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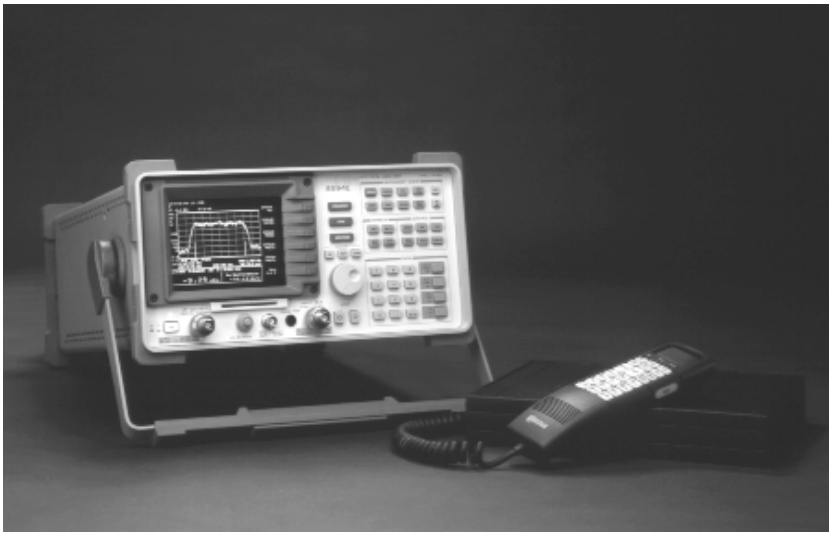
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Find the *Keysight / Agilent 85725C* at our website: ***Click HERE***

Agilent 85725C
Portable CDMA Spectrum Analyzer

Product Overview

Agilent 85725C CDMA Measurements Personality and Options 151 & 160 for the Agilent 8590 E-Series Spectrum Analyzer



- **Simplifying your measurements of cellular, PCS, and other spread spectrum transmitters based on IS-95-A, IS-97-A, IS-98-A, J-STD-008, -019, and ARIB STD-T53[1]**
- **Tuning plans for U.S. and Korean PCS/U.S. and Japanese Cellular**
- **ACPR[2] measurements**

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Innovating the HP Way

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Custom CDMA Transmitter Testing – Simply

CDMA (code division multiple access) is reality!
For those who design, manufacture, install or maintain CDMA equipment, Agilent Technologies presents another measurement personality for our 8590 E-series spectrum analyzers. This CDMA transmitter test solution includes ALL of the spectrum analysis capability you've grown to rely on from Agilent in this dynamic marketplace.



Testing Should Be Simple
The Agilent CDMA spectrum analyzer makes testing simple and straightforward because it follows the CDMA standards in terminology, methods of measurement, and limits. Agilent is an active member of the committees that produce the standards for PCS and cellular equipment, so we understand first hand what the standards require. We have used this experience to create a simpler solution. Just let the analyzer do the work for you.

Improved Time-To-Market
Break the bottleneck of prototype testing. With the Agilent CDMA spectrum analyzer, you can depend on a proven test tool to provide you with accurate and repeatable measurement results.

Even Faster Test Times
Cut costs with increased test throughput and decreased test development time. Since all of the CDMA measurements are programmable, you can initiate each with a single command. By using the digital signal processing (DSP) hardware option of the spectrum analyzer, the Agilent 85725C performs power measurements up to three times faster than the 85725A.

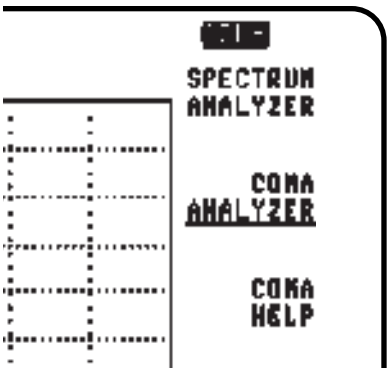
Quick, Easy, One-Button Measurements
Perform CDMA transmitter tests simply and efficiently with the press of a button. The 85725C CDMA measurements personality does the work for you. It automatically sets the instrument controls and performs the measurements and calculations required to test the standards.

Tight Power Control Requires Reliable Accuracy
Measure transmitters with near-power-meter accuracy. Option 053 provides absolute accuracy to within ±0.6 dB in the cellular band and ±0.9 dB in the PCS band.

