

FCC AND ISCED CERTIFICATION TEST REPORT

FOR

Applicant	:	Dongguan Laccess Electronic Technology Ltd.
Address	:	NO.20 Xiang Yang Road, Huaxing Industrial Park, Tianxin, Qiaotou Town, DongGuan, GuangDong, China
Equipment under Test	:	WIRELESS GAMING HEADSET
Model No.	:	GG-01WT
Trade Mark	:	JVC
FCC ID	:	2AD8P-GG01WT
IC	:	12709A-GG01WT
Manufacturer	:	Dongguan Laccess Electronic Technology Ltd.
Address	:	NO.20 Xiang Yang Road, Huaxing Industrial Park, Tianxin, Qiaotou Town, DongGuan, GuangDong, China

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park,
Dongguan City, Guangdong Province, China, 523808

Tel.: +86-0769-38826678, **E-mail:** ddt@dgddt.com, <http://www.dgddt.com>

REPORT

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Test Report Declare

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Manufacturer	:	Dongguan Laccess Electronic Technology Ltd.
Address	:	NO.20 Xiang Yang Road, Huaxing Industrial Park, Tianxin, Qiaotou Town, DongGuan, Guangdong, China

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C, RSS-210 Issue 10 December 2019.

Test procedure used:

ANSI C63.10:2013, RSS-Gen Issue 5, Apr. 2018, Amendment 2 (February 2021).

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC&ISED standards.

Report No:	DDT-R21060724-2E01		
Date of Receipt:	Aug. 16, 2021	Date of Test:	Aug. 16, 2021 ~ Oct. 09, 2021

Prepared By:

Sam Li

Sam Li/Engineer

Approved By:



Damon Hu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Oct. 09, 2021	

1. Summary of Test Results

The EUT have been tested according to the applicable standards as referenced below.		
Description of Test Item	Standard	Results
20 dB Bandwidth and 99% Bandwidth	FCC Part 15: 15.215 ANSI C63.10:2013 RSS-210 Issue 10 RSS-Gen Issue 5	Pass
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.249 ANSI C63.10:2013 RSS-210 Issue 10 RSS-Gen Issue 5	Pass
Band Edge Compliance	FCC Part 15: 15.205 FCC Part 15: 15.249 ANSI C63.10:2013 RSS-210 Issue 10 RSS-Gen Issue 5	Pass
Power Line Conducted Emission	FCC Part 15: 15.207 ANSI C63.10:2013 RSS-Gen Issue 5	Pass
Antenna requirement	FCC Part 15: 15.203 RSS-Gen Issue 5	Pass

2. General Test Information

2.1. Description of EUT

EUT* Name	: WIRELESS GAMING HEADSET
Model Number	: GG-01WT
EUT Function Description	: Please reference user manual of this device
Power Supply	: DC 5V by USB
Operation Frequency	: 2404 MHz - 2478 MHz
Modulation	: GFSK
Data Rate	: 1 Mbps
Antenna Gain	: 1.7 dBi
Sample Type	: Series production
Serial Number	: N/A

Note: EUT is the abbreviation of equipment under test.

EUT channels and frequencies list:

Channel Information					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
2	2404	27	2429	52	2454
3	2405	28	2430	53	2455
4	2406	29	2431	54	2456
5	2407	30	2432	55	2457
6	2408	31	2433	56	2458
7	2409	32	2434	57	2459
8	2410	33	2435	58	2460
9	2411	34	2436	59	2461
10	2412	35	2437	60	2462
11	2413	36	2438	61	2463
12	2414	37	2439	62	2464
13	2415	38	2440	63	2465
14	2416	39	2441	64	2466
15	2417	40	2442	65	2467
16	2418	41	2443	66	2468
17	2419	42	2444	67	2469
18	2420	43	2445	68	2470
19	2421	44	2446	69	2471
20	2422	45	2447	70	2472
21	2423	46	2448	71	2473
22	2424	47	2449	72	2474
23	2425	48	2450	73	2475
24	2426	49	2451	74	2476
25	2427	50	2452	75	2477
26	2428	51	2453	76	2478

2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Serial No.	Other
AUX in cable	N/A	N/A	N/A	Length: 195cm, Unshielded
Type-C cable	N/A	N/A	N/A	Length: 190cm, Unshielded
MIC cable	N/A	N/A	N/A	Length: 12cm, Unshielded
2 to 1 cable	N/A	N/A	N/A	Length: 13cm, Unshielded

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	EMC Compliance	SN
Laptop	HP	HP ProBook 445 G6	5CD9112VSV	AC Adapter: TPN-CA17, HP Part No.: L25299-002, Input: 100-240V, 50/60Hz, Output: DC 19.5V, 3.33A, 65W

2.4. Block diagram of EUT configuration for test



Test software: AppoTech RF Control Kit

The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table.

Tested mode, channel, information			
Mode	Setting Tx Power	Channel	Frequency (MHz)
GFSK Tx mode	2	CH2	2404
	2	CH39	2441
	2	CH76	2478

2.5. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25 °C
Humidity range:	40-75%
Pressure range:	86-106 kPa

2.6. Deviations of test standard

No deviation.

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808.

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, G-20118

2.8. Measurement uncertainty

Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Conducted spurious emissions	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	1.40 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
	1.66 dB ($8 \text{ GHz} \leq f < 22 \text{ GHz}$)
Uncertainty for radio frequency (RBW < 20 kHz)	3×10^{-8}
Temperature	0.4 °C
Humidity	2%
Uncertainty for Radiation Emission test (30 MHz - 1 GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1 GHz - 18 GHz)	4.10 dB (1-6 GHz)
	4.40 dB (6 GHz - 18 GHz)
Uncertainty for Power line conduction emission test	3.32 dB (150 kHz - 30 MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

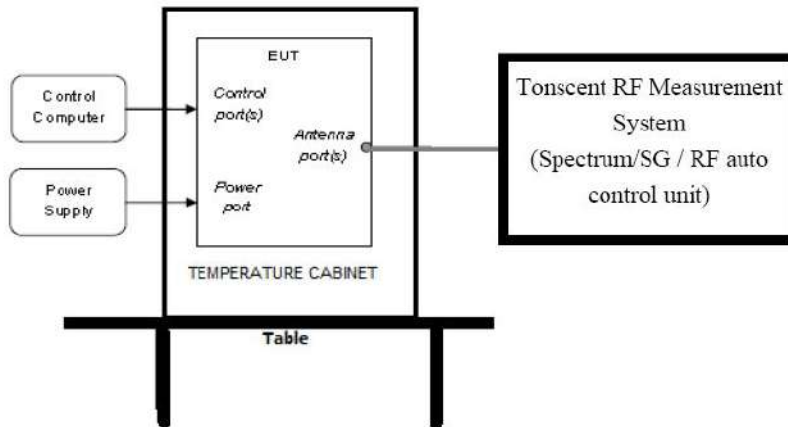
3. Equipment Used During Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☐ RF Connected Test (Tonscend RF Measurement System 1#)					
Spectrum analyzer	R&S	FSU26	200071	Sep. 02, 2021	1 Year
Wideband Radio Communication tester	R&S	CMW500	120259	Sep. 02, 2021	1 Year
Vector Signal Generator	Agilent	E8267D	US49060192	Sep. 18, 2021	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180737	Jun. 01, 2021	1 Year
RF Control Unit	Tonsend	JS0806-2	158060010	Jun. 01, 2021	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	Jun. 01, 2021	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.6.77.0518	N/A	N/A
☒ RF Connected Test (Tonscend RF Measurement System 2#)					
Signal analyzer	R&S	FSQ26	101272	Jun. 01, 2021	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	Jun. 01, 2021	1 Year
Vector Signal Generator	Agilent	N5182A	MY19060405	Jun. 01, 2021	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180912	Jun. 01, 2021	1 Year
RF Control Unit	Tonsend	JS0806-2	DDT-ZC01449	Jun. 01, 2021	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	Jun. 01, 2021	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.6.77.0518	N/A	N/A
☒ Radiation 3#chamber					
EMI Test Receiver	R&S	ESU	100472	Jun. 01, 2021	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jun. 01, 2021	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Nov. 18, 2020	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	01429	Aug. 07, 2021	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA9120	02108	Jul. 17, 2021	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	May 08, 2021	1 Year
Pre-amplifier	COM-POWER	PAM-118A	18040084	Sep. 02, 2021	1 Year
Pre-amplifier	COM-POWER	PAM-840A	461369	Mar. 15, 2021	1 Year
Test software	Audix	E3	V 6.1.1.1	N/A	N/A
☒ Power Line Conducted Emissions Test 1#					
Test Receiver	R&S	ESCI	100551	Sep. 02, 2021	1 Year
LISN 1	R&S	ENV216	101109	Sep. 02, 2021	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 02, 2021	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 02, 2021	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Sep. 02, 2021	1 Year
LISN 3	SCHWARZBECK	NSLK 8163	00017	Sep. 02, 2021	1 Year

Test software	Audix	E3	V 6.11111b	N/A	N/A
☐ Power Line Conducted Emissions Test 2#					
Test Receiver	R&S	ESCI	101028	Sep. 02, 2021	1 Year
LISN 1	R&S	ENV216	101170	Sep. 02, 2021	1 Year
Pulse Limiter	R&S	KH43101	431011801568-1 2#	Jun. 01, 2021	1 Year
CE Cable 2	HUBSER	RG214-5	N/A	Jun. 01, 2021	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

4 Duty Cycle

4.1. Block diagram of test setup



4.2. Limits

None: for reporting purposes only.

