APPENDIX B:

USER'S MANUAL

2442MHz Data Transceiver Unit

XE642 MANUAL

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TWIN21 MID 23F SHIROMI
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Specifications General

Frequency:	2442MHz
Spread Type:	Direct Sequence (11 chip, 11Mbps Berker sequence)
Output Power:	not more than 0.01W/MHz
Occupied Bandwidth:	not more than 26MHz
Modulation:	DQPSK or DBPSK
Data Speed:	DQPSK: 2Mbps, DBPSK: 1Mbps
Antenna terminal:	SMT
Antenna type:	Sleeve antenna
Dimensions	110mm x 50mm x 11mm (without projections)
Weight:	approx. 85 gr. (antenna not included)
Operating voltage :	5Vdc +/-5%
Current dissipation:	not more than 400mA
Operating temperature:	0 ~ 50℃
Absolute maximum ratings:	supply voltage minimum -0.2V, maximum 6V terminal signal voltages minimum -0.2V, maximum +0.3V input current +/-20mA output current +/- 70mA

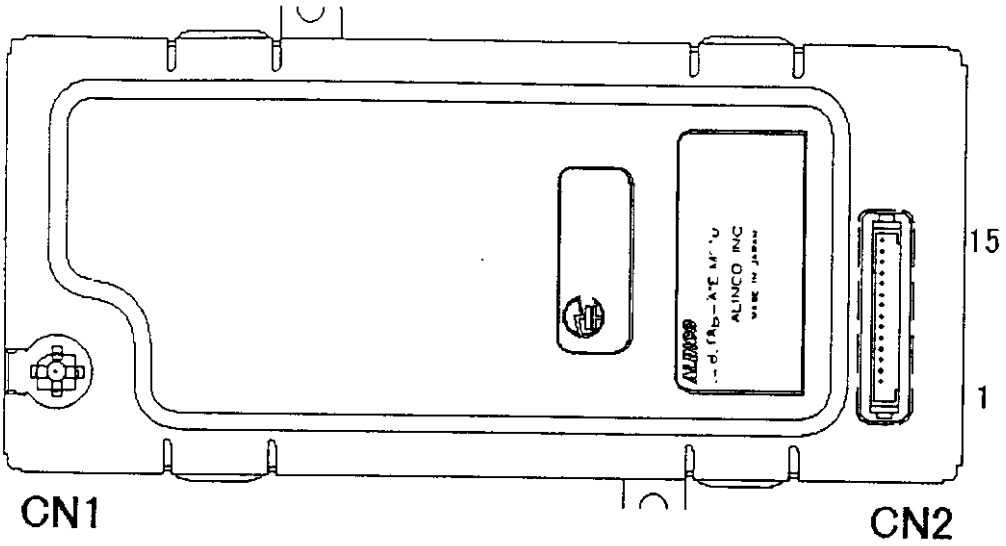
Interface Specifications

Terminal	I/O	Function
RXDT	O	Received data output
RXDCK	O	Received data clock output
SYNC	O	Synchro output (L when synchronized)
TXDCK	O	Transmitting data clock output
TXDT	I	Transmitting data input
TXRQ	I	Input L when transmitting (pull up)
CTS	O	Outputs permitting signal for data transmission
QP/BP	I	toggles DQPSK and DBPSK
RSSI	O	Outputs received signal strength

Connector:

Antenna terminal:		Hirose H.FL.R-SMT2 (C) (10)
Interface connector:	On-board:	Hirose DF13B-15P-1.25V(21)
	Mating:	Hirose DF13-15S-1.25C

Connections



Connections

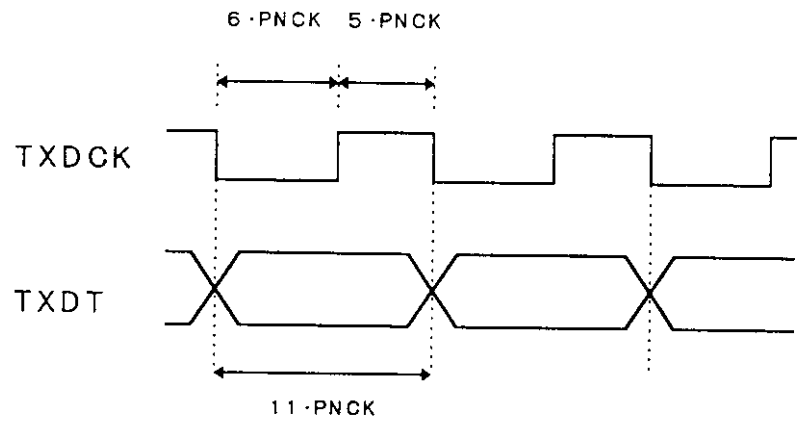
Attach the supplied antenna to CN1.