Take a Closer Look
You can evaluate your design and thoroughly troubleshoot failures. Measurements can be run continuously, allowing real-time equipment adjustments and troubleshooting. Go/no-go testing is easily accomplished with displayed pass/fail messages. Graphical displays add key visual information to numerical results.

1. Association of Radio Industries and Businesses
2. Adjacent Channel Power Ratio

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HELP is on the Way

And we've added something new — on-screen **HELP**. You will spend less time deciphering the standards and making measurements, and more time designing your radio or device. These **HELP** messages are noninterfering and concise. Even though we provide the most thorough documentation in the industry, on-screen **HELP** makes it that much easier for you.

Built-In Flexibility Beyond Cellular and PCS for Other Wireless Applications

You may also be involved in designs at other frequencies, for other services, and even using technologies other than the current PCS and cellular standards. You are in the best position to know what you need. That's why we have designed greater flexibility into the CDMA personality. YOU can configure the measurements the way YOU want them:

- Define your own tuning scheme based on the frequency allocation of your system. The configuration for channel-number tuning has a custom setup and IS-95-A, J-STD-008, Korean PCS[4] and ARIB STD-T53[1] setups.

- Change the pass/fail limit lines from the default settings for the selected standards to meet your requirements — for example, you may want to add test line uncertainty, additional margin, or alternative limits.

- Measure your signal channel power in any arbitrary channel bandwidth (for example: AMPS[3], W-CDMA, or FCC[5] Part 15). You can easily define the signal measurement bandwidth and viewing span.

ISO[6] 9000

The 85725C CDMA measurements personality and the 8590 E-series spectrum analyzers are manufactured in an ISO 9001 registered facility in concurrence with Agilent's quality commitment.

MIL-T-28800 Conformance

The 8590 E-series spectrum analyzers conform to environmental specifications of MIL-T-28800 class 5 to ensure reliable and accurate performance in portable environments as well as indoors. Compliance with MIL-T-28800 standards of vibration, temperature, humidity, and shock provide assurance that the 8590 E-series will withstand the rigors of field use.

3. Advanced mobile phone system
4. Personal communication services
5. Federal Communications Commission (U.S.)
6. International Organization for Standardization

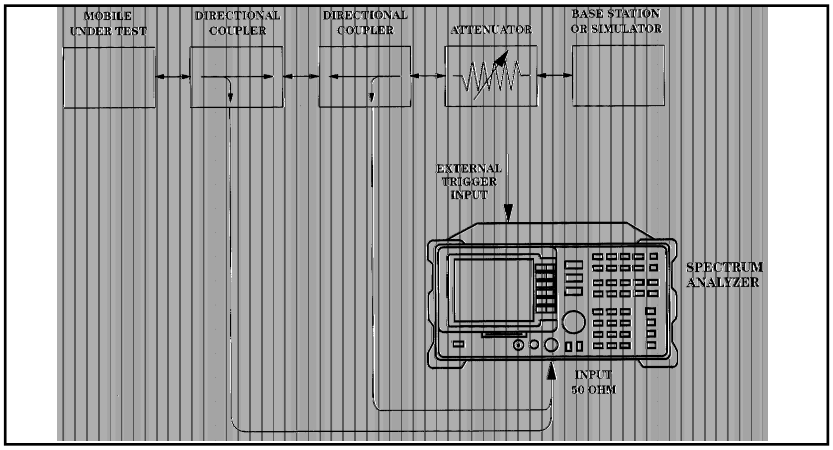


Figure 1.
Typical measurement setup for transmitter measurements using the Agilent 85725C CDMA measurements personality and the 8590 E-series spectrum analyzer. Measurements of either the forward or reverse paths may be performed in a noninterfering manner, as shown here. An alternate test method for mobiles requires a test mode.

