

**ECHORING**<sup>TM</sup>

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## R3 HEALTH MONITOR

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# User Manual

Support Tool for the EchoRing Ethernet Bridge

R3HM1000

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# 1 General Terms of Use of this Document

It is the user's responsibility to regularly confirm they have downloaded the latest version of this manual, as R3 may edit, revise, or improve product documentation over time.

The user must ensure the product is used correctly according to this document's guidelines, in particular by observing all relevant standards and regulations.

This document, including all diagrams and illustrations, is copyright-protected. Any and all changes violate our Terms of Use.

## 2 Please Observe the Following Notes

Please observe and obey the following note formats and instructions throughout the document:



**TIP** — Text in this format is information explaining correct use of the product.



**ATTENTION** — Text in this format must be observed in order to avoid malfunction and/or even damage, or to avoid security risks.



**EXAMPLE** — Text in this format provides examples.

## 3 Product Description

The Health Monitor is a device that determines data traffic patterns and quality of signals in a deployed wireless network. This allow the set-up of a well operating wireless network.

# 4 Product Specification

## General

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Model	Panasonic Toughpad FZ-M1
Graphic Chip	Intel® HD Graphics 615
Physical Dimensions (WxDxH)	203 mm x 18 mm x 132 mm
Weight	Approx. 540g
Power Adapter	Input: 100V - 240V AC, 50Hz/60Hz Output: 16V DC, 3.75A
Operating temperature	-29°C to +60°C
Storage temperature	-51°C to + 71°C
Scannable frequencies	5,725–5,875 MHz
Number of channels	5

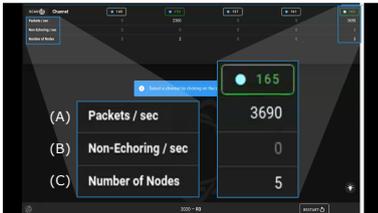
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# 5 Device Assembly and Usage

## 5.1 Use Device

### 5.1.1 Channel Overview

The device scans the wireless channels for active traffic in the supported frequency bands. Statistics of each scanned channel are shown in the upper horizontal bar.



- (A) "Packets/sec" displays the number of packets, transmitted with a device over EchoRing, in each channel.
- (B) "Non-Echoring/sec" displays the number of other Wlan-based packets, not transmitted over EchoRing, on that channel.
- (C) "Number of Nodes" displays the number of EchoRing-capable devices currently active in the channel.

### 5.1.2 In-depth Channel Diagnostic

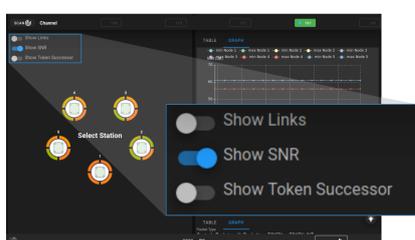
1. Click the channel with active EchoRing devices that you would like to monitor more closely. Click the selected channel again to enter channel overview scanning of the frequency band.
2. You now see two graphical elements: a topology graph with its devices to the left and statics diagrams to the right.

#### 5.1.2.1 Network's Signal Strength

1. Click the "Show SNR" toggle.



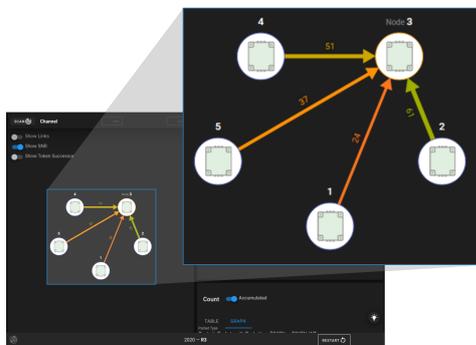
2. The topology now shows a graphical representation of the signal strengths between devices in network.



Each device in the topology has a circle around them. This circle is cut in sections which represents each link to every other device in the network. The color of the section determines the signal strength to each device.

Color	SNR	Meaning
Red	< 40 dB	<ul style="list-style-type: none"> <li>- low chance of transmitting/receiving without interference</li> <li>- poor link quality</li> <li>- improvement is highly recommended</li> </ul>
Orange	40-80 dB	<ul style="list-style-type: none"> <li>- medium chance of transmitting/receiving without interference</li> <li>- medium link quality</li> <li>- improvement is recommended</li> </ul>
Green	> 80 dB	<ul style="list-style-type: none"> <li>- high chance of transmitting/receiving without interference</li> <li>- good link quality</li> <li>- improvement is not needed</li> </ul>

Click on a specific device to investigate which respective link is to which device.

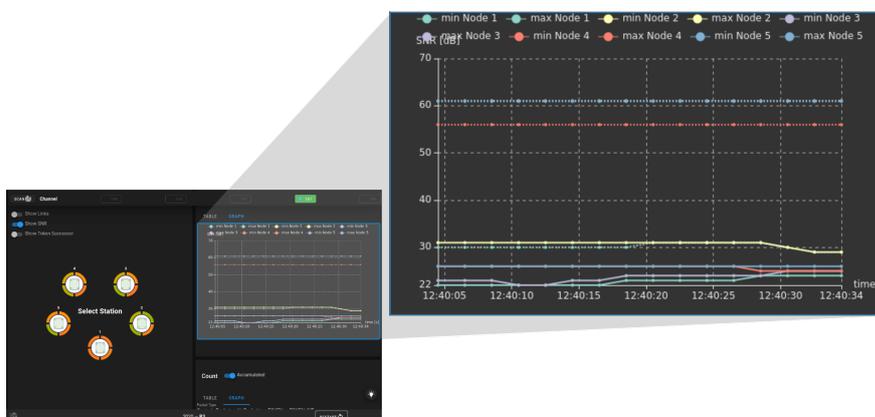


Arrows with a numerical value appear between devices displaying the links signal strength. The signal strength does dynamically change since it is directly affected by objects in the environment.



