Comba V2 Antenna Monitoring System User Manual

Contents

Comba V2 Antenna Monitoring System

Product Information

Specifications

- Product Name: Antenna Monitoring System V2
- Model: QE: 1-0-1
- Manufacturer: Comba Telecom Ltd.

Product Usage Instructions

General Information
The Antenna Monitoring System V2 is designed to monitor antenna performance and ensure optimal signal reception.
Equipment Description
The system consists of a Main Control Unit (MCU) that processes data from the antennas and provides monitoring capabilities.

Installation Guide
Follow the installation guide provided for the RX-7W22 model. Ensure that all connections are secure and the system is properly set up.

Tag Installation
Properly install tags as per the instructions to enable accurate monitoring and tracking of antenna performance.

Appendices
Refer to the appendices for additional information such as Return Material Authorization (RMA) procedures.

FAQ

- **What should I do if I encounter safety notices?**

  If you come across safety notices, ensure that only trained and authorized personnel handle installation, adjustment, maintenance, and repairs of the equipment. Always follow safety instructions provided.

- **Where can I find pin definitions for Dry Contact Cables?**

  Refer to Table 2 in the manual for pin definitions of Dry Contact Cables.

HISTORY

Change No.	ENU	Details Of Change
1	1-0-0	This manual first created and issued in APR 2019
2	1-0-1	Change the Warning section
3	1-0-2	Change some descriptions

GLOSSARY OF TERMS

Abbreviation	Definition
ALC	Automatic Level Control
ATT	Attenuator
BTS	Base Transceiver Station
CH	Channel
CSA	Cross Sectional Area
dB	Decibel
dBm	Decibels relative to 1 milliwatt
DL	Downlink
DT	Donor Terminal
DPX	Duplexer
FS	Frequency Selection
Hz	Hertz
ID	Identification
IF	Intermediate Frequency
LNA	Low Noise Amplifier
LOS	Line-of-Sight
MCU	Main Control Unit
MHz	Megahertz
MT	Mobile Terminal
MTBF	Mean Time Between Failures
NF	Noise Figure
OMC	Operation & Maintenance Center
OMT	Operation & Maintenance Terminal
PA	Power Amplifier
PLL	Phase Locked Loop
PSU	Power Supply Unit
RF	Radio Frequency
SMA	Sub-Miniature A Connector
UL	Uplink
VAC	Volts Alternating Current
VDC	Volts Direct Current
VSWR	Voltage Standing Wave Ratio

SAFETY NOTICES AND ADMONISHMENTS

This document contains safety notices in accordance with appropriate standards. In the interests of conformity with the territory standards for the country concerned, the equivalent territorial admonishments are also shown. Any installation, adjustment, maintenance and repair of the equipment must only be carried out by trained, authorized personnel. At all times, personnel must comply with any safety notices and instructions.
Specific hazards are indicated by symbol labels on or near the affected parts of the equipment. The labels conform to international standards, are triangular in shape, and are colored black on a yellow background. An informative text label may accompany the symbol label.
Hazard labeling is supplemented by safety notices in the appropriate equipment manual. These notices contain additional information on the nature of the hazard and may also specify precautions.

Note: The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.
For compliance with the general population RF exposure limits, each individual antenna used for this transmitter must be installed to provide a separation distance greater than 67.2cm or more from all persons during normal operation and must not be co-located with any other antenna for meeting RF exposure requirements.

FCC STATEMENT

Warning Notices

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

GENERAL INFORMATION

The CriticalPoint Antenna Monitoring System consists of the Main Control Unit (MCU) and monitoring tags which

are easily installed on the service antennas. The system utilizes RFID (Radio Frequency Identification) technology, that is incorporated into the DAS (Distributed Antenna System), to monitor the link status of the entire passive network. It can report the status of any individual antenna link in real time via an easy to use GUI and transmit the overall alarm information through Form C dry contacts. This system will satisfy AHJ requirements for monitoring service antennas as part of the overall System Component Failure alarming requirements. The system can also enormously increase the efficiency and accuracy of monitoring a passive antenna system, as well as troubleshooting of the passive network.

