FCC TEST REPORT

47 CFR FCC Part 15 Subpart B

Report Reference No.....:	**JT.SY-06-160100102**	
FCC ID.....:	**XN3-QTS-25**	
Compiled by (position+printed name+signature)..:	File administrators Kevin Liu	kevin . Liu
Supervised by (position+printed name+signature)..:	Project Engineer Kevin Liu	kevin . Liu
Approved by (position+printed name+signature)..:	RF Manager Eric Wang	Eric Wang
Date of issue.....:	March 04, 2016	

Representative Laboratory Name .:	**SHENZHEN YIDAJIETONG TEST TECHNOLOGY CO., LTD**
Address .....:	No.12 Building Shangsha, Innovation & Technology Park, Futian District, Shenzhen, P.R.China
Testing Laboratory Name .....:	**CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.**
Address .....:	Electronic Testing Building, Shahe Road，Xili, Nanshan District,Shenzhen, 518055, P. R. China
Applicant's name.....:	**Mercury Networks, LLC**
Address .....:	6714 Pointe Inverness Way, Suite 230, Fort Wayne, Inited States
Test specification .....**:**	
Standard .....:	**47 CFR FCC Part 15 Subpart B - Unintentional Radiators** **ANSI C63.4: 2009**
TRF Originator.....:	SHENZHEN YIDAJIETONG TEST TECHNOLOGY CO., LTD

Test item description .....:	QTS-25 / AIRSTREAM 4000
Trade Mark .....:	/
Manufacturer.....:	**KZ BroadBand Technologies, Ltd.**
Model/Type reference.....:	050-00525-XXX
Listed Models .....:	N/A
Rating .....:	DC 48V
Hardware version .....:	V3.2
Software version .....:	MERCURY_AS4000D_F25_ODU_V1.4.3P5_R1764
Result.....:	**PASS**

TEST REPORT

Test Report No. :	JT.SY-06-160100102	March 04, 2016 Date of issue

Equipment under Test	:	QTS-25 / AIRSTREAM 4000
Model /Type	:	050-00525-XXX
Listed Models	:	N/A
Applicant	:	**Mercury Networks, LLC**
Address	:	6714 Pointe Inverness Way, Suite 230, Fort Wayne, Inited States
Manufacturer		**KZ BroadBand Technologies, Ltd.**
Address	:	Rm604, East Block, Shengtang Bldg., No.1, Tairan 9 Rd., Chegongmiao, Futian District, Shenzhen, China

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

47 CFR FCC Part 15 Subpart B - Unintentional Radiators

ANSI C63.4: 2009 – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the
Range of 9 kHz to 40GHz

2 . SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Dec 27, 2015
Testing commenced on	:	Dec 27, 2015
Testing concluded on	:	March 04, 2016

2.2. Product Description

The **Mercury Networks, LLC**'s Model: 050-00525-XXX or the "EUT" as referred to in this report; more general information as follows, for more details, refer to the user's manual of the EUT.

Name of EUT	QTS-25 / AIRSTREAM 4000
Model Number	050-00525-XXX
Modilation Type	QPSK,16QAM
Channel Bandwidth	7MHz/8.75MHz/10MHz
Antenna Type	External
Maximum Operate frequency	<512MHz
Operation Frequency Band	2500-2690MHz

2.3. Equipment under Test

Power supply system utilised

Power supply voltage	:	○	120V / 60 Hz	○	115V / 60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 48V

2.4. Short description of the Equipment under Test (EUT)

2.4.1 General Description

050-00525-XXX is WiMax terminal devices.

NOTE: Unless otherwise noted in the report, the functional boards installed in the units shall be selected from the below list, but not means all the functional boards listed below shall be installed in one unit.

2.4.2 Test Environments

NOTE: The values used in the test report maybe stringent than the declared.

Environment Parameter	Selected Values During Tests		
NTNV	Temperature	Voltage	Relative Humidity
	Ambient	48VDC	Ambient

2.5. EUT operation mode

The EUT has been tested under typical operating condition.

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: XN3-QTS-25** filing to comply with the FCC Part 15, Subpart B Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

