



COMMERCE COMMISSION

**DRAFT STANDARD TERMS DETERMINATION FOR
CO-LOCATION ON CELLULAR MOBILE
TRANSMISSION SITES**

**SCHEDULE 5
MOBILE CO-LOCATION INTERFERENCE
MANAGEMENT AND DESIGN
PUBLIC VERSION**

25 July 2008

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1 Introduction

1.1 This Co-location on Cellular Mobile Transmission Sites Interference Management and Design document (Interference Management and Design document) forms part of the Mobile Co-location Terms. This Interference Management and Design document sets out the procedures for managing Interference in relation to the Mobile Co-location Service.

2 Definitions and Interpretation

2.1 References to clauses are references to clauses in this Interference Management and Design document unless expressly stated otherwise. The definitions set out in the Mobile Co-location General Terms and the Mobile Co-location Operations Manual apply to the extent that they are not expressly modified by or inconsistent with the context of this Interference Management and Design document. This Interference Management and Design document should be ~~read~~ in conjunction with the Mobile Co-location Service Operations Manual.

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2.2 Any Access Provider obligation and/or procedure in respect of Access Provider Equipment in this Interference Management and Design Document, including (without limitation):

(a) measurement and testing as set out in section 8;

(b) procedures for Interference management as set out in section 9; and

(c) protocols for ongoing Interference management as set out in section 10.

includes an obligation on the Access Provider to use all reasonable commercial endeavours to ensure that equivalent obligations and/or procedures apply to third parties in respect of any third party equipment installed and operating on or with the Relevant Facility.

2.3 **Definitions.** For the purposes of this Interference Management and Design document, the following definitions apply:

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Agreed Standard Solution

has the meaning set out in clauses 9.1.9(a) and 9.1.13(a).

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dB

means decibels.

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Design Principles

means those principles set out in section 7.

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Desktop Analysis Meeting

has the meaning set out in clause 9.1.7.

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Disagreed Solution

has the meaning set out in clauses 9.1.9(b) and 9.1.13(b).

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EIRP

means effective isotropic radiated power.

Emergency Services

means Radiocommunication services utilised by the New Zealand Police, New Zealand Fire Service, National Rural Fire Authority, rural fire authorities, and hospital and health services.

Existing Co-locator

means any other Access Seeker who ~~has~~ installed and operates equipment on or with the Relevant Facilities.

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Interference

means the unwanted effect of radio waves owing to one or more emissions, radiations or inductions, or any combination of

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one or more of those things, on the reception of radio communications.

Isolation

means the loss between the Antenna port of the Access Seeker's transmitting base station equipment and the Antenna port(s) of the sites existing receiving base station(s).

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ITU

means the International Telecommunications Union.

Link Budget

means a calculation of power and noise levels between the transmitter and receiver (uplink or downlink) in a Cellular Mobile Telephone Network. A Link Budget takes account of all gain and loss factors to yield operating values of Signal to Noise Ratio (SNR) and/or Bit Error Rate (BER). A Link Budget accounts for attenuation of the transmitted signals due to propagation; antenna gains; cable, connector, device and miscellaneous losses.

Maximum Configuration

has the meaning set out in clause 9.4.11.

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Non-Compliant Solution

has the meaning set out in clause 9.1.13(c) and 9.6.2.

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Outages

means the proportion of dropped calls due to interference, compared with the proportion of dropped calls in the absence of the interference

Parties

includes, where the context requires, any Existing Co-locators

Performance Degradation

has the meaning set out in clause 6.1.1.

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Radiocommunication

means the transmission or reception of signs, signals, writing, images, sounds, or intelligence of any nature by radio waves as part of a Cellular Mobile Telephone Network.

Regulations

has the meaning set out in clause 3.1.

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RF

means radio frequency.

Testing Procedures Meeting

has the meaning set out in clause 9.1.10.

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Unacceptable Performance Degradation

has the meaning set out in clause 6.2.

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Unavoidable Unacceptable Performance Degradation

means Unacceptable Performance Degradation that cannot be avoided through the utilisation of co-location procedures or technologies, including Antenna Minimisation technologies or optimising the placement of Antennas.

3 Radiocommunications Act 1989

3.1 The Radiocommunications Act 1989 and Radiocommunications Regulations 2001 (together, the Regulations) provide for the management of radio frequency spectrum, and include provisions in relation to interference to receivers.

3.2 The Regulations do not provide for the way in which Interference should be managed where such Interference arises out of mobile co-location where equipment is transmitting within its licence terms.

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Such Interference may ~~cause Unacceptable Performance Degradation of Radiocommunications services provided to End Users~~ but the Regulations do not necessarily provide for dealing with this Interference.

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3.3 This Interference Management and Design document therefore sets out how ~~Access Seekers and Access Providers~~ will manage Interference, specifically in relation to the Mobile Co-location Service.

4 Scope

4.1 This Interference Management and Design document sets out the following:

- 4.1.1 the objectives of managing Interference in relation to the Mobile Co-location Service;
- 4.1.2 the levels of Unacceptable Performance Degradation in relation to the Mobile Co-location Service;
- 4.1.3 Design Principles to avoid Unacceptable Performance Degradation; and
- 4.1.4 Procedures for Interference management in co-location.

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5 Objectives

5.1 General Overview

5.1.1 ~~Radiocommunications services utilise RF and can cause Interference, but the risk of Unacceptable Performance Degradation can be reduced if providers of such Services have in place, and abide by, design principles and testing protocols.~~

5.1.2 This Interference Management and Design document sets out design principles and testing protocols and the requirements ~~that must be met by the Parties~~ as part of the Mobile Co-location Service.

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5.2 Specific Objectives

5.2.1 The objectives of this Interference Management and Design document are to:

- (a) set out how Interference issues which arise with respect to the Mobile Co-location Service can be resolved in a timely manner;
- (b) set out efficient solutions to maximise the use of physical resources as part of the Mobile Co-location Service;
- (c) ~~reflect the principle that Access Seekers shall not implement solutions which will, or will be likely to, degrade the performance or standard of existing Telecommunications Services to Customers or End Users beyond an acceptable level;~~
- (d) ~~reflect the principle that Access Providers shall not implement solutions which will, or will be likely to, degrade the performance or standard of existing Telecommunications Services to Customers or End Users beyond an acceptable level.~~

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- (e) set out a way in which provision is made for new and evolving Telecommunications Services and technologies, so that End Users may benefit from technology advances; and
- (f) promote the long-term interests of End Users and the efficiency of the New Zealand Telecommunications industry.

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6 Unacceptable Performance Degradation

6.1 Performance Degradation

- 6.1.1 Performance degradation in relation to the Mobile Co-location Service is a reduction in the level of quality of Radiocommunications service provided by the Access Provider and any Existing Co-locators to End Users and includes, but is not limited to, a rise in noise floor, loss of system gain, and losses suffered from electrical or physical causes (Performance Degradation).
- 6.1.2 Performance Degradation may affect Customers and/or End Users, for example, without limitation, through an increase in the number of dropped calls; call set-up failures; reduced call quality; reduced throughput; outage-time; and/or a reduction in or loss of Telecommunications Services.
- 6.1.3 Performance Degradation may be observed by Telecommunications Service providers through Customer and/or End User complaints and/or statistical performance data including, without limitation, traffic volume; drop call rate; call setup failure rate; handover failure rate; quality (such as bit error and block error rates); attach failure rate; PDP¹ activations failure rate; throughput reduction or failure; location update failure rate; IMSI² update failure rate; and paging failure rate.

