Anritsu

P25-Phase 1 Rx Test Solution

MG3710A
Vector Signal Generator

P25-Phase 1
Rx Test Solution

P25 Phase 1 Technical Specifications

Transceiver Performance Recommendations
TIA-102.CAAB-C (Jun 2010)

Transceiver Measurement Methods
TIA-102.CAAA-D (Apr 2013)

Note: For details, refer to the TIA-102 standard.

Version 1.00

May2014

Anritsu Corporation

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[Anritsu] P25-Phase 1 Rx Test Solution

For Rx Evaluation

Output multi-signals with one unit!

MG3710A
Vector Signal Generator

Single

Single memory in **one** RF port

Normal

Wanted Signal

Dual

Dual memory* in one RF port

+ Opt-048

Wanted Signal +
Unwanted Signal (Mod)

Triple

Dual memory* & **two** RF ports

+ Opt-062 (2.7 GHz)

Wanted Signal +
Unwanted Signal (Mod) +
Unwanted Signal (CW)

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*Combination of Baseband Signal option: (Two internal ARB memories)
   Selects two waveform patterns per RF output for setting mutual frequency offset, level offset, delay time, etc., to output two signals from one RF port.
   Frequency (recommended range: ±60 MHz) and level (CN: ±80 dB) can also be set at the screen.

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[Anritsu] P25-Phase 1 Rx Test Solution

Note: For details, refer to the TIA-102 standard.

TIA-102 CAAB-C	TIA-102 CAAA-C	Receiver test items	Signal Generator Wanted Signal	Signal Generator Unwanted Signal		Other
3.1.4	2.1.4	Reference Sensibity	Tone	---	---	
3.1.5	2.1.5	Faded Reference Sensibity	Faded Tone	---	---	
3.1.6	2.1.6	Signal Delay Spread Capability	Faded Tone	Faded Tone	---	
3.1.7	2.1.7	Digital ACR	Tone	Interference	---	
		Digital Offset ACR	Tone	---	Interference	
3.1.8	2.1.8	Co-channel Rejection	Tone	Interference	---	
3.1.9	2.1.9	Spurious Response Rejection	Tone	FM	---	
3.1.10	2.1.10	Intermodulation Rejection	Tone	Interference	CW	
3.1.11	2.1.11	Signal Displacement Bandwidth	Tone	---	---	
3.1.12	2.1.12	Audio Output Noise Ratio	Tone	---	---	Audio Load, Distortion Meter
3.1.13	2.1.13	Residual Audio Noise Ratio	Tone Silence MUTE	---	---	Audio Load, Distortion Meter
3.1.14	2.1.14	Average Radiation Sensitivity	Tone	---	---	Standard Radiated Test Site
3.1.15	2.1.15	Acoustic Audio Output	Tone	---	---	Sound Level Meter, etc.
3.1.16	2.1.16	Bit error Rate Floor	Tone	---	---	
3.1.17	2.1.17	Late Entry Unsquelch Delay	Under investigation			Oscilloscope, etc.
3.1.18	2.1.18	Receiver Throughput Delay	Under investigation			Oscilloscope, etc.
3.1.19	2.1.19	Blocking Rejection	Tone	---	CW	

MG3710A
Vector Signal Generator

One RF port — Single / Dual
Two RF ports — Dual or Triple

ACR: Adjacent Channel Rejection

Faded Tone: User can create Faded pattern by using Fading IQproducer (Option).

FM: User can output FM signal by using analog function of main frame.

CW: User can output CW signal by using non-modulation mode of main frame.

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[Anritsu] P25-Phase 1 Rx Test Solution

TIA-102.CAAA-C		Pattern Name for SG
1.3.3.7-a	Standard Tone Test Pattern (1011 Hz)	Tone1011Hz
1.3.3.7-b	Standard Silence Test Pattern	Silence
1.3.3.7-c	Standard Interference Test Pattern	Interference
1.3.3.7-d	Standard Busy Test Pattern	Busy
1.3.3.7-e	Standard Idle Test Pattern	Idle
1.3.3.7-f	Calibration Test Pattern	Calibration
1.3.3.7-g	Automatic Frequency Control Test Pattern	AutoFrequencyControl
1.3.4.3	Standard Transmitter Test Pattern	TxTest_PN9
1.3.4.4	Standard Transmitter Symbol Rate Pattern	TxSymbolRate
1.3.4.5	Standard Transmitter Low Deviation Pattern	TxLowDeviation
1.3.4.6	Standard Transmitter C4FM Modulation Fidelity Pattern	TxModFidelity

✓ **Modulation:**

- ❑ **C4FM** **(Compatible 4-level FM version of QPSK-c Modulation)**

- ❑ **CQPSK** **(Compatible QPSK version of QPSK-c modulation)**

- ❑ **LSM** **(Linear Simulcast Modulation)**

- ❑ **WCQPSK**

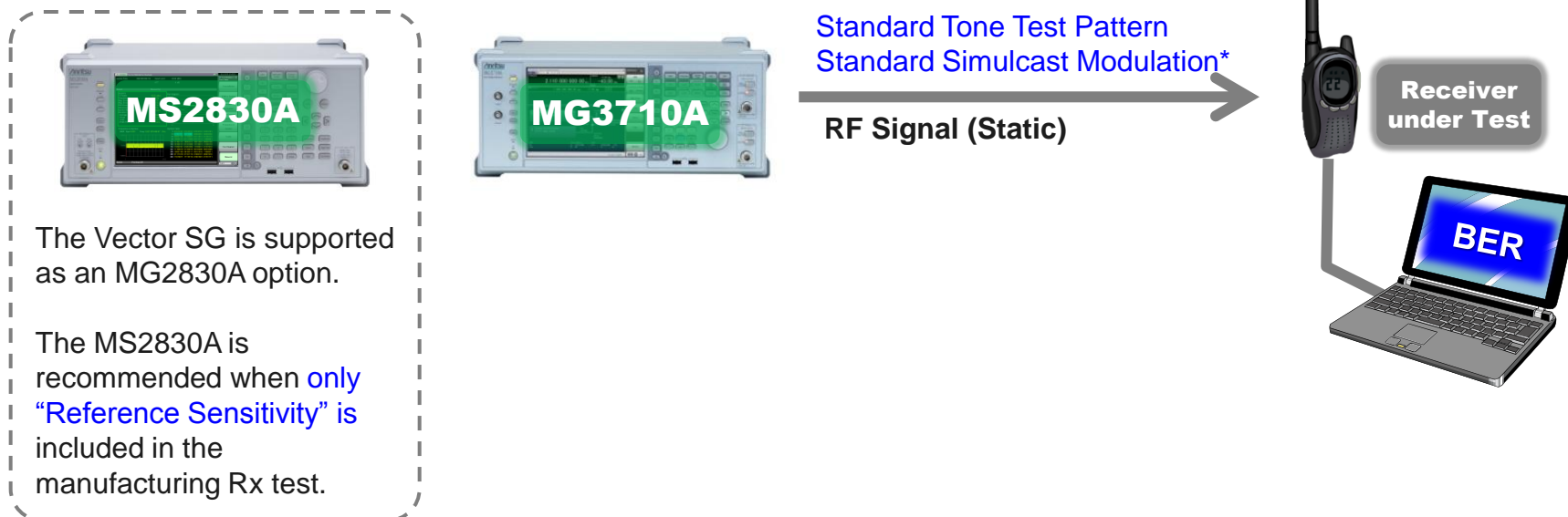✓ **Data Rate: 9.6 kbps**

✓ **Symbol Rate: 4.8 ksps**

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Receiver Performance Measurement Methods

Reference Sensitivity

Measures input level when BER = 5%

*Mobile or Portable only

MS2830A

MG3710A

Standard Tone Test Pattern
Standard Simulcast Modulation*

RF Signal (Static)

Receiver
under Test

BER

The Vector SG is supported as an MG2830A option.

The MS2830A is recommended when only "Reference Sensitivity" is included in the manufacturing Rx test.

Expected Value: BER of 5% when 250 ms or more (2400 bits)

Limits:
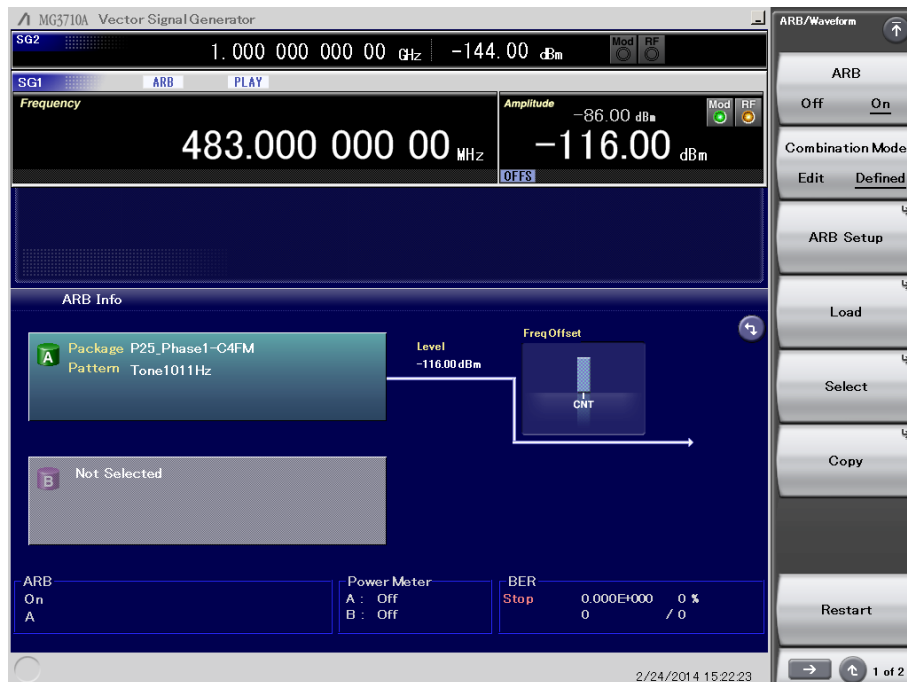
Radio Application	Mobile	Portable	Base Station
Class A	–116 dBm	–116 dBm	–116 dBm
Class B	–113 dBm	–113 dBm	–113 dBm
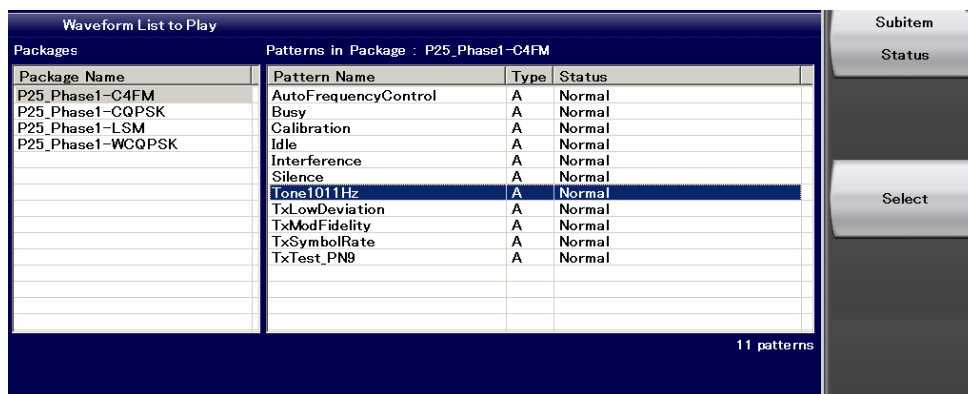
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Receiver Performance Measurement Methods

Reference Sensitivity

MG3710A

Wanted Signal

Choose P25 Phase1 signal you want from the list.

