



REPORT No. : SZ17080130W01

# CE RF TEST REPORT

**MANUFACTURER** : Shenzhen Chainway Information Technology Co.,Ltd.

**PRODUCT NAME** : Mobile Data Terminal

**MODEL NAME** : C71

**TRADE NAME** : CHAINWAY

**BRAND NAME** : CHAINWAY

**STANDARD(S)** : ETSI EN 30 1511 V12.5.1  
3GPP TS 51.010-1 V13.3.0

**ISSUE DATE** : 2017-10-13

**SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.**

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Change History		
Issue	Date	Reason for change
1.0	2017-10-13	First edition



## Test Report Declaration

Manufacturer	Shenzhen Chainway Information Technology Co.,Ltd.
Manufacturer Address	9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen
Factory	Shenzhen Chainway Information Technology Co.,Ltd.
Factory Address	9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen
Product Name	Mobile Data Terminal
Model Name	C71
Brand Name	CHAINWAY
HW Version	C70SE_MB_V11
SW Version	V1.0_60006735_20170424
Test Standards	ETSI EN 301 511 V12.5.1 3GPP TS 51.010-1 V13.3.0
Test Date	2017-08-16 to 2017-09-15
Test Result	PASS

Tested by:

*Xiachengzhi*

Xia Chengzhi

Approved by:

*Peng Huarui*

Peng Huarui



## 1. Technical Information

Note: Provide by manufacturer.

### 1.1 Applicant Information

Company: Shenzhen Chainway Information Technology Co.,Ltd.

Address: 9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen

### 1.2 Equipment under Test (EUT) Description

Frequency Bands	GSM850/900/1800/1900MHz
Modulation Mode	GMSK,8PSK
Power Class	GSM850/900:4, GSM1800/1900:1
Multislot Class	GPRS:12, EGPRS:12
HSCSD Multislot MS	Not Support
R-GSM MS	Not Support
Support of GPRS Multislot class on the uplink	Support
EGPRS	Support
EGPRS capable of 8PSK in Uplink, of all Multislot classes	Support
SIM cards description	SIM 1 and SIM 2 is a chipset unit and tested as a single chipset. The SIM 1 is chosen for test.

#### 1.2.1 Photographs of the EUT

Please reference ANNEX D.

#### 1.2.2 Identification of all used EUTs

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
A01	C70SE_MB_V11	V1.0_60006735_20170424

## 2. Test Results

### 2.1 Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	ETSI EN 301 511 V12.5.1(2017-03)	Global System for Mobile communications (GSM); Mobile Stations (MS) equipment; Harmonised Standard covering the



No.	Identity	Document Title
		essential requirements of article 3.2 of Directive 2014/53/EU

Specific reference documents for testing:

No.	Identity	Document Title
2	3GPP TS 51.010-1 V13.3.0 (2017-01)	Mobile Station (MS) conformance specification; Part 1: Conformance specification

## 2.2 Test Conditions

Test Environment Conditions:

Relative Humidity:	30 ... 75 %
Air Pressure:	98 ... 102 kPa
Temperature:	Normal Temperature (NT)= +20 °C to +25 °C Low Temperature (LT) = -20°C High Temperature (HT) = +45°C
Voltage of the EUT:	Normal Voltage (NV) = 3.8V Low Voltage (LV) = 3.6V High Voltage (HV) = 4.35V

Note: The EUT the highest extreme temperature should be 45 degrees and the lowest extreme temperature should be -20 degrees by safety test. ( Declare by manufacturer.)

## 2.3 Test Results lists

### 2.3.1 Terms in the column “Verdict” for the test results list of this section:

Verdict	Description
PASS	EUT passed this test case
FAIL	EUT failed this test case
Decl.	“Declaration”: Morlab has received documents from the applicant and/or manufacturer which show conformity to the applied standards for this test case.
N/A	Test case not applicable for the EUT, please see the column “Note” for detailed

Table A.1: The EN Requirements Table (EN-RT) (Ref. ETSI EN 301 511 Annex A)

ETSI TS 151 010-1 Clause	EN Reference	EN-R (note): Test Descriptions & Test Conditions	GSM850		GSM900		DCS1800		PCS1900		Note
			EUT	Verdict	EUT	Verdict	EUT	Verdict	EUT	Verdict	
12.1.1	4.2.12	Conducted spurious emissions - MS allocated a channel. NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	



