

NTC3474/AB

70–140 MHz to L-band Agile Frequency Converter Board

OEM Product

Description

The NTC/3474/AB is a state-of-the-art synthesized Frequency Upconverter board that enables flexible frequency conversion from 70 or 140 MHz to any L-band frequency (950-1750 MHz). Available to third party manufacturers under OEM agreement, the high performance of the NTC/3474/AB allows an easy and cost effective interfacing with L-band based installations or equipment.

The input frequency is switchable between 70 MHz and 140 MHz. The L-band output frequency ranges from 950 MHz up to 1750 MHz in steps of 48 Hz.

Both input and output are MCX connectors for further internal wiring into the chassis.

The output can be switched on/off, while the level can be adjusted over a range of 40 dB. (Output level -30 / +10 dBm). The gain between input and output is adjustable in 0.1 dB steps.

The design of the NTC/3474/AB allows to perform an optimal trade-off between linearity and spurious response and has the ability to perform frequency conversion with or without spectrum inversion.

For low bit-rate applications, the NTC/3474/AB Frequency Converter can be locked to an external 10MHz reference.

The NTC/3474/AB Frequency Converter board can be controlled via an asynchronous serial link with a comprehensive range of monitoring and control functions.

Key features

- Agile 70 – 140 MHz to L-band up-converter
- Ultra fine L-band frequency resolution (48 Hz)
- Input frequency switchable between 70 MHz and 140 MHz
- Unique ability of selecting frequency conversion with or without spectrum inversion
- Can be locked to an external 10 MHz reference
- Phase noise exceeding IESS-308/309 standard
- Very low group delay
- High linearity
- Wide band frequency flatness covering more than 72 MHz
- Very low in-band and out-of-band spurious
- High reliability and modular flexibility
- CE-label

Main advantages

- Reduce time to market
- Easy integration
- High compactness
- Low cost

Applications

- IP Trunking
- Cellular backhauling
- Distribution
- Contribution
- Government

Related Documents

NTC/3475/AB L-band to 70-140 MHz Agile Frequency Converter Board



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Specifications – NTC3474/AB

Input interface

Input interface (IF):

• Connector	MCX (F), 50 ohms
• Return loss	>15dB
• Frequency range	70 MHz +/- 18MHz or 140 MHz +/- 36 MHz (switchable)
• Input level IF (typical)	-35 to +5 dBm
• Input harmonic	(required for output specs) < -50 dBc

Output interface (L-Band):

• Connector	MCX (F), 50 ohms
• Return loss	>15dB
• Frequency range	950 to 1750 MHz
• Frequency step size	48 Hz
• Output level	-30 to +10 dBm

Channel characteristics

Gain

• Programmable IF gain	-15 to 20 dB (IF -> 750MHz @ -10 dBm)
• IF gain step size	0.1 dB
• Programmable L-band gain	-20 to +20 dB (750 MHz @ -10 dBm=>L-band)
• L-band gain step size	0.1dB
• Gain variation over 36/72 MHz BW	1.2 dB peak-to-peak

Linearity

• Output 1dB compression	+10dBm
• Third order intermod	<-60 dBc (Pin/Pout: -10/-4 dBm)
• Third order intercept	>+26dBm
• AM/PM conversion	0.1°/dB max @ 0 dBm

Switching

• Spectrum inversion	Selectable
• Output switching suppression	<-80 dB

Noise

• Noise figure	<20 dB for (in) IF gain >10 dB & (out) L-band gain >0 dB
• In-band spurious	<-65 dBc (@ -10 dBm output level and for rates > 200 Kbaud)

• Phase noise (typical values between brackets)

@ 10 Hz	<-50 dBc/Hz (53)
@ 100 Hz	<-70 dBc/Hz (73)
@ 1KHz	<-80 dBc/Hz (85)
@ 10 KHz	<-85 dBc/Hz (87)
@ 100 KHz	<-95 dBc/Hz (98)
@ 1MHz	<-120 dBc/Hz (123)

Group delay

	@ 72 MHz BW	@ 36 MHz BW
Linear group delay	0.05 ns/MHz	0.03 ns/MHz
Parabolic group delay	0.0035 ns/MHz ²	0.01 ns/MHz ²
Residual group delay	1 ns pk-to-pk	1 ns pk-to-pk

Internal 25 MHz reference

Stability

± 5ppm	at 23 deg C ± 2 deg C
± 2ppm	0 to 70 deg C
± 1ppm / year	
± 5ppm / 10 years	

Generic

Monitor and control interfaces

Newtec RMCP protocol over RS485

Available controls

Output On/Off
70 or 140 MHz input frequency band
Selectable 40/80 MHz BW for 140 MHz IF
Output frequency
Conversion gain IF
Conversion gain L-band
Spectrum inversion
Reference Clock internal / external
Frequency offset

Available Alarms & Monitoring

Synthesizer out of lock
Input overload warning (adjustable threshold)
Input power low indication (adjustable threshold)
Board temperature
Input power
Output power

Power consumption

+12V	1000mA
-12V	50mA
+5.2V	300mA

Voltage accuracy

+5.2V	5.15V to 5.25V
+12V	11.25V to 13V
-12V	-13V to -11V

Peak to peak ripple and noise voltage requirement

for +5.2V is less than 50mV, for +/-12V is less than 120mV which is measured by a 15MHz bandwidth limited oscilloscope.

Physical

• Mechanical	Single PCB, 210 x 118 mm
• Temperature	
Operational	0°C to 50°C
Storage	-40 to +70°C
• Humidity	5% to 85% non-condensing
• CE label	

Ordering information

NTC/3474/AB 70-140 MHz to L-band Agile Frequency Converter	Order n°
Default configuration	
NTC/3474/AB 70-140 MHz to L-band	NTC/3474/AB.A

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