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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603720S / <i>Microelectronics Technology Development and Support (DMEA)</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	1,116.972	131.718	202.475	139.833	-	139.833	143.442	145.862	146.628	147.741	Continuing	Continuing
001: <i>Technology Development</i>	557.688	57.911	0.000	-	-	-	-	-	-	0.000	Continuing	Continuing
003: <i>Trusted Foundry</i>	559.284	73.807	0.000	-	-	-	-	-	-	0.000	Continuing	Continuing
004: <i>Defense MicroElectronics Activity (DMEA)</i>	0.000	0.000	202.475	139.833	-	139.833	143.442	145.862	146.628	147.741	Continuing	Continuing

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

The Defense Microelectronics Activity (DMEA) mission is to leverage advanced technologies to provide microelectronics solutions across the entire spectrum of technology development and system acquisition phases. It is critical to National Security for the Department to maintain technological superiority through microelectronics solutions via partnerships with the Defense Industrial Base, and by alternative means when industry is unable or unwilling to provide them. DMEA provides an in-house capability to quickly develop and deliver timely, cost-effective, technically appropriate solutions to sustain weapon systems, to modernize their capabilities, increase their lethality, address new threats, and meet operational demands. DMEA augments its in-house capability through extensive industry and Government partnerships that enable streamlined access to a variety of microelectronics technologies and engineering services to enhance responsiveness, and that develop sources for advanced microelectronics solutions.

DMEA's capabilities are critical in an atmosphere of diminishing domestic semiconductor manufacturing capability and increasing worldwide supply chain risks. The Department has very little influence over the microelectronics industry; the defense market represents less than 0.1% share of the total global semiconductor market. Access to mainstream, State of the Practice (SOTP) and State of the Art (SOTA) technologies is therefore a major and growing challenge. Threats to defense microelectronics include counterfeiting, latent vulnerabilities, malicious insertions, reliability issues particular to military environments, consolidation and off-shoring of manufacturing, rapid obsolescence and diminishing technology availability coming from an unpredictable and unsecured supply chain. In addition, as the Department maintains its weapon systems longer than originally planned, extended use increases demand for sustainment and modernization, which further intensifies the need for DMEA's unique capabilities, as well as continued development, and incorporation, of quantifiable assurance mechanisms.

DMEA provides the Department with engineering expertise and laboratories to address the myriad microelectronics issues and to meet military requirements across the entire spectrum of technology research and development, acquisition, and long-term support. DMEA applies its specialized capabilities to resolve microelectronics issues for hundreds of distinct Department programs across the acquisition lifecycle every year. In addition, DMEA assists the Combatant Commands (COCOMs) including Special Ops, Cyber, Intelligence, and the Radiation-Hard communities.

DMEA also provides the Department with front door access to SOTA microelectronics design and manufacturing capabilities with the added benefit of accredited facilities and processes, which employ quantifiable assurance mechanisms, to meet confidentiality, integrity, availability, performance and delivery needs. DMEA also provides the Services and Defense Agencies with a competitive cadre of accredited suppliers and advanced hardware assurance capabilities that can meet the needs of mission critical/essential systems for microelectronics components.

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<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	124.049	160.821	0.000	-	0.000
Current President's Budget	131.718	202.475	139.833	-	139.833
Total Adjustments	7.669	41.654	139.833	-	139.833
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	12.000	49.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.331	-6.621			
• Correction for Non-Pay/Non-Fuel Purchases	-	-0.725	-	-	-
• Adjustments to Budget Year	-	-	139.833	-	139.833

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

**Project: 001: Technology Development**

Congressional Add: *GaN-on-Si-Based RF Front-end Increase*

Congressional Add Subtotals for Project: 001

**Project: 003: Trusted Foundry**

Congressional Add: *Military GPS User Equipment (MGUE) Transfer from PDW*

Congressional Add Subtotals for Project: 003

**Project: 004: Defense MicroElectronics Activity (DMEA)**

Congressional Add: *Qualified Discrete Parts*

Congressional Add: *GaN-on-Si RF Front-end*

Congressional Add: *On-Shore Test Site*

Congressional Add: *Silicon Carbide Applications*

Congressional Add Subtotals for Project: 004

Congressional Add Totals for all Projects

	<b>FY 2021</b>	<b>FY 2022</b>
	5.000	-
Congressional Add Subtotals for Project: 001	5.000	-
	7.000	-
Congressional Add Subtotals for Project: 003	7.000	-
	-	5.000
	-	30.000
	-	9.000
	-	5.000
Congressional Add Subtotals for Project: 004	-	49.000
Congressional Add Totals for all Projects	12.000	49.000

