



Virtual Signalling Tester

Virtual Signalling Tester NR Software MX844030PC





Virtual Environment Software Test Solution

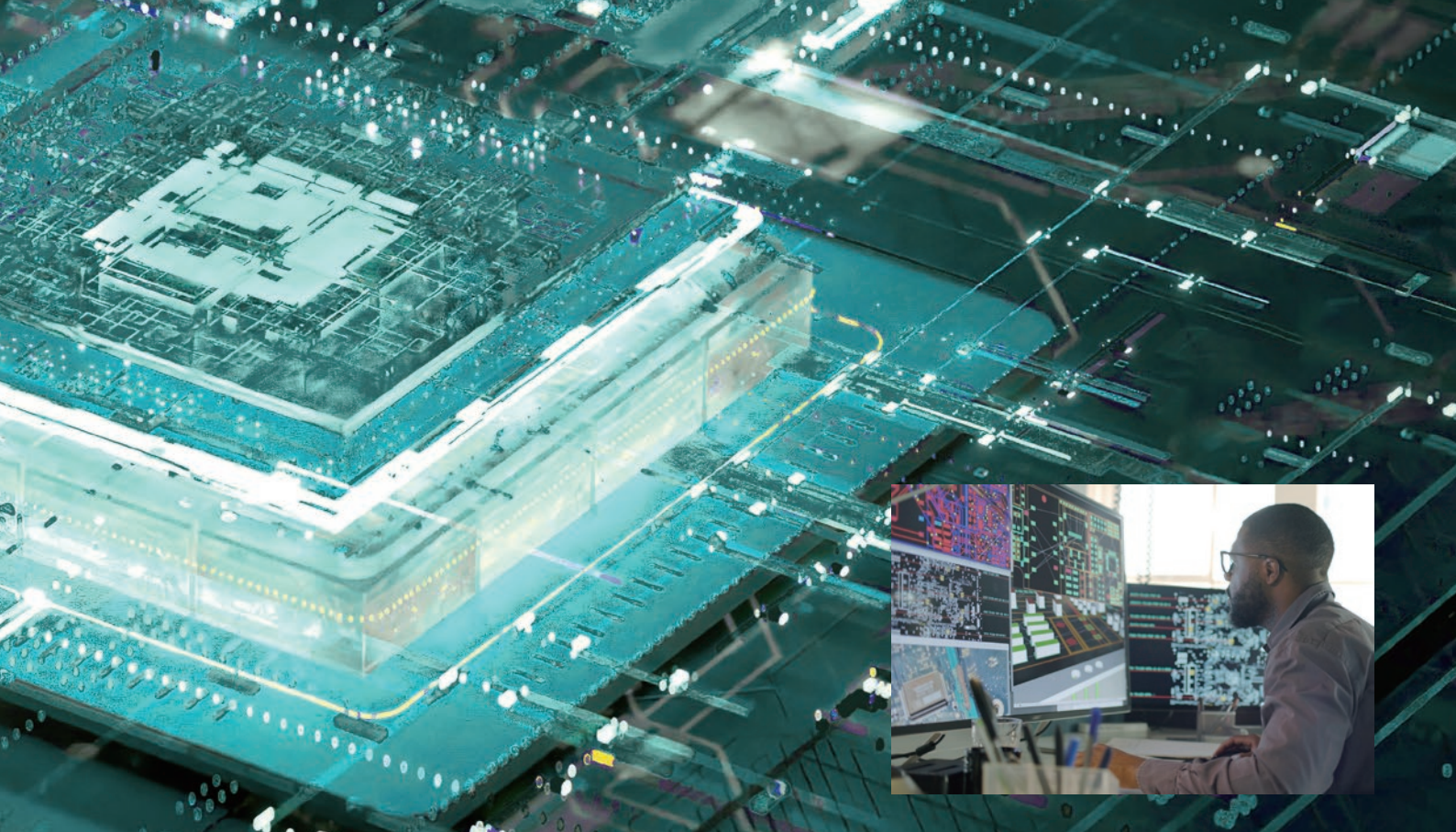
Software Protocol Simulator

VirtualST

Necessity for Beyond 5G/6G Virtual Environment Testing

Communication standards are evolving from Beyond 5G to 6G, and this technology will be used in a wide variety of products, such as chipsets, communications equipment, and IoT devices. Accommodating evolving communications standards will require both updated and new product testing facilities. As well as cutting costs, the benefits offered by virtual environment software solutions, such as efficient testing, reduced risks, and flexible scenario construction are in increasing demand.

Additionally, emergence of the 5G RedCap market in 5G IoT modules/devices is expected for applications such as automotive, healthcare, industrial IoT, and smart cities.



The Virtual Signalling Test Solution virtualizes the protocol stack to replicate each protocol layer on a PC, enabling quick and easy hardware-free creation of protocol test environments on a PC.

5G

LTE



Development From Chipset to IoT Device

Tailored Product Line to Match Every Need

Efficient Shift-Left Chipset Development

VirtualSTO



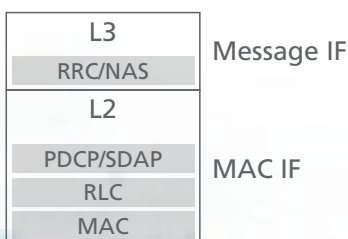
