

Test Report

Verified code: 282648

Report No.: E20211217696105-4

Customer: BYD Auto Industry Company Limited

Address: No. 3001, 3007, Hengping Road, Pingshan, Shenzhen, P. R. China

Sample Name: DiLink

Sample Model: DiLink 3.0F

Receive Sample Date: Feb.10,2022

Test Date: Apr.03,2022 ~ Apr.14,2022

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

Test Result: Pass

Prepared by: Yang Zhaoyun

Reviewed by: Zhao Zetian

Approved by: Xiao Liang

GUANGZHOU GRG METROLOGY & TEST CO., LTD

Issued Date: 2022-06-07

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REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E20211217696105-4	Original Issue	2022-04-26

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1. TEST RESULT SUMMARY

Standard	Item	Limit / Severity	Result
CFR 47, FCC Part 15 Subpart C (§15.247)	Antenna Requirement	§15.203	PASS
	Conducted Emissions	§15.207 (a)	Not Applicable
	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:1) Not Applicable, the EUT is powered by DC 12V.

2)The antenna is External antenna.The max gain of Antenna is -1.77dBi ,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: BYD Auto Industry Company Limited
Address: No. 3001, 3007, Hengping Road, Pingshan, Shenzhen, P. R. China

2.2 MANUFACTURER

Name: BYD Auto Industry Company Limited
Address: No. 3001, 3007, Hengping Road, Pingshan, Shenzhen, P. R. China

2.3 FACTORY

Name: Huizhou BYD Electronics Co., Ltd.
Address: Xiangshui River, Economic Development Zone, Daya Bay, Huizhou, Guangdong, P. R. China

2.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Product Name: DiLink
Product Model: DiLink 3.0F
Adding Model: /
Trade Name: BYD
FCC ID: SD4-DILINK6125F
Power Supply: DC 12V
Frequency Band: 2412MHz-2462MHz
Modulation Type: DSSS for IEEE 802.11b mode;
OFDM for IEEE 802.11g/n mode
Antenna Specification: External antenna with -1.77dBi gain (Max)
Transmit Power: 18.99dBm for IEEE 802.11b
21.16dBm for IEEE 802.11g
20.33dBm for IEEE 802.11n HT20
20.56dBm for IEEE 802.11n HT40
Temperature Range: -30℃~70℃
Hardware Version: DiLink HW 6125F
Software Version: DiLink SW 4.0F
Sample submitting way: ☒ Provided by customer ☐ Sampling
Sample No: E20211217696105-0001
Note: /

2.5 CHANNEL LIST

CH01 - CH11 for IEEE 802.11b, IEEE 802.11g, IEEE 802.11n HT20							
CH03 – CH09 for IEEE 802.11n HT40							
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		

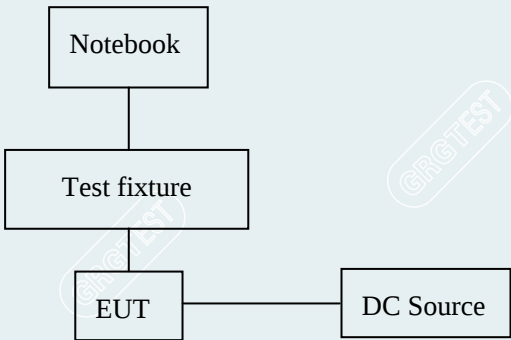
2.6 TEST OPERATION MODE

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
Notebook	LENOVO	TianYi 310-14ISK	MP18DLC6	/
Adapter(Notebook)	LENOVO	ADLX65NVV3A	SA10M42747	Unshielded, 1m (AC Cable) Shielded, 1.8m (DC Cable)
DC Source	LW	PS-305DM	/	/
Test fixture	/	/	/	/
Cable				
Test fixture cable	/	/	/	Unshielded 0.15m
USB cable	/	/	/	Unshielded 1.0m
DC cable	/	/	/	Unshielded 0.8m

2.8 CONFIGURATION OF SYSTEM UNDER TEST



Test software:

Software version
QRCT

Power Setting:

Mode	Date Rate	Frequency (MHz)	Power Setting
IEEE 802.11b	1M	2412	15
		2437	15
		2462	15
IEEE 802.11g	6M	2412	15
		2437	15
		2462	15
IEEE 802.11n HT20	MCS0	2412	14
		2437	14
		2462	14
IEEE 802.11n HT40	MCS0	2422	11
		2437	11
		2452	11

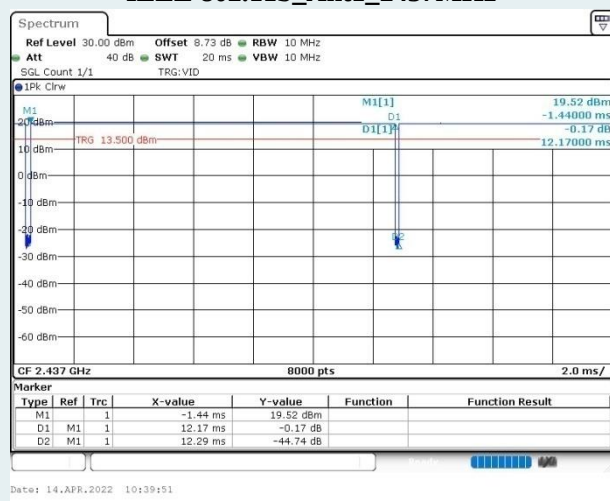
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2.9 DUTY CYCLE

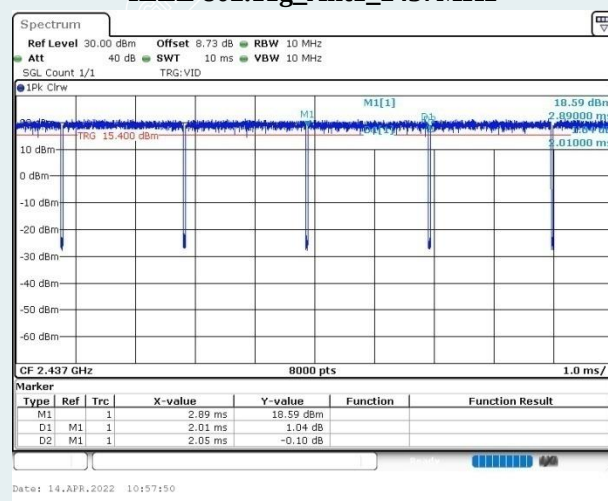
EUT Name	DiLink	Model	DiLink 3.0F
Environmental Conditions	23.5°C/48%RH	Test Voltage	DC 12V
Tested By	Lu Wei	Tested Date	2022-04-14

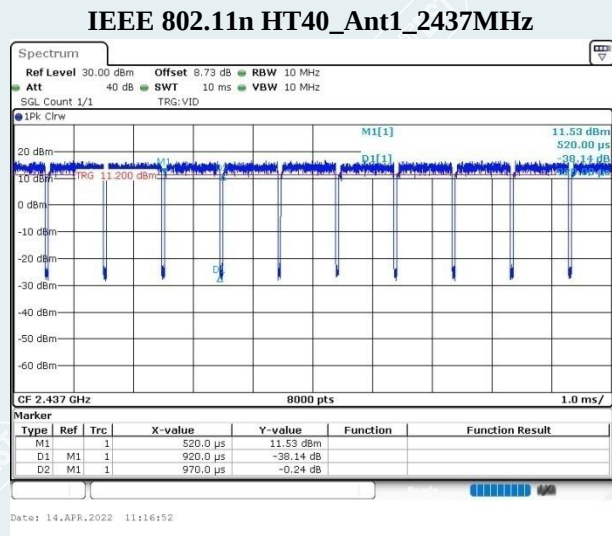
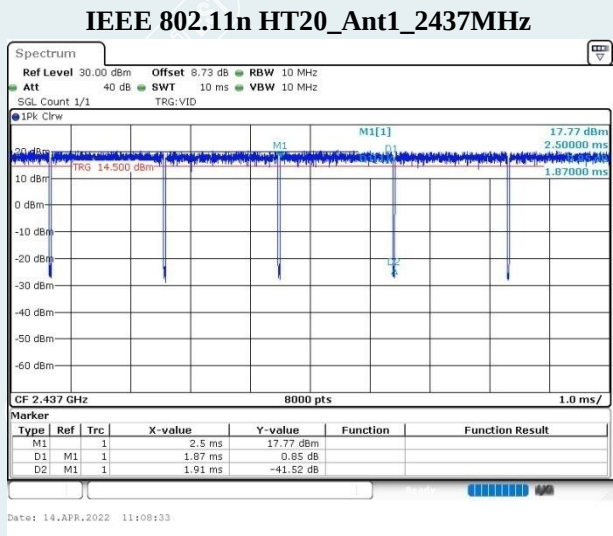
TestMode	Antenna	Frequency (MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	T [s]
IEEE 802.11b	Ant1	2437	12.17	12.29	99.02	0.01217
IEEE 802.11g	Ant1	2437	2.01	2.05	98.05	0.00201
IEEE 802.11n HT20	Ant1	2437	1.87	1.91	97.91	0.00187
IEEE 802.11n HT40	Ant1	2437	0.92	0.97	94.85	0.00092

IEEE 802.11b_Ant1_2437MHz



IEEE 802.11g_Ant1_2437MHz





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3. LABORATORY AND ACCREDITATIONS AND MEASUREMENT UNCERTAINTY

3.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of Guangzhou GRG Metrology & Test Co., Ltd.

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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	4.5dB
		30MHz~1000MHz	4.3dB
		1GHz~18GHz	5.6dB
		18GHz~26.5GHz	3.7dB
	Vertical	9kHz~30MHz	4.5dB
		30MHz~1000MHz	4.3dB
		1GHz~18GHz	5.6dB
		18GHz~26.5GHz	3.7dB

Measurement	Uncertainty
RF frequency	6.0×10^{-6}
RF power conducted	0.8dB
Occupied channel bandwidth	0.4dB
Unwanted emission, conducted	0.7dB
Humidity	6%
Temperature	2°C

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
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	2022-09-21
Preamplifier	EMEC	EM330	I00426	2023-03-05
Bi-log Antenna	Schwarzbeck	VULB9160	VULB9160-3401	2022-10-27
Spectrum Analyzer	Agilent	N9020B	MY57120179	2022-08-08
Horn Antenna	Schwarzbeck	BBHA9120D(1201)	02143	2022-10-22
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-497	2022-10-16
Amplifier	Tonscend	TAP01018048	AP20E8060075	2022-05-09
Amplifier	Tonscend	TAP184050	AP20E806071	2022-05-17
Test S/W	Tonscend	JS32-RE/2.5.1.5		
6 dB Bandwidth & Conducted band edges and Spurious Emission & Power Spectral Density				
Spectrum Analyzer	R&S	FSV30	104381	2022-12-10
Simultaneous sampling DAQ	Tonscend	JS0806-2	186060020	2022-09-04
BT/WIFI System	Tonscend	JS1120-3		
Output Power				
Pulse power sensor	Anritsu	MA24802.11b	1126150	2023-03-01
Power meter	Anritsu	ML2495A	1204003	2023-02-28

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

5. RADIATED SPURIOUS EMISSIONS

5.1 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 PeakLimit= $74+20*\log(3/1)=83.54$ (dB $\mu\text{V/m}$).
The Avg Limit= $54+20*\log(3/1)=63.54$ (dB $\mu\text{V/m}$).

5.2 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.

