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# FCC Test Report

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Report No.: AGC07307220701FE10

**FCC ID** : 2AY9HVRR020007  
**PRODUCT DESIGNATION** : remote control  
**BRAND NAME** : AUTO DRIVE  
**MODEL NAME** : VM-R02  
**APPLICANT** : Artsun Enterprise Company Limited  
**DATE OF ISSUE** : Aug. 01, 2022  
**STANDARD(S)** : FCC Part 15 Subpart C §15.231  
**REPORT VERSION** : V 1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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**REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Aug. 01, 2022	Valid	Initial Release

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## TABLE OF CONTENTS

<b>1. GENERAL INFORMATION .....</b>	<b>5</b>
<b>2. PRODUCT INFORMATION .....</b>	<b>6</b>
2.1 PRODUCT TECHNICAL DESCRIPTION .....	6
2.2 TEST FREQUENCY LIST .....	6
2.3 RELATED SUBMITTAL(S) / GRANT (S) .....	7
2.4 TEST METHODOLOGY .....	7
2.5 SPECIAL ACCESSORIES .....	7
2.6 EQUIPMENT MODIFICATIONS .....	7
2.7 ANTENNA REQUIREMENT .....	7
<b>3. TEST ENVIRONMENT .....</b>	<b>8</b>
3.1 ADDRESS OF THE TEST LABORATORY .....	8
3.2 TEST FACILITY .....	8
3.3 ENVIRONMENTAL CONDITIONS.....	9
3.4 MEASUREMENT UNCERTAINTY .....	9
3.5 LIST OF EQUIPMENTS USED .....	10
<b>4.SYSTEM TEST CONFIGURATION .....</b>	<b>11</b>
4.1 EUT CONFIGURATION .....	11
4.2 EUT EXERCISE.....	11
4.3 CONFIGURATION OF TESTED SYSTEM.....	11
4.4 EQUIPMENT USED IN TESTED SYSTEM.....	11
4.5 SUMMARY OF TEST RESULTS .....	12
<b>5. DESCRIPTION OF TEST MODES .....</b>	<b>13</b>
<b>6. PROVISION FOR MOMENTARY OPERATION .....</b>	<b>14</b>
6.1 PROVISIONS APPLICABLE.....	14
6.2 MEASUREMENT PROCEDURE.....	14
6.3 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION).....	14
6.4 MEASUREMENT RESULTS.....	15
<b>7. DUTY CYCLE CORRECTION FACTOR .....</b>	<b>16</b>
7.1 PROVISIONS APPLICABLE.....	16
7.2 MEASUREMENT PROCEDURE.....	16
7.3 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION).....	16
7.4 MEASUREMENT RESULTS.....	16
<b>8. 20 DB BANDWIDTH.....</b>	<b>19</b>
8.1 PROVISIONS APPLICABLE.....	19
8.2 MEASUREMENT PROCEDURE.....	19

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8.3 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION).....	19
7.4 MEASUREMENT RESULTS.....	20
<b>7. RADIATED EMISSION .....</b>	<b>21</b>
7.1 LIMITS OF RADIATED EMISSION TEST .....	21
7.2 MEASUREMENT PROCEDURE.....	22
7.3 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION).....	24
7.4 MEASUREMENT RESULT .....	25
<b>8. AC LINE CONDUCTED EMISSION TEST.....</b>	<b>29</b>
8.1 LIMITS OF LINE CONDUCTED EMISSION TEST .....	29
8.2 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION).....	29
8.3 PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST.....	30
8.4 FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST .....	30
8.5 MEASUREMENT RESULTS.....	30
<b>APPENDIX I: PHOTOGRAPHS OF TEST SETUP .....</b>	<b>31</b>
<b>APPENDIX II: PHOTOGRAPHS OF TEST EUT.....</b>	<b>32</b>

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## 1. GENERAL INFORMATION

<b>Applicant</b>	Artsun Enterprise Company Limited
<b>Address</b>	19H Maxgrandplaza, No.3 Tai Yau Street, San Po Kong, Kowloon, Hong Kong
<b>Manufacturer</b>	Artsun Enterprise Company Limited
<b>Address</b>	19H Maxgrandplaza, No.3 Tai Yau Street, San Po Kong, Kowloon, Hong Kong
<b>Factory</b>	VOLANT ROC E ELECTRONICS TECH CO., LTD
<b>Address</b>	A Building, QianLi Industrial Park, Sandong Town, Huizhou, Guangdong, China
<b>Product Designation</b>	remote control
<b>Brand Name</b>	AUTO DRIVE
<b>Test Model</b>	VM-R02
<b>Deviation from Standard</b>	No any deviation from the test method
<b>Date of Test</b>	Jul. 21, 2022 to Aug. 01, 2022
<b>Test Result</b>	Pass
<b>Test Report Form No</b>	AGCTR-ER-FCC-ID V1.0

Prepared By   
 \_\_\_\_\_  
 Bibo Zhang  
 (Project Engineer) Aug. 01, 2022

Reviewed By   
 \_\_\_\_\_  
 Calvin Liu  
 (Reviewer) Aug. 01, 2022

Approved By   
 \_\_\_\_\_  
 Max Zhang  
 (Authorized Officer) Aug. 01, 2022

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## 2. PRODUCT INFORMATION

### 2.1 PRODUCT TECHNICAL DESCRIPTION

<b>Hardware Version</b>	RVE:1.0
<b>Software Version</b>	V1.0
<b>Operation Frequency</b>	433.92MHz
<b>Modulation Type</b>	OOK
<b>Number of channels</b>	1
<b>Field Strength of Fundamental</b>	433.92MHz: 71.82dBuV/m(PK)@3m 433.92MHz: 63.20dBuV/m(AV)@3m
<b>Antenna Designation</b>	PCB Antenna
<b>Antenna Gain</b>	10dBi
<b>Power Supply</b>	DC 3V by battery

### 2.2 TEST FREQUENCY LIST

Frequency Band	Channel Number	Frequency
--	01	433.92 MHz

Note: According to manufacturer's requirements, periodic operation in the band 40.66-40.70 MHz and above 70 MHz

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### 2.3 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AY9HVR020007**, filing to comply with Part 2, Part 15 of the Federal Communication Commission rules.

