



Post Initial Certification Revisions to CBRS Baseline Operational and Functional Requirements Specification (WINNF-TS-0112-V1.9.1)

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1 Scope

This document contains changes to “Requirements for Commercial Operation in the U.S. 3550-3700 MHz Citizens Broadband Radio Service Band” technical specification (WINNF-TS-0112-V1.9.0), also known as the Release 1 Baseline Operational and Functional Requirements. Unlike the requirements capture in “CBRS Operational and Functional Requirements (Release 2)”, which are entirely driven by industry need to improve commercial operation, the requirements captured here extend the baseline requirements used for initial certification to capture changes in the FCC Part 96 rules or changes in the implementation of those rules as communicated by the FCC via Public Notice, Knowledge Database (KDB) entry, or other means. The source for each change is referenced throughout the document wherever applicable. While adoption of the requirements captured in this extension, or any WinnForum Standard, is voluntary, as with Release 1, demonstrating conformance with these requirements may be deemed by the FCC to be sufficient to show compliance with the Part 96 rules.

NOTE: Heading numbers have been kept consistent with TS-0112 throughout for readability purposes.

2 Definitions and Abbreviations

The Wireless Innovation Forum Spectrum Sharing Committee (SSC) leverages the definitions provided by the FCC from their Title 47 Part 96 rules. These definitions and others are also available at reference [3].

2.1 Wireless Innovation Forum Definitions

This document contains no new definitions.

2.2 Abbreviations

This document contains no new abbreviations.

3 Requirement Organization

Requirements shall be uniquely identified by: REL1Ext-R#-<CATEGORY>-<XX>-<Y>.
Where

- REL1Ext designates these requirements as Release 1 Extensions
- R0-: Requirements directly from FCC Rules
R1-: Requirements derived from FCC Rules
R2-: Requirements imposed by WinnForum to address FCC Rules

- <CATEGORY>

Code	Category
SGN	SAS General
IPM	Incumbent Protection Management
IMZ	SAS Interference Management and Exclusion Zones
SAD	SAS Administration
SPU	SAS Requirements for PAL Users
SGU	SAS Requirements for GAA Users
ISC	Inter-SAS Communication
PAL	Priority Access Licensee and PAL Protection Requirements (Leasing, Transfer of Control, etc.)
DEV	CBSD and EUD Requirements
DPX	Domain Proxy
SRR	System Registration Requirements (includes CBSD User, CBSD & Certified Professional Installer Registration)
ESC	Environmental Sensing Capability
CPI	Certified Professional Installer

- <XX>: Unique number to identify the requirement
- <Y>: Optional and used to identify subordinate requirements, typically captured in an alphabetical list following the main requirement number <XX> (e.g., R0-IPM-01-a).

Requirements taken from the FCC Rules are included as “R0” and we attempted to use the FCC Rules without change. In some instances, the FCC uses “must” or “will” for rules, which we have included below as a requirement; however, we insert [shall] to indicate we consider this as a formal requirement.

3.1 Keywords or Requirements Language

The following terms are used within this document and should be interpreted as described in RFC-2119 [Ref-9]:

- SHALL is a mandatory requirement (negative is SHALL NOT)
- SHOULD is recommended requirement/best practice (negative is SHOULD NOT)
- MAY is an optional requirement, i.e. something that is allowed (negative is NEED NOT)

When applicable, “shall” and “shall not” identify requirements that are mandatory for conformance with this standard. “Should” and “should not” indicate that a particular action is preferred but not necessarily required, or that (in the negative form) a certain possibility or course of action is discouraged but not prohibited. “May” and “need not” indicate a course of

action permissible within the limits of the standard. “Can” and “cannot” are used for statements of possibility and capability, whether material, physical, or causal.

