

FCC Part 15B Measurement and Test Report

For

Goodbetterbest Limited

Suites 103-107 Devonshire Business Centre Works Road Letchworth Herts,

SG6 1GJ United Kingdom

FCC ID: VS9-HC5TX

Test Rule(s): FCC Part 15 Subpart B

Product Description: Bluetooth Chat Headset Dongle

Tested Model: HC5D

Report No.: STR15118172I-2

Tested Date: 2015-11-01 to 2015-11-28

Issued Date: 2015-11-28

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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: Goodbetterbest Limited
Address of applicant: Suites 103-107 Devonshire Business Centre Works
Road Letchworth Herts, SG6 1GJ United Kingdom
Manufacturer: ATI Electronics (ShenZhen) Co.,LTD
Address of manufacturer: 1/F, B Tower, Shengdelan Industrial Park, Kukeng
Village, Guanlan Town, Shenzhen, China.

General Description of EUT	
Product Name:	Bluetooth Chat Headset Dongle
Trade Name:	Gioteck
Model No.:	HC5D
Adding Model(s):	FL400D
<i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model HC5D, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	USB 5V
Rated Current:	/
Rated Power:	/
Lowest Internal Frequency:	16MHz
Highest Internal Frequency:	16MHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the Goodbetterbest Limited 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	Operating	Connected to PC

EUT Cable List and Details

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

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E23	EB12648265

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/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
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

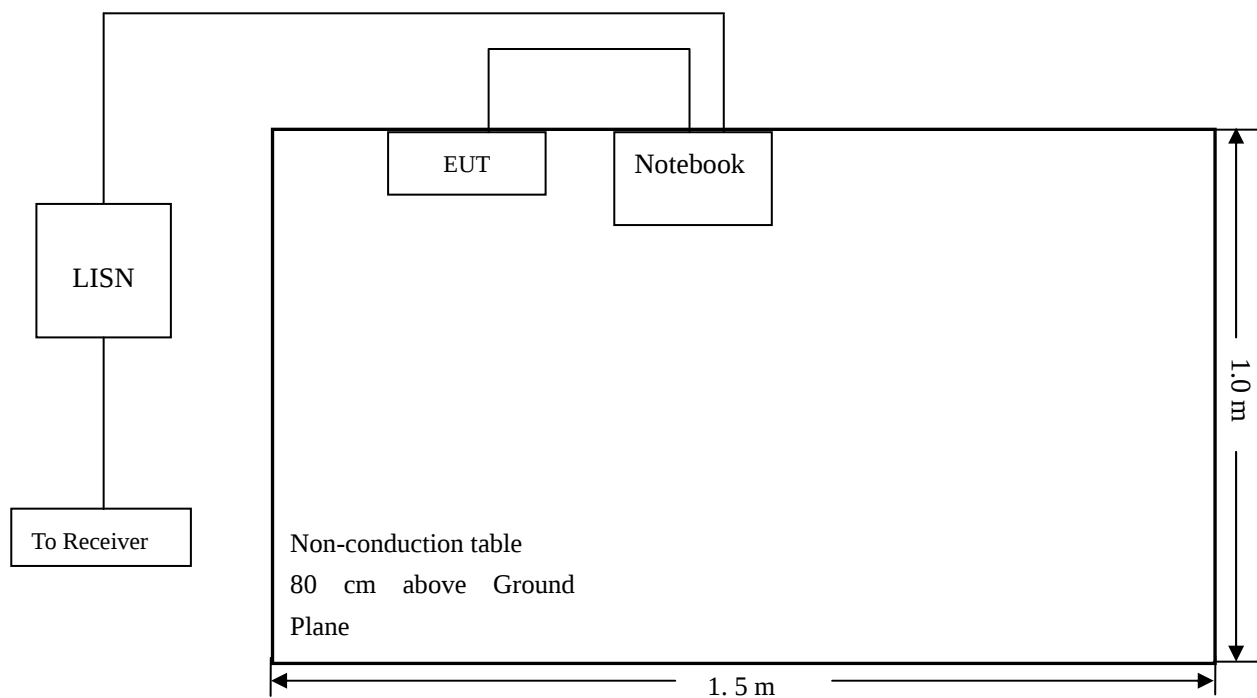
3.1 Measurement Uncertainty

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



3.4 Environmental Conditions

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

3.5 Summary of Test Results/Plots

According to the data in section 3.6, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

