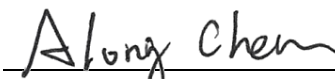


FCC C2PC Test Report

FCC ID : U28OMSTREAMER
Equipment : Audio Streaming Module XM
Model No. : Audio Streaming Module XM
Brand Name : Oticon
Applicant : Oticon A/S
Address : Kongebakken 9 DK-2765 Smørum, Denmark
Standard : 47 CFR FCC Part 15.247
Received Date : Mar. 30, 2021
Tested Date : Apr. 07 ~ Apr. 12, 2021

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:


Along Chen / Assistant Manager

Approved by:

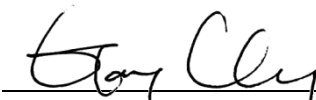

Gary Chang / Manager



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Release Record

Report No.	Version	Description	Issued Date
FR8N1301-06AD	Rev. 01	Initial issue	Nov. 04, 2021

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.518MHz 27.03 (Margin -18.97dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 35.82MHz 26.80 (Margin -13.20dB) - PK	Pass

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Information

This is a Class II Permissive Change report (C2PC).

This report is issued as a supplementary report to original ICC report no. FR8N1301AD. The modification is change PCB component and audio cable (3.5mm mini jack stereo cable). Therefore, conducted emission and radiated emission below 1GHz tests were performed. Test results are leveraged from ICC report no. FR8N1301-04AD.

1.1.1 Product Details

The following models are provided to this EUT.

Brand Name	Sample Number	Model Name	Product Name	Description
Oticon	7059526	Audio Streaming Module XM	Audio Streaming Module XM	---

1.1.2 Specification of the Equipment under Test (EUT)

RF General Information				
Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number	Data Rate
2400-2483.5	BR	2402-2480	0-78 [79]	1 Mbps
2400-2483.5	EDR	2402-2480	0-78 [79]	2 Mbps
2400-2483.5	EDR	2402-2480	0-78 [79]	3 Mbps
Note 1: RF output power specifies that Maximum Peak Conducted Output Power.				
Note 2: Bluetooth BR uses a GFSK.				
Note 3: Bluetooth EDR uses a combination of $\pi/4$ -DQPSK and 8DPSK.				

1.1.3 Antenna Details

Ant. No.	Type	Connector	Gain (dBi)	Remarks
1	Inverted F	N/A	3	---

1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	3.7Vdc from battery
-------------------	---------------------

