Report No: CSBG (R) 11122005EB
FCC ID: QISC3300

FCC TEST REPORT OF
Huawei 800MHz CDMA Handset

M/N: C3300

Feb. 17, 2006

Reliability Laboratory of Huawei Technologies Co., Ltd.

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REPORT ON FCC Test of Huawei 800MHz CDMA Handset

M/N: C3300

Report No: CSBG (R) 11122005EB

REGULATION **FCC CFR47 Part 2: Subpart J;**

FCC CFR47 Part 22: Subpart H;

FCC CFR47 Part 15: Subpart B;

CONCLUSION There are 9 items need to be tested, 9 items have been tested. The sample of the model completely meets the requirements

Final Judgement: Pass

General Manager	**2006.02.17**	**Tang Shuanli**	Tang shuanli
	Date	Name	signature
Technical Responsibility For Area of Testing	**2006.02.16**	**Zhang Xinghai**	Zhang Xinghai
	Date	Name	signature
Test Lab Engineer	**2006.02.15**	**Zhu Yongsheng**	Zhu yongsheng
	Date	Name	signature

Contents

1 Summary

The table below summarizes the measurements and results for the Huawei 800M CDMA Handset. Detailed results and descriptions are shown in the following pages.

Table 1 Summary of results

FCC Measurement Specification	FCC Limits Part(s)	Description	Result
2.1046	22.913	Effective Radiated Power of Transmitter	PASS
2.1047	22.915	Modulation Characteristics	PASS
2.1049	22.917	Occupied Bandwidth	PASS
2.1051	22.917(e)	Band Edges Compliance	PASS
2.1051	22.917(e)	Spurious Emission at Antenna Terminal	PASS
2.1053	22.917(e)	Field Strength of Spurious Emissions	PASS
2.1055	22.355	Frequency Stability	PASS
-	15.107	Conducted Emission at Power Port	PASS
-	15.109	Radiated Emission in Idle Mode	PASS

2 Product Description

2.1 Production Information

2.1.1 General Description

Huawei 800M CDMA Handset C3300 is subscriber equipment in the CDMA system. The frequency band is US Cellular. C3300 implements such functions as RF signal receiving / Transmitting, CDMA protocol processing, voice and SMS service etc. C3300 uses MSM6000 chipset and Zero-IF technologies.

2.1.2 Support function and Service

Huawei 800M CDMA Handset C3300 support the function and service as follows:

Table 2 Service and Test mode List

Service Name	Characteristic	Corresponding Test Mode	Note
voice and SMS	Modulation: QPSK	TM1*	
voice and SMS	Modulation: HPSK	TM3*	

Note: * Refer to ANSI/TIA-98-E section 1.3 for the information of TM (Test Mode).

2.2 Modification Information

For original equipment, following table is not application.

Table 3 Modification Information

Model Number	Board/Module	Original Version	New Version	Modify Information

Not applicaiton!

3 Test Site Description

The test site of:

Huawei Technologies Co. Ltd.
P.O. Box 518129
Huawei base, bantian,
Longgang District, Shenzhen, China

The test site description has been submitted to FCC and registration granted under the registration number **97456** on March 11. 2003. The test site has been accredited by and the accredited number is **2714.01** in Jan of 2004.

3.1 Testing Period

The test have been performed during the period of

Feb. 05, 2006 to Feb. 10, 2006

3.2 General Set up Description

Huawei 800M CDMA Handset C3300 can only support CDMA mode and US Cellular Band. During this measurement, the Handset just works in CDMA mode and US Cellular Band.

TM1: Forward Traffic Channel Radio Configuration 1, Reverse Traffic Channel Radio Configuration 1
TM3: Forward Traffic Channel Radio Configuration 3, Reverse Traffic Channel Radio Configuration 3

Parameter	Units	Value
$\hat{I}or$	dBm/1.23 MHz	-104
$\frac{\text{Pilot Ec}}{I_{or}}$	dB	-7
$\frac{\text{Traffic Ec}}{I_{or}}$	dB	-7.4

4 Product Description

4.1 Technical Characteristics

4.1.1 Frequency Range

Table 4 Frequency Range

Uplink band:	824 to 849 MHz
Downlink band:	869 to 894 MHz

4.1.2 Channel Spacing / Separation

Table 5 Channel Spacing / Separation

Channel spacing:	30 KHz
Channel separation:	1.23 MHz

4.1.3 Type of Emission

Table 6 Type of Emission

Emission Designation:	**1M25F9W**

According to CFR 47 (FCC) part 2, subpart C, section 2.201 and 2.202

4.1.4 Environmental Requirements

Table 7 Environmental Requirements

Minimum temperature:	- 10 °C
Maximum temperature:	+ 55 °C
Relative Humidity:	5％～95％RH

4.1.5 Power Source

Table 8 Power Source

AC voltage nominal:	～ 220V
AC voltage range	100V ~ 240V
AC current maximal:	640mA

4.1.6 Tune-up Procedure

According to CFR (FCC) part 2, subpart 2, section 2.1033 (9).

Please reference the document Tune-up Procedure in TCF.

4.1.7 Applied DC Voltages and Currents

According to CFR (FCC) part 2, subpart 2, section 2.1033 (8)

The voltage and current in the final RF stage is:

Table 9 Applied DC Voltages and Currents

Voltage:	2.85VDC
Current:	150mA According to CFR (FCC) part 2, subpart 2, section 2.1033 (8)

4.2 EUT Identification List

4.2.1 Board Information

Table 10 Board Information

800MHz CDMA Handset		
C3300		
Board and Module		
Equipment Designation / Description	Serial Number	Remarks
-Main board	UMT-SZ 2MV 94V-04905	HC1C3300M
-LCD	1511010001011Y	WD-X1212Y7-6CLWC
-Battery	HGY5C1200225	HBC85U

4.2.2 Adapter Technical Data

AC/DCAdapter Model: TPCA-050040E
Manufacturer: TECH-POWER INTERNATIONAL CO.,LTD/Shenzhen
Input Voltage: 100-240V ~50/60Hz
Output Voltage: ⎓ 5.0V
Rated Power: 2W

4.2.3 Battery Technical Data

Type: Rechargeable Li-ion Battery
Manufacturer: HAERBIN COSLIGHT POWER CO.,LTD
Battery Model: HBC85U
Rated capacity: 850mAH
Nominal Voltage: ⎓ 3.7V
Charging Voltage: ⎓ 4.2V

