



# AmpliTech

"Amplify Your Potential"



## THE BEST AMPLIFIERS FOR GLOBAL COMMUNICATIONS

GPS

DBS

4G/5G

Wi-Fi

LTE

PCS

RADAR

SATCOM



20 CATALOG 2015

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# MISSION STATEMENT

**AmpliTech's** mission is to develop quality, state-of-the-art microwave amplifiers through a company built on experience, proven technical expertise, superior design heritage, and complete customer satisfaction.



# A MESSAGE FROM THE PRESIDENT

I would like to extend my sincerest thanks to all our customers in the past 13 years that have supported the company in its efforts to be a global leader in amplifier technology. Their faith in our capabilities has allowed us to show the world that we are constantly being challenged by the demands of a dynamic communications technology market, and that we have successfully met these challenges where many of our competitors have failed.

Our approach to accept the most demanding specifications is what brings our customers back to us repeatedly. Those customers include the most prominent leading edge Tier 1 OEM's such as GE, Boeing, BAE Systems, Raytheon, Lockheed Martin, Northrop Grumman, Harris, Rockwell Collins and many others. Our list of Institutional customers includes NASA, NIST, Yale University, University of Maryland, University of California, Johns-Hopkins University, JPL, Los Alamos Laboratory, and many more. Add to that the list of international governments and OEM's, and these lists become a testimonial of the kind of performance and reliability of our products.

We design and develop a core component of many communications systems...the RF/Microwave AMPLIFIER (50 KHz to 40 GHz). Whether it be the front-end LNA or Gain blocks, or back-end high dynamic range medium power amplifiers, our specialty is customizing the amplifiers and providing the most flexible designs that address the most demanding environments such as space, airborne and ground military systems as well as the most rigorous commercial applications. The success of the entire receiving system depends on the chain of core components such as the LNA, mixer, and post-processing IF filters and amplifiers. We design the quality into our amplifiers using MIL-PRF-883 guidelines even in all our commercial parts to yield ultra-reliable designs that are backed by a 3 year warranty. We can do this because of our extensive experience in the design and manufacture of RF/microwave components using unique hybrid microelectronic techniques.

Our proprietary packaging, assembly techniques, and in-time product delivery have enabled us to outperform our competitors and although we have always led the way by doing what we do best, we plan to expand our product line to include many other synergistic components at the request of our customers. We offer agility and competitive pricing without sacrificing quality and performance. I believe it is impossible for AmpliTech to grow without the trust and respectful relationship of our valued customers. AmpliTech's team also believes that our success comes from our customers' success and we celebrate this idea every day. I welcome new valued customers to give us a chance to fulfill their needs and feel free to contact me personally at any time.



Fawad Maqbool

President and CEO



# COMPANY PROFILE

## Background

AmpliTech designs, develops, and manufactures custom and standard state-of-the-art RF components for the Commercial, SATCOM, Space, and Military markets. These designs cover the frequency range from 50 kHz to 40 GHz - Eventually, offering designs up to 110 GHz. AmpliTech also provides consulting services to help with any microwave components or systems design problems. Our growth has come about because we can provide complex, custom solutions. Therefore, AmpliTech is committed to providing immediate responses to any custom requirements that are presented to us. In addition, we have the best assemblers, wirers, and technicians in the industry and can provide contract assembly of your designs.

AmpliTech was founded by Fawad Maqbool to fill the need for high quality, reliable, state-of-the-art, RF components at an affordable cost, with quick deliveries, and hassle-free customer service.

Mr. Maqbool has over 32 years of experience in the design of microwave amplifiers and components. He has developed a wide variety of amplifier product lines, from LNA's (Low Noise Amplifiers) and MPA's (Medium Power Amplifiers), to broadband telecom amplifiers for the microwave and fiber optic communications firms.

Fawad Maqbool has developed amplifiers for leading companies such as MITEQ, Motorola, ITT, Harris, Northrop Grumman, Raytheon, L3 Communications, Aeroflex, and TRW. For the past 25 years, he has been at the fore-front of developing, and managing the development of high performance, low noise amplifier products, as well as other amplifier products. He has received a Best Technology Award from one of the industry's leading trade magazine and various Supplier Quality Awards.

## Quality Features

AmpliTech offers designs and products which maintain the highest quality. This is accomplished through myriad techniques which include the use of KOVAR Housings, Hermetic Sealing, ISO-9001:2008 Compliance, MIL-STD-883 and MIL-I-45208 specifications. AmpliTech uses the Highest quality parts and processes to deliver the highest quality product.

## Production Methodology

AmpliTech offers the most efficient and cost effective production techniques in the industry. Our philosophy includes the use of multiple vendors to provide a constant guarantee of parts availability. Assembly operations are two fold

- 1) Encompassing an in-house capability for custom prototyping and small orders.
- 2) Having the ability to partner with highly trained outsourced assembly for larger quantity production orders.

This blend ensures the highest customer satisfaction when custom designs, performance, and on time delivery are at the heart of customer requirements.

AmpliTech uses the latest test and assembly equipment as we continually focus on improving our process for better customer satisfaction and provide the most accurate data for our customers.

# AMPLITECH TECHNICAL FEATURES



AmpliTech, Inc. uses the latest test and production equipment



AmpliTech, Inc. has developed and supplied LNAs to Fortune 500 companies, the Military and Government Agencies such as:

- Lockheed Martin
- NASA
- L3 Communications
- Boeing
- Northrop Grumman
- Raytheon
- Government of Israel



All our personnel are cross-trained to perform multiple tasks to ensure efficient operation

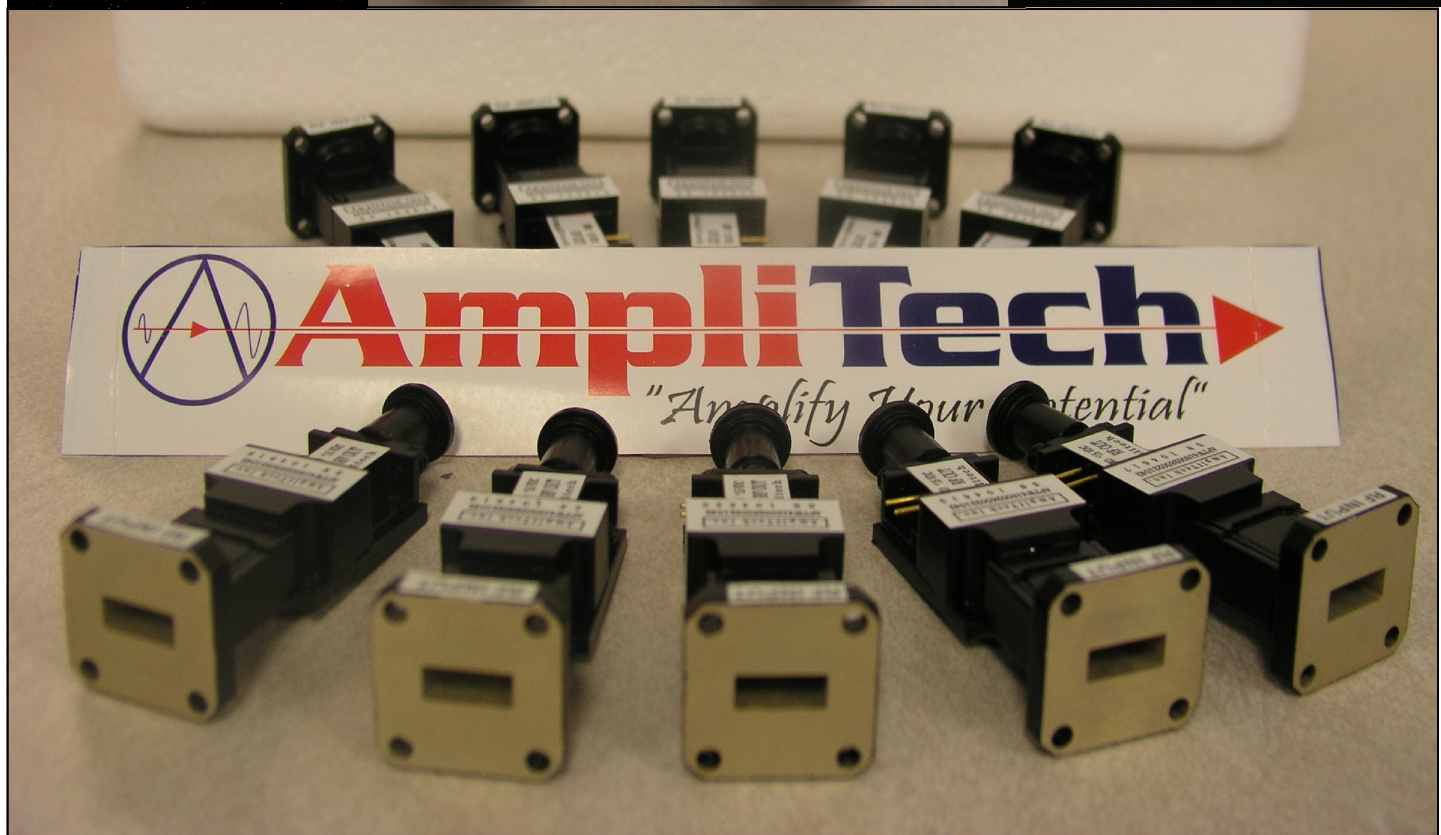


**RoHS Compliant**



# PRODUCT SUMMARY

- Highly customized RF/Microwave amplifiers that cover frequency ranges from 50 kHz to 100 GHz.
- Standard state-of-the-art RF/Microwave components for the Commercial, SATCOM, Space, & Military markets.
- Cryogenically cooled LNAs that achieve the LOWEST NOISE FIGURES in the industry.
- High reliability Space-Qualified components that meet standards of excellence that no other manufacturer in the industry can match.
- Consulting services to provide technical support for any microwave components or systems design issues, even from other manufacturers.



# AVAILABLE OPTIONS

## Electrical Options

- Low Phase Noise
- Gain window
- Integrated limiter protection
- Amplitude Matching/Tracking
- Phase Matching/Tracking
- Gain Flatness
- Gain Slope/Equalizer
- Integrated Bias Tee
- Temperature compensation
- Out of band gain filters

## Mechanical Options

- Custom packaging and outlines
- Hermetic Sealing
- Custom finishing (Gold, Nickel plating, Irridite, Anodize, etc.)
- Kovar packages
- EMI/EMC compatible package designs
- Waveguide packages to WR-90 size

## Environmental Screening Options

AmpliTech maintains an assortment of procedures and documentation that facilitates the testing of all our amplifiers up to MIL-PRF-38534 Class H level. The following items are part of this screening:

- Element Evaluation
- Non-destruct bond pull
- Temperature cycling
- Pre-burn-in
- Burn-in
- Mechanical Shock/Constant Acceleration
- Gross and Fine Leak
- Radiographic Examination/X-ray
- Internal Visual/Final Visual
- QCI Group A, B, C testing



# AMPLITECH QUALITY AND WARRANTY POLICY

## Quality Policy

AmpliTech believes that quality must be designed into all of the products that we manufacture. We take extreme care in maintaining a complete and detailed product assurance program. Our product quality is structured to and operates within the guidelines of ISO9001-2008 and MIL-STD-883. This, in turn, allows us to meet the rigorous requirements generated by our customers in the aerospace, military, and commercial sectors. Internal procedures are used to perform all functions affecting quality, from initial design through final acceptance. These procedures detail the responsibilities and functions necessary to maintain effective controls and to provide a means for evaluating quality disciplines during all phases of a job's assembly.

Beginning with a careful review of the customer's contract, Quality Assurance will evaluate the contract and all of the specifications applicable to the job. Quality requirements and characteristics are noted and adequate plans are implemented to ensure the incorporation of all aspects pertaining to overall product quality.

Quality Assurance activities will be coordinated with Engineering, Manufacturing, and Procurement during all phases of an order to ensure the transmittal of complete quality information to all manufacturing centers and inspection stations in a manner consistent with schedule requirements.

## Warranty Policy

AmpliTech guarantees that each of its products will be free from manufacturing and material defects and will perform in full accordance with applicable specifications provided. Products sold by AmpliTech shall not be considered defective or non-conforming to the buyers' order if they satisfactorily fulfill the performance requirements that were provided by the buyer to AmpliTech or as published in AmpliTech's product specification literature or in accordance with any written agreement between the Buyer and AmpliTech.

This warranty does not apply to any products which have been subject to accident, negligence, alteration, abuse, or other misuse. AmpliTech offers no warranty on accessories or internal parts not directly supplied by us and does not warranty damages to other equipment located before and after our products. Disassembly of our products or removal of factory seals by anyone other than an authorized representative of AmpliTech, voids this warranty in its entirety.



AmpliTech reserves the right to make changes in any of its products without incurring any obligation to make the same changes on previously delivered products. AmpliTech reserves the right to make changes and updates to this warranty as required. This warranty is not transferable unless otherwise agreed upon, in writing, by both parties.

The term for this warranty is three years, starting from the date of shipment, but we will continue to support all our current products by offering spare part replacements for 20 years from the date of shipment.

However, due to technological advances and changing markets, some spare parts may become technically obsolete or economically unfeasible. At that point, we will offer entirely new products at discounted prices or offer mechanical drawings and specifications to allow for suitable replacement.

All components having been repaired by Amplitech shall be warranted for that repair, for ninety (90) days from the repair shipping date. The buyer will prepay the shipping charges for any unit returned to us, by the buyer, and found to meet the applicable specifications or which were found not to be defective or which were not covered under this warranty.

All matters regarding this warranty shall be interpreted in accordance with the laws of the State of New York and any controversy that can not be settled directly shall be settled by arbitration in the State of New York.





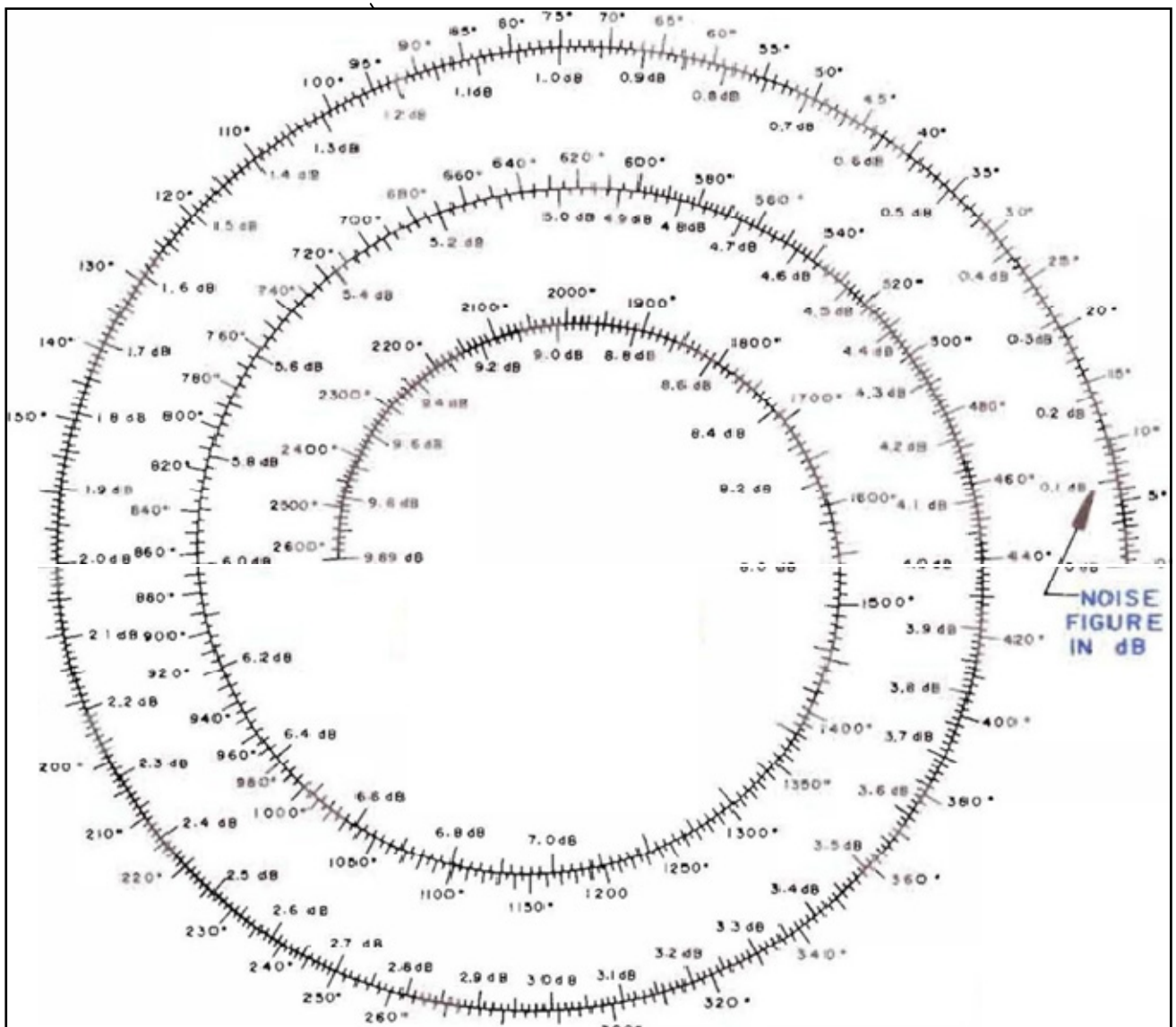
# AMPLIFIER KNOWLEDGEBASE

## Noise Figure

Advances in GaAs FET and pHEMT transistor technology have enabled amplifier manufacturers to design amplifiers with less than 0.25dB noise figures at L band, and less than 1 dB at Ku-band. Advances in microwave test equipment technology have in some cases eliminated measurement errors and in other cases have minimized them. AmpliTech's capabilities in this area permit measurement accuracies of the order of 0.01 dB for Noise measurements ( .05 degrees in noise Temp. ) and 0.25 dBm for power. This has proven to provide much satisfaction to our customers in their ability to rely on our stated performance data.

## Noise Temperature in Degrees Kelvin

### NOISE FIGURE / NOISE TEMPERATURE CONVERSION NOMOGRAPH



An understanding of some “noise” basics is crucial to the understanding of how amplifiers are to be specified in terms of their noise figure, even if such tests are not carried out to this level of detail by the end user. Some discussion in this regard is relevant. Noise diodes are integral to the measurement of Noise Figure in Amplifiers. Keysight Technologies has a noise diode (346C) which is well suited to this task. The “Hot Cold” method is typically used where the noise diode is to be switched on and off and where each diode state corresponds to a “Noise Temperature”. These on and off states are designated as  $T_H$  and  $T_C$  for “T Hot” and “T Cold.” When such a method is used the noise figure is evaluated from the following formula.

$$(T_2/T_0) - 1$$

$$F = Y - 1$$

$T_2$  - noise temp of diode in “on” state

$T_0$  - room reference temp (290 °K typically)

Y- a ratio of device noise output, when the device is at two different temperatures (i.e.; “on” and “off”)

Gain changes which may occur in the amplifier under test (when the noise diode is turned from its off condition to its on condition, or the amplifier input termination is changed from cold to hot) can adversely affect the accuracy of the measurement. Gain changes can be caused by:

- Amplifier gain change caused by the source impedance change as the noise diode is switched from off to on.
- Gain compression of noise peaks in test setups with insufficient amplifier or test setup dynamic range.
- Test setup gain instability caused by equipment warm-up.
- Source impedance uncertainties.

The most commonly encountered and most frequently overlooked error is introduced by amplifier gain modulation caused by the noise diode source impedance modulation as the diode is switched from off to on condition. Normally amplifier noise figure is optimized by use of the automatic noise figure indicator. Unless proper precautions are taken to eliminate or minimize the gain modulation effects, the “minimized” noise figure might include a substantial error introduced by amplifier gain modulation. If the amplifier gain increases as the noise diode is switched from off to on, the “minimized” noise figure is too “optimistic.” while a gain decrease when the diode is turned from off to on results in a “pessimistic” noise figure. The source impedance modulation is most prevalent when noise diodes are used. Its effects can be minimized by use of well-matched low-loss isolators, but their use is limited to narrow bandwidths. Another means of mitigating such effects are associated with the use of well-calibrated attenuators in the microwave test setup.

Mathematically

$$Y = \frac{G_1 (T_H + T_E)}{G_2 (T_C + T_E)}$$



Where

$G_2$  - available gain (noise diode is off)

$T_H$  - on noise temperature

$T_C$  - off noise temperature

$T_E$  - effective amplifier input noise temperature

As we can see, the gain change cannot be separated from that of the noise diode

A significant number of noise peaks can be as much as 10 dB higher than the RMS noise power (crest factor). For example, a test setup saturation point 10 dB above the RMS noise level can still yield an error of 0.1 dB due to noise peak clipping. Again, this error is more predominant with noise diodes because of their higher excess noise power. Conventional measurement techniques convert a spot (nominally 1 MHz bandwidth) noise power at the microwave frequency to a fixed IF frequency of the measuring instrument by mixing the RF noise power with a local oscillator. To avoid these measurement errors one must ensure that the input noise power fluctuation is within the dynamic range of the receiver. For more accurate measurements a precision receiver attenuator should be used. For example the automatic noise figure indicator (ANFI) can add an additional  $\pm 0.15$  to  $\pm 0.25$  dB of measurement error, while the precision attenuator is accurate to within  $\pm 0.5$  dB. Modern network analyzers such as the Keysight (formerly Agilent) PNA-X series of analyzers have minimized these errors and uncertainties using their unique X-parameter measurement system thereby eliminating the need for the older ANFI system.

## Noise Figure Dependence on Source Impedance

The noise figure of a GaAs FET or pHEMT amplifier is a very sensitive function of its source impedance. The lowest noise figure does not generally occur at the best input power match. Quite the contrary, lowest noise figures are obtained when the amplifier and the source are highly mismatched. This can generate additional new design problems to the system engineer, such as high gain ripple and large delay distortions as a function of frequency. For that reason amplifier manufacturers use various design techniques where simultaneous noise match and power match is approximated.

AmpliTech uses four design techniques in this regard.

- 1) Resistive Feedback-** By using resistive feedback techniques at frequency range where it is theoretically possible to achieve power match to achieve minimum degradation to noise figure.
- 2) Broadband Balanced matching-** By using  $90^\circ$  3 dB hybrid Lange couplers, multi-octave matching can be achieved without degrading power but at a slight increase in NF.
- 3) Narrowband matching-** The use of isolators achieves input and interstage matching at the expense of bandwidth and insertion loss since isolators are inherently narrowband devices.
- 4) Lossless series and shunt feedback-** This technique is more complex and involves complex conjugate matching and advanced methodology and topology to achieve the best possible bandwidth and least effect on NF.

AmpliTech has perfected many proprietary techniques that have many different combinations of the above to achieve the lowest NF and broadest bandwidths in the industry. If the source impedance of the amplifier in its actual system application differs from 50 ohms the system sensitivity can be degraded as a result of noise figure degradation as a function of source impedance as shown in Fig. 2.

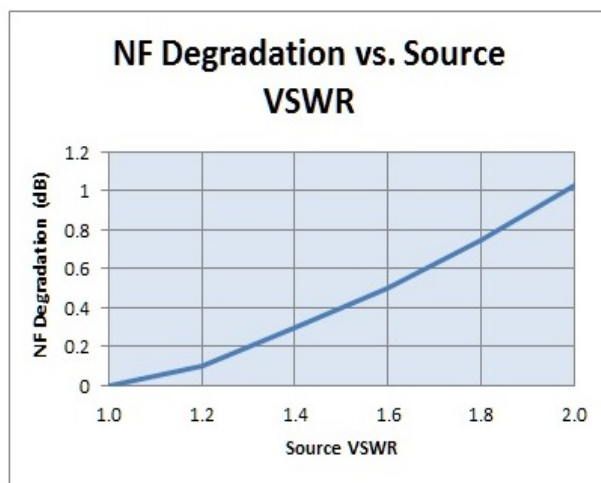


FIGURE 2. FET amplifier noise figure degradation due to nonoptimum source impedance.

## Gain

Error in insertion gain measurements can be caused by :

- Source and load VSWR
- Inaccuracies in adjustable attenuators
- Saturation effects

Typically, source impedance of sweepers and signal generators have VSWR's in the order of 1.5:1. If this VSWR is interacting with a 2:1 amplifier VSWR through a length of coaxial cable, a 0.2 dB gain ripple can result at the amplifier output. If the amplifier gain is measured by changing the insertion loss of a stepped attenuators an additional  $\pm 1$  dB gain uncertainty can result in the absolute as well as the relative gain vs. frequency. Also, if the detector is not well matched, a gain ripple can result at the amplifier detector interface. Mathematically, the gain variation produced by SWR interaction between the signal generator and the amplifier input or the detector and the amplifier output can be expressed as follows.

The total peak to peak gain variation can be determined from the nomograph in Figure 3. When amplifiers are measured with output signal levels close to the 1 dB gain compression point, additional errors are introduced because wideband amplifiers normally do not saturate uniformly as a function of frequency. Typically, small signal gain measurements should be performed more than 10 dB below the 1 dB compression point. AmpliTech's amplifiers are specified in terms of the minimum gain and maximum peak to peak gain variation over the operating frequency range over the specified temperature range.



$$\text{PEAK-TO-PEAK RIPPLE} = 20 \log_{10} (1 \pm |\Gamma_A \Gamma_B|) \text{ dB}$$

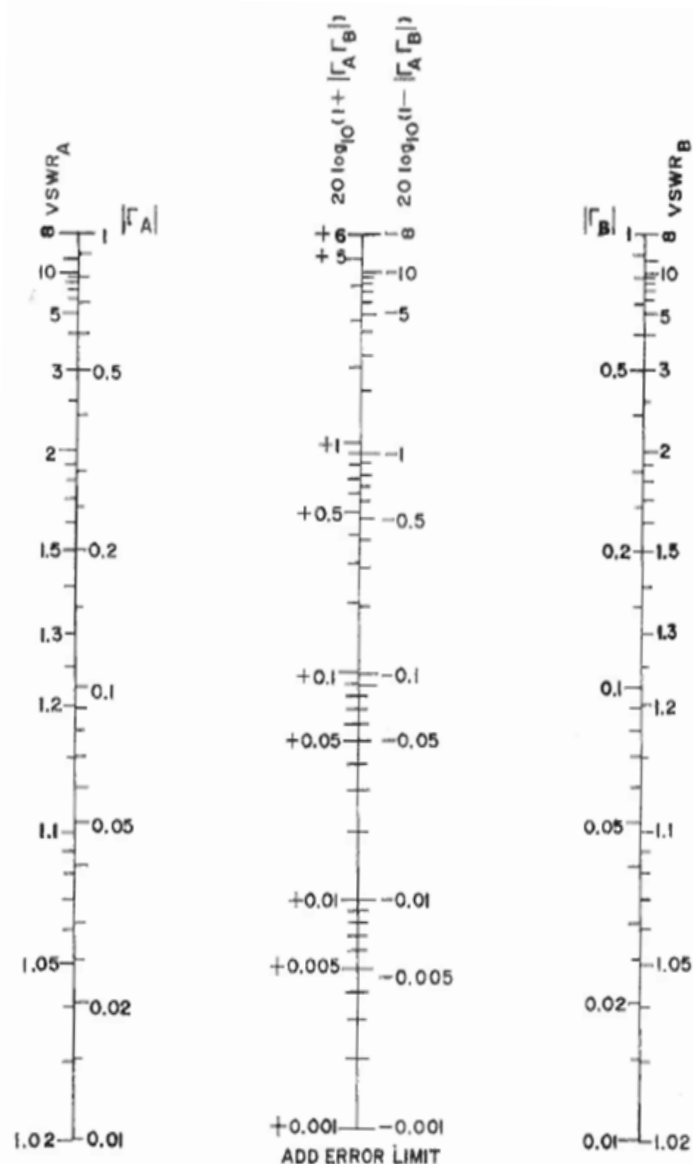
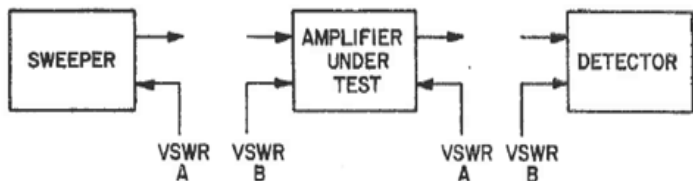


Fig. 3 GAIN RIPPLE AS A FUNCTION OF SOURCE AND LOAD VSWR

THIRD ORDER INTERCEPT POINT

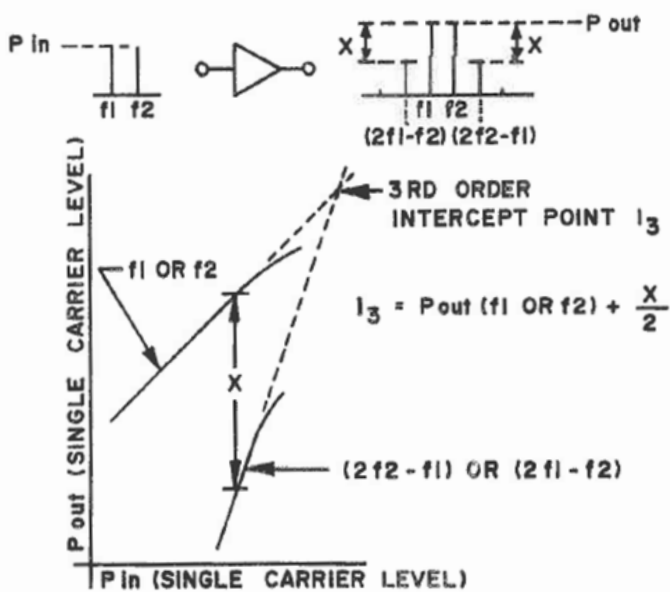
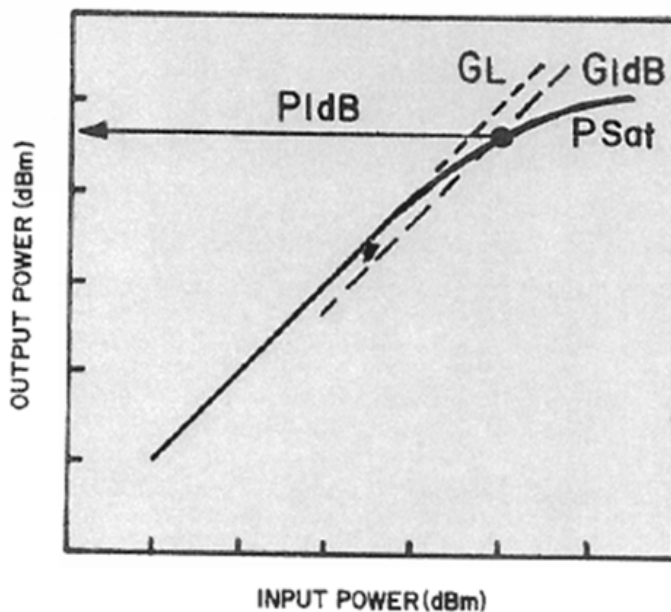


Fig. 4

OUTPUT POWER & GAIN



- P1dB : OUTPUT POWER AT 1dB GAIN COMPRESSION
- G1dB : GAIN AT 1dB G.C.P
- PSat : OUTPUT POWER AT SATURATION
- GL : GAIN AT LINEAR REGION

Fig. 5

## DYNAMIC RANGE

Dynamic range of an amplifier is limited in the low signal levels by internally generated amplifier noise, and in the higher signal levels by transistor nonlinearities. The amplifier noise level determines the magnitude of the minimum usable signal, while the presence of nonlinearities in the transistor produces internally generated signals that can interfere with incoming low level signals or can be falsely interpreted as incoming signals. Noise level is a function of the amplifier noise figure and of the pre-detection bandwidth. The presence of transistor nonlinearities produces harmonics of the incoming signals and intermodulation products when more than one signal is present.

The most troublesome of the intermodulation products in the third order product generated internally by the fundamental of one signal mixing with the second harmonic of another  $(2F_1 - F_2)$ , or  $(2F_2 - F_1)$ .

The level of that intermodulation product can be predicted when either the third order intercept point, the K factor, or the 1 dB compression point of the amplifier is known. Typically the third order intercept is approximately 10 dB above the 1 dB compression point and the K factor is equal to  $(-2) \times$  the third order intercept point.

Therefore,

$$P_{12} = K_{12}P_1P_2^2$$

Where  $P_{12}$  is the intermodulation product produced by the second harmonic of  $P_2$  mixing with the fundamental of  $P_1$ .

The other IM product

$$P_{21} = K_{21}P_1^2P_2$$

is produced by the second harmonic of  $P_1$  mixing with the fundamental of  $P_2$ .

If  $P_1 = P_2$  then

$$P_{12} = P_{21} = K_{12} P_1 P_2^2 = K_{21}P_1^2P_2$$

$K_{12}=K_{21}$  is a constant and is called the K factor

From the above equation

$$P_{21} = 2P_1 + P_2 + K$$

The K factor is determined experimentally for each amplifier. It is very useful in predicting the level of intermodulation products second harmonic of  $P_2$  mixing with the fundamental of  $P_1$ , the other unequal signal levels.



Another constant called the third order intercept point ( $I_3$  or IP3) is very useful if the intermodulation products are produced by two equal level signals. The third order intercept is the theoretical intercept of the fundamental ( $P_1$  or  $P_2$ ) and the third order intermodulation products ( $P_{12}$  or  $P_{21}$ ) transfer curve. The third order intercept point is normally 10 dB above the 1 dB compression point. the third order intermodulation produced by two equal levels fundamental signals, each signal P dBm is

$$P_{21} = P_{12} = 3P - 2$$

## NOISE FIGURE AND GAIN DEPENDENCE ON TEMPERATURE

Among all figures of merit associated with Amplifier performance, noise figure and gain are the ones that are most effected to temperature variations. The noise temperature of a FET is proportional to its active region temperature and inversely proportional to its trans conductance. Consequently the noise figure for the FET amplifier increases or decreases as the temperature increases or decreases. This variation is presented in figure 6.0

The actual gain and frequency response of an amplifier is the combined function of its passive and active circuits elements including stray reactances. While the temperature effect on active components can be predicted fairly accurately, the behavior of passive circuit elements in temperature and their effect on the overall amplifier frequency response is a much more complicated function of temperature. The gain of a transistor chip or a MMIC is inversely proportional to the square root of temperature. This results in gain variations of the order of .015 dB per degrees C per stage this is summarized in Figures 6.0 and 7.0 .

## RECOVERY FROM INPUT OVERLOADS

When the input signals exceeds the specified input power range for linear operation, the amplifier will saturate. When the overload is removed, the amplifier requires a finite time to reach its normal operating condition. That time is defined as a recovery time. Typical recovery time for GaAs FET amplifiers ranges from 10-50 nanosec.

