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# FCC Test Report

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Report No.: AGC13369220301FE01

**FCC ID** : 2A6IY-5918

**APPLICATION PURPOSE** : Original Equipment

**PRODUCT DESIGNATION** : Wireless Data Terminal

**BRAND NAME** : N/A

**MODEL NAME** : R330P, R330C, R330CS, R350, R350S, R350P, R350PM

**APPLICNAT** : Shanghai Senraise Intelligent Technology Co., Ltd.

**DATE OF ISSUE** : May. 19, 2022

**STANDARD(S)** : FCC Part 15B Rules

**REPORT VERSION** : V1.0

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**Report Revise Record**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	May. 20, 2022	Valid	Initial Release

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## TABLE OF CONTENTS

<b>1. VERIFICATION OF CONFORMITY.....</b>	<b>4</b>
<b>2. SYSTEM DESCRIPTION.....</b>	<b>5</b>
<b>3. MEASUREMENT UNCERTAINTY .....</b>	<b>6</b>
<b>4. PRODUCT INFORMATION .....</b>	<b>7</b>
<b>5. SUPPORT EQUIPMENT .....</b>	<b>8</b>
<b>6. TEST FACILITY .....</b>	<b>9</b>
<b>6. TEST ITEMS AND THE RESULTS .....</b>	<b>10</b>
<b>7. FCCLINE CONDUCTED EMISSION TEST .....</b>	<b>11</b>
7.1. LIMITS OF LINE CONDUCTED EMISSION TEST .....	11
7.2. BLOCK DIAGRAM OF TEST SETUP.....	11
7.3. PROCEDURE OF LINE CONDUCTED EMISSION TEST.....	12
7.4. TEST RESULT OF LINE CONDUCTED EMISSION TEST .....	13
<b>8. FCC RADIATED EMISSION TEST .....</b>	<b>15</b>
8.1. EXCEPT FOR CLASS A DIGITAL DEVICES, THE FIELD STRENGTH OF RADIATED EMISSIONS FROM UNINTENTIONAL RADIATORS AT A DISTANCE OF 3 METERS SHALL NOT EXCEED THE FOLLOWING VALUES:.....	15
8.2. BLOCK DIAGRAM OF TEST SETUP.....	16
8.3. PROCEDURE OF RADIATED EMISSION TEST.....	17
8.4. TEST RESULT OF RADIATED EMISSION TEST .....	18
<b>APPENDIX A: PHOTOGRAPHS OF TEST SETUP .....</b>	<b>22</b>

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**1. VERIFICATION OF CONFORMITY**

<b>Applicant</b>	Shanghai Senraise Intelligent Technology Co., Ltd.
<b>Address</b>	Room 951, Zone D, floor 1, building 1, No. 58, Dijie Road, Baoshan District, Shanghai
<b>Manufacturer</b>	Shanghai Senraise Intelligent Technology Co., Ltd.
<b>Address</b>	Room 951, Zone D, floor 1, building 1, No. 58, Dijie Road, Baoshan District, Shanghai
<b>Factory</b>	Shanghai Senraise Intelligent Technology Co., Ltd.
<b>Address</b>	Room 951, Zone D, floor 1, building 1, No. 58, Dijie Road, Baoshan District, Shanghai
<b>Product Designation</b>	Wireless Data Terminal
<b>Brand Name</b>	N/A
<b>Test Model</b>	R330P
<b>Series Model</b>	R330C, R330CS, R350, R350S, R350P, R350PM
<b>Declaration of Difference</b>	All the same except the model name.
<b>Date of test</b>	Apr. 20, 2022~May 19, 2022
<b>Deviation</b>	No any deviation from the test method.
<b>Condition of Test Sample</b>	Normal
<b>Report Template</b>	AGCRT-US-IT/AC

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, the measurement procedure according to ANSI C63.4:2014. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Prepared By

Eder Zhan  
(Project Engineer)

May 19, 2022

Reviewed By

Calvin Liu  
(Reviewer)

May 19, 2022

Approved By

Max Zhang  
Authorized Officer

May 19, 2022

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## 2. SYSTEM DESCRIPTION

### EUT test procedure:

1. Connect EUT and peripheral devices (PC) through USB port.
2. Power on the EUT, use the software to transfer data between EUT and PC.
3. Make sure the EUT operates normally during the test.

