

How to make a Pulse Power Measurement with the Satori ST Sensors

The duty cycle facility is used to measure the “pulse power”. This is the power measurement while an RF burst is present, when the signal is a gated burst of a sinusoidal RF signal – for example a radar pulse.

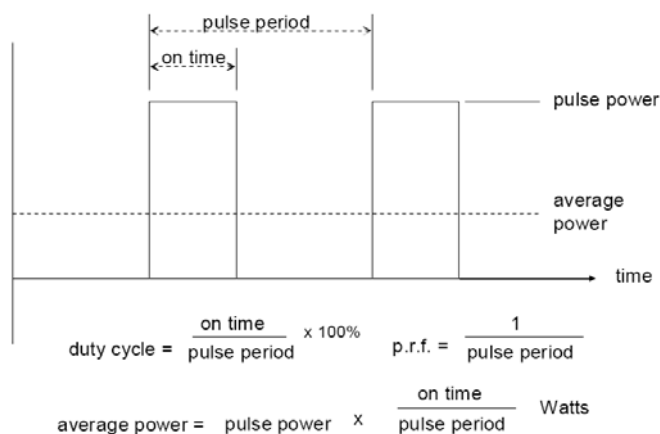
The sensor is calibrated to measure average power, and provided the pulse repetition rate is sufficiently high, a measurement of the pulse power can be obtained from the average power.

Certain assumptions are made about the RF burst, and these must be met if the measurement is to be accurate. The burst is assumed to be either on or off, in other words it does not take a finite time to ramp up or down.

The ramp up and down times should be small in relation to the on time of the signal generator. The burst is also assumed to have a constant amplitude when on. The amplitude does not ring, droop or overshoot. If the pulse does not have these attributes, then the accuracy of the result will not be valid.

The RF burst is assumed to be un-modulated. If it were amplitude modulated, for example, then the measurements would be likely to vary with time as the modulation and the voltage measurement made in the power meter would not be synchronised. Constant amplitude modes of modulation like phase or frequency are permissible.

The pulse repetition rate should be above 200Hz for the internal averaging to be effective. Below this pulse repetition frequency (PRF), the reading will vary. The duty cycle feature may be used down to around 1%. The peak power limit of the sensor should however be strictly adhered to



Measurably better value

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The following procedure outlines how to set up and make a pulse power measurement.

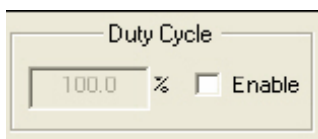
1. Open the software application supplied with the sensor
2. Zero the sensor.
3. Open the measurement control panel. Select the



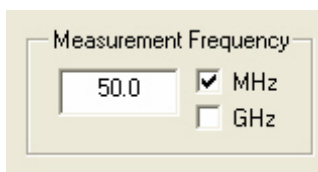
Control panel Icon

Or select **Measurement>Control Panel**.

4. Enable the duty cycle option and set the duty cycle percentage according to the pulse being measured.



5. Set the burst power measurement frequency



6. Select apply

The result shown will be the average pulse power of the signal.



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