

5 CERTIFICATES

- **Type Approval Certificates**
- **Type Examination Certificate on EMC**
- **EC Declaration of the manufacturer**
- **Accreditation Certificate of the test laboratory**

Type Approvals of SATELLINE-3AS

• SATELLINE-3AS/250 and SATELLINE-3ASd/250

EUROPEAN APPROVAL

SATELLINE-3AS/250 and 3ASd/250 have been type approved according to the ERC decision CEPT/ERC/DEC/(97)10 by Norwegian Post and Telecommunications Authority (Conformity Assessment Body no. 9001) on the 8th of June, 1999.
The approval is based on the standard EN 300 220-1 adopted by the decision CEPT/ERC/DEC/(98)05 to the harmonised standard of the Conformity Assessment Procedure.

The following countries have implemented the above decisions and therefore recognize the approval.

Austria
Croatia
Denmark
Finland
Iceland
Norway
Switzerland
United Kingdom

NATIONAL APPROVALS

SATELLINE-3AS/250 and 3ASd/250 has been type approved in the following countries according to the national procedure.

<u>Country</u>	<u>Date</u>	<u>Approval / Ref. no.</u>	<u>Authority</u>
Australia	02.07.1999	99/044/N/I	Australian Communications Authority
Denmark ^{#A}	09.06.1999	99001 D	Telestyrelsen
Denmark ^{#B}	09.06.1999	99.3142-389B	Telestyrelsen
Finland	25.03.1999	FI98090011	Telehallintokeskus
Germany	07.07.1999	A100228L	EMCC Dr. Rašek
Singapore ^{#C}	21.07.1999	LPREQ-WMDM-EA-0540-99	Telecommunication Authority of Singapore
Sweden	30.11.1998	Ue980160	Post & Telestyrelsen
Switzerland	08.04.1999	BAKOM 99.0141.K.P	Bundesamt für Kommunikation

#A = freq. 433.950 , 434.000 and 434.050 MHz ; #B = freq. 445.000 – 447.950 MHz ; #C = for 3AS/250

• SATELLINE-3AS/125 and SATELLINE-3ASd/125

SATELLINE-3AS/125 and SATELLINE-3ASd/125 has been type approved in the following countries according to the national procedure.

<u>Country</u>	<u>Date</u>	<u>Approval no.</u>	<u>Authority</u>
Finland	26.03.1999	FI99090004	Telehallintokeskus



POST- OG TELETILSYNET
Norwegian Post and Telecommunications Authority

K O P I

Type Approval Certificate according to decision ERC/DEC/(97)10

Type approval number	: NO99000197
Type designation	: SATELLINE-3AS
Marketing name	: SATELLINE-3AS
Equipment Category	: Short Range Devices (SRD)
Description of the equipment	: 19,2 kbit/s radio modem
Description of equipment use	: Wireless data communication
Issued to	: Tele Scan AS, Høydaveien 17, N-1523 Moss, Norway
Manufacturer	: Satel Oy, P.O. Box 142, FIN-24101 Salo, Finland
Approved according to the following regulations	: Regulations relating to technical requirements for short range radio devices to be used in the 25 MHz to 1000 MHz frequency range
Applied ERC decision:	: ERC/DEC/(98)05
Standard	: EN 300 220-1 (November 1997)
Test laboratory	: EMCEC Ltd., P.O. Box 19, FIN-02601 Espoo, Finland
Test report number/date	: TL 980212 / 7 October 1998
RF-power, conducted	: 400 mW, fixed
Frequency range, transmitter and receiver	: 380 MHz – 470 MHz
Channel spacing	: 25 kHz
Designation of emissions	: F1D
Operating temperature	: -20 °C to +55 °C
Making requirement	: R9001 SRD
Remarks	: Duty cycle class: 4 (up to 100 %)

Based on the decision ERC/DEC/(97)10 on the mutual recognition of conformity assessment procedures, Annex 1 module B, the Norwegian Post and Telecommunications Authority, P.O. Box 447 Sentrum, N-0104 Oslo, Norway, as conformity assessment body number 9001 certifies that the above mentioned equipment conforms with the above mentioned standard.

This type approval is valid only for equipment which are identical with the tested sample.

This type approval does not cover licensing or use of the equipment.

The equipment shall be marked according to the decision ERC/DEC/(97)10 Annex 2.



POST- OG TELETILSYNET
Norwegian Post and
Telecommunications Authority



POST- OG TELETILSYNET
Norwegian Post and Telecommunications Authority

KOPI

Type Approval Certificate according to decision ERC/DEC/(97)10

Type approval number	: NO99000198
Type designation	: SATELLINE-3ASd
Marketing name	: SATELLINE-3ASd
Equipment Category	: Short Range Devices (SRD)
Description of the equipment	: 19,2 kbit/s radio modem
Description of equipment use	: Wireless data communication
Issued to	: Tele Scan AS, Høydaveien 17, N-1523 Moss, Norway
Manufacturer	: Satel Oy, P.O. Box 142, FIN-24101 Salo, Finland
Approved according to the following regulations	: Regulations relating to technical requirements for short range radio devices to be used in the 25 MHz to 1000 MHz frequency range
Applied ERC decision:	: ERC/DEC/(98)05
Standard	: EN 300 220-1 (November 1997)
Test laboratory	: EMCEC Ltd., P.O. Box 19, FIN-02601 Espoo, Finland
Test report number/date	: TL 980212 / 7 October 1998
RF-power, conducted	: 400 mW, fixed
Frequency range, transmitter and receiver	: 380 MHz – 470 MHz
Channel spacing	: 25 kHz
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Operating temperature	: -20 °C to +55 °C
Making requirement	: R9001 SRD
Remarks	: Duty cycle class: 4 (up to 100 %)

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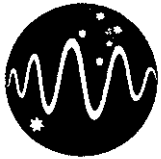


POST- OG TELETILSYNET
Norwegian Post and
Telecommunications Authority

Oslo, 8 June 1999



Tom Liholt
POST- OG TELETILSYNET



Australian
Communications
Authority

Our reference: 99/044/N/I

Mr. T. Malmivaara
RF Designer
Satel Oy
PO Box 142
Salo, FINLAND FIN-24101

Dear Sir,

Acceptance of Sateline-3AS / 3ASd data transmitter

I refer to your application for a Compliance certificate for the Sateline-3AS / 3ASd against the requirements of the Radiocommunications Standard (Analogue Speech (Angle Modulated) Equipment) No. 1 of 1995 (AS4295-1995).

