

**Electromagnetic Radiation (EMR) Survey
At
Proposed site for Townsville Ocean Terminal
Breakwater Cove Precinct, Townsville QLD**

**Performed for
City Pacific Limited**

Report Number: B070702

Issue Date: 13th September 2007

This report replaces report B070702 issued 19th August 2007

EMC Technologies Pty Ltd reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. EMC Technologies Pty Ltd shall have no liability for any deductions, inferences or generalisations drawn by the client or others from EMC Technologies Pty Ltd issued reports. This report shall not be used to claim, constitute or imply product endorsement by EMC Technologies Pty Ltd.



**Nata Accredited
Laboratory
Number: 5292**

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to national standards of measurement. This document shall not be reproduced, except in full.

Electromagnetic Radiation (EMR) Survey
Performed for
City Pacific Limited

Report Number: B070702

Site Name: Proposed site for Townsville Ocean Terminal
Site Address: Breakwater Cove Precinct, Townsville QLD

Test Date 04th July 2007

Standard: **Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)**
Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz (2002)

AS 2772.2:1988
Radio Frequency Radiation
Part 2: Principles and Methods of Measurements – 300kHz – 100GHz

Customer Information

Company: City Pacific Limited
Address Level 12, 300 Queen Street, Brisbane QLD 4000
Phone: 07 3229 7129
Fax: 07 3229 5796
Contact: Will Hattingh

Testing Officer:


Rune Berberg

Authorised Signatory:


Stephen Phillips
Systems Manager
EMC Technologies Pty Ltd



EMR Survey Performed for City Pacific Limited

1.0 INTRODUCTION

This report details the measurements of radiofrequency (RF) Electromagnetic Radiation (EMR)-also known as Electromagnetic Energy (EME), that currently exist in and around the proposed site for Townsville Ocean Terminal, Breakwater Cove Precinct, Townsville QLD.

The purpose of this survey was to provide an independent assessment of the levels of the proposed site for Townsville Ocean Terminal and nearby Commercial and Residential areas. This was done while a US Navy vessel (aircraft carrier marked LHD2) was moored at the nearby Port of Townsville.

Broadband measurements were carried out at several locations along the perimeter of the proposed Ocean Terminal and residential area. These were performed on ground level along the existing breakwater barrier.

Narrowband measurements with spectrum analyser and antennas were carried out at the location with the highest reading from the broadband measurements, in the frequency range of 30MHz to 2900 MHz to determine the total cumulative EME and the contribution from various sources. These were performed on ground level.

The measurements were completed in accordance with the requirements of AS 2772.2 1988 *Radio Frequency Radiation Part 2: Principles and methods of measurement – 300 kHz to 100 GHz* and the ARPANSA RPS3 standard which is cited in the ACMA regulations *Radiocommunications Licence Conditions (Apparatus Licence) Determination 2003* and *Radiocommunications Licence Conditions (Apparatus Licence) Determination 2003*

2.0 EXECUTIVE SUMMARY

At no location where public access is allowed did the levels exceed the general public exposure limit as specified in Table 7 of the ARPANSA RPS3 standard.



3.0 SCOPE OF THE MEASUREMENTS

The purpose of this survey was to provide an independent assessment of the levels of the proposed site for Townsville Ocean Terminal and nearby Commercial and Residential areas. This was done while a US Navy vessel (aircraft carrier marked LHD2) was moored at the nearby Port of Townsville.

Narrowband measurements were made at one location as mentioned below:

- Location A: Corner of existing road outside Entertainment Centre

Broadband measurements were made at the following locations:

- Location A: Corner of existing road outside Entertainment Centre
- Location B: Existing western breakwater
- Location C: Existing western breakwater
- Location D: Existing western breakwater
- Location E: Existing western breakwater
- Location F: Existing western breakwater, far end
- Location G: Existing outer breakwater, middle
- Location H: Existing outer breakwater, far end
- Location I: Road alongside Entertainment Centre, rear
- Location J: Parking outside Entertainment Centre, rear
- Location K: Road in front of Entertainment Centre

See Annex B for proposed site location and measurement points.



4.0 THE AUSTRALIAN STANDARD, REGULATIONS AND DEFINITIONS

4.1 General Background

The Australian Communications and Media Authority (ACMA) formerly the Australian Communications Authority (ACA) is the Australian government regulator that grants licences for the use of the RF spectrum. The regulations require that the General Public must not be exposed to RF fields in excess of the limits prescribed by the ARPANSA standard. More information can be found at:

http://www.acma.gov.au/ACMAINTER:STANDARD::pc=PC_2798

4.2 Units of Measurement

Compliance with the ARPANSA standard is established if the basic restrictions for exposure to RF EMR are satisfied in accordance with the ARPANSA standard. The basic restrictions are given as limits for the maximum Specific Absorption Rate (SAR). SAR is the measure of the absorption of RF energy per unit mass of human tissue (Watts/kg) for whole body and partial body exposure. SAR measurements are inherently complex and difficult to perform, so the ARPANSA standard also gives SAR limits in terms of Reference Levels which are more practical to measure. They are expressed in the more user friendly terms of Power Density or Field Strength. Compliance with the limits is achieved when the ARPANSA Reference Levels are not exceeded. Reference Level measurements are performed directly, usually with conventional RF Field Strength meters that are calibrated to read Electric Field (E-Field) in units of Volt/metre (V/m), Magnetic Field (H-Field) in units of Amps/metre (A/m) or power density (Pd) in units of Watts/square metre (W/m²)

4.3 Reference Standards

Human Exposure Standard

The Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz (2002), published by the Australian Radiation Protection And Nuclear Safety Agency (ARPANSA), sets limits for human exposure to RF fields to prevent adverse health effects. The ARPANSA Standard specifies limits for occupational and general public exposure. It also stipulates equipment and usage parameters in order to assist in the determination of compliance with the specified limits.

RF Field Measurements and Evaluations- Methodology

The Australian Standard AS 2772.2:1988 Radio Frequency Radiation, Part 2: Principles and Methods of Measurements – 300 kHz to 100 GHz, specifies techniques and instrumentation for the measurement and assessment of RF fields from potentially hazardous RF electromagnetic sources. The measurements reported herein were performed in accordance with this standard.

4.4 Apparatus and Transmitters

The Australian Communications and Media Authority (ACMA) Radiocommunications Licence Conditions (Apparatus Licence) Determination 2003 sets out the conditions for the licence to operate transmitting equipment. It mandates the General Public/non-occupational provisions of the ARPANSA standard.



