Test Report

Verified code: 669031

Report No.: E20220818423001-6

Customer:	Lumi United Technology Co., Ltd
Address:	B1, Chongwen Park, Nanshan iPark, Liuxian Avenue, Taoyuan Residential District, Nanshan District, Shenzhen, China
Sample Name:	Smart Video Doorbell G4
Sample Model:	SVD-C01
Receive Sample Date:	Aug.19,2022
Test Date:	Aug.19,2022 ~ Oct.14,2022
Reference Document:	CFR 47, FCC Part 15 Subpart C RADIO FREQUENCY DEVICES:Subpart C—Intentional Radiators
Test Result:	Pass

Prepared by: Huang Lifang Reviewed by: Wu Haoting Approved by: Xiao Liang

GUANGZHOU GRG METROLOGY & TEST CO., LTD

Issued Date: 2022-12-08

GUANGZHOU GRG METROLOGY & TEST CO., LTD.
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5. Without the agreement of the laboratory, the client is not authorized to use the test results for unapproved propaganda.

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REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E20220818423001-6	Original Issue	2022-10-14

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1. TEST RESULT SUMMARY

Standard	Item	Limit / Severity	Result
CFR 47, FCC Part 15 Subpart C (§15.247) ANSI C63.10-2013 KDB 558074 D01 15.247 measurement guidance 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

The EUT have one antenna. The antenna is internal antenna. The max gain of Antenna is 0.5dBi, which accordance 15.203is considered sufficient to comply with the provisions of this section.

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2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

Name:	Lumi United Technology Co., Ltd
Address:	B1, Chongwen Park, Nanshan iPark, Liuxian Avenue, Taoyuan Residential District, Nanshan District, Shenzhen, China

2.2 MANUFACTURER

Name:	Lumi United Technology Co., Ltd
Address:	B1, Chongwen Park, Nanshan iPark, Liuxian Avenue, Taoyuan Residential District, Nanshan District, Shenzhen, China

2.3 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Product Name:	Smart Video Doorbell G4
Product Model:	SVD-C01
Adding Model:	SVD-C03
Models Difference:	that EUT (Smart Video Doorbell G4) Model Numbers SVD-C01 and SVD-C03 have the same technical construction including circuit diagram,PCB LAYOUT,hardware version and software version identical,except color of enclosures and sales method are different.
Trade Name:	Aqara
FCC ID:	2AKIT-SVDC01
Rating:	AC 12-24V power supplied by AC power convert DC 8-24V power supplied by DC adapter DC 4.5V power supplied by battery
Frequency Band:	2412MHz-2462MHz for IEEE 802.11b/g/n HT20
Modulation Type:	DSSS for IEEE 802.11b mode; OFDM for IEEE 802.11g/n mode
Antenna Specification:	FPC antenna with 0.5dBi gain (Max)
Temperature Range:	-10℃~ +55℃
Hardware Version:	T0
Software Version:	1.0.4_0010
Sample submitting way:	■Provided by customer □Sampling
Sample No:	E20220818423001-0001, E20220818423001-0008

2.4 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		

2.5 TEST OPERATION MODE

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

2.6 LOCAL SUPPORTIVE

Name of Equipment	Manufacturer	Model	Serial Number	Note
Notebook	LENOVO	TianYi 310-14ISK	MP18DLC6	/
Test board	/	/	/	/
Adapter	Jingsai	/	/	/

No.	Cable Type	Qty.	Shielded Type	Ferrite Core(Qty.)	Length
1	USB cable	1	No	0	0.5m
2	DC cable	1	No	0	0.2m
3	AC cable	1	No	0	1.2m

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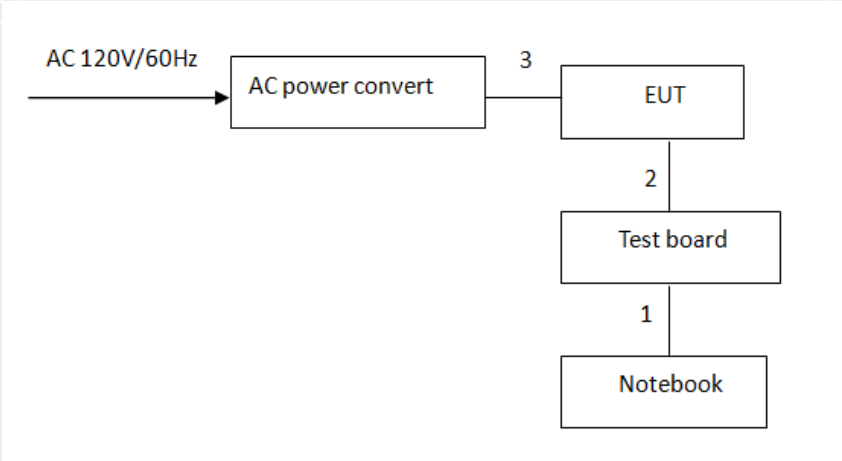
2.7 CONFIGURATION OF SYSTEM UNDER TEST



Test software:

Software version	Test level
QCOM_V1.0	IEEE802.11b: -30 IEEE802.11g: -30 IEEE802.11n HT20: -30

Power Setting:

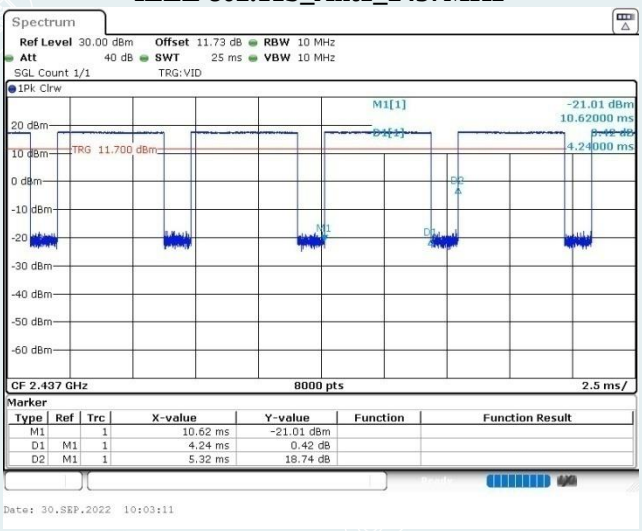
Mode	Date Rate	Frequecy (MHz)	Power Setting
IEEE 802.11b	1M	2412	-30
		2437	-30
		2462	-30
IEEE 802.11g	6M	2412	-30
		2437	-30
		2462	-30
IEEE 802.11n HT20	MCS0	2412	-30
		2437	-30
		2462	-30

2.8 DUTY CYCLE

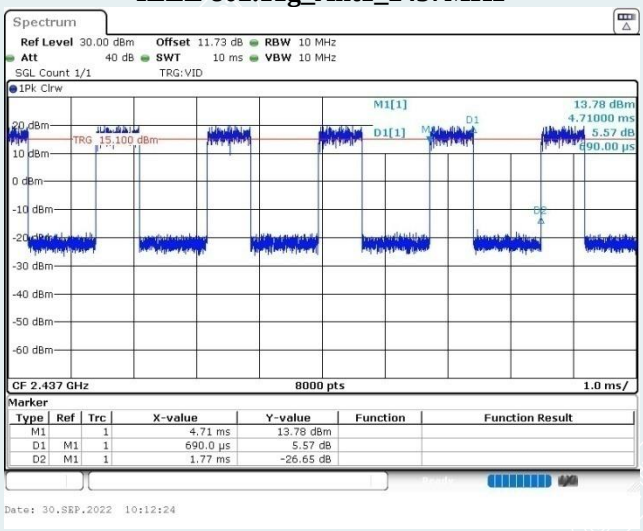
EUT Name	Smart Video Doorbell G4	Model	SVD-C01
Environmental Conditions	23.8℃/52%RH/101.0kPa	Test Voltage	AC 120V/60Hz (AC 24V by AC power convert)
Tested By	Qin Tingting	Tested Date	2022-09-30

Test Mode	Antenna	Frequency (MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	T [s]
IEEE 802.11b	Ant1	2437	4.24	5.32	79.70	0.00424
IEEE 802.11g	Ant1	2437	0.69	1.77	38.98	0.00069
IEEE 802.11n HT20	Ant1	2437	0.65	1.73	37.57	0.00065

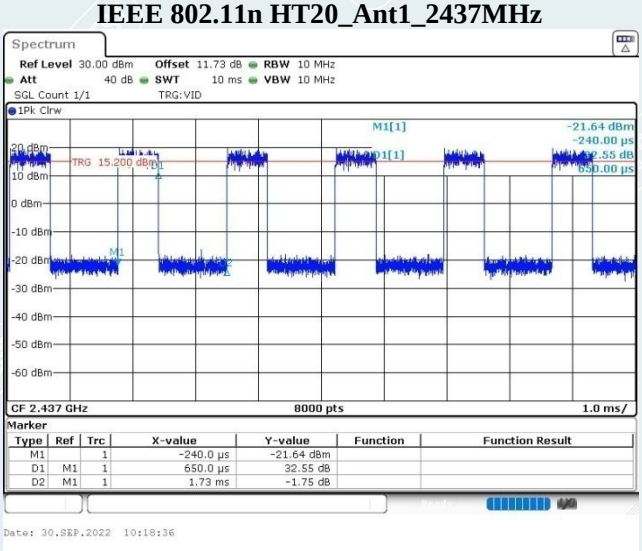
IEEE 802.11b_Ant1_2437MHz



IEEE 802.11g_Ant1_2437MHz



IEEE 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 Guangzhou GRG Metrology & Test Co., Ltd.

Add	:	No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District 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	5.1dB
		30MHz～200MHz	4.5dB
		200MHz～1000MHz	4.4dB
		1GHz～18GHz	5.6dB
		18GHz～26.5GHz	3.65dB
	Vertical	9kHz～30MHz	5.1dB
		30MHz～200MHz	4.4dB
		200MHz～1000MHz	4.5dB
		1GHz～18GHz	5.6dB
		18GHz～26.5GHz	3.65dB
Conduction Emission		150kHz～30MHz	3.40dB

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℃

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(EUT)	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	2023-04-02
Test Receiver	R&S	ESR7	102444	2023-09-02
Preamplifier	EMEC	EM330	I00426	2023-03-05
Bi-log Antenna	Schwarzbeck	VULB9160	VULB9160-3401	2022-10-27
Spectrum Analyzer	Agilent	N9010A	MY52221469	2023-06-29
Horn Antenna	Schwarzbeck	BBHA 9120D	02143	2022-10-22
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-497	2023-10-14
Amplifier	Tonscend	TAP01018048	AP20E8060075	2023-05-05
Amplifier	Tonscend	TAP184050	AP20E806071	2023-05-05
Amplifier	SHIRONG ELECTRONIC	DLNA-1G18G-G40	20200928005	2023-05-08
Test S/W	Tonscend	JS32-RE/2.5.1.5		
6 dB Bandwidth				
Spectrum Analyzer	R&S	FSV30	104381	2022-12-10
Output Power				
Pulse power sensor	Anristu	MA2411B	1126150	2023-03-01
Power meter	Anristu	ML2495A	1204003	2023-02-28
Conducted band edges and Spurious Emission				
Spectrum Analyzer	R&S	FSV30	104381	2022-12-10
Power Spectral Density				
Spectrum Analyzer	R&S	FSV30	104381	2022-12-10

Note: The calibration interval of the above test instruments is 12 months.

5. CONDUCTED EMISSION MEASUREMENT

5.1 LIMITS

Frequency range	Limits (dBμV)	
	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

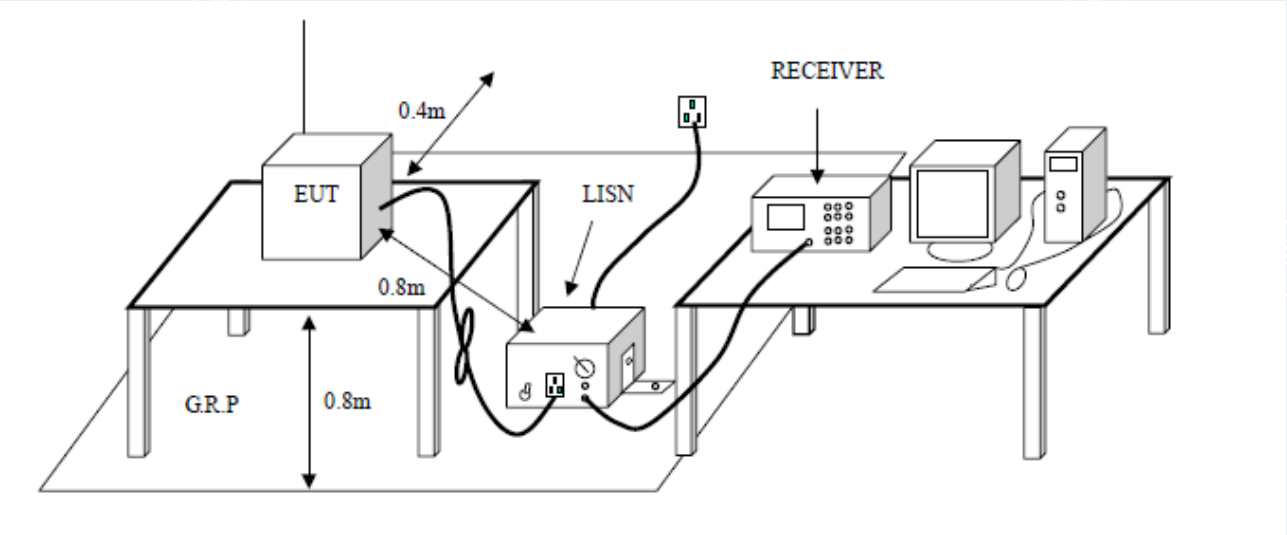
Procedure of Preliminary Test

Test procedures follow ANSI C63.10:2013.
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 + Factor
Limit = Limit stated in standard
Margin = Result (dBuV) – Limit (dBuV)

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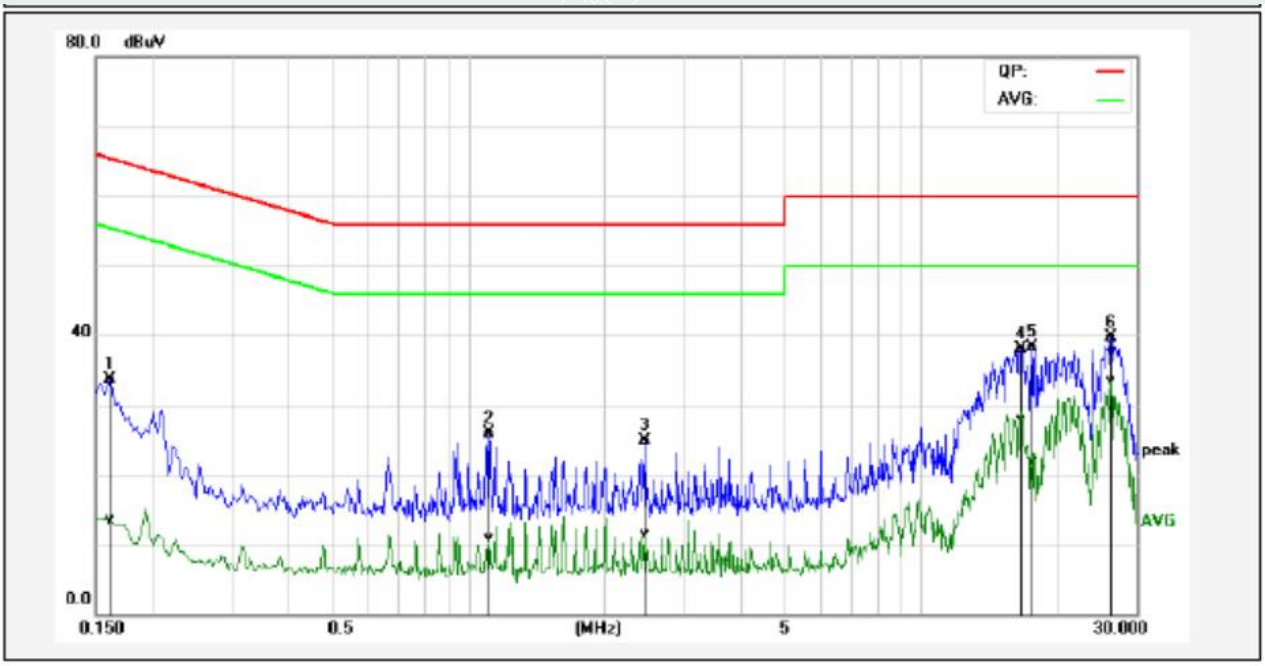
5.5 TEST RESULTS