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**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 Defense Logistics Agency										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603720S / <i>Microelectronics Technology Development and Support (DMEA)</i>				<b>Project (Number/Name)</b> 001 / <i>Technology Development</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>
001: <i>Technology Development</i>	557.688	57.911	0.000	-	-	-	-	-	-	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Technology Development funds provide DMEA with the resources to maintain an in-house ability to quickly develop and deliver timely, cost-effective, technically appropriate solutions to sustain weapon systems, to modernize their capabilities, increase their lethality, address new threats, and meet operational demands. These funds also support DMEA's ability to partner with industry, other government agencies, and academia to enable streamlined access to a variety of microelectronics technologies and engineering services.

These funds enable DMEA to provide increasingly rare government microelectronics design, fabrication, and test expertise to DoD programs. DMEA's knowledge of varying military requirements across a broad and diverse range of combatant environments and missions—along with its unique technical perspective—allows it to develop, manage and deliver novel, decisive, quick turn microelectronics solutions for defense, intelligence, special operations, and cyber and combat missions.

These funds allow DMEA to maintain and enhance critical, Trusted microelectronics design, aggregation, fabrication, post-processing, assembly and analysis capabilities to ensure that the Department is provided with solutions that enable or maintain the warfighter's technological superiority over potential adversaries. These solutions use high mix, low volume, unique microelectronics that are endemic to military requirements but are not commercially available. In addition, funding provides for the research, development and support necessary to ensure availability of microelectronics technologies for weapon systems, particularly as the technologies advance and industry is increasingly unable or unwilling to provide them.

DMEA looks to industry to see if it can provide the required solutions. If industry cannot or will not, only then does DMEA provide the necessary solutions using its in-house capabilities. A critical element required to enable continued success is DMEA's protection of the industry partners' valuable Intellectual Property (IP) and processes. DMEA is a small, agile government-owned and operated organization, providing the structure and confidence necessary to assure them that commercial IP is protected from potential competitors. This strategic and cooperative industry partnership approach allows DMEA to use industry-developed IP and processes by acquiring, installing, and applying them toward meeting the immediate and long-term needs of the Department. This unique capability is essential to all major weapon systems, combat operations, and support needs. As such, DMEA serves the Department, other US Agencies, industry and Allied nations.

DMEA assists hundreds of Department programs every year. DMEA has provided its specialized engineering assistance and capabilities to older systems, current systems, and even to programs not yet in the production phase. Programs that DMEA has recently provided critical support to include Counter-Rocket, Artillery, and Mortar (C-RAM) System, C-5, V-22, F-15, F-35, RQ-4 Global Hawk, AEGIS Advanced Surface Missile System, Advanced Medium-Range Air-to-Air Missile (AMRAAM), HH-60G Pave Hawk Helicopter, OSD Joint Fuze Technology Program, among many others. DMEA assists the Combatant Commands (COCOMs) including Special Operations, Intelligence, and the Radiation-Hard communities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Defense Logistics Agency		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603720S / <i>Microelectronics Technology Development and Support (DMEA)</i>	<b>Project (Number/Name)</b> 001 / <i>Technology Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> Technology Development Accomplishments/Plans	52.911	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	52.911	-	-

	<b>FY 2021</b>	<b>FY 2022</b>
<b>Congressional Add:</b> GaN-on-Si-Based RF Front-end Increase	5.000	-
<b>FY 2021 Accomplishments:</b> \$5 million increase for GaN-on-Si-Based RF Front-end - DMEA plans to continue its efforts (phase 2) on scaling and establishing a domestic 200mm Gallium Nitride (GaN) on Silicon (Si) source at an industry partner.		
<b>Congressional Adds Subtotals</b>	5.000	-