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6.2 Unacceptable Performance Degradation

- 6.2.1 Subject to clause 6.2.2 "Unacceptable Performance Degradation" in this Interference Management and Design document means any one or more of the following:
 - (a) Isolation of less than 30 dB between the Antenna port of the Access Seeker's transmitting equipment and the Antenna port of the Access Provider's receiving equipment or any Existing Co-locator's transmitting or receiving equipment;
 - (b) a total level of loss from the Access Provider's or Existing Co-locator's Link Budget of more than 1.0 dB in either the uplink budget or the downlink budget;
 - (c) a total level of loss of more than 0.2 dB from either the uplink budget or the downlink budget of any Antenna solely dedicated to the provision of Emergency Services;
 - (d) an incremental 5% increase in Outages in Telecommunications Services to End Users directly attributable to the incremental emissions of the Access Seeker from the Relevant Facility. Any increase in Outages is to be assessed:

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¹ Packet Data Protocol

² International Mobile Subscriber Identity

- Adjacent Channel Leakage Ratio (ACLR) (as described in Report ITU-R M.2031) of the interfering transmitter system; and
- Intermodulation of one or more transmitters interfering with the receiver system.

(b) the degree to which equipment will not deliver ideal performance, for example, due to the aging of equipment.

7.3.2 The consequences of these factors on Isolation are influenced by, without limitation:

- (a) the transmitter power levels and modulation of the ~~Parties' equipment~~;
- (b) the susceptibility of the receiver to net interference energy; and
- (c) the inter-system Isolation between transmitters and receivers, for base station and cellular mobile equipment.

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7.4 Antenna Separation

7.4.1 The physical separation of Antennas is a common way in which Isolation can be achieved.

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7.4.2 The distance required for the physical separation of Antennas used for the Mobile Co-location Service cannot be easily deduced by calculation because the co-located Antennas are in the “near field” rather than the “far field”. ~~For these reasons, Isolation~~ needs to be verified on a Site-by-Site basis.

~~Deleted: Therefore, the following formulas provide an indicative-only physical separation distance for a given Isolation value. Field measurements can be used to confirm the calculated values. Guidelines are available in a number of standard text books~~

~~7.4.3~~ In addition to the Isolation between ~~Parties' equipment~~, the following design considerations should be taken into account by the Access Seeker when designing the Antenna separation distances:

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Isolation: $A_v \approx 28 + 40 \log(d_v / \lambda)$ [dB]¶
where d_v = vertical tip-to-tip distance between Antennas [m]¶
 λ = wavelength [m]¶ ... [4]~~

- (a) new Antennas should not unacceptably degrade the performance of other Antennas;
- (b) the physical blockage of Antennas is to be avoided;
- (c) Antenna separation shall allow for adequate space for the installation of Antenna ancillaries including, without limitation, remote electrical tilts, mast head amplifiers and feeders. Such Antenna ancillaries must occupy the space efficiently;
- (d) new Antenna beam azimuths ~~should avoid crossing~~ existing Antenna beam azimuths;
- (e) access to the Antennas and their ancillaries for the purpose of maintenance should always be allowed; and
- (f) the maintenance of Antennas and their ancillaries shall be carried out in such a way as to minimise outages to the other Party and any other third parties.

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8 Measurement and Testing

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8.1 Procedure for Measurement and Testing

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- 8.1.1 This section sets out the requirements for measurement and testing ~~the level of~~ Interference ~~for~~ Unacceptable Performance Degradation and suggests some ways in which testing ~~and~~ measuring may be done.
- 8.1.2 Measurement and testing ~~may~~ be designed, implemented and performed ~~at a test facility~~ ~~and~~ on each of the Relevant Facilities where Access Seeker Equipment is installed in order to assess whether Unacceptable Performance Degradation is occurring ~~to either the Access Providers' Equipment or to the equipment of the Existing Co-locators. The requirement to test at a test facility may be waived if the Parties agree.~~ Measurement and testing shall be undertaken by the Access Seeker with the support of the Access Provider as required. ~~This testing will be necessary when any of the Co-locating parties rearrange their equipment.~~
- 8.1.3 The objective of performing such measurement ~~and~~ testing ~~is to confirm that there is a low risk of any Unacceptable Performance Degradation occurring, and enable any identified Unacceptable Performance Degradation to be minimised including through the use of any or all of the following:~~
- (a) ~~Antenna Minimisation technology;~~
 - (b) ~~Antenna rearrangement; and~~
 - (c) ~~Mast extension, revision or replacement.~~
- 8.1.4 The Parties ~~will share~~ the results of such measurements and testing and attempt to align and agree the results.
- 8.1.5 The following are two separate approaches that contain examples of tests that may be undertaken:
- (a) the Parties ~~may~~ test for Isolation to determine the likely "worst case" Interference mechanisms based on Antenna arrangements and/or Access Seeker Equipment configurations. For the worst case configuration(s) of the Access Seeker Equipment, the Parties ~~will~~ test the following elements at Maximum Configuration (the configuration requested in the Access Seeker's co-location Application) and at full power with a normal mix of traffic modulations and bursting (or using simulations):
 - (i) Measure the receiver sensitivity degradation and/or noise rise and/or blocking and/or other losses on the Access Provider Equipment ~~and the equipment of any Existing Co-locator.~~ This can be due to spurious emissions and intermodulation arising from the Access Seeker Equipment. The following are examples of tests which may be undertaken to measure Link Budget loss:
 - sweep the entire receive band of the Access Provider Equipment ~~and the equipment of any Existing Co-locator,~~ with a low noise spectrum analyser then tune the receiver to the band where effects are found to assess the Interference (e.g. loss of receive sensitivity and/or noise rise) when the Access Provider Equipment is transmitting. This test should be done for all the Access Seeker transmitter systems and bands versus Access Provider ~~and any Existing Co-locator~~ receiver systems and bands in the worst case Antenna arrangement.
 - Operate (or simulate) weak wanted signal (weak mobile for base station receive case). Observe indications of performance

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degradation (e.g. BER, noise rise, VQI), tune the receiver through the receive band to observe effects).

(ii) Measure the Isolation between the Parties' co-located Antennas in the worst case Antenna arrangement. These tests should be done for all the Access Seeker transmit systems and bands versus Access Provider and any Existing Co-locator receiver systems and bands in the worst case Antenna arrangement. The following test is an example of tests that may be undertaken to measure isolation:

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- Transmit a CW sweeping signal from the Antenna port of the Access Seeker Equipment and receive the CW sweeping signal on the Antenna port of the Access Provider Equipment and any Existing Co-locator Equipment. This must be performed over the Access Seeker's transmit band and the Access Provider's and any Existing Co-locator's receive band.

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(b) The Parties may carry out a full test to determine the possible Interference mechanisms. This would involve exhaustive testing to attempt to minimise the possibility of Unacceptable Performance Degradation occurring as follows:

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- Test all systems on the Relevant Facilities, one to the other;
- Test all carriers on all cells, one to the other (exhaustive);
- Test the full range of Antenna arrangements and equipment configurations;
- Tests for sensitivity losses including noise rise, receiver blocking and desensitisation due to any effect of co-location including without limitation emissions (wanted or unwanted) and intermodulation distortion occurring when the Access Seeker's Equipment is installed or operated.
- Limits under the Access Seeker's Application shall be fully tested, including without limitation power transmitted, proximity, interaction and transmitted power of any linking Antennas. All options shall be tested such that all configurations are measured, including without limitation Antenna azimuth and down-tilt directions.
- System performance measurements for weak wanted received signals including without limitation Speech Quality Index (SQI), Bit Error Rate (BER) and noise rise as appropriate to the technology to ensure Unacceptable Performance Degradation criteria are not exceeded. Tests shall be performed by transmitting across the full range of transmit frequencies and checking for effects across the full range of receive frequencies.

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8.2 Test Equipment

8.2.1 This section sets out the requirements for test equipment and how testing may be conducted.

8.2.2 The Parties' actual equipment shall be used for the tests where possible.

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8.2.3 The transmit power levels and modulations need to be from, or need to adequately simulate, the real life target systems. If simulation is used, the receiver noise performance and Interference performance characteristics should reflect the specification of the Parties' equipment.

