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Product Brochure

Anritsu

MF6900A

Fading Simulator





All-in-One Full Digital Fading Simulator Supporting LTE 2×2 MIMO 2-cell and 4×2 MIMO

The introduction of the LTE next-generation communication standard makes MIMO evaluation in a fading environment much more complex. Connecting the MF6900A Fading Simulator to the MD8430A Signalling Tester via dedicated digital interface to simulate a BTS greatly simplifies 3GPP LTE 2×2 MIMO and 4×2 MIMO fading tests.

Key Features

- High reproducibility and maintainability due to full digital baseband processing
- All-in-one unit supports LTE 4×2 MIMO or LTE 2×2 MIMO↔W-CDMA/HSPA dual environment
- Easy fading settings using dedicated interface with MD8430A/MD8480C Signalling Tester
- Highly extendible hardware platform

Main Uses

- Coding and Decoding Tests (RF/Baseband)
- Throughput Tests (Performance Tests)
- Intra-RAT/Inter-RAT Handover Tests
- LTE Pre-conformance/Conformance Tests
- LTE Carrier UE Acceptance Tests
- Fault Troubleshooting

Functions

■ With MD8430A (LTE)

- 8 channels max. (MIMO)
- 1×1 SISO, 1×2 SIMO, 2×1 MISO, 2×2 MIMO (2 cells max.)
- 4×1 MISO, 4×2 MIMO (1 cell max.)
- Birth-Death/Moving/CQI/HST (2 cells max.)
- Correlation Matrix Setting (MIMO)

■ With MD8480C (W-CDMA/HSPA)

- 4 channels max.
- 1×1 SISO (4 cells max.)
- Birth-Death/Moving/HST (4 cells max.)
- Tx/TRx Diversity (2 cells max.)
- MBMS

■ Common Functions

- Path Parameter Edit (12 paths/channel)
- Parameter Saving and Reading
- Slow Clock Tests
- External Control
- Clipping

MF6900A

Fading Simulator

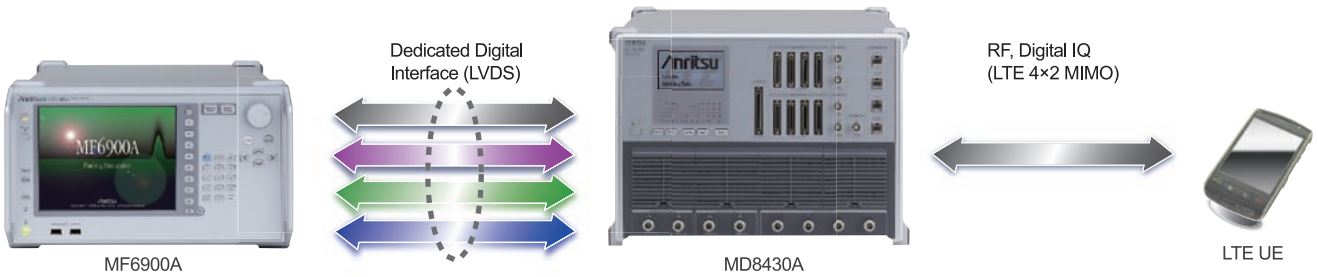


High Reproducibility and Maintainability due to Full Digital Baseband Processing

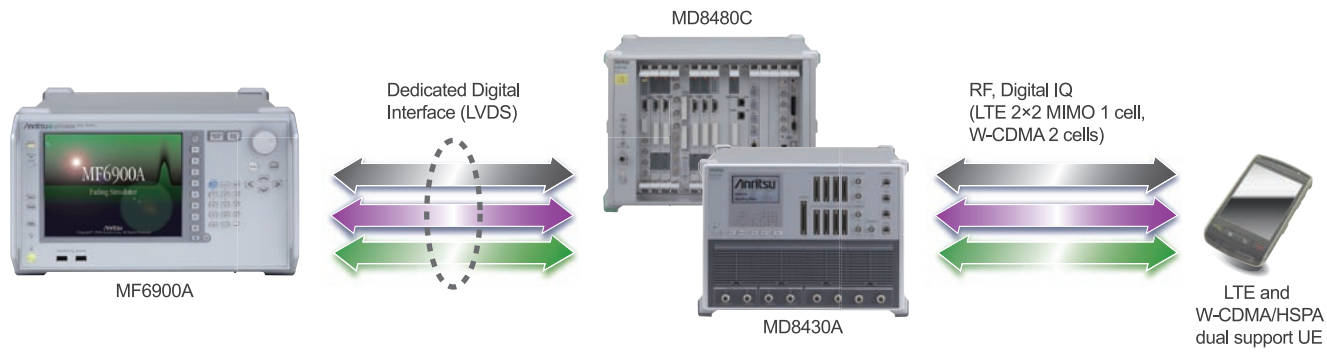
The MF6900A simulates fading using full digital baseband processing. As a result, high-reproducibility results are obtained using the same settings and complex MIMO power control settings are extremely easy and accurate. Moreover, complete elimination of all analog circuits supports easy maintenance and calibration-free stability.

