



Universiteit  
Leiden  
The Netherlands

## International law and regulation of aeronautical public correspondence by satellite

Brisibe, T.C.

### Citation

Brisibe, T. C. (2006, November 28). *International law and regulation of aeronautical public correspondence by satellite*. Eleven International Publishing, Utrecht. Retrieved from <https://hdl.handle.net/1887/4994>

Version: Corrected Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/4994>

**Note:** To cite this publication please use the final published version (if applicable).

INTERNATIONAL LAW AND REGULATION OF AERONAUTICAL PUBLIC  
CORRESPONDENCE BY SATELLITE

The commercial edition of this book is published as volume 3 in the Essential Air and Space Law Series: Tare Brisibe, Aeronautical Public Correspondence by Satellite  
isbn-10 90-77596-10-0, isbn-13 90-77596-10-4, © Eleven International Publishing

This edition is available from Eleven International Publishing  
P.O. Box 358  
3500 AJ Utrecht, The Netherlands  
Tel.: +31 30 231 0545  
Fax: +31 30 225 8045  
[info@elevenpub.com](mailto:info@elevenpub.com)  
[www.elevenpub.com](http://www.elevenpub.com)

Printed on acid-free paper.

ISBN 10: 90-77596-25-9  
ISBN 13: 978-90-77596-25-8

© 2006 Tare Brisibe

This publication is protected by international copyright law.  
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher.

Printed in The Netherlands

# INTERNATIONAL LAW AND REGULATION OF AERONAUTICAL PUBLIC CORRESPONDENCE BY SATELLITE

Proefschrift  
ter verkrijging van  
de graad van Doctor aan de Universiteit Leiden,  
op gezag van de Rector Magnificus Dhr Prof.dr. D.D. Breimer,  
hoogleraar in de faculteit der Wiskunde en Natuurwetenschappen  
en die der Geneeskunde,  
volgens besluit van het College van Promoties  
te verdedigen op donderdag 28 November 2006

te klokke 13.45 uur

door  
Tare Charles Brisibe  
geboren te Benin, Nigeria in 1968

## PROMOTIECOMMISSIE

Promotores: Prof. Dr. P. P. C. Haanappel  
Dr. F. G. von der Dunk

Referent: Prof. Dr. F. Lyall (University of Aberdeen)

Overige leden: Prof. Dr. E. Back-Impallomeni (University of Padua)  
Judge G. Guillaume (Former President, International Court of Justice)  
Prof. Dr. A. H. J. Schmidt  
Prof. Dr. G. J. Zwenne  
Dr. P. M. J. Mendes de Leon  
Dr. O. M. Ribbelink (Asser Instituut)  
Prof. Dr. H. A. Wassenbergh (Emeritus Prof. University of Leiden)  
Prof. Dr. I. H. Ph. Diederiks-Verschoor (Emeritus Prof. University of Utrecht)

# Table of Contents

<b>Acknowledgments</b>	ix
<b>List of Abbreviations</b>	xi
<b>Chapter One</b>	
<b>Introduction</b>	1
<b>Chapter Two</b>	
<b>The Operational Environment</b>	5
1. AERONAUTICAL SATELLITE COMMUNICATIONS – AN OVERVIEW	5
2. AERONAUTICAL COMMUNICATIONS AND TERRESTRIAL INFRASTRUCTURE	8
2.1. The Origins of Satellite-Based Aeronautical Public Correspondence	13
2.2. ICAO Aviation Review Committee Recommendations	16
2.3. Communications Aspects of the ICAO CNS/ATM System	19
2.4. Aeronautical Public Correspondence and the Aeronautical Telecommunication Network	21
3. SATELLITE AERONAUTICAL PUBLIC CORRESPONDENCE AND MARKET OPPORTUNITIES	21
4. NETWORKS, INFRASTRUCTURE, SERVICE AND CONTENT PROVISION	22
4.1. Inmarsat	26
4.2. Connexion-By-Boeing	31
4.3. Other Systems	34
5. EVOLVING TOWARDS BROADBAND AND WIRELESS S-APC	35
5.1. High Speed Data Services	35
5.2. Wireless Access to Broadband Satellite Aeronautical Public Correspondence Services	38

