

Digital Video Broadcast Options

MS2721B-064, MT8222A-064
DVB-T/H Measurements 30 MHz to 990 MHz

MS2721B-078, MT8222A-078
DVB-T/H SFN Field Measurements

MS2721B-057
DVB-T/H BER Unit

MS2721B-030
ISDB-T Measurements

MS2721B-032
ISDB-T SFN Field Measurements

Introduction

The emergence of Digital Video for both fixed and handheld devices has led to the development of new measurement needs. The digital video options for the MS2721B and MT8222A add the capability to analyze the performance of DVB-T/H and ISDB-T digital video signals in the field. These options are very useful for doing area surveys and field maintenance of digital broadcasting equipment.



Option 64 DVB-T/H Analyzer Specifications*

The following table lists the standard specifications when Option 64 is installed on Anritsu's MS2721B or MT8222A.

Common	Channel Map	UHF(Australia), UHF(Europe), None
	Channel	When channel map is UHF (Australia), the numerical value 28 to 69 (setting resolution: 1 channel) can be set to channel. This time, the central frequency is set to 529.5 + (channel -28) x 7 MHz Channel When channel map is UHF (Europe), the numerical value 21 to 69 (setting resolution: 1 channel) can be set to channel. This time, the central frequency is set to 474 + (channel -21) x 8 MHz
	Frequency	When channel map is None, frequency range is 30 to 990 MHz (setting resolution: 1 Hz).
	Bandwidth	7 MHz, 8 MHz
	Pre Amp	On, Off
	Reference Level	-25 to +20 dBm/5 dB step (Pre Amp = Off) -50 to -10 dBm/10 dB step (Pre Amp = On)
Signal Power	Meas Mode	Single, Continuous, Average, Moving average, Max. hold
	Average Count	1 to 100
	Correction table for Field Strength	Level correction data table for measuring the Field Strength can be stored within the measurement instrument.
	Impedance	50, 75 Ohm (External impedance converter corresponds with the case of 75 Ohm)
Modulation Analysis	Meas Mode	Single, Continuous, Average, Moving average
	Average Count	1 to 100
	Screen Select	Constellation, Impulse response
	Mode	2K, 4K, 8K
	GI	1/4, 1/8, 1/16, 1/32
	Modulation	QPSK, 16QAM, 64QAM
	Hierarchy	None, $\alpha = 1$, $\alpha = 2$, $\alpha = 4$
	FFT Start Position	0/8, 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 8/8, 0/8 Fixed, 1/8 Fixed, 2/8 Fixed, 3/8 Fixed, 4/8 Fixed, 5/8 Fixed, 6/8 Fixed, 7/8 Fixed, 8/8 Fixed
	Spectrum Reverse	On, Off
	Detect Parameters	Automatic detection for Mode, GI, Modulation, and Hierarchy parameter
Spectrum Monitor	Meas Mode	Single, Continuous
	Span	1, 3, 5, 11, 31, 51 Channel
Carrier MER <Tx>	Meas Mode	Single, Continuous, Average, Moving average
	Average Count	1 to 100
	Mode	2K, 4K, 8K
	GI	1/4, 1/8, 1/16, 1/32
	Modulation	QPSK, 16QAM, 64QAM
	Hierarchy	None, $\alpha = 1$, $\alpha = 2$, $\alpha = 4$
	FFT Start Position	0/8, 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 8/8, 0/8 Fixed, 1/8 Fixed, 2/8 Fixed, 3/8 Fixed, 4/8 Fixed, 5/8 Fixed, 6/8 Fixed, 7/8 Fixed, 8/8 Fixed
	Spectrum Reverse	On, Off
Option 57 BER Unit Available on the MS2721B only	Meas Mode	Single: The set number of bits is measured at once. Repeat: Measurement of the set number of bits is repeated
	Bit Count Setting	xE+yy x: 1 to 9, setting resolution 1 yy: 6 to 12, setting resolution 1 and 1E+6 to 1E+12
	Service	In Service: BER measurement is possible to arbitrary contents. It is possible to measure the measurement point of Before Viterbi and Before RS, simultaneously. Out of Service: BER measurement is possible to PRBS (PRBS 23). It is possible to measure the measurement point of Before Viterbi, Before RS and After RS.
	Stream	HP, LP
	BER Meas Point	Before Viterbi, Before RS and After RS can be chosen, when Service is selected "Out of Service".
	Result Disp	Current: Measured value is always updated. Last: Measured value is updated after measurement of the set number of bits is completed.
	TS Packet	The following can be chosen, when "BER Meas Point" is selected Before RS or After RS. 1 + [187] + 16, 4 + [184] + 16 (Only Out of Service)
	Spectrum Reverse	On, Off

* For performance specifications, each value is assumed to be obtained from measurement after 10-minute preheating under constant ambient temperature conditions.

Option 64 DVB-T/H Analyzer Specifications (continued)

