



Agilent GS-8210 Wireless Handset Test System

Data Sheet

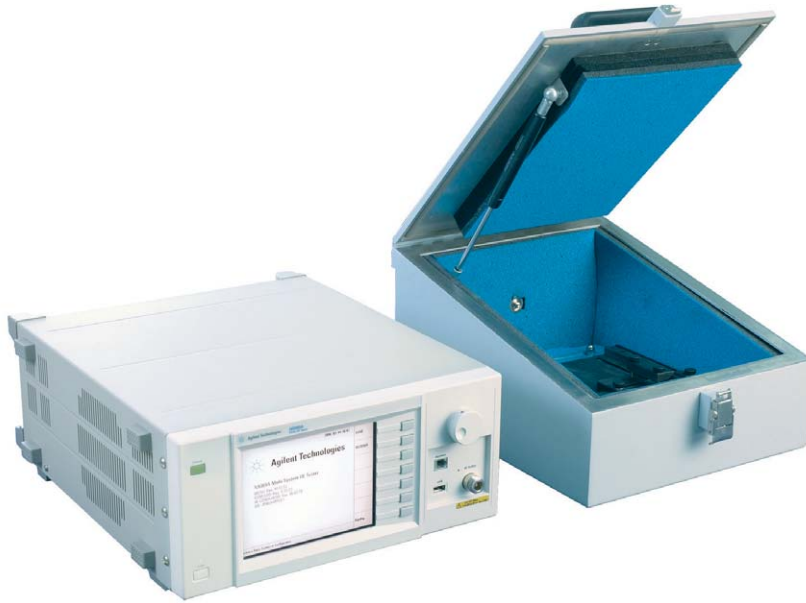


Figure 1: Agilent GS-8210 Wireless Handset Test System

Features and Benefits

- **Quad-band test capability**
- **SMS test capability**
- **Six traffic-channel test in automatic mode**
- **Multi-format test capability for GSM/GPRS/EGPRS and W-CDMA**
- **Future upgradeable format: CDMA2000, 1xEV-DO, HSDPA and TD-SCDMA**

Test Software Overview

GS-8210 Test Software provides simple and complete parametric tests for cellular phone inspection and repair. The user friendly GUI allows you to configure and customize your tests.

- Generate test reports in HTML, PDF (acrobat distiller needed) and CSV formats

RF Shielded Test Chamber Overview

The shield box included with the GS-8210 system offers good isolation for handset. It allows you to simulate over-the-air calls without interference from live networks and other sources.

Benefits of GS-8210 Test Software:

- Ease of set up and use
- Simple, fast and automated testing of mobile phones

Test System Overview

Agilent GS-8210 Wireless Handset Test System is a cost effective functional test system designed for cellular phone inspection and repair. The system consists of a GSM/GPRS/EGPRS and W-CDMA mobile station test set, test software and a RF shield box with built-in antenna coupler.

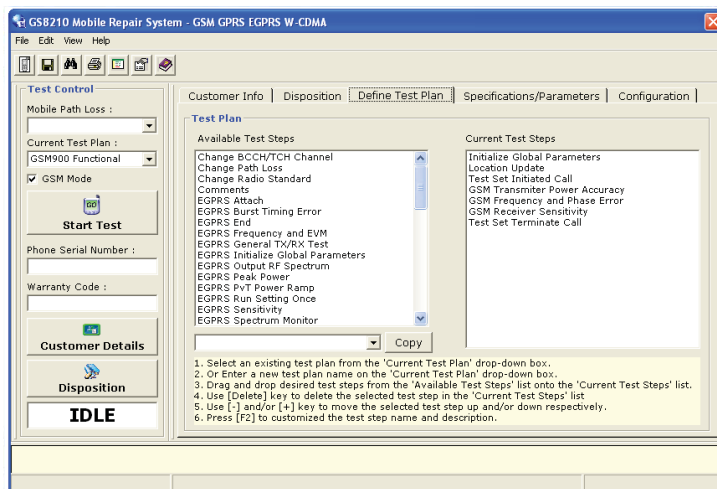


Figure 2: A screen shot of GS-8210 Test Software

Technical Specification

Frequency Bands for GSM/GPRS/EGPRS

Band	Frequency (MHz)	
	Up Link	Down Link
GSM850	824 – 849	869 – 894
GSM900	876 – 915	921 – 960
DCS1800	1710 – 1785	1805 – 1880
PCS1900	1850 – 1910	1930 – 1990

