

MX370110A

LTE TDD IQproducer™

MG3700A
Vector Signal Generator

For MG3700A Vector Signal Generator

MX370110A LTE TDD IQproducer™ Product Introduction

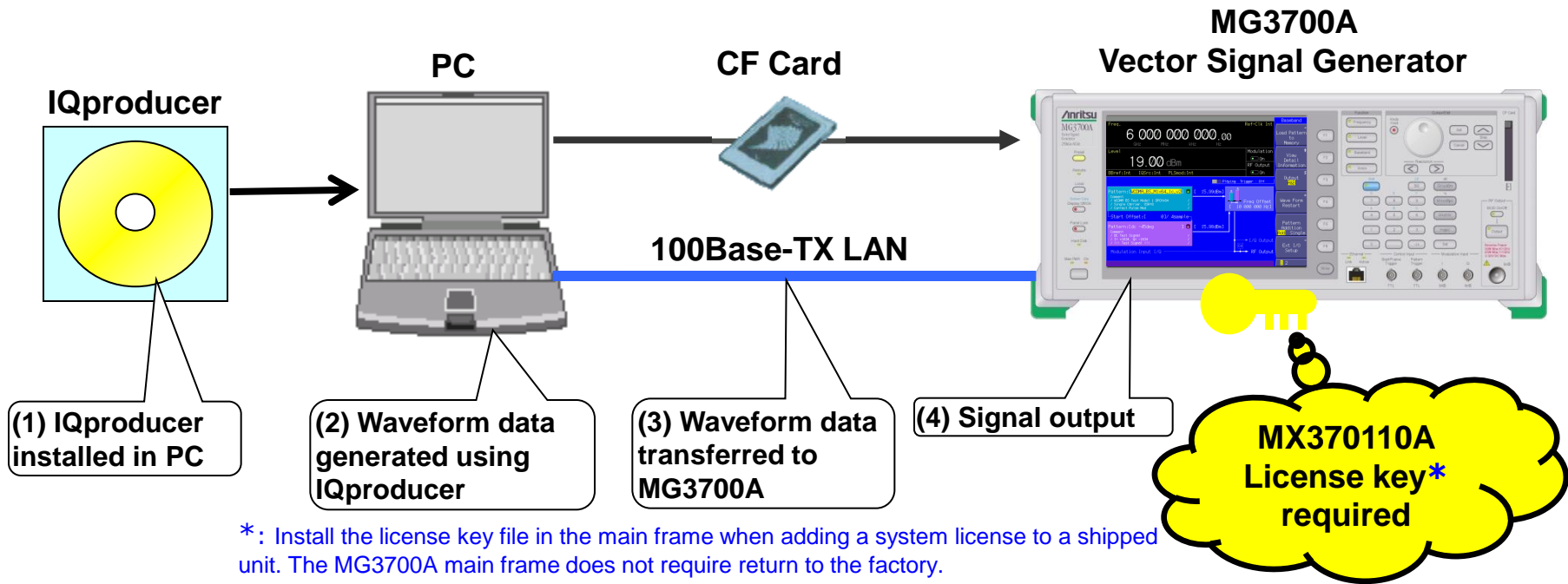


Version 3.00

ANRITSU CORPORATION

What is LTE TDD IQproducer?

The MX370110A LTE TDD IQproducer is PC application software with a GUI for generating waveform patterns in compliance with the 3GPP LTE TDD specifications in the 3GPP TS36.211, TS36.212, TS36.213, and TS25.814 standards. Signals are output by downloading the generated waveform pattern to the MG3700A Vector Signal Generator.



- **Generating waveform patterns using MX370110A => The main frame requires a license.** IQproducer with unlicensed software will run on the PC to test waveform pattern generation but an unlicensed MG3700A cannot output signals because it does not recognize the waveform patterns.
- **Generating waveform patterns using EDA Tools (C, MATLAB, Microwave Office) => Free license**

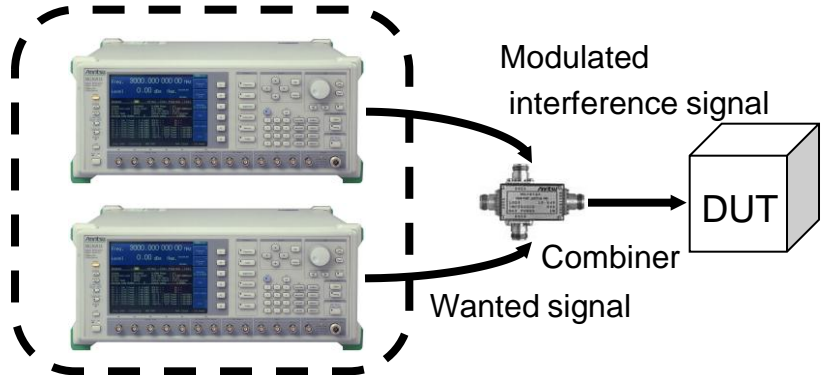
[Merit] Wanted Signal + Interference Signal

Waveform combine function <Standard>

The MG3700A has two built-in arbitrary waveform memories for saving one waveform pattern each. The MG3700A can output the signal of either one of the memories, and can also combine and output both signals simultaneously.

<Present system>

Case with popular signal generator



MG3700A Setting screen sample

The screenshot shows the MG3700A configuration interface. Key settings include:

- Frequency: 2 140 000 000 Hz
- Level: 0.00 dBm
- Memory A: Wanted signal (3.00 dBm)
- Memory B: Interference signal (0.00 dBm)
- C/N: [-63.00 dB]
- Frequency Offset: 5 000 000 Hz

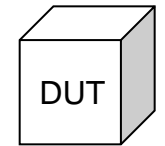
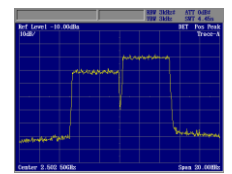
 Callouts highlight:

- 'Easy level ratio setting' pointing to the level and C/N fields.
- 'Memory A: Wanted signal' pointing to the Memory A configuration.
- 'Memory B Interference signal' pointing to the Memory B configuration.
- 'Frequency offset' pointing to the Frequency Offset field.

MG3700A Vector Signal Generator



Wanted signal + Interference signal



- Merit 1:** One MG3700A unit outputs two signals
- Merit 2:** No external combiner
- Merit 3:** Easy level adjustment

Operation Images

| | |
|--|--------------------|
| Setup | Slide 5 |
| Starting IQproducer | Slide 6 |
| IQproducer Main Screen | Slide 6 |
| Editing Parameters | Slide 7-9 |
| Generating Waveform | Slide 10 |
| Transferring Waveform Pattern | Slide 11-12 |
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Setup

Connect the MG3700A and PC as shown below.

Install IQproducer in the PC.

Install the MX370110A LTE TDD IQproducer license key in the MG3700A.