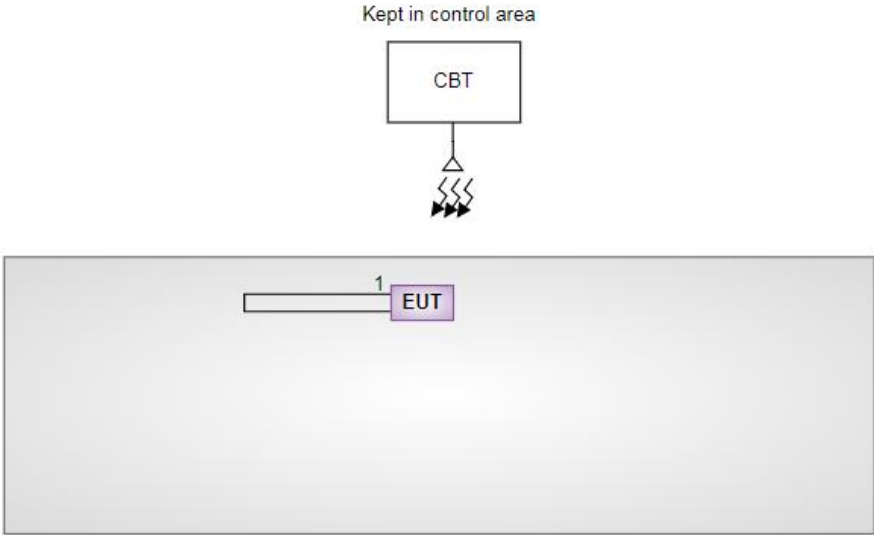
1.1.5 Accessories

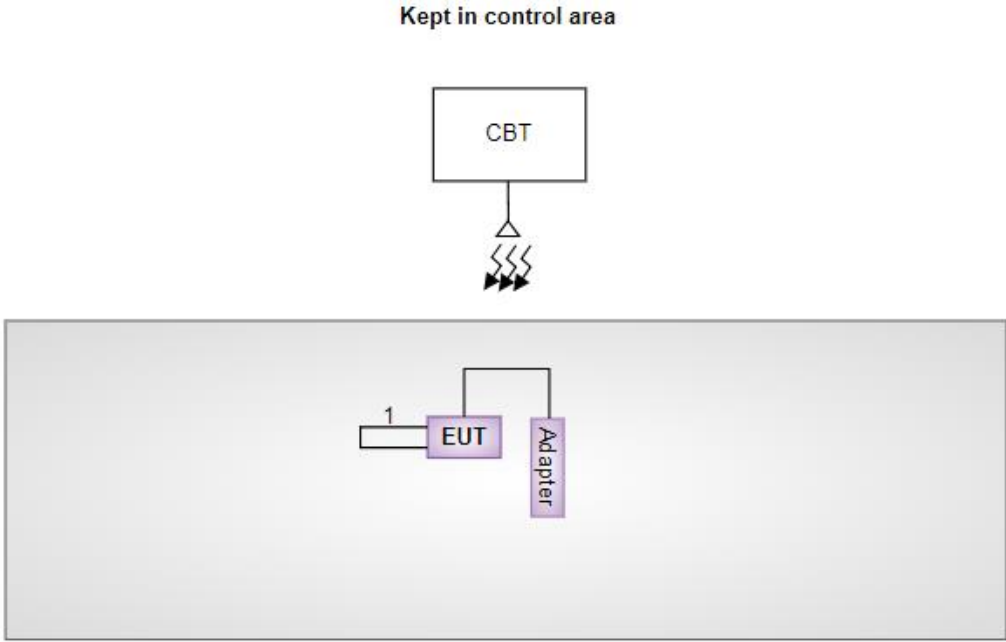
Accessories		
No.	Equipment	Description
1	AC Adapter	Brand: PHIHONG Model: AM05E-050A Power Rating: I/P: 100-240Vac, 50/60Hz, 0.2A O/P: 5Vdc, 1A Power Line: 1.8m non-shielded cable without core
2	Battery	Brand: ZHUHAI COSLIGHT BATTERY CO., LTD Model: CA422258 Power Rating: I/P: 3.7Vdc, 520mAh
3	USB charger cable	1.2m shielded without core
4	3.5mm mini jack stereo cable	1.05m non-shielded with two cores
5	3.5mm headset splitter cable	0.14m non-shielded without core
6	Neck loop-long	0.81m non-shielded without core
7	Neck loop-medium	0.66m non-shielded without core

1.1.6 Channel List

Frequency band (MHz)				2400~2483.5			
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461	---	---

1.2 Local Support Equipment List

Test Setup Diagram (Battery mode)	
Kept in control area 	
No.	Signal cable / Length (m)
1	Neck loop-long, 0.81m non-shielded.

Test Setup Diagram (Adapter mode)	
Kept in control area 	
No.	Signal cable / Length (m)
1	Neck loop-long, 0.81m non-shielded.

1.3 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Apr. 12, 2021				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101658	Feb. 08, 2021	Feb. 07, 2022
LISN	R&S	ENV216	101579	Mar. 17, 2021	Mar. 16, 2022
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 21, 2020	Oct. 20, 2021
Measurement Software	AUDIX	e3	6.120210k	NA	NA

Note: Calibration Interval of instruments listed above is one year.

