S2900 RADIO MODULE DECLARATION

The purpose of this document is to provide information pertaining to all the requirements for FCC/IC modular approval.

1 Shielding

The entire radio circuit of the S2900 module is shielded in a metal cage.

2 Buffering

Data is buffered by the ATMEGA8535 microcontroller before being modulated for the radio. The buffer size is a single byte.

3 Regulated Power Supply

The S2900 module uses a combination of passive filtering and on board regulators to ensure compliance of the transmitted RF.
There is 1 DC voltage required by the S2900 module 9 to 30V (labelled +13.8). The 9 to 30V is regulated by a buck regulator (IC201) which provides a regulated 5Vdc. There is another buck regulator (IC200) which provides a regulated 3.3Vdc (+3AUX) from the 5Vdc. The +3AUX is used to power the transmit and receive circuitry (+3TX and +3RX). The ATMEGA8535 microprocessor with is powered from the regulated +5V provides the transmit modulation (RTXD).
All of the radio circuitry comes the regulated 3.3V except for +5PD which is used by the PLL (IC303) and +5TX which is used by the RF power amplifier (IC304). The +5PD comes from the regulated +5 and is passively filtered by the uses 3.3 Ohms and 100uF.
The single voltage rail supplied to the S2900 is not required to be regulated but must remain with 9 to 30Vdc and have less than 0.5Vpp ripple.

4 Antenna

Antenna is attached to the module by a standard SMA female connector. The SMA connector is located on the module. Elpro supplies four antennas that are compatible with this radio.

4.1 Dipole Antenna – CFD940

The CFD940 is a ground independent half wave coaxial dipole antenna. These antennas are vertically polarized with an omnidirectional radiation pattern having a marine grade fibreglass radome with a powder coated aluminium mounting pole.

Specifications:
Frequency: 900 - 960MHz
Gain: 2dBi
VSWR: 1.5:1 across band
Polarization: Vertical
H Plane: Omnidirectional
Length: 400 mm (16”)
Construction: Half wave coaxial dipole enclosed in fibreglass.
Termination: SMA male on 3m of RG58 low loss cable
Weight: 0.35kg (0.75lbs)

4.2 Collinear Antenna – SG900EL, SG940-6

The SG900EL and SG940-6 are a ground independent 5dBi and 8dBi (respectively) collinear antennas. These antennas are vertically polarized with an omnidirectional radiation and have a fibreglass radome with an aluminium mounting pole.

Specifications:
Frequency: 890-960MHz (SG900EL), 930-960MHz (SG940-6)
Gain: 5dBi (SG900EL), 8dBi (SG940-6)
VSWR: 1.5:1 across band
Polarization: Vertical
H Plane: Omnidirectional
E Plane: 32 deg (SG900EL), 16 deg (SG940-6)
Length: 900 mm (35”) (SG900EL), 1370 mm (54”) (SG940-6)
Construction: fibreglass/aluminium
Termination: N-type female on 100mm cable (SG900EL), N-type female at the base of the pole (SG940-6)
Weight: 0.55kg (1.2lbs) (SG900EL), 0.7kg (1.5lbs) (SG940-6)

4.3 Yagi Antenna – YU6-940

The YU6-940 is a ground independent 11dBi antenna. This antenna is vertically polarized with directional radiation and aluminium construction.