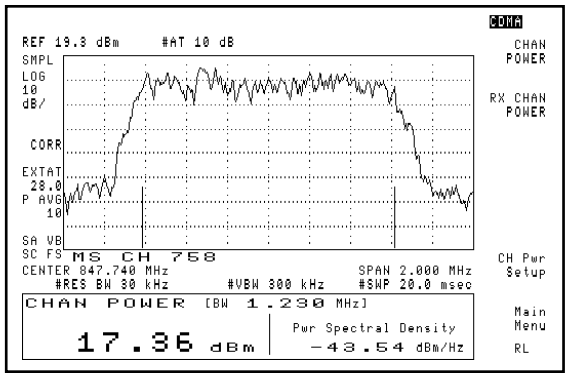
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CDMA Measurements at the Press of a Button

Frequency-Domain Measurements

RF channel power

RF channel power measures the true average (RMS) power in a user-definable bandwidth, such as 1.23 MHz.

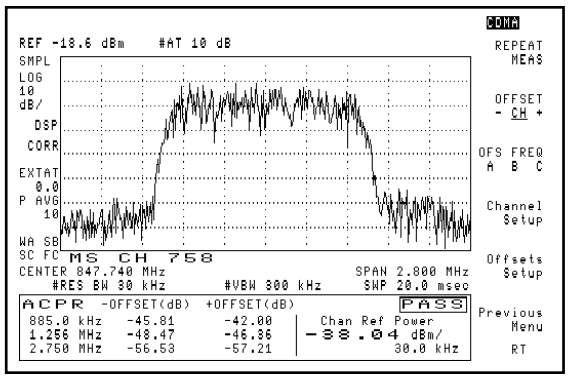


Adjacent Channel Power Ratio

The adjacent channel power ratio measurement measures the ratio of the power in the carrier to the power at selected offsets. Two methods for measuring the offsets are provided; an integrated bandwidth method and a resolution bandwidth method.

In-band spurious emissions

Test spurious emissions of a transmitter or receiver in either the transmit or receive bands. RF channel power and detectable spurious emissions are measured and compared to IS-97-A or -98-A specified test limits.

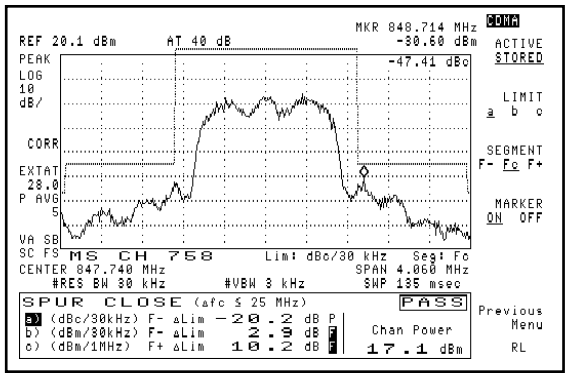


Out-of-band spurious emissions

Out-of-band spurious emissions measurements are made by using up to five user-defined tables of frequency ranges, bandwidths, and amplitude test limits.

Standby output power (mobile)

Standby output power of mobiles measures the residual transmit power while the mobile RF power is turned off.

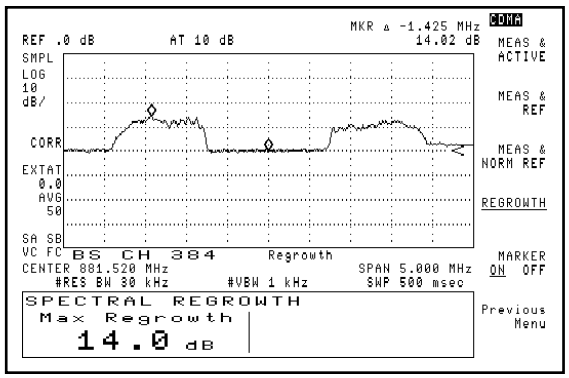


Spectral regrowth

Spectral regrowth measures the power spectral distribution of a transmitter for a specific power level and can display net regrowth of the spectrum relative to a measured reference transmitter power level. This measurement is useful for evaluating power amplifiers, digital modulators, and filters.

Occupied bandwidth

Occupied bandwidth measures the 99% power bandwidth of the displayed spectrum. The percentage is user-definable.

