Deviation Request ETSO-C112d#11 for an ETSO approval for CS-ETSO applicable to Secondary Surveillance Radar Mode S Transponder (ETSO-C112d)
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-C112d#11 Secondary Surveillance Radar Mode S Transponder

2.1   Summary of Deviation

Deviate from ED-73E Chapter 5 to resolve contradictions between given test procedures and corresponding requirements.

2.2   Original Requirement

Refer to Appendix A Table 1 column 'ED-73E Original Requirement'.

2.3   Industry

Refer to Appendix A Table 1 column 'Original Text in ED-73E' and column 'Industry'.

2.4   Equivalent Level of Safety

If tests would be performed as described it would contradict its MOPS requirement.

2.5   EASA position

We accept the deviation.

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Appendix A
Table 1

Item	ED-73E Original Requirement	Original Text in ED-73E	Industry	Justification
1	3.10.2 e Recovery From a Suppression Pair The receipt of P1 and P2 suppression pulses may temporarily desensitise the transponder according to §3.10.2 a, but the suppression pairs shall not otherwise interfere with the reception of Mode S interrogations. 3.10.2 g Recovery from Unaccepted Mode A/C/S All-Call and Mode A/C-Only All-Calls Following unaccepted Mode A/C/S All-Call or Mode A/C-Only All-Calls, the transponder shall recover sensitivity according to §3.10.2 a.	ED-73E 5.4.6.2 d Set the master test set to generate a P1-P2 pulse pair at the Mode A/C standard interrogation rate and a power level equal to -35 dBm. Set the slave test set to generate a Mode S-Only All-Call interrogation delayed 10 µs after the last pulse of the master test set interrogation. Determine the amplitude of the slave test set signal required to produce 90% reply efficiency. [Under environmental conditions, the following paragraph of this test step is not required.] Lock out the transponder to All-Calls and repeat the procedure with Mode A/C/S All-Call and Mode A/C-only All-Call interrogations in place of the suppression pair	ED-73E 5.4.6.2 d Set the master test set to generate a P1-P2 suppression pair at the rate of 50 per second and a power level equal to MTL + 50 dB. Set the slave test set to generate a Mode S-Only All-Call interrogation delayed 3 µs from the trailing edge of the last pulse od suppression pair. Determine the amplitude of the slave test set signal required to produce 90% reply efficiency. Repeat for master to slave test set delays of 6, 10 and 15 µs. [Under environmental conditions, it is sufficient to perform this test step with master to slave test set delays of 3 µs and 15 µs.] [Under environmental conditions, the following paragraph of this test step is not required.] Lock out the transponder to All-Calls and repeat the procedure with Mode A/C/S All-Call and Mode A/C-only All-Call interrogations in place of the suppression pair.	The original procedure requests Mode A/C standard interrogation rate which is too high to be within Mode S reply limit. Thus, we never can get 90% reply efficiency, without reduction of interrogation rate. In addition, there is a problem of ambiguity of results with signal level/time combination selected by original test procedure. The expected result was ambiguous and not explicitly specified. The original procedure requires a desensitizing pulse of signal level (-35 dBm), preceding an interrogation by 10 µs. Analysis of desensitization requirements shows two opposite possible effects: a) If the initial desensitization level is 9 dB below pulse amplitude and maximum recovery rate of 4 dB/µs is used, the desensitization level after 10 µs is: -35 dBm – 9 dB – 4 dB/µs * 10 µs = -84 dBm. So, desensitization shouldn't be in effect and measured level to produce 90% reply efficiency should be approx. equal to MTL. b) If the initial desensitization level is equal to pulse amplitude and the recovery rate is 3.3 dB/µs (50/15), the desensitization level after 10 µs is: -35 dBm - 3.3 dB/µs * 10 µs = -68 dBm. So, desensitization should be effective and measured level to produce 90% reply efficiency, should be higher than MTL. By correction of this discrepancy in test procedure, there is no deviation to given requirements.

