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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army** **Date:** March 2023

<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 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>
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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	-	15.982	11.523	11.509	-	11.509	5.679	11.627	12.335	12.580	0.000	81.235
EB4: <i>CIRCM</i>	-	15.982	11.523	11.509	-	11.509	5.679	11.627	12.335	12.580	0.000	81.235

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

This funding line is a key enabler of the Army Modernization Priorities in support of the Aircraft Survivability Equipment (ASE) program. The Common Infrared Countermeasure (CIRCM) budget line includes funding to support the development and integration of Aircraft Survivability Equipment (ASE) products onto rotary wing and fixed wing aircraft.

**CIRCM (EB4)**

CIRCM is the next generation lightweight, laser-based Infrared Countermeasure (IRCM) component that will interface with the Army's Common Missile Warning System (CMWS), Limited Interim Missile Warning System (LIMWS), Advanced Threat Warner (ATW), and future Improved Threat Detection System (ITDS) to defeat current and emerging missile threats that use multispectral technology for rotary-wing, tilt-rotor and small fixed-wing aircraft across the DoD. CIRCM receives an angular bearing hand-off from the MWS, employs a pointing and tracking system which acquires the handed-over threat and tracks the incoming missile during and after motor burnout. CIRCM jams the missile by using modulated laser energy in the missile seeker band, thus degrading the tracking capability of the missile and causing it to miss the aircraft. CIRCM is utilizing Open Systems Architecture which allows flexibility with software and hardware refreshes. Tech insertions, when coupled with future threat acquisition and integration, will ensure CIRCM performance to keep pace with future threats. CIRCM is part of the suite of ASE Mission Equipment for the Future Vertical Lift (FVL) platform.

The CIRCM A-Kit includes mounting hardware, wiring harnesses, and other components necessary to install and interface the mission kit on host aircraft. The A-Kit ensures the mission kit is functionally and physically operational with a specific host aircraft type. The CIRCM B-Kit is the mission kit (laser, pointer tracker, and controller) required to achieve near spherical coverage for an aircraft.

**JUONS SO-0010 and CIRCM QRC**

As a part of Phase 2a of the JUONS (SO-0010) program, the Army integrated the Department of the Navy Large Aircraft Infrared Countermeasure (DoN LAIRCM) system onto the Army and Special Operations Aircraft platforms. Due to a number of challenges, circumstances, and variables, the Army updated the ATW/CIRCM QRC and Limited Interim Missile Warning System (LIMWS) Directed Requirements (dated November 16, 2018). The updated requirements extend the utilization of ATW DoN LAIRCM on conventional Army aircraft and cancel the need for the ATW/CIRCM QRC system for the conventional Army. (It should be noted that the updated requirement maintains the need for ATW/CIRCM on the Special Operations Aircraft. Sustainment of ATW on Special Operations Aircraft will transfer to Special Operations Aircraft budget line in FY23). As a result, the Army did not acquire the ATW sensors for use in Phase 3 of the JUONS effort. Instead, the Army accelerated the procurement of the CIRCM QRC systems for use with the currently fielded CMWS in preparation for transition to the LIMWS system.

Fiscal Year (FY) 2024 Base Research, Development, Test, and Evaluation (RDTE) funding in the amount of \$11.509 million will fund A-Kit development, integration and test activities on multi-variant platforms as well as threat and vulnerability analysis.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Army	<b>Date:</b> March 2023
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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 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	16.630	11.523	5.236	-	5.236
Current President's Budget	15.982	11.523	11.509	-	11.509
Total Adjustments	-0.648	0.000	6.273	-	6.273
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.648	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	6.273	-	6.273

**Change Summary Explanation**

FY 2024 funding aligns with the programs approved Full Rate Production (FRP) Army Cost Position (ACP).

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Army **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	<b>Project (Number/Name)</b> EB4 / <i>CIRCM</i>
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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
EB4: <i>CIRCM</i>	-	15.982	11.523	11.509	-	11.509	5.679	11.627	12.335	12.580	0.000	81.235
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

This funding line is a key enabler of the Army Modernization Priorities in support of Future Vertical Lift (FVL) Future Attack Reconnaissance Aircraft (FARA) and Future Long-Range Assault Aircraft (FLRAA) platforms.

The Common Infrared Countermeasure (CIRCM) budget line funding supports continuing A-Kit development, model based systems engineering, and integration activities for rotary wing and fixed wing aircraft.

