

**SIMRAD**

New  
for 2011

# Broadband 3G™ Radar

The evolution of the radar revolution.



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# The evolution of the radar revolution.



Broadband Radar™ a.k.a. frequency modulated continuous wave (FMCW) radar is nothing new... but, it was when we first launched the technology in 2009! Understanding the shift in radar requirements, we developed one with superior short-range target detection and unrivalled

target separation. Armed with this new technology boaters received a previously unseen level of situational awareness to improve safe navigation in any state of visibility. However, despite conventional pulse radar being no match for Broadband Radar™ in its short-range capacity, it still offered more range... until now that is! Broadband 3G™ Radar will undoubtedly mark the beginning of the end of conventional pulse radar on recreational craft as the newest 3G boasts a massive 30% increase in range over

... a massive **30%** increase in range over the original BR24 whilst retaining its impressive short-range credentials.

the original BR24 whilst retaining its impressive short-range credentials.



◀ Multiple Rain Cells are seen >17nm away with Broadband 3G™ Radar

# Broadband **3G**<sup>™</sup> Radar

## Faster, better, longer...

▶ **NEW More Range.** Same outstanding target detection and discrimination, but now with a huge 30% increase in range.

▶ **InstantOn<sup>™</sup>**

Solid-state technology produces an immediate, accurate on-screen image unlike normal warm-up times associated with magnetron pulse radars.

▶ **Low Power Consumption**

Ideal for boats of any size, sail, cruise or fish.

▶ **Automatic Clarity**

Proven auto harbour and offshore modes.

▶ **MARPA Target Tracking**

Track up to 10 targets. Requires a heading sensor.

▶ **Crystal Clear Image**

Fantastic for tight manoeuvres in marinas or in conditions of limited visibility.

▶ **Quick Installation**

No reason to open the dome, no tune or zero mile adjustment, and no radar-licensed technician required.

▶ **Extremely Low Emissions**

Safer than any other radar currently on the market and emitting less radiation than a mobile phone allowing it to be mounted anywhere.

▶ **High Speed Mode**

Select 36 RPM for almost instant updating at less than 2nm.

▶ **Dual Guard Zones**

Protect yourself from more angles.

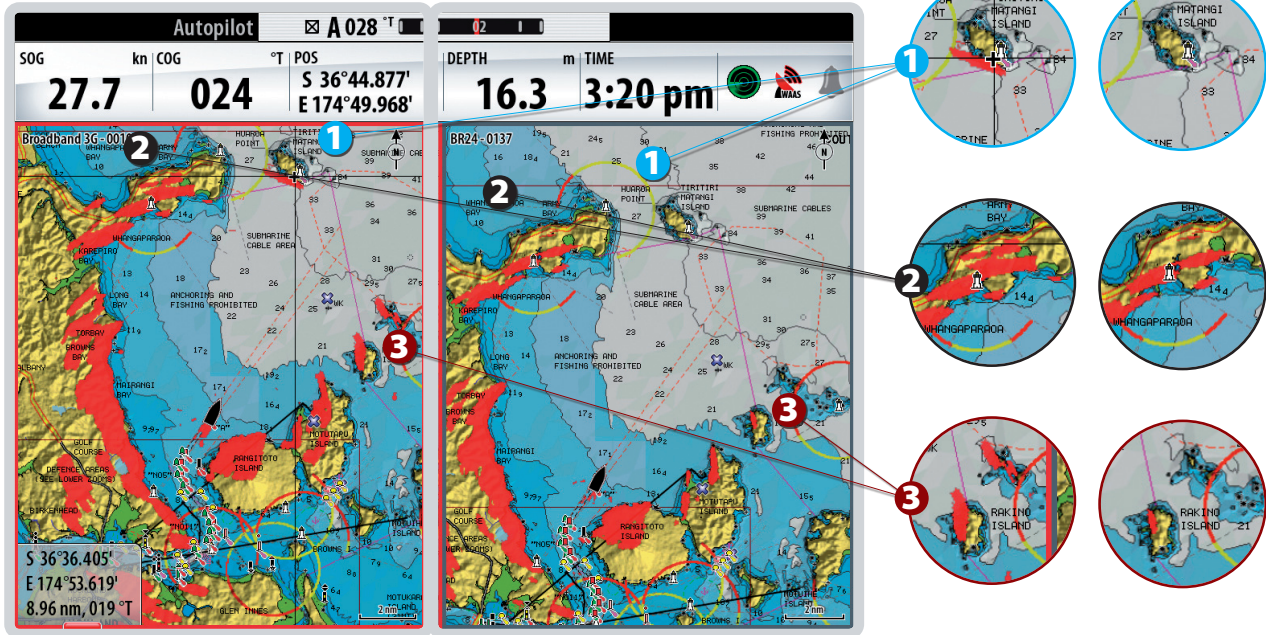
### Truly Different Technology.

