

APPLICATION CERTIFICATION
On Behalf of
Zhejiang Dictory Electronic Technology Co., Ltd.

BLUETOOTH HANDS HREE CAR KIT
Model No.: DR02A

FCC ID: WVRDR02A

Prepared for : Zhejiang Dictory Electronic Technology Co., Ltd.
Address : 23/F, Xingyao Building, No.518, Jiangnan Ave., Binjiang
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Report Number : ATE20081948
Date of Test : October 14-23, 2008
Date of Report : October 24, 2008

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Test Report Certification

Applicant : Zhejiang Dictory Electronic Technology Co., Ltd.
 Manufacturer : Zhejiang Dictory Electronic Technology Co., Ltd.
 EUT Description : BLUETOOTH HANDS HREE CAR KIT
 (A) MODEL NO.: DR02A
 (B) SERIAL NO.: N/A
 (C) POWER SUPPLY: 3.7V DC (Li-ion battery 1 ×)

Measurement Procedure Used:


FCC Rules and Regulations Part 15 Subpart C Section 15.207, 15.209, 15.247:2008
 ANSI C63.4: 2003

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.207, 15.209, 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : October 14-23, 2008

Prepared by : 
 (Engineer)

Approved & Authorized Signer : 
 (Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	BLUETOOTH HANDS HREE CAR KIT
Model Number	:	DR02A
Frequency Band	:	2402MHz-2480MHz
Number of Channels	:	79
Antenna Gain	:	0dBi
Power Supply	:	3.7V DC (Li-ion battery 1×)
AC Adapter	:	Model: GFP302-0512 Input: AC 100-240V, 50/60Hz Output: DC 4.2V, 1000mA
Applicant	:	Zhejiang Dictory Electronic Technology Co., Ltd.
Address	:	23/F, Xingyao Building, No.518, Jiangnan Ave., Binjiang District, Hangzhou City, Zhejiang Province, China
Manufacturer	:	Zhejiang Dictory Electronic Technology Co., Ltd.
Address	:	23/F, Xingyao Building, No.518, Jiangnan Ave., Binjiang District, Hangzhou City, Zhejiang Province, China
Date of sample received	:	October 10, 2008
Date of Test	:	October 14-23, 2008

1.2. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC
The Registration Number is 752051

Listed by Industry Canada
The Registration Number is 5077A-2

Accredited by China National Accreditation Committee
for Laboratories
The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.
Science & Industry Park, Nanshan, Shenzhen, Guangdong
P.R. China

1.3. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2
(Above 1GHz)

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	03.29.2009
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	03.29.2009
Spectrum Analyzer	Agilent	E7405A	MY45115511	03.29.2009
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	03.31.2009
Loop Antenna	Schwarzbeck	FMZB1516	1516131	03.28.2009
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	03.29.2009
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	12.20.2008
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	10.09.2009
LISN	Rohde&Schwarz	ESH3-Z5	100305	03.29.2009
LISN	Schwarzbeck	NSLK8126	8126431	03.29.2009

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: Charging mode

Transmitting mode:

