



L70-R GPS Module Presentation

May, 2014

Contents

Highlights

Advanced Features

Quectel L70-R Vs. Competitor's Product

Support Package



Highlights

MT3337 Single Chip Solution

66 acquisition channels
22 tracking channels

Ultra Low Power Consumption

13mA@Tracking mode
16mA@Acquisition mode

AlwaysLocate™

An intelligent controller of power consumption

LOCUS

Innate logger solution with no need of host and external flash

Extremely Compact Size

10.1 × 9.7 × 2.5mm

ROM-based Version

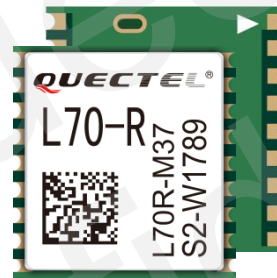
Cost efficient

Anti-Jamming

Multi-tone Active Interference canceller

Highest Sensitivity

-165dBm@Tracking mode
-148dBm@Acquisition mode

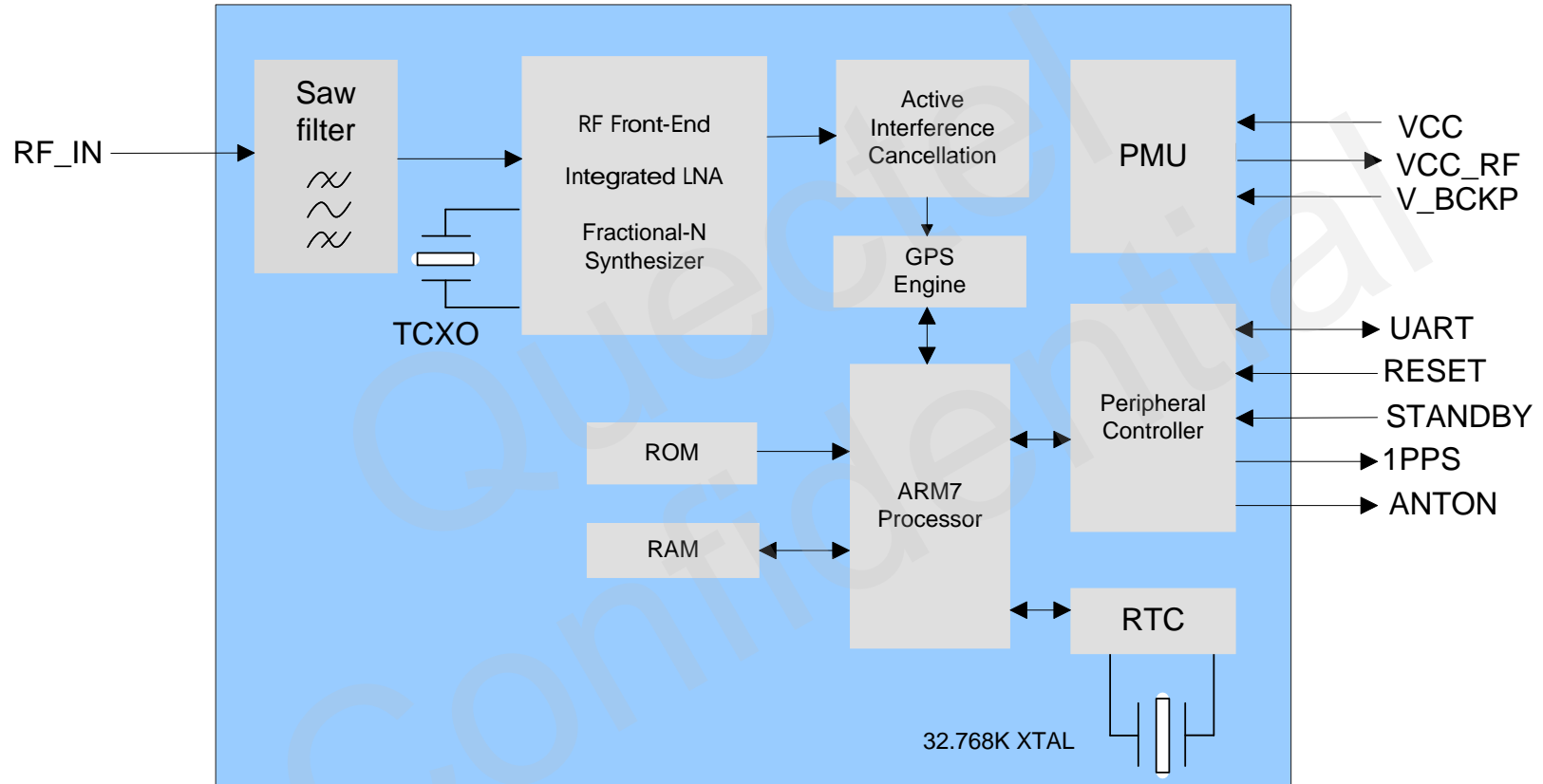


Mechanical Dimensions



Length: 10.1 mm
Width: 9.7 mm
Height: 2.5 mm
Weight: 0.6 g

Hardware Architecture



Receiver Performance

- Extremely low power consumption in tracking mode, 13mA
- AlwaysLocate™, an intelligent controller of periodic mode
- LOCUS, innate logger solution with no need for host and external flash
- High sensitivity, -165dBm@Tracking, -148dBm@ Acquisition
- 66 acquisition channels, 22 tracking channels
- Support DGPS, QZSS, SBAS(WASS/EGNOS/MSAS/GAGAN)
