



G1 SCBA Radio Pairing Guide for **Motorola APX™**

APX 4000 Series
APX 5000 Series
APX 6000 Series
APX 7000 Series
APX 8000 Series

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⚠ WARNING

CAREFULLY READ AND FOLLOW ALL APPLICABLE MOTOROLA AND G1 SCBA MANUALS FOR THE PRODUCTS REFERRED TO HEREIN (INCLUDING ALL INSTRUCTIONS, WARNINGS AND CAUTIONS). WHERE THERE ARE CONFLICTS IN INFORMATION, THE MANUALS SUPERCEDE ALL INFORMATION AND STEPS LISTED IN THIS GUIDE. FAILURE TO FOLLOW THIS WARNING MAY RESULT IN SERIOUS INJURY OR DEATH.

Overview and Important Information

This **G1 SCBA Radio Pairing Guide** is offered in good faith to G1 SCBA owners as a **job aid** to assist them to successfully pair and connect their 3rd Party radio devices to their G1 SCBA.

It provides guidance as to:

- Radio configuration settings which are required for pairing, connecting, and operating your radio with a G1 SCBA.
- Common audio routing options available to you, to choose from, however options may vary depending on your radio model, accessories, radio feature licenses, etc.
- Suggestions based on testing results and from feedback from other customer experiences.

There are additional options, choices, features, and settings available for your radio that are not covered in this guide.

MSA customer support associates will make a best effort to answer or get answers to questions specific to pairing and operation of the G1 SCBA where applicable.

Selection of specific options and configurations is the responsibility of the end user based on their specific radio products, operational procedures, and organizational needs.

This document is not a manual for programming or for using the radio. Please, refer to, and always defer to the manuals and support options provided by your radio vendor and manufacturer. Always work with your radio programming engineer to program and test your radios.

Motorola APX Configuration Suggested Settings



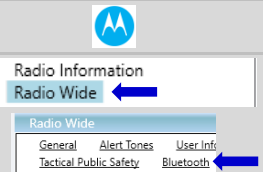
Motorola APX Radio Configuration

The purpose of this section is to provide required, optional, and suggested radio settings. Always consult your authorized Motorola Radio Engineer, vendor, and manufacturer for radio programming.

Step 1. Update Motorola CPS (Code Plug Software) and Radio Firmware to the latest versions, or as advised by your radio vendor and manufacturer.

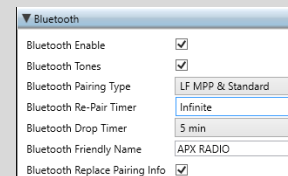
Step 2. Open Motorola Code Plug Software

Step 3. (A) Select "Radio Wide" in the Navigation Panel on the left
(B) Select "Bluetooth" from the Radio Wide menu in the panel to the right to jump to the Bluetooth section.



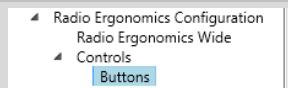
Step 4. In the "Bluetooth" sub-section (expand it if the section is collapsed) and set:

- Bluetooth Enable: YES
- Bluetooth Tones: YES
- Bluetooth Pairing Type: LF MPP & Standard
- Bluetooth Re-Pair Timer: Infinite
- Bluetooth Drop Timer: 5 minutes (minimum)
- Bluetooth Replace Pairing Info: YES



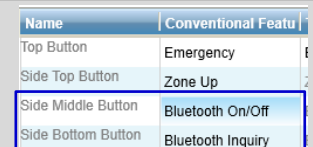
Step 5 & Step 6 refer to a common setup. APX button functions are highly customizable and options differ between APX models. Refer to your APX manual, the CPS Help system, radio engineer, vendor, or manufacturer support, for alternative button options.