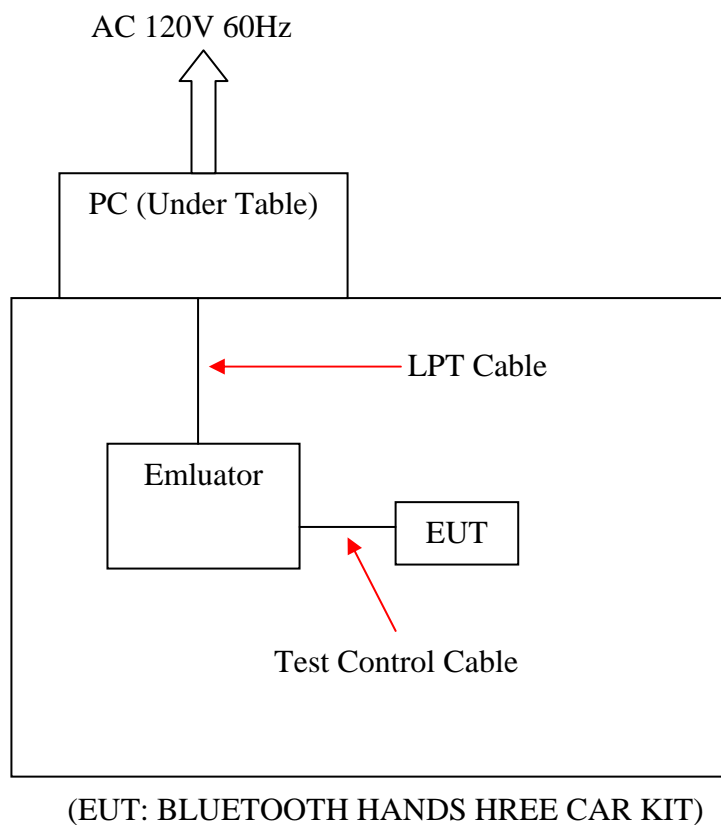
Low Channel: 2402MHz

Middle Channel: 2441MHz

High Channel: 2480MHz

Hopping

3.2.Configuration and peripherals



4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission Test	Compliant
Section 15.209	Radiated Emission Test	Compliant
Section 15.247(a)(1)	20dB Bandwidth Test	Compliant
Section 15.247(a)(1)	Carrier Frequency Separation Test	Compliant
Section 15.247(a)(1)(iii)	Number Of Hopping Frequency Test	Compliant
Section 15.247(a)(1)(iii)	Dwell Time Test	Compliant
Section 15.247(b)(1)	Maximum Peak Output Power Test	Compliant
Section 15.247(d)	Radiated Emission Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. CONDUCTED EMISSION FOR FCC PART 15 SECTION

15.207(A)

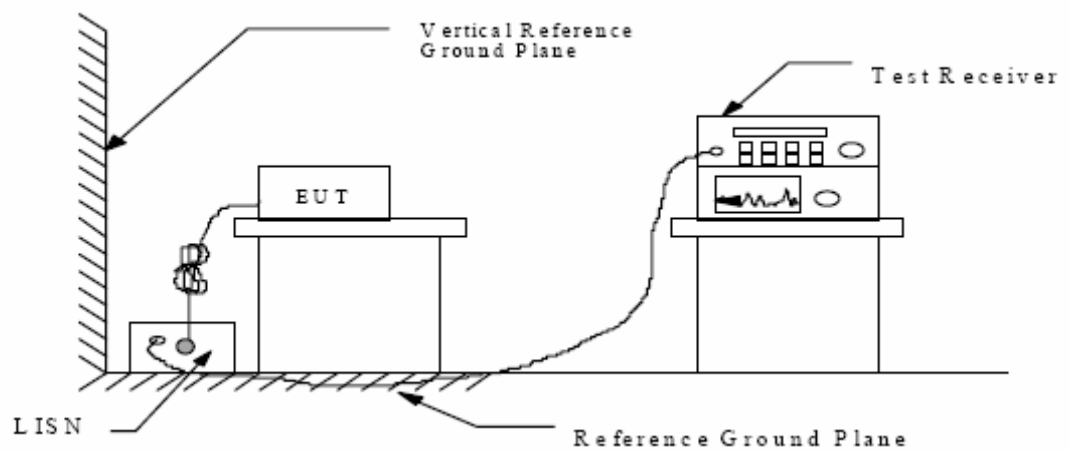
5.1. Block Diagram of Test Setup

5.1.1. Block diagram of connection between the EUT and simulators



(EUT: BLUETOOTH HANDS FREE CAR KIT)

5.1.2. Shielding Room Test Setup Diagram



(EUT: BLUETOOTH HANDS FREE CAR KIT)

5.2.The Emission Limit

5.2.1.Conducted Emission Measurement Limits According to Section 15.207(a)

Frequency (MHz)	Limit dB(μV)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

* Decreases with the logarithm of the frequency.

5.3.Configuration of EUT on Measurement

The following equipment are installed on the Conducted Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.3.1.BLUETOOTH HANDS HREE CAR KIT (EUT)

Model Number : DR02A
 Serial Number : N/A
 Manufacturer : Zhejiang Dictory Electronic Technology Co., Ltd.

5.4.Operating Condition of EUT

5.4.1.Setup the EUT and simulator as shown as Section 5.1.

5.4.2.Turn on the power of all equipment.

5.4.3.Let the EUT work in Charging mode measure it.

5.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2003 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

5.6. Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

Date of Test:	October 23, 2008	Temperature:	25°C
EUT:	BLUETOOTH HANDS FREE CAR KIT	Humidity:	52%
Model No.:	DR02A	Power Supply:	DC 4.2V (Adapter input) Adapter power: AC120V/60Hz
Test Mode:	Charging	Test Engineer:	Roger

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
1.837500	34.40	11.7	56	21.6	QP	N	GND
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.897000	27.50	11.9	46	18.5	AV	N	GND
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
1.869000	34.90	11.7	56	21.1	QP	L1	GND
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.703500	27.60	11.9	46	18.4	AV	L1	GND
0.861000	27.00	11.9	46	19.0	AV	L1	GND

The spectral diagrams are attached as below.