Common		Reference Frequency	Internal, External (10 MHz)		
Signal Power	DVB-T/H Signal, 1 Channel Input				
	Channel Power	Measures channel power			
		Display Resolution	0.1 dB		
		Accuracy	Channel Map: UHF(Europe), Channel: 21 to 69, Bandwidth: 8 MHz Averaging Count: 10, Target VSWR <1.5, 50 Ohm termination Preamplifier: Off ±2.0 dB (-10 to 20 dBm, typical) ±2.0 dB (-60 to -10 dBm) Preamplifier: On ±2.0 dB (-84 to -20 dBm)		
		DANL (Display Average Noise Level)	Channel Map: UHF(Europe), Channel: 21 to 69, Bandwidth: 8 MHz Averaging Count: 50, RF input 50 Ohm termination, 20 to 30 °C Preamplifier: Off, Reference Level: -25 dBm ≤-69 dBm Preamplifier: On, Reference Level: -50 dBm ≤-93 dBm		
		1 dB Compression Level	Channel Map: UHF(Europe), Channel: 21 to 69, CW, 20 to 30 °C Preamplifier: Off, Reference Level: -25 dBm ≥-15 dBm Preamplifier: On, Reference Level: -50 dBm ≥-43 dBm		
	Unit	dBm			
	Termination Voltage, Open Terminal Voltage, Field Strength	Display Item	Termination Voltage [dBμV], Open Terminal Voltage [dBμV (emf)], Field Strength [dBμV/m]		
		Graph	Termination Voltage [dBμV] is displayed as bar chart		
	Modulation Analysis	DVB-T/H Signal, 1 Channel Input			
Common		Frequency Lock Range	±90 kHz		
		Frequency Offset	Measures central frequency offset of modulation signal		
			Unit	Hz	
			Display Resolution	0.1 Hz	
		Accuracy	-20 dBm, MER >40 dB, Preamplifier: off, Average Count 10, Channel Map: UHF (Europe), Channel: 21 to 69, Bandwidth: 8 MHz, Mode: 8K GI: 1/8, Modulation: 64QAM, Hierarchy: None ± (Measurement frequency x Reference frequency accuracy) ±0.3 Hz		
		Channel Power	Measures channel power (@RF In)		
			Display Resolution	0.1 dB	
		MER	Measures MER (Modulation Error Ratio)		
			Display Item	Total, Data, TPS	
	Display Resolution		0.1 dB		
Residual MER	MER: Total, Channel Map :UHF (Europe), Channel: 21 to 69 Bandwidth: 8 MHz, Mode: 8K, GI:1/8, Modulation: 64 QAM, Hierarchy: None, Average count: 10, Typical Preamplifier: Off, Reference Level: -20 dBm input ≥42 dB Preamplifier: On, Reference Level: -50 dBm input ≥37 dB				
Interference	MER: Total, Channel Map: UHF(Europe), Channel: 21 to 69, Bandwidth: 8 MHz, Mode: 8K, GI:1/8, Modulation: 64 QAM, Hierarchy: None, Average Count: ten, Reference Level: -25 dBm, ±2ch interfering wave, 0 dBm typical for required wave ≥30 dB (Preamplifier: Off, -35 dBm)				

Option 64 DVB-T/H Analyzer Specifications (continued)

Modulation Analysis	Constellation	TPS	TPS information (68 bits) displayed in hexadecimal			
			Inner Interleave	Native, In-depth		
			Cell ID	Cell ID (16 bits) displayed in hexadecimal and decimal		
			Code Rate	1/2, 2/3, 3/4, 5/6, 7/8 HP and LP displayed in hierarchical mode		
			Time Slicing	On, Off HP and LP displayed in hierarchical mode		
			MPE-FEC	On, Off HP and LP displayed in hierarchical mode		
		Constellation	Display Item	Data, TPS		
		Carrier MER Graph	Horizontal Axis	For field measurement		
				Frequency Displays central frequency as 0 MHz.		
				Display Range	When Bandwidth is 7 MHz: -3.328 to 3.328 MHz When Bandwidth is 8 MHz: -3.804 to 3.804 MHz	
				Valid Range	Bandwidth: 7 MHz When Mode is 2K: -3.234 to 3.234 MHz When Mode is 4K: -3.281 to 3.281 MHz When Mode is 8K: -3.305 to 3.305 MHz Bandwidth: 8 MHz When Mode is 2K: -3.696 to 3.696 MHz When Mode is 4K: -3.750 to 3.750 MHz When Mode is 8K: -3.777 to 3.777	
				Display Resolution	Bandwidth: 7 MHz When Mode is 2K: 3.906 kHz When Mode is 4K: 1.953 kHz When Mode is 8K: 0.977 kHz Bandwidth: 8 MHz When Mode is 2K: 4.464 kHz When Mode is 4K: 2.232 kHz When Mode is 8K: 1.116 kHz	
	Vertical Axis			MER		
				Display Range	0 to 30 dB	
				Display Resolution	0.1 dB	
	Marker			Carrier number, Offset frequency and MER displayed		
	Impulse Response			Horizontal Axis	Delayed time Displays the maximal level signal as 0 ms	
		Display Range	All graph: -1/24 of the valid symbol length to 7/24 of the valid symbol length Zoom graph: 50.00 μ s (Band Width: 7 MHz) or 43.75 μ s (Band Width: 8 MHz) width at the optional position within the all graph			
		Valid Range	0 μ s to guard interval			
		Display Resolution	0.13 μ s (Bandwidth: 7 MHz) 0.11 μ s (Bandwidth: 8 MHz)			
		Vertical Axis	0 μ s position	Shifting the 0 ms position changes the 0 ms position on All graph. Displayed range when the 0 ms position is selected: Left: -(1/24 of the valid symbol length) to 7/24 of the valid symbol length Center: -(4/24 of the valid symbol length) to 4/24 of the valid symbol length Right: -(7/24 of the valid symbol length) to 1/24 of the valid symbol length		
				Level		
				Display Range	5, 10, 25, 50 dB	
Marker		On, Off When marker is on, Delay, Distance and relative Level are displayed Delta marker On, Off When delta marker is on, the current marker position becomes a reference position. Delay time, presumed distance and relative level are displayed.				

Option 64 DVB-T/H Analyzer Specifications (continued)