4.2.4 FCC Identification

Grantee Code: QIS
Product Code: C3300
FCC Identification: QISC3300

5 Main Test Instruments

Table 11 Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until (MM.DD.YYYY)
3m Semi Anechoic Chamber	S+M	N/A	N/A	12.24.2006
Signal Analyzer	R&S	FSQ 26	100266	05.18.2006
Test Receiver Display Unit	R&S	ESMI 804.8932.52	829214/011	05.30.2006
Test Receiver RF Unit	R&S	ESMI 1032.5640.53	829550/008	05.30.2006
Receiver	R&S	ESIB 26	100318	08.17.2006
Receiver	R&S	ESCS30	830245/018	05.30.2006
Pre-Amplifier	Agilent	8447D	2944A10146	05.30.2006
Pre-Amplifier	Agilent	83017A	3950M00246	01.03.2007
Loop Antenna	Schwarzbeck	FMZB1516	1516115	01.08.2007
BiLog Antenna	Schaffner	CBL 6112B	2747	08.30.2006
BiLog Antenna	Schaffner	CBL 6112B	2536	08.30.2006
Horn Antenna	R&S	HF906 4044.4507.02	359287/005	12.05.2006
Horn Antenna	R&S	HF906 4044.4507.02	359287/006	12.05.2006
Horn Antenna	ETS-Lindgren	3116	00031542	01.15.2007
Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	979/917	08.28.2006
Signal Generator	R&S	SMT06	830264/009	05.29.2006
Signal Generator	R&S	SMR 40	100325	12.09.2006
Artificial Mains Network	Schwarzbeck	NNLK8121	8121416	05.29.2006
Power Supply	Keithley	2306	1045337	04.20.2006
Climate Chamber	WEISS	ACS-1	3604040034	04.24.2006
Universal Radio Communication Tester	R&S	CMU200	108522	08.16.2006
Universal Radio Communication Tester	Agilent	8960	GB43042699	04.15.2006
Power splitter	Agilent	11667B	N/A	Before test

6 Transmitter Measurements

6.1 Channel Output Power (ERP)

6.1.1 Test Conditions

Table 12 Test Conditions

Preconditioning:	1 hour
Measured at:	enclosure
Ambient temperature:	23.5℃
Relative humidity:	53%
Test Configurations:	TM1 and TM3 at frequency B、M、T

6.1.2 Test Specifications and Limits

6.1.2.1 Specification

CFR 47 (FCC) part 2.1046 and part 22.913

6.1.2.2 Supporting Standards

Table 13 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ANSI/TIA-98-E: 2003	Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations

6.1.2.3 Limits

Compliance with 22.913 requires in no any case may the peak power of a CDMA800M Handset transmitter exceed 7 W. And calculate longitude ERP by following formula：ERP(dBm)= 10*log ($ERP_{in\ watts}$).

Table 14 Limits

Maximum Output Power (Watts)	< 7 Watts
Maximum Output Power (dBm)	< 38.5 dBm

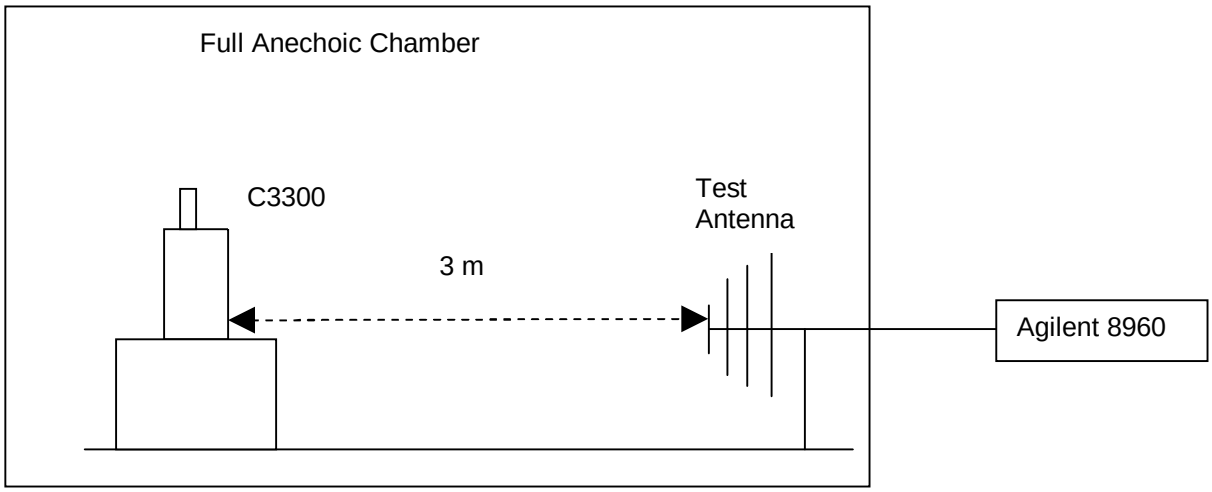
6.1.3 Test Method and Setup

(a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, E.R.P. shall be measured when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in 2.1033(c)(9). Connect the handset to the wireless communication tester Agilent 8960 via the air interface. The band class is set as US Cellular.
(b) Test the Radiated maximum output power by the Agilent 8960 received from test antenna.
(c) Use substitution method to verify the Maximum output power. The EUT is substituted by a dipole antenna. The dipole is connected to a signal generator. And then adjust the output level of the signal generator to get the same received power recorded in step (b) on Agilent 8960, and record the

power level of Signal Generator. Of course, the cable loss at the test frequency should be compensated.

Test setup

Step 1: find the maximum E.R.P.



