

FCC Part 15B

Measurement and Test Report

For

ThinPAD Technology (ShenZhen) Co., Ltd.

Room 2305, Xingji Tower, Xinsha Road, Shajing Town, Baoan, Shenzhen,

Guangdong, China

FCC ID: 2ADZ7MGS101033160

Test Rule(s):	<u>FCC Part 15 Subpart B</u>
Product Description:	<u>carbon Baytrail-M</u>
Tested Model:	<u>MGS101-03</u>
Report No.:	<u>STRD1504040I-5</u>
Tested Date:	<u>2015-07-15 to 2015-08-10</u>
Issued Date:	<u>2015-08-10</u>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: ThinPAD Technology (ShenZhen) Co., Ltd.
Address of applicant: Room 2305, Xingji Tower, Xinsha Road, Shajing Town, Baoan, Shenzhen, Guangdong, China
Manufacturer: ThinPAD Technology (ShenZhen) Co., Ltd.
Address of manufacturer: Room 2305, Xingji Tower, Xinsha Road, Shajing Town, Baoan, Shenzhen, Guangdong, China

General Description of EUT	
Product Name:	carbon Baytrail-M
Trade Name:	TPtech
Model No.:	MGS101-03
Adding Model(s):	/
Note: The test data is gathered from a production sample provided by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	DC 7.4V
Battery Capacity:	16000mAh
Rated Power:	/
Power Adapter Model:	WSC1304WB Input 100-240V, 50/60Hz, Output DC 12V/4A
Lowest Internal Frequency:	32.768KHz
Highest Internal Frequency:	2.16GHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the ThinPAD Technology (ShenZhen) Co., Ltd in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

- **FCC – Registration No.: 934118**

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

- **Industry Canada (IC) Registration No.: 11464A**

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Charging & Playing	Running with full screen of scrolling letter H
TM2	Downloading	Connected to PC

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Adapter cable	1.0	Unshielded	Without Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E10	LR-63C8R

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	0.3	Unshielded	Without Core
Earphone	1.2	Unshielded	Without Core

1.6 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Spectrum Analyzer	Agilent	E4407B	MY41440400	2015-06-17	2016-06-16
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2015-06-17	2016-06-16
Amplifier	Agilent	8447F	3113A06717	2015-06-17	2016-06-16
Amplifier	C&D	PAP-1G18	2002	2015-06-17	2016-06-16
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2015-06-17	2016-06-16
Horn Antenna	ETS	3117	00086197	2015-06-17	2016-06-16
Horn Antenna	ETS	3116B	00088203	2015-06-17	2016-06-16
Loop Antenna	Schwarz beck	FMZB 1516	9773	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2015-06-17	2016-06-16
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2015-06-17	2016-06-16
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2015-06-17	2016-06-16

