Cobham Sensor Systems
Hunt Valley, MD

COBHAM

SIGINT Technologies Product Catalog

電戰系統

電子攻擊；電子反制；電子支援

The most important thing we build is trust

Providing over 50 years of experience in the design and manufacturing of RF technology to the Signal Intelligence community

Strategic Vision

To be the most trusted partner and supplier for Department of Defense communications electronics technology, focused on sensor components, subsystems, and line replaceable units (LRUs) used in various Electronic Warfare applications, such as Electronic Attack (EA), Electronic Protection (EP), and Electronic Support (ES) missions.

Cobham Sensor Systems
10713 Gilroy Road
Hunt Valley, MD 21031

Quality Policy

It is the goal of Cobham Sensor Systems employees to deliver on-time to our customers and internal operations products and services which meet the highest standard of quality, reliability, safety and effectiveness. Processes and controls will be implemented and continually improved so that tasks are performed properly the first time, in order for our customers to be completely satisfied. Maintaining the effectiveness of our quality management system and compliance with customer and regulatory requirements is the personal responsibility of every employee.

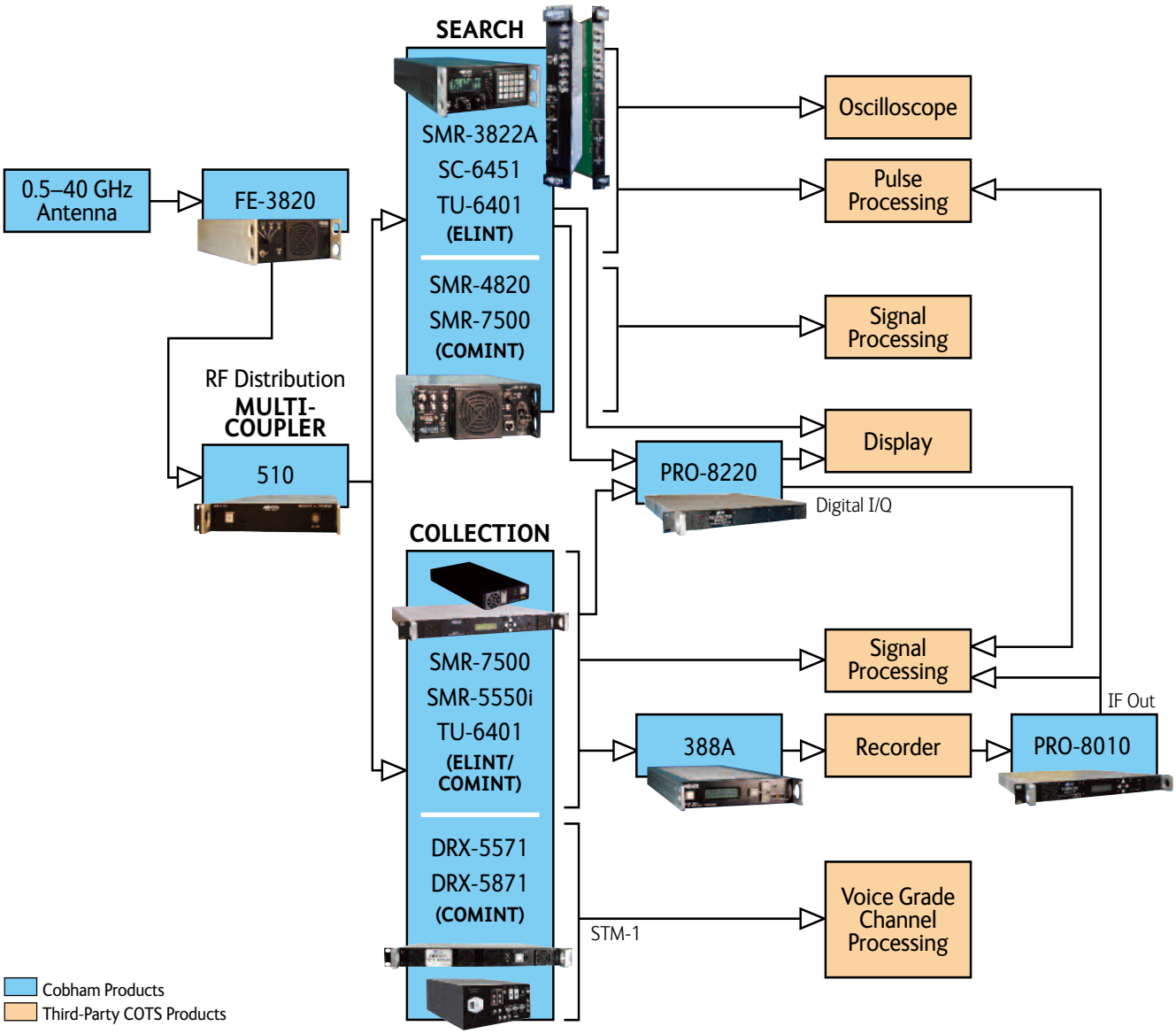
Export of this equipment is subject to U.S. Government export controls. An export license which is issued by the U.S. Government on a case-by-case basis may be required.

This equipment does not contain provisions for the installation of an intelligence database (i.e. threat signal parametric data).

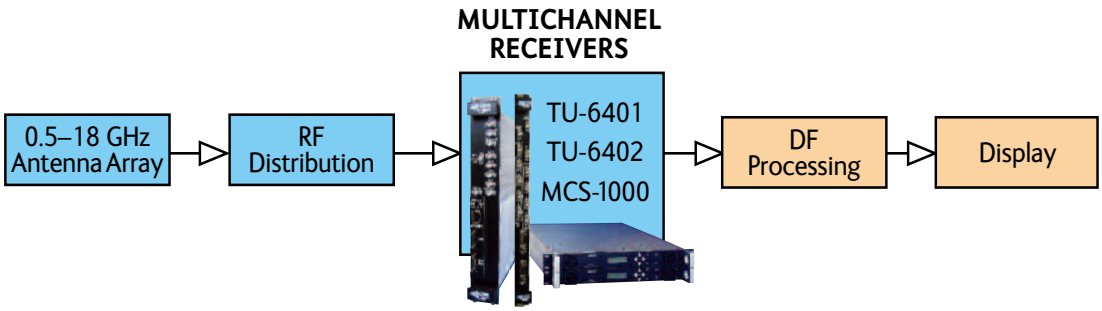
22 CFR 125.4(b)(13) applicable IAW Office of Security Review public release approval (case 10-S-3345)

Contents

Typical Microwave System

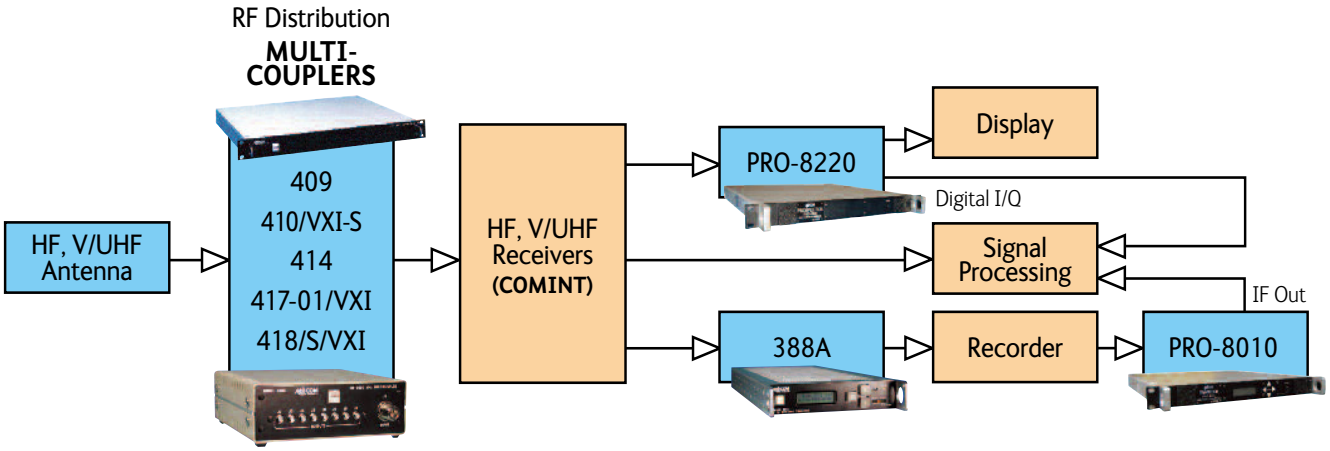


Typical Direction Finding System



Cobham Products
Third-Party COTS Products

Typical COMINT System



Horn Antennas

Cobham broadband horns are optimized for high efficiency, constant gain and constant impedance versus frequency over multi-octave bandwidths. These horns are used for EMI/RFI measurement and radiation, antenna gain and pattern measurement, reconnaissance/surveillance and other applications.

