Spectrum Analyzers

3.5GHz/8GHz/26.5GHz For Testing and Evaluation of Next Generation Mobile Communication Systems such as W-CDMA.

R3264/3267/3273

■ **Wide frequency range:**
R3264 ; 9kHz to 3.5GHz
R3267 ; 100Hz to 8GHz
R3273 ; 100Hz to 26.5GHz
26.5GHz to 60GHz (External mixer option)
Synchronization available up to 325 GHz

■ **Resolution bandwidth (RBW):**
10 Hz to 10 MHz, 5MHz (analog)
1 Hz to 100 Hz (digital)

■ **Wide dynamic range:**
-145dBc/Hz (2GHz band, typ.)
70dB or better for W-CDMA ACP measurement (5MHz offset, typ.)

■ **1μs fast zero-span sweep**

■ **Simplified, Automated measurements for mobile communications**

■ **Digital modulation analysis options for 1G, 2G, and 3rd Generation : PHS, PDC, IS-136, GSM, DECT, EDGE, GPRS IS-95, W-CDMA/3GPP, cdma2000, Bluetooth**

R3264/3267/3273
Spectrum Analyzer

The R3264/3267/3273 are high-performance multifunction spectrum analyzers with the basic functions necessary to meet the demand for wider frequency range and a higher C/N ratio for next-generation digital mobile communications.

■ 10MHz resolution bandwidth for wide signal range

Offers an RBW of 10MHz enabling accurate analysis of the rise and fall characteristics of high-speed amplitude modulated signals. The analog RBW extends down to 10Hz providing wide dynamic measurement.
Since the R3264/3267/3273 also support the digital resolution bandwidth (RBW) from 1 Hz to 100 Hz, they are suitable for high-resolution measurement.

■ Enables measurement with wide dynamic range

To maximize the dynamic range of input signal amplitude, the R3264/3267/3273 have inputs with low distortion characteristics and reduced average noise levels. A wide dynamic range of measurement of -145dBc/Hz (at 2GHz, typ.) with a 0dBm signal input.

■ Low distortion design ideal for inter-modulation measurement

Two-signal 3rd order inter-modulation distortion is essential for evaluating RF modules and wireless transmission devices. To provide this function the spectrum analyzer itself must have a low modulation design. The R3267 offers a high performance of -90dBc or less in the 1.6GHz to 8GHz range.

■ Advance digital modulation analysis (option)

The R3264/3267/3273 support both spectrum analysis and modulation analysis in a single unit. In addition to major existing mobile communication standards, the R3264/3267/3273 can also support advanced standards such as W-CDMA/3GPP and cdma2000.

OPT.01	Digital Modulation Analysis Hardware
OPT.61	cdmaOne Analysis Software
OPT.62	W-CDMA/3GPP Analysis Software
OPT.63	GSM//DECT/EDGE Analysis Software
OPT.64	PDC/PHS/IS-136 Analysis Software
OPT.65	cdma2000 Analysis Software
OPT.66	Bluetooth Analysis Software
OPT.67	1xED-DO(HDR) Analysis Software
OPT.73	AMPS/JTACS/NTACS Analysis Software

Note1 : The digital modulation analysis option OPT.01 is required for installing the analysis software options (OPT.61 to OPT.66, OPT.73).
Note2 : For installing any of options OPT.61 to OPT.66, OPT.73 up to five options can be installed simultaneously

OPT.02	Memory Card Drive (swapped with floppy disk drive)
OPT.08	Rx Control (for R3560/3561/3562)
OPT.10	High-Accuracy Power Measurement (for PDC-BS)
OPT.11	High-Accuracy Power Measurement (for 3GPP-BS)
OPT.12	High-Accuracy Power Measurement (for cdma2000-BS)
OPT.16	External mixer (26.5GHz to 40GHz)
OPT.17	External mixer (40GHz to 60GHz)
OPT.21	High-stability Frequency Reference Source ($\pm 5 \times 10^{-9}$/day)
OPT.22	High-stability Frequency Reference Source ($\pm 3 \times 10^{-10}$/day)
OPT.23	Rubidium Frequency Reference Source ($\pm 1 \times 10^{-10}$/month)
OPT.25	Reference Converter
OPT.74	Tracking generator (with attenuator)

Note: Options OPT.16 and OPT.17 are for the R3273 only.

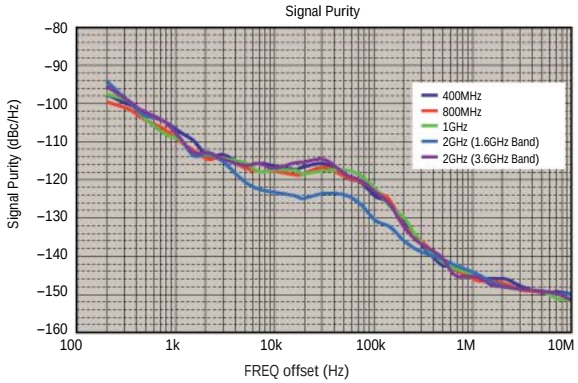
3.5GHz/8GHz/26.5GHz For Testing and Evaluation of Next Generation Mobile Communication Systems such as W-CDMA.

R3264/3267/3273

■ Key Functions

• High-level signal purity

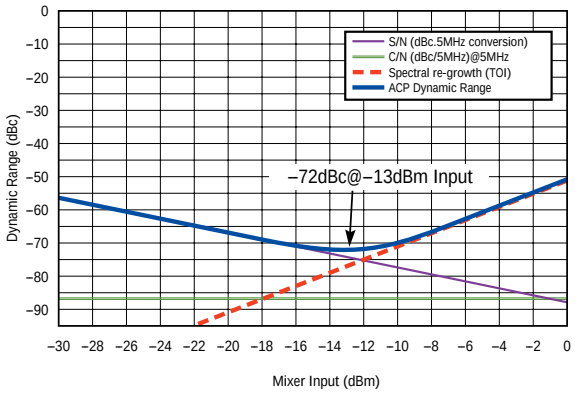
The advanced RF technology of ADVANTEST enables signal purity of -145 dBc/Hz (at 2GHz band, 5MHz offset, typical value). -145dBc/Hz (typ.) dynamic range can be measured within a 2GHz band.



