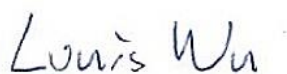


FCC Test Report

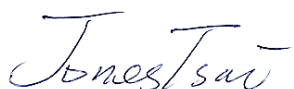
APPLICANT : ZTE CORPORATION
EQUIPMENT : LTE/WCDMA HOTSPOT
BRAND NAME : ZTE
MODEL NAME : Z289L
FCC ID : SRQ-Z289L
STANDARD : FCC 47 CFR FCC Part 15 Subpart B
CLASSIFICATION : Certification

The product was received on Oct. 10, 2013 and testing was completed on Oct. 30, 2013. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown to be compliant with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.



Reviewed by: Louis Wu / Manager



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC3O1008	Rev. 01	Initial issue of report	Dec. 09, 2013

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.107	AC Conducted Emission	< 15.107 limits	PASS	Under limit 16.12 dB at 5.930 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 5.48 dB at 76.560 MHz for Quasi-Peak

1. General Description

1.1. Applicant

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057,
P.R.China

1.2. Manufacturer

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057,
P.R.China

1.3. Feature of Equipment Under Test

Product Feature	
Equipment	LTE/WCDMA HOTSPOT
Brand Name	ZTE
Model Name	Z289L
FCC ID	SRQ-Z289L
EUT supports Radios application	WCDMA/HSPA/HSPA+(Downlink Only)/LTE/ WLAN2.4GHz 802.11bgn HT20
HW Version	Z289LHWV1.0
SW Version	TF_US_Z289LV0.0.0B01
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4. Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx Frequency	WCDMA Band V : 826.4 MHz ~ 846.6 MHz WCDMA Band IV : 1712.4 MHz ~ 1752.6 MHz WCDMA Band II : 1852.4 MHz ~ 1907.6 MHz LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 17 : 706.5 MHz ~ 713.5 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz
Rx Frequency	WCDMA Band V : 871.4 MHz ~ 891.6 MHz WCDMA Band IV : 2112.4 MHz ~ 2152.6 MHz WCDMA Band II : 1932.4 MHz ~ 1987.6 MHz LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 17 : 736.5 MHz ~ 743.5 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz
Antenna Type	WWAN : LDS Antenna WLAN : Monopole Antenna
Type of Modulation	WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink) HSPA+ :16QAM (Downlink Only) LTE: QPSK / 16QAM 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5. Modification of EUT

No modifications are made to the EUT during all test items.

1.6. Test Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC Registration No.
	CO01-KS	03CH01-KS	149928

1.7. Applied Standards

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

- ♦ FCC 47 CFR FCC Part 15 Subpart B
- ♦ ANSI C63.4-2003

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2. Test Configuration of Equipment Under Test

2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The following tables are showing the test modes as the worst cases and recorded in this report.

Item	EUT Configuration	Test Condition		
		EMI AC	EMI RE<1G	EMI RE≥1G
1.	Charging Mode (EUT with adapter)	☒	☒	Note 1
2.	Data application transferred mode (EUT with notebook)	☒	☒	☒

Abbreviations:

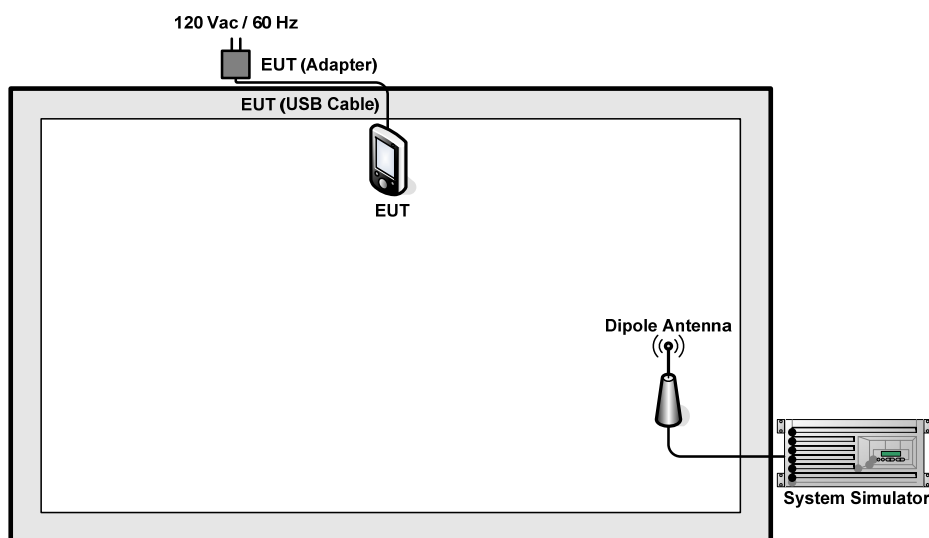
- EMI AC: AC conducted emissions
- EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz
- EMI RE < 1G: EUT radiated emissions < 1GHz

Note 1: Testing for this mode is not required or not the worst case.