ETSI TS 151 010-1 Clause	EN Reference	EN-R (note): Test Descriptions & Test Conditions	GSM850		GSM900		DCS1800		PCS1900		Note
			EUT	Verdict	EUT	Verdict	EUT	Verdict	EUT	Verdict	
		NT / LV NT / HV	A01 A01	<u>PASS</u> <u>PASS</u>	A01 A01	<u>PASS</u> <u>PASS</u>	A01 A01	<u>PASS</u> <u>PASS</u>	A01 A01	<u>PASS</u> <u>PASS</u>	
12.1.2	4.2.13	Conducted spurious emissions - MS in idle mode. NT / NV NT / LV NT / HV	A01 A01 A01	<u>PASS</u> <u>PASS</u> <u>PASS</u>	A01 A01 A01	<u>PASS</u> <u>PASS</u> <u>PASS</u>	A01 A01 A01	<u>PASS</u> <u>PASS</u> <u>PASS</u>	A01 A01 A01	<u>PASS</u> <u>PASS</u> <u>PASS</u>	
12.2.1	4.2.16	Radiated spurious emissions - MS allocated a channel. NT / NV NT / LV NT / HV	--- A01 A01	<u>N/A</u> <u>PASS</u> <u>PASS</u>	--- A01 A01	<u>N/A</u> <u>PASS</u> <u>PASS</u>	--- A01 A01	<u>N/A</u> <u>PASS</u> <u>PASS</u>	--- A01 A01	<u>N/A</u> <u>PASS</u> <u>PASS</u>	02 01 01
12.2.2	4.2.17	Radiated spurious emissions - MS in idle mode. NT / NV NT / LV NT / HV	--- A01 A01	<u>N/A</u> <u>PASS</u> <u>PASS</u>	--- A01 A01	<u>N/A</u> <u>PASS</u> <u>PASS</u>	--- A01 A01	<u>N/A</u> <u>PASS</u> <u>PASS</u>	--- A01 A01	<u>N/A</u> <u>PASS</u> <u>PASS</u>	02 01 01
13.1	4.2.1	Transmitter - Frequency error and phase error. NT / NV LT / LV LT / HV HT / LV HT / HV Vibration X-axis Vibration Y-axis Vibration Z-axis	A01 A01 A01 A01 A01 A01 A01 A01 A01	<u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u>	A01 A01 A01 A01 A01 A01 A01 A01 A01	<u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u>	A01 A01 A01 A01 A01 A01 A01 A01 A01	<u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u>	A01 A01 A01 A01 A01 A01 A01 A01 A01	<u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u> <u>PASS</u>	
13.2	4.2.2	Transmitter - Frequency error under multipath and interference conditions.									



ETSI TS 151 010-1 Clause	EN Reference	EN-R (note): Test Descriptions & Test Conditions	GSM850		GSM900		DCS1800		PCS1900		Note
			EUT	Verdict	EUT	Verdict	EUT	Verdict	EUT	Verdict	
		NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
13.3	4.2.5	Transmitter output power and burst timing - MS with permanent antenna connector.									
		NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
13.4	4.2.6	Transmitter - Output RF spectrum.									
		NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
13.16.1	4.2.4	Frequency error and phase error in GPRS multislot configuration									
		NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		Vibration X-axis	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		Vibration Y-axis	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		Vibration Z-axis	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
13.16.2	4.2.10	Transmitter output power in GPRS multislot									



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ETSI TS 151 010-1 Clause	EN Reference	EN-R (note): Test Descriptions & Test Conditions	GSM850		GSM900		DCS1800		PCS1900		Note
			EUT	Verdict	EUT	Verdict	EUT	Verdict	EUT	Verdict	
		configuration NT / NV LT / LV LT / HV HT / LV HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
13.16.3	4.2.11	Output RF spectrum in GPRS multislot configuration NT / NV LT / LV LT / HV HT / LV HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
13.17.1	4.2.26	Frequency error and Modulation accuracy in EGPRS Configuration NT / NV LT / LV LT / HV HT / LV HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
13.17.2	4.2.27	Frequency error under multipath and interference conditions in EGPRS configuration NT / NV LT / LV LT / HV HT / LV HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
13.17.3	4.2.28	EGPRS Transmitter output power NT / NV LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	





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ETSI TS 151 010-1 Clause	EN Reference	EN-R (note): Test Descriptions & Test Conditions	GSM850		GSM900		DCS1800		PCS1900		Note
			EUT	Verdict	EUT	Verdict	EUT	Verdict	EUT	Verdict	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
13.17.4	4.2.29	Output RF spectrum in EGPRS configuration									
		NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.2.1	4.2.42	Reference sensitivity - TCH/FS	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.2.3	4.2.43	Reference sensitivity - FACCH/F	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.5.1	4.2.38	Adjacent channel rejection - speech channels (TCH/FS)									
		NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.5.2	4.2.39	Adjacent channel rejection - control channels									
		NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.6.1	4.2.32	Intermodulation rejection - speech channels	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.6.2	4.2.33	Intermodulation rejection - control channels	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	



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			EUT	Verdict	EUT	Verdict	EUT	Verdict	EUT	Verdict	
14.7.1	4.2.20	Blocking and spurious response - speech channels.	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.8.1	4.2.35	AM suppression - speech channels	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.8.2	4.2.36	AM suppression - control channels	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.8.3	4.2.37	AM suppression - packet channels	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.16.1	4.2.44	Minimum Input level for Reference Performance - GPRS									
		NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.18.1	4.2.45	Minimum Input level for Reference Performance - EGPRS									
		NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.18.3	4.2.40	Adjacent channel rejection - EGPRS									
		NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.18.4	4.2.34	Intermodulation rejection - EGPRS									