A sampling of the horn antennas Cobham offers are represented here. For a complete listing of horn antennas, please see Antenna Typical Specifications on page 10.

AN-015036
Horn

- Dual-polarized horn feed
- 1.5–23 GHz
- Compact size 5.3" x 4.5"
- High gain
- Separate V, H outputs
- High isolation >25 dB

The dual-linear polarized broadband horn antenna is a unique antenna which can be used in multiple applications. This antenna provides numerous advantages when compared to conventional quad-ridged horns including wider frequency coverage, smaller size and lighter weight. The antenna provides excellent performance from 1.5 GHz to beyond 23 GHz, and can be used as an illuminator for anechoic chambers, a feed for large reflectors or signal surveillance and jamming applications.

Applications include anechoic chamber calibrated gain antenna, anechoic chamber illuminator, surveillance system apertures, reflector antenna feed, and EMI/EMC testing.

AN-015290
Linear Horn

- 8–40 GHz
- Weight 0.75 lbs
- Environmental specification: lab standard

The broadband gain reference antenna is primarily used in test chambers to accelerate gain measurements and minimize setup errors. Units can be supplied with a measured gain curve for enhanced gain accuracy over calculated values. Typical gain accuracy is better than ±0.3 dB over the band of operation.

AN-015944
Horn

- 92–96 GHz
- Small size
- Broad bandwidth
- High dielectric plano convex lens
- Millimeter wave frequency range

This antenna is a compact broadband horn antenna. It employs a high dielectric plano convex lens for phase correction with impedance matching grooves machined into the internal surface of the lens. High precision machining practices are employed to meet the required tolerances for this extremely high frequency.

AN-015498
Ridged Horn

- 2–18 GHz
- 9:1 bandwidth
- Test set and test range applications

The ridged broadband linear horn antenna provides superior performance for use in a wide variety of laboratory, commercial and military applications. With excellent input VSWR, this antenna provides high gain across the frequency range and consistent pattern performance. The ridged broadband linear horn antenna is a laboratory standard as a reference horn in anechoic chambers and outdoor ranges.

Spiral Antennas

Cobham spiral antennas are designed to radiate or receive RF energy over very broad frequency ranges while maintaining constant beam width. The spiral antennas are designed to operate in severe airborne and ground-based environments. Cobham considers and evaluates additional designs to maximize system performance: low axial ratio, minimal squint, and very small size relative to the wavelength of the lowest operating frequency. The antennas can also be amplitude and/or phase matched for precision DF systems.

A sampling of the spiral antennas Cobham offers are represented here. For a complete listing of spiral antennas, please see Antenna Typical Specifications on page 10.

AN-016125
Cavity Backed Spiral

- 0.5–2.0 GHz
- Gain: Low band -5.0 dBi, typical;
  Mid band +4.0 dBi, typical;
  High band +3.0 dBi, typical
- Weight 3.2 lbs.
- Airborne environment

This cavity backed spiral antenna is specially designed for reconnaissance, direction finding, remote sensing and aircraft flush installation applications. Applied right-hand or left-hand circular polarization, this antenna has good impedance matching radiation directivity performance.

AN-016175
Spiral

- 2–18 GHz (ultra broadband)
- Consistent half-power beamwidth for quadrant coverage
- Low axial ratio
- Rugged design for airborne applications
- Small size
- Available in phase matched sets

This spiral antenna provides superior performance for use in applications requiring circular polarization. With excellent input VSWR, this antenna provides smooth broadband gain, low axial ratio and consistent pattern performance over 2–18 GHz. This model was designed and developed for applications requiring extremely close unit-to-unit phase matching and is an excellent choice for airborne interferometry and direction finding systems. Two-inch-diameter spirals allow close element spacing in arrays for better system performance. This antenna is available with SMA female connector. Either right- or left-hand circular polarizations are available.

Applications include airborne radar warning receivers, airborne direction finding (DF) systems, and airborne interferometry systems.

AN-017120
Vehicle-Mount Dipole

- 100–6000 MHz operating range
- 200 W CW
- Two-port RF interface, single-port options available
- Omni-directional radiation pattern
- Three-port interface:
  Low Band: 20–500 MHz
  Mid Band: 100–500 MHz
  High Band: 500 MHz–6 GHz

The AN-017120 is a vertically-polarized, omni-directional antenna specifically designed to meet rigorous environmental and mechanical conditions encountered in military environments. The antenna provides wideband electronic countermeasures for a range of military vehicles and can be used with ECM equipment that operates in the 100-6000 MHz frequency range.

AN-017210
Airborne-Mount Broadband Dipole

- 20–2500 MHz operating range
- Designed for airborne applications
- Blade is composite construction mounted on aluminum alloy base plate

The broadband dipole antenna is a passive blade antenna designed to receive only over the frequency range 20–2500 MHz in general airborne applications. This antenna is configured as a broadband fan monopole radiating element fed via a susceptance compensation network to enhance VHF gain and minimize resistive loading to ensure compliance with the VSWR specification. The antenna is comprised of a composite blade of aero foil section which houses the electronic assembly enclosed by an aluminum alloy base plate which supports the single RF connector.

AN-018122
Omni Bicone

- 9:1 bandwidth
- Electrically compact and lightweight
- Omni-directional azimuth pattern
- Integral radome
- Rugged construction
- Optional polarizers

The omni bicone antenna features rugged aluminum and composite construction and includes an integral protective radome. It is available with optional vertical, linear or circular polarization. This antenna is suitable for a variety of uses including broadband communications systems and electronic warfare applications.

AN-019120
DF (Direction Finder)

- 0.6–40 GHz
- Shaped beam
- Composite materials
- High reliability

The DF antenna is an antenna system designed to be mounted on the underside of an aircraft for broadband direction finding or ELINT applications. It is constructed from lightweight composite materials. This antenna is designed for high reliability and does not need rotary couplers. The reflectors are mounted facing opposite each other.

AN-020151-XX
Parabolic Reflector

- 2–40 GHz frequency range
- Four separate feed horns for 2–18 GHz, 18–40 GHz, 18–26 GHz and 26–40 GHz
- Gain is varied by changing reflector size

The parabolic antenna uses a system of four interchangeable feed horns that allow it to function over the range 2–40 GHz. The gain in each of the four frequency bands is adjusted by changing the size of the parabolic reflector.

AN-021110
Log Periodic Array

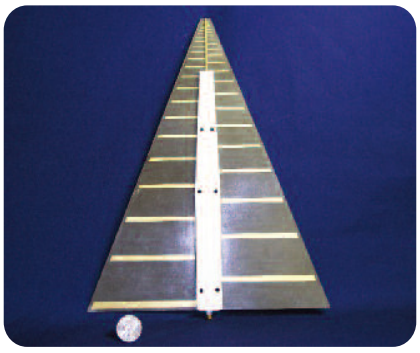
- 0.5–2 GHz frequency range
- Airborne environment qualification
- Rugged stainless steel construction
- Lightweight

The AN-021110 log periodic array antenna is constructed of stainless steel tubing which is brazed through the main support for maximum strength. It has been qualified for airborne environments and is suitable for air, sea, land or land mobile deployment.

AN-021113
Log Periodic Array

- 1–12 GHz frequency range
- Polytetraflorethylene reinforced
- Structure integrity
- Airborne application

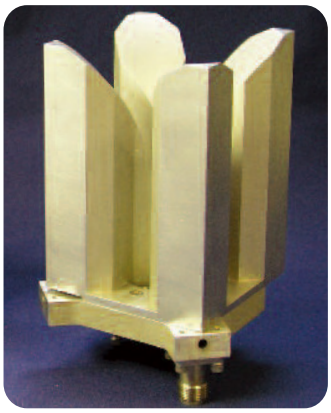
The AN-021113 is a printed circuit antenna manufactured on a low loss polytetraflorethylene glass reinforced substrate. The antenna is gold plated to prevent corrosion. The balun feed structure is designed to reinforce the structural integrity and to strengthen the unit for airborne application. The antenna can be used for direction finding, ELINT, or as feed antenna for a reflector system.



