

General

This unit can record RF signal of 8MHz band width in center frequency range of 46MHz ~ 960MHz on hard disk drive (HDD) as the data and reproduce them. By using this unit, RF signals at several places in field are recorded, and by reproducing them after carrying them back, operating confirmation of receiver with same receiving environment in field can be made in factory and laboratory. ()
Also, recording of data is made on removable HDD directly, arrangement of data is easy by using HDD per each place.

This unit is made for the purpose of RF signal analysis and evaluation test of receiver. Do not use this unit other than such purpose. Also, be careful that use for purpose to duplicate contents is prohibited.

Features

• Compact and carrying possible size

Down converter, A/D·D/A converter part, data recording part (HDD) and up converter needed for recording / reproduction are accommodated in one body compactly.
350(W) x 132(H) x 400(D) mm

• Wide frequency range and level range

For frequency range, center frequency of 46MHz ~ 960MHz (In case of reproduction, 44 ~ 960MHz) is corresponded, so that recording / reproduction of RF signal of terrestrial broadcasting in the world is possible. Also, wide range of -90dBm (In case of converting to 1-seg., -101dBm) ~ +10dBm is covered for input level range.

• Adopted 16 bits A/D converter, D/A converter

A/D converter and D/A converter of 16 bits resolution are adopted, so that wide dynamic range is secured.

• Direct data recording on removable type HDD

Recording data is made directly to removable type of HDD, so that by providing plural HDD, arrangement of data is easy by recording data at different place to each HDD.

Also, possible recording time is approx. 1 hour.

• Automatic setting for recorded frequency and level at the time of reproduction

Frequency and input level information captured are supplemented to recorded data, output frequency and level are set automatically based on such information, so that reproduction of condition at the time of capture is made easily.

Also, reproduction of different frequency and level from those of recording time is possible.

• Equipping Auto Cal function that can set level easily at the time of recording

When RF signal is captured, Auto Cal function that can set level at the time of recording automatically is equipped, that is the most important and time consuming.

• Timer recording function

Recording by designating record starting date and time is possible.

In case of recording of mid-night broadcasting, recording can be started without operator.

• Repeat reproduction function

Reproduction of recorded data is repeat reproduction (Reproduction is made repeatedly from top when data are reproduced to the end), so that evaluation for receiver can be done efficiently.

• Common holding of recorded data with former equipment is possible

Data recorded by Eiden's former RF capture equipment (4406A) can be reproduced by this unit. In reverse, data recorded by this unit can be also reproduced by 4406A.

• Equipping high quality mode and level margin mode

In accordance with quality of recording RF signal, switching to high quality mode (Putting priority to signal quality instead of level variation margin) and level margin mode (Putting priority to level variation margin instead of signal quality) is possible.

When RF signal of severe level variation, such as reception in moving, is captured, overflow of A/D converter is prevented by setting level margin mode.

• Equipping RF reverse polarity function at the time of reproduction

Reverse of RF polarity at the time of reproduction is possible.

By setting IF frequency at the time of reproduction on modulator IC, data recorded with RF can be input to modulator IC directly as IF signal.

• Possible to build-in GPS module (Option)

By built-in optional GPS module, positioning information at each time can be buried in recorded data. Due to this, when reproduction is made, recording place can be specified easily.

• Providing the case for external HDD convenient to carry (Option)

Exclusive case (Option) to be external HDD of PC (Interface is USB2.0) is provided, so that back-up of recorded data in high speed can be made by inserting removable HDD of this unit.

• Providing exclusive carrying case for 4412A RF capture equipment made by FRP (Option)

Carrying case made by FRP is made outer dimensions as priority and min. necessary absorbing material is used, so that refrain the use of it except carrying unit as a luggage.



Optional HDD case.

Main Unit	1
350 (W) x 132 (H) x 400 (D) mm	
Weight	11kg
Accessories Power Cable	
(Including 3pin 2pin converter)	1
Instruction Manual	1
Power Source Input Voltage Allowable Range	: AC90V ~ AC250V
	(50Hz/60Hz)
Power Consumption	: 100 VA (At 100V)
Operating Environment Temperature	: +5 ~ +40
Humidity	: Less than 85%RH (No dew generation)

Type

Type	Built-in option
4412A-001	No GPS module
4412A-002	Built-in GPS module

Rating

RF Input Terminal [RF INPUT]

Input terminal for RF signal to be recorded.

