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| **Radiocommunication Study Groups** |  |
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| **\_\_\_\_\_\_\_\_ 2020** |
| **English only** |
| WP1A | |
| DRAFT LIAISON STATEMENT TO Working Parties 5C, 5D, 7C, and 7D | |
| Information for studies on WRC-19 Res. 731 | |

WRC-19 approved a revised version of Res. 731, for “(c)onsideration of sharing and adjacent-band compatibility between passive and active services above 71 GHz”.

For timely conducting studies on Res. 731 , WP 1A requests the viewpoints of WP 5C, 5D, 7C, and 7D on its planned approach to addressing this complex sharing issue. In studies for Report ITU-R F.2239 and for WRC-19 AI 1.15 the basic approach taken was to start with assumptions for Fixed transmitters uses in a band and to predict the impact on EESS systems compared to the protection level given in RS.2017. But the framework of Res. 731 is different from AI 1.15 and requests ITU-R “to continue its studies to determine if and under what conditions sharing is possible between active and passive services.” To this end we are considering a different approach for a new study and seek your inputs.

The studies are focusing only on EESS protection and not RAS protection since RAS facilities at these frequencies are typically located in high altitude arid sites such as in Northern Chile in order to avoid degradation by the atmosphere. These facilities are best protected by restrictive zones surrounding them which will have little impact on communications networks due to the nature of the siting of these RAS receivers.

In the bands above 71 GHz protected by RR5.340 from any emissions any shared use is presently prohibited. In order to share these bands without harmful interference to EESS the prevention of such interference must be a key design input. While RS.2017 gives the protection criteria for EESS, they are in the term of received power over a specified bandwidth at the terminal of the antenna. Based on the AI 1.15 studies it is unlikely that typical microwave antenna technology could achieve such required low levels since these antennas were not designed for performance in an environment with such a strict protection requirement.

Sharing above 71 GHz raises different technical issues than possible sharing in the lower bands also contained at 5.340. Atmospheric absorption is a key propagation issue above 71 GHz for paths greater than a few km. As a result, low elevation angle ground-to-satellite paths have paths losses generally above 1000 dB - making the atmospheric basically opaque at such angles. However this path loss decreases with path elevation angle increase and zenith propagation is comparable to much lower bands.

FIXED systems generally have low elevation angles, so main beam illumination of EESS receivers by such can be eliminated as an interference threat. But sidelobe illumination is a interference threat to EESS receivers unless antennas are designed to control this threat. While all finite size antennas must have sidelobes for theoretical reasons, it is theoretically possible to decrease sidelobes at high elevation angles below the typical values generally encountered in today’s FIXED systems which were designed in a terrestrial-to-terrestrial sharing environment where such sidelobes were of limited concern. But antenna designers need a sidelobe suppression goal in order to develop such designs. The focus of this work is to develop a method of calculating an EIRP mask as a function of elevation angle that will lead to possible standards for interference free sharing as requested in Rs. 731

All contributing Working Parties are kindly invited to respond in a timely manner before the deadline of ­­­­­­\_\_\_\_\_\_\_\_\_\_, at the latest, and in advance if possible, taking due account that WP 1A will be meeting on \_\_\_\_\_\_\_\_\_.

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| **Status:** | For action. |  | |
| **Deadline:** | \_\_\_\_\_\_\_\_\_ at the latest. |  | |
| **Contact:** |  | **E-mails**: |  |
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