



# EMC TEST REPORT

**Applicant** ZTE Coporation  
**FCC ID** SRQ-Z815  
**Product** LTE/WCDMA/GSM Multi-Mode  
Digital Mobile Phone  
**Model** Z815  
**Report No.** RXC1512-0230EMC  
**Issue Date** February 23, 2016

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2014)/ ANSI C63.4 (2014)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

*Wei Liu*

Reviewed by: Wei Liu

*Guangchang Fan*

Approved by: Guangchang Fan



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### Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	15.107, ANSI C63.4-2014	PASS
Test Date: January 4, 2016 ~ February 4, 2016			

# 1 Test Laboratory

## 1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of TA technology (shanghai) co., Ltd).The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by CNAS or any government agencies.

## 1.2 Test facility

### **CNAS (accreditation number: L2264)**

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

### **FCC (recognition number is 428261)**

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

### **IC (recognition number is 8510A)**

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

### **VCCI (recognition number is C-4595, T-2154, R-4113, G-766)**

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

### **A2LA (Certificate Number: 3857.01)**

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



### 1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.  
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## 2 General Description of Equipment under Test

### 2.1 Client Information

<b>Applicant</b>	ZTE Coporation
<b>Applicant address</b>	ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District
<b>Manufacturer</b>	ZTE Coporation
<b>Manufacturer address</b>	ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District

### 2.2 General information

EUT Description	
Device Type:	Portable Device
Product Name:	LTE/WCDMA/GSM Multi-Mode Digital Mobile Phone
Model Number:	Z815
HW Version:	u50A
SW Version:	Z815V0.0.0B01
IMEI:	869278020002764
Antenna Type:	Internal Antenna
Used Host Product:	PC: Model: DELL E6430 (SN : 32RKWW1)
Test Mode:	Transfer Data Mode
EUT Accessory	
Battery	Manufacturer: SCUD(FUJIAN)ELECTRONICS Model: Li3922T44P6h903546 Power Rating: DC 3.84V, Li-ion
Adapter	Manufacturer: RUIDE Model: STC-A51A-Z
USB Cable	99cm Cable, Shielded
Remark: The information of the EUT is declared by the manufacturer. Please refer to the specifications or user manual for details.	



## 2.3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

### Test standards

**FCC Code CFR47 Part15B (2014)**

**ANSI C63.4 (2014)**

### 3 Test Case Results

#### 3.1 Radiated Emission

##### Ambient condition

Temperature	Relative humidity	Pressure
24°C~26°C	45%~50%	102.5kPa

##### Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

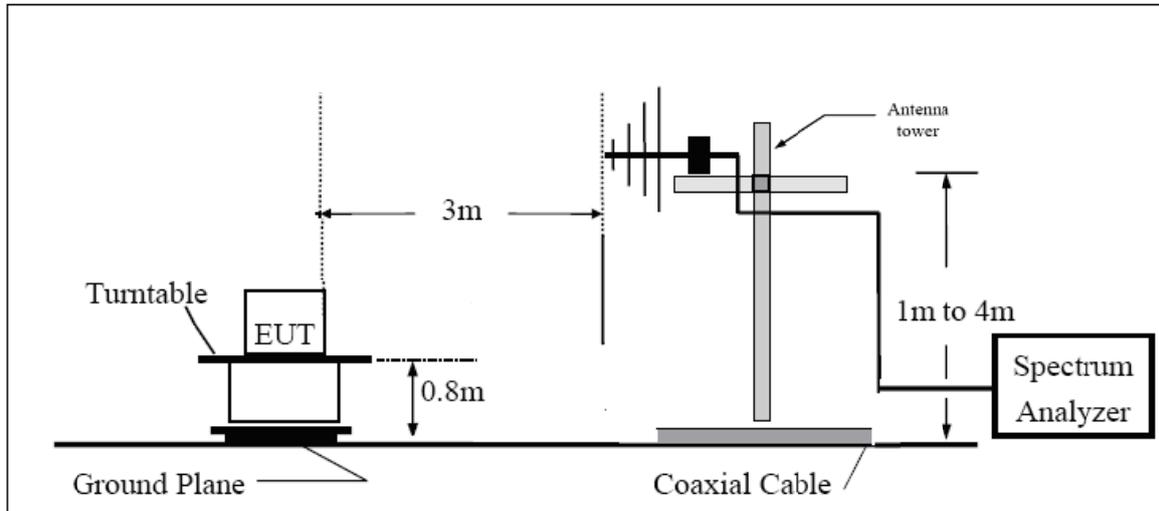
(a) PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO

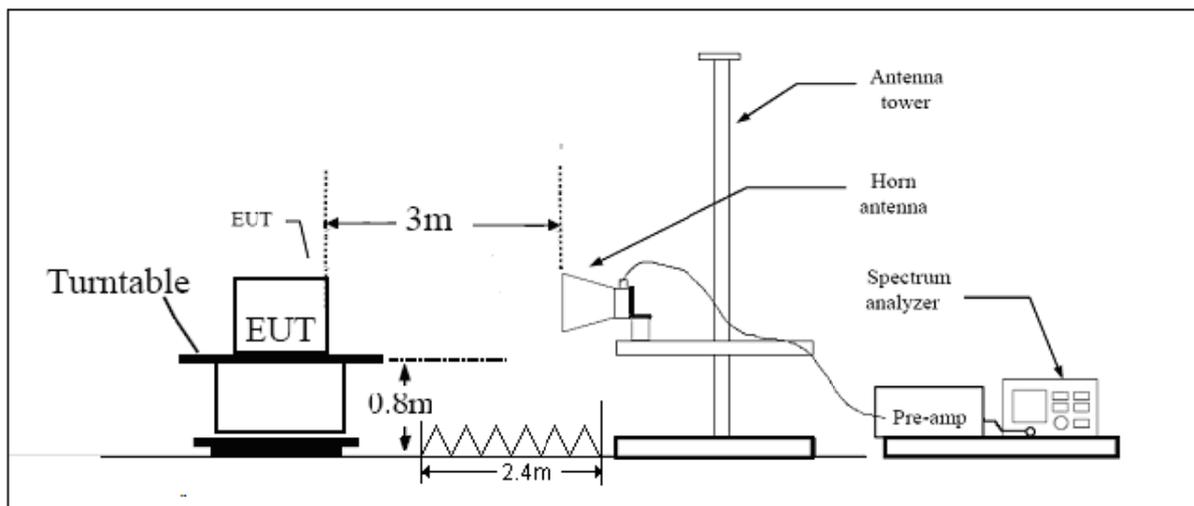
During the test, EUT is connected to a laptop via a USB cable in the case of Transfer Data mode. The EUT is used as the peripheral equipment of the PC. The data is transferred from EUT to PC; PC is connected to server via a long LAN cable.

