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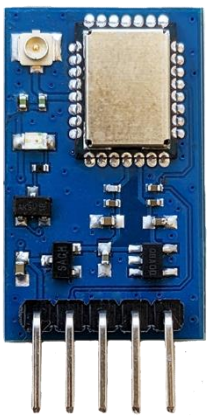
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RYS8839_Lite

Ultra-low power **1.8V**, L1 L5 Dual-band multi-constellation GNSS module
Lite Evaluation Board

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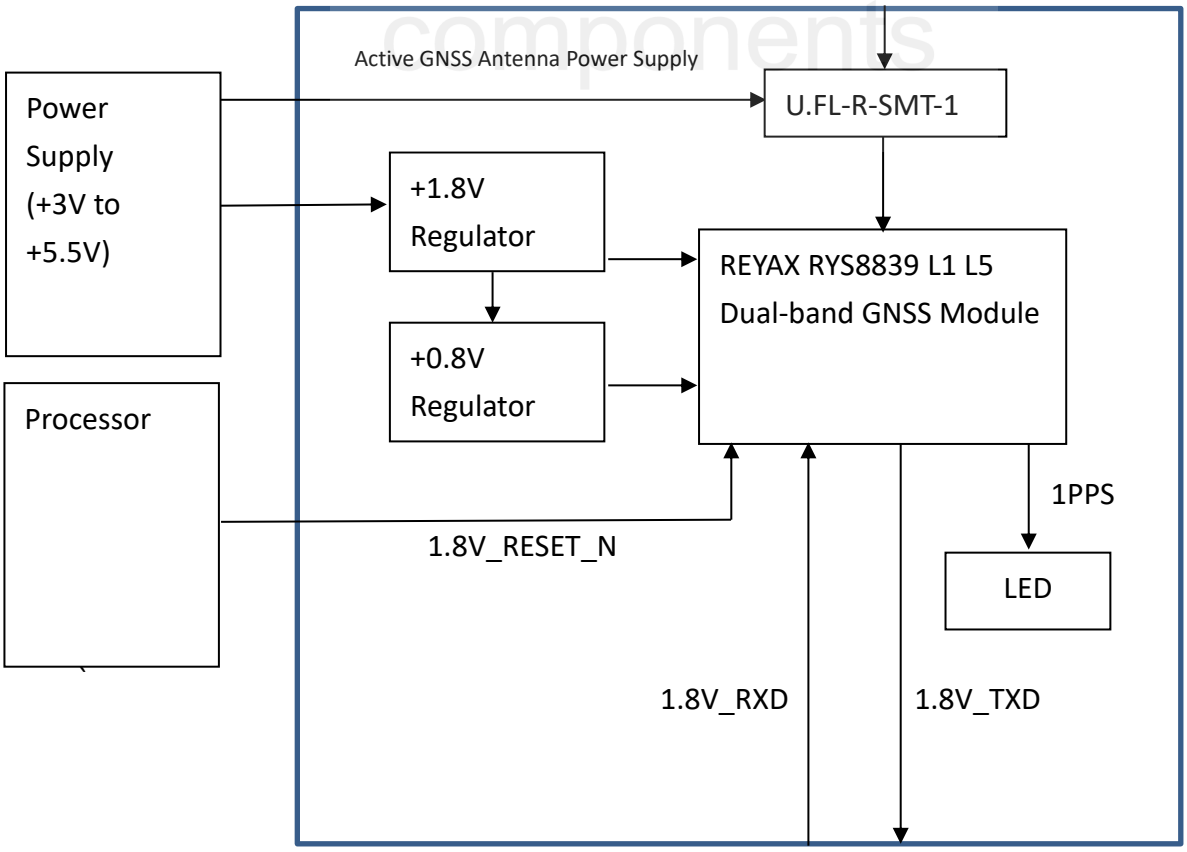
PRODUCT DESCRIPTION

The RYS8839 is an ultra-low power, L1 L5 Dual-band multi-constellation GNSS module. It also has integrated digital noise filters for coexistence with other radio systems.

