

# MX370101A/MX269901A

HSDPA/HSUPA IQproducer

MG3710A

Vector Signal Generator

MS269xA/MS2830A

Signal Analyzer

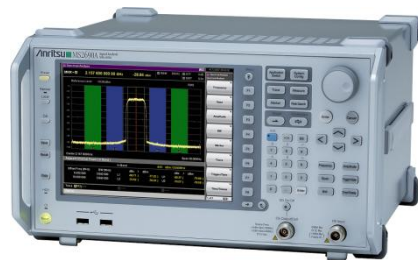
**MG3710A Vector Signal Generator**

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

**MX370101A/MX269901A  
HSDPA/HSUPA IQproducer  
Product Introduction**



**MG3710A  
Vector Signal Generator**



**MS269xA  
Signal Analyzer**



**MS2830A  
Signal Analyzer**

**Version 1.00**

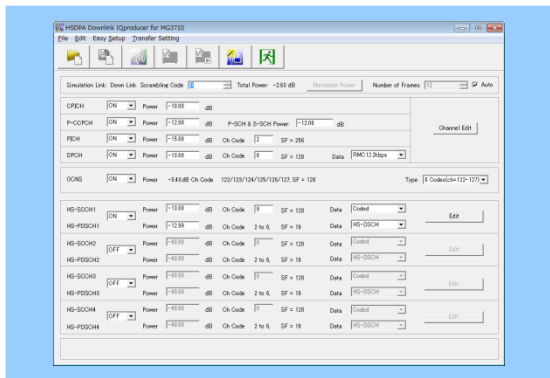
**ANRITSU CORPORATION**

# What is HSDPA/HSUPA IQproducer?

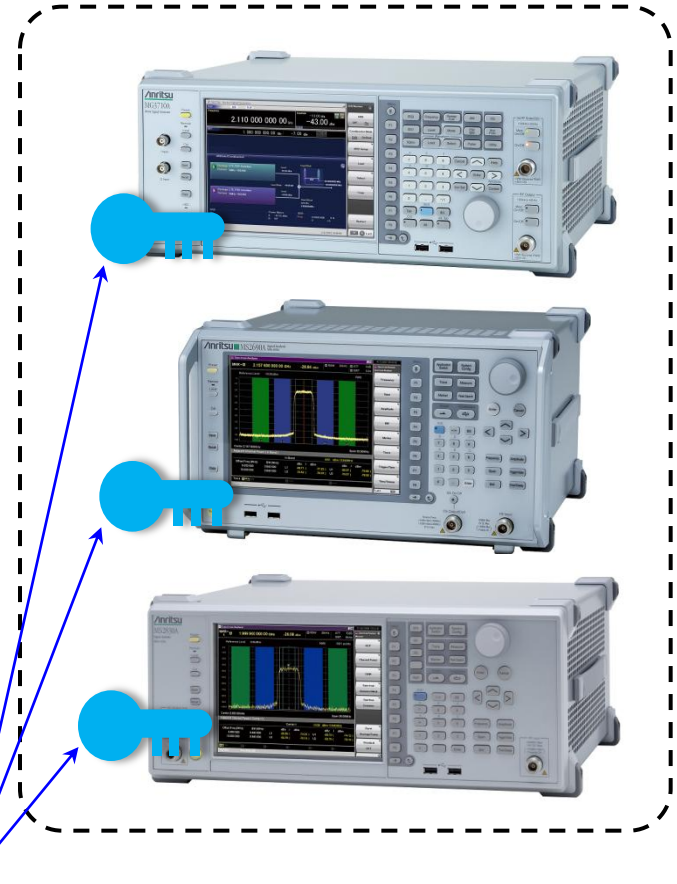
HSDPA/HSUPA IQproducer is PC application software for generating waveform patterns in compliance with 3GPP HSDPA/HSUPA (uplink, downlink).

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.

## HSDPA/HSUPA IQproducer



Install



- **Generating waveform patterns using HSDPA/HSUPA 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 HSDPA/HSUPA IQproducer?

