

Comment				Comment summary	Suggested resolution	Comment is an observation (suggestion)	Comment is substantive (objection)	EASA comment disposition	EASA response
NR	Author	Section, table, figure	Page						
1	Garmin	1.1	3	<p>The purpose and scope of CM-AS-007 is very narrow in that it “is to provide guidance on the approval of installation of electronic flight instrument systems without own EASA equipment approval in small aeroplanes operated under Day-VFR conditions.”</p> <p>The FAA’s draft “Approval of Non-Required Safety Enhancing Equipment (NORSEE)” that is currently out for public comment is much broader in the scope of equipment as noted in the following copied from its “Mission Objective” section:</p> <p>“Equipment approved as NORSEE has a variety of uses including—</p> <ol style="list-style-type: none"> 1. Increasing overall situation awareness; 2. Providing additional information other than the aircraft primary system; 3. Providing independent warning, cautionary, or advisory indications; and 4. Providing additional occupant safety protection. <p>... The types of equipment that may be considered NORSEE include, but are not limited to the following:</p> <ul style="list-style-type: none"> • Traffic advisory system, • Terrain advisory (such as a terrain awareness and warning system (TAWS)), • Attitude indicator, • Weather advisory, • Crashworthiness (such as energy-absorbing seats, seatbelts, and airbags), • Configuration advisory (such as gear advisory for floats and takeoff/landing configuration), • Supplemental indication (such as a fuel flow or fuel quantity indicator), • Monitoring/detection system (such as a smoke, carbon monoxide, or fire detector), • Extinguishing system (such as a fire extinguisher), and • Stability and control (such as an autopilot or stability augmentation system).” <p>The draft NORSEE policy also is not limited to “small aeroplanes”. Instead, the draft NORSEE policy Applicability states “This policy statement applies to 14 CFR part 23, 27, and 29 category aircraft.”</p>	Recommend that EASA consider expanding the purpose and scope of CM-AS-007 in terms of equipment and aircraft to be consistent with the draft FAA NORSEE policy “Mission Objective” and “Applicability”.		Yes	Noted	<p>For Electronic Flight Instruments EASA’s CM scope is wider than “Approval of Non-Required Safety Enhancing Equipment” (NORSEE) as the EASA CM is applicable to required equipment.</p> <p>EASA is aware of the FAA NORSEE activity. EASA plans to update and potentially extend the scope of this CM and will consider among the others also the FAA NORSEE activity .</p> <p>EASA has other initiatives to facilitate the installation of non-certified equipment through CS-STAN (AoA) and through the use of AML STCs in specific cases.</p>
2	Garmin	1.1	3	<p>The FAA’s draft NORSEE policy is not limited to “small aeroplanes operated under Day-VFR conditions.” It is a great disservice to the industry and the flying community to make it easier to install new safety enhancing technology and then limit it to VFR only. Lowering the certification burden, and consequently the cost, of equipment that is VFR only will result in higher equipment costs for IFR because those companies focused on low cost will only serve the VFR only market and the companies left serving the</p>			Yes	Noted	<p>The argument is understood. The objective of this CM is not to promote VFR against IFR operations, rather to facilitate the use of non-ETSO equipment under certain conditions. EASA has initiated a number of activities under the GA roadmap to facilitate IFR flight (One example is the SC-OVLA-div03 issue1 for IFR operation for VLA) . EASA plans to update and potentially extend the scope of this CM and Further revisions of the CM may address also IFR flights.</p>