- Anti-Jamming, Multi-tone Active Interference Canceller

Specifications

L1 Band Receiver (1575.42MHz)	Channel	22 (tracking) / 66 (acquisition)	Environmental	Operation Temperature	-40°C to 85°C
	C/A code			Storage Temperature	-45°C to 125°C
	SBA	WAAS, EGNOS MSAS,GAGAN	Dynamic Performance	Maximum Altitude	Max.18000m
Horizontal Position Accuracy	Autonomous	<2.5m CEP		Maximum Velocity	Max.515m/s
Velocity Accuracy	Without aid	<0.1m/s	Dimensions	10.1 × 9.7 × 2.5mm	
Acceleration Accuracy	Without aid	0.1m/s ²	Weight	Approx. 0.6g	
Timing Accuracy	1PPS	15ns	Serial Interface	UART: Adjustable 4800~115200 bps Default: 9600bps	
Reacquisition Time		<1s	Update Rate	1Hz by default, up to 5Hz	
TTFF@-130dBm	Cold Start	<35s	I/O Voltage	2.7V ~ 2.9V	
	Warm Start	<30s	Protocols	NMEA 0183 PMTK	
	Hot Start	<1s	Power Supply	2.8V ~ 4.3V	
Sensitivity	Acquisition	-148dBm	Power Acquisition	16mA	
	Tracking	-165dBm	Power Tracking	13mA	
	Re-acquisition	-160dBm	Power Saving	1.6mA@AlwaysLocate™ 8uA@Backup Mode 500uA@Standby Mode Periodic Mode	
			Antenna Type	Active or Passive	
			Antenna Power	External or Internal VCC_RF	

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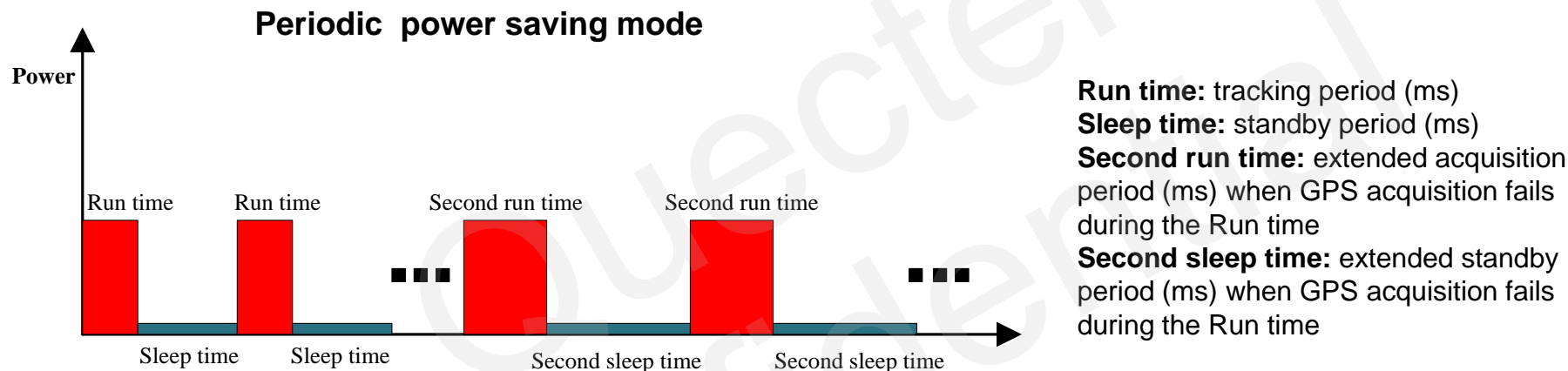
Support Package