4.5 Portable Devices and Mobile Stations

The Australian Communications Media Authority (ACMA) Radiocommunications (Electromagnetic Radiation - Human Exposure) Standard 2003 is the mandatory standard for equipment compliance with the Radiocommunications Act 1992. It refers to the provisions of the ARPANSA standard.

4.6 Definitions

Basic Restrictions

The ARPANSA standard sets mandatory limits on exposure to RF fields. These are based on established health effects and are termed 'Basic Restrictions'. Protection against adverse health effects requires that these Basic Restrictions are not exceeded. These mandatory Basic Restrictions are impractical to measure, therefore, a set of Reference Levels utilising quantities much easier to measure are given by the ARPANSA standard as an alternate means of compliance with the Basic Restrictions.

Reference Levels (Exposure Limits)

"Reference Levels" for the purpose of this report means the Reference Levels mentioned in *Table 7 and 8* of the ARPANSA standard, and the *notes to Table 7 and 8, of section 2.4 of the ARPANSA Standard*. The E and H reference levels within the ARPANSA standard were derived from the basic restrictions by mathematical modelling and laboratory investigations. They represent the condition of maximum coupling of the RF field(s) to the exposed individual for all circumstances, and therefore are generally more conservative than the corresponding basic restrictions.

General Public/non-occupational Exposure Limits

No member of the general public is to be exposed to RF fields in excess of the general public/non-occupational/unaware user limits. This definition includes members of the general public and all persons who are not trained RF workers and may be exposed to RF fields. This definition excludes occupational exposure, exposure of aware users and medical exposure

Occupational Exposure Limit

No occupationally exposed person, aware user or person in a controlled area is to be exposed to RF fields that exceed the occupational exposure limits. Occupational exposure may only occur when the person being exposed is a trained RF worker.

An RF worker is a person who may be exposed to RF fields under controlled conditions, in the course of and intrinsic to the nature of their work. Such persons are subject to the requirements of *Section 5.1* of the ARPANSA standard. The occupational limits apply only when workers accessing the area are trained RF workers.



4.7 Reference Levels for the General Public Exposure Category

Reference levels are defined in Table 7 Section 2 of the Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz (2002). The table below was obtained from the Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz (2002).

Frequency Range	E-field strength (V/m rms)	H-field strength (A/m rms)	Equivalent plane wave power flux density S_{eq} (W/m ²)
100 kHz – 150 kHz	86.8	4.86	—
150 kHz – 1 MHz	86.8	$0.729 / f$	—
1 MHz – 10 MHz	$86.8 / f^{0.5}$	$0.729 / f$	—
10 MHz – 400 MHz	27.4	0.0729	2
400 MHz – 2 GHz	$1.37 \times f^{0.5}$	$0.00364 \times f^{0.5}$	$f / 200$
2 GHz – 300 GHz	61.4	0.163	10

f is the frequency in MHz

For broadband measurements, as the EME contributors included television, FM, CDMA and GSM 900, the exact reference level was unable to be determined. Consequently, the reference level in all sections was taken as 2 W/m² or 200 µW/cm², which is the most stringent level in this frequency range.

For narrowband measurements, the following frequencies were applied to calculate the General Public Reference Level for FM, VHF & UHF TV and Mobile signals.

4.8 Evaluating Compliance with Reference Levels

Single Frequency Electromagnetic Field

Compliance with reference levels from exposure to single frequency fields may be determined by ensuring the Power Flux Density is less than the reference level for that frequency.

Multiple Frequency Electromagnetic Field

Compliance with reference levels from exposure to multiple frequency fields may be determined by referring to Section 3 of Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz (2002). To comply with the Basic Restrictions, the incident Power Flux Density must satisfy the following condition:

$$\sum_{i=100kHz}^{6GHz} \frac{S_i}{RL_i} \leq 1$$

Where

S_i = Incident Power Flux Density at frequency i .

RL_i = Reference Level at frequency i .

For each frequency transmitted, a percentage of the reference level at that particular frequency is found. These values are added together to produce a final percentage value. Compliance is ensured if the final value is less than 100%.



5. MEASUREMENT EQUIPMENT

Equipment	Model	Freq. Range	Last Cal	Cal due	Traceability
Spectrum Analyser	8954EM	9 kHz – 3 GHz	08/02/2007	08/02/2008	NATA Calibration
Biconical Antenna	EMCO	30 MHz – 300 MHz	01/02/2007	01/02/2008	EMC Technologies NMI*
Log-Periodic Antenna	EMCO	300 MHz – 1000 MHz	31/01/2007	31/01/2008	EMC Technologies NMI*
10dB N-type Attenuator	RADIAL	1000 MHz – 18000 MHz	29/06/2007	29/06/2008	EMC Technologies
Coax Cable	23m N-N	DC – 18000 MHz	29/06/2007	29/06/2008	EMC Technologies
Fieldmeter EMR-20	EMR-20	100 kHz – 3 GHz	08/05/2006	08/05/2008	NPL (UK)
E-Field Probe	8.2	100 kHz – 3 GHz	08/05/2006	08/05/2008	NPL (UK)

5.1 Measurement Uncertainty

The following measurement uncertainty has been conservatively determined in accordance with ISO17025 and NATA requirements.

Narrow Band Measurement Uncertainty

Spectrum Analyser	±1.2dB (worst case)
Antennas	±1.8dB
Cables	±0.2dB
Environmental	±2.0dB (worst case)
Total (Root of the Sum of the Squares)	±3.0dB

Broadband E-field Measurement Uncertainty:

Broadband Probe	1.2 dB
Environmental	1.8 dB (Worst case)
Total (Root of the Sum of the Squares)	±3.0dB

The specified measurement range of the equipment is 0.003W/m² to 239 W/m².



This document must not be copied or reproduced, except in full, without the written permission of the Manager, EMC Technologies Pty Ltd
www.emctech.com.au

6 MEASUREMENT PROCEDURE

6.1 Narrowband – Radio Frequency

The receive antennas used to perform the measurements were mounted on a wooden tripod at approximately 1.5m above the ground. The analyser was set in peak detect mode and set to Max Hold. The location was scanned in the vertical and horizontal planes and in all directions. The analyser was left in this mode for approximately 6 minutes in each frequency range. The frequency range was broken into sub-ranges, which allowed the maximum resolution. The RF radiation levels were recorded in dB μ V/m and converted to W/m².

