

FCC TEST REPORT

Product Name : AC Ryan VEOLO SMART ANDROID HUB
Trade Name : AC RYAN
Model Name : ACR-VE91200
FCC ID : Y8J-ACR-VE91200
Contains FCC ID (WIFI module) : WWMMN42754IV1
Serial Number : N/A
Technical Data : 5V/2.4A
Report Number : EESZD10170006-7
Date : Nov. 15, 2011
Regulations : See below

Test Standards	Results
☒ FCC Part 15 Subpart B: 2010	PASS

Prepared for:

AC RYAN ASIA PACIFIC PTE LTD
60 KAKI BUKIT PLACE #01-12 EUNOS TECPARK SINGAPORE 415979

Prepared by:

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CENTRE TESTING INTERNATIONAL (SHENZHEN) CORPORATION

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(Note: N/A means not applicable)

1. GENERAL INFORMATION

Applicant: AC RYAN ASIA PACIFIC PTE LTD
60 KAKI BUKIT PLACE #01-12 EUNOS TECPARK
SINGAPORE 415979

Manufacturer: AC RYAN ASIA PACIFIC PTE LTD
60 KAKI BUKIT PLACE #01-12 EUNOS TECPARK
SINGAPORE 415979

Equipment Authorization: Certification

Product Name: ACRyan VEOLO SMART ANDROID HUB

Trade Name: AC RYAN

Model Name: ACR-VE91200

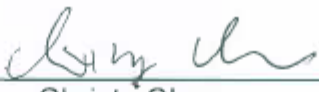
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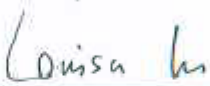
Report Number: EESZD10170006-7

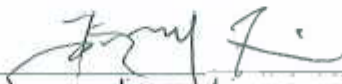
Date of Test: Oct. 17, 2011 to Nov. 15, 2011

The results of this test report are only valid for the mentioned equipment under test. The test report with all its sub-reports, e.g. tables, photographs and drawings, is copyrighted. Unauthorized utilization, especially without permission of the test laboratory, is not allowed and punishable. For copying parts of the test report, a written permission by the test laboratory is needed.

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

Prepared by : 
Christy Chen

Reviewed by : 
Louisa Lu

Approved by : 
Jimmy Li
Manager

Date Nov. 15, 2011



2. TEST SUMMARY

The EUT has been tested according to the following specifications:

Standard	Test Item	Test
FCC 15.107	Conducted Emission	Yes
FCC 15.109	Radiated Emission	Yes

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

Test item	Value (dB)
Conducted Emission	2.6
Radiated Emission	4.4

4. PRODUCT INFORMATION AND TEST SETUP

4.1. PRODUCT INFORMATION

Technical Data: 5V/2.4A
Adapter information: Model No.:ADS-18C-06 0512GPCU
 Input: AC 100-240V, 50/60Hz, max. 0.6A
 Output: DC 5V, 2.4A

I/O Port of EUT

No.	I/O Port Type	Quantity
1	USB port	2
2	Optical port	1
3	HDMI port	1
4	AV port	2
5	SD port	1
6	LAN port	1

4.2. TEST SETUP CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

4.3. SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	PC	IBM	8143	BD-241	N/A	Un-shielded 1.2M
2.	Monitor	Lenovo	SY2	SS161118X6	Un-shielded 1M	Un-shielded 1M
3.	Mouse	IBM	M028UOL	23-468157	Un-shielded 1.2M	N/A
4.	Keyboard	IBM	89P8300	02284699	Un-shielded 1.2M	N/A

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5. FACILITIES AND ACCREDITATIONS

5.1. TEST FACILITY

All test facilities used to collect the test data are located at Building C, Hongwei Industrial Zone, Baoan 70 District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4, CISPR 16-1-1 and other equivalent standards.

5.2. TEST EQUIPMENT LIST

Instrumentation: The following list contains equipments used at CTI for testing.

