



# Radio Communication Test Station MT8000A

with

RF Chamber MA8171A

CATR Anechoic Chamber MA8172A

Shield Box MA8161A

# Index

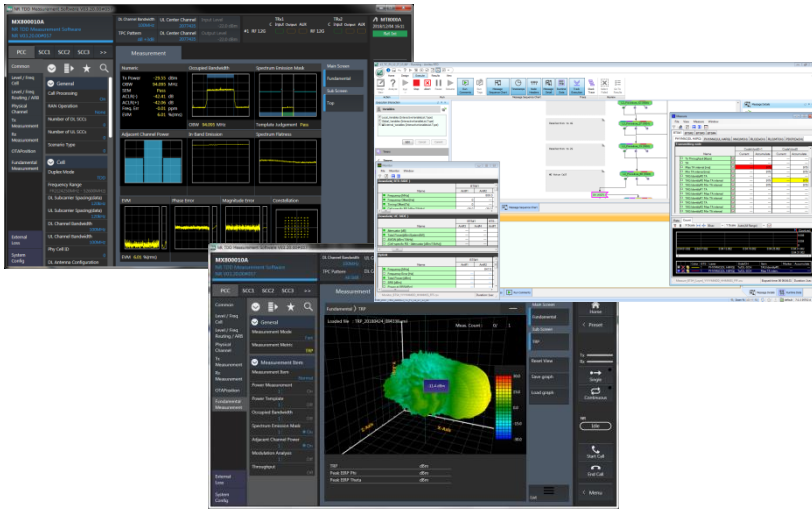
1. Product Overview
2. Software/Hardware Option
3. Specification Overview

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1. Product Overview
2. Software/Hardware Option
3. Specification Overview

# Product Overview

■ High performance and scalable test platform for 5G NR



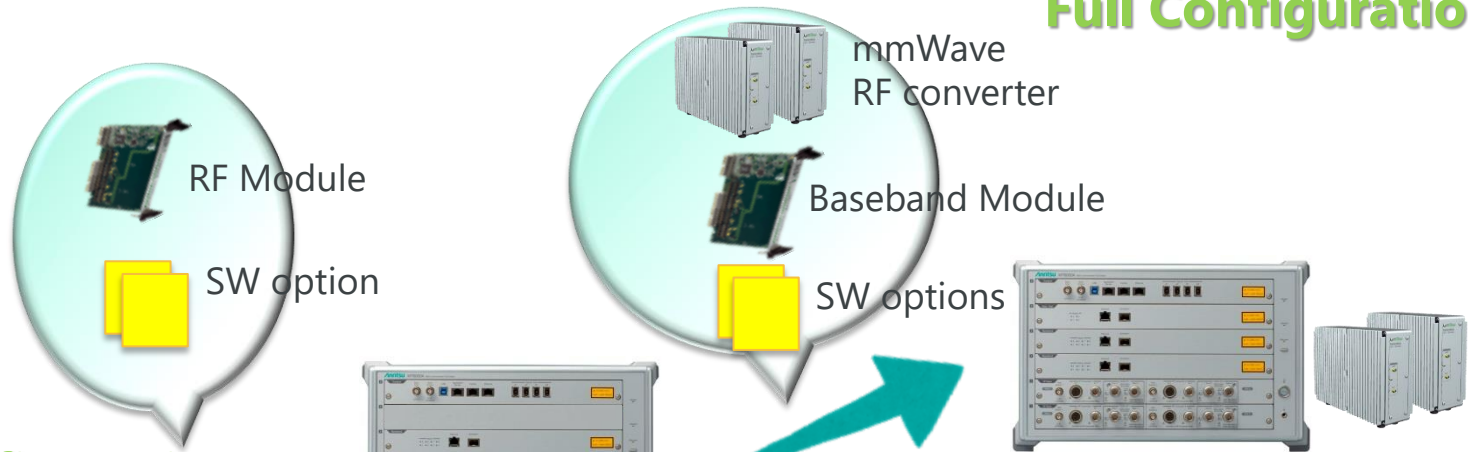
## MT8000A Radio Communication Test Station

- **Versatile and scalable** test platform for developing chipset and mobile devices for 5G.
- **Supports RF and Protocol** test for **Sub-6 GHz** and **mmWave** with broadband signal process and beamforming technology.
- **Advanced module based and software defined architecture** ensure the expandability for future technology evolution.

# Scalable platform for 5G NR Sub-6 GHz & mmWave in Long-Term

MT8000A has flexible functions scalability from minimum Sub-6 GHz Basic feature set to mmWave test environment with common HW platform.

## Full Configuration



## Minimum configuration



### Sub-6 GHz Basic

- Max BW: 100 MHz
- MIMO: DL 2x2MIMO
- Modulation: 64QAM
- Frequency: **2 to 6 GHz**

### Sub-6 GHz Enhanced

- Max BW: 200 MHz
- MIMO: DL **4x4MIMO**  
UL 2x2MIMO
- Modulation: **256QAM**
- Max Data TP: **over 2.5 Gbps**
- Frequency: **0.45G to 6 GHz**

upgrade

### Sub-6 GHz & mmWave

- Max BW: **800 MHz**
- MIMO: DL 4x4MIMO  
UL 2x2MIMO
- Modulation: 256QAM
- Max Data TP: **over 5 Gbps**
- Frequency: 0.45G to 6 GHz  
**28 GHz, 39 GHz**

# TRx Measurement Capability Overview

Advanced, intuitive and graphical user interface for various test parameters.

## 1. RF TRx test item

- TX Power, OBW, SEM, ACLR, Frequency Error, EVM, Phase Error, Constellation

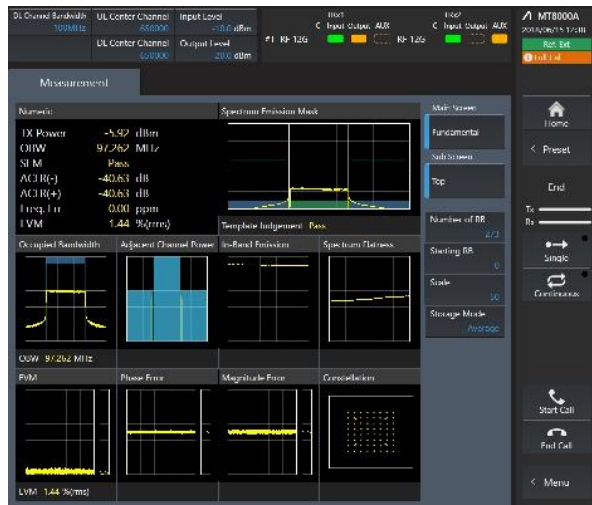
## 2. FR2 measurement metric

TRP/EIRP/EIS/CDF/Peak Search are supported. The antenna characteristics are displayed in the 2D/3D graph to allow user to intuitively grasp results.

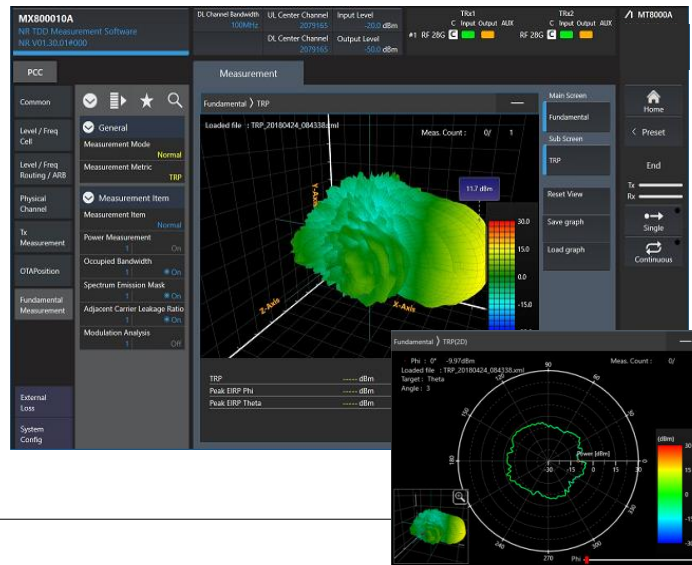
## 3. Automation Test Software (ATS)

- 3GPP RF test standard compliant automatic remote control tool
- Simple GUI for setting of test condition
- Automatically output for measurement result (Pass/Fail)

