FCC PART 15.249

EMI MEASUREMENT AND TEST REPORT

For

Shenzhen Vitebo Science Technology Develop Co.,Ltd

3/F, 1st Building, No 243, Xinsheng Rd, Longgang District,Shenzhen, China.

FCC ID: T56VTB-99

Jul. 8, 2009

This Report Concerns: Original Report	Equipment Type： Bluetooth car kit
Test Engineer:	Eric Li
Report No.:	BST09061822517R-3
Receive EUT Date/Test Date:	Jul.1,2009/ Jul.1-8,2009
Reviewed By:	Christina
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1. GENERAL INFORMATION

1.1. Report information

1.1.1.This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

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Test Facility -
The test site used to collect the radiated data is located on the address of Solid Industrial Co., Ltd. (FCC Registered Test Site Number: 759397) on 333 Bulong Highway Buji, Longgang Shenzhen, Guangdong, China
The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. Measurement Uncertainty

Available upon request.

2. PRODUCT DESCRIPTION

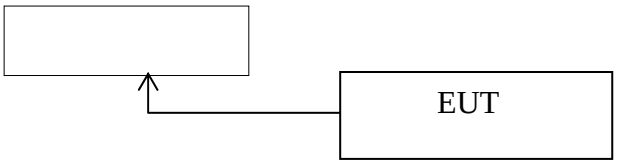
2.1. EUT Description

Description	:	Bluetooth car kit
Applicant	:	Shenzhen Vitebo Science Technology Develop Co.,Ltd 3/F, 1st Building, No 243, Xinsheng Rd, Longgang District,Shenzhen, China.
Model Number	:	VTB-99, VTB-80

Additonal Information

Frequency	:	2402MHz~2480MHz
Number of Channels	:	-
Power Supply	:	DC 3.7V
Maximum Range	:	N/A
Transmitter Antenna	:	The antenna is PCB Layout antenna, no consideration of replacement.Refer to the product photo.
Current Consumption		N/A

2.2. Block Diagram of EUT Configuration



2.3. Support Equipment List

N/A

2.4. Test Conditions

Temperature: 23~25℃
Relative Humidity: 55~63 %

3. FCC ID LABEL

FCC ID: T56VTB-99

This device complies with Part 15 of the FCC Rules.Operation is subject to the following two conditions:1. This device may not cause harmful interference, and 2. This device must accept any interference received,including interference that may cause undesired operation.

Label Location on EUT

EUT Bottom View/ FCC ID Label Location

4. TEST RESULTS SUMMARY

FCC 15 Subpart C,Paragraph 15.249:2004

Test Standards	Test Items	Test Results
FCC Part 15,Paragraph 15.207	Conducted Test	N/A
FCC Part 15 Subpart C, Paragraph 15.249(a) and 15.249(b)	Field Strength of Fundamental	Pass
FCC Part 15,Paragraph 15.209	Radiated Test	Pass
FCC Part 15 Subpart C, Paragraph 15.249(d)	Measured Band Edges	Pass

Remark: “N/A” means “Not applicable.”

Modifications

No modification was made.

