

Exhibit F: Tune-up Procedure

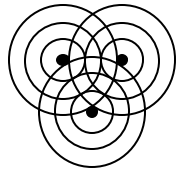
FCC ID: CM676A91341-600

Only information regarding operation at 608-614 MHz applies.

Transmitter Tune-up Procedure at a specified power range.

The 600MHz and 1400MHz transmitters are designed to operate at one power level and within the RF output power limits shown in the table below. There are no adjustments for changing the RF output power level either in the factory or by the end user.

Subject	Specifications	Comments
Frequency Range	600 MHz model 608.0 – 614.0 MHz 1400 MHz model 1395 – 1400 MHz 1427 – 1432 MHz	1400 – 1427 is a restricted band. Radio should never transmit into this band or outside the bands normally operated.
Modulation	FM – FSK 2-level	
Access Method	FDMA –Transmit only	
Transmit Power (RMS CW) Conducted (50 Ω Load) 600 MHz Band 1400 MHz Band	 3.0 dBm +/-3dB 6.0 dBm +1dB -3dB	Assumes 3dB ground bounce, 0dB peak antenna gain. FCC limit = 10.8 dBm @ 600 MHz, 22.2 dBm @ 1400 MHz For 1400 MHz 6.0 dBm max was chosen to conserve battery power. For an analysis of the predicate design transmit performance see System Design Document Rev2.



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RF Control and Operation for the Medical Telemetry Transmitter Rev2 – July/01

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2. Reference Documents

1. Spacelabs System Design for the Medical Telemetry Transmitter- Draft, July,2001
2. Spacelabs Technical Specification for the Medical Telemetry Transmitter, Rev 1,2001

3. Revision Notes

July 16,2001	Changed document to Rev1
July 16,2001	Changed "Programming the Synthesizer" to "User Channel Selection"
July 30,2001	Changed document to Rev2
July 30,2001	Added Sec 5.1 , Invalid Channel

4. Introduction

This document details how the RF deck is controlled and operated. There are 2 high level functions:

- Power up
- Programming the synthesizer

These high level functions are presented below.

5. Power Up

The RF deck operates autonomous to the rest of the unit. To power up the unit all that is required is connection of a 9V battery, the unit will automatically set all it's conditions to transmit within a certain amount of time, defined in the technical specification. It is designed in this way to provide live data transmission only, no other mode of operation exists.

5.1 Invalid Channel

When reading the channel selection from the Dip-switches the microcontroller will perform a check for validity. On the condition that the settings are invalid the microcontroller will program ununlockable data into the synthesizer, preventing transmission on an unknown channel.

During power up the microcontroller reads and stores the Dip-switch settings on board, no changes to the switches following this will affect transmit in any way, until the unit is powered off, then back on. In the event of a reset or loss of Lock Detect, the microcontroller will reload data stored internally in FLASH memory and reprogram all possibly affected devices. In the event that the synthesizer registers programming changes during operation, it is expected that the synthesizer will lose lock at least momentarily if not permanently. This will prompt the microcontroller to reset and reprogram the synthesizer.

6. User Channel Selection

Programming the synthesizer takes place each time the PWT is powered up. This operation is automatically completed by the microcontroller to enable the correct frequency for transmission. The required data to program the synthesizer is translated from the two – 8pin dipswitches (in the form of a channel selection) to the necessary code for frequency setting. This operation takes place only when the unit is powered up. For the switch settings to take effect the unit must be powered off, then back on.

The following tables illustrates the switch settings for each channel and the corresponding frequency.