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

N/A: not applicable

3. Conducted Emissions

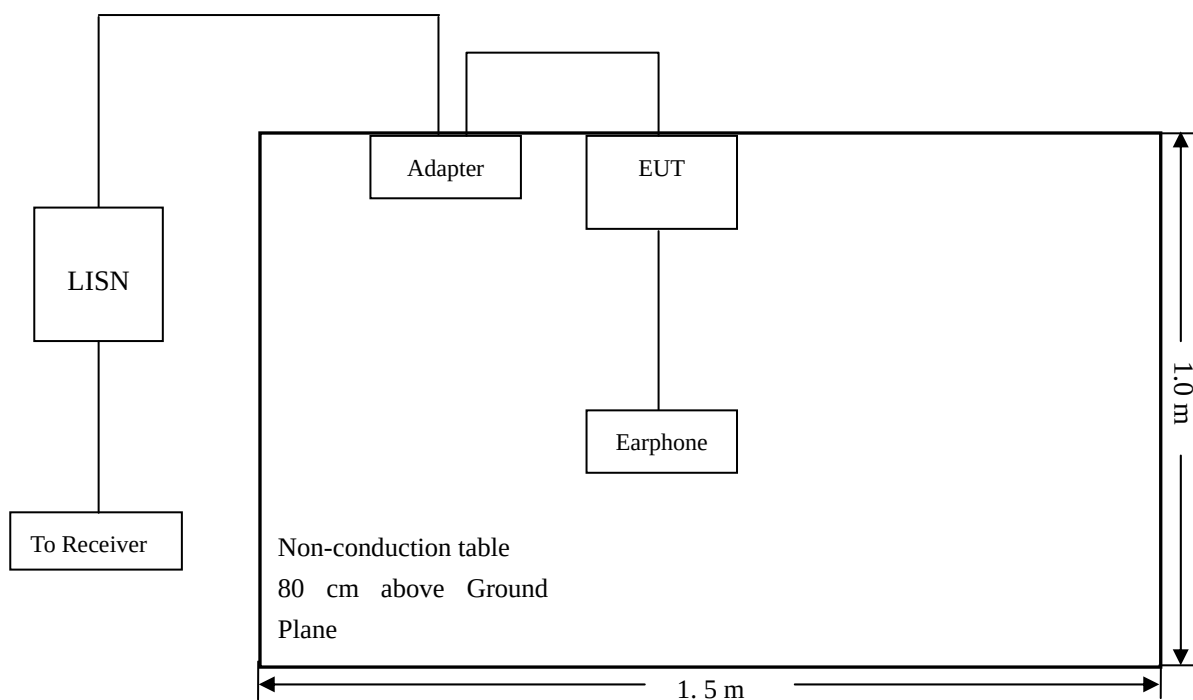
3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

3.2 Test Procedure

Test is conducting under the description of ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.3 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

