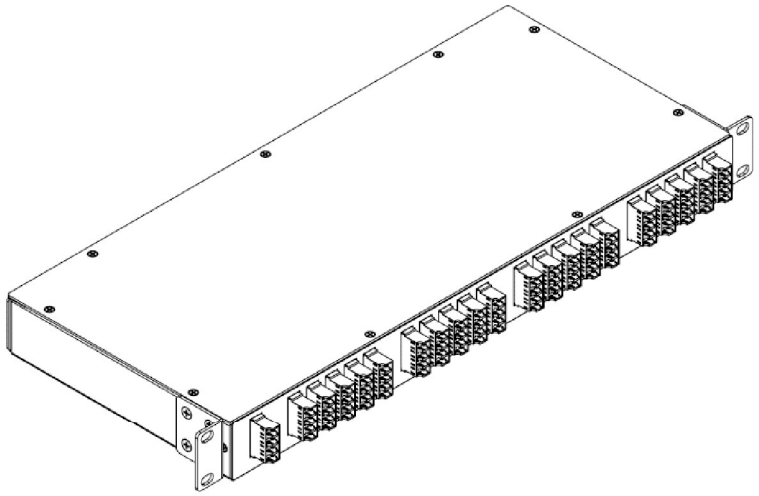
AWG Utilization Guidelines for NBT Configuration

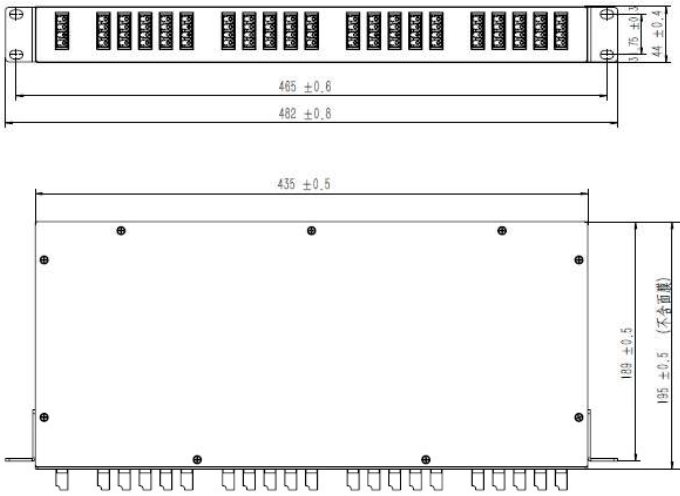
2025-12-01
ChemOptics R&D

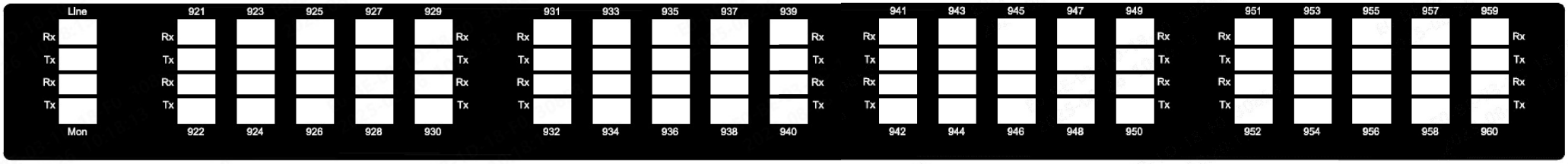
AWG optical spec

PARAMETER	SPECIFICATION			UNITS	NOTE
	MIN.	TYP.	MAX.		
Channels		40		Ch	C21~C60
Channel Spacing		100		GHz	
Reference Pass-band	-12.5		+12.5	GHz	Centered at each ITU channel frequency
Wavelength Accuracy	-50		+50	pm	Offset from ITU grid over operation temperature range
1dB Bandwidth	50			GHz	1dB from best insertion loss, full width, under average polarization state
3dB Bandwidth	75			GHz	3dB from best insertion loss, full width，under average polarization state
Insertion Loss ch RX → Line Tx/ Line RX→ ch TX			6.2	dB	The worst insertion loss including connector loss, under theworst case regarding polarization state
Insertion Loss Line Rx→ Mon Rx	18		22	dB	The worst insertion loss including connector loss, under theworst case regarding polarization state
Insertion Loss ch Rx→ Mon Tx			28	dB	The worst insertion loss including connector loss, under theworst case regarding polarization state
Uniformity			1.5	dB	Loss uniformity among channels at ITU center
Ripple			0.7	dB	Maximum of the loss variance for all polarization states within the reference pass-band, over all channe ls.
Adjacent Channel Isolation	25			dB	Difference between the insertion loss in channel and the minimum loss over both adjacent channels, ov er average polarization states, within reference pass-band
Total Crosstalk	22			dB	Difference between the insertion loss in channel and the minimum loss over all other channels, for all p olarization states，over average polarization states, within reference pass-band
Polarization Dependent Loss (PDL)			0.5	dB	Maximum insertion loss difference between all polarization states, within reference pass-band
Return Loss	40			dB	Ratio of input power in to the reflected power out，
Maximum continuous optical power			24	dBm	Maximum input optical power
Chromatic Dispersion(CD)	-20		+20	ps/nm	Maximum change rate of group delay versus wavelength within reference pass-band
Polarization Mode Dispersion(PMD)			0.7	ps	Averaged differential group delay within reference pass-band

