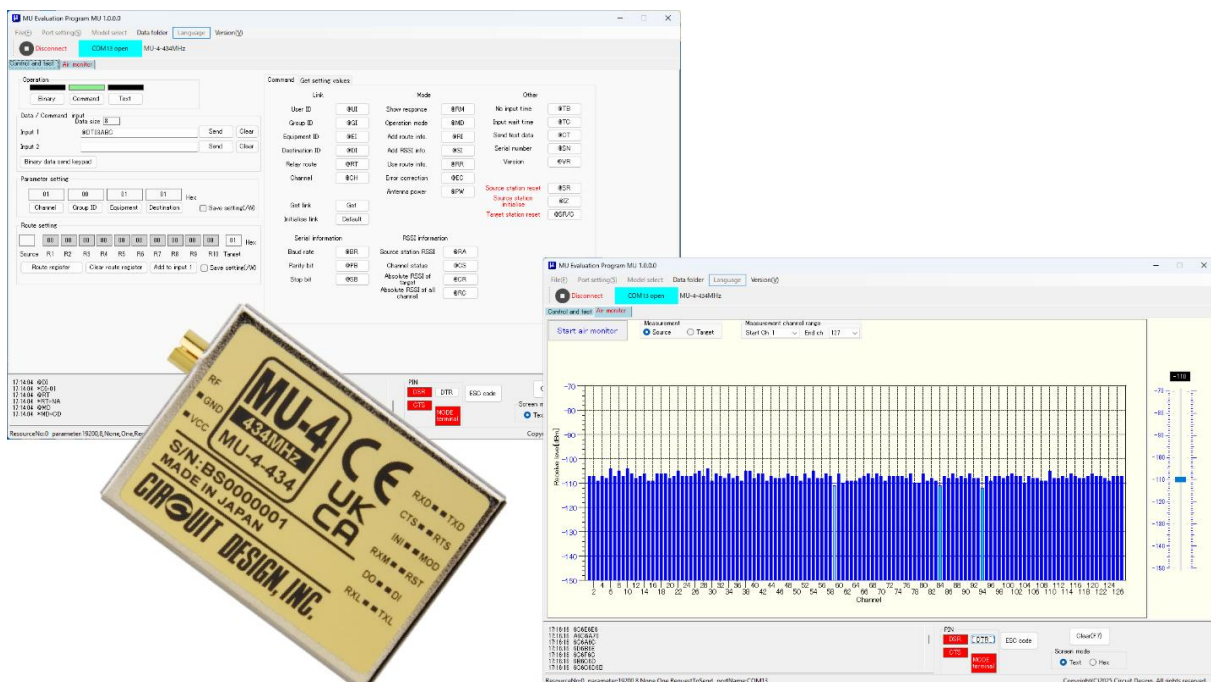


MU Evaluation Program Quick Start Guide



Operation Guide

Version 1.0 (July 2026)

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INTRODUCTION

This quick start guide is for the MU Evaluation Program that is used to evaluate the MU-4 modem.

The MU Evaluation Program is a PC application that communicates to the MU-4 modem via the RS232 (MU4-RS2IF) or the USB (MU4-USBIF) interface board.

By using the application, you can control the modem, execute various commands and run communication tests.