Step 5. (A) In the Navigation Panel, expand "Radio Ergonomics Configuration"
(B) Expand "Controls", and then select "Buttons"



Step 6. Under the "Conventional Feature" column, set:

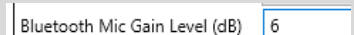
- Side Middle Button (1-dot) : Bluetooth On/Off
- Side Bottom Button (2-dot): Bluetooth Inquiry On/Off



Step 7. Optimize BT Mic Gain:

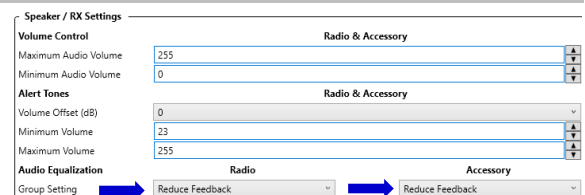
- (A) Under "Radio Ergonomics Configuration" & "Radio Profiles" select desired profile
(B) "Audio Settings" → "Microphone TX Settings" → "Audio Equalization"

BT Mic Protocols have inherently low gain compared to wired mics; **Results suggest that a BT Mic Gain of at least 6 dB, and often 9 dB, is optimal.**



Step 8. Reduce feedback for firefighters in close proximity:

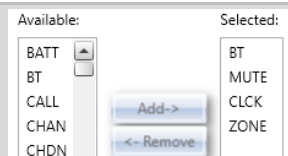
- (A) Under "Radio Ergonomics Configuration" and "Radio Profiles" select the desired profile
(B) "Audio Settings" → "Speaker / RX Settings" → "Group Setting"
(C) Set the Radio and Accessory to "Reduce Feedback"



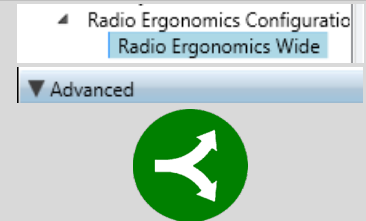
Repeat Step 7 and Step 8 for each radio profile, as desired.

Step 9. **Two Display Radios ONLY:** Adding the BT menu to the display screen:

- (A) Under "Radio Ergonomics Configuration" → "Controls"
(B) Select "Menu Items"
(C) Ensure the "BT" menu item is added to the "Selected" List



- Step 10.** (A) Go to “Radio Ergonomics Configuration” → “Radio Ergonomics Wide”
 (B) Click the “Advanced” link at the top to jump to the “Advanced” sub-section and expand it.
 (C) Choose the settings for the desired PTT and Speaker Option
 Proceed to “**OPTION 1**” for radios WITH a Remote Speaker Mic (RSM)
 Proceed to “**OPTION 2**” for radios WITHOUT a Remote Speaker Mic (RSM)



OPTION 1: RSM Large Button as PTT button and Default Incoming Audio to RSM

This option is for Motorola APX Radios WITH a Remote Speaker Mic (RSM).

Note: Allows Speaker Volume control.

And will operate with: (A) the RSM’s large button as PTT button, and
 (B) Default Incoming Audio to the RSM.



- Step 1.** Under “Radio Ergonomics Configuration” → “Radio Ergonomics Wide” → “Advanced”
 (A) For the “Active Mic for Radio PTT” setting: Select “Wireless Mic”
 (B) For the “Active Mic for RSM PTT” setting: Select “Wireless Mic”

Active Mic for Radio PTT Wireless Mic
 Active Mic for RSM PTT Wireless Mic

- Step 2.** For the “Bluetooth Receive Audio” setting: Select “RSM/Internal Speaker”

Bluetooth Receive Audio RSM/Internal Speaker

OPTION 2: Radio’s Large Button as PTT button with Incoming Audio to the G1 Lapel Mic

This option is for Motorola APX Radios WITHOUT a Remote Speaker Mic (RSM).

And will operate with: (A) the Radio’s large button as PTT button, and
 (B) Default Incoming Audio to the G1 Lapel Speaker



- Step 1.** Under “Radio Ergonomics Configuration” → “Radio Ergonomics Wide” → “Advanced”
 For the “Active Mic for Radio PTT” setting: Select “Wireless Mic”.

Active Mic for Radio PTT Wireless Mic

- Step 2.** For the “Bluetooth Receive Audio” setting: Select “Bluetooth Speaker”.

Bluetooth Receive Audio Bluetooth Speaker

Active Mic for Indirect PTT - If you have purchased and configured radio/RSM hardware capable of using Emergency Call Button features, you may see an option to select an “Active Mic for Indirect PTT” in your Motorola CPS programming software.




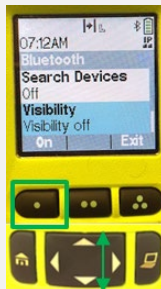
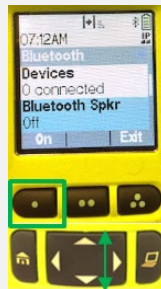
Active Mic for Indirect PTT RSM Mic

In cases where the department has opted to use an emergency call button, MSA recommends setting this feature to “RSM Mic”.

