

MX370111A/MX269911A

WLAN IQproducer

MG3710A

Vector Signal Generator

MS2690A/MS2691A/MS2692A/MS2830A

Signal Analyzer

MG3710A Vector Signal Generator

**MS269xA-020, MS2830A-020/021 Vector Signal Generator option
for MS269xA/MS2830A Signal Analyzer**

MX370111A/MX269911A WLAN IQproducer

MX370111A-002 802.11ac (160MHz) Option

MX269911A-001 802.11ac (80MHz) Option

Product Introduction

* MG3700A Vector Signal Generator supports MX370111A-001 802.11ac (80MHz) Option.



**MG3710A
Vector Signal Generator**



**MS269xA
Signal Analyzer**



**MS2830A
Signal Analyzer**

Version 2.01

ANRITSU CORPORATION

What is WLAN IQproducer?

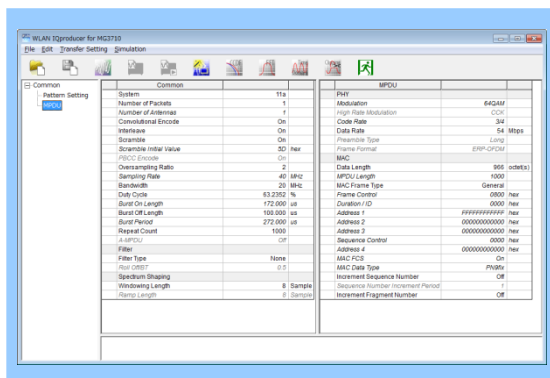
The WLAN IQproducer is PC software for generating waveform patterns in compliance with the IEEE Std 802.11-2007 and IEEE Std 802.11n-2009 standards.

Installing the MX370111A-001 802.11ac (160 MHz) option or the MX269911A-001 802.11ac (80 MHz) option supports output of signals in compliance with IEEE802.11ac standards.

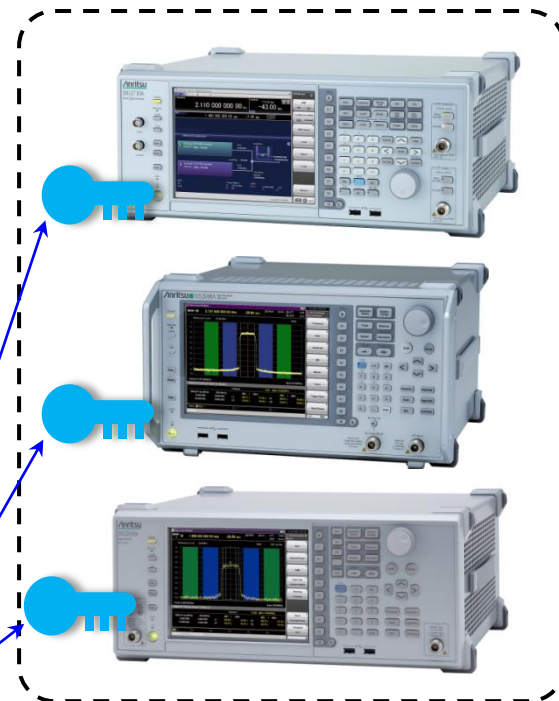
The software runs under the Windows OS installed in the MG3710A, MS2690A/91A/92A-020, and MS2830A-020/021.

It outputs modulation signals by selecting generated waveform patterns. The main frame requires a license.

WLAN IQproducer



Install



- **Generating waveform patterns using WLAN IQproducer => [The main frame requires a license.](#)**

The unlicensed software will run on the PC to test waveform pattern generation but an unlicensed SG cannot output signals because it does not recognize the waveform patterns.

- **Generating waveform patterns using EDA Tools (C, MATLAB, Microwave Office) => [Free license](#)**

• MATLAB® is a registered trademark of The MathWorks, Inc.

• Windows® is a registered trademark of Microsoft Corporation in the USA and other countries.

What is WLAN IQproducer?

MX370111A-002 802.11ac (160MHz) Option: for MG3710A

MX269911A-001 802.11ac (80MHz) Option: for MS269xA-020, MS2830A-020/021

Installing the MX370111A-001/MX269911A-001 supports output of signals in compliance with IEEE802.11ac standards.

Supported Vector Signal Generator Series IEEE802.11ac Signal bandwidth

IEEE802.11ac Signal Bandwidth	Vector Signal Generator		Vector Signal Generator Option for Signal Analyzer	
	MG3710A*1	MG3700A*2	MS2690A series Opt. 020*3	MS2830A Opt. 020/021*3
20 MHz/40 MHz/80 MHz	✓ (1 unit)	✓ (1 unit)	✓ (1 unit)	✓ (1 unit)
160 MHz	✓ (1 unit)	—	—	—
80 MHz + 80 MHz (non-contiguous)	✓ (2 RF 1 unit*4, or 1 RF 2 units)	✓ (2 units)	✓ (2 units)	✓ (2 units)

*1: MX370111A WLAN IQproducer and MX370111A-002 802.11ac (160 MHz) Option installed.

