
TECHNOLOGY DIVISION
COMMUNICATIONS SECTION

Phone: 324 3307

Email: jkame@pngpower.com.pg

Document : TERMS OF REFERENCE (TOR)**Title : SUPPLY OF HYTERA DMR RADIO & INSTALLATION ACCESSORIES****Definition**

TOR is an integrated document into the ST409 process under the PNG Power Ltd (PPL) Standard Operating Procedure (SOP). The process is aimed at centralising and monitoring procurement practices to ensure all necessary procurement requirements are followed and awarded in the best interest of the company. The document spells out the necessary terms for the company's management information and necessary approvals to proceed with the supply of materials and/ or services.

Background

PPL wishes to upgrade its VHF radio system in Port Moresby to an IP Multisite IP Connect system using 3 repeater sites around the city of Port Moresby.

Part of the upgrade is to refit field vehicles and operational teams with mobile radios and the installation of 3 repeater systems.

The upgrade will be based on Hytera platform operating as DMR Tier II (DMR conventional, Simulcast) mode.

The 3 repeater sites will be interconnected using PTP Wireless links, which are inclusive of the terms of reference.

Objective

The supplier is required to supply the Hytera MD782G, Hytera PD782G, and Hytera RD 982 radio units, including the PTP links and installation accessories as specified under the Scope of Supply

Respondents may provide a proposal to supply all or only specific parts of the entire requirements specified in the scope of supply.

Scope of Supply

The Supplier is required to provide to PNG Power the following items;

- A **Radio Components**
- I. 28 x Hytera MD782G Fleet radios
 - II. 21 x Hytera MD782G Base radios
 - III. 29 x Hytera PD 782G Handheld radios
 - IV. 3 X Hytera RD982 Repeaters

B Wireless PTP Links

- (i) 3 X pairs Point to Point Wireless links

C Installation Accessories

- (i) 100 X Meters LDF4-50 Heliax Cable
- (ii) 3 X VHF Duplexers
- (iii) 3 X SMD2 Dipole Antenna
- (iv) 6 X LDF4-50 Connectors Male Female

D Radio Programming and Configuration

Configuration and programming is not part of the scope of supply

E Equipment Supply Specifications

Radio Equipment Specifications

The radio must be compatible with attached General Data on Hytera MD782G and PD782G radio.

Specifically the radios must satisfy the following specifications.

Frequency range

136MHZ – 174 MHZ

Supported Operation Modes

DMR Tier II (DMR conventional), Simulcast

DMR Tier III (DMR trunking),

Analog, MPT 1327

DMR Tier II in reference to ETSI TS 102 361-1/2/3

DMR Tier III in reference to ETSI TS 102 361- 1/2/3/4

Software

The radio Data and Firmware version must be or equivalent to

Data version

D8.05.06.003

Firmware version

A8.05.06.005

Duplexer specification

The duplexer must be of the "Band Pass filter" type for the range 136-174MHZ.

The Duplexers must be supplied pre-tuned to the following 3 frequency pairings;

- (i) TX:150.0625MHZ RX:154.6750 MHZ
- (ii) TX:149.7373MHZ RX:154.3500MHZ
- (iii) TX:150.3875MHZ RX: 155.000MHZ

Antenna

Side Mounted SMD2, Frequency 148 – 175 MHZ

Attachments

1. Hytera MD782 Brochure & Specifications
2. Hytera MD782 Brochure & Specifications
3. Hytera RD782 Brochure & Specifications
4. Antenna Brochure

Hytera 

MD782

Digital Mobile Radio



- Superior Digital Voice with Analog Upgrade Option
- GPS Option and Integration with Data Applications



DMR RATED
IP54

www.hytera.us



MD782

As a product built to the DMR standard, the MD782 delivers quality digital voice and data communications as well as all-round digital functions to increase your efficiency and enable you to be responsive to emergency situations. The radio can also be used as a control station to monitor and communicate with radio fleets from a desk. The MD782G is the GPS version of the radio, which allows integration with Hytera SmartDispatch or other 3rd party GPS Solutions.