IQproducer



**100Base-TX LAN
Crossover cable**

**MG3700A Vector Signal Generator
+ MX370110A License key**



IQproducer™ Operating Environment

| | |
|---------|---|
| CPU | Pentium III, 1 GHz or faster |
| Memory | ≥ 512 Mbytes |
| HDD | ≥ 5 Gbytes |
| Display | > 1024 x 768 pixels |
| OS | Windows2000 ^(R) Professional, Windows XP ^(R) |

***Read the appended [IQproducer Upgrade Procedure] for the IQproducer installation method.**

***Read the appended [LAN Connection] for the LAN connection method between the PC and MG3700A.**

Starting IQproducer

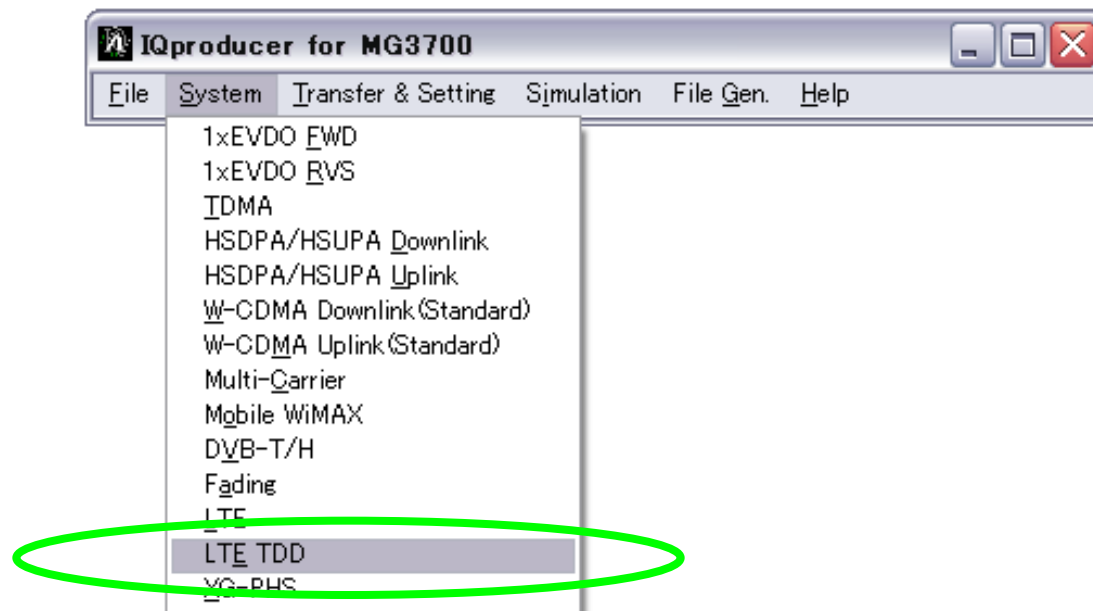
Start IQproducer as follows:

Start > Programs > Anritsu Corporation > IQproducer for MG3700A

IQproducer Main Screen

When IQproducer starts, the following screen is displayed.

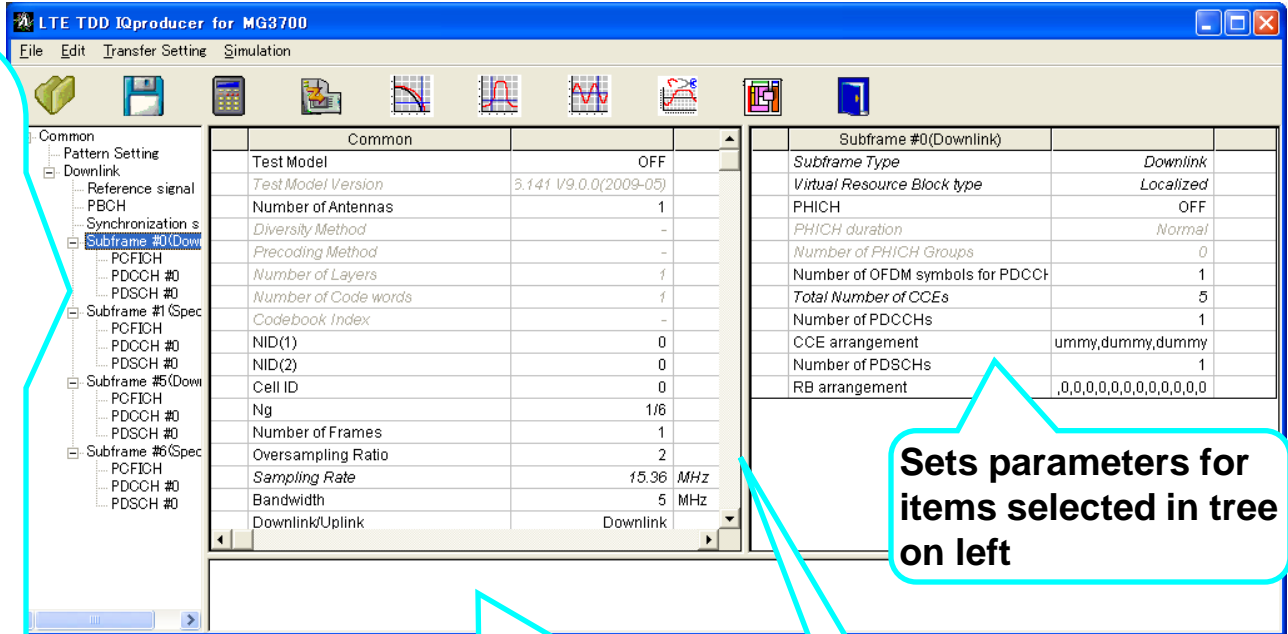
Choose LTE TDD from the [System] pull-down menu.



Editing Parameters: Main Screen

When LTE TDD is selected, the Main screen displays all setting parameters.

LTE TDD IQproducer Main Screen



PHY/MAC parameter items are displayed as a tree hierarchy.

Common:
 Test Model, Test Model Version, Number of Antennas, Cell ID, Number of Frames, Band Width, Downlink/Uplink, Uplink-downlink, Configuration, Cyclic Prefix, Filter

Downlink:
 Reference Signal, PBCH, BCH, Synchronization signals, Subframe, PCFICH, PDCCH, DCI, PDSCH, DL-SCH, PHICH