AN-022568
Dual Polarized Crossed Notch

- 9:1 bandwidth
- High power
- Dual polarized

The dual polarized crossed notch antenna is a dual-linear and high power antenna. This antenna is suitable for high power ECM applications as well as for feeding reflector antennas, wide-band antenna arrays and other broadband applications.



Antenna Typical Specifications

Model Number	Frequency Range (GHz)	Type	Gain (dBiL-dBiC)	Pattern	Polarization	Input Connector	Weight
AN-015036	1.5–23.0	Horn	4 to 15	N/A	LHCP	SMA female	N/A
AN-015265	26.5–40.0	WG Diagonal Horn	10	Directional	Circular	UG599/U WR-28	2 oz (0.0614 kg)
AN-015290	18.0–40.0	Linear Horn	17 at 18 GHz to 20 at 40 GHz	N/A	Linear	2.4 mm or 2.9 mm	12 oz (0.35 kg)
AN-015498	2.0–18.0	Ridged Horn	6 to 12, nom	Directional	Linear	SMA female	10 oz (.31 kg)
AN-015798	18.0–40.0	Horn	5 to 7	N/A	LHCP	WRD 180C24	N/A
AN-015944	92.0–96.0	Horn	22	N/A	Linear, cross polarization 23 dB	WR-10	2 oz (0.0614 kg)
AN-016125	0.5–2.0	Cavity Backed Spiral	Low-band -5 Mid-band +4 High-band +3	Gaussian	LHCP	N female	3.2 lbs max (1.5 kg)
AN-016163	18.0–40.0	Spiral	-2 at 18 GHz 0 at 29 GHz -1 at 40 GHz	Gaussian	LHCP or RHCP	2.92 mm	0.8 oz (0.023 kg)
AN-016175	2.0–18.0	Spiral	1, nom	Gaussian	Circular	SMA female	4 oz (0.123 kg)
AN-016322	2.0–40.0	Spiral	0, nom	Gaussian	Circular	SSMA	6 oz (0.170 kg)
AN-017120	0.02–6.0	Dipole	Low-band -5 Mid-band -4 High-band -1.5	Omni	Vertical	N female	18 lbs (8.2 kg)
AN-017210	0.02–2.5	Dipole	-44 at 20 MHz ≥-12 at 88 MHz ≥-5 at 118 MHz ≥ 0 at 174 MHz ≥ 0 avg. at 225-2500 MHz	Omni	Vertical	N female	3.75 lbs (1.725 kg)
AN-018122	2.0–18.0	Omni Bicone	-5 at 2 GHz -2 at 6 GHz -3 at 8 GHz -3 at 18 GHz	N/A	Vertical, Linear, Circular, Slant 42˚	SMA female	2 lbs (0.92 kg)
AN-019120	0.6–40.0	DF	-5 dBiC at 1 GHz 8 dBiC at 4 GHz ±15 dBiC at 10 to 40 GHz	N/A	RHCP	0.6 to 18 GHz-TNC jack 18 to 40 GHz-WRD-180	N/A
AN-020151-XX	2.0–40.0 Band 1 2–18 Band 2 18–40 Band 3 18–26 Band 4 26–40	Parabolic Reflector with inter-changeable feed horns	Varies with reflector size & frequency band. See data sheet.	Directional	Rotatable, Horizontal, Vertical, Slant 45˚	2.4 mm or 2.9 mm	<2 lbs (0.92 kg)
AN-021110	0.5–2.0	Log Periodic Array	3 to 7, nom	N/A	Linear	SMA female	8 oz (0.23 kg)
AN-021113	1.0–12.0	Log Periodic Array	7, nom	N/A	Linear	SMA female	1 lb (0.46 kg)
AN-022568	2.0–18.0	Dual Polarized Crossed Notch	+8, nom	N/A	N/A	TNC	1.3 lb (0.6 kg)

Model 409
VLF/HF Multicoupler

- 1 kHz–60 MHz
- 8 or 16 outputs
- Wide dynamic range
- Input protection
- Full-rack or half-rack configurations

The Model 409 VLF/HF Multicoupler is a compact, versatile broadband unit which permits eight or 16 receivers to be coupled to a single antenna. A low-noise input amplifier provides a wide dynamic range over a broad band, covering the VLF and HF bands. Input circuitry provides protection under high-ambient RF field conditions or from nearby lightning strikes.

Model 410
HF Multicoupler

- 100 kHz–32 MHz
- 8 or 16 outputs
- Wide dynamic range
- Input protection

The Model 410 HF Multicoupler is a compact unit which allows coupling of up to 16 HF receivers to a single antenna or to one of two switch-selectable antennas. A low-noise input amplifier provides a wide dynamic range over the entire HF band. Input circuitry provides protection under high-ambient RF field conditions or from nearby lightning strikes.

Model 410VXI-S
HF Multicoupler

- 100 kHz–32 MHz
- 6U, single-slot, C-size VXI card
- 8 outputs
- Wide dynamic range
- Excellent reverse isolation

The Model 410VXI-S HF Multicoupler is a compact unit which allows RF energy from a single antenna to be distributed to up to eight HF Receivers. A low noise input amplifier provides a nominal gain of 5 dB and achieves a wide dynamic range over the entire HF band. Input circuitry provides protection under high ambient RF field conditions or from nearby lightning strikes

The Model 410VXI-S HF Multicoupler is available with eight SMA outputs. It is powered from a VXI chassis.

Model 414
VHF/UHF Multicoupler

- 20–1100 MHz
- 20–1200 MHz option
- Switchable dual input option
- 70 dB reverse isolation
- Wide dynamic range
- Low noise
- 14 outputs (max)

The Model VHF/UHF Multicoupler is a compact unit which allows up to 14 VHF/UHF receivers to be coupled to a single antenna or to one of two switch-selectable antennas. The input signal drives a wideband amplifier which achieves wide dynamic range and high isolation with amplifier gain sufficient to overcome incidental losses.

Multicouplers

Model 417-01
VHF/UHF Wideband Multicoupler

- Wide passband 30–6000 MHz
- 1U, half-rack chassis
- 8 outputs
- Wide dynamic range
- Input protection (DC block)

The Model 417-01 VHF/UHF Wideband Multicoupler is our latest wideband, high-performance unit designed for compatibility with wide frequency range signal collection and signal analysis systems requiring up to eight outputs from a single antenna input.

The Model 417-01 covers the 30–6000 MHz frequency range. The use of a wideband, high dynamic range amplifier results in minimum distortion over the specified frequency range and gain sufficient enough to overcome incidental losses. The Model 417-01 is available with eight outputs in a 1U, half-rack chassis permitting convenient side-by-side installation of two units.

Model 417VXI
VHF/UHF Wideband Multicoupler

- Wide passband 30–6000 MHz
- 6U, single-slot, C-size VXI card
- 8 outputs
- Wide dynamic range
- Input protection (DC block)

The Model 417VXI VHF/UHF Wideband Multicoupler is our latest wideband, high-performance unit designed for compatibility with wide frequency range signal collection and signal analysis systems requiring up to eight outputs from a single antenna input.

Model 418
VHF/UHF Multicoupler

- Wide passband 20–3000 MHz
- Half-rack chassis
- 8 or 16 outputs
- Wide dynamic range
- Input protection
- High port-to-port isolation

The Model 418 VHF/UHF Multicoupler is our latest broadband, high performance unit designed for compatibility with wide frequency range receiving systems requiring eight to 16 outputs from a single antenna input.

Model 418S
VHF/UHF Multicoupler

- Wide passband 20–3000 MHz
- Miniature chassis
- 8.25”D x 7.25”W x 2.6”H
- 8 outputs
- Wide dynamic range
- Input protection
- High port-to-port isolation

The Model 418S VHF/UHF Multicoupler is our latest broadband, high-performance unit designed for compatibility with wide frequency range receiving systems requiring up to eight outputs from a single antenna input. The miniature chassis allows it to be used in applications where a half-rack unit would be too large, such as tactical/mobile systems.