All-in-One Unit Supports LTE 4×2 MIMO or LTE 2×2 MIMO↔W-CDMA/HSPA Dual Environment

One unit supports LTE 2×2 MIMO 2-cell or 4×2 MIMO tests and combination with the MD8430A Signalling Tester offers a simple test setup for intra-system LTE 2×2 MIMO handover or 4×2 MIMO tests



The MD8480C Signalling Tester for W-CDMA supports all-in-one LTE/W-CDMA inter-system handover tests (with MF6900A-001 option installed).



Easy Fading Setting using Dedicated Interface with MD8430A/MD8480C

The MF6900A Fading Simulator uses a dedicated digital connection with the MD8430A/MD8480C. Elimination of internal RF circuits eliminates power control settings, and the simple display supports intuitive use.

In addition, fading setting is made easy just by calling preset fading profiles from MD8430A and MD8480C test scenarios, allowing chipset and UE protocol developers to run tests transparently without a deep understanding of fading settings.

Moreover, auto-synchronization at MD8430A and MD8480C slow clock operation eliminates repeated fading setting.



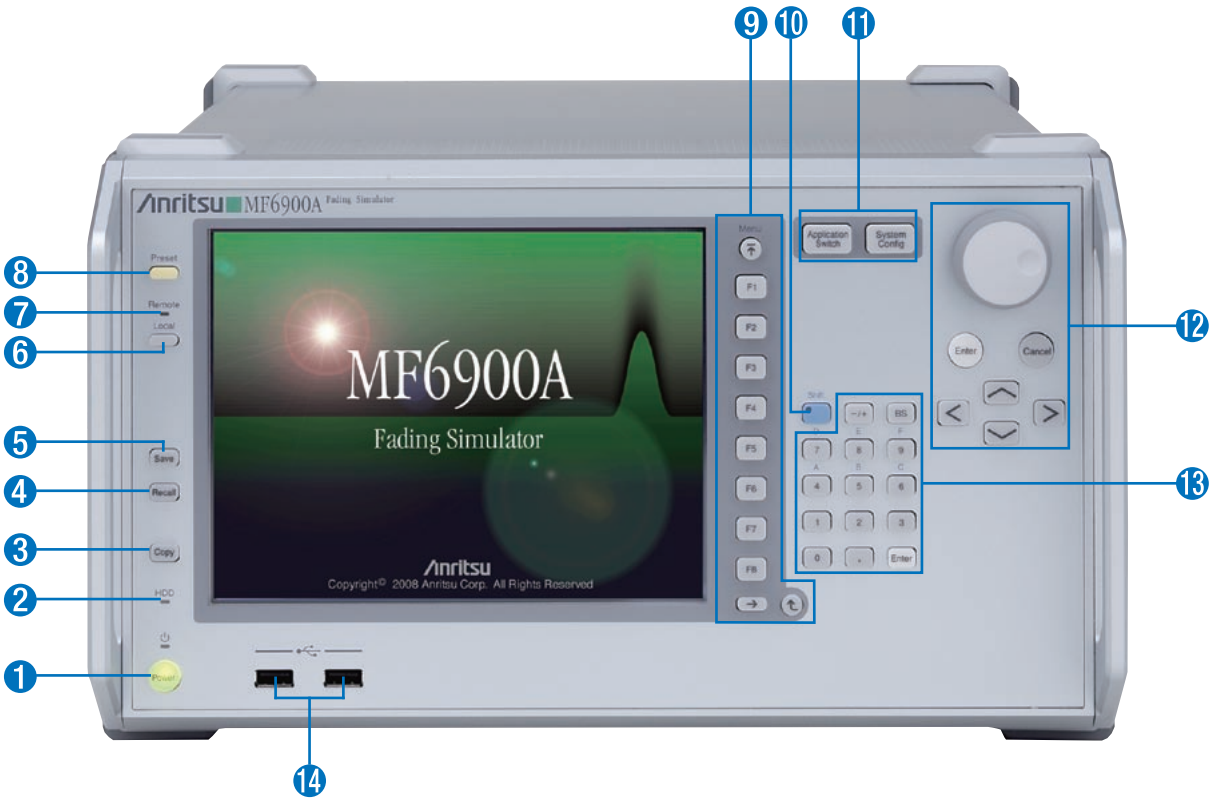
Example of MF6900A Main Display

Expandable Hardware Platform

