### **COMMSCOPE®**

# Instruction Sheet

#### 654634 Revision A, January 2018

### Antenna Sharing Configuration using CommScope RET Controller Systems

#### **Table of Contents**

1 Overview	2
1.1 Introduction	2
1.2 Acronyms & abbreviations	2
2 Antenna Sharing Configuration using ATC Lite	2
2.1 Changing Antenna Sharing	2
2.2 Viewing the Current Antenna Sharing Configuration	4
2.3 Antenna Sharing Configuration Build Tool	5
2.4 Importing Antenna Sharing Configuration Data and Support Files to a PC from External Sources	5
3 Antenna Sharing Configuration using RET Master apps	5
3.1 Changing Antenna Sharing	6
3.2 Viewing the Current Antenna Sharing Configuration	12
3.3 Importing Antenna Sharing Configuration Data and Support files to RET Master app	14

#### **Table of Figures**

Figure 2-1 Finding devices through ATC Lite software	2
Figure 2-2 Menu selection of change antenna sharing	3
Figure 2-3 Select and send antenna sharing to antenna device	3
Figure 2-4 Menu selection for view antenna sharing	4
Figure 2-5 Graphical display of the current antenna sharing configuration	4
Figure 2-6 Folder locations to copy antenna sharing support and data files	5
Figure 3-1 Select device for change antenna sharing	6
Figure 3-2 Initiate change antenna sharing	7
Figure 3-3 Select new antenna sharing data file	8
Figure 3-4 Select and return to change configuration	9
Figure 3-5 Send antenna sharing to device	.10
Figure 3-6 Send antenna sharing completion message	11
Figure 3-7 Button for view antenna sharing	.12
Figure 3-8 Current antenna sharing configuration information	13
Figure 3-9 Import antenna sharing support file on iOS	14
Figure 3-10 download attachment in Android	15

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#### **1 Overview**

#### **1.1 Introduction**

The latest CommScope antennas support an Antenna Sharing feature. This feature provides independent beamtilt control from two radio controllers to the same antenna. The two separate AISG input ports on these antennas are internally connected to a RET control module, allowing operators to assign which radio has control for each band. CommScope RET Controller systems like the Antenna Tilt Controller (ATC) Lite on PC and RET Master application on mobile devices, implements the antenna sharing configuration process for these CommScope antennas. The following sections describes in detail about the features provided to manage and control antenna sharing.

The Antenna Sharing feature is available only in the ATC Lite version 8.4 and above. Commscope recommends visiting Commscope.com and downloading the latest version of the ATC Lite software.

Also the RETMaster apps are available in version 1.4.1 and above. Latest version of the RETMaster app can be downloaded from Apple ITunes store (iOS) or Google Play store (Android).

#### 1.2 Acronyms & abbreviations

Third Generation Partnership Project
Antenna Interface Standards Group
Antenna Line Device
Application Programming Interface
CommScope RET
Interoperability Test
Remote Electrical Tilt
Single-Antenna Remote Electrical Tilt Actuator
Multiple-Antenna Remote Electrical Tilt Actuator
User Interface

### 2 Antenna Sharing Configuration using ATC Lite

#### 2.1 Changing Antenna Sharing

NOTE: Your antenna will initially be configured from factory with all RETs assigned to the AISG port 1. Use the following steps to reassign the RETs to one or both of the AISG ports, and to select the operating mode of each AISG port (SRET or MRET).

Run the ATC lite software (from desktop) with connection to the AISG port 1 on the antenna.

- 1. Click on 'Find Devices' to perform a device search.
- 2. After the device search is complete, select the device from the display list as shown in Figure 2-1. For an MRET, any subunit can be selected for antenna sharing configuration of the RET system.

