

GLOBAL PLASMA TEST REPORT

SCOPE OF WORK

ISO 16000-3 (October 2011), ISO 16000-6 (December 2011), & ISO 16000-9 (February 2006) on FC-48

REPORT NUMBER

104641658GRR-001

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TEST REPORT FOR GLOBAL PLASMA SOLUTIONS, INC

Report No.: 104641658GRR-001

Date: 30-March-2021

P.O.: GPS-032521-CW

Revised Date: 31-March-2021

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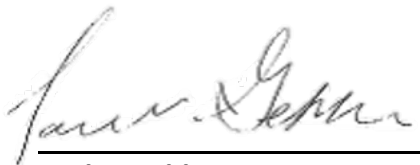
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SECTION 1

CLIENT INFORMATION

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**SECTION 2
SUMMARY**

Date Received: 05-January-2020
Dates Tested: 15-January-2020 to 19-February-2020

DESCRIPTION OF SAMPLES

Part Name: FC-48
Material Submitted: One (1) Unit
Condition of Samples: Not Specified
Shipping Condition: Good Condition

WORK REQUESTED/APPLICABLE DOCUMENTS

VOC Emissions Analysis: Byproduct analysis per ISO 16000-3 (October 2011), ISO 16000-6 (December 2011), & ISO 16000-9 (February 2006)
Intertek Quote: Qu-01162475-1

TEST RESULTS

TEST	DISPOSITION
BYPRODUCT ANALYSIS PER ISO 16000-3 (OCTOBER 2011), ISO 16000-6 (DECEMBER 2011), & ISO 16000-9 (FEBRUARY 2006)	NO BYPRODUCTS WERE OBSERVED ABOVE DETECTION LIMITS

SAMPLE DISPOSITION

At the completion of testing, samples were returned to Global Plasma Solutions, Inc.

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**SECTION 3
VOC ANALYSIS**

Date Received: 05-January-2020
Dates Tested: 15-January-2020 to 13-February-2020

DESCRIPTION OF SAMPLES:

Part Name: FC-48
Material Submitted: One (1) Unit
Condition of Samples: Not Specified
Shipping Condition: Good Condition

TEST PROCEDURE:

Test Method: Byproduct analysis per ISO 16000-3 (October 2011), ISO 16000-6 (December 2011), & ISO 16000-9 (February 2006)
Number of Samples: One (1) Sample per model

ACCEPTANCE CRITERIA:

VOC Emissions: Results Reported

TEST NOTES OR DEVIATIONS:

Testing performed without deviation unless noted below.

TEST SUMMARY:

A VOC reduction test was performed on the units using formaldehyde, 2-butanone, toluene, n-heptane, and xylene (-m,-p,&-o). Decay results can be observed within report 104218896GRR-001b. The chamber air was sampled for byproducts through collection and analysis per ISO 16000-3 (October 2011) and ISO 16000-6 (December 2011). Samples were collected on multi-sorbent tubes containing Tenax TA® 35/60 and Carbograph 5 TD 40/60 at a collection rate of 100 cc/min. The analysis for potential byproducts focused on compounds smaller than C₈ (xylene). Multi-sorbent tubes containing Tenax TA® 35/60 and Carbograph 5 TD 40/60 are rated to retain compounds with volatility between 1,3-butadiene to C₂₀ including low molecular weight oxygenates, such as C₂-C₈ alcohols, C₂-C₈ carboxylic acids, and C₃-C₈ ketones. Air samples were analyzed by thermal desorption-gas chromatography/mass-spectroscopy, TD-GC/MS, referencing ISO 16000-6. Individual VOCs were calculated using toluene as a surrogate.

Samples analyzed for low molecular weight aldehyde and ketones were collected on cartridges treated with 2,4-di-nitrophenylhydrazine (DNPH), at a collection rate of 500 cc/min, and were analyzed using high performance liquid chromatography, HPLC, referencing ISO 16000-3. Individual VOC concentrations were calculated using calibration curves based on pure standards.