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Receiver Performance Measurement Methods

Faded Reference Sensitivity

Measures input level when BER = 5%

*Mobile or Portable only

Fading IQproducer:
"Fading (Flat/Rayleigh)" pattern created by Fading IQproducer.
This is supported only by the MG3710A.

MG3710A

Faded Standard Tone Test Pattern
Faded Standard Simulcast Modulation*

RF Signal (Faded)

Receiver under Test

BER

Fading conditions
- Single path
- Flat Rayleigh fading
- Moving speed **8 km/h, 100 km/h**
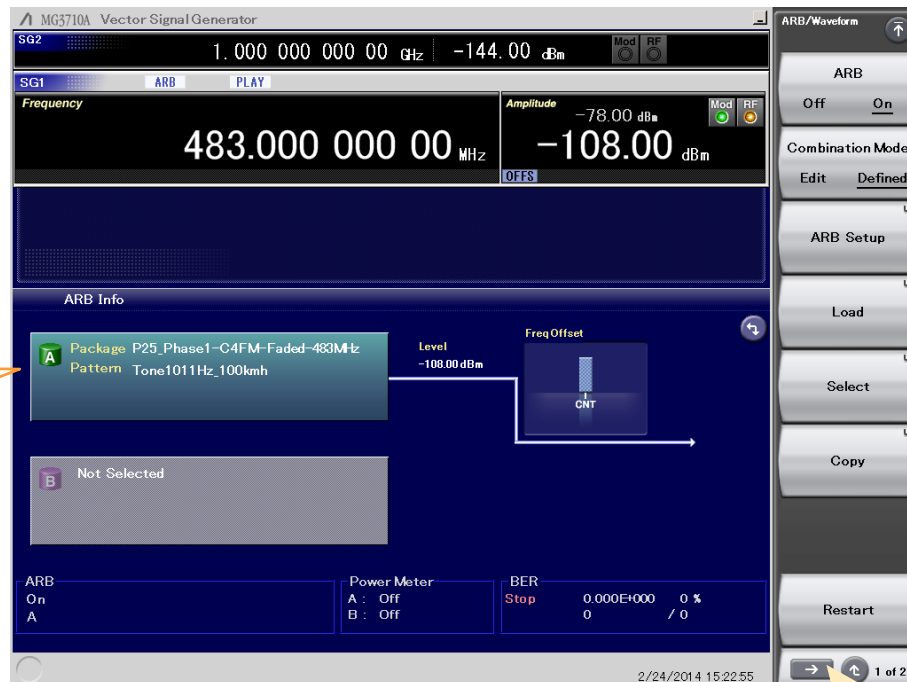
Expected Value: BER of 5% over time interval of ≥"t" s

$$t = \frac{180,000}{(F_{MHz}) / (S_{km/h})}$$

Limits:

Radio Application	Mobile	Portable	Base Station
Class A	−108 dBm	−108 dBm	−108 dBm
Class B	−105 dBm	−105 dBm	−105 dBm

/Inritsu envision:ensure

Receiver Performance Measurement Methods

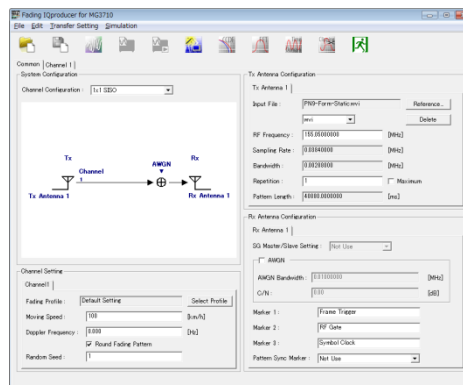## Faded Reference Sensitivity

MG3710A

Wanted Signal (Faded)

Load to Memory

User creates Fading pattern using Fading IQproducer

Fading IQproducer:
"Fading (Flat/Rayleigh)" pattern created by Fading IQproducer.
This is supported only by the MG3710A.

Standard Tone Test Pattern

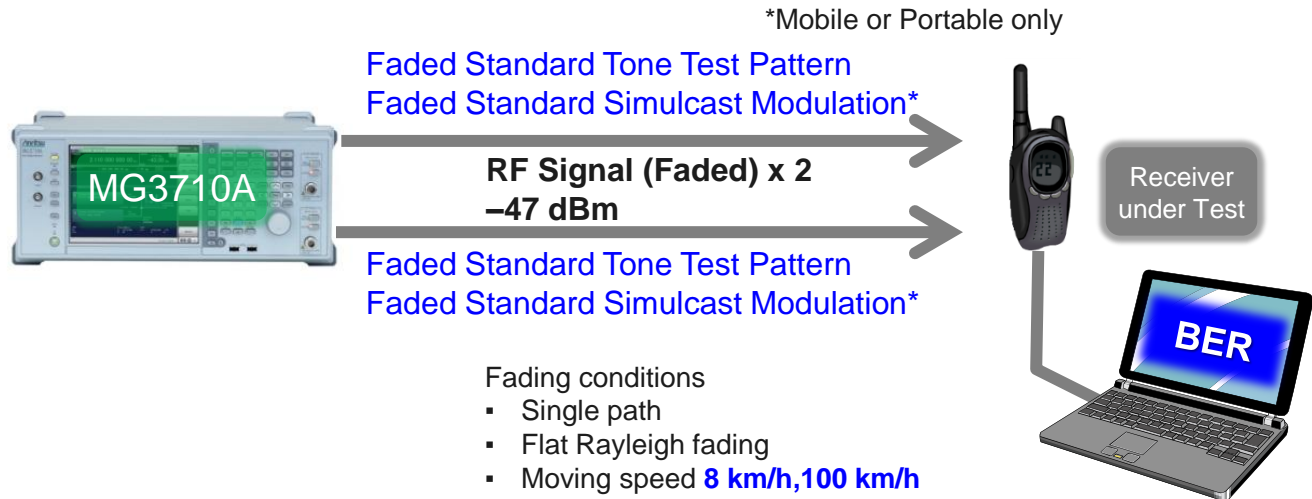**Standard Simulcast Modulation**

Load to Fading IQproducer

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Receiver Performance Measurement Methods

Signal Delay Spread Ability

Measures delay time between two paths when BER = 5%

*Mobile or Portable only

Dual Memory:
One RF port has two memories. Two signals are output at one RF port. The Frequency, Level and Delay-Time can be set. This is supported only by the MG3710A.

MG3710A

Faded Standard Tone Test Pattern
Faded Standard Simulcast Modulation*

**RF Signal (Faded) x 2
−47 dBm**

Faded Standard Tone Test Pattern
Faded Standard Simulcast Modulation*

Receiver under Test

BER

Fading conditions
- Single path
- Flat Rayleigh fading
- Moving speed **8 km/h,100 km/h**

Expected Value: BER of 5% over time interval of ≥"t" s

Limits:

Modulation Type	Delay Spread
C4FM	50 μs
Standard Simulcast	80 μs

$$t = \frac{180{,}000}{(F_{MHz}) / (S_{km/h})}$$

Receiver Performance Measurement Methods

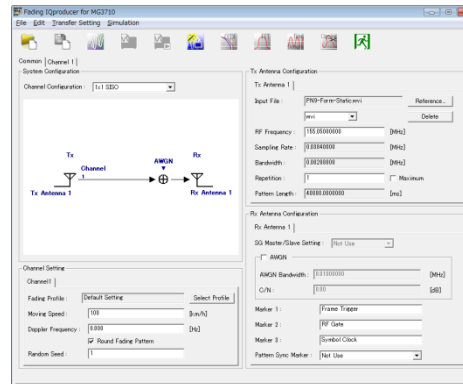## Signal Delay Spread Ability

MG3710A
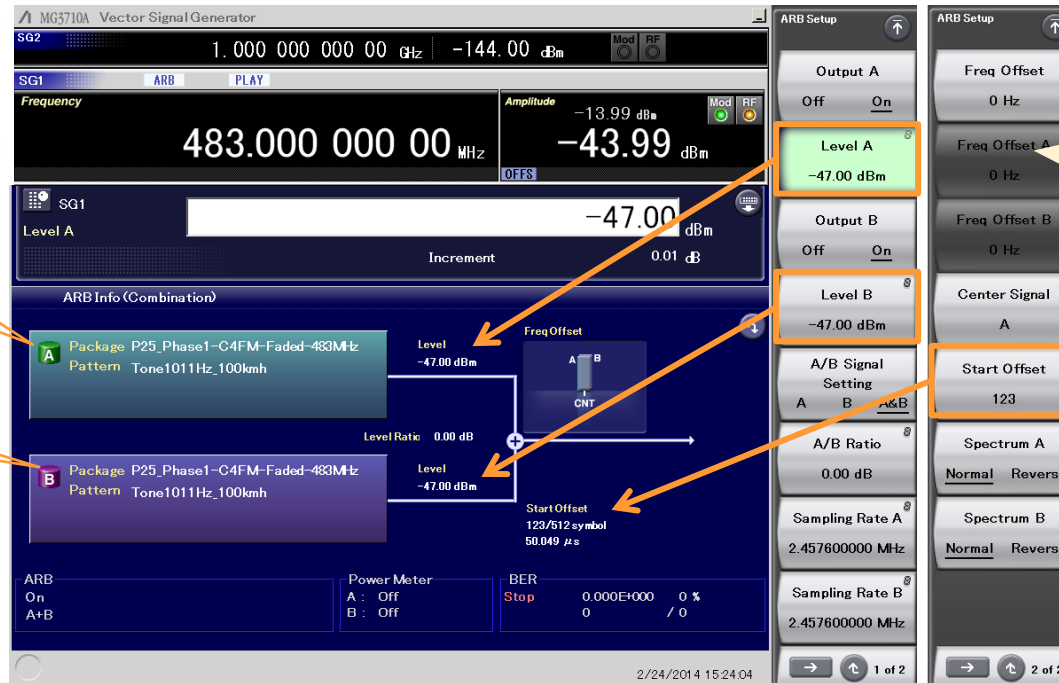
Wanted Signal (Faded)

Delayed Signal (Faded)

Load to Memory

User creates Fading pattern using Fading IQproducer

Merit of Dual Memory:

➢ **Two signals of "Wanted signal" and "Unwanted signal" are output by one RF-port.**

➢ **Both Level and C/N set for each level**

➢ **Frequency offset set by direct input.**

1 point = 0.407 μs
123 points = 50.05 μs
〰〰〰〰〰〰〰〰〰〰〰〰〰

Symbol Rate = 4800 sps
Oversampling = 512

1 s/4800 symbols = 208 μs
208 μs/512 = 0.407 μs

Fading IQproducer:
"Fading (Flat/Rayleigh)" pattern created by Fading IQproducer.
This is supported only by the MG3710A.

