

Product Introduction, ***MEB-1000***

RoyalTek

Taoyuan, Taiwan

Topics

- **MEB-1000 Introduction**
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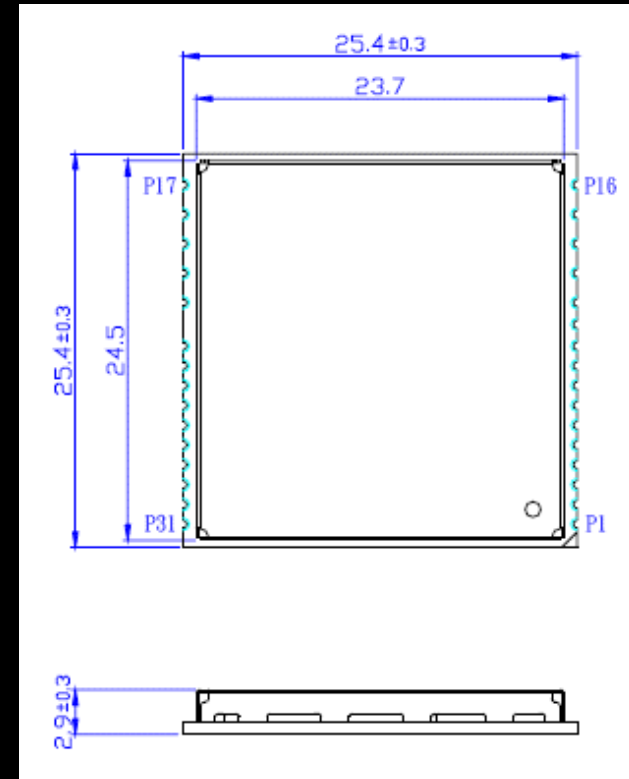
MEB-1000 Images & Dimension



Front View



Rear View



Dimension

Note,
the dimension is now customized for customers.

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MEB-1000 Features

- 32 parallel channels
- SMT type with stamp holes
- High quality stereo audio output
- **TCXO design**
- 0.1 second reacquisition time
- NMEA-0183 compliant protocol/ customize protocol
- Enhanced algorithm for navigation stability
- Excellent sensitivity for urban canyon and foliage environments.
- DGPS (WAAS, EGNOS) support
- **Auto recovery while RTC crashes**

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MEB-1000 General Specification (1)

GPS Receiver General Specification	
Chipset	MediaTek MT3179 (RF)& MT3301 (Digital)
Frequency	L1 1575.42MHz.
Code	C.A. Code.
Channels	32
Chipset Sensitivity	-130dBm (Acquisition)
Chipset cold start	36 sec @ open sky (Typical)
Chipset warm start	35 sec @ open sky (Typical)
Chipset hot start	1 sec @ open sky (Typical)
Reacquisition	<1sec typical
Position accuracy	3 meters at 2D RMS (w/o aid)
Maximum altitude	18,000 m
Maximum velocity	515 m/s
Update rate	1Hz

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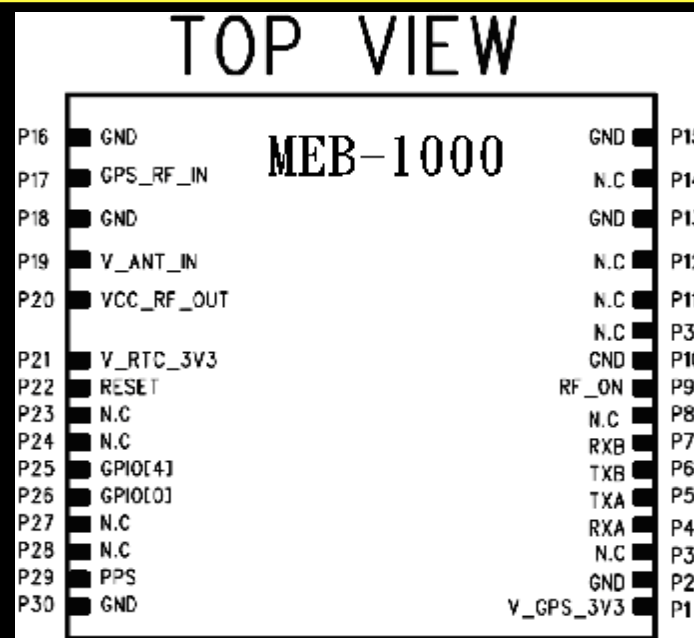
MEB-1000 General Specification (2)

