

PATENT ASSIGNMENT

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SUBMISSION TYPE:	NEW ASSIGNMENT										
NATURE OF CONVEYANCE:	ASSIGNMENT										
CONVEYING PARTY DATA											
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Name</th> <th style="width: 30%;">Execution Date</th> </tr> </thead> <tbody> <tr> <td>Gregory S. Um</td> <td>08/17/2010</td> </tr> <tr> <td>Mark Wayne Biggs</td> <td>08/17/2010</td> </tr> <tr> <td>Timothy Schempp</td> <td>08/19/2010</td> </tr> </tbody> </table>		Name	Execution Date	Gregory S. Um	08/17/2010	Mark Wayne Biggs	08/17/2010	Timothy Schempp	08/19/2010		
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Name:</td> <td>Raytheon Company</td> </tr> <tr> <td>Street Address:</td> <td>870 Winter Street</td> </tr> <tr> <td>City:</td> <td>Waltham</td> </tr> <tr> <td>State/Country:</td> <td>MASSACHUSETTS</td> </tr> <tr> <td>Postal Code:</td> <td>02451-1449</td> </tr> </table>		Name:	Raytheon Company	Street Address:	870 Winter Street	City:	Waltham	State/Country:	MASSACHUSETTS	Postal Code:	02451-1449
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CORRESPONDENCE DATA											
<p>Fax Number: (781)401-9966 <i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i></p> <p>Phone: 7814019988 Email: mhw@dc-m.com Correspondent Name: Daly, Crowley, Mofford & Durkee, LLP Address Line 1: 354A Turnpike Street Address Line 2: Suite 301A Address Line 4: Canton, MASSACHUSETTS 02021-2714</p>											
ATTORNEY DOCKET NUMBER:	RTN-535AUS										
NAME OF SUBMITTER:	Christopher S. Daly										
<p>Total Attachments: 4 source=TO_PTO_ASSIGNMENT#page 1.tif</p>											

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A S S I G N M E N T

Whereas we, the undersigned, Gregory S. Um, Mark^{WAYNE} Biggs and Timothy Schempp hereby have made certain inventions or discoveries (or both) set forth in an application for Letters Patent of the United States of America entitled SINGLE FREQUENCY USER IONOSPHERE SYSTEM AND TECHNIQUE, identified as Attorney Docket No. RTN-535AUS, and Client Case No. 09E164/US/RRL, which application was executed on August 17, 2010, August 17, 2010 and August 19, 2010, and filed on August 23, 2010 and assigned Application No. 12/860,954. In the event that the execution date, filing date and/or Application No. are not entered above or are incorrect at the time we executed this document, and if such information is deemed necessary, we hereby authorize and request the attorneys at DALY, CROWLEY, MOFFORD & DURKEE, LLP, 354A Turnpike Street, Suite 301A, Canton, MA 02021-2714, to insert above the execution date, filing date and/or Application No. of said application.

Whereas Raytheon Company, a Delaware Corporation having a place of business at 870 Winter Street, Waltham, MA 02451-1449, and which, together with its successors and assigns, is hereinafter called "Assignee," is desirous of acquiring the title, rights, benefits and privileges hereinafter recited;

Now, therefore, for valuable consideration furnished by Assignee to us, receipt and sufficiency of which we hereby acknowledge, we hereby, without reservation:

1. Assign, transfer and convey to Assignee the entire right, title and interest in and to said inventions and discoveries, said application for Letters Patent of the United States of America, any and all other applications for Letters Patent on said inventions and discoveries in whatsoever countries, including all divisional, renewal, substitute, continuation, reissue, re-examination and Convention applications based in whole or in part upon said inventions or discoveries, or upon said applications, and any and all Letters Patent, reissues, reexaminations, and extensions of Letters Patent granted for said inventions and discoveries or upon said applications, and every priority right that is or may be predicated upon or arise from said inventions, said discoveries, said applications and said Letters Patent and any provisional applications from which priority is claimed in said Letters Patent;

2. Authorize Assignee to file patent applications in any or all countries on any or all of said inventions and discoveries in my name or in the name of Assignee or otherwise as Assignee may deem advisable, under the International Convention or otherwise;

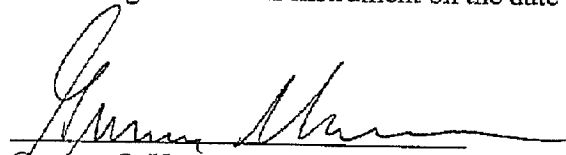
3. Authorize and request the Commissioner of Patents and Trademarks of the United States of America and the empowered officials of all other governments to issue or transfer all said Letters Patent to Assignee, as assignee of the entire right, title and interest therein or otherwise as Assignee may direct;

4. Warrant that I have not knowingly conveyed to others any right in said inventions, discoveries, applications or patents or any license to use the same or to make, use or sell anything embodying or utilizing any of said inventions or discoveries; and that I have good right to assign the same to Assignee without encumbrance;

5. Bind my heirs, legal representatives and assigns, as well as myself, to do, upon Assignee's request and at Assignee's expense, but without additional consideration to me or them, all acts reasonably serving to assure that the said inventions and discoveries, the said patent applications and the said Letters Patent shall be held and enjoyed by Assignee as fully and entirely as the same could have been held and enjoyed by me, my heirs, legal representatives and assigns if this assignment had not been made; and particularly to execute and deliver to Assignee all lawful application documents including petitions, specifications, and oaths, and all assignments, disclaimers, and lawful affidavits in form and substance as may be requested by Assignee; to communicate to Assignee all facts known to me relating to said inventions and discoveries or the history thereof; and to furnish Assignee with any and all documents, photographs, models, samples and other physical exhibits in my control or in the control of my heirs, legal representatives or assigns which may be useful for establishing the facts of my conceptions, disclosures, and reduction to practice of said inventions and discoveries.

In testimony of which we have each executed this Assignment as an instrument on the date indicated next to our name(s).

Dated: Aug 17, 2010

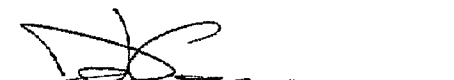

Gregory S. Um

On this 17 day of August, 2010, before me appeared Gregory S. Um, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.


First Witness Signature

M M LEAL
First Witness Printed Name

On this 17 day of August, 2010, before me appeared Gregory S. Um, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.


Second Witness Signature

DAVID CROSSER
Second Witness Printed Name

PATENT ASSIGNMENT
Atty. Dckt. No.: RTN-535AUS
Client Case No.: 09E164/US/RRL

Dated: 8-17-10

Mark Wayne Biggs
Mark Biggs
WAYNE

On this 8th day of Aug, 2010, before me appeared Mark Biggs, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.

Flore A. Costales
First Witness Signature

FLORE A. COSTALES
First Witness Printed Name

On this 8th day of Aug, 2010, before me appeared Mark Biggs, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.

James J. Richardson
Second Witness Signature

James J. Richardson
Second Witness Printed Name

PATENT ASSIGNMENT
Atty. Dckt. No.: RTN-535AUS
Client Case No.: 09E164/US/RRL

Dated: 8-19-10

Timothy Schempp
Timothy Schempp

On this 19 day of Aug, 2010, before me appeared Timothy Schempp, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.

Hawam
First Witness Signature

HAI VAN VO
First Witness Printed Name

On this 19 day of Aug, 2010, before me appeared Timothy Schempp, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.

Phung
Second Witness Signature

THANH PHUONG NGUYEN
Second Witness Printed Name

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