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5.3 TEST SETUP

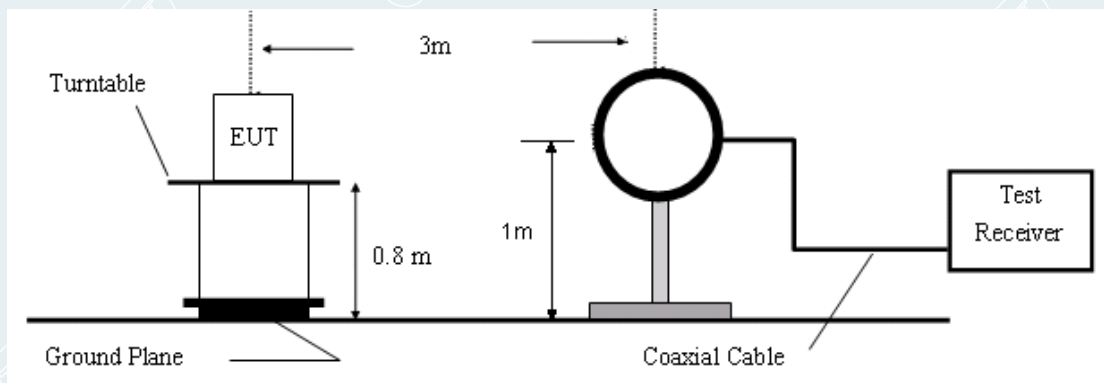


Figure 1. 9kHz to 30MHz radiated emissions test configuration

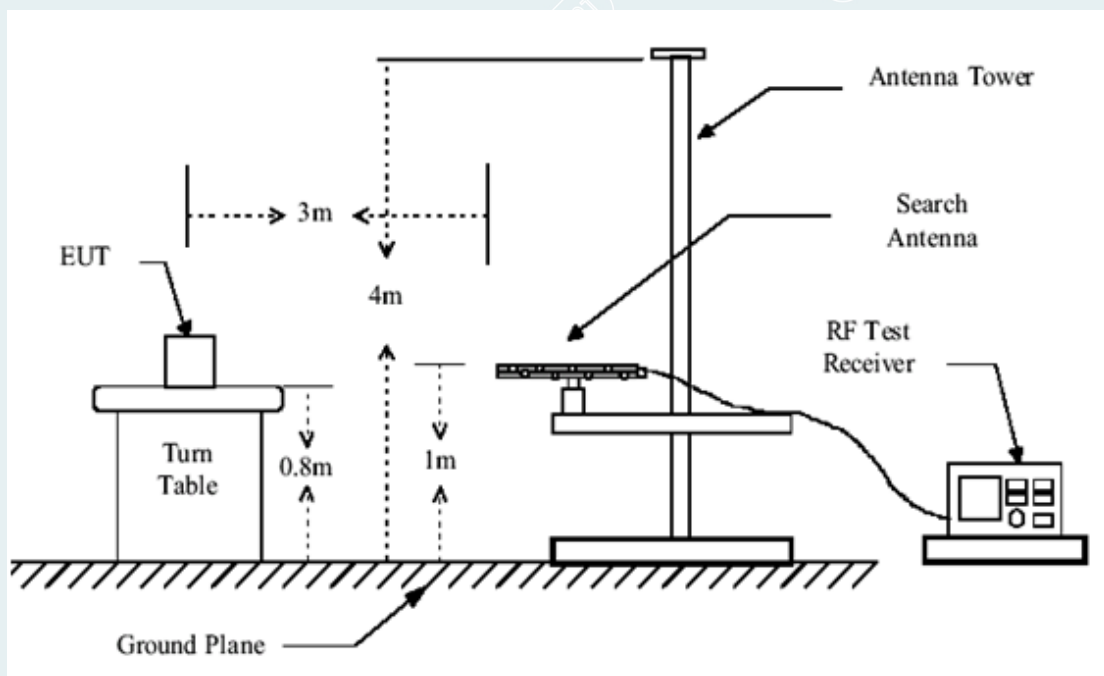


Figure 2. 30MHz to 1GHz radiated emissions test configuration

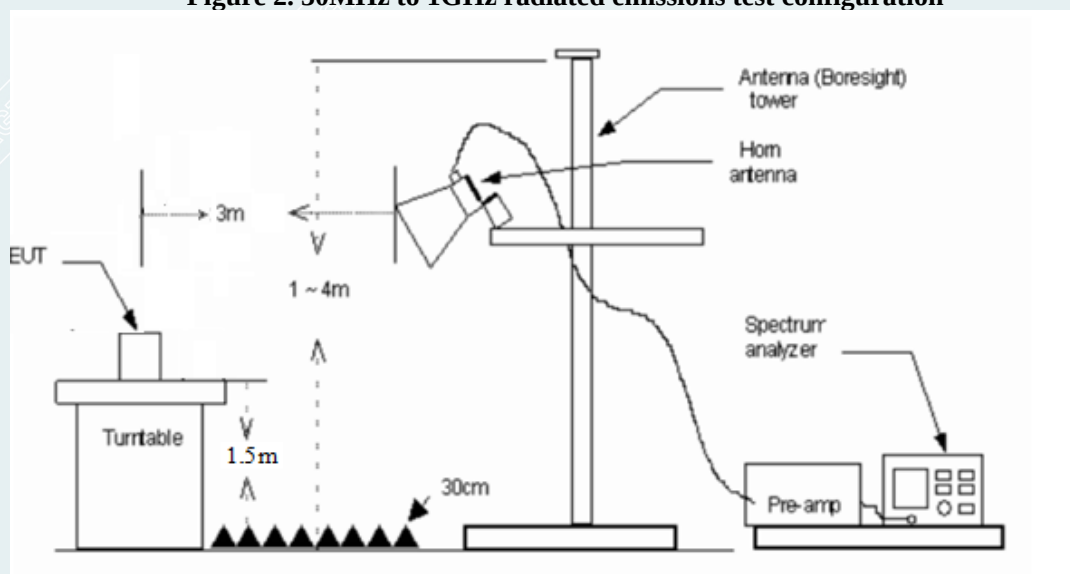


Figure 3. 1GHz to 18GHz radiated emissions test configuration

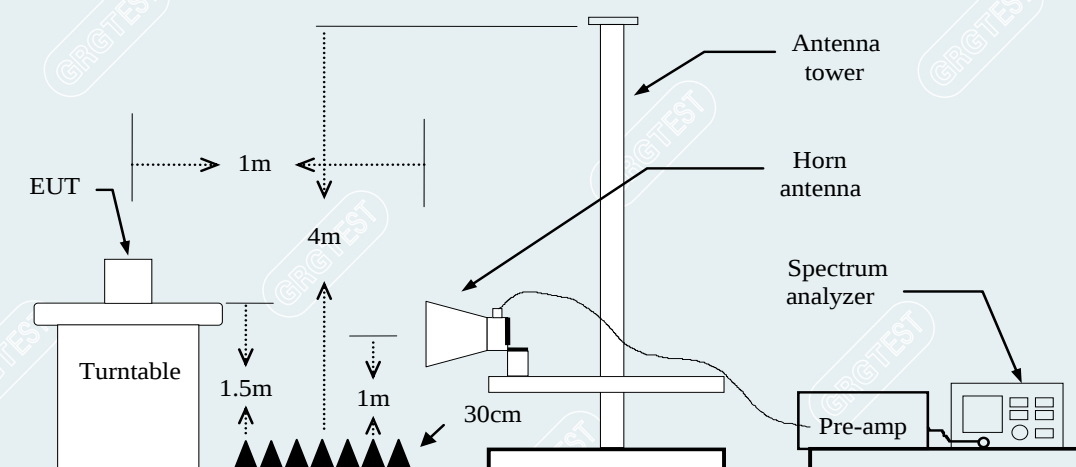


Figure 4.18GHz to 26.5GHz radiated emissions test configuration

5.4 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

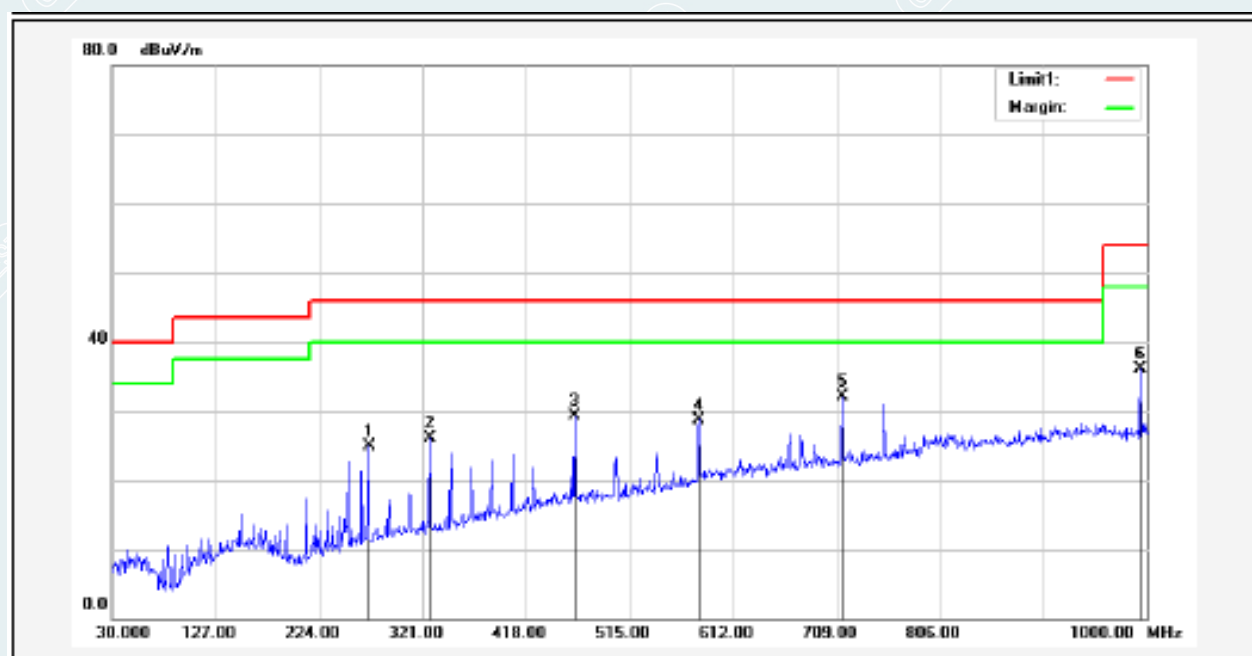
= Average Reading

5.5 TEST RESULTS

Below 1GHz

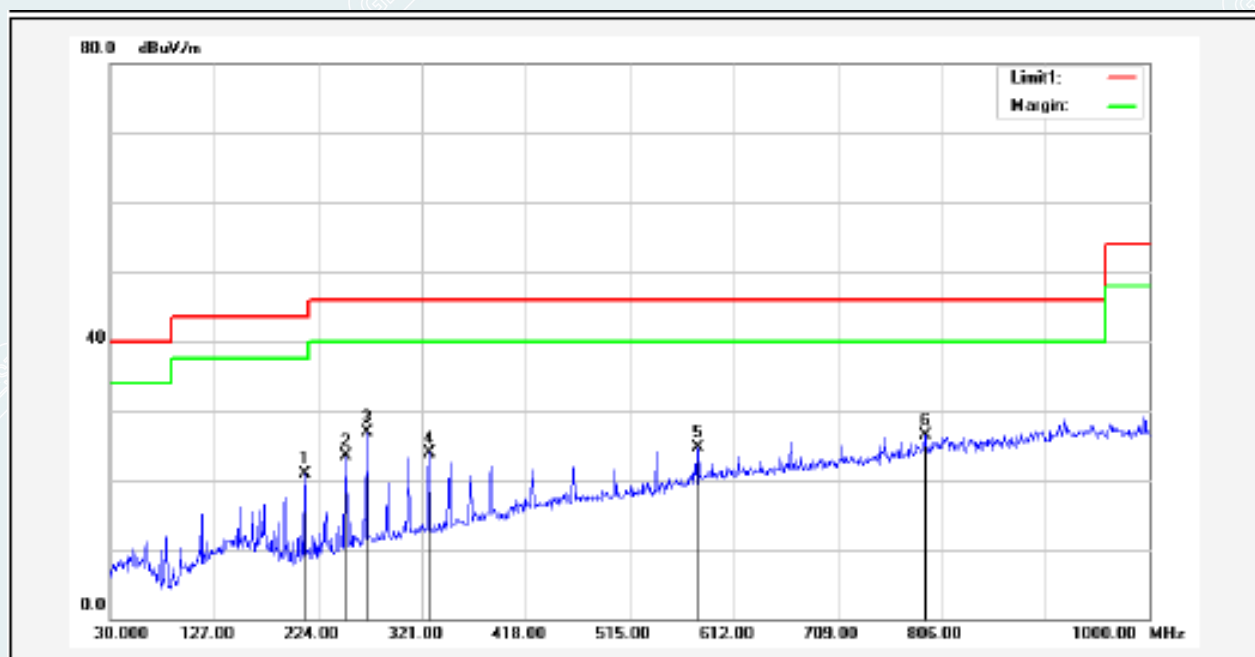
All models were pretested and only the worst modes and channels were recorded in this report. (IEEE 802.11g)

EUT Name	DiLink	Model	DiLink 3.0F
Environmental Conditions	24.0°C / 46%RH	Test Voltage	DC 12V
Test Mode	IEEE 802.11g Frequency (2412MHz)	Polarity	Horizontal
Tested By	Zeng Xianglong	Tested Date	2022-04-04