FEATURES

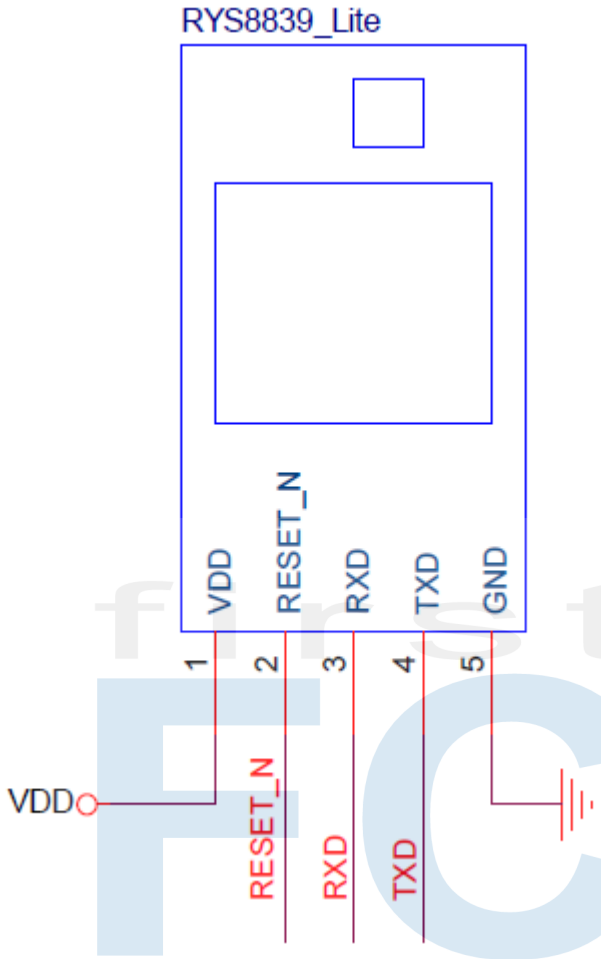
- SONY CXD5610GF Engine
- A L1 L5 Dual-band GNSS receiver.
- Supports multi-constellation :
  GPS(L1C/A,L5) GLONASS(L1OF)
  BeiDou(B1I. B1C, B2a)
  Galileo(E1, E5a)
  QZSS(L1C/A, L1S, L1C/B, L5)
  IRNSS NAVIC(L5)
  SBAS(L1)
  *GNSS performance could depend on the setting.
- Embedded digital noise filters and spectrum analyzer.

BLOCK DIAGRAM



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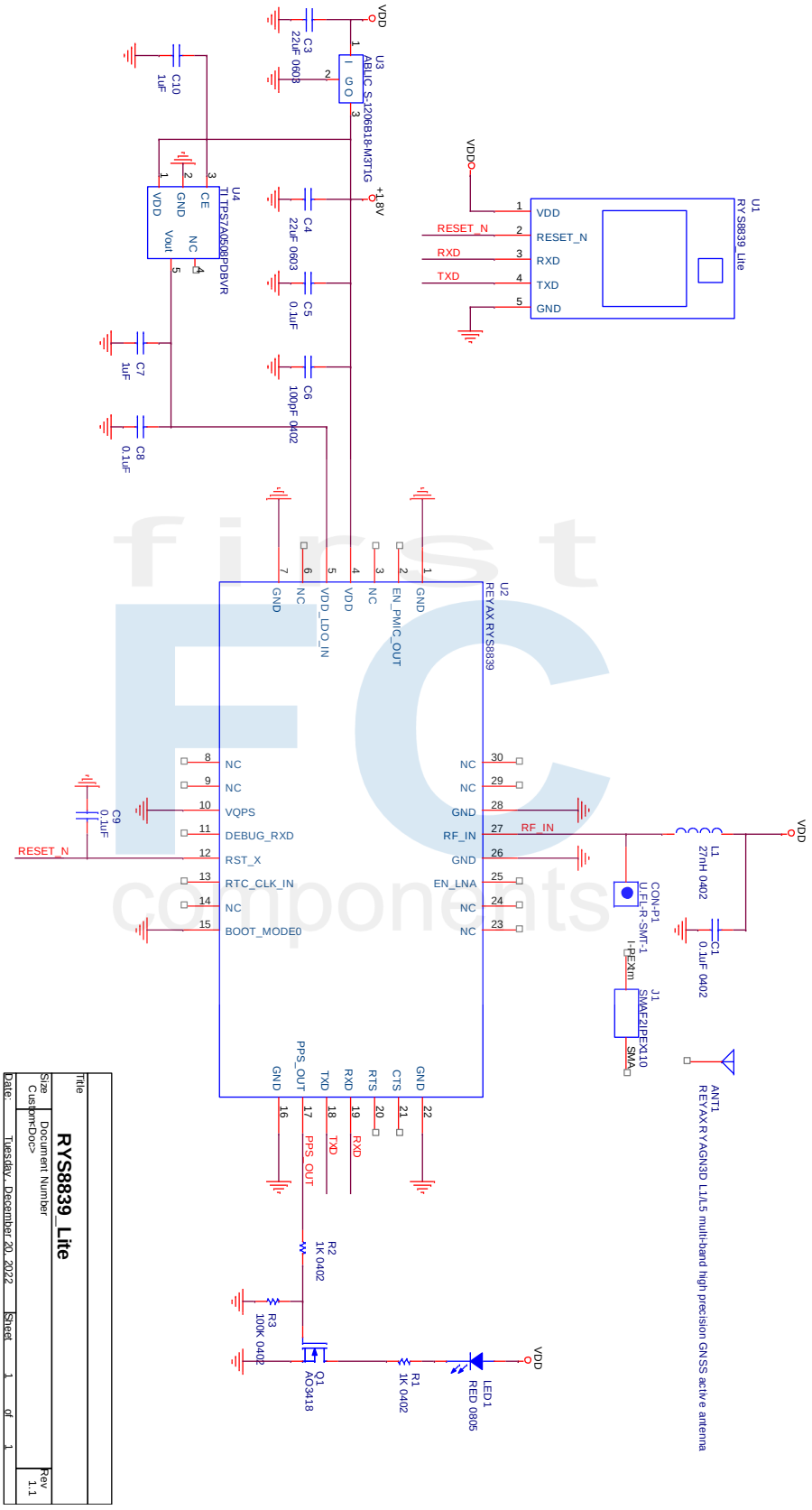
PIN DESCRIPTION



