

MOBAT RADIO (P44)

1 Radios spec (data sheet).....2-3

2 Pin configuration4

3 Operating method (signals5-6

1 Radios spec (data sheet)

1.1 Introduction

The **P44 MOBAT** radio is a mounted, stand alone, 7 channels UHF/VHF RF board which will be mounted on the MOSCAD_L (Or Moscad by a Sabonia) by means of an interface piggyback, for communication via port 3.

1.2 P44 Radio types.

The P44 Types of Radios is shown in table 1.1 below.

	P44- UHF1 FLN2582A	P44- UHF21 FLN2583A	P44- VHF1 FLN2584A	P44- VHF2 FLN2585A
Channel BW	6.25,12.5,25 Khz	6.25,12.5,25 Khz	6.25,12.5,25 Khz	6.25,12.5,25 Khz
Frequency	438-470 MHz	403 – 433 MHz	136 - 155 MHz	146 - 174 MHz

Table 1.1 P44 Types of Radios.

The marked radios are the radios that will be tested (UHF).

1.3 P44 Spec

The P44 Spec is shown in table 1.2 below.

GENERAL	
	P44
	UHF/VHF
	12.5kHz Channel BW
Synthesizer Reference	2.1,2.225,2.4 Mhz
Channel Spacing	12.5Khz / 25Khz (6.25 capable)
Operating Temperature	- 30C to +60C
Operating Mode	Simplex / Half Duplex
Supply Voltage -1 (Main)	7.5V +/-1.5V DO-13.8V+/-20%

Supply Voltage -2	5V +/-5%
RF Connector	RF Micro Jack
Interface Connector	14-pin In-Line socket on 0.100 inch
Synthesizer Data Load Time	98 bits in 48 microseconds minimum
Dimensions	3.3"L x 2.25" W x 0.49" H
Transmitter	
RF Power Out	1-5 Watt (Adjustable)
Conducted Spurs	- 38dbm
Frequency Stability	2.5ppm (1.5ppm Optional)
FM Hum and Noise	40dB
Modulation Sensitivity	175 mV RMS/Khz 100 mV RMS/Khz Nominal
Switching Bandwidth	32Mhz
Audio Input DC Level	2.5 VDC
Audio Distortion	<3%
In what frequency response?	
Attack Time	12mSec (7mSec Typical)
What it means ?	
Typical Current Drain	2A @ 5Watt Max 1.4A @ 14V , 5Watt Max 2A @ 7.5V , 5Watt
Receiver	
Sensitivity	0.38uV / 12dB SINAD
Frequency Stability	2.5ppm (1.5ppm Optional)
Selectivity	60 dB
Intermodulation	60 dB
Spurious Rejection	70 dB
Image Rejection	70 dB
FM Hum and Noise	48dB
Frequency Response	Flat +/- 2 dB from DC to 5kHz
Audio Output :AC Level	70 mV RMS/Khz 100 mV RMS/Khz Nominal
Audio Output :DC Level	2.5VDC
Audio Response	Flat
Audio Distortion	<5%
In what frequency response ?	
Carrier Detect Attack Time	25 mSec
Is it RSSI or CSQ ?	
Current Drain	~47 mA
Turn Around Time	7 mSec Typical
Switching Bandwidth	32 Mhz
RSSI	0.5 to 1.9 V monotonically (20mV/dB)
Conducted Spurs	- 57dbm
Group Delay Distortion	<30uSec

	< 20uSsc
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2 Pin configuration of P44 radio is shown in table 2.1 below

PIN No.	Signal Name	
1	GND	Reference node for all receive transmit and power signals. Proper grounding requires metal screws in the four corners mounted to a common chassis.
2	SW_B+	Transmit - Max 2A @ 7.5VDC @ 5 Watt Receive - 47mA @ 7.5VDC
3	XMIT_B+	This signal is Asserted only during transmit time . 250 mA @ 7.5VDC
4	RX_5V	Not Connected
5	TX_5V	Asserted during Transmit - 40Ma @ 5VDC
6	MODE_IN	Analog data in to the radio to be transmitted. DC coupled with a nominal bias of 2.5VDC.
7	SQ_DET	Output signal from the radio indicating that there is a valid RF signal on the channel
8	Reset	This pin in pulled up in the radio. In normal mode must kept up. Used when programming the radio.
9	RSSI	Output signal from the radio. The Volt level of this pin is according to the RF level of the received signal.
10	Audio_Out	Received analog data is transferred to the CPU via this pin.
11	CH_SEL_B	Channel select pin (1 out of 7)
12	CH_SEL_A	Channel select pin (1 out of 7)
13	CH_SEL_C	Channel select pin (1 out of 7)
14	CH_SEL_D	Channel select pin (1 out of 7)

Table 2.1 pin configuration of P44 radio.

3 Operating method (signals)

3.1 TIMING DIAGRAMS

Figure 3 shows the timing diagrams of the MOBAT radio in transients between transmit and receive modes as it will be used with the MOSCAD_L.

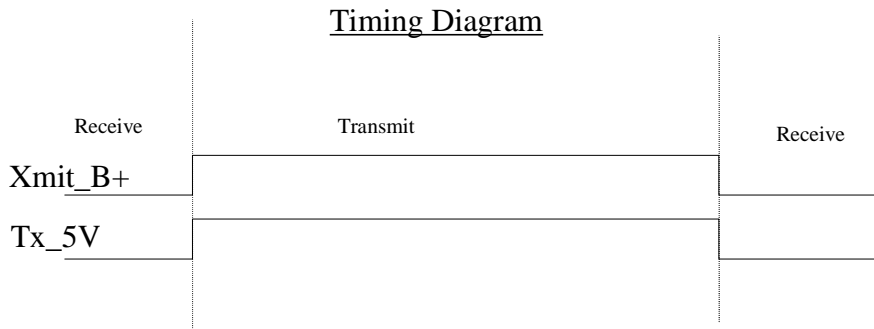


FIGURE 3.1 TIMMING DIAGRAM

3.2 Channel Change

The radio can operate in multi channel mode and single channel mode and is programmable via the RSS software of Mobat.

3.2.1 Single Channel

In this mode only channels 1, and 2 are operational.

CH_SEL_A is 0VDC Channel 1 is selected

CH_SEL_A is 5VDC Channel 2 is selected

When this signal is changed an interrupt is generated on the radio and the channel is changed.

3.2.2 Multi channel

The channel of the radio is determined by the three channel select bits

CH_SEL_B	CH_SEL_C	CH_SEL_D	Channel selected
0	0	0	1
1	0	0	2
0	1	0	3
1	1	0	4
0	0	1	5
1	0	1	6
0	1	1	7

Changing a channel could be done only in receive mode.
 After setting CH_SEL_B – CH_SEL_D reset CH_SEL_A for 5mS and assert it again.

Channel select Timing