Traditional "pulse" radars use high-powered magnetrons to generate microwave signals with very short pulses of applied voltage. Simrad has developed the first solid-state X-band radar technology, which utilizes FMCW techniques. Simrad Broadband Radar sends a continuous transmission wave with linear increasing frequency (hence the term Broadband). The wave retains its frequency as it travels out and reflects back from any objects. Meanwhile, the transmitter continues to

output an increasing frequency. The difference between the currently transmitted and received frequencies, coupled with the known rate of frequency increase, is the basis for precisely calculating a "time of flight" and target distance. Since FMCW constantly builds up radar return energy (vs. a single pulse), this system provides target detection superior to pulse radars while transmitting at far lower energy levels.



# ► How far? Broadband 3G™ Radar



- Broadband 3G™ Radar exposes hard targets previously unseen by BR24 Radar

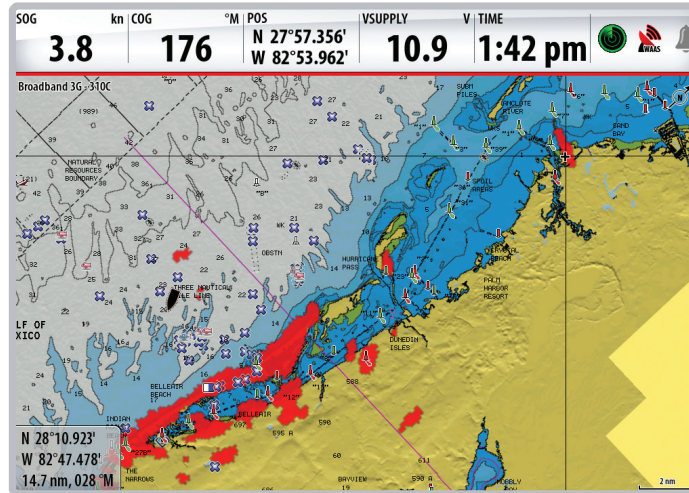
Target	BR24 Radar	Broadband 3G™ Radar
Large power station / wind farm	15-25nm	<b>18-25nm+</b>
Long coastline with 100m high cliffs	10-20nm	<b>13-25nm+</b>
High density urban coastline	6-12nm	<b>8-15nm</b>
Forest covered coastline gently sloping to 250m	4-8nm	<b>5-10nm</b>
Low lying suburban coastline	4-8nm	<b>5-10nm</b>
Large container ship (ship dependent)	7-14nm	<b>10-17nm+</b>
Low lying coastline < 50m, dense vegetation	3-6nm	<b>4-8nm</b>
Small low lying island	2-4nm	<b>2.5-5nm</b>
Medium size power boat	1-2nm	<b>1.3-2.6nm</b>
Channel markers with radar reflectors	1-2nm	<b>1.3-2.6nm</b>
Small power or sail boat	0.5 to 1.5nm	<b>0.7-2nm</b>
Small marker buoy with no reflector.	0.25-0.5nm	<b>0.25-0.7nm</b>
Kayak 300-800ft	300-800ft	300-800ft
Birds 160-500ft	160-500ft	160-500ft
Wide weather front with heavy rain.	6-12nm	<b>8-15nm</b>
Dense rain cell 100mm/hr	5-10nm	<b>7-13nm</b>
Heavy shower 25mm/hr	2-4nm	<b>2.5-5.5nm</b>
Light rain	1-2nm	<b>1.3-2.6nm</b>