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Tested Date	Apr. 07, 2021				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101658	Feb. 08, 2021	Feb. 07, 2022
Spectrum Analyzer	R&S	FSV40	101498	Dec. 04, 2020	Dec. 03, 2021
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 17, 2020	Nov. 16, 2021
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 10, 2020	Jul. 09, 2021
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 11, 2020	Dec. 10, 2021
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 06, 2020	Nov. 05, 2021
Preamplifier	EMC	EMC02325	980225	Jul. 03, 2020	Jul. 02, 2021
Preamplifier	Agilent	83017A	MY39501308	Sep. 26, 2020	Sep. 25, 2021
Preamplifier	EMC	EMC184045B	980192	Jul. 21, 2020	Jul. 20, 2021
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 06, 2020	Oct. 05, 2021
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 06, 2020	Oct. 05, 2021
LF cable 11M	EMC	EMCCFD400-NW-N W-11000	200801	Oct. 06, 2020	Oct. 05, 2021
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	160502	Oct. 06, 2020	Oct. 05, 2021
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Oct. 06, 2020	Oct. 05, 2021
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Oct. 06, 2020	Oct. 05, 2021
Measurement Software	AUDIX	e3	6.120210g	NA	NA

Note: Calibration Interval of instruments listed above is one year.

1.4 Test Standards

47 CFR FCC Part 15.247

ANSI C63.10-2013

1.5 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

1.6 Deviation from Test Standard and Measurement Procedure

None

1.7 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$)).

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	± 34.130 Hz
Conducted power	± 0.808 dB
Power density	± 0.583 dB
Conducted emission	± 2.715 dB
AC conducted emission	± 2.92 dB
Radiated emission ≤ 1 GHz	± 3.41 dB
Radiated emission > 1 GHz	± 4.59 dB
Time	$\pm 0.1\%$

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	CO01-WS, 03CH01-WS
Address of Test Site	No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Mode	Test Frequency (MHz)	Data Rate (Mbps)	Test Configuration
Conducted Emissions	GFSK	2402	1Mbps	2
Radiated Emissions ≤ 1GHz	GFSK	2402	1Mbps	1, 2
NOTE: 1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The Z-plane results were found as the worst case and were shown in this report. 2. Test configurations are listed as below: Configuration 1 : Battery mode Configuration 2 : Adapter mode				

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

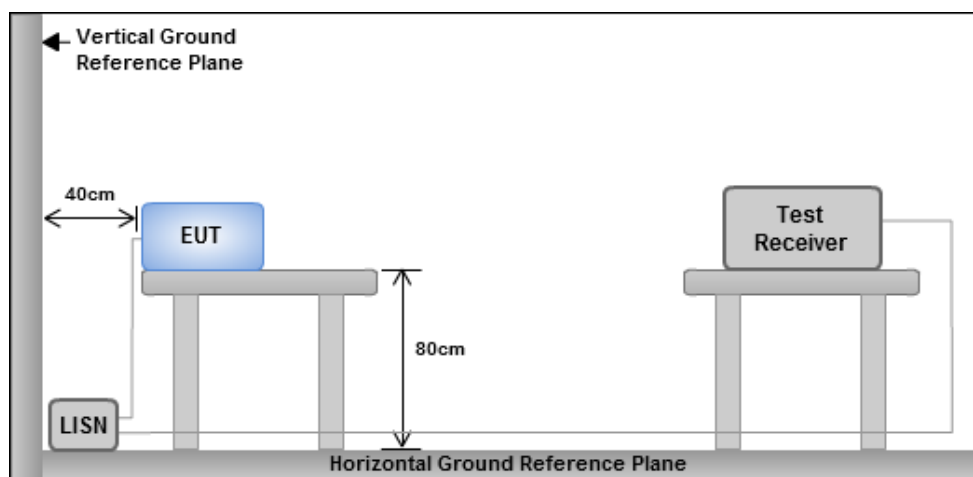
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