5. TEST EQUIPMENT USED

Equipment/Facilities	Manufacturer	Model #	Serial no.	Date of Cal.	Cal. Interval
Cable	Resenberger	N/A	NO.1	Mar 10，2009	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Mar 10，2009	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Mar 10，2009	1 Year
LISN	Rohde＆Schwarz	ESH3-Z5	100305	Mar 10，2009	1 Year
50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 10, 2009	1 Year
EMI Test Receiver	Rohde＆Schwarz	ESP13	100180	Oct.18,2008	1 Year
Spectrum Analyzer	Rohde＆Schwarz	FSP40	100273	Sep.10,2008	1 Year
3m Semi-Anechoic Chamber	Albatross Projects	9m×6m×6m	N/A	Feb.20,2009	1 Year
Signal Generator	FLUKE	PM5418 + Y/C	LO747012	Feb.20,2009	1 Year
Signal Generator	FLUKE	PM5418TX	LO738007	Feb.20,2009	1 Year
Loop Antenna	SCHWARZBECK	FMZB1516	113	Jan.30,2009	1 Year
Trilog-Super Broadband Antenna	SCHWARZBECK	VULB9161	9161-4079	Sep.22,2008	1 Year
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-564	Sep.22,2008	1 Year
Ultra Broadband Antenna	Rohde＆Schwarz	HL-562	100110	June.15,2009	1 Year
AMN	Rohde＆Schwarz	ESH3-Z5	100196	Oct.11,2008	1 Year
AMN	Rohde＆Schwarz	ESH3-Z5	100197	Oct.11,2008	1 Year
Pulse Limiter	Rohde＆Schwarz	ESH3-Z2	N/A	N/A	N/A
Power Meter	Rohde＆Schwarz	NRVD	100041	Feb.20,2009	1 Year
EMI Test Receiver	Rohde＆Schwarz	ESCS30	100003	Feb.20,2009	1 Year
Coaxial Cable with N-connectors	SCHWARZBECK	AK9515H	95549	Sep.22,2008	1 Year
Radio Communication Test Set	Rohde＆Schwarz	CMS 54	846621/024	Feb.20,2009	1 Year
Modulation Analyzer	Hewlett-Packard	8901B	2303A00362	Feb.20,2009	1 Year
Absorbing clamp	Rohde＆Schwarz	MDS-21	N/A	Oct.29,2008	1 Year

6. CONDUCTED POWER LINE TEST

6.1. Test Equipment

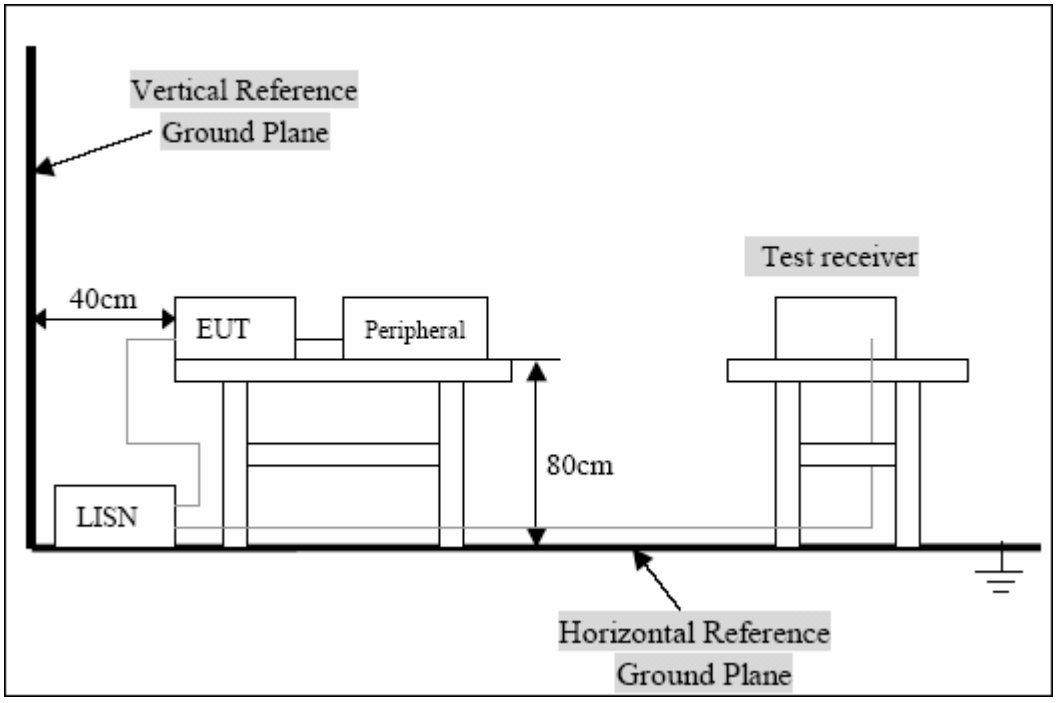
Please refer to section 4 this report.

