



HUGHES
Traveling-Wave
Tube Amplifiers

AVAILABLE FROM
ALPENA LTD
412 BATH ROAD
SLOUGH SL1 8BD
TEL BURNHAM 4353
TELEX: 847155



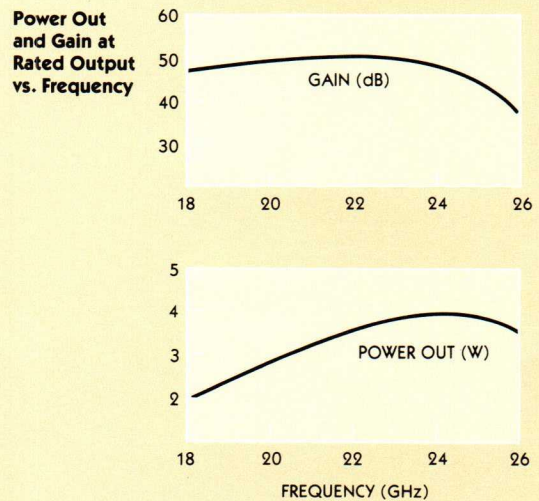
Commercial Traveling-Wave Tube Amplifiers manufactured by Hughes Aircraft Company are in use throughout the world. To date, we have manufactured and delivered over 5,000 units.

Hughes Aircraft Company has been in the forefront of design and development of complete orbiting satellites and their components. We have used this same technology and experience to produce the very latest in commercial TWTAs. These descendants of space-qualified units have been produced by Hughes since 1968 and are continually undergoing testing and improvement to meet the ever expanding application requirements. The reliability built into our units is a product of the highest quality components, engineering, and years of experience. Three to four years of TWTA operation is not an unusual achievement.

A variety of input power requirements is offered, including 28-48V, 220-110V and 50/60 or 48/420 Hz input. Broad frequency coverage is offered, spanning 1 to 40 GHz at various power levels (1-, 10-, 20-, watts) with multi- and standard band units available in the 10-watt series. Standard band, 1 through 18 GHz units are available in the 20-watt series. Two 1-watt units are offered covering the band from 18 to 40 GHz.

We offer as options TT Logic (TTL) for computer interfacing, and circulator/isolators for TWTA protection. Special options allow a choice of operations in unattended or remote switching. If standard options do not meet your requirements, we will create an option or develop a special unit for your particular application.

1077H11
1 Watt · 18-26.5 GHz





Applications of our TWTAs are as varied as nature allows. From the standpoint of size, weight and ease of operation, it proves to be an excellent laboratory testing unit for either point-to-point or swept frequency measurements, calibration of power sources, as a RF simulator, as test sets for missile checkout, and EMI measuring systems including use in anechoic chambers.

In the Bio Medical field our amplifier has been used as a RF energy source in researching effects of microwaves on cancer cells and to heat atoms in plasma physics.

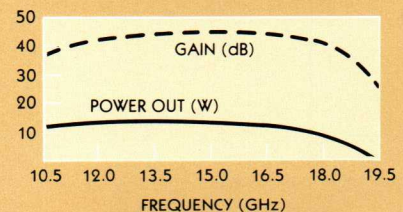
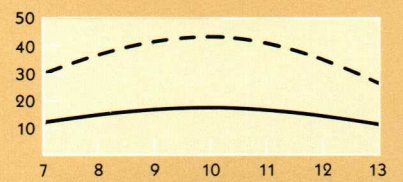
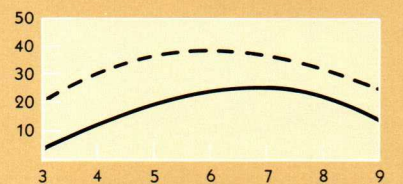
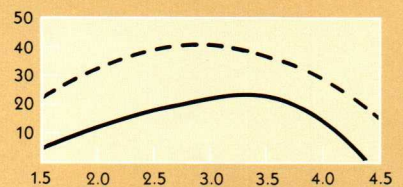
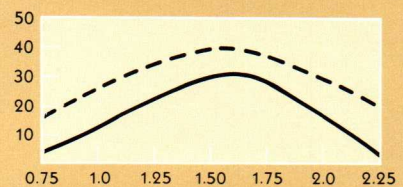
Hughes TWTAs can be found aboard some of our nation's largest naval vessels. Our one-third rack with transistor to transistor logic (TTL), models 1233H through 1236H, are used on the U.S.S. Enterprise in a test system to check out the EW equipment on its squadron of aircraft. Several other radar systems on board the Enterprise also use our TWTAs.