-6.34 dB at 0.1940 MHz in the **Line** mode, **Peak** detector, **0.15-30MHz**

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

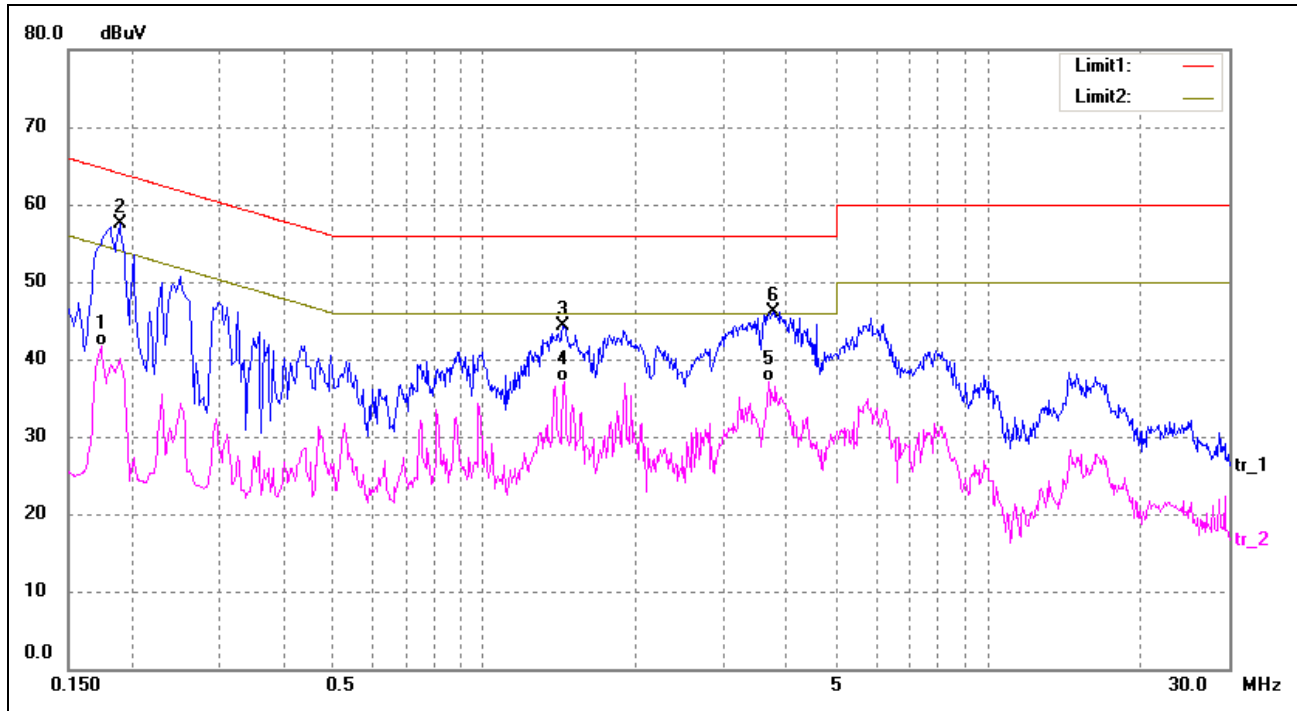
EUT: carbon Baytrail-M

Tested Model: MGS101-03

Operating Condition: TM1

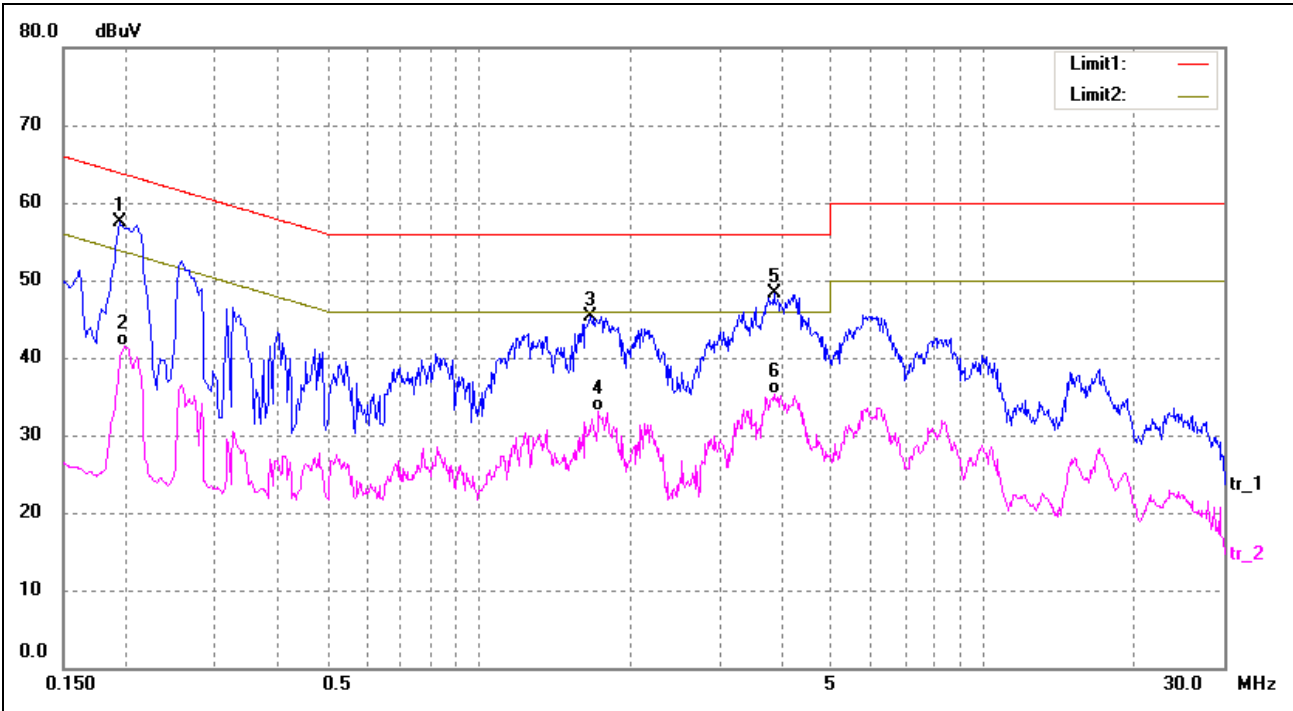
Comment: AC 120V/60Hz, Adapter DC12V/4A

Test Specification: Neutral



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1740	29.17	12.50	41.67	54.77	-13.10	AVG
2*	0.1900	44.95	12.50	57.45	64.04	-6.59	peak
3	1.4380	31.28	13.00	44.28	56.00	-11.72	peak
4	1.4420	24.15	13.00	37.15	46.00	-8.85	AVG