Applications

Public Safety

Utilities

Security

Waste Management

Forestry

Construction

Logistics

Taxi



Product Features

- User Friendly Design**
 The large-size color display allows good visibility even under extremely strong light. The seven programmable keys facilitate your communication and the optional keypad microphone enhances. The optional keypad microphone enhances the ability to send quick canned messages.
- Rugged & Reliable**
 Complies with MIL-STD-810 C/D/E/F/G standards and is IP54 (5: Generally protected against dust; 4: Protected against the effects of light rain or minor water splashes) ensuring outstanding performance.
- Higher Spectrum Efficiency, Higher Channel Capacity**
 The TDMA technology allows twice the channels based on the same spectrum resource. This relieves the stress of increasing shortage in spectrum resource.
- Secure Communication**
 Besides the encryption inherent to digital technology, The MD782 provides enhanced encryption capabilities (such as 256-bit encryption algorithm). It has analog scrambling, and digital encryption using Advanced Encryption Standard (AES) and ARCFOUR (ARC4) encryption methodology to both voice and data.
- Multifaceted Features**
 In addition to conventional communication services, the MD782 is capable of Text Message, Scan, Emergency, Channel Steering, Auto Registration, Lone Worker, Radio Check, Remote Monitor, Call Alert, Radio Enable, and Radio Disable.
- Roaming**
 Automatic roaming of all sites in an IP Multi-site Connect system.
- Pseudo Trunk**
 This virtual trunking feature allocates a free timeslot for urgent communications. This effectively enhances frequency efficiency and allows you to communicate in a timely manner in emergency situations.
- Data Features**
 Supports data capabilities of sending Private and Group text messages. It also supports a Third Party to control the radio via Third party API (GPS, Radio Registration Services, Radio Call Control, Telemetry, Data Transfer), via Telemetry control to radio.
- Dual Mode: Analog & Digital**
 Dual mode (analog & digital) operation ensures a smooth analog to digital migration.
- Versatile Voice Calls**
 The intelligent signaling of the MD782 supports various voice call types, including Private Call, Group Call, All Call and Emergency Call.
- GPS Positioning**
 Optional GPS version supports viewing of GPS positioning information and sending of GPS text message.
- Expansion Ports**
 This allows third parties to develop accessory and applications via front and rear port of the mobile. (Features such as channel steering, emergency footswitch can be supported via the rear port).
- Various Analog Signaling Types**
 The MD 782 is capable of Various analog signaling types (HDC1200, DTMF phone, 2-Tone, and 5-Tone), various squelch control types (CTCSS / CDCSS), which provide higher functionality in analog mode.
- One Touch Call/Text**
 Supports One Touch features that comprise of Preprogrammed Text Messages, Voice Calls and Supplementary Features
- Scan**
 Capable of scanning of pure analog voice and signaling, pure Digital voice and data, and also mix mode scan that comprise of Analog and Digital activities.
- Software Upgradeable**
 Upgradeable software enables new features without buying a new radio; MD782(G) could also be switched into DMR trunking modes with corresponding trunking license applied in the same hardware.
- Analog Upgradeable Version**
 The Analog version of the MD782 can be upgraded at your organizations own pace to provide an easy step-by-step migration to digital technology. Analog features include 2-tone, HDC 1200, 5-tone Signaling, Scan, and Scrambler.

Accessories

- Included
- Palm Microphone
 - Microphone Hanger & Screws
 - Mounting Bracket
 - Power Cord
 - Fuse
 - GPS Antenna (MD782G only)