Step 2: substitution method

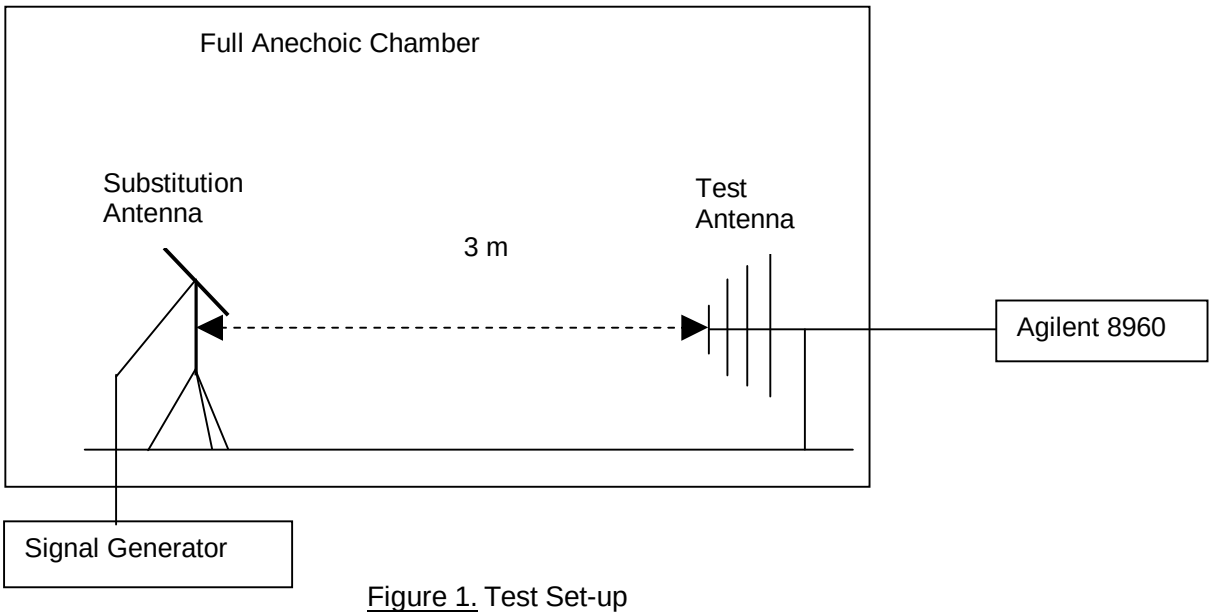


Figure 1. Test Set-up

6.1.4 Measurement Results

Table 15 Measurement Results

TEST CONDITIONS	RF Output Power		
	Channel1013(B) 824.70MHz	Channel283(M) 833.49MHz	Channel777(T) 848.31MHz
	dBm	dBm	dBm

		Measured	Limit	Measured	Limit	Measured	Limit
TM1	T_{nom} (25 °C) V_{nom} (3.7 V)	24.50	38.5	24.40	38.5	24.88	38.5
TM3	T_{nom} (25 °C) V_{nom} (3.7 V)	24.43	38.5	24.51	38.5	24.81	38.5

6.1.5 Conclusion

The equipment **PASSED** the requirement of this clause.
For the measurement results refer to appendix A with 7 pages.

6.2 Modulation Characteristics

6.2.1 Test Conditions

Table 16 Test Conditions

Preconditioning:	1 hour
Measured at:	Antenna connector
Ambient temperature:	22 °C
Relative humidity:	47 %
Test Configurations:	TM1 and TM3 at frequency M

6.2.2 Test Specifications and Limits

6.2.2.1 Specification

CFR 47 (FCC) part 2.1047 and part 22.915

6.2.2.2 Supporting Standards

Table 17 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ANSI/TIA-98-E: 2003	Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile stations.

6.2.2.3 Limits

Compliance with 22.915 requires, not a specific modulation characteristic since the EUT is applied for 22.901(d).

Table 18 Limits

Limits	Not applicable

6.2.3 Test Method and Setup

Connect the Huawei 800M CDMA Handset to the Universal Radio Communication Tester CMU200 via the antenna connector. The band class is set as US Cellular; the Handset's output is matched with 50 Ω load. Test method was according to ANSI/TIA-98-E. The waveform quality and constellation of the Handset was tested.

Test setup

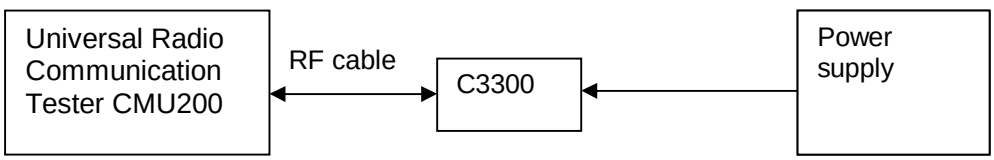


Figure 2. Test Set-up

6.2.4 Measurement Results

Table 19Measurement Results

TEST CONDITIONS		Modulation Characteristic	
		Channel283(M) 833.49MHz	
		Measured	
		TM1	TM3
T_{nom} (25 °C)	V_{nom} (3.7V)	Refer to Appendix B	Refer to Appendix B

6.2.5 Conclusion

The equipment **PASSED** the requirement of this clause.

For the measurement results refer to appendix B with 3 pages.

6.3 Occupied Bandwidth

6.3.1 Test Conditions

Table 20 Test Conditions

Preconditioning:	1 hour
Measured at:	RF connector
Ambient temperature:	25 °C
Relative humidity:	51 %
Test Configurations:	TM1 and TM3 at frequency B、M、T

6.3.2 Test Specifications and Limits

6.3.2.1 Specification

CFR 47 (FCC) part 2.1049 and part 22.917

6.3.2.2 Supporting Standards

Table 21 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ANSI/TIA-98-E: 2003	Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile stations.

6.3.2.3 Limits

Compliance with 2.1049 requires not a specific occupied bandwidth since the EUT is applied for part 22 subpart H and possesses a digital modulation there is no specific requirement formulated in before mentioned rules the 99% rules applies.

Table 22 Limits

Upper /lower frequency limits	0.5% of the mean power

6.3.3 Test Method and Setup

Huawei 800M CDMA Handset was connected to the wireless signal analyzer R&S FSQ26 via the one RF connector. The band class is set as US Cellular; Handset was controlled to transmit Maximum power. Measure and record the Occupied Bandwidth by the R&S FSQ26.

The OBW, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the following conditions as applicable:

Refer to 47CFR part2.1049 section (g) & (h).
(g) Transmitter in which the modulating base band comprises not more than three independent channels - when modulated by the full complement of signals for which the transmitter is rated. The level of modulation for each channel should be set to that prescribed in rule parts applicable to the services for which the transmitter is intended. If specific modulation levels are not set forth in the rules, the tests should provide the manufacturer’s maximum rated condition.

(h) Transmitters employing digital modulation techniques - when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal shall be applied through any filter networks, pseudorandom generators or other devices required in normal service. Additionally, the occupied bandwidth shall be shown for operation with any devices used for modifying the spectrum when such devices are optional at discretion of the user.

Measurement bandwidth (RBW): 30 kHz (Resolution bandwidth)
Video bandwidth (VBW): 300 kHz

Test Set-up

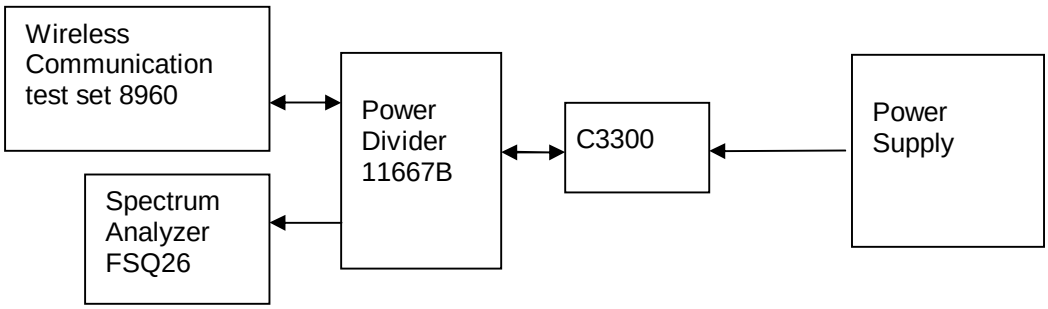


Figure 3. Test Set-up

6.3.4 Measurement Results

Table 23 Measurement Results

TEST CONDITIONS		Occupied Bandwidth					
		Channel1013 (B) 824.700MHz		Channel283 (M) 833.49MHz		Channel777(T) 848.31MHz	
		Measured (MHz)		Measured (MHz)		Measured (MHz)	
		TM1	TM3	TM1	TM3	TM1	TM3
T_{nom} (25 °C)	V_{nom} (3.7V)	1.2660	1.2660	1.2660	1.2660	1.2660	1.2660

6.3.5 Conclusion

The equipment **PASSED** the requirement of this clause.
For the measurement results refer to appendix C with 7 pages.