3.1.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V/60Hz

3.1.3 Test Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

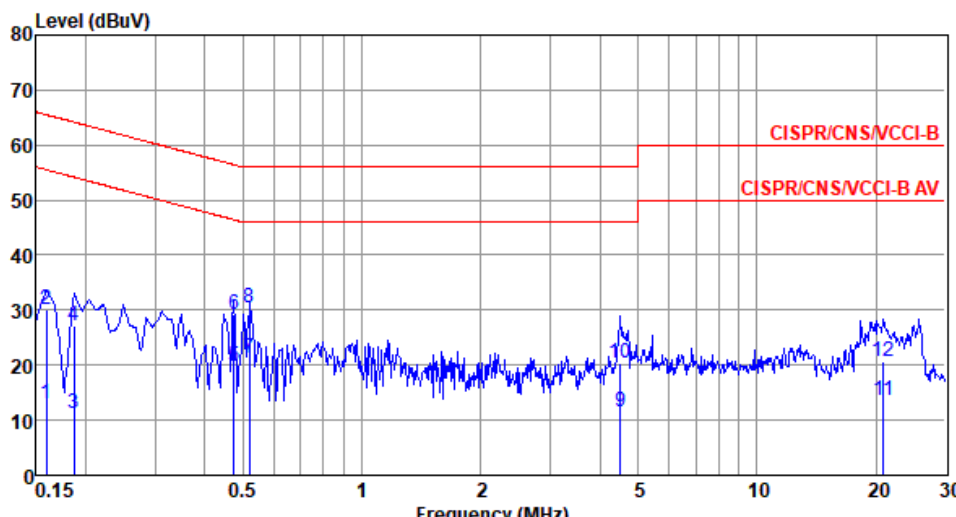
3.1.4 Test Result of Conducted Emissions

Modulation Mode	GFSK	Test Freq. (MHz)	2402
Power Phase	Line	Test Configuration	2

Test by : Alex Tsai

Temperature: 24°C

Humidity: 64%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Remark
1	0.159	13.09	55.52	-42.43	3.21	9.83	0.05	Average
2	0.159	30.05	65.52	-35.47	20.17	9.83	0.05	QP
3	0.186	11.36	54.20	-42.84	1.46	9.84	0.06	Average
4	0.186	27.03	64.20	-37.17	17.13	9.84	0.06	QP
5	0.474	19.67	46.45	-26.78	9.67	9.91	0.09	Average
6	0.474	29.35	56.45	-27.10	19.35	9.91	0.09	QP
7*	0.518	21.37	46.00	-24.63	11.36	9.92	0.09	Average
8	0.518	30.54	56.00	-25.46	20.53	9.92	0.09	QP
9	4.501	11.48	46.00	-34.52	1.13	10.05	0.30	Average
10	4.501	20.34	56.00	-35.66	9.99	10.05	0.30	QP
11	20.924	13.49	50.00	-36.51	2.52	10.29	0.68	Average
12	20.924	20.69	60.00	-39.31	9.72	10.29	0.68	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).

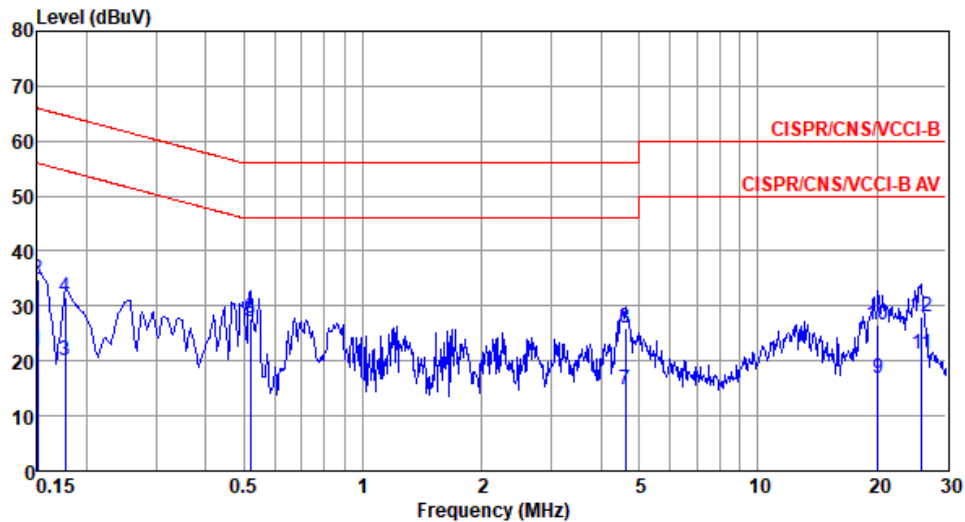
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation Mode	GFSK	Test Freq. (MHz)	2402
Power Phase	Neutral	Test Configuration	2