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

Equipment used during the tests:

Shielding Room No. 1 - Conducted Emission Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
Receiver	R&S	ESCI	100009	07/06/2012
LISN	R&S	ENV216	100098	07/06/2012

3M Semi-anechoic Chamber - Radiated Emission Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	07/09/2012
Spectrum Analyzer	Agilent	E4440A	MY46185649	03/29/2012
Biconilog Antenna	ETS-LINGREN	3142C	00044562	07/06/2012
Multi device Controller	ETS-LINGREN	2090	00057230	N/A
Horn Antenna	ETS-LINGREN	3117	00057407	07/06/2012
Microwave Preamplifier	Agilent	8449B	3008A02425	07/06/2012

5.3. LABORATORY ACCREDITATIONS AND LISTINGS

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

6. CONDUCTED EMISSION TEST

6.1. LIMITS

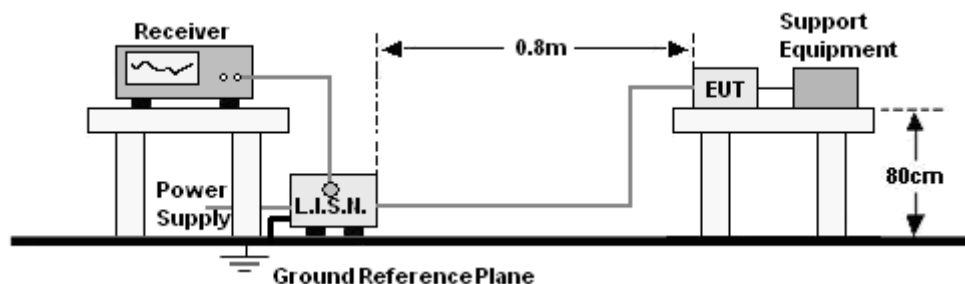
Limits for Class B digital devices

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

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

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

6.2. BLOCK DIAGRAM OF TEST SETUP



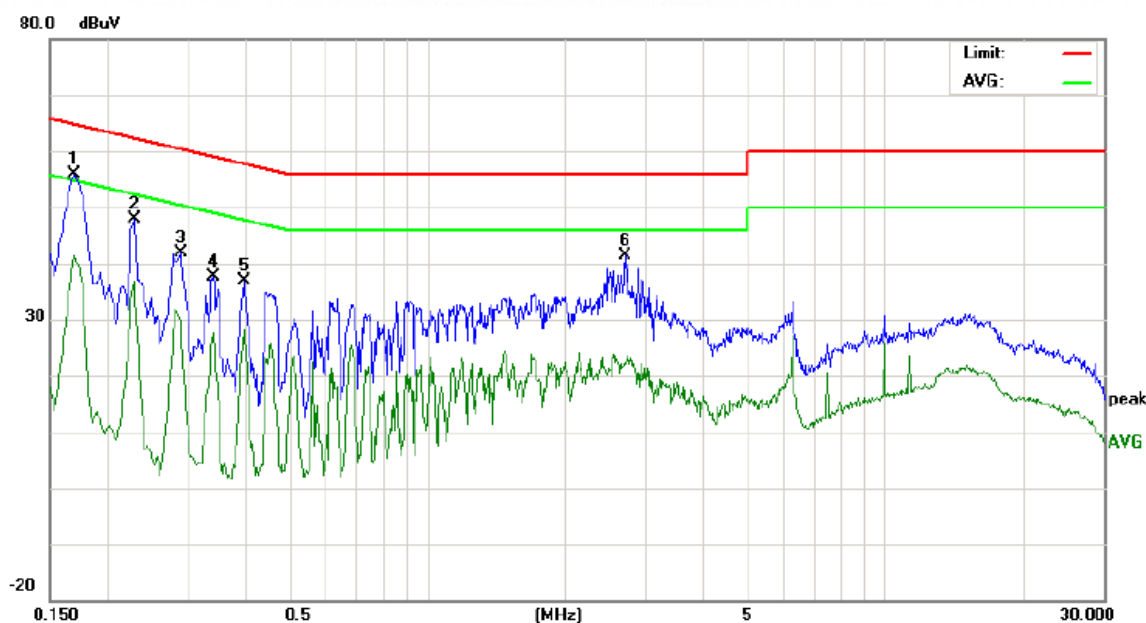
6.3. PROCEDURE OF CONDUCTED EMISSION TEST

a. The EUT was placed on a nonconductive table above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N.).

b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from EUT in all power lines in the full band.

