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**Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	20.511	28.741	4.497	-	4.497	4.409	4.493	3.561	3.664	0.000	69.876
FA1: <i>Manpack Radio</i>	-	9.754	17.690	3.053	-	3.053	2.918	2.979	2.013	1.997	0.000	40.404
FA2: <i>Rifleman Radio (RR)</i>	-	10.757	11.051	1.444	-	1.444	1.491	1.514	1.548	1.667	0.000	29.472

**A. Mission Description and Budget Item Justification**

This funding line is directly aligned to the Army Network Modernization Priority. This effort supports the Army Network Modernization Strategy Line of Effort 1, Unified Network.

Tactical Network Radio Systems (Low-Tier) provide both Classified and Unclassified communications. The radios provide the Single Channel Ground and Airborne Radio System (SINCGARS) waveform for Classified and Unclassified communications. They also provide advanced networking waveforms (e.g. TrellisWare TSM) that provide Secure but Unclassified (SBU) communications. The Manpack (MP) radio provides the Mobile User Objective System (MUOS) waveform for Tactical Satellite communications.

The Handheld, Manpack, and Small Form Fit (HMS) radio program is a single Acquisition Category 1C program encompassing handheld radios and manpack radios. Handheld radio variants include the legacy single-channel Rifleman Radio (RR), single-channel Single Channel Data Radio (SCDR), and two-channel Leader Radio (LR). The manpack variants include the legacy Generation 1 Manpack, and the current Generation 2 Manpack. HMS provides voice and data communication to the expeditionary Warfighter with an on-the-move, at-the-halt, and stationary Line of Sight (LOS)/Beyond Line of Sight (BLOS) capability for both dismounted personnel and platforms. HMS radio systems are software reprogrammable, networkable, multi-mode systems capable of simultaneous voice and data communication. HMS radios supports a variety of other platforms, including tactical End User Devices (EUD) voice and data needs. HMS provides tailorable and scalable, software-defined radio systems meeting U.S. Army, Air Force, Navy, Marine Corps and Special Operations Command communications needs.

FY2019 - FY2022 RDT&E funds supported Integrated Tactical Network (ITN) testing and evaluation, of which HMS is a key component, in addition to HMS Program of Record (PoR) test events. The HMS radio systems serve as the backbone of the ITN architecture, supporting a converged Mission Command network. The ITN tests supported mature system development, integration, and demonstration in support of ITN evaluation to include: concept refinement, characterization, data collection, demos, integrated testing, and operational assessments. The ITN is a warfighter-enabling System of Systems comprised of key networking components including HMS PoR radio systems, advanced high capacity commercial radios, commercial phone technologies, and advanced radio-application gateway integration and interoperability technologies. These ITN technologies increase transport options and support a converged Mission Command network. The ITN introduces a new SBU security domain enhancing Mission Partner interoperability and significantly reducing key distribution and other security-related burdens for the Soldier at lower echelons. Starting in FY 2023, ITN funds have been realigned to PE 0605236A, CQ1.

HMS completed Initial Operational Test and Evaluation (IOT&E) during January 2021. Following the IOT&E test event, HMS outlined specific actions required to resolve test findings from the IOT&E event. FY2023 and beyond RDT&E funding supports testing activities including laboratory technical testing, Performance Verification Tests

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<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>
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(PVTs), and Operational User Assessments (OUAs). Each of these events provides both technical and operational user feedback on increased capabilities, future waveform incorporation, soldier usability, and life-cycle sustainment improvements.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
Previous President's Budget	20.511	28.849	0.000	-	0.000
Current President's Budget	20.511	28.741	4.497	-	4.497
Total Adjustments	0.000	-0.108	4.497	-	4.497
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	4.497	-	4.497
• FFRDC Transfer	-	-0.108	-	-	-

**Change Summary Explanation**

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>				<b>Project (Number/Name)</b> FA1 / <i>Manpack Radio</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
FA1: <i>Manpack Radio</i>	-	9.754	17.690	3.053	-	3.053	2.918	2.979	2.013	1.997	0.000	40.404
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

This funding line is directly aligned to the Army Network Cross Functional Team. This effort supports the Army Network Modernization Strategy Line of Effort 1, Unified Network.