AWG drawing





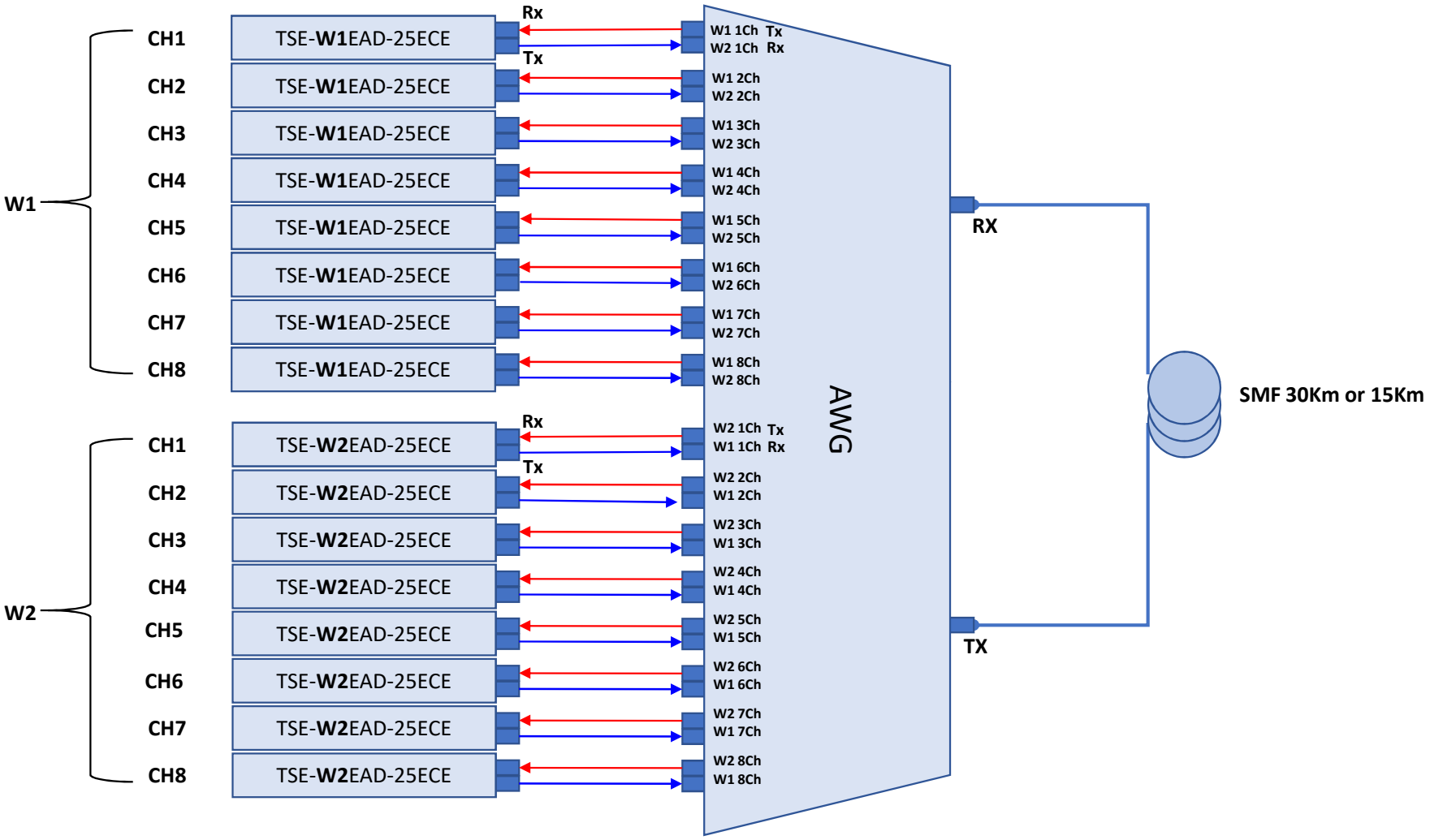


AWG front port

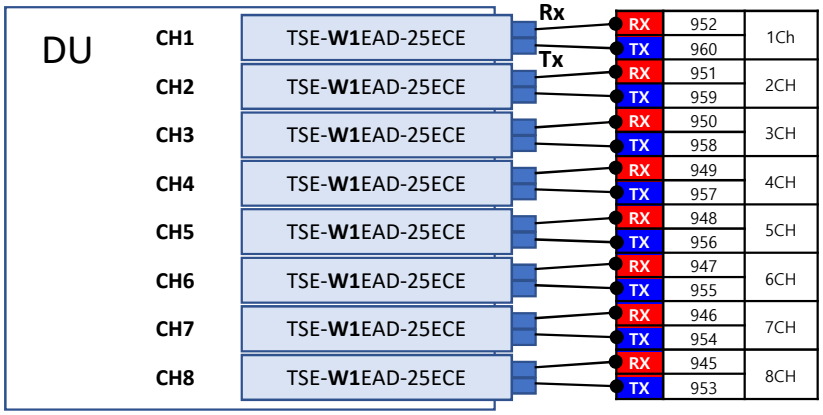
NBT channel table

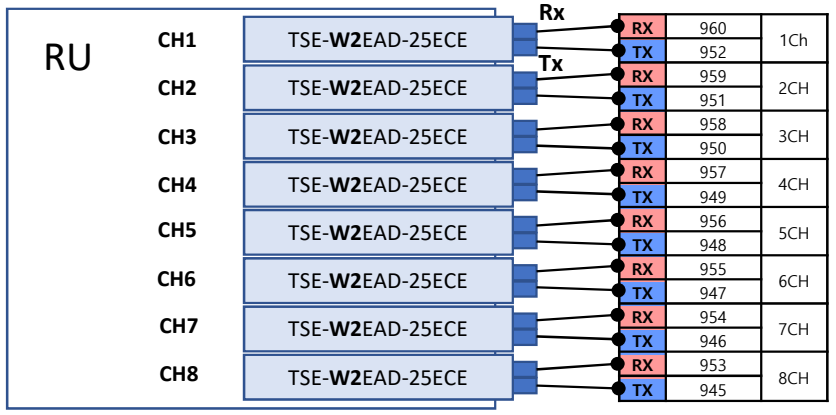
-	Label Content	Channel Frequency (THz)	Channel Wavelength (nm)	-	Label Content	Channel Frequency (THz)	Channel Wavelength (nm)
W1	C60	196	1529.553	W3	C40	194	1545.322
	C59	195.9	1530.334		C39	193.9	1546.119
	C58	195.8	1531.116		C38	193.8	1546.917
	C57	195.7	1531.898		C37	193.7	1547.715
	C56	195.6	1532.681	W4	C36	193.6	1548.515
	C55	195.5	1533.465		C35	193.5	1549.315
	C54	195.4	1534.25		C34	193.4	1550.116
	C53	195.3	1535.036		C33	193.3	1550.918