The calculation of power density, P in W/m² was carried out as follows:

$$P = \frac{\left[\left(\log^{-1} \left(\frac{E}{20} \right) \right) \times 10^{-6} \right]^2}{377}$$

where P: power density [W/m²]

E: electric field strength measured by the spectrum analyser [dB μ V/m]

377: impedance of free space [Ω]

6.2 Broadband – Radio Frequency

Measurements were carried out with the Narda Radiation Meter, Model EMR-20, probe type 8.2, the Fieldmeter was set to Max Hold mode with each location scanned in height between head and knee height to locate the peak field reading. At the point where the maximum field strength was recorded, the reading was averaged over a 6 minute period and was recorded. The EME levels were recorded in W/m².

The field-meter was verified before and after the survey in an EN61000-4-3 chamber.

7. MEASUREMENT RESULTS

The broadband probe was used to identify the EME present in and around the proposed site for Townsville Ocean Terminal. Narrowband measurements were performed at one location, where the highest broadband levels were obtained.

7.1 Narrowband Measurement Results

7.1.1 Location A: Corner of existing road outside Entertainment Centre

Narrowband measurements were carried out in the frequency range of 30MHz to 2900 MHz to measure the existing cumulative EME level and to determine the contributors to EME. The levels below do not exceed the requirements of the General Public Reference Level as stated in Table 7 Section 2 of the Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz (2002).

Spectrum Sector	Level (W/m ²)	Percentage of Limit (%)
FM Radio & Digital TV (30-500MHz)	0.0001072	0.005094
VHF & UHF TV & Digital TV (500-800MHz)	0.0000026	0.000079
Mobile (CDMA and GSM) (800-1000MHz)	0.0001658	0.003482
Mobile GSM 1800MHz and WCDMA1900MHz	0.0000001	0.000001
All RF sources 1000-2000MHz	0.0001704	0.002940
All RF sources 2000-2900MHz	0.0000018	0.000018



7.2 Broadband Measurement Results

7.2.1 Proposed site for Townsville Ocean Terminal, Commercial & Residential areas

A pre-screen inspection was performed with a broadband probe in and around the proposed site for the Townsville Ocean Terminal and its Commercial and Residential areas. Measurements were for practical reasons limited to areas currently accessible by foot, i.e. along the existing breakwater barrier and Entertainment Centre parking areas. The location with the highest maximum peak and average levels was selected to perform full narrowband emissions (refer to section 6.1.1 of this report).

Measurements were done at several locations along the existing breakwater barrier and in the Entertainment Centre parking area. The highest levels are recorded below. All average levels are below the measurement range of the broad band probe equipment.

Location		Reading [W/m ²]	% of the General Public Exposure Limit* (2 W/m ² = 100%)
Corner of existing road outside Entertainment Centre	A	<0.003 **	<0.03 **
Existing western breakwater	B	<0.003	<0.03
Existing western breakwater	C	<0.003	<0.03
Existing western breakwater	D	<0.003	<0.03
Existing western breakwater	E	<0.003	<0.03
Existing western breakwater, far end	F	<0.003	<0.03
Existing outer breakwater, middle	G	<0.003	<0.03
Existing outer breakwater, far end	H	<0.003	<0.03
Road alongside Entertainment Centre, rear	I	<0.003	<0.03
Parking outside Entertainment Centre, rear	J	<0.003	<0.03
Road in front of Entertainment Centre	K	<0.003	<0.03

* See Section 4.7.

** Results reported are average readings as per the ARPANSA standard. Maximum peak levels were also recorded. Measurement location A had marginally higher levels than B-K.

See Annex A for photos and Annex B for measurement location details.

8 CONCLUSION

The existing EME levels measured at any of measurement locations A through K did not exceed the Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz (2002) General Public Reference Level.



Annex A - Site photos



Proposed site, view towards sea



Proposed site, view towards mainland (measurement location A)

Annex A - Site photos



Measurement location A (30-300MHz)



