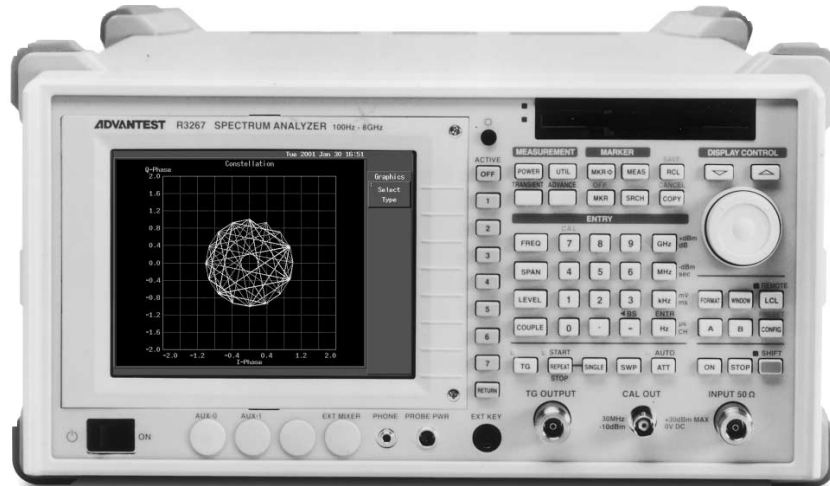


For GSM/GPRS/EDGE/DECT Transmission Test



Spectrum Analyzer R3267/3273

Photo is additional TG option

■ Overview

The GSM/DECT analysis software option (OPT.63) makes R3267/3273 possible to measure the GSM/GPRS/EDGE/DECT transmission test items.

This option contributes to both base station/mobile station with a single unit. In addition, modulation analysis and graphics analysis are possible (Operation of OPT.63 require Digital Modulation Analysis Option (OPT.01).)

■ Target systems

- GSM450/480/850/900/DCS1800/PCS1900 - BTS/MS
- DECT - RFP/PP

■ Features

- Dual mode analysis
 - Spectrum analyzer mode

R3267	20Hz to 8GHz
R3273	20Hz to 26.5GHz
 - GSM/GPRS/EDGE/DECT Tx tester mode
- Measurement of specified modulation analysis items
- Automatic setting of GSM/GPRS/EDGE/DECT parameters
- Simple operation with conversational key menu
- Standard limit test function is provided

■ Measurement items

- | | |
|--|---|
| <ul style="list-style-type: none"> ● Power ● On/Off Ratio ● Spurious ● Due to Transient ● Due to Modulation ● Power vs Time ● Graphics analysis ● Tx Power(DSP) ● Frequency error | <ul style="list-style-type: none"> □ GSM/DCS1800/1900 <ul style="list-style-type: none"> ● Phase Error □ EDGE <ul style="list-style-type: none"> ● Modulation Accuracy (I/Q Origin offset/ EVM/ Peak EVM/ 95:th percentile) □ DECT <ul style="list-style-type: none"> ● Freq. Deviation ● Timing Jitter |
|--|---|

Display Example

■STD parameter setup menu (GSM/EDGE)

STD Measurement Parameter Set
Tue 2001 Jan 30 15:56

Modulation : GMSK 3PI/8 Shift QPSK

Type : GSM450 GSM480 GSM850 GSM900 DCS1800 PCS1900

Meas Mode : BURST MULTI-BURST CONTINUOUS

Link : BTS MS

Burst Type : 148 BIT 00 BIT

Sync Type : SYNC WORD NO SYNC WORD

TSC : 0 1 2 3 4 5 6 7 ARB
771771711177717717717717111(Oct)

Filter Mode : WIDE NARROW

Offset Level : 0.0 dB

Frequency Input : FREQUENCY CHANNEL

Input : RF BASEBAND(I&Q)

Baseband Input : AC DC

IQ Inverse : NORMAL INVERSE

Cont Auto Level Set : ON OFF

1 STD
2 DC CAL
3
4
5
6 Channel Setting
7 STD Setup

■TRANSIENT (Tx tester mode) menu

Measurement Parameter (Setup in the STD)
Tue 2000 Oct 10 17:53

Standard

Type : GSM900

Link : BTS

Burst Type : 148 BIT

Sync Type : SYNC WORD

TSC : 77177171117771777177717717111(Oct)