This Standard's scope covers only analogue equipment. A data standard is currently being developed by Standards Australia and hence a compliance certificate for 'data only' equipment cannot be issued. A Spectrum Impact Assessment of your equipment's potential to cause interference to other users of the RF spectrum was made against your supplied test report prepared by EMCEC Oy.

Assessment of the Sateline-3AS / 3ASd was made against the following AS4295-1995 requirements:

Transmitter: *Frequency Error, Carrier Power, Maximum Frequency Deviation, Out-of-band Modulation Response, Adjacent Channel Power, Transient Performance, Spurious Emissions.*

Receiver: *Conducted Spurious Emissions. All other aspects of the receiver, though not tested are assumed to meet the requirements of AS4295-1995.*

Please accept this letter as formal notification that your device is acceptable to the Australian Communications Authority for licensing purposes to the Mobile requirements of AS4295-1995 for 25 kHz bandwidth equipment in the frequency bands 409 - 411 and 469 - 471 MHz at 0.4 watts transmitter power utilising 4 level FSK data modulation.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Noel Higgins', with a stylized flourish at the end.

Noel Higgins
Manager - Compliance and Standards Assessment Team
Customer Service Group
Victoria Area Office
2 June 1999

Typegodkendelse af radiokommunikationsanlæg



Telestyrelsen
National Telecom Agency

Reference Nr.: 99.3142-389A

Fabrikat: Satel

Typebetegnelser: Satelline 3AS og 3ASd

Godkendelsenummer: 99001 D

Godkendelsesindehaver: ComSystem A/S
Porthusvej 9B
3490 Kvistgård

Prøvningsrapport: TL 980212 dateret 24. juni 1998 fra emcec, Espoo, Finland

Godkendelsesdato: 9. juni 1999

Udstyrskategori: Laveffekt radioanlæg til datakommunikation

Frekvens / Frekvensområde 433,950, 434,000 og 434,050 MHz

Sendeeffekt: <500 mW

Modulation: F1D

Kanalfrekvens: 25 kHz

Antenne: Stik til udvendig antenne

Temperaturområde: -20° til +55° C

Betingelser: Se side 2

Typegodkendelsen er udstedt i medfør af Bekendtgørelse nr. 957 af 12. december 1997 om godkendelse og markedsføring m.m. af radioanlæg og på grundlag af ovennævnte prøvningsrapport, der godtgør, at udstyret opfylder kravene i "Tekniske Bestemmelser. Laveffekts radioanlæg til datakommunikation", TB 97 092 rev. A, februar 1999 (EN 300 220-1)


Flemming Nielsen



Telestyrelsen
National Telecom Agency

Vilkår for godkendelsen:

1. Alle fremstillede anlæg af de omhandlede typer skal være identiske med de afprøvede eksemplarer. Dette gælder strømskemaer, komponenter, montering samt evt. software.

Alle fremstillede anlæg skal overholde de tekniske bestemmelser, som afprøvningen er foretaget efter.

Hvis der foretages ændringer, må der gives ny typebetegnelse. Hvis ændringerne har relation til de gældende tekniske bestemmelser, kan der kræves ny afprøvning.

2. Typegodkendelsen omfatter kun forhold, der angår de bestemmelser, som Telestyrelsen har fastsat. Den tager principielt ikke sigte på anlæggets praktiske anvendelighed.

Den omfatter ikke eventuelt relevante bestemmelser i lovgivningen vedrørende stærkstrømsanlæg eller andre sikkerhedsmæssige bestemmelser.

3. Anlægget skal være mærket med et eller flere skilte indeholdende oplysninger om fabrikat, typebetegnelse, serienummer samt godkendelsesnummer.

Sidstnævnte oplysning skal anføres således:

99001 D
Telestyrelsen

Mærkningen skal være mekanisk solid og holdbar. Den kan f.eks. udføres ved gravering, prægning eller ved anvendelse af metalskilte. Mærkningen skal være anbragt på anlægget, så den er let synlig i forbindelse med kontrol.

Typegodkendelse af radiokommunikationsanlæg



Telestyrelsen
National Telecom Agency

Reference Nr.: 99.3142-389B

Fabrikat: Satel

Typebetegnelser: Satelline 3AS og 3ASd

Godkendelsesindehaver: ComSystem A/S
Porthusvej 9B
3490 Kvistgård

Prøvningsrapport: TL 980212 dateret 24. juni 1998 fra emccc, Espoo, Finland

Godkendelsesdato: 9. juni 1999

Udstyrskategori: Radioanlæg til fjernstyring

Frekvens / Frekvensområde 445,000 - 447,950 MHz

Sendeeffekt: <500 mW

Modulation: F1D

Kanalfasthed: 25 kHz

Antenne: Stik til udvendig antenne

Temperaturområde: -20° til +55° C

Betingelser: Se side 2

Typegodkendelsen er udstedt i medfør af Bekendtgørelse nr. 957 af 12. december 1997 om godkendelse og markedsføring m.m. af radioanlæg og på grundlag af ovennævnte prøvningsrapport, der godtgør, at udstyret opfylder kravene i "Tekniske Bestemmelser. Radioanlæg til fjernstyring", TB 94 048 rev.B, februar 1999 (EN 300 220-1)


Flemming Nielsen



Telestyrelsen

National Telecom Agency

Vilkår for godkendelsen:

1. Alle fremstillede anlæg af de omhandlede typer skal være identiske med de afprøvede eksemplarer. Dette gælder strømskemaer, komponenter, montering samt evt. software.

Alle fremstillede anlæg skal overholde de tekniske bestemmelser, som afprøvningen er foretaget efter.

Hvis der foretages ændringer, må der gives ny typebetegnelse. Hvis ændringerne har relation til de gældende tekniske bestemmelser, kan der kræves ny afprøvning.

2. Typegodkendelsen omfatter kun forhold, der angår de bestemmelser, som Telestyrelsen har fastsat. Den tager principielt ikke sigte på anlæggets praktiske anvendelighed.

Den omfatter ikke eventuelt relevante bestemmelser i lovgivningen vedrørende stærkstrømsanlæg eller andre sikkerhedsmæssige bestemmelser.

3. Anlægget skal være mærket med et eller flere skilte indeholdende oplysninger om fabrikat, typebetegnelse og serienummer.