Standard Tone Test Pattern

Standard Simulcast Modulation

Load to Fading IQproducer

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Receiver Performance Measurement Methods

Digital Adjacent Channel Rejection

Measures ability to reject unwanted signal applied to adjacent channels
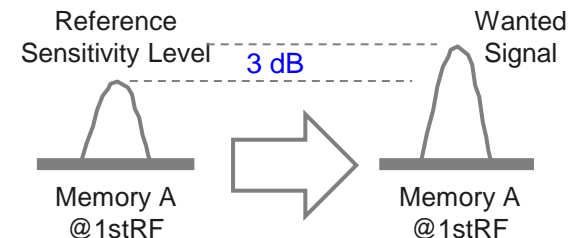
Dual Memory:
One RF port has two memories. Two signals are output at one RF port. The Frequency, Level and Delay-Time can be set. This is supported only by the MG3710A.

MG3710A

Standard Tone Test Pattern

RF1 signal @1stRF
RF2 signal @1stRF

Standard Interference Test Pattern*
Standard Simulcast Modulation

Receiver under Test

BER

C4FM for ChBW = 12.5 kHz, or CQPSK for ChBW = 6.25 kHz

RF1 = Wanted signal (Standard Tone Test Pattern)
• Level: 3 dB above reference sensitivity
RF2 = Unwanted signal
(Standard Interference Test Pattern or Standard Simulcast Modulation)
• Frequency: [RF1 Freq] $\pm$ [12.5 kHz] or
  Frequency: [RF1 Freq] $\pm$ [6.25 kHz]
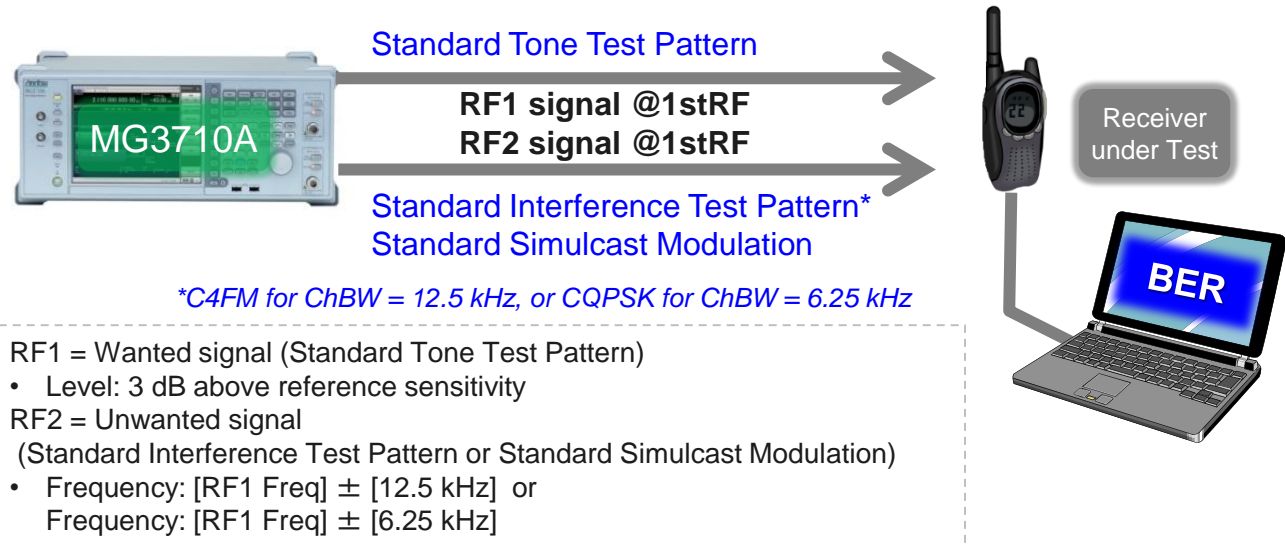
Expected Value: BER of 5%

Limits: Adjacent Channel Rejection Limits

Radio Application	Mobile	Portable	Base Station
Class A	60 dB	60 dB	60 dB
Class B	50 dB	50 dB	50 dB

Reference Sensitivity Level   3 dB   Wanted Signal

Memory A @1stRF   Memory A @1stRF

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Receiver Performance Measurement Methods

Digital Adjacent Channel Rejection
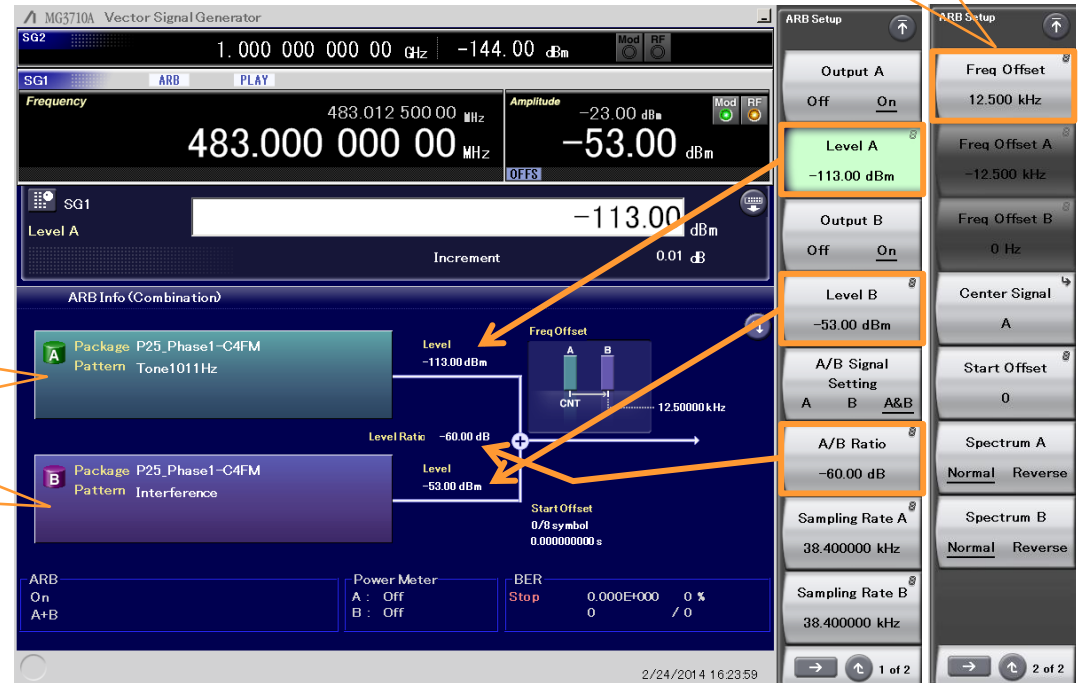
Frequency Offset

MG3710A

Merit of Dual Memory:

- **Two signals of "Wanted signal" and "Unwanted signal" are output by one RF-port.**
- **Both Level and C/N set for each level**
- **Frequency offset set by direct input.**
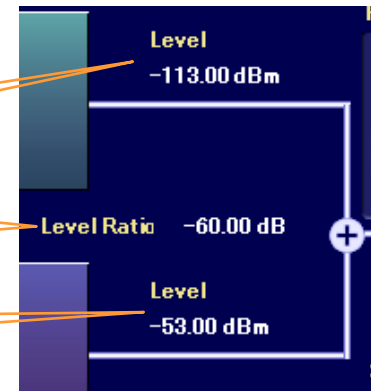
Wanted Signal

Unwanted Signal

12.5 kHz or 6.25 kHz   12.5 kHz or 6.25 kHz

Unwanted Signal

Wanted Signal

Unwanted Signal

Memory B   Memory A   Memory B

Wanted Signal Level

Wanted/Unwanted Level Ratio

Unwanted Signal Level

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Digital <u>Offset</u> Adjacent Channel Rejection

Measures ability to reject unwanted signal applied to adjacent channels
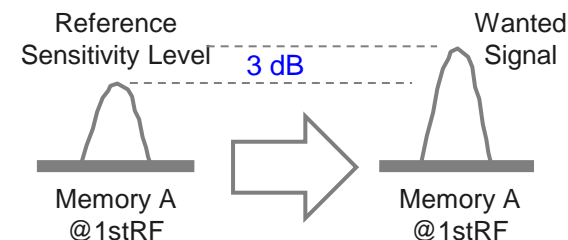
Dual Memory:
One RF port has two memories. Two signals are output at one RF port. The Frequency, Level and Delay-Time can be set. This is supported only by the MG3710A.

MG3710A

Standard Tone Test Pattern

RF1 signal @1stRF
RF2 signal @1stRF

Standard Interference Test Pattern*

C4FM for ChBW = 12.5 kHz, or CQPSK for ChBW = 6.25 kHz

Receiver under Test

BER

RF1 = Wanted signal (Standard Tone Test Pattern)
- Level: 3 dB above reference sensitivity

RF2 = Unwanted signal (Standard Interference Test Pattern)
- Frequency: [RF1 Freq] $\pm$ [12.5 kHz], Toward receiver frequency by 1 kHz
  Frequency: [RF1 Freq] $\pm$ [6.25 kHz], Toward receiver frequency by 500 Hz

Expected Value: BER of 5%

Limits:

Radio Application	Mobile	Portable	Base Station
Class A	47 dB	47 dB	47 dB
Class B	37 dB	37 dB	37 dB

Reference Sensitivity Level
3 dB
Wanted Signal

Memory A @1stRF

Memory A @1stRF
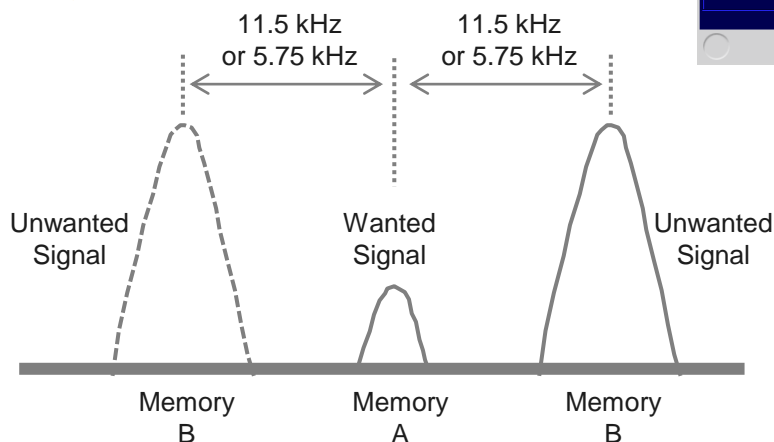
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Receiver Performance Measurement Methods

Digital <u>Offset</u> Adjacent Channel Rejection

MG3710A

Merit of Dual Memory:

➢ **Two signals of "Wanted signal" and "Unwanted signal" are output by one RF-port.**

➢ **Both Level and C/N set for each level**

➢ **Frequency offset set by direct input.**

Frequency Offset

Wanted Signal
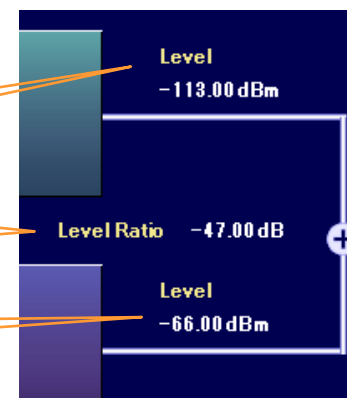
Unwanted Signal

11.5 kHz or 5.75 kHz   11.5 kHz or 5.75 kHz

Unwanted Signal   Wanted Signal   Unwanted Signal

Memory B   Memory A   Memory B

Wanted Signal Level

Wanted/Unwanted Level Ratio

Unwanted Signal Level

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Receiver Performance Measurement Methods

Co-channel Rejection

Measures ability to reject unwanted signal applied to same channel

Dual Memory:
One RF port has two memories. Two signals are output at one RF port. The Frequency, Level and Delay-Time can be set. This is supported only by the MG3710A.