600MHz Band (WideBand)		SW2				SW1								600MHz Band (NarrowBand)		SW2				SW1							
Channel	RF Frequency (MHz)	4	3	2	1	8	7	6	5	4	3	2	1	Channel	RF Frequency (MHz)	4	3	2	1	8	7	6	5	4	3	2	1
2242	608.0375	1	0	0	0	1	1	0	0	0	0	1	0	1241	608.0125	0	1	0	0	1	1	0	1	1	0	0	1
2244	608.0875	1	0	0	0	1	1	0	0	0	1	0	0	1242	608.0375	0	1	0	0	1	1	0	1	1	0	1	0
2246	608.1375	1	0	0	0	1	1	0	0	0	1	1	0	1243	608.0625	0	1	0	0	1	1	0	1	1	0	1	1
2248	608.1875	1	0	0	0	1	1	0	0	1	0	0	0	1244	608.0875	0	1	0	0	1	1	0	1	1	1	0	0
2250	608.2375	1	0	0	0	1	1	0	0	1	0	1	0	1245	608.1125	0	1	0	0	1	1	0	1	1	1	0	1
2252	608.2875	1	0	0	0	1	1	0	0	1	1	0	0	1246	608.1375	0	1	0	0	1	1	0	1	1	1	1	0
2254	608.3375	1	0	0	0	1	1	0	0	1	1	1	1	1247	608.1625	0	1	0	0	1	1	0	1	1	1	1	1
2256	608.3875	1	0	0	0	1	1	0	1	0	0	0	0	1248	608.1875	0	1	0	0	1	1	1	0	0	0	0	0
2258	608.4375	1	0	0	0	1	1	0	1	0	0	1	0	1249	608.2125	0	1	0	0	1	1	1	0	0	0	0	1
2260	608.4875	1	0	0	0	1	1	0	1	0	1	0	0	1250	608.2375	0	1	0	0	1	1	1	0	0	0	1	0
2262	608.5375	1	0	0	0	1	1	0	1	0	1	1	0	1251	608.2625	0	1	0	0	1	1	1	0	0	0	1	1
2458	613.4375	1	0	0	1	1	0	0	1	1	0	1	0	1470	613.7375	0	1	0	1	1	0	1	1	1	1	1	0
2460	613.4875	1	0	0	1	1	0	0	1	1	1	0	0	1471	613.7625	0	1	0	1	1	0	1	1	1	1	1	1
2462	613.5375	1	0	0	1	1	0	0	1	1	1	1	0	1472	613.7875	0	1	0	1	1	1	0	0	0	0	0	0
2464	613.5875	1	0	0	1	1	0	1	0	0	0	0	0	1473	613.8125	0	1	0	1	1	1	0	0	0	0	0	1
2466	613.6375	1	0	0	1	1	0	1	0	0	0	1	0	1474	613.8375	0	1	0	1	1	1	0	0	0	0	1	0
2468	613.6875	1	0	0	1	1	0	1	0	0	1	0	0	1475	613.8625	0	1	0	1	1	1	0	0	0	0	1	1
2470	613.7375	1	0	0	1	1	0	1	0	0	1	1	0	1476	613.8875	0	1	0	1	1	1	0	0	0	1	0	0
2472	613.7875	1	0	0	1	1	0	1	0	1	0	0	0	1477	613.9125	0	1	0	1	1	1	0	0	0	1	0	1
2474	613.8375	1	0	0	1	1	0	1	0	1	0	1	0	1478	613.9375	0	1	0	1	1	1	0	0	0	1	1	0
2476	613.8875	1	0	0	1	1	0	1	0	1	1	0	0	1479	613.9625	0	1	0	1	1	1	0	0	0	1	1	1
2478	613.9375	1	0	0	1	1	0	1	0	1	1	1	0	1480	613.9875	0	1	0	1	1	1	0	0	1	0	0	0