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				<p>IFR market will have a smaller overall market and will command even higher prices.</p> <p>This is the path rotorcraft certification has been on for a long time, i.e., making it harder to get IFR approval for a helicopter. And now the only IFR helicopters are extremely expensive. This has resulted in many crashes involving helicopters restricted to VFR because pilots may “scud run”. Fixed wing pilots also “scud run”. The big picture solution is to fix the root cause of scud running, which is to make it <u>easier</u> to fly IFR by keeping the costs as low as possible in certifying and installing safety enhancing equipment, and then making the pilot qualification standards modern and realistic (e.g., RNAV rather than NDB approaches). Encourage <u>all</u> pilots to be IFR qualified, even if they might only go IFR/IMC 1% of the time. Let the pilots have big moving maps and low cost autopilots with electronic stability protection (which functions when the autopilot is not engaged). This will have a greater effect on improving safety than worrying about the very small chance that a series of error sources align to cause misleading data or the extremely small percentage of time that equipment might be adversely influenced by HIRF due to flying next to a NORAD radar.</p> <p>Lastly, if an aircraft is limited to day VFR, it will be so limited by a panel placard, AFM limitation, or possibly noted on the Type Certificate Data Sheet (TCDS). In any case, the OEM certified the aircraft and used the declared kind of operation as its basis for certification. If someone comes along later and modifies the aircraft, they have to take into account the assumptions used for the original certification. The transition from VFR to IFR can be accomplished by installing equipment, <u>and</u> addressing all of the other certification requirements that change when going from VFR to IFR (e.g., heated pitot). But it would be highly unusual for someone to believe that such a dramatic change in the aircraft certification basis is going to happen just because of the CM-AS-007 policy. So if CM-AS-007 said nothing about IFR/VFR, there is no reason to believe an aircraft owner would think that the VFR only limitation could be removed just because EFIS is installed. If this concern has been seen, then similar issues would arise from installing equipment specifically intended to support IFR aircraft like a Garmin GTN 650 that provides GPS/SBAS enroute, terminal and approach, 8.33 kHz VHF COM, VOR, ILS, with moving map, traffic, TAWS, and datalink weather display.</p>					

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3	Garmin	3.1.1, bullet 8	5	The language requiring that the displayed information “not violating generally accepted design conventions” and referencing AC 23.1311-1C could be interpreted as a requirement to fully comply with this AC including colors, symbology, and the comprehensive human factors compliance study requirements.	Change “Further guidance is provided in FAA AC 23.1311-1C” to “While full compliance with this AC is not required, FAA AC 23.1311-1C is a good reference for generally accepted design conventions.”		Yes	Partially accepted	The CM text is changed to: “All information is displayed in a way not interfering with normal operation of the aircraft and not violating generally accepted display design conventions (E.g., display principles of standard certified equipment, colour schemes, etc. FAA AC 23.1311-1C is a good reference for generally accepted design conventions.”
4	Garmin	3.1.3, bullet 4	6	The catch all statement that “any other displayed information should be verified for accuracy” is too broad. There is much non-essential information displayed on modern EFIS systems (like selected music channel) that should not require verification. The ASTM F3153 verification standard allows those using F3153 to determine which intended functions are verified under F3153.	Remove bullet 4		Yes	Partially accepted	The CM text is changed to: “any other displayed information related to the safety of the flight should be verified for accuracy”.
5	Garmin	3.1.4, bullet 1	6	In the U.S., non-certified EFIS systems may provide pressure altitude to the TSO’d transponder. The accuracy of this data is verified with periodic 14 CFR 91.411 testing with the same accuracy requirements as TSO’d systems.	Allow non-certified EFIS systems to provide pressure altitude data to the transponder.		Yes	Not accepted	The transponder is part of the ATM system, misleading information transmitted by the transponder could potentially disrupt the air traffic control system and create hazards to other aircraft.
6	Garmin	3.1.4, bullet 3	6	In the U.S., non-certified devices may be used as primary or secondary interfaces to VHF radios. Proper operation of the user interface is readily verified.	Allow non-certified EFIS systems to provide the primary user interface to VHF radios.		Yes	Noted	Will be considered for future revisions. See comment 1.
7	Dynon Avionics	1.1	3	<p>The purpose and scope of CM-AS-007 is very narrow in that it “is to provide guidance on the approval of installation of electronic flight instrument systems without own EASA equipment approval in small aeroplanes operated under Day-VFR conditions.”</p> <p>The FAA has a draft “Approval of Non-Required Safety Enhancing Equipment (NORSEE)” out for public comment. Its scope statement better describes its intent and the implicit safety case being made. Its “Mission Objective” section reads:</p> <p>“Equipment approved as NORSEE has a variety of uses including—</p> <ol style="list-style-type: none"> 1. Increasing overall situation awareness; 2. Providing additional information other than the aircraft primary system; 3. Providing independent warning, cautionary, or advisory indications; and 4. Providing additional occupant safety protection. <p>... The types of equipment that may be considered NORSEE include, but are not limited to the following:</p> <ul style="list-style-type: none"> • Traffic advisory system, • Terrain advisory (such as a terrain awareness and warning system (TAWS)), • Attitude indicator, 	Recommend harmonizing the purpose and scope of CM-AS-007 in terms of equipment and aircraft with the draft FAA NORSEE policy “Mission Objective” and “Applicability.”	No	Yes	Noted	See comment 1.

