



588 West Jindu Road, Songjiang District, Shanghai, China  
Telephone: +86 (0) 21 6191 5666  
Fax: +86 (0) 21 6191 5678  
ee.shanghai@sgs.com

Report No.: SHEM120700104601  
Page: 1 of 24

## 1 Cover Page

# TEST REPORT

<b>Application No.:</b>	SHEM1207001046IT
<b>Applicant:</b>	FEITIAN Technologies Co., Ltd.
<b>Manufacturer:</b>	FEITIAN Technologies Co., Ltd.
<b>Factory:</b>	FEITIAN Technologies Co., Ltd.
<b>FCC ID:</b>	ZD3iR301-U
<b>Product Name:</b>	USB CardReader
<b>Model No.(EUT):</b>	iR301-U
<b>Standards:</b>	FCC Part15 :2011
<b>Date of Receipt:</b>	July 27, 2012
<b>Date of Test:</b>	August 7, 2012 to October 12, 2012
<b>Date of Issue:</b>	October 15, 2012
<b>Test Result :</b>	<b>Pass*</b>

\* In the configuration tested, the EUT (Equipment under test) complied with the standards specified above.

**Tony Wu**  
**E&E Section Manager**  
**SGS-CSTC (Shanghai) Co., Ltd.**




The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

## 2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		Oct. 15,2012	Neil Zhang	Original

<b>Authorized for issue by:</b>			
<b>Engineer</b>	Neil Zhang		<b>Date(Oct. 15, 2012)</b>
	<b>Print Name</b>		
<b>Clerk</b>	Neil Zhang		<b>Date(Oct. 15, 2012)</b>
	<b>Print Name</b>		
<b>Reviewer</b>	Jim Xu		<b>Date(Oct. 15, 2012)</b>
	<b>Print Name</b>		

### 3 Test Summary

<b>ELECTROMAGNETIC INTERFERENCE (EMI)</b>				
<b>Test</b>	<b>Test Requirement</b>	<b>Test Method</b>	<b>Class / Severity</b>	<b>Result</b>
Conducted Emission (150KHz to 30MHz)	FCC Part15:2011	ANSI C63.4: 2009	Class B	PASS
Radiated Emission, (30MHz to 1GHz)	FCC Part15:2011	ANSI C63.4: 2009	Class B ♀	PASS
Radiated Emission above 1 GHz	FCC Part15:2011	ANSI C63.4: 2009	Class B	N/A

♀ If the highest frequency of the internal sources of the EUT is less than 108MHz,the measurement shall only be made up to 1GHz.

## 4 Contents

<b>1</b>	<b>COVER PAGE .....</b>	<b>1</b>
<b>2</b>	<b>VERSION .....</b>	<b>2</b>
<b>3</b>	<b>TEST SUMMARY .....</b>	<b>3</b>
<b>4</b>	<b>CONTENTS .....</b>	<b>4</b>
<b>5</b>	<b>GENERAL INFORMATION .....</b>	<b>5</b>
5.1	Client Information.....	5
5.2	General Description of E.U.T. ....	5
5.3	Details of E.U.T. ....	5
5.4	Description of Support Units .....	6
5.5	Deviation from Standards .....	6
5.6	Abnormalities from Standard Conditions .....	6
5.7	Modification/Retest Record .....	6
5.8	Test Location.....	7
5.9	Test Facility.....	7
<b>6</b>	<b>EQUIPMENT USED DURING TEST .....</b>	<b>8</b>
<b>7</b>	<b>ELECTROMAGNETIC INTERFERENCE TEST RESULTS.....</b>	<b>10</b>
7.1	Conducted Emissions on Mains Terminals, 150 kHz to 30 MHz .....	10
7.2	Radiated Emissions, 30MHz to 1GHz .....	14
<b>8</b>	<b>PHOTOGRAPHS (TEST SETUP FOR THE EUT).....</b>	<b>18</b>
8.1	Conducted Emissions on Mains Terminals Test Setup.....	18
8.2	Radiated Emission Test Setup.....	18
<b>9</b>	<b>EUT CONSTRUCTIONAL DETAILS .....</b>	<b>19</b>
9.1	Exterior of EUT .....	19
9.2	Interior of EUT .....	23

## 5 General Information

### 5.1 Client Information

Applicant: FEITIAN Technologies Co., Ltd.

Address of Applicant: Floor 17th, Tower B, Huizhi Mansion, No.9 Xueqing Road Haidian District,  
Beijing, P.R.China

Manufacturer: FEITIAN Technologies Co., Ltd.

Address of Manufacturer: Floor 17th, Tower B, Huizhi Mansion, No.9 Xueqing Road Haidian District,  
Beijing, P.R.China

Factory: FEITIAN Technologies Co., Ltd.

Address of Factory: Floor 17th, Tower B, Huizhi Mansion, No.9 Xueqing Road Haidian District,  
Beijing, P.R.China

### 5.2 General Description of E.U.T.

Product Name: USB CardReader

Model No.(EUT): iR301-U

Operating frequency: 48MHz (the Highest working frequency )

### 5.3 Details of E.U.T.

Power Supply: USB power DC 5V

Power Cord: About 100cm

Adapter Supply: N/A

Functions/Modes: Running the LoopBack2010.exe installed at the PC to keeping the EUT reading the information from the IC card which plug into the EUT.

