Anritsu envision:ensure

5G NR TDD sub-6GHz IQproducer MX370113A/MX269913A

Vector Signal Generator MG3710A

Signal Analyzer MS2690A/MS2691A/MS2692A

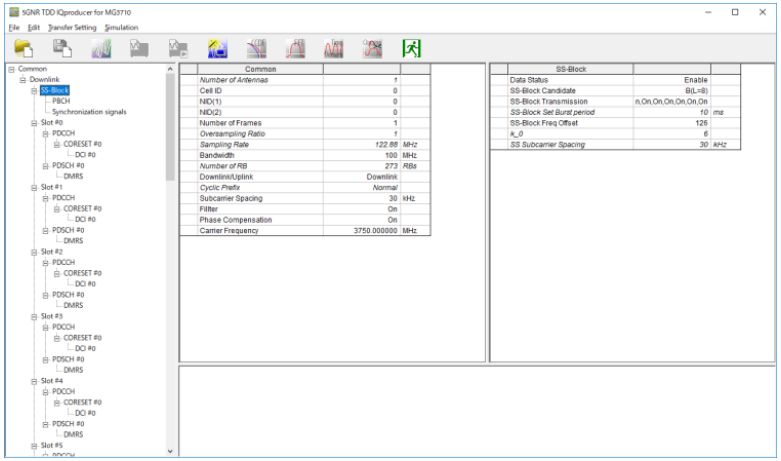
Vector Signal Generator Option

What is 5G NR TDD sub-6GHz IQproducer?

This is PC application software for vector signal generation to generate Uplink and Downlink patterns supporting the sub-6GHz standard in the 3GPP 5G NR FR1 specifications.

Supported instruments are the Vector Signal Generator MG3710A and the MS2690A/MS2691A/MS2692A with installed vector signal generation option. The software can be run either on these instruments, or on a PC.

It can generate waveform patterns used for 5G NR Base Station (BS) Tx tests, Fixed Reference Channel (FRC) waveform patterns for Rx tests, and interference waveform patterns.



[Features]

- ✓ **Generates 5GNR FR1 waveform patterns**
  - **3GPP TS38.211 (2018-06)**
  - **TS38.212 (2018-06)**
  - **TS38.213 (2018-06)**
- ✓ **Generates waveforms for BS Rx sensitivity tests and interference waveforms**
  - **Generates waveforms including channel coding**
- ✓ **Generates UE interference waveforms**
  The main unit requires a license to output signals.

Vector Signal Generator MG3710A

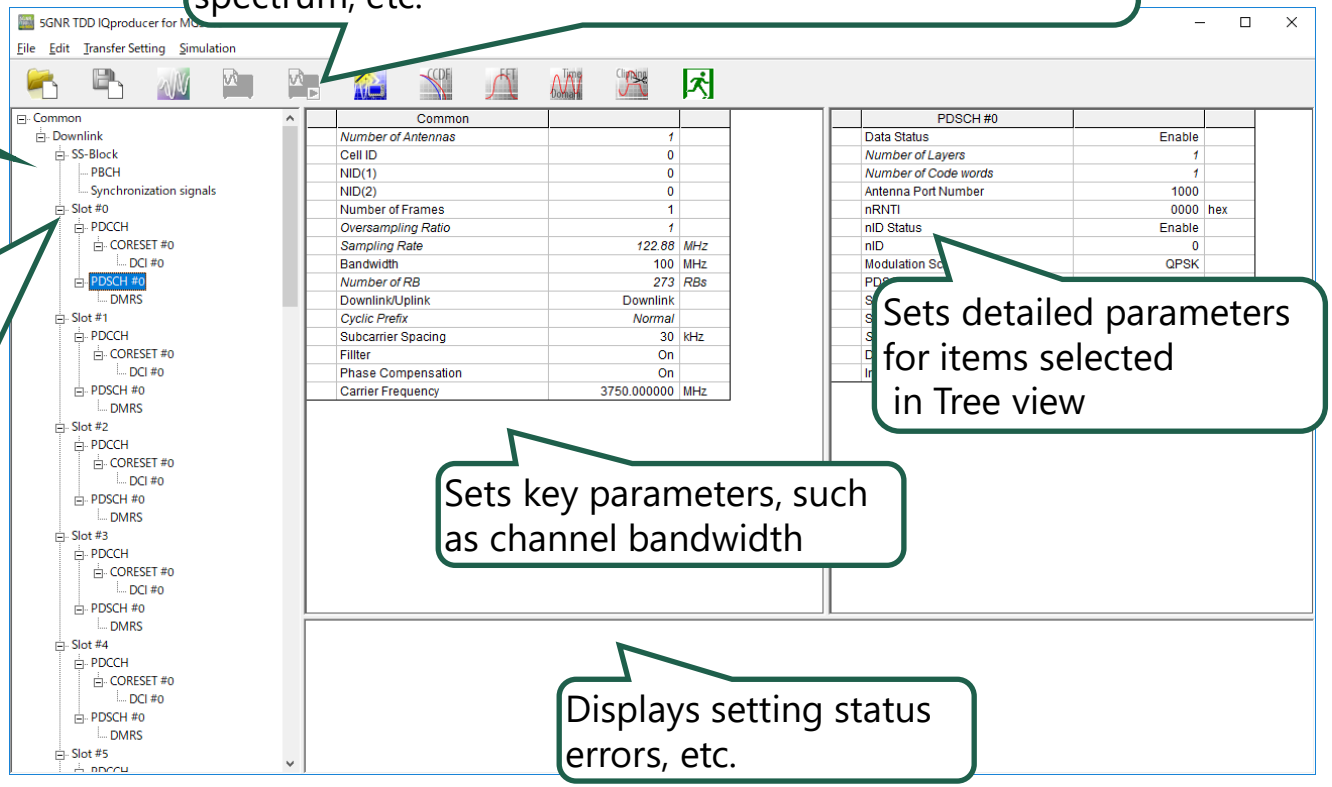
Vector Signal Generator Option MS269xA-020