6.4 Band edges compliance

6.4.1 Test Conditions

Table 24 Test Conditions

Preconditioning:	1 hour
Measured at:	Antenna connector
Ambient temperature:	23.5°C
Relative humidity:	55 %
Test Configurations:	TM1 and TM3 at frequency B、T

6.4.2 Test Specifications and Limits

6.4.2.1 Specification

CFR 47 (FCC) part 2.1051 and part 22.917(e)

6.4.2.2 Supporting Standards

Table 25 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ANSI/TIA-98-E: 2003	Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations.

6.4.2.3 Limits

Compliance with 22.917 requires that all spurious emission must be attenuated below the transmitter power by at least 43 +10 $\log_{10}$ P. (Whereas P is the rated power of the EUT).

Table 26 Limits

Rated Power:	24 dBm
Required attenuation:	43+10log (0.25) = 37 , 24 dBm – 37 dB
Absolute level	- 13 dBm

6.4.3 Test Method and Setup

Huawei 800M CDMA Handset was connected to the wireless signal analyzer R&S FSQ26 via the one RF connector, the band class is set as US Cellular. CDMA800M Handset was controlled to transmit at maximum power. Measure and record Band edge compliance by the R&S FSQ26.

RBW of 20 kHz was used up to 5MHz away from the band edge.

Test Set-up

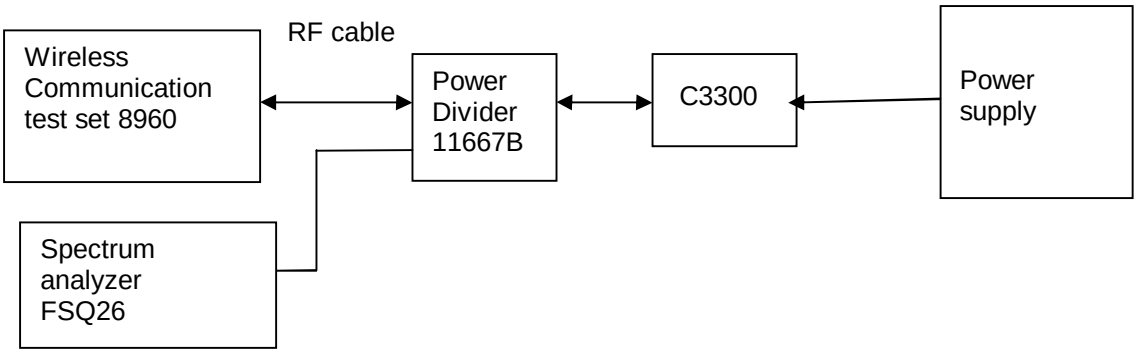


Figure 4. Test Set-up

6.4.4 Measurement Results at Band Edges

Table 27 Measurement Results outside Band Edges-- Single Carrier

Band	Frequency of Band edges [MHz]	Channel Number	Test Mode	Power [dBm]	Spurious Level measured [dBm]	FCC limit	Result
US Cellular	T_{nom} (23.5 °C), V_{nom} (3.7V)						
	824	1013 (B)	TM1 & TM3	24	<-13(See appendix D)	- 13 dBm	Pass
	849	777 (T)	TM1 & TM3	24	<-13(See appendix D)	- 13 dBm	Pass

6.4.5 Conclusion

The equipment **PASSED** the requirement of this clause.
For the measurement results refer to appendix D with 5 pages.

6.5 Conducted Spurious Emission at Antenna Terminal

6.5.1 Test Conditions

Table 28 Test Conditions

Preconditioning:	1 hour
Measured at:	Antenna connector
Ambient temperature:	23°C
Relative humidity:	50 %
Test Configurations:	TM1 and TM3 at frequency B、M、T

6.5.2 Test Specifications and Limits

6.5.2.1 Specification

CFR 47 (FCC) part 2.1051 and part 22.917(e)

6.5.2.2 Supporting Standards

Table 29 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ANSI/TIA-98-E: 2003	Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations.

6.5.2.3 Limits

Compliance with 22.917 requires that all spurious emission must be attenuated below the transmitter power by at least 43 +10 $\log_{10}$ P. (Whereas P is the rated power of the EUT).

Table 30 Limits

Rated Power:	24 dBm
Required attenuation:	43+10log (0.25) = 37 , 24 dBm – 37 dB
Absolute level	- 13 dBm

6.5.3 Test Method and Setup

Huawei 800M CDMA Handset was connected to the wireless signal analyzer R&S FSQ26 via the one RF connector, the band class is set as US Cellular. Handset was controlled to transmit Maximum power. Measure and record the Conducted Spurious Emission by the R&S FSQ26.

According to ANSI/TIA-603-C, the defined measurement bandwidth as following:

Measurement bandwidth (RBW) for 9 kHz up to 1GHz: 10 kHz;
Measurement bandwidth (RBW) for 1GHz up to 12.75GHz: 1MHz;