2.8. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

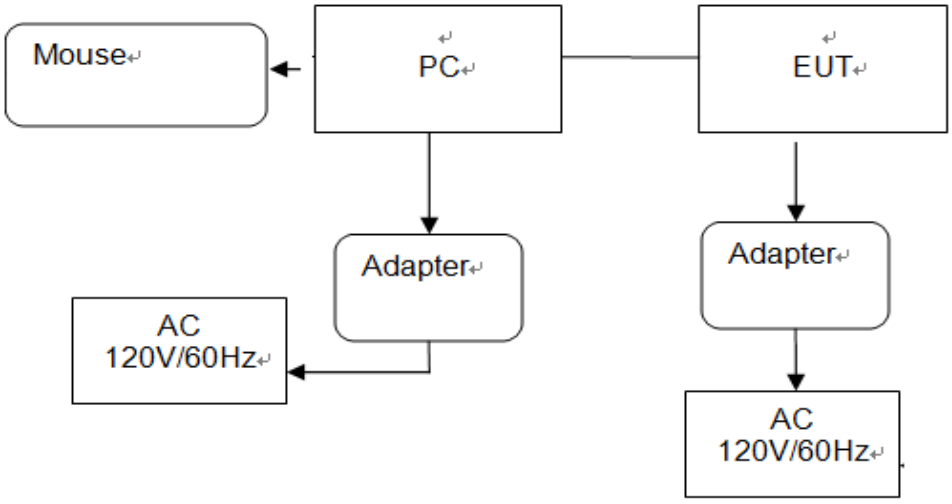
● - supplied by the manufacturer

○ - supplied by the lab

○	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/
○	Multimeter	Manufacturer :	/
		Model No. :	/

2.9. Configuration of Tested System

Configuration of Tested System



Equipment Used in Tested System

No.	Equipment	Manufacturer	Model No.	Serial No.	Length	shielded/unshielded	Notes
1	Notebook	ThinkPad	E430C	A131101550	/	/	DOC
2	Mouse	DELL	MO56UOA	G0E02SY7	1.00m	unshielded	DOC
3	RJ45 Cable Line (EUT to PC)	Genshuo	N/A	N/A	0.60m	unshielded	N/A
4	Power line	/	/	N/A	1.00m	unshielded	N/A

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.

Electronic Testing Building, Shahe Road, Xili, Nanshan District,Shenzhen, 518055, P. R. China
The sites are constructed in conformance with the requirements of ANSI C63.4 (2003) and CISPR Publication 22.

3.2. Test Facility

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

FCC-Registration information:

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.
Electronic Testing Building, Shahe Road，Xili, Nanshan District,Shenzhen, 518055, P. R. China
Test Firm FCC Registration number: 806614

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. National Digital Electronic Product Testing Center quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. National Digital Electronic Product Testing Center
is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.5 dB	(1)
Radiated Emission	1~18GHz	4.6 dB	(1)
Conducted Disturbance	0.009~30MHz	3.5 dB	(1)

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

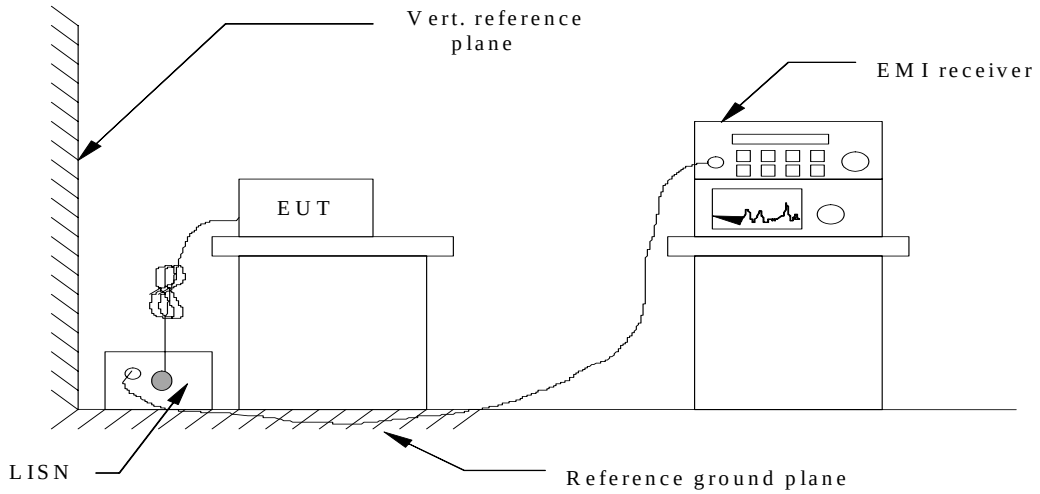
3.5. Equipments Used during the Test

Description	Manufacturer	Model	Serial No.	Calibration Date	Calibration Due. Date
Test Receiver	ROHDE&SCHWARZ	ESCI	A130901475	2014.09.09	2015.09.08
LISN	ROHDE&SCHWARZ	ENV216	/	2015.04.28	2016.04.27
Cable	MATCHING PAD	W7	/	2015.06.05	2016.06.04
Test Receiver	ROHDE&SCHWARZ	ESIB7	A0501375	2015.06.10	2016.06.09
Test Receiver	ROHDE&SCHWARZ	ESIB26	A0304218	2015.06.10	2016.06.09
Semi-Anechoic Chamber	Albatross	9m*6m*6m	A0412372	2015.03.22	2016.03.21
Test Antenna - Bi-Log	HP	CBL6111A	A9704202	2015.06.10	2016.06.09
Test Antenna – Horn	ROHDE&SCHWARZ	HF906	A0304225	2015.06.10	2016.06.09
Anechoic Chamber	Albatross	SAC-5MAC 12.8x6.8x6.4m	A0304210	2015.03.22	2016.03.21
Amplifier 1G~18GHz	ROHDE&SCHWARZ	MITEQ AFS42-00101800	A0509366	2015.06.10	2016.06.09
Amplifier 20M~3GHz	Compliance Direction System	PAP-0203H	A0509377	2015.06.10	2016.06.09
Cable	SUNHNER	SUCOFLEX 100	/	2015.06.10	2016.06.09
Cable	SUNHNER	SUCOFLEX 104	MY1758/4	2015.06.10	2016.06.09