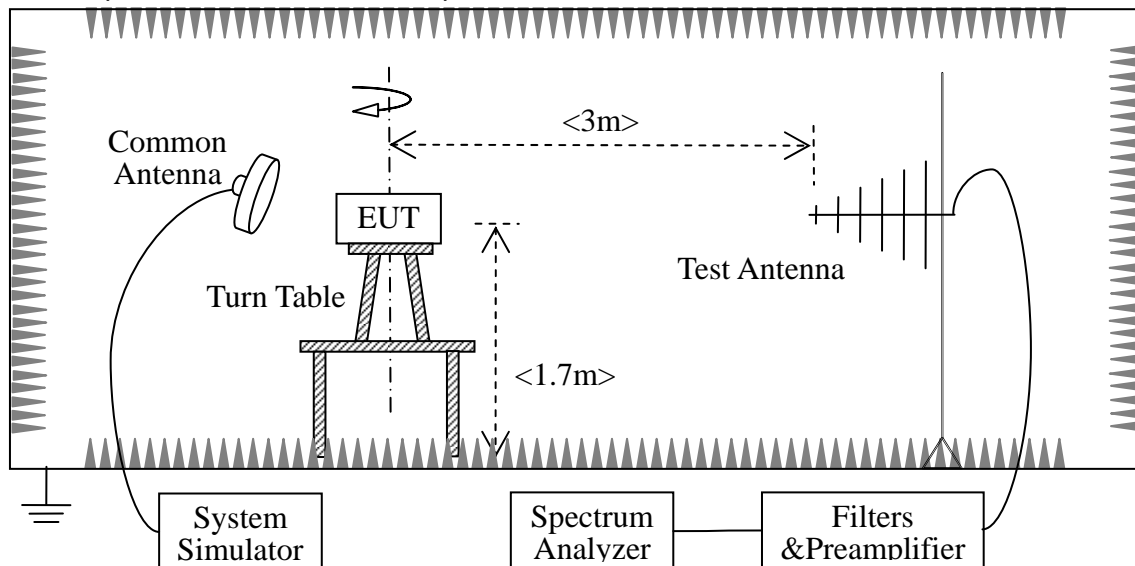
ETSI TS 151 010-1 Clause	EN Reference	EN-R (note): Test Descriptions & Test Conditions	GSM850		GSM900		DCS1800		PCS1900		Note
			EUT	Verdict	EUT	Verdict	EUT	Verdict	EUT	Verdict	
		NT / NV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		LT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / LV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
		HT / HV	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	
14.18.5	4.2.26	Blocking and spurious response in EGPRS configuration	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	A01	<u>PASS</u>	

Note:

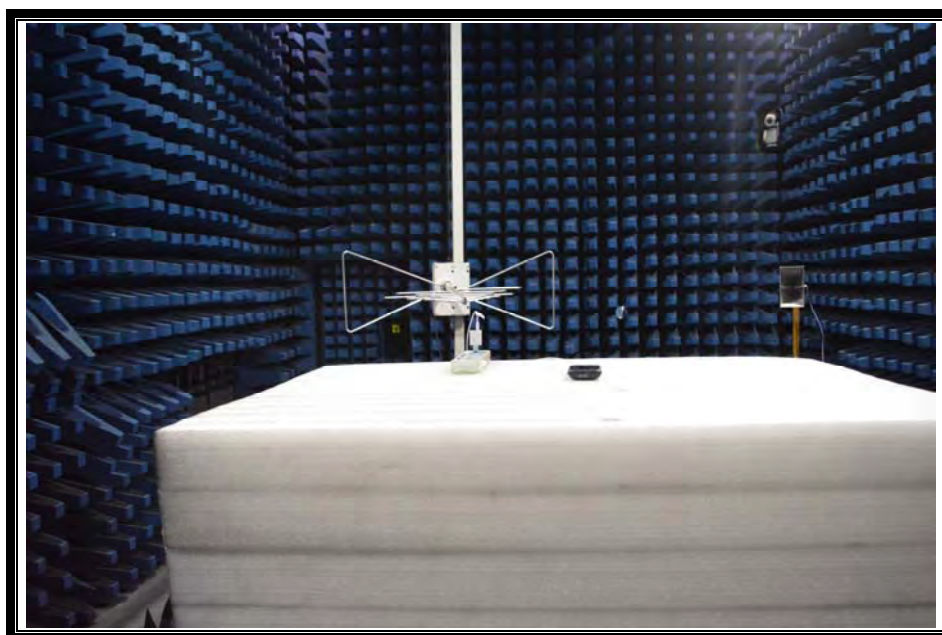
- 01 The EUT configuration of the Radiated spurious emissions tests is EUT + Battery + Charger + headset.
- 02 The test case is not performed under normal voltage (NV) conditions. Because high voltage (HV) and low voltage(LV) conditions are the WORST Phases for this test case.

