	IEEE 802.11b: 12 IEEE 802.11g: 12 IEEE 802.11n HT20: 10

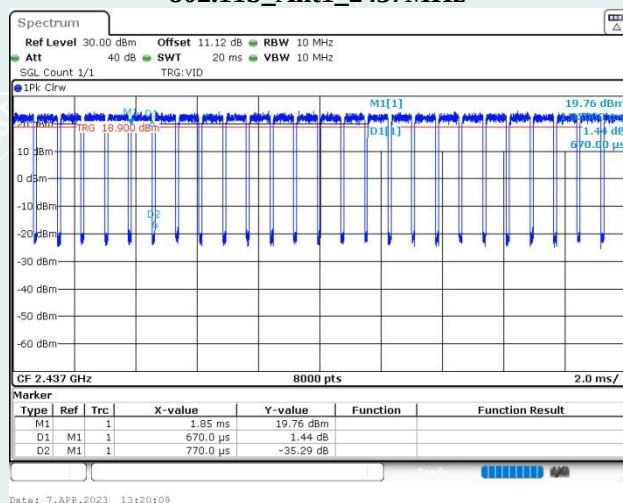
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2.9 DUTY CYCLE

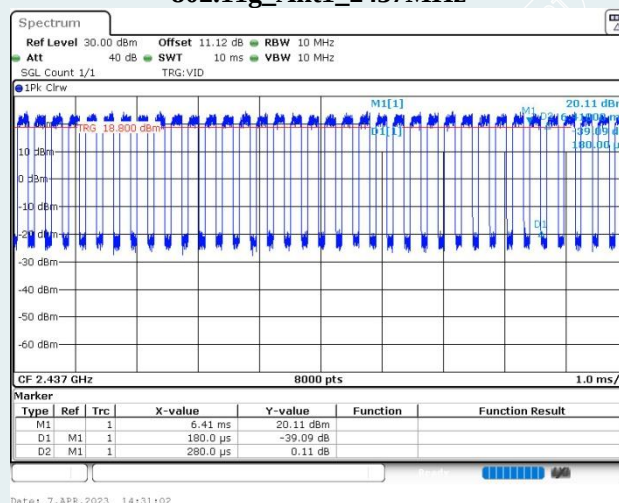
EUT Name	Wireless Data Collector	Model	RH570
Environmental Conditions	22.6°C/53%RH/101.0kPa	Test Voltage	AC120V/60Hz
Tested By	Qin tingting	Tested Date	2023-04-07

Test Mode	Antenna	Frequency (MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	T [s]
802.11b	Ant1	2437	0.67	0.77	87.01	0.00067
802.11g	Ant1	2437	0.18	0.28	64.29	0.00018
802.11n	Ant1	2437	1.30	1.41	92.20	0.00130

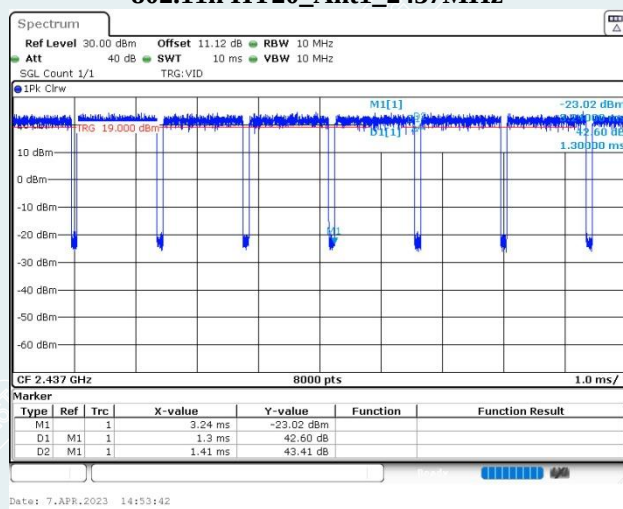
802.11b_Ant1_2437MHz



802.11g_Ant1_2437MHz



802.11n HT20_Ant1_2437MHz



3. LABORATORY AND ACCREDITATIONS

3.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of GRG METROLOGY & TEST GROUP CO., LTD.

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Shenzhen, 518110, People's Republic of China

P.C. : 518110

Tel : 0755-61180008

Fax : 0755-61180008

3.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA A2LA(Certificate#:2861.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada ISED (Company Number: 24897, CAB identifier:CN0069)

USA FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site,

<http://www.grgtest.com>

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3.3 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement		Frequency	Uncertainty
Radiated Emission	Horizontal	9kHz~30MHz	4.46dB
		30MHz~1000MHz	4.30dB
		1GHz~18GHz	5.60dB
		18GHz~26.5GHz	3.65dB
	Vertical	9kHz~30MHz	4.46dB
		30MHz~1000MHz	4.30dB
		1GHz~18GHz	5.60dB
		18GHz~26.5GHz	3.65dB
Conduction Emission		9 kHz~150kHz	2.80dB
		150kHz~10MHz	2.80dB
		10MHz~30MHz	2.20dB

Measurement	Uncertainty
RF frequency	6.0×10^{-6}
RF power conducted	0.78 dB
Occupied channel bandwidth	0.4 dB
Unwanted emission, conducted	0.68 dB
Humidity	6 %
Temperature	2 °C

This uncertainty represents an expanded uncertainty expressed at approximately the 95%. This uncertainty represents an expanded uncertainty factor of $k=2$.

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4. LIST OF USED TEST EQUIPMENT AT GRGT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Conducted Emissions				
EZ-EMC	EZ	CCS-3A1-CE	/	/
EMI Receiver	R&S	ESCI	100783	2023-08-28
LISN	R&S	ENV216	101543	2023-09-13
Radiated Spurious Emission&Restricted bands of operation				
Test S/W	EZ	CCS-03A1		
Loop Antenna	TESEQ	HLA6121	52599	2024-02-03
Test Receiver	R&S	ESR7	102444	2023-09-02
Preamplifier	EMEC	EM330	/	2024-02-06
Bi-log Antenna	Schwarzbeck	CBL6143A	26039	2024-10-23
Spectrum Analyzer	Agilent	N9010A	MY52221469	2023-06-29
Horn Antenna	Schwarzbeck	BBHA9120D	02143	2023-10-15
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170-497	2023-10-14
Amplifier	Tonscend	TAP037030	AP20E8060081	2023-05-08
Amplifier	Tonscend	TAP01018048	AP20E8060075	2023-05-05
Amplifier	Tonscend	TAP184050	AP20E806071	2023-05-05
Test S/W	Tonscend	JS32-RE/2.5.1.5		
6 dB Bandwidth				
Spectrum Analyzer	R&S	FSV30	1321.3008K30-10 4381-rH	2023-11-17
Output Power				
Pulse power sensor	Agilent	MA2411B	1126150	2024-02-12
Power meter	Anritsu	ML2495A	1204003	2024-02-12
Conducted band edges and Spurious Emission				
Spectrum Analyzer	R&S	FSV30	1321.3008K30-10 4381-rH	2023-11-17

Power Spectral Density				
Spectrum Analyzer	R&S	FSV30	1321.3008K30-10 4381-rH	2023-11-17

Note: The calibration cycle of the above instruments is 12 months except for the Bi-log Antenna which is 24 months.

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5. CONDUCTED EMISSION MEASUREMENT

5.1 LIMITS

Frequency range	Limits (dB μ V)	
	Quasi-peak	Average
150kHz~0.5MHz	66~56	56~46
0.5MHz~5MHz	56	46
5MHz~30MHz	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 150 kHz to 0.5MHz.

5.2 TEST PROCEDURES

Procedure of Preliminary Test

For measurement of the disturbance voltage the equipment under test (EUT) is connected to the power supply mains and any other extended network via one or more artificial network(s). An EUT, whether intended to be grounded or not, and which is to be used on a table is configured as follows:

– Either the bottom or the rear of the EUT shall be at a controlled distance of 40 cm from a reference ground plane. This ground plane is normally the wall or floor of a shielded room. It may also be a grounded metal plane of at least 2 m by 2 m. This is physically accomplished as follows:

1) place the EUT on a table of non-conducting material which is at least 80 cm high. Place the EUT so that it is 40 cm from the wall of the shielded room, or

2) place the EUT on a table of non-conducting material which is 40 cm high so that the bottom of the EUT is 40 cm above the ground plane;

– All other conductive surfaces of the EUT shall be at least 80 cm from the reference ground plane;

– The EUT are placed on the floor that one side of the housings is 40 cm from the vertical reference ground plane and other metallic parts;

– Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth forming a bundle 30 cm to 40 cm long, hanging approximately in the middle between the ground plane and the table.

– I/O cables that are connected to a peripheral shall be bundled in the centre. The end of the cable may be terminated if required using correct terminating impedance. The total length shall not exceed 1 m.

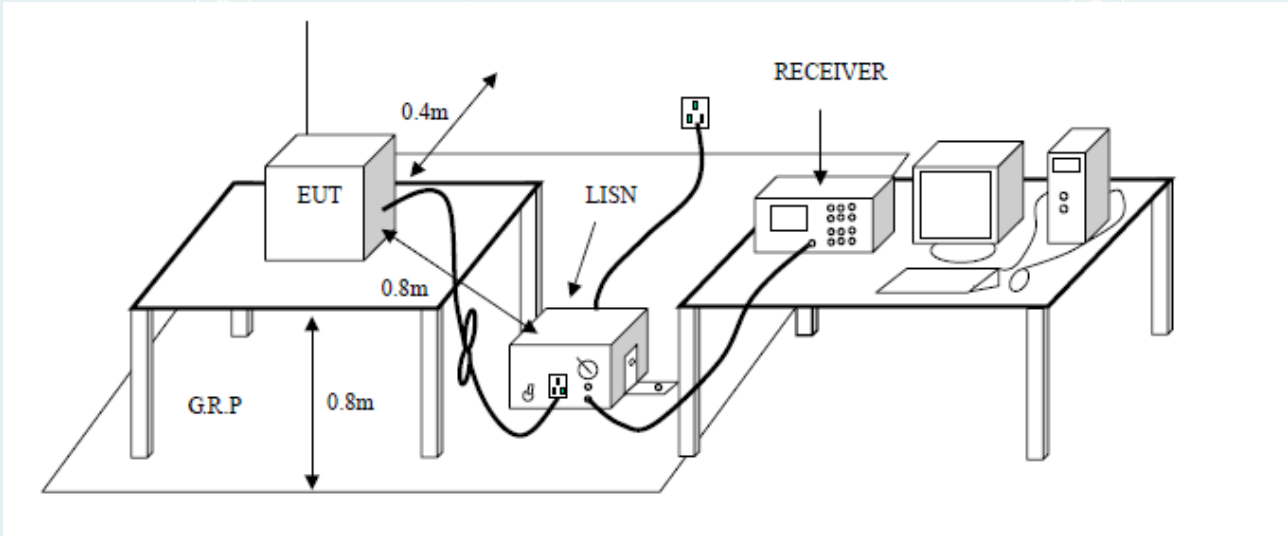
– Use serial board or connecting line to make EUT and notebook to communicate, according to the actual need to make EUT send constant frequency signal continuously.

The test mode(s) described in Item 2.6 were scanned during the preliminary test. After the preliminary scan, we found the test mode described in Item 2.6 producing the highest emission level. The EUT configuration and cable configuration of the above highest emission levels were recorded for reference of the final test.

Procedure of Final Test

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test. A scan was taken on both power lines, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. The test data of the worst-case condition(s) was recorded.

5.3 TEST SETUP



5.4 DATA SAMPLE

Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XXXX	32.69	25.65	11.52	44.21	37.17	65.78	55.79	-21.57	-18.62	Pass

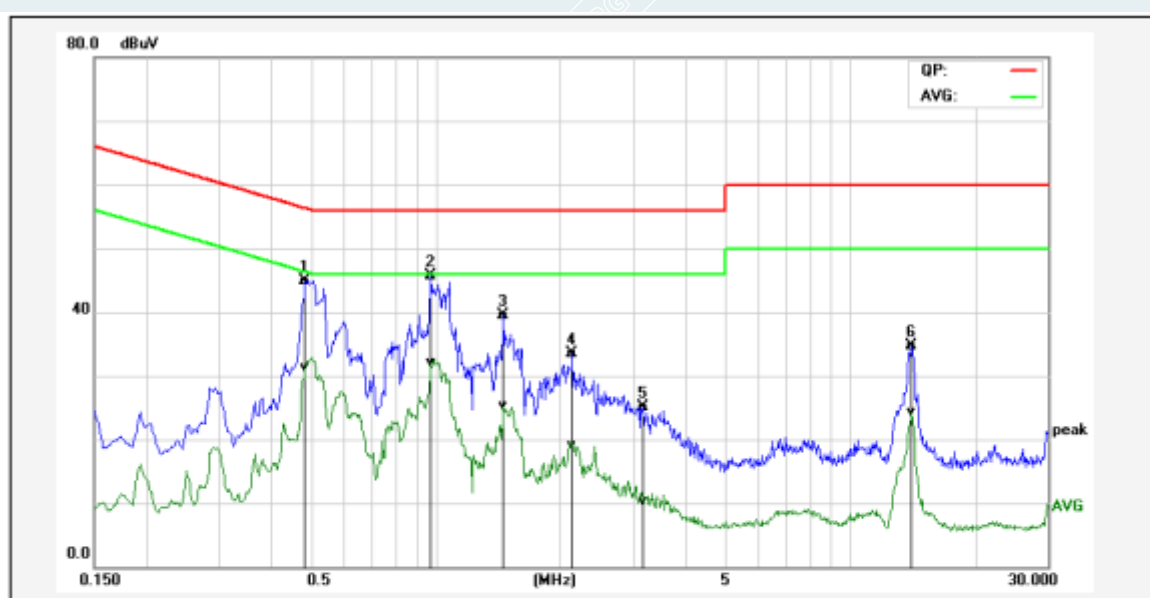
- Factor
- = Insertion loss of LISN + Cable Loss
- Result
- = Quasi-peak Reading/ Average Reading + Correction Factor
- Limit
- = Limit stated in standard
- Margin
- = Result (dBuV) – Limit (dBuV)