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RESULTS:

Table 1: Sample and Chamber Conditions During Test Period

PARAMETER	SYMBOL	VALUE	UNITS
Number of Samples	-	1	Unit*
Chamber Volume	V	30	m ³
Testing Duration	t	1	h
Fan Setting	-	3900	cfm*
Average Temperature (Range)	T	24.4 (24.0-24.7)	°C
Average Humidity (Range)	RH	47.9 (47.0-49.1)	% RH

*Average of 9 readings from various positions within duct opening

Table 2: Method detection limits by ISO 16000-3.

COMPOUND	CAS NO.	METHOD DETECTION LIMIT (ppb)
Acetaldehyde	75-07-0	30
Acetone	67-64-1	40
Acrolein	107-02-8	4
Propionaldehyde	123-38-6	5
Crotonaldehyde	123-73-9	5
Methacrolein	78-85-3	5
n-Butyraldehyde	123-72-8	5
Benzaldehyde	100-52-7	5
Valeraldehyde	110-62-3	5
m-Tolualdehyde	620-23-5	5
Hexaldehyde	66-25-1	6

There were no observed carbonyl compounds in the 60 min test above detection limits

Table 3: Method detection limits for VOC concentrations in ppb by ISO 16000-6.

COMPOUND	CAS NO.	METHOD REPORTING LIMIT (ppb)
-	-	5

There were no observed compounds in the 60 min test above reporting limits

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PHOTOGRAPHS:

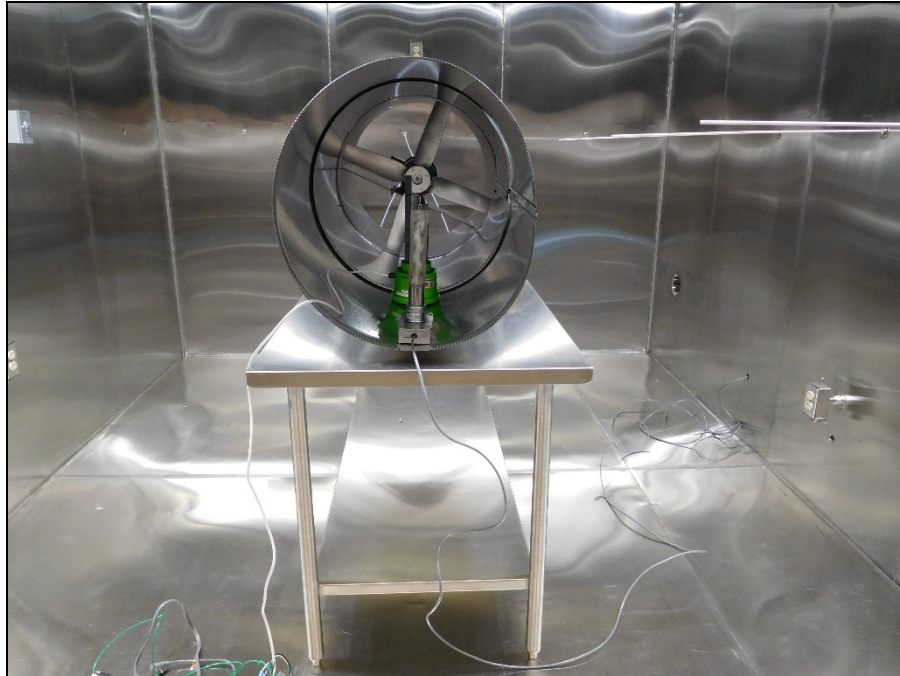


Figure 1: Photograph of test set-up, unit observed is a representative unit for setup.

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SECTION 4

FACILITIES AND EQUIPMENT:

TD-GCMS

INSTRUMENTATION USED:	Markes TD-100 Thermal Desorption Agilent 7890A GC Agilent 5975C MS
COLUMN USED:	Agilent HP-Ultra 2

HPLC

INSTRUMENTATION USED:	Agilent 1260
COLUMN USED:	Poroshell 120 EC-C18

SECTION 5

REVISIONS MADE TO TEST REPORT

INDEX	DATE	REVISION DESCRIPTION	REVISED BY	REVIEWED BY
1	31-March-2021	Update to sample receipt date	Taylor Gebben 	-