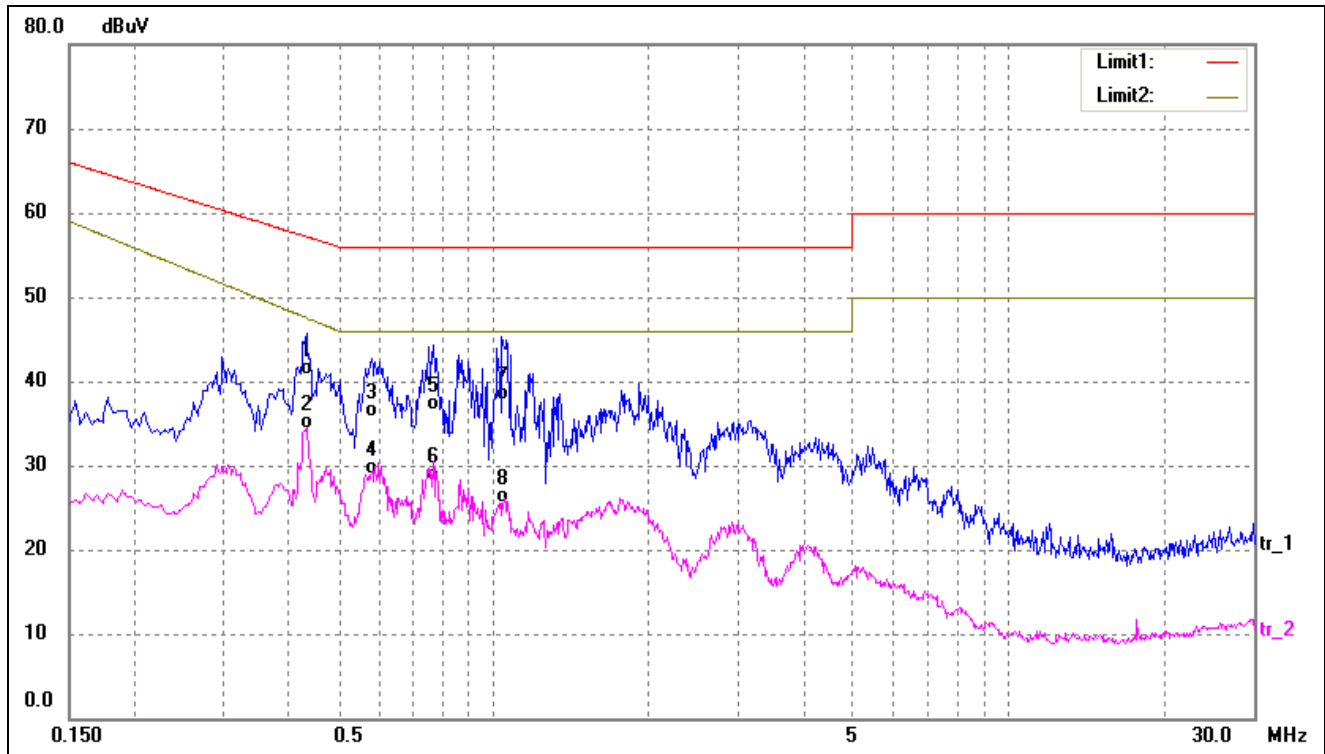
-7.38 dB at **0.4340 MHz** in the **Line**, **AVG** detector, 0.15-30MHz