Interface	
LNA	Not Applicable
I/O Pin	31pin
Mechanical requirements	
Dimension	25.4*25.4*2.9 (±0.2) mm
Weight	≤ 3.5 grams
Power consumption	
Vcc	DC 3.3 ±5%
Current	< 65mA@3.3V Typical. (Tracking mode) < 40mA@3.3V Typical. (Acquisition mode)
Environment	
Temperature	Operating temperature : -30 ~ +85°C Storage temperature : -40 ~ +85°C
Humidity	≤ 95%

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MEB-1000 Design Appendix (1)

PIN Definition



Pin #	Signal Name	I/O	Description	Characteristics
1	V_GPS_3V3	I	DC Supply Voltage Input	DC +3.3V±5%
2	GND	G	Ground	Reference Ground
3	N.C.			
4	RXA	I	Serial port A	$3.6V \geq V_{IH} \geq 2V$, $-0.3V \leq V_{IL} \leq 0.8V$
5	TXA	O	Serial port A	$3.15V \geq V_{OH} \geq 2.4V$, $-0.3V \leq V_{OL} \leq 0.4V$

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MEB-1000 Design Appendix (2)

Pin #	Signal Name	I/O	Description	Characteristics
6	TXBO	O	Serial Port B	$3.15V \geq V_{OH} \geq 2.4V$, $-0.3V \leq V_{OL} \leq 0.4V$
7	RXBO	I	Serial Port B	$3.6V \geq V_{IH} \geq 2V$, $-0.3V \leq V_{IL} \leq 0.8V$
8	N.C.			
9	RF_ON	O	Indicate Power Status of RF Part	$V_{OH}=2.85V$, $V_{OL}=0V$
10	GND	G	Ground	Reference Ground
11	N.C.			
12	N.C.			
13	GND	G	Ground	Reference Ground
14	N.C.			
15	GND	G	Ground	Reference Ground
16	GND	G	Ground	Reference Ground
17	GPS_RF_IN	I	GPS Signal Input	50Ω @1.57542GHz
18	GND	G	Ground	Reference Ground