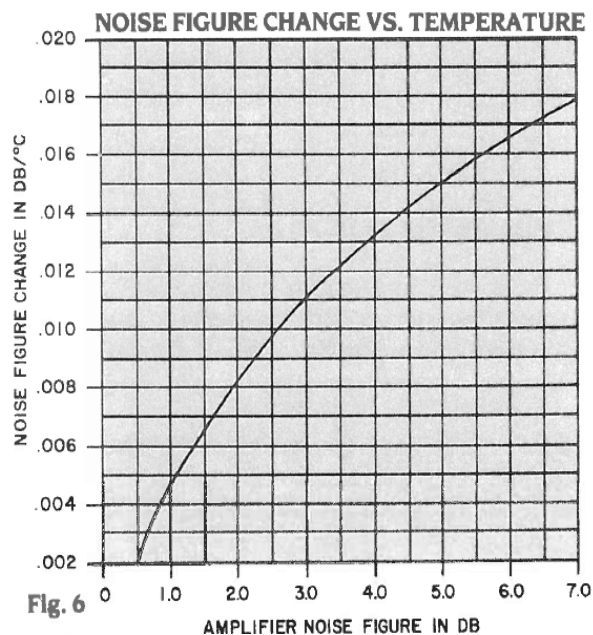


Fig. 6

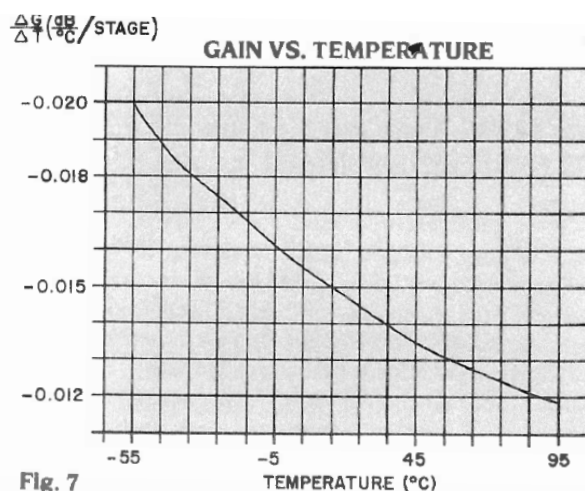


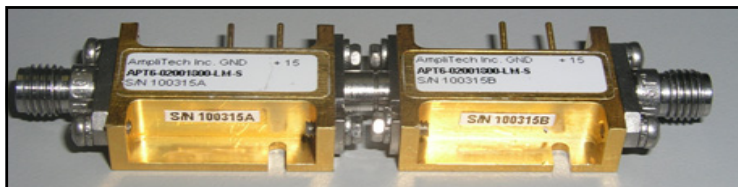
Fig. 7

## LOW NOISE AMPLIFIERS AND THE SYSTEM ENGINEER

Low noise amplifiers are used to enhance the sensitivity of receiving systems. Most of low noise amplifiers are used as RF front ends preceding mixers in superheterodyne receivers. The amplifier performance is optimized over the input frequency range. Optimized parameters include noise figure, input VSWR, gain and gain flatness. Two of the most important amplifier performance parameters that are often overlooked by system design engineers are the amplifier gain and noise figure outside the band of interest.



# AMPLITECH FEATURED PRODUCTS



2 to 18 GHz Wide Band EW / ECM / IFM High Gain Limiting Amplifier

## APT55-02001800-7016-66-LMS

- 2 to 18 GHz Frequency Range
- Typical N.F. < 4 dB
- High Gain (80 dB)
- Gain Flatness <  $\pm 2.5$  dB
- +20 dBm Saturated Output Power
- Low Harmonic Distortion with Two-tone input signals up to +10 dBm
- Internal DC Regulator
- Reverse Voltage Protection
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability



C-Band Super LNA/High Dynamic Range with integrated Bias- Tee

## APTMP4-04400500-0617-D4-SB

- 4.4 to 5.0 GHz Frequency Range
- Typical N.F. < 0.6 dB
- Typical Gain 43dB
- Gain Flatness <  $\pm 0.5$  dB
- +32 dBm IP3
- +12V to +15V 125 mA Low DC power consumption
- Internal DC regulator
- Internal Bias Tee at output
- Reverse Voltage Protection
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- Hermetic Seal Option



C-Band Super Low Noise Amplifier with integrated 2W CW Limiter

## APT3-05400590-1010-LS-D4

- 5.4 to 5.9 GHz Frequency Range
- Typical N.F. < 0.7 dB
- Typical Gain 28 dB
- Gain Flatness <  $\pm 0.3$  dB
- +33 dBm (2W) CW Limiter
- +8V to +15V 80 mA Low DC power consumption
- Internal DC regulator
- Reverse Voltage Protection
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability

# AMPLITECH PRODUCT LISTING

## CRYOGENIC AMPLIFIERS

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTC3-1M500M-1000-D6	0.001	0.500	27.0	3.0	1.00	2.5	2.0	0.0
APTC3-00100200-0900-D4-V	0.100	2.000	38.0	1.0	0.90	2.0	2.0	0.0
APTC3-00100200-1200-D4	0.100	2.000	35.0	1.0	1.20	2.0	2.0	0.0
APTC-00100400-1200-D4	0.100	4.000	28.0	1.0	1.20	2.0	2.0	0.0
APTC3-00100200-0905-D4	0.100	2.000	35.0	1.0	0.20	2.0	2.0	5.0
APTC3-00100200-0912-D4	0.100	2.000	35.0	1.0	0.20	2.0	2.0	12.0
APTC3-00500100-0600-D4-K	0.500	1.000	36.0	1.0	0.60	2.5	2.5	0.0
APTC3-01000200-0600-D4-K	1.000	2.000	36.0	1.0	0.60	2.5	2.5	0.0
APTC4-01001800-1910-D4	1.000	18.000	23.0	2.5	2.50	2.5	2.5	8.0
APTC4-01001800-1900-D4	1.000	18.000	23.0	2.5	1.90	2.5	2.5	0.0
APTC3-01000200-0500-D4-V	1.000	2.000	36.0	1.0	1.00	2.0	2.0	0.0
APTC4-01501000-2500-D4-V	1.500	10.000	25.0	2.5	2.50	2.5	2.5	0.0
APTC3-01600163-0300-D4	1.600	1.630	36.0	0.5	0.30	2.0	2.0	0.0
APTC2-02000400-0500-D2	2.000	4.000	24.0	1.5	0.60	2.5	2.5	0.0
APTC3-04000800-0700-D4-KH	4.000	8.000	23.0	1.0	0.70	2.0	2.0	0.0
APTC2-04000800-0700-D4-V	4.000	8.000	23.0	2.0	1.00	2.0	2.0	0.0
APTC2-08001200-1500-D2	8.000	12.000	17.0	2.0	1.50	2.5	2.5	0.0

## SURFACE MOUNT AMPLIFIERS

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTSM1-00050100-1820	0.050	1.000	13.0	1.0	1.80	2.0	2.0	20.0
APTSM1-00100200-1616	0.100	2.000	12.0	1.0	1.60	2.0	2.0	16.0
APTSM2-00100200-1208	0.100	2.000	22.0	1.0	1.20	2.0	2.0	8.0
APTSM2-00100300-1208	0.100	3.000	20.0	1.0	1.20	2.0	2.0	8.0
APTSM2-00100400-1808	0.100	4.000	20.0	1.0	1.80	2.0	2.0	8.0
APTSM2-00100600-2208	0.100	6.000	20.0	1.0	2.20	2.0	2.0	8.0
APTSM3-00502000-5008	0.500	20.000	16.0	1.0	5.00	2.5	2.5	8.0
APTSM2-00500100-0808	0.500	1.000	25.0	1.0	0.80	2.0	2.0	8.0
APTSM2-00800100-1510-SMT	0.800	1.000	26.0	1.0	1.50	1.6	1.6	10.0
APTSM1-01000200-1618	1.000	2.000	13.0	1.0	1.60	2.0	2.0	18.0
APTSM2-01000200-0808	1.000	2.000	25.0	1.0	0.80	2.0	2.0	8.0
APTSM2-02000400-1008	2.000	4.000	21.0	1.0	1.00	2.0	2.0	8.0
APTSM2-02000600-1608	2.000	6.000	16.0	1.5	1.60	2.0	2.0	8.0
APTSM2-02000600-1208	2.000	6.000	20.0	1.0	1.20	2.0	2.0	8.0
APTSM2-02340718-1500-S	2.340	7.180	20.0	0.1	1.50	1.9	1.9	0.0
APTSM2-02340718-1500-S-E	2.340	7.180	20.0	0.1	1.50	1.9	1.9	0.0
APTSM2-04000800-2008	4.000	8.000	20.0	1.0	2.00	2.0	2.0	8.0
APTSM2-08001200-1508	8.000	12.000	20.0	1.0	1.50	2.0	2.0	8.0
APTSM3-12001800-2008	12.000	18.000	20.0	1.0	2.00	2.0	2.0	8.0

# AMPLITECH PRODUCT LISTING-con'd

SATCOM AMPLIFIERS								
MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTW4-02200230-33K10-D8	2.200	2.300	50.0	0.5	33.00	18.0	18.0	10.0
APTW5-03400420-30K10-229	3.400	4.200	50.0	1.0	30.00	15.0	15.0	10.0
APTW6-03400420-33K10-229	3.400	4.200	60.0	1.5	33.00	15.0	15.0	10.0
APTW4-03400420-30K10-229G	3.400	4.200	50.0	0.5	0.43	1.4	1.4	10.0
APTW4-03400420-40K10-229G	3.400	4.200	60.0	0.5	0.70	1.3	1.3	10.0
APTW1-03600420-50K10-229	3.600	4.200	10.0	1.5	50.00	15.0	15.0	10.0
APTW3-03600420-30K10-229	3.600	4.200	35.0	0.5	30.00	15.0	15.0	10.0
APTW3-03600420-50K10-229	3.600	4.200	35.0	0.5	50.00	15.0	15.0	10.0
APTW5-03600420-35K10-229	3.600	4.200	50.0	0.8	35.00	15.0	15.0	10.0
APTW1-03600420-50K10	3.600	4.200	10.0	1.5	0.69	1.7	1.7	10.0
APTW3-03600420-50K10	3.600	4.200	35.0	0.5	0.69	1.4	1.4	10.0
APTW6-03600420-45K10-229-G	3.625	4.200	60.0	0.5	0.63	1.3	1.3	10.0
APTW4-0440550-39K10-187	4.400	5.500	40.0	1.0	39.00	15.0	15.0	10.0
APTW5-0440550-50K10-187	4.400	5.500	60.0	1.0	50.00	15.0	15.0	10.0
APTW5-04400550-60K10	4.400	5.500	60.0	1.0	0.82	1.4	1.4	10.0
APTW5-04400550-40K10	4.400	5.500	40.0	1.5	0.56	1.4	1.4	10.0
APTW4-0590072-0613-137	5.900	7.200	35.0	0.8	0.60	1.5	1.5	13.0
APTW5-05900710-45K10	5.900	7.100	40.0	1.5	0.63	1.4	1.4	10.0
APTW5-05900710-70K10-D4	5.900	7.100	40.0	1.0	0.94	1.4	1.4	10.0
APTW5-05900710-70K10	5.900	7.100	40.0	1.0	0.93	1.4	1.4	10.0
APTW4-05900710-50K10-137	5.900	7.100	39.0	1.0	0.70	1.5	1.5	10.0
APTW6-06700775-60K10-112	6.700	7.750	57.0	1.0	0.80	1.5	1.5	10.0
APTW5-07100840-55K10-112	7.100	8.400	50.0	1.0	55.00	14.0	14.0	10.0
APTW5-07100840-50K10-112	7.100	8.400	50.0	1.0	50.00	14.0	14.0	10.0
APTW6-07100840-50K10-112	7.100	8.400	60.0	1.0	50.00	14.0	14.0	10.0
APTW8-07100840-50K10-112	7.100	8.400	60.0	1.0	0.69	1.5	1.5	10.0
APTW4-07100840-XX10-137	7.100	8.400	25.0	0.5	0.55	2.0	1.5	10.0
APTW5-07250775-44K10-112	7.250	7.750	50.0	1.0	44.00	15.0	15.0	10.0
APTW3-07250775-42K03-137	7.250	7.750	25.0	0.8	42.00	10.0	10.0	3.0
APTW3-07250775-0503-SD4	7.250	7.750	23.0	0.8	0.55	1.3	1.3	10.0
APTW8-07250840-50K10-137	7.250	8.400	60.0	1.0	0.70	1.4	1.4	10.0
APTW5-07250775-44K20-112	7.250	7.750	50.0	1.0	0.60	1.4	1.4	20.0
APTW3-725775-50K05-112-BTO	7.250	7.750	27.0	0.3	0.69	1.3	1.3	10.0
APTW5-07700850-50K10-112NUG	7.700	8.500	50.0	1.0	0.69	1.5	1.5	10.0
APTW4-08000840-50K10-112	8.000	8.400	40.0	0.5	50.00	14.0	14.0	10.0
APTW4-10701270-100K10-75	10.700	12.700	40.0	1.5	100.00	14.0	14.0	10.0
APTW2-10701270-100K08-75	10.700	12.700	14.0	1.5	100.00	14.0	14.0	8.0
APTW4-10701275-80K10-75	10.700	12.700	40.0	1.5	80.00	14.0	14.0	10.0
APTW4-10701275-100K10-75	10.700	12.700	40.0	1.5	100.00	14.0	14.0	10.0
APTW5-10701275-80K10-75	10.700	12.700	50.0	1.8	80.00	15.0	15.0	10.0
APTW6-10701275-115K10-75	10.700	12.700	60.0	2.0	115.00	14.0	14.0	10.0
APTW5-10701270-100K10	10.700	12.700	40.0	1.5	1.30	1.4	1.4	10.0



# AMPLITECH PRODUCT LISTING-con'd

## SATCOM AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTW2-10701270-100K08	10.700	12.700	10.0	2.0	1.29	1.7	1.7	8.0
APTW5-10701270-80K10-75	10.700	12.700	40.0	1.5	1.01	1.4	1.4	10.0
APTW5-10951170-80K10-75	10.950	11.000	50.0	1.0	80.00	14.0	14.0	10.0
APTW42-12251275-80K10-75	12.250	12.000	60.0	1.0	80.00	15.0	15.0	10.0
APTW4-12701530-150K10-62	12.700	15.000	40.0	1.5	150.00	15.0	15.0	10.0
APTW6-12701530-100K10-62	12.700	15.300	40.0	1.5	1.30	1.3	1.3	10.0
APTW5-12701530-125K10-62	12.700	15.300	40.0	1.5	1.56	1.4	1.4	10.0
APTW4-12701530-150K10-D6	12.700	15.300	40.0	1.5	1.80	1.4	1.4	15.0
APTW4-12701530-150K10	12.700	15.300	40.0	1.5	1.80	1.4	1.4	10.0
APTW5-12701530-100K10-62	12.700	15.300	40.0	1.5	1.29	1.4	1.4	10.0
APTW4-14001600-100K10-62	14.000	16.000	37.0	1.0	100.00	15.0	15.0	10.0
APTW6-1504-100K10-WR62	14.920	15.150	36.0	0.5	1.29	1.4	1.4	13.0
APTW3-15501750-101K10-62	15.500	17.500	23.0	1.0	1.30	2.0	2.0	10.0
APTW3-15501750-101K10-62-G	15.500	17.500	24.0	1.0	1.30	2.0	2.0	10.0
APTW3-17701970-150K10-51	17.700	19.700	30.0	1.0	150.00	15.0	15.0	10.0
APTW3-17701970-175K10	17.700	19.700	30.0	1.0	2.05	1.4	1.4	10.0
APTW5-17702020-180K08-42-S	17.700	20.200	50.0	1.5	2.10	1.3	1.3	8.0
APTW22-17802130-135K10-42	17.800	21.300	45.0	2.0	135.00	10.0	10.0	10.0
APTW4-18002650-214K10-42	18.000	26.500	40.0	2.0	214.00	7.0	10.0	10.0
APTW4-18002650-2210-42	18.000	26.500	40.0	2.0	2.20	2.5	2.0	10.0
APTW-18102130-1620-S	18.100	221.300	46.0	2.0	1.70	1.3	1.3	20.0
APTW22-20202120-135K10-42	20.200	21.200	50.0	1.0	135.00	10.0	10.0	10.0
APTW8-20202120-120K06-S	20.200	21.200	50.0	0.8	1.50	1.3	1.3	6.0
APTW8-20202120-135K10-42	20.200	21.200	50.0	0.8	1.70	1.3	1.3	10.0
APTW8-20202120-150K10-42	20.200	21.200	50.0	1.0	1.80	1.5	1.5	10.0
APTW4-24752525-2005-S	24.750	25.250	38.0	0.5	2.00	2.0	2.0	10.0

## LIMITING AMPLIFIERS

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT4-00100200-5011-D6-LM	0.100	2.000	65.0	2.5	5.00	2.5	2.5	13.0
APT4-01002000-5011-D42-LM	1.000	20.000	42.0	2.5	5.00	2.5	2.5	11.0
APT3-01000200-1515-D4-LM	1.000	2.000	40.0	1.0	2.00	2.0	2.0	17.0
APT5-02001800-5010-D46-LM	1.955	18.050	72.0	2.5	8.00	2.0	2.0	16.0
APT55-02001800-5011-D6-LM	2.000	18.000	60.0	2.5	5.00	2.5	2.5	13.0
APT55-02001800-5011-D66-LM	2.000	18.000	61.0	3.0	5.00	3.0	3.0	13.0

# AMPLITECH PRODUCT LISTING-con'd

OCTAVE AMPLIFIERS								
MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT2-00250050-0810-D4	0.250	0.500	25.0	0.5	0.80	2.0	2.0	10.0
APT3-00250050-0810-D4	0.250	0.500	38.0	0.5	0.80	2.0	2.0	10.0
APT2-00500100-0610-D4	0.500	1.000	25.0	0.5	0.60	2.5	2.0	10.0
APT3-00500100-0610-D4	0.500	1.000	35.0	0.5	0.60	2.5	2.0	10.0
APTSM2-00500100-0808	0.500	1.000	25.0	1.0	0.80	2.0	2.0	8.0
APTC3-00500100-0600-D4-K	0.500	1.000	36.0	1.0	0.60	2.5	2.5	0.0
APT2-01000200-0510-D4	1.000	2.000	24.0	1.0	0.50	2.0	2.0	10.0
APT3-01000200-0510-D4	1.000	2.000	38.0	1.0	0.50	2.0	2.0	10.0
APT3-01000200-0310-D4	1.000	2.000	38.0	1.0	0.30	2.0	2.0	10.0
APT3-01000200-1310-D6	1.000	2.000	36.0	1.0	0.30	2.0	2.0	10.0
APT3-01000200-1010-D6	1.000	2.000	38.0	1.0	1.00	2.0	2.0	10.0
APT2-01000200-1010-D2	1.000	2.000	22.0	1.0	1.00	2.0	2.0	10.0
APT3-01000200-1310-D4	1.000	2.000	32.0	1.0	1.30	2.0	2.0	10.0
APT2-01000200-1410-D2	1.000	2.000	24.0	1.0	1.40	2.0	2.0	10.0
APTMP1-01000200-1523-D4	1.000	2.000	13.0	1.5	1.50	2.5	2.5	23.0
APTMP2-01000200-2020-D2	1.000	2.000	20.0	1.5	2.00	2.0	2.0	20.0
APTMP3-01000200-2523-D4	1.000	2.000	29.0	1.5	2.50	2.0	2.5	23.0
APTSM1-01000200-1618	1.000	2.000	13.0	1.0	1.60	2.0	2.0	18.0
APTSM2-01000200-0808	1.000	2.000	25.0	1.0	0.80	2.0	2.0	8.0
APT2-01000200-1010-D6	1.000	2.000	22.0	1.0	1.00	2.0	2.0	10.0
APTC3-01000200-0600-D4-K	1.000	2.000	36.0	1.0	0.60	2.5	2.5	0.0
APT5-01000200-0410-D6	1.000	2.000	42.0	1.0	0.40	2.5	2.0	10.0
APT2-1000200-4010-D2	1.000	2.000	17.0	2.5	4.00	2.5	2.5	10.0
APT4-01000200-0413-D4	1.000	2.000	45.0	1.5	0.40	2.0	2.0	13.0
ASK1-01000200-2020-D4	1.000	2.000	14.0	0.5	2.00	2.0	2.0	20.0
APT3-01000200-1513-D4	1.000	2.000	44.0	2.0	1.50	2.0	2.0	13.0
APTMP4-01000200-1525-D4	1.000	2.000	40.0	1.0	1.50	2.0	2.0	25.0
APT4-01000200-0513-D6	1.000	2.000	45.0	1.0	0.50	2.0	2.0	13.0
APTMP3-01000200-0520-D6	1.000	2.000	40.0	1.0	0.50	2.0	2.0	20.0
APTC3-01000200-0500-D4-V	1.000	2.000	36.0	1.0	1.00	2.0	2.0	0.0
APT3-01000200-1515-D4-LM	1.000	2.000	40.0	1.0	2.00	2.0	2.0	17.0
APTMP4-01000200-1823-D4-GW	1.000	2.000	20.0	1.5	1.80	2.0	2.0	23.0
APT3-02000400-0610-D4	2.000	4.000	32.0	1.0	0.60	2.0	2.0	10.0
APT5-02000400-0610-D6	2.000	4.000	46.0	1.5	0.60	2.0	2.0	10.0
APT3-02000400-0510-D4	2.000	4.000	32.0	1.0	0.50	2.0	2.0	10.0
APT3-02000400-1410-D4	2.000	4.000	32.0	1.0	1.40	2.0	2.0	10.0
APT4-02000400-1014-D4	2.000	4.000	38.0	1.5	1.00	2.0	2.0	14.0
APT4-02000400-0615-D6	2.000	4.000	37.0	1.5	0.60	2.0	2.0	15.0
APTMP4-02000400-3025-D4	2.000	4.000	28.0	1.5	3.00	2.0	2.0	25.0
APTMP4-02000400-2520-D4	2.000	4.000	40.0	1.0	2.50	2.0	2.0	20.0
APTSM2-02000400-1008	2.000	4.000	21.0	1.0	1.00	2.0	2.0	8.0

# AMPLITECH PRODUCT LISTING-con'd

## OCTAVE AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT3-02000400-2415-D4	2.000	4.000	33.0	1.0	2.40	2.0	2.0	15.0
APT3-0200400-0608-D4	2.000	4.000	26.0	1.0	0.60	2.0	2.0	8.0
APTC2-02000400-0500-D2	2.000	4.000	24.0	1.5	0.60	2.5	2.5	0.0
APT3-02000400-0608-D4	2.000	4.000	26.0	1.0	0.60	2.0	2.0	8.0
APT4-02000400-0510-D6	2.000	4.000	40.0	1.5	0.50	2.0	2.0	10.0
ASK3-02000400-0608-D4	2.000	4.000	26.0	1.0	0.60	2.0	2.0	8.0
APT4-02000400-1015-D6	2.000	4.000	40.0	1.0	1.00	2.0	2.0	15.0
APTMP5-02000400-4030-D12	2.000	4.000	33.0	1.0	4.00	1.8	1.8	30.0
APT4-02000400-1810-D4	2.000	4.000	37.0	1.0	1.80	1.8	1.8	10.0
APT3-02000400-0710-D4	2.000	4.000	32.0	1.0	0.70	2.0	2.0	10.0
APTMP5-02000400-1525-D6	2.000	4.000	35.0	3.0	1.50	2.0	2.0	25.0
APTMP5-02000400-0520-D6	2.000	4.000	40.0	1.5	0.50	2.0	2.0	20.0
APTMP4-02000400-0620-D4	2.000	4.000	38.0	2.0	0.60	2.0	2.3	20.0
APT4-02600520-1010-D4	2.600	5.200	28.0	1.0	1.00	2.0	2.0	10.0
APT2-04000800-0710-D4	4.000	8.000	23.0	1.0	0.70	2.0	2.0	10.0
APT3-04000800-0610-D4	4.000	8.000	28.0	1.0	0.60	2.0	2.0	10.0
APT3-04000800-0710-D4	4.000	8.000	32.0	1.0	0.70	2.0	2.0	10.0
APT4-04000800-1212-D4	4.000	8.000	38.0	1.5	1.20	2.0	2.0	12.0
APT4-04000800-0710-D4	4.000	8.000	38.0	1.0	0.70	2.0	2.0	10.0
APT5-04000800-0710-D6	4.000	8.000	50.0	1.5	0.70	2.0	2.0	10.0
APTMP4-04000800-4022-D4	4.000	8.000	20.0	1.0	4.00	2.0	2.0	22.0
APTSM2-04000800-2008	4.000	8.000	20.0	1.0	2.00	2.0	2.0	8.0
APT4-04000800-0710-D4-S	4.000	8.000	40.0	1.0	1.00	2.0	2.0	10.0
APTC3-04000800-0700-D4-KH	4.000	8.000	23.0	1.0	0.70	2.0	2.0	0.0
APT3-04000800-5010-D2	4.000	8.000	18.0	1.0	5.00	2.0	2.0	15.0
APT4-04000800-0610-D4	4.000	8.000	35.0	1.0	0.60	2.0	2.0	10.0
APT3-04000800-5015-D4	4.000	8.000	15.0	1.0	5.00	2.0	2.0	15.0
APT3-04000800-1010-D4	4.000	8.000	28.0	1.0	0.60	2.0	2.0	10.0
APT4-04000800-2415-D4	4.000	8.000	33.0	1.0	2.40	2.0	2.0	15.0
APTMP4-04000800-1525-D6	4.000	8.000	36.0	1.0	1.50	2.0	2.0	25.0
APTMP4-04000800-3020-D6	4.000	8.000	29.0	1.0	3.00	2.0	2.0	20.0
APT3-04000800-5015-D2	4.000	8.000	18.0	1.0	5.00	2.0	2.0	15.0
ASK4-04000800-0710-D4	4.000	8.000	38.0	1.0	0.70	2.0	2.0	10.0
APTMP4-0400800-1530-D6	4.000	8.000	33.0	1.3	4.00	1.8	1.8	30.0
APT4-04000800-1810-D4	4.000	8.000	37.0	1.2	1.80	1.8	1.8	10.0
APT4-04000800-1810-D4-GW	4.000	8.000	32.0	1.0	1.80	1.8	1.8	10.0
APTMP4-04000800-6025-D4	4.000	8.000	20.0	1.0	6.00	2.0	2.0	25.0
APT4-04000800-1515-D4	4.000	8.000	40.0	1.0	1.50	2.0	2.0	15.0
APT4-04000800-1010-D4	4.000	8.000	41.0	1.0	1.00	2.0	2.0	10.0
APT3-04000800-0810-D4	4.000	8.000	32.0	1.0	0.80	2.0	2.0	10.0
APTMP5-04000800-0820-D6	4.000	8.000	40.0	1.7	0.80	2.0	2.0	20.0



# AMPLITECH PRODUCT LISTING-con'd

## OCTAVE AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTC2-04000800-0700-D4-V	4.000	8.000	23.0	2.0	1.00	2.0	2.0	0.0
APTMP5-04000800-5525-D4	4.000	8.000	20.0	1.0	5.50	2.0	2.0	25.0
APT2-04000800-0805-D2-GW	4.000	8.000	18.0	1.0	0.80	2.0	2.0	5.0
APT3-04000800-2523-D4-GW	4.000	8.000	26.0	1.3	2.50	2.0	2.0	23.0
APT2-06001200-1605-D2	6.000	12.000	14.0	2.0	1.60	2.0	2.0	5.0
APT3-06001200-1208-D4	6.000	12.000	24.0	1.5	1.20	2.0	2.0	8.0
APT3-06001200-1508-D4	6.000	12.000	24.0	1.5	1.50	2.0	2.0	8.0
APT4-06001200-1208-D4	6.000	12.000	32.0	2.0	1.20	2.0	2.0	10.0
APT4-06001200-1510-D4	6.000	12.000	34.0	1.5	1.50	2.0	2.0	10.0
APT4-06001200-1510-D6	6.000	12.000	34.0	1.5	1.50	2.0	2.0	10.0
ASK4-06001200-1510-D6	6.000	12.000	34.0	1.5	1.50	2.0	2.0	10.0
APT3-06001200-1510-D4	6.000	12.000	34.0	1.0	1.50	2.0	2.0	10.0
APTVG-06001200-1910-D6C	6.000	12.000	24.0	1.5	1.90	2.0	2.0	10.0
APT4-08001600-1410-D4	8.000	16.000	23.0	1.0	1.40	2.0	2.0	10.0
APT2-08001800-2010-D4	8.000	16.000	25.0	2.0	2.00	2.0	2.0	10.0
ASK4-08001600-1410-D4	8.000	16.000	23.0	1.0	1.40	2.0	2.0	10.0
APT4-12002400-2510-D4	12.000	24.000	20.0	2.0	2.50	2.0	2.5	10.0
APT4-12002400-2510-D2	12.000	24.000	20.0	2.0	2.50	2.0	2.5	10.0

## MULTI-OCTAVE AMPLIFIERS

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTMP3-00100050-1015-D6	0.100	0.500	36.0	1.0	1.00	2.5	2.0	15.0
APTMP2-00100100-1823-D2	0.100	1.000	13.0	1.0	1.80	2.5	2.0	23.0
APTMP1-00100100-3523-D2	0.100	1.000	13.0	2.0	3.50	2.5	2.5	23.0
APTMP2-00100170-1527-D4	0.100	1.700	29.0	1.5	1.00	2.0	2.0	27.0
APT3-00100100-1112-D4-GW	0.100	1.000	14.0	1.0	1.10	2.0	2.0	12.0
APT2-00100100-1008-TC-D2-GW	0.100	1.000	27.0	1.0	1.00	2.0	2.0	8.0
APT3-00100100-0910-TC-D4-GW	0.100	1.000	41.0	1.0	0.90	2.0	2.0	10.0
APT3-00150030-1119-D4-GWS	0.150	0.300	25.0	1.5	1.10	2.2	2.2	19.0
APTMP2-00200200-2527-D2	0.200	2.000	23.0	1.0	2.50	2.0	2.0	27.0
APTMP3-00200100-1216-D2-LS	0.200	1.000	20.0	0.5	1.20	2.0	2.0	16.0
APTMP3-00200100-3316-D2-S	0.200	1.000	20.0	0.5	3.30	2.0	2.0	16.0
APT3-00200100-1010-D4	0.200	1.000	28.0	1.0	1.00	2.0	2.0	10.0
APTMP3-00200100-3316-D16-S	0.200	1.000	20.0	0.5	3.30	2.0	2.0	16.0
APTMP3-00200100-1216-D16-LS	0.200	1.000	20.0	0.5	1.20	2.0	2.0	16.0
APTMP3-00200100-1216-D2-S	0.200	1.000	20.0	0.5	1.20	2.0	2.0	16.0

# AMPLITECH PRODUCT LISTING-con'd

## MULTI-OCTAVE AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTMP3-00100050-1015-D6	0.100	0.500	36.0	1.0	1.00	2.5	2.0	15.0
APTMP2-00100100-1823-D2	0.100	1.000	13.0	1.0	1.80	2.5	2.0	23.0
APTMP1-00100100-3523-D2	0.100	1.000	13.0	2.0	3.50	2.5	2.5	23.0
APTMP2-00100170-1527-D4	0.100	1.700	29.0	1.5	1.00	2.0	2.0	27.0
APT3-00100100-1112-D4-GW	0.100	1.000	14.0	1.0	1.10	2.0	2.0	12.0
APT2-00100100-1008-TC-D2-GW	0.100	1.000	27.0	1.0	1.00	2.0	2.0	8.0
APT3-00100100-0910-TC-D4-GW	0.100	1.000	41.0	1.0	0.90	2.0	2.0	10.0
APT3-00150030-1119-D4-GWS	0.150	0.300	25.0	1.5	1.10	2.2	2.2	19.0
APTMP2-00200200-2527-D2	0.200	2.000	23.0	1.0	2.50	2.0	2.0	27.0
APTMP3-00200100-1216-D2-LS	0.200	1.000	20.0	0.5	1.20	2.0	2.0	16.0
APTMP3-00200100-3316-D2-S	0.200	1.000	20.0	0.5	3.30	2.0	2.0	16.0
APT3-00200100-1010-D4	0.200	1.000	28.0	1.0	1.00	2.0	2.0	10.0
APTMP3-00200100-3316-D16-S	0.200	1.000	20.0	0.5	3.30	2.0	2.0	16.0
APTMP3-00200100-1216-D16-LS	0.200	1.000	20.0	0.5	1.20	2.0	2.0	16.0
APTMP3-00200100-1216-D2-S	0.200	1.000	20.0	0.5	1.20	2.0	2.0	16.0
APT2-00250050-0810-D4	0.250	0.500	25.0	0.5	0.80	2.0	2.0	10.0
APT3-00250050-0810-D4	0.250	0.500	38.0	0.5	0.80	2.0	2.0	10.0
APT2-00280060-0810-D4	0.280	0.600	25.0	0.8	0.80	2.0	2.0	10.0
APT2-00300140-0810-D4	0.300	1.400	18.0	1.0	0.80	2.0	2.0	10.0
APT3-00400350-1010-D4	0.400	3.500	30.0	1.0	1.00	2.0	2.0	10.0
APT2-00400100-1010-D2	0.400	1.000	20.0	1.5	1.20	2.0	2.0	10.0
APTMP6-00400600-4025-D6	0.400	6.000	30.0	2.0	4.00	2.2	2.2	25.0
APTMP6-00400600-4020-D6-GW	0.400	6.000	30.0	2.0	4.00	2.2	2.2	20.0
APTMP4-00450380-1524-D6	0.450	3.800	43.0	0.2	1.50	2.0	2.0	24.0
APT2-00500100-0610-D4	0.500	1.000	25.0	0.5	0.60	2.5	2.0	10.0
APT3-00500100-0610-D4	0.500	1.000	35.0	0.5	0.60	2.5	2.0	10.0
APT4-00500200-0815-D4	0.500	2.000	38.0	1.0	0.80	2.0	2.0	15.0
APT3-00500600-1010-D4	0.500	6.000	28.0	1.3	1.00	2.0	2.0	10.0
APTSM2-00500100-0808	0.500	1.000	25.0	1.0	0.80	2.0	2.0	8.0
APTC3-00500100-0600-D4-K	0.500	1.000	36.0	1.0	0.60	2.5	2.5	0.0
APT3-00500600-1010-D4-GW	0.500	6.000	29.0	1.3	1.00	2.0	2.0	10.0
APT3-00500800-1510-D4-S	0.500	8.000	28.0	1.5	1.50	2.0	2.0	10.0
APT3-00500400-1310-D4-S	0.500	4.000	28.0	1.5	1.30	2.0	2.0	10.0
APT2-00500200-2013-D20	0.500	2.000	17.0	1.3	2.00	2.5	2.5	13.0
APT4-00500800-1813-D6	0.500	8.000	42.0	1.5	1.80	2.0	2.0	13.0
APTMP4-00500200-2527-D6	0.500	2.000	44.0	1.0	2.50	2.0	2.0	27.0
APT5-00500400-3010-D4	0.500	4.000	35.0	2.0	3.00	2.0	2.0	10.0
APTMP5-00500800-3023-D4-L	0.500	8.000	30.0	2.0	3.00	2.0	2.0	20.0
APT3-00600300-1010-D4	0.600	3.000	28.0	1.0	1.00	2.0	2.0	10.0
APT4-00700200-1010-D4	0.700	2.000	38.0	1.0	0.50	2.0	2.0	10.0

