Keysight Technologies

N9079A & W9079A TD-SCDMA

X-Series Measurement Application

Demo Guide

KEYSIGHT TECHNOLOGIES

Introduction

This demonstration guide follows the list from Table 1 (page 2), which shows the transmitter tests defined by the 3GPP in the document of TS34.142 and TS34.122 for base station and mobile (user equipment) transmitters, respectively. Each demonstration is given a brief description of its function and the corresponding measurement steps on the signal generator and/or signal analyzer.

TD-SCDMA Test Standards and Measurement Applications

Table 1. TD-SCDMA transmitter test of base station and mobile station

3GPP TS25.142/ TS34.122 paragraph no.	Transmitter test	TD-SCDMA measurement application function
6.2/5.2	Maximum output power	Transmit power
6.3/5.3	Frequency stability	OBW or modulation accuracy (Tx frequency error)
6.4/5.4.2	Output power dynamics	Transmit power
6.5.1/5.4.3	Transmit OFF power	Power vs time
6.5.2/5.4.5	Transmit ON/OFF time mask	Power vs time
6.6.1/5.5.1	Occupied bandwidth	Occupied BW
6.6.2.1/5.5.2.1	Spectrum emission mask	Spectrum emission mask
6.6.2.2/5.5.2.2	Adjacent channel leakage power ratio (ACLR)	Adjacent channel power
6.6.3/5.5.3	Spurious emissions	Spurious emissions
6.7/5.6	Transmit intermodulation	Spectrum analyzer mode
6.8.2/5.7.1	EVM (Error vector magnitude)	Modulation accuracy
6.8.3/5.7.2	Peak code domain error	Code domain

Demonstration Preparation

All demonstrations use an X-Series signal analyzer and the N5182A MXG vector signal generator. Keystrokes surrounded by [ ] indicate front-panel keys; keystrokes surrounded by { } indicate softkeys located on the display.

Helpful tip:

Update your instrument firmware and software to the latest version, at

www.keysight.com/find/xseries_software
www.keysight.com/find/signalstudio

Minimum equipment configuration requirements

Product type/ instrument	Model No.	Required options
MXG (or ESG) vector signal generator	N5182A (or E4438C) firmware revision of MXG A.01.10 or later	– 503 or 506 – frequency range at 3 GHz or 6 GHz – 652 or 654 – internal baseband generator – UNV - enhanced dynamic range (required for better ACP performance)
Signal Studio software for TD-SCDMA	N7612B- V1.2.0.0 or later	– 3FP – N5182A connectivity – EFP – basic TD-SCDMA option – QFP – advanced TD-SCDMA option
X-Series signal analyzer	N9000A, N9010A, N9020A, or N9030A firmware revision A.06.xx or later	– 503, 508, 507 (EXA and CXA), 513 or 526 – 513 and 526 not available on CXA. – P0x (P03, P08, (P07 for CXA), P13 or P26) – preamplifier (one required for PvT measurement of BTS Tx Off power of –82 dBm at 1.28 M bandwidth) – 1FP - TD-SCDMA measurement application – 2FP - HSPA/8PSK measurement application
TD-SCDMA measurement application	N9079A	
Controller PC for Signal Studio		– Install N7612B to generate and download the signal waveform into the Keysight MXG via GPIB or LAN (TCP/IP) —please refer to the online documentation for installation and setup

Demonstration Setup:

Connect the PC, X-Series and MXG

Connect a PC (loaded with N7612B Keysight Signal Studio for 3GPP TD-SCDMA software and Keysight I/O libraries) to the N5182A MXG via GPIB or LAN. Follow the Signal Studio instructions to complete the connection, then perform the following steps to interconnect the X-Series signal analyzer and MXG (see Figure 1 for a graphical overview):

A. Connect the MXG RF output port to the X-Series signal analyzer RF input port

B. Connect the MXG 10 MHz out to the X-Series signal analyzer Ext Ref in port (rear panel)

C. Connect the MXG Event 1 port to the X-Series signal analyzer Trigger 1 In (rear panel)

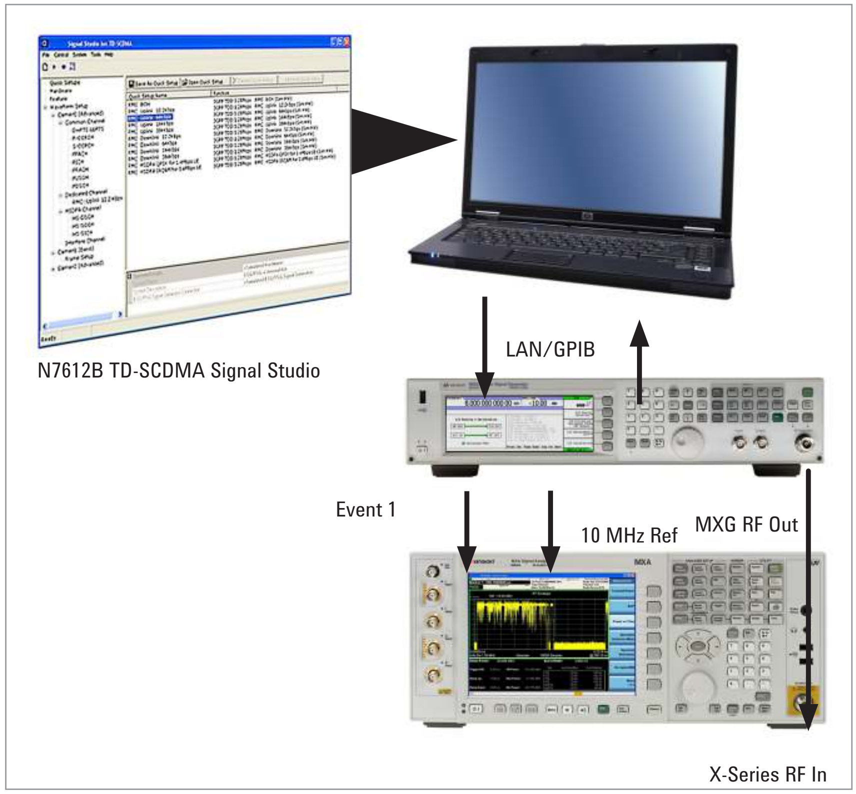

Figure 1. Demonstration setup

Demonstrations

Demonstration 1:

Set up TD-SCDMA Signal Studio on the MXG

The Keysight N7612B Signal Studio for 3GPP TD-SCDMA is a Windows-based utility that simplifies the creation of standards-based or customized TD-SCDMA signals and then the parameters are downloaded into the MXG vector signal generator, which creates the desired waveform.