Pin	Name	I/O	Condition
1	VDD	I	Power supply(+3V to +5.5V)
2	RESET_N	I	Active Low(+1.8V)
3	RXD	I	Serial interface Input (+1.8V)
4	TXD	O	Serial interface Output (+1.8V)
5	GND	-	Ground

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APPLICATION SCHEMATIC



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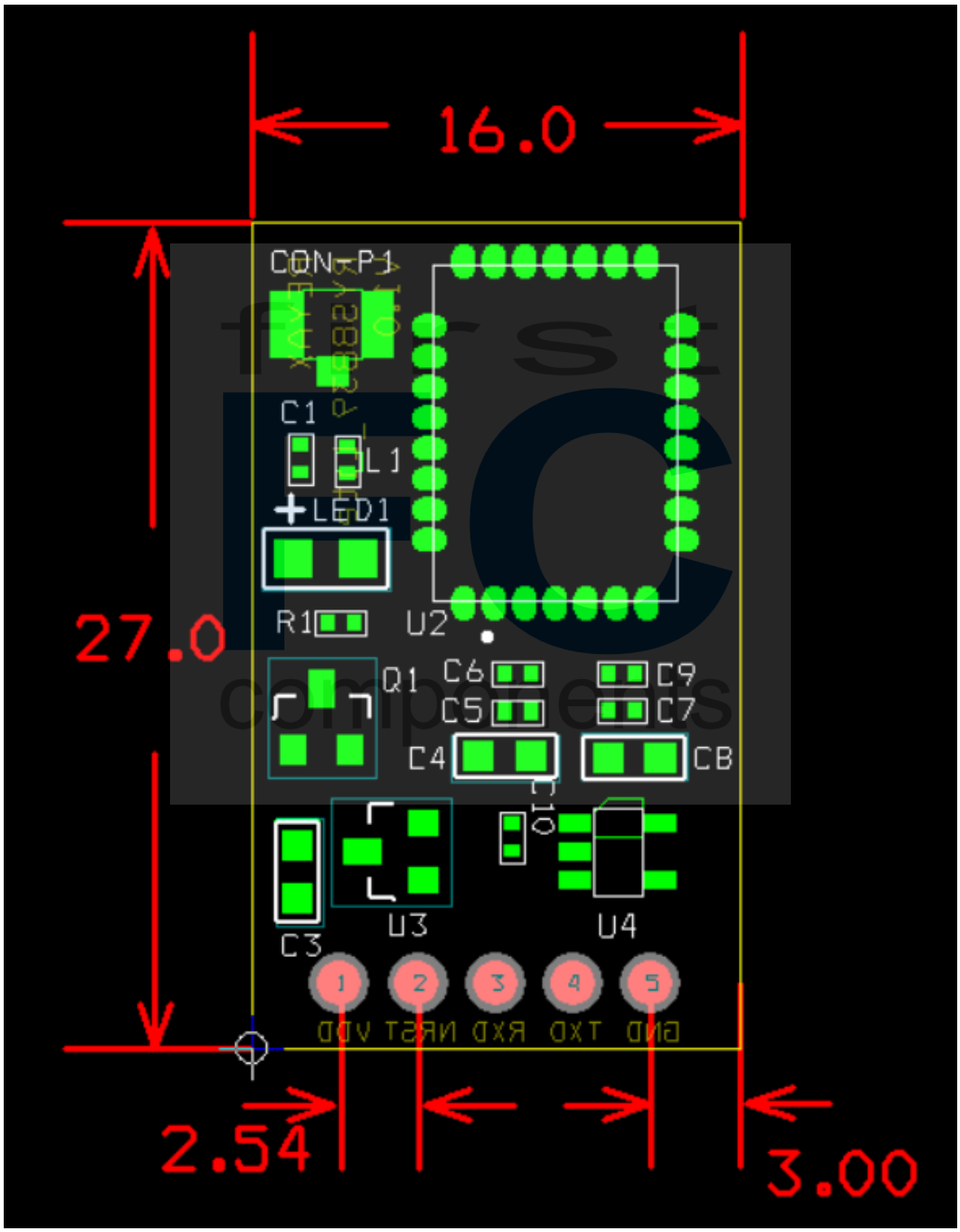
SPECIFICATION

