

**THOMSON-CSF
COMMUNICATIONS**

KVJEVR718

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April 18, 00

Réf : DIN/264-80/mk
Subject : TYPE ACCEPTANCE Authorisation
Enclosed/Ref. : to the cover letter
Similarity report
Applicant / grantee code FCC 31010/EQU-ID
Waiver 98 62 602 and copy of the grant for the EVR716-01-XXXXX
New Waiver 99 11 265 (copy)
Application data package

Dear Sir,

By this letter, THOMSON-CSF COMMUNICATIONS (TCC) is applying for the FCC KVJEVR718 authorisation to the Enhanced VHF Data Radio type EVR716 PIN EVR716-11-XXXXX which represents the family version/type configuration. In this family 2 PIN's have been qualified :

PIN EVR716-11-0300A

PIN EVR716-11-0350A

This version of the EVR716-11 is issued from the EVR716-01 already granted KVJEVR710, the main differences between both EVR716 are described in the enclosed document "similarity report" Ref. 56123742 Rev. AA .

The referenced waiver 98 62 602 is identical to the new waiver 99 11 265 sent for this application to the EVR716-11-XXXXX.

This EVR-716-11 transceiver which provides voice and data communications in the VHF Aeronautical band (118-137 MHz), has been designed for the DASH8 Aircraft .

This new equipment is already approved by the French Airworthiness Authorities (DGAC/DAC92) and by the FAA (TSO-C37d/C38d/C120) .

In this frame, we would be pleased, accordingly to the Form 731 section IV §4, the application data to be granted before the 26th of may 00 .

For this application you will find, the associated data package .

Very truly Yours



M. KWARTNIK
Product program Manager
Certifications coordinator

Copy : **D. BOYET**



services

**Strategic Business Line
BATTLESPACE RADIO**

**FCC
Equipment approval**

**PO box 358315
PITTSBURG, PA 15251-5315
USA**

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P/N EVR716-11-XXXX which represents the family version/type
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2 P/N's have been
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**P/N EVR716-11-0300A
P/N EVR716-11-0350A**

This version of the EVR716-11 is issued from the EVR716-01 already
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main differences between both EVR716 are described in the enclosed
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Aircraft .
This new equipment is already approved by the French Airworthiness
Authorities (QAC1/
QAC62) and by the FAA (TSO-C37d/C38d/C128) .

In this frame, we would be pleased, accordingly to the Form 731 section
IV §4, the application
date to be granted before the 26th of
may 00 .
For this application, you will find, the associated data

package .

Very truly
Yours

M. KWARTNIK
Product program Manager
Certifications coordinator

Copy : D. BOYET

**FAA
Spectrum Engineering Division
800 Independence Ave. SW.
WASHINGTON, DC 20591
USA**

Ref : DIN/153-00/mk

Colombes : June 19, 00

SUBJECT : FCC TYPE ACCEPTANCE APPLICATION

Sir,

We are pleased to notify you we are proceeding with the FCC ID application KVJEVR718 registered under the confirmation number EA 97536 . This type acceptance application is issued for the Enhanced VHF Data Radio type EVR 716

P/N EVR716-11-XXXXX designed for commuter Aircraft (basic on DASH8) which represents the family version/type configuration, in this family 2 P/N are qualified :

1. P/N EVR716-11-0300A

2. P/N EVR716-11-0350A

This versions of the EVR716 come from the EVR716-01 already granted KVJEVR716 with the waiver 9862602 for 8.33 Khz operations by the FCC, they are also TSO approved (enclosed approval of june 99) .

We remain at your disposal for any information you may need

M. KWARTNIK
Product program Manager
Certifications coordinator

Copie : D. BOYET

from : M.KWARTNIK

DIN/SCNS

Colombes, june 19, 2000
Réf : DIN/SNCS/157-00/mk
Page 5 / 1


TO : FCC

Copy : D. BOYET

SUBJECT : Response to CRN 14354 for KVJ EVR718 application

3. FURTHER TO THE REMARK 1° OF THE HEREBOWE CRN, WHERE YOU INFORM US ON A DISCREPANCY IN THE FORM 731 REGARDING THE FCC RULES PART REFERENCE DUE PROBABLY TO A TYPING ERROR :

3.1 we confirm you the applicable FCC rule part is 87 and we require you to correct the FORM 731 accordingly .

