ECC addressed the issue of Interference from 5 GHz RLAN to meteorological radars by considering a letter on this issue sent by EUMETNET to the EC DG CONNECT and DG GROW (document ECC(17)018) as well as a specific EUMETNET contribution (document ECC(17)032) providing additional details on current interference events to meteorological radars.

In particular, these documents stress the fact that the number of interference events is increasing in most European countries, due to non-compliant and illegal use of RLAN 5 GHz equipment. In addition, these documents argue that that there is still a lack of relevant actions from enforcement and market surveillance authorities in most countries participating to EUMETNET, despite the adoption of [ECC Report 192](http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCREP192.PDF) in 2014 (see executive summary below).

ECC recognised the seriousness of the current situation and the increasing level of threat to meteorological radars in the 5600-5650 MHz band. It was agreed that the current situation is not a consequence of any shortcomings in the Regulations (e.g. ECC Decision, EC Decision) or in the sharing mechanism in place (DFS, as specified in ETSI EN 301 893).

On the contrary, ECC agreed that the current situation is due to a lack of relevant enforcement actions or difficulties to undertake such actions where administrations were facing a high ratio of non-compliant RLAN 5 GHz equipment being placed on the European market.

ECC and its members therefore agreed that the following actions have to be undertaken within short-notice to ensure sustainable operations of meteorological radars in the 5600-5650 MHz band:

1. Make sure that ECC Report 192 findings and guidelines are from now fully applied by national enforcement authorities, with particular stress on the fact of not leaving any non-compliant equipment in use
2. Prepare awareness and information actions from National radio administrations as well as in the CEPT web-site
3. Asking, through WGFM, that the issue of 5 GHz meteorological radar interference be specifically monitored in FM22 (the meteorological radars in the band 5600-5650 MHz are assumed to be covered by the yearly interference statistics, but not explicitly by a separate category)
4. Consider the possibility to release a “Name and Blame” list of non-compliant 5 GHz RLAN equipment:
	1. at each national level (e.g. Germany informed ECC about their plan)
	2. at CEPT level, for which WGFM is tasked to undertake the relevant studies
5. Recommend to the European Commission to activate Article 5 of the RE Directive for 5 GHz RLAN, under which manufacturers will have to register their radio equipment, providing relevant elements of the technical documentation and getting from the EC a registration number before putting on the market.

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# Executive summary of ECC Report 192 on “The Current Status of DFS (Dynamic Frequency Selection) In the 5 GHz frequency range” (approved 6 February 2014)

ECC WGFM adopted a work item to study the DFS mechanism (Dynamic Frequency Selection) and current situation regarding interference into radars in 2011. Under an ECC WG FM questionnaire on the current status of in the 5 GHz frequency range, more than 200 cases have been reported and analysed in 2012.

This Report was intended to keep the collected information and study further in detail the issue of Wireless Access Systems including radio local area networks (WAS/RLAN) 5 GHz interference to meteorological radars. It has been shown that all investigated interference cases relate to outdoor WAS/RLAN fixed installations operating co-channel with the radar, although, due to the lack of information which did not allow concluding on the origin of the interference, some of these cases were not further investigated. It is also emphasised that short-term interference events have been reported but the short duration of these cases does not give the opportunity for administrations to further investigate the situation and to identify the source of the interference.

The analysis of reported interference cases leads to the following categories:

**Intentional illegal use:**

* A considerable number of the reported interference cases were caused by equipment where the DFS mechanism was disabled;
* In some cases, higher gain antennas were used resulting in e.i.r.p. levels above the regulatory limits, However, if the DFS) mechanism is active and efficient the use of higher gain antennas should not result in interference towards radars.

**Non-compliant equipment**

The main reasons for non-compliance are:

* Alteration/ disablement of DFS settings possible by the user (ETSI EN 301 893 version 1.4.1 [1] and higher does not allow the user to disable DFS or alter the DFS settings). In some of these cases, Notified Bodies had issued a positive opinion to this non-compliant equipment.

* In those interference cases where the DFS mechanism in the WAS/RLAN equipment is disabled, or where the equipment could be configured to a country where different or no DFS requirements apply, market enforcement shall not allow such equipment to be operated or remain in use and no effort should be undertaken to resolve the interference case by re-configuring the country of operation or by re-enabling DFS;
* In some cases, where DFS was disabled, re-enabling DFS did not cause the equipment to detect the radar. The DFS did not function as intended (non-compliant DFS).
* Market enforcement and surveillance authorities are also advised to initiate appropriate actions to prevent further that such equipment is placed on the market. It is also recommended that the equipment is submitted to a test laboratory to determine why the DFS mechanism is failing.

The findings of the present report have been confirmed by the TCAM ADCO market surveillance campaign that shows quite a high percentage of non-compliant equipment among those considered. TCAM/ADCO recommends that market surveillance authorities to increase the amount of inspections on 5GHz WLANs until the situation will have improved.

In those cases where the WAS/RLAN is operating co-channel with the radar and is causing interference into the radar, market enforcement shall not allow such equipment to be operated or remain in use and no effort should be made to solve the interference case by

1. Re-configuring the WAS/RLAN equipment to a different channel, or by
2. Re-enabling DFS again (where it was disabled), or by
3. Reducing the Tx-output power.

The case should be passed to the national responsible market surveillance authority for an action that can end in a safeguard clause procedure to ban the considered equipment from the European market.

Interferences due to equipment placed on the market at an earlier stage (compliant with an earlier standard version) should be dealt with on a case by case basis to solve the interference.

It could be beneficial to maintain and publish a list of non-compliant equipment for which Member States had initiated a safeguard clause in accordance with the R&TTE Directive [10]. It would be desirable to find solutions such that users/ consumers and retailers become more aware of the existing problems with non-compliant equipment and get some guidance from authorities and such a list may help them.

**Notified Bodies**

Notified Bodies shall not issue a positive opinion for the cases described above where the equipment is clearly non-compliant. Notified Bodies should consider the guidance provided in the present Report when assessing 5 GHz WAS/RLAN equipment.

The development of additional guidance to manufacturers and Notified Bodies is recommended (see section 2.6.1).

**Incomplete investigation / inadequate actions by enforcement authorities**

Most of the reported interference cases remained ultimately inconclusive because of key information were not collected, the investigations were incomplete or the action was inadequate.

However, despite these incomplete investigations, it can still be concluded that there is a considerable number of cases of intentional illegal use or non-compliant equipment.

Market enforcement authorities should consider the guidance provided in this report and increase their efforts to take appropriate action against non-compliant equipment or non-compliant operation of equipment.

There was

1. Insufficient or no investigation at all on why DFS did not work as intended;
2. No action against non-compliant or illegally used equipment.

A good cooperation and coordination between national market surveillance and market enforcement action is important to solve 5 GHz DFS interference problems.

Enforcement authorities should inform WAS/RLAN users about the consequences of the illegal use of WAS/RLAN equipment, i.e. causing interference to meteorological radars.

**Compliance with ETSI standards**

Considering investigated interference cases, no issues have been identified with regard to short comings in the specifications of the DFS mechanism itself as specified in the current version of the Harmonised European Standard EN 301 893 (i.e. – v1.5.1 and above). No investigated interference case can be traced back to failure of the DFS mechanism. Therefore, it may be assumed that equipment fully compliant with this standard provides adequate protection to radars.

Although ETSI EN 301 893 [1] prohibits the equipment to provide the user direct access to any of the DFS settings, this Report identifies means which may indirectly impact the DFS mechanism, including potential disablement of DFS (see section 2.6.1.3). Solutions may potentially be found through a further enhancement of the applicable standards.