

# **FCC Test Report**

Report No.: AGC01040210607FE10

FCC ID : 2AF9HBC107

APPLICATION PURPOSE : Original Equipment

**PRODUCT DESIGNATION**: Bike Computer

**BRAND NAME** : N/A

BC107, BC100, BC101, BC102, BC103, BC104, BC105, BC106,

**MODEL NAME** : BC108, BC109, BC110, BC120, BC130, BC140, BC150, BC160,

BC170, BC180, BC190, BC111

**APPLICANT**: Shenzhen CooSpo Tech Co., Ltd.

**DATE OF ISSUE** : Jun. 25, 2021

**STANDARD(S)** : FCC Part 15 Subpart C §15.249

REPORT VERSION :

Attestation of Global Compliance (Shenzhen) Co., Ltd

AGC



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# REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	1	Jun. 25, 2021	Valid	Initial Release

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# 1. GENERAL INFORMATION

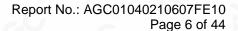
Shenzhen CooSpo Tech Co., Ltd.
11F, Lingyun Building, Honglang North 2nd Road, Bao'an District, Shenzhen 518000, Guangdong, China
Shenzhen CooSpo Tech Co., Ltd.
11F, Lingyun Building, Honglang North 2nd Road, Bao'an District, Shenzhen 518000, Guangdong, China
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11F, Lingyun Building, Honglang North 2nd Road, Bao'an District, Shenzhen 518000, Guangdong, China
Bike Computer
N/A
BC107
BC100, BC101, BC102, BC103, BC104, BC105, BC106, BC108, BC109, BC110, BC120, BC130, BC140, BC150, BC160, BC170, BC180, BC190, BC111
All the same except for the model, item No., or color.
Jun. 15, 2021 to Jun. 23, 2021
None
Normal
Pass
AGCRT-US-BR/RF

# We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.249.

Prepared By	Eddy Liu	
No.	Eddy Liu Project Engineer	Jun. 23, 2021
Reviewed By	Max Zhang	
-C	Max Zhang Reviewer	Jun. 23, 2021
Approved By	Formastico	
	Forrest Lei Authorized Officer	Jun. 23, 2021

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# 2. PRODUCT INFORMATION

# 2.1 PRODUCT TECHNICAL DESCRIPTION

Hardware Version	V1.2
Software Version	V1.0.1
Equipment Specification	ANT+
Frequency Band	2400MHz-2483.5MHz
Operation Frequency	2457 MHz
Modulation Type	GFSK
Number of channels	1' - 0
Field Strength of Fundamental	93.55dBuV/m(Average)@3m
Antenna Designation	PCB Antenna
Antenna Gain	-1.19dBi
Power Supply	DC 3.7V by battery or DC 5V by adapter
Adapter Information	N/A

# 2.2 TEST FREQUENCY LIST

Frequency Band	Channel Number	Frequency	
2400~2483.5MHz	01	2457 MHz	

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# 2.3 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: **2AF9HBC107**, filing to comply with Part 2, Part 15 of the Federal Communication Commission rules.

#### 2.4 TEST METHODOLOGY

The tests were performed according to following standards:

No.	Identity	Document Title		
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations		
2	FCC 47 CFR Part 15	Radio Frequency Devices		
3	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices		

#### 2.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

#### 2.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

#### 2.7 ANTENNA REQUIREMENT

#### **Standard Requirement**

#### 15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antennathat uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a brokenantenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

# **EUT Antenna:**

The non-detachable antenna inside the device cannot be replaced by the user at will. The gain of the antenna is -1 19dBi

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g/Inspection

The test results

the test report.

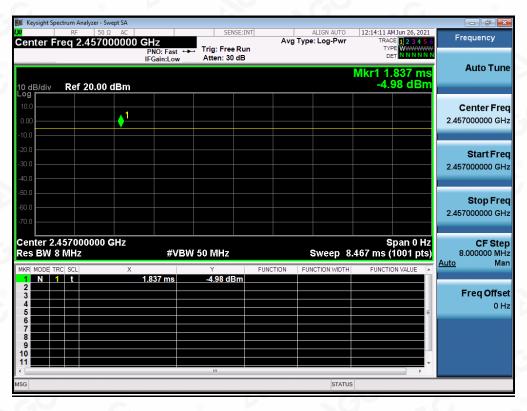


#### 2.8 DUTY CYCLE

The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Test Mode	Frequency	Duty Cycle	
ANT+	2457 MHz	100%	

# **Test Graphs of Duty Cycle**



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#### 3. TEST ENVIRONMENT

#### 3.1 ADDRESS OF THE TEST LABORATORY

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

#### 3.2 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

# CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

#### A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

# FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) 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 with Registration 975832.

