

SATCOM

IMAs and Multi-Function Products

Control Products

IF Signal Processing

Frequency Generation

PIN Limiters

Frequency Multipliers

Fiber-Optic Components

Mixers

Amplifiers

Active Components

narda  MITEQ

Passive Components

Coaxial Terminations

Couplers

Circulators and Isolators

Power Dividers

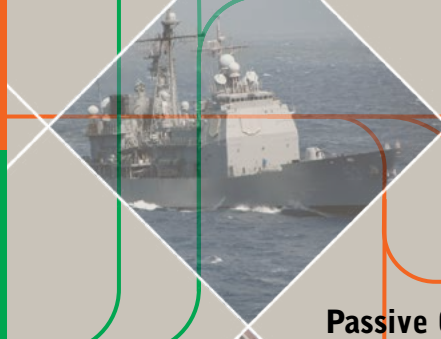
Attenuators

Waveguide Components

Phase Shifters

Spaceborne

Safety Test Solutions



# OVERVIEW

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In addition to providing off-the-shelf catalog component products, we have been supporting customers for decades with an array of custom products	
- Off-the-shelf RF and Microwave catalog components	
We build our standard catalog products to an industry forecast and inventory of over 1,500 different models. Most models are in stock, and if not, are available on a defined schedule.	
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## INTRODUCTION

Narda-MITEQ has more than 60 years of experience in serving both the military and commercial markets with outstanding RF and microwave products. Our design and world-renowned manufacturing facility has more than 235,000 square feet, housing our dedicated team of sales, design and production professionals. We are ready to design, develop and deliver high-performance products to address your needs.

With the development and manufacture of state-of-the-art RF and microwave components, integrated microwave assemblies, subsystems and world-renowned SATCOM equipment, Narda-MITEQ has positioned itself as a technology leader by offering advanced products in the frequency range of DC to 100 GHz for both commercial and military applications. We maintain the world's largest inventory of RF and microwave components for the rapid delivery of products to our customer base. Component products manufactured at our production facility include IMAs, couplers, power dividers, attenuators, RF switches, power monitors, amplifiers, mixers, frequency multipliers, fiber-optics, frequency generation, IF signal processing, PIN limiters and terminations that are suitable for a myriad of RF applications. SATCOM products manufactured at our facility include synthesized frequency converters, single and multiband block converters, test translators, LNAs and LNBs, equalizers, uplink power control products, fiber-optic products and custom SATCOM solutions.

Narda-MITEQ's portfolio of products also includes RF safety test solutions that characterize emission levels for RF workers and the general public.

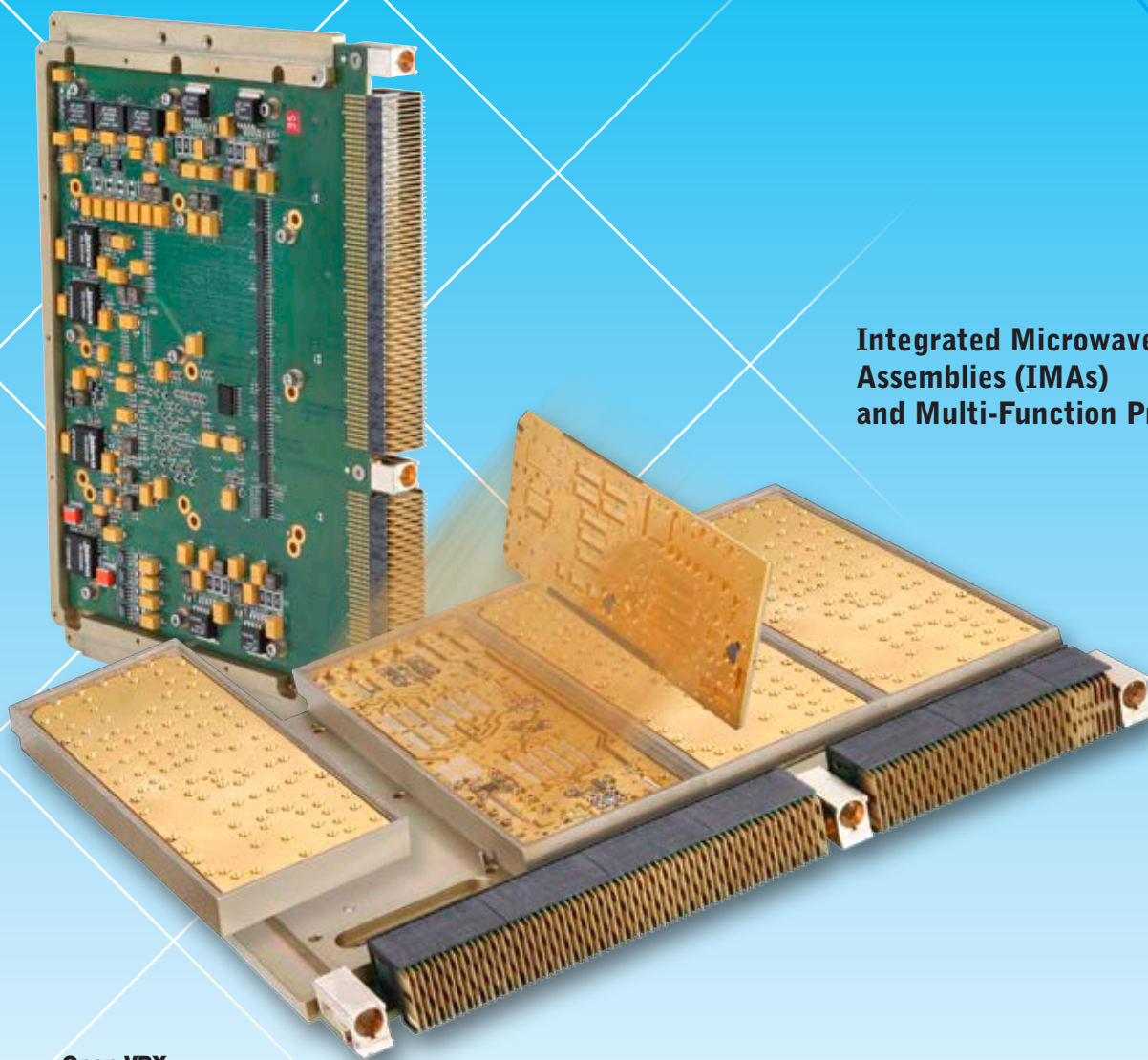
# INTEGRATED MICROWAVE ASSEMBLY (IMA) TECHNOLOGY