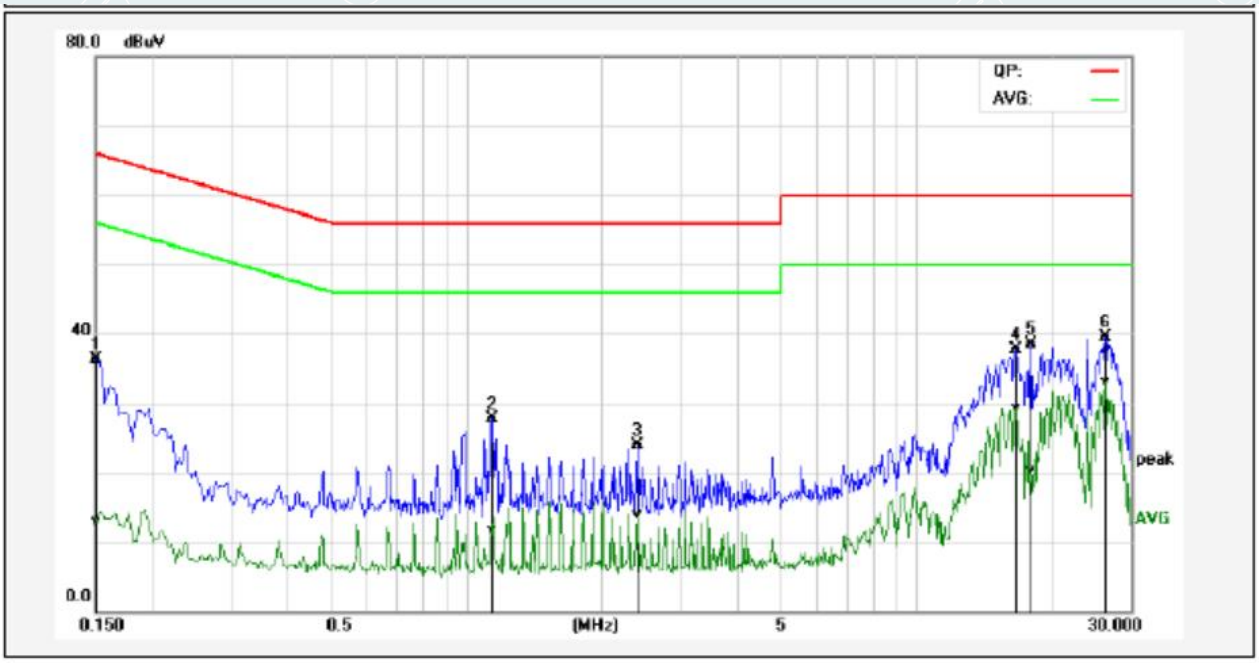
All models were pretested and the worst modes and channels were recorded in this report. (IEEE 802.11n HT20 2462MHz)

EUT Name	Smart Video Doorbell G4	**Model**	SVD-C01
Environmental Conditions	24.5℃/47%RH/101.0kPa	**Test Mode**	Mode 1
Tested By	Wang Xinyuan	**Line**	L
Tested Date	2022-10-18	**Test Voltage**	AC 24V by AC power convert from AC 120V/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	0.1620	24.15	3.80	9.61	33.76	13.41	65.36	55.36	-31.60	-41.95	Pass
2	1.1140	16.26	1.29	9.61	25.87	10.90	56.00	46.00	-30.13	-35.10	Pass
3	2.4580	15.24	1.90	9.63	24.87	11.53	56.00	46.00	-31.13	-34.47	Pass
4	16.6820	28.28	18.03	9.78	38.06	27.81	60.00	50.00	-21.94	-22.19	Pass
5	17.5900	28.56	12.05	9.80	38.36	21.85	60.00	50.00	-21.64	-28.15	Pass
6*	26.3220	29.83	23.59	9.84	39.67	33.43	60.00	50.00	-20.33	-16.57	Pass

EUT Name	Smart Video Doorbell G4	Model	SVD-C01
Environmental Conditions	24.5℃/47%RH/101.0kPa	Test Mode	Mode 1
Tested By	Wang Xinyuan	Line	N
Tested Date	2022-10-18	Test Voltage	AC 24V by AC power convert from AC 120V/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	0.1500	26.62	3.32	9.60	36.22	12.92	65.99	56.00	-29.77	-43.08	Pass
2	1.1460	18.02	2.03	9.61	27.63	11.64	56.00	46.00	-28.37	-34.36	Pass
3	2.3980	14.19	4.37	9.62	23.81	13.99	56.00	46.00	-32.19	-32.01	Pass
4	16.6020	27.92	19.42	9.84	37.76	29.26	60.00	50.00	-22.24	-20.74	Pass
5	18.0380	28.63	10.48	9.86	38.49	20.34	60.00	50.00	-21.51	-29.66	Pass
6*	26.3220	29.42	23.15	9.99	39.41	33.14	60.00	50.00	-20.59	-16.86	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(μV/m)	Measurement distance(m)	Quasi-peak(dBμV/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

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 (dBμV/m).
The Avg Limit=54+20*log(3/1)=63.54 (dBμV/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 ≥98%, set VBW≤RBW/100 (i.e.,10kHz) but not less than 10Hz. Where duty cycle is defined in section 2.9. If the EUT duty cycle is ＜98%, set VBW≥1/T, Where T is defined in section 2.9.

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

6.3 TEST SETUP

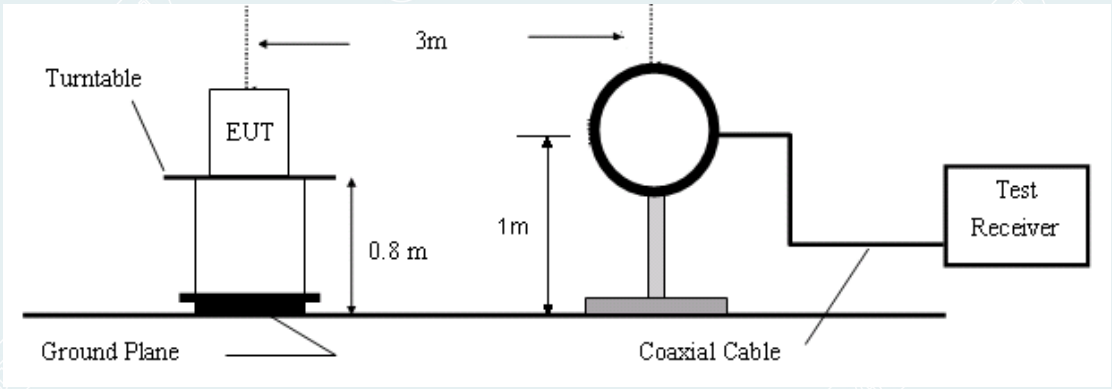


Figure 1. 9kHz to 30MHz radiated emissions test configuration

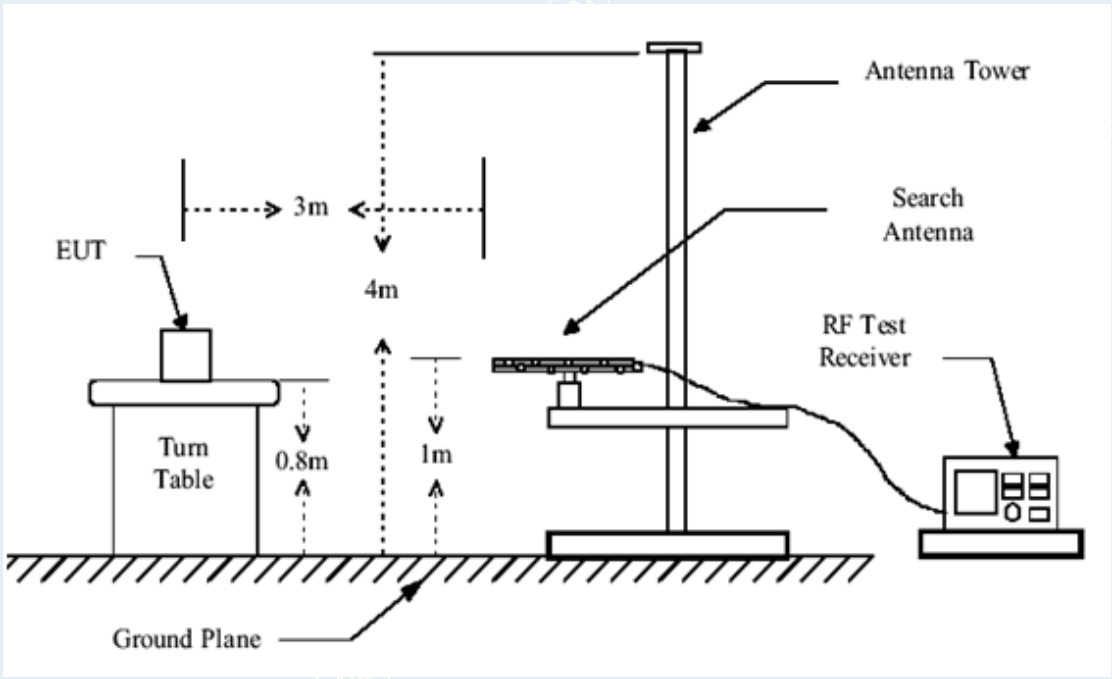


Figure 2. 30MHz to 1GHz radiated emissions test configuration

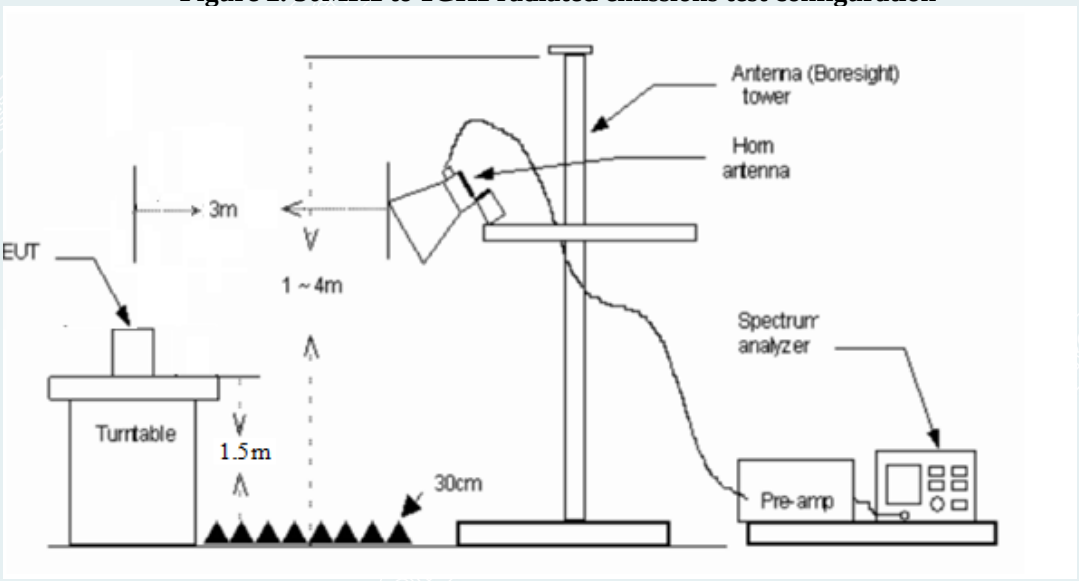


Figure 3. 1GHz to 18GHz radiated emissions test configuration

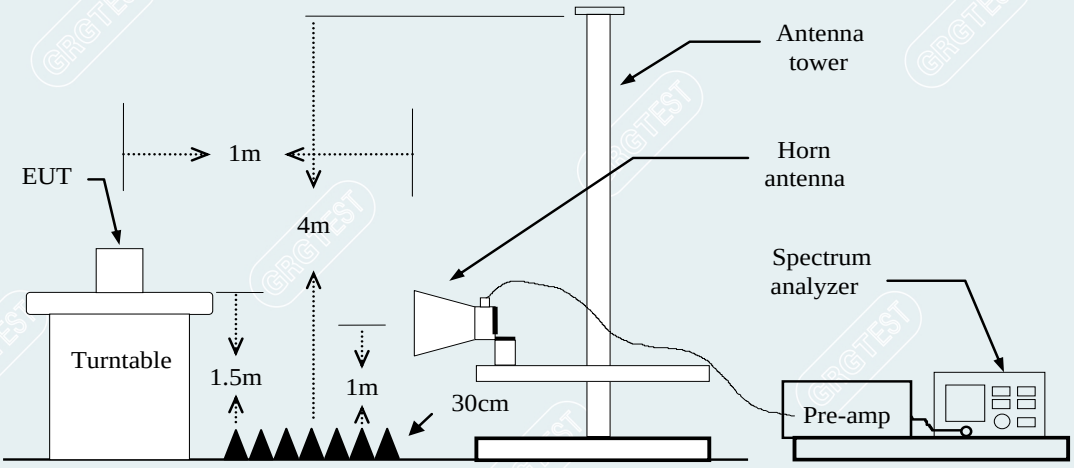


Figure 4.18GHz to 26.5GHz radiated emissions test configuration

6.4 DATA SAMPLE

30MHz to 1GHz

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

1GHz-18GHz

No.	Frequency (MHz)	Reading (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
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 (MHz)	Reading (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
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) = Uncorrected Analyzer / Receiver reading

Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain

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

Limit (dBuV/m) = Limit stated in standard

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

Peak = Peak Reading

QP = Quasi-peak Reading

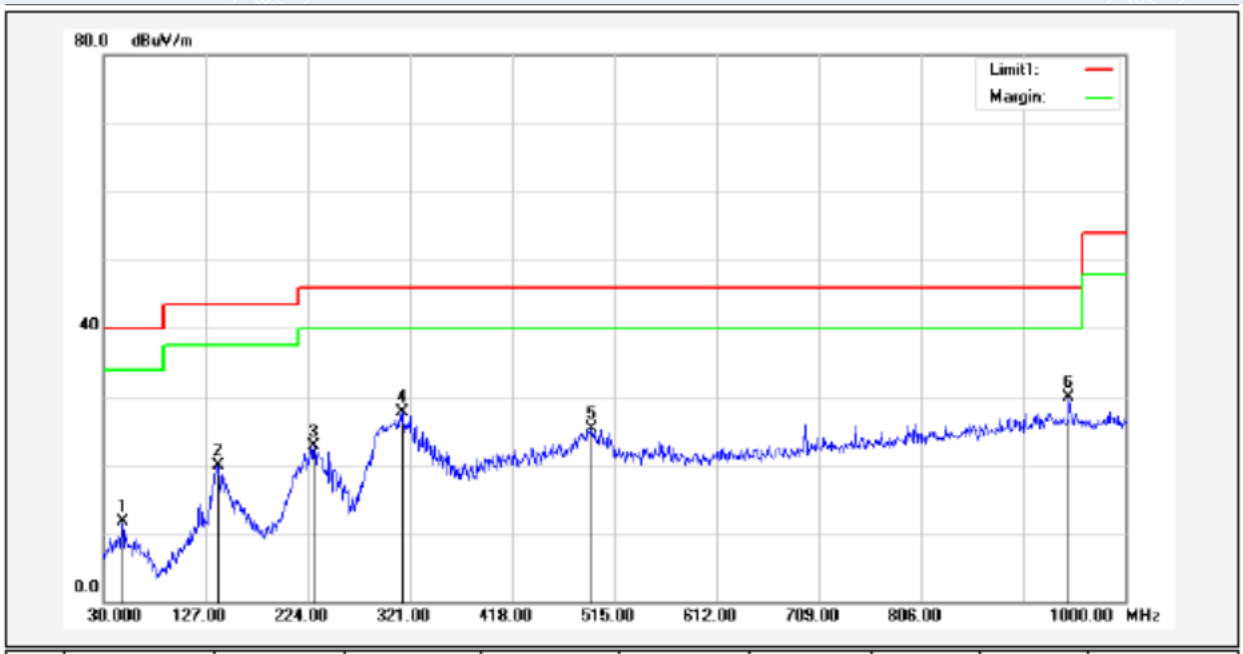
AVG = Average Reading

6.5 TEST RESULTS

This item pre-scan all power supply,AC 12V/24V supply by AC power convert,DC 8V/24V supply by DC adapter and DC 4.5V supply by battery,then the report display the worst case and data.(AC 24V supply by AC power convert)

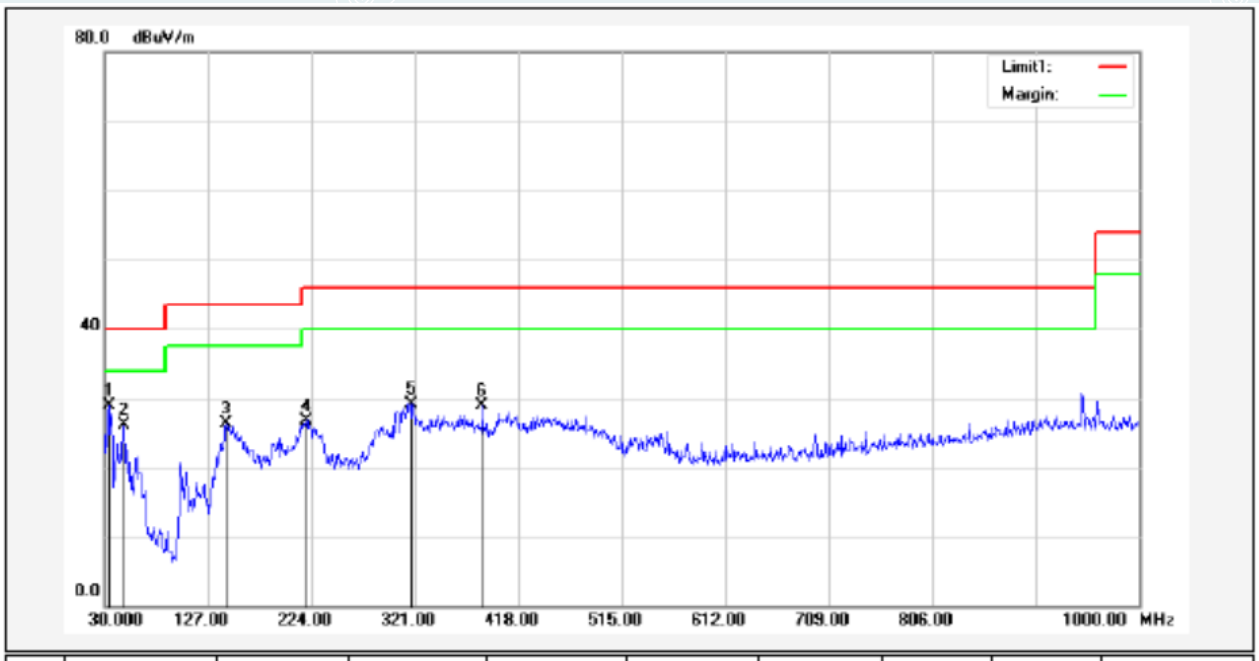
Below 1GHz
All models were pretested and the worst modes and channels were recorded in this report. (IEEE 802.11n HT20 2462MHz)

EUT Name	Smart Video Doorbell G4	**Model**	SVD-C01
Environmental Conditions	23.7℃/45%RH/101.0kPa	**Test Voltage**	AC 24V by AC power convert from AC 120V/60Hz
Test Mode	Mode 1	**Polarity**	Horizontal
Tested By	Tang Shenghui	**Tested Date**	2022-09-30



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over (dB)	Degree (deg.)	Height (cm)	Remark
1	48.4300	38.21	-26.54	11.67	40.00	-28.33	360	155	QP
2	139.6100	44.78	-24.91	19.87	43.50	-23.63	111	200	QP
3	229.8200	48.65	-25.95	22.70	46.00	-23.30	329	100	QP
4	313.2400	50.62	-22.91	27.71	46.00	-18.29	182	100	QP
5	493.6600	43.13	-17.81	25.32	46.00	-20.68	288	200	QP
6*	946.6500	39.42	-9.56	29.86	46.00	-16.14	318	200	QP

EUT Name	Smart Video Doorbell G4	Model	SVD-C01
Environmental Conditions	23.7℃/45%RH/101.0kPa	Test Voltage	AC 24V by AC power convert from AC 120V/60Hz
Test Mode	Mode 1	Polarity	Vertical
Tested By	Tang Shenghui	Tested Date	2022-09-30



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over (dB)	Degree (deg.)	Height (cm)	Remark
1*	33.8800	56.43	-27.54	28.89	40.00	-11.11	64	100	QP
2	48.4300	52.62	-26.54	26.08	40.00	-13.92	358	100	QP
3	144.4600	51.01	-24.65	26.36	43.50	-17.14	325	100	QP
4	219.1500	53.22	-26.44	26.78	46.00	-19.22	290	100	QP
5	318.0900	51.99	-22.80	29.19	46.00	-16.81	297	100	QP
6	384.0500	49.66	-20.81	28.85	46.00	-17.15	360	133	QP

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) Date:2022-09-24
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By: Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1166	70.99	46.38	-24.61	74.00	27.62	100	278	Horizontal
2	1328.2	69.78	46.73	-23.05	74.00	27.27	100	330	Horizontal
3	1659	68.96	45.80	-23.16	74.00	28.20	100	330	Horizontal
4	2658.4	65.01	46.58	-18.43	74.00	27.42	100	278	Horizontal
5	3618	58.67	42.32	-16.35	74.00	31.68	200	345	Horizontal
6	4824	60.09	47.77	-12.32	74.00	26.23	200	81	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	1166.2	69.79	45.50	-24.29	74.00	28.50	200	16	Vertical
2	1328.8	69.69	47.04	-22.65	74.00	26.96	200	226	Vertical
3	1662.4	69.95	47.47	-22.48	74.00	26.53	100	322	Vertical
4	2653.8	65.21	47.40	-17.81	74.00	26.60	100	308	Vertical
5	3324	62.44	44.83	-17.61	74.00	29.17	200	240	Vertical
6	4824	59.59	47.02	-12.57	74.00	26.98	200	346	Vertical

Mode: IEEE 802.11b
Middle Frequency (2437MHz) Date:2022-09-24
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By: Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1162.6	69.65	44.97	-24.68	74.00	29.03	100	240	Horizontal
2	1328.4	67.84	44.78	-23.06	74.00	29.22	100	304	Horizontal
3	1660.6	68.62	45.48	-23.14	74.00	28.52	100	328	Horizontal
4	1997.4	65.60	44.43	-21.17	74.00	29.57	100	278	Horizontal
5	2660.2	65.37	46.94	-18.43	74.00	27.06	100	16	Horizontal
6	4873.5	60.63	47.60	-13.03	74.00	26.40	200	95	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	1165.2	70.98	46.72	-24.26	74.00	27.28	100	279	Vertical
2	1333.6	69.16	46.66	-22.50	74.00	27.34	100	265	Vertical
3	1663	70.29	47.83	-22.46	74.00	26.17	200	323	Vertical
4	2654.2	64.41	46.61	-17.80	74.00	27.39	100	201	Vertical
5	3996	61.79	45.87	-15.92	74.00	28.13	100	58	Vertical
6	4873.5	58.35	45.31	-13.04	74.00	28.69	200	280	Vertical

Mode: IEEE 802.11b
Highest Frequency (2462MHz) Date: 2022-09-24
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By: Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1164.4	69.25	44.61	-24.64	74.00	29.39	100	278	Horizontal
2	1333.6	67.96	44.85	-23.11	74.00	29.15	100	318	Horizontal
3	1664	68.06	44.95	-23.11	74.00	29.05	100	331	Horizontal
4	2659.4	64.77	46.33	-18.44	74.00	27.67	100	16	Horizontal
5	4924.5	61.95	49.39	-12.56	74.00	24.61	200	108	Horizontal
6	6682.5	54.16	47.69	-6.47	74.00	26.31	100	82	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	4926	-12.51	56.35	43.84	54.00	10.16	200	94	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	1165.2	70.84	46.58	-24.26	74.00	27.42	200	15	Vertical
2	1330	69.02	46.41	-22.61	74.00	27.59	100	266	Vertical
3	1663.2	68.58	46.13	-22.45	74.00	27.87	200	318	Vertical
4	2660.6	64.90	47.17	-17.73	74.00	26.83	100	203	Vertical
5	3997.5	63.41	47.49	-15.92	74.00	26.51	100	123	Vertical
6	4924.5	60.00	47.69	-12.31	74.00	26.31	200	186	Vertical

Mode: IEEE 802.11g
Lowest Frequency (2412MHz) Date: 2022-09-24
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By: Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1166.4	68.65	44.05	-24.60	74.00	29.95	200	143	Horizontal
2	1248.6	66.66	44.71	-21.95	74.00	29.29	100	251	Horizontal
3	1328.2	65.56	42.51	-23.05	74.00	31.49	100	193	Horizontal
4	1666	69.54	46.45	-23.09	74.00	27.55	200	328	Horizontal
5	1997.4	64.48	43.31	-21.17	74.00	30.69	100	278	Horizontal
6	4816.5	56.54	44.31	-12.23	74.00	29.69	200	227	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	1164.8	69.24	44.98	-24.26	74.00	29.02	100	296	Vertical
2	1330.4	69.82	47.22	-22.60	74.00	26.78	100	269	Vertical
3	1664.4	69.38	46.96	-22.42	74.00	27.04	200	321	Vertical
4	2655	65.35	47.56	-17.79	74.00	26.44	100	203	Vertical
5	3996	63.26	47.34	-15.92	74.00	26.66	100	18	Vertical
6	4809	56.25	43.85	-12.40	74.00	30.15	200	252	Vertical

Mode: IEEE 802.11g
Middle Frequency (2437MHz) Date: 2022-09-24
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By: Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1166.4	67.39	42.79	-24.60	74.00	31.21	100	265	Horizontal
2	1328	67.38	44.33	-23.05	74.00	29.67	100	201	Horizontal
3	1660.2	69.24	46.09	-23.15	74.00	27.91	100	16	Horizontal
4	2663.2	64.93	46.51	-18.42	74.00	27.49	100	293	Horizontal
5	4326	57.53	43.29	-14.24	74.00	30.71	200	173	Horizontal
6	4840.5	56.78	44.23	-12.55	74.00	29.77	100	173	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	1165	71.68	47.42	-24.26	74.00	26.58	100	292	Vertical
2	1330.4	69.19	46.59	-22.60	74.00	27.41	100	267	Vertical
3	1661.2	69.96	47.44	-22.52	74.00	26.56	200	317	Vertical
4	2664.6	64.82	47.14	-17.68	74.00	26.86	100	214	Vertical
5	3324	63.25	45.64	-17.61	74.00	28.36	200	268	Vertical
6	4663.5	58.32	45.97	-12.35	74.00	28.03	100	30	Vertical

Mode: IEEE 802.11g
Highest Frequency (2462MHz) Date: 2022-09-24
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By: Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1165.4	68.46	43.84	-24.62	74.00	30.16	100	266	Horizontal
2	1327.6	66.78	43.73	-23.05	74.00	30.27	100	17	Horizontal
3	1659.8	66.59	43.44	-23.15	74.00	30.56	200	17	Horizontal
4	2661.4	63.47	45.04	-18.43	74.00	28.96	200	17	Horizontal
5	3613.5	57.17	40.96	-16.21	74.00	33.04	100	235	Horizontal
6	4924.5	57.49	44.93	-12.56	74.00	29.07	200	96	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	1163.8	72.05	47.82	-24.23	74.00	26.18	100	278	Vertical
2	1331.6	69.65	47.08	-22.57	74.00	26.92	100	265	Vertical
3	1660	70.43	47.88	-22.55	74.00	26.12	200	305	Vertical
4	3318	62.82	45.37	-17.45	74.00	28.63	200	256	Vertical
5	3985.5	63.53	47.68	-15.85	74.00	26.32	100	344	Vertical
6	4924.5	57.50	45.19	-12.31	74.00	28.81	200	190	Vertical

Mode: IEEE 802.11n HT20
Lowest Frequency (2412MHz) Date: 2022-09-24
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By: Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1165.6	70.88	46.26	-24.62	74.00	27.74	100	225	Horizontal
2	1333	67.15	44.05	-23.10	74.00	29.95	100	328	Horizontal
3	1659.6	69.46	46.30	-23.16	74.00	27.70	100	340	Horizontal
4	2656	65.47	47.03	-18.44	74.00	26.97	100	28	Horizontal
5	3985.5	60.50	44.35	-16.15	74.00	29.65	100	32	Horizontal
6	4812	56.82	44.65	-12.17	74.00	29.35	200	81	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	1161	71.93	47.76	-24.17	74.00	26.24	200	15	Vertical
2	1330.4	69.76	47.16	-22.60	74.00	26.84	200	239	Vertical
3	1661	69.48	46.96	-22.52	74.00	27.04	100	318	Vertical
4	2659.2	64.97	47.23	-17.74	74.00	26.77	100	318	Vertical
5	3981	62.53	46.71	-15.82	74.00	27.29	100	212	Vertical
6	4950	56.05	44.68	-11.37	74.00	29.32	100	212	Vertical