### Test Mode

TEST MODE DESCRIPTION		
NO.	TEST MODE DESCRIPTION	WORST
1	USB (connection for data transferring)	V
Note:		
1. V means EMI worst mode		

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### 3. MEASUREMENT UNCERTAINTY

Test	Measurement Uncertainty	Notes
Transmitter power conducted	±0.57 dB	(1)
Transmitter power Radiated	±2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	±2.20 dB	(1)
Occupied Bandwidth	±0.01ppm	(1)
Radiated Emission 30~1000MHz	±4.10dB	(1)
Radiated Emission Above 1GHz	±4.32dB	(1)
Conducted Disturbance 0.15~30MHz	±3.20dB	(1)

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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#### 4. PRODUCT INFORMATION

Housing Type	Plastic and metal
EUT Input Rating	DC 7.7V by battery

I/O Port Information (Applicable    Not Applicable)

I/O Port of EUT			
I/O Port Type	Number	Specific	Tested With
USB Port	1	-	1

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## 5. SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
PC	Xiaomi Inc.	--	--	--	--
Adapter	Xiaomi Inc.	--	--	--	1.25m Unshielded

**Note:** All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

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## 6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

### TEST EQUIPMENT OF CONDUCTED EMISSION TEST

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. 09, 2021	Jun. 08, 2022
Test software	R&S	ES-K1(Ver.V1.71)	N/A	N/A	N/A

### TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Mar. 28, 2022	Mar. 27, 2023
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Nov. 17, 2021	Nov. 16, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 19, 2021	Sep. 18, 2023
preamplifier	ChengYi	EMC184045SE	980508	Sep.16, 2021	Sep.15, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Broadband Preamplifier	SCHWARZBECK	3117PA	00225134	Sep.03, 2020	Sep.02, 2022
ANTENNA	SCHWARZBECK	VULB9168	D69250	Jan. 08, 2021	Jan. 07, 2023
Test software	Tonscend	JS32-RE (Ver.2.5)	N/A	N/A	N/A

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## 6. TEST ITEMS AND THE RESULTS

Test item	Test Requirement	Test Method	Class/Severity	Result
CONDUCTED EMISSION	FCC Part 15.107 Rules	ANSI C63.4:2014	Class B	Pass
RADIATED EMISSION	FCC Part 15.109 Rules	ANSI C63.4:2014	Class B	Pass

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## 7. FCC LINE CONDUCTED EMISSION TEST

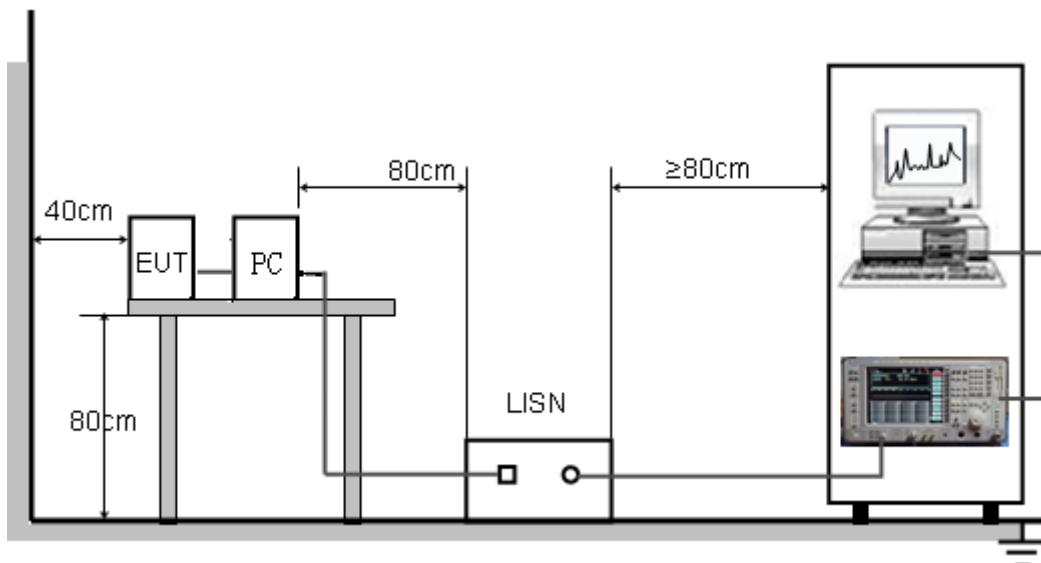
### 7.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.( dBuV)	Average( dBuV)
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 0.50MHz.

