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| **WORLD WEATHER WATCH****COMMISSION FOR BASIC SYSTEMS** |  |
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| **Steering Group on Radio Frequency Coordination (SG-RFC)****Payerne, Switzerland. 22-25 September 2015.** | **Document SG-RFC/2015-1-19** |
| **15 September 2015** |
| **English only** |
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| **Restricted access required? (Y/N)[[1]](#footnote-1)\*** | **N** |  |
| STEERING GROUP ON RADIO FREQUENCY COORDINATION (SG-RFC) |
| David FRanc (USA) |
| Collection of Technical and Operational Characteristics for RF-based Space Weather Sensors |

**Introduction**

Study Group 7 of the International Telecommunications Union Radiocommunication Sector (ITU-R) has approved a question to study the technical and operational characteristic, and spectrum requirements for RF-based space weather sensors. This work is required in order to support any future regulatory action that may be required to provide protection to RF-based space weather sensor operations. The effort to obtain the technical and operational characteristics of the sensors has been challenging at best. Following up on discussion with WMO Secretariat staff about the challenges that have been experienced, a form was created that can be completed by system experts. This form has been provided to WMO staff involved with the Space Weather Program, in hopes that they can further distribute it to system experts.

**X. Action (by SG-RFC) Proposed** *(for example, note the information, study the matter, etc.)*

The SG-RFC membership is invited to review and provide revisions to the attached document, and distribute the final version as widely as possible in order to assist in collecting space weather sensor technical and operational characteristics.

**Y. Draft Text for Inclusion in the SG-RFC Meeting Reports or Other Documents**

The report should encourage use of the form to provide technical and operational characteristics of RF-based space weather sensors so that work in ITU-R Study Group 7 can proceed.

**Required Information for RF Based Space Weather Observing Systems**

Work is ongoing within the Radiocommunication Sector of the International Telecommunications Union (ITU-R) to document the technical and operational characteristics of radio frequency (RF) based observing systems that are used for observation of space weather conditions. The system may transit and receive, or be receive only. In addition, they may be ground, aircraft or satellite based.

It has been noted that RF-based space weather observing systems may not be adequately protected from interference that could be caused by other radio services, either existing or as a result of future changes in spectrum regulations. Work within the ITU-R is ongoing to understand the situation and determine what steps can and need to be taken to provide additional protection. The first step is documenting the technical and operational characteristics of the observing systems so that spectrum regulators know what is operating or planned to be operated in support of space weather operations. Without this information it is not possible to determine what the next steps should be to provide the needed protection in the international radio regulations.

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**Observing System Nomenclature:**

**Technical Contact for Further Questions: (***Organization and Email Address***)**

**Description of Deployment** (*Please provide a description of how this system is deployed, the number of systems believed to be operating globally, and, if possible, the locations.*)**:**

**Functional Description** (*Please provide a high level description of how the system operates, how it relies of reception of radio frequency signals, how it processes the signal to produce data, and a description the data it provides.*)**:**

**Diagrams and Graphics to Help Understand System (***Please provide any antenna pattern plots, system block diagrams, or other graphics that will help in understanding the system***):**

**How Does Data From this System Support Space Weather Monitoring and Forecast Operations?**

|  |  |  |
| --- | --- | --- |
| **Characteristics** | **Value** | **Instructions** |
| Function |  | What is system used for ? |
| Platform type  |  | Where is it installed? |
| Frequency (MHz) |  | Center Frequency(ies) of Operation |
| Modulation Type |  | If system includes a transmitter. |
| Power into antenna |  | If system includes a transmitter, indicate whether Peak or Average |
| Pulse width (s) andPulse repetition rate (pps) |  | Needed for pulsed systems only. |
| Maximum duty cycle |  | Needed for pulsed systems only. |
| Pulse rise/fall time (s) |  | Needed for pulsed systems only. |
| Antenna pattern type |  |  |
| Antenna type |  |  |
| Antenna polarization |  |  |
| Antenna main beam gain (dBi) |  |  |
| Antenna elevation beamwidth (degrees) |  |  |
| Antenna azimuthal beamwidth (degrees) |  |  |
| Antenna side-lobe (SL) levels (1st SLs and remote SLs)  |  |  |
| Antenna height |  | Required if ground based only |
| Receiver IF 3 dB bandwidth (MHz) |  |  |
| Receiver noise floor (dBm) |  |  |
| Minimum Required S/N |  |  |
| Receive loss, dB |  | Loss between Antenna and Receiver |
| RF emission bandwidth (MHz) 3 dB –20 dB |  | Required only if system includes a transmitter |

1. \* If restricted access is selected the WMO Document will only be accessible to the WMO WIKI registered users. [↑](#footnote-ref-1)