Simple IMA Modules

Compact Microwave Subsystems

Complex IMA Modules

Integrated Microwave Assemblies (IMAs) and Multi-Function Products



**Open VPX**  
Technology

Complex-Level IMA Modular Design

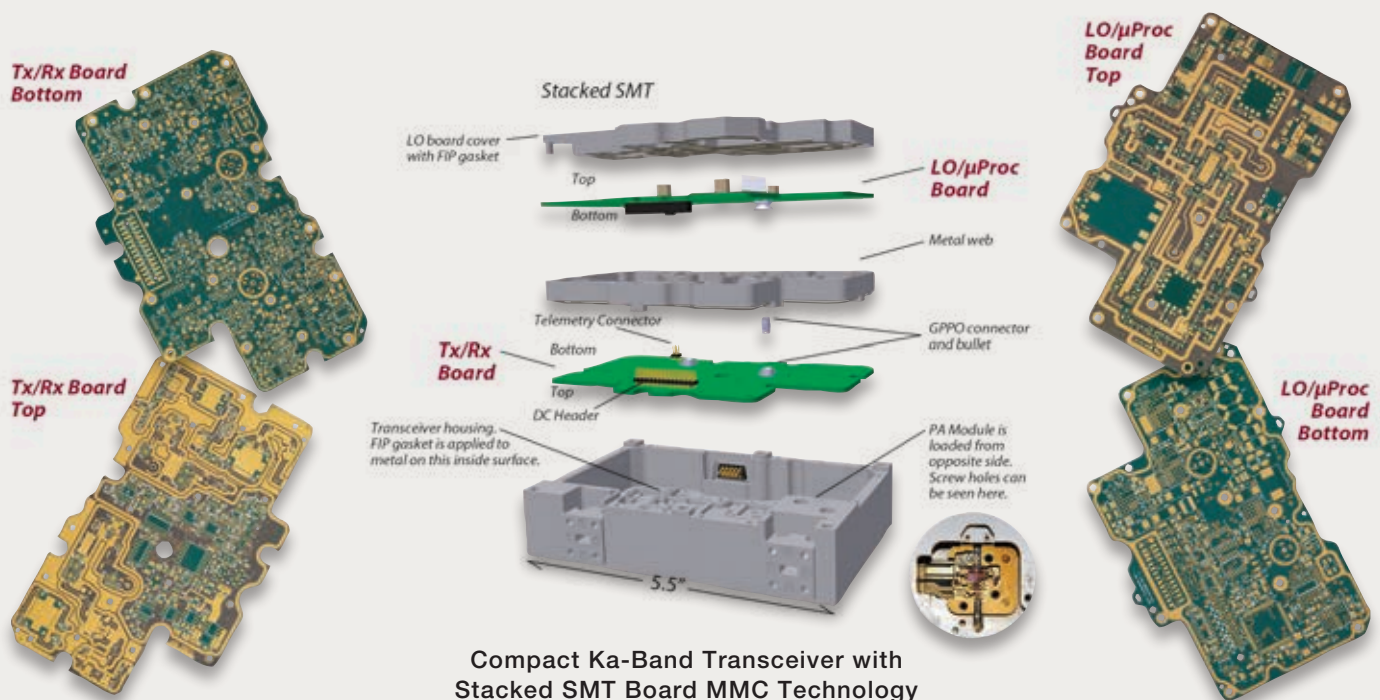
# INTEGRATED MICROWAVE ASSEMBLY (IMA) TECHNOLOGY

Narda-MITEQ is an industry leader that offers advanced Integrated Microwave Assembly (IMA) products and subsystems to both the commercial and military markets. Every project we undertake benefits from our years of experience, performance and world-class resources. Our strengths include:

- Custom solutions incorporating leading-edge technology from DC to 40 GHz
- Advanced technology that produces cost savings, reductions in size and weight, and improvements in efficiency and performance
- Highly experienced senior engineering staff working at the forefront of IMA assembly and subassembly development for over 30 years
- Applications include electronic warfare, communications, radar and SATCOM
- Designs that meet or exceed requirements for rugged military sea, air and land platforms
- Financial backing and resources of Narda-MITEQ, a Fortune 500 company
- Experienced, dedicated senior program management staff committed to minimizing risk and ensuring efficient, successful achievement of project requirements
- 245,000-square-foot, state-of-the-art headquarters and design center with two additional satellite locations