		<p align="center">DEMANDE DE DEVIATION - DEROGATION <i>REQUEST FOR DEVIATION – WAIVER - - EXPEDITED ACTION REQUESTED</i></p>										
UNITÉ CNI												
CENTRE COLOMBES <i>PLANT</i>		1	AFFAIRE/PROJECT Application for FCC type acceptance		3	MARCHE TITULAIRE/PRIME CONTRACT ⁵ AERONAUTICAL		5	DEVIATION <input type="checkbox"/> N° DEROGATION <input checked="" type="checkbox"/> N° 9911265 <i>WAIVER</i>			
SERVICE EXECUTANT DIN <i>ACTING DEPARTMENT</i>		2	SOUS-ENSEMBLE/SUB-ASSEMBLY		4	SOUS-CONTRAT/SUBCONTRACT N.A.		6	REF. SOUS-CONTRACTANT: N.A. <i>SUB-CONTRACTOR REF:</i>			
REFERENCE/PART NUMBER EVR716-11-XXXXX		9	DESIGNATION PRODUIT/PRODUCT DESCRIPTION		10	N° DE SERIE ou de LOT/SERIAL, BATCH Nr ALL		MINEURE <input checked="" type="checkbox"/> MAJEURE <input type="checkbox"/> <i>MINOR MAJOR</i>				
DESCRIPTION DE NON CONFORMITE, CROQUIS, ACTION CORRECTIVE PROPOSÉE <i>DESCRIPTION OF DEFECT, SKETCH, PROPOSAL FOR REWORK</i> THIS WAIVER IS ISSUED TO COVER THE OPERATION OF THE EVR716 AT 8.33 KHZ CHANNEL SPACING THE EVR716 IS ABLE TO OPERATE AT 8.33 KHZ AND 25 KHZ CHANNELING . THE ADDITIONAL 8.33KHZ CHANNELING (IN ACCORDANCE WITH THE EUROPEAN REGULATION) IS NOT SPECIFIED IN THE FCC RULES PART 87 SECTION 87.173(B) .					NB DE PIECES EN LITIGE		13	N° DE SERIE DE L'ENSEMBLE SUPERIEUR <i>APPLICATION</i> N.A.				
					AVIS DES SERVICES CONCERNES <i>OPINION OF MANAGER AND CONCERNED SERVICES</i>							
					NOM <i>NAME</i>		AVIS <i>REMARKS</i>		DATE <i>DATE</i>		VISA <i>SIGNATURE</i>	
					D. BOYET PROJECT MGR		8.33KHZ STANDARD IS SPECIFIED IN EUROCAE ED23-B AND ETSI ETS 300676		30/11/99			
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SOUS-TRAITANT/SUBCONTRACTOR ^{19a}				CONTRACTANT/CONTRACTOR ^{19b}				MAITRE D’OEUVRE/PRIME CONTRACTOR ^{19c}				MAJEURE MAJOR <input type="checkbox"/>		MINEURE MINOR	
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Unité CNI

ENHANCED VHF RADIO - EVR716

EVR716-11-0300A & EVR716-11-0350A

SIMILARITY REPORT

Etabli / Prepared Service / Department Date Signature	C. BOIT CNI/DT 1999-01-04	Approuvé / Approved Service / Department Date Signature
Vérifié / Checked Service / Department Date Signature		Approuvé / Approved Service / Department Date Signature
Approuvé / Approved Service / Department Date Signature	D. BOURDARIAS CNI/DT	Réservé / Reserved

REVISIONS / <i>REVISIONS</i>			
REV	RAISON DE L'EVOLUTION / <i>CHANGE REASON</i>	DATE AAAA-MM-JJ	APPROUVE <i>APPROVED</i>
AA	Creation	1999-01-04	D. BOURDARIAS

SOMMAIRE / *SUMMARY*

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4. OBJECT

This document describes the differences between EVR716-11-0300A (VHF Radio dedicated to DASH8-400) and EVR716-01-0200A (Basic version already qualified).

The aim of this report is to assess the impact of these differences on the environmental tests.

