

# {TESS+} VHF Training

## Module 2: Standard radio equipment

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Read more about {TESS+}: [www.wfp.org/telecommunications-security-standards](http://www.wfp.org/telecommunications-security-standards)

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# Session objectives

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- Learn about standard VHF/UHF radio equipment

# Standard VHF/UHF radio equipment

- Motorola and iCOM radios are the VHF/UHF radio equipment that have been tested and verified by {TESS+}. These vendors cover 90% of the field.
- VHF/UHF portable radios:
  - 1-5 Watt
  - Rubber antenna
  - Rechargeable battery
  - Range up to 5km (simplex)

VHF/UHF Handset models	
<p><b>Motorola DP2400e</b> <i>Features:</i> Available in VHF / UHF Supports up to 16 channels <i>Recommended for:</i> Network users</p>	
<p><b>Motorola DP4801/DP4801e</b> <i>Features:</i> Full keypad and display Available in VHF / UHF Supports up to 1000 channels <i>Recommended for:</i> Network users Network controllers</p>	
<p><b>ICOM IC-F1100D</b> <i>Features:</i> Available in VHF, IC-F2100D for UHF Supports up to 16 channels <i>Recommended for:</i> Network users</p>	



# Standard VHF/UHF radio equipment

- VHF/UHF base/mobile radios:
  - 10-25 Watt
  - External antenna
  - External battery
  - Range up to 25km (simplex)

VHF Base / Mobile models	
<p><b>Motorola DM2600</b> <i>Features:</i> Keypad / display Available in VHF / UHF Supports up to 160 channels Keypad microphone included <i>Recommended for:</i> Network users</p>	
<p><b>Motorola DM4601 / DM4601e</b> <i>Features:</i> Keypad / display Available in VHF / UHF Supports up to 1000 channels Keypad microphone included <i>Recommended for:</i> Network users Network controllers</p>	
<p><b>ICOM IC-F5062D</b> <i>Features:</i> Keypad / display Available in VHF, IC-F6062 for UHF Supports up to 512 channels Keypad microphone included <i>Recommended for:</i> Network users Network controllers</p>	

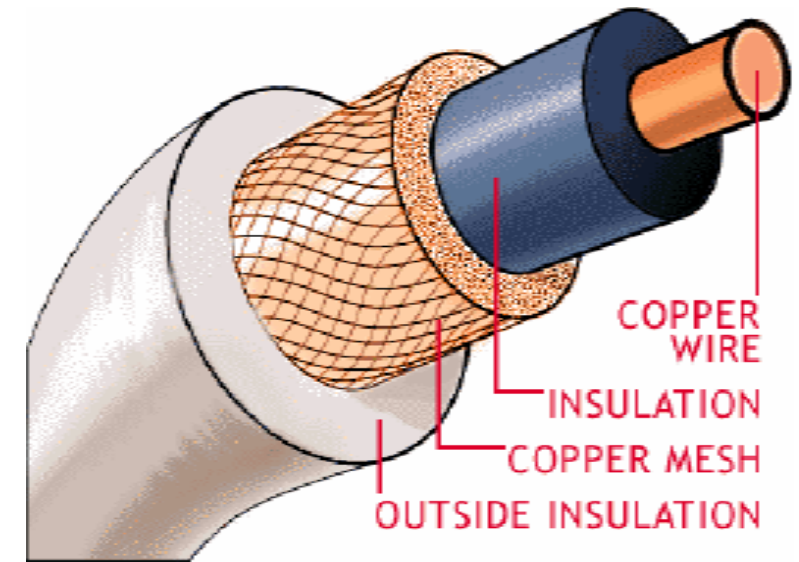
# Standard VHF/UHF radio equipment

- VHF/UHF Repeater:
  - 25/50 Watt
  - External high gain antenna
  - Power (solar/battery)
  - Range up to 50-80km (repeater)

VHF Repeater models	
<b>Motorola SLR5500</b> VHF/UHF repeater	
<b>ICOM IC-FR5100</b> VHF repeater <b>ICOM IC-FR6100</b> UHF repeater	

# Accessories - RF coaxial cables

- Coaxial cables make convenient, fixed impedance transmission lines.
- Suitable for HF and VHF/UHF
- Common cable types:
  - RG-58 C/U (d = 4.95 mm). Often used for HF ( $\leq 30$  MHz)
  - RG-213 U (d = 10.3 mm). Often used for VHF, UHF
  - LMR-400 (d=10.29 mm). Often used for VHF repeater installations



# Accessories - RF connectors

- BNC vs PL-259 vs N connectors
- Soldering vs crimping



## **BNC connectors**

Male

T-adaptor (Male + 2Female)

Use:  $\leq 4$  GHz



## **UHF connectors**

SO-239 (female)

PL-259 (male)

Use:  $\leq 300$  MHz,



## **N connectors**

Male

Female

Use:  $\leq 2.5$  GHz, 300 W

# Questions and remarks

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