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**Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army** **Date:** May 2017

<b>Appropriation/Budget Activity</b> 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	<b>R-1 Program Element (Number/Name)</b> PE 0605035A / Common Infrared Countermeasures (CIRCM)
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	98.496	107.877	105.778	21.540	127.318	52.410	75.909	40.179	1.470	Continuing	Continuing
EB4: CIRCM	-	98.496	107.877	105.778	21.540	127.318	52.410	75.909	40.179	1.470	Continuing	Continuing

## A. Mission Description and Budget Item Justification

The Common Infrared Countermeasure (CIRCM) budget line includes CIRCM (EB4), and funding to counter emerging technology as identified in Joint Urgent Operational Needs Statement (JUONS) SO-0010 Phase 2a and the Headquarters Department of the Army (HQDA) Directed Requirement for the Advanced Threat Warner Common Infrared Countermeasures Quick Reaction Capability (ATW & CIRCM QRC).

### CIRCM (EB4)

The Common Infrared Countermeasure (CIRCM) is the next generation lightweight, laser-based Infrared Countermeasure (IRCM) component that will interface with both the Army's Common Missile Warning System (CMWS) and future missile warning systems (MWS) 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 to keep pace with future threats.

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 ATW & CIRCM QRC

Initially, a select number of aircraft in the threat area of responsibility will be outfitted with a Department of the Navy Large Aircraft Infrared Countermeasure (DoN LAIRCM) system. However, this approach came with a Space, Weight and Power - Cooling (SWaP-C) penalty which is being addressed as a follow-on HQDA Directed Requirement with a Quick Reaction Capability (QRC) using Advanced Threat Warner (ATW) and CIRCM. The intent of the ATW & CIRCM QRC program is to reduce the SWaP-C associated with the Phase 2a solution.

FY 2018 Base Research, Development, Test, and Evaluation (RDT&E) funding in the amount of \$106.699 million completes the Engineering and Manufacturing Development (EMD) phase to include continued A-Kit and B-Kit development/Low Rate Initial Production (LRIP), and developmental testing.

