MX368012A

GSM Device Test Software

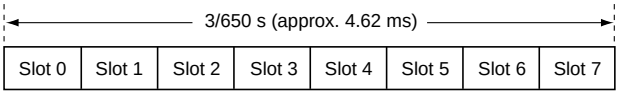
(For MG3681A Digital Modulation Signal Generator equipped with MU368010A TDMA Modulation Unit)

For GSM System's Receiver and Device Evaluation

Frame/Slot Configuration

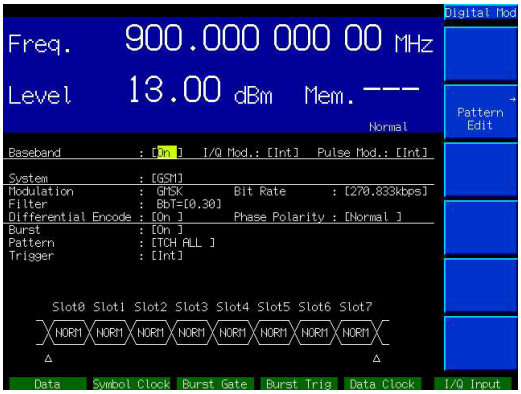
Install MX368012A in MU368010A TDMA Modulation Unit, which is mounted into MG3681A Digital Modulation Signal Generator. Frame and slot configuration for selecting GSM systems conforms to GSM Rec. Slots 0 to 7 can be separately set to on/off. All bits except G (guard) bit have PN-pattern slot configuration that can be used for device evaluation.

[Frame configuration]



[Slot configuration]

T 3	E 58	TS 26	E 58	T 3	G 8.25

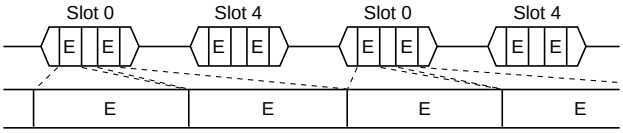


Pattern setting screen

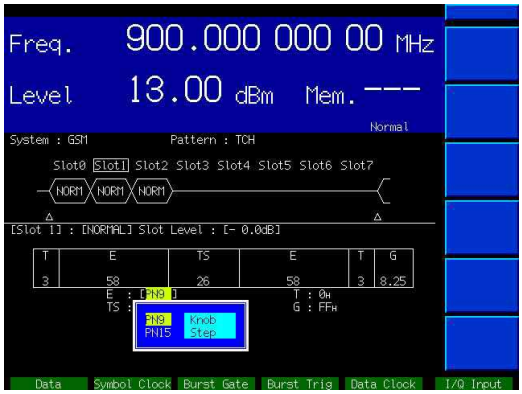
Modulation Pattern

For data (E field), continuous PN9 or PN15 pseudo-random pattern can be selected with different phases by slot. When invalid slot is received, the pseudo-random pattern becomes discontinuous so that it can be detected during error rate measurement.
TS field can be edited to any data. MX368012A, which can generate testing signals for advanced diagnosis/evaluation by itself, is ideal for testing GSM receivers or evaluation/management of devices. Because MX368012A is not dealing with multi frame, this does not have channel configurations such as TCH and SACCH.

[Example of modulation pattern]