Mærkningen skal være mekanisk solid og holdbar. Den kan f.eks. udføres ved gravering, prægning eller ved anvendelse af metalskilte. Mærkningen skal være anbragt på anlægget, så den er let synlig i forbindelse med kontrol.



Telecommunications
Administration Centre

Helsinki 25.3.1999

TYPE APPROVAL CERTIFICATE

No. FI98090011

Satel Oy
Meriniitynkatu 17
PL 142
24101 Salo

Ref: your application 16.10.1998/ Mr. Malmivaara

TYPE APPROVAL CERTIFICATE

Equipment Type	Data radio equipment SATELLINE-3AS/250 SATELLINE-3ASd/250
Manufacturer	Satel Oy, Finland
Marketing/brand name	SATEL
Frequency range (MHz)	380...470
RF-power (W)	0,4
Modulation	F1D
Channel separation (kHz)	25 kHz
Bit rate	19,2 kbit/s radio modem
Test reports	TL 980212 / EMCEC Ltd., Sonera Group
Applied requirements	THK Regulation 16B/97M (EN 300 220-1)
Remarks	Type -3ASd/250 is a variant with a LCD display and programming keys.

Based on above mentioned test report, the Telecommunications Administration Centre (TAC) has found the equipment concerned to fulfil the requirements applied for this kind of radio equipment in Finland. Therefore it has been granted this type approval by which its compliance with the requirements is shown in the sense of the Radio Act (517/88, amendment 677/92), section 8. In addition, the radio equipment has to conform the regulations given by TAC on the Electromagnetic Compatibility (EMC).

The licence conditions YY 1.2, valid from 1. September 1998 concerning these kind of radio equipment, must be observed when using the equipment.

This type approval can be withdrawn in the cases specified under paragraph § 8 of Regulation THK 17A/1997 M.

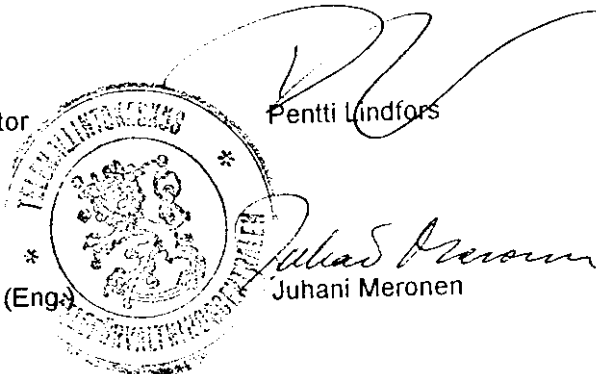
This approval is valid until 31.12.2003.

Director

Pentti Lindfors

B.Sc.(Eng.)

Juhani Meronen



EMCC DR. RAŠEK

EU-Kennnummer 0678

beliehen nach der Beleihungs- und Akkreditierungsverordnung vom Dezember 10, 1997
als Benannte Stelle der Bundesrepublik Deutschland, vertreten durch die
recognised in accordance with the Recognition and Accreditation Ordinance of 10 December 1997
as Notified Body for the Federal Republic of Germany, represented by



Regulierungsbehörde für
Telekommunikation und Post

DEUTSCHE BAUMUSTERPRÜFBESCHEINIGUNG GERMAN TYPE-EXAMINATION CERTIFICATE

Registriernummer: A100228L
Registration No.:

Bescheinigungsinhaber: SATEL Oy
Certificate Holder: Meriniitynkatu 17
FIN-24100 Salo, Finland

Produktbezeichnung: SATELLINE-3AS/250, SATELLINE-3ASd/250
Product Designation:

Produktbeschreibung: Fernwirk-Funkanlage für gewerbliche und industrielle Zwecke
Product Description: des nichtöffentlichen mobilen Landfunks (nömL)

Produkthersteller: SATEL Oy
Product Manufacturer: Meriniitynkatu 17
FIN-24100 Salo, Finland

Vorschrift: BAPT 222 ZV 124, Ausgabe April 1997
Specification: I-ETS 300 220, Ausgabe Oktober 1993

Prüfergebnis: Das geprüfte Baumuster ist konform zu der genannten Prüfvorschrift.
Examination Result: The examined type is in conformity with the above-mentioned test specification.

Diese Bescheinigung ist erstellt in Übereinstimmung mit der Telekommunikationszulassungsverordnung vom 20. August 1997 und gilt nur
in Verbindung mit den nachfolgenden 2 Anlagen.
This certificate is issued in accordance with the Telecommunications Type Approval Ordinance of August 20th, 1997 and is only valid in
conjunction with the following 2 annexes.

EMCC DR. RAŠEK

- Ingenieurbüro -
Moggast 72-74

D-91320 Ebermannstadt

Tel: 09194-9016 Fax: -9125

Ebermannstadt, 1999-07-07

Ort, Ausstellungsdatum

Unterzeichnet von / Signed by Klaus Knörig
Benannte Stelle / Notified Body



Systembeschreibung

Transceiver in 2 Varianten:	SATELLINE-3AS/250 SATELLINE-3ASd/250 (mit LCD display und Programmiertasten)
Schaltbandbreite:	380 MHz – 470 MHz
Sendeleistung:	0,4 W
Sendart:	F1D
Modulationsart:	FM
Betriebsart:	Simplex
Anzahl der schaltbaren HF- Kanäle:	80
Kanalabstand:	25 kHz
Datenübertragungsrate:	19200 bit/s
Antenne des Senders:	Antennenbuchse, TNC, 50 Ω
Temperaturbereich:	- 20° C bis +55° C
Spannungsversorgung des Senders:	Extern 13,5 VDC (nominal) Spannungsbereich: 30,0 VDC max., 9,0 VDC min.

Technische Dokumentation

Technical documentation

gemäß
according to

Telekommunikationszulassungsverordnung **vom 20.08.1997**

Telecommunications Type Approval Ordinance

Als wesentliche Teile der technischen Dokumentation gelten:
Relevant parts of the technical documentation are:

Prüfbericht(e): TL980212
Test report(s):

vom: 1998-06-24
of:

sowie: - Benutzerhandbuch
- Schaltplan
- Bestückungsliste
- Component layout
- PCB layout
- Blockschaltbild
- Application form for testing to I-ETS 300 220

DIGISELECT PTE LTD
Marine Parade
P O Box 0640
Singapore 914405



TYPE APPROVAL CERTIFICATE

TAC No : LPREQ-WMDM-EA-0540-99

This is to certify that the equipment described hereunder has been approved by the Telecommunication Authority of Singapore (TAS) for sale and use in Singapore subject to the conditions specified overleaf.

