



BUREAU  
VERITAS

Test Report No.: FV170607W003



Test Lab  
Cert 2951.01

## EMC TEST REPORT

Applicant:	Guangzhou Robustel Technologies Co., Limited
Address:	3rd Floor, Building F, Kehui Park, No.95, Daguan Road, Tianhe District, Guangzhou 510660, China

Manufacturer or Supplier	Guangzhou Robustel Technologies Co., Limited
Address	3rd Floor, Building F, Kehui Park, No.95, Daguan Road, Tianhe District, Guangzhou 510660, China
Product	Industrial Dual SIM Cellular VPN Router
Brand Name	Robustel
Model Name	R3000-L4L
FCC ID	2AAJGR3KL
Date of tests	Jun. 08, 2017 ~ Jun. 20, 2017

The submitted sample of the above equipment has been tested for according to the requirements of the following standards:

**FCC Part 15, Subpart B, Class B**  
 **ANSI C63.4:2014**

**CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

Issued by Harry Li Engineer / Mobile Department	Approved by Sam Tung Manager / Mobile Department

Date: Jun. 21, 2017

Date: Jun. 21, 2017

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.



BUREAU  
VERITAS

Test Report No.: FV170607W003

## TABLE OF CONTENTS

<b>RELEASE CONTROL RECORD .....</b>	<b>3</b>
<b>1 GENERAL INFORMATION .....</b>	<b>4</b>
1.1 GENERAL DESCRIPTION OF EUT.....	4
1.2 SUMMARY OF TEST RESULTS.....	5
1.3 MEASUREMENT UNCERTAINTY .....	5
1.4 DESCRIPTION OF TEST MODES.....	6
1.5 DESCRIPTION OF SUPPORT UNITS.....	7
1.6 CONFIGURATION OF SYSTEM UNDER TEST.....	8
<b>2 EMISSION TEST .....</b>	<b>9</b>
2.1 CONDUCTED EMISSION MEASUREMENT .....	9
2.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT .....	9
2.1.2 TEST INSTRUMENTS.....	9
2.1.3 TEST PROCEDURES .....	10
2.1.4 DEVIATION FROM TEST STANDARD .....	10
2.1.5 TEST SETUP .....	11
2.1.6 EUT OPERATING CONDITIONS .....	11
2.1.7 TEST RESULTS .....	12
2.2 RADIATED EMISSION MEASUREMENT .....	14
2.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT .....	14
2.2.2 TEST INSTRUMENTS .....	16
2.2.3 TEST PROCEDURE .....	17
2.2.4 DEVIATION FROM TEST STANDARD .....	18
2.2.5 TEST SETUP .....	19
2.2.6 EUT OPERATING CONDITIONS.....	19
2.2.7 TEST RESULTS .....	20
<b>3 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB .....</b>	<b>24</b>



**Test Report No.: FV170607W003**

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FV170607W003	Original release	Jun. 21, 2017



BUREAU  
VERITAS

Test Report No.: FV170607W003

## 1 GENERAL INFORMATION

### 1.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Industrial Dual SIM Cellular VPN Router	
BRAND NAME	Robustel	
MODEL NAME	R3000-L4L	
ADDITIONAL MODEL	R3000-L3P, R3000-L3H	
NOMINAL VOLTAGE	12.0Vdc (adapter or host equipment)	
MODULATION TYPE	LTE	QPSK/16QAM
OPERATING FREQUENCY	LTE	1710.7MHz ~ 1754.3MHz (FOR LTE Band4) 777MHz ~ 787MHz (FOR LTE Band13)
HW VERSION	V1.1.0	
SW VERSION	V2.9.1	
I/O PORTS	Refer to user's manual	
CABLE	N/A	
ACCESSORY DEVICES	Refer to note as below	

**NOTE:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. Additional models R3000-L3P, R3000-L3H are identical with the test model R3000-L4L except the model NO. for marketing purpose.
3. The EUT was powered by the following adapter:

ADAPTER	
BRAND:	N/A
MODEL:	SK03T-1200150U
INPUT:	AC 100-240V, 600mA
OUTPUT:	DC 12V, 1500mA

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.



BUREAU  
VERITAS

Test Report No.: FV170607W003

## 1.2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart B			
Standard Section	Test Item	Result	Remark
FCC Part 15, Subpart B, Class B ANSI C63.4:2014	Conducted Test	PASS	Meets limits minimum passing margin is -15.03dB at 0.416000MHz.
	Radiated Emission Test (30MHz ~ 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -3.02dB at 837.04MHz
	Radiated Emission Test (Above 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -15.97dB at 3150MHz

## 1.3 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.

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz ~ 30MHz	+/-2.70dB
Radiated emissions	30MHz ~ 1GHz	+/-4.06dB
	1GHz ~ 18GHz	+/-4.58dB



BUREAU  
VERITAS

Test Report No.: FV170607W003

## 1.4 DESCRIPTION OF TEST MODES

Test Mode	Test Condition
<b>Radiated emission test</b>	
1	LTE B4 Idle+ Adapter+ LAN port Link
2	LTE B13 Idle+ Adapter+ LAN port Link
<b>Conducted emission test</b>	
1	LTE B4 Idle+ Adapter+ LAN port Link
2	LTE B13 Idle+ Adapter+ LAN port Link

**NOTE:**

1. For conducted emission test, test mode 1 was the worst case and only this mode was presented in this report.
2. For radiated emission test, test mode 1 was the worst case and only this mode was presented in this report.