Uplink:
 Subframe, PUSCH, PUCCH, UCI, Demodulation RS, UL-SCH, Cyclic Shift

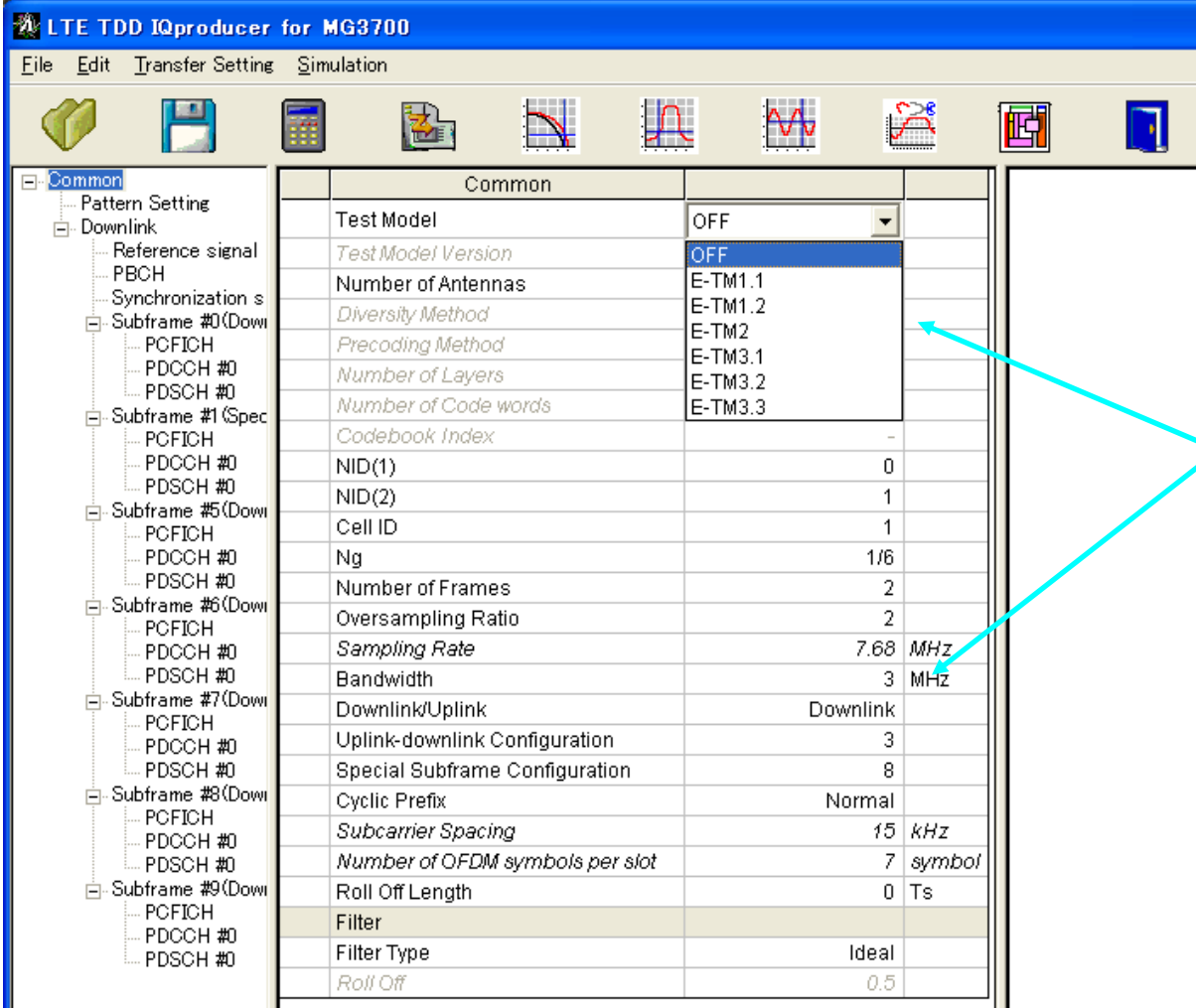
Sets parameters for items selected in tree on left

Displays setting conditions, such as errors

Sets Common parameters

Editing Parameters: Easy Setup Items include for Test Model

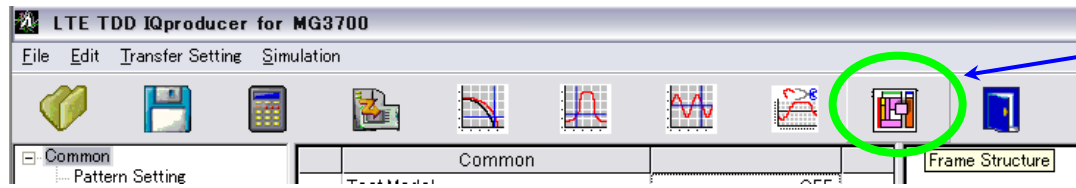
The parameter of Test Model along the standard can be easily set only by selecting "Test Model" for Downlink.



The parameter of Test Model along the standard can be easily set only by selecting "Test Model" for Downlink. When the setting is expect "OFF", "Test Model Version" can select the version of the reference standard "3GPP TS36.141 V8.2.0(2009-03)" or "3GPP TS36.141 V9.0.0(2009-05)". When the setting is "OFF", a detailed parameter can be arbitrarily set.

Editing Parameters: Frame Structure Screen

Displays Frame Structure screen for confirming channel allocation status and power of each OFDM Symbol.

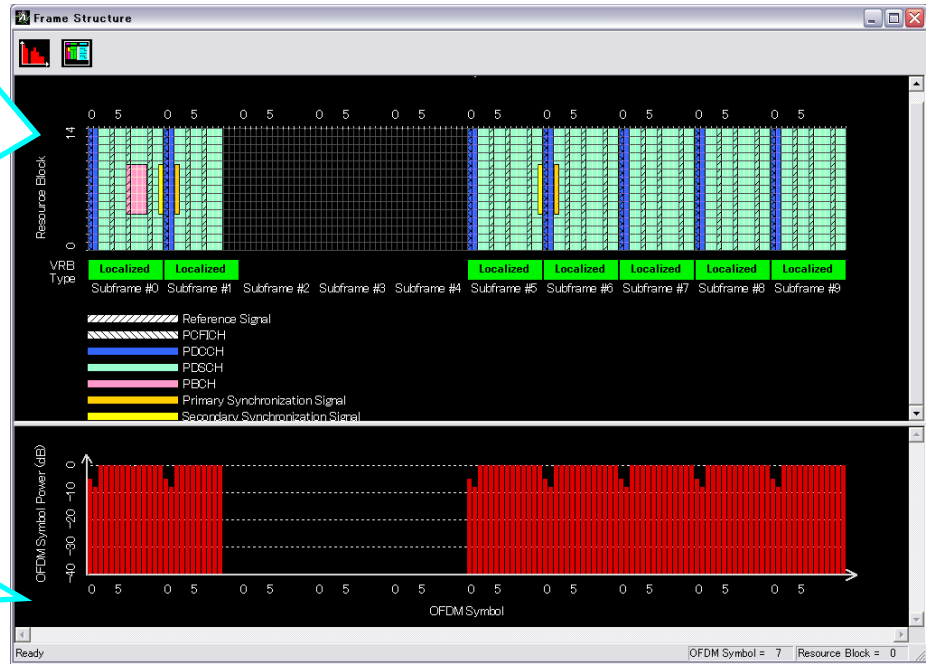


Frame Structure

The Frame Structure Screen shows the resource element allocation graphically with each channel color-coded.
Y-axis: Frequency (Resource Block units)
X-axis: Time (OFDM Symbol units)
In the Full Scale display, one frame (Subframe #0 to 9) is displayed. The zoom can be done by selecting the area with the cursor. When the Full Scale button is pushed, one frame is displayed. Moreover, when the cursor is set in each channel, and "Properties" is selected by right-clicking, information on the setting of the channel etc. is displayed.