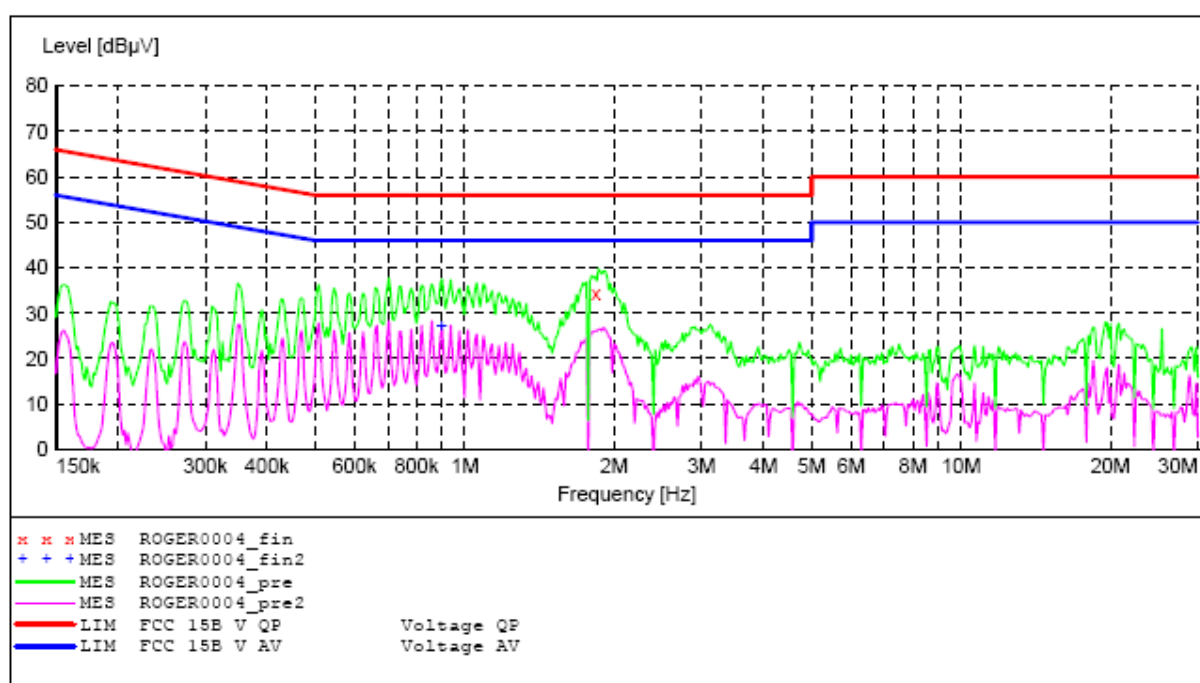
SHENZHEN ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD EN55022B

EUT: BLUETOOTH HANDS FREE CAR KIT M/N:DR02A
 Manufacturer: Dictory
 Operating Condition: Charing
 Test Site: 1#Shielding Room
 Operator: Roger
 Test Specification: Va 120V/60Hz Sample No.:083732 Report No.:ATE20081948

SCAN TABLE: "V 9K-30MHz fin"

Short Description:			Conducted emission		IF	Transducer
Start	Stop	Step	Detector	Meas. Time	Bandw.	
Frequency 9.0 kHz	Frequency 150.0 kHz	Width 100.0 Hz	QuasiPeak	1.0 s	200 Hz	NSLK8126 2008
			Average			
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
			Average			



MEASUREMENT RESULT: "ROGER0004_fin"

10/23/2008 11:21AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
1.837500	34.40	11.7	56	21.6	QP	N	GND

MEASUREMENT RESULT: "ROGER0004_fin2"

10/23/2008 11:21AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.897000	27.50	11.9	46	18.5	AV	N	GND

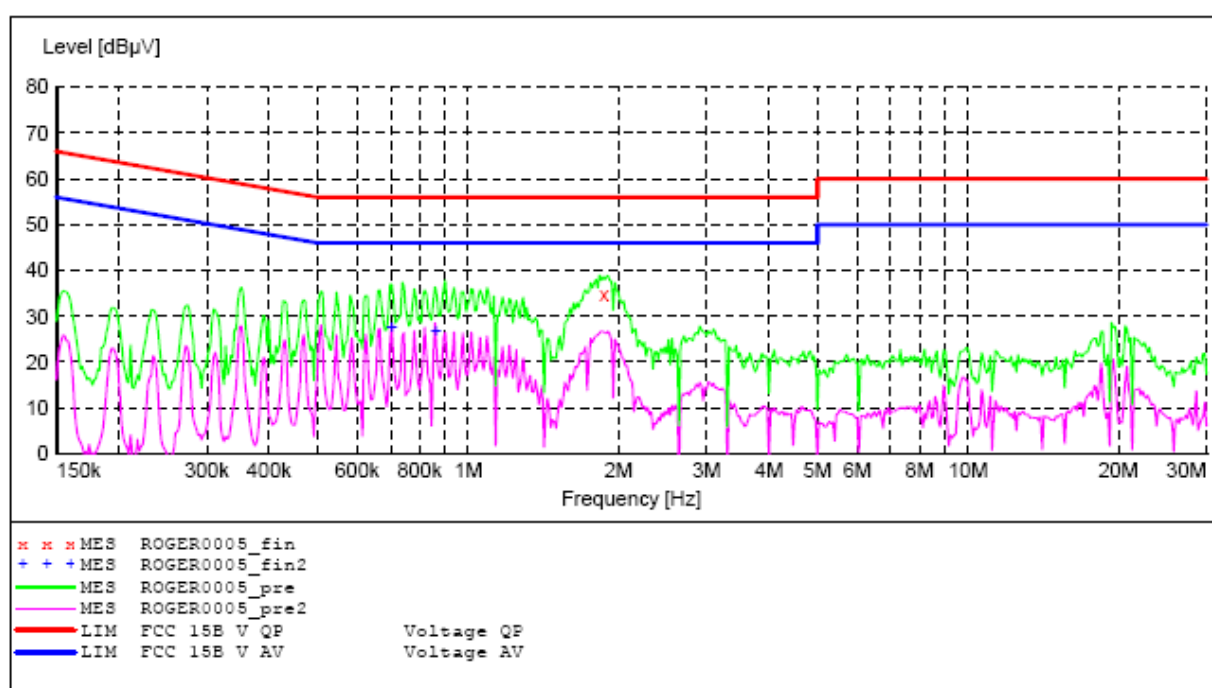
SHENZHEN ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD EN55022B