BUREAU  
VERITAS

Test Report No.: FV170607W003

## 1.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

### FOR EMISSION TESTS

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Network Cable	N/A	N/A	N/A	N/A
2	Notebook	DELL	E6420	9H12FS1	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	N/A

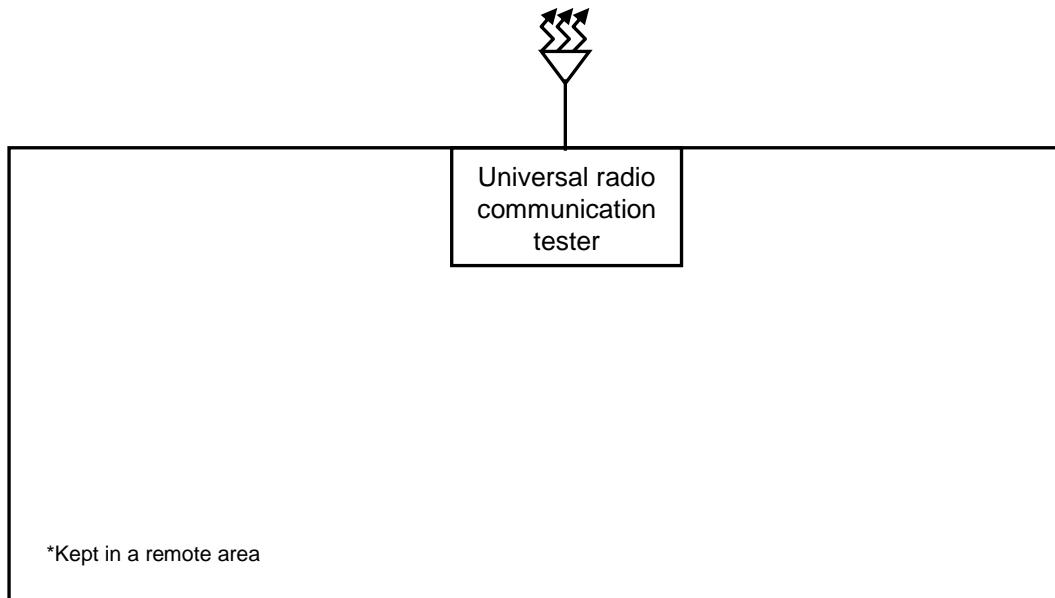
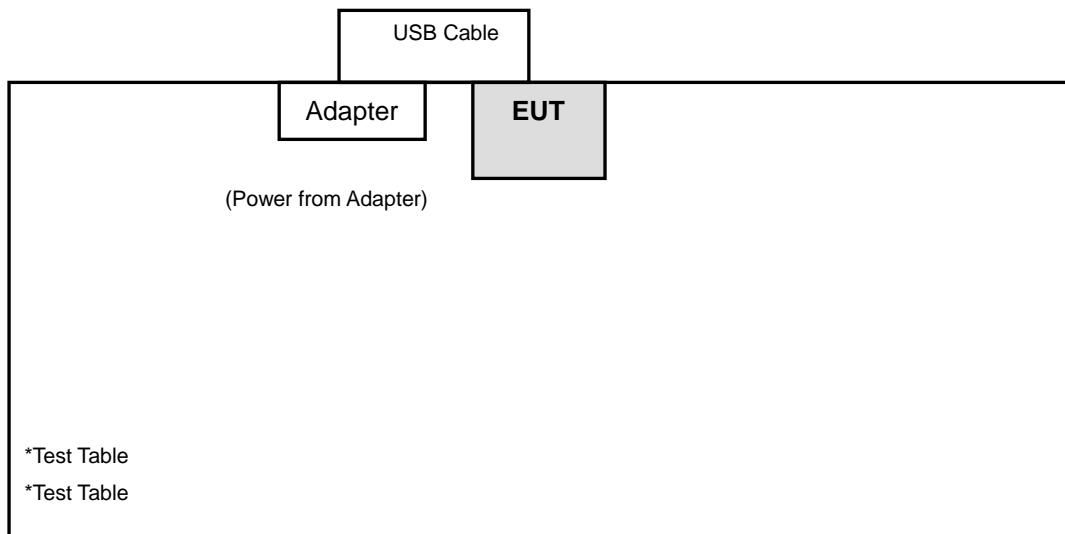


BUREAU  
VERITAS

Test Report No.: FV170607W003

## 1.6 CONFIGURATION OF SYSTEM UNDER TEST

### Test configuration





BUREAU  
VERITAS

Test Report No.: FV170607W003

## 2 EMISSION TEST

### 2.1 CONDUCTED EMISSION MEASUREMENT

#### 2.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107)

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	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 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 2.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Apr. 01,17	Mar. 31,18
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Mar. 03,17	Mar. 02,18
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Apr. 01,17	Mar. 31,18
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Nov. 25,16	Nov. 24,17
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A	N/A

**NOTE:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRRG/CHINA and NIM/CHINA.
2. The test was performed in Dongguan Shielded Room 553.
3. The FCC Site Registration No. is 502831.