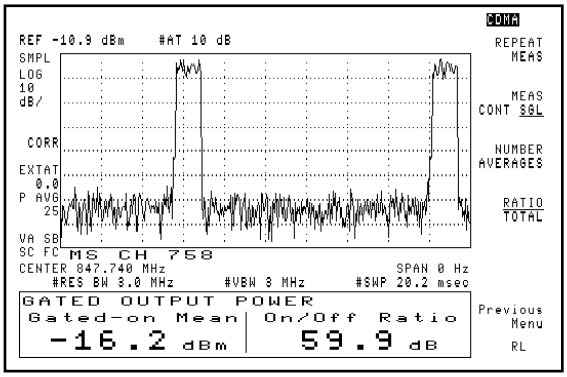


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Time-Domain Measurements

Gated output power

Gated output power measures both gated-on power and on/off ratio of a mobile when set at variable-rate transmit mode.

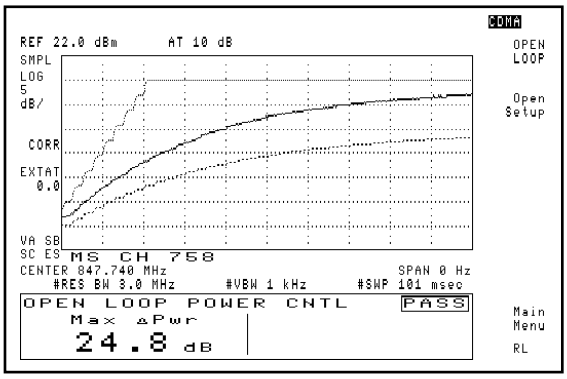


Gated output power time response

Gated output power time response measures the time required for the mobile transmitter to change from the gated-off state to the gated-on state and from the gated-on state to the gated-off state. Results are compared to the IS-98-A limits.

Time response of open loop power control

Time response of open loop power control measures the time response of the mobile transmitter power to a step change in receive power and compares it to the IS-98-A limits. This measurement requires an external trigger signal.



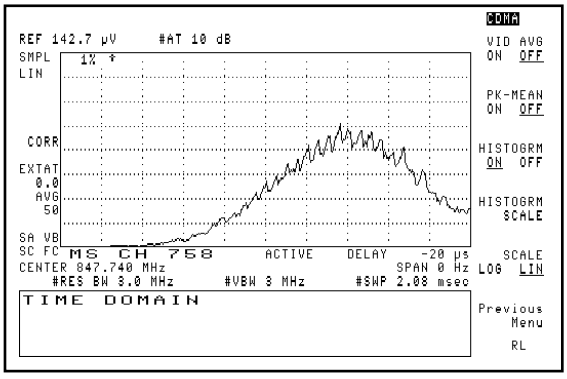
General-Frequency and Time-Domain Measurements

Frequency domain

- Channel spectrum
- Monitor channel
- Monitor band
- Receive RF channel power

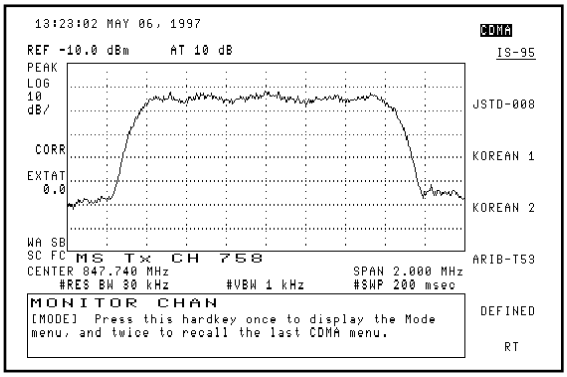
Time domain

- Time domain analysis
- Amplitude probability density
- Mean and peak-to-mean power



Additional features

- Follows the CDMA standards in terminology, method of measurement, and limits
- Channel tuning by IS-95-A channel, user channel, or user frequency
- Band selection per IS-95-A
- External attenuation correction for base and mobile (separate entries)
- Automatic reference level adjustment for most measurements
- On-screen help messages
- Pass/fail messages
- IS-95-A, -97-A, and -98-A; J-STD-008, 018, 019, and ARIB STD-T53 limit lines
- Remote programmability of measurements, parameters, and limits



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Specifications

Specifications describe the instrument's warranted performance. Characteristics provide information about non-warranted instrument performance in the form of nominal values. Typical performance is not warranted, but indicates performance that most units will exhibit.

