



REPORT No. : SZ16070156E01

FCC TEST REPORT

APPLICANT : Vitalwell Electronics (Zhuhai) Pte. Ltd.

PRODUCT NAME : VW320TSBR BusBeacon Receiver

MODEL NAME : VW320TSBR

TRADE NAME : Vitalwell

BRAND NAME : Vitalwell

FCC ID : 2AJJTVW320-BBR

STANDARD(S) : 47 CFR Part 15 Subpart B

TEST DATE : 2016-08-10 to 2016-08-30

ISSUE DATE : 2016-08-31



SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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Change History		
Issue	Date	Reason for change
1.0	2016-08-31	First edition



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Test Report Declaration

Applicant	Vitalwell Electronics (Zhuhai) Pte. Ltd.
Applicant Address	Blk D3#415/416, Southern Software Park, Tangjia, Zhuhai, Guangdong, China
Manufacturer	Vitalwell Electronics (Zhuhai) Pte. Ltd.
Manufacturer Address	Blk D3#415/416, Southern Software Park, Tangjia, Zhuhai, Guangdong, China
Product Name	VW320TSBR BusBeacon Receiver
Model Name	VW320TSBR
Brand Name	Vitalwell
HW Version	1.1
SW Version	1.21A
Test Standards	47 CFR Part 15 Subpart B
Test Result	PASS

Tested by : Wang Dalong
Wang Dalong (Test Engineer)

Reviewed by : Xiao Xiong
Xiao Xiong (EMC Manager)

Approved by : Zeng Dexin
Zeng Dexin (Technology Manager)



1. Technical Information

Note: Provided by applicant

1.1. Applicant Information

Company: Vitalwell Electronics (Zhuhai) Pte. Ltd.

Address: Blk D3#415/416, Southern Software Park, Tangjia, Zhuhai, GuangDong, China

1.2. Equipment under Test (EUT) Description

EUT Type:	VW320TSBR BusBeacon Receiver
Serial No:	(N/A, marked #1 by test site)
Hardware Version:	1.1
Software Version:	1.21A

NOTE:

1. The EUT is a VW320TSBR BusBeacon Receiver which equipped with an USB port.
2. For a more detailed description, please refer to specification or user's manual supplied by the applicant and/or manufacturer.



2. Test Results

2.1. Applied Reference Documents

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

No.	Identity	Document Title
1	47 CFR Part 15(August 29, 2016 Edition)	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Result
1	15.107	Conducted Emission	2016.08.30	PASS
2	15.109	Radiated Emission	2016.08.30	PASS

NOTE: The tests were performed according to the method of measurements prescribed in ANSI C63.4-2014.



3. Test Conditions Setting

3.1. Test Mode

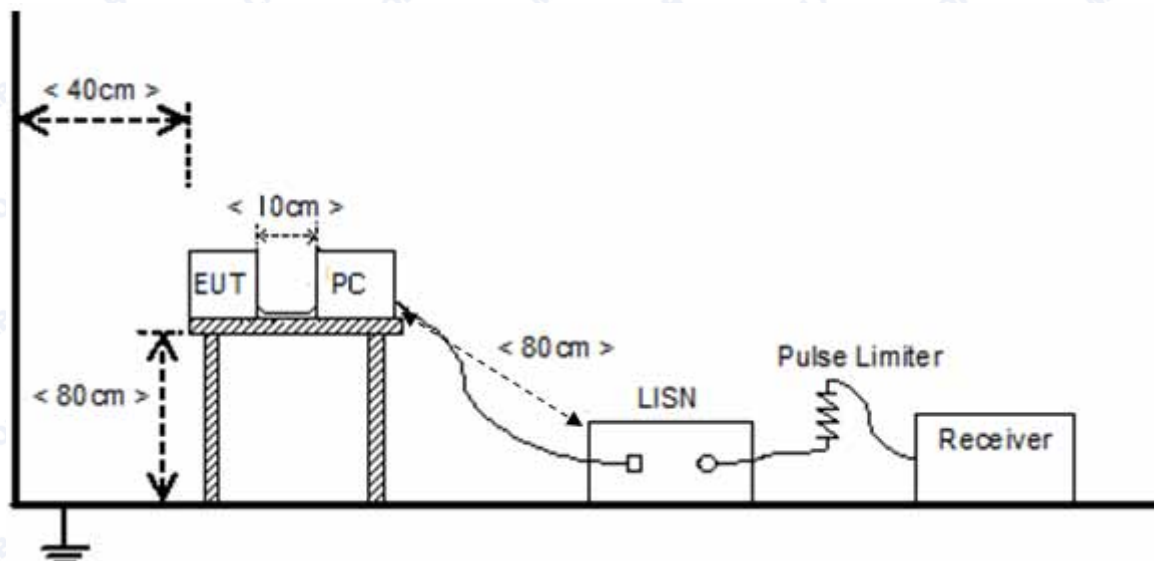
The EUT configuration of the emission tests is EUT + PC.

