
BABT 721

A Guide to the BABT Certified for Network Connection Scheme

BABT is the Telecommunications
Certification body of TÜV SÜD



Foreword

This guide explains the general features of the Certified for Network Connection scheme.

This guide is designed so that the essential information can be read quickly by reading the main text. Where you require more information, either refer to an associated annex or to shaded text adjacent to the main item. A list of standards which may be used for certification of particular types of equipment is included in BABT Application Note 101.

The scheme enables a supplier to achieve a product certification which demonstrates that compliance of the product with the technical requirements for network connection has been verified by BABT and that BABT is satisfied that the certificate holder will supply production units which continue to be compliant.

In addition, certificate holders are eligible to use the BABT Approval Mark on products covered by their certificate.

The formal requirements of the scheme are set out in the BABT Certification Regulations. The current version of these may be found at www.BABT.com.

All BABT publications are available from:

<http://www.babt.com>

(See the download area in *Information Services*)

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1. Introduction

BABT's Certified for Network Connection Scheme addresses issues of telecommunications interface and radio interface compatibility.

It enables manufacturers of telecommunications and radio products to demonstrate that they meet recognised standards or other acceptable criteria and to give confidence that the product can interwork with the intended networks. It also enables demonstration of compliance to recognised standards throughout the World by means of a certificate from BABT.

There are two main elements to the certification scheme:

- a) the assessment of a technical construction file (TCF) by BABT to establish the initial compliance of the product to the requested standard *and*
- b) satisfying BABT that compliance will continue to be maintained consistently in production from unit to unit produced over time.

Once all the requirements are satisfied BABT will issue a hard-copy of the Certificate to the required address and place a copy of the Certificate with all annexes on the BABT Web site.

Technical Construction File" (TCF)

The Term "Technical Construction File" (TCF) is used to denote the collection of technical data and information required to demonstrate compliance with the standard and with the information requirement of this scheme

2. Making an application

2.1 Who to apply to

The application should normally be made to direct BABT on form BABT 700. While the actual BABT 700 form may be sent as paper, e-mail, fax, or on a CD the accompanying information should normally be sent on electronic media.

Refer to the foreword for the sources of form BABT 700 and the address to send completed applications to.

Alternatively you may submit your application via any TUV Product Service company appointing them as your agents to progress the application.

On receipt of your application, we will generate and send you a confirmation of the application.

2.2 Who can apply

Applications can be made by or on behalf of both manufacturers and suppliers of telecommunications terminal equipment or radio equipment. The person making the application should be a duly authorised signatory of the applicant and may not be an agent or BABT/TUV employee.

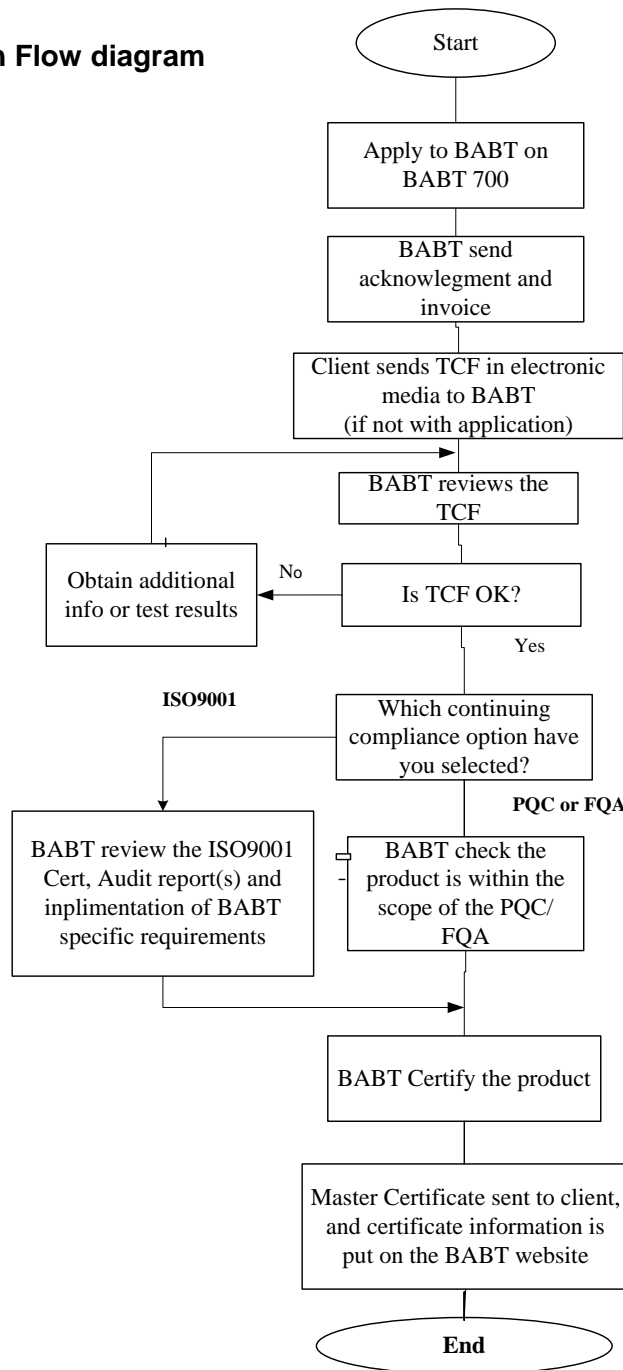
Optionally, the applicant may in addition authorise BABT to liaise with another party (e.g. a TUV company/agent/consultant) acting on behalf of the applicant in matters relating to the application