Recent chipset development performs protocol testing at the pre-silicon stage (before physical manufacturing) using virtual terminals to catch any issues early. This 'Shift-Left' trend improves quality at post-silicon processes (after creating physical chipset), prevents reworking, and improves development efficiency.

- MAC and PHY Digital IQ Interfaces (non real-time)
- Quick implementation of features
- Regression Test in pre-silicon phase
- Common GUI: RTD (High class)

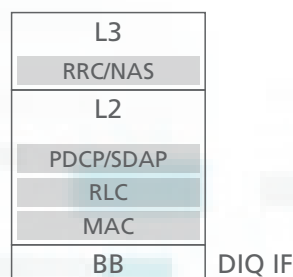
Pre-Silicon



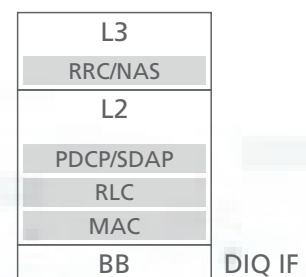
SW Simulation



EDA Emulation



FPGA Prototype



Seamless movement between real and virtual environments is possible by using

Optimal Basic Protocol Testing of IoT Devices and Communication Modules

VirtualSTR



As a software-based solution, it offers excellent development efficiency, cost efficiency, and future scalability, and supports rapid functional testing and regression testing. In addition, parameters and test procedures can be configured from sample scenarios, and the Report/Log display functions enable efficient device verification and analysis.



Development Efficiency



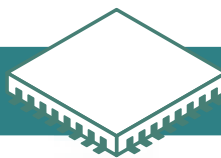
Cost Efficiency



Scalability /Potential

- RF Interface (real-time) with using Anritsu SDR Unit
- Verified Sample scenarios on commercial devices
- IoT Chipset/Device test
- GUI: RTD (High class)