**Chapter Three**

<b>Institutional Authorities, Legal and Regulatory Frameworks</b>	<b>41</b>
1. OVERVIEW OF THE LEGAL AND REGULATORY FRAMEWORKS	41
1.1. International Law	41
1.2. Municipal Law	43
1.3. The Regulation of Telecommunications, Aviation, Trade in Services, Copyrights and the Protection of Programme Content	44
1.4. Technical Standards and Operational Procedures/Guidelines for Civil Aviation	49
2. INTERNATIONAL SPACE LAW	51
3. RULES OF INTERNATIONAL SATELLITE TELECOMMUNICATIONS	56
3.1. International Telecommunication Union – Structure and Jurisdiction	56
3.2. Satellite Aeronautical Public Correspondence – Frequency Allocation, Assignment and the Radio Regulations	59
3.3. Satellite Aeronautical Public Correspondence Services – Frequency Use and Regulation	61
4. RULES OF INTERNATIONAL AVIATION	66
4.1. The Chicago Convention of 1944	66
4.2. The Future Air Navigation Systems Committees	68
4.3. The ICAO Air Navigation Commission and the Aeronautical Communications Panel	69
4.4. Article 30 of the Chicago Convention Revisited	71
4.5. The 29 <sup>th</sup> ICAO Assembly Resolution A29-19/1	75
5. RULES OF INTERNATIONAL TRADE IN SERVICES	78
6. INTERNATIONAL COPYRIGHT AND PROTECTION OF PROGRAMME CONTENT	80
6.1. Berne Convention for the Protection of Literary and Artistic Works	81
6.2. WIPO Copyright Treaty	82
6.3. Concluding Remarks on Copyrights and Programme Content Protection	87
7. OPERATIONAL REGULATIONS AND TECHNICAL STANDARDS	88
7.1. Telecommunications Standards, Recommendations and Non-binding Rules	88

**Chapter Four**

<b>State Sovereignty</b>	<b>91</b>
1. AIRSPACE AND TERRITORIAL WATERS	91
1.1. Sovereignty, Territoriality and Airspace	96
1.2. Nationality of Aircraft	104
2. STATE JURISDICTION IN THE AIRSPACE OVER HIGH SEAS AND POLAR REGIONS	105
2.1. Airspace above the High Seas	105

2.2. Airspace over the Arctic Region	112
2.3. Antarctic Airspace	117
3. RIGHT OF STATES TO CONTROL TERRITORIAL COMMUNICATIONS	120
3.1. Case Studies on the Concept of Sovereignty in International Telecommunications	120
4. INTERNATIONAL TRADE LAW ASPECTS OF INTERNATIONAL ECONOMIC LAW	123
5. OUTER SPACE	128
6. CONCLUDING REMARKS	129
<b>Chapter Five</b>	
<b>Current International Legal and Regulatory Regime</b>	133
1. INTERNATIONAL TELECOMMUNICATION UNION REGULATIONS AND RECOMMENDATIONS IN FORCE	133
1.1. International Telecommunications World Radio Conference 2003	133
1.2. International Telecommunication Union Recommendation D-94	136
1.3. The GMPCS MoU and Arrangements	139
2. ICAO SARPS AND STANDARDS OF OTHER TECHNICAL ORGANIZATIONS	140
3. NATIONAL PROCEDURES ON THE USE OF PORTABLE ELECTRONIC DEVICES ON-BOARD AIRCRAFT	146
3.1. Title 14 of the United States Code of Federal Regulations (14 CFR) part 91, Section 91.21	148
3.2. Joint Aviation Authorities Regulations JAR-OPS 1.110 and Temporary Guidance Leaflet JAR-OPS No 29	151
3.3. Australia – Civil Aviation Amendment Regulations 2002 (No.) 10 and Advisory Circular AC 91-050(0)	153
3.4. Canada – Air Carrier Advisory Circular ACAC 0106R (2001.07.04)	156
4. GENERAL REMARKS ON REGULATING THE USE OF PORTABLE ELECTRONIC DEVICES ON-BOARD AIRCRAFT	158
<b>Chapter Six</b>	
<b>Liability</b>	161
1. GENERAL REMARKS	161
2. PORTABLE ELECTRONIC DEVICE RELATED INCIDENTS ON-BOARD AIRCRAFT	162
3. CRIMINAL LIABILITY AND PENAL AIR LAW	165
4. PASSENGERS AND THE LIABILITY OF THE AIR CARRIER – FROM WARSAW TO MONTREAL	172