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5.5 TEST RESULTS

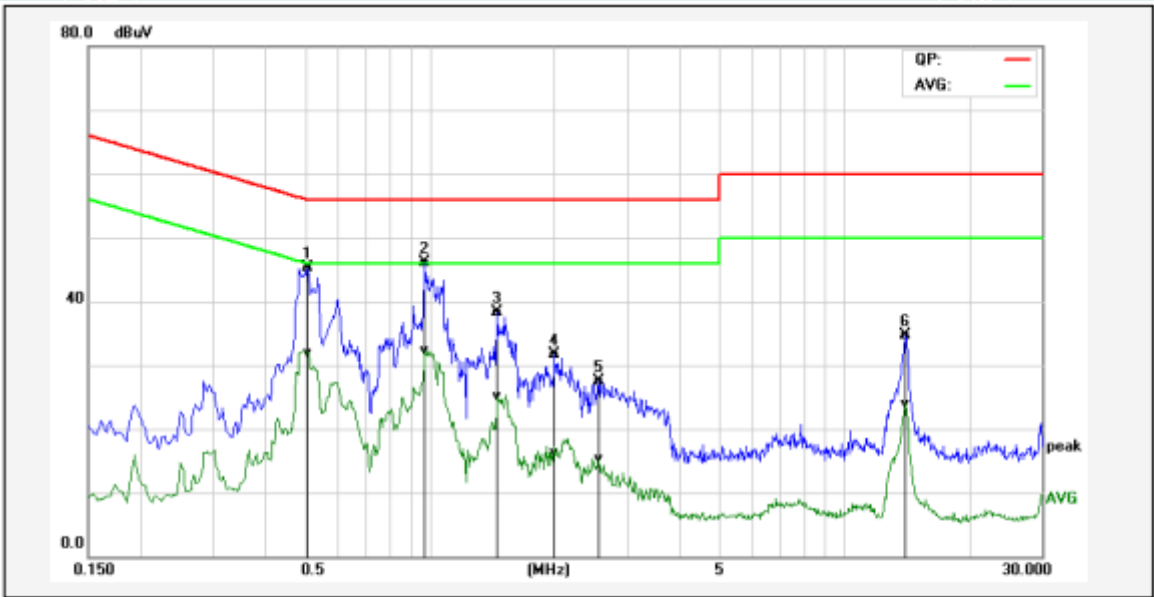
All models were pretested and only the worst modes and channels were recorded in this report. (IEEE 802.11b 2462MHz)

EUT Name	Wireless Data Collector	Model	RH570
Environmental Conditions	22.1 °C /55%RH/101.0kPa	Test Mode	Mode 1
Tested By	Huang xinlong	Line	L
Tested Date	2023-04-12	Test Voltage	AC120V/60Hz



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.4860	35.32	21.72	9.61	44.93	31.33	56.24	46.24	-11.31	-14.91	Pass
2*	0.9740	36.12	22.54	9.63	45.75	32.17	56.00	46.00	-10.25	-13.83	Pass
3	1.4620	29.78	15.65	9.63	39.41	25.28	56.00	46.00	-16.59	-20.72	Pass
4	2.1340	23.83	9.37	9.65	33.48	19.02	56.00	46.00	-22.52	-26.98	Pass
5	3.1619	15.43	0.72	9.67	25.10	10.39	56.00	46.00	-30.90	-35.61	Pass
6	14.1020	24.84	14.44	9.80	34.64	24.24	60.00	50.00	-25.36	-25.76	Pass

EUT Name	Wireless Data Collector	Model	RH570
Environmental Conditions	22.1 °C /55%RH/101.0kPa	Test Mode	Mode 1
Tested By	Huang xinlong	Line	N
Tested Date	2023-04-12	Test Voltage	AC120V/60Hz



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.5100	35.76	22.39	9.60	45.36	31.99	56.00	46.00	-10.64	-14.01	Pass
2*	0.9740	36.42	22.58	9.63	46.05	32.21	56.00	46.00	-9.95	-13.79	Pass
3	1.4620	28.61	15.53	9.63	38.24	25.16	56.00	46.00	-17.76	-20.84	Pass
4	2.0059	22.13	6.60	9.64	31.77	16.24	56.00	46.00	-24.23	-29.76	Pass
5	2.5620	17.84	5.63	9.66	27.50	15.29	56.00	46.00	-28.50	-30.71	Pass
6	14.0340	24.80	13.95	9.86	34.66	23.81	60.00	50.00	-25.34	-26.19	Pass

6. RADIATED SPURIOUS EMISSIONS

6.1 LIMITS

In any 100kHz 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 100kHz 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 30dB instead of 20dB. Attenuation below the general limits specified in §15.209(a) is not required.

Frequency (MHz)	Quasi-peak($\mu\text{V/m}$)	Measurement distance(m)	Quasi-peak(dB $\mu\text{V/m}$)@distance 3m
0.009-0.490	$2400/F(\text{kHz})$	300	128.5~93.8
0.490-1.705	$24000/F(\text{kHz})$	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

NOTE:

- (1) The emission limits for the ranges 9-90kHz and 110-490kHz are based on measurements employing a linear average detector.
- (2) The lower limit shall apply at the transition frequencies.
- (3) Above 18GHz test distance is 1m, so the Peak Limit= $74+20*\log(3/1)=83.54$ (dB $\mu\text{V/m}$).
The Avg Limit= $54+20*\log(3/1)=63.54$ (dB $\mu\text{V/m}$).

6.2 TEST PROCEDURES

1) Sequence of testing 9kHz to 30MHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Use serial board or connecting line to make EUT and notebook to communicate, according to the actual need to make EUT send constant frequency signal continuously.
- The EUT is placed on a desktop position in the center of the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0 °to 360 °.
- The antenna height is 1.0 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

--- Identified emissions during the pre measurement the software maximizes by rotating the turntable position (0 ° to 360 °) and by rotating the elevation axes (0 ° to 360 °).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QP detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement and the limit will be stored.

2) Sequence of testing 30MHz to 1GHz**Setup:**

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Use serial board or connecting line to make EUT and notebook to communicate, according to the actual need to make EUT send constant frequency signal continuously.

--- The EUT is placed on a desktop position in the center of the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Pre measurement:

--- The turntable rotates from 0 ° to 360 °.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 4 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable rotates from 0 ° to 360 ° and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1GHz to 18GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Use serial board or connecting line to make EUT and notebook to communicate, according to the actual need to make EUT send constant frequency signal continuously.
- The EUT is placed on a desktop position in the center of the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0 °to 360 °.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 4 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable rotates from 0 °to 360 °and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 18GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Use serial board or connecting line to make EUT and notebook to communicate, according to the actual need to make EUT send constant frequency signal continuously.
- The EUT is placed on a desktop position in the center of the turntable.
- The measurement distance is 1 meter.
- The EUT was set into operation.

Pre measurement:

--- The antenna is moved spherical over the EUT in different polarisations of the antenna.

Final measurement:

--- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

NOTE:

(a).The frequency from 9kHz to 150kHz, Set RBW=300Hz(for Peak&AVG), RBW=300Hz(for Peak&AVG). the frequency from 150kHz to 30MHz, Set RBW=9kHz, RBW=9kHz, (for QP Detector).

(b).The frequency from 30MHz to 1GHz, Set RBW=120kHz, RBW=300kHz, (for QP Detector).

(c).The frequency above 1GHz, for Peak detector: Set RBW=1MHz, RBW=3MHz.

(d).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 10Hz. if the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$, Where T is defined in section 2.9.

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

6.3 TEST SETUP

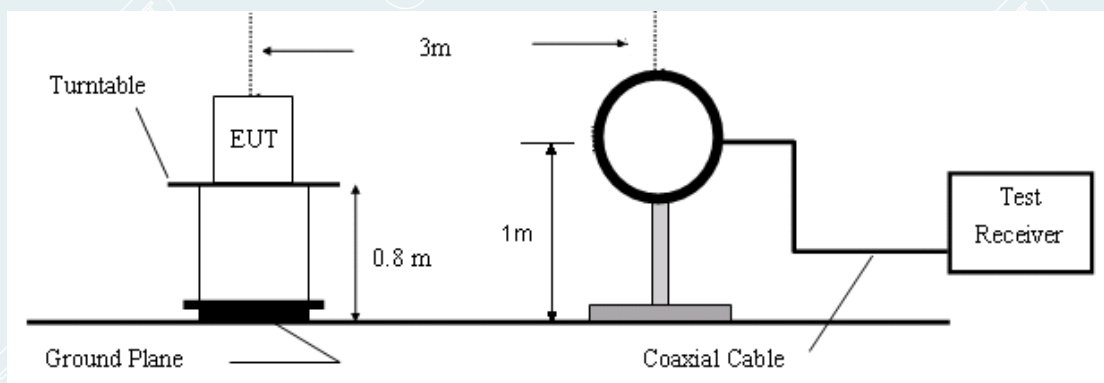


Figure 1. 9kHz to 30MHz radiated emissions test configuration

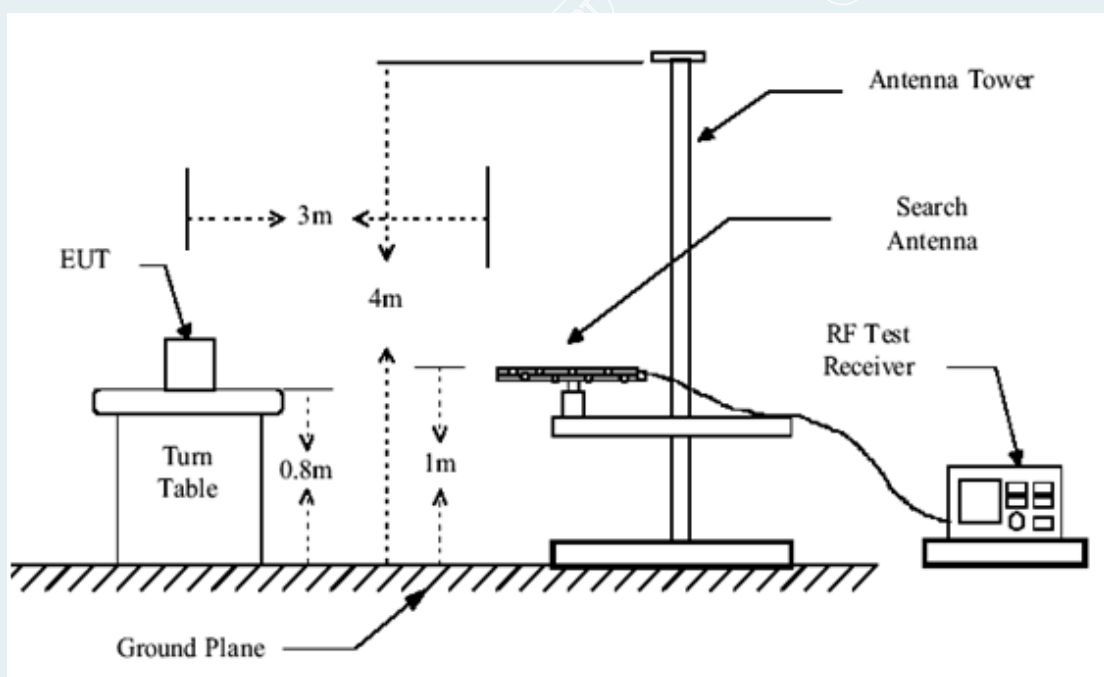


Figure 2. 30MHz to 1GHz radiated emissions test configuration

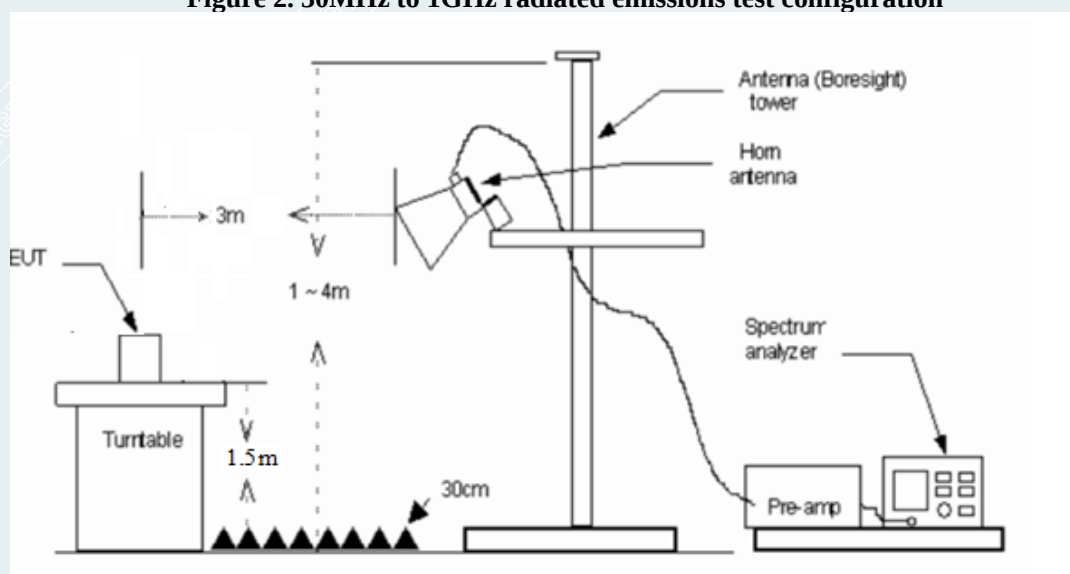


Figure 3. 1GH to 18GHz radiated emissions test configuration

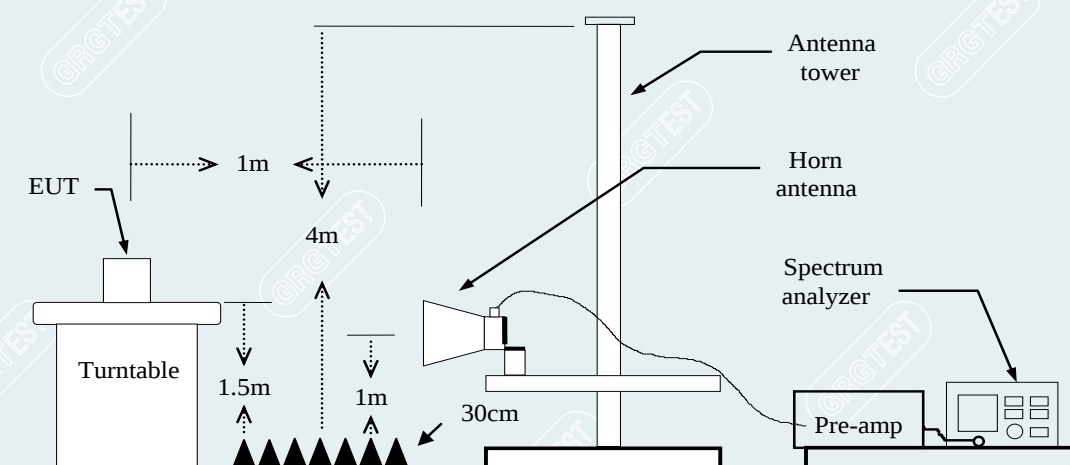


Figure 4. 18GHz to 26.5GHz radiated emissions test configuration

6.4 DATA SAMPLE

30MHz to 1GHz

No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark	Pole
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
xxx	xxx	37.06	-15.48	21.58	40.00	-18.42	QP	Vertical