Main Screen

This screen is used to set detailed parameters required for waveform generation. After generating waveforms, the spectrum can be displayed, and analyses, such as CCDF and in the time domain, can be performed.

Displays each channel and signal PHY/MAC parameter items as Tree view

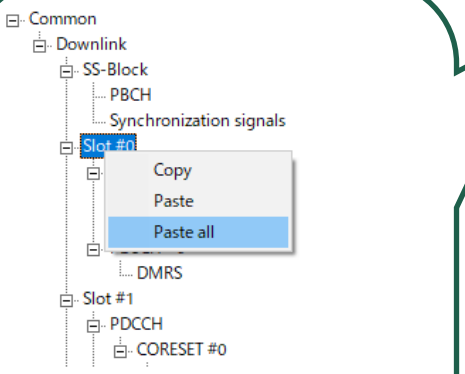
Menu buttons for loading and saving settings file, generating waveforms, displaying generated waveform spectrum, etc.



Sets detailed parameters for items selected in Tree view

Sets key parameters, such as channel bandwidth

Displays setting status errors, etc.



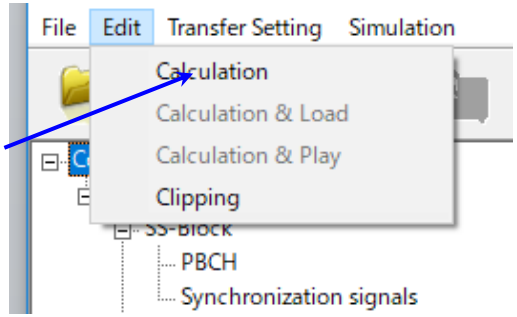
Can copy set parameters to other slots

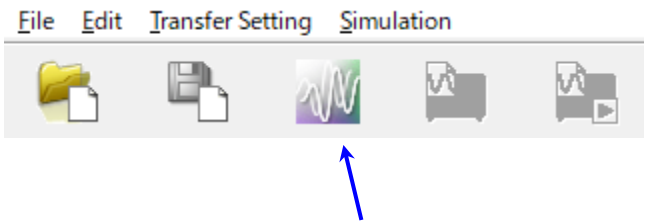
***Refer to the separate catalogs for the MX3701xxA IQproducer and MX269xxxA series software for more details about parameter setting ranges.**

Waveform Creation: Calculate Waveform Pattern

The waveform pattern file is generated based on the set parameters.