FY 2018 RDT&E Overseas Contingency Operations (OCO) funding in the amount of \$21.540 million will support efforts related to the HQDA Directed Requirement to include CIRCM QRC integration with the Army ATW processor and associated follow-on Test and Evaluation (T&E) efforts.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army				Date: May 2017		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0605035A I Common Infrared Countermeasures (CIRCM)				
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		101.570	107.877	106.699	-	106.699
Current President's Budget		98.496	107.877	105.778	21.540	127.318
Total Adjustments		-3.074	0.000	-0.921	21.540	20.619
• Congressional General Reductions		-	-			
• Congressional Directed Reductions		-	-			
• Congressional Rescissions		-	-			
• Congressional Adds		-	-			
• Congressional Directed Transfers		-	-			
• Reprogrammings		-	-			
• SBIR/STTR Transfer		-	-			
• Adjustments to Budget Years		-3.074	0.000	-0.921	21.540	20.619
Congressional Add Details (\$ in Millions, and Includes General Reductions)						
Project: EB4: CIRCM						
Congressional Add: Advanced Threat Warner (ATW) CIRCM Quick Reaction Capability (QRC) Congressional Add						
Congressional Add Subtotals for Project: EB4						
Congressional Add Totals for all Projects						
Change Summary Explanation						
FY 2018 funding increase will support efforts related to the HQDA Directed Requirement for ATW & CIRCM QRC.						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605035A / Common Infrared Countermeasures (CIRCM)				Project (Number/Name) EB4 / CIRCM			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EB4: CIRCM	-	98.496	107.877	105.778	21.540	127.318	52.410	75.909	40.179	1.470	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
<p><b>Note</b></p> <p>Funds in the program are a realignment of funds from program VU8, PE 0604270A (Electronic Warfare Development) for more efficient and effective program management.</p> <p><b>A. Mission Description and Budget Item Justification</b></p> <p>The Common Infrared Countermeasure (CIRCM) budget line includes CIRCM (EB4), and funding to counter emerging technology as identified in Joint Urgent Operational Needs Statement (JUONS) SO-0010 Phase 2a and the Headquarters Department of the Army (HQDA) Directed Requirement for the Advanced Threat Warner Common Infrared Countermeasures Quick Reaction Capability (ATW &amp; CIRCM QRC).</p> <p>CIRCM (EB4)</p> <p>The Common Infrared Countermeasure (CIRCM) is the next generation lightweight, laser-based Infrared Countermeasure (IRCM) component that will interface with both the Army’s Common Missile Warning System (CMWS) and future missile warning systems (MWS) 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 to keep pace with future threats.</p> <p>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.</p> <p>JUONS SO-0010 and ATW &amp; CIRCM QRC</p> <p>Initially, a select number of aircraft in the threat area of responsibility will be outfitted with a Department of the Navy Large Aircraft Infrared Countermeasure (DoN LAIRCM) system. However, this approach came with a Space, Weight and Power - Cooling (SWaP-C) penalty which is being addressed as a follow-on HQDA Directed Requirement with a Quick Reaction Capability (QRC) using Advanced Threat Warner (ATW) and CIRCM. The intent of the ATW &amp; CIRCM QRC program is to reduce the SWaP-C associated with the Phase 2a solution.</p> <p>FY 2018 Base Research, Development, Test, and Evaluation (RDT&amp;E) funding in the amount of \$105,778 million completes the Engineering and Manufacturing Development (EMD) phase to include continued A-Kit and B-Kit development/Low Rate Initial Production (LRIP), and developmental testing.</p>												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army				Date: May 2017		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0605035A / Common Infrared Countermeasures (CIRCM)		Project (Number/Name) EB4 / CIRCM		
FY 2018 RDT&E Overseas Contingency Operations (OCO) funding in the amount of \$21.540 million will support efforts related to the HQDA Directed Requirement to include CIRCM QRC integration with the Army ATW processor and associated follow-on Test and Evaluation (T&E) efforts.						
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p><b>Title:</b> CIRCM Product Development</p> <p><b>Description:</b> CIRCM Product Development, Support Costs, &amp; Management Services</p> <p><b>FY 2016 Accomplishments:</b> RDT&amp;E dollars support the CIRCM Engineering and Manufacturing Development (EMD) phase to include Critical Design Review (CDR) Risk Reduction Activities, B-Kit ship set prototype deliveries, A-Kit integration, prototype A-Kit Modification Work Order (MWO) development, Training Support Plan (TSP), Technical Manual (TM) development, and non-recurring engineering (NRE).</p> <p><b>FY 2017 Plans:</b> RDTE dollars support the CIRCM EMD phase to include continued B-Kit and A-Kit development, CDR and A-Kit prototype procurement/deliveries. Other RDTE activities will support systems engineering/program management (SEPM) and Logistics Activities (Core Depot Assessment, Performance Based Logistics Business Case Analysis and Technical Manual updates).</p> <p><b>FY 2018 Base Plans:</b> RDT&amp;E dollars support completion of EMD phase and start of the Production and Deployment phase, start of Low Rate Initial Production (LRIP) 1, and multi-platform A-Kit and B-Kit development and integration.</p>		63.039	56.755	54.687	-	54.687
<p><b>Title:</b> CIRCM Test &amp; Evaluation (T&amp;E)</p> <p><b>Description:</b> CIRCM Test &amp; Evaluation (T&amp;E) Activities</p> <p><b>FY 2016 Accomplishments:</b> RDT&amp;E dollars support the CIRCM EMD phase to include software testing, tower testing, and Reliability Growth Testing (RGT). "Other Testing" includes funds to develop IRCM solutions to defeat newly acquired threats.</p> <p><b>FY 2017 Plans:</b> Supports CIRCM developmental testing to include A-kit testing for MH-60M, HH-60M, and AH-64E. This funding also includes test efforts to provide required lab capabilities such as in a system integration lab and procure test assets. Also continues efforts to develop IRCM solutions to defeat newly acquired threats.</p> <p><b>FY 2018 Base Plans:</b></p>		11.457	40.222	51.091	-	51.091

