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Subject : Increasing threat to meteorological radars in the 5600-5650 MHz band due to interference from 5 GHz RLAN

Dear Madam/Sir,

The issue of interference to meteorological radars in the band 5600-5650 MHz has been one of the major consequence of the adoption of the EC Decision 2005/513/EC on "the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of wireless access systems including radio local area networks (WAS/RLANs)".

First interference cases from RLAN 5 GHz were reported in 2006 and triggered a EUMETNET request for action to TCAM dated 17 October 2006. The importance of solving the problem was duly recognised in TCAM that invited ETSI to undertake revision of the RLAN standard EN 301 893 to improve the specifications of the Dynamic Frequency Selection (DFS) feature. Thanks to a fruitful collaboration between the RLAN industry and EUMETNET, the relevant revisions of EN 301 893, namely V.1.5.1 and V1.6.1 were adopted in 2008, together with a schedule of withdraw of former versions, agreed in TCAM. This work was complemented by the adoption on 4th December 2008 of a EUMETNET Recommendation on C-Band Meteorological radar design to ensure global and long-term coexistence with 5 GHz RLAN. At that time, EUMETNET considered this package as a satisfactory global and long-term solution to this difficult RLAN 5 GHz issue.

Unfortunately, it rapidly appeared that most interference cases to meteorological radars were due to non-compliant RLAN 5 GHz, with either no DFS inside or DFS that can be switched-off by the user. This situation was again raised in 2011 by EUMETNET to the ECC WGFM attention that, after a questionnaire among European countries and an ADCO/RTTE market surveillance campaign, adopted ECC Report 192 (February 2014) definitively confirming that most interference cases to meteorological radars are due

illegal use of RLAN and non-compliant equipment and stressing the lack of relevant action from radio authorities (insufficient or no investigation at all on why DFS did not work as intended and no action against non-compliant or illegally used equipment).

This Report was therefore aimed at also providing guidance to Radio Administrations, Market enforcement authorities and notified bodies, listing a number of actions to be undertaken following interference or behavior to be banned, fully consistent with the RTTE directive.

EUMETNET saw this ECC Report 192 as a last opportunity to solve the interference problem by definitively banning non-compliant equipment from any use in Europe, taking strong actions against unscrupulous manufacturers putting these equipment on the European market (including well known EU based manufacturers) and by finally discouraging such behavior with voluntarists action such as "name to blame".

At the present stage, 10 years after the initial interference reports, 7 years after the adoption of revised EN 301 893 and 3 years after the adoption of ECC Report 192, EUMETNET has unfortunately to report that, on the contrary, nothing has changed with regards to the interference to meteorological radars in the 5600-5650 MHz band.

Indeed, EUMETNET has recently undertaken an enquiry among its members operating such meteorological radars, with results from 23 countries and representing the situation of 153 radars (over a total of 180 radars):

- In 2015, 21 members have experienced interference to 110 radars (72% of radars), with the number of cases ranging from a few to thousands
- 21 members have not seen any improvement of the interference situation, 13 of them reporting an increasing trend in the number of interference cases
- Among those cases, a large number of them do not last long enough to allow relevant intervention from the NRA but are sufficient to degrade the meteorological radar measurements and products
- Although the level of intervention upon request from most NRA's seems to be satisfactory, the enquiry confirm the lack of relevant actions undertaken by these NRA following interference cases, in particular only shifting the frequency of the interfering RLAN, hence leaving equipment that are obviously non-compliant (in full contradiction with ECC Report 192 and RTTE directive) in operation and without any further action on the users and the manufacturers
- One can also mention the case of the NRA from Ireland that consistently refuses to intervene following interference cases, leaving the Dublin airport radar interfered with for more than 3 years

Meteorological radars are key observation stations used for meteorological observing and environmental monitoring and play a crucial role in providing warnings of imminent severe weather conditions that can endanger populations and damage strategic economic infrastructure. In this respect, meteorological radars represent the last line of defence against loss of life and property in flash floods and severe storms events, such as those that occurred recently in Eastern Europe, UK or France and for these reasons cannot be put at any risk.