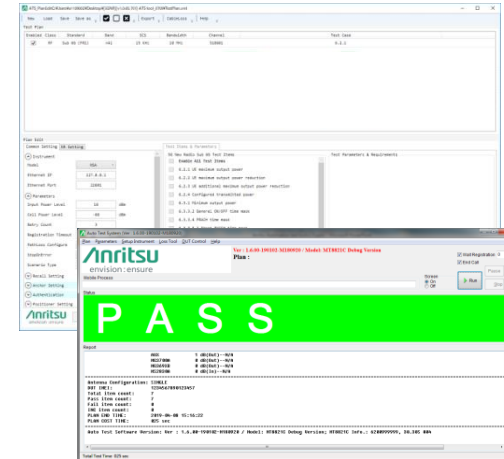
### TRx test item GUI



### FR2 Beam measure GUI



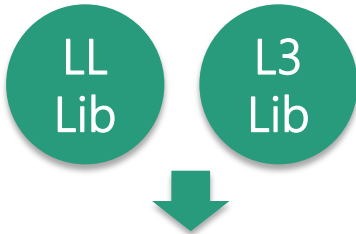
### Automation Test Software



# Protocol Test Capability Overview

## RTD – Integrated Protocol Test Environment

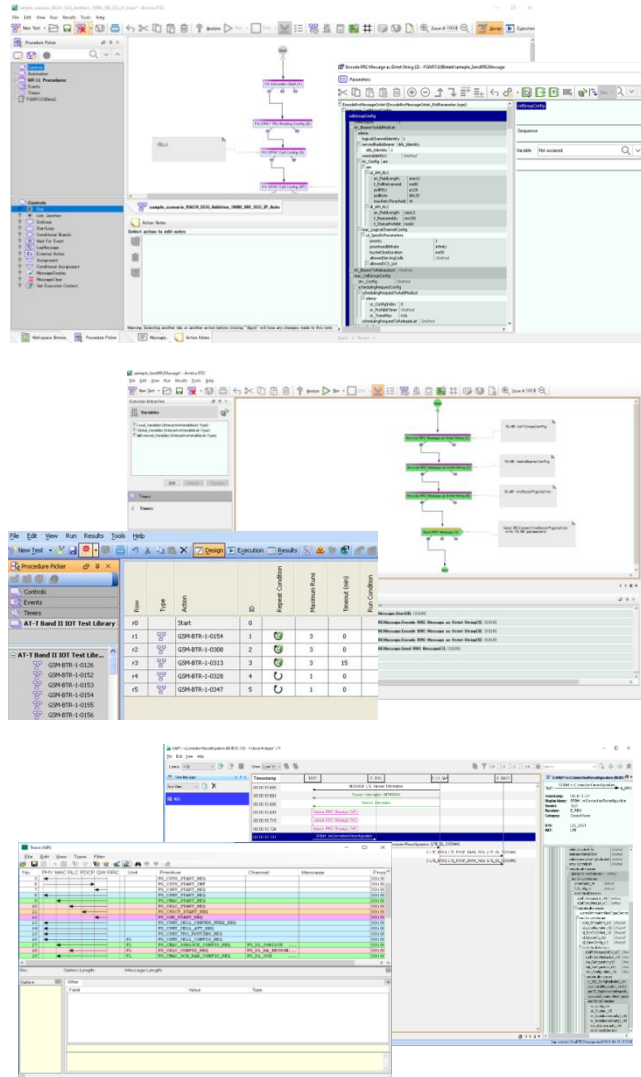
### DESIGN TEST



### EXECUTE & AUTOMATE



### TRACE/LOG & ANALYZE



### Protocol Test example

System Access

Cell Acquisition

Initial Access

Security setup

Radio bearer setup/release

Cell selection and reselection

Scell activation/Deactivation

Beam Acquisition

PHY DL/UL assignment

PHY Link Adaptations

Beam Tracking/Refinement

MAC H-ARQ operation

### Data Performance

IP Data Transfer (IPv4/v6)

Traffic Monitor

Internal Traffic Generator



# Function Test Capability Overview

Preliminary Information

## Easy Operation with State-machine GUI for 5G device function test

The screenshot displays the Anritsu SmartStudio NR software interface. The main window is titled "Anritsu - SmartStudio NR -" and features a menu bar (File, View, Setup, Simulation, Test, Log, System, Help) and a toolbar. The interface is divided into several sections:

- UE Status:** A state-machine GUI on the left showing states like Power Off, Detach, Registration, Idle, Origination, Termination, Communication, Handover, UE Release, and NW Release.
- Common Parameters:** A table listing network parameters for NR and LTE cells.
- Network Diagram:** A central diagram showing a UE connected to NR and LTE networks, with a Packet Connection and IMS server.
- Sequence Log:** A table at the bottom showing test sequence details.

No.	Time Stamp	Sequence Type	Direction	Data
53	000:00:00	Parameter	NR1	Cell Parameter (Default Cell A_BT51)
54	000:00:00	Parameter	NR2	Cell Parameter (Default Cell B_BT52)
55	000:00:00	Parameter	LTE1	Cell Parameter (Default Cell A_BT53)
56	000:00:00	Parameter	LTE2	Cell Parameter (Default Cell B_BT54)
57	000:00:00	Parameter	LTE3	Cell Parameter (Default Cell C_BT55)



## SmartStudio NR

- Interactive NR-NSA test environment **without any complex test scripts**
- Network parameter settings matching user test environment
- Included IMS server for SIP based application test
- Unique graphical SMS/PWS Centre applications for SMS/CMAS/ETWS service



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1. Product Overview
2. Software/Hardware Option
3. Specification Overview

# Hardware Option - MT8000A Platform

Flexible modular architecture for various test need

## MT8000A-001 Control Module

Control for each MT8000A module

## MT8000A-009 Multi-box Data Connection

For protocol test using multiple units

## MT8000A-012 Data Test Module

Simulate U-plane stack with built-in IP generator

## MT8000A-011 Baseband Module

Simulate full-stack 5G NR gNB signaling.

## MT8000A-020 RF Base Module

Base module for RF TRx. Max.

### MT8000A-021 0.4GHz-6GHz RF Sub Module

### MT8000A-022 3GHz-12GHz RF Sub Module

### MT8000A-023 Extend RF 2.4GHz-3GHz

### MT8000A-024 Extend RF 6GHz-7.125GHz

## MT8000A-031 0.4GHz-6GHz Multi RF Module

## MT8000A-032 0.4GHz-6GHz Multi RF Extension

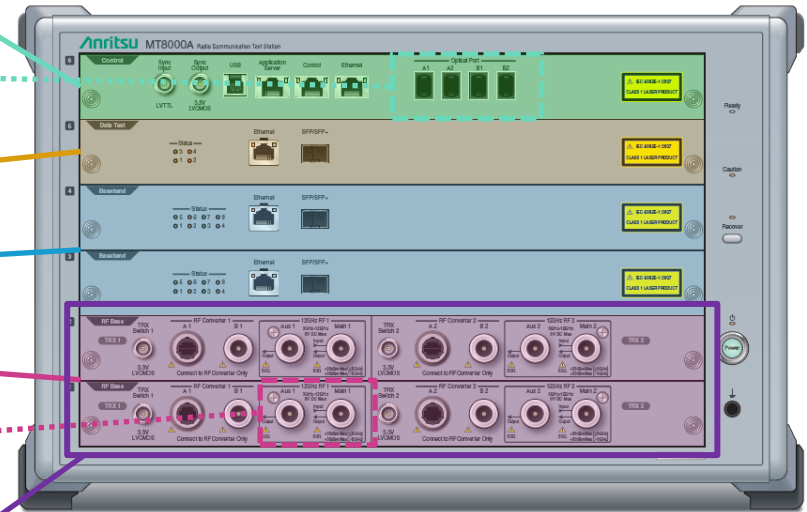
## MA80001A 28GHz RF Converter

## MA80002A 39GHz RF Converter

## MA80003A Multiband RF Converter

for 2x2 MIMO, 2pcs converters required

## MT8000A Mainframe



J1771A/B Coaxial Cord (N-N) 1.0m/3.0m  
RF Cable

J1772A/B Control Cable 1.0m/3.0m  
Cable for Converter control signal



## Warranty Service

MT8000A-ES210/ES310/ES510	2/3/5 Years Extended Warranty Service	Warranty service for MT8000A
MA80001A-ES210/ES310/ES510	2/3/5 Years Extended Warranty Service	Warranty service for MA80001A
MA80002A-ES210/ES310/ES510	2/3/5 Years Extended Warranty Service	Warranty service for MA80002A
MA80003A-ES210/ES310/ES510	2/3/5 Years Extended Warranty Service	Warranty service for MA80003A

# Hardware Option - MA8171A OTA Test Environment

■ Integrated OTA environment for beamforming test

## MA8181A

28GHz Test Antenna



## Z1996A

28GHz/39GHz Test Antenna



## Z2031A

Test Antenna

## MA80001A

28GHz RF Converter

## MA80002A

39GHz RF Converter

## MA80003A

Multiband RF Converter

## MT8000A

Radio Communication  
Test Station(5G NR Tester)