BABT will require evidence that the representative or consulting agency is authorised by the applicant company to act on their behalf and there is a section of the example application form for this purpose

2.3 Types of Application

The application should be made for an original certificate and will normally be for one single named product. Exceptionally, where a product is identical and is marketed by the certificate holder in different regions with different identities, more than one product name may appear on the certificate.

2.4 Application Flow diagram



2.5 Information required for an application

The following information should be supplied as appropriate as a part of the application. Entries for this information are included in or with form BABT 700.

- **Section A: Applicant Details**
 - **Section A.1: Main Contact Detail**
Details of the company name, and address which will appear on the certificate, including Telephone number and e-mail address
 - **Section A.2: Other Contact Information**
 - Please indicate and provide the supporting information where the main contact works from a different address to the address to appear on the certificate (e.g. where you wish the Company HQ to be on certificates), or where a different Company name is to appear on the certificate .
 - Where you wish BABT to involve an agent to be involved with the application please indicate and supply details of the scope of appointment of the Agent on Company Headed paper.

- **Section B: Your Certification Requirements**
 - **Section B.1: Type of Assessment** In this instance select the CNC box
- **Section C: Product Details**
 - **Section C.1: Product(s) Submitted**
Must be clearly stated as this will appear on the certificate and serve as a prime identifier of the certified product(s).
 - **Section C.2: Brief description of this product**
This assists in the evaluation of the product.
 - **Section C.3: Related Products**
 - An explanation of the relationship between models. Where you are applying for more than one product name or wish to use test data from another product in support of this application a relevant explanation should be included.
In particular please state whether one can be derived from another by sub-equipping/depopulation and whether they have substantial areas of circuitry or software in common
 - Where your product is an OEM product for which BABT have already issued an opinion please provide details of any differences and a letter from the holder of the original certificate granting you access to their results.
- **Section D: Test Laboratories**
Details of the test facility who have either issued the test report, or where you intend to have the testing performed and subsequently reported upon.
Normally this Test Lab should be a BABT recognised source of test reports.
- **Section E: Continuing Compliance Option Information**
Details of the continuing compliance measures. You should complete the sections relevant to your selected measure.
- **Section F: Payment Details**
Information related to your intended method of payment.
 - Where you wish the invoice to be sent to a different person to the main contact please mark "X" in the box and provide the full details in supporting information
 - Purchase Order or Credit Card details.

Work is carried out on receipt of either payment in advance or a valid purchase order number. Clients applying directly to BABT (i.e. not through any other TUV Group office), who do not currently have approved credit facilities with either BABT or TUV Product Service UK must include a completed Credit Details Form with the application. Alternatively payment in advance is accepted. The appropriate forms may be downloaded from <http://www.babt.com>

- **Section G: Agreement**
A statement that you understand and agree to abide by the BABT Certification Regulations.
This must either be signed by the main contact or an officer of the applicant company.
Where applications are made electronically this may be an electronic signature.
Exceptionally in the absence of a valid signature BABT will e-mail the main applicant to obtain their agreement to progress the application.

The application should also be accompanied with supporting information as detailed in later sections.

2.6 Documentation supporting the Application

2.6.1 General

The completed BABT 700 application form should be accompanied by a TCF and documentation appropriate to the continuing compliance option you have selected.

While BABT will accept the TCF in paper format we prefer that the TCF is sent via electronic media (e.g. On a CD, or via e-mail attachments). Documents should be in Word, Excel, Adobe PDF, or images in JPEG formats. Where you wish to use other formats or employ encoding please contact BABT prior to submission to ensure we will have ready access to the files.

All documentation should be readily identifiable with either revision indication or an issue date. Multiple paged documents should have indications (page numbers or listed sections) to ensure they are complete.

2.6.2 TCF Contents

Since each TCF is unique there is no fixed structure or mandated set of contents. However the TCF should contain the following information.

- Index or Content list
- Description of the apparatus
- Procedures to ensure compliance
- Test Data
- User Instructions

An expanded list with details of the contents is included for information in Annex A of this document.

2.6.3 Continuing compliance option

Certified Products must be manufactured under one of the following continuing compliance options

- Manufacture at a facility holding a BABT PQC or FQA Quality Management System Certificate including CNC within its scope
- Manufacture at a facility holding an ISO9001 Certificate

Details of the requirements for these options are provided in Annex B of this document.

Replacement/Additional Manufacturing Facilities

Where Product is manufactured at one location but is later modified at another location before being placed on the market, BABT may at its discretion inspect the premises where such modification is performed.

