

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)
)
THE NATIONAL FOOTBALL LEAGUE)
)
Request for Partial Waiver of Section 96.39(c))
of the Commission’s Rules to Permit the)
Certification and Operation of a Citizen’s)
Broadband Radio Service System in Stadiums)
During NFL Football Games)

**To: The Chief, Wireless Telecommunications Bureau
And the Chief, Office of Engineering and Technology**
Via: Office of the Secretary

REQUEST FOR PARTIAL WAIVER

The National Football League (NFL), by and through counsel and pursuant to Sections 1.3 and 1.925 of the Commission’s Rules (47 C.F.R. §§ 1.3 and 1.925), hereby respectfully requests that the Commission waive Section 96.39(c)(2) [47 C.F.R. §96.39(c)(2)] of the Commission’s Rules, in order to permit the operation of a General Access (GAA) Citizen’s Broadband Radio Service (CBRS) System developed and now under test by the NFL, in stadiums during NFL games, for the purpose of coach-to-coach communications during NFL football games. Very specifically, the instant waiver request pertains to a very narrow and limited set of factual circumstances, in which Internet service is interrupted or becomes unavailable during or immediately prior to the commencement of a scheduled game in a stadium, but after authority to operate the CBRS system for that game, within that particular stadium has been granted by the System Access Administrator (SAS). The instant waiver requested herein would obviate

the need to shut the NFL CBRS system off within 60 seconds of the Internet outage, thus to allow the continuation of the use of the CBRS system for the remainder of the game, pursuant to the SAS grant issued prior to the game. To minimize the risk of an Internet outage, the NFL will use at least two independent Internet service providers. In the interest of the public in watching televised football games without interruption; in the interest of the teams involved being able to conduct the games without disruption; and in permitting deployment of this new and useful CBRS technology in football stadiums in the United States without predicted adverse effect on licensed or unlicensed terrestrial telecommunications systems and facilities (including Priority Access or other General Access CBRS users), the NFL states as follows:

I. Introduction

1. Since 2014, the NFL has utilized for its in-stadium, coach-to-coach communications systems during games (for both home and visiting team coaches), portable headsets using paired, 10 megahertz occupied bandwidth channels in the band 3650-3700 MHz. Specifically, the system has used center frequencies 3656.4 MHz and 3668.4 MHz. That system was developed by the NFL and service was provided by contract with a Wireless Broadband Service (WBS) Part 90 incumbent, nationwide licensee at 3650-3700 MHz. The system worked extremely well, and permitted high-level encryption and security, which is a requirement during NFL football games in stadiums for wireless coach-to-coach communications. Before that time, coaches on the field used unwieldy cabled headsets that limited movement of the coaches on the field, and created hazards on the sidelines for players and coaches. For a short time thereafter, wireless headsets using broadcast-quality wireless microphone channels on UHF frequencies were

utilized, but that became impossible due to the UHF auction that eliminated spectrum at 614-698 MHz and the compression of residual UHF wireless microphone spectrum below 608 MHz which was needed in stadiums for television broadcasting of the games and precluded operational communications for the coaches.

2. Beginning in 2014, anticipating the advent of CBRS, NFL contracted with a systems development company to develop a CBRS system for NFL coach-to-coach communications using the 3650-3700 MHz band. It was developed to the point that it was tested in NFL stadiums in 2015 pursuant to the WBS license, and in 2018 by means of a Part 5 grant of Special Temporary Authority (see, WN9XFR, File No. 0854-EX-ST-2018). NFL has invested significantly in this new system. The system as configured for test purposes used the band 3655-3695 MHz for portable operation only at 250 mW (ERP) using a 20MOD7W emission. The system was not configured at the time to conform to the present Part 96 rules, most especially the environmental sensing requirement and the centralized administration of the GAA by a SAS. The system has now been re-engineered to conform with all Part 96 rules applicable to GAA systems, though as is shown below, operation in strict accordance with Section 96.39(c)(2) creates an overwhelming practical difficulty for the NFL's application of its CBRS system in the unexpected (but predictable) circumstance in which internet connectivity within a stadium is interrupted during or just before the commencement of an NFL football game.

