



# SmartStudio NR IP Performance MX800071A

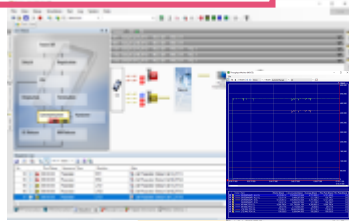
Radio Communication Test Station

MT8000A



# MT8000A Common Platform for Entire Cellular Device R&D/Mfg. Cycle

MX800070A SSNR  
MX800071A SSIP



Smart Device Integration  
/ Higher IP Throughput

ME7873NR  
RF Conformance Test System



RF Conformance Test

ME7834NR  
5G NR Mobile Device Test Platform



Protocol Conformance Test  
Carrier Acceptance Test

MX800010A RF Measurement



RF Performance Verification

MT8000A  
Radio Communication Test Station



MX800040A  
NR mmW Production Test

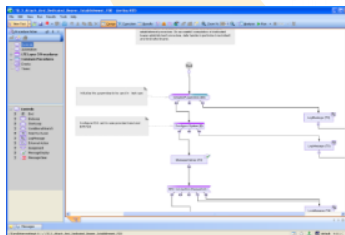


MT8870A  
Universal Wireless Test Set



Volume Production

MX800050A RTD

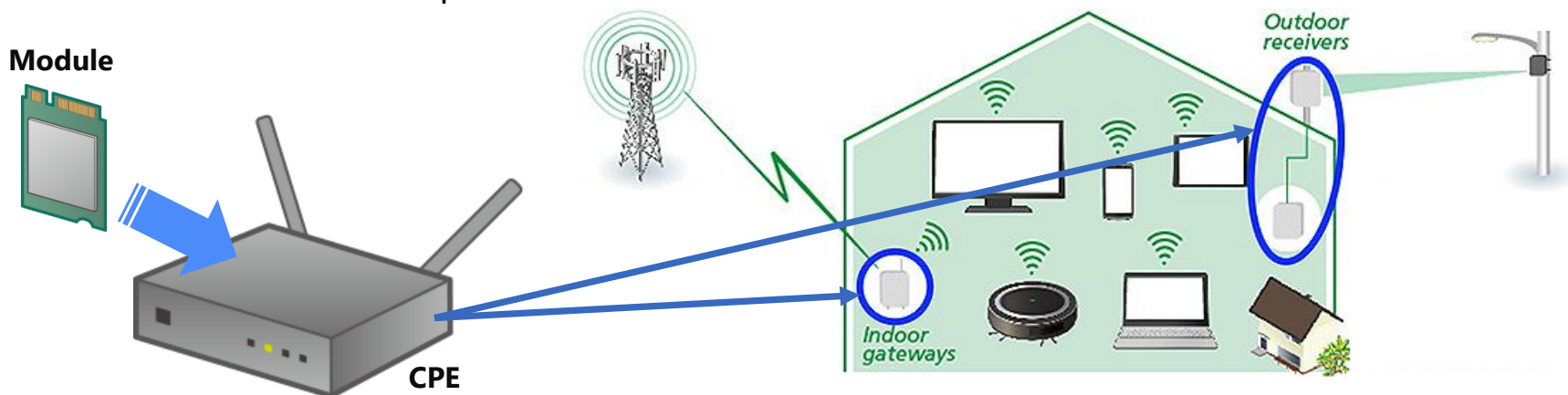


Chipset/Protocol Development



# Challenges for Evaluating Higher IP Throughput

FWA (Fixed Wireless Access) services are evolving rapidly due to increased demand for Digital Transformation (DX), remote work, and home entertainment. To improve the User Experience (UX), the CPE (Customer Premises Equipment) used for FWA, and the built-in module must have sufficient transmission speed.



To support these use cases, chipset vendors are implementing various frequency bands and higher-layer CCs/MIMO. The CPE/module development scene tests IP throughput with various combinations of frequency bands/CCs/MIMO. Since there are more than 1000 pattern combinations, an efficient IP throughput test is required.

$$\text{System} \times \text{Frequency} \times \text{\# of CCs} \times \text{\# of MIMO} =$$

• LTE	• 4G
• 5G NSA	• 5G FR1
• 5G SA	• 5G FR2

Very Complex  
&  
Wide Variety

# Product Outline



# Efficient 5G Device IP Throughput Test

## - SmartStudio NR IP Performance MX800071A -

Best test solution to evaluate IP throughput performance with higher-layer CCs/MIMO at any band combination

- ✓ **Single platform** supports FR1 SA/NSA and LTE systems, contributing to **easy-to-use, small-footprint** test systems
- ✓ Supports **wide variety of CCs/MIMO combinations**
- ✓ **Easy testing start** by verifying connection with advanced chipsets
- ✓ **Cost effective** with scalable HW/SW platform
- ✓ **Intuitive state machine GUI**



MT8000A

**Cell Parameter**  
(CA, MIMO, TDD configuration, etc.)

**Simulation Parameter**  
(Frequency, Channel, BW, etc.)

**Throughput Monitor**

Color	Name	Max Rate (Mbps)	Average Rate (Mbps)	Min Rate (Mbps)
Blue	CPRENSA-ALL UL	5,320.912	3,748,572.248	4,712,429.2
Blue	CPRENSA-ALL DL	5,320.914	4,484,267.248	1,317,780
Blue	CPRENSA-S UL	5,320.912	3,748,572.248	4,712,429.2
Blue	CPRENSA-S DL	5,320.914	4,484,267.248	1,317,780
Blue	NR MAC PDU UL	4,484,268	3,172,845.767	28,540.5
Blue	NR MAC PDU DL	28,540.5	28,540.5	28,540.5
Blue	LTE MAC PDU UL	108,628.0	8,264,844.508	108,628.0
Blue	LTE MAC PDU DL	108,628.0	8,264,844.508	108,628.0

