



GC7105B

Base Station Analyzer

Technical Data Sheet





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Conditions of Specifications

The GC7105B specifications apply under the following conditions.

- After 30 minute warm-up and then two hours of operation temperature.
- The instrument is operating within a valid calibration period.
- Data with no tolerance is considered as typical values.
- The 'typical' or 'nominal' values are defined as follows:
 - Typical: Expected performance of the instrument operating under 20 °C to 30 °C after being at this temperature for two hours.
 - Nominal: A general, descriptive term or parameter.

Spectrum Analyzer (Standard)

Supplemental Information

Frequency

Frequency Range: 100 kHz to 7.2 GHz

Internal 100 MHz Frequency Reference

Accuracy: ± 0.1 ppm ($25^{\circ}\text{C} \pm 25^{\circ}\text{C}$) + aging
Aging: ± 2.5 ppm per 10 years

Frequency Span

Range: 0 Hz (Zero Span)
10 Hz to 7.2 GHz
Resolution: 1 Hz

Resolution Bandwidth (RBW)

-3 dB Bandwidth: 1 Hz to 3 MHz
Accuracy: ± 10 % (Nominal)

1-3-10 Sequence

Video Bandwidth (VBW)

-3 dB Bandwidth: 1 Hz to 3 MHz
Accuracy: ± 10 % (Nominal)

1-3-10 Sequence

Single Sideband (SSB) Phase Noise

Fc = 1 GHz, RBW 10 kHz, VBW 1 kHz, RMS Detector

Carrier Offset:
30 kHz < -100 dBc/Hz
100 kHz < -102 dBc/Hz
1 MHz < -115 dBc/Hz

Measurement Range

DANL to +30 dBm
Input Attenuator Range: 0 to 55 dB, 5 dB steps

Maximum Safe Input Level

Average Continuous Power: +36 dBm; 3 minutes maximum Nominal
DC Voltage: ± 50 VDC

Displayed Average Noise Level (DANL)

1 Hz RBW, 1 Hz VBW, 50 Ω Termination, 0 dB Attenuation, RMS Detector

Preamplifier Off:

10 MHz to 1 GHz	-145 dBm
> 1 GHz to 2 GHz	-143 dBm
> 2 GHz to 3 GHz	-140 dBm
> 3 GHz to 6 GHz	-135 dBm
> 6 GHz to 7.2 GHz	-130 dBm

Preamplifier On:

10 MHz to 1 GHz	-160 dBm
> 1 GHz to 2 GHz	-158 dBm
> 2 GHz to 3 GHz	-156 dBm
> 3 GHz to 6 GHz	-154 dBm
> 6 GHz to 7.2 GHz	-145 dBm

Display Range

Log Scale and Units:	1 to 20 dB/division in 1 dB steps	10 divisions displayed
	dBm, dBmV, dBuV	
Linear Scale and Units:	10 divisions displayed	
	V, mV, mW, W	
Detectors:	Normal, Positive Peak, Sample, Negative Peak, Sample, Average	
Number of Traces:	6	
Trace Functions:	Clear/Write, Maximum Hold Minimum Hold, Capture, Load, View On/Off	

Total Absolute Amplitude Accuracy

Preamplifier Off, Power Level > -50 dBm, Auto-coupled (25°C \pm 5°C)

10 MHz to 4.350 GHz	\pm 1.00 dB	
> 4.350 GHz to 5.750 GHz	\pm 1.25 dB	Attenuation \leq 40 dB
	\pm 1.75 dB	Attenuation > 40 dB
> 5.750 GHz to 7.2 GHz	\pm 1.50 dB	Attenuation \leq 40 dB
	\pm 2.00 dB	Attenuation > 40 dB

Reference Level

Setting Range:	-120 dBm to +100 dBm
Setting Resolution	
Log Scale:	0.1 dB
Linear Scale:	1 % of Reference Level

Markers

Marker Types:	Normal, Delta, Delta Pair Noise, Frequency Count Marker
Number of Markers:	6
Marker Functions:	Peak, Next Peak, Peak Left, Peak Right, Minimum Search, Marker to Center/Start/Stop



RF Input VSWR

1.5:1 Typical

Second Harmonic Distortion (Second Harmonic Intercept: SHI)

Mixer Level = -25 dBm

100 kHz to 1 GHz < -65 dBc
1 GHz to 7.2 GHz < -70 dBc

Third Order Inter-modulation (Third Order Intercept: TOI)

1 GHz +12 dBm
2 GHz +15 dBm

Spurious

Inherent Residual Response

Input Terminated, 0 dB Attenuation, Preamplifier Off, RBW @10 kHz

100 kHz to 3.2 GHz -90 dBm
3.2 GHz to 7.2 GHz -85 dBm
Exceptions <-75 dBm @ 4281 to 4292 MHz
<-60 dBm @ 95.836 MHz, 191.672 MHz

