



TEST REPORT

Date: 2013-09-09

Report No.: 60.870.12.030.03F

Applicant: XiangDe Electronic Technology (Shenzhen) Co., LTD
Blg C16 Fuyuan Industrial Area, No. 111, Zhoushi Road,
Xixiang Street, Baoan, Shenzhen City, China

Description of Samples: Model name: 7" MID
Brand name: ---
Model no.: PI070H04AA
FCC ID: RQ2PI070H04AA

Date Samples Received: 2012-07-26

Date Tested: 2013-08-08 to 2013-08-19

Investigation Requested: FCC Part 15, Subpart B

Conclusions: The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

Remarks:

Checked by:

Approved by:-

Ray Cheung
Project Engineer
Wireless & Telecom department

Jeff Pong
Operation Manager
Wireless & Telecom department



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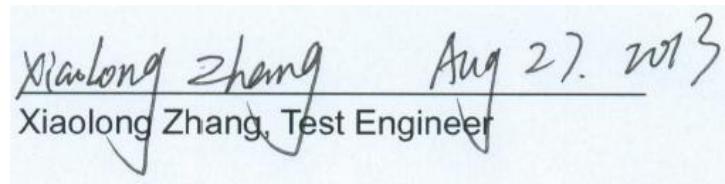
1.0 General Details

1.1 Test Laboratory

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.
Electronic testing Building, Shahe Road, Xili, Nanshan District,
Shenzhen, 518055, P.R. China

Registration Number: 406086

Tested By:


Xiaolong Zhang Aug 27. 2013
Xiaolong Zhang, Test Engineer

Note: All the data of this report which are copied by Report No. SET2013-05312 from
CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.

1.2 Applicant Details

Applicant

XiangDe Electronic Technology (Shenzhen)Co., Ltd
Blg C16 Fuyuan Industrial Area, No.111, Zhoushi Road, Xixiang
Street, Baoan, Shenzhen City, China

Manufacturer

XiangDe Electronic Technology (Shenzhen)Co., Ltd
Blg C16 Fuyuan Industrial Area, No.111, Zhoushi Road, Xixiang
Street, Baoan, Shenzhen City, China



1.3 Equipment Under Test [EUT]

Description of EUT

Product Description:	7" MID
Model No.:	PI070H04AA
Brand Name:	---
FCCID:	RQ2PI070H04AA
Rating:	5VDC, 1000mA Powered by AD/DC Switching Adaptor
Operated Frequency:	2412 – 2462 MHz (802.11b/g/n – H20) 2422 – 2452 MHz (802.11n – HT40)
No. of Operated Channel:	11 CH / (802.11b/g/n-HT20) ; 9CH / (802.11n – HT40)
Data Rate:	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0-7, up to 150Mbps
Modulation:	DSSS (BPSK, QPSK, CCK) and OFDM (BPSK/QPSK/16-QAM/ 64-QAM)
Accessories and Auxiliary Equipments:	AC/DC Switching Adaptor (JD-050100), Notebook (ThinkPad E420)
Software / Hardware version	Android 4.1 / V3.0
Antenna Type:	PIFA
Manufacturer of Antenna:	---
Antenna Gain:	2.0dBi

General Operation of EUT

The EUT is a Tablet, it contains WIFI Module operating at 2.4GHz ISM band; it supports 802.11b, 802.11g, 802.11n.

Description of Test Modes

The EUT has been tested under operating condition. Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 1Mbps data rate (worst case) are chosen for the final testing.

IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6Mbps data rate (the worst case) are chosen for the final testing.

IEEE802.11n – HT20: Channel 1(2412MHz), Channel 6 (2437MHz) and Channel 11 (2462MHz) with MCS0 (worst case) are chosen for the final testing.

IEEE802.11n – HT40: Channel 1(2422MHz), Channel 6 (2437MHz) and Channel 11 (2452MHz) with MCS0 (worst case) are chosen for the final testing.

1.4 Equipment Modification

No modification was made to the tested unit by TÜV SÜD Hong Kong Ltd.



2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with
CFR 47, Part 15 and ANSI C63.4: 2003.

2.2 Test Standards and Results Summary Tables

EMISSION Results Summary			
Test Condition	Test Requirement	Test Result	
		Pass	N/A
Spurious Radiated Emissions,	Part 15.109,	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conducted Emissions	Part 15.107	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Note: N/A - Not Applicable



3.0 Test Methodology

3.1 Radiated Emission

The sample was placed 0.8m above the ground plane on a standard emission test site *. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

3.2 Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

$$FS = R + \text{System Factor}$$

$$\text{System Factor} = AF + CF + FA - PA$$

Where FS = Net Field Strength in dBuV/m at 3 meters.