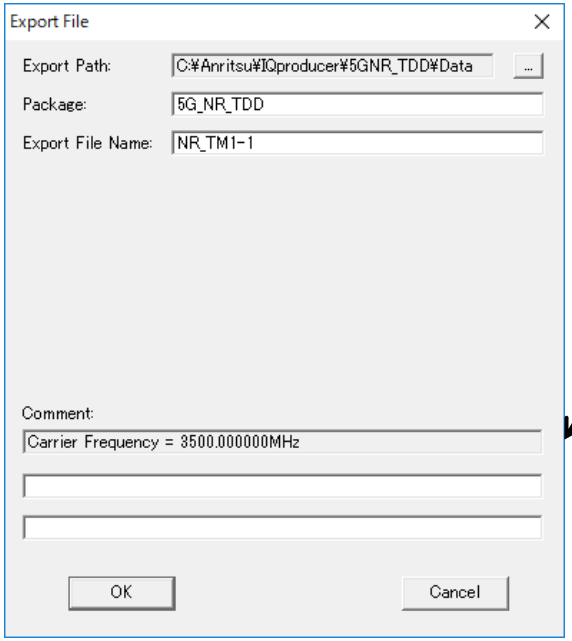
Waveform pattern generation





Waveform pattern generation

When executing the above-described waveform pattern generation, [Export File] is displayed as shown below.



← Output file destination

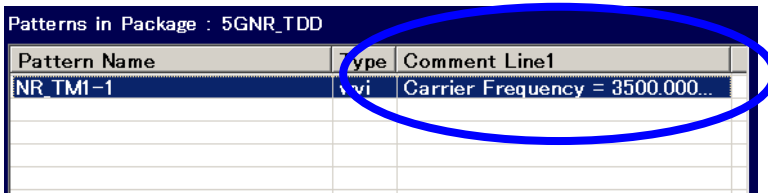
← Package name (31 alphanumeric characters max.)

← File name (20 alphanumeric characters max.)

Automatically registers frequency when Phase Compensation On

} Comment section (38 alphanumeric characters max. each line)

Comments can be displayed at the measuring instrument as file selection references



Units Supporting 5G NR TDD Sub-6GHz IQproducer

■ Vector Signal Generator MG3710A

- Frequency: ≤6 GHz　　Bandwidth: 160 MHz
- 2 waveform addition function for effective interfering wave tests
  Two types of waveform memory settings in 160-MHz band
  One RF output
- One unit supports interference evaluation for two systems with different frequency bands
  One unit outputs two independent RF signals

Vector Signal Generator MG3710A
6 GHz, 160 MHz Bandwidth

■ Vector Signal Generator Option MS269xA-020

- Frequency: ≤6 GHz　　Bandwidth: 120 MHz
- One unit supports both Tx and Rx tests
  SA function as standard with optional installed SG
- The SA analyzes sub-6GHz signals and measures fifth harmonics.
  Frequency: ≤26.5GHz　　Bandwidth: ≤125 MHz
- Analysis software for 5G NR, LTE, etc., and IQproducer can be added.

Signal Analyzer MS269xA
SA: up to 26.5 GHz,
125 MHz Bandwidth
SG: 6 GHz, 120 MHz Bandwidth

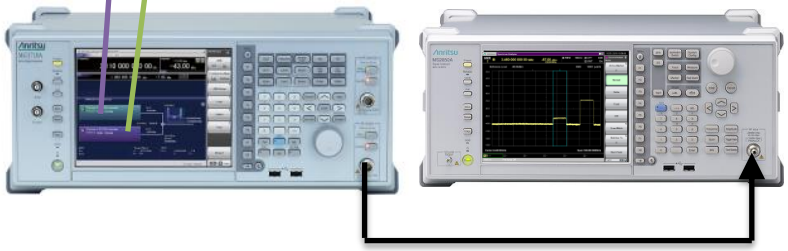
MG3710A Features (1/2) 2 Waveform Addition

■ Features

- Different waveforms can be selected for generating the baseband, and the level ratio can be set accurately.
- Various combinations such as wanted waveform ＋AWGN, wanted waveform＋modulated interfering waveform, wanted waveform ＋CW, etc., can be set

Memory A:
Wanted signal: G-FR1-A1-3
(18.36 MHz (51RB), SCS:30 kHz)

Memory B:
Interfering signal: 20 MHz BW (DFT-s-OFDM)