Input Related Spurious: < -70 dBc

Exceptions -50 dBc @ 175 MHz ± 0.8 MHz

Sweep Time

Range: 80 ms to 1000 s
24 μs to 200 s Span = 0 Hz (Zero Span)
Sweep Mode: Continuous, Single

Gated Sweep

Trigger Source: External
Gate Length: 1 μs to 100 ms
Gate Delay: 0 to 100 ms

Trigger

Trigger Source: Free Run, Video, External
Trigger Delay:
Range: 0 to 200 s
Resolution: 6 μs

Measurements

Channel Power
Occupied BW
Spectrum Emission Mask
Adjacent Channel Power
Spurious Emissions
AM/FM Audio Demodulation
RF Source



Power Meter (Standard)

Power Meter

Display Range : -100 dBm to +100 dBm
 Offset Range: 0 to 60 dB
 Resolution: 0.01 dB or 0.1xW x = m, u, p

Internal Power Sensor

Frequency Range: 10 MHz to 7.2 GHz
 Span: 1 kHz to 100 MHz
 Dynamic Range: -120 dBm to +30 dBm
 Maximum Power: +30 dBm
 Accuracy: Same as Spectrum Analyzer

External Power Sensor

Directional Power Sensors	GC731A	GC733A	
Frequency Range:	300 MHz to 3800 MHz	150 MHz to 3800 MHz	
Dynamic Range:	Average 0.15 W to 150 W Peak 4 W to 400 W	Average 0.1 W to 50 W Peak 0.1 W to 50 W	
Connector Type:	N-female on both ends		
Measurement Type:	Forward/reverse average power, forward peak power, VSWR		
Accuracy:	±4 % + 0.05 W ¹		
Terminating Power Sensors	GC732A	GC734A	GC736A
Frequency Range:	20 to 3800 MHz	20 to 3800 MHz	20 to 3800 MHz
Dynamic Range:	-30 to 20 dBm	-30 to 20 dBm	-30 to 20 dBm
Connector Type:	Type N (m)	Type N (m)	Type N (m)
Measurement Type:	Average	Peak	Average and Peak
Accuracy:	±7 % ¹	±7 % ¹	±7 % ¹

¹CW condition at 25°C ± 10°C

Cable and Antenna Analyzer (Standard)

Supplemental Information

Frequency

Range: 20 MHz to 4 GHz
 Resolution: 10 kHz
 Accuracy: ±25 ppm

Data Points

Measurement Speed: 126, 256, 501, 1001 Nominal
 2 ms/point

Measurement Accuracy

Corrected Directivity: 40 dB (Typical)
 Measurement Uncertainty:
 Reflection Uncertainty: $0.3 + |20\log(1+10^{-EP/20})|$ EP is calibration return loss value minus measured return loss value.



Output Power

High:	+ 3 dBm	
Low:	- 30 dBm	
Signal Source Setting:	+3 dBm, -20 dBm, -30 dBm, -40 dBm, -50 dBm, -60 dBm, -70 dBm	Cable and Antenna Analyzer can be used as a sine wave or CW (continuous wave) source.
Accuracy:	± 1.5 dB	

Dynamic Range

Reflection:	60 dB
Transmission:	
25 MHz to 3.5 GHz	80 dB
3.5 GHz to 4.0 GHz	75 dB

Maximum Safe Input Level

Maximum Input Level:	+25 dBm	Nominal
DC Voltage:	±50 VDC	
Interference Immunity:	+17 dBm on channel 0 dBm on frequency	Nominal

Measurements

Reflection (VSWR)

VSWR Range:	1 to 65
Return Loss Range:	0 to 60 dB
Resolution:	0.01

Distance to Fault (DTF)

Vertical VSWR Range:	1 to 65	
Vertical Return Loss Range:	1 to 60 dB	
Vertical Resolution:	0.01	
Horizontal Range:	0 to (# of data port-1) x Horizontal Resolution	Maximum= 1500 m (4921 ft)
Horizontal Resolution:	$(1.5 \times 10^8) \times (V_p) / (\Delta) \times (0.95)$	V_p =Propagation Velocity Δ = Stop Freq-Start Freq [Hz]

Cable Loss (1 port)

Range:	0 to 30 dB
Resolution:	0.01 dB

Insertion Loss/Gain

Range:	-120 to 100 dB
Resolution:	0.01 dB

Phase (1 and 2 port)

Range:	-180° to +180°
Resolution:	0.01°

Smith Chart

Resolution:	0.01
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GPS Receiver (Option 010)

Supplemental Information

GPS Indicator

Latitude, Longitude, Altitude

High Frequency Accuracy

GPS Lock: ± 25 ppb
Hold Over: ± 50 ppb
Connector: SMA, Female

Spectrum, Interference, and
Signal Analyzer

3 minutes after satellite locking

Interference Analyzer (Option 011)

Supplemental Information

Measurements

Spectrum Analyzer: Sound Indication, AM/FM Audio Demodulation
Spectrogram: Collect data up to 72 hours
RSSI: Collect data up to 72 hours Received Signal Strength
Indicator