Measurements in range 300-1000MHz

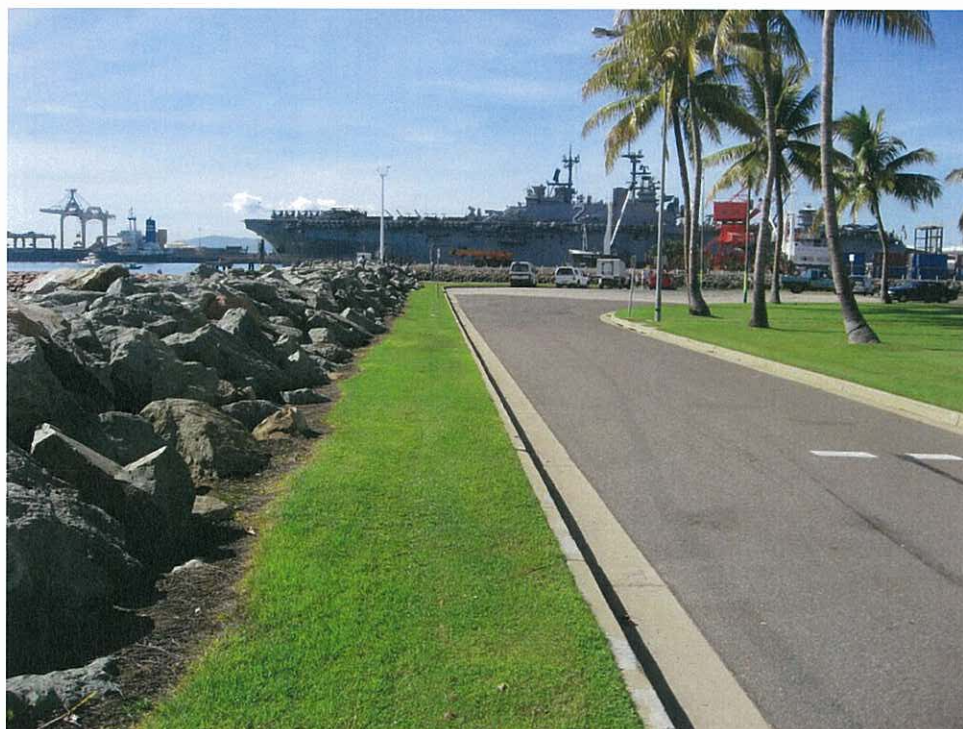


Measurements in range 2000-2900MHz

Annex A - Site photos

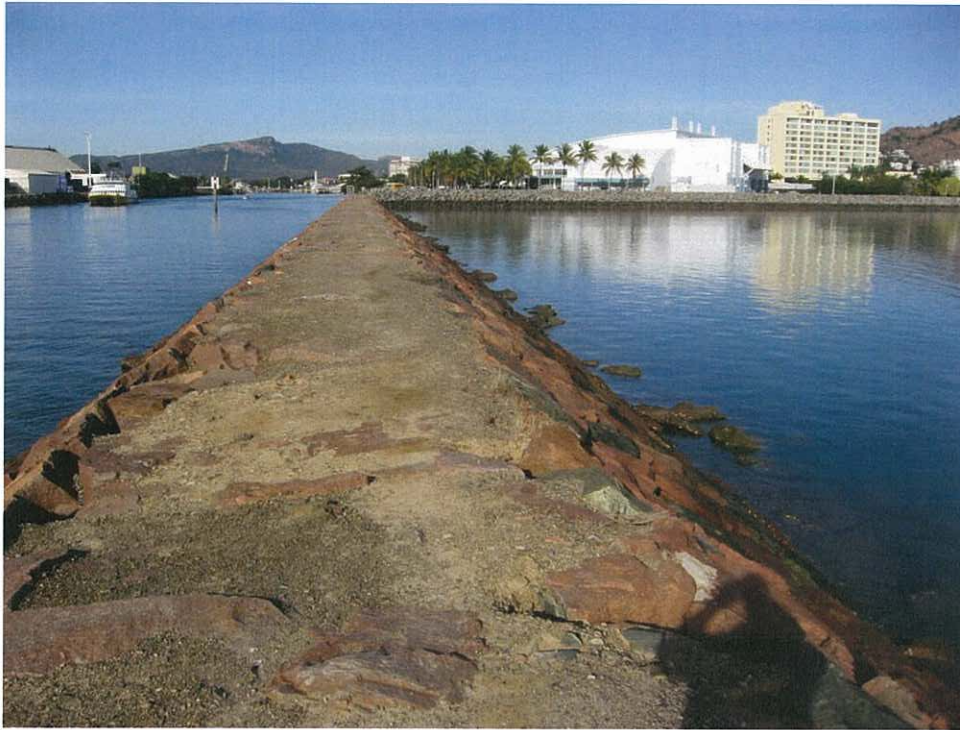


US NAVY Aircraft Carrier "LHD2" in port



Road past Entertainment Centre (view towards location A)

Annex A - Site photos



Existing western breakwater (broadband measurements performed)



Existing western breakwater (broadband measurements performed)

Annex A - Site photos



Existing outer breakwater (broadband measurements performed)



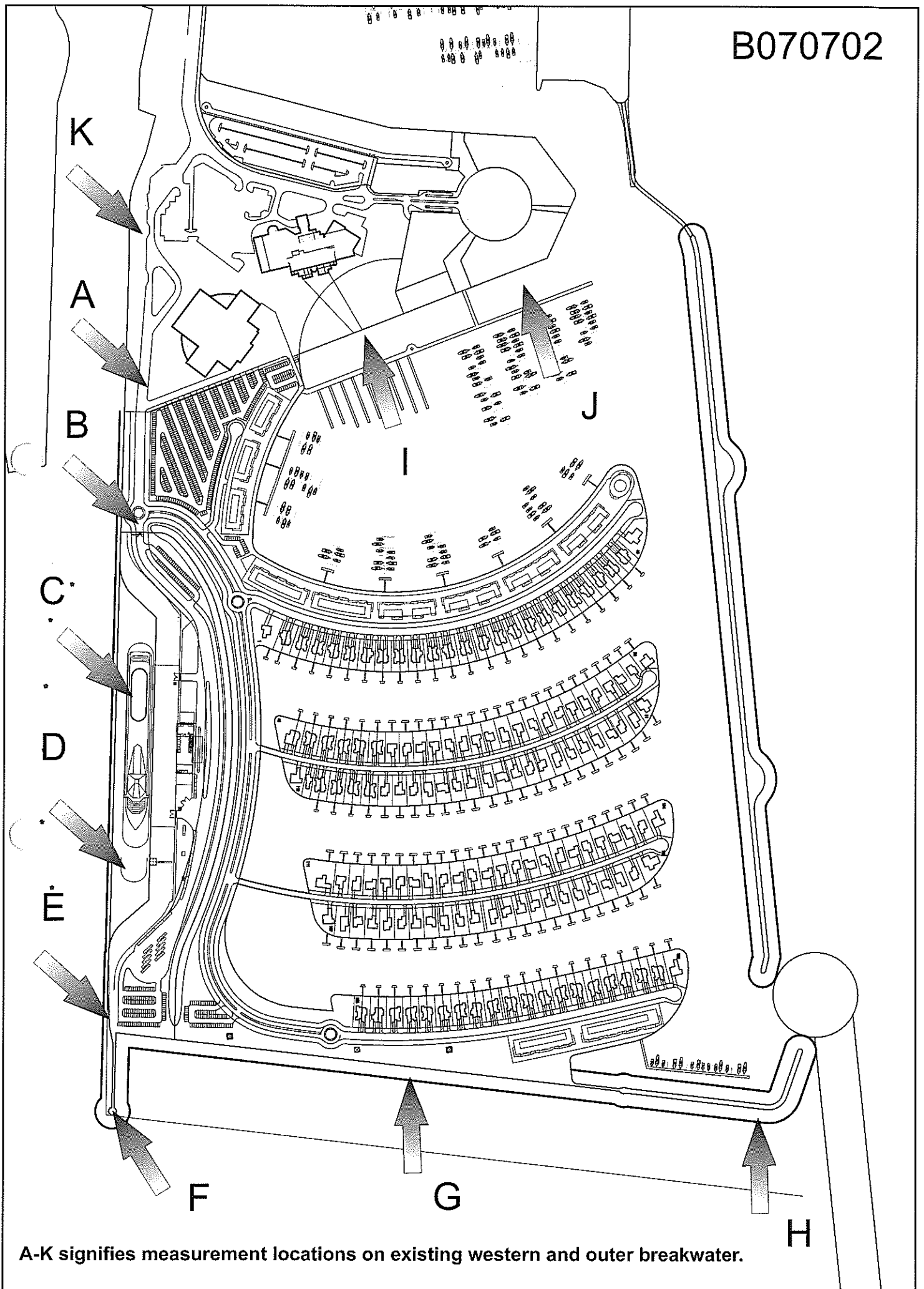
Existing outer breakwater (broadband measurements performed)