### 2.4 TEST METHODOLOGY

The tests were performed according to following standards:

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 15	Radio Frequency Devices
3	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

### 2.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

### 2.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

### 2.7 ANTENNA REQUIREMENT

Standard Requirement
<p><b>15.203 requirement:</b> An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antennathat uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a brokenantenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p>
<p><b>EUT Antenna:</b> The non-detachable antenna inside the device cannot be replaced by the user at will. The gain of the antenna is 3 dBi.</p>

### 3. TEST ENVIRONMENT

#### 3.1 ADDRESS OF THE TEST LABORATORY

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

#### 3.2 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

##### **CNAS-Lab Code: L5488**

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

##### **A2LA-Lab Cert. No.: 5054.02**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

##### **FCC-Registration No.: 975832**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

##### **IC-Registration No.: 24842 (CAB identifier: CN0063)**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.



### 3.3 ENVIRONMENTAL CONDITIONS

	NORMAL CONDITIONS	EXTREME CONDITIONS
Temperature range (°C)	15 - 35	-20 - 50
Relative humidity range	20 % - 75 %	20 % - 75 %
Pressure range (kPa)	86 - 106	86 - 106
Power supply	--	--

Note: The Extreme Temperature and Extreme Voltages declared by the manufacturer.

### 3.4 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 3.1$ dB
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 4.0$ dB
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.8$ dB
Uncertainty of total RF power, conducted	$U_c = \pm 0.8$ dB
Uncertainty of RF power density, conducted	$U_c = \pm 2.6$ dB
Uncertainty of spurious emissions, conducted	$U_c = \pm 2$ %
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2$ %

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### 3.5 LIST OF EQUIPMENTS USED

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Mar. 28, 2022	Mar. 27, 2023
LISN	R&S	ESH2-Z5	100086	Jun. 08, 2022	Jun. 07, 2023
Test software	R&S	ES-K1(Ver.V1.71)	N/A	N/A	N/A
TEST RECEIVER	R&S	ESCI	10096	Mar. 28, 2022	Mar. 27, 2023
EXA Signal Analyzer	Aglient	N9010A	MY5347050 4	Nov. 17, 2021	Nov. 16, 2022
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	Mar. 22, 2022	Mar. 21, 2024
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 31, 2021	Oct. 30, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 12, 2022	Mar. 21, 2024
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2020	Jan. 07, 2023
Test software	Tonscend	JS32-RE (Ver.2.5)	N/A	N/A	N/A

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## 4.SYSTEM TEST CONFIGURATION

### 4.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission’s requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 4.2 EUT EXERCISE

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

### 4.3 CONFIGURATION OF TESTED SYSTEM

Radiated Emission Configure:



### 4.4 EQUIPMENT USED IN TESTED SYSTEM

The Following Peripheral Devices And Interface Cables Were Connected During The Measurement:

- Test Accessories Come From The Laboratory
- Test Accessories Come From The Manufacturer

Item	Equipment	Model No.	Identifier	Note
1	remote control	VM-R02	2AY9HVRR020007	EUT

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#### 4.5 SUMMARY OF TEST RESULTS

Item	FCC Rules	Description Of Test	Result
1	§15.203	Antenna Equipment	Pass
2	§15.231(a)	Transmission Time (Activated automatically)	Pass
3	§15.231	Field Strength of Fundamental	Pass
4	§15.209	Radiated Emission	Pass
5	§15.205(a)	Restricted Bands of Operation	Pass
6	§15.231(c)	20dB Bandwidth	Pass
7	§15.207	AC Power Line Conducted Emission	N/A

Note: 1.N/A means not applicable

Note: 2. The device under test is battery-powered and does not require evaluation of AC Power Line Conducted Emission.

## 5. DESCRIPTION OF TEST MODES

Summary table of Test Cases	
Test Item	Data Rate / Modulation
	Short-range equipment / ASK
Radiated&Conducted Test Cases	Mode 1: Tx _433.92 MHz
AC Conducted Emission	--

Note:

1. Only the result of the worst case was recorded in the report, if no other cases.
2. The battery is full-charged during the test.
3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
4. For Conducted Test method, a temporary antenna connector is provided by the manufacture.

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## 6. PROVISION FOR MOMENTARY OPERATION

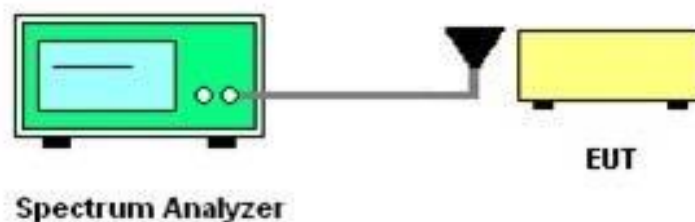
### 6.1 PROVISIONS APPLICABLE

- (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.
- (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.
- (3) Periodic transmissions at regular predetermined intervals are not permitted.  
However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.
- (4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.
- (5) Transmission of set-up information for security systems may exceed the transmission duration limits in (1) and (2) above, provided such transmission are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

### 6.2 MEASUREMENT PROCEDURE

1. Set the parameters of SPA as below:
2. Centre frequency = Operation Frequency
3. RBW=1MHz, VBW=3MHz Span: 0Hz Sweep time: 10S
4. Set the EUT to transmit by manually operated. Use the "View" function of SPA to find the transmission time of being released.
5. Record the data and Reported.