EUT: BLUETOOTH HANDS FREE CAR KIT M/N:DR02A
 Manufacturer: Dictory
 Operating Condition: Charing
 Test Site: 1#Shielding Room
 Operator: Roger
 Test Specification: Vb 120V/60Hz Sample No.:083732 Report No.:ATE20081948

SCAN TABLE: "V 9K-30MHz fin"

Short Description:			Conducted emission			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	NSLK8126 2008
			Average			
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
			Average			



MEASUREMENT RESULT: "ROGER0005_fin"

10/23/2008 11:27AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
1.869000	34.90	11.7	56	21.1	QP	L1	GND

MEASUREMENT RESULT: "ROGER0005_fin2"

10/23/2008 11:27AM

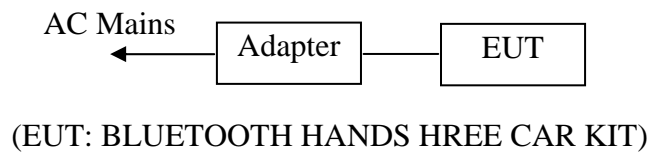
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.703500	27.60	11.9	46	18.4	AV	L1	GND
0.861000	27.00	11.9	46	19.0	AV	L1	GND

6. RADIATED EMISSION FOR FCC PART 15 SECTION 15.209

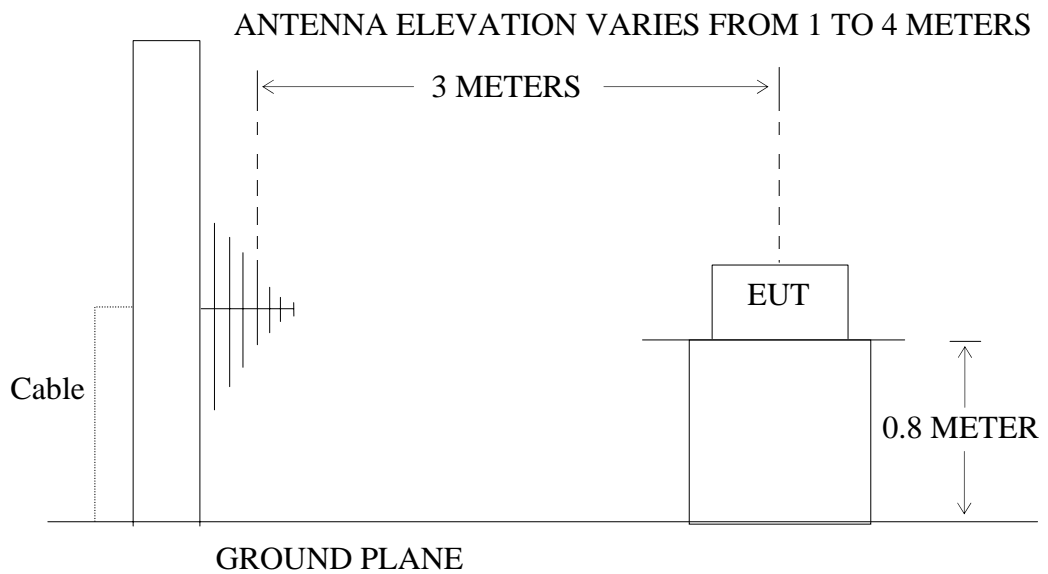
(A)

6.1. Block Diagram of Test Setup

6.1.1. Block diagram of connection between the EUT and simulators



6.1.2. Anechoic Chamber Test Setup Diagram



(EUT: BLUETOOTH HANDS FREE CAR KIT)

6.2.The Emission Limit For Section 15.209 (a)

6.2.1.Radiation Emission Measurement Limits According to Section 15.209 (a).

Frequency (MHz)	Limit	
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dB μ V/m)
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

6.3.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.3.1.BLUETOOTH HANDS HREE CAR KIT (EUT)

Model Number : DR02A
 Serial Number : N/A
 Manufacturer : Zhejiang Dictory Electronic Technology Co., Ltd.

6.4.Operating Condition of EUT

6.4.1.Setup the EUT and simulator as shown as Section 6.1.

