



# TEST REPORT

No. 2012TAR092

for

**ZTE Corporation**

**WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone**

**Model Name: T116a**

**FCC ID : Q78-T116A**

with

**Hardware Version: w5rA**

**Software Version: TEL\_AU\_P640A30V0.0.1B01**

**Issued Date: 2012-02-28**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

**Test Laboratory:**

***DAR accreditation (DIN EN ISO/IEC 17025): No. DGA-PL-114/01-02***

***FCC 2.948 Listed: No.733176***

***IC O.A.T.S listed: No.6629A-1***

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

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## **1. Test Laboratory**

### **1.1. Testing Location**

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT  
Address: No 52, Huayuan beilu, Haidian District, Beijing, P. R. China  
Postal Code: 100191  
Telephone: 00861062304633  
Fax: 00861062304633

### **1.2. Testing Environment**

Normal Temperature: 15-35°C  
Relative Humidity: 20-75%

### **1.3. Project data**

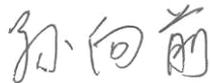
Testing Start Date: Feb. 21<sup>st</sup>, 2012  
Testing End Date: Feb. 24<sup>th</sup>, 2012

### **1.4. Signature**



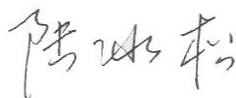
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**Qu Pengfei**  
**(Prepared this test report)**



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**Sun Xiangqian**  
**(Reviewed this test report)**



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**Lu Bingsong**  
**Deputy Director of the laboratory**  
**(Approved this test report)**

## **2. Client Information**

### **2.1. Applicant Information**

Company Name: ZTE CORPORATION  
Address /Post: ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan  
District, Shenzhen, Guangdong, 518057, P.R.China  
City: Shenzhen  
Postal Code: 518057  
Country: China  
Telephone: 0086 21 68895196  
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### **2.2. Manufacturer Information**

Company Name: ZTE CORPORATION  
Address /Post: ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan  
District, Shenzhen, Guangdong, 518057, P.R.China  
City: Shenzhen  
Postal Code: 518057  
Country: China  
Telephone: 0086 21 68895196  
Fax: 0086 21 61460600

### **3. Equipment Under Test (EUT) and Ancillary Equipment (AE)**

#### **3.1. About EUT**

Description	WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone
Model Name	T116a
FCC ID	Q78-T116A
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.7VDC)

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

#### **3.2. Internal Identification of EUT used during the test**

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	357353040668891	w5rA	TEL_AU_P640A30V0.0.1B01

\*EUT ID: is used to identify the test sample in the lab internally.

#### **3.3. Internal Identification of AE used during the test**

AE ID*	Description	SN
AE1	Battery	10091104283579381
AE2	Travel charger	100905290907912
AE3	USB cable	/

##### AE1

Model	Li3708T42P3h553447
Manufacturer	ZTE
Capacitance	820mAh
Nominal Voltage	3.7V

##### AE2

Model	STC-A22O50I700USBA-Z
Manufacturer	RUIDE
Length of cable	120cm (length of USB cable)

##### AE3

Model	/
Manufacturer	ZTE
Length of cable	120cm

\*AE ID: is used to identify the test sample in the lab internally.

## **4. Reference Documents**

### **4.1. Reference Documents for testing**

The following documents listed in this section are referred for testing.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
FCC Part 15, Subpart B	Radio frequency devices	10-1-10 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003

## 5. LABORATORY ENVIRONMENT

**Semi-anechoic chamber** (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

**Control room** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

**Conducted chamber** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

**Fully-anechoic chamber1** (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

**Fully-anechoic chamber2** (8.6 meters×6.1 meters×3.85 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 1 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 4000 MHz

## 6. SUMMARY OF TEST RESULTS

<b>Abbreviations used in this clause:</b>	
P	Pass
NA	Not applicable
F	Fail

<b>Clause</b>	<b>List</b>	<b>Clause in FCC rules</b>	<b>Verdict</b>
1	Radiated Emission	15.109(a)	P
2	Conducted Emission	15.107(a)	P