Modulation Analysis	Impulse Response	Marker	On, Off When marker is on, Delay, Distance and relative Level are displayed Delta marker On, Off When delta marker is on, the current marker position becomes a reference position. Delay time, presumed distance and relative level are displayed.			
		Frequency Response Graph	Horizontal Axis	Displays the central frequency as 0 MHz		
				Display Range	When Bandwidth is 7 MHz: -3.328 to 3.328 MHz When Bandwidth is 8 MHz: -3.804 to 3.804 MHz	
				Valid Range	Bandwidth: 7 MHz When Mode is 2K: -3.234 to 3.234 MHz When Mode is 4K: -3.281 to 3.281 MHz When Mode is 8K: -3.305 to 3.305 MHz Bandwidth: 8 MHz When Mode is 2K: -3.696 to 3.696 MHz When Mode is 4K: -3.750 to 3.750 MHz When Mode is 8K: -3.777 to 3.777 MHz	
				Display Resolution	Bandwidth: 7 MHz When Mode is 2K: 3.906 kHz When Mode is 4K: 1.953 kHz When Mode is 8K: 0.977 kHz Bandwidth: 8 MHz When Mode is 2K: 4.464 kHz When Mode is 4K: 2.232 kHz When Mode is 8K: 1.116 kHz	
		Vertical Axis	Display Range	5, 10, 25, 50 dB		
Marker	On, Off When marker is on, the offset frequency and the relative level are displayed					
Spectrum Monitor	Spectrum Graph	Horizontal axis	Channel or Frequency			
			Display width	1, 3, 5, 11, 31, 51 Channel		
		Vertical Axis	Display Range	100 dB of the range between -150 to 20 dB (Preamplifier: On, Reference level: Over -50 dBm, Preamplifier: Off, Reference level: 20 dBm)		
	Channel Power		Measures the channel power (@RF In)	Display Resolution	0.1 dB	
Carrier MER<Tx>	Common	DVB-T/H Signal, 1 Channel Input for Stable Signal Like Transmitter				
		Frequency Offset	Measures the central frequency offset of the modulation signal			
			Unit	Hz		
			Display Resolution	0.1 Hz		
		Channel Power	Measures the channel power (@RF In)		Display Resolution	0.1 dB
			MER	Measures MER (Modulation Error Ratio)		Display Item
		Display Resolution		0.1 dB		
		TPS		TPS information (68 bits) is displayed in hexadecimal		
				Inner Interleave	Native, In-depth	
			Cell ID	Cell ID (16 bits) is displayed in hexadecimal and decimal		
			Code Rate	1/2, 2/3, 3/4, 5/6, 7/8 HP and LP are displayed in hierarchical mode		
			Time Slicing	On, Off HP and LP are displayed in hierarchical mode		
		MPE-FEC	On, Off HP and LP are displayed in hierarchical mode			
		Carrier MER Graph	For Transmitter measurement			
			Horizontal Axis	Frequency Displays the central frequency as 0 MHz		
				Display Range	When Bandwidth is 7 MHz: -3.328 to 3.328 MHz When Bandwidth is 8 MHz: -3.804 to 3.804 MHz	
				Valid Range	When Bandwidth is 7 MHz: -3.328 to 3.328 MHz When Bandwidth is 8 MHz: -3.804 to 3.804 MHz	
			Display Resolution	Bandwidth: 7 MHz When Mode is 2K: 3.906 kHz When Mode is 4K: 1.953 kHz When Mode is 8K: 0.977 kHz Bandwidth: 8 MHz When Mode is 2K: 4.464 kHz When Mode is 4K: 2.232 kHz When Mode is 8K: 1.116 kHz		
				Vertical Axis	MER	
					Display Range	0 to 50 dB
			Display Resolution		0.1 dB	
		Marker	Carrier number, Offset frequency and MER are displayed			

Option 64 DVB-T/H Analyzer Specifications (continued)

These specifications become effective when the Option 64 is installed in the MS2721B. At the time of this unit mounting, a temperature of the function of this unit of operation is restricted to 0 °C to 40 °C		
Indication	Real Time Monitor	Signal Sync: Locked, Unlocked TPS Parity: OK, NG PRBS Sync (PRBS23): Locked, Unlocked (only Out of Service)
	TPS Info	Length indicator: 23,31,33 Mode: 2K, 4K, 8K GI: 1/4, 1/8, 1/16, 1/32 Modulation: QPSK, 16QAM, 64QAM Hierarchy: None, $\alpha = 1$, $\alpha = 2$, $\alpha = 4$ Inner Interleave: Native, In-depth Cell ID: 0 x 0~0 x FFFF (Hexadecimal, Decimal) Code Rate: 1/2, 2/3, 3/4, 5/6, 7/8 (HP, LP) Time Slicing: On, Off (HP, LP) MPE-FEC: On, Off (HP, LP) It is possible to display of a detailed information for TPS warning.
	Estimate Time	hh: mm: ss hh: hour, mm: minute, ss: second
BER measurement	Display format	Rate: x.xx E-yy x.xx: Mantissa, display resolution 0.01 yy: Exponent, display resolution 1 Error Count: It displays in the following cases. In Service: Before RS Out of Service: Before RS, After RS
PER measurement	It is performed when In service, and After RS in the case of Out of Service are set.	
	Display format	Rate: x.xx E-yy x.xx: Mantissa, display resolution 0.01 yy: Exponent, display resolution 1 Error Count: It displays number of error packets.
MER (Quick)	Display Items	Instant, Maximum, Moving average, Minimum
	Unit	dB
	Display Resolution	0.1 dB
	Display Range	< 27 dB
CH Power (@RF In)	Display Items	Instant, Maximum, Moving average, Minimum
	Unit	dB
	Display Resolution	0.1 dB
Connector	BNC-J, 75 Ω	
Output level	800 mVp-p (typical)	
Reference Frequency	Frequency	10 MHz
	Level	-10 to +10 dBm
Save the Measurement Results	JPEG file on the measurement screen and the CSV file of the numerical data (Except for graph data) can be stored within the internal memory. The file of the measurement results within the memory can be copied to the external memory.	
Save Recall of the Setting Information	Saves the panel setting information into the internal memory. Recalls the panel set information which is saved, to reflect to the panel setting.	
Display Language	English or Japanese is selectable.	

Option 78 DVB-T/H Single Frequency Network (SFN) Measurement Specifications

The following table lists the standard specifications when Option 78 is installed on Anritsu's MS2721B or MT8222A.

