Spectrum Analyzers

For testing the receiving characteristics of CDMA (IS-95) base/mobile stations

R3561

- **Can output multiple signals conforming to IS-97 with a maximum of 3 code channels**
- **Can be utilized to the test of base/mobile stations**
- **Covers both cellular and PCS systems with a frequency band from 800 MHz to 2.3 GHz (100 Hz resolution)**
- **High waveform quality for module testing applications**
- **Built-in AWGN function to adapt to various receiver characteristic tests**
- **GPIB interface as standard**
- **All functions can be controlled from a R3465/3463 with an option (OPT.08)**

Notes:

1) Rx control option (OPT.08) requires addition the CDMA option (OPT.61) to the R3465/3463 series modulation spectrum analyzer.

2) To add the Rx control option (OPT.08) to your R3465/3463 series modulation spectrum analyzer after purchase and delivery, please contact the nearest ADVANTEST branch or sales office.

R3561
CDMA Test Source

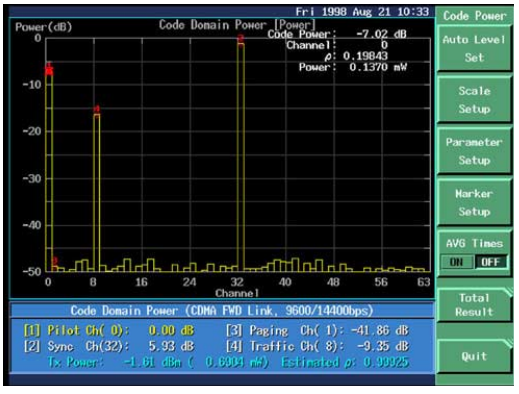
The stand-alone R3561 CDMA test source can test base and mobile stations for both cellular and PCS CDMA systems. For CDMA base stations, it can generate a baseband multiple signals conforming to IS-97 with a maximum of 3 code channels (Pilot, Sync and Traffic channels). The unit can also generate a reverse traffic channel signal conforming to IS-98 for CDMA mobile stations. The R3561's wide frequency range and excellent waveform quality means the instrument can be used in a host of applications, including receiver testing of base stations and mobile stations as well as testing of RF modules and subsystems. The R3561 can be used with the R3465/3463, or independently through GPIB control.

■ Multiple signals output with 3 code channels

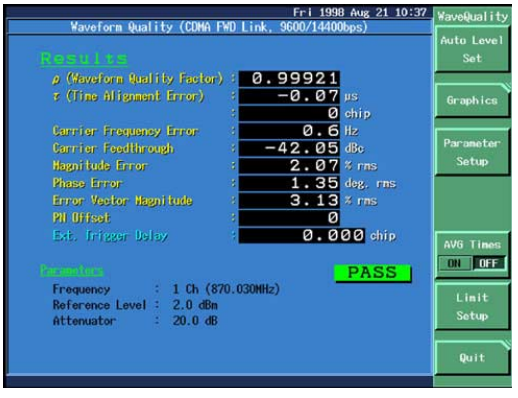
The R3561 can output multiple signals conforming to IS-97 with a maximum of 3 code channels. Configurations such as Pilot, Sync, Primary Traffic, User Traffic or PN Traffic can be selected, Also the level between channels can be set accurately. The R3561 is an optimum test source when used as a CDMA base station signal source for evaluation the transmission equipment of mobile station (open loop power control test, etc.) or for various receiver characteristic tests.

■ Excellent Waveform Quality

The R3561 delivers high waveform over a wide range. Therefore, it can be used for a wide range of applications, such as evaluating transmitter/receiver characteristics and for module testing application. As a data source, it has both PN9/PN15 internal random data memory and a user data memory buffer of 600 frames for developing unique user tests. In addition, it has the External I/Q Input for evaluating RF modules.



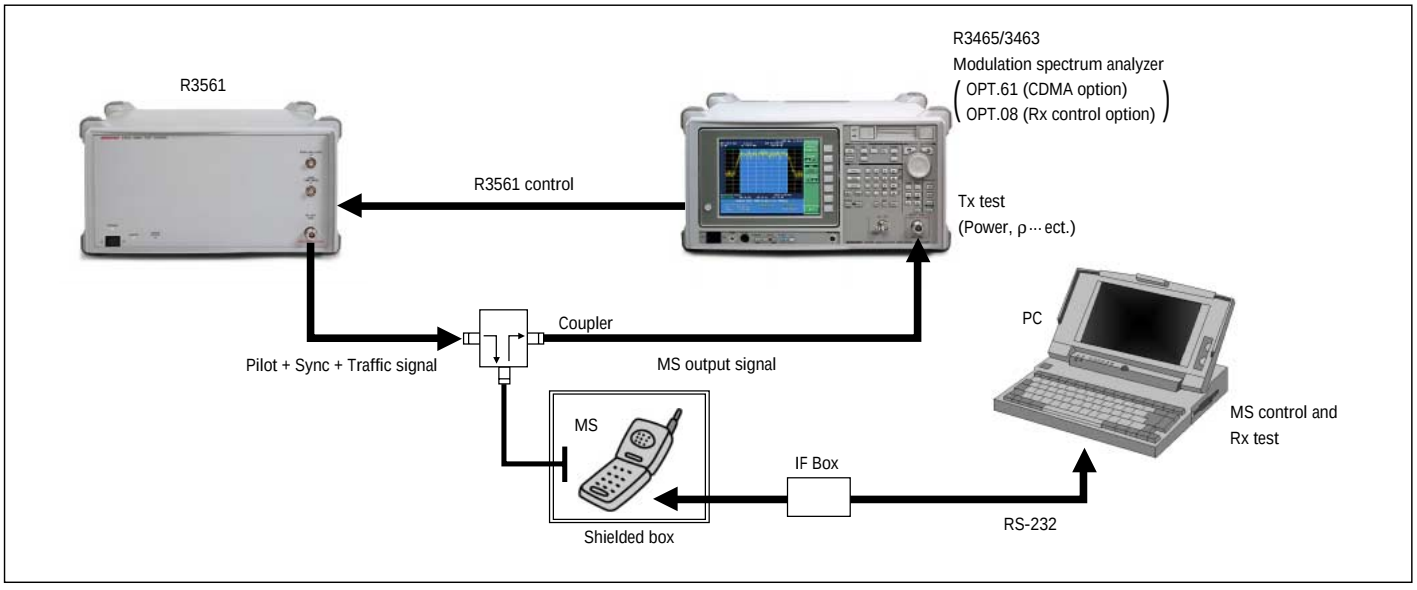
▲ Sample R3561 Signal Output (Code Domain Power)