R = Reading of Spectrum Analyzer / Test Receiver in dBuV.

AF = Antenna Factor in dB.

CF = Cable Attenuation Factor in dB.

FA = Filter Attenuation Factor in dB.

PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

3.3 Conducted Emissions

The EUT was placed on a non-metallic table 0.8m above the horizontal metal reference place and 0.4m from a vertical ground plane which is connected to the horizontal metal ground plane. Meanwhile, the AC main of EUT was connected to the distance of 0.8m line impedance stabilization network (LISN) during measurement.

Initial measurements were performed in quasi-peak and average detection modes by the test receiver, any emissions recorded within 30dB of the relevant limit lines were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

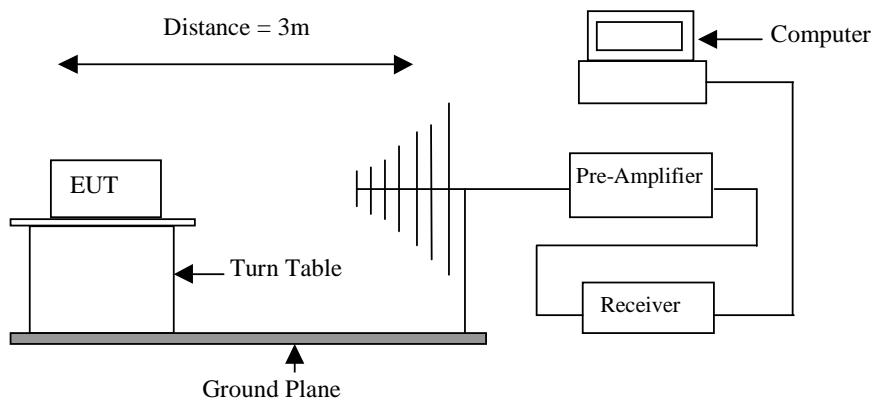


4.0 Test Results

4.1 Spurious Radiated Emission

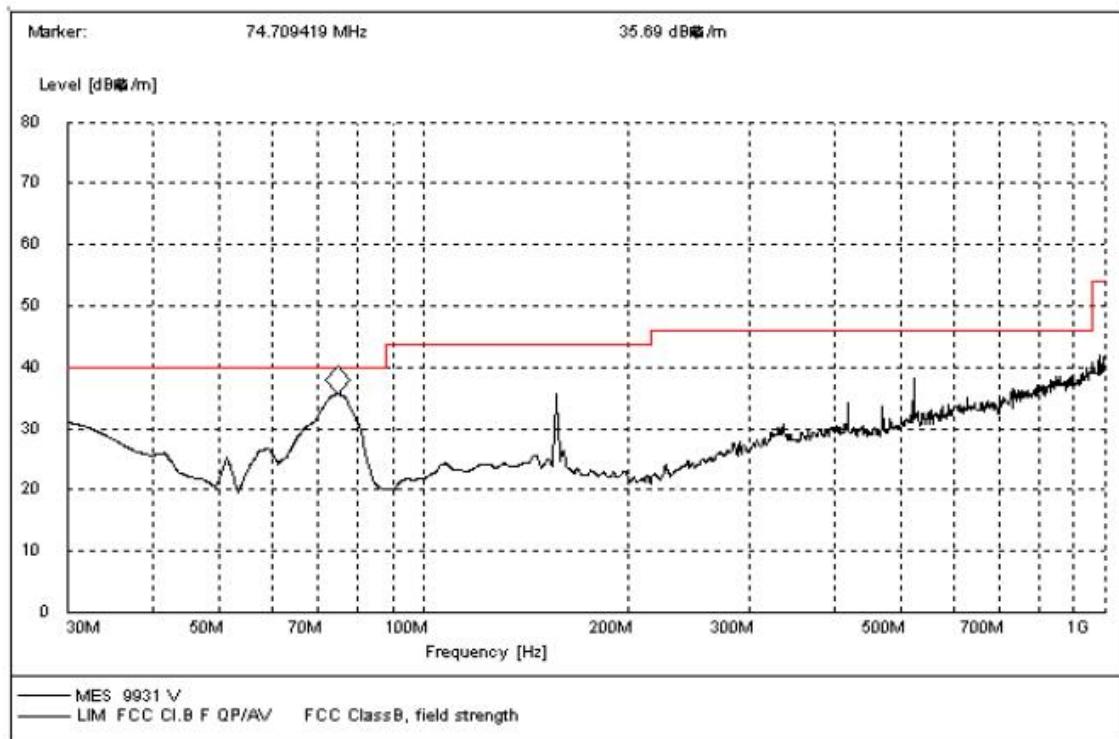
Test Requirement: FCC part 15 section 15.109
Test Method: ANSI C63.4:2003
Test Date: 2013-08-08
Mode of Operation: USB Communication with Computer
Detector Function: Quasi-peak, Average and Peak
Measurement BW: 120 kHz (30MHz to 1000 MHz)
1 MHz (Above 1000 MHz)