The Power Graph shows the power relative levels of OFDM Symbols with maximum power of 0 dB.
Y-axis: OFDM Symbol Power
X-axis: Time (OFDM Symbol units)

Frame Structure Screen

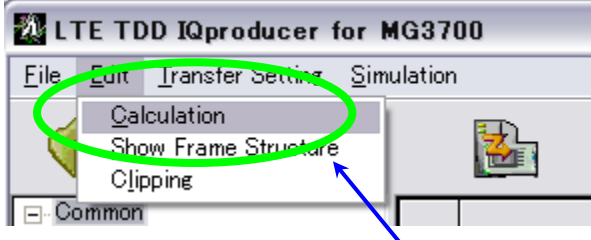


Generating Waveform: Calculation

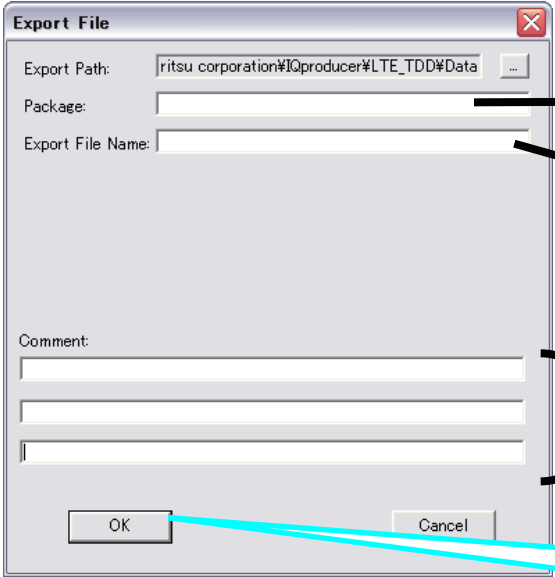
Clicking the [Calculation] icon starts creating waveform patterns.
A file for saving the waveform pattern is also created in the following path:
C:\Program Files\Anritsu Corporation\IQproducer\LTE_TDD\Data



Calculation: Creates waveform pattern



Calculation: Creates waveform pattern



Name of waveform pattern package: 31 characters max.

Name of waveform pattern file: 18 characters max.

Comment on MG3700A screen:
38 characters max. per line

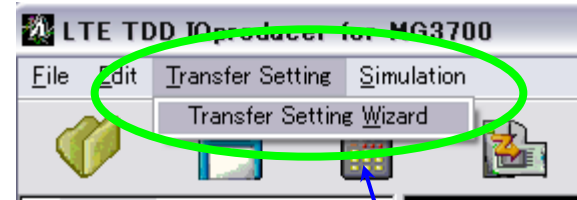
Generate the waveform pattern by clicking the [OK] button.

Transferring Waveform Pattern

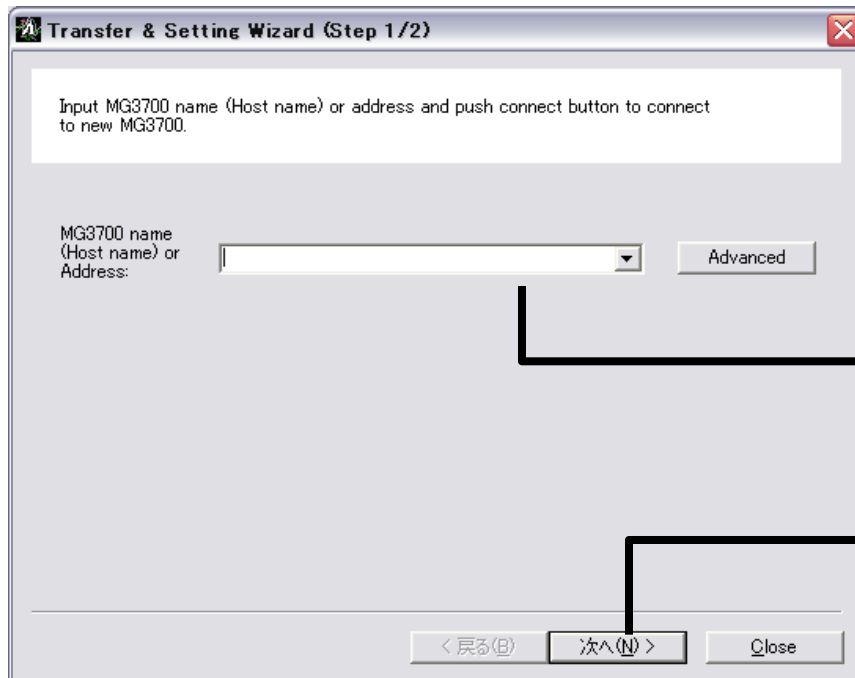
Connect the MG3700A and PC via a LAN.



Transfer & Setting Wizard



Transfer & Setting Wizard

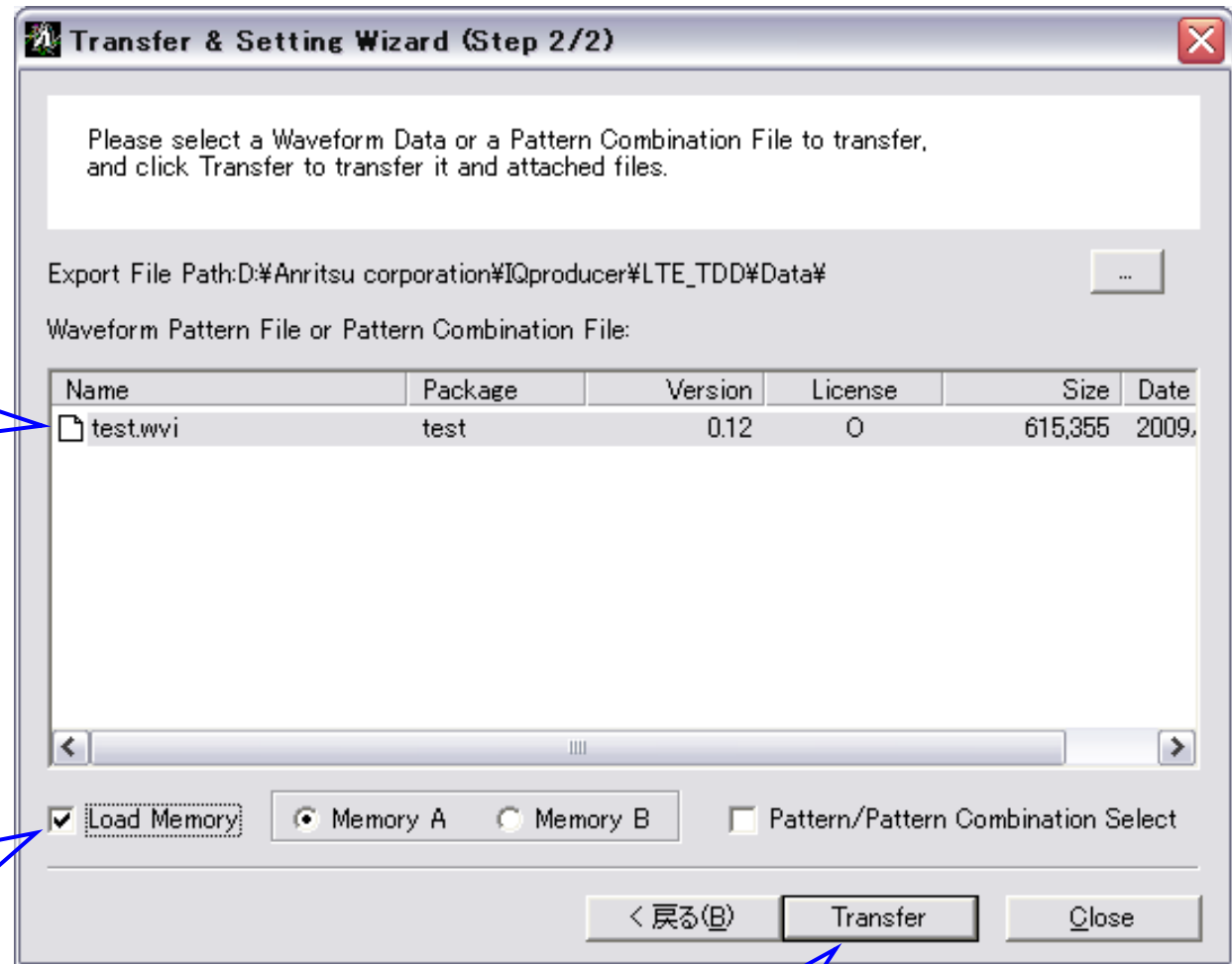


Input name or IP address of MG3700A.

