



Australian Government

Department of Education, Employment and Workplace Relations

ICTRFN5097A Test cellular handset enhancements and international roaming agreements

Release: 1

ICTRFN5097A Test cellular handset enhancements and international roaming agreements

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to test the handset enhancements and international roaming capability of a subscriber's cellular phone service in a public land mobile network (PLMN) overseas. In order to guarantee the subscriber high quality and full availability, regular international roaming tests are necessary. Manual roaming testing has largely given way to fully automated testing due to the large number of PLMNs and tests required. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.
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Application of the Unit

Application of the unit	Technical officers and supervisors who test the international roaming capabilities of cellular mobile equipment apply the skills and knowledge in this unit.
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to conduct roaming tests	1.1. Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2. Identify need for tests from service provider mobile network deployment taskforce 1.3. Develop enterprise test procedure according to roaming arrangements and manufacturer test regime 1.4. Arrange access to the location where tests are to be conducted according to required procedure 1.5. Select resources needed to conduct tests complying to roaming arrangements 1.6. Confirm details of international roaming partners and agreements with partner mobile operators 1.7. Advise network operations centre of the test details and test schedule
2. Conduct tests and analyse test results	2.1. Conduct tests according to enterprise test procedure 2.2. Analyse recorded test results for roaming compliance and functionality of SIM card and phone enhancements
3. Document results	3.1. Document details of roaming tests, SIM card validity and functionality of phone enhancements and make recommendations to appropriate person 3.2. Report non-compliance to appropriate person for investigation with international roaming partners and mobile phone manufacturer

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to review and evaluate measurements
- communication skills to interact with enterprise personnel, international roaming partners and customers to maintain a customer focus and consider customer needs
- literacy skills to interpret technical documentation
- numeracy skills to:
 - check that equipment is calibrated
 - take measurements

REQUIRED SKILLS AND KNOWLEDGE

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| <ul style="list-style-type: none">• interpret results• evaluate different types of technical data• PC skills to:<ul style="list-style-type: none">• control automated testing• load test files• store test results• planning and organisational skills to organise and prepare for measurements• problem solving skills to resolve technical issues within international roaming• task management skills to work logically and systematically with required attention to detail when following complex test procedures• technical skills to:<ul style="list-style-type: none">• conduct test procedures• operate specialised roaming test equipment |
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Required knowledge

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| <ul style="list-style-type: none">• features and operating requirements of specialised roaming test equipment• information required to operate equipment according to a test specification• legislation, codes of practice and other formal agreements that impact on the work activity• manufacturer's requirements for safe operation of equipment• mobile phone network standards and specifications• specific OHS requirements relating to the activity and site conditions• test analysis |
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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: - conduct tests on international roaming capability and functionality of handset enhancements - analyse results of testing - make recommendations based on test results.
Context of and specific resources for assessment	Assessment must ensure: - site where tests on handsets and international roaming agreements may be conducted - testing equipment currently used in industry - equipment, system manuals, specifications and relevant enterprise policy and documentation.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. the following examples are appropriate for this unit: - direct observation of the candidate conducting international roaming agreement tests - review of report prepared by the candidate outlining findings, interpretation of test results and recommendations - oral or written questioning of the candidate to assess knowledge of handsets and handset enhancements.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplaces and job role is recommended, for example: ICTRFN5148A Test and measure cellular phone and network equipment performance. Aboriginal people and other people from a non-English speaking background may have second language issues. Access must be provided to appropriate learning and assessment support when required.

EVIDENCE GUIDE

	Assessment processes and techniques must be culturally appropriate, and appropriate to the oral communication skill level, and language and literacy capacity of the candidate and the work being performed. In all cases where practical assessment is used it will be combined with targeted questioning to assess required knowledge. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. Where applicable, physical resources should include equipment modified for people with special needs.
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Range Statement**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Relevant legislation, codes, regulations and standards include:

- Australian Communications and Media Authority (ACMA) standards
- GSM Association permanent reference documents:
- International Standards ISO 9000 and ISO 9001
- International Telecommunications Union (ITU) recommendations
- IR.22 SCCP Signalling aspects for roaming
- IR.24 End-to-end functional capability specification for inter-PLMN roaming
- IR.26 End-to-end functional capability specification for inter-PLMN roaming addendum for Phase 2
- IR.27 Functional capability test specification for inter-PLMN roaming phase 1 data services, fax services
- IR.28 Specifications of the infrastructure in a

RANGE STATEMENT	
	PLMN to allow automatic testing • IR.29 Proposal of a minimum requirement on an automatic test equipment for roaming • IR.32 End-to-end functional capability specification for Inter-PLMN CAMEL-roaming • IR.35 End-to-end functional capability test specification for inter-PLMN GPRS roaming • IR.37 Guidelines and testing for optimal routing - Service definition Stage 1 testing • IR.50 2G/2.5G/3g roaming • IR.53 MMS inter-working tests • IR.60 Prepaid service roaming test • IR.62 End-to-end WLAN roaming test cases • IR.66 End-to-end interworking and roaming test specification for IMS • ITU Regulation 24 and standards • OHS • The International Roaming Expert Group (IREG) of the GSM Association.

RANGE STATEMENT	
<i>Need for tests</i> may include:	• compatibility of frequency bands from one country to another • emergence of additional network services • modification of a software release by an operator • new mobile phone enhancements and features • new roaming agreements between service providers.
<i>Test procedure</i> may include:	• IREG tests • PLMN test data • test equipment.
<i>Tests</i> may include:	• additional test cases • billing tests • check against manufacturer's standards • compatibility with normal features provided by carriers • connectionless mobile originated call (MOC) and mobile terminated call (MTC) • email • general packet radio service (GPRS) and wideband code division multiple access (WCDMA) • IR35 including FTP and HTTP • IREG 24 Basic services and supplementary services • IREG 27 Data and fax services • IREG 28/29 Test with automatic answer circuits • IREG 32 CAMEL Phase 1 and 2 • MMS • P.862 standard • P.862.1 standard • phone enhancements • ping • prepaid tests • roaming functionality • SIM card validity • SMS • speech quality (PESQ) • test cases.

RANGE STATEMENT	
Resources may include:	• PLMN test data stored in test files • roaming test equipment required locally • SIM card boards.
Conduct tests may include:	• inbound roaming • keynote SIGOS - GlobalRoamer • MILBORNE Roaming Verification tester • outbound roaming • test line interface and roaming and mobile service test system - Nexus 8620/8610.
Phone enhancements may include:	• data • email • fax • multimedia messaging service (MMS) • SMS • WiFi.
Appropriate person may include:	• account manager • international roaming partner • marketing manager • mobile phone manufacturer's representative • project manager.

Unit Sector(s)

Unit sector	Telecommunications
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Radio frequency networks
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