



Radio Communication Analyzer MT8821C



Radio Communication Analyzer MT8821C

MT8821C is an all-in-one tester designed for RF verification and functional tests of mobile phone incl. Smartphone. It supports all cellular technologies including LTE-Advanced and IoT in accordance with 3GPP RF relating test specifications: TS36.521-1 Chapter 6, 7. It also equips Call-processing mode which must remove the difficulty of chipset control and reduce development terms with simple operation.

✓ LTE/LTE- Advanced

- DL CA 8CCs 4x4MIMO ***
- DL CA 6CCs 4x4MIMO **
- DL CA 4CCs 4x4MIMO *
- DL CA 4CCs 2x2 MIMO
- UL CA 2CCs

✓ IoT systems

- LTE Cat.1 bis, Cat-M1
- NB-IoT, Cat-NB2
- NTN NB-IoT, Cat-NB2

✓ W-CDMA

- HSPA Evolution
- DB/DC-HSDPA
- 4C-HSDPA
- DC-HSUPA

✓ GSM

- GPRS
- EGPRS

✓ TD-SCDMA

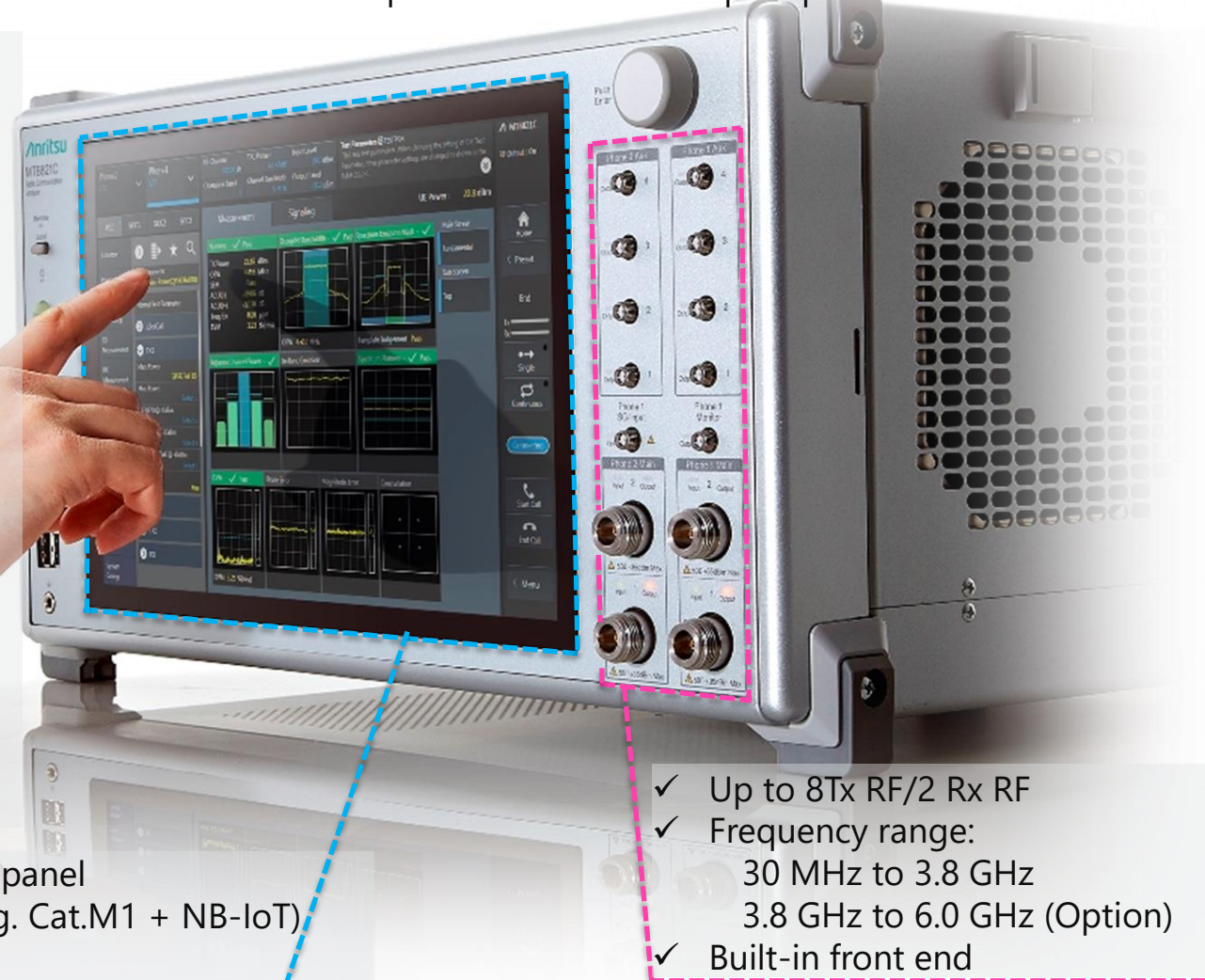
- HSPA
- HSPA Evolution

✓ Enhanced GUI with large touch panel

✓ ParallelPhone measurement (e.g. Cat.M1 + NB-IoT)

✓ Built-in application/IMS server

✓ Compatibility with MT8820C



- ✓ Up to 8Tx RF/2 Rx RF
- ✓ Frequency range:
 - 30 MHz to 3.8 GHz
 - 3.8 GHz to 6.0 GHz (Option)
- ✓ Built-in front end

* : Requires 2 boxes of MT8821C, ** : Requires 3 boxes of MT8821C

*** : Requires 4 boxes of MT8821C

All-In One Tester for LTE-Advanced UE Development

The all-in-one MT8821C supports RF parametric tests through to UE functional and performance tests in one box. It is the perfect solution for development of RF chipsets and UE.

◆ RF Verification Tests

- UE TRX Tests
- UE Calibration
- RRM (Inter-RAT Measurements)

◆ Functional Tests

- OTA
- SAR
- IP Throughput
- Power Consumption
- VoLTE Voice/Video Echoback Tests

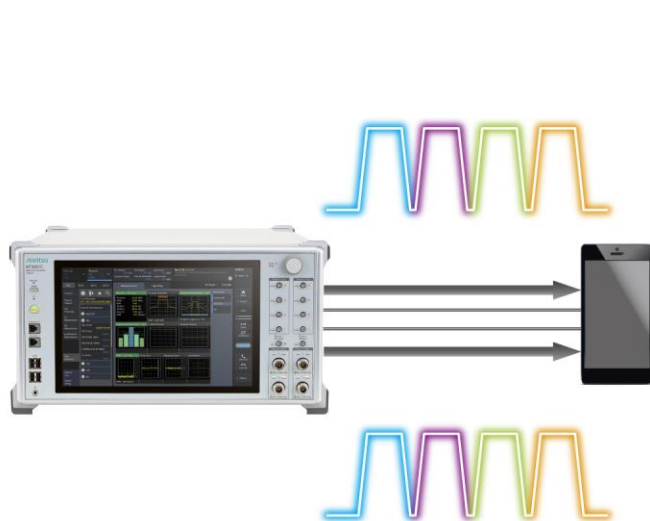


The MT8821C supports up to 8 TX RF (when AUX ports used). It can also combine RF signals using the built-in RF frontend for LTE CA.

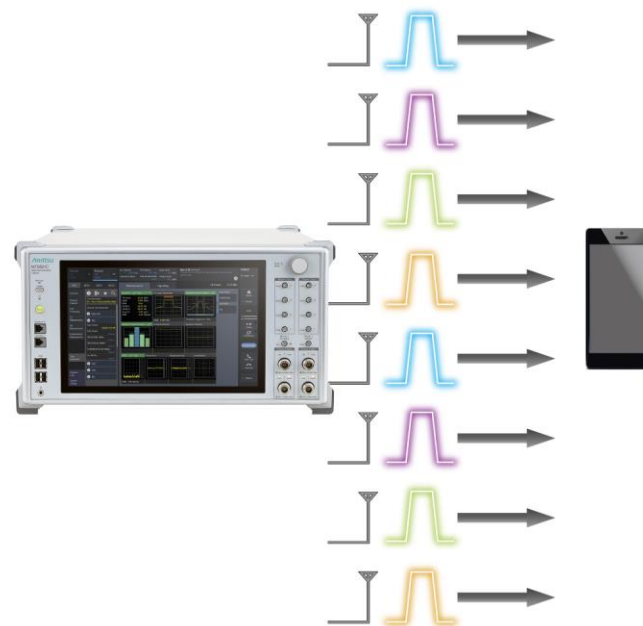
This is the original feature of MT8821C which enables users to simplify the test connection diagram because users do not need to prepare the external combiner.

◆Combining RF signals

The following combination can be selected according to the user's purpose.



[4CC 2x2 MIMO for throughput measurement]



[4CC 2x2 MIMO for OTA]

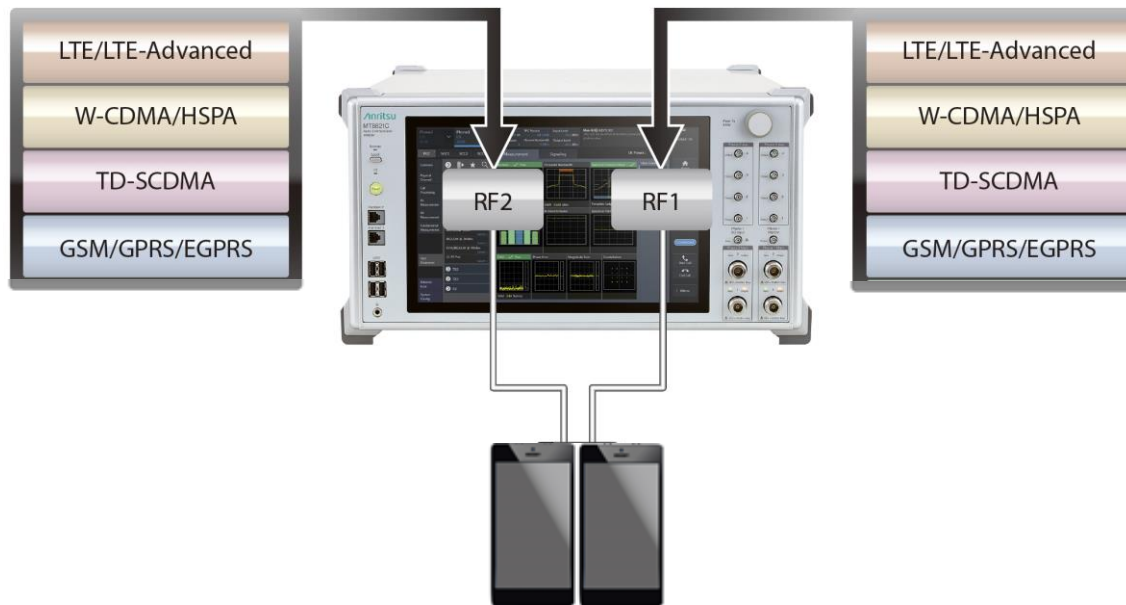
Multi-RAT Measurement

One MT8821C can perform two measurements simultaneously. Anritsu calls this function Parallel-Phone Measurement or PPM.

It supports simultaneous and independent testing of two UEs.

The MT8821C contribute to reduce user's burden for test...

- SGLTE/SVLTE
- DSDA
- RRM (Inter-RAT measurement)
- Two UEs measurement (e.g. LTE Cat-M1 and NB-IoT)



MT8821C LTE Support Status (Physical layer)

Legend	Throughput Support Status	Number of Units	FDD/TDD Joint CA	LAA
	White : Max. throughput	: Supported by 1 unit : Supported by 2 units : Supported by 3 units : Supported by 4 units	★ : supported*1	★ : supported*2

*1: When PCC is TDD with FDD/TDD joint CA, UL/DL Configuration 1 is supported.

*2: PCC is FDD, SCC is FDD or TDD or LAA.

DL CA Throughput (No limitation even with inter-band non-contiguous CA case)

4x4 MIMO (256QAM)	400 Mbps	800 Mbps	1200 Mbps	1600 Mbps	2000 Mbps	2400 Mbps	2800 Mbps	3200 Mbps
2x2 MIMO (256QAM)	200 Mbps	400 Mbps	600 Mbps	800 Mbps	1000 Mbps	1200 Mbps	1400 Mbps	1600 Mbps
SISO (256QAM)	100 Mbps	200 Mbps	300 Mbps	400 Mbps	500 Mbps	600 Mbps	700 Mbps	800 Mbps
CA	1	2	3	4	5	6 *4	7 *4	8 *4

*3: Only supports PCC FDD frame structure among several CCs. Considering future support for TDD

*4: CA with all-TDD band combination is not supported.

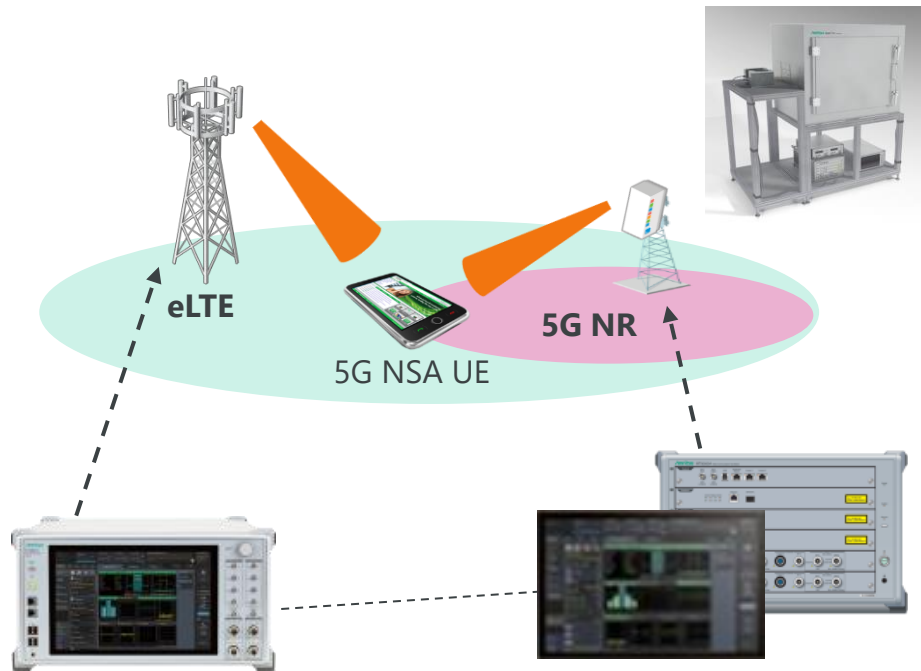
UL CA Throughput

SISO (64QAM)	75 Mbps	150 Mbps
CA	1	2

■ Outline of the option

- 4G Anchor function*1 to realize RF measurement of 5G NSA UE by connecting with 5G tester
- 4G Anchor also supports MIMO and CA if required options are equipped. (required options are same as MT8821C LTE configuration)

*1: LTE IP data transfer function during connected with 5G tester is not supported.



