MEASUREMENT REPORT
FCC Part 15B

FCC ID: SRQ-ZTEBLADEC341

APPLICANT: ZTE Corporation

Application Type: Certification
Product: WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone
Model No.: ZTE Blade C341, ZTE Blade Q2 3G, ZTE T221
Trademark: ZTE
FCC Classification: FCC Class B Digital Device (JBP)
FCC Rule Part(s): FCC Part 15 Subpart B
Test Procedure(s): ANSI C63.4: 2014
Test Date: Jun. 24 ~ Jul. 09, 2015

Reviewed By : Robin Wu
(Robin Wu)

Approved By : Marlin Chen
(Marlin Chen)

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.
This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2014. Test results reported herein relate only to the item(s) tested.
The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date
1510RSU01304	Rev. 01	Initial report	10-21-2015

Note: The test report was based on MRT report no. 1506RSU03004. This modification just updated the model number and FCC ID of the product.

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§2.1033 General Information

Applicant:	ZTE Corporation
Applicant Address:	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R. China
Manufacturer:	ZTE Corporation
Manufacturer Address:	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R. China
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
MRT FCC Registration No.:	809388
Model No.:	ZTE Blade C341, ZTE Blade Q2 3G, ZTE T221
FCC ID:	SRQ-ZTEBLADEC341
Test Device Serial No.:	N/A ☐ Production ☒ Pre-Production ☐ Engineering
FCC Classification:	FCC Class B Digital Device (JBP)

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- **MRT facility is a FCC registered (MRT Reg. No. 809388) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.**
- **MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.**
- **MRT facility is a VCCI registered (R-4179, G-814, C-4664, T-2206) test laboratory with the site description on file at VCCI Council.**
- **MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.**

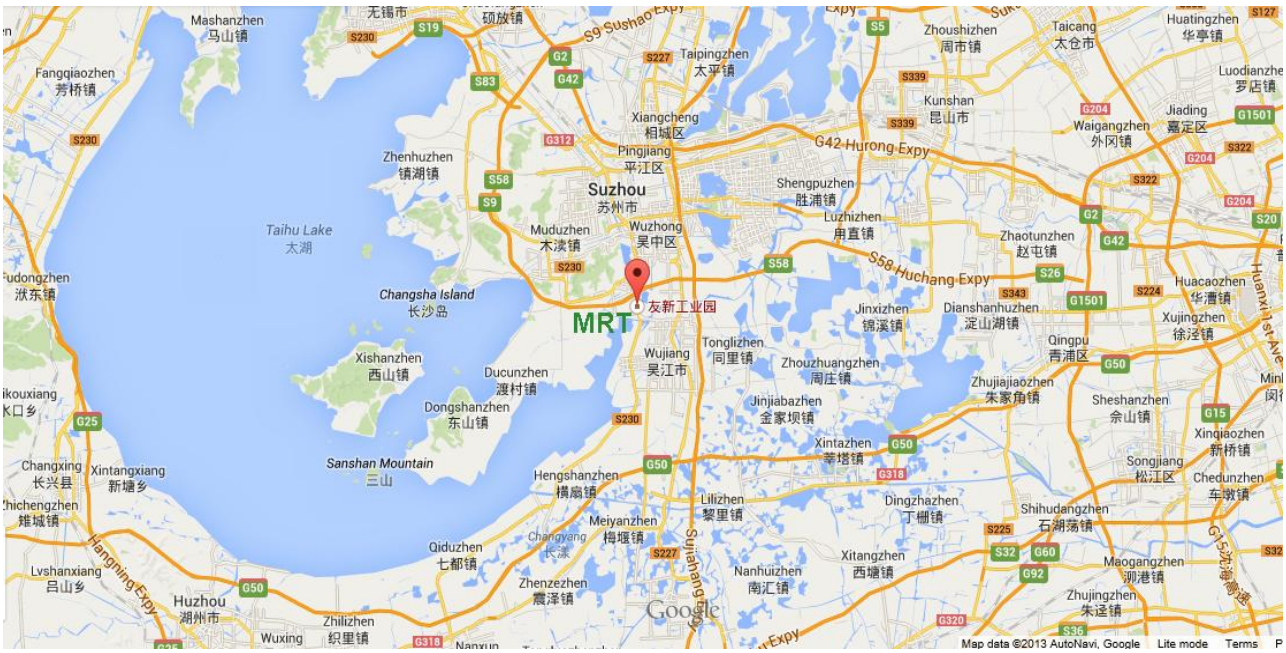
1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.



