Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force											Date: March 2023	
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 1206431SF *I Advanced EHF MILSATCOM (SPACE)*							
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
Total Program Element	-	39.217	11.651	4.068	0.000	4.068	1.018	1.021	1.042	1.080	Continuing	Continuing
657104: *MILSATCOM Space Modernization Initiative (SMI)*	-	39.217	11.651	4.068	0.000	4.068	1.018	1.021	1.042	1.080	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Space Modernization Initiative (SMI) evolves current and future SATCOM systems to develop a more affordable and resilient integrated enterprise capable of meeting near-term and emerging requirements. Under this construct, SMI includes the Capabilities Insertion Program (CIP) to enhance the current Advanced Extremely High Frequency (AEHF) constellation and protected communications performance to improve system operational resiliency. Additionally, SMI will demonstrate technologies and Concepts of Operations (CONOPS) supporting the Protected Anti-jam Tactical SATCOM (PATS) family-of-systems capability that provides tactical-level military SATCOM (MILSATCOM) users protected, anti-jam SATCOM while operating in a contested environment. PATS is an integrated approach that includes the Protected Tactical Satellite Communications (PTS) and Protected Tactical Enterprise Service (PTES) programs to mitigate adversarial jamming effects by using the Protected Tactical Waveform (PTW). For this effort, SMI includes the Air Force - Army Anti-Jam Modem (A3M) to develop PTW-capable modems, providing high throughput and enhanced anti-jam capability in benign and contested environments. Finally, Global Broadcast Service (GBS) functionality will be added to the PATS modems. GBS implements a worldwide high-capacity satellite broadcast information system to provide a continuous, one-way, high-speed, high-volume flow of classified and unclassified intelligence products (full motion video, imagery, data) to garrisoned, deployed or moving forces. FY 2022 was the final year of funding for CIP and A3M. FY 2024 funding continues the GBS effort.

Space acquisition must respond with speed and agility to pacing and emerging adversary threats. Space Systems Command (SSC) has transformed the organization and implementation of space acquisition to an enterprise approach, to increase innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SSC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose existing capabilities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver AEHF and SMI capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392SF and 1206398SF.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 1206431SF *I Advanced EHF MILSATCOM (SPACE)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	26.942	11.701	4.077	0.000	4.077
Current President's Budget	39.217	11.651	4.068	0.000	4.068
Total Adjustments	12.275	-0.050	-0.009	0.000	-0.009
• Congressional General Reductions	0.000	-0.050			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	13.202	0.000			
• SBIR/STTR Transfer	-0.927	0.000			
• Other Adjustments	0.000	0.000	-0.009	0.000	-0.009

Change Summary Explanation

FY 2022: 13.202; program increase to complete A3M development.
FY 2023: -0.050M Congressional General Reduction
FY 2024: -0.027M; to realign funding to APPN 3410, PE 1207804SF, for fiscal policy compliance as Space Systems Command (SSC) establishes Headquarters functions and a Chief Information Office (CIO) for integrated cybersecurity
FY 2024: +0.018M; Inflation

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Capabilities Insertion Program (CIP)	11.846	0.000	0.000

Description: Develop software that will increase the current AEHF constellation and Protected Communications capabilities, broaden overall user base, and accommodate a larger user population through improved resource utilization efficiencies. Develop modifications that will improve the Protected mission operational resiliency. Develop software to increase current AEHF terminal data rates with adaptive coding algorithms. Invest in technology demonstrations that improve the operational mission resiliency and effectiveness for all protected capabilities, which include, but are not limited to, W/V Frequency utility assessments and demonstrations, Operational Resiliency Phase 2 (OR 2/2B), Mission Planning Element (MPE) 8.4, and Cyber Defense-in-depth.

FY 2023 Plans:
NA

FY 2024 Plans:
NA

FY 2023 to FY 2024 Increase/Decrease Statement:

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
N/A. FY 2022 was the final year of funding for W/V frequency utilization demonstration to determine the utility of W and V frequency bands to support future MILSATCOM requirements.			
Title: Air Force - Army Anti-Jam Modem (A3M) ***Description:*** The A3M will develop PTW modems that meet all environmental, integration, and mission requirements for the Satellite Transportable Terminal (STT), Ground Multi-band Terminal (GMT), and other Combat Communications tactical users. A3M development includes integration and testing of production evaluation (pre-production) modems, development of operator training materials, fielding, and sustainment planning. A3M is dependent on the Protected Tactical Enterprise Service (PTES) development and delivery of a production representative ground hub to connect to and perform an Operational Assessment (OA) of the pre-production modems to inform the Milestone C production decision. A3M pre-production modems are 100% production-ready and support PTES Minimum Viable Product (MVP) goals. A3M OA testing reduces risk for the PTES Multi-service Operational Test and Evaluation (MOT&E) for initial operating capability (IOC). ***FY 2023 Plans:*** NA ***FY 2024 Plans:*** NA ***FY 2023 to FY 2024 Increase/Decrease Statement:*** NA. FY 2022 is the final year of funding.	27.371	0.000	0.000
Title: Global Broadcast Service (GBS) ***Description:*** GBS continues A3M efforts towards meeting integration and mission requirements for Combat Communications users. This includes completing A3M software/firmware updates and integrating the modem into the GBS receive suites, which will allow the modem to be compatible with the GBS legacy broadcast. This ensures the 2,000+ worldwide GBS users continue to have access to continuous, one-way, high-speed, high-volume flow of classified and unclassified intelligence products (full motion video, imagery, data, weather, etc.) during the 5-year fielding timeline. Upon fielding completion, GBS users will transition to a PATS broadcast. This will fulfill the GBS TRANSEC requirement in the GBS JORD-III (2005) and Committee on National Security Systems (CNSS) Policy No. 12/CNSS Instruction No.1200. This solution also supports the Chief Space Operations' SATCOM Vision for improved resiliency and agility. ***FY 2023 Plans:*** Begin A3M software/firmware updates through one of the current A3M Block I Development vendors to add GBS legacy broadcast compatibility. Funding will also integrate A3M with GBS receive suites (physical integration, technical order updates, training package updates, software updates, etc.). Start Satellite Broadcast Manager (SBM) architecture updates for PATS compatibility.	0.000	11.651	4.068

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Perform initial test activities to include planning and acquisition of test assets. Rapidly respond to implement system resiliency necessary to operate in the contested space domain. Activities include, but are not limited to, program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2024 Plans:*** Continue A3M software/firmware updates through one of the current A3M Block I Development vendors to add GBS legacy broadcast compatibility. Funding will also integrate A3M with GBS receive suites (physical integration, technical order updates, training package updates, software updates, etc.). Continue SBM architecture updates for PATS compatibility. Continue initial test activities to include planning and acquisition of test assets. Rapidly respond to implement system resiliency necessary to operate in the contested space domain. Activities include, but are not limited to, program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 funds decreased to transition the efforts from development to integration of the A3M modem providing PTW capability with GBS receive suites.			
Accomplishments/Planned Programs Subtotals	39.217	11.651	4.068

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• SPSF 01 MILSAT: *MILSATCOM*	13.927	17.338	23.703	-	23.703	22.165	4.640	4.762	-	0.000	86.535

Remarks

The MILSATCOM Procurement Space Force (PSF) funds the production costs of the A3M for GBS.

The above costs reflect the GBS and PTW Modem line item totals (omitting the AFWET line item costs) of the 3022F: Procurement, Space Force MILSAT / MILSATCOM document.

E. Acquisition Strategy

A3M is an ACAT III program and is a joint effort between SSC and the Program Manager (PM) Tactical Networks (TN), Aberdeen Proving Ground (APG), to develop a common modem for the United States Air Force Global Multi-band Terminal (GMT) and United States Army Satellite Transportable Terminal (STT).

The Space Force will utilize existing contracts for all updates necessary. Those contracts are: A3M Block I Development contracts for software/firmware updates; GBS receive suite contracts for terminal integration; GBS architecture sustaining engineering contract for SBM updates; and an existing service level agreement with the 520th Software Engineering Squadron (SWES) for receive suite and SBM software updates. Within the CIP effort, the W/V-band Satellite Communication Experiment

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
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Transponder (WSCE-T) program's W/V frequency utilization demonstration was a cost-shared venture between the Program Office and the Air Force Research Laboratory (AFRL).

