FCC Test Report

Compliance with Canada Interference-Causing Equipment Standard ICES-003

Product Name ： Bluetooth Headset

Model No. ： HSC100W

Applicant ： GN Audio A/S

Address ： Lautrupbjerg 7,DK-2750 Ballerup,Denmark.

Date of Receipt ： 2018/06/22

Issued Date ： 2018/07/03

Report No. ： 1860331R-ITUSP01V00

Report Version ： V1.0

Testing Laboratory
3023

Test Report

Issued Date: 2018/07/03
Report No.: 1860331R-ITUSP01V00

Product Name	:	Bluetooth Headset
Applicant	:	GN Audio A/S
Address	:	Lautrupbjerg 7,DK-2750 Ballerup,Denmark.
Manufacturer	:	GN Audio A/S
Model No.	:	HSC100W
EUT Rated Voltage	:	DC 3.8V (Power by Battery) or DC 5V (Power by USB)
EUT Test Voltage	:	DC 5V (Power by USB)
Trade Name	:	Jabra
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart B: 2017, Class B CISPR 22: 2008, ANSI C63.4: 2014 ICES-003 Issue 6: 2016, Class B
Test Result	:	Complied
Performed Location	:	DEKRA Testing and Certification Co., Ltd. Linkou Laboratory No. 5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan TEL:+866-2-8601-3788 / FAX:+886-2-8601-3789

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Laboratory Information

We, **DEKRA Testing and Certification Co., Ltd.**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scopes:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Norway	**:**	**DNV**
USA	**:**	**FCC**
Japan	**:**	**VCCI**

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site :
http://www.dekra.com.tw/english/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : http://www.dekra.com.tw/index_en.aspx
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1. General Information

1.1. EUT Description

Product Name	Bluetooth Headset
Trade Name	Jabra
Model No.	HSC100W
EUT Max Frequency	26MHz

Component	
Micro USB Cable	Shielded, 1.5m

1.2. Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
Mode 1: BT & Charge Mode	
Final Test Mode	
Emission	Mode 1: BT & Charge Mode

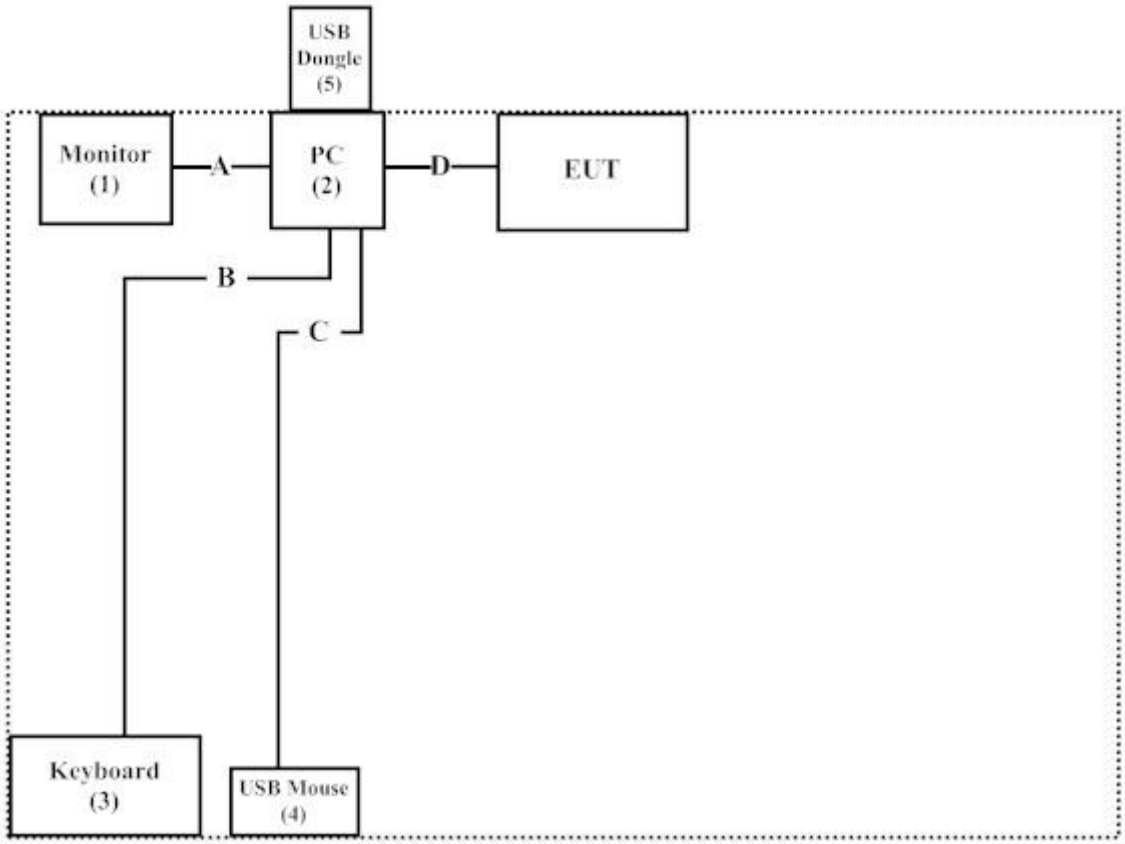
1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Monitor	DELL	U2410f	CN-082WXD-72872-16E-060L	Non-Shielded, 1.8m
2	PC	DELL	Vostro230	2R7Z62S	Non-Shielded, 1.8m
3	Keyboard	Microsoft	1576	N/A	N/A
4	USB Mouse	Microsoft	1113	N/A	N/A
5	USB Dongle	Jabra	END040W	N/A	N/A