See website for full list

Optional



Keypad
Microphone
SM19A1



External
Speaker
SM09D1



Programming Cable
(USB Port)
PC37



Desktop
Microphone
SM10A1

Specifications

General	Frequency Range	VHF: 136 - 174MHz ; UHF1: 400 - 470MHz UHF2: 450 - 520MHz ; UHF3: 350 - 400MHz UHF5: 804 - 941MHz (only for DMR Trunking)		
	Channel Capacity	1024		
	Zone Capacity	64 (with a maximum of 16 channels each)		
	Channel Spacing	25 / 20 / 12.5KHz		
	Operating Voltage	13.6 V ± 15%		
	Current Drain	Standby	<0.6A	
		Receive	<0.2A	
		Transmit	5W: <5A 25W: <8A 45/50W <12A	
	Frequency Stability	± 1.5ppm		
	Antenna Impedance	50 Ω		
	Dimensions (HxWxD)	2.36 x 6.85 x 7.87 inches		
	Weight	3.75 lbs		
	FCC ID	MD782	136-174 MHz: YAMMD78XVHF 400-470 MHz: YAMMD78XU1 450-520 MHz: YAMMD78XU2	
		MD782G	136-174 MHz: YAMMD78XGVHF 400-470 MHz: YAMMD78XG-U1 450-520 MHz: YAMMD78XG-U2	
Industry Canada ID	MD782	138-174 MHz: 8913A-MD782VHF(L / H) 406.1-470 MHz: 8913A-MD782U1(L / H) 450-470 MHz: 8913A-MD782U2(L / H)		
	MD782G	138-174 MHz: Pending 406.1-470 MHz: Pending 450-470 MHz: Pending		
Environmental Specifications	Operating Temperature	-22°F ~ +140°F		
	Storage Temperature	-40°F ~ +185°F		
	ESD	IEC 61000 - 4 - 2 (level 4) ± 8kV(contact) ; ± 15kV (air)		
	American Military Standard	MIL-STD-810 C/D/E/F/G		
	Dust & Water Intrusion	IP54 Standard		
	Humidity	Per MIL-STD-810 C/D/E/F/G Standard		
	Shock & Vibration	Per MIL-STD-810 C/D/E/F/G Standard		
GPS	TTFF (Time To First Fix) Cold Start	<1 minute		
	TTFF (Time To First Fix) Hot Start	<10 seconds		
	Horizontal Accuracy	<10 meters		

Transmitter	RF Power Output	Low VHF & UHF1,2,3: 5-25W ; High VHF: 5-50W, UHF1,2,3: 5-45W UHF5: 5-35W	
	FM Modulation (Analog Emissions Designator)	11KϕF3E @ 12.5KHz ; 14KϕF3E @ 20KHz ; 16KϕF3E @ 25KHz	
	4FSK Digital Modulation (Digital Emissions Designator)	12.5KHz Data Only: 7K6ϕFXD 12.5KHz Data & Voice: 7K6ϕFXW	
	Conducted/Radiated Emission	-36dBm < 1GHz -30dBm > 1GHz	
	Modulation Limiting	± 2.5KHz @ 12.5KHz ; ± 4.0KHz @ 20KHz ; ± 5.0KHz @ 25KHz	
	FM Hum & Noise	40dB @ 12.5KHz ; 43dB @ 20KHz ; 45dB @ 25KHz	
	Adjacent Channel Power	60dB @ 12.5KHz 70dB @ 20/25KHz	
	Audio Response	+1 ~ -3dB	
	Audio Distortion	≤ 3%	
	Digital Vocoder Type	AMBE++ or SELP	
	Digital Protocol	ETSI-TS102 361-1, 2&3	

Receiver	Sensitivity	Analog	0.3 μ V (12dB SINAD) ; 0.22 μ V (Typical) (12dB SINAD) ; 0.4 μ V (20dB SINAD)	
		Digital	0.3 μ V/BERS9%	
	Selectivity TIA-603 ETSI	65dB @ 12.5KHz / 75dB @ 20/25KHz 60dB @ 12.5KHz / 70dB @ 20/25KHz		
	Intermodulation TIA-603 ETSI	75dB @ 12.5/20/25KHz 70dB @ 12.5/20/25KHz		
	Spurious Response Rejection TIA-603 ETSI	75dB @ 12.5/20/25KHz 70dB @ 12.5/20/25KHz		
	Blocking TIA-603 ETSI	90dB 84dB		
	S/N	40dB @ 12.5KHz ; 43dB @ 20KHz ; 45dB @ 25KHz		
	Rated Audio Power Output	Internal	@20ohm load - 3W	
		External	@8 ohm load - 7.5W	
	Max Audio Power Output	Internal	@20ohm load - 8W	
		External	@8 ohm load - 20W	
Rated Audio Distortion	≤ 3%			
Audio Response	+1 ~ -3dB			
Conducted Spurious Emission	< -57dBm			

Your Local Dealer



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Hytera America

Address: 3315 Commerce Parkway
Miramar, Florida 33025, USA
Tel: 800-845-1230 Fax: 954-846-1672
http://www.hytera.us
Stock Code: 002583.SZ

