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CNAS L0446



Page 1 of 61

# Test Report

Verified code: 712642

Report No.: E202111252962-3-G1

Customer: Hydrow, Inc.

Address: 10 Summer St, Floor 5, Boston, MA 02110, USA

Sample Name: Hydrow Touchscreen Monitor

Sample Model: CVC15101

Receive Sample Date: Nov.26,2021

Test Date: Dec.03,2021 ~ Dec.21,2021

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

Test Result: Pass

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GUANGZHOU GRG METROLOGY & TEST CO., LTD

Issued Date: 2022-03-29

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**REPORT ISSUED HISTORY**

Report Version	Report No.	Description	Compile Date
1.0	E202111252962-3	Original Issue	2022/02/23
2.0	E202111252962-3-G1	Update	2022/03/28

**Version 2.0:**

1. On the basis of the original report, update the description of test items in the report.
2. This report instead the report E202111252962-3, and from the date of issuance of this report, the report which being replaced become invalid.

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**1. TEST RESULT SUMMARY**

<b>Technical Requirements</b>		
FCC 47 CFR Part 15 Subpart C 15.247 ANSI C63.10-2013 KDB 558074 D01 15.247 measurement guidance v05r02		
<b>Limit / Severity</b>	<b>Item</b>	<b>Result</b>
§15.203	Antenna Requirement	Pass
§15.207(a)	Conducted Emission	Pass
§15.247(d)	Radiated Spurious Emission	Pass
§15.247(b)(3)	Maximum Peak Output Power	Pass
§15.247(e)	Power Spectral Density	Pass
§15.247(a)(2)	6dB bandwidth	Pass
§15.247(d)	Conducted band edges and Spurious Emission	Pass
§15.205	Restricted bands of operation	Pass

The EUT has one antenna. The antenna is internal antenna.

The max gain of antenna is 3.5dBi, 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: Hydrow, Inc.  
Address: 10 Summer St, Floor 5, Boston, MA 02110, USA

### 2.2 MANUFACTURER

Name: Chengdu Vantron Technology Co., Ltd.  
Address: No.5 GaoPeng Road, Hi-Tech Zone, Chengdu, SiChuan, P.R.  
China 610045

### 2.3 FACTORY

Name : Chengdu Vantron Technology Co., Ltd.  
Address : No.5 GaoPeng Road, Hi-Tech Zone, Chengdu, SiChuan, P.R.  
China 610045

### 2.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Hydrow Touchscreen Monitor  
Model No.: CVC15101  
Adding Model: /  
Models discrepancy: /  
Trade Name: Hydrow  
FCC ID: 2A3HV-CVC15A  
Power supply: DC12V Power supplied by adapter  
Model No: WT1205000  
Adapter specification: In put:100-240V~50/60Hz 1.6A  
Out put: 12V---5.0A  
Frequency Range: 2402 ~ 2480MHz  
Transmit Power: GFSK for 1Mbps:2.54dBm  
GFSK for 2Mbps:2.63 dBm  
Modulation type: GFSK for 1Mbps  
GFSK for 2Mbps  
Channel space: 2MHz  
Antenna Specification: Internal antenna 3.5dBi gain (Max.)  
Temperature Range: -20℃~85℃  
Hardware Version: V1.1  
Software Version: V1.0  
Sample No: E202111252962-0001  
E202111252962-0002  
Note: /

**2.5 CHANNELLIST**

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	10	2422	20	2442	30	2462
01	2404	11	2424	21	2444	31	2464
02	2406	12	2426	22	2446	32	2466
03	2408	13	2428	23	2448	33	2468
04	2410	14	2430	24	2450	34	2470
05	2412	15	2432	25	2452	35	2472
06	2414	16	2434	26	2454	36	2474
07	2416	17	2436	27	2456	37	2476
08	2418	18	2438	28	2458	38	2478
09	2420	19	2440	29	2460	39	2480

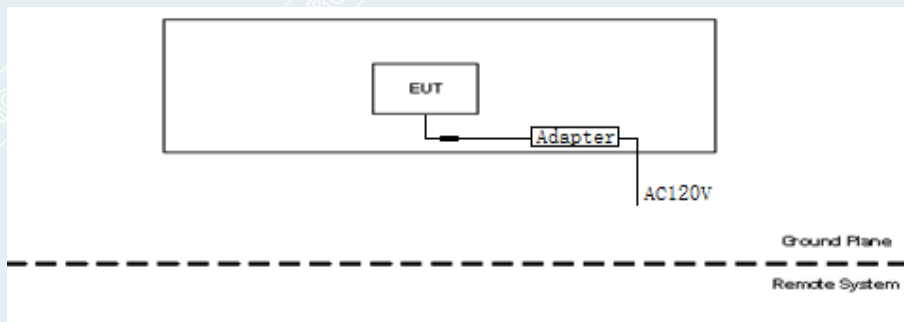
**2.6 TEST OPERATION MODE**

Mode No.	Description of the modes
1	Bluetooth(BLE(1M+2M)) fixed frequency transmitting

**2.7 LOCAL SUPPORTIVE**

Name of Equipment	Manufacturer	Model	Serial Number	Note
Adapter	Wen Tong	WT1205000	A211014000600	/
<b>Cable</b>				
AC cable (DC power)	/	/	/	UnShielded, 1.0m
DC cable (DC power)	/	/	/	Shielded, 1.0m

## 2.8 CONFIGURATION OF SYSTEM UNDER TEST



Test software:

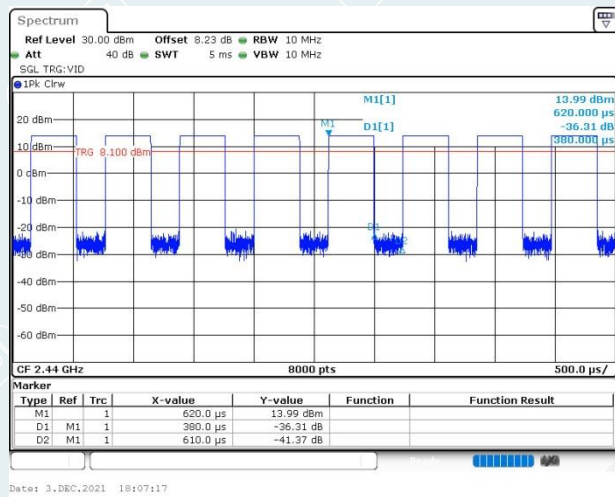
Software version	Test level
ADB	5

## 2.9 DUTY CYCLE

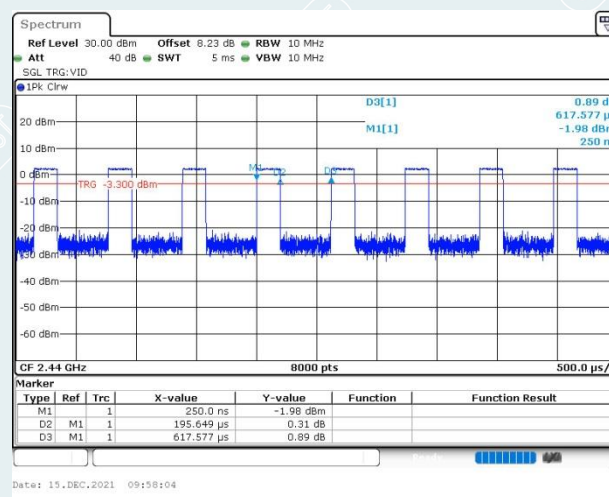
<b>EUT Name</b>	Hydrow Touchscreen Monitor	<b>Model</b>	CVC15101
<b>Environmental Conditions</b>	23.5°C/48%RH	<b>Test Voltage</b>	AC120V/60Hz
<b>Tested By</b>	Lu Wei	<b>Tested Date</b>	2021/12/03 to 2021/12/15

TestMode	Antenna	Frequency [MHz]	ON Time [ms]	Period [ms]	DC [%]	T [s]
BLE_1M	Ant1	2440	0.380	0.610	62.30	0.000380
BLE_2M	Ant1	2440	0.196	0.618	31.72	0.000196

BLE\_1M\_2440MHz



BLE\_2M\_2440MHz



### 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.

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#### 3.2 ACCREDITATIONS

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

**USA** A2LA(Certificate #2861.01)

**China** CNAS(L0446)

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

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

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

Copies of granted accreditation certificates are available for downloading from our web site,  
<http://www.grgtest.com>

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### 3.3 MEASUREMENT UNCERTAINTY

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

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

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

This uncertainty represents an expanded uncertainty 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
<b>Conducted Emissions</b>				
EMI TEST RECEIVER	R&S	ESCI	100783	2022-09-13
LISN(EUT)	R&S	ENV216	101543	2022-02-25
Test S/W	EZ	CCS-3A1-CE		
<b>Radiated Spurious Emission&amp;Restricted bands of operation</b>				
Test S/W	EZ	CCS-2ANT	/	/
Test Receiver	R&S	ESCI	100088	2022-10-31
Preamplifier	EMEC	EM330	/	2022-03-21
Loop Antenna	TESEQ	HLA6121	52599	2022-04-21
Bi-log Antenna	TESEQ	CBL6143A	32399	2022-11-25
Spectrum Analyzer	Agilent	N9010A	MY52221469	2022-04-16
Horn Antenna	Schwarzbeck	BBHA9120D (1201)	02143	2022-10-22
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170-497	2022-10-16
Amplifier	Tonscend	TAP01018048	AP20E8060075	2022-05-09
Amplifier	Tonscend	TAP184050	AP20E806071	2022-05-17
Test S/W	Tonscend	JS36-RSE/2.5.1.5		
<b>6dB Bandwidth</b>				
Spectrum Analyzer	R&S	FSV30	104381	2022-12-10
<b>Maximum Peak Output Power</b>				
Pulse power sensor	Agilent	MA2411B	1126150	2022-03-21
Power meter	Anritsu	ML2495A	1204003	2022-03-21
<b>Conducted band edges and Spurious Emission</b>				
Spectrum Analyzer	R&S	FSV30	104381	2022-12-10
<b>Power Spectral Density</b>				
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 (dB $\mu$ V)	
	Quasi-peak	Average
150kHz~0.5MHz	66~56	56~46
0.5MHz~5MHz	56	46
5MHz~30MHz	60	50

**NOTE:** (1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases in line with the logarithm of the frequency in the range of 150 kHz to 0.5MHz.

### 5.2 TEST PROCEDURES

#### Procedure of Preliminary Test

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.