Mode: IEEE 802.11n HT20
Middle Frequency (2437 MHz) Date: 2022-09-24
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By: Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1165.2	70.31	45.68	-24.63	74.00	28.32	100	265	Horizontal
2	1330	68.14	45.07	-23.07	74.00	28.93	100	278	Horizontal
3	1666.4	69.31	46.23	-23.08	74.00	27.77	100	334	Horizontal
4	2656.4	62.62	44.18	-18.44	74.00	29.82	100	15	Horizontal
5	3592.5	58.09	42.14	-15.95	74.00	31.86	100	84	Horizontal
6	4860	56.48	43.65	-12.83	74.00	30.35	200	69	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	1162.8	71.27	47.06	-24.21	74.00	26.94	200	355	Vertical
2	1329	70.00	47.35	-22.65	74.00	26.65	100	279	Vertical
3	1661.2	70.42	47.90	-22.52	74.00	26.10	100	317	Vertical
4	2660.6	65.28	47.55	-17.73	74.00	26.45	100	202	Vertical
5	3988.5	63.85	47.99	-15.86	74.00	26.01	100	306	Vertical
6	4947	55.58	44.10	-11.48	74.00	29.90	100	30	Vertical

Mode: IEEE 802.11n HT20
Highest Frequency (2462MHz) Date: 2022-09-24
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By: Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1166.8	68.08	43.49	-24.59	74.00	30.51	100	345	Horizontal
2	1327.8	68.24	45.19	-23.05	74.00	28.81	100	331	Horizontal
3	1661.2	67.56	44.42	-23.14	74.00	29.58	100	331	Horizontal
4	2074.2	63.61	42.70	-20.91	74.00	31.30	100	331	Horizontal
5	2661.4	63.97	45.54	-18.43	74.00	28.46	200	16	Horizontal
6	4930.5	57.36	45.01	-12.35	74.00	28.99	200	108	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	1162.6	70.24	46.03	-24.21	74.00	27.97	100	292	Vertical
2	1333.6	68.78	46.28	-22.50	74.00	27.72	200	223	Vertical
3	1664.4	69.63	47.21	-22.42	74.00	26.79	200	327	Vertical
4	2662.6	65.39	47.69	-17.70	74.00	26.31	100	317	Vertical
5	2997.2	63.73	47.34	-16.39	74.00	26.66	100	237	Vertical
6	3988.5	63.62	47.76	-15.86	74.00	26.24	100	302	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 802.11n HT20)

Mode: IEEE 802.11n HT20
Lowest Frequency (2412MHz) Date: 2022-09-26
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By: Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18499.8	52.56	40.34	-12.22	83.54	43.20	100	256	Horizontal
2	19646.025	52.57	41.29	-11.28	83.54	42.25	100	304	Horizontal
3	20403.375	51.74	41.13	-10.61	83.54	42.41	100	78	Horizontal
4	21201.525	51.62	41.56	-10.06	83.54	41.98	100	288	Horizontal
5	22650.35	48.15	39.22	-8.93	83.54	44.32	100	157	Horizontal
6	24909.225	43.53	36.14	-7.39	83.54	47.40	100	141	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	18481.95	53.45	41.31	-12.14	83.54	42.23	100	55	Vertical
2	19049.325	52.88	41.12	-11.76	83.54	42.42	100	170	Vertical
3	19711.05	52.72	41.56	-11.16	83.54	41.98	100	248	Vertical
4	20403.375	51.84	41.33	-10.51	83.54	42.21	100	216	Vertical
5	21187.5	51.24	41.28	-9.96	83.54	42.26	100	312	Vertical
6	22598.075	48.48	39.46	-9.02	83.54	44.08	100	345	Vertical

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Mode: IEEE 802.11n HT20
Middle Frequency (2437MHz) Date: 2022-09-26
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By:Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18321.3	53.42	41.10	-12.32	83.54	42.44	100	95	Horizontal
2	18997.9	53.42	41.62	-11.80	83.54	41.92	100	306	Horizontal
3	19450.525	52.72	41.26	-11.46	83.54	42.28	100	112	Horizontal
4	20329.425	51.55	40.84	-10.71	83.54	42.70	100	306	Horizontal
5	21971.625	49.34	39.57	-9.77	83.54	43.97	100	64	Horizontal
6	22807.175	48.69	39.96	-8.73	83.54	43.58	100	273	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	18530.4	53.03	40.93	-12.10	83.54	42.61	100	119	Vertical
2	19289.45	52.86	41.28	-11.58	83.54	42.26	100	218	Vertical
3	19722.95	53.12	41.98	-11.14	83.54	41.56	100	0	Vertical
4	20465	51.95	41.52	-10.43	83.54	42.02	100	235	Vertical
5	21190.9	51.17	41.21	-9.96	83.54	42.33	100	298	Vertical
6	22666.5	48.23	39.32	-8.91	83.54	44.22	100	7	Vertical

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Mode: IEEE 802.11n HT20
Highest Frequency (2462MHz) Date: 2022-09-26
Environment: 23.5℃/56%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By:Zhang Zishan

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18420.325	53.15	40.88	-12.27	83.54	42.66	100	71	Horizontal
2	19714.45	52.08	40.84	-11.24	83.54	42.70	100	295	Horizontal
3	21082.1	50.92	40.83	-10.09	83.54	42.71	100	54	Horizontal
4	21955.05	49.75	39.98	-9.77	83.54	43.56	100	153	Horizontal
5	22707.725	48.25	39.41	-8.84	83.54	44.13	100	184	Horizontal
6	25098.35	43.10	35.91	-7.19	83.54	47.63	100	263	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	18165.325	53.10	40.67	-12.43	83.54	42.87	100	126	Vertical
2	19040.825	53.46	41.69	-11.77	83.54	41.85	100	16	Vertical
3	20491.775	51.99	41.59	-10.40	83.54	41.95	100	16	Vertical
4	21298	50.86	40.98	-9.88	83.54	42.56	100	94	Vertical
5	22757.025	47.50	38.73	-8.77	83.54	44.81	100	109	Vertical
6	24063.475	44.68	36.39	-8.29	83.54	47.15	100	143	Vertical

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7. 6dB BANDWIDTH

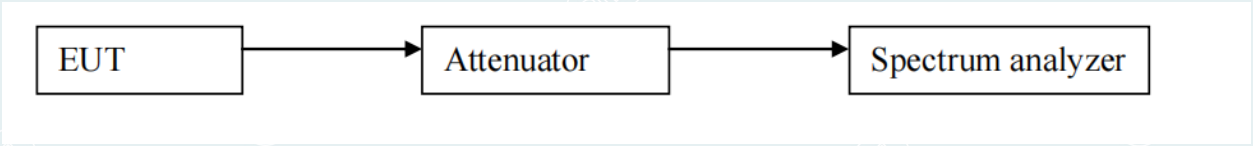
7.1 LIMITS

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) ≥ 3 x 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



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7.4 TEST RESULTS

Environment: 23.8℃/52%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By:Qin Tingting Date: 2022-09-30

Test Mode	Antenna	Frequency[MHz]	DTS BW [MHz]	Limit[MHz]	Verdict
IEEE 802.11b	Ant1	2412	10.08	≥0.5	PASS
		2437	10.08	≥0.5	PASS
		2462	10.08	≥0.5	PASS
IEEE 802.11g	Ant1	2412	16.32	≥0.5	PASS
		2437	16.32	≥0.5	PASS
		2462	16.32	≥0.5	PASS
IEEE 802.11n HT20	Ant1	2412	17.04	≥0.5	PASS
		2437	17.04	≥0.5	PASS
		2462	16.92	≥0.5	PASS

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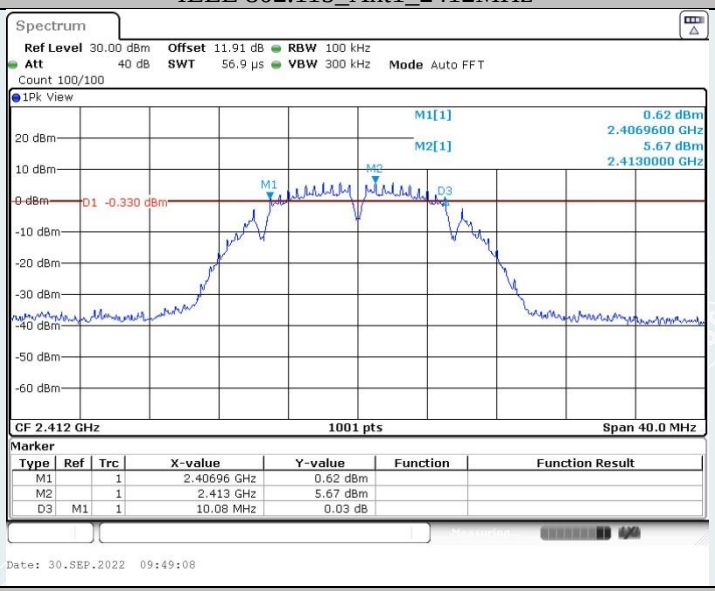
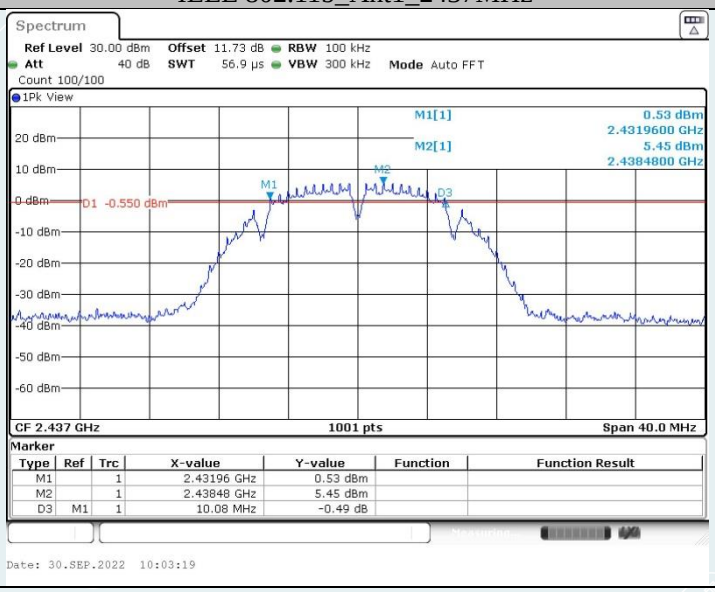
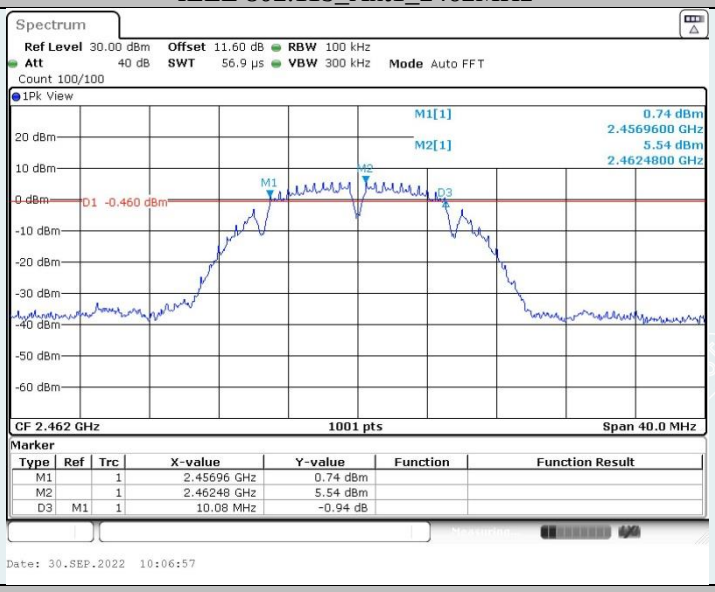
IEEE 802.11b_Ant1_2412MHz