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army								Date: May 2017			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0605035A / Common Infrared Countermeasures (CIRCM)			Project (Number/Name) EB4 / CIRCM					
B. Accomplishments/Planned Programs (\$ in Millions)						FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
RDT&E dollars support completion of Reliability Demonstration Testing (RDT), and continue A-Kit and B-Kit testing to include developmental/operational T&E.											
Title: ATW & CIRCM QRC OCO						-	10.900	0.000	21.540	21.540	
Description: ATW & CIRCM QRC Integration											
FY 2017 Plans: Continue the ATW and CIRCM QRC A-Kit development and integration for the H-60, H-47, & H-64 platform variants and integration and integration with other ASE systems.											
FY 2018 Base Plans: N/A											
FY 2018 OCO Plans: RDT&E dollars will support the Army ATW Processor, B-Kit development, integration, and associated T&E efforts. This effort will integrate the ATW and CIRCM systems to reduce Space, Weight and Power - Cooling (SWaP-C) in support of JUONS SO-0010.											
Accomplishments/Planned Programs Subtotals						74.496	107.877	105.778	21.540	127.318	
						FY 2016	FY 2017				
Congressional Add: Advanced Threat Warner (ATW) CIRCM Quick Reaction Capability (QRC) Congressional Add						24.000	-				
FY 2016 Accomplishments: RDT&E dollars support the ATW CIRCM QRC A-Kit development, integration, and associated Test and Evaluation (T&E) efforts. The ATW & CIRCM QRC effort will integrate the ATW and CIRCM systems to reduce Space, Weight and Power - Cooling (SWaP-C) in support of JUONS SO-0010.											
Congressional Adds Subtotals						24.000	-				
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APA Funding: SSN AZ3537; BA4; CIRCM	-	108.721	6.337	43.440	49.777	62.460	106.500	120.851	148.498	Continuing	Continuing

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Army										<b>Date:</b> May 2017	
<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>			
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
<b>Remarks</b>											
None											
<b>D. Acquisition Strategy</b>											
<p>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 Northrup 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). Upon CIRCM MS C approval planned for the second quarter of FY18, the LRIP and Engineering Support options may be exercised and the program may immediately enter the Production &amp; Deployment phase with First Unit Equipped (FUE) planned for first quarter of FY20, and a Full Rate Production Decision Review (FRPDR) planned for the first quarter of FY20.</p> <p>Due to the urgency of addressing the SWaP-C penalty issues related to the JUONS SO-0010 initial DoN LAIRCM material solution, the Army approved a Directed Requirement for the ATW and CIRCM systems, which will be a sole source QRC effort with Northrop Grumman. Northrop Grumman has the required technical capabilities, knowledge and special equipment needed to meet the urgent and compelling need for the ATW CIRCM QRC effort.</p>											
<b>E. Performance Metrics</b>											
N/A											

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: FY 2018 Army</b>												<b>Date: May 2017</b>			
<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>			
<b>Management Services (\$ in Millions)</b>				<b>FY 2016</b>		<b>FY 2017</b>		<b>FY 2018 Base</b>		<b>FY 2018 OCO</b>		<b>FY 2018 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
System Engineering Program Management	Various	Various : -	6.762	7.742		9.371		9.978	Jan 2018	-		9.978	Continuing	Continuing	Continuing
ATW CIRCM QRC System Engineering & Program Management	Various	Various : -	0.000	-		1.100		0.000		2.154	Jan 2018	2.154	Continuing	Continuing	Continuing
<b>Subtotal</b>			6.762	7.742		10.471		9.978		2.154		12.132	-	-	-
<b>Product Development (\$ in Millions)</b>				<b>FY 2016</b>		<b>FY 2017</b>		<b>FY 2018 Base</b>		<b>FY 2018 OCO</b>		<b>FY 2018 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Non-recurring Engineering (NRE)	C/CPFF	Various : -	23.671	22.235	Mar 2016	35.303	Nov 2016	18.125	Jan 2018	-		18.125	Continuing	Continuing	Continuing
Prototype Manufacturing	C/FPIF	Various : -	25.334	-		-		11.892	Jan 2018	-		11.892	Continuing	Continuing	Continuing
Development - System Integration Lab (SIL) Capability Improvements	Various	Various : -	0.000	-		3.000	Apr 2017	2.000	Apr 2018	-		2.000	Continuing	Continuing	Continuing
Other - Threat Management	Various	Various : -	9.777	5.882	Mar 2016	5.081	Mar 2017	6.692	Mar 2018	-		6.692	Continuing	Continuing	Continuing
Data - Logistics Support	Various	Various : -	0.000	0.267	May 2016	1.000	May 2017	1.000	May 2018	-		1.000	Continuing	Continuing	Continuing
ATW CIRCM QRC NRE	C/CPFF	Various : -	0.000	-		3.280	Nov 2016	0.000		3.231	Jan 2018	3.231	Continuing	Continuing	Continuing
ATW CIRCM QRC Prototype Manufacturing	C/CPFF	Various : -	0.000	-		2.120	Nov 2016	-		-		-	Continuing	Continuing	Continuing
ATW CIRCM QRC A-Kit Development & Integration	Various	Various : -	0.000	22.390	Apr 2016	-		0.000		5.385	Jan 2018	5.385	Continuing	Continuing	Continuing
<b>Subtotal</b>			58.782	50.774		49.784		39.709		8.616		48.325	-	-	-