During the test, the EUT was connected with a PC via the USB port and the EUT was kept working normally until test end.

3.2. Test Setup and Equipments List

3.2.1. Conducted Emission

A. Test Setup:



The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides $50\Omega/50\mu\text{H}$ of coupling impedance for the measuring instrument. A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

The power strip or extension cord has been investigated to make sure that the LISN integrity is maintained with respect to the impedance characteristics as prescribed in ANSI C63.4-2014 at Clause 4.3.

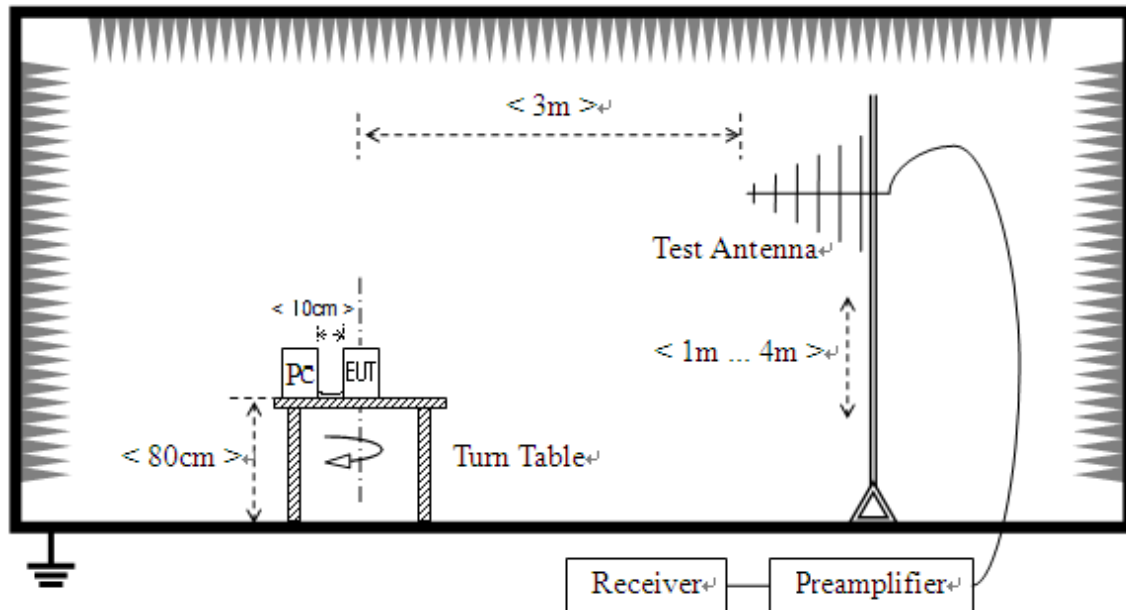
B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
Receiver	Narda	PMM 9010	001WX11001	2016.01.13	2017.01.12
Receiver	Narda	PMM 9060	595WX11007	2016.01.13	2017.01.12
LISN	Schwarzbeck	NSLK 8127	812744	2016.01.13	2017.01.12
Pulse Limiter (20dB)	Schwarzbeck	VTSD 9561-D	9537	2016.01.13	2017.01.12
PC	Apple	A1370	C02FQ2PYDDQW	N/A	N/A