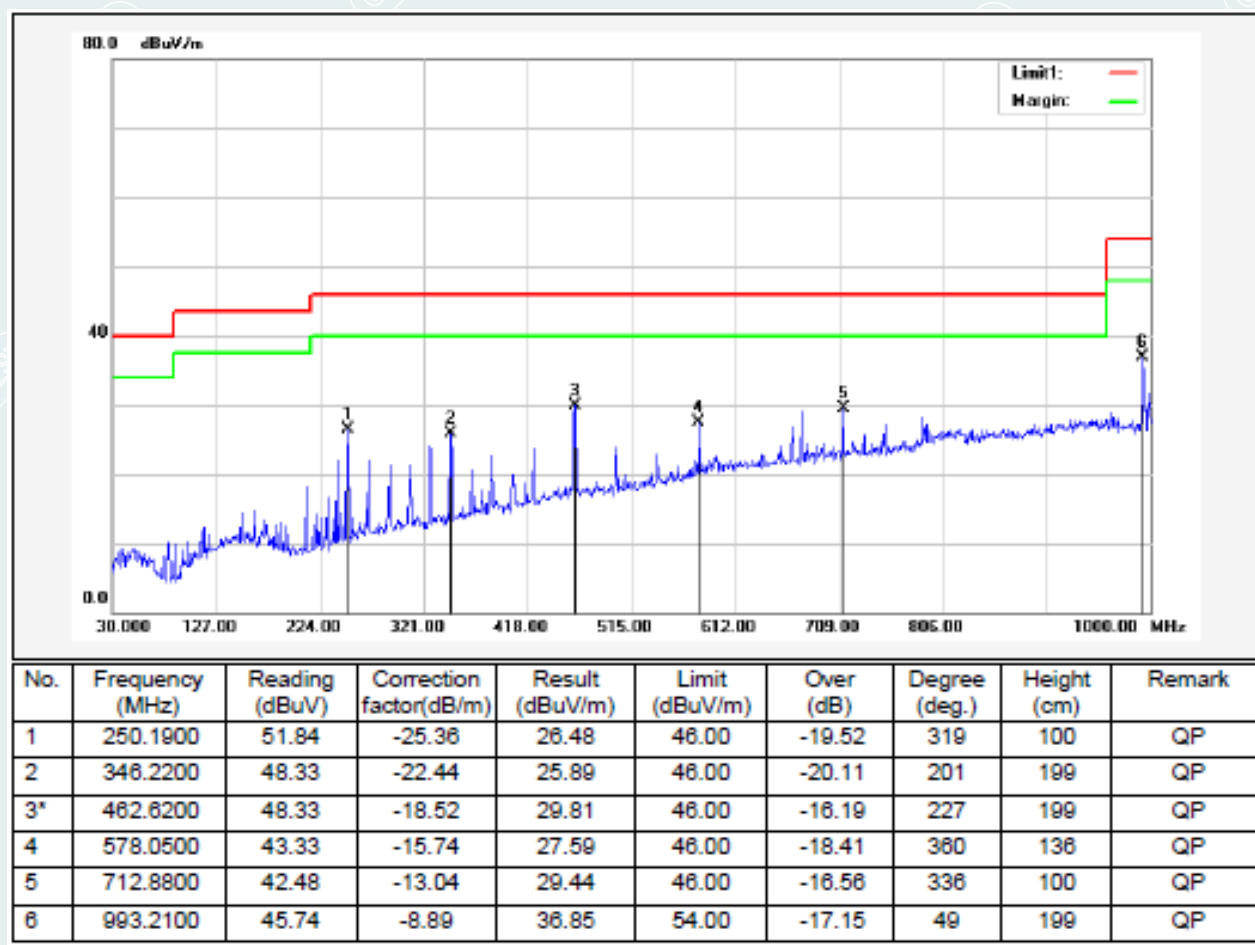
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over (dB)	Degree (deg.)	Height (cm)	Remark
1	270.5800	49.49	-24.62	24.87	46.00	-21.13	224	100	QP
2	327.7900	48.90	-22.88	26.02	46.00	-19.98	202	299	QP
3	483.5900	47.82	-18.51	29.31	46.00	-16.69	253	200	QP
4	579.9900	44.48	-15.68	28.80	46.00	-17.20	231	200	QP
5*	714.8200	45.18	-13.00	32.18	46.00	-13.82	266	200	QP
6	994.1800	44.93	-8.89	36.04	54.00	-17.96	297	299	QP

EUT Name	DiLink	Model	DiLink 3.0F
Environmental Conditions	24.0°C / 46%RH	Test Voltage	DC 12V
Test Mode	IEEE 802.11g Frequency (2412MHz)	Polarity	Vertical
Tested By	Zeng Xianglong	Tested Date	2022-04-04

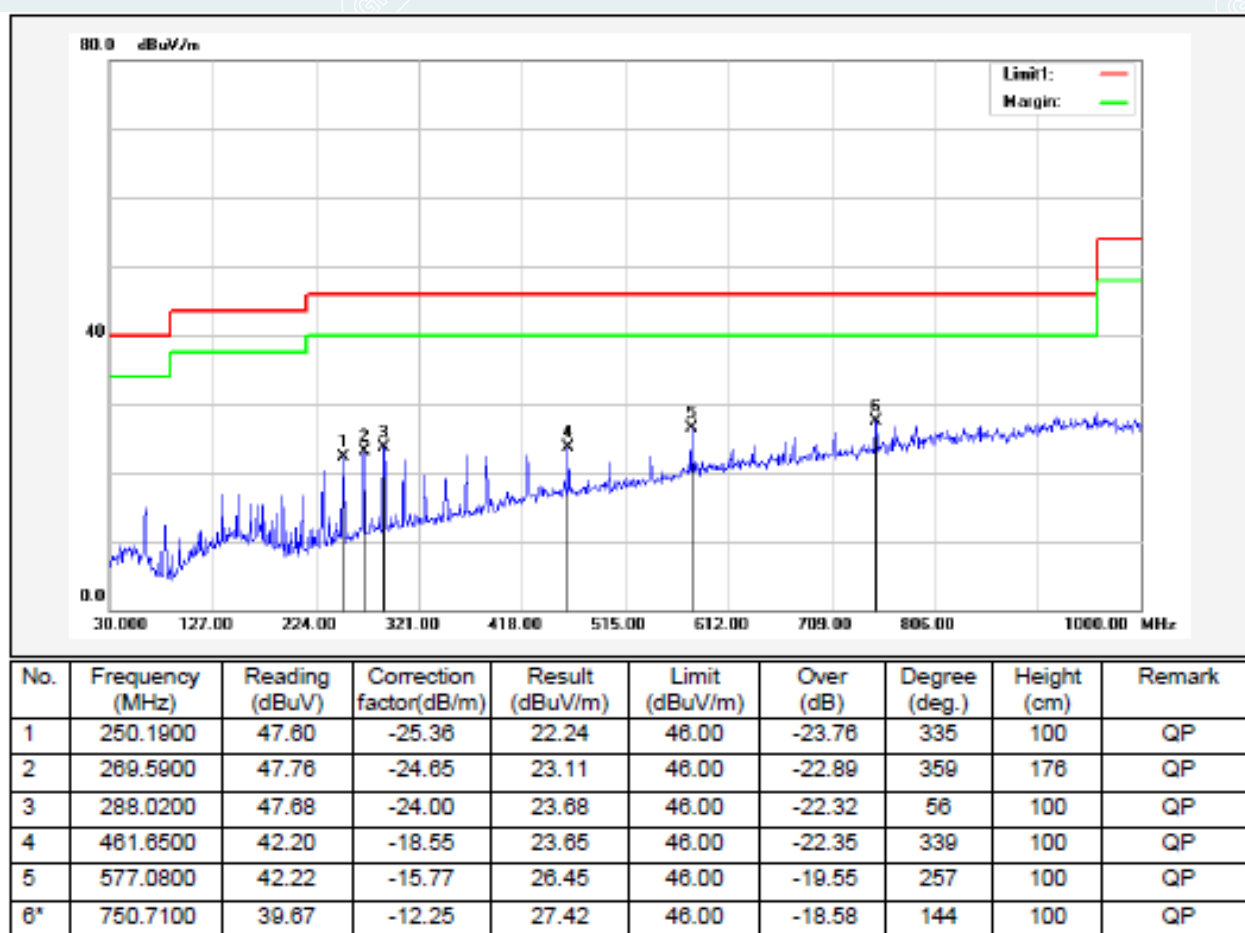


No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over (dB)	Degree (deg.)	Height (cm)	Remark
1	211.3900	48.18	-27.20	20.98	43.50	-22.52	102	100	QP
2	250.1900	48.79	-25.36	23.43	46.00	-22.57	336	100	QP
3*	269.5900	51.63	-24.65	26.98	46.00	-19.02	358	100	QP
4	327.7900	46.88	-22.88	24.00	46.00	-22.00	136	100	QP
5	579.0200	40.48	-15.71	24.77	46.00	-21.23	246	200	QP
6	790.4800	38.13	-11.67	26.46	46.00	-19.54	228	100	QP

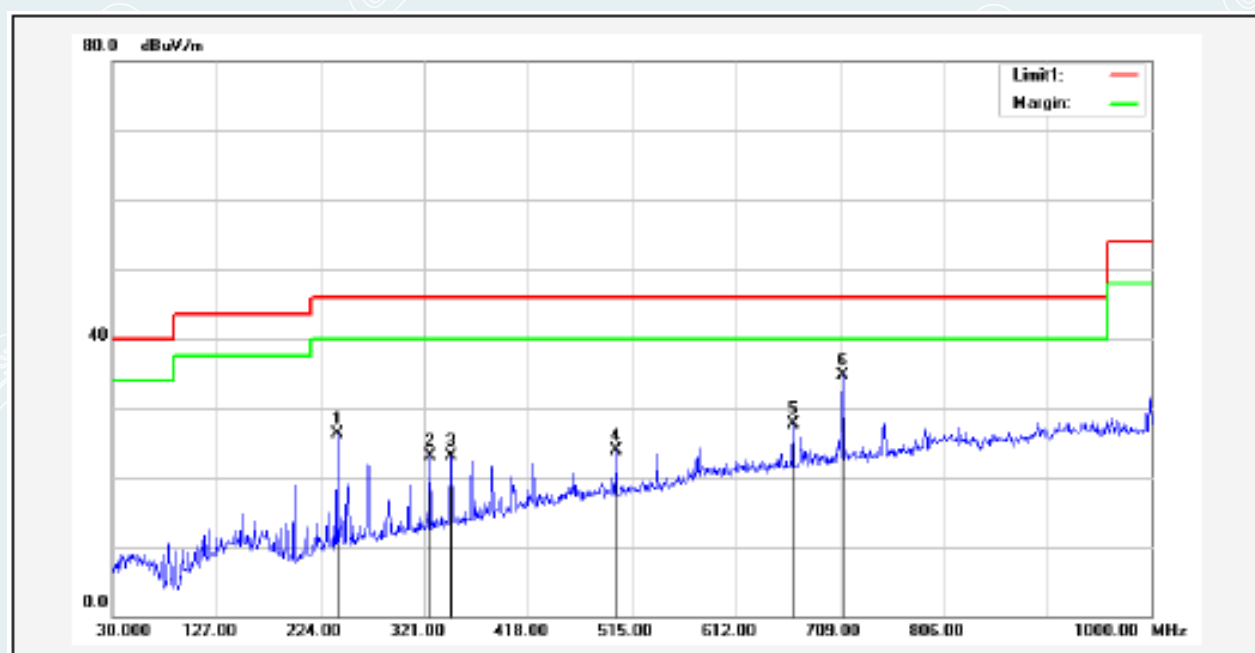
EUT Name	DiLink	Model	DiLink 3.0F
Environmental Conditions	24.0°C / 46%RH	Test Voltage	DC 12V
Test Mode	IEEE 802.11g Frequency (2437MHz)	Polarity	Horizontal
Tested By	Zeng Xianglong	Tested Date	2022-04-04



EUT Name	DiLink	Model	DiLink 3.0F
Environmental Conditions	24.0°C / 46%RH	Test Voltage	DC 12V
Test Mode	IEEE 802.11g Frequency (2437MHz)	Polarity	Vertical
Tested By	Zeng Xianglong	Tested Date	2022-04-04