2.7 Progressing the Application

When BABT has received your application and evaluated the initial information, we will:

- Ask you to pay an application fee. The fee relates to the assessment of the application as well as the issuing of the Certificate.
- Inform you of the BABT reference number assigned to your application. This number should be quoted in all further correspondence.
- Advise you of any obvious omissions of items required for assessment (e.g. Test Reports)

When BABT has received all the required items the application will be allocated to an engineer. For formal review.

After testing you should confirm or re-submit your TCF to BABT to complete the certification process.

2.8 Completion of Process

2.8.1 Assessment Outcome

Once the technical documentation file has been received, the assessment of the application for certification is allocated to a certification engineer.

After assessment of the supporting documentation:

- if the TCF demonstrates compliance with the requested standard ; and
- the requirements of your selected continuing compliance option are met
- then BABT will issue a Certificate confirming compliance.

If during the assessment the Engineer concludes that

- Required documentation is omitted; or
- The TCF includes unexplained inconsistencies; or
- Documentation is incorrect or incomplete; or
- Test Results are inconsistent or omitted;

then the reviewing Engineer will contact the main contact with details of the concerns and seek a suitable response.

Where information is missing from an application or the reviewing Engineer raises a query further work on that application will be suspended at an appropriate time and will only be resumed after the response .

Certificate

Certificates are issued in the name of the Applicant Company which is referred to as the holder.

- Certificates and their associated Annex also include:
- the address of the holder (or an alternate address where identified within the application),
- The product identity(ies) (including any variants/models),
- the reference to the TCF presented to BABT
- information related to the interface type(s)
- The Standards used within the TCF
- Test Reports used in the TCF
- Other data necessary for identification of the product,
- and any conditions for its validity.

The Certificate is valid for 3 years provided the conditions for certification are met.

Inconsistent or Omitted test results

If during the assessment BABT concludes that additional testing is required then you may either:

- request BABT to discontinue with the application ; or
- suspend the assessment and obtain the additional required tests results.

Where the testing option is taken then this must take place at either a test facility recognised by BABT (refer to document BABT 766 for details), or at any other Test facility accredited to ISO/IEC 17025 (or equivalent). In the latter case BABT may require evidence of accreditation for the tests being performed

Once the required testing has been performed the test report should be sent to BABT and the Assessment resumed.

Note: BABT may charge an additional fee for reviewing such reports.

- * if the TCF or continuing compliance documentation is not satisfactory in the view of BABT we will contact the main contact and endeavour to resolve any concern. This is normally conducted by e-mail but may be formalised if required.

Changes to the TCF during assessment

If you make changes to the TCF after initial submission BABT which require re-assessment by BABT we may charge an additional fee for repeated work.

You are entitled to make a formal appeal if you believe that you have been unjustly denied a certificate. In all cases, the decision of the appeals panel is final. Full details of the appeals procedure are given in the Certification Regulations.

3. BABT Approved Product Marking

Holders of BABT CNC Certificates may place the BABT Approved Product Mark on the certified products and on advertisements under the conditions stipulated in the BABT Certification Regulations

Details of the rules and colour schemes for the mark are defined in document BABT AP014 "Marks associated with BABT Certification Schemes"



4. Annual renewal of the Certificate

Continuation of the certificate is subject to payment of an annual renewal fee, and satisfactory checks that the continuing compliance option remains valid.

Recognised manufacturing quality assurance systems are subject to annual review in respect of each manufacturing location to ensure continuation of their quality certification. Where a production facility ceases manufacture of the certified product, or is withdrawn due to their quality certification not being maintained, then BABT will suspend your certification to enable you to seek an alternative continuing compliance option. Where the suspension is prolonged the Certificate may be cancelled.

If you do not wish to continue production you should notify BABT, in writing, at least two months before the anniversary of original issue of the certificate. You will not then be liable for the next continuation fee.. Note this replaces the date cited in the Certification regulations

Certificates are issued with an expiry date 3 years after the initial certification date. If you wish this to be extended then provided all the initial requirements for certification continue to be met you (the holder) may request that the validity be extended. If this request is made after the expiry date any re-instatement of the certificate will be at the discretion of the BABT who may apply additional conditions or fees.

5. Records

BABT maintain records of all the details on a certificate; of each submission and the resulting evaluation for 6 years after the last significant file activity

You are required to maintain records the records of all items listed on the Certificate for 10 years as defined in the BABT Certification regulations.

You shall also maintain a record of all complaints and remedial actions relative to the Certified Product. These shall be made available to BABT on request. BABT will forward complaints about certified clients within an appropriate period of time to the certified clients in question.

6. Keeping your TCF up to Date

Over the lifetime of a product and the supporting certificate, BABT understands that it is likely that you will want to make a number of changes.

Whilst not all changes will be significant to the certification, each change, however small, must be considered for its potential effects and their relevance to the certification and conformance to the relevant standards.

Please refer to Annex C of this document for details of how to process changes related to certified products.

Annex A Information to be included within a TCF

A.1 General

Each TCF is unique accordingly there is no fixed structure or mandated set of contents. The following list identifies data and documents normally found within a TCF to support your application.