Test Set-up

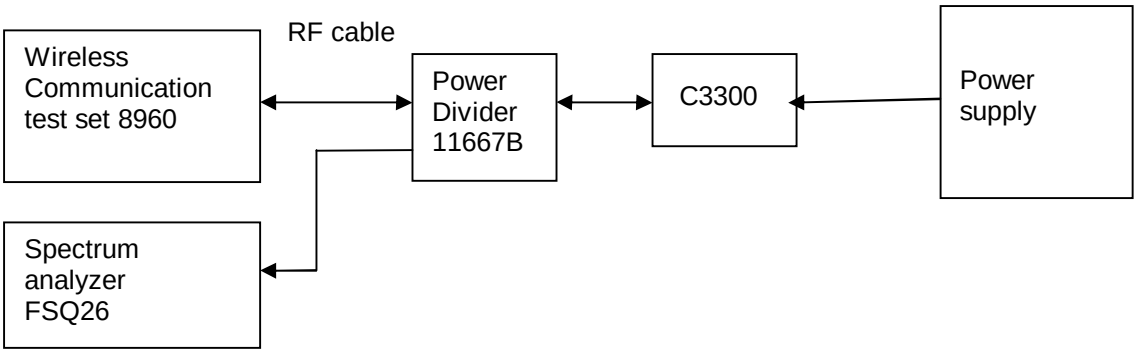


Figure 5. Test Set-up

6.5.4 Measurement Results at Conducted Spurious Emission

Table 31 Measurement Results

Channel Number	Test Mode	Test Range (Frequency)	Output Power [dBm]	Spurious Level measured [dBm]	FCC limit	Result
Channel 1013(B)	TM1	9 kHz ~12.75GHz	24	<- 13 dBm (See appendix E)	- 13 dBm	Pass
	TM3	9 kHz ~12.75GHz	24	<- 13 dBm (See appendix E)	- 13 dBm	Pass
Channel 283(M)	TM1	9 kHz ~12.75GHz	24	<- 13 dBm (See appendix E)	- 13 dBm	Pass
	TM3	9 kHz ~12.75GHz	24	<- 13 dBm (See appendix E)	- 13 dBm	Pass
Channel 777(T)	TM1	9 kHz ~12.75GHz	24	<- 13 dBm (See appendix E)	- 13 dBm	Pass
	TM3	9 kHz ~12.75GHz	24	<- 13 dBm (See appendix E)	- 13 dBm	Pass

6.5.5 Conclusion

The equipment **PASSED** the requirement of this clause.
For the measurement results refer to appendix E with 19 pages.

6.6 Field Strength of Spurious Radiation

6.6.1 Test Conditions

Table 32 Test Conditions

Preconditioning:	1 hour
Measured at:	enclosure
Ambient temperature:	24 °C
Relative humidity:	52 %
Test Configurations:	TM1 at frequency M

6.6.2 Test Specifications and Limits

6.6.2.1 Specification

CFR 47 (FCC) part 2.1053 and part 22.917(e)

6.6.2.2 Supporting Standards

Table 33 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ANSI/TIA-98-E: 2003	Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations

6.6.2.3 Limits

Compliance with 22.917 requires that all spurious emission must be attenuated below the transmitter power by at least 43 +10 $\log_{10}$ P. (Whereas P is the rated power of the EUT).

Table 34 Limits

Rated Power:	24 dBm (0.25W)
Required attenuation:	43 +10 $\log_{10}$ (0.25W) = 37 dB
Absolute level	24 dBm – 37 dB= - 13 dBm

6.6.3 Test Method and Setup

(a) Measurements were made to detect spurious emissions radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data were supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph 2.1049(c) as appropriate. For equipment operating on frequencies below 890 MHz, an Open Field Test is normally required with the measuring instrument antenna located in the far field at all test frequencies. In the event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurement will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections, which might distort the field strength measurements. Information

submitted shall include the relative radiated power of each spurious emission with the reference to the rated power output of the transmitter, assuming all emissions are radiated from half-wave dipole antennas.
(b) Measurements specified in paragraph (a) of this section shall be made for the following equipment:
(1) Those in which the spurious emission are required to be 60 dB or more below the mean power of the transmitter.
(2) All equipment operating on frequencies higher than 25 MHz
(3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.
(4) Other types of equipment as required, when deemed necessary by the Commission.

Huawei 800M CDMA Handset is equipment with non-integral antenna. And it should test according to part (b) of above section.

BTS simulator is connected to a communication antenna, by which communicates with the Handset inside the test site. The BTS simulator controls the Handset to transmit at maximum power which defined in specification of product when in traffic mode, field strength of spurious emission in idle mode were also tested. The Handset operates on a typical channel.

The test procedure:

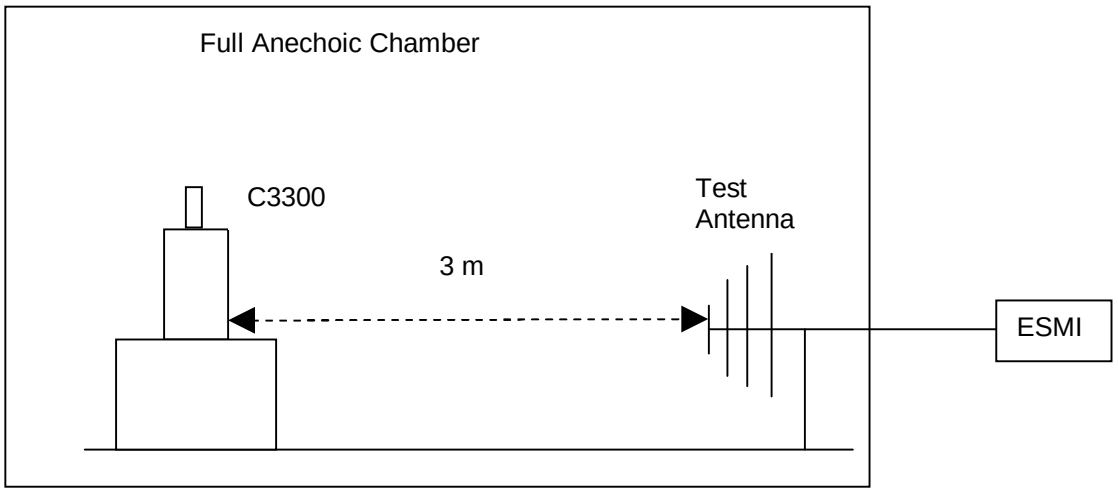
(a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, E.R.P. shall be measured when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in 2.1033(c)(9). Connect the handset to the BTS simulator via the air interface. The band class is set as US Cellular.
(b) Test the Radiated maximum output power by the Rohde and Schwarz ESMI Test Receiver from test antenna.
(c) Use substitution method to verify the Maximum output power. The EUT is substituted by a dipole antenna. The dipole is connected to a signal generator. And then adjust the output level of the signal generator to get the same received power recorded in step (b) on ESMI Test Receiver, and record the power level of Signal Generator. Of course, the cable loss at the test frequency should be compensated.

According to ANSI/TIA-603-C, the defined measurement bandwidth as following:

Measurement bandwidth (RBW) for 9 kHz up to 1GHz: 10 kHz;
Measurement bandwidth (RBW) for 1GHz up to 12.75GHz: 1MHz;

Test setup

Step 1: find the maximum E.R.P.