## 5.4 Description of Support Units

Supporting equipments :

Description	Manufacturer	Model No.	Serial No.	Data Cable	Power Cable
Personal Computer	DELL	OPTIPLEX 755	E191 (reference no.)	N/A	1.5m
17" LCD	Lenovo	9227-AE1	VENCW23	VGA	1.5m
Universal Programmer	Qian LongSheng	QL-2006	201105116086	COM	1.5m
Keyboard	Lenovo	KB1021	0000319	USB <sup>2)</sup>	N/A
Mouse	Lenovo	MO28UOL	4401282 081	USB <sup>3)</sup>	N/A
FT Java card with Dual-Interface	FEITIAN	FT-JAVA	Q-2630	N/A	N/A-

Note: For the cable details please refer to below table.

**Cables:**

#	Type	Length, m	Shield	Metallic hood	Ferrite
1	VGA	1.8	Yes	No	Yes
2	COM	1.5	Yes	No	No
3	USB <sup>1)</sup>	1.5	Yes	No	Yes
4	USB <sup>2)</sup>	1.8	Yes	No	No
5	USB <sup>3)</sup>	1.8	Yes	No	No

**Software:**

Description	Manufacturer	Software name	Version no.
USB Driver	Microsoft	USB Input Device Driver	6.1.7601.17514
USB Driver	Microsoft	USB Mass Storage Device Driver	5.1.2600.0
LoopBack	Alcor Micor, Corp	LoopBack2010	1.1.0.4

## 5.5 Deviation from Standards

None.

## 5.6 Abnormalities from Standard Conditions

None.

## 5.7 Modification/Retest Record

None.

## 5.8 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab  
No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

No tests were sub-contracted.

## 5.9 Test Facility

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2014-07-26.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2015-02-22.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2014-09-20.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: **R-3868** and **C-4336** respectively. Date of Registration: 2012-05-29. Date of Expiry: 2015-05-28.

## 6 Equipment Used during Test

### Conducted Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2012-04-13	2013-04-12
2	Line impedance stabilization network	SCHWARZBE CK	NSLK812 7	8127-490	2012-03-15	2013-03-14
3	Line impedance stabilization network	ETS	3816/2	00034161	2012-03-15	2013-03-14

### Radiated Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2012-06-02	2013-06-01
2	Antenna	SCHWARZBE CK	VULB916 8	9168-313	2012-03-15	2013-03-14
3	CONTROLLER	INNCO	CO200	474	/	/
4	Antenna	SCHWARZBE CK	BBHA912 0D	9120D-67 9	2012-03-15	2013-03-14
5	Antenna	SCHWARZBE CK	BBHA917 0	9170-373	2012-03-15	2013-03-14
6	Low noise amplifier	LNA6900	TESEQ	71033	2012-03-15	2013-03-14



**General Equipment**

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	Digital pressure meter	YONGZHI	DYM3-01	101012	2012-01-16	2013-01-14
2	Digital Multimeter	FLUKE	17B	10560713	2012-08-24	2013-08-22
3	Temperature & humidity recorder	ShangHai weather meter work	ZJ 1-2B	0804081 0802150 0805126	2012-07-25	2013-07-23

## 7 Electromagnetic Interference Test Results

### 7.1 Conducted Emissions on Mains Terminals, 150 kHz to 30 MHz

Test Requirement: FCC Part15 :2011  
 Test Method: ANSI C63.4: 2009  
 Test Date: October 12, 2012  
 Test Voltage: AC 120V 60Hz  
 Frequency Range: 150 KHz to 30 MHz  
 Class / Severity: Class B  
 Detector: Peak for pre-scan (9 kHz Resolution Bandwidth from 150 KHz to 30 MHz)  
 Limit:

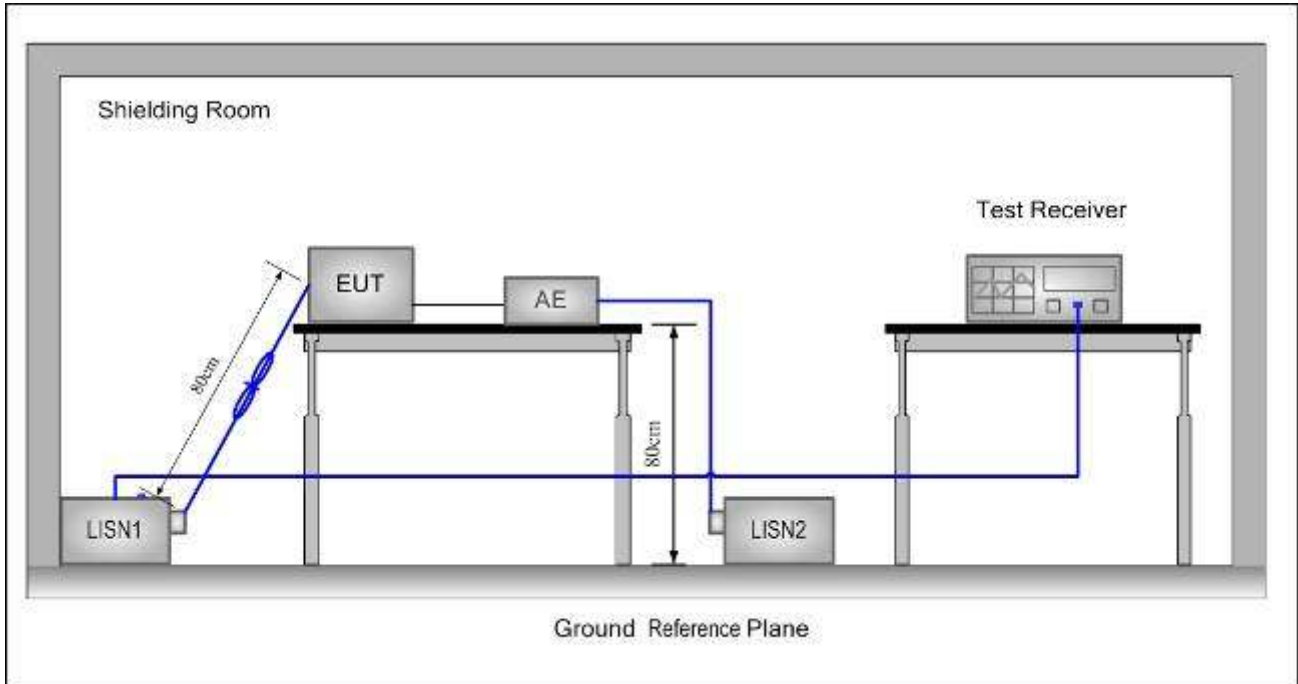
Frequency range MHz	Class B Limits dB (μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.  
 Note2: The lower limit is applicable at the transition frequency.

#### 7.1.1 E.U.T. Operation

Operating Environment:  
 Temperature: 23.0 °C Humidity: 56 % RH Atmospheric Pressure: 100.3 kPa  
 Test mode: Reading card mode  
 Pre-scan was performed with peak detected on all ports, Quasi-peak & average measurements were performed at the frequencies at which maximum peak emission level were detected.  
 Please see the attached Quasi-peak and Average test results.  
 Level = Read Level + LISN/ISN Factor + Cable Loss.

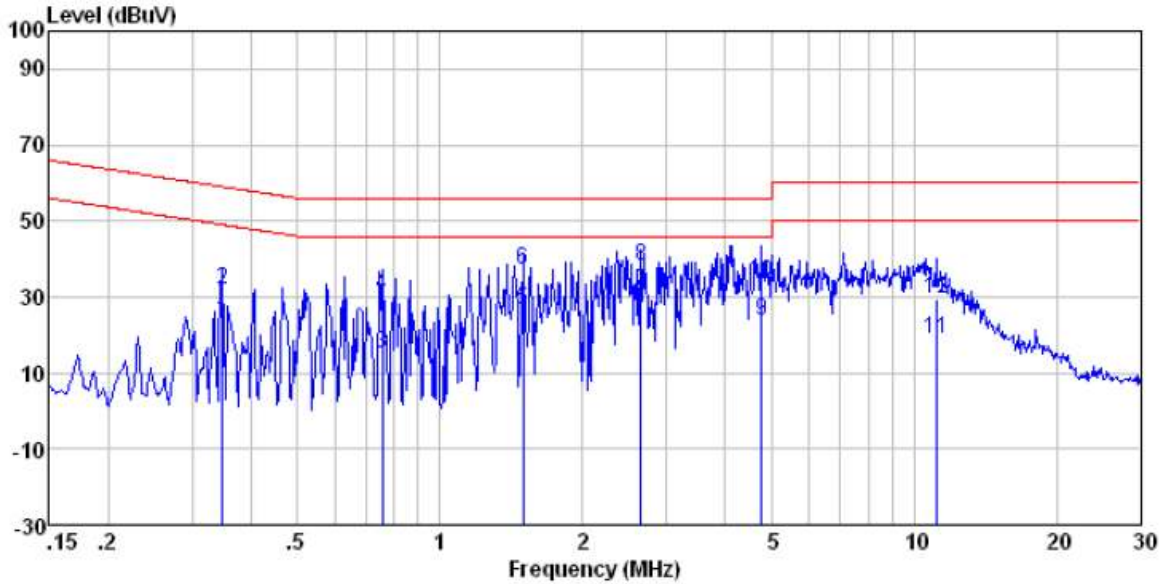
### 7.1.2 Test Setup and Procedure



1. The mains terminal disturbance voltage was measured with the EUT in a shielded room.
2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a  $50\Omega/50\mu\text{H} + 5\Omega$  linear impedance. The power cables of all other units of the EUT was connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance was between the closest points of the LISN and the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m. All other units of the EUT and associated equipment was at least 0,8 m from the LISN.