## B0746A

RF Chamber Rack

## B0747A

RF Converter Rack

Anritsu

## MA8171A

RF Chamber

## MA8175A

Positioner

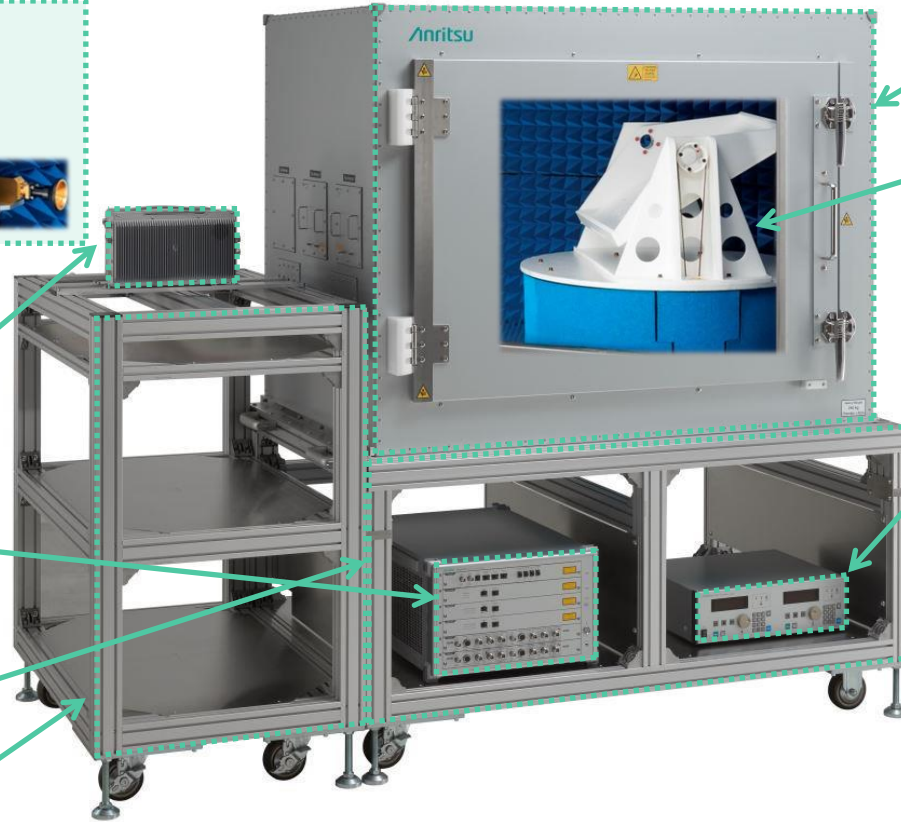
## Z1984A

Jig for Tray

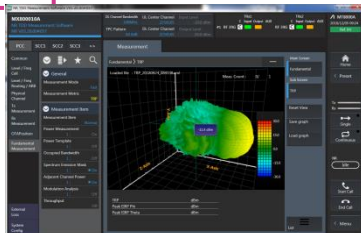


## MA8174A

Position Controller

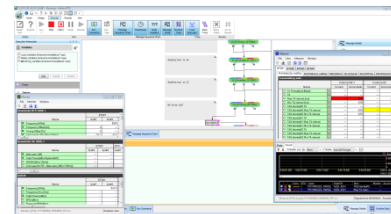


GUI



## MX800010A-002

NR TDD OTA Measurement Software  
(For RF TRx Test)



## MX800030A/50A

Rapid Test Designer (RTD)  
(for protocol test)

# Hardware Option - MA8172A OTA Test Environment

■ Integrated OTA environment for Black Box CATR TRx testing

**MA8172A**  
CATR Chamber

Reflector

**MT8821C**  
Radio Communication  
Test Station (LTE Tester)

**MT8000A**  
Radio Communication  
Analyzer (5G NR Tester)

**MA8172A-AK022 NR**  
Link Antenna

**MA8179A**  
Positioner

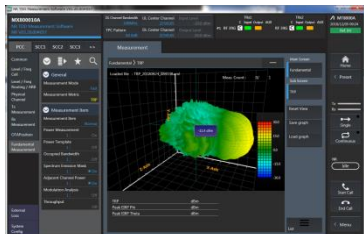
**MA8172A-021/022**  
Test Antenna

**MA80001A/2A/3A**  
RF Converter (Inside)

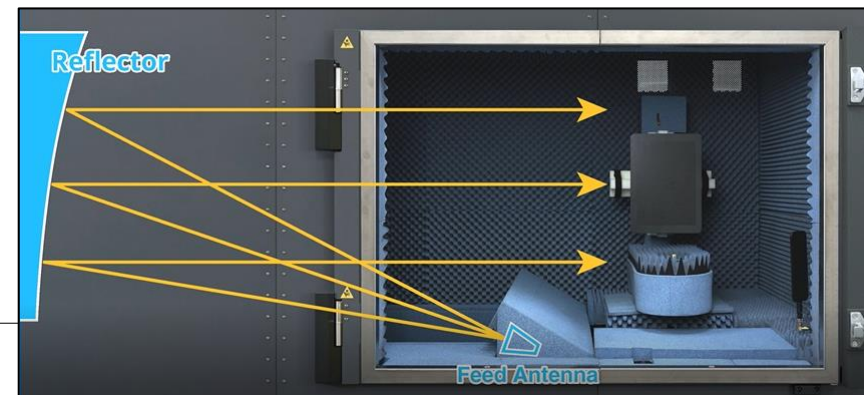
**MA8178A**  
Position Controller



GUI



**MX800010A-002**  
NR TDD OTA Measurement Software  
(For RF TRx Test)

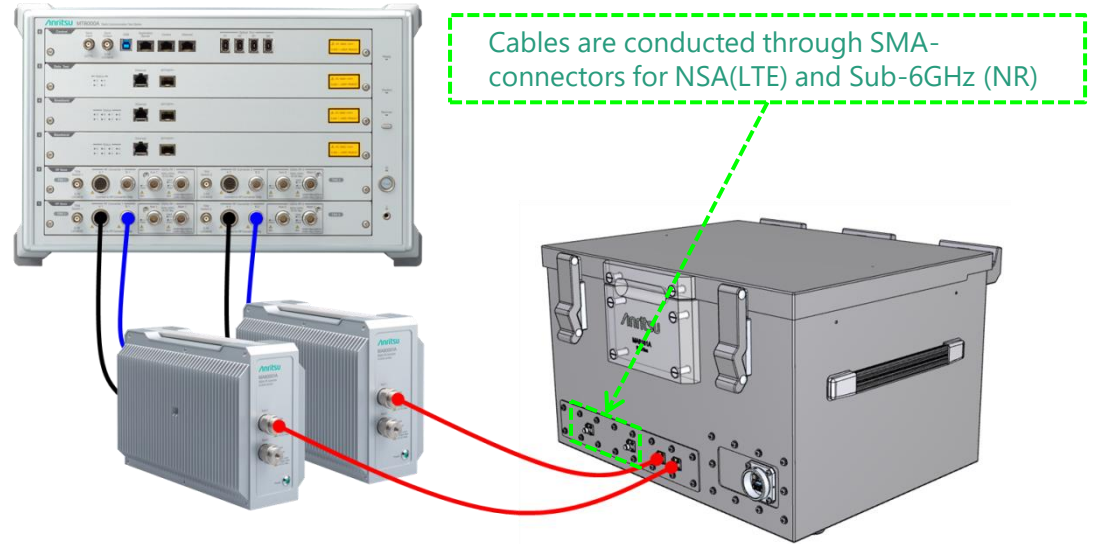


# Hardware Option - MA8161A Shield Box

## ◆ MA8161A Shield Box for mmW Protocol Test

### Test Use Case

- ✓ Protocol Functional test
- ✓ Throughput test
- ✓ Debug
- ✓ Regression test



## ◆ Overview

Model	MA8161A
Type	Shield Box
Solution	Protocol test for R&D, CAT (Under verification)
Compatible models	MT8000A
Antenna type	Spiral Antenna
Test environment	Shield Box, Radiative NFM
Shielding characteristics	≥50 dB (600 MHz ≤ frequency ≤ 43.5 GHz) (nom.)
Maximum Supported UE Size	200 (W) x 300 (H) x 15 (D) mm, 1kg
Outer size	434 (W) x 271 (H) x 328 (D) mm (excluding projections), ≤16 kg (Max.)



# LTE Anchor

## ■ Minimum configuration as an LTE Anchor.

For RF Measurement (1CC, SISO)



MT8821C LTE Anchor Configuration

Model No.	Description	Qty.
MT8821C	Radio Communication Analyzer	1
MT8821C-008	LTE Measurement Hardware	1
MX882112C	LTE FDD Measurement Software	1
MX882112C-010	LTE FDD Anchor For 5G NSA	1
MX882113C	LTE TDD Measurement Software	1
MX882113C-010	LTE TDD Anchor For 5G NSA	1

For Protocol Test (1CC, 2x2 MIMO)



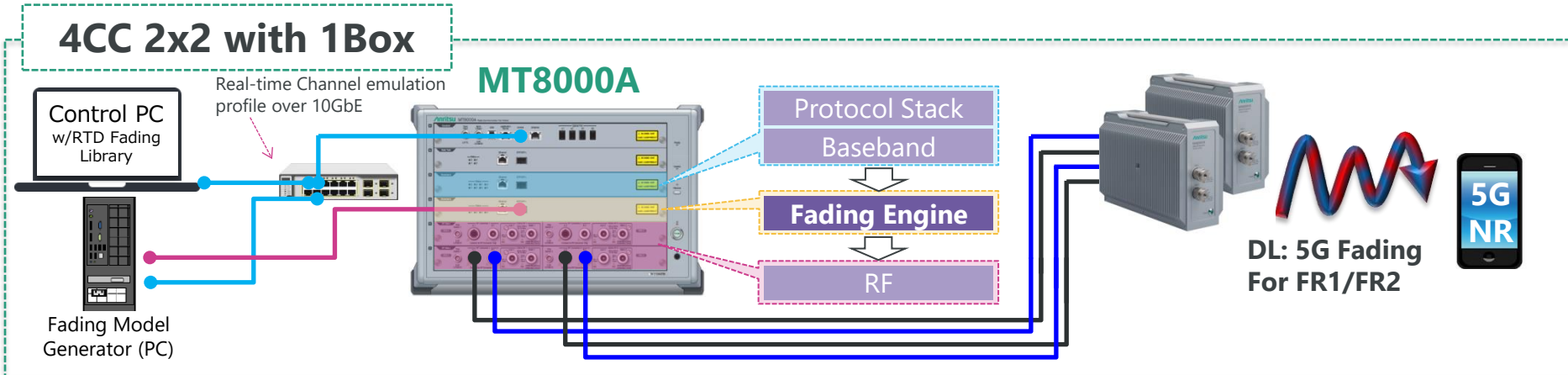
MD8430A LTE Anchor configuration

Model No.	Description	Qty.
MD8430A	Signalling Tester	1
MD8430A-035	LTE Enhanced Test Model(ETM)	1
MD8430A-005	Extended Frequency Range to 3.8GHz Hardware2	1
MD8430A-060	LTE FDD Option	1
MD8430A-061	LTE TDD Option	1
MD8430A-064	LTE Anchor For 5G NSA Option	1
MD8430A-086	Ciphering Option	1

