







ISO/IEC17025Accredited Lab.

Report No: FCC 0812096 File reference No: 2008-12-22

Applicant: ShenZhen Longhorn Technology Co., Ltd

Product: Bluetooth handsfree car kit

Model No: BT410

Trademark: Longhorn

Test Standards: FCC Part 15 Subpart C, Paragraph 15.247 and PART15B

Test result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.4&FCC Part 15 Subpart C, Paragraph 15.247 regulations for the evaluation of

electromagnetic compatibility

Approved By

Jack Chung

Jack Chung Manager

Dated: Dec. 22.2008

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD

5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.

Tel (755) 83448688 Fax (755) 83442996

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Date: 2008-12-22



Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 899988

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.:899988.

IC- Registration No.: IC5205A-01

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration No.: IC 5205A-01.

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1.0 General Details

1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD

Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District,

Shenzhen, CHINA.

Telephone: (755) 83448688 Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 899988

For 3m & 10 m OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-01

For 3m & 10 m OATS

1.2 Applicant Details

Applicant: ShenZhen Longhorn Technology Co., Ltd

Address: Longhorn Hi-Tech Estate, Gongyeyuan Rd., Dalang str, Longhua, Baoan District, Shenzhen,

518109, China

Telephone: +86-755-28032222 Fax: +86-755-28032666

1.3 Description of EUT

Product: Bluetooth handsfree car kit

Manufacturer: ShenZhen Longhorn Technology Co., Ltd

Brand Name: Longhorn
Model Number: BT410
Additional Model Name BT400

Rating: Input: DC 3.7V

Power Supply N/A
Type of Modulation FHSS

Frequency range 2402-2480MHz

Number of Channel 79

Frequency Selection By software

Antenna type chip dielectric antenna, the antenna gain is -2.0dBi

1.4 Submitted Sample: 2 Sample

1.5 Test Duration

2008-12-15 to 2008-12-22

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB Radiated Emissions Uncertainty =4.7dB

The report refers only to the sample tested and does not apply to the bulk.

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1.7 Test Engineer

The sample tested by

Print Name: Terry Tang

2.0		Test Equi	ipments		
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2008-12-06	2009-12-05
Absorbing Clamp	ROHDE&SCHWARZ	MDS-21	100126	2008-12-06	2009-12-05
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2008-12-06	2009-12-05
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2008-12-06	2009-12-05
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2008-12-06	2009-12-05
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2008-04-26	2009-04-25
4-WIRE ISN	ROHDE&SCHWARZ	ENY 41	830663/044	2008-02-18	2009-02-17
GG ENY22 Double 2-Wire ISN	ROHDE&SCHWARZ	ENY22	83066/016	2008-02-18	2009-02-17
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2008-02-18	2009-02-17
System Controller	СТ	SC100	-	2008-02-18	2009-02-17
Printer	EPSON	РНОТО ЕХЗ	CFNH234850	2008-02-18	2009-02-17
FM-AM Signal Generator	JUNGJIN	SG-150M	389911177	2008-02-18	2009-02-17
Color TV Pattern Generator	PHILIPS	PM5418	LO621747	2008-02-18	2009-02-17
Computer	IBM	8434	1S8434KCE99BLX LO*	-	-
Oscillator	KENWOOD	AG-203D	3070002	2008-02-18	2009-02-17
Power meter	Anritsu	ML2487A	6K00003613	2008-02-18	2009-02-17
Power sensor	Anritsu	MA2491A	32263	2008-02-18	2009-02-17

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Spectrum Analyzer	HAMEG	HM 5 012	-	2008-04-26	2009-04-25		
Power Supply			-	-	-		
5K VA AC Power Source	California Instruments	5001iX	56060	2008-02-18	2009-02-17		
CDN	EM TEST	CDN M2/M3	-	2008-02-18	2009-02-17		
Attenuation	EM TEST	ATT6/75	-	2008-02-18	2009-02-17		
Resistance	EM TEST	R100	-	2008-02-18	2009-02-17		
Electromagnetic Injection Clamp	LITTHI	EM101	35708	2008-02-18	2009-02-17		
Signal Generator	ROHDE&SCHWARZ	SMT03	100029	2008-02-18	2009-02-17		
Power Amplifier	AR	150W1000	300999	2008-02-18	2009-02-17		
Field probe	Holaday	HI-6005	105152	2008-02-18	2009-02-17		
Bilog Antenna	Chase	CBL6111C	2576	2008-02-18	2009-02-17		
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2008-02-18	2009-02-17		
3m OATS			N/A	2008-02-18	2009-02-17		
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2008-08-18	2009-08-17		
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2008-04-26	2009-04-25		

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3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:

Requirement	CFR 47 Section	Result	Notes
Antenna Requirement	15.203, 15.247(b)(4) and	PASS	Complies
Maximum Peak Out Power	15.247 (b)(1), (4) and	PASS	Complies
Carrier Frequency Separation	15.247(a)(1)	PASS	Complies
20dB Channel Bandwidth	15.247 (a)(1)	PASS	Complies
Number of Hopping Channels	15.247(a)(iii), 15.247(b)(1)	PASS	Complies
Time of Occupancy (Dwell Time)	15.247(a)(iii)	PASS	Complies
Spurious Emission, Band Edge, and	15.247(d),15.205(a),	PASS	Complies
Restricted bands	15.209 (a),15.109 and		
Peak Power Spectral Density	15.247(e)	PASS	Complies
Conducted Emissions	15.207(a), 15.107	PASS	Complies
RF Exposure	15.247(i), 1.1307(b)(1)	PASS	Complies

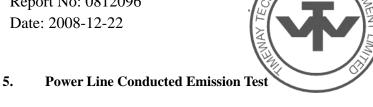
3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247, and Part15B

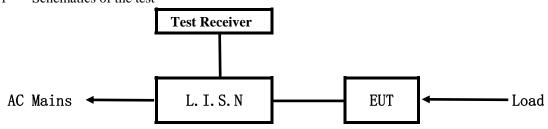
4.0 EUT Modification

No modification by Shenzhen Timeway Technology Consulting Co.,Ltd

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5.1 Schematics of the test

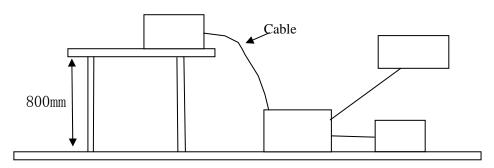


EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 -2003.

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

79 channels are provided to the EUT

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A. EUT

ъ.	M. C.	3.6 1.1	ECC ID
Device	Manufacturer	Model	FCC ID
Buletooth	ShenZhen Longhorn Technoology		
handsfree car	Co,.Ltd	BT410	WE7BT410
kit			

B. Internal Device

	Device	Manufacturer	Model	FCC ID/DOC
Ī	N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
N/A				

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003.