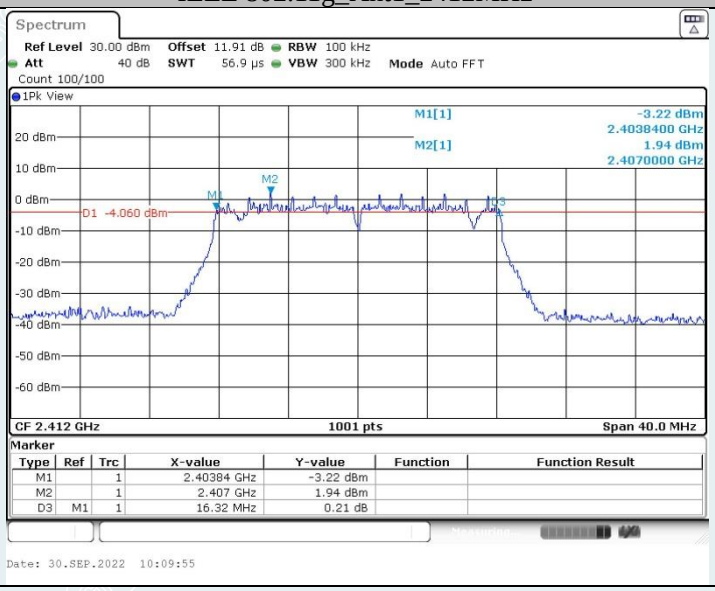
IEEE 802.11b_Ant1_2437MHz



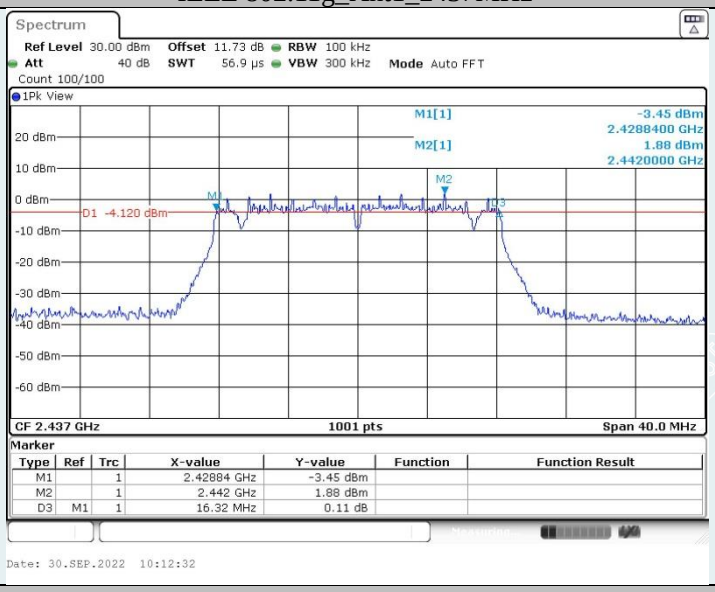
IEEE 802.11b_Ant1_2462MHz



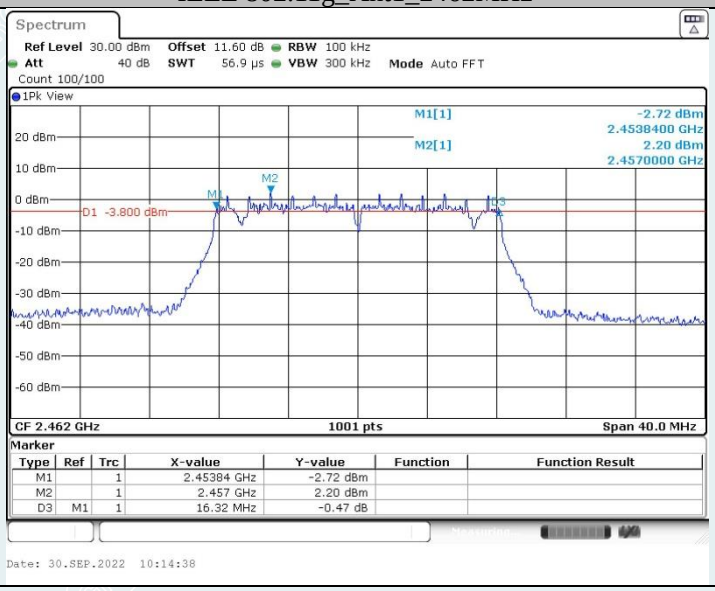
IEEE 802.11g_Ant1_2412MHz



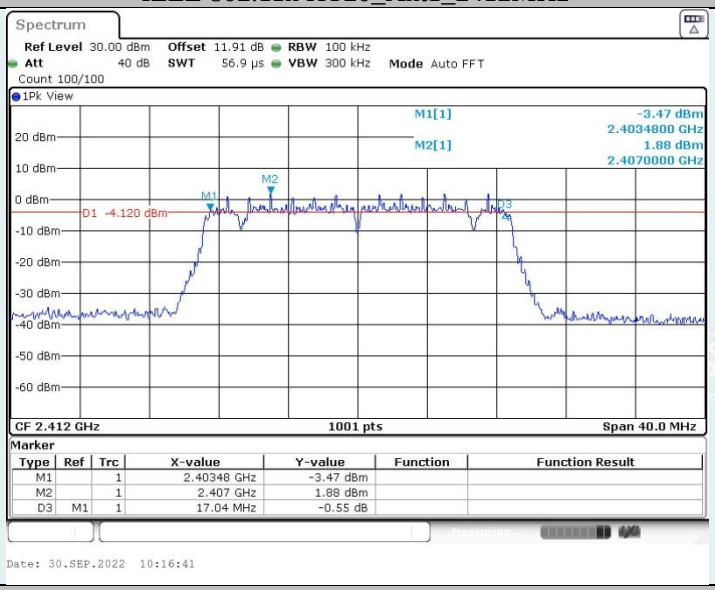
IEEE 802.11g_Ant1_2437MHz



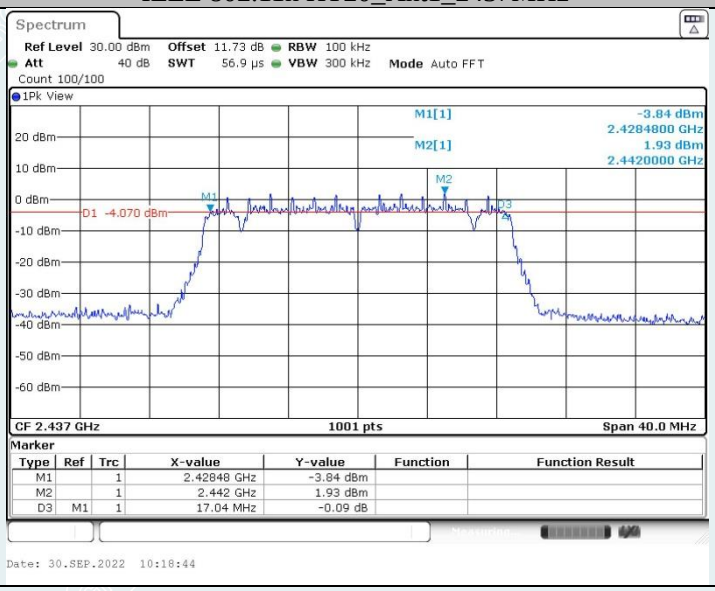
IEEE 802.11g_Ant1_2462MHz

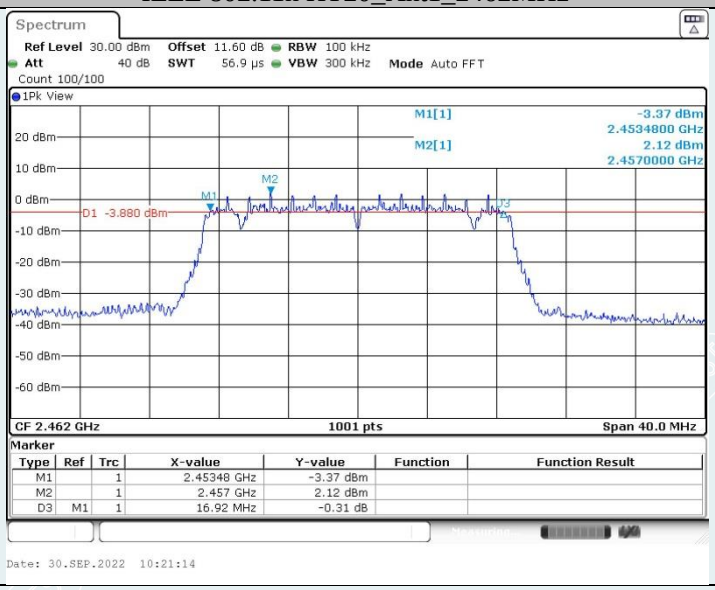


IEEE 802.11n HT20_Ant1_2412MHz



IEEE 802.11n HT20_Ant1_2437MHz



IEEE 802.11n HT20_Ant1_2462MHz


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8. MAXIMUM PEAK OUTPUT POWER

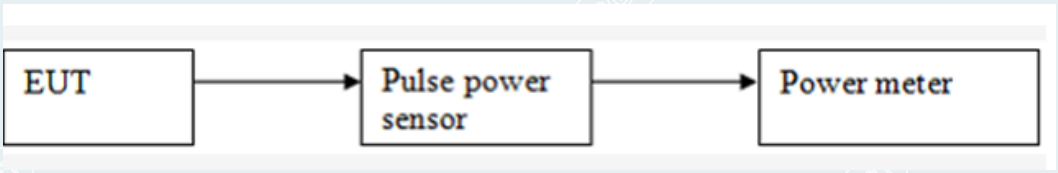
8.1 LIMITS

The maximum Peak output power measurement is 1W

8.2 TEST PROCEDURES

1) RF output of EUT was connected to the broadband peak RF power meter by RF cable. 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



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8.4 TEST RESULT

Environment: 23.8℃/52%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By:Qin Tingting Date: 2022-09-30

IEEE 802.11b Mode:

Channel No.	Frequency (MHz)	Measured Channel Power (dBm)	Peak / AVG	Limit	Result
1	2412	19.15	Peak	30dBm	Pass
6	2437	19.06			Pass
11	2462	19.68			Pass

IEEE 802.11g Mode:

Channel No.	Frequency (MHz)	Measured Channel Power (dBm)	Peak / AVG	Limit	Result
1	2412	26.06	Peak	30dBm	Pass
6	2437	26.15			Pass
11	2462	26.61			Pass

IEEE 802.11n HT20 Mode:

Channel No.	Frequency (MHz)	Measured Channel Power (dBm)	Peak/ AVG	Limit	Result
1	2412	26.91	Peak	30dBm	Pass
6	2437	26.94			Pass
11	2462	27.14			Pass

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9. POWER SPECTRAL DENSITY

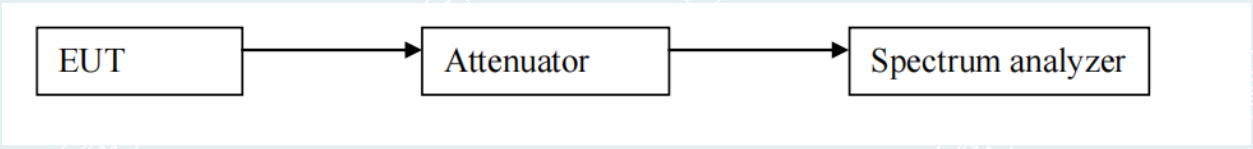
9.1 LIMITS

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 kHz ≤ RBW ≤ 100 kHz.
   d) Set the VBW ≥ [3 × 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



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9.4 TEST RESULTS

Environment: 23.8℃/52%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By:Qin Tingting Date: 2022-09-30

IEEE 802.11b Mode:

Channel No.	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	2412	-5.38	8.00	Pass
6	2437	-5.16	8.00	Pass
11	2462	-5.79	8.00	Pass

IEEE 802.11g Mode:

Channel No.	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	2412	-12.52	8.00	Pass
6	2437	-12.70	8.00	Pass
11	2462	-12.76	8.00	Pass

IEEE 802.11n HT20 Mode:

Channel No.	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	2412	-13.53	8.00	Pass
6	2437	-13.57	8.00	Pass
11	2462	-13.50	8.00	Pass

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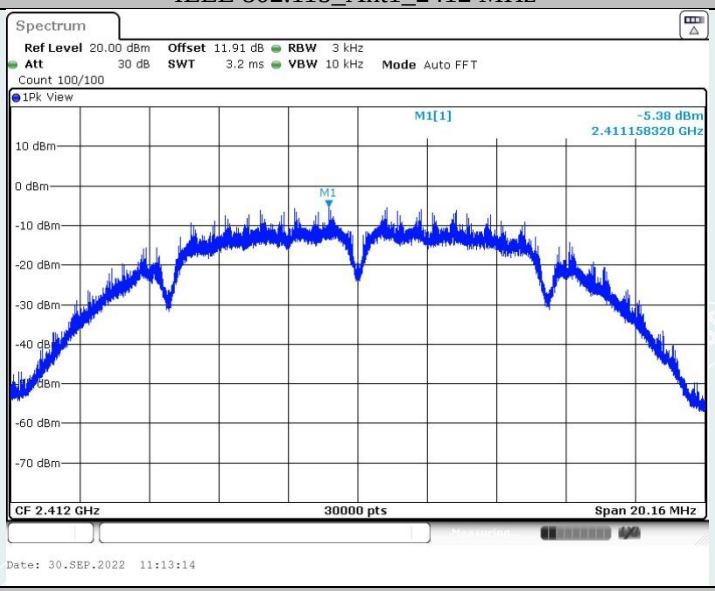
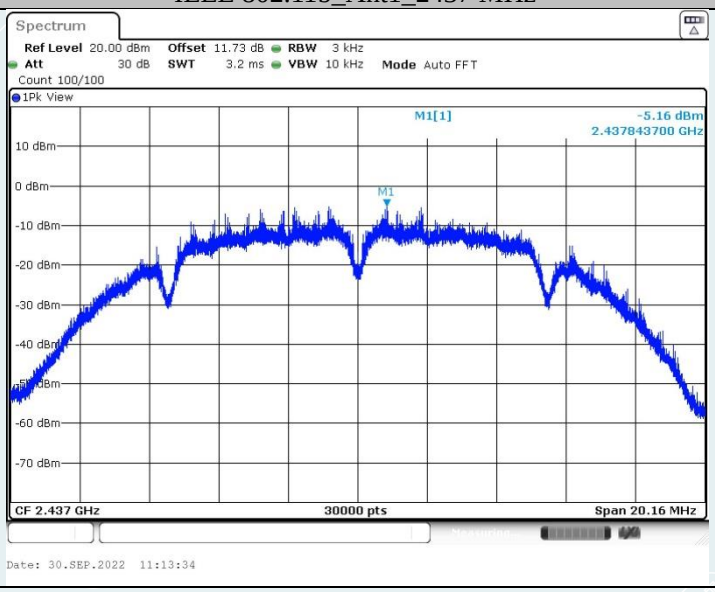
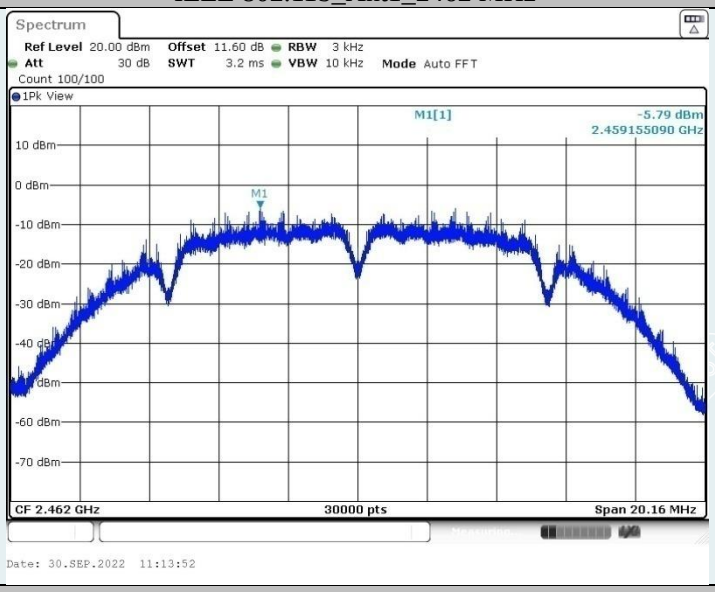
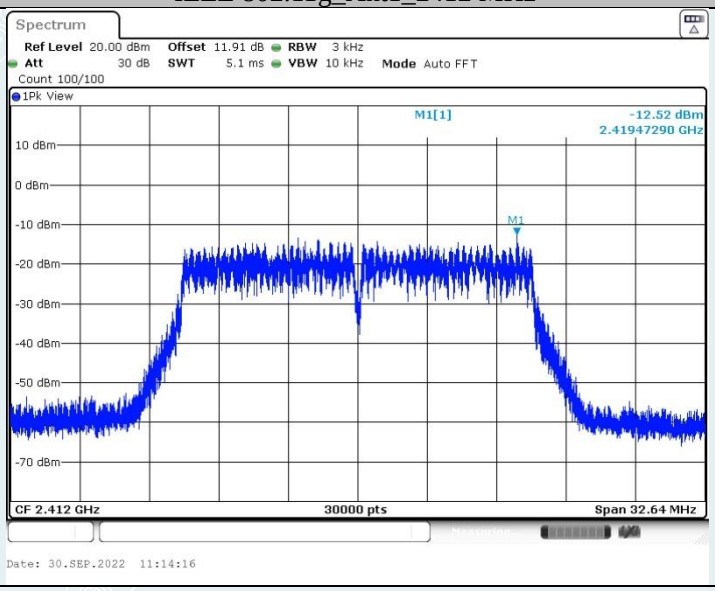
IEEE 802.11b_Ant1_2412 MHz