Annex B – Measurement Locations



This document must not be copied or reproduced, except in full, without the written permission of the Manager, EMC Technologies Pty Ltd
www.emctech.com.au

B070702



Annex C – Narrowband Measurement Results



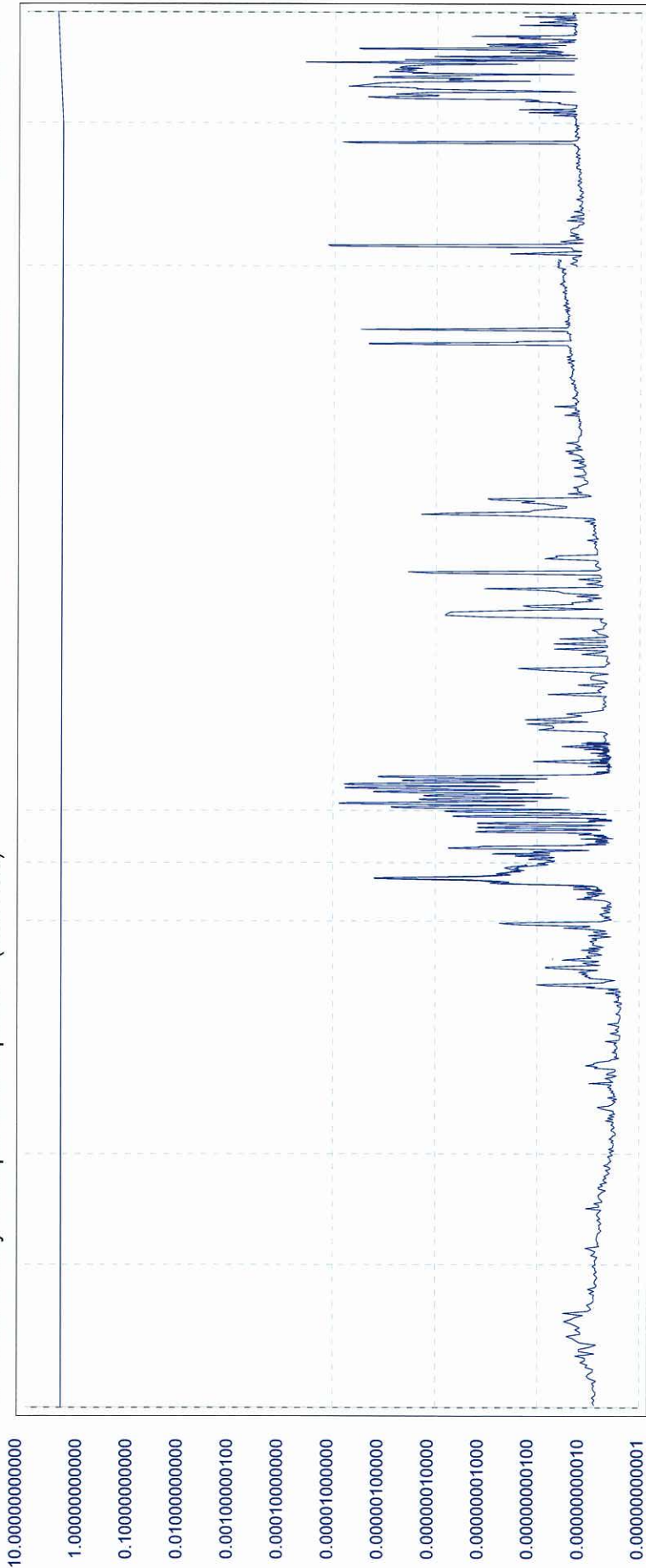
This document must not be copied or reproduced, except in full, without the written permission of the Manager, EMC Technologies Pty Ltd
www.emctech.com.au

EMC Technologies Pty. Ltd. - Global Product Certification
Job No:B070702

C:\plotting\PCF\070702_1.PCF
GRAPH No. 1

Test Date: 04/07/2007

RF Power Density Watts per Metre squared (Max Hold)



30 100 500
Frequency (MHz)

Hyder Consulting Pty Ltd / City Pacific Limited
Proposed site for Townsville Ocean Terminal

BAND	PD W/m2	% of Limit
All Displayed	0.0001072	0.005094 %
DIGTV	0.0000001	0.000005 %

Legend:

Standard: arpansa_NOCC ARPANSA Non-Occupational limits

Ver 5.5 Build 153

Equipment: WINPLT55 HP8593EM WINTST1

Site survey
Test Officer: Rune Berberg

Source:

2 3 4 8 9 10 11 12
B070702r
5 6 7 13 14 15 16 17
B070702r
B070702r
B070702r

EMC Technologies (Brisbane) 1/15 Success St, Acacia Ridge, 4110, QLD, Australia
Phone+(617) 3875 2455 Fax+(617) 3875 2466

