COMMENTS MATRIX FOR NASCTN TEST PLAN, "**Measure Aggregate Emissions in the CBRS Band in Coastal DPAs**"								
Commenter Area							NASCTN Adjudication Area	
#	ORGANIZATION & POC Name, Phone, and E-mail	Line Number	Page	Para	Comment Type	Comments and Justification	Resolution	A/R/P

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1		85	vii	Sec 0.1		There does not appear to be definitive rationale for the numbers and locations of sensors in either East or West Coast DPA neighborhoods. Specifically, why 5 sensors in both East and West Coast DPA neighborhoods? Section 0.1.1 states "actual distribution of sensors will be decided based on site availability and feasibility", but does not provide rationale for site location based on ability to collect data to support project goals.	*The rationale described in section 3.3 of the test plan was to have sensors within a CBSD cluster and a sensor outside the cluster observing the aggregate CBRS emissions. 4-5 sensors for east and west coast meet that requirement with the other sensors being located in areas of interest determined on a location-by-location basis (e.g. Catalina Island for an additional aggregate view from a location that is surrounded by the E-DPA West-13).* *Edited text to add reference to section 3.3. for more detailed information.*	
2		117	viii	Sec 0.1.3		This section is entitled data analysis, but only lists 5 summary data products which will be produced. The section does not provide any further information on what inferential analyses these data products will (or could) support in order to achieve the project purpose (i.e., data-driven insight into CBRS sharing ecosystem's effectiveness between commercial and DoD incumbent systems, and to track changes in the spectrum environment over time).	*Changed section title to Data Products to better reflect the content of the section.*	
3		512-514	4	Ch 2		Which parameters within the ecosystem can be characterized, and which cannot? For those parameters that cannot be directly validated (i.e., directly measured), how can the community infer ecosystem effectiveness? This task plan references extensive modeling and sensor deployment activities, but does not provide an understanding of how this modeling and sensor data can be used to infer ecosystem effectiveness.	*Direct validation of the Part 96 rules was based on assumed additional data sources, which did not come to fruition. Instead of focusing on the direct validation of the Part 96 rules, the data taken can be used to run analyses on the behavior of the ecosystem. Several example analyses of this are provided in the text in Section 6.2 and additional analyses can be run as new data and insights to that data come in. If*	

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						There should be a discussion on the "data which is of interest to the entire stakeholder community", and how the measured data products can be used to assess (directly or indirectly) ecosystem parameters (i.e. those delineated in Part 96 rules and/or WInnForum guidance.	*there are specific data products of interest, please submit them to nasctn@nist.gov so they may undergo feasibility assessment.* Added reference to more detailed information in Section 6.2.	
4		517-520	4	Ch 2		This statement is vague. How does one know if a particular emission data product will provide insights into overall ecosystem behavior? Without an understanding of how a data product will (or could) be used, it is not clear of the benefit of collecting said data product.	*The example analyses in the Test Plan (Sections 5.3 and 6.2) showcase how the data products can be used both individually and in conjunction with each other to characterize the behavior of the ecosystem. For example, Section 6.2.3 shows how both the PSD and PFP can be used to indicate possible aggregation of CBRS emissions when a sensor is located at distance from surrounding CBSDs.*	
5		528-529	4	Sec 2.1		A discussion on what constitutes "ideal" sensor locations would be helpful in understanding the tradeoff between ideal and practical.	*Ideal sensor locations are discussed later in this section as well as in Section 3.3 and are tailored to the purpose of the individual sensor. For example, an aggregate measuring sensor would ideally be far away from local CBSDs to not be dominated by a single emitter and have multiple CBSDs within its RF horizon. Modelling is used to indicate regions where this is the case, then site surveys determine where a sensor can realistically be deployed. This process is iterated until an acceptable location that balances feasibility of deployment and achieving the sensor's goal is found. Ideal sensor locations*	

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							would be independent of any practical deployment considerations. In reality, a feasible deployment location may not exist at the original ideal sensor site for a variety of reasons such as no nearby infrastructure to provide power, inability to mount an antenna at sufficient height, etc. The practicality of real deployment must be taken into account when siting actual sensors beyond a thought exercise.	
6		534-536	4	Sec 2.1		What is the definition of "cluster" in this application? How is that different than a CBRS neighborhood?	*Added a short description of "cluster" referring to an area of dense deployment of CBSDs. Section 3.3 also describes this methodology in more detail.*	
7		540-542	5	Sec 2.1		How will this sensor measure the aggregate effects of a CBSD cluster, considering it may well be measuring effects from other clusters/CBSDs as well?	*Measuring from all CBSDs without a single dominating CBSD (i.e. a single CBSD that contributes far more power than others) is what is termed as "measuring aggregate". Measuring from multiple clusters/CBSDs is designed into the sensor locations and is desired from the sensors sited to measure aggregate. The use of a directional antenna can also control the level of aggregation in measurements. For example, at Catalina Island, both an omni-directional and directional antenna are used to vary the level of aggregation between measurements. The use of modeling helps anticipate the CBSDs and CBSD clusters observable from each sensor location. Added reference link to appropriate section in test plan.*	

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8		826	16	3	S	The terrain on Catalina Island has large variation in ground elevation (from near sea level to 2000 ft+). If a sensor is deployed on the island, can it be installed at a location with low ground elevation? At roughly 25 miles off the greater Los Angeles coastline, it is right at the cusp of radio horizon using the simple formula of 1.414xh^0.5, ignoring any influence from the link budget. A low ground elevation should put it right below radio horizon. Cape Charles, VA is at a similar distance away from Norfolk, VA coastline. Section 3.4.2 (Line #794, Page #15, Para #4) mentioned CBSD emissions from Norfolk area were not detected during a previous site survey. With (presumed) higher CBSD count and concentration in Los Angeles area, the impact of over-the-radio-horizon RF transmission can be further quantified. If resources permit, a second sensor at a higher ground elevation on Catalina Island would provide further insights.	*The sensor on Catalina Island is currently deployed on a very high ground elevation (above 1900 ft). The original scope of the sensor on Catalina Island was to obtain an aggregate view of CBSDs on the California coastline with sufficient SNR to observe CBSD behavior above the sensor noise floor. The RF horizon mapping tool is used to predict a sensor's RF horizon based on the sensor's deployment and CBSD parameters more than the physical horizon. It uses ITM as the propagation model which includes over-the-horizon propagation.* *Text added to Section 3 to indicate higher elevations used to collect aggregate effects.*	