IEEE 802.11b_Ant1_2437 MHz


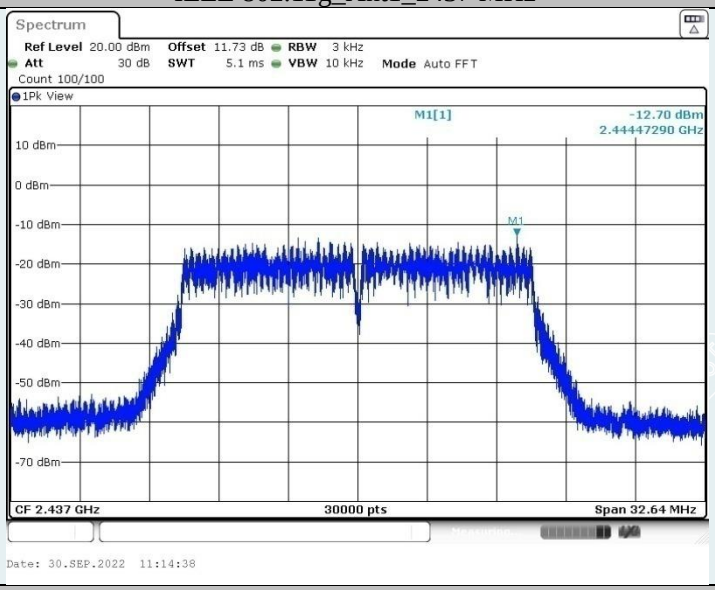
IEEE 802.11b_Ant1_2462 MHz



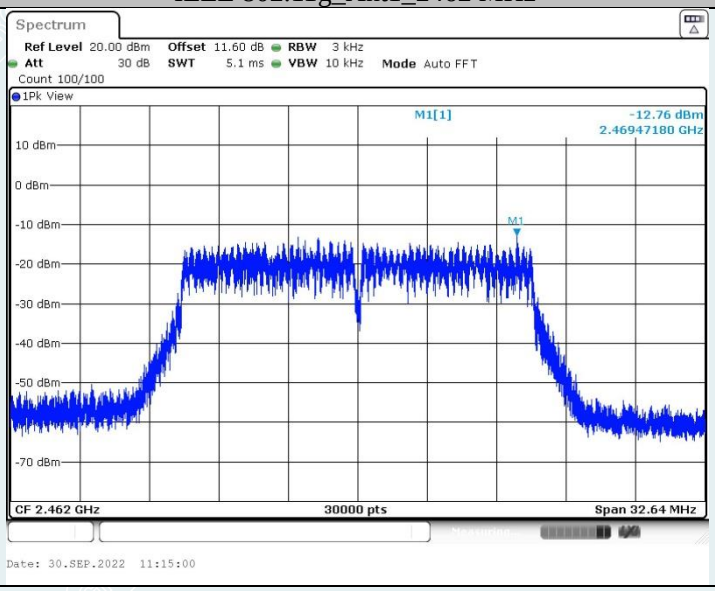
IEEE 802.11g_Ant1_2412 MHz



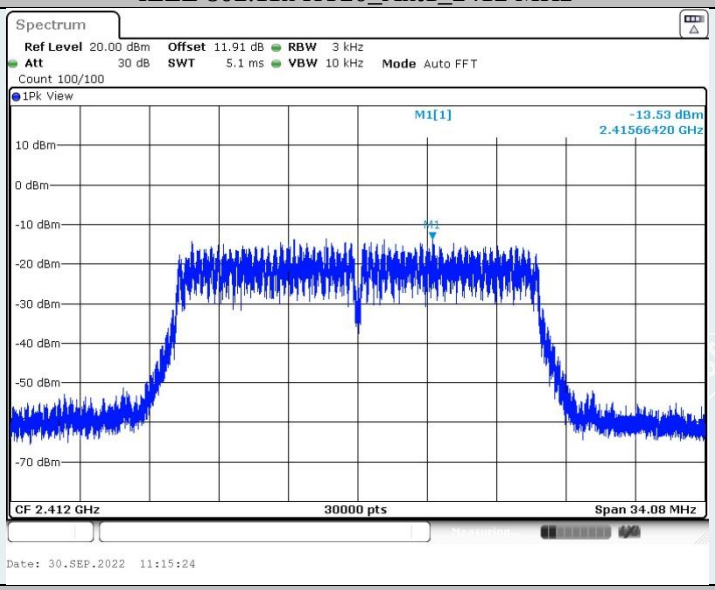
IEEE 802.11g_Ant1_2437 MHz



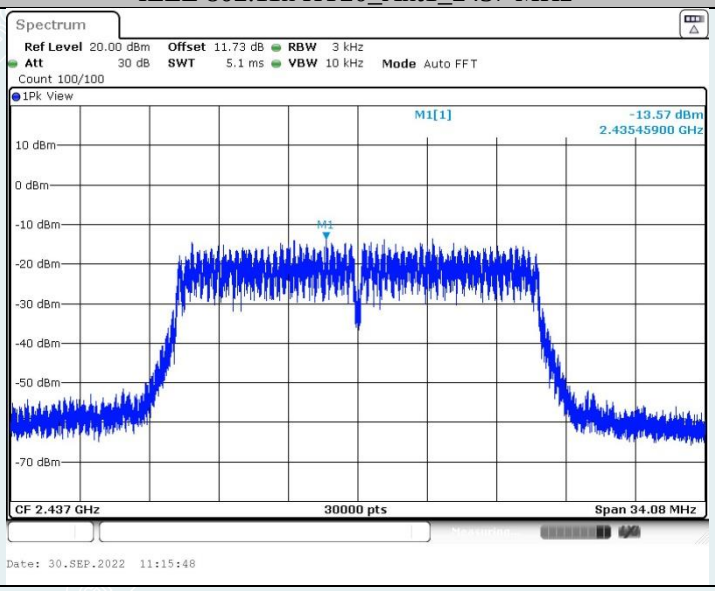
IEEE 802.11g_Ant1_2462 MHz

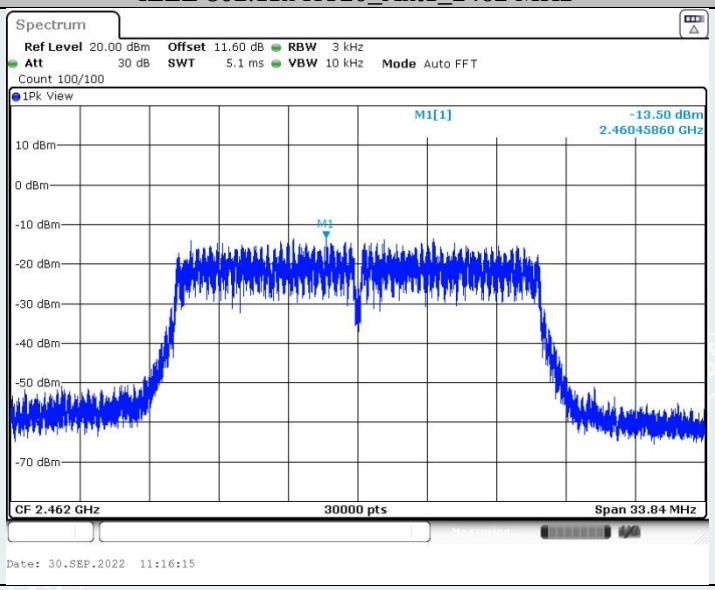


IEEE 802.11n HT20_Ant1_2412 MHz



IEEE 802.11n HT20_Ant1_2437 MHz



IEEE 802.11n HT20_Ant1_2462 MHz


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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.

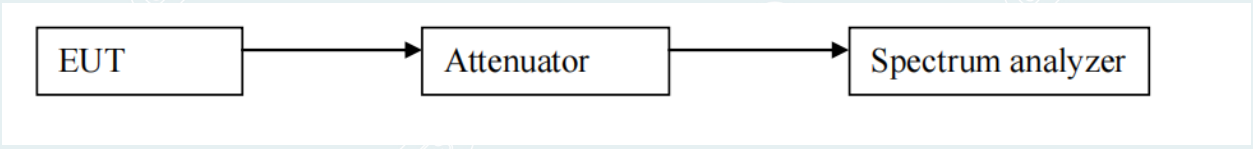
10.2 TEST PROCEDURES

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



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10.4 TEST RESULTS

Environment: 23.8℃/52%RH/101.0kPa Voltage: AC 24V by AC power convert from AC 120V/60Hz
Tested By:Qin Tingting Date: 2022-09-30

Band edge

Test Mode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
IEEE 802.11b	Ant1	Low	2412	5.24	-39.02	≤-14.76	PASS
		High	2462	6.44	-42.83	≤-13.56	PASS
IEEE 802.11g	Ant1	Low	2412	1.84	-37.53	≤-18.16	PASS
		High	2462	2.25	-44.39	≤-17.75	PASS
IEEE 802.11n HT20	Ant1	Low	2412	2.04	-36.39	≤-17.96	PASS
		High	2462	0.69	-44.17	≤-19.31	PASS

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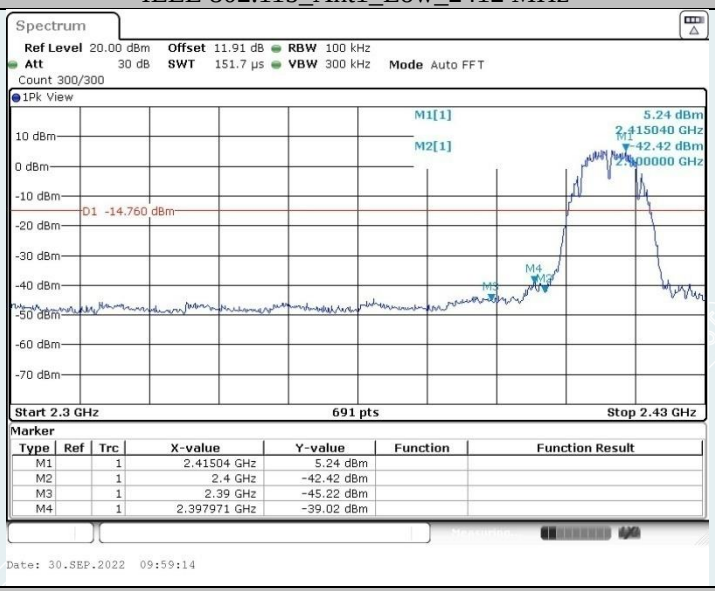
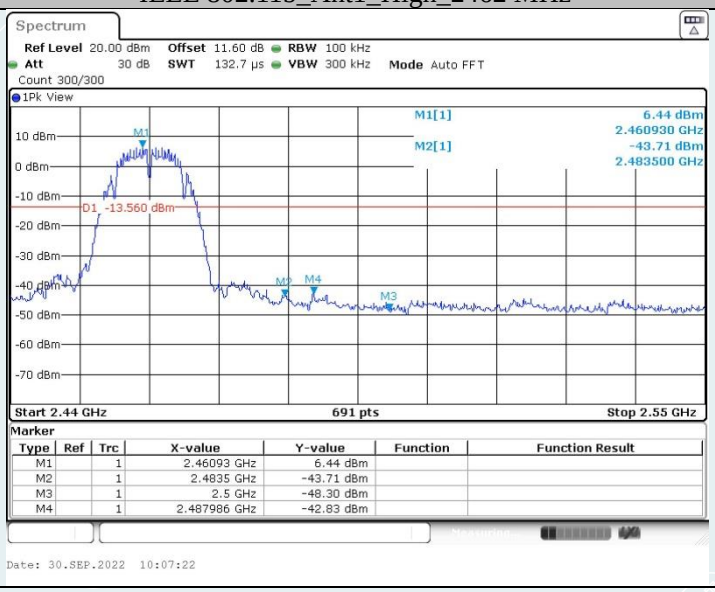
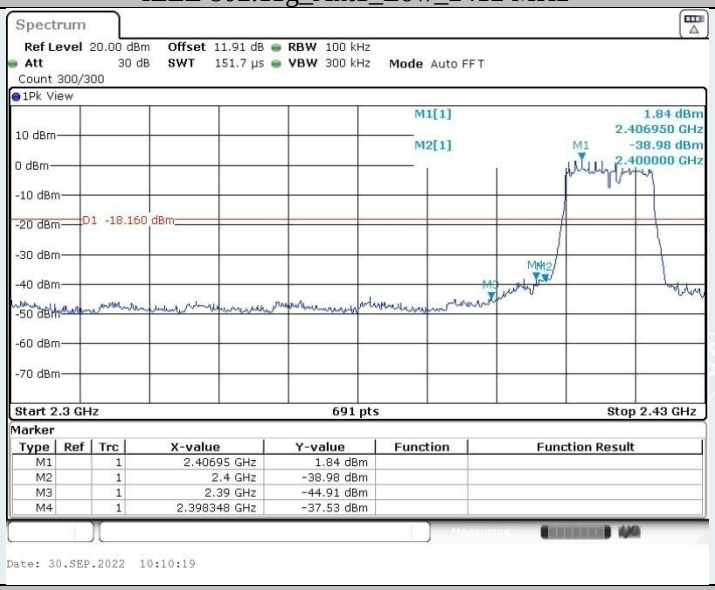
IEEE 802.11b_Ant1_Low_2412 MHz