EQUIPMENT DESCRIPTION

Type of Equipment	:	Wireless Data Communication (Spec 12)
Trade Name	:	Satellite
Model No.	:	3AS
Manufacturer	:	Satel Oy., Finland
Operating Frequency	:	453.7250 / 458.7250 MHz 453.7375 / 458.7375 MHz 453.7500 / 458.7500 MHz 453.7625 / 458.7625 MHz
RF Output Power	:	1 Watt
Channel Capacity	:	1
Channel Spacing	:	25 kHz
Type of Modulation	:	FSK
Date of Issue	:	21 July 1999
Date of Expiry	:	21 July 2004

A handwritten signature in black ink, appearing to read 'Wong Yau Liong', is positioned above the printed name and title.

WONG YAU LIONG
for DIRECTOR-GENERAL
TELECOMMUNICATION AUTHORITY OF SINGAPORE



POST & TELESTYRELSEN

REGISTRERINGSBEVIS

Datum

1998-11-30

Satel Datacom AB

Björn Moberg

Box 18

131 06 Nacka

Utrustningens benämning Satelline-3ASd	Registreringsnummer Ue980160
Produktidentitet (nummer och utförandebeteckning) Satelline-3ASd	Diarienummer Dnr 98-17560
Kortfattad beskrivning av utrustningen Transceiver, frekvens 380 - 470 MHz, uteffekt 0,5 W	

Godkännandets giltighet

Godkännandet gäller endast för det utförande som är definierat av provexemplar och insända uppgifter. Företages ändring i konstruktion, materiel, e.dylig måste underrättelse omedelbart lämnas till Post- och telestyrelsen som avgör om förnyad provning erfordras eller ej.

Detta godkännande gäller inte som tillstånd för anslutning till ett allmänt tillgängligt telenät. Registreringen medför rätt att märka saluförd utrustning med ovan angivet registreringsnummer.

Enligt uppdrag

Bo Flink

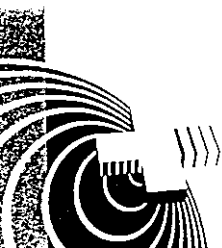
98.11.30

R E G I S T E R K O R T

Reg.nummer :980160
Ärendenummer :Dnr 98-17560
Reg.datum :981126
Ändringsdatum :
Benämning :Satelline-3ASd
Prodid :Satelline-3ASd
Kategori :LMR 30 - 1000 MHz
Fabrikat :Satel OY, Finland
Reg.innehavare :SATEL DATACOMM AB
Provande lab :EMCEC Ltd (Finland)
Aktuella föreskr:ETS 300 220
Anslutning :50 ohm
Återkallad :

Kort beskrivning av utrustningen:

Transceiver
Frekvens 380-470 MHz,
Uteffekt 0,5 W



BAKOM Bundesamt für Kommunikation
OFCOM Office fédéral de la communication
UFCOM Ufficio federale delle comunicazioni
UFCDM Uffici federal da comunicaziuns

Certificat d'homologation BAKOM 99.0141.K.P

En vertu de l'article 31 de la loi du 30 avril 1997 sur les télécommunications (LTC; RS 784.10), de l'ordonnance du 6 octobre 1997 sur les installations de télécommunication (OIT; RS 784.101.2) et à la suite de la demande déposée par le requérant

LINK COMPUTER SERVICES SA

Route de Beaumont 9c, 1700 Fribourg
Suisse

L'Office fédéral de la communication décide :

l'installation de télécommunication suivante est homologuée

Marque:	SATELLINE
Genre d'appareil:	Radio Modem
Modèle (le nom ou la désignation de l'installation):	SATELLINE 3AS / 3ASD
Fabricant:	SATEL OY, Salo, SF

Caractéristiques techniques

433.250 - 434.500 MHz, 80 canal, espace entre canaux: 25 kHz, P < 500 mW, F1D (19200 bps) 4FSK, Interface RS 232, RS 485, RS 422 Simplex

Options/Modèles

Le Type 3ASd est une variante comprenant un affichage LC et des touches de programmation.

Numéro d'identification

BAKOM 99.0141.K.P.

Conditions

1. L'installation ne peut être exploitée que sur les fréquences collectives prévues pour la télécommande et la télémessure avec une puissance apparente rayonnée (PAR) maximum de 0,5W.
2. La puissance apparente rayonnée (PAR) ne doit pas dépasser 0,5 W.

Les fréquences ci-dessous sont autorisées:

433.250/433.300/433.350/433.425/433.525/433.600/433.700/433.750
434.150/434.400/434.450/434.500/433.650/433.800/433.850/433.900
433.950/434.050/434.100/434.200 MHz

433.650/433.800/433.850/433.900/433.950/434.050/434.100/434.200 MHz

433.850/433.900/433.950/434.050 MHz

Motifs

L'installation de télécommunication susmentionnée satisfait aux dispositions de l'OIT, ainsi qu'aux normes techniques et administratives établies par l'OFCOM.

Cette décision se base sur le(s) rapport(s) d'essais et/ou le certificat d'homologation (délivré à l'étranger) suivants:

<i>Rapport/Certificat No</i>	<i>Laboratoire/Organisme d'homologation</i>	<i>Date</i>
TL 980212	EMCEC LTD.	24.06.1998

Remarques

Validité pour d'autres installations de télécommunication

Si l'installation de télécommunication homologuée est le modèle d'une série, le certificat d'homologation est valable pour les autres installations de son titulaire, à condition qu'elles soient en tous points identiques avec l'installation homologuée.

Divers

L'installation peut être mise en place et exploitée sans autorisation ou concession.

Emoluments

Conformément à l'article 35, 1er alinéa de l'ordonnance du 22 décembre 1997 du Département fédéral de l'environnement, des transports, de l'énergie et de la communication sur les émoluments dans le domaine des télécommunications, le requérant verse un émolument à l'office pour l'homologation de l'installation susmentionnée.