Main Features

- Monitor In-building status in real time for all passive components, antenna coax, and service antennas
- Report overall status through dry contact alarming, login to identify alarms from individual antenna paths
- Supports up to 20dB cable loss from Main Control Unit (MCU) to Antenna
- Supports up to 50 antennas
- Supports Monitoring UHF/T band, 700/800MHz systems
- Monitor VHF system via external combining
- Supports Form C dry contact alarms
- MCU is housed in a NEMA 4 enclosure
- Low Power Consumption

System Block Diagram

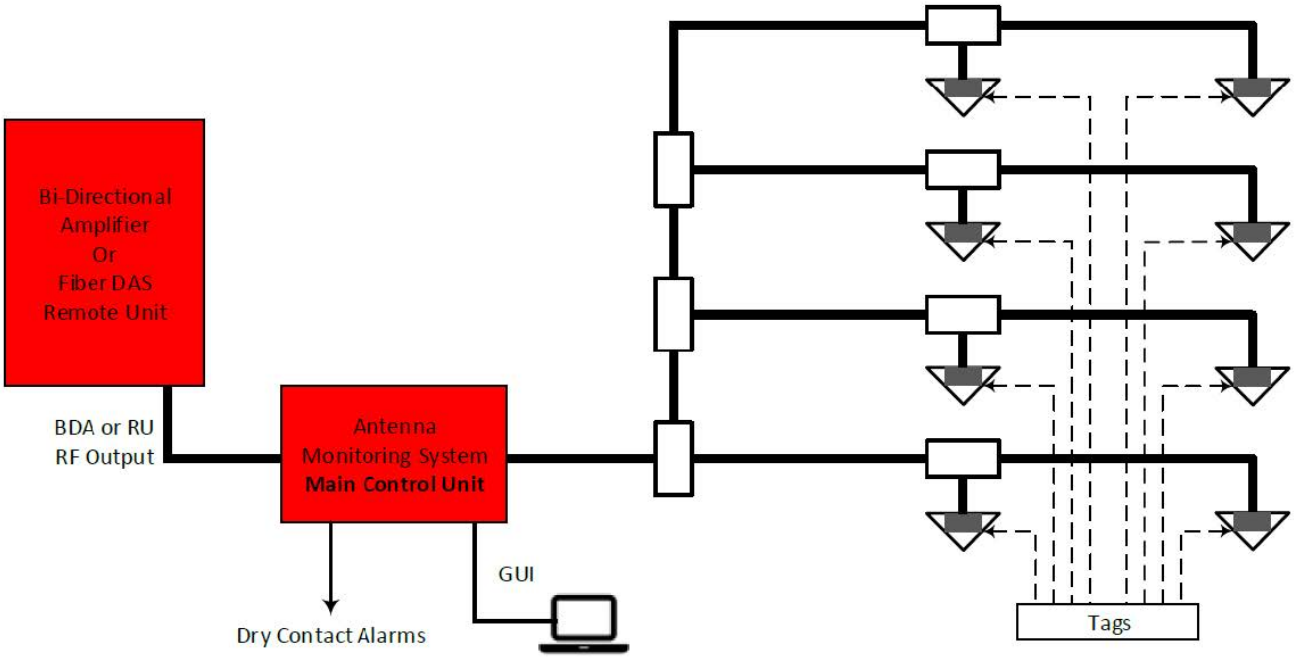


Figure 1: CriticalPoint Antenna Monitoring Solution System Block Diagram

EQUIPMENT DESCRIPTION

MCU (MAIN CONTROL UNIT) BLOCK DIAGRAM

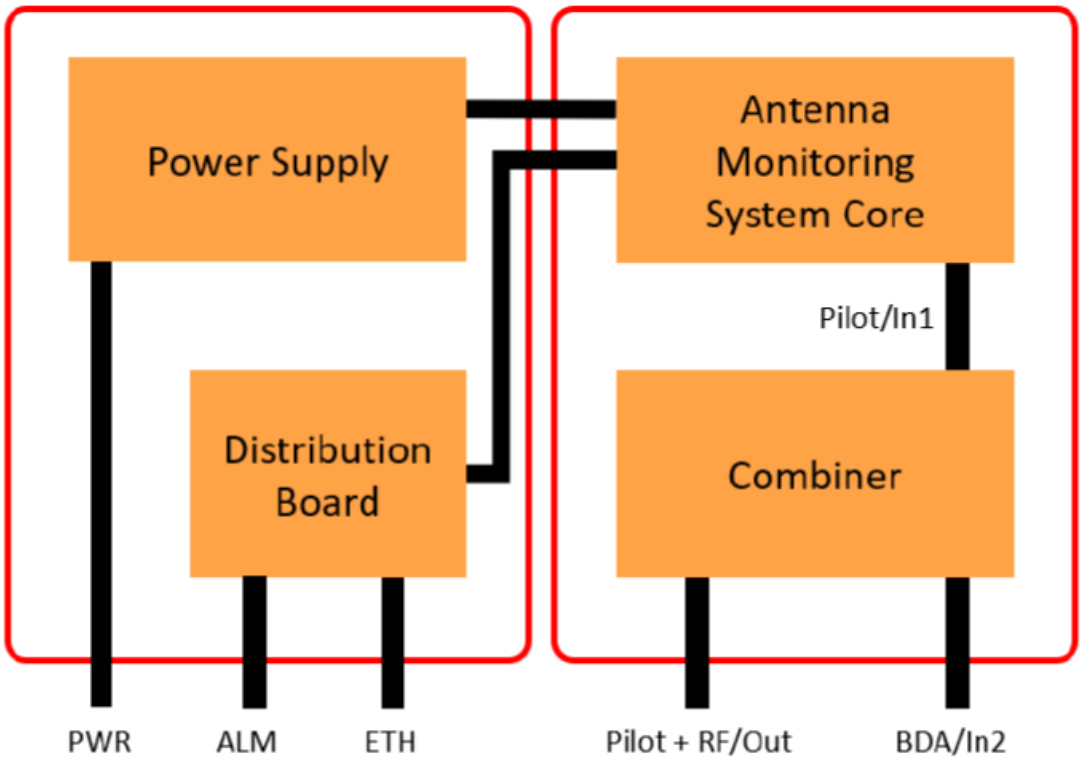


Figure 2: MCU (Main Control Unit) Block Diagram

MCU generates a pilot signal at 910MHz or 915MHz, combines the RF signal from BDA/Signal Booster through the combiner and transmit the combined signal to each of the antenna, the RFID tags in the antenna will be energized by the pilot signal and send a response back to the MCU.

INSTALLATION

WARNINGS AND ALERTS

Radio Frequency Energies
There may be situations, particularly for workplace environments near high-powered RF sources, where recommended limits for safe exposure of human beings to RF energy could be exceeded. In such cases, restrictive measures or actions may be necessary to ensure the safe use of RF energy.

High Voltage
The equipment has been designed and constructed to prevent, as far as reasonably practicable danger. Any work activity on or near equipment involving installation, operation or maintenance must be, as far as reasonable, free from danger. Where there is a risk of damage to electrical systems involving adverse weather, extreme temperatures, wet, corrosive or dirty conditions, flammable or explosive atmospheres, the system must be suitably installed to prevent danger.

Protective Earthing
Equipment provided for the purpose of protecting individuals from electrical risk must be suitable for the purpose and properly maintained and used.

Handling Precautions
This covers a range of activities including lifting, lowering, pushing, pulling, carrying, moving, holding or restraining an object, animal or person from the equipment. It also covers activities that require the use of force or effort, such as pulling a lever, or operating power tools.
Where some of the abovementioned activities are required, the equipment must be handled with care to avoid being damaged.

Electrostatic Discharge (ESD)
Observe standard precautions for handling ESD-sensitive devices. Assume that all solid-state electronic devices are ESD-sensitive. Ensure the use of a grounded wrist strap or equivalent while working with ESD-sensitive devices. Transport, store, and handle ESD-sensitive devices in static-safe environments.