IQproducer sets TS25.212-defined HS-PDSCH and HS-DPCCH parameters. Various signals are generated just by changing the Tx process.

## Downlink

- Scrambling Code
- Channel (CPICH, P-CCPCH, P-SCH, S-SCH, PICH, DPCH, OCNS, HS-SCCH1/2/3/4, HS-PDSCH1/2/3/4)
- DPCH Data



## Uplink

- Scrambling Code
- Channel (UL-DPCCH, UL-DPDCH, HS-DPCCH, DPCH, E-DPCCH, E-DPDCDH)
- DPCH Data



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

# Downlink: Editing Parameters

When HSDPA/HSUPA Downlink is chosen, [various Downlink parameters can be set according to the standard.](#)

In addition, the Downlink [Easy Setup](#) function offers default parameter sheets for "Fixed Reference Channel (FRC) of HSDPA defined in 3GPP TS25.101" and "Reference Measurement Channel (RMC) defined in 3GPP TS25.101/TS25.104." Parameters are set just by choosing an item and the waveform pattern is generated.

## [Easy Setup]

### **FRC:**

**H-Set1 (QPSK)**

**H-Set1 (16QAM)**

**H-Set2 (QPSK)**

**H-Set2 (16QAM)**

**H-Set3 (QPSK)**

**H-Set3 (16QAM)**

**H-Set4**

**H-Set5**

### **RMC:**

**RMC12.2 kbps (for RX test)**

**RMC12.2 kbps (for Performance test)**

**RMC64 kbps (for Performance test)**

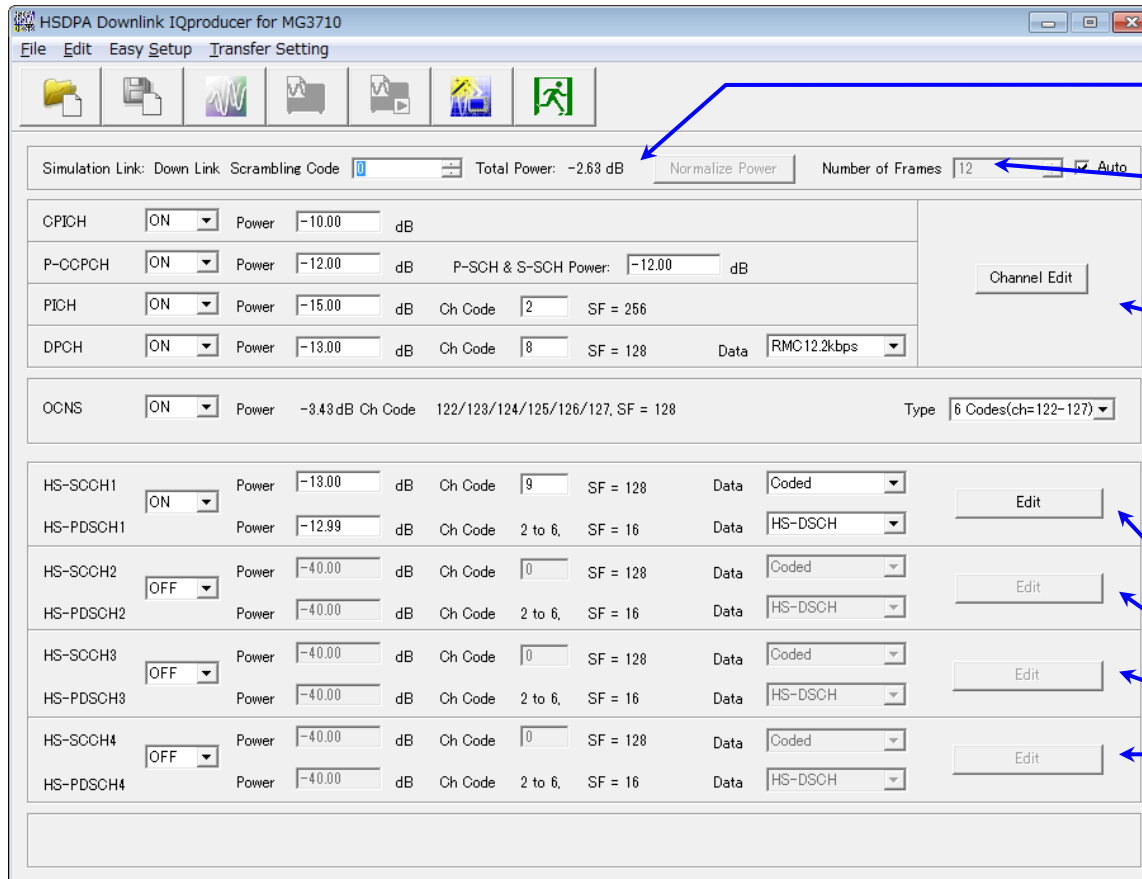
**RMC144 kbps (for Performance test)**

**RMC384 kbps (for Performance test)**

# Downlink: Parameter Editing

When HSDPA/HSUPA Downlink is chosen, the following setting screen is displayed.

The P-CCPCH, DPCH, HS-SCCH 1-4, and HS-PDSCH 1-4 parameters are set using the [Edit] menu.



**Total Power:** Displays total power of all ON channels (except OCNS)

**Normalize Power:** Sets Total Power to 0 dB, maintaining power ratio of all ON channels

Enabled at OCNS = OFF