5. COLLISIONS, SURFACE DAMAGE AND LIABILITY	181
6. SOME CONSIDERATIONS ON STATE RESPONSIBILITY AND LIABILITY	183
 <b>Chapter Seven</b>	
<b>Institutions, State Practice and Regulation in the 21<sup>st</sup> Century</b>	193
1. MOVING INTO THE 21 <sup>st</sup> CENTURY	193
2. INTERNATIONAL INSTRUMENTS, INSTITUTIONS, GEO-POLITICS AND INDUSTRY	199
2.1. Relevant Legal and Regulatory Instruments	199
2.2. Applying the Regimen – A Bird’s Eye View	200
2.3. Re-inventing Pertinent Aspects of the Regimen	204
2.4. The CNS/ATM Institutional and Legal Framework – The Long Road to Utopia	208
3. CONCLUDING REMARKS AND MOVING TOWARDS UNIFORMITY	210
3.1. Drawing Upon the Lessons From the Past	212
 <b>Conclusions and Summary</b>	215
 <b>Draft Agreement</b>	217
 <b>Appendices</b>	225
 <b>Bibliography</b>	245
TREATIES	
CASES	
BOOKS	
ARTICLES	
DOCUMENTS	

## Acknowledgments

I am grateful to Professor Dr. P. P. C. Haanappel, Professor of Air & Space Law at the International Institute of Air and Space Law, Leiden University; and Dr. Frans G. von der Dunk, Director of Space Law Studies at the International Institute of Air and Space Law, Leiden University, for the supervision provided during the course of writing this book. I am equally indebted to Professor Francis Lyall of the University of Aberdeen and Professor Dr. Ludwig Weber, (former Director, Legal Bureau, ICAO) Institute of Air & Space Law, McGill University, for their critical comments, suggestions and clarification.

I also wish to thank the following who have been of assistance with various matters: Professor Robert Ajayi Boroffice, Director General, Nigerian National Space Research and Development Agency; Ms. Mirjam van der Heide, Eleven International Publishing, Utrecht; Dr. Boakye Donkwa Kofi Henaku, Consultant, London; Mr. Terence Jeacock, of the former United Kingdom Radiocommunications Agency; Mr. Eyal Trachmann, Inmarsat Limited London; Ms. Paula van der Wulp, International Institute of Air and Space Law, Leiden University; staff of the libraries of both the International Institute of Air and Space Law, Leiden University, and of the Institute of Advanced Legal Studies, University of London.

Tare Charles Brisibe

Abuja, September 2006



## List of Abbreviations

AAC	Aeronautical Administrative Communications
AC	Advisory Circular (Australia)
ACP	Aeronautical Communications Panel
ACARS	Aircraft Communications Addressing and Reporting System
AEEC	Airlines Electronic Engineering Committee
AES	Aircraft Earth Stations
ADIZ	Air Defence Identification Zone
AJIL	American Journal of International Law
AMC	Aeronautical Mobile Communications
AMCP	Aeronautical Mobile Communications Panel
AMS (OR) S	Aeronautical Mobile-Satellite Off-Route Service
AMS (R) S	Aeronautical Mobile-Satellite Route Service
AMSS	Aeronautical Mobile Satellite service
ANC	Air Navigation Commission
AOC	Aeronautical Operational Control
APC	Aeronautical Public Correspondence
APU	Auxiliary Power Unit
ARC	Aviation Review Committee
ARINC	Aeronautical Radio Inc.
ASRS	Aviation Safety Reporting System
ASTRA	Application of Space Technology Relating to Aviation
ATN	Aeronautical Telecommunications Network
ATS	Air Traffic Services
BATS	Bilateral Air Transport Agreements
BGAN	Broadband Global Area Network
BTA	Basic Telecommunications Agreement
BYIL	British Yearbook of International Law
CAA	Civil Aviation Authority
CAG	Customer Advise Group (Inmarsat)
CAR	Canadian Aviation Regulation
CASA	Australian Civil Aviation Safety Authority
CASR	Australian Civil Aviation Safety Regulation