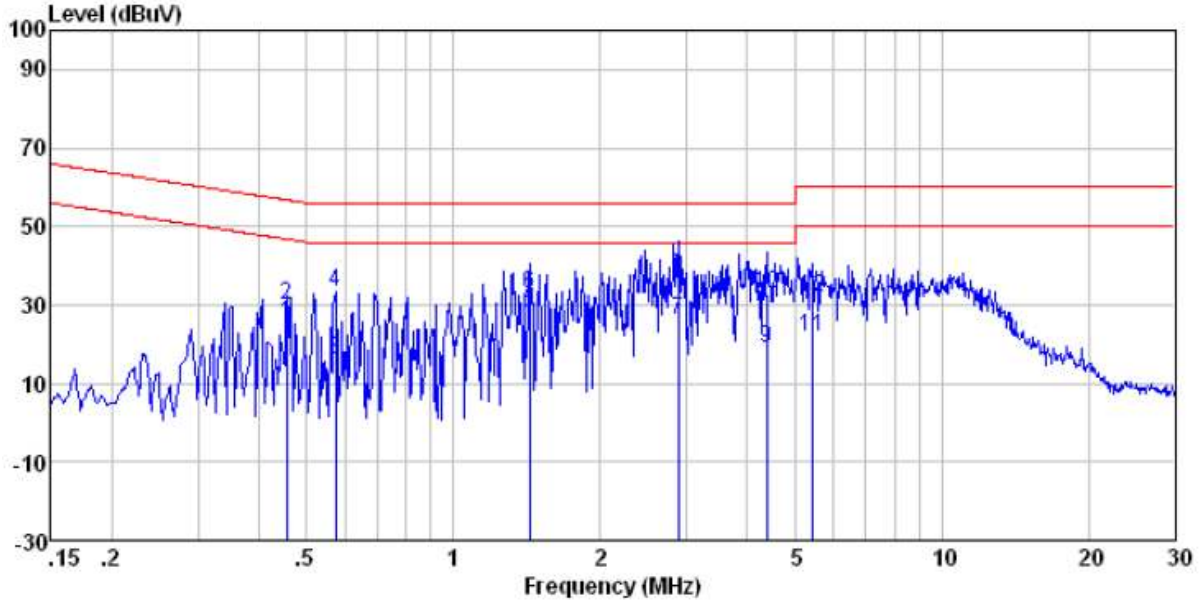
### 7.1.3 Measurement Data

Live Line:



	Freq	Read Level	Cable Loss	LISII Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.35	23.44	0.10	0.15	23.69	49.00	-25.31	Average
2	0.35	31.66	0.10	0.15	31.91	59.00	-27.09	QP
3	0.75	14.78	0.10	0.20	15.08	46.00	-30.92	Average
4	0.75	30.16	0.10	0.20	30.46	56.00	-25.54	QP
5	1.50	26.04	0.10	0.25	26.39	46.00	-19.61	Average
6	1.50	36.78	0.10	0.25	37.13	56.00	-18.87	QP
7	2.65	30.85	0.12	0.30	31.27	46.00	-14.73	Average
8	2.65	37.79	0.12	0.30	38.21	56.00	-17.79	QP
9	4.77	23.42	0.19	0.30	23.91	46.00	-22.09	Average
10	4.77	33.46	0.19	0.30	33.95	56.00	-22.05	QP
11	11.14	18.45	0.10	0.60	19.15	50.00	-30.85	Average
12	11.14	28.81	0.10	0.60	29.51	60.00	-30.49	QP

Neutral Line:



	Freq	Read Level	Cable Loss	LISII Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.46	25.10	0.10	0.19	25.39	46.76	-21.37	Average
2	0.46	29.73	0.10	0.19	30.02	56.76	-26.74	QP
3	0.57	15.69	0.10	0.20	15.99	46.00	-30.01	Average
4	0.57	32.82	0.10	0.20	33.12	56.00	-22.88	QP
5	1.43	27.81	0.10	0.24	28.15	46.00	-17.85	Average
6	1.43	32.58	0.10	0.24	32.92	56.00	-23.08	QP
7	2.88	25.63	0.13	0.30	26.06	46.00	-19.94	Average
8	2.88	36.55	0.13	0.30	36.98	56.00	-19.02	QP
9	4.38	18.47	0.18	0.30	18.95	46.00	-27.05	Average
10	4.38	32.48	0.18	0.30	32.96	56.00	-23.04	QP
11	5.42	21.13	0.20	0.30	21.63	50.00	-28.37	Average
12	5.42	31.61	0.20	0.30	32.11	60.00	-27.89	QP

## 7.2 Radiated Emissions, 30MHz to 1GHz

Test Requirement: FCC Part15 :2011  
 Test Method: ANSI C63.4: 2009  
 Test Date: October 12,2012  
 Test Voltage: AC 120V 60Hz  
 Frequency Range: 30 MHz to 1 GHz  
 Measurement Distance: 3m  
 Class: Class B  
 Detector: Peak for pre-scan (120 kHz resolution bandwidth)  
 Limit:  
 For 3m

Frequency range MHz	Quasi-peak limits dB (μV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960	54

Note: At transitional frequencies the lower limit applies.