Model 418VXI
VHF/UHF Multicoupler

- Wide passband 20–3000 MHz
- 6U, single-slot, C-size VXI card
- 8 outputs
- Wide dynamic range
- Input protection
- High port-to-port isolation

Model 418VXI covers the 20–3000 MHz frequency range. Use of a wideband, high dynamic range amplifier results in minimum distortion over the specified frequency range and gain sufficient enough to overcome incidental losses. Model 418VXI is available with eight outputs in a VXI chassis permitting convenient side-by-side installation.

Model 510
UHF/SHF Microwave Multicoupler

- Wide passband 0.5–18 GHz
- Half-rack chassis
- 8 outputs
- Wide dynamic range
- Input protection
- High IP2 and IP3
- High channel-to-channel isolation (optional)

Model 510 covers the 0.5–18 GHz frequency range. The use of a wideband, high dynamic range amplifier results in minimum distortion over the specified frequency range and gain sufficient enough to overcome incidental losses. Model 510 is available with eight outputs in a half-rack chassis permitting convenient side-by-side installation.

Multicoupler Typical Specifications

Model Number	Frequency Range (MHz)	IP3 (dBm)	IP2 (dBm)	Gain (nom) (dB)	Noise Figure (dB)	Isolation (Out-Out, Out-In)	No. of Outputs Available	Rack Width
409	0.001–60	+28	+40	5	8	40/50	8,16	Half/Full
410	0.1–32	+28	+40	5	8	40/50	8,16	Half/Full
410VXI-S	0.1–32	+28	+40	5	8	40/50	8	VXI Single-Slot
414	20–1200	+18	+30	2	7.5	30/70	6,12,14	Full
417-01	30–6000	+8	+20	2	11	10/50	8	Half
417VXI	30–6000	+8	+20	0	11	10/50	8	VXI Single-Slot
418	20–3000	+20	+28	1	8	19/50	8,16	Half/Full
418S	20–3000	+20	+28	1	8	19/50	8	Miniature Chassis
418VXI	20–3000	+20	+28	1	8	19/50	8	VXI Single-Slot
510	500–18000	+10	+21	2	9	22/70	8	Half

Other configurations available: please inquire for details

SMR-3822

Wideband Microwave Search Receiver

- 0.5–20 GHz tuning range
- Compatible with FE-3820 Frequency Extender
- IF outputs at 1 GHz, 160 MHz, and 70 MHz
- Built-in spectrum display processor for RF sweep and IF pan
- 8 IF bandwidths: 250 kHz–100 MHz
- AM, FM and log detectors
- Controlled from workstation or front panel controls
- Built-in test functions
- F1-F2 sweep and fixed frequencies
- Ethernet 10/100BaseT control
- Integrated local control panel

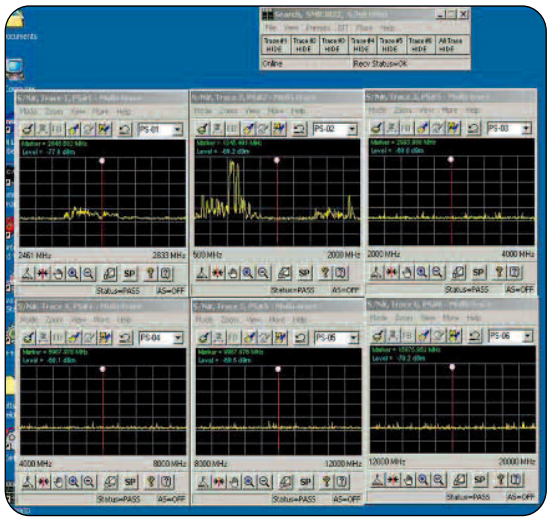
OPTIONS

- RF blanking
- RF front-end attenuation
- Other filter bandwidths available
- WBFM (500 MHz bandwidth)

This high-performance, wideband, scanning, microwave receiver provides low noise figure, high intercept point, low phase noise, and wide dynamic range. It offers three wideband IF outputs at 1 GHz (500 MHz bandwidth), 160 MHz (100 MHz bandwidth), and 70 MHz (50 MHz bandwidth) with one post-filtered IF output centered at 160 MHz. In addition to the IF outputs, the receiver provides AM video, FM video, switched AM/FM audio outputs and optional log video. Data from the internal spectrum display generator is sent via ethernet to a PC or workstation where it is converted to RF sweep or IF pan displays.

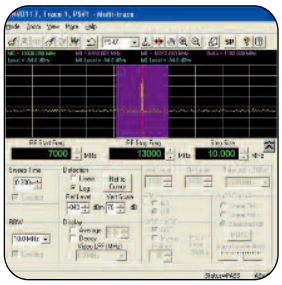
Six-Trace GUI

- Windows® NT/2000/XP operating system
- Six-trace display from one receiver
- Simultaneous control of multiple receivers
- RF sweep or IF pan spectrum displays
- Access to system configuration windows, tuner controls, and demodulator controls
- Analysis tools include: frequency and amplitude marker, delta measurement markers, and zero span (O'scope) time domain display

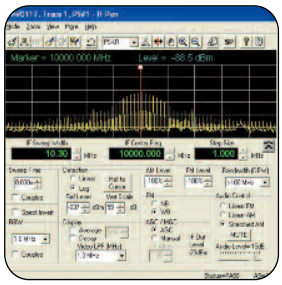


Six-trace GUI display

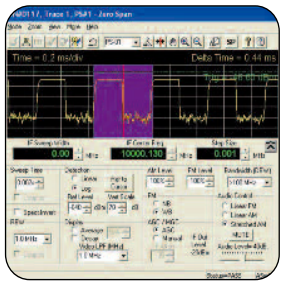
The Graphical User Interface (GUI) for search receivers allows the operator to remotely control an SMR-3822 microwave receiving system. A typical configuration might have a separate trace assigned to each of the octave bands (1–2 GHz, 2–4 GHz, etc.). Each trace is an individual receiver control window that can be positioned anywhere on the desktop. A trace window can be expanded to reveal all the GUI display and receiver control functions. Based on the Windows® operating system, the GUI has a typical Windows® look and feel and provides either an RF sweep or IF pan spectrum display. In addition to the spectrum displays, a separate system manager window is provided permitting the selection of preset system configurations allowing the configuration to be quickly changed and saved/recalled from hard disk. Controls for the tuner and demodulator are available on the same receiver window.



RF sweep mode



IF pan mode



Zero span mode; Magenta area measures pulse width

SMR-3822A

Advanced Wideband Microwave Search Receiver

- 0.1–20 GHz tuning range
- Compatible with FE-3820 Frequency Extender
- IF outputs at 1 GHz, 160 MHz and 70 MHz
- Controlled from remote workstation
- Antenna band select aux. control
- F1-F2 sweep and fixed frequencies
- Ethernet 10/100BaseT control

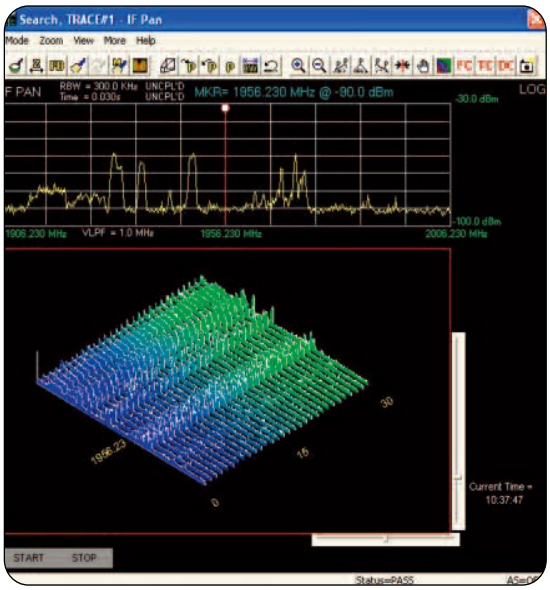
OPTIONS

- AM/FM demodulators
- RF blanking
- RF attenuation

The SMR-3822A Receiver, a member of the SMR-3000 family of high-performance synthesized microwave receivers, covers 0.1 to 20 GHz. Millimeter wave frequency extension is achievable using an FE-3820. An internal Spectrum Display Generator (SDG) generates data that can be used to develop RF sweep and IF pan spectrum displays on a remote workstation or laptop. The receiver provides simultaneous wideband IF outputs at 1 GHz (500 MHz bandwidth) and 160 MHz (100 MHz bandwidth) in addition to a post-filtered 160-MHz IF output. All IF outputs have a noninverted spectrum; in addition, there is operator-selectable inversion of the IF up to 20 GHz tuned frequency.