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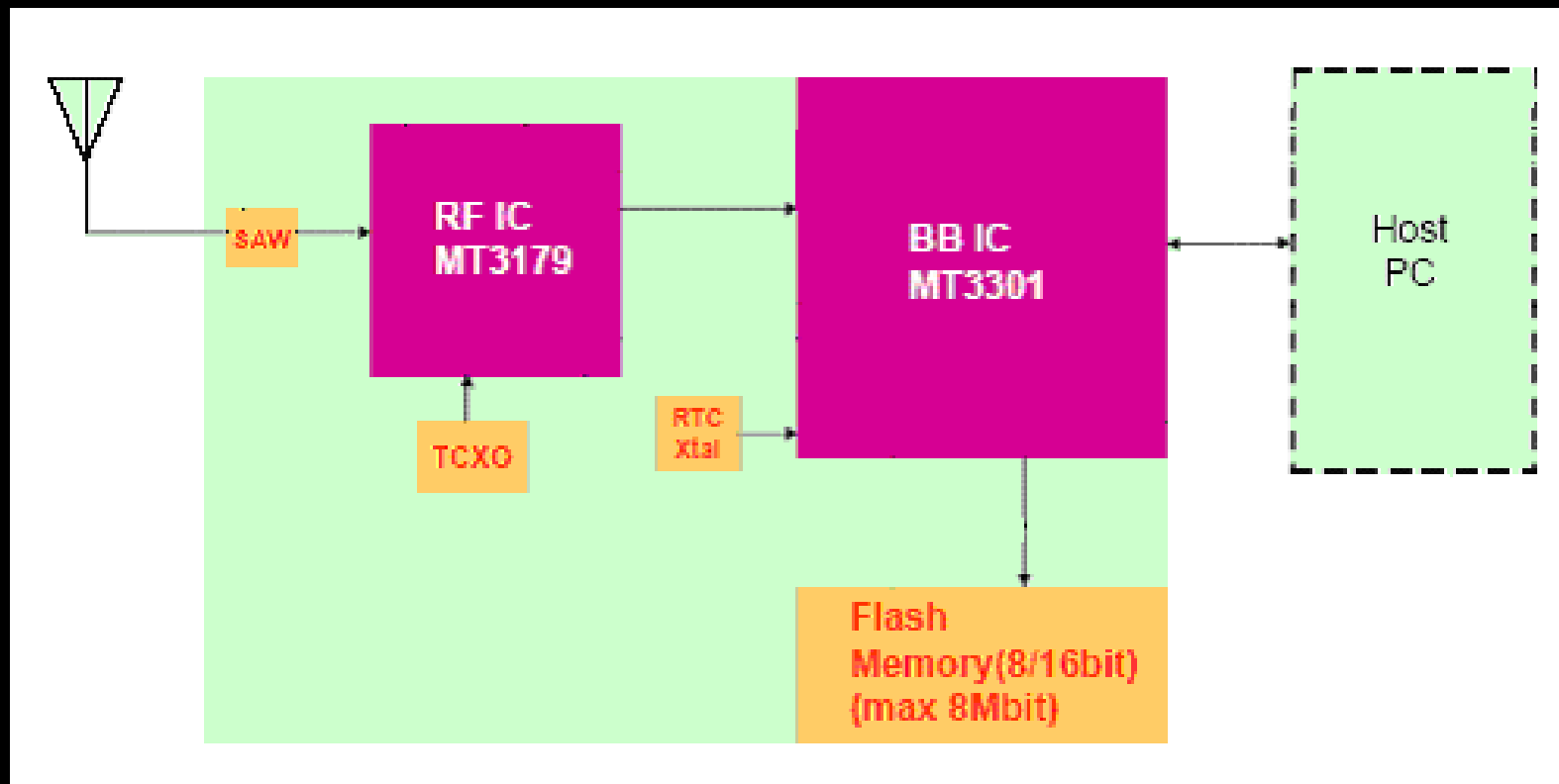
MEB-1000 Design Appendix (3)

Pin #	Signal Name	I/O	Description	Characteristics
19	V_ANT_IN	I	Active Antenna Bias Voltage	Receiving DC Power Supply for Active Antenna Bias.
20	VCC_RF_OUT	O	Supply Antenna Bias Voltage	$V_{OH}=2.85V\pm5\%$, Current<35mA
21	V_RTC_3V3	I	Backup Voltage Supply	DC: +1.6V~3.6V, Current $\leq 10\mu A$
22	Reset	I	Reset (Active Low)	$3.6V\geq V_{IH}\geq 2V$, $-0.3V\leq V_{IL}\leq 0.8V$
23	N.C.			
24	N.C.			
25	GPIO4	I/O	General Purpose I/O	$3.6V\geq V_{IH}\geq 2V$, $-0.3V\leq V_{IL}\leq 0.8V$ $3.15V\geq V_{OH}\geq 2.4V$, $-0.3V\leq V_{OL}\leq 0.4V$
26	GPIO0	I/O	General Purpose I/O	$3.6V\geq V_{IH}\geq 2V$, $-0.3V\leq V_{IL}\leq 0.8V$ $3.15V\geq V_{OH}\geq 2.4V$, $-0.3V\leq V_{OL}\leq 0.4V$
27	N.C.			
28	N.C.			
29	PPS	O	One Pulse per Second	$3.15V\geq V_{OH}\geq 2.4V$, $-0.3V\leq V_{OL}\leq 0.4V$
30	GND	G	Ground	Reference Ground
31	N.C.			