Item	ED-73E Original Requirement	Original Text in ED-73E	Industry	Justification
2	3.18.4.40 DP Data Parity 3.22.2.1 Mode S Protocols – Error Detection 3.23.1.12 Comm-B Protocol	ED-73E 5.5.8.1.2.1 Interrogate the transponder to extract Register 10_{16} with an interrogation having UF=4, PC=0, RR=20 (14 Hex), DI=0, IIS=0, and all remaining "SD" bits set to ZERO (0).	ED-73E 5.5.8.1.2.1 Interrogate the transponder to extract Register 10_{16} with an interrogation having UF=4, PC=0, RR=17 (11 Hex), DI=0, IIS=0, and all remaining "SD" bits set to ZERO (0).	For extraction of GICB register 10_{16}, the value of RR should be 17 (11 Hex), not 20 (14 hex). By correction of this discrepancy in test procedure, there is no deviation to given requirements.
3	3.18.4.40 DP Data Parity 3.22.2.1 Mode S Protocols – Error Detection 3.23.1.12 Comm-B Protocol	ED-73E 5.5.8.1.2.1 i Interrogate the transponder to extract Register $5F_{16}$ with an interrogation having UF=4, PC=0, RR=21 (15 Hex), DI=0, IIS=0, RRS=F Hex, Bit 25=0, LOS=0, Bit 27=0, Bit 28=1 (e.g., OVC=1), and all remaining "SD" bits set to ZERO (0). 1. Verify that the transponder replies with a DF=20 reply having DP=C9 C2 8E Hex. 2. Repeat the interrogation with DI=3 and verify the same results. 3. Repeat the interrogation with DI=7 and verify the same results.	ED-73E 5.5.8.1.2.1 i Interrogate the transponder to extract Register $5F_{16}$ with an interrogation having UF=4, PC=0, RR=21 (15 Hex), DI=3, IIS=0, RRS=F Hex, Bit 25=0, LOS=0, Bit 27=0, Bit 28=1 (e.g., OVC=1), and all remaining "SD" bits set to ZERO (0). 1. Verify that the transponder replies with a DF=20 reply having DP=C9 C2 8E Hex. 2. Repeat the interrogation with DI=7 and verify the same results.	When DI=0, the RRS field does not exist, so it is not possible to extract GICB register $5F_{16}$. This register can only be extracted with DI=3 or DI=7. By correction of this discrepancy in test procedure, there is no deviation to given requirements.
4	3.18.4.40 DP Data Parity 3.22.2.1 Mode S Protocols – Error Detection 3.23.1.12 Comm-B Protocol	ED-73E 5.5.8.1.2.1 j Interrogate the transponder to extract Register $5F_{16}$ with an interrogation having UF=5, PC=0, RR=21 (15 Hex), DI=0, IIS=0, RRS=F Hex, Bit 25=0, LOS=0, Bit 27=0, Bit 28=1 (e.g., OVC=1), and all remaining "SD" bits set to Zero (0). 1. Verify that the transponder replies with a DF=21 reply having DP=0A 55 55 Hex. 2. Repeat the interrogation with DI=3 and verify the same results. 3. Repeat the interrogation with DI=7 and verify the same results.	ED-73E 5.5.8.1.2.1 j Interrogate the transponder to extract Register $5F_{16}$ with an interrogation having UF=5, PC=0, RR=21 (15 Hex), DI=3, IIS=0, RRS=F Hex, Bit 25=0, LOS=0, Bit 27=0, Bit 28=1 (e.g., OVC=1), and all remaining "SD" bits set to Zero (0). 1. Verify that the transponder replies with a DF=21 reply having DP=0A 55 55 Hex. 2. Repeat the interrogation with DI=7 and verify the same results.	When DI=0, the RRS field does not exist, so it is not possible to extract GICB register $5F_{16}$. This register can only be extracted with DI=3 or DI=7. By correction of this discrepancy in test procedure, there is no deviation to given requirements.

