Essential Utility for Optical Professionals

Contents

[Introduction to Optical Professional Utility](#)
[Snapshot of utility:](#)
[Features Supported](#)
[Composite Power calculator](#)
[Net Composite power Change when some channels are added/removed.](#)
[Direct Conversion for multiple parameters.](#)
[Composite Power calculator](#)
[Net Composite power Change when some channels are added/removed.](#)
[Direct Conversion for multiple parameters.](#)

Introduction to Optical Professional Utility

This utility will serve as readymade handy calculator/conversion requirement for Optical Professionals specially dealing with DWDM/Photonic technologies.

This utility is compatible on both Windows and Mac as it is developed in java.Java 8 is required to launch this tool.

Calculate and reset functionality is added with the tool to reinitialize values alongwith exit to close .

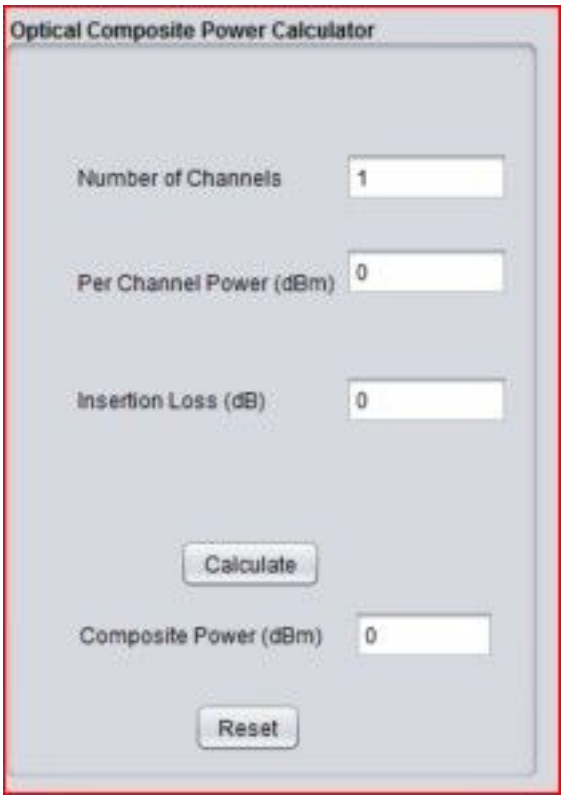
Snapshot of utility:

Features Supported

- **Composite Power calculator**
- **Net Composite power Change when some channels are added/removed.**
- **Direct Conversion for multiple parameters.**

Composite Power calculator

We always need to calculate the composite power for multiplexed channels as optical multiplexing follows additive and subtractive law of optical power distribution. Following section will be used for calculation.



For this section, we are using following formula:-

$P_{composite} = P_{channel} + 10\log N - \text{Insertion loss}$

(where N is the number of channels)

We can exclude Insertion Loss if we do not require it. Fill the text box with Zero.

Net Composite power Change when some channels are added/removed.

The power change can be quantified as the ratio between the number of channels at the reference point after the channels are added or dropped and the number of channels at that reference point previously. We can consider composite power here and each channel at same optical power in dBm.

So whenever we add or delete number of channels from a MUX/DEMUX/FILTER/WSS following equations define the new changed power.

For the case when channels are added (as illustrated on the right side of Figure 1):

$$Power change = 10\log_{10}\left(\frac{A+U}{U}\right)$$

where:

A is the number of added channels

U is the number of undisturbed channels

For the case when channels are dropped (as illustrated on the left side of Figure 1):

$$Power change = 10\log_{10}\left(\frac{U}{D+U}\right)$$

where:

D is the number of dropped channels

U is the number of undisturbed channels

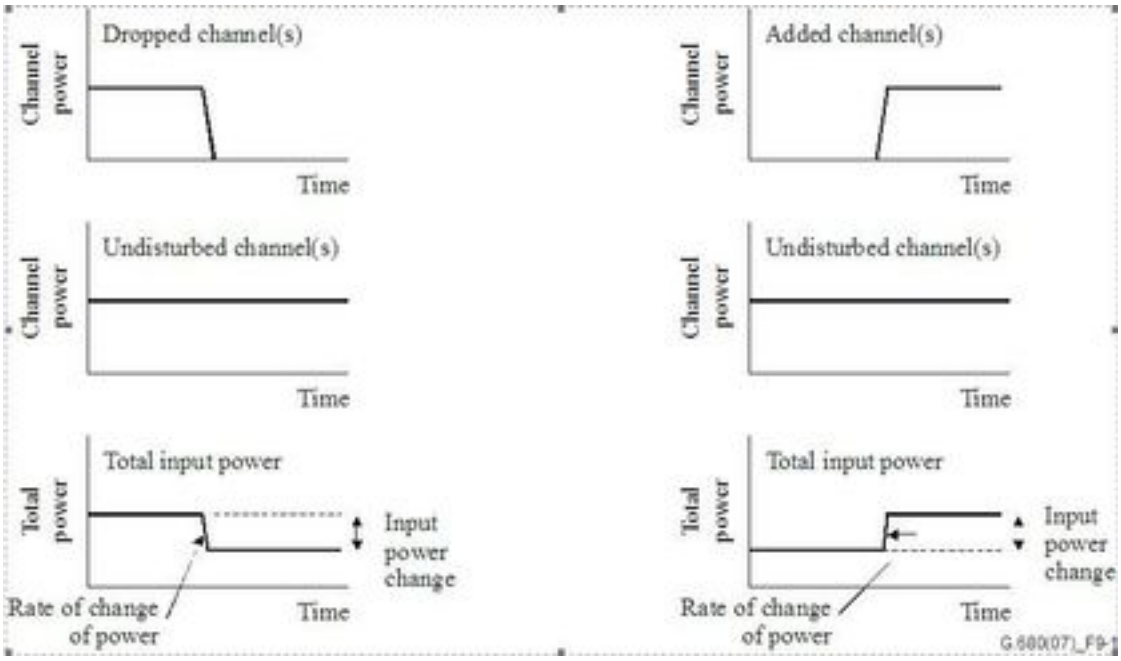


Figure 1

For example:

- adding 7 channels with one channel undisturbed gives a power change of +9 dB;
- dropping 7 channels with one channel undisturbed gives a power change of –9 dB;
- adding 31 channels with one channel undisturbed gives a power change of +15 dB;
- dropping 31 channels with one channel undisturbed gives a power change of –15 dB;

Direct Conversion for multiple parameters.

This section consists of following conversions:-

- dBm to mW
- mw to dBm

- THz to nm
- nm to THz
- Coupling ratio to Insertion Loss introduced decibel value(Tap % to IL)
- Channel spacing to wavelength spacing.

Utility is available in both .jar and .zip format.

https://cisco.app.box.com/s/4skbg2xa7blpljjvrv7jdnuuv5bliax1