**UE Status**

**Sequence Log**  
between UE and MT8000A

No.	Progress	TS	Dir	Message
28	00:00:15.025	101	IN	EMM_IDENTITY_RESPONSE
29	00:00:15.196	101	IN	UE_CAPACITY_ENQUIRY
30	00:00:15.183	101	IN	UE_CAPACITY_INFORMATION
31	00:00:15.150	101	IN	EMM_CONNECTION_RECONFIGURATION
32	00:00:15.145	101	IN	EMM_CONNECTION_RECONFIGURATION_COMPLETE
33	00:00:15.145	101	IN	EMM_ATTACH_COMPLETE / EMM_ACTIVATE_DEFAULT_EPS_BEARER_CONTEXT_ACCEPT
34	00:00:15.001	101	IN	EMM_EMM_INFORMATION
35	00:00:15.096	101	IN	EMM_CONNECTION_RECONFIGURATION
36	00:00:15.016	101	IN	EMM_CONNECTION_RECONFIGURATION_COMPLETE
37	00:00:15.711	101	IN	EMM_CONNECTION_RECONFIGURATION
38	00:00:15.762	101	IN	EMM_CONNECTION_RECONFIGURATION_COMPLETE

MX800071A GUI

# Scalable HW/SW Platform

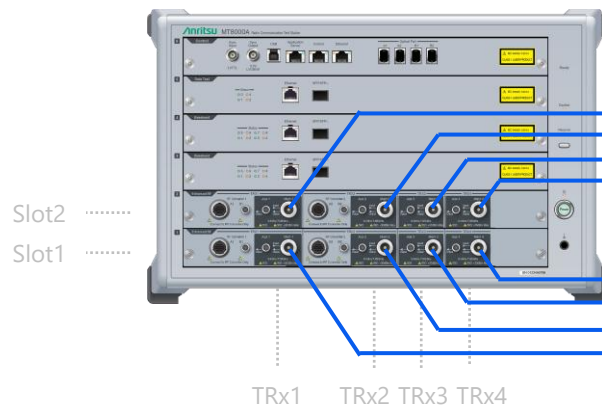
## - MT8000A-033 and "RF Sharing" Function -

The MX800071A uses the MT8000A-033 as a standard platform and supports an **RF sharing function** that bundles/outputs signals with similar frequencies, covering a wide frequency/CCs/MIMO combination.

- **Small footprint and cost-effective platform**
- **Scalability for future advanced chipset performance**

### Example: NR DL 2CC 4x4 MIMO + LTE DL4CC 4x4 MIMO

- ✓ NR: band n40A (2.3 to 2.4 GHz) + n78A (3.3 to 3.8 GHz)
- ✓ LTE: band1A (2.1 GHz) + 3A (1.8 GHz) + 7A (2.6 GHz) + 28A (700 MHz)



SG slot2 Tx-C      SG slot2 Tx-D

Ant#1 band 1/7 + Ant#1 band 3/28  
Ant#2 band 1/7 + Ant#2 band 3/28  
Ant#3 band 1/7 + Ant#3 band 3/28  
Ant#4 band 1/7 + Ant#4 band 3/28

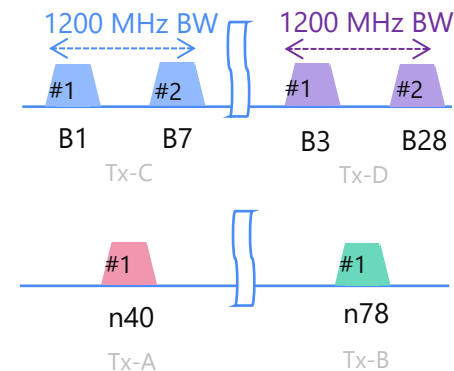
Ant#1 band n40 + Ant#1 band n78  
Ant#2 band n40 + Ant#2 band n78  
Ant#3 band n40 + Ant#3 band n78  
Ant#4 band n40 + Ant#4 band n78

SG slot1 Tx-A      SG slot1 Tx-B

Slot	Signal Generator	#	RAT	Band
2	Tx-C (in TRx1~TRx4)	#1	LTE	B1
		#2	LTE	B7
	Tx-D (in TRx1~TRx4)	#1	LTE	B3
		#2	LTE	B28
1	Tx-A (in TRx1~TRx4)	#1	NR	n40
		#2	N/A	
	Tx-B (in TRx1~TRx4)	#1	NR	n78
		#2	N/A	

RF sharing



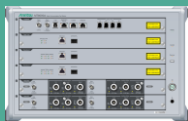
RF sharing





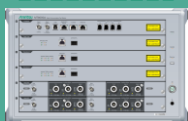
# Supports Expanding CCs/MIMO Variations

SSIP can test CCs/MIMO conditions supported by advanced chipsets.

## ◆ DL Coverage

System	033 model  MT8000A x 1	033 model  MT8000A x 2	031 model 
FR1 SA	DL4CC (4B) 4x4	-	-
FR1 NSA	FR1 DL2CC (2B) 4x4 + LTE DL4CC (4B) 4x4	FR1 DL2CC (2B) 4x4 + LTE DL6CC (6B) 4x4	-
FR2 NSA	Under consideration	Under consideration	-
FR1+2	Under consideration	Under consideration	-
LTE	DL7CC (6B) 4x4	-	-