# AMPLITECH PRODUCT LISTING-con'd

## MULTI-OCTAVE AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT2-00950122-1115-D2	0.950	12.200	30.0	0.5	1.10	1.8	1.8	15.0
APT2-01000200-0510-D4	1.000	2.000	24.0	1.0	0.50	2.0	2.0	10.0
APT3-01000200-0510-D4	1.000	2.000	38.0	1.0	0.50	2.0	2.0	10.0
APT3-01000200-0310-D4	1.000	2.000	38.0	1.0	0.30	2.0	2.0	10.0
APT3-01000200-1310-D6	1.000	2.000	36.0	1.0	0.30	2.0	2.0	10.0
APT3-01000200-1010-D6	1.000	2.000	38.0	1.0	1.00	2.0	2.0	10.0
APT2-01000200-1010-D2	1.000	2.000	22.0	1.0	1.00	2.0	2.0	10.0
APT3-01000200-1310-D4	1.000	2.000	32.0	1.0	1.30	2.0	2.0	10.0
APT2-01000200-1410-D2	1.000	2.000	24.0	1.0	1.40	2.0	2.0	10.0
APT3-01000400-0910-D4	1.000	4.000	26.0	1.0	0.90	2.0	2.0	10.0
APT4-01000800-5010-D4	1.000	8.000	34.0	1.5	5.00	2.5	2.5	10.0
APT4-01001800-3510-D4	1.000	18.000	22.0	2.5	3.50	2.0	2.0	10.0
APT3-01001200-2510-D4	1.000	12.000	22.0	2.0	2.50	2.0	2.0	10.0
APTMP1-01000200-1523-D4	1.000	2.000	13.0	1.5	1.50	2.5	2.5	23.0
APTMP2-01000200-2020-D2	1.000	2.000	20.0	1.5	2.00	2.0	2.0	20.0
APTMP3-01000200-2523-D4	1.000	2.000	29.0	1.5	2.50	2.0	2.5	23.0
APTMP4-01000400-1523-D4	1.000	4.000	33.0	1.0	1.50	1.8	1.8	23.0
APTMP3-01000800-4020-D4	1.000	8.000	18.0	1.5	4.00	2.0	2.2	20.0
APTMP3-01001800-3919-D4	1.000	18.000	24.0	2.5	3.90	2.0	2.0	19.0
APТСM1-01000200-1618	1.000	2.000	13.0	1.0	1.60	2.0	2.0	18.0
APТСM2-01000200-0808	1.000	2.000	25.0	1.0	0.80	2.0	2.0	8.0
APT2-01000200-1010-D6	1.000	2.000	22.0	1.0	1.00	2.0	2.0	10.0
APT3-01001800-3919-D4	1.000	18.000	24.0	0.7	3.90	2.0	2.0	19.0
APT4-01001800-2510-D6-S	1.000	18.000	28.0	2.0	2.50	2.5	2.5	10.0
APTC3-01000200-0600-D4-K	1.000	2.000	36.0	1.0	0.60	2.5	2.5	0.0
APTM6-01001900-5016-D4	1.000	19.000	24.0	2.3	5.00	2.0	2.0	16.0
APT5-01000200-0410-D6	1.000	2.000	42.0	1.0	0.40	2.5	2.0	10.0
APT4-01001800-4008-D4	1.000	18.000	20.0	2.0	4.00	2.0	2.0	8.0
APT6-01001900-5016-D4	1.000	19.000	20.0	2.3	5.00	2.0	2.0	16.0
APTC4-01001800-1910-D4	1.000	18.000	23.0	2.5	2.50	2.5	2.5	8.0
APT3-01001200-2210-D4	1.000	12.000	25.0	1.3	2.20	2.0	2.0	10.0
APTMP6-01001900-5016-D4	1.000	19.000	20.0	2.3	5.00	2.0	2.0	16.0
APT2-1000200-4010-D2	1.000	2.000	17.0	2.5	4.00	2.5	2.5	10.0
APTC4-01001800-1900-D4	1.000	18.000	23.0	2.5	1.90	2.5	2.5	0.0
APT42-01001800-3013-D42-S	1.000	18.000	33.0	2.0	3.00	2.0	2.0	13.0
APT4-01000200-0413-D4	1.000	2.000	45.0	1.5	0.40	2.0	2.0	13.0
APTMP3-01000800-4030-D6	1.000	8.000	20.0	2.0	4.00	2.5	2.5	30.0
APT4-01000700-3010-D4	1.000	7.000	35.0	2.0	3.00	2.2	2.2	10.0
ASK4-01000800-5010-D4	1.000	8.000	34.0	1.5	5.00	2.5	2.5	10.0
ASK4-01001800-2510-D6-S	1.000	18.000	28.0	2.5	2.50	2.5	2.5	10.0



# AMPLITECH PRODUCT LISTING-con'd

## MULTI-OCTAVE AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
ASK1-01000200-2020-D4	1.000	2.000	14.0	0.5	2.00	2.0	2.0	20.0
ASK3-01001200-2510-D4	1.000	12.000	22.0	2.0	2.50	2.0	2.0	10.0
APT3-01000200-1513-D4	1.000	2.000	44.0	2.0	1.50	2.0	2.0	13.0
APTMP3-01001800-1520-D4	1.000	18.000	30.0	1.5	1.50	2.0	2.0	20.0
APT4-01001800-2510-D6	1.000	18.000	28.0	2.5	2.50	2.5	2.5	10.0
APT2-01001800-4010-D2	1.000	18.000	25.0	2.0	4.00	2.0	2.0	10.0
APT3-01000300-1310-D4	1.000	3.000	26.0	1.0	1.30	2.0	2.0	10.0
APTMP4-01000200-1525-D4	1.000	2.000	40.0	1.0	1.50	2.0	2.0	25.0
APT4-01000200-0513-D6	1.000	2.000	45.0	1.0	0.50	2.0	2.0	13.0
APTMP3-01000200-0520-D6	1.000	2.000	40.0	1.0	0.50	2.0	2.0	20.0
APT3-01001800-3010-D42	1.000	18.000	35.0	2.5	3.00	2.0	2.0	10.0
APTMP5-01000800-1523-D6-GS	1.000	8.000	50.0	2.0	1.50	2.0	2.0	23.0
APT3-01001800-3010-D42-DBIO	1.000	18.000	35.0	2.5	3.50	2.5	2.5	10.0
APTMP4-01001200-1521-D6	1.000	12.000	40.0	2.0	1.50	2.0	2.0	21.0
APTMP6-01001200-2023-D6-GS	1.000	12.000	40.0	2.0	2.00	2.0	2.0	23.0
APTC3-01000200-0500-D4-V	1.000	2.000	36.0	1.0	1.00	2.0	2.0	0.0
APT3-01000200-1515-D4-LM	1.000	2.000	40.0	1.0	2.00	2.0	2.0	17.0
APTMP4-01000200-1823-D4-GW	1.000	2.000	20.0	1.5	1.80	2.0	2.0	23.0
APTC4-01501000-2500-D4-V	1.500	10.000	25.0	2.5	2.50	2.5	2.5	0.0
APT4-01600440-1510-D4	1.600	4.400	35.0	1.5	1.50	1.5	1.5	10.0
APT5-02001800-5010-D46-LM	1.955	18.050	72.0	2.5	8.00	2.0	2.0	16.0
APT5-02001800-2410-D6-L	1.955	18.050	72.0	2.5	8.00	2.0	2.0	17.0
APT5-02001800-2410-D11-L	1.955	18.050	72.0	2.5	8.00	2.0	2.0	16.0
APT8-19551804-D66-SLM	1.955	18.450	72.0	2.5	8.00	2.0	2.0	16.0
APT44-02001800-7018-D66-SL	1.955	18.050	72.0	2.5	7.00	2.0	2.0	17.0
APT44-02001800-7018-D46-S	1.955	18.050	72.0	2.5	7.00	2.0	2.0	16.0
APT44-02001800-2410-D66-L	1.955	18.050	72.0	2.5	8.00	2.0	2.0	17.0
APT3-02000400-0610-D4	2.000	4.000	32.0	1.0	0.60	2.0	2.0	10.0
APT5-02000400-0610-D6	2.000	4.000	46.0	1.5	0.60	2.0	2.0	10.0
APT3-02000400-0510-D4	2.000	4.000	32.0	1.0	0.50	2.0	2.0	10.0
APT3-02000400-1410-D4	2.000	4.000	32.0	1.0	1.40	2.0	2.0	10.0
APT4-02000400-1014-D4	2.000	4.000	38.0	1.5	1.00	2.0	2.0	14.0
APT4-02000400-0615-D6	2.000	4.000	37.0	1.5	0.60	2.0	2.0	15.0
APT3-02000600-0910-D4	2.000	6.000	28.0	1.0	0.90	2.0	2.0	10.0
APT4-02000600-1010-D4	2.000	6.000	32.0	1.0	1.00	2.0	2.0	10.0
APT3-02000800-1210-D4	2.000	8.000	25.0	1.0	1.20	2.0	2.0	10.0
APT3-02000800-0910-D4	2.000	8.000	26.0	1.0	0.90	2.0	2.0	10.0
APT3-02001000-1010-D4	2.000	10.000	24.0	1.5	1.00	2.0	2.0	10.0
APT4-02001800-2510-D4	2.000	18.000	23.0	2.0	2.50	2.5	2.5	10.0

# AMPLITECH PRODUCT LISTING-con'd

## MULTI-OCTAVE AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT4-02001800-2410-D4	2.000	18.000	23.0	2.0	2.40	2.5	2.5	10.0
APT4-02001800-3810-D4	2.000	18.000	23.0	2.0	3.80	2.5	2.5	10.0
APT2-02002000-4010-D2	2.000	20.000	12.0	1.0	4.00	2.0	2.0	10.0
APT1-02002000-5513-D2	2.000	20.000	8.0	1.5	5.50	2.0	2.0	13.0
APTMP4-02000400-3025-D4	2.000	4.000	28.0	1.5	3.00	2.0	2.0	25.0
APTMP4-02000400-2520-D4	2.000	4.000	40.0	1.0	2.50	2.0	2.0	20.0
APTMP1-02000600-6022-D4	2.000	6.000	10.0	1.5	6.00	1.5	1.5	22.0
APTMP3-02001800-5020-D4	2.000	18.000	15.0	2.0	5.00	2.5	2.0	20.0
APTMP3-02001800-3420-D4	2.000	18.000	17.0	1.5	3.40	2.0	2.0	20.0
APTMP4-02001800-4020-D4	2.000	18.000	24.0	1.5	4.00	2.0	2.0	20.0
APTMP6-02001800-4020-D6	2.000	18.000	40.0	2.0	4.00	2.0	2.0	20.0
APTMP3-02001800-5020-D4	2.000	18.000	20.0	2.0	5.00	2.5	2.5	20.0
APTMP3-02002000-3620-D4	2.000	20.000	18.0	2.0	3.60	2.5	2.5	20.0
APTSM2-02000400-1008	2.000	4.000	21.0	1.0	1.00	2.0	2.0	8.0
APTSM2-02000600-1608	2.000	6.000	16.0	1.5	1.60	2.0	2.0	8.0
APT3-02000400-2415-D4	2.000	4.000	33.0	1.0	2.40	2.0	2.0	15.0
APT3-02001800-3013-D4	2.000	18.000	18.0	2.5	3.00	2.5	2.5	13.0
APT3-02001800-7013-D4	2.000	18.000	15.0	2.5	7.00	2.5	2.5	13.0
APT3-0200400-0608-D4	2.000	4.000	26.0	1.0	0.60	2.0	2.0	8.0
APT5-02001800-2410-D6	2.000	18.000	30.0	2.0	2.40	2.0	2.0	10.0
APTSM2-02000600-1208	2.000	6.000	20.0	1.0	1.20	2.0	2.0	8.0
APT6-02001800-5022-D6	2.000	18.000	32.0	2.0	5.00	2.3	2.3	22.0
APT55-02001800-5011-D6-LM	2.000	18.000	60.0	2.5	5.00	2.5	2.5	13.0
APTMP3-02001800-3420-D4-S	2.000	18.000	17.0	1.5	4.00	2.5	2.0	20.0
APTMP1-02000600-6022-D2-S	2.000	6.000	10.0	1.5	6.00	1.5	1.5	22.0
APT4-02000600-2510-D6	2.000	6.000	34.0	1.0	1.00	2.0	2.0	11.0
APTMP3-02001800-7020-D4	2.000	18.000	18.0	2.5	7.00	2.5	2.0	20.0
APTC2-02000400-0500-D2	2.000	4.000	24.0	1.5	0.60	2.5	2.5	0.0
APT3-02000400-0608-D4	2.000	4.000	26.0	1.0	0.60	2.0	2.0	8.0
APT4-02000400-0510-D6	2.000	4.000	40.0	1.5	0.50	2.0	2.0	10.0
APTMP5-02001800-3820-D4	2.000	18.000	35.0	2.5	3.80	2.5	2.5	20.0
APT3-02001800-7013-D2	2.000	18.000	18.0	2.5	7.00	2.5	2.5	13.0
APTMP2-02001800-2816-D2-GW	2.000	18.000	14.0	2.5	2.80	2.5	2.5	16.0
ASK3-02001800-7013-D2	2.000	18.000	18.0	2.5	7.00	2.5	2.5	13.0
ASKMP3-02001800-5020-D4	2.000	18.000	20.0	2.5	5.00	2.5	2.5	20.0
ASK3-02000400-0608-D4	2.000	4.000	26.0	1.0	0.60	2.0	2.0	8.0
ASKMP3-02001800-3420-D4	2.000	18.000	17.0	1.5	3.40	2.0	2.0	20.0
ASK4-02000600-1010-D4	2.000	6.000	32.0	1.0	1.00	2.0	2.0	10.0
APT4-02000400-1015-D6	2.000	4.000	40.0	1.0	1.00	2.0	2.0	15.0
APTMP3-02002650-1027-D3	2.000	26.500	27.0	3.0	10.00	2.5	2.5	27.0

# AMPLITECH PRODUCT LISTING-con'd

## MULTI-OCTAVE AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT2-0200600-2013-D2	2.000	6.000	20.0	1.3	2.00	2.5	2.5	13.0
APTMP3-02001800-4520-D4	2.000	18.000	20.0	2.5	4.50	2.5	2.5	20.0
APT3-02000800-1010-D4	2.000	8.000	28.0	1.0	1.00	2.0	2.0	10.0
APTMP5-02000400-4030-D12	2.000	4.000	33.0	1.0	4.00	1.8	1.8	30.0
APT4-02000400-1810-D4	2.000	4.000	37.0	1.0	1.80	1.8	1.8	10.0
APT42-02001800-2510-D42	2.000	18.000	40.0	2.5	2.50	2.5	2.5	10.0
APT42-02001800-2010-D42	2.000	18.000	40.0	2.5	2.00	2.5	2.5	10.0
APTMP2-02001800-3116-D2-GW	2.000	18.000	14.0	2.5	3.10	2.5	2.5	16.0
APT4-02001800-3508-D6	2.000	18.000	32.0	2.0	3.50	2.0	2.0	8.0
APT2-02002000-4510-D2	2.000	20.000	12.0	1.0	4.50	2.0	2.0	10.0
APT3-02000400-0710-D4	2.000	4.000	32.0	1.0	0.70	2.0	2.0	10.0
APT4-02001800-3510-D4	2.000	18.000	23.0	2.0	3.50	2.0	2.0	10.0
APTMP3-02001800-5020-D4-S	2.000	18.000	15.0	2.5	5.00	2.5	2.5	20.0
APT44-02001800-7018-D66-SL	2.000	18.000	72.0	2.5	8.00	2.0	2.0	16.0
APTMP5-02000400-1525-D6	2.000	4.000	35.0	3.0	1.50	2.0	2.0	25.0
APTMP6-02001800-2020-D6	2.000	18.000	40.0	1.0	2.00	2.0	2.0	20.0
APTMP5-02000400-0520-D6	2.000	4.000	40.0	1.5	0.50	2.0	2.0	20.0
APTMP5-02001800-6030-D6	2.000	18.000	34.0	2.5	6.00	2.5	2.5	30.0
APTMP3-02001800-5020-ME1-S	2.000	18.000	15.0	2.5	5.00	2.5	2.5	20.0
APT3-020001800-7213-D2	2.000	18.000	18.0	2.5	7.00	2.5	2.5	13.0
APTMP5-02001800-3523-D4	2.000	18.000	30.0	2.0	3.50	2.5	2.5	23.0
APTMP4-02000400-0620-D4	2.000	4.000	38.0	2.0	0.60	2.0	2.3	20.0
APT55-02001800-5011-D66-LM	2.000	18.000	61.0	3.0	5.00	3.0	3.0	13.0
APT4-02000800-2608-TC-D4-GW	2.000	8.000	32.0	1.5	2.60	2.0	2.0	8.0
APT4-02000800-2010-D6C	2.000	8.000	32.0	1.3	2.00	2.0	2.0	10.0
APTMP5-02001800-5020-D6	2.000	18.000	34.0	2.0	5.00	2.5	2.5	20.0
APTSM2-02340718-1500-S	2.340	7.180	20.0	0.1	1.50	1.9	1.9	0.0
APTSM2-02340718-1500-S-E	2.340	7.180	20.0	0.1	1.50	1.9	1.9	0.0
APT4-02600520-1010-D4	2.600	5.200	28.0	1.0	1.00	2.0	2.0	10.0
APT2-03001300-2510-D2	3.000	13.000	17.0	2.0	2.50	2.0	2.0	10.0
ASK2-03001300-2510-D2	3.000	13.000	17.0	2.0	2.50	2.0	2.0	10.0
APTMP3-03002200-5020-D4	3.000	22.000	20.0	2.5	5.00	2.5	2.5	20.0
APT5-03501450-5013-D6	3.500	14.500	40.0	2.0	5.00	2.0	2.0	13.0
APT5-03501450-5013-D4-S	3.500	14.500	40.0	2.0	5.00	2.0	2.0	15.0
APT2-04000800-0710-D4	4.000	8.000	23.0	1.0	0.70	2.0	2.0	10.0
APT3-04000800-0610-D4	4.000	8.000	28.0	1.0	0.60	2.0	2.0	10.0
APT3-04000800-0710-D4	4.000	8.000	32.0	1.0	0.70	2.0	2.0	10.0
APT4-04000800-1212-D4	4.000	8.000	38.0	1.5	1.20	2.0	2.0	12.0
APT4-04000800-0710-D4	4.000	8.000	38.0	1.0	0.70	2.0	2.0	10.0
APT5-04000800-0710-D6	4.000	8.000	50.0	1.5	0.70	2.0	2.0	10.0



# AMPLITECH PRODUCT LISTING-con'd

## MULTI-OCTAVE AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT2-04001200-3010-D2	4.000	12.000	15.0	1.0	3.00	2.0	2.0	10.0
APTMP4-04000800-4022-D4	4.000	8.000	20.0	1.0	4.00	2.0	2.0	22.0
APSM2-04000800-2008	4.000	8.000	20.0	1.0	2.00	2.0	2.0	8.0
APT4-04000800-0710-D4-S	4.000	8.000	40.0	1.0	1.00	2.0	2.0	10.0
APTC3-04000800-0700-D4-KH	4.000	8.000	23.0	1.0	0.70	2.0	2.0	0.0
APT3-04000800-5010-D2	4.000	8.000	18.0	1.0	5.00	2.0	2.0	15.0
APT4-04000800-0610-D4	4.000	8.000	35.0	1.0	0.60	2.0	2.0	10.0
APT3-04000800-5015-D4	4.000	8.000	15.0	1.0	5.00	2.0	2.0	15.0
APT3-04000800-1010-D4	4.000	8.000	28.0	1.0	0.60	2.0	2.0	10.0
APT4-04000800-2415-D4	4.000	8.000	33.0	1.0	2.40	2.0	2.0	15.0
APTMP4-04000800-1525-D6	4.000	8.000	36.0	1.0	1.50	2.0	2.0	25.0
APTMP4-04000800-3020-D6	4.000	8.000	29.0	1.0	3.00	2.0	2.0	20.0
APT3-04000800-5015-D2	4.000	8.000	18.0	1.0	5.00	2.0	2.0	15.0
ASK4-04000800-0710-D4	4.000	8.000	38.0	1.0	0.70	2.0	2.0	10.0
APTMP4-0400800-1530-D6	4.000	8.000	33.0	1.3	4.00	1.8	1.8	30.0
APT4-04000800-1810-D4	4.000	8.000	37.0	1.2	1.80	1.8	1.8	10.0
APT4-04000800-1810-D4-GW	4.000	8.000	32.0	1.0	1.80	1.8	1.8	10.0
APTMP4-04000800-6025-D4	4.000	8.000	20.0	1.0	6.00	2.0	2.0	25.0
APT4-04000800-1515-D4	4.000	8.000	40.0	1.0	1.50	2.0	2.0	15.0
APT4-04000800-1010-D4	4.000	8.000	41.0	1.0	1.00	2.0	2.0	10.0
APT3-04000800-0810-D4	4.000	8.000	32.0	1.0	0.80	2.0	2.0	10.0
APTMP5-04000800-0820-D6	4.000	8.000	40.0	1.7	0.80	2.0	2.0	20.0
APTC2-04000800-0700-D4-V	4.000	8.000	23.0	2.0	1.00	2.0	2.0	0.0
APTMP5-04000800-5525-D4	4.000	8.000	20.0	1.0	5.50	2.0	2.0	25.0
APT2-04000800-0805-D2-GW	4.000	8.000	18.0	1.0	0.80	2.0	2.0	5.0
APT3-04000800-2523-D4-GW	4.000	8.000	26.0	1.3	2.50	2.0	2.0	23.0
APT2-06001200-1605-D2	6.000	12.000	14.0	2.0	1.60	2.0	2.0	5.0
APT3-06001200-1208-D4	6.000	12.000	24.0	1.5	1.20	2.0	2.0	8.0
APT3-06001200-1508-D4	6.000	12.000	24.0	1.5	1.50	2.0	2.0	8.0
APT4-06001200-1208-D4	6.000	12.000	32.0	2.0	1.20	2.0	2.0	10.0
APT4-06001200-1510-D4	6.000	12.000	34.0	1.5	1.50	2.0	2.0	10.0
APT2-06001800-4013-D2	6.000	18.000	18.0	2.5	4.00	2.5	2.5	13.0
APT4-06001800-2210-D4	6.000	18.000	23.0	1.5	2.20	2.5	2.0	10.0
APT5-06001800-1905-D6	6.000	18.000	33.0	2.0	1.90	2.5	2.0	5.0
APTMP6-06001800-5020-D4	6.000	18.000	22.0	2.0	5.00	2.0	2.0	20.0
APT4-06001200-1510-D6	6.000	12.000	34.0	1.5	1.50	2.0	2.0	10.0
APTMP5-06001800-4020-D6-T	6.000	18.000	42.5	1.5	4.50	1.8	1.8	20.0
APTMP2-06001800-3520-S	6.000	18.000	18.0	0.8	3.50	1.8	1.8	20.0
ASK4-06001200-1510-D6	6.000	12.000	34.0	1.5	1.50	2.0	2.0	10.0

# AMPLITECH PRODUCT LISTING-con'd

MULTI-OCTAVE AMPLIFIERS-con'd								
MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTMP3-06001800-4020-D4	6.000	18.000	20.0	2.5	4.00	2.5	2.5	20.0
APTMP2-06001800-3520-D4	6.000	18.000	18.0	0.8	3.50	1.8	1.8	20.0
APT2-06001800-7013-D2	6.000	18.000	18.0	2.5	7.00	2.5	2.5	13.0
APT2-06001800-3012-D2	6.000	18.000	17.0	1.0	3.00	2.0	2.0	12.0
APT2-06001800-2510-D2	6.000	18.000	20.0	1.5	2.50	2.0	2.0	10.0
APTMP4-06001800-5020-D4	6.000	18.000	35.0	2.5	5.00	2.0	2.0	20.0
APT3-06001200-1510-D4	6.000	12.000	34.0	1.0	1.50	2.0	2.0	10.0
APTMP5-06001800-1027-D6	6.000	18.000	41.0	4.0	10.00	2.0	2.0	27.0
APT3-06001800-3015-TM2	6.000	18.000	25.0	1.5	3.00	2.0	2.0	15.0
APTVG-06001200-1910-D6C	6.000	12.000	24.0	1.5	1.90	2.0	2.0	10.0
APTMP8-06001800-1510-D6	6.000	18.000	38.0	2.0	1.50	2.0	2.0	10.0
APTMP2-06001800-3513-D4	6.000	18.000	10.0	1.5	1.00	2.0	2.0	13.0
APTMP6-06001800-3723-D6	6.000	18.000	30.0	1.8	3.70	2.0	2.0	23.0
APT4-08001600-1410-D4	8.000	16.000	23.0	1.0	1.40	2.0	2.0	10.0
APT3-08001800-2510-D4	8.000	18.000	20.0	1.5	2.50	2.0	2.0	10.0
APT3-08001800-2008-D4	8.000	18.000	20.0	1.5	2.00	2.0	2.0	8.0
APT4-08001800-2010-D4	8.000	18.000	22.0	2.0	2.00	2.0	2.0	10.0
APT4-08001800-2210-D4	8.000	18.000	22.0	2.0	2.20	2.0	2.0	10.0
APT4-08001800-5010-D4	8.000	18.000	34.0	1.5	5.00	2.5	2.5	10.0
APTMP5-08001800-5020-D6	8.000	18.000	34.0	2.0	5.00	2.0	2.0	20.0
APT3-08001800-3010-D4	8.000	18.000	24.0	1.5	3.00	2.0	2.0	10.0
APT2-08001800-2010-D4	8.000	16.000	25.0	2.0	2.00	2.0	2.0	10.0
APTM5-08001100-3515-D4	8.000	18.000	40.0	1.5	3.50	2.0	2.0	15.0
APT42-08001800-2421-D6	8.000	18.000	44.0	2.0	2.40	2.0	2.0	21.0
ASK4-08001800-5010-D4	8.000	18.000	34.0	1.5	5.00	2.5	2.5	10.0
ASK4-08001600-1410-D4	8.000	16.000	23.0	1.0	1.40	2.0	2.0	10.0
APTMP4-06001800-5030-D3	8.000	18.000	33.0	1.3	5.00	2.5	2.5	30.0
APT5-08001800-2010-D4	8.000	18.000	37.0	1.8	2.00	2.0	2.0	10.0
APT4-08001800-2510-D4	8.000	18.000	30.0	2.0	2.50	2.2	2.2	10.0
APT3-08001800-2510-D4-S	8.000	18.000	28.0	2.5	2.50	2.5	2.5	10.0
APT2-10002200-4010-D2	10.000	22.000	17.0	2.0	4.00	2.5	2.5	10.0
APT4-12002400-2510-D4	12.000	24.000	20.0	2.0	2.50	2.0	2.5	10.0
APT4-12002400-2510-D2	12.000	24.000	20.0	2.0	2.50	2.0	2.5	10.0
ASK4-12002400-2510-D2	12.000	24.000	20.0	2.0	2.50	2.0	2.5	10.0
APT2-18004000-4010-D3	18.000	40.000	16.0	2.5	4.00	2.5	2.5	10.0
APT4-18004000-5010-D3	18.000	40.000	16.0	2.5	2.50	2.5	2.5	10.0
APT2-18004000-5010-D3	18.000	40.000	16.0	2.5	5.00	2.5	2.5	10.0
APT2-18004000-4010-D2	18.000	40.000	16.0	2.5	4.00	2.5	2.5	10.0
APTW-18102130-1620-S	18.100	21.300	46.0	2.0	1.70	1.3	1.3	20.0

# AMPLITECH PRODUCT LISTING-con'd

## NARROW-BAND AMPLIFIERS

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTMP4-00010100-2525-D4	0.010	1.000	25.0	1.5	2.50	2.0	2.5	25.0
APTMP1-00010100-1821-D4	0.010	1.000	15.0	1.5	1.80	2.5	2.5	21.0
APTMP4-00010100-4021-D4	0.010	1.000	15.0	1.5	4.00	2.3	2.3	20.0
APT2-00010100-1210-D4	0.010	1.000	14.0	1.0	1.20	2.3	2.3	10.0
APTMP4-00010100-2525-D6	0.010	1.000	25.0	1.5	2.50	2.0	2.5	25.0
APT2-00010025-4012-D20	0.010	0.250	18.0	1.0	4.00	2.5	2.5	12.0
APT2-00020100-1210-D4	0.020	1.000	14.0	1.0	1.20	2.3	2.3	10.0
APT4-00020100-2510-D6	0.020	1.000	32.0	1.5	2.50	2.5	2.5	10.0
APT3-00020100-2010-D4	0.020	1.000	30.0	1.5	2.00	2.5	2.5	10.0
APT1-00020200-1210-D4	0.020	2.000	12.0	1.5	1.20	2.5	2.5	10.0
APT2-00020300-3010-D4	0.020	3.000	24.0	2.8	3.00	2.5	2.5	10.0
APTMP4-00020050-2224-D9	0.020	0.500	39.0	1.0	2.20	2.0	2.0	24.0
APTMP2-00020050-4028-D9	0.020	0.500	18.0	1.0	4.00	2.0	2.0	20.0
APTMP3-00200040-2028-D27	0.020	0.040	28.0	1.0	2.00	2.5	2.5	28.0
APT2-00030250-1010-D4	0.030	2.500	26.0	1.5	1.00	2.5	2.5	10.0
APTMP4-00030050-1527-D9	0.030	0.500	37.5	0.5	1.50	2.0	2.0	27.0
APTSM1-00050100-1820	0.050	1.000	13.0	1.0	1.80	2.0	2.0	20.0
APTMP3-00050100-3030-D9	0.050	1.000	30.0	1.0	3.00	2.0	2.0	30.0
APTMP3-00050100-4030-D9	0.050	1.000	30.0	0.5	4.00	2.0	2.0	30.0
APTMP3-00050100-2531-D15	0.050	1.000	31.0	1.0	2.50	2.0	2.0	31.0
APTMP4-00050100-1333-D9	0.050	1.000	43.0	1.5	1.30	2.0	2.0	33.0
APT3-00100200-1015-D4	0.100	2.000	38.0	1.0	1.00	2.0	2.0	15.0
APT3-00100200-0910-D4	0.100	2.000	20.0	1.0	0.90	2.0	2.0	10.0
APT4-00100300-1115-D6	0.100	3.000	30.0	2.0	1.10	2.5	2.5	15.0
APT3-00100300-1010-D4	0.100	3.000	28.0	1.0	1.00	2.2	2.0	10.0
APT3-00100300-1210-D4	0.100	3.000	30.0	1.0	1.20	2.0	2.0	10.0
APTMP3-00100050-1015-D6	0.100	0.500	36.0	1.0	1.00	2.5	2.0	15.0
APTMP2-00100100-1823-D2	0.100	1.000	13.0	1.0	1.80	2.5	2.0	23.0
APTMP1-00100100-3523-D2	0.100	1.000	13.0	2.0	3.50	2.5	2.5	23.0
APTMP1-00100200-1121-D4	0.100	2.000	15.0	1.5	1.10	2.5	2.5	21.0
APTMP2-00100200-2020-D4	0.100	2.000	20.0	1.5	2.00	2.0	2.0	20.0
APTMP2-00100200-1121-D4	0.100	2.000	25.0	1.5	1.10	2.5	2.5	21.0
APTMP3-00100200-2523-D4	0.100	2.000	32.0	1.5	2.50	2.0	2.5	23.0
APTMP2-00100200-2527-D6	0.100	2.000	32.0	1.5	2.50	2.0	2.5	27.0
APTMP4-00100200-2527-D6	0.100	2.000	44.0	1.0	2.50	2.0	2.5	27.0
APTMP3-00100300-1520-D4	0.100	3.000	30.0	1.5	1.50	2.2	2.2	20.0
APTMP4-00100300-2021-D4	0.100	3.000	31.0	1.5	2.00	2.0	2.0	21.0
APTSM1-00100200-1616	0.100	2.000	12.0	1.0	1.60	2.0	2.0	16.0
APTSM2-00100200-1208	0.100	2.000	22.0	1.0	1.20	2.0	2.0	8.0
APTSM2-00100300-1208	0.100	3.000	20.0	1.0	1.20	2.0	2.0	8.0
APT4-00100300-4015-D6	0.100	3.000	20.0	2.0	4.00	2.5	2.5	10.0

# AMPLITECH PRODUCT LISTING-con'd

## NARROW-BAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTMP4-00100300-2021-D6	0.100	3.000	31.0	1.5	2.00	2.0	2.0	21.0
APTMP4-00100200-3020-D4	0.100	2.000	28.0	1.5	3.00	2.5	2.5	16.0
APTMP3-00100300-1523-D4	0.100	3.000	30.0	1.5	1.50	2.2	2.2	23.0
APT3-00100300-1210-D4-S	0.100	3.000	30.0	1.0	1.20	2.0	2.0	10.0
APTC3-00100200-0900-D4-V	0.100	2.000	38.0	1.0	0.90	2.0	2.0	0.0
APTMP2-00100200-1820-D4	0.100	2.000	25.0	1.0	1.80	2.0	2.0	20.0
APTMP2-00100170-1527-D4	0.100	1.700	29.0	1.5	1.00	2.0	2.0	27.0
ASKMP4-00100300-2021-D4	0.100	3.000	31.0	1.5	2.00	2.0	2.0	21.0
ASK3-00100300-1010-D4	0.100	3.000	32.0	1.0	1.00	2.0	2.0	10.0
APT3-00100200-1015-D4-L	0.100	2.000	38.0	1.0	1.00	2.0	2.0	15.0
APTC3-00100200-1200-D4	0.100	2.000	35.0	1.0	1.20	2.0	2.0	0.0
APTC3-00100200-0905-D4	0.100	2.000	35.0	1.0	0.20	2.0	2.0	5.0
APTC3-00100200-0912-D4	0.100	2.000	35.0	1.0	0.20	2.0	2.0	12.0
APT3-00100200-1015-D4-GW-3840	0.100	2.000	38.0	1.0	1.00	2.0	2.0	15.0
APT3-00100200-1015-D4-GW-4850	0.100	2.000	48.0	1.0	1.00	2.0	2.0	15.0
APT3-00100100-1112-D4-GW	0.100	1.000	14.0	1.0	1.10	2.0	2.0	12.0
APT2-00100100-1008-TC-D2-GW	0.100	1.000	27.0	1.0	1.00	2.0	2.0	8.0
APT3-00100100-0910-TC-D4-GW	0.100	1.000	41.0	1.0	0.90	2.0	2.0	10.0
APT3-00150030-1119-D4-GWS	0.150	0.300	25.0	1.5	1.10	2.2	2.2	19.0
APTMP2-00200200-2527-D2	0.200	2.000	23.0	1.0	2.50	2.0	2.0	27.0
APTMP3-00200100-1216-D2-LS	0.200	1.000	20.0	0.5	1.20	2.0	2.0	16.0
APTMP3-00200100-3316-D2-S	0.200	1.000	20.0	0.5	3.30	2.0	2.0	16.0
APT3-00200100-1010-D4	0.200	1.000	28.0	1.0	1.00	2.0	2.0	10.0
APTMP3-00200100-3316-D16-S	0.200	1.000	20.0	0.5	3.30	2.0	2.0	16.0
APTMP3-00200100-1216-D16-LS	0.200	1.000	20.0	0.5	1.20	2.0	2.0	16.0
APTMP3-00200100-1216-D2-S	0.200	1.000	20.0	0.5	1.20	2.0	2.0	16.0
APT2-00250050-0810-D4	0.250	0.500	25.0	0.5	0.80	2.0	2.0	10.0
APT3-00250050-0810-D4	0.250	0.500	38.0	0.5	0.80	2.0	2.0	10.0
APT2-00250027-1010-D4-S	0.250	0.270	25.0	0.5	1.00	2.0	2.0	10.0
APT2-00280060-0810-D4	0.280	0.600	25.0	0.8	0.80	2.0	2.0	10.0
APT2-00300140-0810-D4	0.300	1.400	18.0	1.0	0.80	2.0	2.0	10.0
APT2-00400100-1010-D2	0.400	1.000	20.0	1.5	1.20	2.0	2.0	10.0
APT3-00430045-0810-D4	0.430	0.450	38.0	0.5	0.80	2.0	2.0	10.0
APT3-00500060-0510-D4	0.500	0.600	38.0	0.3	0.50	1.5	1.5	10.0
APT2-00500100-0610-D4	0.500	1.000	25.0	0.5	0.60	2.5	2.0	10.0
APT3-00500100-0610-D4	0.500	1.000	35.0	0.5	0.60	2.5	2.0	10.0
APT4-00500200-0815-D4	0.500	2.000	38.0	1.0	0.80	2.0	2.0	15.0
APTSM2-00500100-0808	0.500	1.000	25.0	1.0	0.80	2.0	2.0	8.0
APTC3-00500100-0600-D4-K	0.500	1.000	36.0	1.0	0.60	2.5	2.5	0.0
APT2-00500200-2013-D20	0.500	2.000	17.0	1.3	2.00	2.5	2.5	13.0
APTMP4-00500200-2527-D6	0.500	2.000	44.0	1.0	2.50	2.0	2.0	27.0