Test by : Alex Tsai

Temperature: 24°C

Humidity: 64%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Remark
1	0.150	21.91	56.00	-34.09	12.04	9.82	0.05	Average
2	0.150	34.84	66.00	-31.16	24.97	9.82	0.05	QP
3	0.177	20.02	54.64	-34.62	10.13	9.83	0.06	Average
4	0.177	31.57	64.64	-33.07	21.68	9.83	0.06	QP
5*	0.518	27.03	46.00	-18.97	17.08	9.86	0.09	Average
6	0.518	27.84	56.00	-28.16	17.89	9.86	0.09	QP
7	4.622	14.71	46.00	-31.29	4.42	9.98	0.31	Average
8	4.622	25.86	56.00	-30.14	15.57	9.98	0.31	QP
9	20.162	16.96	50.00	-33.04	5.96	10.33	0.67	Average
10	20.162	26.49	60.00	-33.51	15.49	10.33	0.67	QP
11	26.001	21.19	50.00	-28.81	9.98	10.49	0.72	Average
12	26.001	27.99	60.00	-32.01	16.78	10.49	0.72	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 Note 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

3.2 Unwanted Emissions into Restricted Frequency Bands

3.2.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9~90 kHz, 110~490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

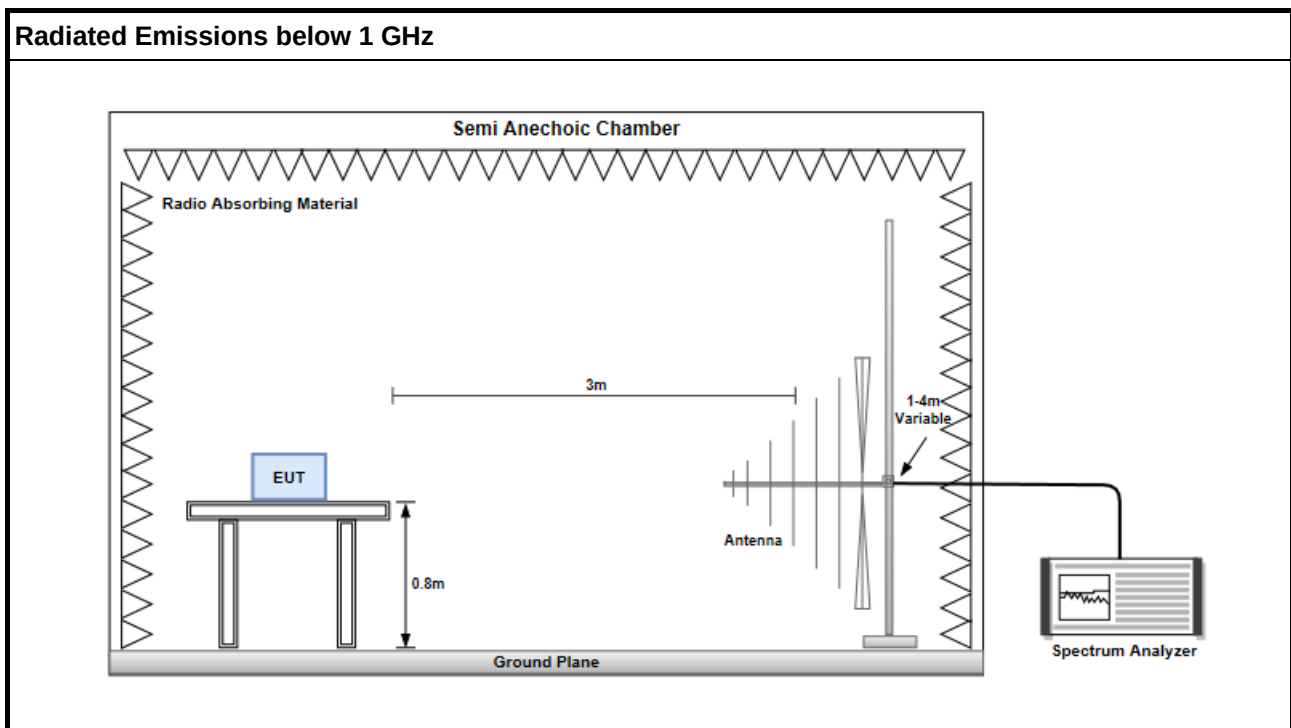
3.2.2 Test Procedures

1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.