EMC Technologies Pty. Ltd. - Global Product Certification

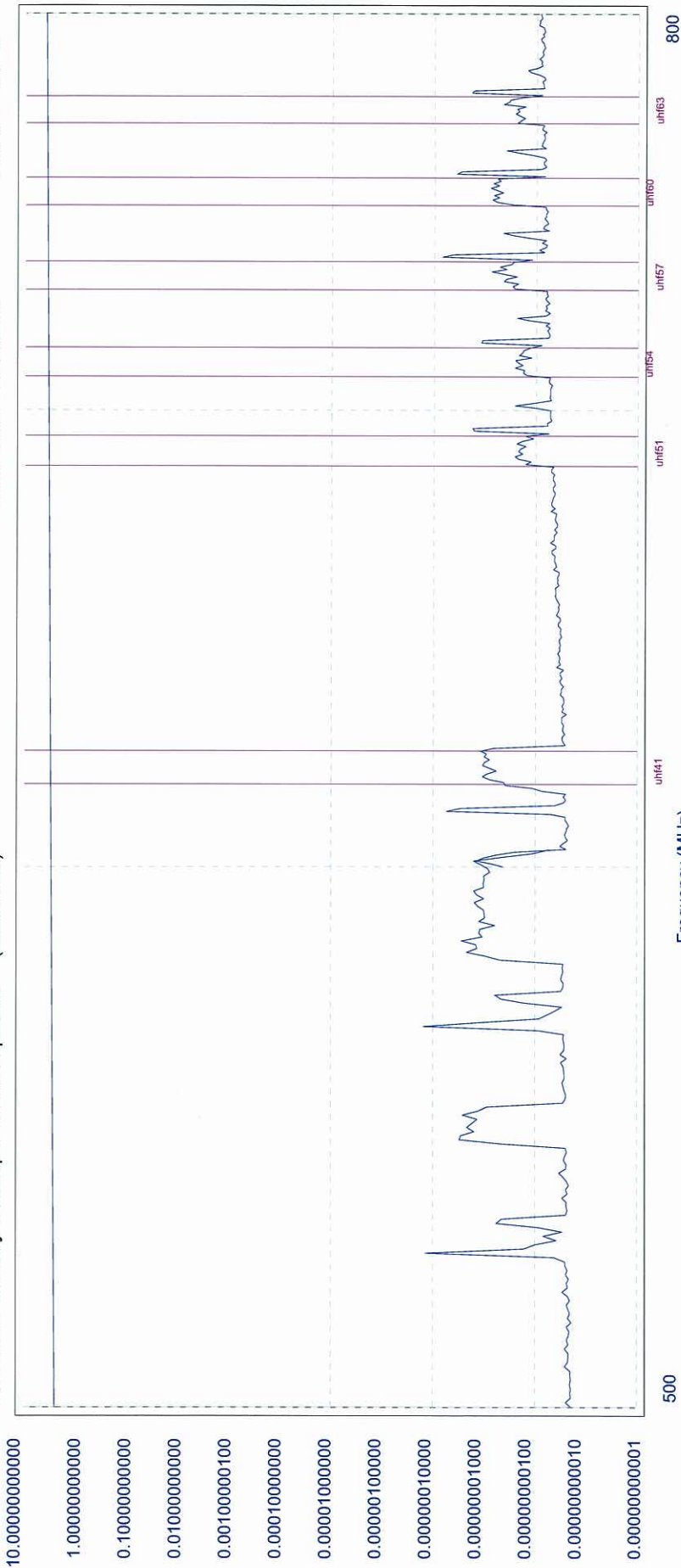
Job No:B070702

RF Power Density Watts per Metre squared (Max Hold)

Test Date: 04/07/2007

GRAPH No. 2

C:\plotting\PCF\070702_2.PCF



Hyder Consulting Pty Ltd / City Pacific Limited
Proposed site for Townsville Ocean Terminal

Standard: arpana_NOCC ARPANSA Non-Occupational limits
Ver 5.5 Build 153
Equipment: WINPLT55 HP8593EM WINTST1
Site survey
Test Officer:Rune Berberg
Source: B070702r 2 3 4 8 9 10 11 12
B070702r 5 6 7 13 14 15 16 17
B070702r
B070702r

EMC Technologies (Brisbane) 1/15 Success St, Acacia Ridge 4110, QLD, Australia
Phone+(617) 3875 2455 Fax+(617) 3875 2466

BAND	PD W/m2	% of Limit
All Displayed	0.0000026	0.000079 %
DIGTV	0.0000018	0.000053 %

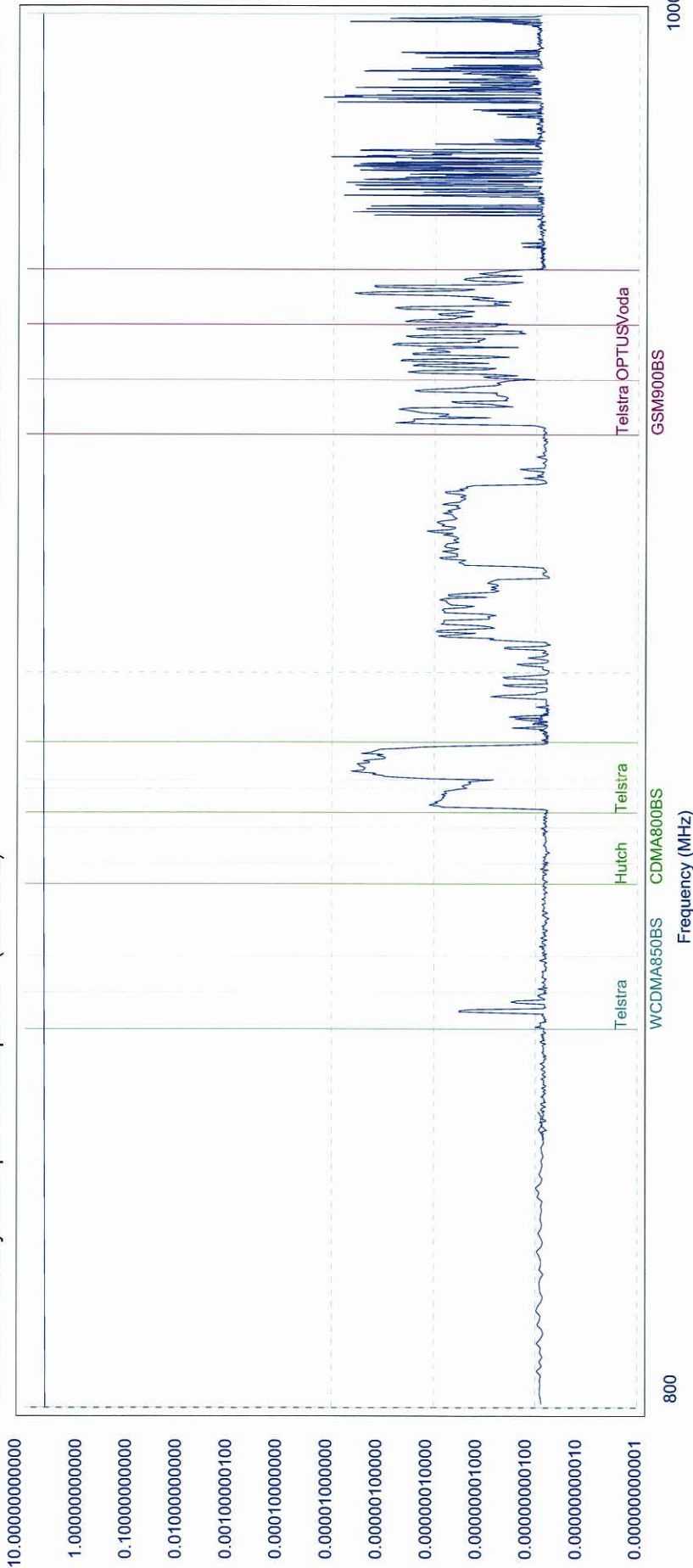
EMC Technologies Pty. Ltd. - Global Product Certification