NSA-NR Network Configuration Image

Required minimum unit

<MT8821C FDD Configuration>

Product Num.	Product Name
MT8821C	Radio Communication Analyzer
MT8821C-008	LTE Measurement Hardware
MX882112C	LTE FDD Measurement Software
MX882112C-010	LTE FDD 5G NSA Anchor

<MT8821C TDD Configuration >

Product Num.	Product Name
MT8821C	Radio Communication Analyzer
MT8821C-008	LTE Measurement Hardware
MX882113C	LTE TDD Measurement Software
MX882113C-010	LTE TDD 5G NSA Anchor

◆Product Overview

MT8821C will support RF Tx/Rx measurements for Cat M and NB-IoT to be specified in Chapter 6/7 of 3GPP TS 36.521-1.



◆Configuration

Cat M

Model	Name
MT8821C	Radio Communication Analyzer
MT8821C-008	LTE Measurement Hardware
MX882116C	LTE Category M1 Measurement Software
MX882116C-006	LTE Category M1 IP Data Transfer

NB-IoT

Model	Name
MT8821C	Radio Communication Analyzer
MT8821C-008	LTE Measurement Hardware
MX882117C	NB-IoT Measurement Software
MX882117C-001	Category NB2 Measurement Software
MX882117C-002	NB-IoT Multi Carrier
MX882117C-006	NB-IoT IP Data Transfer

◆ Available features



RF TRX measurement

- 3GPP TS36.521-1 test case
Please ask our sales person about the MT8821C 3GPP support status.
- Maximum Throughput



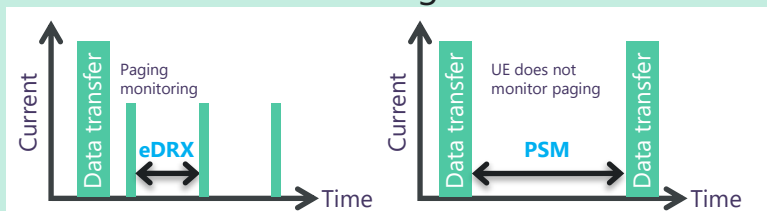
OTA

- Some OTA vendors have already supported Cat M of MT8821C.
- Some OTA vendors have already supported NB-IoT of MT8821C.



Power consumption

- For Idle status
 - eDRX : Extended DRX
 - PSM : Power Saving Mode



- For Connected status
 - Maximum Throughput
 - IP data feature



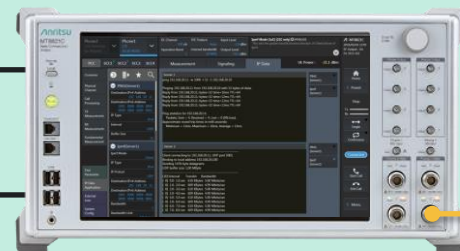
Function/Stress testing

- Maximum Throughput
- IP data feature
 - Internal Server/lperf

Application

Server 1

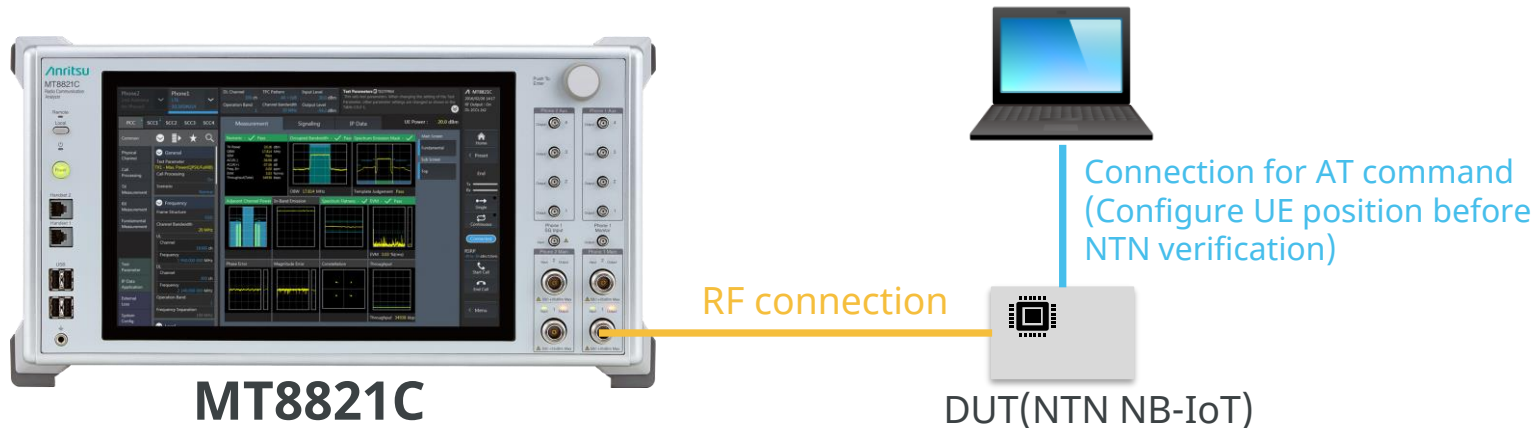
1000 BASE-T 1



DUT

◆Product Overview

MT8821C will support RF Tx/Rx measurements for NTN NB-IoT to be specified in Chapter 6/7 of 3GPP TS 36.521-4.



◆Configuration

Model	Name
MT8821C	Radio Communication Analyzer
MT8821C-008	LTE Measurement Hardware
MX882118C	NTN NB-IoT Measurement Software

◆Available features

- ✓ RF TRX measurement
MT8821C will support RF Tx/Rx measurements for NTN NB-IoT to be specified in Chapter 6/7 of 3GPP TS 36.521-4.
- ✓ TRP/TIS measurement
Some OTA vendors have already supported NTN NB-IoT of MT8821C.

Category	section	Title	MX882118C (MT8821C) support status	MT8821C-UP042 (ATS-NR) support status
TX	6.2B.1	UE Maximum Output Power for category NB1 and NB2	Supported	Supported
	6.2B.2	UE Maximum Output Power reduction for category NB1 and NB2	Supported	Supported
	6.2B.3	UE additional Maximum Output Power reduction for category NB1 and NB2	Supported	Supported
	6.2B.4	Configured transmitted Power for category NB1 and NB2	Supported	Supported
	6.3B.1	UE Minimum output power for category NB1 and NB21	Supported	Supported
	6.3B.2	Transmit OFF power for category NB1 and NB2	Supported	Supported
	6.3B.3.1	General ON/OFF time mask for category NB1 and NB2	Supported	Supported
	6.3B.3.2	NPRACH time mask for UE category NB1 and NB2	Supported	Supported
	6.3B.4.1	Power Control Absolute power tolerance for category NB1 and NB2	Supported	Supported
	6.3B.4.2	Power Control Relative power tolerance for category NB1 and NB2	Supported	Supported
	6.3B.4.3	Aggregate power Control tolerance for category NB1 and NB2	Supported	Supported
	6.4B.1	Frequency error for UE category NB1 and NB2	Supported (*)	Supported (*)
	6.4B.2.1	Error Vector Magnitude (EVM) for category NB1 and NB2	Supported	Supported
	6.4B.2.2	Carrier leakage for category NB1 and NB2	Supported	Supported
	6.4B.2.3	In-band emissions for category NB1 and NB2	Supported	Supported
	6.5B.2	Occupied bandwidth for category NB1 and NB2	Supported	Supported
	6.5B.3.2	Spectrum emission mask for category NB1 and NB2	Supported	Supported
	6.5B.3.4	Adjacent Channel Leakage Ratio for category NB1 and NB2	Supported	Supported
	6.5B.4.2	Transmitter Spurious emissions for category NB1 and NB2	Requires External Equipment	Not Supported
	6.5B.4.3	Spurious emissions band UE co-existence for category NB1 and NB2	Requires External Equipment	Not Supported
	6.5B.4.4	Additional Spurious emissions for category NB1 and NB2	Requires External Equipment	Not Supported
	6.6B	Transmit intermodulation for UE category NB1 and NB2	Requires External Equipment	Not Supported
RX	7.3B	Reference sensitivity power level for UE category NB1 and NB2	Supported	Supported
	7.4B	Maximum input level for category NB1 and NB2	Supported (*)	Supported (*)
	7.5B	Adjacent Channel Selectivity for category NB1 and NB2	Requires External Equipment	Not Supported
	7.6B.2	In-band blocking for category NB1 and NB2	Requires External Equipment	Not Supported
	7.6B.3	Out-of-band blocking for category NB1 and NB2	Test spec is incomplete	Not Supported
	7.7B	Spurious response for category NB1 and NB2	Test spec is incomplete	Not Supported
	7.8B	Intermodulation characteristics for category NB1 and NB2	Test spec is incomplete	Not Supported
	7.9B	Spurious emissions for category NB1 and NB2	Test spec is incomplete	Not Supported

OTA Implementation status

MT8821C continues to support leading edge features like LTE 4CA, 4x4 MIMO.
OTA vendor and Anritsu provide OTA solution for leading edge features.

Reference : CTIA_OTA_Test_Plan v3.8.2

CTIA Test Plan for 2x2MIMO Downlink MIMO v1.2

★ Mandated by CTIA Wireless Device OTA Performance
★ Planned by CTIA Wireless Device OTA Performance

Indicator	Meaning
✓	Supported
V	Supported(not verified)
D	Under development
C	Under consideration
-	Not supported

			Bluetest (Reverb)	ETS-Lindgren (Anechoic)	MVG (SATIMO) (Anechoic)	EMITE (Reverb)
LTE	SISO/2x2 MIMO ★		✓	✓	✓	✓
	4x4 MIMO		✓	✓	✓	✓
LTE-A	DL 2CA	SISO/2x2 MIMO ★	✓	✓	✓	✓
		4x4 MIMO	✓	-	✓	✓
	DL 3CA	SISO/2x2 MIMO ★	✓	✓	✓	✓
		4x4 MIMO	✓	-	-	V
	DL 4CA	SISO/2x2 MIMO ★	✓	✓	✓	✓
		4x4 MIMO	✓	-	-	D
	DL 5CA	SISO/2x2 MIMO ★	✓	-	-	-
		4x4 MIMO	✓	-	-	-
	UL 2CA	SISO	✓	-	-	-
WCDMA	HSPA ★		✓	✓	✓	✓
	DC-HSDPA		✓	-	-	✓
GSM	GPRS/EGPRS ★		✓	✓	✓	✓
TD-SCDMA	HSPA		✓	✓	✓ (HSDPA only)	✓ (HSDPA only)
IoT	Cat-M ★		✓	✓	✓	✓
	NB-IoT ★		✓	✓	✓	✓
NTN	NB-IoT		✓	V	C	✓

SAR

SAR (Specific absorption rate) is a measure of the rate at which energy is absorbed by the human body when exposed to a radio electromagnetic field.

It is defined as the power absorbed per mass of tissue and has units of watts per kilogram (W/kg).

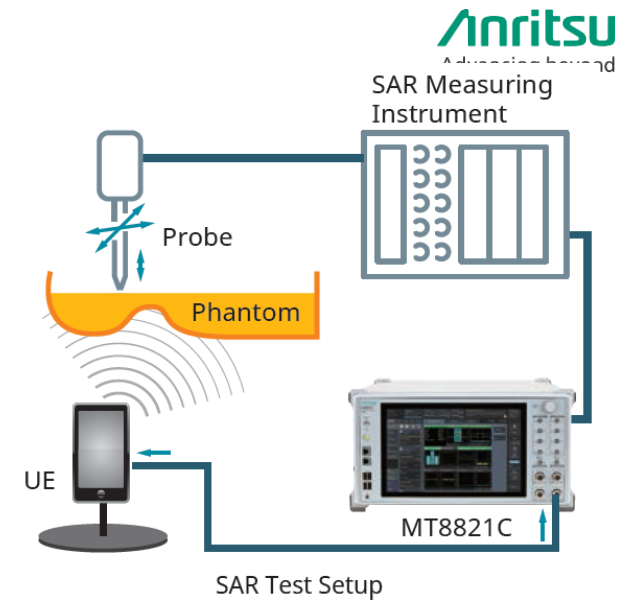
SPEAG in Switzerland is a biggest SAR system vendor.

- MT8821C is supported as a subset for LTE/W/G by automated test s/w (V2.6 ~) of SPEAG system in DASY6 and cSA3D as of Mar. 2016.

<http://www.speag.com/products/csar3d/csar3d-overview/>

- News release from SPEAG below.

<http://www.speag.com/news-events/news/measurement/anritsu-mt8820c-integrates-with-dasy6-and-csar3d/>



Automated 3GPP RF TRx Test Measurement System

An automated measurement system is easily configured using the ATS tools* (remote control sample tools) running on an external PC controller.

Measurement, Pass/Fail evaluation, and report creation are performed simply by selecting test cases from a list, supporting 3GPP RF TRx testing even by inexperienced operators.

The image displays two software interfaces from Anritsu. The left window is the 'ATS-Plan Editor' showing a test plan for 'LTE/IoT'. It includes sections for 'Plan Edit', 'Instrument Setting', and 'Test Parameters & Requirements'. A red box highlights the 'Test Item Selection' window, which lists various test items like '6.2.2 UE Maximum Output Power' and '6.2.3 Maximum Power Reduction (MPR)'. The right window is the 'ATS-NR Test Tool' showing the 'Measured Results Pass/Fail Evaluation'. It displays a large green 'PASS' status and a table of test results. A red arrow points from the 'PASS' status to a red box labeled 'Output result in file (Excel, CSV, TXT, HTML, PDF)'. A red box labeled 'Measurement Item Selection Window' points to the test item selection window in the left window.