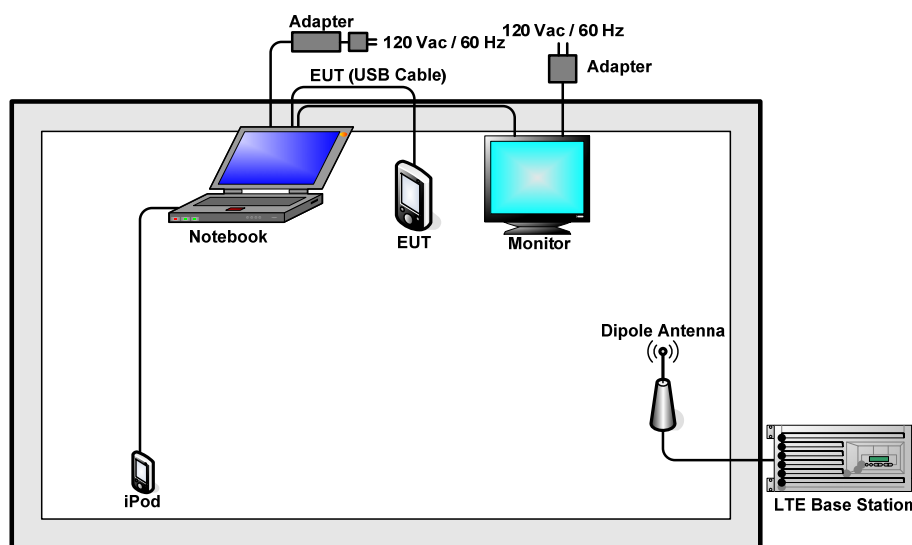
Remark: For signal above 1GHz, the worst case was test item 2.

Test Items	EUT Configure Mode	Function Type
AC Conducted Emission	1/2	Mode 1: WCDMA Band V Idle + WLAN Idle + USB Cable (Charging from Adapter) <Fig.1> Mode 2: LTE Band 2 Idle + WLAN Idle + USB Cable (Data Link with Notebook) <Fig.2>
Radiated Emissions < 1GHz	1/2	Mode 1: WCDMA Band V Idle + WLAN Idle + USB Cable (Charging from Adapter) <Fig.1> Mode 2: LTE Band 2 Idle + WLAN Idle + USB Cable (Data Link with Notebook) <Fig.2>
Radiated Emissions $\geq$ 1GHz	2	Mode 1: LTE Band 2 Idle + WLAN Idle + USB Cable (Data Link with Notebook) <Fig.2>
Remark: - The worst case of AC Conducted Emission is mode 1; the test data of this mode is reported. - The USB Link mode of AC Conducted Emission is mode 2; the test data of this mode is also reported. - The worst case of Radiated Emissions is mode 2; only the test data of this mode is reported. - Link with Notebook means data application transferred mode between EUT and Notebook.		

2.2. Connection Diagram of Test System



<Fig.1>



<Fig. 2>

2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritus	MT8820C	N/A	N/A	Unshielded, 1.8 m
3.	Monitor	Dell	E1910Hc	FCC DoC	Shielded, 1.2 m	Unshielded, 1.8 m
4.	iPod	Apple	A1199	FCC DoC	Shielded, 1.2 m	N/A
5.	Notebook	Lenovo	G480	FCC DoC	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m

2.4. EUT Operation Test Setup

The EUT was in WCDMA or LTE idle mode during the testing. The EUT was synchronized to the BCCH, and was in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the following programs installed in the EUT were programmed during the test.

1. Execute the program, "Winthrax" under WINXP installed in notebook for files transfer with EUT via USB cable.
2. Execute "H Pattern" to show H Pattern via VGA Cable on the Monitor.

3. Test Result

3.1. Test of AC Conducted Emission Measurement

3.1.1 Limits of AC Conducted Emission

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 in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	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.