**CIRCM (EB4)**

CIRCM is the next generation lightweight, laser-based Infrared Countermeasure (IRCM) component that will interface with the Army's Common Missile Warning System (CMWS), Limited Interim Missile Warning System (LIMWS), Advanced Threat Warner (ATW), and future Improved Threat Detection System (ITDS) system to defeat current and emerging missile threats that use multispectral technology for rotary-wing, tilt-rotor and small fixed-wing aircraft across the Department of Defense (DoD). CIRCM receives an angular bearing hand-off from the Missile Warning System (MWS), employs a pointing and tracking system which acquires the handed-over threat and tracks the incoming missile during and after motor burnout. CIRCM jams the missile by using modulated laser energy in the missile seeker band, thus degrading the tracking capability of the missile and causing it to miss the aircraft. CIRCM is utilizing Open Systems Architecture which allows flexibility with software and hardware refreshes. Tech insertions, when coupled with future threat acquisition and integration, will ensure CIRCM performance to keep pace with future threats. CIRCM is part of the suite of Aircraft Survivability Equipment (ASE) Mission Equipment for the FVL platform.

The CIRCM A-Kit includes mounting hardware, wiring harnesses, and other components necessary to install and interface the mission kit on host aircraft. The A-Kit ensures the mission kit is functionally and physically operational with a specific host aircraft type. The CIRCM B-Kit is the mission kit (laser, pointer tracker, and controller) required to achieve near spherical coverage for an aircraft.

**Joint Urgent Operational Needs Statement (JUONS) SO-0010 and CIRCM Quick Reaction Capability (QRC)**

As a part of Phase 2a of the JUONS (SO-0010) program, the Army integrated the Department of Navy Large Aircraft Infrared Countermeasure (DoN LAIRCM) system onto the Army and Special Operations Aircraft (SOA) platforms. Due to a number of challenges, circumstances, and variables, the Army updated the ATW/CIRCM QRC and Limited Interim Missile Warning System (LIMWS) Directed Requirements (dated November 16, 2018). The updated requirements extend the utilization of ATW DoN LAIRCM on conventional Army aircraft and cancel the need for the ATW/CIRCM QRC system for the conventional Army. (It should be noted that the updated requirement maintains the need for ATW/CIRCM on the Special Operations Aircraft. Sustainment of ATW on Special Operations Aircraft will transfer to Special Operations Aircraft budget line in FY23). As a result, the Army did not acquire the ATW sensors for use in Phase 3 of the JUONS effort. Instead, the Army accelerated the procurement of the CIRCM QRC systems for use with the currently fielded CMWS in preparation for transition to the LIMWS system.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	<b>Project (Number/Name)</b> EB4 / <i>CIRCM</i>		
FY 2024 Base Research, Development, Test, and Evaluation (RDTE) funding in the amount of \$11.509 million will fund A-Kit development, integration and test activities on multi-variant platforms as well as threat and vulnerability analysis.				
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> CIRCM Product Development <b>Description:</b> CIRCM product development, support costs, & management services  <b>FY 2023 Plans:</b> FY 2023 RDTE Base funding supports continuing A-Kit development, model based systems engineering, and integration activities for CH-47F. Additionally, funding supports preliminary analysis for integration of ASE systems on FVL FARA and FLRAA platforms.  <b>FY 2024 Plans:</b> FY 2024 RDTE Base funding supports continuing A-Kit development, model based systems engineering, and integration activities for CH-47F. Additionally, funding supports preliminary analysis for integration of ASE systems on FVL FARA and FLRAA platforms.  <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Level of effort remained stable		11.109	4.570	5.956
<b>Title:</b> CIRCM Test & Evaluation (T&E) <b>Description:</b> CIRCM T&E activities  <b>FY 2023 Plans:</b> FY 2023 RDTE Base funding supports A-Kit Integration testing for the work on CH-47F, as well as jamcode and software improvement testing. Supports continuing Threat & Vulnerability Analysis.  <b>FY 2024 Plans:</b> FY 2024 RDTE Base funding supports A-Kit Integration testing for the continued work on CH-47F, as well as jamcode and software improvement testing. Supports continuing Threat & Vulnerability Analysis.  <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Level of effort remained stable		4.873	6.532	5.553
<b>Title:</b> SBIR/STTR Transfer <b>FY 2023 Plans:</b> FY23: Funding transferred in accordance with Title 15 USC §638  <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>		-	0.421	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army	<b>Date:</b> March 2023
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<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	<b>Project (Number/Name)</b> EB4 / <i>CIRCM</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2022	FY 2023	FY 2024
FY23: Funding transferred in accordance with Title 15 USC §638			
<b>Accomplishments/Planned Programs Subtotals</b>	15.982	11.523	11.509

**C. 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
• AZ3537: <i>Common Infrared Countermeasures (CIRCM)</i>	234.012	284.334	261.384	-	261.384	254.397	257.727	257.462	257.015	2,075.106	3,881.437

