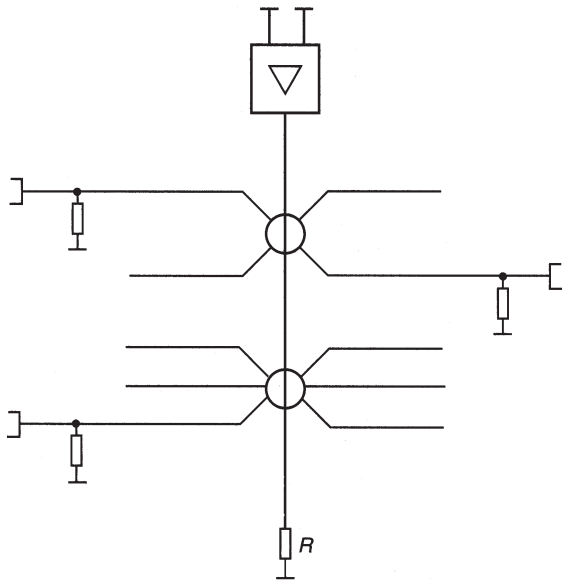


Illustrasjoner til Kommunikasjonsanlegg Vg2 elenergi

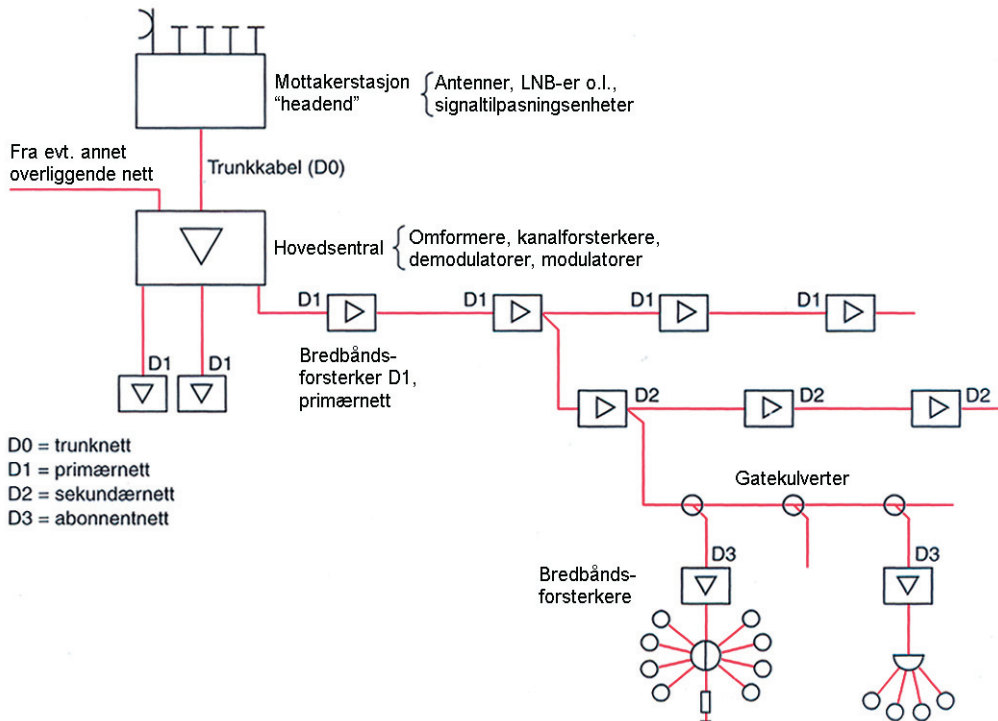
Kapittel 2

Illustrasjonene kan brukes fritt i undervisningen

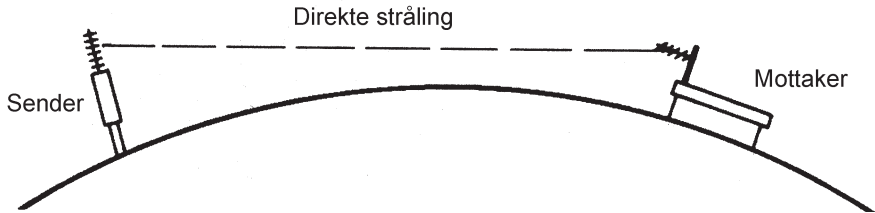
© Elforlaget 2010



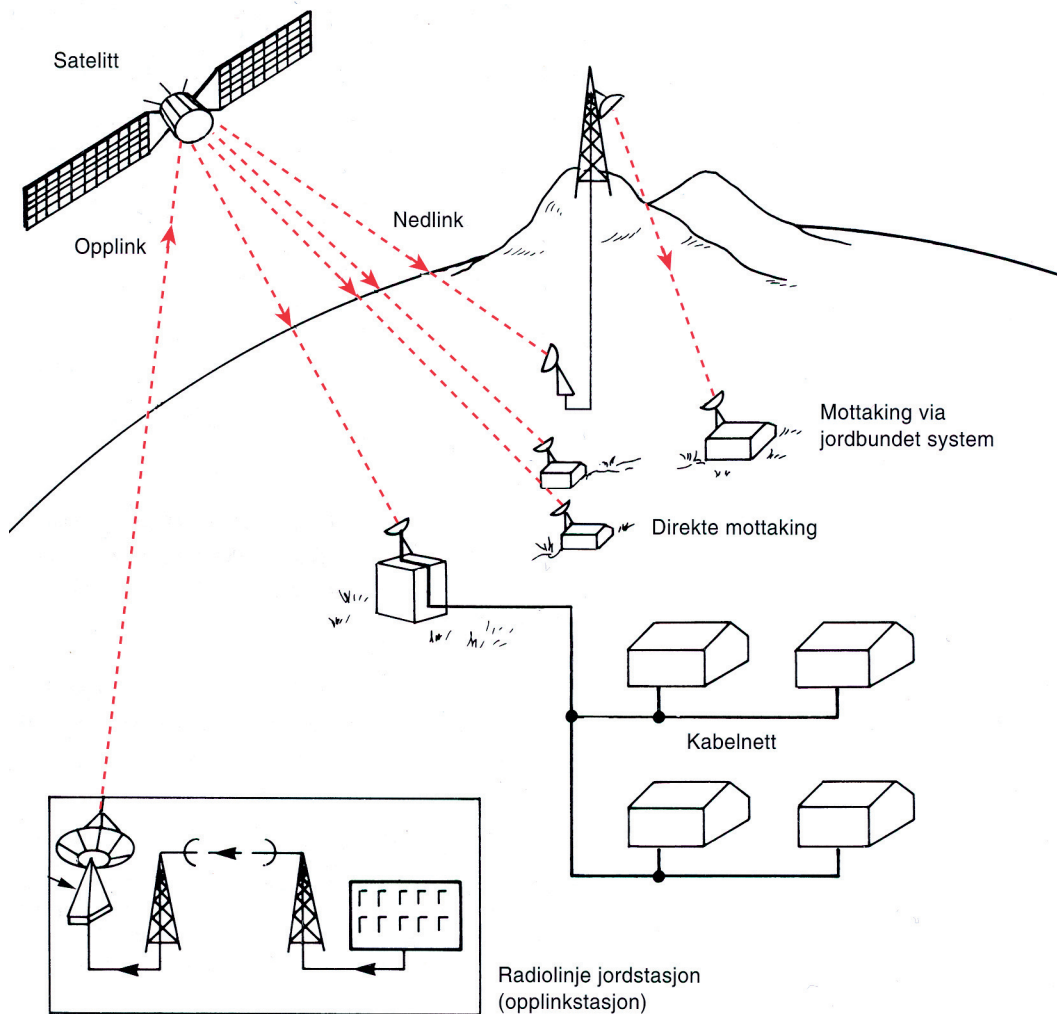
Figur 2.1 Stjernestruktur i antenneanlegg



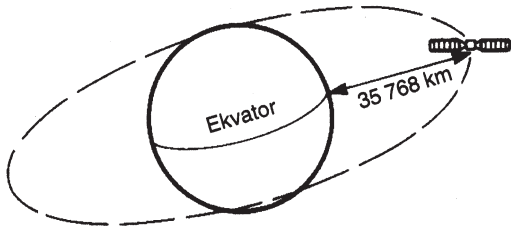
Figur 2.2 Prinsippskisse for et fellesantenneanlegg



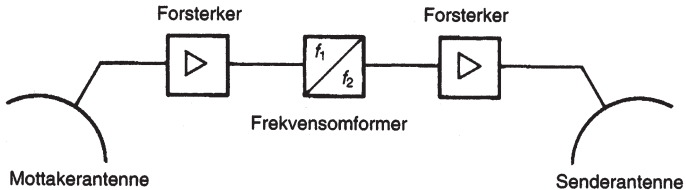
Figur 2.3 Radiobølgenes utbredelse



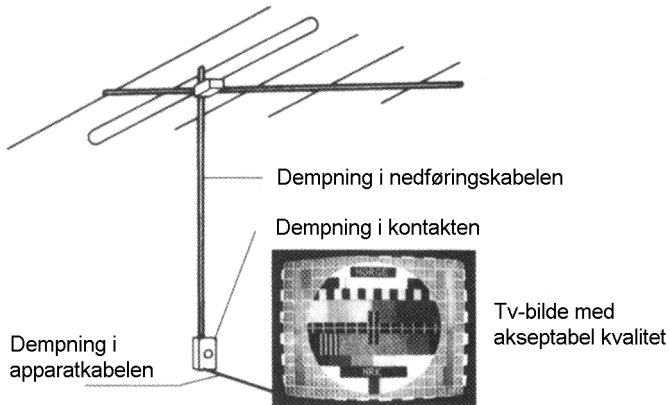
Figur 2.4 Prinsippet for satellittringkasting



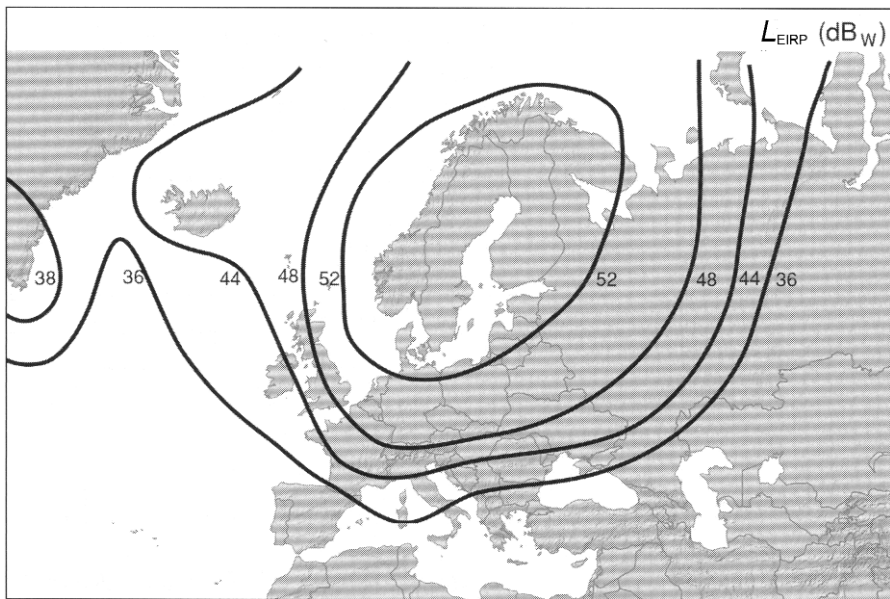
Figur 2.5 Satellitt som er plassert i geostasjonær bane



