

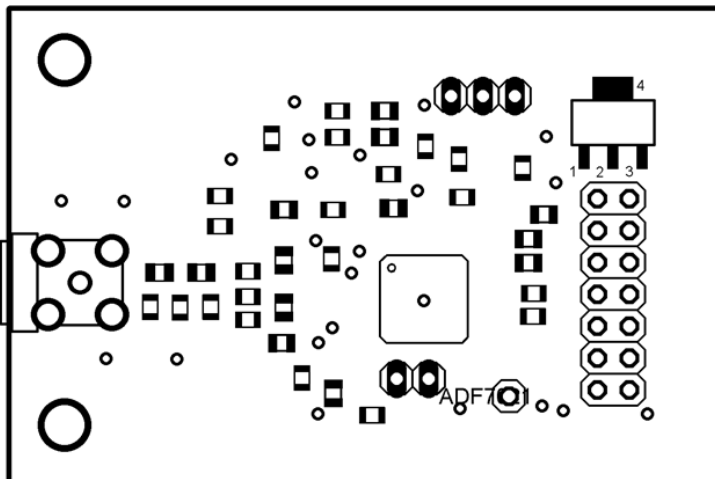
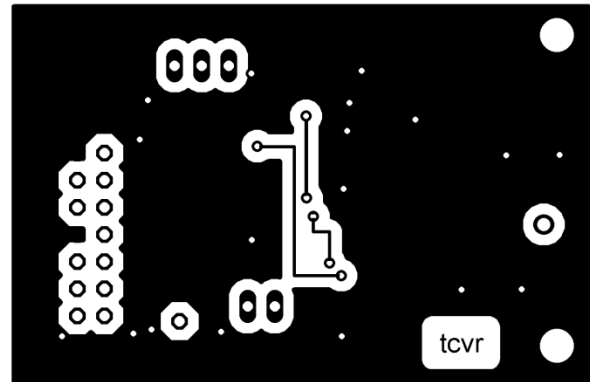
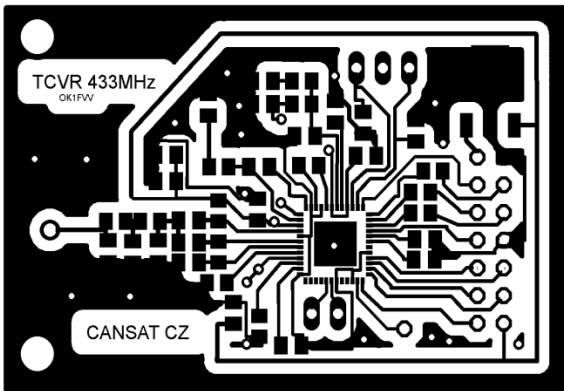
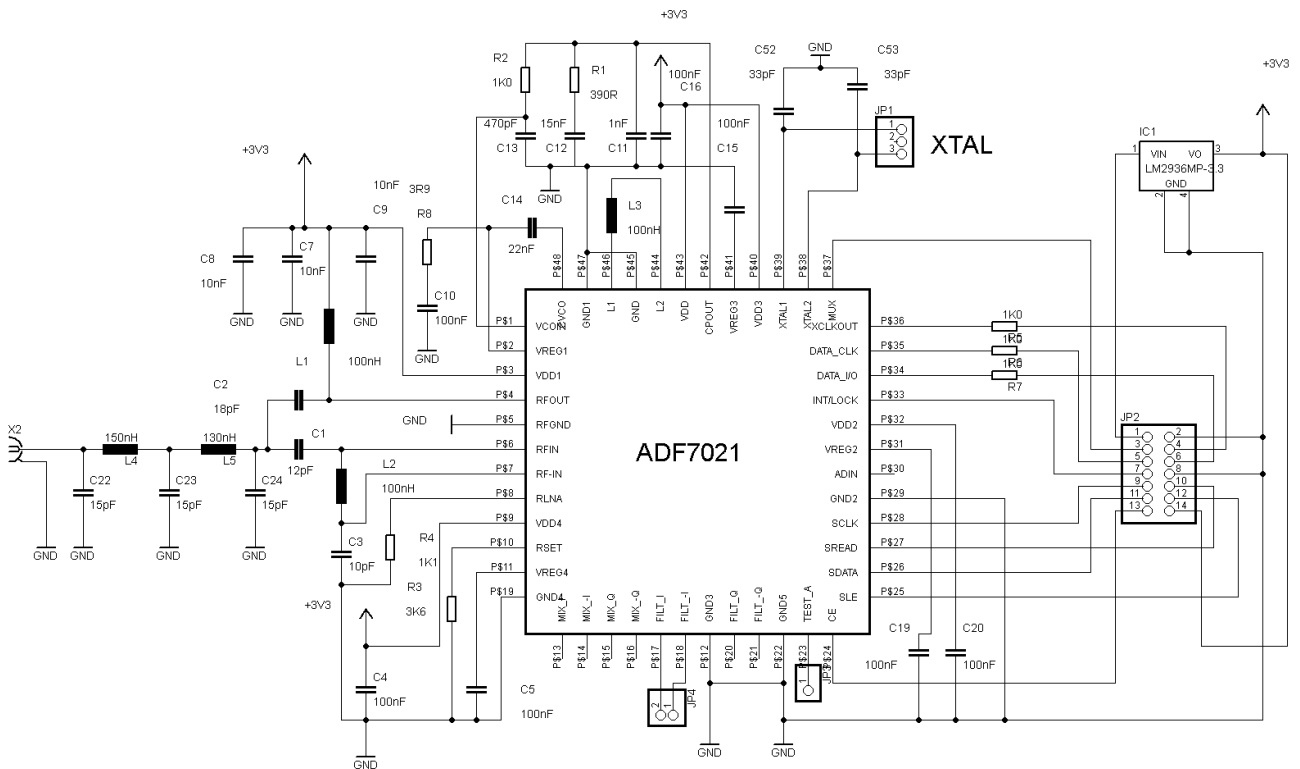
Tranciever s ADF7021 pro CanSAT a další konstrukce