1.4. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	D-SUB Cable	Shielded, 1.8m, with two ferrite cores bonded.
B	Keyboard Cable	Shielded, 1.8m
C	Mouse Cable	Shielded, 1.8m, with one ferrite core bonded.
D	Micro USB Cable	Shielded, 1.5m

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment.
3	All the features of the EUT operation normally.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Emission			
Performed Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart B: 2017 Class B, ANSI C63.4: 2014	Yes	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart B: 2017 Class B, ANSI C63.4: 2014	Yes	No

Note : Test Procedure ☒ ANSI C63.4:2014 ☐ MP-5:1986

2.2. List of Test Equipment

Conducted Emission / SR1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
LISN	R&S	ESH2-Z5	836679/023	2017/07/28
EMI Test Receiver	R&S	ESCS 30	100367	2018/01/23
LISN	Schwarzback	8226	176	2018/05/10
LISN	Schwarzback	8226	177	2018/05/10
Coaxial Cable	DEKRA	RG 400	LC016-RG	2018/06/21

Radiated Emission / Site 7

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2930	2018/06/25
EMI Test Receiver	R&S	ESCI	100649	2017/07/04
Coaxial Cable	DEKRA	RG 214	LC007-RG	2018/06/18
Pre-Amplifier	DEKRA	AP/0100A	CHM/1009094	2018/06/18
Site7 NSA	DEKRA	N/A	N/A	2018/06/18

Radiated Emission / CB7

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESU26	100433	2017/11/02
Horn Antenna	ETS-Lindgren	3117	00202723	2017/07/31
Horn Antenna	SCHWARZBECK	9120D	576	2017/12/07
Pre-Amplifier	EMCI	EMC051845SE	980359	2017/10/12
CB7 VSWR	DEKRA	N/A	N/A	2017/07/29

2.3. Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 3.44 dB.

Radiated Emission

The measurement uncertainty is evaluated as ± 4.22 dB.

Radiated Emission Above 1GHz

The measurement uncertainty is evaluated as ± 5.08 dB.

2.4. Test Environment

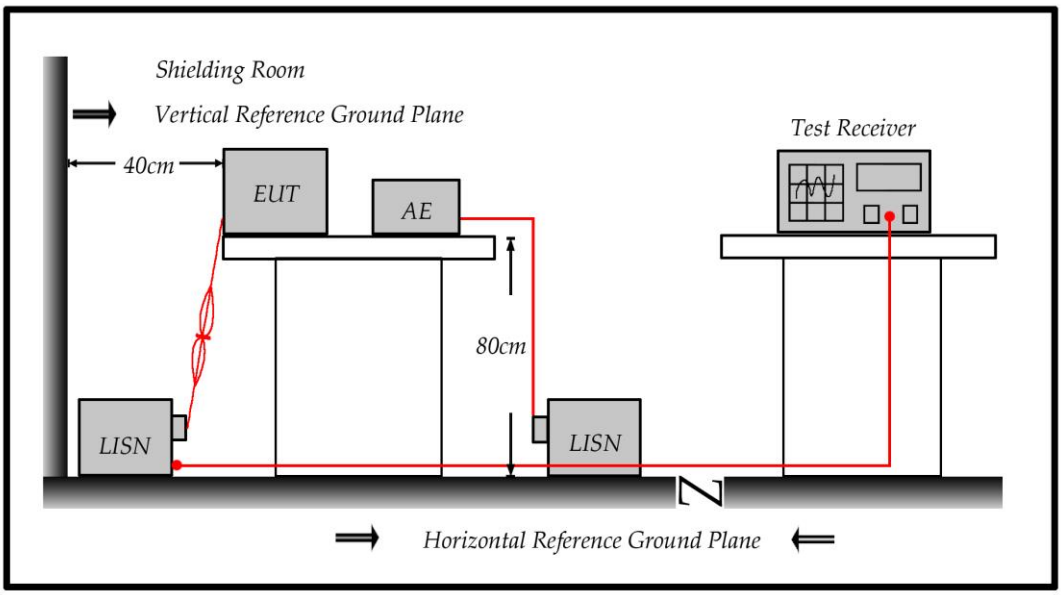
Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	15-35	25.5
	Humidity (%RH)	25-75	47
	Barometric pressure (mbar)	860-1060	950-1000
Radiated Emission	Temperature (°C)	15-35	32.1
	Humidity (%RH)	25-75	47
	Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission

3.1. Test Specification

According to Standard : FCC Part 15 Subpart B, ANSI C63.4

3.2. Test Setup



3.3. Limit

Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 – 46
0.50-5.0	56	46
5.0 - 30	60	50

