

**FCC Equipment Authorization Application**  
**for the**  
**ISS-2100**  
**Master Table of Contents**

## Exhibit A – ID Label/Location Information

## Exhibit B – Attestation Statement

## Exhibit C – External Photos

### List of Figures

Figure 1 - Front View – Handle Lifted – Showing Location of the TSO Name Plate	C-2
Figure 2 - Right Rear Quarter View	C-3
Figure 3 - Left Rear Quarter View	C-3
Figure 4 - Rear View, Detail of ARINC Connector	C-4
Figure 5 - Front View, Face Plate Removed	C-4

## Exhibit D – Block Diagrams

## Exhibit E – Schematics

Part Number	Rockwell Collins Schematic Drawing Number
Part 1	Power Supply 828-6820-002
Part 1A	Power Supply Subassembly SLICK 828-5837-113
Part 1B	Power Storage 828-6821-001
Part 2	System Processor 828-6830-103
Part 3	TAWS – purchased assembly, schematic not available
Part 4	DSP Card 828-6843-004
Part 5	Receiver Card 828-6842-104
Part 6	RF Switch Card 828-6841-105
Part 7	Modulator 828-6851-005
Part 8	Linear PA 828-6852-004
Part 9	WXR Processor 828-6870-003
Part 10	LED CCA 828-6860-002
Part 11	System theory, top level description, not a schematic
Part 12	Chassis/ Backplane 828-6812-002
Part 13	Installation drawing, not a schematic
Part 14	Fiber Optic Interface 828-6813-002
Part 15	Power Filter 828-6811-002

## Exhibit F – Test Report

### List Of Figures

Figure 1 - ATCRBS Reply Pulse Waveform	F-6
Figure 2 - Mode S Reply Waveform	F-7
Figure 3 - Mode C-Only All-Call Interrogation Pulse Sequence.	F-8
Figure 4 - Mode-S Interrogation Pulse Sequence for TCAS	F-9
Figure 5 - Basic Whisper-Shout Sequence	F-13
Figure 6 - RF Test Setup	F-20
Figure 7 - Transmitter Frequency Error vs. Temperature and Power Supply (Limit is 20,600 Hz, off-scale)	F-26

Figure 8 - First 10 Microseconds of P6Long Pulse	F-27
Figure 9 – Occupied bandwidth – Mode C-Only All Call Interrogation 1.03 GHz	F-32
Figure 10 – Occupied bandwidth – Mode-S Interrogation 1.03 GHz	F-33
Figure 11 – Occupied BW – Mode A ATCRBS Reply at 1090 MHz	F-34
Figure 12 - Equipment Setup for Spurious Emissions Test	F-35
Figure 13 - 9 kHz to 940 MHz Spectrum	F-40
Figure 14 - 1120 MHz to 2.0 GHz. Transmitter broadband noise visible on the left	F-41
Figure 15 - 2.0 GHz to 3.0 GHz. Second harmonic noted at -72.8 dBc.	F-42
Figure 16 - 3.0 to 5.0 GHz spectrum	F-43
Figure 17 - 5.0 to 7.0 GHz spectrum.	F-44
Figure 18 - 7.0 TO 9.0 GHz Spectrum	F-45
Figure 19 9.0 to 11.0 GHz spectrum. Discontinuity in the noise floor is from analyzer switching settings internally. This noise is -90 dBc.	F-46
Figure 20 - Low side of transmitter spectrum within step from -53.4 dBc requirement to -60 dBc requirement. Spurious is at -64.39 dBc.	F-47
Figure 21 Low side of transmitter spectrum within step from -53.4 dBc requirement to -60 dBc requirement. Spurious is at -63.5 dBc.	F-48
Figure 22. Field Strength of Spurious Radiation Test Setup – Top View	F-52
Figure 23 – DO-160 RF Radiated Emissions Limits (Narrowband)	F-56
Figure 24 - RF Radiated Emissions Test Chamber Setup	F-57
Figure 25. Radiated Spurious Emissions, 150 kHz – 1000 MHz, Vertical Polarization	F-59
Figure 26. Radiated Spurious Emissions, 1 – 11 GHz, Vertical Polarization	F-60
Figure 27. Radiated Spurious Emissions, 25 MHz- 1GHz, Horizontal Polarization	F-61
Figure 28. Radiated Spurious Emissions, 1 – 11 GHz, Horizontal Polarization	F-62

#### List Of Tables

Table F- 1 - Test Requirements Matrix	F-4
Table F- 2 - RF Power Output	F-20
Table F- 3 - Transmitted Frequency vs. Input Voltage and Temperature Mode S Interrogation P6L Pulse (1.03GHz)	F-22
Table F- 4 - ISS-2100 Occupied Bandwidth Measurement Results	F-29
Table F- 5 - Conducted Spurious Emissions	F-40
Table F- 7 - ISS-2100 Radiated Emissions Test Operating Conditions	F-51
Table F- 8 - Spectrum Analyzer Settings	F-53
Table F- 9 - Test Equipment Used	F-54
Table F- 10 - Antennas Used vs. Frequency	F-55
Table F- 11 - Potential internally-generated emitters	F-56
Table F- 12 - Field Strength of Spurious Radiation – Normal Mode	F-58

## Exhibit G – Test Setup Photos

#### List of Figures

Figure 1 – Computer Aided Test Set	G-2
Figure 2 – Radiated Emissions Test. Biconical Antenna in Horizontal Polarization	G-3
Figure 3 – Radiated Emissions Test. Biconical Antenna in Vertical Polarization	G-4
Figure 4 – Radiated Emissions Test. Standard Horn Antenna in Vertical Polarization	G-5
Figure 5 – Radiated Emissions Test. Standard Horn Antenna in Horizontal Polarization	G-6
Figure 6 – Radiated Emissions Test. Low Frequency Horn Antenna in Vertical Polarization	G-7
Figure 7 – Radiated Emissions Test. Low Frequency Horn Antenna in Horizontal Polarization	G-8