Item	Min.	Typical	Max.	Unit	Condition
Power Supply Voltage	3		5.5	V	VDD for RYAGN3D active antenna & RYS8839
Default Baud Rate		115200		bps	8,N,1
Digital input level high	1.26	1.8	2.1	V	VIH
Digital input level low	-0.3		0.54	V	VIL
Digital output level high	1.44		1.8	V	VOH 2mA
Digital output level low	0		0.36	V	VOL 2mA
GNSS Center Frequency		1176.45 1561.098 1575.42 1602.5625		MHz	GPS L5 BeiDou GPS L1 Glonass
Navigation update rate		1	25	Hz	L1 L5 Signal strength is -130dBm
Accuracy		1		M	L1 L5 Signal strength is -130dBm
Cold start		24		Sec.	L1 L5 Signal strength is -130dBm
Hot start		1		Sec.	L1 L5 Signal strength is -130dBm
Tracking Sensitivity		-167		dBm	
Hot starts Sensitivity		-163		dBm	
Cold starts Sensitivity		-149		dBm	
Operating Temperature	-40	+25	+85	℃	
Dimensions					32mm*16mm*7mm (include pin header)
Weight		2.4		g	
Active antenna (VDD = 3.3V)					
Idle Current		15.7		mA	
Satellite acquisition Current		27.5	42	mA	L1 Band
Satellite tracking Current		22	25	mA	L1 Band
Satellite acquisition Current		37	50	mA	L1+L5 Band
Satellite tracking Current		27.5	30	mA	L1+L5 Band
Sleep mode		13.87		mA	
Deep sleep mode		11.36		mA	
Passive antenna(VDD = 3.3V)					
Idle Current		5		mA	Passive antenna
Satellite acquisition Current		16.5	30	mA	L1 Band
Satellite tracking Current		12	15	mA	L1 Band

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Satellite acquisition Current		24	38	mA	L1+L5 Band
Satellite tracking Current		18	21	mA	L1+L5 Band
Sleep mode		3		mA	
Deep sleep mode		580		uA	

DIMENSIONS



Unit : mm

PCB Thickness : 1.6mm

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GNSS Monitor software

STEP 1. INSTALL THE SOFTWARES

1.) Download the GNSS_Monitor2_ForCustomer_Setup

https://drive.google.com/file/d/1e6uwdC3NmsTMZIWHbXxcK98Ul8Ng-4RC/view?usp=sharing