*2: MX370111A WLAN IQproducer and MX370111A-001 802.11ac (80 MHz) Option installed.

*3: MX269911A WLAN IQproducer and MX269911A-001 802.11ac (80 MHz) Option installed.

*4: MG3710A-062 (2.7 GHz)/064 (4 GHz)/066 (6 GHz) 2nd RF Option installed.

◆ MG3710A Vector Signal Generator

- One Unit Supports All Bandwidth Configurations for IEEE802.11ac Signals. -

The MG3710A supports a built-in baseband signal generator with an upper frequency limit of 6 GHz and an RF modulation bandwidth of 160 MHz*/120 MHz as well as up to two RF output connectors.

It enables one unit to support all bandwidth configurations for IEEE802.11ac signals.

*Can generate 160-MHz bandwidth signals (Wireless LAN IEEE802.11ac) only when using MX370111A WLAN IQproducer and MX370111A-002 802.11ac (160 MHz) option.

Main Screen

WLAN IQproducer supports two setting screens:
“Easy Setup Screen” and “Normal Setup Screen”.

● Easy Setup Screen

Easy Setup (WLAN)

Common | PHY | MAC

Select Option: Memory 1024M samples x2 (With Option48/8)

System: 11n | Number of Packets: 1 | Repeat Count: 1000 | Total Output Packets: 1000

Bandwidth: 40 MHz

Duty Cycle: 50.0000 % | Burst On Length: 280.000 us

Burst Off Length: 280.000 us | Burst Period: 560.000 us

Filter Type: None | Roll Off / BT: 0.50 | Windowing Length: 8 sample | Ramp Length: 8 sample

Pattern Setting

Package: WLAN | Package (Combination File): WLAN_C

Pattern Name: IEEE802_11n

Calculation & Load | Calculation & Play

● Normal Setup Screen

WLAN IQproducer for MG3710

File | Edit | Transfer Setting | Simulation

Easy Setup

Common	PHY	MPDU
System	11n	
Number of Packets	1	
Number of Antennas	1	
Convolutional Encode	On	
Interleave	On	
Scramble	On	
Scramble Initial Value	5D hex	
PBCC Encode	On	
Oversampling Ratio	2	
Sampling Rate	80 MHz	
Bandwidth	40 MHz	
Duty Cycle	50.0000 %	
Burst On Length	280.000 us	
Burst Off Length	280.000 us	
Burst Period	560.000 us	
Repeat Count	1000	
A-MPDU	Off	
Filter		
Filter Type	None	
Roll Off / BT	0.50	
Spectrum Shaping		
MPDU		
PHY		
PPDU Format		HT Mixed
MCS		7
Number of Spatial Streams		1
Stream 1		64QAM
Code Rate		5/6
Spatial Mapping		Direct Mapping
GI		Long
Smoothing		Off
Not Sounding		On
Number of Transmit Chains		1
Number of Space Time Streams		1
Number of Extension Spatial Streams		0
Half Bandwidth		N/A
MAC		
Data Length		4062 octets
MPDU Length		4096
MAC Frame Type		General
Frame Control		0800 hex
Duration / ID		0000 hex
Address 1		FFFFFFFFFFFF hex
Address 2		000000000000 hex

Easy Setup Screen (1/2)

Because it is limited to major parameters, it generates waveform patterns using simple operation. Moreover, touch-panel operation is supported when IQproducer is executed on the MG3710A.

Use “Normal Setup function” for detailed parameter settings.

The image shows the 'Easy Setup (WLAN)' interface with several callout boxes pointing to specific settings:

- System:** A separate window shows system options (11a, 11ac, 11b, 11g, 11j, 11n, 11p). The main screen has 'System' set to '11n'.
- Bandwidth (System: 11n):** A callout points to the 'Bandwidth' field, which is set to '40 MHz'.
- Bandwidth (System: 11ac):** A callout points to the 'Bandwidth' field, which is set to '40 MHz'.
- Number of Packets:** A callout points to the 'Number of Packets' field, set to '1'. A text box explains: 'Sets the number of output times* (the number of waveform pattern packets)'. Below this, 'Repeat Count' is set to '1000' and 'Total Output Packets' is '1000'.
- Duty Cycle:** A callout points to the 'Duty Cycle' field, set to '50.0000 %'. A text box explains: 'Sets burst On/Off ratio.' A waveform diagram shows burst timing with labels T1 (Burst On Length), T2 (Burst Off Length), and T3 (Burst Period). Below the diagram, 'T1: Burst On Length' and 'T3: Burst Period' are defined.
- Filter Type:** A callout points to the 'Filter Type' dropdown, which is set to 'None'.