Channel Scanner (Option 012)

Supplemental Information

Frequency Range

100 kHz to 7.2 GHz

Measurement Range

-110 dBm to +30 dBm

Measurements

Channel Scanner: 1 to 20 channels
Frequency Scanner: 1 to 20 frequencies
Custom Scanner: 1 to 20 channels or frequencies

Bias Tee (Option 013)

Supplemental Information

Voltage Range: +12 V to +32 V
Current: 500 mA Max
Resolution: 0.1 V

GSM/GPRS/EDGE Signal Analyzer (Option 022)

Supplemental Information

Frequency Range:	450 MHz to 500 MHz 820 MHz to 965 MHz 1705 MHz to 1995 MHz	
Input signal Range:	-40 dBm to +30 dBm	
Burst Power:	±1.0 dB	
Frequency Error:	±10 Hz + time base error	99 % confidence level
GMSK Modulation Quality		
Phase RMS Accuracy:	±1.0 degree	(0 < Phase RMS < 8)
Residual Error:	0.7 degree	Typical
Phase Peak Accuracy:	±2.0 degree	(0 < Phase Peak < 30)
8 PSK Modulation Quality		
EVM Accuracy:	±1.5 %	(2 % < EVM < 8 %)
Residual Error:	2.5 %	
RF Power vs Time:	±0.25 symbol	

Measurements

	Option 022		Option 042
Channel Power	Power vs Time (Slot)	Auto Measure	Channel/Frequency Scanner
Channel Power	Burst Power	Channel Power	Power
Spectral Density	Max/Min Point	Occupied BW	Group (Traffic, Control)
Peak to Average Power	Power vs Time (Frame)	Spectrum Emission Mask	BSIC (NCC, BCC)
Occupied BW	Frame Average Power	Spurious Emissions	Multipath Profile
Occupied Bandwidth	Burst Power (Slot 0 to 7)	Burst/Frame Average Power	(Six Strongest)
Integrated Power	TSC (Slot 0 to 7)	Frequency Error	SNR, Delay
Occupied Power	Constellation	Phase Error RMS/Peak	Longitude, Latitude,
Spectrum Emission Mask	Burst Power	EVM RMS/Peak*	Satellite
Peak Level @defined range	Modulation Type	Origin Offset	Modulation Analyzer
Spurious Emissions	Frequency Error	C/I*	Frame Avg Power Trend
Peak Level @defined range	Phase Error RMS/Peak		C/I Trend,
	IQ Origin Offset		Frame Average Power
	TSC		BSIC
	BSIC		Frame No, Frame Time
	C/I*		C/I
	EVM RMS/Peak*		Frequency Error
	EVM 95 th *		Burst Power
			Modulation Type
			Longitude, Latitude,
			Satellite

WCDMA/HSDPA Signal Analyzer (Option 023 for WCDMA, Option 024 for HSDPA)

Supplemental Information

Frequency Range:	Band I to Band XIV	
Input Signal Level:	-40 dBm to + 30 dBm	
RF Channel Power Accuracy:	±1.0 dB, ±0.7 dB (typical)	
Occupied Bandwidth Accuracy:	±100 kHz	
Adjacent Channel Leakage Ratio:	< -56 dB, ±0.7 dB@5 MHz offset	
(ACLR)	< -58 dB, ±0.8 dB@10 MHz offset	
WCDMA Modulations:	QPSK	
HSDPA Modulations:	QPSK, 16 QAM, 64 QAM	
Frequency Error:	±10 Hz + time base error	99 % confidence level
EVM Accuracy:	±2.0 %, 2 % ≤ EVM ≤ 20 %	
Residual EVM:	2.5 %	Typical
Code Domain Power:	±0.5 dB relative power	Code channel power > -25 dB
	±1.5 dB absolute power	
CPICH Accuracy (dBm):	±0.8 dB	Typical

Measurements

Option 023 and 024		Option 043
Channel Power	Constellation	Scramble Code Scanner
Channel Power	Channel Power	(Six Strongest)
Spectral Density	Rho, EVM	Channel Power
Peak to Average Power	Peak CDE	CPICH Dominance
Occupied BW	Frequency Error	Scramble Code
Occupied Bandwidth	Time Offset	Ec/Io, CPICH Power, Delay
Integrated Power	Carrier Feed Through	Multipath Profile
Occupied Power	Scramble Code	Channel Power
Spectrum Emission Mask	Code Domain Power	Multipath Power
Peak Level @defined range	Channel Power	Ec/Io, Delay
ACLR	CPICH Power (Abs/Rel)	Code Domain Power
Reference Power	PCCPCH Power (Abs/Rel)	Channel Power
Abs Power@defined range	SCCPCH Power (Abs/Rel)	Scramble Code
Rel Power@defined range	PSCH Power (Abs/Rel)	CPICH Power (Abs/Rel)
Multi-ACLR	SSCH Power (Abs/Rel)	PCCPCH Power (Abs/Rel)
Lowest Reference Power	PICH Power (Abs/Rel)	SCCPCH Power (Abs/Rel)
Highest Reference Power	Max/Avg Active Power	PSCH Power (Abs/Rel)
Abs Power@defined range	Max/Avg Inactive Power	SSCH Power (Abs/Rel)
Rel Power@defined range	Scramble Code	PICH Power (Abs/Rel)
Spurious Emissions	Codogram	Max/Avg Active Power
Peak Level @defined range	Code Utilization	Max/Avg Inactive Power
	Longitude, Latitude	Rho, EVM
	RCSI	Frequency Error
	CPICH, PCCPCH, SCCPCH	Time Offset, Peak CDE
	PSCH, SSCH, PICH	Carrier Feed Through
	CDP Table	Amplifier Capacity
	Code, Spreading Factor	Peak Amplifier Capacity
	Channel Type, Power	Average Amplifier Capacity
	Code Utilization	Code/Peak Utilization
		Average Utilization
		Longitude, Latitude,
		Satellite in all screens