Item	ED-73E Original Requirement	Original Text in ED-73E	Industry	Justification
5	3.28 Extended Squitter Protocols	ED-73E 5.5.8.6.2.2 b STEP 2 - Set the ALT switch to the "on" position and provide altitude code input to the transponder. After power-up initialization, verify that the transponder does not broadcast Extended Squitters. Interrogate the transponder with ground initiated Comm-B requests with RR=16, DI=7 and RRS=5, 6, 9 and 10 respectively. Verify that the altitude is ZERO in the airborne position report and remaining bits are ZERO. Verify that the MB field of the remaining replies is ZERO.	ED-73E 5.5.8.6.2.2 b STEP 2 - Set the ALT switch to the "on" position and provide altitude code input to the transponder. After power-up initialization, verify that the transponder does not broadcast Extended Squitters. Interrogate the transponder with ground initiated Comm-B requests with RR=16, DI=7 and RRS=5. Verify that the MB field of the reply is ZERO, excluding SSS and altitude subfields. Interrogate the transponder with ground initiated Comm-B requests with RR=16, DI=7 and RRS=6, 9. Verify that the MB field of the reply is ZERO. Description: There are two fields in GICB register 05_{16} which are controlled by the transponder part of the equipment: altitude and surveillance status. ED-73E implies that as long as there are no conditions to transmit GICB register 05_{16}, it is set to 0, even if data are available. Decision to transmit GICB register 05_{16} as a squitter is done as follows: - Transmit if GICB register 05_{16} is not 0". A deviation is submitted for allowance of an implementation in a way, that each field of GICB register 05_{16} is updated whenever data for this field are available (this is in line with ICAO doc9871 appendix A.2.1.1). Decision to transmit GICB register 05_{16} as a squitter is done by logic conditions analysis.	In case that logic conditions result in prevention for transmission of GICB register 05_{16}, the content of altitude and surveillance fields is not relevant. So setting them to 0 is not mandatory and those fields can be updated as long as new information is available. This change in implementation needs also adaptation of corresponding test procedure in ED-73E 5.5.8.6.2.2 b. By adaptation of this test procedure to alternative implementation architecture, there is no deviation to given requirements.