### 7.2. BLOCK DIAGRAM OF TEST SETUP



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### 7.3. 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 C63.4 (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 C63.4.
- (3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- (4) The EUT received DC 5V power from PC with receive AC120V/60Hz power from a LISN.
- (5) The EUT 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.
- (6) Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- (7) During the above scans, the emissions were maximized by cable manipulation.
- (8) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.
- (9) 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.

The test data of the worst case condition (mode 1) was reported on the Summary Data page.

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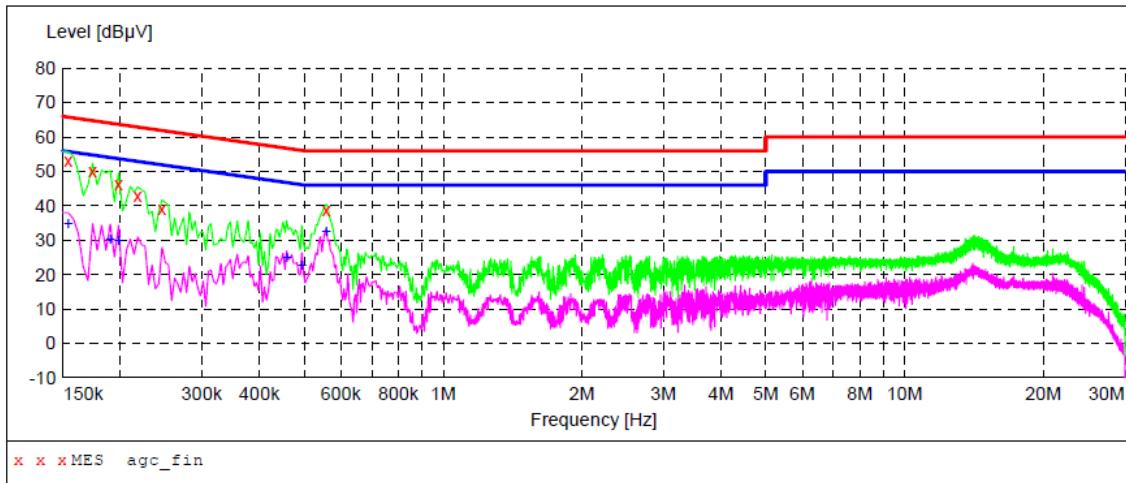
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## 7.4. TEST RESULT OF LINE CONDUCTED EMISSION TEST

### LINE CONDUCTED EMISSION TEST-L



#### MEASUREMENT RESULT: "agc\_fin"

2022/5/14 11:37

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Detector	Line
0.154000	53.20	6.9	66	12.6	QP	L1
0.174000	50.00	6.7	65	14.8	QP	L1
0.198000	46.20	6.6	64	17.5	QP	L1
0.218000	43.00	6.4	63	19.9	QP	L1
0.246000	39.00	6.3	62	22.9	QP	L1
0.558000	38.90	5.4	56	17.1	QP	L1

