



4RF Limited introduction and T&C
Engineering services



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1 Overview

1.1 Introduction

4RF provides technical support and a range of engineering services to support the efficient design and implementation of customer wireless networks. We can manage an entire project including network design, traffic routing, RF planning, core and peripheral equipment selection, implementation, installation, and commissioning. Alternatively 4RF may only be responsible for a single part of a larger project.

The engineering services that 4RF provides are grouped into two categories:

- In-office
- Field

Technical support is described separately within these terms and conditions, but charged in conjunction with the appropriate engineering service fees.

1.2 Definitions

Term	Meaning
'We' or 'Our' or '4RF'	4RF Limited
'You' or 'Customer'	Who 4RF is providing the services to
'Work'	Activity carried out in support of the engineering service provided to the customer
'Urgent'	A classification applied to requests for engineering services or technical support that applies to significant problems that are causing substantially restricted or curtailed services to the end customers, or other such occurrence that the customer can reasonably class as being of a critical nature to their network and business operations (that is, revenue affecting)
'Standard'	A classification applied to requests for engineering services or technical support that applies to all requests that do not meet 'urgent' classification
'Obsolete'	A Product classification indicating 4RF no longer provides guaranteed support. Items are typically designated obsolete at a period of greater than 7 years after the product has ceased manufacture.

2 Engineering services

2.1 In-office engineering services

4RF's in-office engineering services include:

- Network and system engineering, and design (including equipment selection)
- RF engineering
- Equipment integration and configuration

Network and system engineering

Implementing solutions with Aprisa's in-built multiplexer and the wide range of available traffic interfacing protocols means we have knowledge that extends well beyond the design of a 'backbone' point-to-point microwave link.

We can design the total solution for the customer including network topology and traffic distribution as well as the selection of both core and peripheral equipment.

By drawing on our extensive experience, customers can significantly decrease the design and equipment selection phase of their project to achieve lower cost of total ownership, both in terms of equipment selection as well as project design costs

RF engineering

Accurate RF engineering is key to ensuring reliability expectations are met, and to ensure efficient use of available spectrum, both of which contribute to cost effectiveness and ultimately a better customer ROI (Return on Investment).

Typically, RF engineering includes individual path profiles, frequency distribution planning and antenna system selection.

Our engineers have extensive experience in RF planning and transmission systems. Together with the aid of advanced software tools such as 'Pathloss' this helps to take the uncertainty out of RF planning.

RF engineering is charged as an in-office engineering service on a time basis, as defined in the following sections. Path profiles are charged separately on a per profile basis, as described in our Path Planning introduction and terms and conditions document.

Equipment integration and configuration

Pre-shipment configuration of 4RF equipment and integration with additional core and peripheral network equipment can significantly reduce installation and commissioning time, avoiding complications due to the following:

- Infrastructure requirements for power-up and connection of equipment in one location

- Identifying configuration errors over remote locations
- Lack of familiarity with equipment setup

With the required information from the customer we can configure the total network for immediate operation.

2.2 Field engineering services

Our field engineering services include the following:

- Installation and commissioning
- Site and path survey
- Engineering assistance

Installation and commissioning

Customers can benefit from having a 4RF engineer on site to assist with installation and commissioning, especially if the customer has not previously implemented 4RF equipment, or if they do not have in-depth experience in implementing radio links and associated network equipment. Additional benefit can be gained by combining this activity with a training course.

We typically carry out commissioning of the radio and network equipment. For full site installation, including tower and antenna systems, or DC provision and distribution we will quote separately, typically as part of a larger project.

Site and path survey

Including surveys of both existing and proposed sites, a 4RF site and path survey can significantly increase the accuracy of RF planning and evaluated performance expectations for the proposed solution.

Identifying potential interference sources, infrastructure limitations, or other factors during a site or path survey can greatly reduce the risks and associated cost of identifying problems after equipment is installed.

A 4RF site and path survey is a requirement of our warranty for path planning services, as described in our Path Planning introduction and terms and conditions document.

Engineering assistance

On request we can provide an engineer to assist with:

- Identifying or rectifying system performance or degradation issues
- Managing, planning or coordinating a project

3 General terms

3.1 Availability

Both in-office and field engineering services are provided depending on resource, and made available at our sole discretion.