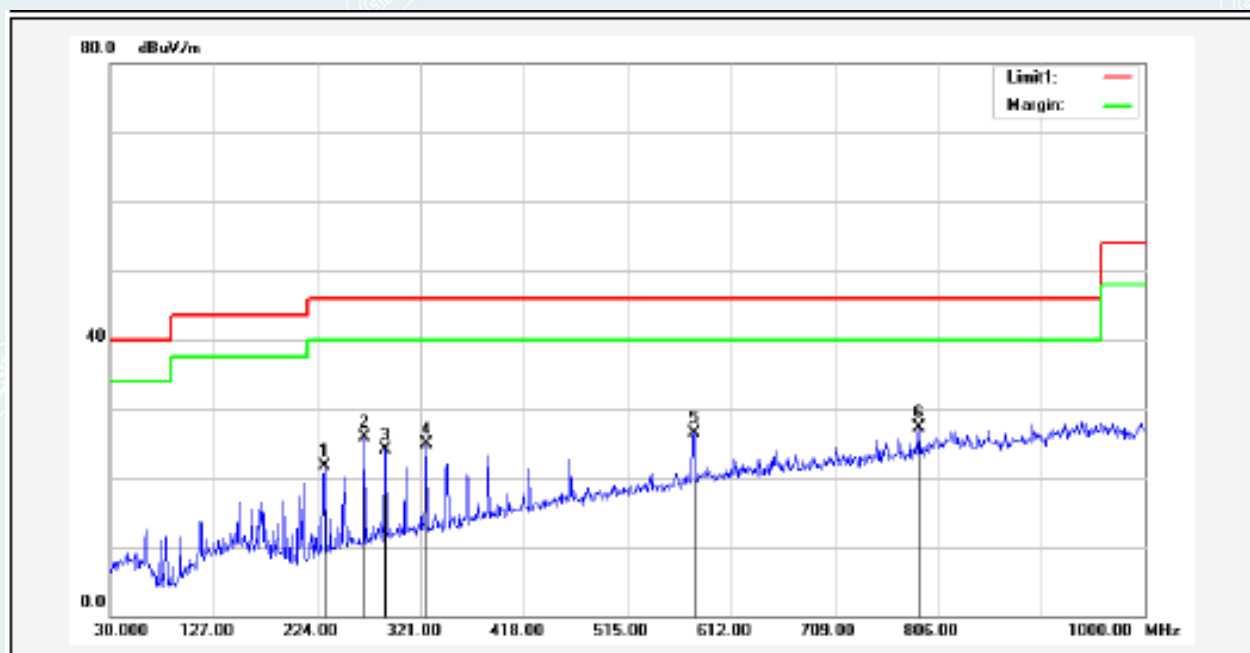


EUT Name	DiLink	Model	DiLink 3.0F
Environmental Conditions	24.0°C / 46%RH	Test Voltage	DC 12V
Test Mode	IEEE 802.11g Frequency (2462MHz)	Polarity	Horizontal
Tested By	Zeng Xianglong	Tested Date	2022-04-04



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over (dB)	Degree (deg.)	Height (cm)	Remark
1	239.5200	52.20	-25.86	26.34	46.00	-19.66	309	199	QP
2	326.8200	46.11	-22.91	23.20	46.00	-22.80	232	400	QP
3	346.2200	45.57	-22.44	23.13	46.00	-22.87	215	100	QP
4	500.4500	41.85	-17.90	23.95	46.00	-22.05	380	102	QP
5	665.3500	41.71	-13.99	27.72	46.00	-18.28	146	100	QP
6*	711.9100	47.87	-13.07	34.80	46.00	-11.20	263	100	QP

EUT Name	DiLink	Model	DiLink 3.0F
Environmental Conditions	24.0°C / 46%RH	Test Voltage	DC 12V
Test Mode	IEEE 802.11g Frequency (2462MHz)	Polarity	Vertical
Tested By	Zeng Xianglong	Tested Date	2022-04-04



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over (dB)	Degree (deg.)	Height (cm)	Remark
1	230.7900	47.98	-26.28	21.70	46.00	-24.30	79	100	QP
2	268.6200	50.53	-24.69	25.84	46.00	-20.16	360	128	QP
3	288.0200	48.18	-24.00	24.18	46.00	-21.82	79	100	QP
4	326.8200	47.73	-22.91	24.82	46.00	-21.18	153	100	QP
5	577.0800	42.30	-15.77	26.53	46.00	-19.47	262	200	QP
6*	788.5400	38.93	-11.69	27.24	46.00	-18.76	331	100	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)

Environment: 25°C/60%RH

Tested By:Lu Qiang

Date: 2022-04-07

Voltage:DC 12V

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1118.5148	64.23	39.38	-24.85	74.00	34.62	100	293	Horizontal
2	1670.5838	65.72	42.80	-22.92	74.00	31.20	100	111	Horizontal
3	2529.6912	62.21	44.28	-17.93	74.00	29.72	100	239	Horizontal
4	3200.6501	63.49	46.69	-16.80	74.00	27.31	100	114	Horizontal
5	4824.6031	58.76	46.17	-12.59	74.00	27.83	100	171	Horizontal
6	6797.3497	48.71	41.58	-7.13	74.00	32.42	100	320	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	1113.7642	68.97	46.75	-22.22	74.00	27.25	100	25	Vertical
2	1595.8245	69.03	45.49	-23.54	74.00	28.51	100	278	Vertical
3	1991.8740	69.15	48.69	-20.46	74.00	25.31	100	278	Vertical
4	2790.7238	65.23	47.28	-17.95	74.00	26.72	100	1	Vertical
5	4262.0328	63.40	49.24	-14.16	74.00	24.76	100	119	Vertical
6	6373.5467	59.08	49.03	-10.05	74.00	24.97	100	58	Vertical

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

Mode: IEEE 802.11b
 Middle Frequency (2437MHz)
 Environment: 25°C/60%RH
 Tested By:Lu Qiang

Date: 2022-04-07
 Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1353.7942	64.23	41.33	-22.90	74.00	32.67	100	264	Horizontal
2	1669.0836	65.59	42.66	-22.93	74.00	31.34	100	110	Horizontal
3	1991.1239	64.93	44.02	-20.91	74.00	29.98	100	343	Horizontal
4	3189.3987	60.33	43.67	-16.66	74.00	30.33	100	264	Horizontal
5	4250.7813	60.21	45.83	-14.38	74.00	28.17	100	298	Horizontal
6	4873.3592	59.16	46.95	-12.21	74.00	27.05	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	1593.3242	69.04	45.50	-23.54	74.00	28.50	100	280	Vertical
2	1996.1245	67.25	46.88	-20.37	74.00	27.12	100	286	Vertical
3	3187.5234	66.31	48.95	-17.36	74.00	25.05	100	300	Vertical
4	3999.4999	64.32	48.73	-15.59	74.00	25.27	100	67	Vertical
5	4262.0328	62.38	48.22	-14.16	74.00	25.78	100	115	Vertical
6	6396.0495	60.96	51.31	-9.65	74.00	22.69	100	56	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	6378.4604	-9.65	41.47	31.82	54.00	22.18	101	54.9	Vertical

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

Mode: IEEE 802.11b
 Highest Frequency (2462MHz)
 Environment: 25°C/60%RH
 Tested By:Lu Qiang

Date: 2022-04-07
 Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1353.7942	64.09	41.19	-22.90	74.00	32.81	100	260	Horizontal
2	1668.8336	65.15	42.22	-22.93	74.00	31.78	100	130	Horizontal
3	2319.1649	68.02	48.67	-19.35	74.00	25.33	100	197	Horizontal
4	3196.8996	59.88	43.12	-16.76	74.00	30.88	100	221	Horizontal
5	4263.9080	59.23	44.79	-14.44	74.00	29.21	100	308	Horizontal
6	4923.9905	63.20	51.61	-11.59	74.00	22.39	100	170	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	4923.9905	-11.59	62.11	50.52	54.00	3.48	151	169.4	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	1118.2648	64.78	42.39	-22.39	74.00	31.61	100	4	Vertical
2	1727.0909	63.92	42.46	-21.46	74.00	31.54	100	225	Vertical
3	1995.3744	64.75	44.37	-20.38	74.00	29.63	100	283	Vertical
4	2316.9146	62.83	44.27	-18.56	74.00	29.73	100	106	Vertical
5	4260.1575	59.67	45.50	-14.17	74.00	28.50	100	297	Vertical
6	4923.9905	62.72	51.38	-11.34	74.00	22.62	100	170	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	4923.8428	-11.35	54.22	42.87	54.00	11.13	100	120	Vertical

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

Mode: IEEE 802.11g
 Lowest Frequency (2412MHz)
 Environment: 25°C/60%RH
 Tested By:Lu Qiang

Date: 2022-04-07
 Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1265.7832	60.83	38.78	-22.05	74.00	35.22	100	240	Horizontal
2	1859.1074	63.85	42.30	-21.55	74.00	31.70	100	136	Horizontal
3	2238.4048	60.04	41.65	-18.39	74.00	32.35	100	257	Horizontal
4	3200.6501	62.58	45.78	-16.80	74.00	28.22	100	310	Horizontal
5	4263.9080	58.93	44.49	-14.44	74.00	29.51	100	1	Horizontal
6	4826.4783	56.51	43.92	-12.59	74.00	30.08	100	169	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	1114.5143	69.03	46.78	-22.25	74.00	27.22	100	9	Vertical
2	1990.6238	68.18	47.69	-20.49	74.00	26.31	100	279	Vertical
3	2797.4747	64.55	46.58	-17.97	74.00	27.42	100	1	Vertical
4	3191.2739	63.46	46.06	-17.40	74.00	27.94	100	269	Vertical
5	4263.9080	61.96	47.80	-14.16	74.00	26.20	100	335	Vertical
6	6397.9247	60.53	50.91	-9.62	74.00	23.09	100	45	Vertical

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

Mode: IEEE 802.11g
 Middle Frequency (2437MHz)
 Environment: 25°C/60%RH
 Tested By:Lu Qiang

Date: 2022-04-07
 Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1353.5442	62.15	39.25	-22.90	74.00	34.75	100	100	Horizontal
2	1993.8742	65.70	44.77	-20.93	74.00	29.23	100	308	Horizontal
3	2319.9150	64.10	44.75	-19.35	74.00	29.25	100	10	Horizontal
4	3183.7730	62.08	45.49	-16.59	74.00	28.51	100	315	Horizontal
5	4258.2823	59.87	45.45	-14.42	74.00	28.55	100	291	Horizontal
6	4875.2344	55.27	43.09	-12.18	74.00	30.91	100	178	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	1111.2639	70.04	47.91	-22.13	74.00	26.09	100	7	Vertical
2	2000.3750	67.32	47.04	-20.28	74.00	26.96	100	280	Vertical
3	2798.4748	65.65	47.67	-17.98	74.00	26.33	100	332	Vertical
4	3200.6501	63.81	46.32	-17.49	74.00	27.68	100	301	Vertical
5	3999.4999	61.03	45.44	-15.59	74.00	28.56	100	334	Vertical
6	6405.4257	60.02	50.50	-9.52	74.00	23.50	100	288	Vertical

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

Mode: IEEE 802.11g
Highest Frequency (2462MHz)
Environment: 25°C/60%RH
Tested By:Lu Qiang

Date: 2022-04-07
Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1555.3194	65.79	43.53	-22.26	74.00	30.47	100	288	Horizontal
2	1997.1246	65.17	44.21	-20.96	74.00	29.79	100	309	Horizontal
3	3187.5234	59.80	43.16	-16.64	74.00	30.84	100	262	Horizontal
4	4262.0328	59.38	44.94	-14.44	74.00	29.06	100	310	Horizontal
5	4931.4914	58.00	46.48	-11.52	74.00	27.52	100	178	Horizontal
6	7198.6498	47.59	43.34	-4.25	74.00	30.66	100	10	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	1065.7582	70.70	48.14	-22.56	74.00	25.86	100	1	Vertical
2	1991.6240	69.04	48.57	-20.47	74.00	25.43	100	286	Vertical
3	2791.7240	65.73	47.77	-17.96	74.00	26.23	100	359	Vertical
4	3196.8996	65.79	48.32	-17.47	74.00	25.68	100	263	Vertical
5	4248.9061	59.52	45.34	-14.18	74.00	28.66	100	130	Vertical
6	6401.6752	53.65	44.09	-9.56	74.00	29.91	100	61	Vertical

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

Mode: IEEE 802.11n HT20
 Lowest Frequency (2412MHz)
 Environment: 25°C/60%RH
 Tested By:Lu Qiang

Date: 2022-04-07
 Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1242.7803	62.58	40.37	-22.21	74.00	33.63	100	12	Horizontal
2	1668.0835	64.70	41.77	-22.93	74.00	32.23	100	115	Horizontal
3	2241.9052	63.95	45.51	-18.44	74.00	28.49	100	290	Horizontal
4	2597.9497	61.37	43.23	-18.14	74.00	30.77	100	302	Horizontal
5	2792.7241	60.49	43.10	-17.39	74.00	30.90	100	257	Horizontal
6	3997.6247	56.88	40.99	-15.89	74.00	33.01	100	118	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	1114.2643	71.10	48.86	-22.24	74.00	25.14	100	5	Vertical
2	1725.5907	66.10	44.64	-21.46	74.00	29.36	100	266	Vertical
3	1997.8747	67.47	47.14	-20.33	74.00	26.86	100	269	Vertical
4	3200.6501	67.76	50.27	-17.49	74.00	23.73	100	294	Vertical
5	4254.5318	61.78	47.61	-14.17	74.00	26.39	100	306	Vertical
6	6382.9229	60.11	50.23	-9.88	74.00	23.77	100	279	Vertical