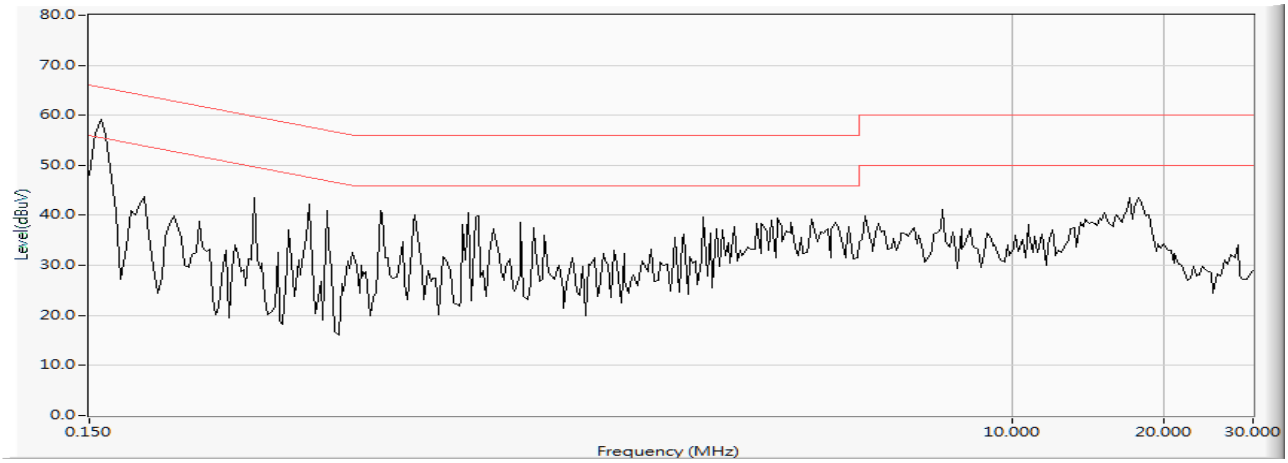
Remarks: In the above table, the tighter limit applies at the band edges.

3.4. Test Procedure

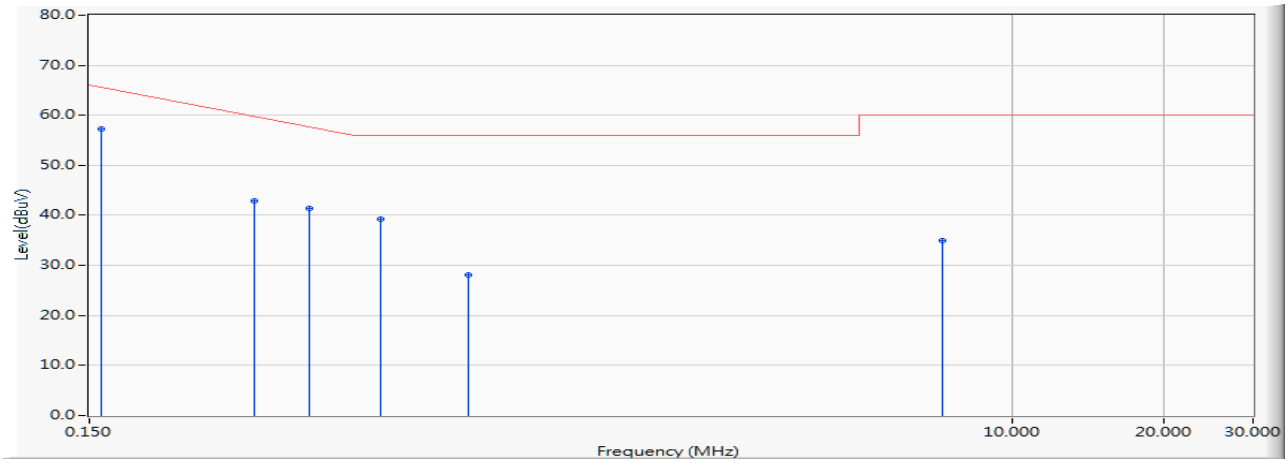
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.
(Please refers to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Test Result

Site : SR1	**Time : 2018/06/28 - 22:25**
Limit : CISPR_B_00M_QP	**Margin : 10**
EUT : Bluetooth Headset	**Probe : ENV216_L1_1044 - Line1**
Power : AC 120V/60Hz	**Note : Mode 1**



Site : SR1	**Time : 2018/06/28 - 22:27**
Limit : CISPR_B_00M_QP	**Margin : 0**
EUT : Bluetooth Headset	**Probe : ENV216_L1_1044 - Line1**
Power : AC 120V/60Hz	**Note : Mode 1**