**Channel Edit:** Starts parameter setting screen for P-CCPCH and DPCH.

**Edit:** Performs HS-SCCH 1-4 and HS-PDSCH 1-4 setup and starts parameter setting screen for PCCPCH and DPCH.

# Downlink: Parameter Editing Screen

## Channel Edit Screen

Channel Edit

P-CCPCH Edit

SFN Cycle 4096 frames

DPCCH Edit

PhyCH

DPCCH Data TrCH BER %

TFCI 0 Slot Format #11

Spreading Factor 128 Timing Offset 0 TPC Edit

TrCH

Easy Setup TrCH Number DTX Fix

	TrCH1	TrCH2	TrCH3	TrCH4
Data	PN9fix	16bitRepeat	PN9fix	PN9fix
TTI	20ms	40ms	20ms	20ms
Max. TrBk Size	244 bit	100 bit	244 bit	244 bit
TrBk Size	244 bit	100 bit	244 bit	244 bit
Max.TrBk Set No.	TrBk * 1	TrBk * 1	TrBk * 1	TrBk * 1
TrBk Set No.	TrBk * 1	TrBk * 1	TrBk * 1	TrBk * 1
CRC	16bit	12bit	16bit	16bit
Coder	CC 1/3	CC 1/3	CC 1/3	CC 1/3
RM attribute	256	256	256	256
BER	-	-	-	-
BLER	-	-	-	-

OK Cancel

# Downlink: Parameter Editing Screen

## HSDPA Edit Screen

The screenshot shows a dialog box titled "HSDPA Edit (Ch1)" with a close button in the top right corner. The dialog contains several configuration fields:

- Channelization Code Offset: 2
- Number of Physical Channel Code: 5
- Modulation: QPSK
- Transport Block Size Information: 41
- RV information: 0
- UE Identity: 0
- CRC Error Insertion: Correct
- Number of HARQ Processes: 2
- Virtual IR Buffer Size: 9600
- Payload Data: PN9fix

Below these fields is a section titled "Transmitting Pattern Edit" containing:

- HARQ Process Cycle: 6
- Inter-TTI Distance: 3
- TTI Start Offset: 0
- Process Setting File: [Empty text box] [Browse button]