3. NFL determined that, given its exceptionally short-term use needs, during NFL games only, and given the very limited geographic deployment of these low-power CBRS headsets inside NFL stadiums, the GAA configuration of its CBRS system rather

than the PAL license concept was appropriate.¹ The NFL had, and has, no use for wider geographic area authorizations, and has a need to deploy the system at all NFL stadiums, making contractual arrangements with PAL licensees highly problematic. NFL was -- and is - confident that its in-stadium, GAA CBRS operation protects all incumbent users in the band, federal and non-federal. This is due in part to the Environmental Sensing Capability and the prior grant process from the SAS. However, the principal compatibility factor in this context is due to the exceptionally high level of attenuation of the 250 mW, wide bandwidth (and thus extremely low power spectral density) signals provided by the high walls of the stadiums. PAL licensees and all other co-channel and adjacent channel users are protected from interference from the NFL CBRS headsets, to the extent that interference-free PAL operation immediately outside the stadiums is assured.²

4. In configuring the design of the NFL CBRS system, NFL did not initially take into account the SAS administrator concept, or the need for Environmental Sensing Capability (ESC), now required for all Citizen's Broadband Service Devices (CBSD), or dynamic spectrum management. The system was *redesigned* when the Part 96 rules were finalized but testing was required in order to determine whether or not the NFL's basic requirements could be met while having the SAS Administrators effectively controlling the systems in real time. NFL worked with Verizon to set up testing sessions in Baltimore, in M&T Bank Stadium in February of 2020. The initial testing sessions revealed access issues to the channels needed for the coaches' communications, and

¹ The basic needs the NFL has for its coach-to-coach communications are high reliability and very low latency.

² NFL testing shows that CBRS operation immediately outside a stadium, even in the parking lots of the stadiums, creates *no* adverse interaction with NFL coach-to-coach communications inside the stadiums, and vice-versa.

delays in completing access status changes via the SAS. Further testing was scheduled, but precluded by the onset of the Covid-19 pandemic. To overcome this the Commission very helpfully accommodated testing of NFL's Category A (indoor, low antenna) GAA CBRS system during the 2020-2021 football season, and to the present time, by a grant of Special Temporary Authority³, which permitted refinement of the system relative to the interaction with the SAS Administrators called for under the Part 96 rules, and in order to test the Environmental Sensing Capability (ESC) requirement for the system. These tests were critical in determining the reliability of the in-stadium coach-to-coach communications using the system. During the current football season, the NFL has had an opportunity to further test and refine these devices for this specific application, and to resolve concerns of reliability and handshaking capability between the CBSDs and the SAS Administrators. The system is now "ready to go". However, in the unusual event of loss of internet connectivity just before or during an NFL football game in a given location, the obligation that exists pursuant to Section 96.39(c) of the CBRS rules to cease operation of the system immediately would work an unusual hardship on the NFL and preclude the use of this system into which much time and effort has been invested.

II. Strict Compliance with the Heartbeat Interval Requirements of the CBSD Is Preclusive of an NFL Football Game Within a Stadium, as a Replacement System for Coach-to-Coach Communications is Not Readily Available on Short Notice

5. Section 96.39(c) of the CBRS rules, pertaining to the requirements for Citizen's Broadband Service Devices reads in relevant part as follows:

(c) Registration with SAS. A CBSD must register with and be authorized by an SAS prior to its initial service transmission. The CBSD must provide the SAS upon its registration with its geographic location, antenna

³ See, WR9XAY, File No. 1330-EX-ST-2020, which extends to March of this year.

height above ground level (in meters), CBSD class (Category A/Category B), requested authorization status (Priority Access or General Authorized Access), FCC identification number, call sign, user contact information, air interface technology, unique manufacturer's serial number, sensing capabilities (if supported), and additional information on its deployment profile required by §§96.43 and 96.45. If any of this information changes, the CBSD shall update the SAS within 60 seconds of such change, except as otherwise set forth in this section. All information provided by the CBSD to the SAS must be true, complete, correct, and made in good faith.

