RAEM1 4G Detection System User Guide

Contents

RAEM1 4G Detection System

Product Information

The RAEM1 4G Module is a wireless communication module designed for data collection and transmission. It comes with a magnetic base antenna, connector with Ethernet cable, and power adaptor.

What's included

- RAEM1 module with magnetic base
- Antenna with magnetic connector
- Ethernet cable
- Power adaptor

Setup

1. Before connecting the hardware, read the RAEM1 label to identify the matching power adaptor and sensor type.
2. Insert the 4G SIM card into the RAEM1 module:
    1. Carefully rotate the top plastic part of the RAEM1 in an anti-clockwise direction to expose the PCBs.
    2. Locate the SIM card slot on the second PCB layer from the top.
    3. Insert the 4G SIM card into the slot with the cut corner inside and the metal interface facing down.
    4. Push the SIM card completely into the slot until you feel a click.
    5. Gently and carefully rotate the PCBs back in a clockwise direction.

Configuration
Ethernet Connection:

1. Connect the RAEM1 module to a computer using an Ethernet cable. If multiple RAEM1 modules need to be connected, connect them to a switch and then to a computer.
2. Change the computer settings:
    - Open Control Panel > Network and Internet > Ethernet Duplex Mode.
3. Start the RAEM1 Configuration software. The software is compatible with Windows 10 and below.
4. When running the software for the first time, a firewall warning window may appear. Check both the private and public network options and click "Allow access".
5. Once the software is opened, the connected devices will be listed in the Device List with their IP addresses and IDs. Select a device to view or modify its configuration settings.

Note: Remote configuration of the RAEM1 module through AlibabaCloud is also possible. Refer to the user manual for detailed instructions.
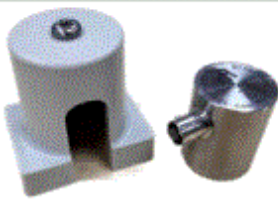
Data Access and Display:

Local Access:
To access data collected by the RAEM1 module locally, use the RAEM1 Configuration software. Before data collection, ensure that the RAEM1 is configured to store data in the local memory. Enable "Save Wave" and "Save Param" options under Storage Settings.
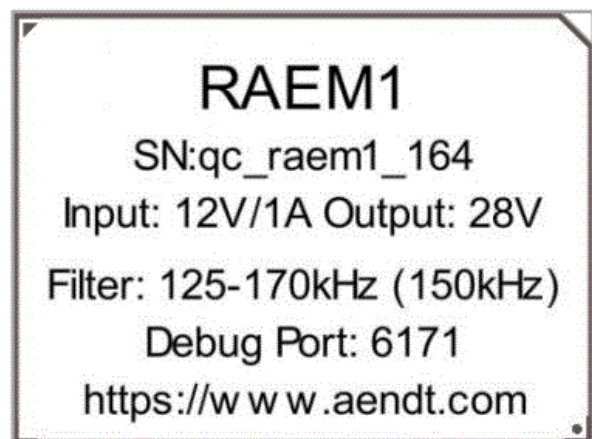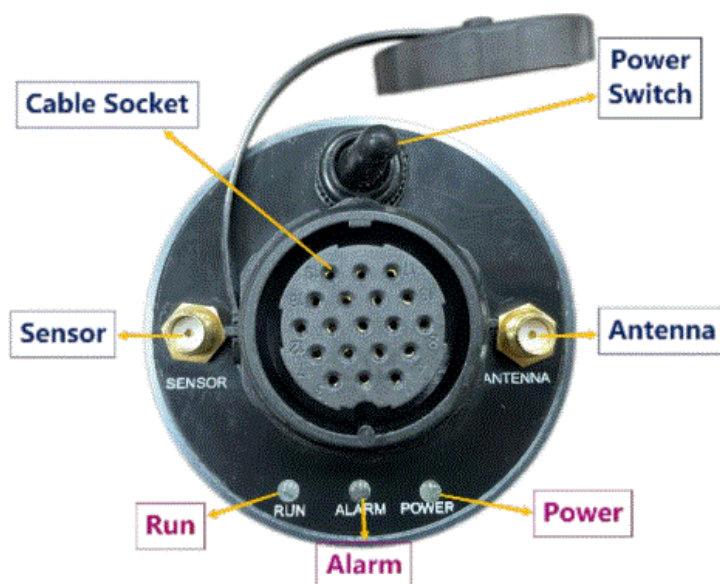
Configuration Over the Cloud:
The RAEM1's configurations can be viewed and modified through cloud servers. Ensure that the 4G SIM card is inserted and the APN (Access Point Name) is configured correctly using the configuration software.