Offset Level : 0.0 dB

Input : RF

IQ Inverse : NORMAL

Parameter Entry

Frequency : 935.000000 MHz

Reference Level : 20.0 dBm

Attenuator : 30.0 dB

10MHz Ref. : INT

1 Transient
2 T-Domain
3 F-Domain
4 Modulation
5
6
7 STD

■STD parameter setup menu (DECT)

STD Measurement Parameter Set
Fri 1999 Jun 4 16:01

Type : DECT

Meas Mode : BURST CONTINUOUS

Link : RFP PP

Physical Packet : P00 P32 P08J P80

Z-Filed : ON OFF

Sync Type : SYNC WORD NO SYNC WORD

Filter Mode : WIDE NARROW

Power Level : LEVEL1 LEVEL2

Offset Level : 0.0 dB

Frequency Input : FREQUENCY CHANNEL

Input : RF BASEBAND(I&Q)

Baseband Input : AC DC

Phase Inverse : NORMAL INVERSE

Cont Auto Level Set : ON OFF

1 STD
2 DC CAL
3
4
5
6 Channel Setting
7 STD Setup

■Tx Power (EDGE)

Tx Power
Tue 2000 Oct 10 18:15

Results

Tx Power : 5.94 dBm
3.93 mW

Peak Factor : 3.42 dB
(Offset : 0.0 dB)

Parameter Entry

Frequency : 935.000000 MHz

Reference Level : 19.9 dBm

Attenuator : 30.0 dB

10MHz Ref. : INT

1 Tx Power
2 Auto Level Set
3
4
5
6 Parameter Setup
7 Average Times ON OFF

■Power vs Time (EDGE)

Power vs Time
Tue 2001 Jan 30 15:58

dB

20

-40

-100

-20 0 20 40 60 80 100 120 140 160

Bit

PASS

1 Pow vs Time
2 Auto Level Set
3 Template Entry
4 Meas Mode NORM HIGH
5 Y [dB/div] 20 10 5
6 Parameter Setup
7 Average Times ON OFF
8 Burst PREV NEXT

Ramp Up

dB

20

-40

-100

-10 -6 -2 2 6

Bit

Ramp Down

dB

20

-40

-100

142 146 150 154 158

Bit

Tx Power

Tx Power : 0.37 dBm

■Power vs Time (GPRS)

Power vs Time
Tue 2001 Jan 30 16:01

dB

20

-40

-100

-20 0 20 320

Bit

PASS

1 Pow vs Time
2 Auto Level Set
3 Template Entry
4 Meas Mode NORM HIGH
5 Y [dB/div] 20 10 5
6 Parameter Setup
7 Average Times ON OFF
8 Burst PREV NEXT

Ramp Up

dB

20

-40

-100

-10 -6 -2 2 6

Bit

Ramp Down

dB

20

-40

-100

144 148 152 156 160

Bit

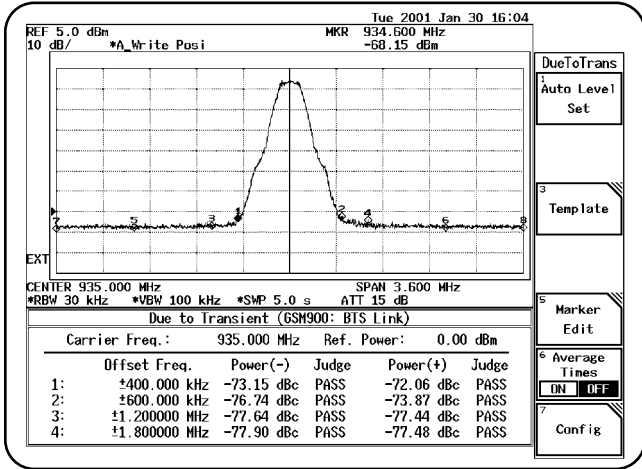
Tx Power

Tx Power1 : -0.00 dBm Tx Power2 : 0.01 dBm

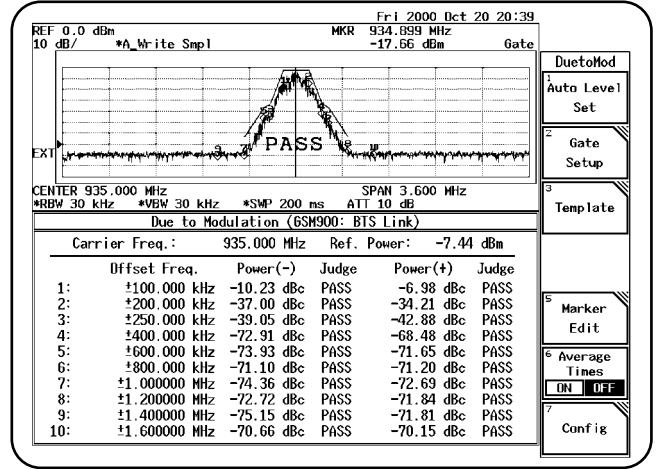
Δ Power : 0.01 dB

• GSM/DECT Analysis Software Option (OPT.63)

