

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT5734917

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| <b>SUBMISSION TYPE:</b>   | NEW ASSIGNMENT   |
| <b>NATURE OF CONVEYANCE:</b>  | ASSIGNMENT   |
| <b>CONVEYING PARTY DATA</b>   |  |
|   |  |
| <b>Name</b>   | <b>Execution Date</b>  |
| TDK CORPORATION   | 10/16/2018   |
| TDK ELECTRONICS AG  | 10/16/2018   |
| <b>RECEIVING PARTY DATA</b>   |  |
| <b>Name:</b>  | SNAPTRACK, INC.  |
| <b>Street Address:</b>  | 5775 MOREHOUSE DRIVE   |
| <b>City:</b>  | SAN DIEGO  |
| <b>State/Country:</b>   | CALIFORNIA   |
| <b>Postal Code:</b>   | 92121  |
| <b>PROPERTY NUMBERS Total: 1</b>  |  |
|   |  |
| <b>Property Type</b>  | <b>Number</b>  |
| <b>Application Number:</b>  | 16323699   |
| <b>CORRESPONDENCE DATA</b>  |  |
| <b>Fax Number:</b>  |  |
| <i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i> |  |
| <b>Email:</b>   | rross@pattersonsheridan.com, psdocketing@pattersonsheridan.com |
| <b>Correspondent Name:</b>  | PATTERSON + SHERIDAN, LLP                                      |
| <b>Address Line 1:</b>  | 24 GREENWAY PLAZA, SUITE 1600                                  |
| <b>Address Line 4:</b>  | HOUSTON, UNITED STATES 77046                                   |
| <b>ATTORNEY DOCKET NUMBER:</b>  | 172241USP  |
| <b>NAME OF SUBMITTER:</b>   | PUJA S. DETJEN   |
| <b>SIGNATURE:</b>   | /Puja S. Detjen/   |
| <b>DATE SIGNED:</b>   | 09/24/2019   |
| <b>Total Attachments: 16</b>  |  |
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## CONFIRMATORY PATENT ASSIGNMENT

This Confirmatory Patent Assignment (“**Patent Assignment**”) is made by **TDK Corporation**, a company incorporated under the laws of Japan with its place of business at 3-9-1, Shibaura, Minato-ku, Tokyo 108-0023, Japan, and **TDK Electronics AG** (formerly named EPCOS AG), a company incorporated under the laws of Germany with its place of business at St.-Martin-Str. 53, 81669 Munich Germany (hereinafter collectively “**ASSIGNORS**”) to **SnapTrack, Inc.**, a California corporation, having its principal place of business at 5775 Morehouse Drive, San Diego, California, U.S.A. (hereinafter “**ASSIGNEE**”).

WHEREAS, ASSIGNORS and ASSIGNEE previously entered into that certain Patent Transfer Agreement, effective as of February 1, 2017 the (“**PTA**”), whereby ASSIGNORS irrevocably sold, assigned, transferred, conveyed, and delivered to ASSIGNEE certain patents and patent applications, including but not limited to the Patent Items (as defined below).

WHEREAS, ASSIGNORS and ASSIGNEE agree to execute this Patent Assignment in order to confirm and perfect the transfer of the Patent Items to ASSIGNEE, to the extent that the sale, assignment, and transfer of the Patent Items was not fully completed upon execution of the PTA.

WHEREAS, ASSIGNEE has agreed to acquire all right, title and interest in, to and under (i) the registered patents and patent applications identified in the Exhibit attached hereto (hereinafter the “**Exhibit I**”), and all provisional and priority applications relating thereto; (ii) all patents issuing on or from any patent applications identified in the Exhibit I; (iii) all reissues, reexaminations, extensions, divisionals, renewals, continuations, continuations-in-part and counterparts (whether foreign or domestic) claiming priority to any of the foregoing items in (i) or (ii) above, along with all patents issuing therefrom; and (iv) all inventions and improvements claimed or described in any of the foregoing items (i), (ii) or (iii) (subsections (i), (ii), (iii) and (iv) hereinafter collectively referred to as the “**Patent Items**”).

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

1. Assignment of Transferred IP. ASSIGNORS, to the extent that the transfer and assignment of the Patent Items was not complete at the time of execution of the PTA on February 1, 2017, do hereby sell, assign, transfer, convey and deliver unto ASSIGNEE, its successors, legal representatives and assigns, all right, title and interest throughout the world in, to and under the Patent Items, including without limitation all foreign patents and any and all rights of priority under international conventions, treaties or agreements based on or relating to the Patent Items.

2. Patent Offices Recordation. ASSIGNORS hereby authorize and request the Commissioner of Patents of the United States of America and any official of any country or countries foreign to the United States of America, whose duty it is to issue patents on applications, to record ASSIGNEE as the assignee and owner of the Patent Items and to issue all patents for the Patent Items to and in the name of ASSIGNEE, its successors, legal representatives and assigns, as the assignee to the entire interest therein, in accordance with the terms of this Patent Assignment.

3. Assignment of Enforcement Rights. ASSIGNORS hereby assign, transfer, convey and deliver to ASSIGNEE, its successors, legal representatives and assigns, all rights of enforcement, all claims for damages and all remedies arising out of, relating to or resulting from the Patent Items or any violation(s) thereof, whether accrued prior to the date of this Patent Assignment or hereafter, including but not limited to the right to sue for, seek, collect, recover and retain damages and any other relief arising out of or resulting from any past, present or future infringement or violation of any of the Patent Items, and all other rights, including common law rights, that ASSIGNORS may have relating to the Patent Items, including but not limited to any ongoing or prospective royalties to which ASSIGNORS may be entitled, or that ASSIGNORS may collect for any infringements of any of the Patent Items or from any settlement or agreement related to the Patent Items arising before or after the date of this Patent Agreement, such rights to be held and enjoyed by ASSIGNEE, its successors, legal representatives and assigns, as fully and entirely

as the same would have been held and enjoyed by ASSIGNORS if this Patent Assignment had not been made.