< Phase Noise Characteristics (typ.) >

• Wide Dynamic Range ACP

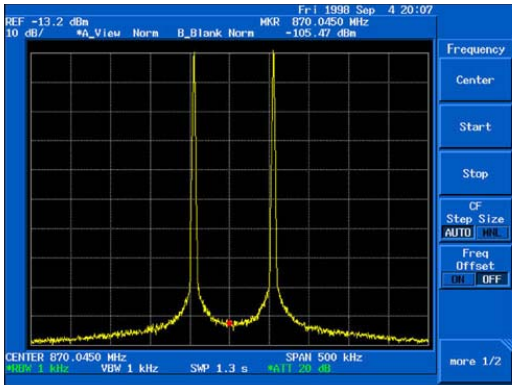
Offering the highest basic functionality in their class, the R3264/3267/3273 ensure an ACP dynamic range of 70dBc or more (typ.) in W-CDMA ACP measurement.



< Dynamic Range of W-CDMA Measurement (5MHz offset) >

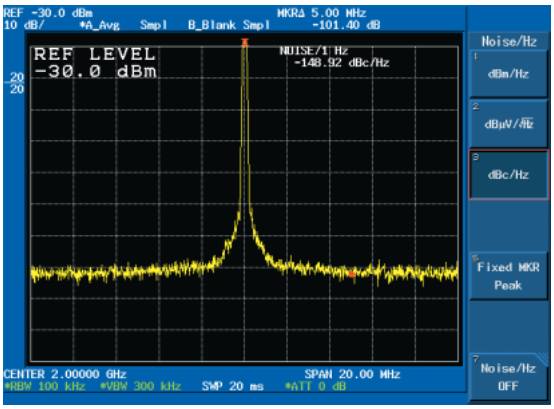
• Low Distortion

These spectrum analyzers offer high performance for 2-signal 3rd order inter-modulation distortion, the R3267 delivering 90dBc or more in the 1.6 to 8GHz band. This makes them ideal for evaluating inter-modulation in transmission amplifiers and so on.



< Example of 2-signal 3rd Order Inter-modulation Distortion>

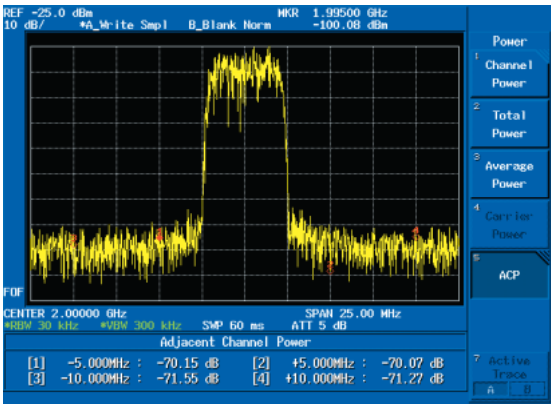
Realizes -148dBc/Hz (typ.) phase noise in the W-CDMA transmission signal band at 5MHz detuning.



< Example of Signal Purity >

Variety of ACP Measurement Methods

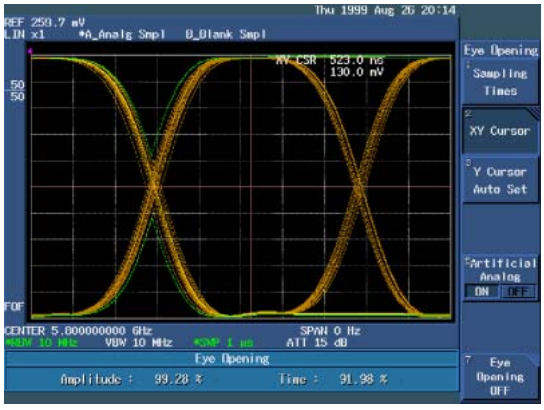
- Full mode calculated from 1 screen of trace data
- SEPA mode can separately sweep and calculate a specified channel and the adjacent channels above and below it.
- CARRIER mode in which a carrier power and an adjacent channel power are separately specified using a window.



< Example of W-CDMA ACP Measurement >

• High-Speed Zero-Span Sweep

The R3264/3267/3273 feature high-speed transient signal analysis in the time domain sweep with a high speed of 1μs/ and a 10MHz IF bandwidth filter.



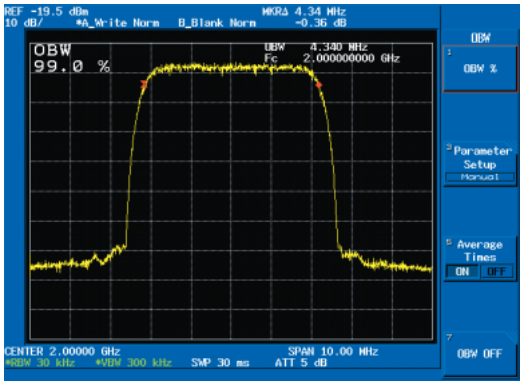
< Example of Fast Time-Domain Measurement >

Spectrum Analyzers

3.5GHz/8GHz/26.5GHz For Testing and Evaluation of Next Generation Mobile Communication Systems such as W-CDMA.

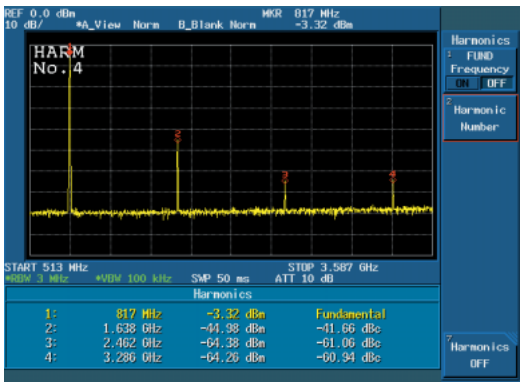
R3264/3267/3273 (Continued From Previous Page)

• Occupied Bandwidth Measurement
The spectrum analyzer can calculate the bandwidth of a specified power ratio from measured spectrum data and display the OBW. A frequency span accuracy of 1% or better enables highly accurate OBW measurement.