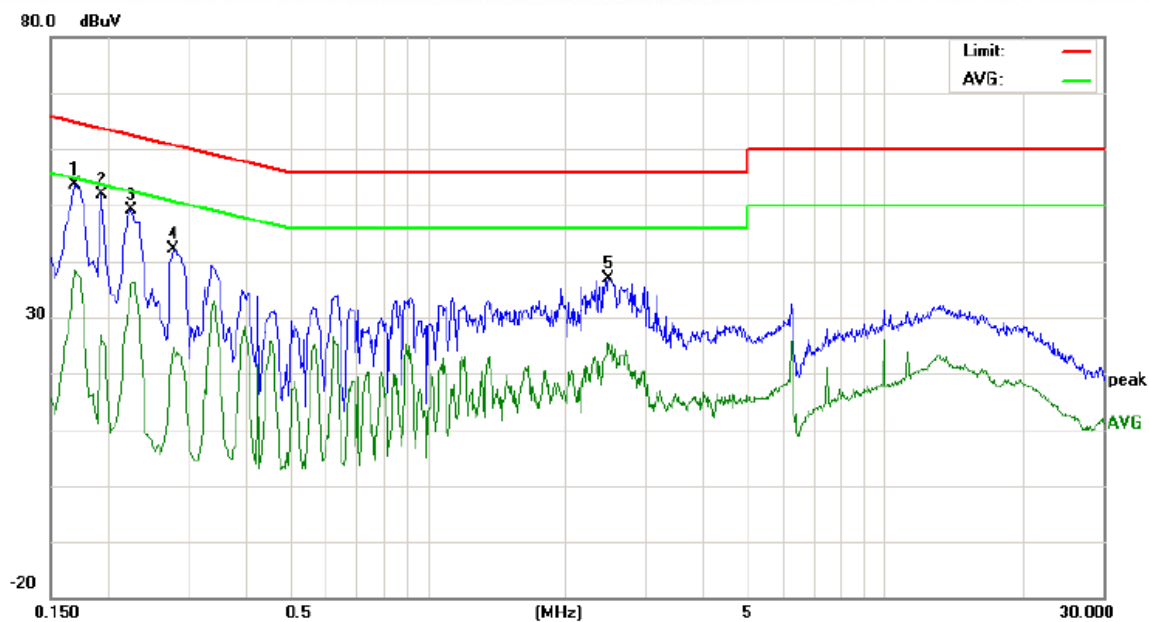
c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4. GRAPHS AND DATA



Site site #1 Phase: **L1** Temperature: 25
Limit: FCC Class B CE (QP) Power: AC 120V/60Hz Humidity: 56 %
EUT: ACRyan VEOLO SMART ANDROID HUB
M/N: ACR-VE91200
Mode: Ping
Note:

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1700	45.87		31.37	10.00	55.87		41.37	64.96	54.96	-9.09	-13.59	P	
2	0.2300	37.89		26.85	10.00	47.89		36.85	62.45	52.45	-14.56	-15.60	P	
3	0.2900	31.97		19.77	10.00	41.97		29.77	60.52	50.52	-18.55	-20.75	P	
4	0.3420	27.63		17.71	10.00	37.63		27.71	59.15	49.15	-21.52	-21.44	P	
5	0.3980	26.92		18.08	10.00	36.92		28.08	57.89	47.89	-20.97	-19.81	P	
6	2.7180	31.53		12.20	9.90	41.43		22.10	56.00	46.00	-14.57	-23.90	P	