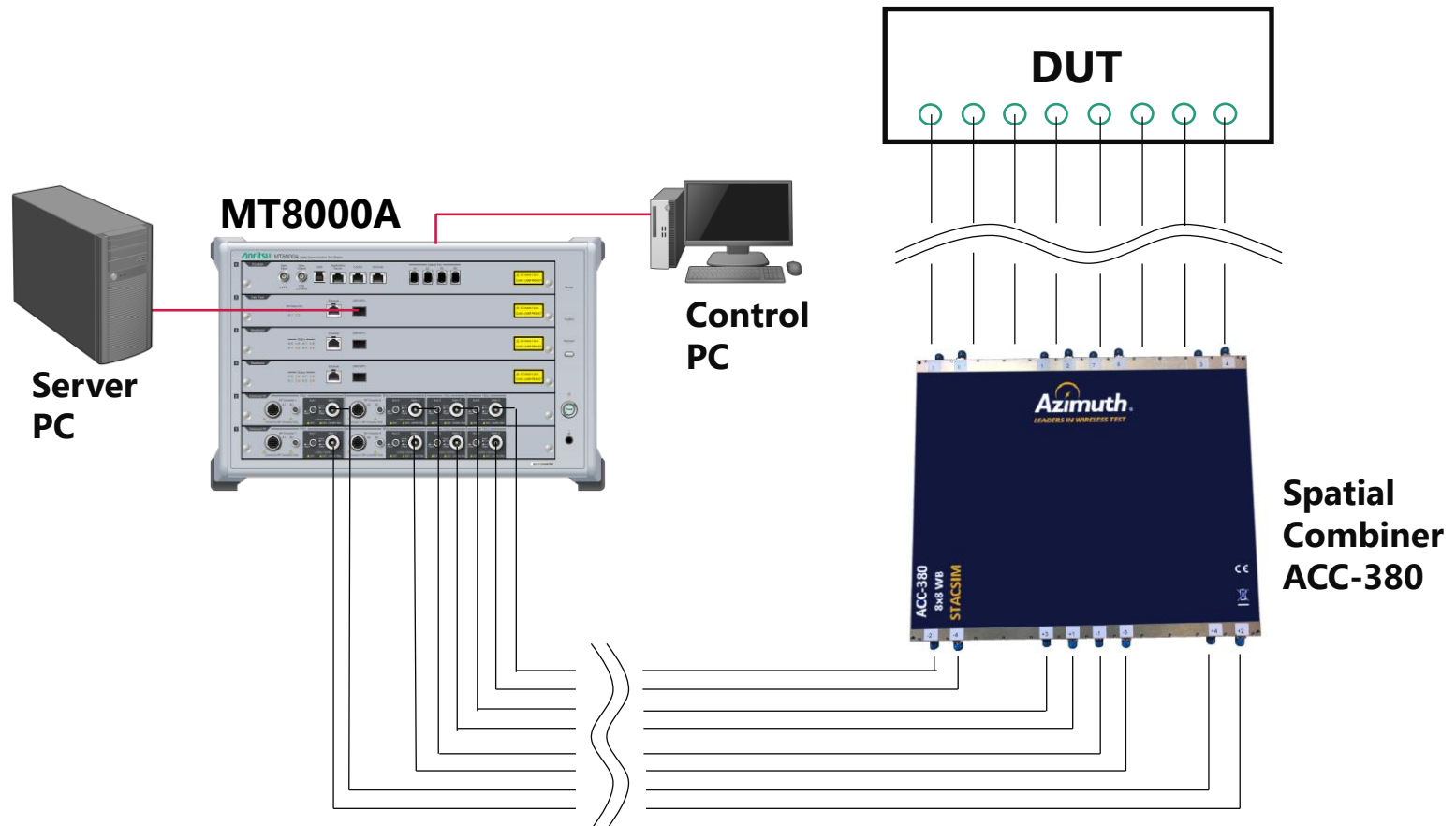
## ◆ UL Coverage

System	033 model  MT8000A x 1	033 model  MT8000A x 2	031 model 
FR1 SA	UL 2CC (2B) 2x2	-	-
FR1 NSA	FR1 UL 2CC (2B) 2x2 + LTE UL 2CC (2B) 1x1	FR1 UL 2CC (2B) 2x2 + LTE UL 2CC (2B) 1x1	-
FR2 NSA	Under consideration	Under consideration	-
FR1+2	Under consideration	Under consideration	-
LTE	UL2CC (2B) 1x1	-	-

# Proposal for Automated Test System using ACC-380

The increasing number of CC/MIMO and Band combinations for 5G NR SA/NSA, LTE, requires frequent **changes of the physical RF cable connections** between the tester and DUT when test conditions are changed, which is a **difficult to automate**.

Using the ACC-380 **eliminates the need to reconnect physical RF cables**, so engineers can build a test system to **automate IP throughput tests under different combinations of conditions**.



# New Product Introduction



# UE Capability Info Segmentation · SDL · Band expansion

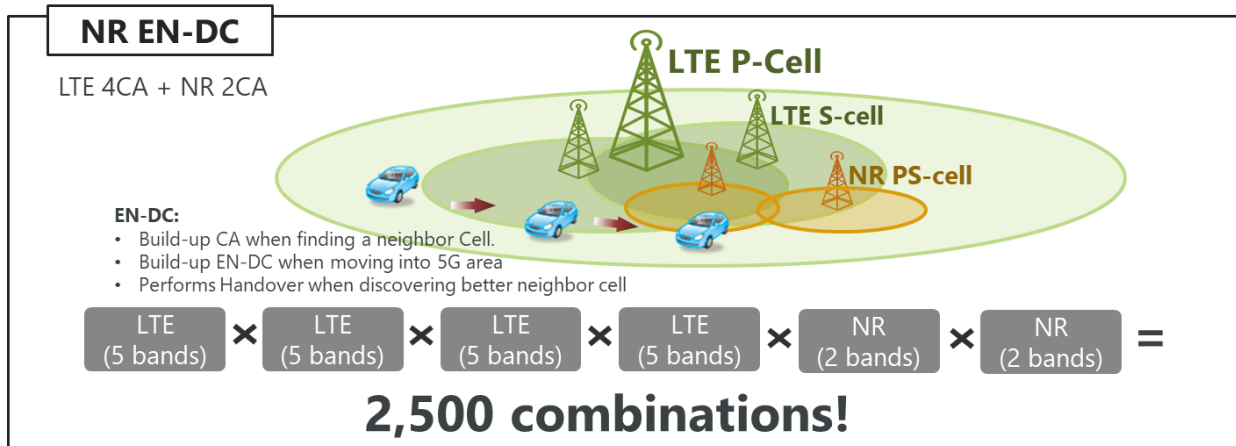
With the refarming of frequencies to 5G following the shutdown of 3G, the number of **NR bands has increased**. Additionally, the rapid growth in downlink traffic has led to a rise in mobile network operators and devices performing Carrier Aggregation (CA) using downlink-only bands (SDL). As a result, improving **the efficiency of evaluating the vast number of band combinations involving existing LTE and 5G bands has become a major challenge**.



- Supports SDL (\*1) and FR1 bands/bandwidth defined in Release 18 (\*2), **expanding the scope of band combination testing**
- By obtaining all band combination which the latest devices supports at once, **the design process for band combination testing is greatly improved efficiency**.

