Technologically managed environment and self-regulation in mm waves

Pavel Šístek

Czech Telecommunication Office

sistekp@ctu.cz

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Český telekomunikační úřad

Topics

- Reasons for new approaches in spectrum management
- Light-licencing in the 60 GHz band: how it works
- RLAN 5.8 GHz band
- 5G NR in mm waves, dynamic access
- Further steps and conclusions

Reasons for new approaches in spectrum management

Risk management and innovations

- The construction of fibre networks: long-term impediments affecting the availability of the connectivity in rural (and other specific) areas
- Wireless platform is a reasonable solution to bridge the last mile. Licence-exempt authorisation facilitates deployment of networks (and, the availability of the connectivity).
- In 2015, national government Radio Spectrum Strategy identified 2 candidate bands: 60 GHz and 5.8 GHz.
- But, incumbents:
  - ✓ 5.8 GHz band: military radiolocation and Road Tolling
  - ✓ To manage the coexistence with the incuments: light-licencing
- Introduction of techno-regulation

Light-licencing in the 60 GHz band: how it works

(rlan.ctu.cz/en)

Example: Fixed Service station(s)

60 GHz Station

Add new WiGig PtP or PtMP Station
MGWS, IEEE802.11ad/ay, beamforming (with mitigation)

Add new FS PtP Stations (paired)
Fixed Services, only fixed directional connections (without mitigation)

5.8 GHz Stations

Add new Access Point 5.8 GHz

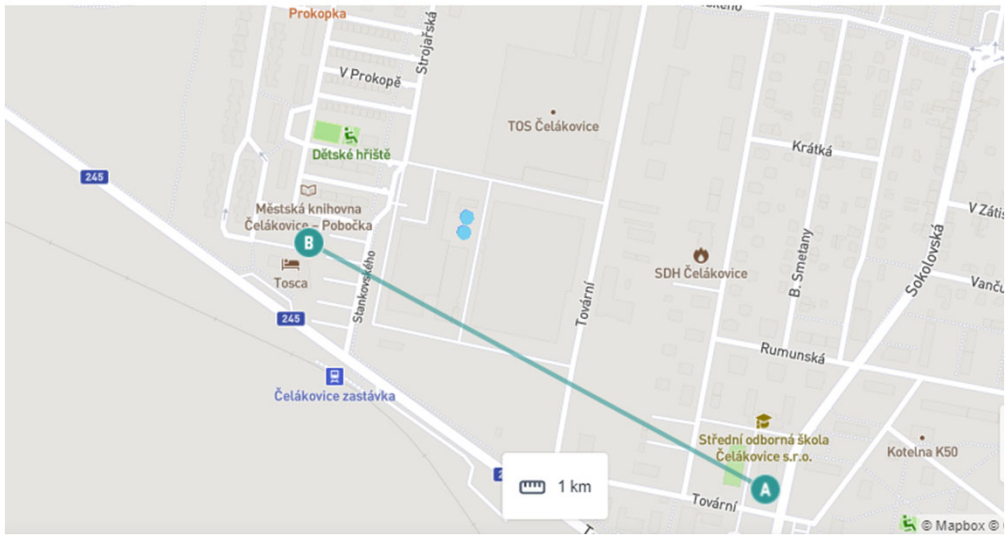
5.2 GHz Station

Add new Access Point 5.2 GHz

Where are stations located?

Use the map to select the location or enter the GPS coordinates.

Latitude A *	Longitude A *	Latitude B *	Longitude B *
50.15880963364367	14.742027139358896	50.161350729497286	14.734687324028243