The maximum number of input and output ports can be extended to four each to support 4×2 MIMO, 2×2 MIMO with 2 cells and dual RAT between W-CDMA/HSPA. Moreover, the MF6900A has GCF/PTCRB certification with the ME7873F/ME7873L used commonly as an RF conformance test system, and can be used as a future RF conformance test system.

Panel Layout

• Front Panel



❶ **Power Switch**
AC power On switches Standby to Power On;
LED orange at Standby and green at Power On

❷ **Hard Disc Access Lamp**
On at hard disk access

❸ **Copy Key**
Saves screen dump of display to files

❹ **Recall Key**
Recalls parameter files

❺ **Save Key**
Saves parameter files

❻ **Local Key**
Switches from remote to local mode using GPIB, USB, and Ethernet and enables panel setting

❼ **Remote Ramp**
On at remote control

❽ **Preset Key**
Resets parameters to defaults

❾ **Function Key**
Selects and executes function displayed on right (Menu contents change between screens and levels)

❿ **Shift Key**
Toggles function of blue keys;
press until LED is green and press required key.

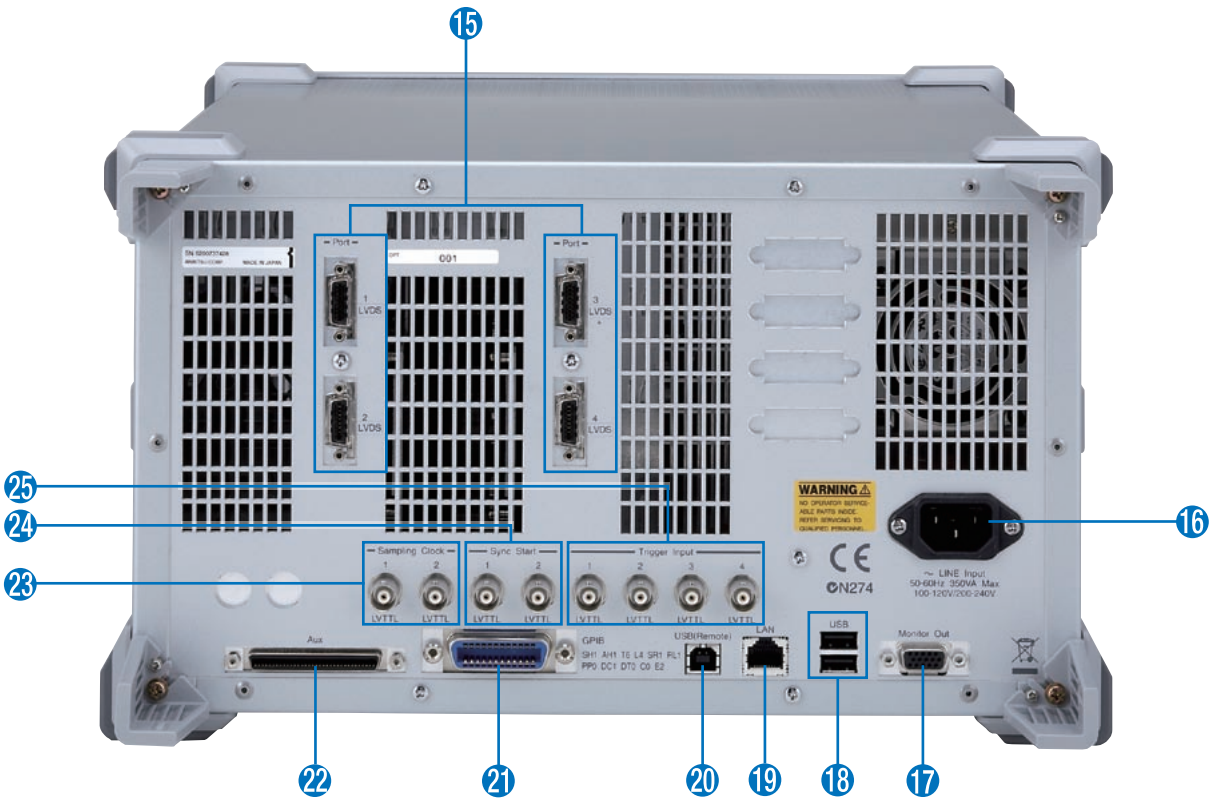
⓫ **Main Function Key**
For connecting USB memory or USB keyboard and mouse