Step 2: substitution method

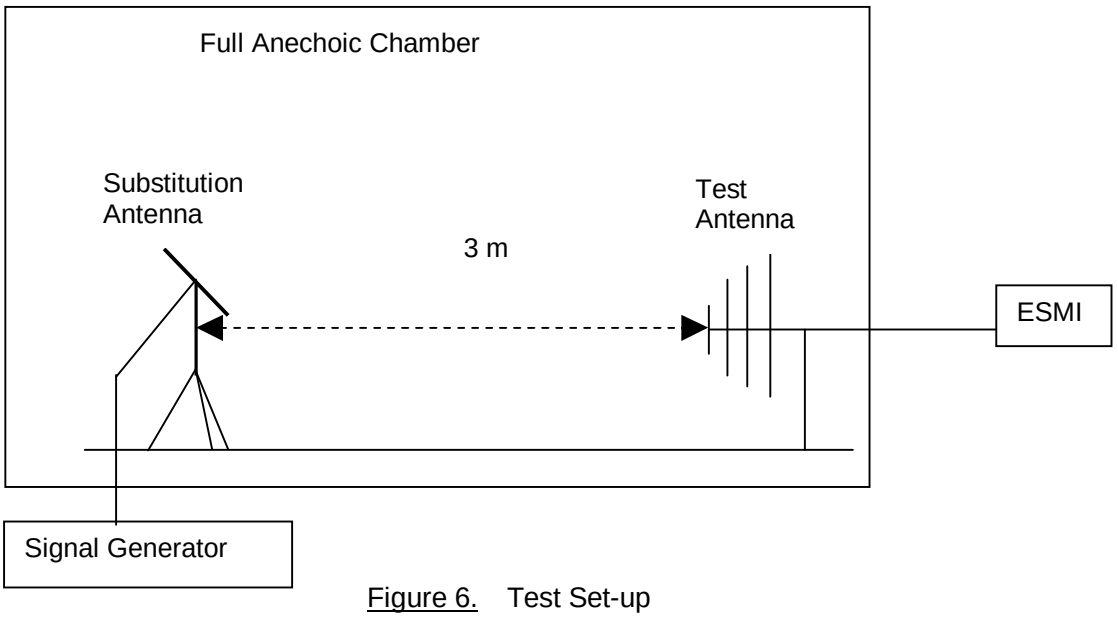


Figure 6. Test Set-up

6.6.4 Measurement Results

6.6.4.1 Pre-test Measurement Results

Table 35 Measurement Results

Channel Number	Test Range (Frequency)	Power [dBm]	Spurious Level measured [dBm]	FCC limit	Result
283	9 kHz ~12.75GHz	24	<- 13 dBm (See appendix F)	- 13 dBm	Pass

6.6.4.2 Substitution Results

There was one peak found in pre- test.

Calculation Sample:

Table 36 Substitution Results

Freq. [MHz]	Measurement Value [dBm]	Substitution Antenna Type	Gain [dBd]	Cable Loss [dB]	Signal Generator Level [dBm]	Substitution Level [dBm]	FCC limit [dBm]	Result
1671.11	-32.12	Horn Ant.	8.85	2.05	-38.39	-31.59	-13	Pass

Note: For get the E.R.P. (Efficient Radiated Power) in substitution method, the following formula should take to calculate it,

E.R.P. [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBd]

NOTE: SGP- Signal Generator Level

6.6.5 Conclusion

The equipment **PASSED** the requirement of this clause.
For the measurement results refer to appendix F with 7 pages.

6.7 Frequency Stability

6.7.1 Test Conditions

Table 37 Test Conditions

Preconditioning:	1 hour
Measured at:	Antenna connector
Ambient temperature:	See below
Relative humidity:	55 % at 24.5 °C
Test Configurations:	TM1 and TM3 at frequency M

6.7.2 Test Specifications and Limits

6.7.2.1 Specification

CFR 47 (FCC) part 2.1055 and part 22.355

6.7.2.2 Supporting Standards

Table 38 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ANSI/TIA-98E: 2003	Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations

6.7.3 Test Method and Setup

The frequency stability shall be measured with variation of ambient temperature as follows:
(1) From –30 ° to +50 ° centigrade for all equipment except that specified in subparagraphs
(2) and (3) of paragraph 2.1055

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10^{o} centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short-term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test.

(d) The frequency stability shall be measured with variation of primary supply voltage as follows:
(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point, which shall be specified by the manufacturer.
(3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.
(e) When deemed necessary, the Commission may require tests of frequency stability under conditions in addition to those specifically set out in paragraphs (a), (b), (c) and (d) of this section. (For example,

measurements showing the effect of proximity to large metal objects, or of various types of antennas, may be required for portable equipment.)

Test Set up

Connect the Base Station to the Wireless Communication test set 8960 via the antenna connector. Then measure the frequency error by the Wireless Communication test set 8960. The Handset's output is matched with a 50 Ω load.

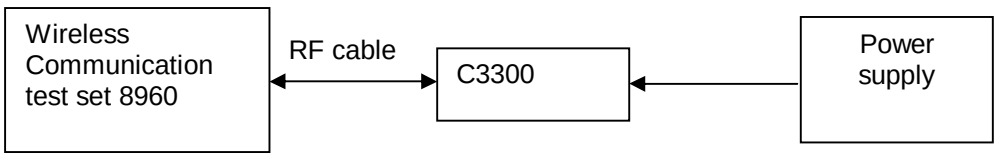


Figure 7. Test Set up

6.7.4 Measurement Results

6.7.4.1 Measurement Results vs. Variation of Temperature

- TM1, 3.7V DC Channel No.**283(833.49MHz)**

Table 39 Measurement Results vs. Variation of Temperature—TM1

Temperature	Power (dBm)	Nominal Frequency (MHz)	Measured Frequency Error(Hz)	Result
-30 °C	24	833.49	-2.0	Pass
-20 °C	24	833.49	4.1	Pass
-10 °C	24	833.49	5.8	Pass
0 °C	24	833.49	0.7	Pass
+10 °C	24	833.49	1.9	Pass
+20 °C	24	833.49	3.6	Pass
+30 °C	24	833.49	2.2	Pass
+40 °C	24	833.49	-0.6	Pass
+50 °C	24	833.49	3.8	Pass