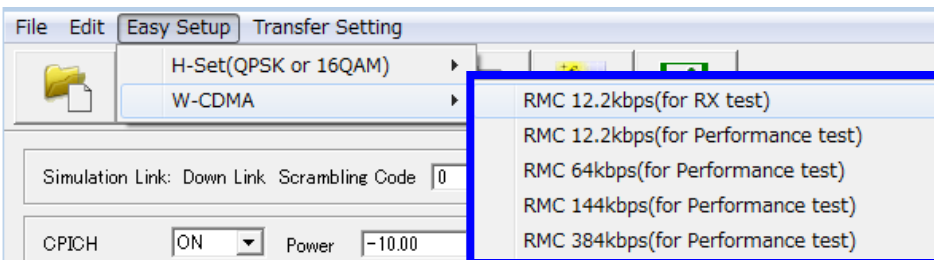
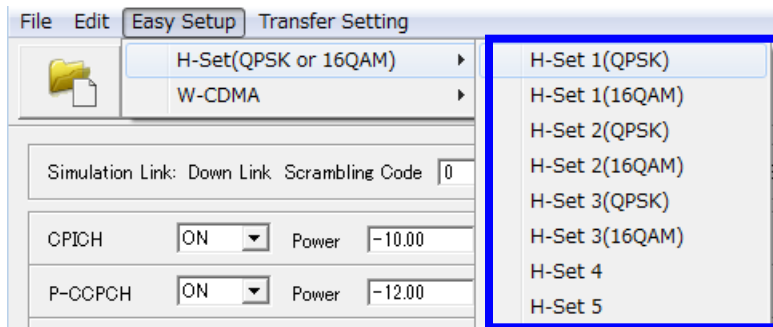
At the bottom of the dialog are "OK" and "Cancel" buttons.



# Downlink: Easy Setup Function

The Downlink Easy Setup function offers default parameter sheets for "Fixed Reference Channel (FRC) of HSDPA defined in 3GPP TS25.101" and "Reference Measurement Channel (RMC) defined in 3GPP TS25.101/TS25.104."

The initial work is easy because the default is displayed for the selected item.



## [Easy Setup]

### ***FRC:***

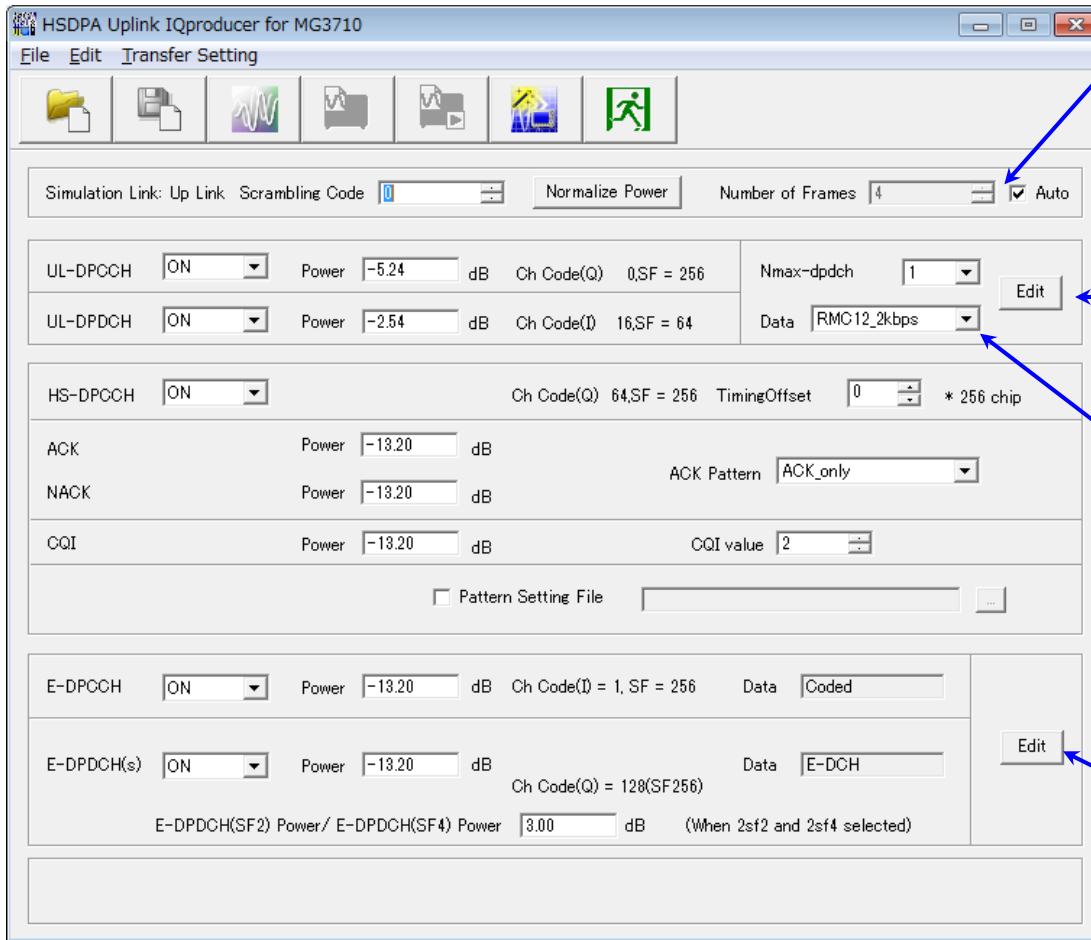
***H-Set1 (QPSK)***  
***H-Set1 (16QAM)***  
***H-Set2 (QPSK)***  
***H-Set2 (16QAM)***  
***H-Set3 (QPSK)***  
***H-Set3 (16QAM)***  
***H-Set4***  
***H-Set5***