Leveraging similar mission and environmental requirements enables selection of the high water mark requirements to meet both mission parameters with greater efficiency while reducing risk and lifecycle cost. A3M leverages the PTS Field Demonstration technology maturation resulting in a low-risk development effort delivering pre-production modems with 100% production-ready components. This will include certified End Cryptographic Units (ECUs) for full-scope operational and cyber testing, operator and maintainer training materials, and all required intellectual property rights and provisioning documentation to enable swift terminal modification for operational use and sustainment. The development phase will deliver pre-production PTW-capable modems ready for "build-to-print" production. Blended developmental and operational testing is expected to include full environmental, blue, and red team testing prior to the production decision.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force			Date: March 2023
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206431SF / *Advanced EHF MILSATCOM (SPACE)*	**Project (Number/Name)** 657104 / *MILSATCOM Space Modernization Initiative (SMI)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CIP - W/V Frequency Utilization Demonstration	MIPR	AFRL : Various	-	8.554	Jan 2022	-		-		-		-	0.000	8.554	-
A3M PTW Modem Development	C/CPAF	Various : Various	-	26.964	Nov 2021	-		-		-		-	0.000	26.964	-
GBS-A3M Software/ Firmware Design Changes	C/CPFF	Various : Various	-	0.000		8.701	May 2023	1.500	Nov 2023	-		1.500	Continuing	Continuing	-
GBS Receive Suite Integration	C/Various	Various : Various	-	0.000		0.673	May 2023	2.355	Oct 2023	-		2.355	Continuing	Continuing	-
SBIR/STTR	Various	Various : Various	-	-		-		0.142	Mar 2024	-		0.142	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace : El Segundo, CA	-	2.627	Nov 2021	-		-		-		-	0.000	2.627	-
Enterprise SE&I	C/CPAF	Linquest : Los Angeles, CA	-	0.650	Nov 2021	0.600	May 2023	-		-		-	0.000	1.250	-
		Subtotal	-	38.795		9.974		3.997		-		3.997	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GBS DT/IT/OT Resources	Various	Peterson / Schriever SFB : CO Springs, CO	-	-		1.500	Jun 2023	-		-		-	Continuing	Continuing	-
		Subtotal	-	-		1.500		-		-		-	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
A&AS	Various	Various : Various	-	0.299	Oct 2021	0.177	Apr 2023	0.053	Jan 2024	-		0.053	Continuing	Continuing	-
Other Support	Various	Various : Various	-	0.123	Oct 2021	-		0.018		-		0.018	Continuing	Continuing	-
		Subtotal	-	0.422		0.177		0.071		-		0.071	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force			Date: March 2023
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	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	39.217		11.651		4.068		-		4.068	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
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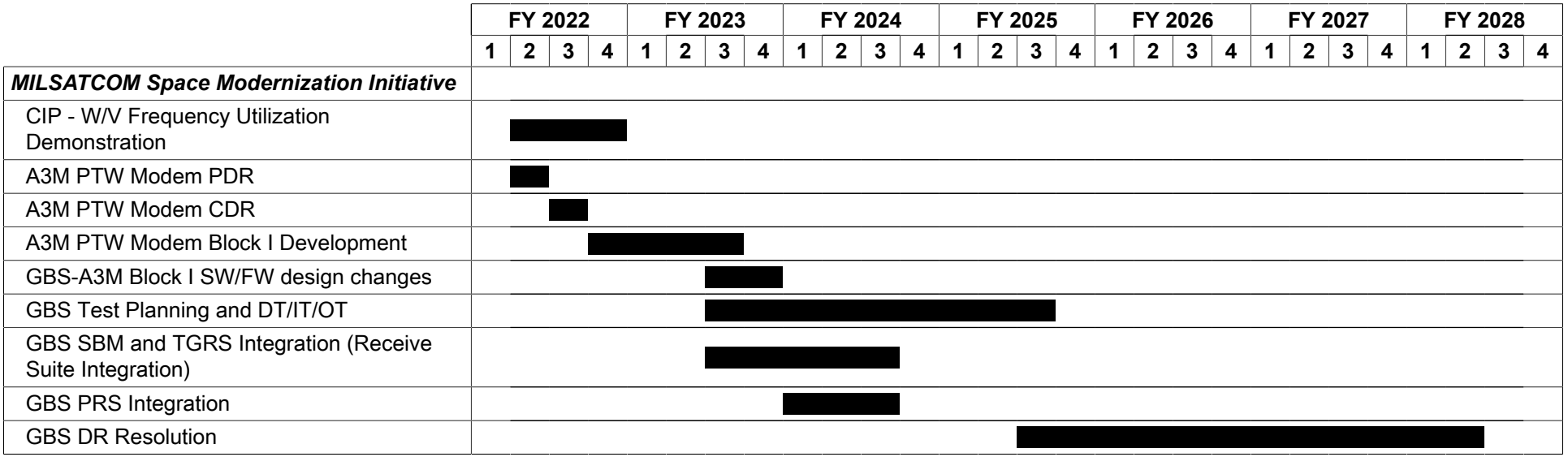

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 5	**R-1 Program Element (Number/Name)** PE 1206431SF / *Advanced EHF MILSATCOM (SPACE)*	**Project (Number/Name)** 657104 / *MILSATCOM Space Modernization Initiative (SMI)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MILSATCOM Space Modernization Initiative				
CIP - W/V Frequency Utilization Demonstration	2	2022	4	2022
A3M PTW Modem PDR	2	2022	2	2022
A3M PTW Modem CDR	3	2022	3	2022
A3M PTW Modem Block I Development	4	2022	3	2023
GBS-A3M Block I SW/FW design changes	3	2023	4	2023
GBS Test Planning and DT/IT/OT	3	2023	3	2025
GBS SBM and TGRS Integration (Receive Suite Integration)	3	2023	3	2024
GBS PRS Integration	1	2024	3	2024
GBS DR Resolution	3	2025	2	2028