Enhanced GUI

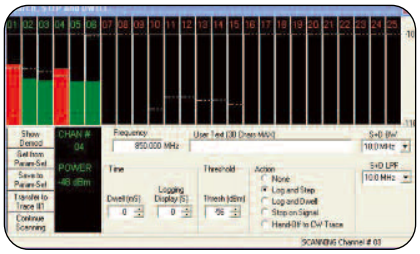
- Full band RF sweep spectrum display
- IF pan displays maximum span of 100 MHz
- Zero span mode
- 2D or 3D waterfall display in RF sweep or IF pan modes
- Snapshot feature
- 64 receiver parameter presets
- Step and dwell or channel scan mode
- Operator defined zoom



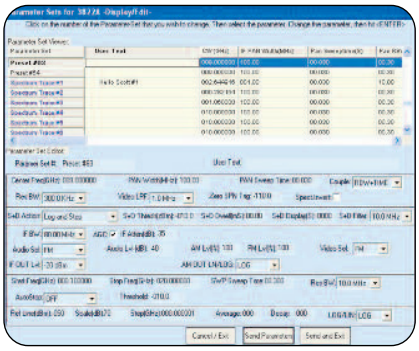
3D waterfall spectrum display

The enhanced GUI for search receivers allows the operator to remotely control an SMR-3822A microwave receiving system. This GUI has similar display capabilities as the SMR-3822 GUI shown on the previous page. Six-trace, RF sweep, and IF pan displays are available.

The enhanced features include a 25-channel step and dwell function and an improved parameter set manager for storage and recall of preset receiver operating functions. Also included are updated 2D and 3D waterfall displays.



Step and dwell window



Parameter set manager window

SMR-3822C

Low-Cost Wideband Microwave Receiver

- 0.5–20 GHz tuning range
- Extendable up to 40 GHz
- IF outputs at 1 GHz and 160 MHz
- AM and log detectors
- Controlled from workstation
- Built-in test functions
- Ethernet 10/100BaseT control
- Available Pelican 1650 case

OPTIONS

- RF input blanking
- RF front-end attenuation
- Analog sweep
- Rapid-step tuning

The SMR-3822C Receiver, a member of the SMR-3800 family of high-performance synthesized microwave receivers, covers 0.5–20 GHz. Continuous coverage to millimeter waves is available by connecting the FE-3820 Frequency Extender. The receiver provides simultaneous wideband IF outputs at 1 GHz (500 MHz bandwidth), and 160 MHz (100 MHz bandwidth).

SMR-4820

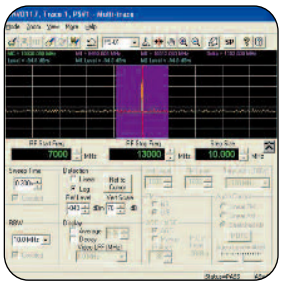
Compact Microwave Receiver

- 2–26.5 GHz frequency range
- Compact, lightweight package
- Low phase noise (<0.45˚ rms)
- IF outputs at 70 MHz and 140 MHz
- IF bandwidths from 10 MHz to 80 MHz
- RS-422A/RS-232C & Ethernet remote control
- Built-in spectrum display processor for RF sweep and IF pan

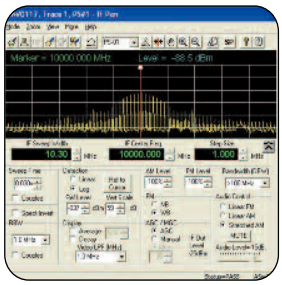
The SMR-4820 Compact Microwave Receiver is a high performance receiver designed for applications that require small size. This highly efficient unit optimizes reception of multi-channel FDM and PCM signals. With an integrated LO phase noise of less than 0.45˚ rms, low group delay and high NPR performance, the SMR-4820 is an excellent unit for reception of digitally-modulated signals. It provides both wideband and narrowband (filtered) IF outputs. The basic SMR-4820 receiver is packaged in a compact rugged enclosure and operates from an AC power supply.

Search GUI

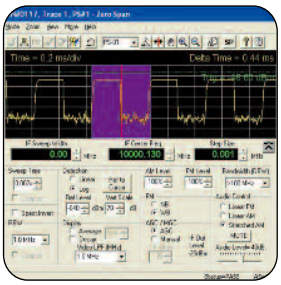
The Graphical User Interface (GUI) for search receivers allows the operator to remotely control an SMR-4820 microwave receiving system. A typical configuration might have a separate trace assigned to each of the octave bands (1–2 GHz, 2–4 GHz, etc.). Each trace is an individual receiver control window that can be positioned anywhere on the desktop. A trace window can be expanded to reveal all the GUI display and receiver control functions. Based on the Windows® operating system, the GUI has a typical Windows® look and feel and provides either an RF sweep or IF pan spectrum display. In addition to the spectrum displays, a separate system manager window is provided permitting the selection of preset system configurations allowing the configuration to be quickly changed and saved/recalled from hard disk. Controls for the tuner and demodulator are available on the same receiver window.



RF sweep mode



IF pan mode



Zero span mode; Magenta area measures pulse width

SMR-5550-02A

Microwave Receiver

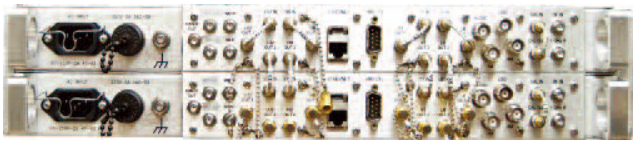
- 1–18 GHz tuning range
- Synthesized in 10 kHz steps
- High dynamic range
- Optimized for PCM/TDM and FM/FDM reception
- Selectable wideband IF outputs: 70/140/160 MHz standard
- Excellent BER performance
- 5 IF bandwidths for FM demodulation

This receiver has all the necessary features for reception of complex order, high data rate PCM/TDM and high-capacity FM/FDM communication signals. Its electrical design features low group delay distortion and low phase noise characteristics. These assure virtually error-free reception of digitally modulated signals over a wide dynamic range of received signal strength. The IF bandwidth at 70 MHz is 50 MHz, and the 140/160 MHz IF bandwidth is 80 MHz. A demodulated FM video output is provided along with the ability to select one of the five IF bandwidth filters: 5, 10, 15, 20 and 50 MHz (other bandwidths available).
The IF filters and FM discriminator are designed for high NPR performance for all high-capacity FM/FDM signal formats. All receiver functions are controllable from the front panel or via RS-232C serial interface.

SMR-5550f

Independent/ Dual-Channel Flexible Microwave Receiver

The SMR-5550f meets the need of two receivers to be field configured either as two independent receivers or a two-channel phase coherent subsystem. This enables the customer the flexibility to configure various systems with minimal hardware costs. Since the SMR-5550f is based on the SMR-5550i, the same high performance is delivered.



SMR-5550i
Microwave Receiver

- 0.5–20 GHz tuning range
- Compatible with FE-3820 Frequency Extender
- Synthesized tuning in 1 kHz steps
- Excellent phase noise performance (0.2˚ rms, typical)
- 1 GHz IF output, 100 MHz bandwidth
- Selectable 70/140/160 MHz IF outputs:
  Fixed gain wideband output
  Variable gain wideband output
  Variable gain, post filtered IF output
- AM, FM and LOG video and audio outputs
- 4 selectable IF bandwidths
- Ethernet 10/100BaseT, RS-232

OPTIONS
- Tuning range extension to 0.1 GHz (LBU)
- External preselector control port
- DC input power 12–28 Vdc
- 21.4 MHz IF output
- RS-422 control

The SMR-5550i meets the need for a low-cost, high-performance microwave receiver. The receiver offers all the necessary features for high data rate PCM/TDM reception while maintaining high pulse fidelity for RADAR interception. The SMR-5550i electrical design features the low group delay distortion, low phase noise characteristics and high dynamic range necessary in today's demanding signal environments. Through the use of state-of-the-art commercial components coupled with a high volume production line, the SMR-5550i sets a new standard for performance-to-cost value in microwave/mm wave signal reception.