Measured Results Pass/Fail Evaluation

Measurement Item Selection Window

Output result in file (Excel, CSV, TXT, HTML, PDF)

* SW update and technical support for 1 year with paid option (MT8821C-UP041)

APPENDIX



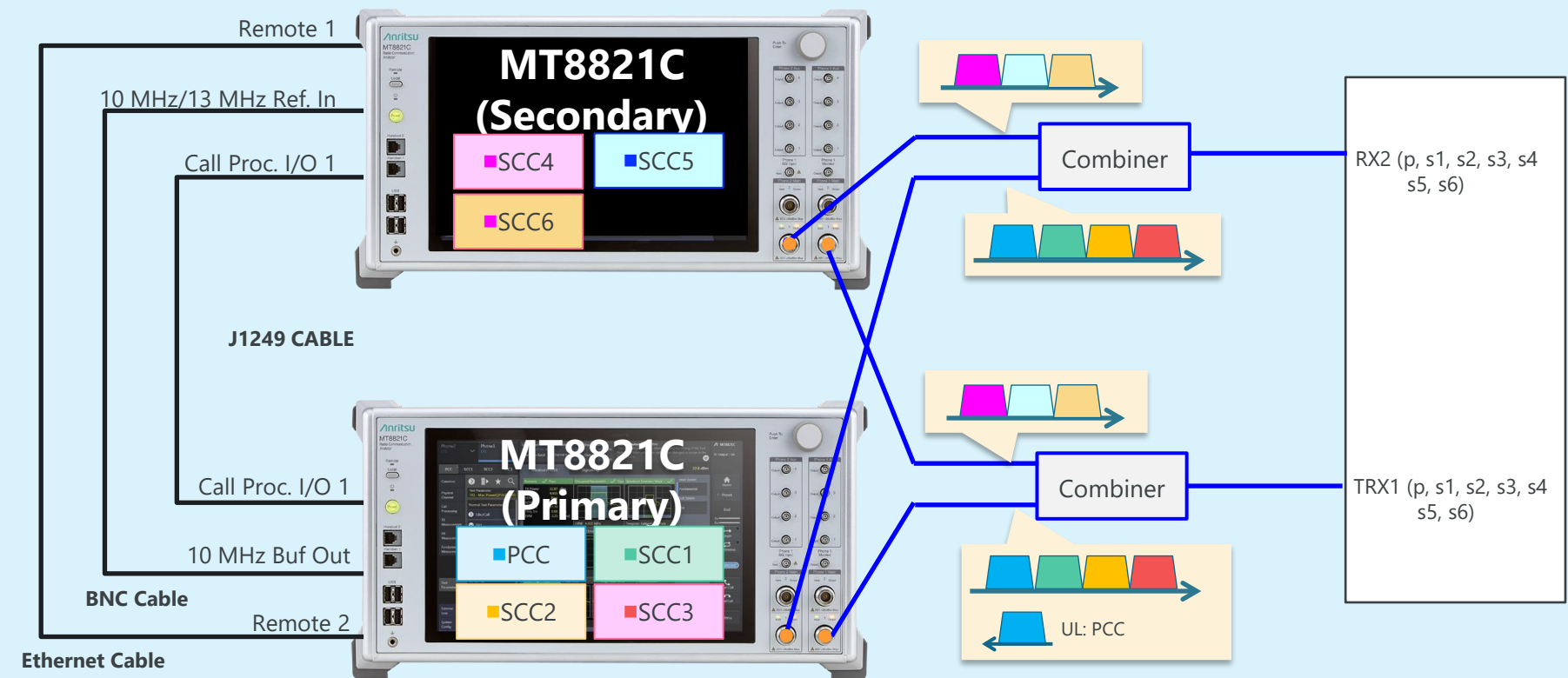
◆MT8821C supports DL 7CA 2x2 MIMO 256QAM (1.4 Gbps)

CA/MIMO Combination

No.	PCC	SCC1	SCC2	SCC3	SCC4	SCC5	SCC6
1	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2
2	FDD 2x2	FDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2

- Maximum Physical Throughput **1.4 Gbps**
- DL Modulation QPSK, 16QAM, 64QAM, **256QAM**
- Test by controlling only Primary MT8821C

Setup



Note

- IP Throughput measurement is not supported
- HARQ re-transmission is not supported
- All TDD combination is not supported.
- During FDD/TDD Joint 7CA measurement, only FDD can be set for PCC.

◆ Required options

If you want to test the CA/ MIMO combination shown in the right, following options are required.

7CA 2x2 MIMO Combination example

No.	PCC	SCC1	SCC2	SCC3	SCC4	SCC5	SCC6
1	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2
2	FDD 2x2	FDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2

Primary

Measurement Instruments		No.1	No.2
MT8821C	Radio Communication Analyzer	1	1
Hardware Options		No.1	No.2
MT8821C-008	LTE Measurement Hardware	2	2
MT8821C-012	Parallel Phone Measurement Hardware	1	1
MT8821C-025	2nd RF for Phone1	1	1
MT8821C-026	3rd RF for Phone1	1	1
MT8821C-027	4th RF for Phone1	1	1
MT8821C-028	2nd RF for Phone2	1	1
MT8821C-029	3rd RF for Phone2	1	1
MT8821C-030	4th RF for Phone2	1	1
Software Options		No.1	No.2
MX882112C	LTE FDD Measurement Software	1	1
MX882112C-011	LTE FDD 2x2 MIMO DL	1	1
MX882112C-021	LTE-Advanced FDD DL CA Measurement Software	1	1
MX882112C-031	LTE-Advanced FDD DL 3CCs Measurement Software	1	1
MX882112C-041	LTE-Advanced FDD DL 4CCs Measurement Software	1	1
MX882112C-051	LTE-Advanced FDD DL 5CCs Measurement Software	1	1
MX882112C-061	LTE-Advanced FDD DL 6CCs Measurement Software	1	1
MX882112C-071	LTE-Advanced FDD DL 7CCs Measurement Software	1	1
MX882113C	LTE TDD Measurement Software	-	1
MX882113C-011	LTE TDD 2x2 MIMO DL	-	1
MX882113C-021	LTE-Advanced TDD DL CA Measurement Software	-	1
MX882113C-031	LTE-Advanced TDD DL 3CCs Measurement Software	-	1
MX882113C-041	LTE-Advanced TDD DL 4CCs Measurement Software	-	1
MX882113C-051	LTE-Advanced TDD DL 5CCs Measurement Software	-	1
MX882113C-061	LTE-Advanced TDD DL 6CCs Measurement Software	-	1
MX882113C-071	LTE-Advanced TDD DL 7CCs Measurement Software	-	1

Secondary

Measurement Instruments		No.1	No.2
MT8821C	Radio Communication Analyzer	1	1
Hardware Options		No.1	No.2
MT8821C-008	LTE Measurement Hardware	1	1
MT8821C-012	Parallel Phone Measurement Hardware	1	1
MT8821C-025	2nd RF for Phone1	1	1
MT8821C-026	3rd RF for Phone1	1	1
MT8821C-027	4th RF for Phone1	-	-
MT8821C-028	2nd RF for Phone2	1	1
MT8821C-029	3rd RF for Phone2	1	1
MT8821C-030	4th RF for Phone2	-	-
Software Options		No.1	No.2
MX882112C	LTE FDD Measurement Software	1	-
MX882113C	LTE TDD Measurement Software	-	1

Others		No.1	No.2
J1249	CDMA2000 Cable	1	1
-	BNC Cable	1	1
-	Ethernet Cable	1	1

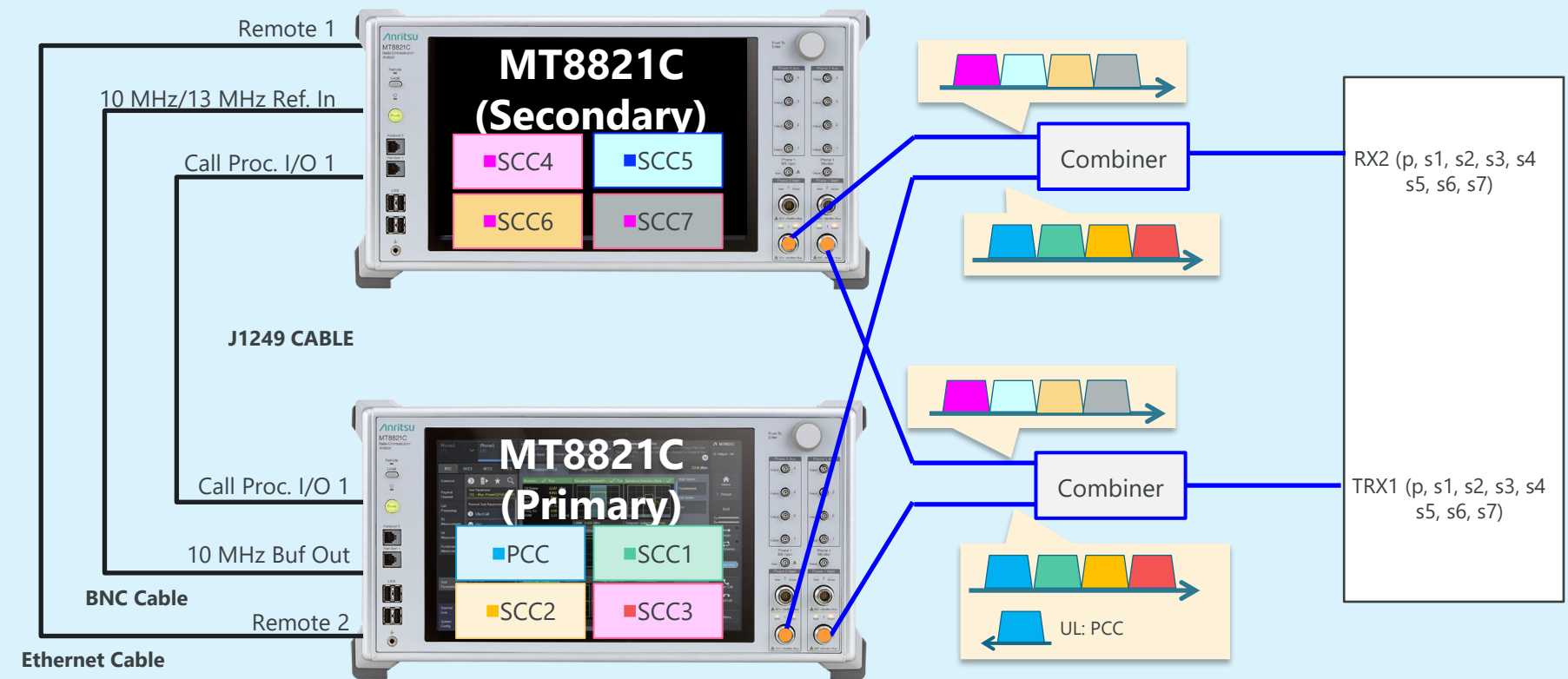
◆MT8821C supports DL 8CA 2x2 MIMO 256QAM (1.6 Gbps)

CA/MIMO Combination

No.	PCC	SCC1	SCC2	SCC3	SCC4	SCC5	SCC6	SCC7
1	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2
2	FDD 2x2	FDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2

- Maximum Physical Throughput **1.6 Gbps**
- DL Modulation QPSK, 16QAM, 64QAM, **256QAM**
- Test by controlling only Primary MT8821C

Setup



Note

- IP Throughput measurement is not supported
- HARQ re-transmission is not supported
- All TDD combination is not supported.
- During FDD/TDD Joint 7CA measurement, only FDD can be set for PCC.

◆ Required options

If you want to test the CA/ MIMO combination shown in the right, following options are required.

Primary

Measurement Instruments		No.1	No.2
MT8821C	Radio Communication Analyzer	1	1
Hardware Options		No.1	No.2
MT8821C-008	LTE Measurement Hardware	2	2
MT8821C-012	Parallel Phone Measurement Hardware	1	1
MT8821C-025	2nd RF for Phone1	1	1
MT8821C-026	3rd RF for Phone1	1	1
MT8821C-027	4th RF for Phone1	1	1
MT8821C-028	2nd RF for Phone2	1	1
MT8821C-029	3rd RF for Phone2	1	1
MT8821C-030	4th RF for Phone2	1	1
Software Options		No.1	No.2
MX882112C	LTE FDD Measurement Software	1	1
MX882112C-011	LTE FDD 2x2 MIMO DL	1	1
MX882112C-021	LTE-Advanced FDD DL CA Measurement Software	1	1
MX882112C-031	LTE-Advanced FDD DL 3CCs Measurement Software	1	1
MX882112C-041	LTE-Advanced FDD DL 4CCs Measurement Software	1	1
MX882112C-051	LTE-Advanced FDD DL 5CCs Measurement Software	1	1
MX882112C-061	LTE-Advanced FDD DL 6CCs Measurement Software	1	1
MX882112C-071	LTE-Advanced FDD DL 7CCs Measurement Software	1	1
MX882112C-081	LTE-Advanced FDD DL 8CCs Measurement Software	1	1
MX882113C	LTE TDD Measurement Software	-	1
MX882113C-011	LTE TDD 2x2 MIMO DL	-	1
MX882113C-021	LTE-Advanced TDD DL CA Measurement Software	-	1
MX882113C-031	LTE-Advanced TDD DL 3CCs Measurement Software	-	1
MX882113C-041	LTE-Advanced TDD DL 4CCs Measurement Software	-	1
MX882113C-051	LTE-Advanced TDD DL 5CCs Measurement Software	-	1
MX882113C-061	LTE-Advanced TDD DL 6CCs Measurement Software	-	1
MX882113C-071	LTE-Advanced TDD DL 7CCs Measurement Software	-	1
MX882113C-081	LTE-Advanced TDD DL 8CCs Measurement Software	-	1

8CA 2x2 MIMO Combination example

No.	PCC	SCC1	SCC2	SCC3	SCC4	SCC5	SCC6	SCC7
1	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2	FDD 2x2
2	FDD 2x2	FDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2	TDD 2x2

Secondary

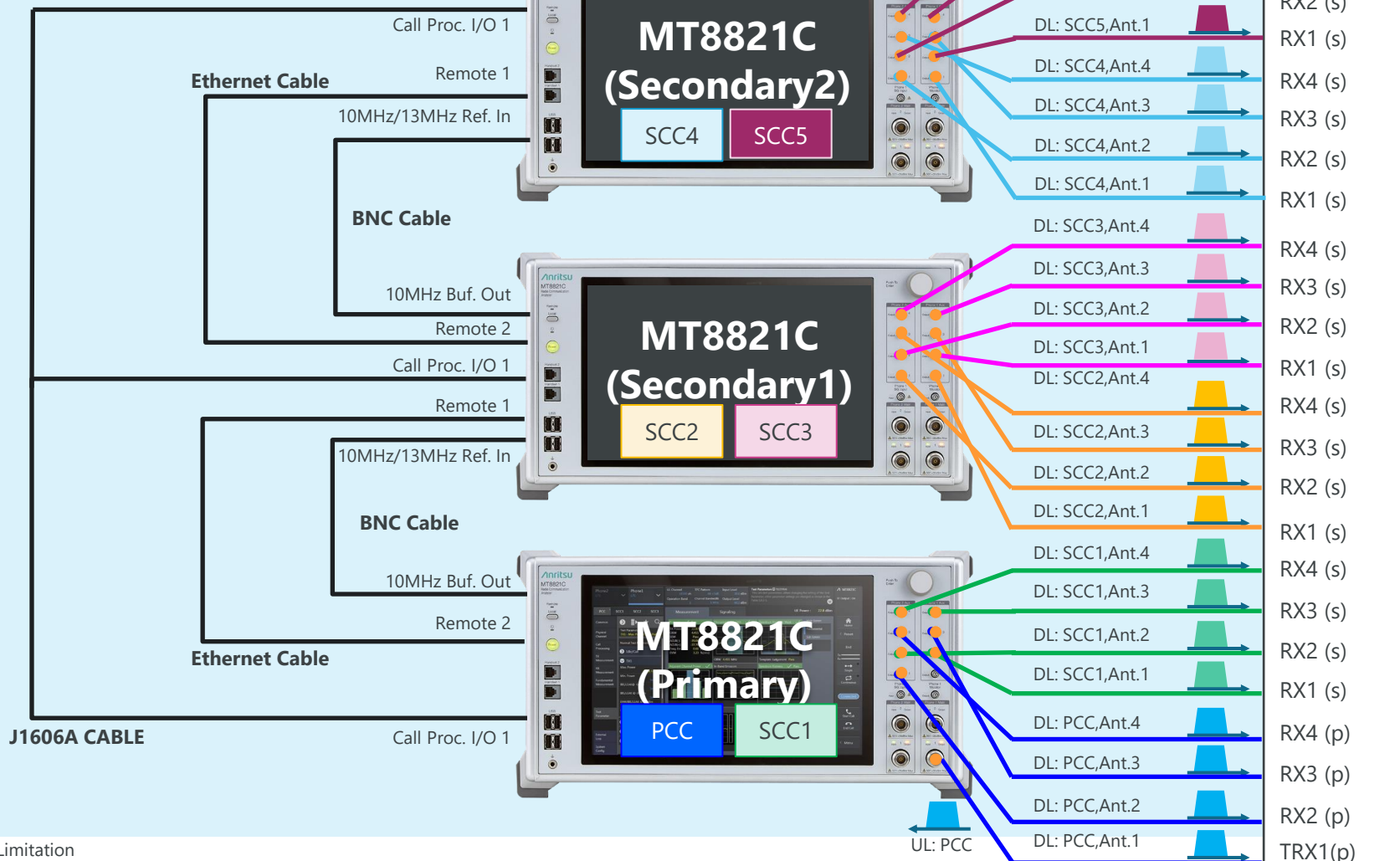
Measurement Instruments		No.1	No.2
MT8821C	Radio Communication Analyzer	1	1
Hardware Options		No.1	No.2
MT8821C-008	LTE Measurement Hardware	1	1
MT8821C-012	Parallel Phone Measurement Hardware	1	1
MT8821C-025	2nd RF for Phone1	1	1
MT8821C-026	3rd RF for Phone1	1	1
MT8821C-027	4th RF for Phone1	1	1
MT8821C-028	2nd RF for Phone2	1	1
MT8821C-029	3rd RF for Phone2	1	1
MT8821C-030	4th RF for Phone2	1	1
Software Options		No.1	No.2
MX882112C	LTE FDD Measurement Software	1	-
MX882113C	LTE TDD Measurement Software	-	1

Others		No.1	No.2
J1249	CDMA2000 Cable	1	1
-	BNC Cable	1	1
-	Ethernet Cable	1	1

DL 6CA 4x4 MIMO

◆ MT8821C supports 6CA 4x4 MIMO 256QAM physical throughput testing.

