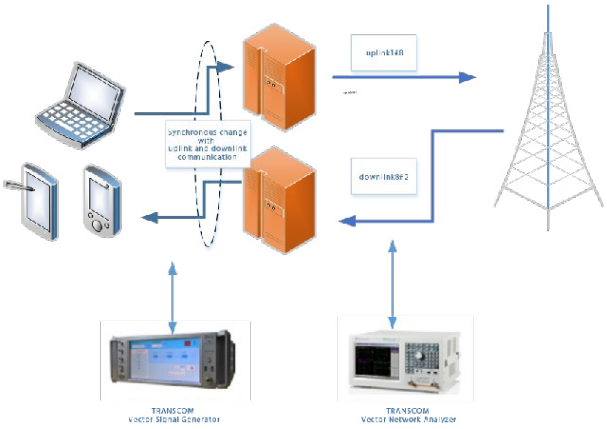
TRANSCOM INSTRUMENTS
Product Brochure

TRANSCOM
INSTRUMENTS

MIMO Channel Simulator



Overview

MIMO (Multiple Input Multiple Output) has become the key technology of next generation of communication due to the capacity advantage. The space characteristics can be fully utilized in MIMO to increase the system capacity while the transmission power and bandwidth are maintained.

The complex 8 × n and 801.11ac technology may result in a number of problems in the laboratory. As they are sensitive to the phase, engineers must accept large errors of accuracy or spend hours in manual calibration and re-calibration of RF simulation environment. The MIMO channel simulation test system of TRANSCOM can help to realize the automation of calibration and provide the required precision and efficiency. The system or terminal performance test can be done indoors by presenting the fading characteristics of spatial transmission of wireless signals in the instrument.

Main advantages:

• Simplify the test

The complicated procedures which may easily result in errors in the accurate test of complex RF signals can be simplified and optimized.

• Create a real world in the laboratory

TRANSCOM can bring the real RF scene into the laboratory, including the captured driving test scene and complex MIMO scene.

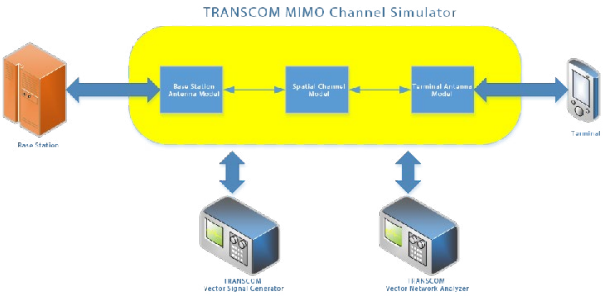
• Maximize the efficiency of resources

Even the most inexperienced member can rapidly and correctly establish and call the most complex test case.

Main characteristics：

• The control process can be simplified even in the complex MIMO environment, due to the touch screen type graphical user interface.

• Automatic phase calibration of higher time efficiency can be realized in the 8 × n/TD-LTE/802.11ac test.



• Support key channel simulation characteristics of TRANSCOM.

• Dynamic environment emulation (DEE).

• Extensible bandwidth (up to 70MHz).

• Enhanced power output and dynamic range.

Features

• Provide four MIMO wireless channel simulator prototypes.

a) Support the signal bandwidth of 70MHz and simulation of 4x4 MIMO channels.

b) The modular architecture can be extended to simulation of 4x4 channels.

c) Flexible simulation interfaces, including RF and DBB (digital baseband).

d) Complex multi-path (48 paths) fading in each channel.

e) RF channel system covering the frequency range of 400MHz to 6GHz.

f) The low-distortion channel supports high-order modulation (such as 64QAM).

g) Implementation technology for high-speed baseband signal processing.

h) Self-correction of MIMO channel simulation system.

i) Support multi-functional interfaces, including RF, analog baseband and digital baseband.

j) Flexible application architecture, supporting two-way synchronous test.

• MIMO channel simulation algorithm and implementation technology

a) Simulation of large and small channel parameter.

b) Support the typical/customized channel fading model.

c) Support the MIMO-based channel model.

d) Support the high-speed mobile environment.

e) Support AWGN digital noise adding to provide the accurate C/N or SNR.

f) Support the carrier aggregation and CoMP test.

g) Support rapid dynamic control of channel parameters and realize dynamic environment emulation (DEE). The controlled parameters include the status duration, channel output level, relative path power, etc.

• Provide the open development interface for the user to program the test function according to the equipment and test requirements. Parameter configuration and channel characteristic simulation are integrated in the test environment.

• Support the data acquisition, playback and offline analysis of channel simulation. Apply the complete information analysis function, and realize information output to the terminal.