### 7.2.1 E.U.T. Operation

Operating Environment:

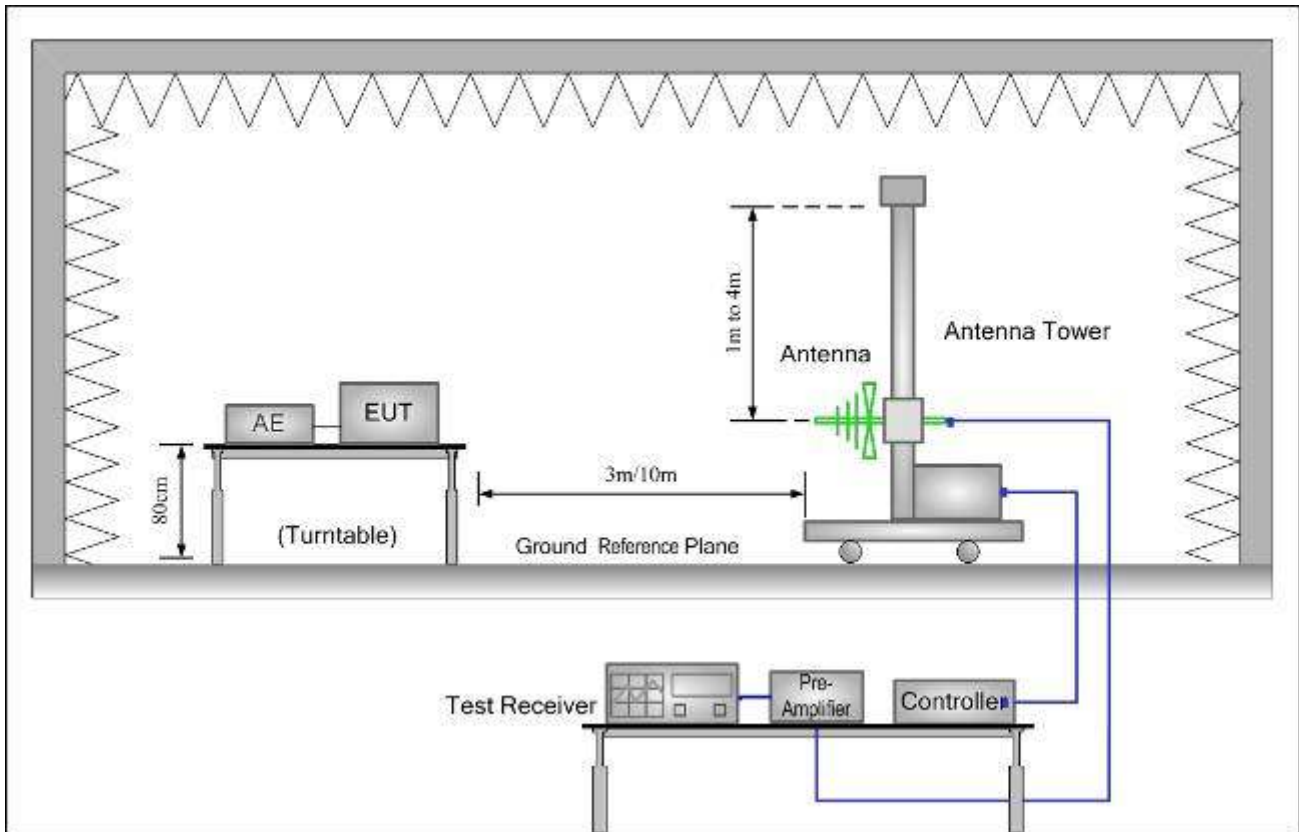
Temperature: 24.5 °C Humidity: 59 % RH Atmospheric Pressure: 100.9 kPa  
 Test mode: Reading Card mode

Pre-scan was performed with peak detected on all ports, Quasi-peak measurements was performed at the frequencies at which maximum peak emission level were detected.

Please see the attached Quasi-peak test results.