INSTALLATION

Download information

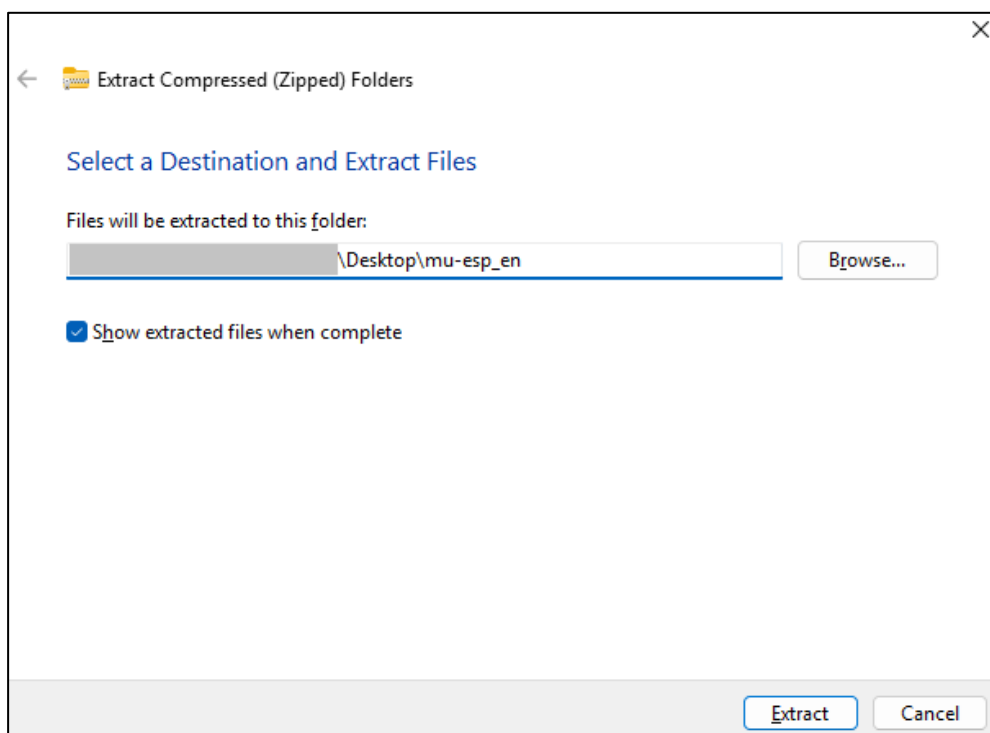
The MU Evaluation Program and the associated files are available on the Circuit Design website in the “Documents” section on the MU-4 product page. It is a single zip file.

Extracting the zip file

After downloading the zip file, navigate to the file on your PC (e.g. the “Downloads” folder if applicable) and extract the contents of the zip file to a suitable location. For example, to your Windows desktop.



mu-esp_en



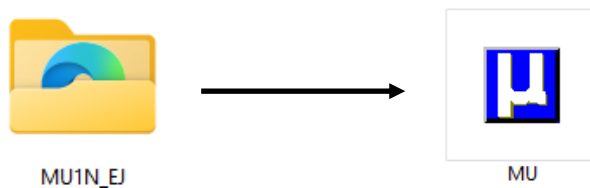
SETTING UP

Connecting the interface board

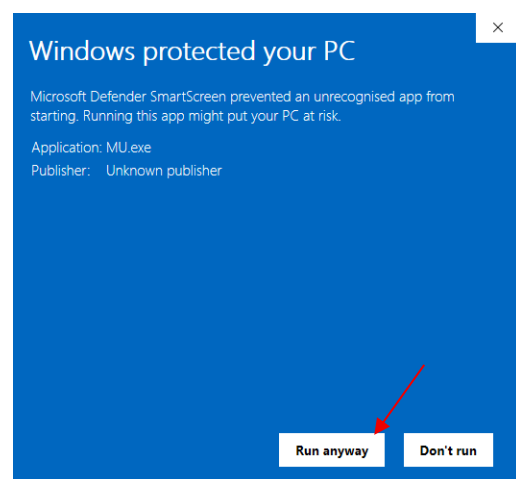
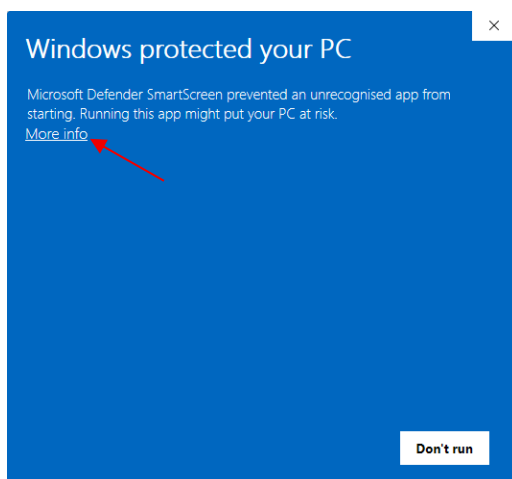
Connect the interface board to your PC using the appropriate cable (RS232 or USB).

Starting the software

Go to the folder “mu-esp_en”, open “MU1N_EJ”.