4. TEST CONDITIONS AND RESULTS

4.1. Conducted Emissions Test

TEST CONFIGURATION



TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. 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 C63.4-2014.
2. Support equipment, if needed, was placed as per ANSI C63.4-2014.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2014.
4. The EUT received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. 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.
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.

CONDUCTED POWER LINE EMISSION LIMIT

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following：

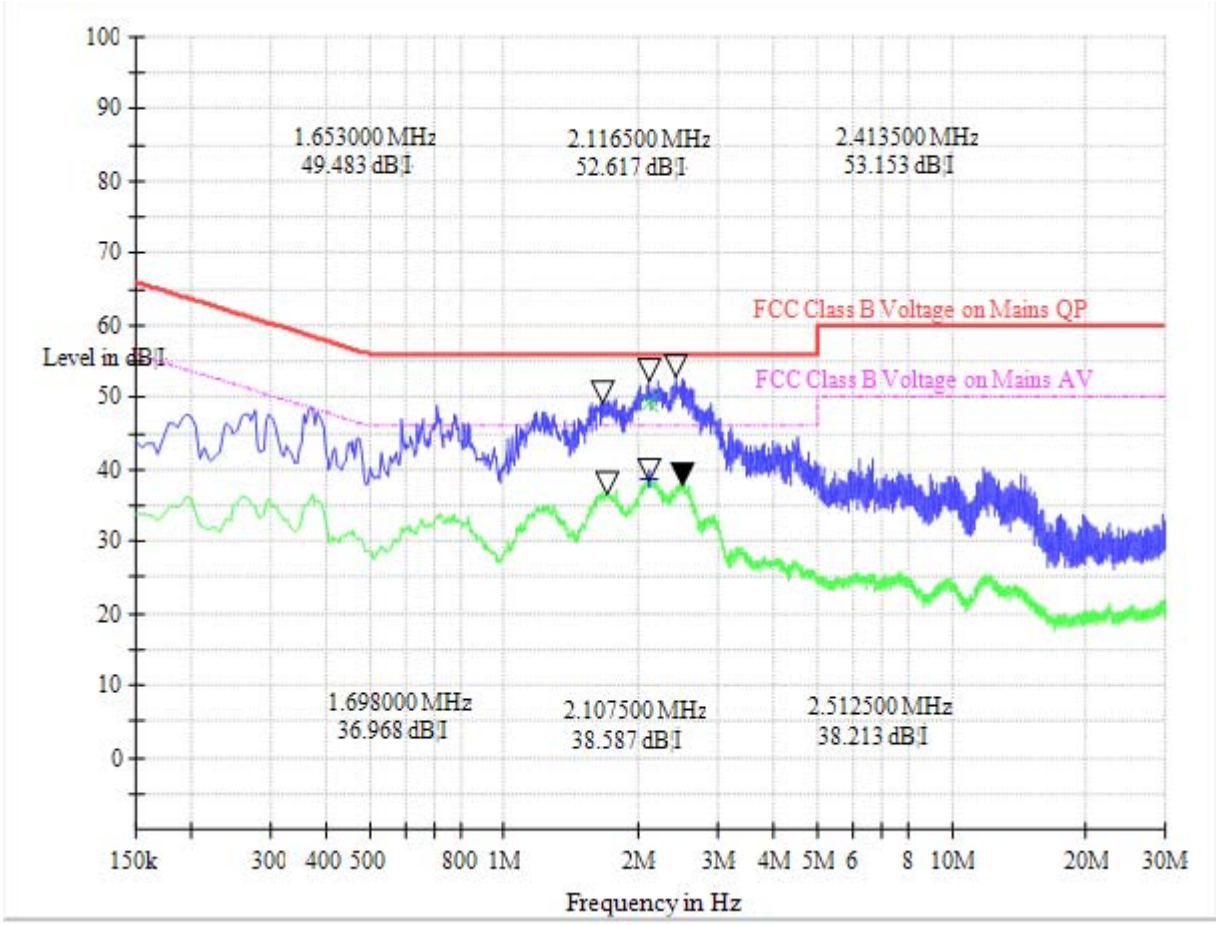
Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

