No. TS-017503

PERFORMANCE SPECIFICATIONS

GPS RECEIVING UNIT

MODEL: CCA-453JZ

July.2, 2001

JRC Japan Radio Co., Ltd.

INDEX

1. COMPONENTS LIST

Item	Type	Qty	Remarks
Receiving Unit	CCA-453JZ	1	

2. RECEIVING UNIT SPECIFICATIONS

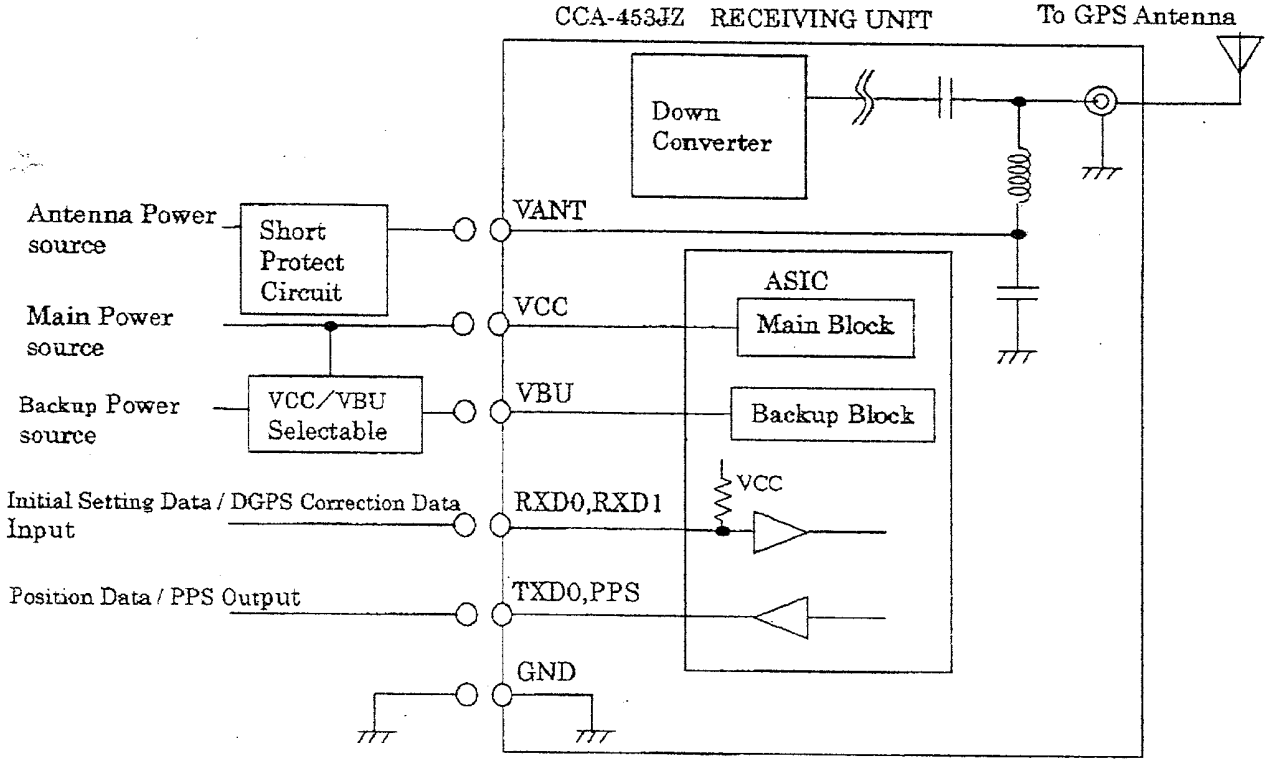
2.1 GENERAL

Receiving Method:	Multi-channel (Receiving:15 channels, Special search:1 channel)
Receiving Frequency:	1575.42MHz (L1), C/A code
Sensitivity:	-130dBm (at NAY-3600G antenna receiving level)
Dynamic Range:	> 25dB
Fixing Method:	ALL IN VIEW
DATUM:	WGS-84 (default, 46 datums selectable)
Accuracy	
Alone	GPS System Accuracy
Position:	15m 2dRMS (SA off, HDOP≦1.5)
Speed:	0.04m/sec. RMS (SA off, HDOP≦1.5)
Course:	< 0.14° (SA off, speed = 60km/h , HDOP≦1.5)
DGPS	
Position:	7m 2dRMS (example)
1PPS Accuracy:	UTC±1μsec.
Dynamic Capability	
Maximum Velocity:	300km/h
Maximum Acceleration:	2g's
Time To First Fix (no signal loss)	
HOT START:	8sec. typical
WARM START:	33sec. typical
COLD START:	40sec. typical
Re-acquisition Time:	3sec. (within 5 sec. block out)
DGPS Capability:	RTCM SC-104 version 2.1, 1200bps (Type 1,2,9) Option: DARC format available , 1200bps
WAAS Capability:	Under development
Position Fix Data Output Rate:	1sec.
Data I/O	
Interface:	CMOS level (3.3V)
Output:	TXD0 4800bps (Position Data Output)
Input:	RXD0 4800bps (Initial Setting Data Input) RXD1 1200bps (DGPS Correction Data Input)
Data Output Format:	NMEA0183 Revision 2.01S
Power Requirements	
Main Power:	Vcc: +3.3Vdc±5%, 100mVp-p ripple (max.)
Consumption Current:	Icc: 125mA typical (except for antenna)