## 2.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

## 2.1.4 DEVIATION FROM TEST STANDARD

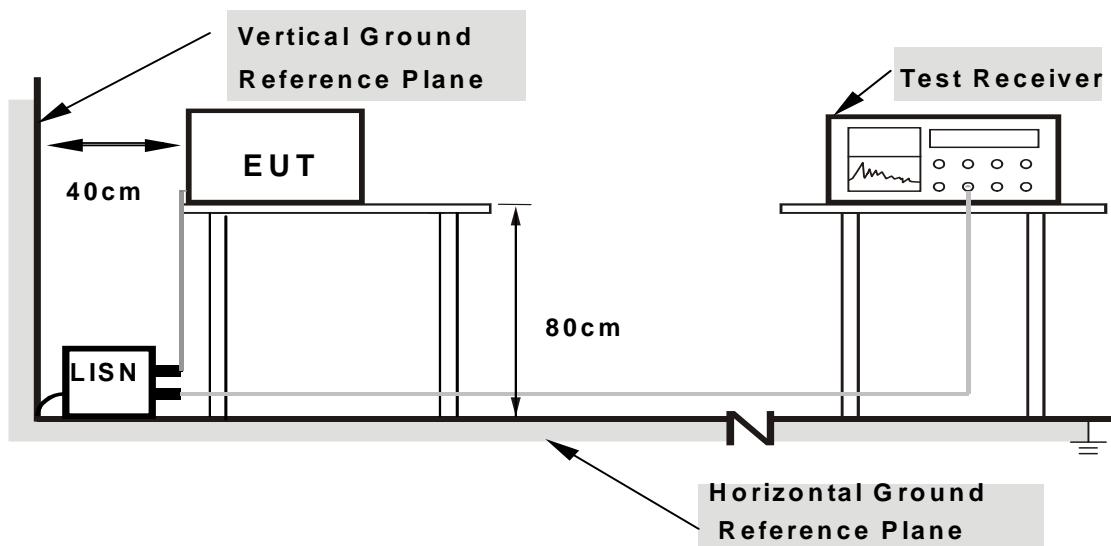
No deviation.



BUREAU  
VERITAS

Test Report No.: FV170607W003

## 2.1.5 TEST SETUP



**Note:**

1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

## 2.1.6 EUT OPERATING CONDITIONS

- a. Turned on the power and connected of all equipment.
- b. EUT was operated according to the use type described in the manufacturer's specifications or the user's manual.



BUREAU  
VERITAS

Test Report No.: FV170607W003

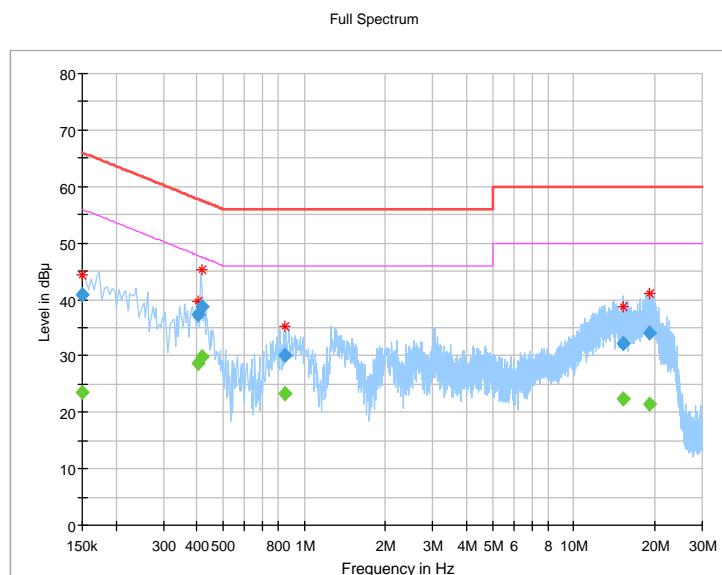
## 2.1.7 TEST RESULTS

TEST VOLTAGE	DC 12V From Adapter Input 120 Vac, 60 Hz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	24deg. C, 55RH	TESTED BY	Eric Shi

