FCC C2PC Test Report

FCC ID	:	**XNAWBS08**
Equipment	:	**Withings Body Scan**
Model No.	:	**WBS08**
Brand Name	:	**Withings**
Applicant	:	**Withings**
Address	:	**2 rue Maurice Hartmann 92130 Issy-Les-Moulineaux France**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Jun. 16, 2023**
Tested Date	:	**Jul. 12 ~ Jul. 24, 2023**

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 shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:	**Approved by:**
Along Chen / Assistant Manager	**Gary Chang / Manager**

Table of Contents

Release Record

Report No.	Version	Description	Issued Date
FR261601-05AE	Rev. 01	Initial issue	Aug. 29, 2023

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emissions	[dBuV]: 0.775MHz 32.93 (Margin -13.07dB) - AV	Pass
15.247(d) 15.209	Unwanted Emissions	[dBuV/m at 3m]: 46.49MHz 28.50 (Margin -11.50dB) - PK	Pass
15.247(b)(3)	Conducted Output Power	Power [dBm]: 3.35	Pass
15.203	Antenna Requirement	Meet the requirement of limit	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 report no. FR261601-04AE. The modifications are concerned with following items:

- Removed reserved components (0 ohms) and relative circuit is modified in non-RF section.
- Filter is replacing.
- Diode is adding and relative circuit is modified in non-RF section.
- Contour of U801 is modified.

In this report, all related test items had been performed and recorded in the following sections.

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information				
Frequency Range (MHz)	**Bluetooth Mode**	**Ch. Freq. (MHz)**	**Channel Number**	**Data Rate**
2400-2483.5	LE	2402-2480	0-39 [40]	1 Mbps
Note: Bluetooth LE (Low energy) uses GFSK modulation.				

1.1.2 Antenna Details

Ant. No.	Brand	Model	Type	Connector	Gain (dBi)
1	BROADCOM	BCM9Fractal64	PCB	N/A	2.8

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	3.7Vdc from battery 5Vdc from adapter

Note: The adapter is not bundled in market.

1.1.4 Accessories

Accessories		
No.	**Equipment**	**Description**
1	Cable stopper	---
2	Wall handle support	---
3	USB-C Cable	0.75m non-shielded without core

1.1.5 Test Sample Information

MAC of Test Sample	Radiated Emission: A47EFA12740A AC Power Line Conducted Emission: A47EFA12740A Antenna Port Conducted: A47EFA1273B0

1.1.6 Channel List

Frequency band (MHz)				**2400~2483.5**			
Channel	**Frequency (MHz)**	**Channel**	**Frequency (MHz)**	**Channel**	**Frequency (MHz)**	**Channel**	**Frequency (MHz)**
37	2402	9	2422	18	2442	28	2462
0	2404	10	2424	19	2444	29	2464
1	2406	38	2426	20	2446	30	2466
2	2408	11	2428	21	2448	31	2468
3	2410	12	2430	22	2450	32	2470
4	2412	13	2432	23	2452	33	2472
5	2414	14	2434	24	2454	34	2474
6	2416	15	2436	25	2456	35	2476
7	2418	16	2438	26	2458	36	2478
8	2420	17	2440	27	2460	39	2480

1.1.7 Test Tool and Duty Cycle

Test Tool	Tera Term, Version: 4.84	
Modulation Mode	**Duty Cycle Of Test Signal (%)**	**Duty Factor (dB)**
BT-LE(1Mbps)	70.42%	1.52

1.1.8 Power Index of Test Tool

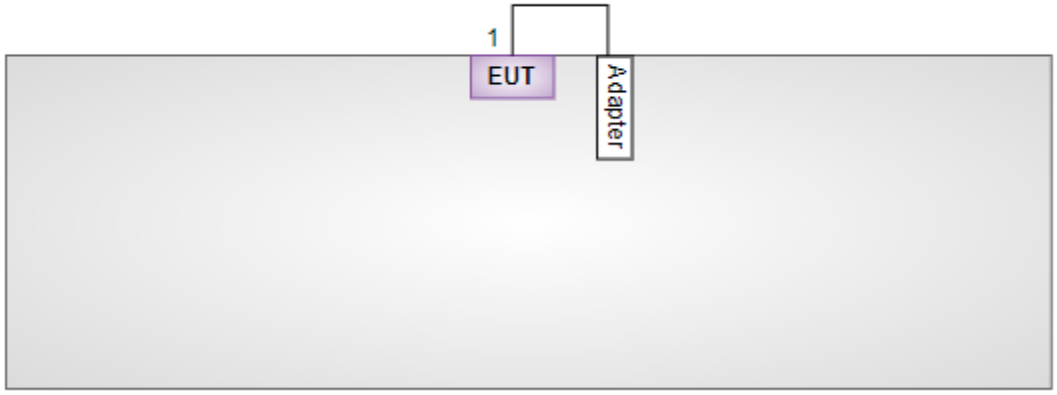
Modulation Mode	**Test Frequency (MHz)**		
	2402	**2440**	**2480**
BT-LE(1Mbps)	default	default	default

1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Remarks**
1	Adapter	Samsung	ETA-U90JWS	---	---

Note: The support notebook and fixture are disconnected from EUT and removed from test table after sending command to EUT to control EUT to transmit continuously.

