

ADCON TELEMETRY
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JOB : 903AU1
EXHIBIT # : 10



B900SRC

Radio Modem Card (FCC Part15.249)

Specifications

EDITION: 0.4
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Chapter 1. Objective

The objective of this document is to present the mean characteristic of the B900SRC radio module.

1.1. Description

The B900SRC is an FM radio transceiver using an F.S.K modulation. The receiver is of a super beat oscillator type with heterodyning. It operates on the 902-928 MHz band and, therefore, is within U.S. FCC part 15.249 standard.

Using the frequency synthesis, it has a minimum of 20 channels spaced by 300 kHz and can communicate with equipment via a serial interface with NRZ standard and TTL levels. The radio rate is established at 20 KBits/s.

The B900SRC uses the most recent technology of flash memory microcontroller, which allows the user to update or to load new features through the serial link.

1.2. Specifications

1.2.1. General

The B900SRC is a radio card component that receives and transmits data according to a frequency table selected by the user.

1.2.2. Specifications of the B900SRC

Dimensions

Dimensions :	30 x 52 x 7 mm (without antenna).
Connectors :	one 30 pins and two 4 pins connectors.

Electronics

- Radio part

Frequency:	902 to 928 MHz (FCC part 15-249).
Number of channels:	20 , channel 0 to 19.

Radio rate:	20KBits/s.
Modulation/Demodulation:	FSK (Frequency Shift Keying).

F1=8 Khz and F2= 12 Khz
DEV=40Khz

RF sensitivity:	-95 dBm ($\pm$ 1dB) at 50 Ohms.
RF powermax radiated:	50 mV/m at 3m.
Error rate:	10^{-3} to -95 dBm.
Saturation:	Two modules communicate at -10dBm.

Operation Temp.:	Standard operation: 32°F to +122°F.
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Storage Temp.:	-40°F to +176°F.
Relative humidity:	from 20% to 90% RH (without condensation).

- Digital Part

Processor: FLASH Texas Microcontroller :
MSP430F135IPM.

Programming: Upload and download with a PC through
the RS232 serial link and a specific
interface.

Program Memory : 16 Kb of Flash (10.000 write cycle
minimum).

Data Memory : 512 bytes of Ram.

Input/Output : 28 digital I/O, with 7 analog inputs
with 12 bits precision.

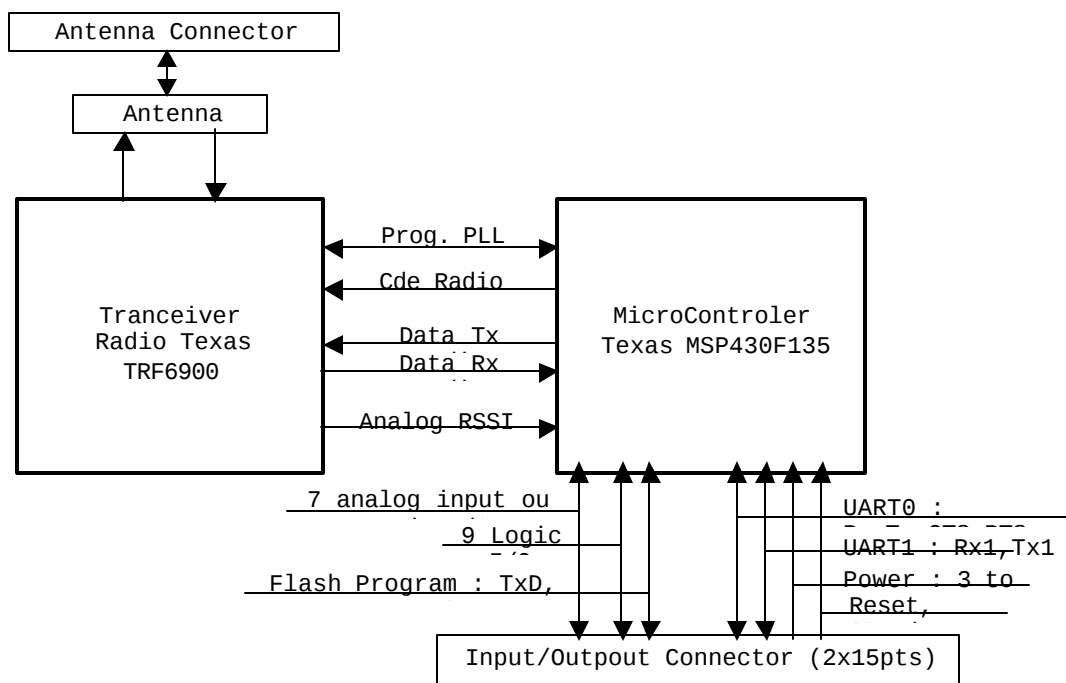
Serial Link : One hardware UART and a possibility of
one software UART.