5	3.6780	24.19	13.00	37.19	46.00	-8.81	AVG
6	3.7420	33.18	13.00	46.18	56.00	-9.82	peak

Test Specification: Line



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1940	45.02	12.50	57.52	63.86	-6.34	peak
2	0.1980	29.02	12.50	41.52	53.69	-12.17	AVG
3	1.6700	32.31	13.00	45.31	56.00	-10.69	peak
4	1.7300	20.06	13.00	33.06	46.00	-12.94	AVG
5	3.8580	35.25	13.00	48.25	56.00	-7.75	peak
6	3.8580	22.29	13.00	35.29	46.00	-10.71	AVG

4. Radiated Emissions

4.1 Measurement Uncertainty

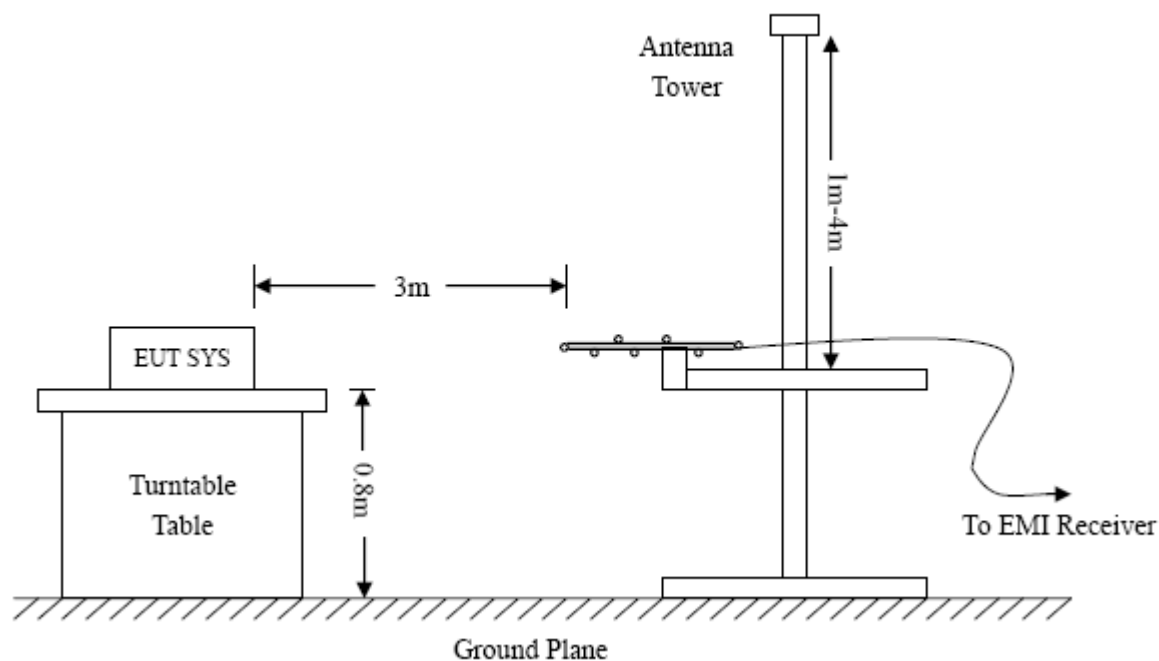
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



