



The following table provides typical examples where an applicant or DOA holder gets help in the decision process to classify a design change as Minor or Major. As this is a living document, changes can be made without expressive notice. Operational aspects are not subject of this table, e.g. change from VFR to IFR.

Abbreviations are explained at the end of the table.

Subject	Classification	Restriction/Assumption	Specific Guidance Material	Notes/Boundaries/Test requirements/Documentation
GPS based FMS e.g. GNS 3xx/4xx GNS 3xxW/4xxW UNS	Minor	Single Installation no new functionality or technology not linked to Auto Pilot BRNAV only SBAS must be disabled No embedded TAWS VHF Comms not affected.	AMC 20-4 AMC 20-5 FAA AC 20-138A	for additional installation only, or VFR operation upgrade of operational rule need separate approval <u>BOUNDARIES:</u> <ul style="list-style-type: none"> • SINGLE SYSTEM • FOR SITUATIONAL AWARENESS ONLY • NOT TOO COMPELLING TO BE USED AS PRIMARY MEANS OF NAVIGATION AND/OR TERRAIN AVOIDANCE • NOT TO BE USED FOR PRNAV, LNP-RNAV ETC. • NO INTERFACES WITH AUTOPILOT, TAWS OR ADS-B TRANSMITTER • SBAS DISABLED <u>TEST REQUIERENTS:</u> <ul style="list-style-type: none"> • NOT SPECIFIED <u>DOCUMENTATION:</u> <ul style="list-style-type: none"> • AFM SUPPLEMENT AS REQUIRED, BASED ON OPERATIONAL USE (EASA FORM 33) • ICA
	Major	Single installation with linkage to Auto Pilot (-> use like FMS) Dual Installation All other RNAV operations	AMC 20-4	<u>BOUNDARIES:</u> <ul style="list-style-type: none"> • NONE <u>TEST REQUIERENTS:</u> <ul style="list-style-type: none"> • NOT SPECIFIED <u>DOCUMENTATION:</u> <ul style="list-style-type: none"> • CERT. PROGRAM • SSA • AFM SUPPLEMENT AS REQUIRED, BASED ON

Disclaimer:

This publication provides typical examples, further to the guidance published in GM 21A.91, of Minor/Major classification of relatively common design changes to Avionics systems, in General Aviation (GA) type aircraft. They are of a generic nature, and have been classified assuming a type of installation, an intended use, a level of complexity and novelty of the design, possible failure conditions, operational requirements and operating conditions, typical for common GA type aircraft. Applicants or DOA Holders should therefore use these examples with caution, as unique characteristics of a specific application may invalidate these assumptions and possibly lead to a different outcome of the classification process.



Subject	Classification	Restriction/Assumption	Specific Guidance Material	Notes/Boundaries/Test requirements/Documentation
				<ul style="list-style-type: none"> OPERATIONAL USE (EASA FORM 33) ICA
TAWS (Brand Name: EGPWS) With- or without RAAS functionality	Minor	Class B without a Display Forward looking mode is predicted by using GPS data	RAAS Generic CRI	NOTE: PILOT-SYSTEM INTERFACE, PROCEDURES AND CHANGES TO THE AFM MUST BE TAKEN INTO CONSIDERATION WHEN CERTIFYING TAWS B. BOUNDARIES: <ul style="list-style-type: none"> RAAS FOR ON GROUND USE ONLY (<40 KTS) TEST REQUIERENTS: <ul style="list-style-type: none"> AS REQUIRED PER TGL No. 12. AND RAAS GENERIC CRI DOCUMENTATION: <ul style="list-style-type: none"> AFM SUPPLEMENT (EASA FORM 33) ICA
	Major	1) Class B with partial Class A functionality , 2) Class A	TGL No. 12 RAAS Generic CRI	BOUNDARIES: <ul style="list-style-type: none"> NONE TEST REQUIERENTS: <ul style="list-style-type: none"> AS REQUIRED PER TGL No. 12. AND RAAS GENERIC CRI DOCUMENTATION: <ul style="list-style-type: none"> CERT. PROGRAM SSA AFM SUPPLEMENT (EASA FORM 33) ICA
XPDR Mode S, ELS	Minor	No penetration of pressure vessel	TGL No. 13, Rev. 1 (classification in AMC 20-13)	BOUNDARIES: <ul style="list-style-type: none"> REPLACEMENT OF EXISTING TRANSPONDER WITH ELS CAPABLE UNIT. NO SUBSTANTIAL CHANGES TO INTERFACING, ANTENNA INSTALLATION. TEST REQUIREMENTS: <ul style="list-style-type: none"> PER TGL No. 13, Rev 1 DOCUMENTATION: <ul style="list-style-type: none"> AFM SUPPLEMENT (EASA FORM 33) ICA
XPDR Mode S,	Minor	If existing antennas can be used,	TGL 13, Rev. 1 (classification in	NOTE:

Disclaimer:

This publication provides typical examples, further to the guidance published in GM 21A.91, of Minor/Major classification of relatively common design changes to Avionics systems, in General Aviation (GA) type aircraft. They are of a generic nature, and have been classified assuming a type of installation, an intended use, a level of complexity and novelty of the design, possible failure conditions, operational requirements and operating conditions, typical for common GA type aircraft. Applicants or DOA Holders should therefore use these examples with caution, as unique characteristics of a specific application may invalidate these assumptions and possibly lead to a different outcome of the classification process.



Subject	Classification	Restriction/Assumption	Specific Guidance Material	Notes/Boundaries/Test requirements/Documentation
Antenna Diversity (ELS)		no penetration of pressure vessel, no new antennas	AMC 20-13)	<p>SIMILAR TO NON-DIVERSITY ELS TRANSPONDER.</p> <p><u>BOUNDARIES:</u></p> <ul style="list-style-type: none"> REPLACEMENT OF EXISTING TRANSPONDER WITH ELS CAPABLE UNIT. NO SUBSTANTIAL CHANGES TO INTERFACING, ANTENNA INSTALLATION. <p><u>TEST REQUIREMENTS:</u></p> <ul style="list-style-type: none"> PER TGL No. 13, Rev 1 <p><u>DOCUMENTATION:</u></p> <ul style="list-style-type: none"> AFM SUPPLEMENT (EASA FORM 33) ICA
	Major	penetration of pressure vessel, new antenna	TGL 13 (classification in AMC 20-13)	<p><u>NOTE:</u> NO FLIGHT TEST REQUIRED FOR UPPER ANTENNA</p> <p><u>BOUNDARIES:</u></p> <ul style="list-style-type: none"> NONE <p><u>TEST REQUIREMENTS:</u></p> <ul style="list-style-type: none"> PER TGL No. 13, Rev 1 <p><u>DOCUMENTATION:</u></p> <ul style="list-style-type: none"> CERT. PROGRAM SSA AFM SUPPLEMENT (EASA FORM 33) ICA
XPDR, Mode S, EHS	Major	No boundaries	AMC 20-13	<p><u>BOUNDARIES:</u></p> <ul style="list-style-type: none"> NONE <p><u>TEST REQUIREMENTS:</u></p> <ul style="list-style-type: none"> PER AMC 20-13 <p><u>DOCUMENTATION:</u></p> <ul style="list-style-type: none"> CERT. PROGRAM SSA AFM SUPPLEMENT (EASA FORM 33) ICA
IFE (In Flight	Minor	Exchange of components in		

Disclaimer:

This publication provides typical examples, further to the guidance published in GM 21A.91, of Minor/Major classification of relatively common design changes to Avionics systems, in General Aviation (GA) type aircraft. They are of a generic nature, and have been classified assuming a type of installation, an intended use, a level of complexity and novelty of the design, possible failure conditions, operational requirements and operating conditions, typical for common GA type aircraft. Applicants or DOA Holders should therefore use these examples with caution, as unique characteristics of a specific application may invalidate these assumptions and possibly lead to a different outcome of the classification process.



Subject	Classification	Restriction/Assumption	Specific Guidance Material	Notes/Boundaries/Test requirements/Documentation
Entertainment)		existing system		
	Major	New installation or major alteration	TGL 17	<u>TEST REQUIREMENTS:</u> <ul style="list-style-type: none"> AS DEFINED IN TGL 17 <u>DOCUMENTATION:</u> <ul style="list-style-type: none"> AS DEFINED IN TGL 17
Upgrade of Avionics, INCLUDING "GLASS COCKPIT"	Minor	Exchange of single units with no change to basic technology, e.g. change to high integrated units / glass cockpit or functionality No change from electromechanical installation to a "glass type cockpit"	CPR analysis may be required	<u>BOUNDARIES:</u> <ul style="list-style-type: none"> EXCHANGE OF UNITS FOR PRODUCT-IMPROVEMENT ALLOWED NO ADDED FUNCTIONALITY NO CHANGES TO PILOT-SYSTEM INTERFACE NOT APPLICABLE TO AUTOPILOT AND PRECISION LANDING SYSTEMS (CAT II / III or equivalent) <u>TEST REQUIREMENTS:</u> <ul style="list-style-type: none"> AS REQUIRED TO DEMONSTRATE COMPLIANCE WITH 23.1301. <u>DOCUMENTATION:</u> <ul style="list-style-type: none"> ICA
	Major	New functionality, change of basic technology (change to high integrated units / glass cockpit) EVS, SVS functionality HUD Installation Change from electromechanical installation to a "glass type cockpit"	CPR analysis required HUDS requirements Generic CRIs for SVS and/or EVS	<u>BOUNDARIES:</u> <ul style="list-style-type: none"> NONE. <u>TEST REQUIREMENTS:</u> <ul style="list-style-type: none"> AS REQUIRED <u>DOCUMENTATION:</u> <ul style="list-style-type: none"> CERT. PROGRAM SSA AFM SUPPLEMENT (EASA FORM 33) ICA
TCAS I or TAS	Minor	No commercial use of the aircraft	TGL not applicable	<u>NOTE:</u> TCAS 1 WHISPER-SHOUT ALGORITHMS ARE A SOURCE OF RF POLLUTION, THEREFORE INSTALLATION OF TCAS 1 IS NOT RECOMMENDED.

