

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2025 Air Force **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603605F / <i>Advanced Weapons Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	-	81.040	102.997	25.050	0.000	25.050	4.935	21.159	22.526	22.902	Continuing	Continuing
633151: <i>High Power Solid State Laser Technology</i>	-	28.585	15.849	0.000	0.000	0.000	0.000	13.520	14.104	9.390	Continuing	Continuing
633152: <i>High Power Microwave Development and Integration</i>	-	52.455	87.148	25.050	0.000	25.050	4.935	7.639	8.422	13.512	0.000	199.161

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

This program provides for the development, integration, demonstration, and detailed assessment of directed energy (DE) weapon technologies for potential application on Air Force platforms. These include high energy laser (HEL), high power microwaves (HPM), and other unconventional weapon generation and transmission technologies, which can support a wide range of Air Force applications. The program develops a corresponding susceptibility, vulnerability, and lethality database for directed energy weapons. Efforts in this program have been coordinated through the Department of Defense Science and Technology Executive Committee process to harmonize efforts and eliminate duplication.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver science & technology capabilities. The use of program funds in this program element would be in addition to the civilian pay expenses budgeted in program elements 0601102F, 0602102F, 0602201F, 0602202F, 0602203F, 0602204F, 0602602F, 0602605F, 0602788F, 1206601SF, and 0602298F.

This program element may include necessary expenses to support the operation and maintenance of facilities to manage, execute, and deliver science and technology capabilities.

This program is in Budget Activity 3, Advanced Technology Development because this budget activity includes development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in a simulated environment.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>
Previous President's Budget	89.024	102.997	52.172	0.000	52.172
Current President's Budget	81.040	102.997	25.050	0.000	25.050
Total Adjustments	-7.984	0.000	-27.122	0.000	-27.122
• Congressional General Reductions	0.000	0.000			
• 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	-1.096	0.000			
• SBIR/STTR Transfer	-3.164	0.000			
• Other Adjustments	-3.724	0.000	-27.122	0.000	-27.122

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 633151: *High Power Solid State Laser Technology*

Congressional Add: *Program increase - LIDAR CUAS automated target recognition*

Congressional Add Subtotals for Project: 633151

Congressional Add Totals for all Projects

	<b>FY 2023</b>	<b>FY 2024</b>
	5.000	-
	5.000	-
	5.000	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2025 Air Force **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603605F / <i>Advanced Weapons Technology</i>	<b>Project (Number/Name)</b> 633151 / <i>High Power Solid State Laser Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
633151: <i>High Power Solid State Laser Technology</i>	-	28.585	15.849	0.000	0.000	0.000	0.000	13.520	14.104	9.390	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

This project provides for the development, integration, demonstration, and detailed technical assessment of high energy laser devices, advanced imaging, and beam control technologies needed for applications such as force protection, force application, precision engagement, and aircraft protection. Laser system concept assessments to include vulnerability assessments and target effect testing are performed.

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

	FY 2023	FY 2024	FY 2025
<b>Title:</b> High Energy Laser/Beam Control	23.585	15.849	0.000
<b>Description:</b> Develop and demonstrate advanced beam control technologies, integrated laser systems, and aircraft protection laser technologies. Demonstrate beam control components integrated with high energy lasers for the Department of the Air Force utility.			
<b>FY 2024 Plans:</b> Continue additional testing and demonstration activities with packaged high energy laser (HEL) and/or beam control subsystem. Continue laser subsystems integration for a ground demonstration. Initiate next phase of advanced integrated technologies for compact, low-size, weight and power (SWaP) airborne laser weapon system.			
<b>FY 2025 Plans:</b> - Reduce testing and demonstration of the Packaged HEL and beam control subsystem, supported by in-house government personnel only. - Terminate laser subsystems integration for a ground demonstration. - Reduce planning for next phase of advanced integrated technologies for compact, low-size, weight and power (SWaP) airborne laser weapon system, supported by in-house government personnel only.			
<b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> FY 2025 funding decreased compared to FY 2024 by \$15.849 million due to re-prioritization to meet the nation's future security needs.			
<b>Accomplishments/Planned Programs Subtotals</b>	23.585	15.849	0.000