6.2. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.).This provides a 50ohm/50uh coupling inpedance for the measuring equipment.The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uh coupling inpedance with 50ohm termination.

Both sides of A.C. Line are check for maximum conducted interference.In order to find the maximum emission,the relative positions of equipment and al of the interface cables must be changed according to ASIN C63.4:2003 on conducted measurement .Conducted emissions were invested over the frequency range from 0.15MHz to 30MH z using a receiver bandwidth of 9Khz.

6.3. Test Setup



For the actual test configuration,Please refer to the related items-Photos of testing

6.4. Configurating of the EUT

The EUT was configured according to ASIN C63.4:4-2003. Enable the signal transmitted from the external antenna from EUT to receiver. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.
Note:
Below 1GHZ, the channel low, middle, high were pre-tested, The channel low, worst case one, was chosen for conducted and radiated emission test.
Above 1GHZ,the channel low ,middle, high were tested individually.

A.EUT

Device	Manufacturer	Model #	FCC ID
Bluetooth car kit	Shenzhen Vitebo Science Technology Develop Co.,Ltd	VTB-99	T56VTB-99

B.Internal Devices

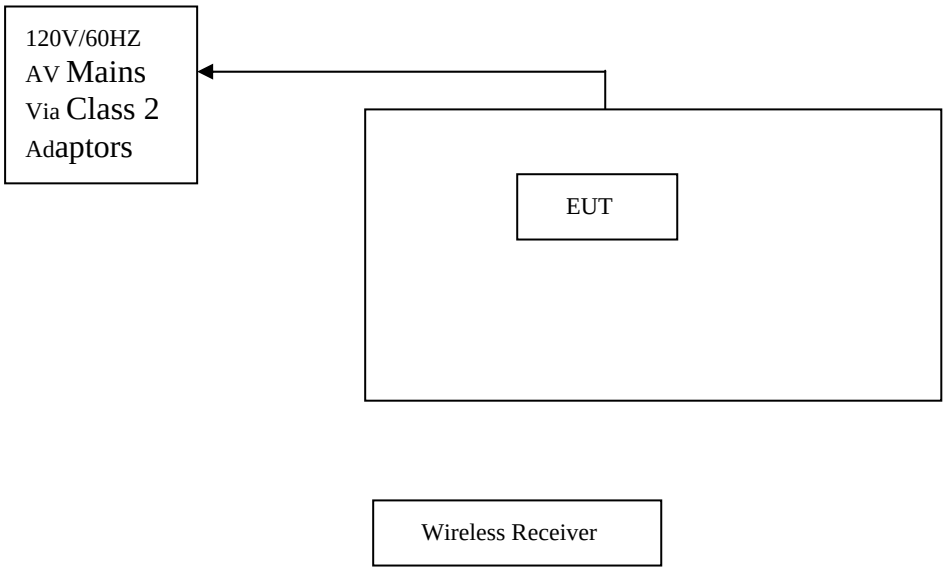
Device	Manufacturer	Model #	FCC ID
N/A			

C.Peripherals

Device	Manufacturer	Model # Serial #	FCC ID/ Doc	Cable
N/A				

6.5. EUT Operating Condition

Operating condition is according to ANSI C63.4-2003.
Setup the EUT and simulators as shown on follow.
Enable RF signal and confirm EUT active.
Modulate output capacity of EUT up to specification.



6.6. Conducted Power line Emission Limits

FCC Part 15 Paragraph 15.207 (dBuv)		
Frequency Range (MHZ)	Class A QP/AV	Class B QP/AV
0.15-0.5	79/66	65-56/56-46
0.5-5.0	73/60	56-46
5.0-3.0	73/60	60-50

Note: In the above table, the tighter limit applies at the band edges.