6.4.2.Turn on the power of all equipment.

6.4.3. Let the EUT work in Charging mode measure it.

6.5. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz.

The frequency range from 30MHz to 1000MHz is checked.

The final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

6.6.The Emission Measurement Result

PASS.

Date of Test:	October 16, 2008	Temperature:	25°C
EUT:	BLUETOOTH HANDS HREE CAR KIT	Humidity:	52%
Model No.:	DR02A	Power Supply:	DC 4.2V (Adapter input)
Test Mode:	Charging	Test Engineer:	Adapter power: AC120V/60Hz Roger

Frequency (MHz)	Reading (dBμV/m)	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

The spectral diagrams are attached as below display the measurement of peak values.

Note:

1. Remark “-” means that the emission level is too low to be measured.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss – Amplifier Gain



ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Roger #3

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: Charging

Model: DR02A

Manufacturer: Dictory

Polarization: Horizontal

Power Source: AC 120V/60Hz

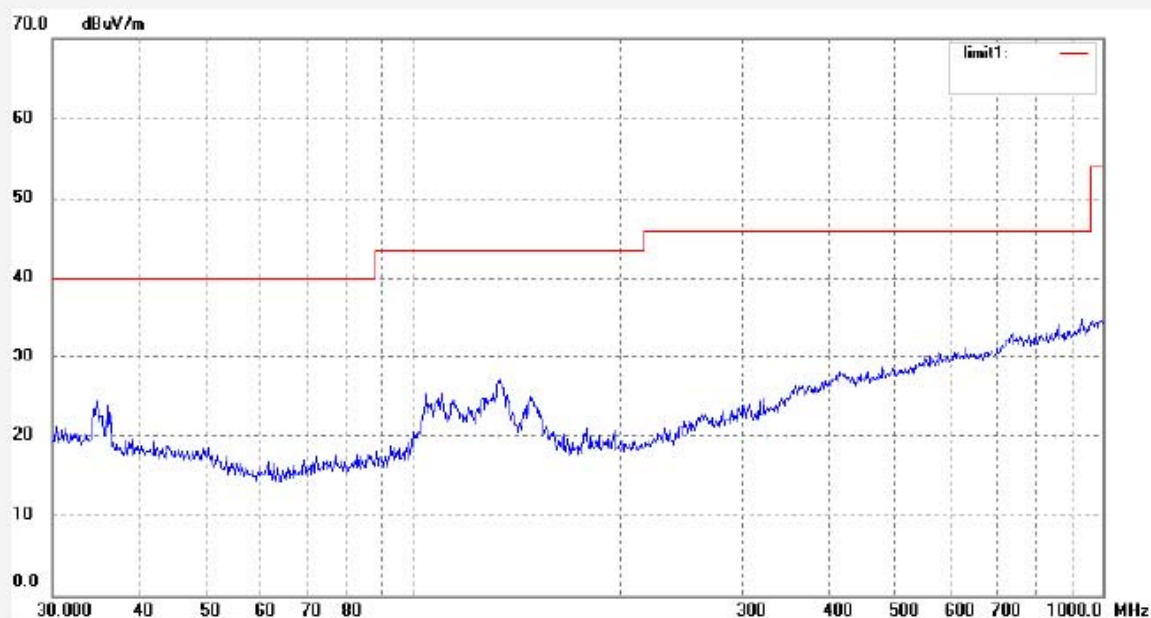
Date: 08/10/16/

Time: 8/55/58

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
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ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Roger #4