1.3 Test Setup Chart

Test Setup Diagram


No.	Signal cable / Length (m)
1	USB-C cable, 0.75m non-shielded without core

1.4 Test Equipment List and Calibration Data

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Jul. 20, 2023				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101658	Feb. 17, 2023	Feb. 16, 2024
LISN	R&S	ENV216	101579	May 09, 2023	May 08, 2024
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127667	Jan .03, 2023	Jan .02, 2024
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 17, 2022	Oct. 16, 2023
50 ohm terminal (Support Unit)	NA	50	01	Jun. 14, 2023	Jun. 13, 2024
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 chamber3 / (03CH03-WS)				
Tested Date	Jul. 12 ~ Jul. 13, 2023				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101657	Mar. 03, 2023	Mar. 02, 2024
Spectrum Analyzer	R&S	FSV40	101499	Mar. 16, 2023	Mar. 15, 2024
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 01, 2022	Oct. 31, 2023
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Jul. 04, 2023	Jul. 03, 2024
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Dec. 15, 2022	Dec. 14, 2023
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 27, 2022	Oct. 26, 2023
Preamplifier	EMC	EMC02325	980187	Jul. 10, 2023	Jul. 09, 2024
Preamplifier	EMC	EMC184045SE	980897	Aug. 01, 2022	Jul. 31, 2023
Preamplifier	EMC	EMC184045SE	980903	Jul. 16, 2022	Jul. 15, 2023
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 04, 2022	Oct. 03, 2023
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800 -001	Sep. 23, 2022	Sep. 22, 2023
LF cable-3M	EMC	EMC8D-NM-NM-300 0	131103	Sep. 23, 2022	Sep. 22, 2023
LF cable-13M	EMC	EMC8D-NM-NM-130 00	131104	Sep. 23, 2022	Sep. 22, 2023
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Sep. 23, 2022	Sep. 22, 2023
RF cable-8M	EMC	EMC104-SM-SM-80 00	181107	Sep. 23, 2022	Sep. 22, 2023
HIGHPASS FILTER	WI	WHK3.1-18G-10SS	43	Sep. 28, 2022	Sep. 27, 2023
Attenuator	Pasternack	PE7005-10	10-3	Oct. 14, 2022	Oct. 13, 2023
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Jul. 24, 2023				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101910	Apr. 14, 2023	Apr. 13, 2024
Power Meter	Anritsu	ML2495A	1241002	Nov. 23, 2022	Nov. 22, 2023
Power Sensor	Anritsu	MA2411B	1207366	Nov. 23, 2022	Nov. 22, 2023
Attenuator	Pasternack	PE7005-10	10-2	Oct. 06, 2022	Oct. 05, 2023
Measurement Software	Sporton	SENSE-15247_FS	V5.10.8	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

47 CFR FCC Part 15.247
ANSI C63.10-2013

1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

1.7 Deviation from Test Standard and Measurement Procedure

None

1.8 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
Unwanted Emission ≤ 1GHz	±3.41 dB
Unwanted Emission > 1GHz	±4.9 dB

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	CO01-WS, TH01-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.)
Test Site	03CH03-WS
Address of Test Site	No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

- FCC Designation No.: TW0009
- FCC site registration No.: 207696
- ISED#: 10807C
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Mode	Test Frequency (MHz)	Test Configuration
AC Power Line Conducted Emissions	BT-LE(1Mbps)	2480	---
Unwanted Emissions ≤ 1GHz	BT-LE(1Mbps)	2480	---
Unwanted Emissions >1GHz Conducted Output Power	BT-LE(1Mbps)	2402, 2440, 2480	---

3 Transmitter Test Results

3.1 Conducted Output Power

3.1.1 Limit of Conducted Output Power

Conducted power shall not exceed 1Watt.

Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.

3.1.2 Test Procedures

A broadband RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

3.1.3 Test Setup

3.1.4 Test Results

Ambient Condition	24°C / 62%	**Tested By**	Roger Lu

Refer to Appendix A.

3.2 Unwanted Emissions in Restricted Frequency Bands

3.2.1 Limit of Unwanted Emissions in 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

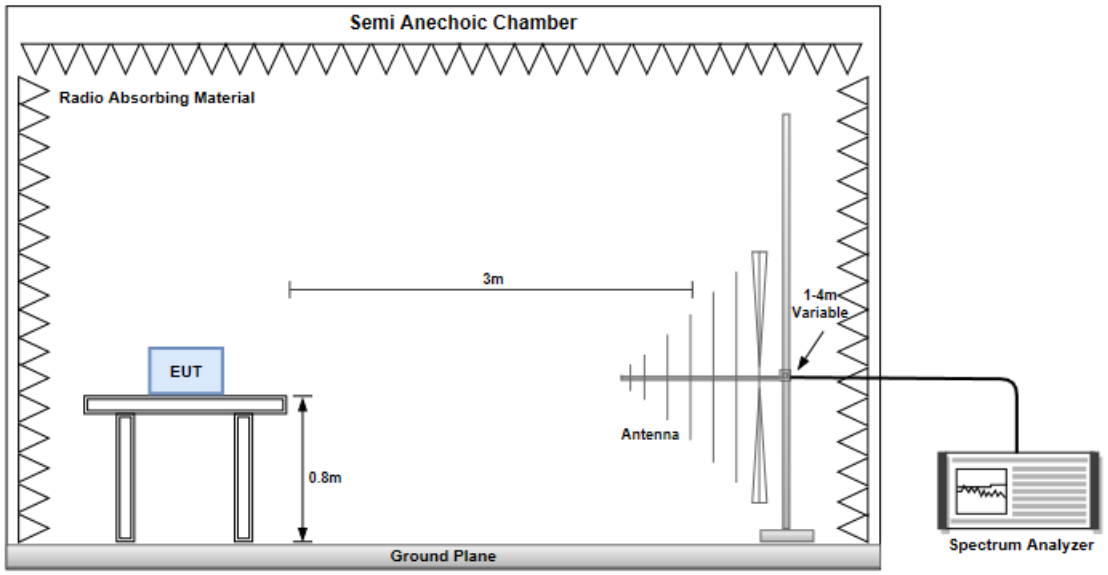
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission 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:

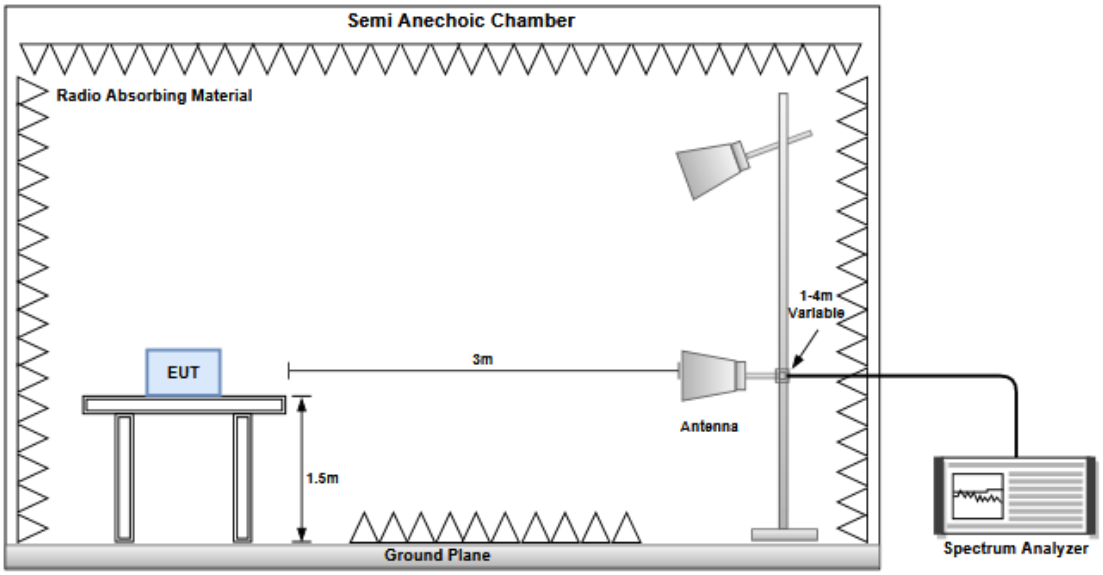
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.2.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.2.4 Test Results

Refer to Appendix B.