Hytera
Respond & Achieve

Hytera



PD782G/ PD702G (UL913) Intrinsically Safe Full Power Digital Radio

- UL/CSA/CQST Certified explosion-proof DMR Portable Two-way Radio
- Designed for Hazardous Working Environments
- Smooth Migration from Analog to Digital
- Larger Battery Capacity, Longer Cycle Life



www.hytera.us

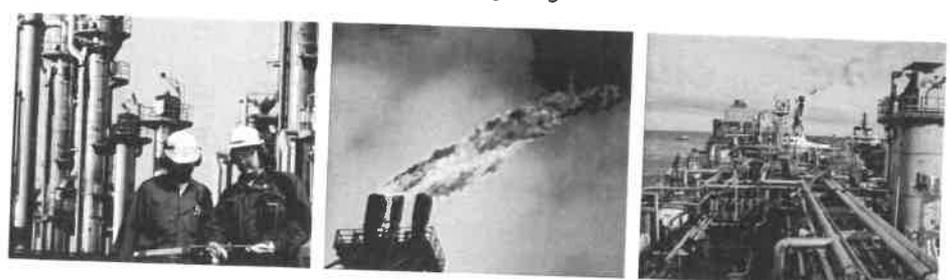


PD782G/PD782
PD702G/PD702
(UL913)

A digital two way radio built to the DMR standard, PD782/PD782G/PD702/PD702G (UL913) are specially designed for those who work in environments with explosive gas and combustible dusts, where using regular radios could be unsafe. Hytera understands the challenges of professionals in hazardous environments. Dedicated to designing and delivering of intrinsically safe and reliable communications solutions. Hytera launched PD782/PD782G/PD702/PD702G (UL913), portable explosion-proof DMR radio with ergonomic and rugged design. Easy to use, long battery life and UL913-rated for safety. The PD782G/PD702G enables your workers to communicate safely and efficiently wherever it must be.

Applications

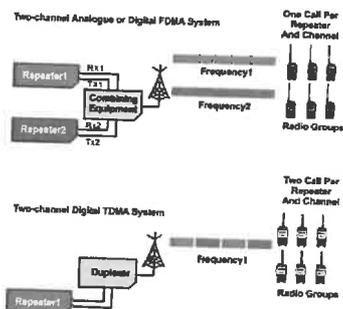
Oil & Gas, Refinery, Chemical Industry, Fire Fighting



PD782,PD782G,PD702,PD702G in this document are intrinsically safe, they are different from the conventional types.

5 Save Equipment Cost

Compared with FDMA solution, 2 slot TDMA solution allows 2 simultaneous calls through 1 repeater, which helps reduce minimum entry cost.



6 End-to-End Encryption

Voice or data information is encrypted during the transmission from end to end. The encrypted information can only be decoded by the terminals that have the specific key.



Specifications

Frequency Range		UHF1: 400-470MHz; UHF2: 450-520MHz; UHF3:350-400MHz; UHF5: 806-941MHz; VHF: 136-174MHz	
Channel Capacity		1024	
Zone Capacity		16(PD702 UL913, each with a maximum of 16 channels) 64(PD782 UL913, each with a maximum of 256 channels)	
Channel Spacing		12.5kHz / 20kHz / 25kHz	
Operating Voltage		7.4V (rated)	
Battery		2400mAh (Li-Ion)	
Battery Life (5-5-90 Duty Cycle, High TX Power) PD782G High-capacity 2400mAh Li-Ion Battery		Analog: UHF1: 16h 14.5h (G) UHF2: 15.8h 14.4h (G) UHF5: 16.8h 15.2h(G) VHF: 15.6h 14.2h (G)	Digital: UHF1: 21.2h 18.8h (G) UHF2: 20.6h 18.3h (G) UHF5: 21.3h 18.9h(G) VHF: 20.6h 18.3h (G)
Frequency Stability		±1.5ppm	
Antenna Impedance		50Ω	
Dimensions (H×W×D) (with standard battery, without antenna)		125 x 55 x 43mm (PD782G) 125 x 55 x 41mm (PD702G)	
Weight (with antenna & standard battery)		369g (PD782G) 355g (PD702G)	
LCD Display (PD782G)		160 x 128 pixels, 65535 colors 1.8 inch, 6 rows	
Sensitivity	Analog	0.3μV (12dB SINAD); 0.22μV (Typical) (12dB SINAD) 0.4μV (20dB SINAD)	
	Digital	0.3μV /BER5%	
Selectivity	TIA-603	60dB @ 12.5kHz / 70dB @ 20/25kHz	
	ETSI	60dB @ 12.5kHz / 70dB @ 20/25kHz	
Intermodulation	TIA-603	70dB @ 12.5/20/25kHz	
	ETSI	65dB @ 12.5/20/25kHz	
Spurious Response Rejection	TIA-603	70dB @ 12.5/20/25kHz	
	ETSI	70dB @ 12.5/20/25kHz	
Hum and Noise		40dB @ 12.5kHz; 43dB @ 20kHz; 45dB @ 25kHz	
Rated Audio Power Output		0.5W	
Rated Audio Distortion		≤3%	
Audio Response		+1 ~ -3dB	
Conducted Spurious Emission		< -57dBm	