Emoluments

CHF 750.00

Voies de recours

Un recours motivé peut être déposé par écrit dans les trente jours à compter de la notification de cette décision. Il sera adressé en double exemplaire à

Commission de recours en
matière de télécommunications
M. Paul Rüst, Président
Centralbahnstrasse 7
CH - 4051 Bâle

Bienne, le 08.04.1999

Office fédéral de la communication
Section installations



Gerhard Käser
Chef de section



Helsinki 26.3.1999

No. FI99090004

Satel Oy
Meriniitynkatu 17
PL 142
24101 Salo

Ref: your application 23.3.1999/ Mr. Malmivaara

TYPE APPROVAL CERTIFICATE

Equipment Type	Data radio equipment SATELLINE-3AS/125 SATELLINE-3ASd/125
Manufacturer	Satel Oy, Finland
Marketing/brand name	SATEL
Frequency range (MHz)	400...470
RF-power (W)	1,0
Modulation	F1D
Channel separation (kHz)	12,5 kHz
Application	9600 bit/s radio modem
Test reports	TL980004 / EMCEC Ltd., Sonera Group TL980367 / EMCEC Ltd., Sonera Group
Applied requirements	THK Regulation 16B/97M (ETS 300 113)
Remarks	Type -3ASd/125 is a variant with a LCD display and programming keys.

Based on above mentioned test report, the Telecommunications Administration Centre (TAC) has found the equipment concerned to fulfil the requirements applied for this kind of radio equipment in Finland. Therefore it has been granted this type approval by which its compliance with the requirements is shown in the sense of the Radio Act (517/88, amendment 677/92), section 8. In addition, the radio equipment has to conform the regulations given by TAC on the Electromagnetic Compatibility (EMC).

The licence conditions YY 1.2, valid from 1. September 1998 concerning these kind of radio equipment, must be observed when using the equipment.

This type approval can be withdrawn in the cases specified under paragraph § 8 of Regulation THK 17A/1997 M.

Approval fee is FIM 1700,- based on the Decision 1155/1998 of the Ministry of Transport and Communications.

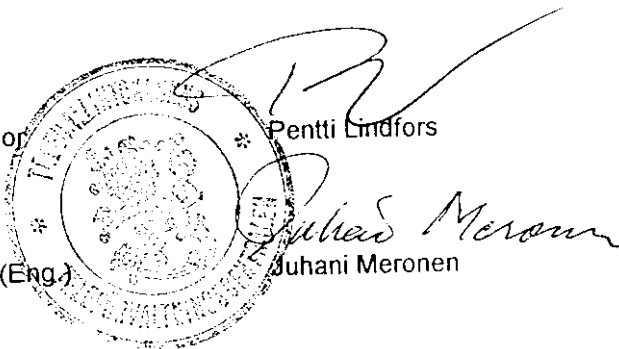
This approval is valid until 31.12.2004.

Director

Pentti Lindfors

B.Sc. (Eng.)

Juhani Meronen





Helsinki 29.3.1999

Satel Oy
Meriniitynkatu 17
PL 142
24101 Salo

EC TYPE-EXAMINATION CERTIFICATE ON ELECTROMAGNETIC COMPATIBILITY

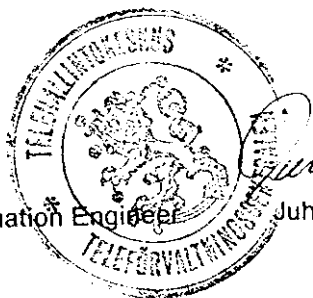
Equipment category	Short range radio equipment
Type	SATELLINE-3AS/250 SATELLINE-3ASd/250
Manufacturer	Satel Oy, Finland
Application	19,2 kbit/s radio modem
Test requirement	Mobile & vehicular use
Test reports	TL990011 / EMCEC Ltd., Sonera Group
Applied requirements	ETS 300 683 (1997)

Telecommunications Administration Centre as a Notified Body no. 0523 for the purposes of article 10.5 of the EC-Directive 89/336/EEC, certifies that the above mentioned equipment conforms with the protection requirements set under regulation THK 24 B/97M on electromagnetic compatibility implementing the provisions of the above mentioned directive in Finland.

This certificate does only cover the requirements given in the directive 89/336/EEC and does not supersede national or common European type approval requirements of radio transmitters.

This certificate does cover the equipment with model variants and ancillary equipment described in the technical documentation by the manufacturer.

The applicant shall keep this certificate with all the technical documentation for a period at least ten years after the last product has been manufactured.



Evaluation Engineer

Juhani Meronen

EC Declaration of Conformity

according to EC Directive 89/336/EEC on Electromagnetic Compatibility

Description of Equipment

Type: SATELLINE-3AS/250, SATELLINE-3ASd/250

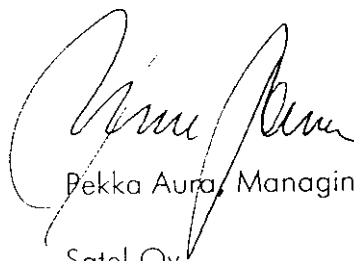
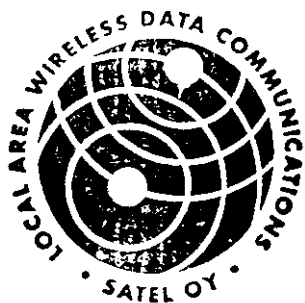
Application: UHF Radio Modem for wireless data communication

Relating Certificate

EC type-examination certificate on electromagnetic compatibility, no. F199900004,
Telecommunications Administration Centre (Notified Body no. 0523),
dated on the 29th of March, 1999.

Hereby confirming that the equipment mentioned above conforms with the
protection requirements of the Council Directive 89/336/EEC on the
approximation of the laws of the Member States relating to electromagnetic
compatibility.

Salo, 10 May 1998



Pekka Aura, Managing Director

Satel Oy
Meriniitynkatu 17 (P.O.Box 142)
FIN-24100 Salo
FINLAND

FINAS

AKKREDITOINTITODISTUS

ACCREDITATION CERTIFICATE

EMCEC OY

ESPOO

on Mittatekniikan keskuksen akkreditoima testauslaboratorio T017
päätöksellä T017/A7/1998.

Päätös on voimassa 14.01.2002 asti.

is Testing Laboratory No. T017 accredited by
the Centre for Metrology and Accreditation.

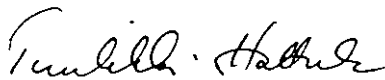
The accreditation is based on Decision T017/A7/1998, valid until 14.01.2002.