Instructions	Keystrokes
On the MXG	
Preset the MXG. **Check the IP address.**	**[Preset]** **[Utility] {I/O Config} {GPIB/LAN Setup} e.g. {GPIB Address 20}**
On the Signal Studio software	
Run the Signal Studio for 3GPP TD-SCDMA.	Double-click on the TD-SCDMA shortcut on the desktop or access the program via the Windows start menu.
Verify the software is communicating with the instrument via the GPIB or LAN (TCP/IP) link.	To establish a new connection, click on the {System} pull-down menu at the top of the Signal Studio program window. Next, select {Run System Configuration Wizard}.
Set the basic parameters of the signal at center frequency 2 GHz, amplitude –20 dBm, and RF output turned ON.	Click Signal Generator at the hardware on the explorer menu on the left. Press [Preset] green button on the top. Frequency = 2.0 GHz, amplitude = –20 dBm, RF Output = On, ALC = On
Set a test signal in waveform setup. According to TS25.142, there are three types of test signals defined for the BTS transmitter tests -- we will use one in this demonstration. Single–carrier signals: – TS0: Primary common control physical channels 1 and 2 (P-CCPCH) Active – TS4, TS5 and TS6: 8 code channels active per timeslot – Downlink pilot timeslot: DwPTS.	Click Carrier0 (Basic) under Waveform Setup on the explorer menu on the left. The active timeslots should be selected under the Resource Units setup on the left-side of the window. The signal setting should be reviewed on the signal studio -> Carrier0 (Basic).
Download the signal to the MXG.	Click ⤓ Generate and Download button on the top tool bar. If you encounter any errors, please refer to the online help of Signal Studio software.
Save the signal file for future use.	File > Save Setting File > TDSCDMA_Demo1.scp (file name is your choice.)
Export the waveform file for future use.	File > Export Waveform Data > TDSCDMA.wfm (file name is your choice).

Demonstration 2:

Transmit power

The transmit power measurement is a highly accurate measure of the average power in a specified RF burst. It measures in-channel burst power. It ensures the transmitted RF carrier power of either mobile station or base station transceivers transmit the proper power level for the correct receiver operation, directly affecting call quality. In the TD-SCDMA measurement, the burst power can be determined by a single timeslot, above a specified threshold value or during detected burst width.

(Standard sub-clauses required in TS25.142 chap 6.2 for Node B., TS34.122 chap 5.2; 5.4.2; 5.4.1.3; 5.4.1.4 for UE.)

In the TD-SCDMA measurement application, the following power measurement parameters can be controlled:

– Measurement method: Single Time Slot, Measured Burst Width and Above Threshold Level
– Number of trace averages (default to 50)
– Trigger source: Free run, video, external-½, and RF burst (default is External 1 for BTS; RF burst for MS)
– Display results as minimum, maximum, and measured output power
– Results in RMS or log averaging

Instructions	Keystrokes
On the X-Series in TD-SCDMA mode:	
Select TD-SCDMA mode. If N9079A-2FP is installed, it must be **TD-SCDMA with HSPA/8PSK**.	[Mode Preset] [Mode] {TD-SCDMA with HSPA/8PSK}
Set the center frequency at 2.0 GHz.	[Center Freq] [2] {GHz}
Choose transmitter radio device for base station.	[Mode Setup] {Radio} {Device BTS MS}
Run a transmit power measurement.	[Meas] [Transmit Power]
Set the reference level offset for DUT lost compensation (Figure 2)	[Input/Output] {External Gain} Select {MS} or {BTS} for the DUT you are testing – Enter the number of compensation loss of the DUT In this demonstration, we enter –6 dB of external gain to compensate for the cable and power splitter.

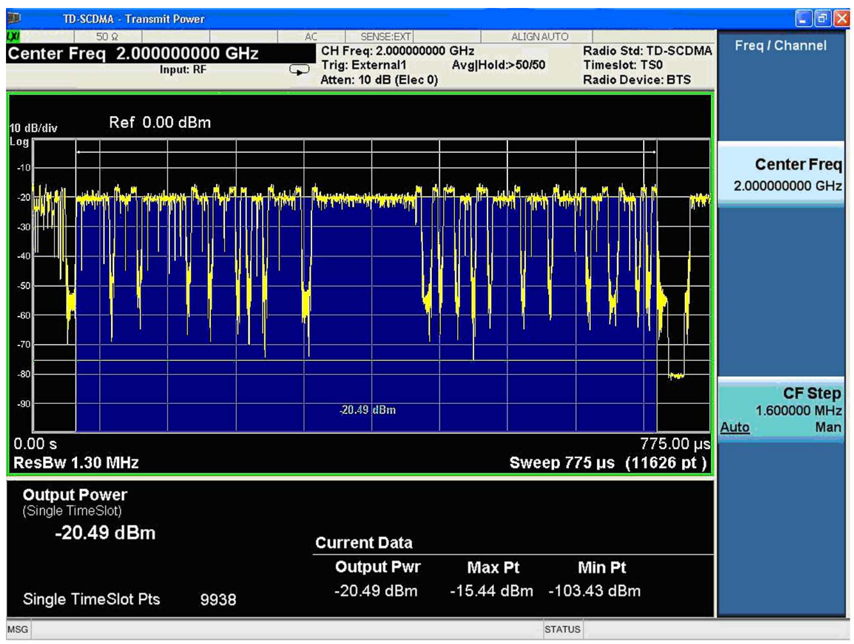

Figure 2. Single traffic timeslot (TS0 in this demonstration) transmit power measurement

Demonstration 3:

Power versus time (PvT)

Time Division Duplex (TDD) is used in TD-SCDMA to separate the uplink and downlink. The timing is critical in the TD-SCDMA time-slot-based transmission format. A burst signal in a given time slot must fit within a tight mask so as not to interfere with adjacent time slots. The TD-SCDMA standard has a stringent dynamic range requirement of 112 dB for base stations, which requires measurement of Tx Off power levels of –82 dBm for the Transmit ON/OFF Time Mask, for the maximum power (Tx ON). The Keysight X-Series signal analyzers support input signal level up to +30 dBm (1 W). To perform this large dynamic range measurement within a 1.6 MHz bandwidth, a special measurement algorithm must be employed, replacing traditional swept measurements in a general purpose spectrum analyzer.

Keysight makes a significant and excellent solution of the PvT measurement using two sweeps with different attenuator and preamp setups. The first sweep minimizes the instrument internal noise floor, with the internal preamp enabled and attenuation minimized to measure the noise floor. The second sweep is with the instrument internal settings of preamp and attenuation to ensure accurate measurement of the burst's Tx On power level as calculated by the auto RF range algorithm. Then the measurement result is combined in create one trace to display the power versus time. In this method, the measurement exhibits the true power variations throughout the burst or time slots. It also provides a pass/fail function to quickly indicate if the signal is entirely within the mask and conformant to the standard.

Instructions	Keystrokes
On the X-Series in TD-SCDMA mode:	
Active power versus time measurement.	[Meas] {Power vs Time}
Select TS4 as the first time slot for a view of the whole burst signal.	[Mode Setup] {Analysis TimeSlot} > {More 1 of 2} > {TS4}
Make a 9 time slots PvT measurement (Figure 3).	[Meas Setup] {Meas Interval} {9} {Enter} [Restart]
Zoom in for ramp-up or ramp down details (Figure 4).	[SPAN X Scale] {Scale/Div} Enter 10 us of Scale/div, Adjust {Ref Value} to put the trace to a best display position.
Turn On the Trigger Line and Burst Line for trigger delay adjustment.	[View/Display] {Trigger Line On} {Burst Line On} or refer to the "Trigger Diff" value in the metrics window.