4.3. Test procedure

Set the Centre frequency of the spectrum analyzer to the transmitting frequency;

Set the span = 0, RBW = 10 MHz, VBW = 10 MHz, Sweep time = 100 ms;

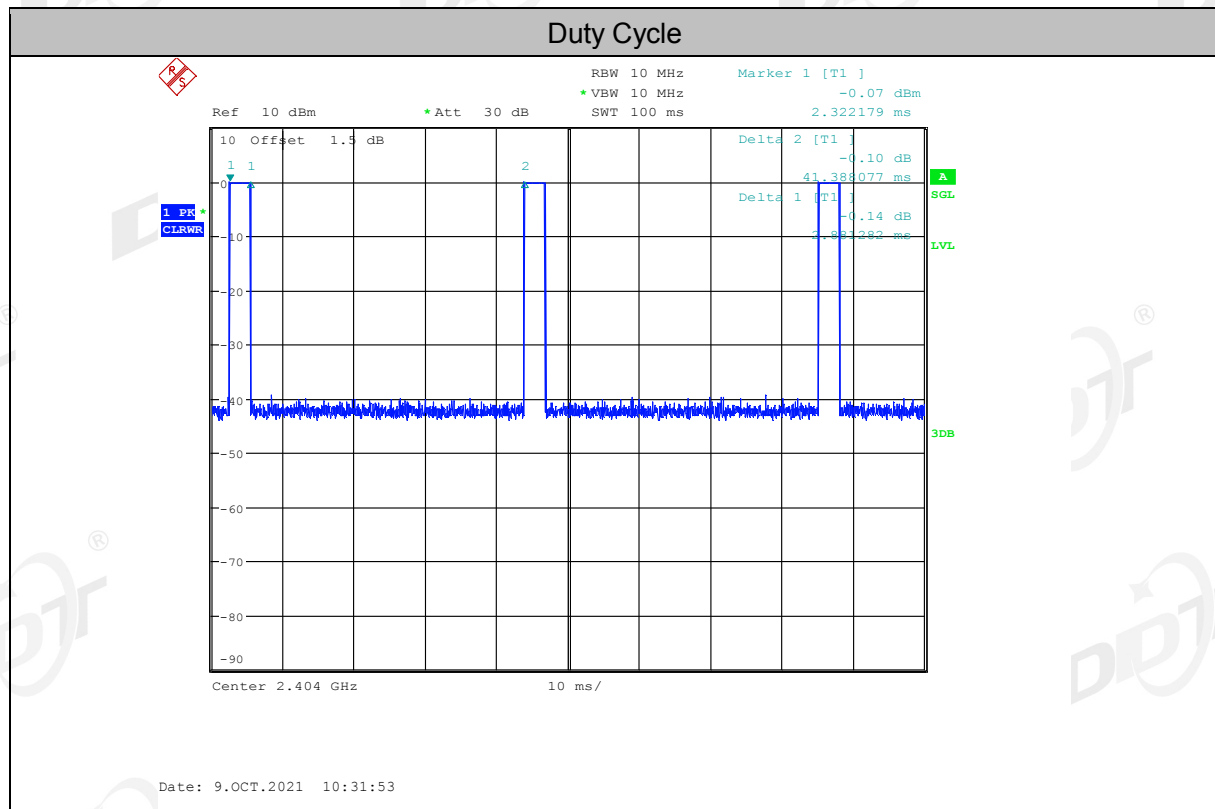
Trace mode = Single hold.

4.4. Test result

Test Channel [MHz]	Duty Cycle [%]	20log(Δ) Factor[dB]
2404	8.64	-21.27

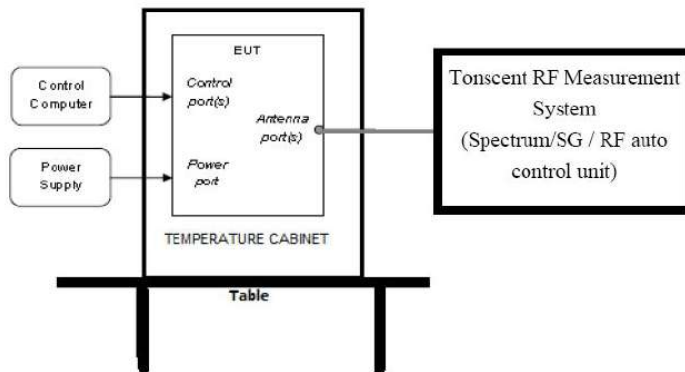
Average value:	
Calculate Formula:	Average value = Peak value + PDCF
	PDCF = 20 log(Duty cycle)
	Duty cycle = $T_{on\ time} / T_{period}$
Test data:	$T_{on\ time} = (2.88 \times 3) \text{ ms} = 8.64 \text{ ms}$
	$T_{period} = 100 \text{ ms}$
	PDCF = 20 log(Duty cycle) = 20 log(8.64/100) = -21.27 dB

4.5. Original test data



5. 20 dB Bandwidth and 99% Bandwidth

5.1. Block diagram of test setup



5.2. Limits

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

5.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Set the spectrum analyzer as follows:

RBW:	30 kHz
VBW:	100 kHz
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

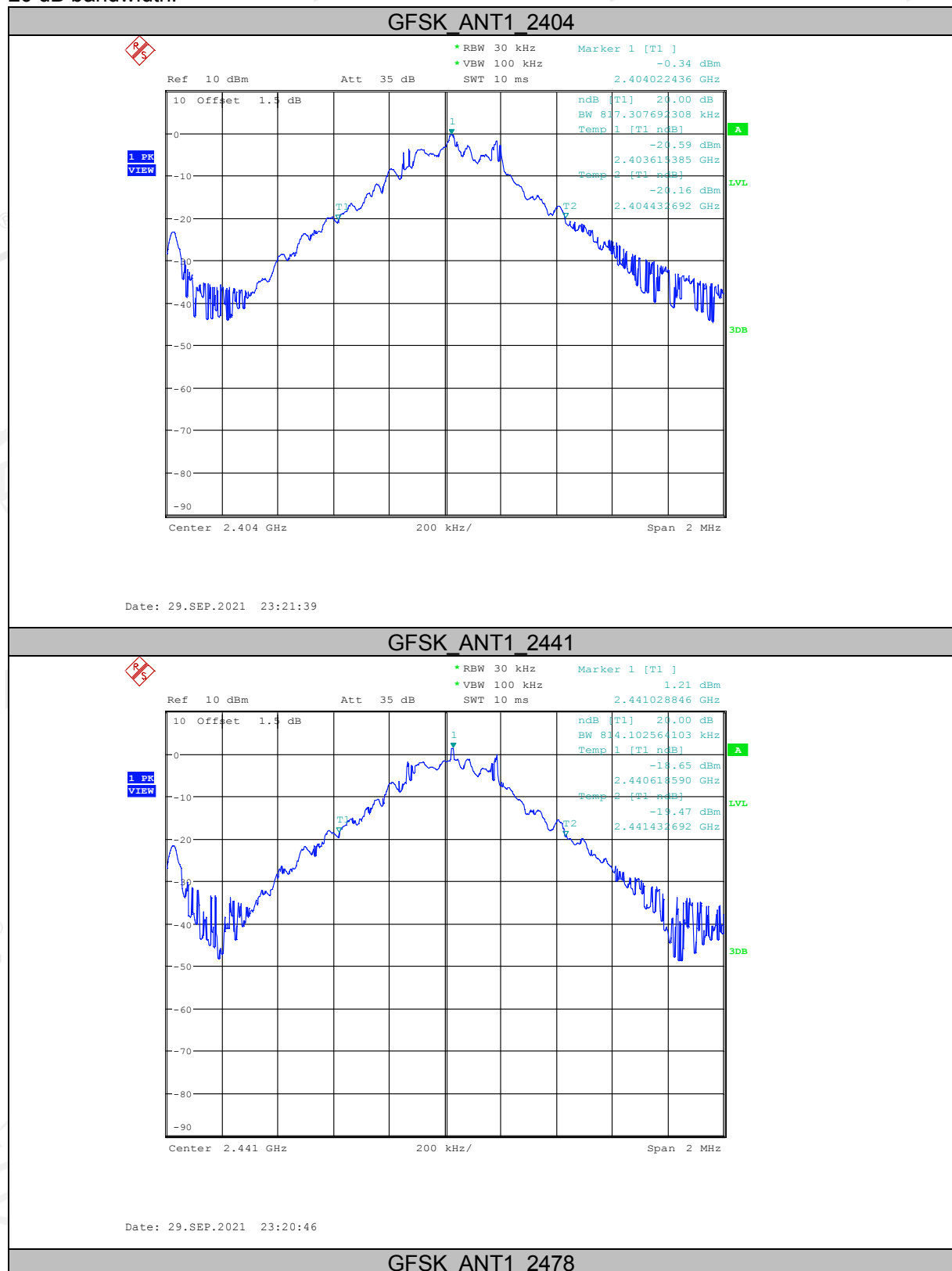
(3) Allow the trace to stabilize, measure the 20 dB and 99% bandwidth of signal.

