

# Agilent Signal Studio for TD-SCDMA (TSM) E4438C ESG Vector Signal Generator

## Option 411 Technical Overview

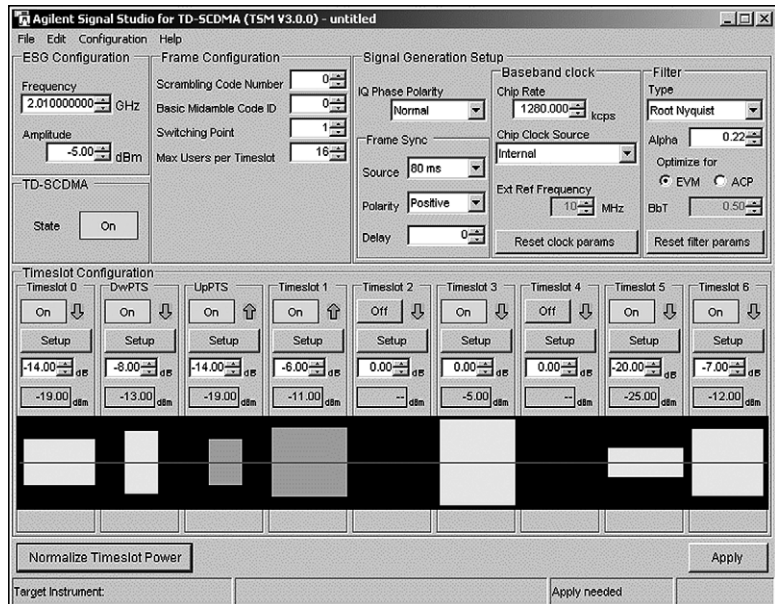
Signal Studio for TD-SCDMA (TSM) is a powerful software tool for creating TD-SCDMA (TSM) I/Q waveforms for use with the Agilent E4438C ESG vector signal generator.

### Main features

- Intuitive user interface
- Quickly create TD-SCDMA (TSM) frames
- Seventeen fully-coded transport channel types for BER/BLER, including BCCH-T, TCH/T-EFS, and TCH/T9.6
- Configure channels in each timeslot
- Select from predefined PN sequences, fixed bit patterns, or user files
- Configure DwPTS and UpPTS
- Selectable baseband filtering
- 10B/T LAN or GPIB connectivity

### Try before you buy!

Go to [www.agilent.com/find/signalstudio](http://www.agilent.com/find/signalstudio) and download Signal Studio for TD-SCDMA (TSM) to your PC to evaluate the signal configuration capabilities of the software. A license key is required to generate the waveform. The license key can be ordered through your sales engineer or the nearest sales office, which can be found at: [www.agilent.com/find/assist](http://www.agilent.com/find/assist).



### Benefits

#### Component test

- Determine performance characteristics of TD-SCDMA (TSM) components
- Modify signal parameters to meet your customized test needs
- Generate statistically correct signals to properly stress components

#### Receiver test

- Fully-coded channels enable BER/BLER testing
- Customize channel configurations in each timeslot to verify demodulation capability and sensitivity of mobile handsets and base transceiver stations

### I/Q waveform generation

Signal Studio for TD-SCDMA (TSM) software is an intuitive Windows®-based utility that simplifies the creation of TD-SCDMA (TSM) I/Q waveforms. It is intended for use with the E4438C ESG vector signal generator equipped with a baseband generator operating in the real-time mode.

Signal Studio requires a PC running Windows 2000 or Windows XP and a LAN or GPIB interface. The configured signal parameters are downloaded to the ESG, which automatically begins generating the modulated RF signal. Waveform configurations can be stored on the PC.



## TD-SCDMA (TSM) Signal Studio software features<sup>1</sup>

### General configuration

Specification version	CWTS TSM 05.02 V3.0.0 (2002-08) CWTS TSM 05.03 V3.0.0 (2002-08) CWTS TSM 05.04 V3.0.0 (2002-08)
Scramble code	0 to 127
Midamble base	0 to 127
Max users	2, 4, 6, 8, 10, 12, 14, or 16
Baseband filtering	Root Nyquist and Nyquist with adjustable filter alpha, Gaussian, or rectangle
Filter optimization	ACP or EVM
IQ phase	Normal or inverted
Number of uplink slots (switch point)	1 to 6
Chip clock	Internal or external
Chip rate	320 kcps to 1.408 Mcps
Graphic displays	Frame timeslot structure

### Pilot signal configuration

DwPTS (downlink pilot timeslot physical channel)	
Downlink SYNC code	0 to 31
Power	0 to -40 dB
Phase pattern	S1, S2, or none
UpPTS (uplink pilot timeslot physical channel)	
Uplink SYNCH code	0 to 255
UpPTS power	0 to -40 dB
Time offset	-5 to 5 chips

### Resource unit (RU) configuration (uplink and downlink)

Physical channel type	DPCH
Number of channels	Up to 16 channels per timeslot
Slot number	0 to 6
Spread factor	1, 2, 4, 8, or 16
Channelization code	0 to 15
User number	1 to 16
Data type	Fixed 4-bit pattern, PN9, PN15
Time offset	-5 to 5 chips
Power level	0 to -60 dB

### Transport layer coding (uplink and downlink)

Number of fully-coded transport channels	8 channels that can be independently allocated to any timeslot
Spread factor	8 or 16
Channelization code	0 to 15
Transport channel types	Uncoded, TCH-T/EFS, TCH-T/F9.6M, TCH-T/F9.6, TCH-T/HS, TCH-T/F14.4M, TCH-T/F14.4, FACCH-T/F, FACCH-T/H, BCCH-T, PCH-T, AGCH-T, NCH-T, CBCH-T, RACH-T, FACH-T, HOACH-T, FNICH-T
Data source for transport channel <sup>2</sup>	Fixed 4-bit pattern, PN9, PN15, user file
Error insertion	BLER, BER, or none for either data field
User number	1 to 16
Time offset	-5 to 5 chips (uplink)
Power level	0 to -60 dB

1. Features subject to change.

2. Applies to data field #1, data field #2, power control field, synchronization shift field, and stealing flag field.

## Recommended configuration

E4438C ESG with the following options:  
E4438C-602\* 64 MSA baseband generator  
E4438C-411\* Signal Studio for TD-SCDMA (TSM)  
E4438C-503 3-GHz frequency range  
E4438C-1E5 High stability timebase

\* Required options. The baseband generator may be either Option E4438C-001, -002, -601, or -602.

## Upgrade kits

If you currently own an E4438C ESG vector signal generator equipped with a baseband generator, and want an upgrade kit (license key), order E4438CK-411.



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