Toimielin täyttää seuraavien standardien vaatimukset:

The above body conforms to the requirements of the following Standards:

SFS-EN 45001
ISO/IEC Guide 25

Helsinki 07.01.1998



Tuulikki Hattula



Risto Suominen



MITTATEKNIIKAN KESKUS
CENTRE FOR METROLOGY AND ACCREDITATION

Päiväys / Date 29.05.1998

Korvaa / Replaces 17.04.1998

AKKREDITOITU TESTAUSLABORATORIO**ACCREDITED TESTING LABORATORY****EMCEC OY***EMCEC LTD***T017 (EN45001)**

Tunnus Code	Laboratorio Laboratory	Osoite Address	Puh./fax Tel./fax
T017	Emcec Oy <i>Emcec Ltd</i>	Perkkaantie 11 02600 Espoo <i>Perkkaantie 11</i> <i>FIN-02600 Espoo</i> <i>FINLAND</i>	Puhelin: 02040 66320 Telefax: 02040 66322 <i>Phone int.:+358 2040 66320</i> <i>Telefax int.:+358 2040 66322</i>

Tekninen vastuuhenkilö: <i>Technical manager:</i> Varavastuuhenkilö: <i>Substitute of technical manager</i>	Testausalat <i>Fields of testing</i>
Jyrki Leino Jari Lintunen	Sähkömagneettinen yhteensopivuus (EMC), radiolaitteiden tyyppitestaus <i>Electromagnetic Compatibility (EMC), radio equipment type testing</i>

PÄTEVYYSSALUE SCOPE OF ACCREDITATION		
Testattava materiaali / tuote <i>Material / product tested</i>	Testityyppi, mitta-alue <i>Type of test, measured range</i>	Testausmenetelmä <i>Test method</i>
1. Sähkö- ja elektroniikkalaitteet <i>1. Electrical and electronic equipment</i>	Staattisen purkauksen (ESD) sieto - ilmapurkaus $\pm 200 \text{ V} \dots \pm 16,5 \text{ kV}$ - kontaktipurkaus $\pm 200 \text{ V} \dots \pm 9 \text{ kV}$ <i>Electrostatic discharge (ESD) immunity test</i> - <i>air discharge $\pm 200 \text{ V} \dots \pm 16.5 \text{ kV}$</i> - <i>contact discharge $\pm 200 \text{ V} \dots \pm 9 \text{ kV}$</i>	IEC 801-2 (1991) EN 60801-2 (1993) IEC 1000-4-2 (1995) EN 61000-4-2 (1995)
	Säteilevän radiotaajuuden sähkömagneettisen kentän sieto - taajuusalue 26 MHz - 1000 MHz - kentänvoimakkuus 1 V/m - 10 V/m <i>Radiated, radio-frequency electromagnetic field immunity test</i> - <i>frequency range 26 MHz - 1000 MHz</i> - <i>field strength 1 V/m - 10 V/m</i>	IEC 801-3 (1984) IEC 1000-4-3 (1995) ENV 50140 (1993) EN 61000-4-3 (1996)
	Digitaalisista radiopuhelimista aiheutuvan sähkömagneettisen kentän sieto - taajuusalue 900 MHz $\pm 5 \text{ MHz}$ - kentänvoimakkuus 1 V/m - 10 V/m <i>Radiated electromagnetic field from digital radio telephones - Immunity test</i> - <i>frequency range 900 MHz $\pm 5 \text{ MHz}$</i> - <i>field strength 1 V/m - 10 V/m</i>	ENV 50204 (1995)
	Nopeiden transienttipurskeiden (EFT/B) sieto - testausjännite $\pm 220 \text{ V} \dots \pm 4,5 \text{ kV}$ <i>Electrical fast transient/burst (EFT/B) immunity test</i> - <i>test voltage $\pm 220 \text{ V} \dots \pm 4.5 \text{ kV}$</i>	IEC 801-4 (1988) IEC 1000-4-4 (1995) EN 61000-4-4 (1995)
	Syöksyaallon sieto - testausjännite $\pm 0,5 \text{ kV} \dots \pm 4 \text{ kV}$ <i>Surge immunity test</i> - <i>test voltage $\pm 0.5 \text{ kV} \dots \pm 4 \text{ kV}$</i>	IEC 1000-4-5 (1995) ENV 50142 (1994) EN 61000-4-5 (1995)
	Johtuvien radiotaajuisten häiriöiden sieto - taajuusalue 150 kHz - 230 MHz - testaustaso 1 V - 10 V <i>Conducted disturbances induced by radio-frequency fields - immunity test</i> - <i>frequency range 150 kHz - 230 MHz</i> - <i>test level 1 V - 10 V</i>	ENV 50141 (1993) IEC 1000-4-6 (1996) EN 61000-4-6 (1996)

PÄTEVYYSSALUE SCOPE OF ACCREDITATION		
Testattava materiaali / tuote Material / product tested	Testityyppi, mittaustaso Type of test, measured range	Testausmenetelmä Test method
	Verkkotaajuuden magneettikentän sieto - testaus taso 1 A/m - 100 A/m <i>Power frequency magnetic field immunity test</i> - test level 1 A/m - 100 A/m	IEC 1000-4-8 (1993) EN 61000-4-8 (1993)
	Pulssimaisen magneettikentän sieto - testaus taso 10 A/m - 1000 A/m <i>Pulse magnetic field immunity test</i> - test level 10 A/m - 1000 A/m	IEC 1000-4-9 (1993) EN 61000-4-9 (1993)
	Jännitevaihteluiden ja -katkosten sieto - testaus taso 0 - 100 % <i>Voltage dips, short interruptions and voltage variations immunity tests</i> - test level 0 - 100 %	IEC 1000-4-11 (1994) EN 61000-4-11 (1994)
	Verkkotaajuuden harmoniset yliaallot - mittaustaso 0 - 2 kHz <i>Limits for harmonic current emissions</i> - frequency range 0 - 2 kHz	IEC 1000-3-2 (1995) EN 61000-3-2 (1995)
	Jännitteen vaihtelut pienjänniteverkossa <i>Limitation of voltage fluctuations and flicker in low-voltage supply systems</i>	IEC 1000-3-3 (1994) EN 61000-3-3 (1995)
	Häiriösäteily - taajuusalue 9 kHz - 30 MHz <i>Radiated interference</i> - frequency range 9 kHz - 30 MHz	EN 55011 (1991)
	Häiriösäteily - taajuusalue 30 MHz - 18 GHz <i>Radiated interference</i> - frequency range 30 MHz - 18 GHz	EN 55011 (1991) EN 55013 (1990) + A12 (1994) EN 55014 (1993) EN 55022 (1994)
	Häiriöjännite verkkoliitännästä - taajuusalue 9 kHz - 30 MHz <i>Mains terminal interference voltage</i> - frequency range 9 kHz - 30 MHz	EN 55011 (1991) EN 55013 (1990) EN 55014 (1993) EN 55022 (1994)
	Häiriöjännite antenniliitimestä - taajuus max. 1750 MHz <i>Antenna terminal interference voltage</i> - frequency max. 1750 MHz	EN 55013 (1990) + A12 (1994)