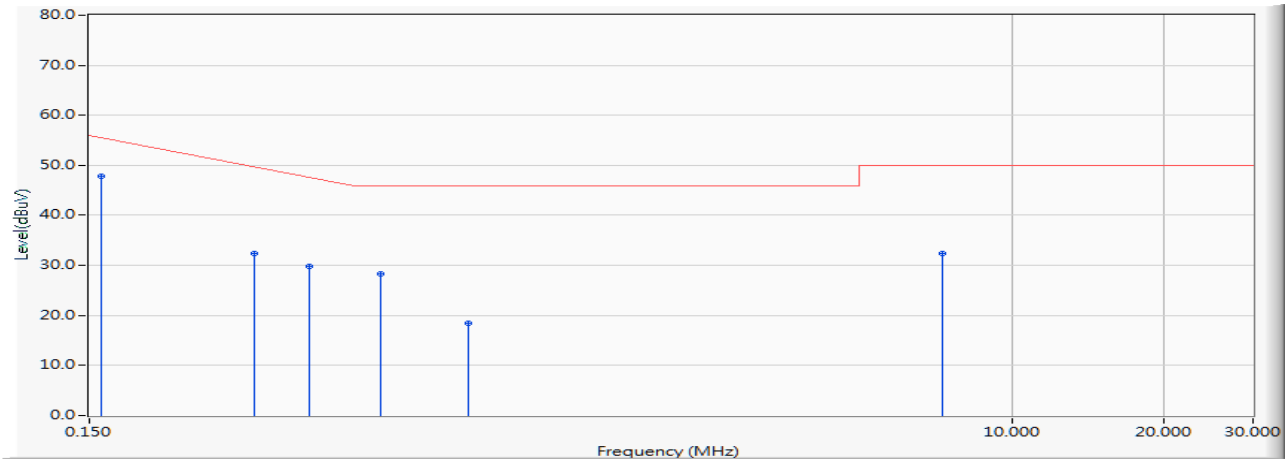


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.158	9.705	47.620	57.325	-8.446	65.771	QUASIPEAK
2		0.318	9.700	33.170	42.870	-18.330	61.200	QUASIPEAK
3		0.408	9.703	31.680	41.383	-17.246	58.629	QUASIPEAK
4		0.564	9.708	29.620	39.328	-16.672	56.000	QUASIPEAK
5		0.841	9.726	18.360	28.086	-27.914	56.000	QUASIPEAK
6		7.310	9.936	25.030	34.966	-25.034	60.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor (LISN factor + cable loss).

Site : SR1	**Time : 2018/06/28 - 22:27**
Limit : CISPR_B_00M_AV	**Margin : 0**
EUT : Bluetooth Headset	**Probe : ENV216_L1_1044 - Line1**
Power : AC 120V/60Hz	**Note : Mode 1**

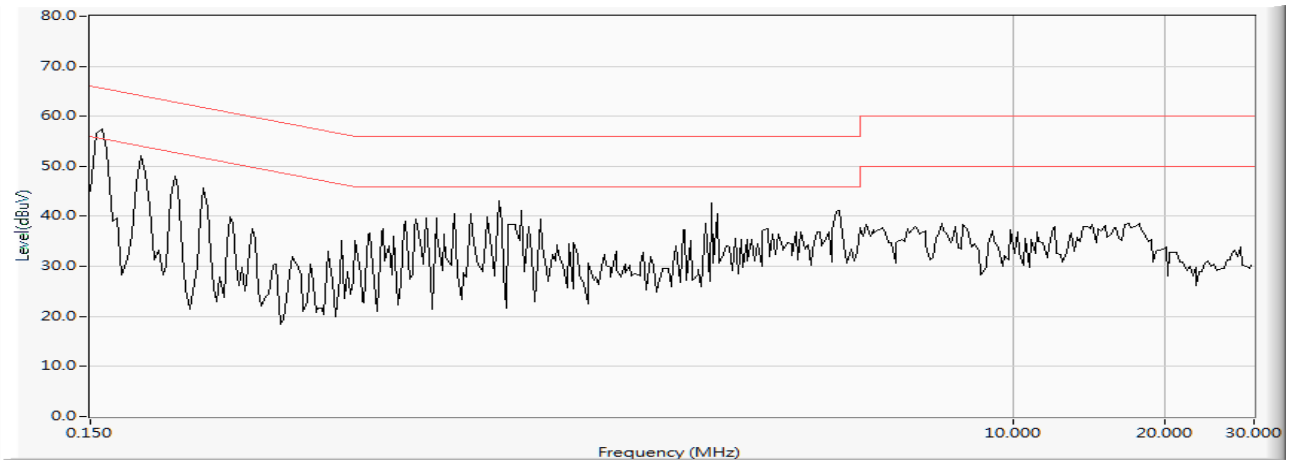


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.158	9.705	38.070	47.775	-7.996	55.771	AVERAGE
2		0.318	9.700	22.660	32.360	-18.840	51.200	AVERAGE
3		0.408	9.703	20.060	29.763	-18.866	48.629	AVERAGE
4		0.564	9.708	18.610	28.318	-17.682	46.000	AVERAGE
5		0.841	9.726	8.760	18.486	-27.514	46.000	AVERAGE
6		7.310	9.936	22.500	32.436	-17.564	50.000	AVERAGE

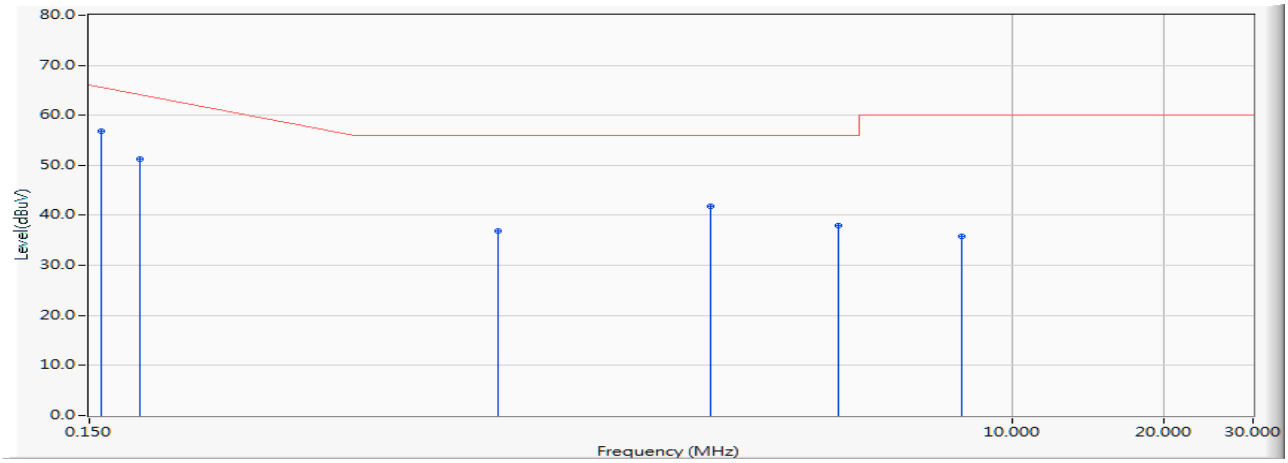
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor (LISN factor + cable loss).