# AMPLITECH PRODUCT LISTING-con'd

## NARROW-BAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT3-00600300-1010-D4	0.600	3.000	28.0	1.0	1.00	2.0	2.0	10.0
APT3-00700080-0410-D4	0.700	0.800	38.0	0.5	0.40	1.5	1.5	10.0
APT4-00700200-1010-D4	0.700	2.000	38.0	1.0	0.50	2.0	2.0	10.0
APT1-00800100-4015-D4	0.800	1.000	10.0	1.0	4.00	1.6	1.6	15.0
APTSM2-00800100-1510-SMT	0.800	1.000	26.0	1.0	1.50	1.6	1.6	10.0
APT3-00900120-0413-D4	0.900	1.200	38.0	0.5	0.40	1.5	1.5	13.0
APT2-00950122-0715-D2	0.950	1.220	25.0	0.5	0.70	1.8	1.8	15.0
APT2-00950122-0715-D2-L	0.950	1.220	25.0	0.5	0.80	1.8	1.5	15.0
APT2-00950122-1115-D2-LS	0.950	1.220	30.0	0.5	1.10	1.8	1.8	15.0
APT3-00950145-0413-D4	0.950	1.450	38.0	0.5	0.40	1.8	1.8	13.0
APT1-00950160-1013-D4	0.950	1.600	12.0	1.0	1.00	2.0	2.0	13.0
APT3-00950175-0513-D4	0.950	1.750	38.0	0.5	0.50	1.8	1.8	13.0
APT5-09500105-0810-D6	0.950	1.050	44.0	0.5	0.80	2.0	2.0	10.0
APTMP2-00950122-0820-D2	0.950	1.220	26.0	0.5	0.80	1.8	1.8	20.0
APTMP1-00951600-1015-D4	0.950	1.600	10.0	1.0	1.00	2.0	2.0	15.0
APT5-00950105-0810-D6	0.950	1.050	44.0	0.5	0.80	2.0	2.0	10.0
APTMP2-00950122-1325-D4-LS	0.950	1.220	30.0	0.8	1.30	2.0	2.0	25.0
APTMP2-00950122-1115-D2-LS	0.950	1.220	27.0	0.5	1.00	1.8	1.8	18.0
APTMP2-00950122-1020-D2-LS	0.950	1.220	27.0	0.5	1.10	1.8	1.8	17.0
APTMP2-00950122-1117-D2-LS	0.950	1.220	27.0	0.5	1.10	1.8	1.8	17.0
APT5-01000110-0810-D6	1.000	1.100	44.0	0.5	0.80	2.0	2.0	10.0
APT2-01000200-0510-D4	1.000	2.000	24.0	1.0	0.50	2.0	2.0	10.0
APT3-01000200-0510-D4	1.000	2.000	38.0	1.0	0.50	2.0	2.0	10.0
APT3-01000200-0310-D4	1.000	2.000	38.0	1.0	0.30	2.0	2.0	10.0
APT3-01000200-1310-D6	1.000	2.000	36.0	1.0	0.30	2.0	2.0	10.0
APT3-01000200-1010-D6	1.000	2.000	38.0	1.0	1.00	2.0	2.0	10.0
APT2-01000200-1010-D2	1.000	2.000	22.0	1.0	1.00	2.0	2.0	10.0
APT3-01000200-1310-D4	1.000	2.000	32.0	1.0	1.30	2.0	2.0	10.0
APT2-01000200-1410-D2	1.000	2.000	24.0	1.0	1.40	2.0	2.0	10.0
APT3-01000400-0910-D4	1.000	4.000	26.0	1.0	0.90	2.0	2.0	10.0
APTMP1-01000200-1523-D4	1.000	2.000	13.0	1.5	1.50	2.5	2.5	23.0
APTMP2-01000200-2020-D2	1.000	2.000	20.0	1.5	2.00	2.0	2.0	20.0
APTMP3-01000200-2523-D4	1.000	2.000	29.0	1.5	2.50	2.0	2.5	23.0
APTMP4-01000400-1523-D4	1.000	4.000	33.0	1.0	1.50	1.8	1.8	23.0
APTSM1-01000200-1618	1.000	2.000	13.0	1.0	1.60	2.0	2.0	18.0
APTSM2-01000200-0808	1.000	2.000	25.0	1.0	0.80	2.0	2.0	8.0
APT2-01000200-1010-D6	1.000	2.000	22.0	1.0	1.00	2.0	2.0	10.0
APTC3-01000200-0600-D4-K	1.000	2.000	36.0	1.0	0.60	2.5	2.5	0.0
APT5-01000200-0410-D6	1.000	2.000	42.0	1.0	0.40	2.5	2.0	10.0
APT2-1000200-4010-D2	1.000	2.000	17.0	2.5	4.00	2.5	2.5	10.0
APT4-01000200-0413-D4	1.000	2.000	45.0	1.5	0.40	2.0	2.0	13.0

# AMPLITECH PRODUCT LISTING-con'd

## NARROW-BAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
ASK1-01000200-2020-D4	1.000	2.000	14.0	0.5	2.00	2.0	2.0	20.0
APT3-01000200-1513-D4	1.000	2.000	44.0	2.0	1.50	2.0	2.0	13.0
APT3-01000300-1310-D4	1.000	3.000	26.0	1.0	1.30	2.0	2.0	10.0
APTMP4-01000200-1525-D4	1.000	2.000	40.0	1.0	1.50	2.0	2.0	25.0
APT4-01000200-0513-D6	1.000	2.000	45.0	1.0	0.50	2.0	2.0	13.0
APTMP3-01000200-0520-D6	1.000	2.000	40.0	1.0	0.50	2.0	2.0	20.0
APTC3-01000200-0500-D4-V	1.000	2.000	36.0	1.0	1.00	2.0	2.0	0.0
APT3-01000200-1515-D4-LM	1.000	2.000	40.0	1.0	2.00	2.0	2.0	17.0
APTMP4-01000200-1823-D4-GW	1.000	2.000	20.0	1.5	1.80	2.0	2.0	23.0
APT3-01200160-03513-D4	1.200	1.600	40.0	0.5	0.35	1.5	1.5	13.0
APT3-01200160-03513-D6	1.200	1.600	40.0	0.5	0.35	1.5	1.5	13.0
APT3-01200160-02513-D4	1.200	1.600	40.0	0.5	0.25	1.5	1.5	13.0
APT3-01200160-03513-D6-S	1.200	1.600	40.0	0.5	0.35	1.5	1.5	13.0
APT3-01200160-1510-D4	1.200	1.600	36.0	0.5	1.50	2.0	2.0	10.0
APT3-01200160-0513-D4	1.200	1.600	40.0	0.5	0.50	1.5	1.5	13.0
APT3-01200160-03513-D6-BTO	1.200	1.600	40.0	0.5	0.35	1.5	1.5	13.0
APT4-01300140-0410-D4	1.300	1.400	28.0	0.5	0.40	1.5	1.5	10.0
APT5-01400270-0610-D6	1.400	2.700	50.0	1.0	0.60	2.0	2.0	10.0
APT6-01500160-03513-D6	1.500	1.600	60.0	0.5	0.35	1.5	1.5	13.0
APT1-01500180-03510-D2	1.500	1.800	13.0	0.5	0.35	2.5	2.5	10.0
APT1-01500180-0710-D2-GW	1.500	1.800	13.0	0.5	0.70	2.0	2.0	10.0
APT3-01500180-02513-D4	1.500	1.800	40.0	0.5	0.25	1.5	1.5	13.0
APT2-0150166-03510-D4-S	1.500	1.660	30.0	0.5	0.35	1.5	1.5	10.0
ASK6-01500160-03513-D6	1.500	1.600	60.0	0.5	0.35	1.5	1.5	13.0
ASKW4-01500160-30K10-650	1.500	1.600	50.0	0.5	0.45	1.3	1.3	10.0
APT6-01500180-0413-D6	1.500	1.800	60.0	1.0	0.40	1.7	1.5	15.0
APT1-01500250-1010-D4	1.500	2.500	12.0	1.0	1.00	2.5	2.5	10.0
APT3-01500250-1013-D4	1.500	2.500	36.0	1.0	1.00	2.0	2.0	13.0
APT3-01500160-1010-D4	1.500	1.600	38.0	0.5	1.00	1.5	1.5	10.0
APT2-01520166-03510-D4	1.520	1.660	30.0	0.5	0.35	1.5	1.5	10.0
APT2-01520166-03510-D4-S	1.520	1.660	30.0	0.5	0.35	1.5	1.5	10.0
APT5-01530155-03510-D6-W	1.530	1.550	60.0	0.5	0.35	1.7	1.7	10.0
APT3-01570161-2015-D4-S	1.570	1.610	35.0	1.0	2.00	1.4	2.0	15.0
APT3-01570161-2015-D4-SF	1.570	1.610	35.0	1.0	2.00	1.4	2.0	15.0
APT4-01600440-1510-D4	1.600	4.400	35.0	1.5	1.50	1.5	1.5	10.0
APTC3-01600163-0300-D4	1.600	1.630	36.0	0.5	0.30	2.0	2.0	0.0
APT5-01690171-05610-D6-T	1.690	1.710	50.0	1.0	0.56	1.3	1.3	10.0
APT5-01690171-45K13-D6	1.690	1.710	50.0	0.5	0.63	1.5	1.5	10.0
APT4-01700240-1010-D4	1.700	2.400	38.0	0.5	1.00	1.8	1.8	10.0
APTMP5-01700240-1525-D6	1.700	2.400	38.0	0.5	1.50	1.8	1.8	25.0
APTMP2-01900210-2427-D4	1.900	2.100	23.0	0.8	2.40	2.0	2.0	27.0

# AMPLITECH PRODUCT LISTING-con'd

## NARROW-BAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT3-02000400-0610-D4	2.000	4.000	32.0	1.0	0.60	2.0	2.0	10.0
APT5-02000400-0610-D6	2.000	4.000	46.0	1.5	0.60	2.0	2.0	10.0
APT3-02000400-0510-D4	2.000	4.000	32.0	1.0	0.50	2.0	2.0	10.0
APT3-02000400-1410-D4	2.000	4.000	32.0	1.0	1.40	2.0	2.0	10.0
APT4-02000400-1014-D4	2.000	4.000	38.0	1.5	1.00	2.0	2.0	14.0
APT4-02000400-0615-D6	2.000	4.000	37.0	1.5	0.60	2.0	2.0	15.0
APTMP4-02000300-1321-D4	2.000	3.000	45.0	1.5	1.30	2.0	2.0	21.0
APTMP4-02000400-3025-D4	2.000	4.000	28.0	1.5	3.00	2.0	2.0	25.0
APTMP4-02000400-2520-D4	2.000	4.000	40.0	1.0	2.50	2.0	2.0	20.0
APTSM2-02000400-1008	2.000	4.000	21.0	1.0	1.00	2.0	2.0	8.0
APT3-02000250-1410-D4-LS	2.000	2.500	27.0	0.5	1.40	1.5	1.5	10.0
APT3-02000400-2415-D4	2.000	4.000	33.0	1.0	2.40	2.0	2.0	15.0
APT3-02000400-0608-D4	2.000	4.000	26.0	1.0	0.60	2.0	2.0	8.0
APT3-2000250-1410-D4-LS	2.000	2.500	27.0	0.5	1.50	1.5	1.5	10.0
APTC2-02000400-0500-D2	2.000	4.000	24.0	1.5	0.60	2.5	2.5	0.0
APT3-02000400-0608-D4	2.000	4.000	26.0	1.0	0.60	2.0	2.0	8.0
APT4-02000400-0510-D6	2.000	4.000	40.0	1.5	0.50	2.0	2.0	10.0
ASK3-02000400-0608-D4	2.000	4.000	26.0	1.0	0.60	2.0	2.0	8.0
APT4-02000400-1015-D6	2.000	4.000	40.0	1.0	1.00	2.0	2.0	15.0
APTMP5-02000400-4030-D12	2.000	4.000	33.0	1.0	4.00	1.8	1.8	30.0
APT4-02000400-1810-D4	2.000	4.000	37.0	1.0	1.80	1.8	1.8	10.0
APTMP5-02000250-1525-D4	2.000	2.500	40.0	1.0	1.50	2.0	2.0	25.0
APT3-02000400-0710-D4	2.000	4.000	32.0	1.0	0.70	2.0	2.0	10.0
APTMP5-02000400-1525-D6	2.000	4.000	35.0	3.0	1.50	2.0	2.0	25.0
APTMP5-02000400-0520-D6	2.000	4.000	40.0	1.5	0.50	2.0	2.0	20.0
APT2-02000600-2510-TM1	2.000	3.000	15.0	1.5	2.50	2.0	2.0	10.0
APTMP4-02000400-0620-D4	2.000	4.000	38.0	2.0	0.60	2.0	2.3	20.0
APT5-02020212-35K10-D6	2.020	2.120	60.0	1.0	0.45	1.5	1.5	10.0
APT4-02050240-0810-D4	2.050	2.400	36.0	1.0	0.80	1.5	1.5	10.0
APT5-02100270-05510-D6	2.100	2.700	60.0	1.0	0.55	1.5	1.5	10.0
APT4-02100240-0810-D4	2.100	2.400	37.0	1.5	0.80	2.0	2.0	10.0
ASK5-02100270-05510-D6	2.100	2.700	60.0	1.0	0.55	1.5	1.5	10.0
APT5-0210270-05510-D6	2.100	2.700	60.0	1.0	0.55	1.5	1.5	10.0
APT5-02190240-35K10-D6-S	2.190	2.400	60.0	0.8	0.49	1.3	1.3	10.0
APT5-02190240-25K10-D6-S	2.190	2.400	60.0	0.8	0.50	1.5	1.5	10.0
APT5-02190240-0510-D6	2.190	2.400	60.0	0.5	0.50	1.3	1.3	10.0
APT4-02200230-0705-D4	2.200	2.300	40.0	0.5	0.70	1.5	1.5	5.0
APT5-02200229-1510-D6-S	2.200	2.290	53.0	0.7	1.50	1.5	1.5	14.0
ASK4-02200230-0705-D4	2.200	2.300	40.0	0.5	0.70	1.5	1.5	5.0
APTMP3-02200240-2317-D4	2.200	2.400	25.0	0.1	2.30	1.5	1.5	17.0
APT3-02300240-04510-D4	2.300	2.400	32.0	0.5	0.45	1.5	1.5	10.0

# AMPLITECH PRODUCT LISTING-con'd

## NARROW-BAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT2-02300270-04510-D2	2.300	2.700	26.0	0.5	0.45	1.5	1.5	10.0
ASK2-02300270-04510-D2	2.300	2.700	26.0	0.5	0.45	1.5	1.5	10.0
APT5-02450275-33K10-D6	2.450	2.750	50.0	0.5	0.47	2.0	2.0	10.0
APT5-02460255-33K10-D6	2.460	2.550	50.0	0.5	0.46	1.5	1.5	10.0
APTMP3-02500350-1420-D4	2.500	3.500	31.0	1.0	1.40	1.8	1.5	20.0
APTMP3-02500350-0820-D4	2.500	3.500	28.0	1.5	0.80	2.0	2.0	20.0
APT2-002600280-0513-D2	2.600	2.800	26.0	0.5	0.50	1.5	1.5	13.0
APT4-02600520-1010-D4	2.600	5.200	28.0	1.0	1.00	2.0	2.0	10.0
APT2-02600280-0513-D2	2.600	2.800	26.0	0.5	0.50	1.5	1.5	13.0
APT3-02600280-0513-D4	2.600	2.800	32.0	0.5	0.50	1.5	1.5	13.0
APT4-02650275-4010-D4	2.650	2.750	30.0	0.5	4.00	2.0	2.0	10.0
APT4-02700310-0615-D4-T	2.700	3.100	37.0	0.5	0.60	1.6	1.6	15.0
APT4-02700310-0615-D6-T	2.700	3.100	37.0	0.5	0.60	1.6	1.6	15.0
APT3-02700300-1011-D4-S	2.700	3.000	32.0	1.0	1.00	1.8	1.8	11.0
APTMP4-02900350-3023-D4-L	2.900	3.500	30.0	1.0	3.00	1.7	1.7	23.0
APT3-03000350-0510-D4	3.000	3.500	29.0	0.5	0.50	1.5	1.5	10.0
APT6-03300390-0413-D6	3.300	3.900	45.0	0.5	0.40	1.8	1.8	13.0
APT3-03400420-0510-D4	3.400	4.200	28.0	1.0	0.50	2.0	2.0	10.0
APTMP2-03400420-2526-D4-GW	3.400	4.200	16.0	1.0	2.50	2.0	2.0	26.0
APTMP2-03400420-4020-D4-GW	3.400	4.200	21.0	0.8	4.00	2.0	2.0	20.0
APTMP3-03400420-1520-D4-GW	3.400	4.200	32.0	0.8	1.50	2.0	2.5	20.0
APTMP2-03400420-2526-D4-S	3.400	4.200	17.0	1.0	2.50	2.0	2.0	26.0
APTMP3-03400420-4020-D6-GW	3.400	4.200	32.0	0.8	4.00	2.0	2.0	20.0
APTW4-03400420-30K10-229G	3.400	4.200	50.0	0.5	0.43	1.4	1.4	10.0
APTMP3-03400420-4020-D4-GW	3.400	4.200	32.0	0.8	4.00	2.0	2.0	20.0
APT1-03400420-2510-D2	3.400	4.200	9.0	0.8	2.50	2.5	2.5	10.0
ASKW6-03400420-33K10-229	3.400	4.200	60.0	1.5	0.50	1.5	1.5	10.0
APTW4-03400420-40K10-229G	3.400	4.200	60.0	0.5	0.70	1.3	1.3	10.0
APTMP2-03400420-3125-D4-S	3.400	4.200	18.0	1.0	3.10	2.0	2.0	25.0
APT4-03600420-0413-D4	3.600	4.200	35.0	0.5	0.40	2.0	2.0	13.0
APTW1-03600420-50K10	3.600	4.200	10.0	1.5	0.69	1.7	1.7	10.0
APTW3-03600420-50K10	3.600	4.200	35.0	0.5	0.69	1.4	1.4	10.0
APTW6-03600420-45K10-229-G	3.625	4.200	60.0	0.5	0.63	1.3	1.3	10.0
APTMP3-04000450-2030-D3	4.000	4.500	30.0	0.5	2.00	2.1	2.1	30.0
APTMP4-04400500-1220-D4-S	4.000	5.000	42.0	0.8	1.20	1.3	1.3	20.0
APT5-04100530-0713-D4	4.100	5.300	47.0	0.5	1.80	1.5	1.5	13.0
APTMP4-04390501-0617-D4-SB	4.390	5.010	42.0	0.8	0.60	2.0	2.0	25.0
APT4-04400510-0510-D4	4.400	5.100	36.0	0.5	0.50	1.5	1.5	10.0
APTW5-04400550-60K10	4.400	5.500	60.0	1.0	0.82	1.4	1.4	10.0
APTW5-04400550-40K10	4.400	5.500	40.0	1.5	0.56	1.4	1.4	10.0
APTMP4-04400500-1517-D4-S	4.400	5.000	42.0	0.8	1.50	2.0	2.0	17.0



# AMPLITECH PRODUCT LISTING-con'd

## NARROW-BAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT4-04400500-1315-D6-PLH	4.400	5.000	40.0	1.0	1.30	2.0	2.0	15.0
APTMP4-04400500-1220-D4-S-GW	4.400	5.000	43.0	0.8	1.20	1.4	1.4	20.0
APT3-05000700-0610-D4	5.000	7.000	24.0	1.0	0.60	1.5	1.5	10.0
APT3-05000700-0910-D4	5.000	7.000	25.0	1.0	0.90	1.5	1.5	10.0
APT4-05000700-0610-D4	5.000	7.000	34.0	1.0	0.60	1.5	1.5	10.0
APT4-05000720-0710-D4	5.000	7.200	35.0	0.8	0.70	1.5	1.5	10.0
APTMP4-05200760-D18-S	5.200	7.600	35.0	1.5	1.00	2.0	2.0	21.0
APT2-05200600-1210-TC-D2-GW	5.200	6.000	17.0	1.0	1.20	2.0	2.0	10.0
APT4-05400590-0912-D4	5.400	5.900	30.0	0.5	0.90	2.0	2.0	12.0
APT4-05400590-1515-D4	5.400	5.900	36.0	1.0	1.50	2.0	2.0	15.0
APT5-05750675-0810-D6	5.750	6.750	50.0	1.0	0.80	2.0	2.0	10.0
APT5-05750675-0710-D6	5.750	6.750	50.0	1.0	0.70	2.0	2.0	10.0
APT2-05800610-1311-D4	5.800	6.100	16.0	0.5	1.30	1.8	1.8	11.0
APT2-05800610-1211-D4-S	5.800	6.100	16.0	0.5	1.60	1.8	1.8	11.0
APTW4-0590072-0613-137	5.900	7.200	35.0	0.8	0.60	1.5	1.5	13.0
APTW5-05900710-45K10	5.900	7.100	40.0	1.5	0.63	1.4	1.4	10.0
APTW5-05900710-70K10-D4	5.900	7.100	40.0	1.0	0.94	1.4	1.4	10.0
APTW5-05900710-70K10	5.900	7.100	40.0	1.0	0.93	1.4	1.4	10.0
APTW4-05900710-50K10-137	5.900	7.100	39.0	1.0	0.70	1.5	1.5	10.0
APTMP5-06400710-2015-D6	6.400	7.100	41.0	1.0	2.00	1.5	1.5	15.0
APT5-06400710-2015-D6	6.400	7.100	41.0	1.0	2.00	1.5	1.5	15.0
APT4-06400710-0815-D6-PLH	6.400	7.100	35.0	1.0	0.80	2.0	2.0	15.0
APTW6-06700775-60K10-112	6.700	7.750	57.0	1.0	0.80	1.5	1.5	10.0
APT3-07000800-1000-D4	7.000	8.000	25.0	1.0	1.00	2.0	2.0	0.0
APT5-07001000-1010-D6	7.000	10.000	50.0	1.5	1.00	2.0	2.0	10.0
APTMP4-07000950-4020-D4	7.000	9.500	22.0	1.3	4.00	2.0	2.0	20.0
APT4-07100840-0810-D4	7.100	8.400	28.0	1.0	0.80	2.0	2.0	10.0
APT4-07100840-0813-D4	7.100	8.400	34.0	1.0	0.80	1.8	1.8	13.0
APT3-07100840-0810-D4	7.100	8.400	23.0	1.0	0.80	2.0	2.0	10.0
APTW8-07100840-50K10-112	7.100	8.400	60.0	1.0	0.69	1.5	1.5	10.0
APTW4-07100840-XX10-137	7.100	8.400	25.0	0.5	0.55	2.0	1.5	10.0
ASKW5-07100840-55K10-112	7.100	8.400	50.0	1.0	0.70	1.5	1.5	10.0
APT4-07100840-D4	7.100	8.400	28.0	1.0	0.80	2.0	2.0	10.0
APT6-07100840-0710-D6	7.100	8.400	60.0	1.0	0.70	1.5	1.5	10.0
APT4-07100770-1513-D4	7.100	7.700	40.0	1.0	1.50	2.0	2.0	13.0
APTMP4-07100840-0825-D4	7.100	8.400	34.0	0.5	0.80	2.0	2.0	25.0
APT3-07250775-0710-D4	7.250	7.750	23.0	0.8	0.70	1.5	1.5	10.0
APTW3-07250775-0503-SD4	7.250	7.750	23.0	0.8	0.55	1.3	1.3	10.0
APTW8-07250840-50K10-137	7.250	8.400	60.0	1.0	0.70	1.4	1.4	10.0
APT3-07250775-05510-D4	7.250	7.750	23.0	0.8	0.55	1.3	1.3	10.0
APTW5-07250775-44K20-112	7.250	7.750	50.0	1.0	0.60	1.4	1.4	20.0

# AMPLITECH PRODUCT LISTING-con'd

## NARROW-BAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT4-07250775-1010-D4	7.250	7.750	38.0	0.5	1.00	1.5	1.5	10.0
APTW3-725775-50K05-112-BTO	7.250	7.750	27.0	0.3	0.69	1.3	1.3	10.0
APT4-07300840-0513-D4	7.300	8.400	36.0	0.8	0.75	1.5	1.5	13.0
APT5-07700820-0915-D6	7.700	8.200	40.0	1.0	0.90	1.5	1.5	15.0
APT5-07700820-1515-D6-GW	7.700	8.200	40.0	1.0	1.50	1.5	1.5	15.0
APT5-07700820-1615-D4	7.700	8.200	40.0	1.0	1.60	2.0	2.0	15.0
APT5-07700850-50K13-D6	7.700	8.500	50.0	1.0	0.69	1.5	1.5	13.0
APT4-07700820-0815-D6-PLH	7.700	8.200	37.0	1.0	0.50	2.0	2.0	15.0
APTW5-07700850-50K10-112NUG	7.700	8.500	50.0	1.0	0.69	1.5	1.5	10.0
APT5-07700850-55K13-D6-S	7.750	8.500	50.0	1.0	0.75	1.5	1.5	13.0
ASKW8-07100840-50K10-112	7.800	8.400	60.0	1.0	0.70	1.5	1.5	10.0
APT3-07900840-2010-D4	7.900	8.400	28.0	0.5	2.00	2.0	2.0	10.0
APTMP2-07900840-1820-D2	7.900	8.400	16.0	0.5	1.80	2.0	2.0	20.0
APTMP4-08000850-3020-D4	8.000	8.500	35.0	1.0	3.00	2.0	2.0	20.0
APTMP3-08001100-3516-D4	8.000	11.000	22.0	1.0	3.50	2.0	2.0	16.0
APTMP5-08001100-3515-D6	8.000	11.000	40.0	1.5	3.50	2.0	2.0	15.0
APTMP5-08001100-3515-D8	8.000	11.000	40.0	1.5	3.50	2.0	2.0	15.0
APT6-08001000-3000-D6	8.000	10.000	40.0	1.0	3.00	2.0	2.0	0.0
APTMP3-08001100-3516-D8	8.000	10.000	24.0	1.0	3.50	2.0	2.0	16.0
APT6-08001000-3024-D6	8.000	10.000	40.0	1.0	3.00	2.0	2.0	24.0
APT3-08001000-3024-D4	8.000	10.000	28.0	1.0	3.00	2.0	2.0	24.0
APT4-08001100-0910-D4-GW	8.000	11.000	32.0	1.0	0.90	2.0	2.0	10.0
APT44-08400850-0710-D44	8.400	8.500	60.0	1.0	0.70	1.5	1.5	10.0
APT3-09001000-1010-D4	9.000	10.000	32.0	0.8	1.00	1.5	1.5	10.0
APTMP6-09001000-1117-D6	9.000	10.000	42.0	1.0	1.10	1.8	1.8	17.0
APT4-09000950-1010-D4	9.000	9.500	32.0	0.8	1.00	1.5	1.5	10.0
APT3-09001100-0910-D4	9.000	11.000	26.0	0.5	0.90	1.5	1.5	10.0
APT3-09001100-0910-D4-S	9.000	11.000	26.0	0.5	0.90	1.5	1.5	10.0
APT3-09001100-0910-D4-S-GW	9.000	11.000	27.0	0.5	0.90	1.5	1.5	10.0
APT3-09801020-3010-D4	9.800	10.200	25.0	1.5	3.00	2.0	2.0	10.0
APT2-10701120-1410-D4	10.700	11.000	16.0	1.5	1.40	1.5	1.5	10.0
APT3-10701170-1010-D4	10.700	11.000	32.0	1.0	1.00	1.5	1.5	10.0
APT4-10701270-1010-D4	10.700	12.000	40.0	1.5	1.00	1.5	1.5	10.0
APT4-10701270-1010-D6	10.700	12.000	38.0	1.0	1.00	2.0	2.0	10.0
APT4-10701275-1110-D4	10.700	12.000	28.0	1.0	1.10	1.8	1.8	10.0
APT5-10701270-1010-D6	10.700	12.000	45.0	1.0	1.00	2.0	2.0	10.0
APT6-10701270-1010-D6	10.700	12.000	52.0	1.0	1.00	2.0	2.0	10.0
APT2-10701120-1405-D4	10.700	11.200	16.0	1.5	1.40	1.5	1.5	5.0
APT3-10701275-1910-D6	10.700	12.750	28.0	1.0	1.90	1.8	1.8	10.0
APTW5-10701270-100K10	10.700	12.700	40.0	1.5	1.30	1.4	1.4	10.0
APTW2-10701270-100K08	10.700	12.700	10.0	2.0	1.29	1.7	1.7	8.0

# AMPLITECH PRODUCT LISTING-con'd

## NARROW-BAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT5-10701270-1015-D6	10.700	12.700	45.0	1.0	1.00	2.0	1.5	10.0
APT6-10701270-1015-D6	10.700	12.700	52.0	1.0	1.00	2.0	2.0	15.0
APT4-10701270-1015-D6	10.700	12.700	38.0	1.0	1.00	2.0	2.0	15.0
APT1-10701275-3010-D2	10.700	12.750	9.0	0.5	3.00	2.5	2.5	10.0
APTW5-10701270-80K10-75	10.700	12.700	40.0	1.5	1.01	1.4	1.4	10.0
ASKW5-10701270-80K10-75	10.700	12.700	40.0	1.5	1.04	1.6	1.6	10.0
APT5-10701370-1515-D4	10.700	13.700	45.0	1.0	1.50	2.0	2.0	15.0
APT3-10951175-0910-D4	10.950	11.000	23.0	0.8	0.90	1.5	1.5	10.0
APT4-11001200-1010-D6	11.000	12.000	38.0	0.5	1.00	2.0	2.0	10.0
APT2-11001400-2010-D4	11.000	14.000	18.0	1.0	1.50	2.0	2.0	12.0
APT3-11701220-0910-D4	11.700	12.200	23.0	0.8	0.90	1.5	1.5	10.0
APT4-12001300-1010-D6	12.000	13.000	40.0	0.5	1.00	2.0	2.0	10.0
APT3-12701320-1010-D4	12.700	13.200	28.0	1.0	1.00	2.0	2.0	10.0
APT4-12701530-1110-D4	12.700	15.300	40.0	1.0	1.10	1.8	1.8	10.0
APTW6-12701530-100K10-62	12.700	15.300	40.0	1.5	1.30	1.3	1.3	10.0
APTW5-12701530-125K10-62	12.700	15.300	40.0	1.5	1.56	1.4	1.4	10.0
APT4-12701530-150K10	12.700	15.300	40.0	1.5	1.81	1.4	1.4	10.0
APTW4-12701530-150K10-D6	12.700	15.300	40.0	1.5	1.80	1.4	1.4	15.0
APTW4-12701530-150K10	12.700	15.300	40.0	1.5	1.80	1.4	1.4	10.0
APT4-12701450-1510-D4	12.700	15.300	20.0	2.0	1.50	2.0	2.5	10.0
ASKW5-12701530-125K10-62	12.700	15.300	40.0	1.5	1.50	1.6	1.6	10.0
ASKW6-12701530-100K10-62	12.700	15.300	40.0	1.5	1.30	1.3	1.3	10.0
APTW5-12701530-100K10-62	12.700	15.300	40.0	1.5	1.29	1.4	1.4	10.0
APT3-13901500-0910-D4	13.900	15.000	30.0	1.0	0.90	2.0	2.0	10.0
APT3-13901500-1110-D4	13.900	15.000	30.0	1.0	1.10	2.0	2.0	10.0
APT3-13901500-1310-D4	13.900	15.000	30.0	1.0	1.30	2.0	2.0	10.0
APT6-14001450-1410-D6	14.000	14.500	34.0	0.8	1.40	1.5	1.5	10.0
APTMP5-14001530-1525-D6	14.000	15.300	45.0	1.0	1.50	2.0	2.0	25.0
APT2-143144-D2-SP	14.300	14.400	23.0	0.5	1.00	2.0	2.0	5.0
APT5-14401540-1315-D6	14.400	15.400	40.0	1.0	1.30	1.8	1.8	15.0
APTMP5-14401540-2015-D6	14.400	15.400	40.0	1.0	2.00	1.8	1.8	15.0
APT5-14401540-1515-D6	14.400	15.400	38.0	4.0	1.50	2.0	2.0	15.0
APTW6-1504-100K10-WR62	14.920	15.150	36.0	0.5	1.29	1.4	1.4	13.0
APT4-15101540-2010-D4	15.100	15.400	30.0	1.0	2.00	2.0	2.0	10.0
APTW3-15501750-101K10-62	15.500	17.500	23.0	1.0	1.30	2.0	2.0	10.0
APTW3-15501750-101K10-62-G	15.500	17.500	24.0	1.0	1.30	2.0	2.0	10.0
APT4-17001750-1610-D4	17.000	17.500	22.0	1.0	1.60	1.5	1.5	10.0
APT2-17701970-1210-D2	17.000	19.000	22.0	1.5	1.20	1.8	1.8	10.0
APT44-17701970-1512-D44	17.700	19.700	46.0	1.5	1.50	1.8	1.8	12.0
APT22-17701970-1611-D22	17.700	19.700	38.0	1.0	1.60	1.8	1.8	11.0
APTMP3-17701970-1520-D22	17.700	19.700	38.0	1.0	1.50	1.8	1.8	20.0