4 SAS Requirements

4.1 SAS General Requirements

REL1Ext-R2-SGN-01: Reserved

REL1Ext-R2-SGN-02: For DPA protection, the SAS shall increase the median ITM propagation loss (computed according to R2-SGN-03 specified in WINNF-TS-0112) for each CBSD by adding the following losses:

- a. For all CBSDs with Antenna Height Above Ground Level (AGL) less than or equal to 6 meters, the SAS shall add median clutter loss, L_{ctt} (dB), to the median ITM propagation loss, where L_{ctt} (dB) is computed as follows:

$$L_{ctt} \text{ (dB)} = \begin{cases} 30.5 & d > 2.0 \text{ km} \\ -5\log_{10}\left(10^{-6.1024} + 10^{-6.9298-4.78\log_{10}(d)}\right) & 0.25 \text{ km} \leq d \leq 2.0 \text{ km} \\ 0 & d < 0.25 \text{ km} \end{cases}$$

Where:

d : Path length from a CBSD to the DPA protection point in km.

NOTE 1: The above equation is derived from ITU-R P.2108-1 (09/2021)¹, Section 3.2 equations, by setting the following parameters:

f : Operational Frequency: Set to 3600, and the unit is MHz

.

p : Percentage Location Range, set to 50, and the unit is %

NOTE 2: The value of L_{ctt} calculated at 3600 MHz is shown in Figure 1 below:

¹ <https://www.itu.int/rec/R-REC-P.2108/en>

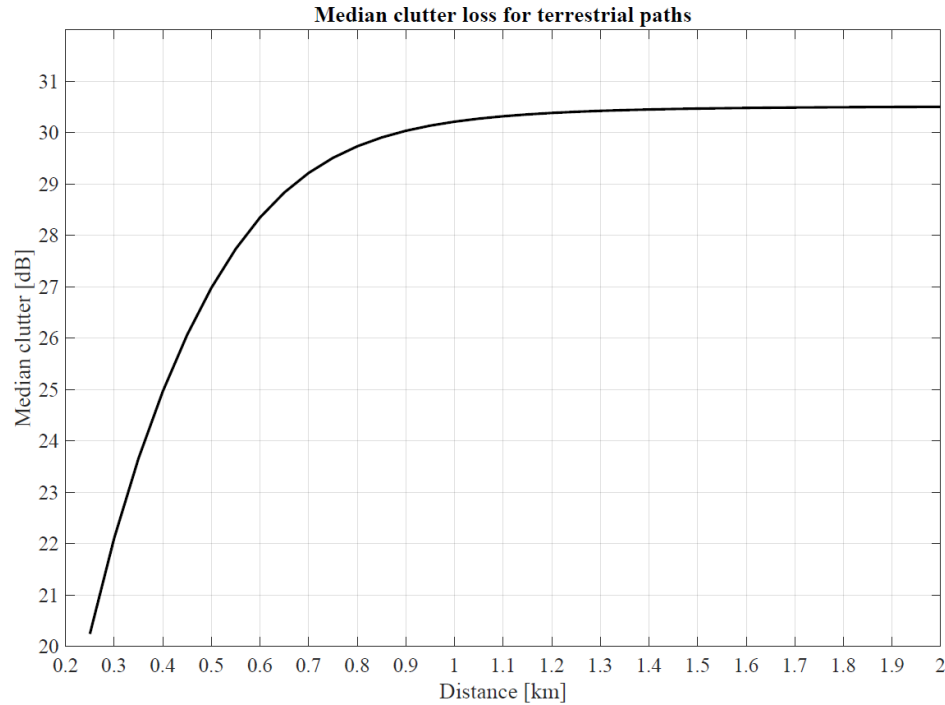


Figure 1: Median Clutter loss at 3600 MHz ($0.25 \text{ km} \leq d \leq 2.0 \text{ km}$)

- b. For all CBSDs, the SAS shall add an additional 8 dB loss, which accounts for Time Division Duplex (TDD) and network loading factor, to the ITM propagation loss.

Note: This is based on an 80% activity factor and 20% loading factor which yields 16% average reduction in EIRP, which is approximately -8dB.