5. REFERENCE DOCUMENTS

- [1] System Requirements Document (SSS/SSDD)
for EVR716-01-0300A & EVR716-01-0350A n° 4689709A305
- [2] Qualification Test Procedure n° 4689709A206

6. EQUIPMENT CONFIGURATION

6.1 Electrical & mechanical specifications

The differences relative to electrical and mechanical characteristics between the basic version (EVR716-01-0200A) and the DASH8-400 version (EVR716-11-0300A) are limited to the following items.

CHARACTERISTIC FUNCTIONALITY	EVR716-01-0200A			EVR716-01-0300A		
	[2] n° REQ.	Specification	Typical result	[1] n° REQ.	Specification	Typical result
- Tx Consumption	SSS_716_027	< 180 W	160 W	SSS_716_027	< 160 W	140 W
- Output power	SSS_716_092	> 25 W	26 W	SSS_706_081	> 16 W	19 W
- Momentary power interruptions	SSS_716_271	> 200 ms	600 ms (for 28V)	SSS_716_271	> 50 ms	150 ms (for 28V)
- Long power interruptions (>5s)	-	-	-	SSS_DHC_291	Frequency memorized	compliant
- Readback frequency	-	-	-	SSS_DHC_025	Arinc output	compliant
- Port C selection	-	-	-	SSS_716_023	Arinc input selection	compliant
- Interlocking control	-	-	-	-	Sensitivity is degraded by ~15dB when active	compliant
- Weight	-	(4450 ± 50) g	4460 g	-	< 9.3 lb (4218g)	9.0 lb (4100 g)
- Dimensions		3 MCU Dog house= 56mm	compliant		3 MCU Dog house= 30mm	compliant

6.2 Configuration

Configuration differences between the basic version and EVR716-01-0300A are described hereafter.

The equipment EVR716-11-0300A is built from a basic version equipment EVR716-01-0200A, on which modifications are applied through "Engineering Change Orders" (ECO).

EVR716-11-0300A and EVR716-11-0350A are identical except that the 8.33kHz channeling is inhibited for the second version.

6.2.1 Hardware differences

Sub-assembly	EVR716-11-0300A				
	Comparison with basic version	List of all the hardware modifications			
		Also applied on the basic version (improvement) (note 1)		Specific to Dash8 version (note 2)	
		Detailed description	Reason	Detailed description	Reason
- Transmitter	Hardware idem output power re-adjusted at 16W + ECO n°98-40-021	R128/R132: modified values R10/R196/C157/ C158/C60/FL5/F L2: modified values	Adjustment improvement Power supply filtering to improve spurious emissions	Output power adjusted at 18W instead of 25W.	
- Receiver	Hardware idem + ECO 98-40-017	R88/R107/R131/ C68: modified values	10MHz filtering to improve spurious emissions	Additional components for interlocking: 7R+2CR+2Q	Interlocking function
- Power Supply	idem	-		-	
- Data Processing Unit	idem + ECO 98-40-022	- CR480/CR481: modified values (Zener diodes)	Arinc 429 threshold reduction	-	
- HIRF	idem + ECO n°98-40-018 (Interlocking Control) + ECO n°98-40-020	R11/R17: modified values	Arinc 429 impedance reduced	Additional components: 1R+1CR+1C	Interlock control
- Chassis	idem except: - power storage capacity reduced - dog-house reduced - front panel headset jacks suppressed according to ECO n°98-40- 019	-	-	C1/C2: modified values (note 3) minor mechan. modifications 2 "jack" connectors suppressed	power interrupt of 50ms weight reduction weight reduction

Note 1: These modifications have been brought to the basic version after the flight certification (Airbus) phase and have been validated through an "Additional Qualification Report".

Note 2: These modifications are specific to the Dash8-400 version and are justified by the specific dash8 requirements [1].

Note 3: The capacity (two components) used for the power storage is wired inside the "Chassis unit" and is only used when the DC power supply drops down to less than 18V.