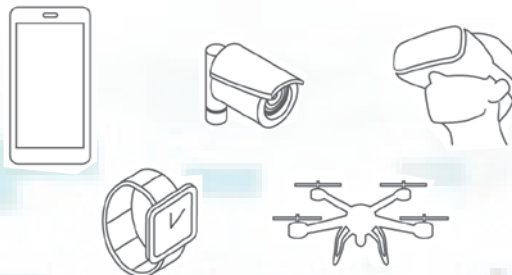
Post-Silicon



Chipset

L3
L2
BB
RF

Integration / Regression



CAT/PCT



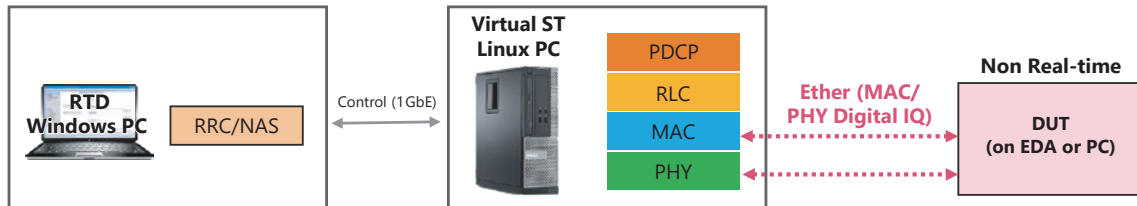
the same test cases in the transition from Pre-silicon to Post-Silicon phases.

Virtual ST Features

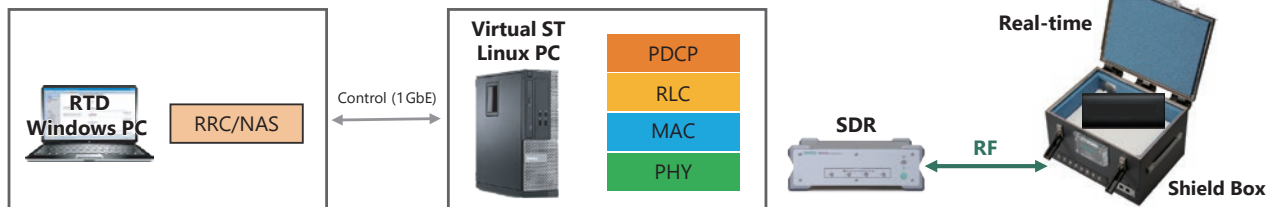
Software-based Versatile Architecture

Easily and quickly build the test environment using a general-purpose PC. Verification across different development phases is facilitated by support for various IFs (MAC/PHY Digital-IQ/RF). The shared RTD GUI enables NR Protocol test-case migration from Post-silicon phase to Pre-silicon phase. Refer to the Radio Communication Test Station MT8000A catalog to learn more about RTD.

Pre-silicon Test Solution



Post-silicon Test Solution



Key Virtual ST-R Applications

- Throughput testing, stress testing (performance testing)
- Network interoperability verification testing
- Terminal operation verification in quality control departments
- Shipping inspection/security testing

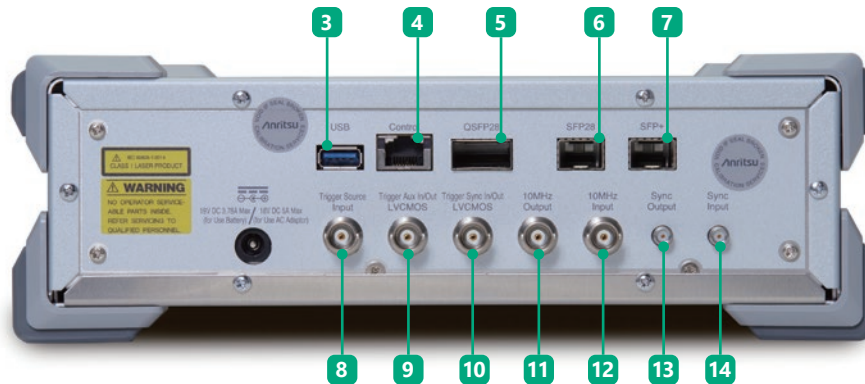
MD8190A Panels

Front Panel



- 1 Sub (Simplex) Input**
RF Input Connectors; Sub-connectors
- 2 Power Button**

Back Panel



- 3 USB**
USB Port
- 4 Control**
Ethernet connector for remote control
- 5 QSEFP28**
QSEFP28 Connector
- 6 SFP28**
SFP28 Connector
- 7 SFP+**
SFP+ Connector
- 8 Trigger Source Input**
External device trigger input BNC connector
- 9 Trigger Aux In/Out LVCMOS**
Trigger input/output BNC connector
- 10 Trigger Sync In/Out LVCMOS**
Trigger input/output BNC connector
- 11 10MHz Output**
Equipment reference signal output BNC connector
- 12 10MHz Input**
External reference signal input BNC connector
- 13 Sync Output**
Sync signal output SMA connector
- 14 Sync Input**
Sync signal input SMA connector

