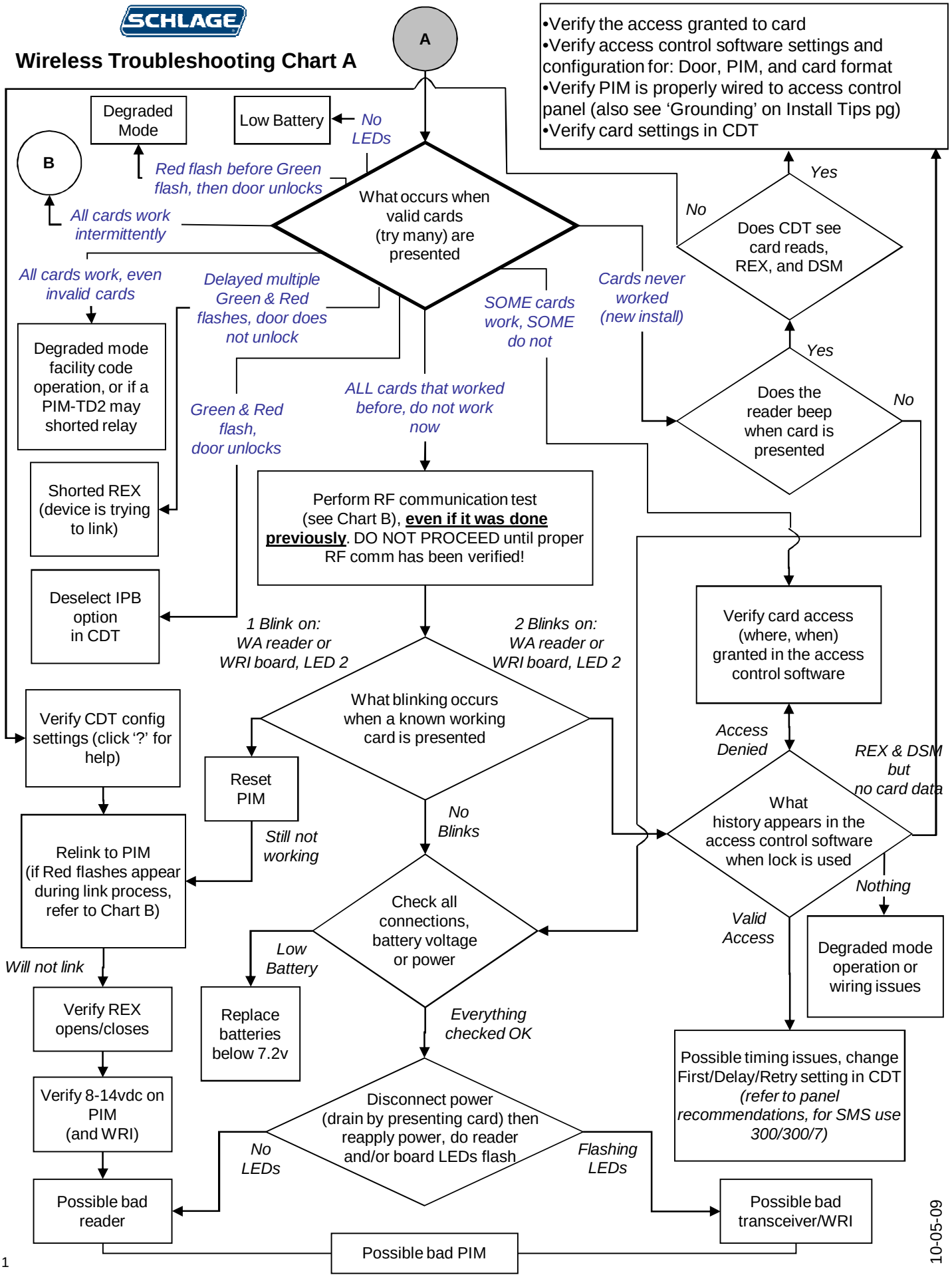
Wireless Troubleshooting Chart A



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Wireless RF Communication Troubleshooting Chart B

B

The Wireless Test Kit is not required, a PIM and Lock/WRI may also be used

Use the Wireless Test Kit TK797 (or a PIM and lock) to perform RF communication link tests. Test the most troublesome door (preferably when it is not operating properly). Perform the test at the most active/busy time of the day, using these guidelines:

- Barriers between PIM and door to be tested (such as other doors, etc.) should all be opened/closed to put the maximum amount of barriers between the PIM and the test door.
- Test the door in various states: open, closed, and in between. Record the maximum number of Red flashes from the various door states.
- If using a test kit, mount test PIM just above the current PIM.
- If using a test kit, hold the handheld tester in the same spot as the current transceiver.
- **The linking process has 3 phases:**
  A. slow red/green flashes to establish a link
  B. rapid green flashes to confirm good communication (count the RED flashes during this period)
  C. confirmation beeps when link is complete (equal to the dipswitch setting on PIM)

During the rapid green flashing, how many Red flashes were observed

More than 3

Wireless devices may not operate reliably. Improvements are highly recommended.

None

Good RF communication currently (this may change if environment does, retesting may be required in the future).

3 or less

Wireless devices may not operate consistently. Improvements are recommended.

Intermittent performance still occurs

When the lock is not working properly, perform a test or relink and observe for red flashes.

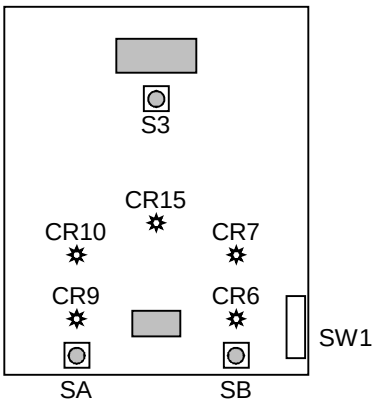
Determine the best frequency range. Perform 3 tests, each with a different dipswitch setting on the PIM (must be done with regular PIM, test PIM does not have dipswitch). Note number of Red flashes:

Channel	PIM Dipswitch Setting	Red Flashes
1	Up, Up, Up, Dwn	
8	Dwn, Up, Up, UP	
15	Dwn, Dwn, Dwn, Dwn	

If all 3 channels gave Red flashes, perform the following to improve wireless performance:

- Try all remaining channels 1-15, select the one that gives the least red LEDs
- Add more PIMs (test the proposed location to confirm no Reds flashes)
- Move the PIM (or add a remote antenna) and retest (remote antennas come with a 15ft cable, disconnect the PIM's internal antenna when using a remote antenna)
- As a last resort, enable DCS* on the PIM (it will decrease battery life by one-third)

** DCS (Dynamic Channel Switching) is enabled on the PIM using the CDT. This requires relinking all devices on the PIM. DCS will not overcome physical barriers to wireless communication but may help if there are roaming 900mhz signals that cannot be avoided with channel settings 1-15.*



PIM-485

LEDs, Pushbuttons, and Linking

LED	Indication	Condition Description
CR15	On	Normal operation
	Off	No power to PIM, defective PIM, or PIM locked up (press S3)
	Slow Blinking	PIM cover removed, 'Tamper' on.
CR7 (transmit) **CR10** (receive)	Rapid Blinking	Normal operation, wired communication with access control panel (or with CDT when connected to laptop)
	Off	No communication
CR6 CR9	Solid Green	Normal operation
	Slow Green/Red Blinking	PIM is in Link Mode, will remain in Link mode (until a successful link or 30 minutes has elapsed)
	Rapid Green/Red Blinking	Linking with a wireless device (blinks are identical to those on the wireless device). If more than 3 red blinks occur, intermittent operations may occur, consider adding/moving PIM.
	Faint Red Flashes	PIM has received data from the wireless device (card read, REX, door status, etc.) and is sending it to access control panel.
	Off	No power to PIM, or defective PIM

Pushbuttons and Linking

S3 RESET: Resets the PIM when momentarily pressed. No data is lost, it simply cycles power. Upon reset, LEDs flash the firmware level of PIM. For example 3 reds then 7 greens = 3.7

SA or **SB**: Use to establish communication with CDT software (for configuring and linking).
-Connect laptop to PIM, launch CDT and set for proper serial port.
-Press and hold either SA or SB, while you momentarily press and release S3 RESET.
-Continue to hold SA or SB until the green flashes stop

While the PIM is in Link Mode, wireless devices can be linked to the PIM as follows:
For WA Locksets (and WA993 trim):
Hold the inside lever down, present a card, continue to hold lever until reader LEDs start flashing
For WRI, WSM, and WPR:
Press and release Reset pushbutton on device

