

RF Exposure TEST REPORT



Report No.: **SL13080801-ZBR-047-N Radio-RF Exposure**

Supersede Report No.: **NONE**

Applicant	:	Zebra Technologies Corporation
Product Name	:	N Radio Module
Model No.	:	WYSBMVGXB
Test Standard	:	FCC 47 CFR §1.1307(b) FCC 47 CFR §1.1310
Test Method	:	FCC 47 CFR §1.1310 FCC OST/OET Bulletin Number 65
FCC ID	:	I28MD-EXLAN11N
IC ID	:	3798B-EXLAN11N
Dates of test	:	August 8th - August 23th , 2013
Issue Date	:	9/20/2013
Test Result	:	☒ Pass ☐ Fail
Equipment complied with the specification [X]		
Equipment did not comply with the specification []		

This Test Report is Issued Under the Authority of:

	
Nima Molaei	David Zhang
Test Engineer	Engineer Reviewer

Issued By:

SIEMIC Laboratories
775 Montague Expressway, Milpitas, 95035 CA



TESTING CERT # 2742-01

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Test result presented in this test report is applicable to the representative sample only.

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Laboratory Introduction

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In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC , RF/Wireless , Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless , Telecom
Taiwan	BSMI , NCC , NIST	EMC, RF, Telecom , Safety
Hong Kong	OFTA , NIST	RF/Wireless , Telecom
Australia	NATA, NIST	EMC, RF, Telecom , Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF , Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC , RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom , Safety

Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC , RF , Telecom
Canada	IC FCB , NIST	EMC , RF , Telecom
Singapore	iDA, NIST	EMC , RF , Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC (RCB 208)	RF , Telecom
HongKong	OFTA (US002)	RF , Telecom

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1 Report Revision History

Report No.	Report Version	Description	Issue Date
SL13080801-ZBR-047-N Radio-RF Exposure	Original	-	09/20/2013

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2 Executive Summary

The purpose of this test program was to demonstrate compliance of the Zebra Technologies Corporation , N Radio Module, and model: WYSBMVGXB to be installed into a printer host (Printer Model: ZD500R) against the current Stipulated Standards. It's FCC certified with FCC ID: 128MD-EXLAN11N and transmitting simultaneously with the RFID radio module with FCC ID: I28-RFIDM6EM. The WYSBMVGXB has demonstrated compliance with the Stipulated Standard listed on 1st page.

3 Customer information

Applicant Name	:	Zebra Technologies Corporation
Applicant Address	:	333 Corporate Woods Parkway , Vernon Hills, IL 60061 USA
Manufacturer Name	:	Zebra Technologies Corporation
Manufacturer Address	:	333 Corporate Woods Parkway , Vernon Hills, IL 60061 USA

4 Test site information

Lab performing tests	:	SIEMIC Laboratories
Lab Address	:	775 Montague Expressway, Milpitas, CA 95035
FCC Test Site No.	:	881796
IC Test Site No.	:	4842D-2
VCCI Test Site No.	:	A0133

5 Modification

Index	Item	Description	Note
-	-	-	-

6 EUT Information

6.1 EUT Description

Product Name	:	N Radio Module
Model No.	:	WYSBMVGXB
Trade Name	:	Zebra
Serial No.	:	100-240VAC
Input Power	:	24VDC
Power Adapter Manu/Model	:	Zebra/FSP100-RDB
Power Adapter SN	:	H00005819
Host	:	Mobile Printer
Host Model	:	ZD500R
Date of EUT received	:	August 16th, 2013
Equipment Class/ Category	:	N Radio (WLAN , BT)
Clock Frequencies	:	24 MHz
Port/Connectors	:	USB

6.2 Radio Description

Spec for WLAN –

Radio Type	802.11b	802.11g	802.11a	802.11n-20M	802.11n-40M
Operating Frequency	2412-2462MHz	2412-2462MHz	5180-5320MHz 5500-5700MHz 5745-5825MHz	2412-2462MHz 5180-5320MHz 5500-5700MHz 5745-5825MHz	5190-5310MHz 5510-5670MHz 5755-5795MHz
Modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing	5MHz	5MHz	20MHz	5MHz(2.4GHz), 20MHz (5GHz)	40MHz
Number of Channels	11	11	21	11(2.4GH) 21 (5GHz)	7 (2.4GH) 9 (5GHz)
Antenna Type	Patch Antenna				
Antenna Gain	3.81 dBi (2.4GHz), 5.0 dBi (5GHz)				
Antenna Connector Type	U. FL connector				

Spec for Bluetooth Radio –

Radio Type	Blue Tooth
Operating Frequency	2402-2480MHz
Modulation	FHSS (GFSK , $\pi/4$ -DQPSK, 8-DPSK)
Channel Spacing	1MHz
Number of Channels	79
Antenna Type	Patch Antenna
Antenna Gain	3.81 dBi (2.4GHz)
Antenna Connector Type	U. FL connector

7 MPE Calculation

RF Exposure Requirements:	47 CFR §1.1307(b)
RF Radiation Exposure Limits:	47 CFR §1.1310
RF Radiation Exposure Guidelines:	FCC OST/OET Bulletin Number 65
EUT Frequency Band:	2402-2480 MHz 2412-2462 MHz 5180-5825 MHz
Limits for General Population/Uncontrolled Exposure in the band of:	(N Radio) 1500-100000 MHz
Power Density Limit:	(N Radio) 1 mW/cm ²

Equation: $S = PG / 4\pi R^2$ or $R = \sqrt{PG / 4\pi S}$

Where, S = Power Density
P = Power Input to Antenna
G = Antenna Gain
R = distance to the center of radiated antenna

Prediction distance 20cm

BT (2402-2480MHz): Power = 7.76 dBm, antenna gain = 3.81 dBi, Power density = 0.00286 mW/cm²

WLAN(2412-2462MHz): Power = 16.37 dBm, antenna gain = 3.81 dBi, Power density = 0.0207 mW/cm²

WLAN(5180-5825MHz): Power = 16.28 dBm, antenna gain = 5.0 dBi, Power density = 0.0267 mW/cm²

UHF RFID (902.75-927.25 MHz): Power = 28.01dBm, Antenna gain= -28dBi, Power density=0.000199 mW/cm² (Worst Case)

Total Ratio= (P_{RFID}/0.62)+(P_{N Radio}/1)= 0.000321+0.0267=0.026899

Total Ratio is 0.026899, which is less than 1;

The Above Result had shown that Device complied with MPE requirement.

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