It is **NOT recommended** to set “Active Mic for Indirect PTT” to “Wireless Mic”, based on consideration that, in an emergency call situation, there is an increased potential for conditions that inhibit communication through the G1 microphone, and the firefighter may be in a position that makes egress, troubleshooting, or switching to the radio mic more difficult.

Motorola APX Screen Navigation

Navigating: Motorola APX Radio Screens

Scroll to Next Menu	Selecting BT Menu	Turn BT (Status) On	Turn Visibility On	Speaker Setting
 <p>Step 1: Turn on the radio on with the volume knob. Then, Press the Right Arrow button to get to the "BT" choice as shown in the next figure.</p>	 <p>Step 2: Press the button under "BT" to enter the Bluetooth settings menu page.</p>	 <p>Step 3: Navigate to "Status" using arrow keys. Then, Press the button under "On" to change the status to "On"</p>	 <p>Step 4: Navigate to "Visibility" using arrow keys. Then, Press the button under "On" to change the status to "Visibility All"</p>	 <p>Optional: Navigate to "Bluetooth Spkr" using arrow keys. "Off" = incoming audio through Radio/RSM. "On" = incoming audio through G1 Lapel Speaker.</p>

Notes:

- Dual Screen Radio menus depicted herein.
- Menu availability may be customized, as referenced in the previous page, and if some menus are currently not visible on the radio, re-programming may be required for those menus to be visible.
- For radio models not depicted, please consult the product documentation for information on the appropriate procedures.

G1 Bluetooth Settings Tag

Creating a G1 SCBA Configuration Tag (G1 Bluetooth Settings)

The purpose of this section is to: (1) enable the Bluetooth radio on the G1 SCBA and
(2) set Bluetooth Pair Save behavior based on the department's preference.

Step 1. Launch the MSA A2 Software



Step 2. Select the "G1 Tags" Tile on the A2 Dashboard (Under the "G1 Devices" column)



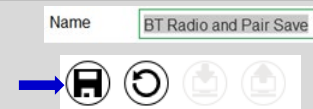
Step 3. Select tag type: "G1 Configurations"



Step 4. Select the Add (+) icon (top-right) to create the configuration template, which will be used to change these 2 settings.

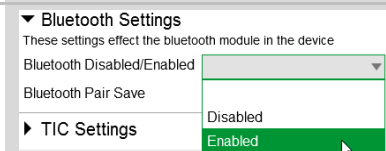


Note: This tag can be written without saving a template, but a template can be saved using the Save icon (top-right) if a template Name is filled in.



Step 5. Enabling the G1 SCBA's Bluetooth Radio:

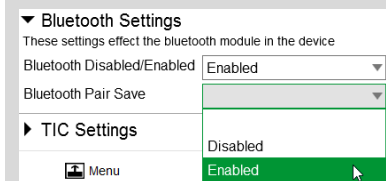
- (A) Expand the "Bluetooth Settings" section.
- (B) Change "Bluetooth Disabled/Enabled" setting to "Enabled".



Step 6. Preference Choice: "Bluetooth Pair Save" setting options:)

- (A) Require Radio Pairing Tag in every SCBA is turned on, choose "Disabled"
- (B) To retain the Radio Pairing on the SCBA until "clearing the pair" *, choose "Enabled"

* - defined on the "Removing Radio Pairing Info from the G1 SCBA" page.



Step 7. Writing the G1 Configuration Tag:

- (A) Place RFID Tag on the RFID Reader / Writer
- (B) Select the Write G1 Tag icon (top-right side of A2 application)



Step 8. Applying the G1 Configuration Tag to the G1 SCBA(s):

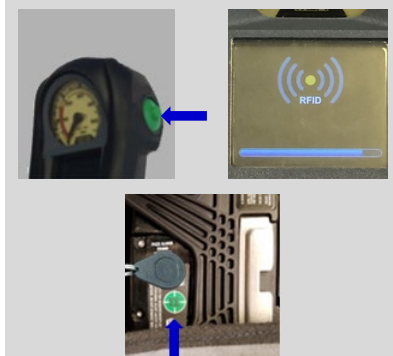
- (A) Power on the G1 SCBA
- (B) **Press & hold** either of the **green** Control Module buttons to activate the RFID mode. *For iTic Control modules: Press & Hold Both Green Buttons.*
- (C) Place Bluetooth Pairing Save Tag over G1 Power Module RFID Target.