Site : SR1	**Time : 2018/06/28 - 22:28**
Limit : CISPR_B_00M_QP	**Margin : 10**
EUT : Bluetooth Headset	**Probe : ENV216_N_1044 - Line2**
Power : AC 120V/60Hz	**Note : Mode 1**



Site : SR1	**Time : 2018/06/28 - 22:30**
Limit : CISPR_B_00M_QP	**Margin : 0**
EUT : Bluetooth Headset	**Probe : ENV216_N_1044 - Line2**
Power : AC 120V/60Hz	**Note : Mode 1**

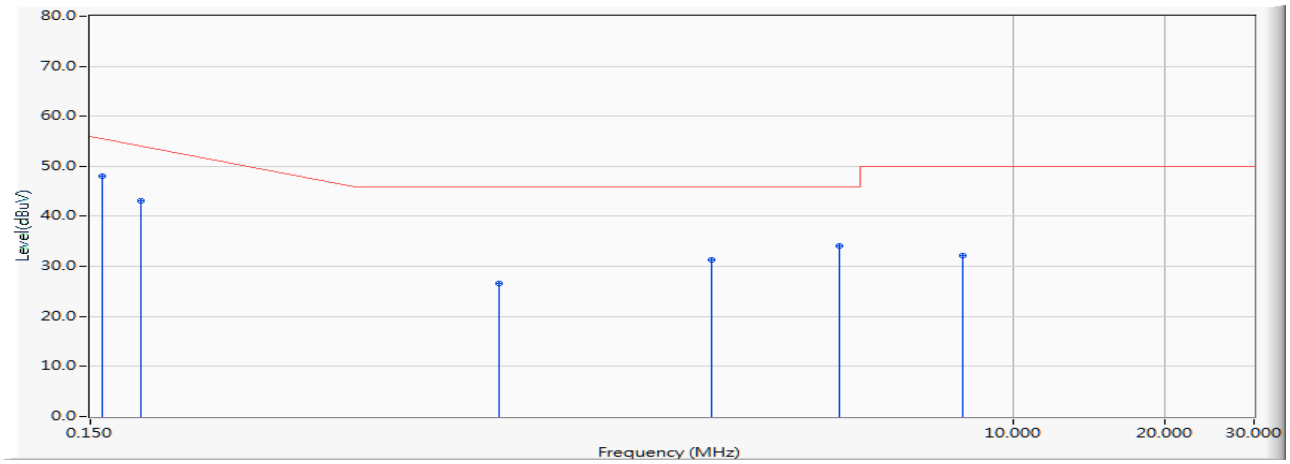


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.158	9.685	47.090	56.775	-8.996	65.771	QUASIPEAK
2		0.189	9.686	41.600	51.286	-13.600	64.886	QUASIPEAK
3		0.963	9.710	27.190	36.900	-19.100	56.000	QUASIPEAK
4		2.537	9.779	31.940	41.719	-14.281	56.000	QUASIPEAK
5		4.548	9.853	28.150	38.003	-17.997	56.000	QUASIPEAK
6		7.978	9.971	25.760	35.731	-24.269	60.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor (LISN factor + cable loss).

Site : SR1	**Time : 2018/06/28 - 22:30**
Limit : CISPR_B_00M_AV	**Margin : 0**
EUT : Bluetooth Headset	**Probe : ENV216_N_1044 - Line2**
Power : AC 120V/60Hz	**Note : Mode 1**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.158	9.685	38.410	48.095	-7.676	55.771	AVERAGE
2		0.189	9.686	33.380	43.066	-11.820	54.886	AVERAGE
3		0.963	9.710	16.860	26.570	-19.430	46.000	AVERAGE
4		2.537	9.779	21.460	31.239	-14.761	46.000	AVERAGE
5		4.548	9.853	24.230	34.083	-11.917	46.000	AVERAGE
6		7.978	9.971	22.240	32.211	-17.789	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor (LISN factor + cable loss).