## Test Setup

### Below 1GHz



### Above 1GHz



Note: Area side:2.4mX3.6m

**Limits**

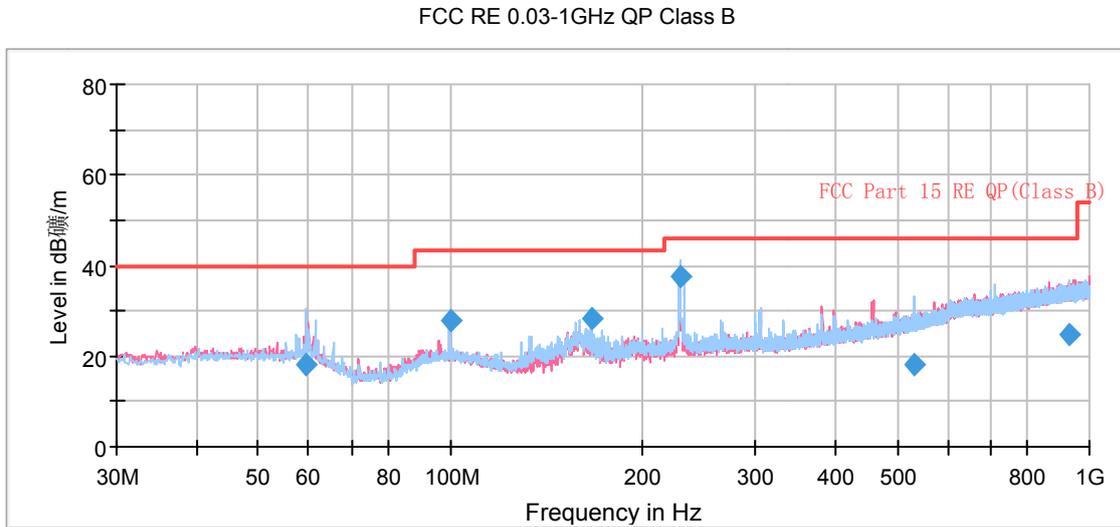
Frequency (MHz)	Field Strength (dB $\mu$ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 <sup>th</sup> harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .  $U = 3.92$  dB.

**Test Results**

The messy code ( dB<sub>μV/m</sub> ) including in the following plots mean dBuV/m.  
 The following graphs display the maximum values of horizontal and vertical by software.  
 For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

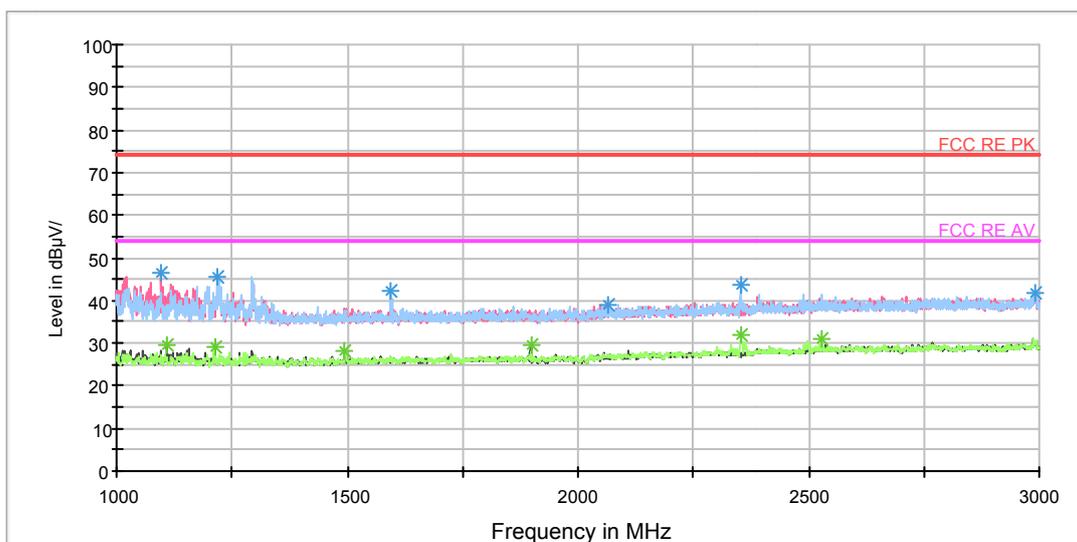


Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
59.383750	18.0	30.5	200.0	H	44.0	-12.5	22.0	40.0
99.758750	27.9	41.1	189.0	H	0.0	-13.2	15.6	43.5
166.005000	28.2	38.2	100.0	V	241.0	-10.0	15.3	43.5
228.365000	37.6	50.8	125.0	H	255.0	-13.2	8.4	46.0
533.348750	18.2	38.9	100.0	H	210.0	-20.7	27.8	46.0
932.501250	25.0	50.9	175.0	H	340.0	-25.9	21.0	46.0

