Report On

RF Exposure Estimation of the
Yanfeng Visteon Automotive Electronics Co.,Ltd.
Bluetooth Module of R0-13 BTM01

COMMERCIAL-IN-CONFIDENCE

FCC ID: RQ9BTM01
IC ID: 5444A-BTM01

COMMERCIAL-IN-CONFIDENCE

REPORT ON   RF Exposure Estimation of the
Yanfeng Visteon Automotive Electronics Co.,Ltd.
Bluetooth Module of R0-13 BTM01

Document 57013010 Report 02 Issue 1

February 2013

PREPARED FOR   Yanfeng Visteon Automotive Electronics Co.,Ltd.
300 Minolta Road Songjiang County Shanghai, China

PREPARED BY

Y He
Test Engineer

APPROVED BY

C Zhang
Test Engineer

DATED   14 February 2013

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47: Part 1, 2 and Industry Canada RSS-102. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

Y He   C Zhang

COMMERCIAL-IN-CONFIDENCE

Product Service

RF Exposure Measurement

1   Introduction

This document was prepared to analyze the expected level of Radiofrequency Radiation Exposure caused by the radio transmission equipment Bluetooth Module of R0-13 BTM01 belonging to Yanfeng Visteon Automotive Electronics Co.,Ltd.

2   Limits and Guidelines on Maximum Permissible Exposure (MPE)

Based on Section FCC Part 1.1037(b) and Industry Canada RSS-102 requirements for environmental impact of human exposure to radio-frequency (RF) radiation, according to the KBD447498 Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies, a device may be used in mobile exposure condition with no restrictions when output power is ≤ $60/f_{(GHz)}$ mW as specified in the following table:

Limits for Maximum Permissible Exposure

Exposure Category	Limit
General Population	$1.0mW/cm^2$ or $10W/m^2$

NOTE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
NOTE 2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

3   Calculation of Output Power threshold for Bluetooth Module of R0-13 BTM01

Below method describes a theoretical approach to compare the output power of the Bluetooth Module of R0-13 BTM01 based on a typical configuration mobile device.

In accordance with 47CFR FCC Part 2.1091 and Industry Canada RSS-102, the product was defined as a mobile device.

3.1   Typical Configuration of the Bluetooth Module of R0-13 BTM01

The Bluetooth Module of R0-13 BTM01 supports frequency band of 2400MHz - 2483.5MHz. It supports GFSK, π/4DQPSK and 8PSK modulation with a bandwidth of 1MHz.

3.2   Antennas and Technical Description of Bluetooth Module of R0-13 BTM01

Max. output power at antenna connector(dBm)	Modulation Type	CH Bottom (2402MHz)	CH Middle (2441MHz)	CH Top (2480MHz)
	GFSK	6.37	6.77	7.01
	π/4DQPSK	5.73	6.10	6.25
	8PSK	5.84	6.20	6.37
Transmitter frequency band	2400MHz -2483.5MHz			
Number of antenna ports	1			
Antenna gain	0dBi			

3.3   Calculation result

This Bluetooth device operate with distance d ≥ 20cm,
The maximum measured antenna conducted power, P_{max}=7.01dBm
The antenna gain, G=0dBi,

So, the maximum EIRP power= P+G=7.01dBm, or 5.02mW
The limit for Maximum Permissible Exposure (MPE) for transmitter at 2.4GHz is1.0mW/cm^2

The power density is related to EIRP with the equation:
$S = EIRP/4\pi D^2$, which equal to $1=0.00502/4\pi D^2$, thus D=0.02cm

The minimum safe separation distance D= 0.02cm, which is below 20cm.