Test Setup:





Results: PASS

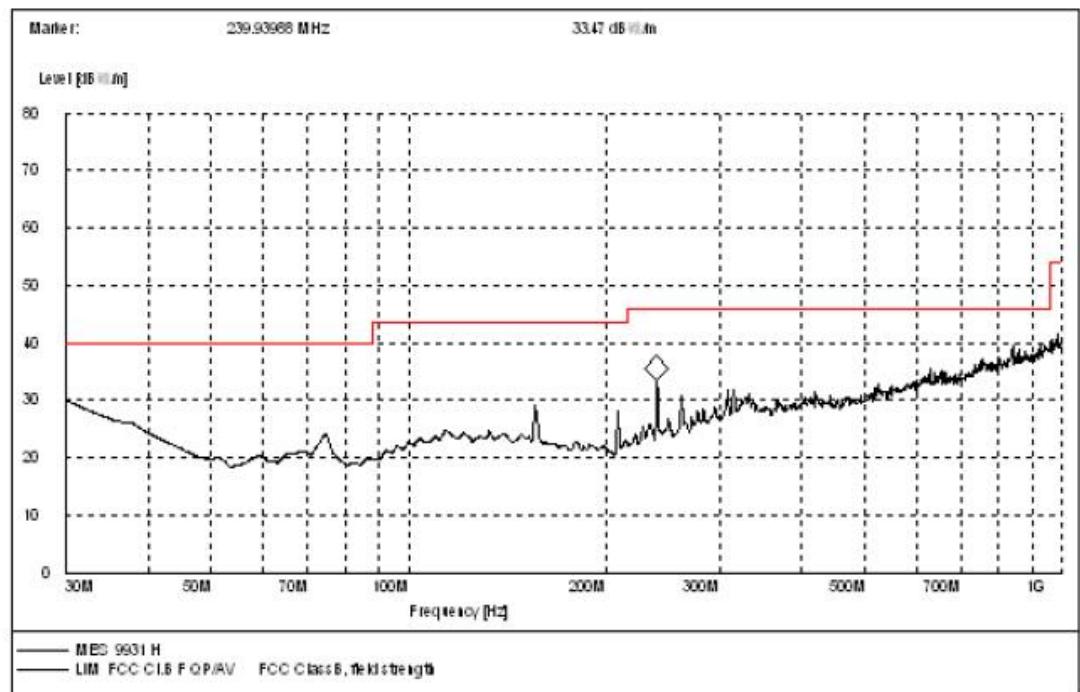


(Plot A: Test Antenna Vertical 30M - 1G)

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Margin (dB)	Antenna	Verdict
74.709419	35.69	120.000	100.0	40.00	4.31	Vertical	Pass
156.352705	35.12	120.000	100.0	43.50	8.38	Vertical	Pass
519.042323	38.74	120.000	100.0	46.00	7.26	Vertical	Pass