What's included

|		
RAEM1 with magnetic base	Antenna with magnetic base	Connector with Ethernet cable and power
Sensor and magnetic holder	Sensor Coaxial cable	12V power adaptor

- RAEM1 Top Part Details:

RAEM1
SN:qc_raem1_164
Input: 12V/1A Output: 28V
Filter: 125-170kHz (150kHz)
Debug Port: 6171
https://www.aendt.com

Setup

1. Before the hardware connection, please read the RAEM1 label to figure out the matching power adaptor and sensor. The sensor type is normally the integral sensor with a built-in preamplifier. The preamp voltage is supplied through the "Sensor". The analog filter in RAEM1 also requires the sensor frequency range to match. If the sensor, it may cause some damage to the sensor. So please pay attention to the label.

2. Insert 4G SIM card in RAEM1:
    - a. Carefully rotate the top plastic part of the RAEM1 in an anti-clockwise direction so that the PCBs are

exposed.
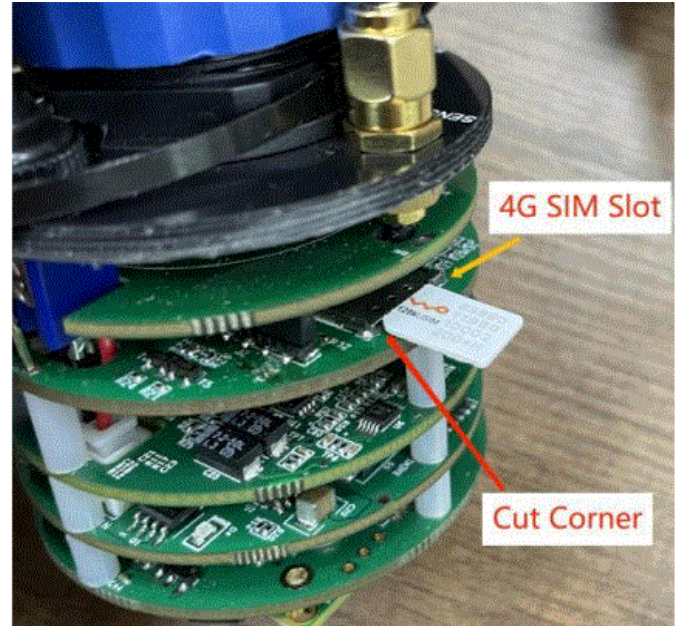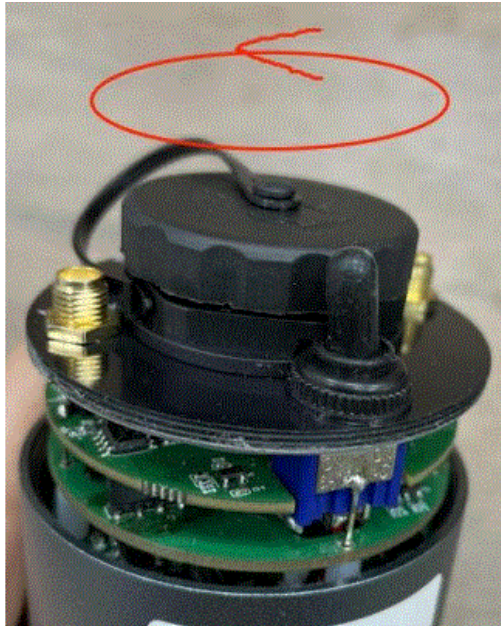
- b. Find the SIM card slot on the 2nd PCB layer from the top.
- c. Insert the 4G SIM card into the SIM card slot. Make sure the cut corner should be inside the slot and the metal interface is facing down.
- d. Push the SIM card in the slot completely. You should feel that there is a click feeling when the SIM card is well inserted.
- e. Gently and carefully rotate the PCBs back in the cylinder in a clockwise direction. When rotating the part in the cylinder, be careful not to over-bend or damage the ribbon cable in between the PCB and the cylinder case. Try not to open the RAEM1 cylinder many times because it might accidentally break the hardware and it will require repairing.