Disclaimer:

This publication provides typical examples, further to the guidance published in GM 21A.91, of Minor/Major classification of relatively common design changes to Avionics systems, in General Aviation (GA) type aircraft. They are of a generic nature, and have been classified assuming a type of installation, an intended use, a level of complexity and novelty of the design, possible failure conditions, operational requirements and operating conditions, typical for common GA type aircraft. Applicants or DOA Holders should therefore use these examples with caution, as unique characteristics of a specific application may invalidate these assumptions and possibly lead to a different outcome of the classification process.



Subject	Classification	Restriction/Assumption	Specific Guidance Material	Notes/Boundaries/Test requirements/Documentation
				<p><u>BOUNDARIES:</u></p> <ul style="list-style-type: none"> • ANTENNA INSTALLATION IN PRESSURIZED A/C IS MAJOR • FOLLOW ON INSTALLATION – NO FLIGHT TEST REQUIRED FOR TESTING. <p><u>TEST REQUIREMENTS:</u></p> <ul style="list-style-type: none"> • AS REQUIRED TO DEMONSTRATE COMPLIANCE WITH 23.1301. <p><u>DOCUMENTATION:</u></p> <ul style="list-style-type: none"> • ICA • AFMS (Form 33) or Operational Procedures
ACAS (TCAS II)	Major		TGL No. 8, Rev. 2	<p><u>BOUNDARIES:</u></p> <ul style="list-style-type: none"> • NONE <p><u>TEST REQUIREMENTS:</u></p> <ul style="list-style-type: none"> • PER TGL No. 8, Rev 2 <p><u>DOCUMENTATION:</u></p> <ul style="list-style-type: none"> • CERT. PROGRAM • SSA • AFM SUPPLEMENT (EASA FORM 33) • ICA
Telemetric Equipment	Major			<p>interface with avionics or new antennas or outside pods or linked to major changes of structures</p> <p>(No interface with avionics, attachment already approved, etc. → possibly minor)</p>
COM with 8.33 KHz Channel spacing	Minor	Change of Radios and Radio Tuning/Control Panels, if applicable.	TGL No. 7, Rev. 1	<p><u>NOTES:</u> 8.33 KHz. CHANNEL SPACING REQUIRED FOR ALL FLIGHTS ABOVE FL 245</p> <p>LOSS OF ALL COMMUNICATION IS CONSIDERED A MAJOR/HAZARDOUS FAILURE CONDITION. THIS SHOULD BE CONSIDERED WITH THE CLASSIFICATION OF THE CHANGE.</p> <p><u>BOUNDARIES:</u></p> <ul style="list-style-type: none"> • EXCHANGE OF UNITS ONLY.

Disclaimer:

This publication provides typical examples, further to the guidance published in GM 21A.91, of Minor/Major classification of relatively common design changes to Avionics systems, in General Aviation (GA) type aircraft. They are of a generic nature, and have been classified assuming a type of installation, an intended use, a level of complexity and novelty of the design, possible failure conditions, operational requirements and operating conditions, typical for common GA type aircraft. Applicants or DOA Holders should therefore use these examples with caution, as unique characteristics of a specific application may invalidate these assumptions and possibly lead to a different outcome of the classification process.