Transmitter	RF Power Output	UHF1/UHF2/UHF3 High Power: 4W UHF1/UHF2 Low Power: 1W UHF5: 1W/3W (806-870MHz), UHF5: 1W/2.5W (896-941MHz) VHF1: 1W/ 5W
	FM Modulation	11K0F3E @ 12.5kHz; 14K0F3E @ 20kHz 16K0F3E @ 25kHz
	4FSK Digital Modulation	12.5kHz Data Only: 7K60FXD 12.5kHz Data & Voice: 7K60FXW
	Conducted/Radiated Emission	-36dBm<1GHz; -30dBm>1GHz
	Modulation Limiting	±2.5kHz @ 12.5kHz; ±4.0kHz @ 20kHz; ±5.0kHz @ 25kHz
	FM Hum & Noise	40dB @ 12.5kHz; 43dB @ 20kHz; 45dB @ 25kHz
	Adjacent Channel Power	60dB @ 12.5kHz; 70dB @ 20/25kHz
	Audio Response	+1 ~ -3dB
	Audio Distortion	≤3%
	Digital Vocoder Type	AMBE++ or SELP
Digital Protocol	ETSI-TS102 361-1,-2,-3	
Environmental Specifications	Operating Temperature	-30 ~ +55
	Storage Temperature	-40 ~ +85
	ESD	IEC 61000-4-2 level 4 ±8kV (contact) ±15kV (air)
	American Military Standard	MIL-STD-810 C/D/E/F/G
Dust & Water Intrusion	IP67 Standard	
Humidity	Per MIL-STD-810 C/D/E/F/G Standard	
Shock & Vibration	Per MIL-STD-810 C/D/E/F/G Standard	
GPS Performance	Accuracy spikes are optional term tracking (95th percentile value > 5 satellites, 24dBm at a nominal -130dBm signal strength)	
	TTF (Time To First Fix) Cold Start	<1 minute
	TTF (Time To First Fix) Hot Start	<10 seconds
	Horizontal Accuracy	<10 meters

All Specifications are tested according to applicable standards, and subject to change without notice due to continuous development.



Hytera
Respond & Achieve

Hytera America

Address: 3315 Commerce Parkway
Miramar, Florida 33025
Tel: 800.845.1230 Fax: 954.846.1672
www.hytera.us

Hytera America, West

Address: 300 Spectrum Center Drive
Irvine, CA 92618
Tel: 949.326.5740 Fax: 949.943.3006
www.hytera.us