For radiated emission: Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

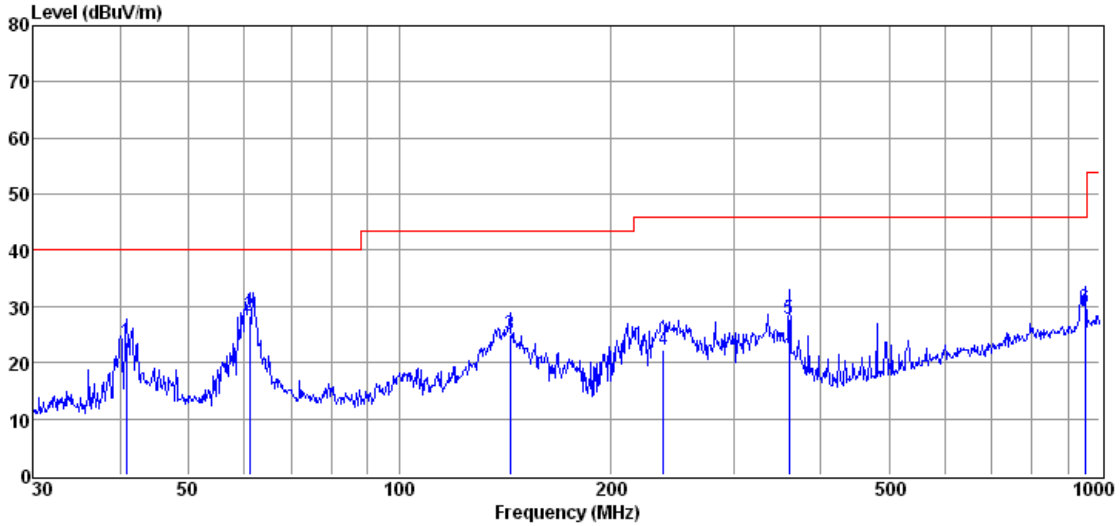
## 7.2.2 Test Setup and Procedure



1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. The EUT was connected to AC power source through a mains power outlet which was bonded to the ground reference plane; The mains cables shall drape to the ground reference plane.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum signature data plots of the EUT.
5. The frequencies of maximum emission were determined in the final radiated emissions measurement, the physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

### 7.2.3 Measurement Data

Vertical:



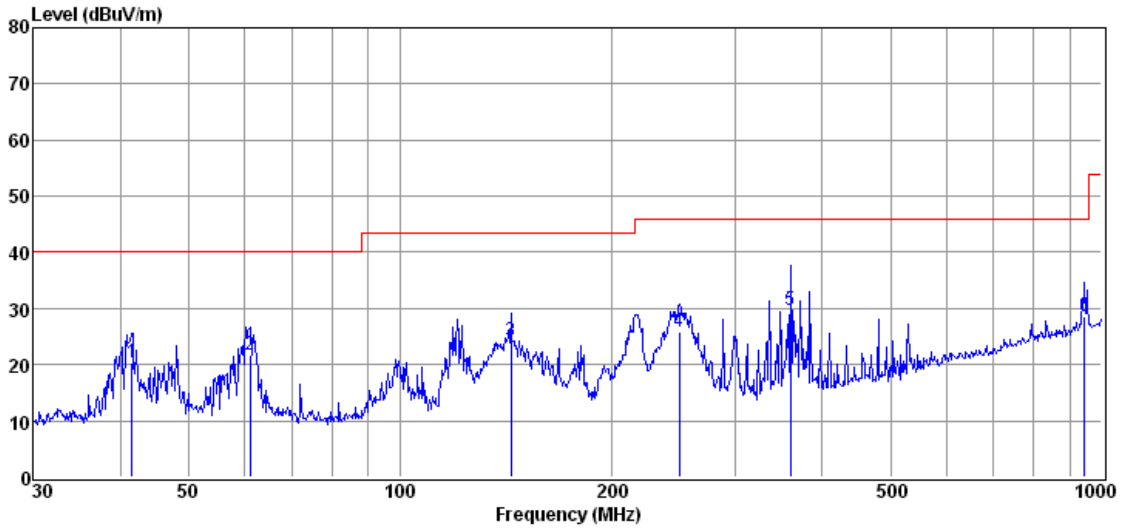
Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dB $\mu$ V)	(dB/m)	(dB)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)	
1	40.70	34.51	13.27	24.70	0.57	23.65	40.00	-16.35	QP
2	61.13	40.34	12.04	24.70	0.74	28.42	40.00	-11.58	QP
3	143.83	36.01	12.33	24.70	1.25	24.89	43.50	-18.61	QP
4	238.31	35.02	10.21	24.52	1.68	22.39	46.00	-23.61	QP
5	360.45	36.31	13.89	24.46	2.16	27.90	46.00	-18.10	QP
6	952.09	25.63	23.92	23.79	3.80	29.56	46.00	-16.44	QP

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

2. If Peak Result comply with QP limit, QP Result is deemed to comply with QP limit



Horizontal:



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dB $\mu$ V)	(dB/m)	(dB)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)	
1	41.42	31.35	13.24	24.70	0.57	20.46	40.00	-19.54	QP
2	61.13	33.70	12.04	24.70	0.74	21.78	40.00	-18.22	QP
3	143.83	35.40	12.33	24.70	1.25	24.28	43.50	-19.22	QP
4	250.30	38.10	10.51	24.50	1.73	25.84	46.00	-20.16	QP
5	360.45	38.18	13.89	24.46	2.16	29.77	46.00	-16.23	QP
6	945.44	24.91	23.81	23.80	3.79	28.71	46.00	-17.29	QP

