

# Summary of Estimated RF EME Levels around the Mobile Phone Base Station at 123 High Street, Anytown QLD 4321

**Introduction:**

Date 28/7/2011

**NSA Site No (4321001)**

This report summarises the estimated maximum cumulative radiofrequency (RF) electromagnetic energy (EME) levels at ground level emitted from the existing Mobile Phone Base Station antennas at 123 High Street Anytown QLD 4321. Maximum EME levels are estimated in 360° circular bands out to 500m from the base station. The procedures for making the estimates have been developed by the Australian Radiation Protection And Nuclear Safety Agency (ARPANSA)<sup>1</sup>. These are documented in the ARPANSA Technical Report; "Radio Frequency EME Exposure Levels - Prediction Methodologies" which is available at <http://www.arpansa.gov.au>

## EME Health Standard

ARPANSA, an Australian Government agency in the Health and Ageing portfolio has established a Radiation Protection Standard<sup>2</sup> specifying limits for continuous exposure of the general public to RF transmissions at frequencies used by mobile phone base stations. Further information can be gained from the ARPANSA web site.

The Australian Communications and Media Authority (ACMA)<sup>3</sup> mandates exposure limits for continuous exposure of the general public to RF EME from mobile phone base stations. Further information can be found at the ACMA website <http://emr.acma.gov.au>

## Existing Site Radio Systems

Carrier1 / GSM900	Carrier1 / WCDMA850	Carrier2 / WCDMA2100	
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## Table of Predicted EME Levels – Existing

Distance from the antennas at 123 High Street in 360° circular bands	Maximum Cumulative EME Level – All carriers at this site (% of ARPANSA exposure limits <sup>2</sup> ) Public exposure limit = 100%
0m to 50m	0.075%
50m to 100m	0.88%
100m to 200m	0.86%
200m to 300m	0.19%
300m to 400m	0.049%
400m to 500m	0.019%
<b>Maximum EME level</b> 96.072 m, from the antennas at 123 High Street	0.88%

**Note:** Estimation for the maximum level of RF EME at 1.5m above the ground from the existing antennas assuming level ground. The estimated levels have been calculated on the maximum mobile phone call capacity anticipated for this site. This estimation does not include possible radio signal attenuation due to buildings and the general environment. The actual EME levels will generally be significantly less than predicted due to path losses and the base station automatically minimising transmitter power to only serve established phone calls<sup>5</sup>. Where applicable, particular locations of interest in the area surrounding the base station, including topographical variations, are assessed in Appendix A "Other areas of Interest" table on the last page.

## Summary – Existing Radio Systems

RF EME levels have been estimated from the existing antennas at 123 High Street Anytown QLD 4321. The maximum cumulative EME level at 1.5 m above ground level is estimated to be 0.88 % of the ARPANSA public exposure limits.

## Existing and Proposed Site Radio Systems

Carrier1 / GSM900	Carrier1 / WCDMA850	Carrier2 / WCDMA2100	Carrier3 / WCDMA2100 (proposed)
Carrier1 / LTE1800 (proposed)			

## Table of Predicted EME Levels – Existing and Proposed

Distance from the antennas at 123 High Street in 360° circular bands	Maximum Cumulative EME Level – All carriers at this site (% of ARPANSA exposure limits <sup>2</sup> ) Public exposure limit = 100%
0m to 50m	0.1%
50m to 100m	1.086%
100m to 200m	1.11%
200m to 300m	0.34%
300m to 400m	0.1%
400m to 500m	0.048%
<b>Maximum EME level</b> 101.8 m, from the antennas at 123 High Street	1.11%

**Note:** Estimation for the maximum level of RF EME at 1.5m above the ground from the existing and proposed antennas assuming level ground. The estimated levels have been calculated on the maximum mobile phone call capacity anticipated for this site. This estimation does not include possible radio signal attenuation due to buildings and the general environment. The actual EME levels will generally be significantly less than predicted due to path losses and the base station automatically minimising transmitter power to only serve established phone calls<sup>5</sup>. Where applicable, particular locations of interest in the area surrounding the base station, including topographical variations, are assessed in Appendix A "Other areas of Interest" table on the last page.

## Summary – Existing and Proposed Radio Systems

RF EME levels have been estimated from the existing and proposed antennas at **123 High Street** Anytown QLD 4321. The maximum cumulative EME level at 1.5 m above ground level is estimated to be **1.11 %** of the ARPANSA public exposure limits.

### Reference Notes:

1. The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is a Federal Government agency incorporated under the Health and Ageing portfolio. ARPANSA is charged with responsibility for protecting the health and safety of people, and the environment, from the harmful effects of radiation (ionising and non-ionising).
2. Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), 2002, 'Radiation Protection Standard: Maximum Exposure Levels to Radiofrequency Fields — 3 kHz to 300 GHz', Radiation Protection Series Publication No. 3, ARPANSA, Yallambie Australia. [Printed version: ISBN 0-642-79400-6 ISSN 1445-9760] [Web version: ISBN 0-642-79402-2 ISSN 1445-9760]
3. The Australian Communications and Media Authority (ACMA) is responsible for the regulation of broadcasting, radiocommunications, telecommunications and online content. Information on EME is available at <http://emr.acma.gov.au/>
4. The EME predictions in this report assume a near worst-case scenario including:
  - base station transmitters operating at maximum power (no automatic power reduction)
  - simultaneous telephone calls on all channels
  - an unobstructed line of sight view to the antennas.

In practice a worst-case scenario is rarely the case. There are often trees and buildings in the immediate vicinity, and cellular networks automatically adjust transmit power to suit the actual telephone traffic. The level of EME may also be affected where significant landscape features are present and predicted EME levels might not be the absolute maximum at all locations.
5. Further explanation of this report may be found in "Understanding the ARPANSA Environmental EME Report" and other documents on the ARPANSA web site, <http://www.arpansa.gov.au>

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## Appendix A

### Table of Other Areas of Interest

Additional Locations	Height / Scan relative to location ground level	Maximum Cumulative EME Level All Carriers at this site  (% of ARPANSA exposure limits <sup>2</sup> ) Public exposure limit = 100%
Main Street Corner of High Street and Park Street Station St	0m to 6m 0m to 17m 0m to 6m	0.34% 2.09% 0.7%

**Note:** Estimation for the maximum EME levels at selected areas of interest over a height range relative to the specific ground level at the area of interest. This table includes any existing and proposed radio systems.

#### Estimation Notes / Assumptions – Other Areas of Interest

Variable ground topography has been included in the assessment of the "Other Areas of Interest" as per ARPANSA methodology

*Insert other data / notes as required*