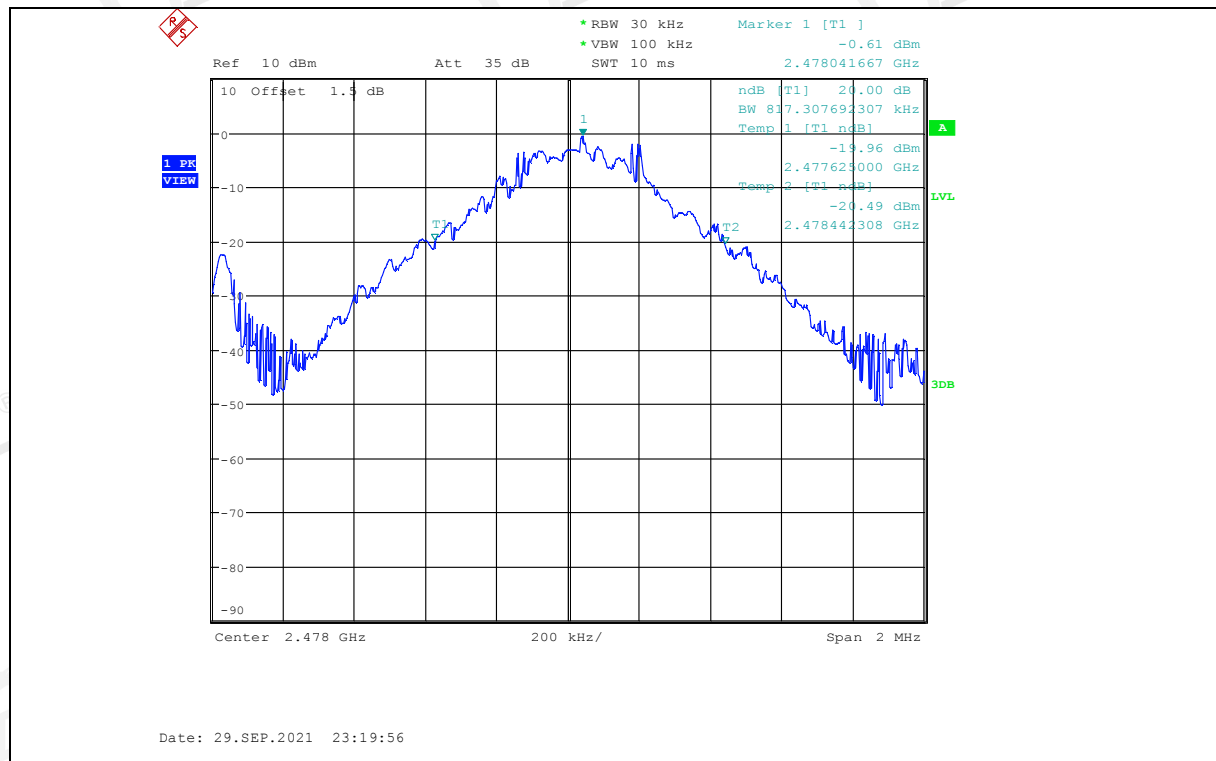
5.4. Test result

Test Mode	Freq. (MHz)	99% bandwidth Result (MHz)	20 dB bandwidth Result (MHz)	Verdict
GFSK	2404	0.894	0.817	Pass
	2441	0.875	0.814	Pass
	2478	0.872	0.817	Pass

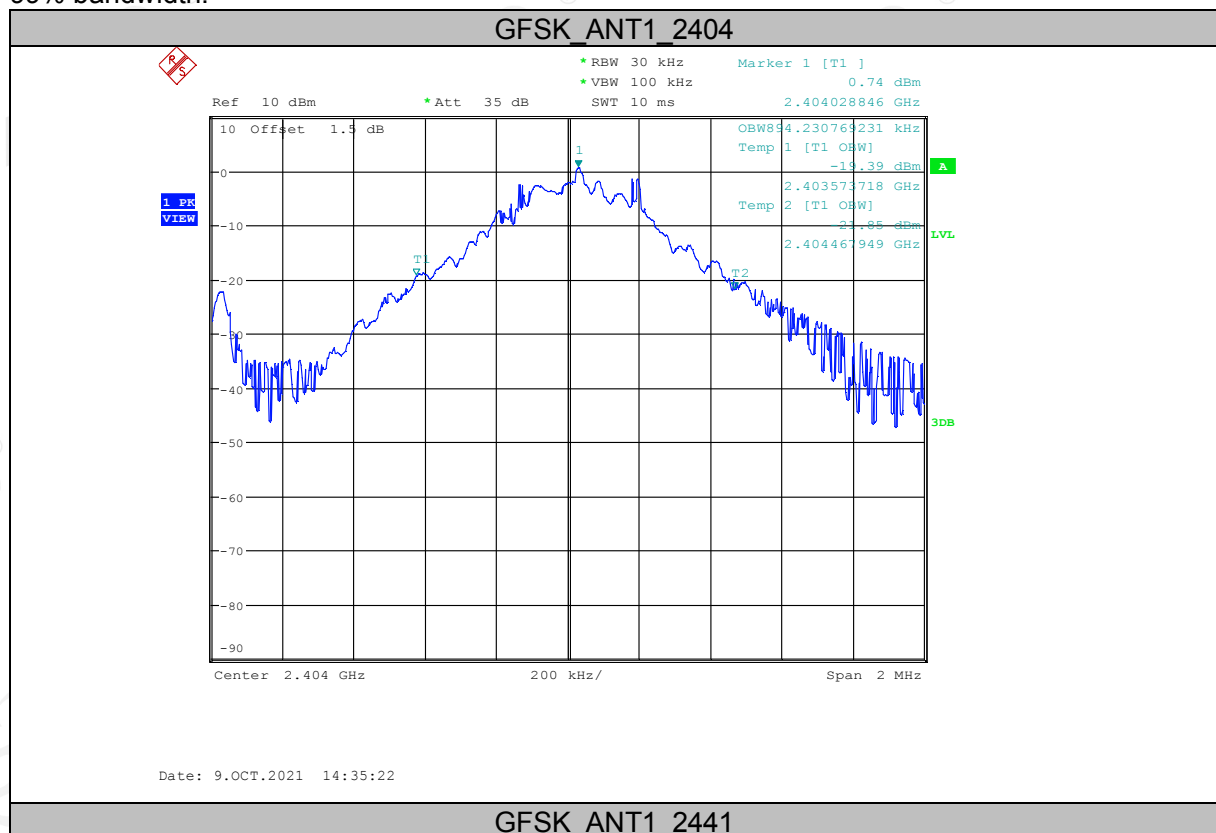
5.5. Original test data

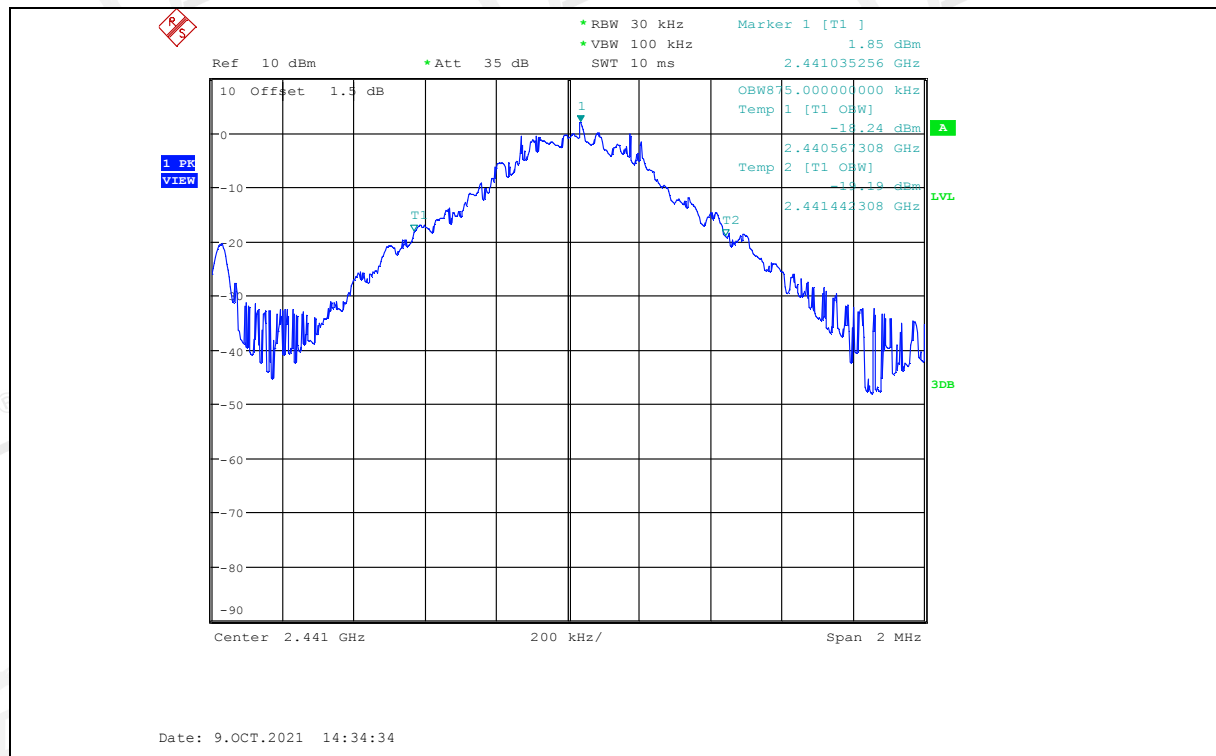
20 dB bandwidth:



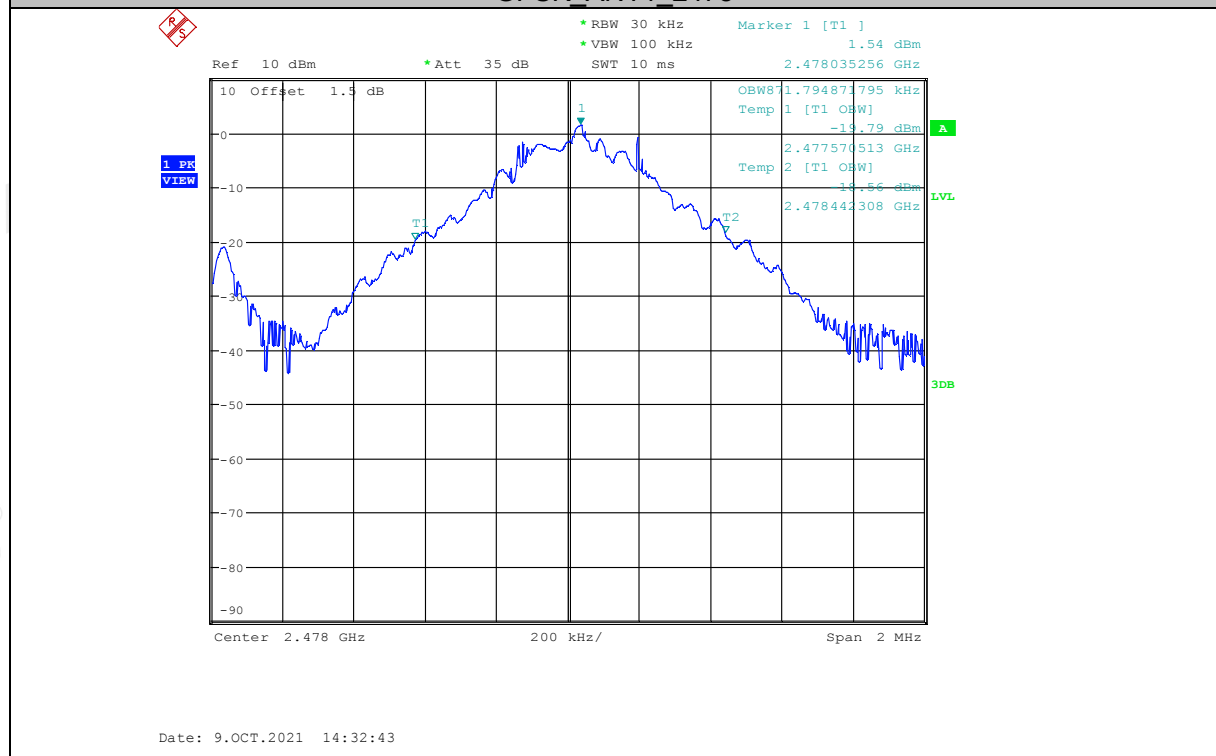


99% bandwidth:





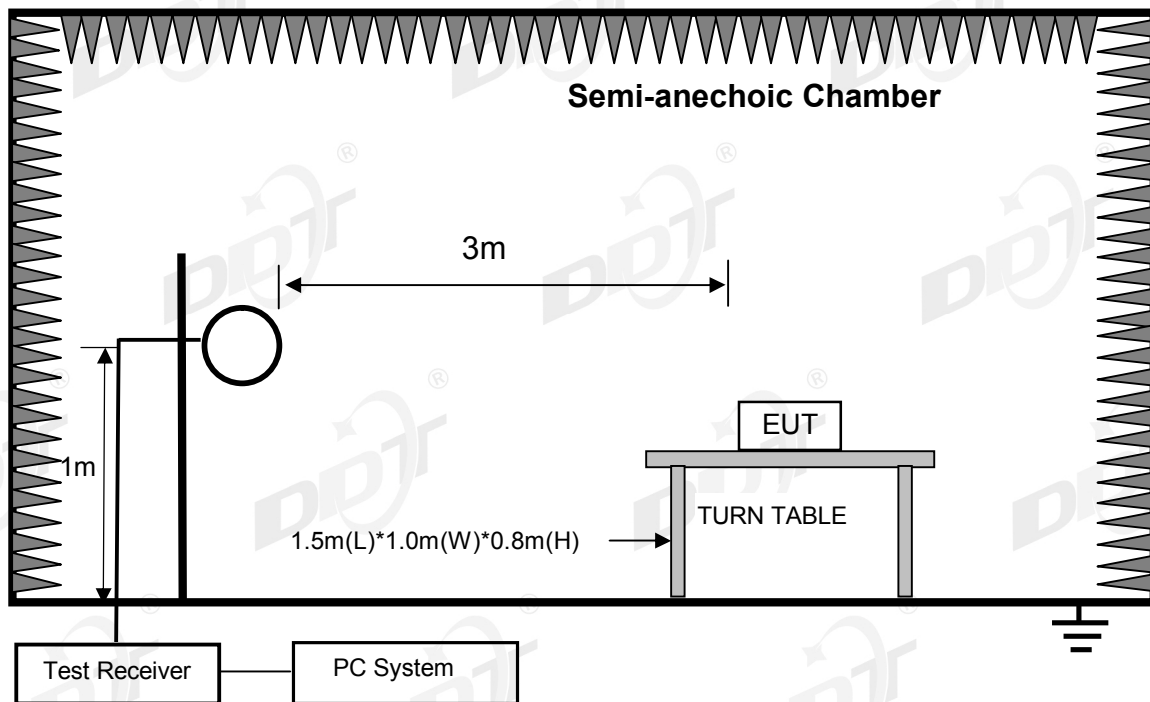
GFSK ANT1 2478



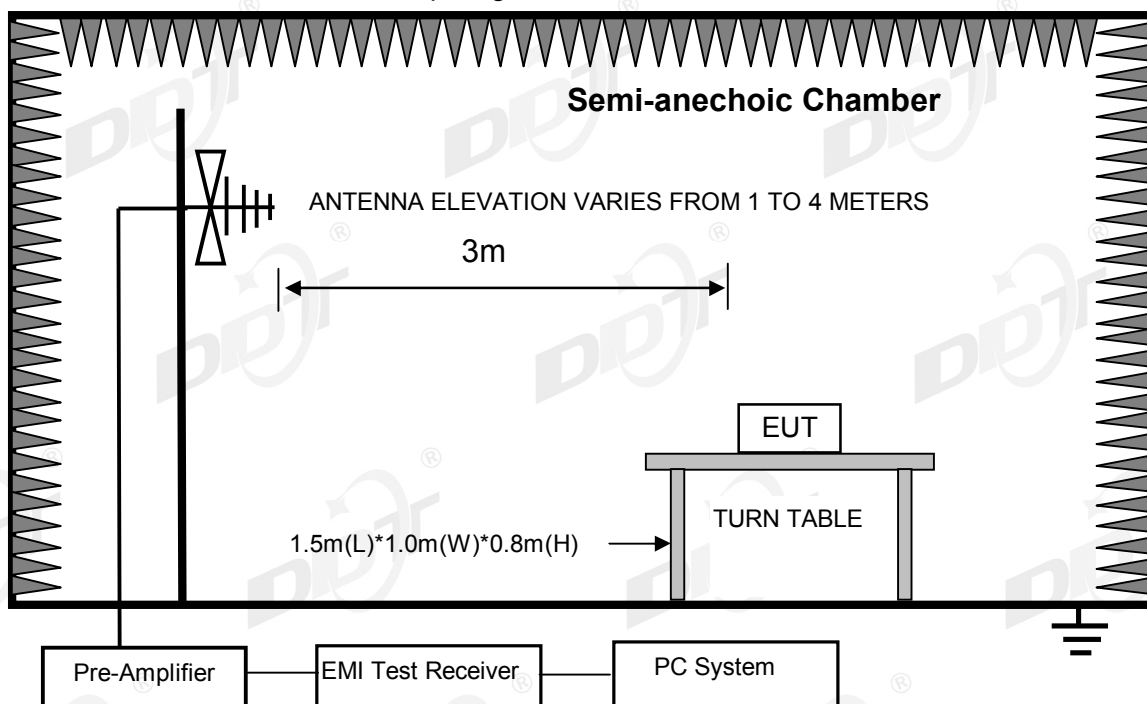
6. Radiated Emission

6.1. Block diagram of test setup

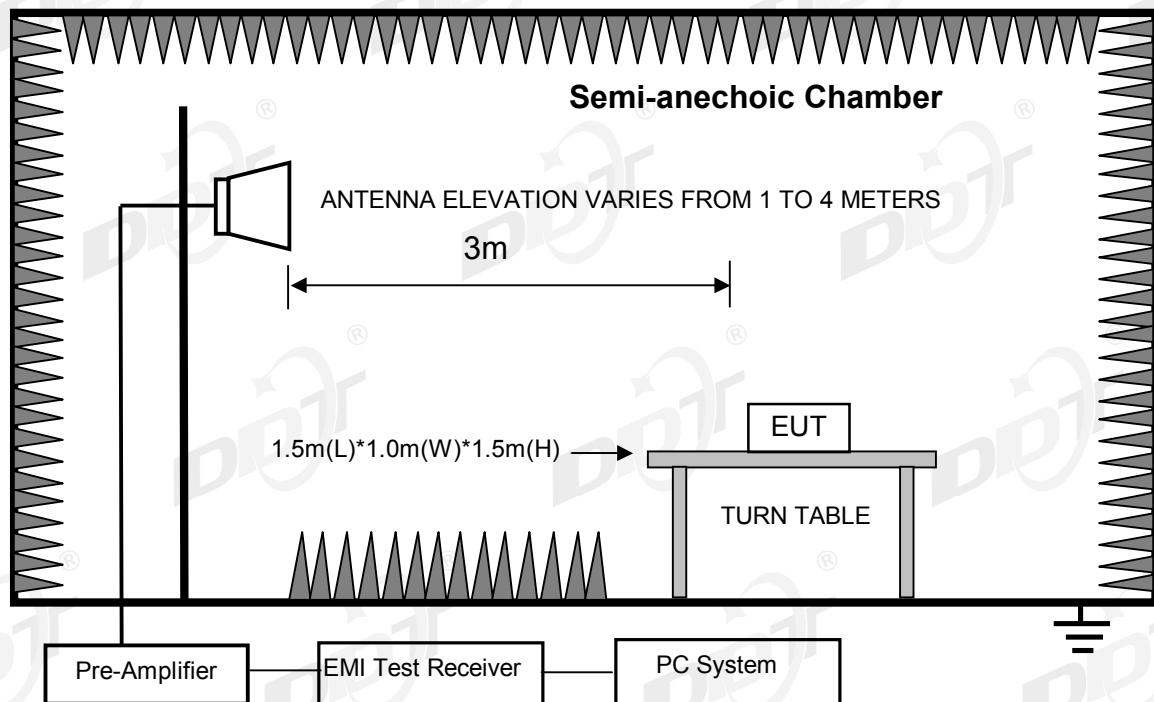
In 3 m Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:



In 3 m Anechoic Chamber, test setup diagram for 30 MHz - 1 GHz:



In 3 m Anechoic Chamber, test setup diagram for frequency above 1 GHz:



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

6.2. Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
0.009 ~ 0.490	300	$2400/F(\text{kHz})$	$67.6-20\log(F)$
0.490 ~ 1.705	30	$24000/F(\text{kHz})$	$87.6-20\log(F)$
1.705 ~ 30.0	30	30	29.54
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 MHz	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	
Field Strength of Fundamental emission for 2.4 GHz - 2.4835 GHz	3	94.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average) 114.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak)	
Field Strength of Harmonics	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

Remark:

- (1) Emission level $\text{dB}\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
- (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.

(4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz, radiated emission limits in these three bands are based on measurements employing an average detector.