Easy Setup Screen (Common Setup Screen)

*: MG3710A

PER (Packet Error Measurement), the number of waveform pattern packets is generated as [1] and the number of output times from the MG3710A main frame is set.

Example: Outputting 1000 packets

Number of Packets: 1

Repeat Count: 1000

Easy Setup Screen (2/2)

Because it is limited to major parameters, it generates waveform patterns using simple operation. Moreover, touch-panel operation is supported when IQproducer is executed on the MG3710A.

Use “Normal Setup function” for detailed parameter settings.

Ex.) System: 11n: PPDU Format: HT Mixed/HT Greenfield

Class: **HT** | Select Option: Normal (Default) (HT Mixed/HT Greenfield) (HT Mixed/HT Greenfield)

PPDU Format: HT Mixed | GI: Long

MCS: 7 | Number of Spatial Streams: 1 | Stream 1: 64QAM | Code Rate: 5/6

Ex.) System: 11n: PPDU Format: Non-HT

Class: **HT** | Select Option: Normal (Default) (Non-HT) (Non-HT)

PPDU Format: Non-HT | Data Rate: 54Mbps | Modulation: 64QAM | Code Rate: 5/6

Ex.) System: 11a/11b/11g/11j/11p

Class: **HT** | Select Option: Normal (Default) (HT) (HT)

Data Rate: 54Mbps | Modulation: 64QAM | High Rate Modulation: Off

Code Rate: 3/4 | Packet Type: Long | Frame Format: ERP-OFDM

Ex.) System: 11ac

Class: **HT** | Select Option: Normal (Default) (VHT) (VHT)

PPDU Format: VHT | MCS: 8 | Number of Spatial Streams: 1

Modulation: 256QAM | Code Rate: 3/4 | GI: Long | Coding Mode: BCC

Easy Setup Screen (PHY Setup Screen)

Class: **HT** | Select Option: Normal (Default) (HT) (HT)

Data Length: 4096 Octets | MPDU Length: 4096 Octets

Increment Sequence Number: Off | Sequence Number Increment Period: 1 | Increment Fragment Number: Off

MAC Frame Type: Open

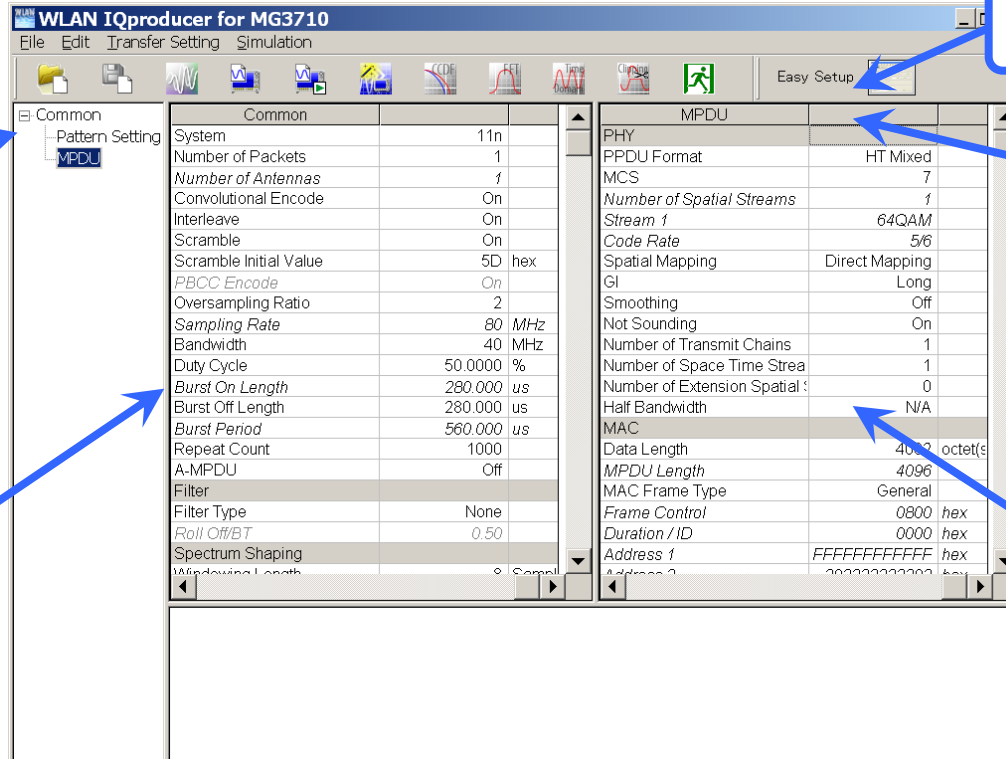
Frame Control	Duration/ID	Address 1	Address 2	Address 3	Seq Control	Address 4	End Control	HT Control	Frame Body	FCS
0x	0000	0000	000000000000	000000000000	0000	0000	0000	0000	0000	0000

Easy Setup Screen (MAC Setup Screen)

Normal Setup Screen (Example: IEEE802.11a/b/g/n/j/p)

Sets system, number of packets in one waveform pattern, On/Off ratio (Duty) and filter at Common sheet.

