



FLANN MICROWAVE

Millimeter & Sub-millimeter Calibration Kits

Series 704 / 721 / 741

- Models 90 GHz to 500 GHz
- Thru-Reflect-Line (TRL) Calibration
- $3/4\lambda_g$ or $5/4\lambda_g$ lines
- Three Grades:
 - Bronze Grade (Series 704)
 - Silver Grade (Series 721)
 - Gold Grade (Series 741)
- National Physical Laboratory Technology Applied

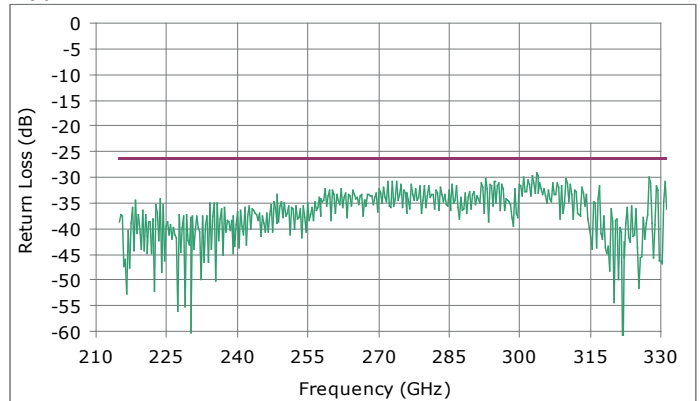


At millimeter wave frequencies the quarter wavelength lines required to carry out a TRL calibration become so thin as to become fragile and prone to damage and distortion. By using multiple $1/4\lambda_g$ lines the need to use very thin, fragile sections is negated, ensuring a more reliable and repeatable calibration. Flann millimeter wave Calibration Kits have been designed in close co-operation with the National Physical Laboratory (NPL) and incorporate $3/4\lambda_g$ or $5/4\lambda_g$ sections. Flann has been awarded a licence by NPL to manufacture devices using this technology.

Further information on this calibration technique can be found from: 21st International Symposium on Space Terahertz Technology, Oxford, 23-25 March 2010

NPL report 'Choosing Line Lengths...' Ridler, N M TQE 5, March 2009

Typical Return Loss for Model 32045 Termination



Related Products

- Series
- 045/043/044: Bronze/ Silver/ Gold grade Terminations
 - 191/192/193: Bronze/ Silver/ Gold grade Flush Shorts
 - 440/442/443: Bronze/ Silver/ Gold grade Waveguide
 - 491/492/493: Bronze/ Silver/ Gold grade Lines

Ordering

Please specify the following:

WG designation	Series	-	Vector analyzer used
WG28-32 WM 2032-570	704 721 741		

Example: 570704. A WM570 Bronze Grade Calibration Kit, 500 GHz.

Standard Kit Contents
2 x Fixed Terminations
2 x Flush Shorts
2 x Waveguide Sections
2 x $3/4\lambda_g$ or 3 x $5/4\lambda_g$ Lines
Set of flange bolts
Precision flange dowels
Torque driver
USB data stick
Hardwood case
Handbook

Customised kits including alternative or additional components can be supplied.



Microwave Specifications

Waveguide Designation				Frequency Range (GHz)	Termination VSWR (max)
WM*	WG	R	WR		
2032	28	1200	8	90 - 140	1.04
1651	29	1400	6	110 - 170	1.05
1295	30	1800	5	140 - 220	1.06
1092	31	2200	4	170 - 260	1.08
864	32	2600	3	220 - 330	1.10
710	-	-	2.8†	260 - 400	1.12
570	-	-	2.2†	330 - 500	1.15

† Designation not formally standardised.

Dimensional Specifications

WG	WM*	Waveguide Dimensions (microns)	Dimensional Tolerances from Nominal (microns)									Flush Short Flatness better than (microns)		
			Waveguide Aperture			Line Length			Waveguide Section Overall Length					
			Bronze	Silver	Gold	Bronze	Silver	Gold	Bronze	Silver	Gold	Bronze	Silver	Gold
28	2032	2032 x 1016	12.0	8.0	4.0	18.0	9.0	4.5						
29	1651	1651 x 826	10.0	6.0	3.0	15.0	7.5	4.0						
30	1295	1295 x 648	8.0	5.0	2.5	12.0	6.0	3.0						
31	1092	1092 x 546	6.5	4.5	2.5	9.5	5.0	2.5	20	10	5	12	6	3
32	864	864 x 432	5.0	3.5	2.0	7.0	3.5	2.0						
-	710	710 x 355	4.0	3.0	1.5	6.5	3.0	1.5						
-	570	570 x 285	3.5	2.5	1.2	5.0	2.5	1.5						

WM* - IEEE Standard for Rectangular Metallic Waveguides and Their Interfaces for Frequencies of 110 GHz and Above.

WG	WM*	Line	Nominal Length (mm ± 0.01)	Line Changeover Frequency (GHz)	Measurement Length (microns ±)
28	2032	1	3.39	108	
		2	2.31		
29	1651	1	2.81	131	
		2	1.91		
30	1295	1	2.22	168	
		2	1.47		
31	1092	1	1.74	203	
		2	1.24		
32	864	1	1.29	260	
		2	1.00		
-	710	1	2.10	291	
		2	1.61		
		3	1.26		
-	570	1	1.74	362	
		2	1.33		
		3	1.02		

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