Backup Power (SRAM&RTC):	Vbu1: +2.2 to Vcc Vdc (Backup mode) Vbu2: +2.7 to Vcc Vdc (Operation mode)
Consumption Current:	Ibu1: 6μA typical (+3.3Vdc, 25℃) Ibu2: 500μA typical (+3.3Vdc, 25℃)
Input Power for Active Antenna:	Vant: +3.0 to +5.25Vdc
Consumption Current:	Iant: 5 to 30mA
Incorporated Battery:	No
Connectors	
RF Connector:	H.FL-R-SMT2(10) (Hirose) Mating connector: H.FL-LP-DFS111 (Hirose)
I/O Connector:	MA44-10PA-SH (Hirose), Mating connector: MA44-10D-2C

Size:	25mm × 39mm × 7mm
Weight:	10g (approx.)
Temperature	
Operating:	-30 to +70℃
Storage:	-40 to +85℃

2.2 I/O CONNECTOR PIN FUNCTIONS

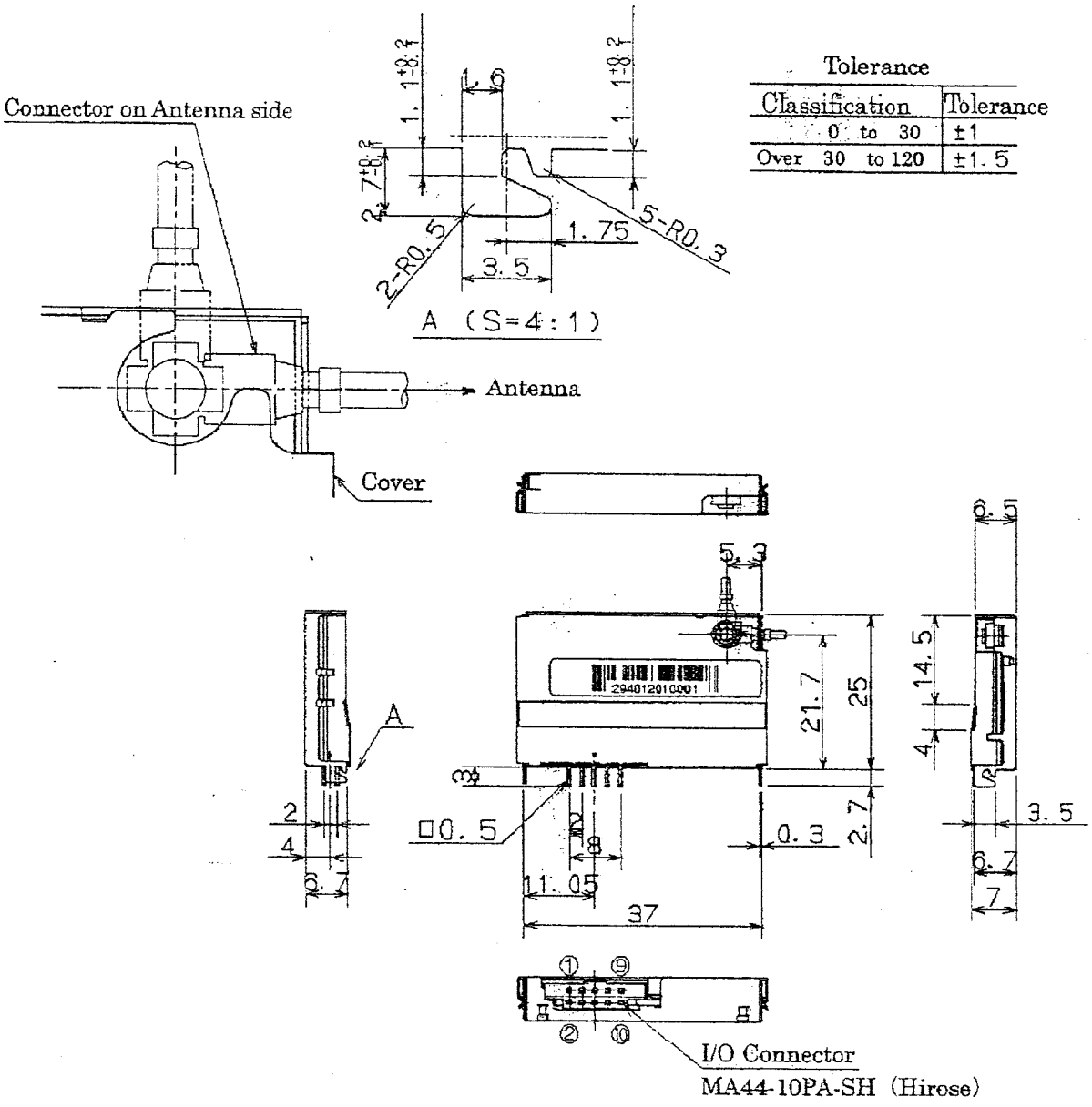
PIN No.	PIN NAME	DESCRIPTION	PARAMETER	TEST CONDITIONS	VALUE MIN.	VALUE MAX.	UNIT
2	PPS	PPS Output	Output Level High (V_{OH})	I_{OH}=-8mA	V_{CC}-0.5		V
			Output Level Low (V_{OL})	I_{OL}=8mA		+0.4	
3	Vbu	Backup Power Input	Back up mode (Vbu1)		+2.2	Vcc	Vdc
			Back up mode (Ibu1)	Vbu=+3.3V,25℃	6(typ.)		μA
			Operation mode (Vbu2)		+2.7	Vcc	Vdc
			Operation mode (Ibu2)	Vbu=+3.3V,25℃	500(typ.)		μA
4	TXD0	Position Data Output	Output Level High (V_{OH})	I_{OH}=-8mA	V_{CC}-0.5		V
			Output Level Low (V_{OL})	I_{OL}=8mA		+0.4	
5	RXD0	Initial Setting Data Input	Input Level High (V_{IH})		0.7Vcc	V_{CC}+0.3	V
			Input Level Low (V_{IL})		-0.3	0.3Vcc	
6	Vcc	Main Power Input	Supply Voltage (Vcc)		+3.135	+3.465	Vdc
			Supply Current (Icc)	Vcc=+3.3V	125(typ.)		mA
7	Vant	Active Antenna Power Input	Supply Voltage (Vant)		+3.0	+5.25	Vdc
			Supply Current (Iant)		5	30	mA
8	RXD1	DGPS Correction Data Input	Input Level High (V_{IH})		0.7Vcc	V_{CC}+0.3	V
			Input Level Low (V_{IL})		-0.3	0.3Vcc	
10	GND	Ground					