## IMA TECHNOLOGY

Narda-MITEQ has pioneered the design and manufacture of IMAs for a combined experience of 60 years. The first IMAs manufactured by Narda-MITEQ, referred to as classic MICs, were realized by combining several alumina-on-carrier circuits within a single machined aluminum housing. These classic MIC multi-function assemblies provided high performance and longevity, yet the constraints of higher labor/material costs and larger footprints were prohibitive. Today, while the vast majority of suppliers for IMA products are still using this conventional technology, we have evolved to effectively eliminate the constraints of chip and wire manufacturing. Our new and continually evolving proprietary MMC (Multi-layer Microwave Circuitry) technology leverages commercially available multi-layer board materials with unique interconnection techniques, along with DSP/FPGA-enabled monitor/control functions, to allow for densely packaged IMAs and subsystems in footprints previously unachievable.



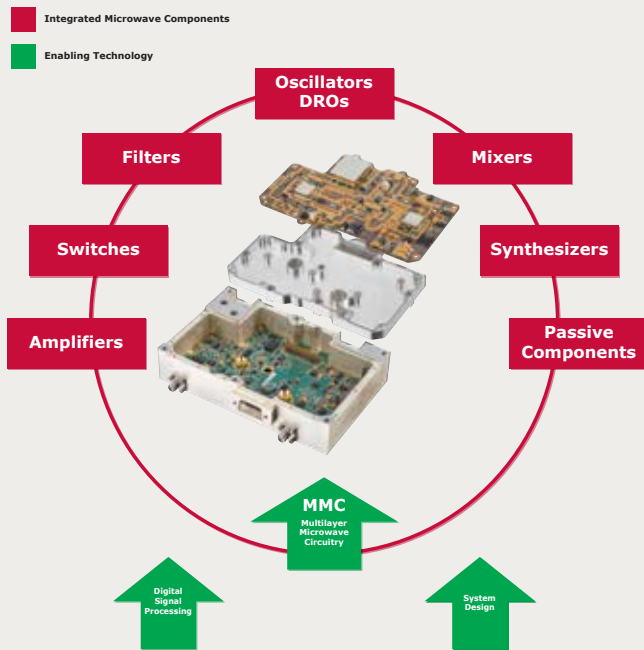
## MMC TECHNOLOGY

MMC uses multi-layered printed circuit boards to interconnect microwave devices (MIC, SMT or MMIC configurations) with bias, control and digital signal processing components. These complex IMAs and compact subsystems are constructed using single or stacked multi-layer boards with the microwave circuitry on the top side and the control circuitry, conditioning, microprocessor, FPGA and DSP circuits on the bottom. Connections from top to bottom are made with specially developed ViAs, as appropriate. Narda-MITEQ's MMC technology allows the creation of more complex, high-performance IMA modules with tightly controlled I/O locations and unusually small form factors that facilitate integration into complex next-level assemblies.

The MMC technology utilized on our module and subsystem solutions consists of two major types of approaches, the Ultimate MIC and Ultimate SMT. The Ultimate MIC approach is utilized when the majority of the electrical components are bare die and chip, while Ultimate SMT technology is employed when there is a prevalence of surface-mount devices. Each type of technology promotes the ability to combine traditional MIC chip and wire hybrid technology with high-volume, low-cost, surface-mount assembly techniques. As a result, our modules or compact subsystems demonstrate unrivaled and previously unachievable integration levels. The results are smaller, reduced cost, higher-performance solutions that combine microwave, bias/control circuits and DSP functions interconnected with high isolation, promoting multi-layer signal routing.

### FACILITIES

Narda-MITEQ has a state-of-the-art facilities dedicated to IMA products in Hauppauge, NY (design, development and production).



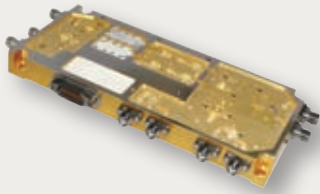
### FEATURES OF MMC-ENABLED IMA MODULES AND SUBSYSTEMS

- A single multi-layer board construction integrates the RF/ Microwave functions along with supporting bias, control and DSP needs, facilitating an unmatched level of integration
- “Stacked” multi-layer board topology allows for growth in height while preserving footprint
- Allows for the use of both of traditional MIC technology with SMT as may be required
- Dense packaging, reduced weight and lower power consumption for SWaP considerations
- Custom solutions from DC to 40 GHz

### PRODUCTS

- High Dynamic Range Front-End Assemblies
- Up and Downconverter Modules
- Waveform Generators
- LNAs and SSPAs
- Transceivers
- PIN Diode Switch Solutions
- Switched Filter Banks
- Frequency Sources

# INTEGRATED MICROWAVE ASSEMBLY (IMA) TECHNOLOGY



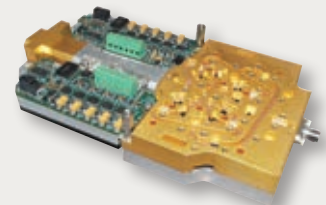
**EW Receiver**  
Compact assembly of MMC (multilayer microwave circuitry) modules containing input and output switching networks, RF filters and dual-amplifier chains in a very small package.



