

1 GUI for NU1020

1.1 HW setup

First, connect EVM with "USB to TTL" by two pin connection: GND and CLK (EVM side) – RXD (NU-Link side).

the connect is shown as following:



Second, connect NU-Link with computer by USB.

1.2 Install GUI Tool interface

install "serial_port_utility_latest.exe" step by step



After finish installation, you can see below interface:



Serial Port Utility		
File Edit View Tools Control Help		
Serial Port Setting		
Port Default (COM2)▼		
Baudrate 9600 💌		
Data Bits 8		
Parity None 💌		
Stop Bits 1		
Flow Type None 💌		
Receive Setting		
• Text C Hex		
□ Auto Feed Line		
🗆 Display Send		
🗆 Display Time		
Send Setting		Open
• Text C Hex		
🗆 Loop 1000 ≑ ms		_
Default CLOSED Rx: 0 Bytes	Tx: 0 Bytes	

Step1- Choose the corresponding port in "Port" list:

Serial Port Utility		_	\Box \times
File Edit View Tools Control Help			
Serial Port Setting			
Port Default (COM2)			
Baudrate Default (COM2) TCP/UDP			
Data Bits 8			
Parity None			
Stop Bits 1			
Flow Type None			
Receive Setting			
• Text C Hex			
🗆 Auto Feed Line			
🗆 Display Send			
🗆 Display Time			
Send Setting			Open
• Text C Hex			
□ Loop 1000 ÷ ms			•
Default CLOSED Rx: 0 Bytes	Tx: 0 Bytes		

Step2- Choose baudrate as "115200" as following



🐷 Serial Port Utility		
File Edit View Tools Control Help		
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- Serial Port Setting		
Port COM23(USB-SERIAL CH340) 💌		
Baudrate 115200 💌		
Data Bits 8		
Parity None 💌		
Stop Bits 1		
Flow Type None 💌		
Receive Setting		
• Text • Hex		
🗆 Auto Feed Line		
Display Send		
🗆 Display Time		
Send Setting		
⊂ Text		
□ Loop 1000 ÷ ms		
İ		
COM23 OPENED 115200 & NONE 1 OFE		

Step3- Click "start▶", it starts to output the log message on the right side window. If the user want to stop the log, you can click "Pause".

2 Explanation of log message

2.1 Analog Ping / Q Ping / Digital Pin Log Message (IDLE mode)

Below Figure shows the log message in IDLE mode:

senal Port Utility		
File Edit View Tools Control Help		
📄 🚥 🕨 🚺 🔳 🗘 🕂 — 🛅 🕄		
Serial Port Setting Port [COM23(USB-SERIAL CH340) -] Baudrate [115200 -] Data Bits 8 - Parity None -] Stop Bits 1 -] Flow Type None -] Receive Setting • Text	V-> -165 2435 2600 0 5 0 0 0 0 Q-> 3 79 76 0 5 0 0 0 0 EtandbyVsens = 4960 V-> -177 2423 2600 1 6 0 0 0 Q-> 0 76 76 1 6 0 0 0 P9 16 StandbyVsens = 4961 V-> -173 2427 2600 0 1 0 0 0 0 Q-> 3 79 76 0 1 0 0 0 0 StandbyVsens = 4957 V-> -148 2452 2600 0 2 0 0 0 0 Q-> 1 77 76 0 2 0 0 0 0 StandbyVsens = 4959	Send
COM23 OPENED, 115200, 8, NONE, 1, OFF R	x: 18,761 Bytes Tx: 0 Bytes	

Line 1 in red:

V-> -165 2435 2600 0 5 0 0 0 0



"2600" means the reference voltage of Vcoil in AP phase to distinguish if there is FO. "2435" means the ADC measured voltage of Vcoil in AP phase

"-165" means the delta voltage between the measured voltage and the reference voltage.

Line 2 in red:

Q-> 3 79 76 0 5 0 0 0 0

"76" means the reference Q-Factor in QP phase.

"79" means the measured Q-Factor.

"3" means the delta Q value between the measured value and the reference value.

Line 3 in red:



"StandbyVsens" means the ADC measured voltage of Vin in IDLE mode.

