/Anritsu envision : ensure

Signal Analyzer

MS2830A

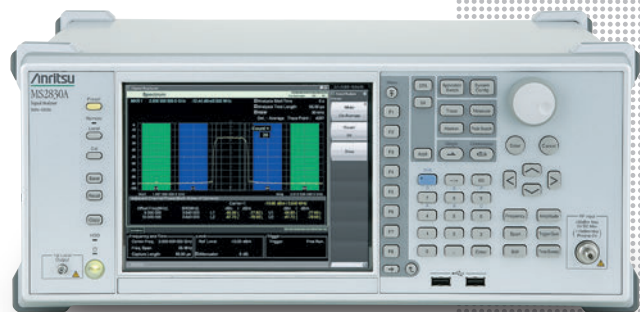MS2830A-040: 9 kHz to 3.6 GHz
MS2830A-041: 9 kHz to 6 GHz
MS2830A-043: 9 kHz to 13.5 GHz
MS2830A-044: 9 kHz to 26.5 GHz
MS2830A-045: 9 kHz to 43 GHz

MS2830A Signal Analyzer

This explains how to order the new MS2830A and MS2830A retrofit options and measurement software.
Follow the steps below to select the MS2830A configuration.
Functions marked "standard" are built-in. Options and measurement software can be added as necessary.

Steps for New Purchase

Step 1. Select maximum frequency range (Required option; Frequency range not upgradeable.)

Outline	Option No.	Additional information
Frequency range: 9 kHz to 3.6 GHz	MS2830A-040	Spectrum Analyzer
Frequency range: 9 kHz to 6 GHz	MS2830A-041	Spectrum Analyzer
Frequency range: 9 kHz to 13.5 GHz	MS2830A-043	Spectrum Analyzer
Frequency range: 9 kHz to 26.5 GHz	MS2830A-044	Spectrum Analyzer
Frequency range: 9 kHz to 43 GHz	MS2830A-045	Spectrum Analyzer

Step 2. Choose frequency reference

Outline	Option No.	Additional information
Frequency reference	Standard	Aging rate: $\pm 1 \times 10^{-6}$/year, $\pm 1 \times 10^{-7}$/day
Rubidium Reference Oscillator	MS2830A-001	Aging rate: $\pm 1 \times 10^{-10}$/month Start-up characteristics: $\pm 1 \times 10^{-9}$ (7 minutes after power-on)
Rubidium Reference Oscillator	MS2830A-037	Aging rate: $\pm 1 \times 10^{-10}$/month Start-up characteristics: $\pm 1 \times 10^{-9}$ (15 minutes after power-on)
High Stability Reference Oscillator	MS2830A-002	Aging rate: $\pm 1 \times 10^{-7}$/year, $\pm 1 \times 10^{-8}$/day Start-up characteristics: $\pm 5 \times 10^{-8}$ (5 minutes after power-on) ∗: Dedicated option for MS2830A-040/041/043

Step 3. Choose analysis bandwidth

Outline	Option No.	Additional information
Analysis Bandwidth N/A	Standard	Spectrum Analyzer
Analysis Bandwidth 10 MHz	MS2830A-006	10 MHz analysis bandwidth supports VSA and digitize functions. Supports measurement software for communications with bandwidth of ≤10 MHz.
Analysis Bandwidth Extension to 31.25 MHz	MS2830A-005	Extends analysis bandwidth from 10 MHz to 31.25 MHz. Supports measurement software for wideband communications, such as LTE. ∗: Requires MS2830A-006. Not supported by MS2830A-045

Bandwidth Extension to 31.25 MHz for Millimeter-wave	MS2830A-009	This option extends the MS2830A-045 (43 GHz Signal Analyzer) maximum analysis bandwidth to 31.25 MHz.
		∗: Requires MS2830A-006.
		   Dedicated option for MS2830A-045 (43 GHz Signal Analyzer).
		   Cannot be set the RBW to more than 10 MHz in spectrum analyzer function.

Analysis Bandwidth Extension to 62.5 MHz	MS2830A-077	Extends analysis bandwidth from 10 MHz to 62.5 MHz.
		∗: Retrofit not supported.
		   Requires MS2830A-006 and MS2830A-005 (for MS2830A-040/041/043/044).
		   Requires MS2830A-006 and MS2830A-009 (for MS2830A-045).
		   An image response is received when setting the bandwidth to more than 31.25 MHz.
		   This can be used when not inputting a signal frequency outside the MS2830A analysis bandwidth (62.5 MHz max.).
		   The Signal Analyzer series MS2690A/91A/92A is recommended for other measurement purposes.

Analysis Bandwidth Extension to 125 MHz	MS2830A-078	Extends analysis bandwidth from 10 MHz to 125 MHz.
		∗: Retrofit not supported.
		   Requires MS2830A-006, MS2830A-005 and MS2830A-077 (for MS2830A-040/041/043/044).
		   Requires MS2830A-006, MS2830A-009 and MS2830A-077 (for MS2830A-045).
		   An image response is received when setting the bandwidth to more than 31.25 MHz.
		   This can be used when not inputting a signal frequency outside the MS2830A analysis bandwidth (125 MHz max.).
		   The Signal Analyzer series MS2690A/91A/92A is recommended for other measurement purposes.

Step 4. Add preamplifier (option)

Outline	Option No.	Additional information
Preamplifier: 100 kHz to 6 GHz	MS2830A-008	Improves level sensitivity from 100 kHz to 6 GHz. Supports all frequency options. 3.6 GHz upper frequency limit with MS2830A-040. ∗: Cannot be installed simultaneously with MS2830A-068.

Microwave Preamplifier	MS2830A-068	Improves level sensitivity. This option is used to measure low-level signals, such as noise and interference signals.
		   Frequency Range: 100 kHz to 26.5 GHz (with MS2830A-044)
		                        100 kHz to 43 GHz (with MS2830A-045)
		∗: Dedicated option for MS2830A-044/045. Cannot be installed simultaneously with MS2830A-008.

Step 5. Add microwave preselector bypass (option)

Outline	Option No.	Additional information
Microwave Preselector Bypass	MS2830A-067	Bypassing the preselector used for the microwave band improves RF frequency characteristics and in-band frequency characteristics. Supports signal analyzer measurement functions up to main-frame upper limit frequency. ∗: Dedicated option for MS2830A-044/045. 　 Add MS2830A-067 when using the signal analyzer measurement functions at bandwidth: >31.25 MHz and frequency: >6 GHz.

Step 6. Choose phase noise performance

Outline	Option No.	Additional information
Low Phase Noise Performance	MS2830A-066	Phase noise performance is increasingly important at carrier offsets of 1 kHz to 100 kHz. Spectrum analyzer phase noise performance affects ACLR/MASK measurements at narrowband communications. (Channel bandwidth: <100 kHz) Add MS2830A-066 when required by the specifications. ∗: Retrofit not supported. Dedicated option for MS2830A-040/041/043. 　 Cannot be installed simultaneously with MS2830A-043, MS2830A-066 and MS2830A-020/021/088.