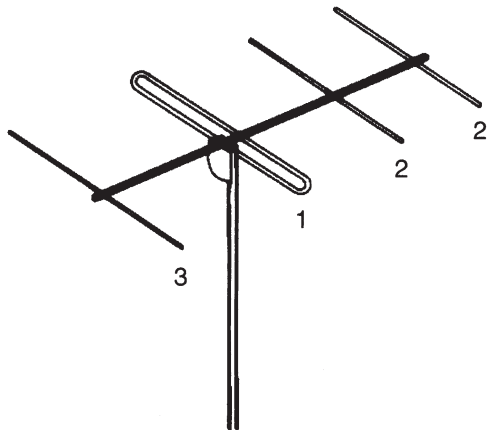
Figur 2.6 Transponder



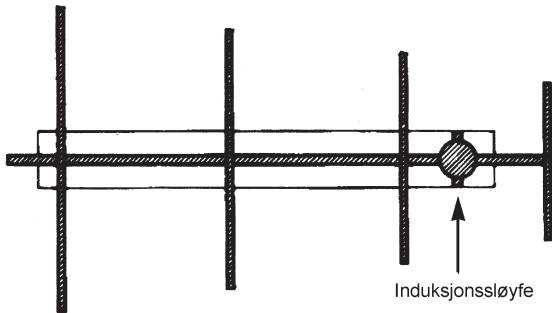
Figur 2.7 Et enkelt antenneanlegg



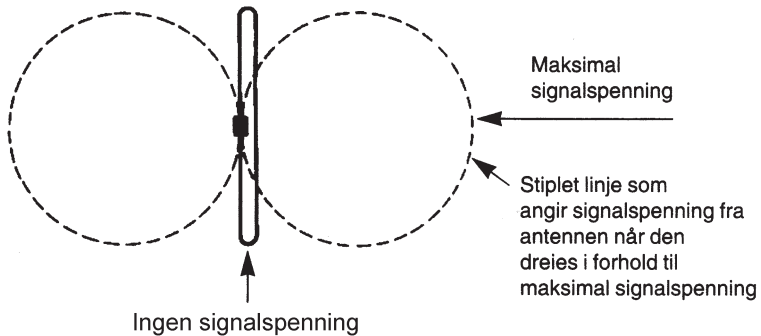
Figur 2.8 Fotavtrykk til Thor II



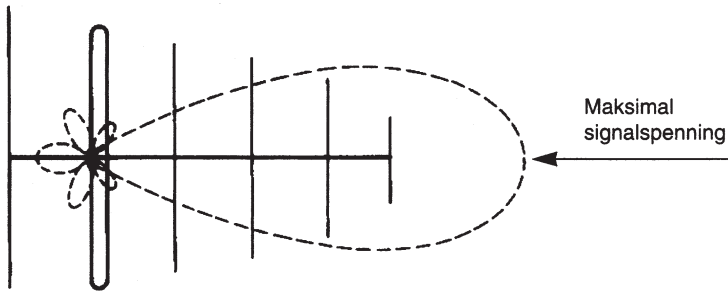
Figur 2.9 Yagiantenne



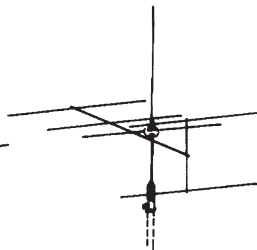
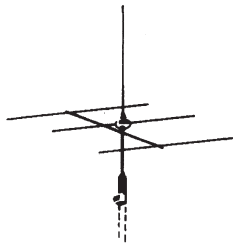
Figur 2.10 Induksjonssløyfeantenne



Figur 2.11 Retningsdiagram for enkel dipol



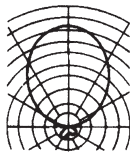
Figur 2.12 Retningsdiagram for yagiantenne



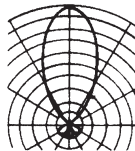
Dipolantenne



Kryssdipol-
antenne

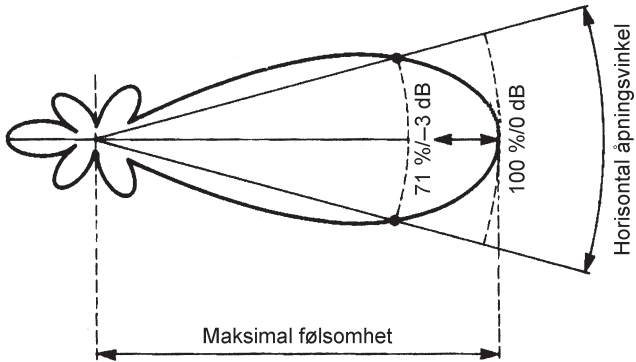


Treelements-
antenne

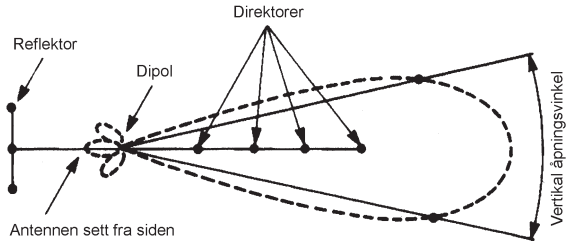


Femelements-
antenne

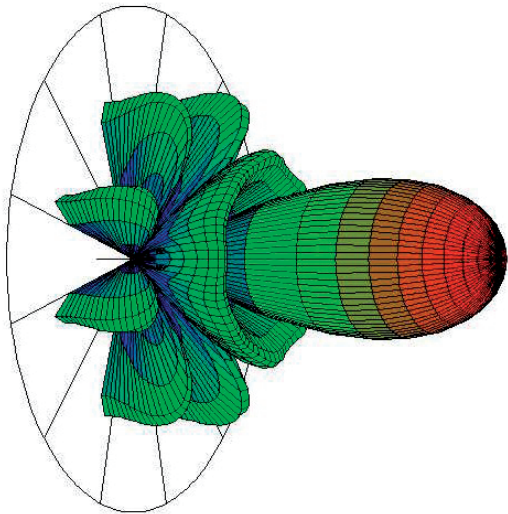
Figur 2.13 Retningsdiagrammer



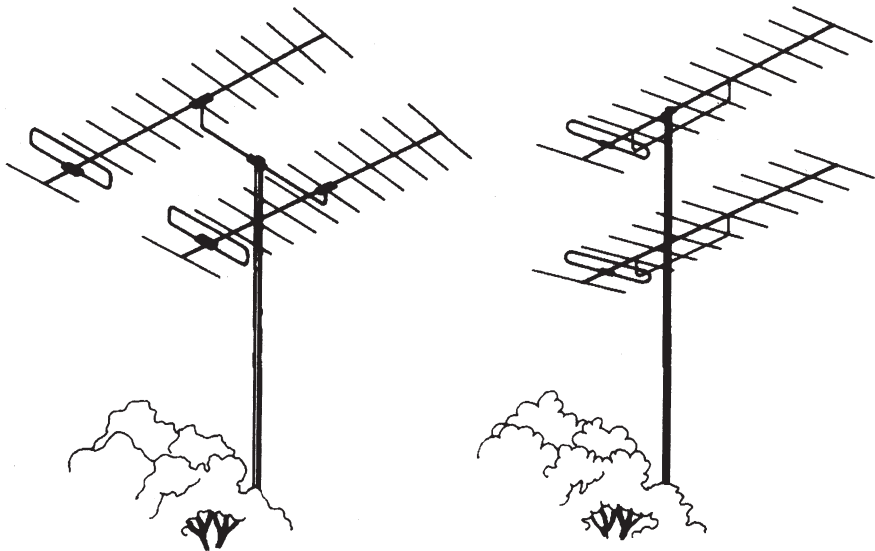
Figur 2.14 Horisontal åpningsvinkel



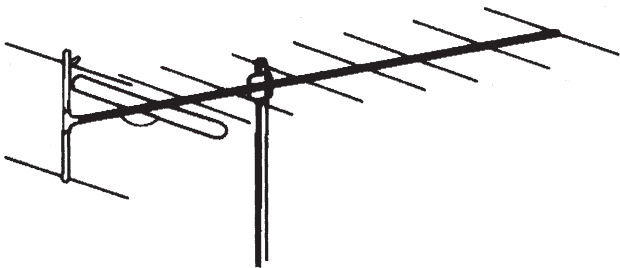
Figur 2.15 Vertikal åpningsvinkel



Figur 2.16 Lobe



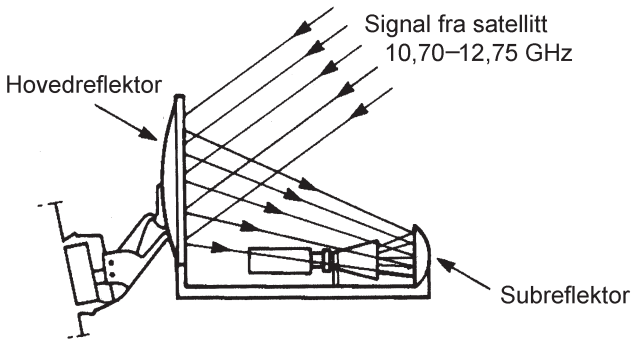
Figur 2.17 Tvillingantennen og stablede antenner



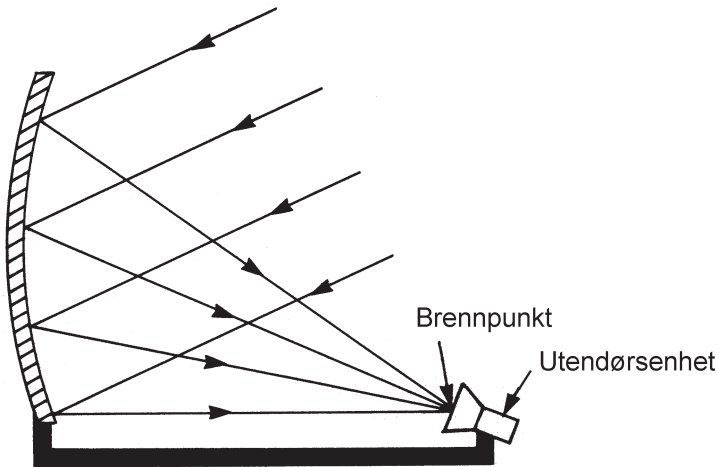
Bredbåndsantenne

Kanaler:	k5–12
Elementer:	10
Forsterkning:	9,5 dB
Front-back-forhold:	20 dB
Horisontal	
Åpningsvinkel:	53°
Vindlast:	47 N
Lengde:	1710 mm
Kabeltilkobling:	flatkabel eller koaksialkabel