⓬ **Rotary Knob/Cursor Key/Enter Key/Cancel Key**
Select and change settings of displayed items

⓭ **Numerical Keypad**
Sets parameters

⓮ **USB Connector (Type A)**
For connecting USB flash memory, USB keyboard or mouse

• Rear Panel



⑮ **Port 1, 2, 3, 4 (LVDS)**
Input and output IQ signals. Connect with MD8480C BTS board LVDS connector or MD8430A Fading Simulator Interface LVDS connector using attached LVDS cable. Standard configuration connects to two ports. Adding MF6900A-001 option supports maximum of four port connections.

⑯ **AC Inlet**
For connecting power cord

⑰ **Monitor Out**
For connecting external display

⑱ **USB**
For connecting USB flash memory, USB keyboard or mouse

⑲ **LAN**
For connecting external controller (PC) or Ethernet network

⑳ **USB (Remote)**
For connecting external controller over USB

㉑ **GPIB**
For connecting external controller over GPIB

㉒ **Aux**
For future function expanded functions

㉓ **Sampling Clock**
For connecting MD8480C Clock Output to input timing Clock; Sampling Clock1 and 2 can be selected for each port.

㉔ **Sync Start**
For connecting Sync Output MD8480C or MD8430A to input Data output trigger. Sync Start1 and 2 can be selected for each port.

㉕ **Trigger Input**
For future function expanded functions



Fading Profile

SISO	Case1, Case2, Case3, Case4, Case5, Case6, Case8, VA3, VA30, VA120, PA3, PB3 [3GPP TS 25.101 V8.9.0 (2009-12), TS 34.121-1 V8.9.0 (2009-12)]
	EPA, EVA, ETU [3GPP TS 36.101 V8.8.0 (2009-12)]
2×2 MIMO/1×2 SIMO*1	EPA, EVA, ETU [3GPP TS 36.101 V8.8.0 (2009-12)]
4×2 MIMO/4×1 MISO*2	EPA, EVA, ETU [3GPP TS 36.101 V8.8.0 (2009-12)]
1×2 CQI/1×1 CQI*3	Fading conditions for CQI tests [3GPP TS 36.101 V8.8.0 (2009-12)]
2×2 HST/1×2 HST/1×1 HST*4	HST [3GPP TS 25.101 V8.9.0 (2009-12), TS 34.121-1 V8.9.0 (2009-12)] [3GPP TS 36.101 V8.8.0 (2009-12)]
Moving*5	Moving propagation conditions [3GPP TS 25.101 V8.9.0 (2009-12)]
Birth-Death*5	Birth-Death propagation conditions [3GPP TS 25.101 V8.9.0 (2009-12)]
Tx/TRx Diversity*5	Case1, Case2, Case3, Case4, Case5, Case6, Case8, VA3, VA30, VA120, PA3, PB3 [3GPP TS 25.101 V8.8.0 (2009-12) , TS 34.121-1 V8.9.0 (2009-12)]

∗1: Requires MX690010A 2×2 MIMO option
∗2: Requires MX690010A 2×2 MIMO and MX690010A-001 4×2 MIMO option
∗3: Requires MX690011A Propagation for CQI test option
∗4: Requires MX690030A High Speed Train option
∗5: Requires MX690020A WCDMA Extended model option

Options/Software

Options

MF6900A-001 Additional LVDS Interface
Hardware option to add two rear LVDS interface ports
Required when using 2 cells with MD8430A and 3 or more cells with MD8480C

MF6900A-101 Additional LVDS Interface Retrofit
For MF6900A-001 retrofit at Anritsu plant

Software Options

MX690010A 2×2 MIMO
Software installed in main frame to use LTE MIMO functions

MX690010A-001 4×2 MIMO
Software installed option adding 4×2 MIMO capability

MX690011A Propagation for CQI test
Software installed option adding test conditions specified by 3GPP TS 36.521-1 Chapter 9.3 CQI Reporting under fading conditions and Chapter 9.4 Reporting of Precoding Matrix Indicator (PMI)

MX690020A WCDMA Extended Model
Software installed in main frame to use Moving, Birth-Death, Tx/TRx Diversity functions

∗: Connection with MD8480C requires MU848072C-40 MF6900 interface or MU848072E BTS Evolution option