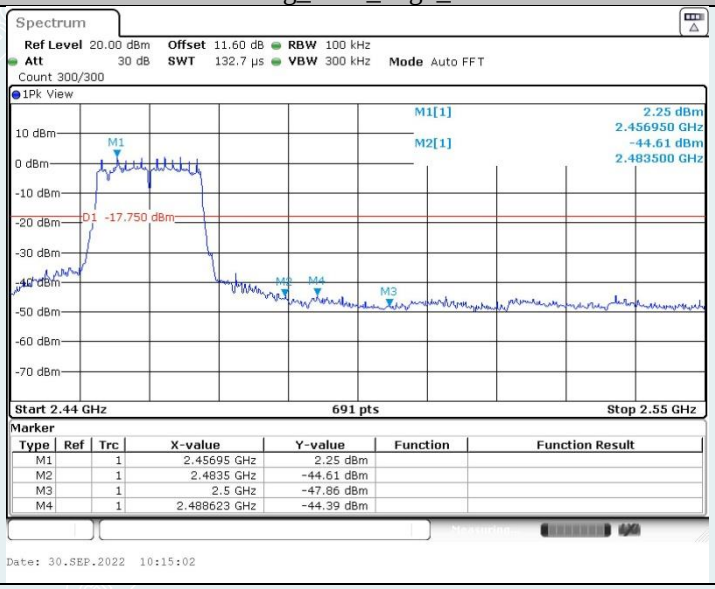
IEEE 802.11b_Ant1_High_2462 MHz



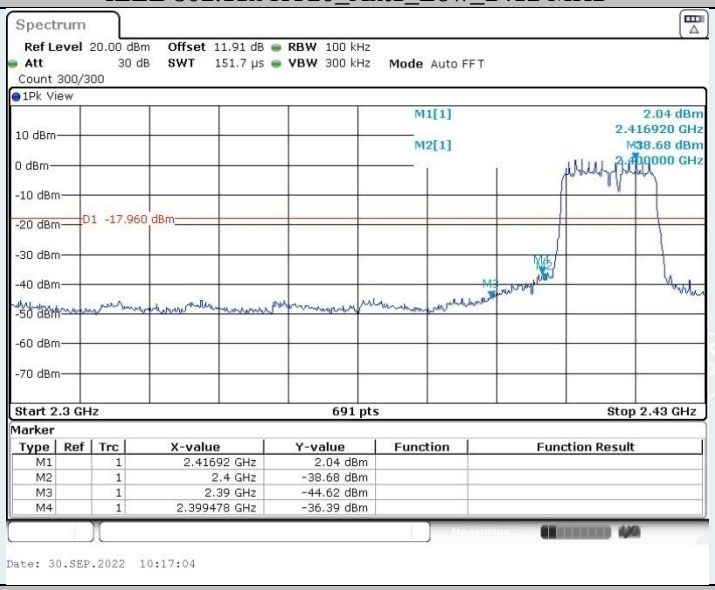
IEEE 802.11g_Ant1_Low_2412 MHz



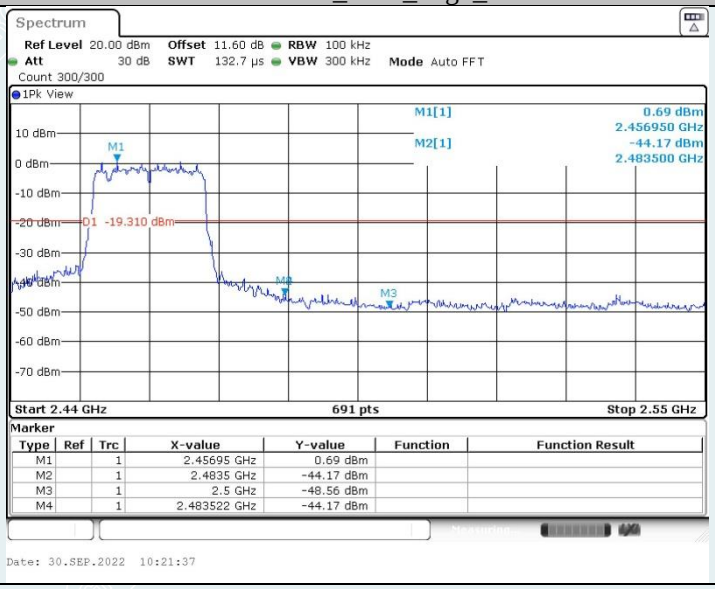
IEEE 802.11g_Ant1_High_2462 MHz



IEEE 802.11n HT20_Ant1_Low_2412 MHz



IEEE 802.11n HT20_Ant1_High_2462 MHz

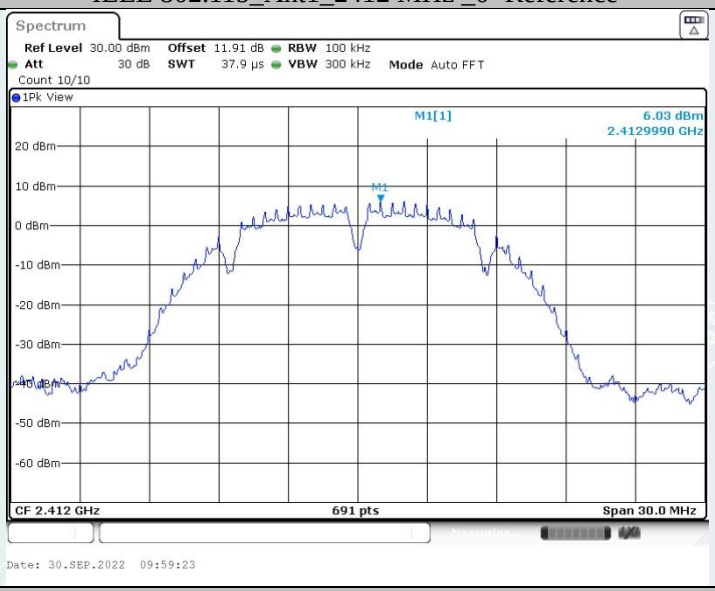


---------- The following blanks ----------

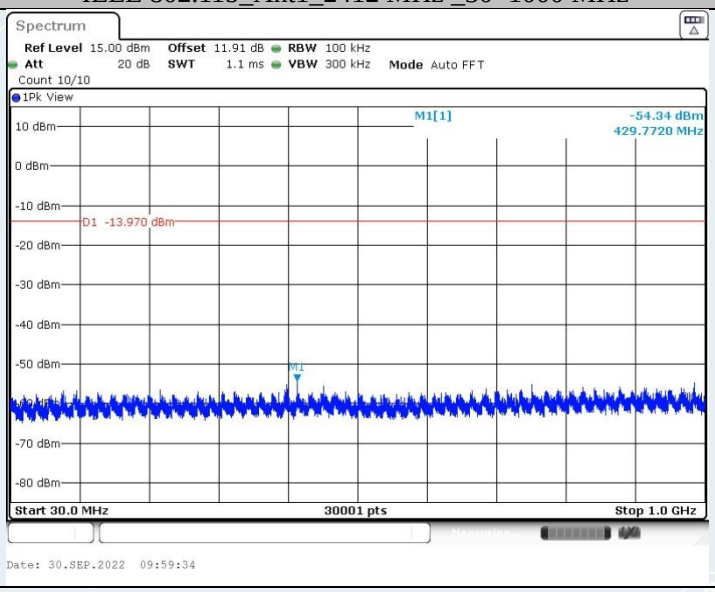
Conducted Spurious Emission:
Test Result
Environment: 23.8℃/52%RH/101.0kPa Voltage: AC 24V by AC power convert
Tested By:Qin Tingting Date: 2022-09-30

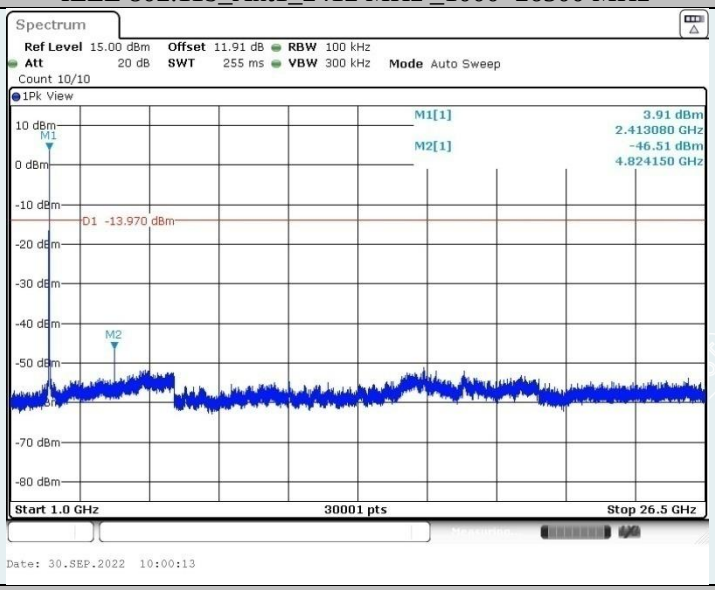
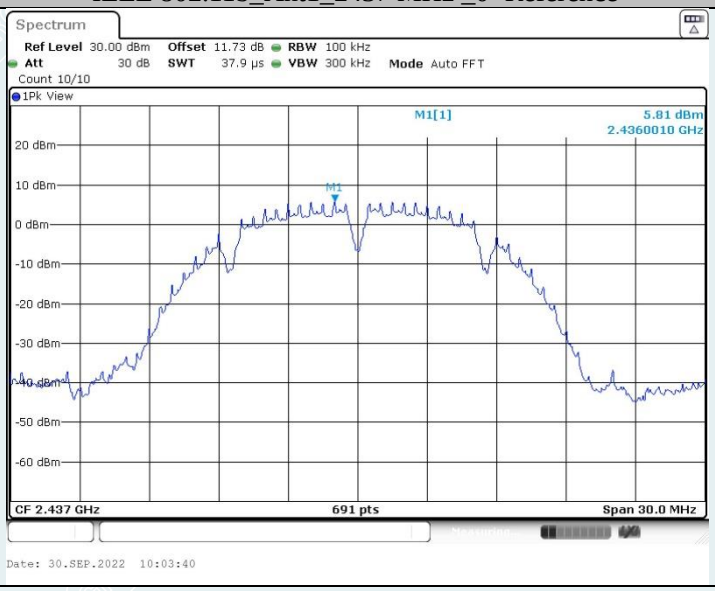
Test Mode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
IEEE 802.11b	Ant1	2412	Reference	6.03	6.03	---	PASS
			30~1000	6.03	-54.34	≤-13.97	PASS
			1000~26500	6.03	-46.51	≤-13.97	PASS
		2437	Reference	5.81	5.81	---	PASS
			30~1000	5.81	-55	≤-14.19	PASS
			1000~26500	5.81	-51.64	≤-14.19	PASS
		2462	Reference	6.31	6.31	---	PASS
			30~1000	6.31	-55.28	≤-13.69	PASS
			1000~26500	6.31	-48.43	≤-13.69	PASS
IEEE 802.11g	Ant1	2412	Reference	1.96	1.96	---	PASS
			30~1000	1.96	-54.78	≤-18.04	PASS
			1000~26500	1.96	-50.94	≤-18.04	PASS
		2437	Reference	1.96	1.96	---	PASS
			30~1000	1.96	-54.9	≤-18.04	PASS
			1000~26500	1.96	-51.48	≤-18.04	PASS
		2462	Reference	2.28	2.28	---	PASS
			30~1000	2.28	-56.14	≤-17.72	PASS
			1000~26500	2.28	-51.8	≤-17.72	PASS
IEEE 802.11n HT20	Ant1	2412	Reference	1.99	1.99	---	PASS
			30~1000	1.99	-55.18	≤-18.01	PASS
			1000~26500	1.99	-51.78	≤-18.01	PASS
		2437	Reference	1.92	1.92	---	PASS
			30~1000	1.92	-54.32	≤-18.08	PASS
			1000~26500	1.92	-51.16	≤-18.08	PASS
		2462	Reference	2.24	2.24	---	PASS
			30~1000	2.24	-55.46	≤-17.76	PASS
			1000~26500	2.24	-51.15	≤-17.76	PASS

IEEE 802.11b_Ant1_2412 MHz _0~Reference

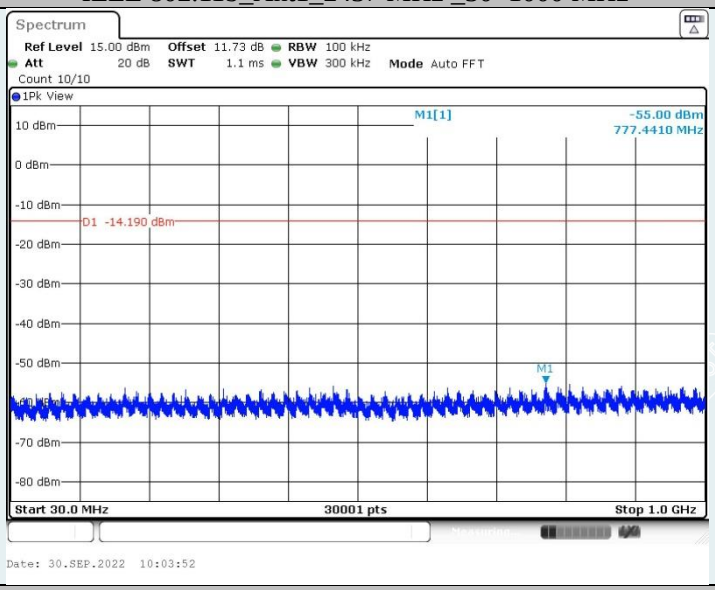


IEEE 802.11b_Ant1_2412 MHz _30~1000 MHz

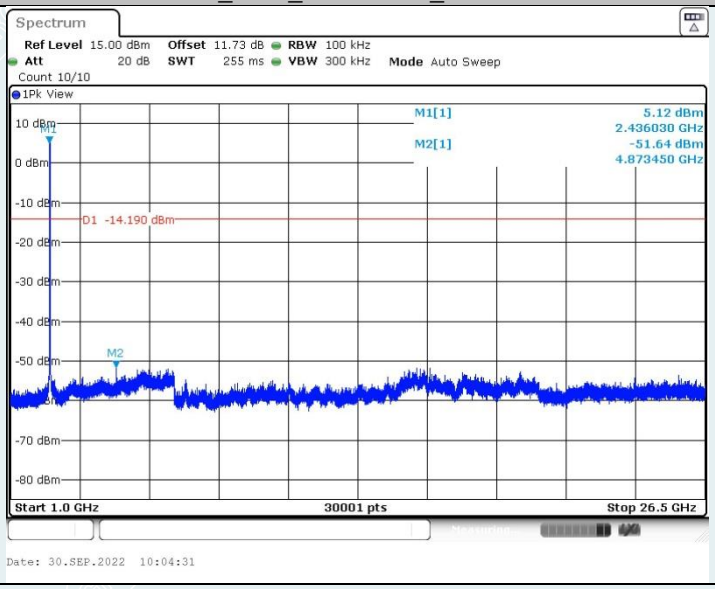


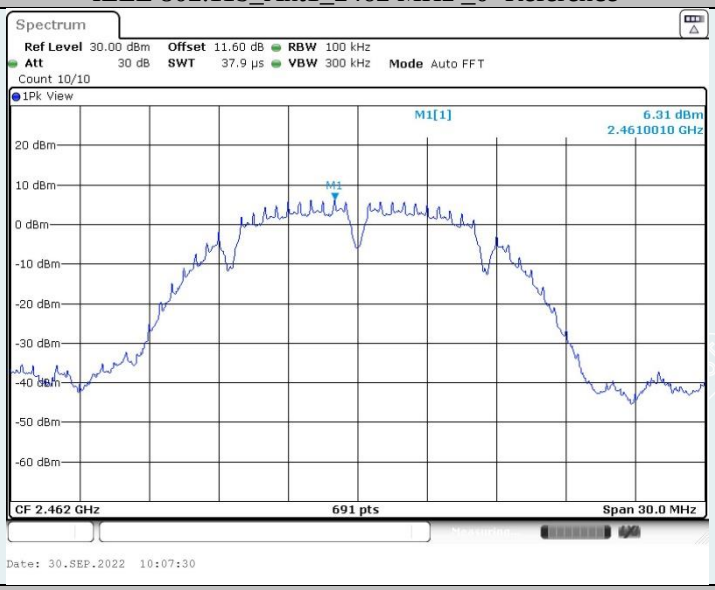
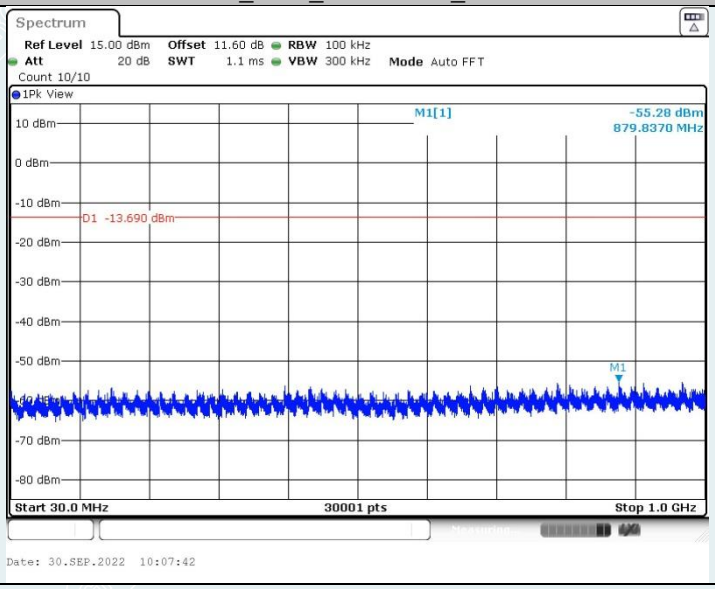
IEEE 802.11b_Ant1_2412 MHz _1000~26500 MHz

