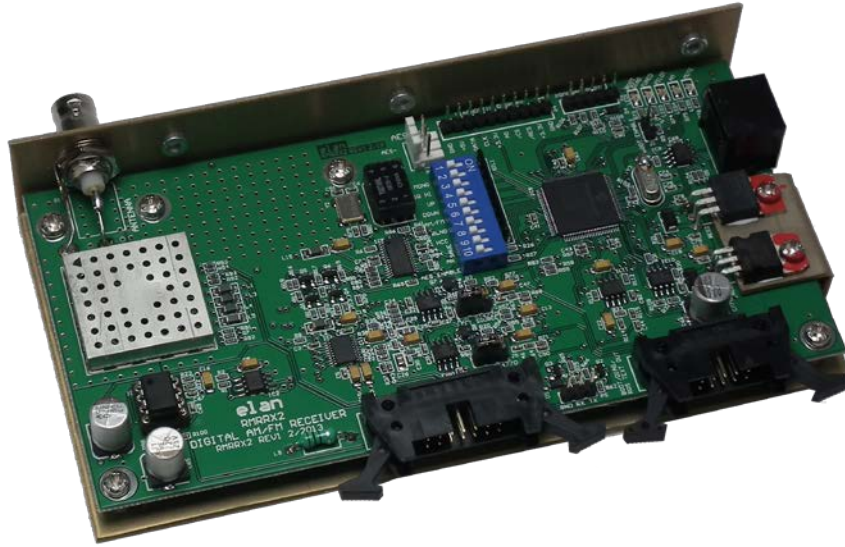


## DSP BASED RADIO RECEIVER CHIP SET TUNER



The new RMRRX2 tuner module is an improved version of the RMRRX tuner module that is plug compatible.

### **RMRRX2 RECEIVER MODULE:**

This module is designed around the Silicon Labs Si4770-A20 IC using the manufacturers recommended design information and parameters, with additional circuitry added to make it uniquely suitable for use in professional broadcast monitor receivers.

The RMRRX2 module is NOT customer serviceable and should be returned to Elan Audio for repair and alignment if this ever becomes necessary due to a fault or damage.

### **Silicon Labs Si4770/A20 IC General Description:**

The Si4770/A20 broadcast receiver employs an advanced, proven digital low-IF architecture to bring outstanding receiver performance to high-performance consumer and professional electronics.

- The Si4770/77-A20 includes a complete on-chip PLLVCO frequency synthesizer to generate the quadrature LO input to the image-reject AM and FM mixers.
- Single-conversion mix (down conversion) to a fixed low IF centre frequency. An innovative high performance image reject mixer architecture allows for IF centre frequencies below 300 kHz, thereby eliminating ceramic filters required in 10.7 MHz IF tuner architectures.

As supplied to the Australian broadcast market, the RMRRX is programmed as follows:

- AM 9 KHz Steps 522 KHz to 1710 KHz to allow use with Narrowcast Services
- FM 100 KHz Steps 87.5 MHz to 108 MHz

### **Facilities on the RMRRX2 board:**

The basic receiver circuit is as per the recommendations by Silicon Labs with extra facilities added by Elan

Audio. These facilities are:

- Direct AES out. AES audio output is available on a three pin connector (P2) RMRRX2 module. This can be brought out easily on some units and provides the ultimate in audio quality. The sample rate and bit width are fixed at 48KHz and 24bit respectively. This output is normally off unless DIP switch 10 is enabled
- a Composite Signal Buffer Amplifier providing a 3.5 V PP signal level output for 100 % Modulation or 75 KHz Deviation on FM
- a PIC PIC24HJ256GP610A Microprocessor and RS-485 interface for control of the RMRRX Module. Test Points are provided and used by Elan Audio for initial tests and alignment. The two jumpered headers; J2 and J5 should under no circumstance, have the jumper's positions changed or removed.
- J1, J2, J5, P4, P5 and P6, are used by Elan Audio for initial tests and alignment
- J1 when jumpered, is used in the device programming process.
- J2 & J5 Audio source selection (Internal receiver setting) NOT TO BE CHANGED.
- P1 is used by Elan Audio for initial tests and alignment. P2 Direct AES out. SW1 Dip1 set on, will enable mono audio output into the RRR-01 RX audio inputs. SW1 Dip 10 will enable AES output from P2. SW1 Dip 2 to 9 should all be set OFF. Please don't change these dipswitch settings.
- LED 1 indicates Boot Diag mode, LED 2 Indicates RMRRX2 is tuned to a signal of valid signal strength LED 3 Indicates Pilot Tone present, LED 4 Indicates AM operation, LED 5 Indicates Mute on.

Please refer to the layout drawing below which shows the positions of all major components, test links and connectors on the RMRRX module.