Connects to LAN

*Read the appended [LAN Connection] for the LAN connection method between the PC and MG3700A.

Transferring Waveform Pattern



Select waveform pattern saved on MG3700A HDD.

Select when loading waveform pattern into memory at same time as transferring.

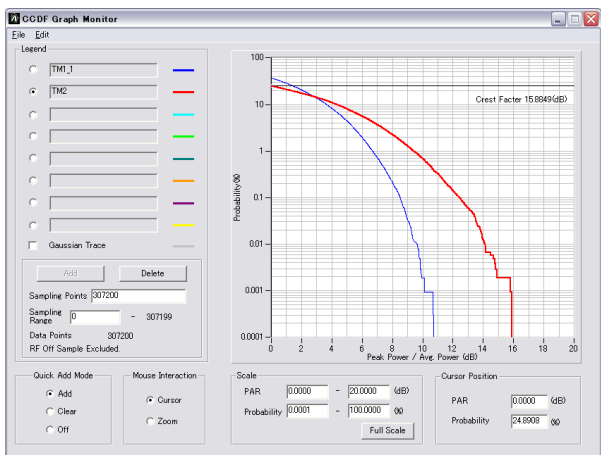
Starts transfer

Outputting Waveform Pattern: CCDF, FFT, Time Domain

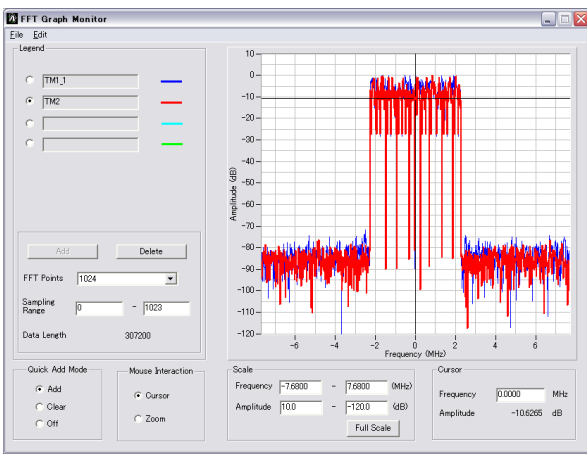
The characteristics of generated waveform patterns can be checked using various waveform displays (CCDF, FFT, and Time Domain). Repeat work when intended characteristics are not obtained is cut because the signal PAPR and distortion can be grasped by preloading the waveform pattern in the SG.

Easy comparison of generated waveform-pattern characteristics by simultaneous display of multiple patterns!

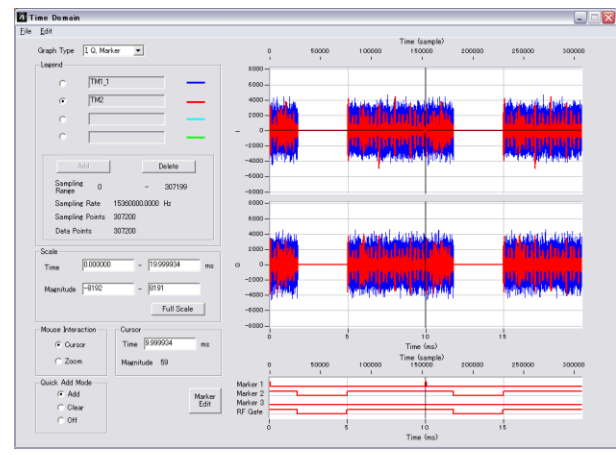
CCDF



FFT



Time Domain



Editing Waveforms: Clipping/Filtering

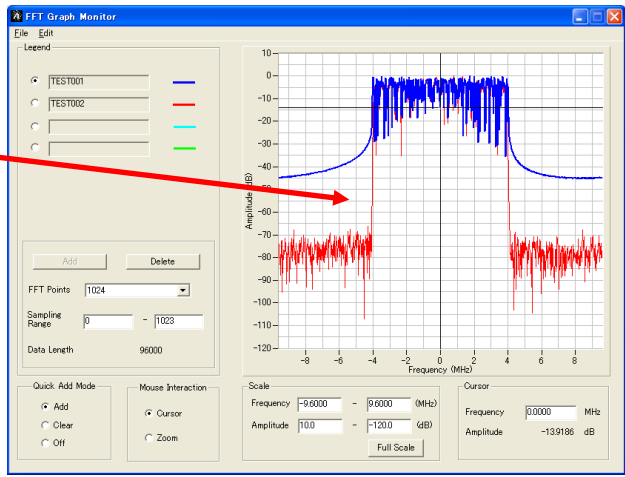
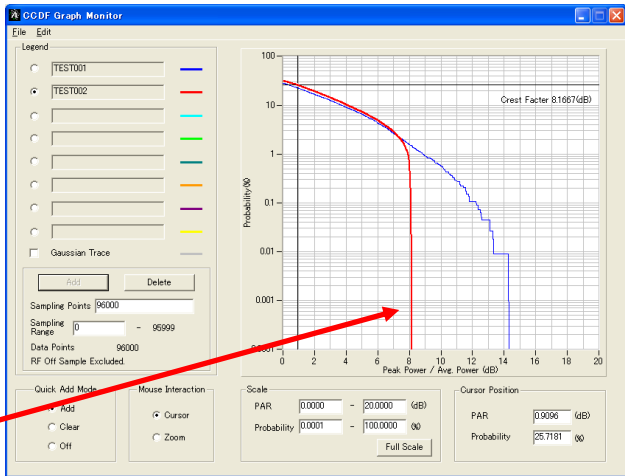
Generated waveform patterns can be easily clipped and filtered to generate test patterns with changed peak average power (PAPR) and distortion.

Easy Clipping and Filtering

The image shows two overlapping dialog boxes from a software interface. The top one is titled 'Clipping' and has an input field for 'Input File' containing 'TEST001.wvi'. Below this are two sections: 'Clipping Setting' with a 'Threshold Level' of 8.0 [dB] and 'Repetition' set to 10; and 'Filter Setting' with 'Filter Type' set to 'Ideal', 'Roll Off/BT' set to 0.50, and 'Bandwidth' set to 8.10000000 [MHz].