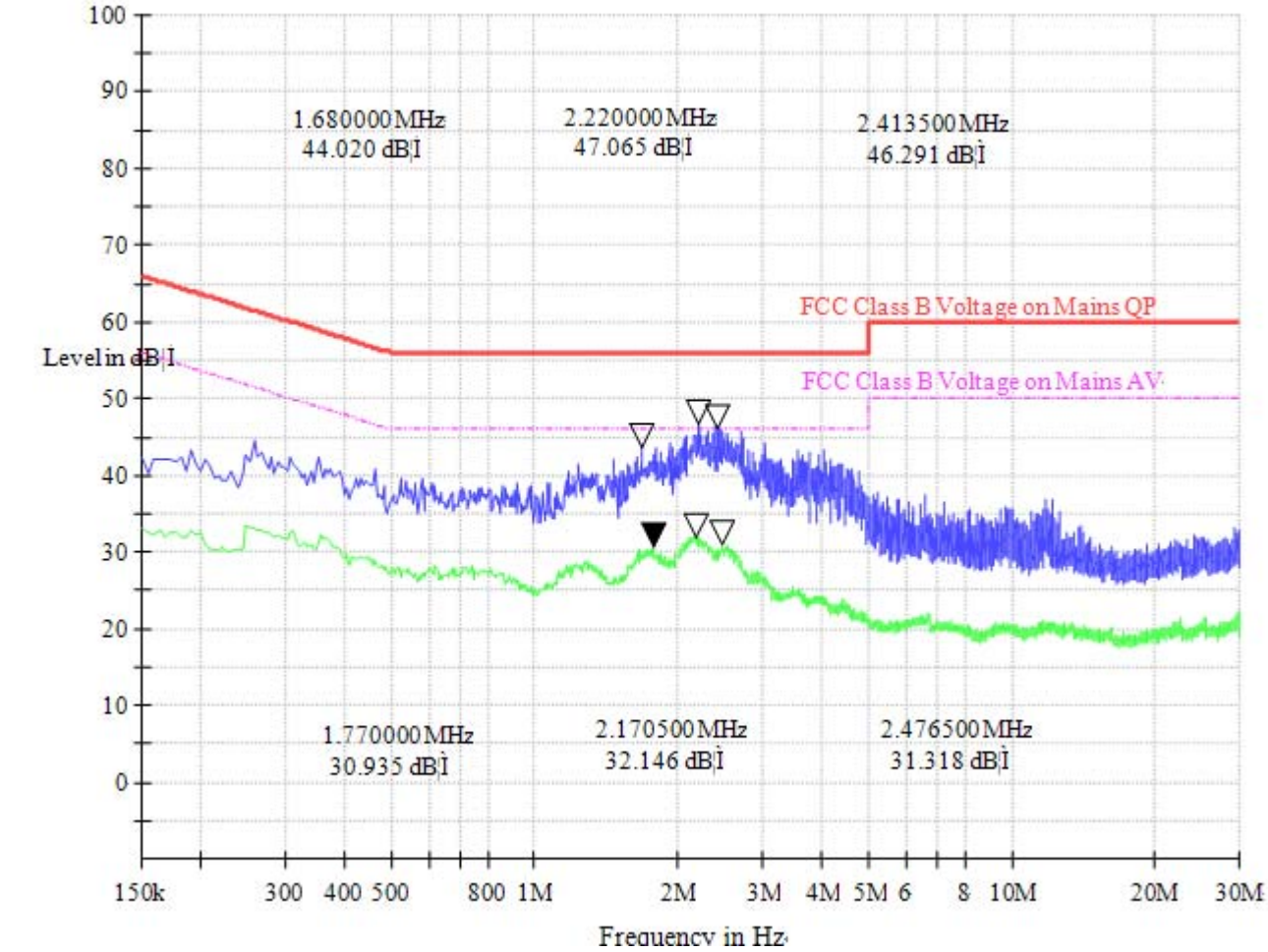
TEST RESULTS

Note: We tested data transmission (EUT to PC) by RJ45 line.