## 7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESCI	100344	R&S	2012-03-28
2	Test Receiver	ESCI	100766	R&S	2012-04-11
3	Test Receiver	ESI40	831564/002	R&S	2013-02-12
4	BiLog Antenna	VUL9163	302	Schwarzbeck	2014-02-10
5	LISN	ESH2-Z5	829991/012	R&S	2012-04-17
6	Universal Radio Communication Tester	CMU200	100680	R&S	2012-09-05
7	Universal Radio Communication Tester	CMU200	109914	R&S	2012-04-20
8	Dual-Ridge Waveguide Horn Antenna	3115	6914	EMCO	2012-12-16
9	PC	OPTIPLEX 755	3908243625	DELL	N/A
10	Monitor	E178FPc	CN-OWR979-6 4180-7AJ-D2M S	DELL	N/A
11	Printer	DeskJet D2368	TH72E12G7Q	HP	N/A
12	Keyboard	L100	CN0RH659658 907ATOI40	DELL	N/A
13	Mouse	VR-301	692722550019 8	XINGYU	N/A

## **ANNEX A: MEASUREMENT RESULTS**

### **A.1 Radiated Emission (§15.109(a))**

#### **A.1.1 Method of measurement**

The field strength of radiated emissions from the unintentional radiator (USB mode of MS and charging mode of MS) at a distance of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

#### **A.1.2 EUT Operating Mode:**

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

#### **A.1.3 Measurement Limit**

Frequency of emission (MHz)	Field strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

#### **A.1.4 Test Condition**

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100kHz/300kHz	5
1000-4000	1MHz/1MHz	15

### A.1.5 Measurement Results

A "reference path loss" is established and the  $A_{Rpl}$  is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + G_A + G_{\text{PL}}$$

Where

$G_A$ : Antenna factor of receive antenna

$G_{\text{PL}}$ : Path Loss

$P_{\text{Mea}}$ : Measurement result on receiver.