4. Representations and Further Assurances. ASSIGNORS represent and warrant that ASSIGNORS have not sold, assigned, transferred or granted and will not sell, assign, transfer or grant to others either (1) any rights, title or interest in and to any of the Patent Items, or (2) any rights inconsistent with the rights granted herein, including without limitation granting or allowing any lien, security interest or other encumbrance in or to such Patent Items. ASSIGNORS hereby further represent that they have full right, power and authority to sell, assign, transfer, convey, and deliver all of the subject matter set forth herein, and hereby agree that upon the written request of ASSIGNEE and without further compensation, ASSIGNORS shall execute, acknowledge, and deliver all the instruments and documents and shall take all the actions reasonably necessary or required by law to consummate and make fully effective the transaction contemplated by this Patent Assignment and will communicate promptly to ASSIGNEE all facts known to ASSIGNORS respecting the Patent Items, and will sign all lawful papers, transfer all file histories, make diligent effort to find or reach every inventor of the Patent Items necessary or appropriate in connection with preparation of any lawful document or proceeding relating to the Patent Items, make reasonable efforts to obtain all necessary or appropriate signed and executed documents relating to the Patent Items from every inventor named in the Patent Items, make all rightful declarations and/or oaths and generally do everything possible to aid ASSIGNEE to obtain patent protection for the Patent Items on a worldwide basis in all countries and for perfecting, recording, or maintaining the title of ASSIGNEE in and to each of the Patent Items in the United States and throughout the world.

5. Appointment. If ASSIGNEE is unable for any reason to secure ASSIGNORS' signature to any document required to file, prosecute, register, or memorialize the assignment of any rights under any Patent Items as provided under this Patent Assignment, ASSIGNORS hereby irrevocably designate and appoint ASSIGNEE and ASSIGNEE'S duly authorized officers and agents as ASSIGNORS' agents and attorneys-in-fact to act for and on ASSIGNORS' behalf and instead of ASSIGNORS to take all lawfully permitted acts to further the filing, prosecution, registration, memorialization of assignment, issuance, and enforcement of rights under such Patent Items, all with the same legal force and effect as if executed by ASSIGNORS. The foregoing is deemed a power coupled with an interest and is irrevocable.

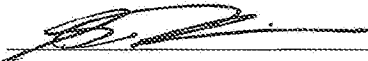
6. No Waiver; No Amendment; Governing Law. No waiver, amendment, or modification of this Patent Assignment shall be effective unless in writing executed by a duly authorized representative of each party. This Patent Assignment shall be governed in all respects by the laws of the United States and the State of Delaware, without giving effect to any choice or conflict of law provision or rule.

7. This Patent Assignment may be executed in multiple counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same document. A signature page delivered by electronic means will be deemed an original for all purposes.

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IN WITNESS WHEREOF, I hereunto set my hand this 16 day of October, 2018.

**TDK Corporation**

By: 

Printed Name: Shigenao Ishiguro

Title: President & CEO

IN WITNESS WHEREOF, I hereunto set my hand this 13<sup>th</sup> day of October, 2018.

**TDK Electronics AG**

By: *[Signature]*

Printed Name: Peter Knoll

Title: Head Legal Department

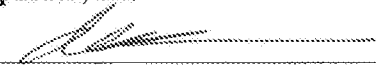
By: *[Signature]*

Printed Name: Heiko Schneider

Title: Deputy Head Legal Department

IN WITNESS WHEREOF, acknowledged and accepted on this 25<sup>th</sup> day of October, 2018.

**SnapTrack, Inc.**

By: 

Printed Name: DAVID MARR

Title: VP LEGAL COUNSEL

**EXHIBIT I**

**Patent Items**

| Country | Docket Number | Title   | Application Number   | Application Date | Grant Number | Grant Date |
|---------|---------------|---|--|------------------|--------------|------------|
| WO      | 172220WO      | SAW FILTER COMPRISING AN ADDITIONAL POLE  | PCT/EP2016/068578  | 8/3/2016         |              |            |
| US      | 172220        | SAW FILTER COMPRISING AN ADDITIONAL POLE  | 15/762,995   | 8/3/2016         |              |            |
| CN      | 172220CN      | SAW FILTER COMPRISING AN ADDITIONAL POLE  | 201680056508.0   | 8/3/2016         |              |            |
| IN      | 172220IN      | SAW FILTER COMPRISING AN ADDITIONAL POLE  | 201847013234   | 8/3/2016         |              |            |
| DE      | 172220DE      | SAW-FILTER MIT ZUSÄTZLICHEM POL   | 102015116224.5   | 9/25/2015        |              |            |
| WO      | 172244WO      | NOTCH FILTER AND EXTRACTOR ARRANGEMENT COMPRISING IT                                      | PCT/US2017/039268  | 6/26/2017        |              |            |
| DE      | 172244DE      | METHOD TO SUPPRESS SPURIOUS ACOUSTIC MODES AND TO ENHANCE LINEARITY IN SAW/BAW EXTRACTORS | 102016112993.3   | 7/14/2016        |              |            |
| WO      | 172261WO      | ELECTROACOUSTIC TRANSDUCER HAVING FEWER SECOND-ORDER NONLINEARITIES                       | PCT/EP2016/076542  | 11/3/2016        |              |            |
| US      | 172261        | ELECTROACOUSTIC TRANSDUCER HAVING FEWER SECOND-ORDER NONLINEARITIES                       | TO BE FILED<br>(National Phase entry of PCT/EP2016/076542) |                  |              |            |
| EP      | 172261EP      | ELECTROACOUSTIC TRANSDUCER HAVING FEWER SECOND-ORDER NONLINEARITIES                       | 16790378.0   | 11/3/2016        |              |            |
| CN      | 172261CN      | ELECTROACOUSTIC TRANSDUCER HAVING FEWER SECOND-ORDER NONLINEARITIES                       | 201680068408.X   | 11/3/2016        |              |            |
| IN      | 172261IN      | ELECTROACOUSTIC TRANSDUCER HAVING FEWER SECOND-ORDER NONLINEARITIES                       | 201847019163   | 11/3/2016        |              |            |
| DE      | 172261DE      | ELEKTROAKUSTISCHER WANDLER MIT VERRINGERTEN NICHTLINEARITÄTEN ZWEITER ORDNUNG             | 102015120654.4   | 11/27/2015       |              |            |
| WO      | 172266WO      | ELECTROACOUSTIC TRANSDUCER HAVING FEWER INTERFERING TRANSVERSE MODES                      | PCT/EP2016/072556  | 9/22/2016        |              |            |
| DE      | 172266DE      | ELEKTROAKUSTISCHER WANDLER MIT REDUZIERTEN STÖRENDE TRANSVERSALMODEN                      | 102015118231.9   | 10/26/2015       |              |            |
| WO      | 172268WO      | ELECTRONIC COMPONENT AND ELECTRONIC SIGNAL PROCESSING UNIT COMPRISING SUCH A COMPONENT    | PCT/EP2016/068573  | 8/3/2016         |              |            |