Connector / Impedance	: N-R / 50
Input Center Frequency	: 46MHz ~ 960MHz
Input Signal Level	: -90dBm ¹ ~ +10dBm
At the time of converting to 1. seg.	: -101dBm (Regulated with total power to be input)
Band Width	: 8MHz
AGC function	: With function of ON/OFF (Normal OFF: Using with MGC)
AGC speed	: Possible to switch Fast (5 sec.) and Slow (30 sec.)

RF Output Terminal [RF OUTPUT]

Output terminal of RF signal to be reproduced.

Connector / Impedance	: N-R / 50
Output Center Frequency	: 44MHz ~ 960MHz
Output Signal Level	: +10dBm (Max. value in case that recorded data are reproduced so as to input level to A/D is to be full scale)
Band Width	: 8MHz
Output Attenuation	: 0dB ~ 100dB

10MHz Input [10MHz INPUT]

Input terminal of external frequency reference (10MHz).

Frequency reference of this unit is set on front panel either to be "Internal X tal" or "Input signal from this terminal".

Connector / Impedance	: BNC-R / 50
Input Level	: Within 0dBm ± 3dB
Input Frequency	: 10MHz
Input Frequency Accuracy	: ± 1x10 ⁻⁶

10MHz Buffer Output [10MHz BUFF OUTPUT]

Output terminal of internal frequency reference (10MHz).

In case that frequency reference is set external frequency reference (10MHz), this becomes buffer output of signal to be input to [10MHz INPUT].

Connector / Impedance	: BNC-R / 50
Output level	: Within ± 3dB against input level to 10MHz input.

IF Input / Output for recording [IF INPUT, IF OUTPUT Record]

IF Input / Output terminal of recorder. Normally, input and output are connected by semi-rigid cable.

In case of using external down-converter, remove semi-rigid cable and connect output of external down-converter to IF input terminal.

Connector / Impedance	: SMA-R × 2 routes / 50
Center frequency	: 36MHz
Band Width	: 8MHz
Level	: -10dBm

IF Input / Output for Reproduction [IF INPUT, IF OUTPUT Play]

IF input / output terminal for player. Normally, input and output are connected by semi-rigid cable.

In case of using external up-converter, remove semi-rigid cable and connect IF output terminal to input of external up-converter.

Connector / Impedance	: SMA-R × 2 routes / 50
Center Frequency	: 44MHz
Band Width	: 8MHz
Level	: -10dBm

Hard Disk Drive [HDD]

Hard disk drive (HDD) for recording data.

Data are written on removable HDD directly in this unit. As HDD is removable type., replacement can be made easily.

HDD Capacity	: 500Gbyte
Recording Capacity	: In HDD capacity, 160 Gbyte of the area to be able to read / write in high speed (Approx. 1 hour converting to recording time)
Number of recording file	: Max. 64

Ethernet [ETHERNET]

Ethernet terminal to be used when data file in HDD of this unit is read out or data file is written in HDD. Use cross cable for connecting with PC.

Connector	: RJ-45
Input / Output	: Conforming to IEEE 802.3
Interface	: 100BASE-TX
Protocol	: TCP/IP

Remote control of this unit by Ethernet is impossible. Using is made only reading out or writing of data file.

GPS ANTENNA Input Terminal [GPS ANT INPUT] (Option)

Terminal to connect accessory GPS antenna.

Connector / Impedance	: BNC-R / 50
Input Center Frequency	: 1.57542GHz

Digital Process Part

Resolution	: 16 bits
Sampling Rate	: Selection from following 2 kinds 21.524475MHz 21.671957MHz

Optional Accessories

Type	Name
4412U-H01	Spare HDD
4412U-H11	Case for external HDD (USB 2.0)
4412U-C01	Carrying case made by FRP 396(W) × 225(H) × 523 (D) mm



Optional carrying case made by FRP.