REL1Ext-R2-SGN-03: Deprecate R2-SGN-12 specified in WINNF-TS-0112-V1.9.1 and apply REL1Ext-R2-SGN-04 instead.

REL1Ext-R2-SGN-04: Aggregate Interference Calculations

- a. Unless specified otherwise, the SAS shall calculate the aggregate interference using by summing the interference contributions from a specified set of interfering CBSDs, determined by either setting the ITM reliability at a specific value (e.g. 50% for median pathloss), or based on the mean of the ITM pathlosses for each CBSD as specified in R2-SGN-22(a). The interference value caused by each CBSD to any DPA point is modified as in REL1Ext-R2-SGN-02 (a) and REL1Ext-R2-SGN-02 (b).
- b. For the ITM model, the CDF to be used for interference realizations shall be given by fixing the confidence parameter at 0.5 and varying the reliability parameter. The ITM value calculated for all CBSDs for the protection of any DPA point is increased as specified in REL1Ext-R2-SGN-02(a) and REL1Ext-R2-SGN-02(b).

Note: this value can be calculated relative to a median value for a specific path by using the ‘avar’ method in the reference implementation.

- c. For the eHata model, the CDF to be used for interference realizations shall be that given by the situation-dependent log-normal distribution using a standard deviation given by equations A-18(a,b,c) in [TR 15-517 ref].
- d. For the model defined in R2-SGN-04, the CDF to be used shall be that for the ITM or eHata model as selected by the criteria for the specific path.
- e.
- f. The description of an Area-Protection-Reference-Standard is as follows:
 - i. Define a fixed grid spanning candidate CBSD locations and to be used by all SASs. The grid has points separated by 2 arc seconds in north/south and east/west directions. The grid is aligned to integer latitude and longitude lines.
 - ii. Let a protection area be defined by a set of bounding contours. Protection points of a protection area are grid points of the fixed grid within the protection area. Protection to this area provided by a SAS aims to ensure that estimated aggregate interference exceeds that of [REL1Ext-R2-SGN-04] at each protection point. The aggregate interference calculations shall be performed assuming the use of an isotropic antenna integrating over a 10 MHz bandwidth and using a specified elevation above ground level.
 - iii. A conservative SAS estimate of aggregate interference from interfering CBSDs is expected to be less than or equal to a specified protection level for all protection points in the protection area. Due to variability in approximation methods and artifacts of terrain, propagation, and statistical models, to fulfill the protection standard the SAS must show that it succeeds for the specified minimum fraction (per the corresponding requirements that refer to this requirement) of the protection points in the protection area.

REL1Ext-R2-SGN-05: Deprecate R2-SGN-24 specified in WINNF-TS-0112-V1.9.1 and apply REL1Ext-R2-SGN-06 instead.

REL1Ext-R2-SGN-06: DPA Protection Procedure

- a. In the case of co-channel frequency range protection for offshore or inland DPAs, for each protection point, p , under consideration within the given DPA and for any co-channel frequency range ch , designate the protection constraint $c = \langle p, ch \rangle$ and define N_c to be the total number of CBSDs having or requesting a co-channel grant that includes any portion of the frequency range ch , and that are within a neighborhood of protection point p .

For each protection constraint c , the SAS shall determine the N_c CBSDs that are considered to be within the neighborhood of protection constraint $\langle p, ch \rangle$ in a manner that is substantially similar² to the following procedure:

- i A Category A Outdoor CBSD _{i} with $AGL \leq 6m$ shall be included in the neighborhood of protection constraint $\langle p, ch \rangle$ if and only if CBSD _{i} is less than or equal to $R_C_Out_{\leq 6m_DPA_A}$ km from protection point p
- ii A Category A Outdoor CBSD _{i} with $AGL > 6m$ shall be included in the neighborhood of protection constraint $\langle p, ch \rangle$ if and only if CBSD _{i} is less than or equal to $R_C_Out_{> 6m_DPA_A}$ km from protection point p .
- iii A Category A Indoor CBSD _{i} with $AGL \leq 6m$ shall be included in the neighborhood of protection constraint $\langle p, ch \rangle$ if and only if CBSD _{i} is less than or equal to $R_C_In_{\leq 6m_DPA_A}$ km from protection point p .
- iv A Category A Indoor CBSD _{i} with $AGL > 6m$ shall be included in the neighborhood of protection constraint $\langle p, ch \rangle$ if and only if CBSD _{i} is less than or equal to $R_C_In_{> 6m_DPA_A}$ km from protection point p .
- v A Category B CBSD _{i} with $AGL \leq 6m$ shall be included in the neighborhood of protection constraint $\langle p, ch \rangle$ if and only if CBSD _{i} is less than or equal to $R_C_{\leq 6m_DPA_B}$ km from protection point p .
- vi A Category B CBSD _{i} with $AGL > 6m$ shall be included in the neighborhood of protection constraint $\langle p, ch \rangle$ if and only if CBSD _{i} is less than or equal to $R_C_{> 6m_DPA_B}$ km from protection point p .

The values of $R_C_Out_{\leq 6m_DPA_A}$, $R_C_Out_{> 6m_DPA_A}$, $R_C_In_{\leq 6m_DPA_A}$, $R_C_In_{> 6m_DPA_A}$, $R_C_{\leq 6m_DPA_B}$, and $R_C_{> 6m_DPA_B}$ for co-channel in-land and offshore DPAs are captured in DPA KML files determined in [Ref-14].

- b. In the case of out-of-band frequency range protection for inland DPAs, for each protection point, p , under consideration within the given DPA and for any protected out-of-band frequency range, ch , designate the protection constraint $c = \langle p, ch \rangle$ and define N_c to be the total number of CBSDs having or requesting any grant, and that are within a neighborhood of protection point p .

² Substantially similar is defined to mean that this determination is within a reasonable tolerance of the results of the DPA Protection Procedure, with the tolerance limit to be determined as part of the test and certification specification.

For each protection constraint c , the SAS shall determine the N_c CBSDs that are considered to be within the neighborhood of protection constraint $\langle p, ch \rangle$ in a manner that is substantially similar³ to the following procedure:

- i A Category A CBSD $_i$ shall be included in the neighborhood of protection constraint $\langle p, ch \rangle$ if and only if CBSD $_i$ is less than or equal to $R_O_DPA_A$ km from protection point p .
- ii A Category B CBSD $_i$ shall be included in the neighborhood of protection constraint $\langle p, ch \rangle$ if and only if CBSD $_i$ is less than or equal to $R_O_DPA_B$ km from protection point p .

The values of $R_O_DPA_A$ and $R_O_DPA_B$ for co-channel in-land and offshore DPAs are captured in DPA KML files determined in [Ref-14].

- c. For every protection constraint, c (i.e., for each of the protection constraints $\langle p, ch \rangle$ corresponding to every protection point p under consideration within a given protection area DPA and for every applicable frequency range ch), the SAS shall determine the associated DPA Move List M_c (see REL1Ext-R2-SGN-06 (d)) using a method that generates results that are substantially similar to the following procedures:

- i Form the ordered list $S_{c,sorted} = [CBSD_1, CBSD_2, \dots, CBSD_{N_c}]$, sorted according to increasing values of $(P_{CBSD,ch} + G_{CBSDi \rightarrow c} - L_{CBSDi,c})$, where $P_{CBSD,ch}$ is the CBSD conducted power (in dBm) on frequency range ch , $G_{CBSDi \rightarrow c}$ is the CBSD antenna gain in the direction of the protection point p (in dBi) [R2-SGN-20], and $L_{CBSDi,c}$ is the median path loss based on ITM model as defined in [REL1Ext-R2-SGN-02] from CBSD $_i$ to the protection point p (in dB).
- ii In case of out of band frequency range protection of inland DPAs,
 - For CBSDs having multiple grants, the grant closest to “ ch ” is taken into account.
 - The CBSD conducted power $P_{CBSD,ch}$, is replaced with one of the three values, -13 dBm/MHz, -25 dBm/MHz, or -40 dBm/MHz, depending on the distance of closest edge of the grant operational frequency range to “ ch ”, as defined in R0-DEV-05(e)⁴
 - If the out of band inland DPA is operating below 3550 MHz and is always activated, ch is assumed to be the frequency range 3540-3550 MHz.