Confirmatory Assignment – TDK Corporation to SnapTrack, Inc.



| Country | Docket Number | Title   | Application Number   | Application Date | Grant Number | Grant Date |
|---------|---------------|---|--|------------------|--------------|------------|
| US      | 172268        | ELECTRONIC COMPONENT AND ELECTRONIC SIGNAL PROCESSING UNIT COMPRISING SUCH A COMPONENT              | 15/759,738   | 8/3/2016         |              |            |
| EP      | 172268EP      | ELECTRONIC COMPONENT AND ELECTRONIC SIGNAL PROCESSING UNIT COMPRISING SUCH A COMPONENT              | 16756607.4   | 8/3/2016         |              |            |
| CN      | 172268CN      | ELECTRONIC COMPONENT AND ELECTRONIC SIGNAL PROCESSING UNIT COMPRISING SUCH A COMPONENT              | 201680059119.3   | 8/3/2016         |              |            |
| IN      | 172268IN      | ELECTRONIC COMPONENT AND ELECTRONIC SIGNAL PROCESSING UNIT COMPRISING SUCH A COMPONENT              | 201847011656   | 3/28/2018        |              |            |
| KR      | 172268KR      | ELECTRONIC COMPONENT AND ELECTRONIC SIGNAL PROCESSING UNIT COMPRISING SUCH A COMPONENT              | 10-2018-7008895  | 8/3/2016         |              |            |
| DE      | 172268DE      | ELEKTRONISCHES BAUELEMENT UND ELEKTRONISCHE SIGNALVERARBEITUNGSEINHEIT MIT EINEM SOLCHEN BAUELEMENT | 102015115442.0   | 9/14/2015        |              |            |
| WO      | 172255WO      | HF FRONT END FOR AN AUTOMOBILE RADAR SYSTEM   | PCT/EP2016/079459  | 12/1/2016        |              |            |
| DE      | 172255DE      | HF-FRONTEND FÜR EIN AUTOMOBILRADARSYSTEM  | 102016102742.1   | 2/17/2016        |              |            |
| WO      | 172259WO      | MEMS COMPONENT  | PCT/EP2016/078443  | 11/22/2016       |              |            |
| DE      | 172259DE      | MEMS BAUELEMENT   | 102015122434.8   | 12/21/2015       |              |            |
| WO      | 172218WO      | SAW FILTER WITH A LARGE BANDWIDTH   | PCT/US2017/026096  | 4/5/2017         |              |            |
| DE      | 172218DE      | BREITBANDIGES SAW-FILTER  | 102016106185.9   | 4/5/2016         |              |            |
| IN      | 172218IN      | SAW FILTER WITH A LARGE BANDWIDTH   | 201847032167   | 4/5/2016         |              |            |
| US      | 172218        | SAW FILTER WITH A LARGE BANDWIDTH   | TO BE FILED<br><br>(National Phase entry of PCT/US2017/026096) |                  |              |            |
| CN      | 172218CN      | SAW FILTER WITH A LARGE BANDWIDTH   | TO BE FILED<br><br>(National Phase entry of PCT/US2017/026096) |                  |              |            |
| EP      | 172218EP      | SAW FILTER WITH A LARGE BANDWIDTH   | TO BE FILED<br><br>(National Phase entry of PCT/US2017/026096) |                  |              |            |
| WO      | 172239WO      | FILTER COMPONENT AND MANUFACTURE OF A FILTER COMPONENT  | PCT/US2017/046792  | 8/14/2017        |              |            |
| DE      | 172239DE      | FILTERBAUELEMENT UND HERSTELLUNG EINES FILTERBAUELEMENTS  | 102016116263.9   | 8/31/2016        |              |            |
| WO      | 172240WO      | RECONFIGURABLE MICROACOUSTIC FILTER AND DUPLEXER COMPRISING A RECONFIGURABLE MICROACOUSTIC FILTER   | PCT/US2017/045535  | 8/4/2017         |              |            |

Confirmatory Assignment – TDK Corporation to SnapTrack, Inc.