\*Single range with noise reduction on. Antenna Height = 13 ft

# ▶ Proven performance: Broadband 3G™ Radar



## Long Range

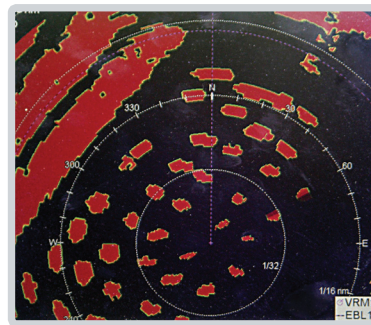


A medium sized power station is easily seen at 15nm

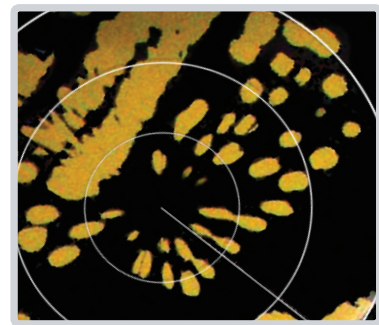


## Harbour / Marina

- Boats and docks separated due to superior target definition



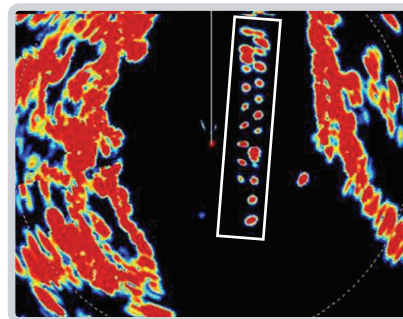
Superior short-range target discrimination clearly shows docks, boats and moored vessels.



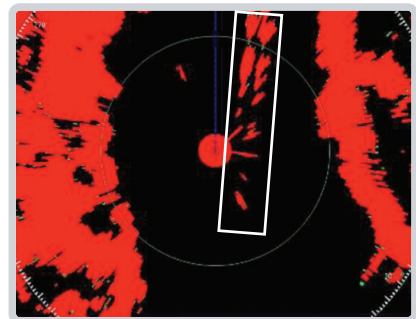
Inferior separation of boats, docks and other features, further obscured by "main bang" (where it matters most) closest to the vessel.



## Pile Moorings



Broadband Radar clearly shows staggered mooring poles, differentiating moored vessel.



Poles and vessel are less defined on pulse radar display.

## ► Compatible displays: Broadband 3G™ Radar

**NEW NSO Offshore** ► With sleek and stylish 10, 15 & 19 inch displays the NSO Offshore line - for vessels with larger helm displays - is versatile and easy to expand. Based on the Simrad NSE platform, the NSO delivers 'best in class' charting, sounder, and radar performance as well as unique control and integration options.



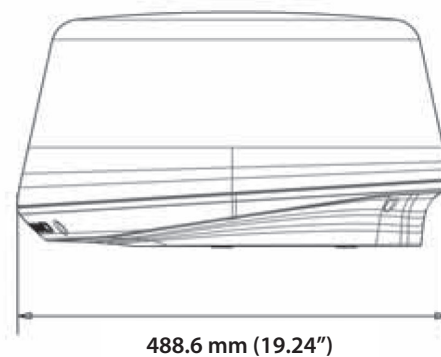
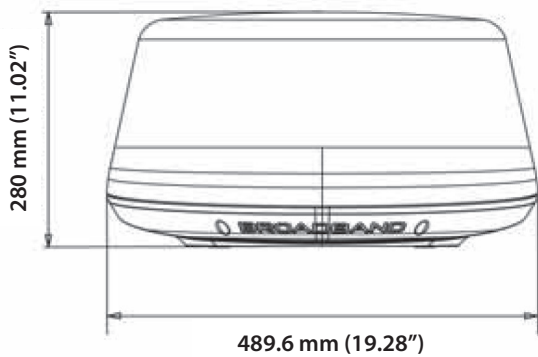
**NSE Expert** ► Easy-to-use, bright visible displays with uncluttered presentation. The Simrad NSE 8 and 12 inch multifunctional displays provide professional level performance with sophisticated charting, radar and echo sounder integration. With powerful networking and vessel integration capabilities, NSE provides comfort and control at sea.