PÄTEVYYSSALUE SCOPE OF ACCREDITATION		
Testattava materiaali / tuote <i>Material / product tested</i>	Testityyppi, mitta-alue <i>Type of test, measured range</i>	Testausmenetelmä <i>Test method</i>
	Epäjatkuvat häiriöt - 150 kHz, 500 kHz, 1,4 MHz, 30 MHz <i>Discontinuous interference</i> - 150 kHz, 500 kHz, 1.4 MHz, 30 MHz	EN 55014 (1993)
2. Ajoneuvot 2. <i>Vehicles</i>	Häiriösäteily - taajuusalue 30 MHz - 1000 MHz <i>Radiated interference</i> - frequency range 30 MHz - 1000 MHz Sähkömagneettisen säteilyn sieto - taajuusalue 20 MHz - 1000 MHz - kentänvoimakkuus 1 V/m - 30 V/m <i>Immunity to electromagnetic radiation</i> - frequency range 20 MHz - 1000 MHz - field strength 1 V/m - 30 V/m	95/54/EY (1995) Liitteet IV ja V 95/54/EC (1995) <i>Annexes IV and V</i> 95/54/EY (1995) Liite VI 95/54/EC (1995) <i>Annex VI</i>
3. Ajoneuvoihin asennettavat sähkö- ja elektroniikkalaitteet 3. <i>Electrical and electronic equipment of vehicles</i>	Häiriösäteily - taajuusalue 30 MHz - 1000 MHz <i>Radiated interference</i> - frequency range 30 MHz - 1000 MHz Sähkömagneettisen säteilyn sieto - taajuusalue 20 MHz - 1000 MHz - kentänvoimakkuus 1 V/m - 30 V/m <i>Immunity to electromagnetic radiation</i> - frequency range 20 MHz - 1000 MHz - field strength 1 V/m - 30 V/m Ajoneuvotransienttien sieto - 12 V ja 24 V järjestelmät <i>Electrical transient conduction along supply lines</i> - 12 V and 24 V systems	95/54/EY (1995) Liitteet VII ja VIII 95/54/EC (1995) <i>Annexes VII and VIII</i> 95/54/EY (1995) Liite IX 95/54/EC (1995) <i>Annex IX</i> ISO 7637-1 (1990) ISO 7637-2 (1990)
4. Radiojärjestelmät - Maaradioliikenteen laitteet - puhelaitteet - datalaitteet - Lyhyen kantaman laitteet	Maksimiherkkyys (johtumalla) - taajuus max. 5400 MHz <i>Maximum usable sensitivity (conducted)</i> - frequency max. 5400 MHz	ETS 300 086 (1991)
4. <i>Radio equipment and systems</i> - <i>Land mobile service</i> - <i>analogue speech</i> - <i>data equipment</i> - <i>Short range devices</i>	Maksimiherkkyys (kentänvoimakkuus) - taajuus 30 - 1000 MHz - taso min. (AVE) 1- 8 dBμV/m <i>Maximum usable sensitivity (field strength)</i> - frequency 30 - 1000 MHz - level min. (AVE) 1- 8 dBμV/m	ETS 300 086 (1991)

PÄTEVYYYSALUE SCOPE OF ACCREDITATION		
Testattava materiaali / tuote <i>Material / product tested</i>	Testityyppi, mitta-alue <i>Type of test, measured range</i>	Testausmenetelmä <i>Test method</i>
	Amplitudinrajoitusominaisuudet - taajuus max. 2000 MHz <i>Amplitude characteristic of the receiver</i> - frequency max. 2000 MHz	ETS 300 086 (1991)
	Yhteiskanavan vaimennus - taajuus max 2000 MHz <i>Co-channel rejection</i> - frequency max. 2000 MHz	ETS 300 086 (1991)
	Naapurikanavan vaimennus - taajuus max. 2000 MHz <i>Adjacent channel selectivity</i> - frequency max. 2000 MHz	ETS 300 086 (1991)
	Harhatoistot - taajuus max. 2000 MHz <i>Spurious response rejection</i> - frequency max. 2000 MHz	ETS 300 086 (1991)
	Keskinäismodulaatiovaimennus - taajuus max. 2000 MHz <i>Intermodulation response rejection</i> - frequency max. 2000 MHz	ETS 300 086 (1991)
	Tukkeutuminen - taajuus max. 2000 MHz <i>Blocking</i> - frequency max. 2000 MHz	ETS 300 086 (1991)
	Harhalähteet johtumalla (Rx) - taajuus max. 22 GHz <i>Spurious emissions (Rx), conducted</i> - frequency max. 22 GHz	ETS 300 086 (1991) ETS 300 113 (1995) EN 300 220-1 V1.2.1(1997-11)
	Kotelonsäteily (Rx) - taajuus 30 MHz - 18 GHz <i>Spurious emissions (Rx), radiation</i> - frequency 30 MHz - 18 GHz	ETS 300 086 (1991) ETS 300 113 (1995) EN 300 220-1 V1.2.1(1997-11)
	Vastaanottimen herkkyys huononeminen samanaikaisesti lähetettäessä - taajuus max. 2000 MHz <i>Receiver desensitisation with simultaneous transmission and reception</i> - frequency max. 2000 MHz	ETS 300 086 (1991)