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MEB-1000 Design Appendix (4)

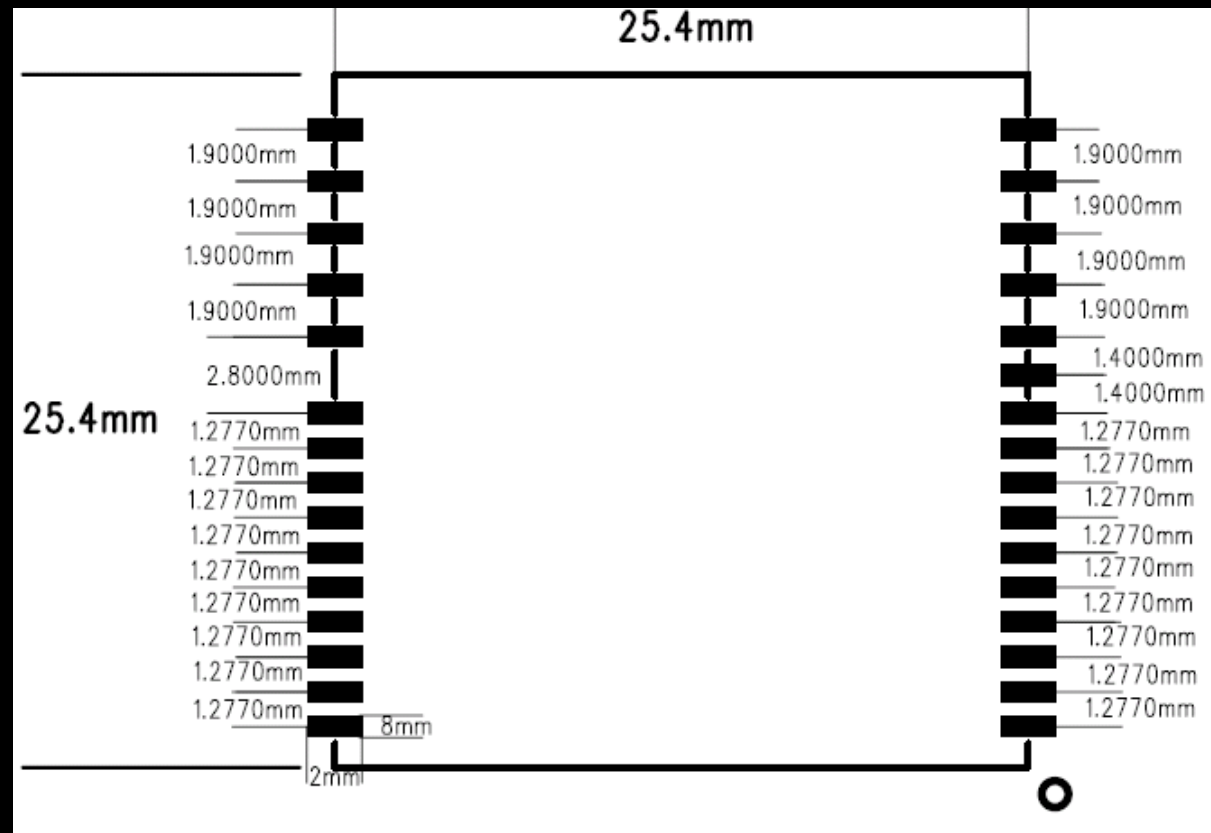
MEB-1000 Block Diagram



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MEB-1000 Design Appendix (5)

