

# Fully Digital Fading Simulator Supporting LTE, W-CDMA/HSPA, and 2x2 MIMO Dual Cells

## MF6900A Fading Simulator

The next-generation LTE communications standard introduces MIMO technology requiring complex evaluation procedures in a fading environment. The MF6900A Fading Simulator connects via a dedicated digital interface to the MD8430A Signalling Tester to configure a simple LTE base station test system for simulating 3GPP LTE 2x2 MIMO fading.

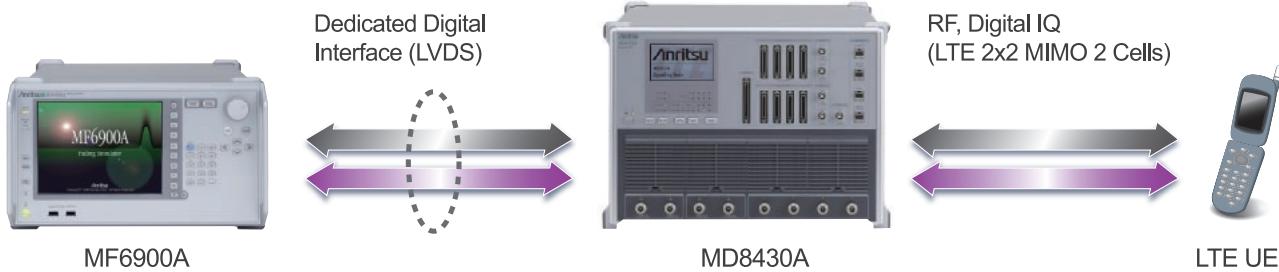


### High-reproducibility and Maintenance-free Measurements using Fully Digital Baseband Processing

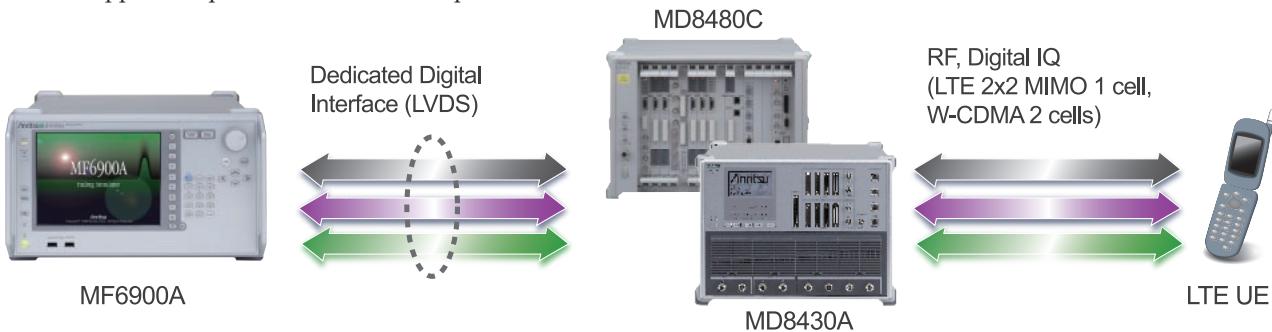
The MF6900A uses fully digital baseband processing to assure fading processing with high reproducibility at the same settings while greatly simplifying difficult MIMO power control and achieving high accuracy. Complete elimination of analog circuits assures excellent maintainability by removing the need for periodic calibration.

### All-in-one Support for LTE 2-cell 2x2 MIMO Handover Tests + LTE 2x2 MIMO ↔ W-CDMA Handover Tests

One MF6900A unit supports LTE 2-cell 2x2 MIMO tests, and combination with the MD8430A Signalling Tester with LTE support makes it easy to configure an LTE 2x2 MIMO system for handover tests.



Additionally, handover tests between LTE and W-CDMA systems are made easy just by connecting an MD8480C with W-CDMA support (requires MF6900A-001 option).



### Easy Fading Settings using Dedicated Interface with MD8430A/MD8480C

Fading setting is easy using MD8430A/MD8480C test scenarios and bundled fading profiles, allowing chipset and UE protocol developers to run tests without needing to understand complex fading setting procedures.

### Versatile and Expandable Hardware Platform

The hardware can be expanded to support a maximum of four input and four output ports and new functions such as support for 4x2 MIMO can be added by software updates.