L:


1.653000 MHz
49.483 dBµV
2.116500 MHz
52.617 dBµV
2.413500 MHz
53.153 dBµV
FCC Class B Voltage on Mains QP
FCC Class B Voltage on Mains AV
Level in dBµV
1.698000 MHz
36.968 dBµV
2.107500 MHz
38.587 dBµV
2.512500 MHz
38.213 dBµV
150k 300 400 500 800 1M 2M 3M 4M 5M 6 8 10M 20M 30M
Frequency in Hz

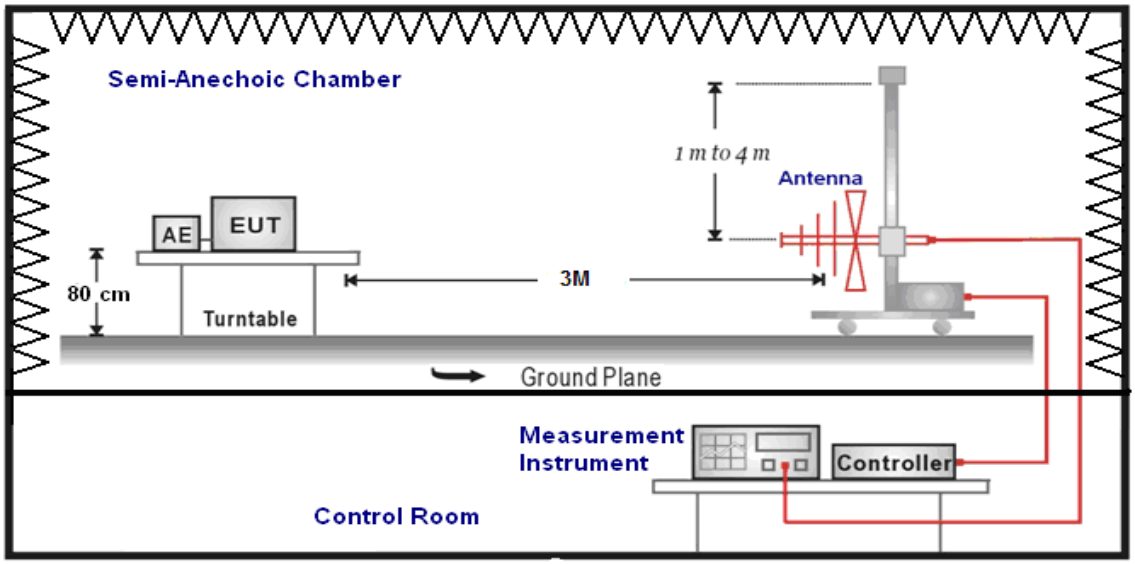
N:


1.680000 MHz
44.020 dBµV
2.220000 MHz
47.065 dBµV
2.413500 MHz
46.291 dBµV
FCC Class B Voltage on Mains QP
FCC Class B Voltage on Mains AV
Level in dBµV
1.770000 MHz
30.935 dBµV
2.170500 MHz
32.146 dBµV
2.476500 MHz
31.318 dBµV
150k 300 400 500 800 1M 2M 3M 4M 5M 6 8 10M 20M 30M
Frequency in Hz

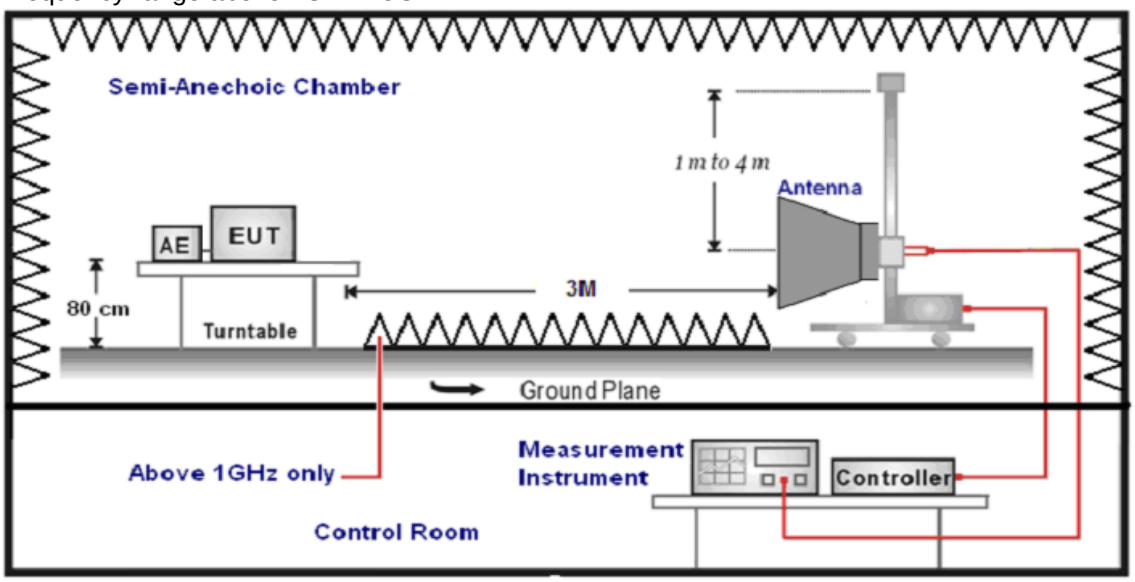
4.2. Radiated Emission Test

TEST CONFIGURATION

Frequency range: 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The maximum operation frequency was 512MHz, the radiated emission test frequency from 30 MHz to 6GHz.
8. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-6GHz	Double Ridged Horn Antenna	3

9. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-6GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto	Peak (Receiver)
	Average Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto	Average (Receiver)

FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

For example

Frequency (MHz)	FS (dBμV/m)	RA (dBμV/m)	AF (dB)	CL (dB)	AG (dB)	Transd (dB)
300.00	40	58.1	12.2	1.6	31.90	-18.1

Transd=AF +CL-AG

RADIATION LIMIT

For unintentional device, according to § 15.109(a), 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:

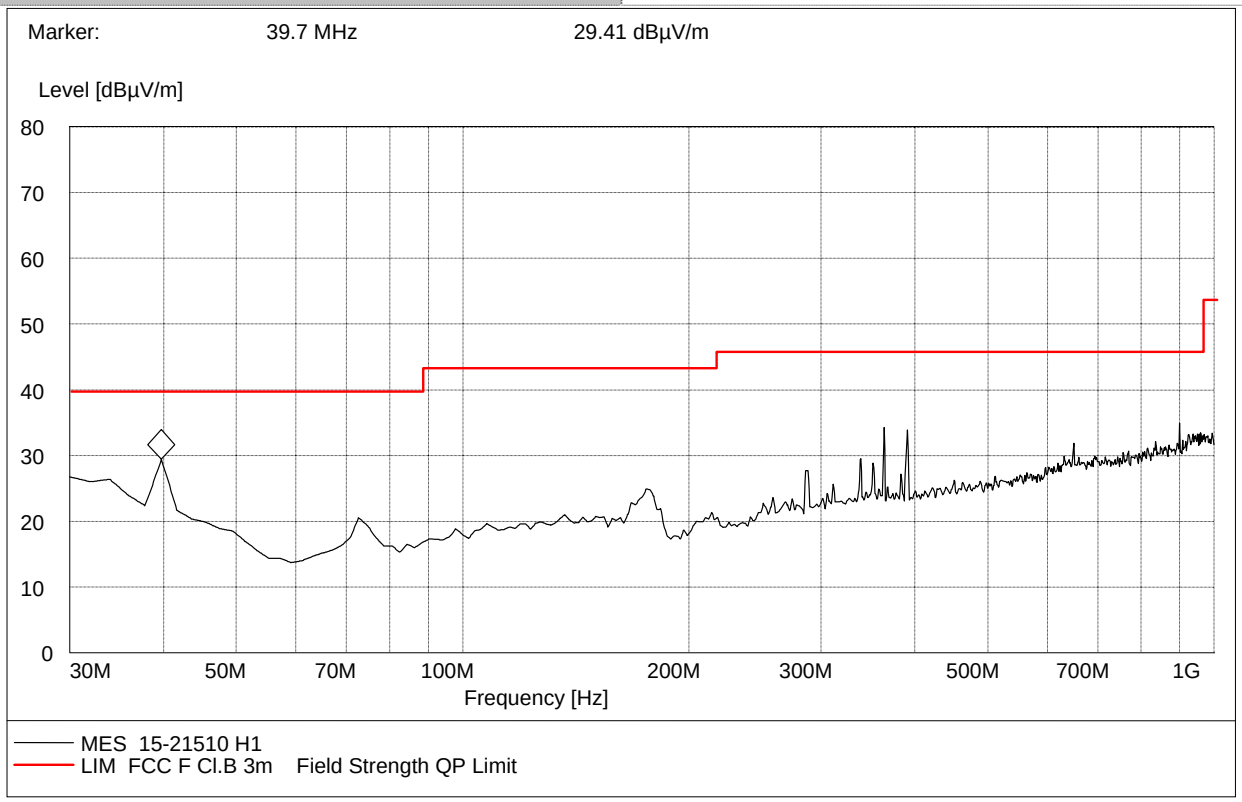
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	300	20log(2400/F(KHz))+80	2400/F(KHz)
0.49-1.705	30	20log(24000/F(KHz))+40	24000/F(KHz)
1.705-30	30	20log(30)+40	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