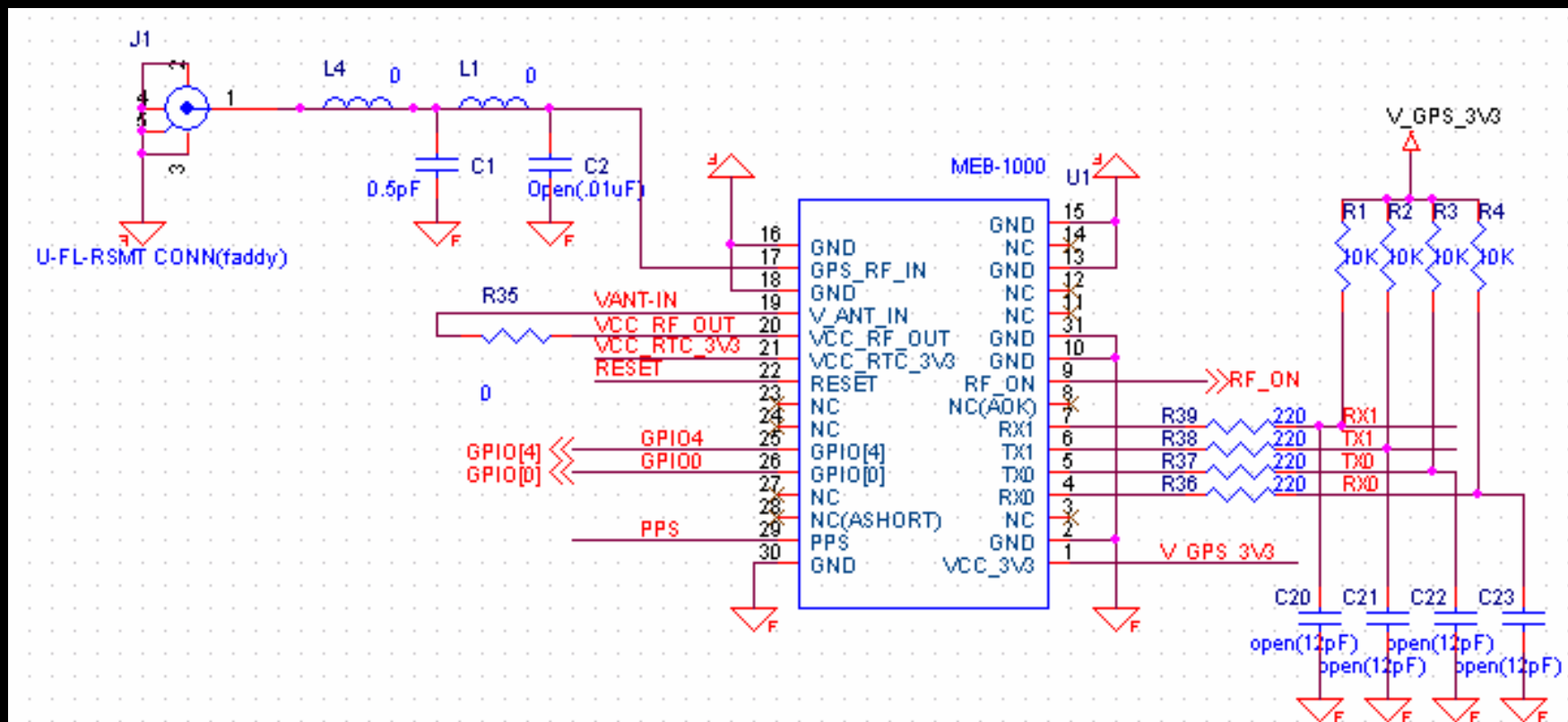
Recommend PAD Layout – Top View



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MEB-1000 Design Appendix (6)