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

Mode: IEEE 802.11n HT20
 Middle Frequency (2437 MHz)
 Environment: 25°C/60%RH
 Tested By:Lu Qiang

Date: 2022-04-07
 Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1248.7811	63.06	41.04	-22.02	74.00	32.96	100	33	Horizontal
2	1667.3334	64.41	41.48	-22.93	74.00	32.52	100	121	Horizontal
3	1993.6242	63.69	42.76	-20.93	74.00	31.24	100	287	Horizontal
4	2784.4731	61.44	43.93	-17.51	74.00	30.07	100	350	Horizontal
5	3196.8996	62.49	45.73	-16.76	74.00	28.27	100	345	Horizontal
6	4254.5318	59.14	44.74	-14.40	74.00	29.26	100	293	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	1111.0139	70.41	48.29	-22.12	74.00	25.71	100	12	Vertical
2	1599.5749	67.74	44.20	-23.54	74.00	29.80	100	36	Vertical
3	1996.6246	68.28	47.92	-20.36	74.00	26.08	100	274	Vertical
4	3195.0244	67.45	50.00	-17.45	74.00	24.00	100	279	Vertical
5	3990.1238	62.05	46.44	-15.61	74.00	27.56	100	260	Vertical
6	6214.1518	55.31	45.59	-9.72	74.00	28.41	100	56	Vertical

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

Mode: IEEE 802.11n HT20
Highest Frequency (2462MHz)
Environment: 25°C/60%RH
Tested By:Lu Qiang

Date: 2022-04-07
Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1115.0144	64.76	39.88	-24.88	74.00	34.12	100	52	Horizontal
2	1671.5839	65.18	42.26	-22.92	74.00	31.74	100	109	Horizontal
3	1988.8736	63.73	42.83	-20.90	74.00	31.17	100	305	Horizontal
4	3196.8996	63.99	47.23	-16.76	74.00	26.77	100	343	Horizontal
5	4256.4071	58.73	44.32	-14.41	74.00	29.68	100	315	Horizontal
6	4925.8657	56.76	45.19	-11.57	74.00	28.81	100	170	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	1065.7582	71.45	48.89	-22.56	74.00	25.11	100	341	Vertical
2	1599.8250	69.24	45.70	-23.54	74.00	28.30	100	24	Vertical
3	1994.3743	69.35	48.94	-20.41	74.00	25.06	100	320	Vertical
4	2538.6923	68.44	49.56	-18.88	74.00	24.44	100	335	Vertical
5	3990.1238	64.84	49.23	-15.61	74.00	24.77	100	72	Vertical
6	6373.5467	55.90	45.85	-10.05	74.00	28.15	100	290	Vertical

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

Mode: IEEE 802.11n HT40
Lowest Frequency (2422MHz)
Environment: 25°C/60%RH
Tested By:Lu Qiang

Date: 2022-04-07
Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1194.7743	65.23	41.57	-23.66	74.00	32.43	100	332	Horizontal
2	1682.0853	64.25	41.36	-22.89	74.00	32.64	100	118	Horizontal
3	1989.1236	67.74	46.84	-20.90	74.00	27.16	100	52	Horizontal
4	2666.4583	62.97	44.10	-18.87	74.00	29.90	100	308	Horizontal
5	3189.3987	58.58	41.92	-16.66	74.00	32.08	100	68	Horizontal
6	4843.3554	54.60	42.05	-12.55	74.00	31.95	100	154	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	1112.0140	70.87	48.71	-22.16	74.00	25.29	100	10	Vertical
2	1599.5749	68.67	45.13	-23.54	74.00	28.87	100	18	Vertical
3	1999.8750	68.74	48.46	-20.28	74.00	25.54	100	296	Vertical
4	3198.7748	64.01	46.52	-17.49	74.00	27.48	100	330	Vertical
5	3995.7495	63.30	47.70	-15.60	74.00	26.30	100	266	Vertical
6	6379.1724	59.71	49.76	-9.95	74.00	24.24	100	264	Vertical

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

Mode: IEEE 802.11n HT40
 Middle Frequency (2437 MHz)
 Environment: 25°C/60%RH
 Tested By:Lu Qiang

Date: 2022-04-07
 Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1245.7807	63.28	41.17	-22.11	74.00	32.83	100	259	Horizontal
2	1673.0841	64.63	41.71	-22.92	74.00	32.29	100	116	Horizontal
3	1909.3637	64.98	44.38	-20.60	74.00	29.62	100	308	Horizontal
4	2799.4749	62.20	44.91	-17.29	74.00	29.09	100	301	Horizontal
5	4250.7813	57.54	43.16	-14.38	74.00	30.84	100	302	Horizontal
6	7892.4866	47.11	43.75	-3.36	74.00	30.25	100	91	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	1111.7640	71.00	48.85	-22.15	74.00	25.15	100	10	Vertical
2	1596.5746	68.79	45.25	-23.54	74.00	28.75	100	16	Vertical
3	2316.1645	68.07	49.49	-18.58	74.00	24.51	100	58	Vertical
4	2793.2242	65.68	47.72	-17.96	74.00	26.28	100	332	Vertical
5	4260.1575	63.62	49.45	-14.17	74.00	24.55	100	323	Vertical
6	6369.7962	56.75	46.64	-10.11	74.00	27.36	100	69	Vertical

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

Mode: IEEE 802.11n HT40
 Highest Frequency (2452MHz)
 Environment: 25°C/60%RH
 Tested By:Lu Qiang

Date: 2022-04-07 to 2022-04-08
 Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1679.0849	64.72	41.82	-22.90	74.00	32.18	100	115	Horizontal
2	2321.6652	68.21	48.85	-19.36	74.00	25.15	100	297	Horizontal
3	2794.9744	62.88	45.52	-17.36	74.00	28.48	100	304	Horizontal
4	3191.2739	63.31	46.62	-16.69	74.00	27.38	100	308	Horizontal
5	4918.3648	54.01	42.36	-11.65	74.00	31.64	100	151	Horizontal
6	9192.0240	45.52	45.94	0.42	74.00	28.06	100	209	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	1112.5141	69.99	47.81	-22.18	74.00	26.19	100	18	Vertical
2	1312.5391	68.56	45.91	-22.65	74.00	28.09	100	30	Vertical
3	1998.1248	68.91	48.59	-20.32	74.00	25.41	100	292	Vertical
4	3195.0244	63.38	45.93	-17.45	74.00	28.07	100	283	Vertical
5	3999.4999	62.56	46.97	-15.59	74.00	27.03	100	72	Vertical
6	6366.0458	58.09	47.91	-10.18	74.00	26.09	100	283	Vertical

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

18GHz-26.5GHz:

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

The peak test results is less than the average limits, so the average test results had not reported.

Mode: IEEE 802.11g

Lowest Frequency (2412MHz)

Environment: 25°C/60%RH

Tested By:Lu Qiang

Date: 2022-04-12

Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18285.6000	57.06	44.62	-12.44	83.54	38.92	150	274	Horizontal
2	19504.9250	56.99	45.47	-11.52	83.54	38.07	150	166	Horizontal
3	20560.6250	55.43	44.99	-10.44	83.54	38.55	150	359	Horizontal
4	22255.5250	54.16	44.45	-9.71	83.54	39.09	150	111	Horizontal
5	23789.7750	55.22	46.44	-8.78	83.54	37.10	150	307	Horizontal
6	24781.3000	54.21	46.32	-7.89	83.54	37.22	150	33	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	18420.3250	57.37	44.96	-12.41	83.54	38.58	150	65	Vertical
2	19388.4750	56.27	44.62	-11.65	83.54	38.92	150	288	Vertical
3	21149.6750	55.35	45.18	-10.17	83.54	38.36	150	171	Vertical
4	22293.7750	54.33	44.78	-9.55	83.54	38.76	150	7	Vertical
5	24111.0750	53.84	45.36	-8.48	83.54	38.18	150	20	Vertical
6	25151.9000	53.88	46.54	-7.34	83.54	37.00	150	136	Vertical

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 802.11g
 Middle Frequency (2437MHz)
 Environment: 25°C/60%RH
 Tested By:Lu Qiang

Date: 2022-04-12
 Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18340.8500	57.17	44.75	-12.42	83.54	38.79	150	245	Horizontal
2	19502.8000	56.40	44.88	-11.52	83.54	38.66	150	1	Horizontal
3	20555.1000	55.70	45.25	-10.45	83.54	38.29	150	271	Horizontal
4	21612.9250	54.71	44.95	-9.76	83.54	38.59	150	59	Horizontal
5	23457.0000	55.37	46.46	-8.91	83.54	37.08	150	226	Horizontal
6	24362.6750	54.09	45.90	-8.19	83.54	37.64	150	122	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	18983.8750	56.75	44.74	-12.01	83.54	38.80	150	106	Vertical
2	20569.1250	55.42	44.91	-10.51	83.54	38.63	150	61	Vertical
3	21656.7000	54.66	44.90	-9.76	83.54	38.64	150	93	Vertical
4	23810.6000	54.27	45.59	-8.68	83.54	37.95	150	3	Vertical
5	24810.6250	53.99	46.30	-7.69	83.54	37.24	150	3	Vertical
6	25313.4000	53.57	46.15	-7.42	83.54	37.39	150	196	Vertical

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 802.11g
 Highest Frequency (2462MHz)
 Environment: 25°C/60%RH
 Tested By:Lu Qiang

Date: 2022-04-12
 Voltage:DC 12V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18385.4750	56.98	44.58	-12.40	83.54	38.96	150	115	Horizontal
2	19699.5750	56.57	45.22	-11.35	83.54	38.32	150	140	Horizontal
3	21628.6500	55.35	45.59	-9.76	83.54	37.95	150	185	Horizontal
4	23003.9500	55.03	46.19	-8.84	83.54	37.35	150	153	Horizontal
5	24441.3000	54.49	46.36	-8.13	83.54	37.18	150	115	Horizontal
6	25355.9000	53.65	46.21	-7.44	83.54	37.33	150	37	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	18333.6250	57.82	45.34	-12.48	83.54	38.20	150	32	Vertical
2	18934.5750	56.65	44.61	-12.04	83.54	38.93	150	175	Vertical
3	19365.9500	56.52	44.85	-11.67	83.54	38.69	150	96	Vertical
4	20574.6500	55.49	44.99	-10.50	83.54	38.55	150	284	Vertical
5	23252.1500	55.15	46.33	-8.82	83.54	37.21	150	270	Vertical
6	24425.1500	53.63	45.46	-8.17	83.54	38.08	150	39	Vertical

Note:

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

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

6. 6DB BANDWIDTH

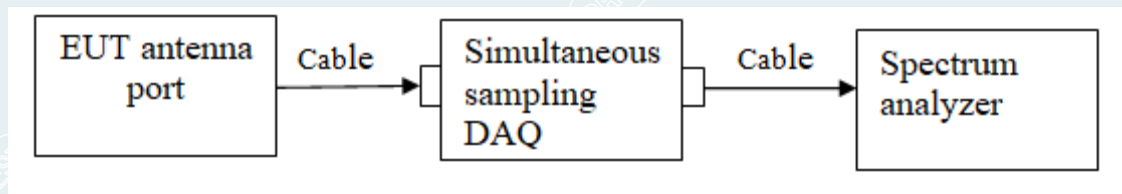
6.1 LIMITS

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.

6.2 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.