3.6 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

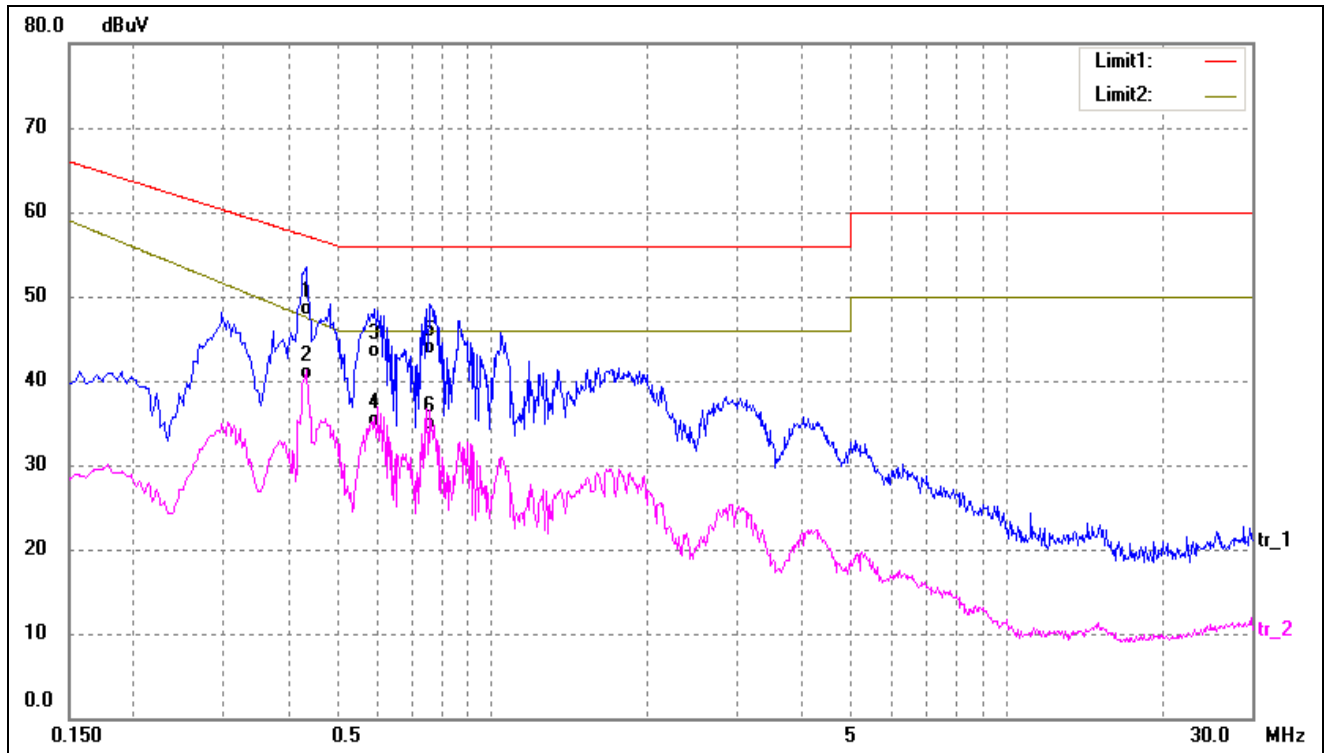
EUT: Bluetooth Chat Headset Dongle
 Tested Model: HC5D
 Operating Condition: TM1
 Comment: AC 120V/60HZ USB 5V

Test Specification: Neutral



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.4340	28.23	12.50	40.73	57.18	-16.45	QP
2*	0.4340	21.81	12.50	34.31	47.53	-13.22	AVG
3	0.5820	23.17	12.58	35.75	56.00	-20.25	QP
4	0.5820	16.34	12.58	28.92	46.00	-17.08	AVG
5	0.7660	23.65	12.77	36.42	56.00	-19.58	QP
6	0.7660	15.43	12.77	28.20	46.00	-17.80	AVG
7	1.0380	24.75	13.00	37.75	56.00	-18.25	QP
8	1.0380	12.41	13.00	25.41	46.00	-20.59	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4340	35.27	12.50	47.77	57.18	-9.41	QP
2*	0.4340	27.65	12.50	40.15	47.53	-7.38	AVG
3	0.5900	30.21	12.59	42.80	56.00	-13.20	QP
4	0.5900	21.97	12.59	34.56	46.00	-11.44	AVG
5	0.7580	30.44	12.76	43.20	56.00	-12.80	QP
6	0.7580	21.27	12.76	34.03	46.00	-11.97	AVG