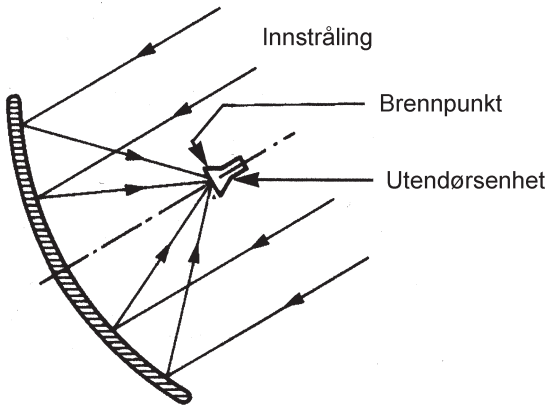
Figur 2.18 Antennedata



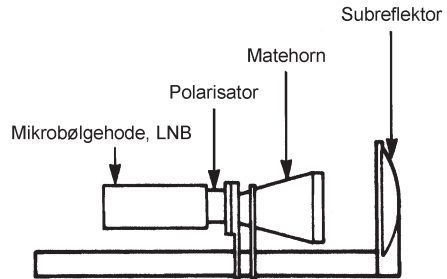
Figur 2.19 Gregoriansk antenne



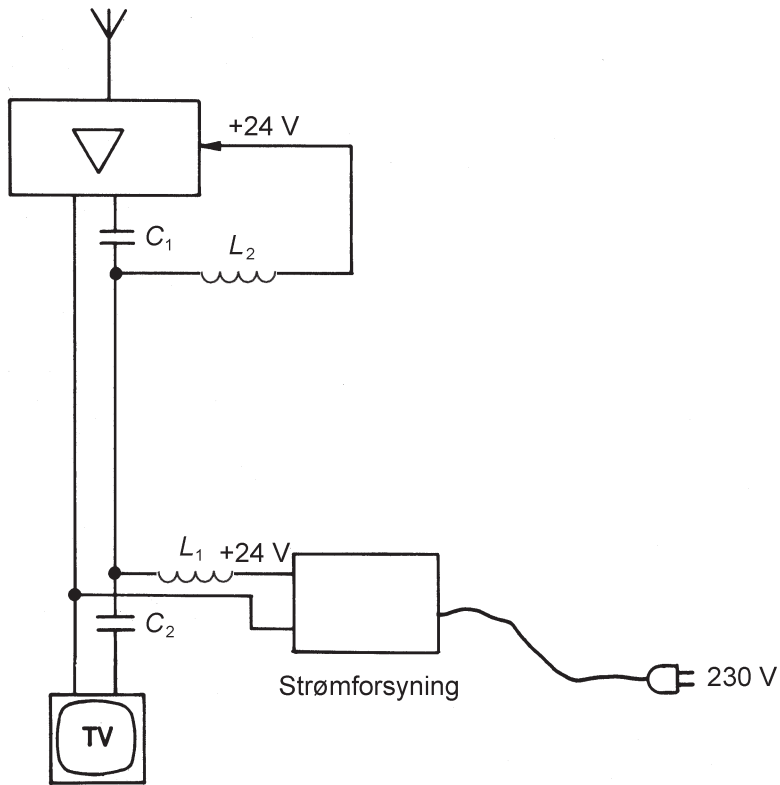
Figur 2.20 Offsetantenne



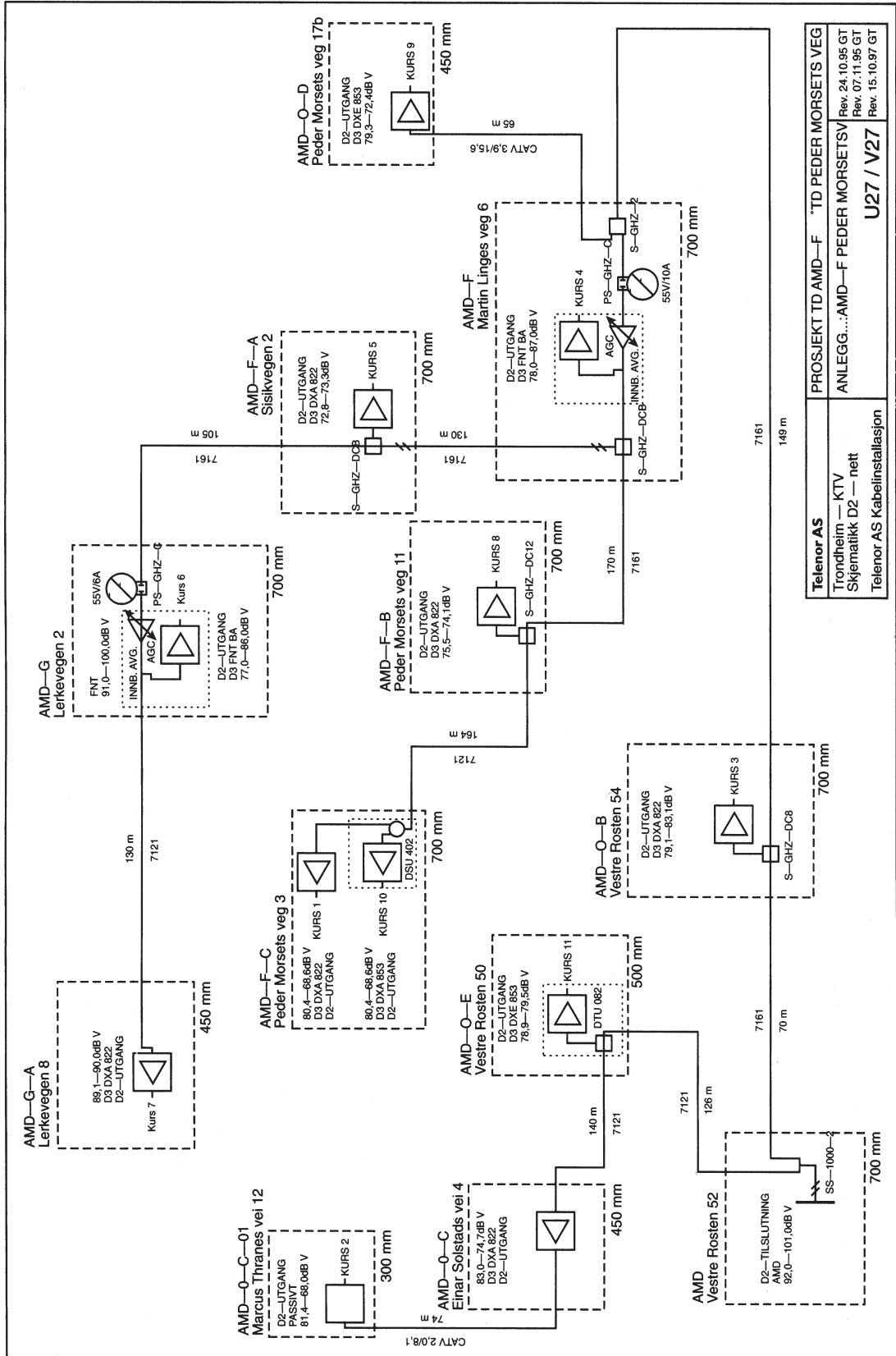
Figur 2.21 Direkterettet antenne



Figur 2.22 Utendørsenheten (kilde: TVECO Elektronikk AS)

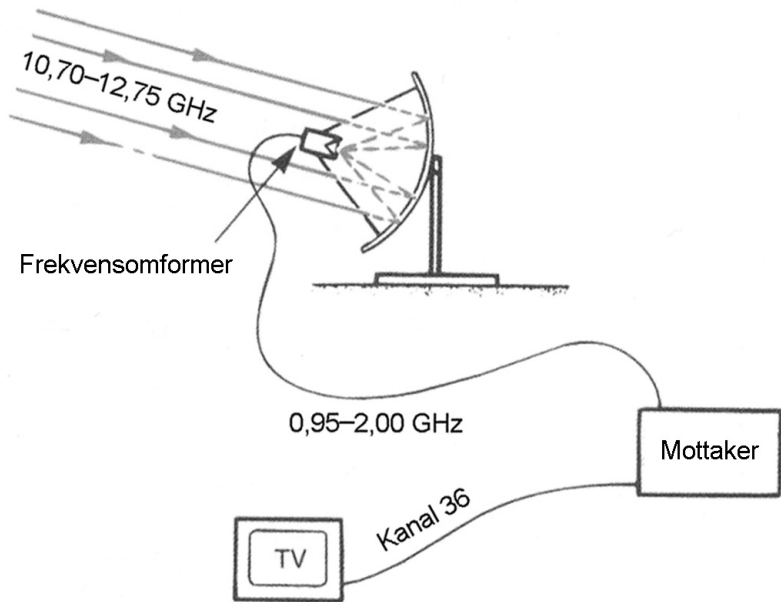


Figur 2.24 Fjernmating gjennom signalkabelen



Telenor AS	PROSJEKT TD AMD—F	TD PEDER MORSSETS VEG
	Trondheim — KTV	Rev. 24.10.95 GT
Telenor AS Kabelinstallasjon	ANLEGG...AMD—F PEDER MORSSETS	Rev. 07.11.95 GT
	U27 / V27	Rev. 15.10.97 GT

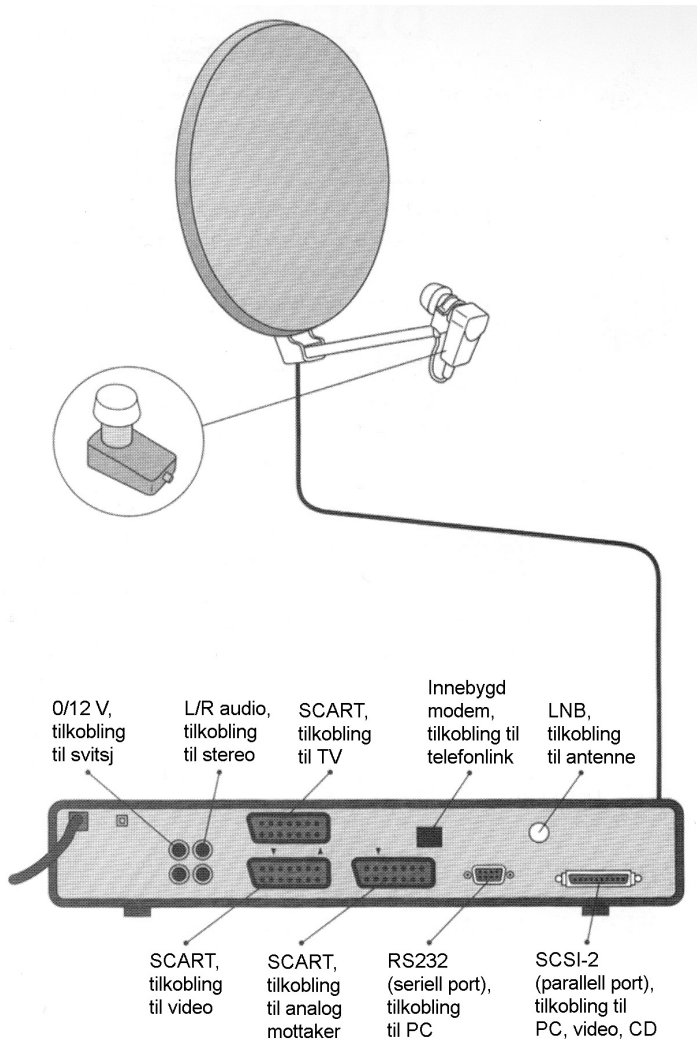
Figur 2.25 Fellesantenneanlegg (kilde: Telenor AS)