Subject	Classification	Restriction/Assumption	Specific Guidance Material	Notes/Boundaries/Test requirements/Documentation
				<ul style="list-style-type: none"> • NO ADDED FUNCTIONALITY • NO CHANGES TO PILOT-SYSTEM INTERFACE <u>TEST REQUIREMENTS:</u> <ul style="list-style-type: none"> • PER TGL No. 7, Rev 1 <u>DOCUMENTATION:</u> <ul style="list-style-type: none"> • ICA
WX Radar	Minor	Upgrade with use of existing locations; no significant weight increase		<u>NOTES:</u> THIS IS COVERED UNDER MINOR UPGRADE OF AVIONICS (SEE ABOVE). INSTALLATION OF NEW INDICATION MEANS MAY CLASSIFY AS A MAJOR CHANGE. STRUCTURAL ASSUMPTIONS FOR THE INITIAL INSTALLATION NEED TO BE CONSIDERED
	Major	New Installation, major alteration to existing installation		<u>BOUNDARIES:</u> <ul style="list-style-type: none"> • NONE. <u>TEST REQUIREMENTS:</u> <ul style="list-style-type: none"> • AS REQUIRED <u>DOCUMENTATION:</u> <ul style="list-style-type: none"> • CERT. PROGRAM • SSA • AFM SUPPLEMENT (EASA FORM 33) • ICA
EFB	CLASS I: No classification required CLASS II Major depending of the interface with the aircraft CLASS III Major	CLASS I No airworthiness approval required CLASS II <u>Installation</u> approval only CLASS III airworthiness approval	TGL No. 36	<u>NOTE:</u> WHETHER OR NOT PAPER WILL STILL BE REQUIRED IS AN OPERATIONAL CONCERN, NOT RELATED TO AIRWORTHINESS. <u>BOUNDARIES:</u> <ul style="list-style-type: none"> • NONE. <u>TEST REQUIREMENTS:</u> <ul style="list-style-type: none"> • AS REQUIRED TO DEMONSTRATE COMPLIANCE WITH 23.1301. <u>DOCUMENTATION:</u> <ul style="list-style-type: none"> • CERT. PROGRAM • SSA

Disclaimer:

This publication provides typical examples, further to the guidance published in GM 21A.91, of Minor/Major classification of relatively common design changes to Avionics systems, in General Aviation (GA) type aircraft. They are of a generic nature, and have been classified assuming a type of installation, an intended use, a level of complexity and novelty of the design, possible failure conditions, operational requirements and operating conditions, typical for common GA type aircraft. Applicants or DOA Holders should therefore use these examples with caution, as unique characteristics of a specific application may invalidate these assumptions and possibly lead to a different outcome of the classification process.



Subject	Classification	Restriction/Assumption	Specific Guidance Material	Notes/Boundaries/Test requirements/Documentation
				<ul style="list-style-type: none"> • AFM SUPPLEMENT (EASA FORM 33) • ICA
ELT	Minor			<u>BOUNDARIES:</u> <ul style="list-style-type: none"> • NO EXTERNAL ANTENNA • NO INTERFACE WITH PRIMARY NAV SYSTEMS. <u>TEST REQUIREMENTS:</u> <ul style="list-style-type: none"> • AS REQUIRED TO DEMONSTRATE COMPLIANCE WITH 23.1301. <u>DOCUMENTATION:</u> <ul style="list-style-type: none"> • ICA
	Major	ELT with NAV linkage		
Antenna Installation	major	pressurized vessel installation of large antenna on unpressurized vessel		<u>DOCUMENTATION:</u> <ul style="list-style-type: none"> • ICA
SATCOM	minor	Equipment upgrade. (for standard type and for iridium type), no antenna installation		<u>NOTES:</u> UPGRADE OF SATCOM EQUIPMENT IS COVERED UNDER MINOR UPGRADE OF AVIONICS (SEE ABOVE). STRUCTURAL ASSUMPTIONS FOR THE INITIAL INSTALLATION NEED TO BE CONSIDERED
	major	for standard type and iridium type (if new antenna installation on pressurized vessels)		<u>BOUNDARIES:</u> <ul style="list-style-type: none"> • NONE. <u>TEST REQUIREMENTS:</u> <ul style="list-style-type: none"> • AS REQUIRED <u>DOCUMENTATION:</u> <ul style="list-style-type: none"> • CERT. PROGRAM • SSA • AFM SUPPLEMENT (EASA FORM 33) • ICA
COM VHF	minor	if no antenna installation is necessary		<u>BOUNDARIES:</u> <ul style="list-style-type: none"> • IF FAILURE CONDITION FOR TOTAL LOSS OF COM HAS ALREADY BEEN SATISFIED BY THE INSTALLATION OF VHF RADIOS.