³ Substantially similar is defined to mean that this determination is within a reasonable tolerance of the results of the DPA Protection Procedure, with the tolerance limit to be determined as part of the test and certification specification.

⁴ Note: e.g., if the upper edge of ch falls at or below 3530 MHz, the value of -40 dBm/MHz, and if ch falls at or below 3540 MHz but above 3530 MHz, the value of -25 dBm/MHz is assumed for all grants.

- iii DPA Move List analysis is performed using increments of half of beamwidth (beamwidth/2), where beamwidth is defined in the appropriate KML file in [Ref-14], over the azimuth range of the given DPA, where the azimuth range is defined in the appropriate KML file in [Ref-14].
- iv Find the largest n_c , $1 \leq n_c \leq N_c$, such that the sum of the interferences from the fundamental emission (in case of co-channel DPA protection, as described in REL1Ext-R2-IPM-01 for offshore DPAs, and REL1Ext-R2-IPM-02 for inland DPAs) or the out-of-band emission (in case of out-of-band inland DPA protection, as described in REL1Ext-R2-IPM-02) of the first n_c elements of $S_{c,sorted}$ (i.e., $CBSD_1, CBSD_2, \dots, CBSD_{n_c}$) for a federal incumbent radar r , hypothetically located at the protection point p associated with constraint c , in the direction of azimuth a does not violate the protection level applied at the DPA protection point p , as per R2-IPM-04.
 - The interference from $CBSD_i$ to protection point p at azimuth a is defined as $P_{CBSD,ch} + G_{CBSD_i,p} - L_{Medi,p} - G_{r,p,a}$, where $P_{CBSD,ch}$ is the $CBSD_i$ conducted power (in dBm) on frequency range ch , $G_{CBSD_i,p}$ is the $CBSD$ antenna gain in the direction of the protection point p (in dBi) (per R2-SGN-20), $L_{Medi,p}$ is the median path loss (confidence = 0.5 and reliability=0.5) based on ITM model as defined in REL1Ext-R2-SGN-02 from $CBSD_i$ to the protection point p (in dB), and $G_{r,p,a}$ is the given radar gain (per R2-IPM-04) for the federal incumbent radar r (in dB).
- v The associated DPA Move List, $M_{c,a}$, corresponding to protection constraints c for azimuth a is determined to be $\{CBSD_{nc+1}, CBSD_{nc+2}, \dots, CBSD_{N_c}\}$.
- vi The SAS shall determine the DPA Move List for protection area DPA on frequency range ch , $M_{DPA,ch}$, to be the union of $M_{c,a}$ for all protection constraints c and all azimuths a , where the associated protection point p is within the protection area DPA.

4.2 Incumbent Protection Management (IPM)

REL1Ext-R1-IPM-01: Strike “(but no more than 300 seconds)” from R1-IPM-01-d specified in WINNF-TS-0112-V1.9.1

REL1Ext-R1-IPM-02: Strike “(but no more than 300 seconds)” from R1-IPM-02-d specified in WINNF-TS-0112-V1.9.1

REL1Ext-R1-IPM-03: Requirement of Re-authorization of Assignments [22]

- a. For grants in the 3550-3700 MHz band, CBSDs outside of Dynamic Protection Area (DPA)⁵ Neighborhoods [21] may continue to transmit for up to 24 hours on the approved grants without SAS re-authorization.
- b. For grants in the 3650-3700 MHz band, CBSDs inside of DPA Neighborhoods [21] may continue to transmit for up to 24 hours on the approved grants without SAS re-authorization.
- c. For grants in the 3550-3650 MHz band, CBSDs inside of DPA Neighborhoods [21] shall continue to transmit for up to 300 seconds on the approved grants without SAS re-authorization.