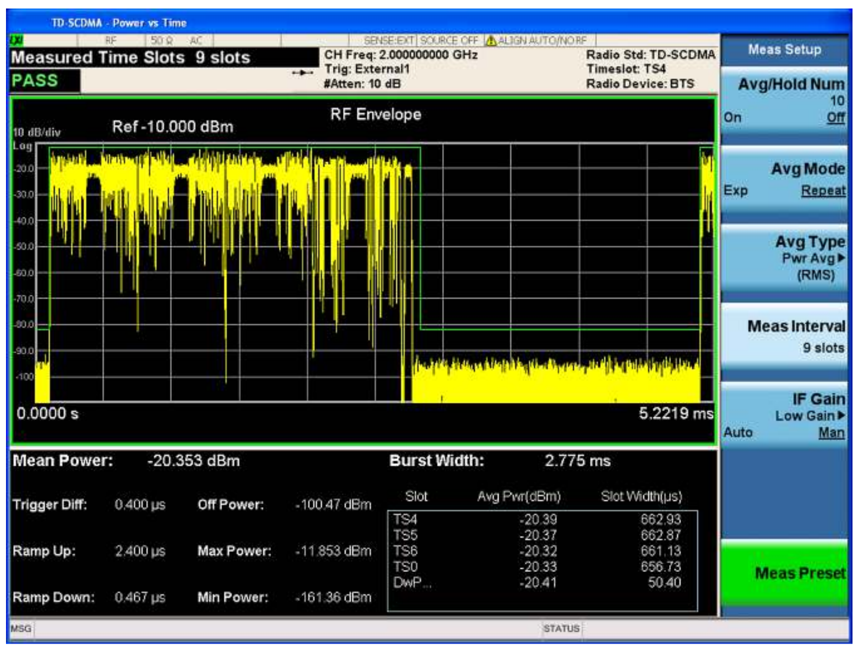

Figure 3. The PvT measurement of 9 time slots or one 5 ms sub-frame

(Standard sub-clause required in TS25.142 chap 6.5 for Node B. or TS34.122 chap 5.4.3; 5.4.4 for UE.)

- Tx OFF Power
- Tx ON/OFF Time Mask

- Use a standard-compliant, consecutive timeslot power vs. time mask
- Measure Tx ON/OFF power
- Trigger from RF burst trigger for UE signal
- Trigger delay and ramp-up/down time
- User-adjustable mask delay
- Change X-scale to zoom in for ramp-up/down details

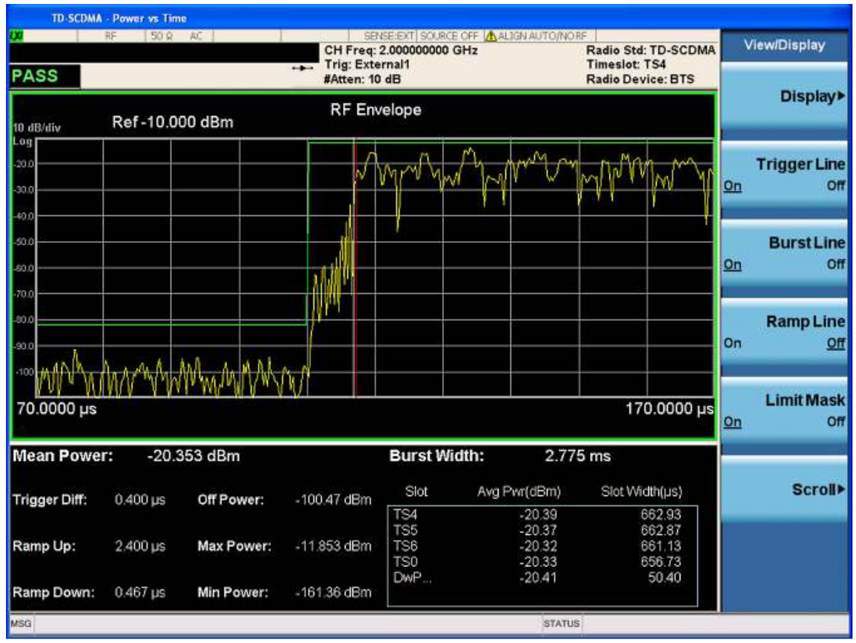

Figure 4. A view of PvT ramp up with burst line and trigger line on

Demonstration 4:

Adjacent channel power (ACP)

The ACP test verifies the ability of BTS or UE to limit the interference produced by the transmitted signal to other UTRA receivers operating at the first or second adjacent RF channel. The ACP, defined by the 3PGG TD-SCDMA TDD specifications as the adjacent channel leakage power ratio (ACLR), is a measure of the power in adjacent channels relative to the transmitted power. The standard requires the power of both the transmitted and adjacent channels be measured through a root raised cosine (RRC) filter with a roll-off factor of 0.22 (α=0.22) and measurement bandwidth equate to the chip rate.

(Standard sub clauses required in TS25.142 chap 6.6.2.2 for Node B. and TS34.122 chap 5.5.2.2 for UE.)

- For BTS, ACLR of >40 dB in the adjacent channel, >45 dB in the alternate channel
- For UE, ACLR of >33 dB in the adjacent channel, >43 dB in the alternate channel

– Default standard-compliant limit lines with Pass/Fail indication

– Adjust integration bandwidth for the offsets (default to 1.28 MHz)

– Limit line customization of selection up to six channel offsets (relative and absolute)

– View bar graph over spectrum trace

– Use default averaging detector (RMS) and integration bandwidth for speed and accuracy

– Noise correction On/Off (default to Off)

– Choose Gate View to see the ACP of the measured time slot

Instructions	Keystrokes
On the X-Series in TD-SCDMA mode:	
Active adjacent channel power measurement.	[Meas] {ACP}
Adjust the limit for one offset pair. Notice as the green PASS indicator in the upper left corner changes to red FAIL when the signal does not meet limit requirements.	[Meas Setup] {Offset/Limit} > {More 1 of 2} {Rel Lim (Car)} > [90] {-dB}
Compare the measurement result with Noise Correction turned On. A better ACP result is achieved with noise correction (Figure 5).	[Meas Setup] {More 1 of 3} {More 2 of 3} {Noise Correction On Off}
Show Gate View. Notice the ACP is a gated ACP measurement of the active time slot (Figure 6 is showing the ACP of TS0).	[Sweep/Control] {Gate} > {Gate View On}

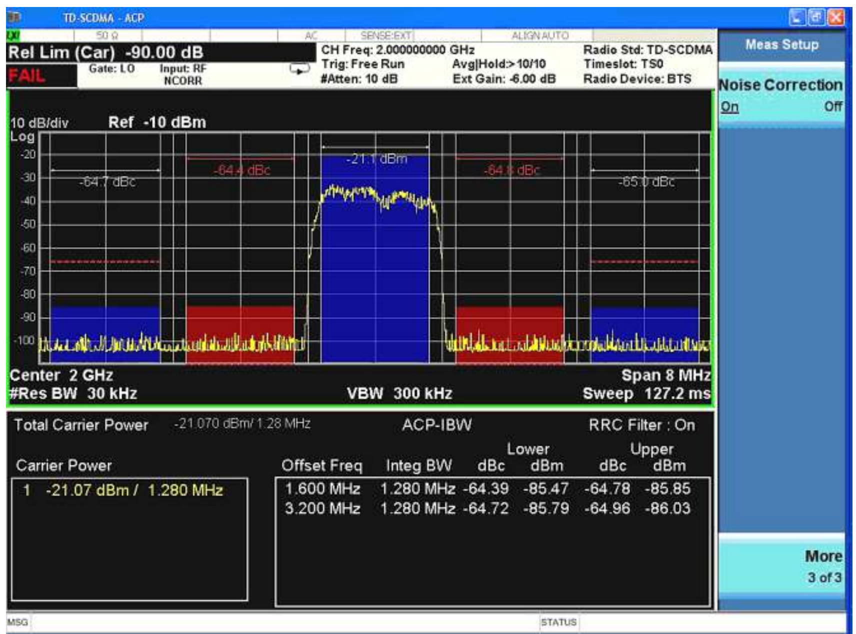

Figure 5. ACP with fail indicator on limit test and noise correction

Multi-carrier power is similar to adjacent channel power, but measures the power in two or more transmit channels and the power that leaks into their adjacent channels. It is used to monitor power amplifiers that transmit two or more carriers simultaneously.