IEEE 802.11b_Ant1_2437 MHz _0~Reference


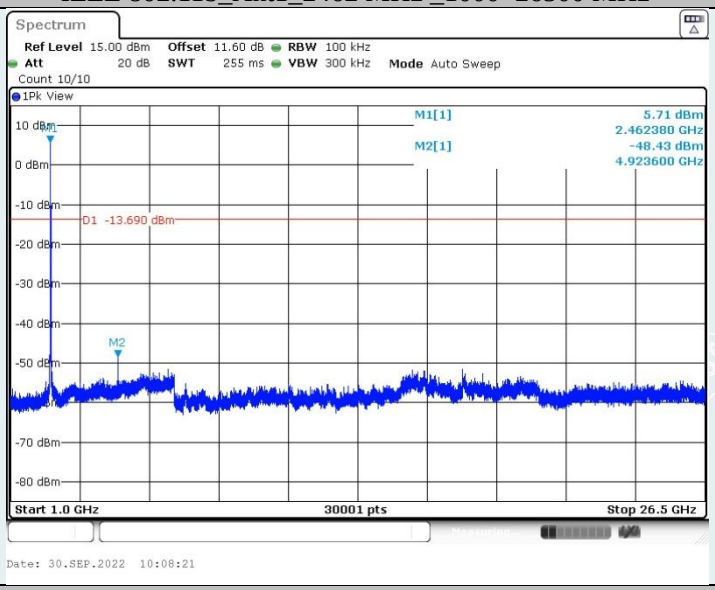
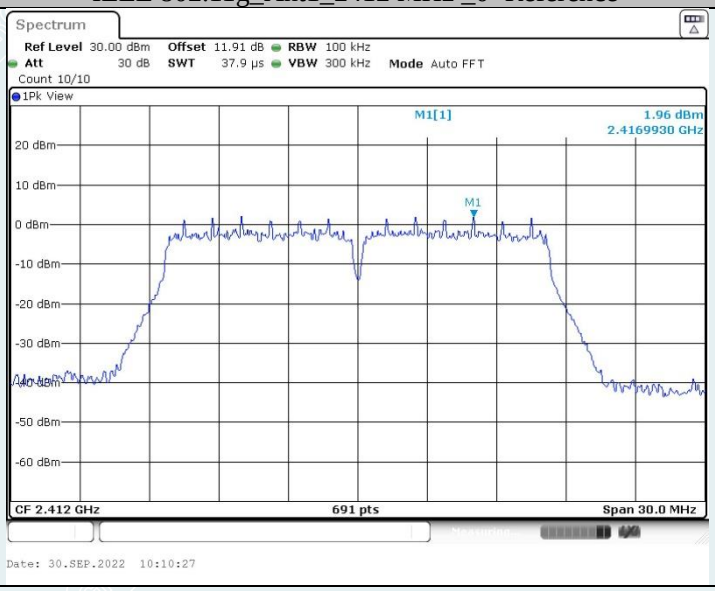
IEEE 802.11b_Ant1_2437 MHz _30~1000 MHz



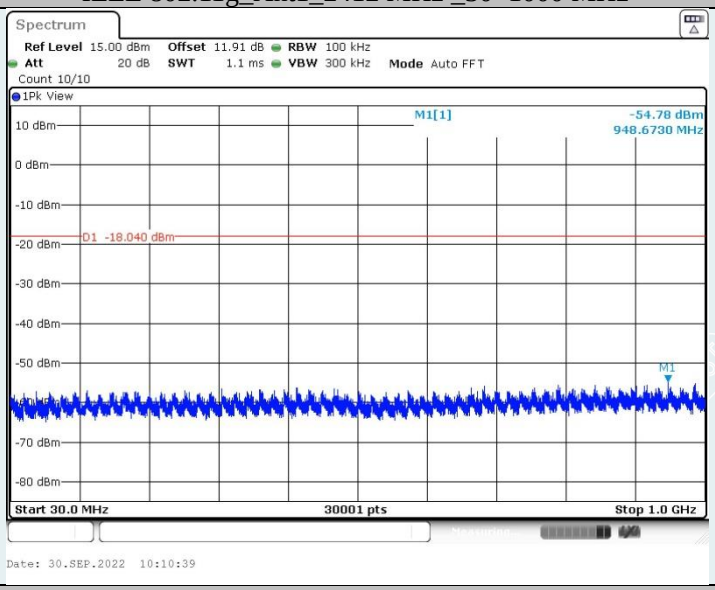
IEEE 802.11b_Ant1_2437 MHz _1000~26500 MHz



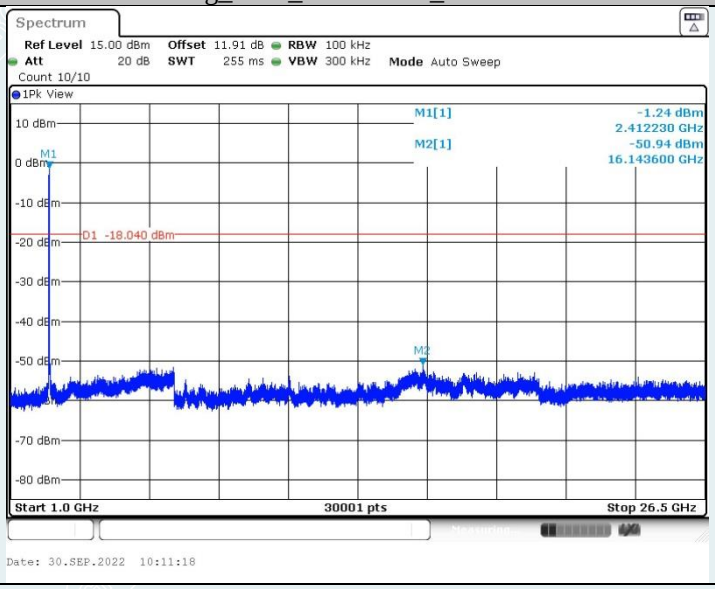
IEEE 802.11b_Ant1_2462 MHz _0~Reference

IEEE 802.11b_Ant1_2462 MHz _30~1000 MHz


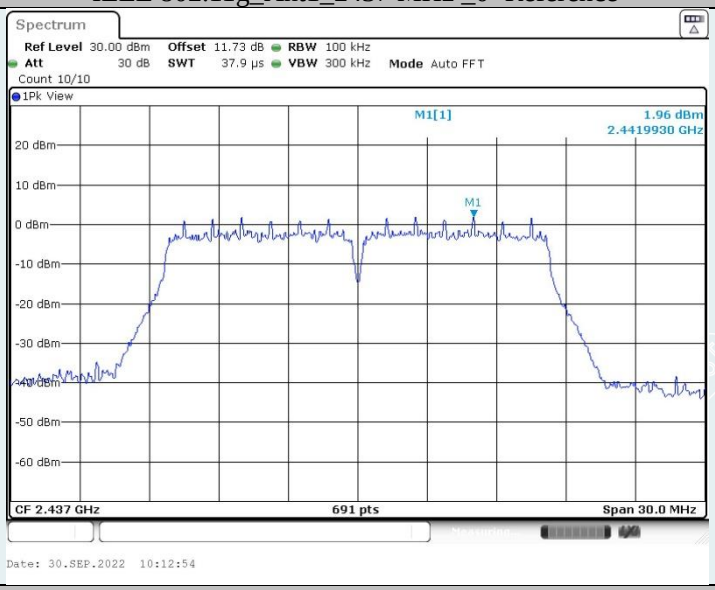
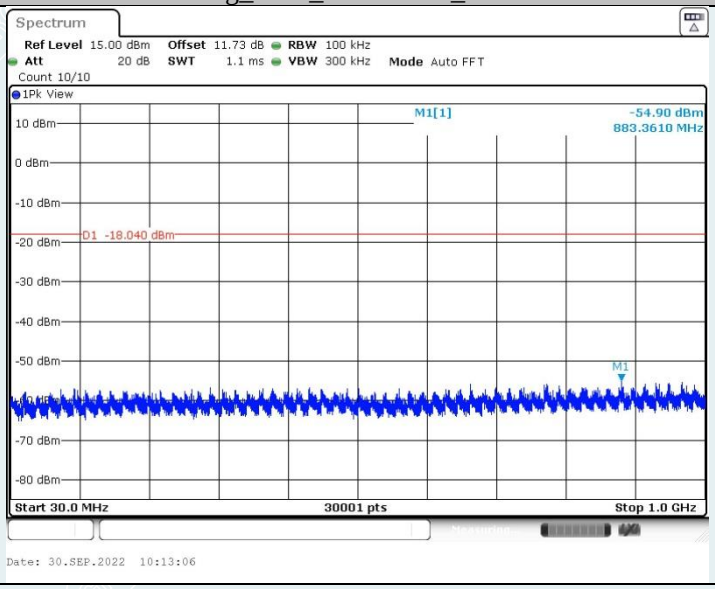
IEEE 802.11b_Ant1_2462 MHz _1000~26500 MHz

IEEE 802.11g_Ant1_2412 MHz _0~Reference


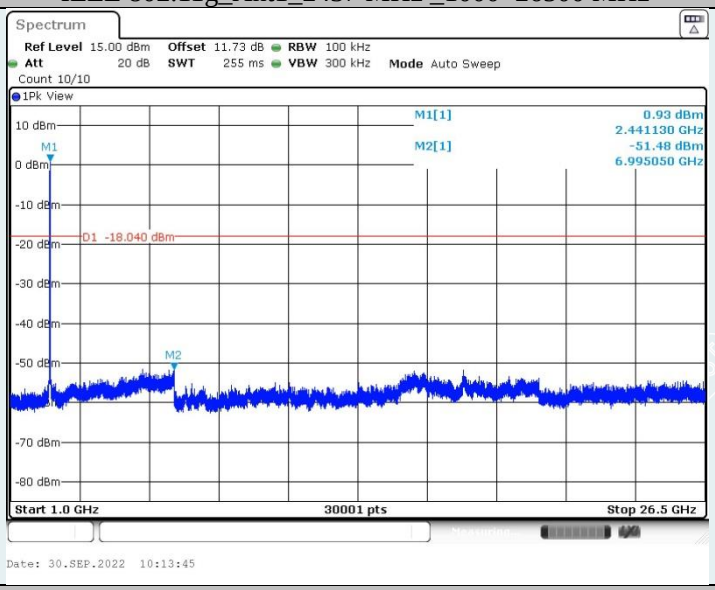
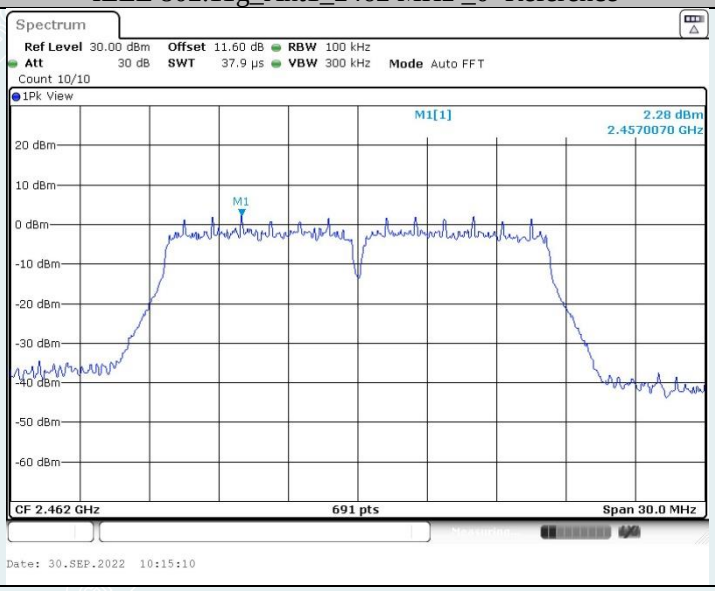
IEEE 802.11g_Ant1_2412 MHz _30~1000 MHz



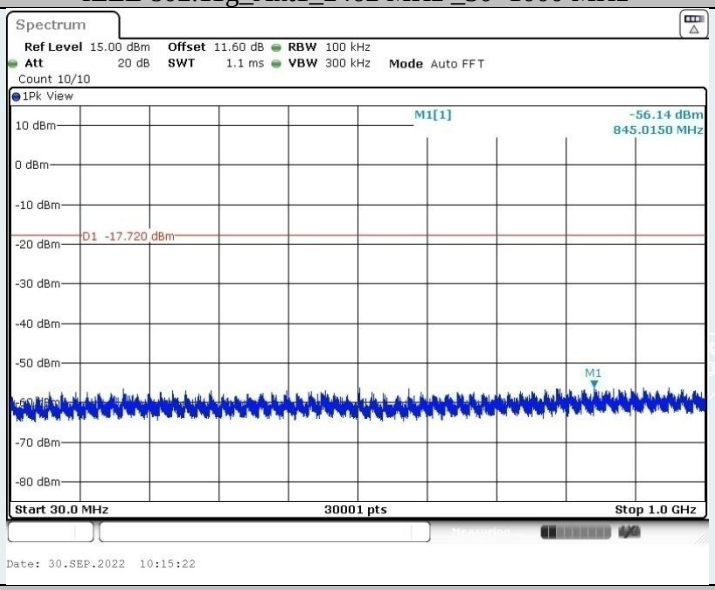
IEEE 802.11g_Ant1_2412 MHz _1000~26500 MHz



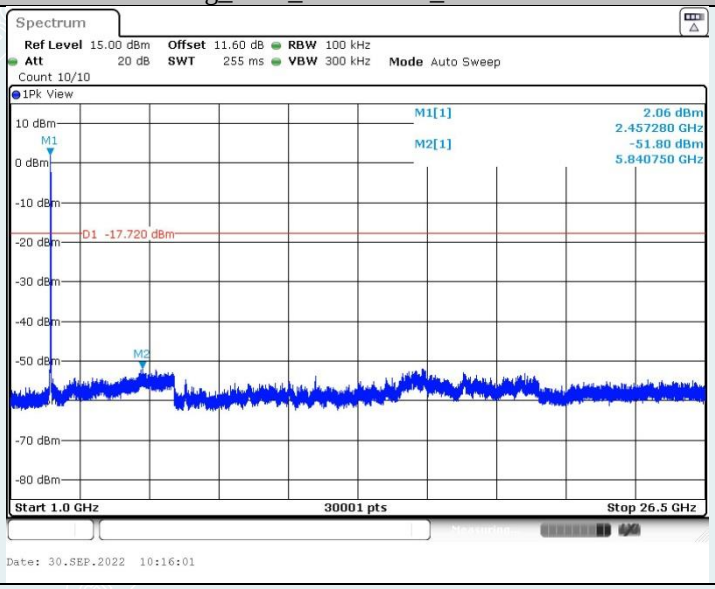
IEEE 802.11g_Ant1_2437 MHz _0~Reference

IEEE 802.11g_Ant1_2437 MHz _30~1000 MHz


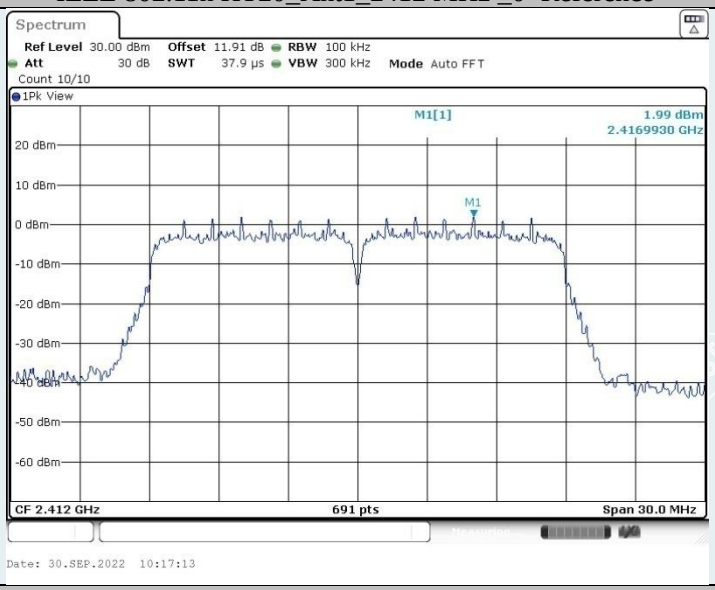
IEEE 802.11g_Ant1_2437 MHz _1000~26500 MHz

IEEE 802.11g_Ant1_2462 MHz _0~Reference


IEEE 802.11g_Ant1_2462 MHz _30~1000 MHz



IEEE 802.11g_Ant1_2462 MHz _1000~26500 MHz



IEEE 802.11n HT20_Ant1_2412 MHz _0~Reference

IEEE 802.11n HT20_Ant1_2412 MHz _30~1000 MHz