For applications to BABT we prefer that the TCF is sent via electronic media (e.g. On a CD, or via e-mail attachments). Documents should be in Word, Excel, Adobe PDF, or JPEG formats. Where you wish to use other electronic formats or employ encoding please contact BABT prior to submission to ensure we will have ready access to the files. Where you submit the TCF in paper form BABT may charge a handling fee.

All documentation should be readily identifiable with either revision indication or an issue date. Multiple paged documents should have indications (page numbers or listed sections) to ensure they are complete.

The documentation to be included broadly falls into the following categories:

- TCF Index
- Description of Apparatus
- Procedures used to ensure conformity
- Test Data
- Other documentation

A.2 Index

The TCF should be structured in a logical format and have either a table of contents or an index.

Where the TCF covers multiple variants of a product the index/table of contents should be in sufficient detail to readily determine common items and documentation specific to single variants.

A.3 Description of the apparatus

The following documentation should be considered:

A.3.1 Overview

This should be an overview or brief description of the purpose of the apparatus and where more than one model of the apparatus is included in the TCF it should contain brief details of the relationships and differences between models.

A.3.2 Identification of Equipment

This should be a list of all model names and associated numbers of all product models included within the TCF. Where documentation is included using prototype names, or names from other markets then the relationship with the models named within the TCF should be detailed.

A.3.3 Block Diagram and/or Cross Connection Matrix

You may include a block diagram showing the following details (for simple apparatus a complete circuit diagram may be satisfactory):

- points of connection to communications networks via any wire or optical interfaces
- points of connection to communications networks via any radio interfaces, showing antennas (internal or external)
- any other radio/wireless interfaces
- other ports (including ac power, dc power, signal & control)
- indicators of key functionality
- connections to earth (protective or functional).

Block Diagram and Cross Connection Matrix The provision of a block/circuit diagram can help to ensure that all parties quickly reach a common understanding of the relevant tests and certifications required.

For complex equipment with switching capabilities, include a cross connection matrix showing the possible connections through the equipment between the various ports and/or terminating stations, if relevant to the assessment.

A.3.4 Technical description explaining the block Diagram

The block/circuit diagram should be accompanied by a brief technical description explaining how the equipment interacts with the communications networks concerned.

A.3.5 Circuit Diagrams and PCB layout Diagrams

Detailed circuit diagrams and PCB layout diagrams are required for all circuits which may have an effect on conformity.

These should show all network or radio interface circuits, active speech processing devices, audio hybrids and transducers, line signalling components, power supplies, ports and all network-affecting circuit elements including any components providing user isolation. Circuit elements need only be shown in sufficient detail to explain the above. Circuit diagrams should exactly reflect the actual samples submitted for test.

A.3.6 Parts List (Bill of Materials)

You should include parts lists (BOMs) for those areas of circuit detail identified in the circuit diagrams.

Critical tolerances should be identified where applicable and the manufacturers of safety-critical components, all transducers and components affecting the signal path, including all second sources, should be stated. If more than one source of a critical component (e.g. line interface IC) is to be used, samples from all sources should be submitted for assessment.

A.3.7 Data Sheets

Data sheets for any safety critical components including Gas discharge tubes and other voltage dependant devices.

A.3.8 Software and Firmware Versions

The version of any software or firmware supplied with the equipment which may affect compliance with the certified standard must be declared.

Where the relevant software or firmware is installed separately from the hardware (e.g. device drivers in PCs, or plug in proms) then installation conditions must be provided either as a part of the software installation package or in the user guide.

Test Software: Where special software is provided to enable testing, then the version of such software must be recorded with a clear statement about the relationship of this software to the production sample.

A.3.9 Photographs or Illustrations

Photographs or illustrations showing the external features of the complete equipment.

A.4 Procedures used to ensure compliance

A.4.1 List of Standards applied

You should include a list of all relevant standards applied to ensure conformity. This list should include the issue level of the standard.

A.4.2 Information for Test Purposes

A.4.3 Where relevant you should include details of any “Information required for testing purposes” which was used to define the testing performed on the product. This may either be copies of completed tables from standards, or equivalent formatted information.

A.4.4 Justifications

Where relevant you should include the following justifications:

- **Justification of Tests not performed**
If there are any aspects for which testing has not been performed then a clear technical justification for this shall be provided. This should include details of what alternative processes have taken place to establish compliance to the requirements of the standard.
- **Justification for using test data from a different standard**
Where you wish to use test data from other standards this may be included instead of the requested standard with a justification for using this to demonstrate compliance to the relevant requirement. For example you may seek listing to an ETSI Standard but have some test data from testing to a non-European standard derived from the same global standard.

- **Justification for omitting tests**

Where the functionality of your equipment does not encompass a normal sub-set of tests from a standard you should provide a justification for omitting those tests; Where due to design constraints, or industry wide lack of test capability tests cannot be performed then you should include justifications (with appropriate supporting data) why the apparatus complies with the requirement.

A.5 Test Data

A.5.1 Test Reports

These should normally be from BABT Recognised test facilities and follow the guidelines in ISO/IEC 17025 Clause 5.10. The scope of BABT recognition of the test laboratory must include the standards relevant to your desired product certification.

BABT recognised laboratories are listed on BABT's web site at <http://www.babt.com>.