Normal Setup Screen



Parameter items are displayed as a tree hierarchy. A-MPDU can be added and deleted. **Pattern Setting, MPDU, A-MPDU**

Common sets parameters for **System, Bandwidth, ON/OFF Ratio and Filter, etc.**

PHY/MAC parameter displays MPDU and A-MPDU selected in the tree.

PHY parameter sets the same value for all MPDU and A-MPDU. It sets **PPDU Format, MCS, Modulation Method, Data Rate, etc.**

MAC parameter supports different settings for MPDU and A-MPDU. It sets **Data Length, MAC frame, Address, etc.**

***Read the “MX3701xxA IQproducer” and “MX269xxxA series Software” brochure for detail parameter setting range.**

Normal Setup Screen (Example: IEEE802.11ac)

Sets system, number of packets in one waveform pattern, On/Off ratio (Duty) and filter at Common sheet.

Normal Setup Screen

Displays MPDU/
A-MPDU in tree for
each user #.
User/MPDU/A-MPDU can
be added and deleted.
**Pattern Setting,
User #0 to #3
MPDU, A-MPDU.**

Common sets parameters,
such as
**User Mode (Single User
/Multi User) ,
bandwidth,
On/Off ratio (Duty),
and filter.**

Common		User#0 (MPDU)	
System	11ac	PHY	
Number of Packets	1	Scramble	On
Number of Antennas	2	MCS	8
Total Output Packets	1000	Number of Spatial Streams	1
Oversampling Ratio	-	Modulation	256QAM
Sampling Rate	200 MHz	Code Rate	3/4
Bandwidth	160 MHz	Coding Mode	BCC
Duty Cycle	50.0000 %	Coding	On
Burst On Length	92.000 us	BCC Interleaver	On
Burst Off Length	92.000 us	LDPC Tone Mapper	On
Burst Period	184.000 us	Number of Space Time Streams	1
Repeat Count	1000	Group ID	01 hex
Scramble Initial Value	5D hex	Partial AID	000 hex
Filter		TXOP PS NOT ALLOWED	1
Filter Type	None	MAC	
Roll Off/BT	0.50	A-MPDU	On
Spectrum Shaping		Data Length	4062 oct
Windowing Length	8 Samples	MPDU Length	4096
IEEE 802.11ac		Total A-MPDU Length	0
PPDU Format	VHT	MAC Frame Type	General
User Mode	Multi User	Frame Control	0800 hex
Number of Transmit Chains	2	Duration / ID	0000 hex
Spatial Mapping	Spatial Expansion	Address 1	FFFFFFFFFFFF hex
GI	Long	Address 2	202222222202 hex
Total Number Of Space Time Streams	2	Address 3	505555555505 hex
		Sequence Control	0000 hex

Displays **MPDU** and **A-MPDU** for **selected user#** for PHY/MAC parameter.

Each user# PHY parameter becomes same value at all MPDU, and A-MPDU. Sets **MCS, modulation method, etc.**

Different value can be set for **each user#** MAC parameter at MPDU, A-MPDU. Sets **data length, MAC frame, address, etc.**

***Read the “MX3701xxA IQproducer” and “MX269xxxA series Software” brochure for detail parameter setting range.**

Easy Setup for system parameter (1/8)

Just selecting “System” sets system parameters in accordance with the standards.

◆ System Selection

Common		
System	11n	
Number of Packets	11a	
Number of Antennas	11ac	
Convolutional Encode	11b	
Interleave	11g	
Scramble	11j	
Scramble Initial Value	11n	hex
Scramble Initial Value	11p	hex

Select system.

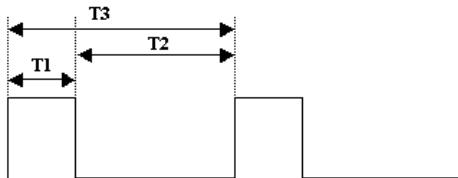
IEEE 802.11a / ac / b / g / j / n / p.

◆ Duty Cycle Setting

Duty Cycle	50.0000	%
Burst On Length	1552.000	us
Burst Off Length	1552.000	us
Burst Period	3104.000	us

Easy **Burst ON/OFF Ratio** setting.

This is the important Rx test item.
Consequently, it is useful when the ON/OFF ratio is standardized by the test specification.



T1 : Burst On Length
T2 : Burst Off Length
T3 : Burst Period
T1/T3 : Duty Cycle

Sets **Duty Cycle** and **Burst Off Length**.