The dual-mode mobile station must either have a CDMA transmitter test mode or be actively linked to a CDMA base station or base station simulator to provide an RF signal for input to the spectrum analyzer RF input.[1]

Lower frequency limit for gated output power, gated output power time response, time response of open loop power control, and in-band spurious is 10 MHz. Lower frequency limit for all other measurements is 1 MHz. Upper frequency limit is the upper frequency limit of the spectrum analyzer.

Time response of open loop power control measurement requires an external trigger signal.

Amplitude accuracy specifications do not include mismatch uncertainty due to DUT output VSWR.

General

Maximum safe input level	Total power must not exceed +30 dBm (1 watt)
Internal frequency reference	±1x10^{-7}/year (aging only)
Option 004	
Channel number tuning	
IS-95-A designation	Channel 1 to 1023 (U.S. Cellular)
J-STD-008 designation	Channel 1 to 1199 (U.S. PCS)
J-STD-008 designation	Channel 1 to 1300 (Korean PCS)
ARIB-STD-T53 designation	Channel 1 to 1199 (Japan Cellular)
User-defined designation	Channel 1 to 30000
Defined channel X frequency	1 MHz to the upper frequency limit of the spectrum analyzer
Option 053 Improved amplitude accuracy frequency ranges	
CDMA Cellular bands	824 to 870 MHz 869 to 925 MHz
CDMA PCS Bands	1715 to 1780 MHz 1805 to 1870 MHz 1850 to 1910 MHz 1930 to 1990 MHz

Channel Power (integrated 1.23 MHz bandwidth)

Channel power range[1]	+40 dBm to (-70 + ext atten) dBm (at transmitter)	
Absolute channel power accuracy: Cellular Bands		
with Option 053	*0°C to 55°C*	*20°C to 30°C*
+25 dBm to +15 dBm[2]	±1.3 dB	±1.0 dB
+15 dBm to -45 dBm[2]	±1.0 dB	±0.6 dB
-45 dBm to -70 dBm[2,3]	±1.3 dB	±0.75 dB
without Option 053	*0°C to 55°C*	
+25 dBm to -70 dBm[2,3]	±4.3 dB (±2.0 dB typical)	
Absolute channel power accuracy: PCS Bands		
with Option 053	*0°C to 55°C*	*20°C to 30°C*
+25 dBm to +15 dBm[2]	±1.6 dB	±1.3 dB
+15 dBm to -45 dBm[2]	±1.3 dB	±0.9 dB
-45 dBm to -70 dBm[2,3]	±1.6 dB	±1.05 dB
without Option 053, for mean channel power range	*0°C to 55°C*	
+25 dBm to -70 dBm[2,3]	±4.3 dB (±2.0 dB typical)	
Relative channel power accuracy:[4]		
Input signal level change	*20°C to 30°C*	
0 to -40 dB	±0.4 dB (±0.2 dB typical)	
0 to -60 dB	±0.5 dB (±0.2 dB typical)	
0 to -90 dB	±0.8 dB	

Receive Channel Power (integrated 1.23 MHz) (0 dB atten)

Receive channel power range[1]		
without external preamplifier	-20 dBm to -80 dBm (typical -90 dBm)	
with external preamplifier	[-20 -preamp gain] dBm to [-80 -preamp gain +preamp NF] dBm	
Receive channel power accuracy:[5,7] **Cellular Bands**		
with Option 053	*0°C to 55°C*	*20°C to 30°C*
-20 dBm to -45 dBm[2]	±1.15 dB	±0.75 dB
-45 dBm to -80 dBm[2,3]	±1.45 dB	±0.90 dB
without Option 053	*0°C to 55°C*	
+20 dBm to -80 dBm[2,3]	±4.3 dB (±2.0 dB typical)	
Receive channel power accuracy:[5,7] **PCS Band**		
with Option 053	*0°C to 55°C*	*20°C to 30°C*
-20 dBm to -45 dBm[2]	±1.45 dB	±1.05 dB
-45 dBm to -80 dBm[2,3]	±1.75 dB	±1.20 dB
without Option 053	*0°C to 55°C*	
-20 dBm to -80 dBm[2,3]	±4.3 dB, (±2.0 dB typical)	

Gated Output Power (mobile station) (3 MHz RBW; 0 span)