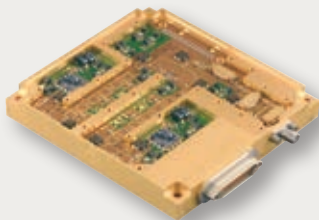
**X-Band DDS Synthesizer**  
Ultimate MIC X-Band synthesizer provides stable signals with precision resolution.



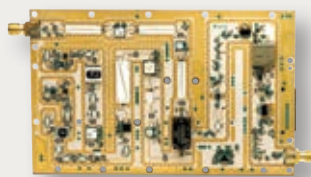
**EW Antenna Interface**  
Complex IMA routing single input to multiple outputs with variable gain, preselection filtering and high-power limiting in each path.



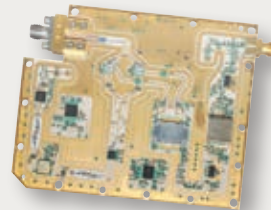
**Ka-Band SSPA**  
Smart IMA using a microcontroller to provide maximum power output with minimum DC drive-over temperature and system variations.



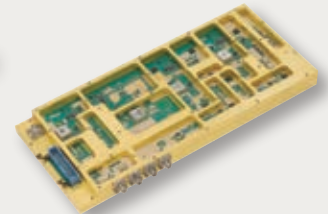
**FPGA-Programmable Source**  
This Ultimate MIC incorporates embedded FPGA-configurable logic blocks to provide arbitrary waveform modulation of microwave signals.



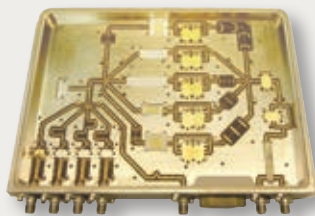
**Ku-Band BUC**  
This IMA uses Ultimate SMT technology to provide a high-performance, compact and efficient Ku-Band SATCOM block upconverter.



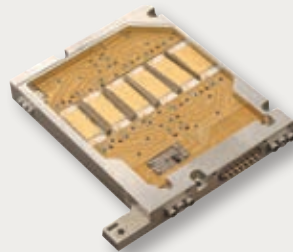
**Ka-Band BUC**  
This IMA uses Ultimate SMT technology to provide a high-performance, compact and efficient Ka-Band SATCOM block upconverter.



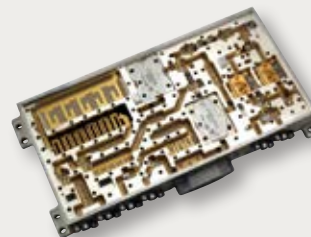
**X-Band DDS Synthesizer**  
Ultimate MIC X-Band synthesizer provides stable signals with precision resolution.



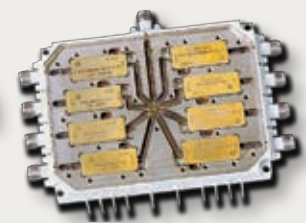
**EW Antenna Interface**  
Complex IMA routing single input to multiple outputs with variable gain, preselection filtering and high-power limiting in each path.



**Switched Filter Bank**  
IMA utilizing high-rejection PIN switches to select sharp cutoff channel filters.



**Multi-Band Microwave Converter**  
This IMA has multiple selectable local oscillators.



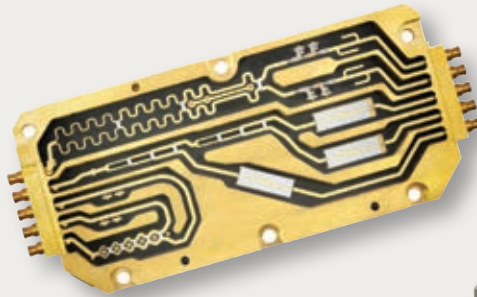
**Switched Amplifier Assembly**  
IMA offers a frequency range of 0.5 to 18 GHz, with 22 dB gain, 4.5 dB noise figure and 45 dB channel isolation.



# CUSTOM COMPONENT SOLUTIONS

## CUSTOM-ENGINEERED COMPONENTS AND NETWORKS

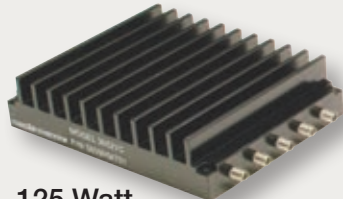
In addition to providing off-the-shelf catalog products, Narda-MITEQ has been supporting customers for decades with custom-engineered solutions. The most cost-effective solution is something from our catalog; however, we continue to support our customers when special models are required. Product specifications that involve a reasonable first-order quantity and follow-up potential are welcomed.