6.3 TEST SETUP



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

6.4 TEST RESULTS

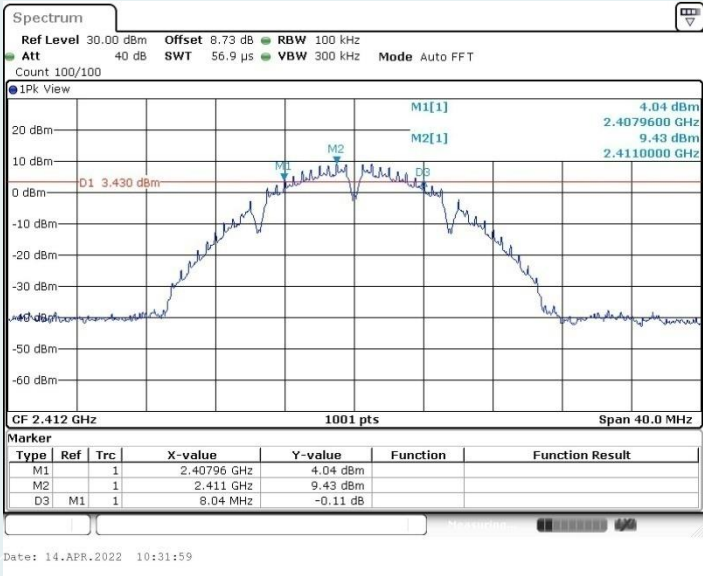
Environment: 23.5℃/48%RH
Tested By:Lu Wei

Voltage:DC 12V
Date: 2022-04-14

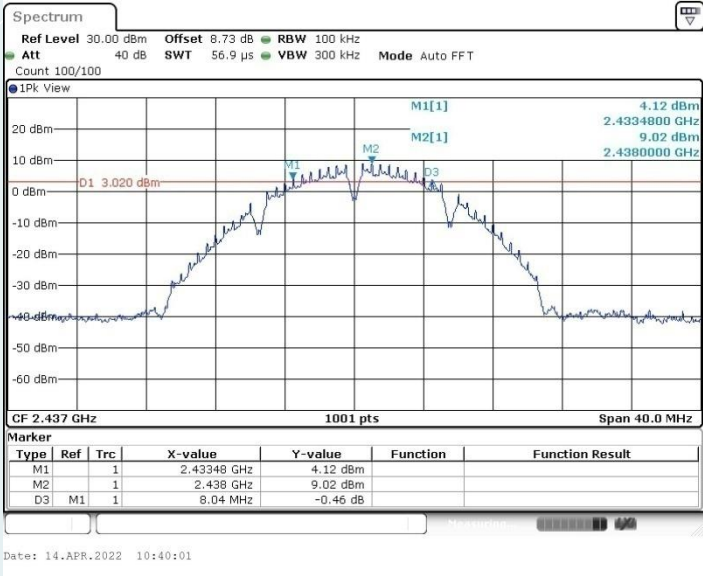
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	Limit[MHz]	Verdict
IEEE 802.11b	Ant1	2412	8.04	≥0.5	PASS
		2437	8.04	≥0.5	PASS
		2462	8.56	≥0.5	PASS
IEEE 802.11g	Ant1	2412	15.08	≥0.5	PASS
		2437	15.32	≥0.5	PASS
		2462	16.04	≥0.5	PASS
IEEE 802.11n HT20	Ant1	2412	15.04	≥0.5	PASS
		2437	15.32	≥0.5	PASS
		2462	16.96	≥0.5	PASS
IEEE 802.11n HT40	Ant1	2422	35.68	≥0.5	PASS
		2437	33.84	≥0.5	PASS
		2452	35.76	≥0.5	PASS