4.3 Test Receiver Setup

Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak, QP

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

Detector function = peak, AV

4.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

4.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

4.6 Summary of Test Results/Plots

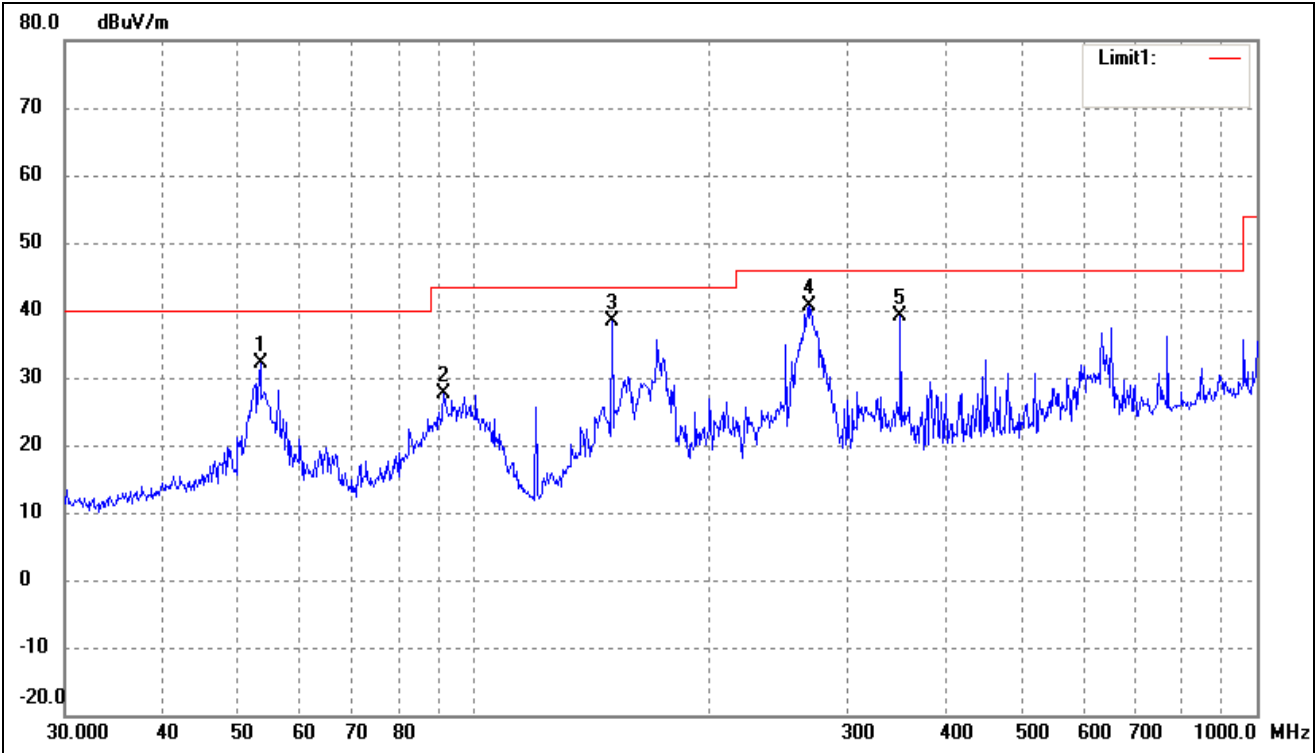
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-1.08 dB at 477.1694 MHz in the Horizontal polarization, TM2 mode, 9 kHz to 11 GHz, 3Meters