(\*1) Supported SDL Band : n29, n67, n75, n76

(\*2) Excluding SUL Band, Unlicensed Band and BW3MHz



CD Band Combinations								
CA Config	PCel	SCell1	SCell2	SCell3	SCell4	SCell5	SCell6	SCell7
11	1	.	.	.	.	.	.	.
11A	11	.	.	.	.	.	.	.
11B	11	.	.	.	.	.	.	.
11C	11	.	.	.	.	.	.	.
11D	11	.	.	.	.	.	.	.
11E	11	.	.	.	.	.	.	.
11F	11	.	.	.	.	.	.	.
11G	11	.	.	.	.	.	.	.
11H	11	.	.	.	.	.	.	.
11I	11	.	.	.	.	.	.	.
11J	11	.	.	.	.	.	.	.
11K	11	.	.	.	.	.	.	.
11L	11	.	.	.	.	.	.	.
11M	11	.	.	.	.	.	.	.
11N	11	.	.	.	.	.	.	.
11O	11	.	.	.	.	.	.	.
11P	11	.	.	.	.	.	.	.
11Q	11	.	.	.	.	.	.	.
11R	11	.	.	.	.	.	.	.
11S	11	.	.	.	.	.	.	.
11T	11	.	.	.	.	.	.	.
11U	11	.	.	.	.	.	.	.
11V	11	.	.	.	.	.	.	.
11W	11	.	.	.	.	.	.	.
11X	11	.	.	.	.	.	.	.
11Y	11	.	.	.	.	.	.	.
11Z	11	.	.	.	.	.	.	.

EN-DC Band Combinations							
DC Config	PCel	FR1-TxRel1	FR1-RxRel1	FR1-TxRel2	FR1-RxRel2	FR1-TxRel3	FR1-RxRel3
11A-11B-11C-11D	11	1	11	11	11	11	11
11E-11F-11G-11H	11	11	11	11	11	11	11
11I-11J-11K-11L	11	11	11	11	11	11	11
11M-11N-11O-11P	11	11	11	11	11	11	11
11Q-11R-11S-11T	11	11	11	11	11	11	11
11U-11V-11W-11X	11	11	11	11	11	11	11
11Y-11Z	11	11	11	11	11	11	11

**Products supported RedCap**—a low-power, low-cost 5G bearer—such as CPEs, wearable devices, and notebook PCs, as well as **services** offered by mobile network operators, are also **expanding**.



- **Provide IP TPUT test environment for RedCap.**
- Seamlessly integrate into existing test environments
- Minimize deployment effort with a familiar user experience

## ■ Function Scope

- IP Packet communication, IP T-PUT



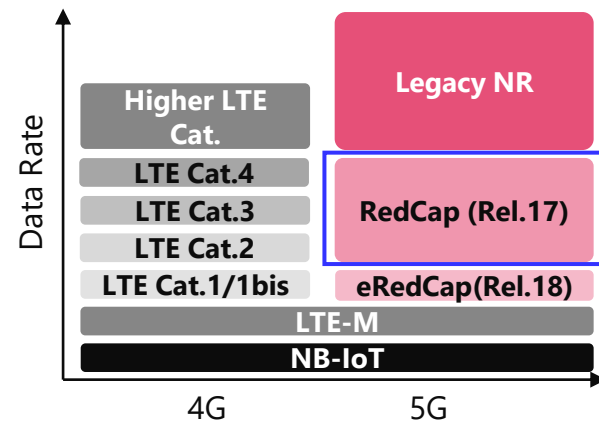
**Consumer IoT**

- ✓ Wearables
- ✓ XR

**Industrial IoT**

- ✓ Smart home
- ✓ Smart city
- ✓ Security Camera
- ✓ Robots

	LTE CAT.1	RedCap (Rel 17)
Bandwidth	20MHz	20MHz
T-Put DL/UL	150M/5M	150M/5M
Duplex	Full	Full Half (TDD)
Antenna	2(For Rx)	DL 2/UL 1





# Example Throughput Measurement Results

# Throughput Meas. Result (1) FR1 SA



## Test result

RAT	LTE	NR	PHY-TPUT DL/UL	IP-TPUT DL/UL	DUT
FR1 SA	--	DL3CC 4x4 MIMO UL1CC SISO	1123/112 Mbps	1116/111 Mbps	Chipset vendor A device

■ iPerf command: `iPerf3 -c 192.168.1.1 -w 8M -p 5201 -t 600 -P 10`

## Parameter settings and Throughput Monitor graph

Simulation Parameter Setup

Machine Config: MT8000A(NR)

RF Connector: Slot #1: RF Sub Module, Slot #2: RF Sub Module

Simulation Model: NR, LTE

RAT: NR, LTE

Cell: 3, 0

RF Sharing

PDN Mapping: High Rate PDN: PDN1

NR	NR1	NR2	NR3
NR Band	n1	n7	n28
Channel (DL)	428000	531000	155100
Frequency (DL)	2140 000	2655 000	780 500
Reference Point A (DL)	426092	529092	154192
Channel (UL)	Synchronizes with DL	Synchronizes with DL	Synchronizes with DL
Frequency (UL)	1950 000	2535 000	725 500
Reference Point A (UL)	388092	505092	143192
UL Frequency 7.5kHz Shift	OFF	OFF	OFF
DL Subcarrier Spacing	15kHz	15kHz	15kHz
UL Subcarrier Spacing	15kHz	15kHz	15kHz
SSB Subcarrier Spacing	15kHz	15kHz	15kHz
DL Bandwidth	20MHz	20MHz	20MHz
UL Bandwidth	Same As DL	Same As DL	Same As DL

Band n1+n7+n28

All 20 MHz BW

NR	NR1	NR2	NR3
Frequency (Channel (SSB))	2139.600	2654.600	780.100
CORESET#0 Index	0	0	0
TDD Configuration	Auto	Auto	Auto
DL Schedule	Auto	Auto	Auto
Allocation Pattern	7DL 1SP 2UL	7DL 1SP 2UL	7DL 1SP 2UL
DCI Pattern	(Data)	(Data)	(Data)
DL/UL Periodicity	10ms,2	10ms,2	10ms,2
Number of PDCCH Symbols	2	2	2
Common/DCI Pattern	(Data)	(Data)	(Data)
Dedicated DCI Pattern	(Data)	(Data)	(Data)
Number of DL Antennas	4	4	2
Number of UL Antennas	1	1	1
DL Modulation Order	256QAM	256QAM	256QAM
UL Modulation Order	256QAM	256QAM	256QAM
Physical Cell ID	0	0	0
UL Waveform	CP-OFDM	CP-OFDM	CP-OFDM
UL Waveform (Msg3)	CP-OFDM	CP-OFDM	CP-OFDM
Packet Scheduling Mode	Static	Static	Static
Static Scheduling Full Allocation	ON, BestEffort	ON, BestEffort	ON, BestEffort
Packet Rate	BestEffort	BestEffort	BestEffort

TDD configurations 7D1S2U

4x4+4x4+2x2 MIMO

All DL 256QAM

Message

	NR1	NR2	NR3
Mode	Default	Default	Default
Data	(Data)	(Data)	(Data)
SIB	Not Send	Not Send	Not Send
Mode(Communication)	Not Send	Not Send	Not Send