1400 MHz Band (Wideband)		SW2				SW1								1400 MHz Band (Narrowband)		SW2				SW1							
Channel	RF Frequency (MHz)	4	3	2	1	8	7	6	5	4	3	2	1	Channel	RF Frequency (MHz)	4	3	2	1	8	7	6	5	4	3	2	1
2522	1427.0375	1	0	0	1	1	1	0	1	1	0	1	0	1521	1427.0125	0	1	0	1	1	1	1	1	0	0	0	1
2524	1427.0875	1	0	0	1	1	1	0	1	1	1	0	0	1522	1427.0375	0	1	0	1	1	1	1	1	0	0	1	0
2526	1427.1375	1	0	0	1	1	1	0	1	1	1	1	0	1523	1427.0625	0	1	0	1	1	1	1	1	0	0	1	1
2528	1427.1875	1	0	0	1	1	1	1	0	0	0	0	0	1524	1427.0875	0	1	0	1	1	1	1	1	0	1	0	0
2530	1427.2375	1	0	0	1	1	1	1	0	0	0	1	0	1525	1427.1125	0	1	0	1	1	1	1	1	0	1	0	1
2532	1427.2875	1	0	0	1	1	1	1	0	0	1	0	0	1526	1427.1375	0	1	0	1	1	1	1	1	0	1	1	0
2534	1427.3375	1	0	0	1	1	1	1	0	0	1	1	0	1527	1427.1625	0	1	0	1	1	1	1	1	0	1	1	1
2536	1427.3875	1	0	0	1	1	1	1	0	1	0	0	0	1528	1427.1875	0	1	0	1	1	1	1	1	1	0	0	0
2538	1427.4375	1	0	0	1	1	1	1	0	1	0	1	0	1529	1427.2125	0	1	0	1	1	1	1	1	1	0	0	1
2540	1427.4875	1	0	0	1	1	1	1	0	1	1	0	0	1530	1427.2375	0	1	0	1	1	1	1	1	1	0	1	0
2542	1427.5375	1	0	0	1	1	1	1	0	1	1	1	0	1531	1427.2625	0	1	0	1	1	1	1	1	1	0	1	1
2698	1431.4375	1	0	1	0	1	0	0	0	1	0	1	0	1710	1431.7375	0	1	1	0	1	0	1	0	1	1	1	0
2700	1431.4875	1	0	1	0	1	0	0	0	1	1	0	0	1711	1431.7625	0	1	1	0	1	0	1	0	1	1	1	1
2702	1431.5375	1	0	1	0	1	0	0	0	1	1	1	0	1712	1431.7875	0	1	1	0	1	0	1	1	0	0	0	0
2704	1431.5875	1	0	1	0	1	0	0	1	0	0	0	0	1713	1431.8125	0	1	1	0	1	0	1	1	0	0	0	1
2706	1431.6375	1	0	1	0	1	0	0	1	0	0	1	0	1714	1431.8375	0	1	1	0	1	0	1	1	0	0	1	0
2708	1431.6875	1	0	1	0	1	0	0	1	0	1	0	0	1715	1431.8625	0	1	1	0	1	0	1	1	0	0	1	1
2710	1431.7375	1	0	1	0	1	0	0	1	0	1	1	0	1716	1431.8875	0	1	1	0	1	0	1	1	0	1	0	0
2712	1431.7875	1	0	1	0	1	0	0	1	1	0	0	0	1717	1431.9125	0	1	1	0	1	0	1	1	0	1	0	1
2714	1431.8375	1	0	1	0	1	0	0	1	1	0	1	0	1718	1431.9375	0	1	1	0	1	0	1	1	0	1	1	0
2716	1431.8875	1	0	1	0	1	0	0	1	1	1	0	0	1719	1431.9625	0	1	1	0	1	0	1	1	0	1	1	1
2718	1431.9375	1	0	1	0	1	0	0	1	1	1	1	0	1720	1431.9875	0	1	1	0	1	0	1	1	1	0	0	0