#### IC-Registration No.: 24842 (CAB identifier: CN0063)

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

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# 3.3 ENVIRONMENTAL CONDITIONS

	NORMAL CONDITIONS	EXTREME CONDITIONS
Temperature range (°C)	15 - 35	-20 - 50
Relative humidty range	20 % - 75 %	20 % - 75 %
Pressure range (kPa)	86 - 106	86 - 106
Power supply		10

Note: The Extreme Temperature and Extreme Voltages declared by the manufacturer.

#### 3.4 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Item	Measurement Uncertainty		
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 3.1 \text{ dB}$		
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 4.0 \text{ dB}$		
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.8 \text{ dB}$		
Uncertainty of total RF power, conducted	$U_c = \pm 0.8 \text{ dB}$		
Uncertainty of RF power density, conducted	$U_c = \pm 2.6 \text{ dB}$		
Uncertainty of spurious emissions, conducted	U <sub>c</sub> = ±2 %		
Uncertainty of Occupied Channel Bandwidth	U <sub>c</sub> = ±2 %		

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# 3.5 LIST OF EQUIPMENTS USED

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due	
TEST RECEIVER	R&S	ESPI	101206	May 11, 2021	May 10, 2022	
LISN	R&S	ESH2-Z5	100086	Jul. 03, 2020	Jul. 02, 2021	
Test software	FARA	EZ-EMC (Ver. AGC- CON03A1)	N/A	N/A	N/A	
TEST RECEIVER	R&S	ESCI	10096	Apr. 14, 2021	Apr. 13, 2022	
EXA Signal Analyzer	Aglient	N9010A	MY5347050 4	Dec. 07, 2020	Dec. 06, 2021	
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	Mar. 23, 2020	Mar. 22, 2022	
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022	
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 21, 2019	Sep. 20, 2021	
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022	
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2023	
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022	
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2021	Jan. 07, 2023	
Test software	FARA	EZ-EMC (Ver RA-03A)	N/A	N/A	N/A	

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# **4.SYSTEM TEST CONFIGURATION**

#### **4.1 EUT CONFIGURATION**

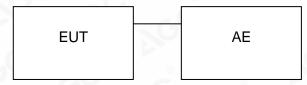
The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

#### **4.2 EUT EXERCISE**

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

#### 4.3 CONFIGURATION OF TESTED SYSTEM

Radiated Emission Configure:



Conducted Emission Configure:



# **4.4 EQUIPMENT USED IN TESTED SYSTEM**

The Following Peripheral Devices And Interface Cables Were Connected During The Measurement:

☐ Test Accessories Come From The Laboratory

☐ Test Accessories Come From The Manufacturer

Item	Equipment	Model No.	Identifier	Note
1	Bike Computer	BC107	FCC ID: 2AF9HBC107	EUT
2	Adapter	ZL-PCB0100020502000	DC 5V	AE

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# 4.5 SUMMARY OF TEST RESULTS

Item	FCC Rules	Description Of Test	Result	
1 §15.203		Antenna Equipment	Pass	
2	§15.249(a)	Field Strength of Fundamental	Pass	
3	§15.209, §15.249	Radiated Emission& Band Edge	Pass	
4	§15.215	20dB Bandwidth	Pass	
9	§15.207	AC Power Line Conducted Emission	Pass	

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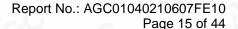
# 5. DESCRIPTION OF TEST MODES

Summary table of Test Cases								
Data Rate / Modulation								
Test Item	ANT+ / GFSK							
Radiated&Conducted Test Cases	Mode 1: ANT+ Tx _2457 MHz							
AC Conducted Emission	PO CO. CO. CO.							