6.7. Conducted Power Line Test Result

N/A

7. RADIATED EMISSION TEST

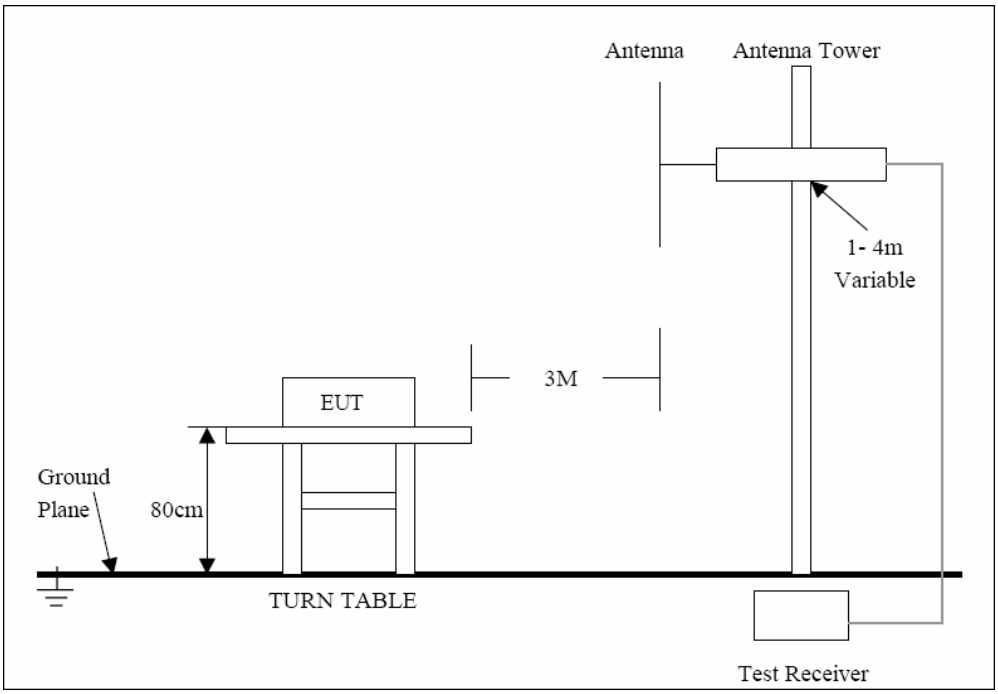
7.1. Test Equipment

Please refer to section 4 this report.

7.2. Test Procedure

1. The EUT was tested according C63.4-2003.The radiated test was performed at FCC Registration laboratory .
2. The EUT,peripherals were put on the turntable which table size od 1m×1.5m,table high 0.8m.All set up is according tl ANSI C63.4-2003.
3. The frequency spectrum from 30MHZ to 1 GHZ was investigated.All readings from 30MHZ to 1 GHZ are quasi-peak values with a resolution bandwidth of 120 KHZ. All readings are above 1GHZ ,prak values with a resolution bandwidth of 1 MHZ.Measurements were made at 3 merers.
4. The antenna high is varied from 1m to 4m high to find the maximum emission for each frequency.
5. Maximizing procedure was performed on the six(6)highest emissions to ensure EUT compliance is with all installation combinations.All data was recorded in the peak detection mode.Quasi-peak readings was performed only when an emission was found to be marginal (within -4 Db of specification limit),and are distinguished with a “QP”in the data table.
6. The antenna polarization:Vertical polarization and Horizontal polarization.

7.3. Radiated Test Setup



For the accrual test configuration,pleas refer to the related items-photos of Testing.

7.4. Confihuration of the EUT

Same as section 5.4 of this report

7.5. EUT Operating Condition

Same as section 5.5 of this report.