Passive Distribution Network



Dual Hybrid Network



125 Watt 5-Way Power Divider



200 Watt Combiner



Custom Butler Matrix

High-Power Sampling Coupler



20 MHz to 18 GHz Power Sensor



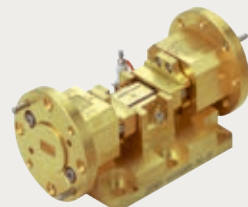
Open Substrate Drop-In Mixer



Surface-Mount Phase-Locked Oscillator



Millimeter Wave LNA



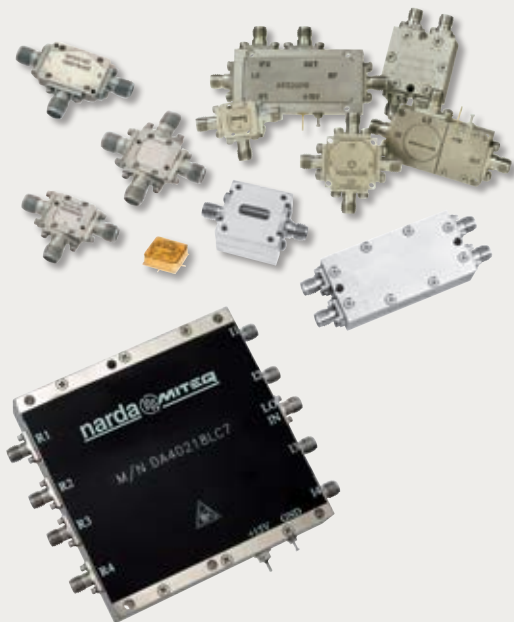


## AMPLIFIERS



- Low-noise designs to 60 GHz
- High-power solid-state amplifier designs up to 20 W to 18 GHz
- Coaxial, waveguide, surface-mount and microstrip interfaces
- Temperature/slope compensated
- RF input limiter protection
- Linear TWT/SSPA drivers
- Instrumentation amplifiers/compliance testing
- Pulsed and low-phase noise amplifiers
- SATCOM band LNAs
- High data rate (fiber-optic) LNAs
- Bias tees/DC blocks
- Spaceborne amplifiers manufactured to MIL-PRF-38534
- Cryogenic applications
- Bipolar amplifiers 10 kHz to 3 GHz
- Broadband low-noise amplifiers
- UHF SATCOM amplifiers

## MIXERS AND FREQUENCY MULTIPLIERS



- Designs to 60 GHz
- Balanced mixers, low loss, moderate to octave band
- Broadband double- and triple-balanced mixers
- Broadband image rejection mixers
- Broadband single-sideband modulators
- Ultrahigh dynamic range FET-based mixers
- Microwave phase detectors and I/Q mixers
- Microwave QAM, QPSK and biphas modulators
- Sampling mixers (sampling phase detectors)
- Broadband active and passive multipliers
- Frequency multipliers to 60 GHz
- Standard X2 to X16 higher order assemblies available
- Spaceborne mixers
- Low-noise radar front ends
- Low-noise block up/downconverters
- Integrated assemblies

# ACTIVE COMPONENTS

## FIBER-OPTIC PRODUCTS



- Analog RF over fiber broadband optical links to 21 GHz
- High-gain receivers and transmitters, 30 kHz to 12.5 GHz, 100 kHz to 20 GHz
- Modulator drivers, 10 Gb/s and 40 Gb/s
- Hermetic packaging available
- Weatherproof and rack enclosure versions
- Delay lines

## CONTROL PRODUCTS



- Designs to 40 GHz
- PIN diode switches
- SPST through SP8T, transfer with up to 90 dB isolation
  - .5 to 18 GHz
  - Reflective and absorptive
- High-speed switched BIT attenuators
- Switched filter banks
- High-power switches, up to 200 W CW, 2 kW peak
- Custom switches
  - SPST to SP25T
  - High-power switches
  - Full military specifications
  - MIL-STD-883 screened T/R switches
- Phase shifters (analog and digital)
- Attenuators (analog and digital)

## MECHANICAL SWITCHES



- SEM series – stocked electromechanical switches
  - DC to 18 GHz
  - SPST to SP6T, transfer
  - Multiple configurations and options
- Standard custom switches
  - DC to 26.5 GHz
  - SP2T to SP12T, transfer
  - Wide range of options
- Full custom design capability

## FREQUENCY GENERATION PRODUCTS



- Designs to 60 GHz
- Frequency synthesizers
  - Ultralow phase noise
  - Phase-locked loop communication band synthesizers
  - Single-loop fast acquisition synthesizers
  - Multi-octave fast acquisition synthesizers
  - Rack-mount sources
  - Broadband synthesizers
  - Free-running and phase-locked oscillators
  - Coaxial resonator designs
  - Fundamental to 4 GHz
  - Multiplied to 40 GHz
- Ovenized crystal oscillators
- Free-running and phase-locked DROs
- Spaceborne oscillators and synthesizers

## IF SIGNAL PROCESSING PRODUCTS



- Logarithmic amplifiers [SDLA] to 8 GHz
- SDLVA and DLVA high-speed logarithmic amplifiers to 20 GHz
- Digital logarithmic amplifiers
- Constant phase-limiting amplifiers to 8 GHz
- Variable and automatic gain-controlled amplifiers to 2 GHz
- Digital frequency discriminators
- Frequency discriminators to 10 GHz
- DC-coupled fixed/variable gain amplifiers to 1 GHz
- Spaceborne logarithmic amplifiers
- IF phase detector subsystems

## PIN LIMITERS



- Narrowband and wideband versions
- Frequencies up to 18 GHz
- Up to 600 W of pulsed power
- Fast recovery time
- Small size
- Available as a stand-alone part or in an integrated assembly
- Analog and digital phase shifters to 360 °
- Analog and digital attenuators to > 80 dB attenuation