Periodic Standby Mode

Periodic standby mode can control power on/off time of GPS periodically to reduce average power consumption, and on/off time can be configured by using PMTK command. For details, see the figure below. Periodic standby mode can be entered by sending the following PMTK command.

\$PMTK255, Type, Run time, Sleep time, Second run time, Second sleep time



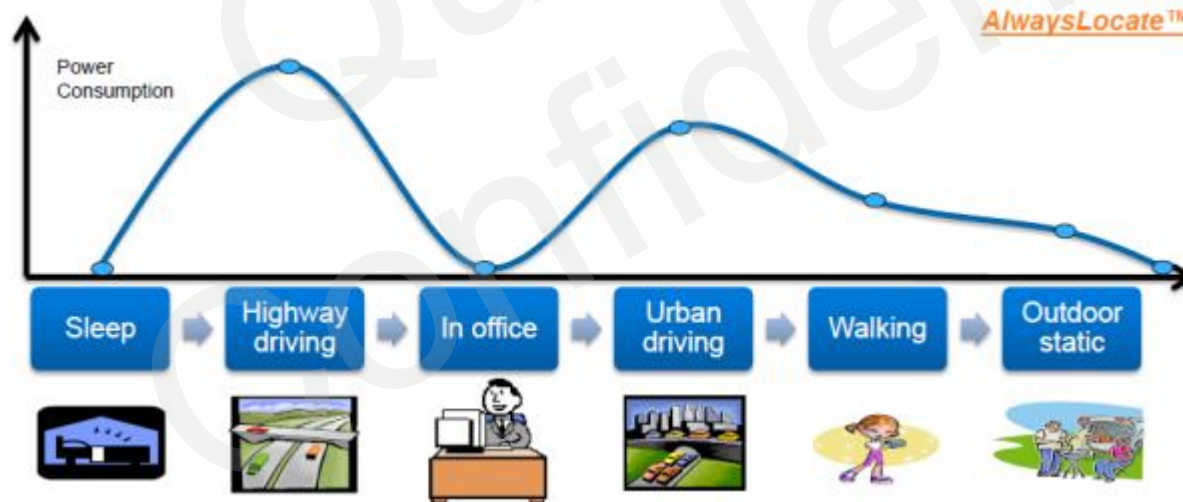
Notes:

1. Normally, the GPS module will enter the periodic mode after successfully fixing position. But if acquisition fails, the GPS module still can enter this mode.
2. If GPS acquisition fails during the Run time, in order to ensure the success of reacquisition, it is better to set the longer Second run time.

Example: PMTK225, 2, 3000, 12000, 18000, 72000*15 for periodic mode with 3s in tracking mode and 12s sleep in standby mode. The average current is about 3mA.

AlwaysLocate™ Technology

- AlwaysLocate™ is an intelligent controller of periodic mode.
- L70-R can adaptively adjust the on/off time to achieve balance between positioning accuracy and power consumption according to the environmental and motion conditions. So the average power consumption is lower in AlwaysLocate™ power saving mode than that in periodic power saving mode. Typical average power is 1.6mA.