Electric Characteristic	For performance specifications, each value is assumed to be obtained from measurement after 10-minute preheating under constant ambient temperature conditions.		
Total	Frequency Range	30 to 990 MHz (setting resolution: 1Hz)	
	Channel Map	UHF (Australia), UHF (Europe) None (Optional frequency setup)	
	Channel Range	When channel map is UHF (Australia), a numerical value from 28 to 69 (setting resolution: 1 channel) can be set to channel. This time, the central frequency is set to 529.5 + (channel -28) x 7 MHz When channel map is UHF (Europe), a numerical value from 21 to 69 (setting resolution: 1 channel) can be set to channel. This time, the central frequency is set to 474 + (channel -21) x 8 MHz	
	Band Width	7, 8 MHz	
	Mode	2K, 4K, 8K Manual setup or automatic detection setup	
	Guard Interval	1/4, 1/8, 1/16, 1/32 Manual setup or automatic detection setup	
	Modulation System	QPSK, 16QAM, 64QAM Manual setup or automatic detection setup	
	Hierarchy	None, $\alpha = 1$, $\alpha = 2$, $\alpha = 4$	
	Spectrum Reverse	On, Off	
	FFT Start Position	Can specify the position to hew out data used for modulation analysis. Pick up the data for the valid symbol length, from where guard interval of $n/8 \times$ guard interval length is included, beginning at a valid symbol start. n: 0 to 8	
	Maximum Input Level	+20 dBm (Preamplifier: Off) -10 dBm (Preamplifier: On)	
	Reference Level Setting Range	+20 to -25 dBm, 5 dB steps (Preamplifier: Off) -10 to -50 dBm, 10 dB steps (Preamplifier: On)	
	Impedance	50, 75 Ω (External impedance converter deals wh it 75 Ω)	
	Correction Table for Field Strength Measurement	Can store the level correction data table for field strength measurement	
	Measurement Mode	Single, Continuous	
Channel Power/Terminal Voltage	DVB-T/H Signal, 1 Channel Input		
	Level	Input Level Range	+20 dBm to noise floor (Preamplifier: Off) -20 dBm to noise floor (Preamplifier: On)
		Measurement Resolution	0.1 dB
		Measurement Resolution	Channel Map: UHF(Europe), Channel: 21 to 69, Bandwidth: 8 MHz, Target's VSWR: 1.5 or less, 50 Ω Preamplifier: Off ± 2.0 dB (+20 to -10 dBm, typical) ± 2.0 dB (-10 to -60 dBm) Preamplifier: On ± 2.0 dB (-20 to -84 dBm)
		Display Average Noise Level	Channel Map: UHF (Europe), Channel: 21 to 69, Bandwidth: 8 MHz, RF input 50 W termination, 20 °C to 30 °C Preamplifier: Off, Reference level: -25 dBm ≤ -69 dBm Preamplifier: On, Reference level: -50 dBm ≤ -93 dBm
		1 dB Compression Level	Channel Map: UHF(Europe), Channel: 21 to 69, CW, 20 °C to 30 °C Preamplifier: Off, Reference level: -25 dBm ≥ -15 dBm Preamplifier: On, Reference level: -50 dBm ≥ -43 dBm
		Units	dBm, dBmV, dBmV/m

Option 78 DVB-T/H Single Frequency Network (SFN) Measurement Specifications (continued)

Impulse Response	DVB-T/H Signal, 1 Channel Input			
	Frequency Lock Range		±90 kHz	
	Level	Input Level Range	+20 dBm to noise floor +10 dB (Preamplifier: Off) -20 dBm to noise floor +10 dB (Preamplifier: On)	
	Impulse Response Graph	Display Range	All graph: -896 ms to +896 ms (Bandwidth: 8 MHz) -1024 ms to +1024 ms (Bandwidth: 7 MHz) Zoom graph: Optional 66 ms width of All graph (Bandwidth: 8 MHz) Optional 75 ms width of All graph (Bandwidth: 7 MHz)	
		Resolution	0.11 ms (Bandwidth: 8 MHz) 0.13 ms (Bandwidth: 7 MHz)	
		Vertical Axis (Level)	Display Range	5, 10, 20, 40 dB
		Display Resolution	0.1 dB	
	Marker	Can read delay time, relative level (DU ratio), power and field strength (unit: dBmV/m) by using marker function		
	Marker Mode	Normal: Reads 1-point marker Zone: Zoom graph: Reads the maximum value within the 1/10 width marker. (Bandwidth: 8 MHz) Zoom graph: Reads the maximum value within the 1/10 width marker. (Bandwidth: 7MHz)		
Impulse Response: Path-level Estimation	Selects the object path with marker, 8K Mode, Guard Interval: 1/8, Channel Map: UHF (Europe), Channel: 21 to 69, Bandwidth: 8 MHz, Target's VSWR of 1.5 or less, 50 Ω			
	2 wave model	Main Wave Estimated Level Accuracy*1	Preamplifier: Off ±2.5 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±2.5 dB (Terminal power: -20 to -79 dBm, typical)	
		Delay Wave Estimated Level Accuracy*2	Preamplifier: Off ±2.5 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±2.5 dB (Terminal power: -20 to -79 dBm, typical)	
		DU Ratio Accuracy*2	Preamplifier: Off ±1.0 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±1.0 dB (Terminal power: -20 to -79 dBm, typical)	
	*1: Time difference between main wave and delay wave is 5 to 850 ms, DU ratio is 3 dB or more *2: Time difference between main wave and delay wave is 5 to 850 ms, DU ratio is 3 to 20 dB			
	3 wave model	Main Wave Estimated Level Accuracy*3, *5	Preamplifier: Off ±2.5 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±2.5 dB (Terminal power: -20 to -79 dBm, typical)	
Delay Wave Estimated Level Accuracy*4, *5		Preamplifier: Off ±2.5 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±2.5 dB (Terminal power: -20 to -79 dBm, typical)		
DU Ratio Accuracy*4, *5		Preamplifier: Off ±1.0 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±1.0 dB (Terminal power: -20 to -79 dBm, typical)		
*3: When time difference between main wave and delay wave is 5 to 420 ms, and DU ratio is 6 dB or more *4: When time difference between main wave and delay wave is 5 to 420 ms, and DU ratio is 6 dB *5: When main wave is set to 0 ms * Delay time (absolute value) of one delay wave is different from that of the other by 2 ms or more * When difference of delay time among delay waves is different from delay time (absolute value) by 2 ms or more				

Option 78 DVB-T/H Single Frequency Network (SFN) Measurement Specifications (continued)