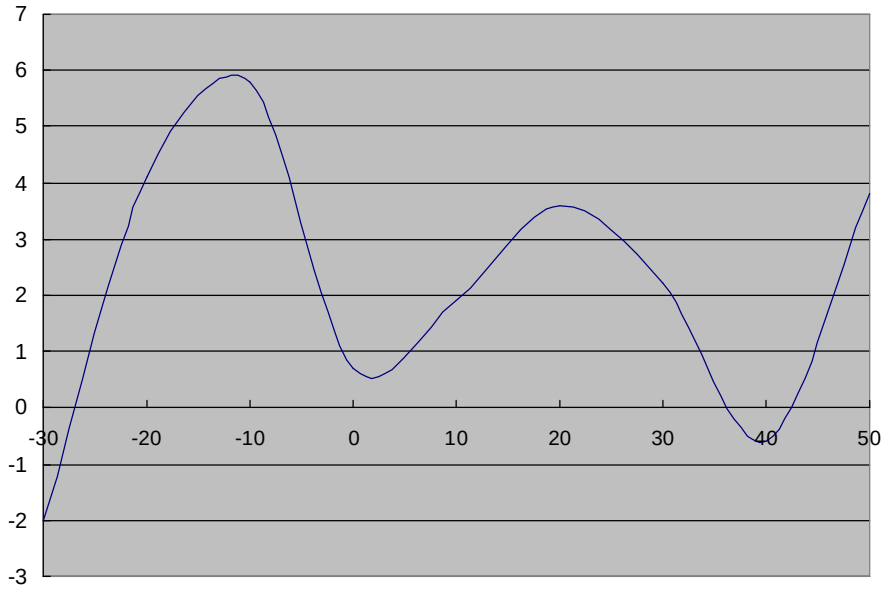


Figure 8. TM1 Test Graph

- TM3, 3.7V DC Channel No.**283(833.49MHz)**

Table 40 Measurement Results vs. Variation of Temperature—TM3

Temperature	Power (dBm)	Nominal Frequency (MHz)	Measured Frequency Error(Hz)	Result
-30 °C	24	833.49	2.6	Pass
-20 °C	24	833.49	0.7	Pass
-10 °C	24	833.49	0.7	Pass
0 °C	24	833.49	5.9	Pass
+10 °C	24	833.49	-0.5	Pass
+20 °C	24	833.49	5.0	Pass
+30 °C	24	833.49	-1.5	Pass
+40 °C	24	833.49	1.6	Pass
+50 °C	24	833.49	4.6	Pass

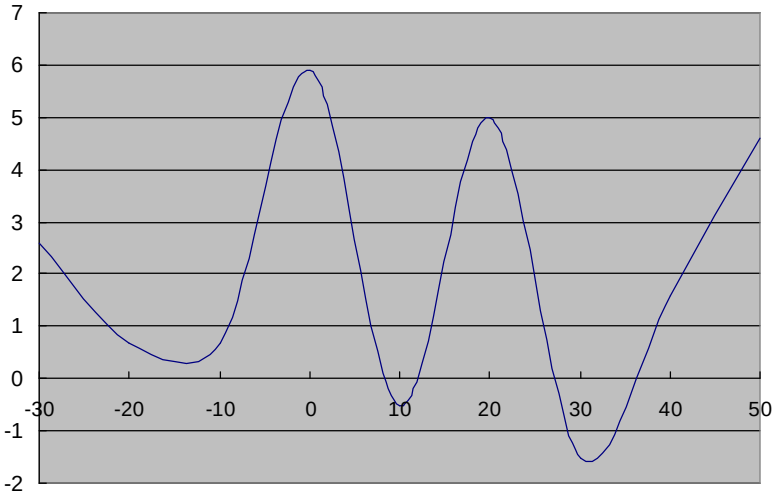


Figure 9. TM3 Test Graph

6.7.4.2 Measurement Results vs. Variation of Voltage

- TM1, 24.5 °C ,Channel No. **283(833.49MHz)**

Table 41 Measurement Results vs. Variation of Voltage—TM1

Voltage	Power (dBm)	Nominal Frequency (MHz)	Measured Frequency Error(Hz)	Result
3.3	24	833.49	2.0	Pass
3.7	24	833.49	3.2	Pass
4.2	24	833.49	-1.2	Pass

- TM3, 24.5°C ,Channel No. **283(833.49MHz)**

Table 42 Measurement Results vs. Variation of Voltage—TM3

Voltage	Power (dBm)	Nominal Frequency (MHz)	Measured Frequency Error(Hz)	Result
3.3	24	833.49	1.8	Pass
3.7	24	833.49	3.2	Pass
4.2	24	833.49	4.2	Pass

6.7.5 Conclusion

The equipment **PASSED** the requirement of this clause.

7 EMC Test

7.1 Conducted Emission at Power Port

7.1.1 Test Conditions

Table 43 Test Conditions

Preconditioning:	1 hour
Measured at:	Power port
Ambient temperature:	23.5°C
Relative humidity:	55 %
Test Configurations:	TM1 at frequency M

7.1.2 Test Specifications and Limits

7.1.2.1 Specification

CFR 47 (FCC) part 15.107

7.1.2.2 Supporting Standards

Table 44 Supporting Standards:

ANSI C63.4: 2003	Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

7.1.2.3 Limits

Compliance with CFR 47 part15.107 requires that conducted emission must meet the requirement of following table.

Table 45 Limits

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

Note: * Decreases with the logarithm of the frequency.

7.1.3 Test Method and Setup

The Table-top EUT was placed upon a non-metallic table 0.8 m above the horizontal metal reference ground plane. EUT was connected to LISN, and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.4: 2003.

Conducted Disturbance at AC Port measurements were undertaken on the L and N Lines. The emissions were measured using a Quasi-Peak Detector and Average Detector.

Huawei 800M CDMA Handset was communicated with the BTS simulator through Air interface, the BTS simulator controls the Handset to transmitter at maximum power which defined in specification of

product. The Handset operated on the typical channel.

Measurement bandwidth (RBW) for 150kz to 30 MHz: 9 kHz;

Test Set-up

The Handset was setup in the screened chamber and operated under nominal conditions.

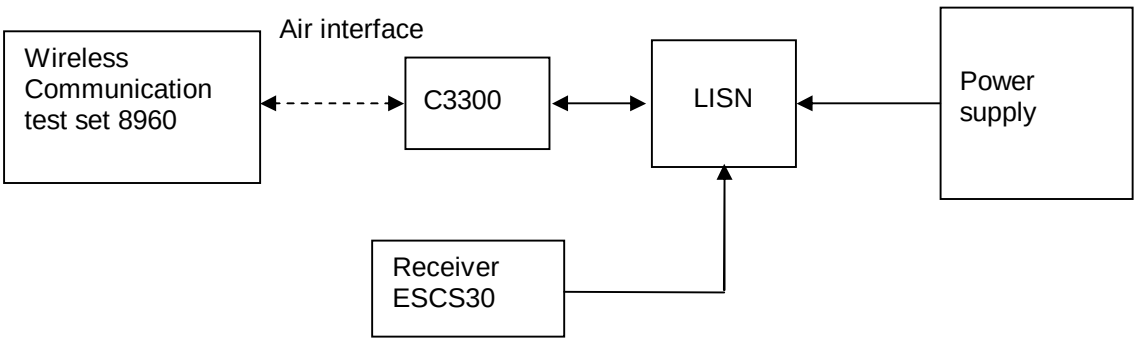


Figure 10. Test Set-up

7.1.4 Measurement Results

Table 46 MEASUREMENT RESULT:QP DECTER

Frequency (MHz)	Level (dBμV)	Transd (dB)	Limit (dBμV)	Margin (dB)	Line	PE
0.186000	40.40	1.5	64	23.9	L2	FLO
0.375000	34.60	0.9	58	23.8	L2	FLO
0.946500	27.30	0.5	56	28.7	N	FLO
2.305500	18.90	0.4	56	37.1	L2	FLO
11.638500	19.30	2.1	60	40.7	L2	FLO
28.342500	26.00	3.5	60	34.0	L2	FLO

Table 47 MEASUREMENT RESULT:AV DECTER

Frequency (MHz)	Level (dBμV)	Transd (dB)	Limit (dBμV)	Margin (dB)	Line	PE
0.190500	35.60	1.4	54	18.4	N	FLO
0.384000	24.60	0.8	48	23.6	N	FLO
0.964500	11.20	0.5	46	34.8	N	FLO
3.561000	7.70	0.5	46	38.4	N	FLO

7.1.5 Conclusion

The equipment **PASSED** the requirement of this clause.
For the measurement results refer to appendix G with 2 pages.