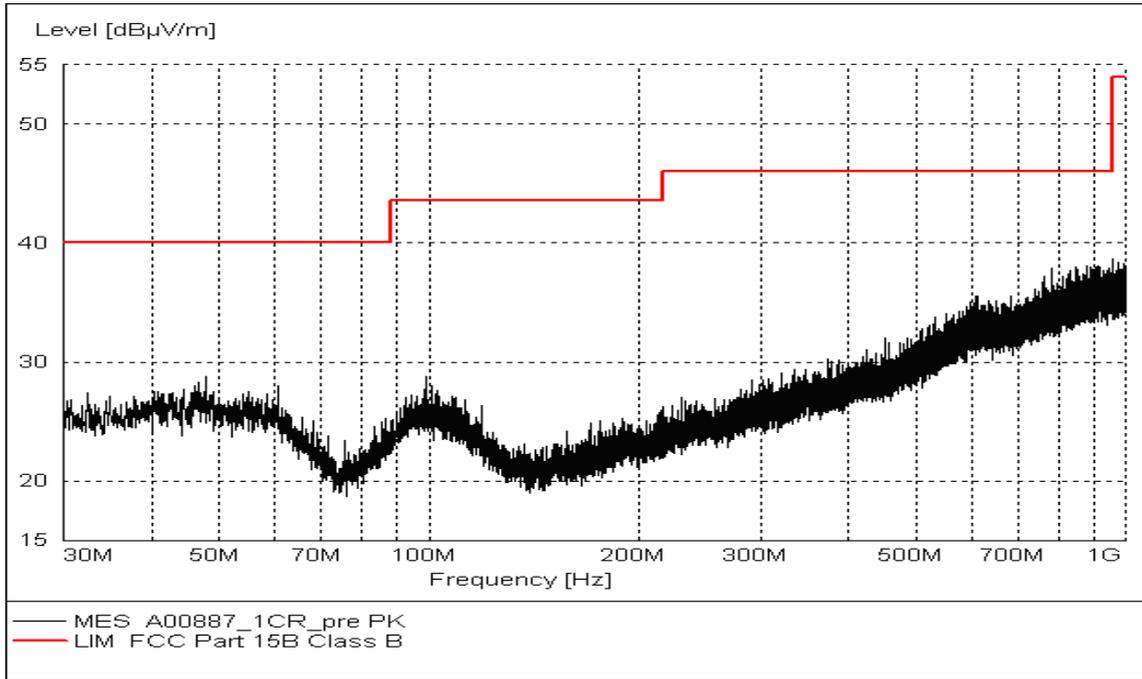
### Charging Mode

Frequency(MHz)	Result(dBuV/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{Mea}}$ (dBuV)	Polarity
3699.399	39.14	-19.5	33.4	25.24	VERTICAL
3701.403	39.10	-19.4	33.4	25.10	VERTICAL
3695.391	39.08	-19.5	33.4	25.18	VERTICAL
3703.407	39.08	-19.4	33.4	25.08	VERTICAL
3697.395	39.06	-19.5	33.4	25.16	HORIZONTAL
3705.411	39.06	-19.4	33.4	25.06	VERTICAL

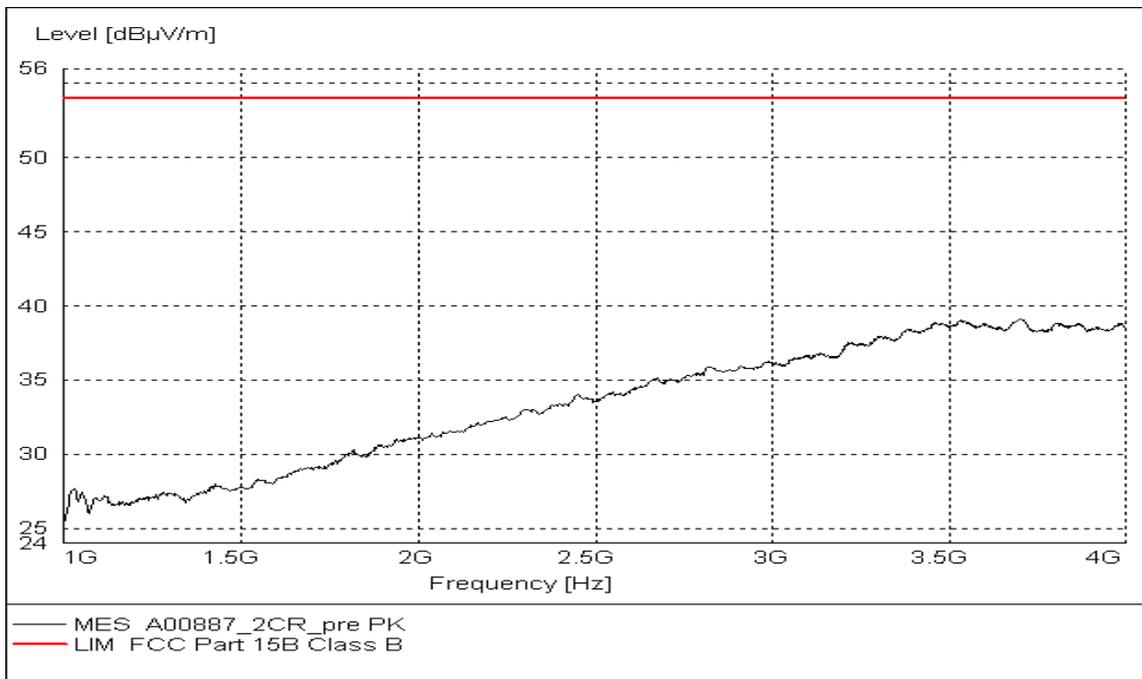
### USB Mode

Frequency(MHz)	Result(dBuV/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{mea}}$ (dBuV)	Polarity
3699.399	39.33	-19.5	33.4	25.43	VERTICAL
3701.403	39.28	-19.4	33.4	25.28	VERTICAL
3703.407	39.26	-19.4	33.4	25.26	VERTICAL
3697.395	39.25	-19.5	33.4	25.35	VERTICAL
3705.411	39.21	-19.4	33.4	25.21	VERTICAL
3695.391	39.20	-19.5	33.4	25.30	VERTICAL