Burst On Length is decided by the MAC parameter such as setting of Data Length, etc..

Burst Period is decided by the Duty Cycle and Burst Off Length settings.

Easy Setup for system parameter (2/8)

◆PHY Selection

Available options when System = 11a, 11j

Data Rate	Frame Format	Modulation	High Rate Modulation	Code Rate
6 Mbps	N/A	BPSK	N/A	1/2
9 Mbps		BPSK		3/4
12 Mbps		QPSK		1/2
18 Mbps		QPSK		3/4
24 Mbps		16QAM		1/2
36 Mbps		16QAM		3/4
48 Mbps		64QAM		2/3
54 Mbps		64QAM		3/4

Available options when System = 11b

Data Rate	Frame Format	Modulation	High Rate Modulation	Code Rate
1 Mbps	N/A	DBPSK	N/A	N/A
2 Mbps		DQPSK	N/A	
5.5 Mbps		N/A	CCK, PBCC	
11 Mbps		N/A	CCK, PBCC	

Available options when System = 11g

Data Rate	Frame Format	Modulation	High Rate Modulation	Code Rate
1 Mbps	ERP-DSSS	DBPSK	N/A	N/A
2 Mbps	ERP-DSSS	DQPSK	N/A	N/A
5.5 Mbps	ERP-CCK ERP-PBCC	N/A	CCK, PBCC	N/A
6 Mbps	ERP-OFDM, DSSS-OFDM	BPSK	N/A	1/2
9 Mbps	ERP-OFDM, DSSS-OFDM	BPSK	N/A	3/4
11 Mbps	ERP-CCK ERP-PBCC	N/A	CCK, PBCC	N/A
12 Mbps	ERP-OFDM, DSSS-OFDM	QPSK	N/A	1/2
18 Mbps	ERP-OFDM, DSSS-OFDM	QPSK	N/A	3/4
22 Mbps	ERP-PBCC	N/A	PBCC	N/A
24 Mbps	ERP-OFDM, DSSS-OFDM	16QAM	N/A	1/2
33 Mbps	ERP-PBCC	N/A	PBCC	N/A
36 Mbps	ERP-OFDM, DSSS-OFDM	16QAM	N/A	3/4
48 Mbps	ERP-OFDM, DSSS-OFDM	64QAM	N/A	2/3
54 Mbps	ERP-OFDM, DSSS-OFDM	64QAM	N/A	3/4

Easy Setup for system parameter (3/8)

◆ PHY Selection

Available options when System = 11p

Data Rate	Frame Format	Modulation	High Rate Modulation	Code Rate
3 Mbps	N/A	BPSK	N/A	1/2
4.5 Mbps		BPSK		3/4
6 Mbps		QPSK		1/2
9 Mbps		QPSK		3/4
12 Mbps		16QAM		1/2
18 Mbps		16QAM		3/4
24 Mbps		64QAM		2/3
27 Mbps		64QAM		3/4

◆ Filter Selection

Filter		
Filter Type	None	
Roll Off/BT	None	
Spectrum Shaping	Gaussian	
Windowing Length	Root Nyquist	Sample
Ramp Length	Nyquist	Sample
	Ideal	

Select filter type.

- None, Gaussian, Root Nyquist, Nyquist, Ideal

Easy Setup for system parameter (4/8)

◆ PDU format selection for IEEE802.11n signals

MPDU	
PHY	
PPDU Format	HT Mixed
MCS	Non-HT
<i>Number of Spatial Streams</i>	HT Mixed
<i>Stream 1</i>	HT Greenfield

Selection and setting of IEEE802.11n for:

- PDU format: Non-HT, HT-Mixed, HT-Greenfield
- MCS: 0 to 76

PPDU Format	HT Mixed
MCS	7

Parameters when MCS set defined in IEEE Std 802.11n-2009 Chapter 20.6.

Common	
System	11n
Number of Packets	1
<i>Number of Antennas</i>	4

Number of antenna decided depending on MCS setting.

Easy Setup for system parameter (5/8)

◆ Setting for IEEE802.11ac signals

Bandwidth	160	MHz
Duty Cycle	20	%
Burst On Length	40	us
Burst Off Length	80	us
Burst Period	160	us
Repeat Count	80+80	

IEEE 802.11ac		
PPDU Format		VHT
User Mode	Multi User	
Number of Transmit Chains	Single User	
Spatial Mapping	Multi User	

IEEE 802.11ac		
PPDU Format		VHT
User Mode		Single User
Number of Transmit Chains	8	

PHY		
Scramble		On
MCS	9	
Number of Spatial Streams		1
Modulation		256QAM
Code Rate		5/6

Bandwidth

- 20MHz, 40MHz, 80MHz, 160MHz*, 80+80MHz

*: 160 MHz is not settable if MG3700A, MS269x, or MS2830 is selected in the Select instrument dialog box.