Frequency Bands for W-CDMA

Band	Frequency (MHz)	
	Up Link	Down Link
Band I	1920 – 1980	2110 – 2170
Band II	1850 – 1910	1930 – 1990
Band III	1710 – 1785	1805 – 1880
Band IV	1710 – 1770	2110 – 2170
Band V	824 – 849	869 – 894
Band VI	830 – 840	875 – 885

N9360A-034 GSM/GPRS/EGPRS

Peak TX Power Measurement

Item	Specification	Unit
Range	-20 to +39	dBm
Resolution	0.1	dB
Accuracy	$\leq \pm 1.0$ (25 ± 5 deg C) Typical = ± 0.5 $\leq \pm 1.5$ (0 to 50 deg C)	dB

Power Ramp

Item	Specification	Unit
Range	-20 to +39	dBm
Resolution	0.1	dB
Accuracy	$\leq \pm 1.0$ (25 ± 5 deg C) $\leq \pm 1.5$ (0 to 50 deg C)	dB

Range for display

Vertical	80	dB
Horizontal	Zoom off	-9.25 to +156.25
	Zoom on	-8.00 to +2.00
		+145.00 to +155.00
		Bits

Frequency Error Measurement

Item	Specification	Unit
Range	0 to ± 60	kHz
Resolution	1	Hz
Accuracy	$\leq \pm (10 + \text{Reference signal})$	Hz
Input level	-5 to +39	dBm

Phase Error Measurement

Item	Specification	Unit
Range	-20 to +20	deg
Resolution	0.1	deg
Accuracy	GSM850, GSM900: $\leq \pm 1.0$ DCS1800, PCS1900: $\leq \pm 1.5$	deg RMS
	GSM850, GSM900: $\leq \pm 4.0$ DCS1800, PCS1900: $\leq \pm 6.0$	deg Peak
Input level	-5 to +39	dBm



Figure 3: N9360A test set connected to a mobile phone

Burst Timing

Item	Specification	Unit
Range	-9.9 to +9.9	Bits
Resolution	0.1	Bits
Input level	-5 to +39	dBm

BER, FER

Item	Specification	Unit	
Range	BER (PN9 Fixed)	0.00 to 99.99	%
	BER (PN9)	0.00 to 25.00	
	BER (PN15)	0.00 to 33.33	
	FER	0.00 to 99.99	
Type	BER (Class Ib, Class II)		
Input level	-5 to +39	dBm	

RX Quality

Item	Specification	Unit
Range	0 to 7	Range
Resolution	1	Resolution

RX Level

Item	Specification	Unit
Range	0 to 63	Range
Resolution	1	Resolution

Actual Timing Advance

Item	Specification	Unit
Range	0 to 63	Bits
Resolution	1	Bit

EVM Measurement (EGPRS 8PSK)

Item	Specification	Unit
Range	0 to 10	%
Resolution	0.01	%
Residual EVM	≤ 3.8	%
Input level	-5 to +39	dBm

ORFS Measurement (EGPRS 8PSK)

Item	Specification	Unit
Range	≤ -57 @400kHz	dB
Resolution	0.1	dB
Measurement points	fc-400, fc+400	KHz
Input level	0 to +39	dBm

Spectrum Monitor

Item	Specification	Unit
Range	-11 to +39	dBm
Span	fc to fc+400 fc ±100	kHz
RBW	10, 30	kHz
Range for display	Span [kHz] fc to fc+400 fc ±100	Level 80 80
Accuracy	≤ ±2	dB
Resolution	0.1	dB
Noise level (Pin = +29 dBm)	≤ -35	dB