3. connect all the parts to RAEM1. Connect the power adaptor to the wall outlet.
4. turn on the power switch. When it starts, the "POWER" light is solid on. After a few minutes, the "RUN" light starts flashing every second to indicate the device is operating.
5. the device is now ready to operate and to connect.
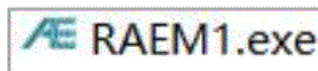
Configuration

Ethernet Connection
The device can connect to the RAEM1 configuration software through the Ethernet cable.

1. Plug the Ethernet cable from the RAEM1 to a computer. If there are multiple RAEM1 to connect, connect them to a switch and then to a computer.
2. Some computer settings need to be changed in order to connect:
    - Ethernet Duplex Mode: open "Control Panel" >> "Network and Internet" >> "Network Connections". Choose the local area connection. Right click and choose "Properties" and then choose "Configure..". In the "Advanced" Tab, choose "Speed & Duplex". On the "Value" drop-down menu, select "100Mbps Full Duplex".
    - Configure Ethernet IPv4: choose "Internet Protocol Version 4 (TCP/IPv4)", and then click "Properties". In the pop-up window, check "Use the following IP address:". Then enter the "IP address:" as 192.168.0.XX (XX can be any two digital numbers). "Subnet mask: " is 255.255.255.0. "Default gateway" is 192.168.0.1.
3. Before using the software, please turn off all firewall and anti-virus programs. Check the user's manual for details.
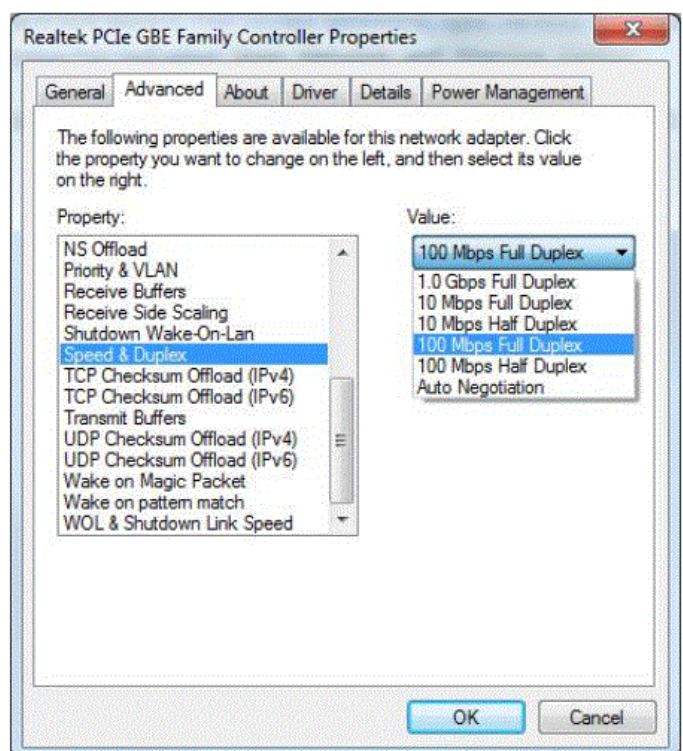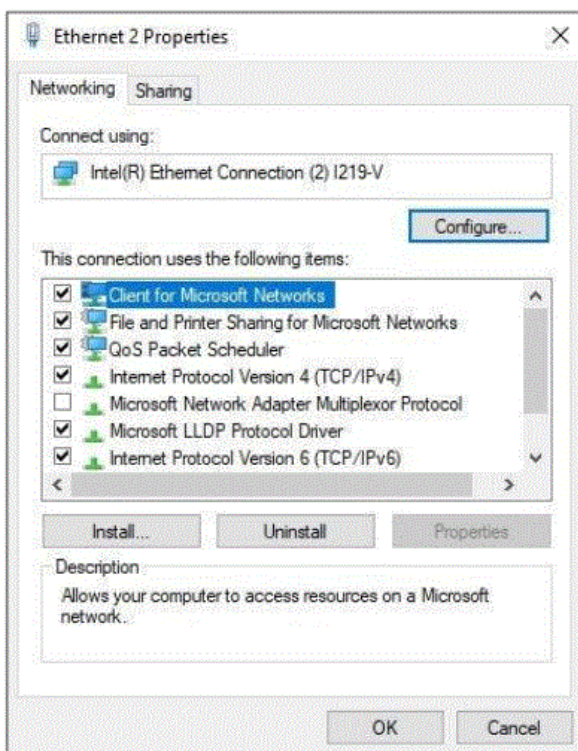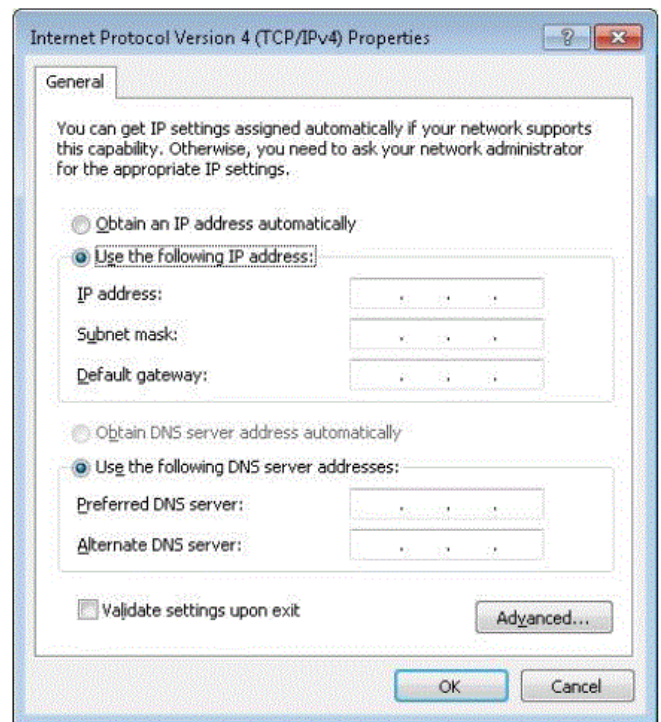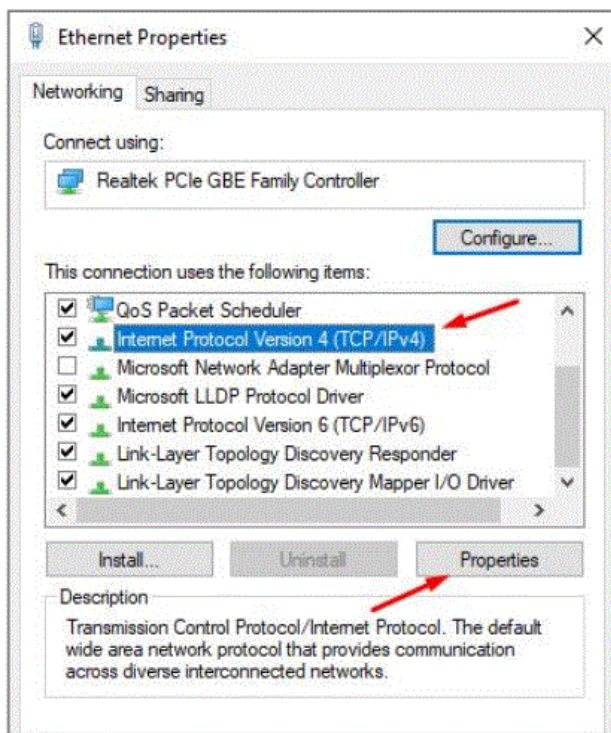
4. Start the RAEM1 Configuration software. The software has 32-bit and 64-bit versions and it runs in Windows 10 and below system. For the first time running, it might pop up a firewall warning window. It must check both the private and network options and then click "Allow access"