Some of our first commercial TWTAs were used in remote areas of Alaska as communication amplifiers transmitting via satellite, and have accumulated thousands of hours of uninterrupted operation. More current uses are EMC (Electro-Magnetic Compatibility) testing, radar range determination, and antenna measurement in remote areas. The U.S. Government, as well as private industry, is constantly using these amplifiers working with short pulse, side-looking and over-the-horizon radar systems. The amplifiers have been used numerous times for real time data link projects aboard helicopters. A recent government application consists of telemetry testing aboard the NASA A37 test plane used in support

1177H
10 Watts · 1-18GHz



Power Out and Gain at Rated Output vs. Frequency





of the Space Shuttle program.

One of the newest applications is electronic journalism. A mobile van equipped with video and transmission components goes directly to the event site and transmits back to the major receiving station via the TWTA. The signal is then distributed to the viewing community.

With respect to quality, nothing is left undone. Each unit must pass rigid inspections and is fully tested prior to shipment to the customer. We are so positive of the quality and reliability of our units that it allows us to offer a full one year warranty, regardless of hours of operation.

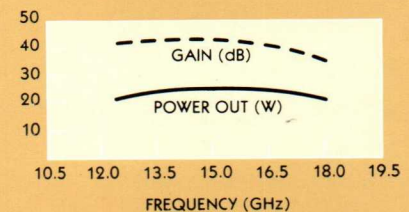
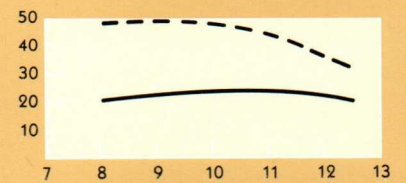
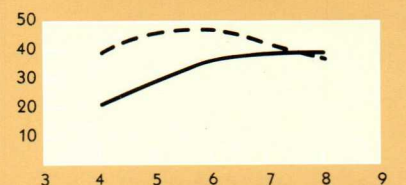
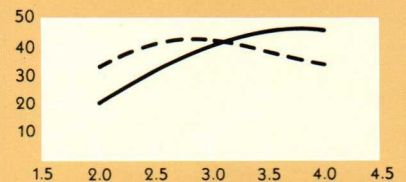
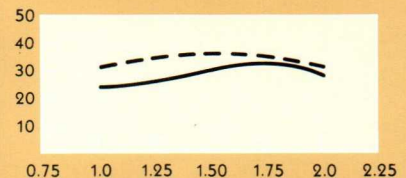
Products of this caliber deserve service to match. We at Hughes strongly believe in high standards and will continue to provide service befitting the Hughes tradition. Making your job easier is our goal. Marketing representatives throughout the world are available to assist you with application problems. The marketing representatives have technical and engineering assistance available from the factory upon request. This assistance is a prime factor in our service policy — making our product perform properly for you.

In addition to the technical assistance, we also maintain a complement of demonstration units which are available for system and customer evaluation. We can make demo units available while your unit is being built. These units are readily available and all of our TWTA's are sold to the general public from a published price list. In addition, these units are offered on the GSA schedule.

1277H
20 Watts · 1-18GHz



Power Out and Gain at Rated Output vs. Frequency



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HUGHES
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ELECTRON DYNAMICS DIVISION

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