Connection Diagram



Limitation

- IP Throughput measurement is not supported
- HARQ re-transmission is not supported
- During FDD/TDD Joint 6CA measurement, only FDD can be set for PCC.

DL 6CA 4x4 MIMO

◆ Required options

If you want to test the CA/ MIMO combination shown in the right, following options are required.

Primary

Measurement Instruments		No.1	No.2
MT8821C	Radio Communication Analyzer	1	1
Hardware Options		No.1	No.2
MT8821C-008	LTE Measurement Hardware	2	2
MT8821C-012	Parallel Phone Measurement Hardware	1	1
MT8821C-025	2nd RF for Phone1	1	1
MT8821C-026	3rd RF for Phone1	1	1
MT8821C-027	4th RF for Phone1	1	1
MT8821C-028	2nd RF for Phone2	1	1
MT8821C-029	3rd RF for Phone2	1	1
MT8821C-030	4th RF for Phone2	1	1
Software Options		No.1	No.2
MX882112C	LTE FDD Measurement Software	1	1
MX882112C-011	LTE FDD 2x2 MIMO DL	1	1
MX882112C-012	LTE FDD 4x4 MIMO DL	1	1
MX882112C-021	LTE-Advanced FDD DL CA Measurement Software	1	1
MX882112C-031	LTE-Advanced FDD DL 3CCs Measurement Software	1	1
MX882112C-041	LTE-Advanced FDD DL 4CCs Measurement Software	1	1
MX882112C-051	LTE-Advanced FDD DL 5CCs Measurement Software	1	1
MX882112C-061	LTE-Advanced FDD DL 6CCs Measurement Software	1	1
MX882113C	LTE TDD Measurement Software	-	1
MX882113C-011	LTE TDD 2x2 MIMO DL	-	1
MX882113C-012	LTE TDD 4x4 MIMO DL	-	1
MX882113C-021	LTE-Advanced TDD DL CA Measurement Software	-	1
MX882113C-031	LTE-Advanced TDD DL 3CCs Measurement Software	-	1
MX882113C-041	LTE-Advanced TDD DL 4CCs Measurement Software	-	1
MX882113C-051	LTE-Advanced TDD DL 5CCs Measurement Software	-	1
MX882113C-061	LTE-Advanced TDD DL 6CCs Measurement Software	-	1

Others

		No.1/2/3
J1606A	Cable	1
-	BNC Cable	2
-	Ethernet Cable	2

No.	PCC	SCC1	SCC2	SCC3	SCC4	SCC5
1	FDD 4x4	FDD 4x4	FDD 4x4	FDD 4x4	FDD 4x4	FDD 4x4
2	FDD 4x4	TDD 4x4	TDD 4x4	TDD 4x4	TDD 4x4	TDD 4x4

* LAA (band46) is supported

* All TDD pattern is not verified

Secondary1

Measurement Instruments		No.1	No.2
MT8821C	Radio Communication Analyzer	1	1
Hardware Options		No.1	No.2
MT8821C-008	LTE Measurement Hardware	2	2
MT8821C-012	Parallel Phone Measurement Hardware	1	1
MT8821C-025	2nd RF for Phone1	1	1
MT8821C-026	3rd RF for Phone1	1	1
MT8821C-027	4th RF for Phone1	1	1
MT8821C-028	2nd RF for Phone2	1	1
MT8821C-029	3rd RF for Phone2	1	1
MT8821C-030	4th RF for Phone2	1	1
Software Options		No.1	No.2
MX882112C	LTE FDD Measurement Software	1	1
MX882113C	LTE TDD Measurement Software	-	1

Secondary2

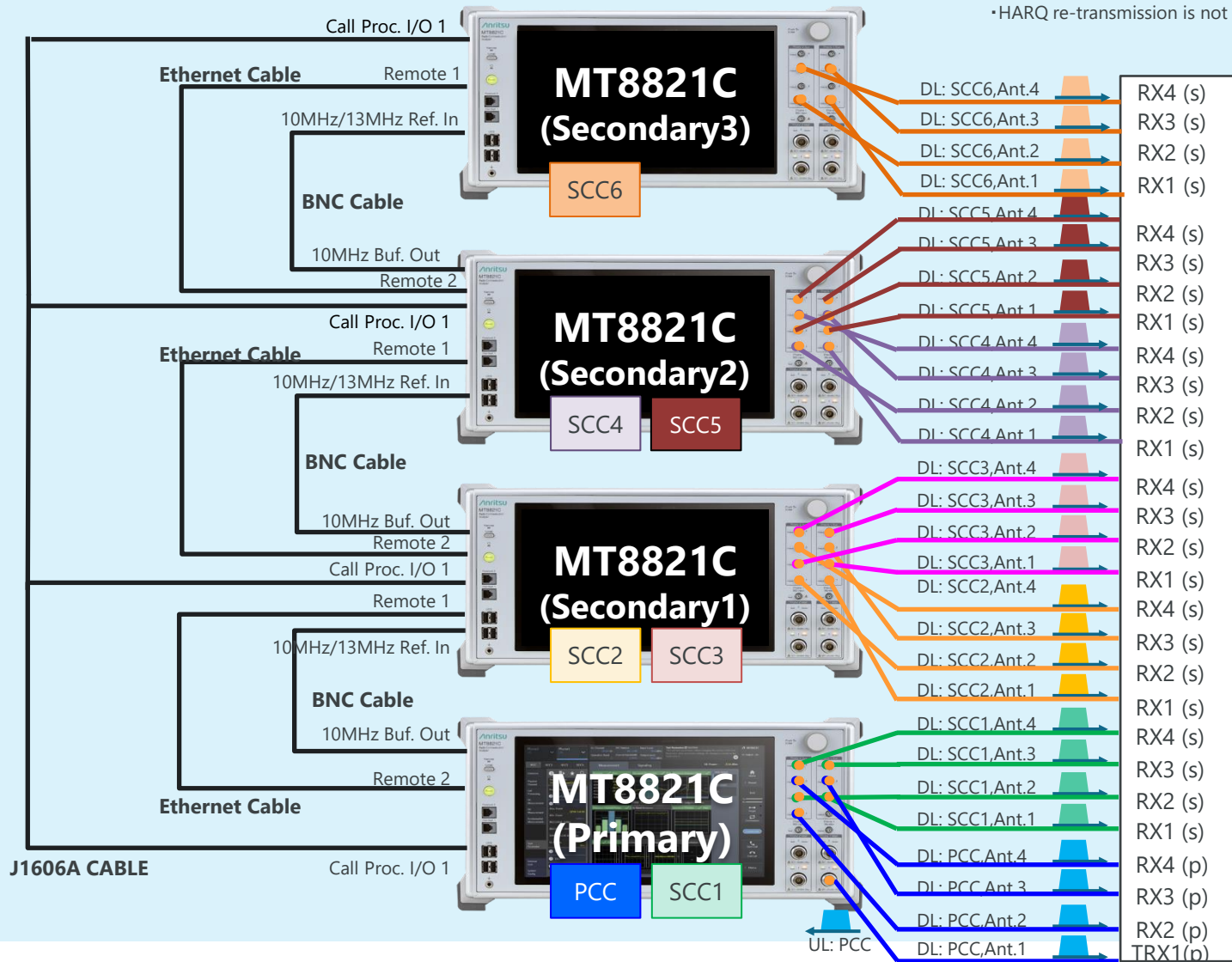
Measurement Instruments		No.1	No.2
MT8821C	Radio Communication Analyzer	1	1
Hardware Options		No.1	No.2
MT8821C-008	LTE Measurement Hardware	2	2
MT8821C-012	Parallel Phone Measurement Hardware	1	1
MT8821C-025	2nd RF for Phone1	1	1
MT8821C-026	3rd RF for Phone1	1	1
MT8821C-027	4th RF for Phone1	1	1
MT8821C-028	2nd RF for Phone2	1	1
MT8821C-029	3rd RF for Phone2	1	1
MT8821C-030	4th RF for Phone2	1	1
Software Options		No.1	No.2
MX882112C	LTE FDD Measurement Software	1	1
MX882113C	LTE TDD Measurement Software	-	1

◆ MT8821C supports 7CA 4x4 MIMO 256QAM physical throughput testing.

Connection Diagram

Limitation ;

- During FDD/TDD Joint 7CA measurement, only FDD can be set for PCC.
- IP Throughput measurement is not supported
- HARQ re-transmission is not supported.



◆ Required options

Primary Unit

Product Number	Product Name	Set
MT8821C	Radio Communication Analyzer	1
MT8821C-008	LTE Measurement Hardware	2
MT8821C-012	Parallel Phone Measurement Hardware	1
MT8821C-025	2nd RF for Phone1	1
MT8821C-026	3rd RF for Phone1	1
MT8821C-027	4th RF for Phone1	1
MT8821C-028	2nd RF for Phone2	1
MT8821C-029	3rd RF for Phone2	1
MT8821C-030	4th RF for Phone2	1
MX882112C	LTE FDD Measurement Software	1
MX882112C-011	LTE FDD 2x2MIMO DL	1
MX882112C-012	LTE FDD 4x4MIMO DL	1
MX882112C-021	LTE-Advanced FDD DL CA Measurement Software	1
MX882112C-031	LTE-Advanced FDD DL 3CCs Measurement Software	1
MX882112C-041	LTE-Advanced FDD DL 4CCs Measurement Software	1
MX882112C-051	LTE-Advanced FDD DL 5CCs Measurement Software	1
MX882112C-061	LTE-Advanced FDD DL 6CCs Measurement Software	1
MX882112C-071	LTE-Advanced FDD DL 7CCs Measurement Software	1
MX882113C	LTE TDD Measurement Software	1
MX882113C-011	LTE TDD 2x2MIMO DL	1
MX882113C-012	LTE TDD 4x4MIMO DL	1
MX882113C-021	LTE-Advanced TDD DL CA Measurement Software	1
MX882113C-031	LTE-Advanced TDD DL 3CCs Measurement Software	1
MX882113C-041	LTE-Advanced TDD DL 4CCs Measurement Software	1
MX882113C-051	LTE-Advanced TDD DL 5CCs Measurement Software	1
MX882113C-061	LTE-Advanced TDD DL 6CCs Measurement Software	1
MX882113C-071	LTE-Advanced TDD DL 7CCs Measurement Software	1

Accessories

Product Number	Product Name	Set
J1606A	Cable	1
-	BNC Cable	3
-	Ethernet Cable	3

Secondary Unit 1

Product Number	Product Name	Set
MT8821C	Radio Communication Analyzer	1
MT8821C-008	LTE Measurement Hardware	2
MT8821C-012	Parallel Phone Measurement Hardware	1
MT8821C-025	2nd RF for Phone1	1
MT8821C-026	3rd RF for Phone1	1
MT8821C-027	4th RF for Phone1	1
MT8821C-028	2nd RF for Phone2	1
MT8821C-029	3rd RF for Phone2	1
MT8821C-030	4th RF for Phone2	1
MX882112C	LTE FDD Measurement Software	1
MX882113C	LTE TDD Measurement Software	1

Secondary Unit 2

Product Number	Product Name	Set
MT8821C	Radio Communication Analyzer	1
MT8821C-008	LTE Measurement Hardware	2
MT8821C-012	Parallel Phone Measurement Hardware	1
MT8821C-025	2nd RF for Phone1	1
MT8821C-026	3rd RF for Phone1	1
MT8821C-027	4th RF for Phone1	1
MT8821C-028	2nd RF for Phone2	1
MT8821C-029	3rd RF for Phone2	1
MT8821C-030	4th RF for Phone2	1
MX882112C	LTE FDD Measurement Software	1
MX882113C	LTE TDD Measurement Software	1