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8.2.4 The equipment used by the Parties to test must operate in its linear operation range and must have adequate blocking, sensitivity and linearity, so that results show the actual Interference affects of the ~~Parties'~~ equipment.

8.2.5 Spectrum analysers, signal generators, ~~and other test equipment,~~ shall ~~have their calibration traceable back to a primary standard.~~

9 Procedures for Interference Management in Mobile Co-location

9.1 Determination of Agreed Standard Solutions and Disagreed Solutions.

9.1.1 This section sets out the procedures for determining whether solutions shall be Agreed Standard Solutions or Disagreed Solutions.

9.1.2 At any time the Access Seeker may propose to the Access Provider a solution for a co-location installation that conforms with this document.

9.1.3 The solution ~~must~~ specify the combination of services to be co-located, the Standard Site Type, Antenna separation, Antenna arrangement, proposed Antenna geometry, RF filters and devices, frequency and bandwidth, EIRP and any other relevant details ~~of the Access Seeker Equipment and proposed changes to the Access Provider Equipment and any Existing Co-locator equipment.~~ This shall include details of the distances and dimensions ~~of the Mast structure and the Antennas of the Parties.~~

9.1.4 ~~The Access Seeker is to provide an analysis of the projected level of Interference and Performance Degradation in relation to the proposed solution.~~

9.1.5 ~~The Access Provider will acknowledge the receipt of the analysis referred to in clause 9.1.4 within 4 Business Hours of receipt.~~

9.1.6 Following receipt of the proposed solution, the Access Provider ~~and any Existing Co-locators~~ will undertake a desktop study of the Interference and Performance Degradation that may occur. ~~This study is to be provided within 10 Working Days of receipt the Access Seeker's solution proposal.~~

9.1.7 The Access Seeker, the Access Provider ~~and any Existing Co-locators~~ will meet to discuss the results of the Interference analysis within ~~20 Working Days of the Access Seeker's solution proposal (this meeting to be referred to as the "Desktop Analysis Meeting"), unless the Parties agree in writing that the risk of Performance Degradation is low, and that the Desktop Analysis Meeting is not required.~~

9.1.8 The Access Provider's desktop study (referred to clause 9.1.6) and participation in the Desktop Analysis Meeting (referred to clause 9.1.7) will be charged for by the Access Provider in accordance with the Charges, as agreed between the Parties pursuant to the Mobile Co-location General Terms.

9.1.9 The outcome of the Desktop Analysis Meeting will be one of two scenarios:

(a) If the ~~Parties,~~ agree, ~~at all times acting in good faith,~~ that the paper based Interference study (i.e. a desktop study) indicates minimal risk ~~of Unacceptable Performance Degradation to the Access Provider Equipment and the equipment of any Existing Co-locators,~~ both existing and forecasted at the Relevant Facilities, then the solution shall be defined as an "Agreed Standard Solution"; and may be deployed in accordance with clause 9.4; or

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	<p>(b) If the Access Seeker, Access Provider or any Existing Co-locator does not believe that the paper based studies indicate minimal risk of Unacceptable Performance Degradation, then testing replicating the proposed solution configuration should be undertaken at a suitable test facility to confirm the extent of the interference.</p>	<p>Deleted: either Deleted: or the Deleted: minimal risk of Interference Deleted: experimental Deleted: may</p>
<p>9.1.10</p>	<p>If testing is required by the Desktop Analysis Meeting, the Parties will meet within five Working Days of the completion of the Desktop Analysis Meeting, to discuss the nature of the tests to be completed, including, without limitation, the designated agreed test environment ("Testing Procedures Meeting"). If no agreement is reached after five Working Days, any of the Parties can advance the issue using the expert determination in the Dispute Resolution procedures in section 36 of the Mobile Co-location General Terms.</p>	<p>Deleted: If experimental testing is not agreed then the solution shall be a Disagreed Solution and may only be implemented under the protocol in clause 10.4. Deleted: experimental Deleted: agreed</p>
<p>9.1.11</p>	<p>Any testing will be completed within 20 Working Days of the Testing Procedures Meeting, or within a mutually agreed timeframe or as determined by the expert determination in the Dispute Resolution process.</p>	<p>Deleted: Access Seeker, and Access Provider and any Existing Co-locators</p>
<p>9.1.12</p>	<p>Testing may be required before a Site is operational, or when changes are proposed to a Site. The costs of any testing shall be met by the party causing the changes to the Relevant Facilities.</p>	<p>Deleted: either the Access Seeker, or the Access ... [22] Deleted: 39 Deleted: L</p>
<p>9.1.13</p>	<p>The outcome of the testing process will be one of three scenarios:</p> <p>(a) If the Access Seeker and the Access Provider agree that the testing indicates a minimal risk of Unacceptable Performance Degradation, the solution becomes an Agreed Standard Solution and may be implemented in accordance with the protocol provided in clause 9.4; or</p> <p>(b) If either the Access Seeker or the Access Provider does not agree that the testing indicates a minimal risk of Unacceptable Performance Degradation, the solution shall be defined as a Disagreed Solution, and may be implemented in accordance with the protocol provided in clause 9.5; or</p> <p>(c) If the Access Seeker and the Access Provider agree that the testing indicates a significant risk of Unacceptable Performance Degradation the solution shall be a Non-Compliant Solution, and will not be built.</p>	<p>Deleted: Deleted: experimental Deleted: twenty Deleted: Experimental t Deleted: co-location Deleted: when the co- ... [23] Deleted: being made Deleted: the Deleted: s Deleted: . Access See ... [24] Deleted: Deleted: minimal risk(... [25] Deleted: 10.3 Deleted: 10.4 Deleted: significant ris ... [26]</p>
<p>9.2</p>	<p>It is accepted that testing and analysis prior to the installation and operation of Access Seeker Equipment can only approximate reality and cannot eliminate the possibility that Unacceptable Performance Degradation will actually occur. For that reason, testing and monitoring once the Access Seeker Equipment is operating at the Relevant Facilities is required.</p>	<p>Deleted: Interference or Deleted: if Deleted: wishes Deleted: e Deleted: . Deleted: ten</p>
<p>9.3</p>	<p>If a Full Site Application is rejected in accordance with the provisions of the Mobile Co-location Operations Manual solely for reasons relating to Unacceptable Performance Degradation, at the Access Seeker's request, the Parties will meet within five Working Days to revise those elements of the Full Site Application for which the Application was rejected. If the revised elements cannot be agreed within 10 Working Days, or such other time as may be agreed, then the Access Seeker can either:</p> <p>9.3.1 progress the issue as a Disagreed Solution in accordance with clause 9.5; or</p> <p>9.3.2 advance the issue using the expert determination procedure of the Dispute Resolution procedures in section 36 of the Mobile Co-location General Terms.</p>	<p>Field Code Changed Deleted: 9.4 Formatted ... [27] Deleted: 39 Deleted: L</p>
<p>9.4</p>	<p><u>Protocol for deployment of an Agreed Standard Solution</u></p>	<p>Formatted ... [28] Deleted: 1</p>