(Standard sub clause required in TS25.142 chap 6.6.2.2 for Node B.)

– Default standard-compliant limit lines with Pass/Fail indication
– Supports up to 12 carriers
– Limit line customization of selection up to six channel offsets (relative and absolute)

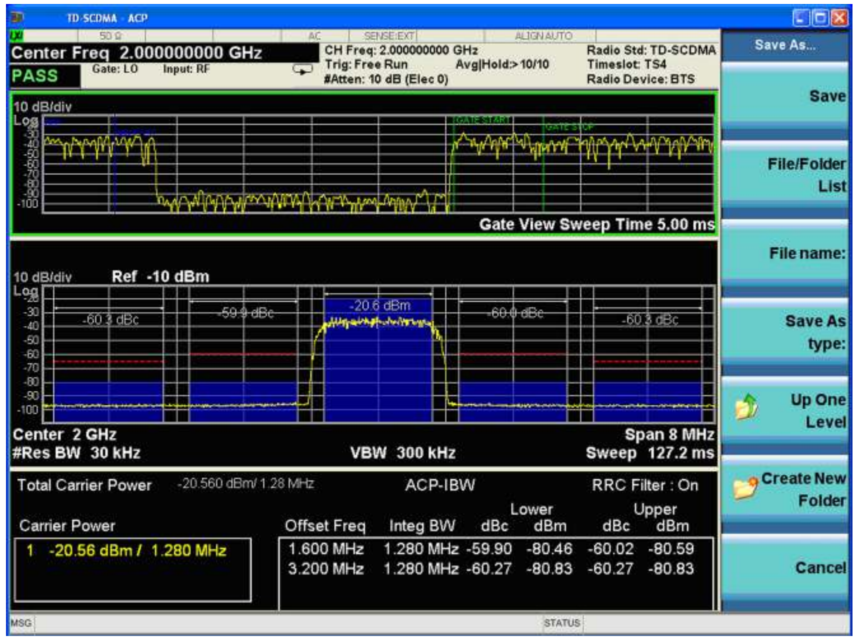

Figure 6. ACP and Gate View of TS4 on one display

Instructions	Keystrokes
On the X-Series in TD-SCDMA mode:	
Active multi-channel power measurement. Enter the number of carriers to be measured. (Figure 7).	[Meas] {ACP} [Meas Setup] {Carrier Setup} > {Carrier} > 6 {Enter};
Configure carriers to change or specify any parameter for each carrier.	{Carrier Setup} {Configure Carriers} > {Carrier 1, or 2, or more } etc.

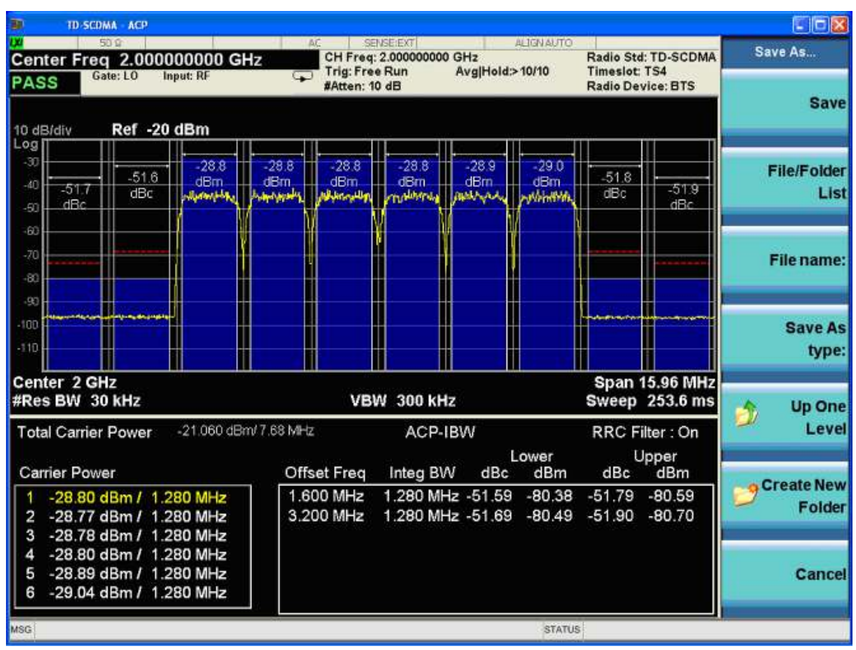

Figure 7. Power measurement of six carriers

Demonstration 5:

Spurious emissions

The spurious emissions measurement identifies and determines the power level of spurious emissions in 3GPP TD-SCDMA defined frequency bands. This measurement can verify the ability of the BTS or UE to limit the interference caused by unwanted transmitter effects to other systems operating at frequencies away from the carrier frequency. In the X-Series, the range of frequencies to search for spurs is user-adjustable, and up to 200 spurs can be reported in a result table.

(Standard sub clause required in TS25.142 chap 6.6.3 for Node B. or TS34.122 chap 5.5.3 for UE.)

- Supports the requirement of the BS mandatory limits
- Performs measurements conformant to MS General and Additional Spurious Emissions Requirements

Instructions	Keystrokes
On the X-Series in TD-SCDMA mode:	
Active spurious emissions.	[Meas] {Spurious emissions}
Edit the range table as needed different from the default parameter values.	[Meas Setup] {Range Table}
Choose Category A or Category B and set the center frequency of emission of the last carrier transmitted by the base station or mobile.	[Meas Setup] {More 1 of 2} > {Range Preset} > {Category A } or {Category B} {Freq Setup} > {First Carrier } or {Last Carrier} For Category B: {TDD lower} and {TDD Upper}