Test Reports from BABT Recognised Test Laboratories and Other Sources

Document BABT 766 details the general criteria for recognised sources of test reports which may be used to support an application for BABT certification. It includes procedures for currently unrecognised independent and manufacturer's own test laboratories to seek BABT recognition as sources of test reports.

BABT will also accept test reports from other sources provided they come from a test laboratory which is accredited to ISO/IEC 17025 by a body recognised by the EA. Such test laboratories must have the standards being tested to on their accredited scope.

Note: Where such a laboratory is used in more than one instance BABT expect they should apply for Recognised Test Facility status

A.5.2 Design Calculations

Where you use design calculations instead of independent test data, or to supplement it these should be clearly included.

A.5.3 Test Methods

Where the standards used do not include test methods or where alternate test methods have been used they should be detailed with justifications for their appropriateness to demonstrate the requirement.

Details should include the equipment used, the calibration status of test equipment, and the estimated measurement uncertainty.

A.5.4 Justifications

The following justifications should be included as appropriate:

- **Related Products/Models**

Where the TCF covers a range of related products or models the test reports shall be sufficient to cover the range taking into consideration the supporting documentation of similarity between products. Where differences in implementation could effect particular requirements testing to those requirements should take place on sufficient variants to cover each different implementation. The justifications to limit testing should either be included with the data or product descriptions.

- **Validity of test results obtained prior to modification**

Where you include test results obtained using apparatus at a build level different from the current level then there should be a justification of the continuing validity of those results. This may be in the form of a positive assertion of the results, or a negative assertion of any effect on the compliance held against individual engineering changes.

A.6 Other Documentation

A.6.1 User/Installation/Special Instructions

You should supply (in English) a draft or published set of User Instructions, or for complex equipment, those sections of the user instructions. They should:

- contain all the information required for conformance to the relevant standard;
- not give details of adjustments which can take the equipment outside compliance - unless it is made clear how to adjust the equipment to maintain compliance and that any non-compliant setting would invalidate the certification.

Annex B Continuing Compliance

B.1 Overall requirement

You must demonstrate to BABT that continuing compliance will be maintained. There are three alternative methods to provide such evidence:

- Manufacture at a facility holding a BABT PQC or FQA Quality Management System Certificate including CNC within its scope
- Manufacture at a facility holding an ISO9001 Certificate

Multiple Manufacturing locations

Where you manufacture the certified product at more than one location you must be able to readily identify at which location the product was manufactured (e.g. by serial number prefix). Each location must demonstrate continuing compliance through one of the options. However you may use different options for individual locations. This does not apply to sub-contract locations as they must be under the control of a main manufacturing site.

B.2 Manufacture at a facility holding a BABT PQC or FQA Certificate

The facility must hold a current PQC or FQA Certificate including testing for products under CNC within its scope. In the application you must identify the site by PQC/FQA Certificate number and location

Furthermore you should include with the Product Certificate Application form a copy of the Product test plan. This should include details of testing to ensure compliance of the certified product to the certified standard.

Refer later for details of recommended contents of such a test plan

At the time of evaluation BABT will confirm the validity of the certificate with respect to the CNC application. The test plan will then be briefly reviewed to ensure it addresses the main certified aspects. While it is expected that the test plan will include test controls, methods and equipment it is the responsibility of the certificate holder to ensure these are adequate to meet the test intent.

Once the Product Certificate is issued the manufacturing aspects will be reviewed at least annually on the assessment visit to the PQC or FQA facility. Any changes to the test plan should likewise be addressed through the Quality System certification.

B.3 Manufacture at a facility holding an ISO9001 Certificate

The facility must hold a current ISO9001 Certificate with a scope suitable for products under CNC within its scope. The Third Party Certifying Organisation must be accredited to ISO/IEC 17021 by an Accreditation Body, which is a signatory to the International Accreditation Forum (IAF) Multilateral Agreement.

Where you are using this option you must accompany your application with a copy of the current certificate and any annexes showing the scope of certification, and a copy of the last audit report from your certifier. Note: BABT may require copies of the previous 2 audit reports where there is insufficient evidence the audit covered all the areas significant to production.

In addition to these requirements for the general basis of the quality system, BABT will need to be satisfied that certain elements of particular significance to the continued compliance of certified products will be addressed. BABT does not stipulate the precise way in which these issues must be addressed. The particular measures adopted by a manufacturer should suit his system and be relevant to the certification criteria for the product. However, the way in which this is achieved must be clear from the quality system documentation and a document cross-reference or "quality plan" will be required by BABT for this purpose.

The quality system must address the following issues of particular significance to the continued compliance of certified products.

1. Define and document the responsibility, authority and interrelation of personnel having responsibility for the quality system, insofar as it affects certified products.
2. Ensure that changes affecting the build level of certified products cannot be implemented until the certificate holder has authorised the changes as having been agreed with BABT (or by a suitable appointed CLE).
3. Ensure that purchasing controls, particularly in relation to certification sensitive material, are adequate to demonstrate material compliance with specified requirements.
4. Where sub-contractors are used their quality assurance system shall be shown to be at least equivalent to that required of the main manufacturer by this document.

