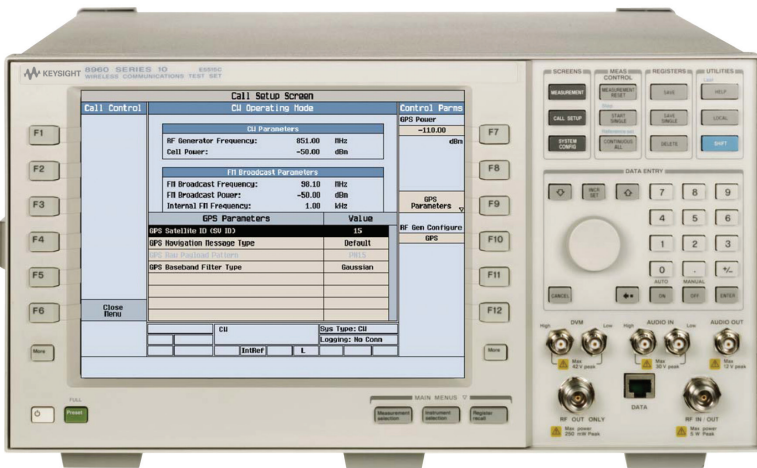


Keysight Technologies

An Integrated Low-cost GPS Test Solution for Mobile Phones

With the E1999A-206 for the 8960 (E5515C)
Wireless Communications Test Set

Data Sheet



Introduction

Now with the Keysight Technologies, Inc. E1999A-206, a single channel Global Positioning Satellite (GPS) satellite simulator is integrated in the Keysight 8960 (E5515C) wireless communications test set providing accurate and repeatable measurement of GPS receivers in a mobile phone. The E1999A-206 achieves this testing capability by simulating a GPS satellite and generating a specific satellite vehicle (SV), navigation data pattern and accurate RF level output and assures the quality of the GPS receiver.

Though this feature is designed specifically for high volume manufacturing test of GPS receiver calibration on GPS capable mobile phones, it can also be used in R&D. Typically, on the production line, you may check if your GPS capable device can “see” the satellite ID correctly, check if the C/N_0 is acceptable, and if the RSSI is within the expected range. The E5515C’s built-in single channel GPS simulator will help you easily do this together with the phone’s RF calibration.

Figure 1 shows a typical connection. The mobile could also receive the GPS signal through a coupler connected to the E5515C.

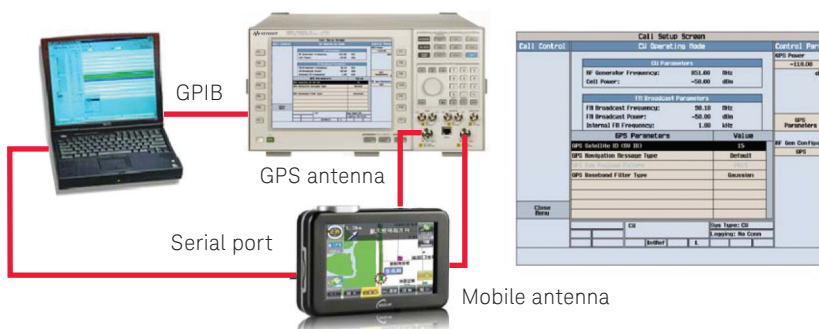


Figure 1. Typical connection setup.

Currently, because some wireless testers do not support GPS testing, some manufacturers have to split the mobile calibration and GPS receiver calibration into two measurement stations. With the new E1999A-206 software feature and the E5515C test set, you no longer need to separate the GPS calibration and the normal phone calibration – saving you time, lowering your costs, improving your production line productivity, and simplifying your production layout significantly. You can integrate the GPIB command easily into your test program and control the GPS parameters for your GPS receiver calibration. The GPS signal can be output from either the RF IN/OUT port or the RF OUT ONLY port and connect to the mobile GPS antenna directly without any other accessories. The RF level is adjustable from -70 dBm to -125 dBm through GPIB command or manually.

If you have any test application format (GSM/GPRS/EDGE, W-CDMA/HSPA, cdma2000®, or 1xEV-DO) in your E5515C (with option E5515C-003), you just need to purchase an E1999A-206 license to activate the GPS test functionality!

Typical Test Step

A typical test step is:

- Set up a GPS signal manually or by GPIB command,
 - Set up the expected level output from the GPS signal generator
 - Set up the antenna coupler loss (if used)
 - Select the desired satellite ID, here the SV ID could be from 1 to 37
 - Turn the GPS signal on
- Observe on the PC

To run the specific program on the PC, this program could be integrated into the whole phone test program to check:

- Is the satellite ID correct?
- Is the RSSI value of the GPS signal correct?
- Is the C/N_0 value within the expected range?

If the value is correct or within the expected range, then the GPS cal/check will pass. Different phones may use different GPS signals and SV IDs.

Figure 2 shows a GPS receiver test result with the E1999A-206 used with the E5515C.

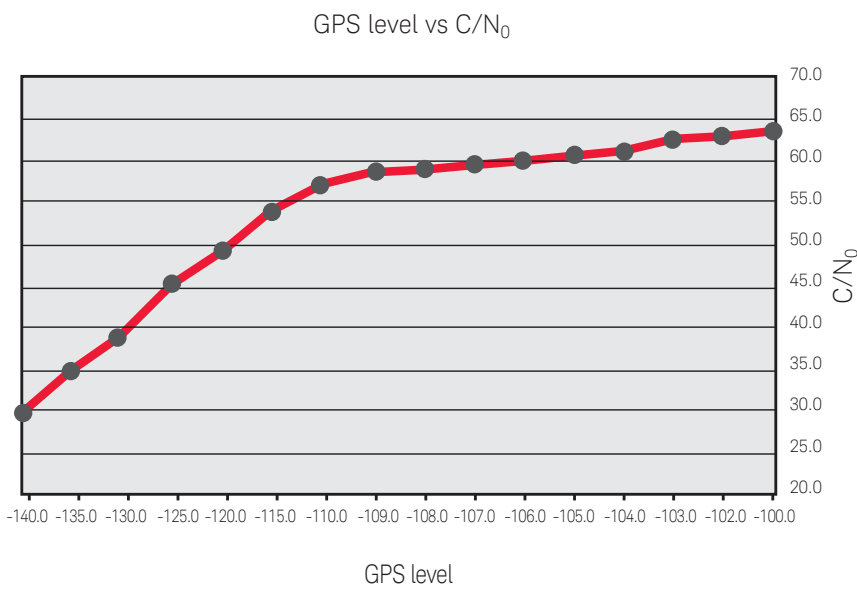


Figure 2. GPS receiver test results using the E1999A-206 with the E5515C.

Key Features

- 1 channel GPS L1 C/A code
- Adjustable RF levels from -70 dBm to -125 dBm
- Accurate RF output levels and frequency stability
- Good signal quality with high C/N₀
- Easily integrated GPIB commands for parameter setting and control
- Predefined raw data pattern, PN9 or PN15
- Easy access to the manual user interface to set and change parameters

Customer Benefits

- Built-in GPS/A-GPS receiver calibration and verification, such as satellite ID, C/N₀ check and GPS RSSI signal check
- The 8960's built-in GPS source solution allows easy integration of GPS testing to your existing test programs
- Simplified production process by combining phone calibration test and GPS test at one test station
- Save production line space by eliminating additional GPIB cables and GPS signal generators
- Take advantage of idle 8960s when your production line is not fully loaded
- Simple manual user interface and remote user interface for test set operation

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