

# JMA



## MX10 & MX16 ANTENNA CBRS ACF UPDATE MOP

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1-24-2024

Document Number 17989-01



# Revision History

ECO Number	Description	Date
00756	MX10 & MX16 Full CBRS RET ACF File MOP First Release	01/24/24

# Introduction

- This document provides the steps required to update the CBRS RET device from a fixed electrical tilt value to a full range RET device, in the JMA Macro panel antenna models beginning with either MX10 or MX16
- The steps in this document are only applicable where the user has direct access to the antenna and can connect to the antenna via either the AISG connector input or to the RF Port which supports RET connection
- For situations where antennas are already installed on site and operational, please refer to Verizon MTCE advisory to how CBRS RETS can be updated via the ENM system.

# Applicable Antenna Models

## List of MX10 Models

MX10FIT445-xx
MX10FIT465-xx
MX10FIT645-xx
MX10FIT665-xx
MX10FIT845-xx
MX10FIT845-Bxx
MX10FIT865-xx
MX10FIT865-Bxx
MX10FRO440-xx
MX10FRO640-xx
MX10FRO660-xx
MX10FRO840-xx
MX10FRO840-Bxx
MX10FRO860-xx
MX10FRO860-Bxx

**-xx can be a value  
from 02 to 12**

## List of MX16 Models

MX16FRO445-xx
MX16FRO645-xx
MX16FRO845-Bxx
MX16FIT465-xx
MX16FIT665-xx
MX16FIT865-Bxx

# List of the equipment needed

- RET Controller  
JMA PCU-1000



- AISG Cable

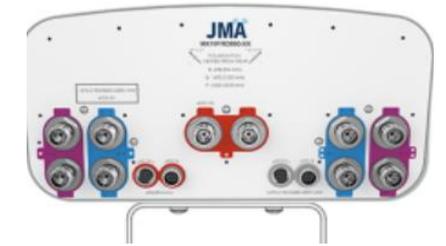


- Laptop



- Antenna

MX10



MX16



- Smart Bias T  
(For RF connection)



RF Jumper for Bias T connection



# MOP Instructions location details

CBRS Full RET ACF File loading  
MOP instructions

<http://jma%20mx10%20&%20mx16%20cbrs%20full%20ret%20act%20update%20mop.pdf/>



Download the JMA MX10 & MX16 CBRS FULL RET UPDATE MOP here.

## Firmware version FW\_V1.2.0

### MX10 Series

MX10FIT445  
MX10FIT465  
MX10FIT645  
MX10FIT665  
MX10FIT845  
MX10FIT845-B  
MX10FIT865  
MX10FIT865-B  
MX10FRO440  
MX10FRO640  
MX10FRO660  
MX10FRO840  
MX10FRO840-B  
MX10FRO860  
MX10FRO860-B

### MX16 Series

MX16FIT465  
MX16FIT665  
MX16FIT865-B  
MX16FRO445  
MX16FRO645  
MX16FRO845-B

## Firmware version FW\_V2.0.1

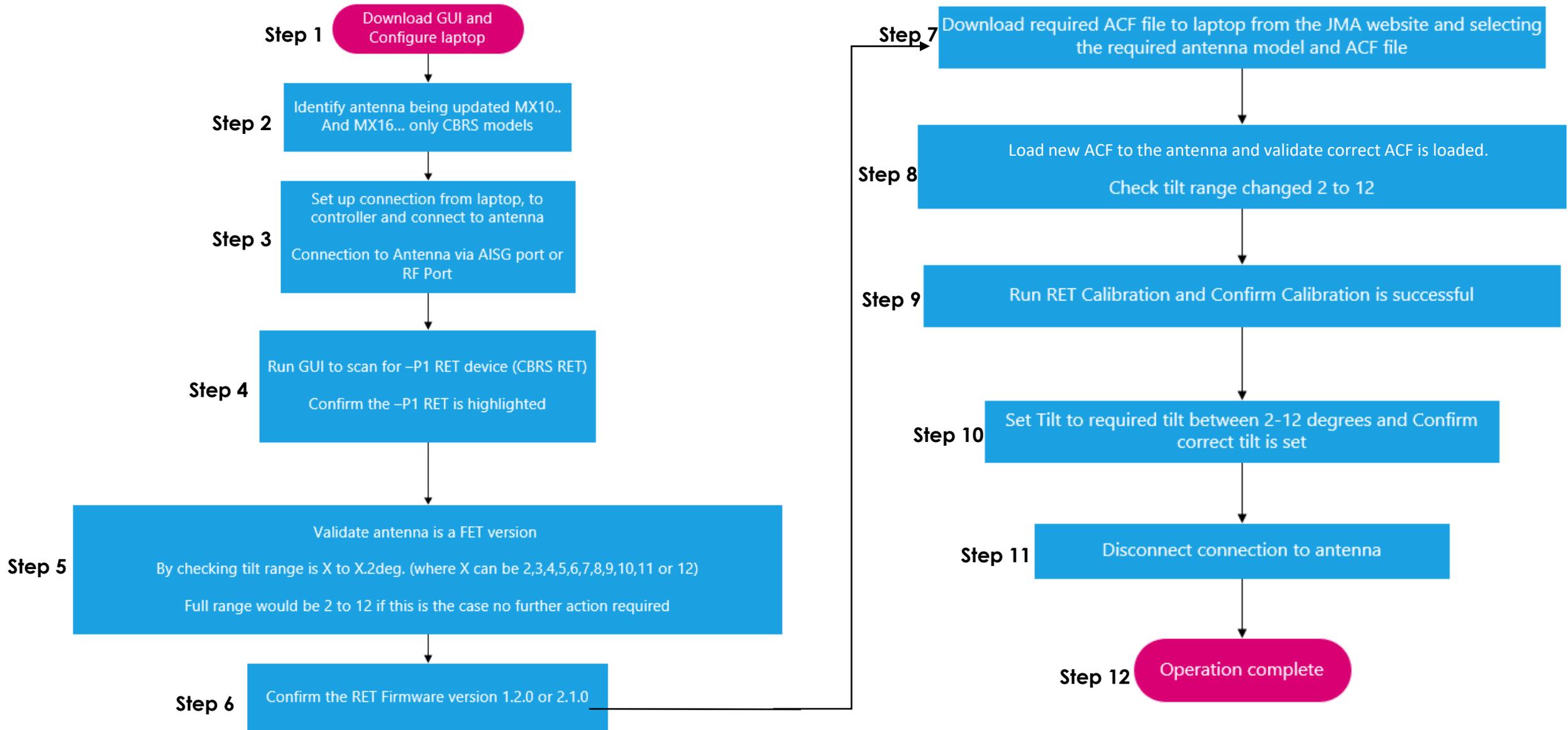
### MX10 Series

MX10FIT445  
MX10FIT465  
MX10FIT645  
MX10FIT665  
MX10FIT845  
MX10FIT845-B  
MX10FIT865  
MX10FIT865-B  
MX10FRO440  
MX10FRO640  
MX10FRO660  
MX10FRO840  
MX10FRO840-B  
MX10FRO860  
MX10FRO860-B