Job No:B070702

RF Power Density Watts per Metre squared (Max Hold)

Test Date: 04/07/2007

C:\plotting\PCF\070702_3.PCF
GRAPH No. 3



Hyder Consulting Pty Ltd / City Pacific Limited Proposed site for Townsville Ocean Terminal	
Standard: arpansa_NOCC ARPANSA Non-Occupational limits	Legend:
Ver 5.5 Build 153	Source:
Equipment: WINPLT55 HP8593EM WINTST1	B070702r 2 3 4 8 9 10 11 12
Site survey	B070702r 5 6 7 13 14 15 16 17
Test Officer:Rune Berberg	B070702r
EMC Technologies (Brisbane)	1/15 Success St, Acacia Ridge 4110, QLD, Australia
	Phone+(617) 3875 2455 Fax+(617) 3875 2466

EMC Technologies Pty. Ltd. - Global Product Certification

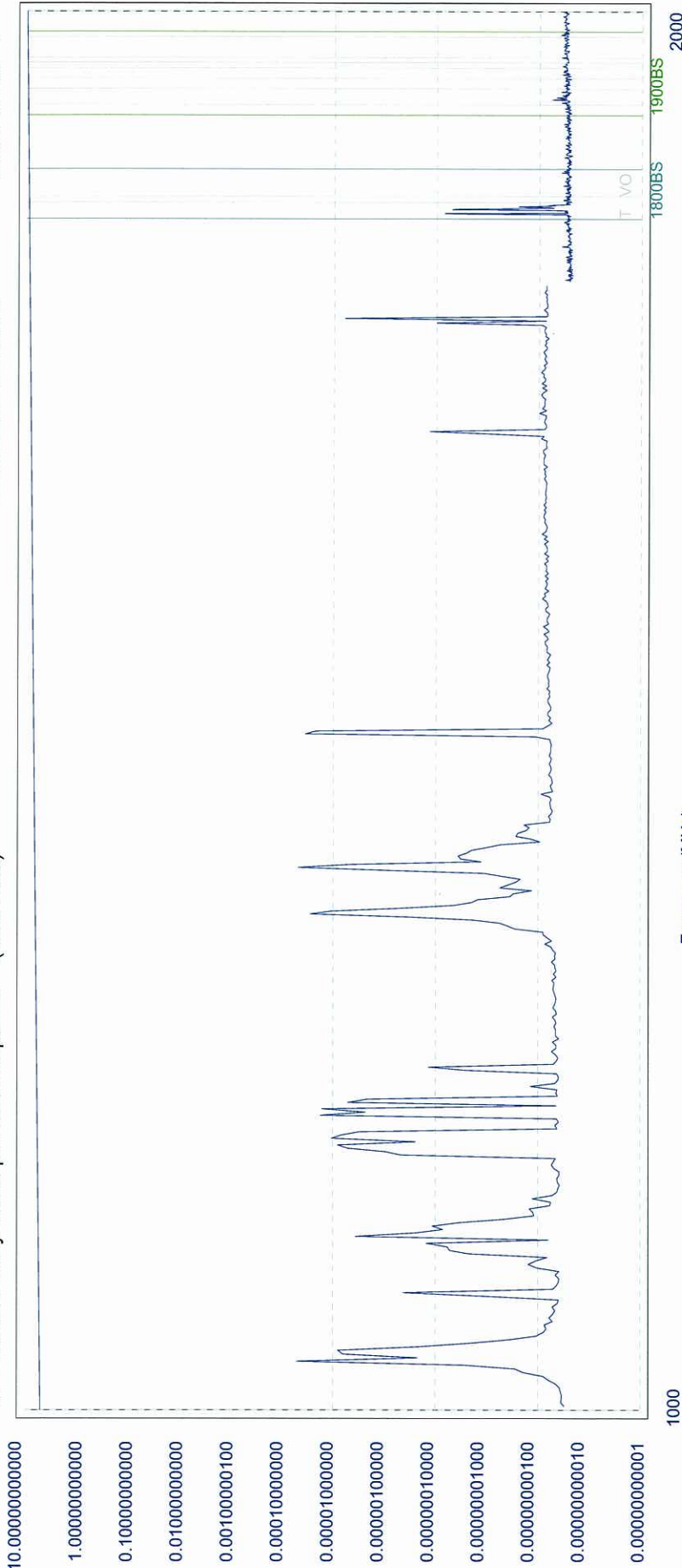
Job No:B070702

RF Power Density Watts per Metre squared (Max Hold)

Test Date: 04/07/2007

GRAPH No. 4

C:\plotting\PCF\070702_4.PCF



1000 1800BS 1900BS 2000

Hyder Consulting Pty Ltd / City Pacific Limited
Proposed site for Townsville Ocean Terminal

Standard: arpansa_NOCC ARPANSA Non-Occupational limits

Ver 5.5 Build 153

Equipment: WINPLT55 HP8593EM WINTST1

Site survey

Test Officer:Rune Berberg

EMC Technologies (Brisbane) 1/15 Success St, Acacia Ridge 4110, QLD, Australia
Phone+(617) 3875 2455 Fax+(617) 3875 2466

Legend:

B070702r 18 19 20 21 22
B070702r 23 24 25 26 27
B070702r
B070702r

BAND	PD W/m2	% of Limit
All Displayed	0.0001704	0.002940 %
DIGTV	0.0000000	0.000000 %
GSM1800all	0.0000001	0.000001 %
GSM1800t	0.0000001	0.000001 %
GSM1800v	0.0000000	0.000000 %
GSM1800o	0.0000000	0.000000 %
WCDMA1900	0.0000000	0.000000 %