Plot of Radiated Emissions Test Data

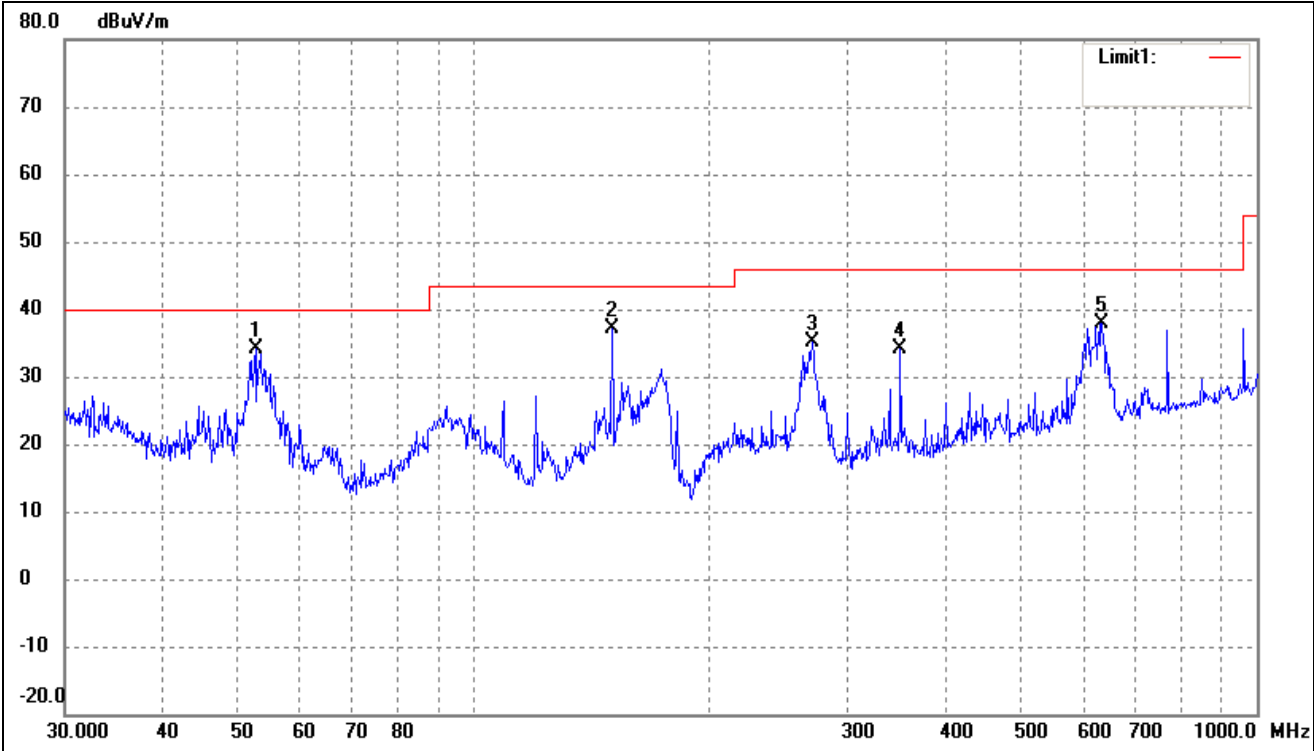
EUT: carbon Baytrail-M
Tested Model: MGS101-03
Operating Condition: TM1
Comment: AC 120V/60Hz,Adapter DC 12V/4A

Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	53.3179	39.95	-7.78	32.17	40.00	-7.83	158	100	QP
2	91.4949	38.40	-10.88	27.52	43.50	-15.98	226	100	QP
3	150.0108	51.36	-12.95	38.41	43.50	-5.09	295	100	QP
4	267.5455	47.66	-7.00	40.66	46.00	-5.34	178	100	QP
5	350.4768	43.46	-4.25	39.21	46.00	-6.79	214	100	QP