### MX16 Series

MX16FIT465  
MX16FIT665  
MX16FIT865-B  
MX16FRO445  
MX16FRO645  
MX16FRO845-B

# Flow Chart



# Step 1 - JMA Website location for Software and Guide

Go to:

<https://jmawireless.com/support/>

Download the 3 red highlighted items as shown.

## KEY SUPPORT DOCUMENTS

### Transmission Line Systems

- Connector Matrix
- Weather Protection Cross Reference Chart
- Cable Prep Tools and Replacement Parts
- View Installation Videos

### Antenna Systems

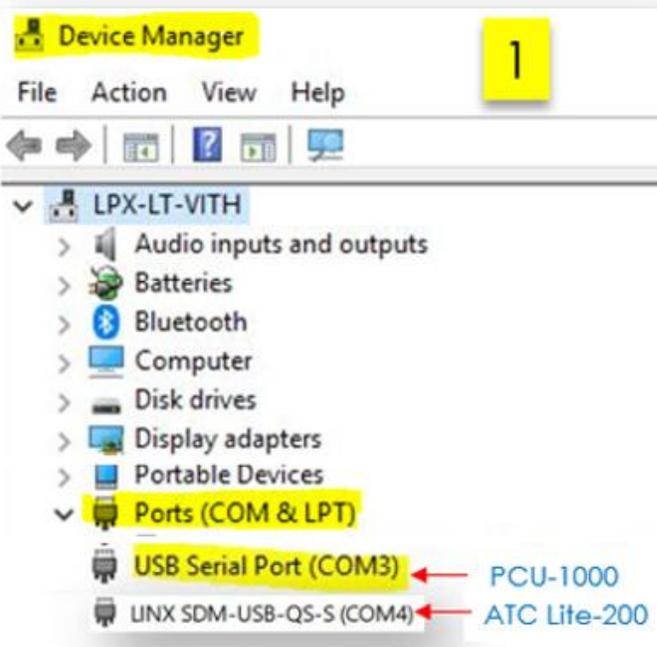
#### Performance Results Portal

- NWAV RET Webinar
- RET Presentation
- Antenna Product Matrix
- Antenna Model Nomenclature
- RET-200 Motor Support
- Antenna Painting Options
- Stadium Antenna – Weep Hole Guide
- NWAV Macro Antenna Bracket Installation Guide
- Venue Bracket Install Guide for 919050 & 919055
- Venue Bracket Install Guide for 91900324 & 91900325
- IVOXOMNI136 Ceiling-Mount Installation Guide
- Dual Mount Bracket Installation Guide
- Instructions for Extension Kit for MX08FIT265-01 Antenna
- **RET Controller PCU 1000 Software**
- **PCU 1000 User Guide**
- **USB Driver for AISG Controller**
- MX10 & MX16 CBRS RET ACF UPDATES

# Step 1 cont. - RET GUI & COM SET UP

- ❑ Download & Install JMA RET GUI 5.16 and USB Driver for AISG Controller
- ❑ Ensure RET Controller is powered up and connected to PC
- ❑ Launch GUI application
- ❑ Perform COM setup for RET controller on PC Steps 1-5

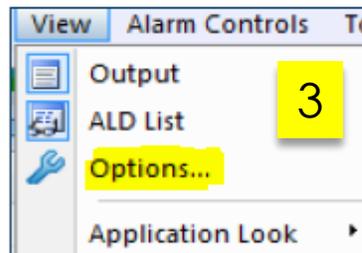
Device manager on laptop to validate com port used



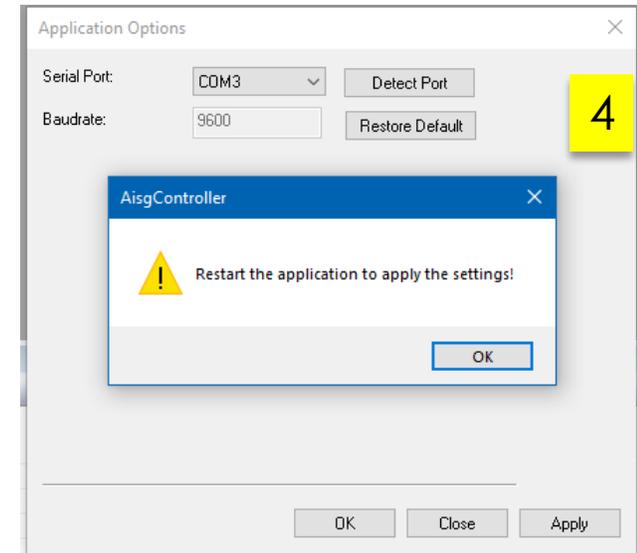
JMA Desktop icon



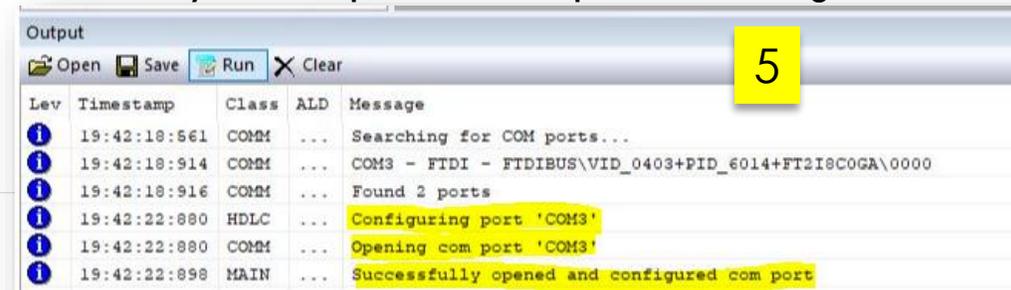
Top left inside JMA GUI



Select serial port and restart the program



Verify that com port has been opened and configured



# Step 2 - Identify Antenna

Label example of a MX10 antenna

Label example of a MX10 antenna

MODEL NO: MX10FRO860-03

SERIAL NO: MX108600322312071 2312071

RET TYPE:

RF PORT	ARRAY ID	FREQ (MHZ)	TILT RANGE
1-2	R1	698-894	2-12
3-6	B1	1695-2180	0-9
7-10	P1	3400-4200	2-12

TEST: -45° SLANT, +45° SLANT

INSPECTION: -45° SLANT, +45° SLANT

POLARIZATION AND PORTS VIEWED FROM REAR

RET SERIAL NO:  
23121086032073-R1  
23121086032073-B1  
23121086032073-P1

**JMA WIRELESS**  
JMA WIRELESS, INC.  
LIVERPOOL, NY USA  
PHONE: +1 888-201-6073

**UP**

**DANGER**  
**WARNING**  
AVOID ELECTRIC POWER LINES, OTHERWISE SERIOUS INJURY OR DEATH MAY OCCUR

Label example of a MX16 antenna

RET SERIAL NO:  
23061644501 010-R1  
23061644501 010-Y1  
23061644501 010-Y3  
23061644501 010-P1

MODEL NO: MX16FRO445-00

SERIAL NO: MX164450012306010 2306010

RET TYPE:

RF PORT	ARRAY ID	FREQ (MHZ)	TILT RANGE
1-4	R1	698-894	2-16
5-8	Y1	1695-2690	0-9
9-12	Y3	1695-2690	0-9
13-16	P1	3400-4980	2-12