MX690030A High Speed Train
Software installed option adding High Speed Train (HST) Scenario that is one of the mobility condition specified by 3GPP

	Standard configuration	MX690010A	MX690020A	Max. No. of LTE BS (MD8430A)		Max. No. of W-CDMA BS (MD8480C)	
				–	MF6900A-001	–	MF6900A-001
SISO (Standard)	√	–	–	1	2	2	4
LTE MIMO, MISO, SIMO	–	√	–	1	2	–	–
LTE Diversity	–	√	–	1	2	–	–
LTE 2×2 MIMO Handover	–	√*	–	–	2	–	–
LTE, W-CDMA/HSPA Inter-RAT	–	√*	√	–	1	–	2
Birth-Death	–	–	√	1	2	2	4
Moving	–	–	√	1	2	2	4
W-CDMA/HSPA Diversity	–	–	√	–	–	1	2
W-CDMA MBMS	√*	–	–	–	–	–	4

∗: Requires MF6900A-001 Additional LVDS Interface option

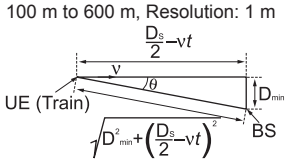


Specifications

MF6900A Fading Simulator

Connector	Digital I/F	I/F (Rear panel) for exchanging signals between MF6900A and MD8480C or MF6900A and MD8430A with one connector supporting both input and output
	No. of I/O Ports	2 ports (Standard), 4 ports (with MF6900A-001 Additional LVDS Interface (Opt-001))
	Sampling Clock	I/F for adjusting timing between MF6900A and MD8480C with two system settings (Sampling Clock1, Sampling Clock2)
	Electrical Characteristics	Connector: BNC-J (Rear panel) Input level: LVTTL
	Sync Start	I/F for synchronizing between MF6900A and MD8480C, or between MF6900A and MD8430A with two settings (Sync Start1, Sync Start2)
	Electrical Characteristics	Connector: BNC-J (Rear panel) Input level: LVTTL
	External Controller	Supports control from external controller (except Power Supply)
	Ethernet (10/100/1000 BASE-T)	Connector: RJ-45 (Rear panel)
	GPIB	Supports IEEE488.2 Connector: IEEE bus connector (Rear panel) Interface functions: SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT0, C0, E2
	USB (B)	Supports USB2.0 Connector: USB-B (Rear panel)
	USB	For connecting external USB devices to save mainframe parameters Supports USB2.0 Connector: USB-A (Front panel: 2 ports, Rear panel: 2 ports)
	Monitor Out	Connector: Mini D-Sub 15 pins, VGA compatible (Rear panel)
	Display	XGA color LCD (Resolution: 1024 × 768) 8.4 inches (213 mm diagonal)
Common Parameter		Defined by Digital I/F
	RF Frequency	100 MHz to 6000 MHz, Resolution: 1 Hz (except 1×1 HST/1×2 HST/2×2 HST) 89.937737 MHz to 36154.970475 MHz, Resolution: 1 Hz (1×1 HST/1×2 HST/2×2 HST, Display only)
	Sampling Frequency	10 MHz to 80 MHz, Resolution: 1 Hz (except 1×1 HST/1×2 HST/2×2 HST) 19.2 MHz, 30.72 MHz (1×1 HST/1×2 HST/2×2 HST)* * To assume normal simulator operation, it is necessary to set the input signal sampling frequency
	Port Gain	–50 to 0 dB, Resolution: 0.1 dB, Setting accuracy: 0.05 dB, each port can be set
	Relative Channel Gain	–50 to 0 dB, Resolution: 0.1 dB, Setting accuracy: 0.05 dB, each channel can be set
	Doppler Frequency	0 or 0.1 Hz to 20 kHz, Resolution: 0.01 Hz (except 1×1 HST/1×2 HST/2×2 HST) 50 Hz to 3350 Hz, Resolution: 1 Hz (1×1 HST/1×2 HST/2×2 HST)
	Moving Speed	0 km/h to ν_{max} km/h, Resolution: 0,01 km/h (except 1×1 HST/1×2 HST/2×2 HST) where ν_{max} found as; $\nu_{max} = c \frac{f_d}{f_c}$ f_c (Hz): Frequency, c: Velocity of light in vacuum (1.07925825×10^9 km/h), f_d: Maximum doppler frequency at 20 kHz 100 km/h to 600 km/h, Resolution: 100 km/h (1×1 HST/1×2 HST/2×2 HST)
Channel Configuration (SISO)		Defined by Digital I/F
	Number of Port	2 (Standard), 4 (with Opt-001)
	Number of Channel	2 (Standard), 4 (with Opt-001)
	Number of Path	12 paths/channel
	Relative Path Delay	0 to 600 µs, Resolution: 0.1 ns, Setting accuracy: ±0.1 ns * Based on delay 0, when connecting MD8430A or MD8480C
	Relative Path Gain	–50 to 0 dB, Resolution: 0.1 dB, Setting accuracy: 0.05 dB
	Fading Type	Constant Phase, Pure Doppler, Rayleigh model, Rice model * Pure Doppler and Rice model can only be set for 1 path at 1 channel
	Phase Shift	Constant Phase 0 to 359.9°, Resolution: 0.1°, Setting accuracy: 0.1°
	Rice K Factor	Rice model +30 to –30 dB, Resolution: 0.1 dB
	Angle of Arrival	Pure Doppler or Rice model 0 to 359.9°, Resolution: 0.1°
	Standard Fading Profile	Case1, Case2, Case3, Case4, Case5, Case6, Case8, VA3, VA30, VA120, PA3, PB3 [3GPP TS 25.101 V8.9.0 (2009-12), TS 34.121-1 V8.9.0 (2009-12)], EPA, EVA, ETU [3GPP TS 36.101 V8.8.0 (2009-12)]