## Annex A Test Setup

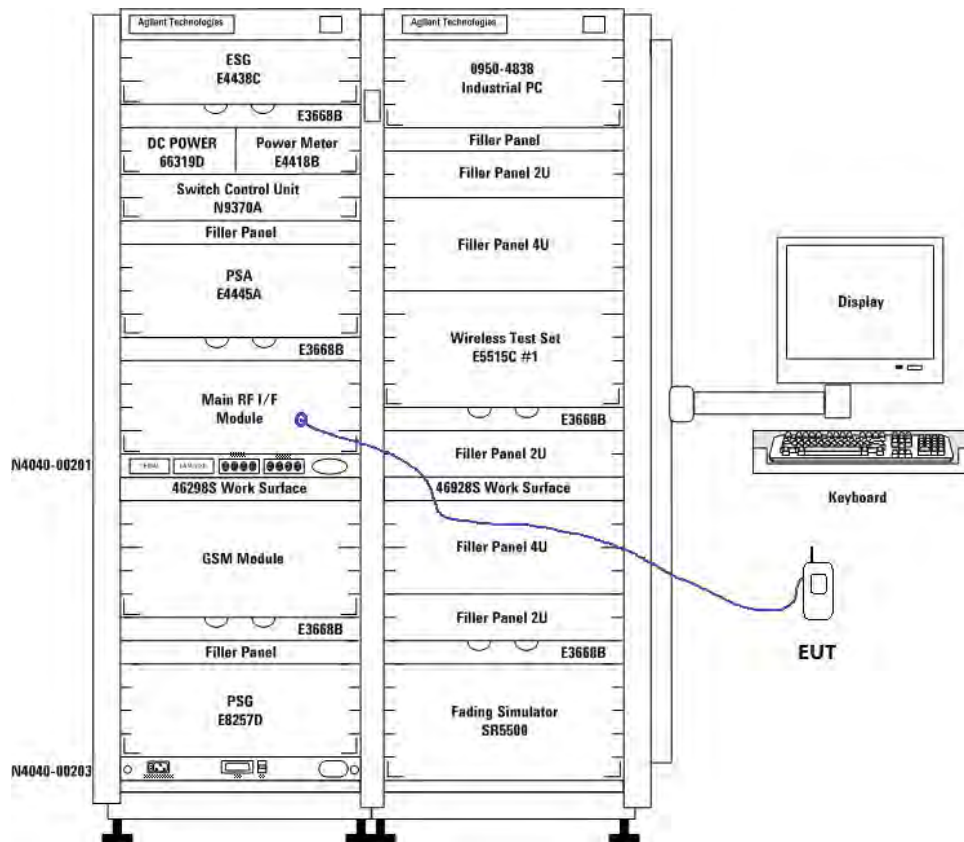
### 1. Radiated Spurious Emission Test Setup



The EUT, which is powered by the Battery charged with the AC Adapter, is located in a 3m Full-Anechoic Chamber; the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading. A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power (i.e. GSM1800MHz band Power Control Level (PCL) = 0/15 and Power Class = 1), and only the test result of the maximum output power was recorded.



## 2. GS8800 Test Setup



**Annex B Conducted Maximum Output Power**

Mode	GSM850 (dBm)	GSM900 (dBm)	DCS1800 (dBm)	PCS1900 (dBm)
GSM	33.48	33.69	29.61	29.47
GPRS	33.21	33.27	29.48	29.37
EGPRS	27.14	27.29	26.80	26.16



## Annex C Conducted and Radiated Spurious Emissions

### 1. Conducted spurious emissions.

Test Type	Frequency Band	Test Condition (MHZ)	Measured Value(dBm)	Pass/Fail
Allocated	GSM850	845.43	-40.93	PASS
Allocated	GSM850	816.48	-41.41	PASS
Allocated	GSM850	821.95	-41.44	PASS
Allocated	GSM850	1672	-42.47	PASS
Allocated	GSM850	3345.7	-46.38	PASS
Allocated	GSM850	5020.9	-47.63	PASS
Allocated	GSM900	890.9	-40.58	PASS
Allocated	GSM900	909.14	-40.97	PASS
Allocated	GSM900	872.11	-41.27	PASS
Allocated	GSM900	4512.7	-40.39	PASS
Allocated	GSM900	1805.3	-41.3	PASS
Allocated	GSM900	2706.7	-48.37	PASS
Allocated	DCS1800	677.7	-57.53	PASS
Allocated	DCS1800	924	-57.57	PASS
Allocated	DCS1800	973	-58.2	PASS
Allocated	DCS1800	1705.73	-44.18	PASS
Allocated	DCS1800	1707.33	-44.55	PASS
Allocated	DCS1800	1704.62	-44.73	PASS
Allocated	DCS1800	1739.91	-43.75	PASS
Allocated	DCS1800	1716.47	-44.26	PASS
Allocated	DCS1800	1723.03	-44.31	PASS
Allocated	DCS1800	1786.77	-44.28	PASS
Allocated	DCS1800	1786.38	-44.53	PASS
Allocated	DCS1800	1789.05	-44.63	PASS
Allocated	PCS1900	518	-54.98	PASS
Allocated	PCS1900	580.3	-56.21	PASS
Allocated	PCS1900	783.5	-57.15	PASS
Allocated	PCS1900	5638.4	-44.49	PASS
Allocated	PCS1900	1888.2	-44.75	PASS
Allocated	PCS1900	1870.3	-44.96	PASS
Idle	GSM850	873.21	-71.84	PASS
Idle	GSM850	773.3	-72.09	PASS