Site site #1

Phase: **N**

Temperature: 25

Limit: FCC Class B CE (QP)

Power: AC 120V/60Hz

Humidity: 56 %

EUT: ACRyan VEOLO SMART ANDROID HUB

M/N: ACR-VE91200

Mode: Ping

Note:

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1700	43.64		28.34	10.00	53.64		38.34	64.96	54.96	-11.32	-16.62	P	
2	0.1940	41.89		16.88	10.00	51.89		26.88	63.86	53.86	-11.97	-26.98	P	
3	0.2260	39.14		25.93	10.00	49.14		35.93	62.59	52.59	-13.45	-16.66	P	
4	0.2779	32.13		14.70	10.00	42.13		24.70	60.88	50.88	-18.75	-26.18	P	
5	2.4940	27.09		15.23	9.90	36.99		25.13	56.00	46.00	-19.01	-20.87	P	

7. RADIATED EMISSION TEST

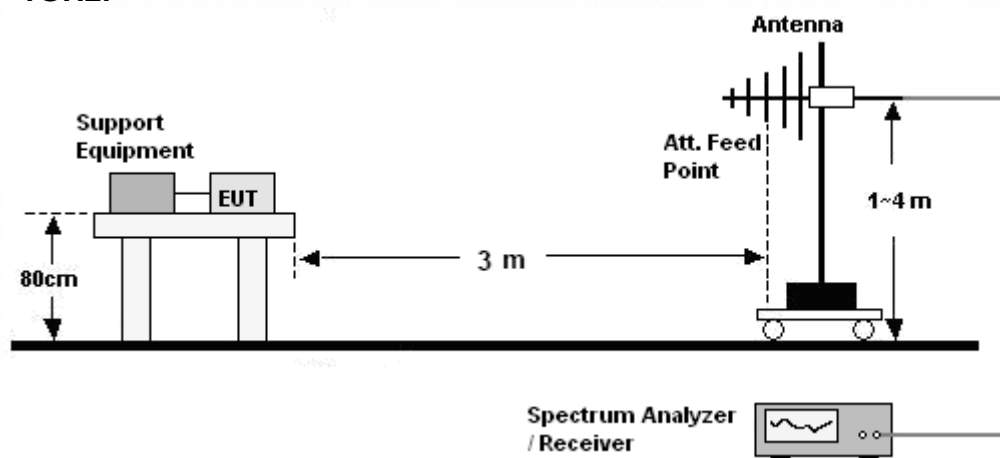
7.1. LIMITS

Frequency (MHz)	limits at 3m dB(μ V/m)
30-88	40.0
88-216	43.5
216-960	46.0
Above 960	54.0

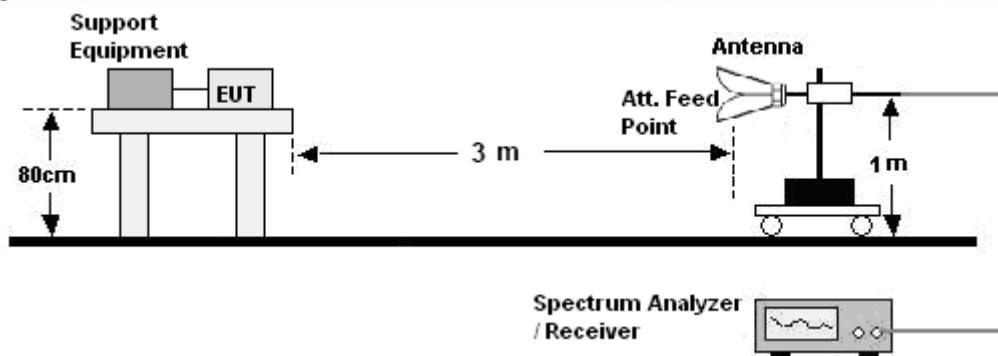
- NOTE:**
1. The lower limit shall apply at the transition frequency.
 2. The limits shown above are based on measuring equipment employing a CISPR quasi-peak detector function for frequencies below or equal to 1000MHz.
 3. The limits shown above are based on measuring equipment employing an average detector function for frequencies above 1000MHz.