**NEW NSS Sport** ► With its Touch Sensible™ technology, the all-new Simrad NSS Sport is extremely simple to operate. The bright and stylish 6.4, 8 or 12.1 inch displays make them the perfect partner for every recreational boater. And with full networking capabilities, they offer effortless performance and integration.



# ► Technical Specifications: Broadband 3G™ Radar



## Broadband 3G™ Radar Specifications

General	
Compliance	FCC/IC/R&TTE FCC ID: RAY3G4G IC ID: 4697A-3G4G Human Exposure General Public Safety Limit - touch dome anywhere
Environmental	IEC60945 4th edition 2002-2008 Operating Temperature: -25° to +55°C Relative humidity: +35°C, 95% RH Waterproof: IPX6
Relative wind velocity	51 m/sec (Max:100 Knots)
Power consumption	Operating: 18W (Typ.) @ 13.8VDC Standby: 2W (Typ.) @ 13.8VDC ~ 150ma
DC input (at end of radar cable)	9V to 31.2Vdc (12/24 Volt systems). Reverse polarity protection
Transmitter Source (pre-heating time)	No magnetron - Instant On™
Outside dimensions	Height 280mm (11.02") x Diameter 488mm (19.27 lbs.)
Weight (no cable)	7.4 kg (16.3 lbs.)
Radar and Antenna Parameters	
Radar Ranges	200' to 24nm with 17 range settings (nm/sm/km)
Rotation	24/36rpm +/- 10%; Mode Dependent
Transmitter frequency	X-band - 9.3 to 9.4Ghz
Transmitter source (warm-up time)	No Magnetron - all solid state. Instant On™

Radar and Antenna Parameters contd.	
Plane of polarization	Horizontal Polarization
Transmitter peak power output (at antenna port)	165mW (nominal)
Main Bang Dead Zone & Tuning	None - not a pulse radar
Sea and Rain Clutter	3-5 times less than a pulse radar
Sweep Repetition Frequency	200Hz
Sweep Time	1ms
Sweep Bandwidth	75MHz max
Horizontal Beam width (Tx and Rx antenna)	5.2° +/- 10% (-3dB width)
Vertical Beam width (Tx and Rx antenna)	25° +/- 20% (-3dB width)
Side lobe level (Tx and Rx antenna)	Below -18dB (within ±10°); Below -24dB (outside ±10°)
Noise figure	Less than 6dB
Coms/Cabling/Mounting	
Com Protocol	Ethernet 100 Base-T and Serial
Heading	NMEA2000/Simnet (with RI-10 interface box)
Inter Connecting cable length	10m (32.8') standard with RJ45 thin custom connector - Display model dependant
Maximum Inter Connecting cable length	30m (98.4')
Bolts (4)	4x30xM8 - 304 stainless steel
Footprint	W233.0mm (9.17") (port to starboard) x L141.5mm (5.57") (matches Garmin GMR18HD/Raymarine RD218 footprint)



**Mackay Marine**  
+1 281 479 1515 marinesales@mackaymarine.com  
**Mackay Communications, Satellite Solutions**  
+1 919 850 3100 satserv@mackaycomm.com  
**Mackay Marine Canada**  
+1 902 469 8480 sales.canada@mackaymarine.com  
**Mackay Govt. Group**  
+1 904 880 4633 government@mackaycomm.com



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