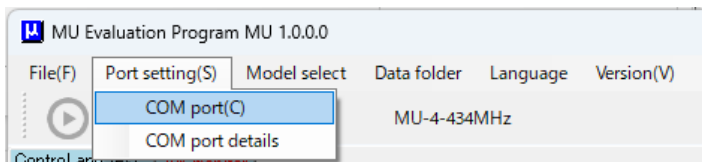
Double click on “MU.exe” to start the evaluation program. If Windows prompts a warning, click “More info” and click “Run anyway”



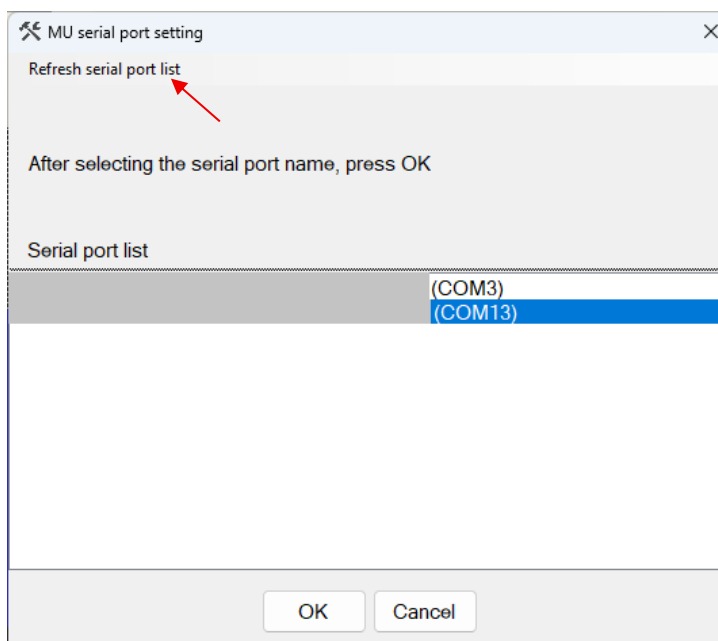
INITIALISING

Verify your USB connection

With the evaluation program open, navigate to the “port settings (S)” on the top menu.



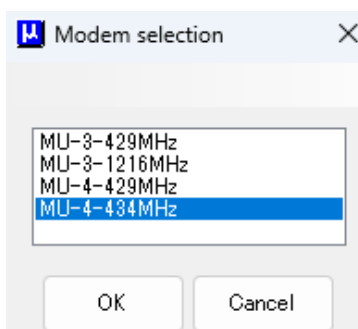
Select “COM port (C)” to bring up the following window.



Identify the correct connection (USB or RS232) and port number that corresponds to the board in the list. If you cannot see the connection details, click “Refresh serial port list” at the top or check the interface board is connected. Once confirmed, click OK.

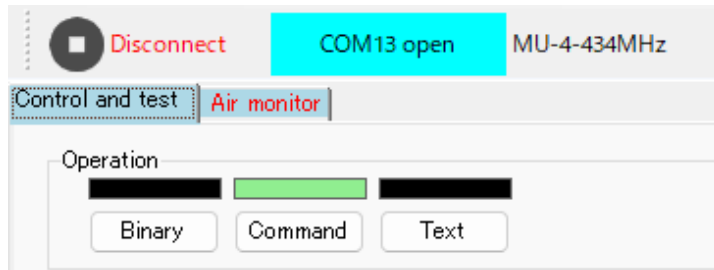
Selecting the model

Go to “Model select” in the menu bar to bring up a list of radio models. For the 434 MHz MU-4, select “MU-4-434MHz” and click OK.



Connecting

If your connection is successful, the COM port will indicate open. Ensure the “Command” is active under “Operation”. If not, click the “Command” button to enable command operation.



MODEM SETTINGS

When the connection is successful, the modem current setting values will display as follows:

Parameter setting

01 00 01 01 Hex

Channel Group ID Equipment Destination ☐ Save setting(/W)

Update current settings

The modem settings can be changed with the following commands and values:

Parameter	Command	Range	Details
Channel	@CH	Refer to the operation guide for acceptable values.	Channel setting of the modem
Group ID	@GI		Group ID setting in the modem
Equipment	@EI		ID of the modem
Destination	@DI		The target modem for communication

To update any parameter values, the corresponding command and value needs to be entered into either "Input 1" or "Input 2" in "Data Command / Input". You can also use the buttons on the right panel that automatically prints the command prefix.

Command Get setting values

Link

User ID @UI

Group ID @GI

Equipment ID @EI

Destination ID @DI

Relay route @RT

Channel @CH

Clicking on the desired parameter button in "Parameter setting" will produce the input panel as shown. Enter the right value and press OK.

* Checking the "Save setting (/W)" box will save the settings for next time power on.

Parameter setting

01 00 01 01 Hex

Channel Group ID Equipment Destination ☐ Save setting(/W)

Input panel

Decimal Hex Mode

10 0A 0x01~0x7F

7 8 9 E F Hex

4 5 6 C D Decimal

1 2 3 A B

0 Clear Cancel

OK

With the command and value in the Input 2 box, clicking "Send" will issue the setting to the modem. If successful, the modem's response will appear in the output window at the bottom.

