

SUMMARY OF CHARACTERISTICS OF
GERMAN DECIMETRE COMMUNICATIONS EQUIPMENTS

(A.S.I. Rep. No. 28)

This report summarises the main characteristics of the commoner types of German decimetre communications equipment known to us by August 1944. General views of most models, and of their associated aerial systems are included to illustrate the types of construction and assist in identification of the equipment in the field. The details concerning the earlier equipments are believed to be fully reliable. In the cases of the Stuttgart (Fug D 3) and DM 43, while the details given are believed to be reliable, there is still some doubt as to the precise designation of the equipment.

NOMENCLATURE OF DM EQUIPMENT

German Air Force official document gives the following interpretation of the system of nomenclature of decimetre equipments.

"DMG denotes Decimetre Gerät, a directional communications set working on a wavelength between 10 and 100 cms (3000 - 300 Mc/s). This is followed by a number indicating the mark of the equipment, followed by the letter T, K, or G. These signify

T (Telefoniegerät) for RT.

K (Kleingerät) Light directional link.

G (Grossgerät) Heavy directional link.

There are also the code names Michael and Rudolf which apply respectively to the K and G series.

The T type is a portable set and not the only apparatus suitable for telephony, and it is therefore possible that the originally intended expansion was "Tragbar" or "Tornister" - both signifying "Portable".

The above system does not seem to apply to the two later sets, and as these are on a different waveband and apparently much later in design, it is possible that they belong to other series, perhaps for other branches of the Wehrmacht.

FREQUENCY SPECTRUM
OF GERMAN DM EQUIPMENT

<u>Type</u>	<u>Frequency (Mc/s)</u>	<u>Wavelength (cms)</u>
DMG 2 T	475 - 525	63 - 57
DMG 3 K	476 - 526	63 - 57
DUG 4a K	500 - 560	60 - 54
DMG 5 K	502 - 554.2	59.8 - 54.1
DUG 3 G	600 - 652	50 - 46
Fug D 3	1250 - 1390	24 - 21.4
DM 43	2100 - 2200	14.2 - 13.8

DMG 2 T

Purpose	Pack R/T or W/T set.
Capacity	Single channel R/T or 800 M.C.W.
Frequency	475 - 525 Mc/s.
Wavelength	63 - 57 cms.
Normal polarisation	Vertical or horizontal
Range	Optical, to 50 kms..
Antenna system	Chireix-Mesny, two bays with reflector. Single aerial for TR.
Antenna mounting	Tripod or 11 metre mast.
Transmitter	Acorn triode self oscillator with lumped circuit.
Transmitter power	0.15 watt.
Modulation	Anode voltage (amplitude).
Wavemeter	None.
Receiver	Superregenerative.

Quench frequency 500 Kc/s.
Power Supply Battery
Power consumption Receiver 2V 2.45A. 90V 15mA.
Transmitter 2V 2.55A 2 x 90V 25-39 mA.

DMG 3 K.

Purpose Remote keying and control of transmitters.
Rack mounted.
Capacity Two channels:
I R/T or 800 c/s. MCW
II 6000 c/s MCW.
Frequency 476 - 526 Mc/s.
Wavelength 63 - 57 cms.
Normal polarisation Vertical
Range Optical, up to 50 kms.
Antenna system. Horizontal row of 5 half-wave vertical
dipoles with reflectors. Separate T and R.
Antenna Mounting Tubular mast or tower.
Transmitter Small triode. Mounted on T aerial pole.
Modulation Anode voltage (amplitude).
Receiver Superregenerative. Mounted on R
aerial pole.
Quench frequency 500 Kc/s.
Power supply A.L. 220V. 50 c/s.
Power consumption 175 VA.

D.M.G. 4a K

Code name Michael II B
Purpose Light directional link and relay duties
Site testing. Rack mounted.
Capacity Two channels:
I 300-2400 c/s. Telephone or field T/R.

