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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Defense Advanced Research Projects Agency | <b>DATE:</b> February 2011 |
|--|----------------------------|

| APPROPRIATION/BUDGET ACTIVITY  |         |         |              | R-1 ITEM NOMENCLATURE                        |               |         |         |         |         |                  |            |
|--|---------|---------|--------------|--|---------------|---------|---------|---------|---------|------------------|------------|
| 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 2: <i>Applied Research</i> |         |         |              | PE 0302168E: <i>WIRELESS INNOVATION FUND</i> |               |         |         |         |         |                  |            |
| COST (\$ in Millions)  | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO                                  | FY 2012 Total | FY 2013 | FY 2014 | FY 2015 | FY 2016 | Cost To Complete | Total Cost |
| Total Program Element  | -       | -       | 100.000      | -  | 100.000       | 100.000 | 100.000 | 100.000 | 100.000 | Continuing       | Continuing |
| WIF-01: <i>WIRELESS INNOVATION FUND</i>  | -       | -       | 100.000      | -  | 100.000       | 100.000 | 100.000 | 100.000 | 100.000 | Continuing       | Continuing |

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

The goal of this effort is to carry out research within the Defense Advanced Research Projects Agency to allow selected spectrum reallocation and conversion of DoD's wireless communications systems and those of other users, coordinating activities as part of the Wireless Innovation (WIN) Fund. This project will develop technologies to create breakthroughs that can solve core security, analytic, sharing, and reliability challenges while increasing data transmission speeds to enable the next generation of wireless networks.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2010</b> | <b>FY 2011</b> | <b>FY 2012 Base</b> | <b>FY 2012 OCO</b> | <b>FY 2012 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | -              | -              | -                   | -                  | -                    |
| Current President's Budget                        | -              | -              | 100.000             | -                  | 100.000              |
| Total Adjustments                                 | -              | -              | 100.000             | -                  | 100.000              |
| • Congressional General Reductions                |                | -              |                     |                    |                      |
| • Congressional Directed Reductions               |                | -              |                     |                    |                      |
| • Congressional Rescissions                       | -              | -              |                     |                    |                      |
| • Congressional Adds                              |                | -              |                     |                    |                      |
| • Congressional Directed Transfers                |                | -              |                     |                    |                      |
| • Reprogrammings                                  | -              | -              |                     |                    |                      |
| • SBIR/STTR Transfer                              | -              | -              |                     |                    |                      |
| • TotalOtherAdjustments                           | -              | -              | 100.000             | -                  | 100.000              |

**Change Summary Explanation**

FY 2012: Funds are requested as part of the Wireless Innovation Fund.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2010</b> | <b>FY 2011</b> | <b>FY 2012</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Wireless Innovation Fund   | -              | -              | 100.000        |
| <b>Description:</b> Building upon DARPA's legacy in developing information and communications technology and command, control and communications systems, DARPA will seek to develop technologies to create breakthroughs that can solve core security, analytic, sharing, and reliability challenges while increasing data transmission speeds to enable the next generation of wireless networks. As part of this program, DARPA will investigate novel spectrum sharing and interference mitigation techniques to |                |                |                |

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 2: <i>Applied Research</i>  |  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0302168E: <i>WIRELESS INNOVATION FUND</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2010</b>   | <b>FY 2011</b> | <b>FY 2012</b> |
| <p>enable more efficient uses of the wireless spectrum. Ultimately, this program will test and demonstrate the technologies to provide a more secure, reliable and robust wireless network that will have broad impacts that span both DoD and commercial applications.</p> <p><b><i>FY 2012 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Identify and develop technologies for security, reliability, and scalability of next generation wireless networks.</li> <li>- Investigate new techniques that increase spectrum efficiency in order to gain more capacity in congested spectrum.</li> <li>- Conduct experiments to assess scalability of spectrum sharing technologies and technologies that reduce spectrum requirements.</li> <li>- Perform in collaboration with interested Government organizations such as National Telecommunications and Information Administration, National Institute of Standards and Technology, and others.</li> </ul> |  |  |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   |  | -  | -              | 100.000        |
| <b>D. Other Program Funding Summary (\$ in Millions)</b><br>N/A   |  |  |                |                |
| <b>E. Acquisition Strategy</b><br>N/A   |  |  |                |                |
| <b>F. Performance Metrics</b><br>Specific programmatic performance metrics are listed above in the program accomplishments and plans section.   |  |  |                |                |