

In-House Agilent VNAs



Phase Matching

We have good experience in making phase matched RF cable sets. We have delivered for many projects to DRDO upto 18 GHz.

Phase matching is done using in-house Agilent Vector Network Analyzer. We can phase match complete range of cables including Semiflexible, Semi-rigid, Corrugated, Handformable, RG types.

APPLICATIONS

- Multi-Channel Amplifiers
- Phased Array Radars & EW
- Multi-Beam Antenna Arrays
- RF Combiners and Filters

ABSOLUTE PHASE MATCH

A 'golden' cable is made & preserved. All the cables are then matched to the golden cable. Any cable in the set can be replaced without replacing all cables of the set. Expressed as XX nS ± YY pS OR XXX° ± Y° @ ZZ GHz

RELATIVE PHASE MATCH (Matched Set)

Cables are matched to other cables in the same set. There is no guarantee that cables in 1 set will match those of another set. Lowest cost options since yield is high. Disadvantage is that if any 1 cable of a set is to be replaced, the entire set have to be replaced. Specified as ± X° @ YY GHz relative to a designated cable in the set

- Relative or Absolute Phase Matching
- DC~18 GHz range
- Our complete range of cables can be matched.
- Phase matching available in pairs or in sets
- Available with common connectors as SMA, TNC, N, etc.

PHASE MATCH TOLERANCE

- ± 0.75 degree/GHz for semi-rigid cable
- ± 1 degree/GHz for flexible cables types
(Above is applicable for cables upto 10 feet in length, for longer lengths please contact us)
- Tighter tolerances are also possible upon request. We have delivered tighter tolerances on special request many times. For example we have delivered ± 5 degree @ 18 GHz for 0.5m length cable sets with SMA connectors in length, for longer lengths please contact us).

Electrical Length (degrees)

$$\varnothing = \frac{360 \times F(\text{MHz}) \times L_{\text{TH}} (\text{Feet})}{984 \times V_p (\text{Percent})}$$

Electrical Length (deg) - our MF02 (Vp = 70%)

Frequency	Physical Length		
	0.5 m	1 m	2m
1 GHz	857.36°	1714.72°	3429.44°
2 GHz	1714.72°	3429.44°	6858.89°
3 GHz	2572.08°	5144.17°	10288.35°
6 GHz	5144.17°	10288.35°	20576.7°
9 GHz	7716.26°	15432.52°	30865.04°
12 GHz	10288.34°	20576.7°	41153.39°
13.5 GHz	11574.39°	23148.78°	46297.57°
18 GHz	15432.52°	30865.04°	61730.09°

Electrical Length (deg) - Our ULL04 (Vp = 76%)

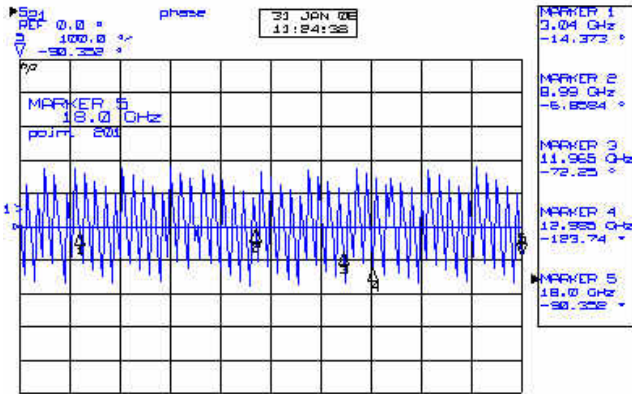
Frequency	Physical Length		
	0.5 m	1 m	2m
1 GHz	789.67°	1579.35°	3158.70°
2 GHz	1579.35°	3158.70°	6317.40°
3 GHz	2369.02°	4738.05°	9476.11°
6 GHz	4738.05°	9476.11°	18952.22°
9 GHz	7107.08°	14214.17°	28428.33°
12 GHz	9476.11°	18952.22°	37904.44°
13.5GHz	10660.62°	21321.25°	42642.5°
18 GHz	14214.16°	28428.33°	56856.66°

Note: Above are theoretical values. In actual practice, these values will be slightly different.