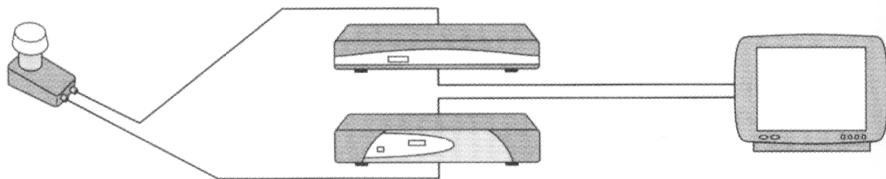
Figur 2.26 Omformere i et satellittanlegg



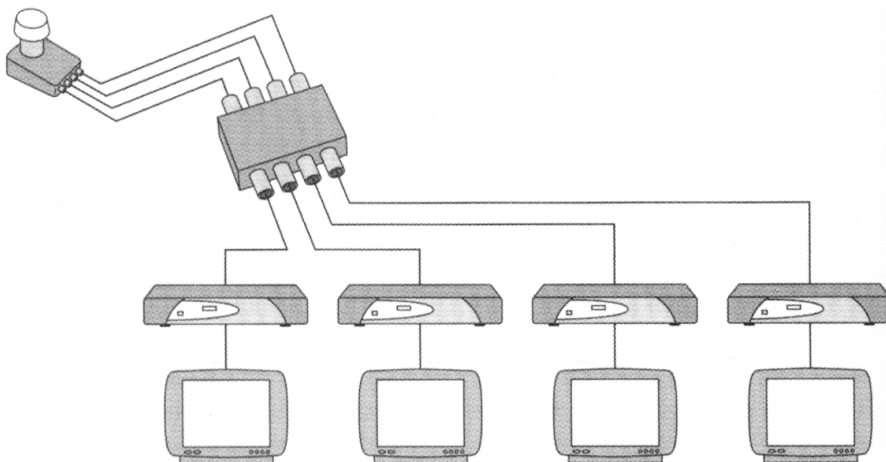
Figur 2.27 Frekvensomformer



Figur 2.28 Satellitmottaker



Twin LNB

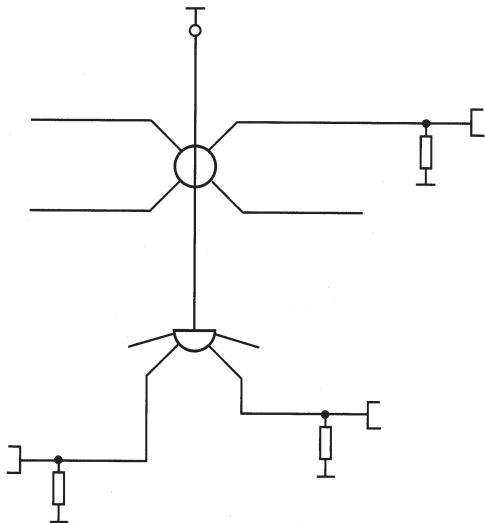


En Quattro LNB tilkoblet en multisvitsj

Figur 2.29 Praktisk bruk av DiSEqC-svitsj



Figur 2.30 Set-top-box



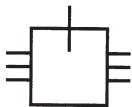
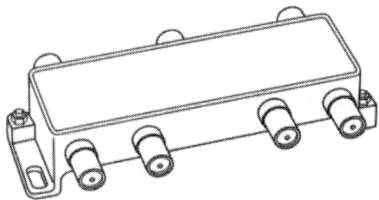
Figur 2.31 Antenneanlegg med passive komponenter



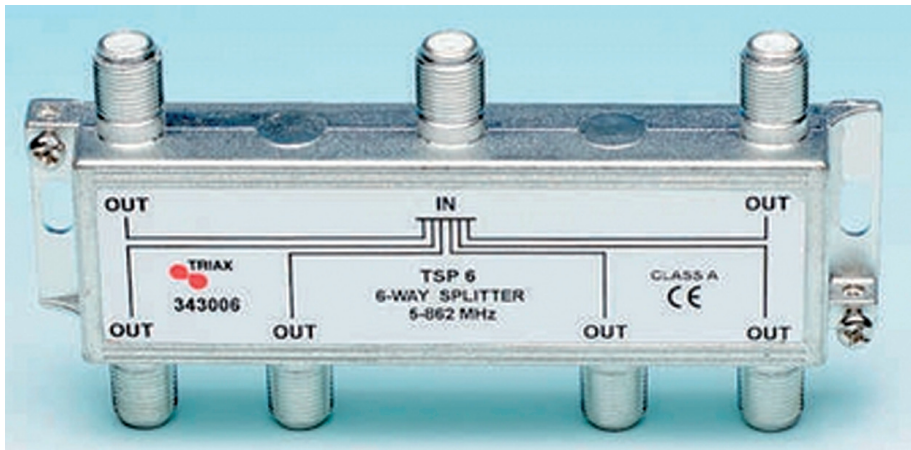
Figur 2.32 Sammenkoblingsfilter

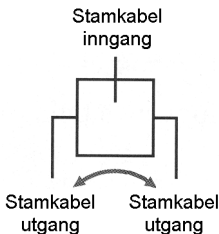
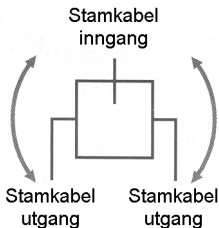


Figur 2.33 Sperrefilter

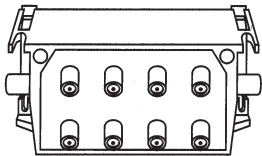


Figur 2.34 Fordeler

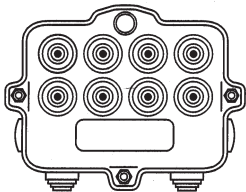




Figur 2.35 Fordelingsdempning og isolasjonsdempning

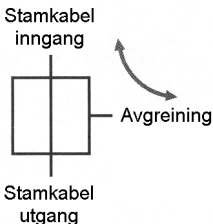
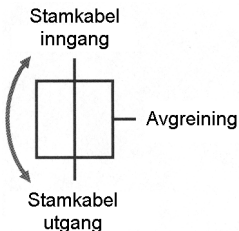


Innendørs

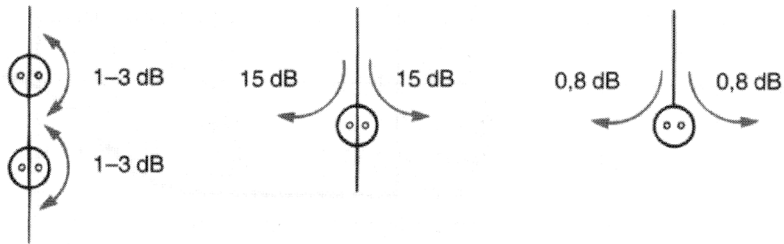


Utendørs

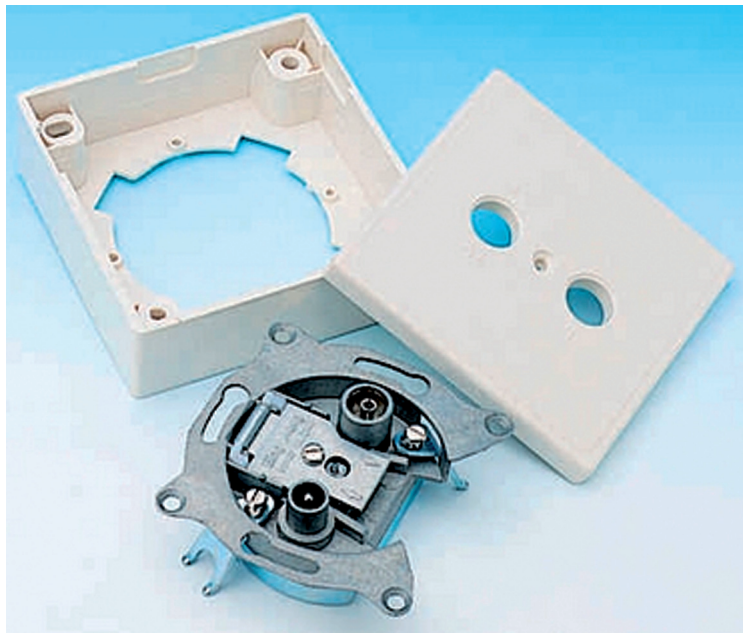
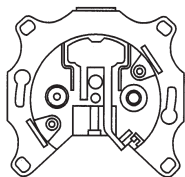
Figur 2.36 Avgreiner



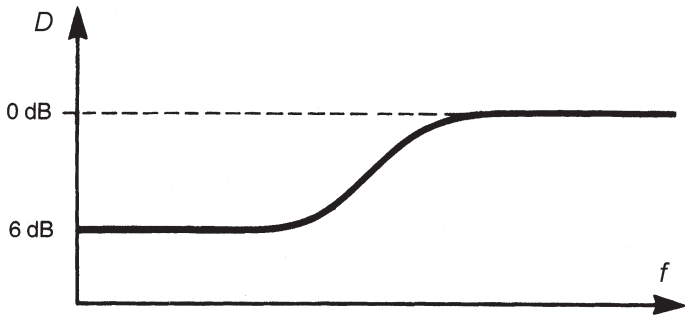
Figur 2.37
Gjennomgangsdempning og
avgreiningisdempning



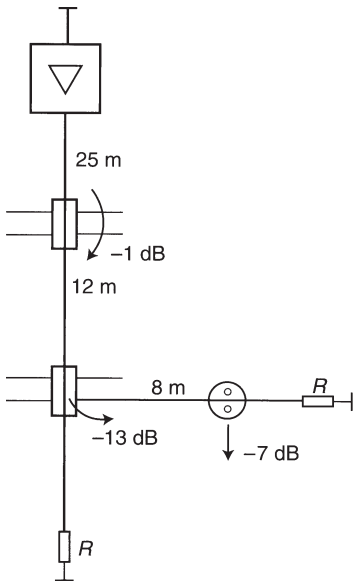
Figur 2.38 Dempning antennekontakter



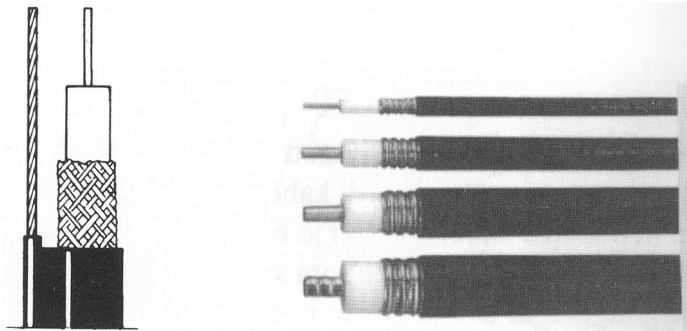
Figur 2.39 Antennekontakt



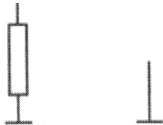
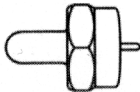
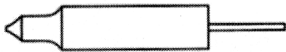
Figur 2.40 Korreksjonskurve for kabelkorreksjonsledd