#### MEASUREMENT RESULT: "agc\_fin2"

2022/5/14 11:37

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Detector	Line
0.154000	34.80	6.9	56	21.0	AV	L1
0.190000	30.40	6.6	54	23.6	AV	L1
0.198000	30.00	6.6	54	23.7	AV	L1
0.458000	25.10	5.5	47	21.6	AV	L1
0.494000	22.80	5.4	46	23.3	AV	L1
0.558000	32.60	5.4	46	13.4	AV	L1

## RESULT: PASS

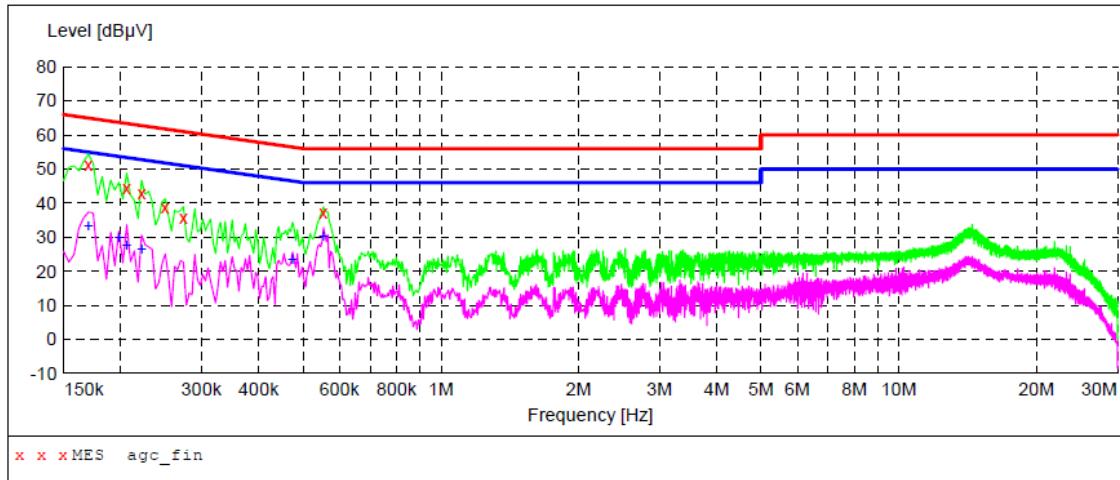
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## LINE CONDUCTED EMISSION TEST-N


**MEASUREMENT RESULT: "agc\_fin"**

2022/5/14 11:33

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Detector	Line
0.170000	51.20	6.8	65	13.8	QP	N
0.206000	44.60	6.5	63	18.8	QP	N
0.222000	43.00	6.4	63	19.7	QP	N
0.250000	38.70	6.3	62	23.1	QP	N
0.274000	35.60	6.1	61	25.4	QP	N
0.554000	37.20	5.4	56	18.8	QP	N

**MEASUREMENT RESULT: "agc\_fin2"**

2022/5/14 11:33

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Detector	Line
0.170000	33.50	6.8	55	21.5	AV	N
0.198000	30.20	6.6	54	23.5	AV	N
0.206000	27.60	6.5	53	25.8	AV	N
0.222000	26.70	6.4	53	26.0	AV	N
0.474000	23.50	5.5	46	22.9	AV	N
0.554000	30.40	5.4	46	15.6	AV	N

**RESULT: PASS**

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## 8. FCC RADIATED EMISSION TEST

### 8.1. EXCEPT FOR CLASS A DIGITAL DEVICES, THE FIELD STRENGTH OF RADIATED EMISSIONS FROM UNINTENTIONAL RADIATORS AT A DISTANCE OF 3 METERS SHALL NOT EXCEED THE FOLLOWING VALUES:

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m/ Q.P.)
30~88	3	40.0
88~216	3	43.5
216~960	3	46.0
Above 960	3	54.0

Note: The lower limit shall apply at the transition frequency.