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.107,15.207

Frequency	Class A Lim	its (dB μ V)	Class B Limits (dB µ V)		
(MHz)	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level	
$0.15 \sim 0.50$	79.0	66.0	66.0~56.0*	56.0~46.0*	
$0.50 \sim 5.00$	73.0	60.0	56.0	46.0	
5.00 ~ 30.00	73.0	60.0	60.0	50.0	

Notes:

- 1. *Decreasing linearly with logarithm of frequency.
- 2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

Note: the worse cases was selected to conducted the test

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A Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Charging

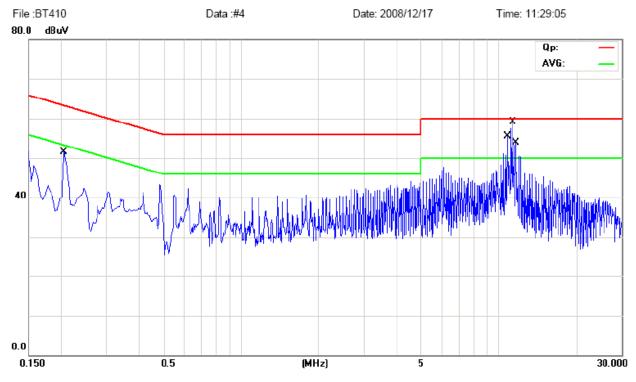
Results: Pass

Model: BT410

Test Voltage 120V~ 60Hz

Please refer to following diagram for individual

Conducted Emission Measurement



Emaguamay		Reading	Limi	t		
Frequency (MHz)	Line	Neutral		(dB µ V)		
(WITIZ)	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.2058	46.26	45.86			63.37	53.37
10.8143	38.48	31.38			60.00	50.00
11.3570	54.27	48.67			60.00	50.00
11.7210	33.67	27.27			60.00	50.00

30.000

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0.0

0.150

B Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Charging
Results: Pass
Model: BT410

Test Voltage 120V~ 60Hz Please refer to following diagram for individual

Conducted Emission Measurement

File :BT410 Data :#3 Date: 2008/12/17 Time: 11:24:28

80.0 dBuV

Qp:
AVG:

40

Г		Reading	Limi	t		
Frequency (MHz)	Live	Neutral		(dB µ V)		
(WITIZ)	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.2050		1	43.96	42.46	63.41	53.41
10.9713			35.88	27.78	60.00	50.00
11.3523			54.17	48.57	60.00	50.00
11.5346			36.27	28.97	60.00	50.00

(MHz)

0.5

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6 Radiated Emission Test

- 6.1 Test Method and test Procedure:
- (1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.
- (3) The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m 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.

Block diagram of Test setup Distance = 3m Computer Pre -Amplifier EUT Turn-table Receiver

- 6.2 Configuration of The EUT

 Same as section 5.3 of this report
- 6.3 EUT Operating Condition

 Same as section 5.4 of this report.

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6.4 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:

Frequencies in restricted band are complied to limit on Paragraph 15.109. 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/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 $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 2. In the Above Table, the higher limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

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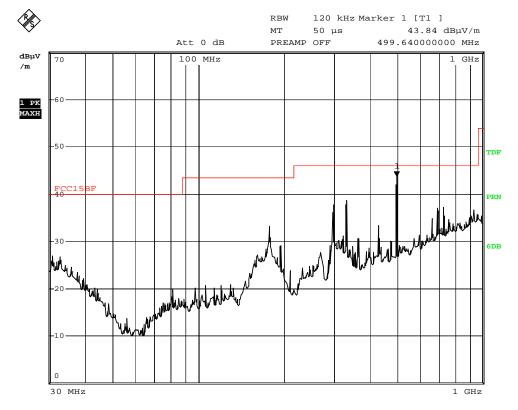
Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Transmitting mode

Model: BT410 **Results: Pass**



Date: 17.DEC.2008 09:50:37

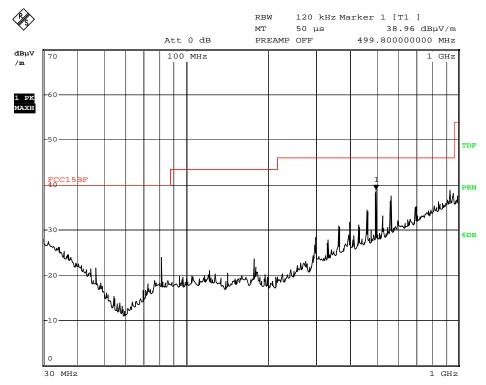
Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
299.04	37.74	Н	46.00
333.08	38.75	Н	46.00
499.64	43.84	Н	46.00



Date: 2008-12-22

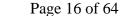
EUT set Condition: Transmitting mode

Model: BT410 **Results: Pass**



Date: 17.DEC.2008 09:49:31

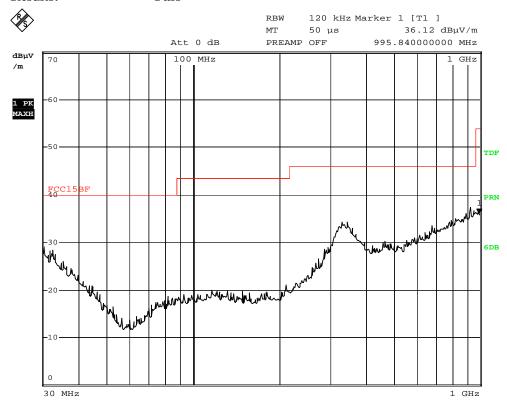
Frequency (MHz)	Frequency (MHz) Level@3m (dB \u03b4 V/m)		Limit@3m (dB \mu V/m)
499.92	39.67	V	46.00



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EUT set Condition: Transmitting Mode

Model: BT400
Results: Pass



Date: 22.DEC.2008 16:21:53

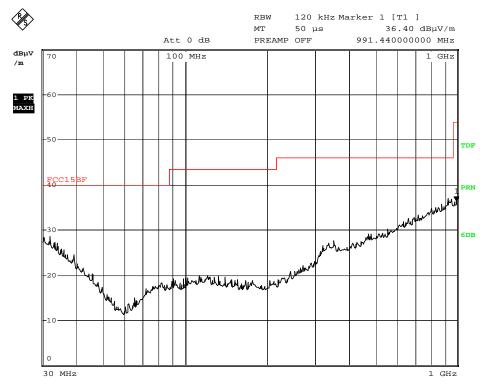
Frequency (MHz)	Frequency (MHz) Level@3m (dB \(\mu \) V/m)		Limit@3m (dB \(\mu \)V/m)	



Date: 2008-12-22

EUT set Condition: Transmitting Mode

Model: BT400
Results: Pass



Date: 22.DEC.2008 16:19:52

Frequency (MHz)	Frequency (MHz) Level@3m (dB \(\mu \) V/m)		Limit@3m (dB \(\mu \)V/m)	

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Operation Mode: Transmitting under Low Channel (2402MHz)

	e e		
Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
2402	92.6 (PK) /81.6 (AV)	V	Fundamental Frequency
2402	95.8 (PK) /86.3 (AV)	Н	rundamental Frequency
4804		H/V	74(Peak)/ 54(AV)
7206		H/V	74(Peak)/ 54(AV)
9608		H/V	74(Peak)/ 54(AV)
12010		H/V	74(Peak)/ 54(AV)
14412		H/V	74(Peak)/ 54(AV)
16814		H/V	74(Peak)/ 54(AV)
19216		H/V	74(Peak)/ 54(AV)
21618		H/V	74(Peak)/ 54(AV)
24020		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

- 2. Remark "---" means that the emissions level is too low to be measured
- 3. After pre-scan, the model BT410 was selected to conduct the final test

Operation Mode: Transmitting g under Middle Channel (2441MHz)

operation without transmitting and transmit (2.1111/112)							
Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)				
2441	93.3 (PK) /82.5 (AV)	V	Eundomontal Eraguanay				
2441	99.5 (PK) /89.6 (AV)	Н	Fundamental Frequency				
4882.		Н	74(Peak)/ 54(AV)				
7323		H/V	74(Peak)/ 54(AV)				
9764		H/V	74(Peak)/ 54(AV)				
12205		H/V	74(Peak)/ 54(AV)				
14646		H/V	74(Peak)/ 54(AV)				
17087		H/V	74(Peak)/ 54(AV)				
19528		H/V	74(Peak)/ 54(AV)				
21969		H/V	74(Peak)/ 54(AV)				
24410		H/V	74(Peak)/ 54(AV)				

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

- 2. Remark "---" means that the emissions level is too low to be measured
- 3. After pre-scan, the model BT410 was selected to conduct the final test

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0 4 1/	1 701 1441		TT' I CI	// i
Operation Mo	ode: Transmitting	g under	High Ch	iannei

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
2480	92.7 (PK) 81.9 (AV)	V	Fundamental Fraguency
2480	98.3 (PK) /88.2 (AV)	Н	Fundamental Frequency
4960		H/V	74(Peak)/ 54(AV)
7440		H/V	74(Peak)/ 54(AV)
9920		H/V	74(Peak)/ 54(AV)
12400		H/V	74(Peak)/ 54(AV)
14880		H/V	74(Peak)/ 54(AV)
17360		H/V	74(Peak)/ 54(AV)
19840		H/V	74(Peak)/ 54(AV)
22320		H/V	74(Peak)/ 54(AV)
24800		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