REL1Ext-R2-IPM-01: Modify R2-IPM-03 specified in WINNF-TS-0112-V1.9.1 as follows:

- a. Replace R2-SGN-24 with REL1Ext-R2-SGN-06
- b. Modify R2-IPM-03-b to the following:
 - i. a protection methodology described in REL1Ext-R2-SGN-06-c-iv.
 - ii. Replace R2-SGN-12 with Rel1Ext-RS-SGN-04

REL1Ext-R2-IPM-02: Modify R2-IPM-05 specified in WINNF-TS-0112-V1.9.1 as follows:

- a. Replace R2-SGN-12 with REL1Ext-R2-SGN-04
- b. Modify R2-IPM-05-b to the following:
 - i. a protection methodology described in REL1Ext-R2-SGN-06-c-iv.

4.5 SAS Requirements for PAL Holders (SPU)

Note: the changes in this section were previously balloted and approved as WINNF-TS-0112-V1.10.0

- REL1Ext-R2-SPU-01: Reserved
- REL1Ext-R2-SPU-02: Reserved
- REL1Ext-R2-SPU-03: Reserved
- REL1Ext-R2-SPU-04: Reserved

⁵ This applies to all portal based DPAs and ESC monitored DPAs. <https://ntia.gov/fcc-filing/ntia-letter-fcc-commercial-operations-3550-3650-mhz-band>

REL1Ext-R2-SPU-05: Reserved

REL1Ext-R2-SPU-06: Reserved

REL1Ext-R2-SPU-07: Reserved

REL1Ext-R2-SPU-08: Reserved

REL1Ext-R2-SPU-09: Reserved

REL1Ext-R2-SPU-10: PAL Channel Assignment Planning: At the conclusion of the auction and prior to PAL use commencing, and at the times requested by the Commission, SAS Administrators shall cooperate to apply appropriate protocols to allocate and to assign “steady-state” frequencies to PAL Licensees to meet FCC requirements 96.11 (a)(3), 96.13, 96.31, 96.25(b)(1)(i), and 96.25(b)(2)(i), as well as meeting incumbent protection requirements. The SAS Administrators may consider additional constraints and objectives provided by PAL Licensees. The proposed allocation methodology shall be presented to the PAL Licensees for review and comment.

4.5.1 SAS Requirements for Temporary PAL Channel Reassignment (per R1-SPU-05)

Note: this section was added to this document after SAS Initial Certification.

REL1Ext-R1-SPU-01: Reserved

REL1Ext-R1-SPU-02: Reserved

REL1Ext-R1-SPU-03: Reserved

REL1Ext-R1-SPU-04: Reserved

REL1Ext-R1-SPU-05: Reserved

REL1Ext-R1-SPU-06: SAS Administrators shall cooperate to apply appropriate protocols for identifying temporary PAL channel reassignments to avoid conflicts among SASs.

REL1Ext-R1-SPU-07: When individual PALs have to be reassigned by SAS, they shall have higher priority over GAA users in the lower 100 MHz of the band.

REL1Ext-R2-SPU-01: Reserved

REL1Ext-R2-SPU-02: Reserved

REL1Ext-R2-SPU-03: Reserved

REL1Ext-R2-SPU-04: Reserved

REL1Ext-R2-SPU-05: Reserved

REL1Ext-R2-SPU-06: Reserved

REL1Ext-R2-SPU-07: Reserved

REL1Ext-R2-SPU-08: Reserved

REL1Ext-R2-SPU-09: Reserved

REL1Ext-R2-SPU-10: Reserved

REL1Ext-R2-SPU-11: The SAS shall temporarily reassign impacted PAL channels to unoccupied channels where possible in the lower 100 MHz, such that:

- a. Impact to PAL contiguity shall be minimized, and
- b. Impact to PAL users shall be minimized, and
- c. Impact to GAA users shall be minimized.

