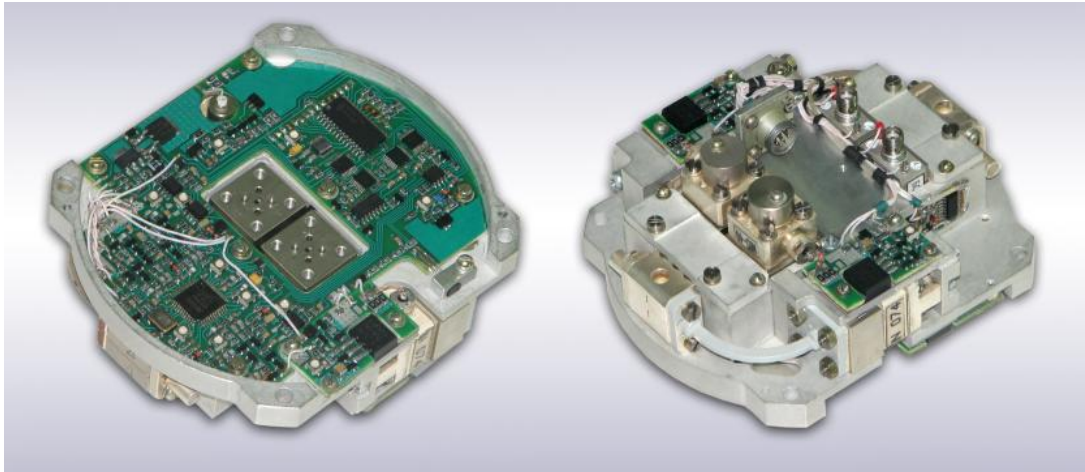




Two channel pulse transceiver in 94 GHz frequency range



APPLICATION

Pulse two-channel transceiver, **M353001** module, is intended for operation in aboard W-band equipment.

DESCRIPTION

The transceiver contains two transceiving channels. Transmitter of each channel is synchronized by single pulse high-frequency oscillator that allows coherent power combining of two channels of the transmitter.

A high level of output power more than 10 W in each channel of the transmitter, or 20 W when combining two channels, is provided through the use of pulse power amplifiers based on IMPATT-diodes.

Pulse repetition rate of output signal equals 50 kHz when transmitter output pulse duration is 70-100 nsec.

Receiver of the transceiver is carried out according to heterodyne circuit and has two outputs. Signal of the receiver reference heterodyne is divided in two by means of 90° bridge and goes to heterodyne outputs of the mixers that allows coherent combining of the intermediate frequency signals. Single band noise factor in each of the two receiving channels of the transceiver is not exceeding 8 dB.

In each receiver channel a protective *p-i-n*-modulator is set, which blanks input of a mixer during radiation of high power pulse of the transmitter.

IF signal stability is achieved by applying cavities made on the base of invar alloys and also with the use of special electric circuits for temperature stabilization of frequency.

Transceiver is supplied by power sources of constant voltage, and power consumption is not exceeding 25 W.