EQUIPMENT CONNECTION

EQUIPMENT CONNECTORS

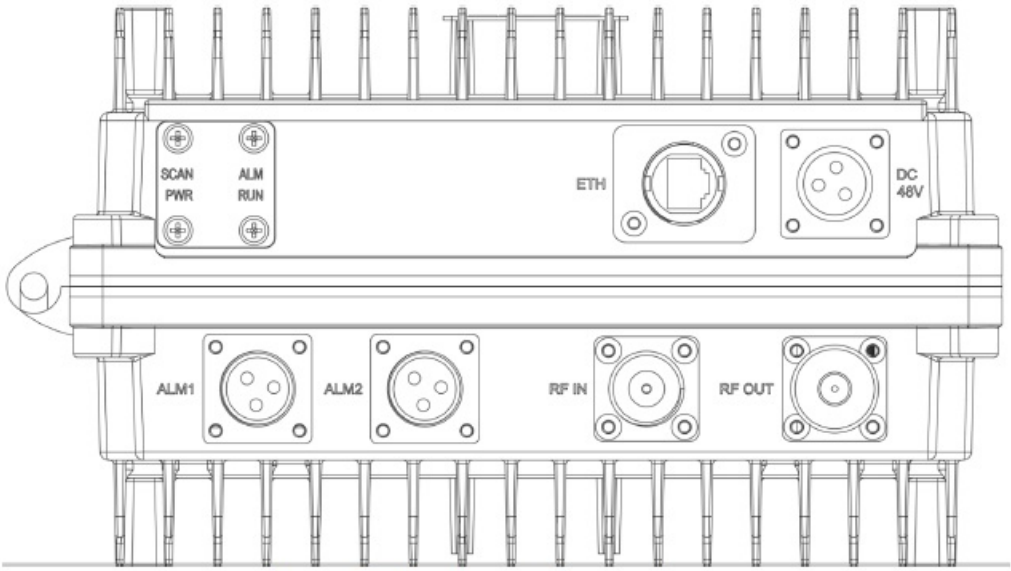


Figure 3: Equipment Connectors

Table 1: Equipment Connectors

Identifier	Descriptions
DC48V	Power cable connector for a pre-installed power cord for connection to DC (48V)
RF IN	N Female, connect to BDA or Signal Booster MT or Service port
RF OUT	N Female, connect to the passive system to the antennas
ETH	RJ45 Connector for local WEB GUI connection.
ALM1	Connector for dry contact alarm 1
ALM2	Connector for dry contact alarm 2

RF CABLE CONNECTION

AMS RF cables connection is as follows:

- RF IN port → connect to BDA or Signal Booster' MT or Service port
- PF OUT port → connect to the passive system to the antennas

POWER CONNECTION
Connect the power cord to the DC48V power source

- RED → connect to Positive
- BLUE → connect to Negative

ETHERNET CONNECTION
Establish an Ethernet connection using the ‘ETH’ port located on the panel.

DRY CONTACT CABLE CONNECTION
Below please find the pin definitions of the dry contact cables. (same for both ALM1 and ALM2 ports)

Table 2: Pin Definition of Dry Contact Cables

Pin NO.	Pin	Description	Color Code
ALM			
1	CLOSE	Dry Contact Alarm	RED
2	COM	Dry Contact Alarm	BLUE
3	OPEN	Dry Contact Alarm	YELLOW

TAG INSTALLATION

Use addressable antenna:

- IXD-360H04YJN-ADR: Low profile, Ceiling Mount, 380-2700MHz, H Pol, 360°, 2.0/2.2/4.5dBi
- IXD-360H04MJN-ADR: Low profile, Ceiling Mount, 698-2700MHz, H Pol, 360°, 2.2/3.5/4.5dBi

Or put the RFID tags on the antenna emission surface:

- These tags should be installed on in-building services antennas and the gain for these antennas shall not be exceeding 12.5dBi gain.
- The tags cannot be used for outdoor environment

Important
Record the RFID 1) serial number 2) Location for each antenna with RFID tag. This information needs to be recorded in the AMS when setting up a new system

WEB GUI

The AMS can be monitored and controlled via the WEB GUI; use the following guide to finish system parameter setting and commissioning.

WEB GUI CONNECTION

1. Step 1: Connect the ETH port to the PC RJ45 port to set up a physical connection.

2. Step 2: Manually change the IP address of the PC to be 192.168.1.100/255.255.255.0
3. Step 3: Open a browser (Chrome or Firefox), connect 192.168.1.231 for login

WEB GUI INTRODUCTION

[TAG MANAGEMENT]