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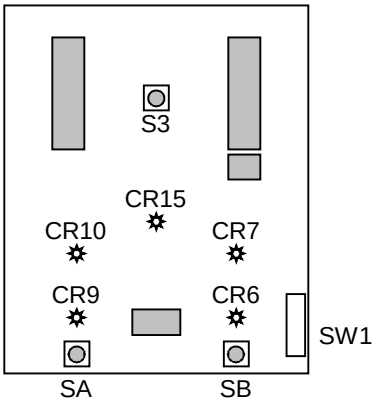


PIM-TD2

LEDs, Pushbuttons, and Linking

LED	Indication	Condition Description
CR15	On	Normal operation
	Off	No power to PIM, defective PIM, or PIM locked up (press S3)
	Slow Blinking	PIM cover removed, 'Tamper' on. (If sending extended unlock commands, temporarily tape down SW1 tamper switch, or this command will not be sent.)
CR7 CR10	1 Blink	Trouble: Low Battery
	2 Blinks	Trouble: No RF Communications
	3 Blinks	Trouble: Reader Tamper
	4 Blinks	Trouble: Lockset Motor Stall
	5 Blinks	Trouble: Cache Memory Used
CR6 CR9	Solid Green	Normal operation
	Slow Green/Red Blinking	Side A (left) or B (right) is in Link Mode
	Rapid Green/Red Blinking	Side A (left) or B (right) is linking with a wireless device (blinks are identical to those on the wireless device). If more than 3 red blinks occur, intermittent operations may occur, consider adding/moving PIM.
	Faint Red Flashes (when lock is used)	PIM has received data from the wireless device (card read, REX, door status, etc.) and is sending to access control panel
	Off	No power to PIM, or defective PIM

Pushbuttons and Linking

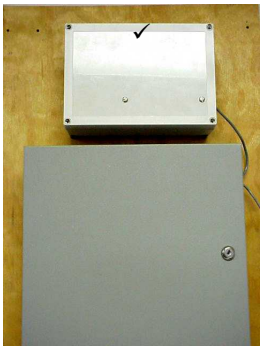
S3 RESET: Resets the PIM when momentarily pressed. No data is lost, it simply cycles power. Upon reset, LEDs flash the firmware level of PIM. For example 3 reds then 7 greens = 3.7

SA or **SB**: Press and release to put side A or B in Link Mode (you have 30min to complete link). While the PIM is in Link Mode, wireless devices can be linked to the PIM as follows:

While the PIM is in Link Mode, wireless devices can be linked to the PIM as follows:
For WA Locksets (and WA993 trim):
Hold the inside lever down, present a card, continue to hold lever until reader LEDs start flashing
For WRI, WSM, and WPR:
Press and release Reset pushbutton on device

PIM Installation Tips

- Mount PIM above the access control panel enclosures (at least 6ft from floor)
- When installing on metal surfaces, use the provided 1" plastic standoffs
- Feed wires down, away from the PIM antenna (behind board), do not coil extra wire in box
- Follow all instructions as outlined in the included instruction manuals!



Correct mounting:
horizontal and above the panel

Improper Mounting:
mounted on side of panel or mounted vertically

Correct wire routing

Improper wire routing

Cables: use cables as specified in installation instructions:

PIM-TD2/TD4 to Panel – Alpha 1298C or equivalent

PIM-485 to Panel – Belden 9841 or 9842 or equivalent

WRI to Reader – Alpha 1296C or equivalent

Status Inputs to WRI – Belden 8760 or equivalent

DC Power – Belden 8760 or equivalent

GROUNDING

PIM to Access Control Panel: Terminate cable shield at the Panel's chassis ground (which should be the same as earth ground), at the other end, leave the shield open (unconnected) at PIM.

Reader to WRI: Terminate cable shield at the WRI's Reader GND connection, at the other end, leave the shield open (unconnected) at the Reader.

Common Grounds: The PIM and access control panel should share a common ground. **If they each have their own power supply, only one supply should be tied to earth ground.** If more than one earth ground is in use, ground loop currents may occur and introduce noise into the wired communication lines (signals from the PIM to the panel may become corrupt). The same applies to WRI and card reader, if they use separate power supplies, only one supply should be tied to earth ground.

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