



VSWR and Return Loss of Coaxial Cables

Voltage Standing Wave Ratio (VSWR) and Structural Return Loss (SRL) are basically the same - only different. Both terms are used to characterize the uniformity of a cable's impedance along its length as it relates to reflected energy. VSWR is essentially the ratio of the input impedance to the average characteristic impedance as a result of signal losses due to reflections and is expressed as a ratio (1.xx:1). SRL is the measurement of reflected energy expressed in decibels (dB). Connectors and termination techniques are major sources of reflected energy and can significantly deteriorate system VSWR or SRL. The difference between VSWR and SRL is no more than how the reflected energy is measured.

Structural Return Loss (SRL) is expressed as VSWR (Voltage Standing Wave Ratio) by the following formula:

$$\text{VSWR} = \frac{(1 + 10(\text{RL}/20))}{(10(\text{RL}/20) - 1)}$$

SRL	VSWR	SRL	VSWR	SRL	VSWR
-40dB	1.0202:1	-30dB	1.0653:1	-20dB	1.2222:1
-39dB	1.0227:1	-29dB	1.0736:1	-19dB	1.2528:1
-38dB	1.0255:1	-28dB	1.0829:1	-18dB	1.2880:1
-37dB	1.0287:1	-27dB	1.0935:1	-17dB	1.3290:1
-36dB	1.0322:1	-26dB	1.1055:1	-16dB	1.3767:1
-35dB	1.0362:1	-25dB	1.1192:1	-15dB	1.4326:1
-34dB	1.0407:1	-24dB	1.1347:1	-14dB	1.4985:1
-33dB	1.0458:1	-23dB	1.1524:1	-13dB	1.5769:1
-32dB	1.0515:1	-22dB	1.1726:1	-12dB	1.6709:1
-31dB	1.0580:1	-21dB	1.1957:1	-11dB	1.7849:1
				-10dB	1.9250:1