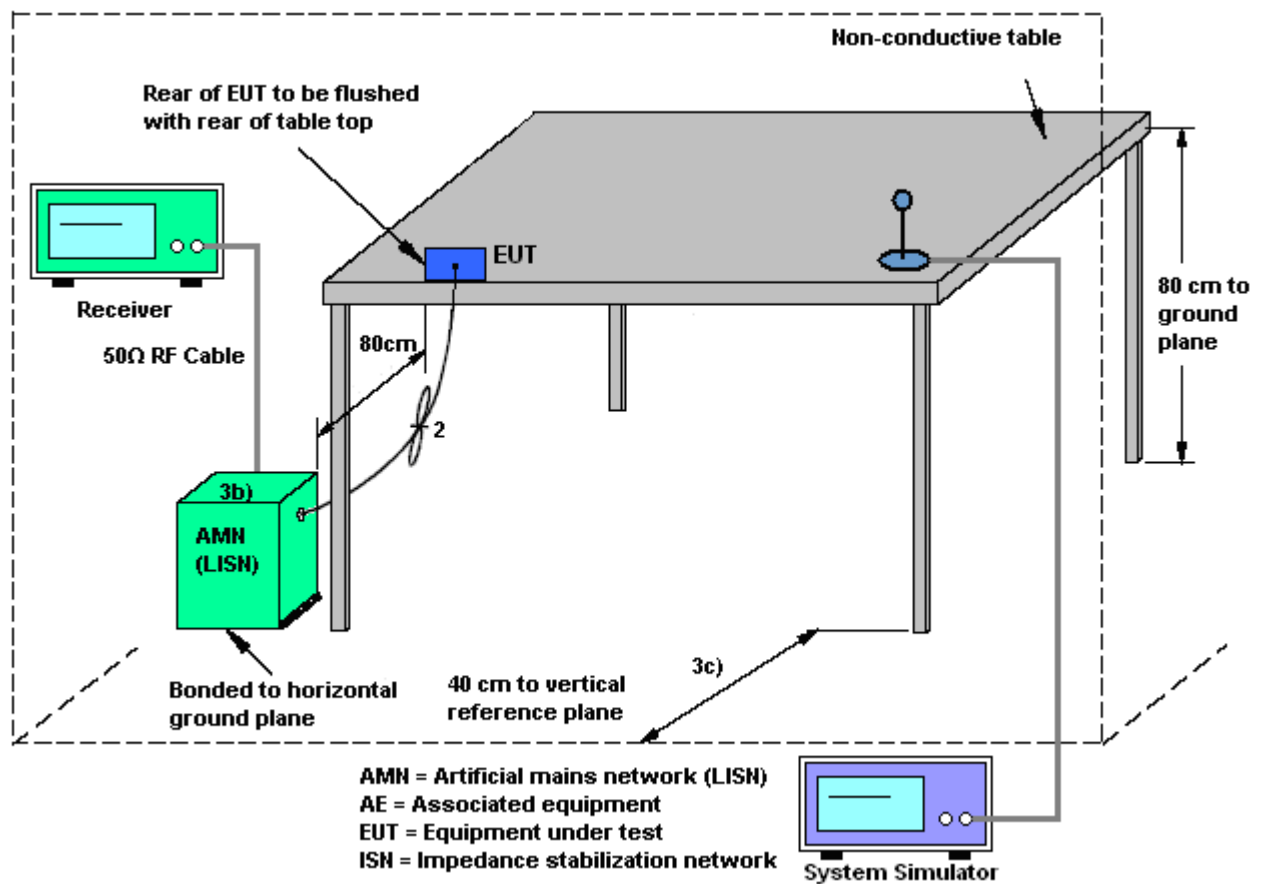
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