NR2, 3 SIB = Not send

Throughput Monitor (NR)

Color	Item	Marker [Mbps]	Accumulate [Bytes]	Average [Mbps]	Max Rate [Mbps]	Min Rate [Mbps]
Blue	QFEEBINSAP1-ALL DL	1,116.9270	82,022,781,596	1,045,708.8	1,116.4754	0.0
Green	QFEEBINSAP1-ALL UL	111.7933	8,147,111,900	103.9379	111.9949	0.0
Yellow	QFEEBINSAP1-5 DL	1,116.9270	82,022,781,596	1,045,708.8	1,116.4754	0.0
Red	QFEEBINSAP1-5 UL	111.7933	8,147,111,900	103.8976	111.9949	0.0
Purple	NR MAC PDU DL	1,123.8274	85,308,900,398	1,044,127.5	1,129.9724	0.0
Orange	NR MAC PDU UL	112.6480	8,831,901,492	106,649.4	112.6480	0.0

Note: DUT supports up to FR1 DL3CC (all FDD), but MX800071A supports up to FR1 DL4CC.

# Throughput Meas. Result (2) FR1 SA



## Test result

RAT	LTE	NR	PHY-TPUT DL/UL	IP-TPUT DL/UL	DUT
FR1 SA	--	DL2CC 4x4 MIMO UL1CC SISO	4367/29 Mbps	4340/26 Mbps	Chipset vendor A device

■ iPerf command: `iPerf3 -c 192.168.1.1 -w 8M -p 5201 -t 600 -P 20`

■ Parameter settings and Throughput Monitor graph

Simulation Parameter Setup

NR 2CC

Band n78, n77

All 100 MHz BW

NR2 : SIB = Not send

TDD configuration: 19D1U

All 4x4 MIMO

All DL256QAM

All DL256QAM

# Throughput Meas. Result (3) FR1 NSA



## Test result

RAT	LTE	NR	PHY-TPUT DL/UL	IP-TPUT DL/UL	DUT
FR1 NSA	DL4CC 2x2 MIMO UL1CC SISO	DL2CC 4x4 MIMO UL1CC SISO	5148/134 Mbps	5120/132 Mbps	Chipset vendor A device

iPerf command: iPerf3 -c 192.168.1.1 -w 8M -p 5201 -t 600 -P 20

## Parameter settings

Simulation Parameter Setup

Machine Config: MT8000A(NR + LTE)

RF Connector: MT8000A #1, MT8000A #2

Slot #1: RF Sub Module, Slot #2: RF Sub Module

RF Sub Module: Main/Aux: Main

Simulation Model: NR, LTE

Cell: 2, 4

RF Sharing: ON

LTE DL: LTE1, LTE2, LTE3, LTE4

UL: LTE1, LTE2

NR

Parameter	NR1	NR2
Duplex Mode	TDD	TDD
NR Band	n78	n78
Channel (DL)	636666	646666
Frequency (DL)	3549.99	3538.99
Reference Point A (DL)	643390	643390
Channel (UL)	SameAsDL	SameAsDL
Frequency (UL)	SameAsDL	SameAsDL
Reference Point A (UL)	SameAsDL	SameAsDL
UL Frequency 7.5kHz Shift	OFF	OFF
DL Subcarrier Spacing	30kHz	30kHz
UL Subcarrier Spacing	SameAsDL	SameAsDL
SSB Subcarrier Spacing	30kHz	30kHz
DL Bandwidth	100MHz	100MHz
UL Bandwidth	SameAsDL	SameAsDL

NR Band n78 + 1078

100 + 100 MHz BW

NR-SIB = Not send

TDD configuration: 19D1U

LTE

Parameter	LTE1	LTE2	LTE3	LTE4
Duplex Mode	FDD	FDD	FDD	FDD
E-UTRA Band	Band1	Band3	Band7	Band7
Channel (DL)	300	1575	3100	3100
Frequency (DL)	2140.0	1842.5	2655.0	2655.0
Channel (UL)	Synchronizes with DL	Synchronizes with DL	-	-
Frequency (UL)	1950.0	1747.5	-	-
DL Bandwidth	20MHz	20MHz	20MHz	20MHz
UL Bandwidth	SameAsDL	SameAsDL	-	-
Number of DL Antennas	2	2	2	2
Transmission Mode	TM3	TM3	TM3	TM3
DL Modulation Order	256QAM	256QAM	256QAM	256QAM
UL Modulation Order	256QAM	256QAM	256QAM	256QAM

LTE Band 1+3+7+7

All 20 MHz BW

All 2x2MIMO

All DL256QAM

NR

TDD Configuration

Auto

Allocation Pattern: (Data)

DCI Pattern: (Data)

Manual

DL/UL Periodicity: 10ms, 1

Number of PDCCH Symbols: 1

Common/DCI Pattern: (Data)

Dedicated/DCI Pattern: (Data)