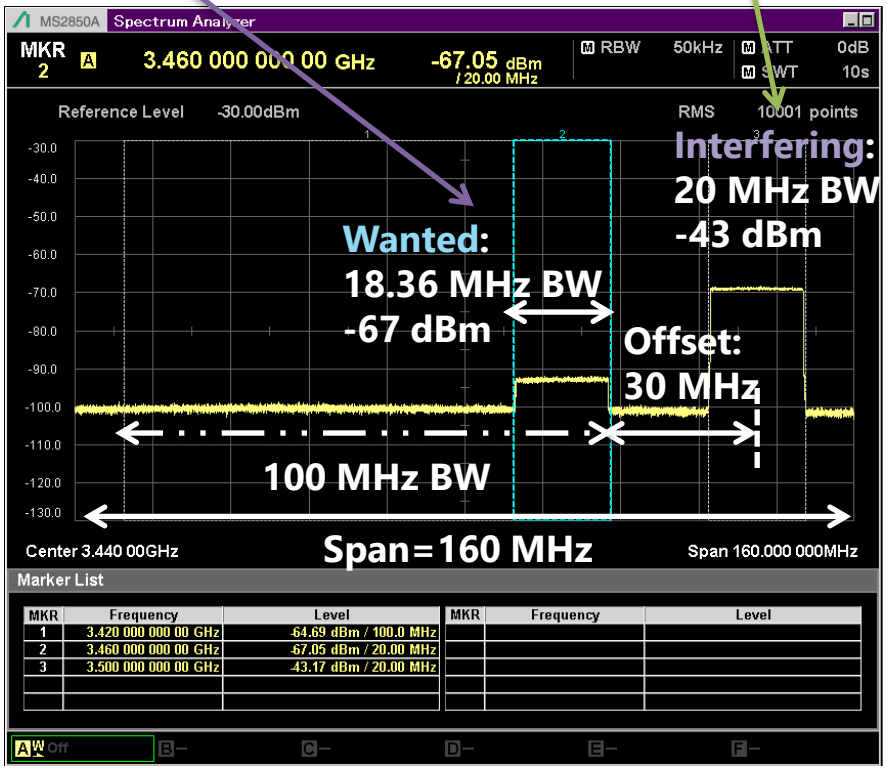


Example of dual memory for In-band blocking test

Table 7.4.2.5-1: Base station general blocking requirement

BS channel bandwidth of the lowest/highest carrier received [MHz]	Wanted signal mean power [dBm]	Interfering signal mean power [dBm]	Interfering signal centre frequency minimum offset from the lower/upper Base Station RF Bandwidth edge or sub-block edge inside a sub-block gap [MHz]	Type of interfering signal
5, 10, 15, 20	$P_{REFSENS}$ + 6 dB	Wide Area: -43 Medium Range: -38 Local Area: -35	±7.5	5 MHz DFT-s-OFDM NR signal SCS: 15 kHz, 25 RB
25, 30, 40, 50, 60, 70, 80, 90, 100	$P_{REFSENS}$ + 6 dB	Wide Area: -43 Medium Range: -38 Local Area: -35	±30	20 MHz DFT-s-OFDM NR signal SCS: 15 kHz, 100 RB

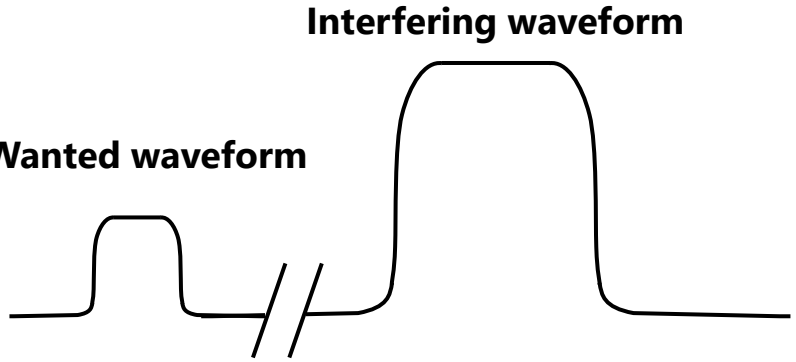
NOTE: $P_{REFSENS}$ depends on the *BS channel bandwidth* as specified in tables 7.2.5-1, 7.2.5-2 and 7.2.5-3.