Step 7. Add measurement software (Requires MS2830A-006. Requires MS2830A-005/009/077/078 depending on software.)

Outline	Option No.	Additional information
W-CDMA/HSPA Downlink Measurement Software	MX269011A	Supports W-CDMA/HSPA/HSPA Evolution compliant BS, and measurement of device RF Tx characteristics.
W-CDMA/HSPA Uplink Measurement Software	MX269012A	Supports W-CDMA/HSPA/HSPA Evolution compliant UE and measurement of device RF Tx characteristics.
GSM/EDGE Measurement Software	MX269013A	Supports GSM/EDGE (EGPRS) compliant BS, and measurement of UE and device RF Tx characteristics.
EDGE Evolution Measurement Software	MX269013A-001	Supports EDGE Evolution (EGPRS2) compliant BS, and measurement of UE and device RF Tx characteristics. ∗: Requires MX269013A
TD-SCDMA Measurement Software	MX269015A	Supports TD-SCDMA compliant repeaters, BS, and measurement of UE and device RF Tx characteristics.
Vector Modulation Analysis Software	MX269017A	Supports evaluation of RF Tx characteristics of digital radio equipment and components for wide range of applications ranging from public facilities and private industry to aerospace and satellite.
Analog Measurement Software	MX269018A∗	Supports evaluation of analog signal Tx characteristics, Rx characteristics and Sound check. (Requires MS2830A-018, MS2830A-088, A0086C and speaker, etc.) ∗: Requires MS2830-066 and A0086C. Not require MS2830A-006.
LTE Downlink Measurement Software	MX269020A	Supports evaluation of 3GPP LTE FDD downlink signal Tx characteristics.
LTE-Advanced FDD Downlink Measurement Software	MX269020A-001	Supports evaluation of 3GPP LTE-Advanced FDD downlink signal Tx characteristics. ∗: Requires MX269020A
LTE Uplink Measurement Software	MX269021A	Supports evaluation of 3GPP LTE FDD uplink signal Tx characteristics.
LTE-Advanced FDD Uplink Measurement Software	MX269021A-001	Supports evaluation of 3GPP LTE-Advanced FDD uplink signal Tx characteristics. ∗: Requires MX269021A
LTE TDD Downlink Measurement Software	MX269022A	Supports evaluation of 3GPP LTE TDD downlink signal Tx characteristics.
LTE-Advanced TDD Downlink Measurement Software	MX269022A-001	Supports evaluation of 3GPP LTE-Advanced TDD downlink signal Tx characteristics. ∗: Requires MX269022A
LTE TDD Uplink Measurement Software	MX269023A	Supports evaluation of 3GPP LTE TDD uplink signal Tx characteristics.
LTE-Advanced TDD Uplink Measurement Software	MX269023A-001	Supports evaluation of 3GPP LTE-Advanced TDD uplink signal Tx characteristics. ∗: Requires MX269023A
CDMA2000 Forward Link Measurement Software	MX269024A	Supports evaluation of CDMA2000 (RC1 to 5) forward link Tx characteristics.
All Measure Function	MX269024A-001	The CDMA2000 Forward Link Tx test items, such as modulation accuracy, power, spectrum, etc., are batch-measured at high speed. ∗: Requires MX269024A
EV-DO Forward Link Measurement Software	MX269026A	Supports evaluation of EV-DO (Rev. 0, Rev. A) forward link Tx characteristics.
All Measure Function	MX269026A-001	The EV-DO Forward Link Tx test items, such as modulation accuracy, power, spectrum, etc., are batch-measured at high speed. ∗: Requires MX269026A
WLAN (802.11) Measurement Software	MX269028A	Supports IEEE802.11n/a/b/g/p/j modulation analysis and flatness measurements.
802.11ac (80 MHz) Measurement Software	MX269028A-001	Supports IEEE802.11ac modulation analysis and flatness measurements. ∗: Requires MX269028A
W-CDMA BS Measurement Software	MX269030A	Supports evaluation of W-CDMA/HSPA downlink signal Tx characteristics (Numerical value result) For manufacturing needing time shortening.
Wireless Network Device Test Software	MX283027A	Choose MX283027A-001 or MX283027A-002. This software is specialized in the speedup of the production line. There is not screen display for result of a measurement. As for the result, only numerical value is retrieved with remote. Because batch handled the measurement, speedup was realized.
WLAN Test Software	MX283027A-001∗1	Supports IEEE802.11n/a/b/g modulation analysis and ACLR measurements. ∗: Requires MX283027A
Bluetooth Test Software	MX283027A-002	Supports Bluetooth signal Tx/Rx characteristics. (Basic Rate/EDR/Bluetooth low energy) ∗: Requires MX283027A
TRX Sweep Calibration	MX283087A	The TRx power of base stations, mobile terminals and device components can be adjusted quickly.

∗1: MX283027A-001 includes MX269911A WLAN IQproducer (Cannot order MX283027A-001 and MX269911A at same time).

Required Options (Analysis Bandwidth)

Name	Model/Order No.	Analysis Bandwidth Extension Option (✓: Required, ✓+: Function expansion, Space (no symbol): No specification)			
		Opt. 006	Opt. 005/009	Opt. 077	Opt. 078
W-CDMA/HSPA Downlink Measurement Software	MX269011A	✓			
W-CDMA/HSPA Uplink Measurement Software	MX269012A	✓			
GSM/EDGE Measurement Software	MX269013A	✓			
EDGE Evolution Measurement Software	MX269013A-001	✓			
TD-SCDMA Measurement Software	MX269015A	✓			
Vector Modulation Analysis Software	MX269017A	✓	✓+	✓+	✓+
Analog Measurement Software	MX269018A				
LTE Downlink Measurement Software	MX269020A	✓	✓		
LTE-Advanced FDD Downlink Measurement Software	MX269020A-001*1	✓	✓*1	✓+*1	✓+*1
LTE Uplink Measurement Software	MX269021A	✓	✓		
LTE-Advanced FDD Uplink Measurement Software	MX269021A-001	✓	✓	✓+	✓+
LTE TDD Downlink Measurement Software	MX269022A	✓	✓		
LTE-Advanced TDD Downlink Measurement Software	MX269022A-001*1	✓	✓*1	✓+*1	✓+*1
LTE TDD Uplink Measurement Software	MX269023A	✓	✓		
LTE-Advanced TDD Uplink Measurement Software	MX269023A-001	✓	✓	✓+	✓+
CDMA2000 Forward Link Measurement Software	MX269024A	✓			
All Measure Function	MX269024A-001	✓			
EV-DO Forward Link Measurement Software	MX269026A	✓			
All Measure Function	MX269026A-001	✓			
WLAN (802.11) Measurement Software	MX269028A	✓	✓		
802.11ac (80 MHz) Measurement Software	MX269028A-001*2	✓	✓*2	✓*2	✓*2
W-CDMA BS Measurement Software	MX269030A	✓			
Wireless Network Device Test Software	MX283027A				
WLAN Test Software	MX283027A-001	✓	✓		
Bluetooth Test Software	MX283027A-002	✓	✓		
TRX Sweep Calibration	MX283087A	✓	✓		

∗1: The LTE-Advanced Carrier Aggregation measurement range varies as follows, depending on the Analysis Bandwidth Extension option configuration.
The Signal Analyzer series MS2690A/91A/92A is recommended for many purposes.