Frequency (MHz)	QuasiPeak (dB <sup>1/2</sup> IV)	CAverage (dB <sup>1/2</sup> IV)	Limit (dB <sup>1/2</sup> IV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	23.55	56.00	-32.45	L1	ON	9.6
0.150000	40.86	---	66.00	-25.14	L1	ON	9.6
0.404000	37.33	---	57.77	-20.44	L1	ON	9.7
0.404000	---	28.59	47.77	-19.18	L1	ON	9.7
0.416000	38.63	---	57.53	-18.90	L1	ON	9.7
0.416000	---	29.78	47.53	-17.75	L1	ON	9.7
0.844000	---	23.38	46.00	-22.62	L1	ON	9.7
0.844000	30.13	---	56.00	-25.87	L1	ON	9.7
15.344000	---	22.44	50.00	-27.56	L1	ON	9.9
15.344000	32.25	---	60.00	-27.75	L1	ON	9.9
19.068000	---	21.45	50.00	-28.55	L1	ON	9.9
19.068000	34.04	---	60.00	-25.96	L1	ON	9.9

**REMARKS:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



BUREAU  
VERITAS

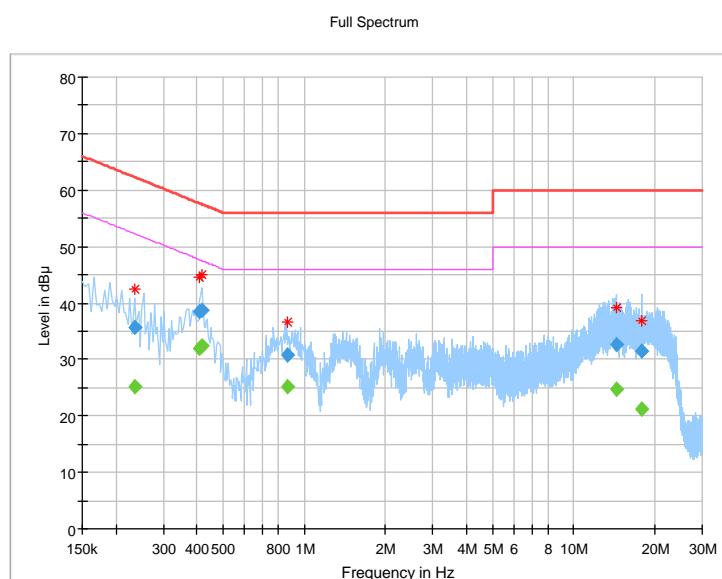
Test Report No.: FV170607W003

TEST VOLTAGE	DC 12V From Adapter Input 120 Vac, 60 Hz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	24deg. C, 55RH	TESTED BY	Eric Shi

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.236000	---	25.29	52.24	-26.95	N	ON	9.9
0.236000	35.66	---	62.24	-26.58	N	ON	9.9
0.408000	38.43	---	57.69	-19.26	N	ON	10.1
0.408000	---	31.95	47.69	-15.74	N	ON	10.1
0.416000	38.67	---	57.53	-18.86	N	ON	10.1
<b>0.416000</b>	---	<b>32.50</b>	<b>47.53</b>	<b>-15.03</b>	<b>N</b>	<b>ON</b>	<b>10.1</b>
0.872000	---	25.29	46.00	-20.71	N	ON	9.9
0.872000	30.89	---	56.00	-25.11	N	ON	9.9
14.444000	---	24.72	50.00	-25.28	N	ON	9.9
14.444000	32.67	---	60.00	-27.33	N	ON	9.9
17.832000	---	21.34	50.00	-28.66	N	ON	10.0
17.832000	31.59	---	60.00	-28.41	N	ON	10.0

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.





BUREAU  
VERITAS

Test Report No.: FV170607W003

## 2.2 RADIATED EMISSION MEASUREMENT

### 2.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

#### TEST STANDARD: FCC Part 15, Subpart B (Section: 15.109)

Emissions radiated outside of the specified bands, shall be according to the general radiated limits as following:

Radiated Emissions Limits at 10 meters (dB $\mu$ V/m)				
Frequencies (MHz)	FCC 15B/ ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	39	29.5		
88-216	43.5	33.1	40	30
216-230				
230-960	46.4	35.6		
960-1000	49.5	43.5	47	37
1000-3000	Avg: 49.5	Avg: 43.5	Not defined	Not defined
3000+	Peak: 69.5	Peak: 63.5	Not defined	Not defined

Radiated Emissions Limits at 3 meters (dB $\mu$ V/m)				
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	49.5	40		
88-216	54	43.5	50.5	40.5
216-230				
230-960	56.9	46		
960-1000	60	54	57.5	47.5
1000-3000	Avg: 60	Avg: 54	Avg: 56 Peak: 76	Avg: 50 Peak: 70
3000+	Peak: 80	Peak: 74	Avg: 60 Peak: 80	Avg: 54 Peak: 74



BUREAU  
VERITAS

Test Report No.: FV170607W003

### Frequency Range (For unintentional radiators)

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5 <sup>th</sup> harmonic of the highest frequency or 40GHz, whichever is lower

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB<sub>u</sub>V/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
4. QP detector shall be applied if not specified.