STEP 2. CONNECTION SETTING

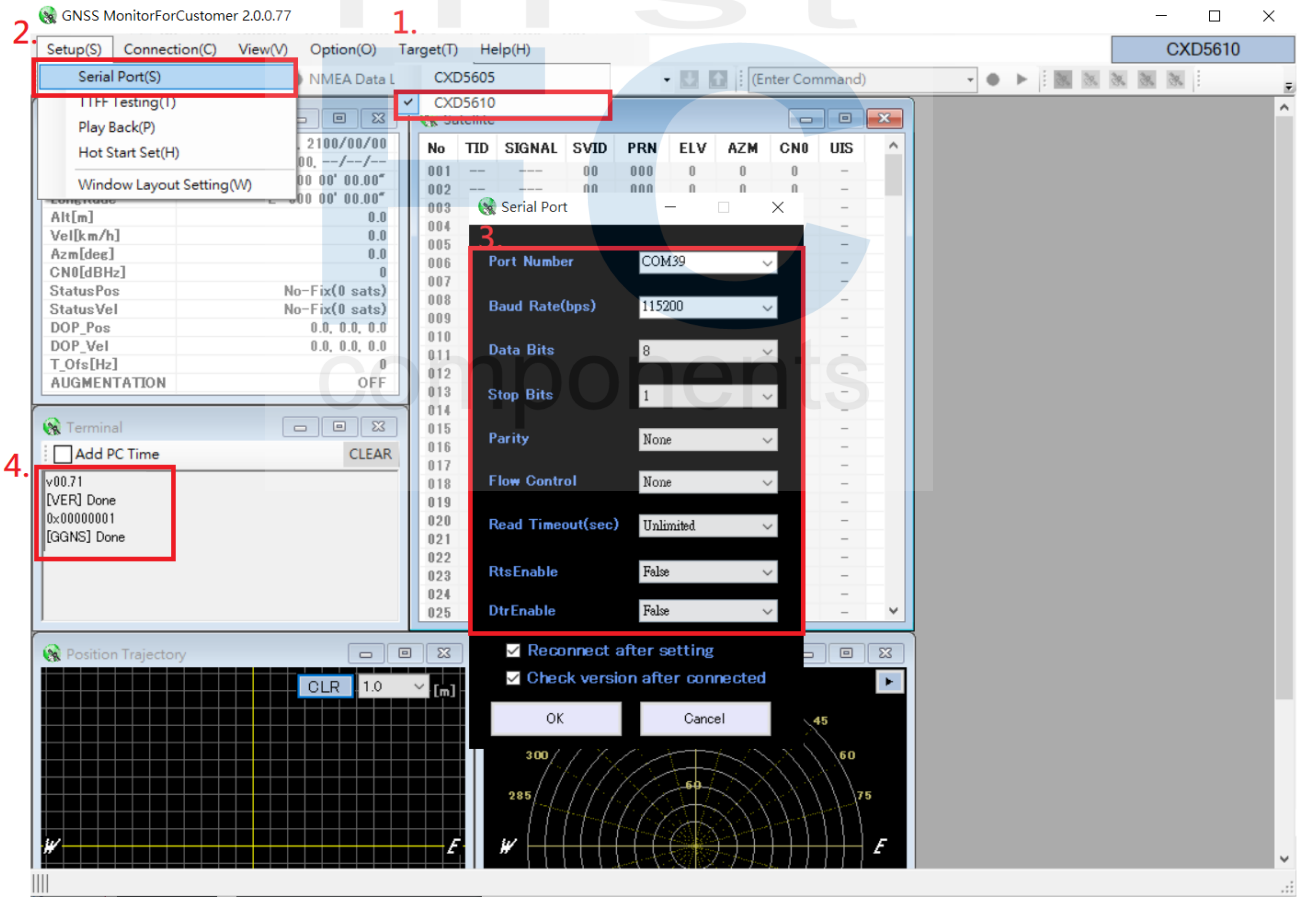
Plug USB to TTL cable to connect the RYS8839_lite and the PC.

1.) Open the software GNSS_Monitor2_ForCustomer Target → CXD5610

2.) Open the Serial Port setting

3.) Set the COM port number and the baud rate (Default is 115200bps).

4.) If connection successful, will show FW version message.