Impulse Response: Interference	UHF (Europe), Channel: 21 to 69, Bandwidth: 8 MHz, 8K Mode, Guard Interval: 1/8, 21 to 69 channel, 64QAM, Reference Level: -25 dBm, ±2 channels for desired signal, CW interfering wave of 0 dBm			
	Main Wave Presumed Level Accuracy*6	Preamplifier: Off ±2.5 dB (Terminal power: -35 dBm, typical)		
*6: When time difference between main wave and delay wave is 5 to 850 ms and DU ratio is 3 dB or more at 2-wave model				
Impulse Response: Sidelobe Compress Function of Main Wave	Automatically compresses the occurrence of the sidelobe centered on the main wave.			
In-band Spectrum	Displays the measurement signal spectrum, focusing on the setup frequency.			
	Level	Input Level Range	+20 dBm to noise floor (Preamplifier: Off) -20 dBm to noise floor (Preamplifier: On)	
	In-band Spectrum Graph	Horizontal Axis (Frequency)		Displays the central frequency as 0 MHz.
		Display Range		±3.804 MHz (Bandwidth: 8 MHz) ±3.328 MHz (Bandwidth: 7 MHz)
		Valid Range		±3.804 MHz (Bandwidth: 8 MHz) ±3.328 MHz (Bandwidth: 7 MHz)
		Display Resolution		Bandwidth: 8MHz: 1.116 kHz Bandwidth: 7MHz: 0.977 kHz
		Vertical Axis		Displays, with linear value root-mean-square of the spectrum within the display range as 0 dB standard.
		Vertical Axis (Level)	Display Range	5, 10, 25, 50 dB
			Display Resolution	0.1 dB
	Marker	Delta Marker Off: Reads 1-point marker frequency and relative level from vertical axis 0 dB. Delta Marker On: Reads relative level, presumed distance and frequency difference, based on the position just after turning the delta marker on.		
Others	External Reference Signal	Frequency	10 MHz	
		Level	-10 to +10 dBm	
	Measurement Result Save	Saves the JPEG file on the measurements screen and the text file of the numerical value within the internal memory. Can copy the measurements file within the internal memory to the external memory.		
	Save and Recall of the Panel Setup Information	Saves the panel setup information into the internal memory Recalls the saved panel setup information to reflect to the panel setup.		
	Screen Display Language	English, Japanese		

Option 30 ISDB-T Analyzer Specifications*

The following table lists the standard specifications when Option 30 is installed on Anritsu's MS2721B.

Setting	Frequency Range	35 to 800 MHz (signal frequency)
	Channel Map	UHF IF (37.15 MHz) None (optional frequency setting) Channel Range: 13 to 62 channels N-channel center frequency = (N-13 x 6 + 473.142857)
	Mode	Mode 2, Mode 3 Manual setting, or setting by automatic detection
	Guard Interval	1/4, 1/8, 1/16 Manual setting, or setting by automatic detection
	Modulator System	QPSK, 16 QAM, 64 QAM Manual setting, or setting by automatic detection
	Combination of Mode and Guard Interval	Mode, Guard Interval 1/4 1/8 1/16 Mode 2 OK OK None Mode 3 OK OK OK
	Spectrum Reverse	On, Off
	Partial Reception	Recognized when segment at A layer is 1
	FFT Start Position	Can specify start position where data picked out for signal analysis Can pick up data for valid symbol length from position including guard interval for N/8 x guard interval length Originates from valid symbol start n: 0 to 8
	Maximum Input Level	+20 dBm (Preamp: Off) -10 dBm (Preamp: On)
Reference Level Range	+20 to -25 dBm/5 dB steps (Preamp: Off) -10 to -50 dBm/10 dB steps (Preamp: On)	
Field Strength, Terminal Voltage, Channel Power	ISDB-T Signal, 1 Channel Input	
	Channel	Setting range: 13 to 62 channels Setting resolution: 1 Hz
	Frequency	Setting range: 35 to 800 MHz Setting resolution: 1 Hz
	Level	Input level range: +20 dBm to noise floor (Preamp: Off), -20 dBm to noise floor (Preamp: On) Measurement resolution: 1.0 dB Measurement accuracy: 13 to 62 channels, Average count: 10 VSWR for measurement under 1.5, 50 W Preamp: Off ±2.0 dB (+20 to -10 dBm, typical) ±2.0 dB (-10 to -60 dBm) Preamp: On ±2.0 dB (-10 to -84 dBm) Display average noise level: 13 to 62 channels, 5.6 MHz width RF Input: 50 W terminal, Average count 50, +20° C to +30° C ≤ -70 dBm (Preamp: Off), ≥ -94 dBm (Preamp: On) 1 dB Compression level 13 to 62 channels, built-in attenuator: 0 dB, CW ≥ -15 dBm (Preamp: Off) ≥ -43 dBm (Preamp: On)
		Units: dBm, dBμV, dBμV[emf], dVμV/m
	Graph	Termination voltage [dBμV] displayed as bar chart
	Correction Table for Field Strength Measurement	Level correction data table for measuring field strength saved in instrument
	Impedance	50 Ω, 75 Ω (External impedance converter for 75 Ω)
	Measurement Mode	Single, Continuous, Average, Moving average, Max hold Average count: 1 to 100

* For performance specifications, each value is assumed to be obtained from measurement after 10-minute preheating under constant ambient temperature conditions.

Option 30 ISDB-T Analyzer Specifications (continued)