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

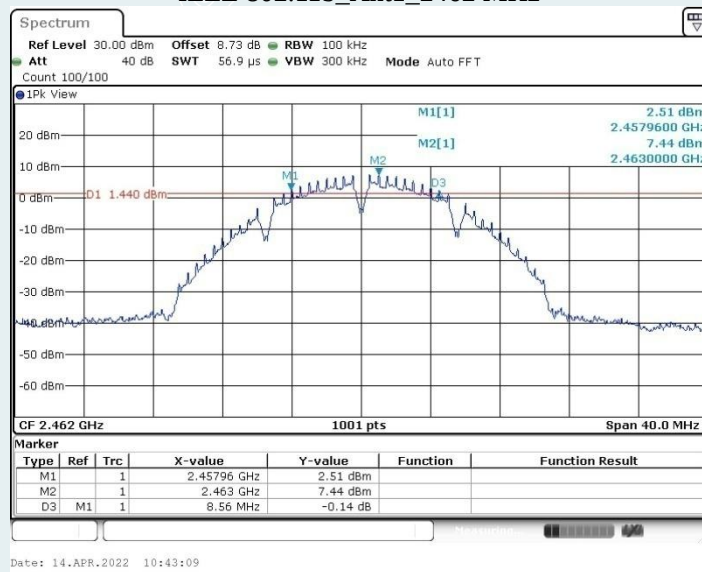
IEEE 802.11b_Ant1_2412 MHz



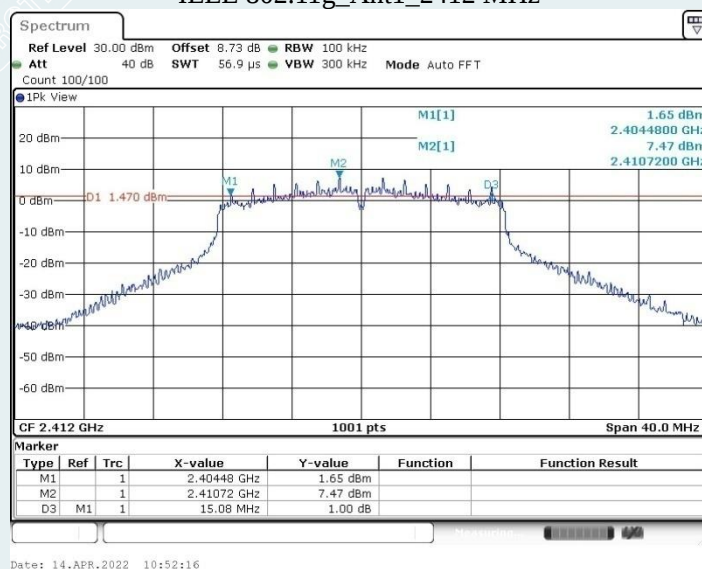
IEEE 802.11b_Ant1_2437 MHz



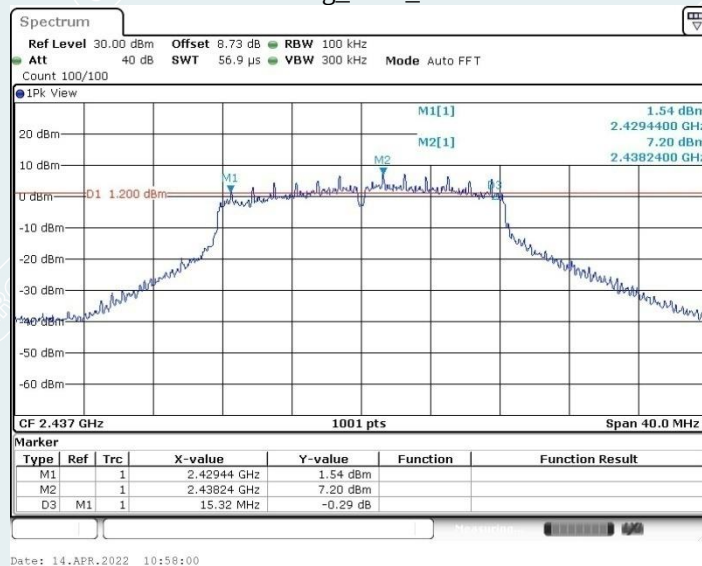
IEEE 802.11b_Ant1_2462 MHz



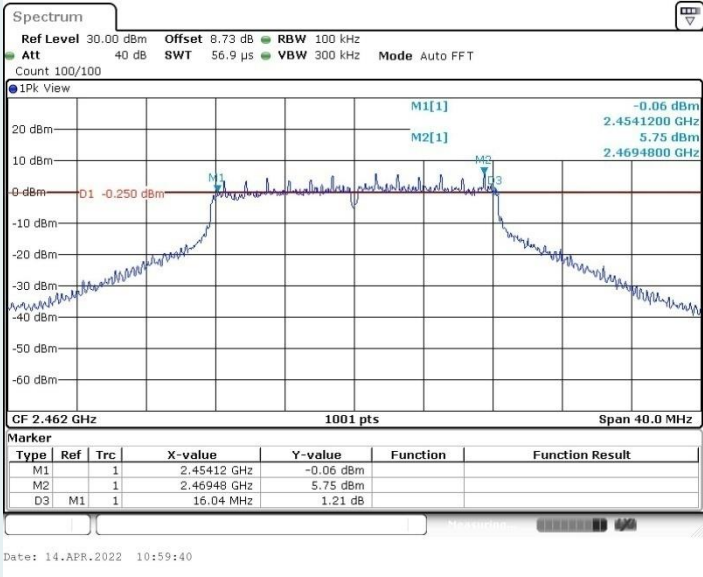
IEEE 802.11g_Ant1_2412 MHz



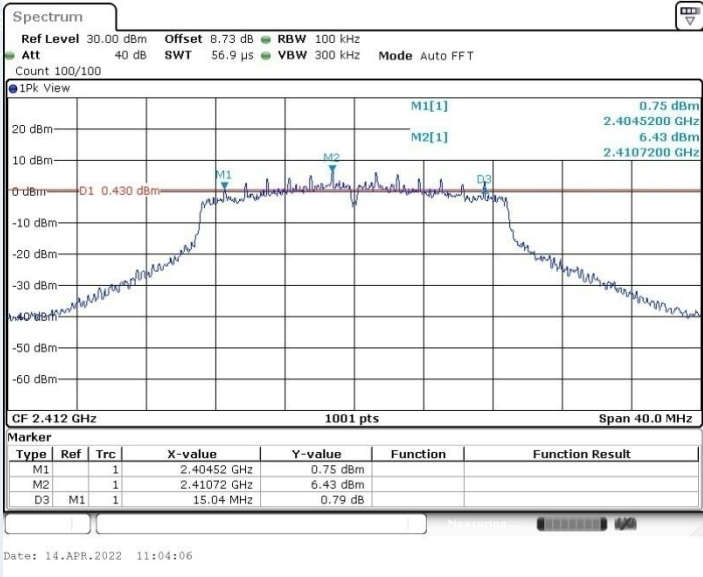
IEEE 802.11g_Ant1_2437 MHz



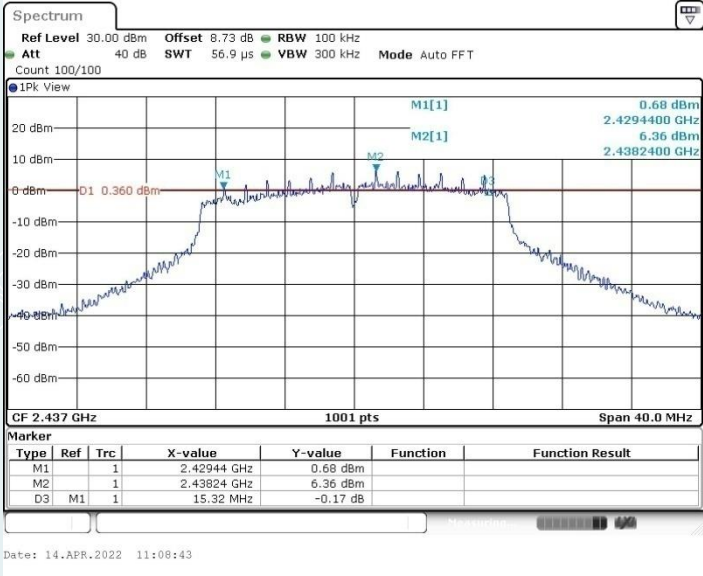
IEEE 802.11g_Ant1_2462 MHz



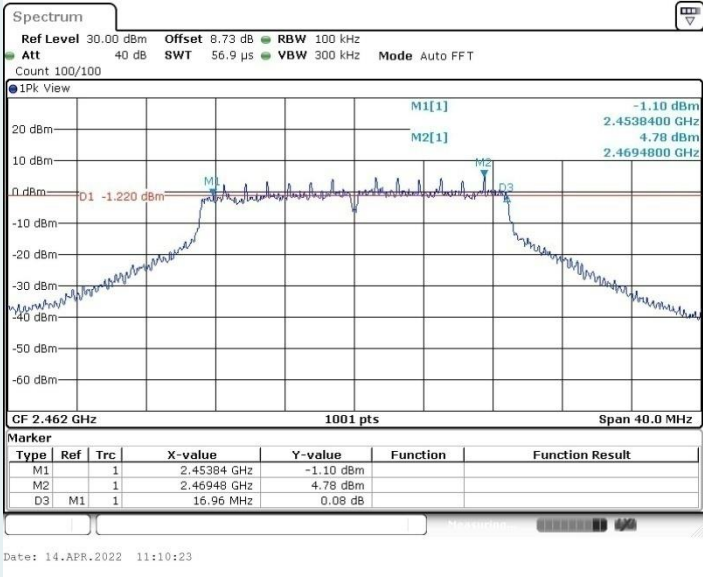
IEEE 802.11n HT20_Ant1_2412 MHz



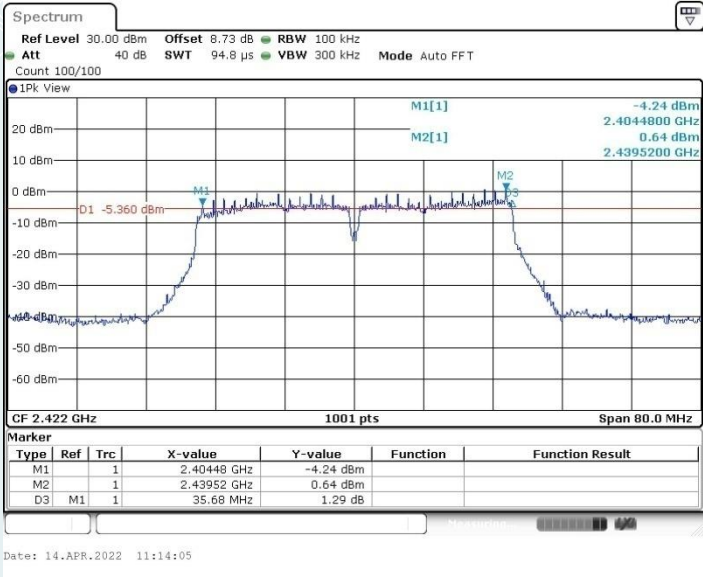
IEEE 802.11n HT20_Ant1_2437 MHz



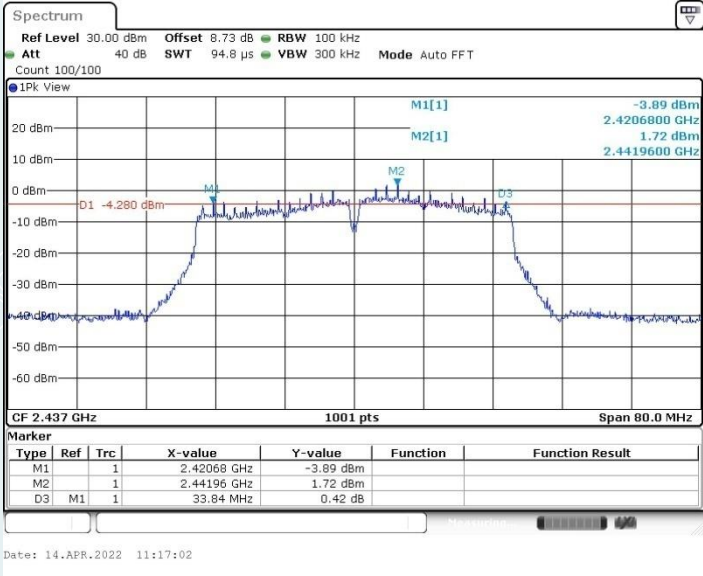
IEEE 802.11n HT20_Ant1_2462 MHz



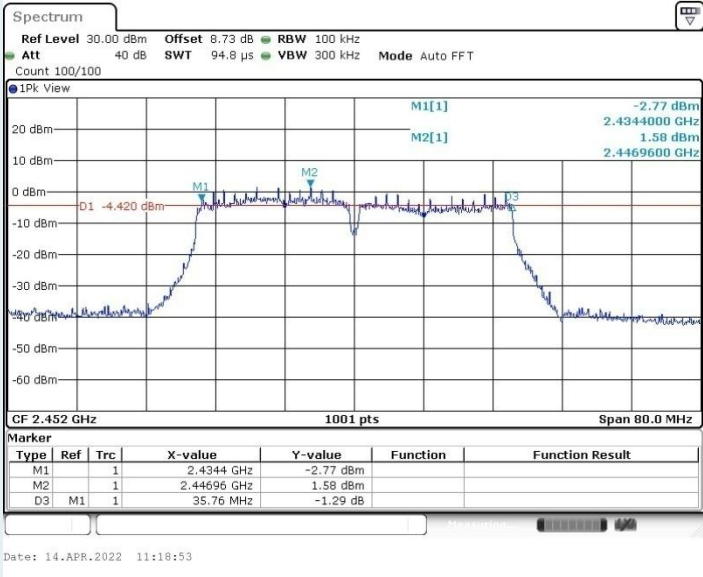
IEEE 802.11n HT40_Ant1_2422 MHz



IEEE 802.11n HT40_Ant1_2437 MHz



IEEE 802.11n HT40_Ant1_2452 MHz



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

7. MAXIMUM PEAK OUTPUT POWER

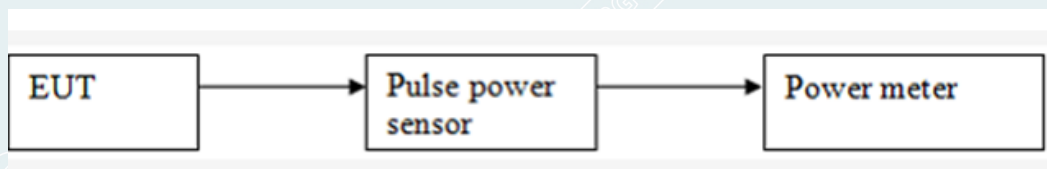
7.1 LIMITS

The maximum Peak output power measurement is 1W

7.2 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.

7.3 TEST SETUP



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

7.4 TEST RESULT

Environment: 22.5°C/49%RH
Tested By:Lu Wei

Voltage:DC 12V
Date: 2022-04-03

IEEE 802.11b Mode:

Channel No.	Frequency (MHz)	Measured Channel Power (dBm)	Peak / AVG	Limit	Result
1	2412	18.98	Peak	30dBm	Pass
6	2437	18.99			Pass
11	2462	17.62			Pass

IEEE 802.11g Mode:

Channel No.	Frequency (MHz)	Measured Channel Power (dBm)	Peak / AVG	Limit	Result
1	2412	21.16	Peak	30dBm	Pass
6	2437	20.94			Pass
11	2462	20.24			Pass

IEEE 802.11n HT20 Mode:

Channel No.	Frequency (MHz)	Measured Channel Power (dBm)	Peak/ AVG	Limit	Result
1	2412	20.33	Peak	30dBm	Pass
6	2437	20.12			Pass
11	2462	19.32			Pass

IEEE 802.11n HT40 Mode:

Channel No.	Frequency (MHz)	Measured Channel Power (dBm)	Peak/ AVG	Limit	Result
3	2422	19.73	Peak	30dBm	Pass
6	2437	18.71			Pass
9	2452	20.56			Pass

8. POWER SPECTRAL DENSITY

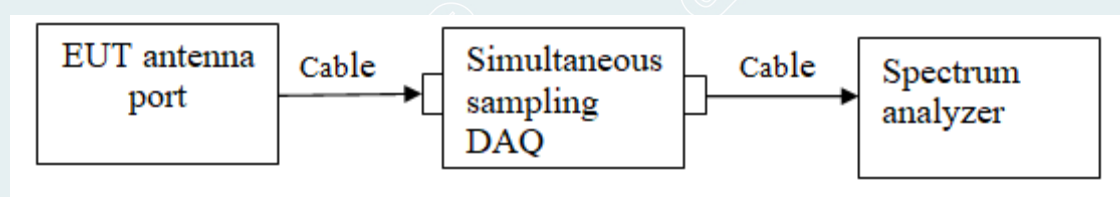
8.1 LIMITS

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.

8.2 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.

8.3 TEST SETUP



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

8.4 TEST RESULTS

Environment: 23.5°C/48%RH

Tested By:Lu Wei

Voltage:DC 12V

Date: 2022-04-14

IEEE 802.11b Mode:

Channel No.	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	2412	-4.1	8.00	Pass
6	2437	-4.33	8.00	Pass
11	2462	-5.78	8.00	Pass

IEEE 802.11g Mode:

Channel No.	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	2412	-5.91	8.00	Pass
6	2437	-5.88	8.00	Pass
11	2462	-7.38	8.00	Pass

IEEE 802.11n HT20 Mode:

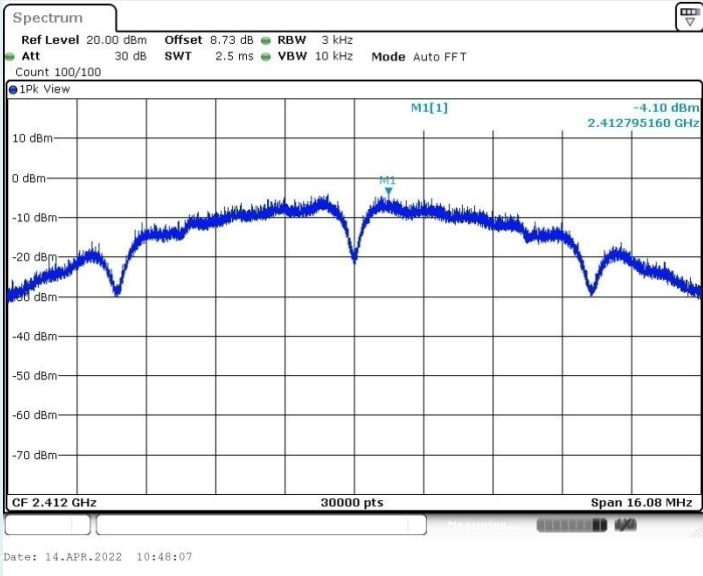
Channel No.	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	2412	-7.83	8.00	Pass
6	2437	-7.69	8.00	Pass
11	2462	-9.41	8.00	Pass

IEEE 802.11n HT40 Mode:

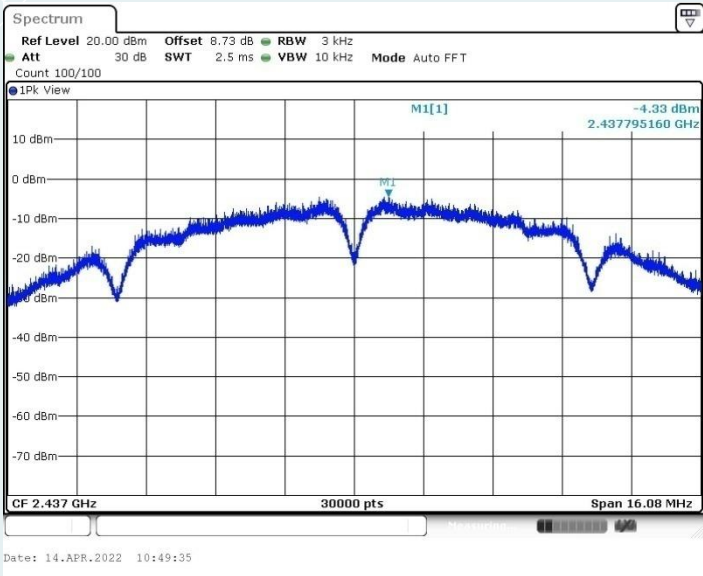
Channel No.	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
3	2422	-13.37	8.00	Pass
6	2437	-12.87	8.00	Pass
9	2452	-12.78	8.00	Pass