Test Type	Frequency Band	Test Condition (MHZ)	Measured Value(dBm)	Pass/Fail
Idle	GSM850	458.77	-72.12	PASS
Idle	GSM850	894.82	-71.66	PASS
Idle	GSM850	983.76	-72.53	PASS
Idle	GSM850	1846.2	-70.56	PASS
Idle	GSM850	1839.6	-70.62	PASS
Idle	GSM850	1703.1	-70.72	PASS
Idle	GSM850	1862.4	-71.33	PASS
Idle	GSM850	12493.66	-61.95	PASS
Idle	GSM850	12358.34	-62	PASS
Idle	GSM850	12699.33	-62.09	PASS
Idle	GSM900	485.72	-72.15	PASS
Idle	GSM900	514.2	-72.22	PASS
Idle	GSM900	510.24	-72.28	PASS
Idle	GSM900	899.83	-71.73	PASS
Idle	GSM900	881.63	-71.99	PASS
Idle	GSM900	908.88	-72.55	PASS
Idle	GSM900	994.9	-71.31	PASS
Idle	GSM900	964.68	-71.94	PASS
Idle	GSM900	1382	-71.1	PASS
Idle	GSM900	1541.4	-71.58	PASS
Idle	GSM900	1626.3	-71.59	PASS
Idle	GSM900	1712.44	-70.99	PASS
Idle	GSM900	1758.75	-71.54	PASS
Idle	GSM900	12698.6	-61.19	PASS
Idle	GSM900	12737	-61.84	PASS
Idle	GSM900	12725.2	-62.2	PASS
Idle	DCS1800	736.41	-71.79	PASS
Idle	DCS1800	861.76	-72.11	PASS
Idle	DCS1800	635.08	-72.3	PASS
Idle	DCS1800	894.93	-71.94	PASS
Idle	DCS1800	951.83	-72.21	PASS
Idle	DCS1800	1452.9	-71.37	PASS
Idle	DCS1800	1642.8	-71.39	PASS
Idle	DCS1800	1591.6	-71.41	PASS
Idle	DCS1800	1725.56	-71.33	PASS





Test Type	Frequency Band	Test Condition (MHZ)	Measured Value(dBm)	Pass/Fail
Idle	DCS1800	1775.91	-71.44	PASS
Idle	DCS1800	12643.9	-61.84	PASS
Idle	DCS1800	12738.2	-62.03	PASS
Idle	DCS1800	12675.8	-62.06	PASS
Idle	PCS1900	503.96	-70.25	PASS
Idle	PCS1900	658.59	-71.84	PASS
Idle	PCS1900	510.24	-72.13	PASS
Idle	PCS1900	892.54	-71.6	PASS
Idle	PCS1900	909.75	-72.03	PASS
Idle	PCS1900	986.4	-72.13	PASS
Idle	PCS1900	960.05	-72.38	PASS
Idle	PCS1900	1820.4	-70.4	PASS
Idle	PCS1900	1529.3	-70.68	PASS
Idle	PCS1900	1154	-71.07	PASS
Idle	PCS1900	1883.6	-70.88	PASS
Idle	PCS1900	1853.8	-71.03	PASS
Idle	PCS1900	12359.93	-61.71	PASS
Idle	PCS1900	12425.8	-61.98	PASS
Idle	PCS1900	12690.51	-61.99	PASS



## 2.Radiated spurious emissions-traffic mode.

### GSM850:



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
237.580	-63.45	-36.00	Horizontal	PASS
836.070	-45.63	-36.00	Horizontal	N.A
881.660	-39.77	-36.00	Horizontal	N.A
1673.067	-48.82	-30.00	Horizontal	PASS
2509.333	-43.16	-30.00	Horizontal	PASS
3346.200	-34.53	-30.00	Horizontal	PASS



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
75.590	-60.72	-36.00	Vertical	PASS
837.040	-53.69	-36.00	Vertical	N.A
881.660	-37.93	-36.00	Vertical	N.A
1673.067	-45.47	-30.00	Vertical	PASS
2509.867	-48.15	-30.00	Vertical	PASS
3345.733	-33.96	-30.00	Vertical	PASS