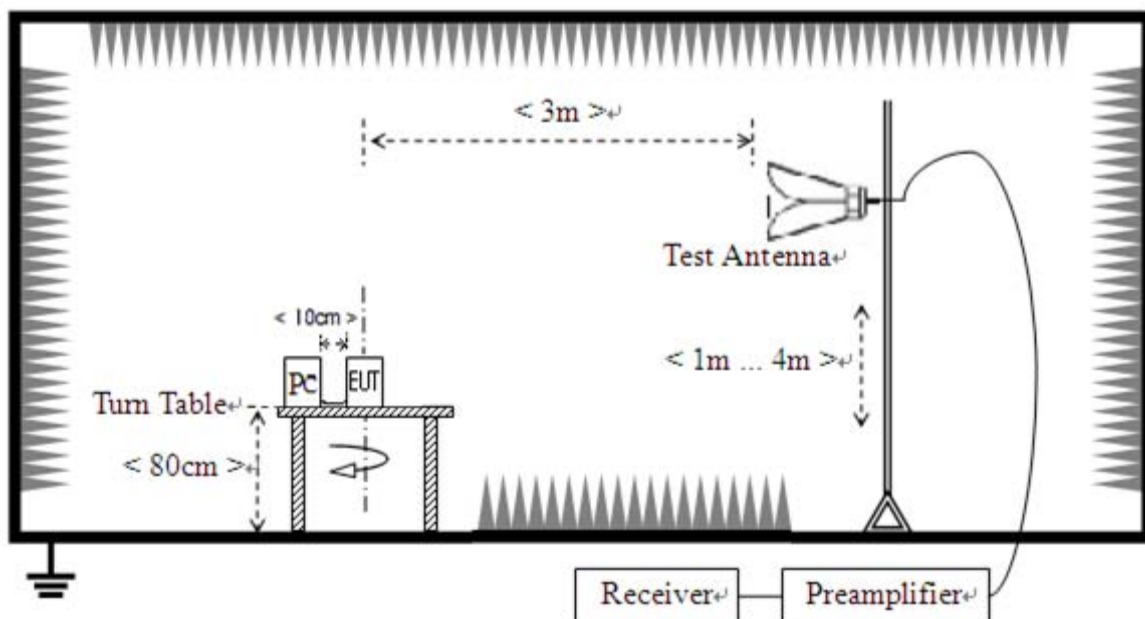
3.2.2. Radiated Emission

A. Test Setup:

- For radiated emissions from 30MHz to1GHz



- For radiated emissions above 1GHz





The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
MXE EMI Receiver	Agilent	N9038A	MY54130016	2016.01.13	2017.01.12
Semi-Anechoic Chamber	Albatross	9m*6m*6m	N/A	2016.01.13	2017.01.12
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2016.01.13	2017.01.12
Test Antenna - Horn	Schwarzbeck	BBHA9120 C	9120C-384	2016.01.13	2017.01.12
PC	Apple	A1370	C02FQ2PYD DQW	N/A	N/A



4. 47 CFR Part 15B Requirements

4.1. Conducted Emission

4.1.1. Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- The limit subjects to the Class B digital device.
- The lower limit shall apply at the band edges.
- The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

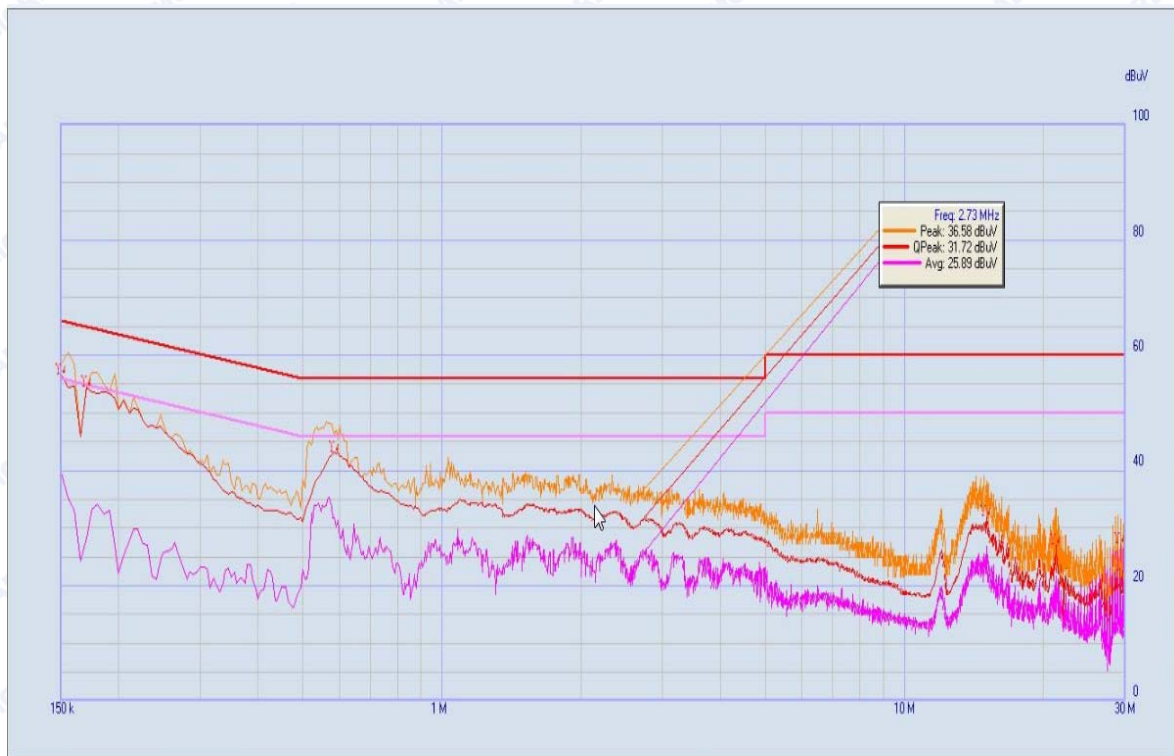
4.1.2. Test Description

See section 3.2.1 of this report.