- 9.4.1 This section sets out how an Agreed Standard Solution may be deployed and how it will be tested to avoid Unacceptable Performance Degradation occurring.
- 9.4.2 If the revised elements are agreed under clause 9.3, the Access Seeker may deploy that solution using this clause 9.4.
- 9.4.3 Once the Access Seeker Equipment has been commissioned and integrated on or with the Relevant Facilities in accordance with clause 21.3 of the Mobile Co-location Operations Manual, the Access Seeker shall design a measurement and testing program to test for Unacceptable Performance Degradation. The Access Seeker shall obtain the Access Provider's and any Existing Co-locators' approval of the program. If the Access Provider or any Existing Co-locator does not approve the program, such approval not to be unreasonably withheld, the Access Seeker, Access Provider and any Existing Co-locator will meet within five Working Days to agree a measurement and testing program. If, within a further 10 Working Days a measurement and testing program has not been agreed, the Access Seeker can advance the issue using the expert determination in the Dispute Resolution procedure in section 36 of the Mobile Co-location General Terms.
- 9.4.4 Following the approval, agreement or imposition of a measurement and testing program, the Access Seeker shall, unless it is agreed otherwise, undertake that measurement and testing program at the Relevant Facilities.
- 9.4.5 If, during the measurement and testing program, the Access Provider or any Existing Co-locator reasonably believes that there is more than a minimal risk of Unacceptable Performance Degradation occurring it will give Notice of this to the Access Seeker.
- 9.4.6 Upon receipt of such Notice, the Access Seeker will ensure no Unacceptable Performance Degradation occurs until a solution is agreed or is imposed by the Disputes Resolution process referred to in clause 9.4.8.
- 9.4.7 The Access Seeker, Access Provider and any Existing Co-locators will meet within one Working Day of the Notice to attempt to resolve the issue. The Access Seeker, Access Provider and any Existing Co-locators will work together in good faith to find a solution.
- 9.4.8 If the Access Seeker, Access Provider and any Existing Co-locator cannot agree a solution within five Working Days, then the issue can be advanced using the expert determination procedure of the Dispute Resolution procedures in section 36 of the Mobile Co-location General Terms.
- 9.4.9 If the Access Provider and any Existing Co-locators agree that the measurement and testing program referred to in clauses 9.4.3 and 9.4.4, indicates no more than a minimal risk of Unacceptable Performance Degradation occurring the Access Seeker may proceed to give Notice under clause 9.4.10.
- 9.4.10 The Access Seeker must provide to the Access Provider and any Existing Co-locator at least 10 Working Days' Notice of the intention to start radiating power.
- 9.4.11 When the Access Seeker begins to radiate power from the Access Seeker Equipment at the Relevant Facilities, it will operate at maximum configuration for the first five days of radiation. "Maximum Configuration" means the maximum power and the maximum number of channels and carriers which have been agreed with the Access Provider and any Existing Co-locators for the Access Seeker Equipment installed at the Relevant Facilities, **(Maximum Configuration)**.
- 9.4.12 If it is not possible to operate at or simulate the Maximum Configuration then prior to the Access Seeker radiating the Access Seeker, Access Provider and any Existing Co-locator will meet within one Working Day to discuss a solution. If a solution cannot be found, the Access Seeker shall give ten Working Days Notice prior to increasing the configuration of

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<#>progress the issue as a Disagreed Solution; or
<#>advance the issue using the expert determination procedure of the Dispute Resolution procedures in section 39 of the Mobile Co-Location General Terms.

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the Access Seeker Equipment at the Relevant ~~Facilities~~. The steps in clauses 9.4.10, 9.4.11, 9.4.14-9.4.27, will then apply as if the increase in configuration is the start of the radiating from the Relevant Facilities.

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9.4.13 If a solution is found then the Access Seeker Equipment at the Relevant Facilities will operate at Maximum Configuration for five days.

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9.4.14 ~~If, during the five days of operating at Maximum Configuration, the Access Seeker experiences Unacceptable Performance Degradation, it will give notice to the Access Provider and any Existing Co-locators.~~

9.4.15 ~~Upon receipt of a Notice given under clause 9.4.14, the Parties shall meet to discuss and agree a solution to the Unacceptable Performance Degradation, provided that the Parties shall not be required to agree to any solution that causes Unavoidable Unacceptable Performance Degradation.~~

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9.4.16 If, during the five days of operating at Maximum Configuration, the Access Provider or any Existing Co-locator reasonably believes that there is Unacceptable Performance Degradation it will give Notice of this to the Access Seeker.

9.4.17 Upon receipt of such Notice, the Access Seeker will immediately take measures to alleviate the Unacceptable Performance Degradation up to and including de-powering and/or completely turning off some or all of the Access Seeker Equipment at the Relevant Facilities, as requested by the issuer of the Notice. ~~Either an existing Co-locator or the Access Provider can issue this notice.~~

9.4.18 The ~~Parties~~ will meet within one Working Day of the Notice of Unacceptable Performance Degradation ~~given under clause 9.4.14~~, to attempt to resolve the issue. The Access Seeker, Access Provider and any Existing Co-locator will work together mutually and in good faith to find a solution. ~~This solution will not impose Unacceptable Performance Degradation on the Access Provider Equipment.~~

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9.4.19 If the Access Seeker, Access Provider and any Existing Co-locator cannot agree a solution within five Working Days ~~of the meeting under clause 9.4.18~~, then the issue can be advanced using the expert determination procedure of the Dispute Resolution procedures in section ~~36~~ of the Mobile Co-Location General Terms. Until a solution is found, whether by agreement or through Dispute Resolution, the Access Seeker must not permit the Unacceptable Performance Degradation to continue.

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9.4.20 If no Unacceptable Performance Degradation is observed during the five days of operation at Maximum Configuration then, ~~provided Phase 1 of the Project Closure Checklist has been approved by the Access Provider under section 21 of the Mobile Co-location Operations Manual~~, the Access Seeker Equipment may ~~operate in its~~ normal configuration.

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9.4.21 ~~If, at any stage during the first two months of operation at normal configuration, the Access Seeker experiences Unacceptable Performance Degradation it will give notice to the Access Provider and any Existing Co-locators.~~

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9.4.22 ~~Upon receipt of a Notice given under clause 9.4.21, the Parties shall meet to discuss and agree a solution to the Unacceptable Performance Degradation, provided that the Parties shall not be required to agree to any solution that causes Unavoidable Unacceptable Performance Degradation.~~

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9.4.23 If at any stage during the first two months of operation at normal configuration, the Access Provider or any Existing Co-locator reasonably believes that Unacceptable Performance Degradation is occurring, it will give Notice of this to the Access Seeker.

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9.4.24 Upon receipt of such Notice, the Access Seeker will immediately take measures to alleviate the Unacceptable Performance Degradation up to and including de-powering and/or completely turning off some or all the Access Seeker Equipment at the Relevant Facilities.

9.4.25 The ~~Parties~~ will meet within one Working Day of the Notice ~~given under clause 9.4.23~~, attempt to resolve the issue. The Access Seeker, Access Provider and any Existing Co-locator will work together ~~in~~ good faith to find a solution.

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9.4.26 If the Access Seeker, Access Provider or any Existing Co-locator cannot agree on a solution within five Working Days, then the issue can be advanced using the Dispute Resolution procedures in section ~~36~~ of the Mobile Co-location General Terms. Until a solution is found, whether by agreement or through Dispute Resolution, the Access Seeker must not permit the Unacceptable Performance Degradation to continue.

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9.4.27 If there is no Unacceptable Performance Degradation at the conclusion of the two months of operation at normal configuration the Access Seeker may proceed to prepare ~~Phase 2 of the~~ Project Closure Checklist referred to in ~~section 21~~ of the Mobile Co-location Operations Manual.

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9.4.28 If the Access Seeker fails to comply with its obligations under clauses 9.4.15, ~~9.4.19~~, 9.4.22 or 9.4.26, then the Access Provider shall be entitled to take such steps as are reasonably necessary to alleviate Unacceptable Performance Degradation. This shall include, without limitation, ~~taking steps to~~ gain access to the Access Seeker Equipment, or any Utility Services used by the Access Seeker, to de-power or completely turn off the Access Seeker Equipment.

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9.5 Protocol for the Deployment of a Disagreed Solution

9.5.1 This section sets out how a Disagreed Solution may be deployed and how it will be tested to avoid Unacceptable Performance Degradation occurring.

9.5.2 If the Access Seeker wishes to proceed with a Disagreed Solution it will give Notice of this to the Access Provider ~~and any Existing Co-locators~~.