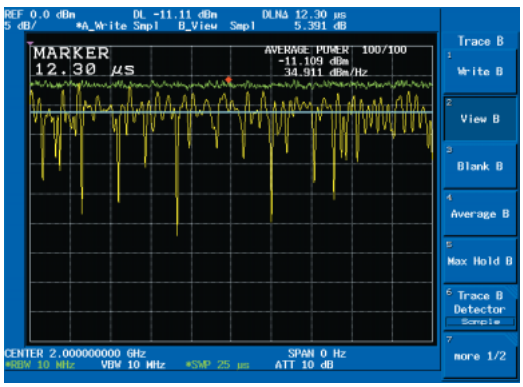
< Example of OBW Measurement >

• One Touch Harmonic Measurement
Automatic measurement of harmonics is possible simply by inputting the frequency of the fundamental waveform and the order of the harmonic you want to measure.



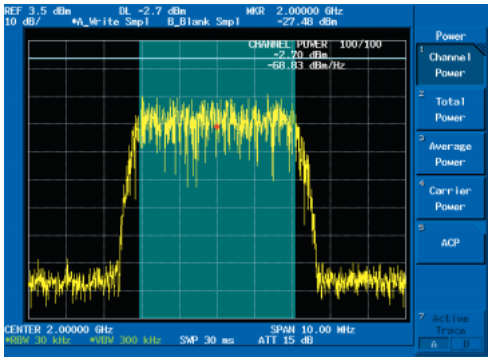
< Example of Harmonic Measurement >

• Simultaneous 2-Trace Measurement
The R3264/3267/3273 have a two-trace display function, and POSI, NEGA or SAMPLE detector modes can be specified separately for each trace. In addition, both traces are sampled simultaneously, allowing true simultaneous measurement of two traces. For example, it is possible to measure the peak factor by simultaneously sampling the POSI peak and AVE power.



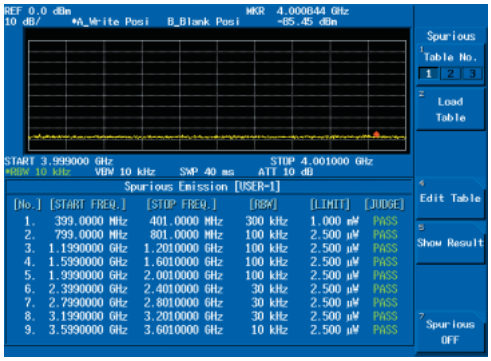
< Example of Peak Factor Measurement >

• Power Calculation Function
The R3264/3267/3273 have a built-in power calculation function for burst signals with large amplitude variations typical of PDC and PHS, and for wide frequency range signals such as CDMA and OFDM. Measurement accuracy can be increased by executing PBW Cal. to calibrate the pass band characteristics of the IF band filter.



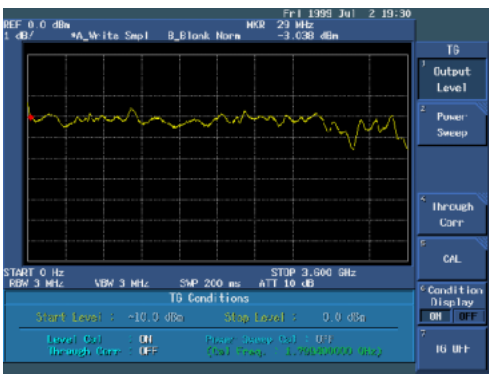
< Example of Channel Power Measurement >

• Spurious Measurement
A wide band spurious search can require a long time for measurement, but this time can be dramatically reduced by running the spurious search using a sweep table corresponding to known spurious map. The R3264/3267/3273 allow you to create up to 10 tables of sweep start and stop frequencies.



< Example of Spurious Measurement >

• Tracking Generator (OPT.74)
An optional 100kHz to 3.6GHz signal generator that is synchronized to the R3264/3267/3273 frequency sweep can be built into the signal analyzer. This lets you directly view the frequency characteristics of filters and amplifiers. The power sweep function provides a continuously variable output level from 0dBm to -50dBm enabling you to view the saturation characteristics of amplifiers and other devices.



< Tracking Generator Function (Option) >

3.5GHz/8GHz/26.5GHz For Testing and Evaluation of Next Generation Mobile Communication Systems such as W-CDMA.

R3264/3267/3273

■ Optional Modulation Analysis for Next Generation Mobile Communications

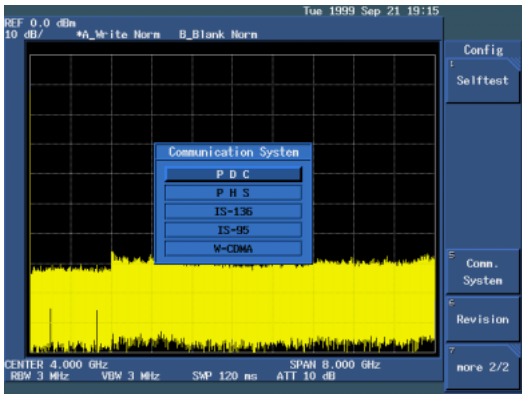
Modulation analysis options for analyzing transmission characteristics in 3rd generation mobile communication systems such as W-CDMA, 3GPP and cdma2000, as well as existing digital mobile communication systems, are available for the R3264/3267/3273. By combining the digital modulation analysis hardware option (OPT.01) and the appropriate analysis software option, it is possible to measure compliance with standards and analyze signal modulation for transmission systems including W-CDMA, 3GPP, PDC, PHS, IS-136, GSM, EDGE, GPRS, DECT, cdmaOne (IS-95), cdma2000, Bluetooth.

A single signal analyzer can support a number of communication systems (up to five options can be installed) for greater efficiency on the production line or in the field.

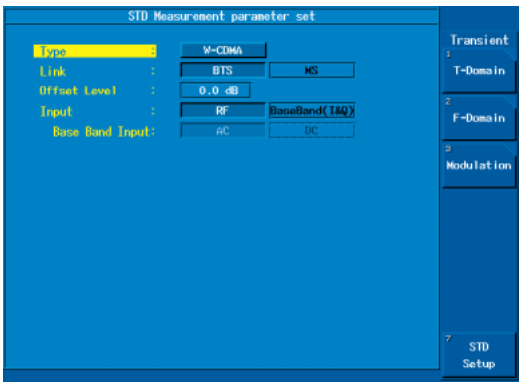
OPT.01 Digital Modulation Analysis Option (hardware)
OPT.61 cdmaOne (IS-95) Analysis Software
OPT.62 W-CDMA/3GPP Analysis Software
OPT.63 GSM/DECT/EDGE (incl. DCS1800/1900)Analysis Software
OPT.64 PDC/PHS/IS-136 Analysis Software
OPT.65 cdma2000 Analysis Software
OPT.66 Bluetooth Analysis Software
OPT.67 1xED-DO (HDR) Analysis Software
OPT.73 AMPS/JTACS/NTACS Analysis Software

Note 1: For installing any of options OPT.61 to OPT.67 and OPT.73 up to five options can be installed simultaneously.
Note 2: OPT.01 is required for integrating any of options OPT.61 to OPT.67 and OPT.73.