**GSM900:**



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
242.430	-64.07	-36.00	Horizontal	PASS
902.030	-44.15	-36.00	Horizontal	N.A
947.620	-38.54	-36.00	Horizontal	N.A
1804.800	-46.84	-30.00	Horizontal	PASS
2706.680	-41.07	-30.00	Horizontal	PASS
3609.400	-45.89	-30.00	Horizontal	PASS



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
75.590	-60.56	-36.00	Vertical	PASS
902.030	-36.99	-36.00	Vertical	N.A
947.620	-36.76	-36.00	Vertical	N.A
1804.800	-51.64	-30.00	Vertical	PASS
2706.960	-49.50	-30.00	Vertical	PASS
3681.360	-46.33	-30.00	Vertical	PASS



DCS1800:



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
90.140	-72.56	-36.00	Horizontal	PASS
230.790	-65.22	-36.00	Horizontal	PASS
302.570	-66.12	-36.00	Horizontal	PASS
1747.200	-53.26	-36.00	Horizontal	N.A
1842.133	-48.82	-30.00	Horizontal	N.A
3494.600	-43.17	-30.00	Horizontal	PASS



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
75.590	-60.58	-36.00	Vertical	PASS
224.000	-60.90	-36.00	Vertical	PASS
299.660	-63.15	-36.00	Vertical	PASS
1747.200	-45.04	-36.00	Vertical	N.A
1842.133	-43.26	-30.00	Vertical	N.A
3494.880	-43.93	-30.00	Vertical	PASS



PCS1900:



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
49.400	-68.95	-36.00	Horizontal	PASS
125.060	-70.51	-36.00	Horizontal	PASS
234.670	-65.03	-36.00	Horizontal	PASS
1879.467	-42.86	-30.00	Horizontal	N.A
1959.467	-45.33	-30.00	Horizontal	N.A
3499.267	-47.79	-30.00	Horizontal	PASS



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
75.590	-60.62	-36.00	Vertical	PASS
229.820	-64.96	-36.00	Vertical	PASS
302.570	-65.66	-36.00	Vertical	PASS
1880.000	-40.48	-30.00	Vertical	N.A
1959.467	-45.91	-30.00	Vertical	N.A
3387.733	-48.16	-30.00	Vertical	PASS

## 2.Radiated spurious emissions-Idle mode.

### GSM850:



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
56.650	-67.30	-57.00	Horizontal	PASS
78.500	-66.88	-57.00	Horizontal	PASS
200.100	-70.29	-57.00	Horizontal	PASS
425.250	-72.10	-57.00	Horizontal	PASS
1194.667	-65.53	-47.00	Horizontal	PASS
3739.133	-54.60	-47.00	Horizontal	PASS



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
55.700	-71.17	-57.00	Vertical	PASS
126.000	-66.29	-57.00	Vertical	PASS
227.650	-73.75	-57.00	Vertical	PASS
525.000	-72.31	-57.00	Vertical	PASS
1136.000	-64.92	-47.00	Vertical	PASS
3727.467	-53.94	-47.00	Vertical	PASS

**GSM900:**


Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
52.850	-69.85	-57.00	Horizontal	PASS
87.050	-66.94	-57.00	Horizontal	PASS
133.600	-63.44	-57.00	Horizontal	PASS
301.750	-72.73	-57.00	Horizontal	PASS
1174.933	-65.98	-47.00	Horizontal	PASS
2284.800	-62.42	-47.00	Horizontal	PASS

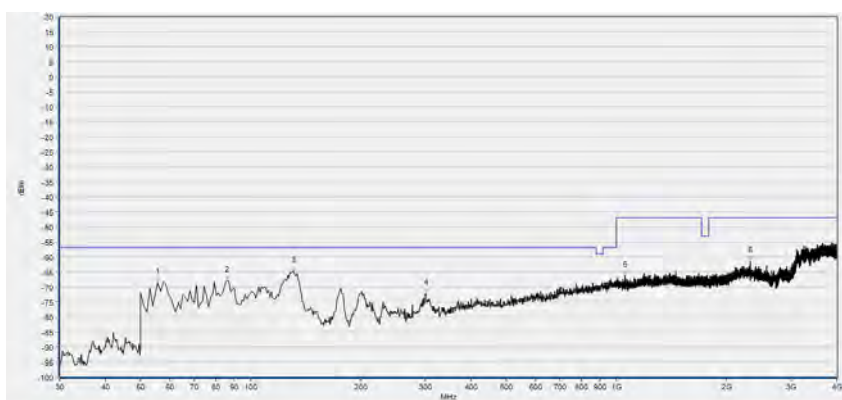


Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
53.800	-73.17	-57.00	Vertical	PASS
129.800	-65.42	-57.00	Vertical	PASS
200.100	-73.80	-57.00	Vertical	PASS
430.950	-72.60	-57.00	Vertical	PASS
1000.533	-66.23	-47.00	Vertical	PASS
3414.800	-54.92	-47.00	Vertical	PASS