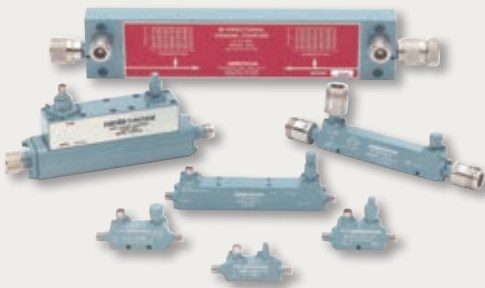
# PASSIVE COMPONENTS

## POWER DIVIDER HYBRIDS



- Broadband power dividers
- Wireless band power dividers/combiners
  - 800 to 2,500 MHz, 2-way to 16-way modules
- SMA 3-way power dividers
- SMA 2-way and 4-way power dividers
  - Octave, multi-octave units in .5 to 26.5 GHz bandwidths
- Multi-octave type N power dividers
  - 2 to 8 GHz, 6 to 8 GHz and 2 to 18 GHz bandwidths
- Ultra-broadband SMA power dividers
  - .5 to 6 GHz, .5 to 18 GHz bandwidths, 2-, 4- and 8-way
- SMA and type N multi-octave 90 ° and 180 ° hybrids
- Specialized devices for high-power dividing and combining operations

## DIRECTIONAL COUPLERS



- Millimeter wave ultra-broadband couplers
  - Models covering 18 to 40 GHz, 1 to 40 GHz and 1 to 60 GHz miniature SMA couplers
  - .5 to 26.5 GHz, octave, multi-octave and maximally flat models
- Type N broadband directional couplers
  - .25 to 12.4 GHz, octave, multi-octave and maximally flat models
- Type N dual-directional reflectometer couplers
  - Multi-octave bands from .05 to 8 GHz
  - High-power, high-directivity
  - Covering 2 to 8 GHz, 2 to 18 GHz, 6 to 18 GHz bands
  - Power levels to 1,000 W CW

## PHASE SHIFTERS



- Precision coaxial phase shifters, 1 to 12.4 GHz
- Broadband phase shifters, DC to 40 GHz
- Phase trimmers, 3 to 18 GHz
- High power (up to 200 W CW, 5 kW peak)
- SMA and N-connector versions

## ATTENUATORS



- Type N fixed coaxial attenuators
  - Frequency range: DC to 18 GHz
  - Choice of attenuation values up to 50 dB
- Miniature fixed attenuators
  - Frequency range: DC to 40 GHz
  - SMA and 2.9 mm connectors
  - Attenuation: up to 60 dB
- Type N high- and medium-power attenuators
  - Frequency range: DC to 18 GHz
  - Attenuation: up to 30 dB
  - Power: up to 150 W average
- Thumbwheel and panel-mount step attenuators
  - Frequency range: DC to 18 GHz
  - Type N or SMA female connectors
  - Attenuation: up to 69 dB
  - 1 dB or 10 dB increments
- Variable attenuators
  - Frequency range: 4 to 26 GHz
  - Connectors: SMA or type N
  - Attenuation: up to 35 dB

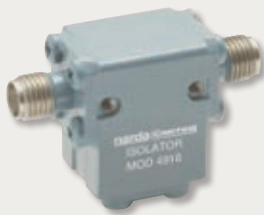
## TERMINATIONS



- Millimeter wave ultra-broadband couplers
  - Frequency range: DC to 50 GHz
  - Connector 2.9 mm
- SMA coaxial fixed terminations
  - Frequency range: DC to 26.5 GHz
  - Power: up to 10 W average
- Type N coaxial fixed terminations
  - Frequency range: DC to 18 GHz
  - Power: up to 500 W average

# PASSIVE COMPONENTS

## ADDITIONAL PASSIVE COMPONENTS



Circulators and Isolators



DC Blocks



Detectors



Adapters



Waveguide Components

## ENVIRONMENTAL PERFORMANCE

Environmental specifications for Stripline Directional Couplers, Attenuators and Power Dividers, as applicable.

PARAMETER	SPECIFICATION
Operating Temperature	-54 °C to +105 °C
Storage Temperature	-55 °C to +125 °C
Humidity	MIL-STD-202F, method 103B, condition B (96 hours at 95% R.H.)
Shock	MIL-STD-202F, method 213B, condition J (30G, 11 msec)
Altitude	MIL-STD-202F, method 105G, condition B (50,000 feet)
Vibration	MIL-STD-202F, method 204D, condition B (.06" double amplitude or 15G, whichever is less)
Thermal Shock	MIL-STD-202F, method 107D, condition A (5 cycles)

# SPACEBORNE PRODUCTS

Receivers

High-Performance Up/Downconverters

Frequency Synthesizers

Custom-Designed Assemblies

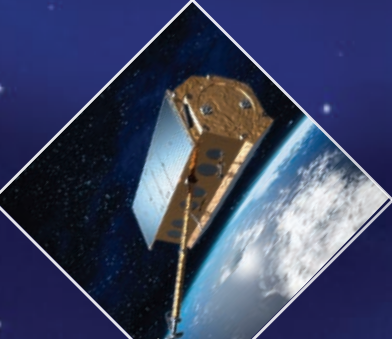
Spaceborne Products

Oscillators

Microwave Mixers

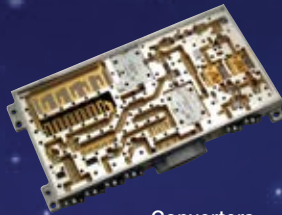
Low-Noise Amplifiers

Logarithmic Amplifiers



## CONFORMANCE TO CUSTOMER QUALITY REQUIREMENTS

## SPACE-QUALIFIED COMPONENTS AND ASSEMBLIES (IMAs)



Converters



Oscillators



Mixers



Amplifiers

Narda-MITEQ has supplied hardware for space-flight missions for over 33 years.