5. Once the software is opened, the devices should show in the "Device List" with the IP address (192.168.0.101) and their own ID. Now you can choose a device and view or modify their configuration settings. Please see the user's manual for more details.
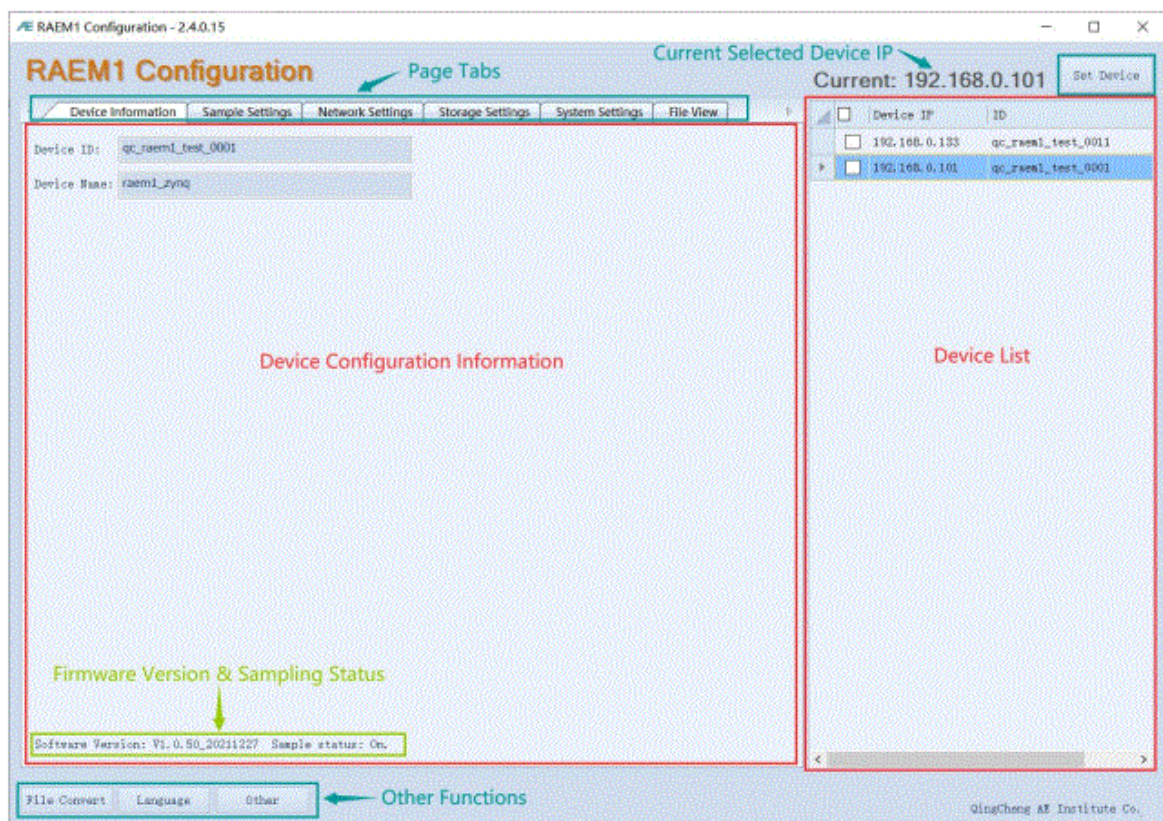
Configuration Over the Cloud
RAEM1's configurations can be viewed and modified through the cloud servers. But first make sure the 4G SIM

card is inserted in and the APN (through the configuration software) is configured correctly.