# AMPLITECH PRODUCT LISTING-con'd

## NARROW-BAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT8-17701970-2010-D8	17.700	19.700	40.0	1.0	2.00	1.5	1.5	10.0
APT8-17701970-2010-D8-GW	17.700	19.700	37.0	1.0	2.00	1.5	1.5	10.0
APTW3-17701970-175K10	17.700	19.700	30.0	1.0	2.05	1.4	1.4	10.0
APT4-17701970-1608-D4	17.700	19.700	24.0	1.0	1.60	2.0	2.0	8.0
APT6-17701970-1610-D6	17.700	19.700	34.0	1.0	1.60	2.0	2.0	10.0
APT5-17701970-1613-D6	17.700	19.700	40.0	1.0	1.60	1.8	1.8	13.0
APTMP3-17701970-1520-D6	17.700	19.700	38.0	1.0	1.50	1.8	1.8	20.0
APT2-17701970-1608-D2	17.700	19.700	22.0	1.0	1.20	1.8	1.8	10.0
APT3-17701970-1608-D2	17.700	19.700	24.0	1.0	1.60	2.0	2.0	8.0
APTW5-17702020-180K08-42-S	17.700	20.200	50.0	1.5	2.10	1.3	1.3	8.0
APT22-17701970-1010-D22	17.700	19.700	38.0	1.0	1.00	1.8	1.8	10.0
APT4-20202120-1708-D4	20.200	21.200	22.0	1.8	1.70	1.5	1.5	8.0
APTW8-20202120-120K06-S	20.200	21.200	50.0	0.8	1.50	1.3	1.3	6.0
APTW8-20202120-135K10-42	20.200	21.200	50.0	0.8	1.70	1.3	1.3	10.0
APTW8-20202120-150K10-42	20.200	21.200	50.0	1.0	1.80	1.5	1.5	10.0
APT2-20202120-1108-D2-PM	20.200	21.200	18.0	0.3	1.10	2.0	2.0	8.0
APT2-21002200-1910-D2	21.000	22.000	20.0	2.0	1.90	2.5	2.5	10.0
APT2-21002200-2510-D2	21.000	22.000	20.0	2.0	2.50	2.0	2.5	10.0
APT4-21002400-2013-D4	21.000	24.000	28.0	1.8	2.00	2.0	2.0	13.0
APT22-21002400-1813-D22	21.000	24.000	37.0	1.0	1.80	1.8	1.8	13.0
APTMP3-21002400-2020-D6	21.000	24.000	38.0	1.0	2.00	1.8	1.8	20.0
APT44-21002400-1713-D44	21.000	24.000	40.0	1.5	1.70	2.0	2.0	13.0
APTMP3-21002400-2020-D4	21.000	24.000	40.0	1.0	2.00	1.8	1.8	20.0
APT4-21002400-1813-D22	21.000	24.000	37.0	1.0	1.80	1.8	1.8	13.0
APT2-21002400-17XX-D2	21.000	24.000	22.0	1.0	1.70	1.8	1.8	10.0
APT2-21002400-1713-D2	21.000	24.000	38.0	1.5	1.70	2.5	2.5	13.0
APT2-21002400-2510-D2	21.000	24.000	38.0	1.0	1.80	1.8	1.8	13.0
APT2-21002200-1813-D2	21.000	22.000	18.0	2.5	1.80	2.5	2.5	10.0
APT22-21002220-1413-D22	21.000	22.200	27.0	2.0	1.40	2.5	2.0	13.0
APT2-21402240-1805-D2	21.400	22.400	16.0	1.5	1.80	1.8	1.8	5.0
APT2-21402240-1405-D2	21.400	22.400	16.0	1.5	1.40	1.8	1.8	5.0
APT2-22002400-2510-D2	22.000	24.000	18.0	2.0	2.50	2.5	2.5	10.0
APT2-24002600-2510-D2	24.000	26.000	18.0	2.0	2.50	2.5	2.5	10.0
APT2-24002600-3010-D2	24.000	26.000	10.0	1.5	3.00	2.5	2.5	10.0
APT4-24202530-2210-D4	24.200	25.300	20.0	1.5	2.20	1.8	1.8	10.0
APTW4-24752525-2005-S	24.750	25.250	38.0	0.5	2.00	2.0	2.0	10.0
APT2-25002800-2510-D2	25.000	28.000	25.0	1.5	2.50	2.5	2.5	10.0
APT2-25202750-XX10-D2	25.000	27.500	25.0	1.5	1.80	1.8	1.8	10.0
APT4-25002750-150K10-D22	25.000	27.500	40.0	1.5	1.81	2.5	2.5	10.0
APT2-25202750-18XX-D2	25.200	28.000	25.0	1.5	1.80	1.8	1.8	10.0
APT22-25202750-1810-D22	25.200	27.500	50.0	1.0	1.80	1.8	1.8	10.0



# AMPLITECH PRODUCT LISTING-con'd

ULTRA-WIDEBAND AMPLIFIERS								
MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT2-1MG0010-3010-D17	0.001	0.100	42.0	0.5	3.00	1.5	1.5	10.0
APTC3-1M500M-1000-D6	0.001	0.500	27.0	3.0	1.00	2.5	2.0	0.0
APT2-00020100-5010-D4	0.002	1.000	14.0	1.0	5.00	2.3	2.3	10.0
APTMP4-00010100-2525-D4	0.010	1.000	25.0	1.5	2.50	2.0	2.5	25.0
APTMP1-00010100-1821-D4	0.010	1.000	15.0	1.5	1.80	2.5	2.5	21.0
APTMP4-00010100-4021-D4	0.010	1.000	15.0	1.5	4.00	2.3	2.3	20.0
APT2-00010100-1210-D4	0.010	1.000	14.0	1.0	1.20	2.3	2.3	10.0
APTMP4-00010100-2525-D6	0.010	1.000	25.0	1.5	2.50	2.0	2.5	25.0
APTMP2-00010100-7027-D9	0.010	1.000	21.0	0.5	7.00	2.0	2.0	27.0
APT2-00010025-4012-D20	0.010	0.250	18.0	1.0	4.00	2.5	2.5	12.0
APTMP3-00010400-3023-D6	0.010	4.000	25.0	2.0	3.00	2.5	2.5	20.0
APT2-00020100-1210-D4	0.020	1.000	14.0	1.0	1.20	2.3	2.3	10.0
APT4-00020100-2510-D6	0.020	1.000	32.0	1.5	2.50	2.5	2.5	10.0
APT3-00020100-4510-D4	0.020	1.000	30.0	1.5	4.50	2.5	2.5	10.0
APT3-00020100-2010-D4	0.020	1.000	30.0	1.5	2.00	2.5	2.5	10.0
APT1-00020200-1210-D4	0.020	2.000	12.0	1.5	1.20	2.5	2.5	10.0
APT2-00020300-3010-D4	0.020	3.000	24.0	2.8	3.00	2.5	2.5	10.0
APT3-00020100-4510-D6	0.020	1.000	30.0	1.5	4.50	2.5	2.5	10.0
APTMP4-00020050-2224-D9	0.020	0.500	39.0	1.0	2.20	2.0	2.0	24.0
APTMP2-00020050-4028-D9	0.020	0.500	18.0	1.0	4.00	2.0	2.0	20.0
APT2-00030250-1010-D4	0.030	2.500	26.0	1.5	1.00	2.5	2.5	10.0
APTSM1-00050100-1820	0.050	1.000	13.0	1.0	1.80	2.0	2.0	20.0
APTMP3-00050100-3030-D9	0.050	1.000	30.0	1.0	3.00	2.0	2.0	30.0
APTMP3-00050100-4030-D9	0.050	1.000	30.0	0.5	4.00	2.0	2.0	30.0
APT4-00501800-2410-D4	0.050	18.000	23.0	2.5	2.40	2.5	2.5	10.0
APTMP3-00050100-2531-D15	0.050	1.000	31.0	1.0	2.50	2.0	2.0	31.0
APTMP4-00050100-1333-D9	0.050	1.000	43.0	1.5	1.30	2.0	2.0	33.0
APT3-00100200-1015-D4	0.100	2.000	38.0	1.0	1.00	2.0	2.0	15.0
APT3-00100200-0910-D4	0.100	2.000	20.0	1.0	0.90	2.0	2.0	10.0
APT4-00100300-1115-D6	0.100	3.000	30.0	2.0	1.10	2.5	2.5	15.0
APT3-00100300-1010-D4	0.100	3.000	28.0	1.0	1.00	2.2	2.0	10.0
APT3-00100300-1210-D4	0.100	3.000	30.0	1.0	1.20	2.0	2.0	10.0
APT3-00100400-1210-D4	0.100	4.000	30.0	1.0	1.20	2.0	2.0	10.0
APT3-00100400-1310-D4	0.100	4.000	28.0	1.0	1.30	2.0	2.0	10.0
APT3-00100600-1510-D4	0.100	6.000	28.0	1.3	1.50	2.0	2.0	10.0
APT3-00100600-1310-D4	0.100	6.000	28.0	1.3	1.30	2.0	2.0	10.0
APT3-00100600-1010-D4	0.100	6.000	28.0	1.3	1.00	2.0	2.0	10.0
APT3-00100600-2010-D4	0.100	6.000	24.0	1.5	2.00	2.0	2.0	10.0
APT4-00100600-1310-D6	0.100	6.000	42.0	1.0	1.30	2.0	2.0	10.0
APT3-00100850-4010-D4	0.100	8.500	25.0	1.8	4.00	2.5	2.5	10.0
APT4-00100800-1410-D4	0.100	8.000	28.0	1.5	1.40	2.0	2.0	10.0

# AMPLITECH PRODUCT LISTING-con'd

## ULTRA-WIDEBAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APT3-00100800-4015-D4	0.100	8.000	25.0	2.0	4.00	2.5	2.5	15.0
APT3-00101200-2510-D4	0.100	12.000	22.0	2.3	2.50	2.0	2.0	10.0
APT4-00101200-2210-D4	0.100	12.000	24.0	1.5	2.20	2.2	2.2	10.0
APT4-00101400-2310-D4	0.100	14.000	23.0	2.0	2.30	2.5	2.5	10.0
APT3-00101800-2510-D4	0.100	18.000	20.0	2.5	2.50	2.5	2.5	10.0
APT4-00101800-2510-D6	0.100	18.000	26.0	2.5	2.50	2.5	2.5	10.0
APT3-00102000-3010-D4	0.100	20.000	19.0	2.5	3.00	2.5	2.5	10.0
APT4-00102000-2710-D4	0.100	20.000	25.0	2.5	2.70	2.5	2.5	10.0
APT3-00102000-2410-D4	0.100	20.000	19.0	2.5	2.40	2.5	2.5	10.0
APT4-00102400-4005-D4	0.100	24.000	16.0	2.0	4.00	2.5	2.5	5.0
APT4-00102650-4008-D4	0.100	26.500	18.0	2.5	4.00	2.5	2.5	8.0
APTMP1-00100200-1121-D4	0.100	2.000	15.0	1.5	1.10	2.5	2.5	21.0
APTMP2-00100200-2020-D4	0.100	2.000	20.0	1.5	2.00	2.0	2.0	20.0
APTMP2-00100200-1121-D4	0.100	2.000	25.0	1.5	1.10	2.5	2.5	21.0
APTMP3-00100200-2523-D4	0.100	2.000	32.0	1.5	2.50	2.0	2.5	23.0
APTMP2-00100200-2527-D6	0.100	2.000	32.0	1.5	2.50	2.0	2.5	27.0
APTMP4-00100200-2527-D6	0.100	2.000	44.0	1.0	2.50	2.0	2.5	27.0
APTMP3-00100300-1520-D4	0.100	3.000	30.0	1.5	1.50	2.2	2.2	20.0
APTMP4-00100300-2021-D4	0.100	3.000	31.0	1.5	2.00	2.0	2.0	21.0
APTMP2-00100400-3520-D2	0.100	4.000	16.0	1.5	3.50	2.2	2.2	20.0
APTMP4-00100400-2620-D4	0.100	4.000	26.0	1.5	2.60	2.0	2.0	20.0
APTMP4-00100600-2620-D4	0.100	6.000	26.0	1.5	2.60	2.0	2.0	20.0
APTMP2-00101000-5520-D2	0.100	10.000	10.0	1.8	5.50	2.2	2.2	20.0
APTMP3-00101000-4020-D4	0.100	10.000	18.0	1.5	4.00	2.0	2.0	20.0
APTMP2-00101800-5516-D4	0.100	18.000	15.0	2.8	5.50	2.5	2.5	16.0
APTMP3-00101800-4520-D4	0.100	18.000	20.0	2.8	4.50	2.5	2.5	20.0
APTMP4-00101800-3820-D4	0.100	18.000	34.0	2.8	3.80	2.5	2.5	20.0
APTMP6-00102000-3518-D6	0.100	20.000	34.0	3.0	3.50	2.5	2.5	18.0
APTSM1-00100200-1616	0.100	2.000	12.0	1.0	1.60	2.0	2.0	16.0
APTSM2-00100200-1208	0.100	2.000	22.0	1.0	1.20	2.0	2.0	8.0
APTSM2-00100300-1208	0.100	3.000	20.0	1.0	1.20	2.0	2.0	8.0
APTSM2-00100400-1808	0.100	4.000	20.0	1.0	1.80	2.0	2.0	8.0
APTSM2-00100600-2208	0.100	6.000	20.0	1.0	2.20	2.0	2.0	8.0
APT4-00100200-5011-D6-LM	0.100	2.000	65.0	2.5	5.00	2.5	2.5	13.0
APT4-00100300-4015-D6	0.100	3.000	20.0	2.0	4.00	2.5	2.5	10.0
APT4-00100400-1210-D4	0.100	4.000	30.0	1.0	1.20	2.0	2.0	10.0
APT4-00101800-2510-D4	0.100	18.000	23.0	2.0	2.50	2.5	2.5	10.0
APT4-00102000-3010-D4	0.100	20.000	20.0	2.0	3.00	2.5	2.5	10.0
APT42-00101800-2510-D42	0.100	18.000	35.0	2.5	2.50	2.5	2.5	10.0
APT5-00100600-1310-D6	0.100	6.000	42.0	1.0	1.00	2.0	2.0	10.0
APT5-00100600-2210-D6	0.100	6.000	47.0	1.0	2.20	2.0	2.0	10.0

# AMPLITECH PRODUCT LISTING-con'd

## ULTRA-WIDEBAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTMP4-00100300-2021-D6	0.100	3.000	31.0	1.5	2.00	2.0	2.0	21.0
APTMP5-00101800-3820-D6	0.100	18.000	34.0	2.8	3.80	2.5	2.5	20.0
APT4-0010400-2310-D4	0.100	14.000	22.0	2.0	2.30	2.5	2.5	10.0
APT4-00101800-2210-D4	0.100	18.000	22.0	2.5	2.20	2.5	2.5	10.0
APTMP4-00100200-3020-D4	0.100	2.000	28.0	1.5	3.00	2.5	2.5	16.0
APTMP3-00100300-1523-D4	0.100	3.000	30.0	1.5	1.50	2.2	2.2	23.0
APT4-00100400-1610-D6	0.100	4.000	42.0	1.0	1.60	2.0	2.0	10.0
APT3-00100300-1210-D4-S	0.100	3.000	30.0	1.0	1.20	2.0	2.0	10.0
APTC3-00100200-0900-D4-V	0.100	2.000	38.0	1.0	0.90	2.0	2.0	0.0
APTMP2-00100200-1820-D4	0.100	2.000	25.0	1.0	1.80	2.0	2.0	20.0
APT4-00101000-3010-D4	0.100	10.000	30.0	1.5	3.00	2.0	2.0	10.0
APTMP2-00100400-2016-D4-GW	0.100	4.000	15.0	2.5	1.50	2.5	2.5	16.0
APTMP2-00100400-2016-D2-GW	0.100	4.000	15.0	2.5	1.50	2.5	2.5	16.0
APT4-00101800-2410-D4	0.100	18.000	23.0	2.5	2.40	2.5	2.5	10.0
ASKMP4-00100300-2021-D4	0.100	3.000	31.0	1.5	2.00	2.0	2.0	21.0
ASK4-00101800-2510-D4	0.100	18.000	22.0	2.5	2.50	2.5	2.5	10.0
ASK3-00100300-1010-D4	0.100	3.000	32.0	1.0	1.00	2.0	2.0	10.0
APT3-00100200-1015-D4-L	0.100	2.000	38.0	1.0	1.00	2.0	2.0	15.0
APT3-00100600-2510-D4-S	0.100	6.000	28.0	1.3	3.00	2.0	2.0	10.0
APTC3-00100200-1200-D4	0.100	2.000	35.0	1.0	1.20	2.0	2.0	0.0
APT5-00102600-4210-D22	0.100	26.000	35.0	3.0	4.20	2.5	2.5	10.0
APTC-00100400-1200-D4	0.100	4.000	28.0	1.0	1.20	2.0	2.0	0.0
APT44-00101800-2410-D44-PLH	0.100	18.000	47.0	2.0	2.40	2.5	2.5	10.0
APT4-00101800-5010-D6-PLH	0.100	18.000	35.0	2.8	5.00	2.5	2.5	10.0
APT42-00101800-2410-D42-PLH	0.100	18.000	30.0	1.5	2.40	2.2	2.2	10.0
APTC3-00100200-0905-D4	0.100	2.000	35.0	1.0	0.20	2.0	2.0	5.0
APTC3-00100200-0912-D4	0.100	2.000	35.0	1.0	0.20	2.0	2.0	12.0
APT3-00100200-1015-D4-GW-3840	0.100	2.000	38.0	1.0	1.00	2.0	2.0	15.0
APT3-00100200-1015-D4-GW-4850	0.100	2.000	48.0	1.0	1.00	2.0	2.0	15.0
APT4-00101000-2010-D4	0.100	10.000	28.0	1.5	2.00	2.2	2.2	10.0
APT3-00200600-1310-D4	0.200	6.000	28.0	1.3	1.30	2.0	2.0	10.0
APT4-00200600-1310-D6	0.200	6.000	42.0	1.0	1.30	2.0	2.0	10.0
APT5-00200600-1310-D6	0.200	6.000	42.0	1.0	1.30	2.0	2.0	10.0
APT3-00300900-1510-D4	0.300	9.000	28.0	1.5	1.50	2.0	2.0	10.0
APT3-00501800-2508-D4	0.500	18.000	20.0	2.5	2.50	2.5	2.5	8.0
APT3-00501800-3008-D4	0.500	18.000	20.0	2.5	3.00	2.5	2.5	8.0
APT4-00501800-2410-D6	0.500	18.000	26.0	2.5	2.40	2.5	2.5	10.0
APT42-00501800-2410-D42	0.500	18.000	30.0	2.0	2.40	2.5	2.5	10.0
APT5-00501800-3010-D6	0.500	18.000	35.0	2.0	3.00	2.5	2.5	10.0
APTMP3-00501800-7020-D4	0.500	18.000	16.0	2.8	7.00	2.5	2.5	20.0
APTMP4-00501800-6520-D6	0.500	18.000	23.0	2.8	6.50	2.5	2.5	20.0

# AMPLITECH PRODUCT LISTING-con'd

## ULTRA-WIDEBAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTMP4-00100300-2021-D6	0.100	3.000	31.0	1.5	2.00	2.0	2.0	21.0
APTMP5-00101800-3820-D6	0.100	18.000	34.0	2.8	3.80	2.5	2.5	20.0
APT4-0010400-2310-D4	0.100	14.000	22.0	2.0	2.30	2.5	2.5	10.0
APT4-00101800-2210-D4	0.100	18.000	22.0	2.5	2.20	2.5	2.5	10.0
APTMP4-00100200-3020-D4	0.100	2.000	28.0	1.5	3.00	2.5	2.5	16.0
APTMP3-00100300-1523-D4	0.100	3.000	30.0	1.5	1.50	2.2	2.2	23.0
APT4-00100400-1610-D6	0.100	4.000	42.0	1.0	1.60	2.0	2.0	10.0
APT3-00100300-1210-D4-S	0.100	3.000	30.0	1.0	1.20	2.0	2.0	10.0
APTC3-00100200-0900-D4-V	0.100	2.000	38.0	1.0	0.90	2.0	2.0	0.0
APTMP2-00100200-1820-D4	0.100	2.000	25.0	1.0	1.80	2.0	2.0	20.0
APT4-00101000-3010-D4	0.100	10.000	30.0	1.5	3.00	2.0	2.0	10.0
APTMP2-00100400-2016-D4-GW	0.100	4.000	15.0	2.5	1.50	2.5	2.5	16.0
APTMP2-00100400-2016-D2-GW	0.100	4.000	15.0	2.5	1.50	2.5	2.5	16.0
APT4-00101800-2410-D4	0.100	18.000	23.0	2.5	2.40	2.5	2.5	10.0
ASKMP4-00100300-2021-D4	0.100	3.000	31.0	1.5	2.00	2.0	2.0	21.0
ASK4-00101800-2510-D4	0.100	18.000	22.0	2.5	2.50	2.5	2.5	10.0
ASK3-00100300-1010-D4	0.100	3.000	32.0	1.0	1.00	2.0	2.0	10.0
APT3-00100200-1015-D4-L	0.100	2.000	38.0	1.0	1.00	2.0	2.0	15.0
APT3-00100600-2510-D4-S	0.100	6.000	28.0	1.3	3.00	2.0	2.0	10.0
APTC3-00100200-1200-D4	0.100	2.000	35.0	1.0	1.20	2.0	2.0	0.0
APT5-00102600-4210-D22	0.100	26.000	35.0	3.0	4.20	2.5	2.5	10.0
APTC-00100400-1200-D4	0.100	4.000	28.0	1.0	1.20	2.0	2.0	0.0
APT44-00101800-2410-D44-PLH	0.100	18.000	47.0	2.0	2.40	2.5	2.5	10.0
APT4-00101800-5010-D6-PLH	0.100	18.000	35.0	2.8	5.00	2.5	2.5	10.0
APT42-00101800-2410-D42-PLH	0.100	18.000	30.0	1.5	2.40	2.2	2.2	10.0
APTC3-00100200-0905-D4	0.100	2.000	35.0	1.0	0.20	2.0	2.0	5.0
APTC3-00100200-0912-D4	0.100	2.000	35.0	1.0	0.20	2.0	2.0	12.0
APT3-00100200-1015-D4-GW-3840	0.100	2.000	38.0	1.0	1.00	2.0	2.0	15.0
APT3-00100200-1015-D4-GW-4850	0.100	2.000	48.0	1.0	1.00	2.0	2.0	15.0
APT4-00101000-2010-D4	0.100	10.000	28.0	1.5	2.00	2.2	2.2	10.0
APT3-00200600-1310-D4	0.200	6.000	28.0	1.3	1.30	2.0	2.0	10.0
APT4-00200600-1310-D6	0.200	6.000	42.0	1.0	1.30	2.0	2.0	10.0
APT5-00200600-1310-D6	0.200	6.000	42.0	1.0	1.30	2.0	2.0	10.0
APT3-00300900-1510-D4	0.300	9.000	28.0	1.5	1.50	2.0	2.0	10.0
APT3-00501800-2508-D4	0.500	18.000	20.0	2.5	2.50	2.5	2.5	8.0
APT3-00501800-3008-D4	0.500	18.000	20.0	2.5	3.00	2.5	2.5	8.0
APT4-00501800-2410-D6	0.500	18.000	26.0	2.5	2.40	2.5	2.5	10.0
APT42-00501800-2410-D42	0.500	18.000	30.0	2.0	2.40	2.5	2.5	10.0
APT5-00501800-3010-D6	0.500	18.000	35.0	2.0	3.00	2.5	2.5	10.0
APTMP3-00501800-7020-D4	0.500	18.000	16.0	2.8	7.00	2.5	2.5	20.0
APTMP4-00501800-6520-D6	0.500	18.000	23.0	2.8	6.50	2.5	2.5	20.0



# AMPLITECH PRODUCT LISTING-con'd

## ULTRA-WIDEBAND AMPLIFIERS-con'd

MODEL	START (GHz)	STOP (GHz)	GAIN (dB)	GAIN FLAT. (+/-dB)	NOISE FIGURE (dB)	I. VSWR (:1)	O. VSWR (:1)	P@1dB (dBm)
APTMP4-00501800-3023-D4	0.500	18.000	33.0	3.0	3.50	2.5	2.5	23.0
APTMP6-00501800-3020-D6	0.500	18.000	42.0	2.5	3.00	2.5	2.5	20.0
APTMP4-00501800-5021-D4	0.500	18.000	27.0	2.0	5.00	2.0	2.0	21.0
APTMP3-00502000-5018-D4	0.500	20.000	16.0	2.8	5.00	2.5	2.5	18.0
APTSM3-00502000-5008	0.500	20.000	16.0	1.0	5.00	2.5	2.5	8.0
APTMP4-00501800-5021-D6	0.500	18.000	27.0	2.0	5.00	2.0	2.0	21.0
APTMP5-00501800-3023-D4	0.500	18.000	37.0	3.0	3.50	2.5	2.5	23.0
APT4-00501800-3505-D4	0.500	18.000	20.0	3.0	3.50	2.0	2.0	5.0
APT5-01001800-3010-D6	0.500	18.000	35.0	2.0	3.00	2.5	2.5	10.0
APT3-00502650-4008-D4	0.500	26.500	18.0	2.5	4.00	2.5	2.5	8.0
APTMP5-00501800-3023-D6	0.500	18.000	34.0	3.0	3.50	2.5	2.5	23.0
APT4-00502650-4008-D4	0.500	26.500	18.0	2.5	4.00	2.5	2.5	8.0
ASK4-00501800-2410-D4	0.500	18.000	26.0	2.5	2.40	2.5	2.5	10.0
ASKMP5-00501800-3023-D4	0.500	18.000	33.0	3.0	3.50	2.5	2.5	23.0
APTMP4-00501800-5021-D4-S	0.500	18.000	24.0	2.0	5.00	2.0	2.3	21.0
APTMP4-00501800-5021-ME2-S	0.500	18.000	15.0	2.0	5.00	2.0	2.3	21.0
APT4-01002000-5011-D42-LM	1.000	20.000	42.0	2.5	5.00	2.5	2.5	11.0
APT3-01002000-3010-D4	1.000	20.000	20.0	2.8	3.00	2.5	2.5	10.0
APT4-01002650-3010-D4	1.000	26.500	30.0	2.0	3.00	2.0	2.0	10.0

## 0.01—2.0 GHz High Isolation 2-way Power Divider/Combiner/AMPD



### Applications

- High Frequency, Very High Frequency (HF/VHF) communications

### Features

- 0.01 to 2.0 GHz Frequency Range
- $\geq 20$  dB Typical Cross-port Isolation
- $\leq 0.5$  dB Typical Insertion Loss
- Shielded Weatherproof Housing
- MIL-883, MIL-45208 construction and reliability
- Hermetic Seal Option

### Product Description

The AMPD-0010200 2-way Power Divider/Splitter or Power Combiner depending on the RF Input/Output configuration that is fast becoming a staple offering to customers as part of our line of passive components. AmpliTech design enhancements allow for a very high isolation of greater than 20 dB (cross-port across the entire band). This, coupled with the low Insertion Loss of less than 0.5 dB is an example of how AmpliTech's design expertise can enhance the performance of mainstream devices to exceed customers' expectations at every turn.

### Key Specifications at +23°C

Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	0.01	-	2.0	Customizable
Isolation	dB	20 dB	20 dB	-	-
Insertion Loss	dB	-	0.5	0.9	Across whole
Phase Unbalance	°	-	-	6	Across whole
Amplitude Unbalance	dB	-	-	0.5	Across whole band
Outline/Package	-	-	-	-	Custom

## 0.01—2.0 GHz High Isolation 2-way Power Divider/Combiner AMPD



### Applications

- High Frequency, Very High Frequency (HF/VHF) communications

### Features

- 0.01 to 2.0 GHz Frequency Range
- $\geq 20$  dB Typical Cross-port Isolation
- $\leq 0.5$  dB Typical Insertion Loss
- Shielded Weatherproof Housing
- MIL-883, MIL-45208 construction and reliability
- Hermetic Seal Option

### Product Description

The AMPD-0010200 2-way Power Divider/Splitter or Power Combiner depending on the RF Input/Output configuration that is fast becoming a staple offering to customers as part of our line of passive components. AmpliTech design enhancements allow for a very high isolation of greater than 20 dB (cross-port across the entire band). This, coupled with the low Insertion Loss of less than 0.5 dB is an example of how AmpliTech's design expertise can enhance the performance of mainstream devices to exceed customers' expectations at every turn.

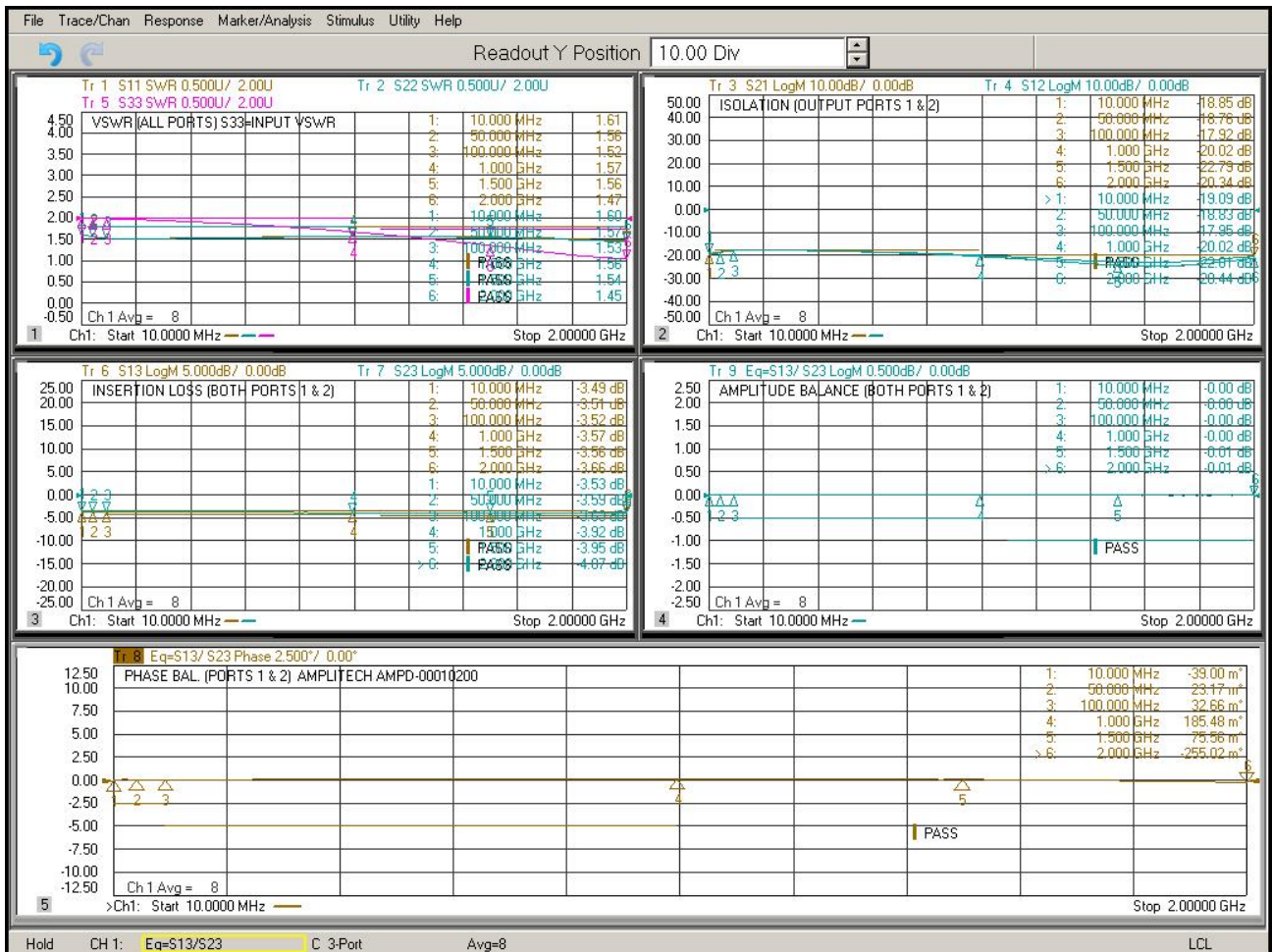
### Key Specifications at +23°C

Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	0.01	-	2.0	Customizable
Isolation	dB	20 dB	20 dB	-	-
Insertion Loss	dB	-	0.5	0.9	Across whole
Phase Unbalance	°	-	-	6	Across whole
Amplitude Unbalance	dB	-	-	0.5	Across whole band
Outline/Package	-	-	-	-	Custom

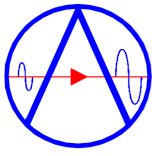
## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-55	+100	95% humidity, non-condensing
Storage Temperature (Case)	°C	-55	+100	95% humidity, non-condensing
RF Input Power	dBm	-	30 dBm	-
Power Dissipation	dBm	-	21 dBm	Internal

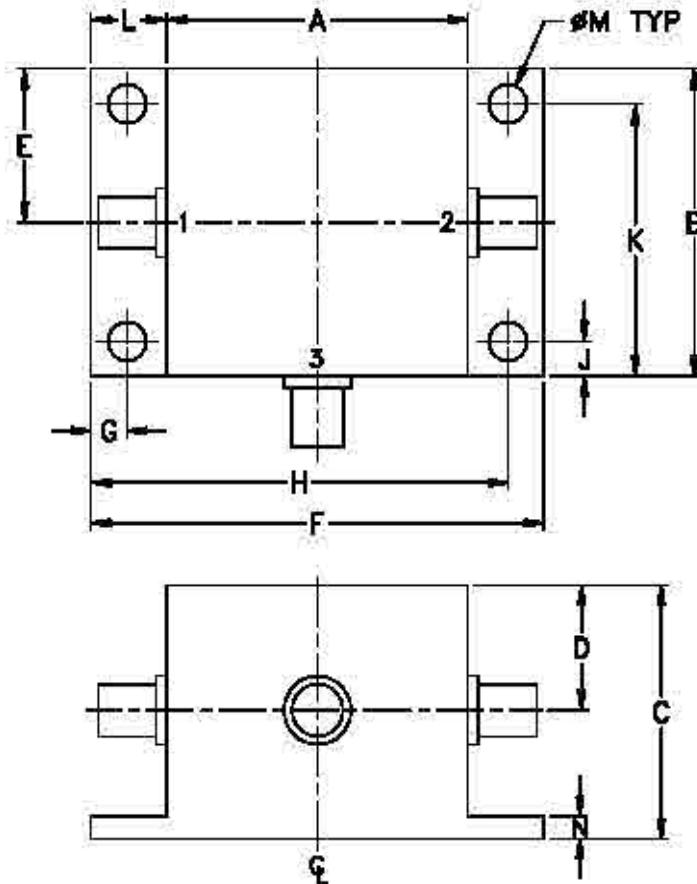
\*Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



Data taken with Agilent N5242 PNA-X Vector Network Analyzer



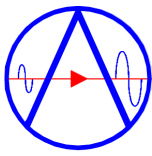
## Outline Drawing



## Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
.83	.83	.75	.37	.42	1.25	.100
21.08	21.08	19.05	9.40	10.67	31.75	2.54
H	J	K	L	M	N	wt
1.150	.095	.735	.21	.106	.06	grams
29.21	2.41	18.67	5.33	2.69	1.52	22.0





## 2 to 18 GHz Wide Band EW / ECM / IFM High Gain Limiting Amplifier

### APT55-02001800-7016-66-LMS



### Features

- 2 to 18 GHz Frequency Range
- Typical N.F. < 4 dB
- High Gain (80 dB)
- Gain Flatness <  $\pm 2.5$  dB
- +20 dBm Saturated Output Power
- Low Harmonic Distortion with Two-tone input signals up to +10 dBm
- Internal DC Regulator
- Reverse Voltage Protection

### Applications

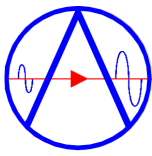
- IFM Receiver Front End
- Radar Systems

### Product Description

The APT55-02001800-7016-66-LMS is a wideband, high gain medium power limiting amplifier with +20 dBm saturated output power. It is designed mainly for IFM EW airborne application where multiple signals are present at the input and low

### Key Specifications at 23°C

Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	2	-	18	Customizable
Gain	dB	72	80	-	Customizable
Gain Flatness	dB	-	$\pm 2.5$	$\pm 2.5$	Customizable
In/Out VSWR	-	-	2.0	2.0	Customizable
Psat Output	dBm	+17	+20	-	Customizable
Input Power	dBm	-50		+10	
Two-tone ratio	dBc	-5	$\pm 15$	+5	6 dB ratio@
DC Power	V@mA	+11	+12	+16	@550 mA
Noise Figure	dB	-	3.0	7.0	@23°C
Outline/Package	-	-	-	-	D6+D6