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

2. If Peak Result comply with QP limit, QP Result is deemed to comply with QP limit

## 8 Photographs (Test Setup For the EUT)

### 8.1 Conducted Emissions on Mains Terminals Test Setup



### 8.2 Radiated Emission Test Setup



## 9 EUT Constructional Details

### 9.1 Exterior of EUT



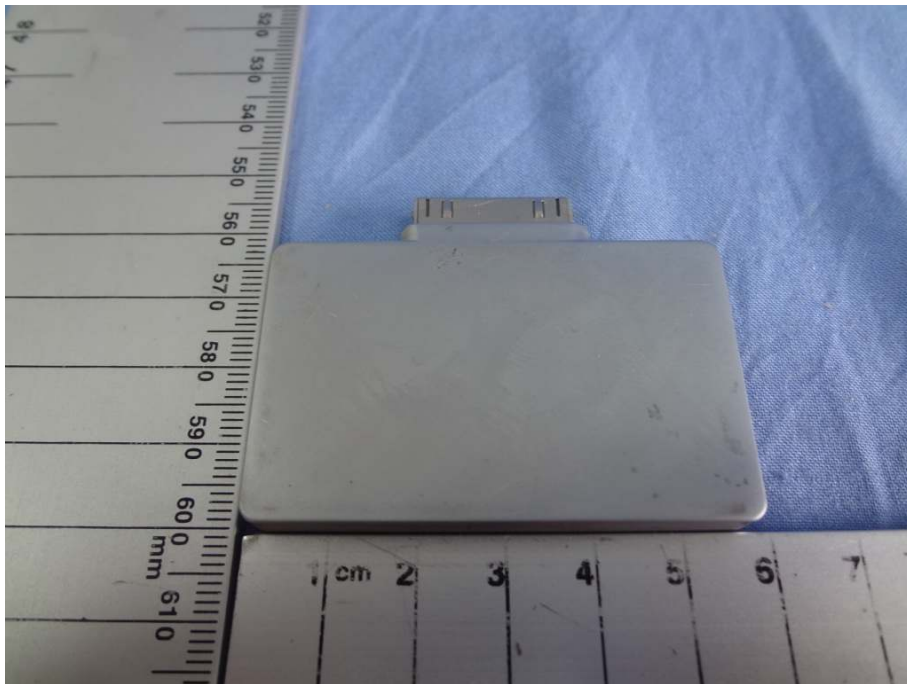
USB Cable



FT Java card with Dual-Interface



Top View



Rear View



Left View



Right View

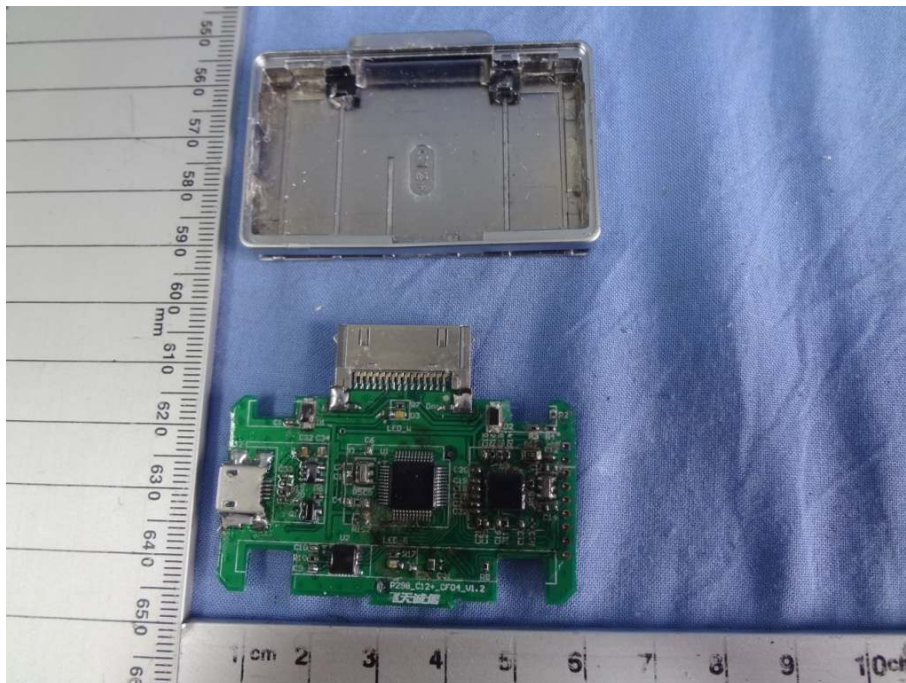
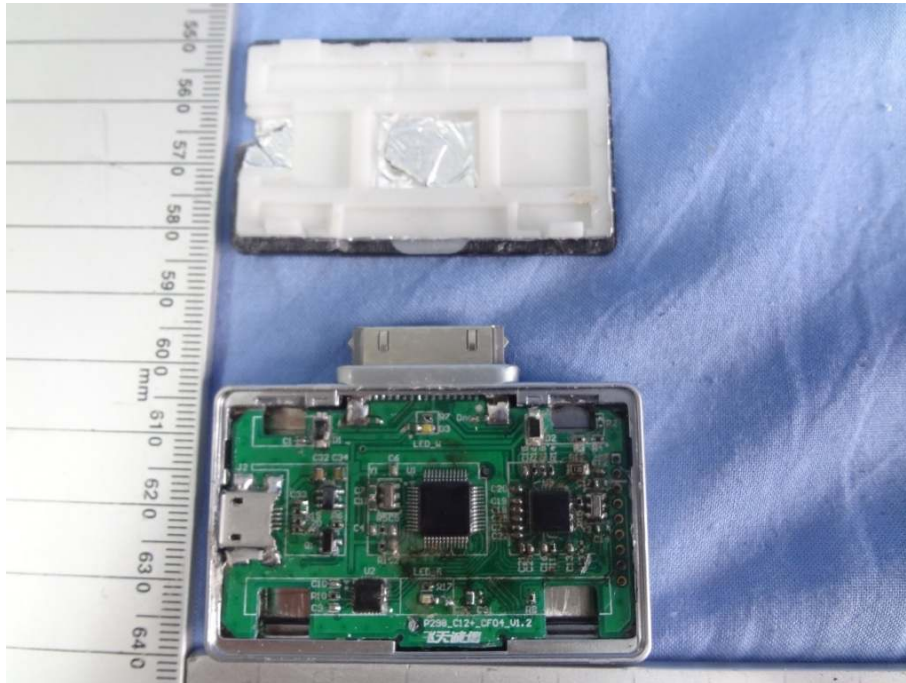