Main frame	Analysis Bandwidth Extension Option Configuration	Maximum Analysis Bandwidth (In-band carrier aggregation range)	Maximum Number of Bands	Maximum Number of Component Carriers
MS2830A	MS2830A-078 installed	125 MHz	1	5
	MS2830A-077 installed	31.25 MHz	3	5
	MS2830A-005/009 installed	31.25 MHz	3	5
MS269xA	MS269xA-078 installed	125 MHz	3	5
	MS269xA-077 installed	31.25 MHz	3	5
	Standard	31.25 MHz	3	5

∗2: The IEEE802.11ac measurement range varies as follows, depending on the Analysis Bandwidth Extension option configuration.
The Signal Analyzer series MS2690A/91A/92A is recommended for many purposes.

Model			Bandwidth of IEEE802.11ac signal				
Main frame	Measurement software	Analysis Bandwidth Extension Option Configuration	20 MHz	40 MHz	80 MHz	160 MHz	80 MHz + 80 MHz
MS2830A	MX269028A-001 (Only for MS2830A)	MS2830A-078 installed	✓	✓	✓*2-2		
		MS2830A-077 installed	✓	✓			
		MS2830A-005/009 installed	✓	✓			
MS269xA	MX269028A-002 (Only for MS269xA)	MS269xA-078 installed	✓	✓	✓	✓	✓*2-1
		MS269xA-077 installed	✓	✓			
		Standard	✓	✓			

∗2-1: Measurement required for each carrier signal (80-MHz bandwidth)
∗2-2: Measurement is only possible when the carrier signal (80-MHz bandwidth) is input due to the effect of the image response.

Step 8. Add other measurement software (These software are for PC.)

Outline	Option No.	Additional information
Wi-SUN PHY Measurement Software	MX705010A	Supports automatic measurement of smart utility network wireless communications "Wi-SUN" PHY conformance test cases. ∗: MS2830A option configuration examples: 　　MS2830A-041, MS2830A-002, MS2830A-006, MX269017A, 　　MS2830A-020, MS2830A-022, MS2830A-027, MX269902A. 　　Cannot be installed in MS2830A.
Wi-SUN Protocol Monitor	MX705110A	Supports Wi-SUN protocol analysis. The wireless signals between communicating wireless equipments are captured as I/Q data using the MS2830A digitize function and data analysis is performed by the MX705110A. Data analysis displays the PHY/MAC frame format, Tx timing, etc. ∗: Requires MS2830A-006. 　　Cannot be installed in MS2830A.

Step 9. Add other signal analyzer options

Outline	Option No.	Additional information
Phase Noise Measurement	MS2830A-010	Adds frequency offset range 10 Hz to 10 MHz phase noise measurement.
Secondary HDD	MS2830A-011	This removable 2ndary HDD is installed in the HDD Option Slot of the MS2830A main frame to expand the user data storage space. It does not have the Windows OS installed. The MS2830A ships with it installed. Only one expansion HDD can be installed in the MS2830A.
2ndary HDD Retrofit	MS2830A-311	This removable 2ndary HDD is installed in the HDD Option Slot of the MS2830A main frame to expand the user data storage space. It does not have the Windows OS installed. The MS2830A does not ship with it installed.
Precompliance EMI Function	MS2830A-016	This option adds an EMI measurement detection mode and RBW to the spectrum analyzer function. Both the detection mode used for CISPR standards (Quasi-Peak, CISPR-AVG, RMS-AVG) and RBW (200 Hz (6 dB), 9 kHz (6 dB), 120 kHz (6 dB), 1 MHz (Imp)) as well as conventional settings can be selected.
Noise Figure Measurement Function	MS2830A-017	Adds Noise Figure Measurement function. Noise Figure is measured with the measurement method of Y-factor method which uses a Noise Source∗. ∗: Noisecom, NC346 series
BER Measurement Function	MS2830A-026	Adds BER Measurement Function for input bit rates of 100 bps to 10 Mbps. It supports Rx sensitivity tests by inputting the receiver-demodulated Data/Clock/Enable to the back of the MS2830A. ∗: The J1556A Aux Conversion Adapter is a standard accessory supplied with MS2830A-026.
Internal Signal Generator Control Function	MS2830A-052	This option measures the DUT transmission characteristics using linked operation between the Spectrum Analyzer functions and the installed signal generator. For the performance, refer to specifications for the Spectrum Analyzer function and the installed vector signal generator or analog signal generator. ∗: Requires any of MS2830A-020, 021, or 088.

Step 10. Add built-in vector signal generator

Outline	Option No.	Additional information
3.6 GHz Vector Signal Generator	MS2830A-020	Covers 250 kHz to 3.6 GHz frequency range and adds waveform generator with 120 MHz wide vector modulation bandwidth.
6 GHz Vector Signal Generator	MS2830A-021	Covers 250 kHz to 6 GHz frequency range and adds waveform generator with 120 MHz wide vector modulation bandwidth.

Step 10-1. Add options for vector signal generator (Requires MS2830A-020 or MS2830A-021)

Outline	Option No.	Additional information
Vector Signal Generator Low-power Extension	MS2830A-022	Expands lower limit of output level from −40 to −136 dBm. (Note: 5-dB drop in upper output level.)
Vector Signal Generator ARB Memory Extension 256 Msample	MS2830A-027	Expands ARB memory capacity from 64 to 256 Msamples.
AWGN	MS2830A-028	Adds AWGN generator function.
Analog Function Extension for Vector Signal Generator	MS2830A-029	Adds analog signal generation function using MX269018A Analog Measurement Software to Vector Signal Generator option (MS2830A-020/021). Can calibrate lower limit frequency up to 100 kHz (MS2830A-020/021 lower limit frequency is 250 kHz). ∗: Please contact our sales representative when requesting retrofitting. 　　Requires MX269018A, MS2830A-020 or 021, and MS2830A-022

Step 10-2. Add vector waveform generation tool (IQproducer) license (Requires MS2830A-020 or MS2830A-021)