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1. Info



2. Vlastní konstrukce



Zapojení konektoru:

1	+ 5 V	2	GND
3	MUX	4	XCLKOUT
5	DATA_CLK	6	DATA_I/O
7	INT/LOCK	8	GND
9	SCLK	10	SREAD
11	SDATA	12	SLE
13	CE	14	+ 3V3

Hodnoty součástí společné pro všechna pásma:

BILL OF MATERIALS

Table 3. Bill Of Materials for the EVAL-ADF7021DBX Daughter Boards (Common to all versions)

Qty	Name	Value	Tolerance	PCB Decal	Manufacturing Part No.
6	C4, C7, C9, C16, C20, C25	10nF	±10%	0402	
1	C21	22uF	±10%	0805	
1	C6	10uF	±10%	0805	
1	C14	22nF	±10%	0402	
1	C8	220pF	±5%	0402	
4	C5, C10, C15, C19	100nF	±10%	0402	
1	C17	22pF	±5%	0402	
3	C18, C22, C24	Not Inserted		0402	
1	J1			HEADER14	
1	J2			SMA_EDGE_RF	
2	R5, R6, R7	1k	±5%	0402	
1	R3	3.6k	±5%	0402	
1	R4	1.1k	±5%	0402	
1	R8	3.9r	±5%	0402	
1	U1			LFCS-48	ADF7021BCPZ

Pozn.místo SMD 0402 lze použít 0805

Hodnoty součástí závislých na kmitočtu tcvr

Pásmo 433MHz (hodnoty z datasheetu Analog Devices):

Table 5. Bill Of Materials for components specific to EVAL-ADF7021DBZ3 Daughter Board

Qty	Name	Value	Tolerance	PCB Decal	Manufacturing Part No.
Matching					
1	C1	4.7pF	±0.25pF	0402	GRM1555C1H4R7CZ01D
1	C2	10pF	±5%	0402	GRM1555C1H100JZ01D
1	C3	6.8pF	±0.5pF	0402	GRM1555C1H6R8DZ01D
1	L1	13nH	±5%	0402	Coilcraft 0402CS-13NX-JLU
1	L2	27nH	±5%	0402	Coilcraft 0402CS-27NX-JLU
VCO External Inductor					
1	L3	Not inserted		0402	
Harmonic Filter					
1	L4	22nH	±5%	0402	
1	L5	20nH	±5%	0402	
1	C23	6.8pF	±0.5pF	0402	
	C22	Not inserted			
	C24	Not inserted			
TCXO					
1	Y1	19.68MHz	2.5ppm	5.0x3.2x1.3mm SMD	SIWARD TXO812025LJ-19.68MHz-3.0R
Loop Filter					
1	R1	270r	±10%	0402	
1	R2	560r	±10%	0402	
1	C11	1000pF	±10%	0402	
1	C12	15nF	±10%	0402	
1	C13	470pF	±10%	0402	