The CN2 connections are as follows:

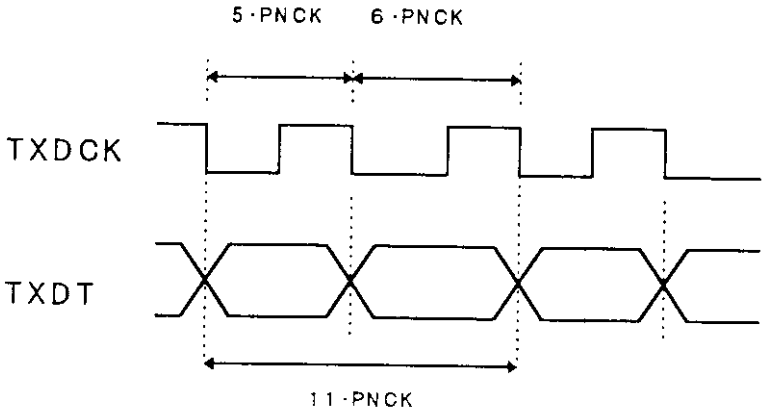
Pin No.	Abbrev.	Connection
1	GND	Ground
2	GND	Ground
3	NC	-
4	RSSI	Rx signal strength output (impedance 10k-ohm)
5	QP/BP	For inputing H for DQPSK at 2Mbps, and L for DBPSK at 1Mbps
6	TEST	for factory test only. Should be used open.
7	CTS	outputs permission to data source to input data for transmission. L=permit
8	TXRQ	For inputing request from data source when wanting to transmit data
9	TXDT	For inputing data for transmission from data source. Must change with the fall of a clock pulse.
10	TXDCK	Clock output for inputting data for transmission
11	SYNC	Outputs synchronization status of demodulator. H=Unsynchronized
12	RXDCK	Clock output for received data
13	RXDT	Outputs received data
14	5V	Power supply terminal 5V
15	5V	Power supply terminal 5V

Timing Chart : Data input for transmission

DBPSK



DQPSK



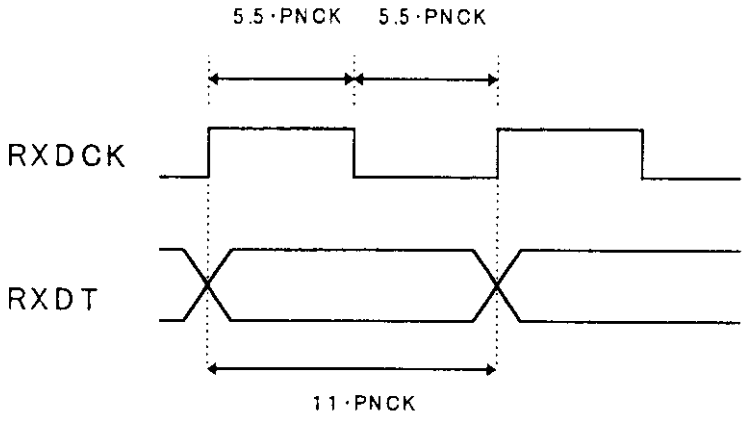
PNCK=1/11Mbps

Data must change with the falling edge of the clock pulse.

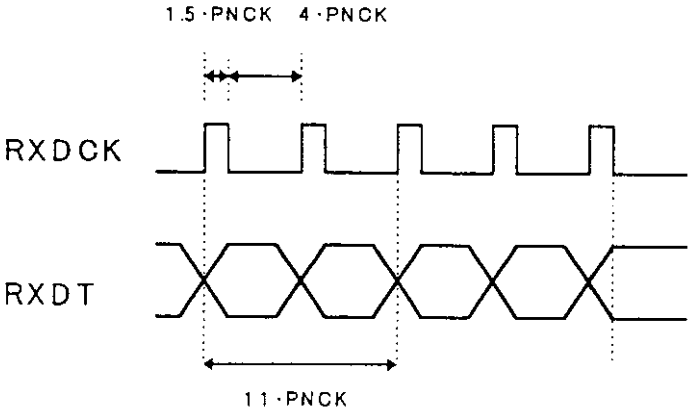
The change in TXDT must be +/- 150ns with respect to the fall of TXDCK.