PPDU format

- VHT

User Mode

- Single User, Multi User

When the user mode is set to Multi User, Up to four users from USER#0 to #3 can be set.

Number of Transmit Chain

- Setting range: 1 to 8

MCS

- Setting range: 0 to 9

Details about the parameters when MCS is set are defined in IEEE P802.11ac/D2.0, January 2012 22.5.

Modulation

- BPSK, QPSK, 16QAM, 64QAM, 256QAM

The value depends on MCS.

Easy Setup for system parameter (6/8)

◆ Spatial Mapping selection for IEEE802.11n and 11ac signals

MPDU	
PHY	
PPDU Format	HT Mixed
MCS	50
Number of Spatial Streams	3
Stream1	64QAM
Stream2	16QAM
Stream3	16QAM
Code Rate	3/4
Spatial Mapping	Direct Mapping
GI	Direct Mapping
Smoothing	Spatial Expansion
Not Sounding	Edit Mode
Number of Transmit Chains	3
Number of Space Time Streams	3
Number of Extension Spatial Streams	0
Half Bandwidth	N/A

IEEE 802.11ac	
PPDU Format	VHT
User Mode	Single User
Number of Transmit Chains	8
Spatial Mapping	Direct Mapping
GI	Direct Mapping
Total Number Of Space Time Streams	Spatial Expansion
	Edit Mode

Available in the following conditions:

- System=11n and PPDU Format = HT Mixed / HT Greenfield
- System=11ac

Direct Mapping is available only when:

"Number of Space Time Streams"
= "Number of Transmit Chains"

Direct Mapping can be set only when: Number of Transmit Chains=1

	Spatial Stream 1	Spatial Stream 2	Spatial Stream 3	Spatial Stream 4
Transmit Chain 1	0.50000	0.50000	0.50000	0.50000
Transmit Chain 2	0.50000	j 0.50000	-0.50000	-j 0.50000
Transmit Chain 3	0.50000	-0.50000	0.50000	-0.50000
Transmit Chain 4	0.50000	-j 0.50000	-0.50000	j 0.50000

If Edit Mode is selected for Spatial Mapping, one of the Spatial Mapping Matrix windows is displayed, on which the spatial mapping can be edited. The number of elements on the matrix depends on the value set for Number of Transmit Chains.

Easy Setup for system parameter (7/8)

◆ MAC Frame Type Setting

MAC		
Data Length	4062	octet(s)
MPDU Length	4096	
MAC Frame Type	General	
Frame Control	0800	hex

Sets MAC information



The address can change

MAC Frame Format

MAC Frame Type:

Frame Control	Duration/ID	Address 1	Address 2	Address 3	Seq Control	Address 4	QoS Cotrol	HT Control	Frame Body	FCS
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0x	<input type="text" value="0800"/>	<input type="text" value="0000"/>	<input type="text" value="FFFFFFFFFFFF"/>	<input type="text" value="202222222202"/>	<input type="text" value="505555555505"/>	<input type="text" value="0000"/>	<input type="text" value="644D20030000"/>	<input type="text" value="0000"/>	<input type="text" value="00000000"/>	<input type="text" value="PN9fix"/>

◆ Increment Setting

➔	Increment Sequence Number	On
	Sequence Number Increment Period	1
➔	Increment Fragment Number	On

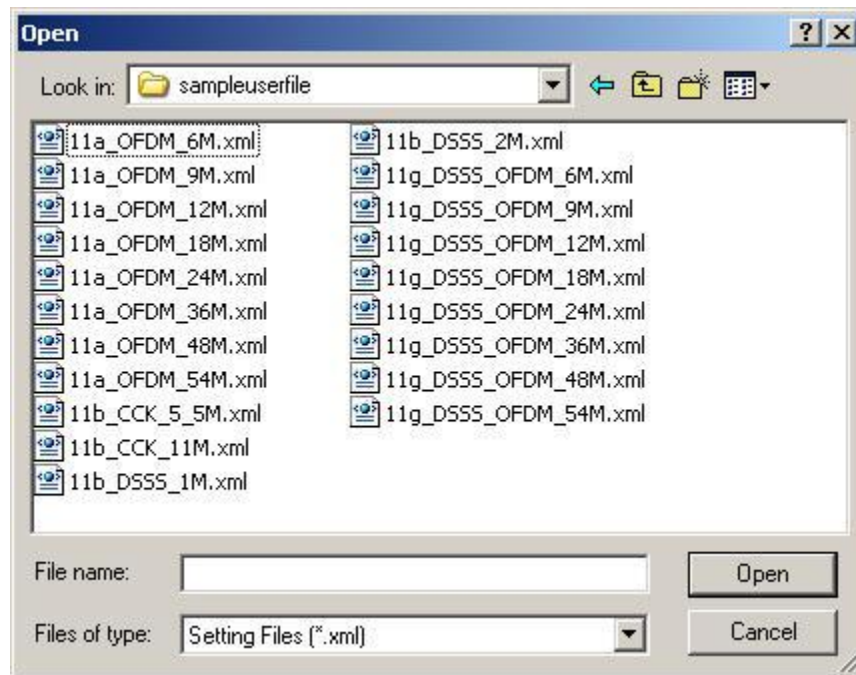
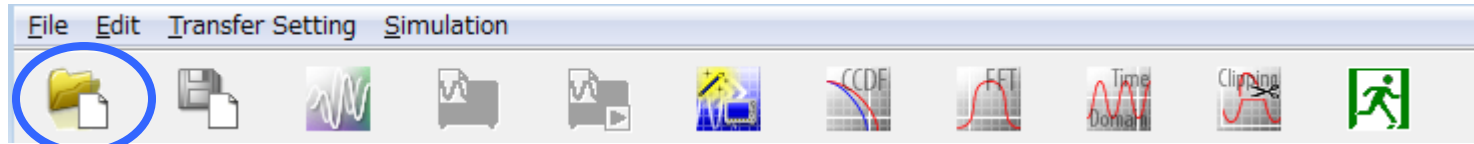
Sets Increment ON/OFF.