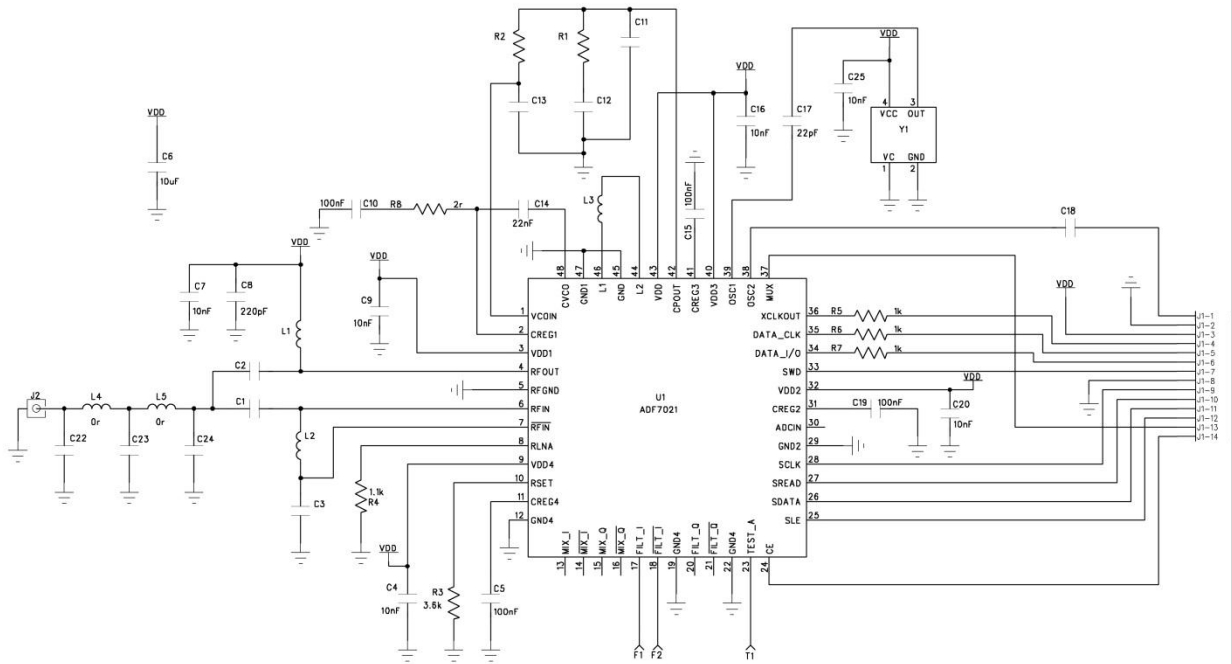
Pozn: místo TCXO použít Xtal 19.68MHz a dále místo SMD 0402 lze použít 0805