7.6. Radiated Emission Limit

All emission from a digital device,including any network of conductors and apparatus connected thereto,shall not exceed the level of field strength specified below :

A. FCC Part 15 Subpart C Paragraph 15.249(a) Limit

Frequency (MHZ)	Distance (m)	Field Strength (dBuV/m)
30-88	3	40.0
88-*216	3	43.5
216-960	3	46.0
ABOVE 960	3	54.0

Note: (1) RF Voltage (DbUv)=20 log Voltage(Uv)
(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
(3) The emission limit in this paragraph os based on measurement instrumentation employing an average detector.Measurement using instrumentation with a peak

Fundamental Frequency (MHZ)	Field as trength of Fundamental(3m)			Field as trength of Harmonics(3m)		
	Mv/m	dBuV/M		Uv/m	DBuV/M	
902~928	50	94(Average)	114(Peak)	500	54(Average)	74(Peak)
2400~2483.5	50	94(Average)	114(Peak)	500	54(Average)	74(Peak)

detector function,corresponding to 20dB above the maximum permitted average limit.

B.Frequencies in restricted band are complied to limit on Paragraph 15.209.

Note: (1) RF Voltage (DbUv)=20 log Voltage(Uv)
(2) In the Above Table,the tighter limit applies at the band edges.
(3) Distaqnce refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

7.7. Radiated Emission Test Result

A.Fundamental Radiated Emission Data

Product:	Bluetooth car kit	Test mode:	CH Low～CH High
Test Item:	Fundamental Radiated Emission Data	Temperature:	25℃
Test Voltage:	DC 3.7V	Humidity:	56%RH
Test Result:	PASS		

CH Low

Freq. (MHz)	Emission(dBuV/m) Peak Detector/ AV	HORIZ/ VERT	Limits(dBuV/m) Peak/AVERAGE	Margin (Db)
2402.23	86.2 / 67.3	HORIZ	114/94	27.8/26.7
2402.23	89.1 / 69.8	VERT	114/94	24.9/24.2

CH Middle

Freq. (MHz)	Emission(dBuV/m) Peak Detector/ AV	HORIZ/ VERT	Limits(dBuV/m) Peak/AVERAGE	Margin (Db)
2441.16	87.4/67.9	HORIZ	114/94	26.6/26.1
2441.16	90.6/71.1	VERT	114/94	23.4/22.9

CH High

Freq. (MHz)	Emission(dBuV/m) Peak Detector/ AV	HORIZ/ VERT	Limits(dBuV/m) Peak/AVERAGE	Margin (Db)
2480.13	85.7/66.5	HORIZ	114/94	28.3/27.5
2480.13	87.7/68.2	VERT	114/94	26.3/25.8

B.Harmonics Radiated Emission Data

Product:	Bluetooth car kit	Test mode:	CH Low～CH High
Test Item:	Radiated Emission Data	Temperature:	25℃
Test Voltage:	DC 3.7V	Humidity:	56%RH
Test Result:	PASS		

CH Low

Freq. (MHz)	Emission(dBuV/m) Peak Detector	HORIZ/ VERT	Limits(dBuV/m) Peak/AVERAGE	Margin (Db)
4804.46	-	H/V	74.0/54.0	-
7206.69	-	H/V	74.0/54.0	-
9608.96	-	H/V	74.0/54.0	-
12011.15	-	H/V	74.0/54.0	-
14413.38	-	H/V	74.0/54.0	-
16815.61	-	H/V	74.0/54.0	-
19217.84	-	H/V	74.0/54.0	-
21620.07	-	H/V	74.0/54.0	-
24022.3	-	H/V	74.0/54.0	-

CH Midde

Freq. (MHz)	Emission(dBuV/m) Peak Detector	HORIZ/ VERT	Limits(dBuV/m) Peak/ACERAGE	Margin (Db)
4882.32	-	H/V	74.0/54.0	-
7323.48	-	H/V	74.0/54.0	-
9764.64	-	H/V	74.0/54.0	-
12205.8	-	H/V	74.0/54.0	-
14646.96	-	H/V	74.0/54.0	-
17088.12	-	H/V	74.0/54.0	-
19529.28	-	H/V	74.0/54.0	-
21970.44	-	H/V	74.0/54.0	-
24411.6	-	H/V	74.0/54.0	-

