FCC TEST REPORT

(Intermodulation Evalutation)

CATEGORY:	Mobile Module
PRODUCT NAME:	802.11b + Bluetooth COMBO SIP
FCC ID.:	IXMWM-BB-AG-01
FILING TYPE:	Certification
BRAND NAME:	USI
MODEL NAME:	WM-BB-AG-01

APPLICANT:	**Universal Scientific Industrial Co., Ltd.** 135, Lane 351, Taiping, Sec.1, Tsao Yuen, Nan-Tou, Taiwan, R.O.C.
MANUFACTURER:	The same as Applicant.

ISSUED BY:	**SPORTON INTERNATIONAL INC.** 6F, No. 106, Sec. 1, Hsin Tai Wu Rd., His Chih, Taipei Hsien, Taiwan, R.O.C.

Statements:

The test result in this report refers exclusively to the presented test model / sample.

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Certificate or Test Report could not be used by the applicant to claim the product endorsement by CNLA, NVLAP or any agency of U.S. government.

The test equipment used to perform the test are calibrated and traceable to NML/ROC or NIST/USA.

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1. Introduction

Except the normal EM emission nature happened on single transmitter, co-located transmitter inherently produced extra emission which is only available while multiple transmitters is operated simultaneously. Such phenomenon is called “inter-modulation”. According to FCC’s rule, emission produced from inter-modulation has to be evaluated and fulfill the limit of spurious emission. In this test report, evaluation concept as well as the result will be presented.

2. Description of the EUT

This product is a module seeking for limited module approval specific to mobile host equipment. There are 2 radio functions which have been integrated together inside this module, standard bluetooth with 79 hopping channels and wireless LAN IEEE802.11b with 11 channels. Both RF solutions do not share the same antenna. BlueTooth uses printed inverted-F antenna, WLAN metal inverted-F. Both individuals has been tested according to FCC part 15 rule and found in compliance with the limit. Since this product is an module, so test feature is used to have it tested under stand-alone configuration and software is used to have both of them operated simultaneously.

3. Evaluation Concept

It is very hard to tell which combination is for sure can produce maximum inter-modulation emission. But basically it should be happened on the combination of 2 carrier emissions because they are the most strong one and, under the test environment defined by FCC, constructed interference of these 2 carriers should be available. So, testing will only be carried out on such condition.

4. Test Method and Observation

3 channels of WLAN has been tested while the bluetooth is also operated on the same carrier frequencies. It is observed that the emission is quite low in 3 conditions. One of the plot has been shown below. It is convinced that all the inter-modulation emission is lower than the limit.

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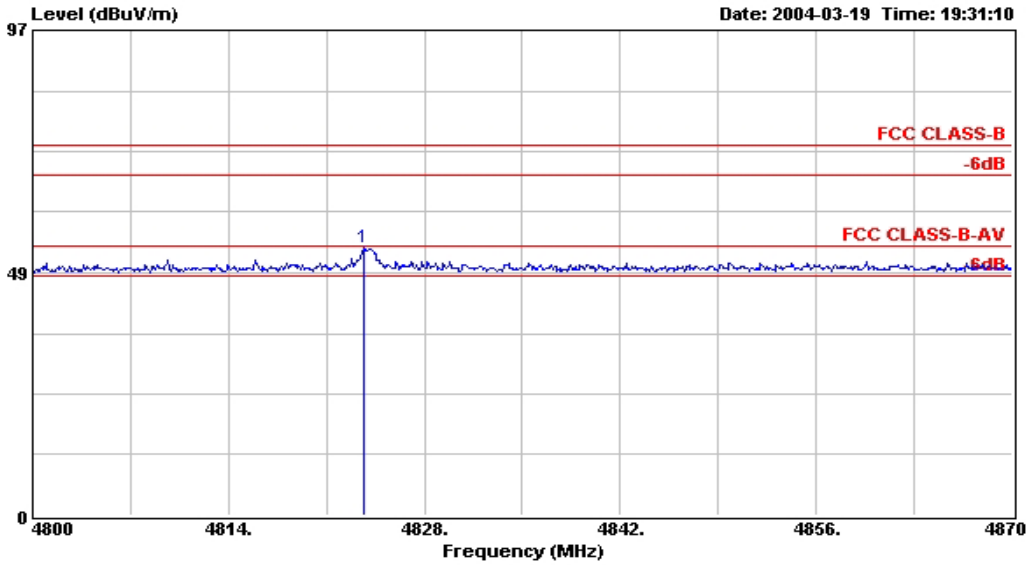

Site : 03CH03-HY
Condition : FCC CLASS-B 3m HORN-ANT-6741 HORIZONTAL
EUT : Combo SIP Module (802.11b+Bluetooth)
Power : FOR N/B
Model : WM-BB-AG-01
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4823.660	53.39	-20.61	74.00	56.37	33.07	2.48	38.53	Peak	---	---