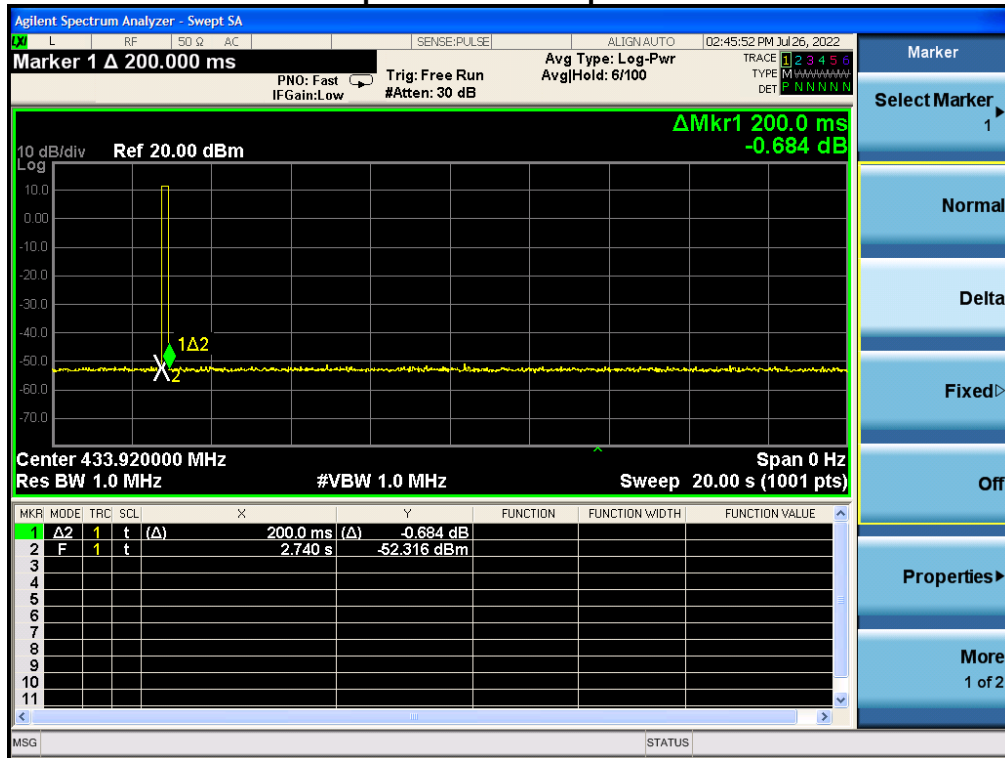
### 6.3 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION)



### 6.4 MEASUREMENT RESULTS

Test Mode	Test Channel (MHz)	The time of stopping transmission after automatically activation by alarm sensor (s)	Limits	Pass or Fail
ASK	433.92	0.20	5s	Pass

Test Graphs Of Launch Operation Time



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## 7. DUTY CYCLE CORRECTION FACTOR

### 7.1 PROVISIONS APPLICABLE

According to FCC Part 15.231 (b)(2) and 15.35 (c), For pulse operation transmitter, the averaging pulsed emissions are calculated by peak value of measured emission plus duty cycle factor.

### 7.2 MEASUREMENT PROCEDURE

After the antenna of the EUT is connected, the output signal of the EUT is received by the connected test antenna

To the spectrum analyzer. Set the center frequency to the actual working frequency of the EUT, and then set the spectrum analyzer to Zero Span for

Release time reading. During the test, the switch is released and the EUT is automatically closed

1. Set the parameters of SPA as below:

Centre frequency = Operation Frequency

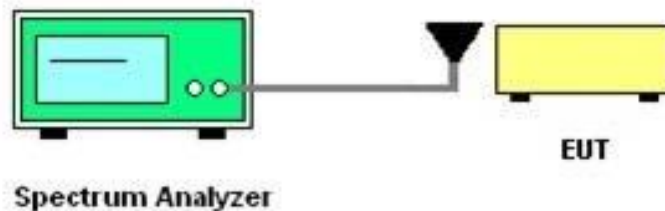
RBW=1MHz, VBW=3MHz

Span: 0Hz

Sweep time: more than two pulse trains or more than each type of pulse occupancy time

2. Set the EUT to transmit by manually operated. Use the “Delta mark” function of SPA to find the period time between two pulse trains and each type of pulse occupancy time.
3. Record the plots and Reported.

### 7.3 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION)



### 7.4 MEASUREMENT RESULTS

Type of Pules	Width of Pules (ms)	Quantity of Pules (pcs)	Transmission Time (ms)	Total Time (Ton) (ms)
Pules 1	0.643	10	6.430	9.865
Pules 2	0.229	15	3.435	

Test Period (Tp) (ms)	Total Time (Ton) (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
26.60	9.865	37.07	-8.62

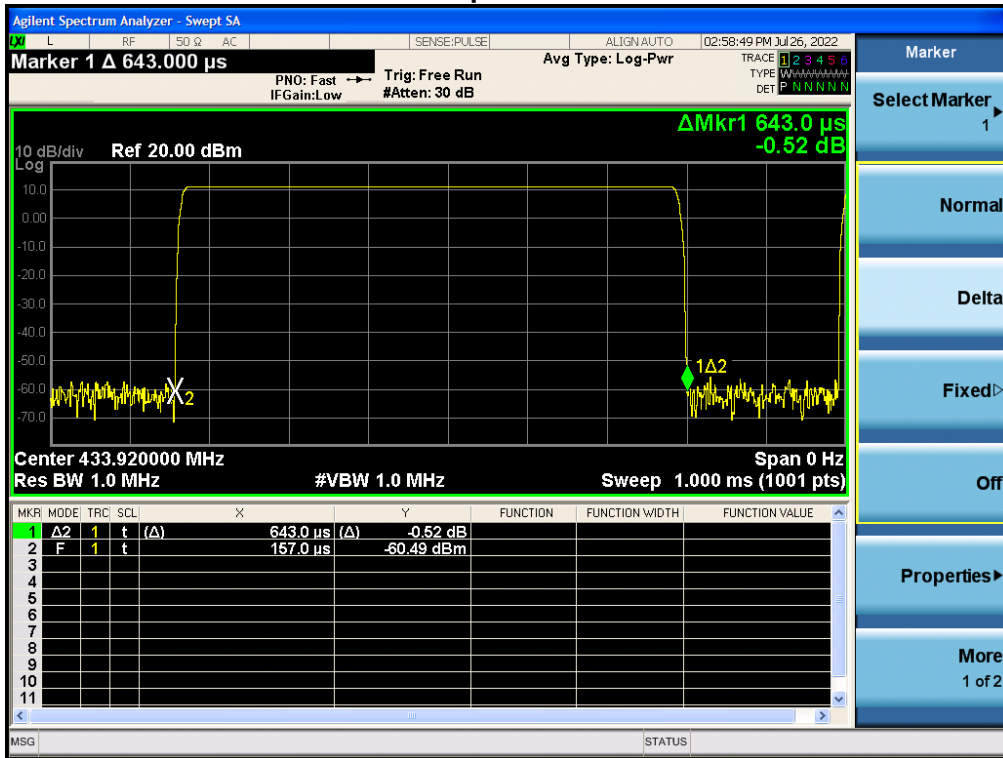
NOTE 1: Duty Cycle Factor= $20 \log (\text{Duty Cycle}) = -8.62$