- Remark:**
1. Quasi-Peak = Reading value + Correction factor
  2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
  3. Margin = Limit – Quasi-Peak

RE 1G-6GHz PK+AV Class B

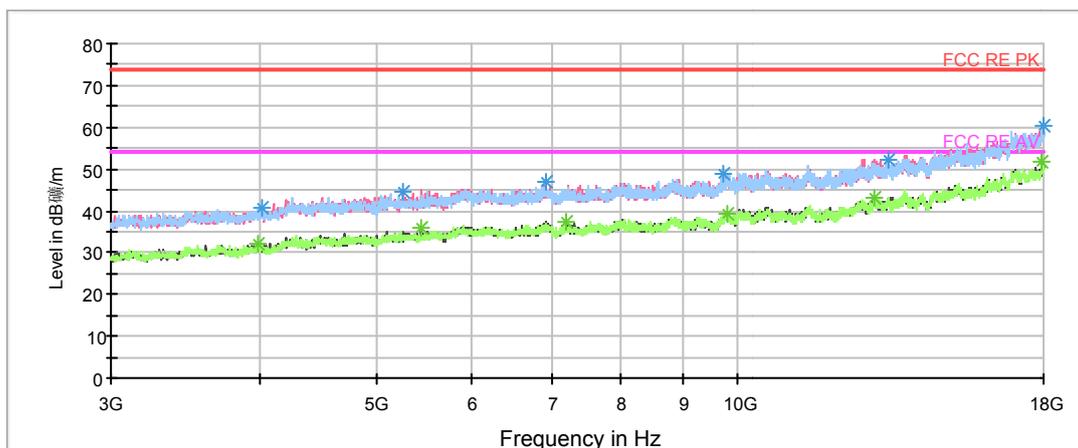


Radiated Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1110.000000	38.6	49.6	100.0	V	155.0	-11.0	35.4	74
1213.500000	40.7	51.3	100.0	H	62.0	-10.6	33.3	74
1495.500000	37.7	47.2	100.0	H	3.0	-9.5	36.3	74
1897.500000	37.2	45.3	100.0	V	70.0	-8.1	36.8	74
2352.500000	39.6	45.4	100.0	H	323.0	-5.8	34.4	74
2527.500000	39.2	44.1	100.0	H	323.0	-4.9	34.8	74

Frequency (MHz)	Average (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1110.000000	29.6	40.6	100.0	V	155.0	-11.0	24.4	54
1213.500000	28.9	39.5	100.0	H	62.0	-10.6	25.1	54
1495.500000	27.9	37.4	100.0	H	3.0	-9.5	26.1	54
1897.500000	29.5	37.6	100.0	V	70.0	-8.1	24.5	54
2352.500000	32.1	37.9	100.0	H	323.0	-5.8	21.9	54
2527.500000	31.1	36.0	100.0	H	323.0	-4.9	22.9	54

RE 3-18GHz PK+AV



- FCC RE PK
- FCC RE AV
- Preview Result 1V-PK+
- Preview Result 2V-AVG
- Preview Result 1H-PK+
- Preview Result 2H-AVG
- \* Data Reduction Result 1 [1]-PK+
- \* Data Reduction Result 2 [1]-AVG

Radiated Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4003.125000	40.5	41.0	101.0	V	0.0	-0.5	33.5	74
5261.250000	44.5	48.2	101.0	V	121.0	-3.7	29.5	74
6924.375000	46.7	53.5	101.0	H	181.0	-6.8	27.3	74
9736.875000	48.6	60.1	101.0	H	2.0	-11.5	25.4	74
13350.000000	52.4	68.2	101.0	V	228.0	-15.8	21.6	74
17981.250000	60.4	85.6	101.0	H	310.0	-25.2	13.6	74