### ***RMC:***

***RMC12.2 kbps (for RX test)***  
***RMC12.2 kbps (for Performance test)***  
***RMC64 kbps (for Performance test)***  
***RMC144 kbps (for Performance test)***  
***RMC384 kbps (for Performance test)***

# Uplink: Parameter Editing

The following screen is displayed when HSDPA/HSUPA Uplink is chosen. The UL-DPCCH, UL-DPDCH, and HS-DPCCH parameters are set to generate the waveform pattern.



## Normalize Power:

Sets Total Power to 0 dB, maintaining power ratio of all ON channels For HS-DPCCH, the greatest value is chosen from ACK, NACK, and CQI and used for calculation.

## Channel Edit:

Starts Channel Edit screen to set DPCH parameters



## HSUPA Edit:

Opens HSUPA Edit screen for setting E-DPDCH/E-DPCCH Physical Layer/Transport Layer parameters

# Uplink: Parameter Editing Screen

## Channel Edit Screen

Channel Edit

DPDCH Edit

PhyCH

UL-DPDCH Data  BER  %

TFCI  UL-DPDCH Slot Format

UL-DPDCH Spreading Factor  Timing Offset

TrCH

TrCH Number

	TrCH1	TrCH2	TrCH3	TrCH4
Data	<input type="text" value="PN9fix"/>	<input type="text" value="PN9fix"/>	<input type="text" value="PN9fix"/>	<input type="text" value="PN9fix"/>
TTI	<input type="text" value="20ms"/>	<input type="text" value="40ms"/>	<input type="text" value="20ms"/>	<input type="text" value="20ms"/>
Max. TrBk Size	<input type="text" value="244"/> bit	<input type="text" value="100"/> bit	<input type="text" value="244"/> bit	<input type="text" value="244"/> bit
TrBk Size	<input type="text" value="244"/> bit	<input type="text" value="100"/> bit	<input type="text" value="244"/> bit	<input type="text" value="244"/> bit
Max.TrBk Set No.	TrBk * <input type="text" value="1"/>	TrBk * <input type="text" value="1"/>	TrBk * <input type="text" value="1"/>	TrBk * <input type="text" value="1"/>
TrBk Set No.	TrBk * <input type="text" value="1"/>	TrBk * <input type="text" value="1"/>	TrBk * <input type="text" value="1"/>	TrBk * <input type="text" value="1"/>
CRC	<input type="text" value="16bit"/>	<input type="text" value="12bit"/>	<input type="text" value="16bit"/>	<input type="text" value="16bit"/>
Coder	<input type="text" value="CC 1/3"/>	<input type="text" value="CC 1/3"/>	<input type="text" value="CC 1/3"/>	<input type="text" value="CC 1/3"/>
RM attribute	<input type="text" value="256"/>	<input type="text" value="256"/>	<input type="text" value="256"/>	<input type="text" value="256"/>
BER	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="-"/>
BLER	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="-"/>