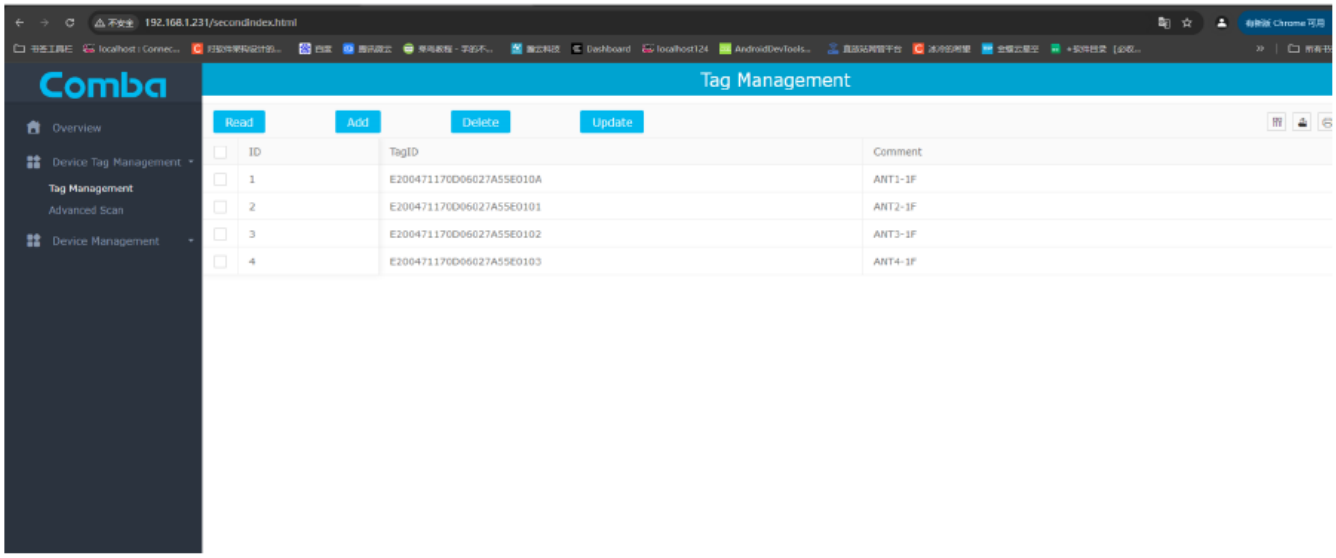


Figure 4: Tag Management

For all the new systems, need to add tags into the controller

- ID – The Serial Number for the RFID tag
- Taginfo – The other information for the RFID/Antenna, such as the location information

[Overview]

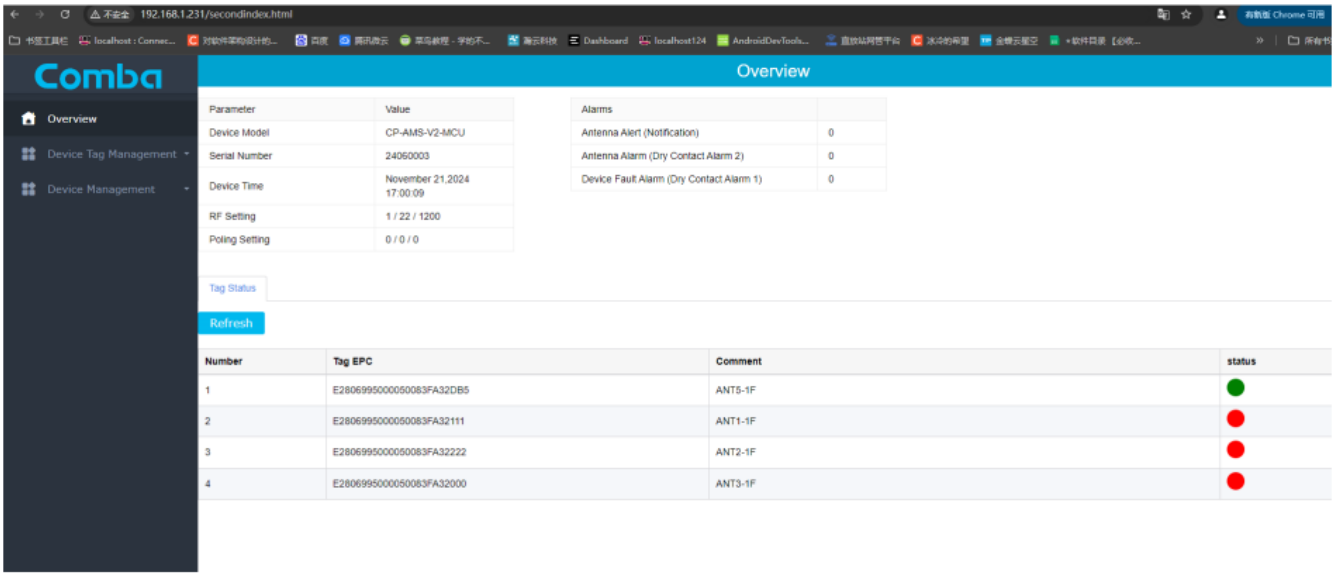


Figure 5: Overview

- Display tag status and Devices information the refresh ratio is based on the setting in “Query Cycle” in the

“Device Parameter” page

- readData will manually trigger a scan all the tags, can be used during set up
- DeviceNum: User can define the device information here such as a remark for the device
- Serial Number: the serial number of the device
- Date/Time: User can set the date and time

[ALARM LOG]