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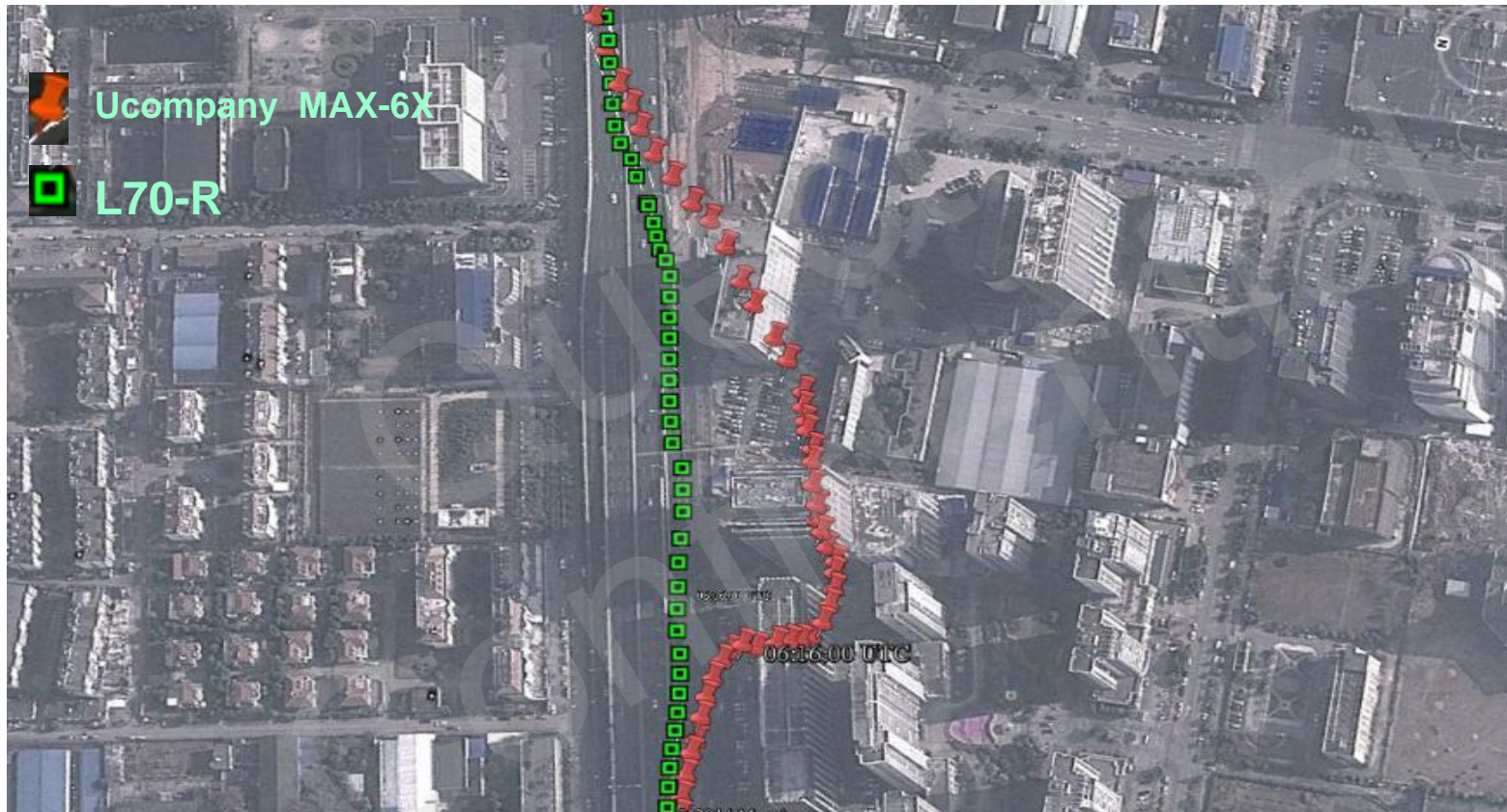
L70-R vs. Ucompany MAX-6X (1)