9.5.3 The Parties ~~will meet within ten Working Days~~ of receipt of the Notice to revise the proposed solution. ~~then the issue can be advanced using the expert determination procedure of the Dispute Resolution procedures in section 36 of the Mobile Co-location General Terms~~.

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9.5.4 If a revised solution is agreed ~~by the Parties~~, the Access Seeker may make a Full Site Application. If ~~Preliminary~~ Site Approval is issued the solution shall be deployed in accordance with this clause 9.5.

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9.5.5 Once the Access Seeker Equipment has been commissioned and integrated on or with the Relevant Facilities in accordance with clause ~~21.3~~ of the Mobile Co-location Operations Manual, the Access Seeker shall design a measurement and testing program to test for Unacceptable Performance Degradation. The Access Seeker shall obtain the Access Provider's ~~and any Existing Co-locators'~~ approval of the program. If the Access Provider ~~or any Existing Co-locator~~ does not approve the program, such approval not to be unreasonably withheld, the ~~Parties~~ will meet within five Working Days to agree a measurement and testing program. If, within a further ten Working Days, a measurement and testing program has not been agreed, the Access Seeker can advance the issue using the expert determination procedure of the Dispute Resolution procedure in section ~~36~~ of the Mobile Co-location General Terms.

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- 9.5.6 Following the approval, agreement or imposition of a measurement and testing program, the Access Seeker shall, unless it is agreed otherwise, undertake that measurement and testing program at the Relevant Facilities.
- 9.5.7 If, during the measurement and testing program, the Access Provider or any Existing Co-locators reasonably believes that there is more than a minimal risk of Unacceptable Performance Degradation occurring it will give Notice of this to the Access Seeker.
- 9.5.8 Upon receipt of such Notice, the Access Seeker will ensure no Unacceptable Performance Degradation occurs until a solution is agreed or is imposed by the Disputes Resolution process referred to in clause 9.5.10.
- 9.5.9 The Parties will meet within one Working Day of the Notice to attempt to resolve the issue. The Parties will work together mutually and in good faith to find a solution.
- 9.5.10 If the Parties cannot agree a solution within five Working Days, then the issue can be advanced using the expert determination procedure of the Dispute Resolution procedures in section 36 of the Mobile Co-location General Terms.
- 9.5.11 If the Access Provider and any Existing Co-locators agree, that the measurement and testing program referred to in clauses 9.5.5 and 9.5.6, indicates no more than a minimal risk of Unacceptable Performance Degradation occurring the Access Seeker may proceed to give Notice under clause 9.5.12.
- 9.5.12 The Access Seeker must provide to the Access Provider and any Existing Co-locator at least 20 Working Days Notice of the intention to start radiating power.
- 9.5.13 The Access Seeker may only begin to radiate power during a low traffic period, as reasonably determined by the Access Provider. The Access Seeker will radiate power for a period of no more than 30 minutes and will then stop radiating.
- 9.5.14 If, during or a result of the radiation period referred to in clause 9.5.13, the Access Seeker experiences Unacceptable Performance Degradation, it will give Notice to the Access Provider and any Existing Co-locators.
- 9.5.15 Upon receipt of a Notice given under clause 9.5.14, the Parties shall meet to discuss and agree a solution to the Unacceptable Performance Degradation, provided that the Parties shall not be required to agree to any solution that causes Unavoidable Unacceptable Performance Degradation.
- 9.5.16 If, during the radiation period referred to in clause 9.5.13, either the Access Provider or any Existing Co-locator reasonably believes that Unacceptable Performance Degradation is occurring, it will give Notice of this to the Access Seeker.
- 9.5.17 Upon receipt of a Notice given under clause 9.5.16, the Access Seeker will immediately take measures to alleviate the Unacceptable Performance Degradation up to and including de-powering and/or completely turning off some or all of the Access Seeker Equipment at the Relevant Facilities, as requested by the issuer of the Notice.
- 9.5.18 If the Parties are satisfied that there is no Unacceptable Performance Degradation occurring during or as a result of the 30 minutes of radiation undertaken pursuant to clause 9.5.13, then the Access Seeker may give Notice to the Access Provider that it will proceed to activate the Access Seeker Equipment at the Relevant Facilities at limited power levels and capacity, for no more than one Business hour, and then shut down. The limited power levels, capacity and shall be determined by the Access Provider in consultation with any Existing Co-locators.

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9.5.19	If, during or as a result of the radiation period referred to in clause 9.5.18, the Access Seeker experiences Unacceptable Performance Degradation, it will give Notice to the Access Provider and any Existing Co-locators.	Deleted: 30 minute
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9.5.20	Upon receipt of a Notice given under clause 9.5.19, the Parties shall meet to discuss and agree a solution to the Unacceptable Performance Degradation, provided that Parties shall not be required to agree to any solution that causes Unavoidable Unacceptable Performance Degradation.	Field Code Changed
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9.5.21	If either the Access Provider or any Existing Co-locator reasonably believes that there is Unacceptable Performance Degradation occurring during or as a result of the radiation period referred to in clause 9.5.18, it will give Notice of this to the Access Seeker.	Deleted: and any Existing Co-locator
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9.5.22	Upon receipt of a Notice given under clause 9.5.21, the Access Seeker will immediately take measures to alleviate the Unacceptable Performance Degradation up to and including de-powering and/or completely turning off some or all of the Access Seeker Equipment at the Relevant Facilities, as requested by the issuer of the Notice.	Deleted: the Access Provider or any Existing Co-locator
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9.5.23	If the Parties are satisfied that there is no Unacceptable Performance Degradation occurring during or as a result of the radiation period referred to in clause 9.5.18, then the Access Seeker will give Notice to the Access Provider that it intends to activate the Access Seeker Equipment at the Relevant Facilities at full power levels and full capacity for no more than one Business Hour and shall then stop radiating. The full power levels, capacity and Business Hour shall be determined by the Access Provider.	Field Code Changed
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9.5.24	If, during or as a result of the radiation period referred to in clause 9.5.23, the Access Seeker experiences Unacceptable Performance Degradation, it will give notice to the Access Provider and any Existing Co-locators.	Deleted: one hour during a normal traffic period
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9.5.25	Upon receipt of a Notice given under clause 9.5.24, the Parties shall meet to discuss and agree a solution to the Unacceptable Performance Degradation, provided that the Parties shall not be required to agree to any solution that causes Unavoidable Unacceptable Performance Degradation.	Field Code Changed
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9.5.26	If either the Access Provider or any Existing Co-locator reasonably believes that there is Unacceptable Performance Degradation occurring during or as a result of the radiating period referred to in clause 9.5.23, it will give Notice of this to the Access Seeker.	Deleted: 9.3.14
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9.5.27	Upon receipt of a Notice given under clause 9.5.26, the Access Seeker will immediately take measures to alleviate the Unacceptable Performance Degradation up to and including de-powering and/or completely turning off some or all of the Access Seeker Equipment at the Relevant Facilities, as requested by the issuer of the Notice.	Deleted: Access Provider and any Existing Co-locator
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9.5.28	If the Access Seeker, Access Provider and any Existing Co-locator are satisfied that there is no Unacceptable Performance Degradation occurring during or as a result of the radiating period referred to in clause 9.5.23, then the Access Seeker will give Notice to the Access Provider that it intends to activate the Access Seeker Equipment at the Relevant Facilities at full power levels and full capacity for one day and then stop radiating. The full power levels and full capacity shall be determined by the Access Provider.	Field Code Changed
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9.5.29	If, during or as a result of the radiation period referred to in clause 9.5.28, the Access Seeker experiences Unacceptable Performance Degradation, it will give notice to the Access Provider and any Existing Co-locators.	Field Code Changed
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9.5.30	Upon receipt of a Notice given under clause 9.5.29, the Parties shall meet to discuss and agree a solution to the Unacceptable Performance Degradation, provided that the Parties	Deleted: Access Seeker's
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~~shall not be required to agree to any solution that causes Unavoidable Unacceptable Performance Degradation.~~

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9.5.31 If either the Access Provider or any Existing Co-locator reasonably believes that there is Unacceptable Performance Degradation occurring during or as a result of the radiating period referred to in clause 9.5.28, it will give Notice of this to the Access Seeker.