If an engineering service request means it is necessary for a service engineer to visit the customer, we will aim to arrive on site within 20 days for standard requests and five days for urgent requests after receipt and accepting the PO (Purchase Order) for the service to be rendered.

3.2 Hours of work

The daily rates are for up to eight hours work per day. We typically work between the hours of 7.00 am and 7.00pm (local time), although this can vary dependent on the nature of the service we are providing.

If the service engineer is required to work more than eight hours a day, we may charge for the additional hours or part thereof at our sole discretion.

3.3 Scope of work

Our quotation will list notes defining scope, inclusions, and exclusions or limitations regarding the specific services to be provided. We may also provide the following to further define the work to be carried out:

- Reference to an associated report, typically produced as a result of associated engineering services such as network engineering, path planning or site surveys
- A work schedule (attached to the quotation)

It is the customer's responsibility to ask that specific activities are included, if required. Any additional activity or work that is not defined in the quotation, customer purchase order, reports and work schedules that are attached to or referenced by the quotation will only be carried out at our sole discretion.

3.4 Extensions to duration of services

We will provide a quotation for engineering services based on the anticipated number of days or hours to complete the requested services.

Work may take longer than anticipated to complete as a result of, but not limited to:

- Restrictions in access to sites, location, or equipment
- Lack of available customer personnel
- Inaccurate or incomplete information provided by the customer
- Other unexpected delays or complications

At our sole discretion, extensions to the duration of services will be charged additionally at the daily or hourly rate as applicable, as described in the Engineering Services price list.

4RF will advise the customer if more time is needed to complete the work. If the customer agrees, we will continue working. Otherwise, we will stop and we will invoice for the amount detailed in the customer purchase order, including expenses accrued.

3.5 Travel and waiting days

We will charge for travel and waiting days at a reduced daily rate as described in the Engineering Services price list.

Travel days are typically anticipated before service begins, and are detailed in the customer quotation accordingly.

Waiting days are typically not anticipated at the time of commencement of services. Waiting days are days spent in the field by our engineer without activity in support of the specific field service being provided to the customer.

Waiting days are due to but not limited to:

- Lack of site access
- Incomplete installations
- The availability of local or customer personnel
- Weather
- Lack or unavailability of equipment

If an extension to the field service period is required due to waiting days, then the additional charge will be at the waiting day rate as described in the Engineering Services price list.

3.6 Field expenses

All additional expenses are to be met by the customer, including but not limited to:

- Travel
- Equipment and freight
- Accommodation
- Meals
- Local transport

3.7 Written reports

If the customer requires an electronic copy (soft copy) of a report, they will be charged based on time taken to produce the report. This will be included in the in-office engineering service charge. If the customer requires a printed copy (hard copy), an additional fee of US\$50 plus postage may be applied at our discretion.

3.8 Safety health and operating environment

The customer is responsible for:

- Ensuring that 4RF personnel are made aware of, and carry out work in accordance with, local site, customer, regional or country policy, procedural or legislative requirements
- Providing any additional equipment or protective clothing that is required as a result of such policy, procedures, or legislative requirements

3.9 Customer staff requirements

The customer is required to provide staff to install equipment including tower or mast equipment, antenna systems and power distribution.

The customer shall ensure that the engineering, operations and maintenance staff are adequately trained so that they have the proper knowledge and skills to operate all systems and the activity to be undertaken. This includes, but is not limited to, providing suitable qualified and authorised staff to:

- Install and connect power supply systems
- Install antennas, feeders, and associated equipment
- Perform antenna alignment ('panning and tilting')

The customer shall appoint a suitable technical liaison for our engineer for the period that we provide both field and in-office engineering services.

3.10 Customer's responsibilities

The customer is responsible for:

- Giving our engineers unrestricted access to, and use of, normal equipment and system documentation during visits
- Rectifying or replacing, at their expense, our test equipment, supplied radio equipment, power supply and antenna systems if these have incurred direct physical damage by the customer's direct or subcontracted employees or personnel. This includes, but is not limited to, damage as a result of negligence
- Providing all adaptors, cabling, equipment and accessories, not specified in the customer purchase order, as required to install the radio equipment, power supplies, and antenna systems.
- The customer is responsible for, and will indemnify and hold harmless

4RF against any claims for injury, sickness or death to any of the customer's direct or subcontracted employees or personnel arising from, or in connection with, the work or services we perform.