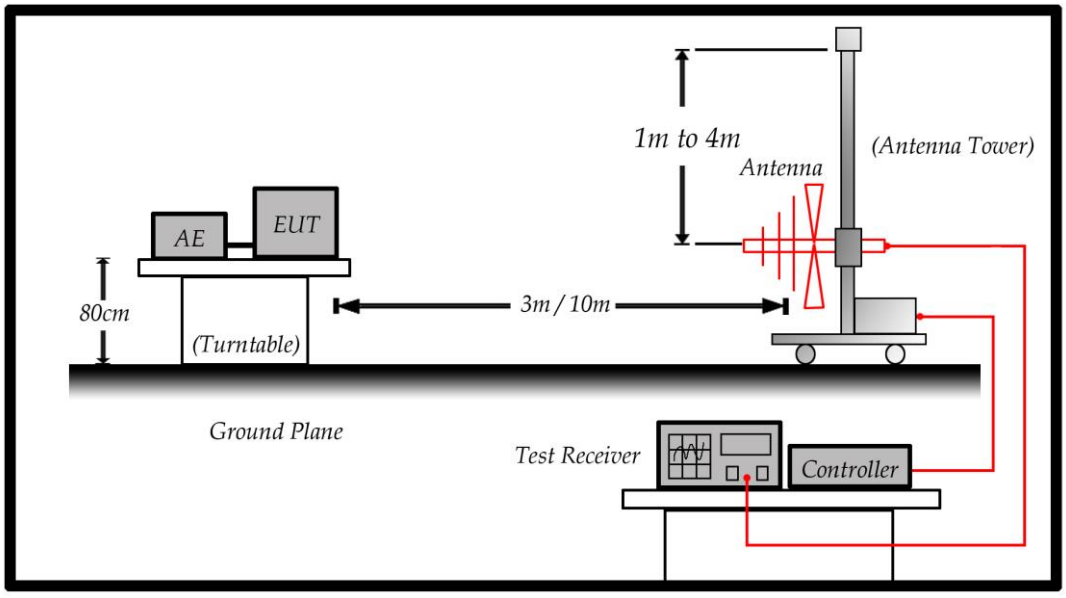
4. Radiated Emission

4.1. Test Specification

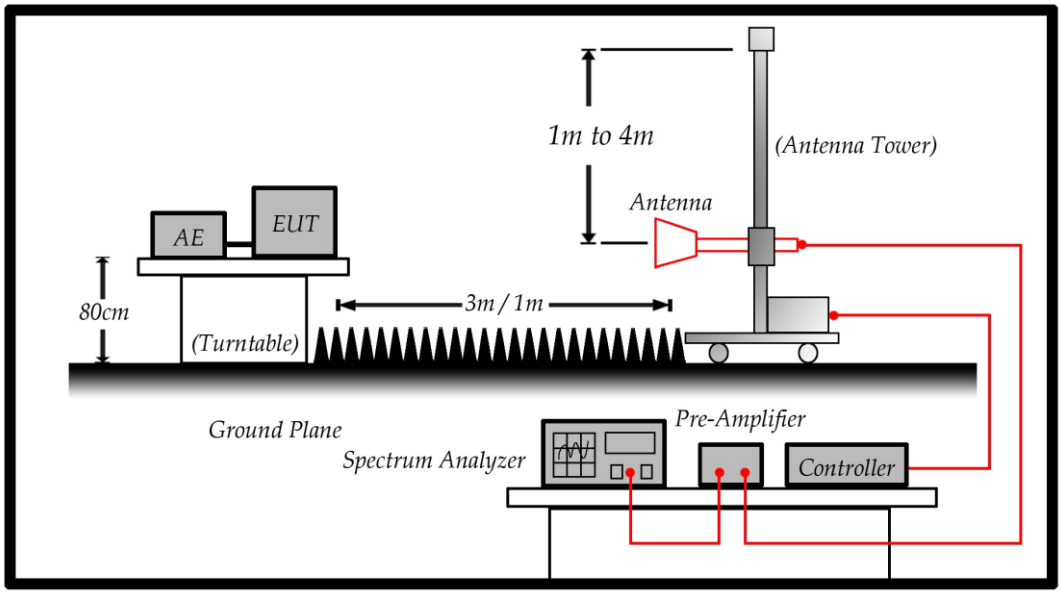
According to EMC Standard : FCC Part 15 Subpart B, ANSI C63.4

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

Under 1GHz test shall not exceed the following value:

Limits		
Frequency (MHz)	Distance (m)	dBuV/m
30 – 230	10	30
230 – 1000	10	37

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Above 1GHz test shall not exceed the following value:

FCC Part 15 Subpart B Paragraph 15.109 Limits (dBuV/m)		
Frequency (MHz)	Distance (m)	dBuV/m
30-88	3	40
88-216	3	43.5
216-960	3	46
960-18000	3	54
Above 18000	1	63.54

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

4.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground.

The turn table can rotate 360 degrees to determine the position of the maximum emission level and the antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the folowing table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 40 GHz, whichever is lower

On any frequency or frequencies below or equal to 1000 MHz, the radiated limits shown are based on measuring equipment employing a quasi-peak detector function and above 1000 MHz, the radiated limits shown are based measuring equipment employing an average detector function.

When average radiated emission measurement are included emission measurement Above 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

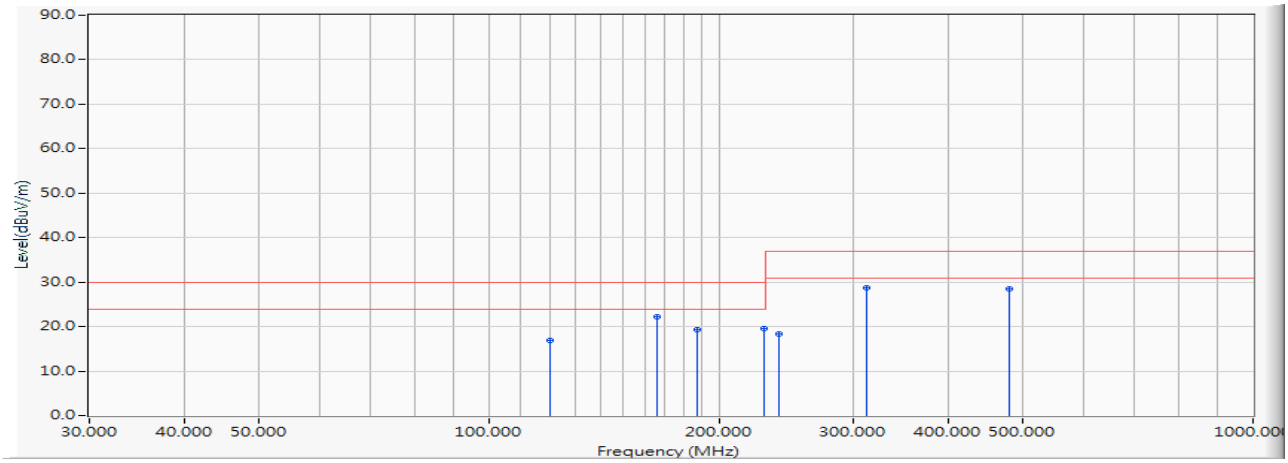
For class A, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and above 1GHz.