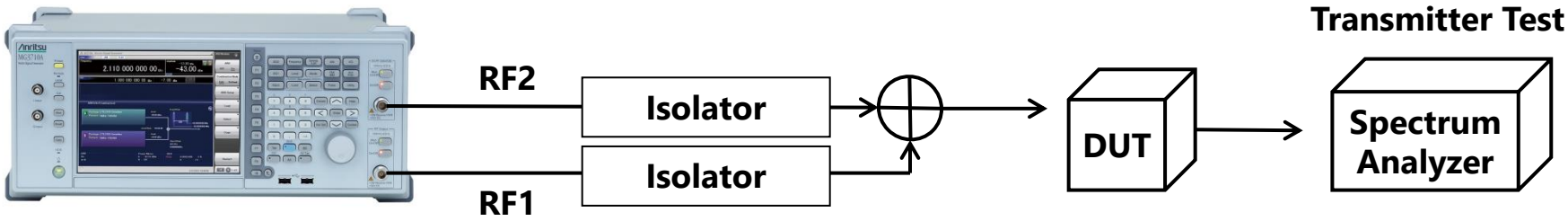


MG3710A Features (2/2) 2RF

■ Features

- One unit with two independent signal generators
  Cuts costs compared to using expensive vector signal generators.
- 2 waveform addition function combines difficult-to-set frequency, level, and waveform data.





One unit supports Two RF outputs
Modulated signal x 2, CW x 2,
Modulated signal + CW

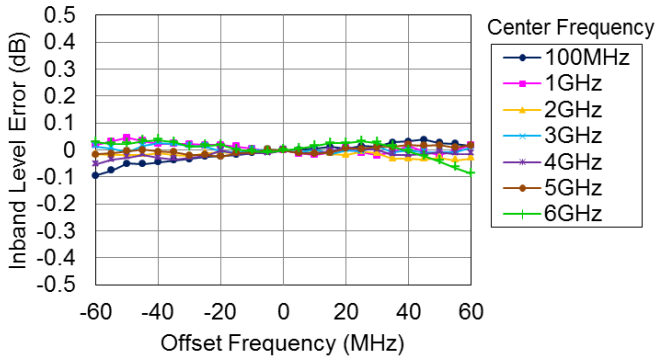
Cuts costs

* Refer to the following application notes for the 2 waveform addition and 2RF functions.
"Optimization Technique using Two-signal Combine Function"
"Multi-Standard Radio Signal Generation using MG3710A Waveform Combine Function"

MS269xA Features

■ High-Performance Signal Analyzer

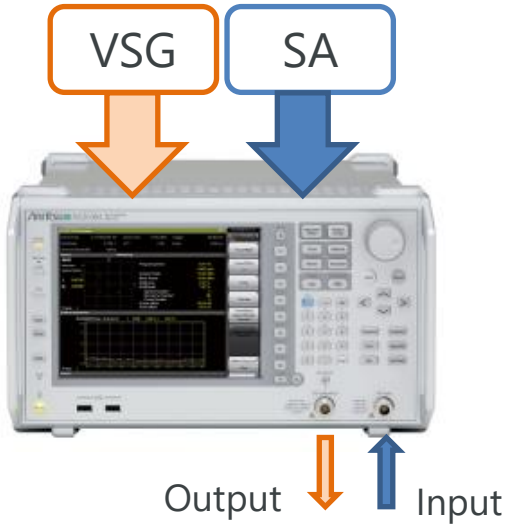
- Performance
  Frequency: ≤26.5 GHz Analysis bandwidth: ≤125 MHz
  Dynamic range: 177 dB
  Level accuracy: ±0.3 dB
- CAL function for excellent flatness
  Extra Band Cal function
  CAL Range: 100 MHz to 6 GHz
  Flatness performance: 0.1 dB max. (meas.)



frequency characteristics in analysis bandwidth after Extra Band Cal

■ Vector Signal Generator Option MS269xA-020

- One unit with SA and installed SG option cuts occupied benchtop footprint
- Performance
  Frequency: ≤6 GHz Bandwidth: ≤120 MHz
  Setting level range: –140 to 0 dBm (at modulation)
- AWGN Addition Function



■ Supports 5G NR and LTE, Analysis Software and IQproducer

- 5G NR
  5G Measurement Software MX269051A
  NR TDD sub-6GHz Downlink MX269051A-011
  NR TDD sub-6GHz Uplink MX269051A-061

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