#### Note:

- 1. Only the result of the worst case was recorded in the report, if no other cases.
- 2. The battery is full-charged during the test.
- 3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
- 4. For Conducted Test method, a temporary antenna connector is provided by the manufacture.
- 5. The maximum duty cycle of the product is greater than 98%.

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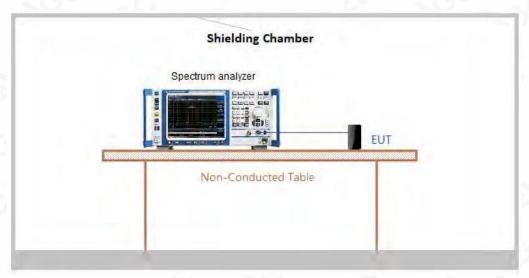


# 6. 20 DB BANDWIDTH

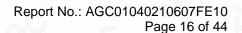
#### **6.1 MEASUREMENT PROCEDURE**

- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss
  was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously.
- Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 30 kHz. Set the Video bandwidth (VBW) = 100 kHz. In order to make an accurate measurement.
- 4. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 \* RBW.
- 5. Measure and record the results in the test report.

# 6.2 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION)



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#### **6.3 MEASUREMENT RESULTS**

Test Data of Occupied Bandwidth and -20dB Bandwidth								
Test Mode Test Channel 99% Occupied -20dB Limits (MHz) Bandwidth (MHz) Bandwidth (MHz) Pass or Fail								
GFSK	2457	0.918	1.034	N/A	Pass			

Test Graphs of Occupied Bandwidth&-20dB Bandwidth



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# 7. RADIATED EMISSION

# 7.1 LIMITS OF RADIATED EMISSION TEST

15.249 Limit in the below table has to be followed:

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)	
900-928MHz	50	500	
2400-2483.5MHz	50	500	
5725-5875MHz	50	500	
24.0-24.25GHz	250	2500	

15.209 Limit in the below table has to be followed:

Frequency Distance		Field Strengths Limit		
(MHz)	Meters	μ <b>V/m</b>	dB(μV)/m	
0.009 ~ 0.490	300	2400/F(kHz)		
0.490 ~ 1.705	30	24000/F(kHz)		
1.705 ~ 30	30	30	G	
30 ~ 88	3	100	40.0	
88 ~ 216	3	150	43.5	
216 ~ 960	3	200	46.0	
960 ~ 1000	3	500	54.0	
Above 1000	3	Other:74.0 dB(µV)/ (Average)	m (Peak) 54.0 dB(μV)/m	

Remark:

- (1) Emission level dB  $\mu$  V = 20 log Emission level  $\mu$  V/m
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

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#### 7.2 MEASUREMENT PROCEDURE

- The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

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The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average

Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

The following is the test setup of Band Edge:

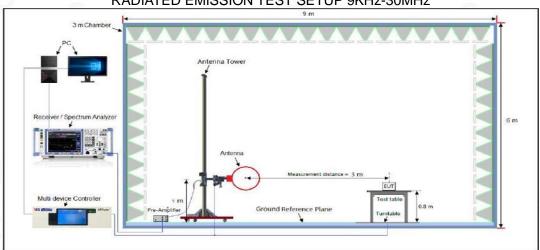
- 1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
- 2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
- (a) PEAK: RBW=1MHz, VBW=3MHz / Sweep=AUTO
- (b) AVERAGE: RBW=1MHz; VBW=1/on time(1KHz) / Sweep=AUTO (Duty cycle is less than 98%)
- (c) AVERAGE: RBW=1MHz; VBW=3M / Sweep=AUTO
- 3. Other procedures refer to clause 7.2.

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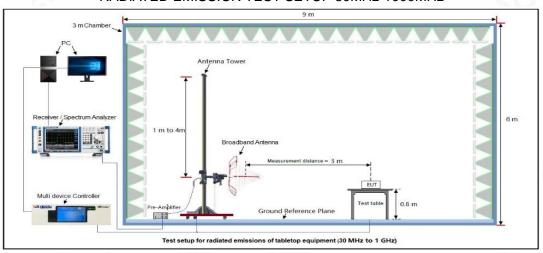