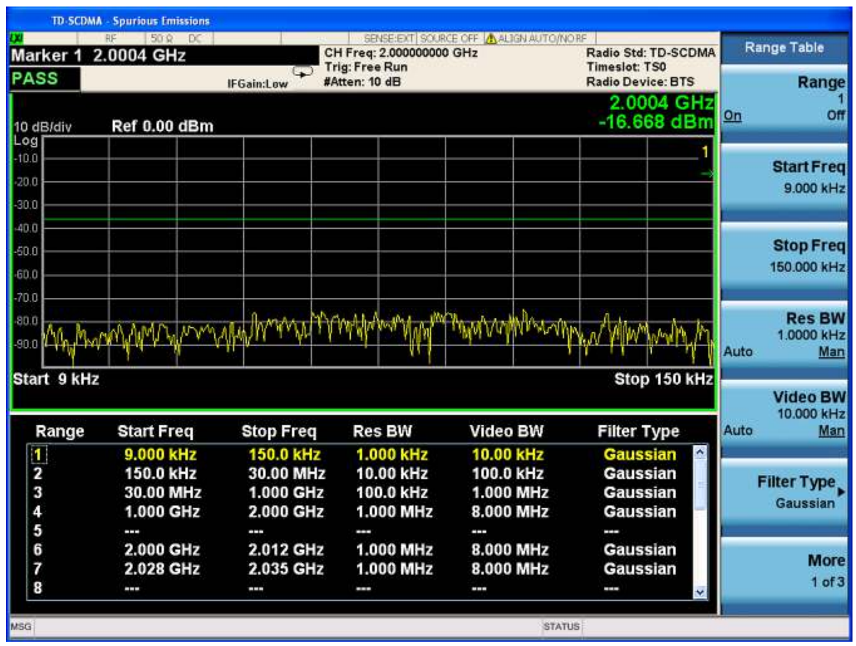

Figure 8. Spurious emissions measurement

Demonstration 6:

Spectrum emission mask

The spectrum emission mask (SEM) measurement measures spurious emissions in specified frequency ranges and displays the power of the spurious emissions in those bands. It is required by 3GPP specifications and encompasses different power limits and measurement bandwidths (resolution bandwidth) at various frequency offsets. Figure 9 is a diagram of the specification requirements for power density versus frequency offset from carrier.

(Standard sub clause required in TS25.142 chap 6.6.2.1 for Node B. or TS34.122 chap 5.5.2.1 for UE.)

With the spectrum emission mask measurement:

- Quickly verify standard requirement of the Node B by choosing "Standard" under Limit State
- Easy-to-view spectrum and tabular results are shown simultaneously on a single screen
- Adjustable offset frequency, reference bandwidth, and limit values (relative and absolute)

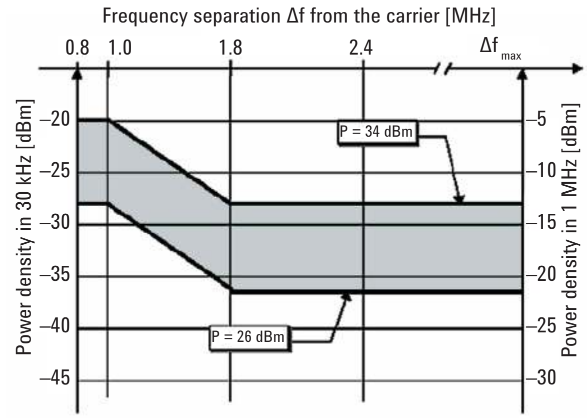

Figure 9. TD-SCDMA specifications for BTS (from TS25.142 v5.10.0)

Instructions	Keystrokes
On the X-Series in TD-SCDMA mode:	
Activate spectrum emission mask.	[Meas] {Spectrum Emission Mask}
Choose "Standard" to make a quick verification for BTS (Node B) SEM test.	[Meas Setup] {Limit State Standard}
Choose the type of values to display. Observe the measurement values change in the lower window to reflect the selected type.	[View/Display] {Abs Pwr Freq} or {Rel Pwr Freq} or {Integrated Power }
View customizable offsets and limits. Measurement parameters as well as limit values may be customized for any of the six offset pairs, A through F, or for any individual offset (Figure 10).	[Meas Setup] {Limit State Manual} {Offset/Limit } > {More 1 of 2} > {Limits}

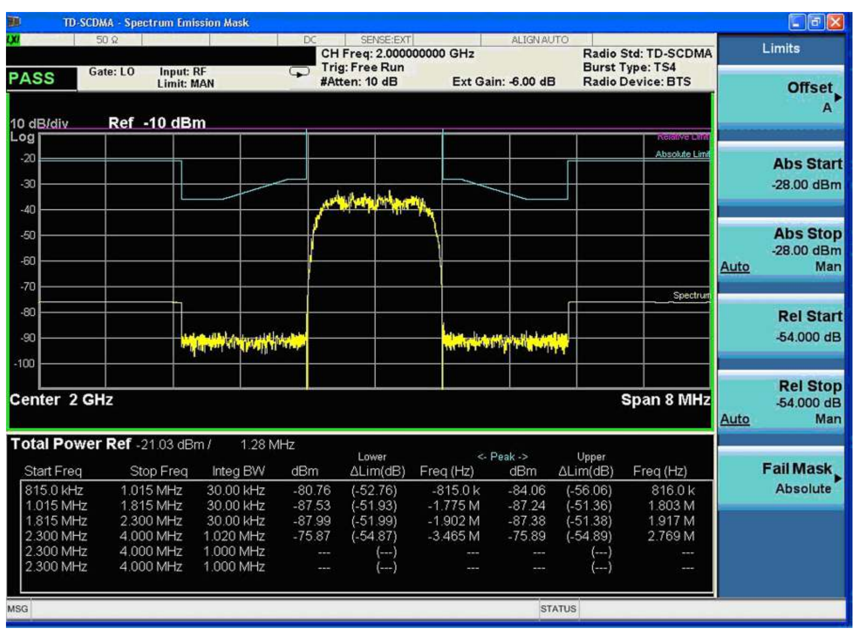

Figure 10. Spurious emissions mask measurement

Demonstration 7:

Occupied bandwidth

The 3GPP TD-SCDMA specifications require the occupied bandwidth (OBW) of a 1.28 Mcps signal to be less than 1.6 MHz, where occupied bandwidth is defined as the bandwidth containing 99% of the total channel power.

(Standard sub clause required in TS25.142 chap 6.6.1 for Node B. or TS34.122 chap 5.5.1 for UE.)

– Provides Pass/Fail indicators and give a large, clear readout of the OBW
– Changeable occupied bandwidth % power

Helpful tip: Measure 99% occupied bandwidth and the x dB bandwidth

In this measurement, the total power of the displayed span is measured. Then the power is measured inward from the right and left extremes until 0.5% of the power accounted for (total 99% occupied bandwidth to be found) in each of the upper and lower parts of the span. In accordance with the 3GPP TD-SCDMA specification, the X-Series defaults to a 1.6 MHz Pass/Fail limit value.