Figur 2.41



Figur 2.42 Koaksialkabel med bærevæier og korrugert koaksialkabel



Symbol

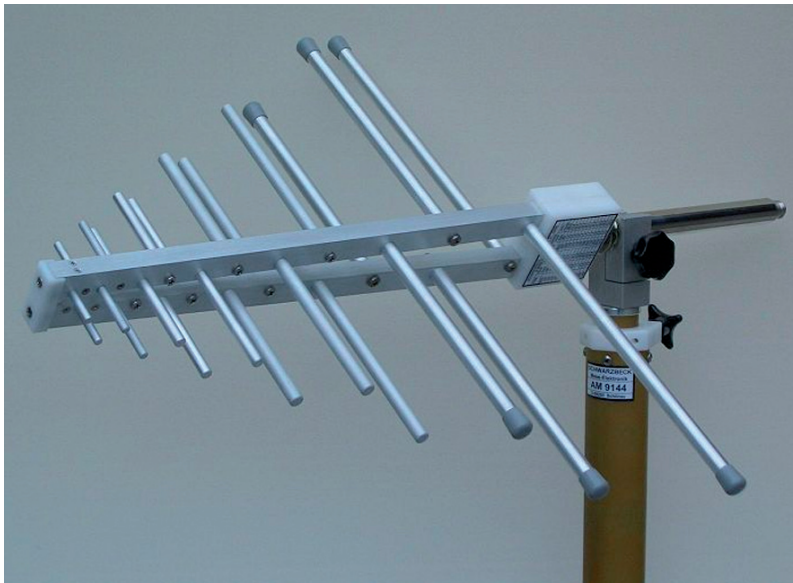
Figur 2.43 Endemotstander



Figur 2.44 FM-antenne



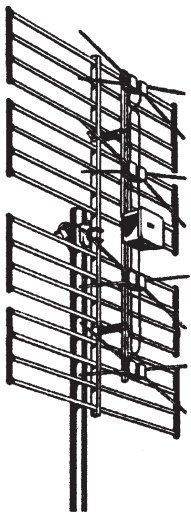
Figur 2.45 Yagi-antenne



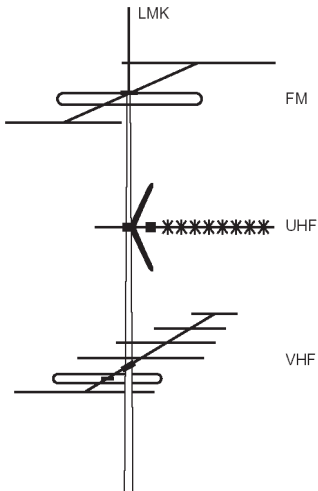
Figur 2.46 Logperiodisk antenne (kilde: Wikipedia.org)



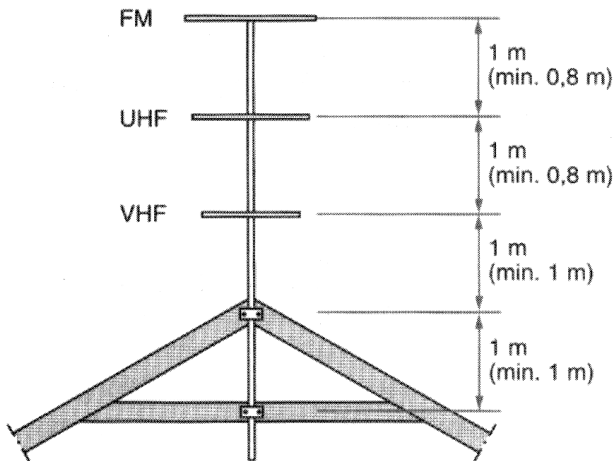
Figur 2.47 Kombiantenne



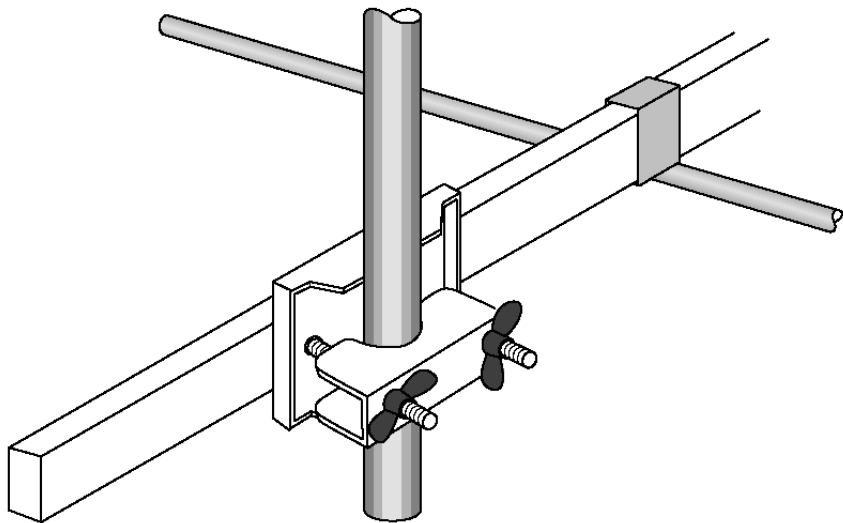
Figur 2.48 Rammeantenne



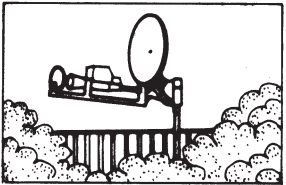
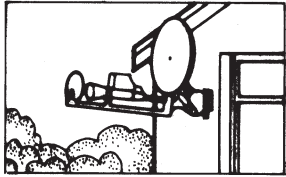
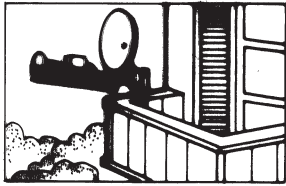
Figur 2.49 Antenner i mast



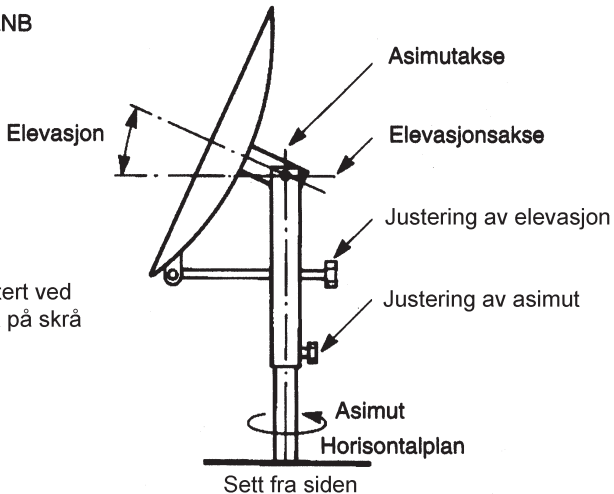
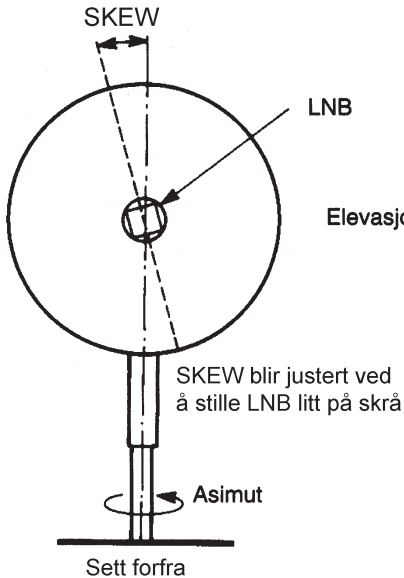
Figur 2.50 Hjælpefigur ved vindlastberegning



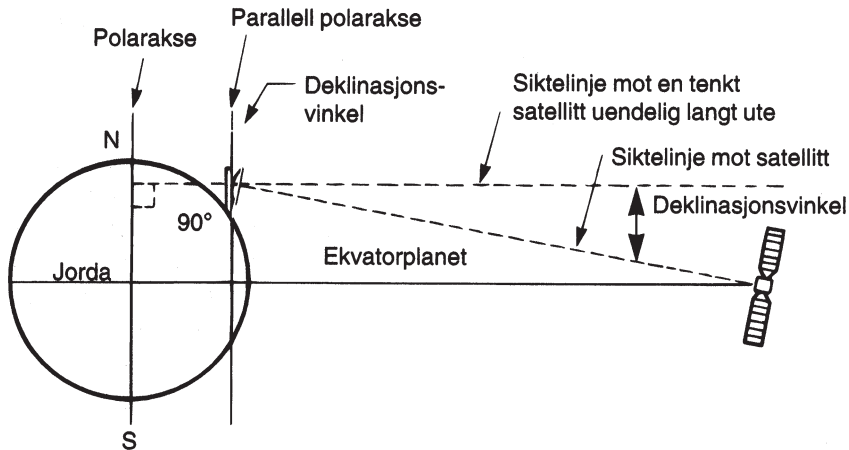
Figur 2.51 Klemfeste på antenne



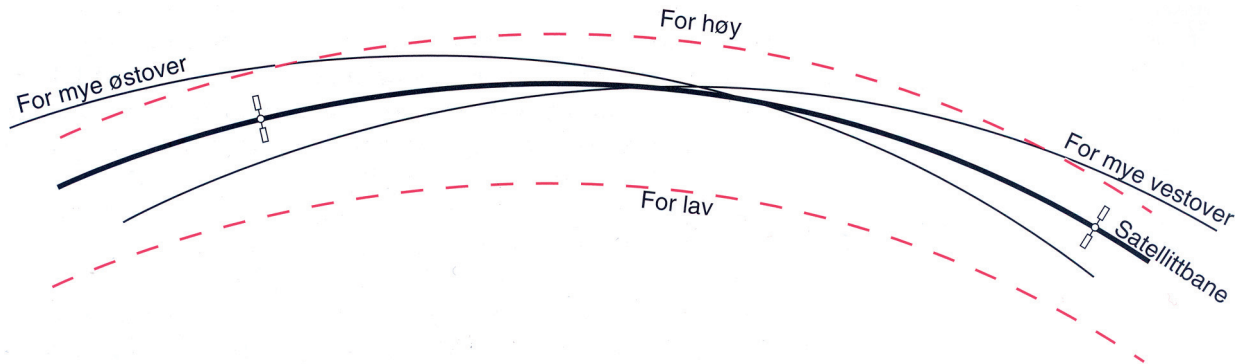
Figur 2.52 Eksempel på antenneplassering