Test Specification: Vertical

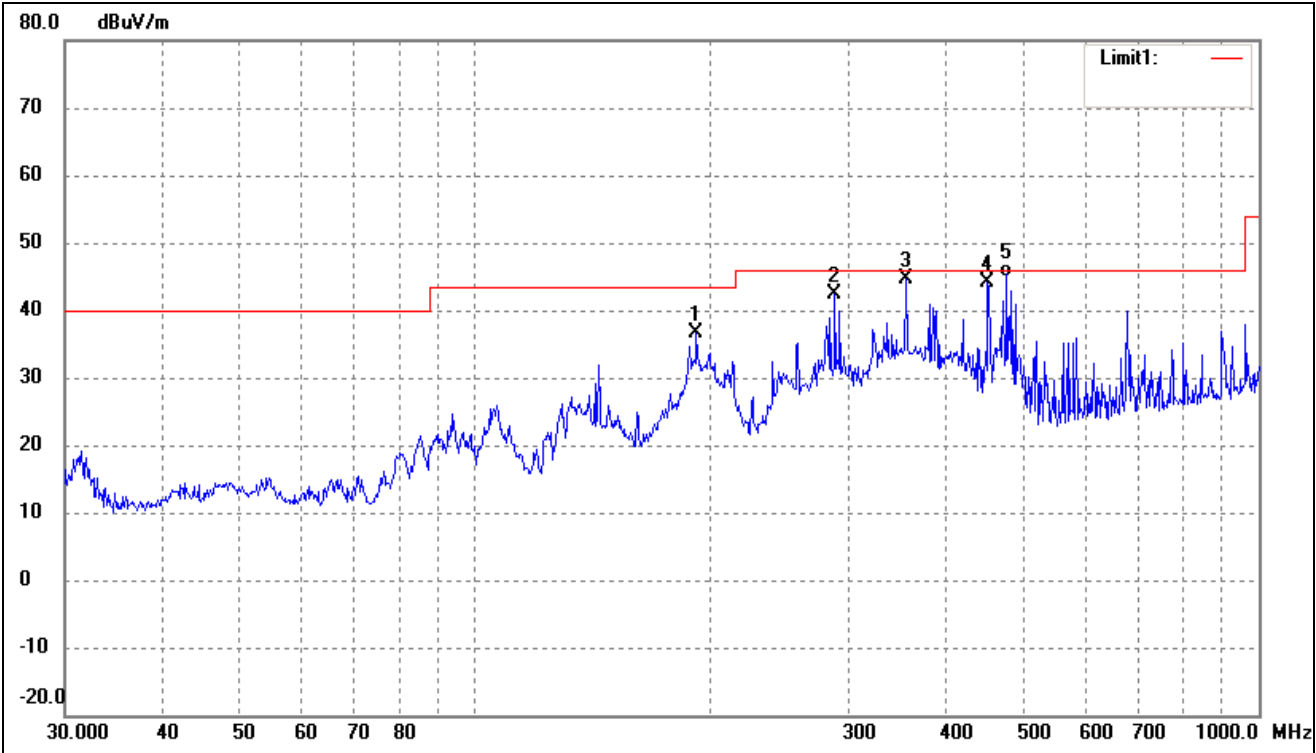


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	52.5753	41.94	-7.71	34.23	40.00	-5.77	145	100	QP
2	150.0108	50.07	-12.95	37.12	43.50	-6.38	102	100	QP
3	270.3748	41.95	-6.93	35.02	46.00	-10.98	174	100	QP
4	350.4768	38.29	-4.25	34.04	46.00	-11.96	178	100	QP
5	633.9073	36.37	1.61	37.98	46.00	-8.02	186	100	QP