Number of DL Antennas: 4

Number of UL Antennas: 1

DL Modulation Order: 256QAM

UL Modulation Order: 256QAM

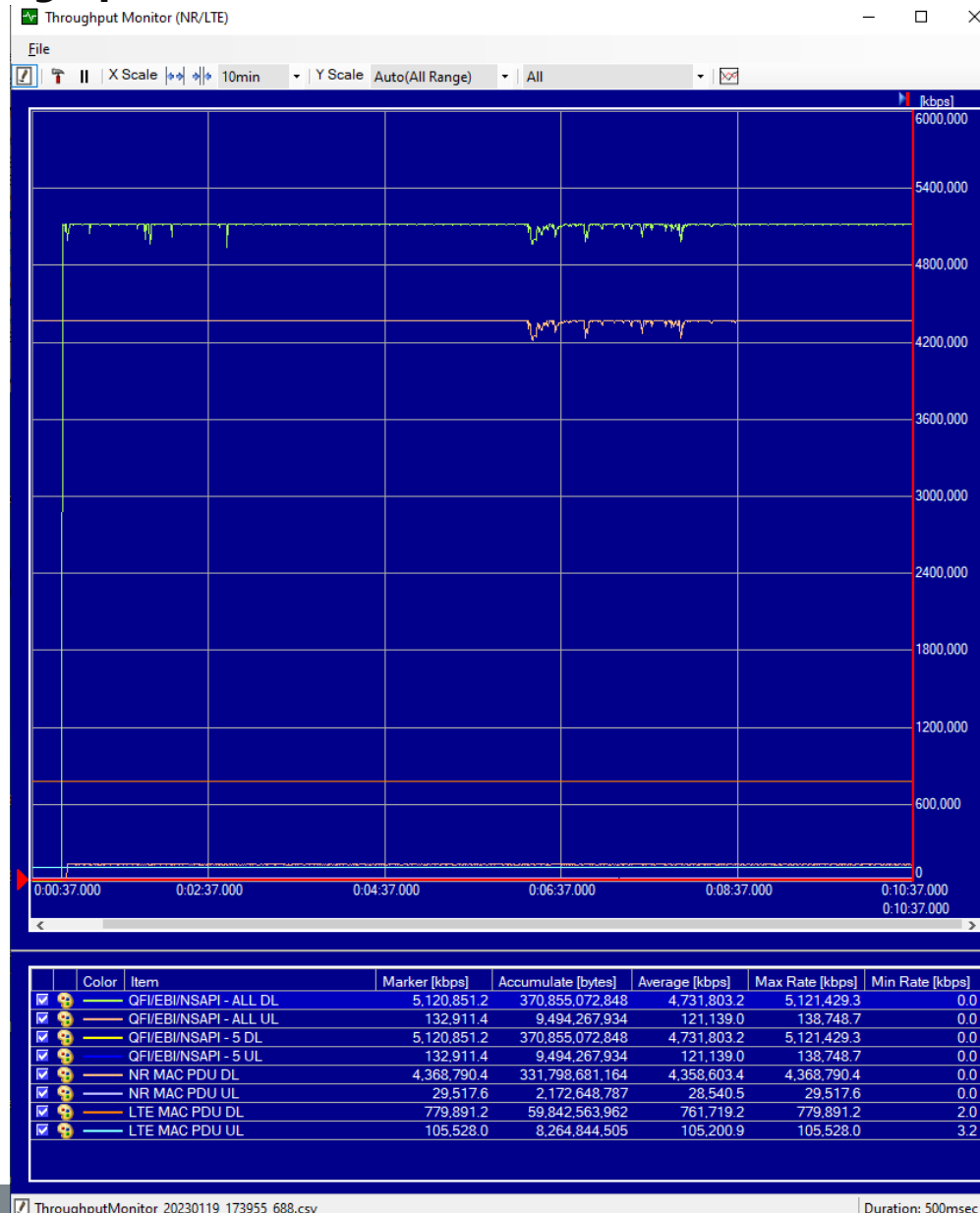
All 4x4MIMO

All DL256QAM

Note: DUT supports up to LTE DL4CC (3B) in NSA mode, but MX800071A supports up to LTE DL4CC (4B) in NSA mode.

# Throughput Meas. Result (3) FR1 NSA

## Throughput Monitor graph



# Throughput Meas. Result (4) FR1 NSA



## Test result

RAT	LTE	NR	PHY-TPUT DL/UL	IP-TPUT DL/UL	DUT
FR1 NSA	DL6CC 4x4 MIMO UL1CC SISO	DL1CC 4x4 MIMO UL1CC SISO	4134/134 Mbps	3992/132 Mbps	Chipset vendor A device

■ iPerf command: iPerf3 -c 192.168.1.1 -w 8M -p 5201 -t 600 -P 10

## Parameter settings and Throughput Monitor graph

**2 x MT8000A**

NR 1CC + LTE 6CC

RF sharing = ON

NR Band n78

100 MHz BW

DL Bandwidth 100MHz

NR1

TDD Configuration: Manual(Dedicated)

TDD Schedule: Manual(Dedicated)

Allocation Pattern: 7DL 1SP 2UL

DCI Pattern: (Data)

Manual: 10ms, 1

DL/UL Periodicity: 10ms

Number of PDCCH Symbols: 1

Common/DCI Pattern: (Data)

Dedicated/DCI Pattern: (Data)

Number of DL Antennas: 4

Number of UL Antennas: 1

DL Modulation Order: 256QAM

UL Modulation Order: 256QAM

4x4 MIMO

DL256QAM

LTE Band 1+3+3+28+7+7

	LTE1	LTE2	LTE3	LTE4	LTE5	LTE6
E-UTRA Band	Band1	Band3	Band3	Band28	Band7	Band7
Channel (DL)	300	1575	1773	9360	3100	3298
Frequency (DL)	2140.0	1842.5	1862.3	773.0	2655.0	2674.8
Channel (UL)	Synchronizes with DL	Synchronizes with DL	-	-	-	-
Frequency (UL)	1950.0	1747.5	-	-	-	-
DL Bandwidth	20MHz	20MHz	20MHz	20MHz	20MHz	20MHz
UL Bandwidth	SameAsDL	SameAsDL	-	-	-	-
Number of DL Antennas	2	4	4	2	4	4
Transmission Mode	TM3	TM3	TM3	TM3	TM3	TM3
DL Modulation Order	256QAM	256QAM	256QAM	256QAM	256QAM	256QAM
UL Modulation Order	256QAM	256QAM	256QAM	256QAM	256QAM	256QAM

2x2+4x4+4x4+2x2+4x4+4x4 MIMO

All DL256QAM

TDD configuration: 19D1U

DL/UL Periodicity	Pattern1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DL/UL Allocation	D	D	D	D	D	S	D	D	D	D	D	D	D	D	D	D	S	D	D	S	U	D
Number of DL Symbols	14	14	14	14	14	12	14	14	14	14	14	14	14	12	14	14	14	14	14	13	0	14
Number of UL Symbols	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	14	0