2. PRODUCT INFORMATION

2.1. Equipment Description

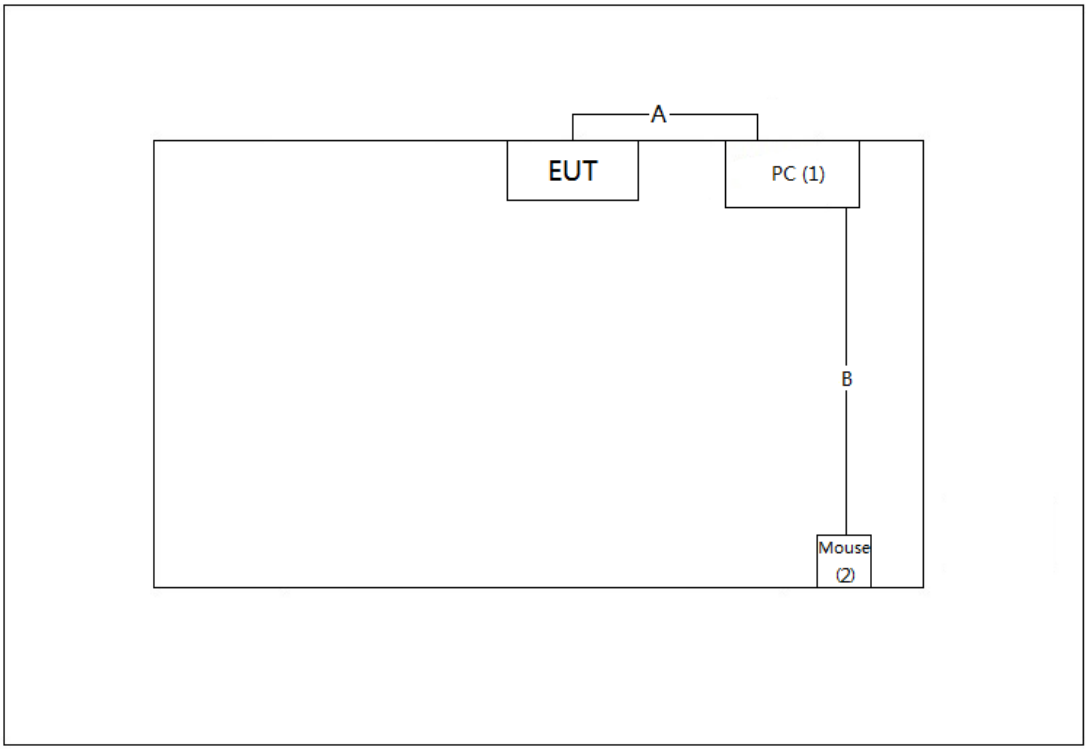
Product Name	WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone
Model No.	ZTE Blade C341, ZTE Blade Q2 3G, ZTE T221
Brand Name	ZTE
Antenna Type	Internal
Wi-Fi Specification	802.11b/g/n
Bluetooth Specification	v2.1 + EDR
2G/3G Specification	GSM850/PCS1900, WCDMA Band II/V

Note: The difference of models is for different marketing requirement.

2.2. Test Configuration

The EUT was tested per the guidance FCC Part 15 Subpart B: 2014 and ANSI C63.4: 2014 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

Connection Diagram		



Signal Cable Type		Signal cable Description
A	USB Cable	Shielded, 0.5m
B	USB Cable	Shielded, 1.8m

2.3. Test System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Power Cord
1	Notebook	Lenovo	E430C	Non-Shielded, 1.8m
2	USB Mouse	DELL	MS111-T	N/A

2.4. Test Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	Making EUT working on “USB Copy” Mode by the “WINTHRAX”, and turn to test

2.5. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

2.6. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

3. DESCRIPTION OF TEST

3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical Equipment in the Range of 9kHz to 40GHz (ANSI C63.4-2014) was used in the measurement of the **WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone FCC ID: SRQ-ZTEBLADEC341.**

Deviation from measurement procedure…….....None

3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 8'x4'x4' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150 kHz to 30 MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9 kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or resolution, clock or data exchange speed, scrolling H pattern to the EUT and/or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions are used for final measurements on the same test site.

Line conducted emissions test results are shown in Section 6.2.

3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. An MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30 MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30 MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 0.8 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions. According to 3dB beam-width of horn antenna, the horn antenna should be always directed to the EUT when rising height.

4. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2015/11/07
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2015/11/07
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2015/11/07
Temperature/Humidity Meter	Ouleinuo	N/A	MRTSUE06114	1 year	2015/11/20

Radiated Emission

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	E4447A	MRTSUE06028	1 year	2015/12/09
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2015/11/07
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2016/04/15
Preamplifier	Agilent	83017A	MRTSUE06019	1 year	2015/12/13
Loop Antenna	Schwarzbeck	FMZB1519	MRTSUE06025	1 year	2015/11/08
TRILOG Antenna	Schwarzbeck	VULB9162	MRTSUE06022	1 year	2015/11/08
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06023	1 year	2015/11/08
Broadband Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06024	1 year	2016/01/05
Temperature/Humidity Meter	Ouleinuo	N/A	MRTSUE06115	1 year	2015/11/20