**Charging Mode**



**Figure A.1 Radiated Emission from 30MHz to 1GHz**



**Figure A.2 Radiated Emission from 1GHz to 4GHz**

USB Mode

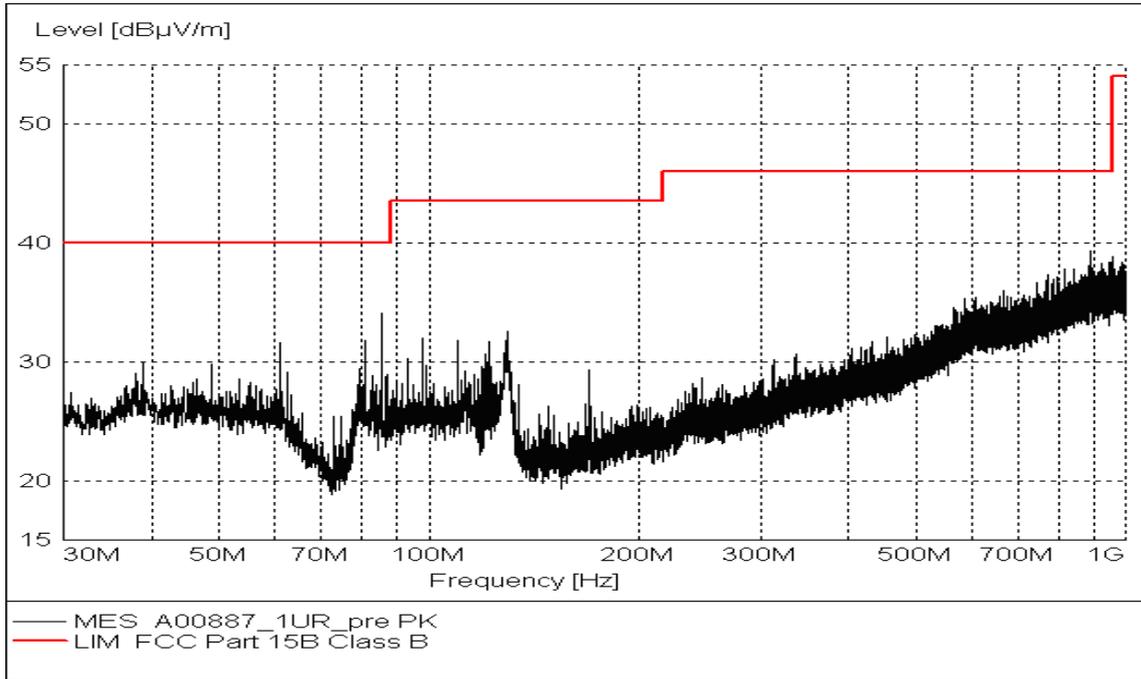


Figure A.3 Radiated Emission from 30MHz to 1GHz

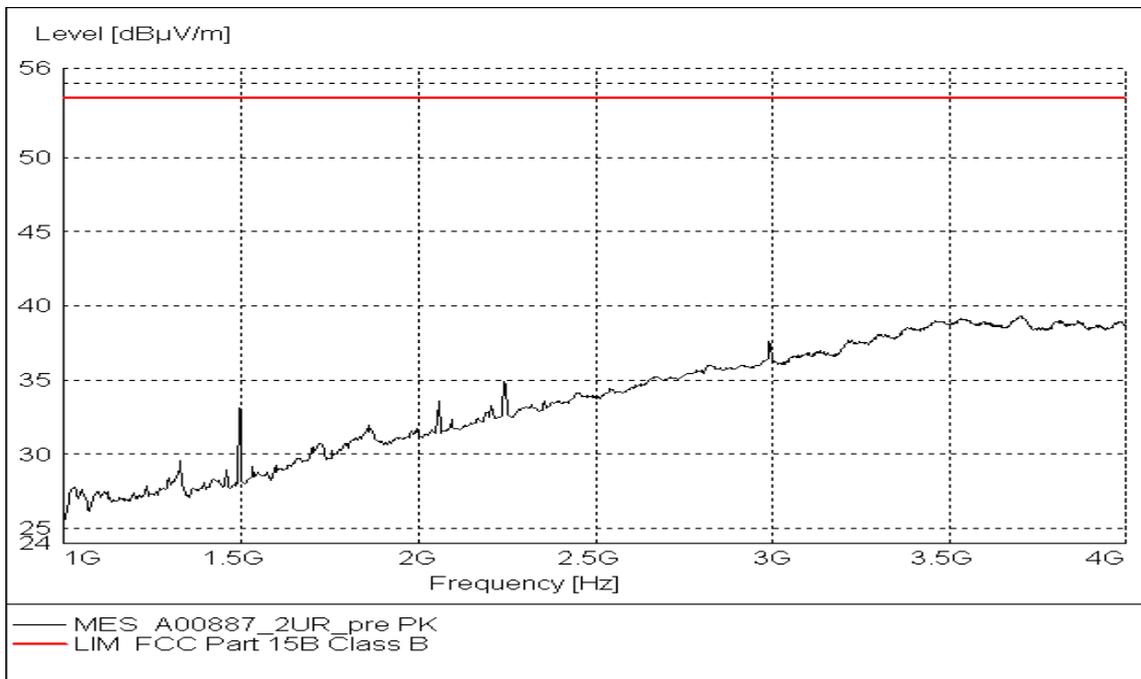


Figure A.4 Radiated Emission from 1GHz to 4GHz

## A.2 Conducted Emission (§15.107(a))

### A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 7.2.

### A.2.2 EUT Operating Mode:

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

### A.2.3 Measurement Limit

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