Common faceplate for SMR-5000 family

SMR-5800
Extended Tuning Range Microwave Receiver

- 0.5–40 GHz tuning range
- 1U, 19-inch rack-mount chassis

OPTION
- Tuning range extension to 0.1 GHz (LBU)

The SMR-5800 meets the need for a low-cost, high-performance microwave receiver with extended tuning range. The SMR-5800 electrical design features the low group delay distortion, low phase noise characteristics and high dynamic range necessary in today's demanding signal environments. Through the use of state-of-the-art commercial components coupled with a high volume production line, the SMR-5800 sets a standard for performance-to-cost value in microwave signal reception. All receiver functions are controllable from the front panel, via Ethernet 10/100BaseT, or RS-232C serial interface.

SMR-7500
LiteRail Receiver

- Small size for portability
- Digitized IF output (I/Q)
- GPS-based time stamping of digitized data
- Integrated spectrum display monitor
- Ethernet and fiber optic interfaces

Continuing in the tradition of high-performance set-on microwave receivers, Cobham's SMR-7500 LiteRail Receiver family is a miniaturized, portable intercept and surveillance subsystem receiver. This receiver is designed to be used for the advanced narrowband and wideband signal targets in the emerging RF environment. The LiteRail can operate in an analog-only mode (RF-to-IF) with 70/140/160 MHz IFCF outputs with up to 100 MHz instantaneous bandwidth, with the option of a built-in digitizer for advanced signal processing. LiteRail is housed in a rugged chassis designed to operate in remote situations, UAV payload or manpack, and in harsh environments. Ideal for low power, size and weight applications (SWaP).

SMR-7500 Product Family Series

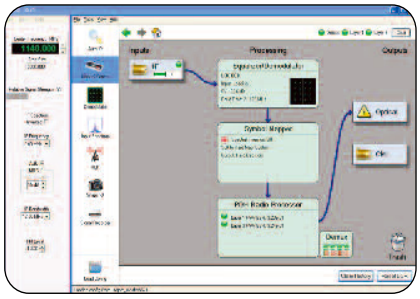
Model Number	Frequency Range (GHz)	Analog Output	Digital Output	Options	Additional Features
SMR-7510	0.8–9.6	140 MHz IFCF, 100 MHz BW	N/A	70/160 MHz IF, V/UHF FE	
SMR-7512	0.8–26.5	140 MHz IFCF, 100 MHz BW	N/A	70/160 MHz IF, V/UHF FE	
SMR-7514	0.8–40	140 MHz IFCF, 100 MHz BW	N/A	70/160 MHz IF, V/UHF FE	
SMR-7520	0.8–9.6	140 MHz IFCF, 100 MHz BW	FPDP, VITA-49	70/160 MHz IF, V/UHF FE, Expandable FPGA	Spectral Display GUI
SMR-7522	0.8–26.5	140 MHz IFCF, 100 MHz BW	FPDP, VITA-49	70/160 MHz IF, V/UHF FE, Expandable FPGA	Spectral Display GUI
SMR-7524	0.8–40	140 MHz IFCF, 100 MHz BW	FPDP, VITA-49	70/160 MHz IF, V/UHF FE, Expandable FPGA	Spectral Display GUI

Collection & Analysis Receivers

DRX-5571
Digital Receiver

- Combines microwave tuner, demodulator, and radio demultiplexer in a single integrated 1U unit
- Tunes 0.5–20 GHz (1 kHz tuning resolution)
- Microwave tuner based on field proven SMR-5550i design
- Demodulator uses 140 MHz IF up to 57 MHz bandwidth
- Demodulates QPSK and 16, 32, & 64-QAM (2 to 46 Mbaud) using field proven demodulator
- Includes waveform analysis (auto ID)
- 2 dedicated FPGAs for radio processing (decoding, descrambling, deframing and demultiplexing)
- Includes development kit for custom radio demultiplexing designs
- STM-1 optical & electrical outputs
- Narrowband IF and analog FM video outputs
- GUI with Ethernet control interface

The DRX-5571 is the latest addition to Cobham Sensor Systems' line of high-performance microwave set-on receivers. The proven RF-to-IF performance of the SMR-5550 series receivers is combined with FPGA-based demodulation and radio demultiplexing capability. This allows the receiver to process microwave signals having complex modulation and encoding schemes down to the underlying radio payload. Thus, the DRX-5571 provides a completely integrated system solution for performing capture, analysis, survey and collection of wideband digital radio RF signals.



DRX-5571 signal flow GUI

DRX-5571 demodulator GUI

DRX-5871
Compact Digital Receiver

- 0.5–18 GHz tuning range
- Small, compact form factor
- Extendable frequency range option
- External power outputs for ancillary products

The DRX-5871 Compact Digital Receiver is similar to Cobham's DRX-5571 in that it provides a completely integrated system solution for performing capture, analysis, survey and collection of wideband digital RF signals.

The DRX-5871 is ideally suited for the reception of signals using QPSK and QAM modulation. Phase noise, group delay, and gain linearity are all optimized to ensure maximum fidelity of the IF signal before demodulation. Various analog outputs are provided externally for system flexibility.

MCS-1000
Multi-Channel Digital Receiver

- Up to 8 phase coherent tuner channels
- Common LO distribution across channels
- Analog IF output of 160/140/70 MHz, user selectable
- Digital IF output via fibre (optional)
- 0.2˚ rms phase noise, typical
- Consistent phase difference between channels
- Ethernet 10/100BaseT remote control

The SMR-5550i-27 RF Tuner and the SMR-5550i-30 LO Distribution Source comprise up to an eight-channel, phase coherent system suitable for very accurate time-of-arrival (TOA) applications. Based on the extremely reliable SMR-5550i receiver tuner and oscillator sections, this system uses proven receiver technology to ensure optimum performance.

Evolving from the successful SMR-5550i receiver with its exceptionally low phase noise, MCS-1000 is optimized to deliver very stable signal phase between channels in a multi-channel system. A shared set of common LO sources, combined with a symmetric layout of LO and IF routing from RF components that are hand-picked for similar characteristics, yields minimal phase drift performance between channels.

Each tuner channel is controlled from RF tuner front panel inputs or via Ethernet inputs. Additionally, a GUI is provided that enables the LO distribution source to command all tuners, simultaneously, to the same radio frequency. A symmetric LO distribution system provides phase-accurate oscillator energy to each of the eight tuner channels.

The analog IF output center frequency is operator-selectable and may be 70, 140 or 160 MHz. The IF bandwidths are 50 MHz/70, 100 MHz/140, and 100 MHz/160. A 1-GHz IF having a bandwidth of 100 MHz is also available. Two-, four-, six- and eight-channel versions are available.

MCS-1000 8-channel version

TU-6401
VME Microwave Tuner

- Tunable input 0.5–18 GHz
- Outputs:
  1 GHz (500 MHz BW) IF
  160 MHz (100 MHz BW) IF
  Log video (160 MHz) IF
- High dynamic range
- Switched filter preselection
- Excellent phase noise
- Fast tuning
- External trigger input
- Single- or multi-channel frequency & amplitude coherent operation
- 6U, dual-slot VME configuration
- Ethernet (front panel) control

The TU-6401 VME Microwave Tuner is an ultra-high-performance wideband microwave tuner. The RF downconverter used in conjunction with the DDS synthesizer module creates a microwave tuner featuring low phase noise and extremely fast tuning speed. This technology uncouples tuning speed from phase noise creating the fastest and highest performance tuner on the market. All of these features are compressed into a 6U dual-slot VME design.

The TU-6401 is capable of tuning over the entire 0.5–18 GHz range providing both narrowband and wideband outputs. The simultaneous analog outputs of 100 MHz BW and 500 MHz BW are centered at 160 MHz and 1 GHz, respectively. The analog outputs are suitable for direct input into an external A/D converter for special signal processing, spectral analysis and pulse processing.