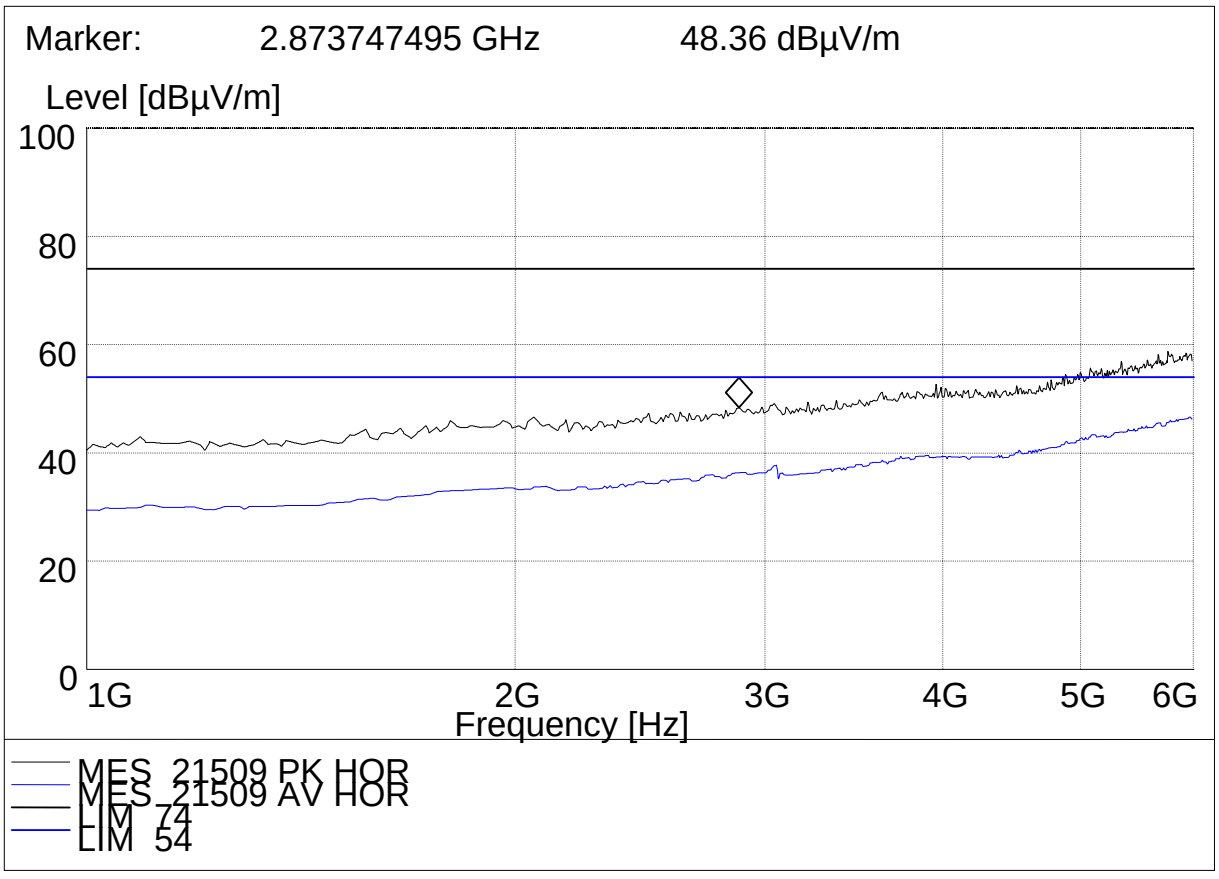
TEST RESULTS

Note: We tested data transmission (EUT to PC) by RJ45 line.