EV-DO Signal Analyzer (Option 021)

Frequency Range: Band 1 to Band 10	Supplemental Information
Input Signal Level: -40 dBm to +30 dBm	
RF Channel Power Accuracy: ± 1.0 dB	Typical
EV-DO Compatibility: Rev 0, Rev A and Rev B	
Frequency Error: ± 10 Hz + time base error	99 % confidence level
Rho Accuracy: ± 0.005 , $0.9 < \text{Rho} < 1.0$	
Residual Rho: > 0.995	Typical
PN Offset: 1 x 64 chips	
Code Domain Power: ± 0.5 dB relative power ± 1.5 dB absolute power	
Pilot Power Accuracy: ± 1.0 dB	
Time Offset: ± 1.0 μs , ± 0.5 μs (typical)	External Trigger

Measurements

Option 021		Option 041	
Channel Power	Power vs Time (Idle Slot and Active Slot)	MAC Codogram	PN Scanner
Channel Power	Slot Average Power	Code Utilization	(Six Strongest)
Spectral Density	Pilot, MAC, Data Power	Longitude, Latitude	Channel Power
Peak to Average Power	On/Off Ratio	RCSI	Pilot Dominance
Occupied BW	Idle Activity	Slot, Pilot, MAC, Data	PN Offset
Occupied Bandwidth	Constellation (Pilot, MAC64/128, Data, Composite 64/128)	MAC CDP Table	Ec/Io, Pilot Power, Delay
Integrated Power	Channel Power	Code, Spreading Factor	Channel Scanner (up to 6)
Occupied Power	Rho, EVM	Channel Type, Power	Frequencies or Channels
Spectrum Emission Mask	Peak CDE	Code Utilization	Channel Power, PN Offset
Peak Level @defined range	Frequency Error	Auto Measure	Pilot Power, Ec/Io
ACPR	Time Offset	Channel Power	Multipath Profile
Reference Power	Carrier Feed Through	Occupied BW	Channel Power
Abs Power@defined range	PN Offset	Spectrum Emission Mask	Multipath Power
Rel Power@defined range	Code Domain Power (Pilot/MAC)	ACLR	Ec/Io, Delay
Multi-ACPR	Pilot/Mac Power	Multi-ACLR	Code Domain Power
Lowest Reference Power	Slot Average Power	Spurious Emissions	Slot Average Power
Highest Reference Power	Max/Avg I/Q Power	Slot Average Power	PN Offset
Abs Power@defined range	Code Domain Power (Data)	Pilot, MAC, Data Power	Pilot, MAC, Data Rho, EVM
Rel Power@defined range	Data Power	On/Off Ratio	Max/Avg Active I/Q Power
Spurious Emissions	Slot Average Power	Idle Activity	Frequency Error
Peak Level @defined range	Max/Avg I/Q Power	Pilot/MAC/Data Rho, EVM	Time Offset, Peak CDE
		Frequency Error	Carrier Feed Through
		Time Offset	Code/Peak Utilization
		Carrier Feed Through	Average Utilization
		PN Offset	
		Power Statistics CCDF	
			Longitude, Latitude
			Satellite in all screens

TD-SCDMA Signal Analyzer (Option 025)

Frequency Range:	1785 MHz to 2220 MHz	Supplemental Information
Input Signal Level:	-40 dBm to +30 dBm	
Channel Power (RRC) Accuracy:	±1.0 dB	Typical
Modulations:	QPSK, 8PSK, 16QAM	
Frequency Error:	±10 Hz + time base error	99 % confidence level
Residual EVM (RMS):	2.0 % typical	P-CCPCH slot & 1 channel
Time Error (Tau):	±0.2 μs (typical)	External Trigger
Spreading Factor:	Auto (DL, UL), 1, 2, 4, 8, 16	