3.3 Emissions in non-restricted Frequency Bands

3.3.1 Emissions in non-restricted frequency bands limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.3.2 Test Procedures

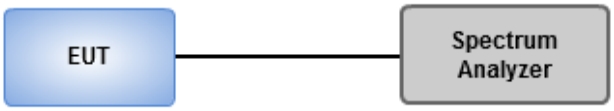
Reference level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

3.3.3 Test Setup



3.3.4 Test Results

Ambient Condition	24°C / 62%	**Tested By**	Roger Lu

Refer to Appendix C.

3.4 AC Power Line Conducted Emissions

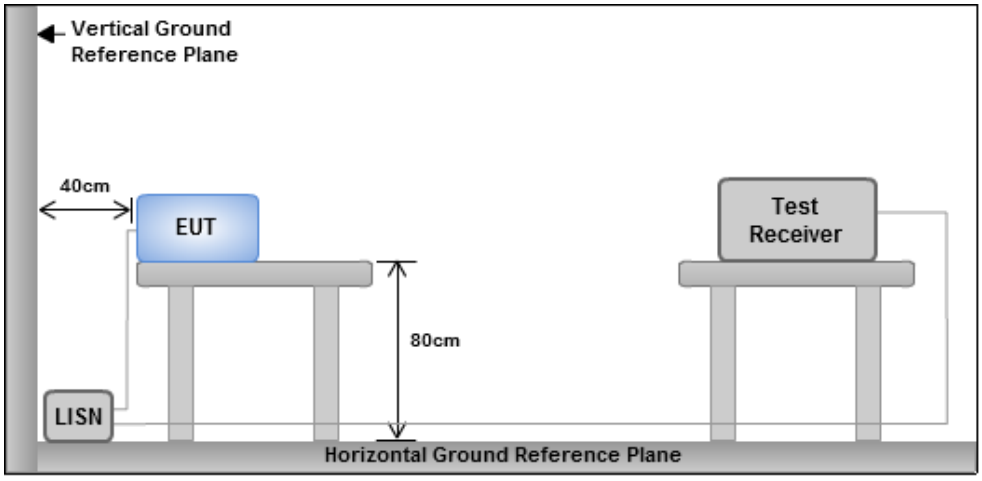
3.4.1 Limit of AC Power Line Conducted Emissions

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.		

3.4.2 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

3.4.3 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

3.4.4 Test Results

Refer to Appendix D.

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 33381, Taiwan (R.O.C.)

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

Tel: 886-3-271-8666
Fax: 886-3-318-0155
Email: ICC_Service@icertifi.com.tw

==END==

Summary

Mode	Total Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	3.35	0.00216

Result

Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
BT-LE(1Mbps)	-	-	-	-	-	-
2402MHz	Pass	2.80	2.40	30.00	5.20	36.00
2440MHz	Pass	2.80	2.91	30.00	5.71	36.00
2480MHz	Pass	2.80	3.35	30.00	6.15	36.00

Summary

Mode	Total Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	3.21	0.00209

Result

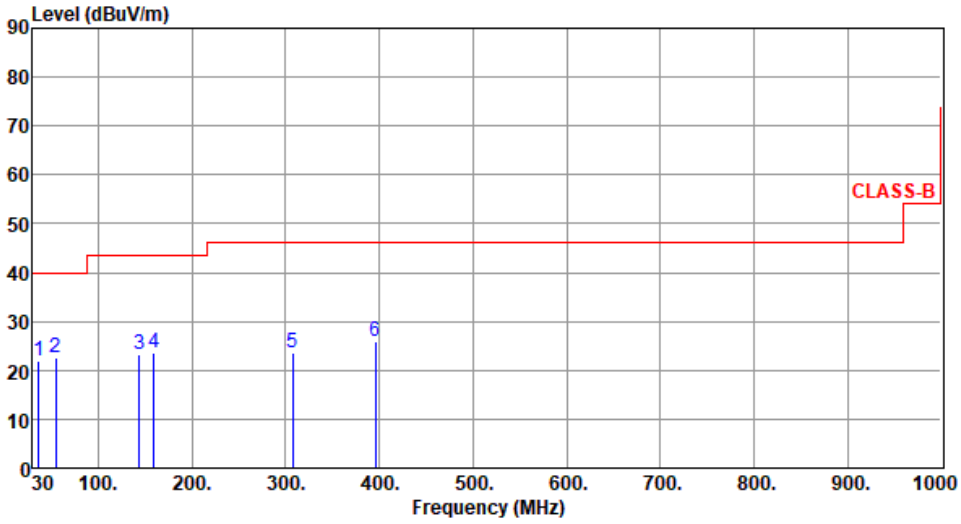
Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
BT-LE(1Mbps)	-	-	-	-	-	-
2402MHz	Pass	2.80	2.25	-	5.05	-
2440MHz	Pass	2.80	2.75	-	5.55	-
2480MHz	Pass	2.80	3.21	-	6.01	-

Note: Average power is for reference only.