MP radios provide both Classified and Unclassified communications. MP radios provide the Single Channel Ground and Airborne Radio System (SINGARS) waveform for Classified and Unclassified communications. MP radios also provide advanced waveforms (e.g. TrellisWare TSM) that provide SBU communications. The MP radio provides the Mobile User Objective System (MUOS) waveform for Tactical Satellite communications. The HMS program received a positive Full Rate Production (FRP) decision in 2021 and plans to host two PVTs annually to verify vendor enhancements.

The Handheld, Manpack, and Small Form Fit (HMS) radio systems serve as the backbone of the Integrated Tactical Network (ITN) architecture, supporting a converged Mission Command network. FY2019 - FY2022 RDT&E funds supported ITN testing and evaluation, of which HMS is a key component, in addition to HMS Program of Record (PoR) test events. The ITN tests supported mature system development, integration, and demonstration in support of ITN evaluation to include: concept refinement, characterization, data collection, demos, integrated testing, and operational assessments. The ITN is a warfighter-enabling System of Systems comprised of key networking components including HMS PoR radio systems, advanced high capacity commercial radios, commercial phone technologies, and advanced radio-application gateway integration and interoperability technologies. These ITN technologies increase transport options and support a converged Mission Command network. The ITN introduces a new Secure But Unclassified (SBU) security domain enhancing Mission Partner interoperability and significantly reducing key distribution and other security-related burdens for the Soldier at lower echelons. Starting in FY 2023, ITN funds have been realigned to PE 0605236A, CQ1.

HMS completed Initial Operational Test and Evaluation (IOT&E) during January 2021. Following the IOT&E test event, HMS outlined specific actions required to resolve test findings from the IOT&E event. FY2023 and beyond RDT&E funding supports testing activities including laboratory technical testing, Performance Verification Tests (PVTs), and Operational User Assessments (OUAs). Each of these events provides both technical and operational user feedback on increased capabilities, future waveform incorporation, soldier usability, and life-cycle sustainment improvements.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> Program Management	2.262	1.158	0.118
<b>Description:</b> Program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning and Integrated Product Team meetings.			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<p><b><i>FY 2022 Plans:</i></b> FY22 funds will provide overall management and oversight to implement HMS acquisition strategy and ITN evaluation - to include Matrix and Contractor support.</p> <p><b><i>FY 2023 Plans:</i></b> FY 2023 funds will provide overall management and oversight to implement HMS acquisition strategy - to include Matrix and Contractor support.</p> <p><b><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i></b> Funds decreased from FY 2022 to FY 2023 due to ITN funds realigned out of FA1.</p>				
<p><b><i>Title:</i></b> HMS Engineering/Technical Support</p> <p><b><i>Description:</i></b> Overall technical analysis support to PdM HMS' Manpack and ITN products.</p> <p><b><i>FY 2022 Plans:</i></b> FY 2022 funds will provide technical systems engineering support to evaluate technical alternatives and perform communication architecture analysis to identify alternatives to reduce cost, improve performance, and achieve tactical radio objectives. Funds will facilitate technical test support for candidate products utilized within ITN's iterative evaluation and capability implementation strategy to include MP.</p> <p><b><i>FY 2023 Plans:</i></b> FY 2023 funds will provide technical systems engineering support to evaluate technical alternatives and perform communication architecture analysis to identify alternatives to reduce cost, improve performance, and achieve tactical radio objectives.</p> <p><b><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i></b> Funds decreased from FY 2022 to FY 2023 due to ITN funds realigned out of FA1.</p>		3.866	3.123	1.768
<p><b><i>Title:</i></b> Test and Evaluation</p> <p><b><i>Description:</i></b> Manpack's Test and Evaluation focuses on the key technical and operational characteristics of the system: Radio Frequency performance, security, Reliability, Availability &amp; Maintainability, suitability and survivability requirements, in addition to operational environmental performance requirements as per the Capability Production Document. Results from OT will facilitate the delivery orders for Full Rate Production and inform any required delta testing. HMS funding supports delta testing and Performance Verification Tests (PVTs).</p>		3.626	12.761	1.167