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: Charging

Model: DR02A

Manufacturer: Dictory

Polarization: Vertical

Power Source: AC 120V/60Hz

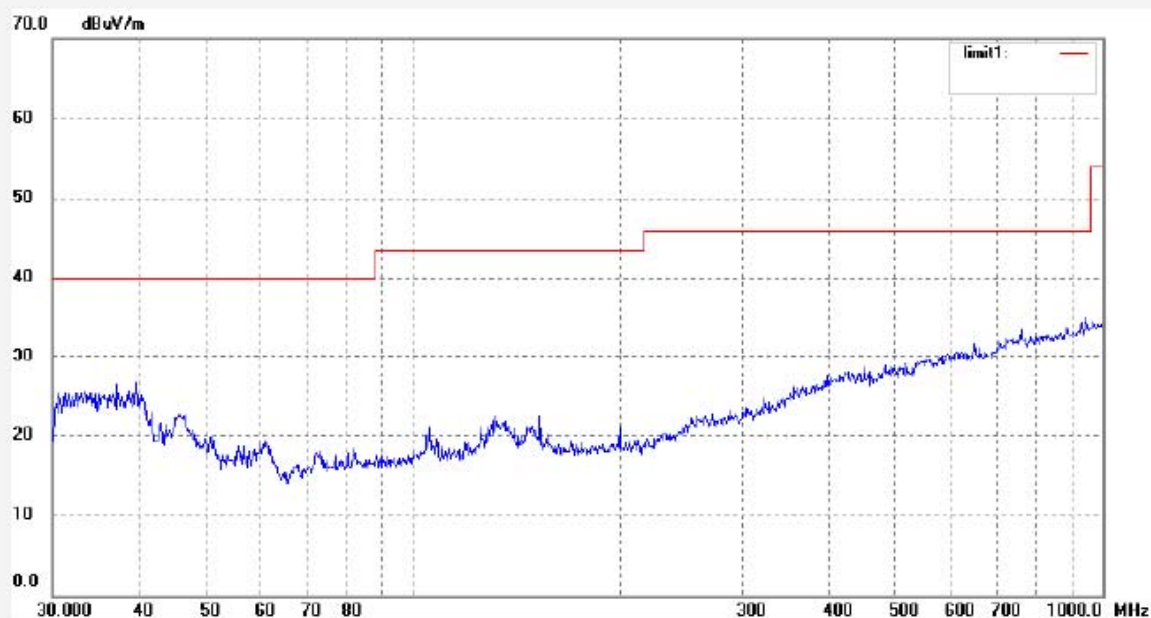
Date: 08/10/16/

Time: 8/58/33

Engineer Signature:

Distance: 3m

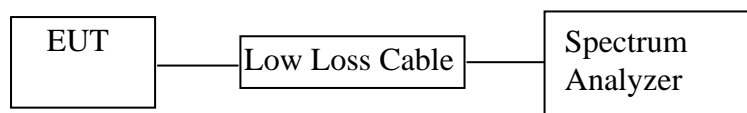
Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
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7. 20DB BANDWIDTH TEST

7.1. Block Diagram of Test Setup



(EUT: BLUETOOTH HANDS FREE CAR KIT)

7.2. The Requirement For Section 15.247(a)(1)

Section 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.

7.3. EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.3.1. BLUETOOTH HANDS FREE CAR KIT (EUT)

Model Number	:	DR02A
Serial Number	:	N/A
Manufacturer	:	Zhejiang Dictory Electronic Technology Co., Ltd.