Specifications:
Frequency: 900-960MHz
Gain: 11dBi
VSWR: 1.5:1

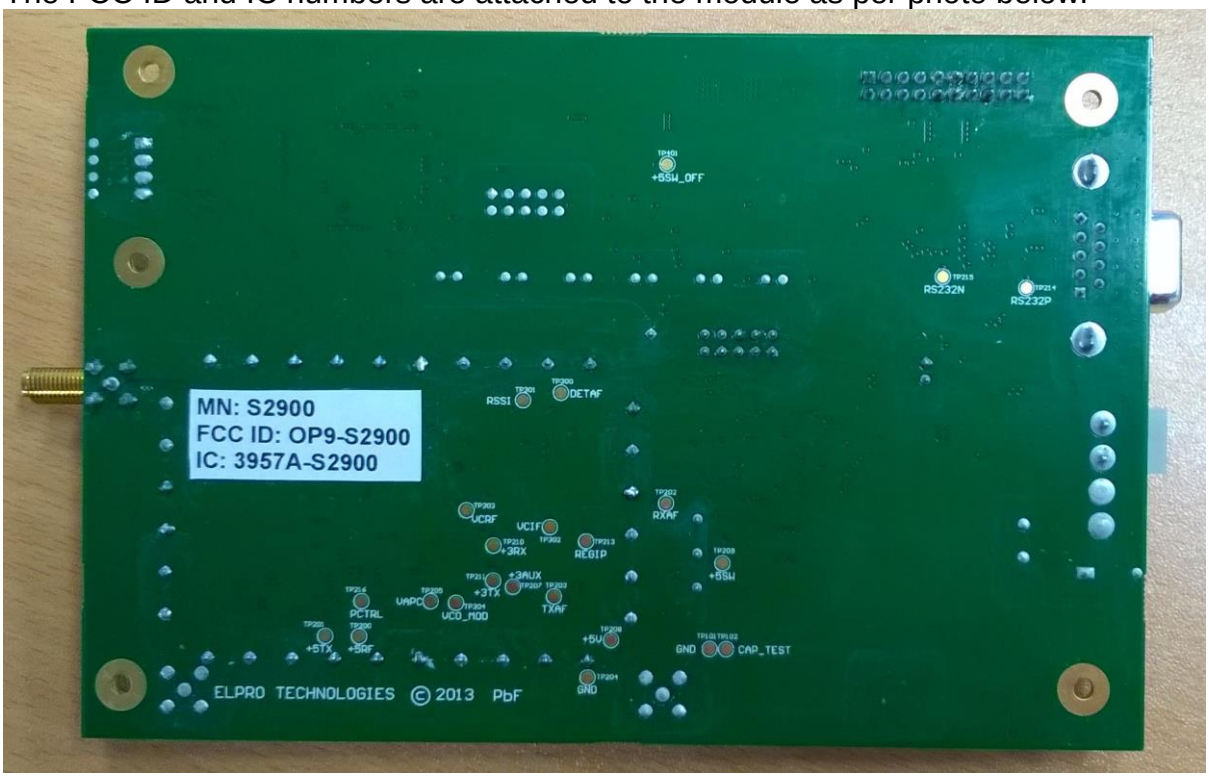
Polarization: Vertical (when mounted vertically)
H Plane: 51 deg
E Plane: 46 deg
F/B ratio: 17.8 dB
Length: 600 mm (23”)
Construction: Aluminum and Stainless Steel
Termination: N-type female on a 250mm cable,
Weight: 1.7kg (3.7lbs)

5 Stand-alone testing

Testing has been performed by EMC Technologies P/L , New Zealand.

6 Labels

The FCC ID and IC numbers are attached to the module as per photo below.



7 Operational Instructions

Operational instructions are contained in the complete product of a product that uses the module. An example operational manual for such a product is the Elpro 905U-D.

8 Section 15.211 Rules Attestation:

Limited Single-Modular Transmitter Requirement	**Yes**	**No**
The radio elements must have the radio frequency circuitry shielded. Physical components and tuning capacitor(s) may be located external to the shield, but must be on the module assembly	Yes – Section 1	
The module must have buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal	Yes – Section 2	
The module must contain power supply regulation on the module	Yes – Section 3	
The module must contain a permanently attached antenna, or contain a unique antenna connector, and be marketed and operated only with specific antenna(s), per Sections 15.203, 15.204(b), 15.204(c), 15.212(a), 2.929(b)	Yes – Section 4	
The module must demonstrate compliance in a stand-alone configuration	Yes – Section 5	
The module must be labelled with its permanently affixed FCC ID label, or use an electronic display (See KDB Publication 784748 about labelling requirements)	Yes – Section 6	
The module must comply with all specific rules applicable to the transmitter including all the conditions provided in the integration instructions by the grantee	Yes – User Manual	
The module must comply with RF exposure requirements	Yes – Test Report	