4. Radiated Emissions

4.1 Measurement Uncertainty

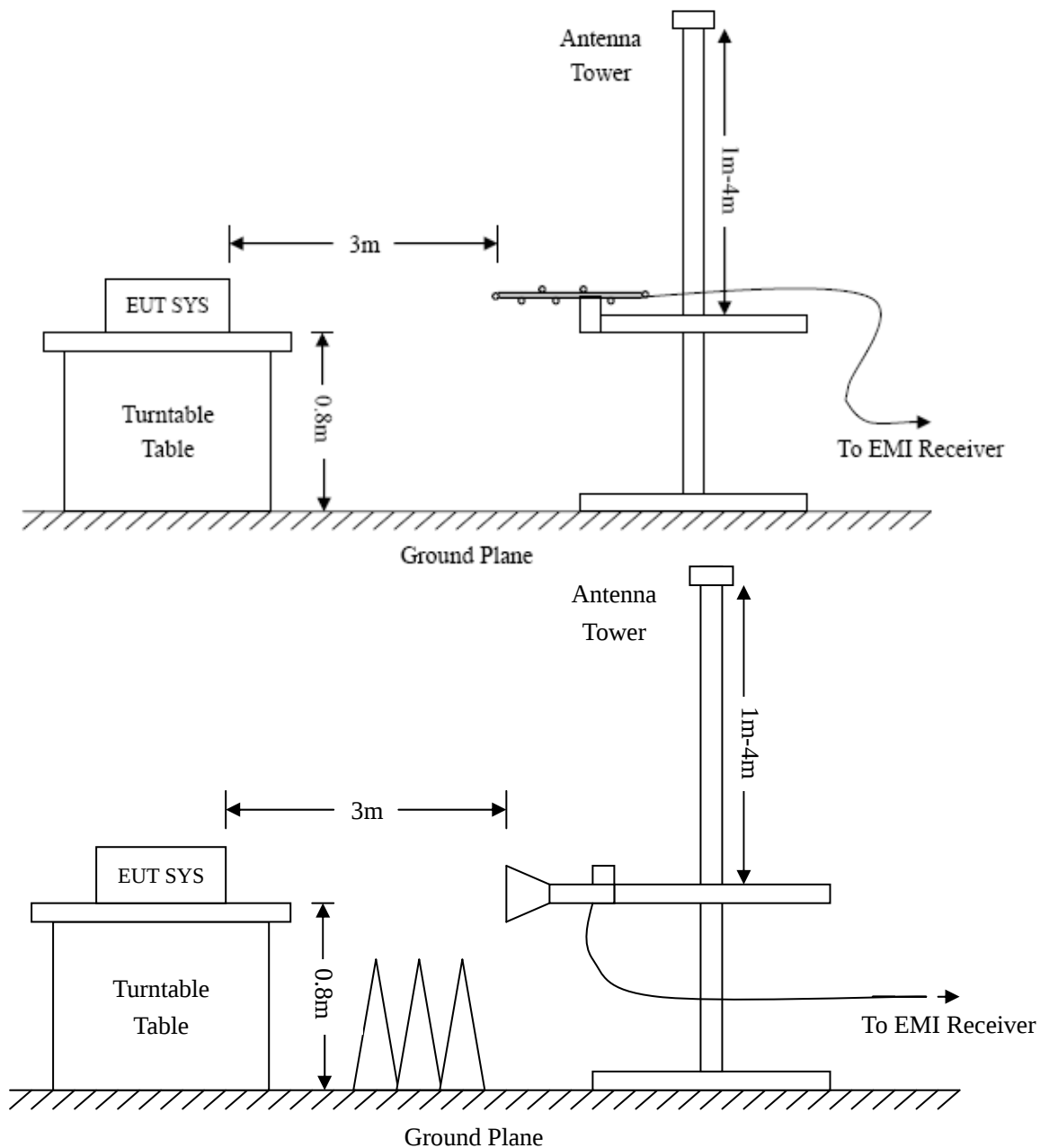
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

