Dated: Nov. 1986

TECHNICAL NOTES FOR EME COMMUNICATION

These notes were written as a technical aid to radio amateurs involved in EME communication at the UHF and SHF amateur bands. The purpose is to provide information for the understanding, measurement, and construction techniques of EME radio systems in that portion of the spectrum. These notes are not intended to be
a primer or text book of EME communication but rather a set of stand-alone advanced reports on specific topics.

The ultimate objective is to provide information leading to a most efficient EME radio system for reliable communication without the use of expensive test equipment. We are fortunate in these times that solid state technology has developed very low noise devices required for reception, and that the space communications industry has honed antenna technology and related techniques which are applicable to EME communication.
Although many of the reports were written in the mid-1960s, much of the information is still applicable today.
The original set of technical notes !.:AS prepared while the author was a member of the Crawford Hill VHF Club, WONFA, associated with the Bel/ Telephone Laboratories at Holmdel, New Jersey, U. S. A.
This particular sat of dated notes has been partially revised, updated and supplemented from the original set, which received wide distribution over the years.
The ordering of the subjects remains as in the original notes and represents only the chronological order in which they were written. The table of contents should be consulted to determine both the subject material and an indication of its applicability at this time.
I reserve the right to make corrections, revisions and additions to these notes in future issues. Each set of notes will be dated as of the last revision issue.
Address all correspondence regarding these notes to:

Dick Turrin W2IMU
P. O. Box 65
Colts Neck,
New Jersey 0 7 7 2 2
U. S. A.

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Technical Reports from *The Crawford* Hill VHF Club

September 1986 Issue

laboratory test equipment. Required reading along with Report # 3.

12/ Slum Tuner for 129A mc/s.
A necessary device to go with the UPX-4 modification described in Report # 13. Describes a good low loss/noise general purpose r-f matching device which may be scaled to other frequencies.

13/ A Kilowatt Amplifier For 1296Mhz
This World War II salvaged UPX-4 pulse amplifier design has been modified for CW service and until recently, duplicated and distributed by 0Z9CR. New construction suggestions are given.

14/ A High Power Directional Coupler and Power Monitor.
A simple design for 1296 mc/s which can be used with the kilowatt amplifier in Report M 13 and also for SWR test measurements.

15/ Spin Casting a Paraboloidal Reflector
This Report describes • novel fabrication method for relatively small but highly accurate paraboloidal reflectors. Primarily for microwave frequencies but useful into the optical spectrum.

16/ Libration Fading on the EME Path.
A description of libration fading and its effects on EME signals is discussed and illustrated with graphic measured data. Necessary reading for the EME enthusiast.

17/ A Low Noise Converter for 1296 mc/s.
A remarkably good converter (mixer) design by W2COH is described and analysed. Using interdigital circuitry, this design is still current.

18/ Off-Set Fed Parabolir Reflector Antenna for 179h mc/s.

An improved high efficiency reflector antenna system is described which should be considered for all new EME antenna construction. Supersedes Report It 5 in reflector design but still uses the dual-mode feed horn. Very current.

19/ A Six-Port Ouadrature Power Divider/Combiner.
A simple design for obtaining 4 output ports with sequential quadrature phase and equal amplitude is described. This design is useful for circular polarization implementation of the the NBS feed at any frequency. Current and useful.

20/ Methods for Estimating Receiver Noise Temperature
Methods are discussed to determine the receiver noise temperature which do not involve laboratory calibrated instruments. Useful at 1296 mc/s and higher frequency bands where Universe background noise temperatures are low.