Unwanted Emissions (Below 1GHz)

Modulation	BT-LE (1Mbps)	**Test Freq. (MHz)**	2480
Polarization	Horizontal		

Test By :Brad Wu Temperature(℃):23 Humidity(%):65

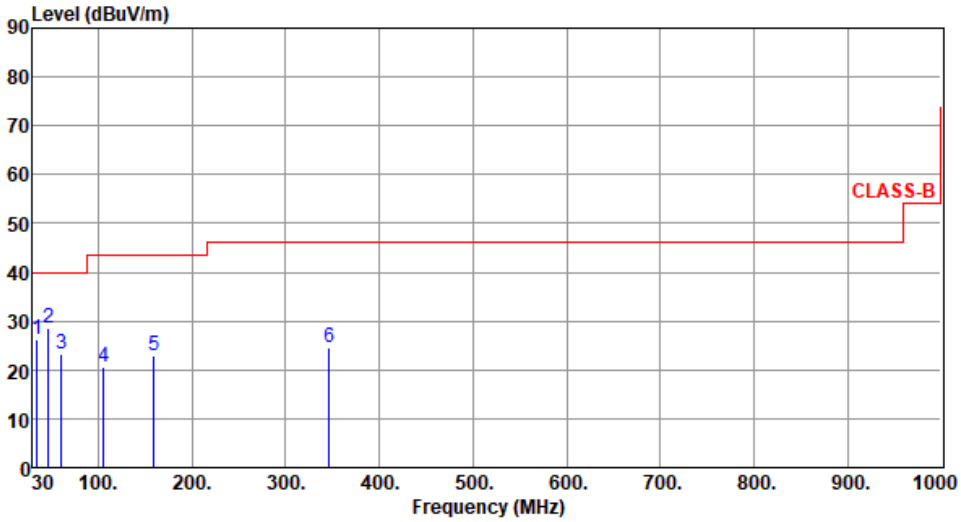


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	36.79	22.01	40.00	-17.99	31.00	-8.99	Peak	---	---
2	54.25	22.62	40.00	-17.38	30.65	-8.03	Peak	---	---
3	143.49	23.19	43.50	-20.31	31.88	-8.69	Peak	---	---
4	159.01	23.47	43.50	-20.03	32.00	-8.53	Peak	---	---
5	307.42	23.64	46.00	-22.36	31.32	-7.68	Peak	---	---
6	395.69	25.77	46.00	-20.23	30.85	-5.08	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	BT-LE (1Mbps)	**Test Freq. (MHz)**	2480
Polarization	Vertical		

Test By :Brad Wu Temperature(℃):23 Humidity(%):65



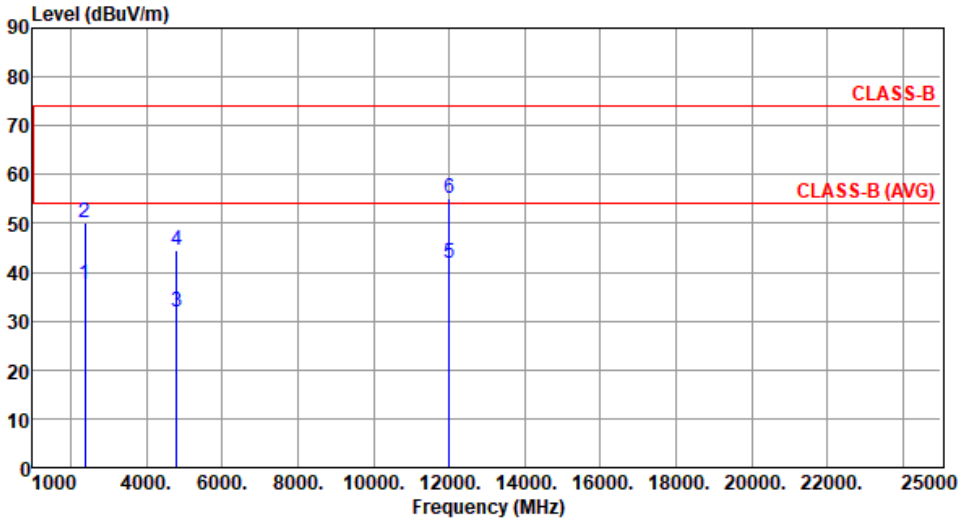
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	34.85	26.39	40.00	-13.61	35.65	-9.26	Peak	---	---
2	46.49	28.50	40.00	-11.50	36.51	-8.01	Peak	---	---
3	61.04	23.38	40.00	-16.62	32.41	-9.03	Peak	---	---
4	105.66	20.43	43.50	-23.07	32.59	-12.16	Peak	---	---
5	159.01	23.02	43.50	-20.48	31.55	-8.53	Peak	---	---
6	346.22	24.64	46.00	-21.36	31.26	-6.62	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.

Unwanted Emissions (Above 1GHz)

Modulation	BT-LE (1Mbps)	**Test Freq. (MHz)**	2402
Polarization	Horizontal		

Test By :Brad Wu Temperature(℃):23 Humidity(%):64

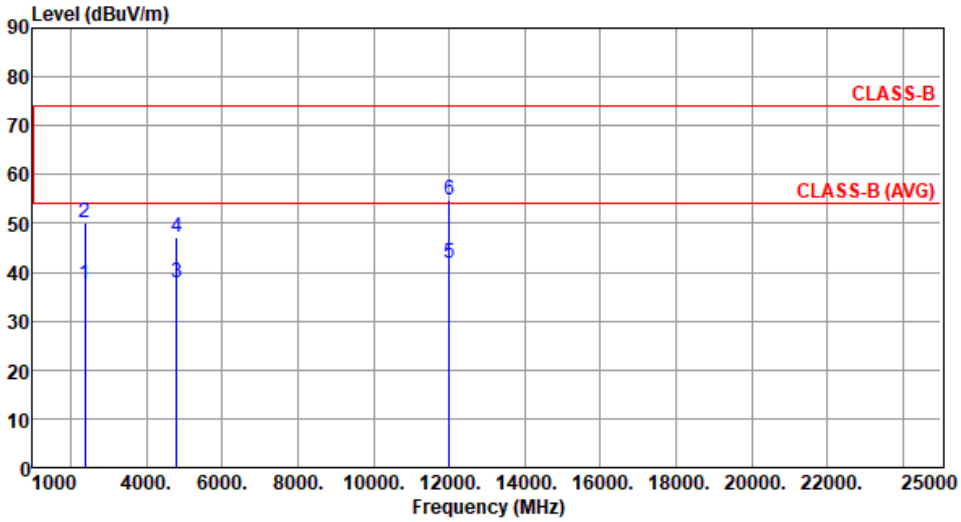


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	37.58	54.00	-16.42	41.37	-3.79	Average	135	321
2	2390.00	50.26	74.00	-23.74	54.05	-3.79	Peak	135	321
3	4804.00	31.74	54.00	-22.26	31.71	0.03	Average	100	14
4	4804.00	44.44	74.00	-29.56	44.41	0.03	Peak	100	14
5	12010.00	41.98	54.00	-12.02	34.22	7.76	Average	100	29
6	12010.00	55.18	74.00	-18.82	47.42	7.76	Peak	100	29

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).

