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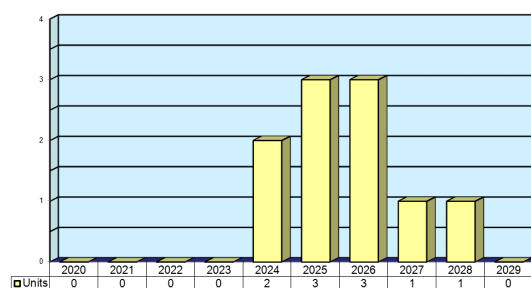
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Multichannel, Multiband Airborne Radio (MMAR)

Outlook

- Only a handful of units will be produced, allowing for production of spares
- If no further orders are announced, this report will be archived in 2021

Unit Production Forecast
2020-2029



Orientation

Description. The Multichannel, Multiband Airborne Radio (MMAR; also known as the ARC-6999) is a military airborne radio manufactured by Thales Defense & Security. The MMAR operates through a software-defined architecture, and is composed of two integrated PRC-148 JEM radio board sets compatible with the U.S. military's JTRS standard.

Status. Available for sale.

Application. The MMAR ARC-6999 is designed to equip aerostats, small aircraft, and UAVs.

Price Range. The MMAR is estimated to cost around \$55,000.

Sponsor

Thales Defense & Security Inc
22605 Gateway Center Dr
Clarksburg, MD 20871
Tel: +1 (240) 864-7000
Fax: +1 (240) 864-7920
Website: <http://www.thalesdsi.com>

Multichannel, Multiband Airborne Radio (MMAR)

Contractors

Prime

Thales Defense & Security Inc	http://www.thalesdsi.com , 22605 Gateway Center Dr, Clarksburg, MD 20871 United States, Tel: + 1 (240) 864-7000, Fax: + 1 (240) 864-7920, Email: Product.Support@thalesdsi.com , Prime
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Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Technical Data

Frequency Coverage

- VHF/UHF 30-512 MHZ continuous

Frequency Stability

- 1 ppm

Transmit Output Power per Channel

- ≤5 watts (Selectable)

Input Power

- 28 VDC per MIL-STD-704F

Receive Sensitivity

- -119 dBm typical (12 dB SINAD)

Presets

- 256 programmable presets per channel

Supports the Following Current and Future Joint Tactical Radio System Enhanced Multiband Inter/Intra Team Radio (JEM) Voice and Data Waveforms:

- AM/FM line-of-sight
- SINCGARS ESIP/FH2
- ANDVT (LPC-10/MELP)
- Retransmission/Crossband
- MIL-STD-188-181C 56 kbps
- Satcom Integrated Waveform
MIL-STD-188-182B / -183B
- APCO Project 25 – Public Safety/LMR
- Emergency beacon
- Blue Force Tracking
- Embedded reprogrammable INFOSEC:

- NSA Type 1 certified (KOV-1482)
- Interoperable with KY-57/KY-58, KYV-5, KY-99A/KY-100, KG-84 A/C
- AES/DES secure

Interfaces

- Command/Control: Ethernet or Serial
- Audio interface to CDL: VoIP or analog
- GPS interface
- Ethernet/IP interfaces with fully supported VoIP/RoIP
- Supports 20-W external amplifier for each channel

Physical Parameters

- Size: 5.0" (12.7 cm) W x 5.6" (14.2 cm) H x 9.4" (23.9 cm) D
- Weight: 7 lb

EMI/TEMPEST

- EMI per MIL-STD-461F
- TEMPEST per NSTISSAM 2-95

Meets Environmental Specifications – MIL-STD-810F – for the following:

- Altitude to 70,000 feet
- Temp operating: -40°C to +60°C
- Vibration
- Functional shock
- Crash hazard shock
- Flammability
- Windblown dust

Multichannel, Multiband Airborne Radio (MMAR)

- Drip
- Acceleration
- Salt fog
- Explosive atmosphere

The Multichannel, Multiband Airborne Radio repackages two PRC-148 JTRS (Joint Tactical Radio System) Enhanced Multiband Inter/Intra Team Radios (JEMs) into an airborne-qualified Air Transport Radio type of enclosure specifically targeted at airborne VHF/UHF communications/relay payload applications.

The MMAR supports dual independent radios or transmission with cross-banding configuration. With integrated co-site filtering, the MMAR is uniquely suited to reduce interference from other emitters on the platform. With its integrated IP (Internet Protocol) / VoIP (Voice over Internet Protocol) capability, it is able

- Fungus/mold growth
- Fluid contamination
- Humidity
- Unpressurized cargo

to easily integrate into airborne networks, allowing for remote command and control via the MMAR's "hosted Web paged" graphic user interface (GUI), according to the manufacturer.