4.1.3. Test Result

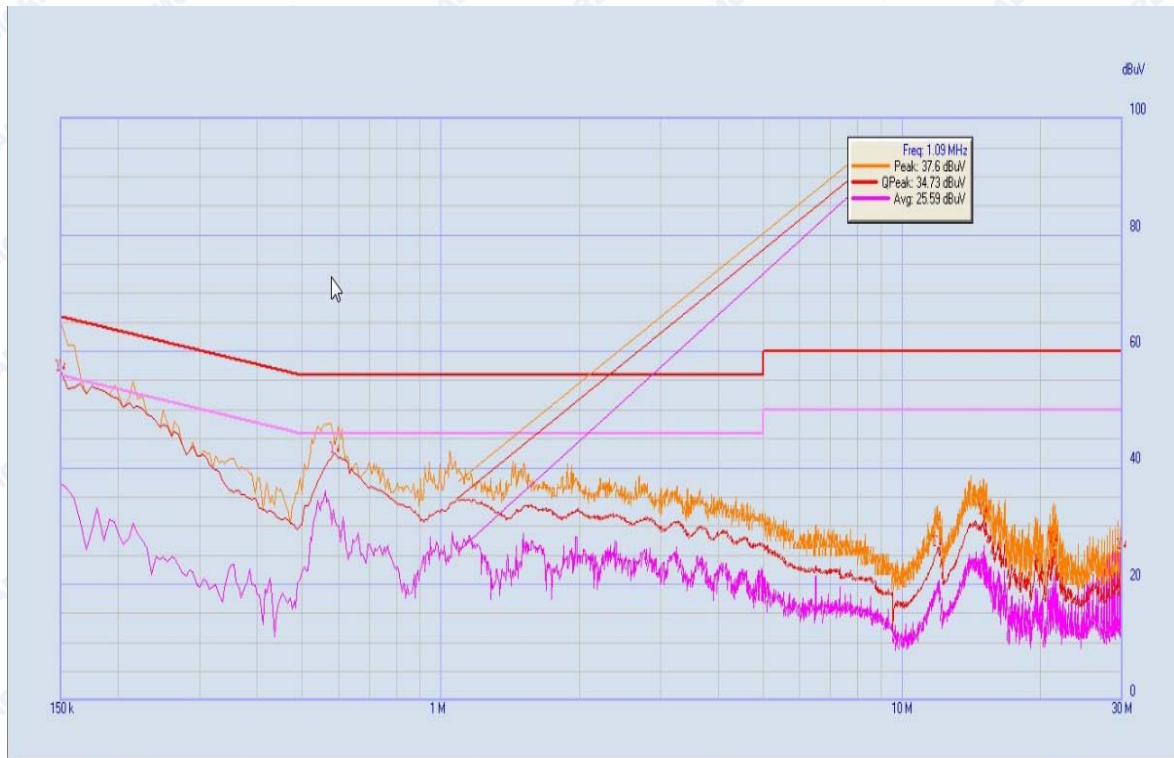
The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

A. Test Plot and Suspicious Points:



(Plot A: L Phase)

NO.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.15	56.53	39.68	66.00	56.00	Line	PASS
2	0.17	54.51	28.26	65.43	55.43		PASS
3	2.73	31.72	25.89	56.00	46.00		PASS
4	15.015	31.35	22.22	60.00	50.00		PASS
5	21.255	26.32	21.02	60.00	50.00		PASS
6	29.25	27.24	27.10	60.00	50.00		PASS



(Plot B: N Phase)

NO.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.15	56.68	37.25	66.00	56.00	Neutral	PASS
2	0.59	42.48	30.63	56.00	46.00		PASS
3	1.09	34.73	25.59	56.00	46.00		PASS
4	15.00	31.43	26.37	60.00	50.00		PASS
5	21.345	25.08	20.73	60.00	50.00		PASS
6	30.00	25.91	25.74	60.00	50.00		PASS

Test Result: PASS