Software	**Version**	**Function**
e3	V 8.3.5	EMI Test Software

5. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

AC Conducted Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 150kHz~30MHz: 3.5dB
Radiated Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): Horizontal: 30MHz~1GHz: 4.07dB 1GHz~18GHz: 4.16 dB Vertical: 30MHz~1GHz: 4.18 dB 1GHz~18GHz: 4.76 dB

6. TEST RESULT

Summary

Product Name: **WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone**
FCC ID: **SRQ-ZTEBLADEC341**
FCC Classification: **FCC Class B Digital Device (JBP)**
Test Mode: **USB Copy**

FCC Part Section(s)	Test Description	Test Result
15.107	Conducted Emissions	Pass
15.109	Radiated Emissions	Pass

6.1. Conducted Emission Measurement

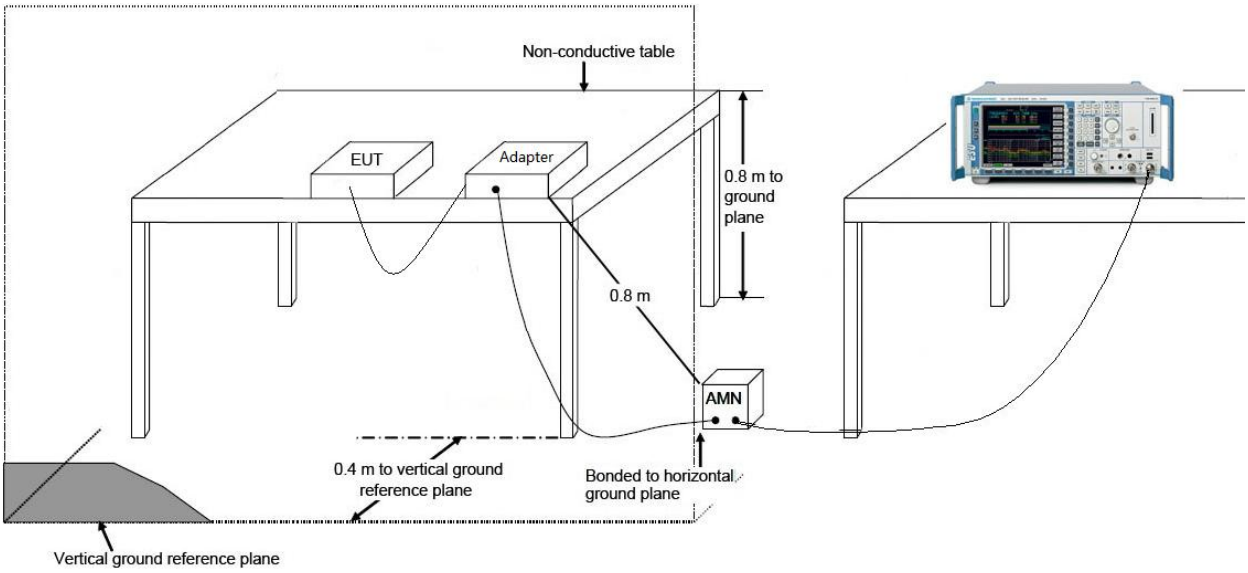
6.1.1. Test Limit

FCC Part 15.107 Limits		
Frequency (MHz)	QP (dBμV)	AV (dBμV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

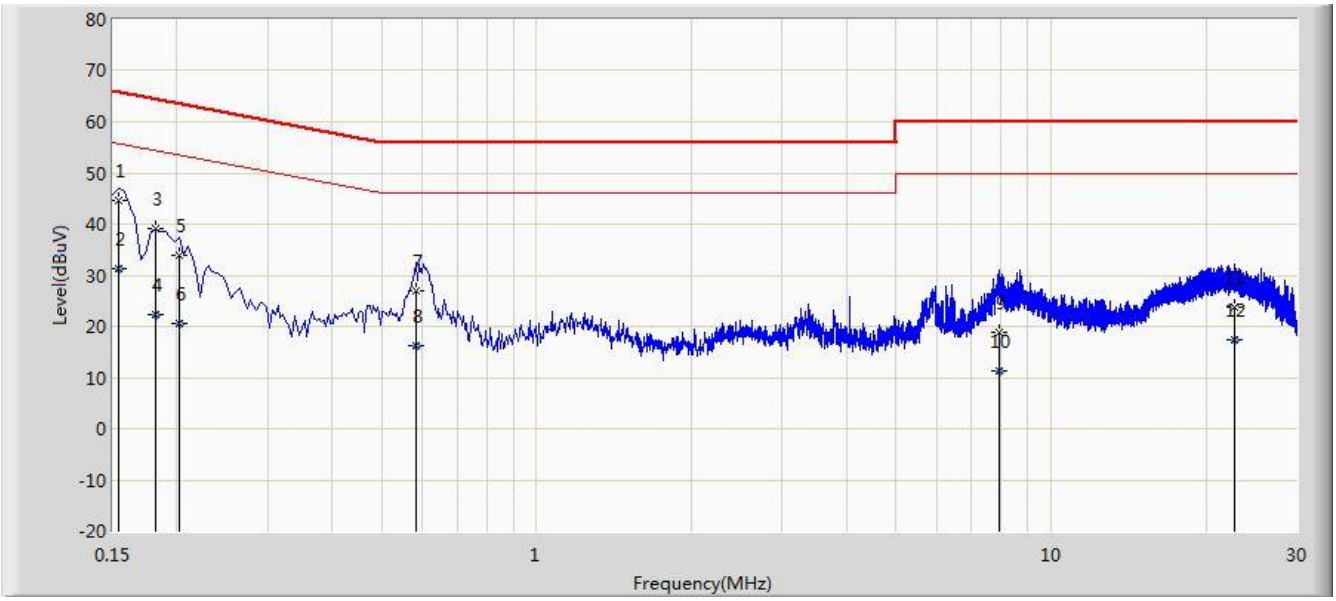
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.1.2. Test Setup