Results: PASS

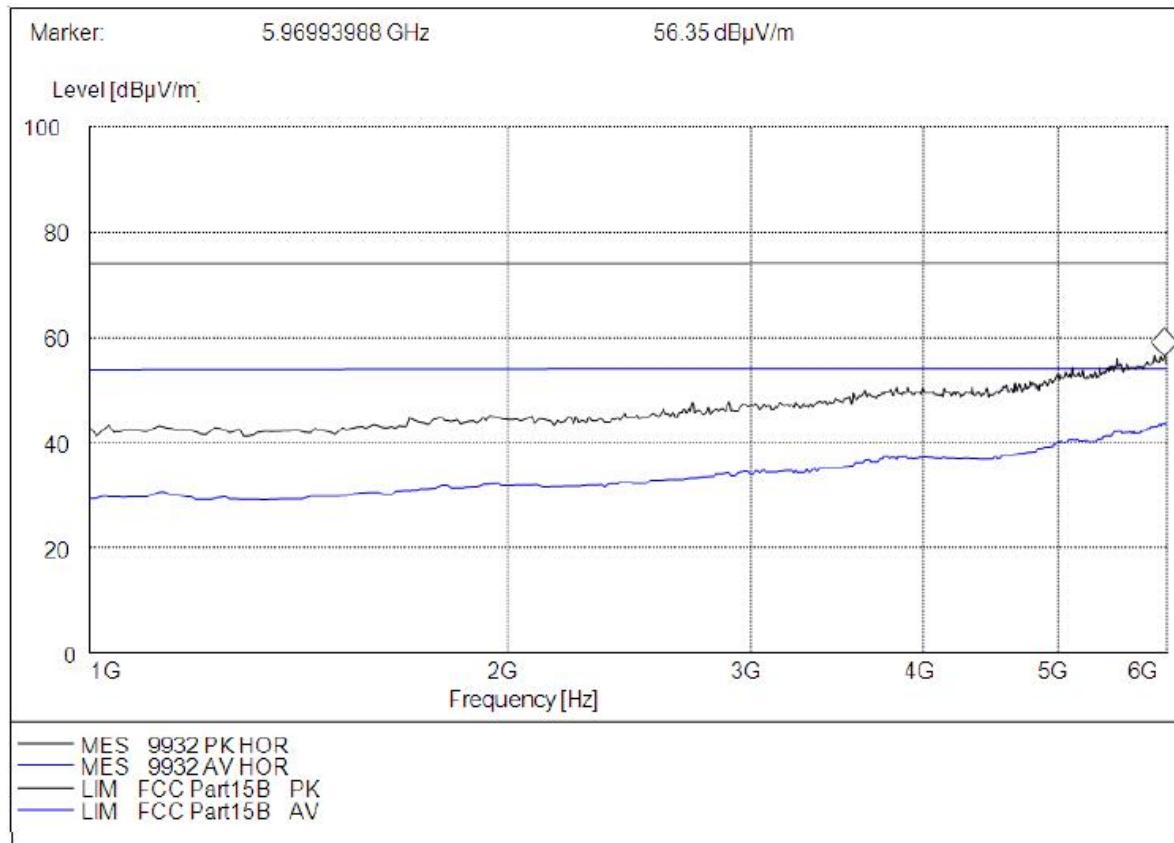


(Plot B: Test Antenna Horizontal 30M - 1G)

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Margin (dB)	Antenna	Verdict
30.012435	29.87	120.000	100.0	40.00	10.13	Horizontal	Pass
156.352705	29.12	120.000	100.0	43.50	14.38	Horizontal	Pass
239.93988	33.47	120.000	100.0	46.00	12.53	Horizontal	Pass