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Item	ED-73E Original Requirement	Original Text in ED-73E	Industry	Justification
6	3.28 Extended Squitter Rate	ED-73E 5.5.8.6.2.2 d STEP 4 - Setup the transponder as in STEP 3 with Extended Squitter updates to the transponder at a maximum update interval as specified in Appendix B, Table B-2-1. Place the transponder in the airborne state. Stop updates of all Extended Squitter data, except altitude information, to the transponder for GICB Registers 05_{16}, 06_{16}, 07_{16}, 08_{16}, 09_{16}, 62_{16} and 65_{16}. 1. Verify that after 2 seconds, the Extended Squitter ME fields for GICB Register 05_{16} are ZERO with the exception of the ACS and surveillance status fields. 2. Verify that after 2 seconds the aircraft identification and category squitter (GICB Register 08_{16}) continues to be transmitted. 3. Verify that after 2 seconds only the Selected Altitude, Selected Heading or Barometric Pressure Setting subfields of the target state and status squitter (GICB Register 62_{16}) are set to ZERO. Verify that the remaining Extended Squitter ME subfields are not cleared, as they contain other integrity, mode or status information. 4. Verify that after 2 seconds the Extended Squitter ME fields of the aircraft operational status squitter (GICB Register 65_{16}) are not cleared, as they contain various integrity, mode or status information. 5. Verify that after 2.6 seconds the airborne velocity squitter is not being transmitted.	ED-73E 5.5.8.6.2.2 d STEP 4 - Setup the transponder as in STEP 3 with Extended Squitter updates to the transponder at a maximum update interval as specified in Appendix B, Table B-2-1. Place the transponder in the airborne state. Stop updates of all Extended Squitter data, except altitude information, to the transponder for GICB Registers 05_{16}, 06_{16}, 07_{16}, 08_{16}, 09_{16}, 62_{16} and 65_{16}. 1. Verify that after 2 seconds, the Extended Squitter ME fields for GICB Register 05_{16} are ZERO with the exception of the ACS and surveillance status fields. 2. Verify that after 2 seconds the aircraft identification and category squitter (GICB Register 08_{16}) continues to be transmitted. 3. Verify that after 2 seconds only the Selected Altitude, Selected Heading or Barometric Pressure Setting subfields of the target state and status squitter (GICB Register 62_{16}) are set to ZERO. Verify that the remaining Extended Squitter ME subfields are not cleared, as they contain other integrity, mode or status information. 4. Verify that after 2 seconds the following fields of the aircraft operational status squitter (GICB Register 65_{16}) are cleared: - NACp field ("ME" bits 45-48) - NIC-Supplement-A bit - NICbaro bit - Resolution Advisory Active bit 5. Verify that all remaining fields of Aircraft Operational Status squitter/GICB register 65_{16} are not cleared. 6. Verify that after 2.6 seconds the airborne velocity squitter is not being transmitted.	ED-102A 2.2.3.3.2.11f specifies that "The ADS-B Transmitting Subsystem shall not clear the Operational Status Messages". Consequently, ED-73E 5.5.8.6.2.2d requires stopping providing the transponder with Extended Squitter data, except altitude information and then in (4) requires after 2 seconds to verify that Aircraft Operational Status squitter (GICB register 65_{16}) fields are not cleared. But, for NACp field ("ME" bits 45-48), ED-102A 2.2.3.2.7.2.7 requires: "If an update has not been received from an on-board data source for NACp within past 2 seconds, then the NACp subfield shall be encoded as a value of ZERO". So, when during test procedure of ED-73E 5.5.8.6.2.2d NACp data delivery is terminated, the NACp field of the squitter/GICB register will be set to ZERO. Similar conflict is with NIC-Supplement-A bit (ED-102A 2.2.3.2.7.2.6) and NICbaro bit (ED-102A 2.2.3.2.7.2.10) and TCAS/ACAS Resolution Advisory Active bit of OM field (ED-102A 2.2.3.2.7.2.4.2) The proposed solution is to require clearing of above fields in test procedure ED-73E 5.5.8.6.2.2 d and no clearance of remaining fields or Aircraft Operational Status squitter/GICB register 0x65. Correction of corresponding test procedure does not result in any deviation to given requirements.

Item	ED-73E Original Requirement	Original Text in ED-73E	Industry	Justification
7	3.28 Extended Squitter Protocols	ED-73E 5.5.8.6.3 Step 2 j Repeat the interrogation used in Step 2.k, except set TCS=0 and RCS=3, 4, 5, 6 and 7, respectively, and for each setting used, verify that the transponder: …	ED-73E 5.5.8.6.3 Step 2 j Repeat the interrogation used in **Step 2.i**, except set TCS=0 and RCS=3, 4, 5, 6 and 7, respectively, and for each setting used, verify that the transponder: …	Step 2.j test shall be performed to test transponder broadcasts of surface related messages (position, operational status …) as used also in Step 2.i. Step 2.k will follow later to verify termination of such broadcasts. By correction of this discrepancy in test procedure, there is no deviation to given requirements.
8	3.28 Extended Squitter Protocols	ED-73E 5.5.8.6.3 Step 3 b Interrogate the transponder with UF=4, PC=0, RR=0, DI=2, TCS=0, RCS=0, and SAS=0. For transponders that do not support automatic detection of on-the-ground status, verify that the following interrogations have no impact to Extended Squitter and Acquisition squitter transmissions. Otherwise, verify that the transponder broadcasts Extended and Acquisition squitters on the top antenna only.	ED-73E 5.5.8.6.3 Step 3 b Interrogate the transponder with UF=4, PC=0, RR=0, DI=2, TCS=0, RCS=0, and SAS=0. For transponders that do not support automatic detection of on-the-ground status, verify that the following interrogations have no impact to Extended Squitter and Acquisition squitter transmissions. Otherwise, verify that the transponder broadcasts Extended and Acquisition squitters on the top antenna only.	Acquisition squitters are not transmitted when the transponder is in 'On the ground' status. In this case, Extended Squitters are transmitted only. By correction of the test procedure accordingly, there is no deviation to given requirements.
9	3.28 Extended Squitter Protocols	ED-73E 5.5.8.6.3 Step 3 c Repeat interrogation used in Step 3.b, except with SAS=1 followed by an interrogation 10 seconds later with SAS=3. After the second interrogation, verify that the transponder resumes broadcasting Extended and Acquisition squitters from the top antenna only.	ED-73E 5.5.8.6.3 Step 3 c Repeat interrogation used in Step 3.b, except with SAS=1 followed by an interrogation 10 seconds later with SAS=3. After the second interrogation, verify that the transponder resumes broadcasting Extended and Acquisition squitters from the top antenna only.	Acquisition squitters are not transmitted when the transponder is in 'On the ground' status. In this case, Extended Squitters are transmitted only. By correction of the test procedure accordingly, there is no deviation to given requirements.
10	3.28 Extended Squitter Protocols	ED-73E 5.5.8.6.3 Step 3 d Repeat interrogation used in Step 3.b, except with SAS=1 followed by an interrogation 10 seconds later with SAS=3. After the second interrogation, verify that the transponder resumes broadcasting Extended and Acquisition squitters from the top antenna only.	ED-73E 5.5.8.6.3 Step 3 d Repeat interrogation used in Step 3.b, except with SAS=1 followed by an interrogation 10 seconds later with SAS=3. After the second interrogation, verify that the transponder resumes broadcasting Extended and Acquisition squitters from the top antenna only.	Acquisition squitters are not transmitted when the transponder is in 'On the ground' status. In this case, Extended Squitters are transmitted only. By correction of the test procedure accordingly, there is no deviation to given requirements.