S Antenna Tilt Controller	Lite 8.4	4.1 (USB)					_	- 🗆 X
File Communication Tools Hel	p			Auto-Discovery		<ol> <li>Click to sea for devices</li> </ol>	rch	
Get Device Info       Get Alarms       Clear Alarms       Self Test       Number of devices       Unknown       Vendor type: <ul> <li>Commscope C</li> <li>All</li> </ul> Find Devices       Cancel								
ID	Addr	Type	Status	Base Station ID	Sector	AISG	ETilt	Gain
CP000ETRN16509049MM.1	1.1	MultiRET	OK			2.0	7.5	
CP000ETRN 16509049MM.2	1.2	MultRET	OK			2.0	7.5	



Figure 2-1 Finding devices through ATC Lite software.

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Page 2 of 15

Page 3 of 15

3. Select the menu "Tools"  $\rightarrow$  "Antenna Sharing Configuration"  $\rightarrow$  "Change Selected Antenna's Configuration..." as shown in the Figure 2-2.

🤤 Antenna Tilt Co	ontroller L	ite 8.4	l.1 (USB)								- 🗆 ×
File Communication	Tools Help										
Device Status and 1 Get Device Info	Antenna I Switch Pro Addressin Calibrate. Actuator	Files otocol M Ig Factory	lode	► ari	arms Self Test		Number of devices	Unknown 💌	Vendor type:	Comms	cope C All
Device Information	Tower Mo	unted A	mplifier (TMA)	_ ا		L	THUDEVIC	<u></u>			
ID	Antenna :	Sharing	Configuration	•	Change Selected Antenna's	: Configura	tion	Sector	AISG	ETilt	Gain
CP000ETRN 1650	9049MM.1	1.1	MultiRET		View Selected Antenna's Co	Infiguration	h		2.0	7.5	
CP000ETRN 1650	9049MM.2	1.2	MultRET		Open Antenna Sharing Cor	nguration t	oxioer		2.0	7.5	
CP000ETRN 1650	9049MM.3	1.3	MultiRET		OK				2.0	7.5	
CP000ETRN 1650	9049MM.4	1.4	MultiRET		OK				2.0	7.5	
CP000ETRN 1650	9049MM.5	1.5	MultiRET		OK			$\mathbf{i}$	2.0	7.5	
CP000ETRN 1650	9049MM.6	1.6	MultRET		OK		3. Sel apply Anten config	ect to view and the available na share urations	2.0	7.5	
		s	how All Devices	•	Move Sector	Move Se	elected	Edit Selected			

Figure 2-2 Menu selection of change antenna sharing.

4. The window titled "Antenna Share Configuration" is displayed. This window contains the list of Antenna Share Configuration files that are available for the given Antenna model. When a relevant configuration is selected, the preview of the bands that are mapped to AISG 1 and AISG 2 are displayed, as shown in Figure 2-3.

5. Select the appropriate configuration, verify the Mode and Bands are correct, and click on the "Send Configuration" button to send the configuration data to the device through AISG.

Intenna Shar	e Configuration			×	
Select the / (from list b	Antenna Share Configuration elow) for the Antenna Model	File	/T_6		
	2_IOT_6_ALL_AISG1-MRET.	lat			
Configura	tion:			4.	Available
AISG 1		AISG 2		An	tenna share
Mode	MRET	Mode		Co	nfigurations
Bands	, R1 [824-960] MHz R2 [824-960] MHz Y1 [1710-2170] MHz	Bands			



Figure 2-3 Select and send antenna sharing to antenna device.

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7. To see the RETs that were assigned to AISG 2, a search using ATC Lite software with connection to the AISG port 2 should be performed.

#### 2.2 Viewing the Current Antenna Sharing Configuration

1. Click on 'Find Devices' to perform a device search.

2. After the device search is complete, select the device from the display list as shown in Figure 2-1. For an MRET, any subunit can be selected for antenna sharing configuration of the RET system.

3. From the ATC Lite software main window select the menu "Tools"  $\rightarrow$  "Antenna Sharing Configuration"  $\rightarrow$  "View Selected Antenna's Configuration..." as shown in the Figure 2-4.