Results: PASS

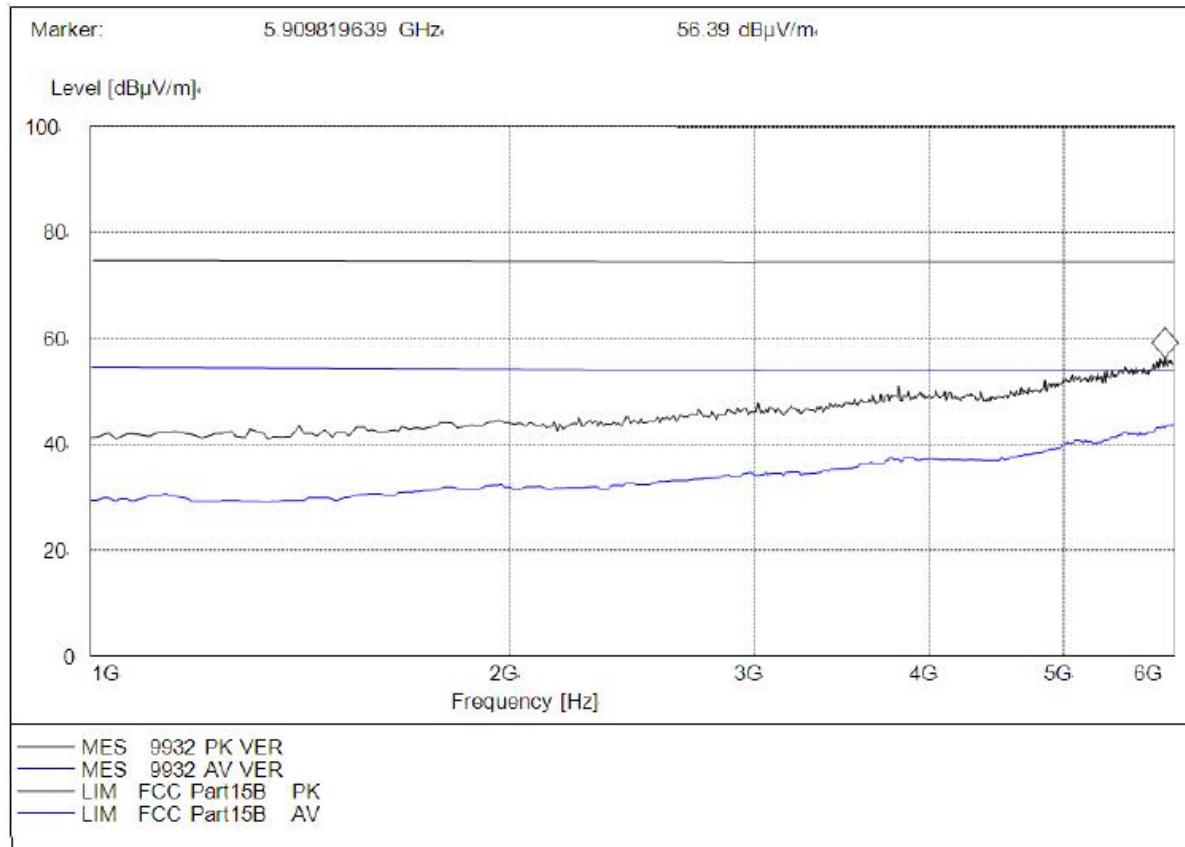


(Plot C: Test Antenna Horizontal 1G – 6G)

Frequency (MHz)	AV (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Margin (dB)	Antenna	Verdict
1056.00000	29.43	1000.000	100.0	54.00	24.57	Horizontal	Pass
1592.50000	30.56	1000.000	150.0	54.00	23.44	Horizontal	Pass
1865.00000	33.96	1000.000	100.0	54.00	20.04	Horizontal	Pass
2400.00000	34.15	1000.000	100.0	54.00	19.85	Horizontal	Pass
5049.50000	40.12	1000.000	150.0	54.00	13.88	Horizontal	Pass
5969.93988	43.23	1000.000	100.0	54.00	11.77	Horizontal	Pass



Results: PASS



(Plot D: Test Antenna Vertical 1G – 6G)

Frequency (MHz)	AV (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Margin (dB)	Antenna	Verdict
1062.00000	30.52	1000.000	150.0	54.00	23.48	Vertical	Pass
1711.00000	32.78	1000.000	150.0	54.00	21.22	Vertical	Pass
2203.00000	33.12	1000.000	123.0	54.00	20.88	Vertical	Pass
2654.00000	34.14	1000.000	148.0	54.00	19.86	Vertical	Pass
3386.00000	35.96	1000.000	150.0	54.00	18.04	Vertical	Pass
5909.81963	43.33	1000.000	100.0	54.00	10.67	Vertical	Pass



Note: - No further spurious emissions found between 150 kHz and lowest internal used / generated frequency.

- Result data graph is shown at the following pages for reference.

Remark : Calculated measurement uncertainty: $\pm 5.0\text{dB}$.

Limits for Radiated Emissions [Section 15.109 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [$\mu\text{V/m}$]
30-88	100
88-216	150
216-960	200
Above 960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

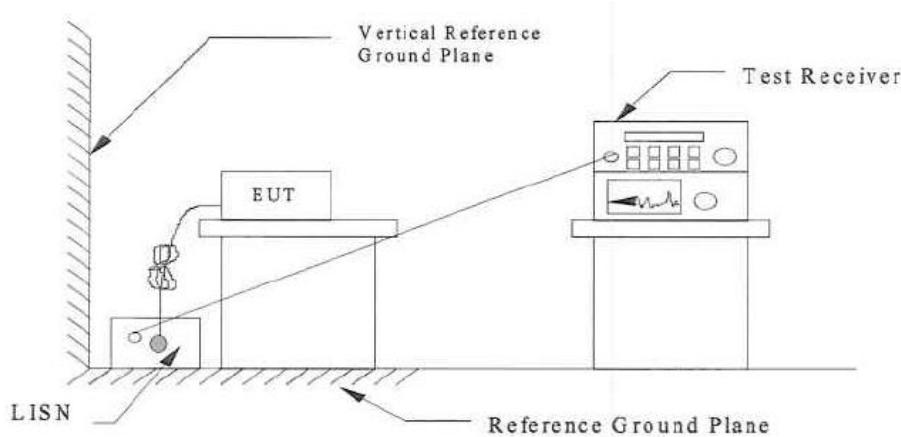


4.2 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement: FCC part 15 Section 15.107 Class B
 Test Method: ANSI C63.4:2003
 Test Date: 2013-08-08
 Mode of Operation: USB Communication with Computer
 Detector Function: CISPR Quasi Peak

Result : PASS

Test Setup:



Limits for Conducted Emission [Section 15.107]:

Frequency Range [MHz]	Quasi-Peak Limit [dB μ V]	Average Limit [dB μ V]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

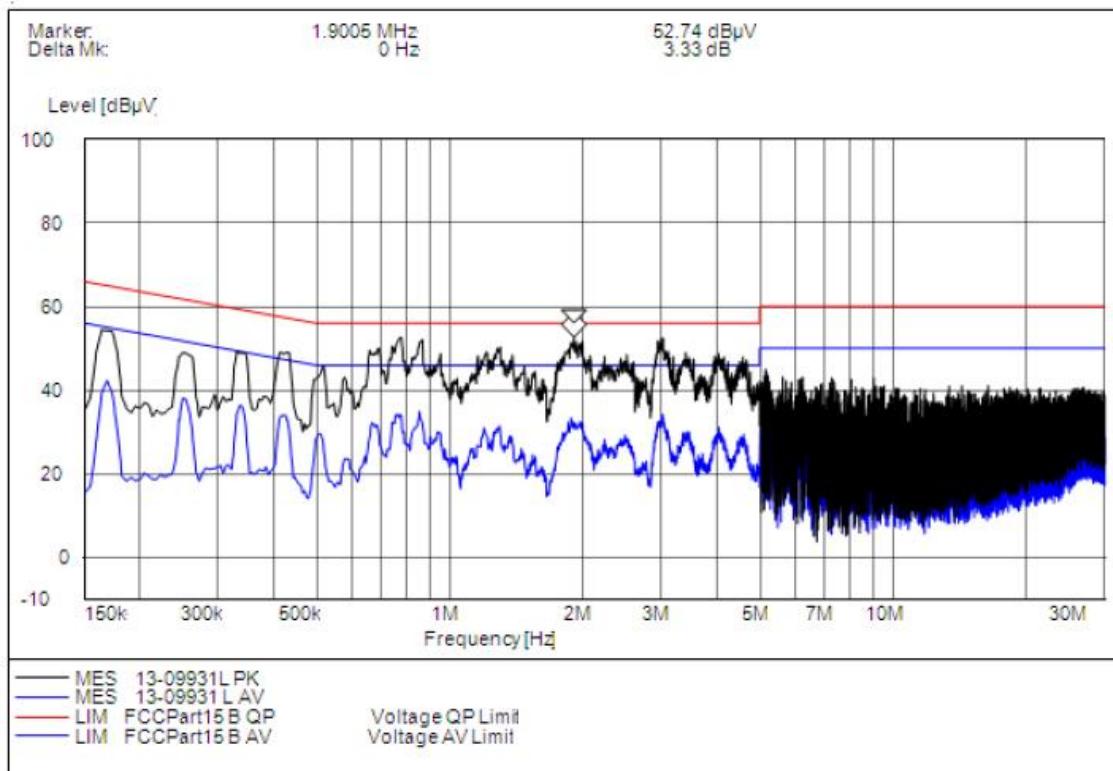
* Decreases with the logarithm of the frequency.



Result data graph shows the conducted emission (Line and Neutral).

Conducted Disturbance at Mains Terminals							
L Test Data							
QP				AV			
Frequen cy (MHz)	Limits (dB μ V)	Measurem ent Value (dB μ V)	Margin (dB)	Frequen cy (MHz)	Limits (dB μ V)	Measurem ent Value (dB μ V)	Margin (dB)
0.4290	57.30	47.80	19.50	0.4290	47.30	32.20	15.10
1.9005	56	46.80	9.20	1.9005	46	34.90	11.10
3.0255	56	46.80	9.20	3.0225	46	34.60	11.40