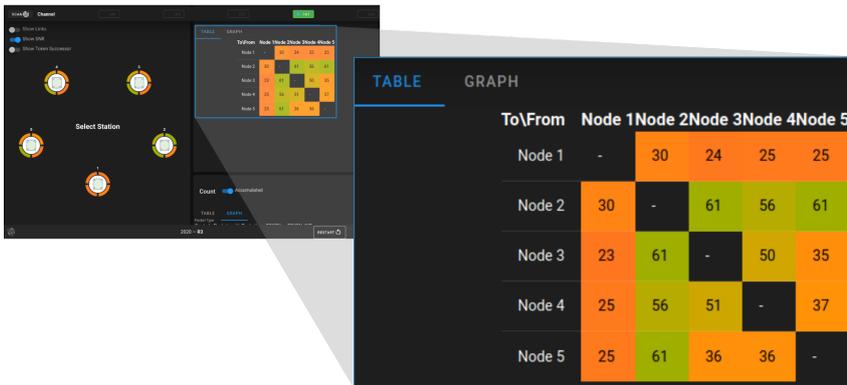
**TIP** — If possible, try improve SNR values by adjusting position of devices with poor signal strength or by reconfiguring reliability parameters in network config, in order to make network more robust.

The SNR of all stations is also displayed in a graph to the right.



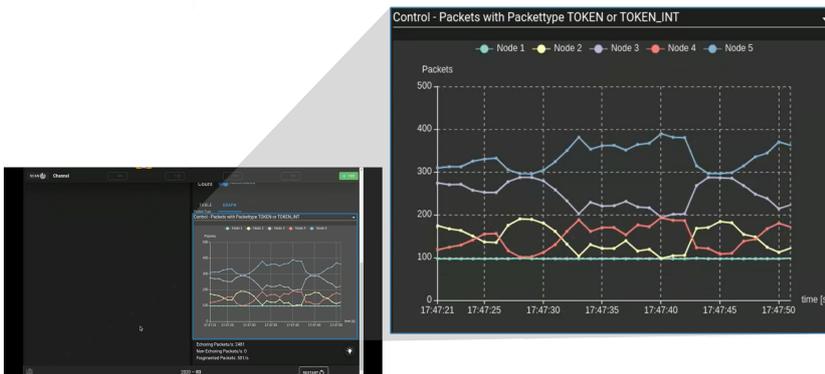
When clicking one device, the graph adjusts to compare the signal quality of the selected device to the others.

Select the "Table" tab next to the graph to display the comparative SNR data in a table format instead.

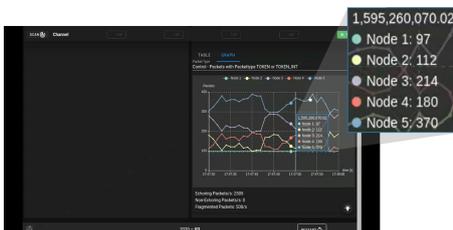


### 5.1.2.2 Traffic Patterns

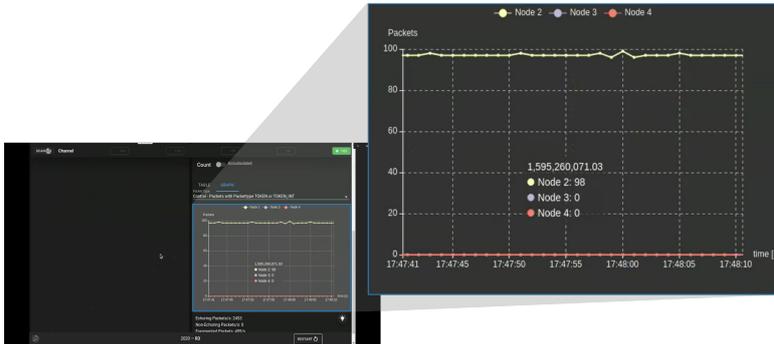
1. On the diagram element to the right, scroll down to display a diagram of data packets.
2. Select a specific packet type to appear on the graph.
3. The "Accumulated" toggle displays the accumulated volume of the selected data type that each station has sent to all other stations. As long as no station is selected, disabling the "Accumulated" toggle is not possible.



Hover over the graph to see the specific number of packets sent from each station.



Click on a station and disable the "Accumulated" toggle - the graph will now only show the data sent from the selected station to all others.

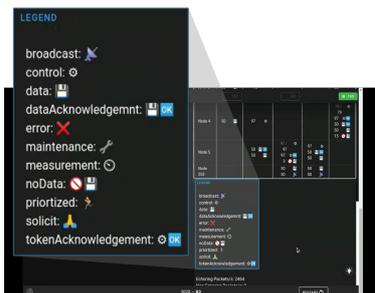


Click on the "Table" tab next to "Graph" to display each station in a table. Symbols represent each packet type, next to the number of sent packets.



To/From	Node 1	Node 2	Node 3	Node 4	Node 5
Node 1		97  40 	97  50 	50 	
Node 2	97 		50  50 	97  42 	97  50  50 
Node 3	97  50  12 	29 / 29 			98 
Node 4	50 	97 			68 / 68  97  50  50  16 
Node 5		50  50 	97 / 97  98  3 	97  50  50 	
Node 255			50  50 	49  49 	

Click on "Legend" beneath the graph for a legend explaining the packet type for each symbol.



To exist the in-depth diagnostic of the chosen channel and return to frequency band scan and channel overview, click on "Scan" in the upper left corner of the screen.