Frequency (MHz)	Average (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3986.250000	32.0	32.4	101.0	V	171.0	-0.4	22.0	54
5439.375000	35.7	39.5	101.0	V	273.0	-3.8	18.3	54
7196.250000	37.1	45.8	101.0	V	49.0	-8.7	16.9	54
9813.750000	39.5	51.6	101.0	H	68.0	-12.1	14.5	54
13003.125000	43.2	59.4	101.0	H	273.0	-16.2	10.8	54
17962.500000	51.6	76.6	101.0	V	171.0	-25.0	2.4	54

### 3.2 Conducted Emission

#### Ambient condition

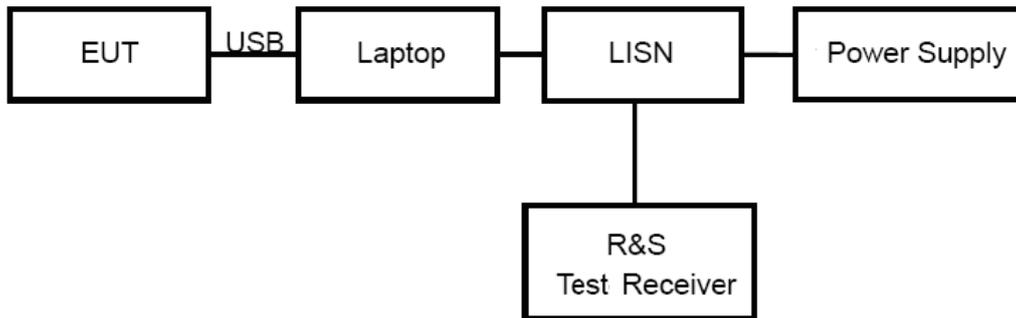
Temperature	Relative humidity	Pressure
24°C ~26°C	50%~55%	102.5kPa

#### Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

During the test, EUT is connected to a laptop via a USB cable in the case of Transfer Data mode. The EUT is used as the peripheral equipment of the PC. The data is transferred from EUT to PC; PC is connected to server via a long LAN cable.

#### Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage 120V/60Hz.

#### Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	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.

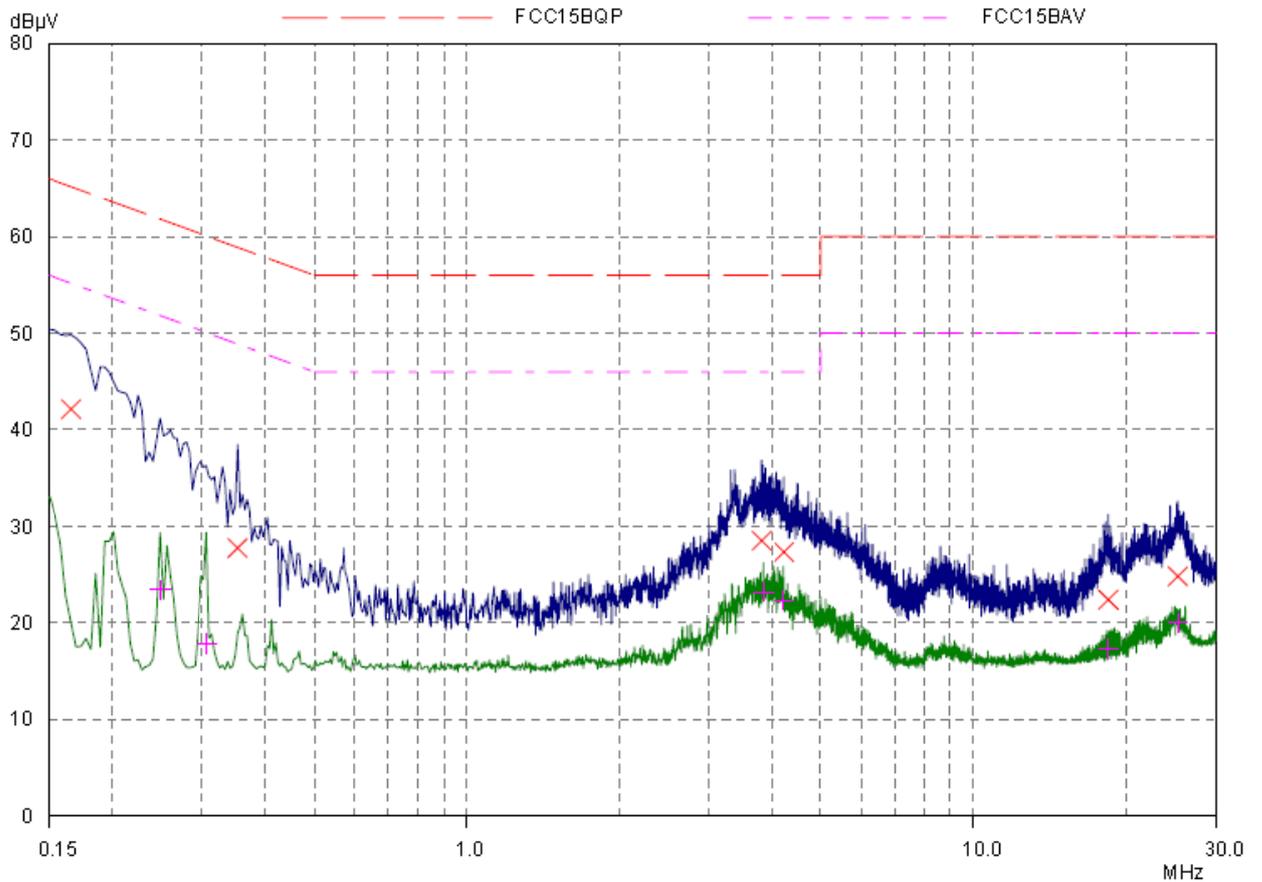
#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .  $U = 2.69$  dB.