NOTE 2: The maximum reference value of the test cycle is 100ms.

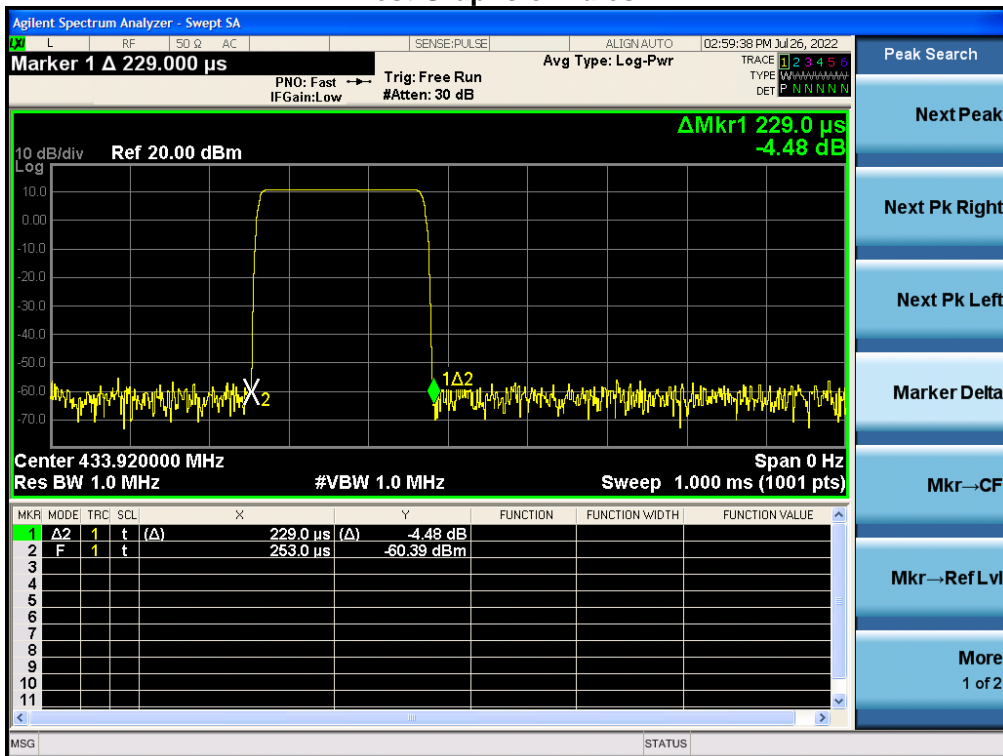




### Test Graphs of Pules 1



### Test Graphs of Pules 2



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## 8. 20 dB BANDWIDTH

### 8.1 PROVISIONS APPLICABLE

According to FCC Part 15.231(c), The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier

### 8.2 MEASUREMENT PROCEDURE

1. Set the parameters of SPA as below:

Centre frequency = Operation Frequency

RBW=0.3KHz

VBW=1.0KHz

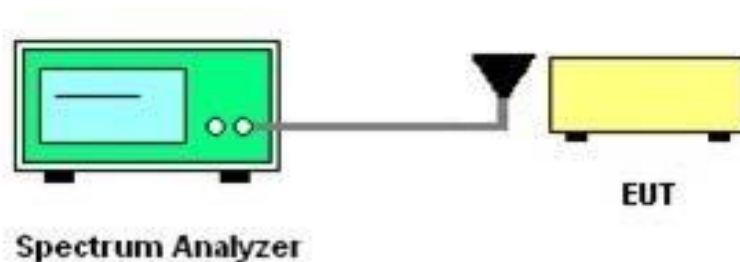
Span: 60kHz

Sweep time: Auto

2. Set the EUT to continue transmitting mode. Allow the trace to stabilize. Use the “N dB down” function of SPA to define the bandwidth.

3. Record the plots and Reported.

### 8.3 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION)



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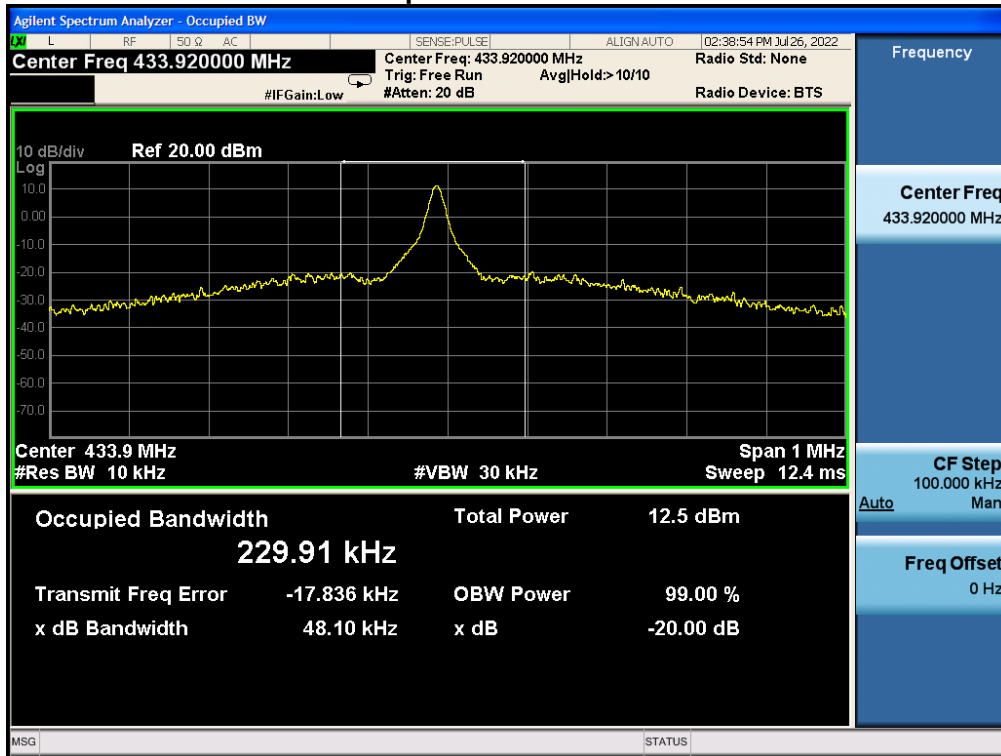
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: <http://www.agccert.com/>