6.1.3. Test Result of Conducted Emissions

Site: SR2	Time: 2015/07/10 - 09:32
Limit: FCC_Part15.107_CE _ Class B	Engineer: Line Chen
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone	Power: AC 120V/60Hz
Test Mode: USB Copy	

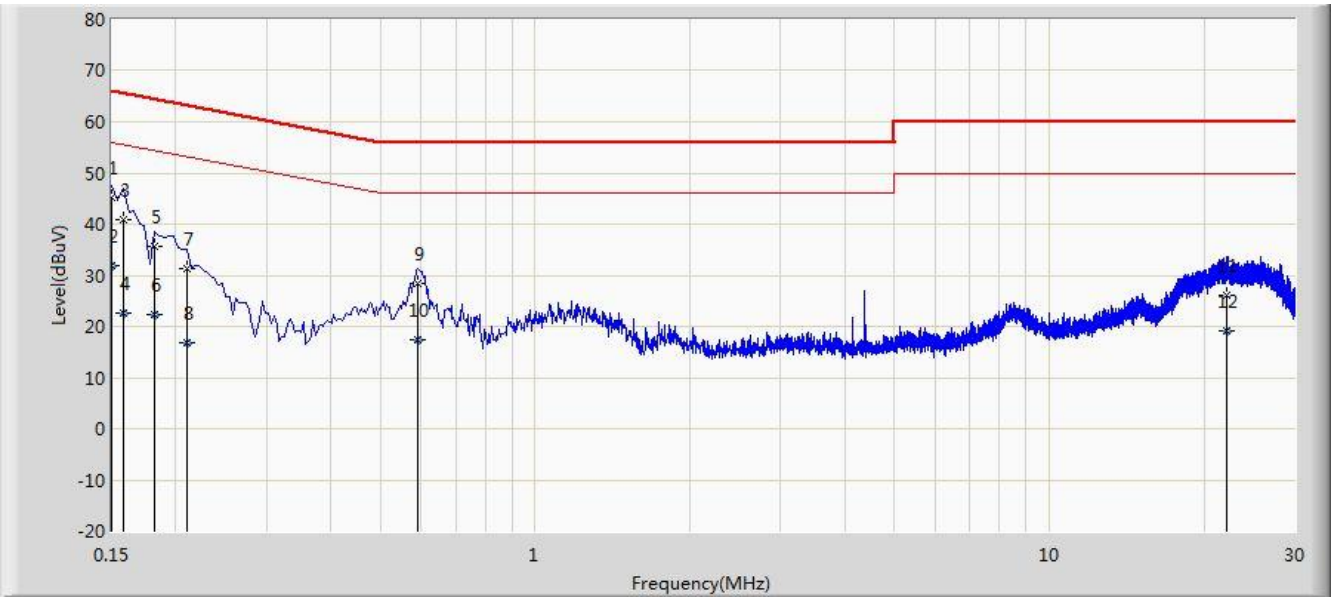


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.154	44.727	33.987	-21.054	65.781	10.740	QP
2			0.154	31.234	20.494	-24.548	55.781	10.740	AV
3			0.182	39.069	29.020	-25.325	64.394	10.048	QP
4			0.182	22.412	12.364	-31.982	54.394	10.048	AV
5			0.202	33.808	23.815	-29.720	63.528	9.993	QP
6			0.202	20.579	10.586	-32.949	53.528	9.993	AV
7			0.582	26.849	16.725	-29.151	56.000	10.124	QP
8			0.582	16.216	6.092	-29.784	46.000	10.124	AV
9			7.950	18.696	8.530	-41.304	60.000	10.166	QP
10			7.950	11.324	1.158	-38.676	50.000	10.166	AV
11			22.706	23.870	13.692	-36.130	60.000	10.178	QP
12			22.706	17.320	7.142	-32.680	50.000	10.178	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Site: SR2	Time: 2015/07/10 - 09:46
Limit: FCC_Part15.107_CE _ Class B	Engineer: Line Chen
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone	Power: AC 120V/60Hz