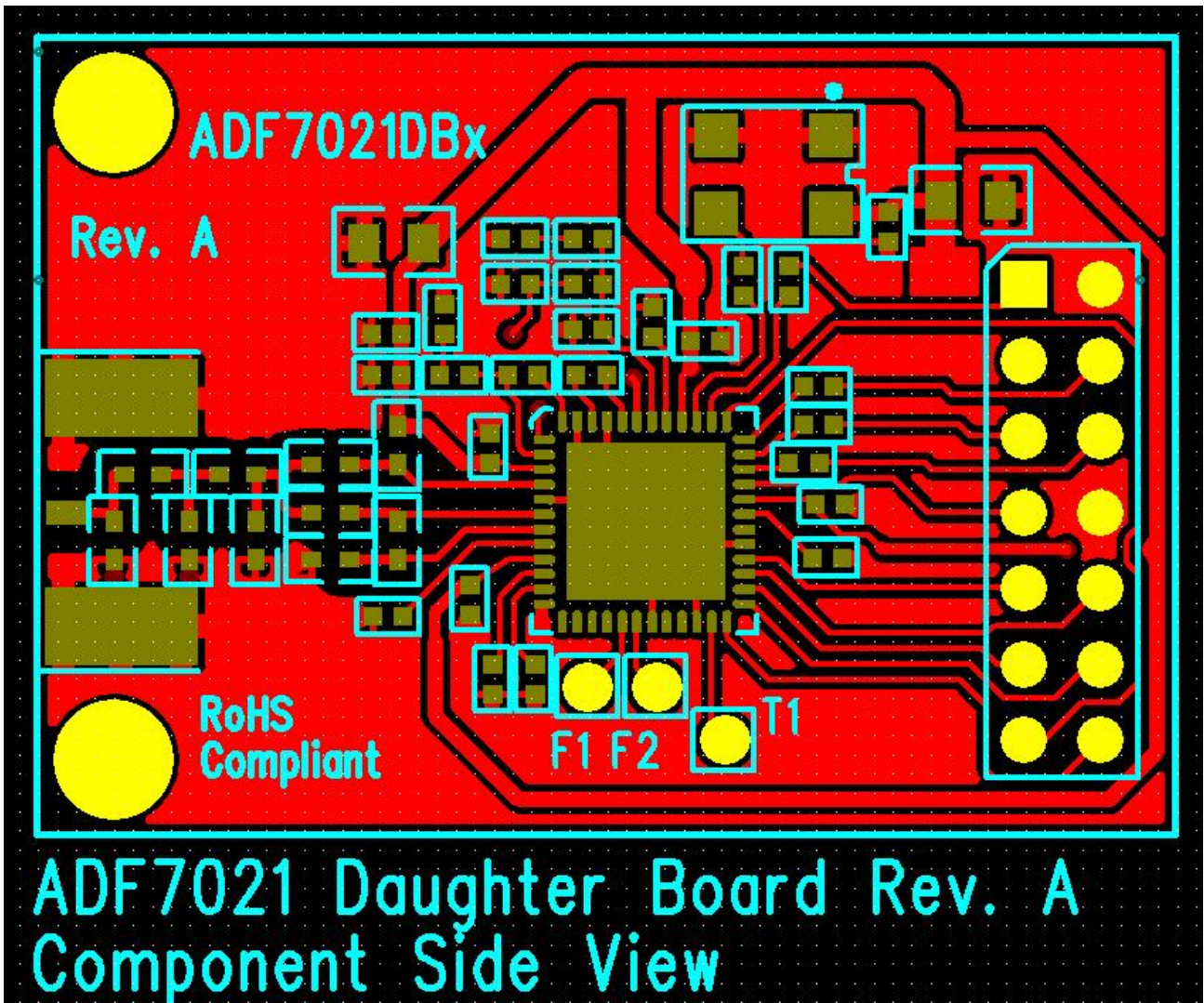
Pásmo 144 MHz (hodnoty z diplomové práce J.Bohátka: FM vysílač telemetrických dat APRS v pásmu 144MHz):