Constellation, MER, Frequency	ISDB-T Signal, 1 Channel Input	
	Channel	Setting range: 13 to 62 channels. Setting resolution: 1 channel
	Frequency	Setting range: 35 to 800 MHz, Setting resolution: 1 Hz
	Frequency Lock Range	±90 kHz
	Level	Input level range: +20 dBm to noise floor +20 dB (Preamp: Off) -20 dBm to noise floor -20 dB (Preamp: On)
	MER	Display item: Total, A layer, B layer, C layer, TMCC, AC1 Display resolution: 0.1 dB Residual MER: Total, 13 to 62 channels, Mode 3 Guard interval: 1/8, 64 QAM, average count 10 Internal attenuator: 0 dB, typical ≥42 dB (Preamp: Off, Reference level: -20 dBm, -20 dBm input) ≥37 dB (Preamp: On, Reference level: -50 dBm, -50 dBm input) Interference wave effect: Total, 13 to 62 channels, Mode 3, Guard Interval: 1/8, 64 QAM, average count 10 ±2 channels, 0 dBm interference wave for expected wave, typical: ≥30 dB (Preamp: Off, -35 dBm)
	Constellation	Display items: A layer, B layer, C layer, TMCC
	Frequency	Measures center frequency of modulation signal Units: Hz, ppm Display resolution : 0.1 Hz Accuracy: -20 dBm, MER >40 dB, Preamp: Off, average count: 10, Mode 3 Guard interval: 1/8, 64 QAM, ± (measurement frequency x reference frequency accuracy) ±0.3 Hz
Measurement Mode	Single, Continuous, Average, Moving average, Overwrite (Constellation only) Average count: 1 to 100	
Delay Profile	ISDB-T Signal, 1 Channel Input	
	Channel	Setting range: 13 to 62 channels, Setting resolution: 1 channel
	Frequency	Setting range: 35 to 800 MHz, Setting resolution: 1 Hz
	Frequency Lock Range	±90 kHz
	Level	Input level range: +20 dBm to noise floor +20 dB (Preamp: Off) -20 dBm to noise floor +20 dB (Preamp: On)
	Delay Profile Graph	Horizontal axis (Delay time) : Maximum level signal displayed as 0 μs Display range: Whole graph: - (1/24 of valid symbol length) to (7/24 of valid symbol length) Enlarged graph: 24.6 μs width of optional whole graph Valid range: 0.12 μs to Guard Interval length Resolution: 0.12 μs Vertical axis (level) Display range: 5, 10, 25, 50 dB Display resolution: 0.1 dB Marker: Delay time, Assumed distance and Relative level read with marker function
Measurement Mode	Single, Continuous, Average, Moving average, (only numeric value) Average count: 1 to 100	
Frequency Response	ISDB-T Compliant OFDM Wave, 1 Wave Input	
	Channel	Setting range: 13 to 62 channels. Setting resolution: 1 channel
	Frequency	Setting range: 35 to 800 MHz, Setting resolution: 1 Hz
	Frequency Lock Range	±90 kHz
	Level	Input level range: +20 dBm to noise floor +20 dB (Preamp: Off) -20 dBm to noise floor +20 dB (Preamp: On)
	Frequency Response Graph	Horizontal axis: Displays, centered around carrier frequency (Frequency) (Carrier Frequency set to 0 Hz) Display range: ±2.785 MHz Valid range: ±2.74 MHz (Mode 2), ±2.76 MHz (Mode 3) Display resolution: 1 kHz Vertical axis (level): Display average value fo frequency response as 0 dB Display range: 5, 10, 25, 50 dB Display resolution: 0.1 dB Marker: Can read offset frequency and relative level with marker function
Measurement Mode	Single, Continuous, Average, Moving average Average count: 1 to 100	

Option 30 ISDB-T Analyzer Specifications (continued)

	ISDB-T Compliant OFDM Wave, 1 Wave Input																				
Channel	Setting range: Channels 13 to 62, Setting resolution: 1 channel																				
Level	Input level range: +20 to -15 dBm																				
Measurement Mode	Single																				
Spectrum Mask	<table border="1"> <thead> <tr> <th>Standard line</th> <th>Offset Frequency (MHz)</th> <th>Relative Level (dB)</th> </tr> </thead> <tbody> <tr> <td>RBW: 10 kHz</td> <td>±2.79</td> <td>0</td> </tr> <tr> <td>VBW: 300 Hz</td> <td>±2.86</td> <td>-20</td> </tr> <tr> <td>Detect: Peak</td> <td>±3.00</td> <td>-27</td> </tr> <tr> <td></td> <td>±4.36</td> <td>-50</td> </tr> </tbody> </table>	Standard line	Offset Frequency (MHz)	Relative Level (dB)	RBW: 10 kHz	±2.79	0	VBW: 300 Hz	±2.86	-20	Detect: Peak	±3.00	-27		±4.36	-50	<p>Measurement point number: 4001 points</p> <p>Pass/Fail judgement: Determines whether the measurement waveform is compliant with mask standard line and displays its result. When measurement waveform for each frequency is less than standard line, the result is judged to have passed.</p> <p>Safety margin: Displays frequency and the minimum value of the difference between the measured waveform and mask standard line among each break point of the mask standard line.</p> <p>Floor reduction function: Deducts the floor noise from the measured spectrum waveform and displays its result.</p> <p>Marker function: Relative level and offset frequency of measurement waveform can be read.</p> <p>Occupied frequency bandwidth: Displays the frequency bandwidth, where 99% of the total power is within the range of ±10 MHz of the stay focus.</p> <p>Display resolution: 0.01 MHz</p>				
	Standard line	Offset Frequency (MHz)	Relative Level (dB)																		
RBW: 10 kHz	±2.79	0																			
VBW: 300 Hz	±2.86	-20																			
Detect: Peak	±3.00	-27																			
	±4.36	-50																			
Mask (Standard A)	<table border="1"> <thead> <tr> <th>Standard line</th> <th>Offset Frequency (MHz)</th> <th>Relative Level (dBc/10 kHz)</th> </tr> </thead> <tbody> <tr> <td>RBW: 10 kHz</td> <td>±2.79</td> <td>-27.4</td> </tr> <tr> <td>VBW: 300 Hz</td> <td>±2.86</td> <td>-47.4</td> </tr> <tr> <td>Detect: Peak</td> <td>±3.00</td> <td>-55.4</td> </tr> <tr> <td></td> <td>±4.36</td> <td>-67.4</td> </tr> <tr> <td></td> <td>±4.36</td> <td>-77.4</td> </tr> </tbody> </table>	Standard line	Offset Frequency (MHz)	Relative Level (dBc/10 kHz)	RBW: 10 kHz	±2.79	-27.4	VBW: 300 Hz	±2.86	-47.4	Detect: Peak	±3.00	-55.4		±4.36	-67.4		±4.36	-77.4	<p>Measurement point number: 6001 points</p> <p>Pass/Fail judgement: Determines whether the measurement waveform is compliant with mask standard line and displays its result. When measurement waveform for each frequency is less than standard line, the result is judged to have passed.</p> <p>Safety margin: Displays frequency and the minimum value of the difference between the measured waveform and mask standard line among each break point of the mask standard line.</p> <p>Floor reduction function: Deducts the floor noise from the measured spectrum waveform and displays its result.</p> <p>Antenna power: Can be set only when the standard line is greater than 0.25 W and less than or equal to 2.5 W. P: Antenna power When the standard line is less than or equal to 0.25 W, "P ≤ 0.25 W" is displayed. When the standard line is greater than 0.25 W and less than or equal to 2.5 W, "0.25 W < P ≤ 2.50" is displayed. When the standard line is greater than 2.5 W, "P > 2.50 w" is displayed.</p> <p>Marker function: Relative level and offset frequency of measurement waveform can be read.</p> <p>Occupied frequency bandwidth: Displays the frequency bandwidth, where 99% of the total power is within the range of ±10 MHz of the stay focus.</p> <p>Display resolution: 0.01 MHz</p>	
Standard line	Offset Frequency (MHz)	Relative Level (dBc/10 kHz)																			
RBW: 10 kHz	±2.79	-27.4																			
VBW: 300 Hz	±2.86	-47.4																			
Detect: Peak	±3.00	-55.4																			
	±4.36	-67.4																			
	±4.36	-77.4																			
	Mask (Standard B)																				