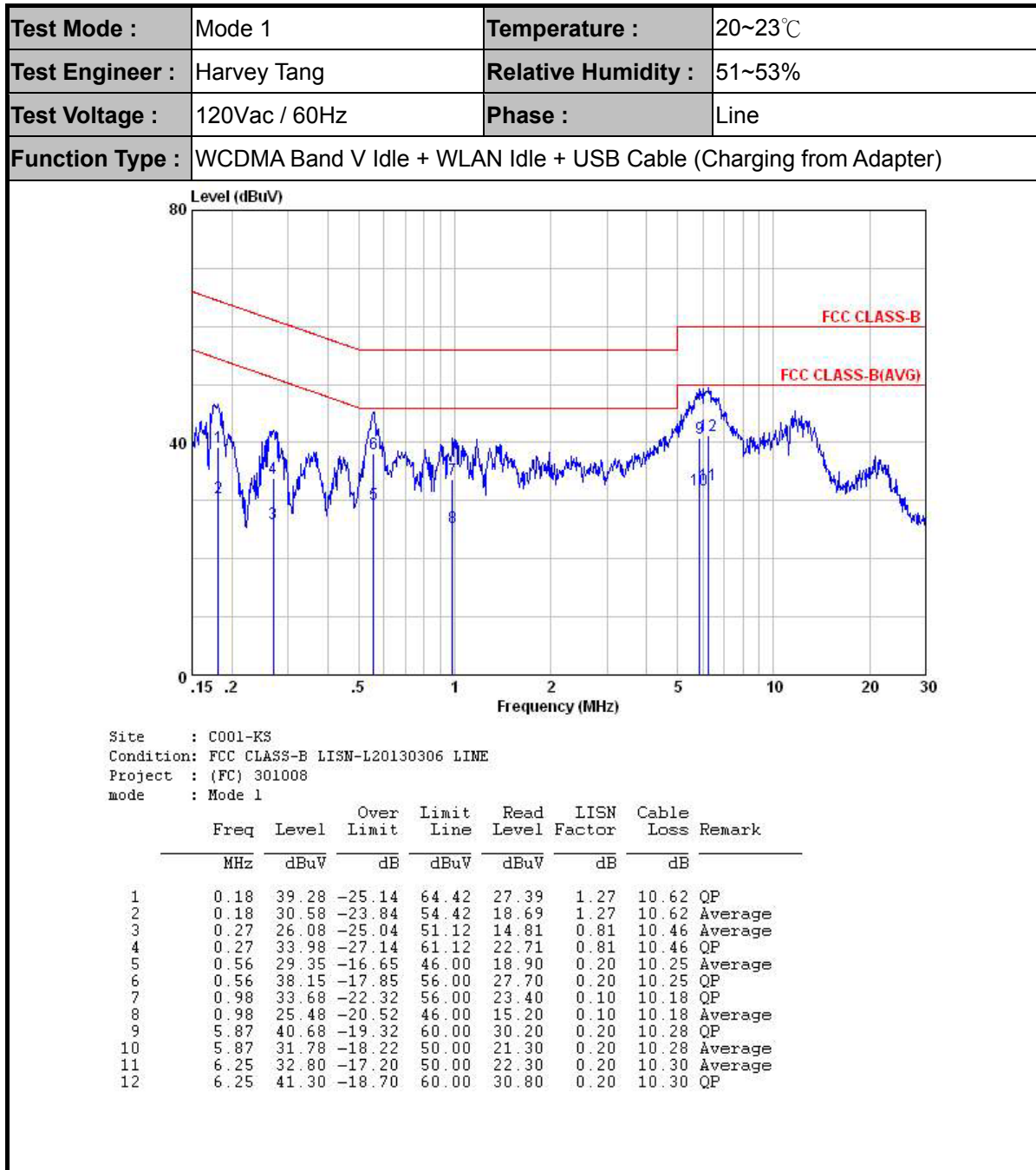
3.1.3 Test Procedure

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

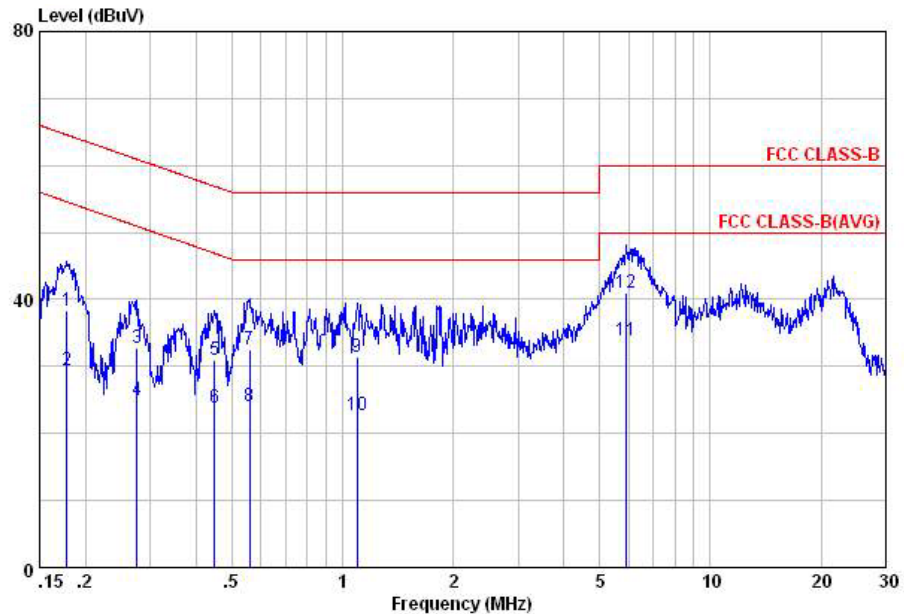
3.1.4 Test Setup



3.1.5 Test Result of AC Conducted Emission



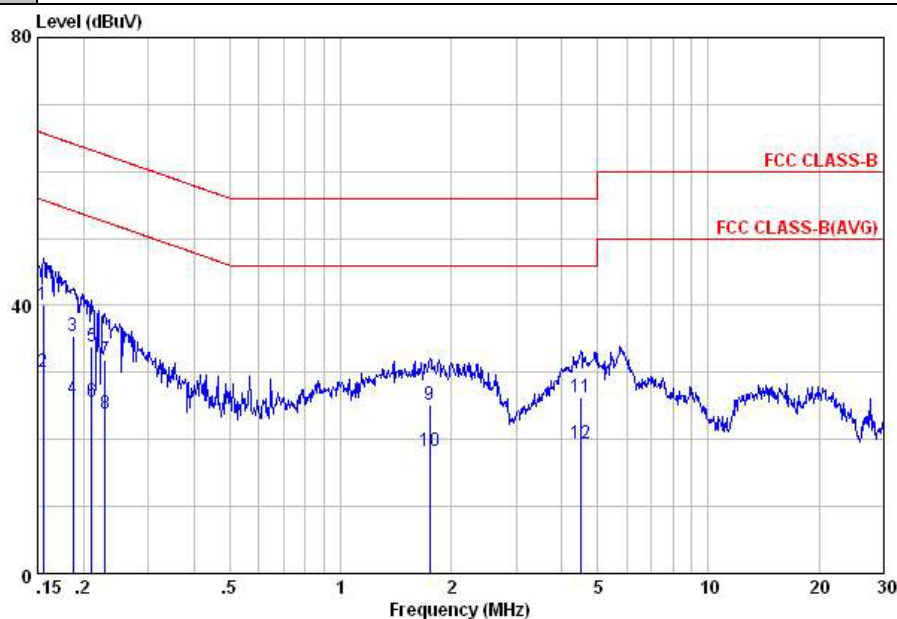
Test Mode :	Mode 1	Temperature :	20~23°C
Test Engineer :	Harvey Tang	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + WLAN Idle + USB Cable (Charging from Adapter)		



Site : C001-KS
 Condition: FCC CLASS-B LISN-N20130306 NEUTRAL
 Project : (FC) 301008
 mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
1	0.18	38.35	-26.24	64.59	26.40	1.33	10.62	QP
2	0.18	29.45	-25.14	54.59	17.50	1.33	10.62	Average