Test Mode: USB Copy	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.150	45.145	34.003	-20.855	66.000	11.142	QP
2			0.150	31.846	20.704	-24.154	56.000	11.142	AV
3			0.158	40.984	30.694	-24.585	65.568	10.290	QP
4			0.158	22.616	12.326	-32.953	55.568	10.290	AV
5			0.182	35.785	25.743	-28.609	64.394	10.042	QP
6			0.182	22.186	12.144	-32.208	54.394	10.042	AV
7			0.210	31.314	21.319	-31.892	63.205	9.995	QP
8			0.210	16.720	6.725	-36.485	53.205	9.995	AV
9			0.590	28.500	18.364	-27.500	56.000	10.137	QP
10			0.590	17.479	7.342	-28.521	46.000	10.137	AV
11			22.142	26.204	15.985	-33.796	60.000	10.219	QP
12			22.142	19.031	8.812	-30.969	50.000	10.219	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

6.2. Radiated Emission Measurement

6.2.1. Test Limit

FCC Part 15.109 Limits		
Frequency (MHz)	Distance (m)	Level (dBμV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

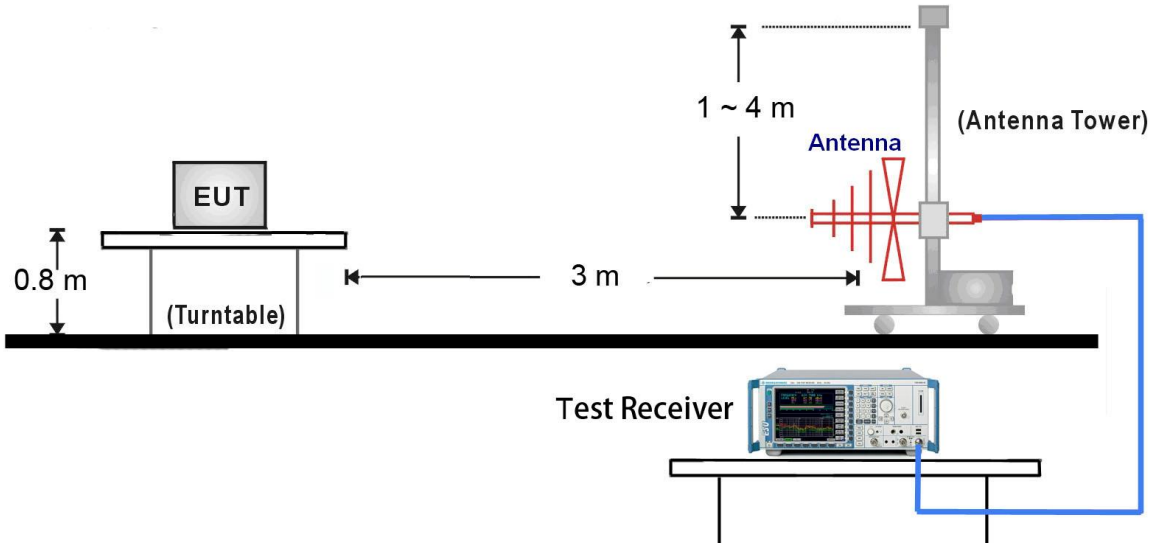
Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

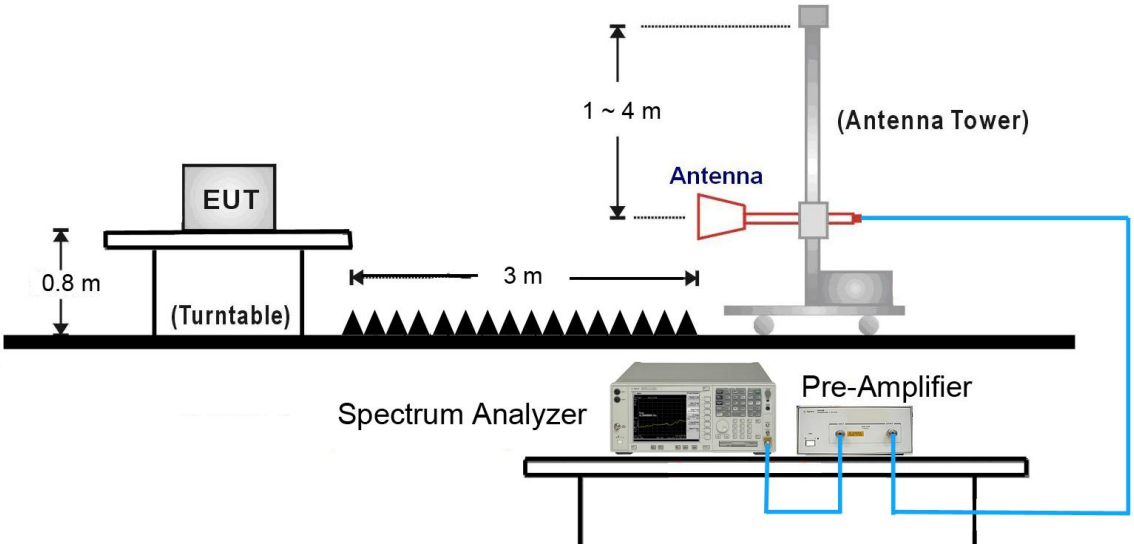
Note 3: E field strength (dBμV/m) = 20 log E field strength (uV/m)

