Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Office of the Secretary Of Defense	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602230D8Z / *Defense Technology Innovation*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	9.989	0.000	17.476	22.918	-	22.918	-	-	-	-	-	-
835: *Defense Technology Innovation*	9.989	0.000	17.476	0.000	-	0.000	-	-	-	-	-	-
230: *Beyond 5G*	-	0.000	0.000	22.918	-	22.918	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This program will build upon the technology foundation that underlies fifth-generation cellular network (5G) systems as a basis to create the next generation of wireless cellular network and security technologies for military applications. Working in concert with other U.S. Government science and technology agencies, this DoD program will enable the U.S. to regain leadership in emerging wireless technology standards including sixth generation (6G) and beyond by investing in research and workforce development in critical technologies. The development of an engagement plan with other Departments, agencies, industry, and universities will ensure continued U.S. influence in both the international commercial marketplace as well as Government sectors.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.000	35.000	23.000	-	23.000
Current President's Budget	0.000	17.476	22.918	-	22.918
Total Adjustments	0.000	-17.524	-0.082	-	-0.082
• Congressional General Reductions	-	-17.524			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-	-	-0.082	-	-0.082

Change Summary Explanation

The decrease in FY 2021 is due to funding of higher priority initiatives.

No significant changes in FY 2022.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense			Date: May 2021
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602230D8Z / *Defense Technology Innovation*	Project (Number/Name) 835 / *Defense Technology Innovation*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
835: *Defense Technology Innovation*	9.989	0.000	17.476	0.000	-	0.000	-	-	-	-	-	-

Note

Funding in FY 2022 will be under new Project Code 230, to change the Project Code title to "Beyond 5G." The requirement and efforts remain unchanged.

A. Mission Description and Budget Item Justification

This program will build upon the technology foundation that underlies fifth-generation cellular network (5G) systems as a basis to create the next generation of wireless cellular network and security technologies for military applications. Working in concert with other U.S. Government science and technology agencies, this DoD program will enable the U.S. to regain leadership in emerging wireless technology standards including sixth generation (6G) and beyond by investing in research and workforce development in critical technologies. The development of an engagement plan with other Departments, agencies, industry, and universities will ensure continued U.S. influence in both the international commercial marketplace as well as Government sectors.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Beyond 5G	-	17.476	-
Description: This program will build upon the technology foundation that underlies fifth-generation cellular network (5G) systems as a basis to create the next generation of wireless cellular network and security technologies for military applications. Working in concert with other U.S. Government science and technology agencies, this DoD program will enable the U.S. to regain leadership in upcoming wireless technology standards including sixth generation (6G) and beyond by investing in research and workforce development in critical technologies. The development of an engagement plan with other Departments, agencies, industry, and universities will ensure continued U.S. influence in both the international commercial marketplace as well as Government sectors. ***FY 2021 Plans:*** DoD will work in concert with other U.S. Government science and technology agencies such as the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST) to invest in applied research in Beyond 5G, through collaborative mechanisms such as co-investment in early-stage technology testbeds, novel hardware and software components for sustained long-term leadership and fellowship/training programs for Beyond 5G workforce development. DoD will initiate research and development in the following areas: • Radio Frequency (RF) and large-scale multi-antenna systems for higher millimeter wave/THz bands, • Novel adaptive machine learning concepts for achieving extreme spectrum reuse and network resource allocation, • Use of all available spectral degrees of freedom in contested/congested spectrum environments to enable highly dynamic spectrum utilization,			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602230D8Z / *Defense Technology Innovation*	**Project (Number/Name)** 835 / *Defense Technology Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
• Robust, reconfigurable, and secure software-defined Beyond 5G network management techniques to enable more dynamic networks, • Edge computing for low latency, mission critical Next G DoD CONOPs. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding in FY 2022 is re-aligned to new Project Code 230.			
Accomplishments/Planned Programs Subtotals	-	17.476	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense			Date: May 2021
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602230D8Z / *Defense Technology Innovation*	Project (Number/Name) 230 / *Beyond 5G*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
230: *Beyond 5G*	-	0.000	0.000	22.918	-	22.918	-	-	-	-	-	-

Note

Funding in FY 2022 will be under new Project Code 230, to change the Project Code title to "Beyond 5G." The requirement and efforts remain unchanged.

A. Mission Description and Budget Item Justification

This program will build upon the technology foundation that underlies fifth-generation cellular network (5G) systems as a basis to create the next generation of wireless cellular network and security technologies for military applications. Working in concert with other U.S. Government science and technology agencies, this DoD program will enable the U.S. to regain leadership in emerging wireless technology standards including sixth generation (6G) and beyond by investing in research and workforce development in critical technologies. The development of an engagement plan with other Departments, agencies, industry, and universities will ensure continued U.S. influence in both the international commercial marketplace as well as Government sectors.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Beyond 5G	-	-	22.918
Description: Continue to build upon the technology foundation that underlies fifth-generation cellular network (5G) systems as a basis to create the next generation of wireless cellular network and security technologies for military applications. Working in concert with other U.S. Government science and technology agencies, this DoD program will enable the U.S. to regain leadership in upcoming wireless technology standards including sixth generation (6G) and beyond by investing in research and workforce development in critical technologies. The development of an engagement plan with other Departments, agencies, industry, and universities will ensure continued U.S. influence in both the international commercial marketplace as well as Government sectors. ***FY 2022 Plans:*** DoD will continue this investment through the collaborative mechanisms with NSF and NIST noted above – in early-stage technology testbeds, novel hardware and software components, and fellowship/training programs. DoD will broadly continue initiatives in the FY 2021 areas: • Radio Frequency (RF) and massive MIMO technology, • Spectrum reuse/network resource utilization based on novel machine learning concepts, • Highly dynamic spectrum sharing using multiple degrees of freedom in contested/congested scenarios, • Robust, reconfigurable, and secure software-defined networking, • Edge computing for ultra-reliable, low latency applications.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602230D8Z / *Defense Technology Innovation*	**Project (Number/Name)** 230 / *Beyond 5G*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
DoD will adapt its R&D investment strategy/award mix based on the companion Prototyping and Experimentation testbed deployments. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Efforts re-aligned from Project Code 835 beginning in FY 2022.			
Accomplishments/Planned Programs Subtotals	-	-	22.918

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A