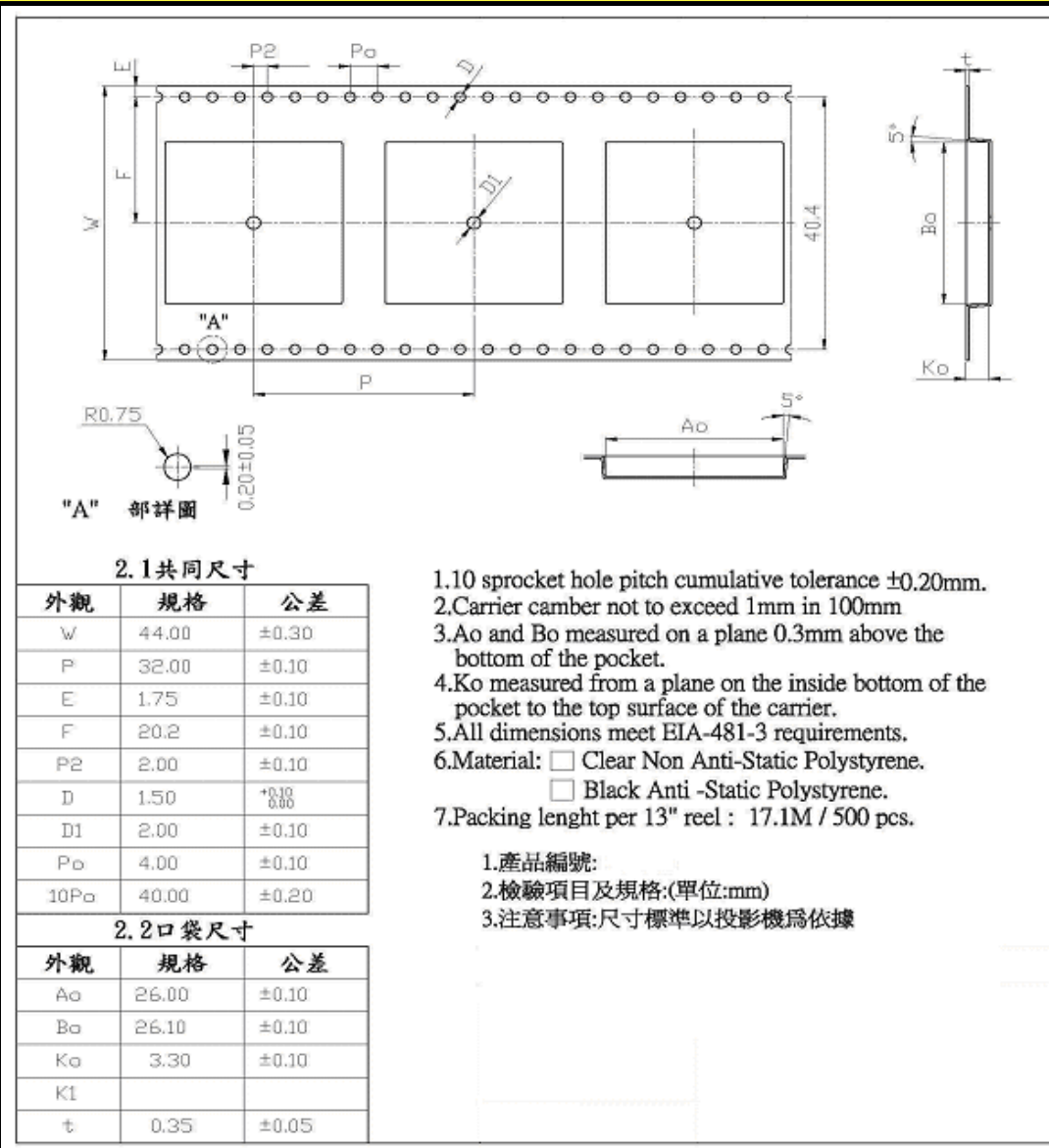
Reference of Application Circuit



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MEB-1000 Appendix (7)

Tape & Reel Package Info.



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MEB-1000 Design Appendix (8)

Evaluation Kit



Evaluation Board, MEV-1000



MEB-1000
on Adapter Board,

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MEB-1000 Design Appendix (9)

Test Program in Eval. Kit

The screenshot shows the 'Mini GPS' application window. It features a menu bar with 'Status', 'Setup', 'Channel', 'Test', and 'About'. The main display is divided into three sections: a Sky Chart, a GPS Status panel, and a Signal Level bar. The Sky Chart shows a circular plot with numbers 3, 8, 11, 13, 16, 19, 23, 27, and a central number 19. The GPS Status panel displays various data points including Date, Time, Lat, Lon, Alt, Fix Type, Spd, Track, PDOP, HDOP, and VDOP. The Signal Level bar shows CNR values for each channel. At the bottom, there are buttons for 'Hot Start', 'Warm Start', and 'Cold Start', and a 'Message Bar' with a dropdown menu and a 'Close' button.

Sky Chart — — — — —

Signal Level — — — — —

Message Bar — — — — —

Other Application Pages — — — — —

GPS Status — — — — —

TTF Command — — — — —

Channel	CNR
3	43
8	31
11	47
13	44
16	40
19	47
23	44
27	45

Hot Start Warm Start Cold Start

COM2 115200 Close

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