| Country | Docket Number | Title  | Application Number   | Application Date | Grant Number   | Grant Date |
|---------|---------------|--|--|------------------|----------------|------------|
| DE      | 172240DE      | REKONFIGURIERBARES MIKROAKUSTISCHES FILTER UND DUPLEXER MIT REKONFIGURIERBAREM MIKROAKUSTISCHEM FILTER | 102016114662.5   | 8/8/2016         |                |            |
| WO      | 172241WO      | MULTIPLEXER  | PCT/US2017/041952  | 7/11/2017        |                |            |
| DE      | 172241DE      | MULTIPLEXER  | 102016114663.3   | 8/8/2016         |                |            |
| WO      | 172242WO      | ELECTROACOUSTIC FILTER WITH REDUCED PLATE MODES  | PCT/US2017/044417  | 7/28/2017        |                |            |
| DE      | 172242DE      | ELEKTROAKUSTISCHES FILTER MIT REDUZIERTEN PLATTENMODEN   | 102016114071.6   | 7/29/2016        | 102016114071.6 | 1/25/2018  |
| WO      | 172243WO      | RF FILTER WITH REDUCED INSERTION LOSS  | PCT/US2017/039270  | 6/26/2017        |                |            |
| DE      | 172243DE      | HF-FILTER MIT VERRINGERTER EINFÜGEDÄMPFUNG   | 102016112984.4   | 7/14/2016        |                |            |
| WO      | 172245WO      | RF CIRCUIT AND METHOD OF OPERATION   | PCT/US2017/039503  | 6/27/2017        |                |            |
| DE      | 172245DE      | RF CIRCUIT AND METHOD OF OPERATION   | 102016111917.2   | 6/29/2016        |                |            |
| WO      | 172247WO      | COMPONENT WITH A THIN-LAYER COVERING AND METHOD FOR ITS PRODUCTION                                     | PCT/US2017/039229  | 6/26/2017        |                |            |
| DE      | 172247DE      | REDISTRIBUTION LAYER SOLUTIONS FOR TFAP PACKAGES   | 102016111911.3   | 6/29/2016        |                |            |
| US      | 172247        | COMPONENT WITH A THIN-LAYER COVERING AND METHOD FOR ITS PRODUCTION                                     | TO BE FILED<br>(National Phase entry of PCT/US2017/039229) |                  |                |            |
| CN      | 172247CN      | COMPONENT WITH A THIN-LAYER COVERING AND METHOD FOR ITS PRODUCTION                                     | TO BE FILED<br>(National Phase entry of PCT/US2017/039229) |                  |                |            |
| EP      | 172247EP      | COMPONENT WITH A THIN-LAYER COVERING AND METHOD FOR ITS PRODUCTION                                     | TO BE FILED<br>(National Phase entry of PCT/US2017/039229) |                  |                |            |
| IN      | 172247IN      | COMPONENT WITH A THIN-LAYER COVERING AND METHOD FOR ITS PRODUCTION                                     | TO BE FILED<br>(National Phase entry of PCT/US2017/039229) |                  |                |            |
| WO      | 172251WO      | MULTIPLEXER CIRCUIT FOR TX CARRIER AGGREGATION   | PCT/US2017/029119  | 4/24/2017        |                |            |
| DE      | 172251DE      | MULTIPLEXER-SCHALTUNG FÜR TX-CARRIER-AGGREGATION   | 102016107628.7   | 4/25/2016        |                |            |
| WO      | 172252WO      | MULTIPLEXER WITH FILTERS REALIZED IN DIFFERENT TECHNOLOGIES  | PCT/US2017/028403  | 4/19/2017        |                |            |
| DE      | 172252DE      | MULTIPLEXER  | 102016107309.1   | 4/20/2016        | 102016107309.1 | 8/31/2017  |
| WO      | 172253WO      | MULTISTAGE ARRANGEMENT HAVING REDUCED DISPERSION   | PCT/US2017/027050  | 4/11/2017        |                |            |
| DE      | 172253DE      | MULTISTAGE ARRANGEMENT HAVING REDUCED DISPERSION   | 102016106611.7   | 4/11/2016        |                |            |
| WO      | 172254WO      | BAUCHE DE PICE ET PROCD DE MARQUAGE DE LADITE BAUCHE   | PCT/IB2017/051229  | 3/2/2017         |                |            |
| DE      | 172254DE      | WERKSTÜCKROHLUNG UND VERFAHREN ZUR MARKIERUNG DES ROHLINGS   | 102016103749.4   | 3/2/2016         |                |            |

Confirmatory Assignment – TDK Corporation to SnapTrack, Inc.

| Country | Docket Number | Title  | Application Number | Application Date | Grant Number   | Grant Date |
|---------|---------------|--|--------------------|------------------|----------------|------------|
| WO      | 172262WO      | ELECTRICAL COMPONENT WITH HEAT DISSIPATION   | PCT/EP2016/076841  | 11/7/2016        |                |            |
| US      | 172262        | ELECTRICAL COMPONENT WITH HEAT DISSIPATION   | 15/776,360         | 11/7/2016        |                |            |
| EP      | 172262EP      | ELECTRICAL COMPONENT WITH HEAT DISSIPATION   | 16791049.6         | 11/7/2016        |                |            |
| CN      | 172262CN      | ELECTRICAL COMPONENT WITH HEAT DISSIPATION   | 201680067293.2     | 11/7/2016        |                |            |
| IN      | 172262IN      | ELECTRICAL COMPONENT WITH HEAT DISSIPATION   | 201847016754       | 11/7/2016        |                |            |
| DE      | 172262DE      | BAUELEMENT MIT WÄRMEABLEITUNG  | 102015120341.3     | 11/24/2015       |                |            |
| WO      | 172264WO      | ELECTROACOUSTIC TRANSDUCER HAVING HIGH QUALITY AND REDUCED SECOND-ORDER NONLINEARITIES       | PCT/EP2016/071350  | 9/9/2016         |                |            |
| DE      | 172264DE      | ELEKTROAKUSTISCHER WANDLER MIT HOHER GÜTE UND VERRINGERTEN NICHTLINEARITÄTEN ZWEITER ORDNUNG | 102015119147.4     | 11/6/2015        |                |            |
| WO      | 172265WO      | LAYER ASSEMBLY FOR A BULK WAVE COMPONENT   | PCT/EP2016/073137  | 9/28/2016        |                |            |
| DE      | 172265DE      | SCHICHTANORDNUNG FÜR EIN VOLUMENWELLENBAUELEMENT   | 102015118437.0     | 10/28/2015       | 102015118437.0 | 11/16/2017 |
| WO      | 172269WO      | SAW FILTER   | PCT/EP2016/067654  | 7/25/2016        |                |            |
| DE      | 172269DE      | SAW FILTER   | 102015114751.3     | 9/3/2015         |                |            |
| WO      | 172271WO      | COMPONENT WITH IMPROVED HEAT DISSIPATION   | PCT/EP2016/063748  | 6/15/2016        |                |            |
| US      | 172271        | COMPONENT WITH IMPROVED HEAT DISSIPATION   | 15/743,984         | 6/15/2016        |                |            |
| EP      | 172271EP      | COMPONENT WITH IMPROVED HEAT DISSIPATION   | 16730349.4         | 6/15/2016        |                |            |
| JP      | 172271JP      | COMPONENT WITH IMPROVED HEAT DISSIPATION   | 2018-500891        | 6/15/2016        |                |            |
| CN      | 172271CN      | COMPONENT WITH IMPROVED HEAT DISSIPATION   | 201680032975.X     | 6/15/2016        |                |            |
| IN      | 172271IN      | COMPONENT WITH IMPROVED HEAT DISSIPATION   | 201747043182       | 6/15/2016        |                |            |
| BR      | 172271BR      | COMPONENT WITH IMPROVED HEAT DISSIPATION   | BR1120180007471    | 6/15/2016        |                |            |
| KR      | 172271KR      | COMPONENT WITH IMPROVED HEAT DISSIPATION   | 10-2017-7035368    | 6/15/2016        |                |            |
| DE      | 172271DE      | BAUELEMENT MIT VERBESSERTER WÄRMEABLEITUNG   | 102015111307.4     | 7/13/2015        |                |            |
| WO      | 172272WO      | MULTIPLEXER  | PCT/EP2016/061028  | 5/17/2016        |                |            |
| US      | 172272        | MULTIPLEXER  | 15/574,325         | 5/17/2016        |                |            |
| EP      | 172272EP      | MULTIPLEXER  | 16725430.9         | 5/17/2016        |                |            |
| JP      | 172272JP      | MULTIPLEXER  | 2017-561723        | 5/17/2016        |                |            |
| CN      | 172272CN      | MULTIPLEXER  | 201680025399.6     | 5/17/2016        |                |            |
| IN      | 172272IN      | MULTIPLEXER  | 201747037966       | 5/17/2016        |                |            |
| CA      | 172272CA      | MULTIPLEXER  | 2983774            | 5/17/2016        |                |            |
| BR      | 172272BR      | MULTIPLEXER  | BR1120170255243    | 5/17/2016        |                |            |
| ID      | 172272ID      | MULTIPLEXER  | P00201709382       | 5/17/2016        |                |            |