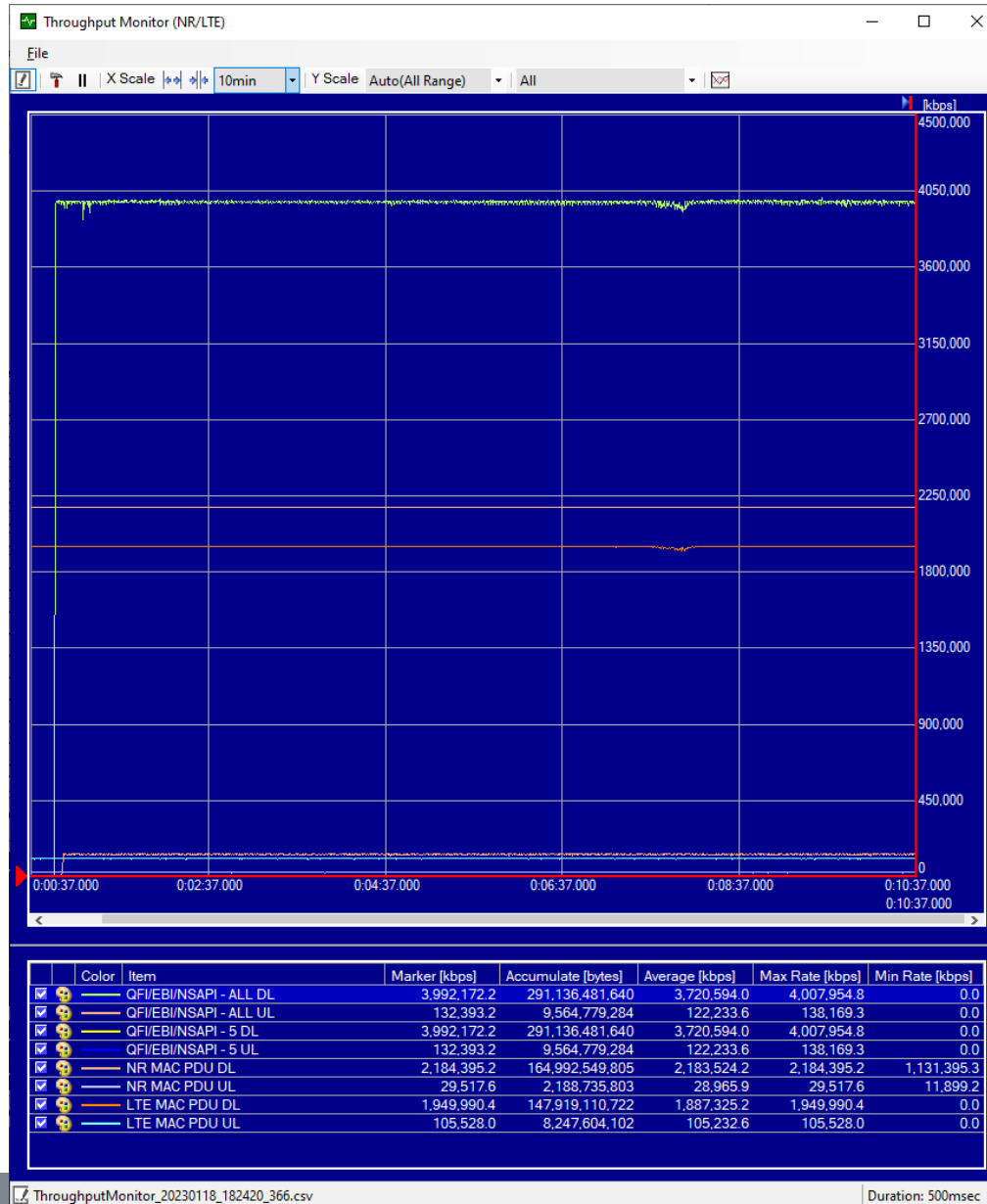
NR1

NR SIB = Not send

Note: DUT supports up to NR1CC (1B) + LTE DL6CC (4B/All FDD) in NSA mode, but MX800071A supports up to NR 2CC (2B) + LTE DL6CC (6B) in NSA mode.

# Throughput Meas. Result (4) FR1 NSA

## Throughput Monitor graph



# Throughput Meas. Result (5) LTE



## Test result

RAT	LTE	NR	PHY-TPUT DL/UL	IP-TPUT DL/UL	DUT
LTE	DL7CC 4x4 MIMO UL1CC SISO	--	1950/105 Mbps	1944/105 Mbps	Chipset vendor A device

■ iPerf command: `iPerf3 -c 192.168.1.1 -w 8M -p 5201 -t 600 -P 10`

## Parameter settings and Throughput Monitor graph

Simulation Parameter Setup

Machine Config: MT8000A(LTE)

Simulation Model

RAT	NR	LTE
Cell	0	7

RF Sharing = ON

RF Sharing: LTE DL: LTE1,LTE3, LTE4,LTE5, LTE6,LTE7

LTE

Band 1+28+1+3+3+7+7

	LTE1	LTE2	LTE3	LTE4
Duplex Mode	FDD	FDD	FDD	FDD
E-UTRA Band	Band1	Band28	Band1	Band3
Channel (DL)	300	9360	500	1575
Frequency (DL)	2140.0	773.0	2160.0	1842.5
Channel (UL)	Synchronizes with DL	Synchronizes with DL	-	-
Frequency (UL)	1950.0	778.0	-	-
DL Bandwidth	20MHz	20MHz	20MHz	20MHz
UL Bandwidth	SameAsDL	SameAsDL	-	-
Number of DL Antennas	4	2	2	4
Transmission Mode	TM3	TM3	TM3	TM3
DL Modulation Order	256QAM	256QAM	256QAM	256QAM
UL Modulation Order	256QAM	-	-	256QAM

All 20 MHz BW

All DL 256QAM

LTE

Simulation Model

	LTE5	LTE6	LTE7
Duplex Mode	FDD	FDD	FDD
E-UTRA Band	Band3	Band7	Band7
Channel (DL)	1773	3100	3298
Frequency (DL)	1862.3	2655.0	2674.8
Channel (UL)	-	-	-
Frequency (UL)	-	-	-
DL Bandwidth	20MHz	20MHz	20MHz
UL Bandwidth	-	-	-
Number of DL Antennas	4	2	2
Transmission Mode	TM3	TM3	TM3
DL Modulation Order	256QAM	256QAM	256QAM
UL Modulation Order	256QAM	256QAM	256QAM

4x4+2x2+2x2+4x4+4x4+2x2+2x2 MIMO

Throughput Monitor (LTE)

Item	Marker (Mbps)	Accumulate (bytes)	Average (Mbps)	Max Rate (Mbps)	Min Rate (Mbps)
QPS-BANDCAP - ALL DL	1,944,795.5	143,696,514,608	1,820,393.4	1,949,049.4	0.0
QPS-BANDCAP - ALL UL	105,227.2	7,720,055,918	97,633.6	105,213.7	0.0
QPS-BANDCAP - S-DL	1,944,795.5	143,696,514,608	1,820,393.4	1,949,049.4	0.0
QPS-BANDCAP - S-UL	105,227.2	7,720,055,918	97,633.6	105,213.7	0.0
LTE MAC PDU DL	1,949,024.8	143,172,158,469	1,864,521.8	1,949,024.8	0.0
LTE MAC PDU UL	105,528.0	8,321,010,847	105,162.9	105,528.0	0.0

Note: DUT supports up to LTE DL7CC (4B), but MX800071A supports up to LTE DL7CC (6B).