**Remarks**

**D. Acquisition Strategy**

The December 28, 2011, Defense Acquisition Executive (DAE) Acquisition Decision Memorandum (ADM) authorized entry into the Technology Maturation and Risk Reduction (TMRR) phase, designated the program a pre-Major Defense Acquisition Program (MDAP), and approved the updated exit criteria. The August 25, 2015, DAE ADM authorized entry into the Engineering and Manufacturing Development (EMD) phase and designated the program as a MDAP. The EMD contract was awarded to Northrop Grumman Systems Corporation (NGSC) on August 28, 2015. The EMD contract includes priced options for Other Platform A-Kit Development, A-Kit Engineering Support, Low Rate Initial Production (LRIP) 1 and 2 Prototypes (Hardware and Installs), LRIP 1 and 2 Engineering and Test Support, Software Technical Data Package (TDP), Navy funded requirements, and Defense Exportability Features (DEF). CIRCM MS C was approved September 14, 2018, the LRIP and Engineering Support options were exercised and the program entered the Production & Deployment phase with First Unit Equipped (FUE) achieved in the second quarter of FY 2020. During the Milestone C approval process, the Chief of Staff of the Army directed funding be increased beginning in FY 2020 to accelerate CIRCM production, Initial Operational Test (IOT) and to field one Combat Aviation Brigade (CAB) per year. A Full Rate Production (FRP) Decision was approved April 13, 2021 and a five year Indefinite Delivery Indefinite Quantity (IDIQ) contract was awarded to NGSC on April 30, 2021 for up to 596 B-Kits with options for Engineering Services, Repairs, and Contractor Logistics Support services. The program met the Initial Operational Capability (IOC) threshold date of September 2022. The program plans to award a new five year IDIQ contract to continue B-Kit production in FY26.

Due to the urgency of addressing the Size, Weight, Power, and Cooling (SWaP-C) issues related to the Phase 2a JUONS SO-0010 DoN LAIRCM initial materiel solution, the Army approved a Directed Requirement for the Phase 3 ATW/CIRCM QRC (requirement updated in November 2018). The updated requirements extend the utilization of ATW DoN LAIRCM on conventional Army aircraft and cancel the need for the ATW/CIRCM QRC system for the conventional Army. (It should be noted that the updated requirement maintains the need for ATW/CIRCM on the Special Operations Aircraft. Sustainment of ATW on Special Operations Aircraft will transfer to Special Operations Aircraft budget line in FY23). As a result, the Army will no longer acquire the ATW sensors for use in Phase 3 of the JUONS effort. Instead, the Army accelerated the procurement of the CIRCM QRC systems for use with the currently fielded CMWS in preparation for transition to the LIMWS system.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0605035A / Common Infrared Countermeasures (CIRCM)				EB4 / CIRCM								
<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
System Engineering Program Management	Various	Various : -	33.279	1.243	Nov 2021	1.300	Nov 2022	1.032	Nov 2023	-		1.032	Continuing	Continuing	Continuing	
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.421		-		-		-	0.000	0.421	-	
<b>Subtotal</b>			33.279	1.243		1.721		1.032		-		1.032	Continuing	Continuing	N/A	
<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
Non-recurring Engineering (NRE) - Multi Platform A-Kit Development & Integration	C/CPFF	Various : -	104.630	7.146	Jun 2022	3.091	Jun 2023	3.184	Jun 2024	-		3.184	Continuing	Continuing	Continuing	
Other - Threat Management	Various	Various : -	36.010	2.720		0.600		1.740		-		1.740	Continuing	Continuing	Continuing	
<b>Subtotal</b>			140.640	9.866		3.691		4.924		-		4.924	Continuing	Continuing	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
Government System Test and Evaluation	Various	Various : -	151.118	4.273	Apr 2022	5.111	Apr 2023	5.553	Apr 2024	-		5.553	Continuing	Continuing	Continuing	
Other Testing - Test Support	Various	Various : -	38.082	0.600		1.000		-		-		-	Continuing	Continuing	Continuing	
<b>Subtotal</b>			189.200	4.873		6.111		5.553		-		5.553	Continuing	Continuing	N/A	
<b>Project Cost Totals</b>			363.119	15.982		11.523		11.509		-		11.509	Continuing	Continuing	N/A	



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Army</b>			<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	<b>Project (Number/Name)</b> EB4 / <i>CIRCM</i>	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Multi-Platform A-Kit Development, Integration, Testing																												
Future Threat Acquisition & Integration																												

**Note**  
none

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	<b>Project (Number/Name)</b> EB4 / <i>CIRCM</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Multi-Platform A-Kit Development, Integration, Testing	1	2015	4	2031
Engineering & Manufacturing Development (EMD) Phase	4	2015	4	2018
Developmental Test Activity	1	2016	4	2018
Prototyping	1	2016	1	2018
Reliability Demonstration Test (RDT)	2	2018	4	2018
Initial Operational Test and Evaluation (IOT&E)	3	2019	1	2020
Future Threat Acquisition & Integration	1	2020	4	2039