▲ Sample R3561 Signal Output (Waveform Quality)

For Transmitter/Receiver Characteristics Testing of CMDA Mobile Stations

R3561



Can output multiple signal conforming to IS-97 with a maximum of 3 code channels. Covering a wide output level range, the R3561 can be used as the signal source for measuring the transmission/receiving characteristics of CDMA mobile stations (Output level range: -125 to 0 dBm in 0.1 dB steps)

Specifications

Output frequency

Range : 800 to 2300MHz
Resolution : 100Hz
Accuracy : Depends on the accuracy of reference source

Output level

Range : -125 to 0dBm
Resolution : 0.1dB
Accuracy (25±10°C) :
frequency ≤1000MHz
≤±1.5dB (-120 to 0dBm)
≤±2.5dB (-125dBm to -120.1dBm)
frequency >1000MHz
≤±1.5dB (-110 to 0dBm)
≤±2.5dB (-125 to -110.1dBm)

Signal purity

Harmonics : ≤-30dBc (output level 0dBm)
Non-harmonics : ≤-60dBc (frequency offset >10kHz)
SSB phase noise : ≤-107dBc/Hz
(frequency offset : 50kHz, @1000MHz)
Adjacent channel noise :
≤-45dBc (BW : 30kHz, frequency offset 750kHz)
≤-60dBc (BW : 30kHz, frequency offset 1.98MHz)

Modulation mode

Modulation mode : OQPSK/QPSK (EIA/TIA/IS-95)
Waveform quality : 0.99 (after calibration)
Channel type :
Forward Link Channel (A) : Pilot/Sync/Traffic
Channel (B) : Pilot/Sync/Traffic
Channel (C) : Pilot
Revers Link : Pilot (Zeros)/Traffic
Variable level between channel :
Range: -5 to -30 dB (with respect to total level)
Resolution: 0.1 dB
Accuracy: < ±0.5 dB
Transmission rate : 9600bps/4800bps/2400bps/1200bps/
14400bps/7200bps/3600bps/1800bps
Data source
PN9/PN15 : 600 user frames (written via GPIB)
PN offset : 0 to 511
Long code mask : 42 zeros

External I/O Input :
DC to 2.5MHz, Frequency characteristic < 20dB p-p
$\sqrt{I^2+Q^2}$=0.5Vrms, 50Ω
Maximum input : AC1.4Vp-p, DC4V

AWGN Source

Bandwidth : ≥2MHz
Mode : SIGNAL only (AWGN OFF), NOISE only, Eb/No setting
Eb/No. (Eb/Nt) range : 0 to 15dB
Eb/No. (Eb/Nt) resolution : 0.1dB
Eb/No. (Eb/Nt) accuracy : <±1.0dB (After Calibration)

Reference source

Internal reference source : 10MHz, ≥0dBm
Aging rate : $<2\times10^{-8}$/day, $<5\times10^{-7}$/year
Synthe Reference CDMA TB input :
Frequency : 19.6608MHz, 15MHz, 10MHz, 9.8304MHz, 5MHz, 4.9152MHz, 2.4576MHz, 2MHz, 1.2288MHz, 1MHz
Level : ≥0dBm
Even second input : 2sec ±300nsec (TTL)
10 MHz reference output : 10MHz, ≥0dBm
CDMA clock output : 1.2288MHz, 19.6608MHz,
20msec/26.67msec/80msec/Even second : (TTL)

Local output

Frequency : 5.0314 to 6.5314GHz
Level : 0≥dBm

Others (I/O interface)

RF OUT : N type connector (50 Ω), maximum reverse input power 2W
SWR ≤ 1:1.5, output level < -10 dBm
Serial I/O : R346X dedicated interface
REF UNLOCK LED : Lights when unlocked by pulling
RF-SYNTHESIZER/CDMA-TIMEBASE
GPIB I/F : IEEE-488 bus connector (R3561 only)

General specifications

Working environment : 0 to 50 °C, RH85% or less (non-condensing)
Storage environment : -20 to 60 °C, RH85% or less
Power supply : Voltage : 100-120/220-240 VAC
Frequency : 50/60 Hz
Power consumption : 300 VA or less
Mass : 16 kg or less
Outside dimensions : approx. 177 mm (H)×350 mm (W)×420 mm (D)