#### 8.1.1 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/1MHz for Peak, 1MHz/10Hz 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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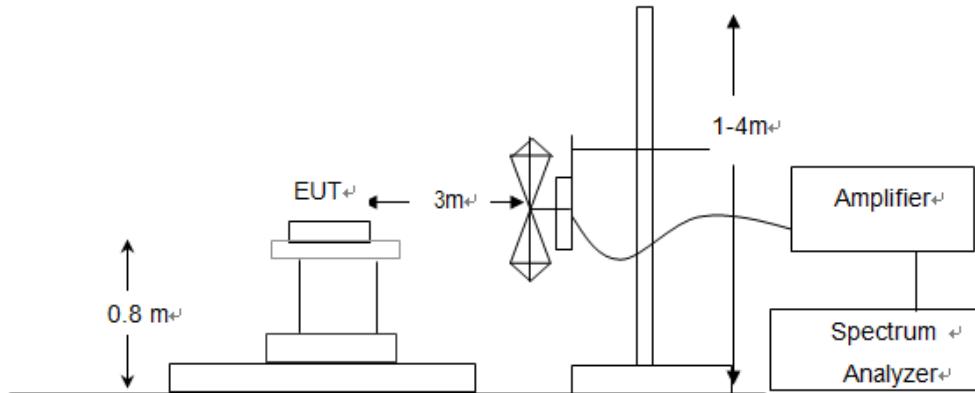
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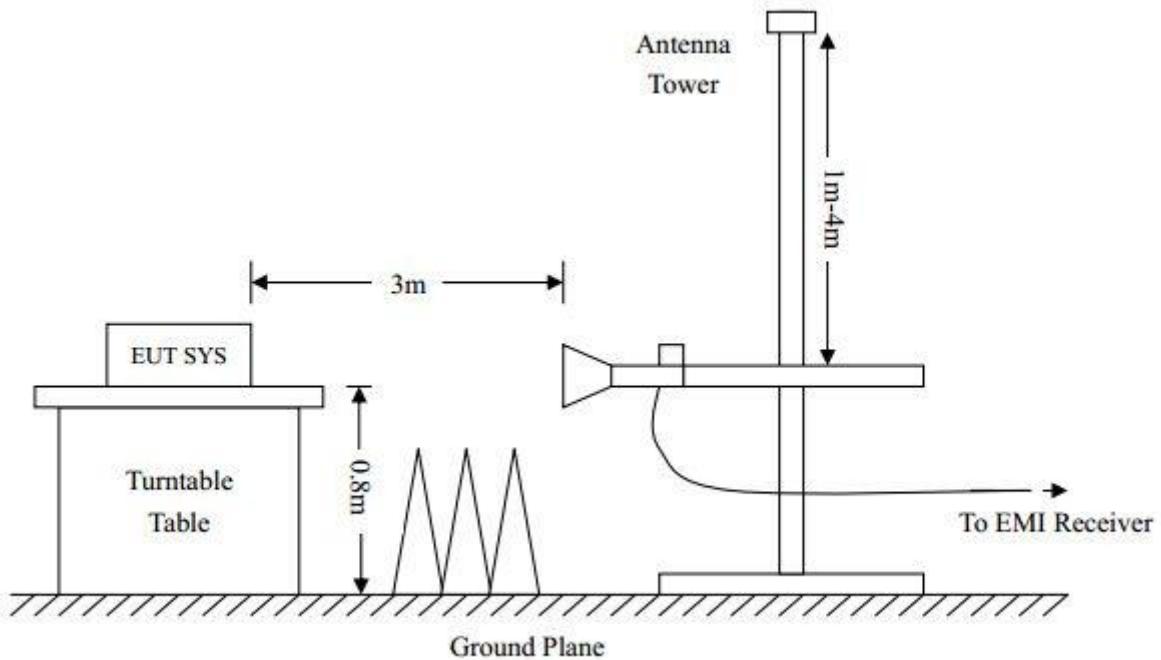
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## 8.2. BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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