5. Quality records demonstrating continued compliance of certified products must be kept for at least 10 years after the expiry or cancellation of the product certification.
6. Internal quality audits shall verify the effective implementation of measures taken to address these issues of particular significance. Records shall be available, on request, to BABT.

Where more than one certified product is manufactured

at a facility the above aspects are only required with the second and subsequent applications where any of the above differ from the original processes/procedures supplied to BABT. In the second and subsequent applications you should reference the Certificate number of the original application and make a statement about the applicability of the assessment of the above documentation to this product.

Furthermore you should include with the Product Certificate Application a copy of the Product test plan. This should include details of testing to ensure compliance of the certified product to the certified standard. Where this test plan has been reviewed for an earlier certified product please make a reference to the BABT Certificate number in your correspondence.

Refer later for details of recommended contents of such a test plan.

BABT normally charge a fee for the review of the documentation and processing of this option.

Once the Product Certificate is issued you will be required to provide the following on an annual basis:

1. Evidence of the continued certification of the facility to ISO9001
2. A copy of the latest audit report from your ISO9001 Certifier
3. Evidence that certified product has been tested according to the product test plan

BABT normally charge a fee for the annual reassessment of the ISO9001.

Any changes to the test plan related to the certified aspects should be sent to BABT for agreement prior to implementation.

B.4 Guidelines for Manufacturing testing

B.4.1 General

Each product covered by BABT Certification has demonstrated compliance to a set of requirements appropriate to the product. Where you opt to use a BABT Certified Facility, or select the Third Party ISO 9001 option you are required to support production controls to demonstrate that the product continues to meet the requirements for certification. The requirements upon which the certificate is based form the basis of the manufacturing tests. However it is not necessary to replicate the test facility testing in the manufacturing environment.

The following guidelines may be used to show that the manufacturing tests or processes, as invoked in the test plan for the product or the quality system in general, are sufficient to demonstrate the product continues to meet the requirements for certification.

Individual aspects may be controlled through appropriate combinations of:

- Process controls;
- Manufacturing procedures;
- In Circuit Testing (ICT);
- Automated testing (ATE);
- End of line testing

B.4.2 Required coverage of testing and/or controls

All certified interfaces on every certified product should be subject to these controls and/or manufacturing testing.

Where tests are performed a given test may be used to demonstrate compliance for more than one aspect or interface (e.g. A call from a cordless telephone handset through the basestation to a wired interface could simultaneously demonstrate aspects for both radio interfaces and the wired interface).

Where a given interface on a product is certified to connect to more than one type of network it is only necessary to perform testing in one configuration representative of the intended use.

Where tests or processes are not applied on a 100 % basis the test plan shall include details of the sampling plans, and the control processes invoked in the event of singular and repeated failures.

Monitoring of outgoing quality level or defect return rates may be used to establish appropriate sampling rates.

B.4.3 Test Configurations

Where testing is performed the measurement equipment and test loads, used to verify the performance of manufactured product against the recommended test criteria, should be maintained in calibration with traceability to national and international standards.

Measurement uncertainty should be appropriate to the measurements performed, such as to have negligible effect on the decision making process or alternatively be taken into account in establishing the test limits.

Limits may be obtained or derived from either the standards used for the product certification or from appropriate network interface specifications relevant to the product. A record of the limits used and their derivation should be maintained.

B.4.4 Recommended Controls and Testing

The following clauses list manufacturing controls and tests that may be considered when generating the test plan. Additional controls or tests should be considered as appropriate to the particular certified product.

For many wired interfaces a simple series of functional tests using a representative network interface unit (or equipment replicating it) may be sufficient. For equipment intended for data transfer the use of BERT testing may also be required.

For Radio equipment some testing may be performed during assembly without the antenna connected.

Test	Purpose	Control
Compatible Connection Type	The means of connection to the interface should be reviewed to ensure correct operation is possible. The interface should be provided with the correctly wired connection method for communication with the intended interface	This may be addressed either through process controls or through the actual use of the connection method/cable/antenna during one of the manufacturing tests
Valid use of the frequency	The manufacturing process should ensure the items operate within the intended frequency band. Note: While it is recommended that the process also ensures that the product does not use unintended frequencies this is normally an EMC issue and out of the scope of the CNC certification	This may be addressed either through a specific test (e.g. an ATE test) or through interworking testing to an interface configured/calibrated to operate within the intended bandwidth. It is recommended that this be not solely controlled through process controls. For Radio interfaces this test should be normally conducted at the antenna connection.
Timing/ Synchronisation	For interfaces that operate with the intended network interface only when synchronised to a defined clock or pattern then the interface of the manufactured item should operate within the defined limits. Note While it is recognised many chip sets now inherently control these aspects many are configurable to operate over a range of values	The timing of the interface may be demonstrated either through a specific test (e.g. an ATE test) or through interworking testing to an interface configured/calibrated to operate with the intended timing(s). Since synchronisation is normally achieved through Chip, firmware, or software design this aspect may be excluded from specific testing
Power Level limits	It is recommended that the intended power limits of the interface should be checked to ensure that the interface is able to communicate over the required range	For wired digital interfaces with pulse masks or wired analogue interfaces with modulated signals this may be achieved through use of specified driver chips (subject to purchase conditions) and functional test through an interface configured/calibrated to fail invalid signals. Another alternate test for wired product may be through a specific test (e.g. an ATE test) during manufacture (using modified limits for any in-line gain/loss between the test point and the interface point). It is recommended that this test be performed with the maximum network attenuation (e.g. Simulate the maximum line length). For Radio interfaces it is suggested that tests should be conducted at the antenna connection point testing for compliance with both the maximum and minimum levels required for the apparatus

