

ELECTRONICS INSTRUMENTATION SECTION
Development and Test Branch
Technical Services Laboratory
Eglin AFB, Florida

16 August 1954

SUBJECT: Determine propagation constant of RG/59/U cable as per W.O # 3-998.

TO : Lt. Thornton. D & T Branch, Tech Svs Lab.

1. Method Used.

Using the tecktronic scope model # 517, and General Radio Pulser model # 1217A. A pulse was applied to the cable under test as per diagram, and the delay was compared to the normal propagation time in free space, the tecktronic scope sweep was checked using a crystal controlled frequency from the Hewlett Packard Frequency Counter. All measurements were made on that portion of the sweep which checked perfectly with the standard frequency. Readings were taken four times and averaged to obtain maximum accuracy. Accuracy to a measurement of 3 milli-micro-seconds was obtained.

2. Readings and computations.

Cable length 99' 11 1/2" = 99.958, RG/59/U - copper center & shield.

Time. 152 ~~M~~ Sec.

186.000 Free space speed miles

9.8208 feet per ~~M~~sec.

101.08 ~~M~~sec - free space time for 99.958' cable

$\frac{101.08}{152}$ MM sec = 66.5% = Velocity of propagation of cable specimen.

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This measurement compares favorably with information given by Amphenol which lists 65.9 and by Electronic Subdivision, Air Material Command which lists 65.6 for velocity per centage.

W.E.

WORK ORDER # 3-998