TEST: +45° SLANT, -45° SLANT

INSPECTION: +45° SLANT, -45° SLANT

POLARIZATION AND PORTS VIEWED FROM REAR

RET SERIAL NO:  
23121086032073-R1  
23121086032073-B1  
23121086032073-P1

**JMA WIRELESS**  
JMA WIRELESS, INC.  
LIVERPOOL, NY USA  
PHONE: +1 888-201-6073

**UP**

**DANGER**  
**WARNING**  
AVOID ELECTRIC POWER LINES, OTHERWISE SERIOUS INJURY OR DEATH MAY OCCUR

# Step 3 - RET Controller Test Diagram – AISG Port

## Testing RET Through Antenna AISG Port

- Connect RET Controller to AISG IN port on Antenna



USB Cable



AISG Cable



Example of a MX10 antenna model

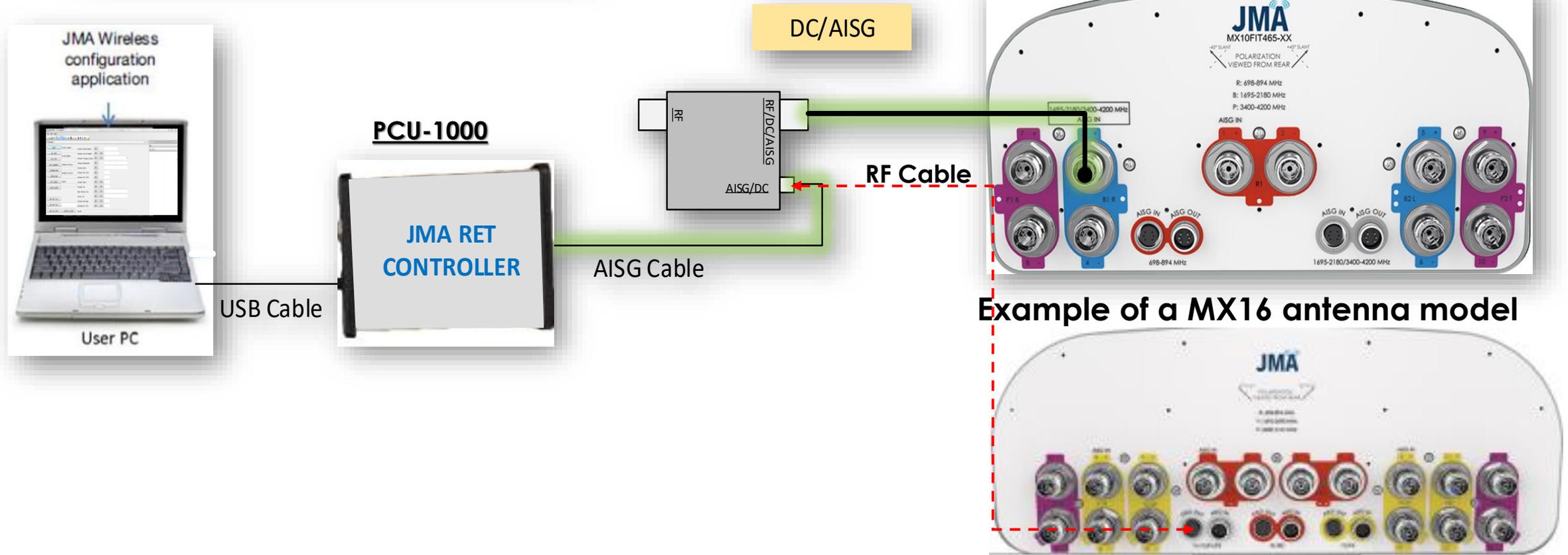
Example of a MX16 antenna model



# Step 3 cont. - RET Controller Test Diagram – RF Port

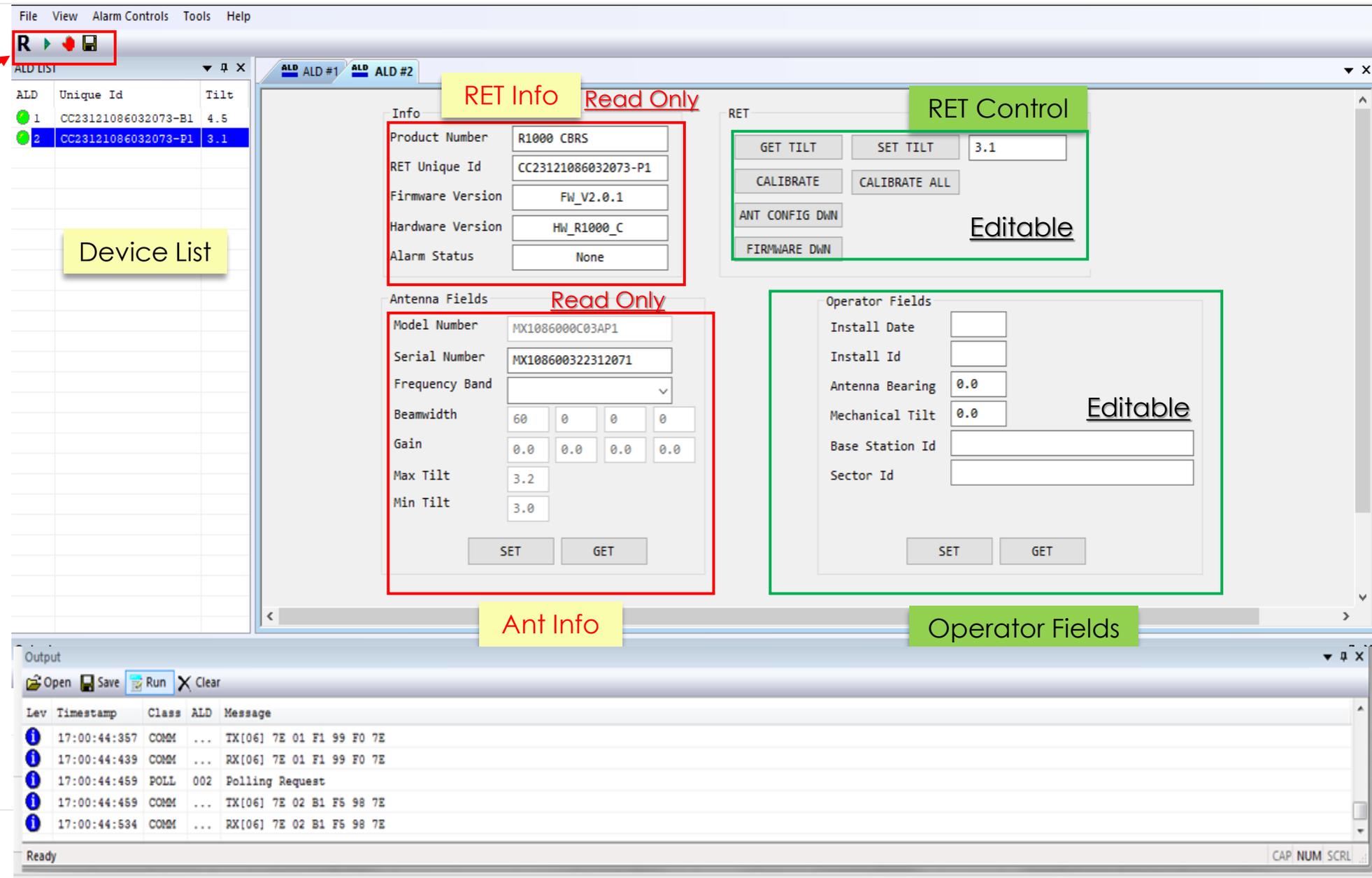
## Testing RET Through Antenna RF Port

- Via Ant RF AISG IN port – internal Bias-T
- Use external Bottom Bias-T to inject DC/AISG



# Explanation of the GUI LAYOUT

-  Bus RESET
-  SCAN
-  STOP SCAN
-  SAVE

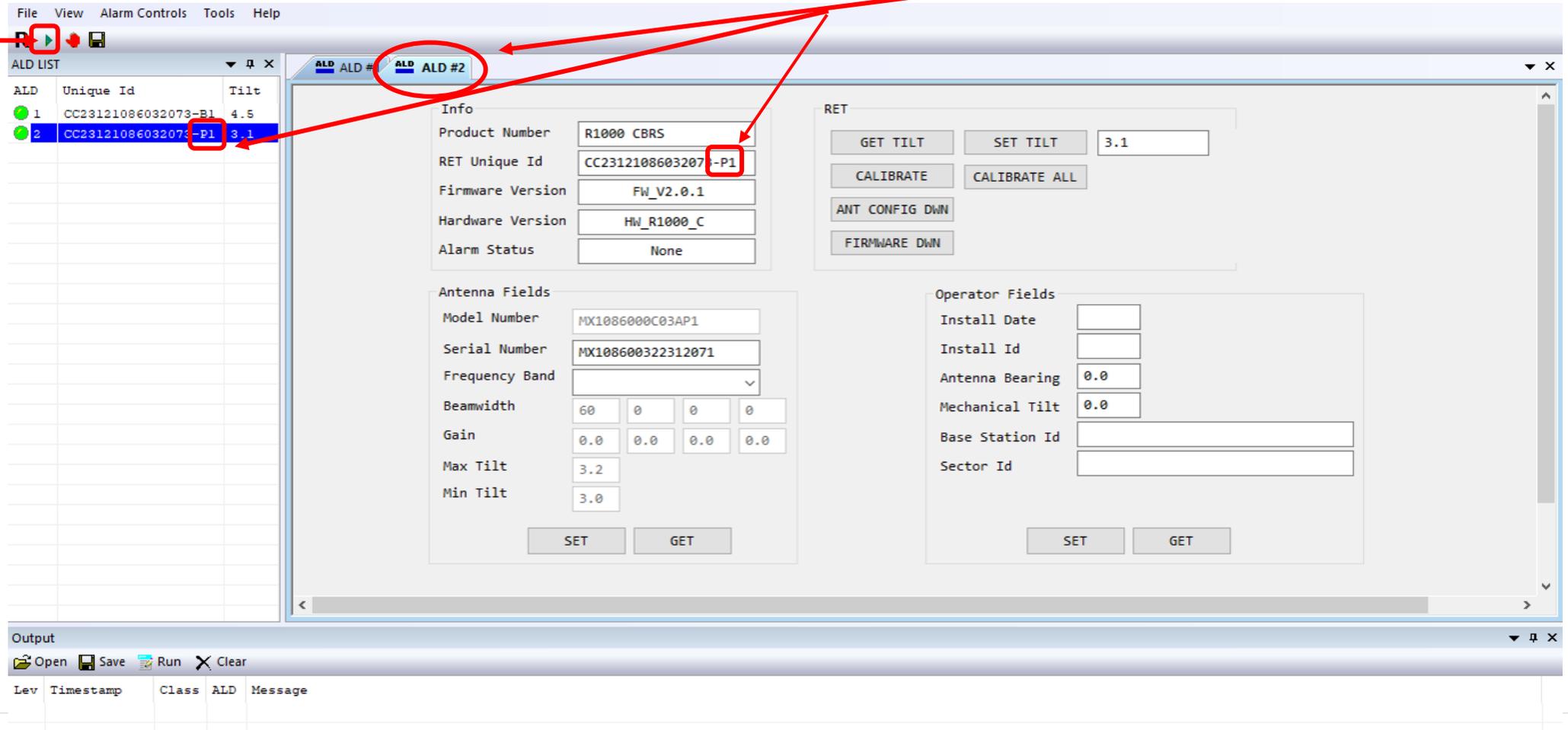


The screenshot shows a software interface with several panels and controls:

- Top Bar:** Contains menu items: File, View, Alarm Controls, Tools, Help.
- Left Panel:** A table titled "ALD LIST" with columns "ALD", "Unique Id", and "Tilt". It contains two rows of data. A yellow label "Device List" points to this table.
- Top Left Controls:** A vertical stack of four icons: a red 'R' (labeled "Bus RESET"), a play button (labeled "SCAN"), a red stop button (labeled "STOP SCAN"), and a floppy disk (labeled "SAVE"). A red arrow points from the "SCAN" label to the play button icon.
- Info Panel (Red Box):** Labeled "RET Info" and "Read Only". It contains fields for Product Number (R1000 CBRS), RET Unique Id (CC23121086032073-P1), Firmware Version (FW\_V2.0.1), Hardware Version (HW\_R1000\_C), and Alarm Status (None).
- Antenna Fields Panel (Red Box):** Labeled "Ant Info" and "Read Only". It contains fields for Model Number (MX1086000C03AP1), Serial Number (MX108600322312071), Frequency Band (dropdown), Beamwidth (60, 0, 0, 0), Gain (0.0, 0.0, 0.0, 0.0), Max Tilt (3.2), and Min Tilt (3.0). It has SET and GET buttons.
- RET Control Panel (Green Box):** Labeled "RET Control" and "Editable". It contains buttons for GET TILT, SET TILT (with a value of 3.1), CALIBRATE, CALIBRATE ALL, ANT CONFIG DWN, and FIRMWARE DWN.
- Operator Fields Panel (Green Box):** Labeled "Operator Fields" and "Editable". It contains fields for Install Date, Install Id, Antenna Bearing (0.0), Mechanical Tilt (0.0), Base Station Id, and Sector Id. It has SET and GET buttons.
- Output Panel:** A log window at the bottom with a table of messages. The table has columns: Lev, Timestamp, Class, ALD, and Message. It shows several communication logs with timestamps around 17:00:44.

# Step 4 - Scan for RETs and confirm connected to -P1 RET in unique antenna ID

Start scan by clicking the  button then select ALD for the P1 RET



The screenshot displays the software interface with the following components:

- ALD LIST Table:**

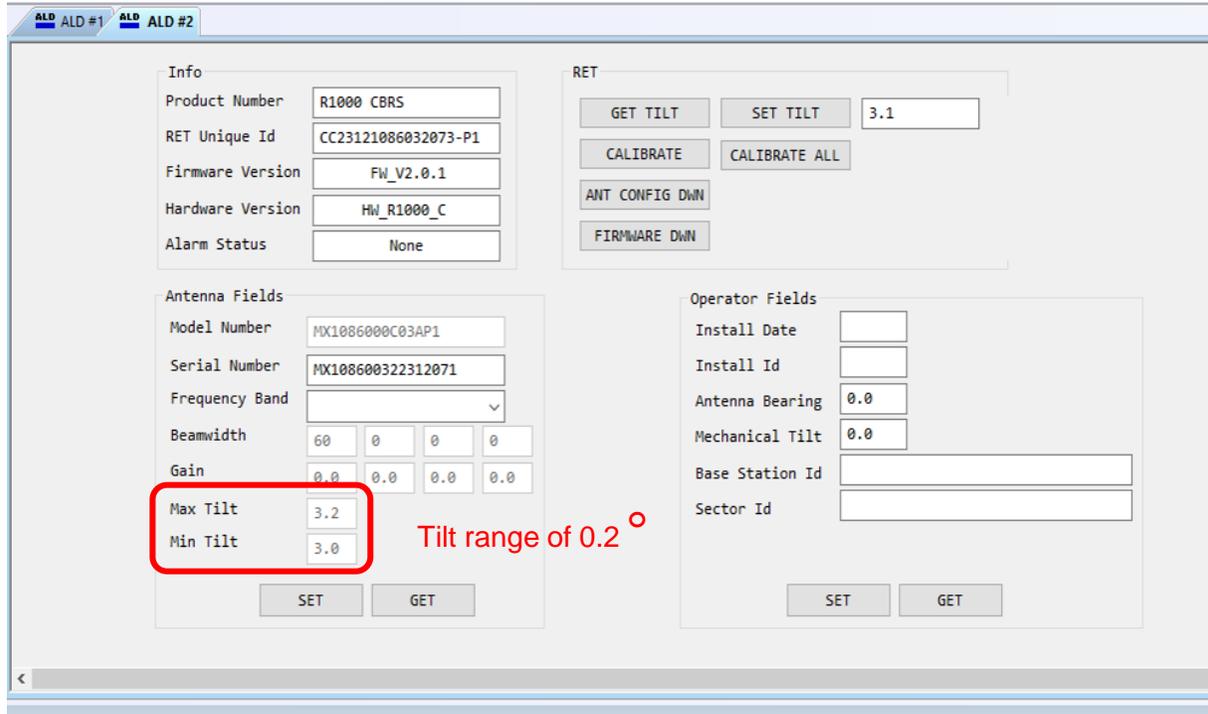
ALD	Unique Id	Tilt
1	CC23121086032073-B1	4.5
2	CC23121086032073-P1	3.1
- RET Configuration Panel:**
  - Product Number: R1000 CBRS
  - RET Unique Id: CC23121086032073-P1
  - Firmware Version: FW\_V2.0.1
  - Hardware Version: HW\_R1000\_C
  - Alarm Status: None
- Antenna Fields:**
  - Model Number: MX1086000C03AP1
  - Serial Number: MX108600322312071
  - Frequency Band: [Dropdown]
  - Beamwidth: 60, 0, 0, 0
  - Gain: 0.0, 0.0, 0.0, 0.0
  - Max Tilt: 3.2
  - Min Tilt: 3.0
- Operator Fields:**
  - Install Date: [Text Box]
  - Install Id: [Text Box]
  - Antenna Bearing: 0.0
  - Mechanical Tilt: 0.0
  - Base Station Id: [Text Box]
  - Sector Id: [Text Box]