DCS1800:



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
55.700	-68.60	-57.00	Horizontal	PASS
86.100	-67.80	-57.00	Horizontal	PASS
130.750	-64.65	-57.00	Horizontal	PASS
300.800	-72.08	-57.00	Horizontal	PASS
1054.933	-66.26	-47.00	Horizontal	PASS
2320.000	-61.53	-47.00	Horizontal	PASS

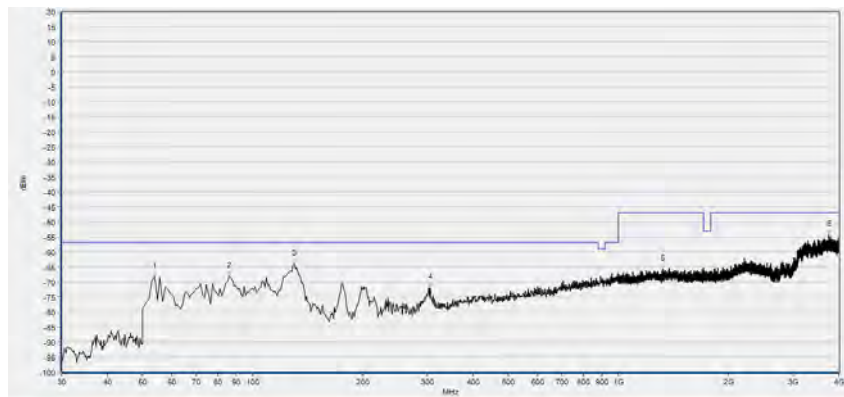


Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
79.450	-71.25	-57.00	Vertical	PASS
128.850	-65.67	-57.00	Vertical	PASS
202.950	-73.16	-57.00	Vertical	PASS
300.800	-74.01	-57.00	Vertical	PASS
720.700	-69.03	-57.00	Vertical	PASS
2204.267	-62.31	-47.00	Vertical	PASS





PCS1900:



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
53.800	-68.39	-57.00	Horizontal	PASS
86.100	-68.16	-57.00	Horizontal	PASS
129.800	-64.15	-57.00	Horizontal	PASS
305.550	-71.83	-57.00	Horizontal	PASS
1322.667	-65.67	-47.00	Horizontal	PASS
3748.933	-54.25	-47.00	Horizontal	PASS



Fre. (MHz)	Peak	Limit(PK)	Antenna	Verdict
126.950	-66.01	-57.00	Vertical	PASS
302.700	-73.07	-57.00	Vertical	PASS
634.250	-70.58	-57.00	Vertical	PASS
1238.400	-65.34	-47.00	Vertical	PASS
2204.800	-62.70	-47.00	Vertical	PASS
3338.733	-55.91	-47.00	Vertical	PASS

Note: N.A means the frequency is the basic frequency or the base station frequency,they are no need to verdict.

## Annex D Photographs of the EUT

1



2



3



4



## Annex E Test Uncertainty

3GPP TS 51.010-1	Test Description	Uncertainty
12.1.1 12.1.2	Conducted spurious emissions	$\pm 1.08\text{dB}$
12.2.1 12.2.2	Radiated spurious emissions	$\pm 3.74\text{dB}$
13.1 13.2 13.16.1 13.17.1 13.17.2	Frequency error and phase error Frequency error under multipath and interference conditions. Frequency error and phase error in GPRS multislot configuration Frequency error and Modulation accuracy in EGPRS Configuration Frequency error under multipath and interference conditions in EGPRS configuration	Freq Err $< \pm 12\text{Hz}$ RMS Phase Err $< \pm 1.0$ degrees Peak Phase Err $< \pm 4.0$ degrees
13.3	TX output power GSM850/GSM900 DCS1800/PCS1900	$\pm 0.52\text{dB}$ $\pm 0.53\text{dB}$
	Power vs. Time	
	$-7 \leq \text{power} \leq +1$	$\pm 0.66\text{dB}$
	$-20 \leq \text{power} \leq -7$	$\pm 1.08\text{dB}$
	$-32 \leq \text{power} \leq -20$	$\pm 2.03\text{dB}$
	$-45 \leq \text{power} \leq -32$	$\pm 2.52\text{dB}$
	$-50 \leq \text{power} \leq -45$ $-60 \leq \text{power} \leq -50$	$\pm 2.72\text{dB}$ $\pm 3.01\text{dB}$
13.4	Output RF spectrum due to modulation and Switching Wideband Noise, 1800KHz offset to Edge of TX band Spurious emission in MS RX band	$\pm 0.54\text{dB}$ $\pm 0.79\text{dB}$ $\pm 0.98\text{dB}$
13.16.2 13.17.3	TX output power in GPRS (or EGPRS) multislot configuration GSM850/GSM900 DCS1800/PCS1900	$\pm 0.68\text{dB}$ $\pm 0.69\text{dB}$
	Power vs. Time in GPRS (or EGPRS) configuration	
	$-7 \leq \text{power} \leq +1$	$\pm 0.66\text{dB}$
	$-20 \leq \text{power} \leq -7$ $-32 \leq \text{power} \leq -20$	$\pm 1.08\text{dB}$ $\pm 2.03\text{dB}$

