

**RTCA Special Committee 209**  
**ATCRBS / Mode S Transponder MOPS Maintenance**  
**Meeting #12**

**In Joint Session with EUROCAE WG-49**  
**EUROCAE HQ, Paris, France**  
**15 – 18 November 2010**

**General Transponder and ADS-B Out Diagnostic Register- Alternate  
Proposal**  
**Revision 1**

**Kurt Schueler**  
**Garmin International**

SUMMARY
<b>This working paper is presented in response to SC209-WP11-11 which proposed a definition for a maintenance register to provide a means for ground-stations to extract general transponder operating conditions. This working paper proposes an alternative definition.</b>

**Introduction:**

During SC-209/WG-49 Meeting #10, SC209-WP10-13 was submitted by Airservices Australia to request that the committee consider adding a single bit in ADS-B transmissions to indicate whether Transponder A or B is transmitting. That working paper resulted in Action Item #10-05 which, in turn, resulted in SC209-WP11-11. Working Paper SC209-WP11-11 was taken to the ICAO ASP Working Group meeting in Brussels Belgium 4 – 8 October 2010 and presented as Working Paper WP ASP09-20. During discussions, there were suggested revisions and Alex Rodriguez of Rockwell presented Working Paper SC209-WP12-09 as the next generation of the proposed diagnostic Register during Meeting #12 of SC209/WG-49 at EUROCAE. SC209-WP11-11 proposed a BDS register to provide ground stations with the configuration and status of the Transponder at the time of request. That register proposal included definitions of Side 1/Side 2, fault bits, port and bus status and data source currently in use. While much of the proposed data could indeed be useful for diagnosing issues with a transmitting entity, the definitions do not reflect all installations. Additionally, experience with the development of multiple ADS-B transmit MOPS versions has shown that overly-defined registers may likely be found insufficient in some respect in the future, requiring a redesign.

**Discussion:**

The first version of this working paper was presented during meeting #12 of SC-209 / WG-49 in conjunction with Working Paper SC209-WP12-09. The committee recognized a need for a structured register such as the one described in SC209-WP12-09 along with an option to provide vendor specific data in an additional register. The committee agreed that registers (E,A) will be defined at this time, while (E,B) and (E,C) will be reserved for future use by vendors. The (E,A) register is defined here:

**Table B-2-xx: BDS Code E,A – Manufacturer Defined Diagnostic Register**

**MB FIELD**

1	MSB	BDS Register Number__“EA”	<p>PURPOSE: To report diagnostic status and configuration information in a format defined by the transponder manufacturer.</p> <p>1) This Register allows manufacturers to define configuration and status data that may be specific to their implementation or installation. This Register is designed to be a compliment to Register E7<sub>16</sub>.</p> <p>2) This register should only be serviced if the transponder hardware and software can be identified via service of Register E3<sub>16</sub> and/or Register E4<sub>16</sub>.</p>
2			
3			
4			
5			
6			
7			
8			
9	LSB	Manufacturer defined diagnostic field	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			
51			
52			
53			
54			
55			
56			