Confirmatory Assignment – TDK Corporation to SnapTrack, Inc.

| Country | Docket Number | Title  | Application Number | Application Date | Grant Number   | Grant Date |
|---------|---------------|--|--------------------|------------------|----------------|------------|
| KR      | 172272KR      | MULTIPLEXER  | 10-2017-7031256    | 5/17/2016        |                |            |
| DE      | 172272DE      | MULTIPLEXER  | 102015108511.9     | 5/29/2015        | 102015108511.9 | 9/22/2016  |
| WO      | 172273WO      | HF CIRCUIT AND FRONT-END CIRCUIT COMPRISING AN HF CIRCUIT      | PCT/EP2016/058917  | 4/21/2016        |                |            |
| US      | 172273        | HF CIRCUIT AND FRONT-END CIRCUIT COMPRISING AN HF CIRCUIT      | 15/564,675         | 4/21/2016        |                |            |
| EP      | 172273EP      | HF CIRCUIT AND FRONT-END CIRCUIT COMPRISING AN HF CIRCUIT      | 16721374.3         | 4/21/2016        |                |            |
| JP      | 172273JP      | HF CIRCUIT AND FRONT-END CIRCUIT COMPRISING AN HF CIRCUIT      | 2017-558734        | 4/21/2016        |                |            |
| CN      | 172273CN      | HF CIRCUIT AND FRONT-END CIRCUIT COMPRISING AN HF CIRCUIT      | 201680022029.7     | 4/21/2016        |                |            |
| IN      | 172273IN      | HF CIRCUIT AND FRONT-END CIRCUIT COMPRISING AN HF CIRCUIT      | 201747035005       | 4/21/2016        |                |            |
| KR      | 172273KR      | HF CIRCUIT AND FRONT-END CIRCUIT COMPRISING AN HF CIRCUIT      | 10-2017-7030083    | 4/21/2016        |                |            |
| DE      | 172273DE      | HF-SCHALTUNG UND FRONTEND-SCHALTUNG MIT HF-SCHALTUNG           | 102015107305.6     | 5/11/2015        |                |            |
| WO      | 172274WO      | CASCADED RESONATOR   | PCT/EP2016/058127  | 4/13/2016        |                |            |
| US      | 172274        | CASCADED RESONATOR   | 15/572,130         | 4/13/2016        |                |            |
| EP      | 172274EP      | CASCADED RESONATOR   | 16716853.3         | 4/13/2016        |                |            |
| JP      | 172274JP      | CASCADED RESONATOR   | 2017-557930        | 4/13/2016        |                |            |
| CN      | 172274CN      | CASCADED RESONATOR   | 201680022232.4     | 4/13/2016        |                |            |
| IN      | 172274IN      | CASCADED RESONATOR   | 201747035004       | 4/13/2016        |                |            |
| DE      | 172274DE      | KASKADIERTER RESONATOR   | 102015107231.9     | 5/8/2015         |                |            |
| WO      | 172275WO      | FILTER ARRANGEMENT WITH COMPENSATION OF POOR ELECTRICAL GROUND | PCT/EP2015/060353  | 5/11/2015        |                |            |
| US      | 172275        | FILTER ARRANGEMENT WITH COMPENSATION OF POOR ELECTRICAL GROUND | 15/572,702         | 5/11/2015        |                |            |
| EP      | 172275EP      | FILTER ARRANGEMENT WITH COMPENSATION OF POOR ELECTRICAL GROUND | 15722181.3         | 5/11/2015        |                |            |
| JP      | 172275JP      | FILTER ARRANGEMENT WITH COMPENSATION OF POOR ELECTRICAL GROUND | 2017-558743        | 5/11/2015        |                |            |
| CN      | 172275CN      | FILTER ARRANGEMENT WITH COMPENSATION OF POOR ELECTRICAL GROUND | 201580079195.6     | 5/11/2015        |                |            |
| IN      | 172275IN      | FILTER ARRANGEMENT WITH COMPENSATION OF POOR ELECTRICAL GROUND | 201747035007       | 5/11/2015        |                |            |
| CA      | 172275CA      | FILTER ARRANGEMENT WITH COMPENSATION OF POOR ELECTRICAL GROUND | 2981550            | 5/11/2015        |                |            |
| BR      | 172275BR      | FILTER ARRANGEMENT WITH COMPENSATION OF POOR ELECTRICAL GROUND | BR1120170241927    | 5/11/2015        |                |            |