The company says the tough design of the MMAR meets the environmental extremes of unmanned aircraft system (UAS) platforms. The company also says the MMAR retains a small size and low weight and power, providing excellent support to a range of operations that include aerostat, high-altitude long-endurance (HALE), extended-range/multipurpose (ER/MP), and other tactical unmanned airborne missions.



The Multichannel, Multiband Airborne Radio (MMAR) / ARC-6999

Source: Thales

Multichannel, Multiband Airborne Radio (MMAR)

Program Review

The Multichannel, Multiband Airborne Radio (also known as the ARC-6999) was initially displayed at the Association of the United States Army (AUSA) Annual Meeting in October 2009.

In April 2010, the MMAR took part in the U.S. Air Force's Joint Expeditionary Force Experiment (JEFX) 2010 held at the Nevada Test and Training Range (NTTR), Nellis Air Force Base. For JEFX 10, the MMARs were installed in aircraft and supported ground communications testing during the period of April 9-22 and flight communications testing during the period of April 14-22.

During the JEFX 10 operational testing, the MMARs provided networked secure communications relay and range extension from ground operators at the NTTR to Operations Center personnel at Nellis AFB and remote locations at beyond line-of-sight distances. According to Thales Communications, the MMARs successfully supported all of the intended communications operational threads. The constrained scenarios included

flights up to 20,000 feet and link distances of up to 40 miles.

In the summer of 2010, Thales Communications announced that it had supplied MMARs to Ultra Electronics in support of that company's Tactical Communications Suite (TCS) for unmanned aerial systems under a contract from the U.S. Air Force Electronic Systems Center (USAF ESC).

The most recent news on this program was a posting by the U.S. Air Force on the Federal Business Opportunities website of a Notice of Intent to award a sole-source contract to Thales Communications to produce MMARs and deliver them to the USAF's Quick Reaction Capabilities/Tactical Data Networks (QRC/TDN) laboratory. One month later, the Air Force released a Justification for Other than Full and Open Competition that provided the details of the Notice of Intent. Under the justification, the Air Force intended to purchase two MMARs from Thales Communications for the USAF's QRC/TDN laboratory.

Funding

No U.S. funding is currently allocated to the MMAR program.

Contracts/Orders & Options

<u>Contractor</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
Thales Communications	Less than 0.1	Jun/Jul 2011 – Sole-source contract from the U.S. Air Force to produce MMARs and deliver them to the USAF's QRC/TDN laboratory. The Air Force issued a Justification for Other than Full and Open Competition that says it specifically intends to purchase two MMARs, software applications/protocols, and associated equipment (cables, connectors, etc.).

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Oct	2009	MMAR publicly displayed for the first time at the AUSA Annual Meeting
Apr	2010	MMAR participates in the U.S. Air Force's JEFX 2010
Summer	2010	Thales Communications supplies MMARs to Ultra Electronics in support of that company's TCS for UAS platforms under a contract from the USAF ESC
Summer	2011	USAF issues Notice of Intent to award a sole-source contract to Thales Communications to produce MMARs and deliver them to the Air Force's QRC/TDN laboratory

Multichannel, Multiband Airborne Radio (MMAR)

Worldwide Distribution/Inventories

The U.S. Air Force is believed to be using the Multichannel, Multiband Airborne Radio.

Forecast Rationale

The Multichannel, Multiband Airborne Radio (MMAR; also known as the ARC-6999) is a military airborne radio manufactured by Thales Defense & Security (formerly Thales Communications). It is an adaptation of the company's PRC-148 JEM that integrates two of that handheld radio's boards into an airborne package that is compatible with the U.S. military's JTRS standard.

No further large-scale orders for the MMAR are expected, as the radio has largely been surpassed in technology by newer systems. Although the radio is software-defined, newer hardware options will prove to be more alluring to customers that may have considered the MMAR for their aircraft.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
Designation or Program		High Confidence					Good Confidence			Speculative		
	Thru 2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Thales Defense & Security Inc												
Multichannel, Multiband Airborne Radio (MMAR) <> United States <> Department of Defense												
	0	0	0	0	0	1	2	1	0	1	0	5
Multichannel, Multiband Airborne Radio (MMAR) <> Worldwide <> Department of Defense												
	0	0	0	0	0	1	1	2	1	0	0	5
Subtotal	0	0	0	0	0	2	3	3	1	1	0	10
Total	0	0	0	0	0	2	3	3	1	1	0	10