Option 30 ISDB-T Analyzer Specifications (continued)

Phase Noise	ISDB-T Signal, 1 Channel Input	
	Channel	Setting range: 13 to 62 channels, Setting resolution: 1 channel
	Frequency	Setting range: 8 to 800 MHz, Setting resolution: 1 Hz
	Lock Range	±2 kHz
	Level	Input level range: +20 to -10 dBm
	Graph	Horizontal axis range: 100 Hz to 6 MHz Vertical axis range: -40 to -140 dBc/Hz Marker: Can read graph frequency, phase noise and value integrated with phase noise between two optional points Fixed point display: Displays phase noise of offset frequency 1, 10, 100 kHz. Displays value integrated with phase noise of 100 Hz to 6 MHz
	Residual Phase Noise	-10 dBm, Average count: 10 -100 dBc/Hz (10 kHz offset), -102 dBc/Hz (100 kHz offset)
	Frequency	Measurement resolution: 0.01 Hz Measurement accuracy: -10 dBm, Average count: 10 ± (measurement frequency x reference frequency accuracy) ±0.20 Hz
Measurement Mode	Single, Continuous, Average Average count: 1 to 100	
Spurious Emissions	ISDB-T Signal, 1 Channel Input	
	Channel	Setting range: 13 to 62 channels, Setting resolution: 1 channel
	Level	Input level range: +20 to 0 dBm
	Spurious	Search range: 5 MHz to quintupled main signal frequency Without main signal frequency ±9 MHz
	Search Condition	RBW: 10 kHz (5 to 30 MHz), 100 kHz (30 MHz to 1 GHz), 1 MHz (1 to 4 GHz) Detection mode: RMS Two measurement methods: 5 MHz to 1 GHz, and 1 GHz or more (main signal frequency x 5) HPF required to drop main signal for measuring 1 GHz or more (Main signal frequency x 5)
	Result Display	Displays frequency, Absolute level, Relative level, RBW, and Detection mode for five spurious with larger level
Measurement Mode	Single	
Batch	Specifies measurement item and several channels for continuous measurement, and saves each measurement result to JPEG file	
	Channel	Setting range: 13 to 62 channels, Maximum channel number: 10 channels
	Measurement Items	Field strength, Channel power, MER, Frequency error, Spectrum mask evaluation, Occupied frequency bandwidth
Others	Reference Frequency	Frequency: 10 MHz, Level: -10 to +10 dBm
	Save the Measurement Results	JPEG file for measurement screen and CSV file for numerical data (except graph data) saved to internal memory and measurement results in memory copied to external memory
	Save Recall of Setting Information	Saves panel setting to internal memory Recalls saved panel setting
	Display Language	English or Japanese

Option 32 ISDB-T Single Frequency Network (SFN) Field Measurement Specifications

In addition to the specifications for Option 30, the following table lists the standard specifications when Option 32 is installed on Anritsu's MS2721B.

	Selects the object path with marker, Mode3, Guard Interval: 1/8, Channel: 13 to 62, Target's VSWR of 1.5 or less, 50 Ω			
Delay Profile: Path-Level Estimation	2 Wave Model	Main Wave Estimated Level Accuracy*1 Preamplifier: Off ±2.5 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±2.5 dB (Terminal power: -20 to -79 dBm, typical)		
		Delay Wave Estimated Level Accuracy*2 Preamplifier: Off ±2.5 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±2.5 dB (Terminal power: -20 to -79 dBm, typical)		
		DU Ratio Accuracy*2 Preamplifier: Off ±1.0 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±1.0 dB (Terminal power: -20 to -79 dBm, typical)		
	*1 Time difference between main wave and delay wave is 5 to 1000 μs, DU ratio is 3 dB or more. *2 Time difference between main wave and delay wave is 5 to 1000 μs, DU ratio is 3 dB or 20 dB.			
	3 Wave Model	Main Wave Estimated Level Accuracy*3,*5 Preamplifier: Off ±2.5 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±2.5 dB (Terminal power: -20 to -79 dBm, typical)		
		Delay Wave Estimated Level Accuracy*4,*5 Preamplifier: Off ±2.5 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±2.5 dB (Terminal power: -20 to -79 dBm, typical)		
DU Ratio Accuracy*4,*5 Preamplifier: Off ±1.0 dB (Terminal power: -10 to -55 dBm, typical) Preamplifier: On ±1.0 dB (Terminal power: -20 to -79 dBm, typical)				
*3 When time difference between main wave and delay wave is 5 to 500 μs, DU ratio is 6 dB or more. *4 When time difference between main wave and delay wave is 5 to 500 μs, DU ratio is 6 dB. *5 When main wave is set to 0 μs. • Delay time (absolute value) of one delay wave is different from that of the other by 2 μs or more. • When difference of delay time among delay waves is different from delay time (absolute value) by 2 μs or more. *6 When time difference between main wave and delay wave is 5 to 1000 μs and DU ratio is 3 dB or more at 2-wave model.				
Delay Profile: Interference	Channel:13 to 62, Mode3, Guard Interval: 1/8, 64QAM, Reference Level: -25 dBm, ±2 channels for desired signal, CW interfering wave of 0 dBm			
	Main Wave Presumed Level Accuracy*6	Preamplifier: Off ±2.5 dB (Terminal power: -35 dBm, typical)		
Delay Profile: Sidelobe Compress Function of Main Wave	Automatically compresses the occurrence of the sidelobe centered on the main wave.			
In-Band Spectrum	Displays the measurement signal spectrum, focusing on the setup frequency			
	Level	Input Level Range +20 dBm to noise floor (Pre-amplifier: Off) -20 dBm to noise floor (Pre-amplifier: On)		
	In-Band Spectrum Graph	Horizontal Axis (Frequency)	Displays the central frequency as 0 MHz	
		Display Range	±2.785 MHz	
		Valid Range	±2.74 MHz (Mode2) ±2.76 MHz (Mode3)	
		Display Resolution	1 kHz	
		Vertical Axis	Displays with linear value root-mean-square of the spectrum with the display range as 0 dB standard	
		Vertical Axis (Level)	Display Range	5 dB, 10 dB, 25 dB, 50 dB
			Display Resolution	0.1 dB
	Marker	Delta Marker Off: Reads 1-point marker frequency and relative level from vertical axis 0 dB. Delta Marker On: Reads relative level, presumed distance and frequency difference, based on the position just after turning the delta marker on.		
Others	External Reference Signal	Frequency	10 MHz	
		Level	-10 to +10 dBm	
	Measurement Result Save	Saves the JPEG file on the measurements screen and the text file of the numerical value within the internal memory. Can copy the measurements file within the internal memory to the external memory.		
	Save and Recall of the Panel Setup Information	Saves the panel setup information into the internal memory. Recalls the saved panel setup information to reflect to the panel setup.		
	Screen Display Language	English, Japanese		