BUREAU  
VERITAS

Test Report No.: FV170607W003

## 2.2.2 TEST INSTRUMENTS

### Frequency range below 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	100962	Feb. 20, 17	Feb. 19, 18
EMI Test Receiver	Rohde&Schwarz	ESCI	101418	Feb. 20, 17	Feb. 19, 18
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-554	Dec. 17, 16	Dec. 16, 17
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-555	Nov. 13, 16	Nov. 12, 17
Signal Amplifier	Agilent	8447D	2944A10488	Jun. 25, 16	Jun. 24, 17
Signal Amplifier	Agilent	8447D	2944A11174	Jun. 25, 16	Jun. 24, 17
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8.8m	NSEMC006	Mar. 12, 16	Mar. 11, 18
Test Software	ADT	ADT_Radiated_V8.7.x	N/A	N/A	N/A

### Frequency range above 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	ETS-Lindgren	3117	00085519	Dec. 30, 15	Dec. 29, 17
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170242	Mar. 12, 17	Mar. 11, 18
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101003	Apr. 01, 17	Mar. 31, 18
Broadband Preamplifier	SCHWARZBECK	BBV9718	266	Mar. 21, 17	Mar. 20, 18
Pre-Amplifier (100MHz-26.5GHz)	EMCI	EMC 012645	980077	Apr. 19, 17	Apr. 18, 18
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04, 16	Nov. 03, 17

**NOTE:** 1. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.  
2. The test was performed in 10 Chamber.  
3. The FCC Site Registration No. is 502831.



BUREAU  
VERITAS

Test Report No.: FV170607W003

## 2.2.3 TEST PROCEDURE

### <Frequency Range below 1GHz>

The basic test procedure was in accordance with ANSI C63.4:2014 (section 12).

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.

#### NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier);
4. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain(dB) (if the raw value contains the amplifier).
5. Margin value = Emission level – Limit value.



BUREAU  
VERITAS

Test Report No.: FV170607W003

### <Frequency Range above 1GHz>

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter fully-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. The bore sight should be used during the test above 1GHz.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz

#### NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Average detection (AV) at frequency above 1GHz.
3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the receiver antenna.
4. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
5. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier);
6. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain(dB) (if the raw value contains the amplifier)
7. Margin value = Emission level – Limit value.

### 2.2.4 DEVIATION FROM TEST STANDARD

No deviation.