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
HMS also supports ITN's iterative evaluation and capability implementation strategy. HMS System of Systems product qualification testing (SoS PQT) included interoperability with the ITN evaluating and demonstrating the efficacy of the ITN Variable Height Antenna (VHA) and Tactical Radio Integration Kit (TRIK) components in expansion of HMS radio range and function.			
<b>FY 2022 Plans:</b> The FY 2022 funding will facilitate testing for HMS delta testing and candidate products utilized within ITN's iterative evaluation and capability implementation strategy to include MP.			
<b>FY 2023 Plans:</b> FY 2023 Research Development Test & Evaluation (RDT&E) funding supports HMS delta testing, Performance Verification Tests (PVTs), examination of modular and open system architectures to decrease future integration and waveform porting costs.			
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funds decreased from FY 2022 to FY 2023 due to ITN funds realigned out of FA1.			
<b>Title:</b> SBIR/STTR Transfer	-	0.648	-
<b>FY 2022 Plans:</b> Funding transferred in accordance with Title 15 USC ?638			
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC ?638			
<b>Accomplishments/Planned Programs Subtotals</b>	9.754	17.690	3.053

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• FA2: <i>Rifleman Radio (RR)</i>	10.757	11.051	1.444	-	1.444	1.491	1.514	1.548	1.667	0.000	29.472
• B95004: <i>Handheld Manpack Small Form Fit (HMS)</i>	547.148	724.099	728.366	-	728.366	905.517	804.072	818.258	826.234	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**  
MP Radio is currently executing a May 2014 approved acquisition strategy to procure Non-Developmental Items (NDI). Utilizing a full and open competition strategy, the MP base contract was awarded to all potential industry partners. The MP contract was awarded on 26 February 2016, and procures NDI MP radios for use in a classified environment. As laid out in the Acquisition Strategy, these candidate NDI radios will need to demonstrate through testing, compliance with program

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<p>requirements; assess effectiveness, suitability, and survivability; to obtain material release for Full Rate Production (FRP). The MP is currently capable of running the following waveforms: Single Channel Ground and Airborne Radio System (SINCGARS), Warrior Robust Enhanced Network (WREN) TSM, as well as legacy Satellite Communications (SATCOM) and the modernized, Navy managed Mobile User Objective System (MUOS) TACSAT waveform.</p> <p>In 2023, HMS will begin the process of conducting a re-compete of the existing MP IDIQ contract in support of an FY25 award. The re-compete will include upgrades to the base contract including specific sustainment requirements, updated quantity pricing schedules, and other lessons-learned from the previous ID/IQ.</p> <p>On 14 May 2019, the ITN gained approval from the Army Acquisition Executive to execute via the Middle Tier of Acquisition (MTA) Rapid Prototyping pathway. The ITN Rapid Prototyping MTA approach provides for the use of innovative technologies to rapidly develop fieldable prototypes to demonstrate new capabilities and meet emerging military needs. The ITN acquisition approach is based on integration of Commercial-Off-The-Shelf (COTS), Non-Developmental Item (NDI), and Government-Off-The-Shelf (GOTS) components. The accelerated schedule for the procurement of experimentation equipment was directed by the Army and driven by the ITN Directed Requirement (DR). Contract execution for ITN Non-POR equipment is being leveraged from existing indefinite delivery indefinite quantity (IDIQ) contracts. All contracts are competitive awards using FAR approved contracting vehicles, such as DLA, CHS, NASA SEWP, GSA (IDIQ) or direct contracts that have been established after a market survey has been completed. In FY 2023 and out, this funding transitions to PE 0605236A, CQ1.</p>		