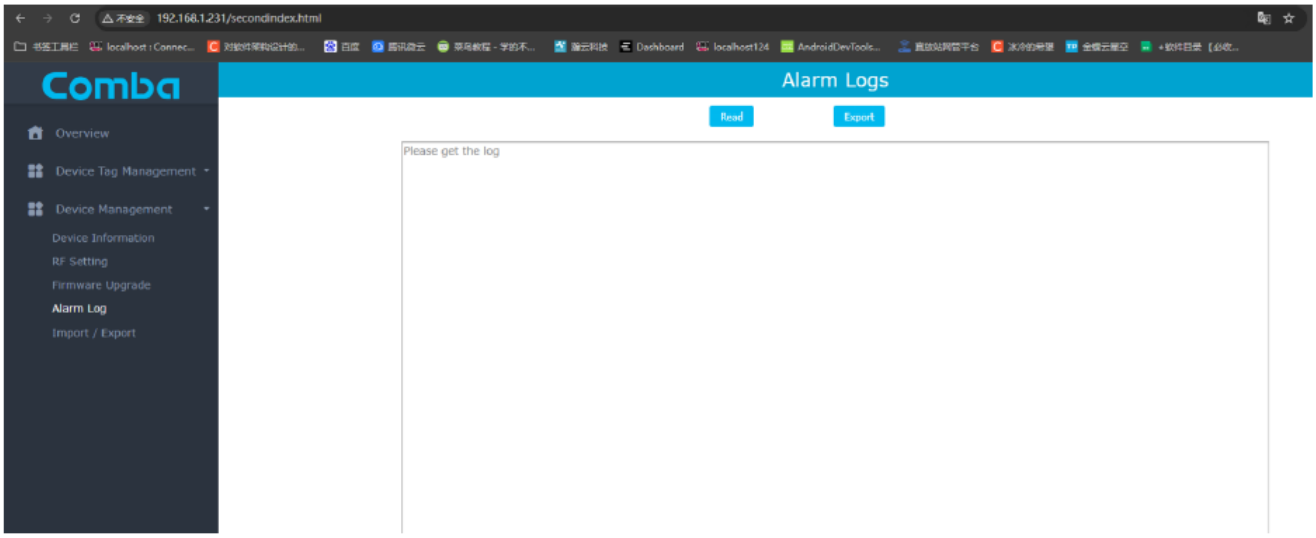


Figure 6: Current Alarm

Check the alarm log

[Advanced Scan]

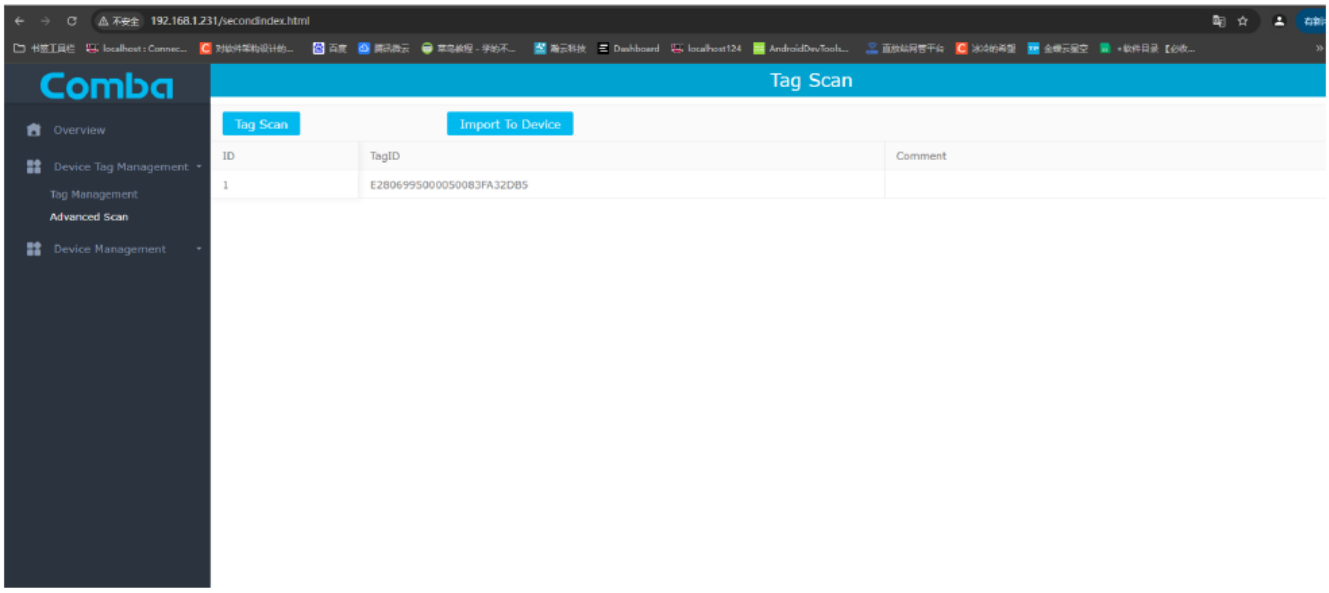


Figure 7: Tag Scan

- Advanced Scan antenna system tag information
- The scan results are imported to the device
- **[Firmware Upgrade]**