The TU-6401 functions for both single- and multi-channel (frequency and amplitude coherent) systems. This is accomplished using a self-contained LO distribution system. This feature makes the TU-6401 the tuner of choice for beamforming and direction finding systems, and for a wide range of scanning/acquisition ELINT and/or EW applications.

TU-6402
VME Microwave RF Converter

- 0.5–18 GHz tuning range
- Outputs:
  1 GHz (500 MHz BW) IF
  160 MHz (100 MHz BW) IF
  Log video (160 MHz) IF
- High dynamic range
- Switched filter preselection
- Excellent phase noise
- Fast tuning
- 6U, single-slot VME configuration

The TU-6402 VME Microwave RF Converter is the companion unit to the TU-6401 VME Microwave Tuner in a multi-channel system. LOs are provided by the TU-6401 Tuner and can be daisy-chained to additional TU-6402 RF Converter modules.

The TU-6402 is capable of tuning over the entire 0.5–18 GHz range providing both narrowband and wideband IF outputs. The simultaneous analog outputs of 100 MHz BW and 500 MHz BW are centered at 160 MHz and 1 GHz, respectively. The analog outputs are suitable for direct input into an external A/D converter for special signal processing, spectral analysis or pulse parameterization.

SC-6451
VME Signal Conditioner

- Input frequency range 0.5–18 GHz
- RF input attenuator
- RF blanking
- 2 TTL inputs for blanking control
- Pulse stretched audio
- 6U, single-slot VME configuration

The SC-6451provides RF input attenuation and RF blanking functions for the TU-6401 VME Microwave Tuner over its tuning range of 0.5–18 GHz. Additionally, it provides a pulse stretched audio output using log video from the TU-6401 as an input. These features are contained in a single-slot VME module.

All control signals for the SC-6451 originate in the system controller and are sent to the TU-6401 via Ethernet. The TU-6401 sends control signals to the SC-6451 via the auxiliary connector. The system controller software determines RF attenuator setting and audio output level.

The RF input signal is connected to the SC-6451 RF input and passes through the blanking module, the RF attenuator module, and then to the RF input of the TU-6401. Switching time to select any attenuator is <5 usecs and attenuation range is 0–60 dB in 10 dB steps.

RF blanking is triggered by an external TTL signal applied to either or both of two front panel inputs. These inputs are internally OR'd together and the polarity of each input is selected using front panel switches.

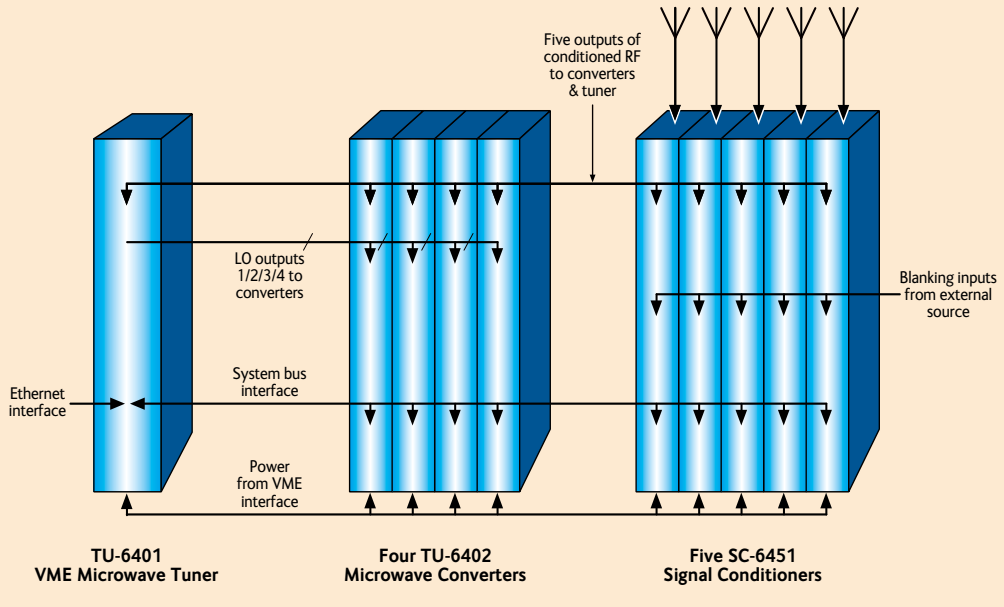
TU-6400 SYSTEM

VME Tuner System

The TU-6400 system is comprised of multiple SC-6451 Signal Conditioners, one TU-6401 Microwave Tuner and multiple TU-6402 Microwave Converters. For ELINT applications, the addition of the SC-6451 to the system includes RF input attenuation, RF blanking, pulse stretch, and audio functions. Command and control of the TU-6400 system is accomplished via Ethernet or VME inputs to the TU-6401. A System Bus is daisy-chained from the TU-6401 to each TU-6402 and SC-6451 for command and control of these components.

A system comprised of multiple SC-6451 Signal Conditioners, one TU-6401 Microwave Tuner and multiple TU-6402 Microwave Converters make this the system of choice for beamforming, direction finding, and for a wide range of scanning/acquisition ELINT and/or EW applications.

TU-6400 System Block Diagram



TU-6401 Master VME (or Ethernet) Tuner

- Single-channel VME microwave tuner
- Includes RF converter & synthesizer
- RF Input: 0.5–18 GHz
- Fixed gain IF outputs:
  1GHz IF / 500 MHz BW
  160 MHz IF / 100 MHz BW
  160 MHz log video output (20 MHz BW)
- 6U, dual-slot VME configuration
- Ethernet and/or VME control interface
- Includes Graphical User Interface package

TU-6402 Coherent Slave Tuners

- Referenced and controlled via TU-6401 Master Tuner
- RF Input: 0.5–18 GHz
- Fixed gain IF outputs:
  1 GHz IF / 500 MHz BW
  160 MHz IF / 100 MHz BW
- 6U, single-slot VME configuration

SC-6451 Signal Conditioners

- Referenced and controlled via TU-6401 Master Tuner
- Input frequency range 0.5–18 GHz
- RF input attenuator
- RF blanking
- 2 TTL inputs for blanking control
- Pulse stretched audio
- 6U, single-slot VME configuration

Frequency Extenders

FE-3820
Frequency Extender

- Companion unit to SMR-3822 and SMR-5550i Receivers
- Extended range (converted 2–18 GHz)
- Bypass input for 0.5–20 GHz
- Control modes
- Remote from companion receiver
- FE-3820 front panel
- Remote via Ethernet or RS-232/RS-422
- Low noise figure
- Low phase noise
- 2U, half-rack chassis
- Operates with other manufacturers' receivers

The FE-3820 Frequency Extender is designed for use with the SMR-5550 and SMR-3822 series receivers to provide extended frequency coverage to 40 GHz in addition to the coverage provided by the receiver. Many existing systems can use the FE-3820 with no added switches and minor cable changes. When the extended tuning range is not selected, a signal in the 0.5–20 GHz range is routed through the unit to the companion microwave tuner or receiver. This RF bypass feature allows the FE-3820 to operate transparently with other manufacturers' equipment. Separate RF inputs accept 18–26.5 and 26.5–40 GHz inputs which are converted to 2–18 GHz for the companion tuner.

LBU-2100
Low-Band Upconverter

- 100–500 MHz upconverter
- Bypass input for 0.5–20 GHz
- 25 MHz, minimum bandwidth
- RS-232/RS-422 interface
- Interfaces with other Cobham receivers (SMR-3822, SMR-5550i)

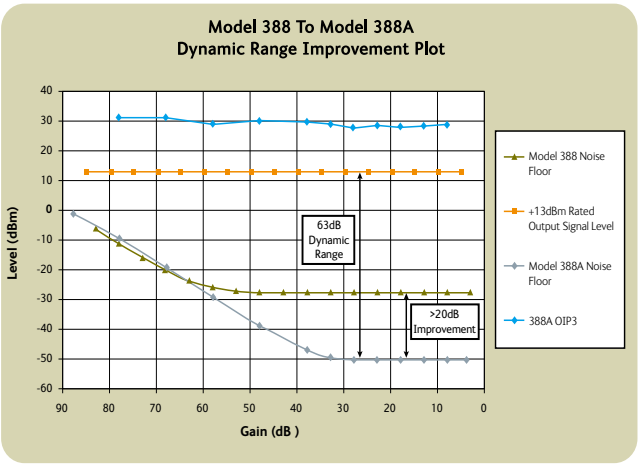
The LBU-2100 Low-Band Upconverter is designed to extend the tuning range of the SMR-3822 and the SMR-5550i receivers to below 0.5–0.1GHz.