This is an important Rx test item.

Easy Setup for system parameter (8/8)

The same parameters as built into the IEEE 802.11a / b / g waveform pattern are provided as samples.

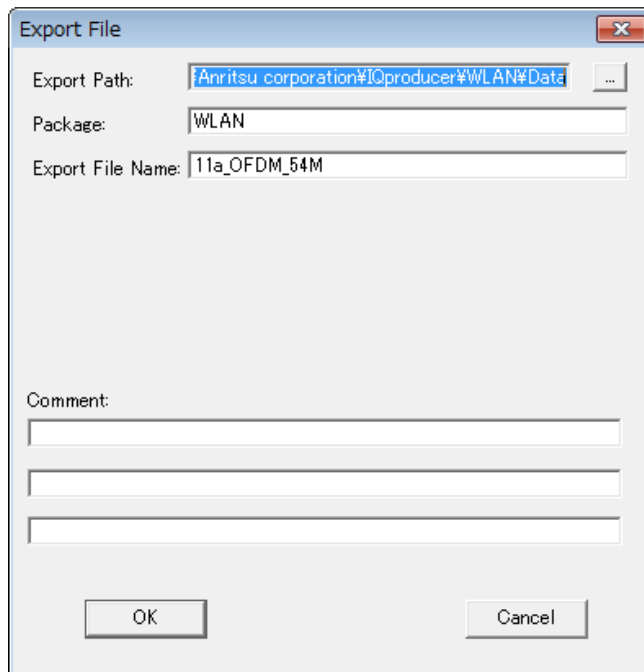
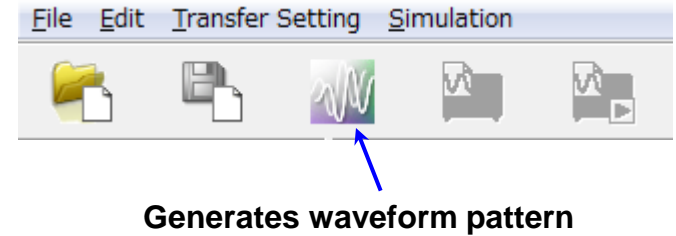
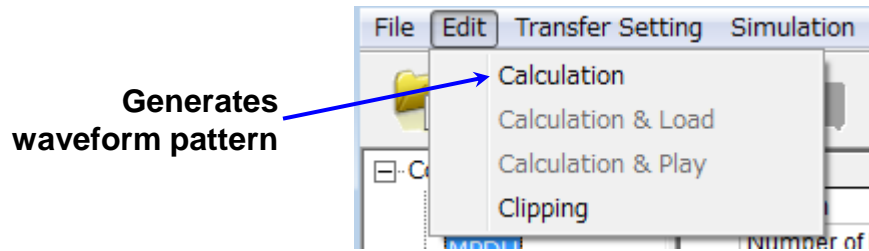
◆ Recalling Sample Waveform Parameter



Recalling a sample parameter file cuts setting time.

Waveform Generation: Calculation

After setting parameters, click the [Calculation] icon to generate the waveform pattern.



- File export destination folder
- Name of waveform pattern package: 31 characters max.
- Name of waveform pattern file: 20 characters max.