Frequency (MHz) = Emission frequency in MHz

Ant.Pol. (H/V) = Antenna polarization

Reading (dBuV/m) = Uncorrected Analyzer / Receiver reading

Result (dBuV/m) = Reading (dBuV/m) + Correction Factor (dB/m)

Limit (dBuV/m) = Limit stated in standard

Margin (dB) = Remark Result (dBuV/m) – Limit (dBuV/m)

QP = Quasi-peak Reading

1GHz to 18GHz

No.	Frequency	Reading	Factor	Result	Limit	Margin	Remark	Pole
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)		
xxx	xxx	65.45	-11.12	54.33	74.00	-19.67	Peak	Vertical
xxx	xxx	63.00	-11.12	51.88	54.00	-2.12	AVG	Vertical

Above 18GHz

No.	Frequency	Reading	Factor	Level	Limit	Margin	Remark	Pole
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)		
xxx	xxx	68.86	57.66	-11.20	83.54	25.88	peak	Vertical
xxx	xxx	68.89	-11.20	57.69	63.54	5.85	AVG	Vertical

Frequency (MHz)	= Emission frequency in MHz
Ant.Pol. (H/V)	= Antenna polarization
Reading (dBuV/m)	= Uncorrected Analyzer / Receiver reading
Result (dBuV/m)	= Reading (dBuV/m) + Factor (dB)
Limit (dBuV/m)	= Limit stated in standard
Margin (dB)	= Remark Result (dBuV/m) – Limit (dBuV/m)
Peak	= Peak Reading
AVG	= Average Reading

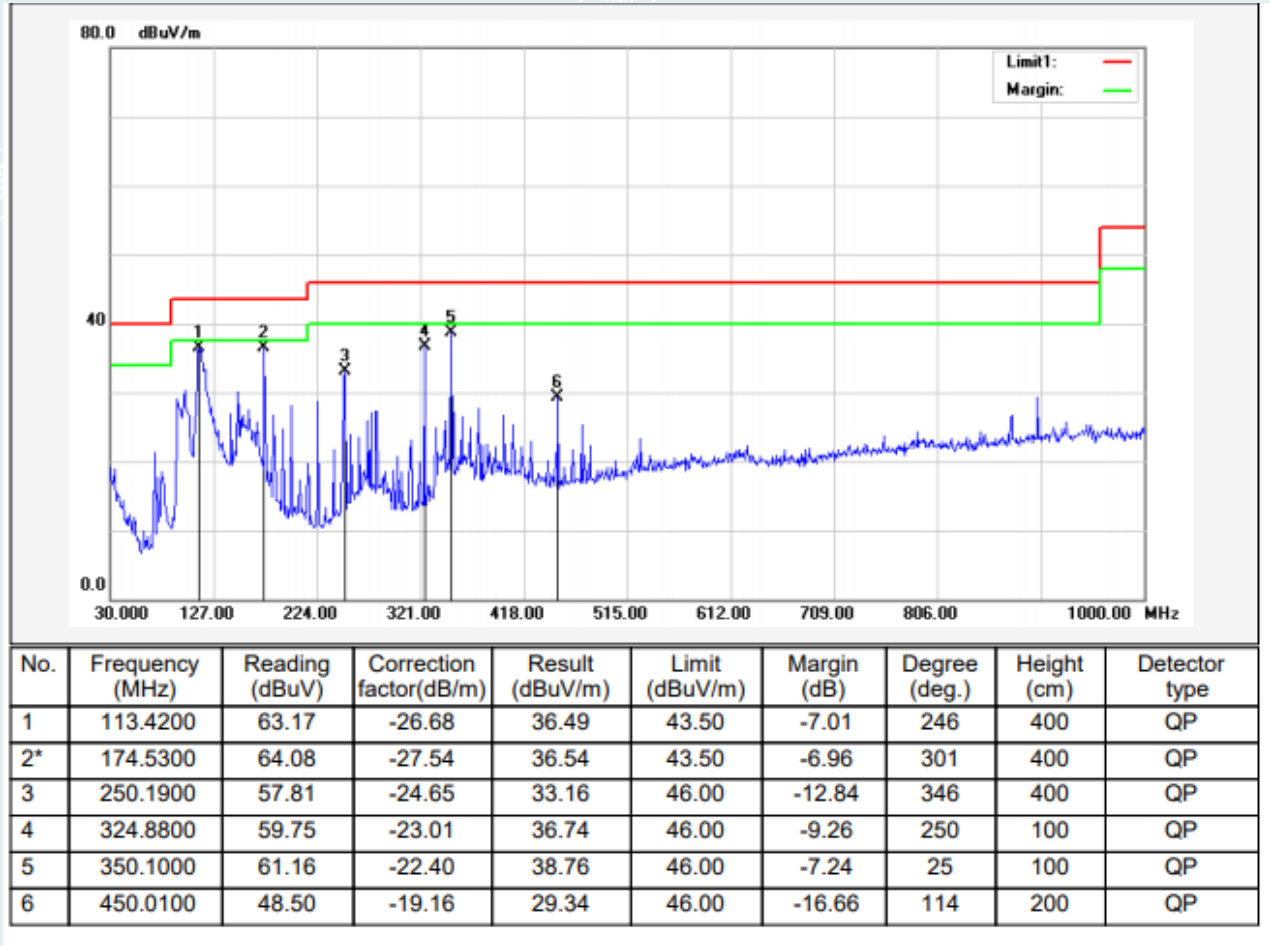
----- The following blanks -----

6.5 TEST RESULTS

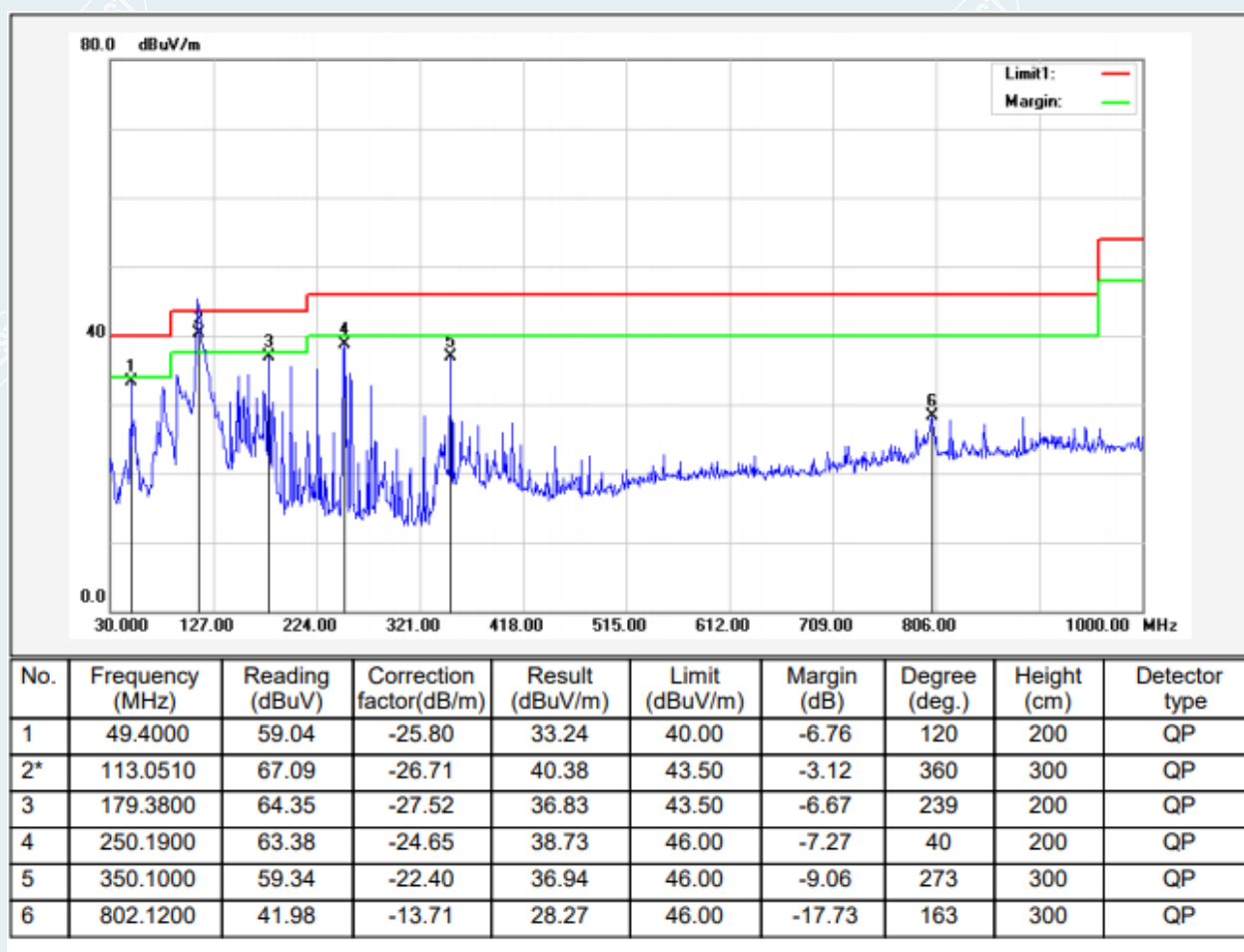
Below 1GHz

All models were pretested and only the worst modes and channels were recorded in this report. (IEEE 802.11b 2412MHz)

EUT Name	Wireless Data Collector	Model	RH570
Environmental Conditions	22.6°C/51%RH/101.0kPa	Test Voltage	AC120V/60Hz
Test Mode	IEEE 802.11b Frequency (2412MHz)	Polarity	Horizontal
Tested By	Wang xinyuan	Tested Date	2023-04-13



EUT Name	Wireless Data Collector	Model	RH570
Environmental Conditions	22.6°C/51%RH/101.0kPa	Test Voltage	AC120V/60Hz
Test Mode	IEEE 802.11b Frequency (2412MHz)	Polarity	Vertical
Tested By	Wang xinyuan	Tested Date	2023-04-13

**Remark:**

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Radiated emissions measured in frequency range from 9 kHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- 3 Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 The IF bandwidth of Receiver between 30MHz to 1GHz was 120 kHz.

1GHz-18GHz:

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Mode: IEEE 802.11b

Lowest Frequency (2412MHz)

Environment: 20.2°C/56%RH/101.0kPa

Tested By: Zhang zishan

Date: 2023-04-08

Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1088.5111	73.19	47.81	-25.38	74.00	26.19	100	151	Horizontal
2	1329.2912	69.28	46.22	-23.06	74.00	27.78	100	3	Horizontal
3	1662.5828	63.73	40.61	-23.12	74.00	33.39	100	249	Horizontal
4	2664.9581	61.87	43.45	-18.42	74.00	30.55	100	170	Horizontal
5	3616.9521	58.89	42.76	-16.13	74.00	31.24	200	55	Horizontal
6	17825.6032	44.90	53.93	9.03	74.00	20.07	100	329	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	17885.4552	9.03	32.79	41.82	54.00	12.18	171	19.5	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1074.7593	72.48	49.84	-22.64	74.00	24.16	200	88	Vertical
2	2373.1716	72.51	53.74	-18.77	74.00	20.26	200	11	Vertical
3	2659.7075	67.51	49.78	-17.73	74.00	24.22	100	171	Vertical
4	3616.9521	67.34	51.71	-15.63	74.00	22.29	200	26	Vertical
5	3991.999	62.76	47.68	-15.08	74.00	26.32	100	206	Vertical
6	17883.7355	45.94	56.55	10.61	74.00	17.45	200	75	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1073.0635	-22.64	48.11	25.47	54.00	28.53	200	76.2	Vertical
2	2373.2057	-18.77	60.21	41.44	54.00	12.56	179	16.3	Vertical
3	2657.321	-17.73	47.22	29.49	54.00	24.51	120	166.1	Vertical
4	3618.4703	-15.63	62.37	46.74	54.00	7.26	198	17.4	Vertical
5	17882.4368	10.61	32.78	43.39	54.00	10.61	199	46.5	Vertical

Mode: IEEE 802.11b
Middle Frequency (2437MHz)
Environment: 20.2°C/56%RH/101.0kPa
Tested By: Zhang zishan

