Telemeter Electronic

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Flyer | SRM-3006 - 5G Code Selective Measurement

SRM-3006
5G Code Selective Measurement

- **Measurement concept**
  Measuring principle of code-selective measurement at 5G.
- **SRM based implementation**
  Details of the intended measurement implementation based on the SRM.
- **Availabilities**
  Implementation schedule

Telemeter Electronic GmbH | Joseph-Gaensler-Str. 10 | 86609 Donauwoerth | Phone +49 906 70693-52 | mt@telemeter.de | www.telemeter.info

Measurement concept

Measurement

The measurement method is based on determination of the radiated field strength of the primary or secondary signaling signals (PSS or SSS) in the broadcast channel (PBCH) of the downlink.

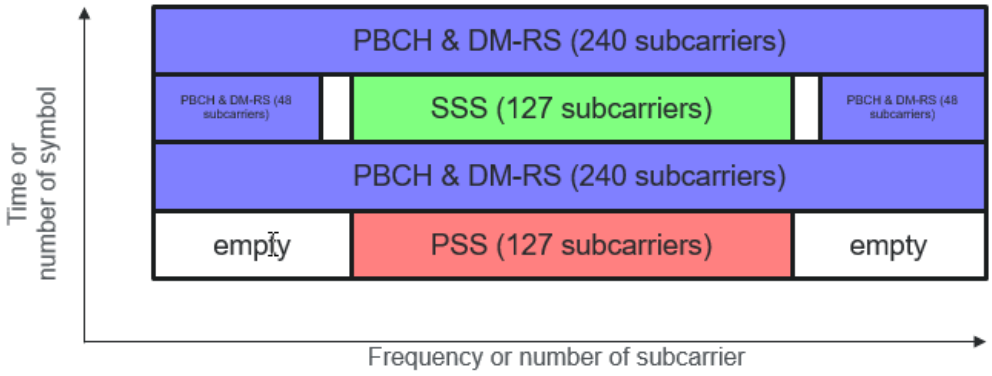
Advantages of the code selective measurement:

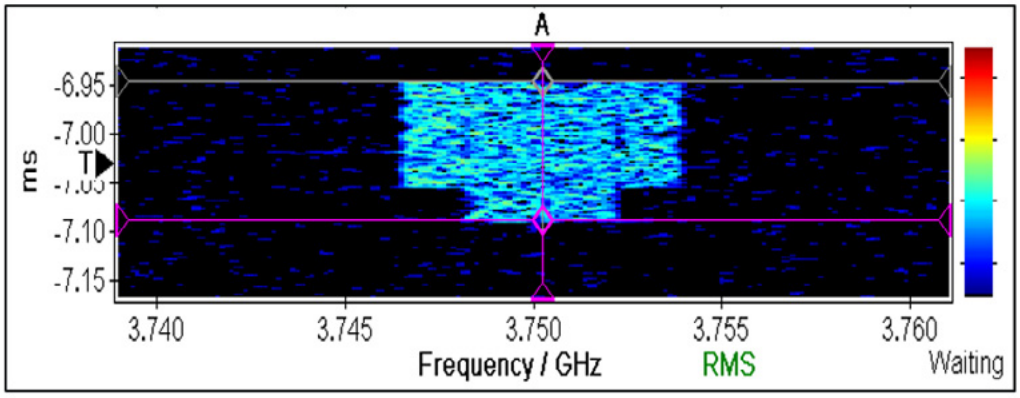
- It is independent of the cell load, so it can be performed at any time without the need for on-site participation by the system operator
- It also works with beamforming antennas, which are more often used for 5G systems.
- It can distinguish between different segment antennas, which enables evaluation of individual segment antennas right up to the sum of all the cellphone stations.
- The measurement is unaffected by the cellphone system uplink signals. This is important when TDD systems are employed, which is the major technology used for 5G NR.

Structure of SS/PBCH block

PSS (red) and SSS (green) are signals inside the physical broadcast channel (**SS/PBCH**) block

- The entire block is 240 subcarriers broad and 4 symbols long
- PSS and SSS are 127 subcarriers broad and 1 symbol long





Measurement Bandwidths

The bandwidth of the SS/PBCH block and the SSS/PSS signal are defined as follows:

- SS/PBCH block has a bandwidth of 240 x Δf
- The SSS/PSS signal bandwidth is 127x Δf

The subcarrier spacing of the PBCH block "Δf" can have the following values for carrier frequencies ≤ 6 GHz:

- 15 kHz, 30 kHz, 60 kHz

This results in the following bandwidths:

Δf	0,015 MHz	0,030 MHz	0,060 MHz
SS/PBCH	3,600 MHz	7,200 MHz	14,400 MHz
SSS	1,905 MHz	3,810 MHz	7,620 MHz
PSS	1,905 MHz	3,810 MHz	7,620 MHz

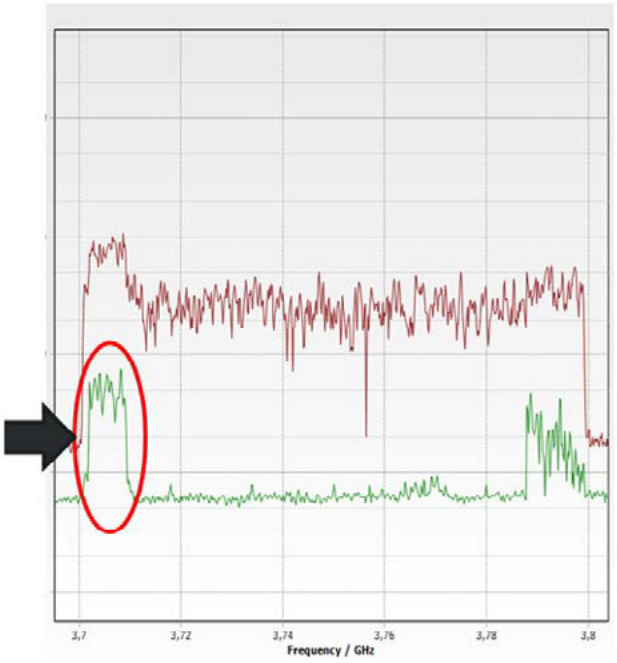
Note:

5G signals above 6 GHz require significantly larger measurement bandwidths. This SRM can only perform frequency-selective measurements in these higher frequency bands.

SS/PBCH Frequency

In contrast to 4G, 5G synchronization SS/PBCH can be shifted individually by the operator inside the frequency band. If frequency of the synchronization is unknown, it has to be located by a spectrum measurement or automatically by the measurement device.

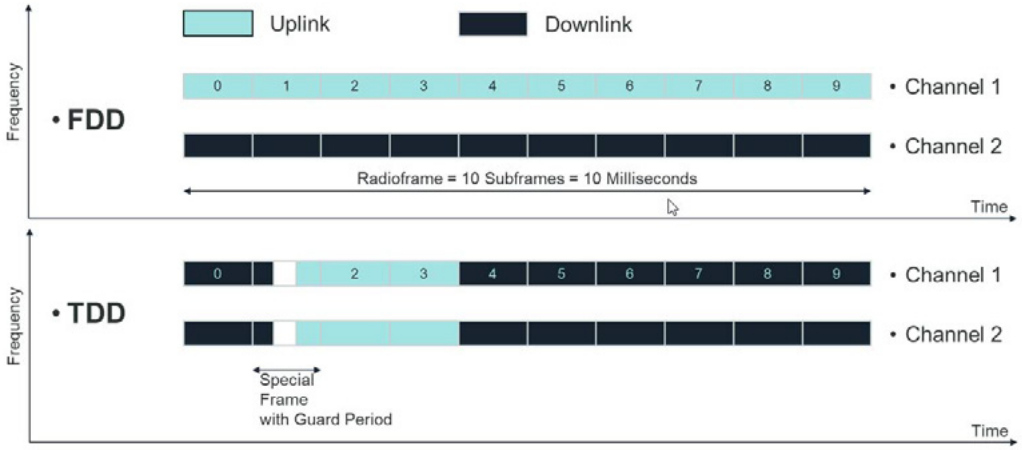
E.g.: 100 MHz bandwidth system with synchronization at lower edge of spectrum



TDD vs. FDD

Most base stations are expected to use TDD, in which uplink and downlink are multiplexed over time slots.

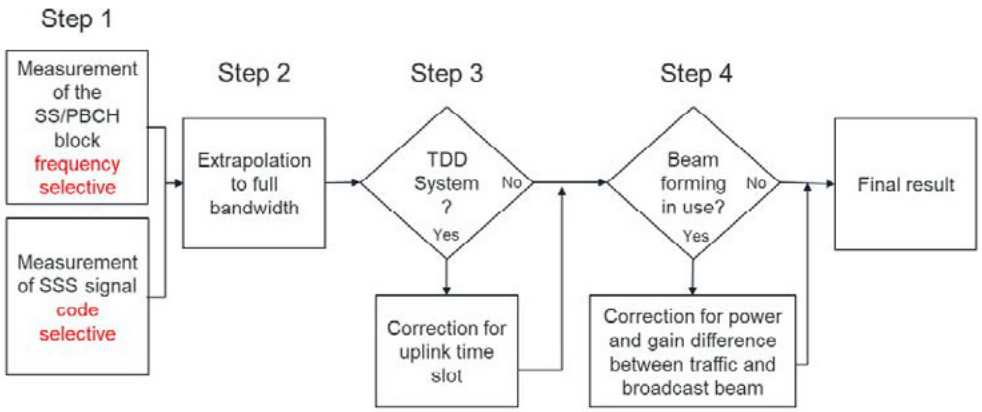
- This improves the utilization of the available frequency spectrum.
- Since often more data is required for the downlink than for the uplink, TDD allows additionally the data rate to be adjusted accordingly via the number of timeslots.