PÄTEVYYSSALUE SCOPE OF ACCREDITATION		
Testattava materiaali / tuote <i>Material / product tested</i>	Testityyppi, mitta-alue <i>Type of test, measured range</i>	Testausmenetelmä <i>Test method</i>
	Vastaanottimen harhatoistot duplex-käytössä - taajuus max. 2000 MHz <i>Spurious response rejection in duplex operation</i> - frequency max. 2000 MHz	ETS 300 086 (1991)
	Maksimi herkkyys - taajuus max. 5400 MHz <i>Maximum usable sensitivity</i> - frequency max. 5400 MHz	ETS 300 113 (1995)
	Käyttäytyminen suurilla sisäänmenotasolla - taajuus max. 5400 MHz <i>Error behaviour at high input levels</i> - frequency max. 5400 MHz	ETS 300 113 (1995)
	Yhteiskanavan vaimennus - taajuus max. 2000 MHz <i>Co-channel rejection</i> - frequency max. 2000 MHz	ETS 300 113 (1995)
	Naapurikanavan vaimennus - taajuus max. 2000 MHz <i>Adjacent channel selectivity</i> - frequency max. 2000 MHz	ETS 300 113 (1995)
	Harhatoistot - taajuus max. 2000 MHz <i>Spurious response rejection</i> - frequency max. 2000 MHz	ETS 300 113 (1995)
	Keskinäismodulaatiovaimennus - taajuus max. 2000 MHz <i>Intermodulation response rejection</i> - frequency max. 2000 MHz	ETS 300 113 (1995)
	Tukkeutuminen - taajuus max. 2000 MHz <i>Blocking</i> - frequency max. 2000 MHz	ETS 300 113 (1995)
	Vastaanottimen herkkyys huononeminen samanaikaisesti lähetettäessä - taajuus max. 2000 MHz <i>Receiver desensitisation with simultaneous transmission and reception</i> - frequency max. 2000 MHz	ETS 300 113 (1995)

PÄTEVYYSSALUE SCOPE OF ACCREDITATION		
Testattava materiaali / tuote <i>Material / product tested</i>	Testityyppi, mittausalue <i>Type of test, measured range</i>	Testausmenetelmä <i>Test method</i>
	Vastaanottimen harhatoistot duplex-käytössä - taajuus max. 2000 MHz <i>Spurious response rejection in duplex operation</i> - frequency max. 2000 MHz Taajuusvirhe - taajuus max. 22 GHz <i>Frequency error</i> - frequency max. 22 GHz Kantoaaltoteho - teho max. 0,1 W kun taajuus max. 26,5 GHz - teho max. 2 W kun taajuus max. 12 GHz - teho max. 1 kW kun taajuus max. 1 GHz <i>Carrier power (conducted)</i> - power max. 0.1 W when freq. max. 26.5 GHz - power max. 2 W when freq. max. 12 GHz - power max. 1 kW when freq. max. 1 GHz Säteilyteho - teho max. 1 kW kun taajuus on 30 - 300 MHz - teho max. 200 W kun taajuus max. 12 GHz <i>Effective radiated power</i> - power max. 1 kW when frequency 30 - 300 MHz - power max. 200 W when freq. max. 12 GHz Maksimideviaatio - taajuus max. 1300 MHz <i>Maximum permissible frequency deviation</i> - frequency max. 1300 MHz Lähettimen modulaation aleneminen yli 3 kHz:n modulaatiotaajuuksilla - taajuus max. 1300 MHz <i>Response of the transmitter to modulation frequencies above 3 kHz</i> - frequency max. 1300 MHz	ETS 300 113 (1995) ETS 300 086 (1991) ETS 300 113 (1995) EN 300 220-1 V1.2.1(1997-11) ETS 300 086 (1991) ETS 300 113 (1995) EN 300 220-1 V1.2.1(1997-11) ETS 300 086 (1991) ETS 300 113 (1995) EN 300 220-1 V1.2.1(1997-11) ETS 300 086 (1991) EN 300 220-1 V1.2.1(1997-11) ETS 300 086 (1991) EN 300 220-1 V1.2.1(1997-11)

PÄTEVYYSSALUE SCOPE OF ACCREDITATION		
Testattava materiaali / tuote <i>Material / product tested</i>	Testityyppi, mittaustalue <i>Type of test, measured range</i>	Testausmenetelmä <i>Test method</i>
	Naapurikanavan teho - taajuus max. 1300 MHz <i>Adjacent channel power</i> - frequency max. 1300 MHz Harhalähteet johtumalla (Tx) - taajuus max. 4 GHz <i>Spurious emissions (Tx), conducted</i> - frequency max. 4 GHz Kotelonsäteily (Tx) - taajuus 30 MHz - 4 GHz <i>Spurious emissions (Tx), radiated</i> - frequency 30 MHz - 4 GHz Lähettimen keskinäismodulaatio- vaimennus - taajuus max. 1000 MHz - teho max. 100 W <i>Intermodulation attenuation of the transmitter</i> - frequency max. 1000 MHz - power max. 100 W Lähettimen taajuustransientti - taajuus max. 1300 MHz <i>Transient frequency behaviour of the transmitter</i> - frequency max. 1300 MHz Maksimideviaatio - taajuus max. 1300 MHz <i>Maximum frequency deviation</i> - frequency max. 1300 MHz Lähettimen nousuaika - taajuus max. 300 MHz <i>Transmitter attack time</i> - frequency max. 300 MHz Lähettimen laskuaika - taajuus max. 1300 MHz <i>Transmitter release time</i> - frequency max. 1300 MHz Naapurikanavan transienttiteho - taajuus max. 1300 MHz <i>Adjacent channel transient power</i> - frequency max. 1300 MHz	ETS 300 086 (1991) ETS 300 113 (1995) EN 300 220-1 V1.2.1(1997-11) ETS 300 086 (1991) ETS 300 113 (1995) EN 300 220-1 V1.2.1(1997-11) ETS 300 086 (1991) ETS 300 113 (1995) EN 300 220-1 V1.2.1(1997-11) ETS 300 086 (1991) ETS 300 113 (1995) ETS 300 086 (1991) ETS 300 113 (1995) ETS 300 113 (1995) ETS 300 113 (1995) ETS 300 113 (1995) ETS 300 113 (1995)

PÄTEVYYSSALUE SCOPE OF ACCREDITATION		
Testattava materiaali / tuote <i>Material / product tested</i>	Testityyppi, mittaustalue <i>Type of test, measured range</i>	Testausmenetelmä <i>Test method</i>
	Modulaation syvyys - taajuus max. 1300 MHz <i>Modulation depth</i> - frequency max. 1300 MHz Modulaatiokaistaleveys - taajuus max. 2200 Mhz <i>Range of modulation bandwidth for wide band equipment</i> - frequency max. 2200 MHz	EN 300 220-1 V1.2.1(1997-11) EN 300 220-1 V1.2.1(1997-11)
5. NMT 450 radiopuhelimet NMT 900 radiopuhelimet 5. NMT 450 mobile phones NMT 900 mobile phones	Tyypitarkastusmittaukset Tyypitarkastusmittaukset <i>Type approval measurements</i> <i>Type approval measurements</i>	NMT Doc 450-3(1995) NMT Doc 900-3(1995)