The essential role of meteorological radars has been raised in many instances by the World Meteorological Organisation (WMO) and was confirmed in the EU Radio Spectrum Policy Group (RSPG)

Report and Opinion on "A coordinated EU spectrum approach for scientific use of the spectrum" (October 2006), as well as even in the RLAN 5 GHz Decision 2005/513/EC.

Facing the current interference situation, EUMETNET and its members consider that it has almost reached a dead-end and that only drastic and rapid actions from all involved European Radio Authorities could allow a future proof and sustainable operation of C-Band meteorological radars in the 5600-5650 MHz band. This is in particular true considering the increasing market expectations from telecommunication applications in the 5 GHz range (high data throughput WiFi, LAA-LTE, M2M, IoT, ...).

In our letter to TCAM in 2007, we wrote :

"Finally, EUMETNET has already noted that RLAN 5 GHz devices that are not compliant with the current version of the ETSI standard are being put on the market by some unscrupulous manufacturers and vendors who are taking advantage of the auto-compliance rule in Europe. We understand that this is a consequence of the RTTE directive 99/05/EC and that this directive provides regulatory provisions for market survey and spectrum control. We are concerned that as a consequence of the unlicensed nature of the RLANs and their expected mass deployment, such non-compliant equipment could be difficult to locate (as confirmed in the recent interference cases) and could, irrespective of the Standard version, lead to a situation where meteorological radars could quite often be affected by harmful interference that could compromise their ability to provide the information needed to provide the warnings that are essential to the protection of life and the preservation of property in severe weather events.

You probably know that in other developed countries such as the US, Canada and Japan, type approval is required, helping to reduce the level of deployment of non-compliant devices. We are therefore wondering whether the RTTE Directive should consider a safeguard clause to introduce type approval in Europe where unlicensed radio devices are currently authorised in bands used by critical and safety of life applications, such as in the 5 GHz band used by meteorological radars."

These considerations are certainly still valid in particular when the current lack of actions from radio and market enforcement authorities does not give any incentive to manufacturers to produce and put on market compliant equipment. They will require specific answers and actions.

The compliance, illegal use and market surveillance issues are also duly mentioned in the recently adopted CEPT Report 64 as a response to the EC Mandate "To study and identify harmonised compatibility and sharing conditions for Wireless Access Systems including Radio Local Area Networks in the bands 5350-5470 MHz and 5725-5925 MHz ('WAS/RLAN extension bands') for the provision of wireless broadband services". The conclusions of this Report confirm the continuation of interference to meteorological radars in the 5600-5650 MHz band and are making a clear link between solving these problems and any decision to authorize RLAN in the potential extension bands 5350-5470 MHz and 5725-5925 MHz bands.

EUMETNET has also strong interests in the 5350-5470 MHz band, namely meteorological radars (currently only in Switzerland) and EESS (active) with the Copernicus programme as well as EUMETSAT instruments and we would be of the highest concern if these applications were put at any risk. We certainly share the CEPT Report 64 conclusions and would fail understanding that a decision could be taken to authorise RLAN 5 GHz in the 5350-5470 MHz under the obvious knowledge of possible intentional illegal use and non-compliant equipment and without efficient solutions to solve this problem.

Status quo is not an option and EUMETNET would therefore respectfully request the EC Spectrum Unit (DG Connect) and TCAM (DG Grow) to initiate all necessary actions to stop within short timeframe non-compliant and illegal use of RLAN 5 GHz in the 5600-5650 MHz band in order to ensure sustainable operation of essential C-Band meteorological radars.

In the absence of rapid results, there would be no other choice for EUMETNET than to request a ban of RLAN in the 5600-5650 MHz band, consistently with the situation in a number of countries worldwide, such as Canada and Australia.

We would like to assure you of our full cooperation on this issue, as we did in the past, and are ready for providing you with more detailed information on this sensitive issue. Mr Philippe TRISTANT (philippe.tristant@eumetnet.eu), EUMETNET Frequency Manager, would be totally entitled to act on behalf of and take the highest care of EUMETNET members' interests, and to try to ensure that any future decisions taken will protect meteorological radars.

Thank you for your consideration and assistance in these matters. Yours sincerely,



Eric Petermann
Executive Director

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