6.2.2. Test Setup

30MHz ~ 1GHz Test Setup:

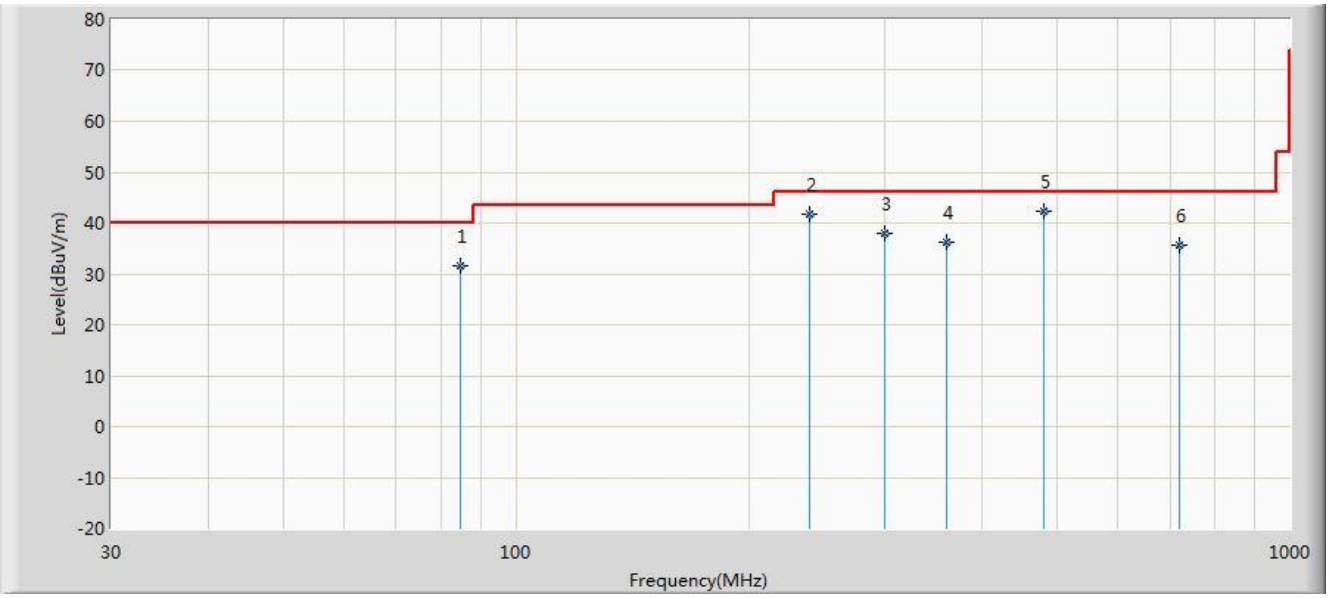


1GHz ~18GHz Test Setup:



6.2.3. Test Result of Radiated Emissions

Site: AC1	Time: 2015/07/11 - 13:49
Limit: FCC_Part15.109_RE(3m)_Class B	Engineer: Line Chen
Probe: VULB9162_0.03-8GHz	Polarity: Horizontal
EUT: WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone	Power: AC 120V/60Hz
Note: USB Copy	