6.3. Test procedure

- (1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.
- (2) Setup EUT and assistant system according clause 2.3
- (3) Test antenna was located 3 m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.
 - (a) Change work frequency or channel of device if practicable.
 - (b) Change modulation type of device if practicable.
 - (c) Change power supply range from 85% to 115% of the rated supply voltage
 - (d) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions
- (4) Spectrum frequency from 9 kHz to 25 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9 kHz to 30 MHz and 18 GHz to 25 GHz, so below final test was performed with frequency range from 30 MHz to 18 GHz.
- (5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.
- (6) For emissions from 30 MHz to 1 GHz, Quasi-Peak values were measured with EMI Receiver and the bandwidth of Receiver is 120 kHz.
- (7) For emissions above 1 GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3 MHz for Peak measure; according ANSI C63.10:2013 clause 4.1.4.2.2 procedure for average measure.
- (8) For fundamental frequency test, set spectrum analyzer's RBW = 3 MHz, VBW = 10 MHz. Peak detector for PK, according ANSI C63.10:2013 clause 4.1.4.2.2 procedure for average measure.

6.4. Test result

Pass. (See below detailed test result)

All the emissions except fundamental emission from 9 kHz to 25 GHz were comply with 15.209 & RSS-GEN limits.

Note1: According exploratory test, the emission levels are 20 dB below the limit detected from 9 kHz to 30 MHz and 18 GHz to 25 GHz, so the final test was performed with frequency range from 30 MHz to 18 GHz and recorded in below.

Note2: For emissions below 1 GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1 GHz, the final test was only performed with EUT working in GFSK, Tx 2478 MHz mode.

Note3: For emissions above 1 GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

Field Strength of the Fundamental Signal

Frequency (MHz)	PK Level (dBuV/m)	PK Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2404	96.56	114.00	-17.44	Horizontal
2404	92.34	114.00	-21.66	Vertical
2441	99.90	114.00	-14.10	Horizontal
2441	95.17	114.00	-18.83	Vertical
2478	102.20	114.00	-11.80	Horizontal
2478	96.53	114.00	-17.47	Vertical

Frequency (MHz)	AV Level (dBuV/m)	AV Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2404	75.29	94.00	-18.71	Horizontal
2404	71.07	94.00	-22.93	Vertical
2441	78.63	94.00	-15.37	Horizontal
2441	73.90	94.00	-20.10	Vertical
2478	80.93	94.00	-13.07	Horizontal
2478	75.26	94.00	-18.74	Vertical

Note: AV Level = PK Level + PDCF, PDCF = -21.27 dB

Radiated Emission test (below 1 GHz)

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\2021 report data\Q21060724-2E

GG-01W\Dongle\FCC BELOW 1G\FCC BELOW 1G_00001.EMI

Test Date : 2021-08-26

Tested By : Sanvin Zheng

EUT : WIRELESS GAMING HEADSET

Model Number : GG-01WT

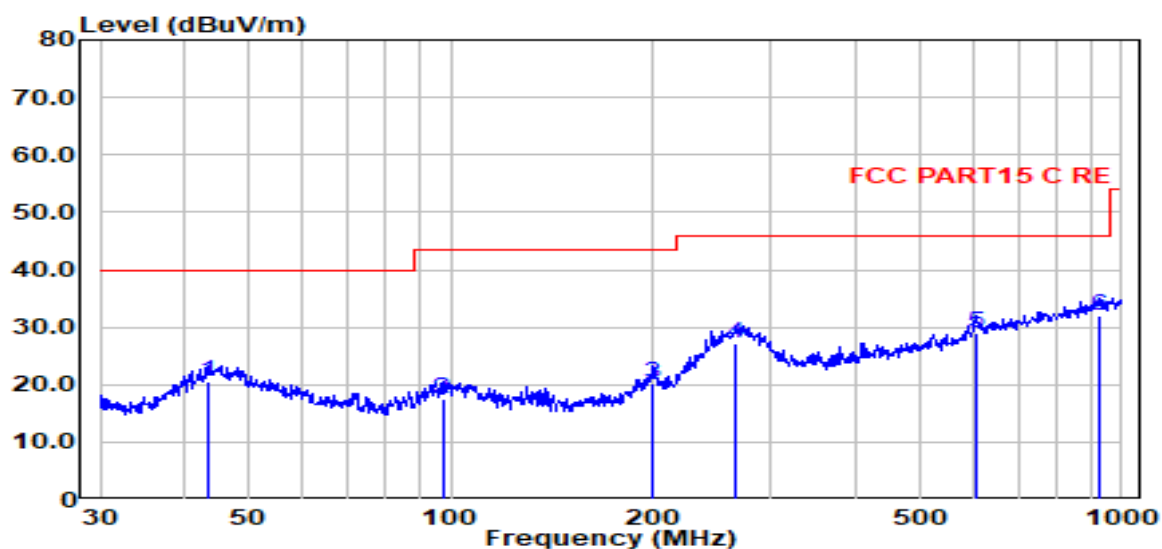
Power Supply : DC 5V

Test Mode : Tx mode

Condition : Temp:24.7°,Humi:55%,Press:100.0kPa

Antenna/Distance : VLUB 9163 3#/3m/VERTICAL

Memo :



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	43.66	1.93	14.80	3.66	20.38	40.00	-19.62	QP	VERTICAL
2	97.11	2.30	11.41	3.88	17.58	43.50	-25.92	QP	VERTICAL
3	199.29	3.80	11.97	4.35	20.12	43.50	-23.38	QP	VERTICAL
4	265.68	9.99	12.60	4.58	27.17	46.00	-18.83	QP	VERTICAL
5	607.79	4.06	19.20	5.63	28.89	46.00	-17.11	QP	VERTICAL
6	929.01	3.25	22.40	6.45	32.10	46.00	-13.90	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\2021 report data\Q21060724-2E

GG-01W\Dongle\FCC BELOW 1G\FCC BELOW 1G_00002.EMI

Test Date : 2021-08-26

Tested By : Sanvin Zheng

EUT : WIRELESS GAMING HEADSET

Model Number : GG-01WT

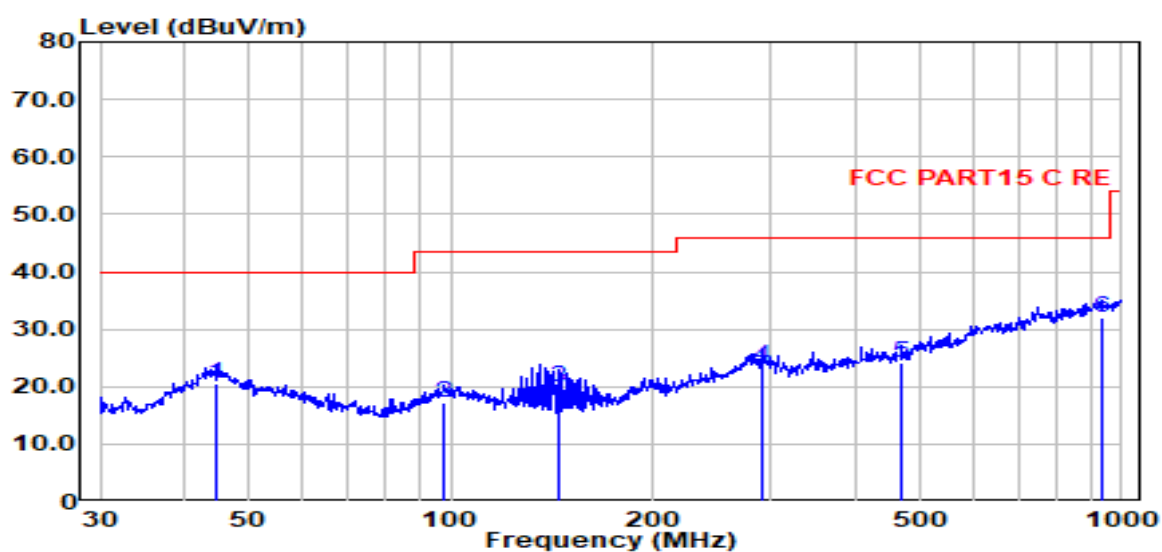
Power Supply : DC 5V

Test Mode : Tx mode

Condition : Temp:24.7°,Humi:55%,Press:100.0kPa

Antenna/Distance : VLUB 9163 3#/3m/HORIZONTAL

Memo :



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	44.59	1.72	15.06	3.66	20.44	40.00	-19.56	QP	HORIZONTAL
2	97.80	1.85	11.48	3.88	17.20	43.50	-26.30	QP	HORIZONTAL
3	144.33	7.98	7.80	4.04	19.82	43.50	-23.68	QP	HORIZONTAL
4	290.02	5.86	13.00	4.67	23.53	46.00	-22.47	QP	HORIZONTAL
5	468.88	2.71	16.08	5.26	24.05	46.00	-21.95	QP	HORIZONTAL
6	932.27	3.18	22.35	6.46	32.00	46.00	-14.00	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

Radiated Emission test (above 1 GHz)