CASS	Commercial Air Service Standards
CBAAC	Commercial and Business Aviation Advisory Circular
CCIR	International Radio Consultative Committee
CENPAC	Central Pacific
CEPT	Conference Européenne des Administrations Postes et Télécommunications
CIS	Commonwealth of Independent States (of the former USSR)
CNS/ATM	Communication, Navigation, Surveillance / Air Traffic Management
DBS	Direct Broadcast Services
DSB	Dispute Settlement Body (WTO)
EASA	European Aviation & Safety Agency
EC	European Community
ECAC	European Civil Aviation Conference
EEZ	Exclusive Economic Zone
EJIL	European Journal of International Law
ELDO	European Launcher Development Organization
EMI	ElectroMagnetic Interference
ERC	European Radiocommunications Committee
ESA	European Space Agency
ESRO	European Space Research Organisation
ETSI	European Telecommunications Standards Institute
EUROCAE	European Organization for Civil Aviation Equipment
FAA	Federal Aviation Administration
FANS	Future Air Navigation Systems
FAR	Federal Aviation Regulations
FCC	Federal Communications Commission
FDMA	Frequency Division Multiplexing Access
FS	Fixed Service
FSS	Fixed Satellite Service
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GES	Ground Earth Station
GMPCS	Global Mobile Personal Communications by Satellite
GNSS	Global Navigation Satellite System
GSM	Global System for Mobile Communications
GSMA	GSM Association
HSD	High Speed Date
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICE	Information Communications and Entertainment
ICJ	International Court of Justice
ICLQ	International and Comparative Law Quarterly

ICT	Information and Communications Technology
IFE	In-Flight Entertainment
IISL	International Institute of Space Law
ILC	International Law Commission
IMO	International Maritime Organization
INMARSAT	International Maritime Satellite Organization
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
ITU	International Telecommunication Union
IWP	Interim Working Party
JAA	Joint Aviation Authorities
JALC	Journal of Air Law and Commerce
JAR	Joint Aviation Regulations
JCAB	Japanese Civil Aviation Bureau
LAN	Local Area Network
LES	Land Earth Station
MES	Mobile Earth station
MFN	Most Favoured Nation
MoU	Memorandum of Understanding
MPDS	Mobile Packet Data Service
MMSS	Maritime Mobile-Satellite Service
MSS	Mobile Satellite Service
MTSAT	Multi-functional Transport Satellite
NASA	National Aeronautics and Space Administration
NCS	Network Coordination Station
NOPAC	North Pacific
NTRA	National Telecommunications Regulatory Authority
PANS	Procedures for Air Navigation Services
PDA	Personal Digital Assistant
PED	Portable Electronic Device
PCIJ	Permanent Court of International Justice
PCS	Personal Communication Systems
PIC	Pilot-in-Command
PSA	Point of Service Activation
PSTN	Public Switched Telephone Networks
RF	Radio Frequency
RIAA	United Nations Reports of International Arbitral Awards
RTCA	Radio Technical Communication Association
S-APC	Satellite Aeronautical Public Correspondence
SARP	Standards and Recommended Practices
SDM	System Definition Manual
SDR	Special Drawing Right
SI	Service Integrator

SITA	Société Internationale de Télécommunications Aéronautiques
SUPPS	Regional Supplementary Procedures
TAPC	Terrestrial-based Aeronautical Public Correspondence
TCP/IP	Transmission Control Protocol/Internet Protocol
TDMA	Time Division Multiple Access
TFA	Table of Frequency Allocations
TFTS	Terrestrial Flight Telecommunication System
TRIPS	Agreement on Trade Related Aspects of Intellectual Property Rights
TSB	Telecommunications Standardization Bureau
UHF	Ultra High Frequency
UMTS	Universal Mobile Telecommunication Service
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNESCO	United Nations Economic Social and Cultural Organization
USSR	Union of Soviet and Socialist Republics
VHF	Very High Frequency
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network
WARC	World Administrative Radio Conferences
WARC-MOB	World Administrative Conference for the Mobile Services
WIPO	World Intellectual Property Organization
WLAN	Wireless Local Area Network
WP	Working Party
WRC	World Radiocommunications Conference
WSC	World Standardisation Conference
WTDC	World Telecommunications Development Conference
WTO	World Trade Organization