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

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**Exhibit R-2A, RDT&E Project Justification:** PB 2023 Defense Logistics Agency **Date:** April 2022

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603720S / <i>Microelectronics Technology Development and Support (DMEA)</i>	<b>Project (Number/Name)</b> 003 / <i>Trusted Foundry</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
003: <i>Trusted Foundry</i>	559.284	73.807	0.000	-	-	-	-	-	-	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Department, other agencies, and the intelligence community require uninterrupted access to state-of-the-art design and manufacturing processes to produce custom integrated circuits designed specifically for military purposes. Under DoDI 5200.44, Application Specific Integrated Circuits (ASICs) in critical/essential systems must be procured from Trusted sources in order to avoid altered or sabotaged parts. Worldwide competition from foreign, state-subsidized manufacturing facilities continues to greatly reduce the number of U.S. semiconductor fabrication facilities available to be Trusted sources. The prevalence of sophisticated offshore design and manufacturing facilities with economic incentives of state subsidies have resulted in the outsourcing of electronics component and integrated circuit services to these offshore facilities. This production capability is of increasing importance as domestic semiconductor manufacturing resources continue to decline, especially in the scarce domestic production capacity of high performance and state-of-the-art semiconductor technologies. Commercial sources of microelectronics remain inherently unpredictable and constitute a continued supply chain risk regardless of Government investment. This trend threatens the integrity and worldwide leadership of the U.S. semiconductor industry by eliminating many domestic suppliers and reducing access to Trusted fabrication sources for advanced technologies, and is of acute concern to the defense and intelligence communities. Secure communications and cryptographic applications, along with most other key defense technologies, depend heavily on high performance semiconductors where a generation of improvement often translates into significant force multipliers and capability advantages. Important defense technology investments and demonstrations carry size, weight, power, and performance goals that can only be met through the use of the most sophisticated semiconductors.

The Trusted Foundry program provides the Department with access to state-of-the-art microelectronics design and manufacturing capabilities with the added benefit of Trust, if necessary, to meet their confidentiality, integrity, availability, performance and delivery needs. The program also provides the Services and other agencies with a competitive cadre of accredited Trusted suppliers that can meet the needs of their mission critical/essential systems for Trusted integrated circuit components. The Trusted Access Program Office has contracted with commercial sources to satisfy state-of-the-art semiconductor requirements. DMEA will foster all viable alternatives to continue the vital supply of Trusted microelectronics, including the work of the DMEA Trusted Access Program Office with commercial state-of-the-art industry, as well as the extension and implementation of key process technologies for trust at DMEA. It is imperative for a wide range of technologies in ongoing and future Department systems that access to Trusted suppliers continues. Most importantly, access to Trusted Microelectronics is absolutely necessary to meet secure communication and cryptographic needs requiring state-of-the-art semiconductor technologies.

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

	FY 2021	FY 2022	FY 2023
<b>Title:</b> Trusted Foundry	66.807	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	66.807	-	-

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<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603720S / <i>Microelectronics Technology Development and Support (DMEA)</i>	<b>Project (Number/Name)</b> 003 / <i>Trusted Foundry</i>
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	FY 2021	FY 2022
<b>Congressional Add:</b> Military GPS User Equipment (MGUE) Transfer from PDW	7.000	-
<b>FY 2021 Accomplishments:</b> \$7M MGUE DLA requested transfer from PDW - DMEA plans to execute the first option year of a two year extension of a critical process technology required for the DoD to complete its procurement of MGUE ASICs.		
<b>Congressional Adds Subtotals</b>	7.000	-

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

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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>
004: <i>Defense MicroElectronics Activity (DMEA)</i>	0.000	0.000	202.475	139.833	-	139.833	143.442	145.862	146.628	147.741	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

DMEA maintains an in-house ability to quickly develop and deliver timely, cost-effective, technically appropriate solutions to sustain weapon systems, to modernize their capabilities, increase their lethality, address new threats, and meet operational demands. These funds also support DMEA's ability to partner with industry, other Government agencies, and academia to enable streamlined access to a variety of microelectronics technologies and engineering services.