Outline	Option No.	Additional information
HSDPA/HSUPA IQproducer	MX269901A	Outputs waveform pattern created by setting HSDPA/HSUPA Uplink/Downlink parameter with HSDPA/HSUPA IQproducer from vector signal generator option.
TDMA IQproducer	MX269902A	Outputs waveform pattern created by setting TDMA parameter with TDMA IQproducer from vector signal generator option.
Multi-carrier IQproducer	MX269904A	Outputs multi-carrier waveform pattern of tone signal and various communication method modulated signals from vector signal generator option.
Mobile WiMAX IQproducer	MX269905A	Outputs waveform pattern created by setting Mobile WiMAX parameter with Mobile WiMAX IQproducer from vector signal generator option.
LTE IQproducer	MX269908A	Outputs waveform pattern created by setting LTE FDD parameter with LTE IQproducer from vector signal generator option.
LTE-Advanced FDD Option	MX269908A-001	Outputs waveform pattern created by setting LTE-Advanced FDD parameter with LTE IQproducer from vector signal generator option. ∗: Requires MX269908A.
LTE TDD IQproducer	MX269910A	Outputs waveform pattern created by setting LTE TDD parameter with LTE TDD IQproducer from vector signal generator option.
LTE-Advanced TDD Option	MX269910A-001	Outputs waveform pattern created by setting LTE-Advanced TDD parameter with LTE TDD IQproducer from vector signal generator option. ∗: Requires MX269910A.
WLAN IQproducer	MX269911A	Outputs waveform pattern created by setting IEEE802.11n/a/b/g/p/j parameter with WLAN IQproducer from vector signal generator option.
802.11ac (80 MHz) Option	MX269911A-001	Outputs waveform pattern created by setting IEEE802.11ac parameter with WLAN IQproducer from vector signal generator option. ∗: Requires MX269911A.
TD-SCDMA IQproducer	MX269912A	Outputs waveform pattern created by setting TD-SCDMA parameter with TD-SCDMA IQproducer from vector signal generator option.
1xEV-DO Reverse Receiver Test Waveform Pattern	MX269970A	Reverse Link signal waveform patterns for 1xEV-DO base station Rx measurements and this license

Step 11. Add built-in analog signal generator (Require MX269018A)

Outline	Option No.	Additional information
3.6 GHz Analog Signal Generator	MS2830A-088	Outputs analog signals by combining with MX269018A Analog Measurement Software and includes low power expansion (equivalent to MS2830A-022). Can calibrate lower limit frequency up to 100 kHz (MS2830A-020 lower limit frequency is 250 kHz). ∗: Requires MX269018A. Cannot be installed simultaneously with MS2830A-022. Vector modulation signal output not supported (added VSG by MS2830A-189).

Step 11-1. Add options for analog signal generator (Require MS2830A-088)

Outline	Option No.	Additional information
Vector Function Extension for Analog Signal Generator Retrofit	MS2830A-189	Installs license required for vector signal generation in existing Analog Signal Generator (MS2830A-088/188). Use following options when ordering new Analog Signal Generator + Vector Signal Generator: MS2830A-020 or 021 + MS2830A-022 + MS2830A-029 + MX269018A + MS2830A-066

Step 12. Add built-in audio analyzer (Require MX269018A)

Outline	Option No.	Additional information
Audio Analyzer	MS2830A-018	Combination with the MX269018A Analog Measurement software supports audio I/O. Combination with the built-in Analog Signal Generator supports measurement of analog radio TRx characteristics. ∗: Requires MX269018A.

Step 13. Add accessories

Outline	Option No.	Additional information
AUX Conversion Adaptor	J1556A	Adapter for converting from AUX to BNC. Used for MARKER output from vector signal generator option, pulse modulation signals, baseband reference clock signals and Clock, Data and Enable signals for BER Measurement Function option. ∗: The J1556A Aux Conversion Adapter is a standard accessory supplied with the MS2830A-026 BER Measurement Function
Inline Peak Power Sensor (350 MHz to 4 GHz, with USB A to mini B cable)	MA24105A	Supports 350 MHz to 4 GHz and operates on Windows.
USB Power Sensor (50 MHz to 6 GHz, with USB A to Mini-B Cable)	MA24106A	Supports 50 MHz to 6 GHz and operates on Windows.
Microwave USB Power Sensor (10 MHz to 8 GHz, with USB A to Micro-B Cable)	MA24108A	Supports 10 MHz to 8 GHz and operates on Windows.
Microwave USB Power Sensor (10 MHz to 18 GHz, with USB A to Micro-B Cable)	MA24118A	Supports 10 MHz to 18 GHz and operates on Windows.
Microwave USB Power Sensor (10 MHz to 26 GHz, with USB A to Micro-B Cable)	MA24126A	Supports 10 MHz to 26 GHz and operates on Windows.

Retrofit to Current MS2830A

Hardware Option Retrofit

The following hardware options can be retrofitted. Order the Z1345A Installation Kit as well.
The MS2830A must be returned to the Anritsu plant for hardware retrofitting.[*1]

	Model/Order No.	Name	Reference steps
Hardware options	MS2830A-101	Rubidium Reference Oscillator Retrofit	2
	MS2830A-137	Rubidium Reference Oscillator Retrofit	2
	MS2830A-102	High Stability Reference Oscillator Retrofit	2
	MS2830A-105	Analysis Bandwidth Extension to 31.25 MHz Retrofit	3
	MS2830A-106	Analysis Bandwidth 10 MHz Retrofit	3
	MS2830A-108	Preamplifier Retrofit	4
	MS2830A-109	Bandwidth Extension to 31.25 MHz for Milimeter-wave Retrofit (Dedicated for MS2830A-045)	3
	MS2830A-110	Phase Noise Measurement Function Retrofit	9
	MS2830A-111	2ndary HDD Retrofit	9
	MS2830A-116	Precompliance EMI Function Retrofit	9
	MS2830A-117	Noise Figure Measurement Function Retrofit	9
	MS2830A-118	Audio Analyzer Retrofit	12
	MS2830A-126	BER Measurement Function Retrofit	9
	MS2830A-352[*1]	Internal Signal Generator Control Function User-Installable	9
	MS2830A-167	Microwave Preselector Bypass Retrofit	5
	MS2830A-168	Microwave Preamplifier Retrofit	4
	MS2830A-120	3.6 GHz Vector Signal Generator Retrofit	10
	MS2830A-121	6 GHz Vector Signal Generator Retrofit	10
	MS2830A-122	Low Power Extension for Vector Signal Generator Retrofit	10-1
	MS2830A-127	ARB Memory Upgrade 256 Msa for Vector Signal Generator Retrofit	10-1
	MS2830A-128	AWGN Retrofit	10-1
	MS2830A-188	3.6 GHz Analog Signal Generator Retrofit	11
	MS2830A-189	Vector Function Extension for Analog Signal Generator Retrofit	11-1
	MS2830A-180[*2]	CPU/Windows 7 64 bit Upgrade Retrofit	–
Application parts	Z1345A	Installation Kit (Required when retrofitting options or installing software)	–

∗1: For MS2830A-352, the license is delivered on an accessory DVD which is used to install the license in the MS2830A.
    It is not necessary to return the MS2830A to Anritsu for upgrading.
∗2: Replace current CPU board of MS2830A which Windows Embedded Standard 2009 (Windows XP) is installed (it was ordered until August 2016 approximately)
    and upgrade the operating system to Windows Embedded Standard 7 (Windows 7).
    A seal labeled "C1" is affixed near the serial number label of MS2830A which is installed Windows 7.

The conditions for the following option are different from the above-described options.