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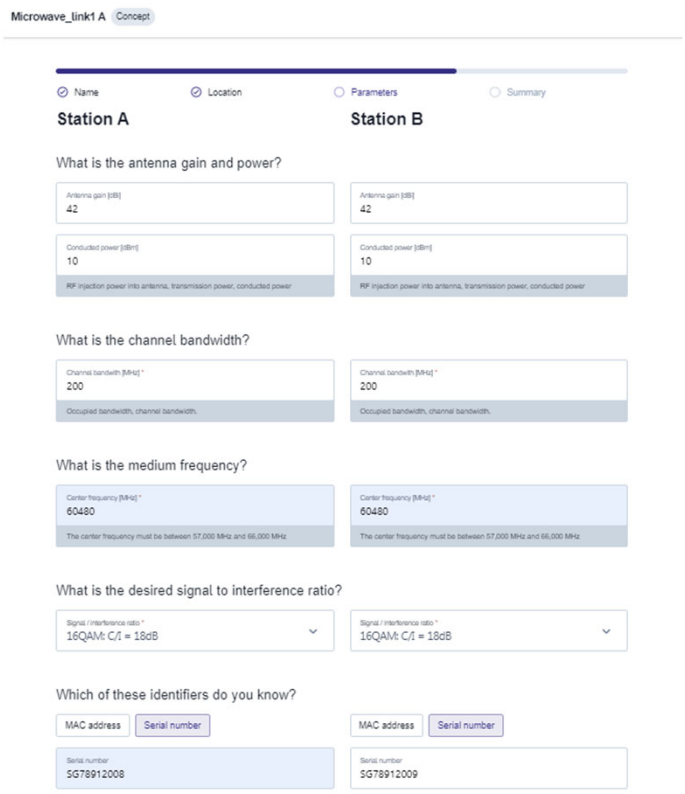
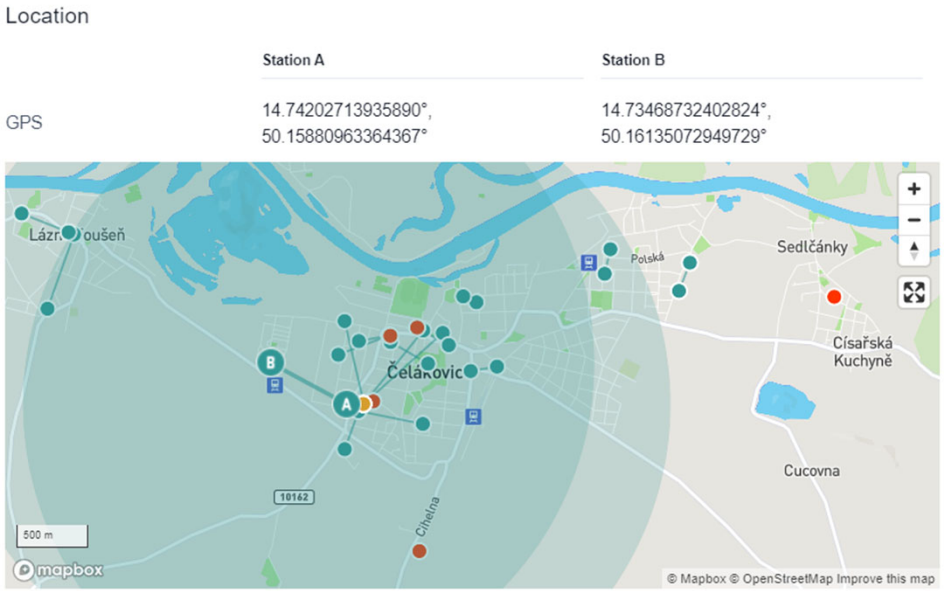
Light-licencing in the 60 GHz band: how it works



Coordination zone: circles of 3.5 km in diameter



Push button  to launch the Coordination Calculator.

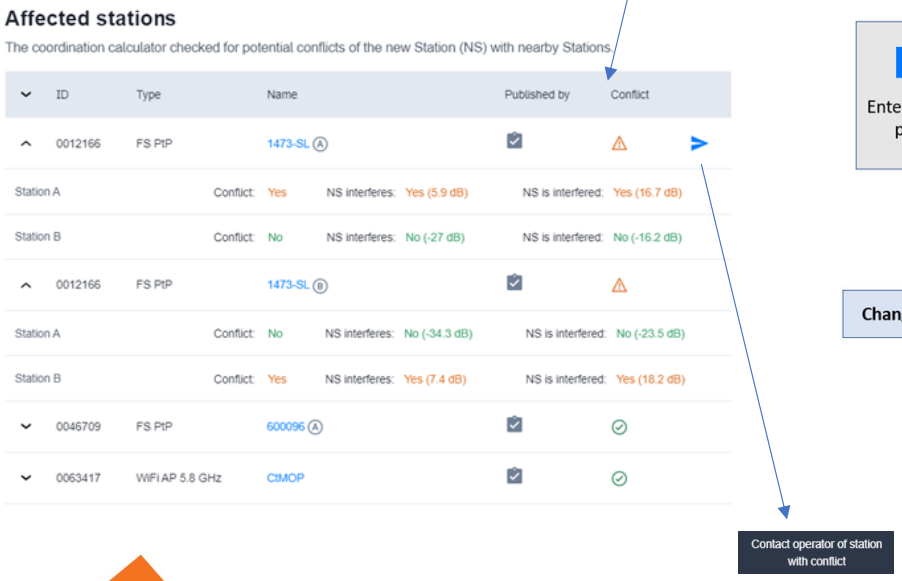
Note: batch file handling implemented.