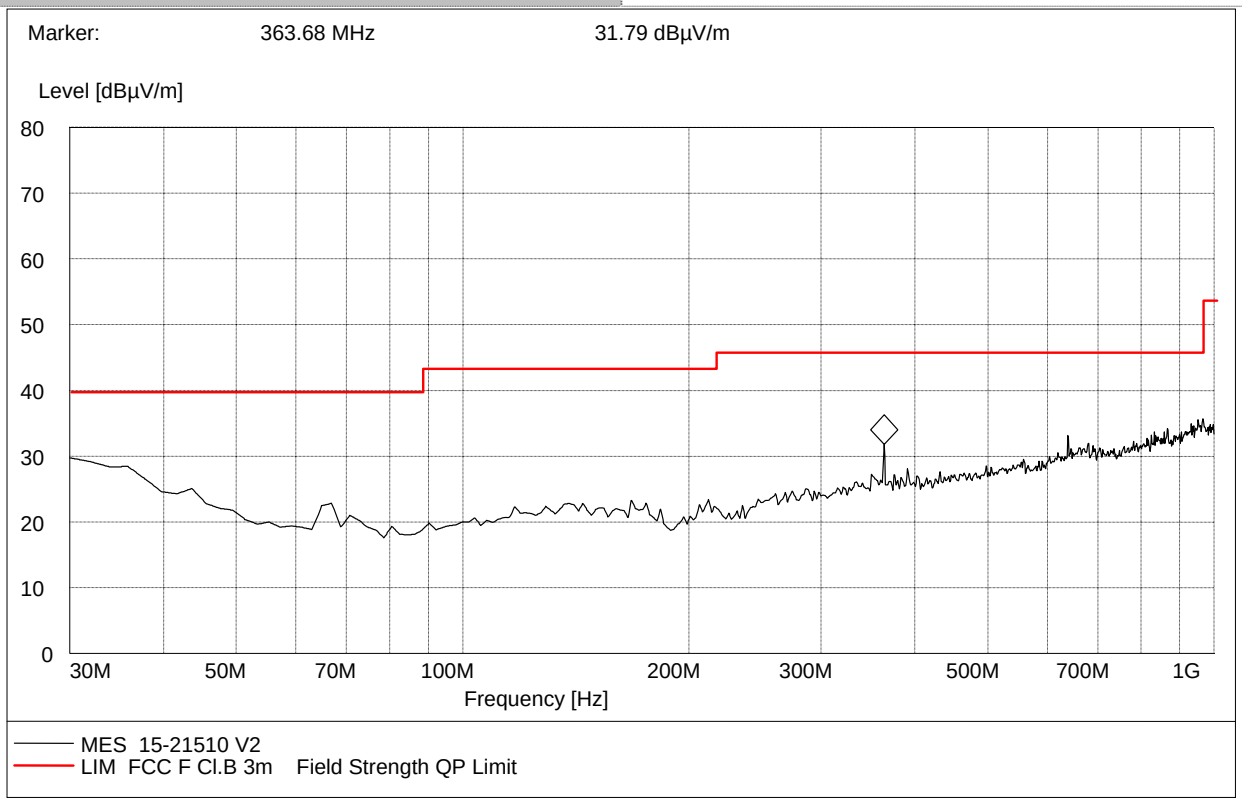
For 30MHz-1GHz

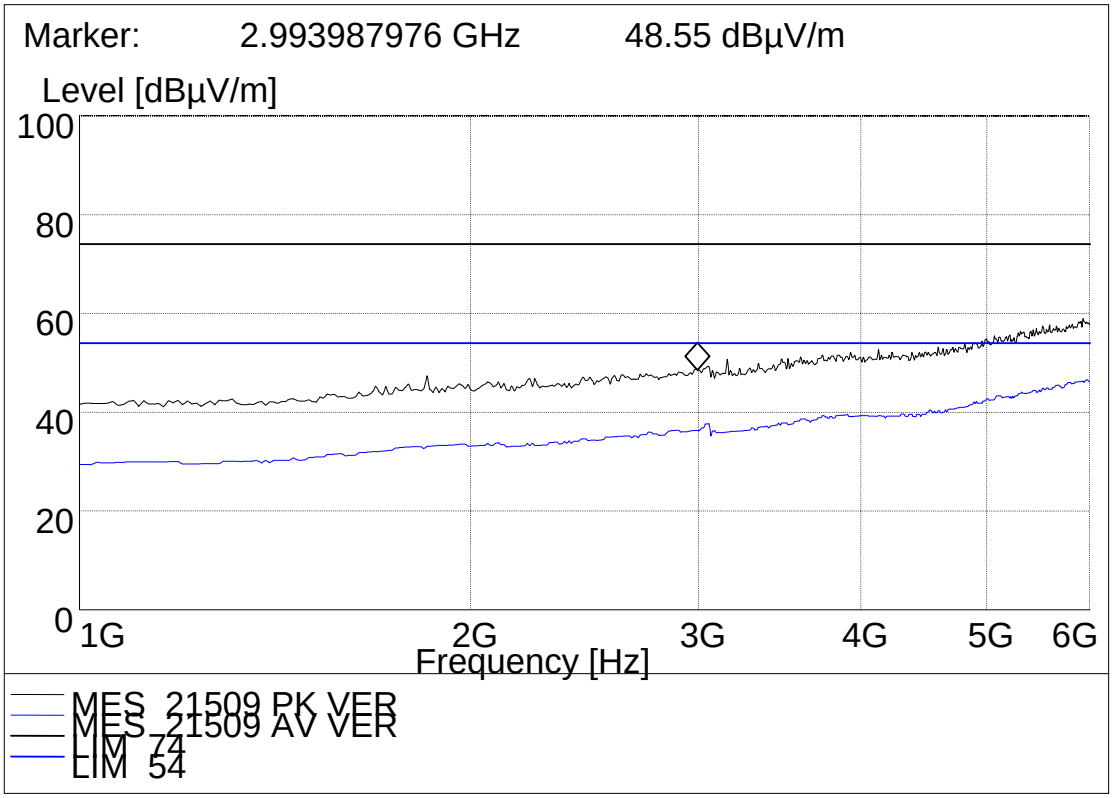
Polarization	*Horizontal*





Polarization	Vertical





Remark:
1. Emission level (dBuV/m) =Reading Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. The other emission levels were very low against the limit.
4. Margin value = Limit value- Emission level.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. „---“ states at least 20dB lower than limit, not record any values.

5. Test Setup Photos of the EUT

Please refer to separated files for Test Setup Photos of the EUT.

6. External Photos of the EUT

Please refer to separated files for External Photos of the EUT.

7. Internal Photos of the EUT

Please refer to separated files for Internal Photos of the EUT.

.....End of Report.....