7.2 Radiated Emission of Enclosure in ideal mode

7.2.1 Test Conditions

Table 48 Test Conditions

Preconditioning:	0.5 hour
Measured at:	enclosure
Ambient temperature:	25 °C
Relative humidity:	45 %
Test Configurations:	TM1 at frequency M

7.2.2 Test Specifications and Limits

7.2.2.1 Specification

CFR 47 (FCC) part 15.109

7.2.2.2 Supporting Standards

Table 49 Supporting Standards:

ANSI C63.4: 2003	Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

7.2.2.3 Limits

The Radiated Emission of enclosure of EUT should compliance with the requirement of CFR 15.109. The limit showed in following table.

Table 50 Limits

Frequency of Emission (MHz)	Radiated Limit	
	Unit(μv/m)	Unit(dBμV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
960-1000	500	54

7.2.3 Test Method and Setup

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4 (2003). The test distance was 3m.The EUT was set-up on insulator 80cm above the Ground Plane. The set-up and test methods were according to ANSI C63.4.The Radiated Disturbance measurements were made using a Rohde and Schwarz ESMI Test Receiver and control software ES-K1.
A preliminary scan and a final scan of the emissions were made from 30 MHz to 1GHz by using test

script of software; the emissions were measured using a Quasi-Peak Detector. The maximal emission value was acquired by adjusting the antenna height, polarisation and turntable azimuth in accordance with the software setup. Normally, the height range of antenna was 1m to 4m, the azimuth range of turntable was 0°to 360°, The receive antenna has two polarizations V and H.

Huawei 800M CDMA Handset was communicated with the BTS simulator through Air interface. The Handset operated on the typical channel and the Handset worked in idle mode, transmitter was not work in this test.

Measurement bandwidth: 30 MHz – 1000 MHz: 120 k Hz

Test set up

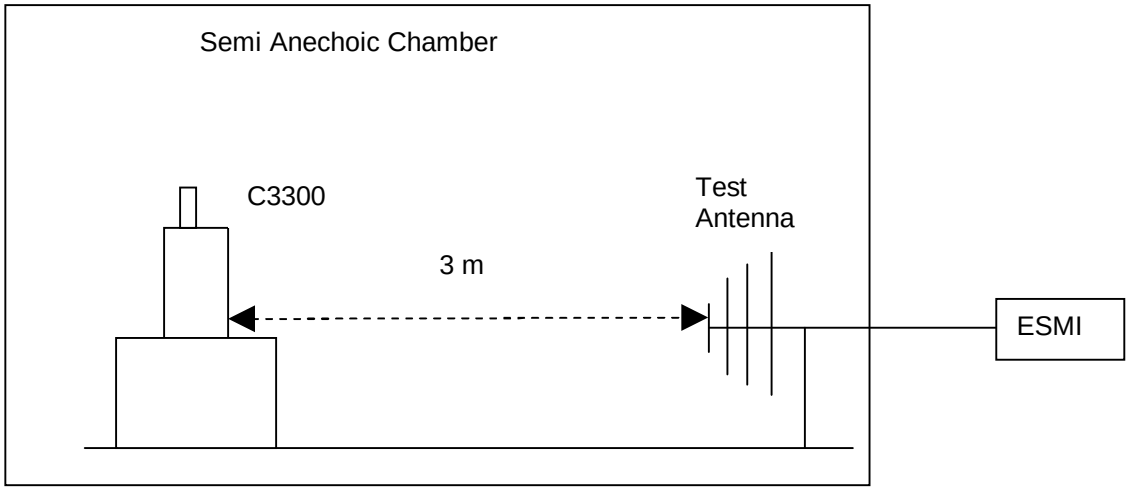


Figure 11. Test set up

7.2.4 Measurement Results

Table 51 MEASUREMENT RESULT: QP DECTER

Frequency (MHz)	Level (dBμV/m)	Transd (dB)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Polarisation
59.220000	32.00	-16.0	40.0	8.0	100.0	111.00	VERTICAL
153.600000	27.50	-10.2	43.5	16.0	116.0	90.00	VERTICAL
165.300000	26.70	-10.6	43.5	16.8	100.0	89.00	VERTICAL
239.820000	32.50	-8.9	46.0	13.5	110.0	248.00	HORIZONTAL
326.460000	29.80	-6.4	46.0	16.2	100.0	251.00	HORIZONTAL
335.640000	20.10	-6.1	46.0	25.9	171.0	99.00	HORIZONTAL

7.2.5 Conclusion

The equipment **PASSED** the requirement of this clause.
For the measurement results refer to appendix H with 2 pages.

8 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Table 52 System Measurement Uncertainty

Items		Extended Uncertainty
Maximum Channel Output Power	Power(dBm)	U=0.39dB; k=2
Band Edge Compliance	Disturbance Power （dBm）	U＝2.0dB; k=2
Conducted Spurious Emission at Antenna Terminal	Disturbance Power （dBm）	U＝2.0dB; k=2
Frequency Stability	Frequency accuracy(ppm)	U＝0.21ppm; k=2
Field Strength of Spurious Radiation	E.R.P(dBm)	U=3dB; k=2
Conducted Emission at Power Port	Disturbance Voltage （dBμV）	U=4dB; k=2
Radiated Emission of enclosure at ideal mode	Field strength （dBμV/m）	U=5dB; k=2

9 Appendixes

Appendix A	Measurement Results Maximum Channel Output Power	7 pages
Appendix B	Measurement Results Modulation Characteristics	3 pages
Appendix C	Measurement Results Occupied Bandwidth	7 pages
Appendix D	Measurement Results Band Edges	5 pages
Appendix E	Measurement Results Conducted Spurious Emission at Antenna Terminal	19 pages
Appendix F	Measurement Results Field Strength of Spurious Radiation	7 pages
Appendix G	Measurement Results Conducted Emission at Power Port	2 pages
Appendix H	Measurement Results Radiated Emission of Enclosure at Ideal Mode	2 pages
Appendix I	Photos of Test Setup	5 pages
Appendix J	Measurement Results Maximum Conducted Output Power	14 pages