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| ID      | 172275ID      | FILTER ARRANGEMENT WITH COMPENSATION OF POOR ELECTRICAL GROUND | P00201708802   | 5/11/2015        |                |            |
| KR      | 172275KR      | FILTER ARRANGEMENT WITH COMPENSATION OF POOR ELECTRICAL GROUND | 10-2017-7032396  | 5/11/2015        |                |            |
| WO      | 172276WO      | HF CIRCUIT AND HF MODULE                                       | PCT/EP2016/059421  | 4/27/2016        |                |            |
| US      | 172276        | HF CIRCUIT AND HF MODULE                                       | 15/571,784   | 4/27/2016        |                |            |
| EP      | 172276EP      | HF CIRCUIT AND HF MODULE                                       | 16719390.3   | 4/27/2016        |                |            |
| JP      | 172276JP      | HF CIRCUIT AND HF MODULE                                       | 2017-557326  | 4/27/2016        |                |            |
| CN      | 172276CN      | HF CIRCUIT AND HF MODULE                                       | 201680022030.X   | 4/27/2016        |                |            |
| IN      | 172276IN      | HF CIRCUIT AND HF MODULE                                       | 201747034124   | 4/27/2016        |                |            |
| KR      | 172276KR      | HF CIRCUIT AND HF MODULE                                       | 10-2017-7029605  | 4/27/2016        |                |            |
| DE      | 172276DE      | HF-SCHALTUNG UND HF-MODUL                                      | 102015107069.3   | 5/6/2015         | 102015107069.3 | 12/1/2015  |
| WO      | 172277WO      | ELECTROACOUSTIC COMPONENT WITH IMPROVED ACOUSTIC PROPERTIES    | PCT/EP2016/051810  | 1/28/2016        |                |            |
| US      | 172277        | ELECTROACOUSTIC COMPONENT WITH IMPROVED ACOUSTICS              | 15/565,259   | 1/28/2016        |                |            |
| EP      | 172277EP      | ELECTROACOUSTIC COMPONENT WITH IMPROVED ACOUSTIC PROPERTIES    | 16701802.7   | 1/28/2016        |                |            |
| JP      | 172277JP      | ELECTROACOUSTIC COMPONENT WITH IMPROVED ACOUSTIC PROPERTIES    | 2017-555311  | 1/28/2016        |                |            |
| CN      | 172277CN      | ELECTROACOUSTIC COMPONENT WITH IMPROVED ACOUSTIC PROPERTIES    | 201680017736.7   | 1/28/2016        |                |            |
| IN      | 172277IN      | ELECTROACOUSTIC COMPONENT WITH IMPROVED ACOUSTIC PROPERTIES    | 201747032455   | 1/28/2016        |                |            |
| BR      | 172277BR      | ELECTROACOUSTIC COMPONENT WITH IMPROVED ACOUSTIC PROPERTIES    | BR1120170225972  | 1/28/2016        |                |            |
| KR      | 172277KR      | ELECTROACOUSTIC COMPONENT WITH IMPROVED ACOUSTIC PROPERTIES    | 10-2017-7029747  | 1/28/2016        |                |            |
| DE      | 172277DE      | ELEKTROAKUSTISCHES BAUELEMENT MIT VERBESSERTER AKUSTIK         | 102015106191.0   | 4/22/2015        |                |            |
| WO      | 172263WO      | FILTER CIRCUIT WITH ADDITIONAL POLES OUTSIDE PASSBAND          | PCT/EP2016/076551  | 11/3/2016        |                |            |
| DE      | 172263DE      | FILTER CIRCUIT WITH ADDITIONAL POLES OUTSIDE PASSBAND          | 102015119995.5   | 11/18/2015       |                |            |
| WO      | 172256WO      | FRONT END MODULE FOR CARRIER AGGREGATION OPERATION             | PCT/EP2016/079483  | 12/1/2016        |                |            |
| US      | 172256        | FRONT END MODULE FOR CARRIER AGGREGATION OPERATION             | TO BE FILED<br>(National Phase entry of PCT/EP2016/079483) |                  |                |            |

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| EP      | 172256EP      | FRONT END MODULE FOR CARRIER AGGREGATION OPERATION                                       | 16808594.2         | 8/17/2018        |                |            |
| JP      | 172256JP      | FRONT END MODULE FOR CARRIER AGGREGATION OPERATION                                       | 2018-540855        | 8/3/2018         |                |            |
| CN      | 172256CN      | FRONT END MODULE FOR CARRIER AGGREGATION OPERATION                                       | 201680078932.5     | 7/13/2018        |                |            |
| IN      | 172256IN      | FRONT END MODULE FOR CARRIER AGGREGATION OPERATION                                       | 201847025543       | 7/9/2018         |                |            |
| BR      | 172256BR      | FRONT END MODULE FOR CARRIER AGGREGATION OPERATION                                       | BR1120180159778    | 8/3/2018         |                |            |
| KR      | 172256KR      | FRONT END MODULE FOR CARRIER AGGREGATION OPERATION                                       | 10-2018-7019600    | 7/9/2018         |                |            |
| DE      | 172256DE      | EXTRACTOR CONCEPTS IN THE CONTEXT OF CELLULAR MID-BAND/HIGH-BAND CARRIER AGGREGATION     | 102016102073.7     | 2/5/2016         | 102016100925.3 | 05/30/2018 |
| WO      | 172257WO      | FILTER CIRCUIT   | PCT/EP2016/079158  | 11/29/2016       |                |            |
| US      | 172257        | FILTER CIRCUIT   | 16/071,040         | 7/18/2018        |                |            |
| CN      | 172257CN      | FILTER CIRCUIT   | 201680073773.X     | 11/29/2016       |                |            |
| DE      | 172257DE      | FILTERSCHALTUNG  | 102016100925.3     | 1/20/2016        | 102016100925.3 | 05/30/2018 |
| WO      | 172260WO      | ELECTRICAL COMPONENT WITH THIN SOLDER RESIST LAYER AND METHOD FOR THE PRODUCTION THEREOF | PCT/EP2016/070973  | 9/6/2016         |                |            |
| US      | 172260        | ELECTRICAL COMPONENT WITH THIN SOLDER RESIST LAYER AND METHOD FOR THE PRODUCTION THEREOF | 15/776,019         | 9/6/2016         |                |            |
| EP      | 172260EP      | ELECTRICAL COMPONENT WITH THIN SOLDER RESIST LAYER AND METHOD FOR THE PRODUCTION THEREOF | 16762778.5         | 9/6/2016         |                |            |
| JP      | 172260JP      | ELECTRICAL COMPONENT WITH THIN SOLDER RESIST LAYER AND METHOD FOR THE PRODUCTION THEREOF | 2018-527165        | 9/6/2016         |                |            |
| CN      | 172260CN      | ELECTRICAL COMPONENT WITH THIN SOLDER RESIST LAYER AND METHOD FOR THE PRODUCTION THEREOF | 201680062169.7     | 9/6/2016         |                |            |
| IN      | 172260IN      | ELECTRICAL COMPONENT WITH THIN SOLDER RESIST LAYER AND METHOD FOR THE PRODUCTION THEREOF | 201847014860       | 9/6/2016         |                |            |
| BR      | 172260BR      | ELECTRICAL COMPONENT WITH THIN SOLDER RESIST LAYER AND METHOD FOR THE PRODUCTION THEREOF | BR1120180106666    | 9/6/2016         |                |            |