RF Signal Generator

Item	Specification	Unit
Frequency step (MODEM)	0.1 (Range: carrier < ±200 kHz)	kHz
Modulation	GMSK (B.T=0.3) 8 PSK OFF (CW)	
Output power accuracy	@-110.0 to -50.0 dBm ≤ ±1 (25 ±5 deg C) Typical = ±0.5 ≤ ±1.5 (0 to 50 deg C)	dB
	@-50.0 to -20.0 dBm ≤ ±1.5 (25 ±5 deg C) Typical = ±0.7 ≤ ±2.0 (0 to 50 deg C)	dB
Phase error (GMSK)	≤ 5 ≤ 15	deg. RMS deg. Peak
Modulation accuracy (8 PSK)	≤ 12.5	%RMS
Power level step	0.1	dB
Power Level Range		
Auto/Manual	-110.0 to -50.0 [dBm] in 0.1 [dB] steps	
Tx Analyzer	-110.0 to -50.0 [dBm] in 0.1 [dB] steps	
SG	-110.0 to -20.0 [dBm] in 0.1 [dB] steps	
Off	< -120.0	

N9360A-034
W-CDMA

Modulated Power Measurement

Item	Specification	Unit
Input range	-60 to +36	dBm
Resolution	0.01	dB
Resolution for display	Open Loop Inner Loop MAX TX Power PRACH Power	0.1 0.01 0.01 0.1
Accuracy		
MAX TX Power	0 to +36 [dBm]	$\leq \pm 0.7$ (25 \pm 5 deg C) Typical = ± 0.4 $\leq \pm 1.0$ (0 to 50 deg C)
	-53 to -0.01 [dBm]	$\leq \pm 1.0$ (25 \pm 5 deg C) Typical = ± 0.5 $\leq \pm 1.5$ (0 to 50 deg C)
	-60 to -53.01 [dBm]	$\leq \pm 1.5$ (25 \pm 5 deg C) Typical = ± 0.8 $\leq \pm 2.0$ (0 to 50 deg C)
Inner Loop	-20 to +36 [dBm]	≤ 1 dB ctrl: ± 0.2 ≤ 10 dB ctrl: ± 0.5

Frequency Error Measurement

Item	Specification	Unit
Range	0 to ± 500	Hz
Resolution	0.1	Hz
Accuracy	$\leq \pm$ (10+Reference signal)	Hz
Input level	-20 to +36	dBm

EVM Measurement

Item	Specification	Unit
Range	0 to 20	%
Resolution	0.01	%
Residual EVM	≤ 3.8	%
Input Level	-20 to +36	dBm

ACLR Measurement

Item	Specification	Unit
Input level	-5 to +36	dBm
Range	0 to -40 (@5 MHz) 0 to -48 (@10 MHz)	dB
Resolution	0.01	dB

OBW Measurement

Item	Specification	Unit
Input level	-5 to +36	dBm
Accuracy	$< \pm 100$	kHz
Range	0.00 to 9.99	MHz
Resolution	0.01	MHz

Sensitivity/BER

Item	Specification	Unit
Input level	-20 to +36	dBm
Range	PN9: 0.00 to 25.00 PN15: 0.00 to 33.33	%

RF Signal Generator

Item	Specification	Unit
Modulation	W-CDMA: QPSK Off: CW	
Modulation accuracy	QPSK ≤ 12.5	%RMS
Output power Accuracy	@-115.0 to -50.0 dBm $\leq \pm 1$ (25 \pm 5 deg C) $\leq \pm 1.5$ (0 to 50 deg C)	dB
	@-50.0 to -18.0 dBm $\leq \pm 1.5$ (25 \pm 5 deg C) $\leq \pm 2.0$ (0 to 50 deg C)	dB
Frequency	Band I Band II Band III Band IV Band V Band VI	2110 to 2170 1930 to 1990 (1932.5, 1937.5, 1942.5, 1947.5, 1952.5, 1957.5, 1962.5, 1967.5, 1972.5, 1977.5, 1982.5, 1987.5) 1805 to 1880 2110 to 2170 869 to 894 (871.5, 872.5, 876.5, 877.5, 882.5, 887.5) 875 to 885 (877.5, 882.5)
Power level step	0.1	dB
Power level range	Mod CW Off	-115.0 to -18.0 [dBm] in 0.1 [dB] steps -115.0 to -18.0 [dBm] in 0.1 [dB] steps ≤ -120.0