W2	C52	195.2	1535.822		C32	193.2	1551.721
	C51	195.1	1536.609		C31	193.1	1552.524
	C50	195	1537.397		C30	193	1553.329
	C49	194.9	1538.186		C29	192.9	1554.134
	C48	194.8	1538.976	W5	C28	192.8	1554.94
	C47	194.7	1539.766		C27	192.7	1555.747
	C46	194.6	1540.557		C26	192.6	1556.555
	C45	194.5	1541.349		C25	192.5	1557.363
W3	C44	194.4	1542.142		C24	192.4	1558.173
	C43	194.3	1542.936		C23	192.3	1558.983
	C42	194.2	1543.73		C22	192.2	1559.794
	C41	194.1	1544.526		C21	192.1	1560.606

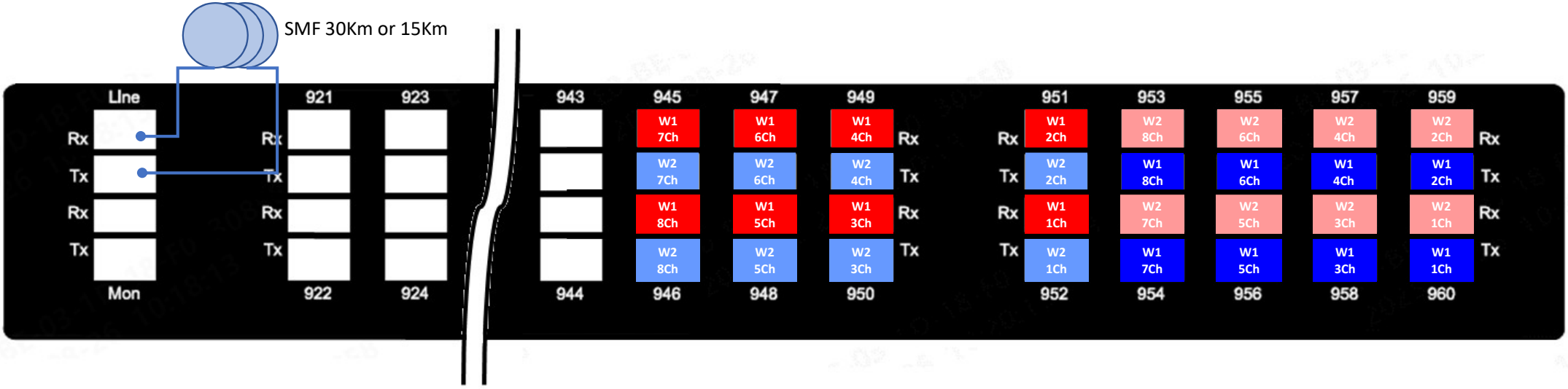
8-line configuration block diagram



Example of 8-line configuration using W1 and W2







Example of 2-line configuration using W1 and W2