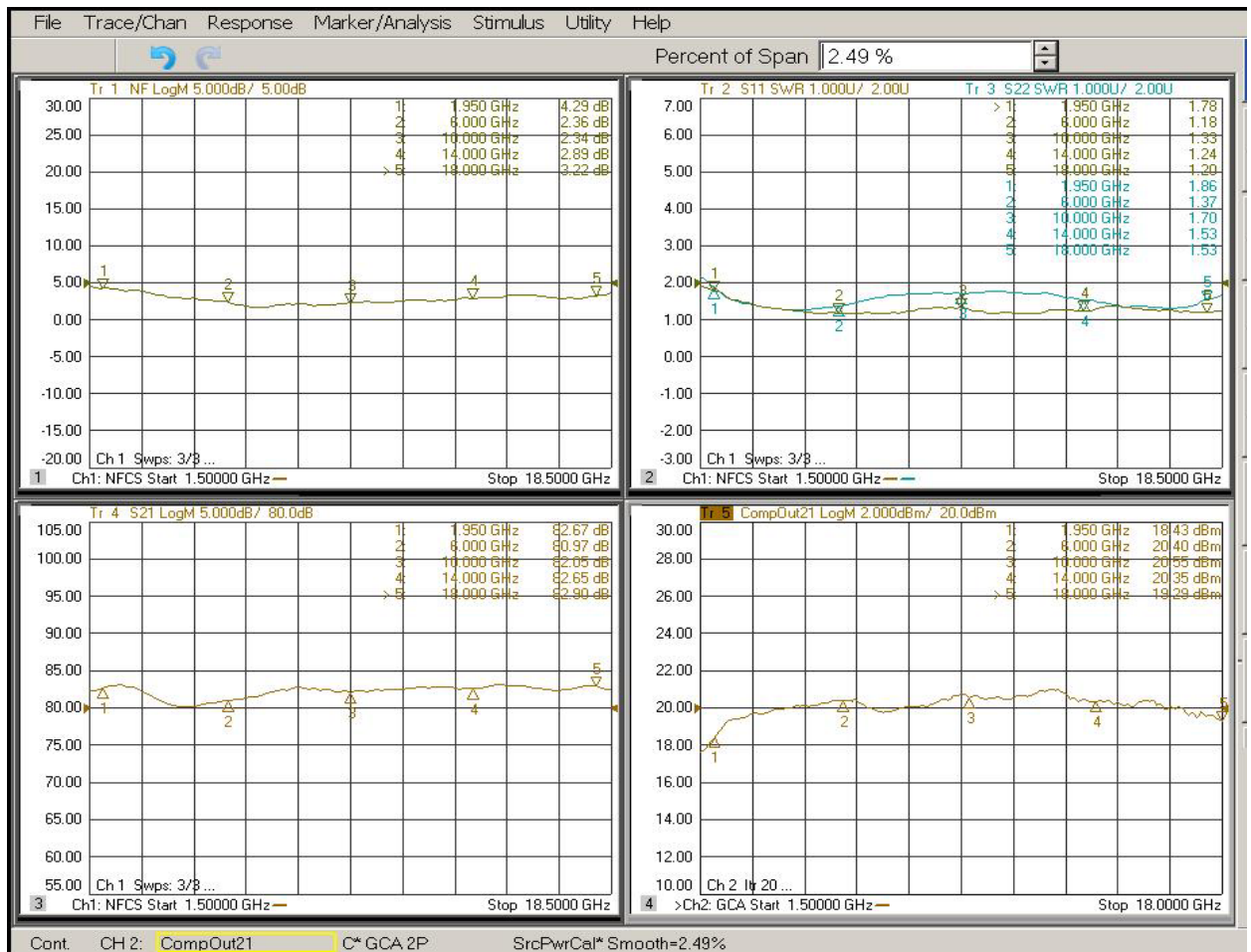


## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-40	+95	95% humidity, non-condensing
Storage Temperature (Case)	°C	-54	+115	95% humidity, non-condensing
RF Input Power	dBm	-	+20	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+16	At +V DC terminal
Negative Voltage	V	-	-10	Reverse Voltage

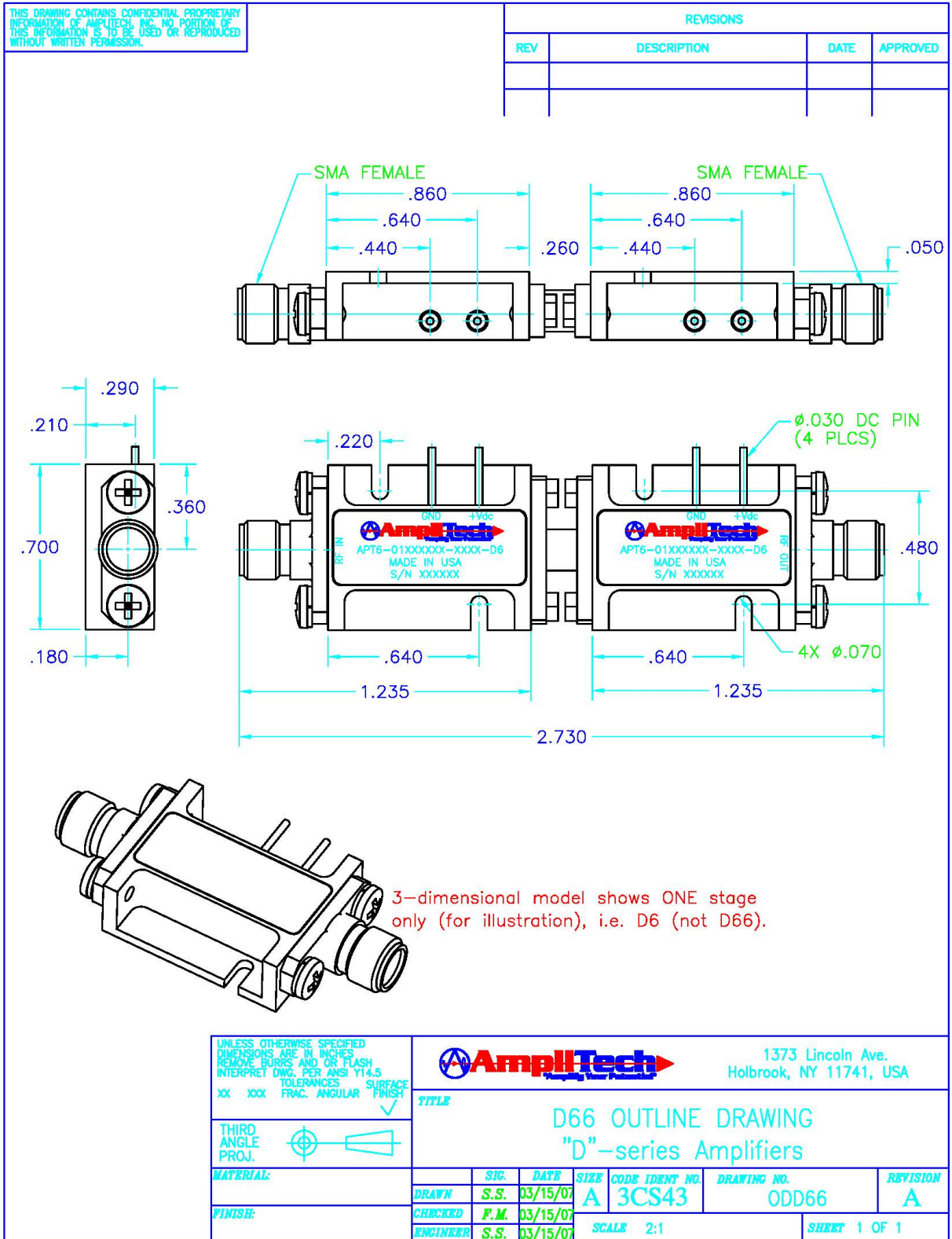
\*Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## Typical Measured Data



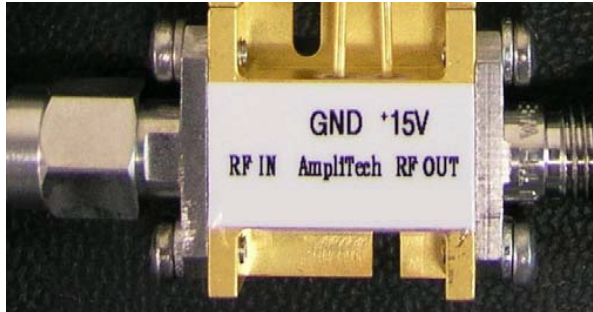
Data taken with Agilent N5242 PNA-X Vector Network Analyzer

## Outline Drawing



## C-Band Super Low Noise Amplifier/High Dynamic Range with integrated Bias Tee

### APTMP4-04400500-0617-D4-SB



### Features

- 4.4 to 5.0 GHz Frequency Range
- Typical N.F. < 0.6 dB
- Typical Gain 43dB
- Gain Flatness <  $\pm 0.5$  dB
- +32 dBm IP3
- +12V to +15V 125 mA Low DC power consumption
- Internal DC regulator
- Internal Bias Tee at output
- Reverse Voltage Protection
- State-of-the-Art PHEMT Technol-

### Applications

- Receiver Front End
- Radar
- Satellite Communication (SATCOM)
- Microwave Radio Systems

### Product Description

The APTMP4-04400500-0617-D4-SB is a Low Noise amplifier with super-low noise figure (<0.6dB) and high IP3 of +32 dBm. Lower NF options are also available with custom flatness, VSWR, P1dB, and outline. An internal Bias Tee at the out-

### Key Specifications at +23°C

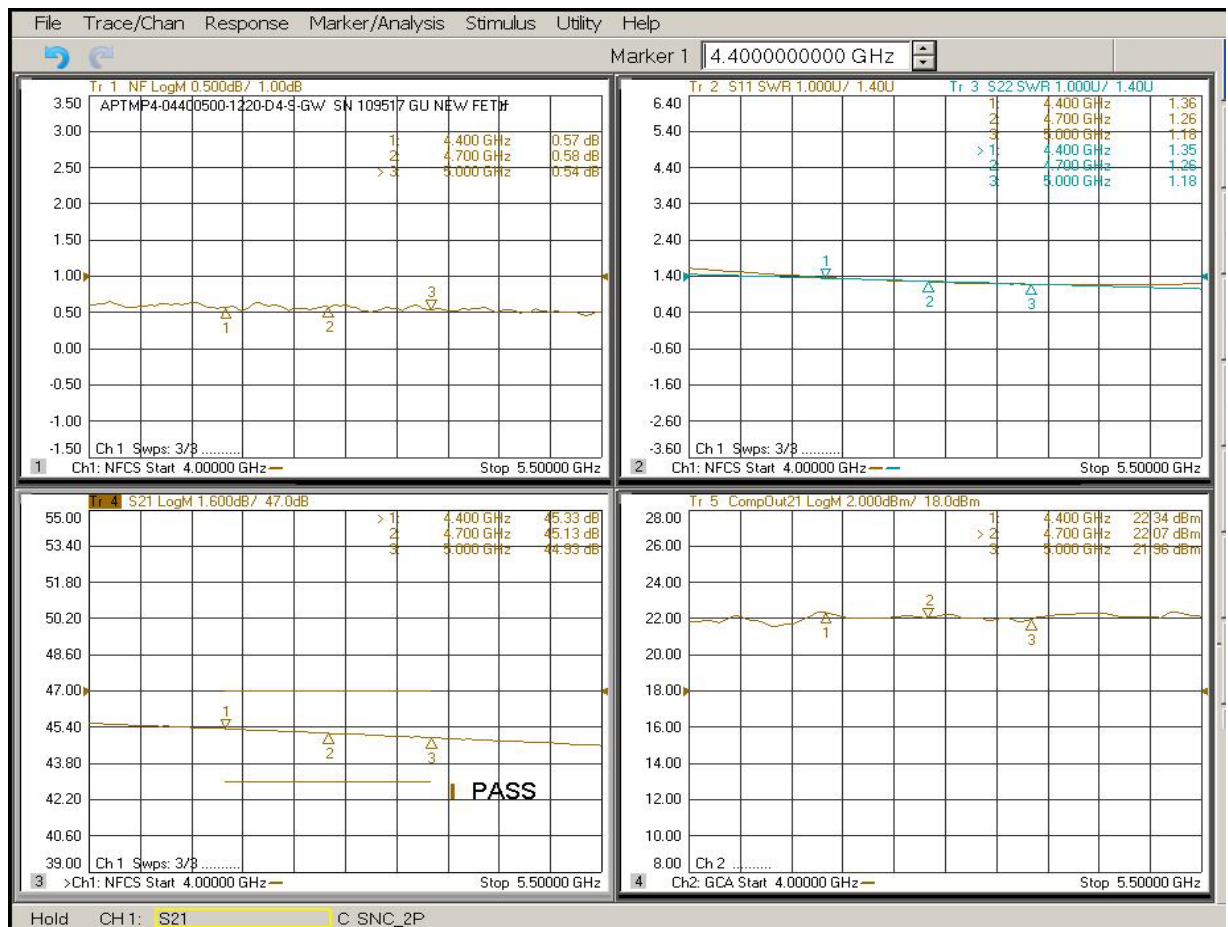
Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	4.40	-	5.00	Customizable
Gain	dB	43	45	47	Customizable
Gain Flatness	dB	-	$\pm 0.5$	$\pm 0.8$	Customizable
In/Out VSWR	-	-	1.40	1.40	Customizable
Output P1dB	dBm	+20	+22	-	Customizable
DC Power	V@mA	+11	+12	+16	@175 mA
Noise Figure	dB	-	0.6	1.2	Lower NF avail.
Outline/Package	-	-	-	-	D4

## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-54	+85	95% humidity, non-condensing
Storage Temperature (Case)	°C	-54	+115	95% humidity, non-condensing
RF Input Power	dBm	-	+16	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+16	At +V RF Output
Negative Voltage	V	-	-10	Reverse Voltage

\*Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

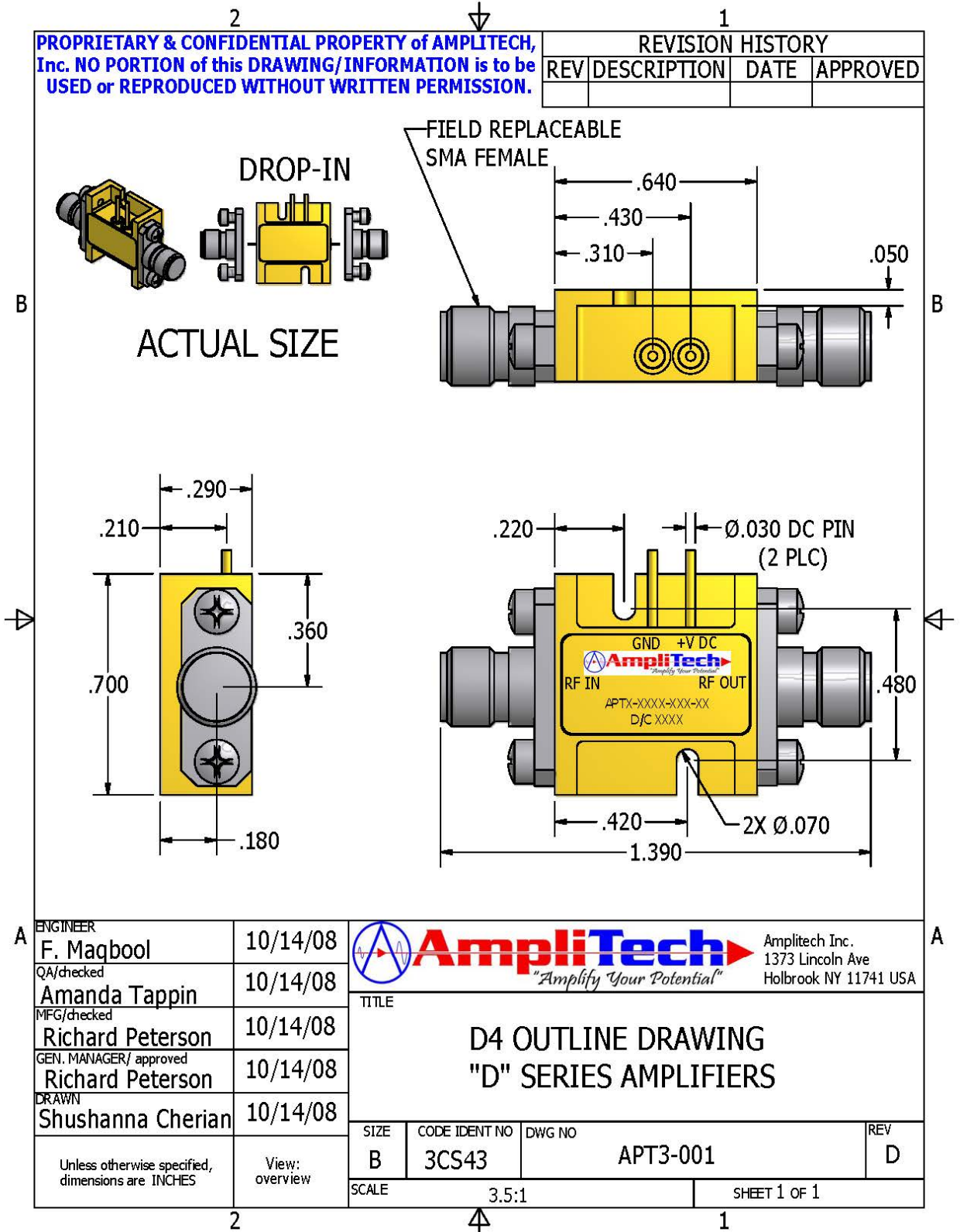
## Typical Measured Data



Data taken with Agilent N5242 PNA-X Vector Network Analyzer



## Outline Drawing



## 4.0 to 8.0 GHz Ultra-Low Noise Amplifier APT3-04000800-0610-ME3



### Features

- 4.0 to 8.0 GHz Frequency Range
- Typical N.F.  $\leq 0.5$  dB
- Gain Flatness  $< \pm 0.5$  dB (typical)
- Reverse Voltage Protection
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability

### Applications

- Radar Systems
- Satellite Communication (SATCOM)

### Product Description

The APT3-04000800-0610-ME3 is an octave band LNA with an industry low Noise Figure and Gain Flatness across the entire band. Lower NF options are also available in smaller sub-bands. Compact AmpliTech D-series packages are also available.

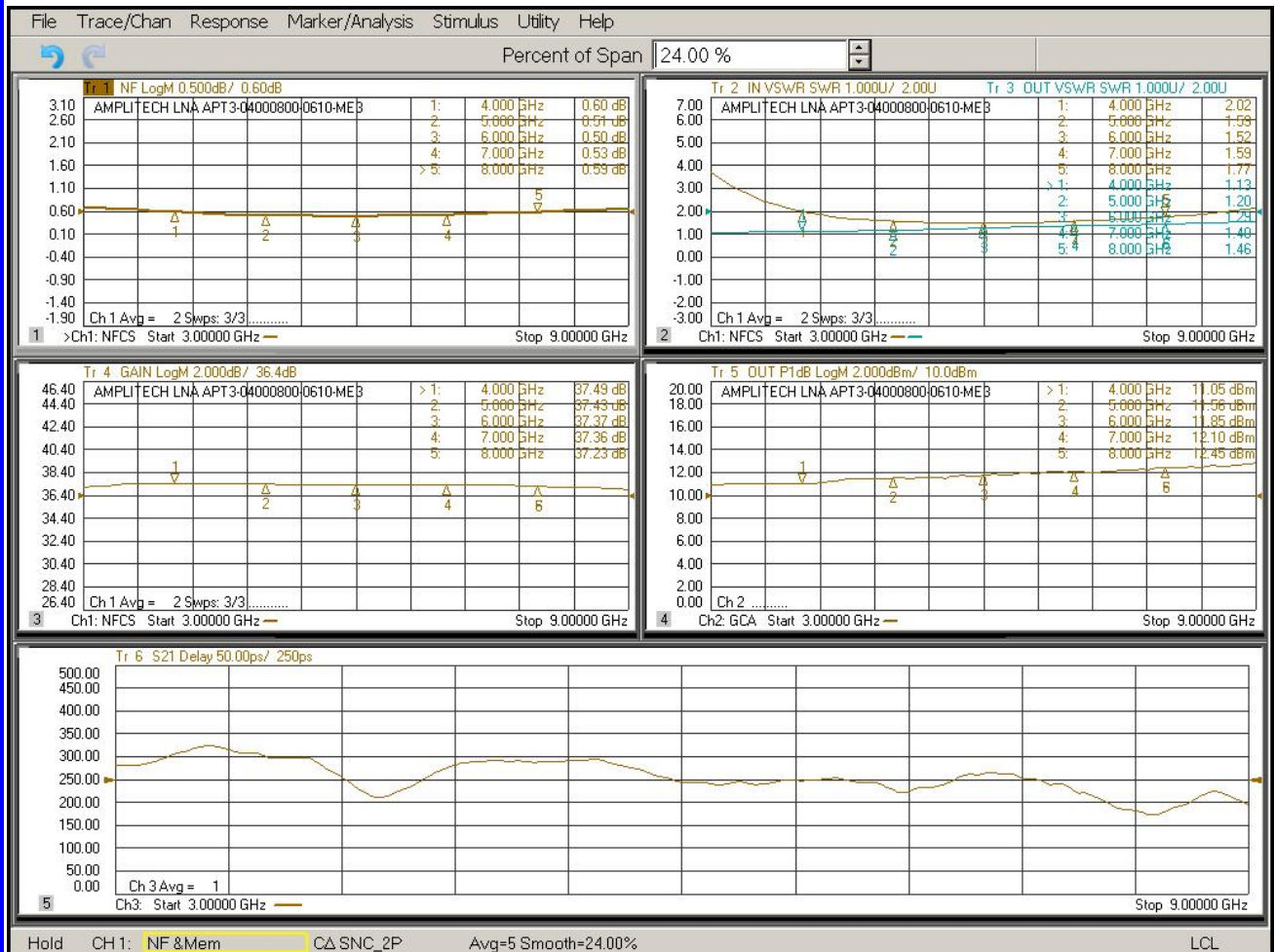
### Key Specifications at 23°C

Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	4.0	-	8.0	Customizable
Gain	dB	35	37	-	Customizable
Gain Flatness	dB	-	$\pm 0.5$	$\pm 1.0$	Customizable
In/Out VSWR	-	-	1.5	2.0	Customizable
Output P1dB	dBm	+10	+11	-	Customizable
DC Power	V@mA	+11	+15	+16	140 mA typ.
Noise Figure	dB	-	0.5	0.6	@23°C
Outline/Package	-	-	-	-	ME3

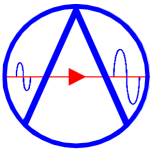
## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-40	+95	95% humidity, non-condensing
Storage Temperature (Case)	°C	-54	+115	95% humidity, non-condensing
RF Input Power	dBm	-	+19	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+16	At +V DC terminal
Negative Voltage	V	-	-10	Reverse Voltage

**\*Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. Nickel and then plated with Gold to eliminate contamination of other adjacent electronic compo-**





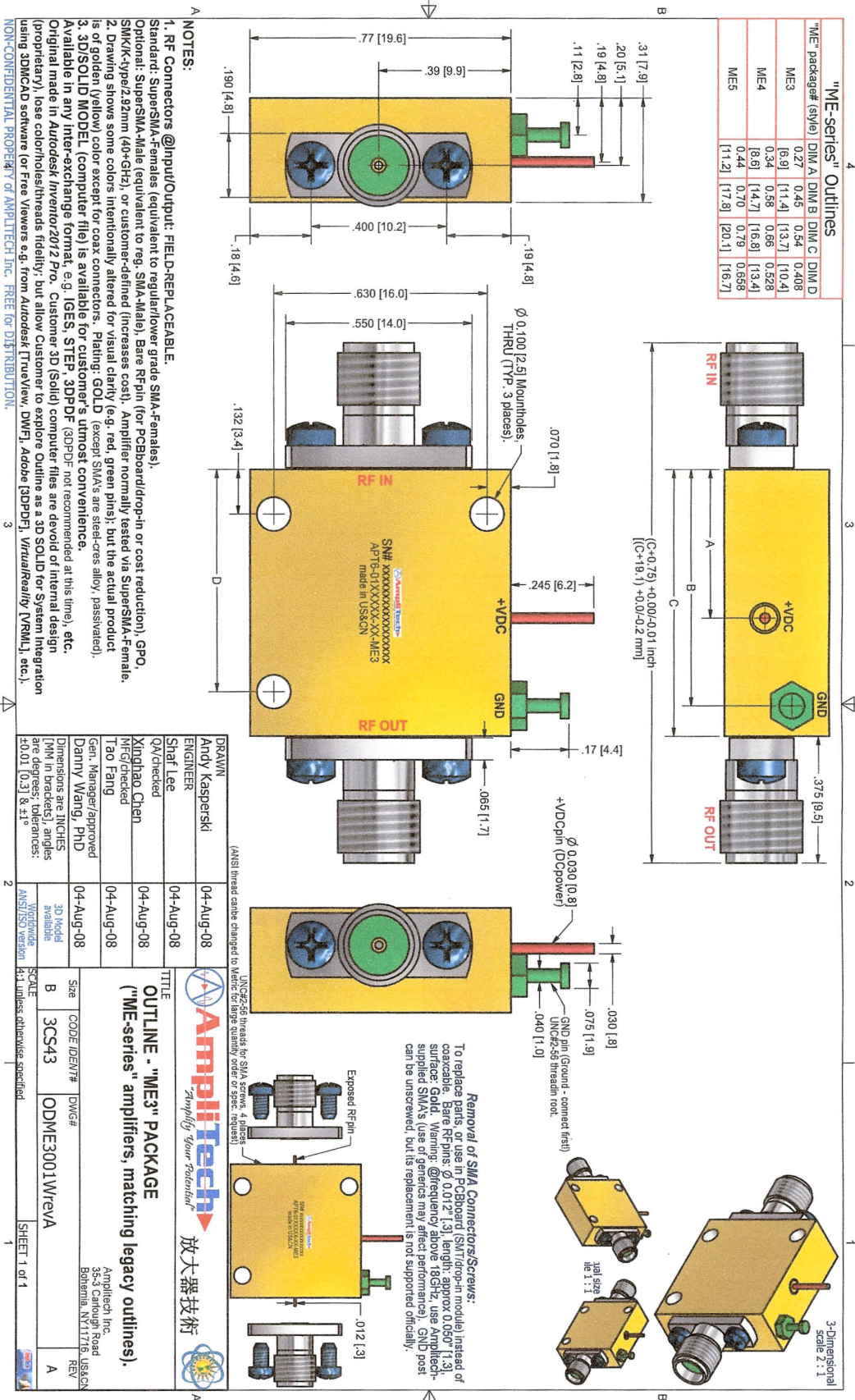


# AmpliTech

"Amplify Your Potential"

35-3 Carlough Road, Bohemia NY 11716 Tel: 631 521 7831 Fax: 631 521 7871

## Outline Drawing



## C-Band Super Low Noise Amplifier with integrated 2W CW Limiter



### Applications

- Receiver Front End
- Radar
- Satellite Communication (SATCOM)
- Microwave Radio Systems

### Product Description

The APT3-05400590-1010-LS-D4 is a Low Noise amplifier with super-low noise figure (<0.9dB, 0.7dB typical). Lower NF options are also available with custom flatness, VSWR, P1dB, and outline. An internal limiter at the input offers protection of

### Key Specifications at +23°C

Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	5.4		5.9	Customizable
Gain	dB	28	29	30	Customizable
Gain Flatness	dB	-	±0.3	±0.5	Customizable
In/Out VSWR	-	-	1.25	1.40	Customizable
Output P1dB	dBm	+10	+12	-	Customizable
DC Power	V@mA	+8	+12	+16	@80 mA
Noise Figure	dB	-	0.7	1.0	Lower NF avail.
Outline/Package	-	-	-	-	D4 and SMT

### Features

- 5.4 to 5.9 GHz Frequency Range
- Typical N.F. < 0.7 dB
- Typical Gain 28 dB
- Gain Flatness < ± 0.3 dB
- +33 dBm (2W) CW Limiter
- +8V to +15V 80 mA Low DC power consumption
- Internal DC regulator
- Reverse Voltage Protection
- State-of-the-Art PHEMT

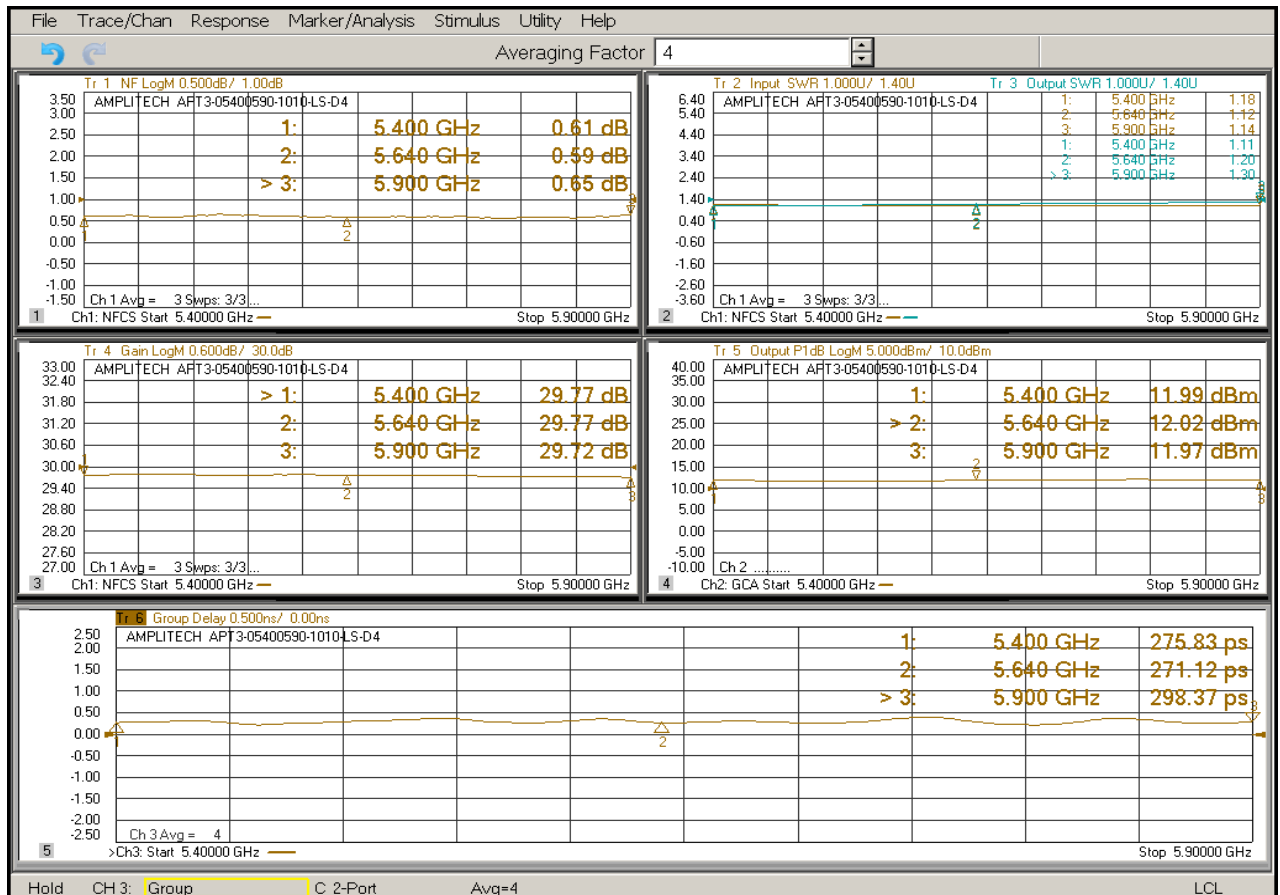


## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-54	+85	95% humidity, non-condensing
Storage Temperature (Case)	°C	-54	+115	95% humidity, non-condensing
RF Input Power	dBm	-	33 CW	+47dBm for 0.1uS pulse, 1% D.C
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+16	At +V DC Pin
Negative Voltage	V	-	-10	Reverse Voltage

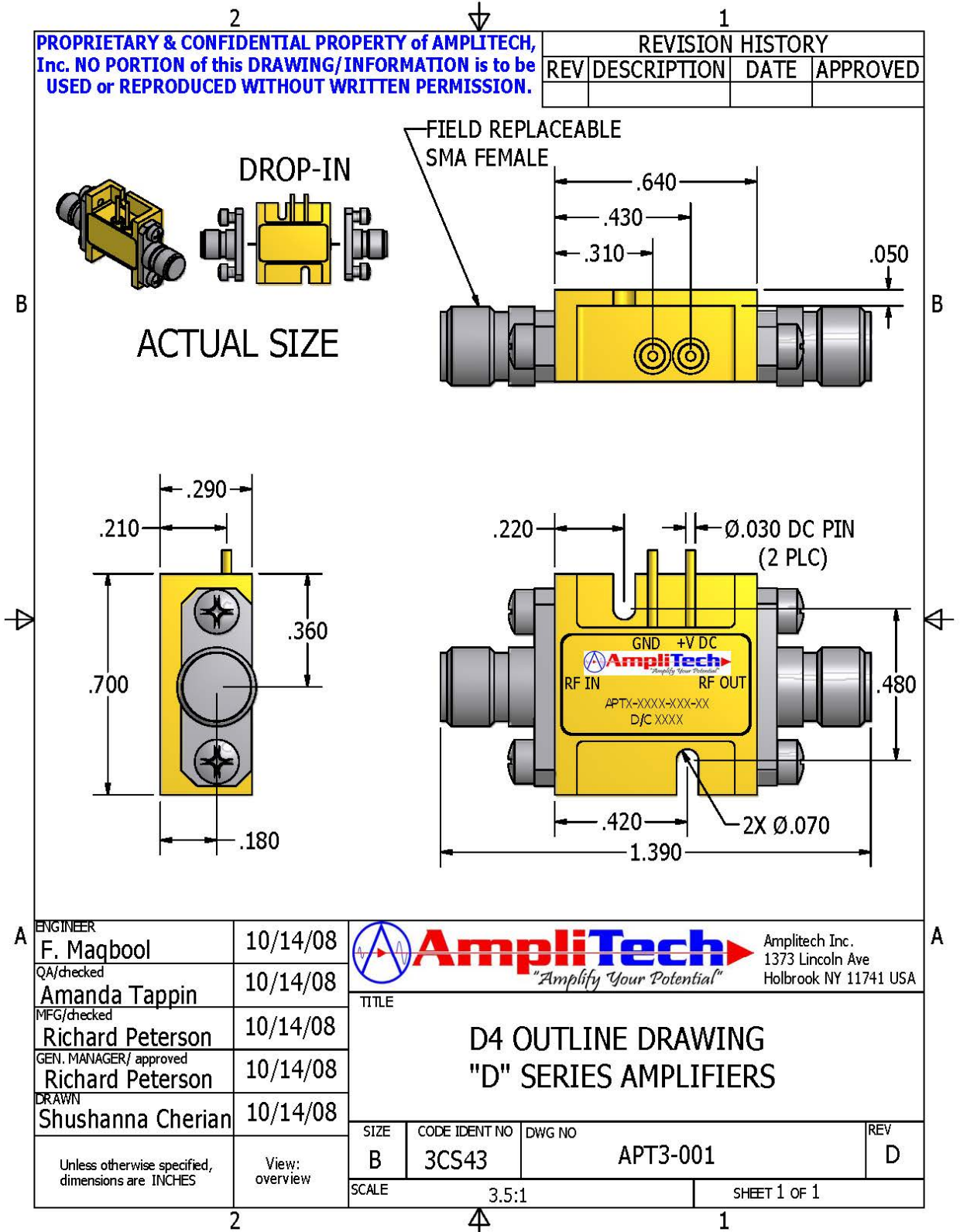
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## Typical Measured Data