### Test Results

Following plots, Blue trace uses the peak detection; Green trace uses the average detection.



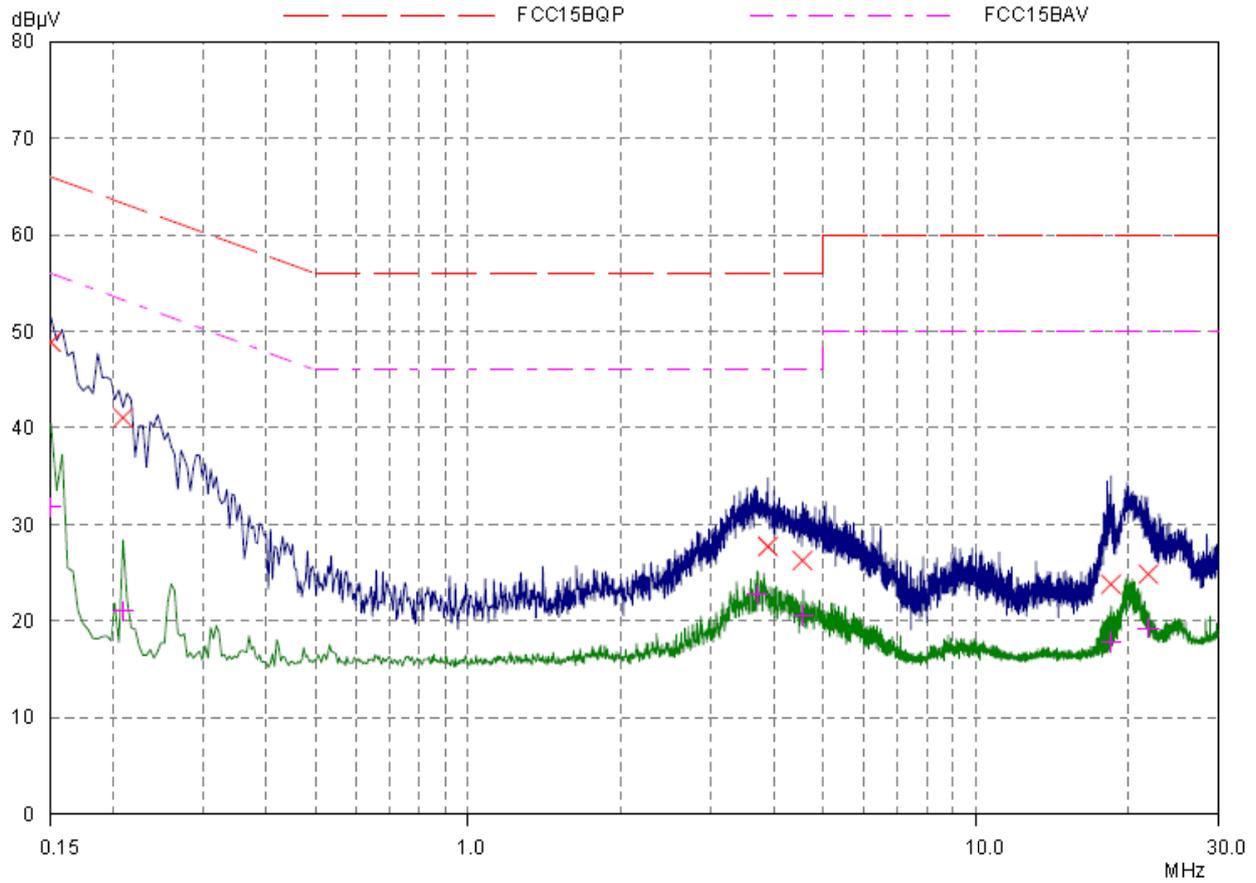
#### Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.16562	42.13	65.18	23.05	L1	gnd
0.35312	27.75	58.89	31.14	L1	gnd
3.81406	28.51	56.00	27.49	L1	gnd
4.23593	27.33	56.00	28.67	L1	gnd
18.44296	22.41	60.00	37.59	L1	gnd
25.20468	24.82	60.00	35.18	L1	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.24765	23.42	51.84	28.42	L1	gnd
0.30625	17.86	50.07	32.21	L1	gnd
3.84531	23.22	46.00	22.78	L1	gnd
4.22812	22.36	46.00	23.64	L1	gnd
18.44296	17.30	50.00	32.70	L1	gnd
25.20468	19.99	50.00	30.01	L1	gnd

L line

Conducted Emission from 150 KHz to 30 MHz



Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase	PE
0.15	48.88	66.00	17.12	N	gnd
0.20859	41.04	63.26	22.22	N	gnd
3.88828	27.72	56.00	28.28	N	gnd