Freq. (MHz)	Read level (dBμV)	Antenn a Factor (dB/m)	PRM Facto r(dB)	Cable Loss (dB)	Result Level (dBμV/ m)	Limit (dBμV/ m)	Margin (dB)	Detector type	Polarization
Tx mode 2404 MHz									
4893.00	49.28	31.54	2.78	40.38	43.23	74.00	-30.77	Peak	HORIZONTAL
7477.00	47.39	36.84	3.48	39.75	47.95	74.00	-26.05	Peak	HORIZONTAL
10639.00	46.67	39.93	4.03	40.34	50.28	74.00	-23.72	Peak	HORIZONTAL
12492.00	46.19	38.71	4.26	40.25	48.91	74.00	-25.09	Peak	HORIZONTAL
14243.00	45.15	41.34	4.58	39.68	51.39	74.00	-22.61	Peak	HORIZONTAL
17949.00	34.12	48.51	5.07	40.67	47.03	54.00	-6.97	Average	HORIZONTAL
17949.00	43.09	48.51	5.07	40.67	56.00	74.00	-18.00	Peak	HORIZONTAL
4995.00	48.01	31.79	2.81	40.40	42.21	74.00	-31.79	Peak	VERTICAL
7766.00	47.34	37.06	3.50	39.78	48.13	74.00	-25.87	Peak	VERTICAL
10401.00	47.01	39.68	3.98	40.44	50.23	74.00	-23.77	Peak	VERTICAL
12390.00	46.60	38.83	4.27	40.22	49.49	74.00	-24.51	Peak	VERTICAL
14702.00	45.62	41.32	4.66	39.63	51.97	74.00	-22.03	Peak	VERTICAL
17932.00	34.32	48.28	5.07	40.66	47.00	54.00	-7.00	Average	VERTICAL
17932.00	43.41	48.28	5.07	40.66	56.09	74.00	-17.91	Peak	VERTICAL
Tx mode 2441 MHz									
4859.00	48.00	31.46	2.78	40.37	41.87	74.00	-32.13	Peak	HORIZONTAL
7494.00	46.91	36.88	3.48	39.75	47.52	74.00	-26.48	Peak	HORIZONTAL
10401.00	46.84	39.68	3.98	40.44	50.07	74.00	-23.93	Peak	HORIZONTAL
12407.00	48.00	38.81	4.27	40.22	50.86	74.00	-23.14	Peak	HORIZONTAL
14396.00	45.94	41.61	4.60	39.66	52.49	74.00	-21.51	Peak	HORIZONTAL
17966.00	34.42	48.74	5.08	40.68	47.56	54.00	-6.44	Average	HORIZONTAL
17966.00	42.36	48.74	5.08	40.68	55.50	74.00	-18.50	Peak	HORIZONTAL
4995.00	48.09	31.79	2.81	40.40	42.29	74.00	-31.71	Peak	VERTICAL
7137.00	47.81	35.88	3.47	39.71	47.46	74.00	-26.54	Peak	VERTICAL
9687.00	46.32	38.74	3.73	40.38	48.41	74.00	-25.59	Peak	VERTICAL
11812.00	46.67	39.53	4.24	40.12	50.32	74.00	-23.68	Peak	VERTICAL
14481.00	44.76	41.77	4.61	39.65	51.48	74.00	-22.52	Peak	VERTICAL
17949.00	34.52	48.51	5.07	40.67	47.43	54.00	-6.57	Average	VERTICAL
17949.00	42.21	48.51	5.07	40.67	55.12	74.00	-18.88	Peak	VERTICAL
Tx mode 2478 MHz									
4774.00	48.58	31.26	2.76	40.35	42.23	74.00	-31.77	Peak	HORIZONTAL
7800.00	48.27	37.08	3.50	39.78	49.08	74.00	-24.92	Peak	HORIZONTAL
9466.00	46.59	38.64	3.69	40.23	48.69	74.00	-25.31	Peak	HORIZONTAL
11608.00	46.19	39.77	4.17	40.14	49.99	74.00	-24.01	Peak	HORIZONTAL
14447.00	44.75	41.70	4.60	39.66	51.40	74.00	-22.60	Peak	HORIZONTAL
17966.00	34.33	48.74	5.08	40.68	47.47	54.00	-6.53	Average	HORIZONTAL
17966.00	42.62	48.74	5.08	40.68	55.76	74.00	-18.24	Peak	HORIZONTAL
4876.00	48.29	31.50	2.78	40.38	42.20	74.00	-31.80	Peak	VERTICAL
7409.00	48.24	36.65	3.48	39.74	48.62	74.00	-25.38	Peak	VERTICAL
10673.00	45.90	39.93	4.03	40.33	49.53	74.00	-24.47	Peak	VERTICAL
12713.00	46.40	38.79	4.33	40.31	49.20	74.00	-24.80	Peak	VERTICAL
14600.00	45.14	41.56	4.63	39.64	51.70	74.00	-22.30	Peak	VERTICAL

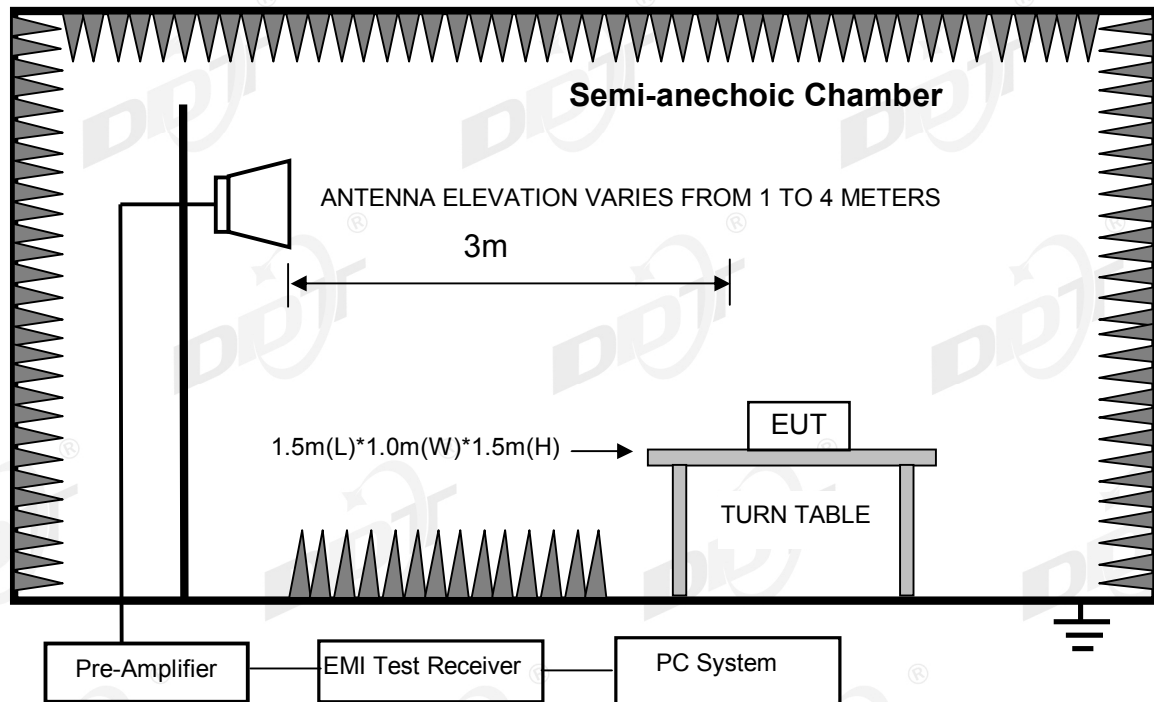
17966.00	34.81	48.74	5.08	40.68	47.95	54.00	-6.05	Average	VERTICAL
17966.00	42.13	48.74	5.08	40.68	55.27	74.00	-18.73	Peak	VERTICAL
Result: Pass									

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. For emissions above 1GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

7. Band Edge Compliance

7.1. Block diagram of test setup



7.2. Limit

All the lower and upper band-edges emissions appearing within 2310 MHz to 2390 MHz and 2483.5 MHz to 2500 MHz restricted frequency bands shall not exceed the limits shown in 15.209 & RSS-GEN, all the other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209 & RSS-GEN, whichever is the lesser attenuation.

7.3. Test procedure

Same with clause 6.3 except change investigated frequency range from 2310 MHz to 2410 MHz and 2475 MHz to 2500 MHz.

Remark: All restriction band have been tested, and only the worst case is shown in report.

7.4. Test result

Pass. (See below detailed test result)

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\2021 report data\Q21060724-2E

GG-01W\Dongle\FCC ABOVE 1G\FCC ABOVE 1G_00046.EMI

Test Date : 2021-09-29

Tested By : Sanvin Zheng

EUT : WIRELESS GAMING HEADSET

Model Number : GG-01WT

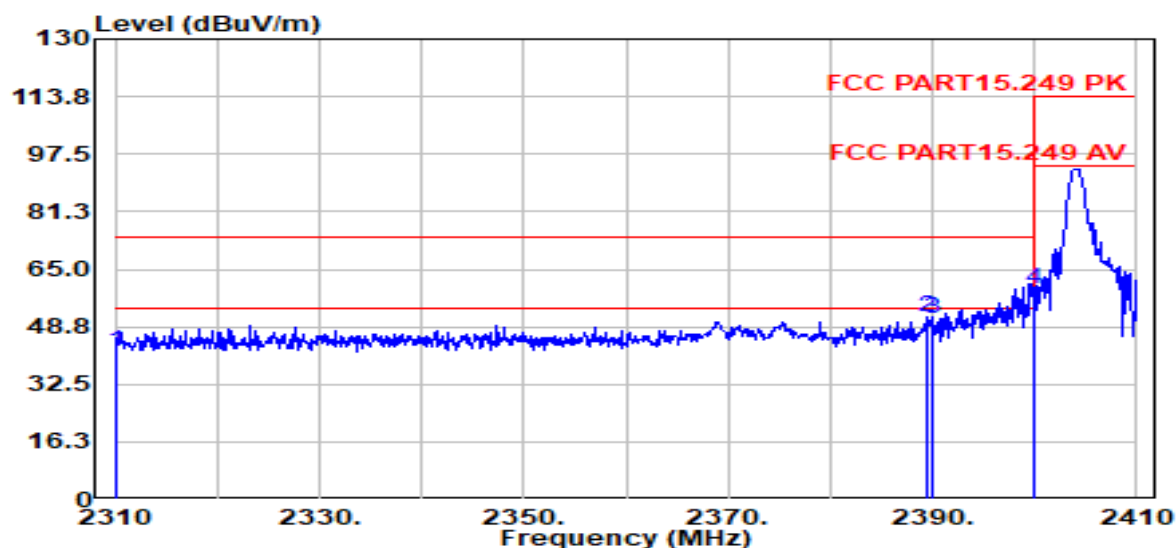
Power Supply : DC 5V

Test Mode : Tx mode

Condition : Temp:24.7°,Humi:55%,Press:100.0kPa

Antenna/Distance : 2020 BBHA 9120D/3m/VERTICAL

Memo : 2404



Item (Mark)	Freq. (MHz)	Read Level (dBUV)	Antenna Factor (dB/m)	Cable Loss dB	PRM Factor (dB)	Result Level (dBUV/m)	Limit Line (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	2310.00	49.11	27.33	4.70	39.56	41.59	74.00	-32.41	Peak	VERTICAL
2	2389.40	58.52	27.57	4.80	39.59	51.29	74.00	-22.71	Peak	VERTICAL
3	2390.00	58.36	27.57	4.80	39.60	51.13	74.00	-22.87	Peak	VERTICAL
4	2400.00	66.63	27.60	4.81	39.60	59.44	74.00	-14.56	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

