Digital Section

+3V3 +3V3

C5 10n C6 10n

C1 100n

GND

C8 10n
+3V3

X1 19.68MHz
Vctrl OUT
GND

C9 22p
C15 22p

R11 0
R12 DNP

R10 0

CLK_IN
CLK_SMA

C9, C15, R10 are "multiplexer" parts. Place one.
C9 – TCXO AC input
C15 – External AC input
R10 – External CMOS input

OSC1 – AC 0.8Vp-p
OSC2 – CMOS

GND

GND
CE
SLE
SDATA
SCLK

ADCIN

24 CE
25 SLE
26 SDATA
28 SCLK

30 ADCIN

39 OSC1
38 OSC2

43 VDD
32 VDD2
31 CREG2

29 GND2
49 EPAD

34 TxRxDATA
35 TxRxCLK

27 SREAD
33 SWD
37 MUXOUT
36 CLKOUT

U1A
ADF7021

GND

RN1C 22
RN1B 22
RN1D 22
R14 22
R13 22
RN1A 22

TxRxData
TxRxCLK
SREAD
SWD
MUXOUT
CLKOUT

Analog Section

+3V3 +3V3 +3V3

C3 100n C4 100p C2 10n

GND GND

L1 DNP
L1 46
L2 44

3 VDD1
40 VDD3

48 CVCO
CREG1
42 CPOUT
1 VCOIN

CREG3 41 CREG3

45 GND
47 GND1

U1B
ADF7021

GND

C14 100n
GND

CVCO
CREG1

CPOUT

C10 1n
C11 15n
C12 470p
R1 270
R2 560

R4 100

GND

C7 22n
R3 2
C13 100n
GND

VCOIN
R5 47k
C16 100n
C17 2.2n
R6 47k
R7 22k
FM_MOD

Input 3Vp-p
Set deviation with R5

Loop filter taken from EVAL-ADF7021DBZ3 module. (For 431 MHz – 470 MHz)

GND

H1 H2 H3
GND

J7 RFShield_OnePiece
Shield
GND

RF Section

+3V3
C20 10n
GND

RFIN
L5 27n
C28 6.8p
GND

6 RFIN
7 RFINB

9 VDD4

4 RFOUT

10 RSET
8 R_LNA
11 CREG4

RFGND 5
GND4 12
GND4 19
GND4 22

U1C
ADF7021
GND

+3V3
C21 220p C22 10n
GND
L4 13n

RSET
R_LNA
CREG4
C29 100n R8 1.1k R9 3.6k
GND

RFOUT

C10, C19 are "multiplexer" DC blocking caps. Place one.
C10 – Bypass
C19 – Filter output

C18 10p
C19 10p

RFOUT

J5 Conn_Coaxial
GND

CLK_SMA R15 DNP

L2 20n L3 22n
C23 DNP C24 6.8p C25 DNP
GND

J2 Conn_Coaxial
RX/CLKREF SMA

C26, C27, C30 are "multiplexer" DC blocking caps. Place one.
C26 – Shared Tx/Rx
C27 – Bypass Rx
C30 – Filter Rx

C26 4.7p
C30 4.7p

L6 20n L7 22n
C31 DNP C32 6.8p C33 DNP
GND

J3 Conn_Coaxial
TX / RX SMA

C27 4.7p

J6 Conn_Coaxial
GND

Matching network taken from EVAL-ADF7021DBZ3 module. (For 431 MHz – 470 MHz)
Harmonic filter values taken from EVAL-ADF7021DBZ3 module. (For 431 MHz – 470 MHz)

3 dB @ 730 MHz

I/O Section

+3V3
C34 10u C35 4.7u C36 1u
GND

J1
Conn_02x10_Counter_Clockwise
CLK_IN 1 2
3 4
SCLK 5 6
SDATA 7 8
9 10
SLE 11 12
CE 13 14
15 16
17 18
19 20

RN2A 22
RN2B 22
RN2C 22
RN2D 22

11 CLKOUT
12 GND
13 TxRxCLK
14 TxRxData
15 SREAD
16 GND
17 MUXOUT
18 ADCIN
19 SWD
20 +3V3

FM_MOD
+3V3

J4
Conn_02x10_Counter_Clockwise
CLK_IN 1 2
3 4
5 6
7 8
9 10
11 12
13 14
15 16
17 18
19 20

RN3A 22
RN3B 22
RN3C 22
RN3D 22

CLKOUT
GND
TxRxCLK
TxRxData
SREAD
GND
MUXOUT
ADCIN
SWD
+3V3

FM_MOD
+3V3

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