1400 MHz Band (Wideband)		SW2				SW1								1400 MHz Band (Narrowband)		SW2				SW1							
Channel	RF Frequency (MHz)	4	3	2	1	8	7	6	5	4	3	2	1	Channel	RF Frequency (MHz)	4	3	2	1	8	7	6	5	4	3	2	1
2002	1395.0375	0	1	1	1	1	1	0	1	0	0	1	0	1001	1395.0125	0	0	1	1	1	1	1	0	1	0	0	1
2004	1395.0875	0	1	1	1	1	1	0	1	0	1	0	0	1002	1395.0375	0	0	1	1	1	1	1	0	1	0	1	0
2006	1395.1375	0	1	1	1	1	1	0	1	0	1	1	0	1003	1395.0625	0	0	1	1	1	1	1	0	1	0	1	1
2008	1395.1875	0	1	1	1	1	1	0	1	1	0	0	0	1004	1395.0875	0	0	1	1	1	1	1	0	1	1	0	0
2010	1395.2375	0	1	1	1	1	1	0	1	1	0	1	0	1005	1395.1125	0	0	1	1	1	1	1	0	1	1	0	1
2012	1395.2875	0	1	1	1	1	1	0	1	1	1	0	0	1006	1395.1375	0	0	1	1	1	1	1	0	1	1	1	0
2014	1395.3375	0	1	1	1	1	1	0	1	1	1	1	0	1007	1395.1625	0	0	1	1	1	1	1	0	1	1	1	1
2016	1395.3875	0	1	1	1	1	1	1	0	0	0	0	0	1008	1395.1875	0	0	1	1	1	1	1	1	0	0	0	0
2018	1395.4375	0	1	1	1	1	1	1	0	0	0	1	0	1009	1395.2125	0	0	1	1	1	1	1	1	0	0	0	1
2020	1395.4875	0	1	1	1	1	1	1	0	0	1	0	0	1010	1395.2375	0	0	1	1	1	1	1	1	0	0	1	0
2022	1395.5375	0	1	1	1	1	1	1	0	0	1	1	0	1011	1395.2625	0	0	1	1	1	1	1	1	0	0	1	1
2178	1399.4375	1	0	0	0	1	0	0	0	0	0	1	0	1190	1399.7375	0	1	0	0	1	0	1	0	0	1	1	0
2180	1399.4875	1	0	0	0	1	0	0	0	0	0	1	0	1191	1399.7625	0	1	0	0	1	0	1	0	0	1	1	1
2182	1399.5375	1	0	0	0	1	0	0	0	0	0	1	1	1192	1399.7875	0	1	0	0	1	0	1	0	1	0	0	0
2184	1399.5875	1	0	0	0	1	0	0	0	1	0	0	0	1193	1399.8125	0	1	0	0	1	0	1	0	1	0	0	1
2186	1399.6375	1	0	0	0	1	0	0	0	1	0	1	0	1194	1399.8375	0	1	0	0	1	0	1	0	1	0	1	0
2188	1399.6875	1	0	0	0	1	0	0	0	1	1	0	0	1195	1399.8625	0	1	0	0	1	0	1	0	1	0	1	1
2190	1399.7375	1	0	0	0	1	0	0	0	1	1	1	0	1196	1399.8875	0	1	0	0	1	0	1	0	1	1	0	0
2192	1399.7875	1	0	0	0	1	0	0	0	1	0	0	0	1197	1399.9125	0	1	0	0	1	0	1	0	1	1	0	1
2194	1399.8375	1	0	0	0	1	0	0	1	0	0	1	0	1198	1399.9375	0	1	0	0	1	0	1	0	1	1	1	0
2196	1399.8875	1	0	0	0	1	0	0	1	0	1	0	0	1199	1399.9625	0	1	0	0	1	0	1	0	1	1	1	1
2198	1399.9375	1	0	0	0	1	0	0	1	0	1	1	0	1200	1399.9875	0	1	0	0	1	0	1	1	0	0	0	0

7. Transmitter type

The channel selection in the previous section used only the lower 4 bits of SW2. The upper 4 bits are used to set the transmitter type.

The following table shows the switch settings for the various types.

	SW2			
TX Type	8	7	6	5
WB Mode (90347-05)	0	0	0	0
NB Mode (90343-05)	0	0	1	1
NB Standard Mode (90347-05)	0	0	0	1