# Internal Fading Concept and typical Configuration

## ■ Fading Feature Concept

- Real-time Fading for FR1 and FR2
- All Features for requirements of 3GPP 5G NR UE Conformance Test
- NR + Fading on one MT8000A \*Up to 4CC, need two boxes for up to 8CC



Model	Description	Qty.
<b>NR Fading software</b>		
MX800031A	NR Fading Basic	1
MX800031A-001	NR Fading 2x2 MIMO	1
MX800031A-002	NR Fading 4x2/4x4 MIMO	1
MX800031A-003	NR Fading 2CA-4CA	1
MX800031A-004	NR Fading 5CA-8CA	1
<b>RTD</b>		
MX800050A-012	5G Fading Library for RTD	1
MX800050A-SS112	5G Fading Support Service (Per Year)	1

- Channel Model
  - 3GPP 5G Channel Models (3GPP TS 38.101-4 Annex B V15.2.0, 2019-06)
  - Static Butler and Bypass models
  - High Speed Train
  - Custom Model Editor





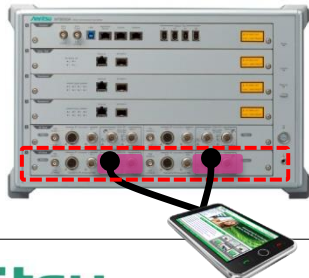
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# RF Base Module specification (Sub-6 GHz and IF)

MT8000A supports sub-6 GHz and IF (Intermediate Frequency) up to 12 GHz. MT8000A-020 has interface for RF converter (mmWave) and Sub-6 GHz (MT8000A-021, MT8000-022 with 023/024).

Item	MT8000A-024	MT8000A-023	MT8000A-022		MT8000A-021
Frequency range	6.0 to 7.125 GHz	2.4 to 3.0 GHz	3.0 to 6.0 GHz	6.0 to 12.0 GHz	0.4 to 6.0 GHz
Modulation BW	200 MHz		1 GHz		400 MHz <sup>*4</sup>
Connector	N – J				
Simplex/Duplex	Full Duplex, TX Simplex				
Downlink	2 TX				
Output level	-110 to -18 dBm	-110 to -10 dBm		-110 to -18 dBm	-110 to -10 dBm
Level Accuracy	±1.3 dB <sup>*1</sup>	±0.7 dB typ <sup>*1</sup>	±1.0 dB <sup>*1</sup>	- <sup>*3</sup>	±0.7 dB typ(0.4-3 GHz) <sup>*1</sup> ±1.0 dB(3-6 GHz) <sup>*1</sup>
Uplink	2 RX				
Max input power(Setting)	+26 dBm				
Max input power	+30 dBm	+35 dBm		+30 dBm	+30 dBm
Level Accuracy (100MHz BW)	±1.3 dB	±0.5 dB typ <sup>*5</sup>	±1.0 dB <sup>*2</sup>	- <sup>*3</sup>	±0.5 dB typ(0.4-3 GHz) <sup>*5</sup> ±1.0 dB(3-6 GHz) <sup>*5</sup>
Module View					



RF Base module

+18°C to +28°C

\*1 : at Output Level ≥ -100 dBm

\*2 : at Input Level Setting ≥ -40 dBm

\*3 : Level Accuracy is not specified because of for Protocol.


\*4 : 20 MHz (0.4 GHz ≤ f < 0.6 GHz), 200 MHz (0.6 GHz ≤ f < 3.3 GHz), 400 MHz (3.3 GHz ≤ f ≤ 6 GHz)

\*5 : at Input Level Setting ≥ -20 dBm (±0.7 dB typ @ -40 to -20 dBm)

\*6 : 20 MHz (0.4 GHz ≤ f < 0.6 GHz), 200 MHz (0.6 GHz ≤ f ≤ 6 GHz)

# Multi RF Module specification (Sub-6 GHz)

MT8000A-031 / 032 is dedicate for Sub-6 GHz module and expand number of TRx port.

Item	MT8000A-031	MT8000A-031/032
Frequency range	0.4 to 6.0 GHz	
Modulation BW	200 MHz <sup>*3</sup>	
Connector	N – J	
Simplex/Duplex	Full duplex	
Downlink	4 TX	8 TX
Output level	-110 to -10 dBm	
Level Accuracy	$\pm 0.7$ dB typ (0.4-3 GHz) <sup>*1</sup> , $\pm 1.0$ dB (3-6 GHz) <sup>*1</sup>	
Uplink	2 RX	4 RX
Max input power (Setting)	+26 dBm	
Max input power	+35 dBm	
Level Accuracy (100 MHz BW)	$\pm 0.5$ dB typ (0.4-3 GHz) <sup>*2</sup> , $\pm 1.0$ dB (3-6 GHz) <sup>*2</sup>	
Module View		



+18°C to +28°C

\*1 : at Output Level  $\geq -100$  dBm

\*2 : at Input Level Setting  $\geq -20$  dBm ( $\pm 0.7$  dB typ @ -40 to -20 dBm)

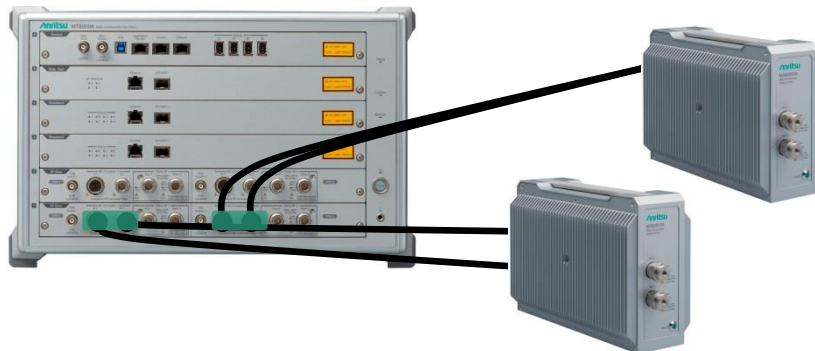
\*3 : 20 MHz ( $0.4 \text{ GHz} \leq f < 0.6 \text{ GHz}$ ), 200 MHz ( $0.6 \text{ GHz} \leq f \leq 6 \text{ GHz}$ )

# RF Converter specification (for mmWave)

MT8000A supports mmWave frequency range by RF Converter.

			MA80001A 28GHz RF Converter	MA80002A 39GHz RF Converter	MA80003A Multiband RF Converter
Frequency Range			24.25 to 29.5 GHz	37.0 to 40.0 GHz	24.25 to 29.5 GHz 37.00 to 43.5 GHz
Connector Type			K/P	K/P	V/P
Output level			-90 to +5 dBm	-90 to +5 dBm	-70 to +15 dBm
Level Accuracy			±1.5 dB*1	±2.0 dB*1	±1.5 dB*1 (24.25~29.5) ±2.0 dB*1 (37.00~43.5)
Maximum input Level			CW,+20 dBm 0VDC	CW,+17 dBm 0VDC	CW,+20 dBm 0VDC
Measurement Accuracy			±1.5 dB*1	±2.0 dB*1	±1.5 dB*1 (24.25~29.5) ±2.0 dB*1 (37.00~43.5)
n257	26500 – 29500	TDD	✓	---	✓
n258	24250 – 27500	TDD	✓	---	✓
n259	[40500 – 43500]	TDD	---	---	✓
n260	37000–40000	TDD	---	✓	✓
n261	27500 – 28350	TDD	✓	---	✓

## MT8000A



## RF Converter

28 GHz Converter / 39 GHz Converter/  
Multiband RF Converter

+18°C to +28°C

\*1 : 37.0 GHz to 40 GHz

\*2 : at Measurement band width 100 MHz, Input Level Setting ≥ -50 dBm

# MT8000A Fading Feature Specification

## Fading Feature Concept

- **Real-time Fading** on external PC with Fading Engine on Baseband Board
- Support all fading features required for **3GPP 5G NR UE Conformance Test**

## Key Specification

- Faded channel : 64 channels
  - Sub 6G - 1 gNodeB with **four 100 MHz CC (400 MHz per gNodeB – 2x2, 4x2, 4x4 links)** 4CC 4x4, 8CC 2x2  
by 2 units
  - mmWave (IF)- 1 gNodeB with **eight 100 MHz CC (800 MHz per gNodeB – only 2x2 links)**
- Channel Model
  - 3GPP 5G Channel Models (3GPP TS 38.101-4 Annex B V15.2.0, 2019-06)
  - Static Butler and Bypass models
  - High Speed Train
- AWGN setting range is -99.99 to -15.0 [dBm/30 kHz]
- Maximum Doppler Frequency : 6 kHz