System APN: cmnet

- **Qingcheng IoT Platform**

  It can configure the RAEM1 through the Qingcheng IoT Platform. Log in the Qingcheng IoT Platform with the given account and password. Please see the user's manual for more detail.

- **Alibaba Cloud**

  You can also configure the RAEM1 remotely through Alibaba Cloud. Please see the user's manual for more details.
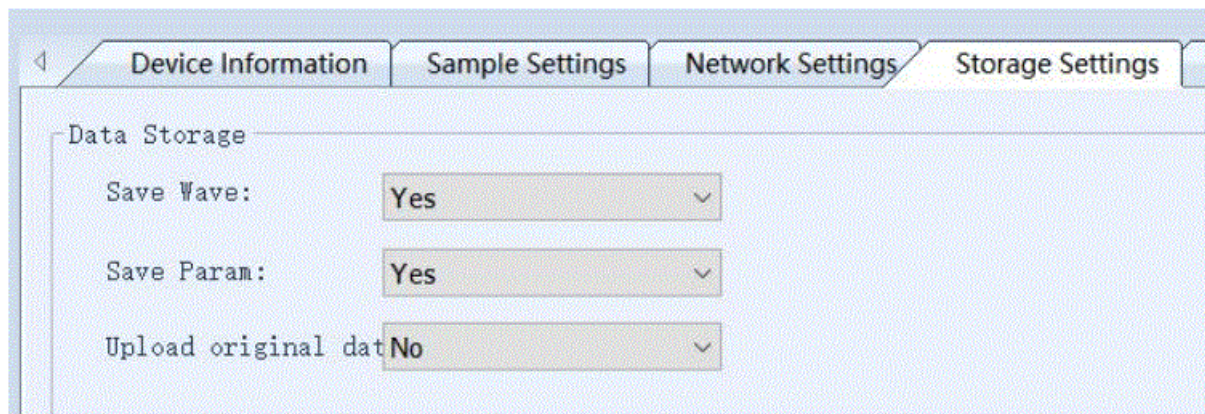
  Follow the user's manual for more details and further operations.

Data Access and Display

RAEM1 starts data collection since turned on. Based on the data storage settings and the set desired destination, the data can be accessed locally or over the cloud servers.

Local Access

Access the RAEM1 data packages through the RAEM1 Configuration software. Before data collection, please check the RAEM1 configurations to make sure it is configured to store data in the local memory. Under the "Storage Settings", enable the "Save Wave" and "Save Param".

After data collection, you can connect the RAEM1 to the configuration software and view the data files of the RAEM1 under the "File View" tab. Right click on the files to download, delete or convert formats.

Index	File name	File size
1	qc_raem1_4G_05_ae_ndt_1641523047.zip	111.50 KB
2	qc_raem1_4G_05_ae_ndt_1641523112.zip	121.50 KB
3	qc_raem1_4G_05_ae_ndt_1641523117.zip	311.50 KB
4	qc_raem1_4G_05_ae_ndt_1641523122.zip	287.50 KB
5	qc_raem1_4G_05_ae_ndt_1641523127.zip	115.50 KB

Download from the Cloud

If the RAEM1 can upload data to the cloud through Wi-Fi router, it can access data from the cloud server.

Qingcheng IoT Platform

All RAEM1 can upload data to the Qingcheng IoT platform. Make sure to enable "Save Wave", "Save Param", and "Upload original data" under the "Storage Settings" in the RAEM1 Configuration software. It may take some time

for the data to upload to the cloud.

Alibaba Cloud

RAEM1 can also upload real-time data to the Alibaba Cloud by configuring RAEM1 with the Aliyun key and secret. In Alibaba Cloud, it displays the acoustic emission parameters in real time but not for downloads.

AWS S3

RAEM1 can also upload data to AWS S3. Just need to set up your AWS S3 account and enter the storage tank information in the REAM1 configuration settings. Then you can see the uploaded RAEM1 data packages in the AWS S3 buckets.