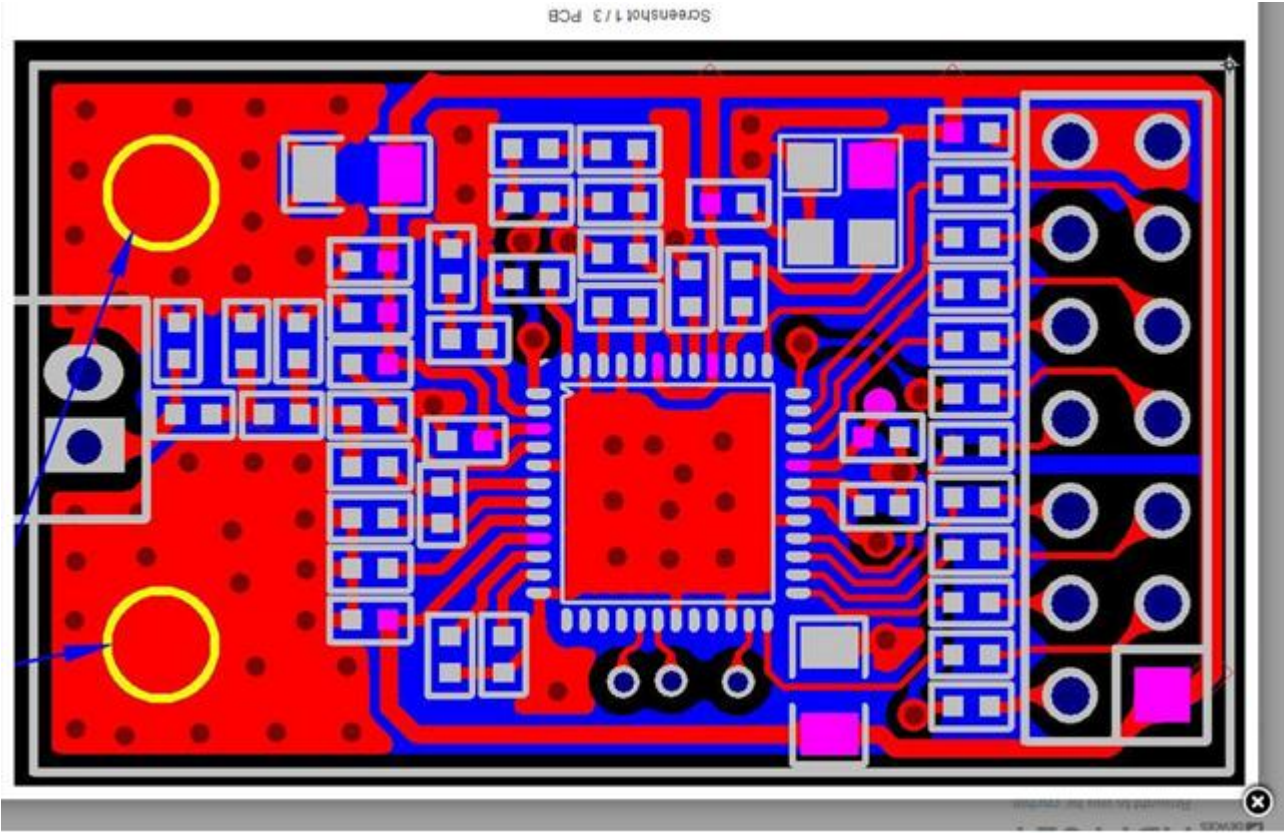
C.2 Modul vysílače

Part	Value	Package	Part	Value	Package
ADF7021	ADF7021	LFCSP_VQ-48	C53	33pF	C0805K
C1	12pF	C0805K	JP1	JP1	jumper
C2	18pF	C0805K	L1	100nH	L0805
C3	10pF	C0805K	L2	100nH	L0805
C4	100nF	C0805K	L3	100nH	L0805
C5	100nF	C0805K	L4	150nH	L0805
C7	10nF	C0805K	L5	130nH	L0805
C8	10nF	C0805K	LE33	LE33	SO-08
C9	10nF	C0805K	LED1	CHIP-LED0805	led
C10	100nF	C0805K	Q1	11,0592MHz	SM49
C11	1nF	C0805K	R1	390R	R0805
C12	15nF	C0805K	R2	1K0	R0805
C13	470pF	C0805K	R3	3K6	R0805
C14	22nF	C0805K	R4	1K1	R0805
C15	100nF	C0805K	R5	1K0	R0805
C16	100nF	C0805K	R6	1K0	R0805
C19	100nF	C0805K	R7	1K0	R0805
C20	100nF	C0805K	R8	3R9	R0805
C22	15pF	C0805K	R50	10K	R0805
C23	15pF	C0805K	R51	560R	R0805
C24	15pF	C0805K	SV1	L10P	con-amp- mt
C50	100nF	C0805K	SV2	L10P	con-amp- mt
C51	100nF	C0805K	X2	BU-SMA-G	con-coax
C52	33pF	C0805K			