Data / Command input

Data size 0

Input 1 Send Clear

Input 2 @CH0A Send Clear

Binary data send keypad

```
15:35:14 @CH0A
15:35:14 *CH=0A
```

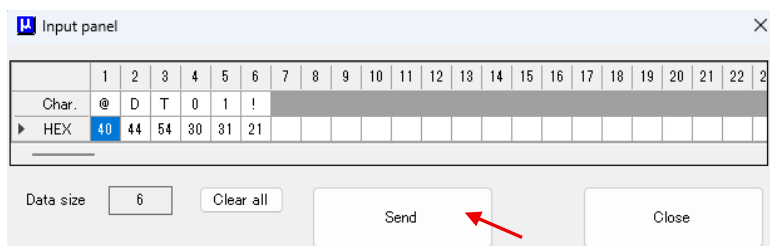
TRANSMITTING DATA

Transmit to the destination modem

You are ready to transmit data to the target modem. The command for transmitting:

Parameter	Command	Range	Details
Transmit	@DTXXww...ww	XX=00h to FFh	XX is number of bytes, ww is ASCII character or byte. For example @DT03ABC

You can also use the “binary data send keypad”. Entering and clicking “Send” will transmit right away.

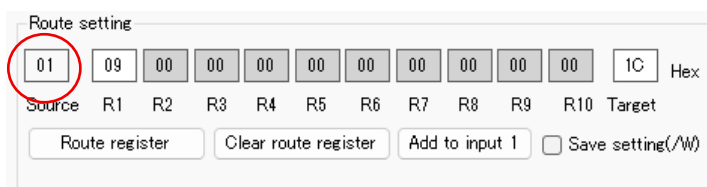


The output window will show the confirmation from the modem when it begins transmission.

```
16:04:17 @DT01!
16:04:17 *DT=01
```

Transmit to the destination modem using route setting

The route setting allows you to set the route your message takes between modems, for example, starting at 01h, receive at 1Ch via 09h.



Clicking where it says “source” inserts your current modem’s ID here.

R1..R10 and “Target” are the ID configurations of the other modems. Clicking on them will allow you to enter the value using the input panel.

* Checking the “Save setting(/W)” box will save the settings for next time power on.

- “Route register” prints the route information to Input 2 and “send” will issue the command.
- “Clear route register” prints the route clear information to Input 2 and “send” will issue the command.
- “Add to input 1” appends the route information to the transmit command (if present) in “Input 1” i.e. @DT03ABC/R09,1C

The output screen shows the response, for example, when route information is issued to the modem.

```
16:56:26 @RT09,1C
16:56:26 *RT=09,1C
```

OTHER SETTINGS

Other settings are on the right hand panel. Clicking will print that command prefix in Input 2 where a value can also be inserted.

In addition clicking will return the current value for that setting through the output window.

Command

Get setting values

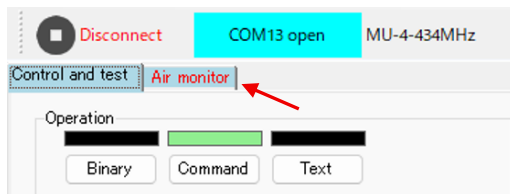
Link		Mode		Other	
User ID	@UI	Show response	@RM	No input time	@TB
Group ID	@GI	Operation mode	@MD	Input wait time	@TC
Equipment ID	@EI	Add route info.	@RI	Send test data	@CT
Destination ID	@DI	Add RSSI info.	@SI	Serial number	@SN
Relay route	@RT	Use route info.	@RR	Version	@VR
Channel	@CH	Error correction	@EC		
		Antenna power	@PW	Source station reset	@SR
Get link	Get			Source station initialise	@IZ
Initialise link	Default			Target station reset	@SR/C
Serial information		RSSI information			
Baud rate	@BR	Source station RSSI	@RA		
Parity bit	@PB	Channel status	@CS		
Stop bit	@SB	Absolute RSSI of target	@CR		
		Absolute RSSI of all channel	@RC		

THE AIR MONITOR

Introduction to the air monitor

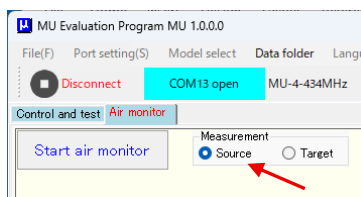
The air monitor is a feature that allows you to see the RSSI on one or more channels. You can select one or a range of channels from a total of 127 channels to monitor at either the source or target modem.