Test	Purpose	Control
Address Signalling	Where the network interface responds to addressing information (e.g. PSTN, ISDN, GSM) then a test should be performed to ensure that address information is sent in the correct format	This may be addressed either be through a specific test (e.g. an ATE test) or through interworking testing to an interface able to receive and note the sent digits. Since most address information is controlled through Chips, firmware, or software it is not considered necessary to test exhaustively every addressing mode or digit that may be sent
On-line/Off-line transitions and states	Equipment with an alert module (e.g. Telephone) or auto-answering ability (e.g. A fax machine) should respond to the correct stimulus from the interface, in the intended manner (e.g. audible ringing, vibration, or visual indication for alert modules)	It is suggested that a functional test should be performed to ensure the equipment responds to the correct stimulus from the network interface
Suscept-ibility to interfere-ence	Radio interfaces (appropriate to type of interface) should not be susceptible to co-channel or adjacent channel interference	It is suggested that this is controlled through process controls on Chip sets, firmware, or software as appropriate.
Receiver Tolerances	Each interface should be able to receive valid network signals	For Wired interfaces tests with signals representative of the network signals at maximum attenuation may be used to demonstrate the receive circuits are fully functional. For equipment intended for data transfer this may be demonstrated through a BERT test looped at one end. For voice equipment reception of a specified frequency within a specified tolerance may be adequate. For Radio Interfaces it is suggested that test are performed with signals at maximum and minimum attenuation

B.5 Changes to Manufacturing Arrangements

B.5.1 General

During the lifetime of the product you may wish to change the manufacture arrangements

Whenever you change a manufacturing facility the Product Certificate and Annex will need to be up-issued.

Changes to an existing listed manufacturing facility which do not invalidate their Quality system certification should be advised to BABT via the administrative change mechanism.

B.5.2 Where you currently use a BABT Certified facility:

- If you wish to transfer production to another BABT Certified facility then you must inform BABT immediately and advise BABT of any changes in the test plan within 3 months;
- If you wish to transfer to the ISO9001 manufacturing option then you must establish the acceptability of this facility, supply the test plan if there are any changes from the previous plan, and pay the appropriate fees, before you start manufacture of certified product at this facility.

B.5.3 Where you currently use an ISO9001 facility:

- If you wish to transfer production to a BABT Certified facility then you must inform BABT immediately and advise BABT of any changes in the test plan within 3 months;
- If you wish to transfer to another ISO9001 manufacturing option then you must establish the acceptability of this facility, supply the test plan if there are any changes from the previous plan, and pay the appropriate fees, before you start manufacture of certified product at this facility.

Annex C Keeping your TCF up to Date

C.1 General

Over the lifetime of a product and the supporting certificate, BABT understands that it is likely that you will want to make a number of changes.

Whilst not all changes will be significant to the certification, each change, however small, must be considered for its potential effects and their relevance to the certification and conformance to the relevant standards.

The Holder must notify BABT, or the appointed Certification Liaison Engineer (CLE), of any intended modifications or amendments to the Certified Product, that may affect compliance with these regulations or the standard; this includes changes of ownership of the company, Where the product certification scheme requires continuing compliance this includes changes in the manufacturing arrangements.

All Technical changes outside the scope of any CLE must be notified to BABT with an appropriate Application form accompanied by appropriate supporting information related to the change. As a minimum this should include a description of the change and a statement on how this affects the compliance previously demonstrated

Administrative Changes may be made in writing traceable back to the Holder.

C.2 Change Authorisation Levels

Changes of certified products may be authorised by the following people:

- BABT: who may authorise any type of change; or
- a BABT-appointed Certification Liaison Engineer (CLE) who may authorise changes within their scope or that of the manufacturer; or
- you or your manufacturer acting on your own responsibility who may only authorise changes within their scope

Certified Liaison Engineer (CLE)

This optional facility is a powerful feature of the scheme. You can nominate one of your own engineers or one of your manufacturer's engineers as a CLE. BABT will review their expertise and the Engineering change control procedure. Where satisfied the CLE has both the ability to assess the change and control to ensure they review all applicable change then they will be appointed.

Once appointed by BABT, the CLE acts on our behalf to assess design changes and component changes, where these changes are within the scope of the authorising authority given to the CLE. This simplifies and speeds up the authorisation of changes

Refer to document BABT 731 for details of CLE appointment.