# 7.3 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION)

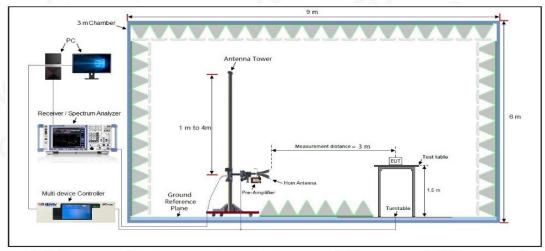
# RADIATED EMISSION TEST SETUP 9KHz-30MHz



#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



# RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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Attestation of Global Compliance(Shenzhen)Co., Ltd Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



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# 7.4 MEASUREMENT RESULT

# FIELD STRENGTH OF FUNDAMENTAL

EUT	Bike Computer	Model Name	BC107
Temperature	20 ℃	Relative Humidity	48%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Modulation	GFSK	Polarization	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
2457	45.00	49.05	94.05	114.00	-19.95	peak
2457	44.50	49.05	93.55	94.00	-0.45	AVG
Remark:			.G	(8)		
Factor = Ante	enna Factor + Ca	able Loss – F	Pre-amplifier.			

EUT	Bike Computer	Model Name	BC107
Temperature	<b>20</b> ℃	Relative Humidity	48%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Modulation	GFSK	Polarization	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
2457	43.00	49.05	92.05	114.00	-21.95	peak
2457	42.51	49.05	91.56	94.00	-2.44	AVG
Remark:					3	<b>▼</b> C
Factor = Ante	enna Factor + C	able Loss – P	re-amplifier.			

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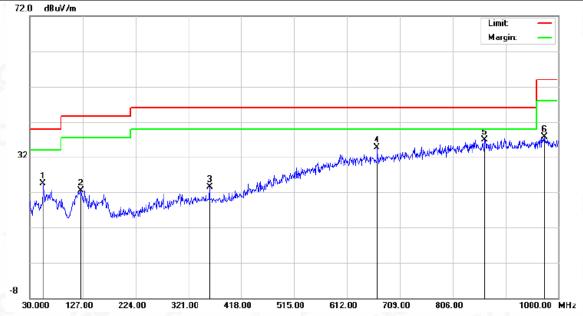


# **RADIATED EMISSION BELOW 30MHZ**

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

#### **RADIATED EMISSION FROM 30MHZ TO 1000MHZ**

EUT		Bike Computer Model Name		BC107		
Temperature		20 ℃		Relative Humidity		48%
Pressure		960hPa		Test Voltage		Normal Voltage
Test Mode		Mode 1		Antenna		Horizontal
72.0 dBuV/m						
						Limit —



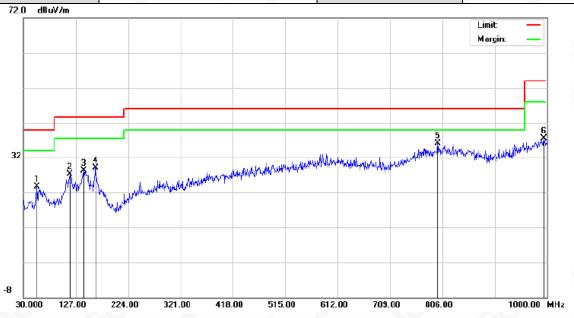
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		54.2500	9.87	14.64	24.51	40.00	-15.49	peak
2		123.1200	5.07	17.39	22.46	43.50	-21.04	peak
3	,	359.8000	6.76	16.77	23.53	46.00	-22.47	peak
4		667.2900	6.88	27.76	34.64	46.00	-11.36	peak
5	*	865.1700	5.61	31.25	36.86	46.00	-9.14	peak
6	!	974.7800	5.44	32.34	37.78	54.00	-16.22	peak

**RESULT: PASS** 

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EUT	Bike Computer	Model Name	BC107
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		55.2200	8.81	14.85	23.66	40.00	-16.34	peak
2		116.3300	9.64	17.61	27.25	43.50	-16.25	peak
3		141.5500	8.98	19.23	28.21	43.50	-15.29	peak
4		163.8600	10.27	18.79	29.06	43.50	-14.44	peak
5	*	797.2700	5.74	30.27	36.01	46.00	-9.99	peak
6		994.1800	5.20	32.28	37.48	54.00	-16.52	peak

Note: 1. Factor=Antenna Factor + Cable loss, Margin= Measurement-Limit.