7.2. BLOCK DIAGRAM OF TEST SETUP

30MHz ~ 1GHz:



Above 1GHz:



7.3. PROCEDURE OF RADIATED EMISSION TEST

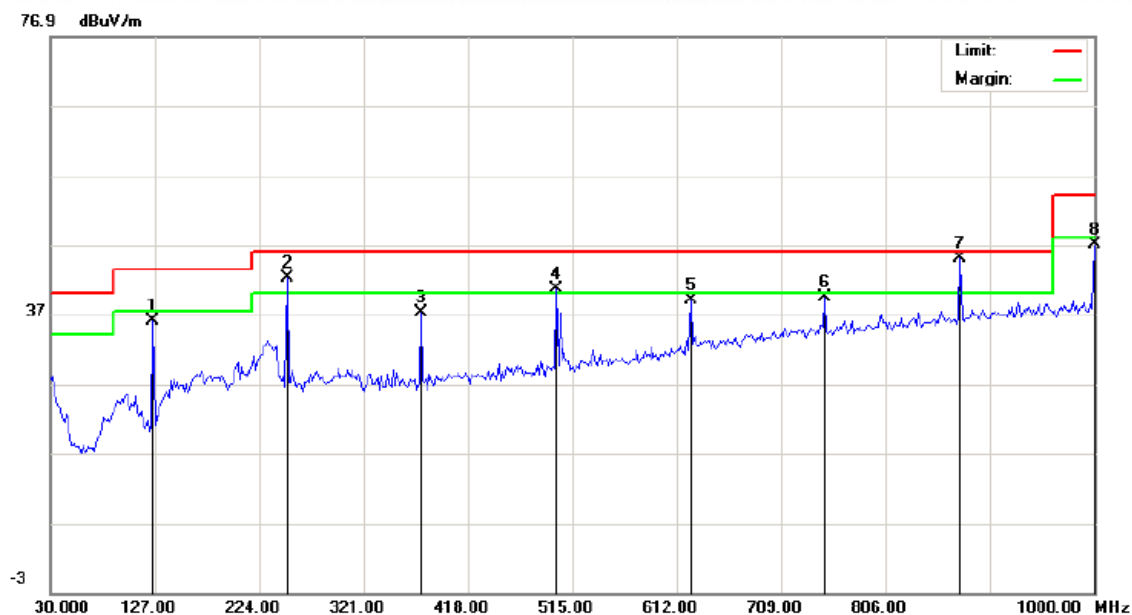
30MHz ~ 1GHz:

- a. The EUT was placed on the non-conductive turntable 0.8 m above the ground at a chamber.
- b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where EUT radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Above 1GHz:

- a. The EUT was placed on the non-conductive turntable 0.8 m above the ground at a chamber.
- b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where EUT radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