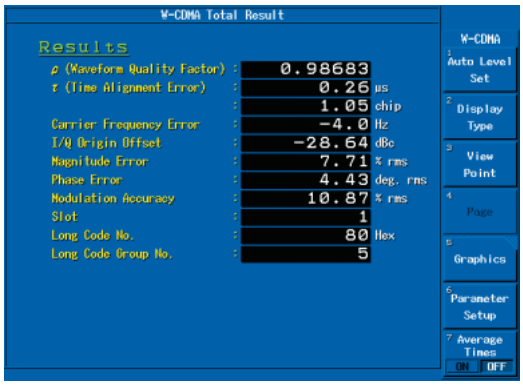
• Communications System Selection Screen



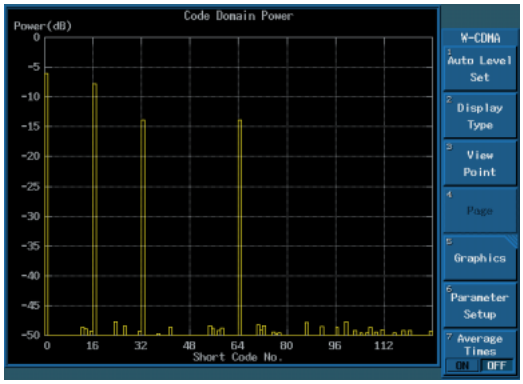
• Example of STD Setting Screen



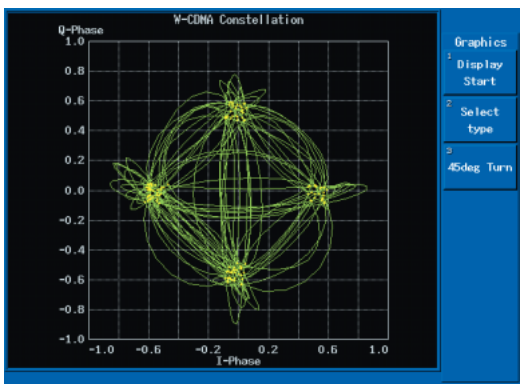
• Example of Modulation Analysis



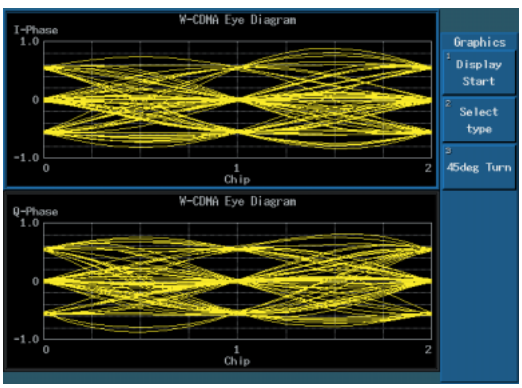
• Example of Code Domain Power Measurement



• Example of Constellation



• Example of Eye Diagram



Spectrum Analyzers

3.5GHz/8GHz/26.5GHz For Testing and Evaluation of Next Generation Mobile Communication Systems such as W-CDMA.

R3264/3267/3273 (Continued From Previous Page)

Specifications

R3264 Specifications

Frequency:

Frequency range ; 9 kHz to 3.5 GHz
Harmonic order N ; 1

Frequency span:

Range ; 20 Hz to 3.5 GHz, Zero span
Accuracy ; ±1%

Signal purity (dBc/Hz)

	Offset			
Frequency	1 kHz	10 kHz	100 kHz	1 MHz
9 kHz to 1 GHz	-100	-113	-118	-135
1 to 2.6 GHz	-100	-110	-118	-135
2.6 to 3.5 GHz	-98	-108	-112	-135

Input attenuator range: 0 to 75 dB (5 dB steps)

Dynamic range

Average noise level

(Resolution bandwidth 100 Hz, input ATT 0 dB, video bandwidth 1 Hz)

Frequency	Average noise level
10 kHz	-100 dBm
100 kHz	-101 dBm
1 MHz	-125 dBm
10 MHz to 3.5 GHz	-(130 - 2f (GHz)) dBm

Average noise level

(Resolution bandwidth 1 Hz (digital), input ATT 0 dB)

Frequency	Average noise level
10 kHz	-120 dBm
100 kHz	-121 dBm
1 MHz	-141 dBm
10 MHz to 3.5 GHz	- (150 - 2f (GHz)) dBm

1 dB gain compression

10 to 100 MHz ; -3 dBm
100 MHz to 3.5 GHz ; 0 dBm

Spurious response

2nd-order harmonics distortion

	Frequency	Mixer level
<-70 dBc	10 MHz to 3.5 GHz	-30 dBm

2-tone 3rd-order intermodulation distortion

(When using the digital filter, distortion measurement should be performed on condition that Δf >5 kHz)

	Frequency	Mixer level
<-70 dBc	10 to 100 MHz	-30 dBm
<-80 dBc	100 MHz to	-30 dBm
<-85 dBc	1 GHz 1 to 3.5 GHz	-30 dBm

Residual response

<-100 dBm ; 10 to 100 MHz
<-90 dBm ; 100 MHz to 3.5 GHz

Amplitude accuracy

Frequency response (Input ATT 10 dB)

In-band flatness (relative value) ; ±1.5 dB (9 kHz to 3.5 GHz)
Flatness with 30 MHzcalibration signal as reference
; ±3.0 dB (9 kHz to 3.5 GHz)

Input ATT switching error (Reference 10 dB at 15 to 75 dB)

Frequency	Error
9 kHz to 3.5 GHz	±1.1 dB/5 dB steps, max. ±2.0 dB

R3267 Specifications

Frequency

Frequency range: 100 Hz to 8 GHz

Frequency	Frequency band	Harmonic order N
100 Hz to 3.5 GHz	0	1
1.6 to 3.5 GHz	1	1
3.5 to 7 GHz	2	1
6.9 to 8 GHz	3	1