Data taken with Agilent N5242 PNA-X Vector Network Analyzer

## Outline Drawing



## Ultra-Wideband Super Low Noise Amplifier for PCS, GPS, Wi-Fi, and 4G/5G receivers



### Applications

- GPS, PCS, Wi-Fi, 4G/5G Receiver Front End
- Test Bench Post Amp LNA
- Satellite Communication (SATCOM)

### Features

- 0.5 to 6 GHz Frequency Range (usable to 100 MHz)
- Typical N.F. < 0.9 dB
- Typical Gain 30 dB
- Gain Flatness <  $\pm 0.8$  dB
- +11V to +15V 115 mA Low DC power consumption
- Internal DC regulator
- Reverse Voltage Protection
- State-of-the-Art PHEMT Technology

### Product Description

The APT3-00500600-1010-D4 is ultra-wideband LNA with super-low noise figure (<1.0dB, 0.8dB typical), low VSWR, and low flatness across the entire 0.1 to 6 GHz band for use in many applications where lowest NF, VSWR and linearity are

### Key Specifications at +23°C

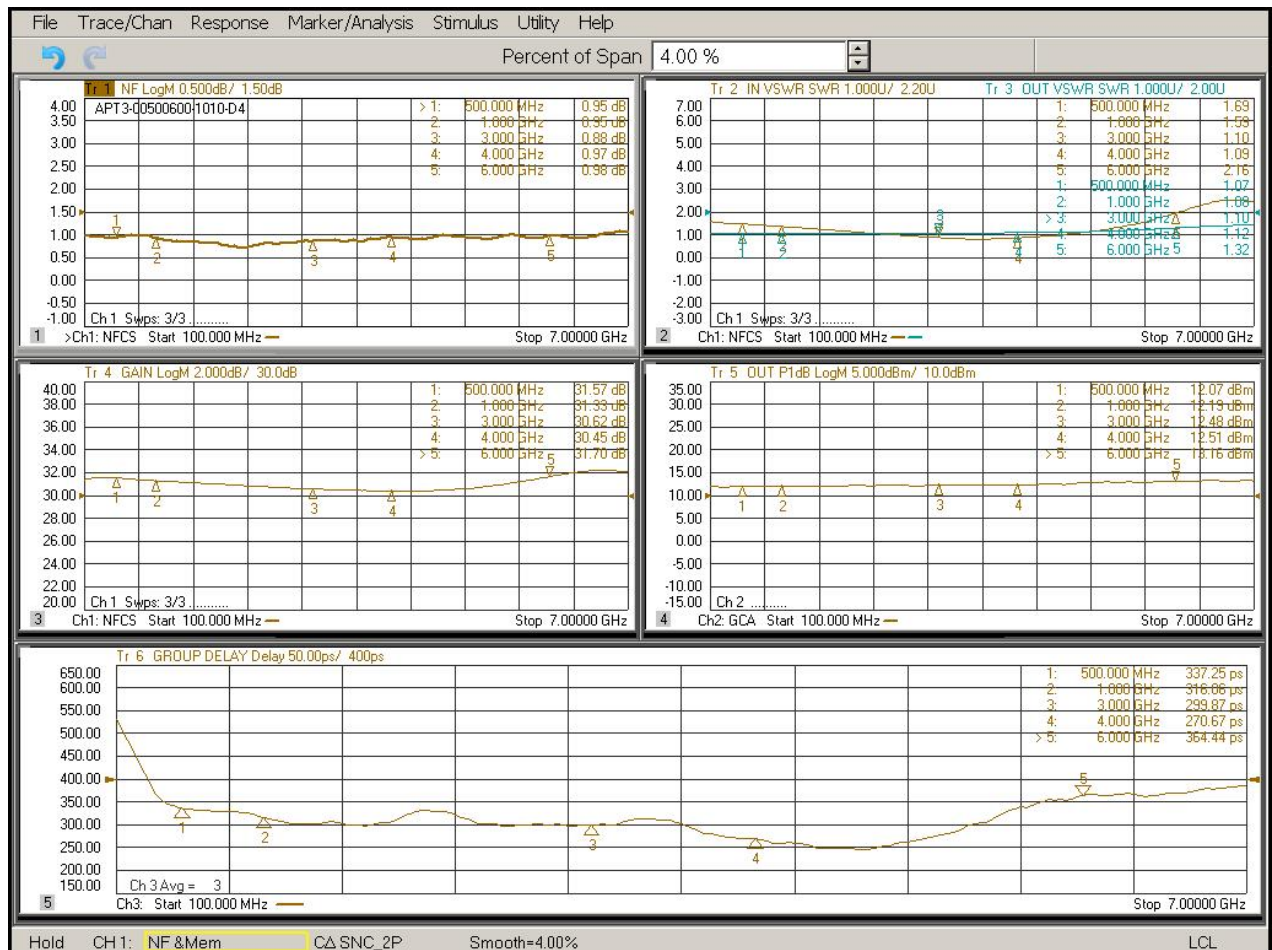
Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	0.5		6.0	Customizable
Gain	dB	28	30	-	Customizable
Gain Flatness	dB	-	$\pm 0.8$	$\pm 1.0$	Customizable
In/Out VSWR	-	-	1.50	2.20	Customizable
Output P1dB	dBm	+10	+12	-	Customizable
DC Power	V@mA	+11	+12	+15	@115 mA
Noise Figure	dB	-	0.8	1.0	
Outline/Package	-	-	-	-	D4

## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-54	+85	95% humidity, non-condensing
Storage Temperature (Case)	°C	-54	+115	95% humidity, non-condensing
RF Input Power	dBm	-	33 CW	+47dBm for 0.1uS pulse, 1% D.C
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+16	At +V DC Pin
Negative Voltage	V	-	-10	Reverse Voltage

**\*Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. All STANDARD units are packaged in Aluminum housings that are layered with electroless Nickel and**

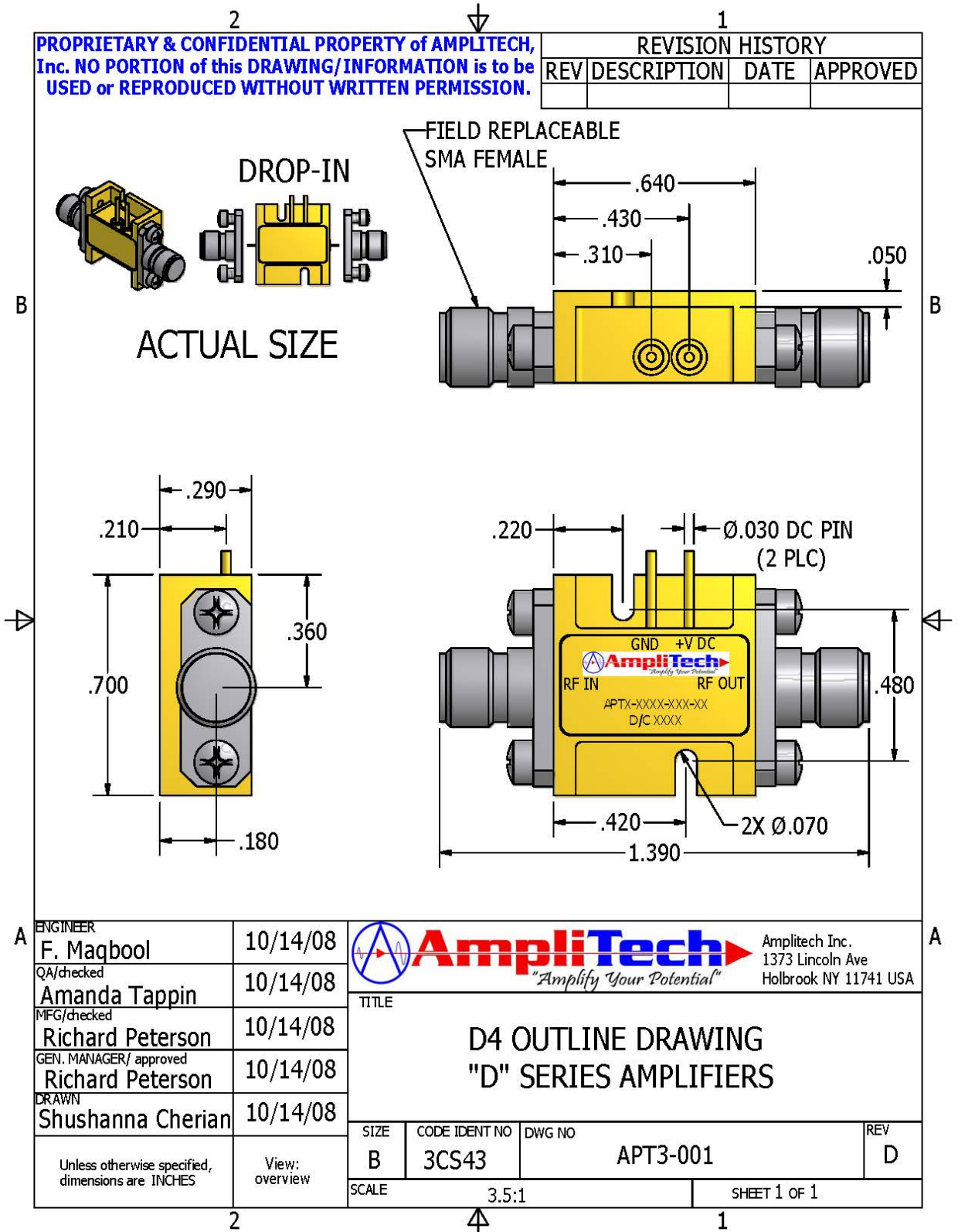
## Typical Measured Data



Data taken with Agilent N5242 PNA-X Vector Network Analyzer



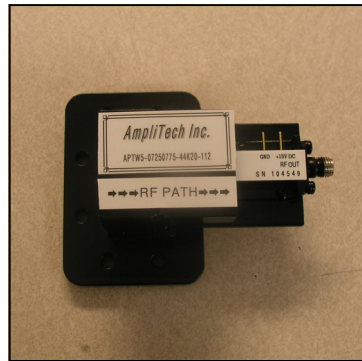
## Outline Drawing





## X-Band Waveguide WR-112 SATCOM Low Noise Medium Power Amplifier

APTW5-07250775-44K20-112



### Features

- 7.25 to 7.75 GHz Frequency Range
- Typical N.F. < 44 °K
- High Gain (54dB)
- Gain Flatness < ± 0.5 dB
- +33 dBm IP3
- Internal DC regulator
- Reverse Voltage Protection
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction

### Applications

- Receiver Front End
- Radar Systems
- Satellite Communication (SATCOM)
- Test Equipment

### Product Description

The APTW5-07250775-44K20-112 is a Low Noise amplifier with right-angle WR-112G waveguide input flange and super low noise figure (<44°K) and high IP3 of +33 dBm. Other options are also available with custom flatness, VSWR, P1dB, and

### Key Specifications at +23°C

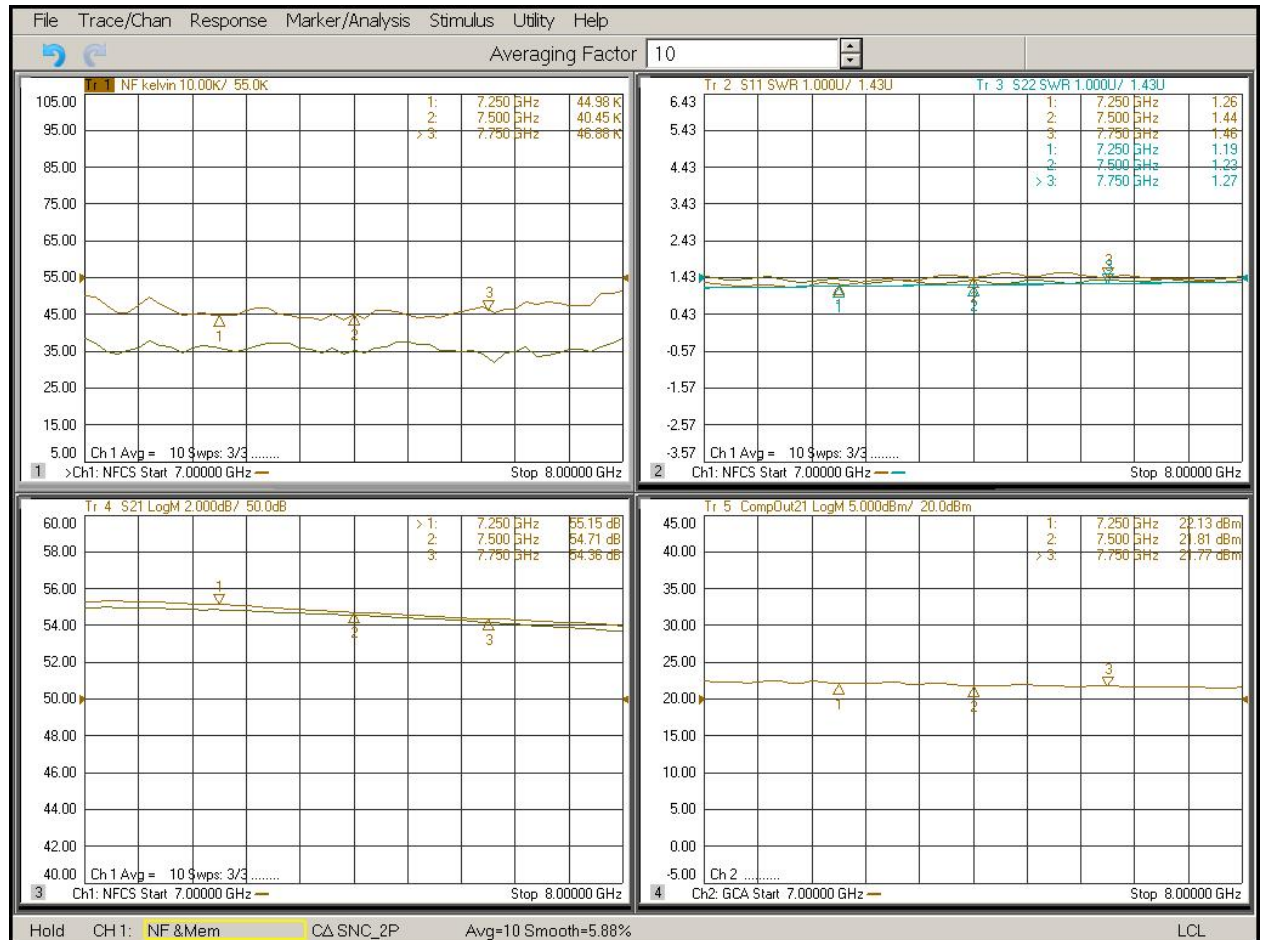
Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	7.25	-	7.75	Customizable
Gain	dB	50	54	-	Customizable
Gain Flatness	dB	-	±0.5	±1.0	Customizable
In/Out VSWR	-	-	1.25	1.50	Customizable
Output P1dB	dBm	+20	+22	-	Customizable
DC Power	V@mA	+11	+12	+16	@175 mA
Noise Figure	°K	-	40	44	0.60 dB
Outline/Package	-	-	-	-	WR112+D6

## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-54	+85	95% humidity, non-condensing
Storage Temperature (Case)	°C	-54	+115	95% humidity, non-condensing
RF Input Power	dBm	-	+15	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+16	At +V RF Output
Negative Voltage	V	-	-10	Reverse Voltage

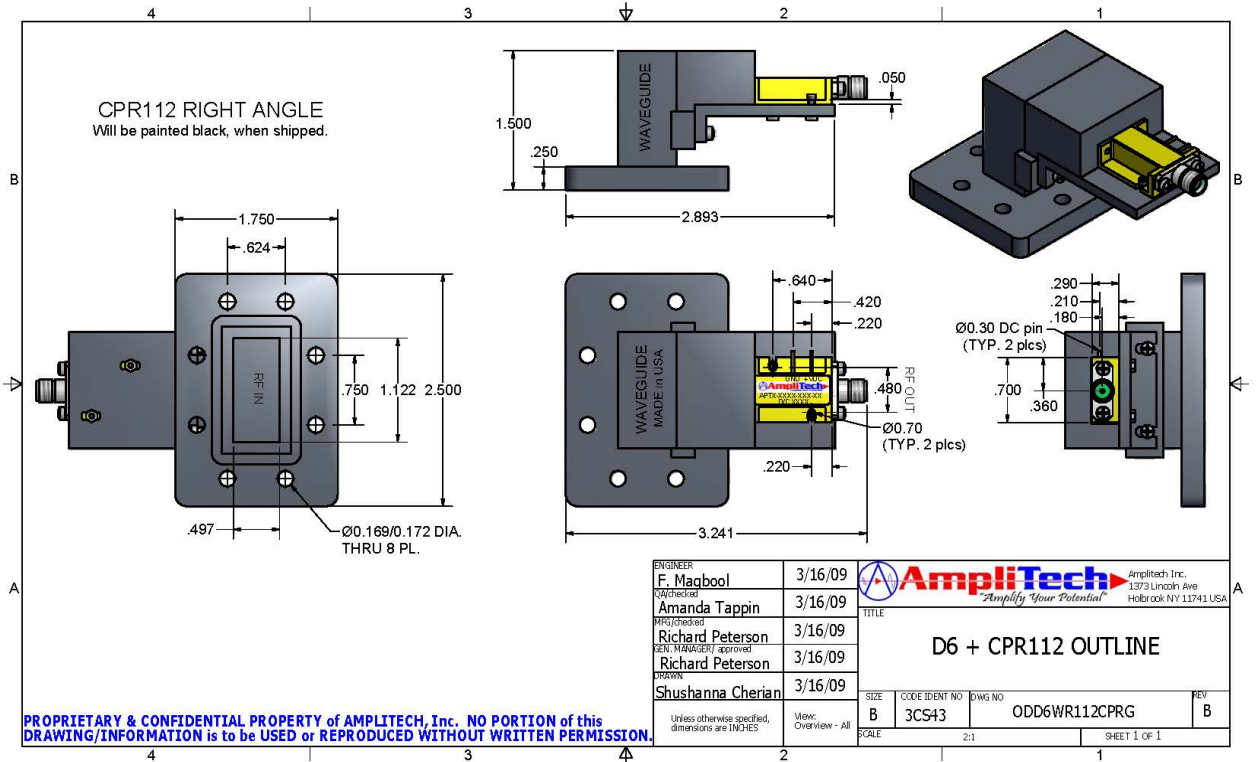
\*Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## Typical Measured Data



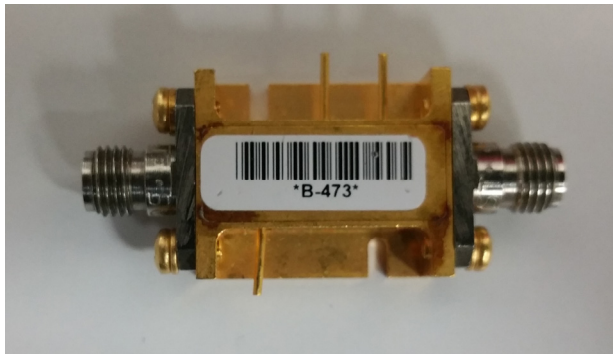
Data taken with Agilent N5242 PNA-X Vector Network Analyzer

## Outline Drawing



## Ku-Band Low Noise Amplifier

### APT5-127013301515-D6



### Features

- 12.7 to 13.3 GHz Frequency Range
- Typical N.F.  $\leq 1.0$  dB
- Typical Gain  $\geq 48$  dB
- Typical Flatness  $\leq \pm 1.0$  dB
- Reverse Voltage Protection
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- Hermetic Seal Option

### Applications

- Receiver Front End
- Radar
- Satellite Communication (SATCOM)
- Microwave Radio Systems

### Product Description

The APT5-127013301515-D6 is a Low Noise amplifier with low noise figure ( $< 1.5$  dB, 1.0 dB typical). Lower NF options are also available with custom flatness, VSWR, P1dB, and outline. The high performance is an example of AmpliTech's industry-leading low-noise design and technology.

### Key Specifications at +23°C

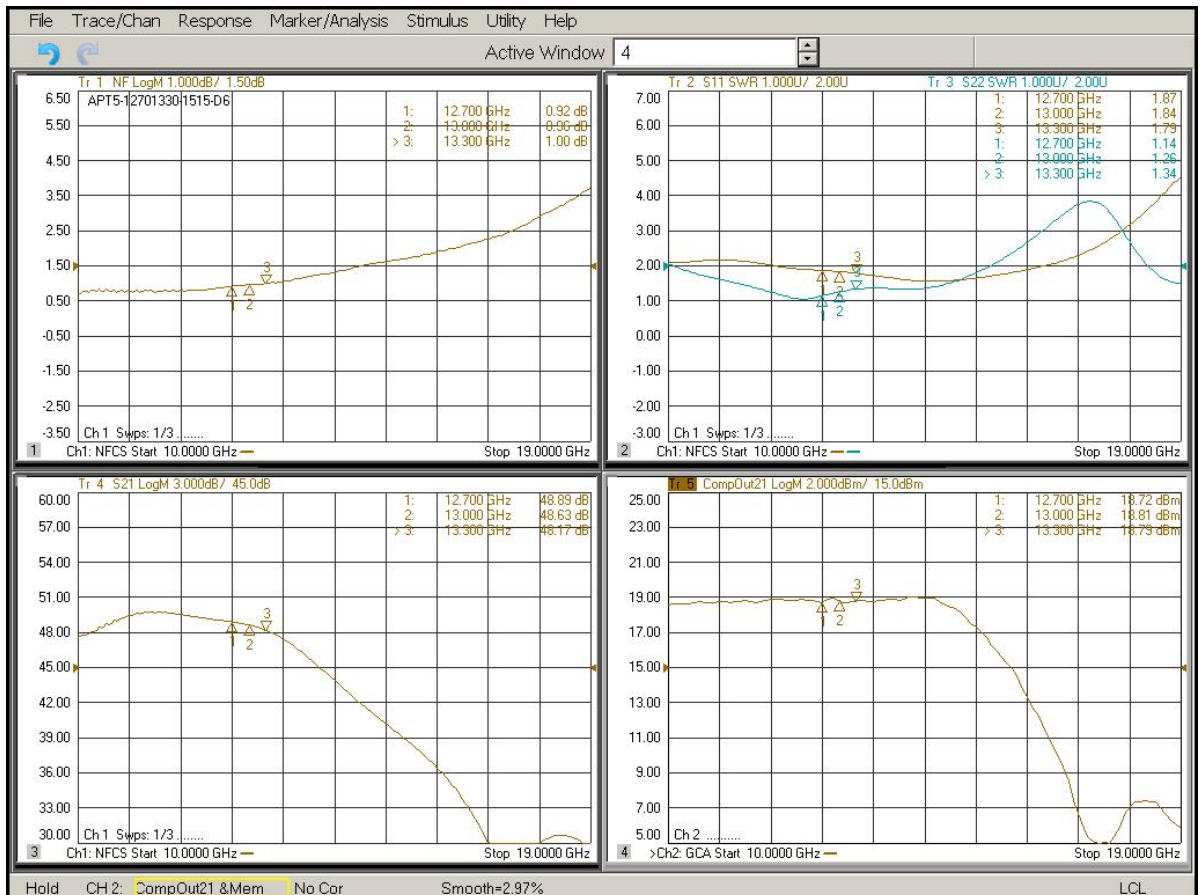
Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	12.7		13.3	Customizable
Gain	dB	45	48	-	Customizable
Gain Flatness	dB	-	$\pm 1.0$	$\pm 2.0$	Customizable
In/Out VSWR	-	-	2.00	2.00	Customizable
Output P1dB	dBm	+15	+19	-	Customizable
DC Power	V@mA	+15	+15	+16	250 ma Max., 210
Noise Figure	dB	-	1.0	1.5	Customizable
Outline/Package	-	-	-	-	D6

## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-54	+85	95% humidity, non-condensing
Storage Temperature (Case)	°C	-54	+115	95% humidity, non-condensing
RF Input Power	dBm	-	19 CW	Input RF Protection
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+16	At +V DC Pin
Negative Voltage	V	-	-10	Reverse Voltage

\*Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. All STANDARD units are packaged in Aluminum housings that are layered with electroless Nickel and

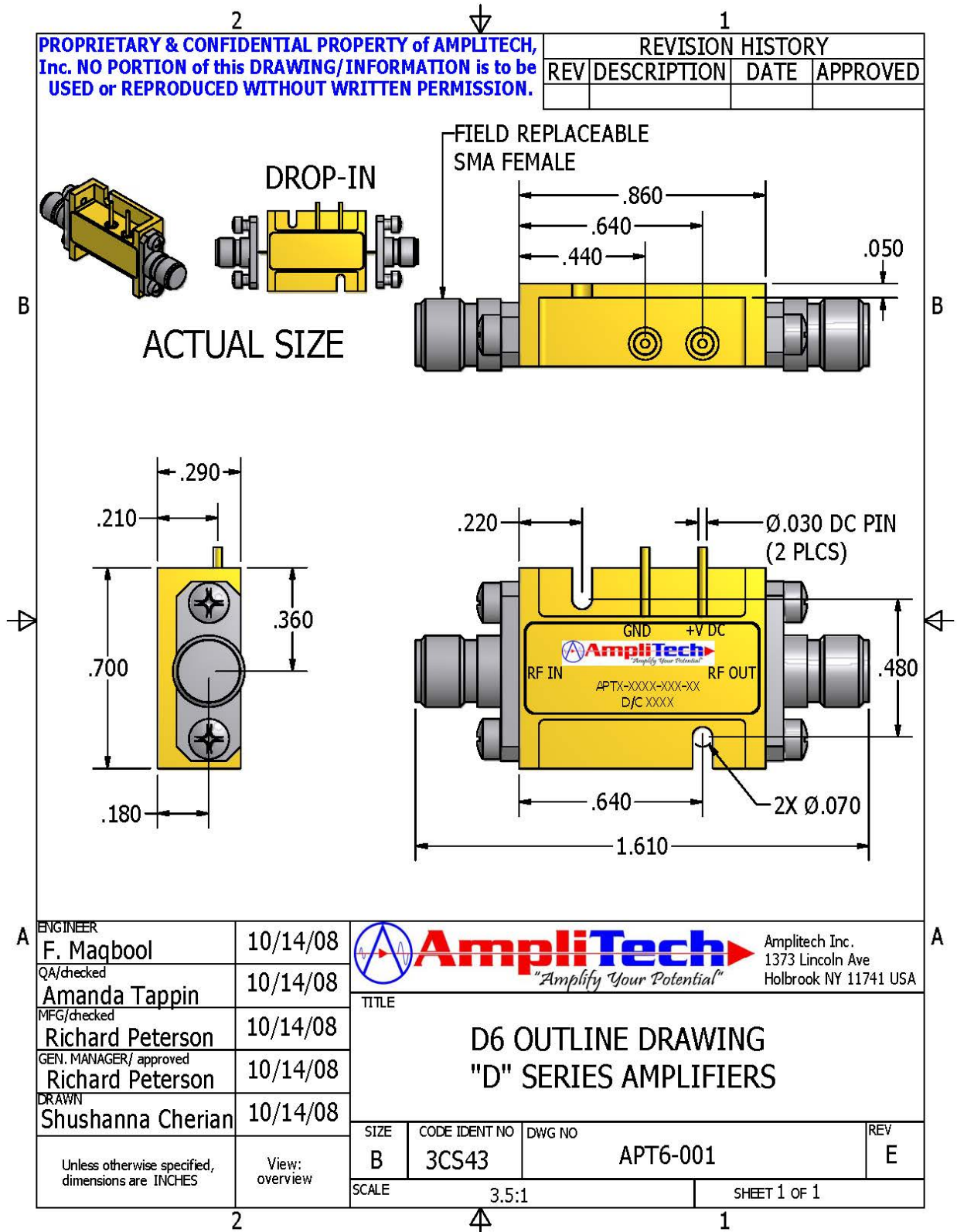
## Typical Measured Data



Data taken with Agilent N5242 PNA-X Vector Network Analyzer



## Outline Drawing



## 12 to 18 GHz High Gain Low Noise Amplifier APT22-12001800-1515-D22



### Features

- 12 to 18 GHz Frequency Range
- Typical N.F. < 1.5 dB
- High Gain (55 dB typ.)
- Gain Flatness <  $\pm 3.0$  dB
- +15 dBm Saturated Output Power
- Reverse Voltage Protection
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability

### Applications

- IFM Receiver Front End
- Radar Systems

### Product Description

The APT22-12001800-1515-D22 is a high gain medium power amplifier with +15 dBm saturated output power. Lower NF options are also available with custom flatness, VSWR, P1dB, and outline. *The input signal can be as large as +19 dBm*

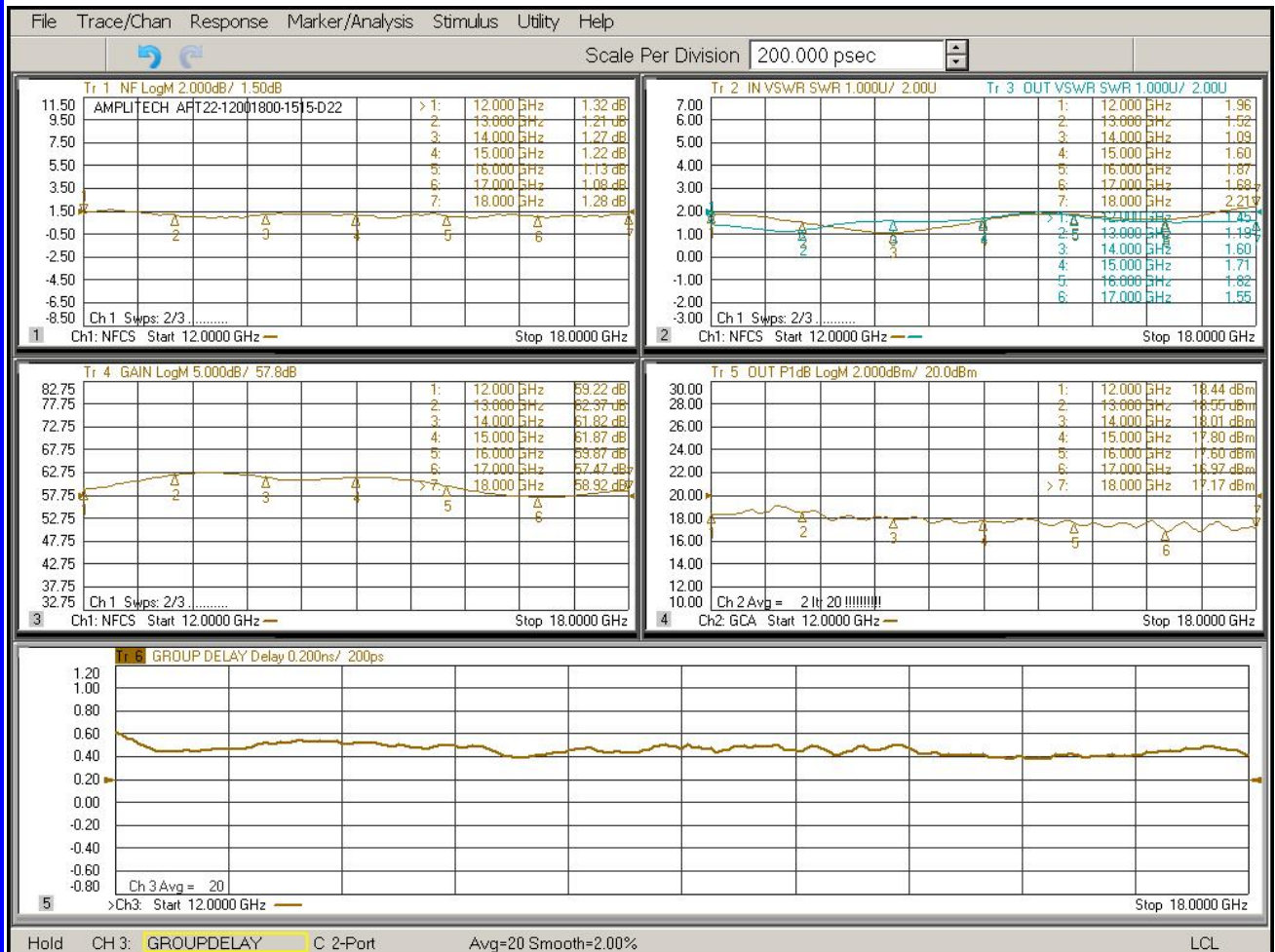
### Key Specifications at 23°C

Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	12	-	18	Customizable
Gain	dB	46	55	-	Customizable
Gain Flatness	dB	-	$\pm 3.0$	$\pm 3.0$	Customizable
In/Out VSWR	-	-	2.0	2.0	Customizable
Psat Output	dBm	+15	+15	-	Customizable
DC Power	V@mA	+11	+15	+16	250 mA Max., 215
Noise Figure	dB	-	1.5	1.5	@23°C
Outline/Package	-	-	-	-	D2+D2

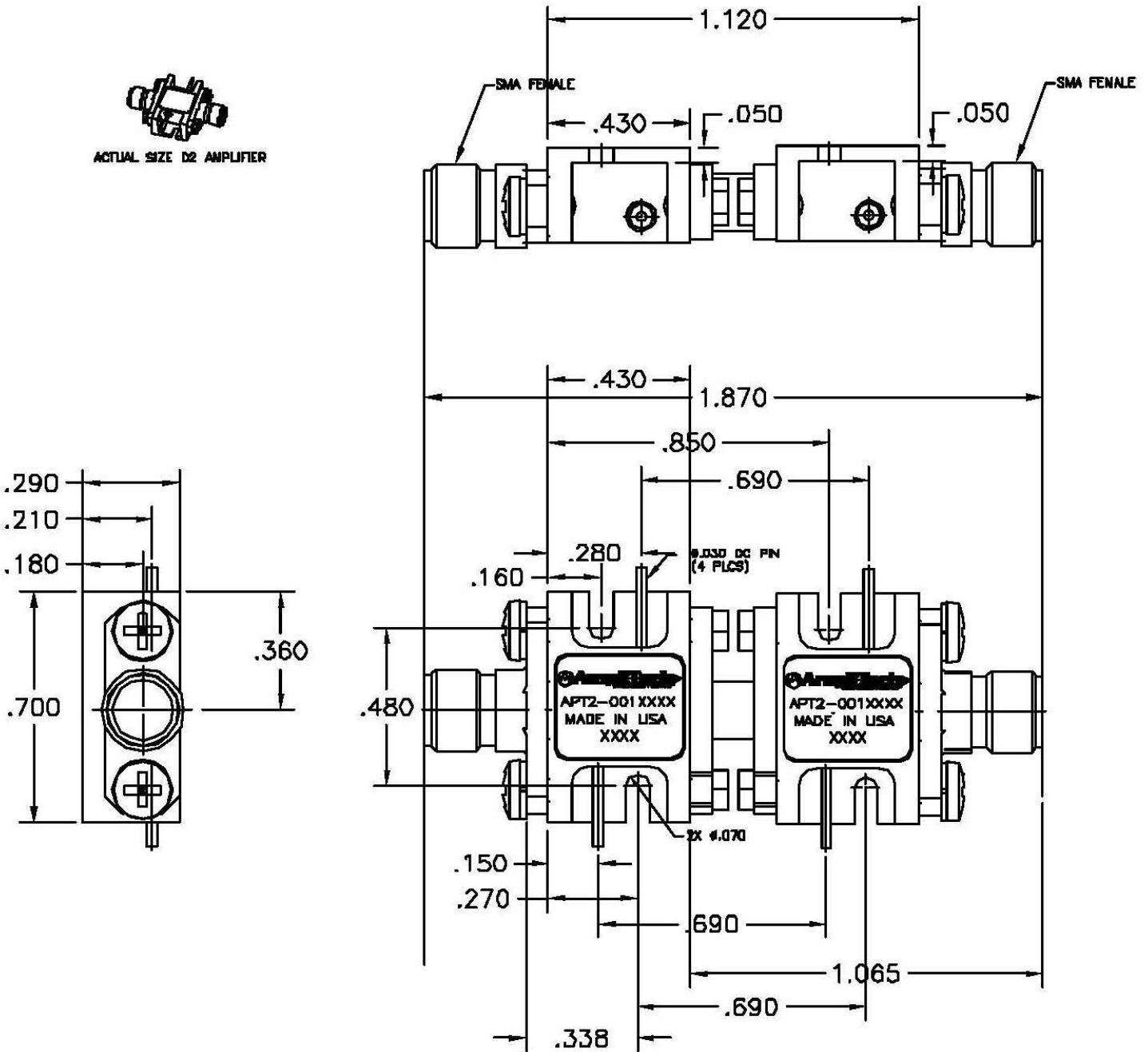
## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-40	+95	95% humidity, non-condensing
Storage Temperature (Case)	°C	-54	+115	95% humidity, non-condensing
RF Input Power	dBm	-	+19	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+16	At +V DC terminal
Negative Voltage	V	-	-10	Reverse Voltage