# Uplink: Parameter Editing Screen

## HSUPA Edit Screen

The screenshot shows a dialog box titled "HSUPA Edit" with a close button in the top right corner. The dialog is divided into two main sections: "PhyCH" and "TrCH".

**PhyCH Section:**

- HARQ Process Setting File: A checkbox followed by a text input field and a browse button (...).
- E-DPCCH Data: A dropdown menu set to "Coded".
- HS-DSCH Configured: A dropdown menu set to "No".
- E-DPDCH Data: A dropdown menu set to "E-DCH".
- E-DPDCH Channel Codes: A dropdown menu set to "SF256".

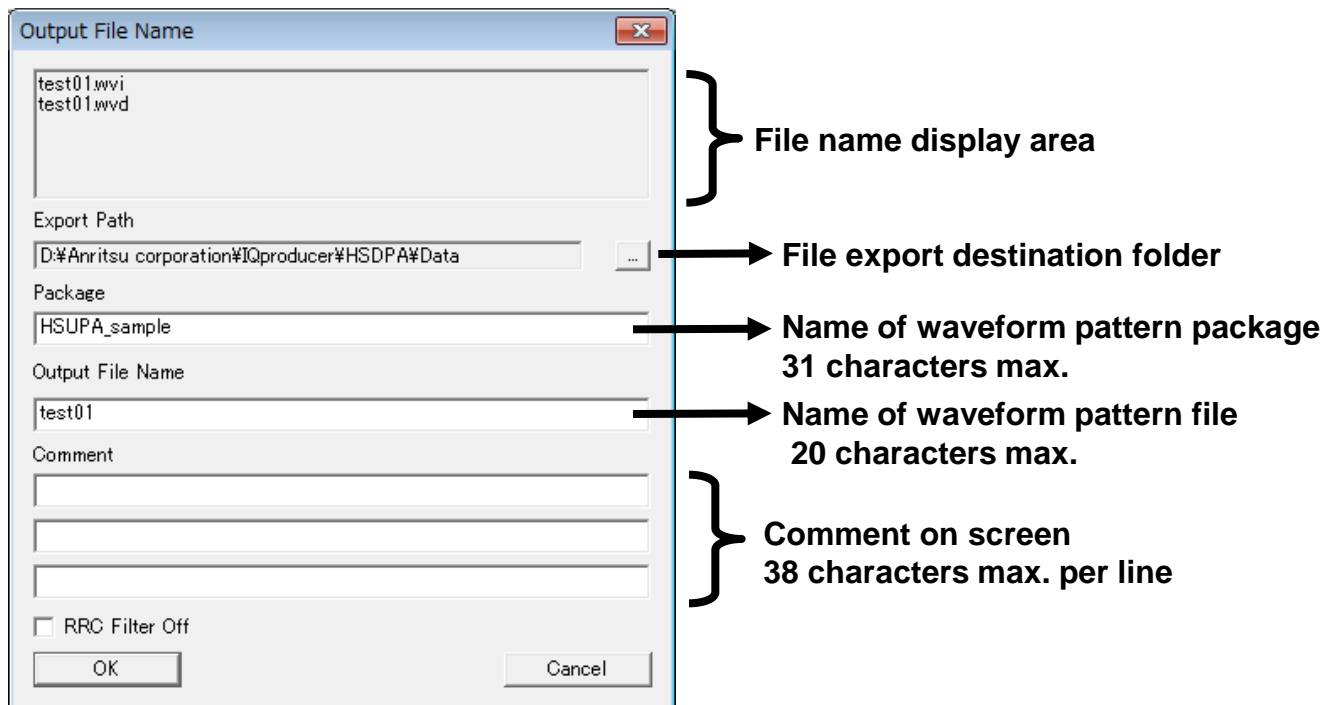
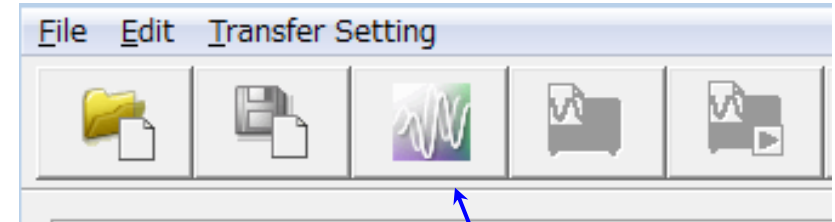
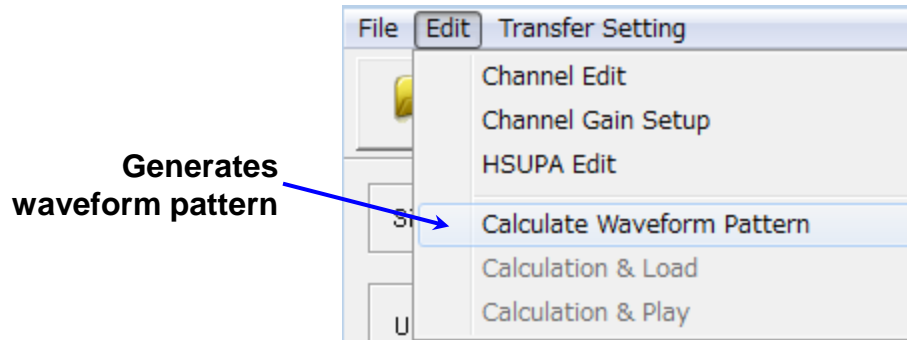
**TrCH Section:**