### 7.4 MEASUREMENT RESULTS

Test Data of Occupied Bandwidth and -20dB Bandwidth				
Test Mode	Test Channel (MHz)	-20dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
ASK	433.92	0.0481	N/A	Pass

#### Test Graphs of -20dB Bandwidth



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## 7. RADIATED EMISSION

### 7.1 LIMITS OF RADIATED EMISSION TEST

15.209 Limit in the below table has to be followed:

Frequency (MHz)	Distance Meters	Field Strengths Limit	
		$\mu$ V/m	dB( $\mu$ V)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB( $\mu$ V)/m (Peak) 54.0 dB( $\mu$ V)/m (Average)	

Remark: (1) Emission level dB  $\mu$  V = 20 log Emission level  $\mu$  V/m  
(2) The smaller limit shall apply at the cross point between two frequency bands.  
(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

15.231(b) Limit in the below table has to be followed:

Fundamental Frequency	Field Strength of Fundamental (microvolts/meter)	Field Strength of Harmonics (microvolts/meter)
40.66-40.70MHz	2250	225
70-130MHz	1250	125
130-174MHz	1250 to 3750	125 to 375
174-260MHz	3750	375
260-470MHz	3750 to 12500	375 to 1250
Above 470MHz	12500	1250

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15.231(e) Limit in the below table has to be followed:

Fundamental Frequency	Field Strength of Fundamental (microvolts/meter)	Field Strength of Harmonics (microvolts/meter)
40.66-40.70MHz	1000	225
70-130MHz	1250	125
130-174MHz	1250 to 3750	125 to 375
174-260MHz	3750	375
260-470MHz	3750 to 12500	375 to 1250
Above 470MHz	12500	1250

## 7.2 MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.

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9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

The following table is the setting of spectrum analyzer and receiver.

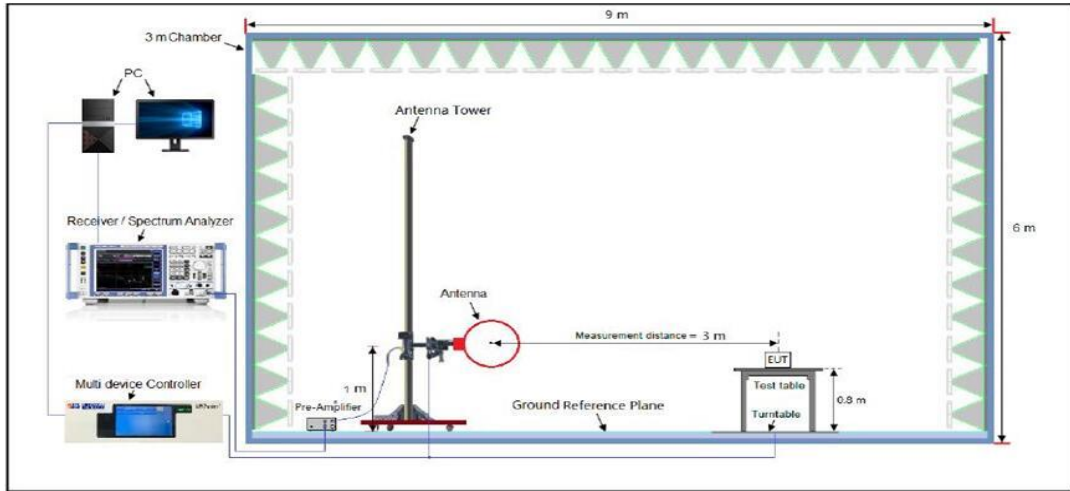
Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average

Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

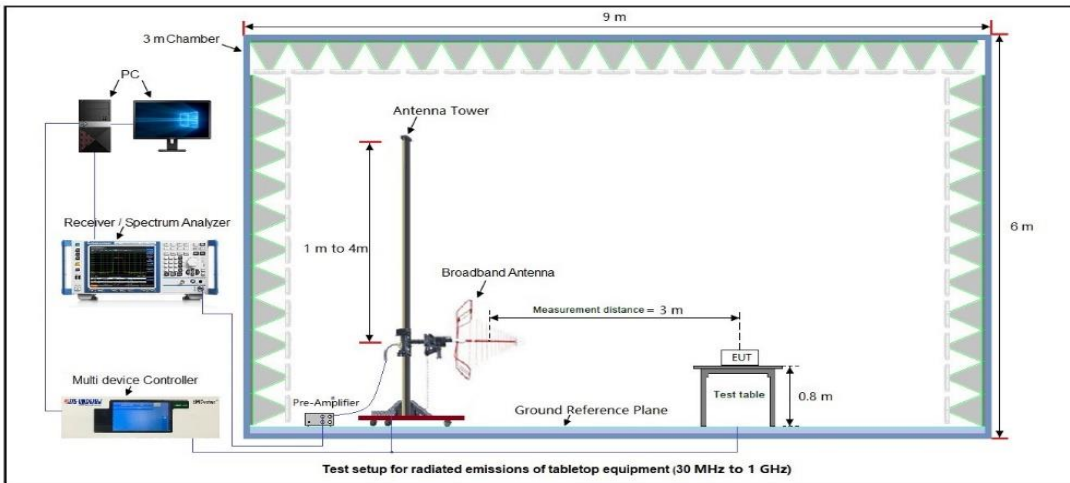
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### 7.3 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION)