Built-in YIG tuning pre-selector at 1.6 to 8 GHz

Frequency span

Range ; 20 Hz to 8 GHz, Zero span
Accuracy ; ±1%

Signal purity (dBc/Hz)

	Offset			
Frequency	1 kHz	10 kHz	100 kHz	1 MHz
100 Hz to 1 GHz	-100	-113	-118	-135
1 to 2.6 GHz	-100	-110	-118	-135
2.6 to 8 GHz	-98	-108	-112	-135

Input attenuator range: 0 to 75 dB (5 dB step)

Dynamic range

Average noise level

(Resolution bandwidth 100 Hz, input ATT 0 dB, video bandwidth 1 Hz)

Frequency	Frequency band	Average noise level
1 kHz	0	-90 dBm
10 kHz	0	-100 dBm
100 kHz	0	-101 dBm
1 MHz	0	-125 dBm
1 MHz to 3.5 GHz	0	- (130 - f (GHz)) dBm
1.6 to 3.5 GHz	1	-125 dBm
3.5 to 7 GHz	2	-125 dBm
6.9 to 8 GHz	3	-125 dBm

Average noise level

(Resolution bandwidth 1 Hz (digital), input ATT 0 dB)

Frequency	Frequency band	Average noise level
10 kHz	0	-120 dBm
100 kHz	0	-121 dBm
1 MHz	0	-141 dBm
10 MHz to 3.5 GHz	0	- (150 - f (GHz)) dBm
1.6 to 3.5 GHz	1	-145 dBm
3.5 to 7 GHz	2	-145 dBm
6.9 to 8 GHz	3	-145 dBm

1dB gain compression

10 to 100 MHz ; -3 dBm
100 MHz to 8 GHz ; 0 dBm

Spurious response

2nd-order harmonic distortion

	Frequency	Frequency band	Mixer level
<-70 dBc	10 MHz to 3.5 GHz	0	-30 dBm
<-90 dBc	> 1.6 GHz	1, 2, 3	-10 dBm

2-tone 3rd-order intermodulation distortion

(When using the digital filter, distortion measurement should be performed on condition that Δf >5 kHz)

	Frequency	Frequency band	Mixer level
<-70 dBc	10 to 100 MHz	0	-30 dBm
<-80 dBc	100 MHz to 1 GHz	0	-30 dBm
<-85 dBc	1 to 3.5 GHz	0	-30 dBm
<-70 dBc	3.5 to 7.5 GHz	1	-30 dBm
<-75 dBc	7.5 to 26.5 GHz	2, 3	-30 dBm

Image/multiple/out-band response

<-70 dBc (10 MHz to 8 GHz)

Residual response(No input, input ATT 0 dB, 50Ω termination)

<-100 dBm ; 1 MHz to 3.5 GHz
<-90 dBm ; 300 kHz to 8 GHz

3.5GHz/8GHz/26.5GHz For Testing and Evaluation of Next Generation Mobile Communication Systems such as W-CDMA.

R3264/3267/3273

Amplitude accuracy

Frequency response

(Input ATT 10 dB, after tuning pre-selector for bands 1 to 3)

Frequency	Frequency band	In-band flatness (correlation value)
100 Hz to 3.5 GHz	0	±1.5 dB
50 MHz to 2.6 GHz	0	±1.0 dB
3.5 to 7.5 GHz	1	±1.5 dB
7.4 to 15.4 GHz	2	±3.5 dB
15.4 to 26.5 GHz	3	±4.0 dB

Additional error by band switching: ± 0.5 dB

Flatness with 30 MHz calibration signal as reference: ± 3.0 dB (100Hz to 8.0 GHz)

Input ATT switching error (Reference 10 dB at 15 to 75 dB) **:**

Frequency	Error
100 Hz to 8 GHz	±1.1 dB/5 dB steps, max. 2.0 dB

R3273 Specifications

Frequency

Frequency range: 100 Hz to 26.5 GHz
26.5 to 60 GHz (with external mixer; tuning possible up to 325 GHz)

Marker frequency counter (SPAN < 1 GHz) :

Frequency	Frequency band	Harmonic order N
100 Hz to 3.5 GHz	0	1
3.5 to 7.5 GHz	1	1
7.4 to 15.4 GHz	2	2
15.2 to 26.5 GHz	3	4

Built-in YIG tuning pre-selector at 3.5 to 26.5 GHz

Frequency span :

Range ; 20 Hz to 26.5 GHz, Zero span

Accuracy ; ±1%

Signal purity (dBc/Hz)

	Offset			
Frequency	1 kHz	10 kHz	100 kHz	1 MHz
100 Hz to 1 GHz	-100	-113	-118	-135
1 to 2.6 GHz	-100	-110	-118	-135
2.6 to 7.5 GHz	-98	-108	-112	-135
7.4 to 15.4 GHz	-89	-102	-106	-129
15.2 to 26.5 GHz	-83	-96	-100	-123

Input ATT range : 0 to 70 dB (10 dB steps)

Dynamic range

Average noise level :

(Resolution bandwidth 100 Hz, input ATT 0 dB, video bandwidth 1 Hz)

Frequency	Frequency band	Average noise level
1 kHz	0	-90 dBm
10 kHz	0	-100 dBm
100 kHz	0	-101 dBm
1 MHz	0	-125 dBm
10 MHz to 3.5 GHz	0	- (130 - f (GHz)) dBm
3.5 to 7.5 GHz	1	-125 dBm
7.4 to 15.4 GHz	2	-122 dBm
15.2 to 22.0 GHz	3	-120 dBm
22.0 to 26.5 GHz	3	-117 dBm

Average noise level :

(Resolution bandwidth 1 Hz (digital), input ATT 0 dB)

Frequency	Frequency band	Average noise level
10 kHz	0	-120 dBm
100 kHz	0	-121 dBm
1 MHz	0	-141 dBm
10 MHz to 3.5 GHz	0	- (150 - f (GHz)) dBm
3.5 to 7.5 GHz	1	-145 dBm
7.4 to 15.4 GHz	2	-142 dBm
15.2 to 22.0 GHz	3	-140 dBm
22.0 to 26.5 GHz	3	-137 dBm

1 dB gain compression:

10 to 100 MHz ; -3 dBm

100 MHz to 3.5 GHz ; 0 dBm

3.5 to 7.5 GHz ; -10 dBm

7.5 to 26.5 GHz ; -3 dBm

Spurious response

2nd-order harmonics distortion

	Frequency	Frequency band	Mixer level
<-70 dBc	10 MHz to 3.5 GHz	0	-30 dBm
<-100 dBc	>3.5 GHz	1, 2, 3	-10 dBm