Channel Configuration (2×2 MIMO/ 2×1 MISO/ 1×2 SIMO)		Enabled with MX690010A and when MD8430A connected, Defined by Digital I/F
	Number of Port	2 (Standard), 2+2 (with Opt-001)
	Number of Channel	2×2 MIMO: 4 (Standard), 4+4 (with Opt-001) 2×1 MISO/1×2 SIMO: 2 (Standard), 2+2 (with Opt-001)
	Number of Path	12 paths/channel
	Relative Path Delay	0 to 600 µs, Resolution: 0.1 ns, Setting accuracy: ±0.1 ns ∗ Based on delay 0, when connecting MD8430A
	Relative Path Gain	–50 to 0 dB, Resolution: 0.1 dB, Setting accuracy: 0.05 dB
	Fading Type	Constant Phase, Pure Doppler, Rayleigh model, Rice model ∗ Pure Doppler and Rice model can only be set for 1 path at 1 channel
	Phase Shift	Constant Phase 0 to 359.9°, Resolution: 0.1°, Setting accuracy: 0.1°
	Rice K Factor	Rice model +30 to –30 dB, Resolution: 0.1 dB
	Angle of Arrival	Pure Doppler or Rice model 0 to 359.9°, Resolution: 0.1°
	Correlation Matrix	4×4 (2×2 MIMO), 2×2 (1×2 MISO, 2×1 SIMO) A 3GPP TS 36.101 V8.8.0 (2009-12) compliant correlation matrix can be set 2×2 High Correlation, 2×2 Medium Correlation, 2×2 Low Correlation Arbitrary correlation matrix can be set by following correlation coefficient range –1.00000 to 1.00000, Resolution: 0.00001 (Display only)
	Standard Fading Profile	EPA, EVA, ETU [3GPP TS 36.101 V8.8.0 (2009-12)]
	Correlation Coefficient	–0.99 to 0.99, Resolution: 0.01
Channel Configuration (Moving)		Enabled with MX690020A, Defined by Digital I/F
	Number of Port	2 (Standard), 4 (with Opt-001)
	Number of Channel	2 (Standard), 4 (with Opt-001)
	Standard Fading Profile	Moving Propagation conditions [3GPP TS 25.101 V8.9.0 (2009-12)]
	Delay Variation	0.5 µs to 10 µs, Resolution: 0.1 µs, Setting accuracy: 2 ns
	Delay Offset	0 to 50 µs, Resolution: 0.1 µs, Setting accuracy: 0.1 ns
	Angular Frequency (ω)	0.01 rad/s to 0.4 rad/s, Resolution: 0.01 rad/s, Setting accuracy: 0.0001 rad/s
	Variation Period	15.708 s to 628.318 s, Resolution: 0.001 s (Display only) where ω (rad/s) and T_s found as; $\omega = \frac{2\pi}{T}$
	Relative Path Gain	–50 to 0 dB, Resolution: 0.1 dB, Setting accuracy: 0.05 dB
Channel Configuration (Birth-Death)		Enabled with MX690020A, Defined by Digital I/F
	Number of Port	2 (Standard), 4 (with Opt-001)
	Number of Channel	2 (Standard), 4 (with Opt-001)
	Standard Fading Profile	Birth-Death propagation conditions [3GPP TS 25.101 V8.9.0 (2009-12)]
	Maximum Delay	1 µs to 600 µs, Resolution: 0.1 ns
	Delay Resolution	0.1 µs to 60 µs, Resolution: 0.1 µs, Setting accuracy: 0.1 ns where Delay resolution: ΔT (µs) and Maximum delay: T_{max} (µs) found as; $10 \cdot \Delta T = T_{max}$
	Dwell Time	0.1 ms to 2000 ms, Resolution: 0.1 ms, Setting accuracy: 0.05 µs
	Relative Path Gain	–50 to 0 dB, Resolution: 0.1 dB, Setting accuracy: 0.05 dB
Channel Configuration (Tx/Trx diversity)		Enabled with MX690020A and when MD8480C connected, Defined by Digital I/F
	Number of Port	2 (Standard), 4 (with Opt-001)
	Number of Channel	Tx Diversity: 2 (Standard), 2+2 (with Opt-001) Trx Diversity: 4 (Standard), 4+4 (with Opt-001)
	Number of Path	12 paths/channel
	Relative Path Delay	0 to 600 µs, Resolution: 0.1 ns, Setting accuracy: ±0.1 ns ∗ Based on delay 0, when connecting MD8480C
	Relative Path Gain	–50 to 0 dB, Resolution: 0.1 dB, Setting accuracy: 0.05 dB
	Fading Type	Constant Phase, Pure Doppler, Rayleigh model, Rice model ∗ Pure Doppler and Rice model can only be set for 1 path at 1 channel
	Phase Shift	Constant Phase 0 to 359.9°, Resolution: 0.1°, Setting accuracy: 0.1°
	Rice K Factor	Rice model +30 to –30 dB, Resolution: 0.1 dB
	Angle of Arrival	Pure Doppler or Rice model 0 to 359.9°, Resolution: 0.1°
	Standard Fading Profile	Case1, Case2, Case3, Case4, Case5, Case6, Case8, VA3, VA30, VA120, PA3, PB3 [3GPP TS 25.101 V8.9.0 (2009-12), TS 34.121-1 V8.9.0 (2009-12)]