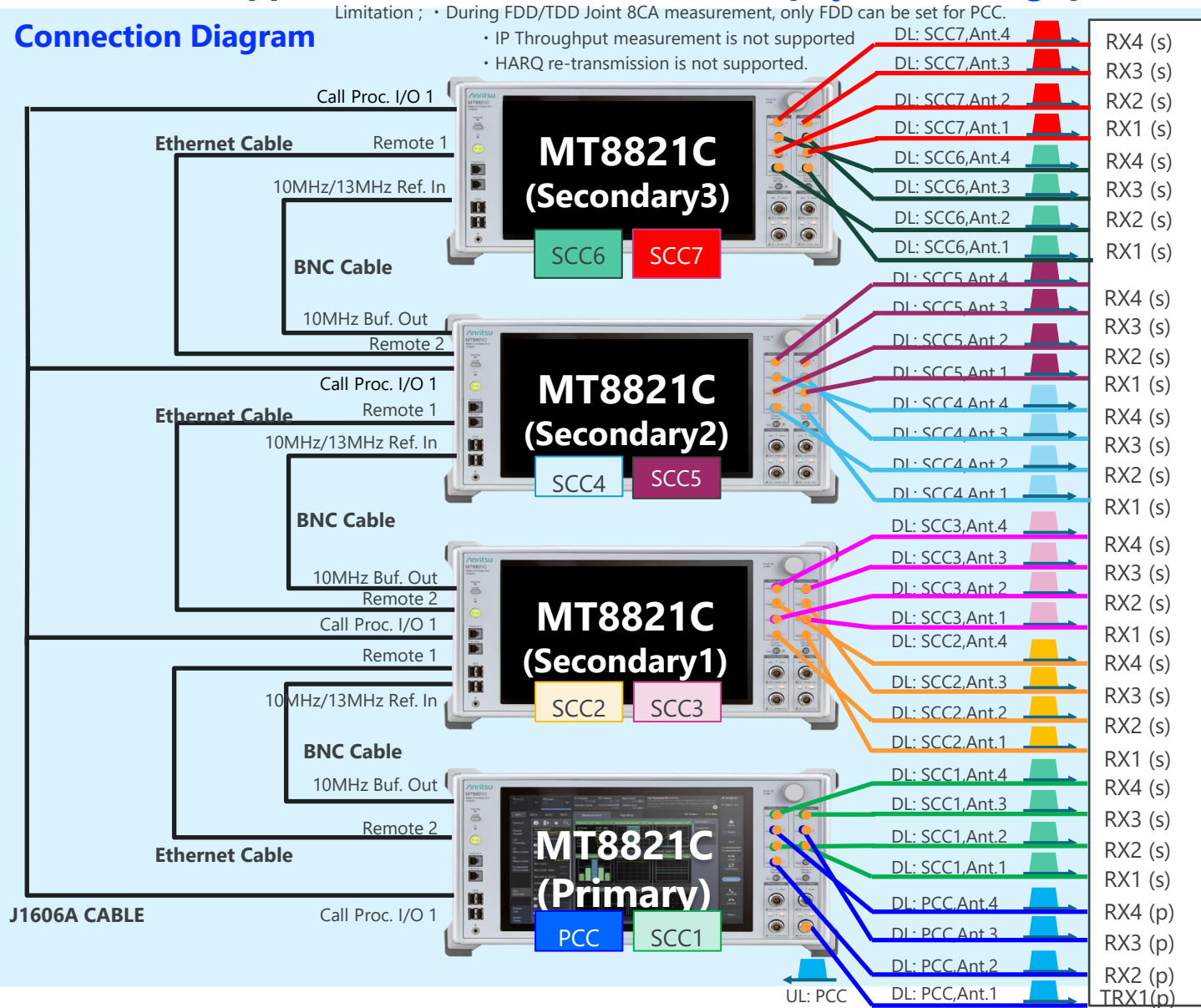
Secondary Unit 3

Product Number	Product Name	Set
MT8821C	Radio Communication Analyzer	1
MT8821C-008	LTE Measurement Hardware	1
MT8821C-012	Parallel Phone Measurement Hardware	1
MT8821C-026	3rd RF for Phone1	1
MT8821C-029	3rd RF for Phone2	1
MX882112C	LTE FDD Measurement Software	1
MX882113C	LTE TDD Measurement Software	1

When LAA band (band46) is necessary for any SCCs, MT8821C-019 must be equipped with all of MT8821Cs.

◆ MT8821C supports 8CA 4x4 MIMO 256QAM physical throughput testing.

Connection Diagram



◆ Required options

If you want to test the CA/ MIMO combination shown in the right, following options are required.

* LAA (band46) is supported
* All TDD pattern is not verified

Primary

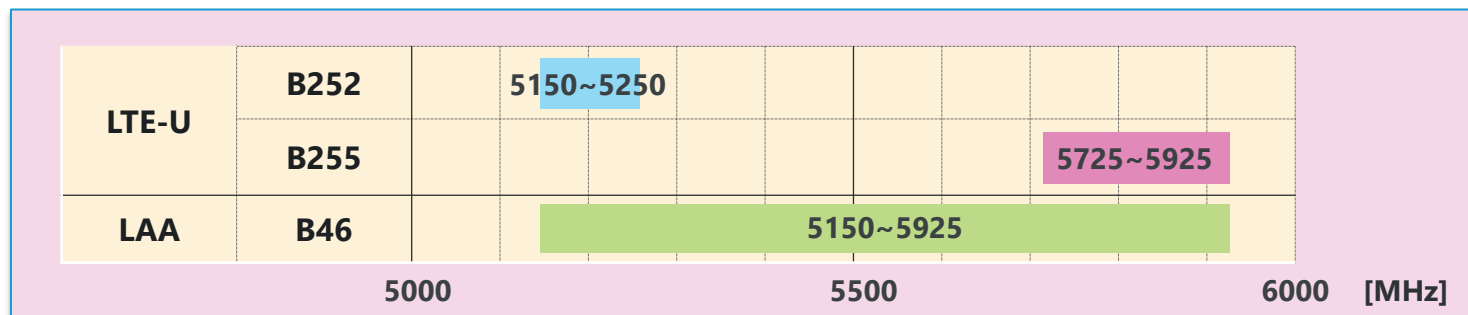
Measurement Instruments		Q'ty
MT8821C	Radio Communication Analyzer	1
Hardware Options		Q'ty
MT8821C-008	LTE Measurement Hardware	2
MT8821C-012	Parallel Phone Measurement Hardware	1
MT8821C-025	2nd RF for Phone1	1
MT8821C-026	3rd RF for Phone1	1
MT8821C-027	4th RF for Phone1	1
MT8821C-028	2nd RF for Phone2	1
MT8821C-029	3rd RF for Phone2	1
MT8821C-030	4th RF for Phone2	1
Software Options		Q'ty
MX882112C	LTE FDD Measurement Software	1
MX882112C-011	LTE FDD 2x2 MIMO DL	1
MX882112C-012	LTE FDD 4x4 MIMO DL	1
MX882112C-021	LTE-Advanced FDD DL CA Measurement Software	1
MX882112C-031	LTE-Advanced FDD DL 3CCs Measurement Software	1
MX882112C-041	LTE-Advanced FDD DL 4CCs Measurement Software	1
MX882112C-051	LTE-Advanced FDD DL 5CCs Measurement Software	1
MX882112C-061	LTE-Advanced FDD DL 6CCs Measurement Software	1
MX882112C-071	LTE-Advanced FDD DL 7CCs Measurement Software	1
MX882112C-081	LTE-Advanced FDD DL 8CCs Measurement Software	1
MX882113C	LTE TDD Measurement Software	1
MX882113C-011	LTE TDD 2x2 MIMO DL	1
MX882113C-012	LTE TDD 4x4 MIMO DL	1
MX882113C-021	LTE-Advanced TDD DL CA Measurement Software	1
MX882113C-031	LTE-Advanced TDD DL 3CCs Measurement Software	1
MX882113C-041	LTE-Advanced TDD DL 4CCs Measurement Software	1
MX882113C-051	LTE-Advanced TDD DL 5CCs Measurement Software	1
MX882113C-061	LTE-Advanced TDD DL 6CCs Measurement Software	1
MX882113C-071	LTE-Advanced TDD DL 7CCs Measurement Software	1
MX882113C-081	LTE-Advanced TDD DL 8CCs Measurement Software	1

Secondary1,2,3

Measurement Instruments		Q'ty
MT8821C	Radio Communication Analyzer	1
Hardware Options		Q'ty
MT8821C-008	LTE Measurement Hardware	2
MT8821C-012	Parallel Phone Measurement Hardware	1
MT8821C-025	2nd RF for Phone1	1
MT8821C-026	3rd RF for Phone1	1
MT8821C-027	4th RF for Phone1	1
MT8821C-028	2nd RF for Phone2	1
MT8821C-029	3rd RF for Phone2	1
MT8821C-030	4th RF for Phone2	1
Software Options		Q'ty
MX882112C	LTE FDD Measurement Software	1
MX882113C	LTE TDD Measurement Software	1

Others		Q'ty
J1606A	Cable	1
-	BNC Cable	3
-	Ethernet Cable	3

◆MT8821C supports Band 46 used by LAA, and Band 252 used by LTE-U

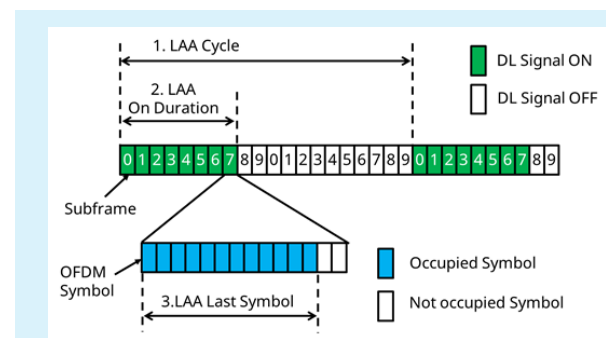


LTE-U only CA by using unlicensed band

LAA CA by using unlicensed band with Frame Structure Type 3

MT8821C supports following features for LAA :

- Frame Structure Type 3
- Max DL Throughput(SISO, 2x2 MIMO, 4x4 MIMO)
- Measurement Report (RSSI)
- Setting of DMTC Periodicity
- Flexible Setting of DL transmission



Set start transmission on frame boundaries using following parameters

1. LAA Cycle

Set end transmission on symbol boundaries using following parameters

2. LAA ON Duration
3. LAA Last Symbol

Notes:

- MT8821C-019 Extended RF 3.8 GHz to 6 GHz required for LTE-U/LAA
- Because band 255 was defined as NTN Band from 3GPP Rel17, MT8821C supports Band 255 as not LTE-U but NTN.
- Please ask our sales person about the MT8821C 3GPP support status.

◆MT8821C supports 3GPP LAA RF test case

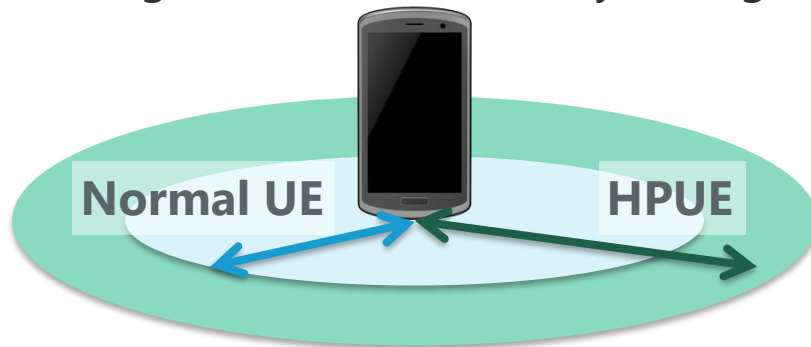
RF RX test specifications with LAA (Band 46) are described in Chapter 7 of 3GPP TS 36.521-1 V14.2.0 (2017-03).

The MT8821C has already supported Physical layer Throughput measurement including the following 3GPP test conditions.

- Non-transition on subframe #1/#2
- Full RB allocation on subframe #5

◆MT8821C supports 3GPP HPUE RF test case

Coverage area is increased by strong HPUE Tx signal.



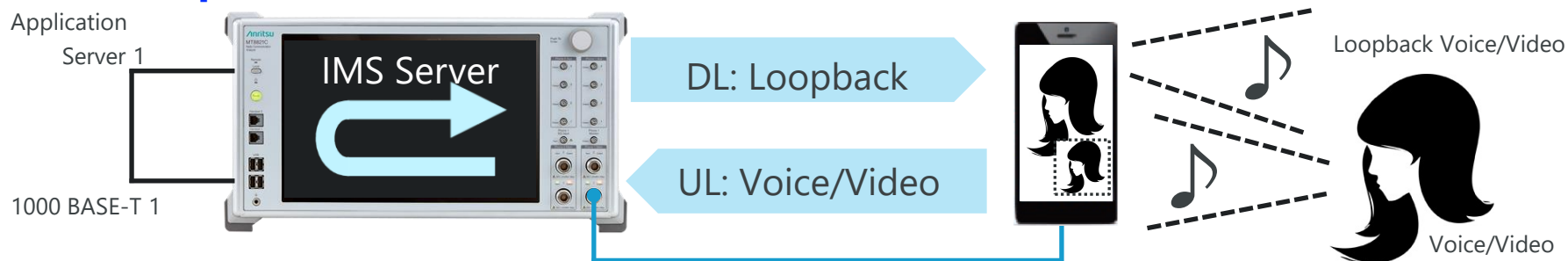
Power Class	Max. Output power [dBm]	Remarks
Class 1	31	HPUE (Band 14)
Class 2	26	HPUE (Band 41)
Class 3	23	Normal UE

Notes:

- Please ask our sales person about the MT8821C 3GPP support status.

Built-in IMS Server

➔ Simple Voice and Video Echoback Test



◆ Functions

■ Voice/Video Echoback

Voice and Video from UE returns to UE



DL: Loopback

UL: Voice / Video



■ DTX Frame

Sends DTX Frame to UE at regular interval



DL: DTX Frame

UL: Voice



■ Fixed Pattern

Sends fixed-pattern data to UE



DL: Fixed Pattern

UL: Voice



■ No Data

No data sent and just connected to UE



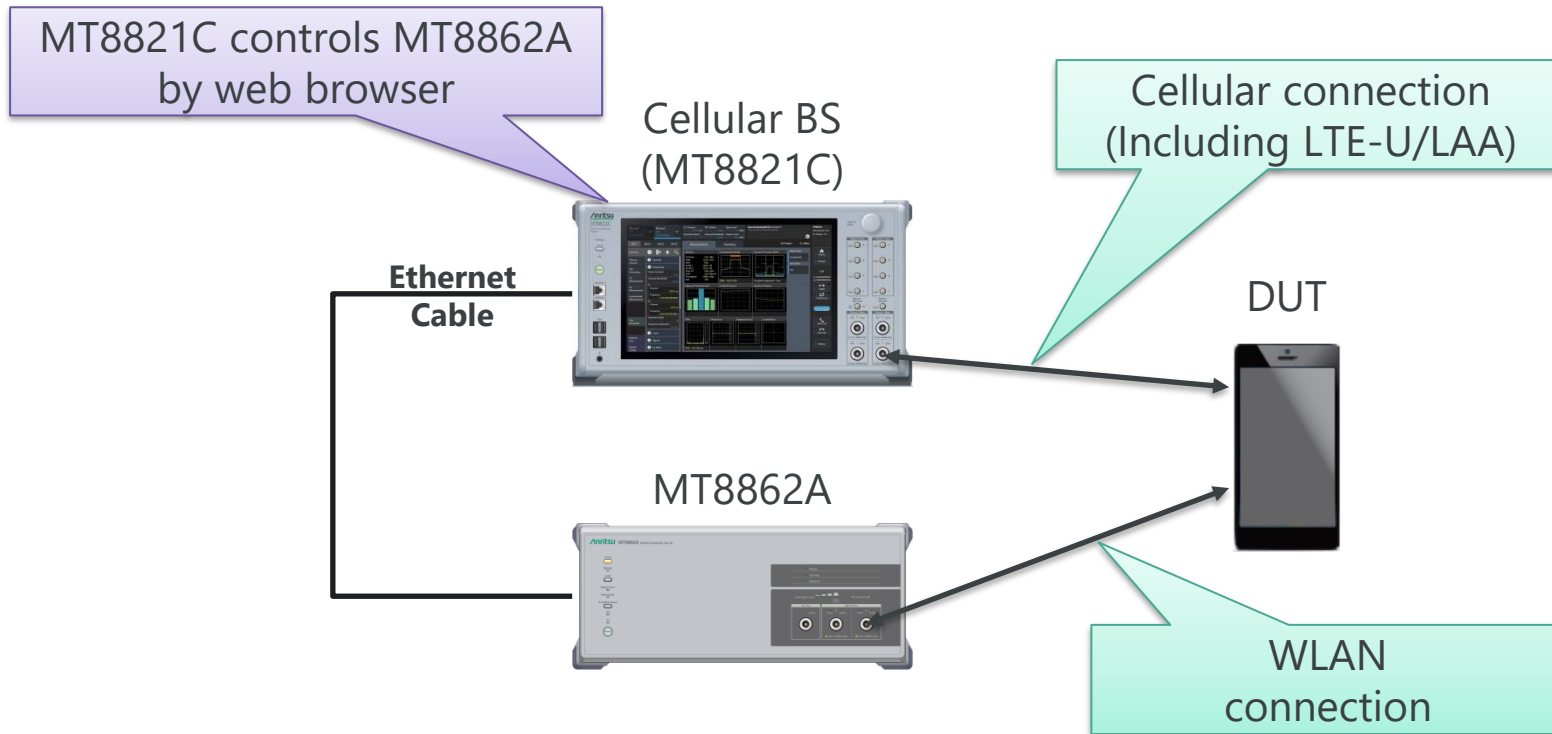
DL: No data

UL: Voice



The following codec rates are supported.