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Sys tems (Low-Tier)</i>	<b>Project (Number/Name)</b> FA1 / <i>Manpack Radio</i>
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<b>Management Services (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Project Management Office Support	Various	PEO C3T & CECOM : Various; APG, MD	1.764	1.456		1.158		0.118		-		0.118	0.000	4.496	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.648		-		-		-	0.000	0.648	-
<b>Subtotal</b>			1.764	1.456		1.806		0.118		-		0.118	0.000	5.144	N/A

<b>Support (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering/Technical Support	Various	PEO C3T, ARL, C5ISR, & ATC : Various	15.926	4.672		3.123		1.768		-		1.768	0.000	25.489	-
<b>Subtotal</b>			15.926	4.672		3.123		1.768		-		1.768	0.000	25.489	N/A









<b>Test and Evaluation (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Follow on Delta Development & Testing	Various	EPG : Ft. Huachuca	2.447	1.651		1.556		1.167		-		1.167	0.000	6.821	-
Follow on Delta Development & Testing (2)	Various	OTC : Various	14.054	-		-		-		-		-	0.000	14.054	-
ITN Testing	Various	Various : TBD	1.709	1.975		11.205		-		-		-	0.000	14.889	-
<b>Subtotal</b>			18.210	3.626		12.761		1.167		-		1.167	0.000	35.764	N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
<b>Project Cost Totals</b>		35.900	9.754	17.690	3.053	-	3.053	0.000	66.397	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2023 Army</b>		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	<b>Project (Number/Name)</b> FA1 / <i>Manpack Radio</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Operational Test (OT)	 HMS OT																											
MP Full Rate Production (FRP)			1 MP FRP																									
Stryker Brigade Combat Team (SBCT) Characterization			2 SBCT Characterization																									
ITN CS23 Prototyping & Testing	 ITN CS23 Prototyping & Testing																											
ITN CS23 Soldier Touch Point				3 ITN CS23 STP																								
ITN CS23 Design Decision				4 ITN CS23 Design Decision																								
Armored Brigade Combat Team (ABCT) Characterization				5 ABCT Characterization																								
Performance Verification Test (PVT)					 PVT																							
Operational User Assessment (OUA)						 OUA																						
Performance Verification Test (PVT) FY22							 PVT																					
Operational User Assessment (OUA) FY23								 OUA																				
Performance Verification Test (PVT) FY23									 PVT																			
Operational User Assessment (OUA) FY23 #2											 OUA																	

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2023 Army</b>		<b>Date: April 2022</b>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
Performance Verification Test (PVT) FY24																																				
Operational User Assessment (OUA) FY24																																				
Performance Verification Test (PVT) FY25																																				
Operational User Assessment (OUA) FY25																																				
Performance Verification Test (PVT) FY26																																				
Operational User Assessment (OUA) FY26																																				
Performance Verification Test (PVT) FY27																																				
Operational User Assessment (OUA) FY27																																				

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2023 Army</b>		<b>Date: April 2022</b>
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	<b>Project (Number/Name)</b> FA1 / <i>Manpack Radio</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Manpack (MP) Customer Test (CT)	2	2017	4	2017
MP Sandbox and Soldier Feedback Study	1	2018	2	2018
MP Field/Lab Base Risk Reduction Test (FBRR/LBRR)	3	2018	4	2018
NIE 18.2	1	2019	1	2019
MP Log Demo	2	2019	3	2019
MP MUOS MOT&E 2B	3	2019	3	2019
Integrated Tactical Network (ITN) CS21 LBRR	3	2019	4	2019
MP LBRR	2	2020	3	2020
ITN CS21 Design Decision	3	2020	3	2020
Operational Test (OT)	2	2021	2	2021
MP Full Rate Production (FRP)	4	2021	4	2021
Stryker Brigade Combat Team (SBCT) Characterization	4	2021	4	2021
ITN CS23 Prototyping & Testing	2	2021	2	2022
ITN CS23 Soldier Touch Point	2	2022	2	2022
ITN CS23 Design Decision	3	2022	3	2022
Armored Brigade Combat Team (ABCT) Characterization	3	2022	3	2022
Performance Verification Test (PVT)	1	2022	1	2022
Operational User Assessment (OUA)	3	2022	3	2022
Performance Verification Test (PVT) FY22	4	2022	4	2022
Operational User Assessment (OUA) FY23	1	2023	1	2023
Performance Verification Test (PVT) FY23	3	2023	3	2023
Operational User Assessment (OUA) FY23 #2	4	2023	4	2023