7.4. Operating Condition of EUT

7.4.1. Setup the EUT and simulator as shown as Section 7.1.

7.4.2. Turn on the power of all equipment.

7.4.3. Let the EUT work in TX(Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

7.5. Test Procedure

7.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

7.5.2. Set RBW of spectrum analyzer to 30kHz and VBW to 100kHz.

7.5.3. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

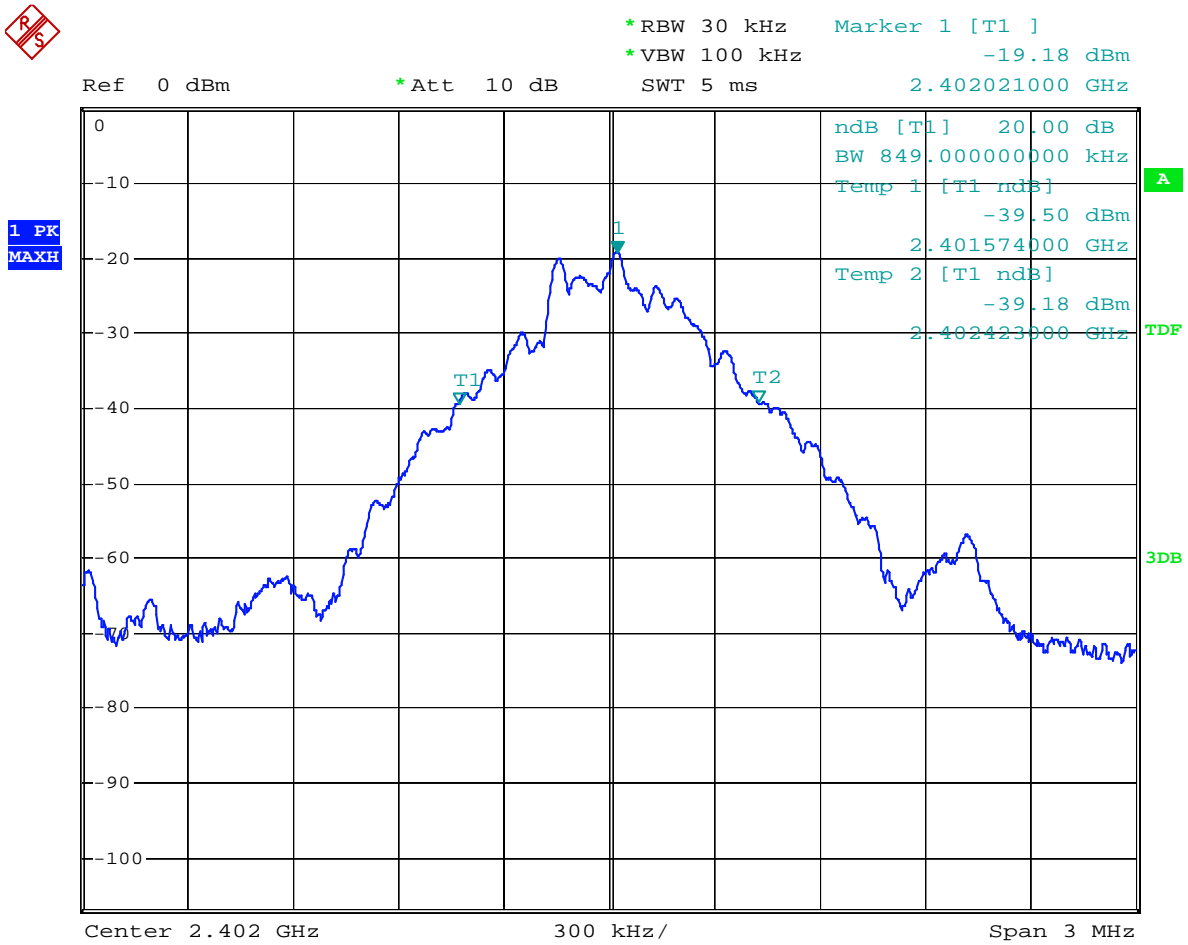
7.6. Test Result

PASS.

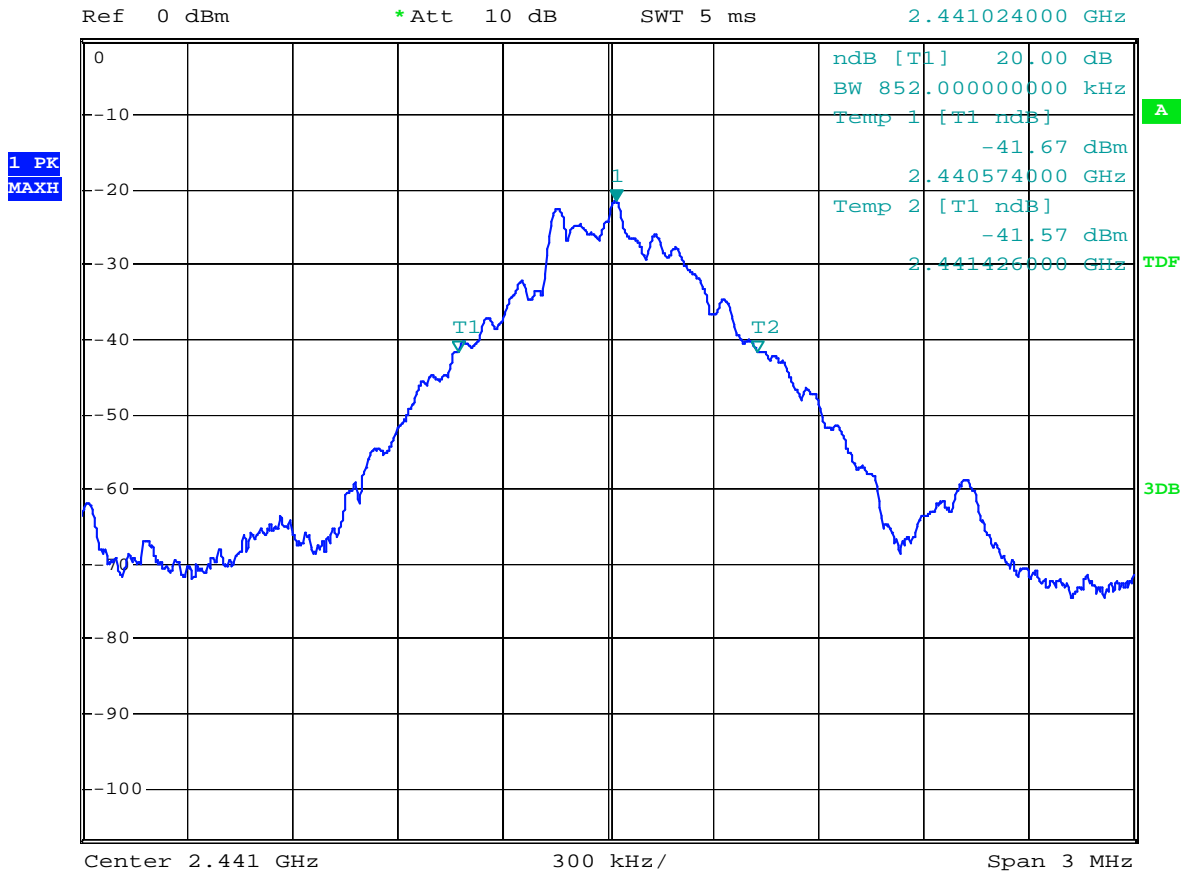
Date of Test:	October 20, 2008	Temperature:	25°C
EUT:	BLUETOOTH HANDS HREE	Humidity:	52%
Model No.:	CAR KIT	Power Supply:	DC 3.7V
Test Mode:	DR02A	Test Engineer:	Roger
	TX		

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
Low	2402	0.849	---
Middle	2441	0.852	---
High	2480	0.852	---