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9.5.32 Upon receipt of a Notice given under clause 9.5.31, the Access Seeker will immediately take measures to alleviate the Unacceptable Performance Degradation up to and including de-powering and/or completely turning off some or all of the Access Seeker Equipment at the Relevant Facilities, as requested by the issuer of the Notice.

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9.5.33 If the Access Seeker, Access Provider and any Existing Co-locator are satisfied that there is no Unacceptable Performance Degradation occurring during or as a result of the radiating period referred to in clause 9.5.28, then the Access Seeker may proceed to activate the Access Seeker Equipment at the Relevant Facilities under normal operating conditions supporting standard commercial traffic for one day and then stop radiating.

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~~If, during or as a result of the radiation period referred to in clause 9.5.33, the Access Seeker experiences Unacceptable Performance Degradation, it will give notice to the Access Provider and any Existing Co-locators.~~

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9.5.35 Upon receipt of a Notice given under clause 9.5.34, the Parties shall meet to discuss and agree a solution to the Unacceptable Performance Degradation, provided that the Parties shall not be required to agree to any solution that causes Unavoidable Unacceptable Performance Degradation.

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9.5.36 If either the Access Provider or any Existing Co-locator reasonably believes that there is Unacceptable Performance Degradation occurring during or as a result of the radiating period referred to in clause 9.5.33, it will give Notice of this to the Access Seeker.

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9.5.37 Upon receipt of a Notice given under clause 9.5.36, the Access Seeker will immediately take measures to alleviate the Unacceptable Performance Degradation up to and including de-powering and/or completely turning off some or all of the Access Seeker Equipment at the Relevant Facilities, as requested by the issuer of the Notice.

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9.5.38 If the Access Seeker, Access Provider and any Existing Co-locator are satisfied that there is no Unacceptable Performance Degradation occurring during the radiating period referred to in clause 9.5.33, then, provided Phase 1 of the Project Closure Checklist has been approved by the Access Provider under section 21 of the Mobile Co-location Operations Manual, the Access Seeker may proceed to activate the Access Seeker Equipment at the Relevant Facilities under normal operating conditions supporting standard commercial traffic on a continuous basis.

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~~9.5.39 If, at any stage during the first twelve months of normal operation, the Access Seeker experiences Performance Degradation, it will give Notice of this to the Access Provider and any Existing Co-locators.~~

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~~9.5.40 Upon receipt of a Notice given under clause 9.5.39, the Parties shall meet to discuss and agree a solution to the Unacceptable Performance Degradation, provided that the Parties shall not be required to agree to any solution that causes Unavoidable Unacceptable Performance Degradation.~~

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9.5.41 If at any stage during the first twelve months of normal operation, the Access Provider or any Existing Co-locator reasonably believes that Unacceptable Performance Degradation is occurring, it will give Notice of this to the Access Seeker.

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- 9.5.42 Upon receipt of ~~a~~ Notice of Unacceptable Performance Degradation ~~given under clause~~ 9.5.41, the ~~Access Seeker~~ will immediately take measures to alleviate the Unacceptable Performance Degradation up to and including de-powering and/or completely turning off some or all of the Access Seeker Equipment at the Relevant Facilities. Deleted: such ...9.4.4 ... [32]
- 9.5.43 If a Notice of Unacceptable Performance Degradation is given under any of clauses 9.5.14, 9.5.21, 9.5.24, 9.5.31, 9.5.36 and 9.5.39, the Access Seeker, Access Provider and any Existing Co-locator will meet within one Working Day of the Notice to attempt to resolve the issue. The Access Seeker, Access Provider and any Existing Co-locator will work together mutually and in good faith to find a solution. Deleted: 10.4.14...10.4.17...10.4.20...10.4.23...10.4.26...10.4.29 ... [33]
- 9.5.44 If the Access Seeker, Access Provider and any Existing Co-locator cannot agree on a solution within five Working Days, then the issue can be advanced using the expert determination procedure of the Dispute Resolution procedures in section 36 of the Mobile Co-location General Terms. ~~Until a solution is found, whether by agreement or through Dispute Resolution, the Access Seeker must not permit Unacceptable Performance Degradation to occur. If a solution is found, then the Access Seeker may take the next step (if any) of the radiation period testing or, if that testing is complete, may return to operation in accordance with the solution.~~ Deleted: 9...L ... [34]
- 9.5.45 If at any stage during the testing the ~~Parties~~ agree that Unacceptable Performance Degradation ~~is~~ occurring, the solution will be deemed to be a Non-Compliant Solution. Deleted: Access Provider and the Access Seeker and any Existing... Co-locators ... [35]
- 9.5.46 The Access Seeker may not make any change to the solution tested in this section, other than as agreed with the Access Provider ~~and Existing Co-locators~~, as provided for in this section 9. ~~Any change will require a new Application.~~ Deleted: 10...Initial Si ... [36]
- 9.5.47 If the Access Seeker fails to comply with its obligations under clauses 9.5.22, 9.5.27, 9.5.28, 9.5.37, 9.5.30, 9.5.32, 9.5.35, 9.5.44, 9.5.46 or 9.5.48 then the Access Provider ~~and any Existing Co-locator~~ shall be entitled to take such steps as are reasonably necessary to alleviate Unacceptable Performance Degradation. This shall include, without limitation, the right to gain access to the Access Seeker Equipment, or any Utility Services used by the Access Seeker, to de-power or completely turn off the Access Seeker Equipment. Deleted: 109.4.8;...10.4.15; 10.4.18; 10.4.21, 10.4.24, 10.4.27, 10.4.30, 10.4.32 or 10.3.34; ... [37]
- 9.5.48 ~~If the Parties cannot agree on a solution within five Working Days, then the issue can be advanced using the Dispute Resolution procedure in section 36 of the Mobile Co-location General Terms. Until a solution is found whether by agreement or through Dispute Resolution, the Access Seeker must not permit the Unacceptable Performance Degradation to continue.~~ Deleted: 9.4.17...; ... [38]
- 9.5.49 ~~If there is no Unacceptable Performance Degradation at the conclusion of the 12 months of operation at normal configuration the Access Seeker may proceed to prepare Phase 2 of the Project Closure Checklist referred to in section 21 of the Mobile Co-location Operations Manual.~~ Field Code Changed
- 9.6 ~~Non-Compliant Solution Protocol~~ Field Code Changed
- 9.6.1 The Access Seeker will not build any Non-Compliant Solutions and any solutions which become Non-Compliant shall be removed. If the Access Seeker and Access Provider agree that Unacceptable Performance Degradation occurs from a Disagreed Solution, the Disagreed Solution will at that point become a Non-Compliant Solution and shall be removed. Deleted: 9.4.22...; ... [39]
- 9.6.2 If as a result of Dispute Resolution the Access Seeker may not radiate from the Relevant ~~Facilities~~, or where it is decided in the Dispute Resolution process that any radiation from the Access Seeker Equipment at the Relevant Facilities will cause Unacceptable Deleted: 9.4.32...; ... [40]
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Performance Degradation, then this shall be deemed to be a Non-Compliant Solution and shall be removed.

10 Protocol for Ongoing Interference Management

10.1 This section sets out how Unacceptable Performance Degradation which occurs outside the time frames of clauses 9.4 and 9.5 shall be managed but it shall only apply where the Access Seeker and the Access Seeker Equipment complies with both the terms of the Final Site Application and the solution finally agreed under clauses 9.4 or 9.5.