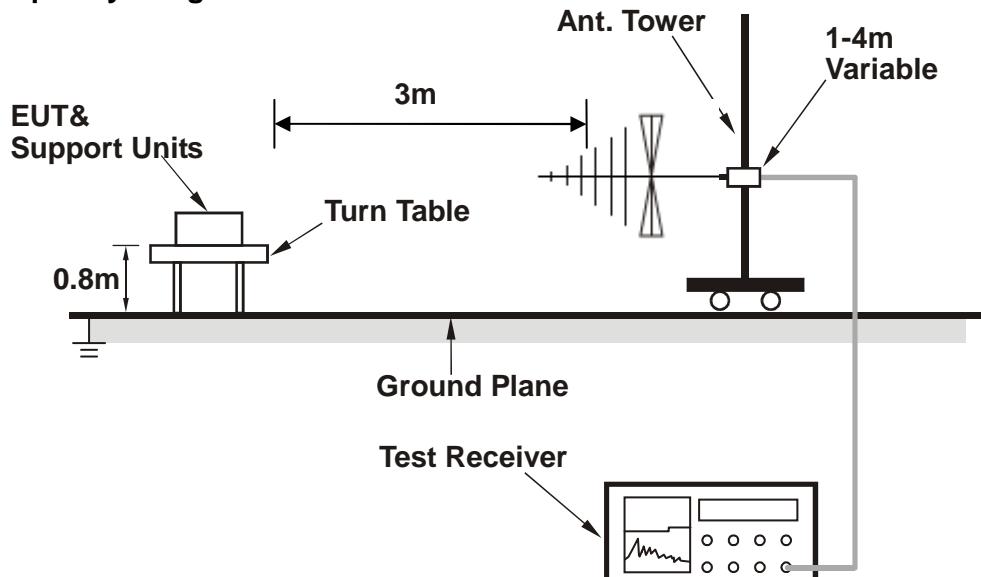


BUREAU  
VERITAS

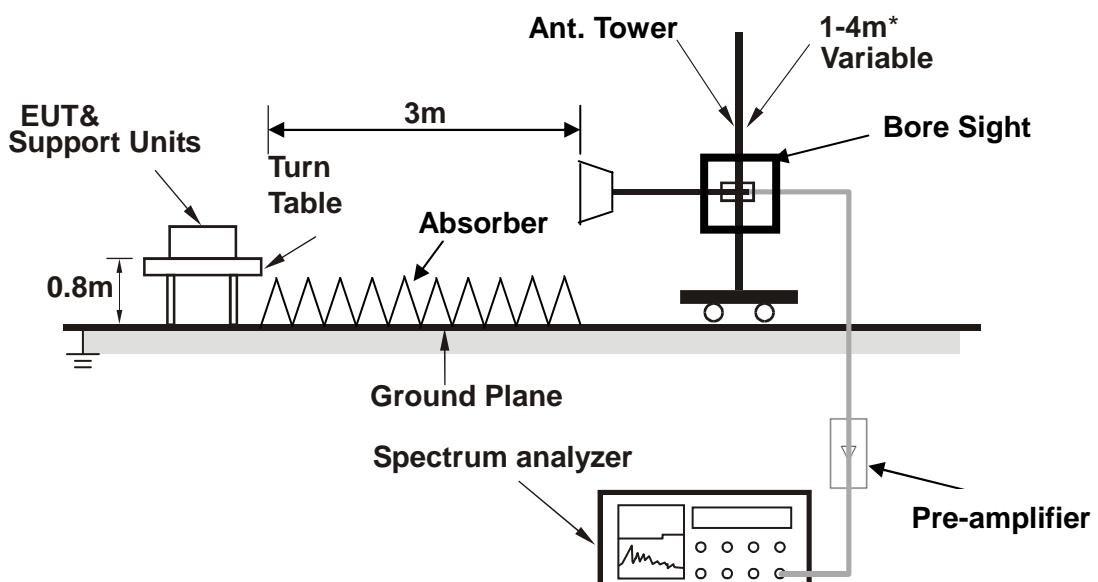
Test Report No.: FV170607W003

## 2.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



\* : depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

## 2.2.6 EUT OPERATING CONDITIONS

Same as item 2.1.6.



BUREAU  
VERITAS

Test Report No.: FV170607W003

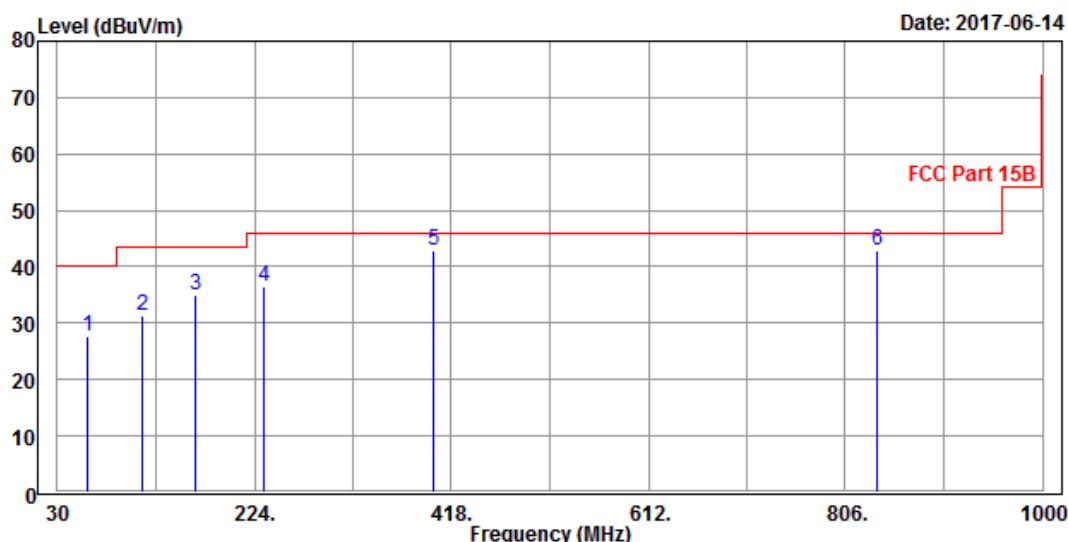
## 2.2.7 TEST RESULTS

TEST VOLTAGE	DC 12V From Adapter Input 120 Vac, 60 Hz	FREQUENCY RANGE	30-1000 MHz
ENVIRONMENTAL CONDITIONS	24deg. C, 58 %RH	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Quasi-Peak, 120 kHz
TESTED BY	Simon Yang		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
60.07	27.67	57.41	40	-12.33	6.4	1.18	37.32	100	35	QP
113.42	31.42	59.22	43.5	-12.08	7.53	1.63	36.96	100	240	QP
165.8	35.12	59.77	43.5	-8.38	10.11	1.97	36.73	100	98	QP
232.73	36.35	58.92	46	-9.65	11.61	2.35	36.53	100	330	QP
399.57	42.83	59.22	46	-3.17	17.18	3.15	36.72	100	155	QP
<b>837.04</b>	<b>42.98</b>	<b>52.81</b>	<b>46</b>	<b>-3.02</b>	<b>23</b>	<b>4.79</b>	<b>37.62</b>	<b>100</b>	<b>110</b>	<b>QP</b>

**REMARKS:**

1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30MHz to 1000MHz.
4. Only emissions significantly above equipment noise floor are reported.