Measurements

	Option 025		Option 045
Channel Power	Power vs Time (Slot)	Code Error	Sync-DL ID Scanner (32)
Channel Power	Slot Power	Slot, DwPTS Power	Scramble Code
Spectral Density	DwPTS Power	No of Active Code	Ec/Io, Tau
Peak to Average Power	UpPTS Power	Max Active Code Power	Sync-DL ID vs Tau (up to 6)
Occupied BW	On/Off Slot Ratio	Avg Active Code Power	DwPTS Power
Occupied Bandwidth	Slot PAR	Max Inactive Code Power	Pilot Dominance
Integrated Power	DwPTS Code	Avg Inactive Code Power	Power, Ec/Io, Tau
Occupied Power	Power vs Time (Frame)	Peak CDE	Sync-DL ID Multipath (up to 6)
Spectrum Emission Mask	Slot Power (TS 0 to 6)	EVM RMS/Peak	DwPTS Power
Peak Level @defined range	Data Power Left (TS 0 to 6)	Frequency Error	Pilot Dominance
ACLR	Midamble Power (TS 0 to 6)	Time Offset	Power, Ec/Io, Tau
Reference Power	Data Power Right (TS 0 to 6)	Auto Measure	Sync-DL ID Analyzer
Abs Power@defined range	Time Offset	Channel Power	DwPTS Power
Rel Power@defined range	Power vs Time (Mask)	Occupied BW	Pilot Dominance
Multi-ACLR	Slot Power	Spectrum Emission Mask	EVM, Ec/Io, CINR
Lowest Reference Power	On/Off Slot Ratio	ACLR	Frequency Error
Highest Reference Power	Timogram	Multi-ACLR	
Abs Power@defined range	Constellation	Spurious Emissions	
Rel Power@defined range	Rho	Slot Power	
Spurious Emissions	EVM RMS/Peak	UpPTS Power	Longitude, Latitude
Peak Level @defined range	PCDE	UpPTS Power	Satellite in all screens
	Frequency Error	On/Off Slot Ratio	
	IQ Origin Offset	DwPTS Code	
	Time Offset	Rho	
	Midamble Power	EVM RMS/Peak	
	Midamble Power (1 to 16)	PCDE	
	Code Power	Frequency Error	
	Slot Power, DwPTS Power	IQ Origin Offset	
	No of Active Code	Time Offset	
	Max Active Code Power		
	Avg Active Code Power		
	Max Inactive Code Power		
	Avg Inactive Code Power		

Mobile WiMAX Signal Analyzer (Option 026)

Supplemental Information

Frequency Range:	2100 MHz to 2700 MHz 3400 MHz to 3850 MHz 5200 MHz to 5900 MHz	
Input Signal Level:	-40 dBm to +30 dBm	
Channel Power Accuracy:	±1.0 dB typical	
Supported Bandwidth:	7 MHz, 8.75 MHz, 10 MHz	
Frequency Error:	±0.1ppm + time base error	99 % confidence level
Residual EVM (RMS):	1.5 % typical	

Measurements

Option 026

Channel Power

Channel Power
Spectral Density
Peak to Average Power

Occupied BW

Occupied Bandwidth
Integrated Power
Occupied Power

Spectrum Emission Mask

Peak Level @defined range

Spurious Emissions

Peak Level @defined range

Power vs Time (Frame)

Channel Power
Frame Average Power
Preamble Power
DL Burst Power
UL Burst Power

Spectral Flatness

Subcarrier Average Power
Subcarrier Max/Min/Avg

Constellation

Frequency Error
EVM RMS/Peak
RCE RMS/Peak
Time Offset
Segment ID, Cell ID
Preamble Index

EVM vs Subcarrier

RCE RMS/Peak
EVM RMS/Peak
Segment ID, Cell ID
Preamble Index

EVM vs Symbol

RCE RMS/Peak
EVM RMS/Peak
Segment ID, Cell ID
Preamble Index

Auto Measure

Channel Power
Occupied BW
Spectrum Emission Mask
Spurious Emissions
Preamble Power
UL Burst Power
Interval Power
Frequency Error
Time Offset
RCE
EVM
IQ Origin Offset

Power Statistics CCDF

LTE Signal Analyzer (Option 028)

Frequency Range:	700 MHz to 1000 MHz 1800 MHz to 2200 MHz 2600 MHz to 2700 MHz	Supplemental Information
Input Signal Level:	-40 dBm to +30 dBm	
Channel Power Accuracy:	±1.0 dB	Typical
Supported Bandwidth:	10 MHz	
Frequency Error:	±10 Hz + time base error	99 % confidence level
Residual EVM (RMS):	2.0 % typical	Data EVM

Measurements

Option 028

Channel Power

Channel Power
Spectral Density
Peak to Average Power

Occupied BW

Occupied Bandwidth
Integrated Power
Occupied Power

Spectrum Emission Mask

Peak Level @defined range

ACLR

Reference Power
Abs Power@defined range
Rel Power@defined range

Spurious Emissions

Peak Level @defined range

Control Channel

PSCH EVM/Power/Mod Type
SSCH EVM/Power/Mod Type
PBCH EVM/Power/Mod Type
PCFICH EVM/Power/Mod Type
PHICH EVM/Power/Mode Type
PDCCH EVM/Power/Mode Type
RS EVM/Power/Mode Type
Each Data Channels'
IQ Diagram
Modulation Format
Frequency Error
IQ Origin Offset
EVM RMS/Peak