Channel Configuration (4×2 MIMO/ 4×1 MISO)		Enabled with MF6900A-001, MX690010A, MX690010A-001 and when MD8430A connected, Defined by Digital I/F
	Number of Port	4
	Number of Channel	4×2 MIMO: 8, 4×1 MISO: 4
	Number of Path	12 paths/channel
	Relative Path Delay	0 to 600 µs, Resolution: 0.1 ns, Setting accuracy: ±0.1 ns ∗ Based on delay 0, when connecting MD8430A
	Relative Path Gain	–50 to 0 dB, Resolution: 0.1 dB, Setting accuracy: 0.05 dB
	Fading Type	Constant Phase, Pure Doppler, Rayleigh model, Rice model ∗ Pure Doppler and Rice model can only be set for 1 path at 1 channel
	Phase Shift	Constant Phase 0 to 359.9°, Resolution: 0.1°, Setting accuracy: 0.1°
	Rice K Factor	Rice model +30 to –30 dB, Resolution: 0.1 dB
	Angle of Arrival	Pure Doppler or Rice model 0 to 359.9°, Resolution: 0.1°
	Correlation Coefficient	–0.99 to 0.99, Resolution: 0.01
	Correlation Matrix	8×8 (4×2 MIMO), 4×4 (4×1 MISO) A 3GPP TS 36.101 V8.8.0 (2009-12) compliant correlation matrix can be set 4×2 High Correlation, 4×2 Medium Correlation, 4×2 Low Correlation ∗ when using Scaling factor Arbitrary correlation matrix can be set by following correlation coefficient range –1.00000 to 1.00000, Resolution: 0.00001 (Display only)
	Standard Fading Profile	EPA, EVA, ETU [3GPP TS 36.101 V8.8.0 (2009-12)]
Channel Configuration (2×2 HST/ 1×2 HST/ 1×1 HST)		Enabled with MX690030A, Defined by Digital I/F
	Number of Port	2 (Standard), 4 (with Opt-001)
	Number of Channel	2×2 HST: 4 (Standard), 4+4 (with Opt-001) 1×2 HST/1×1 HST: 2 (Standard), 2+2 (with Opt-001)
	Number of Path	12 paths/channel
	D_S	100 m to 600 m, Resolution: 1 m  ∗ Unit of each found as: D_S (m), D_{min} (m), v (m/s), *t* (s)
	D_{min}	1 m to 10 m, Resolution: 1 m ∗ D_{min} found as above
	T	1.2000 s to 43.2000 s, Resolution: 0.1 ms (Display only) ∗ D_S, Moving Speed and Variation Period found as D_S (m), v (km/h), *t* (s) $T = \frac{2\times D_S}{v\times\frac{1000}{3600}}$
	Standard Fading Profile	High Speed Train Scenario [3GPP TS 25.101 V8.9.0 (2009-12), 3GPP TS 34.121-1 V8.9.0 (2009-12), and 3GPP TS 36.101 V8.8.0 (2009-12)]
Channel Configuration (1×2 CQI/ 1×1 CQI)		Enabled with MX690011A, Defined by Digital I/F
	Number of Port	2 (Standard), 4 (with Opt-001)
	Number of Channel	2 (Standard), 2+2 (with Opt-001)
	Relative Path Delay	0.2 ns to 600 µs, Resolution: 0.1 ns, Setting accuracy: ±0.1 ns ∗ Based on delay 0, when connecting MD8430A or MD8480C
	Relative Path Gain	–50 to 0 dB, Resolution: 0.1 dB, Setting accuracy: 0.05 dB
	Fading Type	Path 1: Constant Phase Path 2: Pure Doppler
	Phase Shift	Constant Phase 0 to 359.9°, Resolution: 0.1°, Setting accuracy: 0.1°
	Angle of Arrival	Pure Doppler or Rice model 0 to 359.9°, Resolution: 0.1°
	Standard Fading Profile	Conditions for CQI tests [3GPP TS 36.101 V8.8.0 (2009-12)]
Dimension/Mass		340 (W) × 200 (H) × 448 (D) mm (excluding protrusions) ≤15 kg (with Opt-001)
Power Supply		Voltage: 100 V (ac) to 120 V (ac) / 200 V (ac) to 240 V (ac) (–15/+10%, Maximum voltage: 250 V) Frequency: 50 Hz/60 Hz (±5%) Power consumption: ≤350 VA (Maximum value)
Temperature/Humidity		[Operating] Temperature: +5° to +45°C, Humidity: 20 to 80%, (no condensation) [Storage] Temperature: –20° to +60°C, Humidity: 90% or less, (no condensation)
EMC		EN61326-1, EN61000-3-2
LVD		EN61010-1