CH High

Freq. (MHz)	Emission(dBuV/m) Peak Detector	HORIZ/ VERT	Limits(dBuV/m) Peak/ACERAGE	Margin (Db)
4960.26	-	H/V	74.0/54.0	-
7440.39	-	H/V	74.0/54.0	-
9920.52	-	H/V	74.0/54.0	-
12400.65	-	H/V	74.0/54.0	-
14880.78	-	H/V	74.0/54.0	-
17360.91	-	H/V	74.0/54.0	-
19841.04	-	H/V	74.0/54.0	-
22321.17	-	H/V	74.0/54.0	-
24801.3	-	H/V	74.0/54.0	-

Note: - means the emission is too low at least 20dB to the limit.

C. General Radiated Emission Data

Product:	Bluetooth car kit	Test mode:	-
Test Item:	Radiated Emission Data	Temperature:	25℃
Test Voltage:	DC 3.7V	Humidity:	56%RH
Test Result:	PASS		

Freq. (MHz)	Emission(dBuV/m) Peak Detector	HORIZ/ VERT	Limits(dBuV/m) Peak/ACERAGE	Margin (Db)
67.7	31.3	HORIZ	40	8.7
67.7	33.1	VERT	40	6.9
112.3	30.1	HORIZ	43.5	13.4
112.3	33.6	VERT	43.5	9.9
193.7	30.8	HORIZ	43.5	12.7
193.7	32.9	VERT	43.5	10.6

8. BAND EDGE

8.1. Test Equipment

Please refer to Section 4 this report.

8.2. Test Procedure

1. The EUT was tested according C63.4-2003.The radiated test was performed at FCC Registration laboratory .
2. The transmitter output was connected to the spectrum analyzer via a low lose cable.
Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency
span including 100 MHz bandwidth from band edge. The band edges was measured
and recorded.
3.As the radiation test ,set the Lowest and Highest Transmitting Channel,observed the outside band of 2400MHz to 2438.5MHz,than mark the higher-level emission for comparing with the FCC rules.

