

GPS RADIONOVA® RF Antenna Module

Part No. M10214-A

Product Specification

Applications

- PNDs
- Portable handheld battery operated GPS enabled devices
- PDAs
- Multi-mode mobile phones
- Smart phones

Features

- Low cost single package GPS RF antenna module
- SiRF Star III GPS Chipset Architecture
- Low current consumption
- Easy to use 'drop-in solution'
- Built in filter allows co-existence with GSM / CDMA / UMTS / WLAN / BT
- Resistant to de-tuning

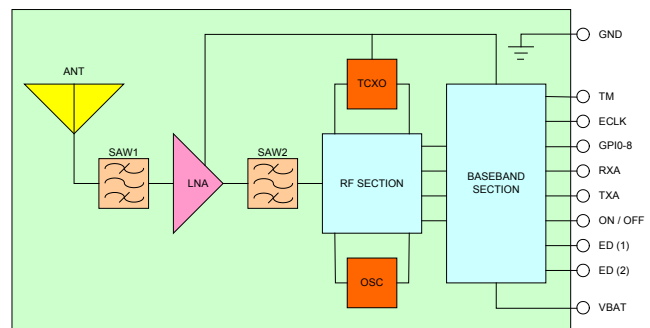
Product Description

GPS RADIONOVA M10214-A is a ROM based, highly integrated GPS RF Antenna Module suitable for L1-band GPS and A-GPS systems. The device is based on the high performance SiRF Star III GPS architecture combined with Antenna's high efficiency antenna technology.

All front-end components are contained in a single package laminate base module for optimum performance. M10214-A operates on a single 3.6V positive bias supply with low power consumption and available low power modes for further power savings.

M10214-A is supported by SiRF stand alone software and uses a UART as the host processor interface.

Functional Block Diagram



Package Style

43 x 9 x 4mm RF Antenna Module

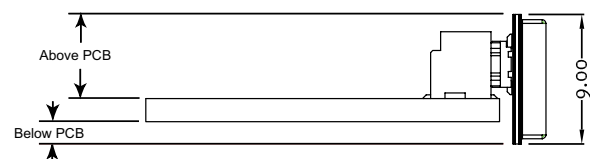
Top View (without shielding can)



Bottom View



Typical Mount (side view)



Absolute Maximum Ratings

Symbol	Parameter	Min	Max	Unit
Vdd	Supply Voltage		5.5	V
RFin	RF Input Power		10	dBm
ESD	Electrostatic Discharge Immunity (HBM)		TBD	kV
T _{STG}	Storage Temperature	-40	150	°C

*Exposure to absolute ratings may adversely affect reliability and may cause permanent damage.

Recommended Operating Conditions

Symbol	Parameter	Typ	Unit
Ta	Ambient Temperature	25	°C
Vbat	Main Supply Voltage	3.6	V
Fref	Reference Frequency	16.369	MHz

DC Electrical Characteristics

Conditions: Vbat = 3.6V, Ta = 25 °C

Symbol	Parameter	Typ	Unit
I _{CC} _{ACQ}	Total Supply Current (Acquisition Mode)	45	mA
I _{CC} _{TRK}	Track Mode	27	mA
I _{CC} _(CLK)	Clock Only	10	mA
I _{CC} _(STAND BY)	Stand By Mode	6	mA
I _{CC} _(HIBERNATE)	Hibernate Mode	13	µA

Performance Specification

Conditions: Vbat = 3.6V, Ta = 25 °C

Symbol	Parameter	Typ	Unit
	Power Consumption		
	Acquisition Mode	75	mW
	Tracking Mode	50	mW
	Trickle Power	25	mW
G _{LNA}	LNA Gain	20	dB
NF _{SYS}	Overall Radio Noise Figure	TBD	dB
P _{1dB}	1dB Compression Point	-65	dBm
ANT _{RL}	Antenna Return Loss	-12	dB
ANT _{EFF}	Antenna Efficiency	50	%

Band Rejection

Frequency	Standard	Typ	Unit
824-849	Cellular CDMA	89	dBc
869-894	GSM850	89	dBc
880-915	GSM900	89	dBc
1710-1785	DCS (LSB)	74	dBc
1850-1910	PCS	84	dBc
1920-1980	WCDMA	84	dBc
2400	WLAN, BT and WiMAX	80	dBc