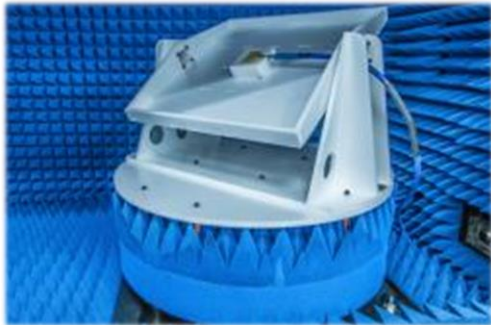
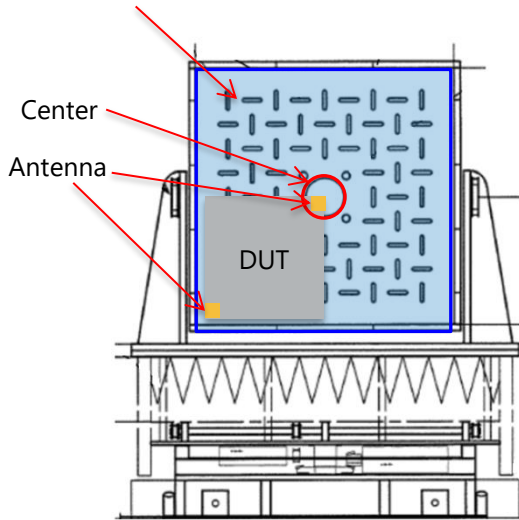
# MA8171A OTA Chamber specification



Item	Specification
Antenna Port	6 Ports
Max. Num. of Mounted Antenna	4 Antennas
Outer Size	Single: 1460 (W) x 1210 (H) x 1000 (D) mm with Rack: 1460 (W) x 1785 (H) x 1000 (D) mm
Weight	With Rack: 240 kg
Shielding Characteristics	$\geq 60$ dB (24 GHz – 40 GHz)
Reflectivity	$\geq 30$ dB (24 GHz – 40 GHz)
AUT to source horn distance	0.6 m (max.)
Path loss calibration	reference antenna method
Quiet zone size	MA8181A: 0.15 (m) diameter Z1996A: 0.3 (m) diameter
Quiet zone test @28 GHz	TBD ( 3GPP (TS 34.114 G.2) as a reference )

# 3D Positioner specification

Tray Size (400 mm x 400 mm)



Item		Specification
Max. DUT Size (longer side)		330 mm x 270 mm x 140 mm
Tray Size		400 x 400 mm
Allowable Capacity		1 kg
Axis		2-axes rotator
Azimuth ( $\varphi$ ) / Elevation ( $\theta$ ) <sub>DUT</sub>	Rotation range	$\Phi$ : -20.0 deg. to 380.0 deg. $\theta$ : 0.0 deg. to 359.9 deg.
	Max. Rotation speed	15 rpm
	Rotation angle resolution	0.1 degree
	Stop accuracy	$\pm 0.5$ degree (Difference between designated and actual positioner location)

Formed polystyrene (dielectric constant = 1.1) based positioner has excellent performance and lower reflection for OTA test environment.

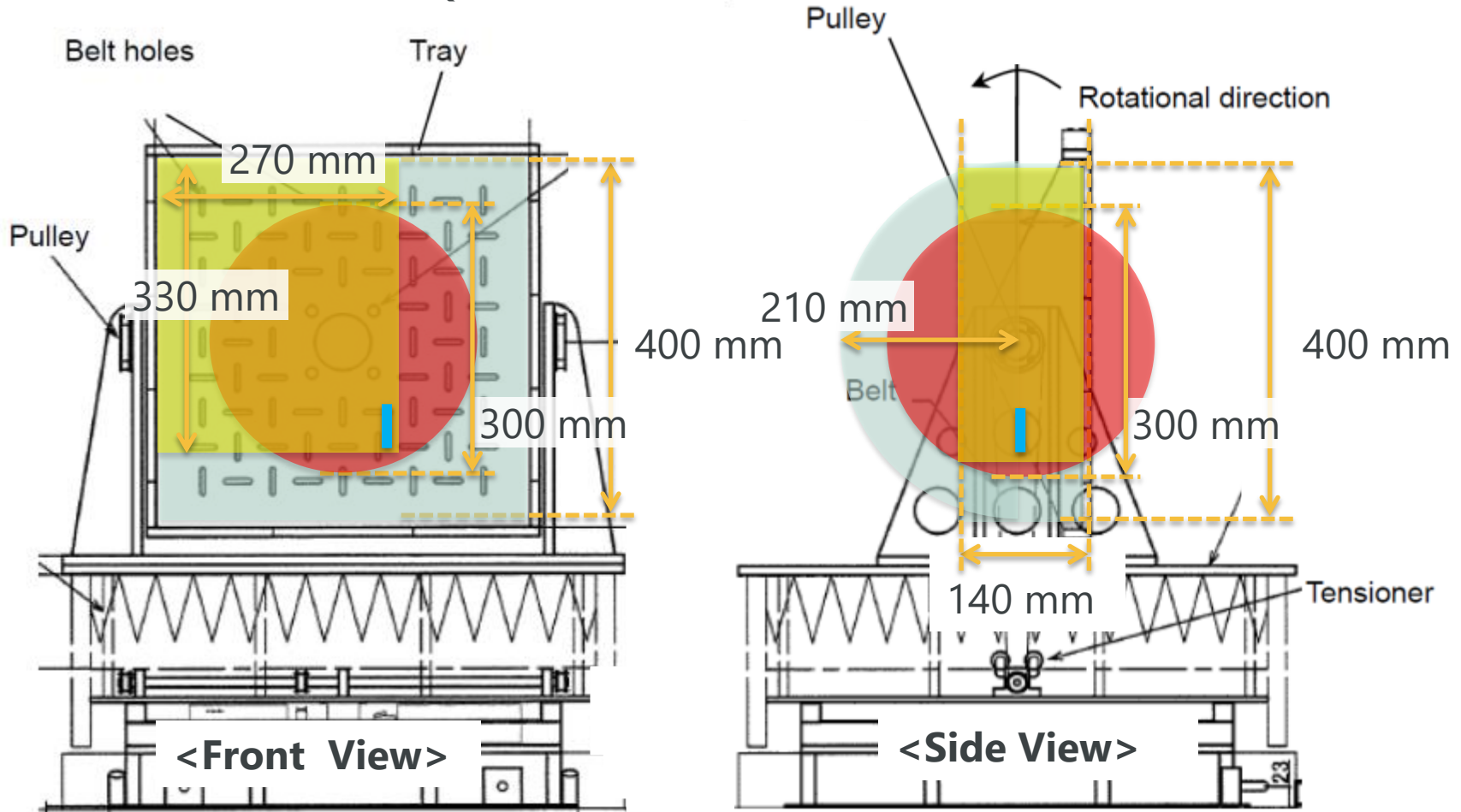


# Target DUT Size for MA8171A

Supports 12.9-inch tablet by using Z1996A

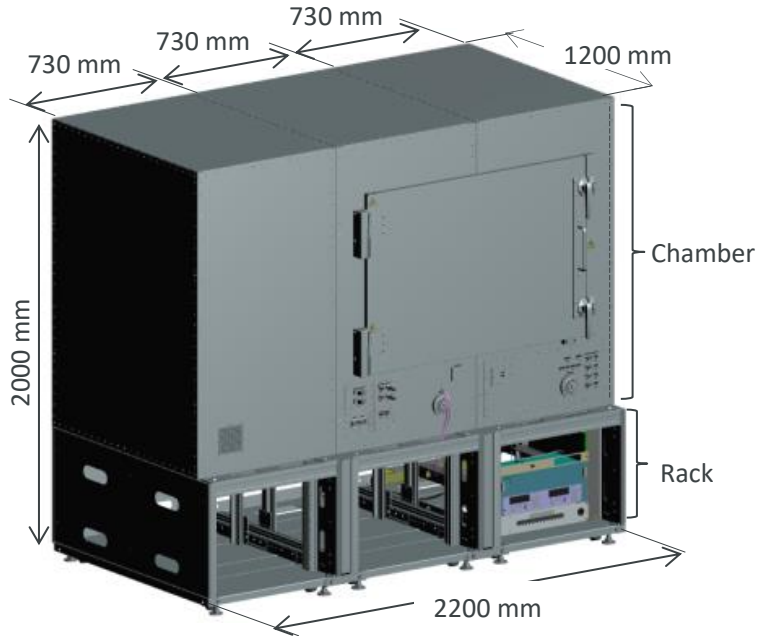
- Maximum DUT size: **330 mm x 270 mm x 140 mm**
- Maximum DUT weight: **1.0 kg**
- Antenna mounted within Quiet Zone

- : DUT installation range
- : Quiet Zone
- : DUT example
- : Antenna example  
( $\leq 55$  mm @ 29.5 GHz / 46 mm @ 42.5 GHz)



# MA8172A OTA Chamber specification

## MA8172A CATR Anechoic Chamber



Frequency Range(for shielding)	600 MHz – 110 GHz
Shielding Characteristics	≥ 60 dB
Outer Size with Rack W x H x D (m)	2.20 x 2.00 x 1.20
Mass (kg)	≤ 700
Reflector Size (cm)	78 x 78
Reflector Type	Rolled edge
Quiet Zone	Spherical Φ 33 cm
Number of Antennas	FR2 In-band meas. x 1 FR2 Link x 2 LTE Link x 2

## MA8172A-021 Test Antenna

Frequency	23.4 GHz – 42 GHz (n257, n258, n260, n261)
VSWR	≤ 2.2
Gain	12 ~ 16 dBi (nom.)
Polarization	Dual polarization
Cross Polarization Ratio	25 dB (nom.)
Isolation	≥ 20 dB (nom.)