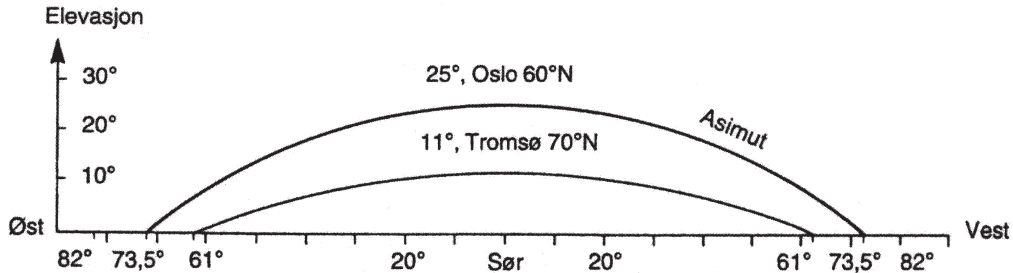
Figur 2.53 Justering av fast montert antenne



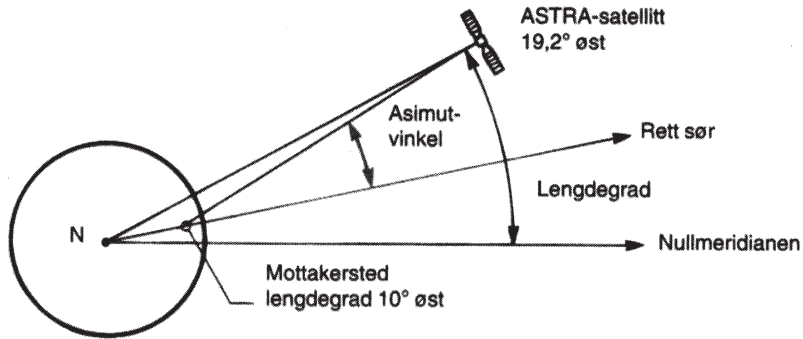
Figur 2.54 Deklinasjonsvinkel



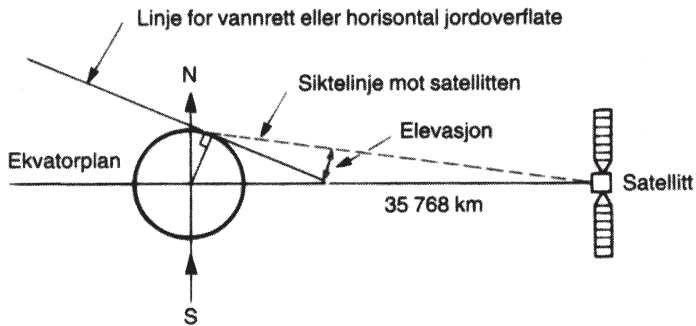
Figur 2.55 Finjustering av "polar mount"



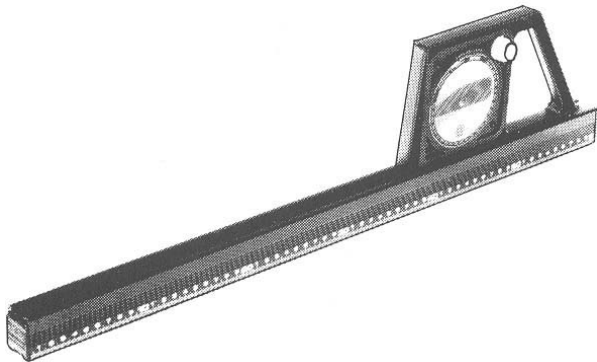
Figur 2.56 Geostasjonær bane i forhold til horisonten fra Oslo og Tromsø



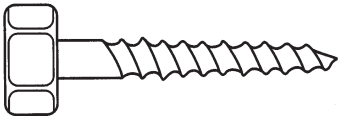
Figur 2.57 Asimutvinkel



Figur 2.58 Elevasjonsvinkel

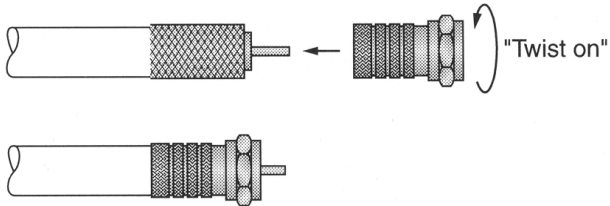


Figur 2.59 Eksempel på høydevinkelmåler

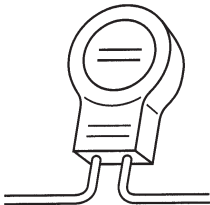


Figur 2.60 Fransk treskrue

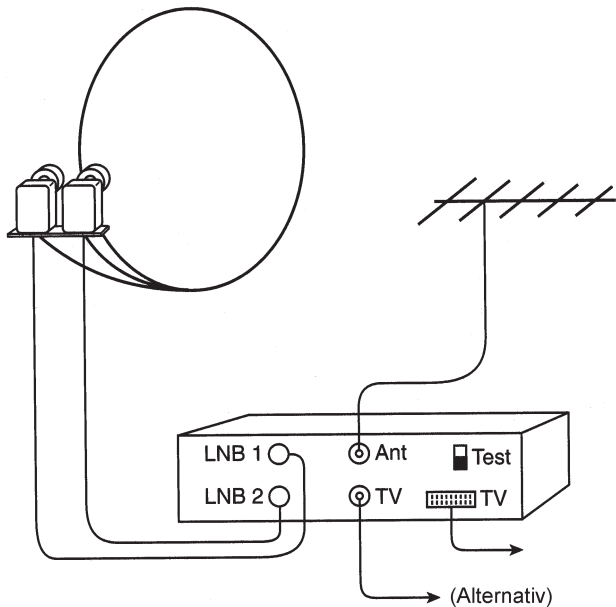
F-konnektor



Figur 2.61 Montering av F-konnektor



Figur 2.62 Skjøting av ledere til motorstyring



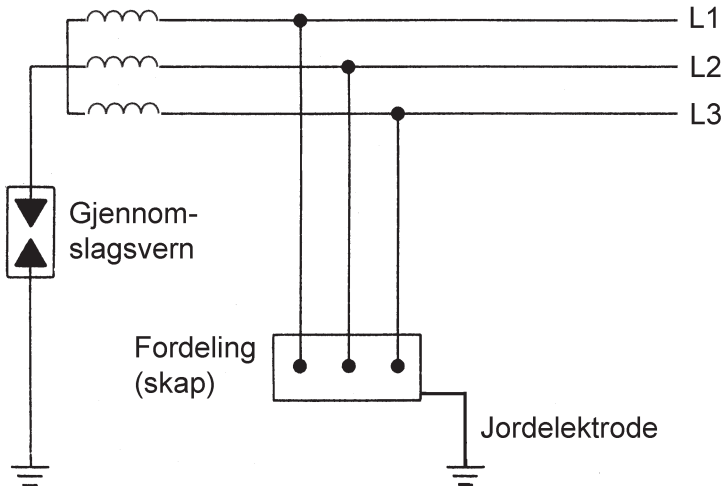
Figur 2.63 Tilkobling av kabler



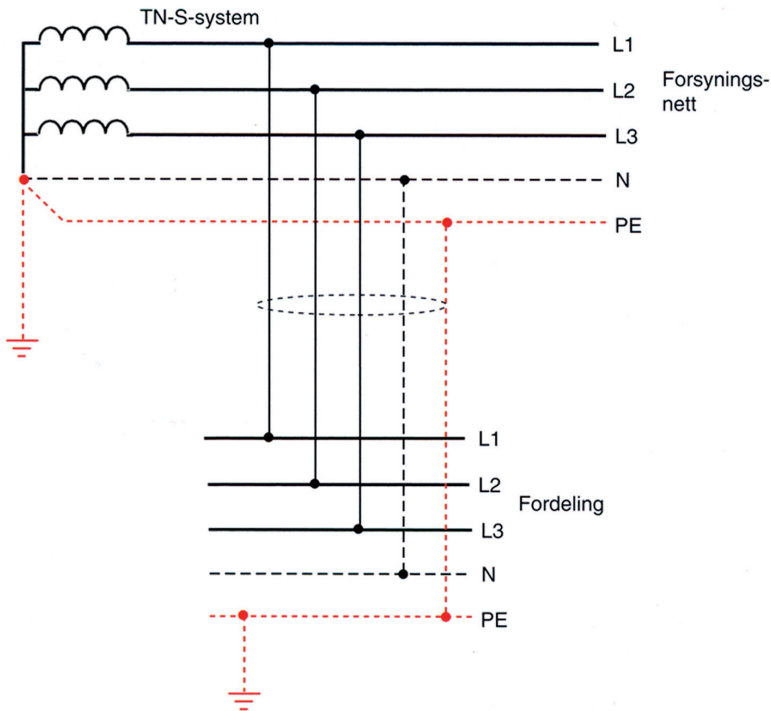
Figur 2.64 Sat-finder



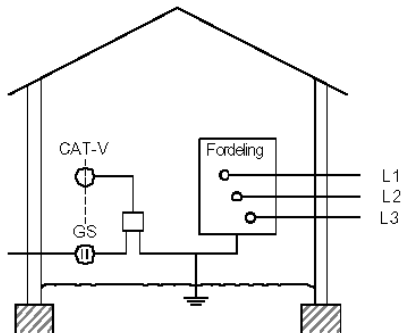
Figur 2.65 Sat-finder uten viserinstrument