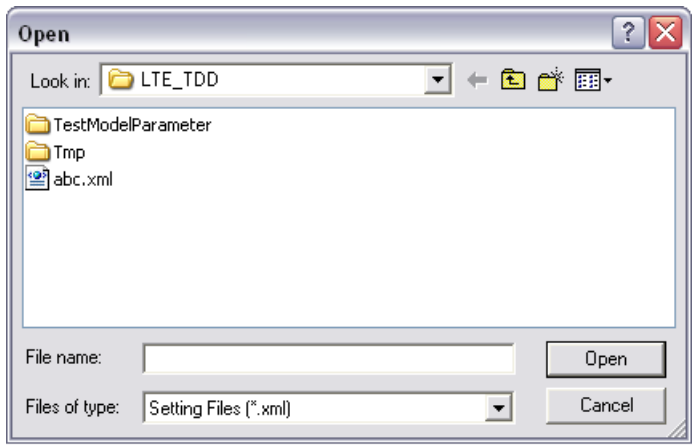
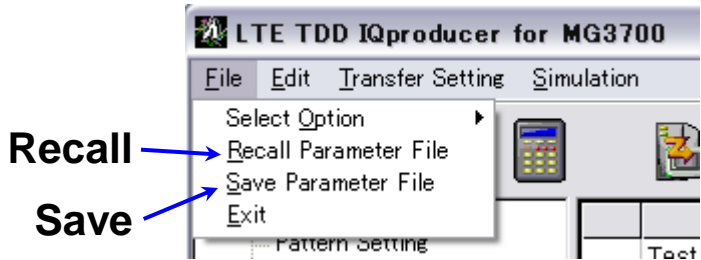
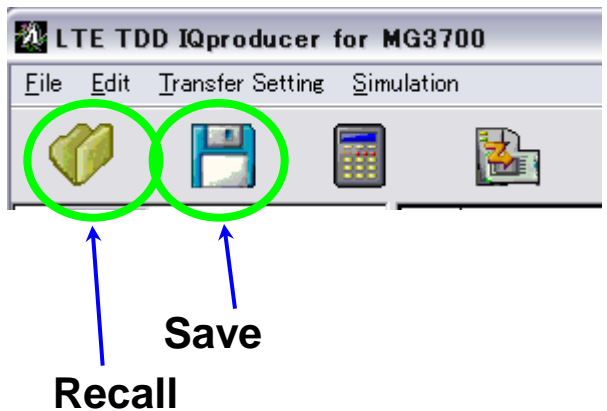
Clipping

Filtering

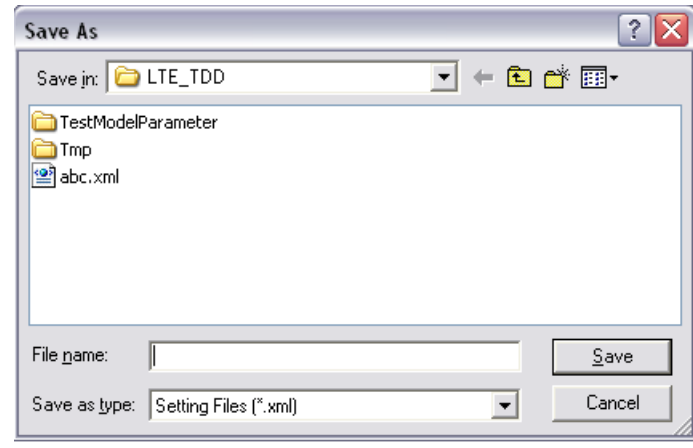


Saving/Recalling Parameters

The numerical values and settings for each item can be saved as a parameter file for instant recall.



File Recall Screen



File Save Screen

Appendix

MX370110A LTE TDD IQproducer Parameter Setting Range

Parameter Setting Range (1/7)

Common Parameter Setting Range

| Display | Outline | Setting Range |
|---------------------------------|---|--|
| Common | | |
| Test Model | Sets test model | OFF, E-TM1.1, E-TM1.2, E-TM2, E-TM3.1, E-TM3.2, E-TM3.3 |
| Test Model Version | Sets the Test Model version of referred specifications | 3GPP TS36.141 V8.2.0(2009-03), 3GPP TS36.141 V9.0.0(2009-05) |
| Number of Antennas | Sets number of antennas | 1, 2, 4 (2 and 4 only at Downlink) |
| Diversity Method | Sets diversity method | Spatial Multiplexing, Tx Diversity |
| Precoding Method | Sets precoding method | Without CDD, Large-delay CDD |
| Number of Layers | Sets number of layers | 1, 2, 3, 4 |
| Number of Code words | Sets number of code words | 1, 2 |
| Codebook Index | Sets codebook Index | 0 to 3 (When Number of Layers = 1) 0 to 2 (When Number of Layers = 2) 0 to 15 (When Number of Antennas = 4) |
| NID(1) | Sets physical-layer cell-identity group NID(1) | 0 to 167 |
| NID(2) | Sets physical-layer identity NID(2) | 0, 1, 2 |
| Cell ID | Sets cell ID | 0 to 503 |
| Ng | Sets parameter (Ng) that decides the arrangement of PHICH | 1/6, 1/2 |
| Number of Frames | Sets number of frames | 1 to max. number of frames in memory |
| Oversampling Ratio | Sets oversampling ratio | 2, 4 |
| Sampling Rate | Displays sampling rate | 1.92*Oversampling Ratio[MHz] (When Bandwidth = 1.4 MHz) 3.84*Oversampling Ratio[MHz] (When Bandwidth = 3 MHz) 7.68*Oversampling Ratio[MHz] (When Bandwidth = 5 MHz) 15.36*Oversampling Ratio[MHz] (When Bandwidth = 10 MHz) 15.36*Oversampling Ratio[MHz] (When Bandwidth = 15 MHz) 30.72*Oversampling Ratio[MHz] (When Bandwidth = 20 MHz) |
| Bandwidth | Sets system bandwidth | 1.4, 3, 5, 10, 15, 20[MHz] |
| Downlink/Uplink | Sets downlink/uplink settings | Downlink, Uplink |
| Uplink-downlink Configuration | Sets uplink-downlink Configuration | 0, 1, 2, 3, 4, 5, 6 |
| Special Subframe Configuration | Sets special subframe Configuration | 0 to 8 |
| Cyclic Prefix | Sets cyclic prefix | Normal, Extended |
| Subcarrier Spacing | Display subcarrier spacing | 15[kHz] |
| Number of OFDM symbols per slot | Display number of OFDM symbols per slot | 7[Symbol] |
| Roll Off Length | Sets roll-off length for OFDM symbol | 0 to 512[Ts] |
| Filter | | |
| Filter Type | Sets filter type | Nyquist, Root Nyquist, Ideal, None |
| Roll Off | Sets roll off rate | 0.1 to 1.0 (only enabled for Nyquist, Root Nyquist) |

Parameter Setting Range (2/7)

Pattern Setting Parameter Setting Range

| Display | Outline | Setting Range |
|------------------|--------------------------------------|-----------------------|
| Reference signal | | |
| Package | Set package name of waveform pattern | 31 characters or less |
| Export File Name | Set pattern name of waveform pattern | 18 characters or less |
| Line1 | Set comment of waveform pattern | 38 characters or less |
| Line2 | Set comment of waveform pattern | 38 characters or less |
| Line3 | Set comment of waveform pattern | 38 characters or less |

Downlink [PHY/MAC] Parameter Setting Range

| Display | Outline | Setting Range |
|----------------------------------|--------------------------------------|--|
| Reference signal | | |
| Frequency Shift Value | Sets frequency shift value | 0, 1, 2, 3, 4, 5 |
| Power Boosting | Set power boosting | -20.000 to +20.000[dB] |
| PBCH | | |
| Data Status | Sets enable/disables | Disable, Enable |
| Data Type | Sets data type | PN9fix, PN15fix, 16 bit repeat, User File, BCH |
| Data Type Repeat Data | Sets 16bit repeat data | 0000 to FFFF (only when Data Type = 16bit repeat) |
| Data Type User File | Sets user file | Select any file (only when Data Type = User File) |
| Power Boosting | Set power boosting | -20.000 to +20.000[dB] |
| BCH | | |
| Data Type | Sets data type | PN9fix, PN15fix, 16 bit repeat, User File |
| Data Type Repeat Data | Sets 16bit repeat data | 0000 to FFFF (only when Data Type = 16bit repeat) |
| Data Type User File | Sets user file | Select any file (only when Data Type = User File) |
| Transport Block Size | Sets number of bits required for BCH | 0 to 1920 (When Cyclic Prefix = Normal) 0 to 1728 (When Cyclic Prefix = Extended) |
| Synchronization signals | | |
| Primary synchronization signal | | |
| Data Status | Sets enable/disables | Disable, Enable |
| Power Boosting | Set power boosting | -20.000 to +20.000[dB] |
| Secondary synchronization signal | | |
| Data Status | Sets enable/disables | Disable, Enable |
| Power Boosting | Set power boosting | -20.000 to +20.000[dB] |