4. AV Level = PK Level + PDCF, PDCF = -21.27 dB < -20 dB, So if Peak Result complies with Peak limit, AV Result is deemed to comply with AV limit.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\2021 report data\Q21060724-2E

GG-01W\Dongle\FCC ABOVE 1G\FCC ABOVE 1G_00047.EMI

Test Date : 2021-09-29

Tested By : Sanvin Zheng

EUT : WIRELESS GAMING HEADSET

Model Number : GG-01WT

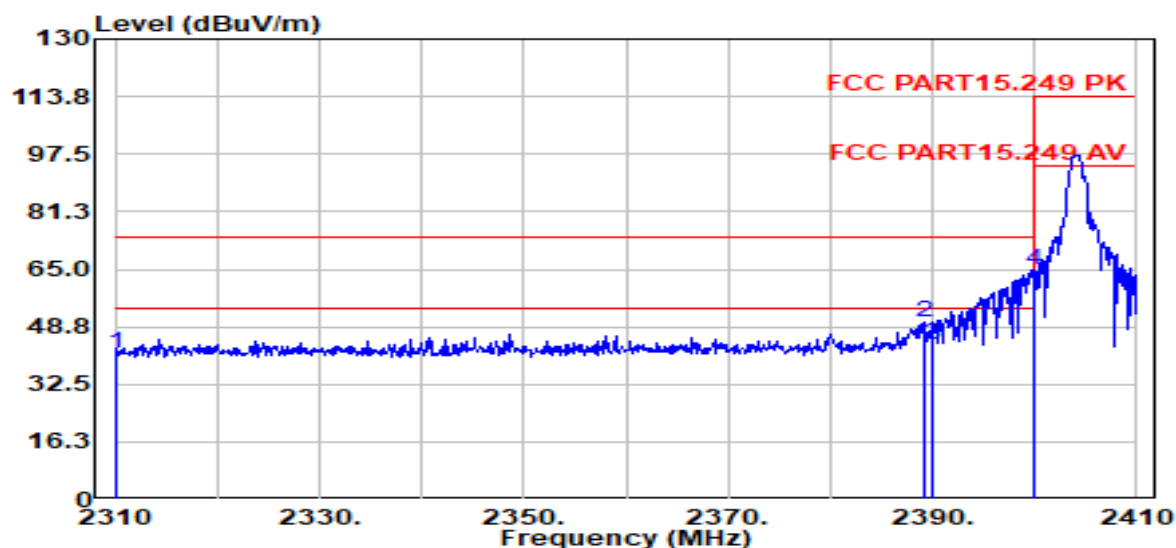
Power Supply : DC 5V

Test Mode : Tx mode

Condition : Temp:24.7°,Humi:55%,Press:100.0kPa

Antenna/Distance : 2020 BBHA
9120D/3m/HORIZONTAL

Memo : 2404



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	PRM Factor (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2310.00	48.84	27.33	4.70	39.56	41.31	74.00	-32.69	Peak	HORIZONTAL
2	2389.20	57.12	27.57	4.79	39.59	49.89	74.00	-24.11	Peak	HORIZONTAL
3	2390.00	50.91	27.57	4.80	39.60	43.68	74.00	-30.32	Peak	HORIZONTAL
4	2400.00	72.18	27.60	4.81	39.60	64.99	74.00	-9.01	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

4. AV Level = PK Level + PDCF, PDCF = -21.27 dB < -20 dB, So if Peak Result complies with Peak limit, AV Result is deemed to comply with AV limit.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\2021 report data\Q21060724-2E

GG-01W\Dongle\FCC ABOVE 1G\FCC ABOVE 1G_00048.EMI

Test Date : 2021-09-29

Tested By : Sanvin Zheng

EUT : WIRELESS GAMING HEADSET

Model Number : GG-01WT

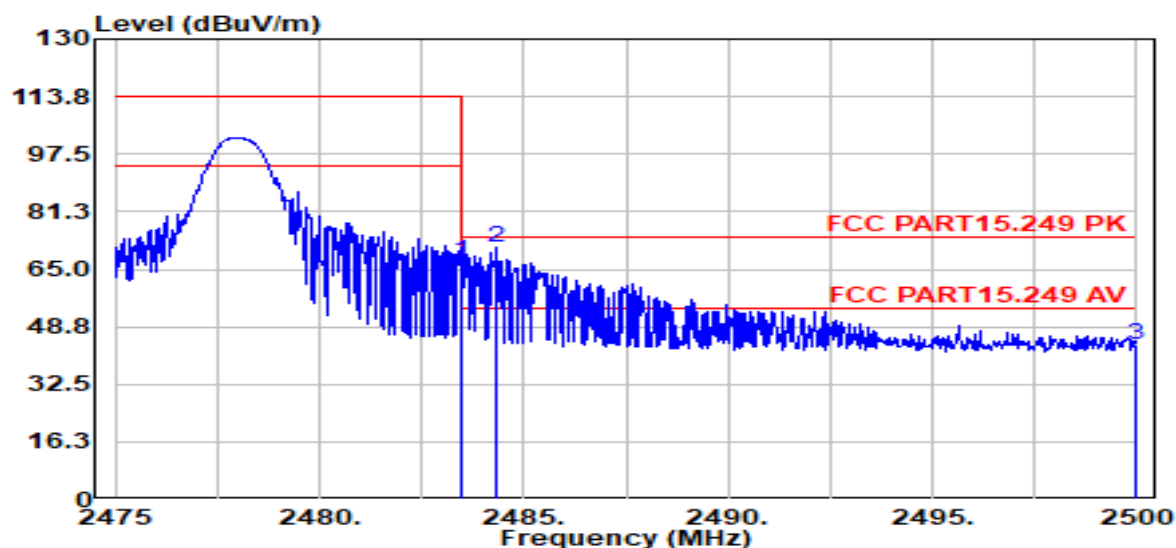
Power Supply : DC 5V

Test Mode : Tx mode

Condition : Temp:24.7°,Humi:55%,Press:100.0kPa

Antenna/Distance : 2020 BBHA
9120D/3m/HORIZONTAL

Memo : 2478



Item (Mark)	Freq. (MHz)	Read Level (dBUV)	Antenna Factor (dB/m)	Cable Loss dB	PRM Factor (dB)	Result Level (dBUV/m)	Limit Line (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	74.31	27.85	4.91	39.64	67.43	74.00	-6.57	Peak	HORIZONTAL
2	2484.33	77.84	27.85	4.91	39.64	70.96	74.00	-3.04	Peak	HORIZONTAL
3	2500.00	50.72	27.90	4.93	39.65	43.90	74.00	-30.10	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

4. AV Level = PK Level + PDCF, PDCF = -21.27 dB < -20 dB, So if Peak Result complies with Peak limit, AV Result is deemed to comply with AV limit.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\2021 report data\Q21060724-2E

GG-01W\Dongle\FCC ABOVE 1G\FCC ABOVE 1G_00049.EMI

Test Date : 2021-09-29

Tested By : Sanvin Zheng

EUT : WIRELESS GAMING HEADSET

Model Number : GG-01WT

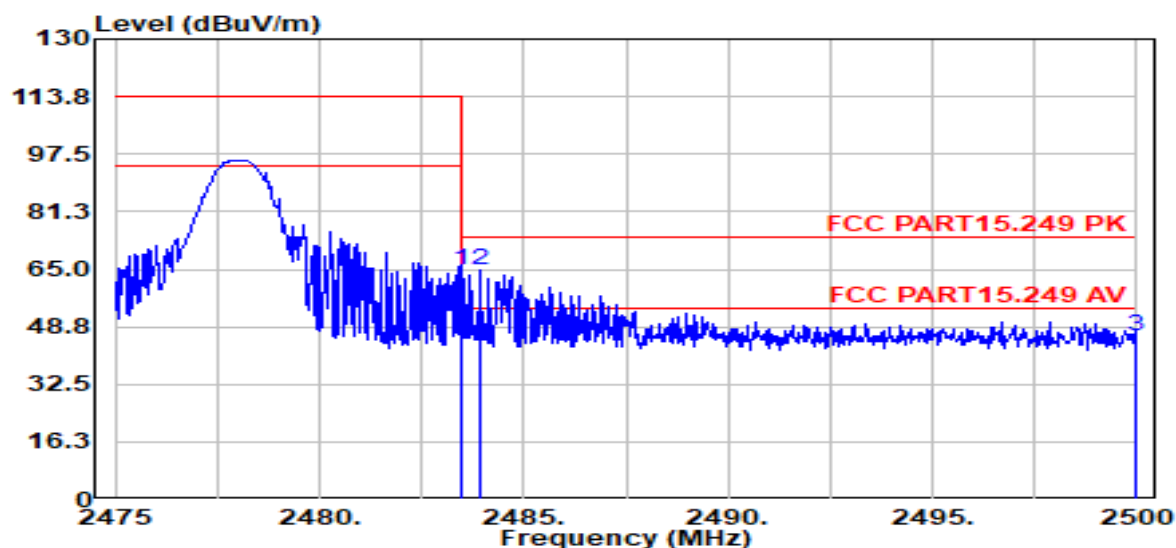
Power Supply : DC 5V

Test Mode : Tx mode

Condition : Temp:24.7°,Humi:55%,Press:100.0kPa

Antenna/Distance : 2020 BBHA 9120D/3m/VERTICAL

Memo : 2478



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss dB	PRM Factor (dB)	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	71.84	27.85	4.91	39.64	64.96	74.00	-9.04	Peak	VERTICAL
2	2483.93	71.85	27.85	4.91	39.64	64.97	74.00	-9.03	Peak	VERTICAL
3	2500.00	52.92	27.90	4.93	39.65	46.10	74.00	-27.90	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

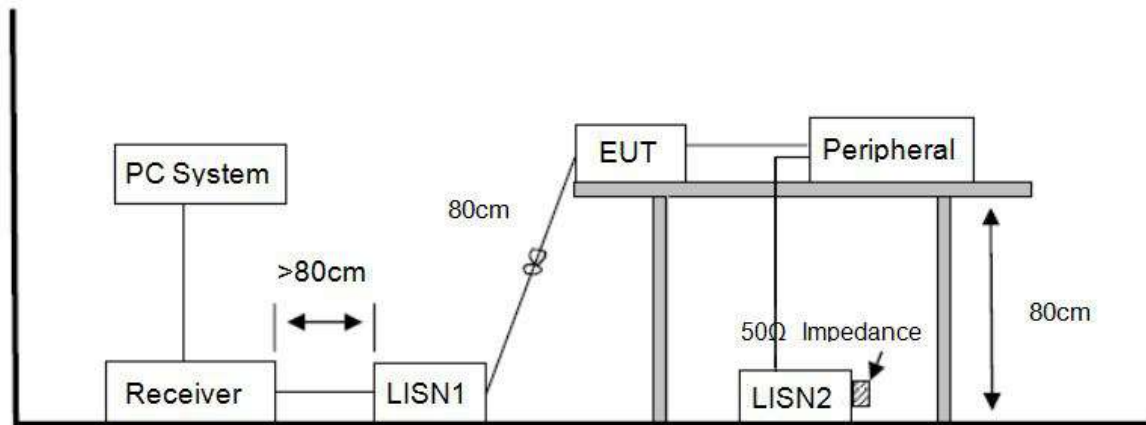
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

4. AV Level = PK Level + PDCF, PDCF = -21.27 dB < -20 dB, So if Peak Result complies with Peak limit,

AV Result is deemed to comply with AV limit.