**\*Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. Nickel and then plated with Gold to eliminate contamination of other adjacent electronic compo-**



## Outline Drawing



## 17.7—20.2 K-Band WR42 Waveguide Amplifier APTW5-17700202-180K08-42-S



### Features

- 17.7-20.2 GHz Frequency Range
- Typical N.F. < =2.0 dB
- High Gain (50 dB)
- Gain Flatness <  $\pm 1.5$  dB
- Typical I/O VSWR <1.3:1/1.3:1
- Reverse Voltage Protection
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction

### Applications

- IFM Receiver Front End
- Radar Systems
- SATCOM
- Wireless

### Product Description

The APTW5-17700202-180K08-42-S is a K-Band, high gain, low noise waveguide amplifier with very low input and output return loss. It is designed main-

### Key Specifications at 23°C

Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	17.7	-	20.2	Customizable
Gain	dB	50	52	-	Customizable
Gain Flatness	dB	-	$\pm 1.5$	$\pm 1.5$	Customizable
In/Out VSWR	-	-	1.2	1.3	Customizable
P@1dB	dBm	+8	+12	-	Customizable
DC Power	V@mA	+18		+18	@230 mA
Noise Figure	dB	-	2.0	2.1	@23°C
Outline/Package	-	-	-	-	WR42+D22

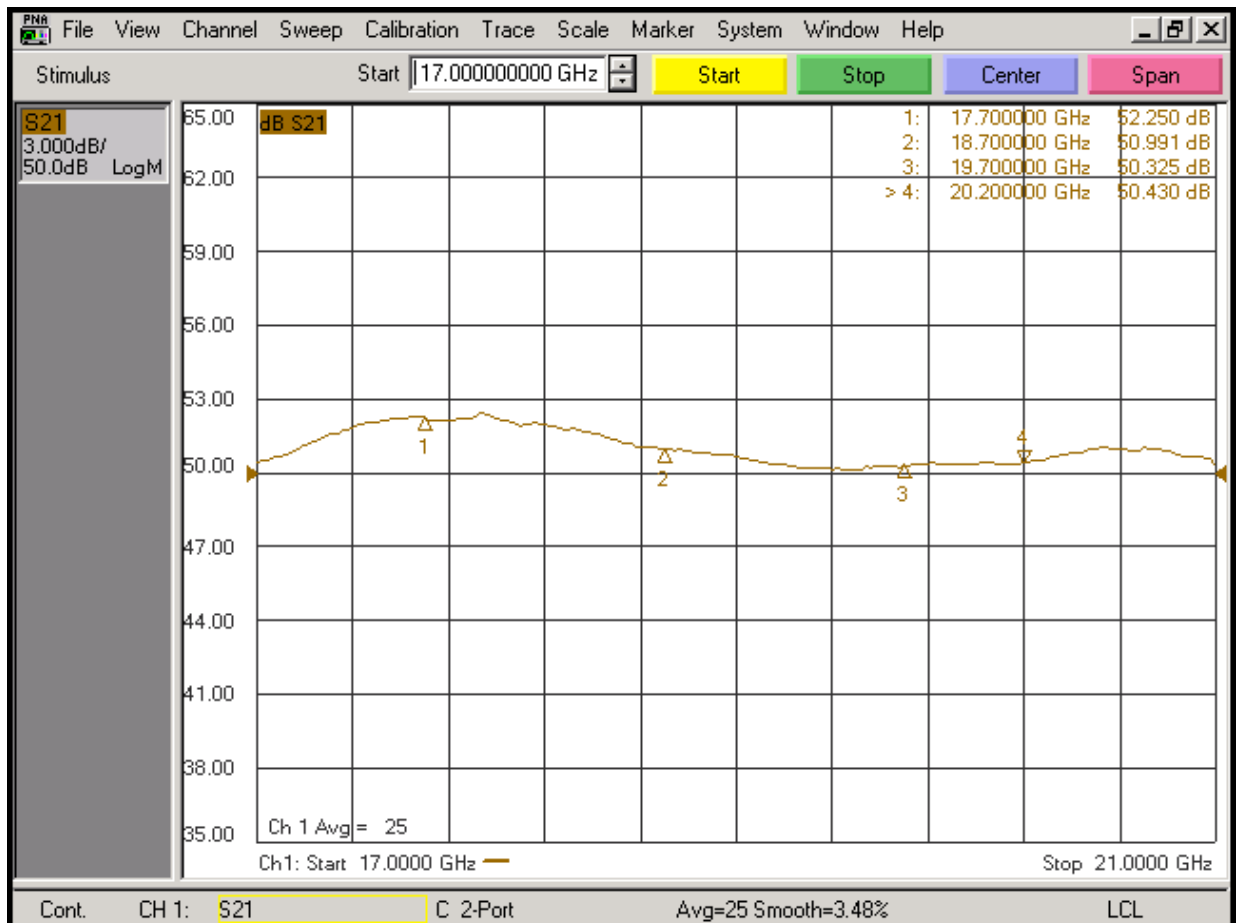


## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-40	+95	95% humidity, non-condensing
Storage Temperature (Case)	°C	-54	+115	95% humidity, non-condensing
RF Input Power	dBm	-	+16	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+16	At +V DC terminal
Negative Voltage	V	-	-10	Reverse Voltage

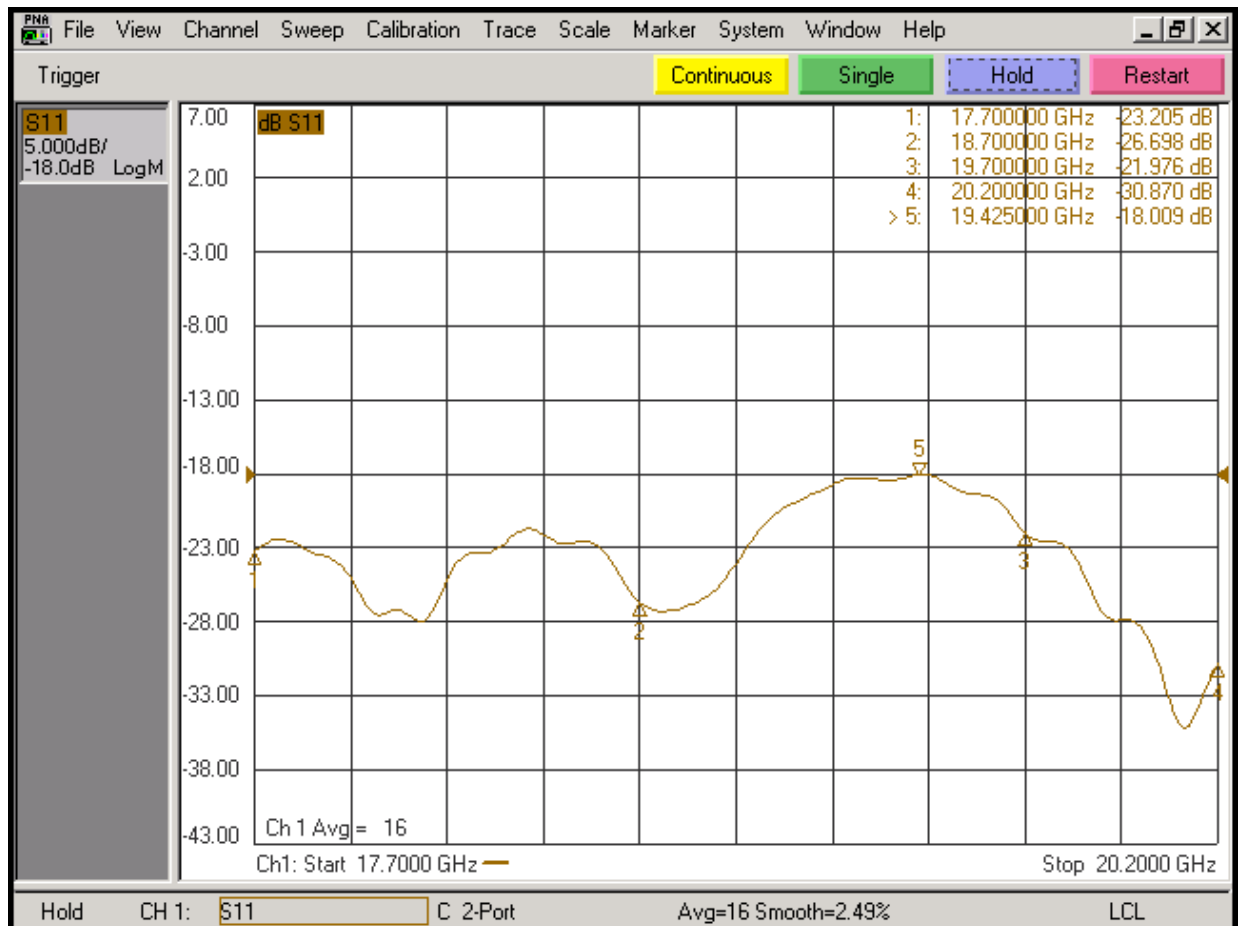
\*Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## Typical Measured Data—Gain

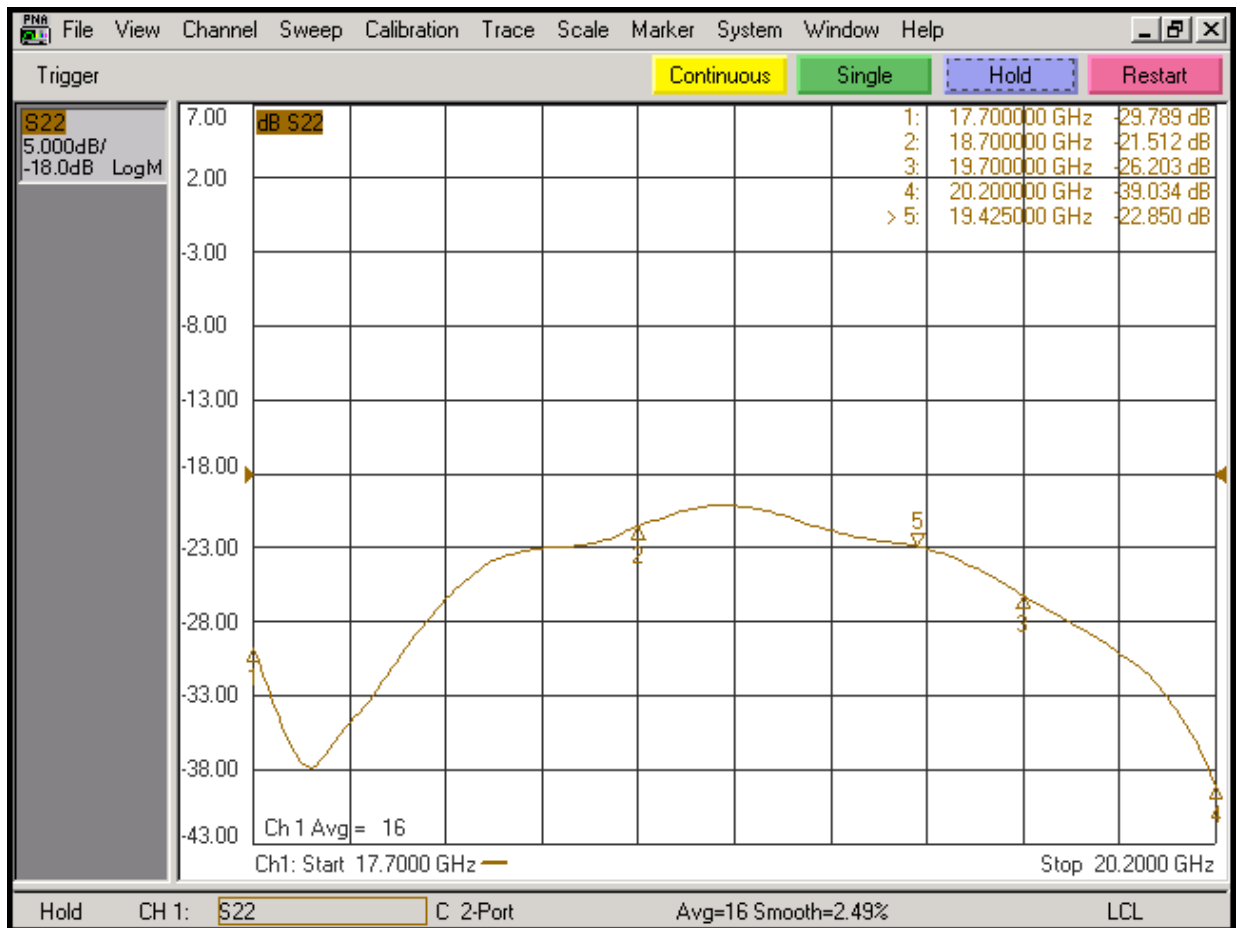


Data taken with Agilent N5242 PNA-X Vector Network Analyzer

## Typical Data cont'd-



## Typical Data cont'd-



## Typical Data cont'd-



**IMPORTANT – MUST USE HEATSINK IF CASE TEMPERATURE EXCEEDS 50°C**

Specifications @23°C			
Frequency (nom.):	<b>17.7- 20.2 GHz</b>	Output Power @1dB compr. point (MIN):	<b>+ 8 dBm</b>
Gain (min.):	<b>50 dB</b>	DCpower	<b>+18V to +24V 230 mA 152 mA</b>
Gain stability @const temp. (max) short term (10 min):	± 0.1dB	Voltage (nom):	
medium term (24 hrs):	± 0.2dB	Current (max):	
long term (1 week):	± 0.5dB	DC Measured Current @Max Voltage of 24V:	
Gain stability vs. temp. (max)	-0.05 dB/C°		
Gain Flatness (max.) full band	± <b>1.5 dB</b>	Third-order Intercept point IP3 (min.)	<b>18 measured +22 dBm</b>
Gain Flatness (max.) in 40MHz	± <b>0.2 dB</b>		
VSWR Input (max.):	<b>1.30:1</b>	Noise Figure (MAX.):	<b>2.1 dB</b>
VSWR Output (max.) in linear:	<b>1.30:1</b>	Outline W/G (box):	<b>WGA1008OD</b>
@impedance Z <sub>0</sub> :	50 Ohm	Outline LNA (SMA con.):	<b>D22</b>
Input Power w/o damage (max.)	0 dBm	AM/PM conversion for -5 dBm out power (max.)	<b>0.05 deg./dB</b>
Group delay in any 40MHz band Linear (max.), ns/MHz:	0.01	Group delay in any 40MHz band	<b>0.1</b>
Parabolic (max.), ns/MHz <sup>2</sup> :	0.001	Ripple (max.), ns p-p:	

**Note: Test data taken at case temperature of +23 °C unless otherwise stated.**

Frequency (GHz)	Gain (dB)	VSWR		Noise Figure (dB)	P1dB compr. (+dBm)	Group delay lin. ns
		In	Out			
17.7	52.6	1.15	1.06	1.62	12	1.73
18.7	51.4	1.10	1.17	1.73	12	1.63
19.7	50.7	1.17	1.11	1.90	12	1.58
20.2	50.9	1.08	1.15	2.00	12	1.60

**COMMENTS: AM/PM conversion, Gain stability. Max. power-IN, Delay in parabolic/ripple form: NOT TESTED BUT GUARANTEE (note: Delay is linear form is TESTED).**

**TESTER: Ewa Polubiak**

**DATE: 3/4/2015**



## 18.0-26.5 GHz K-Band WR42 Waveguide Amplifier APTW4-18002650-214K10-42-S



### Applications

- IFM Receiver Front End
- Radar Systems
- SATCOM
- Wireless

### Features

- 18.0-26.5 GHz Frequency Range
- Typical N.F. < 2.5 dB
- High Gain (40 dB)
- Gain Flatness <  $\pm 1.0$  dB
- Typical I/O VSWR < 2.5:1/2.0:1
- Reverse Voltage Protection
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction

### Product Description

The APTW4-18002650-214K10-42-S is a K-Band, high gain, medium power, low noise waveguide amplifier with very low output return loss and a very smooth Gain curve ( $\pm 0.7$ dB typical). It is designed mainly for receiving systems for

### Key Specifications at 23°C

Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	18.0	-	26.5	Customizable
Gain	dB	40	40	-	Customizable
Gain Flatness	dB	-	$\pm 0.75$	$\pm 1.0$	Customizable
In/Out VSWR	-	2.0	2.3	2.5	Customizable
P@1dB	dBm	+10	+18dBm	-	Customizable
DC Power	V@mA	+15	-	-	@215 mA
Noise Figure	dB	-	2.3	2.4	@23°C
Outline/Package	-	-	-	-	WR42+D22

## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-40	+95	95% humidity, non-condensing
Storage Temperature (Case)	°C	-54	+115	95% humidity, non-condensing
RF Input Power	dBm	-	+16	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+16	At +V DC terminal
Negative Voltage	V	-	-10	Reverse Voltage

\*Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Ex-

## Typical Data

**IMPORTANT – MUST USE HEAT SINK IF CASE TEMPERATURE EXCEEDS 50°C**

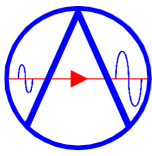
Specifications at 23°C			
Frequency:	18- 26.5 GHz	Output Power @ 1dB Comp. Pt. (min./ Psat (max.):	+ 10 dBm
Gain:	40 dB min.	Voltage/Current: DC Power	+15 VDC @275 mA, nom.
Gain Flatness:	± 2 dB max	Measured Current:	215 mA
VSWR Input:	2.5:1	Max. Noise Figure:	2.4 dB
VSWR Output:	2.0:1 Z=50 Ohms	Outline: Model:	D4 10156A

**Note: Test data taken with case temperature of +23 °C**

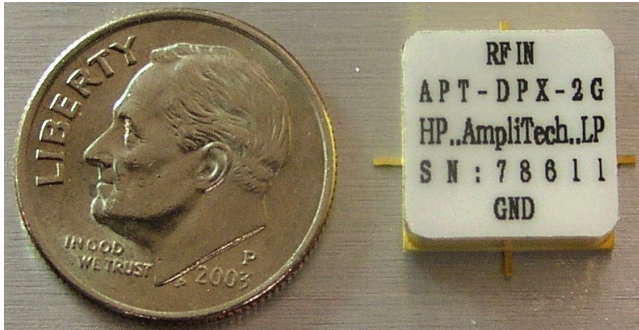
Frequency (GHz)	Gain (dB)	VSWR		Noise Figure (dB)	Output Power @ 1dB Comp. / Psat. (+dBm)
		In	Out		
18	40.8	1.95	1.82	2.39	18.5
20	40.8	1.16	1.66	2.15	19.0
22	40.7	2.26	1.30	2.24	19.5
24	41.8	2.48	1.93	2.33	19.0
26.5	40.6	2.25	1.36	2.36	17.5

Data taken at 23°C unless otherwise stated.

Data taken with Agilent N5242 PNA-X Vector Network Analyzer



## L-Band Variable Crossover Non-Complementary Surface Mount Diplexer for GPS



### Features

- 1.0 to 6 GHz Frequency Range
- Typical Loss 0.6 dB
- Variable Crossover attenuation
- Non-complementary design
- Higher Channel Isolation and rejection with fewer elements
- Surface mount SMT0-8 pkg or 7mm QFN package

### Applications

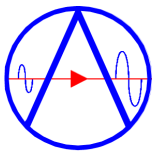
- GPS/PCS Receiver Front End
- Radar

### Product Description

The APT-DPX-2G is a novel variable crossover, non-complementary diplexer that yields a low pass band insertion loss, higher channel isolation, and higher rejection. This is due to the use of minimal number of high Q circuit elements to achieve the desired frequency response. The non-complementary, optimal design allows for easy selection of crossover frequency with the least number of compo-

### Key Specifications at +23°C

Parameter	Unit	Minimum	Typical	Maximum	Notes
Frequency	GHz	1.0	-	6.0	Customizable
High pass loss	dB	-	-0.5	-0.8	Customizable
Low Pass loss	dB	-	-0.3	±0.4	Customizable
X-over Atten	dB	-9	-9	-	Customizable
Outline/Package	-	-	-	-	SMT

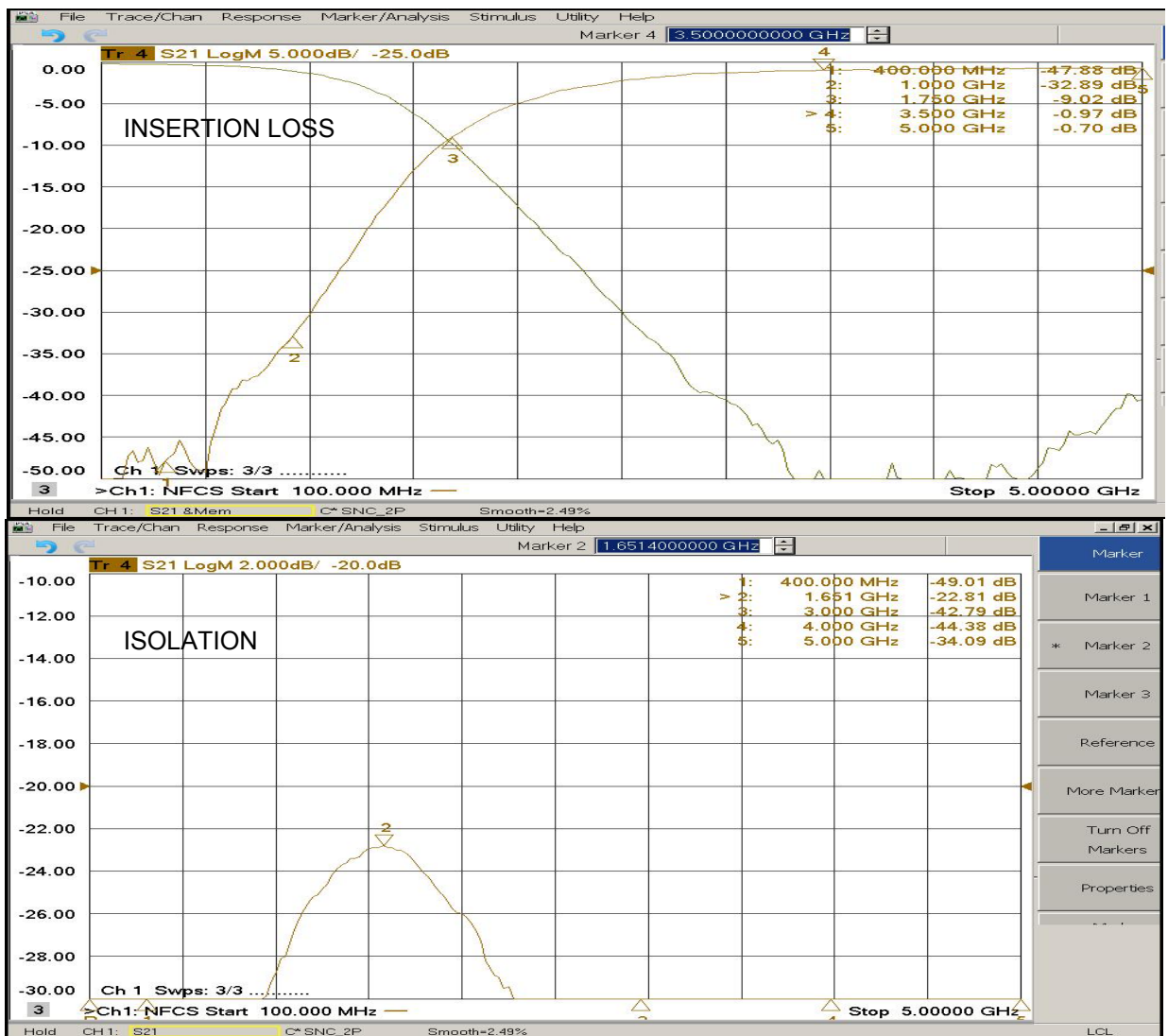


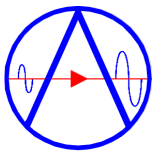
## Absolute Maximum Ratings\*

Parameter	Unit	Minimum	Maximum	Notes
Operating Temperature (Case)	°C	-54	+85	95% humidity, non-condensing
Storage Temperature (Case)	°C	-54	+115	95% humidity, non-condensing
RF Input Power	dBm	-	33	CW

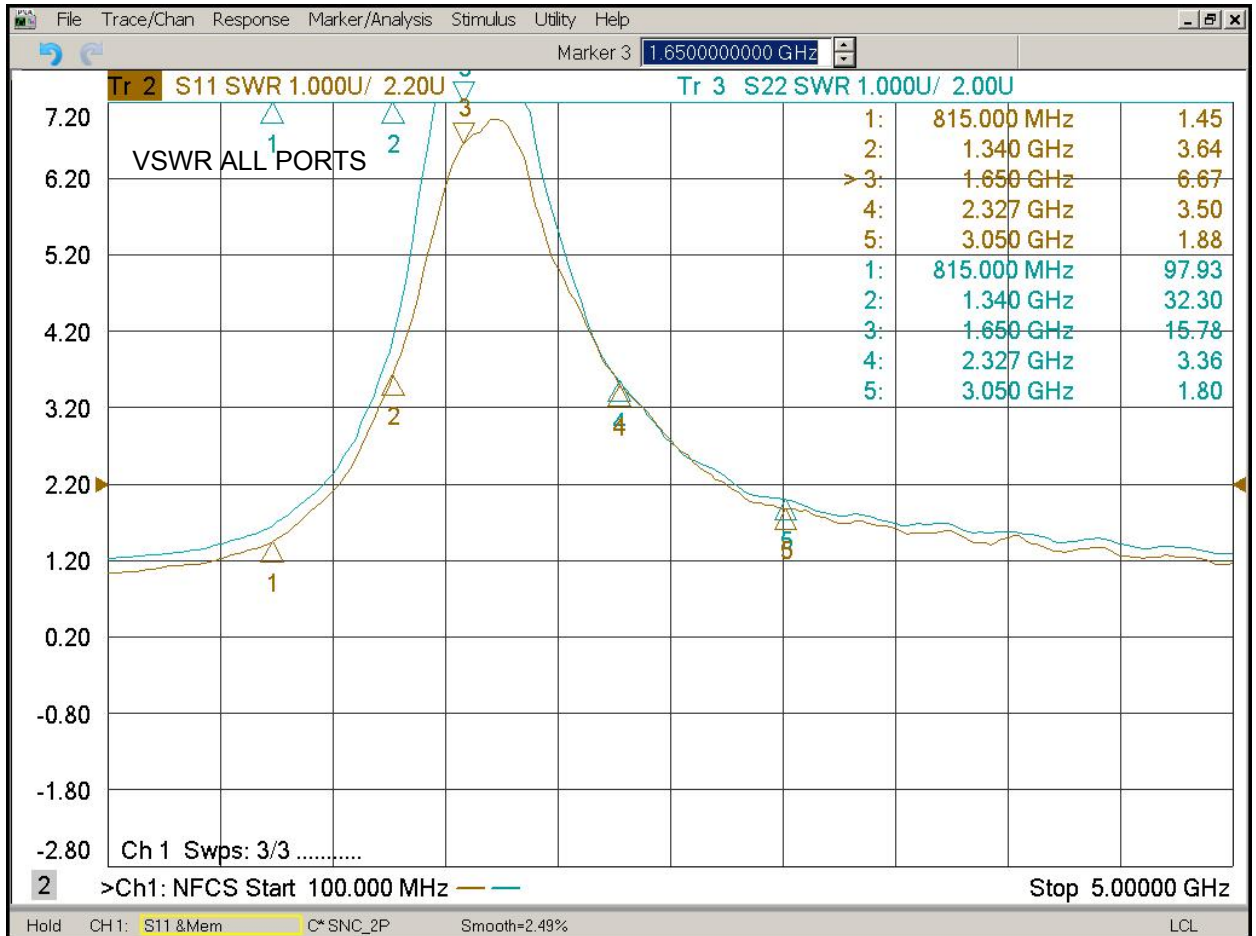
\*Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Ex-

## Typical Measured Data





## Typical Data (continued)



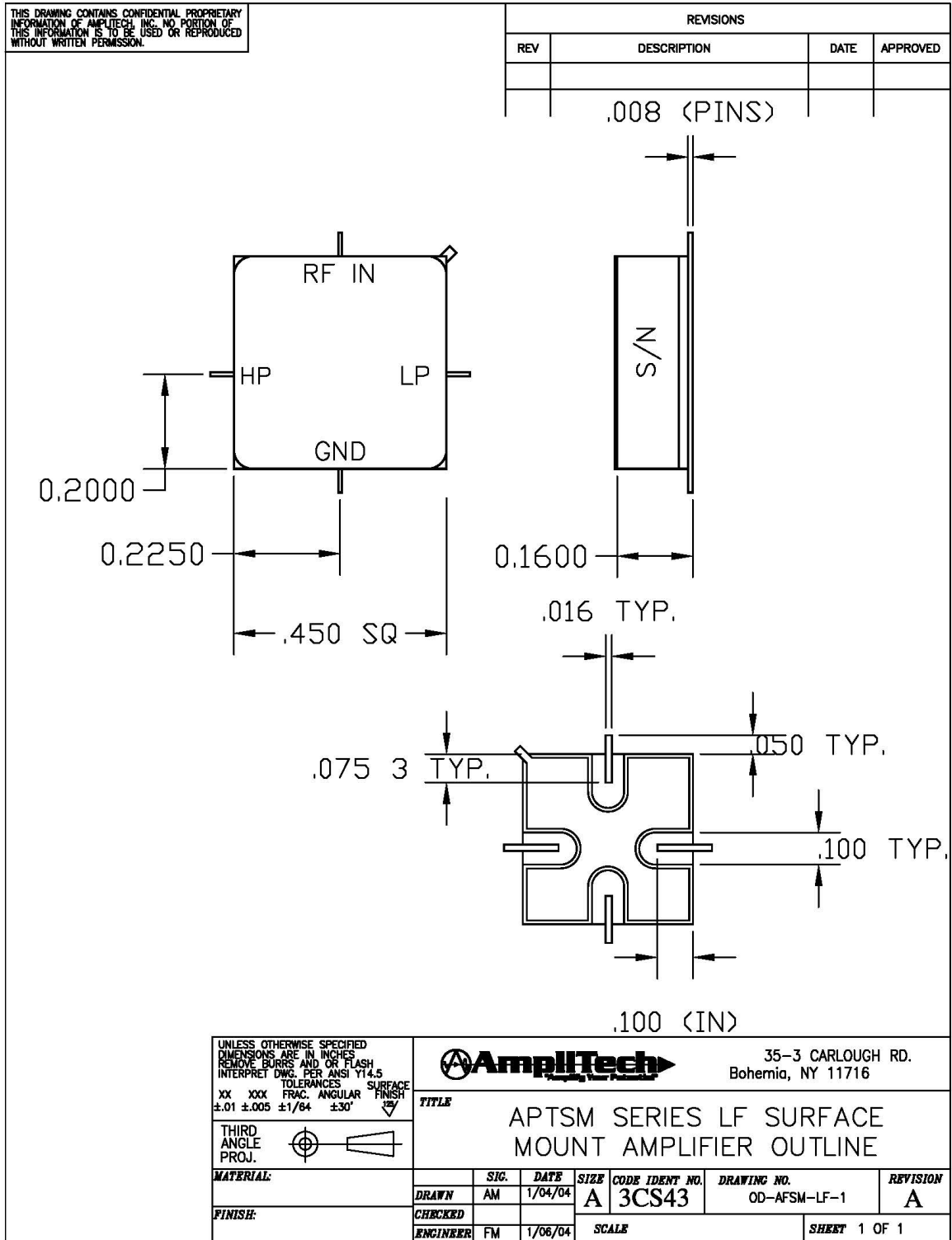
Data taken with Agilent N5242 PNA-X Vector Network Analyzer





35-3 Carlough Road, Bohemia NY 11716 Tel: 631 521 7831 Fax: 631 521 7871

## Outline Drawing



# AMPLITECH GLOSSARY

**Conditionally stable** amplifier refers to an amplifier which will oscillate under particular load or source impedance (VSWR) conditions, an undesirable situation.

**Directivity (active directivity)** is defined as the difference between isolation and forward gain in dB. It is an indication of the isolation of the source from the load, or how much the load impedance affects the input impedance and the source impedance affects the output impedance. The higher the active directivity (in dB), the better the isolation.

**Dynamic range** is the power range over which an amplifier provides useful linear operation, with the lower limit dependent on the noise figure and the upper level a function of the 1 dB compression point.

**Gain flatness** indicates the variation of an amplifier's gain characteristic over the full frequency response range at a given temperature expressed in  $\pm$  dB. The value is obtained by taking the difference between maximum and minimum gain, and dividing it by 2.

**Gain (forward gain, G)** for RF amplifiers is the ratio of output power to input power, specified in the small-signal linear gain region, with a signal applied at the input. Gain in dB is defined as

$$G \text{ (dB)} = 10 * \log_{10} G$$

**Harmonic distortion** is produced by non-linearity in the amplifier, and appears in the form of output signal frequencies at integral multiples of the input signal frequency. Because harmonic distortion is influenced by input power level it is generally specified in

terms of the relative level for the harmonics to the fundamental signal power.

**Isolation** is the ratio of the power applied to the output of the amplifier to the resulting power measured at the input of the amplifier.

**Linearity** of an amplifier signifies how well its output power can be represented by a linear function of the input power. A linear amplifier produces at its output an amplified replica of the input signal with negligible generation of harmonic or intermodulation distortion

**Maximum signal level** refers to the largest CW or pulse RF signal that can be safely applied to an amplifier's input. Exceeding the specified limit can result in permanent noise figure degradation, increased distortion, gain reduction, and/or amplifier burnout.

**Noise factor** is the ratio of signal-to-noise power ratio at an amplifier's input to the signal-to-noise power ratio at the output. Noise figure NF in dB is related to noise factor F by

$$NF = 10 * \log_{10} F \text{ in dB}$$

**Return loss (RL)** is the ratio of reflected power to incident power at an RF port of an amplifier, expressed in dB as

$$RL = -20 * \log_{10} |v|, \text{ where } v = \text{voltage}$$