# Appendix



# 5G Chipset and UE Test Platform

## 5GNR ALL-in-ONE Test Platform

Install each application in all-in-one platform and switch by system number

### Platform GUI

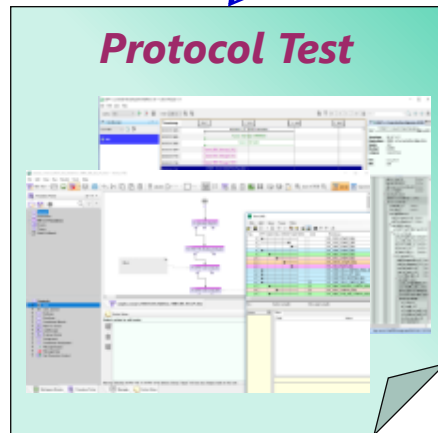


## MT8000A

Radio Communication Test Station



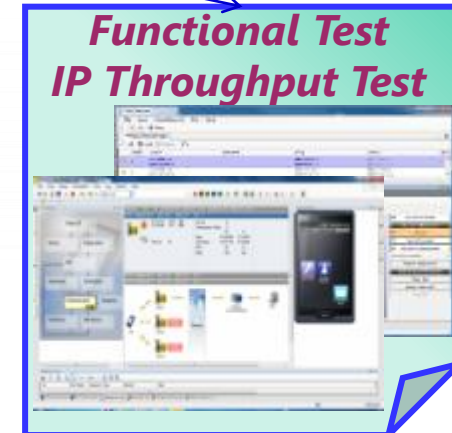
## Test Applications



MX800050A  
Rapid Test Designer Platform (RTD)



MX800010A  
TRx Measurement.

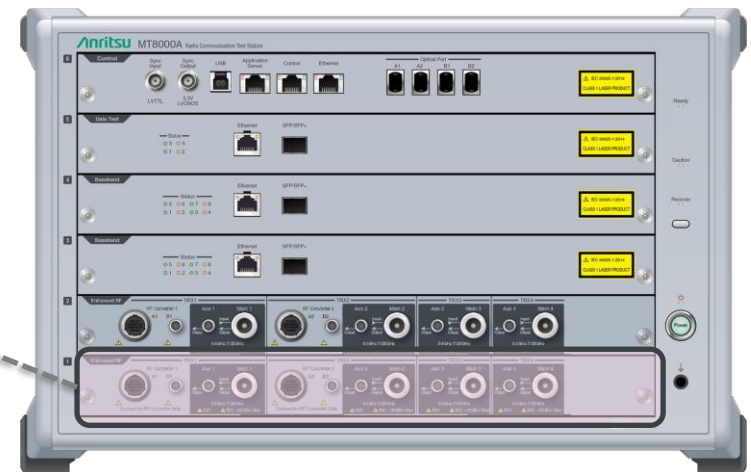
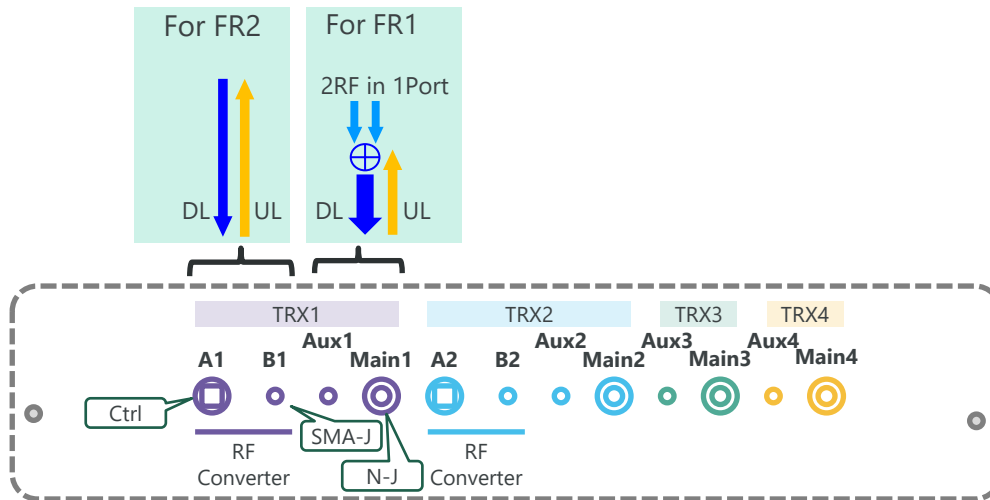


MX800070A SSNR  
MX800071A SSIP

# MT8000A-033 0.4 to 7.125 GHz Enhanced RF Module

- Features
  - Four sets of RF input/output connectors per slot (N-type Main In/Out and SMA-type Aux Out)
  - Eight RF transmitters per slot (total of 16 Tx and four 4x4 MIMO bands)
  - Four RF receivers per slot (total of 8 Rx for UL 2x2 MIMO and UL antenna switch)
  - Frequency range: **FR1: 400 to 7125 MHz, FR2: external RF converter interface**
- Input/Output (4 Ports/slot)
  - Main 1/2/3/4 – RF In/Out
  - Aux 1/2/3/4 – RF Out (exclusive with Main output)
  - RF Converter 1/2 – for MX8000 1/2/3A external RF converter connection
- Transmitter
  - FR1 Bandwidth: **OBW 800 MHz (IBW 1200 MHz)**
  - FR2 Bandwidth: **1000 MHz**
  - FR1 Upper freq: Four Tx up to 7125 MHz and remaining four Tx up to 5000 MHz
- Receiver
  - Receive waveform bandwidth: FR1 800 MHz / FR2 1000 MHz
  - Signal analysis bandwidth: FR1 **1200 MHz (max.)**/FR2 1000 MHz

## Output/Input for FR1 or FR2



The Anritsu logo is displayed in a bold, green, sans-serif font. Below it, the tagline "Advancing beyond" is written in a smaller, black, sans-serif font. The background features a light green gradient with several curved, parallel lines in shades of green and yellow on the right side.

# Anritsu

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