



SIM900 Cold Test Report

HW V2.03

Report by: Sun Ping / Zhu Qin

Confirmed by: Shen Feng

Approved by: Yongsheng.li

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1. Purpose

SIM900 is a complete Quad-Band GSM/GPRS module that can accomplish communication according to AT COM. The purpose of this document is to show the performance of sim900 when it is operating under Low temperature condition for -40°C.

2. Reference Standards

IEC60068-2-1 Part2: Test methods-Tests A: Cold

ETSI GSM 3GPP phase2+

3. Test Equipment

R&S CMU200 Universal Radio Communication Tester

KSON Temperature Chamber

Agilent 8960

4. Test Requirements:

Sample Quantity: 5 pieces

Software Edition: 1137B01V06SIM900M64_ST

Hardware Edition: V2.03

5. Test Summary

<i>NO</i>	<i>Test Items</i>	<i>Conclusion</i>	<i>Remark</i>
1	<i>Serial Port Communication test</i>	<i>Pass</i>	
2	<i>GSM RF test</i>	<i>Pass</i>	
3	<i>GPRS RF test</i>	<i>Pass</i>	
4	<i>GPRS Data Throughput test</i>	<i>Pass</i>	
5	<i>Call success rate Test</i>	<i>Pass</i>	Call success rate=100%

6. Test Procedure:

Place the SIM900 module to the temperature chamber (-40 °C) at least 12 h. Then Test the following items in order:

1) Serial Port Communication test:

The module can communicate with PC via AT command through the serial port correctly.

2) GSM RF test:

The module with a test SIM card can register on the CMU200 and set up a call connection with CMU200. The following parameters must be tested: Transmitter output power, frequency error and Peak Phase errors (peak), RMS phase errors, Transmitter output power versus time, Output RF Spectrum due to modulation and switching, Receiver Bit Error Ratio (BER) performance. *Detailed data, please refer to Chapter 7 table 1*

All measured results should meet the requirements of 3GPP TS 51.010.

3) GPRS RF test:

The module with a test SIM card can register on the CMU200 and set up a data connection with CMU200. The following parameters must be tested: Frequency error and Phase errors in GPRS multi-slot configuration, Transmitter output power in GPRS multi-slot configuration, Output RF Spectrum in GPRS multi-slot configuration, Receiver BLER performance. *Detailed data, please refer to Chapter 7 table 2*

All measured results should meet the requirements of 3GPP TS 51.010.

5) GPRS Data Throughput test

Set up a test bed with Agilent 8960 to measure the data transfer rates and the stability of the module.

Test results: please refer to Chapter 7 table 3

6) Call success rate Test

Call success rate =

(Call Success times/ all dialed times)*100%

A complete call process: Using AT command to connect a call with CMU200 and then disconnect, repeat the above process for 2000 times, calculate the call success rate, it must be 100%.

7. Appendix

Table1 GSM RF Test data

Transmitter Performance								
3.8V	Frequency Error	Phase Error	RMS	Power	PVT	Modulation Spectrum	Switch Spectrum	Result
GSM900	<90Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS
DCS1800	<180Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS
GSM850	<85Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS
PCS1900	<190Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS
4.5V	Frequency Error	Phase Error	RMS	Power	PVT	Modulation Spectrum	Switch Spectrum	Result
GSM900	<90Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS
DCS1800	<180Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS
GSM850	<85Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS
PCS1900	<190Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS
3.45V	Frequency Error	Phase Error	RMS	Power	PVT	Modulation Spectrum	Switch Spectrum	Result
GSM900	<90Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS
DCS1800	<180Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS
GSM850	<85Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS
PCS1900	<190Hz	<±15	<5	PASS	PASS	PASS	PASS	PASS

Receiver Performance

mode	GSM900	GSM850	DCS1800	PCS1900
TCH Level	-102	-102	-102	-102
Channel	1	128	512	512
BER	0	0	0	0
Result	Pass	Pass	Pass	Pass



Table 2 GPRS RF Test data

Transmitter Performance

GSM900	PCL	Frequency Error	Phase Error	RMS	Power	PVT	Modulation Spectrum	Switch Spectrum	Result
CH1	5	<90Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	12	<90Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	19	<90Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
CH62	5	<90Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	12	<90Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	19	<90Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
CH124	5	<90Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	12	<90Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	19	<90Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
DCS1800	PCL	Frequency Error	Phase Error	RMS	Power	PVT	Modulation Spectrum	Switch Spectrum	Result
CH512	0	<180Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	7	<180Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	15	<180Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
CH698	0	<180Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	7	<180Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	15	<180Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
CH885	0	<180Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	7	<180Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	15	<180Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
GSM850	PCL	Frequency Error	Phase Error	RMS	Power	PVT	Modulation Spectrum	Switch Spectrum	Result
CH128	5	<85Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	12	<85Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	19	<85Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
CH189	5	<85Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	12	<85Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	19	<85Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
CH251	5	<85Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	12	<85Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	19	<85Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
PCS1900	PCL	Frequency Error	Phase Error	RMS	Power	PVT	Modulation Spectrum	Switch Spectrum	Result
CH512	0	<190Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	7	<190Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	15	<190Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
CH661	0	<190Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	7	<190Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	15	<190Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
CH810	0	<190Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	7	<190Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS
	15	<190Hz	<±20	<5	PASS	PASS	PASS	PASS	PASS

Receiver Performance

	Class10	3down2up
GSM900 CH62	CS-2(-103dB)	0
	CS-4(-100dB)	0
	Result	PASS
GSM850 CH189	CS-2(-103dB)	0
	CS-4(-100dB)	0
	Result	PASS
DCS1800 CH698	CS-2(-101dB)	0
	CS-4(-98dB)	0
	Result	PASS
PCS1900 CH661	CS-2(-101dB)	0
	CS-4(-98dB)	0
	Result	PASS

Table 2 GPRS Data Throughput test

Data transfer rates

	TimeSlots configuration	Rates/ Typical	Rates/ max
Download CS4	4Down1Up	83	85.6
	3Down1Up	62	64.2
	2Down1Up	40	42.8
	1Down1Up	20	21.4
Upload CS4	3Down2Up	40	42.8
	3Down1Up	20	21.4

Data transfer stability

	TimeSlots configuration	Continuous transmission time	Result
Download CS4	4Down1Up	>12hours	Stability
Upload CS4	3Down2Up	>12hours	Stability
Download and Upload coinstantaneous	3Down2Up	>12hours	Stability