Plot of Radiated Emissions Test Data

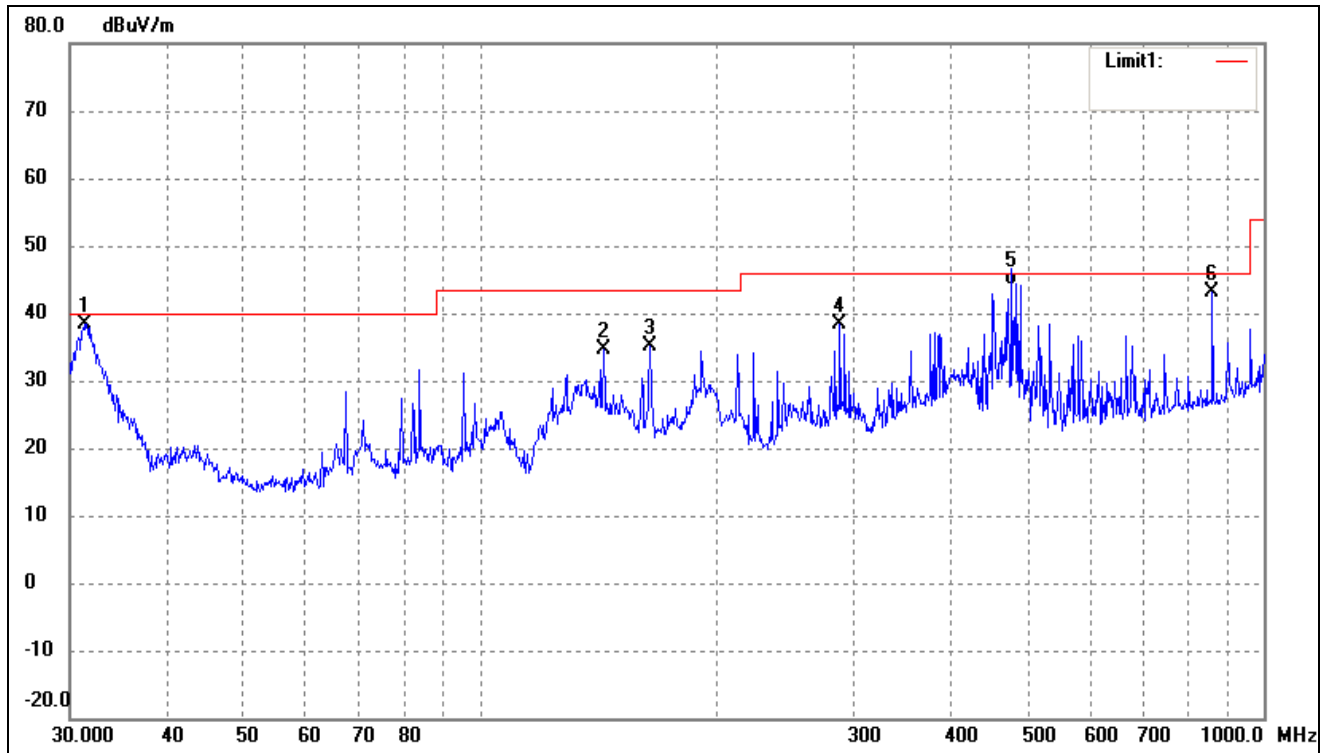
EUT: carbon Baytrail-M
Tested Model: MGS101-03
Operating Condition: TM2
Comment: AC 120V/60Hz,USB DC 5V

Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	191.7450	45.12	-8.39	36.73	43.50	-6.77	158	100	peak
2	287.9904	47.75	-5.28	42.47	46.00	-3.53	226	100	peak
3	355.4273	47.77	-3.14	44.63	46.00	-1.37	129	150	peak
4	451.1349	45.64	-1.57	44.07	46.00	-1.93	109	100	peak
5	477.1694	46.01	-1.09	44.92	46.00	-1.08	115	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	31.2893	49.56	-11.12	38.44	40.00	-1.56	51	100	peak
2	143.8295	45.47	-10.94	34.53	43.50	-8.97	308	100	peak
3	164.9074	45.53	-10.32	35.21	43.50	-8.29	120	100	peak
4	287.9904	43.64	-5.28	38.36	46.00	-7.64	359	100	peak
5	475.9694	45.23	-1.12	44.11	46.00	-1.89	178	100	QP
6	860.0352	38.15	5.08	43.23	46.00	-2.77	165	100	peak

Note: Testing is carried out with frequency rang 9kHz to the 11GHz, which above 1GHz is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

The measurements greater than 20dB below the limit from 9kHz to 30MHz and test data are not provided.

***** END OF REPORT *****