3. Co mě inspirovalo a sw







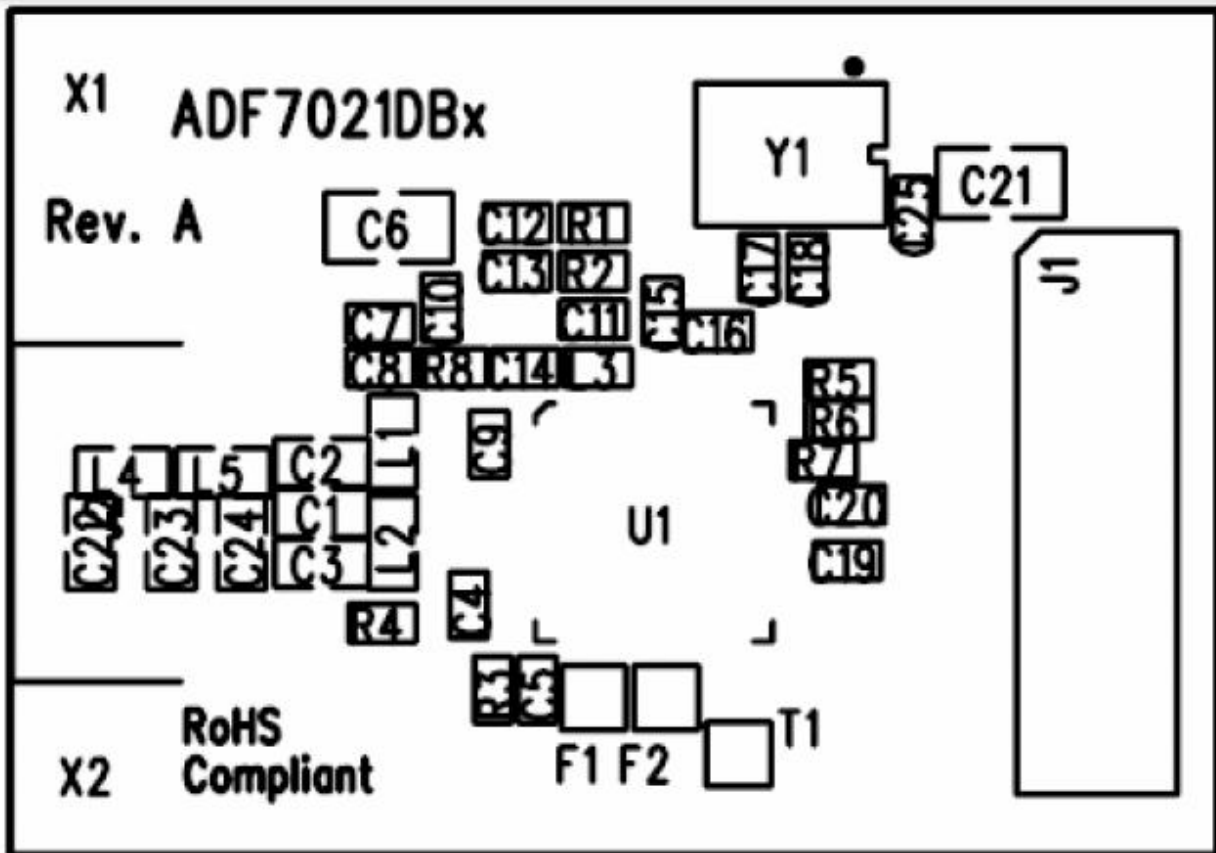
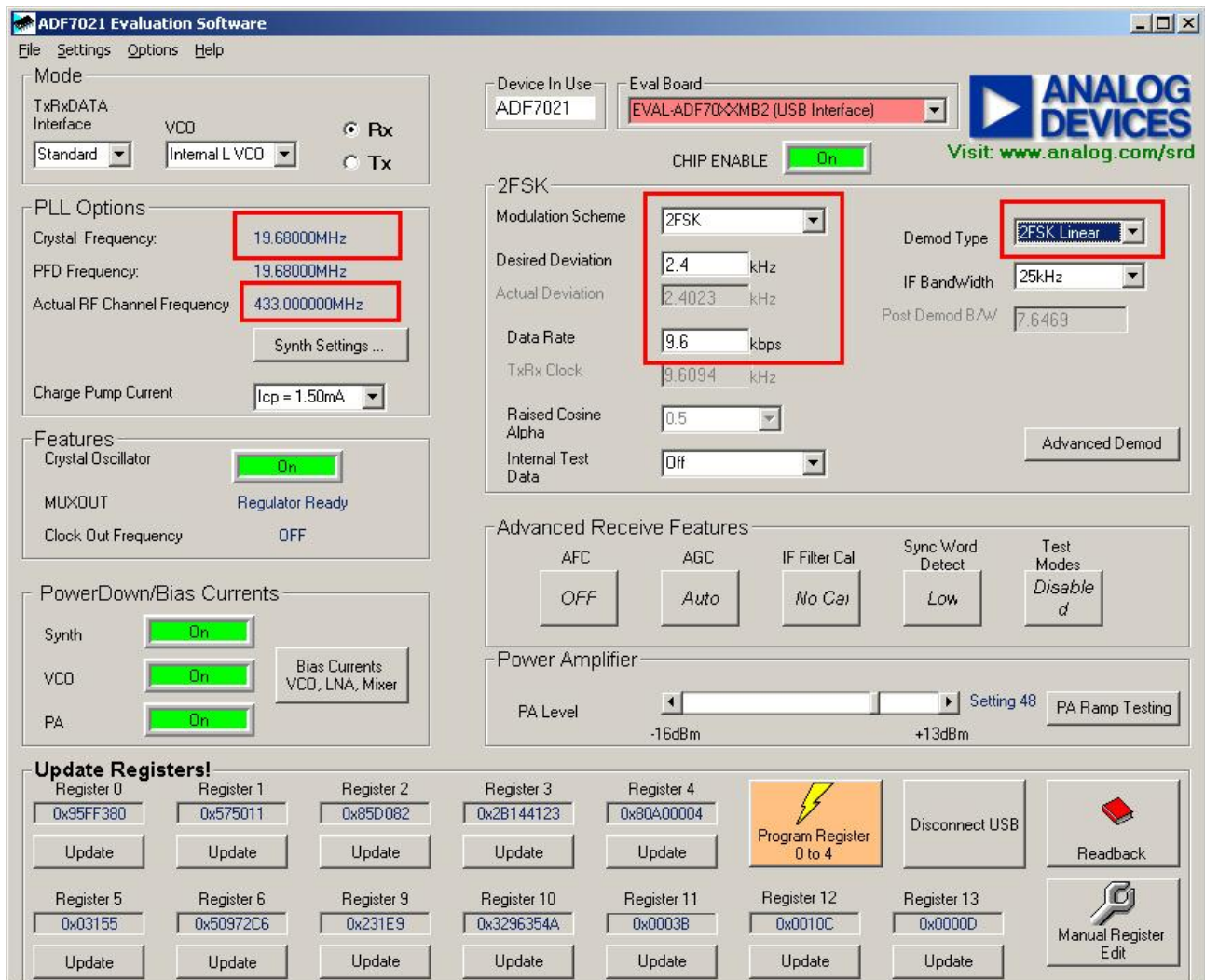