Comment on screen
38 characters max. per line

Calculation & Load & Play

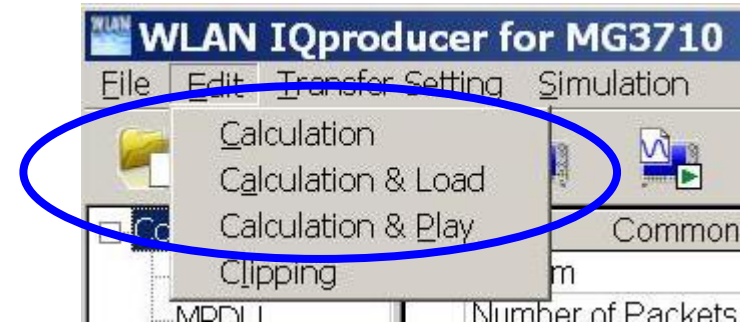
After setting parameters, click the [Calculation] icon to generate the waveform pattern.



Calculation

Calculation & Load

Calculation & Play



Calculation:

Generates a waveform pattern after parameters are set.

/Calculation/

Calculation & Load:

After waveform generation is finished, the created waveform pattern is loaded into the MG3710A waveform memory.

/Calculation/ > /Load/

Calculation & Play:

After waveform generation is finished, the created waveform pattern is loaded and selected at the MG3710A waveform memory.

/Calculation/ > /Load/ > /Select/

File size of waveform patterns

The presence/absence of the ARB Memory Expansion (option) and Baseband Signal Combination Function (option) is selected. Selecting the ARB Memory Expansion (option) and the Baseband Signal Combination Function (option) generates a bigger waveform pattern, while selecting the Baseband Signal Combination Function (option) generates a waveform pattern. If an uninstalled option is selected, sometimes the created waveform pattern may not be usable. Set the combination of installed options based on the following setting items.

Items	Combinations of Options
Memory 64M samples	None
Memory 64M samples × 2	Option48 and Option 78
Memory 256M samples	Option45 or Option 75
Memory 256M samples × 2	Option 45 and Option 48 or Option 75 and Option 78
Memory 1024M samples	Option46 or Option 76
Memory 1024M samples × 2	Option 46 and Option 48 or Option 76 and Option 78

The maximum size of the generated waveform pattern for each of the setting items is shown below.

Items	Maximum Size
Memory 64M samples	64M samples
Memory 64M samples × 2 (With Option48, 78)	128M samples
Memory 256M samples	256M samples
Memory 256M samples × 2 (With Option48, 78)	512M samples
Memory 1024M samples	512M samples
Memory 1024M samples × 2 (With Option48, 78)	512M samples

File size of waveform patterns

MS269xA/MS2830A only

MS2830A:

Select whether the ARB memory expansion option 256Msamples is installed.

Selecting With Option27 (Memory 256M samples) supports creation of larger waveform patterns. If the ARB memory expansion option is not installed, the generated waveform pattern may not be able to be used. Waveform patterns cannot be created with a size greater than 64M samples when Without Option27 (Memory 256M samples) is selected. Select either according to the presence of ARB memory expansion option.

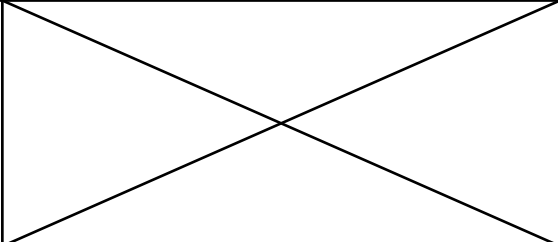
Model	Items	ARB Memory Expansion
MS2830A	With Option27 (Memory 256M samples)	1 GB
	Without Option27 (Memory 256M samples)	256 MB

MS269xA:

ARB Memory Expansion (option) is not available for MS269xA. Only Memory 256M samples, 1 GB is available.

Vector Signal Generator Key Functions

Main Frame	Vector Signal Generator		Signal Analyzer		
	MG3710A		MS269xA	MS2830A	
	MG3710A-032/062	MG3710A-036/066	Vector Signal Generator Option		
			MS269xA-020	MS2830A-020	MS2830A-021
Frequency Range	100kHz to 2.7 GHz	100kHz to 6 GHz	125 MHz to 6 GHz	250 kHz to 3.6 GHz	250 kHz to 6 GHz
Wanted Signal	Yes		Yes	Yes	
Wanted + Interference Signals	Yes Combination of Baseband Signal (Opt.048/078)		No	No	
Wanted + AWGN	Yes AWGN (Opt.049/079) CN ratio < 40 dB		Yes Standard AWGN CN ratio ≤ 40 dB	Yes MS2830A-028 AWGN required. CN ratio ≤ 40 dB	
Packet Number Setting	Yes Sequence mode		No	Yes Frame count	
BER Measurement Function	Yes Input bit rate: 100 bps to 40 Mbps (Opt.021)		Yes Input bit rate: 100 bps to 10 Mbps (standard)	No	

Tx Characteristics Evaluation		Yes One unit supports Tx&Rx characteristics (MX269028A/MX269028A-002 required)	Yes One unit supports Tx&Rx characteristics (MX269028A/MX269028A-001 required)
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