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Events	Start		End	
	Quarter	Year	Quarter	Year
Performance Verification Test (PVT) FY24	3	2024	3	2024
Operational User Assessment (OUA) FY24	4	2024	4	2024
Performance Verification Test (PVT) FY25	3	2025	3	2025
Operational User Assessment (OUA) FY25	4	2025	4	2025
Performance Verification Test (PVT) FY26	3	2026	3	2026
Operational User Assessment (OUA) FY26	4	2026	4	2026
Performance Verification Test (PVT) FY27	3	2027	3	2027
Operational User Assessment (OUA) FY27	4	2027	4	2027

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<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
FA2: <i>Rifleman Radio (RR)</i>	-	10.757	11.051	1.444	-	1.444	1.491	1.514	1.548	1.667	0.000	29.472
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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This funding line is directly aligned to the Army Network Cross Functional Team. This effort supports the Army Network Modernization Strategy Line of Effort 1, Unified Network.

Handheld radios provide both Classified and Unclassified communications. Handheld radios provide the Single Channel Ground and Airborne Radio System (SINGARS) legacy waveform for Classified and Unclassified communications. Handheld radios also provide advanced waveforms (e.g. TrellisWare TSM) that provide SBU communications. The HMS program received a positive Full Rate Production (FRP) decision in 2021 and plans to host two PVTs annually to verify vendor enhancements.

The Handheld, Manpack, and Small Form Fit (HMS) radio systems serve as the backbone of the Integrated Tactical Network (ITN) architecture, supporting a converged Mission Command network. FY2019 - FY2022 Research Development Test & Evaluation (RDT&E) funds supported ITN testing and evaluation, of which HMS is a key component, in addition to HMS Program of Record (PoR) test events. The ITN tests supported mature system development, integration, and demonstration in support of ITN evaluation to include: concept refinement, characterization, data collection, demos, integrated testing, and operational assessments. The ITN is a warfighter-enabling System of Systems comprised of key networking components including HMS PoR radio systems, advanced high capacity commercial radios, commercial phone technologies, and advanced radio-application gateway integration and interoperability technologies. These ITN technologies increase transport options and support a converged Mission Command network. The ITN introduces a new Secure But Unclassified (SBU) security domain enhancing Mission Partner interoperability and significantly reducing key distribution and other security-related burdens for the Soldier at lower echelons. Starting in FY 2023, ITN funds have been realigned to PE 0605236A, CQ1.

HMS completed Initial Operational Test and Evaluation (IOT&E) during January 2021. Following the IOT&E test event, HMS outlined specific actions required to resolve test findings from the IOT&E event. FY2023 and beyond RDT&E funding supports testing activities including laboratory technical testing, Performance Verification Tests (PVTs), and Operational User Assessments (OUAs). Each of these events provides both technical and operational user feedback on increased capabilities, future waveform incorporation, soldier usability, and life-cycle sustainment improvements. Handheld radios provide voice/data communication to the expeditionary Warfighter with an on-the-move, at-the-halt, and stationary Line of Sight (LOS)/Beyond Line of Sight (BLOS) capability for both dismounted personnel and platforms. Handheld radio systems are software reprogrammable, networkable, multi-mode systems capable of simultaneous voice and data communication (RR/LR). Handheld radios will support a variety of other platforms, including tactical End User Devices (EUD) voice and data needs. HMS provides tailorable and scalable, software-defined radio systems meeting U.S. Army, Air Force, Navy, Marine Corps and Special Operations Command communications needs.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> Program Management	0.144	0.863	0.058

