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MX370112A/MX269912A TD-SCDMA 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

MX370112A/MX269912A TD-SCDMA IQproducer Product Introduction



MG3710A Vector Signal Generator



MS269xA Signal Analyzer

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MS2830A Signal Analyzer

Version 1.00

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Slide 1



What is TD-SCDMA IQproducer?

The TD-SCDMA IQproducer is PC software for changing parameters and generating waveform patterns in compliance with TD-SCDMA specifications standardized by 3GPP TS25.221, TS25.222, TS25.223, TS25.105, TS25.142 (supports TRx tests excluding performance tests).

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.



TD-SCDMA IQproducer

Link UL Number of Carriers 1 Adjust Carrier Power Adjust Code Power

0 MHz Relative Power 0.00 dB Channel Coding ON Channel Setting

- Generating waveform patterns using TD-SCDMA IQproducer => <u>The main frame requires a license.</u> 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.

Comment Calculation & Load Calculation & Play

- Generating waveform patterns using EDA Tools (C, MATLAB, Microwave Office) => <u>Free license</u>
 - MATLAB® is a registered trademark of The MathWorks, Inc.
 - Windows® is a registered trademark of Microsoft Corporation in the USA and other countries.

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Slide 2



Main Screen

When TD-SCDMA is selected, the Main screen displays all setting parameters. Supports both uplink and downlink and settings for up to 6 carriers.

	TD-SCDMA IQproducer for MG3710
	Eile Edit Iransfer & Setting Simulation
	Common Setting
Uplink / Downlink	Number of 1 Link UL Number of Carriers 1 Adjust Carrier Power Adjust Code Power
Link X	Channel Setting
	Carrier Setting (see next page.)
UL DL	Carrier#1
	Frequency Offset 0 MHz Relative Power 0 00 dB Channel Coding ON Channel Setting
F O ^{<i>i</i>}	
Frequency Offset	Switching Point 3 Scrambling Code 0 Midamble Config Default
Frequency Offset	
-4.0 -3.2 -2.4	Pattern Setting
-1.6 -0.8 0	Package TD-SCDMA
+3.2 +4.0	
	Midamble Config
	Midamble Config
	Default Common UE specification

TD-SCDMA IQproducer Main Screen

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

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Channel Setting Screen (1/4)

Click Channel Setting to edit downlink channel (when DL is set for Link under Common Setting) or uplink channel (when UL is set for Link under Common Setting), respectively.

Uplink - UpPCH - DPCH

PCH DPCH				UpPCH DPCH				
	State	ON	-	Number of RMC	-1	-	RMC	ť
	Power	0.00	dB	State	ON	-	SF	8
	Sync-UL code	0		Power	0.00	dB	TECI	0
				RMC Type	12.2kbps		TPC	AllO
				Time Slot	-	-	SS	AllO
								2 miles
				Channel Code	1		Midamble Config	Default
				Channel Code	1 PN9		Midamble Config Midamble K	Default 16
				Channel Code DTCH DataType DTCH Rate Matching Attribute	1 PN9 256		Midamble Config Midamble K UE spec shift	Default 16
				Channel Code DTCH DataType DTCH Rate Matching Attribute DCCH Data Type	1 PN9 256 PN9		Midamble Config Midamble K UE spec shift	Default 16

Uplink / DPCH

Uplink / UpPCH

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Channel Setting Screen (2/4)

Downlink

- P-CCPCH
- PICH - DPCH
- S-CCPCH - DwPCH
 - HS-PDSCH

Downlink / P-CCPCH

5	State	ON		State
F	Power	0.00	dB	Power
1	Data Type	PN9		Time
,	vlidamble Config	Default		Data 1
١	vlidamble K	8		Chanr
ι	JE spec shift	8		Slot F
1	\$F	16		Midan
				Midan
				UE sp

Downlink / S-CCPCH

State	ON		TECI	
Power	0.00	dB	TPC	(e
Time Slot	0		SS	
Data Type	PN9		SF	16
Channel Code	3		Block Size	-
Slot Format	+		CRC Size	
Midamble Config	Default		Coding Type	100
Midamble K	8		Rate Matching Attribute	
UE spec shift	8			

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Channel Setting Screen (3/4)

Downlink

- P-CCPCH - S-CCPCH
- PICH - DPCH
- DwPCH
 - HS-PDSCH

Downlink / DwPCH

P-CCPCH S-CCPCH DWPCH PICH DPCH HS-PDSCH State ON Power 0.00 dB Sync-DL code 0	P-CCPCH S-CCPCH DWPCH PICH DPCH State Power Time Slot	NS-PDSCH
State ON Power 0.00 dB Sync-DL code 0	State Power Time Slot	ON 0.00
Power 0.00 dB Sync-DL code 0	Power Time Slot	0.00
Sync-DL code 0	Time Slot	
		0
	Channel Code	1
	Data Type	PN9
	Midamble Config	Default
	Midamble K	16
	UE spec shift	16
	SF	16