3.2.3 Test Setup

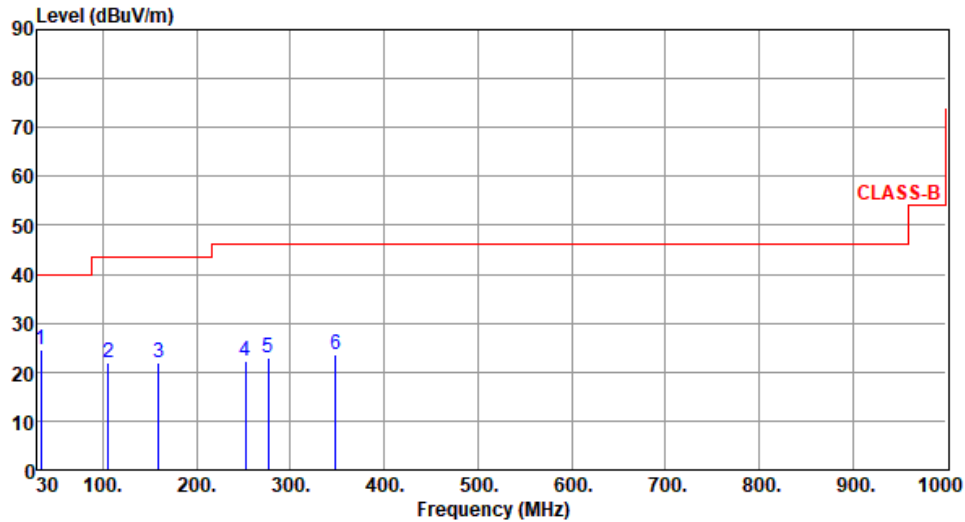


3.2.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	GFSK	Test Freq. (MHz)	2402
Polarization	Horizontal	Test Configuration	1
Test By :Roger Lu Temperature(°C):25 Humidity(%):61			
Level (dBUV/m)			

Modulation	GFSK	Test Freq. (MHz)	2402
Polarization	Vertical	Test Configuration	1

Test By :Roger Lu Temperature(°C):25 Humidity(%):61



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	33.88	24.53	40.00	-15.47	33.92	-9.39	Peak	---	---
2	105.66	21.82	43.50	-21.68	34.26	-12.44	Peak	---	---
3	159.01	22.07	43.50	-21.43	30.90	-8.83	Peak	---	---
4	252.13	22.17	46.00	-23.83	32.21	-10.04	Peak	---	---
5	276.38	22.95	46.00	-23.05	31.75	-8.80	Peak	---	---
6	348.16	23.70	46.00	-22.30	30.56	-6.86	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

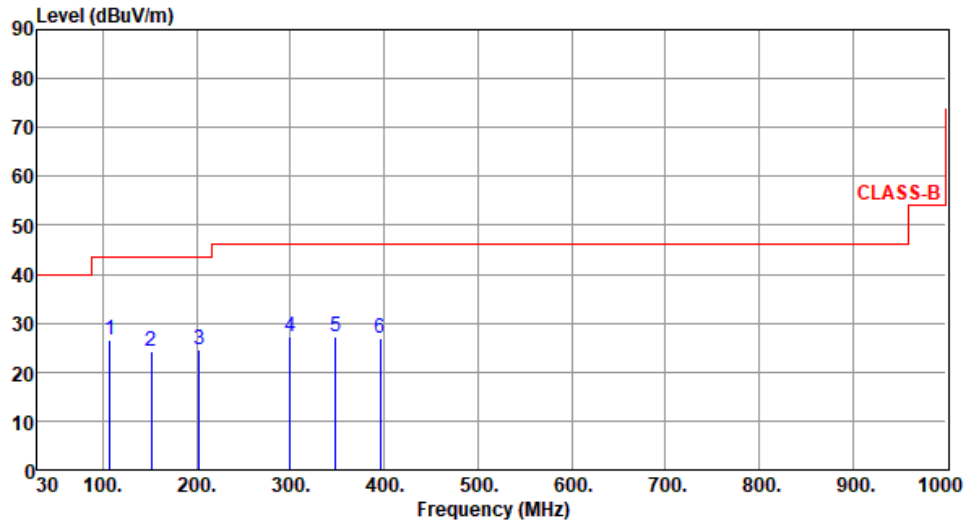
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	GFSK	Test Freq. (MHz)	2402
Polarization	Horizontal	Test Configuration	2