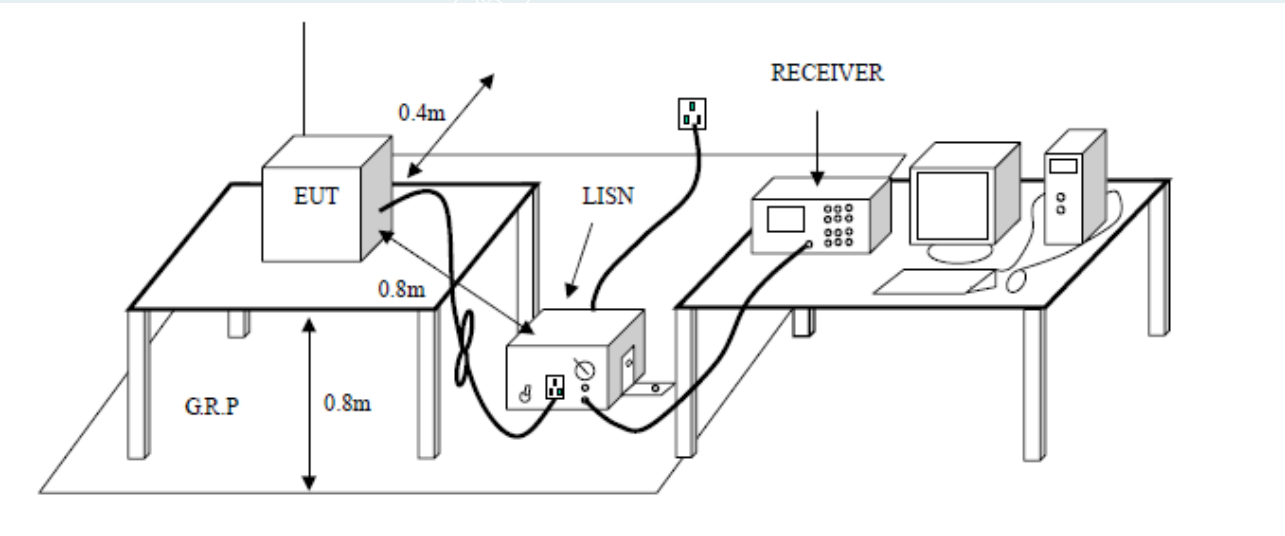
– I/O cables that are connected to a peripheral shall be bundled in the centre. The end of the cable may be terminated if required using correct terminating impedance. The total length shall not exceed 1 m.

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

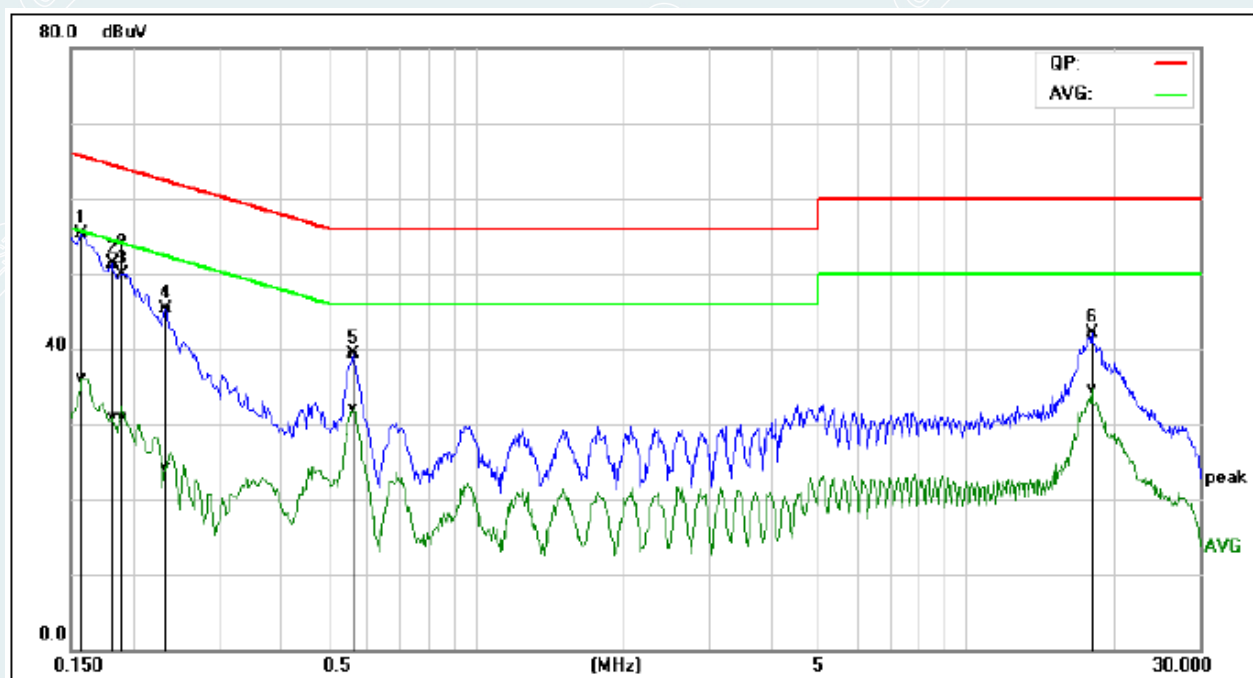
Factor = Insertion loss of LISN + Cable Loss  
Result = Quasi-peak Reading/ Average Reading + Factor  
Limit =Limit stated in standard  
Margin = Result (dBuV) – Limit (dBuV)

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

## 5.5 TEST RESULTS

EUT Name	Hydrow Touchscreen Monitor	Model	CVC15101
Environmental Conditions	22.0°C/53%RH	Test Mode	BLE 1M 2402MHz
Tested By	Zeng xianglong	Line	L
Tested Date	2021/12/21	Test Voltage	AC120V/60Hz

(The chart below shows the highest readings taken from the final data.)