MG3710A

Standard Tone Test Pattern
RF1 signal @1stRF
RF2 signal @1stRF
Standard Interference Test Pattern

Receiver under Test

BER

RF1 = Wanted signal (Standard Tone Test Pattern)
• Level: 3 dB above reference sensitivity
RF2 = Unwanted signal (Standard Interference Test Pattern)
• Frequency: Same as [RF1 Freq]

Reference Sensitivity Level
3 dB
Wanted Signal

Memory A @1stRF
Memory A @1stRF

Expected Value: BER of 5%

Limits: Shall not exceed 9 dB
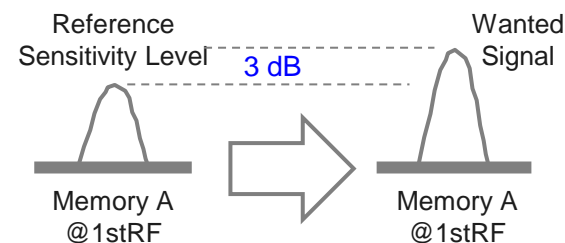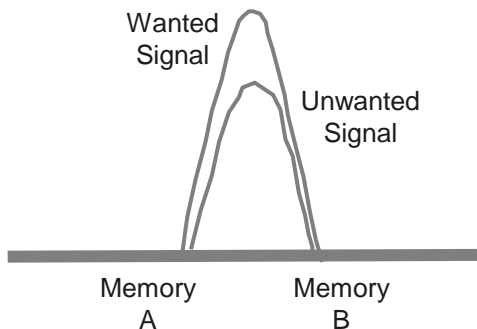
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Receiver Performance Measurement Methods

Co-channel Rejection

MG3710A

Merit of Dual Memory:

➤ **Two signals of "Wanted signal" and "Unwanted signal" are output by one RF-port.**

➤ **Both Level and C/N set for each level**

➤ **Frequency offset set by direct input.**

Same Frequency

Wanted Signal
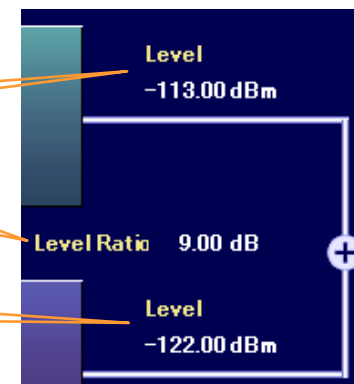
Unwanted Signal

Wanted Signal

Unwanted Signal

Memory A

Memory B

Wanted Signal Level

Wanted/Unwanted Level Ratio

Unwanted Signal Level

Level −113.00 dBm

Level Ratio 9.00 dB

Level −122.00 dBm

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Receiver Performance Measurement Methods

Spurious Response Rejection

Measures ability to reject specified unwanted signal applied to receiver under test
The frequency of the unwanted signal is varied over a range from half of the lowest IF frequency of the receiver under test to twice the highest receiver frequency or 1000 MHz, whichever is higher.
Exclude all responses within ±50 kHz of the receiver frequency.

Two RF Ports:
The MG3710A supports two RF ports in one unit, cutting equipment costs.

MG3710A

Standard Tone Test Pattern
RF1 signal @1stRF
RF2 signal @2ndRF
Unwanted Signal (FM)

Receiver under Test

BER

RF1 = Wanted signal (Standard Tone Test Pattern)
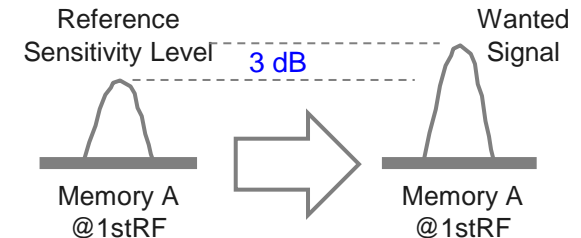- Level: 3 dB above reference sensitivity

RF2 = Unwanted signal (FM)
- FM with 400 Hz tone
- 1500 Hz deviation

$$P_U = P_{REF} + SRR + 6dB$$

P_U : Level of unwanted signal [dBm]
P_{REF} : Level of reference sensitivity [dBm]
SRR : Manufacturer specified limit [db]

Reference Sensitivity Level — 3 dB — Wanted Signal

Memory A @1stRF → Memory A @1stRF

Expected Value: BER of 5%

Limits:

Radio Application	Mobile	Portable	Base Station
Class A	80 dB	70 dB	90 dB
Class B	70 dB	60 dB	70 dB

Receiver Performance Measurement Methods

Spurious Response Rejection

Two RF Ports:
The MG3710A supports two RF ports in one unit, cutting equipment costs.

MG3710A

1stRF

2ndRF

Wanted Signal

Unwanted Signal (FM)

$\dfrac{\text{Lowest IF Freq}}{2}$

Exclude ±50 kHz

Receiver Freq x 2 or 1000 MHz (whichever is greater)

Unwanted Signal (FM)

Wanted Signal

Unwanted Signal (FM)

2ndRF

1stRF

2ndRF
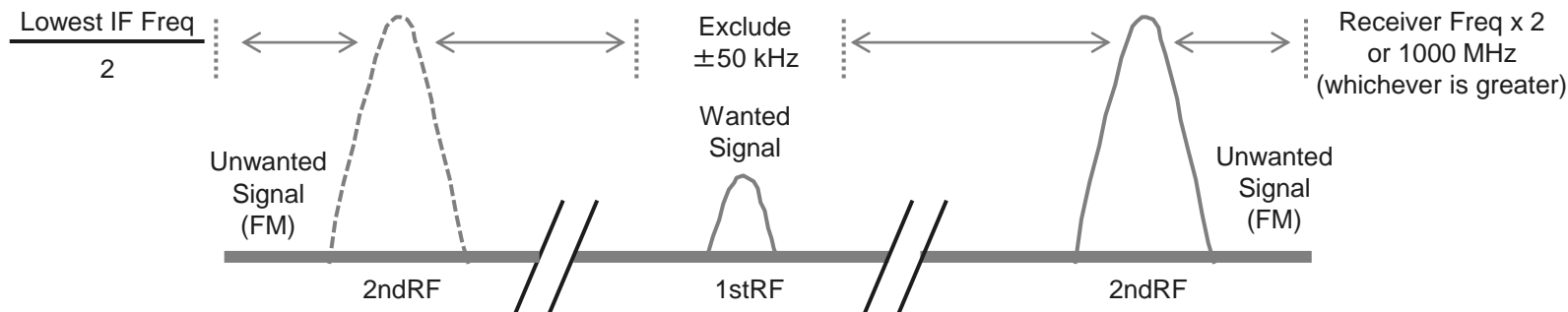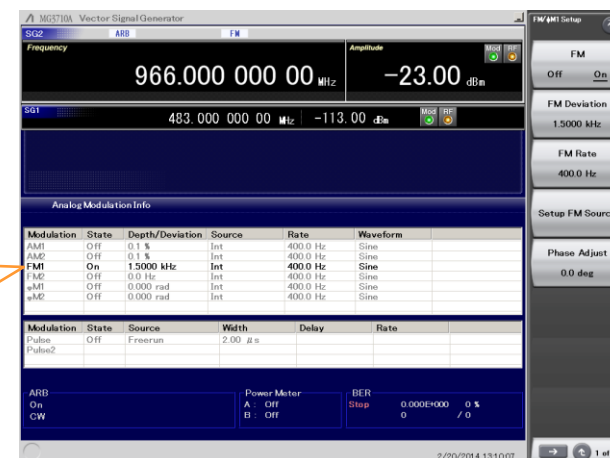
Receiver Performance Measurement Methods

Intermodulation Rejection

Measures ability to reject intermodulation caused by unwanted signals with offset frequency of +50 kHz/+100 kHz or –50 kHz/–100 kHz

Dual Memory:
One RF port has two memories. Two signals are output by one RF port. The Frequency, Level and Delay-Time can be set. This is supported only by the MG3710A.

MG3710A

Standard Tone Test Pattern
RF1 signal @1stRF
RF3 signal @1stRF

Standard Interference Test Pattern*
RF2 signal @2ndRF

Unwanted Signal (CW)

Receiver under Test

BER

C4FM for ChBW = 12.5 kHz, or CQPSK for ChBW = 6.25 kHz

Two RF Ports:
The MG3710A supports two RF ports in one unit, cutting equipment costs.

RF1 = Wanted signal (Standard Tone Test Pattern)
• Level: 3 dB above reference sensitivity
RF2 = Unwanted signal (CW)
• Frequency: [RF1 Freq] $\pm$ [50 kHz]
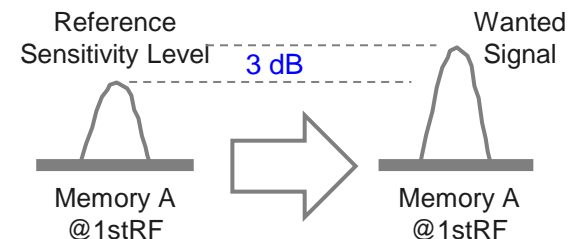RF3 = Unwanted signal (Standard Interference Test Pattern)
• Frequency: [RF1 Freq] $\pm$ [100 kHz]

Same level

Expected Value: BER of 5%

Limits:

Radio Application	Mobile	Portable	Base Station
Class A	75 dB	70 dB	80 dB
Class B	70 dB	50 dB	70 dB

Reference Sensitivity Level
3 dB
Wanted Signal

Memory A @1stRF

Memory A @1stRF

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Receiver Performance Measurement Methods

Intermodulation Rejection

MG3710A

Frequency Offset e.g. +50 kHz

Unwanted Signal (CW: Mod = Off) @2nd RF

Frequency Offset e.g. +100 kHz

Wanted Signal
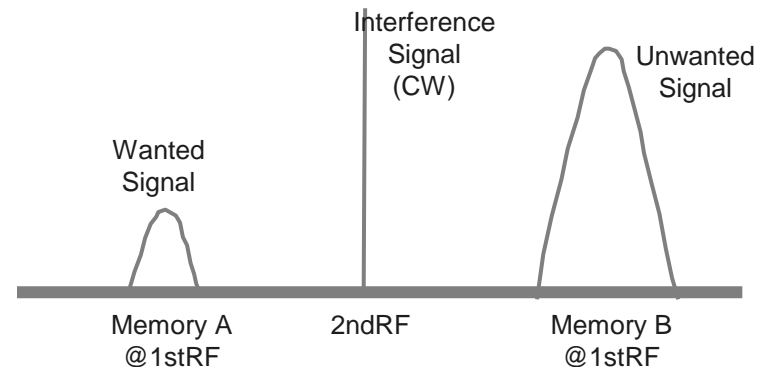
Unwanted Signal (Standard Interference Test Pattern)

