



DIRECTORATE GENERAL : ALL INDIA RADIO
(PLANNING & DEVELOPMENT UNIT)

SPECIFICATION OF AMPLITUDE MODULATION MONITOR

1. **General requirement/ Scope** : This Specification lays down the general, technical and performance parameters of the equipment to be used for measuring the modulation & carrier deviation level of A.M. broadcast transmitters in MW & SW range. The equipment shall be simple in operation requiring no tuning. The instrument shall have efficient R.F. screening so that it can be operated in high R.F. field. It should be precise, compact, fully solid state & rugged. It shall conform to international broadcasting measuring equipment standards in all respects.

2. DESIGN AND GENERAL CONFIGURATION:

The equipment shall have :

1. It shall have modulation level and carrier deviation measurement.
2. Broadband demodulator for providing accurate proof of performance measurements on AM transmitter.
3. Built in calibrator checks for the accuracy of modulation reading.
4. Isolated out puts for modulation and carrier level alarms.
5. Remote out puts for all modulation indication as well as the carrier level.
6. Separate negative and positive peak modulation indications.
7. Peak modulation indicator, range up to 125% for positive modulation with suitable incremental step above 50% .
8. Fully solid state & NRSC compliant

3. TECHNICAL SPECIFICATIONS:

Sl. No.	PARAMETERS	SPECIFICATIONS
3..1	R.F. Frequency Range	500 KHz to 40 MHz in 1 kHz. Increments.
3..2	R.F.Input	5 Vrms
3.3	R.F. Input Impedance	50 Ohms (Unbalanced).
3.4	Modulation Meter Range	0 to 130% with dB scale
3.5	Modulation Accuracy	$\pm 2\%$ at 100% modulation with Sinusoidal signal.
3.6	Carrier Level Deviation Meter Range	$\pm 30\%$
3.7	Carrier Level (Loss) Alarm	Alarm with a 30% drop from nominal carrier level
3.8	Peak flasher Indicator levels	Adjustable upto to 130% for +ve peak.
3.9	Peak Modulation Accuracy	$\pm 2\%$ at 98% modulation
3.10	Audio Test Output	(i) 5 Vrms, rear panel BNC connector (Unbal.) (ii) 0 dBm (0.775 Vrms), 600 Ω (balanced)
3.11	Audio Frequency Response	± 0.5 dB, 20 Hz to 15 kHz.;
3.12	Total Harmonic Distortion(AF)	< 0.25% Max. at 99% modulation.
3.13	Signal to Noise Ratio	Better than 75 dB
3.14	Transient Response	Overshoot < 1%

4. COMMON FACILITIES :

4.0 ENVIRONMENTAL CHARACTERISTICS :

4.1. Operation Temperature Range: 0°C to 50°C dry, RH 95% (no-condensing)

4.2 Operation Altitude : Upto 13000 ft. (4200 m)

4.3 Protection against RF Interference: The equipment shall be provided with adequate shielding against RF/ EMI interference

5. POWER REQUIREMENTS : 230V +/- 10%, 50 Hz +/- 4%, > 30 Watt

6. PHYSICAL DIMENSION (Preferable) :Not to exceed 19"x14"x5 1/4" (3U) WxDxH
It should be standard 19" rack mounting.

7. GUARANTEE : The equipment shall be guaranteed against manufacturing/ design defects and for satisfactory and trouble free performance for a minimum period of one year from the date of receipt by AIR in satisfactory working conditions.

8. TEST CERTIFICATE : Test certificate of the instrument shall accompany each instrument on delivery.

9. SPARES (optional)

Essential and recommended spares(discreet PCB and Modules) shall be quoted separately for keeping the instrument in working condition for at least 10 years.

10. SERVICE FACILITY

The Tenderer shall specify the repair/service facility available for the equipment in India with address, Phone/Fax nos. etc.

11. SUPPLY RECORDS:

The tenderer shall furnish a record for supply of same model of equipment to the various customers along with their addresses, contact nos/email addresses etc along with the tender.

12. INSTRUCTION MANUAL

Two copies of operating instruction and service manual shall be supplied along with each equipment. Four extra copies will be supplied to Director Engg. (Transmitter Design Section), P & D Unit , DG:AIR, N. Delhi.

13. ACCESSORIES

The equipment shall be supplied complete with all standard accessories such as mating connector, power supply chord etc.

14. COMPLIANCE

Para-wise compliance report for all parameters supplemented by leaflet/detailed leaflet wherever required, shall accompany the offer. Offer without compliance and supplement will be rejected out rightly.

Approved vide letter No. 10(34)2004-D(TD) dated 23.01.06

**(M. R. BHARARA)
Dy. Director Engg (TD)**