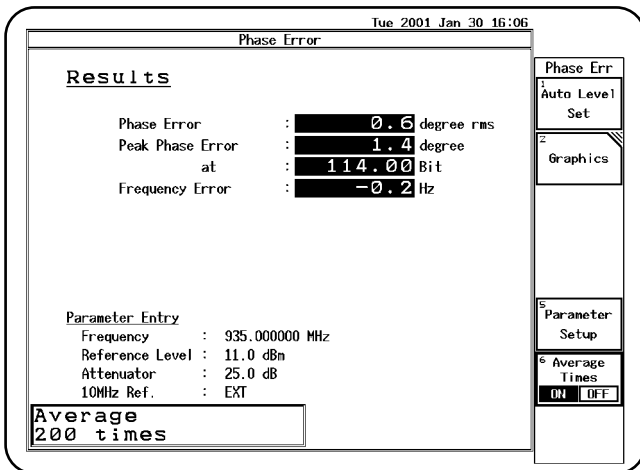
■ Due to Transient



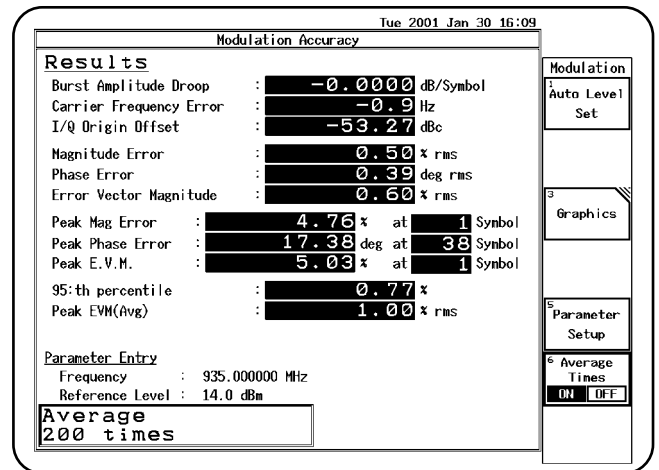
■ Due to Modulation



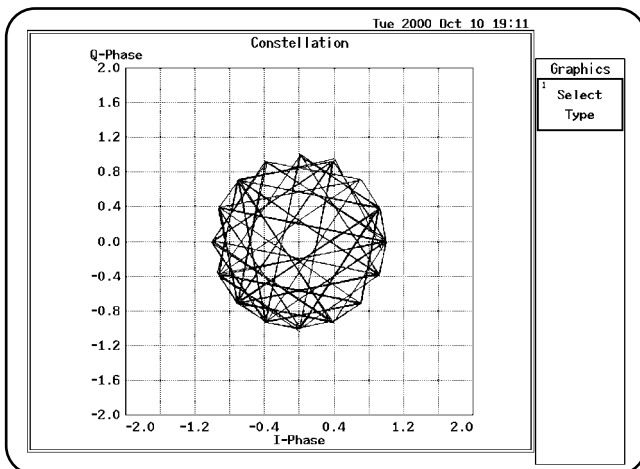
■ Phase Error (GSM)



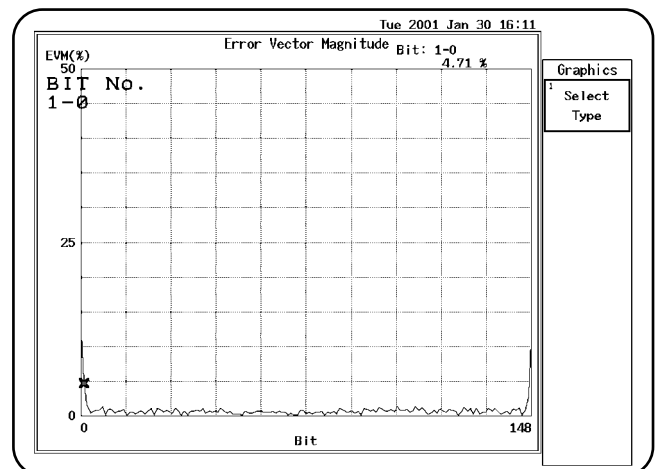
■ Modulation Accuracy (EDGE)