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<b>Appropriation/Budget Activity</b> 3600 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603605F / <i>Advanced Weapons Technology</i>	<b>Project (Number/Name)</b> 633151 / <i>High Power Solid State Laser Technology</i>
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	FY 2023	FY 2024
<b>Congressional Add:</b> Program increase - LIDAR CUAS automated target recognition	5.000	-
<b>FY 2023 Accomplishments:</b> Conduct Congressional directed efforts.		
<b>Congressional Adds Subtotals</b>	5.000	-

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

Not Applicable

**D. Acquisition Strategy**

Not Applicable

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force										<b>Date:</b> March 2024		
<b>Appropriation/Budget Activity</b> 3600 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603605F / <i>Advanced Weapons Technology</i>				<b>Project (Number/Name)</b> 633152 / <i>High Power Microwave Development and Integration</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
633152: <i>High Power Microwave Development and Integration</i>	-	52.455	87.148	25.050	0.000	25.050	4.935	7.639	8.422	13.512	0.000	199.161
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

This project develops and demonstrates high power microwave and other unconventional electromagnetic field generation and transmission technologies that can be integrated into future weapon systems to support a wide range of the Department of the Air Force missions such as air base defense or the damage/destruction of an adversary's electronic infrastructure. It also provides inputs to the susceptibility, vulnerability, and lethality databases used across the Department of Defense to understand thresholds for scalable effects of directed energy weapons.

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

	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<b>Title:</b> High Power Microwave Technologies	52.455	87.148	25.050
<b>Description:</b> Develop and evaluate high power microwave and other unconventional weapon technologies for various platforms, including aerial, for applications such as counter-electronics. Develop and evaluate high power microwave technologies for non-kinetic and counter-electronic weapon applications.			
<b>FY 2024 Plans:</b> Continue development of high power microwave components to enable the integration into aerial platforms, ground-based systems and mobile systems. Initiate development of a high power microwave system for an integrated air and missile defense mission. Continue development of modeling tools and test capabilities to evaluate current and projected blue Directed Energy weapons against relevant red assets. Continue development of next generation high power microwave high frequency sources. Continue a high-priority base defense mission with joint high power microwave system with the Military Services for Directed Energy Frontline Electromagnetic Neutralization and Defeat (DEFEND).			
<b>FY 2025 Plans:</b> - Terminate the development of high power microwave components to enable the integration into aerial platforms, ground-based systems, and mobile systems; focus on technologies that can decrease the size and weight of systems while still providing the same capability. - Terminate the development of modeling tools and test capabilities to evaluate current and projected blue directed energy weapons against relevant red assets. - Initiate in-house government exploration of novel methods to increase power; focus on reducing the logistical requirements and maintenance requirements of the sources. - Terminate development of next generation high power microwave high frequency sources.			

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<b>Appropriation/Budget Activity</b> 3600 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603605F / <i>Advanced Weapons Technology</i>	<b>Project (Number/Name)</b> 633152 / <i>High Power Microwave Development and Integration</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<ul style="list-style-type: none"> <li>- Terminate development of a high power microwave system for an integrated air and missile defense mission; focus on technologies that would allow the system to be compliant with agile combat employment.</li> <li>- Continue a high-priority base defense mission with joint high power microwave system with the Military Services for Directed Energy Frontline Electromagnetic Neutralization and Defeat (DEFEND).</li> <li>- Initiate in-house government design effort of antenna for base defense and airborne applications.</li> <li>- Initiate in-house government design effort of new sources for airborne applications.</li> </ul> <p><b><i>FY 2024 to FY 2025 Increase/Decrease Statement:</i></b> FY 2025 funding decreased compared to FY 2024 by \$62.098 million due to re-prioritization to meet the nation's future security needs.</p>				
<b>Accomplishments/Planned Programs Subtotals</b>		52.455	87.148	25.050
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
Not Applicable				
<b>D. Acquisition Strategy</b>				
Not Applicable				