849 NW STATE ROAD 45
NEWBERRY, FL 32669 USA

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TIMCO ENGINEERING, Inc.

An IIA Company

RF Exposure Evaluation Report

APPLICANT	CRESCEND TECHNOLOGIES, LLC
ADDRESS	140 E. State Parkway SCHAUMBURG IL 60173 USA
FCC ID	CWWP25XXGA3
MODEL NUMBER	P25-20GA3-PS1-C8-001
PRODUCT DESCRIPTION	LOW BAND HIGH POWER AMPLIFIER
DATE SAMPLE RECEIVED	10/17/2019
FINAL TEST DATE	11/21/2019
PREPARED BY	Tim Royer
TEST RESULTS	☒ PASS ☐ FAIL

Report Number	Report Version	Description	Issue Date
2802AUT19 MPETestReport_	Rev1	Initial Issue	11/21/2019
	Rev2	Updated Issue Date and frequency bands	12/24/2019
	Rev 3	Corrected frequency bands on page 6 and 7	01/21/2020

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GENERAL REMARKS

Summary

The device under test does:

☒ Fulfill the general approval requirements as identified in this test report and was selected by the customer.

☐ Not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669
Designation #: US1070

Prepared by:

Name and Title	Tim Royer, Project Manager / EMC Engineer
Date	11/21/2019

GENERAL INFORMATION

EUT Description	Low Band High Power Amplifier		
Model Number	P25-20GA3-PS1-C8-001		
EUT Power Source	☒110–120Vac, 50–60Hz	☐ DC Power (13.8 VDC)	☐ Battery Operated
Test Item	☐ Engineering Prototype	☒ Pre-Production	☐ Production
Type of Equipment	☒ Fixed	☐ Mobile	☐ Portable
Antenna Connector	External, N Type		
Test Conditions	The temperature was 26ºC Relative humidity of 50%.		
Modification to the EUT	No Modification to EUT.		
Applicable Standards	FCC CFR 47 Part 2.1091		
Test Facility	Timco Engineering Inc. at 849 NW State Road 45 Newberry, FL 32669 USA. Designation #: US1070		

ANTENNA INFORMATION

Antenna is Provided	Type	Max Gain (dBi)
No	n/a	**0.0**

RF POWER OUTPUT

Test Data: 400 Band Measurement Table

Frequency	AGC Level	Input (dBm)	Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Gain (dB)	Output ERP (W)
406.20000	AGC	46.5	54.06	0.00	0.00	7.6	254.68
406.20000	AGC +3	49.5	54.07	0.00	0.00	4.6	255.27
406.20000	Saturation	56.50	54.05	0.00	0.00	-2.5	254.10
413.0	AGC	46.5	54.06	0.00	0.00	7.6	254.68
413.0	AGC +3	49.5	54.06	0.00	0.00	4.6	254.68
413.0	Saturation	56.50	54.05	0.00	0.00	-2.5	254.10
419.99375	AGC	46.5	54	0.00	0.00	7.5	251.19
419.99375	AGC +3	49.5	54.03	0.00	0.00	4.5	252.93
419.99375	Saturation	56.50	54.05	0.00	0.00	-2.5	254.10

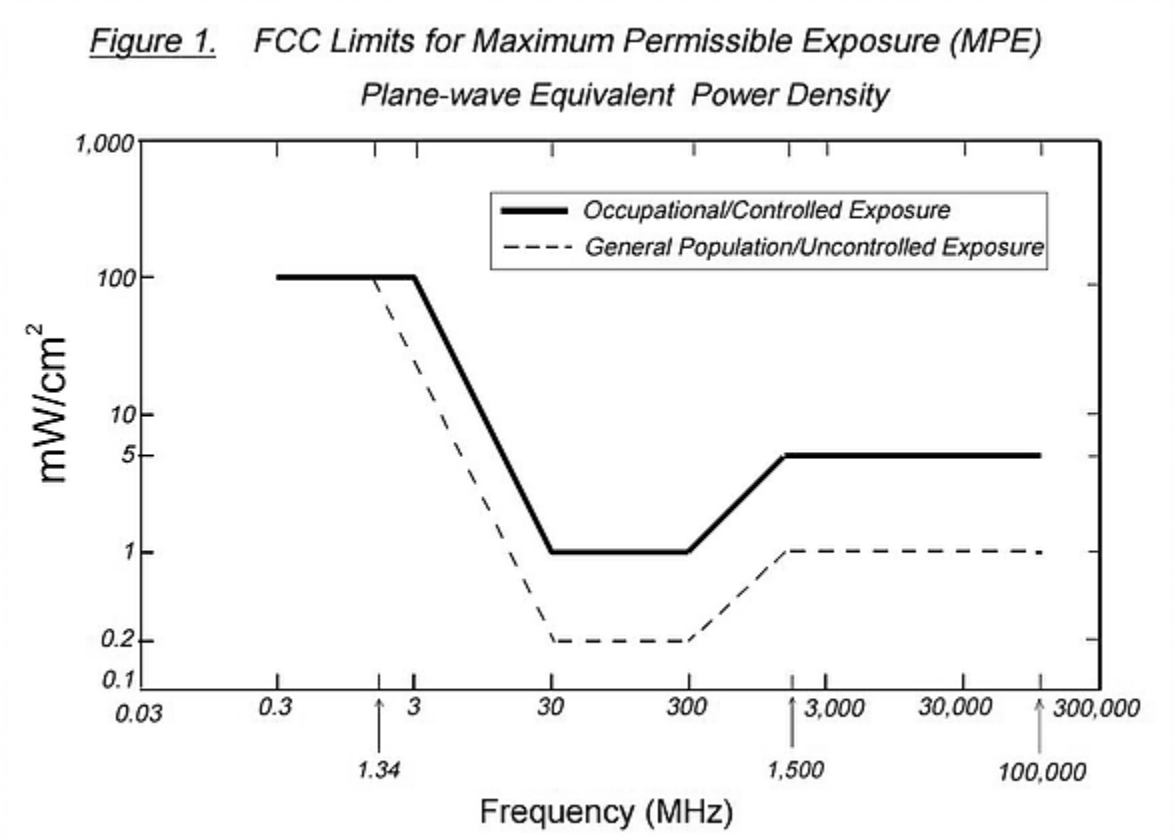
Maximum Power Output: 54.07 dBm (255.27 W).