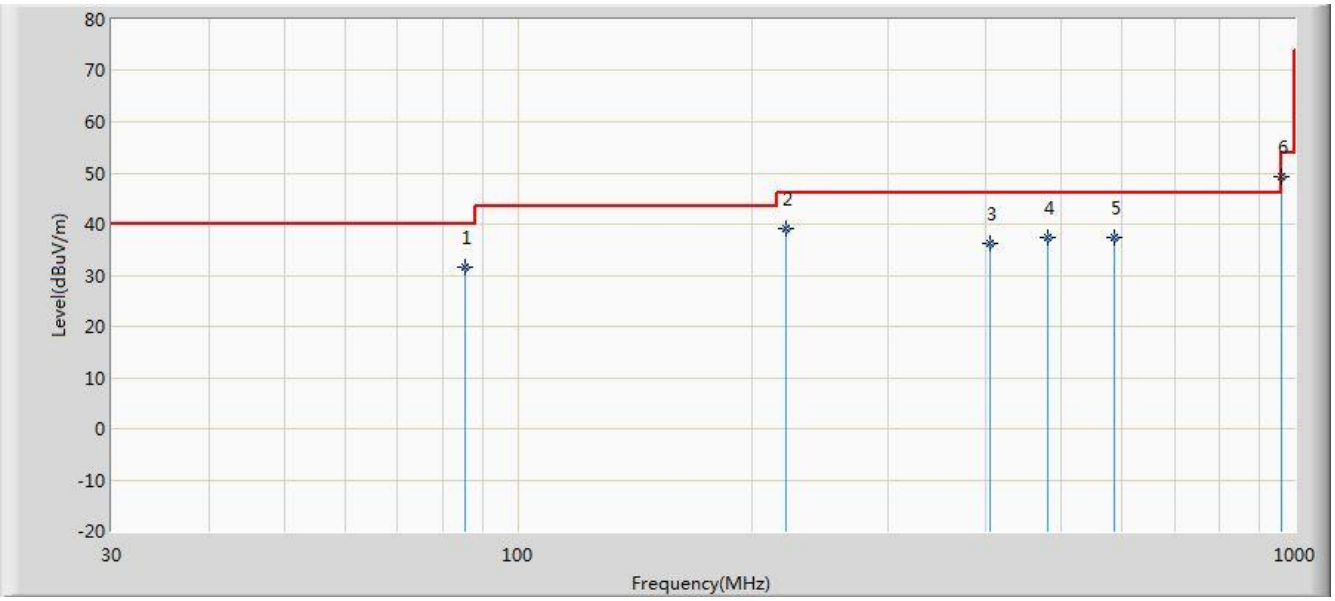


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			84.926	31.488	21.439	-8.512	40.000	10.048	QP
2			240.006	41.856	28.500	-4.144	46.000	13.357	QP
3			300.024	37.969	23.457	-8.031	46.000	14.512	QP
4			359.921	36.160	20.234	-9.840	46.000	15.926	QP
5		*	479.973	42.302	24.400	-3.698	46.000	17.903	QP
6			720.034	35.678	13.925	-10.322	46.000	21.753	QP

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: AC1	Time: 2015/07/11 - 13:49
Limit: FCC_Part15.109_RE(3m)_Class B	Engineer: Line Chen
Probe: VULB9162_0.03-8GHz	Polarity: Vertical
EUT: WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone	Power: AC 120V/60Hz
Note: USB Copy	

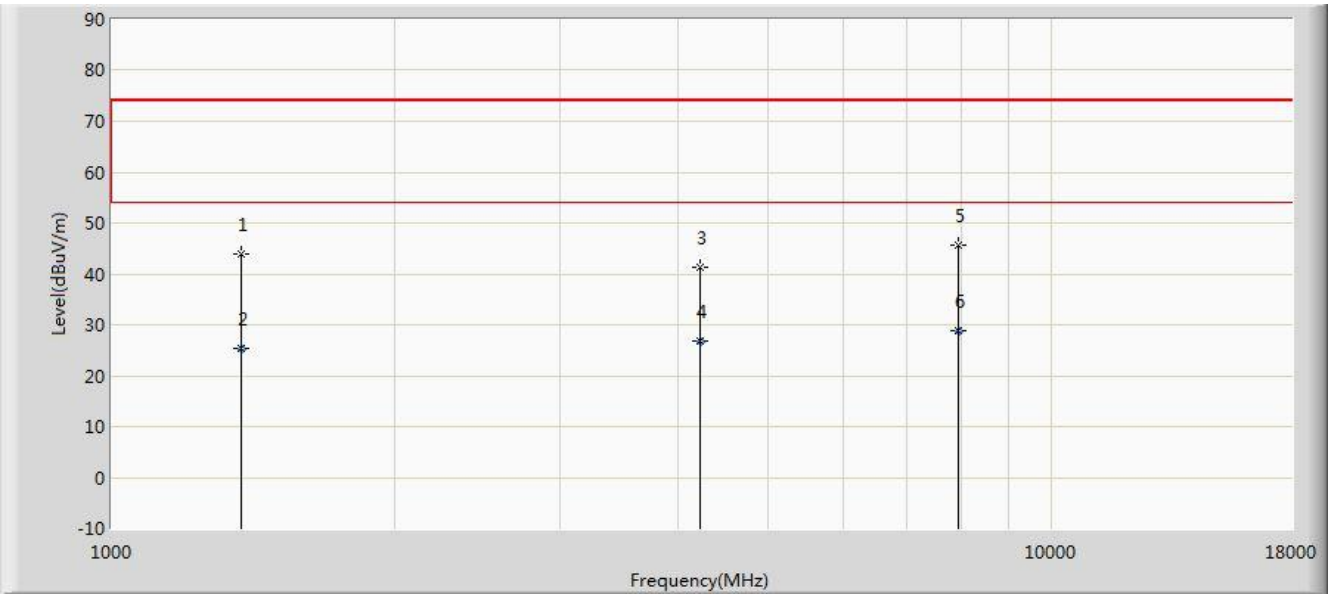


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			85.533	31.682	21.548	-8.318	40.000	10.133	QP
2			221.211	39.074	26.439	-6.926	46.000	12.634	QP
3			405.026	36.259	19.528	-9.741	46.000	16.731	QP
4			479.959	37.360	19.458	-8.640	46.000	17.902	QP
5			584.961	37.284	17.542	-8.716	46.000	19.742	QP
6		*	960.032	49.340	24.900	-4.660	54.000	24.440	QP