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

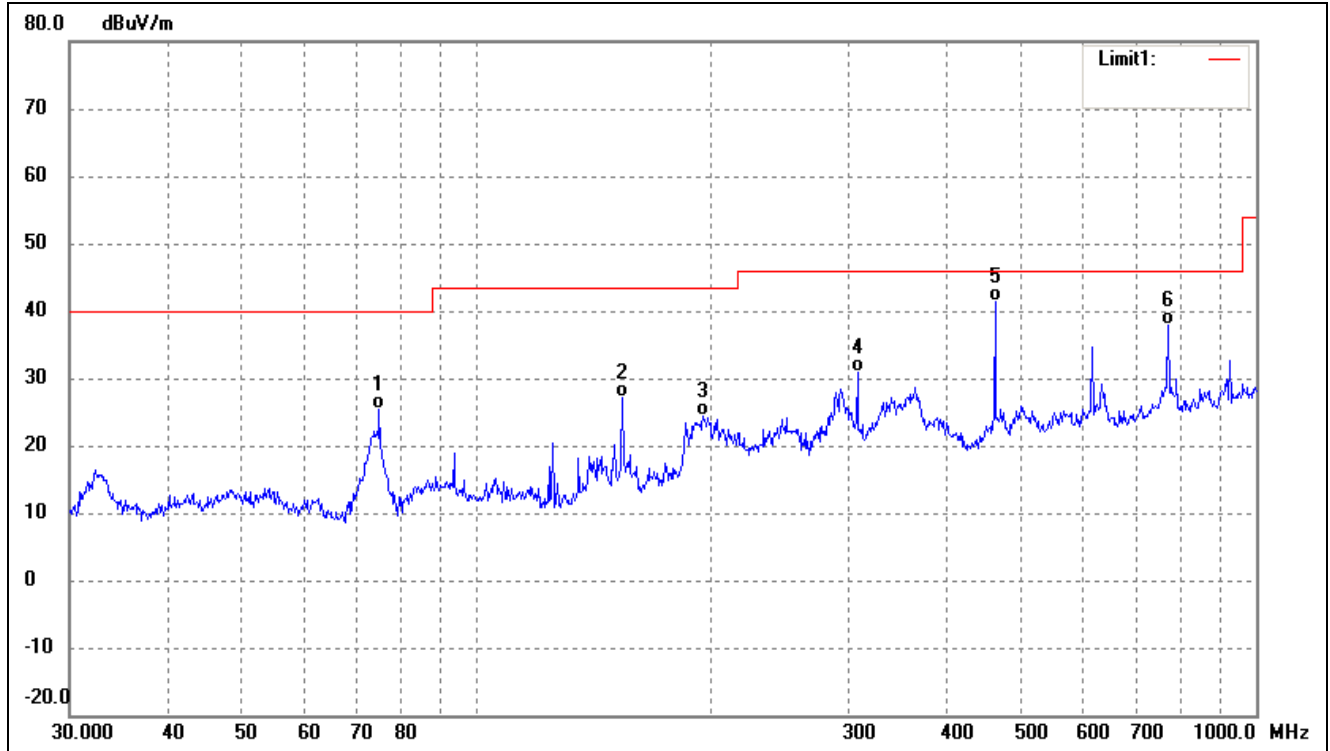
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-4.55 dB at 462.3455 MHz in the Horizontal polarization, 9 kHz to 1 GHz, 3Meters