Modulation	BT-LE (1Mbps)	**Test Freq. (MHz)**	2402
Polarization	Vertical		

Test By :Brad Wu Temperature(℃):23 Humidity(%):64

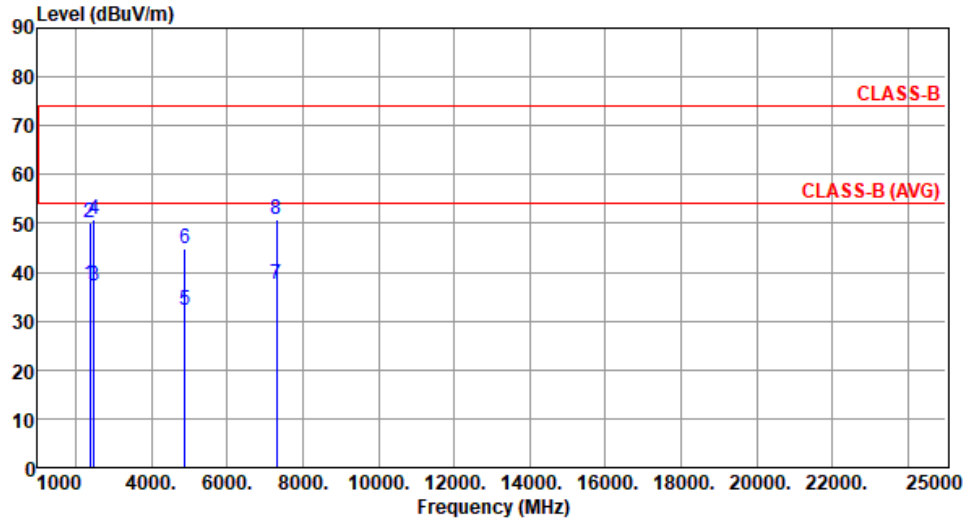


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	37.62	54.00	-16.38	41.41	-3.79	Average	322	71
2	2390.00	50.31	74.00	-23.69	54.10	-3.79	Peak	322	71
3	4804.00	37.87	54.00	-16.13	37.84	0.03	Average	349	83
4	4804.00	47.15	74.00	-26.85	47.12	0.03	Peak	349	83
5	12010.00	41.99	54.00	-12.01	34.23	7.76	Average	100	21
6	12010.00	54.73	74.00	-19.27	46.97	7.76	Peak	100	21

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).

Modulation	BT-LE (1Mbps)	**Test Freq. (MHz)**	2440
Polarization	Horizontal		

Test By :Brad Wu Temperature(℃):23 Humidity(%):64

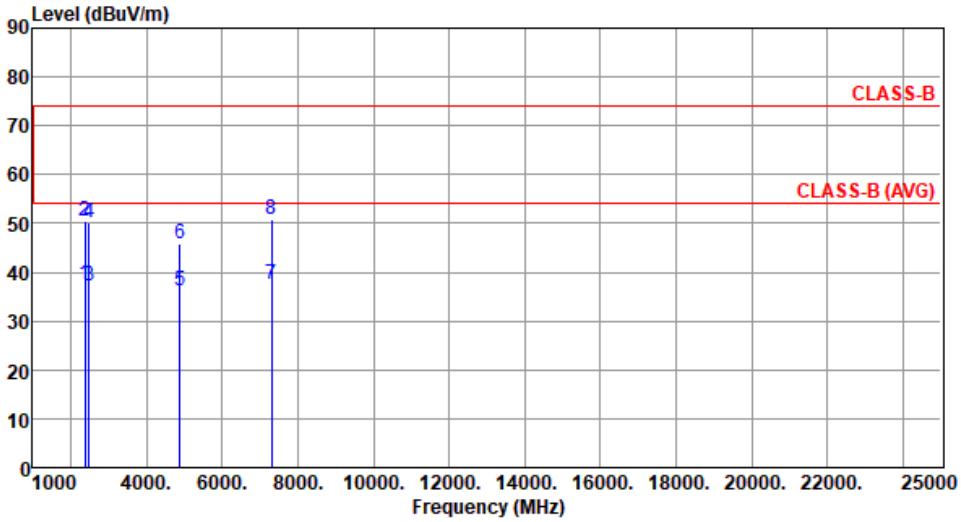


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	37.48	54.00	-16.52	41.27	-3.79	Average	138	319
2	2390.00	50.17	74.00	-23.83	53.96	-3.79	Peak	138	319
3	2483.50	37.34	54.00	-16.66	41.43	-4.09	Average	138	319
4	2483.50	50.72	74.00	-23.28	54.81	-4.09	Peak	138	319
5	4880.00	32.35	54.00	-21.65	32.25	0.10	Average	100	36
6	4880.00	44.76	74.00	-29.24	44.66	0.10	Peak	100	36
7	7320.00	37.54	54.00	-16.46	31.63	5.91	Average	100	26
8	7320.00	50.87	74.00	-23.13	44.96	5.91	Peak	100	26

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).