	Model/Order No.	Name	Reference steps
Hardware option	MS2830A-311	2ndary HDD Retrofit	9

• There is no need to return the MS2830A to the Anritsu plant when ordering the MS2830A-311.
• It is not necessary to order the Z1345A when ordering MS2830A-311 and the MS2830A at the same time.
• It is necessary to order the Z1345A when ordering MS2830A-311 separately.

Software Option Retrofit

The following software options can be retrofitted. Order the Z1345A Installation Kit as well.
The MS2830A does not require return to the Anritsu plant for software retrofitting.

Model/Order No.		Name	Reference steps
	MX269011A	W-CDMA/HSPA Downlink Measurement Software	7
	MX269012A	W-CDMA/HSPA Uplink Measurement Software	
	MX269013A	GSM/EDGE Measurement Software	
	MX269013A-001	EDGE Evolution Measurement Software (Requires MX269013A)	
	MX269015A	TD-SCDMA Measurement Software	
	MX269017A	Vector Modulation Analysis Software	
	MX269018A*1	Analog Measurement Software	
	MX269020A	LTE Downlink Measurement Software	
	MX269020A-001	LTE-Advanced FDD Downlink Measurement Software (Requires MX269020A)	
	MX269021A	LTE Uplink Measurement Software	
	MX269021A-001	LTE-Advanced FDD Uplink Measurement Software (Requires MX269021A)	
	MX269022A	LTE TDD Downlink Measurement Software	
	MX269022A-001	LTE-Advanced TDD Downlink Measurement Software (Requires MX269022A)	
	MX269023A	LTE TDD Uplink Measurement Software	
	MX269023A-001	LTE-Advanced TDD Uplink Measurement Software (Requires MX269023A)	
	MX269024A	CDMA2000 Forward Link Measurement Software	
	MX269024A-001	All Measure Function (Requires MX269024A)	
	MX269026A	EV-DO Forward Link Measurement Software	
	MX269026A-001	All Measure Function (Requires MX269026A)	
	MX269028A	WLAN (802.11) Measurement Software	
	MX269028A-001	802.11ac (80 MHz) Measurement Software (Requires MX269028A)	
	MX269030A	W-CDMA BS Measurement Software	
	MX283027A	Wireless Network Device Test Software	
	MX283027A-001*2	WLAN Test Software (Requires MX283027A)	
	MX283027A-002	Bluetooth Test Software (Requires MX283027A)	
	MX283087A	TRX Sweep Calibration	
Waveform generation tools (IQproducer)/ Waveform patterns	MX269901A	HSDPA/HSUPA IQproducer	10-2
	MX269902A	TDMA IQproducer	
	MX269904A	Multi-Carrier IQproducer	
	MX269905A	Mobile WiMAX IQproducer	
	MX269908A	LTE IQproducer	
	MX269908A-001	LTE-Advanced FDD Option (Requires MX269908A)	
	MX269910A	LTE TDD IQproducer	
	MX269910A-001	LTE-Advanced TDD Option (Requires MX269910A)	
	MX269911A*2	WLAN IQproducer	
	MX269911A-001	802.11ac (80 MHz) Option (Requires MX269911A)	
	MX269912A	TD-SCDMA IQproducer	
	MX269970A	1xEV-DO Reverse Receiver Test Waveform Pattern	
Other measurement software (These software are for PC.)	MX705010A	Wi-SUN PHY Measurement Software	8
	MX705110A	Wi-SUN Protocol Monitor	
Application parts	Z1345A	Installation Kit (Required when retrofitting options or installing software)	–

∗1: Can be retrofitted to MS2830A with installed MS2830A-062 or MS2830A-066 option but requires separate A0086C.
∗2: MX283027A-001 includes MX269911A WLAN IQproducer (Cannot order MX283027A-001 and MX269911A at same time).

Software Update

Software is updated regularly to add new functions, improve performance and fix bugs.
Download the latest software from the following URL. Register before use.

Software Download Site URL

https://my.anritsu.com/home

Options Configuration

Refer two table shown below about the hardware / software which each frequency model of MS2830A can implement.

Hardware

Frequency range (MS2830A-040/041/043/044/045) not upgradable.

✓ = Can be installed, No = Cannot be installed, R = Require, U = Upgrade

Addition to Main frame columns: 040, 041, 043, 044, 045. Combination with "Opt." columns: 001, 037, 002, 005, 006, 009, 077, 078, 008, 010, 011, 311, 016, 017, 018, 020, 021, 022, 026, 052, 027, 028, 029, 066, 067, 068, 088, 189, 180.

Opt.	Name	Retrofit	040	041	043	044	045	001	037	002	005	006	009	077	078	008	010	011	311	016	017	018	020	021	022	026	052	027	028	029	066	067	068	088	189	180
001	Rubidium Reference Oscillator	✓	✓	✓	✓	✓	✓	✕	No	*9																										
037	Rubidium Reference Oscillator	✓	✓	✓	✓	✓	✓	No	✕	*9																										
002	High Stability Reference Oscillator	✓	✓	✓	✓	No	No	*9	*9	✕			No																					No	No	
005	Analysis Bandwidth Extension to 31.25 MHz	✓	✓	✓	✓	✓	No				✕	R	No																							
006	Analysis Bandwidth 10 MHz	✓	✓	✓	✓	✓	✓				U	✕	U	U	U																					
009	Bandwidth Extension to 31.25 MHz for Millimeter-wave		No	No	No	No	✓			No	No	R	✕											No	No	No	No		No	No	No	No			No	No	
077	Analysis Bandwidth Extension to 62.5 MHz	No	✓	✓	✓	✓	✓				*5	R	*5	✕																						
078	Analysis Bandwidth Extension to 125 MHz	No	✓	✓	✓	✓	✓				*5	R	*5	R	✕																					
008	Preamplifier	✓	✓	✓	✓	*1	*1									✕																		*1		
010	Phase Noise Measurement Function	✓	✓	✓	✓	✓	✓										✕																			
011	2ndary HDD	✓	✓	✓	✓	✓	✓											✕																		
311	2ndary HDD Retrofit	✓	✓	✓	✓	✓	✓												✕																	
016	Precompliance EMI Function	✓	✓	✓	✓	✓	✓													✕																
017	Noise Figure Measurement Function	✓	✓	✓	✓	✓	✓									U					✕													U		
018	Audio Analyzer*4	✓	✓	✓	*7	No	No						No									✕									R	No	No			
020	3.6 GHz Vector Signal Generator	✓	✓	✓	*2	No	No						No										✕	No			*11				*2	No	No	No	No	
021	6 GHz Vector Signal Generator	✓	✓	✓	*2	No	No						No										No	✕			*11				*2	No	No	No	No	
022	Low Power Extension for Vector Signal Generator	✓	✓	✓	✓	No	No						No										R		✕							No	No	No	No	
026	BER Measurement Function	✓	✓	✓	✓	✓	✓																			✕										
052	Internal Signal Generator Control Function	*12	✓	✓	*2	No	No																*11				✕				*2			*11		
027	ARB Memory Upgrade 256 MSa for Vector Signal Generator	✓	✓	✓	No	No	No						No										R					✕				No	No	*3	*3	
028	AWGN	✓	✓	✓	No	No	No						No										R						✕			No	No	*3	*3	
029	Analog Function Extension for Vector Signal Generator*4	*8	✓	✓	No	No	No						No										R	R						✕	R	No	No	No	No	
066	Low Phase Noise Performance	No	✓	✓	*2	No	No						No										*2		*2						✕	No	No			
067	Microwave Preselector Bypass	No	No	No	No	✓	✓	No								No	No	No	No				No	No	No	No					No	✕		No	No	
068	Microwave Preamplifier	No	No	No	No	*1	*1	No								*1	No	No	No				No	No	No	No					No		✕	No	No	
088	3.6 GHz Analog Signal Generator*4	✓	✓	✓	No	No	No						No										No	No	No		*11	*3	*3	No	R	No	No	✕		U
189	Vector Function Extension for Analog Signal Generator Retrofit	✓	✓	✓	No	No	No						No										No	No	No			*3	*3	No		No	No	R	✕	R
180	CPU/Windows 7 64 bit Upgrade Retrofit	*10	✓	✓	✓	✓	✓																													✕