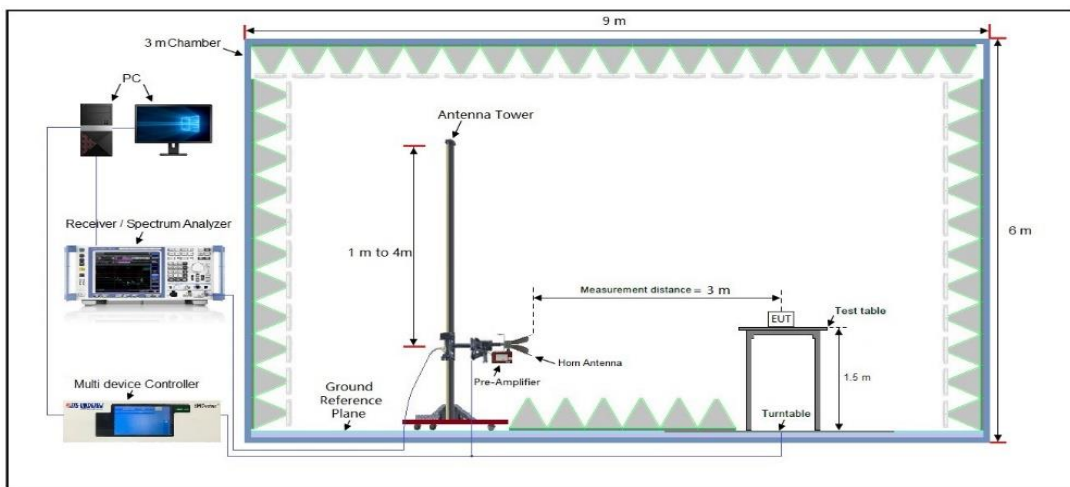
RADIATED EMISSION TEST SETUP 9KHz-30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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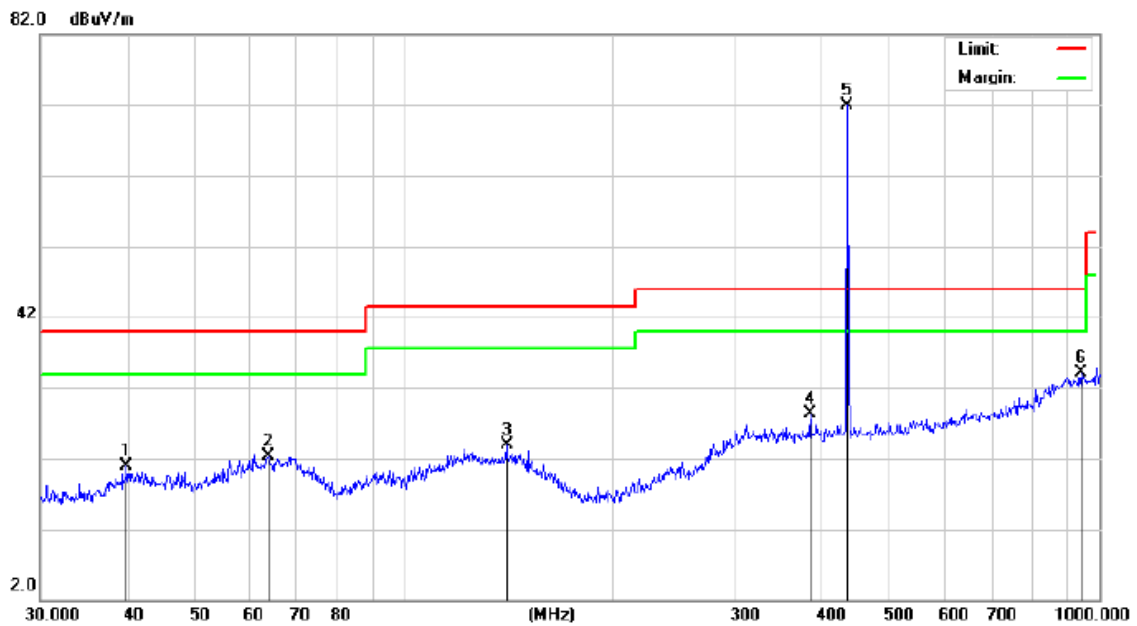
### 7.4 MEASUREMENT RESULT

#### RADIATED EMISSION BELOW 30MHz

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

#### RADIATED EMISSION FROM 30MHz ~1000MHz

<b>EUT</b>	remote control	<b>Model Name</b>	VM-R02
<b>Temperature</b>	23° C	<b>Relative Humidity</b>	55%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 1	<b>Antenna</b>	Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Over dB	Detector
1		39.8542	5.91	15.01	20.92	40.00	-19.08	peak
2		63.7588	5.50	16.72	22.22	40.00	-17.78	peak
3		140.3421	6.34	17.62	23.96	43.50	-19.54	peak
4		383.9318	7.70	20.64	28.34	46.00	-17.66	peak
5	*	434.0650	51.03	20.79	71.82	46.00	25.82	peak
6		942.1304	6.11	27.91	34.02	46.00	-11.98	peak