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Hytera

RD982

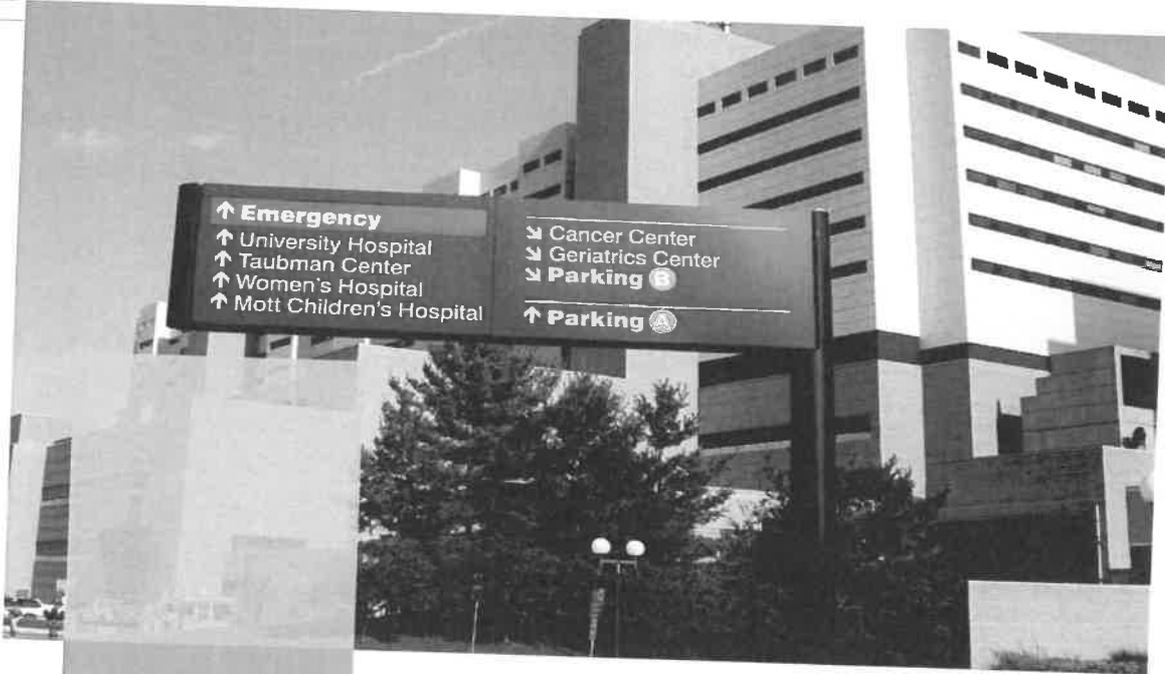
Powerful Digital Repeater



- Smart Digital - Analog Switch
- Outstanding Heat Dissipation



DMR
DIGITAL MOBILE RADIO ASSOCIATION



RD982

The RD982 is an open-standard DMR repeater capable of being connected via the internet to multiple sites as well as integrated with Hytera SmartDispatch or other 3rd party GPS dispatching software. The RD982S is capable of being upgraded to trunking at a future date as capacity requirements increase. The analog version of the RD982 provides organizations with an easy migration path to digital technology.

Applications

Public Safety

Utilities

Transportation

Manufacturing

Forestry

Security

Stadiums

Hospital



Product Features

- Dual Mode: Analog & Digital**
 Dual Mode Analog and Digital channel auto switching, allowing efficient frequency sharing between Analog and Digital users and ensures a smooth transition to Digital technology.
- 50W High Power**
 Maximum repeating power of 50W, and thus increasing the system coverage with lesser setup equipments.
- 16 Channels**
 A maximum of 16 channels, allowing efficient radio network control at different scenarios. The channel change can be performed either via RDAC PC tools, via the repeater's front panel channel knob and via the channel steering from the repeater's rear port.
- Heat Dissipation**
 The unique cooling design combining a built-in heat pipe and a temperature-controlled fan ensures quick heat dissipation, enabling the repeater to operate efficiently even with full power.
- Management Software**
 With the management software, you can remotely monitor and diagnose a repeater. In addition, you can either record or play back the audio freely in digital mode.
- Innovative LED Design**
 The innovative LED and the 2.0" HD color display would deliver the repeater status clearly.
- Expansion Ports**
 This allows third parties to develop accessory and applications via front and rear port of the repeater. This is achieved via the signal streaming and pin control through the repeater ports.
- Dual Slot Digital Audio Streaming**
 Streaming of both the voice slots via the rear port accessory pins, allowing third party for capability expansion.
- Continuous Wave Identification (CWID)**
 Analog transmission of the repeater identification in Morse code format.
- Analog Scan**
 Analog voice and signaling scan, allowing coverage of different analog voice users from various groups.
- Multiple Sites Via IP**
 Network connection via the IP port of the repeater to form a private radio network to meet data and voice communication needs for wide-area coverage and dispersed locations.
- Advanced TDMA Technology**
 The application of Time Division Multiple Access (TDMA) technology greatly enhances spectrum efficiency, which allows twice the users compared with that of traditional FDMA. Obviously, this can not only save infrastructure cost and frequency licenses, but also relieve the pressure of increasing shortage in spectrum resources.
- Repeater Diagnostic And Control (RDAC)**
 Remote IP connection to monitor, diagnose, and control the repeater thus increasing maintenance efficiency. The Hytera developed RDAC is able to support multiple master network connections to allow the radio administrator to monitor multiple radio networks.
- Interoperability**
 Two repeaters can be interconnected to provide interoperability between UHF and VHF. A single repeater can auto switch between Analog and Digital mode, allowing for efficient frequency sharing between Analog and Digital users and an easy digital migration.
- Multi CTCSS/CDCSS Decode**
 Decoding up to a maximum of 16 CDCSS/CTCSS codes in Analog channels allowing coverage for different Analog voice users from various groups.
- Repeater Access Management**
 The repeater access control feature ensures a more secure network by preventing unauthorized users from accessing the radio network.
- Analog/Digital Telephone Interconnect (via DTMF signaling)**
 Simplex voice communications between radio and telephone users. It allows a radio user to make a telephone call; or a telephone user to make either a Group or Private call to radio users. This feature utilizes the Commercial Off The Shelf (COTS) Analog Phone Patch boxes and a Plain Old Telephone Service (POTS) line to connect the Repeater to the Corporate Office Phone System (PBX) or Public Switched Telephone Network (PSTN).
- Analog Repeater Knockdown**
 Repeater knockdown, that when activated via the repeater's rear accessory pin, will disabled the transmit path of the repeater.

