

JAPAN RADIO CO., LTD

JRC 手機綜合測試儀

JRC Multi UE Tester - NJZ-2000

GSM / GPRS / EGPRS / W-CDMA / HSDPA(option) / CDMA2000+1XEVD0(option)



PART1: GSM + EGPRS + EGPRS + W-CDMA

測試功能:

GSM

- 雙頻道切換測試 (GSM900 / 1800 MHz)
- 具 PCS1900 & 850 MHz 頻段
- 提供 USB port & GPIB & Ethernet port
- 自動測試模式下可測試 12 個頻道
- 精簡的手動操作介面
- 發射/接受無線電單獨測試, SMS(短訊)測試
- GPRS(Attach/ BLER/Detach) up to 4x1(down x up) 測試功能

W-CDMA (8 bands support)

Band	Frequency (MHz)	
	Uplink	Downlink
Band 1	1920 to 1980	2110 to 2170
Band 2	1850 to 1910	1930 to 1990
Band 3	1710 to 1785	1805 to 1880
Band 4	1719 to 1770	2105 to 2170
Band 5	824 to 849	869 to 894
Band 6	830 to 840	875 to 885
Band 8	880 to 915	925 to 960
Band 9	1749.9 to 1784.9	1844.9 to 1879.9

- 提供 USB port & GPIB & Ethernet port
- 自動測試模式下可測試 12 個頻道
- 精簡的手動操作介面
- 發射/接受無線電單獨測試

測試步驟:

GSM 測試步驟:

1. 手機註冊 (insert SIM Card)
2. SMS(短訊)測試-手機 傳短訊給基地台 或基地台傳短訊給手機
3. 手機 撥號給基地台 或基地台撥號給手機
4. 語音測試 loopback mode, pass or fail
5. 無線電測項
 - Peak TX Power 功率
 - Power Ramp 升降 功率波
 - Burst Timing 升降 功率波 時間
 - Frequency Error 頻率誤差
 - Phase Error 相位誤差
 - Sensitivity (BER、FER、BLER*) 靈敏度
 - Spectrum Monitor 頻譜監測
6. 手機 斷話 或基地台 斷話

W-CDMA 測試步驟:

1. 手機註冊 (Insert USIM)
2. 手機 AMR 測試 ,手機撥號給基地台 或基地台撥號給手機
3. 語音測試 loopback mode ,pass or fail
4. 手機 AMR 測試 , 手機 斷話 或基地台 斷話
5. 手機 RMC 測試 ,手機撥號給基地台 或基地台撥號給手機
無線電測項(手動操作)
 - TX Power 發射功率 - Inner loop Power control 內迴路升降功率控制
 - Open loop Power (PRACH) 外迴路功率
 - Frequency Error 頻率誤差
 - EVM 向位強度誤差
 - Sensitivity (BER) 靈敏度
- 無線電測項(自動測試)
 - Maximum output Power 最大發射功率
 - Open loop Power (PRACH) 外迴路功率
 - Inner loop Power control 內迴路升降功率控制 (連續 10 slots)
 - Frequency Error 頻率誤差
 - EVM 向位強度誤差
 - Sensitivity (BER) 靈敏度
6. 手機 斷話 或基地台 斷話

RF 規格:

GSM

RF 信號產生器

頻率範圍	935 M Hz to 960 MHz (GSM downlink) 925 MHz to 960 MHz (E-GSM downlink) 1805 MHz to 1880 MHz (DCS1800 downlink) 1930 MHz to 1990 MHz (PCS1900 downlink) 869MHz to 894MHz(GSM 850 down link)
頻率解析度	200 kHz
輸出位準度	-110 dBm to -50 dBm
輸出位準準度	±1.0 dB in GSM band (typical at 25±5 °C)
輸出位準 解析度	0.1 dB
調變品質 相位誤差 rms	<5° rms typical
調變品質 相位誤差 peak	<15° peak typical
頻率準確度	Aging Rate ±0.06 ppm/2 year

RF 信號分析器

頻率範圍	890 MHz to 915 MHz (GSM uplink) 880 MHz to 915 MHz (E-GSM uplink) 1710 MHz to 1785 MHz (DCS1800 uplink) 1850 MHz to 1910 MHz (PCS1900 uplink) 824MHz to 849MHz(GSM 850 up link)
發射功率 測試	
功率 測試範圍	-20 to +39 dBm
功率準度	For GSM ±0.7 dB at level ≥ 0 dBm ±1.0 dB at <0 dBm
相位誤差測試	
輸入位準 測試範圍	-5 to +39 dBm
相位誤差測試範圍	-20° to 20°
解析度	0.1 degree
調變品質 相位誤差 rms	<±1.5° rms typical
調變品質 相位誤差 peak	<6° peak typical
頻率誤差測試	
輸入位準 測試範圍	-5 to +39 dBm
測試範圍	0 to ±60 kHz
準度	±(10Hz+reference accuracy)
解析度	0.1 Hz

W-CDMA

RF 信號產生器

頻率範圍	Band 1,2,3,4,5,6,8,9 support
頻率解析度	200 kHz
頻率準確度	±0.06 ppm /2 year
輸出位準	-20 to -110 dBm
輸出位準準確度	±1.0 dB
輸出位準 解析度	0.1 dB
調變品質 W-CDMA	≤ 12.5% rms (W-CDMA)