# Step 5 - Example of a FET RET vs Full RET

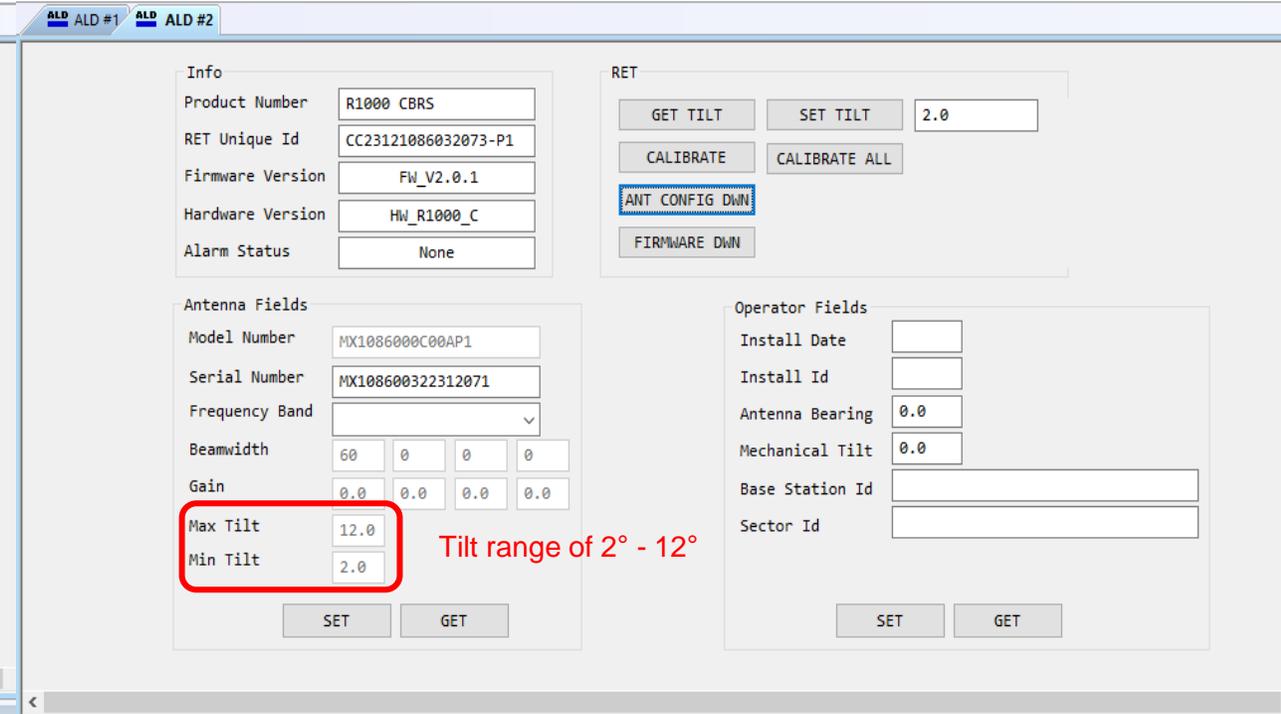
Confirm the antenna is a –P1 FET antenna and not the full ret version by the tilt values

## FET Antenna (Fixed Electrical Tilt)

## Full Range Tilt RET



The screenshot shows the configuration interface for a FET Antenna. It is divided into several sections: Info, RET, Antenna Fields, and Operator Fields. The Info section includes Product Number (R1000 CBRS), RET Unique Id (CC23121086032073-P1), Firmware Version (FW\_V2.0.1), Hardware Version (HW\_R1000\_C), and Alarm Status (None). The RET section has buttons for GET TILT, SET TILT (with a value of 3.1), CALIBRATE, CALIBRATE ALL, ANT CONFIG DWN, and FIRMWARE DWN. The Antenna Fields section includes Model Number (MX1086000C03AP1), Serial Number (MX108600322312071), Frequency Band, Beamwidth (60, 0, 0, 0), Gain (0.0, 0.0, 0.0, 0.0), and Max Tilt (3.2) and Min Tilt (3.0) values, which are highlighted with a red box. The Operator Fields section includes Install Date, Install Id, Antenna Bearing (0.0), Mechanical Tilt (0.0), Base Station Id, and Sector Id. There are SET and GET buttons for the Antenna Fields and Operator Fields sections.



The screenshot shows the configuration interface for a Full Range Tilt RET antenna. It is divided into several sections: Info, RET, Antenna Fields, and Operator Fields. The Info section includes Product Number (R1000 CBRS), RET Unique Id (CC23121086032073-P1), Firmware Version (FW\_V2.0.1), Hardware Version (HW\_R1000\_C), and Alarm Status (None). The RET section has buttons for GET TILT, SET TILT (with a value of 2.0), CALIBRATE, CALIBRATE ALL, ANT CONFIG DWN, and FIRMWARE DWN. The Antenna Fields section includes Model Number (MX1086000C00AP1), Serial Number (MX108600322312071), Frequency Band, Beamwidth (60, 0, 0, 0), Gain (0.0, 0.0, 0.0, 0.0), and Max Tilt (12.0) and Min Tilt (2.0) values, which are highlighted with a red box. The Operator Fields section includes Install Date, Install Id, Antenna Bearing (0.0), Mechanical Tilt (0.0), Base Station Id, and Sector Id. There are SET and GET buttons for the Antenna Fields and Operator Fields sections.