Ordering Information

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

Options

MS2721B-064	DVB-T/H Analysis Option (requires Option 009)
MS2721B-078	DVB-T/H SFN Option (requires Option 009)
MS2721B-057	BER Measurement (requires Option 009 and Option 064)
MT8222A-064	DVB-T/H Analysis Option*
MT8222A-078	DVB-T/H SFN Option*
MS2721B-030	ISDB-T Analysis Option (requires Option 009)
MS2721B-032	ISDB-T SFN Field Measurement Option (requires Option 009)

*The BER measurement option is not available for the MT8222A

Anritsu

Anritsu Corporation

5-1-1 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan
Phone: +81-46-223-1111
Fax: +81-46-296-1264

• U.S.A.

Anritsu Company

1155 East Collins Boulevard, Suite 100,
Richardson, Texas 75081 U.S.A.
Toll Free: 1-800-ANRITSU (267-4878)
Phone: +1-972-644-1777
Fax: +1-972-671-1877

• 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 Eletrônica Ltda.

Praca Amadeu Amaral, 27-1 Andar
01327-010 - Paraisópolis, São Paulo, Brazil
Phone: +55-11-3283-2511
Fax: +55-11-3886940

• Mexico

Anritsu Company, S.A. de C.V.

Av. Ejército Nacional No. 579 Piso 9, Col. Granada
11520 México, D.F., México
Phone: +52-55-1101-2370
Fax: +52-55-5254-3147

• U.K.

Anritsu EMEA Ltd.

200 Capability Green, Luton, Bedfordshire LU1 3LU, U.K.
Phone: +44-1582-433280
Fax: +44-1582-731303

• France

Anritsu S.A.

16/18 Avenue du Québec-SILIC 720
91961 COURTABOEUF CEDEX, 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 (0) 89 442308-0
Fax: +49 (0) 89 442308-55

• Italy

Anritsu S.p.A.

Via Elio Vittorini, 129, 00144 Roma, Italy
Phone: +39-06-509-9711
Fax: +39-06-502-2425

• Sweden

Anritsu AB

Borgafjordsgatan 13, 164 40 Kista, Sweden
Phone: +46-8-534-707-00
Fax: +46-8-534-707-30

• Finland

Anritsu AB

Teknobulevardi 3-5, FI-01530 Vantaa, Finland
Phone: +358-20-741-8100
Fax: +358-20-741-8111

• Denmark

Anritsu A/S

Kirkebjerg Allé 90 DK-2605 Brøndby, Denmark
Phone: +45-72112200
Fax: +45-72112210

• Spain

Anritsu EMEA Ltd.

Oficina de Representación en España

Edificio Veganova
Avda de la Vega, nº 1 (edf 8, pl1, of 8)
28108 ALCOBENDAS - Madrid, Spain
Phone: +34-914905761
Fax: +34-914905762

• United Arab Emirates

Anritsu EMEA Ltd.

Dubai Liaison Office

P O Box 500413 - Dubai Internet City
Al Thuraya Building, Tower 1, Suite 701, 7th Floor
Dubai, United Arab Emirates
Phone: +971-4-3670352
Fax: +971-4-3688460

• Singapore

Anritsu Pte. Ltd.

60 Alexandra Terrace, #02-08, The Comtech (Lobby A)
Singapore 118502
Phone: +65-6282-2400
Fax: +65-6282-2533

• India

Anritsu Pte. Ltd.

India Liaison Office

Unit No.S-3, Second Floor, Esteem Red Cross Bhavan,
No.26, Race Course Road, Bangalore 560 001 India
Phone: +91-80-32944707
Fax: +91-80-22356648

• P. R. China (Hong Kong)

Anritsu Company Ltd.

Units 4 & 5, 28th Floor, 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

• P. R. China (Beijing)

Anritsu Company Ltd.

Beijing Representative Office

Room 1515, Beijing Fortune Building,
No. 5, Dong-San-Huan Bei Road,
Chao-Yang District, Beijing 100004, P.R. China
Phone: +86-10-6590-9230
Fax: +86-10-6590-9235

• Korea

Anritsu Corporation, Ltd.

8F Hyunjuk Bldg. 832-41, Yeoksam-Dong,
Kangnam-ku, Seoul, 135-080, Korea
Phone: +82-2-553-6603
Fax: +82-2-553-6604

• Australia

Anritsu Pty Ltd.

Unit 21/270 Ferntree Gully Road, Notting Hill
Victoria, 3168, 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