(2) A CBSD must receive and comply with any incoming commands from its associated SAS about any changes to power limits and frequency assignments. A CBSD must cease transmission, move to another frequency range, or change its power level within 60 seconds as instructed by an SAS.

The NFL CBRS system is configured to comply with all of the requirements listed in this excerpt. The CBSDs of the NFL system update the SAS and monitor for incoming commands from the SAS by means of a “CBRS Heartbeat Procedure” with the SAS. The Heartbeat Request object informs the SAS that the CBSD needs access to previously SAS-granted, allocated spectrum at the specified location. It also allows the SAS to suspend or terminate the grant. If the transmit expiration timer expires prior to reception of a Heartbeat response, the CBSD discontinues transmission for the Grant within 60 seconds after the value of the transmit expiration parameter expires, in accordance with rule Section 96.39(c)(2). If the Grant is suspended or terminated, the SAS has the option, within the Heartbeat response, of suggesting that the CBSD request alternative spectrum. The CBSD Heartbeat procedure may be executed concurrently for each active Grant. An active Grant has a grant ID and is not terminated, expired or relinquished. Additionally, the SAS to CBSD connectivity is not considered to be lost. When a Grant is terminated, expires or is relinquished, or the SAS to CBSD connectivity is considered to be lost, its grant ID is revoked (i.e., is no longer usable).

6. Thus, while the NFL CBRS system and its associated CBSDs are configured to enable compliance with Section 96.39(c) of the Commission's rules, the obligation pursuant thereto to discontinue operation within 60 seconds of a loss of Internet connectivity at any point just prior to, or during a (typically) three-hour football game would interrupt the game, as it would necessitate the discontinuance of operation of the system for an indeterminate period of time. During such an outage, regardless of the duration thereof, there would not be time to replace the CBRS system with a wired coach-to-coach communications system that is ready to deploy. It would take several hours to accomplish that replacement, and during that interval the game would have to be suspended. This is not a tolerable circumstance from the perspective of the audience in the stadiums or the television audience, and as noted above, the use of a replacement, wired coach-to-coach communications system, even if it could be implemented timely (which it cannot) is not safe for those on the football field involved in the game, or for the coaches using that wired system, due to wires trailing on the ground on the sidelines.

7. The requested waiver of Section 96.39(c) of the Rules in this single, unusual factual circumstance of an Internet outage subsequent to an unrevoked SAS access grant, but before or during the game, would not result in any significant risk of interference to any CBRS or other user, licensed or unlicensed. First of all, the number of incidents of Internet outages in an NFL stadium just prior to or during an NFL football game is, based on anecdotal experience, extremely low. Second, and more importantly, the NFL would have, before the commencement of the game at issue and before the connectivity outage, *already received a grant from the SAS for operation at that time and location, and the operating parameters* permitted by the SAS. The NFL CBSD would not, *prior to the*

Internet outage, have received any instruction from the SAS to change any operating parameter, or frequency. Third, the operation of the NFL CBRS system will in all cases be completely contained within a given NFL stadium, each of which, as mentioned above, uniformly has an exceptionally high degree of attenuation of radio frequency emissions. Fourth, to minimize the risk of an Internet outage, the NFL will use at least two independent Internet service providers at each venue, per game. So, even in the extremely unlikely event that, during the remainder of an NFL game in which all Internet connectivity has been lost between the CBSD and the SAS there might be an instruction from the SAS missed, the continued operation of the CBSD inside the stadium in accordance with the prior grant from the SAS for the duration of the game is most unlikely to result in any actual instance of interference to any user outside the stadium during the remainder of the game at issue.

III. Waiver Standards

8. Because the purpose of the rules sought to be waived (i.e. to prevent interference from GAA CBRS devices *ex ante* to incumbent terrestrial RF users in the same spectrum) would not be frustrated by grant of the waiver, and because the product developed by the NFL stands to substantially enhance, facilitate and improve the conduct of televised football games, it is urged that the waiver be granted as delineated herein without delay.