Our involvement in various high-reliability space programs represents a spectrum of programmatic and quality requirements ranging from a process and test flow similar to that of MIL-PRF-38534 Class H or K to NASA EEE-INST-002.

All open-die, thin-film products are manufactured and tested within our clean rooms [FED-STD-209/ISO14644-1] Class 100,000/ISO Class 8 down to Class 100/ISO Class 5 particle concentrations according to program requirements.

- Low-noise amplifiers
- Oscillators
- Microwave mixers
- Logarithmic amplifiers
- Frequency synthesizers
- Receivers
- High-performance up/downconverters
- Custom-designed assemblies

In addition to meeting stringent manufacturing controls, Narda-MITEQ has outstanding program management expertise and extensive documentation capabilities required for our customers' space contracts, including:

- Configuration control
- Design analysis
- Process documentation
- EMI/EMC
- Dynamic stress
- Thermal analysis
- Traceability
- MTBF
- Design reviews
- Radiation susceptibility
- WCA
- Parts, materials and processes
- FMECA
- Parts derating

All analysis and support provided are based upon individual customer requirements as set forth in the customer's Statement of Work and/or specifications. Narda-MITEQ has established controls, procedures and a customer-centric philosophy. Conformance to your requirements is how we have built such a strong reputation in the industry.



Redundant 1:1 and 1:2 Systems

Multiband Converters



Synthesized Frequency Converters

Test Translators

Block Converters

Equalizers



**SATCOM**

Fiber-Optic Products

Custom Products

LNAs and LNBs

Satellite Simulators



Uplink Power Control Products

Custom-Engineered Equipment

# SATCOM PRODUCTS

## PATENTED 1/3 RU SPACE-SAVING RF SATCOM EQUIPMENT



1RU height cage can hold up to three of the following 1/3 rack products:

- Block upconverters: S-, C-, X-, Ku- or Ka-Bands available
- Block downconverters: S-, C-, X-, Ku- or Ka-Bands available
- Redundant switchover unit: All bands
- Test translators: All bands
- Amplifiers: L- through Ka-Bands
- Fiber-optic transmitters and receivers

### Complete Links With Redundant Switchover Unit

Narda-MITEQ's patented space-saving units are easily configured to create redundancy systems in 1RU height.

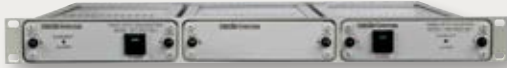
- Each 1/3 rack unit has its own power supply and controls
- Independent front panel and remote controls
- Automatic 5 or 10 MHz and automatic internal or external reference oscillator selections
- Excellent phase noise and low intermodulation products
- Gain: 30 dB upconverters/35 dB downconverters with 30 dB gain control
- LO frequency and power monitors
- 10/100Base-T Ethernet and RS-422/RS-485 options
- Optional slope adjustment



## 1:11 REDUNDANT RACK CONFIGURATION

## TYPICAL 1/3 RU SPACE-SAVING CONFIGURATIONS

### FIBER-OPTIC TRANSMIT/RECEIVE



- 1/3 rack transmitters and receivers covering 10 MHz to 14.5 GHz
- 1:1 redundant switchover unit can provide both RF and fiber-optic switching
- High dynamic range
- Low-noise figure

### EQUALIZER AND SWITCHOVER



- Redundant operation with independent gain and slope adjustment
- Multiple IF and L-Band coverage
- Gain adjustment range: 20 dB
- Slope adjustment: 6 dB
- Remote control RS-485/RS-422 with Ethernet option
- 1:2 redundant converters: utilizing full rack NSU2 switch

### 1:1 BLOCK CONVERTER



- L- to RF block upconverters: C- through Ka-Bands
- RF to L-Band downconverters: C- through Ka-Bands
- 1:1 redundant switchover unit: C- through Ka-Bands
- 1:2 redundant converters: utilizing full rack NSU2 switch

### THREE-CHANNEL AMPLIFIER



- Three channels in 1RU package
- 17 models covering L- to Ka-Band
- LED current fault alarm and summary alarm
- Optional input/output attenuators
- Optional input/output monitors
- Optional remote attenuation control

### REDUNDANT AMPLIFIER SWITCHOVER



- 1:1 switchover configurations in 1RU package using RSU
- 1:2 switchover configurations using NSU2 full rack switch
- 17 amplifier models covering L- to Ka-Band
- LED current fault alarm and summary alarm
- Optional input/output attenuators
- Optional input/output monitors

# SATCOM PRODUCTS

## SYNTHESIZED FREQUENCY UP/ DOWN CONVERTERS



- Synthesized converters providing high-resolution precise step size
- Single and multi-frequency bands:  
L-, C-, X-, Ku-, K-, Ka-, DBS-, TT&C-, Q- and combined Bands
- Superior phase noise to IESS-308/309 standards
- Low intermodulation distortion
- High gain with accurate gain control and flatness
- Remote control using RS-422/RS-485 or 10/100Base-T Ethernet options

## SINGLE, MULTIBAND BLOCK CONVERTERS



- Up/downconverters to 60 GHz:  
L-, C-, X-, Ku-, K-, Ka-, Q- and V-Bands
- Multiband and multichannel versions:  
Dual-, Tri-, Quad- and Quint-Bands
- 1/3 rack 1RU-high block up and downconverters
- Indoor rack-mount and outdoor antenna mount models
- Many configurations: 1/3 rack size, full rack, modules, etc.
- Superior phase noise to the applicable IESS 308/309 or MIL-STD-188-164B specifications
- Low intermodulation distortion
- 10/100Base-T Ethernet and RS-422/RS-485 plus additional control options