Universal RF Unit MD8190A

Frequency Range		0.4 GHz to 6 GHz, at TDD input 0.4 GHz to 2.7 GHz, at FDD input
Amplitude Measurement		Maximum input level: +23 dBm (CW) , 0 VDC (nom.) Setting range: -50 to +20 dBm Accuracy: CW, 0.4 GHz ≤ set frequency ≤ 6 GHz, at TDD input -50 dBm ≤ set level ≤ +20 dBm ±3 dB (nom.) CW, 0.4 GHz ≤ set frequency ≤ 2.7 GHz, at FDD input -50 dBm ≤ set level ≤ +20 dBm ±3 dB (nom.)
Maximum Resolution Bandwidth		100 MHz
Output Properties	Frequency	Setting range: 0.4 GHz to 6 GHz, at TDD output 0.4 GHz to 2.7 GHz, at FDD output
	Level	Setting range: -60 to -5 dBm, at TDD output -60 to -15 dBm, at FDD output Accuracy: CW, 0.4 GHz ≤ set frequency ≤ 6 GHz, at TDD output -60 dBm ≤ set level ≤ -5 dBm ±3 dB (nom.) CW, 0.4 GHz ≤ set frequency ≤ 2.7 GHz, at FDD output -60 dBm ≤ set level ≤ -15 dBm ±3 dB (nom.)
Dimensions and Mass		255 (W) × 73.7 (H) × 346.9 (D) mm (excluding protrusions), ≤6 kg
Power		Connector: DC Power jack DC Power supply: 18 VDC, ≤5.0 A (G0385A High power AC adapter) Reference: 90 W nominal max. 19 VDC, ≤3.78 A (Omni Mobile 25600 using external battery) Reference: 72 W nominal max.
Operating Temperature		0°C to +40°C (No condensation)
Storage Temperature		-20°C to +70°C (No condensation)
EMC		Transmitted EN 61326-1 (Class A) Radiated EN 61326-1 (Class A) Harmonic emissions EN 61000-3-2 (Class A) Static emissions EN 61326-1 (Table 2) Electromagnetic field immunity EN 61326-1 (Table 2) Fast transient/burst EN 61326-1 (Table 2) Surge EN 61326-1 (Table 2) Transmitted RF EN 61326-1 (Table 2) Power supply frequency EMI EN 61326-1 (Table 2) Voltage drop/Brown-out EN 61326-1 (Table 2)
Safety		EN61010-1 (Pollution Degree 2) IEC 60825-1: 2014 Class 1 FDA 21CFR1040.10 and 1040.11 Excluding deviations resulting from compliance with [LASER Notice No.56] (2019-May-8)
Functions and Features		Send and receive RF signals

Operating Environment

Recommended Specifications for OptiPlex PC XE4 for Virtual Signalling Tester

Maker	DELL
Model name	OptiPlex XE4 Small Form Factor
OS	Ubuntu 20.04 LTS
CPU	Intel Core i7 12700 (AVX2 CPU) or better
Memory	≥16 GB
Storage	512 GB SSD or better
LAN	1000Base-T port

* Requires 1GNIC (ST1000SPEXD4) and 10GNIC (X520-10G-2S-X8-D) expansion

Configuration Example

For NR/RedCap design and development in the Pre-silicon phase and RedCap design and development in the Post-silicon phase. Requires separate RTD control PC and software license.