4.54453	26.29	56.00	29.71	N	gnd
18.43906	23.81	60.00	36.19	N	gnd
21.90781	24.85	60.00	35.15	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase	PE
0.15	31.80	56.00	24.20	N	gnd
0.20859	21.05	53.26	32.21	N	gnd
3.70468	22.74	46.00	23.26	N	gnd
4.55625	20.59	46.00	25.41	N	gnd
18.43906	17.86	50.00	32.14	N	gnd
21.90781	19.28	50.00	30.72	N	gnd

N line

Conducted Emission from 150 KHz to 30 MHz

## 4 Main Test Equipment

Name	Type	Manufacturer	Serial Number	Last Cal.	Cal. Due Date
EMI Test Receiver	ESCI	R&S	100948	2015-05-22	2016-05-21
Signal Analyzer	FSV30	R&S	100815	2015-12-17	2016-12-16
Trilog Antenna	VULB 9163	SCHWARZBECK	9163-201	2014-12-06	2017-12-05
Horn Antenna	HF907	R&S	100126	2014-12-06	2017-12-05
Horn Antenna	3160-09	ETS-Lindgren	00102643	2015-01-30	2018-01-29
EMI Test Receiver	ESCS30	R&S	100138	2015-12-17	2016-12-16
LISN	ENV216	R&S	101171	2015-12-18	2016-12-17