

Innovations and interesting from the house SAT-Kabel - revised edition 01

Perturbing fields from TV cable networks

This problem exist in fact for decades. In the recent years the rules have been refined and adopted as law. It is now the task of network operators, ensuring the compliance with the limits and also can account for this.

The company SAT-Kabel has already early engaged with this problem. Thereby a whole clutch of measuring and test equip-

ment especially for practical applications has been developed. Also has been developed for their optimal use a three-step process.

The first stage - a special method for measuring the field strength in a geographical area - and the necessary equipment will be briefly presented here.

Automatic field strength measurement in CATV networks

Having already developed for the immediate leakage detection measuring equipment on site, there was still the question: How can spurious radiation in the CATV system area, i.e. in a zone, are identified, measured and assigned to a specific point? This led to the development of an automatic field strength measurement system.

With the *AMS-SD* (fig. 1), an automatic field strength measurement system, we offer a unique solution for the geographical data acquisition of the spurious field strength in CATV systems, including the documentation.



Fig. 1: System AMS-SD

- area measurement of the spurious field strength in CATV systems
- can be used universal with motor vehicle or on foot
- easy to use - connect, switch on, drive off
- selective field strength measurement with identification evaluation of the code frequency generator *KFG 2*
- high geographical accuracy by using GPS data
- creating digital maps for the documentation of the measured values
- data exchange with the PC via memory card - SD, MMC
- configuration of the measurement process take place already on the PC
- operating on battery and vehicle power
- robust metal housing
- measuring antenna, GPS receiver and software included

Sub carrier frequencies with identification

Prerequisite for the methods developed by us is the feeding of sub-carrier frequencies with an detecting code in the respective cable network. This has the advantage of clearly defined radiations from the leakage of a cable network. The detecting code allows in addition the assignment of measurements to the right system.

That is the purpose of the code frequency generator *KFG 2* - available in three versions (fig. 2). With it can be fed two selectable carrier frequencies with programmable detecting code into a TV cable network.



Fig. 2: KFG 2, KFG 2-3HE, KFG 2-1HE

Characteristics of the *KFG 2*

- serves the feed of 2 modulated carriers into a CATV system
- input of an alphanumeric detecting code in the *KFG 2* is possible
- reception and display of the detecting code, also for programming, is possible with *SPM 22 KF* or *SPM 22 MMC*

Technical data *KFG 2*

frequency	87.0 - 87.7 MHz and
.....	301.0 - 301.70 / 310.0 - 310.7 MHz
programming	in 0.1-MHz steps
output level	90 - 108 dB(μV)
S/N ratio	>60 dB
RF output	F-socket, 75 Ohm
detecting code	13 characters (letters/numbers)
programming	with 2 keys
modulation	FM, deviation 50 kHz
dimensions	196 mm × 96 mm × 55 mm
weight	ca. 1 kg

Difficulties in finding RF-leakage

Example 1: A poor quality cable subscriber »creates« an exceeding of the permissible spurious field strength - measured in the vehicle outside of a house. Now if this cable is replaced by a »class-A cable«, so then the observance of the prescribed limit shall be demonstrated.

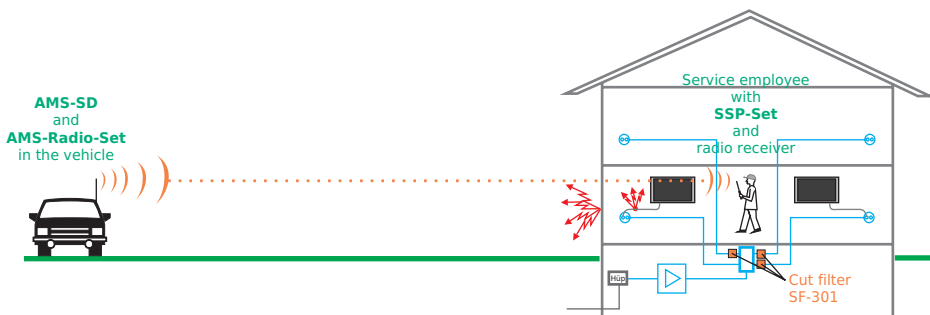
Solution: With the AMS radio set 433 MHz, the field strength readings generated from the AMS-SD are transmitted by radio at 433 MHz from the vehicle to the service technician in the building. This permanent radio transfer of the field strength measurements allows to localize any faulty NE4 section by a disconnection of coaxial cables in the process of exclusion.

The set consists of a radio transmitter, directly connected to the AMS-SD, and a receiver with an integrated display. On the display the field strength values are presented, determined by the service vehicle.

This makes the work easier and saves a lot of time. Any change in the coaxial network is recorded locally on the AMS radio set 433 MHz as the effect on the displayed field strength measurements.

Example 2: Generate several coaxial lines an exceeding of the field strength limit, then only one after the other of these lines can be switched on in order to find the RF-leakage. During this time the other connections have no signal.

Solution: To minimize the duration of the signal drop out, for bridging can not be measured coaxial lines via the KF-rejection filter SF-301 switched on to assure TV, radio and the internet during the leakage detection. This filter prevents in the connected line the passage of the code frequency carrier.



More products for spurious field strength measurement

For field strength measurement and RF-leakage detection in cable television networks, we have more products available. This includes also the already proven spurious radiation test set SSP-Set KF with the signal level measuring instrument SPM 22 KF.

To measure the spurious field strength of buildings is as measurement antenna the Peilset 301K (DF Set) available.

In the accessories are more antennas and preamplifiers available for different frequency ranges, as well as leakage probes.

A video and a recommendation on the application of spurious field strength measurement in a three-stage process can be downloaded from our website.

The presented products can be found currently on our website:

www.sat-kabel.de/Stoerstrahlung.html

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System overview AMS-SD

The base model of the system consists of the AMS-SD with memory card, a GPS receiver and the duo band antenna for 87/301-310 MHz with the suitable pre-amplifier as the Set ANT-Duo Set. (fig. 3)



Fig. 3: AMS-SD base model

The following equipments are optional available to extend the range of functions.

AMS-LCD | (fig. 4) This is an additional display with integrated GPS receiver that is plugged in place of the normal GPS receiver. Thus, the direct functional control of the AMS-SD is possible.



Fig. 4: AMS-LCD

AMS-FS433 | (fig. 5) The AMS radio set 433 MHz is another option. It transmits the measuring data of the AMS-SD during the leakage detection by radio from the vehicle to the service technician.



Fig. 5: AMS-FS433

SF-301 | (fig. 6) The 301 MHz rejection filter is a tool for finding leakages. Thus, the subcarrier will be blocked, for example, in house distribution networks, to separate the RF-leakages.



Fig. 6: SF-301