Accessories

- Included
- Power Cord

Optional

See website for full list



Rackmount Power Supply
SEC-1223R1



Duplexer
DT11 through
DT17



Programming Cable
(USB Port)
PC37



Back to Back
Data Cable
PC49

Specifications

General	Frequency Range	VHF: 136 - 174MHz; UHF1: 400 - 470MHz UHF2: 450-520MHz; UHF3: 350 - 400MHz		
	Channel Capacity	16		
	Channel Spacing	25 / 20 / 12.5KHz		
	Operating Voltage	13.6V ± 15%		
	Current Drain	Standby	<0.8A	
		Transmit	<11A	
	Frequency Stability	± 0.5ppm		
	Antenna Impedance	50 Ω		
	Duty Cycle	100%		
	Dimensions (HxWxD)	3.46 x 19 x 14.4 inches		
	Weight	18.74lbs		
	FCC ID	See website for full list		
	Industry Canada ID	See website for full list		

Environmental Specs	Operating Temperature	-22°F ~ +140°F
	Storage Temperature	-40° F ~ +185° F
	ESD	n/a
	American Military Standard	n/a
	Dust & Water Intrusion	n/a
	Humidity	n/a
	Shock & Vibration	n/a

Transmitter	RF Power Output	5-50W
	FM Modulation (Analog Emissions Designator)	11K f F3E @ 12.5KHz; 14Kf F3E @ 20KHz; 16Kf F3E @ 25KHz
	4FSK Digital Modulation (Digital Emissions Designator)	12.5KHz Data Only: 7K6 FXD 12.5KHz Data & Voice: 7K6 FXW
	Conducted/Radiated Emission	-36dBm<1GHz -30dBm>1GHz
	Modulation Limiting	± 2.5KHz @ 12.5KHz; ± 4.0KHz @ 20KHz; ± 5.0KHz @ 25KHz
	FM Hum & Noise	40dB @ 12.5KHz; 43dB @ 20KHz; 45dB @ 25KHz
	Adjacent Channel Power	60dB @ 12.5KHz 70dB @ 20/25KHz
	Audio Response	+1 ~ -3dB
	Audio Distortion	≤ 3%
	Digital Vocoder Type	AMBE++ or SELP
Digital Protocol	ETSI-TS102 361-1, 2 & 3	

Receiver	Sensitivity	Analog	0.03 mV (12dB SINAD); 0.22 mV (Typical) (12dB SINAD); 0.4 mV (20dB SINAD)
		Digital	0.03 mV/BERS%
	Selectivity TIA-603 ETSI	65dB @ 12.5KHz / 75dB @ 20/25KHz 65dB @ 12.5KHz / 75dB @ 20/25KHz	
	Intermodulation TIA-603 ETSI	75dB @ 12.5/20/25KHz 70dB @ 12.5/20/25KHz	
	Spurious Response Rejection TIA-603 ETSI	80dB @ 12.5/20/25KHz 80dB @ 12.5/20/25KHz	
	Blocking TIA-603 ETSI	90dB	
		90dB	
	S/N	40dB @ 12.5KHz; 43dB @ 20KHz; 45dB @ 25KHz	
	Rated Audio Power Output	0.5W	
	Rated Audio Distortion	≤ 3%	
Audio Response	+1 ~ -3dB		
Conducted Spurious Emission	< -57dBm		



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Hytera Communications (Canada) Inc.