3	0.28	32.77	-28.17	60.94	21.50	0.82	10.45	QP
4	0.28	24.87	-26.07	50.94	13.60	0.82	10.45	Average
5	0.45	31.02	-25.87	56.89	20.41	0.34	10.27	QP
6	0.45	23.82	-23.07	46.89	13.21	0.34	10.27	Average
7	0.56	32.42	-23.58	56.00	21.90	0.27	10.25	QP
8	0.56	24.02	-21.98	46.00	13.50	0.27	10.25	Average
9	1.09	31.48	-24.52	56.00	21.20	0.10	10.18	QP
10	1.09	22.78	-23.22	46.00	12.50	0.10	10.18	Average
11	5.93	33.88	-16.12	50.00	23.40	0.20	10.28	Average
12	5.93	40.98	-19.02	60.00	30.50	0.20	10.28	QP

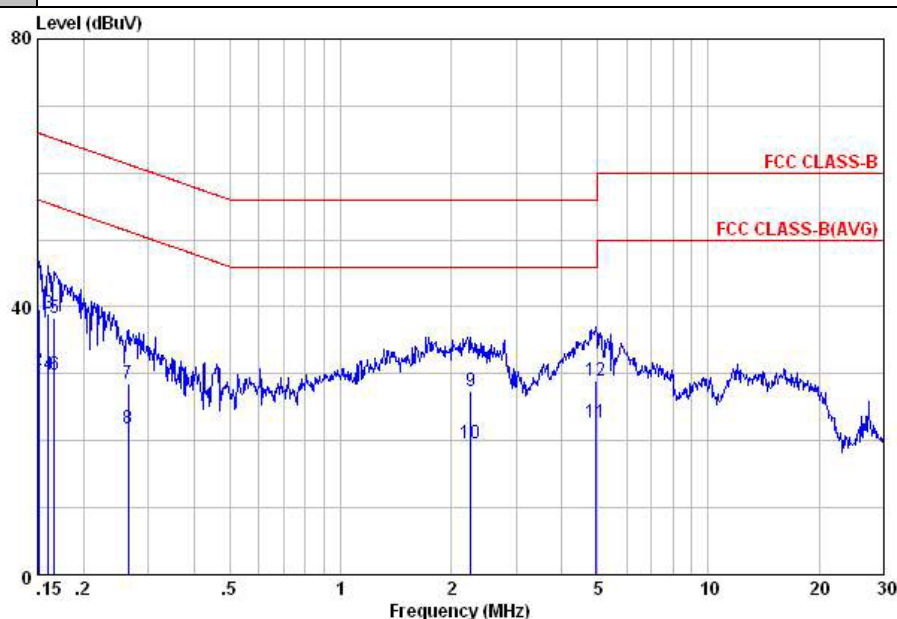
Test Mode :	Mode 2	Temperature :	20~23°C
Test Engineer :	Harvey Tang	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	LTE Band 2 Idle + WLAN Idle + USB Cable (Data Link with Notebook)		