For class B, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and 3 meters for above 1GHz.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30) is 120 kHz and above 1GHz is 1MHz.

4.5. Test Result

Site : SITE7	**Time : 2018/06/26 - 14:49**
Limit : CISPR_B_10M_QP	**Margin : 6**
EUT : Bluetooth Headset	**Probe : Site7_VULB9168_10m_1804 - HORIZONTAL**
Power : AC 120V/60Hz	**Note : Mode 1**

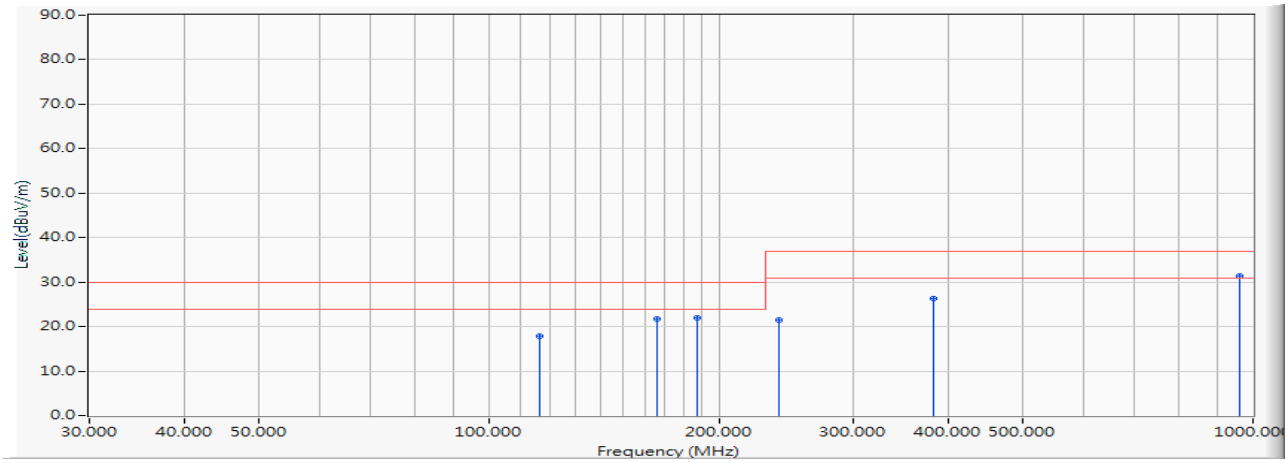


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		120.000	-12.921	29.800	16.878	-13.122	30.000	QUASIPEAK	380.000	44.000
2	*	166.100	-10.259	32.400	22.141	-7.859	30.000	QUASIPEAK	390.000	54.000
3		187.500	-12.205	31.600	19.395	-10.605	30.000	QUASIPEAK	380.000	59.000
4		229.400	-12.133	31.600	19.467	-10.533	30.000	QUASIPEAK	400.000	41.000
5		240.000	-10.830	29.200	18.370	-18.630	37.000	QUASIPEAK	380.000	126.000
6		311.800	-7.765	36.500	28.735	-8.265	37.000	QUASIPEAK	300.000	0.000
7		480.000	-2.353	30.800	28.448	-8.552	37.000	QUASIPEAK	185.000	-29.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor (ant factor + cable loss - amp).

Site : SITE7	**Time : 2018/06/26 - 14:49**
Limit : CISPR_B_10M_QP	**Margin : 6**
EUT : Bluetooth Headset	**Probe : Site7_VULB9168_10m_1804 - VERTICAL**
Power : AC 120V/60Hz	**Note : Mode 1**