- E-DCH TTI: A dropdown menu set to "10ms".
- Pattern Length: A text input field containing "1".
- Information Bit Payload: A text input field containing "18".
- E-DCH RV Index: A dropdown menu set to "0".
- E-DCH Payload Data: A dropdown menu set to "PN9fix".
- CRC Error Insertion: A dropdown menu set to "Correct".
- E-TFCI Information: A text input field containing "0".
- "Happy" Bit: A dropdown menu set to "0".
- RSN: A dropdown menu set to "0".

At the bottom of the dialog, there are two buttons: "OK" on the left and "Cancel" on the right.

# Waveform Generation: Calculation

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



# Calculation & Load & Play

MG3710A only

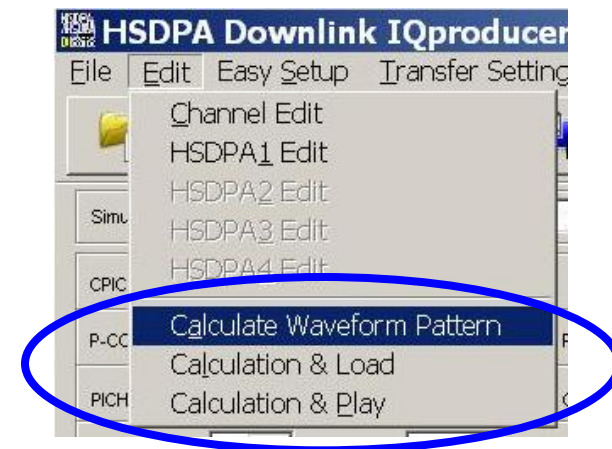
After setting parameters, click the [Calculation] icon to generate the waveform pattern.



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

## 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.



# Note

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