➤ Specification Comparison

	L70 -R	MAX-6X
Packaging	18-pin LCC GPS module	18-pin LCC GPS module
Dimensions	10.1 × 9.7 × 2.5 mm	10.1 × 9.7 × 2.5 mm
Sensitivity	Autonomous Acquisition	-148dBm
	Reacquisition	-160dBm
	Hot Start	-160dBm
	Tracking	-165dBm
Timing Accuracy	<15ns	30ns RMS
Update Rate	1Hz(default), Max 5Hz	1Hz(default), Max 5Hz
Temperature Range	Operation	-40°C to 85°C
	Storage	-45°C to 125°C
Power Supply	2.8V to 4.3V	2.7V to 3.6V (MXX-6Q) 1.75V to 2.0V (MXX-6G)
Full Power Consumption	Acquisition	16mA@3.3V
	Tracking	13mA@3.3V
Power Saving Mode Consumption	Alwayslocate™	1.6mA typ.@3.3V
	Standby mode	500uA
	Backup mode	8uA
Embedded external LNA (Outside Chipset)	No	No
Feature	AlwaysLocate™	Supported
	1PPS	Supported
	Locus	Supported
	SBAS	Support(WAAS,EGNOS,MSAS,GAGAN)

L70-R vs. Ucompany MAX-6X(2)

➤ Tracking Comparison



When driving under the overpass, L70-R module shows its excellent performance. But Ucompany's module has a bigger drift.

L70-R vs. Ucompany MAX-6X(3)

➤ Tracking Comparison



When driving across overpass and making a turn, L70-R module can still capture the accurate tracking data. But Ucompany module has a small drift.

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Support Package



Support Package (1)

Evaluation Board

➤ Interfaces

- GPS serial port
- Antenna interface
- Micro-USB interface

➤ Accessories

- Micro-USB cable
- GPS antenna



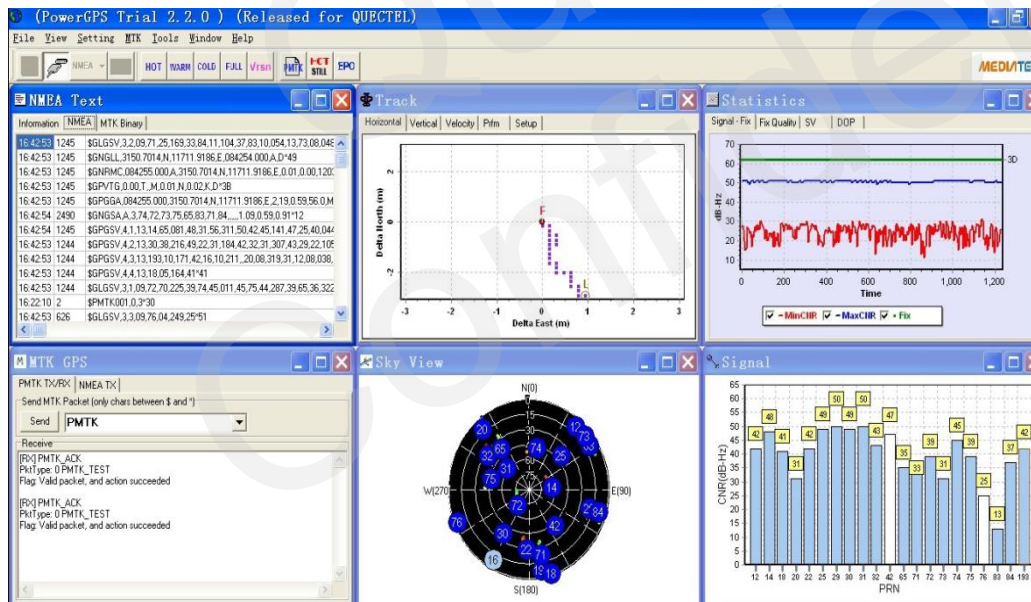
Support Package (2)

➤ Documents

- <<Hardware Design>>
- <<Protocol Specification>>
- <<Part&Decal in PADS and Protel Format>>
- <<Evaluation Board User Guide>>
- <<Circuit Reference Design>>

➤ PC tool

- PowerGPS2.2-GPS/GLONASS testing tool



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Q&A...

Thank you