To open the air monitor, click “Air monitor” tab at the top.

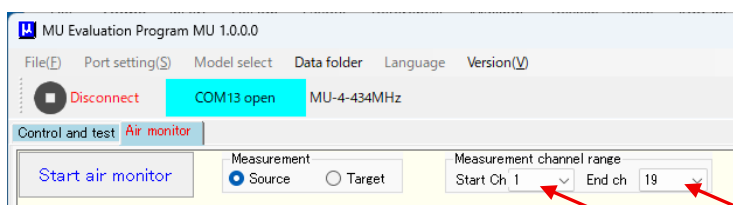


RSSI at the source modem

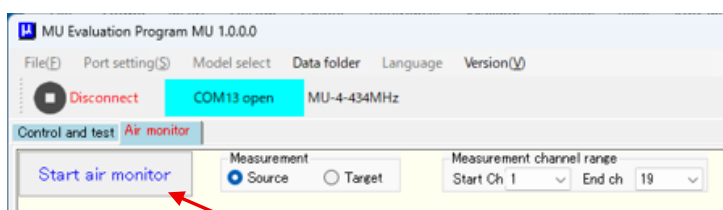
To get RSSI from the source modem, select “Source”.



Select a range of channels to monitor using the Start Ch and End ch drop down lists. For a single channel, use that same number in both lists.

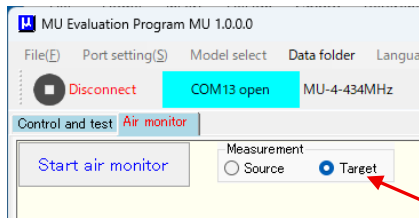


Click “Start air monitor” to start RSSI collection.

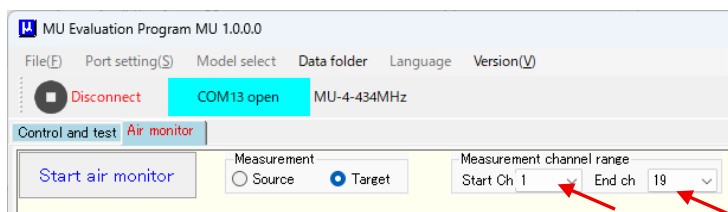


RSSI at the target modem

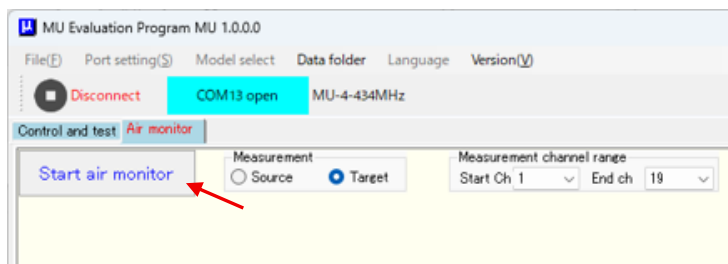
To get RSSI from the target modem, select “Target”.



Select a range of channels to monitor using the Start Ch and End ch drop down lists. For a single channel, use the same number in both lists.

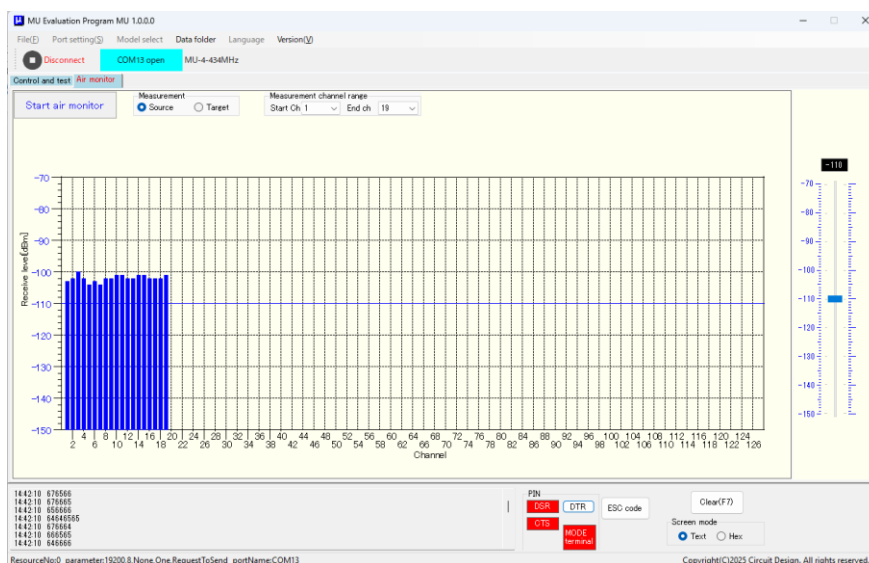


Click “Start air monitor” to start RSSI collection.