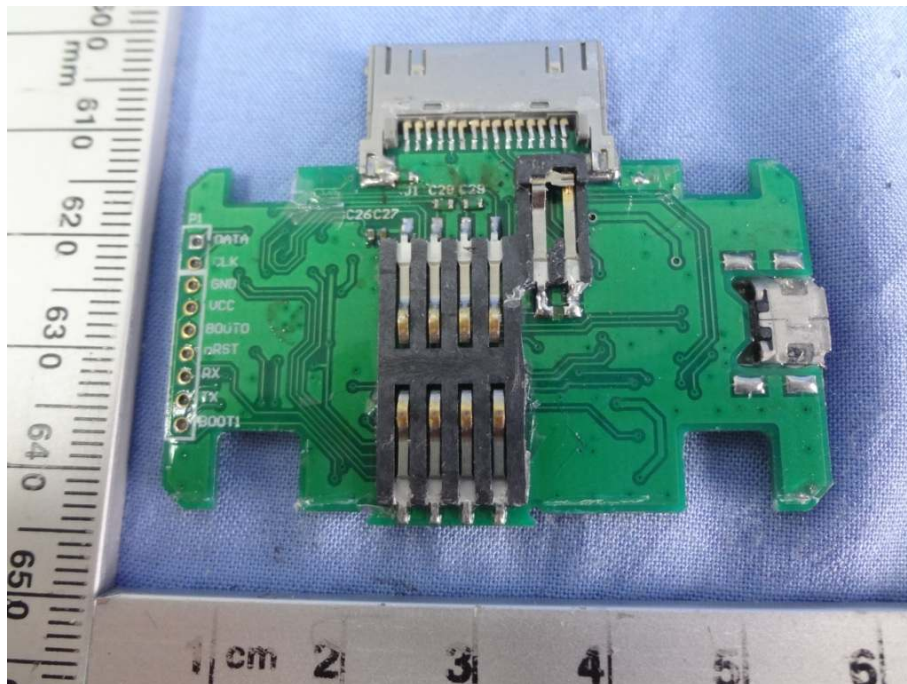
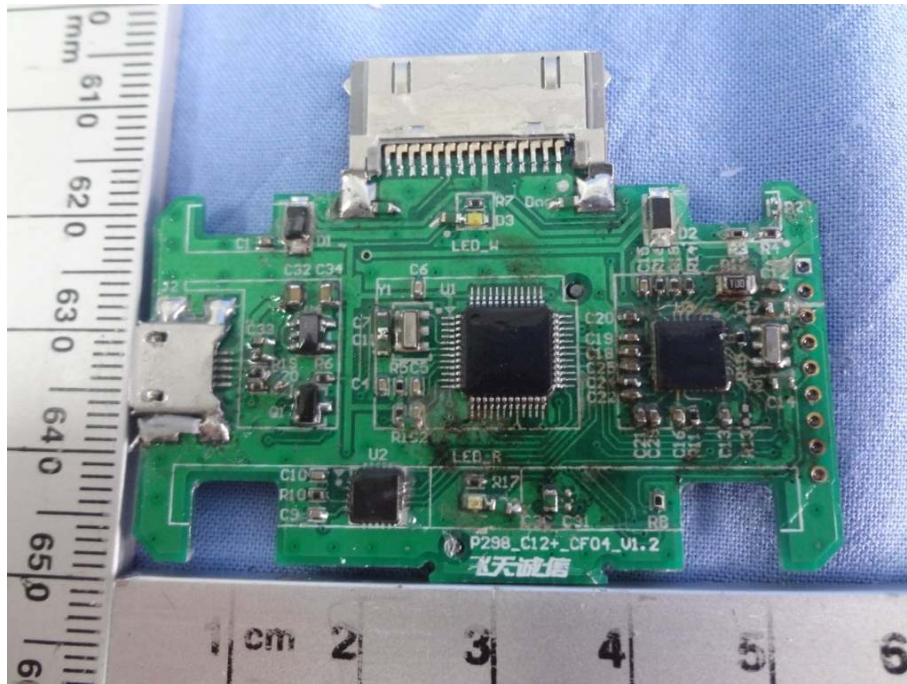
Front View



Back View

## 9.2 Interior of EUT





--End of the Report--