Timing Chart : Output of received data

DBPSK

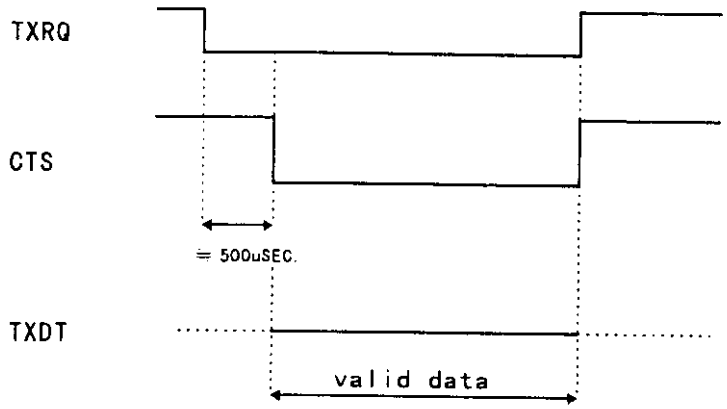


DQPSK



PNCK=1/11Mbps

Timing Chart for TXRQ, CTS, and TXDT when requesting to transmit data:



When the XE642 is receiving without incoming signals, a request for transmitting data can be made by pulling the TXRQ down to L.
Upon detecting the TXRQ input, the XE642, after checking the lock-up of the frequency synthesizer, switches itself into transmit mode. Having established the transmit state, an ID (by manufacturer's option) is sent out, and CTS is switched to L permitting the data input for transmission.
The data through TXDT is valid only after the CTS has gone L and any data input while the CTS is H will not be transmitted.

Precautions for data transmission/reception

1) ID Reception

   Due to automatic transmission of an ID at the beginning of each transmission, the received data will have an ID at the beginning.

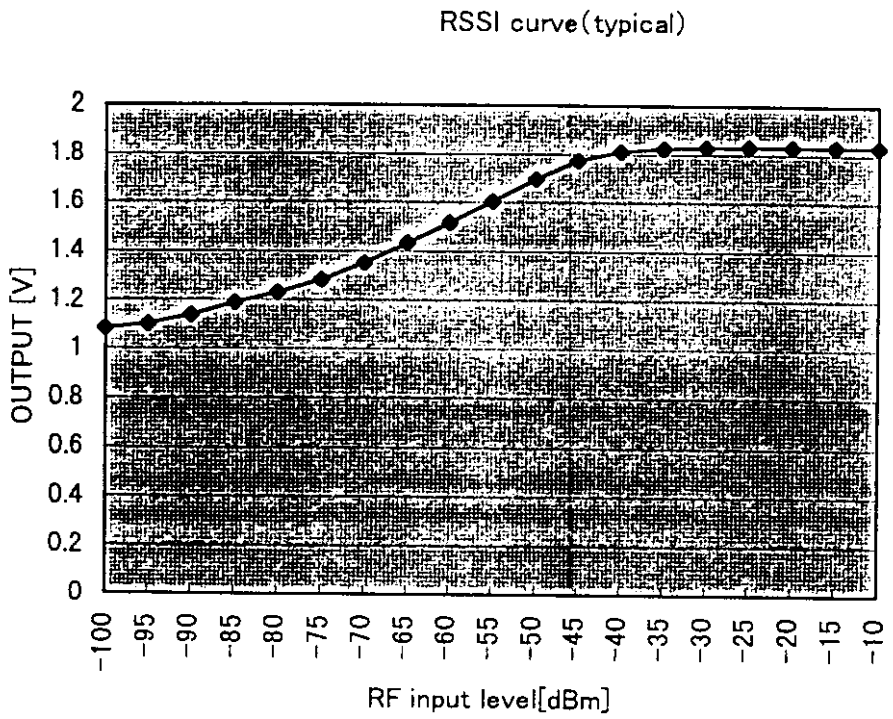
2) RXDT, SYNC

   Because a differential demodulator is employed for the demodulation of primary modulation, clock like pulses or non logical data may come out from the RXDT while no signal is received.

   To come around this problem, it is highly recommended that a receiving data is accepted after checking the synchronization via the SYNC line.