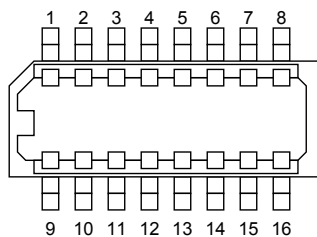
System Performance

Parameter	Specification
Data Output	UART
TCXO Reference	16.369MHz (0.5ppm)
Position Accuracy	2.5m
Sensitivity	
Acquisition	-142dBm
Tracking	-159dBm
TTF	
Hot Start	<1s
Warm Start	<35s
Cold Start	<35s

Pin out Description

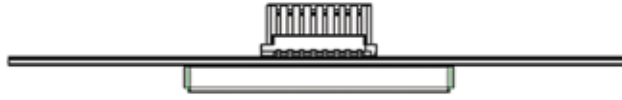
Pin	Name	Description
1	TM	OUTPUT - Time Mark (Handset application, otherwise tie to GND)
2	GND	Ground connection
3	GND	Ground connection
4	GND	Ground connection
5	GND	Ground connection
6	GND	Ground connection
7	GND	Ground connection
8	GND	Ground connection
9	ECLK	INPUT - External clock for Frequency Aiding (Handset application, otherwise tie to GND)
10	GPIO-8	INPUT - Time Aiding (Handset application, otherwise tie to GND)
11	RXA	SERIAL INPUT - UART Receive Input (Main message connection to host CPU)
12	TXA	SERIAL OUTPUT - UART Transmit Output (Main message connection to host CPU)
13	ON / OFF	INPUT - Power ON/OFF control line. Momentary high pulse to turn on and off the device. Pulse duration >70µs with minimum inter-pulse interval of 1s
14	VBAT	POWER SUPPLY (3.6V)
15	ED (1)	INPUT - Memory Boot mode Configuration. External Bus Signal #1 (See table below)
16	ED (0)	INPUT - Memory Boot mode Configuration. External Bus Signal #0 (See table below)

Program Memory Bootstrap Selection		
	ED (1)	ED (0)
Flash Mode	0	0
Reserved	0	1
Flash Loader Mode	1	1
ROM Mode (default)	1	0

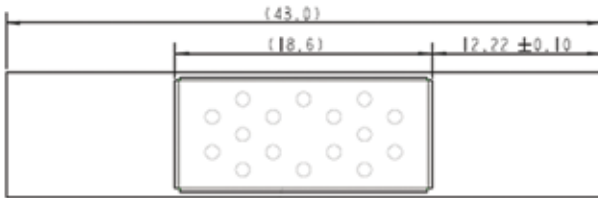


Mechanical Drawing

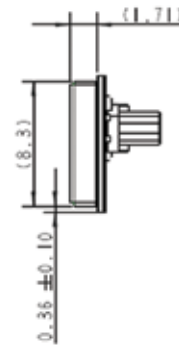
Top View (Mounted)



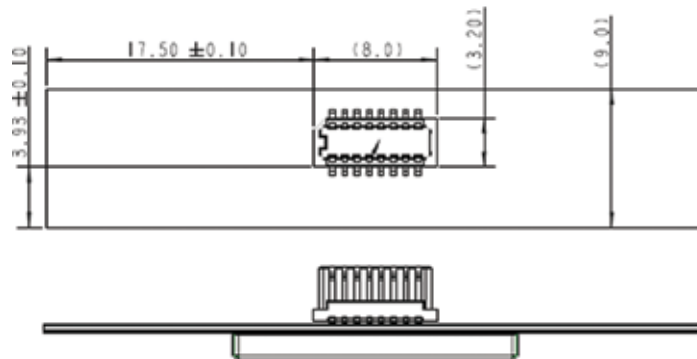
Front View (Component Side)



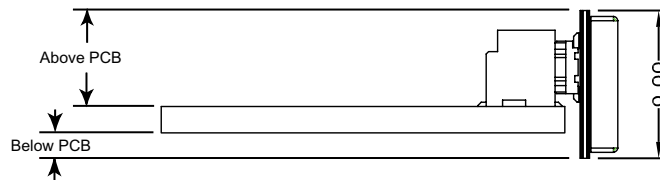
Side View



Back View (Connector Side)