■ Constellation (Line) display (EDGE)

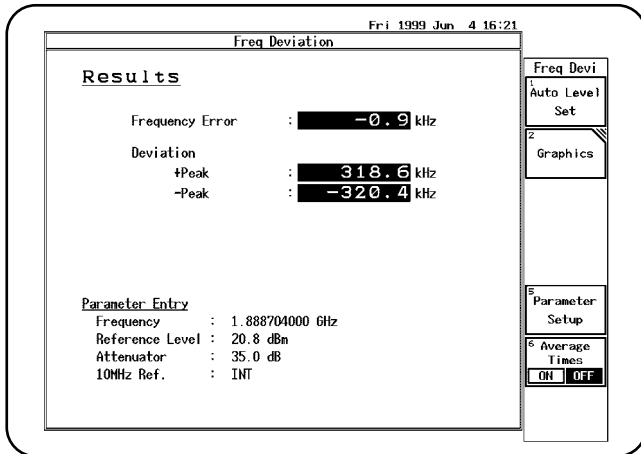


■ E.V.M. vs Symbol display (EDGE)

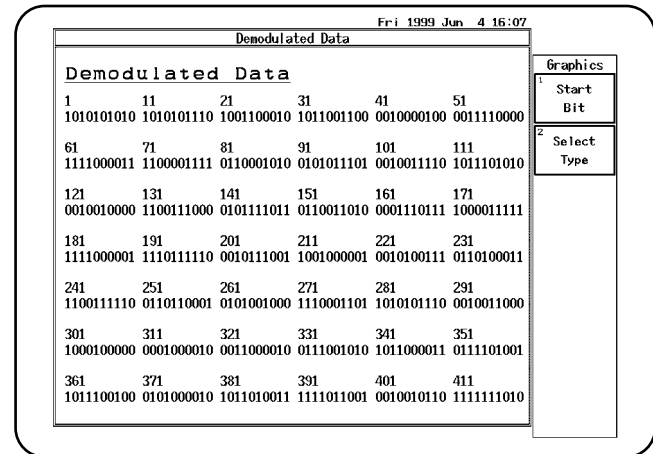


GSM/DECT Analysis Software Option (OPT.63)

■ Freq. Deviation measurement (DECT)



■ Demodulated data display (DECT)



■ Specifications (RF Input)

Items	Specifications	Items	Specifications
GSM Measurement		DECT Measurement	
Target Modulation	GMSK(GSM450, GSM480, GSM850, GSM900, DCS1800, PCS1900)	Target Modulation	GFSK(DECT)
Frequency Range	30 MHz to 3.0 GHz	Frequency Range	30 MHz to 3.0 GHz
Input Level	-30 dBm to +30 dBm	Input Level	-30 dBm to +30 dBm
Frequency/Phase Error		Frequency Deviation	
Frequency Error	Range $\leq \pm 10 \text{ kHz}$	Accuracy	<math>< \pm(\text{Frequency reference accuracy} \times \text{Carrier frequency} + 10 \text{ kHz})</math> &@maximum and minimum deviation
Accuracy	<math>< \pm(\text{Frequency reference accuracy} \times \text{Carrier frequency} + 5 \text{ Hz})</math>	Frequency Error	
Phase Error	Range $\leq \pm 30' \text{ (peak)}$	Accuracy	<math>< \pm(\text{Frequency reference accuracy} \times \text{Carrier frequency} + 10 \text{ kHz})</math>
Accuracy	$\leq \pm 5' \text{ (peak)}$ $\leq \pm 1' \text{ (rms)}$	Jitter Meas.	
EDGE Measurement		Accuracy	<math>< \pm 0.1 \mu \text{ Sec}</math> PP to PP, RFP to RFP, RFP to PP bursts
Target Modulation	3π/8 shift 8PSK (GSM450, GSM480, GSM850, GSM900, DCS1800, PCS1900) (Basedand Filter : Linearized Gaussian Filter)		
Frequency Range	30 MHz to 3.0 GHz		
Input Level	-30 dBm to +30 dBm		
Frequency Error			
Accuracy	<math>< \pm(\text{Frequency reference accuracy} \times \text{Carrier frequency} + 10 \text{ Hz})</math>		
Modulation Accuracy			
Residual Vector Error	<math>< 1.8\% \text{ (rms)}</math>		

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