Fact file: South African tactical radios

Written by defenceWeb, Thursday, 27 November 2008

General Information

Designation	Abbreviation	Frequency Range
Low Frequency	LF	30-300kHz
Medium Frequency	MF	300-3000kHz
High Frequency	HF	3000-30,000kHz
Very High Frequency	VHF	30-300mHz
Ultra High Frequency	UHF	300-3000mHz
Super High Frequency	SHF	3000-30,000mHz
Extremely High Frequency	EHF	30-300gHz

The useful radio frequency spectrum. Note: Army equipment normally operates in the HF and VHF range, SAAF equipment in the UHF band and naval equipment in the HF. 1000 Hertz (Hz) = 1kHz, 1000kHz = 1mHz, 1000mHz = 1gHz.

Power output	Letter	Typical size
Less than 10 Watt (W)	A	Manpack
10-100W	B	Manpack/Portable
100W-1000W (1kW)	C	Vehicle
1-10kW	D	Vehicle/Static
Above 10kW	E	Static

Radio letter designations. Note these are allocated by power output.

Number	Frequency range
10-39	MF/HF: 300-30,000kHz
40-79	VHF: 30-300mHz
80-99	UHF: 300-3000mHz

Radio number designations (Exceptions occur, for example the A72 UHF radio).

SA Army Radios

VHF

A42

Type:	Hardware-defined VHF/FM short-range man- pack tactical radio.
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Reutech Defence Industries.
Dimensions	
· Length:	-
· Width:	-
· Height:	-
Mass:	1.5kg.
Performance	
· Modulation:	FM-F3E.
· Frequency range:	45 to 67,975MHz with 25kHz channel spacing, 100 preset channels.
· RF power output:	2W
· Environmental:	-
· Operating temperature:	-
· Humidity:	-
· Range:	Approx 5km, line-of-sight
· ESM:	None
· ECCM:	
o Encryption:	Has a secure mode
o Frequency hopping:	None
Comment	Developed in the 1980s to replace the A53 (see below). Fill-gun reprogrammable.

The A42 VHF radio.

A43

Type:	Hardware-defined wide-band frequency-hopping short/medium-range man-pack tactical radio.
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Reutech Defence Industries.
Dimensions	
· Length:	-
· Width:	-
· Height:	-
Mass:	2.1kg.
Performance	
· Modulation:	-
· Frequency range:	30 to 49,975MHz with 25kHz channel spacing
· RF power output:	1.5W
· Environmental:	-
· Operating temperature:	-
· Humidity:	-
· Range:	About 5km, line-of-sight.
· ESM:	Data transmission, repeater mode.
· ECCM:	
o Encryption:	-
o Frequency hopping:	Yes.
Comment	A replacement for the A55 (see below). Specified for Project Legend.

The A43 VHF radio.

A53

Type:	Hardware-defined VHF/FM short-range man-pack tactical radio.
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Barlows[1].
Dimensions	
· Length:	approx 15cm.
· Width:	approx 4cm.
· Height:	approx 20cm.
Mass:	4.4kg.
Performance	
· Modulation:	FM-F3
· Frequency range:	30 to 49,975MHz with 25kHz channel spacing[2]
· RF power output:	1.5W
· Environmental:	-
· Operating temperature:	-
· Humidity:	-
· Range:	About 5km, line-of-sight
· ESM:	None
· ECCM:	
o Encryption:	None, clear voice only
o Frequency hopping:	None
Comment	In service since the mid-1970s to replace the PRC261 and still in widespread use, despite being a limited platform.

The A53 VHF radio.