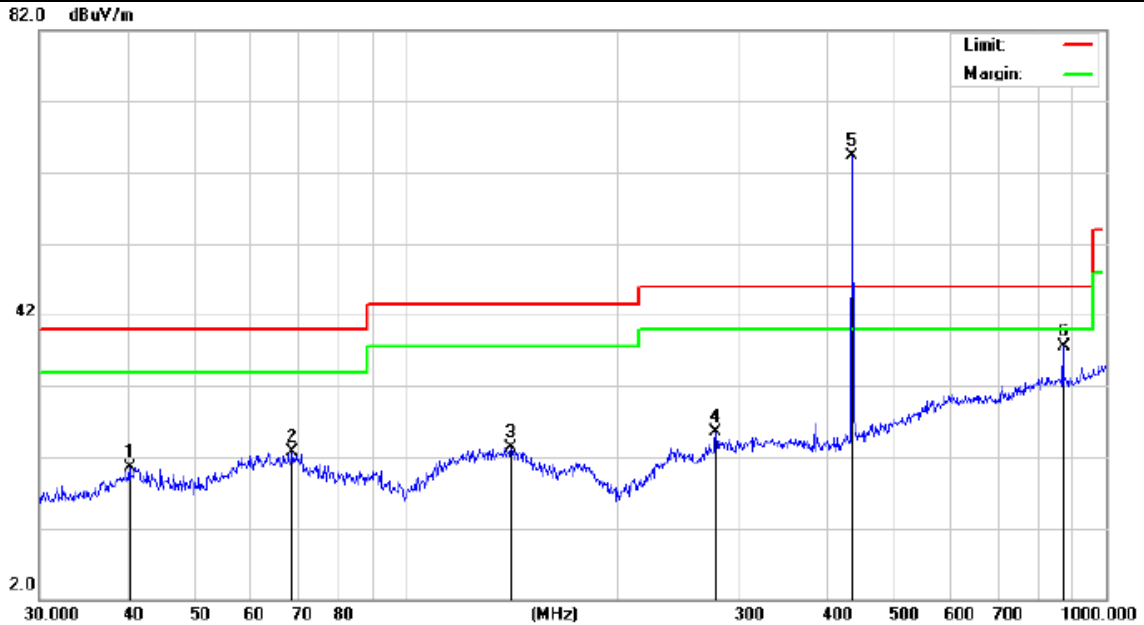
#### Final data result\_ Average Detection

NO.	Freq. [MHz]	PK Level [dBuV/m]	Duty cycle factor(dB)	AV Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Polarity
1	434.0650	71.82	-8.62	63.20	80.82	-17.62	Vertical
2	942.1304	34.02	-8.62	25.40	60.82	-35.42	Vertical

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**RESULT: PASS**

EUT	remote control	Model Name	VM-R02
Temperature	23° C	Relative Humidity	55%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		217.5333	3.85	14.97	18.82	46.00	-27.18	peak
2		325.8500	3.99	19.34	23.33	46.00	-22.67	peak
3	*	434.1667	45.60	20.01	65.61	46.00	19.61	peak
4		542.4833	7.75	23.25	31.00	46.00	-15.00	peak
5	!	867.4333	16.95	27.57	44.52	46.00	-1.48	peak
6		975.7500	6.53	29.09	35.62	54.00	-18.38	peak

**Final data result\_Average Detection**

NO.	Freq. [MHz]	PK Level [dBμV/m]	Duty cycle factor(dB)	AV Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	434.0650	64.33	-8.62	55.71	80.82	-25.11	Vertical
2	869.1301	37.52	-8.62	28.90	60.82	-31.92	Vertical

**RESULT: PASS**

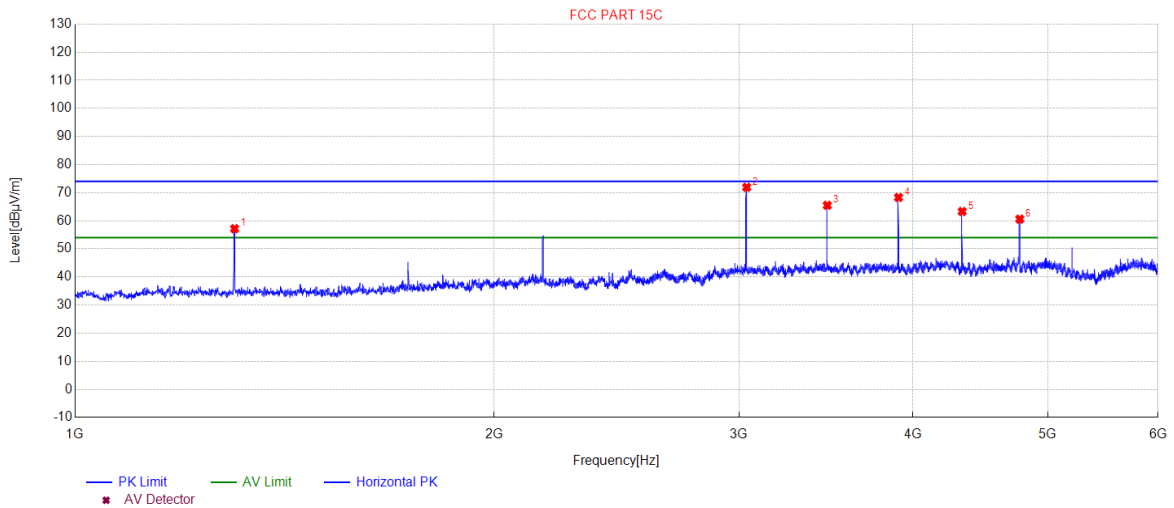
**Note:** 1. Factor=Antenna Factor + Cable loss, Over=Measurement-Limit.