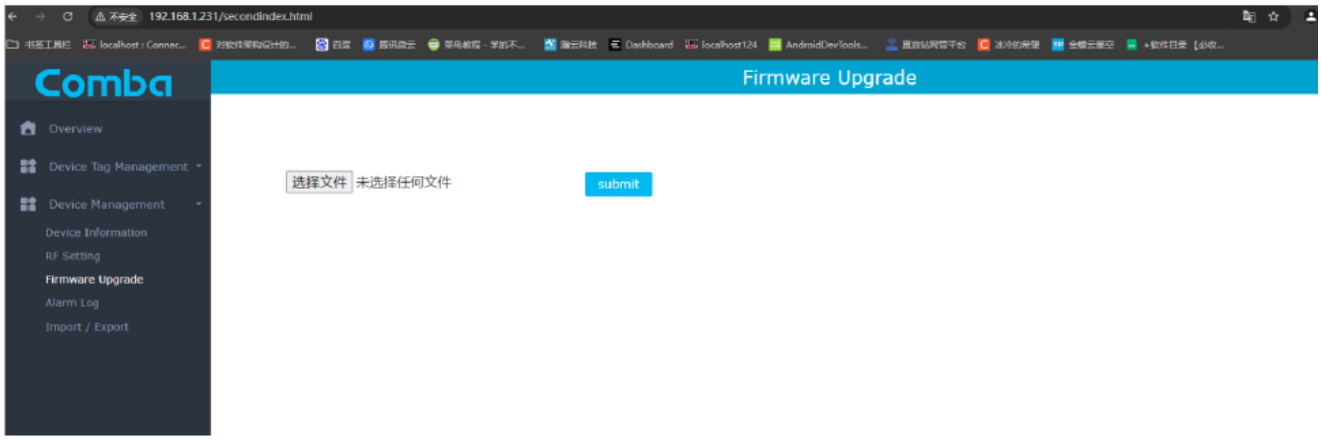


Figure 8: Firmware Upgrade

- Upgrade the firmware version of your device online

[RF Setting]

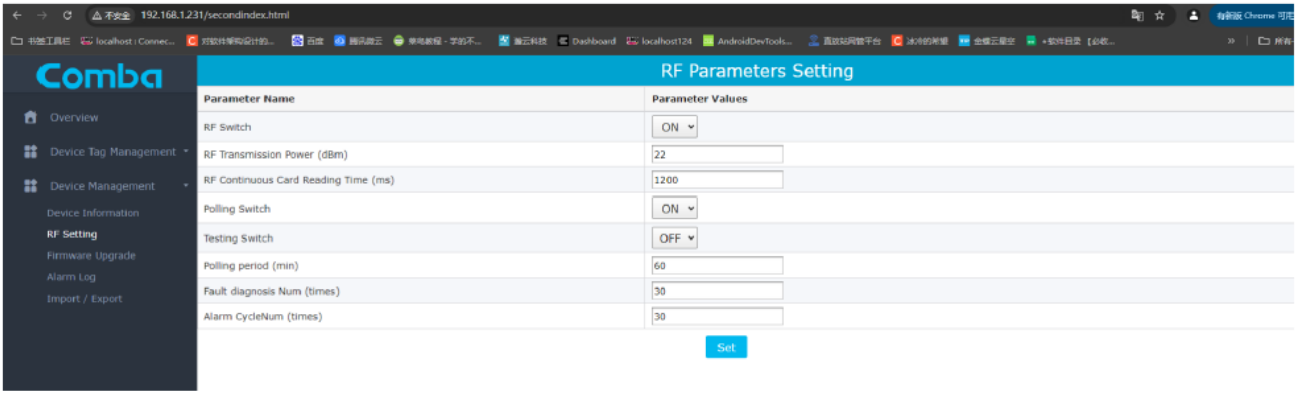
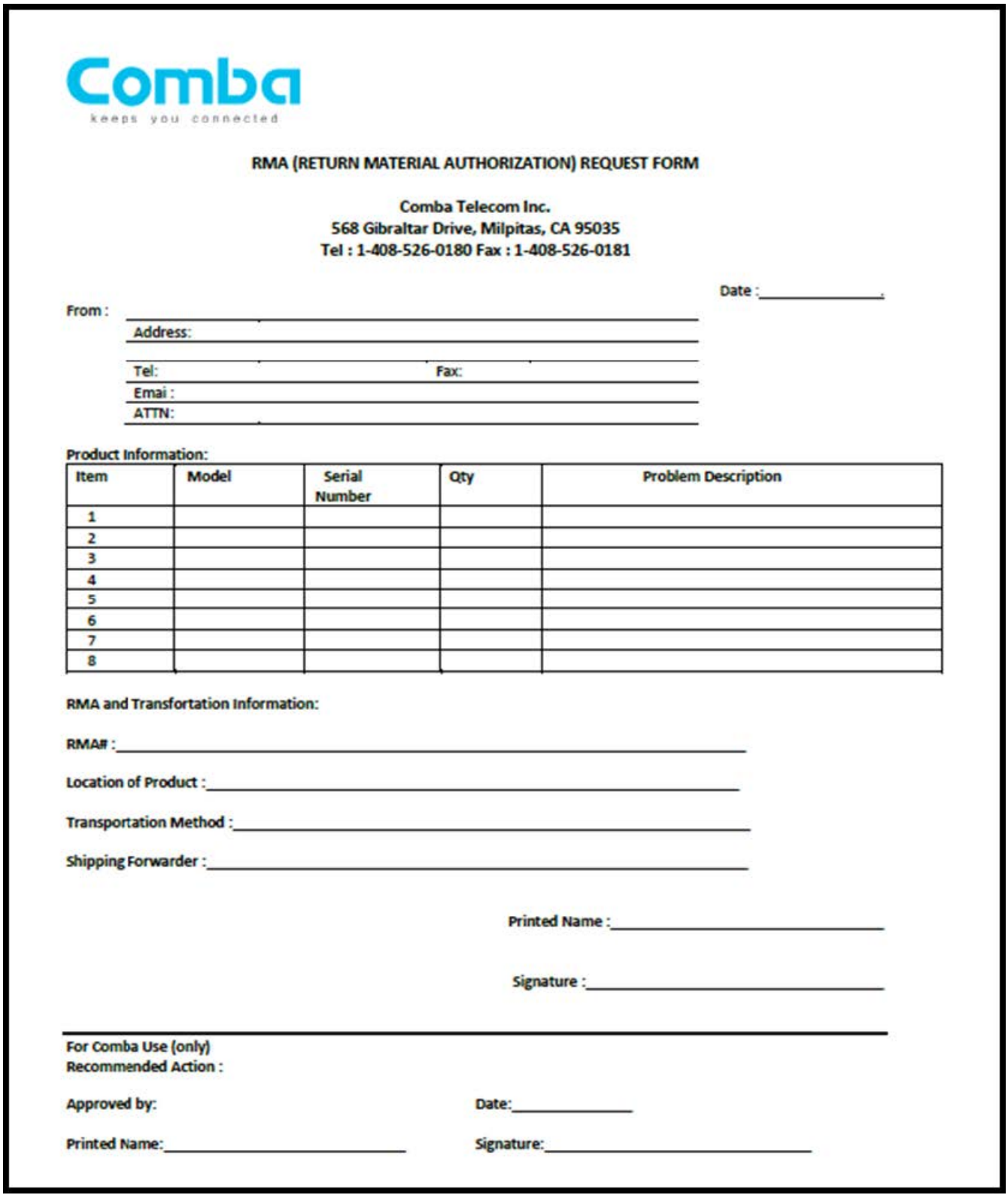