- Power Supply

Supply voltage: 3-3.6V monitored ($\pm 5\%$).

Consumption : Stand-By : $< 5\mu\text{A}$.
Réception : $< 35\text{mA}$.
Emission : $< 45\text{mA}$.

1.2.3. Schematic



The connectors used on the B900SRC are :

- ↳ For the 2x15 points Connector :
 - ✓ Female (B900SRC) : Samtec CLP-115-02-L-D-A.
 - ✓ Male (motherboard) : Samtec FTSH-115-04-L-DV-A.
- ↳ For the two 2x2 points Connector:
 - ✓ Female (B900SRC) : Samtec CLP-102-02-L-D
 - ✓ Male (motherboard) : Samtec FTSH-102-04-L-DV.

1.2.4. Connectors description

Description of the 2x15 points connector :

30 Pin Name	Description	30 Pin N°	µC Pin N°	µC Pin Name	Interrupt	ADC
GND	GND	1	-	-	-	-
RESET	Reset µC	2	-	-	Yes	-
TCK_Flash	Flash Programming Clock	3	57	TCK	-	-
EA1	Analog Input N°1	4	60	P61/A1	-	Yes
EA2	Analog Input N°2	5	61	P62/A2	-	Yes
EA4	Analog Input N°4	6	3	P64/A4	-	Yes
EA3	Analog Input N°3	7	2	P63/A3	-	Yes
EA6	Analog Input N°6	8	5	P66/A6	-	Yes
EA5	Analog Input N°5	9	4	P65/A5	-	Yes
TxD_1	Transmit software UART	10	34	P36	-	-
EA7	Analog Input N°4	11	6	P67/A7	-	Yes
TxD	Transmit hardware UART	12	32	P34/UTXD0	-	-
RxD	Receive hardware UART	13	33	P35/URXD0	-	-
EL1	Logic Input / Output N°1	14	12	P10/TACLK	Yes	-
CTS	Clear To Send hardware UART	15	31	P33/UCLK0	-	-
EL2	Logic Input / Output N°2	16	14	P12/TA1	Yes	-
TxD_Flash	Flash Programming Tx Data	17	13	P11/TA0	-	-
RTS	Request To Send hardware UART	18	30	P32/SOMI0	-	-
EL3	Logic Input / Output N°3	19	15	P13/TA2	Yes	-
EL4	Logic Input / Output N°4	20	16	P14/SMCLK	Yes	-
TEST_BANC	Detection for Test software	21	28	P30/STE0	-	-
STAND-BY	Hardware Low-Power mode	22	25	P25/Rosc	Yes	-
RxD_Flash	Flash Programming Rx Data	23	22	P22/TA0	-	-
EL8	Logic Input / Output N°8	24	21	P21/TA1CLK	Yes	-
EL6	Logic Input / Output N°6	25	18	P16/TA1	Yes	-
EL5	Logic Input / Output N°5	26	17	P15/TA0	Yes	-
RxD_1	Receive software UART	27	35	P37	-	-
EL7	Logic Input / Output N°7	28	19	P17/TA2	Yes	-
EL9	Logic Input / Output N°9	29	23	P23/TA1	Yes	-
Vbat	Vcc	30	-	-	-	-

Description of the 2x2 points connector :

2 Pin Name	Description	2 Pin N°
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N.C.	No connected	1
GND	GND	2
Antenna	"Hot point" Antenna	3
N.C.	No connected	4