Merit of Dual Memory:

➢ **Two signals of "Wanted signal" and "Unwanted signal" are output by one RF-port.**

➢ **Both Level and C/N set for each level**

➢ **Frequency offset set by direct input.**

Two RF Ports:
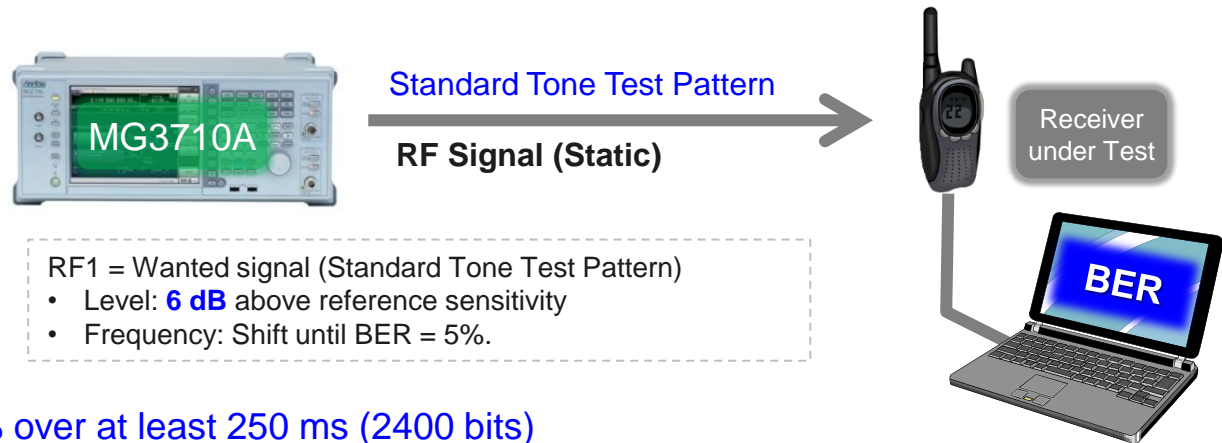The MG3710A supports two RF ports in one unit, cutting equipment costs.

Wanted Signal

Interference Signal (CW)

Unwanted Signal

Memory A @1stRF

2ndRF

Memory B @1stRF

Signal Displacement Bandwidth

Measures ability to reject signal in standard modulation state with specified offset frequency from nominal frequency

MG3710A

Standard Tone Test Pattern

RF Signal (Static)

Receiver under Test

BER

RF1 = Wanted signal (Standard Tone Test Pattern)
- Level: **6 dB** above reference sensitivity
- Frequency: Shift until BER = 5%.

Expected Value: BER of 5% over at least 250 ms (2400 bits)

Limits: Minimum signal displacement bandwidth of 1000 Hz

Wanted Signal

Wanted Signal
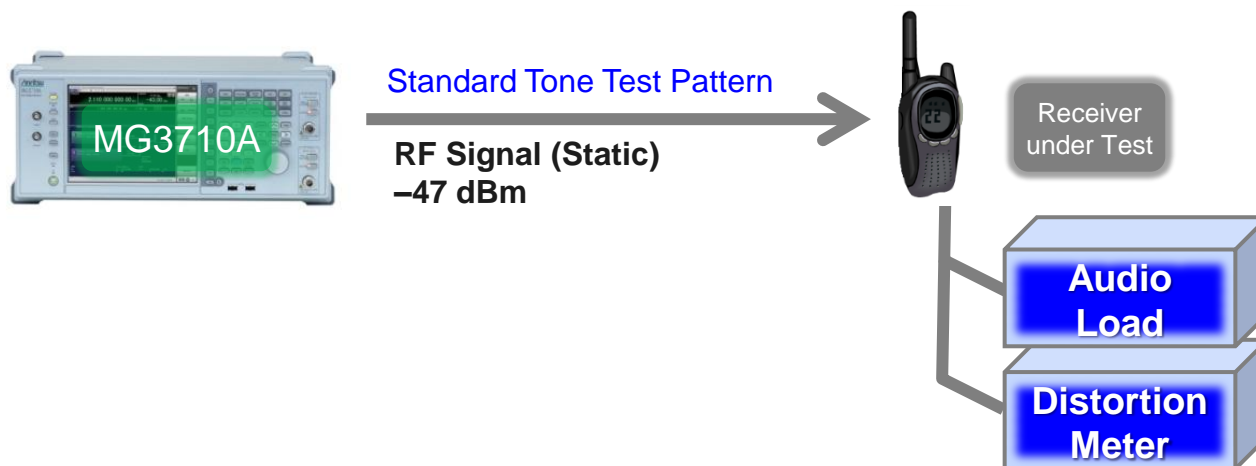
6 dB

Memory A @1stRF

Memory A @1stRF

Anritsu envision : ensure
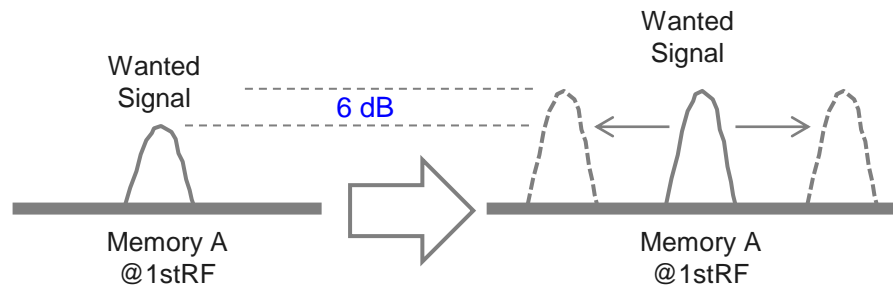
Receiver Performance Measurement Methods

Audio Output Distortion

Measures audio distortion factor under audio frequency load

MG3710A

Standard Tone Test Pattern

RF Signal (Static) −47 dBm

Receiver under Test

Audio Load

Distortion Meter
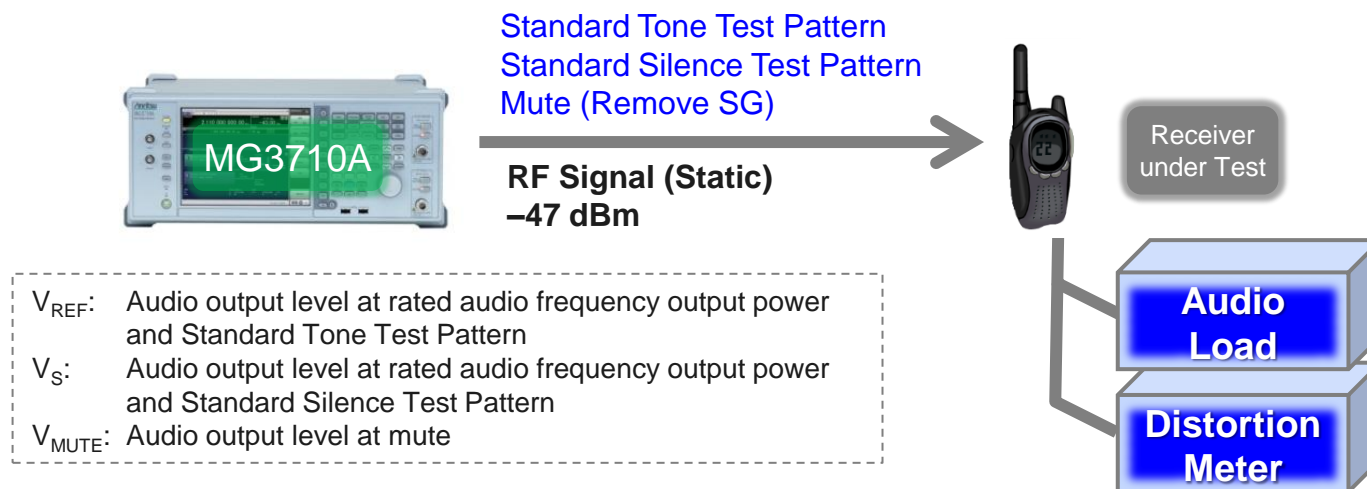
Limits: Maximum audio output distortion shall not exceed 5% when tested at both rated audio power, and 17 dB below rated audio power

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Receiver Performance Measurement Methods

Residual Audio Noise Ratio

Measures audio output level in three states (Tone/Silence/Mute)

Standard Tone Test Pattern
Standard Silence Test Pattern
Mute (Remove SG)

RF Signal (Static)
−47 dBm

MG3710A

Receiver under Test

Audio Load

Distortion Meter

V_{REF}: Audio output level at rated audio frequency output power and Standard Tone Test Pattern

V_{S}: Audio output level at rated audio frequency output power and Standard Silence Test Pattern

V_{MUTE}: Audio output level at mute

$$\text{residual audio noise ratio (silence): } 20\ log_{10} \left[\frac{V_{REF}}{V_S} \right]$$

$$\text{residual audio noise ratio (mute): } 10\ log_{10} \left[1000\ \frac{V^2_{MUTE}}{R_{ROAD}} \right]$$
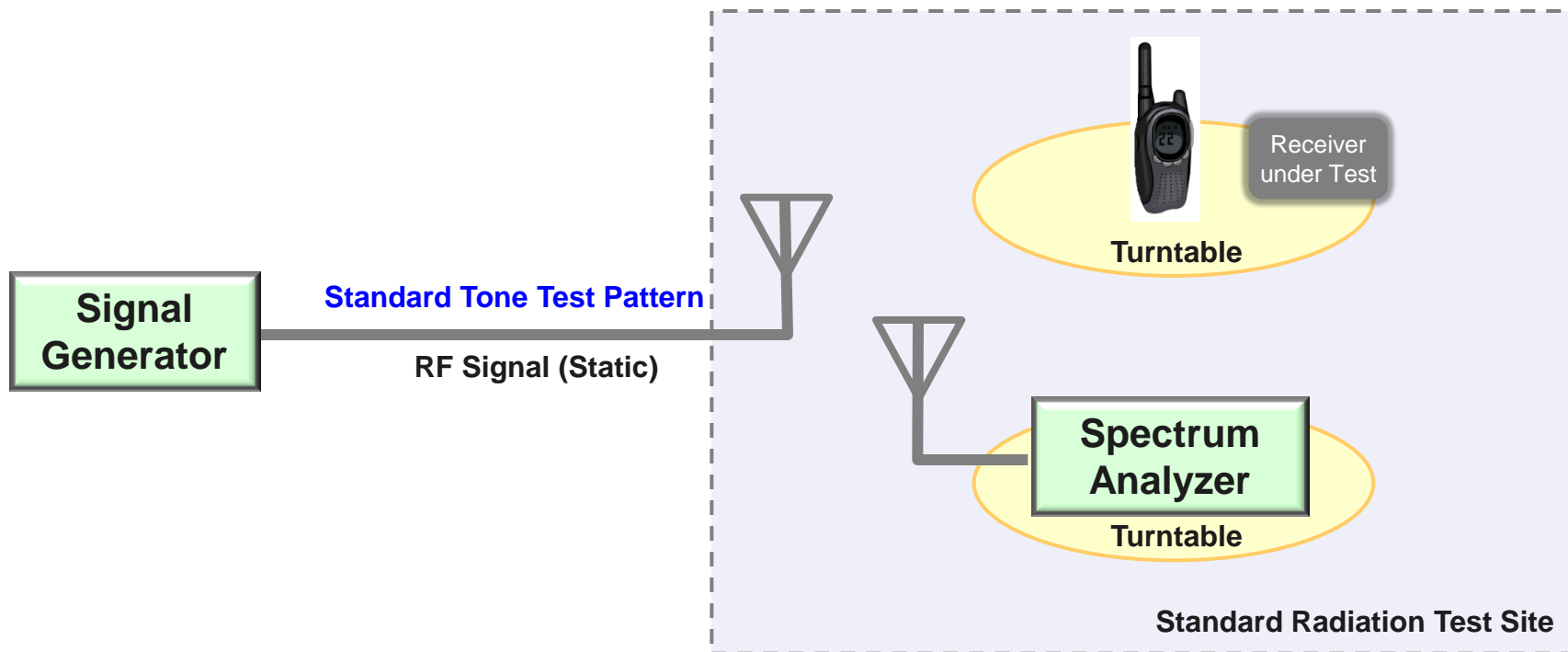
Limits:

Radio Application	Silence Pattern	Muted
Class A	45 dB	−35 dB
Class B	35 dB	−27 dB

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Receiver Performance Measurement Methods

Average Radiation Sensitivity

Measures power received by half-wave dipole antenna

Receiver under Test

Turntable

Signal Generator

Standard Tone Test Pattern

RF Signal (Static)

Spectrum Analyzer

Turntable

Standard Radiation Test Site

Limits:

Frequency Range (25 MHz to 1 GHz)	Equipment with External Antennas	Equipment with Internal Antennas
Class A	–98 dbm	–80 dBm
Class B	–95 dBm	–77 dBm

Anritsu envision:ensure

Receiver Performance Measurement Methods

Acoustic Audio Output

Measures reading of sound level meter

Standard Tone Test Pattern

MG3710A

RF Signal (Static)
−47 dBm

Receiver under Test
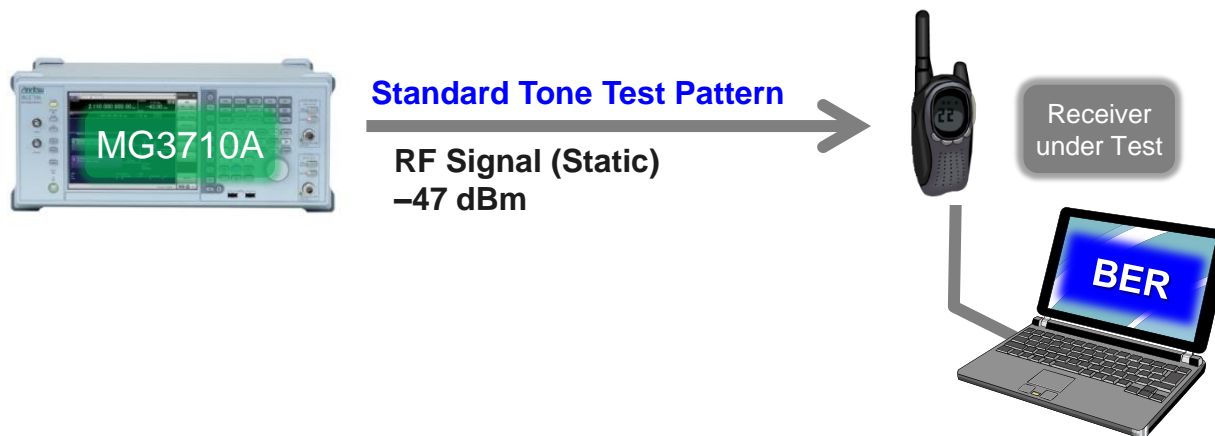
Acoustic Chamber

Sound Level Meter
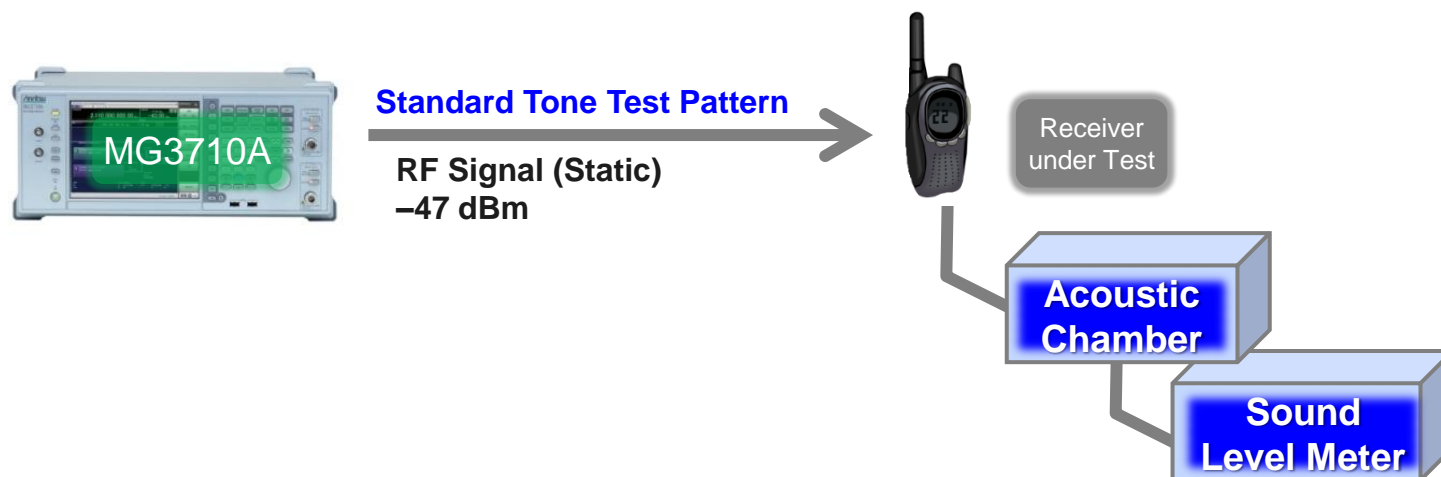
Limits: This requirement applies only to units equipped with a loudspeaker.
The C weighted level measured shall not be less than
$[80 + 10 \log_{10} (\text{rated audio output power, in watts})] \, dB_{SPL}$

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Receiver Performance Measurement Methods

Bit Error Rate Floor

Measures resulting bit error rate

Standard Tone Test Pattern

RF Signal (Static)
–47 dBm

MG3710A

Receiver under Test

BER

Expected Value: Over time interval of ≥10 s (120,000 bits)

Limits: The maximum bit error rate shall be ≤0.01%.

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Receiver Performance Measurement Methods

Late Entry Unsquelch Delay

Note: For details, refer to the TIA-102 standard.

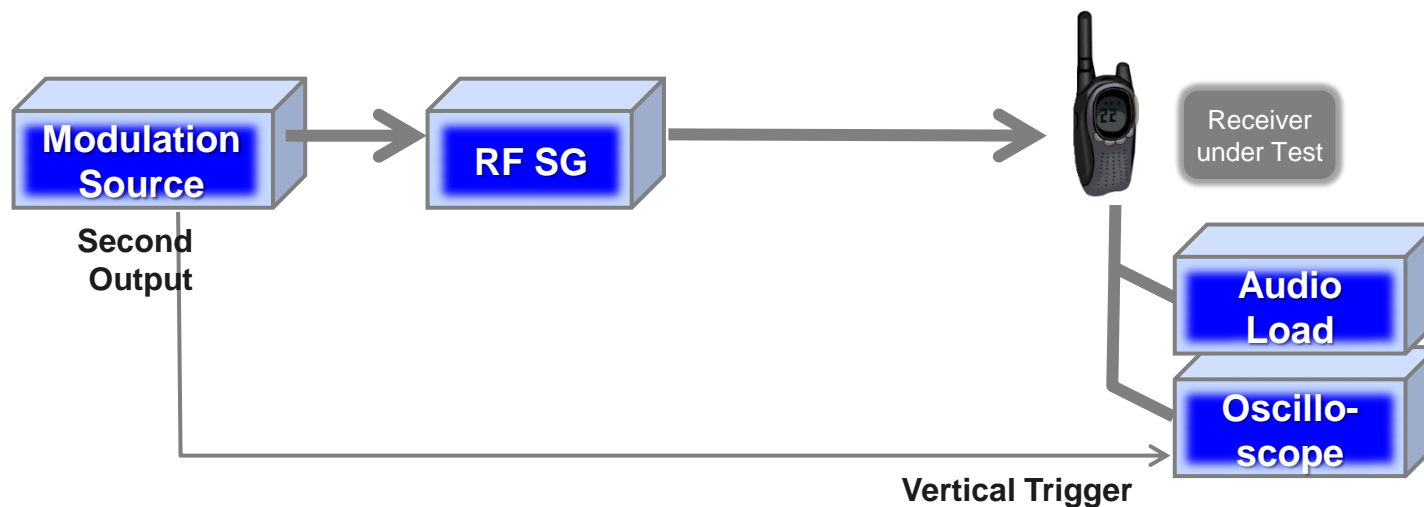Measures the late entry unsquelch delay time.
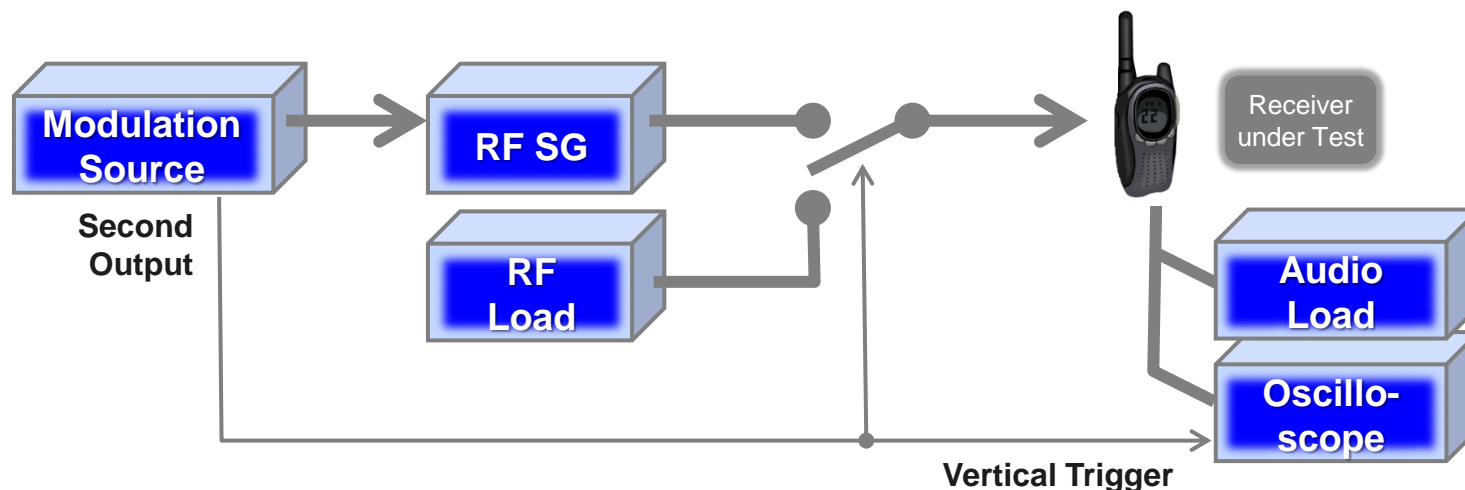
Limits:

Condition	Maximum delay [ms]
No talk group or encryption	125
Talk group only	370
Encryption only	370
Both (on clear or encrypted channel)	460

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Receiver Performance Measurement Methods

Receiver Throughput Delay

Measures the average receiver throughput delay time.