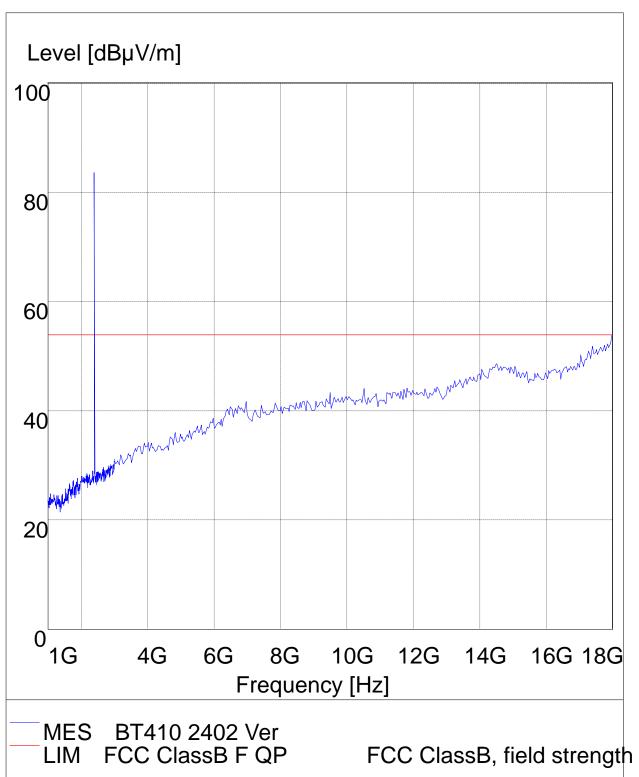
- 2. Remark "---" means that the emissions level is too low to be measured
- 3. After pre-scan, the model BT410 was selected to conduct the final test

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Please refer to the following test plots for details

Low Channel: Vertical



The report refers only to the sample tested and does not apply to the bulk.

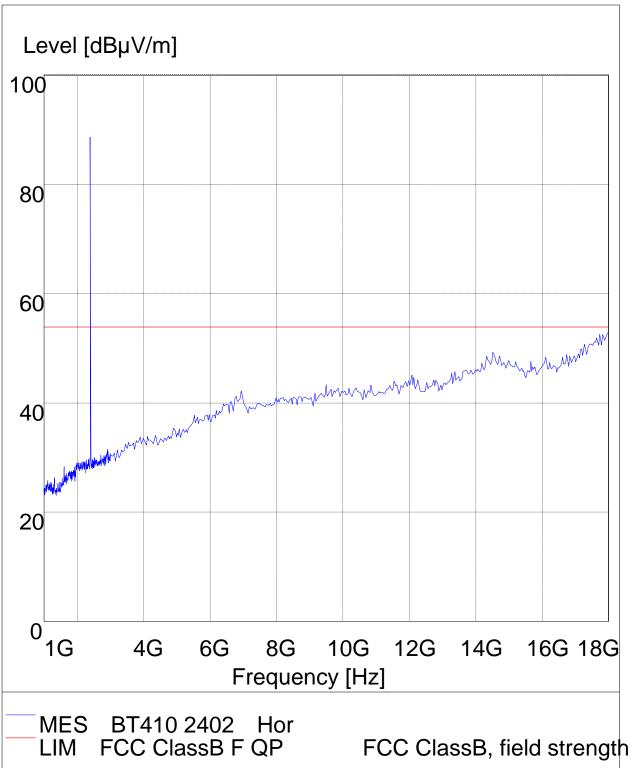
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Low Channel: Horizontal