8. Power Line Conducted Emission

8.1. Block diagram of test setup



8.2. Power line conducted emission limits

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150 kHz ~ 500 kHz	66 ~ 56*	56 ~ 46*
500 kHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

8.3. Test procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 7.1 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level. The EUT configuration and worse cable configuration of the above highest emission levels were

recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, 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.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

8.4. Test result

Pass. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.

Note2: “----” means Peak detection; “----” means Average detection.

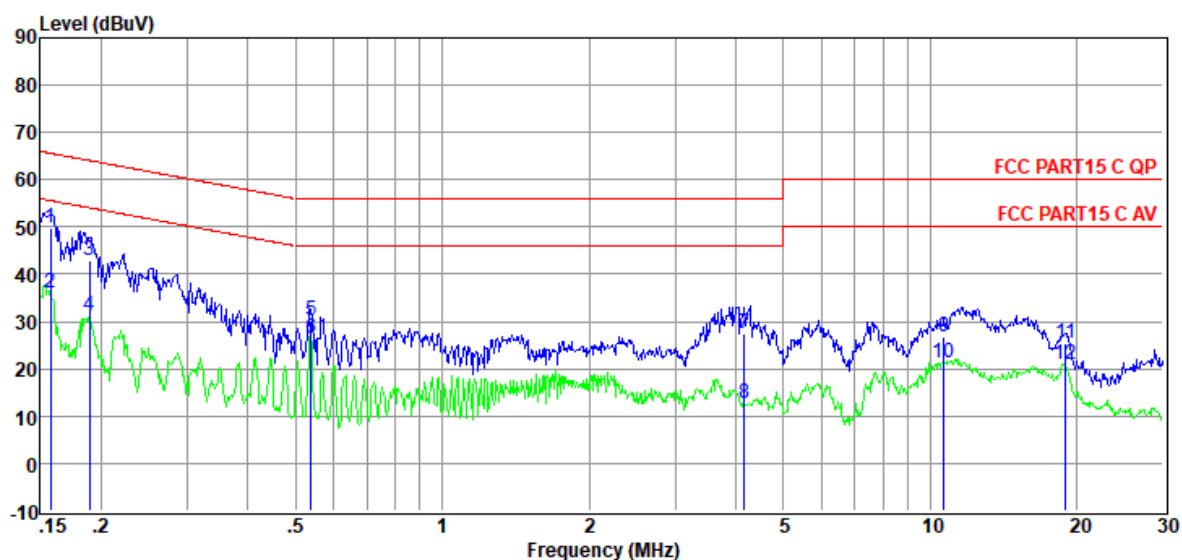
Note3: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/60Hz, recorded worst case.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room **D:\2021 CE report date\Q21060724-2E GG-01W\FCC .EM6**
Test Date : 2021-09-10 **Tested By** : Sanvin Zheng
EUT : WIRELESS GAMING HEADSET **Model Number** : GG-01WT
Power Supply : AC 120V/60Hz **Test Mode** : Tx mode
Condition : TEMP:24.3°C, RH:53.0%, BP:101.0kPa **LISN** : 2020 ENV 216 1#/LINE

Memo :

Data: 5



Item	Freq.	Read Level	LISN Factor	Cable Loss	Pulse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)		
1	0.16	30.48	9.39	0.02	9.86	49.75	65.60	-15.85	QP	LINE
2	0.16	16.87	9.39	0.02	9.86	36.14	55.60	-19.46	Average	LINE
3	0.19	23.75	9.40	0.02	9.86	43.03	64.06	-21.03	QP	LINE
4	0.19	11.86	9.40	0.02	9.86	31.14	54.06	-22.92	Average	LINE
5	0.54	10.97	9.41	0.02	9.86	30.26	56.00	-25.74	QP	LINE
6	0.54	7.18	9.41	0.02	9.86	26.47	46.00	-19.53	Average	LINE
7	4.16	7.97	9.47	0.07	9.87	27.38	56.00	-28.62	QP	LINE
8	4.16	-6.56	9.47	0.07	9.87	12.85	46.00	-33.15	Average	LINE
9	10.68	7.31	9.60	0.11	9.89	26.91	60.00	-33.09	QP	LINE
10	10.68	1.60	9.60	0.11	9.89	21.20	50.00	-28.80	Average	LINE
11	18.92	5.62	9.80	0.16	9.94	25.52	60.00	-34.48	QP	LINE
12	18.92	0.97	9.80	0.16	9.94	20.87	50.00	-29.13	Average	LINE

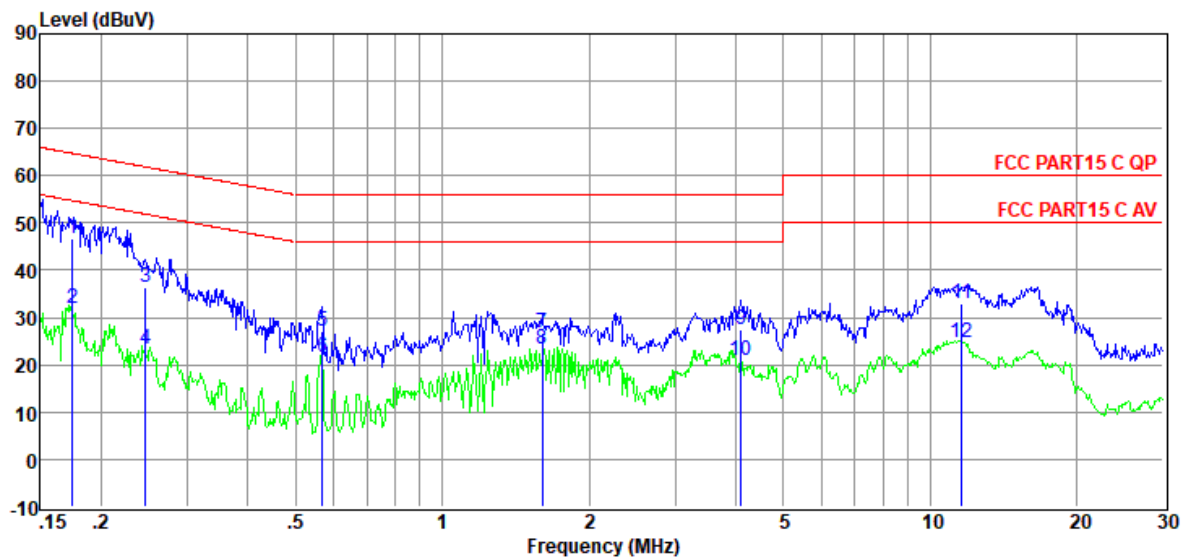
Note:

1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room **D:\2021 CE report date\Q21060724-2E GG-01W\FCC .EM6**
Test Date : 2021-09-10 **Tested By** : Sanvin Zheng
EUT : WIRELESS GAMING HEADSET **Model Number** : GG-01WT
Power Supply : AC 120V/60Hz **Test Mode** : Tx mode
Condition : TEMP:24.3°C, RH:53.0%, BP:101.0kPa **LISN** : 2020 ENV 216 1#/NEUTRAL
Memo :

Data: 7



Item	Freq.	Read Level	LISN Factor	Cable Loss	Pulse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV)	(dBuV)	(dB)		
1	0.17	27.55	9.37	0.02	9.86	46.80	64.72	-17.92	QP	NEUTRAL
2	0.17	12.53	9.37	0.02	9.86	31.78	54.72	-22.94	Average	NEUTRAL
3	0.25	17.03	9.38	0.02	9.86	36.29	61.86	-25.57	QP	NEUTRAL
4	0.25	3.93	9.38	0.02	9.86	23.19	51.86	-28.67	Average	NEUTRAL
5	0.57	7.98	9.39	0.02	9.86	27.25	56.00	-28.75	QP	NEUTRAL
6	0.57	2.22	9.39	0.02	9.86	21.49	46.00	-24.51	Average	NEUTRAL
7	1.60	7.45	9.40	0.04	9.86	26.75	56.00	-29.25	QP	NEUTRAL
8	1.60	3.98	9.40	0.04	9.86	23.28	46.00	-22.72	Average	NEUTRAL
9	4.09	8.10	9.44	0.07	9.87	27.48	56.00	-28.52	QP	NEUTRAL
10	4.09	1.42	9.44	0.07	9.87	20.80	46.00	-25.20	Average	NEUTRAL
11	11.62	13.24	9.59	0.12	9.90	32.85	60.00	-27.15	QP	NEUTRAL
12	11.62	5.23	9.59	0.12	9.90	24.84	50.00	-25.16	Average	NEUTRAL

Note:

1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

9. Antenna Requirements

9.1. Limit

For intentional device, according to FCC 47 CFR Section 15.203 & RSS-Gen section 6.8, 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.

9.2. Result

The antenna used for this product and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 1.7 dBi.