Output screen

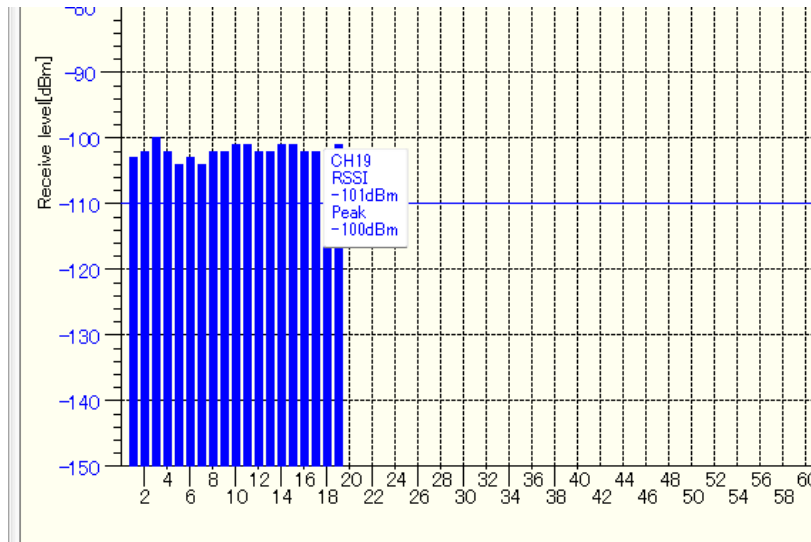
During RSSI collection, the chart displays the RSSI level in dBm for each channel in the chosen range.



Reading current and peak values

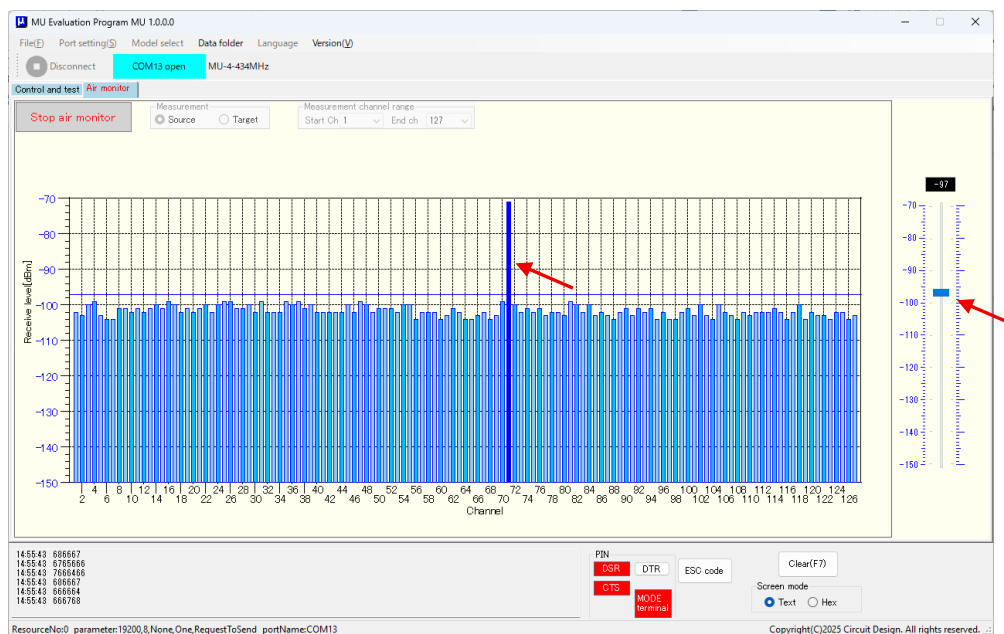
Move the mouse onto the bar for the channel. Click and you can see:

- The channel number
- The current RSSI level of that channel.
- The maximum “peak” value seen in that channel.



Setting the threshold

Dragging the slider on the right sets a threshold on the chart. The colour of the bar will change depending on whether it crosses the threshold or not.



REVISION HISTORY

Version	Date	Description	Remark
1.0	July 2026	The first issue	

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