Date: 2023-04-08
Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1149.2687	74.06	49.12	-24.94	74.00	24.88	100	162	Horizontal
2	1332.0415	70.99	47.90	-23.09	74.00	26.10	100	184	Horizontal
3	1484.5606	62.32	39.52	-22.80	74.00	34.48	100	326	Horizontal
4	1665.3332	66.46	43.37	-23.09	74.00	30.63	100	257	Horizontal
5	2655.957	61.69	43.25	-18.44	74.00	30.75	100	20	Horizontal
6	17555.5694	45.10	53.80	8.70	74.00	20.20	100	315	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1149.2687	-24.94	58.23	33.29	54.00	20.71	100	162	Horizontal
2	17555.5694	8.70	30.45	39.15	54.00	14.85	100	315	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1164.7706	70.19	45.94	-24.25	74.00	28.06	100	59	Vertical
2	1327.0409	70.60	47.90	-22.70	74.00	26.10	100	189	Vertical
3	1664.083	70.16	47.73	-22.43	74.00	26.27	200	236	Vertical
4	2276.9096	72.52	53.69	-18.83	74.00	20.31	200	345	Vertical
5	3654.4568	66.90	51.50	-15.40	74.00	22.50	200	359	Vertical
6	18000	44.68	55.07	10.39	74.00	18.93	200	291	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2276.1191	-18.83	66.60	47.77	54.00	6.23	199	344.6	Vertical
2	3654.5625	-15.40	64.29	48.89	54.00	5.11	185	0	Vertical
3	17885.77	10.39	32.77	43.16	54.00	10.84	123	264.6	Vertical

Mode: IEEE 802.11b
 Highest Frequency (2462MHz)
 Environment: 20.2°C/56%RH/101.0kPa
 Tested By: Zhang zishan

Date: 2023-04-08
 Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1150.0188	73.81	48.88	-24.93	74.00	25.12	100	163	Horizontal
2	1660.5826	66.83	43.69	-23.14	74.00	30.31	100	174	Horizontal
3	2518.4398	62.80	44.20	-18.60	74.00	29.80	100	141	Horizontal
4	2664.7081	65.91	47.49	-18.42	74.00	26.51	100	21	Horizontal
5	3691.9615	58.48	43.19	-15.29	74.00	30.81	200	35	Horizontal
6	17881.8602	44.96	53.61	8.65	74.00	20.39	100	294	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1150.0517	-24.93	49.26	24.33	54.00	29.67	100	138.3	Horizontal
2	17886.0009	8.65	32.65	41.30	54.00	12.70	188	268.5	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1086.5108	71.32	48.86	-22.46	74.00	25.14	200	126	Vertical
2	1161.7702	75.96	51.77	-24.19	74.00	22.23	100	192	Vertical
3	2301.9127	75.22	56.73	-18.49	74.00	17.27	200	344	Vertical
4	3691.9615	66.36	51.26	-15.10	74.00	22.74	200	15	Vertical
5	3999.4999	63.53	48.43	-15.10	74.00	25.57	100	232	Vertical
6	17896.8621	45.08	55.59	10.51	74.00	18.41	200	289	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1087.7842	-22.46	49.78	27.32	54.00	26.68	200	135.7	Vertical
2	1164.1573	-24.19	57.48	33.29	54.00	20.71	100	185.9	Vertical
3	2302.5791	-18.49	68.61	50.12	54.00	3.88	178	0	Vertical
4	3692.0687	-15.10	62.06	46.96	54.00	7.04	200	343.7	Vertical
5	3992.9014	-15.10	45.81	30.71	54.00	23.29	100	206.4	Vertical
6	17885.9878	10.51	32.82	43.33	54.00	10.67	188	334	Vertical

Mode: IEEE 802.11g
 Lowest Frequency (2412MHz)
 Environment: 20.2°C/56%RH/101.0kPa
 Tested By: Zhang zishan

Date: 2023-04-08
 Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1151.769	71.79	46.90	-24.89	74.00	27.10	100	147	Horizontal
2	1332.7916	67.27	44.17	-23.10	74.00	29.83	100	147	Horizontal
3	1664.5831	64.88	41.77	-23.11	74.00	32.23	100	237	Horizontal
4	2660.7076	63.27	44.84	-18.43	74.00	29.16	100	156	Horizontal
5	3616.9521	59.08	42.95	-16.13	74.00	31.05	200	35	Horizontal
6	17774.9719	45.16	53.71	8.55	74.00	20.29	200	262	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	17774.9719	8.55	30.87	39.42	54.00	14.58	200	262	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1162.0203	71.79	47.60	-24.19	74.00	26.40	100	192	Vertical
2	1660.5826	70.68	48.15	-22.53	74.00	25.85	200	230	Vertical
3	2374.6718	73.90	55.11	-18.79	74.00	18.89	200	345	Vertical
4	3616.9521	67.62	51.99	-15.63	74.00	22.01	200	355	Vertical
5	3988.2485	59.25	44.19	-15.06	74.00	29.81	100	129	Vertical
6	17825.6032	44.86	55.74	10.88	74.00	18.26	200	180	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1661.6157	-22.53	53.87	31.34	54.00	22.66	165	226.8	Vertical
2	2372.4724	-18.79	62.25	43.46	54.00	10.54	193	343.3	Vertical
3	3618.5223	-15.63	64.13	48.50	54.00	5.50	186	344.2	Vertical
4	17825.6032	10.88	30.15	41.03	54.00	12.97	200	180	Vertical

Mode: IEEE 802.11g
 Middle Frequency (2437MHz)
 Environment: 20.2°C/56%RH/101.0kPa
 Tested By: Zhang zishan

Date: 2023-04-08
 Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1152.269	71.76	46.88	-24.88	74.00	27.12	100	153	Horizontal
2	1332.7916	67.29	44.19	-23.10	74.00	29.81	200	217	Horizontal
3	1663.5829	66.10	42.98	-23.12	74.00	31.02	100	145	Horizontal
4	2664.7081	62.53	44.11	-18.42	74.00	29.89	100	153	Horizontal
5	3654.4568	58.50	42.46	-16.04	74.00	31.54	200	40	Horizontal
6	17829.3537	44.42	53.43	9.01	74.00	20.57	200	2	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	17829.3537	9.01	30.25	39.26	54.00	14.74	200	2	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1075.2594	69.90	47.28	-22.62	74.00	26.72	200	66	Vertical
2	1665.8332	71.56	49.18	-22.38	74.00	24.82	200	224	Vertical
3	2276.6596	72.68	53.85	-18.83	74.00	20.15	200	360	Vertical
4	3320.6651	60.38	44.02	-16.36	74.00	29.98	100	324	Vertical
5	3654.4568	67.23	51.83	-15.40	74.00	22.17	200	344	Vertical
6	17849.9812	44.75	55.59	10.84	74.00	18.41	100	84	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1662.072	-22.38	53.48	31.10	54.00	22.90	200	226.8	Vertical
2	2276.1653	-18.83	66.51	47.68	54.00	6.32	200	342.8	Vertical
3	3654.6155	-15.40	62.69	47.29	54.00	6.71	186	342.7	Vertical
4	17849.9812	10.84	31.26	42.10	54.00	11.90	100	84	Vertical

Mode: IEEE 802.11g
 Highest Frequency (2462MHz)
 Environment: 20.2°C/56%RH/101.0kPa
 Tested By: Zhang zishan

Date: 2023-04-08
 Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1147.2684	72.46	47.49	-24.97	74.00	26.51	100	153	Horizontal
2	1327.0409	72.06	49.02	-23.04	74.00	24.98	100	153	Horizontal
3	1747.0934	77.34	54.39	-22.95	74.00	19.61	100	71	Horizontal
4	2661.4577	63.89	45.46	-18.43	74.00	28.54	100	164	Horizontal
5	3691.9615	58.91	43.62	-15.29	74.00	30.38	200	26	Horizontal
6	17561.1951	45.37	53.95	8.58	74.00	20.05	100	350	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1330.9397	-23.04	49.23	26.19	54.00	27.81	114	162.5	Horizontal
2	1738.4459	-22.95	45.69	22.74	54.00	31.26	123	97.1	Horizontal
3	17550.5191	8.58	32.76	41.34	54.00	12.66	194	248.1	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1090.5113	70.62	48.22	-22.40	74.00	25.78	200	59	Vertical
2	1331.0414	71.62	49.04	-22.58	74.00	24.96	200	158	Vertical
3	1664.5831	69.60	47.18	-22.42	74.00	26.82	200	230	Vertical
4	2303.1629	74.05	55.56	-18.49	74.00	18.44	200	344	Vertical
5	3691.9615	66.06	50.96	-15.10	74.00	23.04	200	16	Vertical
6	17887.4859	44.75	55.33	10.58	74.00	18.67	100	57	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1089.1697	-22.40	47.81	25.41	54.00	28.59	200	77.5	Vertical
2	1330.3482	-22.58	52.80	30.22	54.00	23.78	198	162.3	Vertical
3	2302.6631	-18.49	68.63	50.14	54.00	3.86	190	357.7	Vertical
4	3692.0687	-15.10	61.74	46.64	54.00	7.36	184	344.2	Vertical
5	17884.6385	10.58	32.73	43.31	54.00	10.69	180	84	Vertical

Mode: IEEE 802.11n HT20
 Lowest Frequency (2412MHz)
 Environment: 20.2°C/56%RH/101.0kPa
 Tested By: Zhang zishan

Date: 2023-04-08
 Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1162.2703	72.41	47.73	-24.68	74.00	26.27	100	124	Horizontal
2	1660.8326	68.76	45.61	-23.15	74.00	28.39	100	134	Horizontal
3	2658.4573	62.80	44.37	-18.43	74.00	29.63	100	156	Horizontal
4	3616.9521	58.32	42.19	-16.13	74.00	31.81	200	46	Horizontal
5	4925.8657	54.23	42.95	-11.28	74.00	31.05	200	284	Horizontal
6	17836.8546	44.87	53.86	8.99	74.00	20.14	100	111	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	17836.8546	8.99	31.25	40.24	54.00	13.76	100	111	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1072.259	70.65	47.98	-22.67	74.00	26.02	100	346	Vertical
2	1662.8329	72.15	49.68	-22.47	74.00	24.32	200	224	Vertical
3	2383.923	77.59	58.72	-18.87	74.00	15.28	200	345	Vertical
4	3618.8274	67.21	51.59	-15.62	74.00	22.41	200	14	Vertical
5	5066.5083	54.69	43.50	-11.19	74.00	30.50	200	332	Vertical
6	17827.4784	45.12	56.00	10.88	74.00	18.00	200	138	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1660.8597	-22.47	54.46	31.99	54.00	22.01	200	221.2	Vertical
2	2383.4744	-18.87	57.48	38.61	54.00	15.39	193	341.7	Vertical
3	3617.7273	-15.62	58.16	42.54	54.00	11.46	193	3.3	Vertical
4	17827.4784	10.88	31.25	42.13	54.00	11.87	200	138	Vertical

Mode: IEEE 802.11n HT20
 Middle Frequency (2437 MHz)
 Environment: 20.2°C/56%RH/101.0kPa
 Tested By: Zhang zishan

Date: 2023-04-08
 Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1164.5206	76.34	52.09	-24.25	74.00	21.91	100	197	Vertical
2	1331.2914	69.63	47.06	-22.57	74.00	26.94	100	360	Vertical
3	1664.5831	71.03	48.61	-22.42	74.00	25.39	200	225	Vertical
4	2276.4096	74.05	55.22	-18.83	74.00	18.78	200	352	Vertical
5	3654.4568	66.14	50.74	-15.40	74.00	23.26	200	344	Vertical
6	17998.1248	44.95	55.35	10.40	74.00	18.65	200	189	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1163.509	-24.25	56.76	32.51	54.00	21.49	100	199.4	Vertical
2	1664.8002	-22.42	53.30	30.88	54.00	23.12	156	231.3	Vertical
3	2275.8496	-18.83	57.65	38.82	54.00	15.18	180	1.1	Vertical
4	3655.3025	-15.40	57.12	41.72	54.00	12.28	200	357.8	Vertical
5	17880.0588	10.40	32.61	43.01	54.00	10.99	100	206.1	Vertical

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1151.5189	72.61	47.71	-24.90	74.00	26.29	100	137	Horizontal
2	2276.4096	61.33	42.62	-18.71	74.00	31.38	200	301	Horizontal
3	2664.208	64.67	46.24	-18.43	74.00	27.76	100	168	Horizontal
4	2998.4998	63.90	46.76	-17.14	74.00	27.24	200	116	Horizontal
5	3991.999	61.56	46.18	-15.38	74.00	27.82	100	197	Horizontal
6	17548.0685	44.68	53.47	8.79	74.00	20.53	100	59	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	17548.0685	8.79	30.28	39.07	54.00	14.93	100	59	Horizontal

Mode: IEEE 802.11n HT20
 Highest Frequency (2462MHz)
 Environment: 20.2°C/56%RH/101.0kPa
 Tested By: Zhang zishan

Date: 2023-04-08
 Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1152.269	73.78	48.90	-24.88	74.00	25.10	100	150	Horizontal
2	1328.291	66.43	43.37	-23.06	74.00	30.63	100	44	Horizontal
3	2302.4128	61.64	42.78	-18.86	74.00	31.22	200	302	Horizontal
4	2659.7075	63.37	44.94	-18.43	74.00	29.06	100	160	Horizontal
5	3684.4606	57.91	42.47	-15.44	74.00	31.53	200	39	Horizontal
6	17551.819	45.46	54.23	8.77	74.00	19.77	100	14	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1150.0007	-24.88	49.21	24.33	54.00	29.67	128	138.7	Horizontal
2	17552.5799	8.77	32.81	41.58	54.00	12.42	101	18.8	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1071.0089	69.49	46.80	-22.69	74.00	27.20	200	171	Vertical
2	1332.5416	70.97	48.44	-22.53	74.00	25.56	200	160	Vertical
3	1661.0826	69.16	46.64	-22.52	74.00	27.36	100	209	Vertical
4	2302.6628	76.59	58.10	-18.49	74.00	15.90	200	345	Vertical
5	3686.3358	65.57	50.43	-15.14	74.00	23.57	200	14	Vertical
6	17883.7355	44.54	55.15	10.61	74.00	18.85	200	14	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1328.2029	-22.53	53.48	30.95	54.00	23.05	140	164.8	Vertical
2	2302.7625	-18.49	58.87	40.38	54.00	13.62	180	15.5	Vertical
3	3692.5241	-15.14	52.66	37.52	54.00	16.48	186	17.6	Vertical
4	17881.6668	10.61	32.77	43.38	54.00	10.62	172	284.2	Vertical

18GHz-26.5GHz:

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Pre-scan all modes and recorded the worst case results in this report (IEEE 802.11b)

Mode: IEEE 802.11b

Lowest Frequency (2412MHz)

Environment: 20.2°C/47%RH/101.0kPa

Tested By: Zhang zishan

Date: 2023-04-08

Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18867.425	53.10	41.22	-11.88	83.54	42.32	100	16	Vertical
2	20703	51.00	40.85	-10.15	83.54	42.69	100	108	Vertical
3	20905.725	50.43	40.40	-10.03	83.54	43.14	100	157	Vertical
4	22633.35	49.95	40.99	-8.96	83.54	42.55	100	176	Vertical
5	23082.15	48.44	39.81	-8.63	83.54	43.73	100	78	Vertical
6	25080.075	47.32	40.21	-7.11	83.54	43.33	100	316	Vertical

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18650.25	52.98	40.93	-12.05	83.54	42.61	100	48	Horizontal
2	19499.4	52.61	41.19	-11.42	83.54	42.35	100	344	Horizontal
3	20139.875	51.72	40.80	-10.92	83.54	42.74	100	95	Horizontal
4	20663.475	51.01	40.65	-10.36	83.54	42.89	100	2	Horizontal
5	22680.525	48.99	40.11	-8.88	83.54	43.43	100	188	Horizontal
6	25106.85	46.99	39.80	-7.19	83.54	43.74	100	268	Horizontal

Note:

Above 18G test distance is 1m, so the Peak Limit=74+20*log(3/1)=83.54 (dBμV/m).