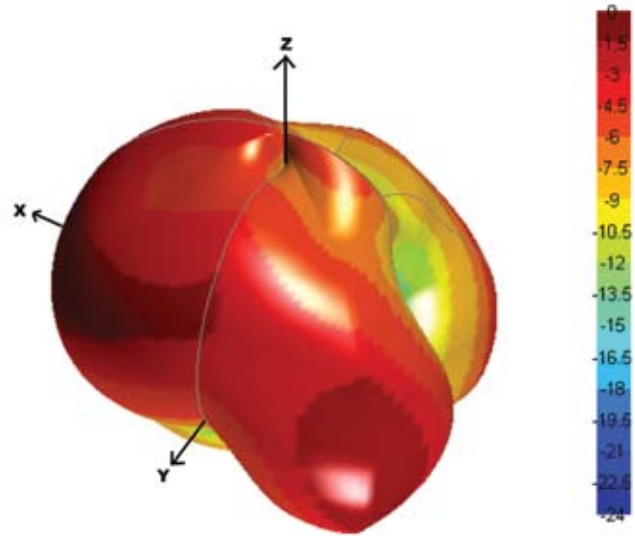
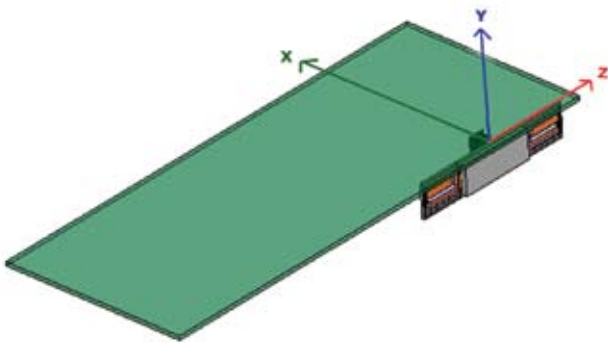
Typical Mount (side view)



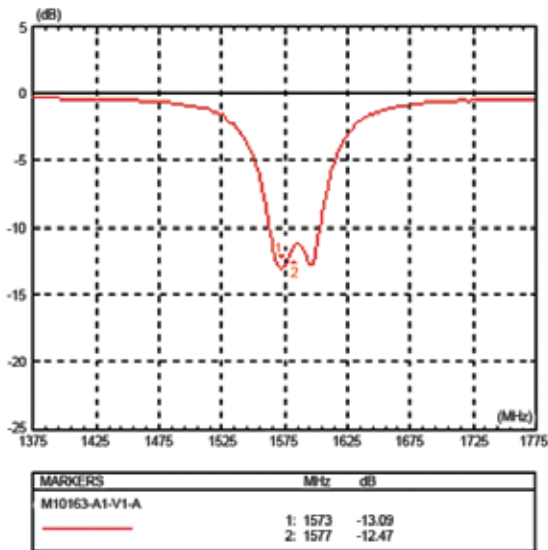
Notes: Units = mm

Antenna Performance

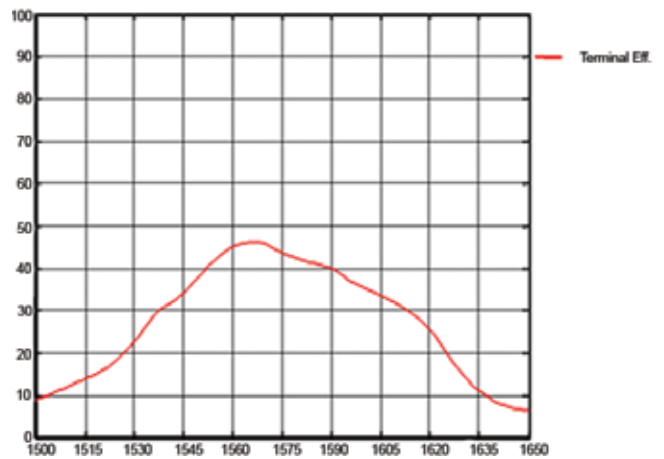
RHCP realized Gain (dBi)



Return Loss



Efficiency





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