*1: Cannot be installed simultaneously MS2830A-008 and MS2830A-068/168. When MS2830A-168 is added to Signal Analyzer with MS2830A-008, only MS2830A-168 becomes effective.

*2: MS2830A-043 can implement only either MS2830A-020/021 or MS2830A-066.

*3: MS2830A-027 and MS2830A-028 are not used in analog signal generator (MS2830A-088/188).
After vector function (MS2830A-189) was added, the vector signal generator function can add MS2830A-027 and MS2830A-028.

*4: Require MX269018A.

*5: MS2830A-040/041/043/044 require MS2830A-005.
MS2830A-045 requires MS2830A-009.

*6: An image response is received when setting the bandwidth to more than 31.25 MHz.
This can be used when not inputting a signal frequency outside the MS2830A analysis bandwidth (125 MHz max.).
The Signal Analyzer series MS2690A/91A/92A is recommended for other measurement purposes.

*7: The MS2830A-018 can be installed with MS2830A-043 but cannot be installed simultaneously with a signal generator (MS2830A-088/020/021/029) because MS2830A-066 is required. Consequently, analog wireless Rx tests cannot be performed using the same main frame when the MS2830A-018 and MS2830A-043 are combined.

*8: Please contact our sales representative when requesting retrofitting.

*9: The Rubidium Reference Oscillator can be retrofitted to MS2830A-040/041/043 with installed High Stability Reference Oscillator.
In this case, the Rubidium Reference Oscillator is functional.

*10: Replace current CPU board of MS2830A which Windows Embedded Standard 2009 (Windows XP) is installed (it was ordered until August 2016 approximately) and upgrade the operating system to Windows Embedded Standard 7 (Windows 7).
A seal labeled "C1" is affixed near the serial number label of MS2830A which is installed Windows 7.

*11: Installing the MS2830A-052 requires any of the MS2830A-020/120, 021/121, or 088/188 options.

*12: When retrofitting signal generator-linked functions (MS2830A-352), the license is delivered on an accessory DVD which is used to install the license in the MS2830A. It is not necessary to return the MS2830A to Anritsu for upgrading.

Software

✓ = Can be installed, No = Cannot be installed, R = Require, U = Upgrade

Model	Name	Addition to Main frame 040	041	043	044	045	Analysis Bandwidth 005	006	009	077	078	Note
MX269011A	W-CDMA/HSPA Downlink Measurement Software	✓	✓	✓	✓	✓		R				
MX269012A	W-CDMA/HSPA Uplink Measurement Software	✓	✓	✓	✓	✓		R				
MX269013A	GSM/EDGE Measurement Software	✓	✓	✓	✓	✓		R				
MX269013A-001	EDGE Evolution Measurement Software	✓	✓	✓	✓	✓		R				Require MX269013A
MX269015A	TD-SCDMA Measurement Software	✓	✓	✓	✓	✓		R				
MX269017A	Vector Modulation Analysis Software	✓	✓	✓	*3	*3	U	R	*1	U	U	U: Upgrade of the phase noise performance (MS2830A-066) (Measured signal: Frequency <3.6 GHz, Bandwidth <1 MHz)
MX269018A	Analog Measurement Software	✓	✓	*2	No	No			No			Require MS2830A-066 and A0086C (See MX2690xxA series Measurement Software catalog for detail) Note) MS2830A-043 cannot implement a signal generator for Rx test (Because MS2830A-066 is required)
MX269020A	LTE Downlink Measurement Software	✓	✓	✓	✓	✓	R	R	*1			
MX269020A-001	LTE-Advanced FDD Downlink Measurement Software	✓	✓	✓	✓	✓	R	R	*1	U	U	Require MX269020A
MX269021A	LTE Uplink Measurement Software	✓	✓	✓	✓	✓	R	R	*1			
MX269021A-001	LTE-Advanced FDD Uplink Measurement Software	✓	✓	✓	✓	✓	R	R	*1	U	U	Require MX269021A
MX269022A	LTE TDD Downlink Measurement Software	✓	✓	✓	✓	✓	R	R	*1			
MX269022A-001	LTE-Advanced TDD Downlink Measurement Software	✓	✓	✓	✓	✓	R	R	*1	U	U	Require MX269022A
MX269023A	LTE TDD Uplink Measurement Software	✓	✓	✓	✓	✓	R	R	*1			
MX269023A-001	LTE-Advanced TDD Uplink Measurement Software	✓	✓	✓	✓	✓	R	R	*1	U	U	Require MX269023A
MX269024A	CDMA2000 Forward Link Measurement Software	✓	✓	✓	✓	✓		R				
MX269024A-001	All Measure Function	✓	✓	✓	✓	✓		R				Require MX269024A
MX269026A	EV-DO Forward Link Measurement Software	✓	✓	✓	✓	✓		R				
MX269026A-001	All Measure Function	✓	✓	✓	✓	✓		R				Require MX269026A
MX269028A	WLAN (802.11) Measurement Software	✓	✓	✓	✓	✓	R	R	*1			
MX269028A-001	802.11ac (80 MHz) Measurement Software	✓	✓	✓	✓	✓	R	R	*1	R	R	Only for MS2830A. Require MX269028A
MX269030A	W-CDMA BS Measurement Software	✓	✓	✓	✓	✓		R				
MX283027A	Wireless Network Device Test Software	↓	↓	↓	↓	↓	↓	↓	↓			
MX283027A-001	WLAN Test Software	✓	✓	✓	✓	✓	R	R	*1			Require MX283027A*4
MX283027A-002	Bluetooth Test Software	✓	✓	✓	✓	✓	R	R				Require MX283027A
MX283087A	TRX Sweep Calibration	✓	✓	✓	No	No	R	R				Require MS2830A-020/021 and MS2830A-022

∗1: MS2830A-045 cannot be installed MS2830A-005. Add MS2830A-009 in substitution for MS2830A-005.

