

## MERG RFID

### General Architecture

<b>Block Diagram</b>				
<b>Status</b>				
	Data Concentrator	RFID Reader	Aerial	TAG
<b>IFC</b>	<b>Purpose:</b> Receive data from one or more readers and redistribute it in a commonly understood and well-defined format for use by established data consumers like JMRI	<b>Purpose:</b> Provide RF power and messaging to one or more aerials according to a well-defined industry standard protocol. Forward the received messages to the data concentrator along with an identifier as to what aerial was involved.	<b>Purpose:</b> Radiate the RFID energy in a detection field large enough for the model railway application but without excessive range that would result in spurious signals.	<b>Purpose:</b> Receive the RF energy power up and respond back to reader via the aerial (when in range) with at minimum the manufacturer assigned GUID. Do this fast enough for reliable reads as the tag passes over the aerial at a scale locomotive speed in excess of 100 MPH.
<b>IFC</b>	<b>Left Side (IN)</b> configuration data for MQTT HUB, CBUS address, events. <b>Left Side (Out)</b> MQTT+JSON and / or CBUS payloads  <b>Right Side:</b> I2C messages to and from RFID Reader	<b>Left Side (IN)</b> I2C messages from Data Concentrator <b>Left Side Out:</b> I2C Payload data {Aerial #, GUID}  <b>Right Side:</b> ISO/IEC 15693 RF messaging	<b>In / Out:</b> ISO/IEC 15693 RF messaging	<b>In / Out:</b> ISO/IEC 15693 RF messaging
<b>IFC</b>	<b>TBD</b> (Ras Pi PICO for example)	<b>TBD</b> (custom MERG board)	<b>MOLEX</b> 25mm x 15mm	Custom small PCB <a href="#">SL2S2602FTBX IC</a> MLCC for Tuning
<b>IFC</b>	<b>Investigating</b>	<b>Investigating</b>	Lead lengths need to be matched with reader passives	Prototype designed and ordered. Parts on hand.

IFC = Issued for Comment