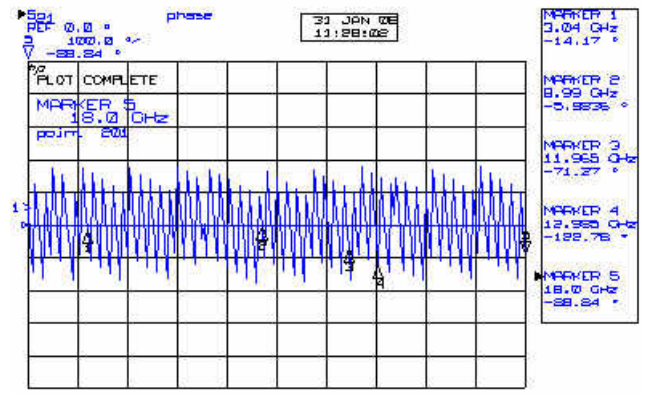
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0.75 meter Phase Matched (± 5 degree) Cable Sets @18 GHz ULL04 Series, 76% Vp

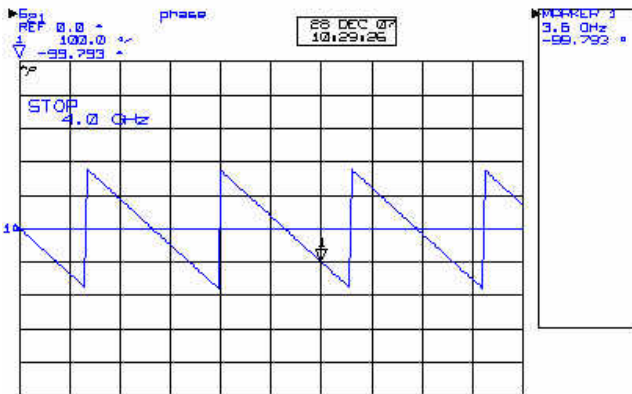


Start : 1.000000 GHz Stop : 18.000000 GHz

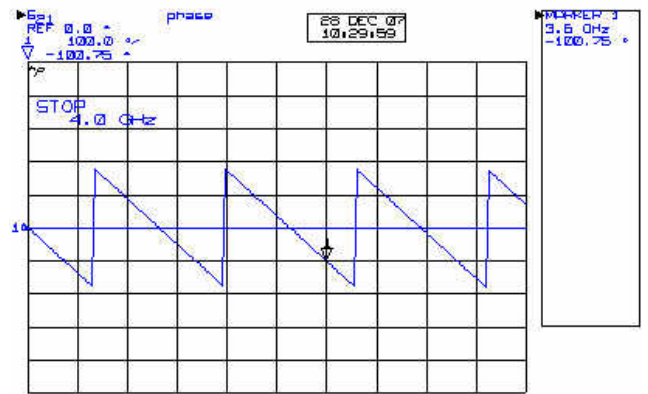


Start : 1.000000 GHz Stop : 18.000000 GHz

0.6 meter Phase Matched (± 3 degree) Cable Sets @3.6 GHz, MF02 Series, 70% Vp

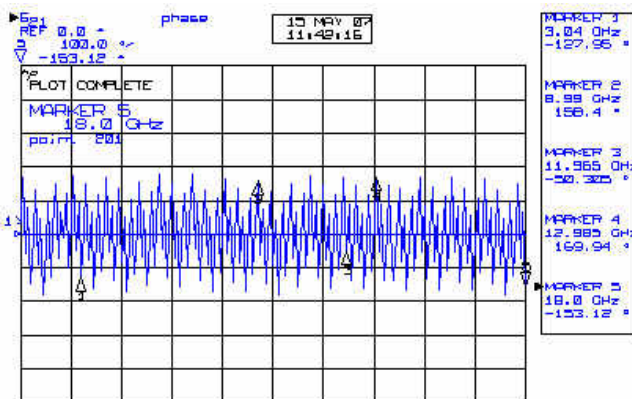


Start : 3.000000 GHz Stop : 4.000000 GHz

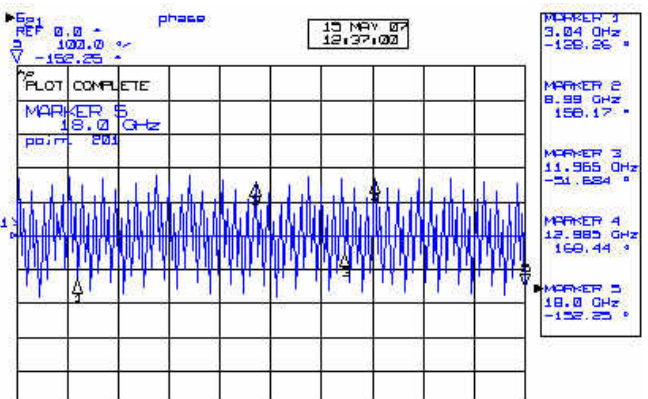


Start : 3.000000 GHz Stop : 4.000000 GHz

0.5 meter Phase Matched (± 5 degree) Cable Sets @18 GHz M17/130-RG402 Semirigid, 70% Vp



Start : 1.000000 GHz Stop : 18.000000 GHz



Start : 1.000000 GHz Stop : 18.000000 GHz

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