Address: 100 Leek Crescent, Unit 11
Richmond Hill, Ontario L4B 3E6
Tel: (905) 305-7545
<http://www.hytera.ca> <http://www.hytera.us>



VHF Side Mounted Dipole Antennas

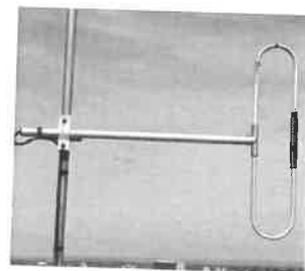
108-200 MHz

SMD2 Series



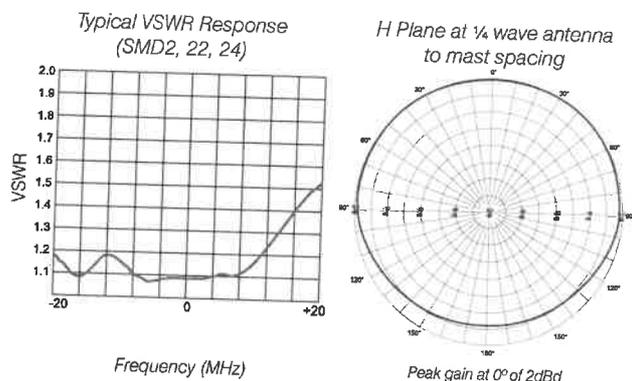
The SMD2 Series side mounted dipoles are broad band antennas which, through different phasing and mounting arrangements can offer a variety of patterns (generally cardioid) tailored to specific coverage requirements. These antennas can be mounted in dual arrays for 3dB gain, or four-stack arrays for 6dB gain over a single dipole.

The SMD22 is a ruggedised antenna featuring extremely heavy walled tubing, all welded aluminium construction and a black epoxy coating to aid in solar heat retention. The SMD24 is a stainless steel version and is ideal in corrosive marine environments. All of the antennas are electrically identical.



Features:

- Can be phased to provide 3 dBd or 6 dBd gain, in a variety of patterns tailored to suit specific requirements. An extensive range of phasing harnesses available.
- Full bandwidth coverage for both single antennas and phased arrays - ideal in community sites
- High strength - SMD2 features anodised aluminium construction and high pressure cast aluminium centrepiece
- Rugged and stainless steel versions also available
- Low PIM models available
- DC grounded for lightning protection and dissipation of static noise



Model Number	Electrical			
	SMD2	SMD22	SMD24	SMD2-99
Nominal Gain dBi (dBd)	Nominally 2 (Unity) but varies with mounting arrangements			
Frequency MHz	108 - 200			
Tuned Bandwidth	Entire band			
VSWR (Return Loss)	<1.5 :1 (14dB)			
Nominal Impedance Ω	50			
Vertical Beamwidth°	Typically 74 at 1/4 λ antenna - mast spacing			
Horizontal Beamwidth°	Typically 230 at 1/4 λ antenna - mast spacing			
Input Power W	250			

Model Number	Mechanical			
	SMD2	SMD22	SMD24	SMD2-99
Construction	Thick walled aluminium with cast aluminium hub	Heavy duty aluminium with black epoxy finish	Stainless steel with cast aluminium hub	Thick walled aluminium with cast aluminium hub
Length m	0.9			
Weight kg	1.5	2.0	3.0	1.3
Termination	N female with RG213 cable tail			
Mounting Area	300mm x 40mm diam. aluminium		300mm x 38mm diam. stainless steel	300mm x 40mm diam. aluminium
Suggested Clamps	1 x UCR1 or UCR2			
Projected Area cm ²	No ice	849	927	810
	With ice	1644	1633	1373
Wind Load (Thrust) @ 160km/h N	No ice	101	110	96
	With ice	195	194	163
Wind Gust Rating km/h	>240			
Torque @ 160 km/h Nm	No ice	50	57	48
	With ice	97	101	95
				202