Modulation	BT-LE (1Mbps)	**Test Freq. (MHz)**	2440
Polarization	Vertical		

Test By :Brad Wu Temperature(℃):23 Humidity(%):64

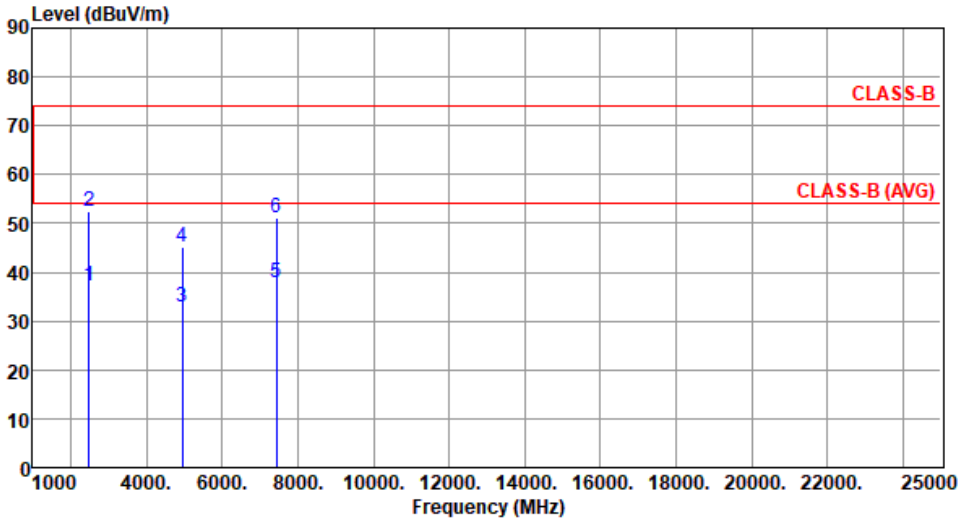


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	37.44	54.00	-16.56	41.23	-3.79	Average	325	69
2	2390.00	50.39	74.00	-23.61	54.18	-3.79	Peak	325	69
3	2483.50	37.34	54.00	-16.66	41.43	-4.09	Average	325	69
4	2483.50	50.25	74.00	-23.75	54.34	-4.09	Peak	325	69
5	4880.00	36.05	54.00	-17.95	35.95	0.10	Average	342	65
6	4880.00	45.69	74.00	-28.31	45.59	0.10	Peak	342	65
7	7320.00	37.52	54.00	-16.48	31.61	5.91	Average	100	22
8	7320.00	50.71	74.00	-23.29	44.80	5.91	Peak	100	22

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).

Modulation	BT-LE (1Mbps)	**Test Freq. (MHz)**	2480
Polarization	Horizontal		

Test By :Brad Wu Temperature(℃):23 Humidity(%):64

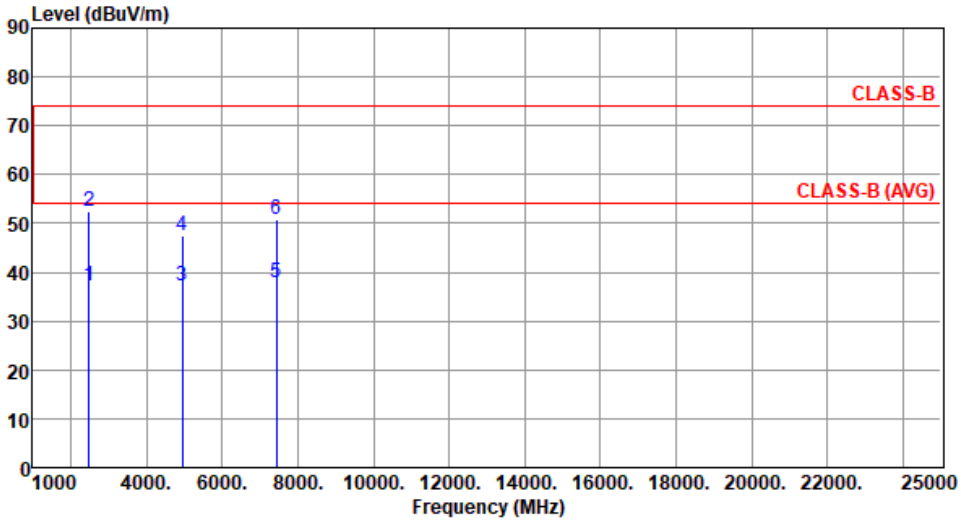


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	37.11	54.00	-16.89	41.20	-4.09	Average	135	312
2	2483.50	52.36	74.00	-21.64	56.45	-4.09	Peak	135	312
3	4960.00	32.94	54.00	-21.06	32.76	0.18	Average	100	44
4	4960.00	45.26	74.00	-28.74	45.08	0.18	Peak	100	44
5	7440.00	37.85	54.00	-16.15	31.89	5.96	Average	100	21
6	7440.00	51.18	74.00	-22.82	45.22	5.96	Peak	100	21

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).

Modulation	BT-LE (1Mbps)	**Test Freq. (MHz)**	2480
Polarization	Vertical		

Test By :Brad Wu Temperature(℃):23 Humidity(%):64

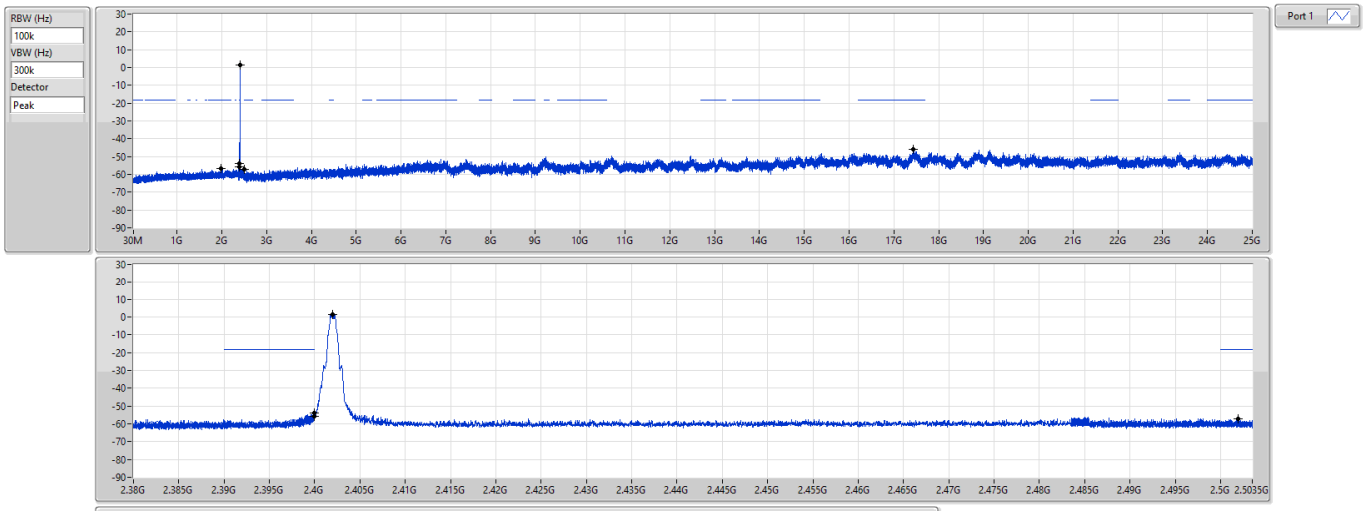


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	37.29	54.00	-16.71	41.38	-4.09	Average	341	68
2	2483.50	52.52	74.00	-21.48	56.61	-4.09	Peak	341	68
3	4960.00	37.04	54.00	-16.96	36.86	0.18	Average	326	67
4	4960.00	47.35	74.00	-26.65	47.17	0.18	Peak	326	67
5	7440.00	37.82	54.00	-16.18	31.86	5.96	Average	100	29
6	7440.00	50.96	74.00	-23.04	45.00	5.96	Peak	100	29

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).