Site : C001-KS
 Condition: FCC CLASS-B LISN-L20130306 LINE
 Project : (FC) 301008
 mode : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	40.05	-25.64	65.69	27.50	1.86	10.69	QP
2	0.16	30.15	-25.54	55.69	17.60	1.86	10.69	Average
3	0.19	35.47	-28.68	64.15	23.71	1.16	10.60	QP
4	0.19	26.17	-27.98	54.15	14.41	1.16	10.60	Average
5	0.21	33.84	-29.34	63.18	22.30	0.98	10.56	QP
6	0.21	25.64	-27.54	53.18	14.10	0.98	10.56	Average
7	0.23	31.87	-30.61	62.48	20.40	0.93	10.54	QP
8	0.23	23.87	-28.61	52.48	12.40	0.93	10.54	Average
9	1.74	25.09	-30.91	56.00	14.80	0.10	10.19	QP
10	1.74	18.19	-27.81	46.00	7.90	0.10	10.19	Average
11	4.50	26.24	-29.76	56.00	15.80	0.19	10.25	QP
12	4.50	19.34	-26.66	46.00	8.90	0.19	10.25	Average

Test Mode :	Mode 2	Temperature :	20~23℃
Test Engineer :	Harvey Tang	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	LTE Band 2 Idle + WLAN Idle + USB Cable (Data Link with Notebook)		



Site : C001-KS
Condition: FCC CLASS-B LISN-N20130306 NEUTRAL
Project : (FC) 301008
mode : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	39.60	-26.36	65.96	26.99	1.89	10.72	QP
2	0.15	30.50	-25.46	55.96	17.89	1.89	10.72	Average
3	0.16	39.10	-26.33	65.43	26.70	1.73	10.67	QP
4	0.16	29.90	-25.53	55.43	17.50	1.73	10.67	Average
5	0.17	38.26	-26.86	65.12	26.00	1.61	10.65	QP
6	0.17	29.96	-25.16	55.12	17.70	1.61	10.65	Average
7	0.26	28.53	-32.76	61.29	17.21	0.85	10.47	QP
8	0.26	21.83	-29.46	51.29	10.51	0.85	10.47	Average
9	2.26	27.50	-28.50	56.00	17.19	0.11	10.20	QP
10	2.26	19.50	-26.50	46.00	9.19	0.11	10.20	Average
11	4.95	22.66	-23.34	46.00	12.20	0.20	10.26	Average
12	4.95	28.96	-27.04	56.00	18.50	0.20	10.26	QP

3.2. Test of Radiated Emission Measurement

3.2.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

3.2.2. Measuring Instruments

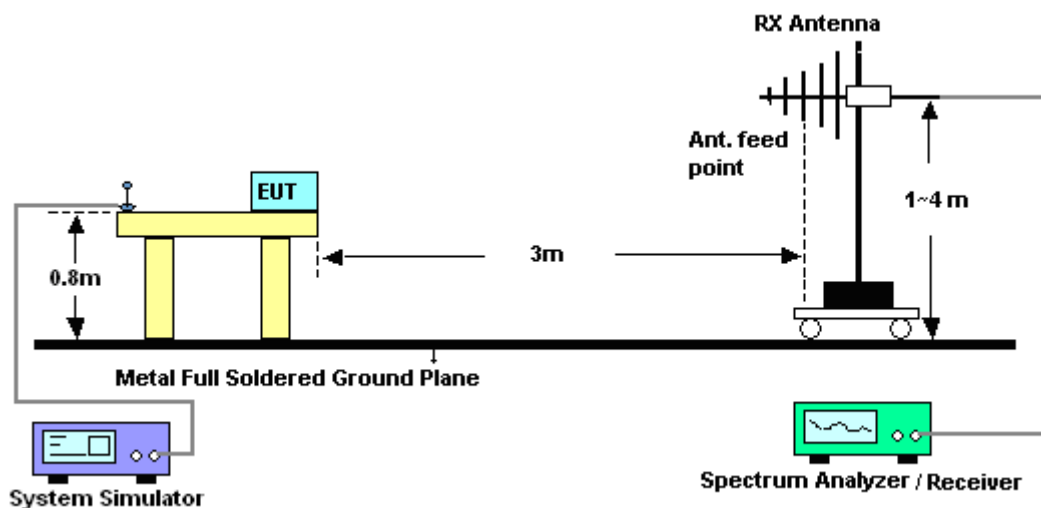
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