Item	ED-73E Original Requirement	Original Text in ED-73E	Industry	Justification
11	3.28 Extended Squitter Protocols	ED-73E 5.5.8.6.3 Step 3 e Repeat interrogation used in Step 3.b, except with SAS=1 followed by an interrogation 10 seconds later with SAS=3. After the second interrogation, verify that the transponder resumes broadcasting Extended and Acquisition squitters from the top antenna only.	ED-73E 5.5.8.6.3 Step 3 e Repeat interrogation used in Step 3.b, except with SAS=1 followed by an interrogation 10 seconds later with SAS=3. After the second interrogation, verify that the transponder resumes broadcasting Extended ~~and Acquisition~~ squitters from the top antenna only.	Acquisition squitters are not transmitted when the transponder is in 'On the ground' status. In this case, Extended Squitters are transmitted only. By correction of the test procedure accordingly, there is no deviation to given requirements.
12	3.18.4.12 Flight Status FS	ED-73E 5.5.8.7.3 Duration of each timer run (T_C and T_I) shall be verified to be 18 ±1.0 seconds by observation of FS code change. Change the input of the ID function to a value other than 7500, 7600 or 7700. Verify that the Mode A Code, temporary alert is set (FS field value is 4 or 5). Five (5) seconds later, change the input of the ID function to a value other than 7500, 7600 or 7700 and different from the previously used value. Verify that the Mode A Code temporary alert is set (FS field value is 4 or 5) for 18 ±1 seconds after the second change.	ED-73E 5.5.8.7.3 Duration of each timer run (T_C and T_I) shall be verified to be 18 ±1.0 seconds by observation of FS code change. Change the input of the ID function to a value other than 7500, 7600 or 7700. Verify that the Mode A Code, temporary alert is set (FS field value is 2, 3 or 4. Five (5) seconds later, change the input of the ID function to a value other than 7500, 7600 or 7700 and different from the previously used value. Verify that the Mode A Code temporary alert is set (FS field value is 2, 3 or 4) for 18 ±1 seconds after the second change.	According to table in ED-73E 3.18.4.12 the coding for Flight Status field shall be 2, 3 or 4 when an alert is pending. Code 5 is stated as 'no' there. By correction of this typo in test procedure, there is no deviation to given requirements.
13	Deleted			