## Exhibit H – User’s Manual

## Exhibit I – Internal Photos

### List of Figures

Figure 1 – Backplane Front Side	I-3
Figure 2 – Backplane Rear Side	I-4
Figure 3 – Fiber Optic Interface PWB	I-5
Figure 4 – Fiber Optic Interface PWB Bottom	I-6
Figure 5 – Rear Interface Filter PWB Top Side	I-7
Figure 6 – Rear Interface Filter PWB Rear Side	I-8
Figure 7 – Front LED Indicator Top	I-8
Figure 8 – Front LED Indicator Bottom	I-9
Figure 9 – Line Power Supply Top	I-9
Figure 10 – Line Power Supply Bottom	I-10
Figure 11 – Power Storage Assembly	I-10
Figure 12 – Power Storage Assembly	I-11
Figure 13 – System I/O Assembly Top View	I-12
Figure 14 – System I/O Assembly Bottom View	I-12
Figure 15 – WXR PWB Top	I-13
Figure 16 – WXR PWB Bottom	I-13
Figure 17 – TAWS Module Top	I-14
Figure 18 – TAWS Module Bottom	I-14
Figure 19 – Modulator PWB Top View	I-15
Figure 20 – Modulator PWB Bottom View	I-15
Figure 21 – Linear PA PWB Top View (Power devices not populated)	I-16
Figure 22 – Linear PA PWB Bottom View	I-16
Figure 23 – DSP PWB Top View	I-17
Figure 24 – DSP PWB Bottom View	I-17
Figure 25 – Receiver PWB Top View	I-18
Figure 26 – Receiver PWB Bottom View	I-18
Figure 27 – RF Switch PWB Top View	I-19
Figure 28 – RF Switch PWB Bottom View	I-19

## Exhibit J – Parts List/Tune-up Information

Assembly	Exhibit J Part Name
Power Supply CCA 828-1820-002	1
Power Storage CCA 828-1821-001	1B
Power Converter SLICK 828-0837-113	1A
System I/O Processor CCA 828-1830-103D	2
DSP CCA 828-1843-004	4
Receiver CCA 828-1842-104	5
RF Switch CCA 828-1841-105	6
Traffic Modulator CCA 828-1851-005	7
Traffic Linear PA CCA 828-1852-004	8
WXR Processor CCA 828-1870-003	9
LED CCA 828-1860-002	10
Backplane CCA 828-1812-002	12
Fiber Optic CCA 828-1813-002	14
Filter CCA 828-1811-002	15
DSP FLEX CCA 828-1800-002	16

AC Power supply,	983-8225-001
System Processor (SysP)	983-8226-001
Power Amplifier	983-8227-010
Transmitter Module	983-8227-021
Traffic Module (TCAS and Transponder functions)	983-8227-001
ISS Line Replaceable Unit (Box level test)	815-8191-001
ISS LRU Acceptance Test Procedure, (this document bears a different number; it was incorporated into this previous document)	Appendix C to 815-8191-001

## Exhibit K – RF Exposure Information

## Exhibit L – Operational Description

### List of Figures

Figure 2 1 Rear Connector Pin Functions and Location	L-8
Figure 2 2 Rear Connector Pin Functions and Locations (cont'd).	L-9
Figure 4 1 Integrated Surveillance System Processing Unit	L-22
Figure 5 1 Rear Panel Connector Arrangement	L-25
Figure 5 2 ISS-2100 Outline and Dimensions – Front and Side Views	L-26
Figure 5 3 ISS-2100 Outline and Dimensions – Top and Rear Views	L-27
Figure 5 4 ISS-2100 Outline and Dimensions – Bottom View	L-28
Figure 5 5 ISS-2100 Interconnect Diagram	L-29
Figure 10 1 - Mode A Transmission with Possible Pulses	L-37
Figure 10 2 - Mode C-Only All Call Transmission	L-37
Figure 10 3 Mode S Reply Pulse Position Modulation Signal	L-38

### List of Tables

Table 2 1 Rear Connector Pin Descriptions	L-10
Table 2 2 Rear Connector Pin Descriptions (cont'd.)	L-11
Table 2 3 Rear Connector Pin Descriptions (cont'd.)	L-12
Table 2 4 Rear Connector Pin Descriptions (cont'd.)	L-13
Table 2 5 Rear Connector Pin Descriptions (cont'd.)	L-14
Table 2 6 Rear Connector Pin Descriptions (cont'd.)	L-15
Table 2 7 Rear Connector Pin Descriptions (cont'd.)	L-16
Table 2 8 Rear Connector Pin Descriptions (cont'd.)	L-17
Table 2 9 Rear Connector Pin Descriptions (cont'd.)	L-18
Table 2 10 Rear Connector Pin Descriptions (cont'd.)	L-19
Table 3 1 Front Panel Indicators	L-20
Table 4 1 ISS-2100 Components	L-21
Table 5 1 Mating Connectors and Contact Requirements	L-24
Table 6 1 Industry Certification Specifications	L-30
Table 6 2 Industry Certification Specifications	L-31
Table 6 3 Terrain Awareness Warning System Specifications	L-32
Table 6 4 DO-160 Certification Categories	L-33
Table 6 5 DO-160 Certification Categories	L-34
Table 7 1 Internal Clocks and Critical Frequencies	L-35
Table 9 1 ISS-2100 Waveform Characteristics	L-38