2.3 RF CONNECTOR

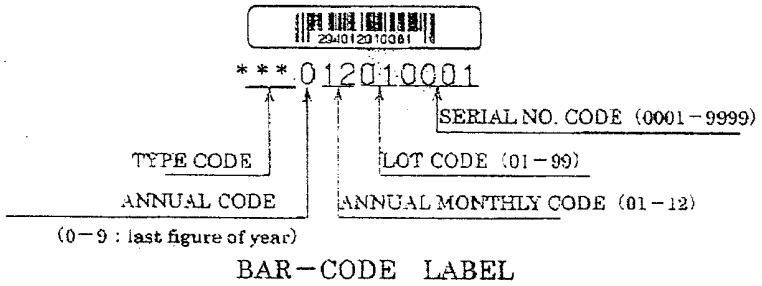
NAME	PARAMETER		VALUE		UNIT	REMARKS
			MIN	MAX		
RF CON-NECTOR	AC	Nominal Impedance	50		Ω	
		VSWR		2.2		@f=1575.42±1MHz

2.4 OUTLINE DRAWINGS



Tolerance

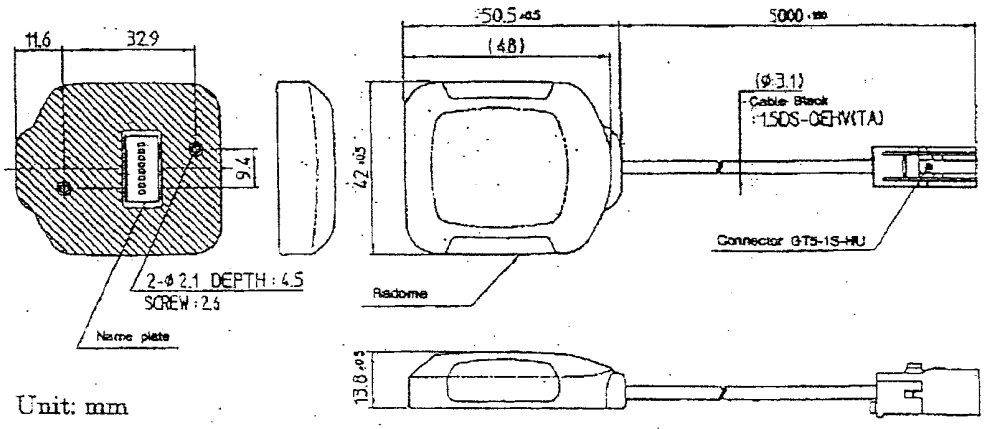
Classification	Tolerance
0 to 30	±1
Over 30 to 120	±1.5



