

# Deviation Request ETSO-C115c#4 for an ETSO approval for CS-ETSO applicable to Airborne Area Navigation Equipment Flight Management Systems (FMS) Using Multi-Sensor Inputs (ETSO-C115c)

## Consultation Paper

### 1 Introductory Note

The hereby presented deviation requests shall be subject to public consultation, in accordance with EASA Management Board Decision No 7-2004 as amended by EASA Management Board [Decision No 12-2007](#) products certification procedure dated 11th September 2007, Article 3 (2.) of which states:

“2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency.”

### 2 ETSO-C115c#4 Airborne Area Navigation Equipment Flight Management Systems (FMS) Using Multi-Sensor Inputs

#### 2.1 Summary of Deviation

Deviates from RTCA DO-283A section 2.2.4.1.2 by providing angular deviations for the analog approach deviation output.

#### 2.2 Original Requirement

RTCA DO-283A

##### 2.2.4.1.2 Non-Numeric Display/Output Requirements “

*The equipment shall provide either a non-numeric display output or an electrical output to support an external non-numeric display as described in the following subsections.*

*Display and electrical outputs defined in the following subsections shall be scaled based on the currently selected RNP type, as defined in the following table.*

**Table 2-2 Cross-Track Deviation Full Scale Deflection**

| Currently Selected RNP Type | Full Scale Deflection (2 Dots) |
|-----------------------------|--------------------------------|
| 0.3 to 0.99                 | 0.3 NM                         |
| 1.0 to 1.99                 | 1.0 NM                         |
| 2.0 to 3.99                 | 2.0 NM                         |
| 4.0 and greater             | 4.0 NM                         |

#### 2.2.4.1.2.2 Electrical Output:

The electrical output shall have the following characteristics shown in Table 2-4.

**Table 2-4 Electrical Output of Cross-Track**

| Full Scale Deflection   | Per <u>Table 2-2</u> |
|---|----------------------|
| Resolution of Electrical Output<br>(Percentage of Full Scale)           | 1%                   |
| Accuracy of Centered Display<br>(Percentage of Full Scale)              | 3%                   |
| Linearity of Display or electrical<br>output (Percentage of Full Scale) | 5%                   |

## 2.3 Industry

Analog approach deviation is output as angular because it is typically used as a steering signal into the Flight Guidance System ILS channel. Note that this issue affects only the analog output and only in approach mode; the digital output is always linear.

## 2.4 Equivalent Level of Safety

An Equivalent Level of Safety is provided by a higher compatibility of the FMS analog output with the legacy Flight Guidance Systems which were designed to slave on ILS (LOC and G/S) angular deviations.

## 2.5 EASA position

We accept the deviation provided that this information is available in the installation manual, especially for those installing the FMS with FGS systems which may base their guidance on the assumption of linear scaling.