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: AC1	Time: 2015/07/11 - 15:57
Limit: FCC_Part15.109_RE(3m)_Class B	Engineer: Line Chen
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone	Power: AC 120V/60Hz
Note: USB Copy	

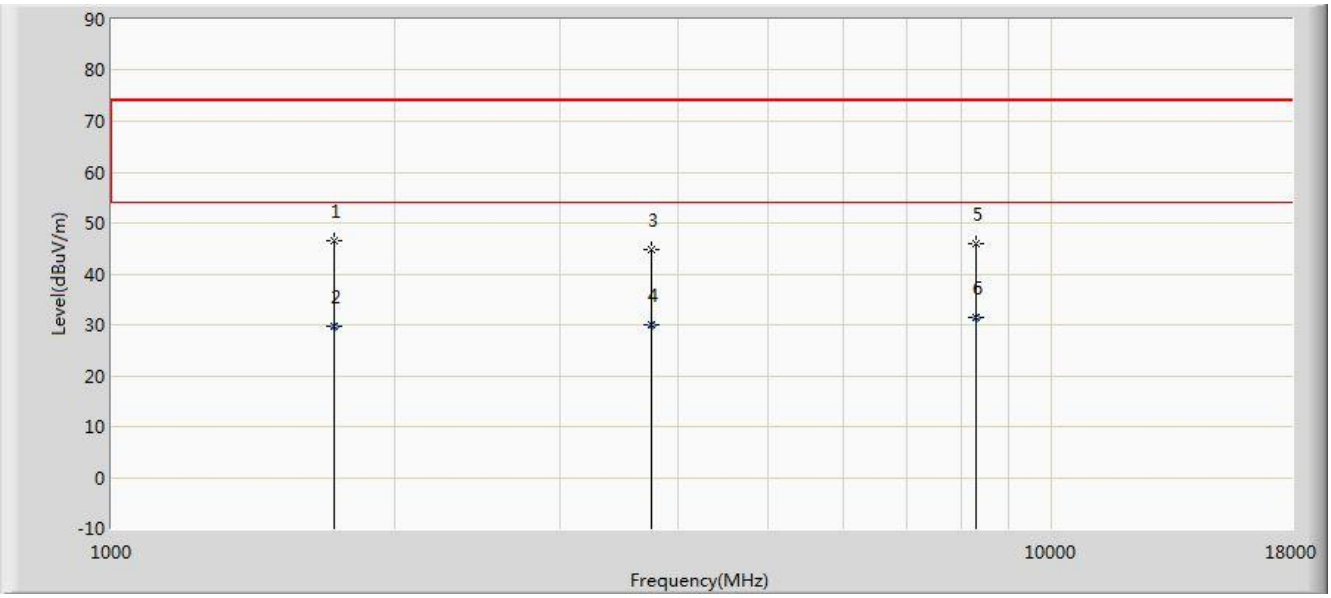


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			1374.000	43.918	51.818	-30.082	74.000	-7.900	PK
2			1374.014	25.295	33.195	-28.705	54.000	-7.900	AV
3			4221.500	41.277	40.444	-32.723	74.000	0.833	PK
4			4221.632	26.797	25.964	-27.203	54.000	0.833	AV
5			7953.000	45.566	36.985	-28.434	74.000	8.581	PK
6		*	7953.143	28.939	20.358	-25.061	54.000	8.581	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Site: AC1	Time: 2015/07/11 - 15:58
Limit: FCC_Part15.109_RE(3m)_Class B	Engineer: Line Chen
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone	Power: AC 120V/60Hz
Note: USB Copy	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			1722.500	46.554	53.923	-27.446	74.000	-7.369	PK
2			1722.639	29.765	37.134	-24.235	54.000	-7.369	AV
3			3754.000	44.704	45.086	-29.296	74.000	-0.382	PK
4			3754.014	30.039	30.421	-23.961	54.000	-0.382	AV
5			8310.000	45.824	37.818	-28.176	74.000	8.006	PK
6		*	8310.027	31.445	23.439	-22.555	54.000	8.006	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

7. CONCLUSION

The data collected relate only the item(s) tested and show that the **WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone FCC ID: SRQ-ZTEBLADEC341** has been tested to comply with the requirements specified in §15.107 and §15.109 of the FCC Rules.

The End