## MA8172A-022 Test Antenna

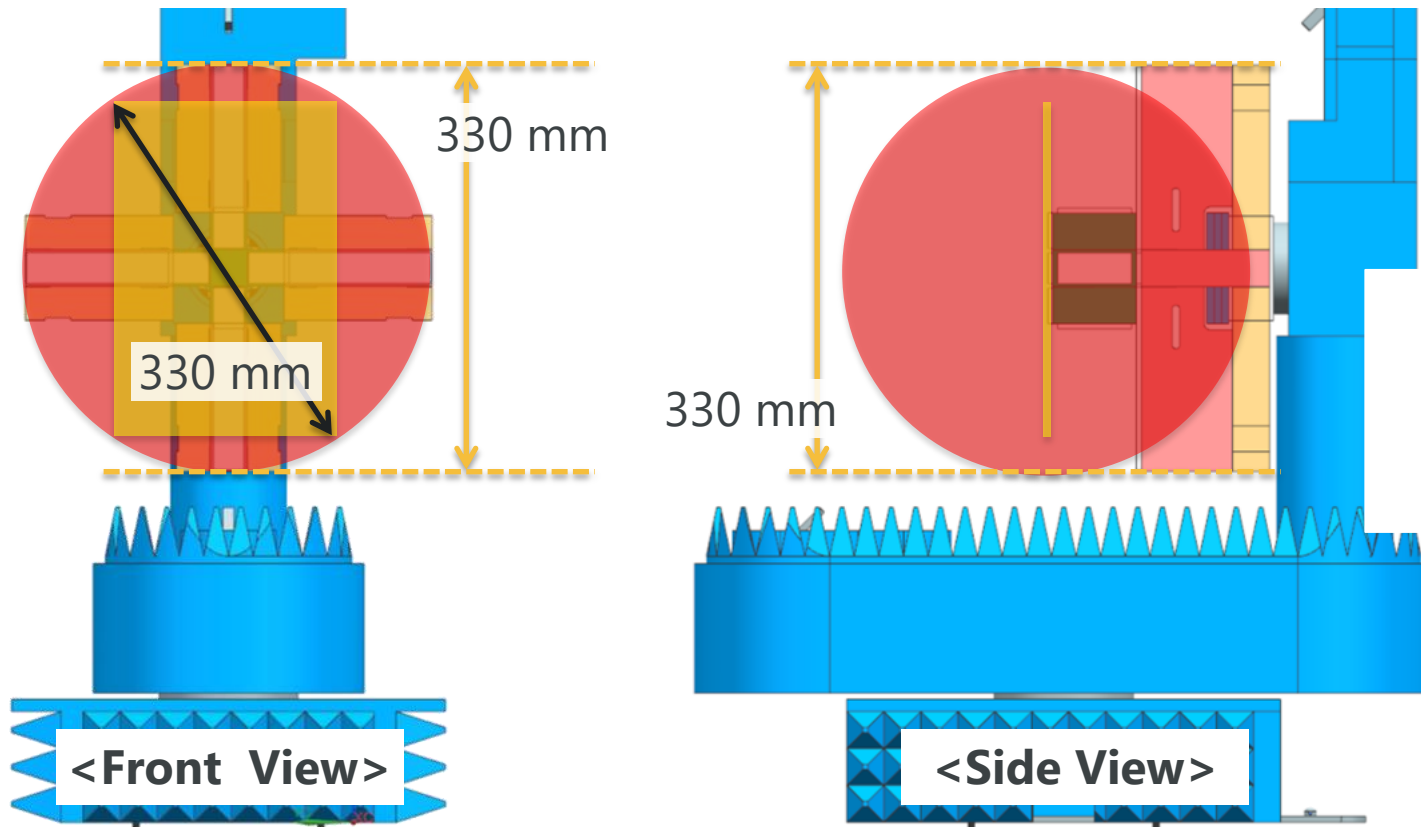
Frequency	22.65 GHz – 45.1 GHz
VSWR	≤ 2.6
Gain	≥ 10 dBi (22.65 – 24.25GHz) (nom.) 11 ~ 15 dBi (24.25 – 45.1GHz) (nom.)
Polarization	Dual polarization
Cross Polarization Ratio	20 dB (nom.)
Isolation	≥ 20 dB (nom.)

# Target DUT Size for MA8172A

## Supports 11-inch tablet

- Maximum DUT size: (Diagonal) 330 mm  
-> for example 270 mm x 180 mm x 10 mm
- Maximum DUT weight: **2.0 kg**
- DUT should be mounted within Quiet Zone.

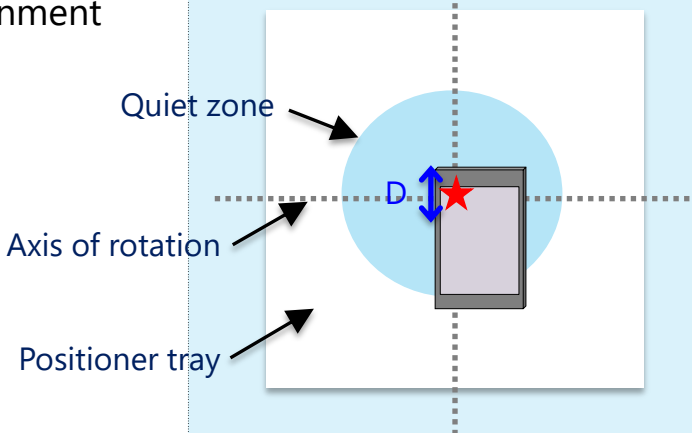
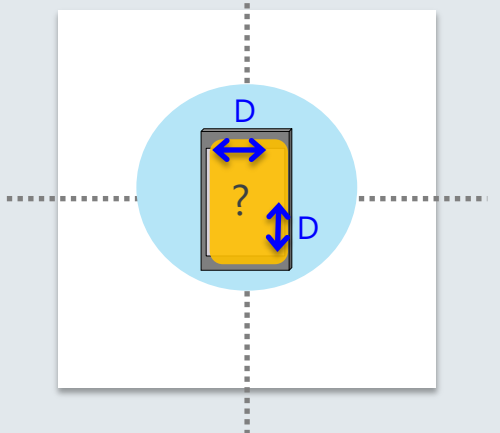
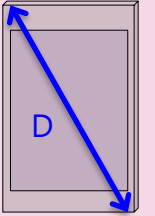
■ : Quiet Zone  
■ : DUT example



# OTA TRx Test Environment

## OTA Test Approach: White box, Black box and Gray Box

White/ Gray box are supported by combining MT8000A and MA8171A

	For MA8171A	For MA8171A	For MA8172A
	White Box	Gray Box	Black Box
Antenna size	Known	Known	Unknown
Antenna position	Known	Unknown	Unknown
Setting image of DUT for OTA test environment	Put active antenna at the center of rotation.  <p>★ : activate antenna            D : antenna size            (= Actual antenna length)</p>	Put active antenna in Quiet zone.  <p>■ : antenna allocated area            D : antenna size            (= Actual antenna length)</p>	 <p>D : antenna size            (= UE diagonal length)</p>

3GPP (under discussion in following condition)

- D ≤ 50 mm
- UE size ≤ 150 mm

# Recommended PC Specifications

## ● Application Parts

- Z2017A/B: for MX800010A (RF TRx Measurement)
- Z1320E: for MX800030A/50A (RTD)

## ■ for MX800010A

Item	Specifications
OS	Windows 10 Professional 64 bit
CPU	Intel Core i7 or more (recommendation)
Memory	8 GB or more (recommendation)
LCD size	12.1 inches or larger Screen resolution: 1280 x 800 or larger
Interface	Gigabit Ethernet (1000Base-T) network adapter USB 3.0 or more
Required Pre-Install Software	NI VISA (for Position Controller)
Language	English

## ■ for Server PC

Item	Specifications
OS	CentOS 6.8 Linux
CPU	Intel® Xeon® E3-1220 v6 3.0 GHz, 8M Cash, 4Core / 4Thread, Turbo (72W)
HDD	1 x 500 GB SATA, 3.5", 7.2K RPM, 3 Gbps
Memory	1 x 8 GB UDIMM 2400MT/s, 1R, x8 Data Width
Interface	SATA DVD+/-RW Broadcom BCM5720 1Gb Base-T 2port (On board)

## ■ for RTD (MX800030A/50A)

Item	Specifications
OS	Windows 10 64 bit
CPU	Intel Core i7 or more (recommendation)
HDD	500 GB 2.5 inch SATA HDD (7200 rpm) or more
Memory	8 GB (4 GB x 2) or more Non-ECC DDR3 1600 MHz SDRAM Memory
LCD size	24" Monitor with screen resolution 1920 x 1080
Interface	DVD drive (for installation) 1 Spare USB port for dongle Two 1 Gigabit Ethernet cards Serial and USB ports for AT and MMI command communication with the UE. The number of ports depends on the UE requirements. 8.3 Short Filename Support enabled
Required Pre-Install Software	-

## ■ for NR Fading (MX800031A)

Item	Specifications
OS	Ubuntu 18.04.2 Server x64
CPU	Intel Core i7 or greater
Storage	120 GB SSD
Memory	16 GB RAM
Interface	Server Network Adapter: Intel E10G42BTDA X520-DA2 10Gbps PCI Express 2.0 x8 2x SFP+ SFP+ Transceiver: 8G FC/10G SR 850 nm SFP Ether cables: Cat 6
Required Pre-Install Software	