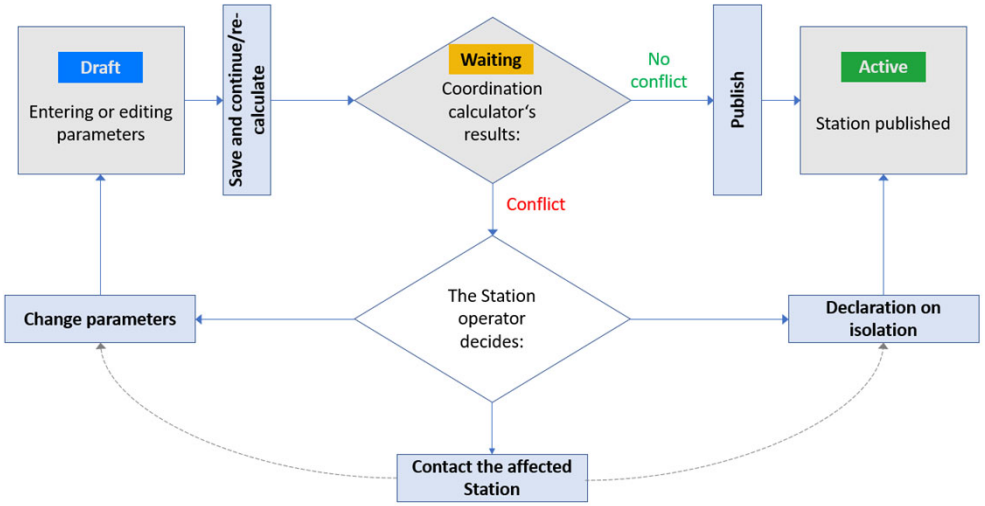
Light-licencing in the 60 GHz band: how it works

Coordination Calculator results:

If no potential interference identified, the station(s) can be easily published.

In case of a conflict, 3 solutions:



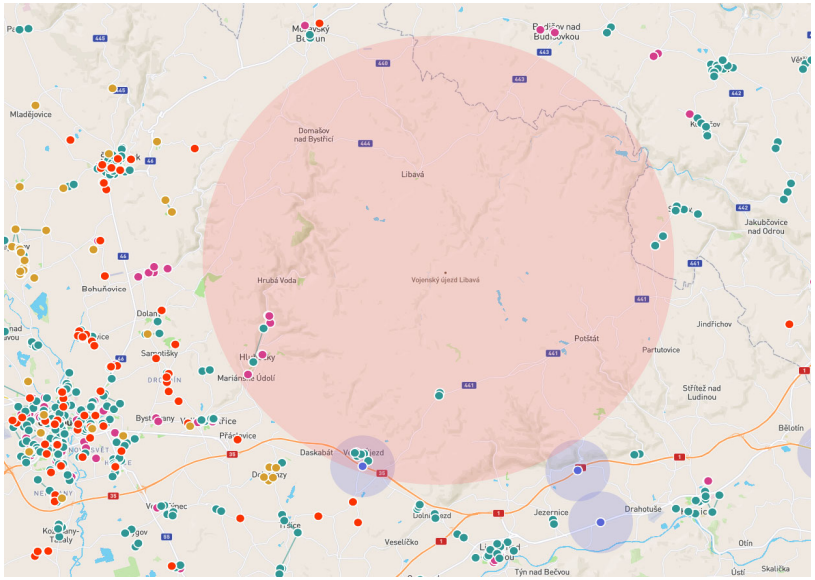


Český telekomunikační úřad

RLAN 5.8 GHz band

Light-licencing for fixed high-power installations

- New band for RLANs (e.i.r.p. > 25 mW), based on sharing principles: 5725-5850 MHz (April 2021).
  - ✓ WAS/RLANs with e.i.r.p. > 200 mW: light-licencing in order to manage the coexistence with incumbents.
- Spectrum sharing with military users: exclusion zones + agreement on the conditions during peacetime.
- Road tolling protection: exclusion zones
- CEPT and RLAN in the 5.8 GHz: no European harmonisation, but draft new ECC Report on national measures (public consultation during summer 2021).



5G in mm waves, dynamic access

New governmental R&D project in the 26 GHz band

- Observations of alternative ways to authorise the 26 GHz band for 5G NR applications, aiming to:
  - ✓ Easy availability of frequencies, addressing various users and verticals.
  - ✓ Involve different stakeholders for wide collaboration.
  - ✓ Results to be shared with other (European) countries.
- Research streams:
  1) Radio planning tools and algorithms
  2) Software
  3) Maps
  4) Legal issues; e.g. SW solutions shared with other administrations: Free and Open Source Software (FOSS) licences considered.
- 5G FWA trials in the 26 GHz band will be launched in 2021

Further steps and conclusions

- New features in the 60 GHz and 5 GHz bands (rlan.ctu.cz/en): API interface to connect external information systems with the portal (dynamic re-configurations).
- The project on 5G NR in mm waves (26 GHz band): dynamic access to spectrum will be observed.
- Spectrum sharing, know-how sharing and the European collaboration:
  - Observations of the feasibility of FOSS licences: European Union Public Licence 2.0 or other copyleft licences can be explored.
- Licence-exempt usage is the candidate for dynamic access. To maintain regulation principles, technologies have to be involved (techno-regulation).
- Spectrum sharing is about balancing benefits and possible risks. Policymakers and administrations are obliged to study new and innovative approaches.