Changes fall into the following broad categories:

- Administrative changes where the product is not technically changed but the Certificate requires updating;
- Changes to product supporting items unrelated to the product certification. This include such items as packaging, warranty cards, cabling for non-certified ports
- Changes to aspects of the product covered by self-declaration or other Certification schemes
- Changes to the certified product which are believed not to have potential to affect compliance to the requirements covered by the certificate
- Changes to the certified product which potentially affect the compliance to requirements covered by the certificate and thus need testing
- Changes to extend the scope of the certification (which may or may not entail changes to the product).

C.3 Rules for progressing changes

C.3.1 Administrative Changes

You must notify BABT if any of the information on your certificate becomes out-of-date; for example:

- the name or address of the holder or
- the place(s) of manufacture of the certified product or
- the status of the quality assurance system certification of the manufacturer of the certified product or

- the name or model number under which the certified product is marketed or
- the information in the annexes to the certificate.

You should also notify BABT if any conditions on your certificate cease to apply directly to the certified product you wish to supply.

Where the conditions for certification continue to be met BABT will apply the appropriate changes to the Certificate and/or Annex and send the updated certificate to the holder.

C.3.2 Changes to product supporting items unrelated to the certified product

Frequently the scope of the certification is less than the whole supplied product. Packaging, information sheets, cables for uncertified ports, and adapters often form a part of the finished manufactured product but are not usually relevant to the certification. These should normally not be submitted as part of the product to be certified.

Such items outside the scope of the certified product are not subject to any BABT control.

The Manufacturer (or the CLE where he is appointed) may approve this type of change.

C.3.3 Changes to [aspects](#) of the product covered by self-declaration or other compliance schemes

Where you demonstrate compliance to certain requirements through a self declaration and changes within that area of design do not impinge on an area covered by the certification, that type of change may be made without redress to BABT. An example of such a declaration is certain GSM requirements for which there is no agreed test method available.

Where the product has aspects of design necessary to comply with mandatory or optional requirements from other schemes (this includes regulatory requirements), then changes within that area of design which do not impinge on an area covered by the BABT certification, may be made without redress to BABT.

(An example could be a safety related change to a ports unrelated to the certified design aspects).

Regulatory requirements

Certificate holders are required to maintain compliance with regulatory and legal requirements pertaining to their certified products at all times.

C.3.4 Changes to the certified product which do *not* affect conformity to the certification requirements

Where a CLE has been appointed, changes which are within the scope of his/her authority will be assessed using the change control procedure agreed at the time of their appointment as a CLE. The CLE may authorise the change without involving BABT.

Where a CLE has not been appointed, you must send full details of changes to BABT for authorisation. If, exceptionally, BABT determines that testing is necessary, you will be advised. You may then negotiate directly with the test laboratory concerning the test work to be performed.

Modifications to embedded software

BABT may accept modifications to software, which is stored in memory within the certified product, provided that you can give an assurance that the new version does not affect conformance to the relevant standards and is uniquely identified. If BABT determines that testing is necessary you will be advised.

C.3.5 Changes to the certified product which potentially affect conformity to the certification requirements covered by the certificate and thus need testing

Where a change to the certified part of a product requires testing, only BABT is able to authorise the change to enable the certification to be maintained.

The following routes may be followed to obtain this agreement

- Where you either wish to completely retest the product to the appropriate standard, or where the effects of the change can clearly be tested by a sub-set of the standards then obtain a test report from a BABT recognised test facility, and submit the test report and change to BABT for agreement;
- Where the change is minimal then produce an in-house test report demonstrating the before and after performance of characteristics potentially effected by the change and submit them to BABT

Otherwise submit the change to BABT with a proposed set of tests to approve the change; Omission of some or all nominally applicable tests should be supported by a reasoned technical justification why the product will continue to comply after change.

Recognised Test Facilities

When testing is required, you should arrange with a BABT recognised test laboratory for samples of the equipment to be tested. The scope of BABT recognition of the test laboratory must include the standards relevant to your desired product certification (see the section on *Recognised Sources of Test Reports*

This test laboratory does not have to be the one which performed the original testing
BABT recognised laboratories are listed on BABT's web site at <http://www.babt.com>.

C.3.6 Changes to the certified product which extend the scope of the certification

Where you extend the functionality of the product to enable connection to another type of network interface, or create network interfaces designed to differing standards, then you may apply for an extension to the scope of certification.

You should identify any technical changes required to provide the new functionality and provide a test report covering the new standard. Where a technical change has occurred that potentially effects compliance to the original certified standards these should also be tested as applicable.

Please note that there is a fee for the evaluation of changes in the scope of certification

C.3.7 Changes to Standards

When a standard is changed, the transition arrangements for equipment already certified may be set out in the standard in which case BABT acts in accordance with these arrangements.

Otherwise, BABT reviews the changes, particularly those affecting network-compatibility requirements, and decides whether or not equipment already certified should be modified to conform to the new standard.

If some modification is required, BABT will define a reasonable period of notice to be given to the certificate holders before samples of their modified equipment have to be re-submitted for testing.

After the expiration of a period of notice, all new applications for certifications, including those in hand at the time of the change, must conform to the new version of standard. Exceptions to this may be made where specific versions of standards are required for regulatory or inter-working reasons.