## Step 6 - Confirm Firmware Version

Info		RET	
Product Number	R1000 CBRS	GET TILT	
RET Unique Id	CC23121086032073-P1	CALIBRATE	
Firmware Version	FW_V2.0.1	ANT CONFIG DWN	
Hardware Version	HW_R1000_C	FIRMWARE DWN	
Alarm Status	None		

Antenna Fields		Oper	
Model Number	MX1086000C03AP1	Ins	
Serial Number	MX108600322312071	Ins	
Frequency Band		Ant	
Beamwidth	60 0 0 0	Mec	
Gain	0.0 0.0 0.0 0.0	Bas	
Max Tilt	3.2	Sec	
Min Tilt	3.0		

SET GET

Info		RET	
Product Number	R1000 CBRS	GET TILT	
RET Unique Id	CC21101086002249-P1	CALIBRATE	
Firmware Version	FW_V1.2.0	ANT CONFIG DWN	
Hardware Version	HW_R1000_C	FIRMWARE DWN	
Alarm Status	None		

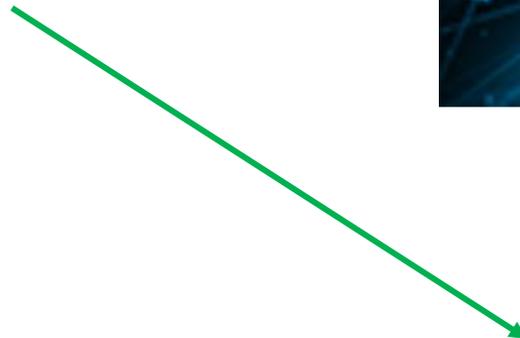
Antenna Fields		Oper	
Model Number	MX1086002502AP1	Ins	
Serial Number	20163970281	Ins	
Frequency Band	16, 43	Ant	
Beamwidth	60 0 0 0	Mec	
Gain	0.0 0.0 0.0 0.0	Bas	
Max Tilt	2.2	Sec	
Min Tilt	2.0		

SET GET

# Step 7 - ACF File location details

ACF file link –

<https://jmawireless.com/mx10-mx16-cbrs-ret-acf-updates/>



Download the JMA MX10 & MX16 CBRS FULL RET UPDATE MOP here.

## Firmware version FW\_V1.2.0

### MX10 Series

- MX10FIT445
- MX10FIT465
- MX10FIT645
- MX10FIT665
- MX10FIT845
- MX10FIT845-B
- MX10FIT865
- MX10FIT865-B
- MX10FRO440
- MX10FRO640
- MX10FRO660
- MX10FRO840
- MX10FRO840-B
- MX10FRO860
- MX10FRO860-B

### MX16 Series

- MX16FIT465
- MX16FIT665
- MX16FIT865-B
- MX16FRO445
- MX16FRO645
- MX16FRO845-B

## Firmware version FW\_V2.0.1

### MX10 Series

- MX10FIT445
- MX10FIT465
- MX10FIT645
- MX10FIT665
- MX10FIT845
- MX10FIT845-B
- MX10FIT865
- MX10FIT865-B
- MX10FRO440
- MX10FRO640
- MX10FRO660
- MX10FRO840
- MX10FRO840-B
- MX10FRO860
- MX10FRO860-B

### MX16 Series

- MX16FIT465
- MX16FIT665
- MX16FIT865-B
- MX16FRO445
- MX16FRO645
- MX16FRO845-B

# Step 7 cont. - Select file based on firmware version of antenna

## Firmware version FW\_V1.2.0

### MX10 Series

- MX10FIT445
- MX10FIT465
- MX10FIT645
- MX10FIT665
- MX10FIT845
- MX10FIT845-B
- MX10FIT865
- MX10FIT865-B
- MX10FRO440
- MX10FRO640
- MX10FRO660
- MX10FRO840
- MX10FRO840-B
- MX10FRO860
- MX10FRO860-B

### MX16 Series

- MX16FIT465
- MX16FIT665
- MX16FIT865-B
- MX16FRO445
- MX16FRO645
- MX16FRO845-B

## Firmware version FW\_V2.0.1

### MX10 Series

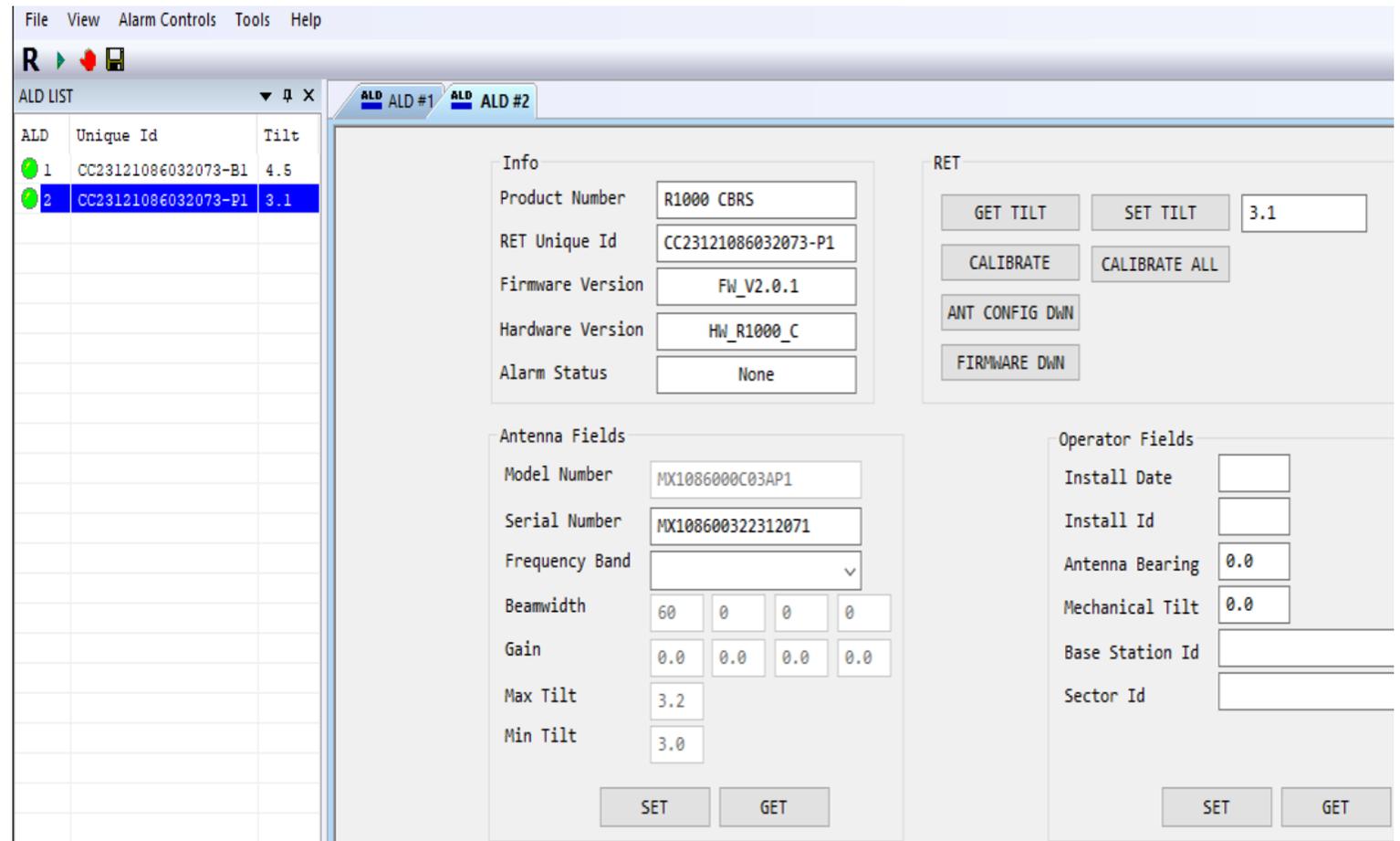
- MX10FIT445
- MX10FIT465
- MX10FIT645
- MX10FIT665
- MX10FIT845
- MX10FIT845-B
- MX10FIT865
- MX10FIT865-B
- MX10FRO440
- MX10FRO640
- MX10FRO660
- MX10FRO840
- MX10FRO840-B
- MX10FRO860
- MX10FRO860-B