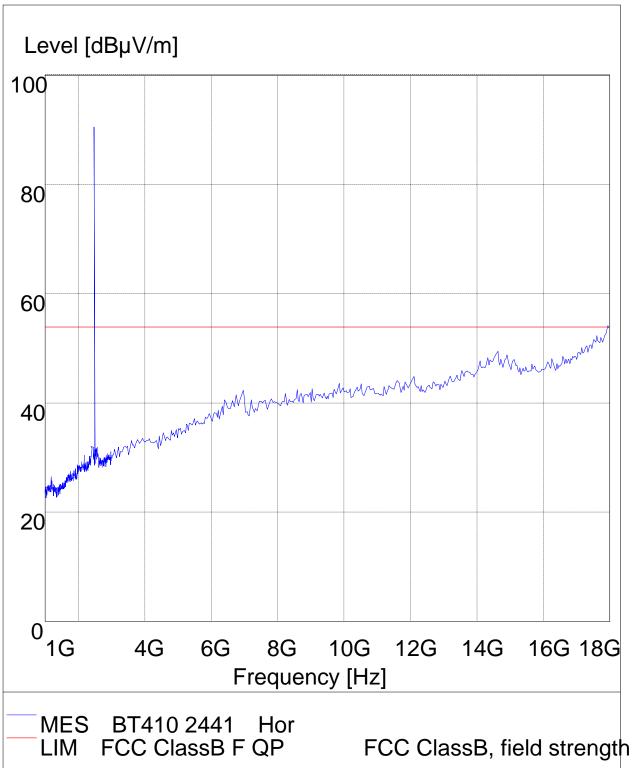


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Middle Channel: Horizontal

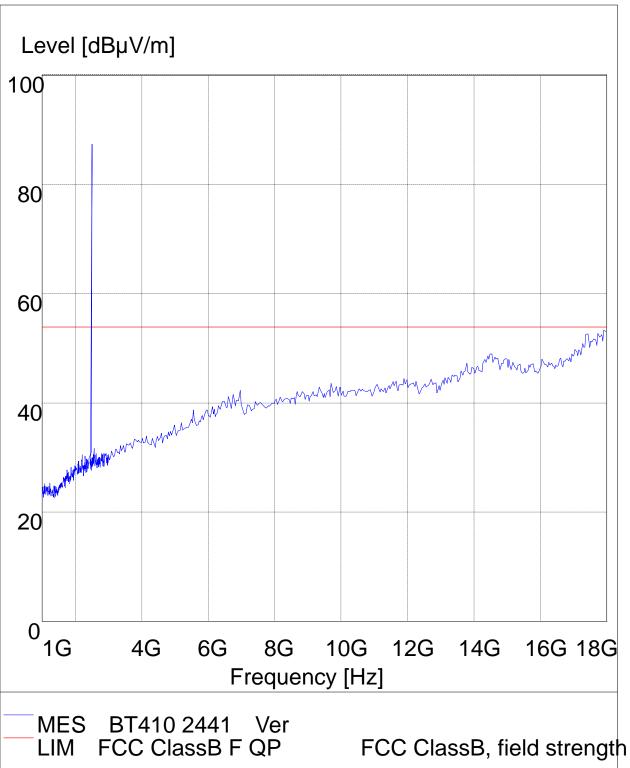


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Middle Channel :: Vertical

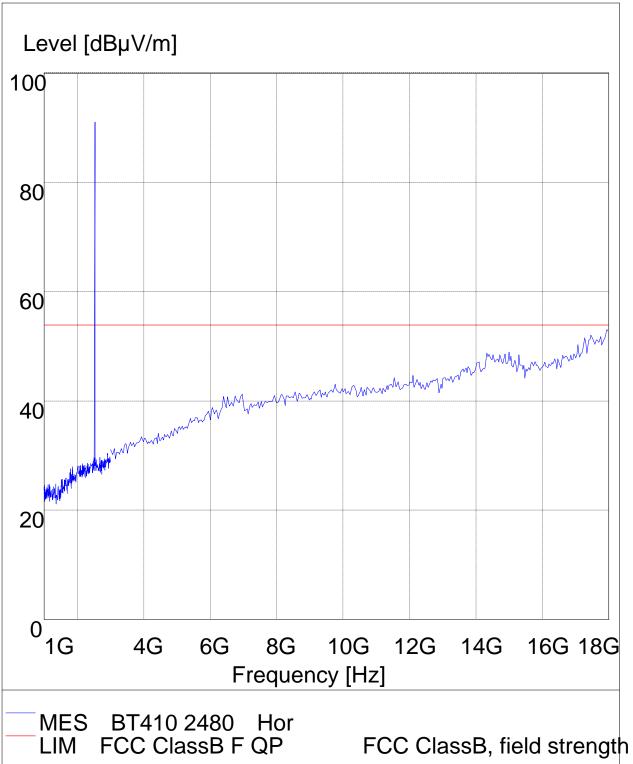


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High Channel: Horizontal



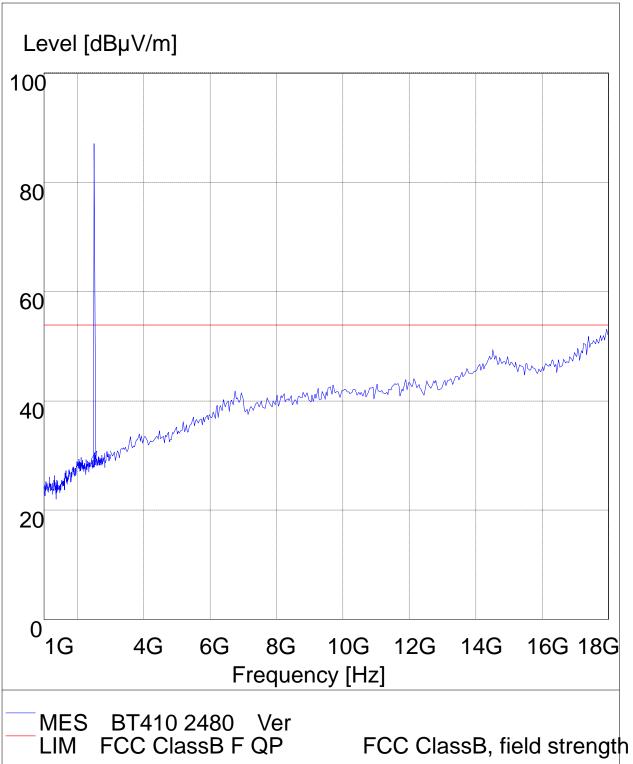
The report refers only to the sample tested and does not apply to the bulk.

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High Channel: Vertical

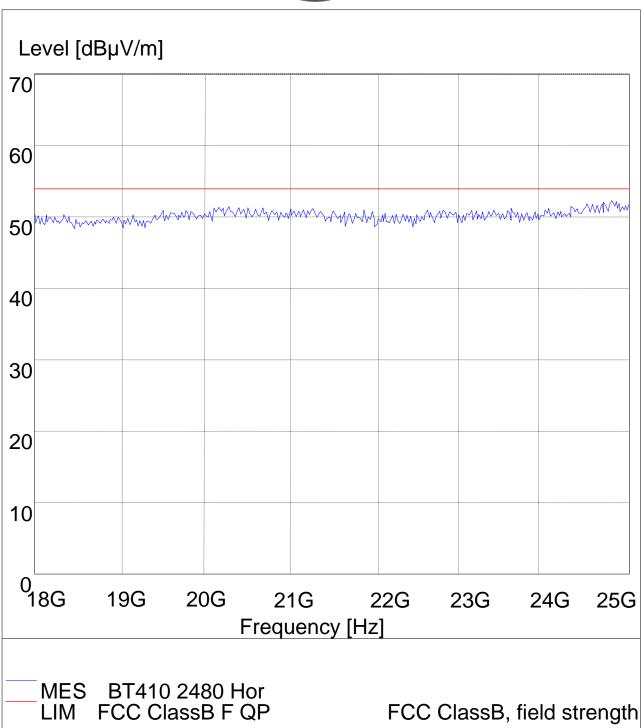


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18-25G Horizontal High Channel

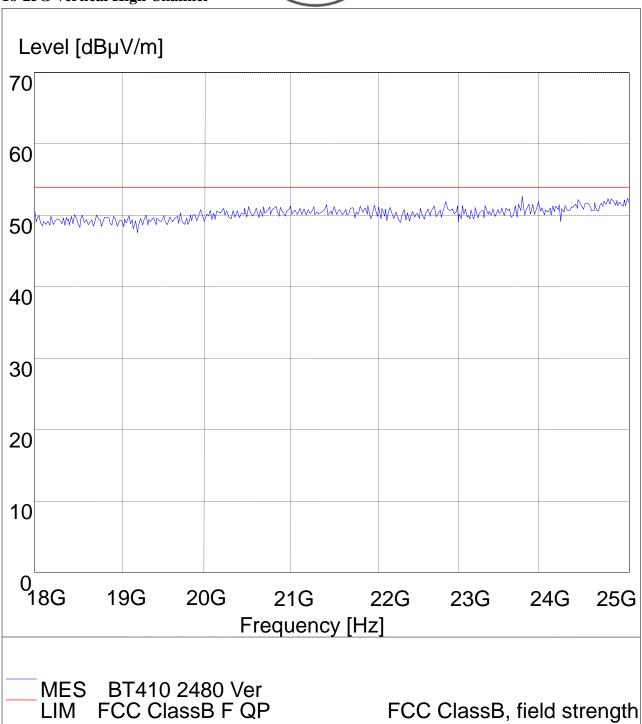


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18-25G Vertical High Channel



The report refers only to the sample tested and does not apply to the bulk.

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7.0 20dB Bandwidth Measurement

7.1 Regulation

According to §15.247(b)(1), for frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.2 Limits of 20dB Bandwidth Measurement

The minimum of 20dB Bandwidth Measurement is <1MHz

7.3 Test Procedure.

- 1. Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel RBW > the 20 dB bandwidth of the emission being measured VBW \geq RBW Sweep = auto Detector function = peak Trace = max hold
- 3. Measure the highest amplitude appearing on spectral display and record the level to calculate results. 6. Repeat above procedures until all frequencies measured were complete.

7.4 Test Result

EU'	Т	Bluetooth handsfree car kit		Model		BT410	
Mod	le	Keep '	Transmitting	Input Voltage		DC3.	7V
Temper	ature 24 deg. C, Humidity		24 deg. C, Humidi		lity 56% RH		RH
Channel		el Frequency (MHz)			Maximum Limit (kHz)		Pass/ Fail
Low		2402 805				<1000	Pass
Middle		2441	2441 800		<1000		Pass
High		2480	800	·	<	<1000	Pass

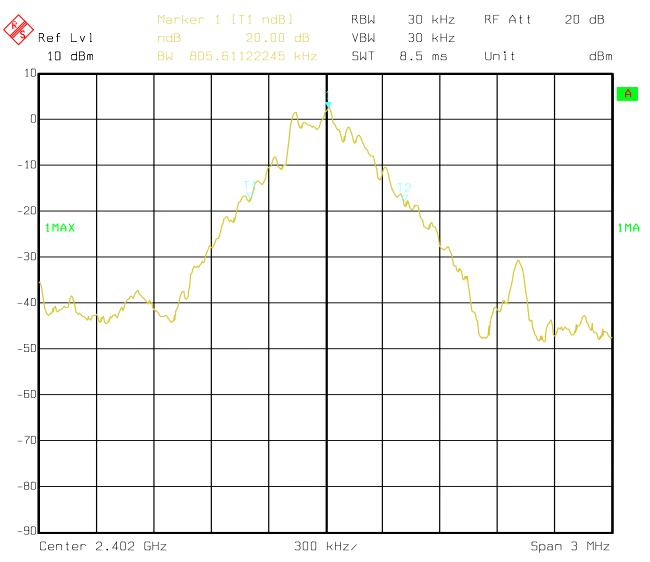
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Test Figure:

1. Condition: Low Channel



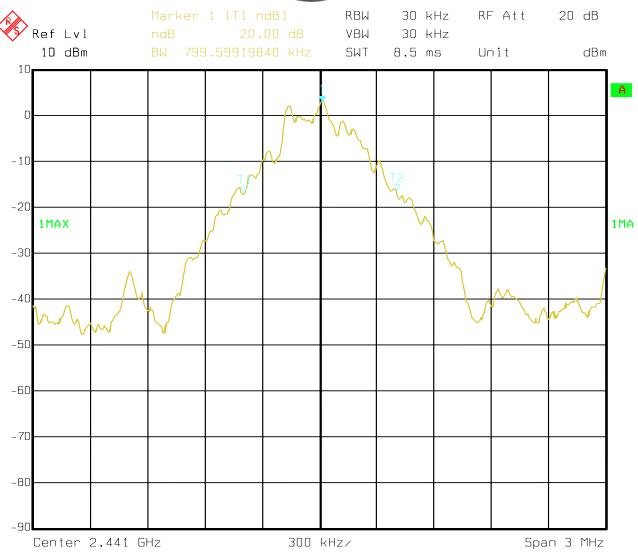
Date: 16.DEC.2008 11:01:53

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2. Condition: Middle Channel



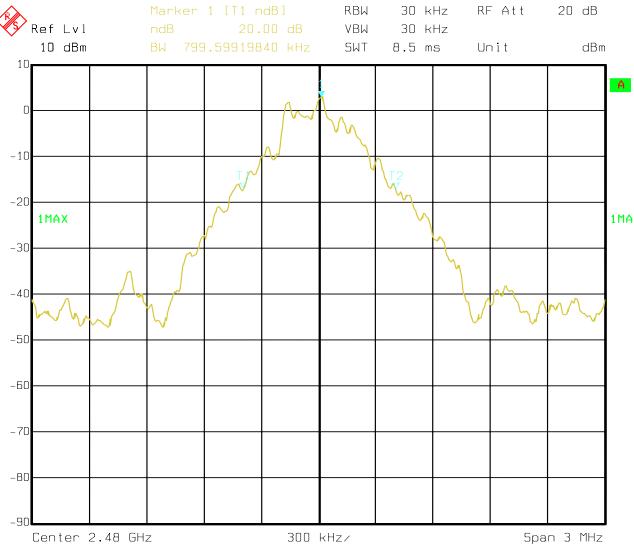
Date: 16.DEC.2008 11:03:41

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3. High Channel



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8. Maximum Peak Output Power

8.1 Regulation

According to \$15.247(b)(1), for frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5MHz band:0.125 watts. According to \$15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Limits of Maximum Peak Output Power

The Maximum Peak Output Power Measurement is 30dBm.

8.3 Test Procedure

- 1. Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel; RBW > the 20 dB bandwidth of the emission being measured; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold
- 3. Measure the highest amplitude appearing on spectral display and record the level to calculate results.
- 4. Repeat above procedures until all frequencies measured were complete.

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8.4Test Results

EUT		Bluetooth hand	lsfree car kit	Model		F	3T410						
Mode		Keeping Tra	nsmitting	Input Voltage		Input Voltage		mitting Input Voltage		Input Voltage		D	C3.7V
Temperature	e	24 deg. C, Humidity		24 deg. C, Humidity		Humidity		Humidity		g. C, Humidity		50	5% RH
Channel	Cha	annel Frequency (MHz)	Peak Power (dBm)	Output	utput Peak P Lim		Pass/ Fail						
Low		2402	2.20	2.20)	Pass						
Middle		2441	2.75		30		Pass						
High		2480	2.45		30)	Pass						

Note: 1. the result basic equation calculation as follow:

Peak Power Output = Peak Power Reading + Cable loss + Attenuator

2. The Maximum Peak Output Power was measured by conducted method

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9. Carrier Frequency Separation

9.1 Regulation

According to §15.247(a)(1), frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

9.2 Limits of Carrier Frequency Separation

The Maximum Power Spectral Density Measurement is 25kHz or two-thirds of the 20dB bandwidth of the hopping Channel which is great.

9.3 Test Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = wide enough to capture the peaks of two adjacent channels: Resolution (or IF) Bandwidth (RBW) \geq 1% of the span; Video (or Average) Bandwidth (VBW) \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold
- 3. Measure the separation between the peaks of the adjacent channels using the marker-delta function.
- 4. Repeat above procedures until all frequencies measured were complete.

10.4Test Result

EUT		Bluetooth handsfree car kit		Bluetooth handsfree car kit Model		E	3T410
Mode		Keeping Transmitting Inpu		Input Voltage		D	C3.7V
Temperature	е	24 deg. C, Humidity		ity	56% RH		
Channel	Ch	annel Frequency (MHz)	Carrier Freque	•	Lin	nit	Pass/ Fail
Middle		2441	1MHz		\geq 25 kHz or 20		Pass
					dB band	dwidth	

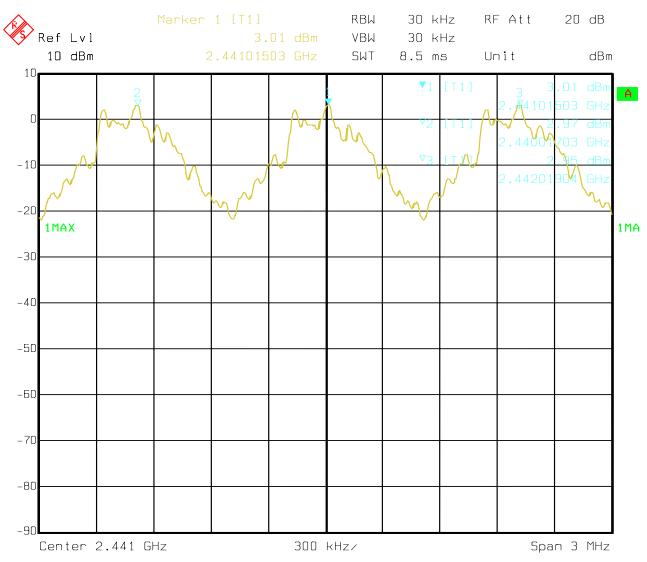
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Test Plots

Middle Channel



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10. Number of Hopping Channels

10.1 Regulation

According to §15.247(a)(1)(iii), frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used. According to §15.247(b)(1), for frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

10.2 Limits of Number of Hopping Channels

The frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels.

10.3 Test Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = the frequency band of operation; RBW \geq 1% of the span; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold
- 3. Record the number of hopping channels.

10.4Test Result

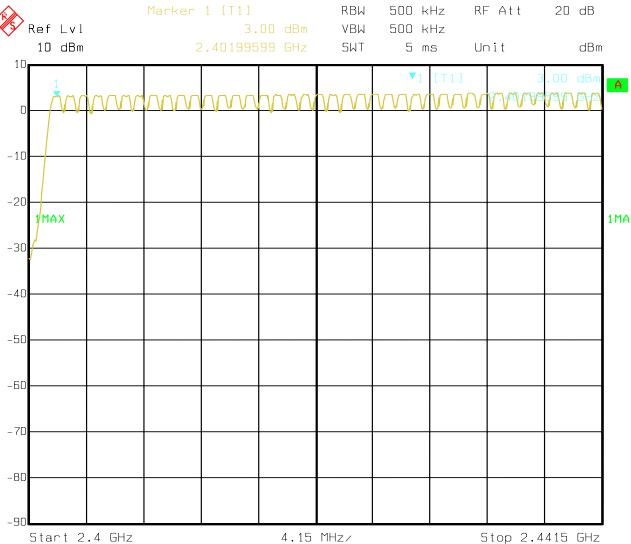
EUT	Blue	etooth handsfree car kit	Model		E	3T410
Mode	K	Ceeping Transmitting	Input Voltage		DC3.7V	
Temperature	24 deg. C,		Humidity		56% RH	
Operating Frequency		Number of hopping channels		Lin	nit	Pass/ Fail
2402-2480MHz		79		≥ 1	5	Pass