2.4-2.4835GHz_BT-LE(1Mbps) **CSENdB-DTS**

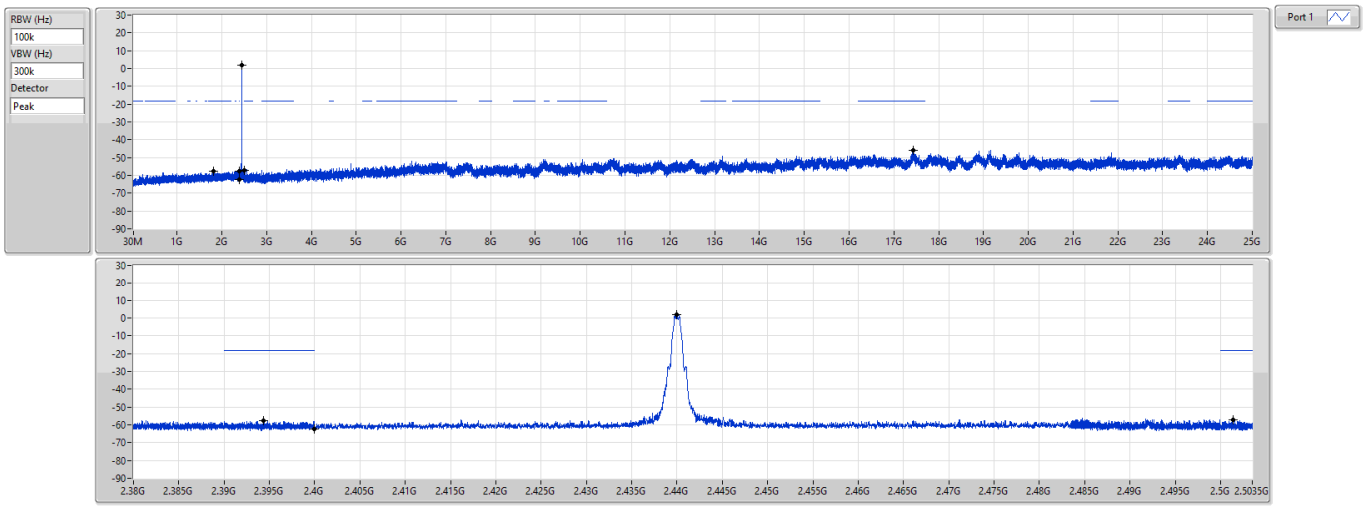
2402MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40199G	1.56	-18.44	1.98212G	-56.61	2.39998G	-53.90	2.4G	-55.81	2.50194G	-57.34	17.42993G	-45.90	1

2.4-2.4835GHz_BT-LE(1Mbps) **CSENdB-DTS**

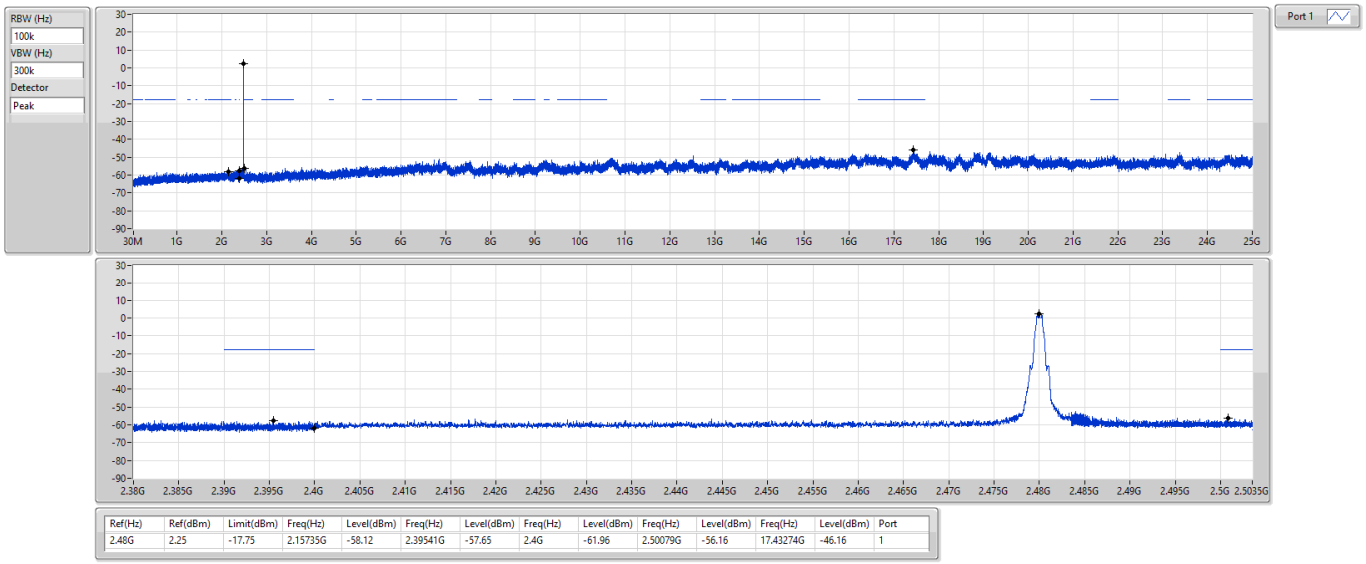
2440MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44G	1.83	-18.17	1.806G	-57.88	2.39435G	-57.66	2.4G	-62.23	2.50134G	-57.03	17.43344G	-46.05	1