Instructions	Keystrokes
On the X-Series in TD-SCDMA mode:	
Measure the occupied bandwidth (Figure 11).	[Meas] {Occupied BW}
Adjust parameters .	[Meas Setup]

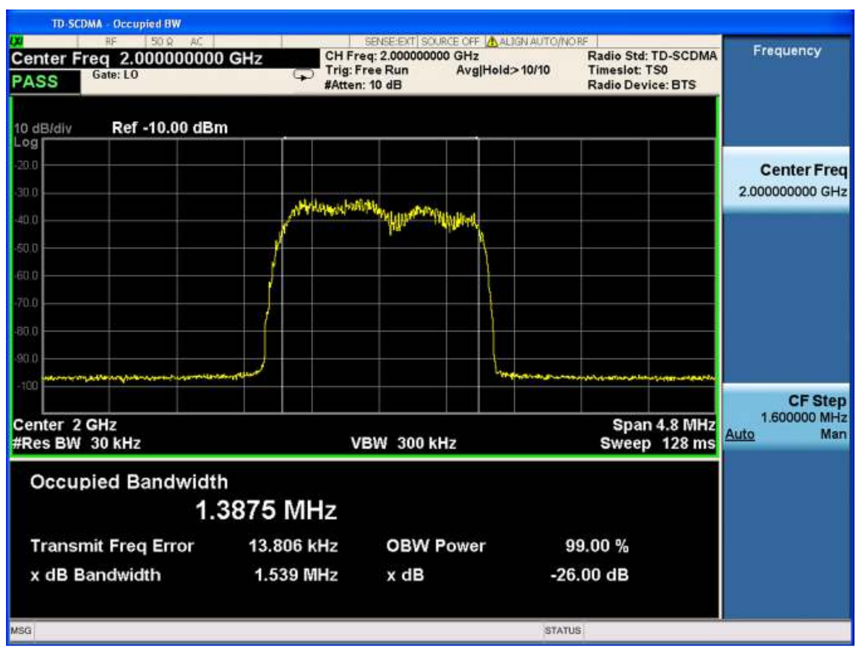

Figure 11. Occupied bandwidth measurement

Demonstration 8:

Power statistics CCDF

The complementary cumulative distortion function (CCDF) is a plot of peak-to-average power ratio (PAR) versus probability and fully characterizes the power statistics of a digitally modulated signal. The plot can be useful in determining design parameters for a digital communications system. It is a very important measurement for power amplifier design in TD-SCDMA and HSDPA base stations, and is particularly challenging because the amplifier must be capable of handling the high PAR which the signal exhibits while maintaining good adjacent channel leakage performance. Because the TD-SCDMA signal is not continuous, the CCDF measurement must specify the time slot(s) to be analyzed.

- Select measurement interval for one or more time slots to be measured
- Easily compare to Gaussian noise as a reference trace
- Available trigger sources: video, external-1/2, and RF burst

Instructions	Keystrokes
On the X-Series in TD-SCDMA mode:	
Measure the CCDF.	[Meas] {More 1 of 2} > {Power Stat CCDF}
Turn on the time slots view.	[View/Display] {Slot View On}
Adjust the measurement interval to three active time slots (Figure 12).	[Meas Setup] {Meas Interval} > 3 {Enter}

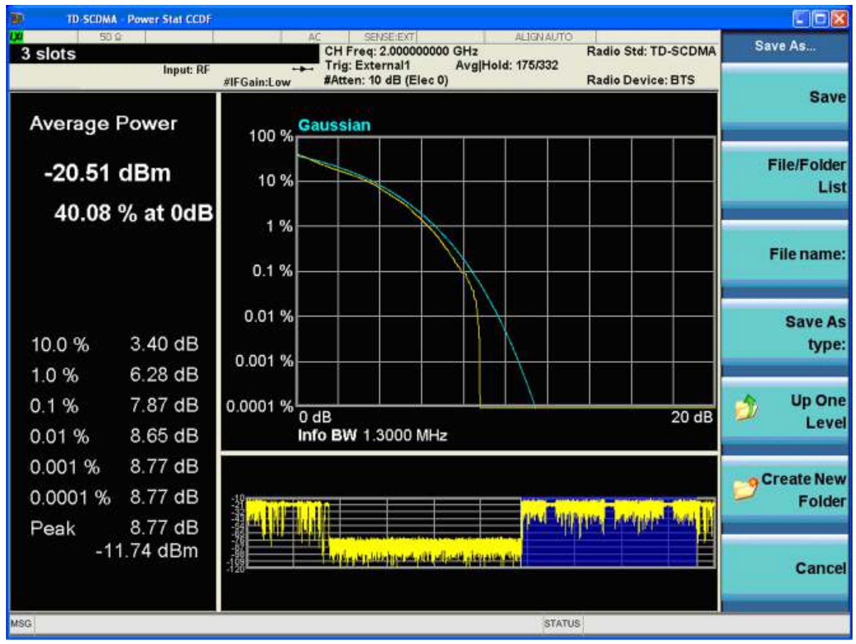

Figure 12. CCDF of three active time slots

Demonstration 9:

Modulation accuracy/ composite EVM measurement

Error vector magnitude (EVM) is defined in 3GPP conformance tests for both Node B and UE. EVM is a common modulation quality metric widely used in digital communications. Measurement of modulation accuracy and quality are necessary to meet standard-defined tests, ensure proper operations between base station and user equipment, and maximize system capacity. The TD-SCDMA modulation accuracy measurement provides excellent methods for measuring the composite errors in a TD-SCDMA transmitter. In this case, composite signal means all of the code channels and the results are comprised of Rho, EVM, Peak CDE, and more.

(Standard sub clause required in TS25.142 chap 6.8.1 for Node B. or TS34.122 chap 5.7.1 for UE.)

Key features:

- Composite EVM, peak CDE, and phase/magnitude/frequency error measurement and more
- Various views of I/Q polar graph, I/Q error, and code domain power
- Capture time summary table and peak/average metric for easier result analysis
- Fail indicator reflects any limit failed of the composite RMS EVM, composite Peak EVM, Composite Rho, peak CDE, or composite frequency error of the selected device (BTS or MS)
- Supports 16QAM and 8PSK by using N9079A-2FP

Instructions	Keystrokes
On the X-Series in TD-SCDMA mode:	
Go to the modulation accuracy measurement.	[Meas] {More 1 of 2 } > {Mod Accuracy (Composite EVM)}
Observe the I/Q measured polar vector display and quantitative data.	[View/Display] {IQ Measured Polar Graph} (default)
Analyze the desired timeslot (Figure 13).	[Mode Setup] {Analysis TimeSlot} > {More 1 of 2} > {TS4} (or other desired timeslot)
Switch to the IQ error view.	[View/Display] {I/Q Error (Quad View)}
View code domain power to check the channel power and CDE.	[View/Display] {Code Domain Power} > See more views by selecting different view button.
Review the list by expanding the view with the zoom key in the bottom of the front panel (Figure 14).	Press [button] in the bottom of the front panel to select the metrics window, then press [button] button to expand the window.
View the capture time summary view. (Figure 15).	[View/Display] {Capture Time Summary}
View the numeric results (Figure 16).	[View/Display] {Numeric Results}

Available views and traces in modulation accuracy:

- I/Q measured polar graph: Metrics (left) and I/Q measured polar vector graph (right);the measured polar data traces are the I/Q chip rate data traces in the desired/selected timeslot or subframe
- I/Q Error (Quad View: Three windows of EVM (bottom left), magnitude error (top left) and phase error (top right) during the captured sub-frame length as chip traces
- Code domain power: Power bar graph in upper and metrics in lower windows; each code channels detected as active are listed with code number, absolute power in dBm and CDE in dB (See Figure 14, code domain matrices of TS4 with 10 active channels)
- Capture time summary: The summary table provides measurement results of multiple slots for conformance tests; it highlights the selected timeslot with a blue bar on the trace and data value in blue in summary window
- Numeric results: Shows details of signal quality parameters