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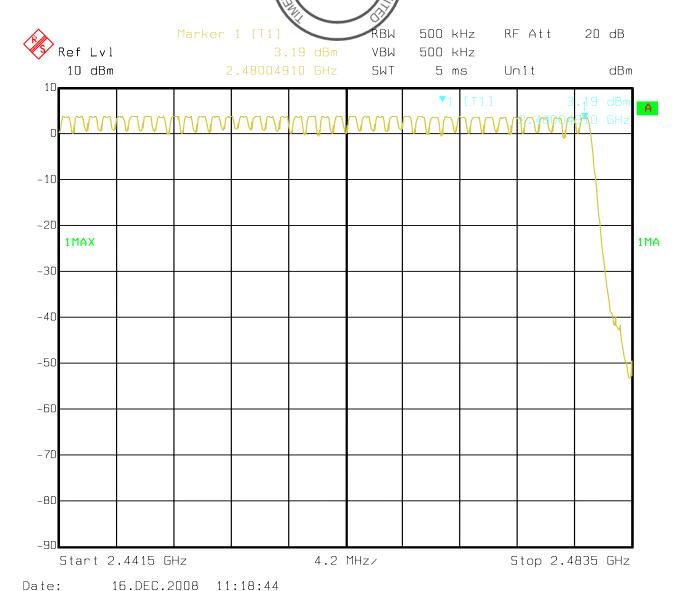


Test Plot



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11. Time of Occupancy (Dewell Time)

11.1 Regulation

According to §15.247(a)(1)(iii), frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

11.2 Limits of Carrier Frequency Separation

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed

11.3 Test Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- $2. \ Set \ the \ spectrum \ analyzer \ as \ follows: \ Span = zero \ span, \ centered \ on \ a \ hopping \ channel; \ RBW = 1 \ MHz; \ VBW =$
- ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold
- 3. Measure the dwell time using the marker-delta function.
- 4. Repeat above procedures until all frequencies measured were complete.
- 5. Repeat this test for different modes of operation (e.g., data rate, modulation format, etc.), if applicable.

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11.4Test Result

EUT Bluetooth hand		lsfree car kit	r kit Model		BT410		
Mode	Keeping Tra		ansmitting Input V		oltage	DC3.7V	
Temperature	rature 24 deg. C, Humidi		ty 56°		5% RH		
Channel		Reading	Hoping Rate		Actual		Limit
Low		2.9014ms	266.667 hop/s		0.31s		0.4s
Middle		2.9014ms	266.667 hop/s		0.31s		0.4s
High		2.9014ms	266.667 hop/s		0.31s		0.4s

Actual = Reading \times (Hopping rate / Number of channels) \times Test period Test period = 0.4 [seconds / channel] \times 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels. A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels. **And the DH5 is the worst case.**

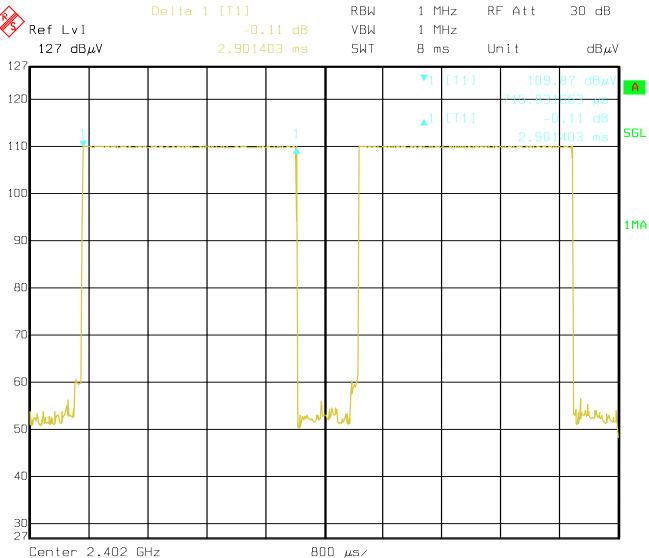
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Test Plots:

Low Channel: DH5



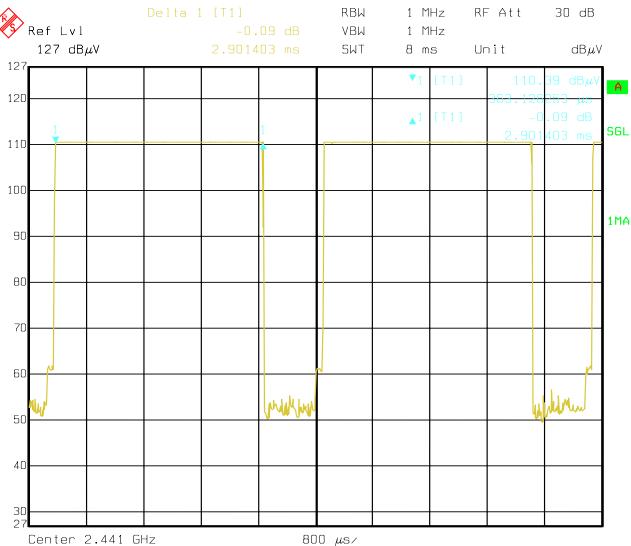
Date: 16.DEC.2008 12:14:11

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Middle Channel: DH5



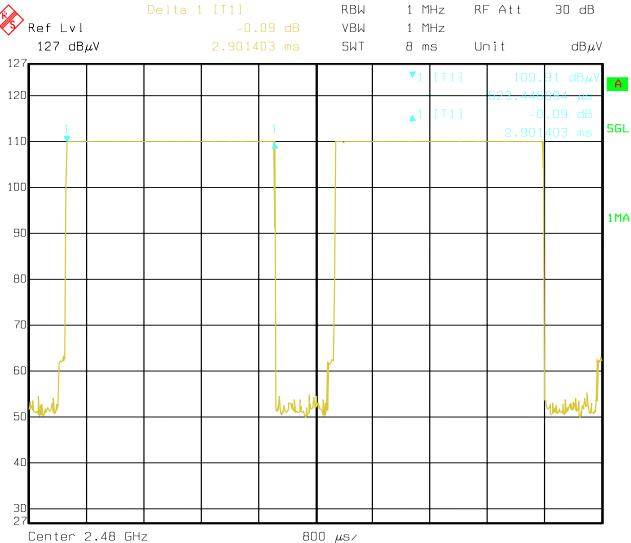
Date: 16.DEC.2008 12:12:55

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High Channel: DH5



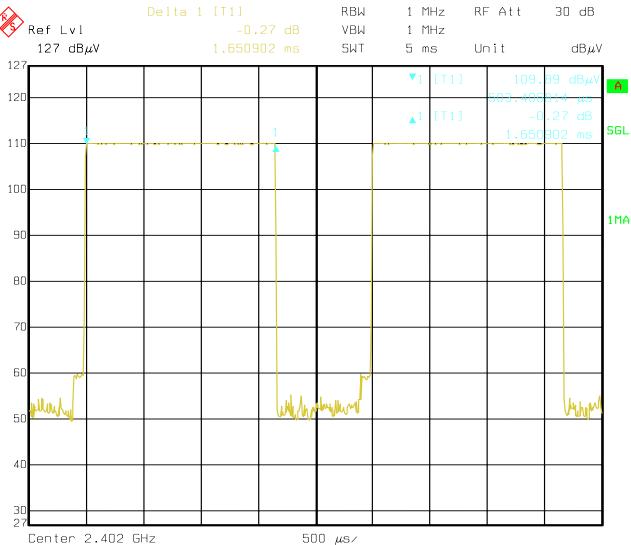
Date: 16.DEC.2008 12:11:55

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Low Channel: DH3



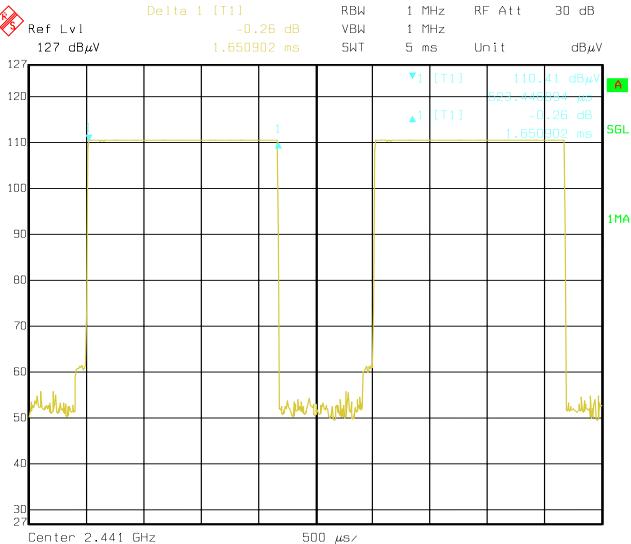
Date: 16.DEC.2008 12:08:40

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Middle Channel: DH3



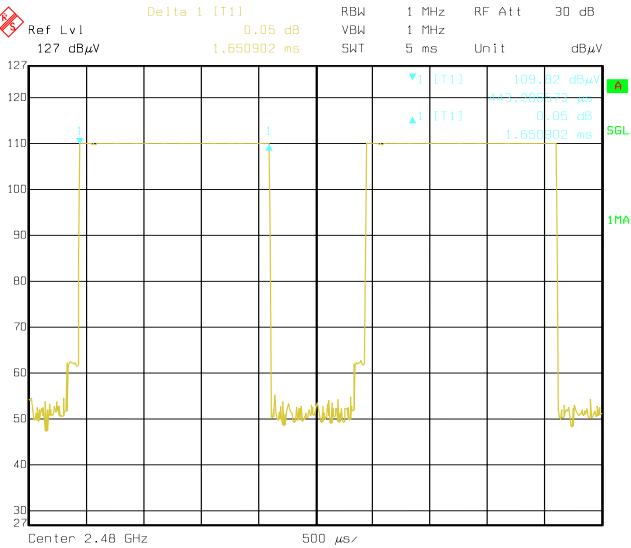
Date: 16.DEC.2008 12:09:46

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High Channel: DH3



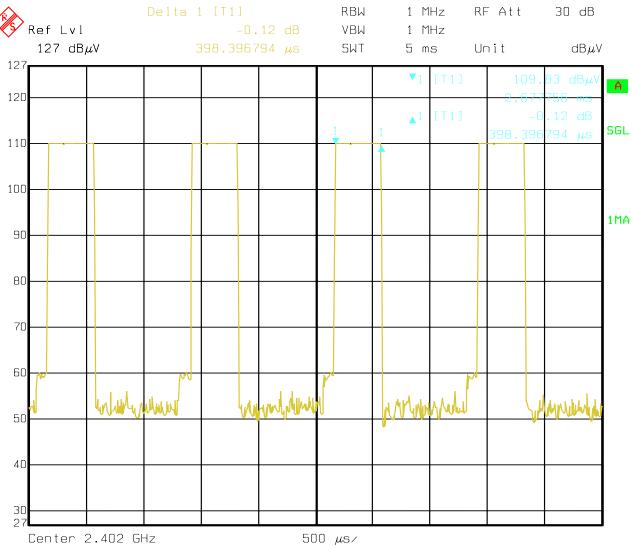
Date: 16.DEC.2008 12:10:58

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Low Channel: DH1



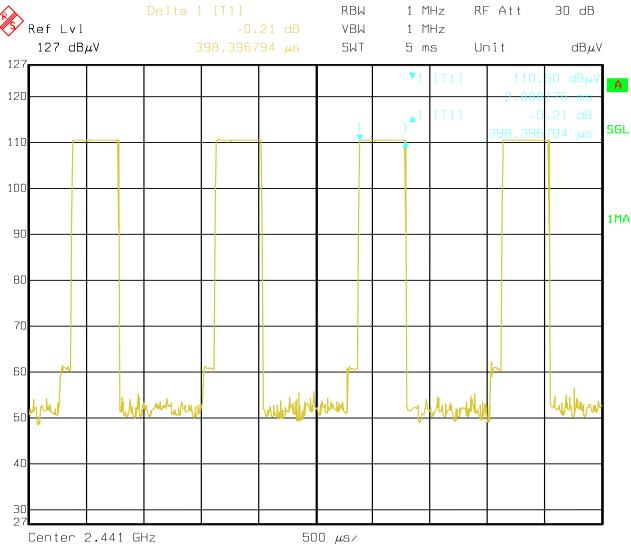
Date: 16.DEC.2008 11:38:24

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Middle Channel: DH1



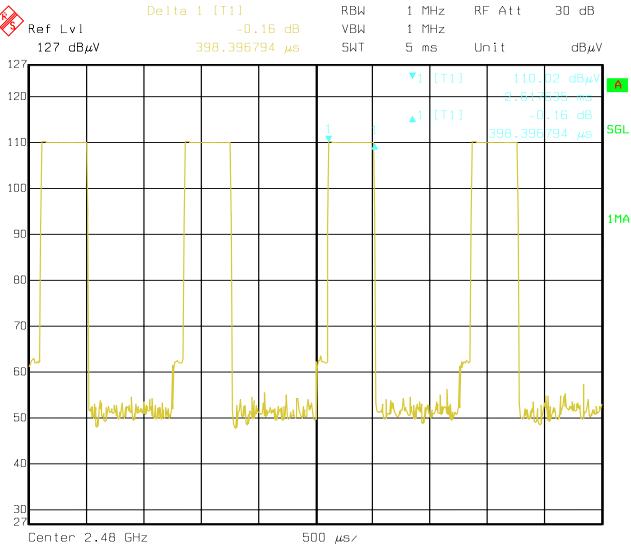
Date: 16.DEC.2008 11:37:00

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High Channel: DH1:



Date: 16.DEC.2008 11:37:42

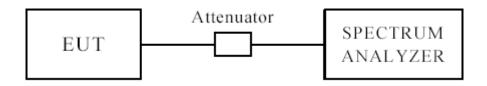
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12 Out of Band Measurement

12.1 Test Setup



12.2 Limits of Out of Band Emissions Measurement

- 1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
- 2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

12.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test. RBW=VBW=1MHz

For bandage test, the spectrum set as follows: RBW=VBW=100 kHz. A conducted measurement used

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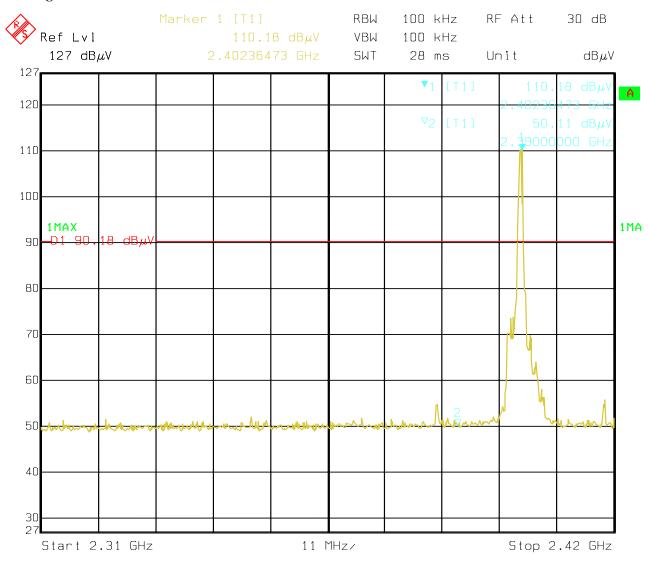
Date: 2008-12-22



12.4 Out of Band Test Result

Product:	Bluetooth handsfree car kit		Test Mode:	Low Channel
Mode	Hopping off mode		Input Voltage	DC3.7V
Temperature	24 deg. C		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBµV/m)	48.3	Limit	$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)	37.5	Lillill	54(dBµV/m)

Test Figure:



Date: 16.DEC.2008 12:25:56

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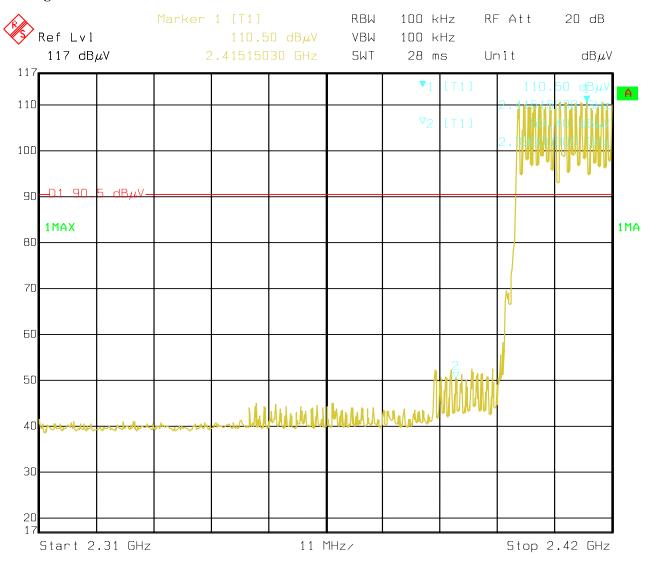
Date: 2008-12-22



12.4 Out of Band Test Result

Product:	Bluetooth handsfree car kit		Test Mode:	Low Channel
Mode	Hopping on mode		Input Voltage	DC3.7V
Temperature	24 deg. C		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBµV/m)	52.6	T imit	$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)	39.9	Limit	54(dBµV/m)

Test Figure:



Date: 24.DEC.2008 17:31:46

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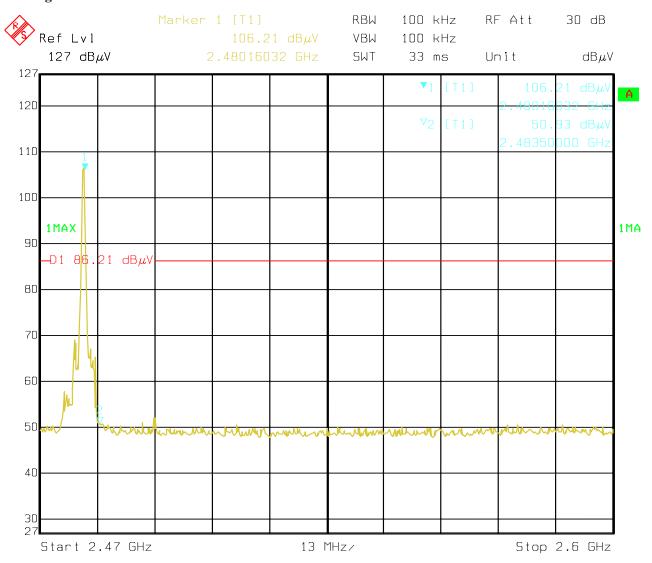
Date: 2008-12-22



12.4 Out of Band Test Result

Product:	Bluetooth handsfree car kit		Test Mode:	High Channel
Mode	Hopping off mode		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBμV/m)	50.1	Limit	$74(dB\mu V/m)$
Restrict Band	$AV(dB\mu V/m)$	41.2	Lillit	$54(dB\mu V/m)$

Test Figure:



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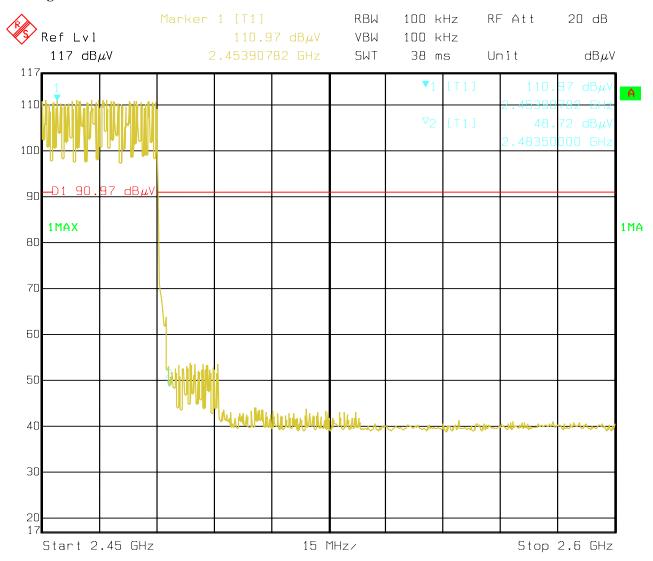
Date: 2008-12-22



12.4 Out of Band Test Result

Product:	Bluetooth handsfree car kit		Test Mode:	High Channel
Mode	Hopping on mode		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBμV/m)	53.2	Limit	$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)	42.8	Limit	54(dBμV/m)

Test Figure:



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13.0 Antenna Requirement

13.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi

are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

13.2 Antenna Connected construction

The antenna is chip dielectric antenna. The maximum Gain of this antenna is -2.0dBi

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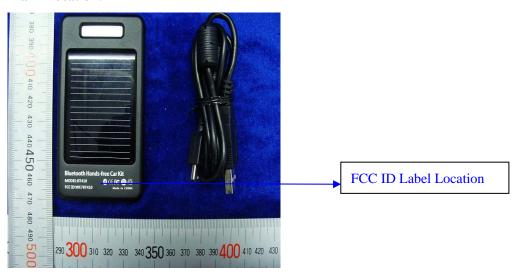
14.0 FCC and IC ID Label

FCC ID: WE7BT410

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.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



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15.0 Photo of testing

15.1 Conducted test View— Charging Mode



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15.2 Emission Radiated test View--Transmitting mode





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15.3 Photo for the EUT

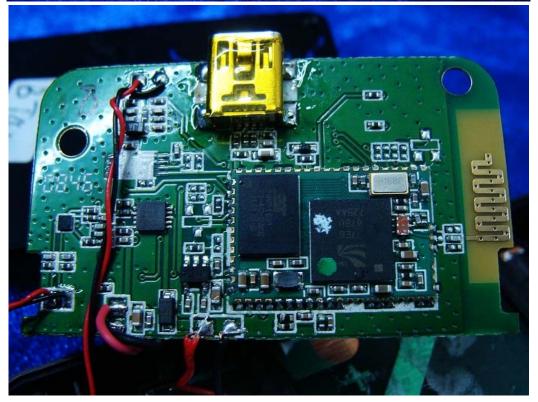
Outside View (Model:BT410)



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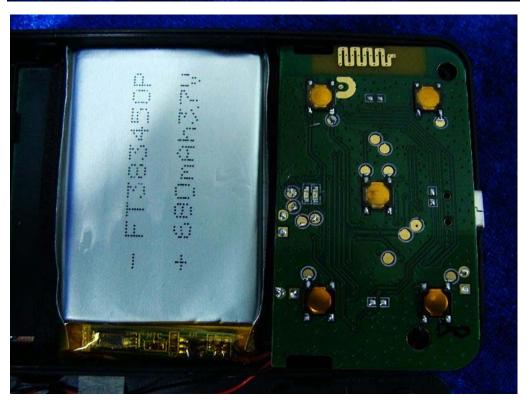
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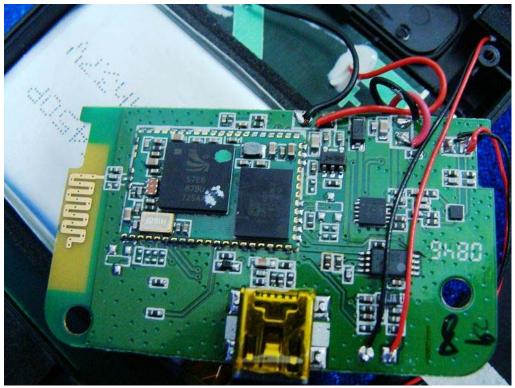
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End of the report