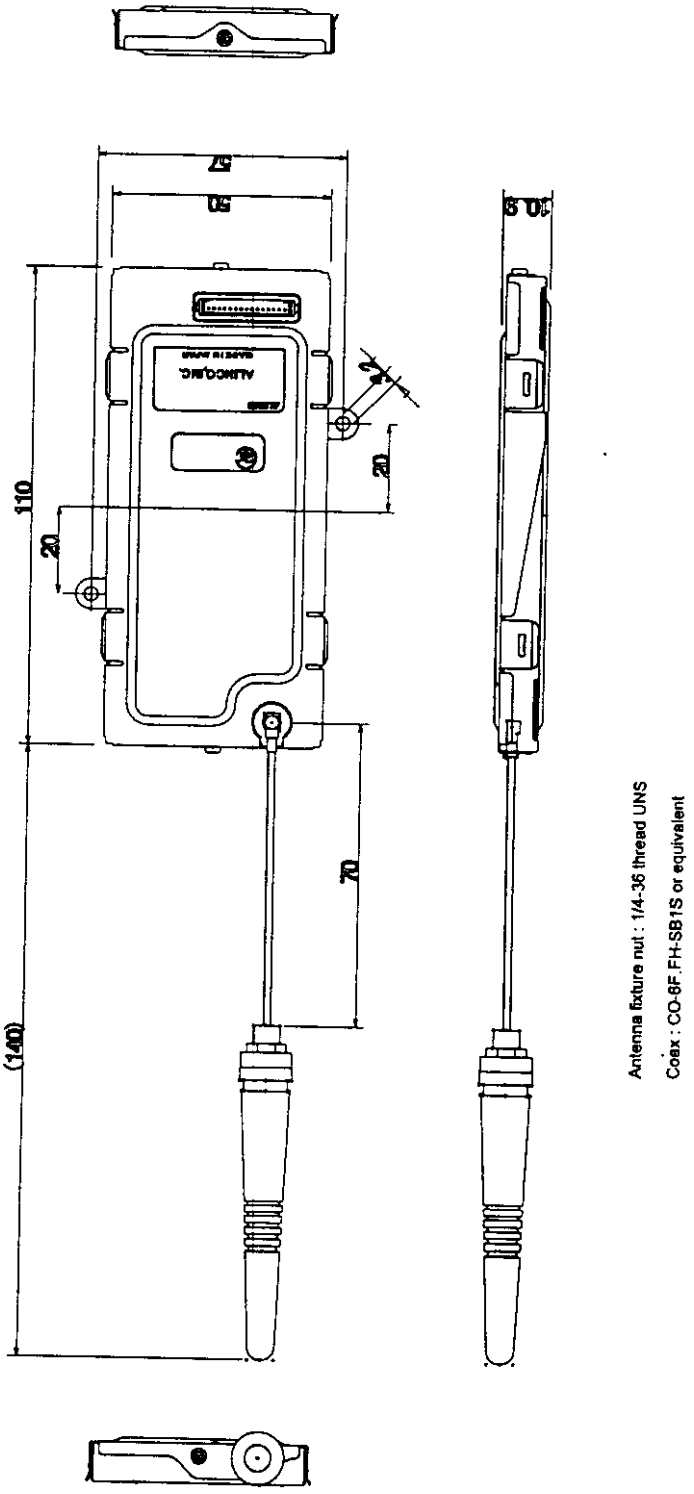
RSSI Characteristic

The following is a typical curve for RSSI (Received Signal Strength Indicator).



The RSSI is output from the limiting amplifier of the I.F. stage in current-variant state, and is converted to voltage by a 3 k-ohm resistor, followed by an isolation circuit inside the XE642. The output impedance for the RSSI terminal is 10k-ohm, therefore the output should be connected with a high-impedance buffer amp.

Dimensions


57
50
110
20
20
70
(140)
Antenna fixture nut : 1/4-36 thread UNS
Coax : CO-6F.FH-SB1S or equivalent

FCC RADIO FREQUENCY INTERFERENCE STATEMENT

Alinco, Inc.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

FCC ID: EUGXE642T

WARNING:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio or television communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the Separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Part 15 of FCC rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply to the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

INFORMATION TO USER:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

The use of shielded cables for connection to the TV-PCI TV/FM Tuner Adapters' audio composite video, S-Video, RF Input Video in-put and FM Stereo Input is required to assure compliance with FCC Class B regulations.