Real-time Data Analysis

RAEM1 can also display and analyze data in real-time using SWAEU3H(RAEM1) software through the Ethernet cable. Before connecting to U3H(RAEM1), make sure that "Send U3H", "Send Wave" and/or "Send Param" are enabled in the configurations. Also importantly, set the "Address type" to "Use IP" and enter the target PC IP address that the RAEM1 should send to. Inside the U3H(RAEM1) "Sample Settings" enter the IP address same as the target IP address above. So it should be able to connect to the U3H and send data.

No	Arrival time(dd:hh:mm:s...	AE cha...	Amplit...	Counts	Duration(us)	Energy(KpJ)	Rise
10	6:23:35:31:664 100000	1	95.2	23	1348	57142.525	
11	6:23:35:31:667 241000	1	60.1	35	610	27.418	
12	6:23:35:31:670 604000	1	58.9	10	239	18.840	
13	6:23:35:35:088 760000	1	95.6	19	1456	52214.099	
14	6:23:35:36:207 796000	1	94.2	36	1345	25639.810	
15	6:23:35:36:871 860000	1	95.5	18	1520	58513.934	
16	6:23:35:43:266 453000	1	95.5	27	1490	38946.721	
17	6:23:35:44:039 742032	1	95.5	35	1397	44770.026	
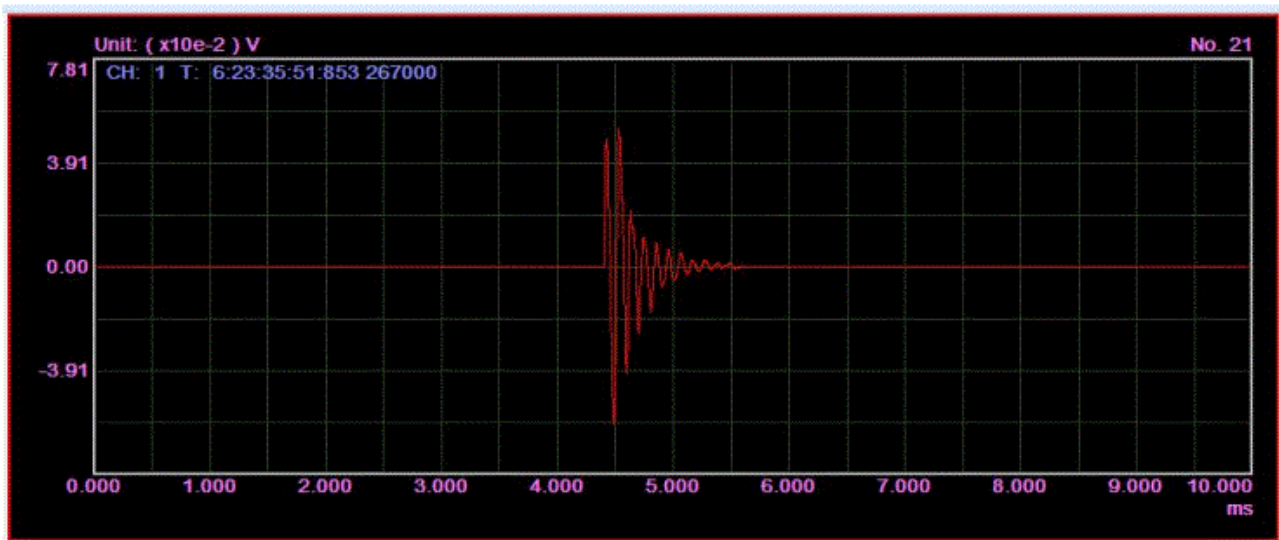
Please follow the user's manual for detailed setups. If you have any questions, please don't hesitate to contact us.

- **Email**: **sales2@ae-ndt.com**
- **Cell/WeChat:** 19128609186
- **Website**: **www.aendt.com**

Documents / Resources

 AE RAEM1 4G Detection System [pdf] User Guide
RAEM1 4G Detection System, RAEM1 4G, Detection System, System

References

- **Find Your Dream Tech Job with NDT | Boston's #1 Tech Recruiter**
- **Acoustic Emission, Vibration Monitoring and Condition Monitoring Systems in NDT industry | QingCheng Ltd.**
- **User Manual**