Parameter Setting Range (3/7)

Downlink [PHY/MAC] Parameter Setting Range

| Display | Outline | Setting Range |
|----------------------------------|--|---|
| Subframe #0 to #9 | | |
| Subframe Type | Display subframe type | <Table1> (Downlink, Uplink, Special) |
| Virtual Resource Block Type | Display virtual resource block type | Localized |
| PHICH | Sets ON/OFF of PHICH | ON, OFF (Subframe in Table 2 is turned off by setting UL/DL Configuration.) |
| PHICH duration | Sets PHICH duration | Normal, Extended |
| Number of PHICH Groups | Sets number of PHICH groups in one subframe | |
| Number of OFDM symbols for PDCCH | Sets number of OFDM symbols for PDCCH | 1 to 4[Symbol] |
| Total Number of CCEs | Display total number of CCEs of control area in subframe | |
| Number of PDCCHs | Sets number of PDCCHs | 1 to 64 |
| CCE arrangement | Sets CCE arrangement | PDCCH#0 to (Number of PDCCHs - 1), dummy |
| Number of PDSCHs | Sets number of PDSCHs | 1 to 64 |
| RB arrangement | Sets RB arrangement of PDSCH | PDSCH#0 to (Number of PDSCHs - 1) |
| PCFICH | | |
| Data Status | Sets enable/disables | Disable, Enable |
| Data Type | Sets data type | CFI codeword, PN9fix, PN15fix, 16 bit repeat, User File |
| CFI | Sets CFI codeword type | 1, 2, 3 |
| Data Type Repeat Data | Sets 16bit repeat data | 0000 to FFFF (only when Data Type = 16bit repeat) |
| Data Type User File | Sets user file | Select any file (only when Data Type = User File) |
| Power Boosting | Set power boosting | -20.000 to +20.000[dB] |
| PDCCH | | |
| Data Status | Sets enable/disables | Disable, Enable |
| PDCCH format | Sets PDCCH format | 0, 1, 2, 3 |
| Data Type | Sets data type | PN9fix, PN15fix, 16 bit repeat, User File, DCI |
| Data Type Repeat Data | Sets 16bit repeat data | 0000 to FFFF (only when Data Type = 16bit repeat) |
| Data Type User File | Sets user file | Select any file (only when Data Type = User File) |
| Power Boosting | Set power boosting | -20.000 to +20.000[dB] |
| DCI | | |
| Data Type | Sets data type | PN9fix, PN15fix, 16 bit repeat, User File |
| Data Type Repeat Data | Sets 16bit repeat data | 0000 to FFFF (only when Data Type = 16bit repeat) |
| Data Type User File | Sets user file | Select any file (only when Data Type = User File) |
| Transport Block Size | Sets transport block size of DCI | 0 to 576 |
| nRNTI | Sets radio network temporary identifier | 0000 to FFFF |

Parameter Setting Range (4/7)

Downlink [PHY/MAC] Parameter Setting Range

| Display | Outline | Setting Range |
|--|---|--|
| PDSCH | | |
| Data Status | Sets enable/disables | Disable, Enable |
| nRNTI | Sets radio network temporary identifier | 0000 to FFFF |
| Modulation Scheme | Sets modulation scheme | QPSK, 16QAM, 64QAM |
| Data Type | Sets data type | PN9fix, PN15fix, 16 bit repeat, User File, DL-SCH |
| Data Type Repeat Data | Sets 16bit repeat data | 0000 to FFFF (only when Data Type = 16bit repeat) |
| Data Type User File | Sets user file | Select any file (only when Data Type = User File) |
| Power Boosting | Set power boosting | -20.000 to +20.000[dB] |
| DL-SCH | | |
| Data Type | Sets data type | PN9fix, PN15fix, 16 bit repeat, User File |
| Data Type Repeat Data | Sets 16bit repeat data | 0000 to FFFF (only when Data Type = 16bit repeat) |
| Data Type User File | Sets user file | Select any file (only when Data Type = User File) |
| Transport Block Size | Sets transport block size of DL-SCH | 0 to 150000[bit] |
| UE Category | Sets UE category | 1, 2, 3, 4, 5 |
| RV index | Sets redundancy version index | 0, 1, 2, 3 |
| PHICH Group | | |
| Data Status | Sets enable/disables | Disable, Enable |
| Number of PHICHs | Sets number of PHICH | 1 to 8 (Cyclic Prefix=Normal) 1 to 4 (Cyclic Prefix=Extended) |
| Power Boosting | Display power boosting of PHICH group | |
| PHICH #0 to #(Number of PHICHs - 1) | | |
| Data Status | Sets enable/disables | Disable, Enable |
| Orthogonal Sequence Index | Sets orthogonal sequence index | 0 to 7 (When Cyclic Prefix = Normal) 0 to 3 (When Cyclic Prefix = Extended) |
| Data Type | Display data type of PHICH | HI |
| HI | Sets code word of HI (HARQ indicator) | 000, 111 |
| Power Boosting | Set power boosting | -20.000 to +20.000[dB] |

Parameter Setting Range (5/7)

Uplink [PHY/MAC] Parameter Setting Range

| Display | Outline | Setting Range |
|------------------------------|--|---|
| Uplink | | |
| delta PUCCH shift | Sets delta PUCCH shift | 1, 2, 3 |
| N_CS(1) | Sets number of cyclic shift for PUCCH format 1/1a/1b | 0 to 7 |
| N_RB(2) | Sets number of resource block for PUCCH format 2/2a/2b | 0 to 63 |
| Subframe #0 to #9 | | |
| Subframe Type | Display subframe type | <Table 1> (Downlink, Uplink, Special) |
| Number of PUCCHs | Sets number of PUCCHs | 0 to 8 |
| Number of PUSCHs | Sets number of PUSCHs | 0 to 8 |
| PUCCH #0 to #7 | | |
| Data Status | Sets enable/disables | Disable, Enable |
| n(1)_PUCCH | Sets resource number of PUCCH 1/ 1a/ 1b | 0 to 764 |
| n(2)_PUCCH | Sets resource number of PUCCH 2/ 2a/ 2b | 0 to 764 |
| nRNTI | Sets radio network temporary identifier | 0000 to FFFF |
| PUCCH format | Sets PUCCH format | 1, 1a, 1b, 2, 2a, 2b |
| Data Type | Sets data type | PN9fix, PN15fix, 16 bit repeat, User File, UCI |
| Data Type Repeat Data | Sets 16bit repeat data | 0000 to FFFF (only when Data Type = 16bit repeat) |
| Data Type User File | Sets user file | Select any file (only when Data Type = User File) |
| Group Hopping | Sets enable/disables | Disable, Enable |
| Base Sequence Group Number u | Sets base sequence group number | 0 to 29 |
| Base Sequence Number v | Display base sequence number | 0 |
| Power Boosting | Set power boosting | -20.000 to +20.000[dB] |
| UCI | | |
| Transport Block Size | Sets transport block size of UCI | 1 (When PUCCH format = 1a) 2 (When PUCCH format = 1b) 1 to 13 (When PUCCH format = 2) 2 to 14 (When PUCCH format = 2a) 3 to 15 (When PUCCH format = 2b) |
| Data Type | Sets data type | PN9fix, PN15fix, 16 bit repeat, User File |
| Data Type Repeat Data | Sets 16bit repeat data | 0000 to FFFF (only when Data Type = 16bit repeat) |
| Data Type User File | Sets user file | Select any file (only when Data Type = User File) |
| Demodulation RS for PUCCH | | |
| Group Hopping | Sets enable/disables | Disable, Enable |
| Base Sequence Group Number u | Sets base sequence group number | 0 to 29 |
| Base Sequence Number v | Display base sequence number | 0 |