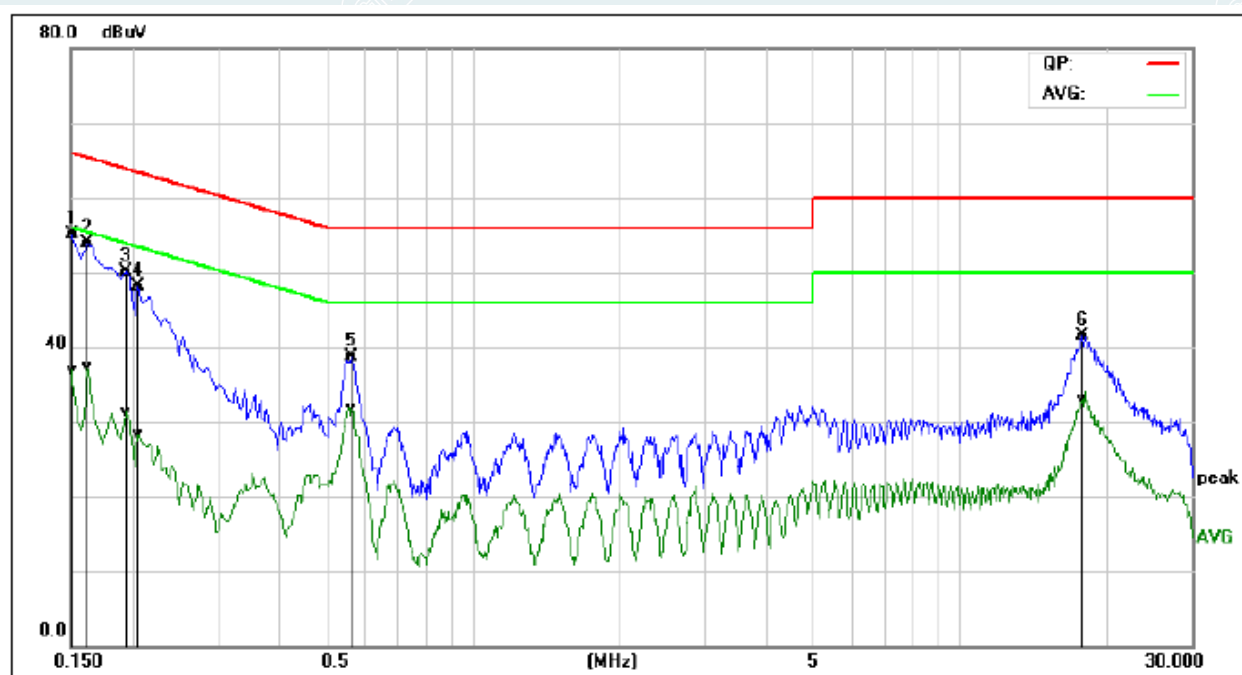
No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.1580	45.74	26.55	9.53	55.27	36.08	65.56	55.57	-10.29	-19.49	Pass
2	0.1819	41.77	21.30	9.54	51.31	30.84	64.39	54.40	-13.08	-23.56	Pass
3*	0.1904	45.17	21.46	9.54	54.71	31.00	64.01	54.02	-9.30	-23.02	Pass
4	0.2340	35.83	14.76	9.55	45.38	24.31	62.30	52.31	-16.92	-28.00	Pass
5	0.5660	29.72	22.49	9.57	39.29	32.06	56.00	46.00	-16.71	-13.94	Pass
6	18.0500	32.21	24.81	9.89	42.10	34.70	60.00	50.00	-17.90	-15.30	Pass

**REMARKS:** L = Live Line

Pre-scan all mode and recorded the worst case results in this report (TX-Low Channel(1Mbps))

<b>EUT Name</b>	Hydrow Touchscreen Monitor	<b>Model</b>	CVC15101
<b>Environmental Conditions</b>	22.0°C/53%RH	<b>Test Mode</b>	BLE 1M 2402MHz
<b>Tested By</b>	Zeng xianglong	<b>Line</b>	N
<b>Tested Date</b>	2021/12/21	<b>Test Voltage</b>	AC120V/60Hz

(The chart below shows the highest readings taken from the final data.)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1500	45.60	27.38	9.50	55.10	36.88	65.99	56.00	-10.89	-19.12	Pass
2	0.1620	44.44	27.81	9.52	53.96	37.33	65.36	55.36	-11.40	-18.03	Pass
3	0.1940	40.58	21.71	9.56	50.14	31.27	63.86	53.86	-13.72	-22.59	Pass
4	0.2060	38.52	18.69	9.57	48.09	28.26	63.36	53.37	-15.27	-25.11	Pass
5	0.5660	28.93	22.07	9.69	38.62	31.76	56.00	46.00	-17.38	-14.24	Pass
6	17.9220	31.51	22.92	9.92	41.43	32.84	60.00	50.00	-18.57	-17.16	Pass

**REMARKS:** N = Neutral Line.

Pre-scan all mode and recorded the worst case results in this report (TX-Low Channel(1Mbps))

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

### 6.2 TEST PROCEDURES

#### 1) Sequence of testing 9kHz to 30MHz

**Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- The AC power port of the EUT (if available) is connected to a power outlet below 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 0.8m 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.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below 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 1.5m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below 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.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below 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 10 Hz. if the EUT duty cycle is  $< 98\%$  , set VBW $\geq 1/T$ , Where T is defined in section 2.9.