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

Mode: IEEE 802.11b
Lowest Frequency (2437MHz)
Environment: 20.2°C/47%RH/101.0kPa
Tested By: Zhang zishan

Date: 2023-04-08
Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18885.275	52.66	40.79	-11.87	83.54	42.75	100	188	Vertical
2	20054.45	52.01	41.10	-10.91	83.54	42.44	100	313	Vertical
3	21921.475	50.11	40.44	-9.67	83.54	43.10	100	219	Vertical
4	22934.675	48.55	39.88	-8.67	83.54	43.66	100	15	Vertical
5	24064.325	47.99	39.70	-8.29	83.54	43.84	100	15	Vertical
6	25055	47.06	39.92	-7.14	83.54	43.62	100	15	Vertical

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18563.125	52.18	40.03	-12.15	83.54	43.51	100	14	Horizontal
2	20027.25	51.74	40.71	-11.03	83.54	42.83	100	314	Horizontal
3	20640.1	51.47	41.09	-10.38	83.54	42.45	100	93	Horizontal
4	21522.4	50.33	40.49	-9.84	83.54	43.05	100	1	Horizontal
5	22849.675	49.23	40.52	-8.71	83.54	43.02	100	126	Horizontal
6	25205.45	47.76	40.66	-7.10	83.54	42.88	100	93	Horizontal

Note:
Above 18G test distance is 1m, so the Peak Limit=74+20*log(3/1)=83.54 (dBμV/m).

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

Mode: IEEE 802.11b
Lowest Frequency (2462MHz)
Environment: 20.2°C/47%RH/101.0kPa
Tested By: Zhang zishan

Date: 2023-04-08
Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	19494.725	52.38	40.95	-11.43	83.54	42.59	100	236	Vertical
2	20677.5	51.32	41.14	-10.18	83.54	42.40	100	299	Vertical
3	21082.525	50.98	40.99	-9.99	83.54	42.55	100	80	Vertical
4	21702.6	50.07	40.41	-9.66	83.54	43.13	100	80	Vertical
5	22641	49.59	40.64	-8.95	83.54	42.90	100	110	Vertical
6	24828.05	47.31	39.94	-7.37	83.54	43.60	100	220	Vertical

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	19449.675	52.48	41.02	-11.46	83.54	42.52	100	233	Horizontal
2	19590.775	52.23	40.91	-11.32	83.54	42.63	100	89	Horizontal
3	21278.025	50.55	40.56	-9.99	83.54	42.98	100	57	Horizontal
4	22244.475	49.57	40.05	-9.52	83.54	43.49	100	169	Horizontal
5	22929.575	48.63	39.96	-8.67	83.54	43.58	100	89	Horizontal
6	25141.7	46.91	39.76	-7.15	83.54	43.78	100	105	Horizontal

Note:
Above 18G test distance is 1m, so the Peak Limit=74+20*log(3/1)=83.54 (dBμV/m).

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7. 6DB BANDWIDTH

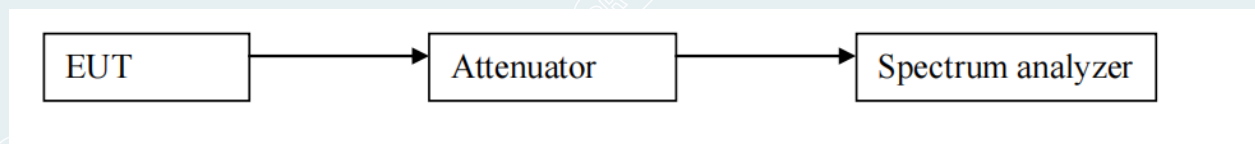
7.1 LIMITS

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

7.2 TEST PROCEDURES

- 1) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
- 2) Set resolution bandwidth (RBW) = 100kHz. Set the video bandwidth (VBW) $\geq 3 \times$ RBW. Detector = Peak. Trace mode = max hold. Sweep = auto couple. Allow the trace to stabilize, record 6dB bandwidth value.
- 3) Repeat above procedures until all frequencies measured were complete.

7.3 TEST SETUP



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

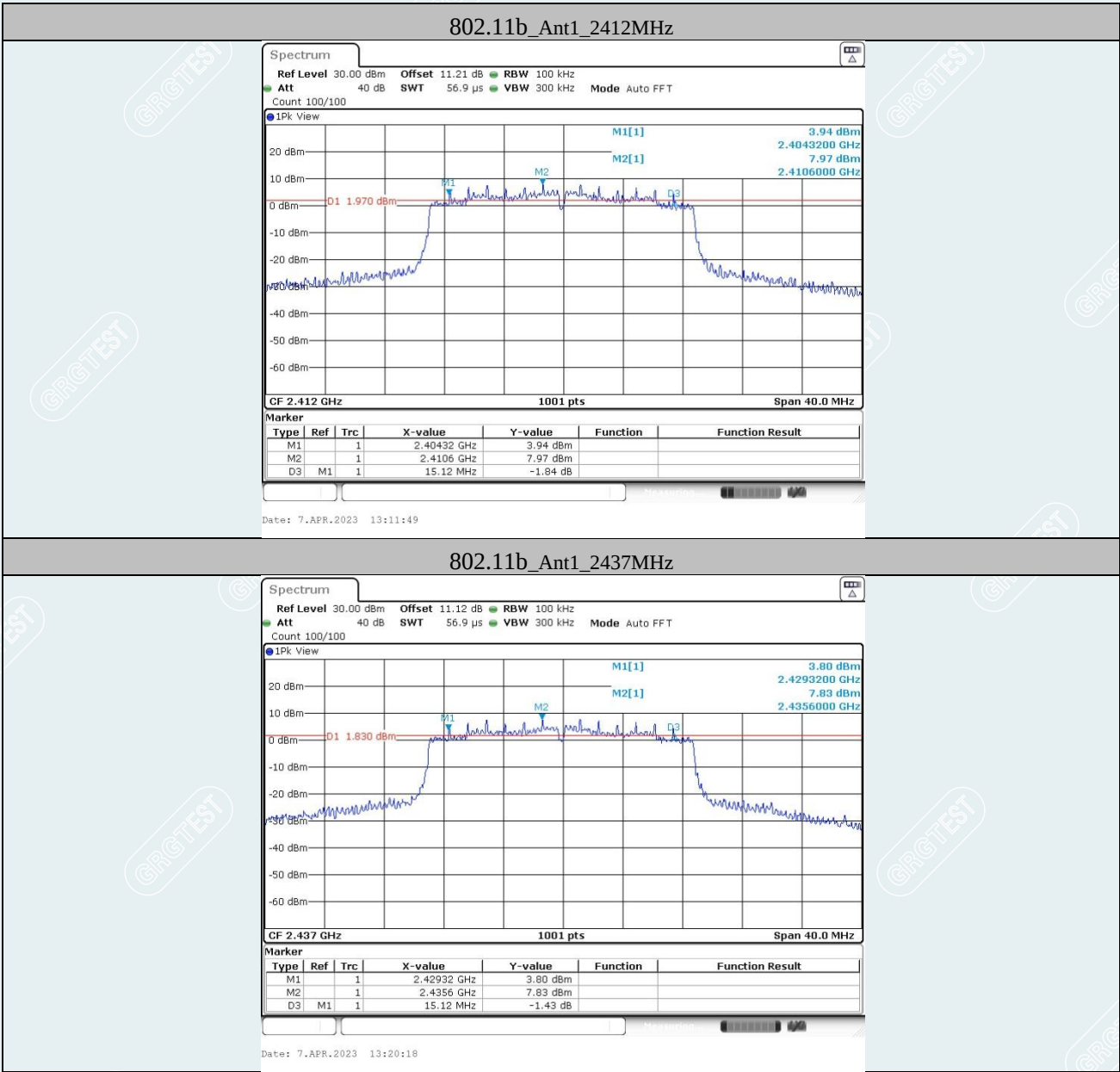
7.4 TEST RESULTS

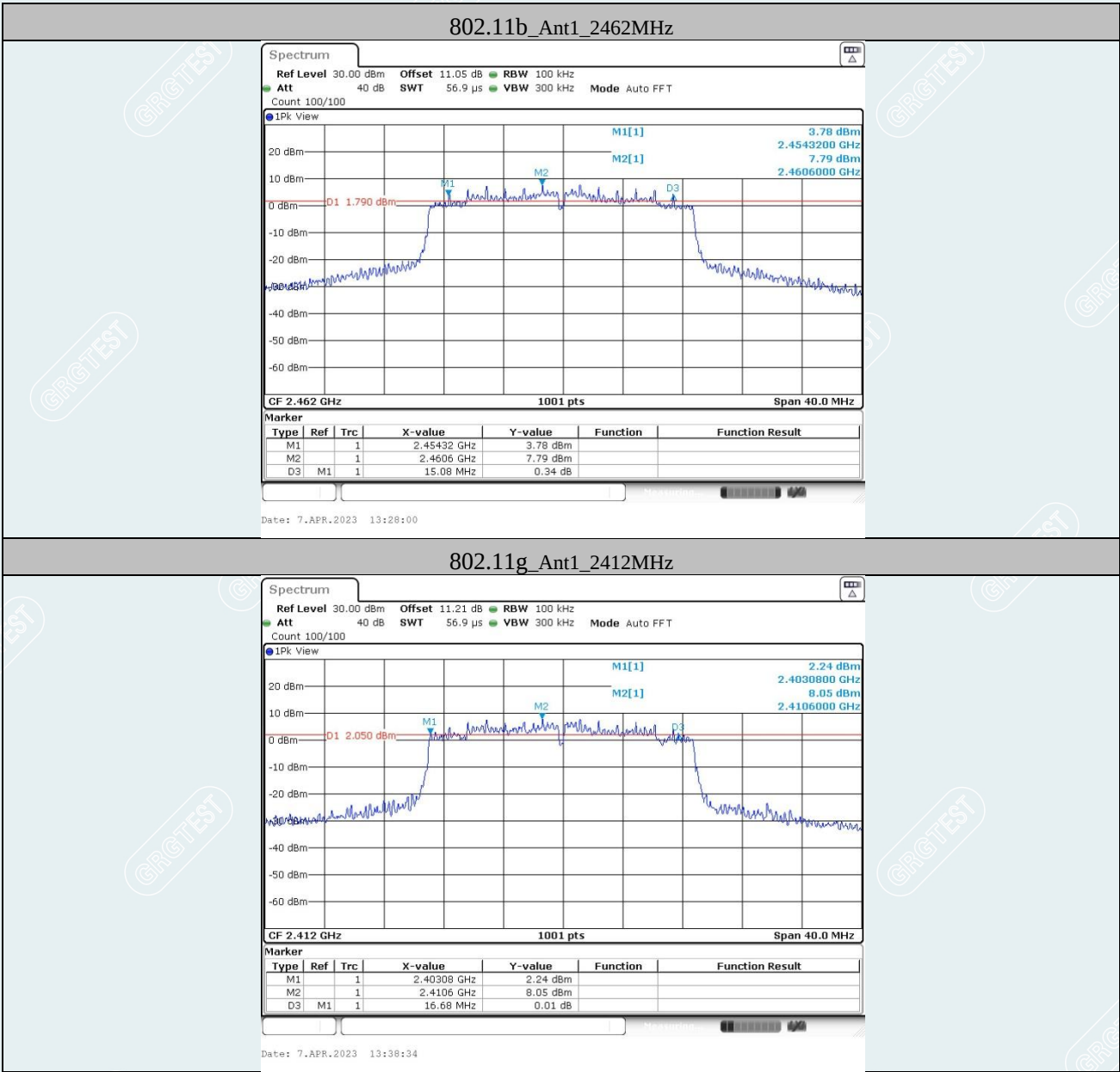
Environment: 22.6℃/53%RH/101.0kPa
Tested By: Qin tingting