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: FY 2018 Army</b>													<b>Date:</b> May 2017		
<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>					
<b>Support (\$ in Millions)</b>				<b>FY 2016</b>		<b>FY 2017</b>		<b>FY 2018 Base</b>		<b>FY 2018 OCO</b>		<b>FY 2018 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Support Equipment	Various	Various : -	0.500	4.546	Jul 2016	3.000	Jul 2017	5.000	Jul 2018	-		5.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.500	4.546		3.000		5.000		-		5.000	-	-	-
<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2016</b>		<b>FY 2017</b>		<b>FY 2018 Base</b>		<b>FY 2018 OCO</b>		<b>FY 2018 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Government System Test and Evaluation	Various	Various : -	28.986	23.907	Apr 2016	17.251	Apr 2017	42.417	Apr 2018	-		42.417	Continuing	Continuing	Continuing
Other Testing - Threat Assets	Various	Various : -	6.283	9.917	May 2016	22.971	May 2017	8.674	May 2018	-		8.674	Continuing	Continuing	Continuing
ATW CIRCM QRC Government System Test & Evaluation	Various	Various : -	0.000	1.610	Apr 2016	4.400	Mar 2017	0.000		10.770	Jan 2018	10.770	Continuing	Continuing	Continuing
<b>Subtotal</b>			35.269	35.434		44.622		51.091		10.770		61.861	-	-	-
			<b>Prior Years</b>	<b>FY 2016</b>		<b>FY 2017</b>		<b>FY 2018 Base</b>		<b>FY 2018 OCO</b>		<b>FY 2018 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			101.313	98.496		107.877		105.778		21.540		127.318	-	-	-
<b>Remarks</b>															