### 6.3 TEST SETUP

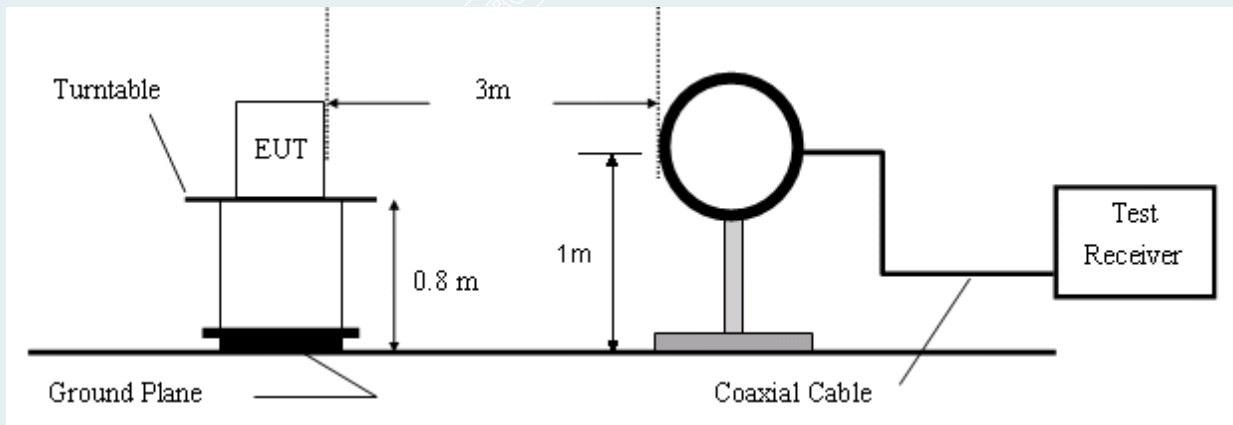


Figure 1. 9kHz to 30MHz radiated emissions test configuration

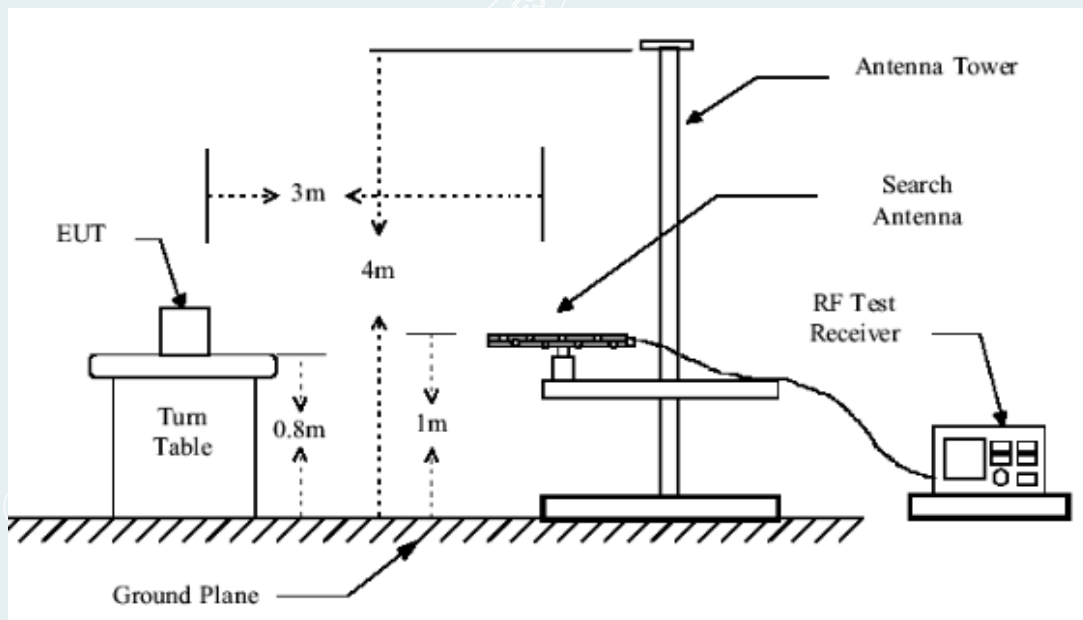


Figure 2. 30MHz to 1GHz radiated emissions test configuration

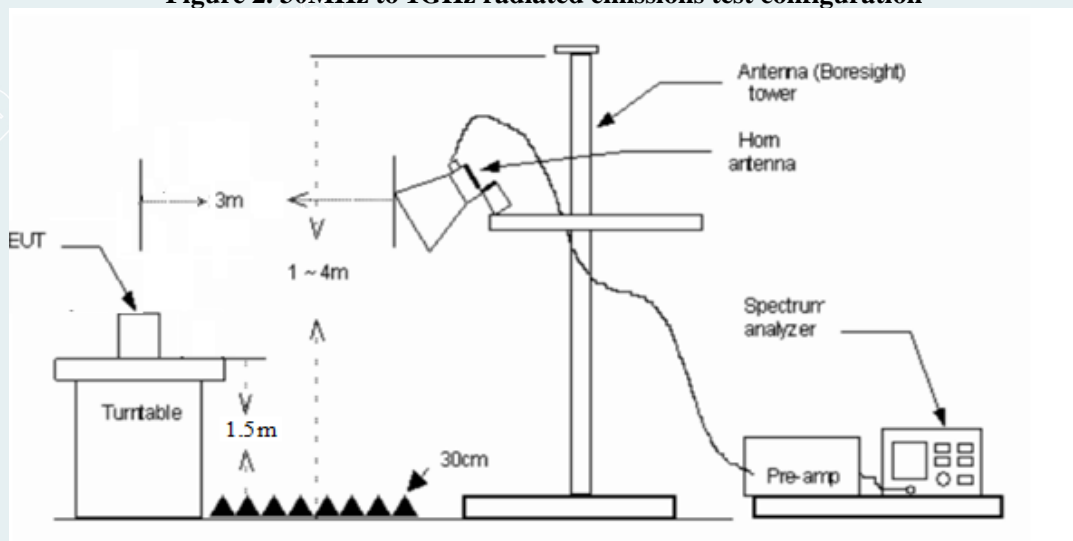


Figure 3. 1GHz to 18GHz radiated emissions test configuration

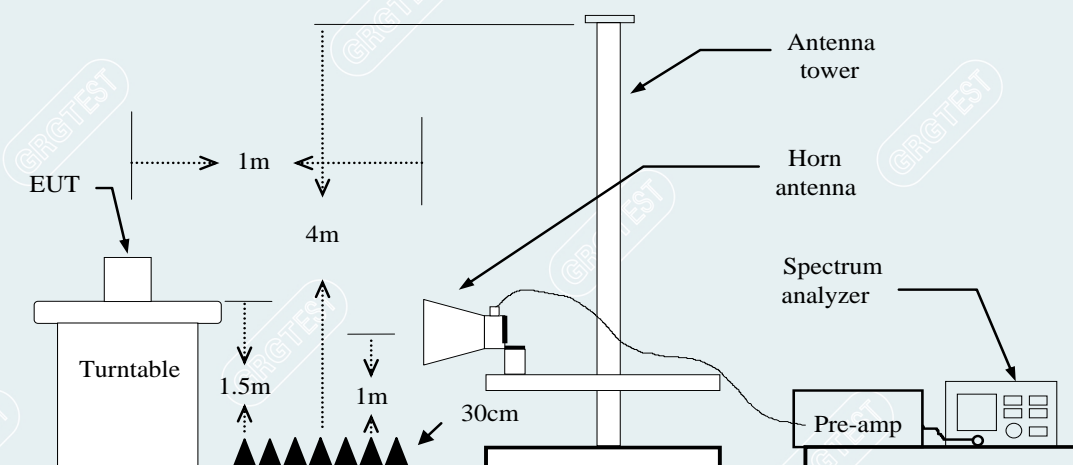


Figure 4. 18GHz to 26.5GHz radiated emissions test configuration

#### 6.4 DATA SAMPLE

##### 30MHz to 1GHz

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