Codec Type	Codec Rate
WB-AMR	6.60 kbps, 8.85 kbps, 12.65 kbps, 14.25 kbps, 15.85 kbps, 18.25 kbps, 19.85 kbps, 23.05 kbps, 23.85 kbps
NB-AMR	4.75 kbps, 5.15 kbps, 5.90 kbps, 6.70 kbps, 7.40 kbps, 7.95 kbps, 10.20 kbps, 12.20 kbps



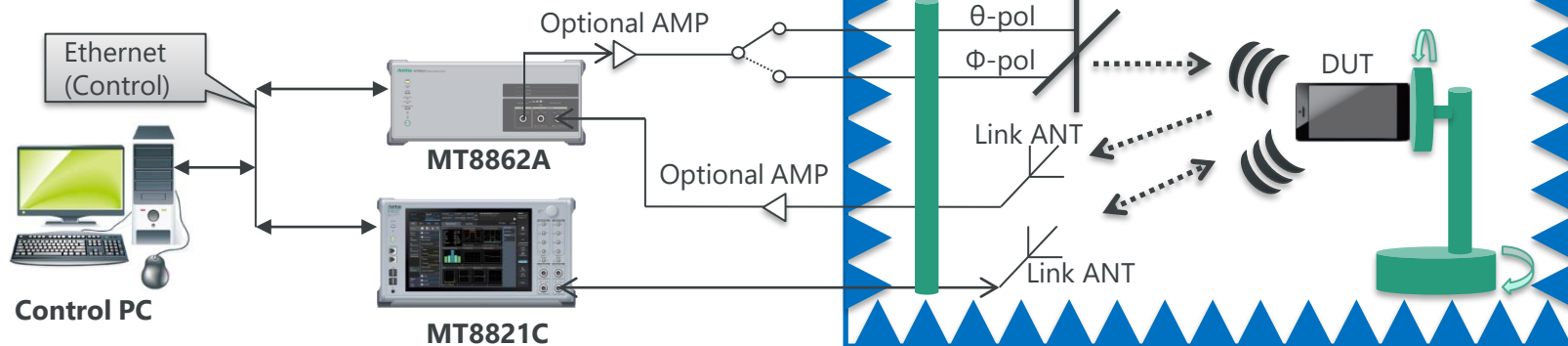
- MT8862A can be controlled by Web browser on MT8821C without external PC*. Receiver sensitivity under concurrent connection with Cellular (including LTE-U/LAA) and WLAN can be tested.
- Co-existence test in the OTA is defined in CTIA/Wi-Fi Alliance Test Plan as Desense test.

* : External control of MT8821C is done by OTA chamber system in OTA test

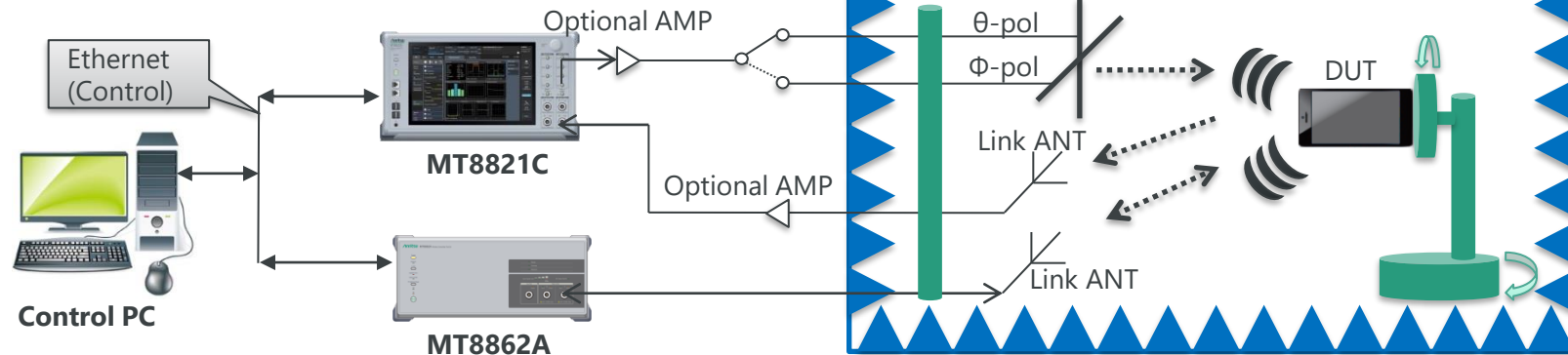
Wi-Fi Desense Measurement

(CTIA/Wi-Fi Alliance Test Plan)

For Wi-Fi Desense



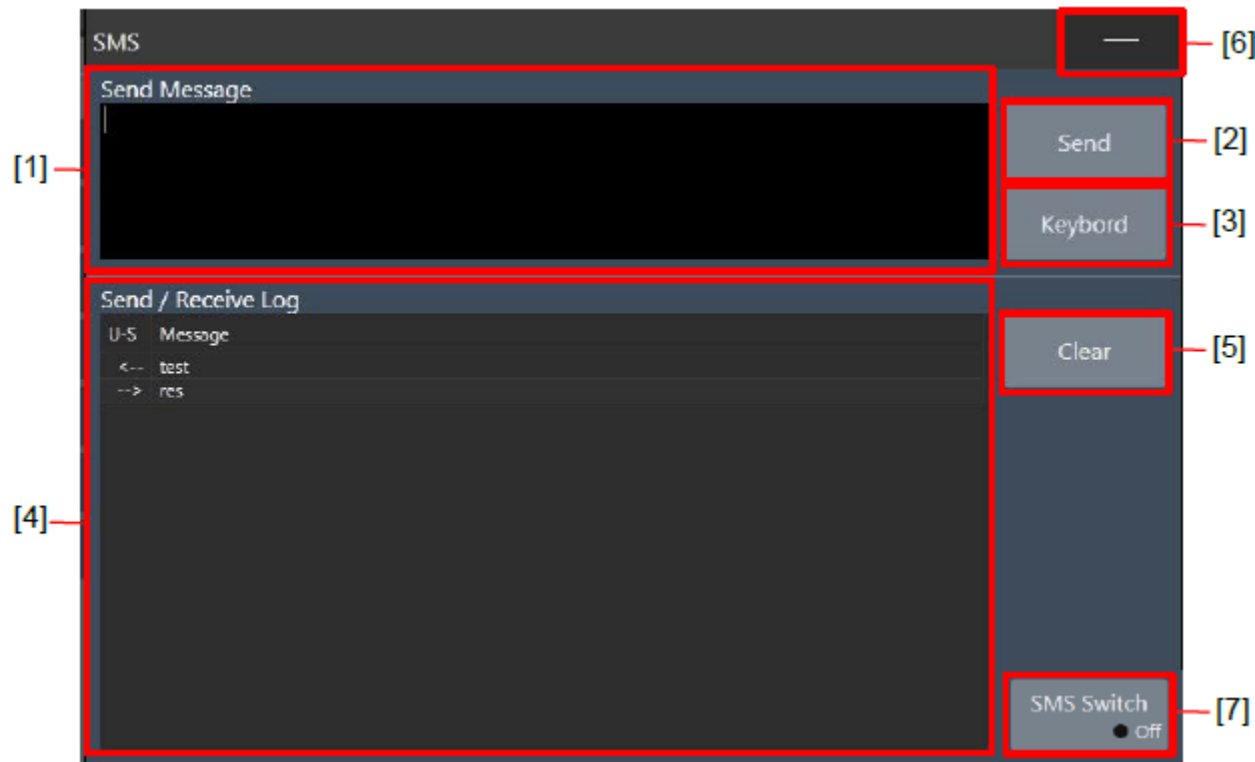
For Cellular Desense



<Reference>

CTIA/Wi-Fi Alliance Test Plan for RF Performance Evaluation of Wi-Fi Mobile Converged Devices Ver. 2.0.3

Send and receive SMS message with the simple operation



Supported systems*

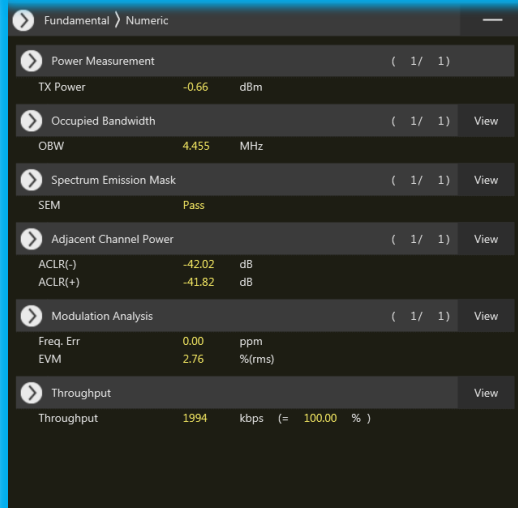
W-CDMA
GSM
CDMA2000
TD-SCDMA
LTE
Cat-M
NB-IoT

*Based on SMS over SGs

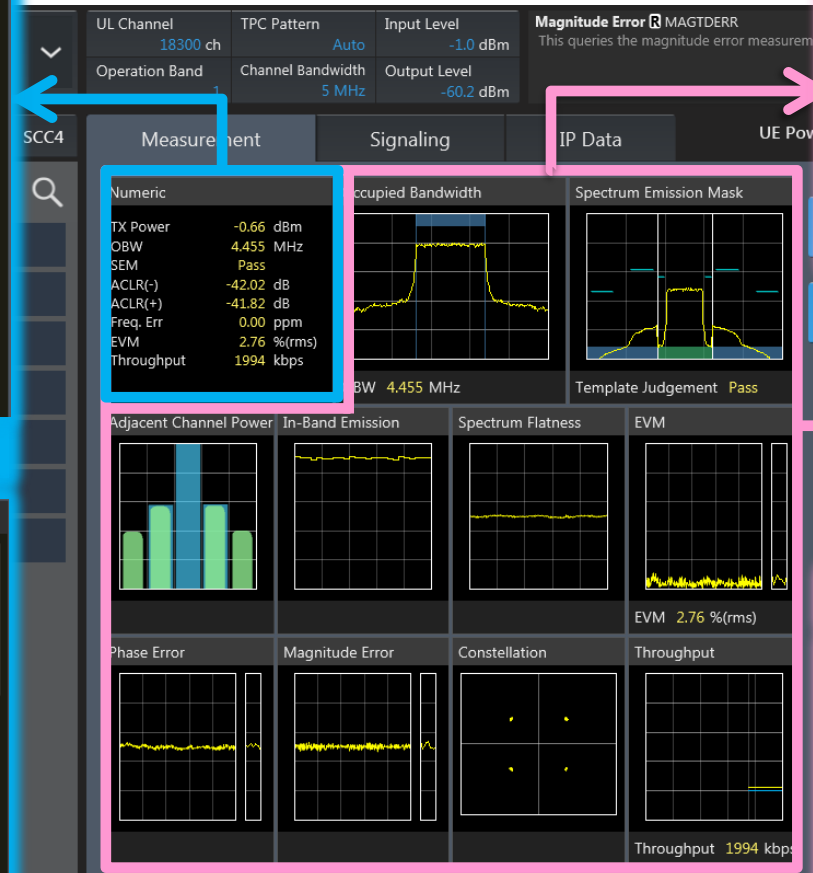
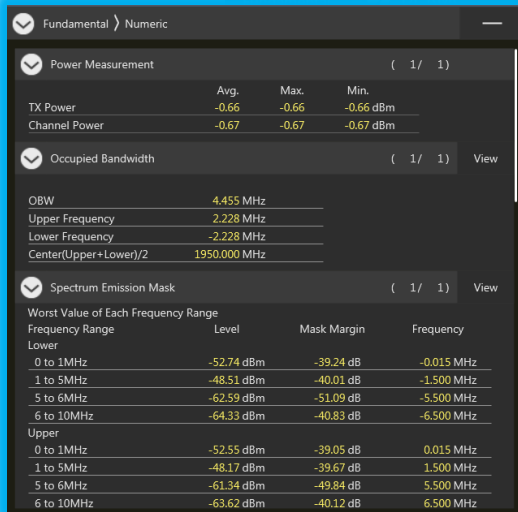
1	Send Message	Inputs a SMS message to send to the UE.
2	Send Button	Sends a SMS message to the UE.
3	Keyboard Button	Starts the screen key board.
4	Send/Receive Log	Displays SMS messages that were sent to and received from the UE.
5	Clear Button	Clears the contents and flag value from the received message.
6	Close Button	Closes the SMS screen.
7	SMS Switch Button	Sets the SMS reception function to On or Off. Displayed only for W-CDMA and TD-SCDMA.