\*Decreases with the logarithm of the frequency

### A.2.4 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60

RBW	Sweep Time(s)
9kHz	1

### A.2.5 Measurement Results Charging Mode

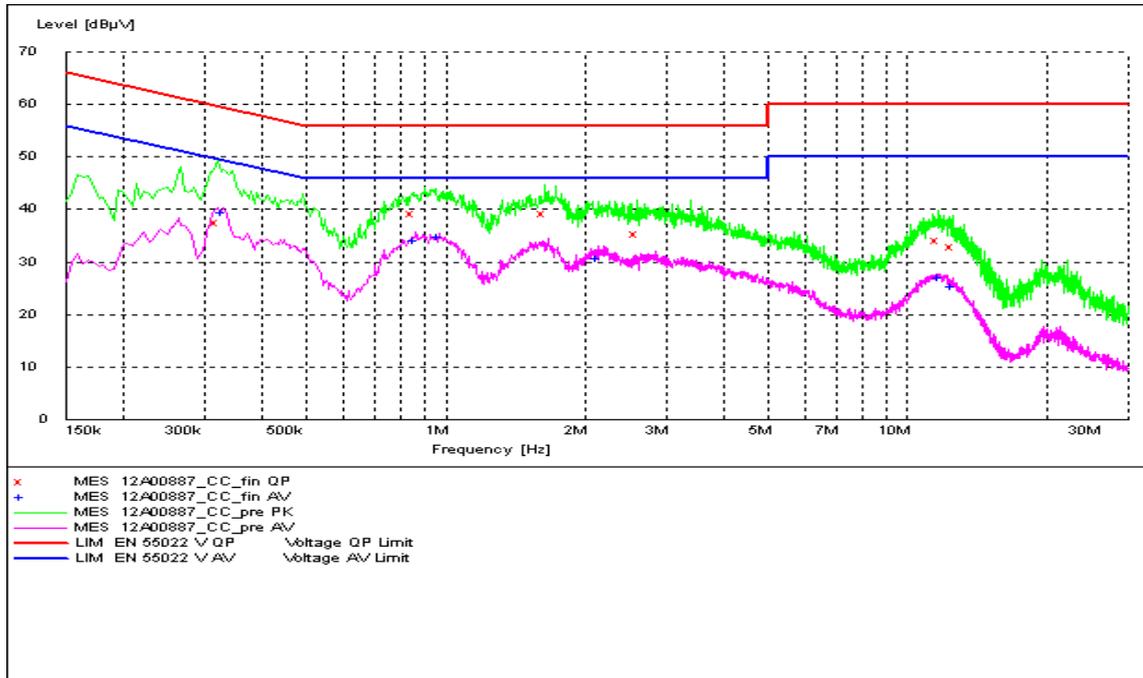


Figure A.5 Conducted Emission

#### MEASUREMENT RESULT: "12A00887\_CC\_fin QP"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.321000	37.50	10.1	60	22.2	L1	GND
0.852000	39.00	10.1	56	17.0	N	GND
1.639500	39.10	10.1	56	16.9	N	GND
2.603570	35.30	10.1	56	20.7	N	GND
11.674226	34.00	10.2	60	26.0	L1	GND
12.544868	32.70	10.2	60	27.3	L1	GND