MPE CALCULATION

The minimum separation distance is calculated as follows:

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power density: } P_d(mW/cm^2) = \frac{E^2}{3770}$$

MPE LIMITS

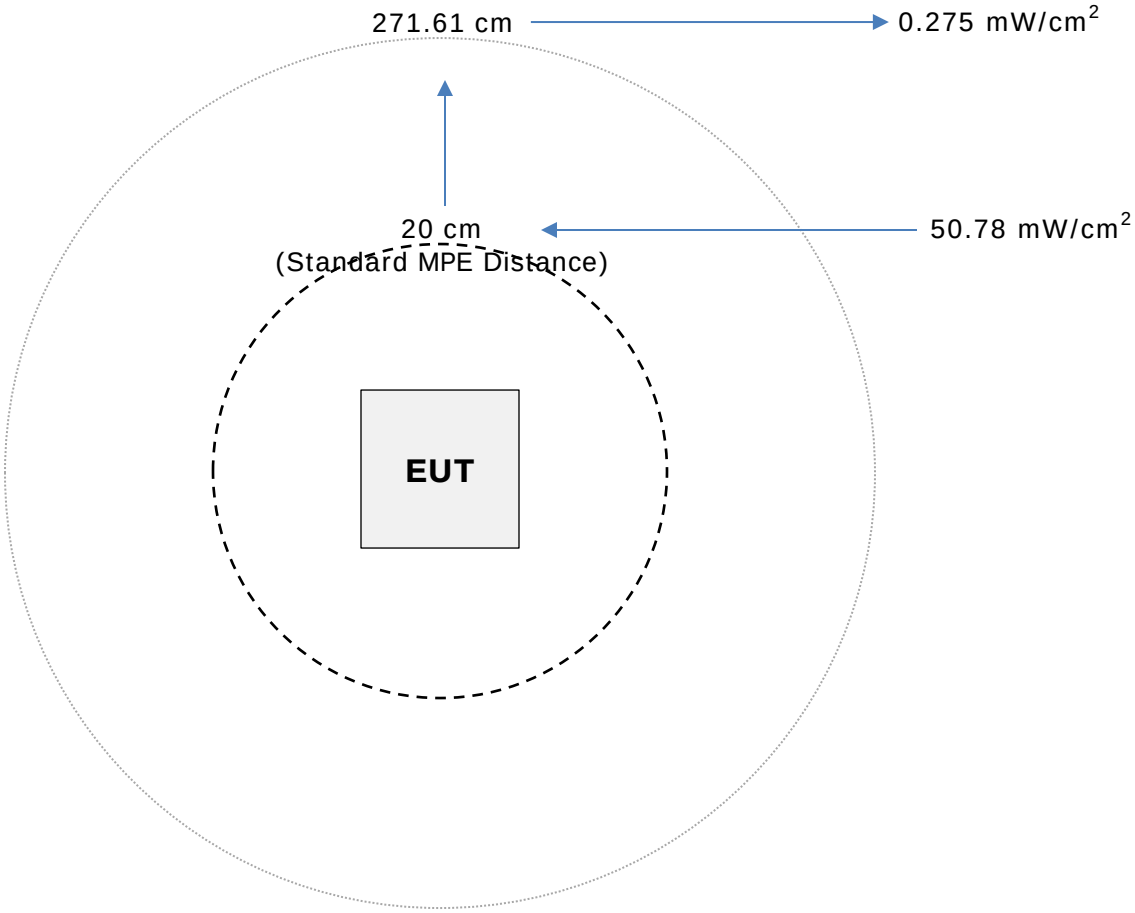


MPE Table

General Uncontrolled Exposure

The limit for General Uncontrolled Exposure Environment is calculated as shown in FCC Pt. 1.1310, Table B:

Variable	Value
Max Power	255.27 W
Frequency Range	406.1 – 421 MHz
Duty Cycle (at full power)	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Power Density	0.275 mW/cm^2
Minimum Separation Distance	271.61 cm



General Controlled Exposure

The limit for General Controlled Exposure Environment is calculated as shown in FCC Pt. 1.1310, Table A:

Variable	Value
Max Power	255.27 W
Frequency Range	406.1 – 421 MHz
Duty Cycle (at full power)	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Power Density	1.376 mW/cm^2
Minimum Separation Distance	121.47 cm