7.4. GRAPHS AND DATA



Site site #1

Polarization: **Horizontal**

Temperature: 25

Limit: FCC PART15 B

Power: AC 120V/60Hz

Humidity: 56 %

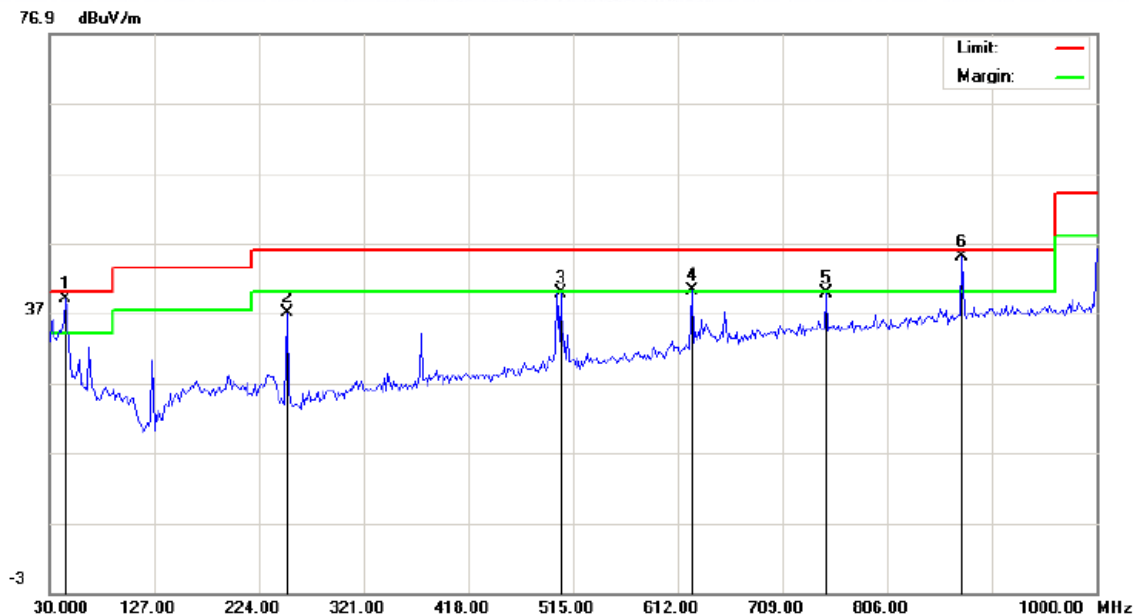
EUT: ACRyan VEOLO SMART ANDROID HUB

M/N: ACR-VE91200

Mode: Ping

Note:

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	125.3833	25.00			10.94	35.94			43.50		-7.56		P	
2	249.8667	27.25	26.75		14.90	42.15	41.65		46.00		-4.35		P	
3	374.3500	18.51			18.62	37.13			46.00		-8.87		P	
4	500.4500	19.86			20.75	40.61			46.00		-5.39		P	
5	624.9333	15.38			23.56	38.94			46.00		-7.06		P	
6	749.4167	13.31			26.09	39.40			46.00		-6.60		P	
7	875.5167	17.21	16.20		27.74	44.95	43.94		46.00		-2.06		P	
8	1000.000	18.31			28.75	47.06			54.00		-6.94		P	



Site site #1 Polarization: **Vertical** Temperature: 25
Limit: FCC PART15 B Power: AC 120V/60Hz Humidity: 56 %
EUT: ACRyan VEOLO SMART ANDROID HUB
M/N: ACR-VE91200
Mode: Ping
Note:

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	44.5500	26.82	23.39		12.24	39.06	35.63		40.00		-4.37		P	
2	249.8667	22.19			14.90	37.09			46.00		-8.91		P	
3	503.6833	18.99			20.82	39.81			46.00		-6.19		P	
4	624.9333	16.61			23.56	40.17			46.00		-5.83		P	
5	749.4167	13.81			26.09	39.90			46.00		-6.10		P	
6	875.5167	17.21	16.23		27.74	44.95	43.97		46.00		-2.03		P	

Remark:

The test data above 1GHz are much lower than the limit, and they are not recorded.