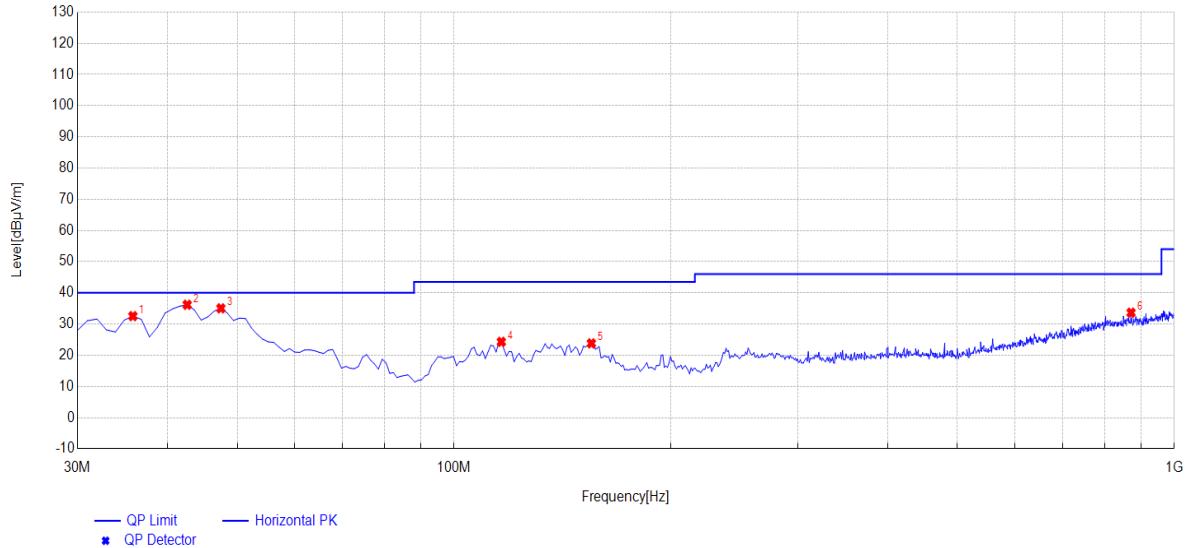
### 8.3. PROCEDURE OF RADIATED EMISSION TEST

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 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 emissions, 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. Then 1MHz RBW and 3MHz VBW for average reading in spectrum analyzer. The EUT was placed on the top of the turntable 0.8 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.
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.
9. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
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.
11. The test data of the worst case condition (mode 1) was reported on the Summary Data page.

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## 8.4. TEST RESULT OF RADIATED EMISSION TEST

### RADIATED EMISSION TEST AT 3M DISTANCE-HORIZONTAL



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.82	32.53	10.73	40.00	7.47	100	230	Horizontal
2	42.61	36.17	10.98	40.00	3.83	100	40	Horizontal
3	47.46	35.03	11.44	40.00	4.97	100	290	Horizontal
4	116.33	24.29	11.46	43.50	19.21	100	230	Horizontal
5	155.13	23.80	14.93	43.50	19.70	100	200	Horizontal
6	870.99	33.64	27.26	46.00	12.36	100	110	Horizontal

