



RADIO PHYSICS

Supplemental Statement of Radio Physics Solutions/"RPS"

FCC Experimental License File 0788-EX-ST-2018

This STA is a follow-up to the one granted previously under Files 1758-EX-ST-201, 0161-EX-ST-2018 and 0671-EX-ST-2018. The technical details are very similar. Johnson Controls, Inc. "JCI" is having a competition for entrepreneurs with new technology in the security area. The preliminary phase of this was a demonstration in the main ballroom of the Philadelphia Marriott West Hotel this was authorized under 0671-EX-ST-2018. Our present authority for demonstrations is limited to California, Texas, New York, Maryland, Virginia. Thus we request authority to demonstrate this technology at the second phase of the JCI competition in Milwaukee, WI. The event is May 22-24, 2018 including set up. Thus we seek only a 3 day STA for this convention center location.

This application is demonstrating to potential clients a concealed threat detection solution – MiRTLE 30¹. This technology has been developed by RPS in the United Kingdom and tested there for the Home Office. Radio Physics MiRTLE® patented technology fuses proprietary millimeter wave radar techniques with artificial intelligence to provide instant standoff threat detection of concealed person borne threats. The system is optimized to detect person borne suicide bomb vests and assault weapons. Radio Physics plans to expand the detection capability to include hand guns and knives. MiRTLE's stand-off detection capability remains unmatched and is gaining traction as a critical system for a wide range of security applications.

We believe that the technology being tested here is "new technology" in the context of 47 U.S.C. 157. Therefore we ask that this application be treated under the provisions of § 7, particularly with respect to the burden test of § 7(a):

Any person or party (other than the Commission) who opposes a new technology or service proposed to be permitted under this chapter shall have the burden to demonstrate that such proposal is inconsistent with the public interest. (Emphasis added)

¹ See <http://radiophysicsolutions.com/solutions/mirtle>

The frequencies requested here include the bands with primary or coprimary allocations for Radio Astronomy² and Earth Exploration Satellite (passive) and thus are subject to the provisions of § 5.85(a)(2)³. In accordance with these provisions we make the following statements:

1) RPS acknowledges that long term or multiple location use of passive bands is not possible under provisions of the present US allocation table

2) RPS intends to transition any long-term use to a band with appropriate allocations at that time.

The unit to be tested is designated here MiRTLE 3y and uses less bandwidth than the unit being developed and tested in UK in order to minimize regulatory complexity under FCC Rules. The MiRTLE 3y in this test will be limited in emissions to the band 75-100 GHz which also contains Fixed Service units under the "licensed light" provisions of Part 101, Subpart Q (47 C.F.R §§ 101.1501,1527)

The use of this equipment will be indoor only and we request such a restriction as a special condition in order to assure other users that this test will not interfere with them. The Wisconsin Center where the event will be held is a 3 floor convention center with heavy reinforced cement floors. All use will be on the first floor, thus any cochannel satellite use will be shielded by two decks of reinforced cement as well as the building roof.

² Since the closest radio telescope to Milwaukee that uses millimeterwave spectrum is in Arizona, we believe that the issue of protecting passive spectrum users is limited to passive environmental satellites issues.

³ 47 C.F.R. § 5.85(a)(2) : **Frequencies and policy governing frequency assignment.**

"Applications to use any frequency or frequency band exclusively allocated to the passive services (including the radio astronomy service) must include an explicit justification of why nearby bands that have non-passive allocations are not adequate for the experiment. Such applications must also state that the applicant acknowledges that long term or multiple location use of passive bands is not possible and that the applicant intends to transition any long-term use to a band with appropriate allocations use of passive bands is not possible and that the applicant intends to transition any long-term use to a band with appropriate allocations."

At this frequency range normal building material is essentially opaque. Furthermore the maximum elevation angle of the 36 dBi antenna will be zero degrees, also protecting licensed users in this band. The Wisconsin Center in Milwaukee is a modern convention center as shown in the photo below:



Technical Issues in Application

The transmitter in this test will have a power of 3.2 mW and will be feeding a 36 dBi antenna.

The maximum elevation angle will be zero degrees. The azimuthal angle will vary as the antenna is rotated to look at various objects in the indoor location. The antenna will have a maximum height of 2m and will only be used at indoor locations.

All exposed surfaces of the device will comply with FCC RF safety limits.

The STOP BUZZER contact for this experiment is Gary King, g.king@rpssys.com, (832) 812-3760

Any questions about this application should be directed to Dr. Michael Marcus, consultant to RPS, 301-229-7714, mjmarcus@marcus-spectrum.com

/s/

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