#### MEASUREMENT RESULT: "12A00887\_CC\_fin AV"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.330000	39.30	10.1	50	10.1	N	GND
0.861000	33.90	10.1	46	12.1	N	GND
0.969000	34.60	10.1	46	11.4	N	GND
2.140585	30.60	10.1	46	15.4	N	GND
11.744412	27.00	10.2	50	23.0	N	GND
12.569957	25.30	10.2	50	24.7	N	GND

USB Mode

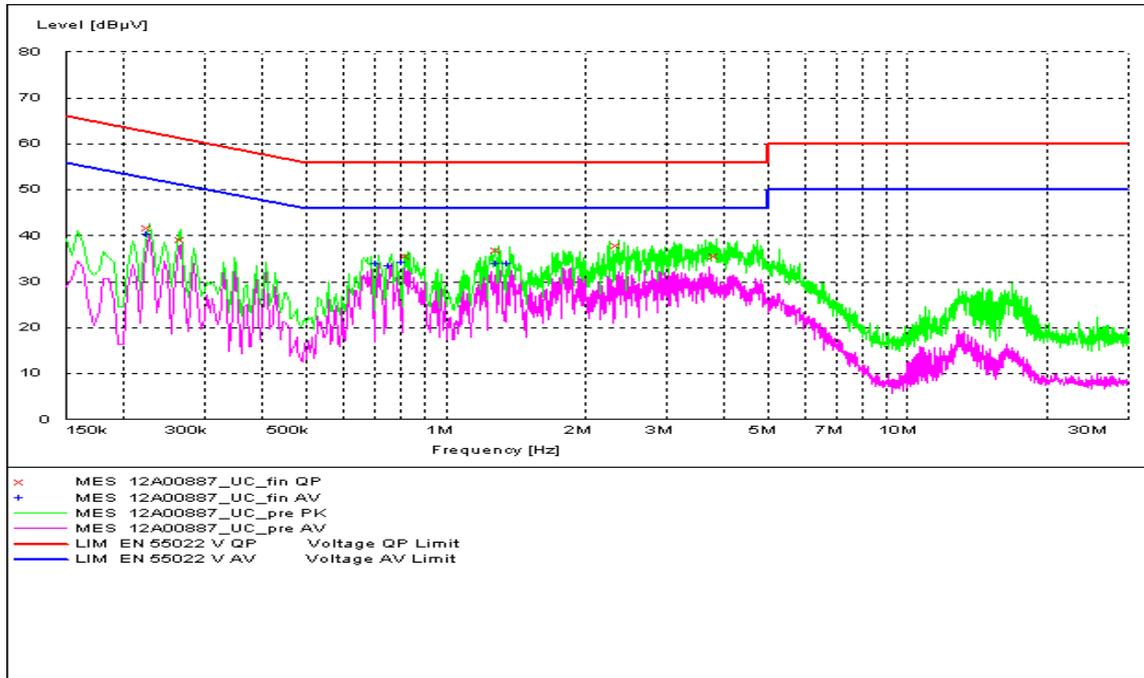


Figure A.6 Conducted Emission

MEASUREMENT RESULT: "12A00887\_UC\_fin QP"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.226500	41.80	10.1	63	20.8	L1	GND
0.267000	39.10	10.1	61	22.1	L1	GND
0.829500	35.60	10.1	56	20.4	L1	GND
1.302000	36.90	10.1	56	19.1	L1	GND
2.360755	37.80	10.1	56	18.2	L1	GND
3.843925	35.70	10.1	56	20.3	L1	GND

MEASUREMENT RESULT: "12A00887\_UC\_fin AV"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.226500	40.10	10.1	53	12.5	L1	GND
0.717000	33.80	10.1	46	12.2	L1	GND
0.757500	33.20	10.1	46	12.8	L1	GND
0.811500	34.00	10.1	46	12.0	L1	GND
1.302000	33.70	10.1	46	12.3	L1	GND
1.378500	33.70	10.1	46	12.3	L1	GND

\*\*\*END OF REPORT\*\*\*