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COMMSCOPE TECHNOLOGIES LLC MPE REPORT

SCOPE OF WORK

MPE CALCULATION
ON THE ONECELL

REPORT NUMBER

105014439LEX-001b

ISSUE DATE

8/17/2022

PAGES

10

DOCUMENT CONTROL NUMBER

Non-Specific EMC Report Shell Rev. December 2017
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MPE TEST REPORT

Report Number: 105014439LEX-001b

Project Number: G105014439

Report Issue Date: 8/17/2022

Product Name: ONECELL

Standards: FCC Part 1.1310 Limits for Maximum
Permissible Exposure (MPE)

RSS-102 Issue 5 RF Field Strength Limits for
Devices Used by the General Public

IEC 62311: 2019

Tested by:
Intertek Testing Services NA, Inc.
731 Enterprise Drive
Lexington, KY 40510
USA

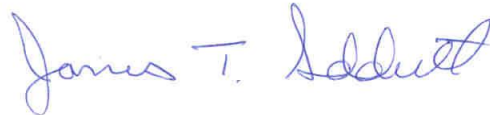
Client:
COMMSCOPE TECHNOLOGIES LLC
900 Chelmsford St.
Lowell, MA 01851
USA

Report prepared by



Brian Lackey, Team Leader

Report reviewed by



James Sudduth, Senior Staff Engineer

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
7	FCC Part 1.1310 Limits for Maximum Permissible Exposure (MPE) (Limits for General Population / Uncontrolled Exposure)	Pass



3 Client Information

This product was tested at the request of the following:

Client Information	
Client Name:	COMMSCOPE TECHNOLOGIES LLC
Address:	900 Chelmsford St. Lowell, MA 01851 USA
Contact:	Zac Johnson
Telephone:	+(978) 250-2678
Email:	zac.johnson@commscope.com
Manufacturer Information	
Manufacturer Name:	COMMSCOPE TECHNOLOGIES LLC
Manufacturer Address:	900 Chelmsford St. Lowell, MA 01851 USA



4 Description of Equipment under Test and Variant Models

Equipment Under Test	
Product Name	ONECELL
Model Numbers	n77c radio
Receive Date	8/16/2022
Test Start Date	8/16/2022
Test End Date	8/16/2022
Device Received Condition	Good
Test Sample Type	Production
Input Rating ¹	Internal provided by host
Frequency Band(s)	5G n77 C
Modulation Type(s)	QPSK, 16-QAM, 64-QAM, 256-QAM
Test Channel(s)	3720 MHz, 3840 MHz, 3960 MHz
Antenna Gain (dBi) ¹	4
Description of Equipment Under Test (provided by client)	
5G Band n77c base station with four outputs.	

4.1 Variant Models:

There were no variant models covered by this evaluation.

¹ This information was provided by the client. Any deviations from this value may affect compliance.



5 FCC Limits

§ 1.1310: The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

Part 1.1310 Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.



6 Test Procedure

An MPE evaluation for was performed in order to show that the device was compliant with the general population exposure limits from FCC §2.1091. The maximum power density was calculated for each transmitter band at a separation distance of 20cm using the maximum declared output power including tune up tolerance.

For each transmitter the maximum RF exposure at a 20 cm distance using the formula:

$$\text{ConductedPower}_{mW} = 10^{\text{ConductedBwer}(dBm)/10}$$

$$\text{PowerDensity} = \frac{\text{ConductedPower}_{mW} \times \text{Ant. Gain}}{4\pi \times (20_{cm})^2}$$



7 Results:

The calculated maximum power density at 20cm distance was equal to or less than the required limits for general population exposure for FCC Part 1.1310.

Duty Cycle	100 (%)							
Separation Dist.	20 (cm)							
Operating Mode	Frequency (MHz)	Declared Max Cond. Power (Inc. Tolerance) (dBm)	Duty Cycle Adjusted Cond. Output Power (dBm)	Antenna Gain (dB)	MPE Value (mW/cm ²)	MPE Limit (mW/cm ²)	Margin to Limit (mW/cm ²)	MPE / Limit Ratio (for Co-Location)
QPSK	3720	29.39	29.39	4	0.4342	1.0000	0.5658	0.4342
QPSK	3840	29.05	29.05	4	0.4015	1.0000	0.5985	0.4015
QPSK	3960	28.66	28.66	4	0.3671	1.0000	0.6329	0.3671
16-QAM	3720	29.52	29.52	4	0.4474	1.0000	0.5526	0.4474
16-QAM	3840	29.29	29.29	4	0.4244	1.0000	0.5756	0.4244
16-QAM	3960	29.07	29.07	4	0.4034	1.0000	0.5966	0.4034
64-QAM	3720	29.50	29.50	4	0.4454	1.0000	0.5546	0.4454
64-QAM	3840	28.98	28.98	4	0.3951	1.0000	0.6049	0.3951
64-QAM	3960	29.08	29.08	4	0.4043	1.0000	0.5957	0.4043
256-QAM	3720	29.29	29.29	4	0.4244	1.0000	0.5756	0.4244
256-QAM	3840	28.95	28.95	4	0.3924	1.0000	0.6076	0.3924
256-QAM	3960	28.90	28.90	4	0.3879	1.0000	0.6121	0.3879



8 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	8/17/2022	105014439LEX-001b	BZ	JTS	Original Issue