Plot of Radiated Emissions Test Data

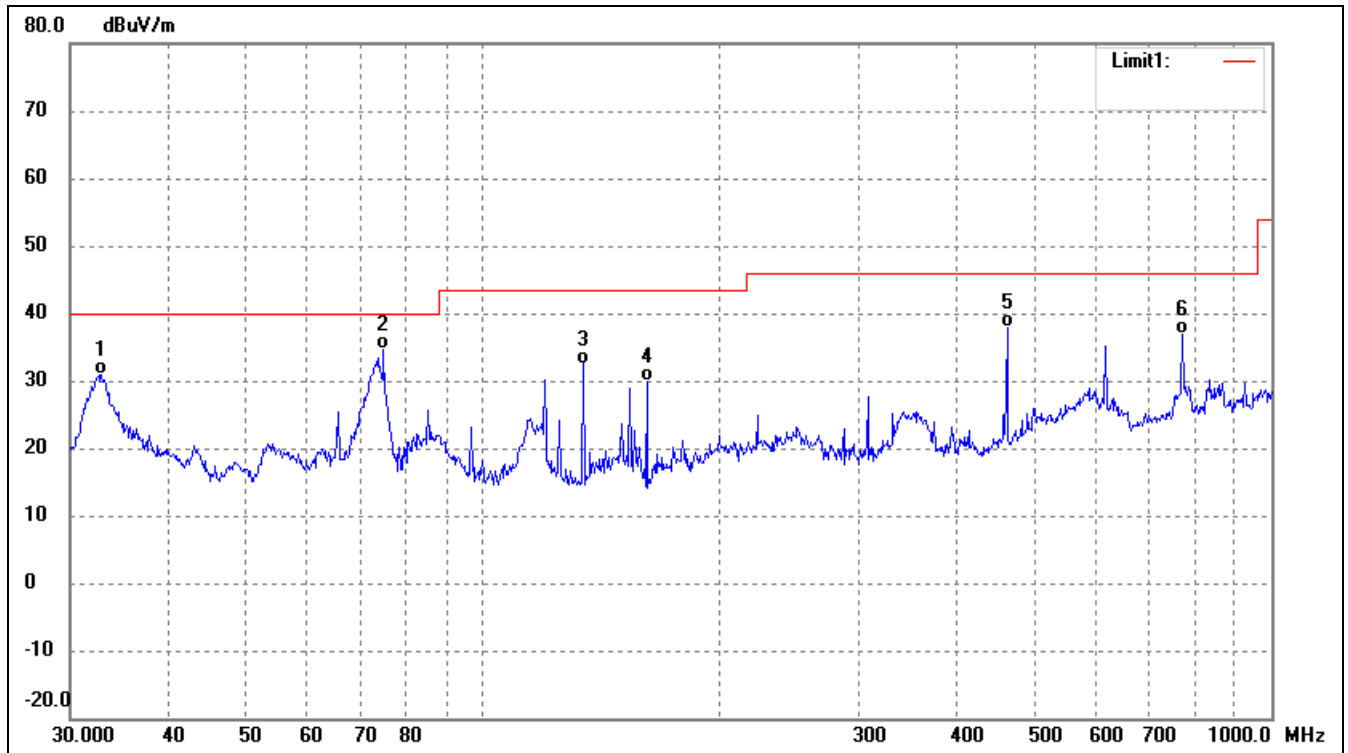
EUT: Bluetooth Chat Headset Dongle
 Tested Model: HC5D
 Operating Condition: TM1
 Comment: AC 120V/60HZ USB 5V

Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	74.9191	37.77	-12.41	25.36	40.00	-14.64	100	100	QP
2	153.7384	38.10	-10.87	27.23	43.50	-16.27	256	100	QP
3	195.1365	32.70	-8.29	24.41	43.50	-19.09	65	100	QP
4	307.8312	35.75	-4.81	30.94	46.00	-15.06	75	100	QP
5	462.3455	42.83	-1.38	41.45	46.00	-4.55	55	100	QP
6	771.4486	33.83	4.06	37.89	46.00	-8.11	100	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	32.8637	41.85	-10.90	30.95	40.00	-9.05	20	100	QP
2	74.9191	47.02	-12.41	34.61	40.00	-5.39	245	100	QP
3	134.0882	43.29	-10.79	32.50	43.50	-11.00	52	100	QP
4	161.4740	40.26	-10.49	29.77	43.50	-13.73	12	100	QP
5	462.3455	39.32	-1.38	37.94	46.00	-8.06	47	100	QP
6	771.4486	32.91	4.06	36.97	46.00	-9.03	100	100	QP

Note: Testing is carried out with frequency rang 9kHz to the 1GHz.

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

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