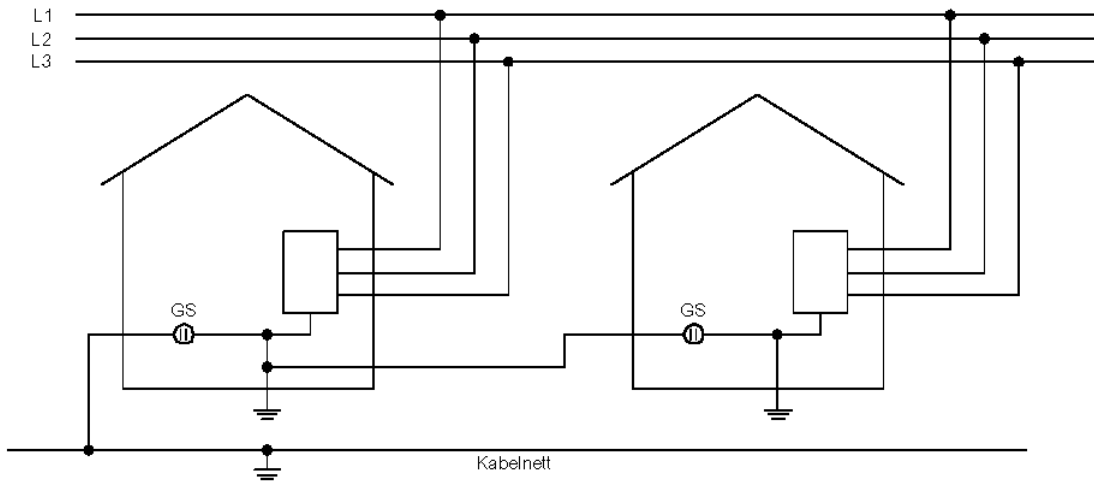
Figur 2.66 IT-nett



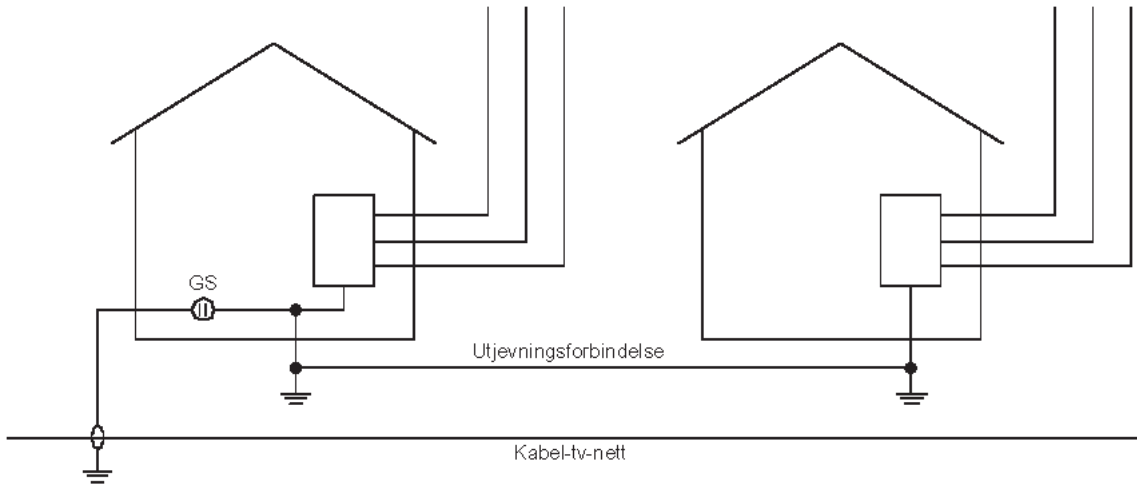
Figur 2.67 TN-S-nett



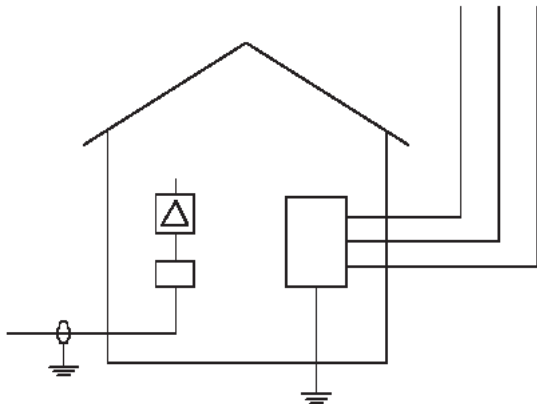
**Figur 2.68 Utjevningsjording
og galvanisk skille**



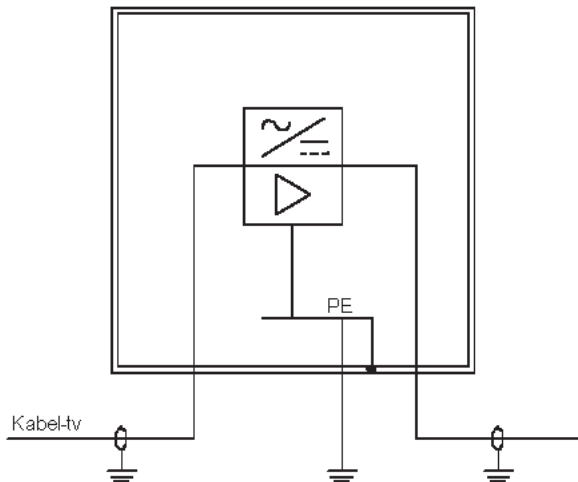
Figur 2.69 Galvanisk skille av kabel-TV-nettet i hver bygning



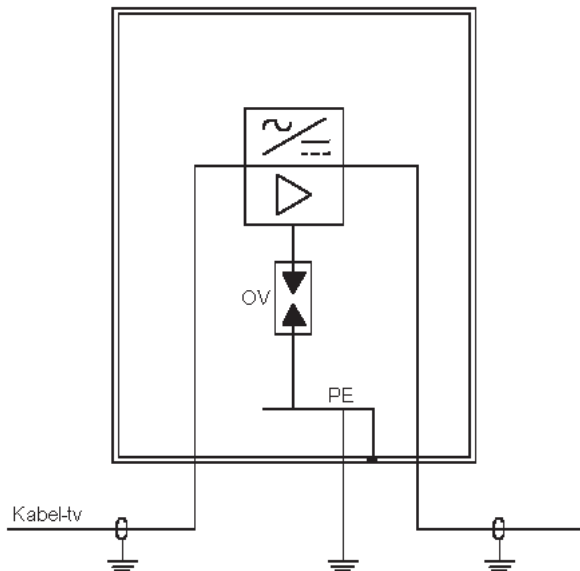
Figur 2.70 Bygninger med utjevningsforbindelser



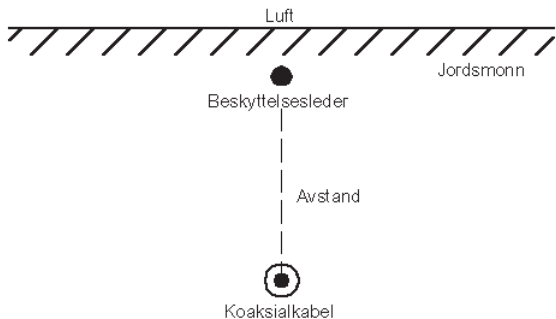
Figur 2.71 Kabel-TV-nett isolert fra lokal jord



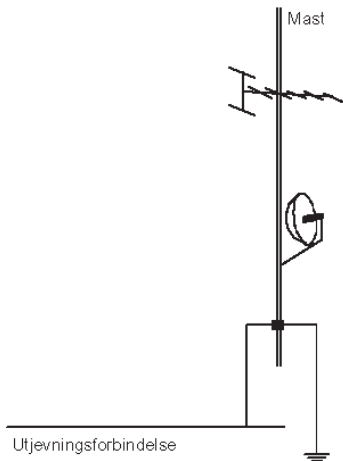
Figur 2.72 Forsterkerstasjon med permanent jordforbindelse



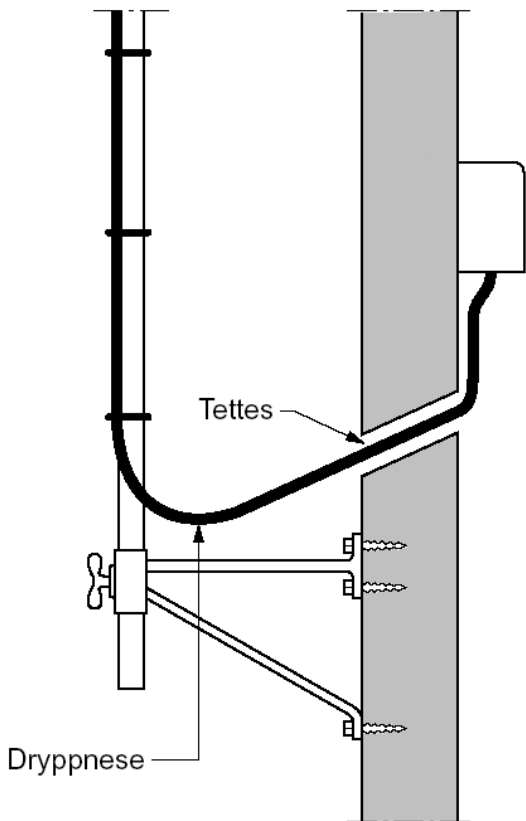
Figur 2.73 Isolert installasjon med avledning av farlige spenninger til jord



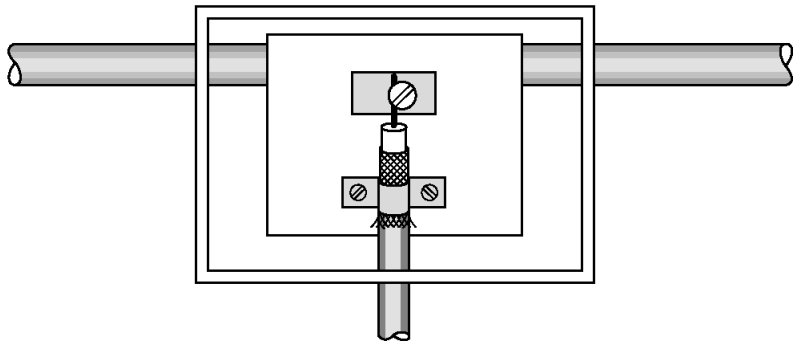
Figur 2.74 Spesiell beskyttelse for avledning av spenninger til jord