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

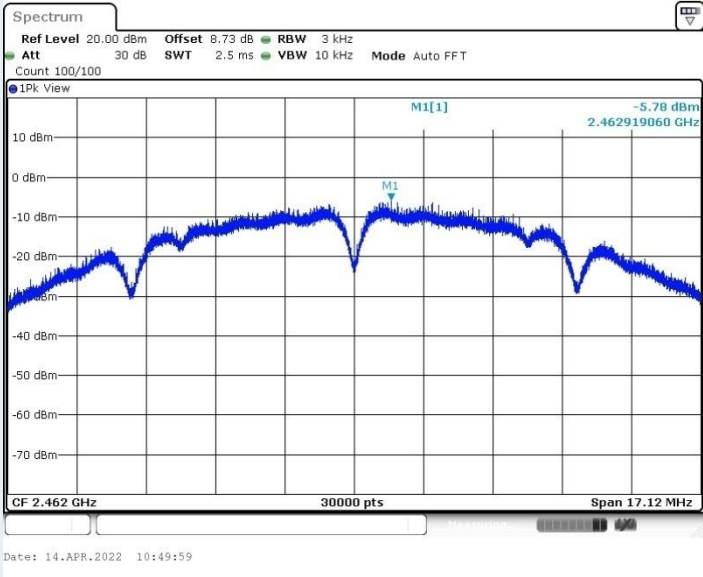
IEEE 802.11b_Ant1_2412 MHz



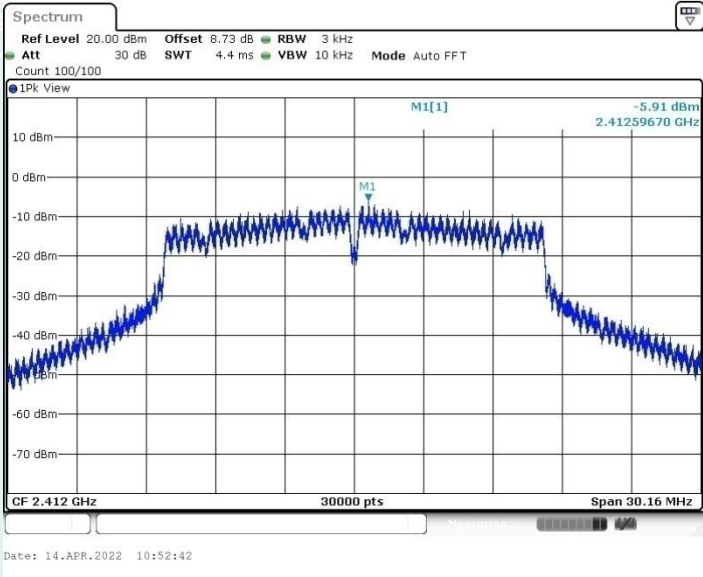
IEEE 802.11b_Ant1_2437 MHz



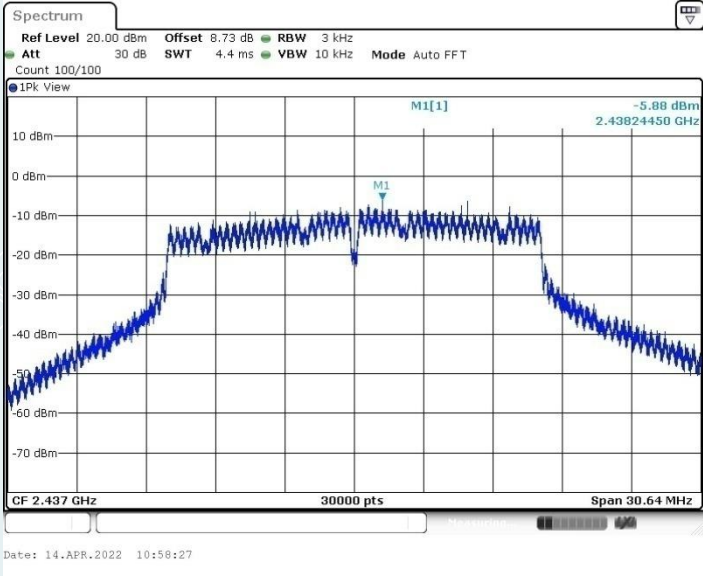
IEEE 802.11b_Ant1_2462 MHz



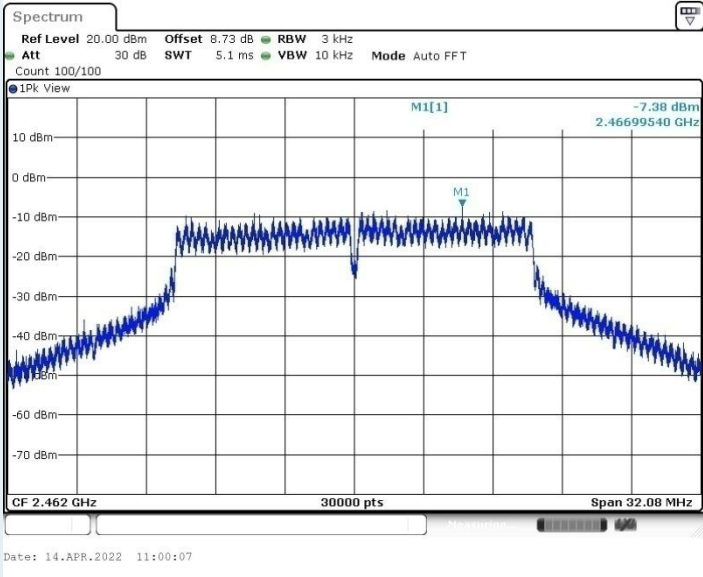
IEEE 802.11g_Ant1_2412 MHz



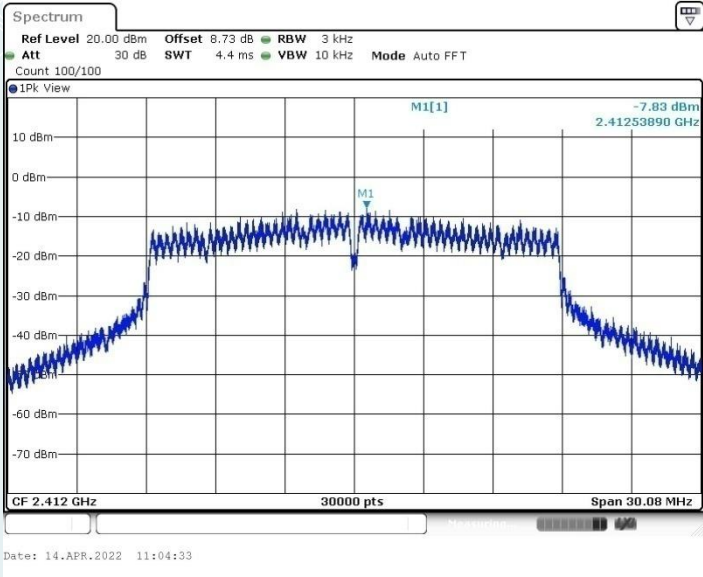
IEEE 802.11g_Ant1_2437 MHz



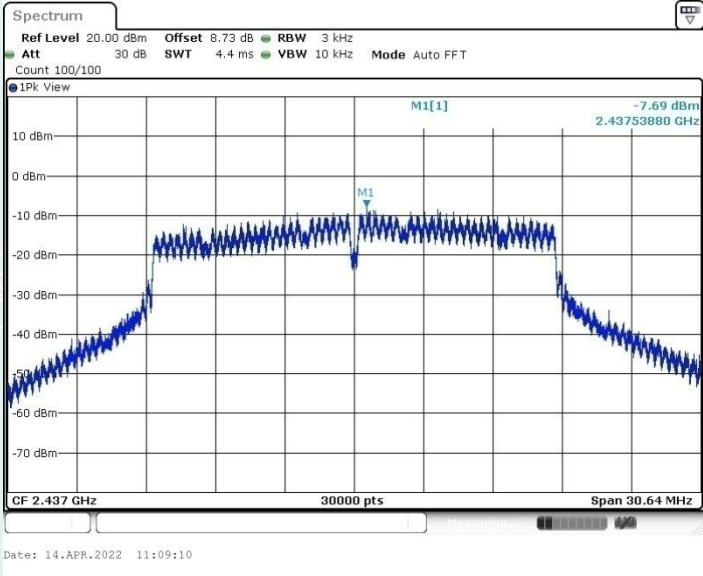
IEEE 802.11g_Ant1_2462 MHz



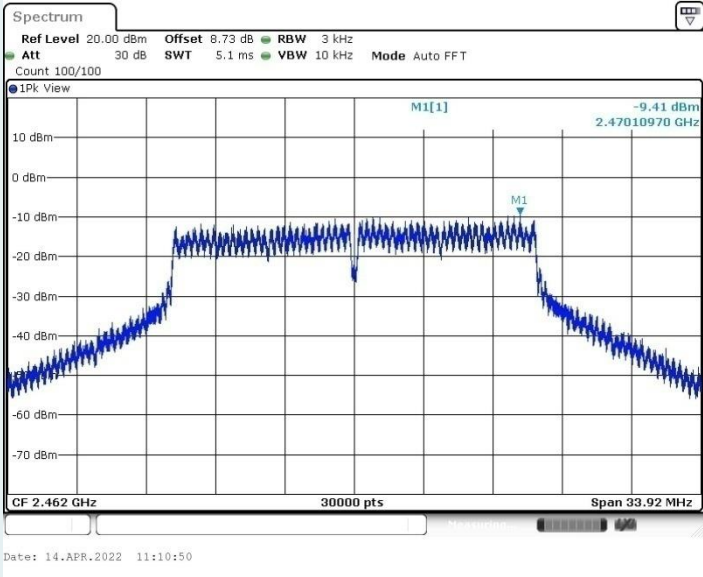
IEEE 802.11n HT20_Ant1_2412 MHz



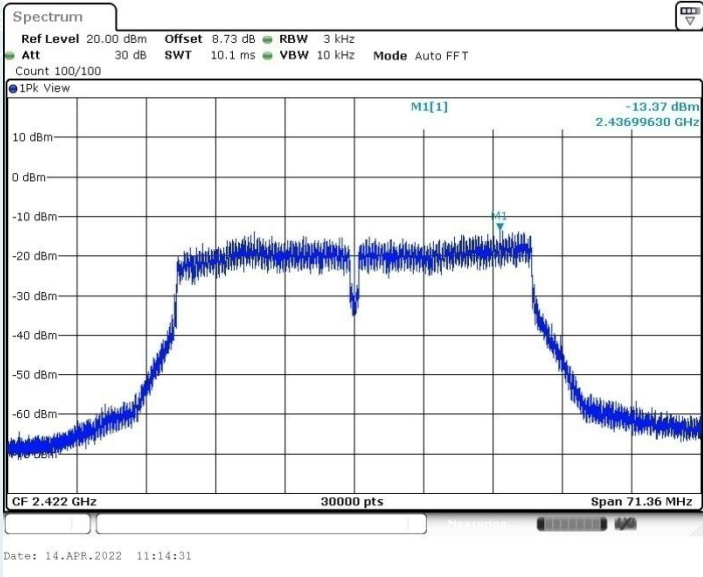
IEEE 802.11n HT20_Ant1_2437 MHz



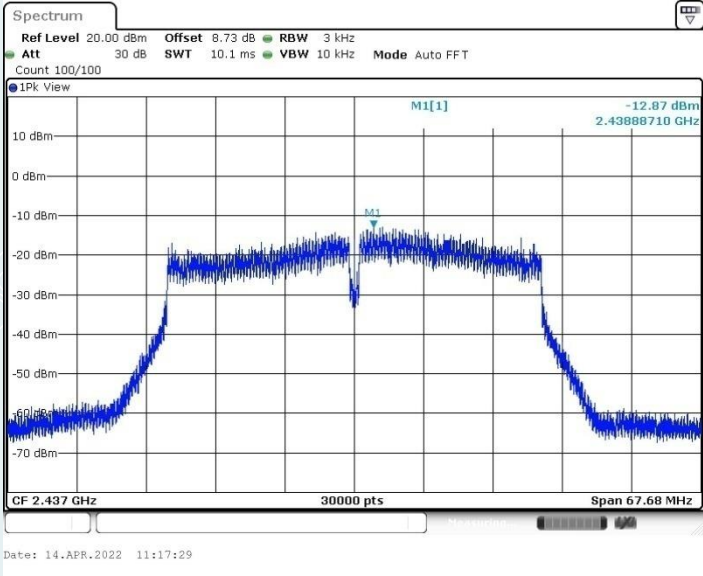
IEEE 802.11n HT20_Ant1_2462 MHz

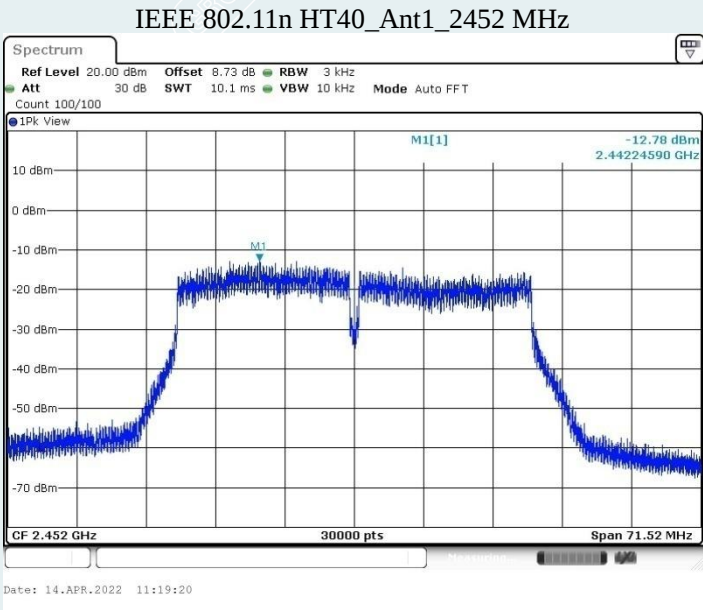


IEEE 802.11n HT40_Ant1_2422 MHz



IEEE 802.11n HT40_Ant1_2437 MHz





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9. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

9.1 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.

9.2 TEST PROCEDURES

Test procedures follow KDB 558074 D01 15.247 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.

9.3 TEST SETUP