Figure 1. EVAL-ADF7021DBX silkscreen

cansats in europe

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ADF7021 Evaluation Software

File Settings Options Help

Mode
 Tx/Rx DATA Interface: VCO (Selected) Rx Tx
 Standard (Selected) Internal L VCO

PLL Options
 Crystal Frequency: 19.68000MHz
 PFD Frequency: 19.68000MHz
 Actual RF Channel Frequency: 433.000000MHz
 Synth Settings ...
 Charge Pump Current: Icp = 1.50mA

Features
 Crystal Oscillator: On
 MUXOUT: Regulator Ready
 Clock Out Frequency: OFF

PowerDown/Bias Currents
 Synth: On
 VCO: On
 PA: On
 Bias Currents VCO, LNA, Mixer

2FSK
 Modulation Scheme: 2FSK
 Desired Deviation: 2.4 kHz
 Actual Deviation: 2.4023 kHz
 Data Rate: 9.6 kbps
 Tx/Rx Clock: 9.6094 kHz
 Raised Cosine Alpha: 0.5
 Internal Test Data: Off
 Demod Type: 2FSK Linear
 IF Bandwidth: 25kHz
 Post Demod B/W: 7.6469
 Advanced Demod

Advanced Receive Features
 AFC: OFF
 AGC: Auto
 IF Filter Cal: No Cal
 Sync Word Detect: Low
 Test Modes: Disabled

Power Amplifier
 PA Level: -16dBm to +13dBm (Setting 48)
 PA Ramp Testing

Update Registers!

Register 0 0x95FF380 Update	Register 1 0x575011 Update	Register 2 0x85D082 Update	Register 3 0x2B144123 Update	Register 4 0x80A00004 Update	Program Register 0 to 4	Disconnect USB	Readback
Register 5 0x03155 Update	Register 6 0x50972C6 Update	Register 9 0x231E9 Update	Register 10 0x3296354A Update	Register 11 0x0003B Update			