Frame Summary

PSCH EVM/Power/Mod Type
SSCH EVM/Power/Mod Type
PBCH EVM/Power/Mod Type
PCFICH EVM/Power/Mod Type
PHICH EVM/Power/Mode Type
PDCCH EVM/Power/Mode Type
PDSCH EVM/Power/Mode Type
Frame Average Power
RS TX Power
EVM RMS/Peak
Data EVM RMS/Peak
Frequency Error
IQ Origin Offset

Subframe Summary

PSCH EVM/Power/Mod Type
SSCH EVM/Power/Mod Type
PBCH EVM/Power/Mod Type
PCFICH EVM/Power/Mod Type
PHICH EVM/Power/Mode Type
PDCCH EVM/Power/Mode Type
PDSCH EVM/Power/Mode Type
Subframe Power
OFDM Symbol Power
RS EVM RMS/Peak
Data EVM RMS/Peak
Frequency Error, Time Error
Cell ID, Group ID, Sector ID

Power vs Time (Frame)

Frame Average Power
Subframe Power
First Slot Power
Second Slot Power
Cell ID, IQ Origin Offset
Time Offset

Data Channel

Resource Block Power
IQ Diagram
RB Power
Modulation Format
IQ Origin Offset
EVM RMS/Peak

Auto Measure

Channel Power
Occupied BW
Spectrum Emission Mask
ACLR
Spurious Emissions
PSCH EVM/Power
SSCH EVM/Power
PBCH EVM/Power
PCFICH EVM/Power
PHICH EVM/Power
PDCCH EVM/Power
PDSCH EVM/Power
Frame Average Power
RS TX Power
EVM RMS/Peak
Data EVM RMS/Peak
Frequency Error
IQ Origin Offset

Power Statistics CCDF



E1 Analyzer (Option 002)

Supplemental Information

Electrical Interface

Connectors RX/TX: RJ48C (120Ω)
 Output: 0 dB, -6 dB (ITU-T Rec.G.703)
 Line Code: AMI, HDB3
 Impedance: Term, Monitor 120 Ω,
 Bridge > 1000 Ω

Input

Term/Bridge/Monitor: 0 to -20 dB

Transmitter and Receiver

Framing: PCM-30, PCM-30 with CRC
 PCM-31, PCM-31 with CRC
 Channel Formats: Full E1
 Test Pattern: 1-4, 1-8, ALL1, ALLO, 0101

Additional Functions

Reference Clock: Received or Internal
 Event Log Capability: Internal Memory
 Error Insertion: 1, 1E-3, 1E-4, 1E-5
 Error Rate Count: CRC, Frame, Code, Bit

Measurements

Option 002

Supplemental Information

Monitoring/Error Injection

Indicator

- E1 Signal
- Frame Sync
- Pattern Sync
- Code Sync
- FAS RAI
- AIS
- HDB8
- Error Count/Rate
 - CRC Error
 - Frame Error
 - Code Error
 - Bit Error
- Alarm Count
 - FAS
 - AIS
- Loss Count
 - Frame Sync
 - Pattern Sync

When CRC-4 is set to On

When PCM31 is set to On

T1 Analyzer (Option 003)

Supplemental Information

Electrical Interface

Connectors RX/TX: RJ48C (120 Ω)
 Output: 0 dB, -7.5 dB and -15 dB
 Line Code: AMI, HDB3
 Impedance: 100 Ω or 1000 Ω (Bridge)

Input

Term/Bridge/Monitor: 0 to -20 dB

Transmitter and Receiver

Framing: D4, ESF
 Channel Formats: Full E1
 Test Pattern: 1-8, 1-16, ALL1, ALL0, 0101
 2E-24, QRSS, 2E-23, 2E-15
 2E-23 Inverse, 2E-15 Inverse

Additional Functions

Reference Clock: Received or Internal
 Event Log Capability: Internal Memory
 Error Insertion: 1, 1E-3, 1E-4, 1E-5
 Alarm Insertion: AIS, RAI
 Error/Alarm Count: Bit RAI, AIS, BPV, BER
 Loopback Modes: Self, CSU, NIU, Line, Network

Measurements

Option 003

Monitoring/BERT/Loop Test

Indicator
 T1 Signal Loss
 Frame Sync
 Pattern Sync
 B8ZS
 Red Alarm
 RAI (Yellow Alarm)
 AIS (Blue Alarm)
 BPV Indicator
 Loss Count
 Signal Loss
 Frame Sync Loss
 Patten Sync Loss
 *Alarm Count
 RAI
 AIS
 BPV
 Error Rate
 Bit Error Rate
 Bit Error Count