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.

Model/Order No.	Name	
	– Main frame –	
MF6900A	Fading Simulator	
	– Standard accessories –	
J1416A	LVDS Cable (2.0 m)	2 pcs
J0093C	Coaxial Code, 2.0 m (BNC-P•RG55A/U•BNC-P)	2 pcs
	Power Cord	1 pc
P0031A	USB Memory (>256 MB, USB2.0 Flash Driver)	1 pc
Z0541A	USB Mouse	1 pc
	Install CD-R (with manual)	1 pc
	– Option –	
MF6900A-001	Additional LVDS Interface*	
	– Retrofit option –	
MF6900A-201	Additional LVDS Interface Retrofit*	
	– Software options –	
MX690010A	2×2 MIMO	
MX690010A-001	4×2 MIMO	
MX690011A	Propagation for CQI test	
MX690020A	WCDMA Extended Model	
MX690030A	High Speed Train	
	– Warranty service –	
MF6900A-ES210	2 Years Extended Warranty Service	
MF6900A-ES310	3 Years Extended Warranty Service	
MF6900A-ES510	5 Years Extended Warranty Service	
	– Application parts –	
J1416A	LVDS Cable (2.0 m)	
J0093B	Coaxial Code, 1.0 m (BNC-P•RG55A/U•BNC-P)	
J0093C	Coaxial Code, 2.0 m (BNC-P•RG55A/U•BNC-P)	
J1261A	Ethernet Cable (Shield type, Straight cable, 1.0 m)	
J1261B	Ethernet Cable (Shield type, Straight cable, 3.0 m)	
J1261C	Ethernet Cable (Shield type, Cross cable, 1.0 m)	
J1261D	Ethernet Cable (Shield type, Cross cable, 3.0 m)	
J0008	GPIB Cable, 2.0 m	
B0606A	Rack Mount Kit	
Z0975A	Keyboard (USB)	

* LVDS Cable is not included.
Please make order for separate J1416A LVDS Cable in the Application parts.

Note:

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Specifications are subject to change without notice.

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