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	<b>Project (Number/Name)</b> FA2 / <i>Rifleman Radio (RR)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<p><b>Description:</b> Program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning and Integrated Product Team meetings.</p> <p><b>FY 2022 Plans:</b> During this timeframe, funds will provide overall management and oversight to implement HMS acquisition strategy and ITN evaluation - to include Matrix and Contractor support.</p> <p><b>FY 2023 Plans:</b> FY 2023 funds will provide overall management and oversight to implement HMS acquisition strategy - to include Matrix and Contractor support.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funds decreased from FY 2022 to FY 2023 due to ITN funds realigned out of FA2.</p>				
<p><b>Title:</b> HMS Engineering/Technical Support</p> <p><b>Description:</b> Overall technical analysis support to PdM HMS' Handheld and ITN products.</p> <p><b>FY 2022 Plans:</b> FY 2021 funds will provide technical systems engineering support to evaluate technical alternatives and perform communication architecture analysis to identify alternatives to reduce cost, improve performance, and achieve tactical radio objectives. Funds will facilitate technical test support for candidate products utilized within ITN's iterative evaluation and capability implementation strategy to include LR.</p> <p><b>FY 2023 Plans:</b> FY 2023 funds will provide technical systems engineering support to evaluate technical alternatives and perform communication architecture analysis to identify alternatives to reduce cost, improve performance, and achieve tactical radio objectives. Funds will facilitate technical test support for candidate products utilized within ITN's iterative evaluation and capability implementation strategy to include LR.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funds decreased from FY 2022 to FY 2023 due to ITN funds realigned out of FA2.</p>		5.440	1.725	1.012
<p><b>Title:</b> Test and Evaluation</p> <p><b>Description:</b> Handheld's Test and Evaluation focuses on the evaluation of key technical and operational characteristics of the system: Radio Frequency performance, security, Reliability, Availability &amp; Maintainability, and survivability requirements, in</p>		5.173	8.058	0.374

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army	<b>Date:</b> April 2022
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<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	<b>Project (Number/Name)</b> FA2 / <i>Rifleman Radio (RR)</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2021	FY 2022	FY 2023
<p>addition to operational environmental performance requirements as per the Capability Production Document. All previous testing on the Leader Radio, served as risk reduction and Operational Test (OT) preparations in support of FRP. Results from the OT will facilitate the delivery orders for Full Rate Production and inform any required delta testing. HMS funding supports delta testing and Performance Verification Tests (PVTs).</p> <p>HMS also supports ITN's iterative evaluation and capability implementation strategy. HMS System of Systems product qualification testing (SoS PQT) included interoperability with the ITN evaluating and demonstrating the efficacy of the ITN Variable Height Antenna (VHA) and Tactical Radio Integration Kit (TRIK) components in expansion of HMS radio range and function.</p> <p><b>FY 2022 Plans:</b> The FY 2022 funding will facilitate testing for candidate products utilized within ITN's iterative evaluation and capability implementation strategy to include LR.</p> <p><b>FY 2023 Plans:</b> FY 2023 Research Development Test &amp; Evaluation (RDT&amp;E) funding supports HMS delta testing, Performance Verification Tests (PVTs), examination of modular and open system architectures to decrease future integration and waveform porting costs.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funds decreased from FY 2022 to FY 2023 due to ITN funds realigned out of FA2.</p>			
<p><b>Title:</b> SBIR/STTR Transfer</p> <p><b>FY 2022 Plans:</b> Funding transferred in accordance with Title 15 USC ?638</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC ?638</p>	-	0.405	-
<b>Accomplishments/Planned Programs Subtotals</b>	10.757	11.051	1.444

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• FA1: <i>Manpack Radio</i>	9.754	17.690	3.053	-	3.053	2.918	2.979	2.013	1.997	0.000	40.404
• B95004: <i>Handheld Manpack Small Form Fit (HMS)</i>	547.148	724.099	728.366	-	728.366	905.517	804.072	818.258	826.234	Continuing	Continuing