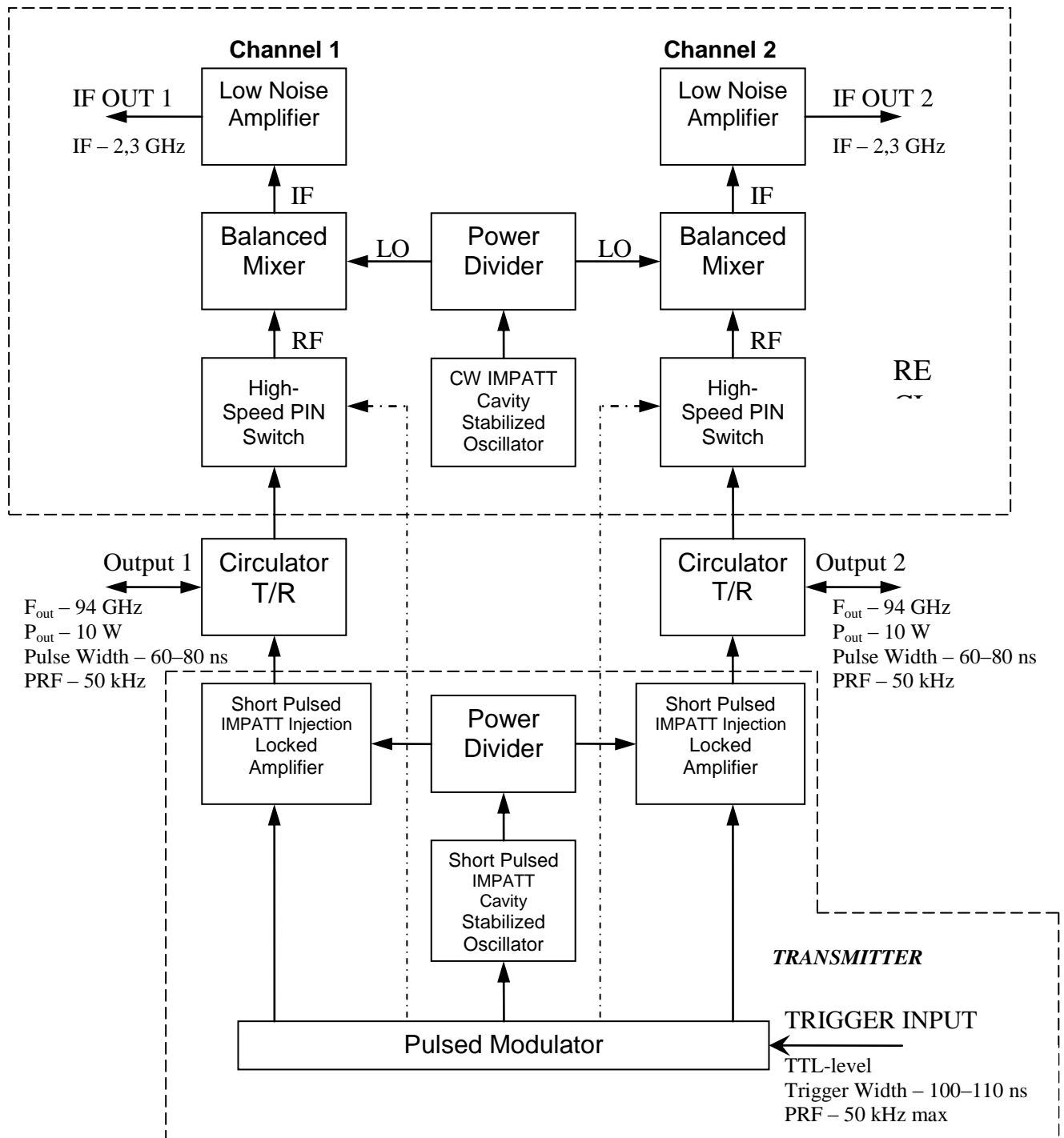


SPECIFICATIONS

Parameter, unit of measure	Typical values
<i>Electrical parameters of output signal of transmitter</i>	
Operating frequency of output signal, GHz	94.0±0,1
Pulse power, channel 1, channel 2, W, no less	10
Output pulse duration, channel 1, channel 2, nsec	70–100
Pulse repetition rate of output signal, no more	50
Temperature stability of output pulse frequency	10 ⁻³
Phase shift between signals, channel 1, channel 2, degree	90 ± 10
Input resistance of control input, Ohm	50
<i>Electrical parameters of receiver</i>	
Operating frequency, GHz	94.0±0,1
Single band noise factor, channel 1, channel 2, dB, no more	8
Central frequency of IF frequency circuit, GHz	2.3
Coefficient of signal transmission, channel 1, channel 2, dB, no less	20
Difference between output signal level in IF frequency circuit of two channels of receiver, dB, no more	1
Output power of IF signal corresponding to compression -1dB, channel 1, channel 2, W, no less	2.0·10 ⁻³
<i>Power supply</i>	
Voltage, V/ consumption current, mA, no more	+48/200, +24/300 +9/200, -5/50
<i>Electrical characteristics of control pulse</i>	
Input levels at loading 50 Ohm	TTL
Control pulse duration, nsec	100 – 110
Control pulse repetition rate, kHz, no more	50
Temperature range of transceiver, °C	-40 – +55
<i>Overall dimensions and weight of transceiver</i>	
Weight, kg, no more	1
Diameter, mm, no more	125
Height, mm, no more	50

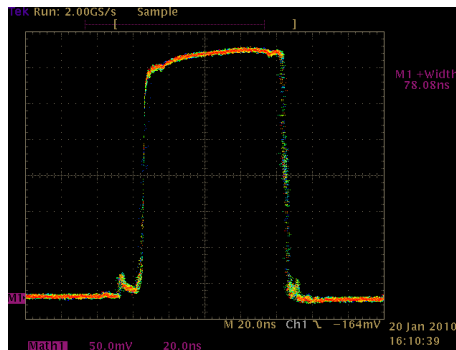


Structural diagram

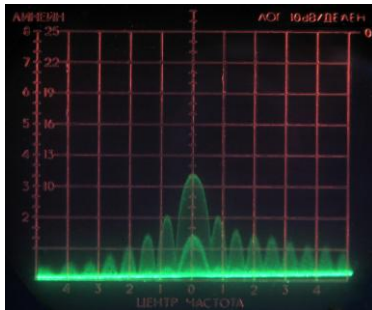




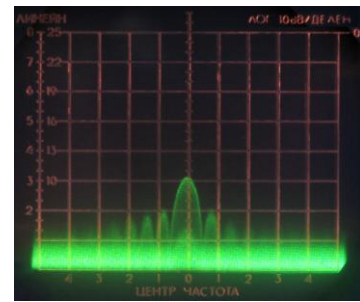
CHARACTERISTICS



Oscillogram of microwave pulse envelope of output signal



Spectrum of output signal



Spectrum of IF signal

OVERALL DIMENSIONS DRAWING