RX Signal Level

Indicator
 T1 Signal Loss
 Frame Sync
 Pattern Sync
 B8ZS
 Red Alarm
 RAI (Yellow Alarm)
 AIS (Blue Alarm)
 BPV Indicator
 Vp-p
 Vp-p Max
 Vp-p Min
 dB_{dsx}

General Information

Inputs and Outputs	Supplemental Information
RF In Connector: Type-N, female Impedance: 50 Ω (nominal) Maximum Level: +30 dBm, ±50 VDC	Spectrum Analyzer
Reflection/RF Out, RF In Connector: Type-N, female Impedance: 50 Ω (nominal) Maximum Level: +25 dBm, ±50 VDC	Cable and Antenna Analyzer
External Trigger, GPS Connector: SMA, female Impedance: 50 Ω (nominal)	
External Ref Connector: SMA, female Impedance: 50 Ω (nominal) Input Frequency: 10 MHz, 13 MHz, 15 MHz Input Range: -5 dBm to +5 dBm	
USB USB Host: Type A, 1 port USB Client: Type B, 1 port	Connect flash drive and power sensor Connect to PC for data transfer
LAN: RJ45, 10/100 Base-T	Connect to PC for data transfer
E1/T1: RJ48C	
Audio Jack: 3.5 mm headphone jack	
External Power: 5.5 mm barrel connector	
Speaker: Built-in speaker	
Display	
Size: 8 inch, LED backlight Resolution: 800 x 600	
Power	
External DC Input: 12 VDC to 19 VDC Power Consumption: 33 W	60 W maximum when battery charging
External AC/DC Adapter Input: 100 to 240 VAC, 50 to 60 Hz, 1.5 A Output: 19 VDC, 4.74 A	



Battery

Operating Time:	10.8 V, 7200 mA-h > 2.5 hours	Lithium Ion Typical
Charge Time:	A fully discharged battery takes about 6 hours to recharge to 80 %, 8 hours to 100 %	
Storage Temperature:	-20 to 50 °C, ≤ 85 % RH	The battery pack should be stored in an environment with low humidity. Extended exposure to temperature above 45 °C could degrade battery performance and life.

Data Storage

Internal:	Minimum 1 GB	Up to 1000 instrument states and trace
External:		Supports USB 2.0 compatible memory devices

Environmental

Operating Temperature:	-10 to 50 °C	
Maximum Humidity:	85 %	
Shock and Vibration:	MIL-PRF-28800F Class 2	
Storage Temperature:	-55 to 71 °C	With the battery pack removed

Size and Weight

Weight:	< 5.22 kg (11.5 lb)	< 5.7 kg (12.6 lb) with battery
Size:	315 x 245 x 95 (mm) 12.4 x 9.6 x 3.7 (Inch)	Approximately (W x H x D)

Warranty

2 years

Calibration Cycle

1 year

EMC

EN 61326-2-1 Complies with European EMC

Ordering Information

GC7105B

25 MHz to 4 GHz	Cable and Antenna Analyzer ¹	
100 kHz to 7.2 GHz	Spectrum Analyzer	
10 MHz to 7.2 GHz	Power Meter	Internal mode

Options

NOTE: Upgrade options for the GC7105B use the designation GC7105BU before the respective last two digit option number.

GC7105B-002	E1 Analyzer ²	
GC7105B-003	T1 Analyzer ²	
GC7105B-010	GPS Receiver and Antenna	
GC7105B-011	Interference Analyzer ^{3,4}	
GC7105B-012	Channel Scanner	
GC7105B-013	Bias Tee	
GC7105B-020	cdmaOne/CDMA2000 Signal Analyzer	
GC7105B-021	EV-DO Signal Analyzer	(Requires option 20)
GC7105B-022	GSM/GPRS/EDGE Signal Analyzer	
GC7105B-023	WCDMA Signal Analyzer	
GC7105B-024	HSDPA Signal Analyzer	(Requires option 23)
GC7105B-025	TD-SCDMA Signal Analyzer	
GC7105B-026	Mobile WiMAX Signal Analyzer	
GC7105B-028	LTE Signal Analyzer	
GC7105B-040	cdmaOne/CDMA2000 OTA Analyzer ⁴	(Requires options 10 and 20)
GC7105B-041	EV-DO OTA Analyzer ⁴	(Requires options 10 and 21)
GC7105B-042	GSM/GPRS/EDGE OTA Analyzer ⁴	(Requires options 10 and 22)
GC7105B-043	WCDMA/HSDPA OTA Analyzer ⁴	(Requires options 10 and 23/24)
GC7105B-045	TD-SCDMA OTA Analyzer ⁴	(Requires options 10 and 25)
GC7105B-046	Mobile WiMAX OTA Analyzer ⁴	(Requires options 10 and 26)

¹Requires Calibration Kit

²Requires Test Cable

³Highly recommends adding GC7105B-010

⁴Highly recommends adding G7000-5035x and/or G7000-5036x

Standard Accessories

G7105-50341	Soft Carrying Case ⁵
G7105-50322	AC/DC Power Adapter ⁵
G7105-50335	Cross LAN Cable (1.5 m) ⁵
GC730-50515	USB A to B Cable (1.8 m) ⁵
GC724-50518	> 1 G Byte USB Memory ⁵
G7105-50325	Rechargeable Lithium Ion Battery ⁵
G7105-50323	Automotive Cigarette Lighter 12 VDC Adapter ⁵
GC7105B-361	GC7105B User's Manual and Application Software – CD

⁵Standard accessories can be purchased separately.