A55

Type:	Hardware-defined VHF/FM short-range frequency-hopping man-pack tactical radio.
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Barlows.
Dimensions	
· Length:	approx 25cm.
· Width:	approx 5cm.
· Height:	approx 25cm.
Mass:	9.9kg.
Performance	
· Modulation:	FM-F3
· Frequency range:	26 to 75,975MHz with 25kHz channel spacing, 100 preset frequencies.
· RF power output:	1.5W
· Environmental:	-
· Operating temperature:	-
· Humidity:	-
· Range:	nn, line-of-sight
· ESM:	None
· ECCM:	
o Encryption:	None, clear voice only
o Frequency hopping:	Yes
Comment	In service since the mid-1970s.

The A55 VHF radio.

B56

Type:	Hardware-defined VHF/FM short-range frequency-hopping

	vehicle-mounted tactical radio (based on A55).
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Barlows.
Dimensions	
· Length:	approx 25cm.
· Width:	approx 5cm.
· Height:	approx 25cm.
Mass:	9.9kg.
Performance	
· Modulation:	FM-F3
· Frequency range:	26 to 75,975MHz with 25kHz channel spacing, 100 preset frequencies.
· RF power output:	1.5W
· Environmental:	-
· Operating temperature:	-
· Humidity:	-
· Range:	nn, line-of-sight
· ESM:	None
· ECCM:	
o Encryption:	None, clear voice only
o Frequency hopping:	Yes
Comment	In service since the mid-1970s.

The B56 VHF radio.

B57

Type:	Hardware-defined VHF/FM short/medium-range vehicle-mounted tactical radio (A53 with amplifier).
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Barlows.
Dimensions	
· Length:	approx 15cm.
· Width:	approx 4cm.
· Height:	approx 20cm.
Mass:	4.4kg.
Performance	
· Modulation:	FM-F3
· Frequency range:	30 to 49,975MHz with 25kHz channel spacing
· RF power output:	1.5W
· Environmental:	-
· Operating temperature:	-
· Humidity:	-
· Range:	About 5km, line-of-sight
· ESM:	None
· ECCM:	
o Encryption:	Can be fitted with a scrambler. A system dubbed "Fat Cat" was used in the 1980s.
o Frequency hopping:	None
Comment	In service since the mid-1970s and still in widespread use, despite being a limited platform.

The B57 VHF radio.

UHF

A72

Type:	Hardware-defined UHF short-range man-pack ground-to-air radio.
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Barlows.
Dimensions	

- Length: approx 15cm.
- Width: approx 4cm.
- Height: approx 20cm.

Mass: 4.4kg.

Performance

- Modulation: -
- Frequency range: 130-136MHz, 12 channels.
- RF power output: -
- Environmental: -
- Operating temperature: -
- Humidity: -
- Range: -
- ESM: -
- ECCM:
  - Encryption: None, clear voice only
  - Frequency hopping: None

Comment: In service since the mid-1970s and still in widespread use, despite being a limited platform. Similar in dimensions and appearance to the A53. When fitted with a 20W booster, the combination is known as the B75.

The A72 UHF radio.

HF

B20

Numbers: -
Country of Origin: South Africa
Manufacturer: Reutech Defence Industries

The B20 HF radio.

B46

Type:	Hardware-defined wide-band long-range frequency-hopping vehicle-mounted tactical radio.
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Reutech Defence Industries.
Dimensions	
· Length:	-
· Width:	-
· Height:	-
Mass:	-
Performance	
· Modulation:	nn
· Frequency range:	30 to 87,975MHz with 25kHz channel spacing, 100 preset channels.
· RF power output:	5 to 50W
· Environmental:	-
· Operating temperature:	-
· Humidity:	-
· Range:	About 5km, line-of-sight
· ESM:	Repeater facility
· ECCM:	
o Encryption:	-
o Frequency hopping:	Yes
Comment	Designed to replace the B57 (see above). Specified for Project Legend.

The B46 HF radio.