2-tone 3rd-order intermodulation distortion

(When using the digital filter, distortion measurement should be performed on condition that Df >5 kHz)

	Frequency	Frequency band	Mixer level
<-70 dBc	10 to 100 MHz	0	-30 dBm
<-80 dBc	100 MHz to 1 GHz	0	-30 dBm
<-85 dBc	1 to 3.5 GHz	0	-30 dBm
<-70 dBc	3.5 to 7.5 GHz	1	-30 dBm
<-75 dBc	7.5 to 26.5 GHz	2, 3	-30 dBm

Image/multiple/out-band response :

<-70 dBc (10 MHz to 18 GHz)

<-60 dBc (10 MHz to 23 GHz)

<-50 dBc (10 MHz to 26.5 GHz)

Residual response(No input, input ATT 0 dB, 50Ω termination) **:**

<-100 dBm ; 1 MHz to 3.5 GHz

<-90 dBm ; 300 kHz to 26.5 GHz

Amplitude accuracy

Frequency response(Input ATT 10 dB, after tuning pre-selector, for bands 1 to 3) **:**

Frequency	Frequency band	In-band flatness (relative value)
100 MHz to 3.5 GHz	0	±1.5 dB
50 MHz to 2.6 GHz	0	±1.0 dB
1.6 to 3.5 GHz	1	±1.5 dB
7.4 to 15.4 GHz	2	±3.5 dB
15.4 to 26.5 GHz	3	±4.0 dB

Additional error by band switching: ± 0.5 dB

Flatness with 30 MHz calibration signal as reference: ± 5.0 dB (100Hz to 26.5 GHz)

Input ATT switching error (Reference 10 dB, at 20 to 70 dB range) **:**

Frequency range	Error
100 Hz to 12.4 GHz	±1.1/10 dB steps, max. 2.0 dB
12.4 to 18 GHz	±1.3/10 dB steps, max. 2.5 dB
18 to 26.5 GHz	±1.8/10 dB steps, max. 3.5 dB

Spectrum Analyzers

100Hz to 8GHz/26.5GHz For Testing and Evaluation of Next Generation Mobile Communication Systems such as W-CDMA.

R3264/3267/3273 (Continued From Previous Page)

R3264/3267/3273 Common Specifications

Frequency read accuracy :
± (Reading of Frequency × Frequency reference accuracy + Span × Span accuracy + 0.15 × Resolution bandwidth + 10 Hz)

Marker frequency counter (SPAN <1 GHz) **:**
Resolution; 1 Hz to 1 kHz
Accuracy (S/N >25 dB); ± (Marker frequency × Frequency reference accuracy + 5 Hz × N + 1LSD)
Delta counter; ± (Δ Frequency × Frequency reference accuracy + 10 Hz × N + 2LSD)

Frequency reference source :

Stability	Aging/day: $\pm3\times10^{-8}$, Aging/year: $\pm1\times10^{-7}$ Warm up (nominal) 3 minutes, $\pm5\times10^{-8}$(Reference: after 60 minutes)
Temperature stability	$\pm1\times10^{-8}$(0 to 40ºC)(with reference to the frequency when temperature is 25°C ±2°C)
OPT.21	
Stability	Aging/day: $\pm5\times10^{-9}$, Aging/year: $\pm8\times10^{-8}$ Warm up (nominal) 3 minutes, $\pm5\times10^{-8}$(Reference: after 60 minutes)
Temperature stability	$\pm5\times10^{-8}$(0 to 40ºC) (with reference to the frequency when temperature is 25°C ±2°C)
OPT.22*1	
Stability	Aging/day: $\pm3\times10^{-10}$, Aging/year: $\pm2\times10^{-8}$ $\pm1\times10^{-8}$/30 minutes, $\pm5\times10^{-9}$/60 minutes warm up (nominal) (Reference: after 24 hours)
Temperature stability	$\pm5\times10^{-9}$(0 to 50ºC) (with reference to the frequency when temperature is +25°C)
OPT.23*1	(Rubidium frequency reference source)
Stability	Frequency accuracy: $\pm5\times10^{-9}$, Aging/month: $\pm1\times10^{-10}$
Temperature stability	$\pm1\times10^{-9}$(0 to 40ºC, with reference to the frequency when temperature is +25°C)
Warm-up	$\pm1\times10^{-9}$/15 minutes

*1 Probe power cannot be used when installing OPT.22 and OPT.23.

Frequency stability:
Residual FM (zero span) ; <3 Hz x Np-p/0.1 sec. N: Harmonics order
Drift; Same as reference value
(After 60 minute warm-up)

Resolution bandwidth (3 dB)**:**
Range; 1 Hz to 10 MHz (1, 3, 10 sequences), 5 MHz
Accuracy; ±25%: RBW = 3 MHz, 5 MHz
±15%: RBW = 100 Hz to 1 MHz
±25%(25 ºC ±10 ºC): RBW = 30 Hz
±10%: RBW = 1 to 100 Hz (digital filter)
Selectivity; <15:1 (RBW = 100 Hz to 5 MHz)
<20:1 (RBW = 30 Hz)
<5:1 (RBW = 1 to 100 Hz, digital filter)

Video bandwidth:
Range; 1 Hz to 10 MHz (1, 3, 10 sequences), 5 MHz

Frequency sweep:
Sweep time; Zero span: 1 µs to 1000 s
Span >0 Hz: 20 ms to 1000 s
Accuracy; ±3% (When using the digital filter, dynamic range measurement is not available)
Trigger; Free run, line, video, external, IF

Gated sweep:
Gate position/resolution; 100 ns to 1 s/100 ns
Gate value/resolution; 1 µs to 1 s/100 ns
Trigger; IF (Mixer input -40 dBm or more), external trigger, external gate

Delayed sweep
Delay time/resolution; 100 ns to 1 s/100 ns

Amplitude range

Measurement range:
+30 dBm, to average noise level

Maximum safety input:
Average continuous power (input ATT >10 dB) ;+30 dBm (1 W)
DC input; 0 V

Display range: 10 × 10 div.
Log mode; 10, 5, 2, 1, 0.5 dB/div
Linear mode; 10% of the reference level/div.