8.3. Configuration of The EUT

Same as section 5.4 of this report

8.4. EUT Operating Condition

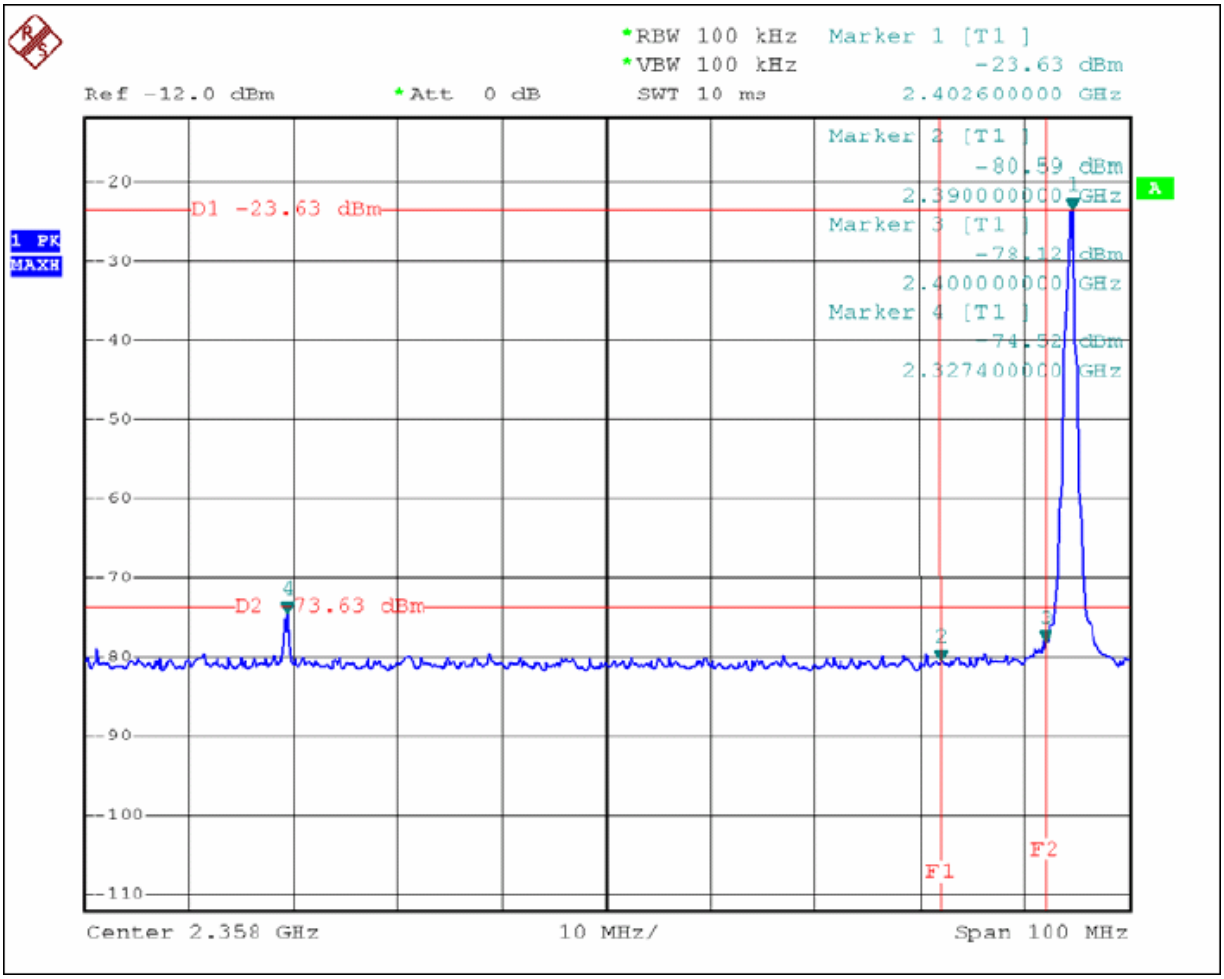
Same as section 5.5 of this report

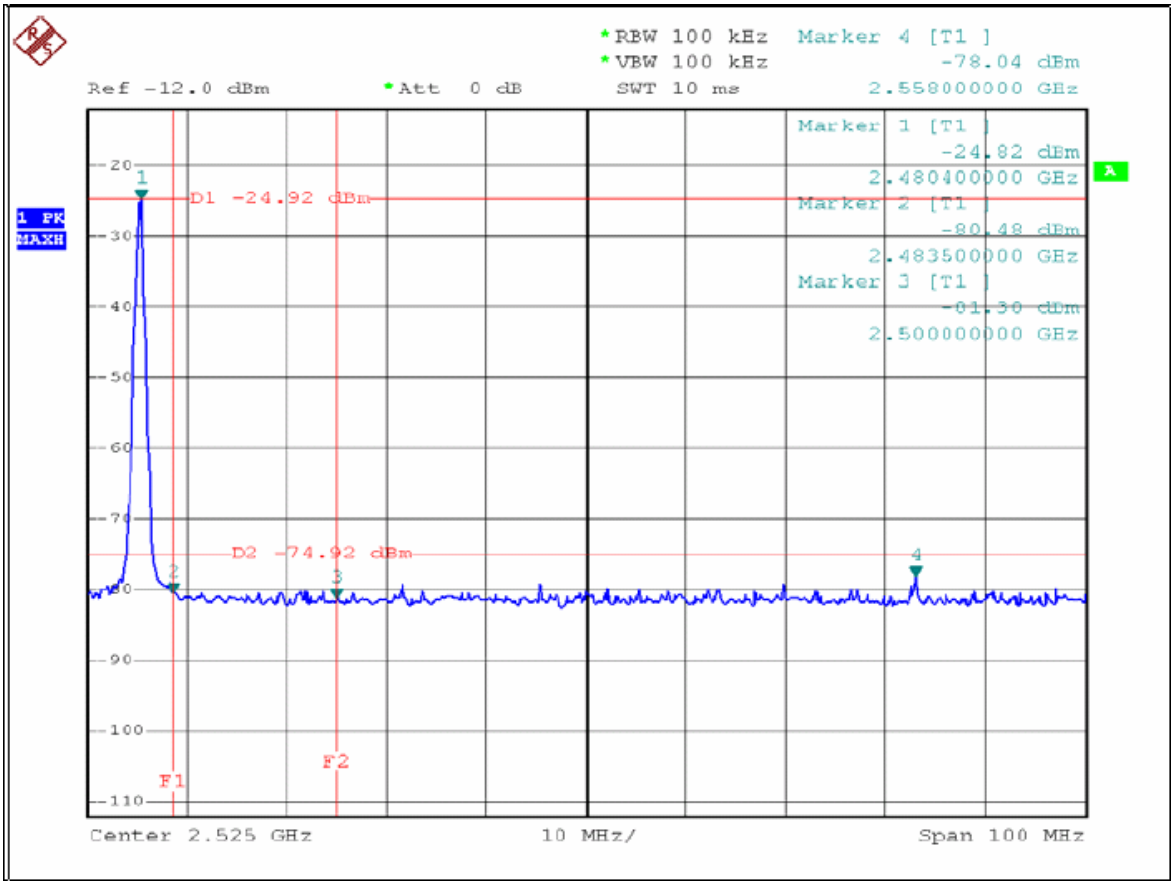
8.5. Band Edge FCC 15.249(d) Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating,the radio frequency power that is produced by the intentional radiator shall be at least 50dB below that in the 100kHz bandwidth within the band that contains the desired power,based on either an RF conducted or a radited measurement,Attenuation below the general limits specified in Section 15.209(a) is not required. In addition,radiated emissions which fall in the restricted bands as defined in Section 15.205(a),must also comply with the radiated emission limits specitfied in Section 15.209(a) (see Section 15.205(c)).