## MULTICHANNEL BLOCK CONVERTERS



- Ku-Band
- Ka-Band
- Either 2 or 3 independent RF or IF inputs
- Combined single, wideband output in an antenna mount package

## TEST TRANSLATORS



- Single and multiband test translators providing accurate system test capability by converting satellite transmit frequency bands to their corresponding receive bands
- Minimum amplitude and delay distortion

## LNAs, LNBS AND REDUNDANT 1:1 AND 1:2 ASSEMBLIES



- C- through Ka-Band Low-Noise Amplifiers (LNAs)
- X- and Ka-Bands Low-Noise Block Downconverters (LNBS)
- Available with fiber-optic IF
- Redundant 1:1 or 1:2, and dual 1:1 LNA and LNB systems
- Superior low-noise temperature LNA front end
- Meets harsh outdoor environmental conditions

## AMPLIFIER/SLOPE EQUALIZERS



- Slope equalizers for L-Band and 70/140 MHz
- Variable amplitude slope and group delay adjustment
- Redundant slope equalizer systems with RS-422/RS-485 remote control
- L-Band slope equalizers suppress critical 2nd harmonic at 2 GHz

## UPLINK POWER CONTROL PRODUCTS



- L-Band and 70/140 MHz models
- Up to 10 uplink channels
- Fully redundant power supplies
- 10/100 Base-T Ethernet interface
  - HTTP
  - Telnet
  - SNMPv1
- RS-485/RS-422 selectable remote interface
- Field-expandable attenuator channels
- Color touchscreen simplifies setup and operation
- Site diversity option

# SATCOM PRODUCTS

## FIBER-OPTIC PRODUCTS



- Fiber-optic links providing over 60 Km separation from antenna to base
- RF over fiber – full SATCOM band of S, C, X, Ku and K
- IF to L-Band or 70/140 MHz
- Indoor and outdoor models
- Card cage fiber-optic links, multiple receivers and transmitters, and cage rack
- S-, C-, X- and Ku-Band low-noise amplifiers with fiber-optic RF outputs
- X- and Ka-Band low-noise block downconverters with fiber-optic IF at L-Band
- Redundant switchover systems with fiber-optic links
- Custom configurations and distribution systems provided

### KU-BAND INTEGRATED LNA WITH FIBER-OPTIC TRANSMITTER

- Entire Rx Ku-Band coverage: 10.75 to 12.75 GHz
- Superior low-noise figure and high dynamic range
- Integral fiber-optic transmitter with low-noise amplifier
- Antenna-mount LNA/fiber-optic unit operating over harsh environments
- Operational distance over 10 Km
- Redundant LNAs can be provided on antenna-mount plate assembly with RF and fiber-optic outputs

### X- AND KA-BAND INTEGRATED LNB WITH FIBER-OPTIC TRANSMITTER

- X- and Ka-Band LNBs with optional integral fiber-optic transmitter
- Superior low-noise temperature front end
- Can interface with either rack-mount cage fiber-optic receiver or separate 1/3 rack-mount receiver
- Interstage high-rejection filter included
- Custom versions and options available

## SPECIAL AND CUSTOM PRODUCTS



- INMARSAT products: converters, pilot receivers and translators
- Unique frequency bands and multiple bands from L- to W-Band available
- Military and flight-qualified converters and transceivers
- Integrated block up and downconverters for use in SSPAs and customer assemblies
- Integrated fiber-optic distribution systems with interfaces to all RF equipment
- Superior engineered solutions to customer specifications

Narda-MITEQ Safety Test Solutions is recognized as the world leader in non-ionizing radiation safety equipment. The company holds more than 95% of the patents in the industry. Products are now available to accurately measure electromagnetic fields from a few hertz to over 100 GHz, as well as static magnetic fields. RF personal monitors cover 100 kHz to 100 GHz and area monitors detect energy from 50 Hz to 100 GHz.

The company prides itself on offering superior customer support in the following areas:

- Equipment and application consultation by our worldwide sales network
- Repair and calibration services
- Expert advice on standards and recent developments
- RF safety training and measurement services

## Low-Frequency DC Static Fields - 0 Hz to 400 kHz



THM1176



EHP-50D

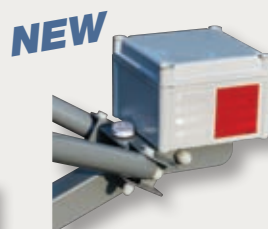


ELT-400



EFA-200 & EFA-300

## Mobile Stray Voltage Detection System



8950-10

## RF and Microwave - 100 kHz to 100 GHz

### Narrowband Meters



EHP-200



SRM-3006

### Broadband Meters



NIM-511/513



NBM 520 & 550

### Personal Monitors



RadMan



Nardalert S3

### Area Monitors



SMARTS II



2600 System

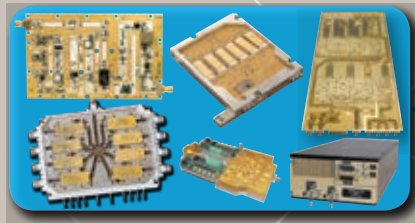
# RF AND MICROWAVE SOLUTIONS



SATCOM



Active Components



Integrated Microwave Assemblies



Passive Components



Spaceborne



Safety Test Solutions

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