Item	ED-73E Original Requirement	Original Text in ED-73E	Industry	Justification
14	3.23.1.9 UM Protocol	ED-73E 5.5.8.18.3 […] Interrogation pattern 8 DI≠0 or 7, State 5 (IIS correct) – expected results 5 **a**,d,e,**j** Interrogation pattern 8 DI=0 and 7, State 5 (IIS correct) – expected results 5 **a**,d,f,**j** **[…]**	As pattern 8 is a GICB Comm-B, the reply shall include contents of GICB register indicated by RR, RRS. The expected result codes "a" and "j" are not correct. As pattern 8 include L (RR>1), the reply is a long reply indicated by "b" and the content is a "MB" indicated by "i". Note: The state "e" or "f" is depending on initial state. ED-73E 5.5.8.18.3 Interrogation pattern 8 DI≠0 or 7, State 5 (IIS correct) – expected results 5 **b**,d,e,**i** Interrogation pattern 8 DI=0 and 7, State 5 (IIS correct) – expected results 5 **b**,d,f,**i**	By correction of this typo in test procedure, there is no deviation to given requirements.
15	Test procedure for requirements stated in chapter: 3.23.1.9 UM Protocol	ED-73E 5.5.8.18.3 (page 247 table headline) Transponder State 4 | 5 (IIS incorrect) | 6 (IIS correct) | 6 Is: "**6** (IIS correct)"	ED-73E 5.5.8.18.3 (page 247 table headline) Shall be: "**5** (IIS correct)"	By correction of this typo in test procedure, there is no deviation to given requirements.
16	Deleted			

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Item	ED-73E Original Requirement	Original Text in ED-73E	Industry	Justification
17	Test procedure for requirements stated in chapters: 3.23.1.13e Change of Aircraft Identification 3.29.3 Declaration of Capability in Register 10_{16} – Data Link Capability Report 3.29.6.3 Flight Identification Update Intervals	ED-73E 5.6.6.2 c As soon as the transponder has replied with the proper Register 20_{16} reply in Part 2, Step b, interrogate the transponder with the following Comm-B Extraction interrogations in order to extract the Comm-B broadcast message which should be the Data Link Capability Report contained in Register 10_{16}	ED-73E 5.6.6.2 c As soon as the transponder has replied with the proper Register 20_{16} reply in Part 2, Step b, interrogate the transponder with the following CommB Extraction interrogations in order to extract the CommB broadcast message which should be the Aircraft Identification Report contained in Register 20_{16} **Remarks:** The procedure in step 'a' terminates Aircraft ID update thus leading in step 'b' to clearing of GICB register 20_{16} and initiating a Comm-B broadcast. Then in step 'c' the procedure extracts Comm-B broadcast message, but expects it to contain Data Link Capability register 10_{16}. In fact, Aircraft ID timeout will affect GICB register 10_{16} bit 33, but according to ED-73E 3.23.1.12 e (3), this register is sampled at intervals up to 4 seconds, so its change and related Comm-B broadcast will most likely follow clearing GICB register 20_{16} and the related broadcast. It seems that termination of Aircraft ID data deliver will trigger following actions, in order of appearance: 1. clear GICB register 20_{16} bits 9..56 and GICB register 10_{16} bit 33, 2. initiate broadcast of GICB register 20_{16}, 3. detect GICB register 10_{16} change, 4. initiate broadcast of GICB register 10_{16}. Looking into timing and sequence of ED-73E 5.6.6.2 it seems that in step c the Comm-B broadcast message will be the GICB register 20_{16}.	This is what is expected by the test itself that is first indicating the broadcast of register 20_{16} in Note1 followed by the broadcast of register 10_{16}. By correction of the test procedure accordingly, there is no deviation to given requirements.