##### 1GHz to 18GHz

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (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

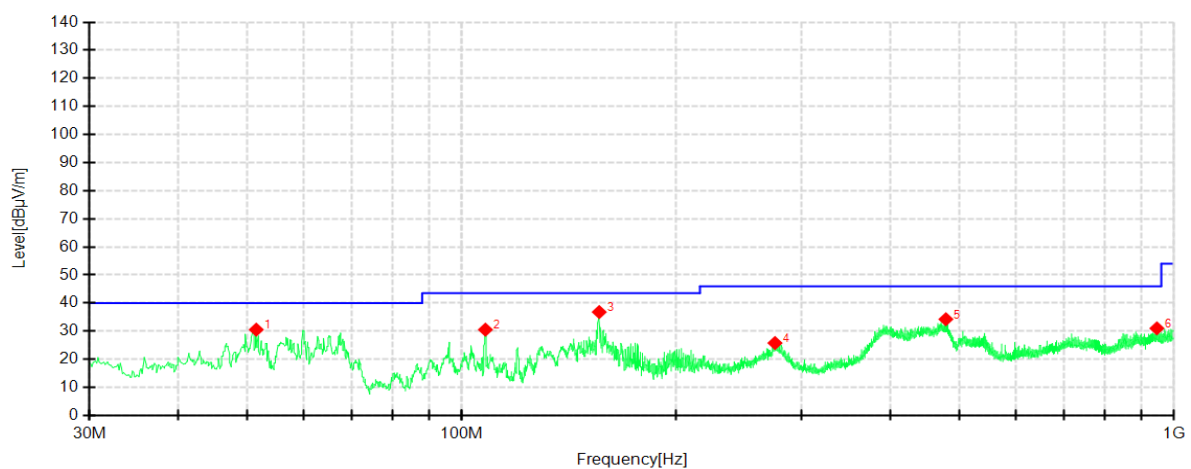
QP = Quasi-peak Reading

AVG = Average Reading

## 6.5 TEST RESULTS

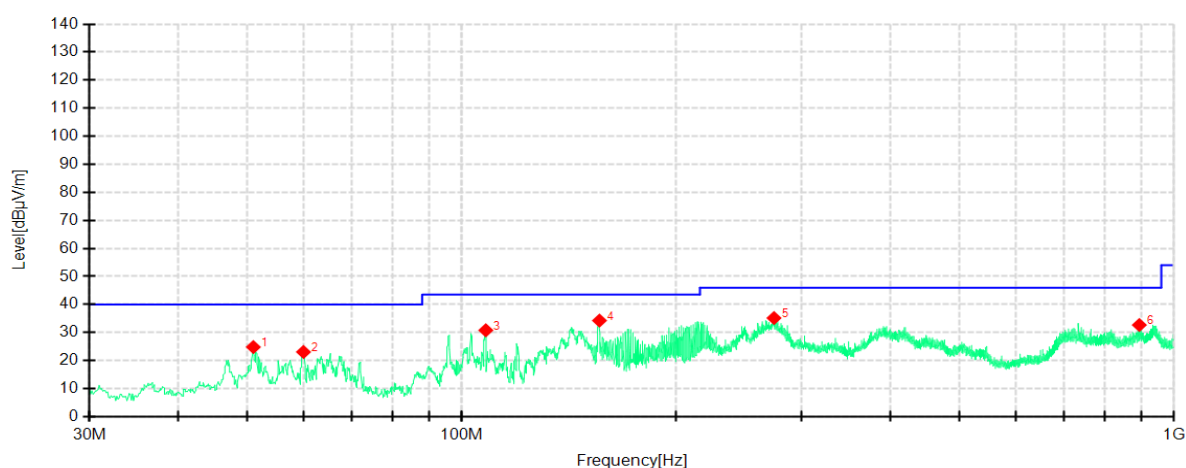
### Below 1GHz

<b>EUT Name</b>	Hydrow Touchscreen Monitor	<b>Model</b>	CVC15101
<b>Environmental Conditions</b>	25°C/60%RH	<b>Test Voltage</b>	AC120V/60Hz
<b>Test Mode</b>	TX/1Mbps (2402MHz)	<b>Polarity</b>	Vertical
<b>Tested By</b>	Lu Qiang	<b>Tested Date</b>	2021/12/13



NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	51.4639	58.45	30.55	-27.90	40.00	9.45	200	134	Vertical
2	107.9735	58.86	30.54	-28.32	43.50	12.96	100	49	Vertical
3	155.9945	67.81	36.80	-31.01	43.50	6.70	260	343	Vertical
4	275.3194	52.02	25.77	-26.25	46.00	20.23	100	90	Vertical
5	478.4386	55.43	34.25	-21.18	46.00	11.75	215	28	Vertical
6	946.5221	44.67	31.01	-13.66	46.00	14.99	100	194	Vertical

<b>EUT Name</b>	Hydrow Touchscreen Monitor	<b>Model</b>	CVC15101
<b>Environmental Conditions</b>	25°C/60%RH	<b>Test Voltage</b>	AC120V/60Hz
<b>Test Mode</b>	TX/1Mbps (2402MHz)	<b>Polarity</b>	Horizontal
<b>Tested By</b>	Lu Qiang	<b>Tested Date</b>	2021/12/13



NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	50.9789	52.63	24.81	-27.82	40.00	15.19	100	205	Horizontal
2	59.9525	52.33	23.06	-29.27	40.00	16.94	167	360	Horizontal
3	108.0948	59.14	30.81	-28.33	43.50	12.69	230	186	Horizontal
4	156.1158	65.26	34.26	-31.00	43.50	9.24	100	239	Horizontal
5	274.4706	61.46	35.18	-26.28	46.00	10.82	300	137	Horizontal
6	894.2568	46.94	32.69	-14.25	46.00	13.31	100	330	Horizontal

**Remark:**

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Pre-scan all mode and recorded the worst case results in this report (TX-Low Channel(1Mbps))
- 3 Data of measurement within this frequency range in the table above the reading of PK detector are more 6dB than QP limit, therefore it's unnecessary to performed QP scan.
- 4 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.

**Above 1GHz:**

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: TX/1Mbps

Lowest Frequenc (2402MHz)

Environment: 25°C/60%RH

Tested By: Lu Qiang

Date: 2021-12-09

Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1131.0164	64.57	39.87	-24.70	74.00	34.13	200	134	Horizontal
2	1863.1079	66.42	44.55	-21.87	74.00	29.45	100	143	Horizontal
3	2700.2125	63.76	45.37	-18.39	74.00	28.63	200	150	Horizontal
4	3680.7101	60.32	45.53	-14.79	74.00	28.47	200	179	Horizontal
5	5400.3000	55.75	45.25	-10.50	74.00	28.75	200	106	Horizontal
6	7206.1508	51.26	48.07	-3.19	74.00	25.93	200	220	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	7206.0067	-3.19	41.88	38.69	54.00	15.31	126	224	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	1001.0001	65.92	40.76	-25.16	74.00	33.24	200	183	Vertical
2	1758.8449	67.92	45.55	-22.37	74.00	28.45	200	183	Vertical
3	2700.2125	62.44	44.05	-18.39	74.00	29.95	200	192	Vertical
4	3498.8124	58.41	43.04	-15.37	74.00	30.96	200	143	Vertical
5	5400.3000	55.10	44.60	-10.50	74.00	29.40	200	209	Vertical
6	9240.7801	48.77	49.53	0.76	74.00	24.47	100	160	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	9239.4864	0.76	41.55	42.31	54.00	11.69	102	157	Vertical

Mode: TX/1Mbps  
 Middle Frequenc (2440MHz)  
 Environment: 25°C/60%RH  
 Tested By: Lu Qiang

Date: 2021-12-09  
 Voltage: AC120V/60Hz

**Suspected Data List**

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1011.2514	66.01	40.87	-25.14	74.00	33.13	100	131	Horizontal
2	1818.6023	66.32	44.33	-21.99	74.00	29.67	100	139	Horizontal
3	2699.9625	63.62	45.23	-18.39	74.00	28.77	200	153	Horizontal
4	3684.4606	58.97	44.17	-14.80	74.00	29.83	200	175	Horizontal
5	5400.3000	54.95	44.45	-10.50	74.00	29.55	200	258	Horizontal
6	9238.9049	47.12	47.86	0.74	74.00	26.14	200	86	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	9239.4592	0.73	36.36	37.09	54.00	16.91	198	171	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	1001.5002	66.31	41.15	-25.16	74.00	32.85	200	185	Vertical
2	1751.3439	67.36	44.93	-22.43	74.00	29.07	200	177	Vertical
3	2699.9625	62.10	43.71	-18.39	74.00	30.29	200	193	Vertical
4	3686.3358	58.27	43.47	-14.80	74.00	30.53	200	216	Vertical
5	5400.3000	55.13	44.63	-10.50	74.00	29.37	200	208	Vertical
6	9240.7801	49.37	50.13	0.76	74.00	23.87	100	159	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	9239.4864	0.76	40.93	41.69	54.00	12.31	102	171	Vertical

Mode: TX/1Mbps  
 Highest Frequency (2480MHz)  
 Environment: 25°C/60%RH  
 Tested By: Lu Qiang

Date: 2021-12-09  
 Voltage: AC120V/60Hz

**Suspected Data List**

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1008.5011	65.23	40.09	-25.14	74.00	33.91	200	128	Horizontal
2	1842.3553	65.86	43.96	-21.90	74.00	30.04	200	218	Horizontal
3	2699.9625	63.67	45.28	-18.39	74.00	28.72	200	153	Horizontal
4	3695.7120	59.28	44.45	-14.83	74.00	29.55	200	135	Horizontal
5	5400.3000	54.53	44.03	-10.50	74.00	29.97	200	249	Horizontal
6	7440.5551	51.08	47.37	-3.71	74.00	26.63	100	101	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	7439.9599	-3.71	40.88	37.17	54.00	16.83	114	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	1001.5002	65.64	40.48	-25.16	74.00	33.52	200	176	Vertical
2	1754.5943	67.06	44.65	-22.41	74.00	29.35	200	168	Vertical
3	2699.9625	62.14	43.75	-18.39	74.00	30.25	200	193	Vertical
4	3665.7082	58.93	44.18	-14.75	74.00	29.82	200	216	Vertical
5	5400.3000	56.12	45.62	-10.50	74.00	28.38	200	208	Vertical
6	9240.7801	49.30	50.06	0.76	74.00	23.94	100	167	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	9239.4864	0.76	40.88	41.64	54.00	12.36	102	172	Vertical