6.2.2 Softwares differences

Software modifications have been brought to take into account the specific functions required for Dash8-400 application.

a- Remote frequency control

The basic version is frequency controlled through an Arinc 429 line activated every 150ms. For Dash8-400, this Arinc 429 line operates in burst mode.

b- Port C

The basic version is equipped with two frequency control port (A & B). For Dash8-400 application, three ports are available: A & B for the two ARCDU, C for Standby Control Panel.

c- Readback frequency

The Dash8-400 version is equipped with a readback frequency line (Arinc 429) which is a frequency acknowledgement to check that the tuned frequency of the radio is right.

d- Frequency Memory

For the basic version, when the transceiver is powered on, the tuned frequency is 121.5 MHz as long as frequency control is not activated.

For the Dash8-400 version, the last used frequency is memorized and recalled when the transceiver is powered on, until a new frequency is selected through Arinc 429.

All these software functions are independant of

- the radio operation,
- the receiver and transmitter management,
- the audio processing.

7. ENVIRONMENTAL QUALIFICATION

Taking into account the level of the modifications, it is considered that additional electrical tests shall be conducted but that all the environmental tests shall not be redone.

The additional electrical tests shall be associated with non-regression tests.

The environmental tests to be done are

- "Power input" tests:
 - to check the 50ms drop-out requirement,
 - to apply MIL-STD-704E levels.
- Tests for which special specifications (specific to Dash8-400) are required:
 - Temperature,
 - Humidity,
 - Voltage spike according to MIL-STD 461 CE07,
 - Radio frequency susceptibility according to ESP89 (level A),

- Lightning induced transient susceptibility according to ESP89,
- Electrostatic discharge according to ESP89.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the matter of

THOMSON-CSF COMMUNICATIONS,

GARMIN INTERNATIONAL, INC.

AND

ALLIED SIGNAL, INC.

Request for Waiver of Section 87.173(b))
of the Commission's Rules Governing)
Assignable Carrier Frequencies)
in the Aviation Services)

ORDER

Adopted: October 6, 1998

Released: October 7, 1998

By the Chief, Public Safety and Private Wireless Division, Wireless
Telecommunications Bureau

I. INTRODUCTION

1. Under consideration are requests for waiver filed by Thomson-CSF Communications (Thomson) on July 23, 1998, by allied Signal, Inc. (Allied) on August 14, 1998, and by Garmin International, Inc. (Garmin) on September 25, 1998. Thomson, Allied and Garmin seek waiver of Section 87.173(b) of the Commission's Rules to permit type acceptance of VHF aircraft transceivers capable of transmitting on both the 25-kHz spaced channels currently authorized pursuant to Section 87.173(b) of the Commission's Rules and on 8.33-kHz spaced channels (dual spacing transceivers) that will be used in certain countries in Europe and in the United Kingdom in 1999. For the reasons discussed herein, we grant the requested waivers regarding operation of the Thomson, Allied and Garmin transceivers with 25 kHz and 8.33 kHz channel spacing. We note, however, that this Order does not authorize aircraft to transmit on 8.33-kHz spaced channels within airspace of the United States, its territories or the Commonwealth of Puerto Rico, but is limited to permitting type acceptance of specified transceivers capable of transmitting on the 8.33-kHz spaced Aeronautical Mobile Service (AMS) channels used in certain other countries.

II. BACKGROUND

2. In March of 1997, the International Civil Aviation Organization (ICAO), an international body operating under the auspices of the United Nations, amended its International Standards and Recommended

Practices to incorporate a channel plan specifying 8.33 kHz channel spacings in the AMS. The 8.33 kHz channel plan was adopted to alleviate the shortage of VHF Air Traffic Control (ATC) channels experienced in western Europe and in the United Kingdom. Seven western European countries and the United Kingdom are scheduled to implement the 8.33 kHz channel plan in 1999. Accordingly, aircraft operating in the airspace of these countries must have the capability of transmitting and receiving on the 8.33-kHz spaced channels.

3. Section 87.39 of the Commission's Rules requires: (1) that U.S. registered aircraft employ type accepted radios; and (2) that to be type accepted, aircraft radios must meet the technical requirements of Subpart D of Part 87 of the Commission's Rules. Subpart D of Part 87 contains a list of "assignable carrier frequencies or frequency bands" and includes carrier frequencies in the VHF aircraft band used for ATC communications (117.975 MHz to 136.975 MHz). The listed frequencies are based on 25 kHz spacing. There is no provision in the Commission's Rules for operating on 8.33-kHz spaced channels as envisioned by the ICAO channel plan. Accordingly, type acceptance of dual spacing transceivers may not be obtained absent a waiver of Section 87.173(b). The Commission granted similar a similar waiver to Rockwell Collins, Inc. on February 11, 1998, and to Honeywell, Inc. on June 17, 1998.