L Test Curve

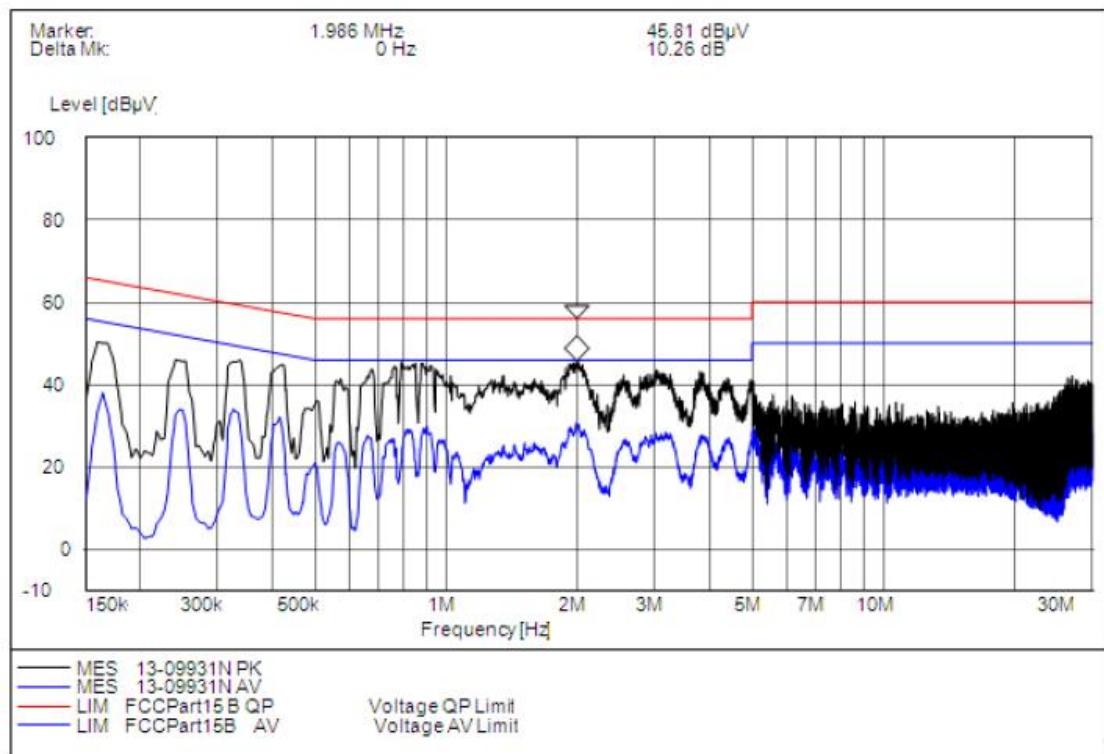


(Plot A: L Phase)



Conducted Disturbance at Mains Terminals							
N Test Data							
QP				AV			
Frequen cy (MHz)	Limits (dB μ V)	Measureme nt Value (dB μ V)	Margin (dB)	Frequency (MHz)	Limits (dB μ V)	Measureme nt Value (dB μ V)	Margin (dB)
0.4200	57.40	42.20	15.20	0.4200	47.40	29.70	17.70
0.7890	56	42.10	13.90	0.7890	46	31.40	14.60
1.9860	56	41.70	14.30	1.9860	46	30.20	15.80

N Test Curve



(Plot B: N Phase)



5.0 List of Measurement Equipment

Radiated Emission

Manufacturer	Equipment	Model No.	Serial No.	Due Date
R&S	Power Meter	NRVS	1020.1809.02	07 Jun 2014
R&S	Power Sensor	NRV-Z4	823.3618.03	07 Jun 2014
R&S	Spectrum Analyzer	FSP40	1164.4391.40	10 Jun 2014
R&S	Receiver	ESIB26	A0304218	07 Jun 2014
Albatross	Full-Anechoic Chamber	12.8m*6.4m	A0412372	07 Jun 2014
R&S	Double ridge horn antenna	HF906	100150	10 Jun 2014
R&S	Amplifier 1G-18GHz	MITEQ AFS42-00101800	25-S-42	05 Jun 2014
R&S	Receiver	ESIB26	A0304218	07 Jun 2014
Albatross	Full-Anechoic Chamber	12.8m*6.8m*6.4m	A0412372	07 Jun 2014
Schwarzbeck	Test Antenna – Bi-Log	VULB 9163	9163-274	09 Jun 2014
R&S	Amplifier 1G-18GHz	MITEQ AFS42-00101800	25-S-42	05 Jun 2014
R&S	Amplifier 18G-40GHz	JS42-18002600-28-5A	12111.0980.00	05 Jun 2014
R&S	Amplifier 20M-3GHz	PAP-0203H	22018	10 Jun 2014

Line Conducted

Manufacturer	Equipment	Model No.	Serial No.	Due Date
ROHDE & SCHWARZ	Test Receiver	ESCS30	A0304260	10 Jun 2014
ROHDE & SCHWARZ	LISN	ESHS2-Z5	A0304221	10 Jun 2014

Remarks:

CM Corrective Maintenance
 N/A Not Applicable or Not Available



Appendix A

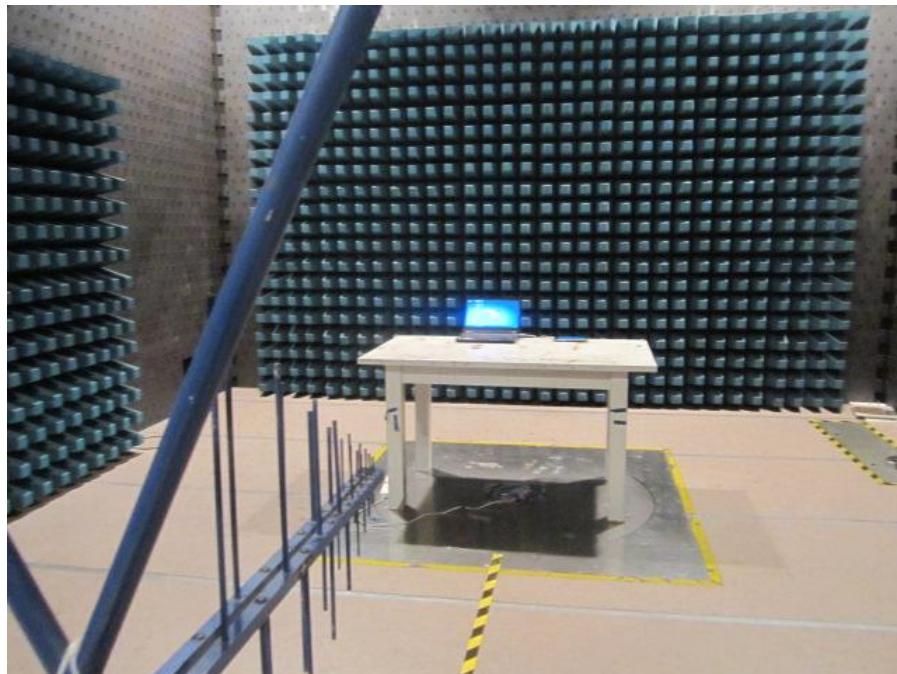
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Photo of Test Setup:

Radiated Emissions





Appendix A

Date: 2013-09-09

Report No.: 60.870.13.030.03F

Model No.: PI070H04AA

Photo of Test Setup:

Conducted Emissions





Appendix B

Date: 2013-09-09

Report No.: 60.870.13.030.03F

Model No.: PI070H04AA

Photo of EUT – External EUT Photos





Appendix B

Date: 2013-09-09

Report No.: 60.870.13.030.03F

Model No.: PI070H04AA

Photo of EUT – External EUT Photos





Appendix B

Date: 2013-09-09

Report No.: 60.870.13.030.03F

Model No.: PI070H04AA

Photo of EUT – External EUT Photos





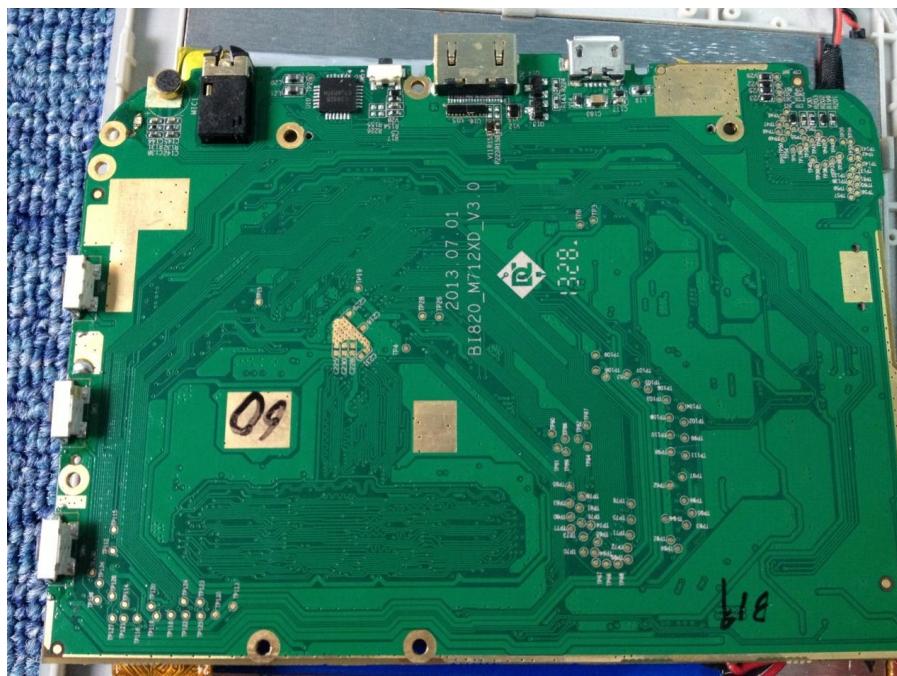
Appendix C

Date: 2013-09-09

Report No.: 60.870.13.030.03F

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Photo of EUT – Internal EUT Photos





Appendix C

Date: 2013-09-09

Report No.: 60.870.13.030.03F

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Photo of EUT – Internal EUT Photos