Reference level range:
Log; -140 to +60 dBm (0.1 dB steps)
Linear; 22.4 nV to 223 V (steps of about 1% of the full scale)

Calibration signal accuracy (30 MHz)**:** -10 dBm ±0.3 dB

IF gain error (After auto calibration)
0 to -50 dBm; ±0.5 dB
0 to -80 dBm; ±0.7 dB

Scale display accuracy (After automatic calibration)
Log ; 0 to -90 dB
Max. ±0.85 dB
±0.2 /1 dB
Linear ; ±5% of reference level

Resolution bandwidth switching error:
(Reference: RBW 300 kHz, after automatic calibration)
<±0.3 dB (RBW = 100 Hz to 5 MHz)
<±1.0 dB (RBW = 30 Hz)
<±0.5 dB (RBW = 1 to 100 Hz, digital filter)

Total level accuracy
Accuracy (typ.) ; ±1.0 dB
Frequency range: 50 MHz to 2.6 GHz
(frequency band 0)
Resolution bandwidth: 3 kHz to 1 MHz
Frequency span: <Resolution bandwidth × 20
Input ATT: 10 dB
Log scale display: 0 to -50 dB
Reference level: 0 to -50 dBm
Detection mode: Sample
Ambient temperature: 20 to 30 ºC
S/N: 20 dB or more

100Hz to 8GHz/26.5GHz For Testing and Evaluation of Next Generation Mobile Communication Systems such as W-CDMA.

R3264/3267/3273

Input/Output

RF input
Connector ; N-type female (R3273 only: SMA convertible)
Impedance ; 50 Ω (nominal)
VSWR (Input ATT >10 dB, with set frequency) ;
<1.5:1 (<3.5 GHz) (nominal)
<2.1:1 (>3.5 GHz) (nominal)

Calibration signal output:
Connector ; BNC female, front panel
Frequency ; 30 MHz × (1 ± Frequency reference determined)
Impedance ; 50 Ω (nominal)
Amplitude ; -10 dBm ±0.3 dB

10 MHz frequency reference output
Connector ; BNC female, rear panel
Output impedance ; 50 Ω (nominal)
Output frequency accuracy ; 10 MHz × Frequency reference accuracy
Output amplitude range ; 0 dBm ±5 dB

10 MHz frequency reference input
Connector ; BNC female, rear panel
Input impedance ; 50 Ω (nominal)
Input amplitude range ; -5 to +5 dBm

Probe power supply : ±12.6 V (100 mA) (nominal)

21.4 MHz IF output :
Connector ; BNC female, rear panel
Impedance ; 50 Ω (nominal)

421.4 MHz IF output :
Connector ; BNC female, rear panel
Impedance ; 50 Ω (nominal)

1st LO output (R3273 only) :
Connector ; SMA female, front panel

Video output
Connector ; VGA (15-pin, female), rear panel,
Equivalent to 640 × 480 dot VGA

X-axis output
Connector ; BNC female, rear panel
Impedance ; 1kΩ (nominal), DC-coupled
Amplitude ; Approx. -5 to +5 V

Y-axis output
Connector ; BNC female, rear panel
Impedance ; 220 Ω (nominal)
Amplitude ; Approx. 2 V for full scale (with 10 dB/div.)

External trigger input
Connector ; BNC female, rear panel
Impedance ; 10 kΩ (nominal), DC-coupled
Trigger level ; TTL level

External gate input
Connector ; BNC female, rear panel
Impedance ; 10 kΩ (nominal), DC-coupled
Sweep stop ; During LOW on TTL level
Sweep ; During HIGH on TTL level

Trigger output
Connector ; BNC female, rear panel
Amplitude ; TTL level

I/O
GPIB ; IEEE-488 bus connector, rear panel
RS232 ; D-SUB 9-pin, rear panel
Printer ; D-SUB 25-pin, rear panel
Extended I/O port ; D-SUB 25-pin, rear panel
FDD ; 3.5-inch floppy disk drive

Direct print
Output by ESC/P, PCL, or ESC/P raster commands

General Specifications

Temperature
Operating temperature ; 0 to 50°C
Storage temperature ; -20 to +60°C
Humidity ; 85% RH or less (no condensation)

Power supply: Automatically selects between 100 VAC and 220 VAC

	100 VAC	220 VAC
Voltage	100 V - 120 V	220 V - 240 V
Power consumption	300 VA or less	300 VA or less
Frequency	50/60 Hz	50/60 Hz

Mass: 18 kg or less (excluding options, front cover, and accessories)
Dimensions : Approx. 177 (H) x 350 (W) x 420 (D) mm
(without handle, feet, and front cover)

Accessories

Product name	Model name
Power cable	A01412
Input cable	A01036-0150
Converter adapter	JUG-201A/U
Power fuse	T6.3A/250V
Front cover	

R3264/3267/3273 (Continued From Previous Page)

Options

OPT.02 Memory card drive :

Memory card drive: (Exchangeable with floppy disk drive)
2-slot, front panel
Connector; JEIDA-Ver. 4.2/PCMCIA2.1

OPT.08 Rx control

When connected to the R3560
Signal source parameter settings: Output frequency, output level, output On-Off, modulation parameters
BER measurement & parameter settings
BER measurement : Average frequency, bit length, clock polarity, data polarity,measurement interval, TCH frame timing signal
Receiver sensitivity measurement & parameter settings
Receiver sensitivity measurement : Search upper and lower limits, search step, search point
When connected to the R3561
Signal source parameter settings : Output frequency, output level, output On-Off, modulation On-Off, modulation parameters, I/O clock
CAL/ADJ function: AWGN CAL execution,
modulator CAL execution,
10 MHz Ref Adjust value setting
Self Test: Self Test execution

OPT.09 CDMA test source control (for R3264/3267)

R3561L parameter setting

Output frequency setting	: Range; 10 to 2300 MHz, Resolution; 1 Hz
Output level setting	: Output; ON/OFF, Range; -125 to +6 dBm Resolution; 0.1 dB, unit; dBm, dBµ
Modulation	: ON/OFF Reverse/Forward Link switching, Data rate switching; 9600/4800/ 2400/1200/14400/7200/3600/1800 bps Data source switching; ZEROS/RANDOM/RANDERR/USER (*Written by user via GPIB) PN offset; 0 to 511 (x 64 chips) Burst; ON/OFF Even Second In; ENABLE/DISABLE Equalizing Filter; ON/OFF
Reference standard	: Synthe reference input switching; 19.6608/15/10/9.8304/5/4.9152/ 2.4576/2/1.2288/1 MHz CDMA Time Base input switching; 19.6608/15/10/9.8304/5/4.9152/ 2.4576/2/1.2288/1 MHz/INTERNAL
Save/recall function:	Max. 10 setting
External interface	: GPIB
1st local output	: 4241.4 to 6531.4 MHz, 0 dBm or more SMA connector