🤤 Antenna Tilt Cor	ntroller Li	te 8.4	.1 (USB)							- 🗆 X
File Communication	ools Help									
Device Status and Get Device Info Device Information	Antenna F Switch Pro Addressing Calibrate. Actuator F Tower Mor	iles tocol M g actory unted A	ode Reset mplifier (TMA)	arms	Self Test	Auto-Discover Number of devices Find Devi	y Unknown 💌 🕚 ces	/endor type:	Comms	cope C All
ID	Antenna S	haring	Configuration	Change Selec	ted Antenna's Configu	uration	Sector	AISG	ETilt	Gain
CP000ETRN165090	049MM.1	1.1	MUITRET	View Selected	Antenna's Configura	tion		2.0	7.5	
CP000ETRN165090	049MM.2	1.2	MultRET	Open Antenn	a Sharing Configuration	xhBuilder		2.0	7.5	
CP000ETRN165090	)49MM.3	1.3	MultRET	OK				2.0	7.5	
CP000ETRN165090	)49MM.4	1.4	MultRET	OK				2.0	7.5	
CP000ETRN165090	)49MM.5	1.5	MultiRET	OK				2.0	7.5	
CP000ETRN165090	049MM.6	1.6	MultRET	OK		<ol> <li>Securre config graph</li> </ol>	lect to view the nt antenna sharing guration through a nic tool	2.0	7.5	
		s	how All Devices	Move Se	ctor Move	e Selected	Edit Selected			
1										

Figure 2-4 Menu selection for view antenna sharing.

4. Using the selected antenna's endcap image, the current antenna sharing configuration is displayed, as shown in the Figure 2-5. Note that all RETs are assigned to AISG1 in this example.



Figure 2-5 Graphical display of the current antenna sharing configuration.

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Page 4 of 15

#### 2.3 Antenna Sharing Configuration Build Tool

Antenna sharing data files used in previous steps can be built using the Antenna Sharing Configuration Builder Tool. This tool can be launched from the ATC Lite program. The detailed user guide for this tool is available in a separate document. Refer to this document for generating the antenna sharing data files.

#### 2.4 Importing Antenna Sharing Configuration Data and Support Files to a PC from External Sources

Antenna sharing data files have extension name "dat" and contain an antenna sharing mapping. These files, created with the Antenna Sharing Configuration builder tool, can be applied to an antenna by any PC.

Following steps describe how to import antenna sharing support files created on a different PC.

1. Obtain the antenna sharing support file from the external storage location (USB flash drive or e-mail attachment) and save to the local machine folder using Windows Explorer.

2. From the saved location copy the files to the respective folder path as mentioned in the table below and shown in the figure 2-6.

File Type		Extension name(s)	Folder location in the local machine
Antenna Shari	ng Data	.dat	C:\Program Files (x86)\Commscope\ATC Lite\AntennaShareData
		.ngcr2	C:\Program Files (x86)\Commscone\ATC