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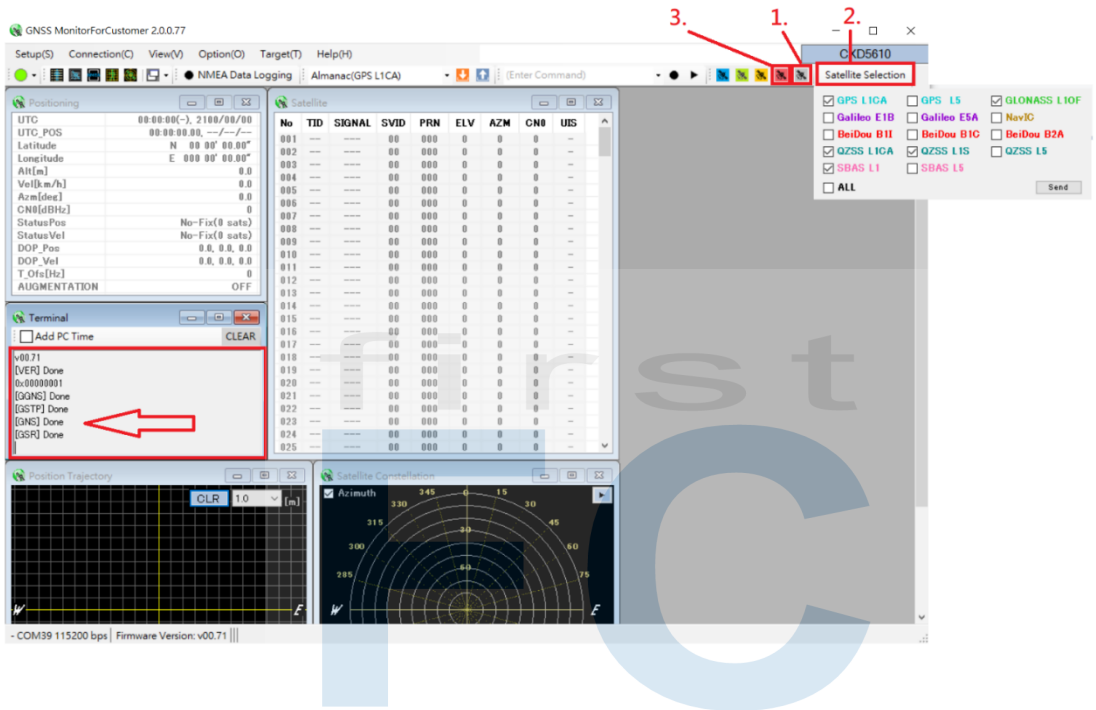
STEP 3. Command input setting

1.) Click “IDLE” button, Terminal window will show [GSTP]Done.

2.) Click “Satellite Selection” button, after select Satellite and click “Send”. Terminal window will show [GNS]Done.

3.) Click “Hot start” button, Terminal window will show [GSR]Done. Module start output NMEA log.

4.) If want to stop tracking, click “IDLE” button.



*For detailed command user guide, please refer to RYS8839_Software_Guide

https://reyax.com//upload/products_download/download_file/RYS8839_Software_Guide.pdf

QUICK START GUIDE

STEP 1. Power on module

STEP 2. Issue command

1.) @GSTP // Positioning stop

2.) @GNS 815

// Positioning-use satellite use GPS L1 L5 + GLONASS L1OF + SBAS + QZSS L1-CA + QZSS L1-S + QZSS L5

3.) @GTIM 2022 12 20 00 00 00 // inject UTC time

4.) @GPPS 1 // enable 1PPS function

5.) @GSR // hot start

*For detailed command user guide, please refer to RYS8839_Software_Guide

https://reyax.com//upload/products_download/download_file/RYS8839_Software_Guide.pdf

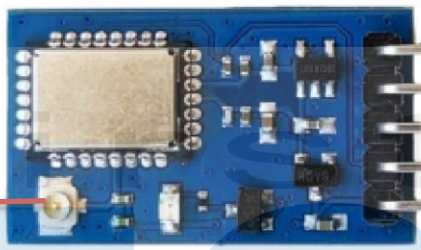
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RYS8839_Lite test connection diagram

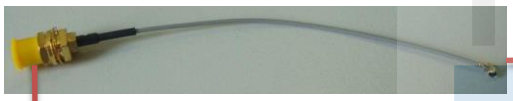
REYAX RYLS135



REYAX RYS8839_Lite



SMAF2IPEX110 Cable





REYAX RYAGN3D Antenna

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