Gated output power range[1]	+40 dBm to (-67 + ext atten) dBm (at transmitter)	
Gated output power accuracy:[7] **Cellular Bands**		
with Option 053	*0°C to 55°C*	*20°C to 30°C*
+25 dBm to +15 dBm[2]	±1.6 dB	±1.0 dB
+15 dBm to -50 dBm[2]	±1.3 dB	±0.6 dB
without Option 053	*0°C to 55°C*	
+25 dBm to -50 dBm[2]	±4.3 dB (±2.0 dB typical)	
Gated output power accuracy:[7] **PCS Bands**		
with Option 053	*0°C to 55°C*	*20°C to 30°C*
+25 dBm to +15 dBm[2]	±1.9 dB	±1.3 dB
+15 dBm to -50 dBm[2]	±1.6 dB	±0.9 dB
without Option 053	*0°C to 55°C*	
+25 dBm to -50 dBm[2]	±4.3 dB, (±2.0 dB typical)	
On/Off power ratio accuracy		*20°C to 30°C*
0 to 40 dB		±0.4 dB

Adjacent Channel Power Ratio (ACPR)

Tx carrier power range	+40 dBm to -20 dBm	
Adjacent channel power sensitivity		
TX carrier power at -10 dBm and >100 KHz offset with 10 dB atten		-82 dBc (30 KHz Ch BW)

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Adjacent channel power ratio accuracy: Cellular and PCS Bands

Integration Bandwidth Method	
with Option 053	*20°C to 30°C*
-40 dB to -70 dB	±1.8 dB
without Option 053	
-40 dB to -70 dB	±3.2 dB
Resolution Bandwidth Method	
with Option 053	*0°C to 55°C*
-40 dB to -70 dB	±1.4 dB
without Option 053	
-40 dB to -70 dB	±2.8 dB

Transmitter Spurious Emissions (in band)

Tx carrier power range	+40 dBm to -70 dBm
Minimum spurious emission power[6]	(-75 + ext atten) dBm (30 kHz) (-60 + ext atten) dBm (1 MHz)
Absolute spurious emission power accuracy:[7] **Cellular Bands**	
with Option 053	±1.8 dB
without Option 053	±4.4 dB (±2.0 dB typical)
Absolute spurious emission power accuracy:[7] **PCS Bands**	
with Option 053	±2.1 dB
without Option 053	±4.4 dB, (±2.0 dB typical)
Relative spurious emission power accuracy:[7]	
with Option 053	±1.4 dB (±1.0 dB typical)
without Option 053	±2.8 dB (±1.8 dB typical)

Transmitter Spurious Emission (out-of-band)

Out-of-band spurious emissions measurements are made using the user-defined tables (maximum of five) of frequency ranges, bandwidths, and amplitude test limits. The accuracy and sensitivity specifications for these measurements are determined by the 8590E-series spectrum analyzer used for these tests.

Receiver Spurious Emissions (in IS-95 bands) (1 MHz RBW; 0 dB atten)

Power range[1]	
without external preamplifier	-20 dBm to -80 dBm (typical -90 dBm)
with external preamplifier	[-20 – preamp gain] dBm to [-80 – preamp gain + preamp NF] dBm
Spurious power emission accuracy:[5,7] **Cellular Bands**	
with Option 053	±2.0 dB
without Option 053	±3.8 dB (±2.0 dB typical)
Spurious emission power accuracy:[5,7] **PCS Bands**	
with Option 053	±2.3 dB
without Option 053	±3.8 dB, (±2.0 dB typical)

Standby Output Power (mobile station) (1 MHz)

Standby output power range[1]	-30 dBm to (-72 + ext atten) dBm
Standby output power accuracy:[7] **Cellular Bands**	
with Option 053	±1.8 dB
without Option 053	±3.6 dB (±1.9 dB typical)
Standby output power accuracy:[7] **PCS Bands**	
with Option 053	±2.1 dB
without Option 053	±3.6 dB (±1.9 dB typical)

Occupied Bandwidth

Frequency accuracy for 1.23 MHz channel bandwidth	
Occupied bandwidth	±15 kHz (characteristic)
Delta frequency	±[35 kHz + (frequency reference error x carrier frequency)] (characteristic)

Gated Output Power Time Response (mobile station) (40 μs sweeptime)