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#### **RADIATED EMISSION ABOVE 1GHZ**

EUT	Bike Computer	Model Name	BC107
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4914	58.36	0.08	58.44	74.00	-15.56	peak
4914	46.56	0.08	46.64	54.00	-7.36	AVG
7371	52.25	2.21	54.46	74.00	-19.54	peak
7371	42.38	2.21	44.59	54.00	9.41	AVG
Remark:	W 42.00	2.21	44.55	04.00	3.41	® AVO
	enna Factor + Ca	able Loss – F	Pre-amplifier.			

EUT	Bike Computer	Model Name	BC107
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4914	58.46	0.08	58.54	74.00	-15.46	peak
4914	46.37	0.08	46.45	54.00	-7.55	AVG
7371	53.12	2.21	55.33	74.00	-18.67	peak
7371	41.29	2.21	43.50	54.00	-10.50	AVG
emark:			a.C	®		
actor = Ante	enna Factor + Ca	ble Loss -	Pre-amplifier.		@	

# **RESULT: PASS**

#### Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin=Level-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

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TEST RESULT FOR BAND EDGE EMISSION AT RESTRICTED BANDS

EUT	Bike Computer	Model Name	BC107
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal





Test Graph for Average Measurement



**RESULT: PASS** 

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EUT	Bike Computer	Model Name	BC107
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical





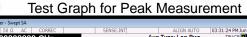




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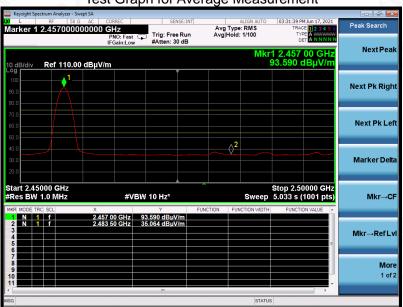


EUT	Bike Computer	Model Name	BC107
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal





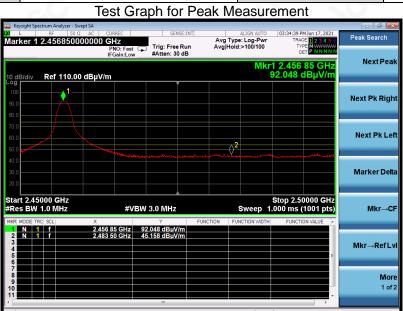
Test Graph for Average Measurement

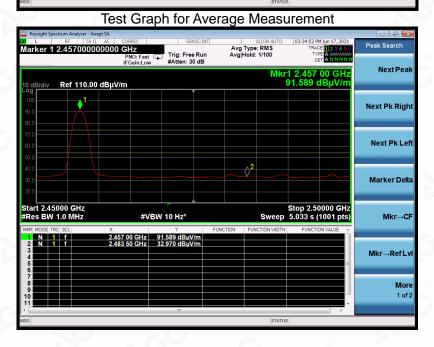


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EUT	Bike Computer	Model Name	BC107
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

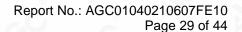




Note: 1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level

2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB( $\mu$ V) to represent the Amplitude. Use the

Any report having R(LLV/rg) to represent the Field Strength who tame Fixation, or having not been stamped by the Compliant of the report is not permitted without the written achievable the test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15day after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.





# 8. AC LINE CONDUCTED EMISSION TEST

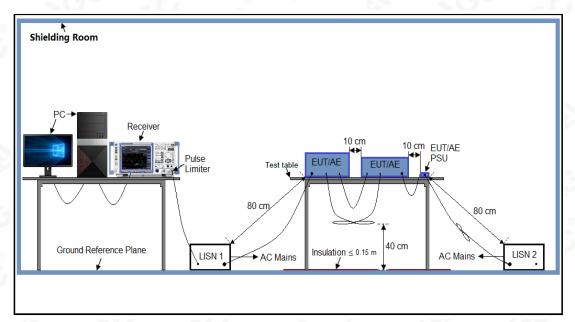
# 8.1 LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P. (dBμV)	Average (dBμV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

#### Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

# 8.2 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION)



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#### 8.3 PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipment received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC 5V power from adapter which received AC120V/60Hz power from a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

#### 8.4 FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.

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