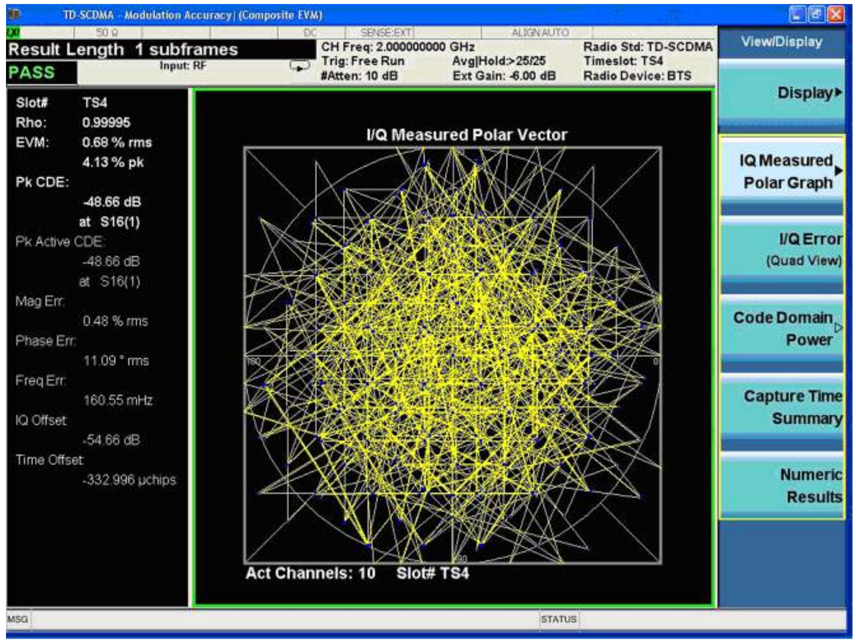

Figure 13. A view of I/Q polar vector of selected TS4 with composite EVM metrics

Figure 14. Code domain metrics of TS4 with 10 active channels

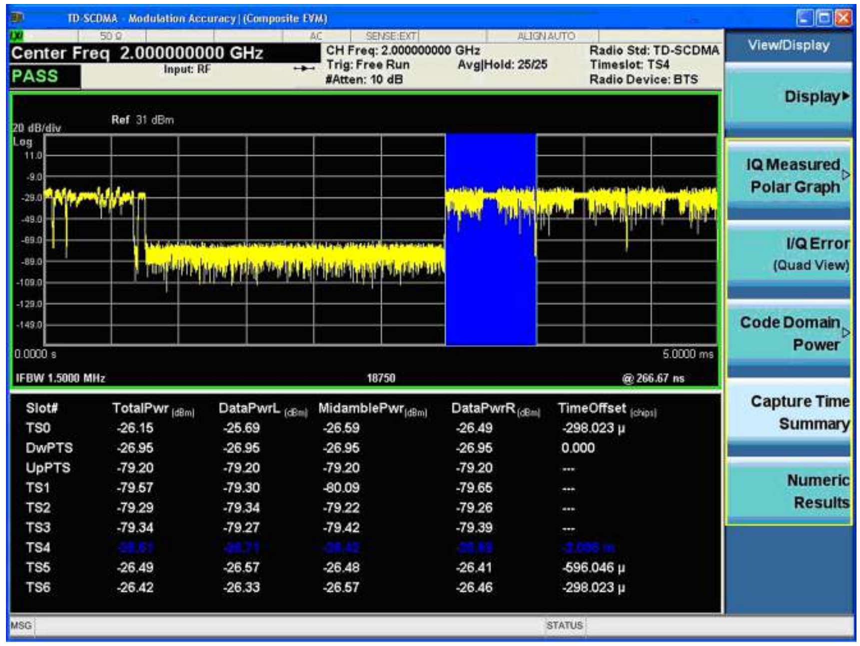

Figure 15. Capture time summary view shows timeslot analyzed and parameters of the entire frame

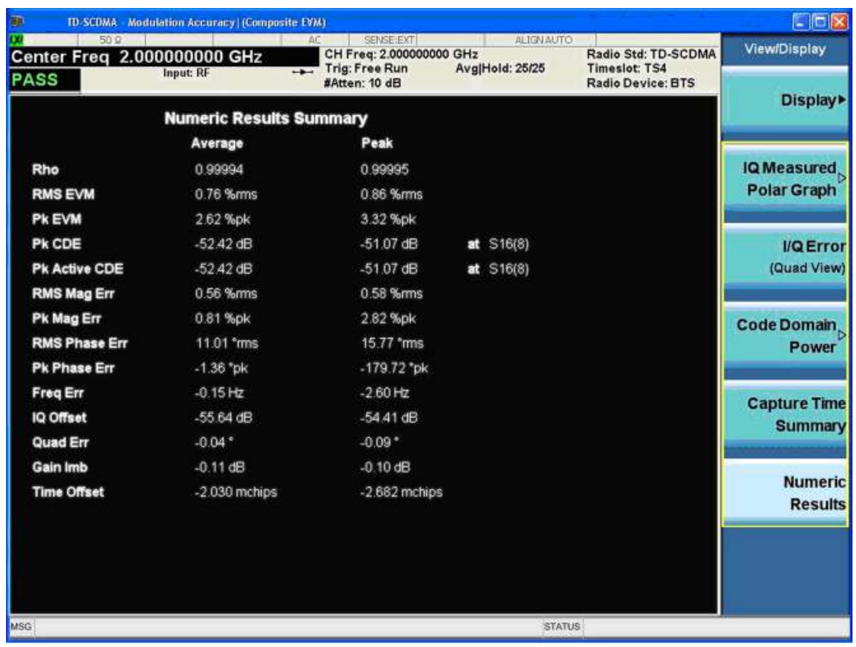

Figure 16. Numeric results view show details of signal quality parameters

Demonstration 10:

Code domain

The code domain measurement provides all of the tools for demodulating and analyzing a TD-SCDMA signal in code domain. According to the user-specified sub-frame, timeslot, code channel, and spread code length, both for uplink and downlink, this measurement helps to verify that each code channel is operating at its proper level and identify problems throughout the transmitter design from coding to the RF section. System imperfections, such as amplifier non-linearity, will present themselves as an undesired distribution of power in the code domain.

Instructions	Keystrokes
On the X-Series in TD-SCDMA mode:	
Activate the code domain measurement.	[Meas] {More 1 of 2} > {Code Domain }
Ensure the desired timeslot is selected.	[Mode Setup] {Demod} > {Analysis Timeslot}
The default view is of the CDP graph and metrics windows (Figure 17).	
Switch to the IQ error view (Figure 18.)	[View/Display] {I/Q Error (Quad View)}
Switch to the result metrics view.	