BAR-CODE LABEL

3 RECOMMENDED ANTENNA

Recommended Antenna:	NAY-3600G
Type:	Active
Overall Performance (Antenna+LNA+Cable)	
Gain:	> 22dBi (at elevation 10°)
Output Impedance:	50 Ω
VSWR:	2.0:1
Supply voltage:	+4 to +5Vdc
Current consumption:	< 30mA
RF Connector:	GT5-1S-HU (Hirose)
Antenna Part	
Gain Coverage:	> -5dBi (elevation ≧10°) > +2dBi (at zenith)
Polarization:	RHCP
Axial Ratio:	< 4.0dB (at zenith)
Low Noise Amplifier (LNA) Part	
Power Gain:	> 28dB (not including cable loss)
Noise Figure:	< 2.1dB
Bandwidth:	> 2MHz
Out of Band Rejection:	> 20dB (at 1575.42MHz±50MHz)
Cable:	1.5D Coax. Cable , 5m long

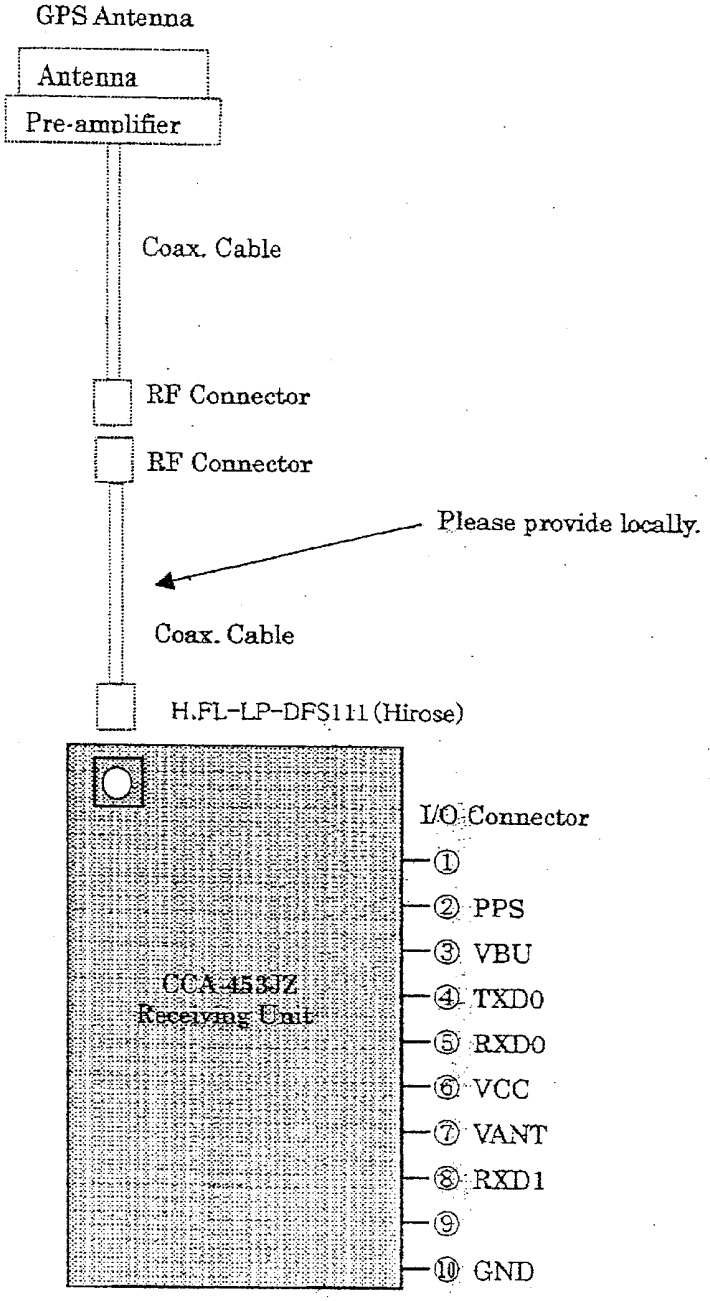


Unit: mm

Tolerance
(unless otherwise specified) ±0.3

NAY-3600G OUTLINE DRAWINGS

4 WIRING DIAGRAM



Pin# ① and ⑨ shall be left open.