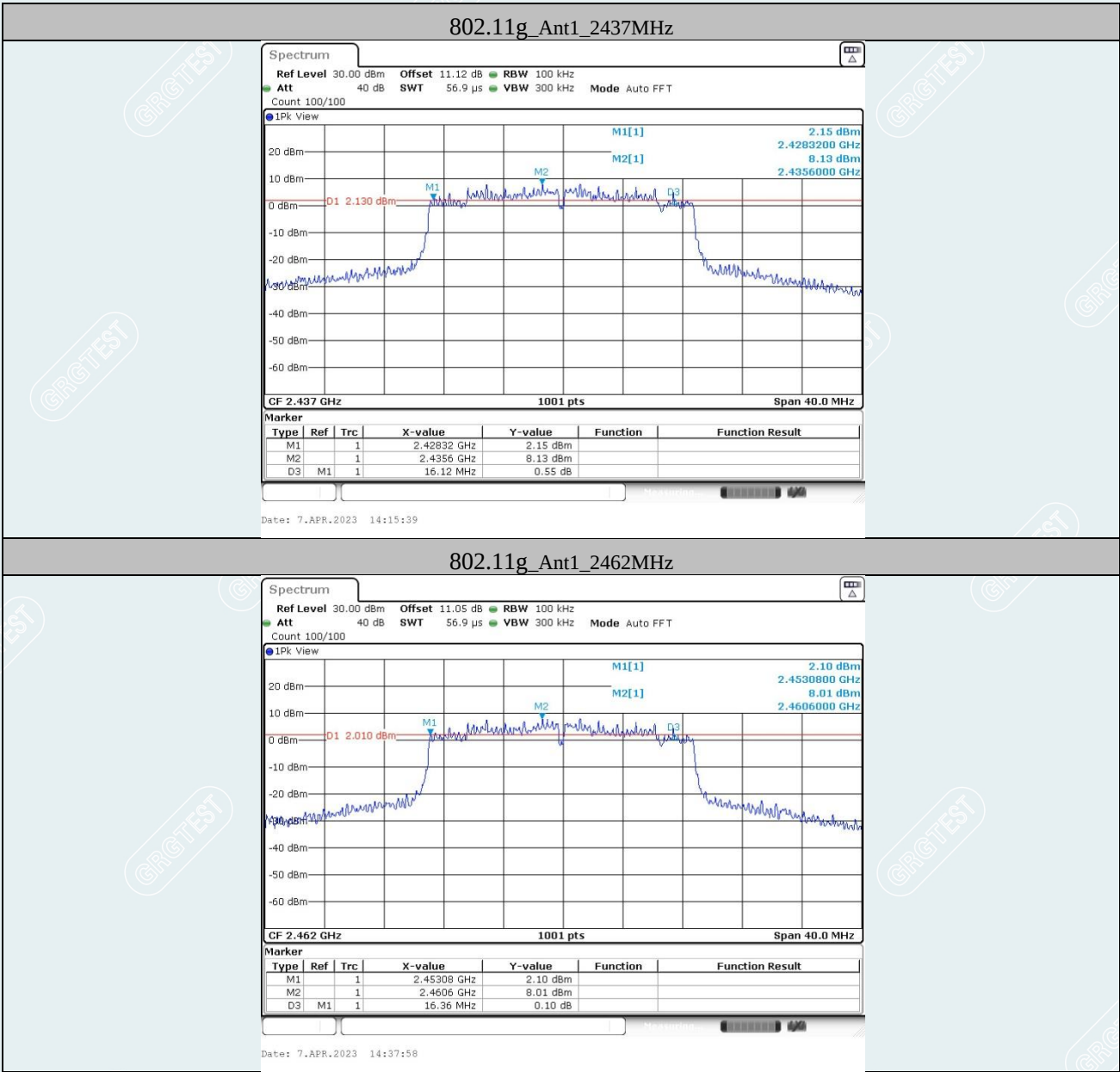
Voltage: AC120V/60Hz
Date: 2023-04-07

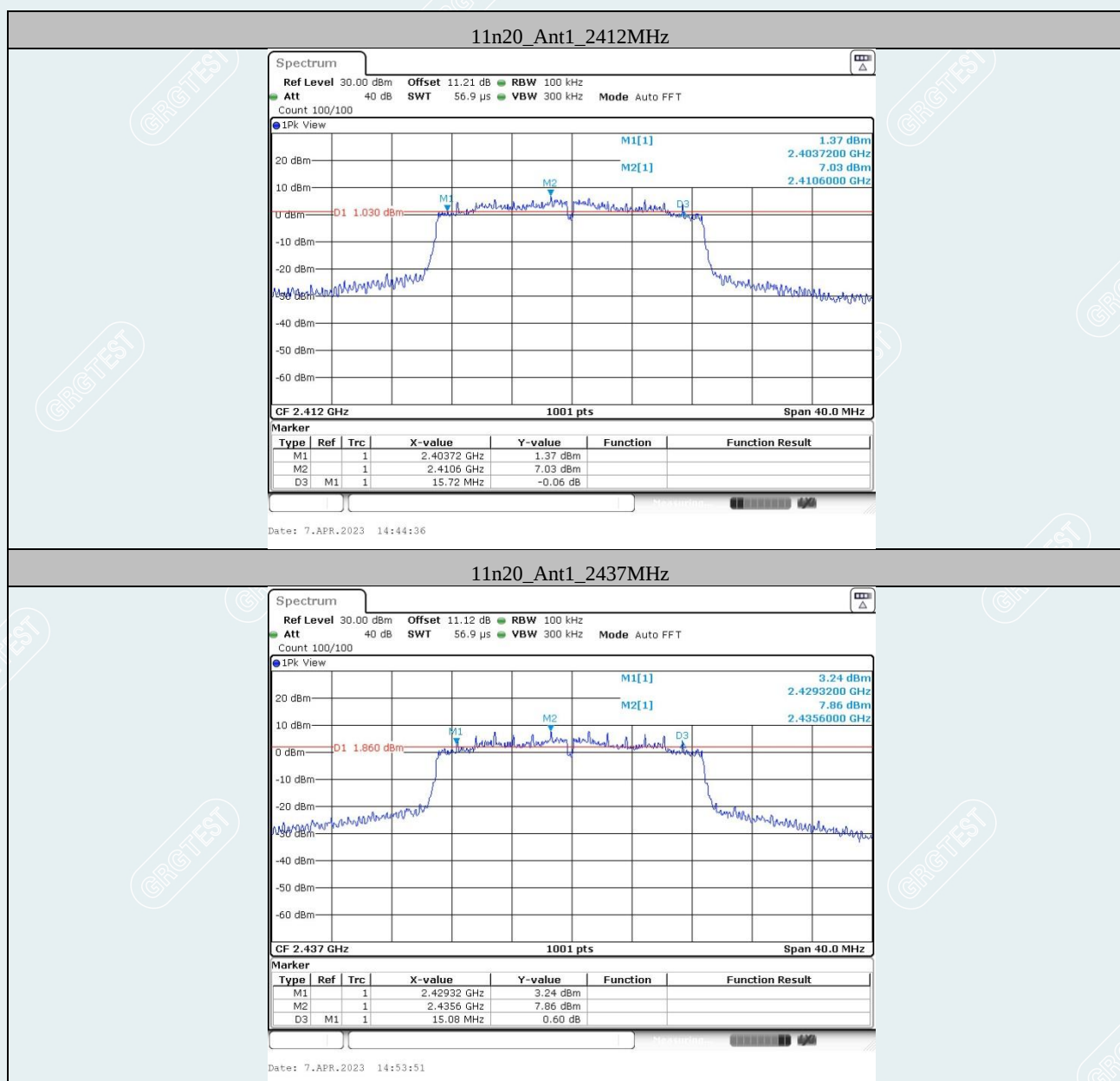
Test Mode	Antenna	Frequency[MHz]	DTS BW[MHz]	Limit[MHz]	Verdict
802.11b	Ant1	2412	15.12	0.5	PASS
		2437	15.12	0.5	PASS
		2462	15.08	0.5	PASS
802.11g	Ant1	2412	16.68	0.5	PASS
		2437	16.12	0.5	PASS
		2462	16.36	0.5	PASS
802.11n HT20	Ant1	2412	15.72	0.5	PASS
		2437	15.08	0.5	PASS
		2462	15.08	0.5	PASS

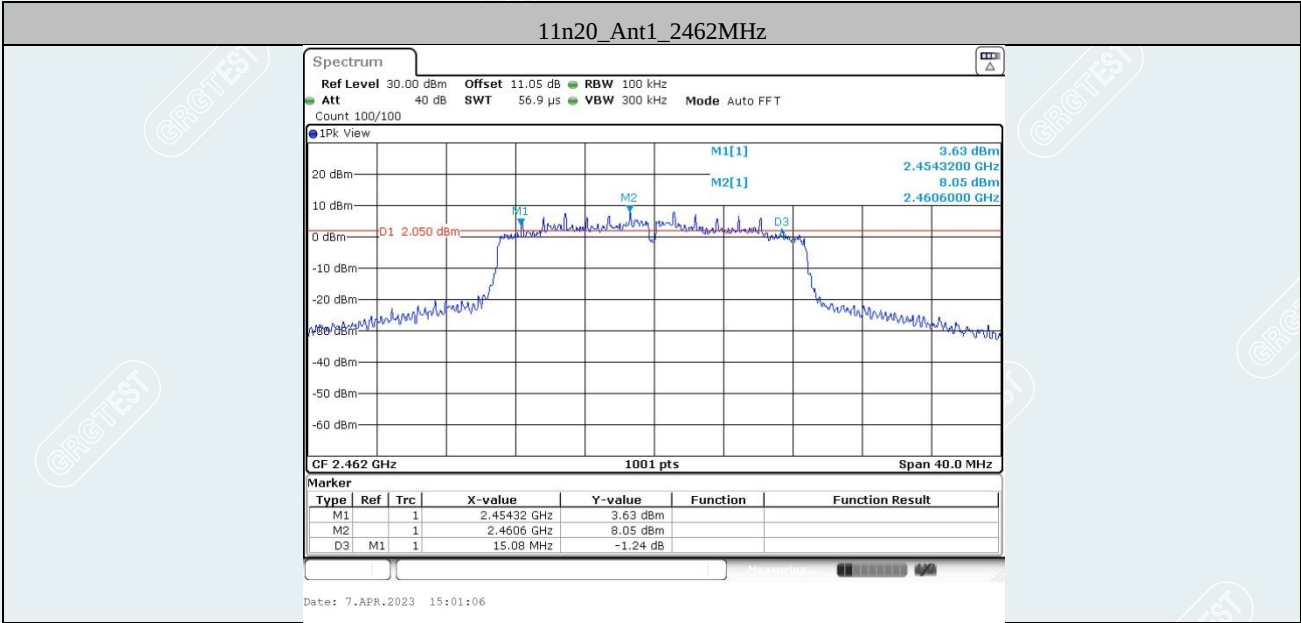
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8. MAXIMUM PEAK OUTPUT POWER

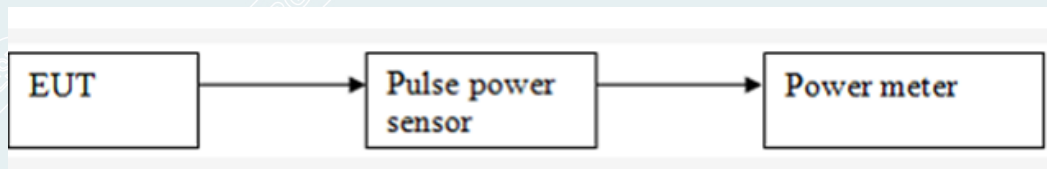
8.1 LIMITS

The maximum Peak output power measurement is 1W. The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 TEST PROCEDURES

- 1) RF output of EUT was connected to the broadband peak 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.

8.3 TEST SETUP



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

8.4 TEST RESULT

Environment: 22.6°C/53%RH/101.0kPa
 Tested By: Qin tingting

Voltage: AC120V/60Hz
 Date: 2023-04-07

802.11b Mode :

Channel No.	Frequency (MHz)	Measured Channel Power (dBm)	Peak / AVG	Limit	Result
1	2412	21.75	Peak	25dBm	Pass
6	2437	21.94			Pass
11	2462	22.17			Pass

802.11g Mode:

Channel No.	Frequency (MHz)	Measured Channel Power (dBm)	Peak / AVG	Limit	Result
1	2412	21.38	Peak	25dBm	Pass
6	2437	22.06			Pass
11	2462	22.14			Pass

802.11n HT20 Mode:

Channel No.	Frequency (MHz)	Measured Channel Power (dBm)	Peak / AVG	Limit	Result
1	2412	18.82	Peak	25dBm	Pass
6	2437	19.31			Pass
11	2462	19.75			Pass

Note: Antenna gain is greater than 6, the output power limit=30-(11-6)=30-5=25dBm.

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9. POWER SPECTRAL DENSITY

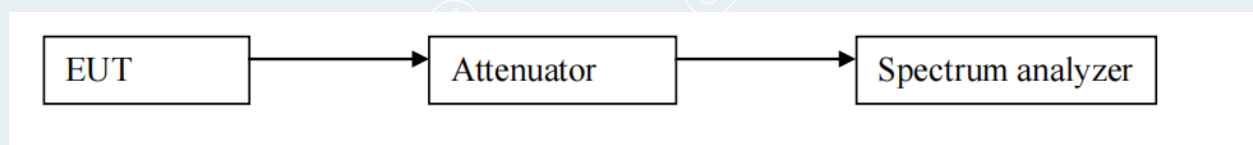
9.1 LIMITS

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

9.2 TEST PROCEDURES

- 1) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
- 2) Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- 3) The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:
 - a) Set analyzer center frequency to DTS channel center frequency.
 - b) Set the span to 1.5 times the DTS bandwidth.
 - c) Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
 - d) Set the VBW $\geq [3 \times \text{RBW}]$.
 - e) Detector = peak
 - f) Sweep time = auto couple.
 - g) Trace mode = max hold.
 - h) Allow trace to fully stabilize.
 - i) Use the peak marker function to determine the maximum amplitude level within the RBW.
 - j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.
- 4) Repeat above procedures until all frequencies measured were complete.