These funds enable DMEA to provide increasingly rare government microelectronics design, fabrication, and test expertise to DoD programs. DMEA's knowledge of varying military requirements across a broad and diverse range of combatant environments and missions—along with its unique technical perspective—allows it to develop, manage and deliver novel, decisive, quick-turn microelectronics solutions for defense, intelligence, special operations, cyber and combat missions.

These funds allow DMEA to maintain and enhance critical, microelectronics design, aggregation, fabrication, post-processing, assembly, hardware assurance and analysis capabilities to ensure that the Department is provided with solutions that enable or maintain the warfighter's technological superiority over potential adversaries. These solutions use high mix, low volume, unique microelectronics that are endemic to military requirements but are not commercially available. In addition, funding provides for the development and sustainment support necessary to ensure availability of microelectronics technologies in accordance with applicable operational security standards, particularly as the technologies advance and industry is increasingly unable or unwilling to provide them.

The Department, other US Agencies, and the Intelligence Community require uninterrupted access to design and manufacturing processes to produce custom integrated circuits designed specifically for military purposes. DMEA partners with industry to provide the required solutions, and the necessary access to commercial SOTA microelectronics design and manufacturing capabilities to meet confidentiality, integrity, availability, performance and delivery needs. If industry cannot or will not provide the required solutions, only then does DMEA provide the necessary solutions using in-house capabilities. A critical element required to enable continued success is DMEA's protection of the industry partners' valuable Intellectual Property (IP). DMEA is an agile, Government-owned-and-operated organization, providing the structure and confidence necessary to assure them that commercial IP is protected from potential competitors. This strategic and cooperative industry partnership approach allows DMEA to use industry-developed IP by acquiring, installing, and applying them toward meeting the immediate and long-term needs of the Department. This unique capability is essential to all major weapon systems, combat operations, and support needs. As such, DMEA serves the Department, other US Agencies, industry and Allied nations.

DMEA assists hundreds of Department programs every year. DMEA has provided its specialized engineering assistance and capabilities to older systems, current systems, and even to programs not yet in the production phase. Programs that DMEA has recently provided critical support to include CH-53E Sea Stallion, Virginia Class Submarines, Columbia Class Submarines, UH-60 Blackhawk, Air Force Air Combat Command, US Army Corps of Engineers, E-3 AWACS, C5ISREW CHEETAH, Military GPS User Equipment, NASA Parker Solar Probe, Naval Research Laboratory High Power Microwave Office, among many others. DMEA assists the Combatant

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Commands (COCOMs) including Special Operations, Intelligence, and the Radiation-Hard communities.

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

	FY 2021	FY 2022	FY 2023
<p><b>Title:</b> Defense Microelectronics Activity Accomplishments/Plans</p> <p><b>FY 2022 Plans:</b>                      DMEA will design, develop, and demonstrate microelectronics concepts, advanced technologies, and applications to solve operational sustainment problems. DMEA will apply advanced technologies to add performance enhancements in response to the newest asymmetric threats and to modernize aging weapon systems. To meet the increased missions seen in the last several years by CCMDs, Special Operations, and the Intelligence Community, DMEA will extend and refresh capability by recapitalizing and modernizing its aging laboratory infrastructure, developing advanced techniques to inspect and analyze circuits, and adapting tools and processes to contribute to the Department-wide hardware assurance efforts, all to meet quick turn solutions on which CCMDs and Special Operations can rely. DMEA will continue to act as the program manager for the Trusted Foundry Program and will provide the Department with access to state-of-the-art microelectronics design and manufacturing capabilities with the added benefit of Trust, if necessary, to meet their confidentiality, integrity, availability, performance and delivery needs via the Trusted Access Program Office. The program also provides the Services and other agencies with a competitive cadre of accredited Trusted suppliers that can meet the needs of their mission critical/essential systems for Trusted integrated circuit components. The Trusted Access Program Office has contracted with commercial sources to satisfy state-of-the-art semiconductor requirements. DMEA will foster all viable alternatives to continue the vital supply of Trusted microelectronics, including the work of the DMEA Trusted Access Program Office with commercial state-of-the-art industry. In areas where Trust is not available, DMEA will assist the Department in the incorporation of the standards for the design and production of the critical components and services needed for appropriate defense systems while contributing to the development or transition to new security approaches for microelectronics.</p> <p>DMEA will continue to support DoD programs in utilizing operational security standards and conducting ACMAs in support of the program protection planning process. DMEA will leverage new models for the use of in-house capabilities to support STEM workforce development, mainstream semiconductor technology fabrication, and streamlined access to advanced technologies.</p> <p>DLA Transfer from PDW for \$35M. DLA requested transfer to execute procurement of ASIC's from TAPO to include: reservations, security services, fee's, masks, wafers, technical services, and other services provided by TAPO</p> <p><b>FY 2023 Plans:</b>                      DMEA will design, develop, and demonstrate microelectronics concepts, advanced technologies, and applications to solve operational problems. DMEA will apply advanced technologies to add performance enhancements in response to the newest asymmetric threats and to modernize and sustain aging weapon systems. To meet the increased missions seen in the last several years by CCMDs, Special Operations, and the Intelligence Community, DMEA will extend and refresh capability by recapitalizing and modernizing its aging laboratory infrastructure, developing advanced techniques to inspect and analyze</p>	-	153.475	139.833