2.4-2.4835GHz_BT-LE(1Mbps) **CSENdB-DTS**

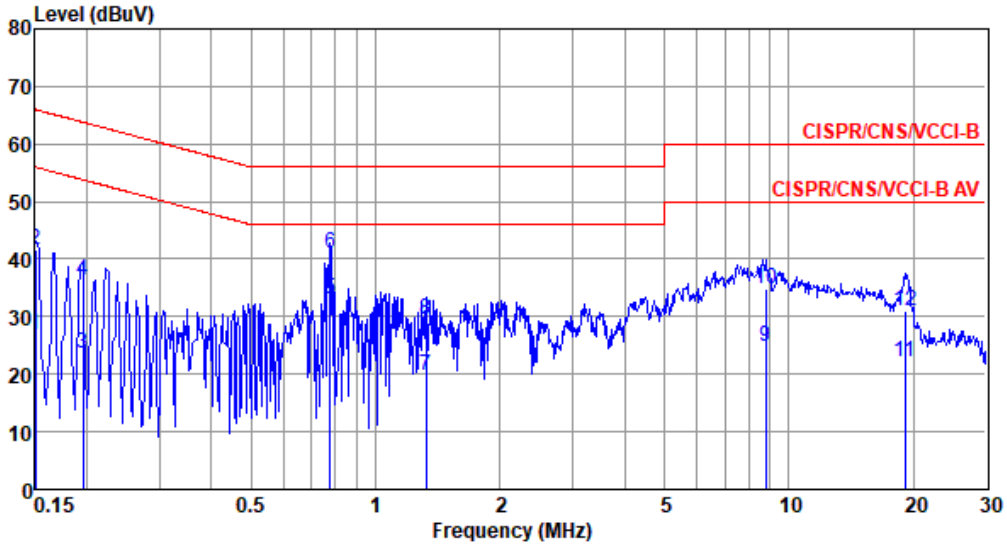
2480MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.48G	2.25	-17.75	2.15735G	-58.12	2.39541G	-57.65	2.4G	-61.96	2.50079G	-56.16	17.43274G	-46.16	1

Modulation	BT-LE(1Mbps)	**Test Freq. (MHz)**	2480
Power Phase	Line		

Test by : Joe Liao Temperature: 23°C Humidity: 62%

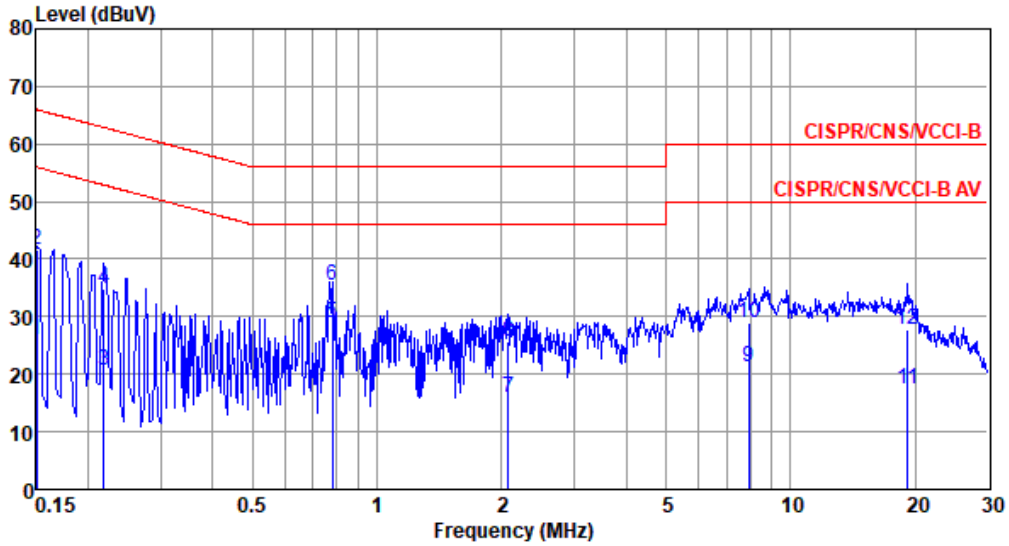


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.150	26.75	56.00	-29.25	16.88	9.63	0.06	0.18	Average
2	0.150	41.58	66.00	-24.42	31.71	9.63	0.06	0.18	QP
3	0.195	23.65	53.80	-30.15	13.78	9.62	0.06	0.19	Average
4	0.195	36.41	63.80	-27.39	26.54	9.62	0.06	0.19	QP
5*	0.775	32.93	46.00	-13.07	22.88	9.63	0.10	0.32	Average
6	0.775	41.10	56.00	-14.90	31.05	9.63	0.10	0.32	QP
7	1.324	19.69	46.00	-26.31	9.60	9.63	0.12	0.34	Average
8	1.324	29.63	56.00	-26.37	19.54	9.63	0.12	0.34	QP
9	8.776	24.90	50.00	-25.10	14.45	9.68	0.33	0.44	Average
10	8.776	34.87	60.00	-25.13	24.42	9.68	0.33	0.44	QP
11	19.122	22.13	50.00	-27.87	11.43	9.68	0.50	0.52	Average
12	19.122	31.10	60.00	-28.90	20.40	9.68	0.50	0.52	QP

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

Modulation	BT-LE(1Mbps)	**Test Freq. (MHz)**	2480
Power Phase	Neutral		

Test by : Joe Liao Temperature: 23°C Humidity: 62%



	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.150	25.90	56.00	-30.10	16.03	9.63	0.06	0.18	Average
2	0.150	41.53	66.00	-24.47	31.66	9.63	0.06	0.18	QP
3	0.219	20.61	52.88	-32.27	10.72	9.63	0.06	0.20	Average
4	0.219	34.72	62.88	-28.16	24.83	9.63	0.06	0.20	QP
5*	0.779	28.84	46.00	-17.16	18.79	9.63	0.10	0.32	Average
6	0.779	35.39	56.00	-20.61	25.34	9.63	0.10	0.32	QP
7	2.077	15.96	46.00	-30.04	5.83	9.64	0.13	0.36	Average
8	2.077	25.60	56.00	-30.40	15.47	9.64	0.13	0.36	QP
9	7.935	21.14	50.00	-28.86	10.71	9.69	0.31	0.43	Average
10	7.935	28.96	60.00	-31.04	18.53	9.69	0.31	0.43	QP
11	19.224	17.56	50.00	-32.44	6.75	9.79	0.50	0.52	Average
12	19.224	27.82	60.00	-32.18	17.01	9.79	0.50	0.52	QP

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