# Ordering information –Mainframe/RF Converter

## ■Mainframe

Model No.	Name
MT8000A	Radio Communication Test Station
MT8000A-001	Control Module
MT8000A-009	Multi-box Data Connection
MT8000A-011	Baseband Module
MT8000A-012	Data Test Module
MT8000A-020	RF Base Module
MT8000A-021	0.4GHz-6GHz RF Sub Module
MT8000A-022	3GHz-12GHz RF Sub Module
MT8000A-023	Extend RF 2.4GHz - 3GHz
MT8000A-024	Extend RF 6GHz-7.125GHz
MT8000A-031	0.4GHz-6GHz Multi RF Module
MT8000A-032	0.4GHz-6GHz Multi RF Extension

## ■HW Retrofit (@Tohoku Anritsu)

Model No.	Name
MT8000A-109	Multi-box Data Connection Retrofit
MT8000A-111	Baseband Module Retrofit
MT8000A-112	Data Test Module Retrofit
MT8000A-120	RF Base Module Retrofit
MT8000A-121	0.4GHz-6GHz RF Sub Module Retrofit
MT8000A-UG121	RF Sub Module Replacement to 0.4GHz-6GHz
MT8000A-122	3GHz-12GHz RF Sub Module Retrofit
MT8000A-123	Extend RF 2.4GHz - 3GHz Retrofit
MT8000A-124	Extend RF 6GHz-7.125GHz Retrofit
MT8000A-132	0.4GHz-6GHz Multi RF Extension Retrofit

## ■HW Retrofit (@Service Center)

Model No.	Name
MT8000A-209	Multi-box Data Connection Retrofit
MT8000A-211	Baseband Module Retrofit
MT8000A-212	Data Test Module Retrofit
MT8000A-220	RF Base Module Retrofit
MT8000A-221	0.4GHz-6GHz RF Sub Module Retrofit
MT8000A-UG221	RF Sub Module Replacement to 0.4GHz-6GHz
MT8000A-222	3GHz-12GHz RF Sub Module Retrofit
MT8000A-223	Extend RF 2.4GHz - 3GHz Retrofit
MT8000A-224	Extend RF 6GHz-7.125GHz Retrofit
MT8000A-232	0.4GHz-6GHz Multi RF Extension Retrofit

## ■RF Converter

Model No.	Name
MA80001A	28GHz RF Converter
MA80002A	39GHz RF Converter
MA80003A	Multiband RF Converter
J1771A	Coaxial Cord (N-N, 1.0m)
J1771B	Coaxial Cord (N-N, 3.0m)
J1771C	Coaxial Cord (N-N, 5.0m)
J1772A	Control Cable, 1.0m
J1772B	Control Cable, 3.0m
J1772C	Control Cable, 5.0m
J1806A	VJ-VJ Adaptor
J1806B	VJ-KJ Adaptor
J1806D	VJ-KP Adaptor
J1775A/B/C/D	Coaxial Cable (KM-KM, 0.3m/1.0m/2.0m/3.0m)
J1811A/B	Coaxial cable (VM-VM, 0.28m/2.5m)

## ■Warranty Service

Model No.	Name
MT8000A-ES210	2 Years Extended Warranty Service
MT8000A-ES310	3 Years Extended Warranty Service
MT8000A-ES510	5 Years Extended Warranty Service
MA80001A-ES210	2 Years Extended Warranty Service
MA80001A-ES310	3 Years Extended Warranty Service
MA80001A-ES510	5 Years Extended Warranty Service
MA80002A-ES210	2 Years Extended Warranty Service
MA80002A-ES310	3 Years Extended Warranty Service
MA80002A-ES510	5 Years Extended Warranty Service
MA80003A-ES210	2 Years Extended Warranty Service
MA80003A-ES310	3 Years Extended Warranty Service
MA80003A-ES510	5 Years Extended Warranty Service

# Ordering information – OTA Environment

## ■ RF Chamber MA8171A

Model No.	Name
MA8171A	RF Chamber
MA8174A	Position Controller
MA8175A	Positioner
MA8175A-AK001	Cable Management Kit
MA8181A	28GHz Test Antenna
Z1996A	28GHz/39GHz Test Antenna
Z2031A	Test Antenna
B0746A	Chamber Rack
B0747A	Converter Rack
B0750A	Anchor Plate
J0322A/B/C/D	COAXIAL CORD, 0.5M/1.0M/1.5M/2.0M
J1762A	Positioner Control Cable (3.0m)
J1775A/B/C/D	Coaxial Cable (KM-KM, 0.3m/1.0m/2.0m/3.0m)
Z1983A	Tray
Z1984A	Jig for DUT Tray
Z1985A	Wave Absorber
Z1986A	Hook and Loop Fastener
Z2009A	Link Antenna
B0752A	Link Antenna Holder
J1798A	GPIB-USB-HS+
J1795A	Coaxial Cable (SMA(M)-SMA(M), 0.5m)
J1795B	Coaxial Cable (SMA(M)-SMA(M), 1.0m)
J1795C	Coaxial Cable (SMA(M)-SMA(M), 1.5m)
J1795D	Coaxial Cable (SMA(M)-SMA(M), 2.0m)

## ■ Shield Box

Model No.	Name
MA8161A	Shield Box
MA8161A-001	Connector Panel 1
MA8161A-002	Connector Panel 2
Z1999A	28GHz Antenna Unit
Z2000A	39GHz Antenna Unit

## ■ OTA environment calibration

Model No.	Name
ML2437A	Power Meter
MA2444D	Power Sensor
MA2445D	Power Sensor
41KC-10	10 dB Attenuator
41V-10	10 dB Attenuator
J0004	COAXIAL ADAPTOR
J0008	GPIB CABLE, 2.0M
K222B	Coaxial Adapter
Z1974A	Reference Antenna
Z2032A	Reference Antenna

## ■ CATR Chamber MA8172A

Model No.	Name
MA8172A	CATR Anechoic Chamber
MA8172A-021	Test Antenna
MA8172A-022	Test Antenna
MA8178A	Position Controller
MA8179A	Positioner
MA8172A-AK011	Converter Install Kit
MA8172A-AK012	Converter Tray
MA8172A-AK013	Switching Hub
MA8172A-AK022	NR FR2 Link Antenna Kit
MA8172A-AK023	LTE Link Antenna Kit
MA8172A-AK031	Monitor Camera
MA8172A-AK032	Additional Rack (41U)
MA8179A-AK010	DUT-supporting structure
Z1974A	Reference Antenna
Z2032A	Reference Antenna



# Ordering information – RF TRx Measurement

## ■ RF TRx Measurement

Model No.	Name
MX800010A	NR TDD Measurement Software
MX800010A-001	NR TDD SA Call Processing Software
MX800010A-002	NR TDD OTA Measurement Software
MX800010A-003	NR IP Data Transfer Software
MX800010A-007	NR TDD sub-6 GHz Measurement
MX800010A-008	NR TDD mmWave Measurement
MX800010A-009	NR FDD Measurement
MX800010A-024	NR BW 200MHz Per Cell
MX800010A-031	NR TDD DL 2x2 MIMO Up To Total BW 100MHz
MX800010A-032	NR TDD DL 2x2 MIMO Up To Total BW 200MHz
MX800010A-033	NR TDD DL 2x2 MIMO Up To Total BW 400MHz
MX800010A-034	NR TDD DL 2x2 MIMO Up To Total BW 600MHz
MX800010A-035	NR TDD DL 2x2 MIMO Up To Total BW 800MHz
MX800010A-036	NR TDD DL 4x4 MIMO Up To Total BW 100MHz
MX800010A-037	NR TDD DL 4x4 MIMO Up To Total BW 200MHz
MX800010A-041	NR TDD DL 2CA For Rx Measurement
MX800010A-042	NR TDD DL 3CA For Rx Measurement
MX800010A-043	NR TDD DL 4CA For Rx Measurement
MX800010A-044	NR TDD DL 5CA For Rx Measurement
MX800010A-045	NR TDD DL 6CA For Rx Measurement
MX800010A-046	NR TDD DL 7CA For Rx Measurement
MX800010A-047	NR TDD DL 8CA For Rx Measurement
MX800010A-051	NR TDD UL 2x2 MIMO Up To Total BW 100MHz
MX800010A-061	NR TDD UL 2CA For Tx Measurement
MX800010A-062	NR TDD UL 3CA For Tx Measurement
MX800010A-063	NR TDD UL 4CA For Tx Measurement

## ■ LTE Anchor

Model No.	Name
MT8821C	Radio Communication Analyzer
MT8821C-008	LTE Measurement Hardware
MX882112C	LTE FDD Measurement Software
MX882112C-010	LTE FDD Anchor For 5G NSA
MX882113C	LTE TDD Measurement Software
MX882113C-010	LTE TDD Anchor For 5G NSA

## ■ Application Parts

Model No.	Name
MT8000A-AK002	IP Test Server PC
Z2017B	Standard PC (for MX800010A)
G0408A	10 Gig Ethernet SR 850nm SFP+
J1802A	Sync Cable
J1440A	LAN Cable
J0127A	COAXIAL CORD, 1.0M
J1398A	N-SMA ADAPTOR
J1773A	AUX Conversion Adapter

## ■ RF TRx Support Option

Model No.	Name
MX800010A-SS101	5G NR RF Measurement Support Service (Per Year)
MX800010A-SS102	5G NR RF OTA Measurement Support Service (Per Year)