∗2: MS2830A-043 can implement only either MS2830A-020/021 or MS2830A-066.
By the system that MS2830A-066 is necessary, MS2830A-020/021 is not added to MS2830A-043.

∗3: By the measurement of the narrowband signal, add MS2830A-066. (Channel bandwidth: x kHz to 100 kHz)
MS2830A-044/045 cannot be installed MS2830A-066.

∗4: MX283027A-001 includes MX269911A WLAN IQproducer (Cannot order MX283027A-001 and MX269911A at same time).

Ordering Information

Please specify the model/order number, name and quantity when ordering.
The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

Model/Order No.	Name
MS2830A	**– Main frame –** Signal Analyzer
P0031A Z0541A	**– Standard accessories –** Power Cord: 1 pc USB Memory (≥256 MB, USB2.0 Flash Driver): 1 pc USB Mouse: 1 pc Install CD-ROM (Application software, instruction manual CD-ROM): 1 pc
MS2830A-040 MS2830A-041 MS2830A-043 MS2830A-044 MS2830A-045	**– Options –** 3.6 GHz Signal Analyzer 6 GHz Signal Analyzer 13.5 GHz Signal Analyzer 26.5 GHz Signal Analyzer 43 GHz Signal Analyzer
MS2830A-001 MS2830A-037 MS2830A-002 MS2830A-005[*1] MS2830A-006 MS2830A-008 MS2830A-009[*1] MS2830A-010 MS2830A-011 MS2830A-016 MS2830A-017 MS2830A-018 MS2830A-026[*2] MS2830A-066 MS2830A-067 MS2830A-068 MS2830A-077[*3] MS2830A-078[*4] MS2830A-311	Rubidium Reference Oscillator Rubidium Reference Oscillator High Stability Reference Oscillator Analysis Bandwidth Extension to 31.25 MHz Analysis Bandwidth 10 MHz Preamplifier Bandwidth Extension to 31.25 MHz for Millimeter-wave (Dedicated for MS2830A-045) Phase Noise Measurement Function 2ndary HDD Precompliance EMI Function Noise Figure Measurement Function Audio Analyzer BER Measurement Function (J1556A AUX Conversion Adapter as standard accessory) Low Phase Noise Performance Microwave Preselector Bypass Microwave Preamplifier Analysis Bandwidth Extension to 62.5 MHz Analysis Bandwidth Extension to 125 MHz 2ndary HDD Retrofit
MS2830A-020 MS2830A-021 MS2830A-022 MS2830A-027 MS2830A-028 MS2830A-029[*5]	3.6 GHz Vector Signal Generator 6 GHz Vector Signal Generator Low Power Extension for Vector Signal Generator ARB Memory Upgrade 256 Msa for Vector Signal Generator AWGN Analog Function Extension for Vector Signal Generator
MS2830A-052[*6]	Internal Signal Generator Control Function
MS2830A-088	3.6 GHz Analog Signal Generator
MS2830A-101 MS2830A-137 MS2830A-102 MS2830A-105[*1] MS2830A-106 MS2830A-108 MS2830A-109[*1] MS2830A-110 MS2830A-111 MS2830A-116 MS2830A-117 MS2830A-118 MS2830A-126[*2]	**– Retrofit options –** Rubidium Reference Oscillator Retrofit Rubidium Reference Oscillator Retrofit High Stability Reference Oscillator Retrofit Analysis Bandwidth Extension to 31.25 MHz Retrofit Analysis Bandwidth 10 MHz Retrofit Preamplifier Retrofit Bandwidth Extension to 31.25 MHz for Millimeter-wave Retrofit (Dedicated for MS2830A-045) Phase Noise Measurement Function Retrofit 2ndary HDD Retrofit Precompliance EMI Function Retrofit Noise Figure Measurement Function Retrofit Audio Analyzer Retrofit BER Measurement Function Retrofit (J1556A AUX Conversion Adapter as standard accessory)
MS2830A-352[*6]	Internal Signal Generator Control Function User-Installable
MS2830A-167 MS2830A-168	Microwave Preselector Bypass Retrofit Microwave Preamplifier Retrofit
MS2830A-120 MS2830A-121 MS2830A-122 MS2830A-127 MS2830A-128	3.6 GHz Vector Signal Generator Retrofit 6 GHz Vector Signal Generator Retrofit Low Power Extension for Vector Signal Generator Retrofit ARB Memory Upgrade 256 Msa for Vector Signal Generator Retrofit AWGN Retrofit
MS2830A-188 MS2830A-189	3.6 GHz Analog Signal Generator Retrofit Vector Function Extension for Analog Signal Generator Retrofit
MS2830A-152[*6]	Internal Signal Generator Control Function Retrofit
MS2830A-180[*7]	CPU/Windows 7 64 bit Upgrade Retrofit

Model/Order No.	Name
MX269011A MX269012A MX269013A MX269013A-001 MX269015A MX269017A MX269018A[*8] MX269020A MX269020A-001 MX269021A MX269021A-001 MX269022A MX269022A-001 MX269023A MX269023A-001 MX269024A MX269024A-001 MX269026A MX269026A-001 MX269028A MX269028A-001[*8] MX269030A MX283027A MX283027A-001 MX283027A-002 MX283087A	**– Software options –** CD-ROM with license and operation manuals W-CDMA/HSPA Downlink Measurement Software W-CDMA/HSPA Uplink Measurement Software GSM/EDGE Measurement Software EDGE Evolution Measurement Software TD-SCDMA Measurement Software Vector Modulation Analysis Software Analog Measurement Software (Requires MS2830A-066 and A0086C) LTE Downlink Measurement Software LTE-Advanced FDD Downlink Measurement Software LTE Uplink Measurement Software LTE-Advanced FDD Uplink Measurement Software LTE TDD Downlink Measurement Software LTE-Advanced TDD Downlink Measurement Software LTE TDD Uplink Measurement Software LTE-Advanced TDD Uplink Measurement Software CDMA2000 Forward Link Measurement Software All Measure Function EV-DO Forward Link Measurement Software All Measure Function WLAN (802.11) Measurement Software 802.11ac (80 MHz) Measurement Software W-CDMA BS Measurement Software Wireless Network Device Test Software WLAN Test Software Bluetooth Test Software TRX Sweep Calibration
MX269901A MX269902A MX269904A MX269905A MX269908A MX269908A-001 MX269910A MX269910A-001 MX269911A MX269911A-001 MX269912A MX269970A	HSDPA/HSUPA IQproducer TDMA IQproducer Multi-Carrier IQproducer Mobile WiMAX IQproducer LTE IQproducer LTE-Advanced FDD Option LTE TDD IQproducer LTE-Advanced TDD Option WLAN IQproducer 802.11ac (80 MHz) Option TD-SCDMA IQproducer 1xEV-DO Reverse Receiver Test Waveform Pattern
MX705010A MX705110A	**– Other software options –** These software are for PC. Wi-SUN PHY Measurement Software Wi-SUN Protocol Monitor
MS2830A-ES210 MS2830A-ES310 MS2830A-ES510	**– Warranty service –** 2 years Extended Warranty Service 3 years Extended Warranty Service 5 years Extended Warranty Service
A0086C J1556A[*2, *9] MA24105A MA24106A MA24108A MA24118A MA24126A Z1345A	**– Application parts –** USB Audio (for MX269018A) AUX Conversion Adapter (AUX → BNC, for vector signal generator option and BER measurement function option) Inline Peak Power Sensor (350 MHz to 4 GHz, with USB A to mini B cable) USB Power Sensor (50 MHz to 6 GHz, with USB A to mini B Cable) Microwave USB Power Sensor (10 MHz to 8 GHz, with USB A to micro B Cable) Microwave USB Power Sensor (10 MHz to 18 GHz, with USB A to micro B Cable) Microwave USB Power Sensor (10 MHz to 26 GHz, with USB A to micro B Cable) Installation Kit (required when retrofitting options or installing software)