**Remarks**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	<b>Project (Number/Name)</b> FA2 / <i>Rifleman Radio (RR)</i>

**D. Acquisition Strategy**

On 13 September 2016 the Army Acquisition Executive approved a decrease to the Basis of Issue (BOI) for the single channel RR, increase the BOI for the two channel LR and move forward with acquisition activities for the two channel LR. An acquisition strategy addendum adding LR was approved in March 2017. The addendum continued the multi-vendor approach utilizing the existing Indefinite Delivery Indefinite Quantity (IDIQ) RR base contract (awarded 29 April 2015) to on-ramp LR capabilities (18 September 2018). The LR effort is a separate competition under the Handheld radio suite. As laid out in the acquisition strategy, these candidate non-developmental radios will need to demonstrate through testing, compliance with program requirements; assess effectiveness, suitability, and survivability; to obtain material release for Full Rate Production (FRP).

The LR will simultaneously run Single Channel Ground and Airborne Radio System (SINCGARS) and other advanced networking waveforms, in one radio with both handheld and mounted configurations, for fixed and mobile sites.

In 2022, HMS began the process of conducting a re-compete of the existing LR IDIQ contract in support of an FY24 award. The re-compete will include upgrades to the base contract including specific sustainment requirements, updated quantity pricing schedules, and other lessons-learned from the previous ID/IQ.









On 14 May 2019, the ITN gained approval from the Army Acquisition Executive to execute via the Middle Tier of Acquisition (MTA) Rapid Prototyping pathway. The ITN Rapid Prototyping MTA approach provides for the use of innovative technologies to rapidly develop fieldable prototypes to demonstrate new capabilities and meet emerging military needs. The ITN acquisition approach is based on integration of Commercial-Off-The-Shelf (COTS), Non-Developmental Item (NDI), and Government-Off-The-Shelf (GOTS) components. The accelerated schedule for the procurement of experimentation equipment was directed by the Army and driven by the ITN Directed Requirement (DR). Contract execution for ITN Non-POR equipment is being leveraged from existing indefinite delivery indefinite quantity (IDIQ) contracts. All contracts are competitive awards using FAR approved contracting vehicles, such as DLA, CHS, NASA SEWP, GSA (IDIQ) or direct contracts that have been established after a market survey has been completed. In FY 2023 and out, this funding transitions to PE 0605236A, CQ1.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0605042A / Tactical Network Radio Systems (Low-Tier)				FA2 / Rifleman Radio (RR)								
<b>Management Services (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Project Management Office Support	Various	PEO C3T & CECOM : Various; APG, MD	2.590	0.441		0.863		0.058		-		0.058	0.000	3.952	Continuing	
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.405		-		-		-	0.000	0.405	-	
<b>Subtotal</b>			2.590	0.441		1.268		0.058		-		0.058	0.000	4.357	N/A	
<b>Support (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
HMS Engineering/ Technical Support	Various	PEO C3T, ARL, C5ISR, & ATC : Various	2.424	5.143		1.725		1.012		-		1.012	0.000	10.304	-	
<b>Subtotal</b>			2.424	5.143		1.725		1.012		-		1.012	0.000	10.304	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Follow on Delta Development & Testing	Various	EPG : Fort Huachuca	4.776	0.962		1.064		0.374		-		0.374	0.000	7.176	-	
Follow on Delta Development & Testing (2)	Various	OTC : Various	10.251	-		-		-		-		-	0.000	10.251	-	
ITN Testing	Various	Various : TBD	13.099	4.211		6.994		-		-		-	0.000	24.304	-	
<b>Subtotal</b>			28.126	5.173		8.058		0.374		-		0.374	0.000	41.731	N/A	
<b>Project Cost Totals</b>			33.140	10.757		11.051		1.444		-		1.444	0.000	56.392	N/A	
<b>Remarks</b>																