Item	ED-73E Original Requirement	Original Text in ED-73E	Industry	Justification
18	Test procedure for requirements stated in chapters: 3.23.1.13 Aircraft Identification Reporting 3.29.6.2.1 Register 20_{16} Data Selection Priority 3.29.6.5 Register 20_{16} Change Reporting	ED-73E 5.6.6.2 b NOTE 1: The interrogation should initiate the "B" timer for 18 ±1.0 seconds since a Comm-B Broadcast is initiated when Aircraft Identification Data is changed.	ED-73E 5.6.6.2 b NOTE 1: The transponder should initiate the "B" timer for 18 ±1.0 seconds since a Comm-B Broadcast is initiated when Aircraft Identification Data is changed.	Correction of this phrasing in 'Note 1' of test procedure does not raise any deviation to given requirements. Remark: The same incorrect phrasing is used several times inside ED-73E. Shown correction should be took into consideration for all appearances.
19	Test procedure for requirements stated in chapters: 3.29.6.2.1b Register 20_{16} – Data Selection Priority 3.29.7.1 Register 21_{16} – Purpose and Definition 3.29.7.2 Register 21_{16} – Data Requirements 3.29.7.3 Register 21_{16} – Update Intervals	ED-73E 5.6.6.7 c "MB" Bit 1 (Status) is stated to be "1"	For this test, we have a condition of Aircraft Registration data timeout (no data delivered for twice the minimum update rate). Therefore, the Aircraft Registration field in GICB register 0x21 should be cleared, including 'Bit 1' (Status). ED-73E 5.6.6.7 c "MB" Bit 1 (Status) shall be "0"	Aircraft Registration "MB" Field status bit is needed to be "0" to clearly identify data as INVALID (refer to ED-73E B.2.2.2 rule 4). By correction of this typo in test procedure, there is no deviation to given requirements.
20	Test procedure for requirements stated in chapters: 3.30.5.1 Register 40_{16} – Purpose and Definition 3.30.5.2 Register 40_{16} – Data Requirements	ED-73E 5.7.5.2 a (1) The "Rounded Input Encoding" value is stated to be: "0_100 1111 0100"	ED-73E 5.7.5.2 a (1) The "Rounded Input Encoding" value shall be: "0_100**0** 1111 0100"	In accordance with 'ED-73-E Table B-3-64', Selected Altitude is to be given by 16 Bits + leading status Bit. A correction in given test procedure is needed to fulfill origin requirement. By correction of this typo in test procedure, there is no deviation to given requirements.

Item	ED-73E Original Requirement	Original Text in ED-73E	Industry	Justification
21	Test procedure for requirements stated in chapters: 3.30.5.3 Maximum Update Interval of Register 40_{16}	<u>ED-73E 5.7.5.6 b</u> Within ONE (1) second of providing the transponder with data as detailed in Part 6.a, interrogate the transponder with the following GICB Extraction interrogation in order to extract the Register 40_{16} [...]	<u>ED-73E 5.7.5.6 b</u> After TWO (2) seconds of providing the transponder with data as detailed in Part 6.a, interrogate the transponder with the following GICB Extraction interrogation in order to extract the Register 40_{16} [...]	The data timeout for Selected Altitude, Barometric Pressure Setting, etc. is specified to be 2 seconds in ED-73E 3.30.5.3. This means, that after ONE second from termination of provision of selected altitude, etc., the Register 40_{16} may still contain recent data. By correction of the test procedure as stated, there is no deviation to given requirements.
22	Test procedure for requirements stated in chapters: 3.30.6.3 Maximum Update Interval of Register 50_{16}	<u>ED-73E 5.7.6.3 b</u> Within 1.3 seconds of changing the data sources in Part 3.a, interrogate the transponder with the following GICB Extraction interrogation in order to extract the Register 50_{16} [...]	<u>ED-73E 5.7.6.3 b</u> Within 2.6 seconds of changing the data sources in Part 3.a, interrogate the transponder with the following GICB Extraction interrogation in order to extract the Register 50_{16} [...]	The data timeout for Register 50_{16} sources is specified to be 2.6 seconds in ED-73E 3.30.6.3. This means, that after 1.3 seconds from termination of provision of Selected Altitude, etc., the register 50_{16} may still contain recent data By correction of the test procedure as stated, there is no deviation to given requirements.