BUREAU  
VERITAS

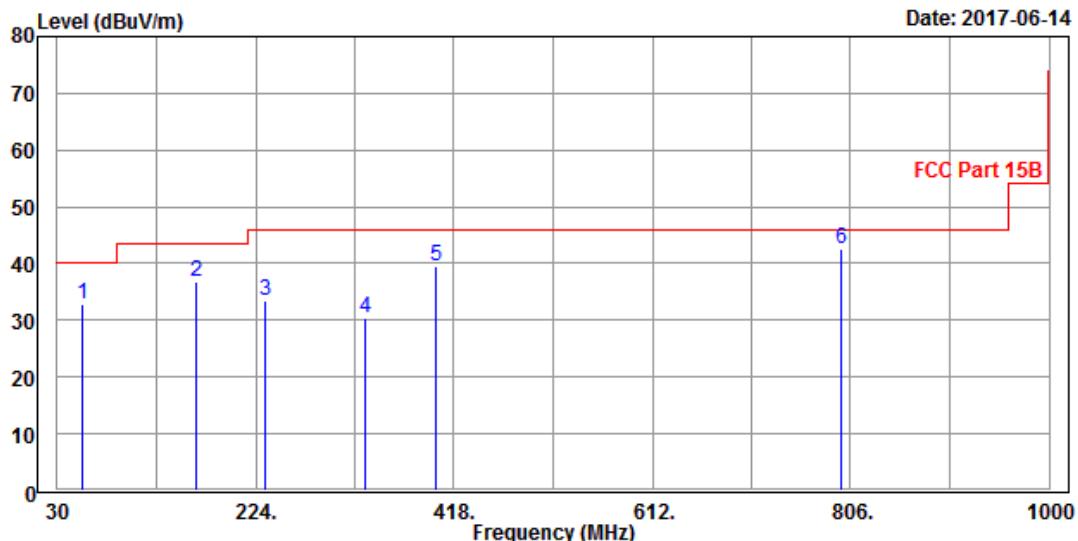
Test Report No.: FV170607W003

TEST VOLTAGE	DC 12V From Adapter Input 120 Vac, 60 Hz	FREQUENCY RANGE	30-1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 57% RH	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Quasi-Peak, 120 kHz
TESTED BY	Simon Yang		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
55.22	32.94	62.71	40	-7.06	6.45	1.13	37.35	100	50	QP
165.8	36.93	61.58	43.5	-6.57	10.11	1.97	36.73	100	210	QP
232.73	33.32	55.89	46	-12.68	11.61	2.35	36.53	100	85	QP
331.67	30.53	49.91	46	-15.47	14.33	2.86	36.57	100	265	QP
399.57	39.43	55.82	46	-6.57	17.18	3.15	36.72	100	320	QP
797.27	42.59	52.53	46	-3.41	23	4.67	37.61	100	135	QP

**REMARKS:**

1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30MHz to 1000MHz.
4. Only emissions significantly above equipment noise floor are reported.