Optional Power Sensors

GC731A	Directional Power Sensor (peak and average power) Frequency: 300 MHz to 3.8 GHz Power: Average 0.15 to 150 W, Peak 4 to 400 W
GC733A	Directional Power Sensor (peak and average power) Frequency: 150 MHz to 3.5 GHz Power: Average/Peak 0.1 to 50 W
GC732A	Terminating Power Sensor (average power) Frequency: 20 MHz to 3.8 GHz Power: -30 to 20 dBm
GC734A	Terminating Power Sensor (peak power) Frequency: 20 MHz to 3.8 GHz Power: -30 to 20 dBm
GC736A	Terminating Power Sensor (peak and average power) Frequency: 20 MHz to 3.8 GHz Power: -30 to 20 dBm

Optional Calibration Kits

GC724-50509	One Port N Type Calibration Kit Open/Short/Load N(m), 40 dB, 4 GHz, 50 Ω
GC724-50510	One Port DIN Type Calibration Kit Open/Short/Load DIN(m), 40 dB, 4 GHz, 50 Ω
GC7105-0507	Dual Port N Type Calibration Kit, 50 Ω <ul style="list-style-type: none"> - Open/Short/Load N(m), 40 dB, 4 GHz, 50 Ω - Two Adapters N(f) to N(f), DC to 4 GHz, 50 Ω - Two 1 m (3.28 ft) RF Test Cables, N(m) to N(m), DC to 18 GHz, 50 Ω
GC7105-0508	Dual Port DIN Type Calibration Kit, 50 Ω <ul style="list-style-type: none"> - Open/Short/Load DIN(m), 40 dB, 4 GHz, 50 Ω - Two 1 m (3.28 ft) RF Test Cables, N(m) to N(m), DC to 18 GHz, 50 Ω - Adapter N(f) to DIN(f), DC to 4GHz, 50 Ω - Adapter N(f) to DIN(m), DC to 4 GHz, 50 Ω - Adapter DIN(f) to DIN(f), DC to 4 GHz, 50 Ω - Adapter DIN(m) to DIN(m), DC to 4 GHz, 50 Ω

Optional RF Cables

G7100-50531	1.5 m (4.92 ft) RF Cable DC to 18 GHz N(m)-N(f), 50 Ω
G7100-50532	3.0 m (9.84 ft) RF Cable DC to 18 GHz N(m)-N(f), 50 Ω

Optional Omni Antennas

G7000-50351	RF Omni Antenna	400 MHz to 450 MHz
G7000-50352	RF Omni Antenna	450 MHz to 500 MHz
G7000-50353	RF Omni Antenna	806 MHz to 896 MHz
G7000-50354	RF Omni Antenna	870 MHz to 960 MHz
G7000-50355	RF Omni Antenna	1710 MHz to 2170 MHz

Optional Yaggi Antennas

G7000-50364	RF Yaggi Antenna	806 MHz to 896 MHz
G7000-50365	RF Yaggi Antenna	866 MHz to 960 MHz
G7000-50363	RF Yaggi Antenna	1750 MHz to 2390 MHz

Optional Adapters

G7100-50571	Adapter N(m) to DIN(f), DC to 4 GHz, 50 Ω
G7100-50572	Adapter DIN(m) to DIN(m), DC to 4 GHz, 50 Ω
G7100-50573	Adapter N(m) to SMA(f), DC to 18 GHz, 50 Ω
G7100-50574	Adapter N(m) to BNC(f), DC to 1.5 GHz, 50 Ω
G7100-50575	Adapter N(f) to N(f), DC to 4 GHz, 50 Ω
G7100-50577	Adapter N(f) to DIN(f), DC to 4 GHz, 50 Ω
G7100-50578	Adapter N(f) to DIN(m), DC to 4 GHz, 50 Ω
G7100-50579	Adapter DIN(f) to DIN(f), DC to 4 GHz, 50 Ω

Optional E1/T1 Test Cables

G7100-50317	RJ45 to Y Bantam Cable
G7100-50318	RJ45 to Y BNC Cable
G7100-50319	RJ45 to 4 Alligator Clips

Optional Miscellaneous

G7100-50581	Attenuator 40 dB, 100 W, DC to 4 GHz (Unidirectional)
G7105-50342	Hard Carrying Case
G7105-50343	Backpack Carrying Case
G7105-50324	External Battery Charger
GC7105B362	GC7105B User's Manual – Printed Version



GC7105B

Base Station Analyzer



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