Continuous PN 9 or PN 15 pseudo-random pattern



Pattern editing screen

Specifications

Install MX368012A in MU368010A equipped in MG3681A

Applicable system		GSM
Modulation method		GMSK
Bit rate		Range: 243.74 to 297.92 kbps (default:: 270.833 kbps), Resolution: 0.01 kbps, Accuracy: Depends on that for reference signal source of MG3681A main frame
Baseband filter		Gaussian, BbT: 0.2 to 0.5, Resolution: 0.01
Modulated data	Continuous modulation	PN 9/PN 15 pseudo-random and 4-bit data repetition pattern
	Burst modulation	Data pattern conforming to GSM can be output Frame configuration*1: Composed of 8 slots (Slot 0 to 7) [frame interval: 3/650 s (about 4.62 ms)] Slot configuration: For device evaluation (DEVICE)*2, normal burst (NORMAL)*3, random access burst (RACH)*4
Auxiliary signal	Input signal	Data clock: Clock input equivalent to bit rate [input range: ± (1% of setting value for bit rate)] Data: Data input synchronized with data clock Burst gate: Gate signal input for burst signal on/off definition Burst trigger: Trigger signal input synchronized with frame
	Output signal	Data clock: Clock output equivalent to bit rate Data: Data output synchronized with data clock Burst gate: Gate signal output for burst signal on/off definition Burst trigger: Trigger signal output synchronized with frame Pattern synchronization: Signal output synchronized with PN 9, PN 15 or 4-bit pattern (at continuous modulation) Data (E field) gate, clock or RF signal on/off control signal output (at burst modulation)
I/Q signal	Output level	$\sqrt{I^2 + Q^2}$ = 500 mV(rms) [bit rate: 270.833 kbps, baseband filter: BbT = 0.30, continuous modulation, pattern: PN 9]
	Phase error	No additional function of I/Q output option (MG3681A-11): ≤1˚ (rms), ≤3˚ (peak) [continuous modulation, pattern: PN 9] ≤1˚ (rms), ≤3˚ (peak) [burst modulation, pattern: TCH] Installed additional function of I/Q output option (MG3681A-11): ≤2˚ (rms), ≤5˚ (peak) [continuous modulation, pattern: PN 9] ≤2˚ (rms), ≤5˚ (peak) [burst modulation, pattern: TCH] [Bit rate: 270.833 kbps, baseband filter: BbT = 0.30]
RF Signal	Frequency range	10 to 2100 MHz
	Output level range	–143 to +13 dBm
	Level accuracy	±1.0 dB (continuous modulation, compared with CW level, ≤+5 dBm) ±0.7 dB (burst modulation, compared with continuous modulation, slot level: 0 dB, ≤+5 dBm)
	Phase accuracy	≤1˚ (rms), ≤3˚ (peak) [continuous modulation, pattern: PN 9] ≤1˚ (rms), ≤3˚ (peak) [burst modulation, pattern: TCH] [Bit rate: 270.833 kbps, baseband filter: BbT = 0.30, 18˚ to 35˚C]
	Carrier leak	≤–33 dBc [bit rate: 270.833 kbps, baseband filter: BbT = 0.30, continuous modulation, pattern: 0000, 18˚ to 35˚C]
	Image rejection	≤–40 dBc [bit rate: 270.833 kbps, baseband filter: BbT = 0.30, continuous modulation, pattern: 0000]
	Adjacent channel power	≤–35 dBc/30 kHz (200 kHz offset), ≤–66 dBc/30 kHz (400 kHz offset)*5
	Burst on/off ratio	≥65 dB (+5 dBm)
Firmware backup space		CPU: 260 kbyte, FPGA: 256 kbyte

*1 Frame configuration

Slot 0	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7

*2 For device evaluation

PN 270	G 8.25

PN: PN 9 or PN 15

*3 Normal burst

T 3	E 58	TS 26	E 58	T 3	G 8.25

E: PN 9/PN 15, TS: 0000000 to 3FFFFFF

*4 Random access burst

Ta 8	TS 41	E 36	T 3	G 68.25

Ta: 00 to FF, TS: 00000000000 to 1FFFFFFFFFF
E: PN9/PN15, ALL0, ALL1, 000000000 to FFFFFFFF

*5 Bit rate: 270.833 kbps, baseband filter: BbT = 0.3, continuous modulation, pattern: PN 9, +5 dBm, frequency: 880 to 960 MHz/1710 to 1880 MHz (except deterioration of performance by spurious of MG3681A main frame)

Ordering Information

Please specify model, order number, name and quantity when ordering.

Model/Order No.	Name	Remarks
MG3681A*1	**Main frame** Digital Modulation Signal Generator	250 kHz to 3000 MHz
MU368010A*1	**Expansion unit** TDMA Modulation Unit	
MX368012A	**Software** GSM Device Test Software	Supplied with compact flash card and PC card adapter or ATA flash memory card
W1837AE	**Standard accessory** MX368012A operation manual: 1 copy	

*1: Refer to catalog for the MG3681A and MU368010A

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Specifications are subject to change without notice.

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