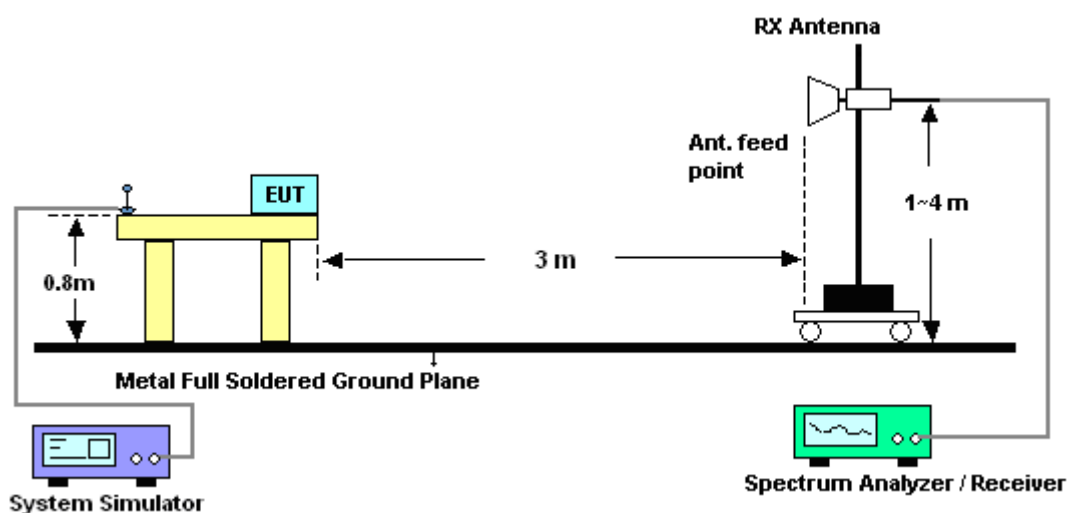
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
8. Emission level (dB μ V/m) = 20 log Emission level (μ V/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

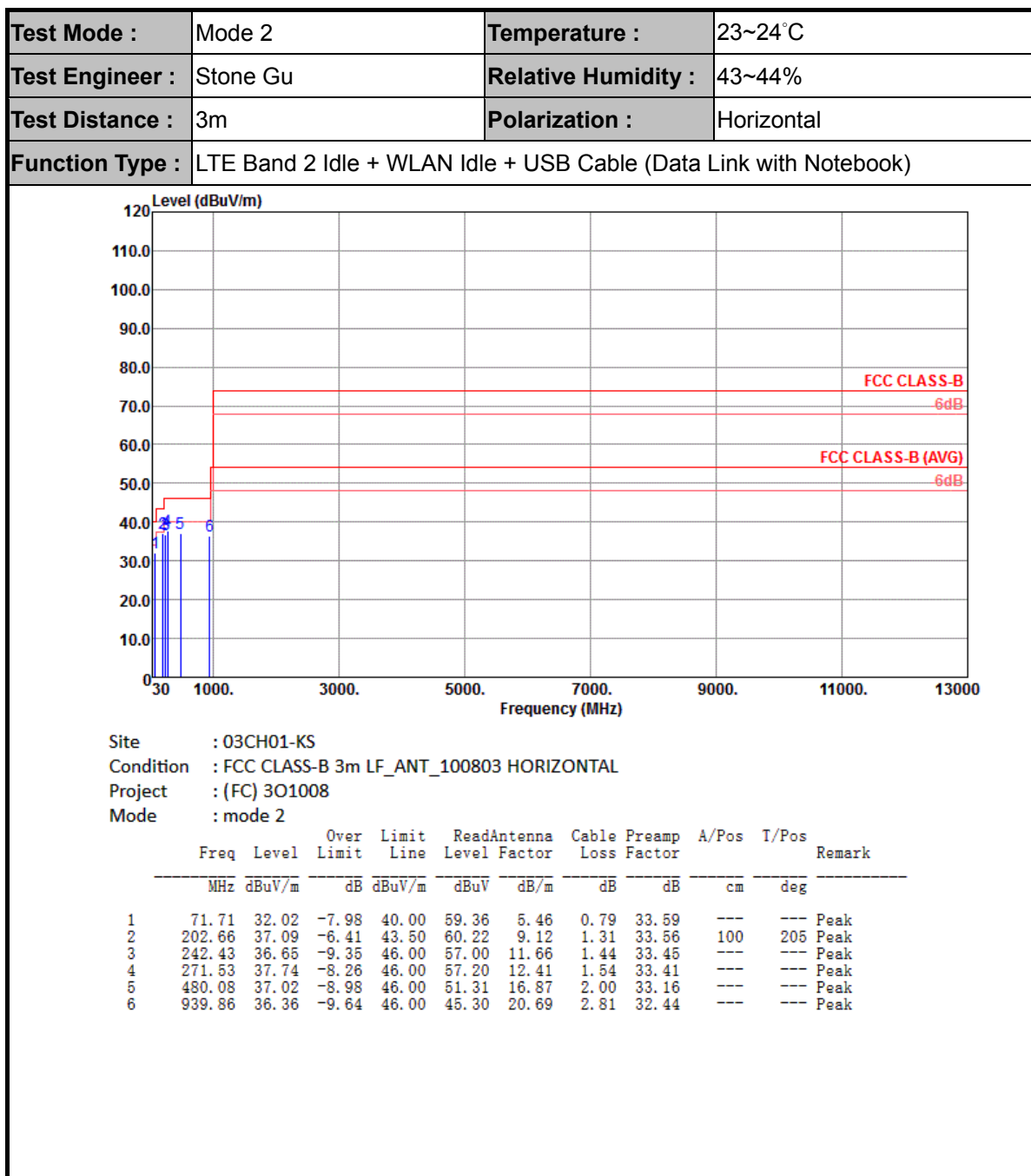
3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz

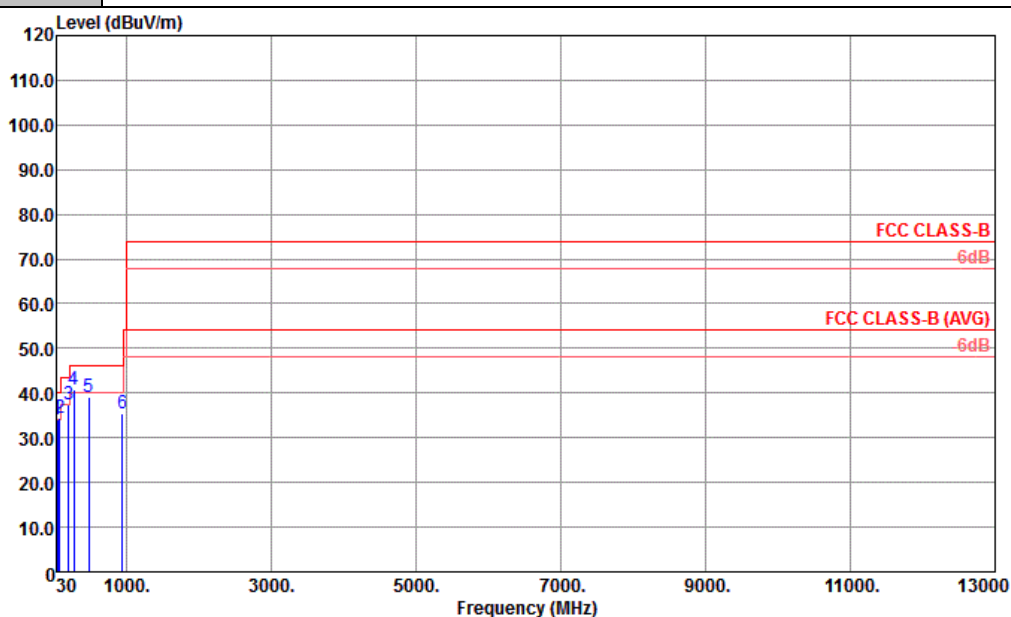


For radiated emissions above 1GHz



3.2.5. Test Result of Radiated Emission


Test Mode :	Mode 2	Temperature :	23~24°C
Test Engineer :	Stone Gu	Relative Humidity :	43~44%
Test Distance :	3m	Polarization :	Vertical
Function Type :	LTE Band 2 Idle + WLAN Idle + USB Cable (Data Link with Notebook)		



Site : 03CH01-KS
 Condition : FCC CLASS-B 3m LF_ANT_100803 VERTICAL
 Project : (FC) 3O1008
 Mode : mode 2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	cm	deg	
1 !	41.64	34.26	-5.74	40.00	56.34	10.95	0.61	33.64	100	56 QP
2 !	76.56	34.52	-5.48	40.00	61.25	6.06	0.81	33.60	120	341 QP
3 !	196.84	37.50	-6.00	43.50	60.91	8.86	1.29	33.56	---	Peak
4 !	269.59	40.86	-5.14	46.00	60.39	12.36	1.53	33.42	---	Peak
5	480.08	39.18	-6.82	46.00	53.47	16.87	2.00	33.16	---	Peak
6	939.86	35.40	-10.60	46.00	44.34	20.69	2.81	32.44	---	Peak

4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	May 23, 2013	Oct. 30, 2013	May 22, 2014	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 29, 2012	Oct. 30, 2013	Dec. 28, 2013	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	60105	9kHz~30MHz	Dec. 29, 2012	Oct. 30, 2013	Dec. 28, 2013	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 15, 2012	Oct. 30, 2013	Nov. 14, 2013	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	Oct. 26, 2013	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	100400	9kHz~30GHz	May 23, 2013	Oct. 26, 2013	May 22, 2014	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2012	Oct. 26, 2013	Dec. 06, 2013	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2013	Oct. 26, 2013	Jan. 05, 2014	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1GHz	May 23, 2013	Oct. 26, 2013	May 22, 2014	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 29, 2012	Oct. 26, 2013	Dec. 28, 2013	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0 ~ 360 degree	NCR	Oct. 26, 2013	NCR	Radiation (03CH01-KS)
Antenna Mast	MF	MF7802	N/A	1 m - 4 m	NCR	Oct. 26, 2013	NCR	Radiation (03CH01-KS)

5. Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54
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