* 21.4 MHz IF output terminal is erased

OPT.10 High-Accuracy Power Measurement (for PDC-BS)

Calibration frequency range: 810 to 959.45 MHz
1420 to 1518 MHz
Level measurement range: +15 to -30 dBm
Level measurement accuracy
Calibration error : ±0.2 dB or less
Measurement error : ±0.3 dB or less
(at 1 dB, 2 dB/DIV, 25°C, Input ATT 30 dB, RBW 30 kHz, 100 kHz, ZERO SPAN mode, TOTAL GAIN after automatic calibration)
During average power measurement mode : ±0.5 dB or less (5 dB, 10 dB/DIV, 25°C)
Temperature-induced
TOTAL GAIN calibration error: 0.015 dB/°C
Calibration cycle : 6 months

OPT.11 High-Accuracy Power Measurement (for 3GPP-BS)

Calibration frequency range: 1848.3 to 2171.7 MHz
Level measurement range: +25 to -60 dBm
Level measurement accuracy
Measurement error: ±0.4 dB or less (+25 to -50 dBm)
±0.6 dB or less (-50 to -60 dBm)
(at 25°C, after GAIN CAL, ATT = AUTO, Min ATT = ON)
Measurement linearity: ±0.2 dB or less (0 to -30 dB)
Temperature-induced
GAIN CAL error : 0.015 dB/°C
Calibration cycle : 1 year

OPT.12 High-Accuracy Power Measurement (for cdma2000-BS)

Calibration frequency range: 802 to 963.7 MHz
1848.3 to 2171.7 MHz
Level measurement range: +25 to -60 dBm
Level measurement accuracy
Measurement error: ±0.4 dB or less (+25 to -50 dBm)
±0.6 dB or less (-50 to -60 dBm)
(at 25°C, after GAIN CAL, ATT = AUTO, Min ATT = ON)
Measurement linearity: ±0.2 dB or less (0 to -30 dB)
Temperature-induced
GAIN CAL error : 0.015 dB/°C
Calibration cycle : 1 year

OPT.16/17 External mixer

OPT3273+16
1 dB gain compression : 26.5 to 40 GHz; 0 dBm (typ.)
Max. input level : 26.5 to 40 GHz; +15 dBm (typ.)
Frequency response : 26.5 to 40 GHz; ±3 dB (typ.)
(after reading frequency response compensated data)
Average display noise level: 26.5 to 40 GHz; -90 dBm (typ.)
(RBW 1 kHz, VIDEO BW 10 Hz)
OPT3273+17
1 dB gain compression : 40 to 60 GHz; 0 dBm (typ.)
Max. input level : 40 to 60 GHz; +15 dBm (typ.)
Frequency response : 40 to 60 GHz; ±5 dB (typ.)
(after reading frequency responsecompensated data)
Average display noise level: 40 to 60 GHz; -90 dBm (typ.)
(RBW 1 kHz, VIDEO BW 10 Hz)

OPT.25 Reference Converter

10MHz frequency reference input
Frequency : 10 MHz, 15 MHz, 19.6608 MHz
Input amplitude range : -5 to +5 dBm

100Hz to 8GHz/26.5GHz For Testing and Evaluation of Next Generation Mobile Communication Systems such as W-CDMA.

R3264/3267/3273

OPT.74 Tracking generator

Output frequency : 100 kHz to 3.6 GHz
(START FREQ <3.5 GHz)
Output level
Setting range : 0 to -50 dBm
Setting resolution : 0.1 dB
Output level flatness : <±3 dB
(100 kHz to 3.6 GHz, relative value)
Output level accuracy : <±1 dB
(30 MHz, -10 dBm, 25 ±10°C)
Vernier accuracy : <0.5 dB/1 dB
Level sweep width
setting range : (0 to -10 dBm) - ATT
(ATT = 0 to 40 dB/10 dB Step)
Spurious output
Harmonic : <-15 dBc (at 0 dBm output)
Non-harmonic : <-25 dBc (at 0 dBm output)
TG Leakage
100 kHz to 3.0 GHz : <-110 dBm
3.0 to 3.6 GHz : <-100 dBm
TG Output
Impedance : 50 Ω(nominal)
VSWR
(at -10 dBm output, nominal): <1.5 (100 kHz to 3.6 GHz)

Main units

R3264	Spectrum Analyzer
R3267	Spectrum Analyzer
R3273	Spectrum Analyzer

Options

OPT.01	Digital Modulation Analysis Option
OPT.61	cdmaOne (IS-95) Analysis Software
OPT.62	W-CDMA (3GPP) Analysis Software
OPT.63	GSM/DECT Analysis Software
OPT.64	PDC/PHS/IS-136 Analysis Software
OPT.65	cdma2000 Analysis Software
OPT.66	Bluetooth Analysis Software
OPT.67	1xEV-DO (HDR) Analysis Software
OPT.73	AMPS/JTACS/NTACS Analysis Software
OPT.02	Memory Card Drive
OPT.08	Rx Control (for R3560/3561/3562)
OPT.09	CDMA Test Source Control (for R3561L and R3264/3267 only)
OPT.10	High-Accuracy Power Measurement (for PDC-BS)
OPT.11	High-Accuracy Power Measurement (for 3GPP-PS)
OPT.12	High-Accuracy Power Measurement (for cdma 200-BS)
OPT.16	External Mixer (26.5 to 40GHz, R3273 only)
OPT.17	External Mixer (40 to 60GHz, R3273 only)
OPT.21	High Stability Frequency Reference Source ($\pm 5 \times 10^{-9}$/day)
OPT.22	High Stability Frequency Reference Source ($\pm 3 \times 10^{-10}$/day)
OPT.23	Rubidium Frequency Reference Source ($\pm 1 \times 10^{-10}$/month)
OPT.25	Reference Converter
OPT.74	Tracking Generator

Accessories

R16081	Transit Case

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