Figure 17. Code domain power (CDP) view shows active and inactive channels, and power metrics of active channels

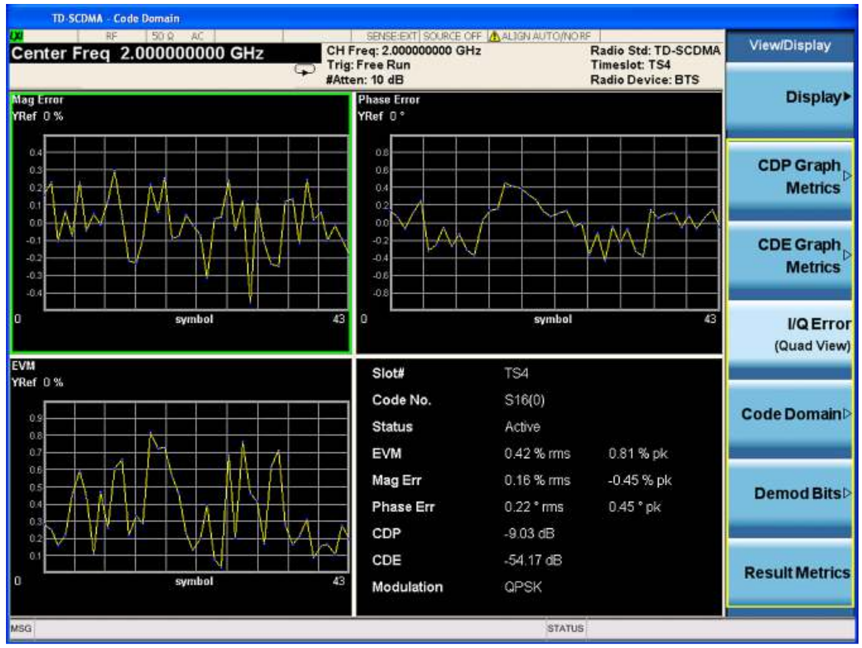

Figure 18. I/Q error view shows channel magnitude error, phase error, and EVM

Now, we will generate an HSDPA signal in the Signal Studio software for TD-SCDMA.

Instructions	Keystrokes
On the Signal Studio software:	
Modify the waveform setup.	Click a green button "+" under the Add/Remove Carriers menu, to add a "Advanced" signal of carrier 0 (just for demo, the basic signal was deleted here).
Adjust the switch point to re-configure the downlink and uplink timeslots.	Explore the menu of waveform setup, change the default setup of "Switching Point" from 3 to 1.
Turn on the HSDPA Channel.	Click "HSDPA channel", change the state of each downlink shared channel to "ON."
Select 16QAM.	Click on HS-DSCH and HS-SCCH channels, choose 16QAM in the modulation column.
Confirm the test signal condition in the detailed channel setup.	Click HS-DSCH and HS-SCCH channels to see each channel parameters.
Download the signal to the Keysight MXG.	Press ⤓ Generate and Download button on the top tool bar.

Demonstration 11:

TD-SCDMA HSDPA measurements

Instructions	Keystrokes
On the MXA/EXA TD-SCDMA mode:	
Turn on HSDPA/8PSK (Need N9079A-2FP installed).	[Mode Setup] {HSDPA/8PSK Enable On}
Active the code domain measurement.	[Meas] {More 1 of 2} > {Code Domain }
Ensure the desired timeslot is selected.	[Mode Setup] {Analysis Timeslot}
Switch the view to observe the selected HSDPA (Figure 19).	[View/Display] {Code Domain}
Change the view to demodulated bits, and switch the bit format form binary to hexadecimal (Figure 20).	[View/Display] {Demod Bits} > Press to move the selected window to the bottom. {Demod Bit Format Binary/Hex}

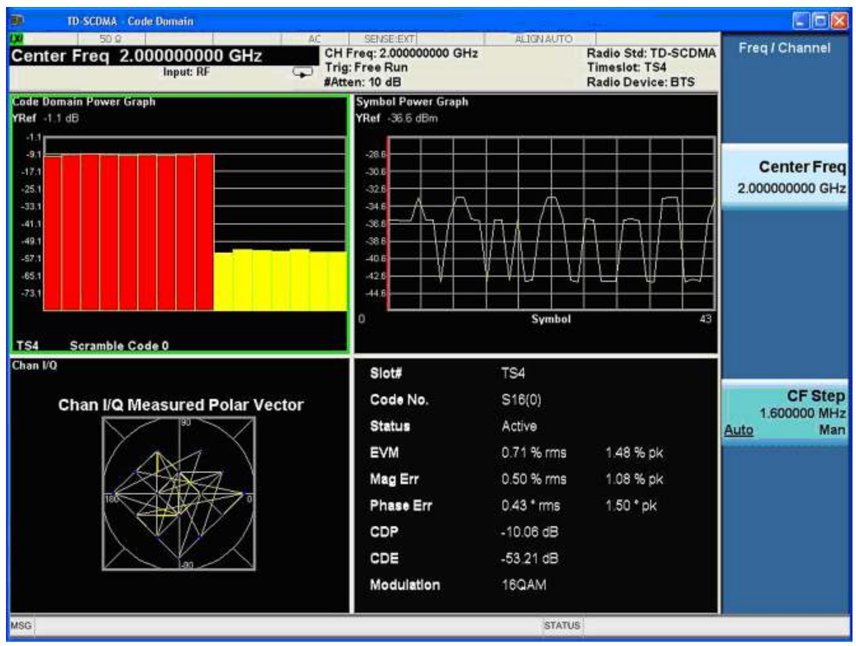

Figure 19. Code domain view showing HSDPA channel with 16QAM modulation

- *Top left: code domain power graph*
- *Top right: symbol power trace in yellow*
- *Bottom left: I/Q symbol constellation of the selected code channel*
- *Bottom right: symbol analysis results of the selected code channel*

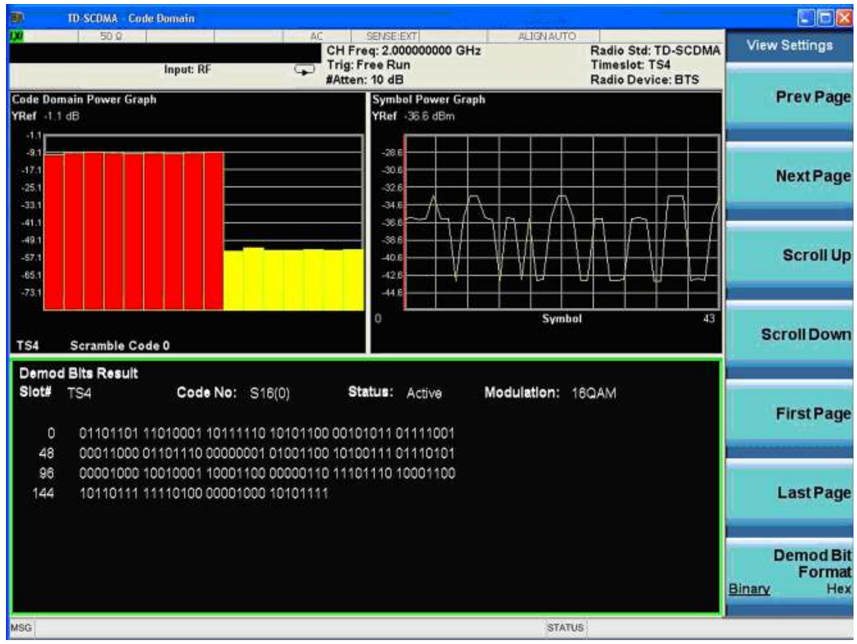

Figure 20. Code domain demodulated bits in binary format; bottom window contains demodulated bits of the selected code channel

Web Resources

Product page:
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X-Series signal analyzers:
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