**RESULT: PASS**

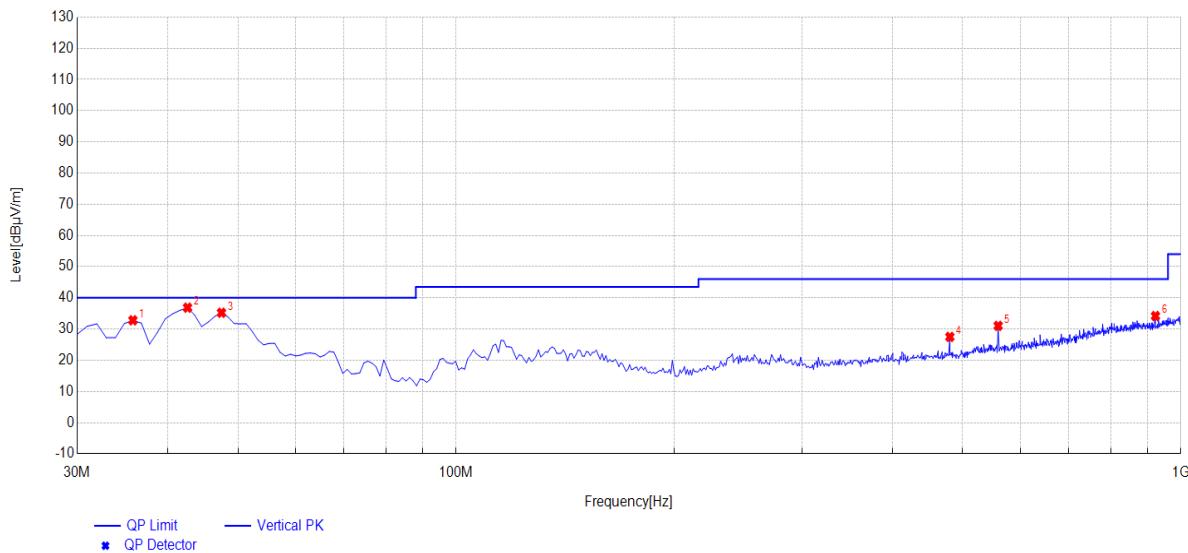
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## RADIATED EMISSION TEST AT 3M DISTANCE-VERTICAL



NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.82	32.80	10.73	40.00	7.20	100	110	Vertical
2	42.61	36.85	10.98	40.00	3.15	100	270	Vertical
3	47.46	35.22	11.44	40.00	4.78	100	280	Vertical
4	480.08	27.49	18.58	46.00	18.51	100	100	Vertical
5	559.62	31.03	19.96	46.00	14.97	100	20	Vertical
6	922.4	34.19	27.93	46.00	11.81	100	130	Vertical

## RESULT: PASS

Note: 1. Measurement = Reading + Factor, Over = Limit-Measurement.

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

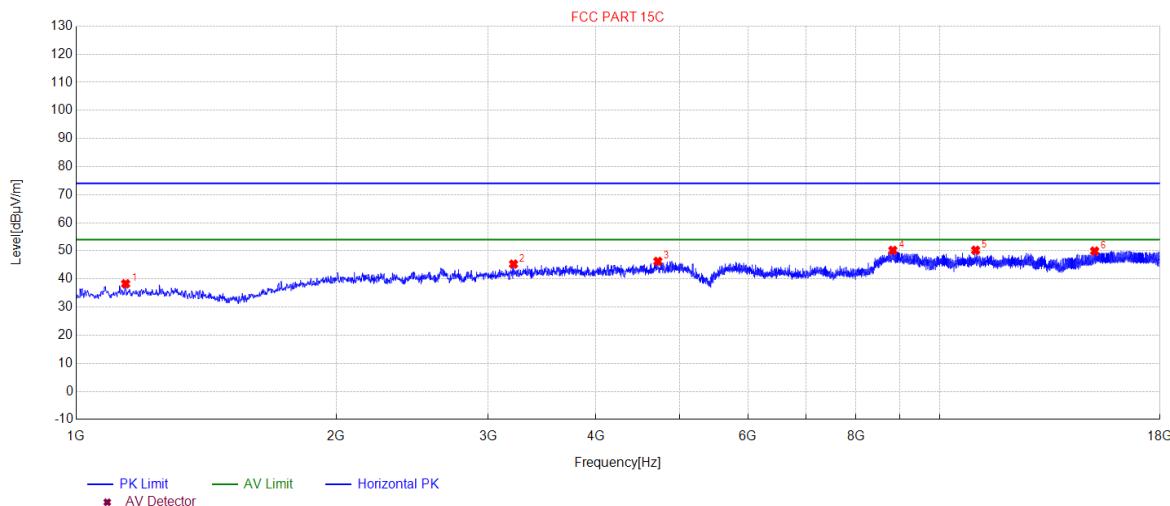
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## RADIATED EMISSION ABOVE 1GHZ TEST AT 3M DISTANCE –HORIZONTAL



NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1141.1141	38.29	-16.78	74.00	35.71	150	20	Horizontal
2	3210.221	45.29	-8.60	74.00	28.71	150	260	Horizontal
3	4718.2718	46.26	-4.99	74.00	27.74	150	70	Horizontal
4	8827.5828	50.18	0.38	74.00	23.82	150	300	Horizontal
5	11007.2007	50.22	1.57	74.00	23.78	150	350	Horizontal
6	15118.2118	49.93	2.70	74.00	24.07	150	110	Horizontal

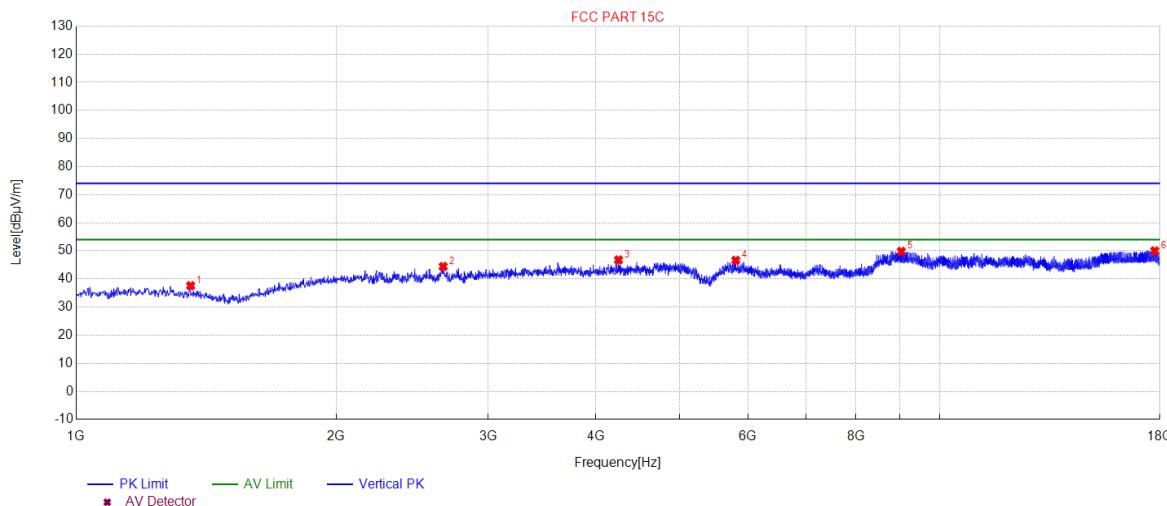
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## RADIATED EMISSION ABOVE 1GHZ TEST AT 3M DISTANCE –VERTICAL



NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1357.0357	37.60	-16.99	74.00	36.40	150	50	Vertical
2	2661.0661	44.42	-9.59	74.00	29.58	150	10	Vertical
3	4247.3247	46.77	-5.86	74.00	27.23	150	280	Vertical
4	5806.3806	46.63	-4.31	74.00	27.37	150	110	Vertical
5	9028.2028	49.81	1.53	74.00	24.19	150	0	Vertical
6	17744.9745	50.01	6.04	74.00	23.99	150	280	Vertical

**Note:** 1. Emissions range from 6GHz to 12.5GHz have 20dB margin. No recording in the test report.

2. Factor=Antenna Factor + Cable loss - Amplifier gain, Margin= Limit –Measurement.

3. The “Factor” value can be calculated automatically by software of measurement system.

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**APPENDIX I: PHOTOGRAPHS OF TEST SETUP**

Refer to the Report No.: AGC13369220301AP03

**APPENDIX II: PHOTOGRAPHS OF EUT**

Refer to the Report No.: AGC13369220301AP02

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

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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 or 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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