*1: Requires MS2830A-006/106.
*2: The J1556A Aux Conversion Adapter is a standard accessory supplied with MS2830A-026/126
*3: Requires MS2830A-006 and MS2830A-005 (For MS2830A-040/041/043/044)
   Requires MS2830A-006 and MS2830A-009 (For MS2830A-045)
*4: Requires MS2830A-006, MS2830A-005 and MS2830A-077
   (For MS2830A-040/041/043/044)
   Requires MS2830A-006, MS2830A-009 and MS2830A-077
   (For MS2830A-045)

*5: Please contact our sales representative when requesting retrofitting.
*6: Requires any of MS2830A-020/120, 021/121, or 088/188.
   For details, refer to the Options Configuration Guide: Hardware item.
*7: Replace the CPU board and upgrade the OS to Windows 7.
   For details, refer to the Options Configuration Guide: Hardware item.
*8: For MS2830A only
*9: The J1556A AUX Conversion Adapter is not a standard accessory for the MS2830A-020/120/021/121 Vector Signal Generator Option.

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● **United States**
Anritsu Americas Sales Company
450 Century Parkway, Suite 190, Allen,
TX 75013, U.S.A.
Phone: +1-800-Anritsu (1-800-267-4878)

● **Canada**
Anritsu Electronics Ltd.
700 Silver Seven Road, Suite 120, Kanata,
Ontario K2V 1C3, Canada
Phone: +1-613-591-2003
Fax: +1-613-591-1006

● **Brazil**
Anritsu Eletronica Ltda.
Praça Amadeu Amaral, 27 - 1 Andar
01327-010 - Bela Vista - Sao Paulo - SP
Brazil
Phone: +55-11-3283-2511
Fax: +55-11-3288-6940

● **Mexico**
Anritsu Company, S.A. de C.V.
Blvd Miguel de Cervantes Saavedra #169 Piso 1, Col. Granada
Mexico, Ciudad de Mexico, 11520, MEXICO
Phone: +52-55-4169-7104

● **United Kingdom**
Anritsu EMEA Ltd.
200 Capability Green, Luton, Bedfordshire, LU1 3LU, U.K.
Phone: +44-1582-433200
Fax: +44-1582-731303

● **France**
Anritsu S.A.
12 avenue du Québec, Bâtiment Iris 1- Silic 612,
91140 VILLEBON SUR YVETTE, France
Phone: +33-1-60-92-15-50
Fax: +33-1-64-46-10-65

● **Germany**
Anritsu GmbH
Nemetschek Haus, Konrad-Zuse-Platz 1
81829 München, Germany
Phone: +49-89-442308-0
Fax: +49-89-442308-55

● **Italy**
Anritsu S.r.l.
Via Elio Vittorini 129, 00144 Roma, Italy
Phone: +39-6-509-9711
Fax: +39-6-502-2425

● **Sweden**
Anritsu AB
Isafjordsgatan 32C, 164 40 KISTA, Sweden
Phone: +46-8-534-707-00

● **Finland**
Anritsu AB
Teknobulevardi 3-5, FI-01530 VANTAA, Finland
Phone: +358-20-741-8100
Fax: +358-20-741-8111

● **Denmark**
Anritsu A/S
Torveporten 2, 2500 Valby, Denmark
Phone: +45-7211-2200
Fax: +45-7211-2210

● **Russia**
Anritsu EMEA Ltd.
Representation Office in Russia
Tverskaya str. 16/2, bld. 1, 7th floor.
Moscow, 125009, Russia
Phone: +7-495-363-1694
Fax: +7-495-935-8962

● **Spain**
Anritsu EMEA Ltd.
Representation Office in Spain
Edificio Cuzco IV, Po. de la Castellana, 141, Pta. 5
28046, Madrid, Spain
Phone: +34-915-726-761
Fax: +34-915-726-621

● **United Arab Emirates**
Anritsu EMEA Ltd.
Dubai Liaison Office
902, Aurora Tower,
P O Box: 500311- Dubai Internet City
Dubai, United Arab Emirates
Phone: +971-4-3758479
Fax: +971-4-4249036

● **India**
Anritsu India Private Limited
6th Floor, Indiqube ETA, No.38/4, Adjacent to EMC2,
Doddanekundi, Outer Ring Road, Bengaluru – 560048, India
Phone: +91-80-6728-1300
Fax: +91-80-6728-1301

● **Singapore**
Anritsu Pte. Ltd.
11 Chang Charn Road, #04-01, Shriro House
Singapore 159640
Phone: +65-6282-2400
Fax: +65-6282-2533

● **P.R. China (Shanghai)**
Anritsu (China) Co., Ltd.
Room 2701-2705, Tower A,
New Caohejing International Business Center
No. 391 Gui Ping Road Shanghai, 200233, P.R. China
Phone: +86-21-6237-0898
Fax: +86-21-6237-0899

● **P.R. China (Hong Kong)**
Anritsu Company Ltd.
Unit 1006-7, 10/F., Greenfield Tower, Concordia Plaza,
No. 1 Science Museum Road, Tsim Sha Tsui East,
Kowloon, Hong Kong, P.R. China
Phone: +852-2301-4980
Fax: +852-2301-3545

● **Japan**
Anritsu Corporation
8-5, Tamura-cho, Atsugi-shi, Kanagawa, 243-0016 Japan
Phone: +81-46-296-6509
Fax: +81-46-225-8352

● **Korea**
Anritsu Corporation, Ltd.
5FL, 235 Pangyoyeok-ro, Bundang-gu, Seongnam-si,
Gyeonggi-do, 13494 Korea
Phone: +82-31-696-7750
Fax: +82-31-696-7751

● **Australia**
Anritsu Pty. Ltd.
Unit 20, 21-35 Ricketts Road,
Mount Waverley, Victoria 3149, Australia
Phone: +61-3-9558-8177
Fax: +61-3-9558-8255

● **Taiwan**
Anritsu Company Inc.
7F, No. 316, Sec. 1, NeiHu Rd., Taipei 114, Taiwan
Phone: +886-2-8751-1816
Fax: +886-2-8751-1817

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