Test By :Roger Lu Temperature(°C):25 Humidity(%):61



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	107.60	26.52	43.50	-16.98	38.75	-12.23	Peak	---	---
2	151.25	24.25	43.50	-19.25	33.17	-8.92	Peak	---	---
3	202.66	24.47	43.50	-19.03	36.40	-11.93	Peak	---	---
4	299.66	27.11	46.00	-18.89	35.31	-8.20	Peak	---	---
5	348.16	27.26	46.00	-18.74	34.12	-6.86	Peak	---	---
6	395.69	27.06	46.00	-18.94	32.88	-5.82	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

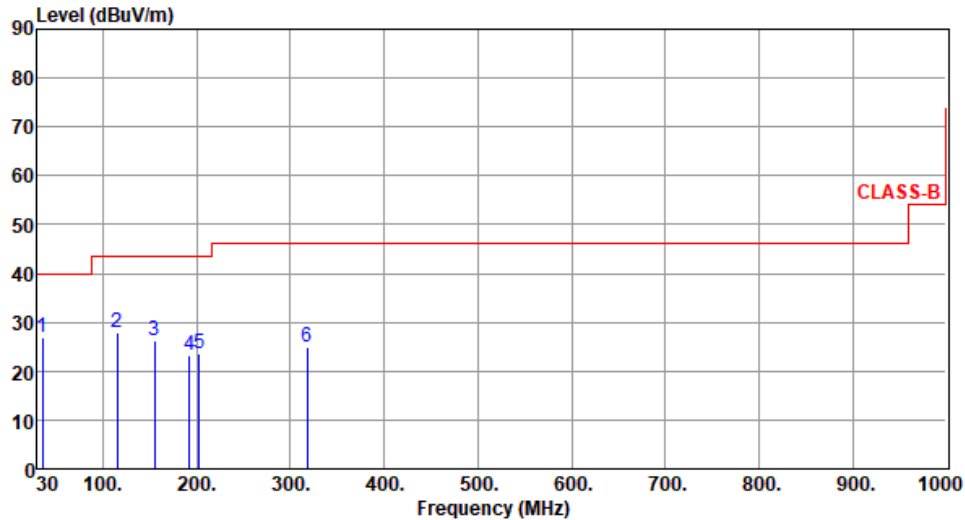
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	GFSK	Test Freq. (MHz)	2402
Polarization	Vertical	Test Configuration	2

Test By :Roger Lu

Temperature(°C):25

Humidity(%):61



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	35.82	26.80	40.00	-13.20	36.02	-9.22	Peak	---	---
2	115.36	27.85	43.50	-15.65	39.03	-11.18	Peak	---	---
3	155.13	26.39	43.50	-17.11	35.14	-8.75	Peak	---	---
4	191.99	23.32	43.50	-20.18	34.97	-11.65	Peak	---	---
5	202.66	23.45	43.50	-20.05	35.38	-11.93	Peak	---	---
6	318.09	24.91	46.00	-21.09	32.38	-7.47	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou
District, New Taipei City, Taiwan
(R.O.C.)

Kwei Shan

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)
No.2-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 333, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666

Fax: 886-3-318-0345

Email: ICC_Service@icertifi.com.tw

==END==