EMC Technologies Pty. Ltd. - Global Product Certification

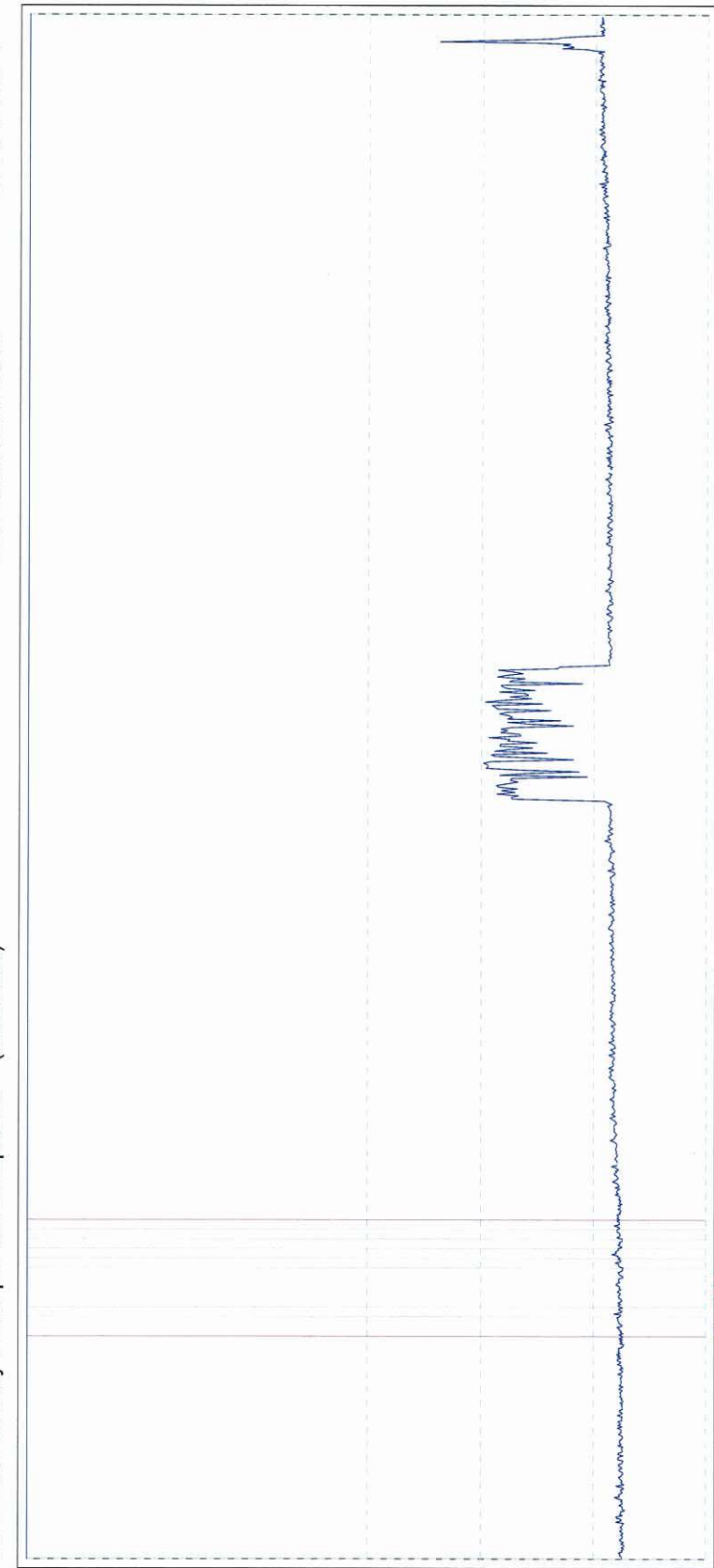
Job No: B070702

RF Power Density Watts per Metre squared (Max Hold)

Test Date: 04/07/2007

GRAPH No. 5

C:\plotting\PCF\070702_5.PCF



2900

2000

Frequency (MHz)

Hyder Consulting Pty Ltd / City Pacific Limited
Proposed site for Townsville Ocean Terminal

BAND	PD W/m2	% of Limit
All Displayed	0.0000018	0.000018 %
DIGTV	0.0000000	0.000000 %
WCDMA2100	0.0000000	0.000000 %

Legend:

Standard: _arpansa_NOCC ARPANSA Non-Occupational limits

Ver 5.5 Build 153

Equipment: WINPLT55 HP8593EM WINTST1

Site survey
Test Officer: Rune Berberg

Source:
18 19 20 21 22
23 24 25 26 27
B070702r
B070702r
B070702r
B070702r

EMC Technologies (Brisbane) 1/15 Success St, Acacia Ridge 4110, QLD, Australia
Phone+(617) 3875 2455 Fax+(617) 3875 2466

Annex D – Assessment of impact on residential and business

NOTE: This assessment is not part of our NATA endorsed services.

The EMR/RF levels measured during the broadband and narrowband survey, as reported in this test report, are all relatively low compared to the ARPANSA limit. The measurements were taken during a visit of US NAVY Aircraft Carrier "LHD2" in Port of Townsville.

It was noted that during all measurements front radar antennas appeared to be operating (rotating). None of the ships rear radar antennas appeared to be in operation during tests.

Measurements were taken at ground level, at various locations along existing breakwater.

The levels seen during this EMR Survey would not be expected to pose a risk to either residential or business located within the proposed Ocean Terminal precinct.

However EMR/RF levels seen higher up from ground level might very well be higher than measured in this report (on ground level), in the order of 10's of Volts per meter as a result of being more direct line of sight from ships radars etc. It is not expected, given present information presented to us (the initial plans for the project), that these levels would be exceeding the General Exposure levels of the ARPANSA standards.

However there is a low risk potential for this energy to cause interference with electronic devices in nearby apartments or units. If this was the case, this may be dealt with on a case by case basis. Solutions could be filtering or moving affected equipment further away from the source. It is not possible for us to anticipate what types of electronic devices could be affected, due to the variety of equipment that could be installed in the nearby units and the complexities of such equipment. Nor do we have an overview of what sort of ships radars would be used by ships in port.

But if such interference occurs, EMC Technologies would likely be able to give advice and assist in determining the cause and recommend a suitable solution.

Further, the risk to TV and Radio reception is deemed low. Disturbances recorded would not be expected to cause noticeable degradation of TV and Radio reception.

Overall the risk for RF disturbance from the port of Townsville having adverse negative impact on residential and business activities within the proposed Townsville Ocean Terminal project is viewed as low.



Rune Berberg,
Branch Manager Brisbane
EMC Technologies Pty Ltd