9. The Commission may waive a rule for good cause shown. 47 C.F.R. § 1.3. Waiver is appropriate if special circumstances warrant a deviation from the general rule and such deviation would better serve the public interest than would strict adherence to the general rule. *Northeast Cellular*, 897 F. 2d 1164, 1166 (D.C. Cir. 1990). Generally,

the Commission may grant a waiver of its rules in a particular case if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest. *WAIT Radio v. FCC*, 418 F2d 1153, (DC Cir 1969); *Dominion Video Satellite, Inc., Order and Authorization*, 14 FCC Rcd. 8182 (Int'l Bur. 1999). In *WAIT Radio*, it was held that even if the overall objectives of a general rule have been adjudged to be in the public interest, it is possible that application of the rule to a specific case may not serve the public interest if an applicant's proposal does not undermine the public interest policy served by the rule. 418 F. 2d at 1157. In discussing the treatment of requests for waivers of established rules, the court in *WAIT Radio* emphasized that the agency's discretion in applying general rules is intimately linked to the existence of "a safety valve procedure" to permit consideration of an application for exemption based on special circumstances. *Id.* Indeed, the court considered a rule most likely to be undercut if it does not take into account "consideration of hardship, equity, or more effective implementation of overall policy..." *Id.* at 1159.

10. The Commission's waiver authority, per Section 1.925 of the Commission's Rules, 47 C.F.R. § 1.925, allows the Commission to grant a waiver if it is shown that (a) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and grant of the requested waiver would be in the public interest; or (b) if there are unique or unusual factual circumstances in a specific case where application of the rule would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative. In this case, both of these criteria are specifically applicable to the requested waiver. The NFL has developed a system that complies in all respects to the Part 96 rules applicable to GAA CBRS

systems, and the system is ready for deployment to continue use for NFL coach-to-coach communications during games as it was initially designed to do. However, in a limited set of factual circumstances, which might occur at a given game in which Internet connectivity is interrupted *after* an SAS access grant is issued for that game at that location, but prior to the commencement of the game, or prior to the end of the game, strict compliance with the terms of the rule would make the system unusable for the purpose for which it was designed. The limited factual circumstances that would trigger the waiver constitute “special circumstances” that would not frustrate the underlying purpose of the rule due to the unique operating environment of the football stadiums, and due to the limited time period that the waiver would be applicable to in a given case.

11. The NFL urges that the circumstances triggering the waiver are both unique and unusual and that strict application of the single rule sought to be waived would be inequitable, unduly burdensome and clearly contrary to the public interest. The public has a distinct interest in watching the games, either in person or via television, without extensive interruptions. Nor does the NFL have a reasonable alternative (other than not using the system it has spent years developing and which is very well-suited for the coach-to-coach communications in this environment in particular). Moreover, the requested waiver can be granted without any substantial risk of interference to incumbent radio services operating in the same band.

12. This is, therefore, precisely the situation that the Court in *Wait Radio* held to justify grant of a waiver -- “a safety valve procedure” -- to permit consideration of an application for exemption based on special circumstances. The Commission should take into account here “consideration[s] of hardship, equity, [and] more effective

implementation of overall policy...” *Wait Radio*, at 1159 and as well the public interest in having access to a CBRS system with proven success in the United States and which has obviously beneficial applications in facilitating NFL Football games.

IV. Conclusions and Request for Waiver

13. Therefore, the National Football League respectfully requests that the Commission waive Section 96.39(c)(2) [47 C.F.R. §96.39(c)(2)] of the Commission’s Rules, in order to permit the continued operation of a General Access (GAA) Citizen’s Broadband Radio Service (CBRS) System developed and now under test by the NFL, in stadiums during NFL games, for the purpose of providing coach-to-coach communications during NFL football games for the duration of the game, under the unique and unusual factual circumstance in which Internet service is interrupted or becomes unavailable within the stadium during or immediately prior to the commencement of a scheduled game in that stadium; and provided that authority to operate the CBRS system for that game, within that particular stadium, in accordance

with specific operating parameters, has been previously granted beforehand by a System Access Administrator.

Respectfully submitted,

NATIONAL FOOTBALL LEAGUE

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