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10.1.1 If at any time after:

- (a) The first two months of normal operation of an Agreed Standard Solution; or
- (b) The first twelve months of normal operation of a Disagreed Solution;

either the Access Seeker, the Access Provider or any Existing Co-locator reasonably believes that Unacceptable Performance Degradation is occurring it may give Notice requiring the other Party or Parties to meet to attempt to resolve the issue.

10.1.2 If such Notice is given by any Party or any Existing Co-locator (**Affected Party**), the **Affected Party will undertake testing to establish the cause of the Interference.**

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10.1.3 **The Parties and any Existing Co-locator will facilitate the testing undertaken by the Affected Party.**

10.1.4 Parties will meet **as soon as practicable but** within five Working Days of the Notice and agree that they will work together to identify techniques to avoid or mitigate Unacceptable Performance Degradation.

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10.1.5 If the Parties cannot agree to appropriate mitigation methods or the mitigation methods agreed, do not reduce the Performance Degradation to an acceptable level, then the issue can be advanced using the expert determination procedure of the Dispute Resolution procedures in section 36 of the Mobile Co-location General Terms. **The expert in reaching their decision shall apply the principles set out above at clause 5.2 and the decision must be consistent with them.**

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10.2 This section sets out how Unacceptable Performance Degradation which occurs outside the time frames of clauses 9.4 and 9.5 shall be managed where the Access Provider determines that the Access Seeker and/or the Access Seeker Equipment does not comply with either the Final Site Application or the solution finally agreed under clause 9.4 or 9.5. This section shall apply regardless of whether the Access Seeker has obtained a Permit to Work or Planned Work Approval under the Mobile Co-location Operations Manual.

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10.2.1 If at any time after:

- (a) The first two months of normal operation of an Agreed Standard Solution; or
- (b) The first twelve months of normal operation of a Disagreed Solution;

either the Access Provider or any Existing Co-locator reasonably believes that Unacceptable Performance Degradation is occurring it may give of this to the Access Seeker.

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10.2.2 Upon receipt of such Notice, the Access Seeker will immediately take measures to:

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- (a) restore the installation so that it is compliant with the Approved Solution; and
- (b) alleviate the Unacceptable Performance Degradation up to and including de-powering and/or completely turning off some or all of the Access Seeker Equipment at the Relevant Facilities.

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10.2.3 The Parties will meet within one Working Day of the Notice of Unacceptable Performance Degradation to attempt to resolve the issue. The Access Seeker, Access Provider and any Existing Co-locator will work together mutually and in good faith to find a solution.

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10.2.4 If the Parties cannot agree on a solution within five Working Days, then the issue can be advanced using the Dispute Resolution procedures in section 36 of the Mobile Co-Location General Terms. Until a solution is found, whether by agreement or through Dispute Resolution, the Access Seeker must not permit Unacceptable Performance Degradation to occur.

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10.2.5 If the Access Seeker fails to comply with its obligations under clauses 10.2.2 and 10.2.4, then the Access Provider shall be entitled to take such steps as are reasonable necessary to alleviate Unacceptable Performance Degradation. This shall include, without limitation, the right to gain access to the Access Seeker Equipment, or any Utility Services used by the Access Seeker, to de-power or completely turn off the Access Seeker Equipment.

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11 Expansion or Modification of Access Seeker Equipment

11.1 This section sets out how Access Seeker Equipment may be modified or expanded. This section shall not apply to Access Seeker Equipment which was deployed as a Disagreed Solution.

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11.1.1 In the event that the Access Seeker wishes to expand or modify (other than reduce) the configuration of any Access Seeker Equipment, it must follow the procedure for making a Planned Work Application (clause 47.4 of the Mobile Co-location Operations Manual). "Expand or Modify" in this clause shall exclude maintenance, repairs or fault rectification which, under the Mobile Co-location Operations Manual, require only a Permit to Work.

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11.1.2 In the event that the Access Seeker expands and/or modifies (other than reducing) the Access Seeker Equipment at a Site without complying with clause 11.1.1 or clause 9.4.11, the Access Provider or any Existing Co-locator may give Notice to the Access Seeker requiring it to immediately de-power and/or switch off the Access Seeker Equipment.

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11.1.3 Upon receipt of such Notice the Access Seeker shall immediately de-power and/or switch off the Access Seeker Equipment.

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11.1.4 If the Notice relates to a failure to comply with clause 9.4.11, then the Access Seeker may only reactivate the Access Seeker Equipment once it has complied with clauses 9.4.10, 9.4.11, 9.4.14, 9.4.27.

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11.1.5 If the Notice relates to a failure to comply with clause 11.1.1, then the Access Seeker may only reactivate the Access Seeker Equipment if it is reduced or modified to comply with the configuration approved in the Final Site Approval.

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11.1.6 If the Access Seeker fails to comply with clauses 11.1.1, 11.1.3, 11.1.4 or 11.1.5, then the Access Provider shall be entitled to take such steps as are reasonably necessary to depower and/or switch off the Access Seeker Equipment including de-powering and/or switching off any Utility Services used by the Access Seeker.

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Spectrum Licensing Process¶
The Radiocommunications Act 1989 and its subsequent modifications govern the licensing process. However, there are issues specific to mobile co-location that are not explicitly addressed in the Radiocommunications Act 1989. ¶
Before the Access Seeker may issue a new spectrum licence, modify an existing spectrum licence or apply for a radio licence at Relevant Facilities it must:¶
take into account and allow for services already operating at the Relevant Facilities;¶
take into account and allow for not prevent services that are forecast to operate at the Relevant Facilities from obtaining spectrum licences; and¶
take steps to ensure that Unacceptable Performance Degradation will not occur as a consequence of any service covered by the proposed new or modified spectrum licence.¶
If the Access Provider wishes to modify existing licences will give considerations to existing services at the Relevant Facilities.**

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Access Provider's Forecast

has the meaning set out in clause 9.2.

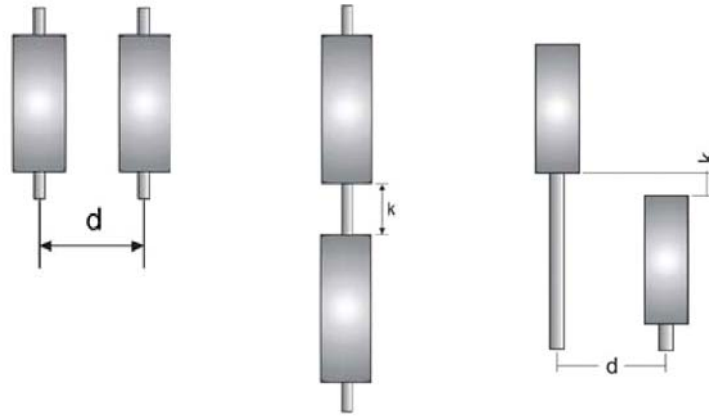


Figure 5A: Example of vertical and horizontal separation with same Antenna orientation

the arrangement of Antenna in such a way so as to minimise the Interference between affecting and affected equipment. This can be achieved by the alignment of Antenna azimuths in such a way so as to avoid the overlap of beamwidths in the near field. Refer to Figure 5B for examples of horizontal separation with different Antenna orientation;

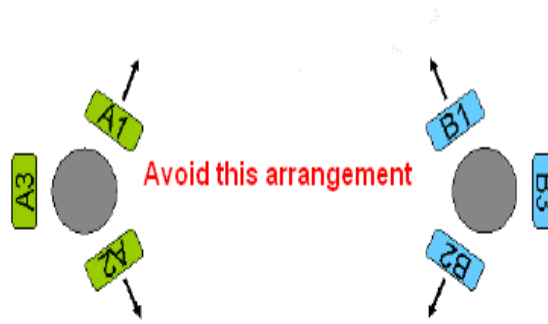


Figure 5B: Example of horizontal separation with different Antenna orientation

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the attenuation (reduction) of transmit power levels of the Access Seeker Equipment.