**Figur 2.75 Lynvern og
potensialutjevning**

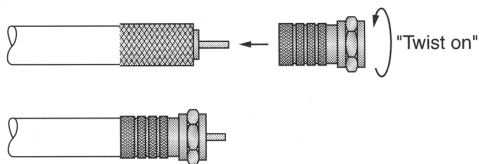


Figur 2.76 Dryppnese

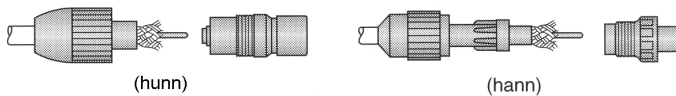


Figur 2.77 Terminering i antennehus

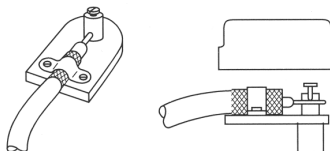
F-konnektor



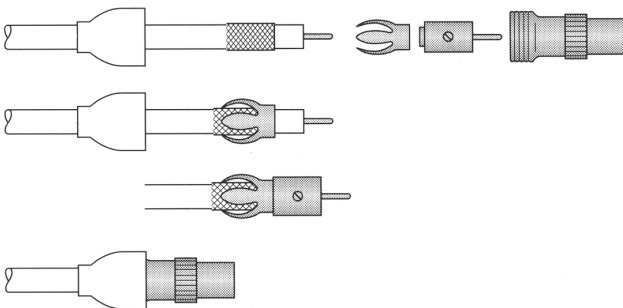
Hirschmann-plugg



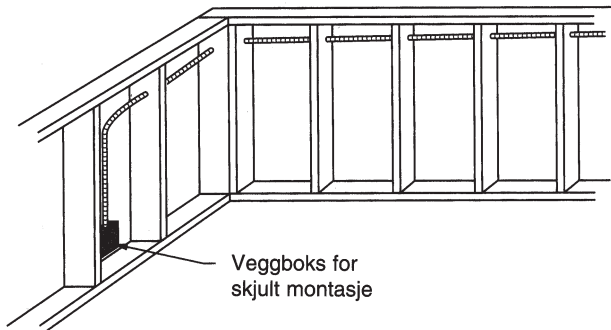
IEC vinkelplugg



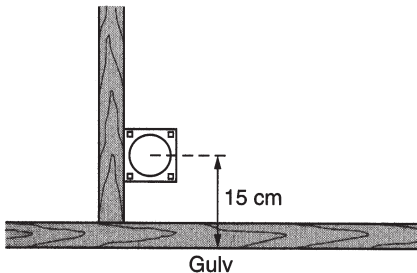
IEC rett plugg



Figur 2.78 Antenneplugger og konnektorer



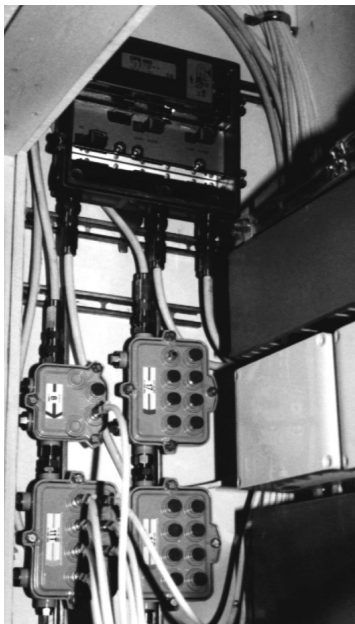
Figur 2.79 Rorforing i skjult anlegg



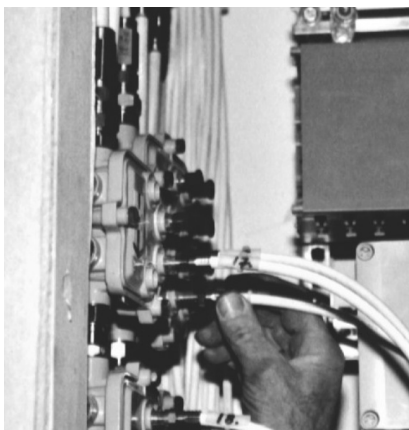
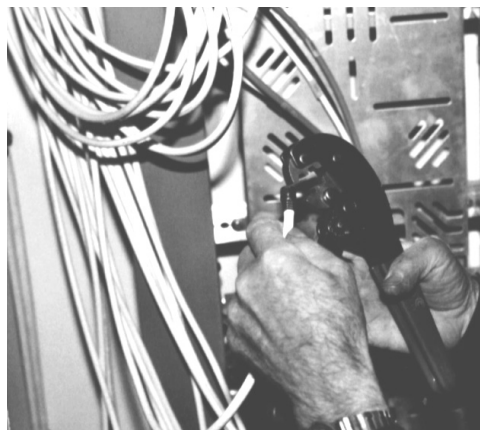
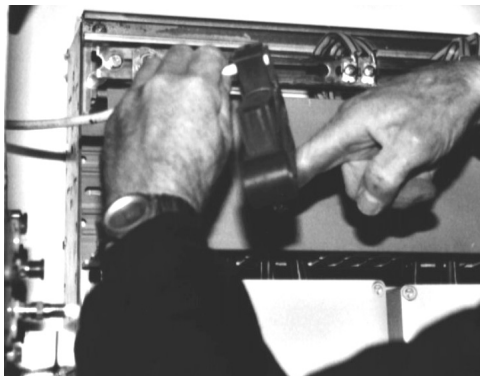
Figur 2.80 Plassering av skjult boks



Figur 2.81 Kabel-TV-nett utendørs



Figur 2.82 Kabel-TV-nett innendørs



Figur 2.83 Avmantling, påsetting av F-konnektor og kobling til avgreiner



SAMSVARSERKLÆRING

Installasjon av elektronisk kommunikasjonsnett

OPPLYSNINGER OM INSTALLATØR

Navn		Autorisasjonsnummer
Postadresse		
Postnr./poststed		
Telefon	Telefaks	E-postadresse

OPPLYSNINGER OM NETTEIER

Eiers navn		
Kontaktperson		
Anleggets adresse		Postnr./poststed
Telefon	Telefaks	E-postadresse

KUN ETT KRYSS HER!

☐ Nyinstallasjon

☐ Utvidelse / endring

Installasjonsarbeidet er ferdig: / 20

OPPLYSNINGER OM INSTALLASJONSARBEIDET (kryss av)

Vi bekrefter at installasjonsarbeidet er utført og dokumentert i samsvar med Post- og teletilsynets regelverk for elektronisk kommunikasjonsnett.

Eventuelle meldinger til netteier:

Følgende aktiviteter er utført og kontrollert:

- ☐ elsikkerhet i telenett og for brukere
- ☐ kabling og terminering
- ☐ montering av overspenningsvern
- ☐ dokumentasjon
- ☐ jording
- ☐ testing
- ☐ brukerveiledning for utstyret

Kablingen er i samsvar med følgende standarder:

- ☐ NEK-EN 50173 Felles kablingssystemer
- ☐ NEK-EN 50174 Installasjonskrav
- ☐ NEK-EN 50098-1 ISDN Grunntilknytning
- ☐ NEK-EN 50098-2 ISDN Utvidet tilknytning
- ☐ NEK-EN 50083 Kabel-TV-nett
- ☐ Veiledning Kabel-TV-nett

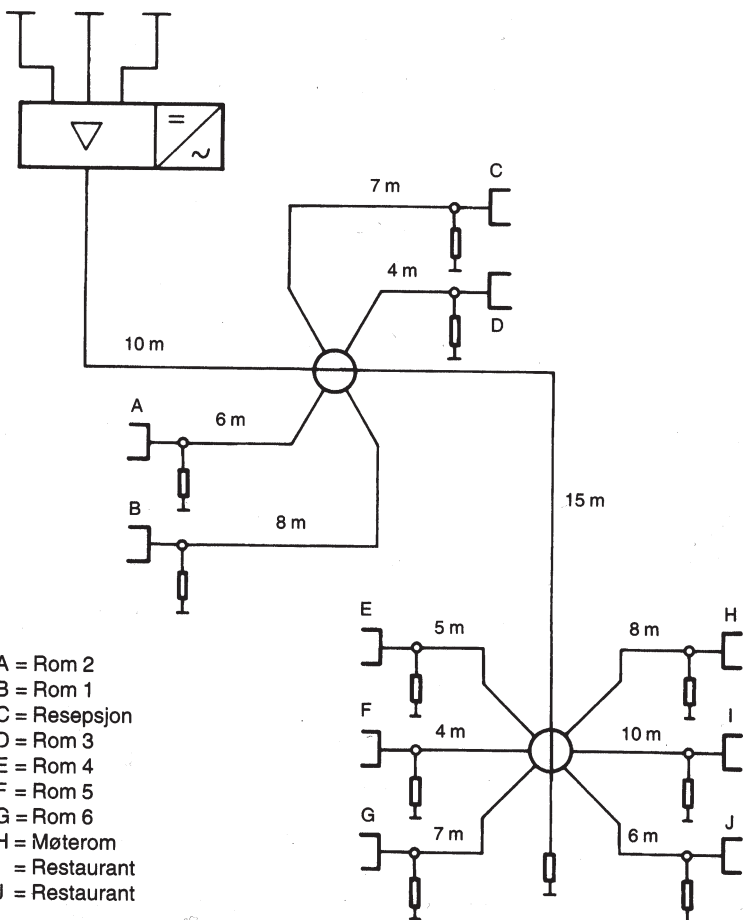
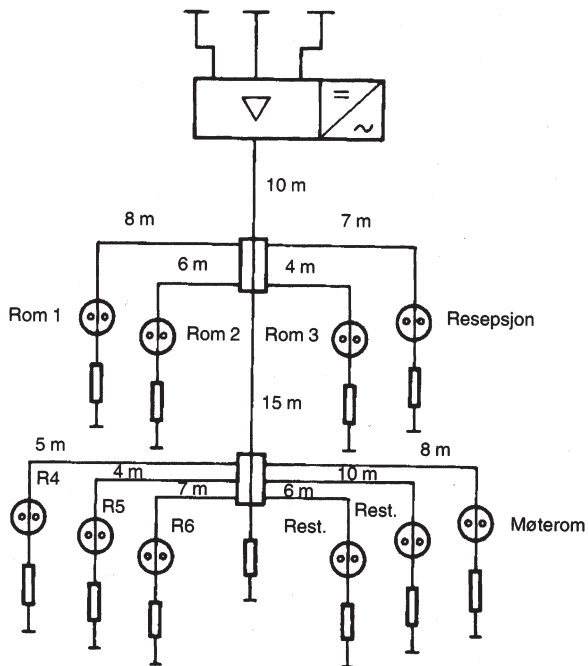
- ☐ _____
- ☐ _____
- ☐ _____

UNDERSKRIFT

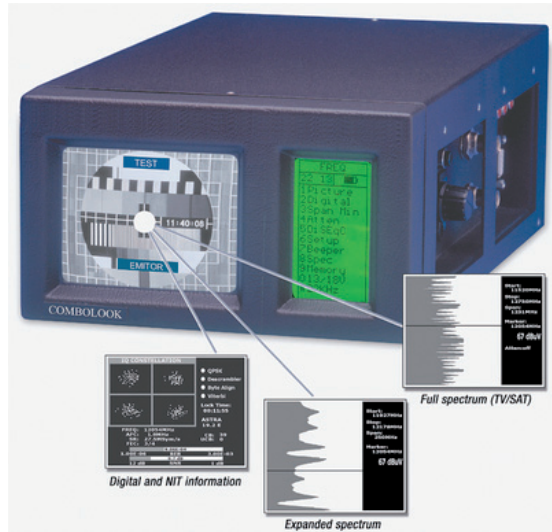
Dato	Sted
Installatørs underskrift	
Netteiers underskrift	

Jf. autorisasjonsforskriften § 9. Originalen leveres til oppbevaring hos netteier, installatøren oppbevarer kopi.

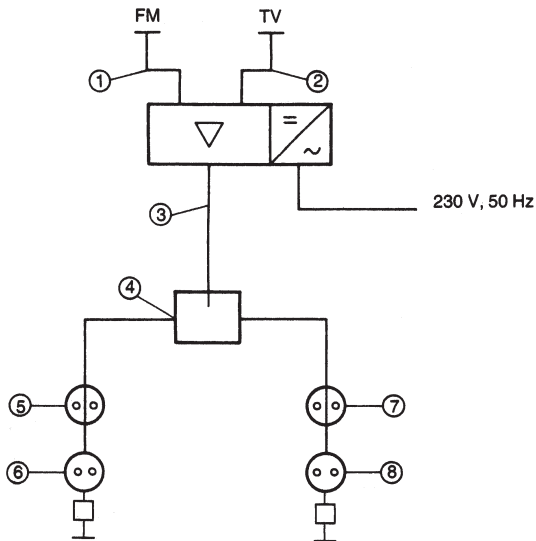
Figur 2.84 Skjema for samsvarserklæring



Figur 2.85 Skjema (to ulike tegnemåter)



Figur 2.86 Feltstyrkemålere



Figur 2.87 Feilsøking i antenneanlegg