Figure 9: RF Parameter Setting

- Output Power: Set the output power in dBm for the pilot signal, default is 30 (dBm)
- PowerAmplifier: Manually turn on or off the power amplifier
- Query Cycle: Set the pulse rate for the pilot signal, minimum pulse rate is 3 minutes
- Auto Query: Turn on or off the auto Query
- polling period Set up an automatic query period
- Alarm cyclenum Set the number of alarms
- Fault diagnosis num Set the number of troubleshootings

APPENDICES

APPENDIX A: RMA (RETURN MATERIAL AUTHORIZATION)



Comba
keeps you connected

RMA (RETURN MATERIAL AUTHORIZATION) REQUEST FORM

Comba Telecom Inc.
568 Gibraltar Drive, Milpitas, CA 95035
Tel : 1-408-526-0180 Fax : 1-408-526-0181

Date :_____

From :
Address:
Tel: Fax:
Emai :
ATTN:

Product Information:

Item	Model	Serial Number	Qty	Problem Description
1				
2				
3				
4				
5				
6				
7				
8				

RMA and Transfortation Information:

RMA# :_____

Location of Product :_____

Transportation Method :_____

Shipping Forwarder :_____

Printed Name :_____

Signature :_____

For Comba Use (only)
Recommended Action :

Approved by: Date:_____

Printed Name:_____ Signature:_____

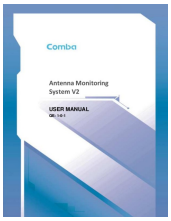
- End of Section
- End of Document

Comba Telecom Inc.

- 568 Gibraltar Drive, Milpitas CA 95035, USA
- Tel: +1 866 802 7961
- Fax: +1 408 526 0181
- Email: customer.nam@comba-telecom.com

www.combausa.com

Documents / Resources

	Comba V2 Antenna Monitoring System [pdf] User Manual V2 Antenna Monitoring System, V2, Antenna Monitoring System, Monitoring System, System

References

- User Manual