2. All test modes had been pre-tested. The mode 1 is the worst case and recorded in the report.

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**RADIATED EMISSION FROM ABOVE 1GHZ**

<b>EUT</b>	remote control	<b>Model Name</b>	VM-R02
<b>Temperature</b>	23° C	<b>Relative Humidity</b>	55%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 1	<b>Antenna</b>	Horizontal



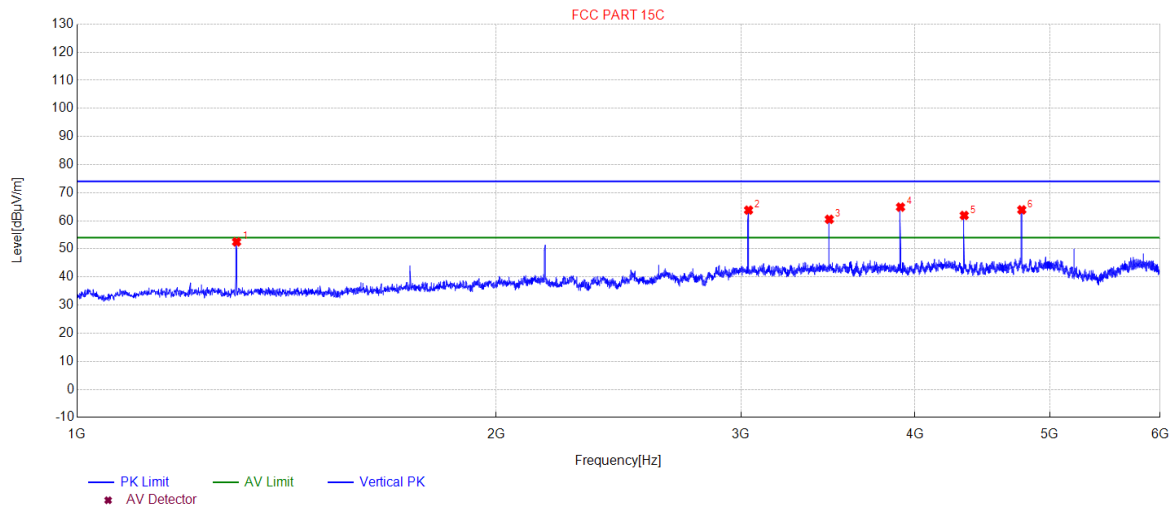
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1302.0302	57.17	-19.89	74.00	16.83	150	207	Horizontal
2	3037.7038	71.90	-11.11	74.00	2.10	150	306	Horizontal
3	3471.2471	65.49	-9.79	74.00	8.51	150	301	Horizontal
4	3905.2905	68.29	-8.40	74.00	5.71	150	306	Horizontal
5	4339.3339	63.30	-7.69	74.00	10.70	150	291	Horizontal
6	4772.8773	60.58	-6.86	74.00	13.42	150	236	Horizontal

**RESULT: PASS**

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### RADIATED EMISSION FROM ABOVE 1GHZ

<b>EUT</b>	remote control	<b>Model Name</b>	VM-R02
<b>Temperature</b>	23° C	<b>Relative Humidity</b>	55%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 1	<b>Antenna</b>	Horizontal



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1302.0302	52.48	-19.89	74.00	21.52	150	326	Vertical
2	3037.2037	63.79	-11.12	74.00	10.21	150	58	Vertical
3	3471.2471	60.52	-9.79	74.00	13.48	150	142	Vertical
4	3905.2905	64.86	-8.40	74.00	9.14	150	207	Vertical
5	4339.3339	61.89	-7.69	74.00	12.11	150	287	Vertical
6	4772.8773	63.88	-6.86	74.00	10.12	150	222	Vertical

### RESULT: PASS

#### Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin=Limit-Level.

The "Factor" value can be calculated automatically by software of measurement system.

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## 8. AC LINE CONDUCTED EMISSION TEST

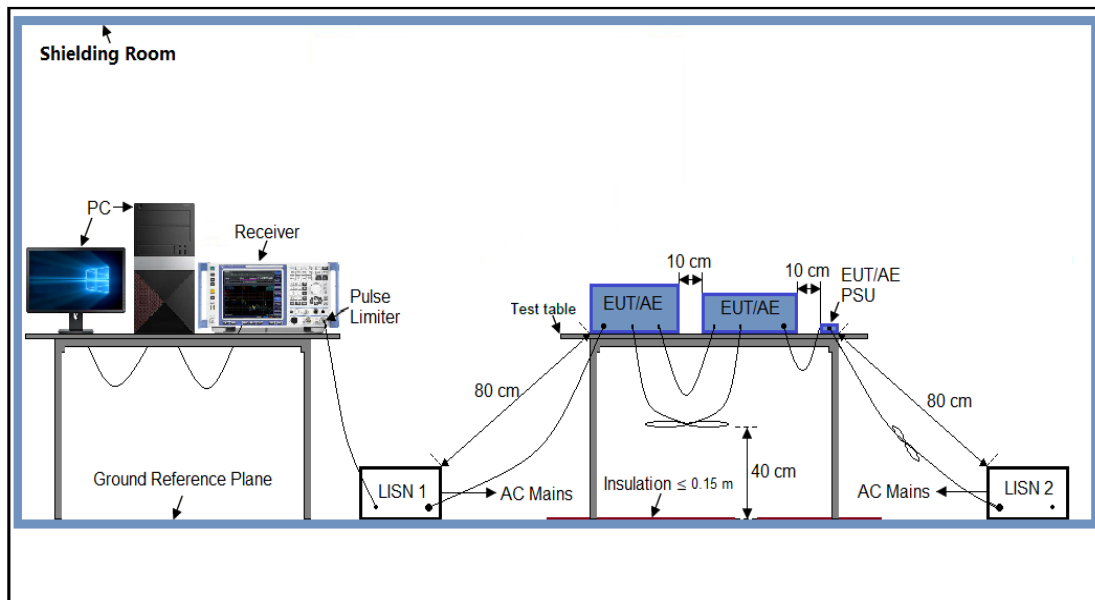
### 8.1 LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P. (dB $\mu$ V)	Average (dB $\mu$ V)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 8.2 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION)



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### 8.3 PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipment received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC 5V power from adapter which received AC120V/60Hz power from a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

### 8.4 FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, 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. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

### 8.5 MEASUREMENT RESULTS

Not Applicable

Note: The device under test is battery-powered and does not require evaluation of AC Power Line Conducted Emission.

## APPENDIX I: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC07307220701AP01

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## **APPENDIX II: PHOTOGRAPHS OF TEST EUT**

Refer to the Report No.: AGC07307220701AP02

**-----END OF REPORT-----**

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## Conditions of Issuance of Test Reports

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2. Any report issued by Company as a result of this application for testing services (the “Report”) shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

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