SECTION I

1.0 INTRODUCTION

This report contains data required for certification of the EMCEE Model TSA50HSS MMDS/ITFS 50 Watt Television Power Amplifier. This amplifier, which will be manufactured in quantity, is rated to provide 50 watts peak power when amplifying the visual carrier only. The TSA50HSS Amplifier is intended for use with any type accepted 10 watt MMDS/ITFS driver, particularly the EMCEE models (BMT)TTS10HSX, TTS10EB and TTS10HSB Transmitters.

The output frequency of the amplifier tested was MMDS channel E1 (2596-2602MHz). The data contained in this report was obtained using the TTS10HSX transmitter as the driver for the 50 watt amplifier (see Figure 1–1). A complete list of the test equipment utilized to obtain the certification data can be found in Section 1.3 of this report. Information relating to the description, operation and maintenance of the TSA50HSS Amplifier can be found in the EMCEE TSA50HSS Instruction Manual. Information concerning the TTS10HSX equipment can be found in its previously submitted type acceptance report.

1.1 Equipment Description

The TSA50HSS Amplifier is composed of a single 50 watt solid state module which provides a minimum gain of 10dB on any FCC specified MMDS/ITFS channel from 2150MHz to 2700MHz. When used as a 50 watt visual only amplifier, any type accepted 10 watt driver can provide more than the necessary 5 watts of visual power for the proper 50 watt output.

To provide the customer with inexpensive, broadband visual/aural combining, the amplifier drawer contains a branch-arm coupler type combiner which provides approximately 10dB of aural loss. When used with an EMCEE driver (capable of 16 watts minimum aural power), the output signal from the TSA50HSS will be 50 watts peak visual and 1.25 watts average aural (see Figure 1–1). This -16dB aural to visual level is typical of the ratio used by MMDS/ITFS operators.

1.2 Personnel Qualifications

The certification tests were performed by Robert Nash, EMCEE VP/Director of Engineering. Mr. Nash has more than twenty-two years of experience in the development and testing of television transmitters and translators.

1.3 Test Equipment

1. Antenna, Adjustable Dipole, 30MHz-1GHz, Model 3121, EMCO
2. Antenna, Conical Helix, 1-11GHz, Model ALN108B, AEL
3. Attenuator, 10dB, 20W, Model 766-10, Narda
4. Attenuator, 20dB, 20W, Model 766-20, Narda
5. Attenuator, 30dB, 20W, Model 766-30, Narda
6. Attenuator, 20dB, 50W, Model 767-20, Narda
7. Distortion Measurement Set, Model 339A, Hewlett Packard
8. Demodulator, Model 1450, Tektronix
9. Diode Detector, Model 8553, Telonic Berkeley
10. Envelope Delay Measuring Set, Model 201/1, Shibasoku
11. Mixer, Model M1P-1, Watkins Johnson
12. Modulator, Model EM-1, EMCEE
13. Multimeter, Digital, Model E2378A, Hewlett Packard
14. NTSC Vectorscope, Model 520, Tektronix
15. NTSC Video Generator, Type 149A, Tektronix
16. Power Meter, Model 435A, Hewlett Packard
17. Spectrum Analyzer, Model 8595E, Hewlett Packard
18. Waveform Monitor, Model 1485R, Tektronix
19. 10 Watt Transmitter, Model TTS10HSX, EMCEE
20. 50 Watt Amplifier, Model TSA50HSS, EMCEE

1.4 Active Device List

The following is a complete listing of all the active devices used in the EMCEE Model TSA50HSS Amplifier. The devices are grouped together as seen on each specific schematic or interconnection diagram. Given with each device is its schematic designator, part number and function.

DEVICE	PART #/DESIGNATOR	FUNCTION
50W S-BAND POWER AMPLIFIER Schematic Diagram 40390039		
Diode	MMBZ5230BLT1/VR1-VR4	Voltage Regulator
Diode	BA531/CR1-CR4	Logic Switch
Diode	FAS02720/CR5	Logic Switch
Transistor	NES2527B/Q1-Q4	RF Amplifier
Transistor	CMPT4401/Q5-Q7	DC Switch