Carrier power range[1]	+40 dBm to (-67 + ext atten) dBm
Time resolution	100 ns
Time accuracy	±150 ns (characteristic)

Time Response of Open Loop Power Control
(mobile station) (100 ms sweeptime)

Carrier power range[1]	+40 dBm to (-67 + ext atten) dBm
Time resolution	250 μs
Time accuracy	±250 μs (characteristic)

Time Domain Characteristics

Sweeptime range	
Standard	15 ms to 100 s
Option 101	20 μs to 200 ms
Option 151	40 μs to 799 ms
Time resolution	0.25% of sweeptime
Sweep trigger delay range	Variable (please consult user's guide for specific ranges)
Option 101 & 151	
Stored time record length[8]	
Option 101	40 x sweeptime; but ≤200 ms
Option 151	80 x sweeptime; but ≤400 ms

1. CAUTION: Use sufficient external attenuation to limit power at the spectrum analyzer input to absolute maximum of +30 dBm (1 watt) with internal attenuation ≥10 dB.
2. At the spectrum analyzer input.
3. When near-noise correction is enabled.
4. For relative channel power measurements made at the same frequency as the reference channel power measurement.
5. For preamplifier output VSWR ≤1.25:1.
6. Lower limit is equivalent to the displayed average noise level of the spectrum analyzer. Lower limit does not include the effect of 2nd order distortion caused by the spectrum analyzer.
7. For signal levels >10 dB above the displayed average noise level of the spectrum analyzer.
8. Available for viewing using delay function.

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Ordering Information

Recommended Configurations for the Agilent 8591E, 8593E, 8594E, 8595E or 8596E Portable Spectrum Analyzer[1]

With DSP (Option 151) for high speed measurements:

Option BD0	Code Division Multiple Access (CDMA)
This option includes:	
Option 004	Precision frequency reference[2,3]
Option 053	Improved amplitude accuracy for PCS and cellular bands
Option 105	Time-gated spectrum analysis
Option 151	Digital signal processor
Option 160	PDC/PHS/NADC/CDMA firmware for Option 151
85725C	CDMA measurements personality

If 300Hz RBW is required for ACPR measurements:

Option 130	Narrow resolution bandwidths[3]

Without DSP (Option 151):

Option 004	Precision frequency reference[2,3]
Option 053	Improved amplitude accuracy for PCS and Cellular bands
Option 101	Fast time domain sweeps
Option 130	Narrow resolution bandwidths recommended for ACPR measurements[3]
85725C	CDMA measurements personality

Related spectrum analyzer options:

Option 010	Built-in tracking generator
Option 040	Front panel protective cover
Option 041	GPIB plus parallel printer interface
Option 042	Protective soft carrying case
Option 043	RS-232 plus parallel printer interface
Option 105	Time-gated spectrum analysis
Option 908	Rack mount with handles
Option 909	Rack mount without handles
Option 910	Additional manual set
Option 915	Component level information with service guide
Option W30	Two additional year return-to-Agilent service
Option W32	Two additional year return-to-Agilent calibration
Option W50	Five additional year return-to-Agilent service
Option W52	Five additional year return-to-Agilent calibration

Note: *Retrofit kits are available for ALL of the listed 8590 E-series options.*

Related Products:

85712D	EMC measurements personality
85714A	Scalar measurements personality
85718B	NADC-TDMA measurements personality
85719A	Noise figure measurements personality
85720C	PDC measurements personality
85726B	PHS measurements personality
85901A	Portable ac power source
85902A	Burst carrier trigger
87405A	Preamp, 0.01–3 GHz, 22 dB gain, 6.5 dB NF
8498A	Option 030 fixed 30 dB attenuator
778D	Dual directional coupler
C1405B	Option ABA keyboard

1. The Agilent 85725C is supported on the 8590 E-series with serial prefixes 3523A or 3525U and later.
2. Required unless 10 MHz external reference is available.
3. Option 004 and 130 may be ordered together at a net reduced price as Option 140.
4. If Options 151 and 160 are not ordered, Option 101 is required for time domain measurements.

Agilent Technologies' Test and Measurement Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

"Our Promise" means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

"Your Advantage" means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and on-site education and training, as well as design, system integration, project management, and other professional services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

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