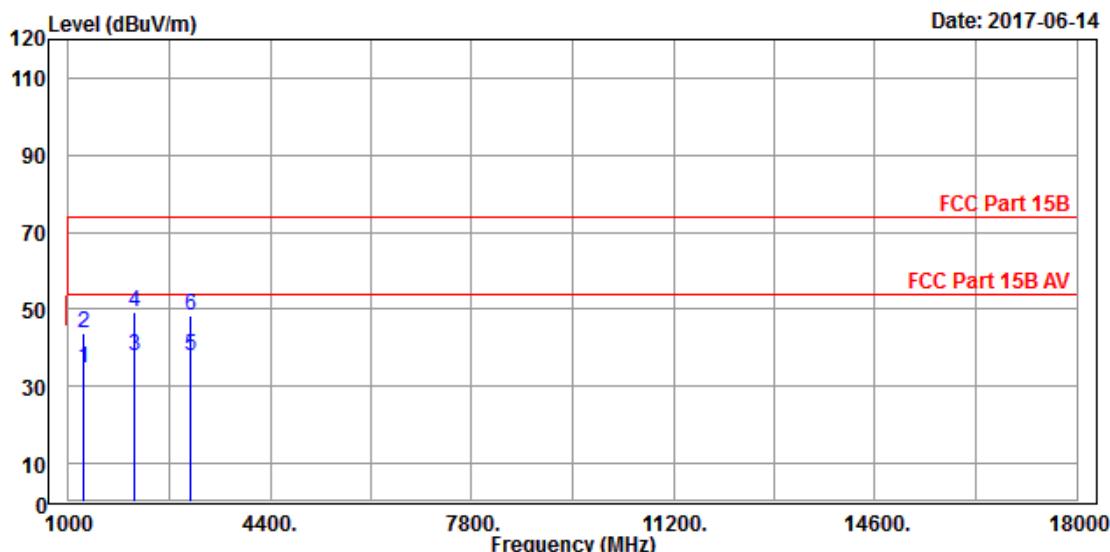
BUREAU  
VERITAS

Test Report No.: FV170607W003

TEST VOLTAGE	DC 12V From Adapter Input 120 Vac, 60 Hz	FREQUENCY RANGE	1-18 GHz
ENVIRONMENTAL CONDITIONS	20deg. C, 58 %RH	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Peak/Average, 1 MHz
TESTED BY	Simon Yang		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
1250	34.64	48.31	54	-19.36	28.95	5.74	48.36	100	48	Average
1250	43.94	57.61	74	-30.06	28.95	5.74	48.36	100	48	Peak
2115	37.68	46.35	54	-16.32	32.01	7.66	48.34	100	110	Average
2115	49.17	57.84	74	-24.83	32.01	7.66	48.34	100	110	Peak
3050	37.99	44.14	54	-16.01	32.91	9.28	48.34	100	215	Average
3050	48.17	54.32	74	-25.83	32.91	9.28	48.34	100	215	Peak

**REMARKS:** 1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.  
2. Negative sign (-) in the margin column signify levels below the limit.  
3. Frequency range scanned: 1GHz to 18GHz.  
4. Only emissions significantly above equipment noise floor are reported.





BUREAU  
VERITAS

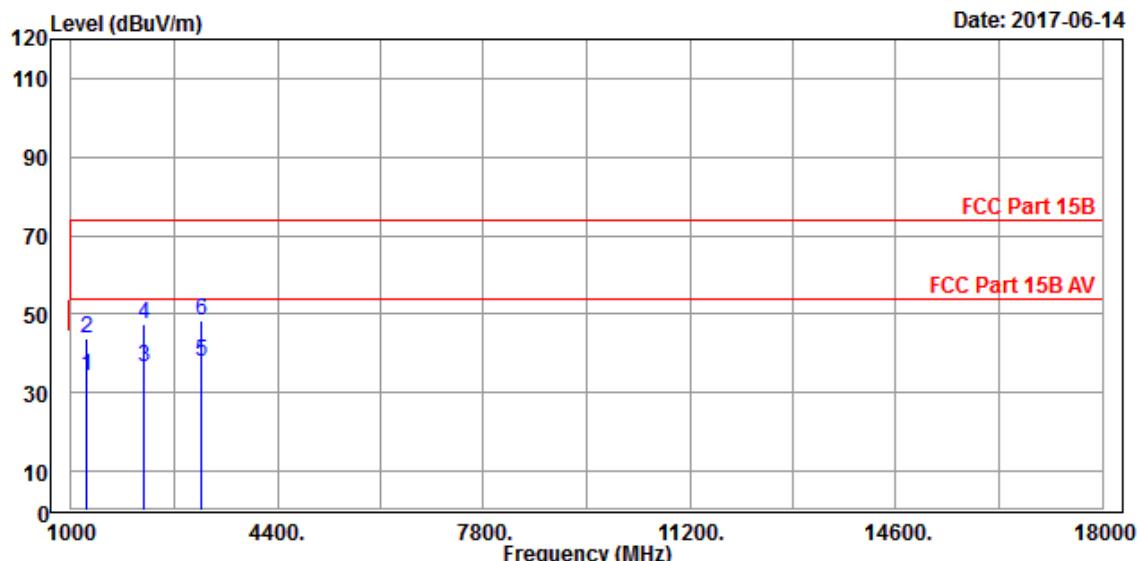
Test Report No.: FV170607W003

TEST VOLTAGE	DC 12V From Adapter Input 120 Vac, 60 Hz	FREQUENCY RANGE	1-18 GHz
ENVIRONMENTAL CONDITIONS	20deg. C, 58 %RH	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Peak/Average, 1 MHz
TESTED BY	Simon Yang		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
1260	34.22	47.88	54	-19.78	28.94	5.76	48.36	100	120	Average
1260	43.76	57.42	74	-30.24	28.94	5.76	48.36	100	120	Peak
2200	36.69	45.11	54	-17.31	32.1	7.81	48.33	100	80	Average
2200	47.62	56.04	74	-26.38	32.1	7.81	48.33	100	80	Peak
<b>3150</b>	<b>38.03</b>	<b>44.02</b>	<b>54</b>	<b>-15.97</b>	<b>32.93</b>	<b>9.43</b>	<b>48.35</b>	<b>100</b>	<b>215</b>	<b>Average</b>
3150	48.26	54.25	74	-25.74	32.93	9.43	48.35	100	215	Peak

**REMARKS:**

1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 1GHz to 18GHz.
4. Only emissions significantly above equipment noise floor are reported.





**BUREAU  
VERITAS** Test Report No.: FV170607W003

### **3 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No any modifications were made to the EUT by the lab during the test.

**---END---**