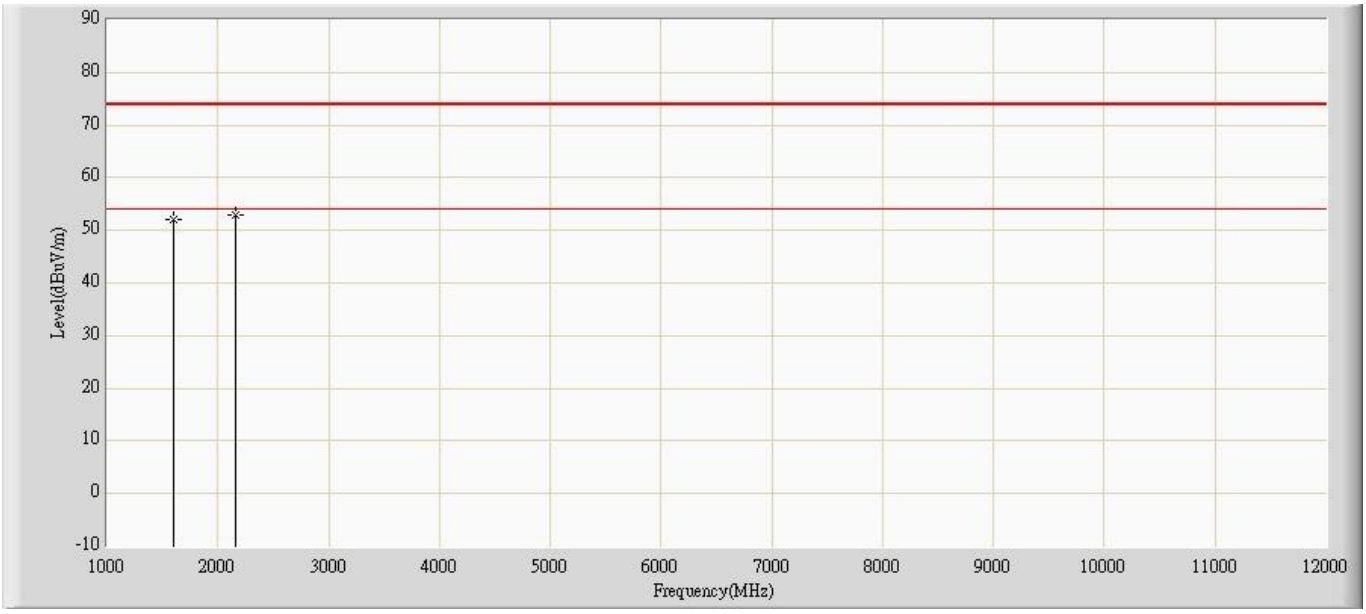


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		116.360	-13.297	31.200	17.903	-12.097	30.000	QUASIPEAK	100.000	97.000
2		166.100	-10.259	31.900	21.641	-8.359	30.000	QUASIPEAK	100.000	128.000
3		187.500	-12.205	34.200	21.995	-8.005	30.000	QUASIPEAK	100.000	96.000
4		240.000	-10.830	32.400	21.570	-15.430	37.000	QUASIPEAK	100.000	14.000
5		381.200	-5.617	32.000	26.382	-10.618	37.000	QUASIPEAK	100.000	41.000
6	*	960.000	7.338	24.000	31.338	-5.662	37.000	QUASIPEAK	160.000	44.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor (ant factor + cable loss - amp).

Site: CB7	Time: 2018/06/25 - 16:36
Limit: FCC_B_(Above_1G)	Margin: 0
Probe: CB7_Horn_3117_1707	Polarity: Horizontal
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1	

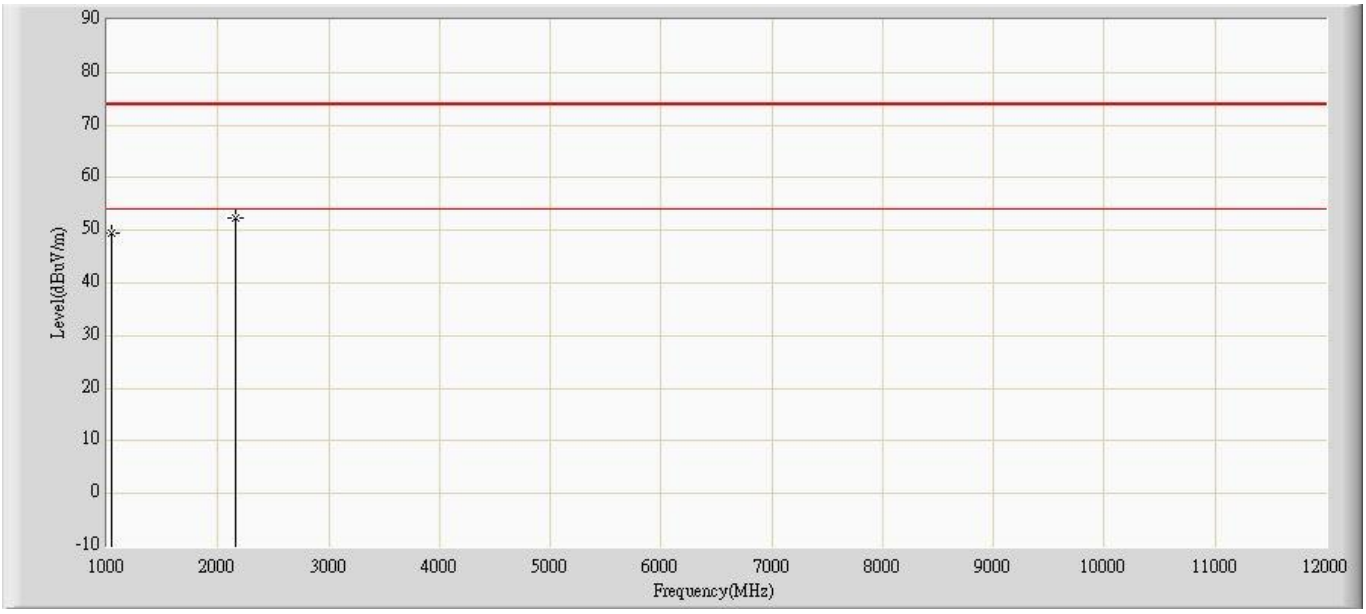


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Ant Pos (cm)	Table Pos (deg)	Type
1			1594.000	52.198	65.650	-21.802	74.000	-13.452	133	68	PK
2		*	2166.000	52.947	62.510	-21.053	74.000	-9.564	130	-75	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor (ant factor + cable loss - amp).

Site: CB7	Time: 2018/06/25 - 16:49
Limit: FCC_B_(Above_1G)	Margin: 0
Probe: CB7_Horn_3117_1707	Polarity: Vertical
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Ant Pos (cm)	Table Pos (deg)	Type
1			1044.000	49.380	64.570	-24.620	74.000	-15.190	100	126	PK
2		*	2166.000	52.327	61.890	-21.673	74.000	-9.564	100	-74	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor (ant factor + cable loss - amp).