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2023 Army</b>		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	<b>Project (Number/Name)</b> FA2 / <i>Rifleman Radio (RR)</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027									
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4						
Operational Test (OT)	 HMS OT																																	
LR Full Rate Production (FRP)			1 LR FRP																															
Stryker Brigade Combat Team (SBCT) Characterization			2 SBCT Characterization																															
ITN CS23 Soldier Touch Point				3 ITN CS23 STP																														
ITN CS23 Prototyping & Testing	 ITN CS23 Prototyping & Testing																																	
ITN CS23 Design Decision				4 ITN CS23 Design Decision																														
Armored Brigade Combat Team (ABCT) Characterization				5 ABCT Characterization																														
Performance Verification Test (PVT)					 PVT																													
Operational User Assessment (OUA)						 OUA																												
Performance Verification Test (PVT) FY22							 PVT																											
Operational User Assessment (OUA) FY23								 OUA																										
Performance Verification Test (PVT) FY23									 PVT																									
Operational User Assessment (OUA) FY23 #2										 OUA																								

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2023 Army</b>		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Sys tems (Low-Tier)</i>	<b>Project (Number/Name)</b> FA2 / <i>Rifleman Radio (RR)</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027																					
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																		
Performance Verification Test (PVT) FY24													■ PVT																																	
Operational User Assessment (OUA) FY24													■ OUA																																	
Performance Verification Test (PVT) FY25													■ PVT																																	
Operational User Assessment (OUA) FY25													■ OUA																																	
Performance Verification Test (PVT) FY26													■ PVT																																	
Operational User Assessment (OUA) FY26													■ OUA																																	
Performance Verification Test (PVT) FY27													■ PVT																																	
Operational User Assessment (OUA) FY27													■ OUA																																	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2023 Army</b>		<b>Date: April 2022</b>
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	<b>Project (Number/Name)</b> FA2 / <i>Rifleman Radio (RR)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Leader Radio (LR) Release For Proposal (RFP)	4	2017	4	2017
LR Qualification Test (QT)	1	2018	2	2018
LR Lab Based Risk Reduction	4	2018	4	2018
LR Contract Award	4	2018	4	2018
LR Early User Assessment (EUA)	3	2019	4	2019
Production Qualification Test (PQT)	4	2019	2	2020
Integrated Tactical Network (ITN) CS21 LBRR	3	2019	4	2019
LR Lab Based Risk Reduction (LBRR)	2	2019	4	2019
LR EUA	4	2019	2	2020
ITN CS21 Design Decision	3	2020	3	2020
Operational Test (OT)	2	2021	2	2021
LR Full Rate Production (FRP)	4	2021	4	2021
Stryker Brigade Combat Team (SBCT) Characterization	4	2021	4	2021
ITN CS23 Soldier Touch Point	2	2022	2	2022
ITN CS23 Prototyping & Testing	2	2021	2	2022
ITN CS23 Design Decision	3	2022	3	2022
Armored Brigade Combat Team (ABCT) Characterization	3	2022	3	2022
Performance Verification Test (PVT)	1	2022	1	2022
Operational User Assessment (OUA)	3	2022	3	2022
Performance Verification Test (PVT) FY22	4	2022	4	2022
Operational User Assessment (OUA) FY23	1	2023	1	2023
Performance Verification Test (PVT) FY23	3	2023	3	2023

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**Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	<b>Project (Number/Name)</b> FA2 / <i>Rifleman Radio (RR)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Operational User Assessment (OUA) FY23 #2	4	2023	4	2023
Performance Verification Test (PVT) FY24	3	2024	3	2024
Operational User Assessment (OUA) FY24	4	2024	4	2024
Performance Verification Test (PVT) FY25	3	2025	3	2025
Operational User Assessment (OUA) FY25	4	2025	4	2025
Performance Verification Test (PVT) FY26	3	2026	3	2026
Operational User Assessment (OUA) FY26	4	2026	4	2026
Performance Verification Test (PVT) FY27	3	2027	3	2027
Operational User Assessment (OUA) FY27	4	2027	4	2027