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| KR      | 172260KR      | ELECTRICAL COMPONENT WITH THIN SOLDER RESIST LAYER AND METHOD FOR THE PRODUCTION THEREOF                   | 10-2018-7011776  | 9/6/2016         |                |            |
| DE      | 172260DE      | ELEKTRISCHES BAUELEMENT MIT DÜNNER LOT-STOPPSCHICHT UND VERFAHREN ZUR HERSTELLUNG                          | 102015120647.1   | 11/27/2015       | 102015120647.1 | 12/28/2017 |
| WO      | 172217WO      | SAW FILTER WITH INTERFERENCE MODE SUPPRESSION  | PCT/US2017/034977  | 5/30/2017        |                |            |
| DE      | 172217DE      | SAW-FILTER MIT STÖRMODENUNTERDRÜCKUNG  | 102016110139.7   | 6/1/2016         |                |            |
| US      | 172217        | SAW FILTER WITH INTERFERENCE MODE SUPPRESSION  | TO BE FILED<br>(National Phase entry of PCT/US2017/034977) |                  |                |            |
| CN      | 172217CN      | SAW FILTER WITH INTERFERENCE MODE SUPPRESSION  | TO BE FILED<br>(National Phase entry of PCT/US2017/034977) |                  |                |            |
| WO      | 172219WO      | SAW COMPONENT WITH REDUCED DISTURBANCES BY TRANSVERSAL AND SH MODES AND HF FILTER WITH SAW COMPONENT       | PCT/US2017/023014  | 3/17/2017        |                |            |
| US      | 172219        | SAW COMPONENT WITH REDUCED DISTURBANCES BY TRANSVERSAL AND SH MODES AND HF FILTER WITH SAW COMPONENT       | 16/085,461   | 9/14/2018        |                |            |
| EP      | 172219EP      | SAW COMPONENT WITH REDUCED DISTURBANCES BY TRANSVERSAL AND SH MODES AND HF FILTER WITH SAW COMPONENT       | TO BE FILED<br>(National Phase entry of PCT/US2017/023014) |                  |                |            |
| CN      | 172219CN      | SAW COMPONENT WITH REDUCED DISTURBANCES BY TRANSVERSAL AND SH MODES AND HF FILTER WITH SAW COMPONENT       | UNKNOWN<br>(National Phase entry of PCT/US2017/023014)     | 8/29/2018        |                |            |
| IN      | 172219IN      | SAW COMPONENT WITH REDUCED DISTURBANCES BY TRANSVERSAL AND SH MODES AND HF FILTER WITH SAW COMPONENT       | 201847029660   | 8/7/2018         |                |            |
| DE      | 172219DE      | SAW-BAUELEMENT MIT VERRINGERTEN STÖRUNGEN DURCH TRANSVERSALE UND SH-MODEN UND HF-FILTER MIT SAW-BAUELEMENT | 102016105118.7   | 3/18/2016        |                |            |
| WO      | 172250WO      | MULTILAYER INTERCONNECTION SUBSTRATE FOR HIGH FREQUENCY AND MANUFACTURING METHOD THEREOF                   | PCT/US2017/025521  | 3/31/2017        |                |            |

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| US      | 172250        | MULTILAYER INTERCONNECTION SUBSTRATE FOR HIGH FREQUENCY AND MANUFACTURING METHOD THEREOF                             | TO BE FILED<br>(National Phase entry of PCT/US2017/025521) |                  |              |            |
| CN      | 172250CN      | MULTILAYER INTERCONNECTION SUBSTRATE FOR HIGH FREQUENCY AND MANUFACTURING METHOD THEREOF                             | TO BE FILED<br>(National Phase entry of PCT/US2017/025521) |                  |              |            |
| IN      | 172250IN      | MULTILAYER INTERCONNECTION SUBSTRATE FOR HIGH FREQUENCY AND MANUFACTURING METHOD THEREOF                             | 201847033725   | 9/7/2018         |              |            |
| JP      | 172250JP      | MULTILAYER INTERCONNECTION SUBSTRATE FOR HIGH FREQUENCY  | 2016-072802  | 3/31/2016        |              |            |
| WO      | 172215WO      | RSONATEUR ONDE ACOUSTIQUE DE VOLUME MODES PARASITES RDUITS, FILTRE ONDE ACOUSTIQUE DE VOLUME ET PROCD DE FABRICATION | PCT/IB2017/051266  | 3/3/2017         |              |            |
| US      | 172215        | BAW RESONATOR LESS PRONE TO SPURIOUS MODES, BAW FILTER, AND MANUFACTURING METHOD                                     | 16/080,616   | 8/28/2018        |              |            |
| DE      | 172215DE      | BULK ACOUSTIC WAVE RESONATOR WITH IMPROVED PERFORMANCES  | 102016103959.4   | 3/4/2016         |              |            |
| WO      | 172216WO      | DISPOSITIF ONDE ACOUSTIQUE DE VOLUME   | PCT/IB2017/051268  | 3/3/2017         |              |            |
| DE      | 172216DE      | BAW DEVICE   | 102016103834.2   | 3/3/2016         |              |            |
| WO      | 172221WO      | SAW FILTER HAVING SUPPRESSED SHEAR MODE  | PCT/EP2016/072284  | 9/20/2016        |              |            |
| US      | 172221        | SAW FILTER HAVING SUPPRESSED SHEAR MODE  | 15/763,008   | 3/23/2018        |              |            |
| CN      | 172221CN      | SAW FILTER HAVING SUPPRESSED SHEAR MODE  | 201680054681.7   | 9/20/2016        |              |            |
| IN      | 172221IN      | SAW FILTER HAVING SUPPRESSED SHEAR MODE  | 201847013664   | 9/20/2016        |              |            |
| DE      | 172221DE      | SAW-FILTER MIT UNTERDRÜCKTER SCHER-MODE  | 102015116223.7   | 9/25/2015        |              |            |
| WO      | 172246WO      | COMPONENT WITH A THIN-LAYER COVERING AND METHOD FOR ITS PRODUCTION   | PCT/US2017/039257  | 6/26/2017        |              |            |
| DE      | 172246DE      | BAUELEMENT MIT DÜNNSCICHT-ABDECKUNG UND VERFAHREN ZUR HERSTELLUNG  | 102016111914.8   | 6/29/2016        |              |            |
| US      | 172246        | COMPONENT WITH A THIN-LAYER COVERING AND METHOD FOR ITS PRODUCTION   | TO BE FILED<br>(National Phase entry of PCT/US2017/039257) |                  |              |            |
| CN      | 172246CN      | COMPONENT WITH A THIN-LAYER COVERING AND METHOD FOR ITS PRODUCTION   | TO BE FILED<br>(National Phase entry of PCT/US2017/039257) |                  |              |            |