Line 4 in red:

99 16

"99" is an indication of the reason why stop charging. It follows the charging failure ID. The charging failure ID refers to following:

typedef enum	
₽{	
FAULT_NONE	= 0x00,
FAULT_PINGNOSIGNAL	= 0x01,
FALUT_IDENTIFICATIONERROR	= 0x02,
FAULT_SEQUENCEERROR	= 0x03,
FAULT_CONFIGURATIONERROR	= 0x04,
FAULT_CONTROLHOLDOFFERROR	= 0x05,
FAULT_POWERTYPENAK	= 0x06,
FAULT_NEGOTIATIONERROR	= 0x07,
FAULT_CALIBRATEPOWER	= 0x08,
FAULT_TRANSFERPACKETERROR	= 0x09,
FAULT_IDENTNOCORRECTPACKET	= 0x0A,
FAULT_NOCONTROLPOWERPACKET	= 0x0B,
FAULT_NORECEIVEPACKET	= 0x0C,
FAULT_CALIBRATIONLONG	= 0x0D,
FAULT_VOLTAGEOVER	= 0x0E,
FAULT_FODNAK	= 0x0F,
FAULT_FODERROR	= 0x10,
FAULT_TEMPERATUREOVER	= 0x11,
FAULT_SOURCEVOLTAGEOVER	= 0x12,
FAULT_OVERCURRENT	= 0x13,
FAULT_NU1008	= 0x14,
FAULT_ENDPOWERTRANSFER	= 0x15,
FAULT_PINGNOPACKET	= 0x16,
FAULT_POWERSTAGEERROR	= 0x17,
FAULT_DIGITAL_PING_OVER_CURRENT	= 0x18,
FAULT_ENTER_FACTORY_TEST	= 0X19,
FAULT_SOURCEVOLTAGEUNDER	= 0x1A,
FAULT_CLEARCALIDATA	= 0x1B,
FAULT_CALIDATAERROR	= 0x1C,
FAULT_EPP_RECEIVE_PACKET_04	= 0x1D,
FAULT_OVER_POWER	= 0x1E,
<pre>} TerminateCause;</pre>	

In this case, "16" means the charging failure comes from "PINGNOPACKET".



2.2 The log Message in charging mode:

🧱 Serial Port Utility		_
File Edit View Tools Control Help		
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Serial Port Setting		•
Port COM23(USB-SERIAL CH340) 💌	PID-> 0 10000 188 500 0	
Baudrate 115200 💌	03 02 01	
Data Bits 8	PID-> 0 10200 188 500 0	
Parity None -	03 FF FC	
Stop Bits 1		
Flow Type None 🔹	03 FF FC	
Receive Setting	03 FF FC	
• Text C Hex	03 FF FC	
☐ Auto Feed Line	31 00 82 82 31	
🗆 Display Send	FOD-> 04 00 01 127659 10195 10242 14443 10156 1012 -774 750 0 0	
🗆 Display Time		
- Send Setting	ERR-> 00 00 00 00	
C Text • Hex	03 FF FC	
□ Loop 1000 <u>•</u> ms	03 FF FC	
	03 FF FC	-
		Send
		•
COM23 OPENED, 115200, 8, NONE, 1, OFF	J XX: 8,017 Bytes Tx: 0 Bytes	

Line 1 in red:

PID-> 0 10000 188 500 0

- The first data indicates the control mode of Tx.
 - "0" means the control mode is controlling the input voltage of power stage.
 - "1" means the control mode is controlling the operating frequency.
 - "2" means duty cycle control.
- "10000" is the setting voltage of Vin.
- "188" means the operating frequency. It needs to transfer to frequency by below formula: freq = 24MHz / 188 = 127.6596kHz
- "500" means the duty cycle is 50%

Line 2 and Line 3 in red:

Baudrate 115200 💌	03 02 01
Data Bits 8	PID-> 0 10200 188 500 0
Parity None 🔹	
Stop Bits 1	
Flow Type None 💌	03 FF FC
Receive Setting	03 FF FC
• Text C Hex	03 FF FC
☐ Auto Feed Line	31 00 82 82 31

It indicates the received Rx Packet.

Line 4 in red:

FOD-> 04 00 01 127659 10195 10242 14443 10156 1012 -774 750 0 0

This indicates the charging state to distinguish FOD:

- 127659 means the frequency is 127659Hz.
- 10195 means the Rx received power is 10195mW.



- 10242 means the Tx transferred power is 10242mW.
- 14443 means the Vcoil voltage is 14443mV.
- 10156 means the Vin voltage is 10156mV
- 1012 means the average current of lin is 1012mA

Line 5 in red:

This line will indicates the history of charging failure ID.



2.3 The log message of demodulation



- ++++ indicates that Tx change the demodulation source (lpk, lin and Vcoil_peak).
- &&&& indicated that Tx adjust the power a bit to improve the demodulation.
- Here the failure ID is "0B", as explained above, refer to charging failure ID, it means "No control power packet"