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				<ul style="list-style-type: none"> • Weather advisory, • Crashworthiness (such as energy-absorbing seats, seatbelts, and airbags), • Configuration advisory (such as gear advisory for floats and takeoff/landing configuration), • Supplemental indication (such as a fuel flow or fuel quantity indicator), • Monitoring/detection system (such as a smoke, carbon monoxide, or fire detector), • Extinguishing system (such as a fire extinguisher), and • Stability and control (such as an autopilot or stability augmentation system)." <p>Additionally, it should be noted that the draft NORSEE policy states that it is applicable to "14 CFR part 23, 27, and 29 category aircraft," while EASA's policy document is limited to small aeroplanes.</p>					
8	Dynon Avionics	3.1.1, bullet 2	5	The statement, "ASTM F3153 Standard Specification for Verification of Avionics Systems is an acceptable means of compliance" could be interpreted as implying that this standard is the only way to verify that a device performs its function as intended. In many other areas in certification (such as software approval), "an acceptable means" slowly becomes interpreted as "the only means."	Suggest EASA revise the statement to read, "ASTM F3153 Standard Specification for Verification of Avionics Systems is an acceptable means – but not the only means -- of compliance."	Yes	No	Not accepted	The wording is clear, acceptable means of compliance is used in several regulations.
9	Dynon Avionics	3.1.1, bullet 8	5	This line states that all information must be displayed in a way not "violating generally accepted display design conventions (e.g., display principles of standard certified equipment, colour schemes, etc. Further guidance is provided in FAA AC 23.1311-1C)." The way this is written could allow the reader to interpret this as a requirement to comply with the whole AC, which we believe is not what was intended.	Change "Further guidance is provided in FAA AC 23.1311-1C" to "Further reference on generally accepted display conventions is provided in FAA AC 23.1311-1C, although full compliance with the AC is not required."	No	Yes	Partially accepted	See comment 3.
10	Dynon Avionics	3.1.3, bullet 4	6	The statement "any other displayed information should be verified for accuracy" is overly broad and subject to misinterpretation. Modern EFIS systems present a significant amount of information that is not required or essential. The ASTM F3153 verification standard allows the applicant to determine which intended functions are verified under F3153.	Remove bullet 4	No	Yes	Partially accepted	See comment 4.

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11	Dynon Avionics	3.1.4, bullet 1	6	In the U.S., non-certified altitude encoders (including those included in EFIS systems) may provide pressure altitude to the TSO'd transponder. This data is verified for accuracy via periodic 14 CFR 91.411 testing which carries the same accuracy requirements as TSO'd systems. There are about new 1200 Experimental and LSA aircraft registered each year in the US. These aircraft fly an average of 50 hours per year. Dynon Avionics is the largest supplier of EFIS systems to these markets, and most of these aircraft fly in rule airspace using our pressure altitude information as the source for the transponder. To our knowledge, no safety issues or significant ATM integrity issues have been reported as a result of non-certified pressure altitude data being supplied to the transponder.	Delete bullet 1, or reword to allow non-certified EFIS systems to provide pressure altitude data to the transponder.	No	Yes	Not accepted	See comment 5.
12	Dynon Avionics	3.1.4, bullet 3	6	In the U.S., non-certified devices may be used as control interfaces to VHF radios. The proper operation of the system can be easily verified during and after installation.	Delete bullet 1, or reword to allow non-certified EFIS systems to provide the primary user interface to VHF radios.	No	Yes	Noted	See comment 6.