* For RTD, refer to the Radio Communication Test Station MT8000A catalog.

Supports following interfaces

- MAC-IF for NR/RedCap
- PHY-IF (Digital-IQ) for RedCap
- RF-IF for RedCap

MAC-IF for NR/RedCap

Model/Code	Qty.	Name
MX844030PC	1	Virtual Signalling Tester NR Software
MX844030PC-PL011*1	1	MAC-IF For NR RedCap
MX844030PC-PL012*1	1	MAC-IF For NR
MX800050A-SS060	1	Virtual Signalling Tester NR Software
MX800050A-SS062	1	MAC-IF For NR Virtual ST-D Support Service (3 months)
MX800050A-SS161	1	MAC-IF For NR RedCap Virtual ST-D Support Service (Per Year)
MX800050A-SS162	1	MAC-IF For NR Virtual ST-D Support Service (Per Year)
MX844030PC-TL011*1	1	MAC-IF For NR RedCap (3 months)
MX844030PC-TL012*1	1	MAC-IF For NR (3 months)
MX844030PC-AK001	1	Standard PC for Virtual Signalling Tester (OptiPlex PC XE4)

PHY-IF (Digital-IQ) for RedCap

Model/Code	Qty.	Name
MX844030PC	1	Virtual Signalling Tester NR Software
MX844030PC-PL001*1	1	PHY-IF For NR RedCap
MX800050A-SS060	1	Virtual Signalling Tester NR Software
MX800050A-SS160	1	PHY-IF For NR RedCap Virtual ST-D Support Service (Per Year)
MX844030PC-TL001*1	1	PHY-IF For NR RedCap (3 months)
MX844030PC-AK001	1	Standard PC for Virtual Signalling Tester (OptiPlex PC XE4)

*1: Requires Permanent license or Term license. Term license does not include support, so separate support license required.

RF-IF for RedCap

Model/Code	Qty.	Name
MX844030PC	1	Virtual Signalling Tester NR Software
MD8190A	1	Universal RF Unit
MD8190A-001	1	0.4-6GHz TRX RF Unit
MX819020A	1	Virtual Signalling Tester RF Platform
MX819020A-020	1	RF Interface For NR RedCap

Ordering Information

Please specify the model/order number, name and quantity when ordering.

The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

Virtual Signalling Tester

Model/Code	Name
MX844030PC	Main Software Virtual Signalling Tester NR Software
MX844030PC-PL001 MX844030PC-PL011 MX844030PC-PL012	Other Software PHY-IF For NR RedCap MAC-IF For NR RedCap MAC-IF For NR
MX800050A-SS060 MX800050A-SS062 MX800050A-SS160 MX800050A-SS161 MX800050A-SS162	Support Service Virtual Signalling Tester NR Software MAC-IF For NR Virtual ST-D Support Service (3 months) PHY-IF For NR RedCap Virtual ST-D Support Service (Per Year) MAC-IF For NR RedCap Virtual ST-D Support Service (Per Year) MAC-IF For NR Virtual ST-D Support Service (Per Year)
MX844030PC-TL001 MX844030PC-TL011 MX844030PC-TL012	Term License PHY-IF For NR RedCap (3 months) MAC-IF For NR RedCap (3 months) MAC-IF For NR (3 months)
MX844030PC-AK001 J1440A G0408A J1581A	Application Parts Standard PC for Virtual Signalling Tester LAN Cable 10 Gig Ethernet SR 850nm SFP+ Optical cable MM LC/PC to LC/PC 3 meter

Model/Code	Name
MD8190A MD8190A-001 MX819020A MX819020A-020	MD8190A Universal RF Unit 0.4-6GHz TRX RF Unit Virtual Signalling Tester RF Platform RF Interface For NR RedCap
Z1320G MT8000A-AK003 Z1591A	Application Parts Standard PC for RTD (with monitor) IP Test Server PC USB Dongle (Protocol)



Specifications are subject to change without notice.

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