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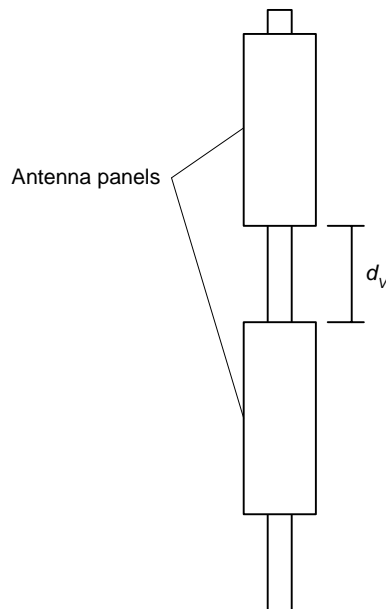
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“Vertical Separation Distance” can be calculated approximately from the general formula:

$$\text{Isolation: } A_V \approx 28 + 40 \log (d_V / \lambda) \quad [\text{dB}]$$

where d_V = vertical tip-to-tip distance between Antennas [m]

λ = wavelength [m]



“Horizontal Separation Distance” can be calculated approximately from the general formula:

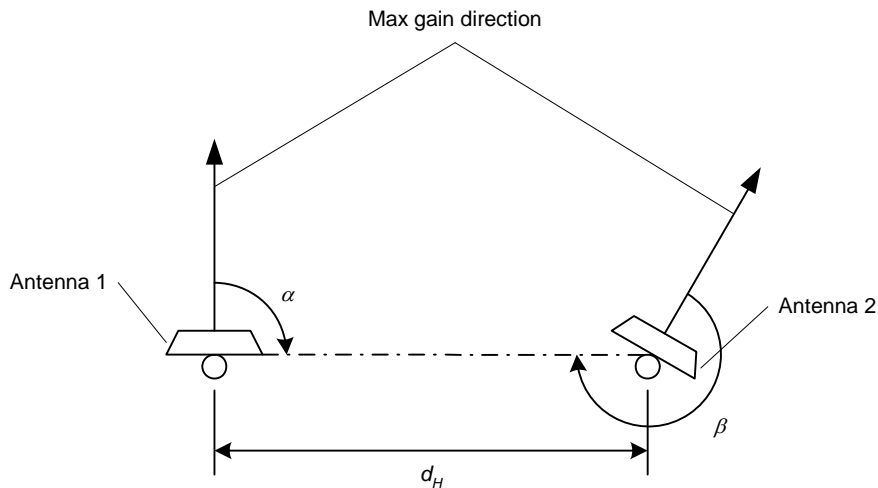
$$\text{Isolation: } A_H \approx 22 + 20 \log (d_H / \lambda) - (G_1(\alpha) + G_2(\beta)) \quad [\text{dB}]$$

where d_H = horizontal distance between the centrelines of Antennas [m]

λ = wavelength [m]

$G_1(\alpha)$ = gain of Antenna 1 [dBi] at the relative angle, α , to Antenna 2

$G_2(\beta)$ = gain of Antenna 2 [dBi] at the relative angle, β , to Antenna 1



Co-location issues

When, even with the use of Mast replacement, extension or revision (as referred to in section 21 of the Mobile Co-location Operations Manual), Relevant Facilities cannot be used for mobile co-location only then may the Access Seeker request that the Access Provider move, add, decrease or change in any way the Access Provider Equipment.

Any proposal from the Access Seeker which requests the Access Provider to move, add, decrease or change in any way the Access Provider Equipment must not result or risk resulting in:

Unacceptable Performance Degradation;

unreasonable technical or operational practicability having regard to the Access Provider's Network;

a loss or reduction in Network security and/or safety;

the Access Provider not being able to meet its existing legal duties to provide a defined level of service to Customers or End Users;

an inability, or likely inability, of the Access Seeker to comply with any reasonable conditions on which the Mobile Co-location Service is supplied;

the Access Provider's current and reasonable forecast requirements for capacity (as set out in section 9) on the Relevant Facilities not being met;

any relevant requirements under the Resource Management Act 1991, the Building Act 2004 and/or any relevant District or Regional Plan not being met;

any relevant health and safety requirements under any enactment not being met;

any existing contractual obligations to third parties, including lessors of land on which the Relevant Facilities are located not being met; and

the interests of third parties who use the Relevant Facilities not being taken into account.

In the event of such a request the Access Seeker shall provide to the Access Provider all relevant information in relation to its proposal, including the following:

all relevant technical and design specifications, dimensions, load factors and the radio communications characteristics of the Access Seeker Equipment;

a construction timetable and work plan for the works; and

anything else reasonably required by the Access Provider.

In the event that such a request is accepted by the Access Provider, the Access Seeker shall pay all costs associated with the request and its implementation. The Access Provider's consideration and involvement in the implementation of such a request shall be charged for by the Access Provider in accordance with the Charges, as agreed between the Parties pursuant to the Mobile Co-location General Terms.

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The Access Provider's involvement in the measurement and testing may be charged for by the Access Provider in accordance with the Charges, as agreed between the Parties pursuant to the Mobile Co-location General Terms.

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Access Provider's Forecasting

This section 9 sets out what the Access Provider's Forecast comprises and the requirements that the Access Provider must meet.

The Access Provider's current and reasonable forecast requirements for capacity ("Access Provider's Forecast") include the following:

any plans for the future expansion of capacity or capability of existing Telecommunications Services currently being provided at the Relevant Facilities;

any plans for the future deployment of Telecommunications Services that are provided by the Access Provider elsewhere but that are not provided at the Relevant Facilities;

any plans for the future deployment of new Telecommunications Services and for technology evolution requirements that are planned for deployment by the Access Provider but that are not currently operating.

The Access Provider's Forecast shall not extend for more than five years from the date when the Access Provider's Forecast was last updated in the Common Format Site Database.

The Access Provider's Forecast must be included in the Access Provider's site database and must also be disclosed in the Common Format Site Database at the time of the forecasting.

The Access Provider must have reasonable intent and the ability to deploy the Access Provider Forecasts which will be evidenced by the following:

the Access Provider must hold suitable spectrum management rights, or intend to acquire such rights, to deploy the relevant requirement; and

if relevant, the new Telecommunications Service Radio communications Service or technology must be standardised and must be one which is recognised by the ITU.

The Access Provider must not use the Access Provider's Forecast for anti-competitive purposes.

The Access Seeker may only invoke the provisions of section 39 of the Mobile Co-location General Terms (Dispute Resolution) in respect of the Access Provider's Forecast if the Access Seeker reasonably believes that the Access Provider has not complied with clauses 9.3, 9.4 and 9.5 and then only in respect of whether or not the Access Provider has complied with those clauses.

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and any eExisting Co-locators

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Access Seeker, Access Provider and any Existing Co-locators.

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The solution must:

Avoid Interference.

Not cause Unacceptable Performance Degradation to existing Telecommunications Services or to Access Provider's Forecast Telecommunications Services at or on the Relevant Facilities.

Comply with the Mobile Co-Location Operations Manual.

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and any existing co-locators

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by close of business the following working day

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Access Provider, Access Seeker and any Existing Co-locators

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Access Seeker and Access Provider and any existing

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of Interference and minimal risk

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either the Access Seeker, or the Access Provider or any Existing Co-locators

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when the co-location is being set up, it may also be required

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.Access Seeker and tThe involvement of the Access Provider other parties in agreeing and participating in the testing referred to in clauses 910.1.10 and 109.1.11 will be charged for by the Access Providerthese parties in accordance with the Charges, as agreed between the Parties pursuant to the Mobile Co-location General Terms

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the Access Provider or any Existing Co-locator

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