The G1 SCBA is now configured with the settings:

- G1 Bluetooth is now enabled - G1 Bluetooth Pair Save (as chosen).

The G1 SCBA is now ready to accept a Radio Pairing tag.

Repeat this "Step 8" for each SCBA to apply these 2 settings.



Radio ID Pair Tag

Creating a G1 SCBA Motorola APX Radio Pairing Tag

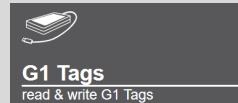
The purpose of this section is to use MSA A2 Software to “see” a “discoverable” (BT visible) radio in A2, select it, read it’s BT address, and write it to a tag, for a radio-specific “Bluetooth Audio Pairing Tag”.



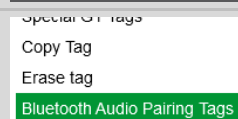
Step 1. Launch the MSA A2 Software



Step 2. Select the “G1 Tags” Tile on the A2 Dashboard (“G1 Devices” column)

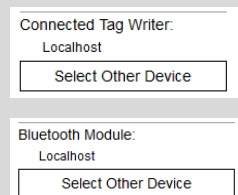


Step 3. Select tag type: “Bluetooth Audio Pairing Tags”



Step 4. Ensure the PC's Bluetooth is enabled, and selected for use in A2, and that your RFID Reader/Writer is connected and ready.

- Both modules appear in lower left of the A2 screen. (Generally as "localhost")
- If either is not visible or not selectable under "Select Other device": disconnect and reconnect the hardware
- Restart the A2 Service if necessary.



Step 5. Turn on the Motorola APX Radio using the volume knob.



Step 6. Making the Motorola APX Radio Discoverable, & Discovering it in A2:

(A) For Single Display Radios:

- Press & Hold the middle (1-dot) button for approx. 30 seconds.
- Continue to hold radio button & select “Discover Devices” in A2.



For Dual Display Radios:

- Turn on “Visibility” via the Radio Bluetooth menu
- Select “Discover Devices” in A2.

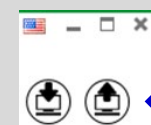
← See “Motorola APX - Two-Screen Navigation” page for details.

(B) Click the discovered Motorola APX Radio in A2 to select it.



Step 7. Writing the Bluetooth Audio Pairing Tag:

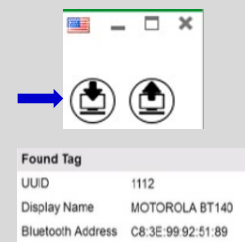
- Place RFID Tag on the RFID Reader / Writer.
- Select the Write G1 Tag icon (top-right side of A2).
- Click “OK” on the “Tag was successfully written” dialog.



Hovering will show “Write Tag” or “Read Tag”.

Step 8. Verifying the Information Written to the Tag:

- Place RFID Tag on the RFID Reader / Writer
- Select the Read G1 Tag icon (top-right side of A2 application)
- Confirm the tag’s Bluetooth Address matches the Radio.



The Radio Pairing tag is now created for this radio. See next page for using it.

Pairing G1 & Radio

Pairing a G1 SCBA and Motorola APX Radio

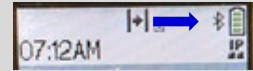
The purpose of this section is to pair a radio with a G1 SCBA using the radio-specific “Bluetooth Audio Pairing Tag”.

“Pairing” is registering 2 Bluetooth devices with one-another so they can be connected. “Paring” does not mean “connecting”.

Step 1. Turn on the Motorola APX Radio using volume knob.



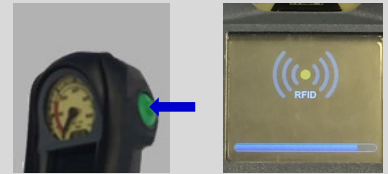
Step 2. Verify Bluetooth icon is visible on radio display. (That Bluetooth capability is enabled) *If not visible, enable the radio’s Bluetooth OR reconfigure radio.*



Step 3. Power on the G1 SCBA.