Extrapolation

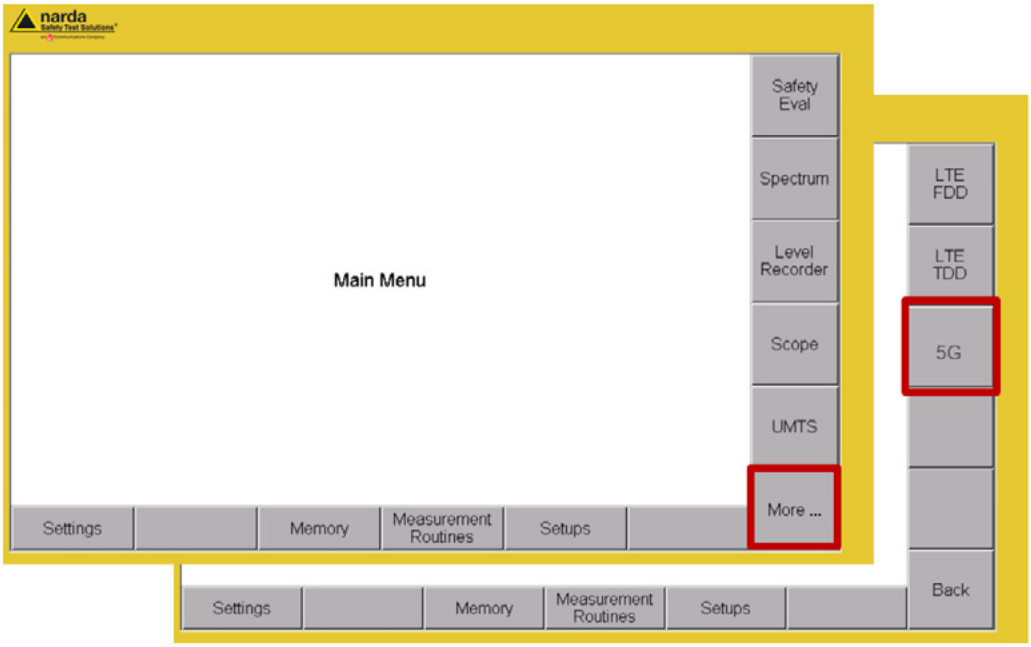
For the extrapolation of 5G signals several parameters have to be considered due to the use of TDD and beam forming.

Even though there will be different extrapolation methods depending on the country, which differ slightly from each other, the basic principle can be described as follows:



SRM based implementation

SRM 5G Measurement Mode
The measurement mode can be accessed via the "More" button.
TDD/FDD will be set via a parameter within the mode.



Exposure Evaluation
The exposure evaluation is usually performed in two steps:

- 1. Code selective measurement of the above-mentioned signals
- 2. Extrapolation to the maximum possible exposure level. The method used to calculate this extrapolation is currently under discussion and evaluation by the standardization bodies.

SRM 5G Code Selective Measurement - Firmware Option supports:

- Code selective measurement of the SSB0 – SSB7 levels

Ordering Information

SRM 5G Code Selective Measurement - Firmware Option

SRM 5G Code Selective Measurement	Firmware Option
Part number:	3701/08
Description:	Option, 5G NR
Compatibility:	All SRM-3006
Availability:	Q2 2021

Germany

Telemeter Electronic GmbH
Joseph-Gänsler-Str. 10, 86609 Donauwoerth
Phone +49 906 70693-0, Fax +49 906 70693-50
info@telemeter.de, www.telemeter.info

Switzerland

Telemeter Electronic GmbH
Romanshornerstr. 117, 8280 Kreuzlingen
Tel. +41 71 6992020, Fax +41 71 6992024
info@telemeter.ch, www.telemeter.info

Czech Republic

Telemeter Electrononic s.r
České Vrbné 2364, 37011 České Budějovice
Tel.+420 38 5310637, +420385510143
info@telemeter.cz, www.telemeter.cz