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

CONDUCTED EMISSION TEST SETUP



RADIATED EMISSION TEST SETUP





APPENDIX 2 PHOTOGRAPHS OF EUT



View of EUT-1



View of EUT-2



View of EUT-3



View of EUT-4



View of EUT-5



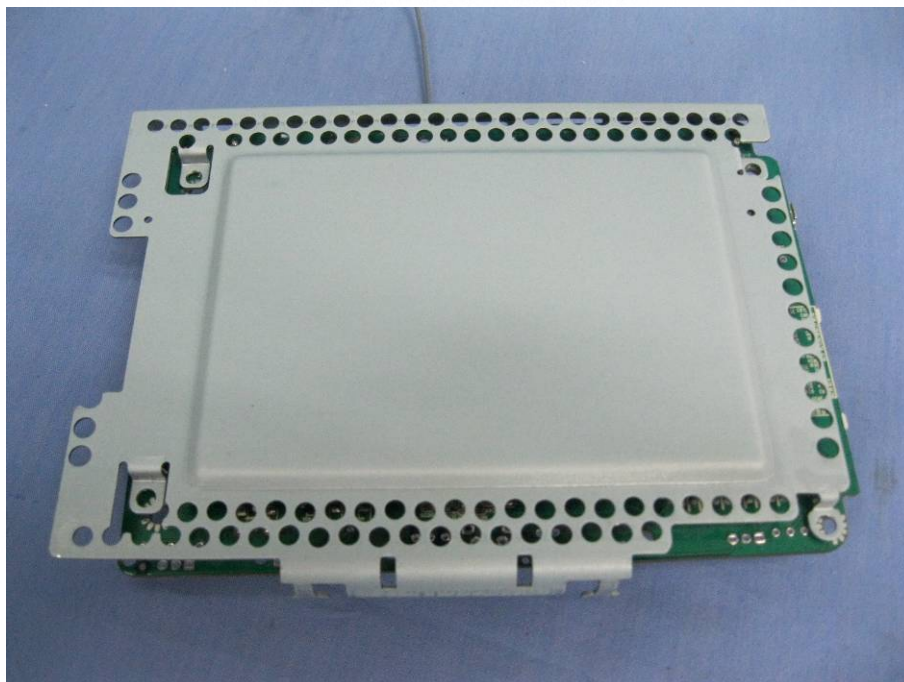
View of EUT-6



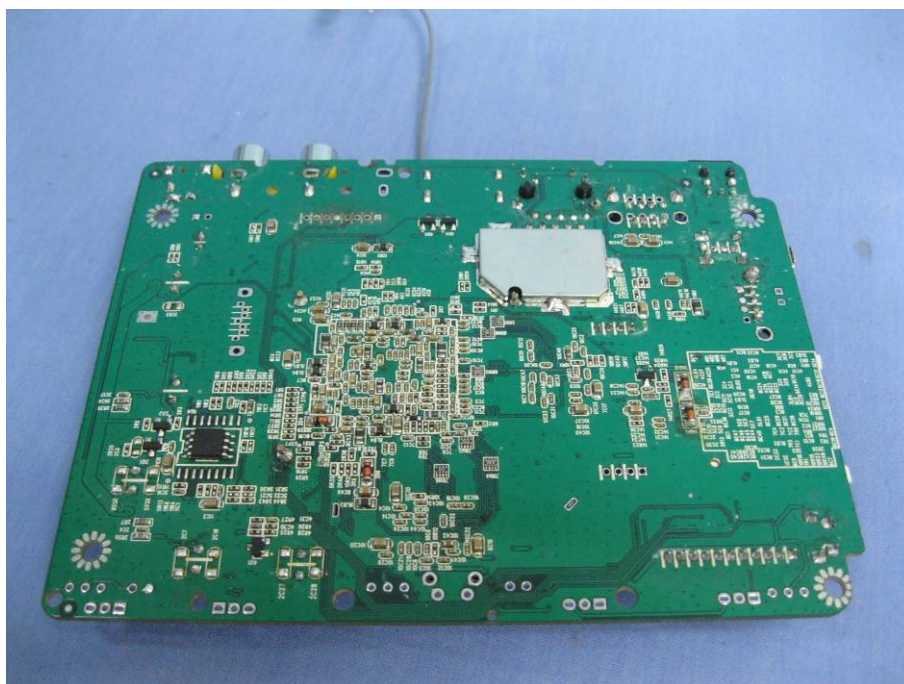
View of EUT-7



View of EUT-8



View of EUT-9



View of EUT-10

----End of the report----