Antenna Sharing Support .ANNOTD .png or .jpg

ATC Lite				_ 🗆 🗙
🕞 🕞 🖉 💶 🐨 🖉 🖉 🖉 🖉	86) • Commscope • ATC Lite • >>	👻 🔯 Seard	h ATC Lite	2
Organize - Include in library - Share with - Burn	Compatbility files New folder			8==
E 🎉 Program Files (x86)	▲ Name ~	Date modified	Туре	Size
🗉 🕌 Adobe	AnternaShareConfig	12/1/2017 3:03 PM	File folder	Conv the support files
Andrew Corporation	AnternaShareData	12/1/2017 3:03 PM	File folder	(ngcr2/ANNTOD / ing/ nng)
Android	LINX QS Drivers	12/1/2017 3:03 PM	File folder	to this folder
AppInsights Copy the data files	📕 TMA	12/1/2017 3:03 PM	File folder	
Application Verifier (.dat) to this	AccuRET1fw.bin	3/16/2015 4:21 PM	BIN File	99 KB
CACE Technologies     folder	ACRET1-TABLE_014.ar1t	11/17/2017 1:19 PM	AR 1T File	11 KB
CE Remote Tools	AIAMfw.bin	3/16/2015 4:21 PM	BIN File	75 KB
F Cisco	AITMfw.bin	3/16/2015 4:21 PM	BIN File	93 KB
🗉 🍌 Common Files	ARGUS-ANfw.bxt	3/16/2015 4:21 PM	Text Document	t 1KB
🗉 퉲 Common7	ATCLite.chm	8/22/2017 1:49 PM	Compiled HTML	. Help 11 KB
E 🍌 Commscope	S ATCLite.exe	11/3/2017 1:51 PM	Application	2,520 KB
ATC Lite	ATCLite_EN.dl	9/21/2017 11:17 AM	Application ext	ension 259 KB
AntennaShareConfig	ATM300fw.bin	3/16/2015 4:21 PM	BIN File	70 KB
LINX OS Drivers	COMMRET 1fw.bin	7/26/2017 2:15 PM	<b>BIN File</b>	248 KB
TMA	COMMRET2fw.bin	11/2/2017 3:47 PM	BIN File	239 KB

Figure 2-6 Folder locations to copy antenna sharing support and data files.

NOTE: data files (.dat) copied can be accessed and used for antenna sharing through the "Change Selected

### **3 Antenna Sharing Configuration using RET Master apps**

RET Master apps are available on iOS and Android platforms running on mobile devices (smartphones or tablets). RET Master app needs a RET Master device that is connected to the antenna device through AISG for communication.

NOTE: RET Master app startup steps as given below:

- On the mobile device use WiFi feature to connect to the RET Master device's SSID.
- Launch the RETMaster app by clicking on the icon.

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#### 3.1 Changing Antenna Sharing

- 1. From the RET Master app's main screen, select "Find Devices" to perform a device search.
- 2. On completion of the search, select the device from the list to display the Device Details screen, as shown in Figure 3-1.





CP765432106543210MM.t4 Antenna: RRZZ-658-R4 Sector: Base Station ID: Operating Frequency Bands:



- 62				
		_		
			_	
		 -		
	-	_		_

#### CP000ETRN16509049MM.t3

Antenna: COMMRET2\_IOT\_6

Sector:

Base Station ID:

**Operating Frequency Bands:** 

I UL: 1920 - 1980 MHz DL: 2110 - 2170 MHz

Tilt: 7.5 deg



CP000ETRN16509049MM.t4 Antenna: COMMRET2\_IOT\_6 Sector:

Base Station ID:

Operating Frequency Bands:

I UL: 1920 - 1980 MHz DL: 2110 - 2170 MHz

Tilt: 7.5 deg



Figure 3-1 Select device for change antenna sharing.

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Page 6 of 15

3. In the Device details screen scroll down to the bottom of the view, among the list of buttons select "Change Antenna" Sharing" as shown in the figure 3-2.

iPad	1:49 PM	\$ 78% 🔳 )
Back	Device Details	
Device Info		
Device Type		MRET
Product Number		COMMRET2
Serial Number		000ETRN16509049MM
Bus Mode		

AISG 2.0



Figure 3-2 Initiate change antenna sharing.

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Page 7 of 15

4. In the "Antenna Sharing Configuration" screen select the "Data File" row to select a new antenna sharing configuration data file as shown in figure 3-3.





#### Assigned Bands:

R1 [824 - 960] MHz

R2 [824 - 960] MHz

Y1 [1710 - 2170] MHz

Y2 [1710 - 2170] MHz

Y3 [1710 - 2170] MHz

Protocol Mode: None

Assigned Bands:

4. Select this row to select a new data file for antenna sharing. Showing the data file name for the current antenna sharing configuration





#### Figure 3-3 Select new antenna sharing data file.

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Page 8 of 15

5. The "Antenna Share Data Files" screen is shown with a list of file names. The current antenna sharing configuration's file name is shown selected as shown in the figure 3-4. Select the new antenna sharing configuration by selecting a file name from the list and select on "back" to return to the "change configuration" screen. For this example select the name COMRET2\_IOT\_6\_LO\_AISG1-MRET\_HI\_AISG2-MRET.



