For the Model 55 configured per ECR 2377A or modified per AAK 55–83–4: In addition to the basis listed above, Special Conditions 25–ANM–2 dated June 24, 1983.

For the Model 55C: Amendments 25– 3, 25-7, 25-10, 25-12, 25-18, 25-21, and 25-30; plus § 25.955(b)(2) of Amend-Amendment 25-11; § 25.954 of Amendment 25-14; §§25.803(e), 25.811(f), and 25.855(a) of Amendment 25-15; § 25.1359 of Amendment 25-17; §25.785(c) of Amendment 25-20; §§25.251(c), 25.251(c), 25.251(e), 25.303, 25.305(b), 25.307(d), 25.331(a)(3), 25.335(b), 25.335(f), 25.337(b), 25.349(b), 25.351(a), 25.363, 25.395(a), 25.395(b), 25.471(a)(1), 25.471(a)(2), 25.473, 25.493(b), 25.499(b), 25.499(c), 25.499(d), 25.509(a)(3), 25.561(b)(3), 25.581, 25.607, 25.615, 25.619, 25.625, 25.629, 25.677, 25.697, 25.699, 25.701, 25.721, 25.723, 25.725, 25.727, 25.729, 25.733, 25.735, 25.865, 25.867, 25.871, 25.903(d), 25.934, 25.994, 25.1103(d), 25.1143(e), 25.1303(a)(1), 25.1303(a)(3), 25.1303(b), 25.1303(c), 25.1307, 25.1331, and 25.1585(c) of Amendment 25-23; §§25.1013(e), 25.1305(c)(4), and 25.1305(c)(6) of Amendment 25–36; §§25.815, 25.1303(a)(2), 25.1322, and 25.1403 of Amendment 25-38; §§25.903(e), 25.939, and 25.943 of Amendment 25-40; §§ 25.255 and 25.703 of Amendment 25-42; § 24.1326 of Amendment 25-43: § 25.853 of Amendment 25-51; § 25.851 of Amendment 25-54; Part 36 of the FAR effective December 1, 1969, as amended through Amendment 36-15; SFAR 27 effective February 1, 1974, as amended through Amendment SFAR 27-6; Special Conditions 25-ANM-2 dated June 24, 1983; and Special Conditions 25-99-CE-14 dated March 10. 1981.

Compliance with structural provisions of § 25.801(b) through (e) and § 25.807(d) has not been shown for Models 55, 55B, and 55C.

For Ice Protection: § 25.1419. When ice protection system is installed per ECR 1906, Model 55, 55B, and 55C.

For Noise Standards: Part 36 of the FAR. Compliance with Noise Standards, Part 36, has been established for Models 55, 55B, and 55C airplanes, when modified according to ECR 1511.

For Equivalent Level of Safety: § 25.201(c)(2) (except Model 55C); § 25.773(b)(2); § 25.1305(r); § 25.1505(b)(1) (except Model 55C).

In addition, under §21.101(b)(1), the following sections of the FAR apply to the HUD installation: §25.1309; §25.1321(a)(b)(d), and (e); §§25.1331, 25.1333, and 25.1335, as amended by Amendment 25–41. These special conditions will form an additional part of the supplemental type certification basis.

If the Administrator finds that the applicable airworthiness regulations (i.e., part 25, as amended) do not contain adequate or appropriate safety standards for the Learjet Model 55 Series airplane because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16 to establish a level of safety equivalent to that established in the regulations.

Special conditions, as appropriate, are issued in accordance with § 11.49 of the FAR after public notice, as required by §§ 11.28 and 11.29, and become part of the type certification basis in accordance with § 21.101(b)(2).

Special conditions are initially applicable to the model for which they are issued. Should the applicant apply for a supplemental type certificate to modify any other model included on the same type certificate to incorporate the same novel or unusual design feature, the special conditions would also apply to the other model under the provisions of $\S 21.101(a)(1)$.

Discussion

There is no specific regulation that address protection requirements for electrical and electronic systems from high-intensity radiated fields (HIRF). Increased power levels from groundbased radio transmitters, and the growing use of sensitive electrical and electronic systems to command and control airplanes, have made it necessary to provide adequate protection.

To ensure that a level of safety is achieved equivalent to that intended by the regulations incorporated by reference, special conditions are needed for the modified Learjet Model 55 Series airplanes that would require that the HUD be designed and installed to preclude component damage and interruption of function due to the effects of HIRF.

High-Intensity Radiated Fields (HIRF)

With the trend toward increased power levels from ground-based transmitters, plus the advent of space and satellite communications, coupled with the electronic command and control of the airplane, the immunity of critical digital avionics systems, such as the Head-Up Display, to HIRF must be established.

It is not possible to precisely define the HIRF to which the airplanes will be exposed in service. There is also uncertainty concerning the effectiveness of airframe shielding for HIRF. Furthermore, coupling of electromagnetic energy to cockpitinstalled equipment through the cockpit window apertures is undefined. Based on surveys and analysis of existing HIRF emitters, an adequate level of protection exists when compliance with the HIRF protection special condition is shown with either paragraphs 1 or 2 below:

1. A minimum threat of 100 volts per meter peak electric field strength from 10KHz to 18 GHz.

a. The threat must be applied to the system elements and their associated wiring harnesses without the benefit of airframe shielding.

b. Demonstration of this level of protection is established through system tests and analysis.

2. A threat external to the airframe of the following field strengths for the frequency ranges indicated:

Frequency	Peak (V/M)	Aver- age (V/M)
10 KHz—100 KHz 100 KHz—500 KHz 100 KHz—2000 KHz 2 MHz—30 MHz 20 MHz—100 MHz 100 MHz—200 MHz 200 MHz—400 MHz 200 MHz—100 MHz 200 MHz—100 MHz 200 MHz—400 MHz 400 MHz—100 MHz 400 MHz—1000 MHz 1 GHz-2GHz 2 GHz-4GHz 4 GHz-6GHz 6 GHz-8GHz 8 GHz-12GHz 12 GHz-48GHz 18 GHz-40GHz	50 60 70 200 30 150 70 4,020 1,700 5,000 6,680 3,600 3,500 3,500 2,100	50 60 70 200 33 70 935 170 990 840 310 670 1,270 360 750

As discussed above, these special conditions are applicable to the Learjet Model 55 Series airplane, modified by Duncan Aviation. Should Duncan Aviation apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. A10CE to incorporate the same novel or unusual design feature, the special conditions would apply to that model as well, under the provisions of § 21.101(a)(1).

Conclusion

This action affects only certain unusual or novel design features on Learjet Model 55, 55B, and 55C airplanes modified by Duncan Aviation. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of this feature on these airplanes.

The substance of these special conditions has been subjected to the notice and comment procedure in several prior instances and has been derived without substantive change from those previously issued. It is