8.6. Band Edge Test Result

Product:	Bluetooth car kit	Test mode:	CH Low,CH High
Test Item:	-	Temperature:	25℃
Test Voltage:	DC 3.7V	Humidity:	56%RH
Test Result:	PASS		


RBW 100 kHz
VBW 100 kHz
Ref -12.0 dBm
Att 0 dB
SWT 10 ms
Marker 1 [T1]
-23.63 dBm
2.402600000 GHz
Marker 2 [T1]
-80.59 dBm
2.390000000 GHz
Marker 3 [T1]
-78.12 dBm
2.400000000 GHz
Marker 4 [T1]
-74.52 dBm
2.327400000 GHz
D1 -23.63 dBm
D2 -73.63 dBm
1 PK
MAXH
A
F1
F2
Center 2.358 GHz
10 MHz/
Span 100 MHz


*RBW 100 kHz
*VBW 100 kHz
Ref -12.0 dBm
*Att 0 dB
SWT 10 ms
Marker 4 [T1]
-78.04 dBm
2.558000000 GHz
Marker 1 [T1]
-24.82 dBm
2.480400000 GHz
Marker 2 [T1]
-80.48 dBm
2.483500000 GHz
Marker 3 [T1]
-01.30 dBm
2.500000000 GHz
1 PK
MAXH
D1 -24.92 dBm
D2 -74.92 dBm
F1
F2
Center 2.525 GHz
10 MHz/
Span 100 MHz