REL1Ext-R2-SPU-12: PPA Enforcement on Temporary PAL Channel Reassignment: If and when a managing SAS indicates that a PAL has been reassigned to a temporary PAL channel, all SASs shall protect the PAL (and its associated PPAs and CBSDs) in the temporary PAL channel.

5 References

[1] Federal Communications Commission, “Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band,” GN Docket 12-354, FCC 15-47, Report and Order and Second Notice of Proposed Rulemaking, Released April 21, 2015, available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-47A1_Rcd.pdf

[2] Title 47, Code of Federal Regulations, Part 96 (2015), available at: <http://www.ecfr.gov/cgi-bin/text-idx?node=pt47.5.96&rgn=div5>.

[3] Wireless Innovation Forum, Spectrum Sharing Committee, “Definitions Related to Commercial Operations in the U.S. 3550-3700 MHz Citizens Broadband Radio Service Band” available at: <http://www.wirelessinnovation.org/fcc-definitions>

[4] Title 47, Code of Federal Regulations (various parts referenced), available at: www.ecfr.gov.

[5] National Telecommunications and Information Administration, “An Assessment of the Near-Term Viability of Accommodating Wireless Broadband Systems in the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, and 4200-4220 MHz, 4380-4400 MHz Bands,” October 2010 (“Fast Track Report”). Available at: https://www.ntia.doc.gov/files/ntia/publications/fasttrackevaluation_11152010.pdf

- [6] National Telecommunications and Information Administration, “Spectrum Occupancy Measurements of the 3550-3650 Megahertz Maritime Radar Band near San Diego, California,” Technical Report TR-14-500, January 2014. Available at: <http://www.its.bldrdoc.gov/publications/2747.aspx>
- [7] Federal Communications Commission, “Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band,” GN Docket 12-354, FCC 16-55, Order on Reconsideration and Second Report and Order, available at: https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-55A1_Rcd.pdf
- [8] Wireless Innovation Forum, Spectrum Sharing Committee, “CBRS Operational Security Technical Specification” available at: http://www.wirelessinnovation.org/assets/work_products/Specifications/winnf-15-s-0071-v1.0.0%20cbrs%20operational%20security.pdf
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- [10] T. Vincenty, “Direct And Inverse Solutions Of Geodesics On The Ellipsoid With Application Of Nested Equations”, Survey Review, Volume 23, Issue 176 (01 April 1975), pp. 88-93.
- [11] “Feasibility study for enhanced uplink for UTRA FDD”, 3GPP TR 25.896
- [12] <https://www.its.bldrdoc.gov/media/50674/itm.pdf> section §47
- [13] Federal Communications Commission, “Wireless Telecommunications Bureau and Office of Engineering and Technology Announce Methodology for Determining the Protected Contours for Grandfathered 3650-3700 MHz Band Licensees,” GN Docket No. 12-354, Public Notice DA 16-946 (Aug. 19, 2016) available at https://apps.fcc.gov/edocs_public/attachmatch/DA-16-946A1.pdf
- [14] National Telecommunications & Information Administration, DPA information to be available at: <https://ntia.gov/fcc-filing/ntia-letter-fcc-commercial-operations-3550-3650-mhz-band>
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[22] DA 23-867, GN Docket Nos. 17-258 and 15-319

Appendix A: Revision History

Document History		
V1.0.0	22 August 2023	WINNF-22-I-00050 on Temporary PAL Channel Reassignment
V1.1.0	14 November 2023	WINNF-22-I-00055 Relaxation of Grant Reauthorization CR for TS-0112 v2.0
V1.2.0	3 May 2024	<p>WINNF-23-I-00096 - SAS Admins - Updated Propagation Model for DPA Protection</p> <p>WINNF-24-I-00011 - SAS Admins - Change in DPA Aggregation Interference Protection Statistics</p> <p>WINNF-24-I-00016-r3 Misc CR for TS-1020</p> <p>Editorial corrections</p>