Enhanced GUI: Measurement (All Results)

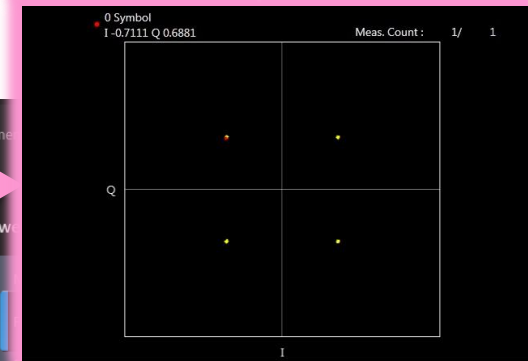
Overview



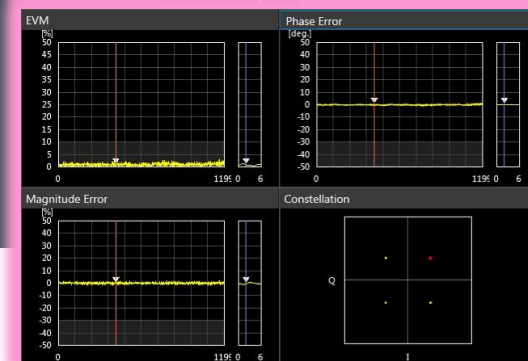
Detail



1-Graph View

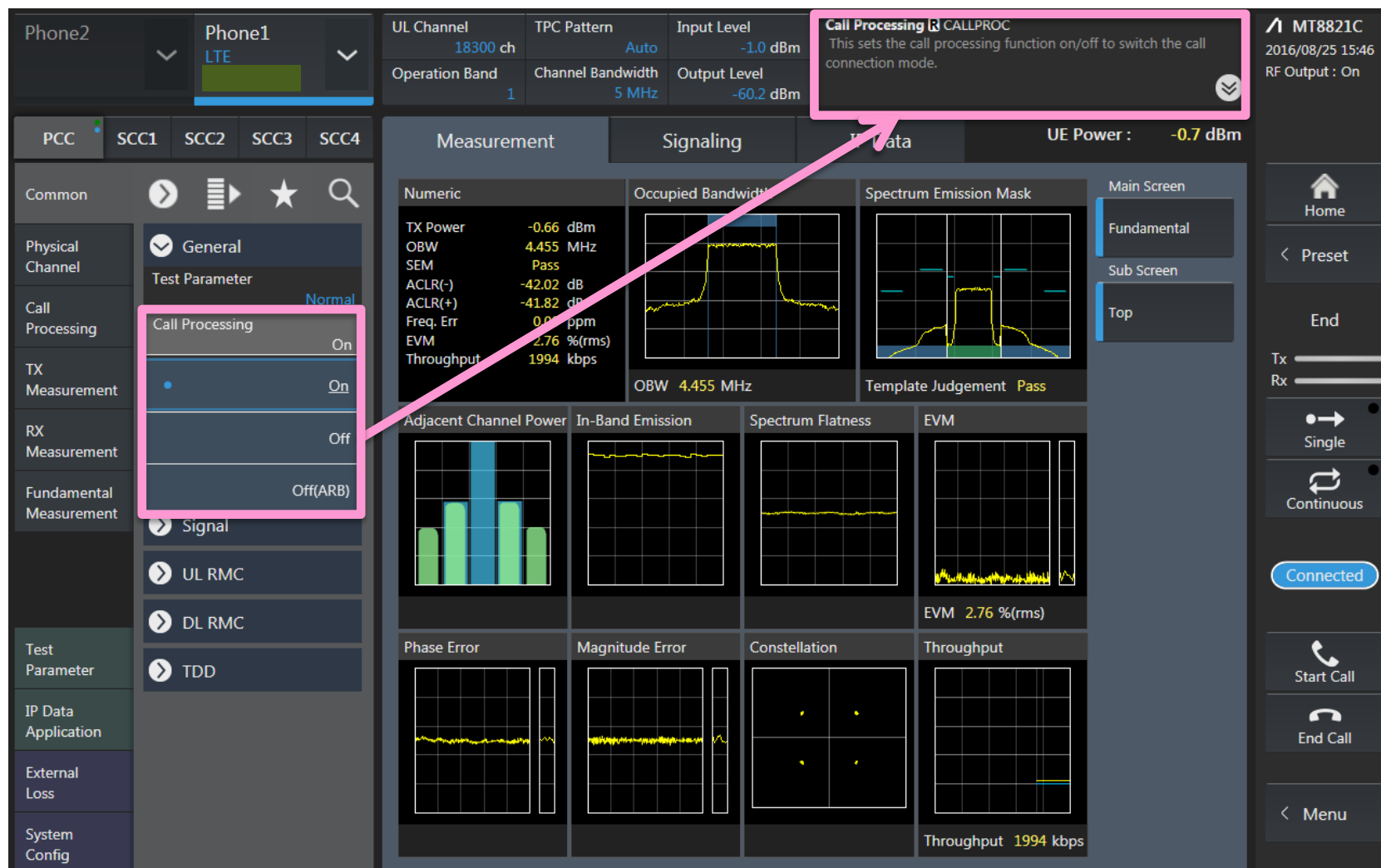


4-Graph View



Enhanced GUI: Automatic Help Display

Touching the test parameter/measurement results displays an explanation or remote commands in the Help window.



Enhanced GUI: Parameter Search

Parameters can be searched by text and settings can be changed.

The screenshot displays the Anritsu test equipment GUI. The top section shows configuration for Phone2 and Phone1 (LTE, 30.34 #008). Below this, there are tabs for PCC, SCC1, SCC2, SCC3, and SCC4. The main area is divided into Measurement, Signaling, and IP Data sections. A pink box highlights the 'Parameter Search' feature, which includes a list of 35 items, a search bar, and a keyboard. A pink arrow points to the 'Channel Coding' parameter in the left sidebar. The 'Channel Coding' parameter is highlighted in the list, and its settings are displayed in the main area. The 'Channel Coding' parameter is set to RMC. The 'Channel Coding' parameter is highlighted in the list, and its settings are displayed in the main area. The 'Channel Coding' parameter is set to RMC. The 'Channel Coding' parameter is highlighted in the list, and its settings are displayed in the main area. The 'Channel Coding' parameter is set to RMC.

Parameter	Value
Channel Bandwidth	5 MHz
Channel	18300 ch
Channel	300 ch
Channel Coding	RMC
User Define Channel Model	
(Channel 1to1/2/3/4 Gain/Phase)	1.00 0.0 degree
	0.00 0.0 degree
	0.00 0.0 degree
(Channel 2to1/2/3/4 Gain/Phase)	0.00 0.0 degree
	0.00 0.0 degree
	0.00 0.0 degree
(Channel 3to1/2/3/4 Gain/Phase)	0.00 0.0 degree
	0.00 0.0 degree
	0.00 0.0 degree
(Channel 4to1/2/3/4 Gain/Phase)	0.00 0.0 degree
	0.00 0.0 degree
	0.00 0.0 degree
DTCH Data Pattern	MAC Padding Bits

- (1) Added function linking PCC and SCC parameter settings (only some parameters, such as Output Level)
- (2) Pressing list button at CA connection setting displays PCC and SCC settings simultaneously
- (3) Supports separate External Loss (Main UL/DL) setting for each CC

The screenshot displays the Anritsu test equipment GUI with the following components:

- Top Bar:** Phone2 (2nd Antenna for Phone1), Phone1 (LTE), DL Channel (300 ch), TPC Pattern (Auto), Input Level (-1.0 dBm), Output Level (Total) (-70.2 dBm), and UE Power (-21.0 dBm).
- Central Area:** Tabs for PCC, SCC1, SCC2, and SCC3. The PCC tab is selected, showing settings for Level, Input Level, Output Level, (Total), (EPRE), and AWGN Level.
- Bottom Section:** External Loss settings for each CC. The settings are:
 - PCC:** Main UL (Phone1) 0.0 dB, Main DL (Phone1) 0.0 dB, Main DL (Phone2, 2nd Antenna) 0.0 dB, AUX1 (Phone1) 0.0 dB, AUX1 (Phone2, 2nd Antenna) 0.0 dB.
 - SCC1:** Main UL (Phone1) 0.0 dB, Main DL (Phone1) 0.0 dB, Main DL (Phone2, 2nd Antenna) 0.0 dB, AUX2 (Phone1) 0.0 dB, AUX2 (Phone2, 2nd Antenna) 0.0 dB.
 - SCC2:** Main DL (Phone1) 0.0 dB, Main DL (Phone2, 2nd Antenna) 0.0 dB, AUX3 (Phone1) 0.0 dB, AUX3 (Phone2, 2nd Antenna) 0.0 dB.
 - SCC3:** Main DL (Phone1) 0.0 dB, Main DL (Phone2, 2nd Antenna) 0.0 dB, AUX4 (Phone1) 0.0 dB, AUX4 (Phone2, 2nd Antenna) 0.0 dB.

Annotations (1), (2), and (3) highlight specific features:

- (1) Links PCC and SCC Output Level settings.
- (2) Shows the list button in the CA connection setting.
- (3) Highlights the External Loss settings for each CC.

◆ Easier Downlink : Resource Block, MCS Index Settings

Freely settable parameters for each subframe support easy testing even at near-to-real test environment settings.

When Allocation mode = Detail

RB Allocation				Aggregation Level				
Subframe	Number of RB	Starting RB	MCS Index	Modulation	TBS Index	TBS	SI-RNTI	C-RNTI
0	80	20	28	64QAM	26	59256	-	8
Subframe 1	100	0	28	64QAM	26	75376	-	8
Subframe 2	2	98	25	64QAM	23	1128	-	8
Subframe 3	2	98	8	QPSK	8	256	-	8
Subframe 4	100	0	25	64QAM	23	57336	-	8
Subframe 5	96	4	13	16QAM	12	22152	8	-
Subframe 6	100	0	18	64QAM	16	32856	-	8
Subframe 7	100	0	18	64QAM	16	32856	-	8
Subframe 8	50	50	28	64QAM	26	36696	-	8
Subframe 9	50	50	28	64QAM	26	36696	-	8

When Allocation mode = Normal

MCS Index		Aggregation Level						
Subframe	MCS Index	Modulation	TBS Index	TBS	SI-RNTI	C-RNTI		
1-4,6-9	28	64QAM	26	18336	-	4		
Subframe 5	28	64QAM	26	15264	4	-		
Subframe 0	28	64QAM	26	18336	-	4		
Subframe -	N/A	-----	-	-	-	-		

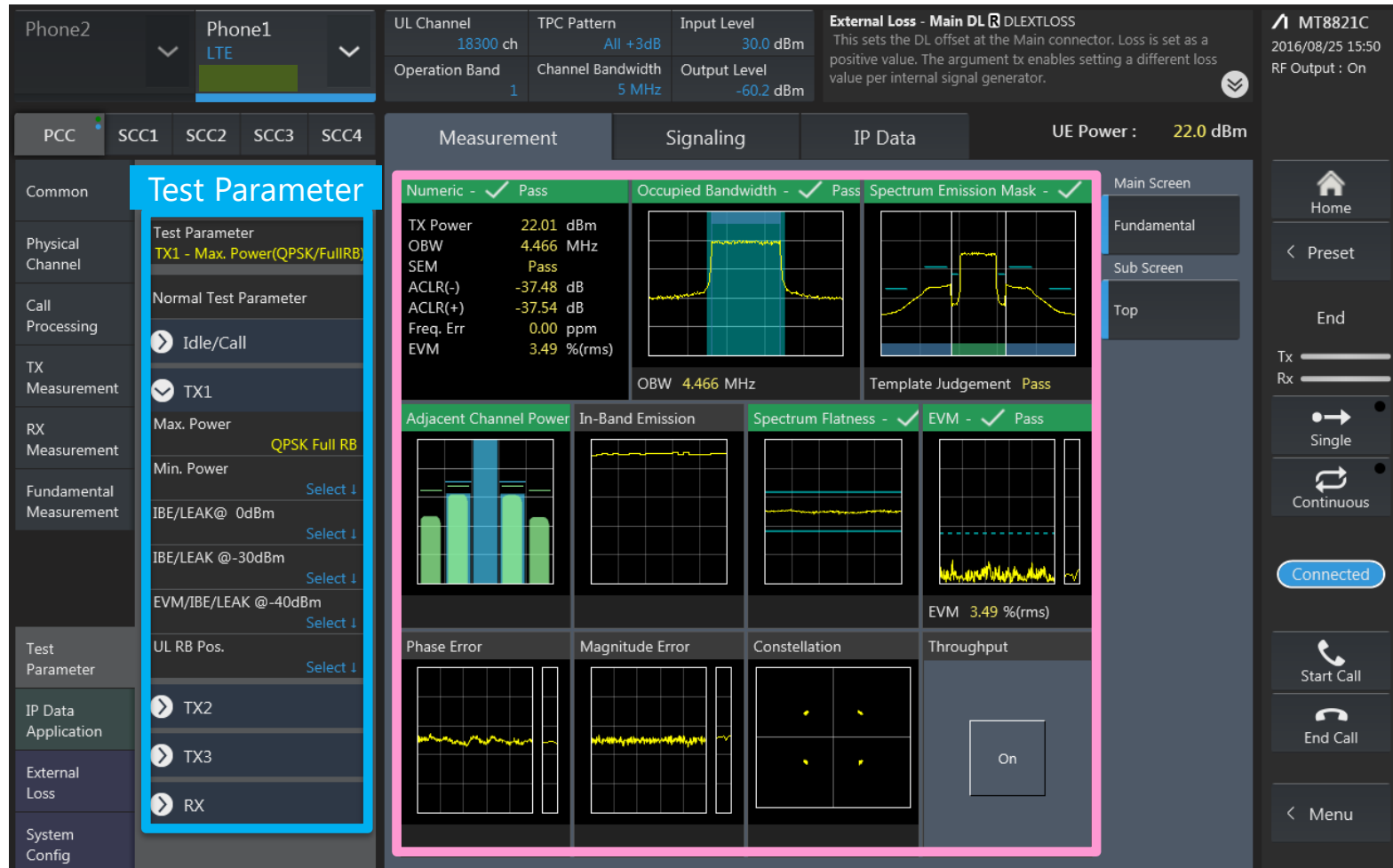
*Easy legacy setting methods are also supported at measurement based on 3GPP TS 36.521-1.

RF TRX Measurement (Test Parameters)

The MT8821C has a "Test Parameter" function for 3GPP RF tests.

It supports following features.

- One-button parameter setting for 3GPP RF TRX tests
- PASS/FAIL judgment

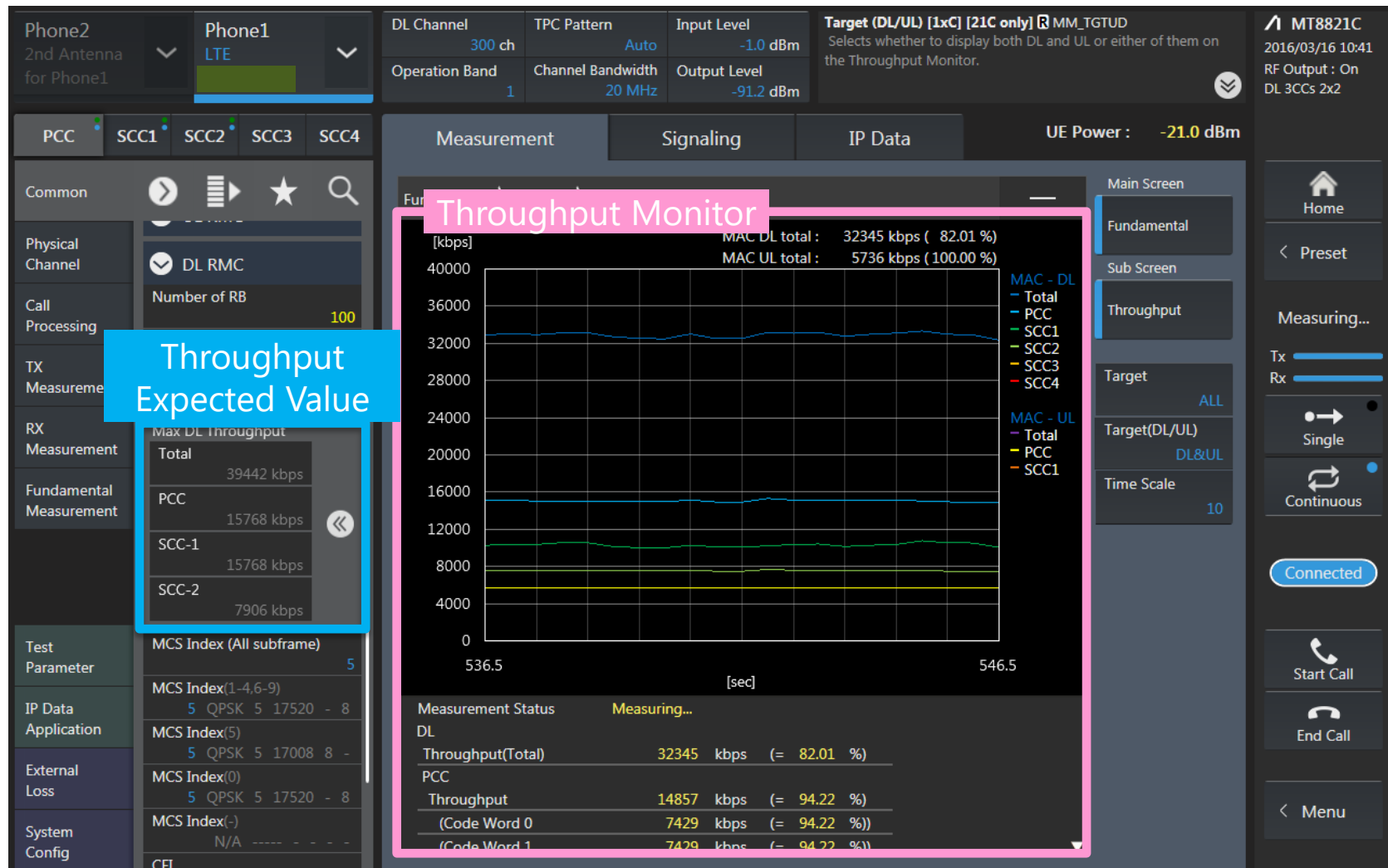


-
- The UE CA Configuration can be captured and displayed for the specified Band for UE supporting Rel-11.