RF Transmitter	
Frequency Range	400MHz to 6000 MHz
Frequency Resolution	10Hz
Output Port	RF OUT N type (female)
Output Impedance	50 Ω
CW Output Power Range	RF OUT port: −80 to -10 dBm
CW Output Power Accuracy	< ±1 dB
CW Power Setting Step	1 dB
Output Gain Flatness	1dB@70MHz
Channel Bandwidth(1dB)	70MHz
Out-of-band Stray	< −30 dBc
RF Receiver	
Frequency Range	400MHz to 6000 MHz
Frequency Resolution	10Hz
Input Port	RF OUT N type (female)
Input Impedance	50 Ω
Input Power Range	−40 to 10 dBm
Power Setting Step	1 dB
Passband Flatness	1dB@70MHz
Channel Bandwidth(1dB)	70MHz
Out-of-band Stray	< −30 dBc
RF to RF Interface Specification	
Chnanels	1-4
(per)Channel Order	48
Minimum Delay	2μs
Amplitude Flatness	±1dB(70MHz bandwidth)
Channel Group Delay	±0.25μs (50MHz bandwidth);
±0.5μs (100MHz bandwidth)	< ±1 dB
Parasitism Caused By Aliasing	-60 dBc
RF Local Oscillator	
Frequency Range	400MHz to 6000 MHz
Frequency Resolution	10Hz
SSB Phase Noise	
1000MHz	-75dBc/Hz @1kHz offset carrier -95dBc/Hz @20kHz
2500MHz	-70dBc/Hz @1kHz offset carrier -100dBc/Hz @100kHz
5000MHz	-60dBc/Hz @1kHz offset carrier -95dBc/Hz @100kHz
Sideband Parasitism	<-60dBc (±100kHz carrier)
VSWR	<2:1

Channel Interfrence Specification	
Numbers of Interfrence Signal (each channel)	1-5
Frequency Range	400MHz～6000MHz
Frequency Offset Range	-50～+50 MHz
Frequency Resolution	10kHz
Frequency Accuracy[1]	±1kHz
Frequency Accuracy[2]	±0.1kHz
C/R Ratio	0.1dB
Interfrence Level Range	-35～-10dBm
Interfrence Level Resolution	0.1dB
Interfrence Level Accuracy	±1dB
Noise Power【1HZ bandwidth】	
>+/-500kHz	<-130dBm/Hz
>+/-700kHz	<-132dBm/Hz
>+/-1500kHz	<-135dBm/Hz
Harmonic/Stray Signal	
>+/-500kHz	<-80dBc
>+/-700kHz	<-85dBc
>+/-1500kHz	<-95dBc
Remote Control Port	LAN
USB-A	5 USB2.0
Trigger Signal Output Port	BNC female（TTL）
Trigger Signal Input Port	BNC（TTL）
Bidirectional Programmable Port	DB9（5 TTL）
System SYNC Port	20 pairs LVDS
Display Port	VGA/DVI-D

Time Base Specification	
Reference Clock Frequency	100MHz
Aging Ratio	< ±0.1 ppm/year
Temperature Stability(reference +25 °)	< ±0.01 ppm -75dBc/Hz @1kHz -95dBc/Hz @20kHz
Output Frequency Accuracy (after warm-up 30 min)	aging shift + stability
External Reference Frequency Range	100MHz ± 5 ppm
Input Port	REF Input(BNC female)
Input Level	0 to +10 dBm(Sine/TTL)
Input Impedance	50Ω
Output Port	REF Out (BNC female)
Output Level	0 to +10 dBm
Output Impedance	50 Ω

General	
Operationg Temperature	+10～+40 °C
Storage Temperature	–20～+65 °C
Humidity	20%～80%
Dimensions(HxWxL)	222 x 426 x 533 mm
AC Power	100～240 VAC, 50～60 Hz
LCD	10.4 inch XGA (1024 x 768)
Touch Screen	4096x4096 resistive
Operating System	Windows XP
Consumption	< 450 W
Weight	< 25 Kg
Calibrating Period	1 year

Keep innovating for excellence!

About Transcom

Shanghai Transcom Instrument Co., Ltd. (NEEQ: 831961), established in 2005, independently research and develop high-end radio frequency communication testing instruments and is a professional provider of overall testing solutions. Starting from 2009, Transcom, titled as National High-Tech Enterprise and the fostered enterprise by Shanghai Little Giant Project, has undertaken the tasks of development for National "New-Generation Broadband Wireless Mobile Communication Network" and the construction of Shanghai Engineering Research Center for Wireless Communication Testing Instruments.

In 2015, Transcom officially announced its new five-year development strategy "1+3" . In detail, Transcom will continue to enhance its potential to be the national team for domestic wireless communication instruments, and develop security software for mobile communication network (network communication/data mining), wireless signal (spectrum monitoring/situation analysis) and Beidou navigation (signal monitoring for satellite navigation/mobile anti-jam verification platform). The strategy has now been implemented systematically with progressive achievements in Shanghai, Guangdong and other cities.

Keep innovating for excellence!

ISO9001 ISO14001

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