Disclaimer:

This publication provides typical examples, further to the guidance published in GM 21A.91, of Minor/Major classification of relatively common design changes to Avionics systems, in General Aviation (GA) type aircraft. They are of a generic nature, and have been classified assuming a type of installation, an intended use, a level of complexity and novelty of the design, possible failure conditions, operational requirements and operating conditions, typical for common GA type aircraft. Applicants or DOA Holders should therefore use these examples with caution, as unique characteristics of a specific application may invalidate these assumptions and possibly lead to a different outcome of the classification process.



Subject	Classification	Restriction/Assumption	Specific Guidance Material	Notes/Boundaries/Test requirements/Documentation
				<p><u>TEST REQUIREMENTS:</u></p> <ul style="list-style-type: none"> AS REQUIRED TO DEMONSTRATE COMPLIANCE WITH 23.1301. <p><u>DOCUMENTATION:</u></p> <ul style="list-style-type: none"> ICA
RVSM	major		TGL 6, Rev 2	<p><u>BOUNDARIES:</u></p> <ul style="list-style-type: none"> NONE. <p><u>TEST REQUIREMENTS:</u></p> <ul style="list-style-type: none"> AS REQUIRED <p><u>DOCUMENTATION:</u></p> <ul style="list-style-type: none"> CERT. PROGRAM SSA AFM SUPPLEMENT (EASA FORM 33) ICA
steep approach	major			<p><u>BOUNDARIES:</u></p> <ul style="list-style-type: none"> NONE. <p><u>TEST REQUIREMENTS:</u></p> <ul style="list-style-type: none"> AS REQUIRED <p><u>DOCUMENTATION:</u></p> <ul style="list-style-type: none"> CERT. PROGRAM SSA AFM SUPPLEMENT (EASA FORM 33) ICA

Disclaimer:

This publication provides typical examples, further to the guidance published in GM 21A.91, of Minor/Major classification of relatively common design changes to Avionics systems, in General Aviation (GA) type aircraft. They are of a generic nature, and have been classified assuming a type of installation, an intended use, a level of complexity and novelty of the design, possible failure conditions, operational requirements and operating conditions, typical for common GA type aircraft. Applicants or DOA Holders should therefore use these examples with caution, as unique characteristics of a specific application may invalidate these assumptions and possibly lead to a different outcome of the classification process.



Acronyms

A/C	Aircraft
A/P	Autopilot
ACAS	Airborne Collision Avoidance System
ADS-B	Automatic Dependent Surveillance-Broadcast
AFM	Airplane Flight Manual
AFMS	Airplane Flight Manual Supplement
AMC	Acceptable Means of Compliance
BRNAV	Basic Area Navigation
CAT	Category (for All-Weather Operations)
CERT	Certification
COM	Communication
CPR	Changed Product Rule
CRI	Certification Review Item
DOA	Design Organization Approval
EFB	Electronic Flight Bag
EGPWS	Enhanced Ground Proximity Warning System (A Honeywell Brand Name)
EHS	Enhanced Surveillance
ELS	Elementary Surveillance
ELT	Emergency Locator Equipment
EVS	Enhanced Vision System
FAQ	Frequently Asked Questions
FL	Flight Level
FMS	Flight Management System
GA	General Aviation
GM	Guidance Material
GNS-xxx	A Garmin Brand Name

GPS	Global Positioning System
HUD	Head-Up-Display
ICA	Instruction for Continued Airworthiness
IFE	Inflight Entertainment system
IFR	Instrument Flight Rules
KHz	Kilo Hertz
KTS	Knots
LNP	Lateral Navigation Performance
NAV	Navigation
PRNAV	Precision Area Navigation
RAAS	Runway Awareness and Alerting System
RF	Radio Frequency
RVSM	Reduced Vertical Separation Minima
SATCOM	Satellite Communication
SBAS	Space Based Augmentation Signal
SSA	System Safety Assessment
SVS	Synthetic Vision System
TAS	Traffic Advisory System
TAWS	Terrain Awareness Warning System
TCAS	Traffic and Collision Avoidance System
TGL	Temporary Guidance Leaflet
UNS-xxx	A Universal Brand Name
VFR	Visual Flight Rules
VHF	Very High Frequency
WX	Weather
XPDR	Transponder

Disclaimer:

This publication provides typical examples, further to the guidance published in GM 21A.91, of Minor/Major classification of relatively common design changes to Avionics systems, in General Aviation (GA) type aircraft. They are of a generic nature, and have been classified assuming a type of installation, an intended use, a level of complexity and novelty of the design, possible failure conditions, operational requirements and operating conditions, typical for common GA type aircraft. Applicants or DOA Holders should therefore use these examples with caution, as unique characteristics of a specific application may invalidate these assumptions and possibly lead to a different outcome of the classification process.