N9360A-034 Test Coverage

GSM/GPRS/EGPRS Test Coverage

GSM Transmitter Tests

Phase & Frequency Error
Tx Output Power (Normal Burst)
Power vs. Time (Burst Timing) (Normal Burst)

GPRS Transmitter Tests

Phase & Frequency Error in GPRS multislot configuration
Tx Output Power in GPRS multislot configuration (Normal Burst)
Power vs. Time (Burst Timing) in GPRS configuration (Normal Burst)

EGPRS Transmitter Tests

Frequency error in EGPRS configuration
Modulation accuracy in EGPRS configuration
EGPRS Transmitter output power
ORFS due to Modulation in EGPRS configuration
ORFS due to Switching in EGPRS configuration

GSM Receiver Tests

Reference Sensitivity, TCH/FS

GPRS Receiver Tests

Minimum Input Level for Reference Performance for GPRS operation

EGPRS Receiver Tests

Minimum Input Level for Reference Performance for EGPRS operation
Incremental redundancy performance

Receiver Signal Reporting

Signal Strength
Signal Quality under static conditions TCH/FS no DTX

Short Message Service (SMS)

SMS mobile terminated
SMS mobile originated
SMS cell broadcast

W-CDMA FDD Test Coverage

W-CDMA Transmitter Characteristics

Maximum Output Power (Thermal and CH Power)
Frequency Error
Open Loop Power Control in the Uplink
Inner Loop Power Control in the Uplink
Minimum Output Power
Occupied Bandwidth (OBW)*
Adjacent Channel Leakage Power Ratio (ACLR)*
Error Vector Magnitude (EVM)

W-CDMA Receiver Characteristics

Reference Sensitivity Level
Maximum Input Level

Short Message Service (SMS)

SMS mobile terminated
SMS mobile originated

* Test mode only

N9360A-034 Test Features

GSM/GPRS/EGPRS/W-CDMA Test Features

GSM

Location Update
MS Call
BS Call
MS Release
BS Release
TCH Loop
Voice Loop Back
Emergency Call
Handover
Short Message Service

GPRS

Attach
Detach
Handover

EGPRS

Attach
Detach
Handover

W-CDMA

Registration
UE Origination Call
UE Termination Call
BS Call (RMC)
BS Call (AMR)
BS Release
Voice (AMR) Loop Back
RMC Test Loop Back
Handover

Physical Specification

RF Shield Box (N9360A-SOX)

Dimension	H-rear = 180mm; H-front = 100mm W = 300mm D = 350mm
Operation Method	Manual open/close operation using a single locking at the front. Mounting screw on the base for nest/fixture mounting.
Rear Panel	2 x N-type connector USB connector (Options) D-SUB 25 connector (Options)
Material	Body – steel with powder coating Lid & Rear panel – Al RF gasket for Lid & Rear panel
RF Shielding	60dB up to 2GHz
Build in flat type Antenna Coupler	800 to 2000MHz Insertion loss: 10 to 18 dB VSWR: 1:1.7 or better
Accuracy	± (10Hz + Reference Accuracy)
Resolution	0.01 dB

Ordering Information

GS-8210 Model Number – N9360A

Options

Option 034* – Communication test set to support GSM/GPRS/EGPRS/W-CDMA

Option W34 – Test software to support GSM/GPRS/EGPRS/W-CDMA

Option S01 – RF shielded test chamber with 2 x N-type connector

Option S02 – RF shielded test chamber with 2 x N-type & USB connector

Option S03 – RF shielded test chamber with 2 x N-type & D-SUB 25 connector

Option S04 – RF shielded test chamber with 2 x N-type, USB & D-SUB 25 connector

Option C01** – RF cable option (1 meter)

Option C02 – GPIB cable option (1 meter)

Option C03 – USB/GPIB interface to control GPIB instruments over USB

Option C04 – RS232 serial cable

Option C05 – LAN crossover cable

Option A01 – Additional test SIM option

Option A02 – Additional antenna coupler option

*Include 1x Test SIM & 1x Antenna Coupler

** Recommended pick with RF Shielded Test Chamber

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