ANRITSU CORPORATION

Throughput Monitor/Display Expected Throughput

The MAC layer Throughput measurement results can be displayed as a graph.
In addition, a function has been added for displaying expected Throughput values.



Data Application (PING/Iperf) operations can be performed from the MT8821C GUI using the Result – IP Data tab. Settings are made at the Parameter – IP Data Application tab.

The screenshot displays the MT8821C GUI interface. The top status bar shows 'Phone2' (2nd Antenna for Phone1) and 'Phone1' (LTE). The 'DL Channel' is set to 300 ch, 'TPC Pattern' to Auto, and 'Input Level' to -1.0 dBm. The 'Operation Band' is 1, 'Channel Bandwidth' is 20 MHz, and 'Output Level' is -70.2 dBm. The 'Iperf Mode' is set to [1xC] [21C only] IPFMODE. The 'UE Power' is -21.1 dBm.

The 'IP Data' tab is selected, showing the 'IP Data Application' configuration. The 'Common' section includes 'PING(Server1)' and 'Iperf(Server1)'. The 'Physical Channel' section shows 'Destination IPv4 Address' as 192.168.20.11 and 'Destination IPv6 Address' as 2001:0000:0000:0000:0000:0000:0000:0001. The 'TX Measurement' section shows 'IP Type' as IPv4. The 'RX Measurement' section shows 'Interval' as 1000 and 'Buffer Size' as 32. The 'Fundamental Measurement' section shows 'IP Type' as IPv4 and 'IP Protocol' as UDP. The 'Test Parameter' section shows 'Destination IPv4 Address' as 192.168.20.11 and 'Destination IPv6 Address' as 2001:0000:0000:0000:0000:0000:0000:0001. The 'External Loss' section shows 'Bandwidth' as 5 and 'Bandwidth Unit' as 5.

The 'IP Data' tab displays the results of the PING and Iperf tests. The PING results show a successful connection to 192.168.20.11 with 32 bytes of data. The Iperf results show a successful connection to 192.168.20.11 with a bandwidth of 5.00 Mb/s.

The right sidebar contains navigation buttons: Home, Preset, Stop, Tx, Rx, Single, Continuous, Connected, Start Call, End Call, and Menu.

Compatibility with MT8820C

The MT8821C is compatible with MT8820C functions, performance, remote commands, etc. Previously developed control software and test sequences can be used with the MT8821C.

- ◆ Reduces costs for test equipment and test environment configuration
- ◆ No risks rebuilding existing LTE and 3G/2G test environment

Compatibility

- Functions and performance
- Remote commands

MT8820C



Control software and
test environment can be
reutilized.



MT8821C



MT8820C to MT8821C Upgrade

The MT8821C is upgradeable from the MT8820C. The existing MT8820C hardware and all measurement software can be re-used to make the most efficient use of your investment.

MT8820C



Upgrade kit

MT8821C



	Hardware	Software
W-CDMA	MT8820C-001	MX882000C
TD-SCDMA	MT8820C-007	MX882007C
GSM	MT8820C-002	MX882001C
LTE	MT8820C-008	MX882012C/13C



	Hardware	Software
	MT8821C-001	MX882100C
	MT8821C-007	MX882107C
	MT8821C-002	MX882101C
	MT8821C-008	MX882112C/13C

	MT8821C	MT8820C
Frequency Range	30 MHz to 6.0 GHz (3.8 GHz to 6.0 GHz Option)	30 MHz to 2.7 GHz, 3.4 GHz to 3.8 GHz (3.4 GHz to 3.8 GHz Option)
Interface	Main: RF In/Out (Max. 4 ports) Aux: RF Out (Max. 8 ports)	Main: RF In/Out (Max. 2 ports) Aux: RF Out (Max. 2 ports)
Output Level	-140 to -10 dBm (Main) -125 to +5 dBm (Aux)	-140 to - 10 dBm (Main) -130 to 0 dBm (Aux)
Bandwidth	Generator bandwidth: 160 MHz Analyzer bandwidth: 160 MHz	Generator bandwidth: 25 MHz Analyzer bandwidth: 25 MHz
System	- LTE FDD/TDD - LTE CA (DL CA 4CCs (with SISO)/ DL CA 8CCs (with 4x4 MIMO)***/ DL CA 6CCs (with 4x4 MIMO)**/ DL CA 4CCs (with 4x4 MIMO)*/ DL CA 8CCs (with 2x2 MIMO)*/ UL CA 2CCs/ LTE in unlicensed spectrum : 5 GHz) - WCDMA/HSPA/HSPA Evolution/ (DB-)DC-HSDPA/4C-HSDPA/DC-HSUPA - GSM/GPRS/EGPRS - TD-SCDMA/HSPA/HSDPA Evolution - LTE Cat-M, NB-IoT(Cat-NB1,2) - 5G NSA Anchor	- LTE FDD/TDD (up to 2x2 MIMO) - LTE CA (DL 3CC + 2x2 MIMO by 3units/ UL 2CC) - WCDMA/HSPA/HSPA Evolution/ (DB-)DC-HSDPA/4C-HSDPA/DC-HSUPA - GSM/GPRS/EGPRS - TD-SCDMA/HSPA/HSDPA Evolution
GUI	Windows 7 OS, touch panel, USB interface	Unix OS, key panel, CF interface
Dimensions	426 (W) × 221.5 (H) × 578 (D) mm (excluding protrusions)	426 (W) × 221.5 (H) × 498 (D) mm (excluding protrusions)

* Requires 2 boxes of MT8821C

** Requires 3 boxes of MT8821C

*** Requires 4 boxes of MT8821C

MT8821C Additional Features for Cellular IoT

System	Model Name / Product Name	Notes
NB-IoT	MX882117C-001 NB-IoT Category NB-2 Measurement Software	Requires MX882117C. Supports RF TRX measurement at NB-IoT Category NB2 condition. Also, IP data transfer can be available by adding MX882117C-001.
NB-IoT	MX882117C-002 NB-IoT Multi Carrier	Requires MX882117C. Supports RF TRX measurement at NB-IoT Category NB2 condition. Also, IP data transfer can be available by adding MX882117C-001. Supports not only primary carrier (=Anchor carrier) which controls both call connection and data communication, but also the secondary carrier (=Non Anchor carrier) which controls only data communication to optimize the efficiency of data transmission. (*: Throughput measurement only. RF measurement is not planned to be supported.)
NB-IoT	3GPP TS36.521-1 RF TRX measurement (Rel-14) following	Follows 3GPP TS 36.521-1 (2019-06). Supports the latest TX measurement test criteria, additional band, etc.
NB-IoT	NIDD (NB-IoT) RF Measurement function	Supports call connection and RF measurement with NIDD state
NB-IoT	NIDD data transfer	Supports data transfer test during NIDD (Non-IP Data Delivery) status
NB-IoT	Release Assistance Indicator	Function to shift to "Idle" state after call connection established which is driven by UE side during communication status without IP data.
NB-IoT	Inactivity Timer	Function to shift to "Idle" state after call connection established which is driven by BTS side during communication status without IP data.
NB-IoT	2HARQ	Enhanced HARQ (Hybrid Automatic Repeat reQuest) to transmit data at double speed at maximum from the existing HARQ.
Cat-M	Full Duplex	Supports Full Duplex Mode with LTE Category M1.
LTE	RSAP, RSARP	Supports technologies to measure the reference signal at the antenna terminal.

(Reference) M8821C minimum configuration incl. Cat-M1, Cat-NB2

Model Name	Product Name	Qty	Notes
MT8821C	Radio Communication Analyzer	1	
MT8821C-008	LTE Measurement Hardware	1	
MX882116C	LTE Category M1 Measurement Software	1	Requires MT8821C-008
MX882116C-006	LTE Category M1 IP Data Transfer	1	Requires MX882116C
MX882117C	NB-IoT Measurement Software	1	Requires MT8821C-008
MX882117C-001	NB-IoT Category NB-2 Measurement Software	1	Requires MX882117C
MX882117C-002	NB-IoT Multi Carrier	1	Requires MX882117C
MX882117C-006	NB-IoT IP Data Transfer	1	Requires MX882117C
MX882164C	LTE VoLTE Echoback	1	Necessary when customers do Cat-M VoLTE test

MT8821C Options

Hardware No.	Hardware Name
MT8821C	Radio Communication Analyzer
MT8821C-001	W-CDMA Measurement Hardware
MT8821C-002	TDMA Measurement Hardware
MT8821C-007	TD-SCDMA Measurement Hardware
MT8821C-008	LTE Measurement Hardware
MT8821C-012	Parallel Phone Measurement Hardware
MT8821C-019	Extended RF 3.8GHz - 6GHz
MT8821C-025	2nd RF for Phone1
MT8821C-026	3rd RF for Phone1
MT8821C-027	4th RF for Phone1
MT8821C-028	2nd RF for Phone2
MT8821C-029	3rd RF for Phone2
MT8821C-030	4th RF for Phone2

Software No.	Software Name
MX882100C	W-CDMA Measurement Software
MX882100C-002	W-CDMA External Packet Data
MX882100C-003	W-CDMA Video Phone Test
MX882100C-005	W-CDMA A-GPS
MX882100C-019	WCDMA HSPA Measurement Software
MX882100C-032	DC-HSDPA Measurement Software
MX882100C-033	DC-HSUPA Measurement Software
MX882100C-034	4C-HSDPA Measurement Software
MX882170C	W-CDMA Ciphering Software
MX882101C	GSM Measurement Software
MX882101C-002	GSM External Packet Data
MX882101C-005	GSM A-GPS
MX882101C-011	EGPRS Measurement Software
MX882107C	TD-SCDMA Measurement Software
MX882107C-002	TD-SCDMA External Packet Data
MX882107C-003	TD-SCDMA Video Phone Test
MX882107C-011	TD-SCDMA HSDPA Measurement Software
MX882107C-012	TD-SCDMA HSDPA Evolution Measurement Software
MX882107C-021	TD-SCDMA HSUPA Measurement Software
MX882112C	LTE FDD Measurement Software
MX882112C-006	LTE FDD IP Data Transfer
MX882112C-010	LTE FDD Anchor For 5G NSA
MX882112C-011	LTE FDD 2x2 MIMO DL
MX882112C-012	LTE FDD 4x4 MIMO DL
MX882112C-016	LTE FDD CS Fallback to W-CDMA/GSM
MX882112C-021	LTE-Advanced FDD DL CA Measurement Software
MX882112C-022	LTE-Advanced FDD UL CA Measurement Software
MX882112C-026	LTE-Advanced FDD DL CA IP Data Transfer
MX882112C-031	LTE-Advanced FDD DL CA 3CCs Measurement Software
MX882112C-036	LTE-Advanced FDD DL CA 3CCs IP Data Transfer
MX882112C-041	LTE-Advanced FDD DL CA 4CCs Measurement Software
MX882112C-046	LTE-Advanced FDD DL CA 4CCs IP Data Transfer
MX882112C-051	LTE-Advanced FDD DL CA 5CCs Measurement Software
MX882112C-061	LTE-Advanced FDD DL CA 6CCs Measurement Software
MX882112C-071	LTE Advanced FDD DL CA 7CCs Measurement Software
MX882112C-081	LTE Advanced FDD DL CA 8CCs Measurement Software

Software No.	Software Name
MX882113C	LTE TDD Measurement Software
MX882113C-006	LTE TDD IP Data Transfer
MX882113C-010	LTE TDD Anchor For 5G NSA
MX882113C-011	LTE TDD 2x2 MIMO DL
MX882113C-012	LTE TDD 4x4 MIMO DL
MX882113C-016	LTE TDD CS Fallback to W-CDMA/GSM
MX882113C-018	LTE TDD CS Fallback to TD-SCDMA/GSM
MX882113C-021	LTE-Advanced TDD DL CA Measurement Software
MX882113C-022	LTE-Advanced TDD UL CA Measurement Software
MX882113C-026	LTE-Advanced TDD DL CA IP Data Transfer
MX882113C-031	LTE-Advanced TDD DL CA 3CCs Measurement Software
MX882113C-036	LTE-Advanced TDD DL CA 3CCs IP Data Transfer
MX882113C-041	LTE-Advanced TDD DL CA 4CCs Measurement Software
MX882113C-046	LTE-Advanced TDD DL CA 4CCs IP Data Transfer
MX882113C-051	LTE-Advanced TDD DL CA 5CCs Measurement Software
MX882113C-061	LTE-Advanced TDD DL CA 6CCs Measurement Software
MX882113C-071	LTE Advanced TDD DL CA 7CCs Measurement Software
MX882113C-081	LTE Advanced TDD DL CA 8CCs Measurement Software
MX882115C	W-CDMA HSPA IP Data Transfer
MX882115C-001	W-CDMA DC-HSPA IP Data Transfer
MX882116C	LTE Category M1 Measurement Software
MX882116C-006	LTE Category M1 IP Data Transfer
MX882117C	NB-IoT Measurement Software
MX882117C-001	NB-IoT Category NB-2 Measurement Software
MX882117C-002	NB-IoT Multi Carrier
MX882117C-006	NB-IoT IP Data Transfer
MX882118C	NTN NB-IoT Measurement Software
MX882120C	SEQ Measurement Software
MX882120C-001	W-CDMA Measurement Software
MX882120C-002	GSM Measurement Software
MX882120C-004	LTE Measurement Software
MX882120C-005	TD-SCDMA Measurement Software
MX882132C	CDMA2000 Measurement Software Lite
MX882136C	1xEV-DO Measurement Software Lite
MX882142C	LTE FDD Measurement Software Lite
MX882143C	LTE TDD Measurement Software Lite
MX882164C	LTE VoLTE Echoback