3GPP TS 51.010-1	Test Description	Uncertainty
	-45≤power≤-32	±2.52dB
	-50≤power≤-45	±2.72dB
	-60≤power≤-50	±3.01dB
13.16.3 13.17.4	ORFS due to modulation in GPRS multislot configuration	±1.79dB
	ORFS due to modulation in EGPRS multislot configuration	
	ORFS due to switching in GPRS multislot configuration	±1.54dB
	ORFS due to switching in EGPRS multislot configuration	
	Wideband Noise,1800KHz offset to Edge of TX band in GPRS multislot configuration	±0.79dB
	Wideband Noise,1800KHz offset to Edge of TX band in EGPRS multislot configuration	
	Spurious emission in MS RX band in GPRS multislot configuration	±0.98dB
	Spurious emission in MS RX band in EGPRS multislot configuration	
14.2.1	Reference sensitivity - TCH/FS	±0.79126 dB
14.2.3	Reference sensitivity - FACCH/F	
14.5.1	Adjacent channel rejection - speech channels (TCH/FS)	
14.5.2	Adjacent channel rejection - control channels	
14.6.2	Intermodulation rejection - control channels	
14.6.1	Intermodulation rejection - speech channels	±1.07792dB
14.7.1	Blocking and spurious response - speech channels	
14.8.1	AM suppression - speech channels	
14.8.2	AM suppression - control channels	±1.10202dB
14.8.3	AM suppression - packet channels	
14.16.1	Minimum Input level for Reference Performance - GPRS	±0.79dB
14.18.1	Minimum Input level for Reference Performance - EGPRS	
14.18.3	Adjacent channel rejection - EGPRS	
14.18.4	Intermodulation rejection - EGPRS	±0.82dB
14.18.5	Blocking and spurious response in EGPRS configuration	±1.08dB



## Annex F General Information

### 1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

### 2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China

### 3. Test Equipments Utilized

#### 3.1 Agilent GS8800 System

##### Agilent GS8800 RF test system

No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	8960 Wireless Communications Test Set	GB45071068	E5515C	Agilent	2016.06.08	2018.06.08
2	PSA Series Spectrum Analyzer	MY44200685	E4445A	Agilent	2016.11.02	2018.11.02
3	Mobile Communications DC Source	MY43000858	66319D	Agilent	2017.05.24	2018.05.23
4	EPM Series Power Meter	GB43318055	E4418B	Agilent	2017.05.17	2018.05.16
5	ESG Vector Signal Generator	MY49070387	E4438C	Agilent	2017.05.24	2018.05.23
6	PSG Analog Signal Generator	MY46521361	E8257D	Agilent	2017.05.24	2018.05.23
7	Electrical Safety Check	MY46130112	N9370A-001	Agilent	2017.05.24	2018.05.23
8	RF Interface	MY45490180	N1960-80103	Agilent	N/A	N/A





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9	GSM Module	MY45490176	N1960-8 0104	Agilent	2017.05.24	2018.05.23
10	Wireless Channel Emulator	WCE301M5	SR5500	Spirent	2017.05.24	2018.05.23
11	Industrial PC	0950-4838	TBN-806 0256	Advanctech	N/A	N/A

Software Version: RCT.2.8.1.0.0

### 3.2 RSE Test System

#### RSE Test System

No.	Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal.Due Date
1	System Simulator	GB43130131	E5515C	Agilent	2017.05.24	2018.05.23
2	Receiver	MY54130016	N9038A	Agilent	2017.05.24	2018.05.23
3	Anechoic Chamber	N.A	9m*6m*6m	Albatross	2017.01.11	2018.01.10
4	Test Antenna - Biconical	9163-519	VULB 9163	Schwarzbeck	2016.12.09	2017.12.08
5	Test Antenna - Biconical	9120D-963	BBHA 9120D	Schwarzbeck	2017.03.30	2018.03.29

### 3.3 Climate Chamber

#### Climate Chamber

No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Climate Chamber	12108015	DTL-003S/01	YOMA	2017.05.24	2018.05.23

### 3.4 Vibration Table

#### Vibration Table

No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Vibration Table	N/A	ACT2000- S015L	CMI-COM	2017.05.24	2018.05.23

### 3.5 Anechoic Chamber

#### Anechoic Chamber

No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Anechoic Chamber	N/A	9m*6m*6m	Changning	2017.05.24	2018.05.23

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