Limits: Shall not exceed 125 ms
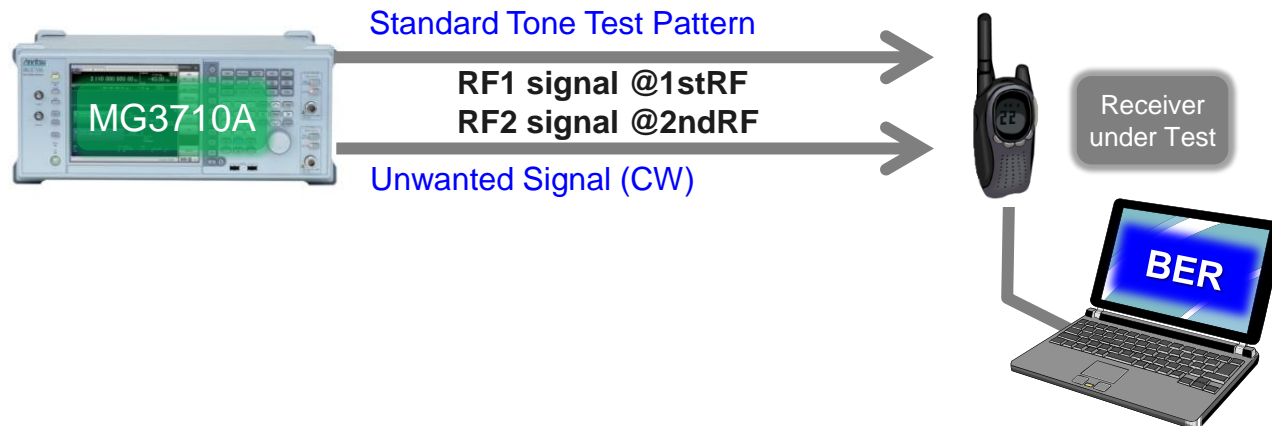
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Receiver Performance Measurement Methods

Blocking Rejection

Measures the ratio of the level of an unwanted input signal to the reference sensitivity.

Dual Memory:
One RF port has two memories. Two signals are output at one RF port. The Frequency, Level and Delay-Time can be set. This is supported only by the MG3710A.

MG3710A

Standard Tone Test Pattern

RF1 signal @1stRF
RF2 signal @2ndRF

Unwanted Signal (CW)

Receiver under Test

BER

Expected Value: BER of 5%

Limits:

Radio Application	Mobile	Portable	Base Station
Class A	90 dB	80 dB	90 dB
Class B	80 dB	70 dB	80 dB

Reference Sensitivity Level

3 dB

Wanted Signal

Memory A @1stRF

Memory A @1stRF

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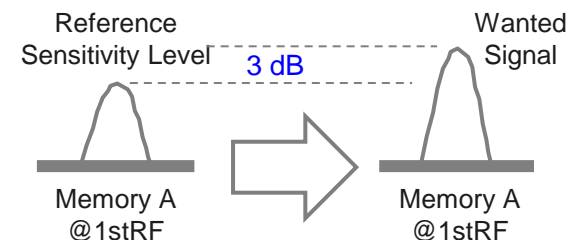
Receiver Performance Measurement Methods
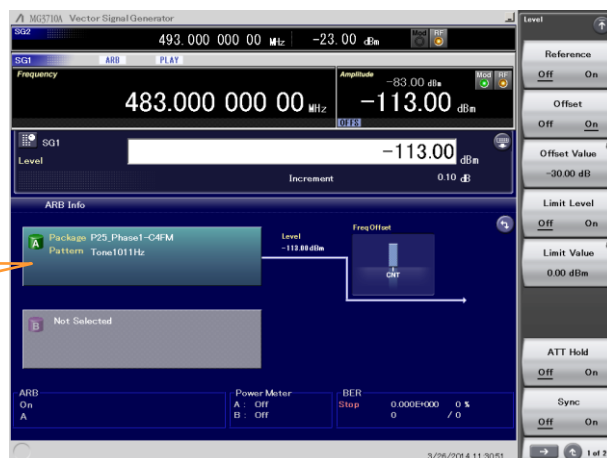
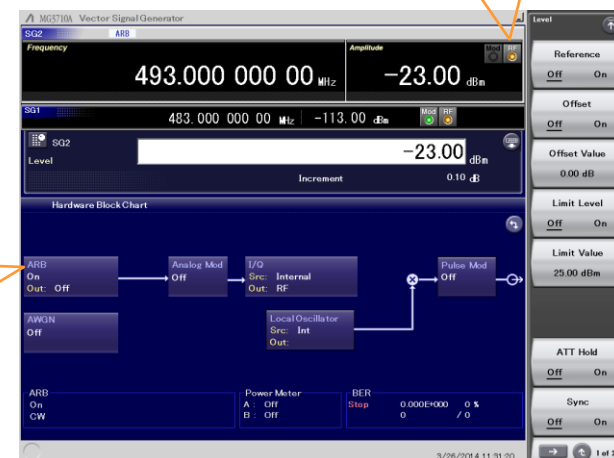## Blocking Rejection

MG3710A

1stRF

2ndRF

Unwanted Signal
(CW: Mod = Off) @2nd RF

Wanted Signal

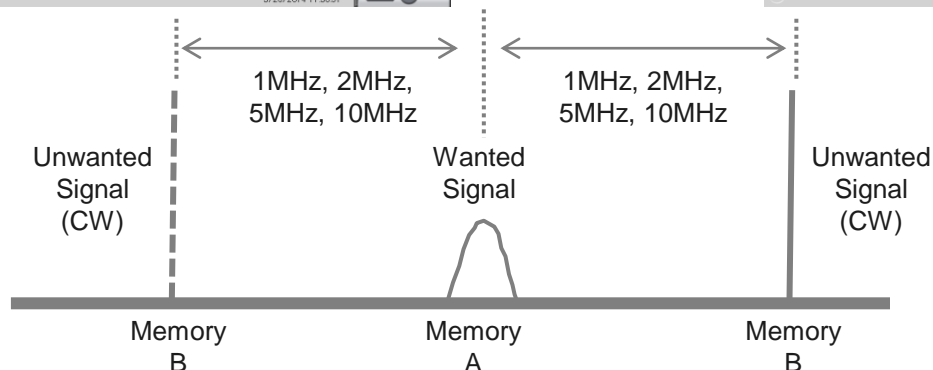Unwanted Signal
(CW)

Two RF Ports:
The MG3710A supports
two RF ports in one unit,
cutting equipment costs.

1MHz, 2MHz,
5MHz, 10MHz

1MHz, 2MHz,
5MHz, 10MHz

Unwanted
Signal
(CW)

Wanted
Signal

Unwanted
Signal
(CW)

Memory
B

Memory
A

Memory
B

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[Appendix] How to Set FM Signal 1/2

Select SG2.
[SG2]

Set FM conditions.
[FM/ɸM]
    [F1: FM/ɸM Setup]
        [F1: FM] = On
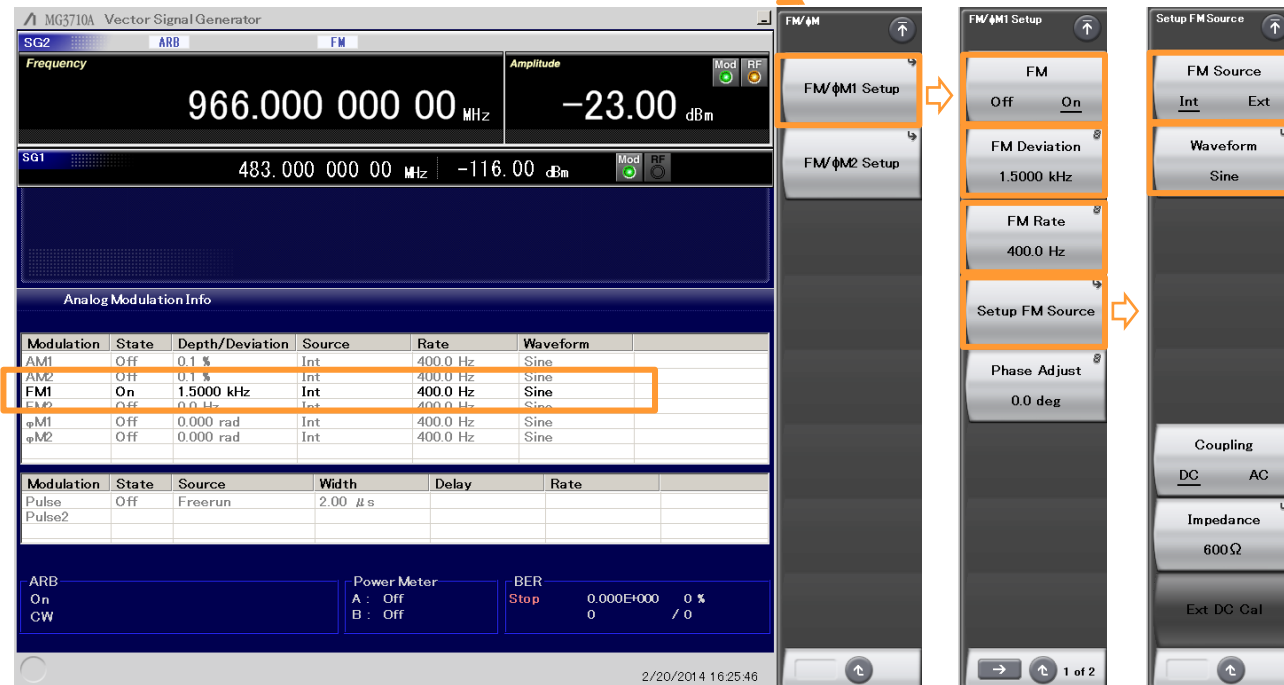   [F2: FM Deviation] = 1500 Hz
        [F3: FM Rate] = 400 Hz
        [F4: Setup FM Source]
            [F1: FM Source] = Int
            [F2: Waveform] = Sine