3.11 4RF staff

We will provide engineering staff to co-ordinate and manage the installation and commissioning process, provide training and technical support, as required.

The 4RF staff will be experts in the type of work to be performed with appropriate technical and engineering knowledge. Their work will be:

- Of a safe and high standard
- Performed with all due expedience and diligence
- In a good and workmanlike manner
- In accordance with good engineering standards and practices

Our engineer(s) will not normally provide 'tower' or 'mast' equipment installation, and power supply routing and connection work. However, if such work is required, the customer is responsible for ensuring that we are fully aware of, and comply with required local policy, procedural or legislative requirements. The customer is responsible for all additional costs to ensure compliance with such requirements including but not limited to:

- Permits or authorising documents
- Specialist equipment or clothing
- Providing additional 'safety men'

3.12 4RF's responsibilities

We will fully insure the cost of rectifying or replacing any test equipment provided by us or installed 4RF microwave equipment that has incurred direct physical damage caused by our staff's negligence when working on a customer's site. We are not liable for any indirect damage or consequential losses, such as loss of income or profit.

We will be responsible for, indemnify and hold harmless the customer against any claims in respect of injury, sickness or death to any of our employees or personnel arising from, or in connection with, the work or services carried out by 4RF.

Except as expressly provided in an associated Support Agreement between the customer and 4RF, and to the full extent permitted by law, all express or implied warranties, representations terms and conditions regarding goods and services and their use (including without limitation fitness for any particular purpose) are expressly excluded.

4RF's aggregate liability to the customer for all claims and indemnities arising under or in connection with the application of field or in-office engineering services (whether for negligence or otherwise) shall, to the full extent

permitted by law, not exceed the fees received by us for the provision of the specific services being claimed against. We will not be liable for any indirect, consequential and special damages of any kind or loss of profit however caused.

3.13 Pricing and payment

In-office engineering services are charged on either an hourly or daily basis.

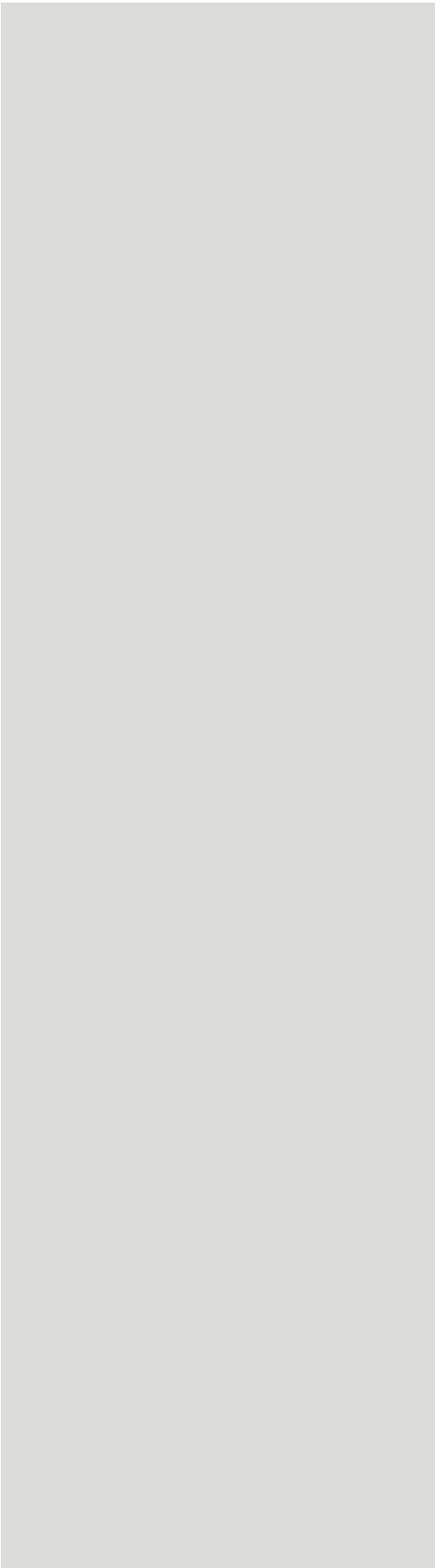
Field engineering services are charged on a daily basis or part thereof.