Parameter Setting Range (6/7)

Uplink [PHY/MAC] Parameter Setting Range

| Display | Outline | Setting Range |
|------------------------------|---|---|
| PUSCH #0 to #7 | | |
| Data Status | Sets enable/disables | Disable, Enable |
| nRNTI | Sets radio network temporary identifier | 0000 to FFFF |
| Modulation Scheme | Sets modulation scheme | QPSK, 16QAM, 64QAM |
| Data Type | Sets data type | PN9fix, PN15fix, 16 bit repeat, User File, UL-SCH |
| Data Type Repeat Data | Sets 16bit repeat data | 0000 to FFFF (only when Data Type = 16bit repeat) |
| Data Type User File | Sets user file | Select any file (only when Data Type = User File) |
| Start Number of RB | Start position of RB | 0 to 5 (When Bandwidth = 1.4 MHz) 0 to 14 (When Bandwidth = 3 MHz) 0 to 24 (When Bandwidth = 5 MHz) 0 to 49 (When Bandwidth = 10 MHz) 0 to 74 (When Bandwidth = 15 MHz) 0 to 99 (When Bandwidth = 20 MHz) |
| Number of RBs | Total number of RB | 1 to 6 (When Bandwidth = 1.4 MHz) 1 to 15 (When Bandwidth = 3 MHz) 1 to 25 (When Bandwidth = 5 MHz) 1 to 50 (When Bandwidth = 10 MHz) 1 to 75 (When Bandwidth = 15 MHz) 1 to 100 (When Bandwidth = 20 MHz) |
| Power Boosting | Set power boosting | -20.000 to +20.000[dB] |
| UL-SCH | | |
| Transport Block Size | Sets transport block size of UL-SCH | 0 to 86400 |
| Data Type | Sets data type | PN9fix, PN15fix, 16 bit repeat, User File |
| Data Type Repeat Data | Sets 16bit repeat data | 0000 to FFFF (only when Data Type = 16bit repeat) |
| Data Type User File | Sets user file | Select any file (only when Data Type = User File) |
| RV Index | Sets redundancy version index | 0, 1, 2, 3 |
| Demodulation RS for PUSCH | | |
| Group Hopping | Sets enable/disables | Disable, Enable |
| Sequence Hopping | Sets enable/disables | Disable, Enable |
| Delta ss | Sets delta ss | 0 to 29 |
| Base Sequence Group Number u | Sets base sequence group number | 0 to 29 |
| Base Sequence Number v | Sets base sequence number | 0, 1 |

Parameter Setting Range (7/7)

Uplink [PHY/MAC] Parameter Setting Range

| Display | Outline | Setting Range |
|-----------------------|---|--|
| Cyclic Shift 1st slot | | |
| n_cs | Sets ncs of first slot of demodulation RS | 0 to 11 |
| alpha | Sets cyclic shift of first slot of demodulation RS | Alpha is calculated by the following expression. Five digits below the decimal are displayed. $\alpha = 2 \cdot \pi \cdot n_cs / 12$ |
| Cyclic Shift 2nd slot | | |
| n_cs | Sets ncs of second slot of demodulation RS | 0 to 11 |
| alpha | Sets cyclic shift of second slot of demodulation RS | Alpha is calculated by the following expression. Five digits below the decimal are displayed. $\alpha = 2 \cdot \pi \cdot n_cs / 12$ |

Table 1

| Subframe | UL/DL Configuration | | | | | | | |
|----------|---------------------|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 0 | D | D | D | D | D | D | D | D |
| 1 | S | S | S | S | S | S | S | S |
| 2 | U | U | U | U | U | U | U | U |
| 3 | U | U | D | U | U | D | U | |
| 4 | U | D | D | U | D | D | U | |
| 5 | D | D | D | D | D | D | D | |
| 6 | S | S | S | D | D | D | S | |
| 7 | U | U | U | D | D | D | U | |
| 8 | U | U | D | D | D | D | U | |
| 9 | U | D | D | D | D | D | D | |

Table 2

| UL/DL Configuration | Subframe turned "off" |
|---------------------|------------------------|
| 0 | — |
| 1 | 0, 5 |
| 2 | 0, 1, 4, 5, 6, 9 |
| 3 | 1, 5, 6, 7 |
| 4 | 0, 1, 4, 5, 6, 7 |
| 5 | 0, 1, 3, 4, 5, 6, 7, 9 |
| 6 | — |

Ordering Information

| Model/ Order No. | Name | Remarks | |
|--|--|--|---|
| — Mainframe — | | | |
| MG3700A | Vector Signal Generator | | Required |
| — Options — | | | |
| MG3700A-002 | Mechanical Attenuator | Standard Electron Attenuator is changed into Mechanical Attenuator. | |
| MG3700A-011 | Upper Frequency 6 GHz | Standard “250 kHz to 3 GHz” is extended to “250 kHz to 6 GHz.” | |
| MG3700A-021 | ARB Memory Upgrade 512 M sample | Standard “128 Msample/channel × 2” is extended to “256 Msample/channel × 2.” | Recommendation |
| MG3700A-031 | High Speed BER Test Function | Standard “1 kbps to 20 Mbps” is extended to “100 bps to 120 Mbps.” | |
| — Softwares (License Key for IQproducer system) — | | | |
| MX370110A | LTE TDD IQproducer | | Required |
| — Optional accessories — | | | |
| W2495AE | MG3700A operation manual | Booklet | Recommendation The PDF manual is on the software CD. Order this when a booklet is required. |
| W2496AE | MG3700A IQproducer operation manual | Booklet | |
| W2539AE | MG3700A standard waveform pattern operation manual | Booklet | |
| W3221AE | MX370110A LTE TDD IQproducer operation manual | Booklet | |
| J1261D | Ethernet Cable (Shield Type) | Cross, 3 m | Recommendation Required when PC connected directly to MG3700A by LAN. |
| Z0777 | Standard waveform pattern upgrade kit | DVD set of pre-install wave form pattern of latest version | |
| G0141 | HDD ASSY | Exchange HDD when built-in HDD break. | |
| J1277 | IQ Output Conversion Adapter | Cable that converts IQ output connector (D-sub) of mainframe into BNC | Recommendation Converts IQ output connector on back of MG3700A from D-sub to BNC. |

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