### MX16 Series

- MX16FIT465
- MX16FIT665
- MX16FIT865-B
- MX16FRO445
- MX16FRO645
- MX16FRO845-B

# Step 8 - RET ACF LOAD

1. Go to <https://jmawireless.com/mx10-mx16-cbrs-ret-acf-updates/> for the ACF files
2. Connect to only one RET at a time
3. Click 
4. A Browsing window will open to look for the ant file (ACF)
5. Select the ant file per the band
  - a. -P1 is CBRS/C-Band
6. Double click on the file and it will load to the RET
7. RET will go into a Not Calibrated status
8. Calibrate the RET – click 
9. Repeat step 2-8 for the remaining RETs



ALD	Unique Id	Tilt
1	CC23121086032073-B1	4.5
2	CC23121086032073-P1	3.1

Info

Product Number: R1000 CBRS

RET Unique Id: CC23121086032073-P1

Firmware Version: FW\_V2.0.1

Hardware Version: HW\_R1000\_C

Alarm Status: None

Antenna Fields

Model Number: MX1086000C03AP1

Serial Number: MX108600322312071

Frequency Band: [dropdown]

Beamwidth: 60 0 0 0

Gain: 0.0 0.0 0.0 0.0

Max Tilt: 3.2

Min Tilt: 3.0

Operator Fields

Install Date: [input]

Install Id: [input]

Antenna Bearing: 0.0

Mechanical Tilt: 0.0

Base Station Id: [input]

Sector Id: [input]



ACF\_FRO10860\_CBRS\_00 v5.cfg

← CBRS File

# Step 9 - Validate new ACF has loaded

Check that Tilt range has changed **1**

Run calibration **2**

Info

Product Number	R1000 CBRS
RET Unique Id	CC23121086032073-P1
Firmware Version	FW_V2.0.1
Hardware Version	HW_R1000_C
Alarm Status	Not Calibrated

RET

GET TILT    SET TILT

**CALIBRATE**    CALIBRATE ALL

ANT CONFIG DWN

FIRMWARE DWN

Antenna Fields

Model Number	MX1086000C00AP1
Serial Number	MX108600322312071
Frequency Band	
Beamwidth	60   0   0   0
Gain	0.0   0.0   0.0   0.0
Max Tilt	12.0
Min Tilt	2.0

Operator Fields

Install Date	
Install Id	
Antenna Bearing	0.0
Mechanical Tilt	0.0
Base Station Id	
Sector Id	

SET    GET

SET    GET

**1** Tilt range of 2° - 12°

## Validate Calibration is complete

Info

Product Number	R1000 CBRS
RET Unique Id	CC23121086032073-P1
Firmware Version	FW_V2.0.1
Hardware Version	HW_R1000_C
Alarm Status	None

RET

GET TILT    SET TILT    2.0

CALIBRATE    CALIBRATE ALL

ANT CONFIG DWN

FIRMWARE DWN

Antenna Fields

Model Number	MX1086000C00AP1
Serial Number	MX108600322312071
Frequency Band	
Beamwidth	60   0   0   0
Gain	0.0   0.0   0.0   0.0
Max Tilt	12.0
Min Tilt	2.0

Operator Fields

Install Date	
Install Id	
Antenna Bearing	0.0
Mechanical Tilt	0.0
Base Station Id	
Sector Id	

SET    GET

SET    GET

# Step 10 - set / confirm tilt

Set tilt **1**

Confirm tilt **2**

ALD ALD #1 ALD ALD #2

Info

Product Number R1000 CBRS

RET Unique Id CC23121086032073-P1

Firmware Version FW\_V2.0.1

Hardware Version HW\_R1000\_C

Alarm Status None

Antenna Fields

Model Number MX1086000C00AP1

Serial Number MX108600322312071

Frequency Band

Beamwidth 60 0 0 0

Gain 0.0 0.0 0.0 0.0

Max Tilt 12.0

Min Tilt 2.0

SET GET

RET

GET TILT SET TILT 2.0

CALIBRATE CALIBRATE ALL

ANT CONFIG DWN

FIRMWARE DWN

Operator Fields

Install Date

Install Id

Antenna Bearing 0.0

Mechanical Tilt 0.0

Base Station Id

Sector Id

SET GET

**Step – 11 Disconnect from antenna. ACF change complete**

# JMA SUPPORT

**For any questions please contact technical support on the contact details below**

<b>Support Hours</b>	<ul style="list-style-type: none"><li>▪ Weekday Hours: 8AM to 5PM EST</li><li>▪ After Hours, Weekend &amp; Holiday Hours:</li><li>• Via Customer Service Representative (CSR) - 24X7</li></ul>
<b>Phone Support</b>	<ul style="list-style-type: none"><li>▪ 1-888-201-6073</li></ul>
<b>Email Support &amp; Web Site</b>	<ul style="list-style-type: none"><li>▪ <a href="mailto:techsupport@jmawireless.com">techsupport@jmawireless.com</a></li><li>▪ <a href="mailto:customerservice@jmawireless.com">customerservice@jmawireless.com</a></li><li>▪ <a href="http://www.jmawireless.com">http://www.jmawireless.com</a></li></ul>

Thank you