Before we start the agreed service, we require a customer purchase order.

The customer will meet all additional expenses.

Payment is net 30 days, unless specified otherwise. Customers without pre-approved credit may be asked to pay before we provide the engineering service(s).

Price is set by 4RF and is subject to change without prior notice.



4 Technical support

4.1 Overview

We provide different levels of technical support to meet the customer's requirements, including e-mail, and on-site support.

For customers without 4RF service level agreements (SLAs), availability and response times will be based on "best effort". Customers with 4RF SLAs receive preferential pricing, availability, and response times.

All requests for technical assistance without immediate resolution will have the following assigned:

- A case number
- A 4RF service engineer who will be responsible for the case until it is resolved

4.2 E-mail support

The following e-mail address can be used to contact Customer Service for technical support: support@4rf.com.

4.3 Standard telephone support

For technical support during normal New Zealand office hours telephone +64 4 499 6000 and ask for Customer Service. Normal New Zealand office hours are 9.00 am to 5.00 pm, GMT+1200.

4.4 24/7 telephone support

24/7 telephone support is only provided to customers that have this support option as part of a 4RF SLA.

24/7 Telephone support is provided via dedicated telephone number(s) that will connect to a 4RF service engineer. The service engineer will have access to suitable resources to provide immediate technical support.

If the technical support request is not resolved immediately a resolution plan including actions and response times will be set.

4.5 Availability

Technical support is not guaranteed for equipment classed as 'obsolete', and is provided at our sole discretion.

Providing technical support both from the office and in the field depends on resources, and is made available at our sole discretion.

If a New Zealand based service engineer needs to visit a customer as a result of a technical support request, we will aim to arrive on site within five days for urgent requests, and 20 days for standard requests. These visits are subject to the terms and conditions for field engineering services.

4.6 Escalation procedures

Escalation procedures can include prioritising technical support requests, the assistance of R&D specialists as well as providing specific 4RF contacts to expedite responses and resolution. Escalation procedures and the additional levels of support are applied at our discretion or as defined within customer specific 4RF SLAs.

4.7 Cases that result in the return of 4RF product for repair

For cases that are resolved by returning 4RF equipment that is in warranty and subsequently confirmed to be faulty we will:

- Cancel all in-office engineering charges that have accrued with respect to technical support for the specific case
- Apply a 50% discount to field engineering services charges that have accrued with respect to the specific case (with the exception of expenses)

For cases that are resolved by returning 4RF equipment that is out of warranty, and subsequently confirmed to be faulty, we may at our sole discretion:

- Cancel all in-office engineering charges that have accrued with respect to the specific case
- Apply a 25% discount to field engineering services charges that have accrued with respect to the specific case, with the exception of expenses

4.8 Pricing and payment

For each individual case we will not charge for the first two hours of e-mail or telephone support.

We will charge for any subsequent responses or investigation in support of the technical request, as identified in the Engineering Services price list for in-office engineering. The minimum charge is two hours.

Additional investigation work and responses are charged on an hourly (or part thereof) basis. If there are multiple telephone calls or e-mails required we will assess the total combined effort when determining the additional hours, to avoid charging every call or e-mail at an hourly rate.

The assessment of effort (time spent) in support of technical support requests is at our sole discretion.

If we need to make a site visit as a result of a technical support request, the terms and conditions and charges for field engineering services will apply as identified in the Engineering Services price list.

Payment is net 30 days, unless specified otherwise. Customers without pre-approved credit may be asked to pay before we provide technical support. Price is set by 4RF and is subject to change without prior notice.

About 4RF Limited



Operating in more than 130 countries, 4RF solutions are deployed by oil and gas companies, international aid organisations, public safety, military and security organisations, transport companies and utilities, broadcasters, enterprises and telecommunications operators. All 4RF products are optimised for performance in harsh climates and difficult terrain, and support legacy analogue, serial data, PDH and IP applications.



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