9.3 TEST SETUP



9.4 TEST RESULTS

Environment: 22.6°C/53%RH/101.0kPa

Tested By: Qin tingting

Voltage: AC120V/60Hz

Date: 2023-04-12

802.11b Mode:

Channel No.	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	2412	-12.58	3	Pass
6	2437	-13.07	3	Pass
11	2462	-12.97	3	Pass

802.11g Mode:

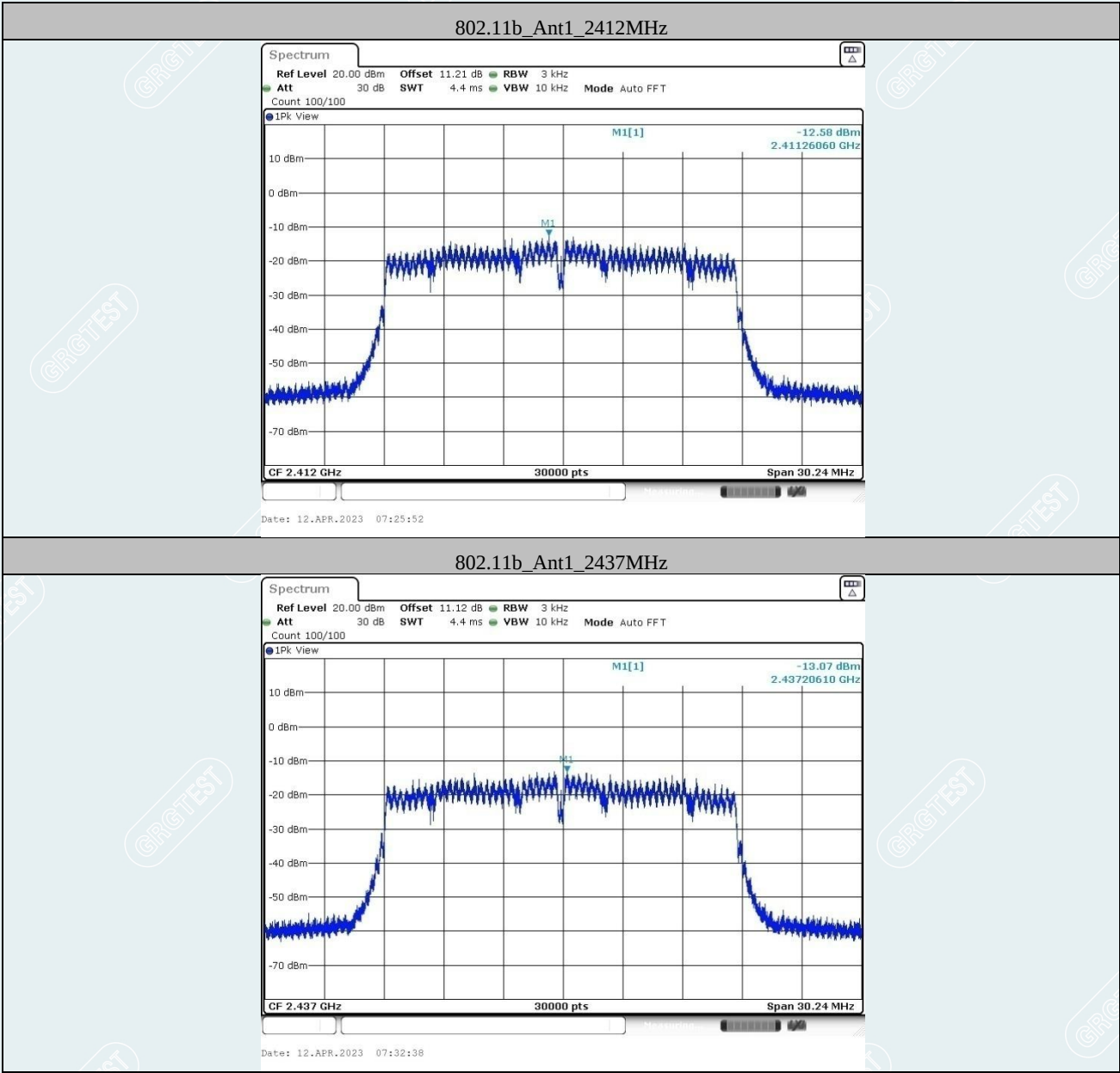
Channel No.	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	2412	-14.16	3	Pass
6	2437	-13.66	3	Pass
11	2462	-14.06	3	Pass

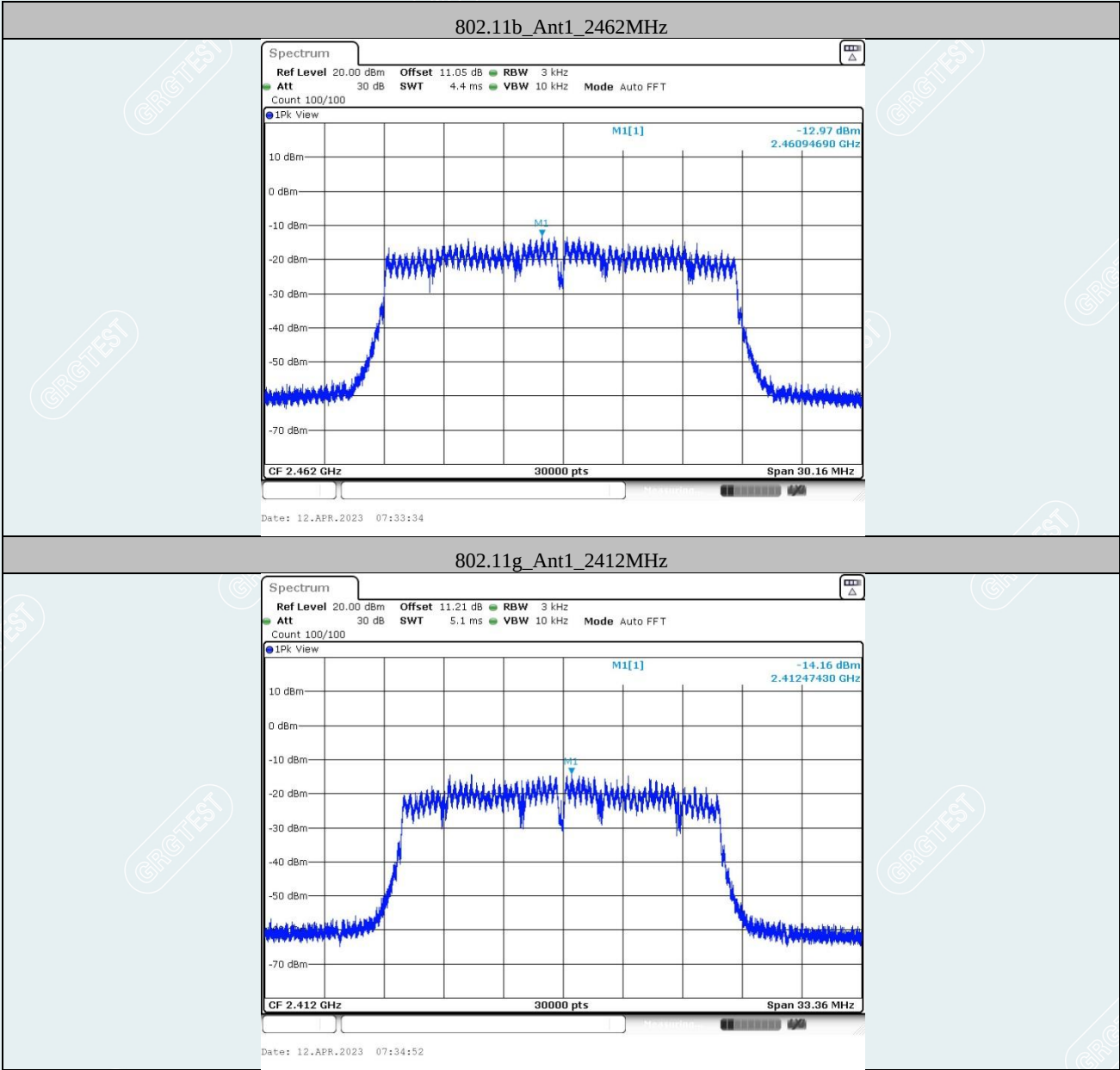
802.11n HT20 Mode:

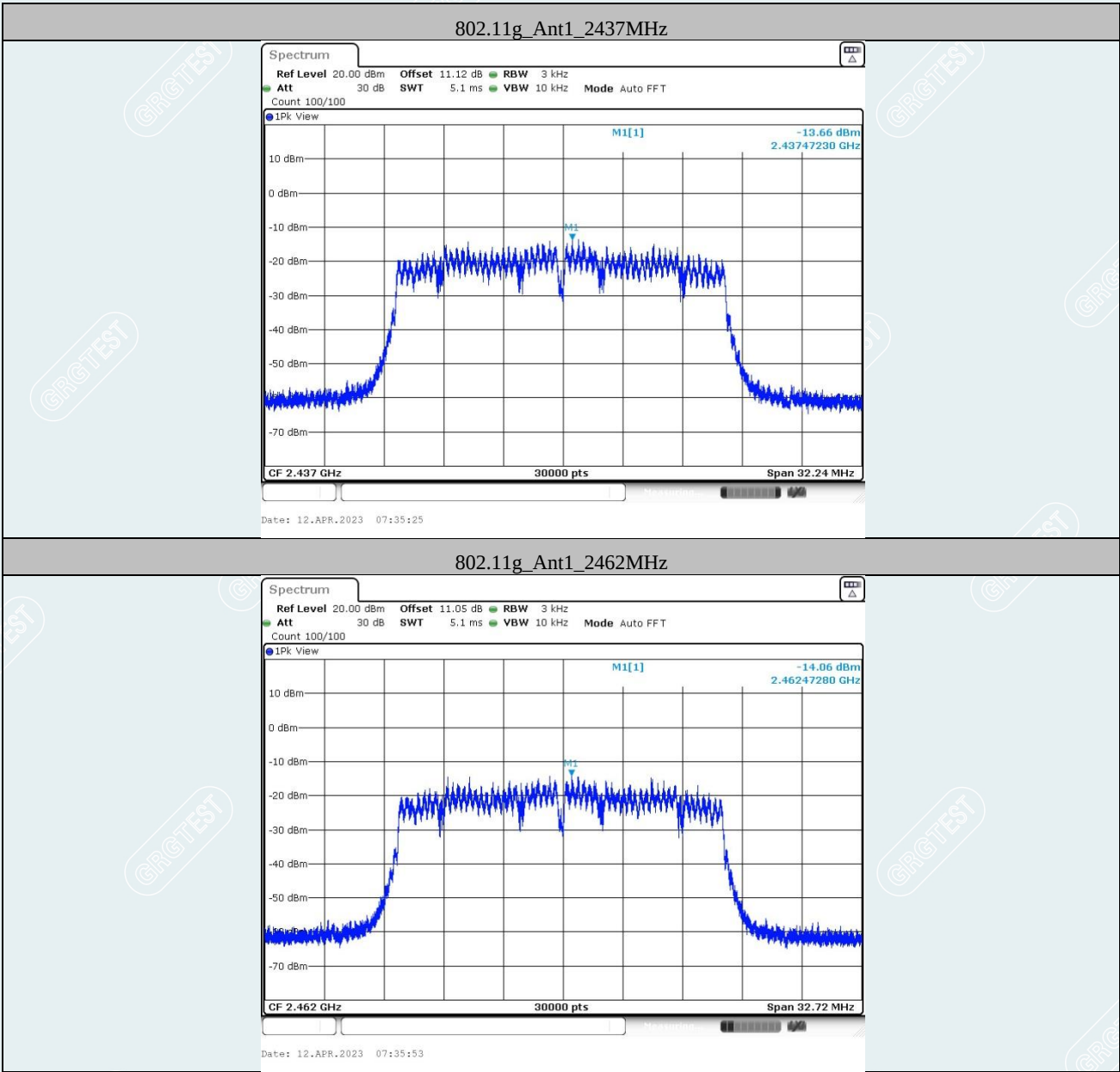
Channel No.	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	2412	-15.72	3	Pass
6	2437	-15.94	3	Pass
11	2462	-15.33	3	Pass

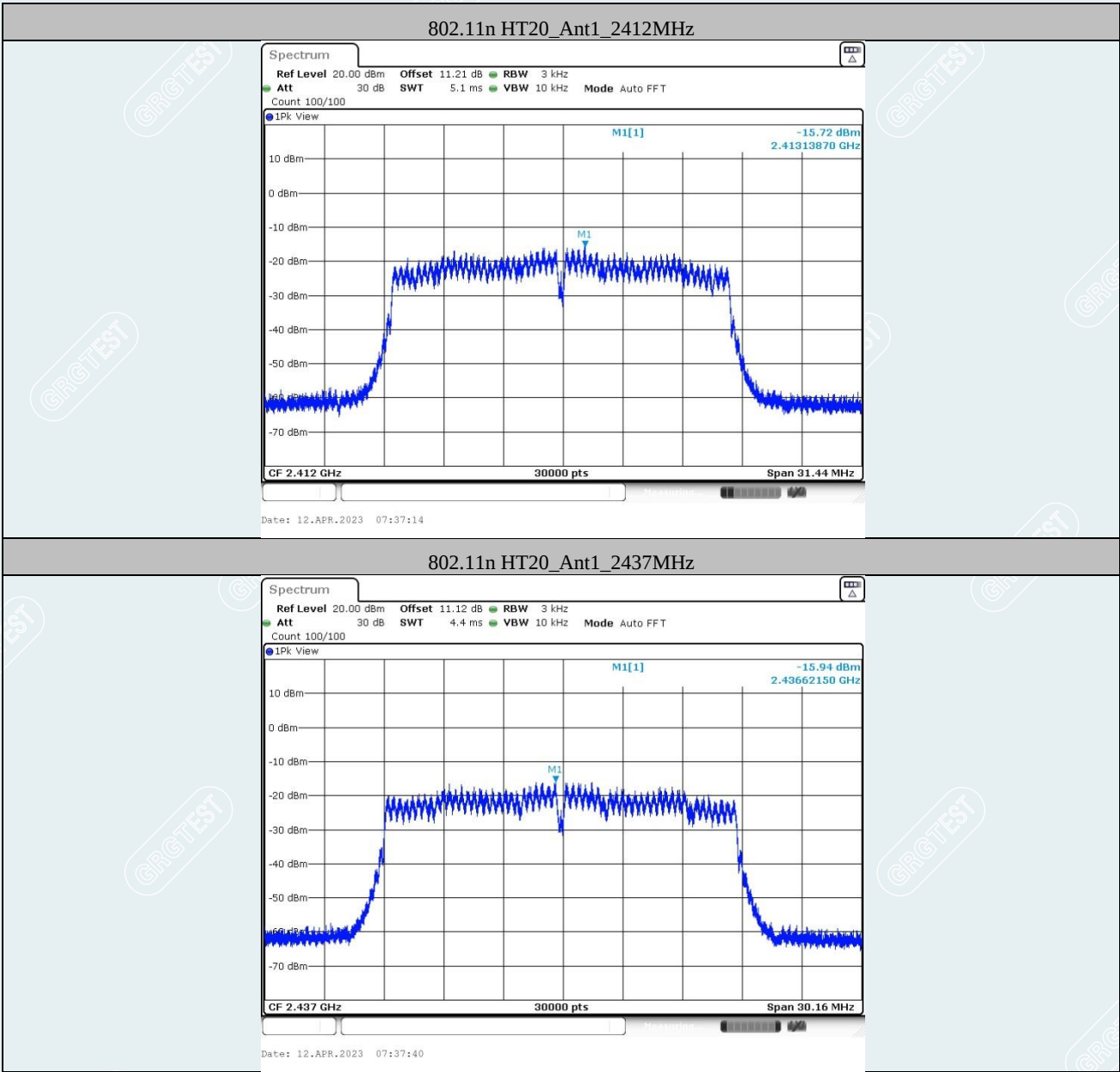
Note: Antenna gain is greater than 6, so PSD limit=8-(11-6)=3dBm/3kHz.