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×

Cancel

dB

MX370112A/MX269912A-E-L-1

Downlink / PCH

Channel Setting Screen (4/4)

Downlink

- P-CCPCH
- PICH - DPCH
- S-CCPCH - DwPCH
 - HS-PDSCH

Downlink / DPCH

lumber of RMC	1		RMC	1
State	ON		SF	16
Power	0.00	dB	TFCI	-
MC Type	-		TPC	-
Time Slot	4		SS	(e:
Channel Code	1	_	Midamble Config	Default
TCH Data Type	PN9		Midamble K	16
OTCH Rate Matching	256		UE spec shift	16
OCCH Data Type			Number of DPCH per TS	1
OCCH Rate	256	T	Block Size	-

Downlink / HS-PDSCH

	HSPA RMC	Туре	=	
State	ON		Midamble Config	Default
Power	0.00	dB	Midamble K	16
Time Slot	4		UE spec shift	16
Channel Code	1		N_IR	12
Slot Format	-		Number of HS-PDSCH per TS	1
Data Type	PN9		Number of TS	3
Redundancy Version Parameter	7.1		SF	16
HARQ Mode	- 1		Modulation	QPSK
			Block Size	-

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Number of Carriers, Number of sub-frame Setting

The Carrier Setting tabs are displayed correspond to the value set by Number of Carriers in Common Setting.

Instru- ment	Number of Carriers			Select	t Option				
	Memory	256 Msamı	ples						
Medeov	1	10485	10485						
WI5209X	2	5242	5242						
	3~6	2621							
	Memory Option	Without Option 27(Memory 256Msamples)			With Option 27(Memory 256Msamples)				
MS2830	1	2621			10485				
	2	1310 655			5242				
	3~6				2621				
	Memory Option	Without Memory Oj	Without With Memory Option Option		5, 75 With Option 46, 7		76		
	Combination of Baseband Signal Option	Without Option 48, 78	With Option 48, 78	Without Option 48, 78	With Option 48, 78	Without Option 48, 78	With Option 48, 78		
MG3710	Memory	64 M samples	64 M samples x2	256 M samples	256 M samples x2	1024 M samples	1024 M samples x2		
	1	2621	5242	10485	20971	20971	20971		
	2	1310	2621	5242	10485	10485	10485		
	3~6	655	1310	2621	5242	5242	5242		



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Sub-frame Structure Screen (1/2)

Displays RU (Resource Unit) for each channel in different colors. Arranges in cells for 7 slots (for 1 Sub-Frame) in RU units. Horizontal axis: Time Slot, 7RU Vertical axis: Channel Code, 16RU

Note that this screen is only for display, and thus cannot be edited.



Downlink: The RU (Resource Unit) of each channel to be displayed when Link is DL: P-CCPCH, S-CCPCH, PICH, DPCH, HS-PDSCH. DwPCH is not displayed.

Uplink: The RU (Resource Unit) of each channel to be displayed when Link is UL: DPCH. UpPCH is not displayed.

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Sub-frame Structure Screen (2/2)

For the details about how many RUs, Time Slots, and Chanel Codes a single channel occupies, refer to Table.

Channel or RMC Type	No. of Time Slot	No. of Channel Code	No. of RU
C-CCPCH	1	2	2
S-CCPCH	1	2	2
PICH	1	2	2
DPCH (Link = DL)	1	Number of DPCH per TS	Number of DPCH per TS
HS-PDSCH	Number of TS	Number of HS-PDSCH per TS	(Number of TS) × (Number of HS-PDSC H per TS)
RMC UL 12.2kbps	1	2	2
RMC UL 64kbps	1	8	8
RMC UL 144kbps	2	8	16
RMC UL 384kbps	4	10	40

The numbers of RUs, Time Slots, and Channel Codes occupied by a single channel

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Slide 10



Waveform Generation: Calculation

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







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Slide 11



Calculation & Load & Play

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





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/

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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	The
Memory 64M samples	None	for
Memory 64M samples × 2	Option48 and Option 78]
Memory 256M samples	Option45 or Option 75	Men
Memory 256M samples × 2	Option 45 and Option 48 or Option 75 and Option 78	Opti Men
Memory 1024M samples	Option46 or Option 76	Men Opti
Memory 1024M samples × 2	Option 46 and Option 48 or Option 76 and Option 78	Men Opti

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 \times 2 (With Option 48, 78)	128M samples
	Memory 256M samples	256M samples
	Memory 256M samples \times 2 (With Option 48, 78)	512M samples
	Memory 1024M samples	512M samples
	Memory 1024M samples × 2 (With Option48, 78)	512M samples

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File size of waveform patterns

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)	$256 \mathrm{MB}$

MS269xA:

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



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