# Ordering information – Protocol Test

## ■ Protocol Test

Model No.	Name
MX800030A	NR Protocol Platform Software
MX800030A-001	NR TDD Platform
MX800030A-031	NR DL 2x2 MIMO BW 50MHz Per Cell
MX800030A-032	NR DL 2x2 MIMO BW 100MHz Per Cell
MX800030A-051	NR DL 2CA For Protocol
MX800030A-052	NR DL 3CA For Protocol
MX800030A-053	NR DL 4CA For Protocol
MX800030A-054	NR DL 5CA For Protocol
MX800030A-055	NR DL 6CA For Protocol
MX800030A-056	NR DL 7CA For Protocol
MX800030A-057	NR DL 8CA For Protocol

## ■ NR Fading software

Model No.	Name
MX800031A	NR Fading Basic
MX800031A-001	NR Fading 2x2 MIMO
MX800031A-002	NR Fading 4x2/4x4 MIMO
MX800031A-003	NR Fading 2CA-4CA
MX800031A-004	NR Fading 5CA-8CA

## ■ RTD

Model No.	Name
MX800050A	Rapid Test Designer Platform (RTD)
MX800050A-001	5G NSA Framework For RTD
MX800050A-002	RTD LL/L3 Procedure Libraries (5G)
MX800050A-003	Core LTE Framework For RTD
MX800050A-004	UTRAN/GERAN Framework For RTD
MX800050A-005	IMS Framework For RTD
MX800050A-006	IoT Framework For RTD
MX800050A-007	LTE-A Framework For RTD
MX800050A-008	LTE-A Pro Framework For RTD
MX800050A-009	LTE MIMO Framework For RTD
MX800050A-010	LTE Unlicensed Framework For RTD
MX800050A-011	LTE/UTRAN/GERAN Fading Library For RTD
MX800050A-012	5G Fading Library For RTD
MX800050A-014	eMBMS Framework For RTD
MX800050A-040	RTD Test Creation and Editing Tools
MX800050A-041	RTD Test Execution Tools
MX800050A-042	RTD Protocol Analyser
MX800050A-051	RTD Floating (Server Based) License

# Ordering information – Protocol Test

## ■ Protocol Support Option

Model No.	Name
MX800050A-SS100	RTD Support Service (Per Year)
MX800050A-SS101	5G NSA Support Service (Per Year)
MX800050A-SS103	LTE Support Service (Per Year)
MX800050A-SS104	UTRAN/GERAN Support Service (Per Year)
MX800050A-SS105	IMS Support Service (Per Year)
MX800050A-SS106	IoT Support Service (Per Year)
MX800050A-SS107	LTE-A Support Service (Per Year)
MX800050A-SS108	LTE-A Pro Support Service (Per Year)
MX800050A-SS109	MIMO Support Service (Per Year)
MX800050A-SS110	LTE Unlicensed Support Service (Per Year)
MX800050A-SS111	LTE/UTRAN/GERAN Fading Support Service (Per Year)
MX800050A-SS112	5G Fading Support Service (Per Year)
MX800050A-SS114	eMBMS Support Service (Per Year)

## ■ LTE Anchor

Model No.	Name
MD8430A	Signalling Tester
MD8430A-035	LTE Enhanced Test Model(ETM)
MD8430A-005	Extended Frequency Range to 3.8GHz Hardware2
MD8430A-060	LTE FDD Option
MD8430A-061	LTE TDD Option
MD8430A-064	LTE Anchor For 5G NSA Option
MD8430A-086	Ciphering Option
MD8430A-SS135	1 Year Support Service for LTE FDD(ETM)
MD8430A-SS136	1 Year Support Service for LTE TDD(ETM)

## ■ Application Parts

Model No.	Name
MT8000A-AK001	Fading Control PC
MT8000A-AK002	IP Test Server PC
Z1320E	Standard PC for RTD (with monitor)
Z1591A	USB Dongle (Protocol)
G0408A	10 Gig Ethernet SR 850nm SFP+
J1581A	Optical cable MM LC/PC to LC/PC 3 meter
Z1993A	Optical Connector Cleaner (MPO)
J1773A	AUX Conversion Adapter
J1440A	LAN Cable
J0127A	COAXIAL CORD, 1.0M
J1398A	N-SMA ADAPTOR

# Customer Supplied parts

■ The following parts need to be prepared by the customer.

Model No.	Description	Note
-----	SFP+ Network card for Server PC	Install in Server PC. Since the SFP + is not installed on PCs that are usually sold, it is necessary to expand them. On the Anritsu side verification, use the following products. ➤ Ecowsera X520SR2 (Reference price: 0.03 M yen)
-----	Server PC	See slide 23 for specifications.
-----	GPIB Controller	Used to control MA8174A from PC.
-----	Switching Hub	Required when Control PC controls two or more measuring instruments.
J1440A*	LAN Cable	1pc is attached to MT8000A.
J0127A*	COAXIAL CORD, 1.0M	BNC Cable. Used to synchronize MT 8000A and external equipment.

\*: These parts can be replaced with commercially available parts.

# LTE Anchor for FR2

## LTE Link Antenna

Z2009A Link Antenna:

B0752A Link Antenna holder:

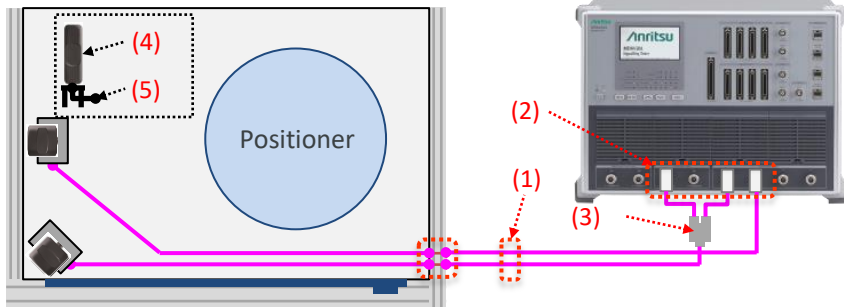
✓ All of LTE Operation Bands are supported.

- Frequency range: 450-6000 MHz.
- This product is for establishing a call connection with NSA.

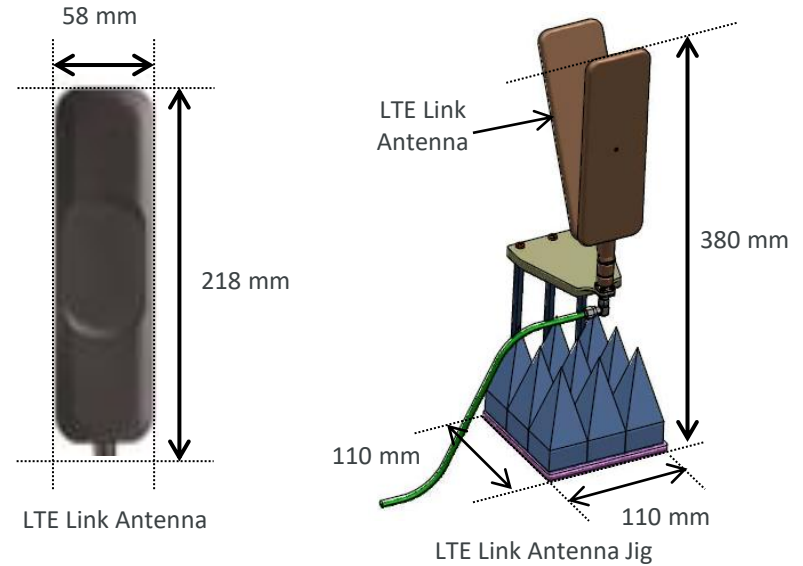
## Connection Example

### Protocol Test, 2x2 MIMO

MA8171A RF Chamber

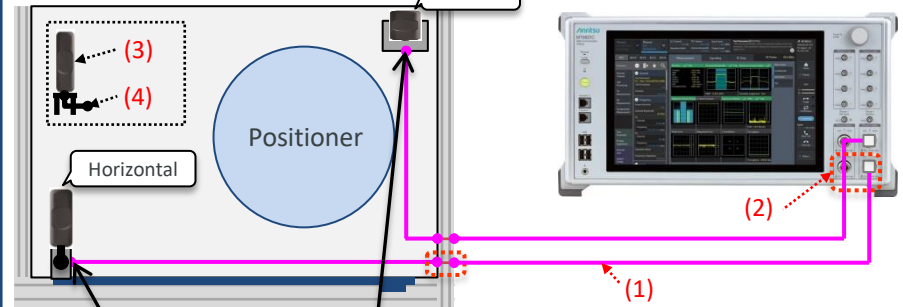


No.	Model.	Description	Qty.	Note
(1)	J1795D	Coaxial Cable (SMA(M)-SMA(M), 2.0m)	6	SMA-SMA Cable
(2)	J0004	COAXIAL ADAPTOR	3	N-SMA Adaptor
(3)	Z1858A	Divider	1	2Way Divider
(4)	Z2009A	Link Antenna	2	
(5)	B0752A	LTE Link Antenna Holder	2	



### RF TRx Test, Rx diversity

MA8171A RF Chamber



Apply a 90 degree angle difference between the two antennas

No.	Model.	Description	Qty.	Note
(1)	J1795D	Coaxial Cable (SMA(M)-SMA(M), 2.0m)	4	SMA-SMA Cable
(2)	J0004	COAXIAL ADAPTOR	2	N-SMA Adaptor
(3)	Z2009A	Link Antenna	2	
(4)	B0752A	LTE Link Antenna Holder	1	