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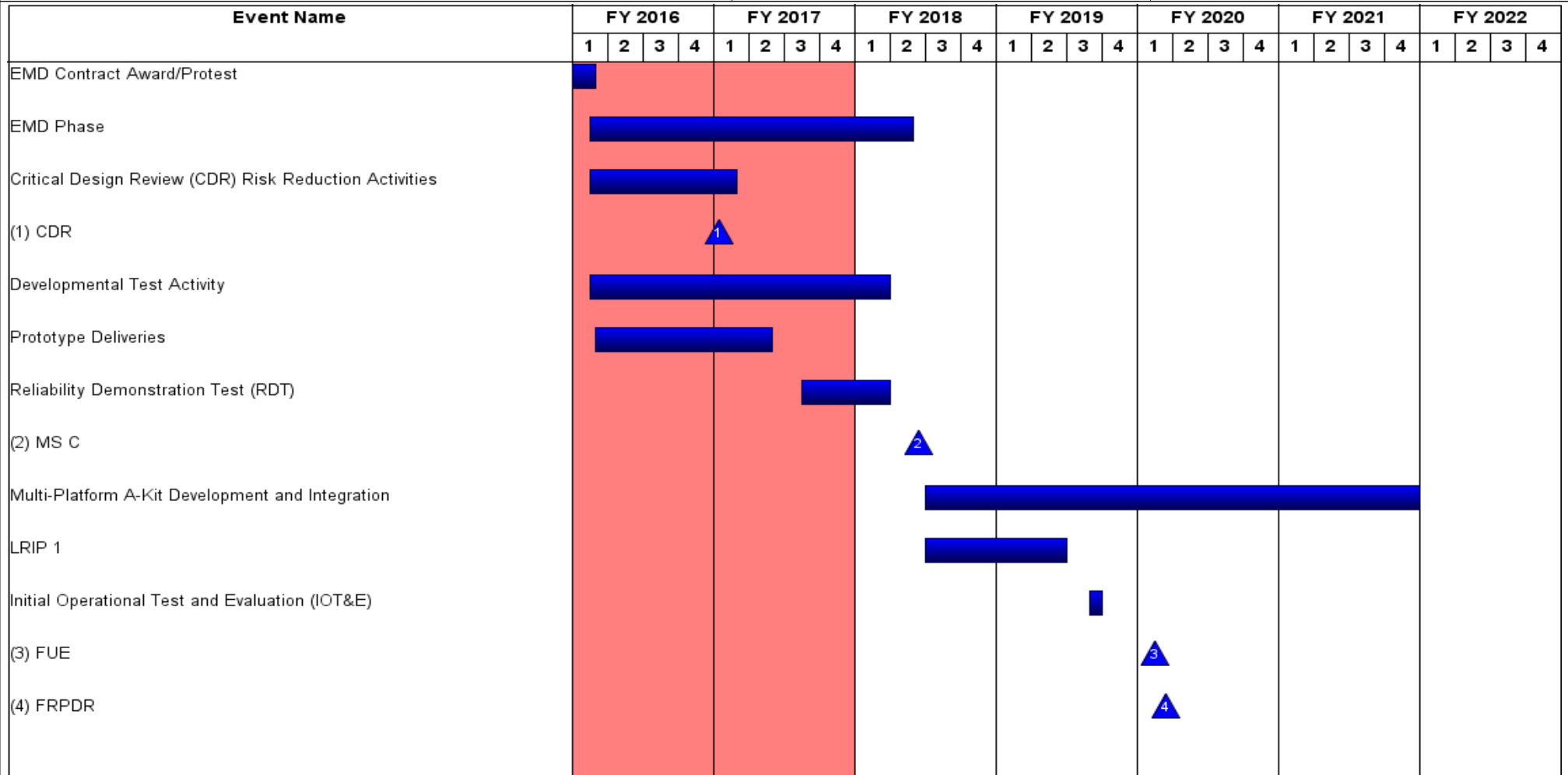
**Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army**

**Date:** May 2017

**Appropriation/Budget Activity**  
2040 / 5

**R-1 Program Element (Number/Name)**  
PE 0605035A / *Common Infrared Countermeasures (CIRCM)*

**Project (Number/Name)**  
EB4 / *CIRCM*



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: FY 2018 Army</b>																				<b>Date: May 2017</b>								
<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 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
(1) Initial Operating Capability (IOC)																					<div style="text-align: center;">1</div>							

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: FY 2018 Army</b>			<b>Date:</b> May 2017
<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**

<b>Events</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
EMD Contract Award/Protest	4	2015	1	2016
EMD Phase	1	2016	2	2018
Critical Design Review (CDR) Risk Reduction Activities	1	2016	1	2017
CDR	1	2017	1	2017
Developmental Test Activity	1	2016	1	2018
Prototype Deliveries	1	2016	2	2017
Reliability Demonstration Test (RDT)	3	2017	1	2018
MS C	2	2018	2	2018
Multi-Platform A-Kit Development and Integration	3	2018	4	2021
LRIP 1	3	2018	2	2019
Initial Operational Test and Evaluation (IOT&E)	3	2019	3	2019
FUE	1	2020	1	2020
FRPDR	1	2020	1	2020
Initial Operating Capability (IOC)	4	2021	4	2021