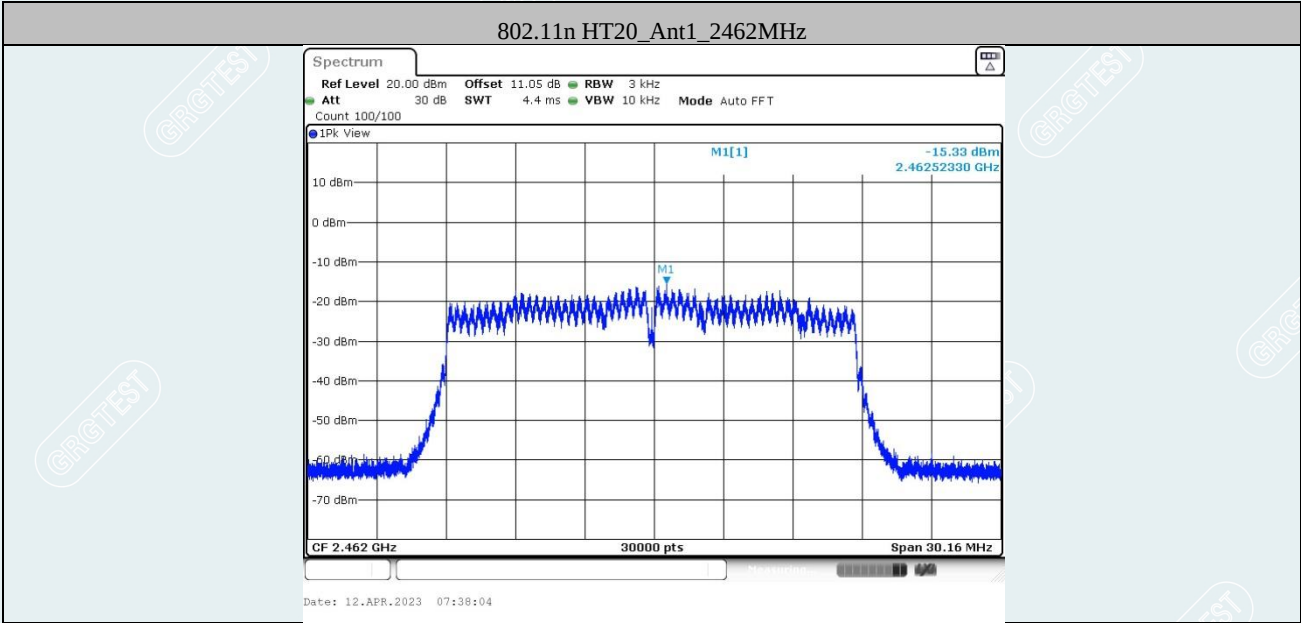
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10. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

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.

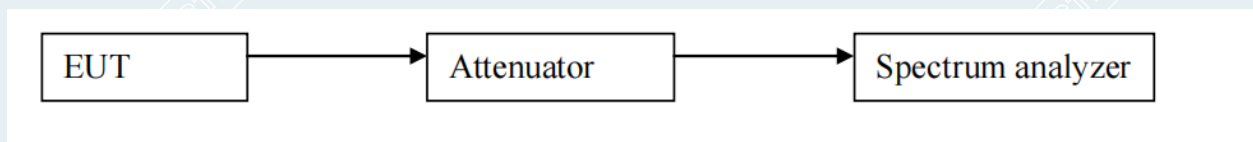
10.2 TEST PROCEDURES

Test procedures follow KDB 558074 D01 DTS Measurement Guidance.

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



10.4 TEST RESULTS

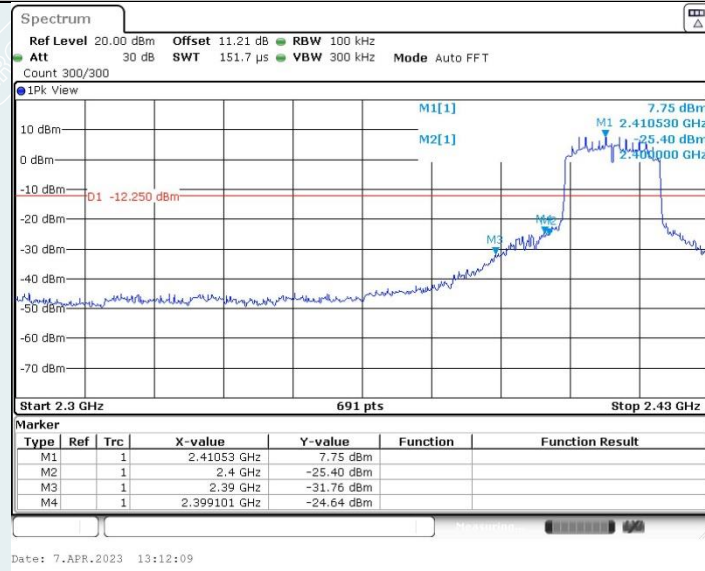
Environment: 22.6°C/53%RH/101.0kPa
 Tested By: Qin tingting

Voltage: AC120V/60Hz
 Date: 2023-04-07

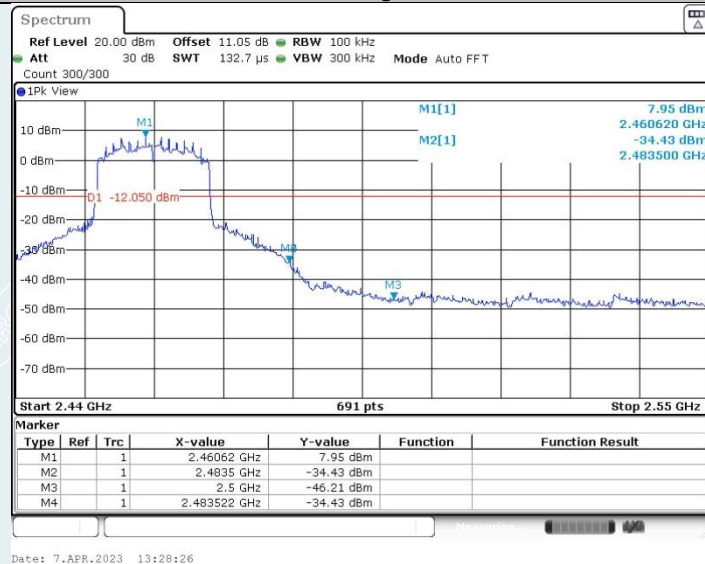
Band edge

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
802.11b	Ant1	Low	2412	7.75	-24.64	≤-12.25	PASS
		High	2462	7.95	-34.43	≤-12.05	PASS
802.11g	Ant1	Low	2412	7.79	-26.39	≤-12.21	PASS
		High	2462	7.96	-34.66	≤-12.04	PASS
802.11n HT20	Ant1	Low	2412	7.72	-23.56	≤-12.28	PASS
		High	2462	7.96	-33.58	≤-12.04	PASS

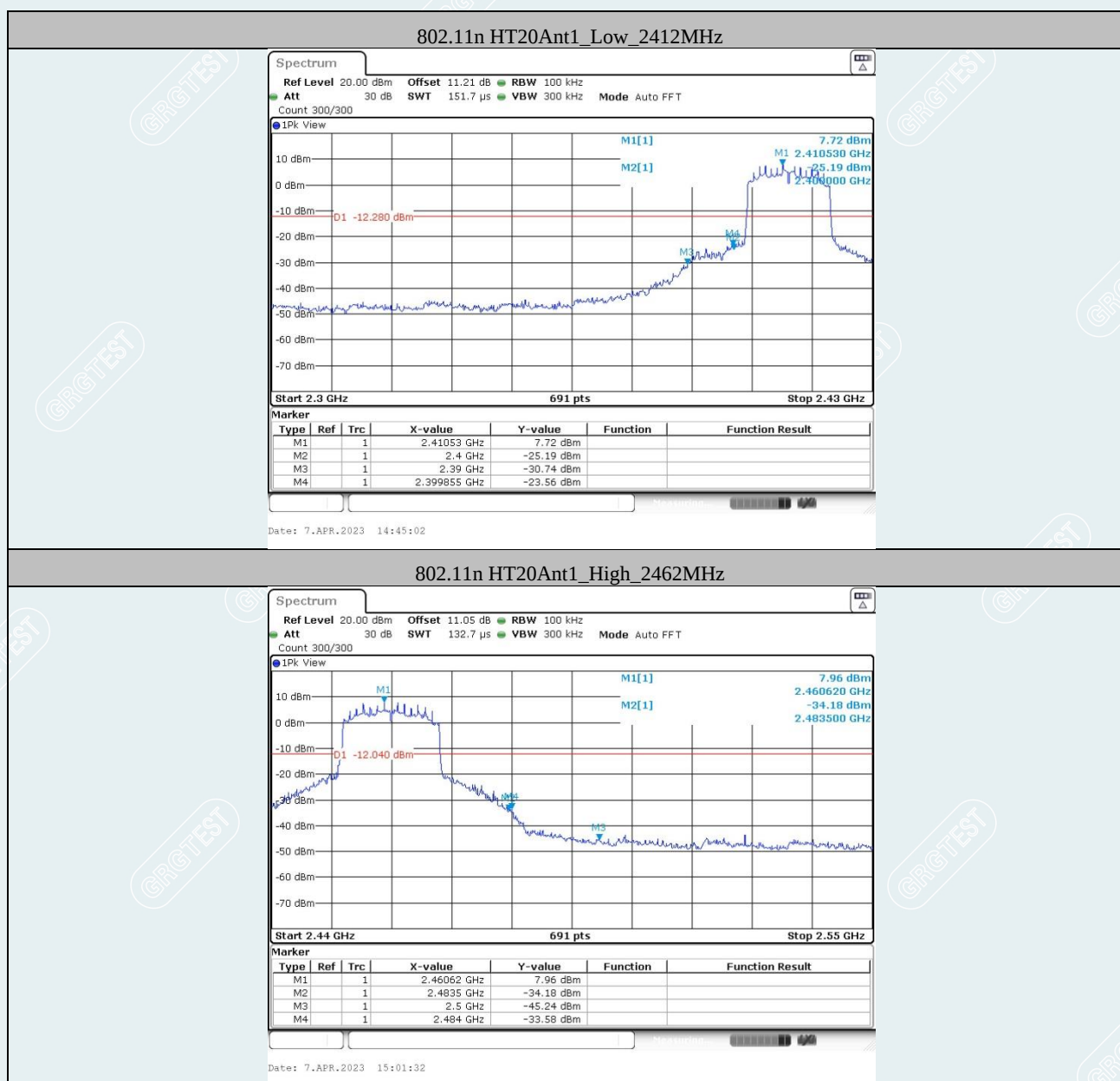
802.11b_Ant1_Low_2412MHz



802.11b_Ant1_High_2462MHz







Conducted Spurious Emission:

Test Result

Environment: 22.6°C/53%RH/101.0kPa

Tested By: Qin tingting

Voltage: AC120V/60Hz

Date: 2023-04-07

TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
802.11b	Ant1	2412	Reference	7.96	7.96	---	PASS
			30~1000	7.96	-56.1	≤-12.04	PASS
			1000~26500	7.96	-48.93	≤-12.04	PASS
		2437	Reference	7.94	7.94	---	PASS
			30~1000	7.94	-55.08	≤-12.06	PASS
			1000~26500	7.94	-47.5	≤-12.06	PASS
		2462	Reference	7.93	7.93	---	PASS
			30~1000	7.93	-54.92	≤-12.07	PASS
			1000~26500	7.93	-45.77	≤-12.07	PASS
802.11g	Ant1	2412	Reference	7.80	7.80	---	PASS
			30~1000	7.80	-55.92	≤-12.2	PASS
			1000~26500	7.80	-48.72	≤-12.2	PASS
		2437	Reference	8.09	8.09	---	PASS
			30~1000	8.09	-55.65	≤-11.91	PASS
			1000~26500	8.09	-47.54	≤-11.91	PASS
		2462	Reference	7.87	7.87	---	PASS
			30~1000	7.87	-55.59	≤-12.13	PASS
			1000~26500	7.87	-47.42	≤-12.13	PASS
802.11n HT20	Ant1	2412	Reference	7.87	7.87	---	PASS
			30~1000	7.87	-55.64	≤-12.13	PASS
			1000~26500	7.87	-48.25	≤-12.13	PASS
		2437	Reference	7.80	7.80	---	PASS
			30~1000	7.80	-56.13	≤-12.2	PASS
			1000~26500	7.80	-48.17	≤-12.2	PASS
		2462	Reference	7.77	7.77	---	PASS
			30~1000	7.77	-55.5	≤-12.23	PASS
			1000~26500	7.77	-48.29	≤-12.23	PASS