C21

Type:	Hardware-defined wide-band short-to-long-range frequency-hopping man-pack or vehicle-mounted tactical radio.
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Reutech Defence Industries.
Dimensions	
· Length:	-
· Width:	-
· Height:	-

Mass:	-
Performance	
· Modulation:	HF, SSB
· Frequency range:	1.6 to 30MHz, 9 preset channels.
· RF power output:	2.6, 25 or 100W
· Environmental:	-
· Operating temperature:	-
· Humidity:	-
· Range:	nn, dependent on antenna rig.
· ESM:	Data transmission and repeater facility.
· ECCM:	
o Encryption:	-
o Frequency hopping:	Yes.
Comment	Replaced the obsolete 1970s vintage B25/6 and C28 radios.

The C21 HF radio.

TR2400 ("Phoenix")

Type:	Software-defined wide-band short-to-long-range frequency-hopping man-pack or vehicle-mounted tactical radio.
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Saab Grintek.
Dimensions	
· Length:	-
· Width:	-
· Height:	-
Mass:	-
Performance	
· Modulation:	AM, USB, LSB, CW, Digital speech, Data
· Frequency range:	1.6 to 30MHz, in steps of 10Hz.
· RF power output:	-
· Environmental:	Meets relevant requirements of MIL-STD-810EQ24.
· Operating temperature:	-
· Humidity:	-
· Range:	nn, dependent on antenna rig.
· ESM:	Data transmission and repeater facility.
· ECCM:	
o Encryption:	-
o Frequency hopping:	Yes.
Comment	In limited use with the Special Forces and the Air Defence Artillery`s 104 (Starstreak) Battery; Link-ZA compliant.

The TR2400 HF radio.

Data Terminals

DT170

Type:	Hardware-defined palm-top data terminal.
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Reutech Defence Industries.
Dimensions	
· Length:	18.6cm.
· Width:	10.1cm.
· Height:	4.5cm.
Mass:	-
Performance	
· Transmission rate:	150 to 600 bits per second.
· ESM:	Repeater facility
· ECCM:	
o Encryption:	Yes.
Comment	Introduced in the mid-1980s, the DT170 revolutionised communications, allowing secure, written interaction between headquarters and call-signs in the field. Routine and special instructions and orders could be sent and received via radio in a way that resembles the Short Message System (SMS) found on modern cellphones. The system was also a leap ahead for the artillery, allowing the speedy transmission of mission orders. The terminal uses preset message formats but also allows free-form messages up to 2500 characters long. The DT170 can print messages via a DP139 printer that prints onto a paper roll similar to that used by some calculators and shop tills. It prints at a rate of one 24-character line per second using a 5 x 7 dot-matrix format[3]. The 12x6.4x18.6cm printer weighs 1.8kg.

The DT170 data terminal.

TDT200

Type:	Hardware-defined desk-top data terminal.
Numbers:	-
Country of Origin:	South Africa
Manufacturer:	Reutech Defence Industries.
Dimensions	
· Length:	-
· Width:	-
· Height:	-
Mass:	-
Performance	
· Transmission rate:	50 to 2400 bits per second.
· ESM:	nn
· ECCM:	
o Encryption:	-
Comment	Introduced in the mid-1980s, the DT200 resembles an early desktop computer and in the original variant sported a 16-line, 80 character display screen. The DT200 has a 64K internal memory. It can communicate with other DT200`s, DT170s as well as now-obsolete T1000 teleprinters. The DT200`s associated printer also uses teleprinter paper. "It offers a secure facility, selective addressing, day, date and time stamp and can store message formats or messages if required."[4]

The DT200 data terminal.

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[1] Now Barloworld. The company exited the defence business in the 1990s.
[2] This is the rub: The increments mean that this radio may be perfectly incapable of communicating with an Allied radio of the same frequency range but whose frequency interval does not coincide with this radio. The advantage of software-defined radios over hardware-defined radios become immediately apparent.
[3] Helmoed-Römer Heitman, South African Arms & Armour, Struik Publishers, Cape Town, 1988, p144.
[4] Helmoed-Römer Heitman, South African Arms & Armour, Struik Publishers, Cape Town, 1988, p144.