RF 信號分析器

頻率範圍	Band1 ,2,3,4,5,6,8,9 support
發射功率 測試	
功率 測試範圍	-60 to +36 dBm
功率準確度	For W-CDMA ±0.7 dB at level 0 to 36 dBm ±1.0 dB at level -60 to 0.1 dBm
頻率誤差測試	
輸入位準 測試範圍	-20 to +36 dBm
測試範圍	0 to ±500 kHz
準確度	±(10Hz+reference accuracy)
解析度	0.1 Hz
EVM 測試	
輸入位準 測試範圍	-20 to +36 dBm
測試範圍	0 to 20%
殘餘 EVM	≤ 3.8%
解析度	0.01%

一般規格:

大小	410 mm (W) x 170 mm (H) x 340 mm (D)
重量	8 kg
輸入電壓範圍	100-240 VAC
輸入頻率	50 Hz & 60 Hz
消耗功率	≤ 250 VA

PART2: CDMA2000+1xEVDO (option)

◆ Single Box Multi-System UE Tester

- Cdma2000/EVDO(Rev A) in addition to GSM/GPRS/EGPRS and W-CDMA/HSDPA

◆ Basic Signaling and TX/RX Tests

- Call Tests: Registration, BS/MS call, Voice Loop Back, handover, and BS/MS Release
- TX/RX measurements: Power, Frequency Error, Modulation Accuracy, and Sensitivity

◆ Complete Tool Set

- Automatic Test, Manual test, TX Analyzer, and Signal Generator
- Optional Shield Box and Automatic Test Software

◆ Wide Frequency Coverage

- 800MHz, 1900MHz, JTACS, Korea PCS, and 2GHz 5 Bands support

Band	Frequency (MHz)	
	Uplink	Downlink
Band 0	824-849	869-894
Band 1	1850-1910	1930-1990
Band 3	887-925	832-870
Band 4	1750-1780	1840-1870
Band 6	1920-1980	2110-2170
AWS Band	1700	2100

◆ High Accuracy (standard compliance)

- Power Measurement ± 0.6 dB (Typ)

◆ User Friendly Auto Test Interface

- Auto Test of maximum 12 channels
- Quick and easy configuration of test plans
- Storage capability of Test Plan
- Copy capability of Test Plan to PC for distribution

◆ Test Capabilities beyond Go/NoGo Tester

Code Domain Power

◆ Flexible Remote Control Interface

Ethernet (TCP/IP), GPIB, and RS-232

Specification Summery

Frequency Bands

Band Class

0 (800MHz Band) / 1 (1900 MHz Band) / 3 (JTACS) / 4 (Korea PCS)

4 (Korea PCS) / 6 (2 GHz Band) / AWS Band

Call Tests

CDMA2000 MC1x

CDMA2000 1xEV-DO

Registration	UATI Assign
Origination	Paging
Paging	Connect Close
MS Release	Session Close
BS Release	AT Info
Loop Back (Audio and Data)	
Softer Handoff/Hard Handoff	
MS Info	

Note: Supporting cdma2000 Protocol Revision 6 and cdma2000 1xDV-DO Revision A.

Measurement Functions

CDMA2000 MC1x

CDMA2000 1xEV-DO

TX Power	TX Power
Maximum TX Power	Maximum TX Power
Minimum TX Power	Minimum TX Power
Frequency Error	Frequency Error
Waveform Quality (Rho/Multi-Code Rho)	Waveform Quality (Multi-Code Rho)
Frame Error Rate (FER)	Packet Error Rate (PER)
Open Loop Power	Open Loop Power

TX Analyzer

TX Power

Range	-60 dBm to +36 dBm
Accuracy	±1.0 dB (at ≥ 0 dBm)

Frequency Error

Input Level Range	-20dBm to +36 dBm
Range	0 to ±10 kHz

Resolution	1 Hz
Accuracy	$\pm (30\text{Hz} + \text{Frequency Reference Stability})$
Waveform Quality (Rho/Multi-Code Rho)	
Input Level Range	-20 dBm to +36 dBm
Range	0.9 to 1.0
Resolution	0.001
Accuracy	± 0.02 (at ≥ 0.95)

RF Signal Generator	
Frequency	
Range	Refer to Frequency Band's forward frequency
Resolution	30 kHz (Band Class 0: 800 MHz Band) 12.5 kHz (Band Class 3: JTACS) 50 kHz (Band Class 4: PCS Korea) 50 kHz (Band Class 1: 1900 MHz Band) 50 kHz (Band Class 6: 2 GHz Band)
Accuracy	Same as Frequency Reference Stability
Output Level	
Range	-115 dBm to -18 dBm
Accuracy	± 1.0 dBm (at ≤ -50 dBm) ± 1.5 dBm (at > -50 dBm)
Resolution	0.1 dB
Modulation	
Modulation	Pilot Only, Normal Modulation, AM, CW
Modulation Quality (Rho)	> 0.912 (for CDMA2000 MC1x) > 0.97 (for CDMA2000 1xEV-DO)

Frequency Reference	
Stability	0.06 ppm/2 year

External Remote Control	
10/100 Base-T, GP-IB, RS-232C	

Note: Specification may be subject to changes without notice. For further information, contact:

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