	II 6000 and 8000 c/s double current.
Frequency	500 - 560 Mc/s
Wavelength	60 - 54 cms.
Normal polarisation	Vertical
Range	Optical (50 - 100 kms.)
Antenna system	Horizontal row of 3 full-wave wideband dipoles with reflector, or as for DMG 5 K. Separate aerials for T and R.
Antenna mounting	On mast or tower up to 50 m. high.
Transmitter	Push-pull small triodes, type RL12T2.
Transmitter power	0.4 watt.
Modulation	Anode voltage (frequency modulation).
Wavemeter	Continuously tuneable cavity resonator.
Receiver	Superhet. with auto tuning correction from the discriminator. Push-pull diode mixer, no R.F.
Intermediate frequency	2 Mc/s.
Power supply	AC 220 V. 50 c/s. 250 VA.
Power consumption	250 VA.

DMG 5 K

Code name	Michael II R.
Purpose	Rack mounted light directional link and relay station.
Capacity	Two channels, separately connectable: I 300-5500 c/s 2 or 4 wire telephone or 3 channel T/P II 7400/8000 c/s tone telegraphy
Frequency	502 - 554.2 Mc/s.
Wavelength	59.76 - 54.1 cms.

Normal polarisation	Horizontal
Range	Optical (50 - 100 kms.)
Antenna system	Two stacks of five full wave horizontal wideband dipoles with sheet metal reflector and with plastic front cover, or aerial as DMG 4a K.
Antenna mounting	On 50 m. lattice mast or buildings.
Transmitter	Single triode type LD 1.
Transmitter power	1 watt.
Modulation	Anode voltage (frequency modulation).
Wavemeter	Cavity resonator with 16 spot frequencies.
Receiver	Superhet with auto search and fine tuning correction. Push-pull diode mixer. No R.F. amplifier.
Intermediate frequency	659 kcs.
Power supply	AC 220V. 50 c/s.
Power consumption	250 - 300 VA.

DMG 3 G

Code name	Rudolf
Purpose	Heavy directional link, rack mounted.
Capacity	Multi-channel: I Control telephone channel II - X 9 carrier frequency telephone channels or 9 x 3-fold tone telegraphy = 27 T/P channels.
Frequency	600 - 650 Mc/s.
Wavelength	50 - 46 cms.
Normal polarisation	Horizontal.
Range	Optical (over 100 kms).
Antenna system	As for DMG 4 K or DMG 5 K.

Antenna mounting As for DMG 4.K or DMG 5 K.
Transmitter Four segment split anode magnetron.
Transmitter power Greater than 3.5 watts.
Modulation Frequency modulation. Modulation voltage fed to magnetron end plates. Audio modulation 0.3 to 63 Kcs.
Wavemeter Wavemeter with 20 spot frequencies.

There are two transmitters permanently connected to the aerial all the time, one being kept in reserve in case of failure of the other.

Receiver Superhet with auto search and fine tuning correction.
Intermediate frequency 650 kc/s.
Power supply AC 220V. 50 c/s.
Power consumption 680 VA.

Fug D 3

Code name Stuttgart
Purpose Communications. Rack mounted.
Capacity At least two channels.
Frequency 1250 - 1390 Mc/s.
Wavelength 24.0 - 21.5 cms.
Transmitter Four segment split anode magnetron.
Transmitter power Probably one or two watts.
Modulation Frequency modulation by anode voltage, via two modulation transformers in series, fitted with low and high pass filters respectively.
Wavemeter Probe type.
Receiver Superhet with diode mixer and automatic search and fine tuning correction.

Intermediate frequency 6 Mc/s (2 stages) + Mc/s (3 stages).

Although full details of this set are not available, it appears similar in many ways to the more common types of DM set, and like the others is made by Lorenz.

DM 43

Purpose	Probably directional communications or harbour barrier. Rack mounted.
Capacity	Probably only one channel.
Frequency	2000 - 2100 Mc/s.
Wavelength	13.8 - 14.2 cms.
Antenna system	Row of six small cylindrical paraboloids for transmitter and similar for receiver.
Transmitter	Barkhausen-Kurz "Resotank" cylindrical triode developed by Pintsch.
Transmitter power	Less than one watt.
Modulation	2 Mc/s square wave (amplitude).
Receiver	Superhet using valve for local oscillator. Diode mixer.
Power supply	220 V. 50 c/s.

This equipment, though rack mounted, is of considerably lighter construction than the other non-portable DM equipments. It is believed to be a product of Julius Pintsch possibly in collaboration with Siemens and for the telephony panels.