## Main Specifications

Interface	Digital I/F (LVDS)
Channel Structure	SISO 2x2 MIMO, 2x1 MISO, 1x2 SIMO (with MD8430A connected and MX690010A installed) Moving, Birth-Death, Tx/Rx/TRx Diversity (with MD8480C connected and MX690020A installed)
Path Number	12 paths/channel
RF Frequency	100 MHz to 6000 MHz, 1 Hz resolution
Relative Path Delay	0 to 600 $\mu$ s, 0.1 ns resolution, 0.1 ns setting accuracy (relative to delay 0)
Relative Path Gain	-50 to 0 dB, 0.1 dB resolution, 0.05 dB setting accuracy
Doppler Frequency	0 or 0.1 Hz to 20 kHz, 0.01 Hz resolution
Fading Type	Constant Phase, Pure Doppler, Rayleigh, Rice
Dimensions and Mass	340 (W) $\times$ 200 (H) $\times$ 448 (D) mm (excluding projections) ≤15 kg (with MF6900A-001 or MF6900A-201 installed)
External Control	Ethernet, GPIB, USB
Power Supply Voltage	100 to 120 Vac, 200 to 240 Vac (-15/+10% and 250 Vac max.), 50 to 60 Hz ( $\pm 5\%$ ), ≤350 VA
Temperature	Operating range: +5° to +45°C; Storage range: -20° to +60°C
EMC	EN61326-1, EN61000-3-2
LVD	EN61010-1

## Fading Profiles

SISO	Case1, Case2, Case3, Case4, Case5, Case6, Case 8, VA3, VA30, VA120, PA3, PB3 [3GPP TS25.101 V7.12.0 (2008-05), TS34.121-1 V8.3.0 (2008-06)] EPA, EVA, ETU [3GPP TS36.101 V8.2.0 (2008-05)]
2x2 MIMO/1x2 SIMO	EPA, EVA, ETU [3GPP TS36.101 V8.2.0 (2008-05)]
Moving	Moving propagation conditions [3GPP TS25.101 V7.12.0 (2008-05)]
Birth-Death	Birth-Death propagation conditions [3GPP TS25.101 V7.12.0 (2008-05)]
Tx/Rx/TRx Diversity	Case1, Case2, Case3, Case4, Case5, Case6, Case 8, VA3, VA30, VA120, PA3, PB3 [3GPP TS25.101 V7.12.0 (2008-05) , TS34.121-1 V8.3.0 (2008-06)]

## 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/Code	Name	Model/Code	Name
MF6900A	<b>— Main Frame —</b> Fading Simulator	MF6900A-ES210	<b>— Warranty Service —</b>
J1416A	<b>— Standard Accessories —</b>	MF6900A-ES310	2 Years Extended Warranty Service
J0093C	LVDS Cable, 2 m: 2 pcs	MF6900A-ES510	3 Years Extended Warranty Service
	Coaxial Cord, 2.0 m (BNC-P•RG55A/U•BNC-P): 2 pcs		5 Years Extended Warranty Service
J0017F	Power Cord, 2.6 m: 1 pc	J1416A	<b>— Accessories —</b>
J0266	Adapter (3 to 2 pin): 1 pc	J0093B	LVDS Cable, 2.0 m
P0031A	USB Memory (>256 MB, USB 2.0 Flash Driver): 1 pc	J0093C	Coaxial Cord, 1.0 m
Z0541A	USB Mouse: 1 pc	J1261A	(BNC-P•RG55A/U•BNC-P)
	Installer CD-R (including operation manual): 1 pc	J1261B	Coaxial Cord, 2.0 m
		J1261C	(BNC-P•RG55A/U•BNC-P)
MF6900A-001	<b>— Option —</b>	J1261D	Ethernet Cable, 1.0 m
	Additional LVDS Interface	J0008	(Shield Type, Straight)
MF6900A-201	<b>— Retrofit Option —</b>	B0606A	Ethernet Cable, 3.0 m
	Additional LVDS Interface Retrofit	Z0975A	(Shield Type, Straight)
MX690010A	<b>— Software Options —</b>	J1261C	Ethernet Cable, 1.0 m
MX690020A	2x2 MIMO	J1261D	(Shield Type, Cross)
	WCDMA Extended Model	J0008	Ethernet Cable, 3.0 m
		B0606A	(Shield Type, Cross)
		Z0975A	GPIB Cable, 2.0 m
			Rack Mount Kit
			Keyboard (USB)