III. DISCUSSION

4. Section 1.3 of the Commission's Rules permits waiver of any rule provision for good cause shown. We find that the waivers requested by Thomson, Allied and Garmin are warranted. In that connection, Allied and Garmin point out that two industry standard setting organizations, RTCA, Inc. (RTCA) and Aeronautical Radio, Inc. (ARINC), have approved United States VHF transceiver standards that include 8.33 kHz spacing. Moreover, the Federal Aviation Administration (FAA) has issued Technical Standard Orders (TSO) based on these industry standards. As we noted in the Rockwell Order, aircraft must have the capability of communicating reliably with ground stations as directed, and on the frequencies specified, by air traffic controllers. Further, we believe that this capability could be impaired if United States registered aircraft were unable to communicate effectively with ATC facilities in certain European countries on 8.33-kHz spaced channels beginning in 1999. Accordingly, in the interest of air safety and operational efficiency, we issued the Rockwell Order and Honeywell Order allowing type acceptance of similar dual spacing transceivers. We believe the same factors that warranted waivers in the Rockwell and Honeywell context are present in the instant waiver requests submitted by Thomson, Allied and Garmin. Thus, we conclude that Thomson, Allied and Garmin have shown good cause for

waiver of Section 87.173(b) of the Commission's Rules to permit type acceptance of their dual spacing transceivers.

IV. ORDERING CLAUSES

5. Accordingly, IT IS ORDERED, pursuant to the authority of Sections 4(i) and 303(i) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303(i), and Section 1.3 of the Commission's Rules, 47 C.F.R. § 1.3, that the Request for Waiver of Section 87.173(b) filed by Thomson-CSF Communications IS GRANTED.

6. IT IS FURTHER ORDERED that Section 87.173(b) of the Rules, 47 C.F.R. § 87.173(b), IS WAIVED to the extent necessary to permit type acceptance of Thomson-CSF Communications' dual spacing transceiver, FCC Identification Number KVJEVR716.

7. IT IS FURTHER ORDERED, pursuant to the authority of Sections 4(i) and 303(i) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303(i), and Section 1.3 of the Commission's Rules, 47 C.F.R. § 1.3, that the Request for Waiver of Section 87.173(b) filed by Allied Signal, Inc. IS GRANTED.

8. IT IS FURTHER ORDERED that Section 87.173(b) of the Rules, 47 C.F.R. § 87.173(b), IS WAIVED to the extent necessary to permit type acceptance of Allied Signal Inc.'s dual spacing transceivers, FCC Identification Numbers ASYKY196B and ASYKX165A.

9. IT IS FURTHER ORDERED, pursuant to the authority of Sections 4(i) and 303(i) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), and 303(i), and Section 1.3 of the Commission's Rules, 47 C.F.R. § 1.3 that the Request of Wavier of Section 87.173(b) filed by Garmin International, Inc. IS GRANTED

10. IT IS FURTHER ORDERED that Section 87.173(b) of the Rules, 47 C.F.R. § 87.173(b), IS WAIVED to the extent necessary to permit type acceptance of the Garmin International, Inc.'s dual spacing transceiver, FCC Identification Number IPH-0021400.

11. IT IS FURTHER ORDERED that, except for having the capability to transmit on 8.33-kHz spaced channels outside of U.S. airspace, the dual spacing transceivers listed supra shall conform in all other respects to applicable provisions of Part 2, Subpart J of the Commission's Rules governing the type acceptance process and to applicable provisions of Part 87 of the Commission's Rules governing aviation services.

12. This action is taken under delegated authority pursuant to Section 0.331 of the Commission's Rules, 47 C.F.R. § 0.331.

FEDERAL COMMUNICATIONS COMMISSION

D'wana R. Terry, Chief
Public Safety and Private Wireless Division
Wireless Telecommunications Bureau

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