NVG – Cockpit Lighting Compatibility Evaluation

NVIS lighting installation – NVG compatibility testing:

	Manufacturer	Model	Serial Number	Base Line Acuity
Pilot				
Copilot				
Obs 1				
Obs 2				

a. Test steps in accordance with RTCA 275

b. Use pilots 5’ 2” to 6’0” (157 to 183 cm) in height to assess both visibility and ability to reach controls.

c. All tests conducted with NVG ON and in viewing position

d. Determine ability to turn off CAWS panel (CB, fuse, etc). Otherwise, be able to block the CAWS panel from view with cardboard, etc.

e. Tests conducted sitting in left/right/crew (if crewmember required to use NVG’s) seats

NOTE: During ground tests, the applicant should ensure that the appropriate voltage is provided to represent flight conditions.

Objective: Ensure the installed lighting and filtered instruments do not interfere with NVG performance.

Preparation:

If possible, allow at least 10 minutes to let eyes adjust to darkness.

1. Focus NVG goggles per manufacturer’s instruction. This is best accomplished using a slightly higher light condition than provided by the illuminator.

2. Verify NVGs are functioning properly and have no defects that would affect test results.

3. Turn on the chart illuminator (turn off all other lights)

4. Stand outside aircraft, abeam pilot position (20 feet from illuminated chart) and focus NVG to obtain maximum resolution on chart (smallest set of horizontal and vertical bars). Record the chart line resolution below:

Note: All chart readings will use the original resolution as the baseline comparison. The object is to determine visual degradation as a result of light/object/reflection interference.

5. Record baseline acuity (chart group and line number) in table above.

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#	Item	Comment/Remark
1.	All cockpit lights - OFF, View target through aircraft windscreen from each crew position. Record chart line visibility **Acceptable degradation = 12% (one resolution element larger from <u>original</u> resolution)**	Chart Line:_____

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#	Item	Comment/Remark
2.	NVIS MAP/Emergency/flood lights – ON NVIS Instrument lights (including filtered instruments) – OFF NVIS Filtered Equipment (i.e., radio stacks, GPS, clocks, etc.) – OFF Illumination level – SET TO NVG OPERATIONAL LEVEL a. View target through aircraft windscreen. Record chart line visibility **Acceptable degradation = 12% (one resolution element from <u>original</u> resolution)** b. Record and assess any reflections/glare created by the MAP/Emergency/Flood lights. c. Scan the instrument panel and consoles and record any light leaks, “hot spots”, or glare in NVG and its effect on NVG performance. d. Record position, type, and effect of any instrument light reflections in windscreen/windows seen through the NVG and effect on NVG performance/outside visibility.	Chart Line:_____

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#	Item	Comment/Remark
3.	NVIS Instrument lights – ON (including filtered instruments) NVIS flood lights – OFF NVIS Filtered equipment (e.g., radio stacks, GPS, clock, etc) - OFF Illumination level – SET TO NVG OPERATIONAL LEVEL a. View target through aircraft windscreen. Record chart line visibility **Acceptable degradation = 12% (one resolution element larger from <u>original</u> resolution)** b. Scan the instrument panel and consoles and record any light leaks, “hot spots”, or glare in NVG and its effect on NVG performance. c. Record position, type, and effect of any instrument light reflections in windscreen/windows seen through the NVG and effect on NVG performance/outside visibility. NOTE: Pay attention to warning/failed flags, off flags, marker lights, other lights accompanying instrument lights that might illuminate and could cause degradation of NVG performance or could create unnecessary distraction to pilot.	Chart Line:_____

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#	Item	Comment/Remark
4.	NVIS Instrument lights – ON (including filtered instruments) NVIS Filtered Equipment (i.e., radio stacks, GPS, clocks, etc) – ON If observer FLIR/video/low-light camera system installed and the screen is in the cockpit, turn the screen- ON (evaluate cross cockpit glare, reflection, goggle interference) NVIS flood lights – OFF Illumination level – SET TO NVG OPERATIONAL LEVEL a. View target through aircraft windscreen. Record chart line visibility **Acceptable degradation = 12% (one resolution element larger from <u>original</u> resolution)** b. Scan the instrument panel and consoles and record any light leaks, “hot spots”, or glare in NVG and its effect on NVG performance. c. Record position, type, and effect of any instrument/equipment light reflections in windscreen/windows seen through the NVG and effect on NVG performance/outside visibility.	Chart Line:_____

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#	Item	Comment/Remark
5.	NVIS Instrument lights – ON (including filtered instruments) NVIS flood lights – ON NVIS Filtered Equipment (i.e., radio stacks, GPS, clocks, etc) - ON Illumination level – SET TO NVG OPERATIONAL LEVEL a. View target through aircraft windscreen. Record chart line visibility **Acceptable degradation = 12% (one resolution element from <u>original</u> resolution)** b. Scan the instrument panel and consoles and record any light leaks, “hot spots”, or glare in NVG and its effect on NVG performance. c. Record position, type, and effect of any instrument light reflections in windscreen/windows seen through the NVG and effect on NVG performance/outside visibility.	Chart Line:_____

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#	Item	Comment/Remark
6.	NVIS Instrument lights – ON (including filtered instruments) NVIS flood lights – ON NVIS Filtered Equipment (i.e., radio stacks, GPS, clocks, etc) – ON **Aft compartment lights** (if NVIS compatible) – ON -- ON, LIGHT CURTAIN IN PLACE (if not NVIS compatible) Illumination level – SET TO NVG OPERATIONAL LEVEL a. View target through aircraft windscreen. Record chart line visibility **Acceptable degradation = 12% (one resolution element from <u>original</u> resolution)** b. Scan the instrument panel and consoles and record any light leaks, "hot spots", or glare in NVG and its effect on NVG performance. c. Record position, type, and effect of any instrument light reflections in windscreen/windows seen through the NVG and effect on NVG performance/outside visibility. d. Record any glare, reflections from aft compartment lights and effect on NVG performance	Chart Line:_____

#	Item	Comment/Remark
7.	Master Caution/Warning Lights – ON All other cockpit lights – OPERATIONAL SETTING View target through aircraft windscreen. Record chart line visibility **Acceptable degradation = 12% (one resolution element from <u>original</u> resolution)** Note: Some Glare/blooming/degradation in NVG performance may be acceptable since Master caution/warning master lights are designed to attract pilot attention. Acceptability dependent on aircraft system, when the lights programmed to illuminate, and position within pilot's NVG FOV. Evaluator Pilot judgment.	Chart Line:_____
8.	Caution Advisory Warning Panel lights – ON All other cockpit lights – OPERATIONAL SETTING View target through aircraft windscreen. Record chart line visibility **Acceptable degradation = 12% (one resolution element from <u>original</u> resolution).** Note: Some Glare/blooming/degradation in NVG performance may be acceptable since the caution/warning panel lights should attract pilot attention. Dependent on aircraft system, when the lights programmed to illuminate, and position within pilot's NVG FOV. Evaluator Pilot judgment. However, any blooming, glare, degradation of NVG performance beyond 12%, or pilot distraction while using NVGs due to CAWs panel **<u>Advisory</u>** light illumination is unacceptable.	Chart Line:_____

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#	Item	Comment/Remark
9.	Check pilot's/observer's ability to move in cockpit, view and operate switches/controls with NVG's in viewing and stowed position. Use representative pilot samples (height: 5'2" to 6'0") a. Record Pilot/Observer ability to see/access overhead panel switches/controls. b. Record Pilot/Observer ability to see/access side/center panel switches/controls. c. Record any interference with aircraft ceiling, structures, controls	