COMMRET2\_IOT\_6\_HI\_AISG1-SRET\_LO\_AISG2-SRET

COMMRET2\_IOT\_6\_LO\_AISG1-MRET\_HI\_AISG2-MRET

COMMRET2\_IOT\_6\_LO\_AISG1-SRET\_HI\_AISG2-SRET

5. Select the new antenna sharing data by file name

Figure 3-4 Select and return to change configuration.

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Page 9 of 15

6. The "Change Configuration" screen shows the antenna sharing information for the selected data file as shown in the figure 3-5. Click on the "Send Antenna Sharing" button to initiate the sending of antenna sharing to the antenna device.





Figure 3-5 Send antenna sharing to device.

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Page 10 of 15

7. Once the new antenna sharing configuration is sent to the device, the "Change Configuration" screen is closed and returned back to the Device Details screen, and the status of the configuration is displayed, as shown in figure 3-6. Click on OK to close the status window.

iPad	1:50 PM	\$ 78% 🔳 🤆
Back	Device Details	
Device Info		
Device Type		
		MRET
Product Number		COMMRET2
		COMMULETZ
Serial Number		000ETRN16509049MM
Bus Mode		
		AISG 2.0





Figure 3-6 Send antenna sharing completion message.

Go back to the RETMaster home screen and select "Find Devices" to initiate a fresh device scan. On the reported list of devices, the configured RET should have the protocol mode (Multi-RET or Single-RET) and the relevant subunits (in case of Multi-RET) or devices (in case of Single-RET) reflecting the new antenna sharing configuration. Note that only the devices assigned to AISG 1 input port will be found and displayed.

To see the RETs that were assigned to AISG 2, a search using RETMaster app with the RETMaster device connected to the AISG port 2 should be performed.

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Page 11 of 15

654634

#### 3.2 Viewing the Current Antenna Sharing Configuration

From the RETMaster app's main screen, select "Find Devices" to perform a device search.

1. On completion of the search, select the device from the list to display the Device Details screen, as shown in Figure 3-1. In the "Device Details" screen, scroll down and click on the "View Antenna Sharing" button as shown in the Figure 3-7.

* 78% 🔳 )
MRET
IMRET2
049MM





Hardware Version Software Version 888.055.095 **Clear Alarms** Calibrate Switch Protocol Mode Change Antenna Sharing **View Antenna Sharing** 

 Select to view the antenna sharing



Figure 3-7 Button for view antenna sharing.

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Page 12 of 15

2. The "Antenna Sharing Configuration" screen is shown with the current antenna sharing configuration; including the protocol mode and band assignments for both AISG ports of this RET system. See Figure 3-8.





Figure 3-8 Current antenna sharing configuration information.

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#### 3.3 Importing Antenna Sharing Configuration Data and Support files to RET Master app

The antenna sharing support files (with extensions .dat or .ngcr2) can be imported to the RET Master app via email. These files can be used to reconfigure an antenna sharing RET system.

1. Open the e-mail application on the mobile device and select the attachment. On the iOS a list of applications that can open the attachment is shown. This list will also have the RET Master app as shown in Figure 3-9.

### Emailing: EGYHHTT-65A-R6\_A2S\_HI\_A1S\_L0\_20171204.dat

Yesterday at 3:30 PM

Your message is ready to be sent with the following file or link attachments:

EGYHHTT-65A-R6\_A25



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Page 14 of 15

2. On the Android select the download icon to transfer the file to the download folder as shown in the Figure 3-10.



Your message is ready to be sent with the following file or link attachments:

EGYHHTT-65A-R6\_A2S\_HI\_A1S\_L0\_20171204.dat

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.



Figure 3-10 download attachment in Android.

3. The imported file will now be available from the RET Master app the next time it is opened.

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Page 15 of 15