Step 4. **Press & hold** either of the **green** Control Module buttons to activate the RFID mode.

For iTic Control modules: Press & Hold Both Green Buttons.



Step 5. Register the Radio to the G1 SCBA:

Place the RFID the Motorola APX Radio’s Pairing Tag over the G1 Power Module RFID Target.



Step 6. Pair the Radio:

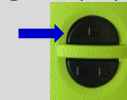
For Single Display Radios:

- Press & Hold middle (1-dot) button on the radio (approx. 30 seconds).
- The radio will give an audible indication when pairing is complete.

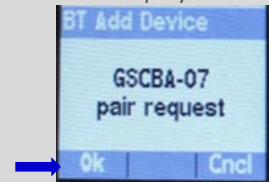
For a Dual Display Radios:

- A pairing request will appear on the radio display, accept the pairing request using the radio menu button. The radio will give an audible indication when pairing is complete.

Single Display Radios:



Dual Display Radios:



The G1 SCBA & Motorola Radio is now paired and ready for use.

- After a successful pairing (*unless the Facepiece is already donned, and the regulator is open*) the G1 SCBA will **not** remain connected to the radio.
 - it will have paired, beeped, and disconnected.
 - The radio is available for non-Bluetooth use.
- When the end user restarts the radio (so it is visible), dons the facepiece, turns on the G1 regulator, and breathes (as described in the next section), the G1 SCBA will automatically connect to this paired radio.



Using Paired
G1 & Radio

Using the G1 SCBA and Motorola APX Radio

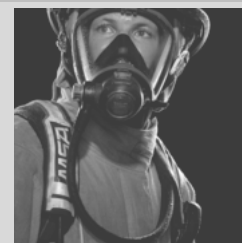
The purpose of this section is to describe how to initiate the connection between the paired G1 SCBA and radio.

Step 1. Turn on the Motorola APX Radio using volume knob.



Step 2. Don the G1 SCBA and securely attach the G1 Facepiece to your face.

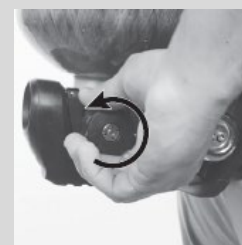
A poor facepiece seal can cause improper microphone performance, such as intermittent audio.



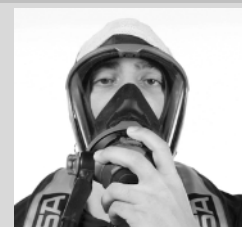
Step 3. Turn on the G1 SCBA via pressurization.

- The G1 SCBA will try to establish a Bluetooth connection to the **currently paired radio** for up to 8 minutes.
- When found, it will quickly connect and disconnect, (and is now ready to automatically activate when breathing.)

If the connection is not established, repeat the pairing process described in the previous section.



Step 4. Begin breathing (with the regulator attached).
The radio and SCBA will connect automatically (approx. 20 seconds).



All SCBA voice communication will now go from the SCBA through the portable radio.

Use Notes & Tips:

- Turn on the radio just **before** you turn on the G1 SCBA.
- If the regulator is shut off, The G1 SCBA will not remain connected to the radio. The radio can be used by itself (no Bluetooth connection) when the regulator is shut off. The G1 SCBA will automatically reconnect to the radio when breathing on the G1 regulator (as described above) resumes.
- Verify both the incoming and outgoing audio functionality after breathing resumes.

The purpose of these sections is to describe how to “un-pair” the G1 SCBA & Radio, so they will no longer connect.

When you no longer want to use a particular radio with a particular G1 SCBA: The **Best practice** is to **clear the pairing information from both devices**—the radio & the G1 SCBA. This prevents the G1 SCBA from connecting to a previously-paired Bluetooth radio during the next start-up.

Clearing G1 SCBA Pair

Clearing Radio Pairing Info from the G1 SCBA

There are 3 methods for removing stored Radio pairing information from the G1 SCBA.

- All three methods are effective on G1 SCBAs configured with “Bluetooth Pair Save” being “Disabled”
- The “**Battery Removal Method**” is a popular method, however, note that this method is **NOT effective when the G1 SCBA is configured with the “Bluetooth Pair Save” setting set to “Enabled”**.

Method 1 – Battery Removal *(Only effective when the G1 “Bluetooth Pair Save” setting is “Disabled”)*

Step 1. Remove G1 SCBA Battery

Bluetooth audio pair info is cleared from the G1 SCBA.