Mode: TX/2Mbps  
 Lowest Frequenc (2402MHz)  
 Environment: 25°C/60%RH  
 Tested By: Lu Qiang

Date: 2021-12-09  
 Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1001.0001	64.91	39.75	-25.16	74.00	34.25	200	118	Horizontal
2	1758.5948	66.36	43.99	-22.37	74.00	30.01	200	207	Horizontal
3	2699.9625	63.21	44.82	-18.39	74.00	29.18	200	150	Horizontal
4	5400.3000	55.14	44.64	-10.50	74.00	29.36	200	111	Horizontal
5	7208.0260	50.14	46.93	-3.21	74.00	27.07	200	210	Horizontal
6	11369.1711	44.14	48.56	4.42	74.00	25.44	100	315	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	7206.2961	-3.21	37.11	33.90	54.00	20.10	200	204	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	1194.2743	64.57	40.03	-24.54	74.00	33.97	200	142	Vertical
2	1859.1074	66.99	45.12	-21.87	74.00	28.88	200	134	Vertical
3	2699.9625	62.32	43.93	-18.39	74.00	30.07	200	191	Vertical
4	5400.3000	54.80	44.30	-10.50	74.00	29.70	200	169	Vertical
5	7206.1508	48.50	45.31	-3.19	74.00	28.69	200	1	Vertical
6	9240.7801	49.10	49.86	0.76	74.00	24.14	100	168	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	9239.4864	0.76	40.51	41.27	54.00	12.73	102	155	Vertical

Mode: TX/2Mbps  
 Middle Frequenc (2440MHz)  
 Environment: 25°C/60%RH  
 Tested By: Lu Qiang

Date: 2021-12-09  
 Voltage: AC120V/60Hz

**Suspected Data List**

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1003.2504	65.01	39.86	-25.15	74.00	34.14	100	119	Horizontal
2	1747.0934	66.59	44.15	-22.44	74.00	29.85	200	210	Horizontal
3	2700.2125	63.44	45.05	-18.39	74.00	28.95	200	153	Horizontal
4	3628.2035	58.55	44.03	-14.52	74.00	29.97	200	126	Horizontal
5	5400.3000	55.34	44.84	-10.50	74.00	29.16	200	110	Horizontal
6	7725.5907	47.84	45.46	-2.38	74.00	28.54	200	359	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	1003.7505	65.43	40.28	-25.15	74.00	33.72	100	70	Vertical
2	1753.5942	67.79	45.38	-22.41	74.00	28.62	200	176	Vertical
3	2700.2125	62.89	44.50	-18.39	74.00	29.50	200	184	Vertical
4	3686.3358	59.01	44.21	-14.80	74.00	29.79	200	117	Vertical
5	5400.3000	54.61	44.11	-10.50	74.00	29.89	200	208	Vertical
6	9240.7801	48.73	49.49	0.76	74.00	24.51	100	177	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	9239.4864	0.76	40.88	41.64	54.00	12.36	102	172	Vertical

Mode: TX/2Mbps  
 Highest Frequency (2480MHz)  
 Environment: 25°C/60%RH  
 Tested By: Lu Qiang

Date: 2021-12-09  
 Voltage: AC120V/60Hz

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1007.2509	65.60	40.45	-25.15	74.00	33.55	200	128	Horizontal
2	1750.8439	66.62	44.19	-22.43	74.00	29.81	200	218	Horizontal
3	2699.9625	63.67	45.28	-18.39	74.00	28.72	200	152	Horizontal
4	5400.3000	55.43	44.93	-10.50	74.00	29.07	200	101	Horizontal
5	6831.1039	50.47	45.85	-4.62	74.00	28.15	100	69	Horizontal
6	13368.1710	42.38	50.38	8.00	74.00	23.62	200	52	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	13376.9940	8.00	29.36	37.36	54.00	16.64	200	120	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	1002.0003	65.99	40.83	-25.16	74.00	33.17	200	152	Vertical
2	1752.8441	68.16	45.74	-22.42	74.00	28.26	200	176	Vertical
3	2699.9625	62.53	44.14	-18.39	74.00	29.86	200	201	Vertical
4	3478.1848	60.90	45.46	-15.44	74.00	28.54	200	143	Vertical
5	5400.3000	55.88	45.38	-10.50	74.00	28.62	200	200	Vertical
6	9240.7801	49.87	50.63	0.76	74.00	23.37	100	158	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	9239.4864	0.76	40.91	41.67	54.00	12.33	102	171	Vertical

**Remark:**

- 1 Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2 The amplitude of 18GHz to 26.5GHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 4 Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 5 Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

## 7. 6dB BANDWIDTH

### 7.1 LIMITS

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

### 7.2 TEST PROCEDURES

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

### 7.3 TEST SETUP



### 7.4 TEST RESULTS

Environment: 23.5°C/48%RH  
 Tested By: Lu Wei

Voltage: AC120V/60Hz  
 Date: 2021-12-13 to 2021-12-15

#### For 1Mbps

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Lowest	2402	696	$\geq 500$	PASS
Middle	2440	696		PASS
Highest	2480	700		PASS

#### For 2Mbps

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Lowest	2402	1152	$\geq 500$	PASS
Middle	2440	1148		PASS
Highest	2480	1160		PASS