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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>circuits, and adapting tools and processes to contribute to the Department-wide hardware assurance efforts, all to meet quick turn solutions on which CCMDs and Special Operations can rely. DMEA will continue to act as the program manager for the Trusted Foundry Program and will provide the Department with access to state-of-the-art microelectronics design and manufacturing capabilities with the added benefit of Trust, if necessary, to meet their confidentiality, integrity, availability, performance and delivery needs via the Trusted Access Program Office. The program also provides the Services and other agencies with a competitive cadre of accredited Trusted suppliers that can meet the needs of their mission critical/essential systems for Trusted integrated circuit components. The Trusted Access Program Office has contracted with commercial sources to satisfy state-of-the-art semiconductor requirements. DMEA will foster all viable alternatives to continue the vital supply of Trusted microelectronics, including the work of the DMEA Trusted Access Program Office with commercial state-of-the-art industry. In areas where Trust is not available, DMEA will assist the Department in the incorporation of the standards for the design and production of the critical components and services needed for appropriate defense systems while contributing to the development or transition to new security approaches for microelectronics. DMEA will continue to support DoD programs in utilizing operational security standards and conducting ACMAs in support of the program protection planning process. DMEA will leverage new models for the use of in-house capabilities to support STEM workforce development, mainstream semiconductor technology fabrication, and streamlined access to advanced technologies.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> The FY 2022 to FY 2023 decrease is primarily due to the receipt of the FY 2022 DLA transfer from PDW for \$35M which was not received in FY 2023.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	-	153.475	139.833

	<b>FY 2021</b>	<b>FY 2022</b>
<b>Congressional Add:</b> Qualified Discrete Parts <i>FY 2022 Plans:</i> Plans awaiting development. Requested Congressional intent on 3/23/22.	-	5.000
<b>Congressional Add:</b> GaN-on-Si RF Front-end <i>FY 2022 Plans:</i> DMEA plans to continue its efforts (phase 3) on scaling and establishing a domestic 200mm Gallium Nitride (GaN) on Silicon (Si) source at a high volume DMEA accredited Trusted Supplier.	-	30.000
<b>Congressional Add:</b> On-Shore Test Site <i>FY 2022 Plans:</i> Plans awaiting development. Requested Congressional intent on 4/4/22.	-	9.000
<b>Congressional Add:</b> Silicon Carbide Applications	-	5.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Defense Logistics Agency	<b>Date:</b> April 2022
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	FY 2021	FY 2022
<b>FY 2022 Plans:</b> Phase 1 effort to investigate and develop a 200mm SiC (Silicon Carbide) epitaxial growth and manufacturing capability at a domestic 200mm high volume DMEA accredited Trusted Supplier.		
<b>Congressional Adds Subtotals</b>	-	49.000

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A