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| EP      | 172246EP      | COMPONENT WITH A THIN-LAYER COVERING AND METHOD FOR ITS PRODUCTION  | TO BE FILED<br>(National Phase entry of PCT/US2017/039257) |                  |                |            |
| IN      | 172246IN      | COMPONENT WITH A THIN-LAYER COVERING AND METHOD FOR ITS PRODUCTION  | TO BE FILED<br>(National Phase entry of PCT/US2017/039257) |                  |                |            |
| WO      | 172248WO      | BULK ACOUSTIC WAVE RESONATOR WITH REDUCED LOSSES, RF FILTER WITH SUCH RESONATORS AND METHOD FOR MANUFACTURING SUCH RESONATORS | PCT/US2017/037261  | 6/13/2017        |                |            |
| DE      | 172248DE      | BULK ACOUSTIC WAVE RESONATOR WITH REDUCED LOSSES, RF FILTER WITH SUCH RESONATORS AND METHOD FOR MANUFACTURING SUCH RESONATORS | 102016111061.2   | 6/16/2016        | 102016111061.2 | 6/28/2018  |
| WO      | 172249WO      | MODULE AND METHOD FOR PRODUCING A PLURALITY OF MODULES  | PCT/EP2016/079607  | 12/2/2016        |                |            |
| DE      | 172249DE      | MODUL UND VERFAHREN ZUR HERSTELLUNG EINER VIELZAHL VON MODULEN  | 102016110862.6   | 6/14/2016        |                |            |
| US      | 172249        | MODULE AND METHOD FOR PRODUCING A PLURALITY OF MODULES  | TO BE FILED<br>(National Phase entry of PCT/EP2016/079607) |                  |                |            |
| BR      | 172249BR      | MODULE AND METHOD FOR PRODUCING A PLURALITY OF MODULES  | TO BE FILED<br>(National Phase entry of PCT/EP2016/079607) |                  |                |            |
| CN      | 172249CN      | MODULE AND METHOD FOR PRODUCING A PLURALITY OF MODULES  | TO BE FILED<br>(National Phase entry of PCT/EP2016/079607) |                  |                |            |
| EP      | 172249EP      | MODULE AND METHOD FOR PRODUCING A PLURALITY OF MODULES  | TO BE FILED<br>(National Phase entry of PCT/EP2016/079607) |                  |                |            |
| IN      | 172249IN      | MODULE AND METHOD FOR PRODUCING A PLURALITY OF MODULES  | TO BE FILED<br>(National Phase entry of PCT/EP2016/079607) |                  |                |            |
| JP      | 172249JP      | MODULE AND METHOD FOR PRODUCING A PLURALITY OF MODULES  | TO BE FILED<br>(National Phase entry of PCT/EP2016/079607) |                  |                |            |
| KR      | 172249KR      | MODULE AND METHOD FOR PRODUCING A PLURALITY OF MODULES  | TO BE FILED<br>(National Phase entry of PCT/EP2016/079607) |                  |                |            |
| WO      | 172258WO      | WAFER-LEVEL PACKAGE AND METHOD FOR PRODUCTION   | PCT/EP2016/077588  | 11/14/2016       |                |            |
| DE      | 172258DE      | WAFER LEVEL PACKAGE UND VERFAHREN ZUR HERSTELLUNG   | 102015122628.6   | 12/22/2015       |                |            |
| WO      | 172270WO      | GLASS CERAMIC SINTERED COMPACT AND WIRING BOARD   | PCT/EP2016/060738  | 5/12/2016        |                |            |

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| US      | 172270        | GLASS CERAMIC SINTERED COMPACT AND WIRING BOARD                    | 15/574,265         | 5/12/2016        | 10,071,932   | 9/11/2018  |
| EP      | 172270EP      | GLASS CERAMIC SINTERED COMPACT AND WIRING BOARD                    | 16724004.3         | 5/12/2016        |              |            |
| JP      | 172270JP      | GLASS CERAMIC SINTERED BODY AND WIRING BOARD                       | 2015-108744        | 5/28/2015        | 6293704      | 2/23/2018  |
| CN      | 172270CN      | GLASS CERAMIC SINTERED COMPACT AND WIRING BOARD                    | 201680029010.5     | 5/12/2016        |              |            |
| IN      | 172270IN      | GLASS CERAMIC SINTERED COMPACT AND WIRING BOARD                    | 201747037020       | 5/12/2016        |              |            |
| KR      | 172270KR      | GLASS CERAMIC SINTERED COMPACT AND WIRING BOARD                    | 10-2017-7034167    | 5/12/2016        |              |            |
| US      | 173008        | SURFACE ACOUSTIC WAVE (SAW) DEVICE STRUCTURE WITH FAST TRAP REGION | 15/966,212         | 4/30/2018        |              |            |

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