Next → “Clearing Radio Pairing Info from the Motorola APX Radio” in the next section.

Method 2 – Pair New Radio

Step 1. Pair a different Bluetooth Motorola APX Radio with the G1 SCBA using the new radio’s Bluetooth Audio Pairing Tag, as described in the “Pairing a G1 SCBA and Motorola APX Radio” section.

Bluetooth audio pair info on the G1 SCBA is changed to the pair info for the new radio.

Next → “Clearing Radio Pairing Info from the Motorola APX Radio” in the next section.

Method 3 – Use a “Reset Bluetooth Pairing” Tag

If not yet created, create a “Reset Bluetooth Pairing” Tag in the A2 software, under “G1 Tags” tile → “Special G1 Tags” → Expand “Reset Tags” list → Select “Reset Bluetooth Pairing”

Step 1. Press & hold either of the **green** Control Module buttons to access the RFID mode display.

Step 2. Place the “Reset Bluetooth Pairing” Tag over the G1 Power Module RFID Target.

Bluetooth audio pair info is cleared from the G1 SCBA.

Next → “Clearing Radio Pairing Info from the Motorola APX Radio” in the next section.

Clearing APX Radio Pair

Clearing Radio Pairing Info from the Motorola APX Radio

Step 1. Single & Dual Display Radios: Press & Hold Bluetooth on/off button (2-dot side bottom button). The radio will give an audible indication when pairing is removed.

- Dual display radios can also be cleared using their Bluetooth Menu Screens instead.

Bluetooth audio pair info is cleared from the Motorola APX Radio.

If not done already: Clear the pairing info from the previously connected G1 SCBA’s pair history using the process described in the previous section: “Clearing Radio Pairing Info from the G1 SCBA”.

Troubleshooting

G1 SCBA & Motorola Radio Troubleshooting

Topic	Problem/Issue	Diagnosis	Possible Solution	Expected Result
Audio	Intermittent Audio	Facepiece may not be properly sealed	Adjust the facepiece until a proper seal is formed	Outgoing audio will function as expected
	Incoming and/or outgoing audio from G1 is not working	Bluetooth icon is visible on the Radio	Power the portable radio on and off to reset the auto connect.	Radio will automatically connect to G1 and emit an audible indication for success.
			If power cycling the radio does not result in a successful connect, clear the G1 & Radio pairing history and repair the G1 & Radio.	G1 & Radio will now connect and audio will function as expected
	Poor audio quality from G1 to Radio	G1 has Firmware SW 2.003 or prior SW version	Update G1 to Firmware SW 3.0 via A2 Software	Improved G1 outgoing audio quality
Pairing	Bluetooth pairing information lost from G1	Pairing information is cleared when the battery G1 battery is removed. (When G1 "Bluetooth Pair Save" is not set to enabled.)	G1 with SW 3.0 or higher is configurable to retain pairing information across battery removals. Review instructions for "G1 SCBA Configuration Tag" and Bluetooth Pairing Save settings.	Bluetooth pairing information will no longer be cleared on every battery removal.
	Radio will not pair with G1	Bluetooth icon is NOT visible on the radio	Turn on Radio Bluetooth via a 2-dot radio button press	Bluetooth icon is visible on Radio and pairing is now successful.
			Power the portable radio on and off to reset the auto connect.	
			If power cycling the radio does not result in a successful connect, clear the G1 & Radio pairing history. Repair the G1 & Radio.	
		G1 is not Bluetooth enabled, icon on control module is gray	Enable Bluetooth on the G1 using a G1 Configuration tag that enables Bluetooth.	Bluetooth icon on the G1 control module will be: <i>Red</i> = enabled/unpaired OR enabled/paired, not connected <i>Green</i> = enabled/connected
		Radio is a non-Motorola APX Series Bluetooth Radio	G1 is compatible with Bluetooth Motorola APX Series Radios.	To use G1 Bluetooth audio, pair with 4000, 5000, 6000, 7000, or 8000 Motorola APX Radios.
	Radio is paired to an incorrect G1	Radio and/or G1 was previously paired to a different radio or G1	Clear the pairing information on both the G1 & Radio. Pair desired G1 & Radio	Desired G1 and Radio will be paired together