The LBU-2100 has two RF inputs. The RF input is amplified, pre-selected and upconverted to a fixed frequency of 1.9 GHz for connection to the companion receiver. The second RF input is a bypass connection for 0.5–20 GHz that connects to the companion receiver through an amplifier and switch in the LBU-2100. The companion receiver controls the LBU via an RS-232 or RS-422 interface.

Model 388A
IF-to-Tape/Baseband Converter

- 3 fixed IF inputs
  21.4, 70, 160 MHz standard
- Variable frequency input 10–250 MHz
- Output bandwidths
  2, 4, 6, 8, 10, 20, 50, 80 MHz
- Variable output center frequency:
  100 kHz–80 MHz
- RS-232 control, optional Ethernet
- Group delay equalization
- Compact, half-rack package
- Over 20 dB improvement carrier-to-noise ratio over previous Model 388
- Selectable output level for compatibility with both analog & digital recorders

The Model 388A IF-to-Tape/Baseband Converter provides the features necessary to meet today's wide range of signal downconversion applications from conventional IF-to-tape conversion to high speed A/D signal recording. The unit offers maximum user flexibility and improved performance while maintaining a compact mechanical package.



Prospector PRO-8010
Frequency Converter

- Versatile DSP-based signal converter
- Up- or downconversion of DC to 50 MHz to any output frequency in the range of 100 kHz–200 MHz up to 50 MHz signal bandwidth
- 14-bit resolution
- Selectable digital filter bandwidth
  3 kHz–50 MHz
- Low group delay
- 1 kHz tuning resolution
- Ethernet control
- Single-channel operation

The PRO-8010 Frequency Converter is the first member of the Prospector family of DSP-based, signal processing products. Built on a flexible FPGA-based hardware platform the Prospector Frequency Converter offers the flexibility of all-digital frequency conversion and digital filtering, as well as the ability to incorporate software-based upgrades available in the future.

The Prospector PRO-8010 series converters are capable of processing signals with bandwidths as wide as 50 MHz, and have been tailored to meet the requirements of versatile frequency translation useful for post-processing and lab applications. Specifically, the PRO-8010 provides selectable upconversion, from baseband, of bandpass signals that have been stored on traditional analog or modern digital signal recorders. The signal is digitally frequency-translated to any standard IF frequency in the range of DC to 200 MHz. This includes the ability to downconvert input signals with frequency limited to 50 MHz, to an alternate frequency within the range of 100 kHz–50 MHz. A user-selectable digital filter converts only the signal within the bandwidth of interest and provides high rejection of adjacent signal energy.

Prospector PRO-8220

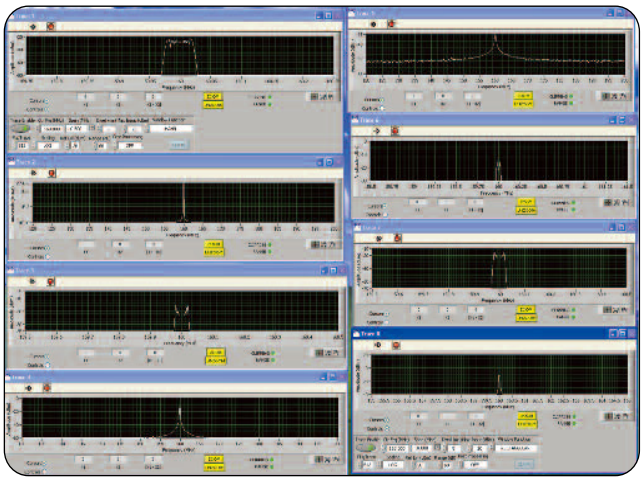
Remote Spectrum Display

- Remote IF/video display of up to 8 separate receivers
- 100 MHz maximum real-time signal bandwidth
- High sensitivity
- Dual 12-bit 213⅓ MS/s ADC
- Integrated anti-aliasing IF filters
- Selectable FFT size/resolution up to 4096 points
- Spectrum analyzer, spectrogram, and oscilloscope displays
- Optional dual-channel capability
- Optional digital I/Q outputs

The PRO-8220 is a member of the Prospector series of DSP-based signal processing products. Built on a high-performance FPGA-based hardware platform, the Prospector Remote Spectrum Display offers the performance benefits of an FFT-based real time spectrum analyzer, with the ability to incorporate software features and upgrades available in the future.

The PRO-8220 is designed to provide local or remote spectral display and analysis of up to eight separate receiver outputs. As an enhanced replacement for the Model 692R line of remote IF pan displays, the PRO-8220 can accept IF signal inputs as high as 200 MHz. Additionally, the PRO-8220 provides the capability to process up to 100 MHz of baseband or video signals, such as FDM or other post-detection signals, making it also a replacement for the Model 692B, 692B/DT and 695 products.

The PRO-8220 is intended for direct interface with HF, VHF/UHF and microwave receivers, and it includes variable gain preamplifiers to extend the sensitivity well beyond that of the A/D converter alone. The overall signal range extends from +20 dBm to below –90 dBm. Anti-aliasing filters ensure that spurious signal outputs from receivers, or harmonics generated from external preamplifiers, do not show up as signals.



8 channels of IF pan display

Operator & Maintenance Training

Cobham has consistently provided superior RF microwave products to the Signal Intelligence market for more than a half a century. The company has been long recognized as the provider of choice when it comes to RF microwave receivers.

Because we want to ensure our customers have a full understanding of the wide-range capabilities of our products, we offer comprehensive training for all the products we manufacture. Due to the complex nature of our product lines, Cobham offers extensive on-site training to all customers who purchase or use our robust, reliable SIGINT equipment. Cobham's training program is designed to enable individuals to maximize the capabilities of the SIGINT equipment and perform depot level maintenance.

To obtain more information about Cobham's training packages, contact us at sigintsales11@cobham.com.

Sustainment Services

At Cobham, we understand the importance of your equipment performing at its best–all the time for every mission. That is why, in addition to providing the most robust full-spectrum RF monitoring products, we provide reset, repair and rework services for our equipment as well as products manufactured by other industry companies.

With a combination of education and experience, Cobham has the skilled work force to rework, reset and repair sustainable products. Our technical professionals have over 100 years of combined experience in designing, developing and maintaining Electronic Warfare equipment. Cobham is a fully-functional repair facility offering extensive testing to ensure conformance of the repaired product to optimal specifications.

Cobham offers several types of sustainment packages dependent on the product. Please consult Cobham at sigintsales11@cobham.com for further information.

Cobham Sensor Systems

THE MOST TRUSTED PARTNER IN SIGNAL INTELLIGENCE PRODUCTS

Cobham Sensor Systems - Hunt Valley is a highly respected partner and an ISO certified manufacturer of RF microwave receivers, IF-to-baseband converters and peripheral equipment. Our electronic products are confidently used across the globe by the United States and her Allies. Cobham brings over fifty years of experience in the design and manufacture of microwave, millimeter wave and wideband RF technology. Our products are well known in the Signal Intelligence community for superior performance and reliability, and are deployable on an array of military platforms and used in various Electronic Warfare applications, such as Electronic Attack, Electronic Protection and Electronic Support missions.

In an ever-changing world, Cobham understands the importance of continuously staying ahead of EW threats by constantly pushing state-of-the-art technology. Because of this, we are able to deliver the finest microwave receivers and related equipment so that complex signals are clearly searched, intercepted, identified, collected and analyzed.

We provide to you in this catalog an impressive range of RF microwave products, ancillary equipment and software capabilities. In keeping with our standard of excellence, we also offer our expertise through sustainment and repair services and operator and maintenance training.

Please visit our website at **www.cobham.com/sensorsystems** to learn more about us and to request detailed data sheets on any of our products.

COBHAM

The most important thing we build is trust

佳昭企業有限公司
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