MG3710A-E-L-4

[Appendix] How to Set FM Signal 2/2

Set ARB for disable.
[Mode]
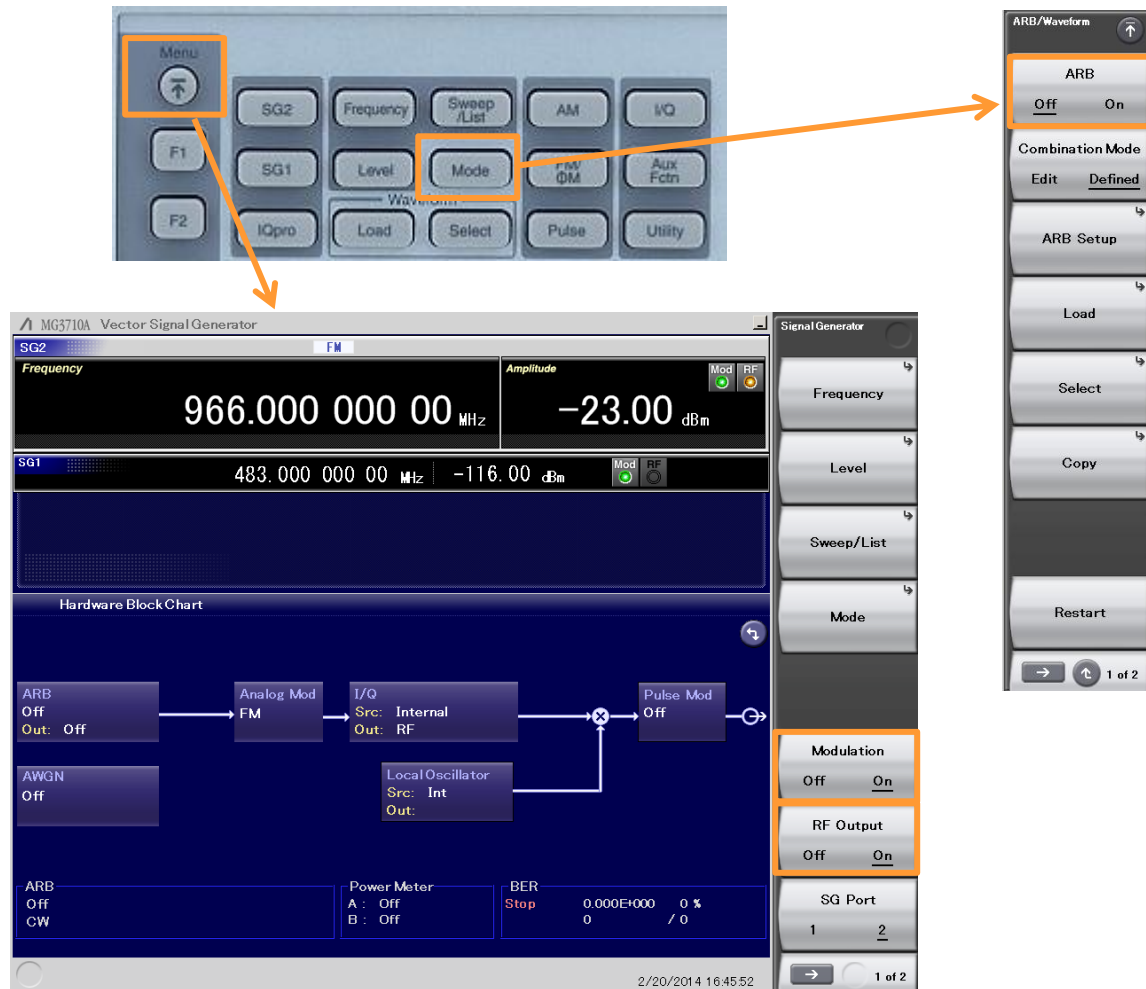   [F1: ARB] = Off

Set Modulation and RF output conditions.
[Menu]
    [F1: FM/φM Setup]
        [F6: Modulation] = On
        [F7: RF Output] = On

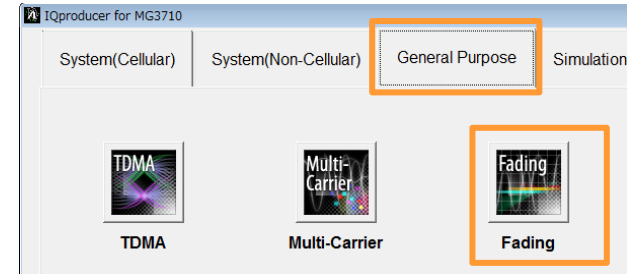**Finish**

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[Appendix] How to Create Faded Pattern 1/2

Start Fading IQproducer.
[IQpro]
Click [General Purpose] tab.
Click [Fading] icon.

Set Fading parameter
(Tx Antenna Configuration).
Click [Reference].
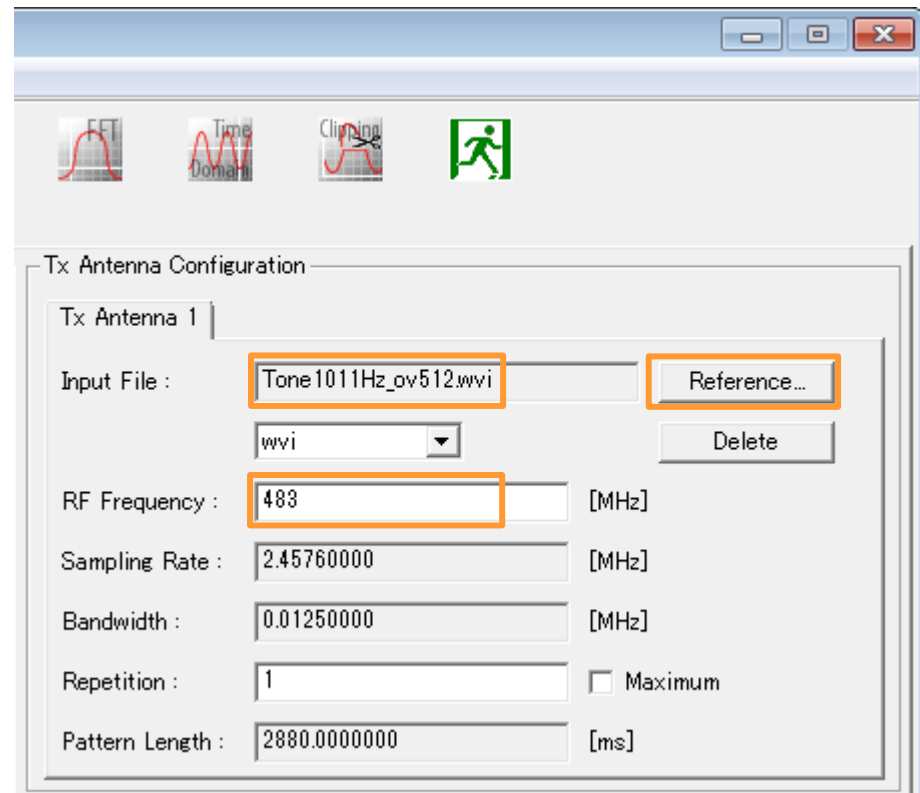Select [Tone1011Hz_ov512].
(C:¥Anritsu¥MG3710A¥User Data¥Waveform
¥P25_Phase1-C4FM*) on MG3710A HDD
*C4FM, CQPSK, LSM or WCQPSK

Set RF Frequency (ex: 483 MHz).

**Create different patterns
for each evaluated
frequency**

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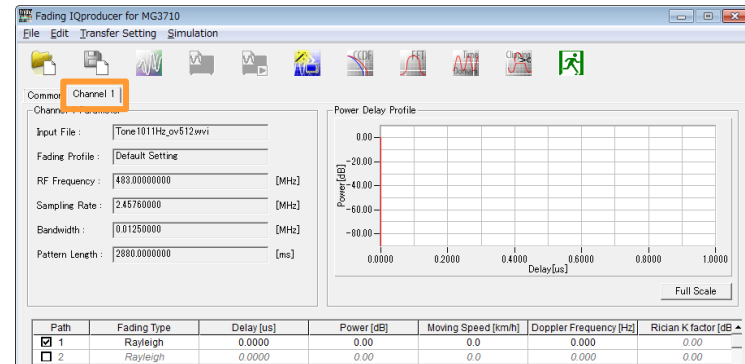# [Appendix] How to Create Faded Pattern 2/2

Set Fading parameter (Channel condition).
Click [Channel 1] tab.
   Set [Fading Type] = Rayleigh.
   Set [Moving Speed] = 8 km/h or 100 km/h.
   Set [Spectrum Shape] = Flat.

Path		Fading Type	Delay [us]	Power [dB]	Moving Speed [km/h]	Doppler Frequency [Hz]	Rician K fact
☑	1	Rayleigh	0.0000	0.00	8.0	3.580	0.00

z]	Rician K factor [dB]	Angle of Arrival [deg]	Phase shift [deg]	Spectrum Shape	Correlation Setting
	0.00	0.0	0.0	Flat	Not Use

Create pattern (Calculation).
Click [Calculation].
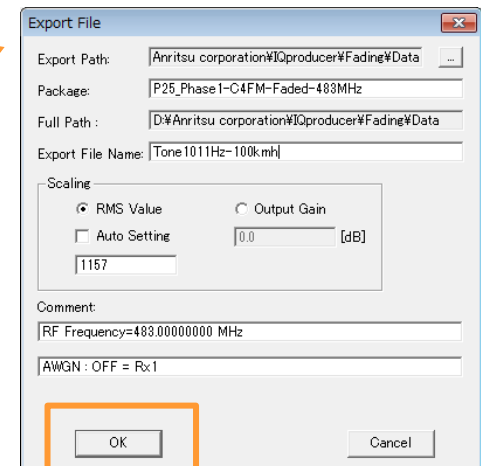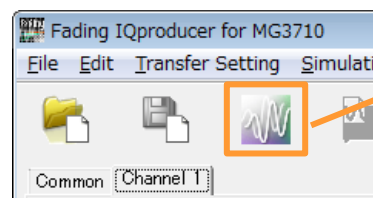
Input [Package] name.
  (ex: P25_Phase1-C4FM-Faded-483MHz)
Input [Pattern] name.
  (ex: Tone1011Hz-100kmh)
Click [OK].

Finish

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Recommended MG3710A Configuration

▶ Base Configuration

| Model | Product Name | One RF port | | Two RF port |
		Single	Dual	Dual/Triple
MG3710A	Vector Signal Generator	√	√	√
MG3710A-032	1stRF 100 kHz to 2.7 GHz	√	√	√
MG3710A-042	Low Power Extension for 1stRF	√	√	√
MG3710A-048	Combination of Baseband Signal for 1stRF		√	√
MG3710A-062	2ndRF 100 kHz to 2.7 GHz			√
MX370102A	TDMA IQproducer	√	√	√

▶ Additional Recommended Options

Model	Product Name	Note
MG3710A-002	High Stability Reference Oscillator	Aging Rate: $\pm 1 \times 10^{-7}$/year, $\pm 1 \times 10^{-8}$/day
MG3710A-043/073	Reverse Power Protection	Protects signal output connector against reverse input power. 20W @<2GHz (Standard 2 W nominal)
MG3710A-045/075	ARB Memory Upgrade 256Msample	Upgrades ARB size to 256 Msamples (1 GB)
MX370107A	Fading IQproducer	Create Faded signal

Required for Reference Sensitivity (Faded)

Note

MG3710A-E-L-4

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Specifications are subject to change without notice.

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