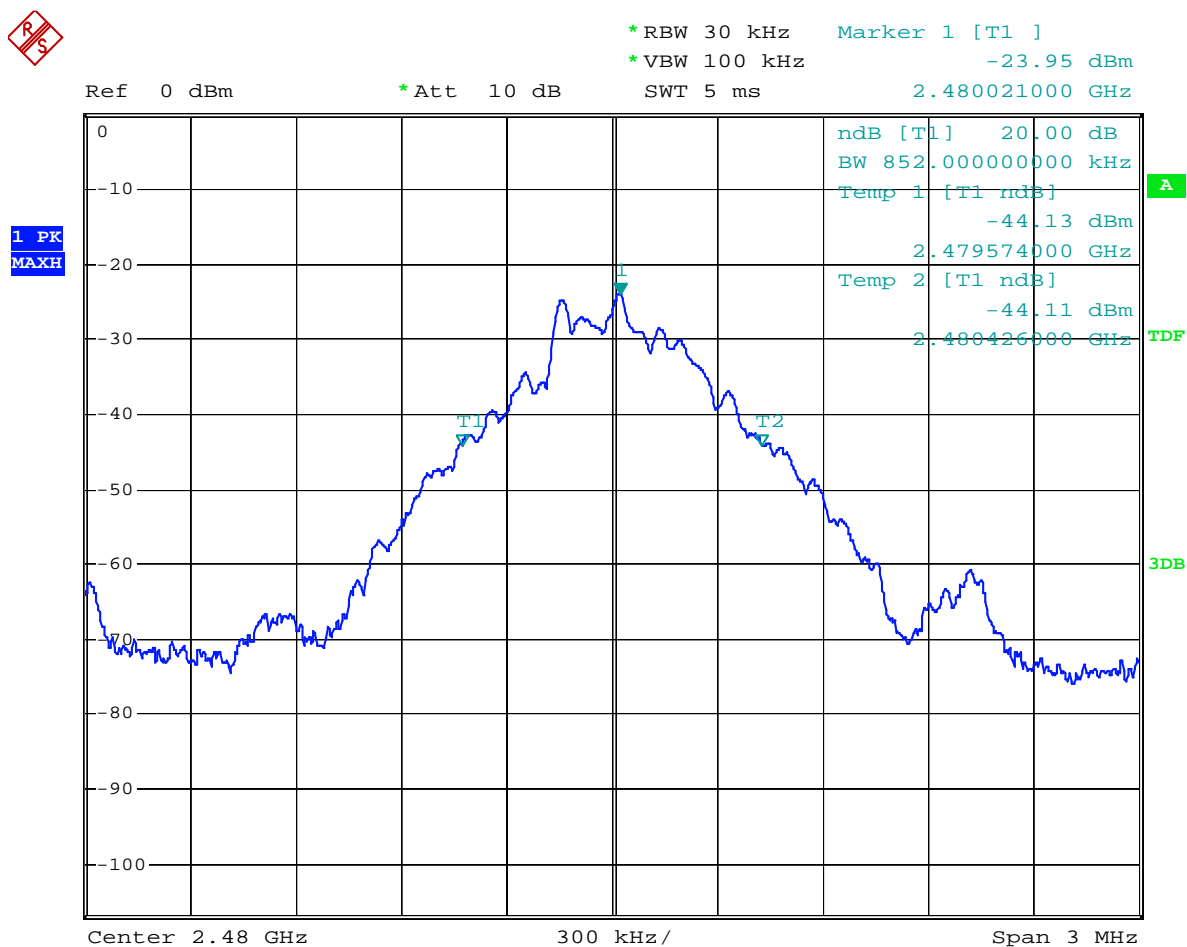
The spectrum analyzer plots are attached as below.



Date: 20.OCT.2008 11:12:08



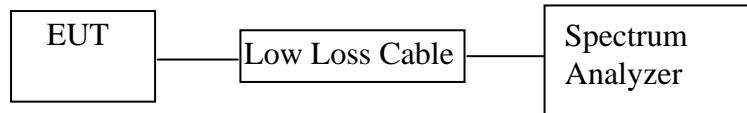
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Date: 20.OCT.2008 11:15:32

8. CARRIER FREQUENCY SEPARATION TEST

8.1. Block Diagram of Test Setup



(EUT: BLUETOOTH HANDS FREE CAR KIT)

8.2. The Requirement For Section 15.247(a)(1)

Section 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. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

8.3. EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.3.1. BLUETOOTH HANDS FREE CAR KIT (EUT)

Model Number	:	DR02A
Serial Number	:	N/A
Manufacturer	:	Zhejiang Dictory Electronic Technology Co., Ltd.

8.4. Operating Condition of EUT

8.4.1. Setup the EUT and simulator as shown as Section 8.1.

8.4.2. Turn on the power of all equipment.

8.4.3. Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

8.5. Test Procedure

8.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

8.5.2. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz. Adjust Span to 3 MHz.

8.5.3. Set the adjacent channel of the EUT maxhold another trace.

8.5.4. Measurement the channel separation

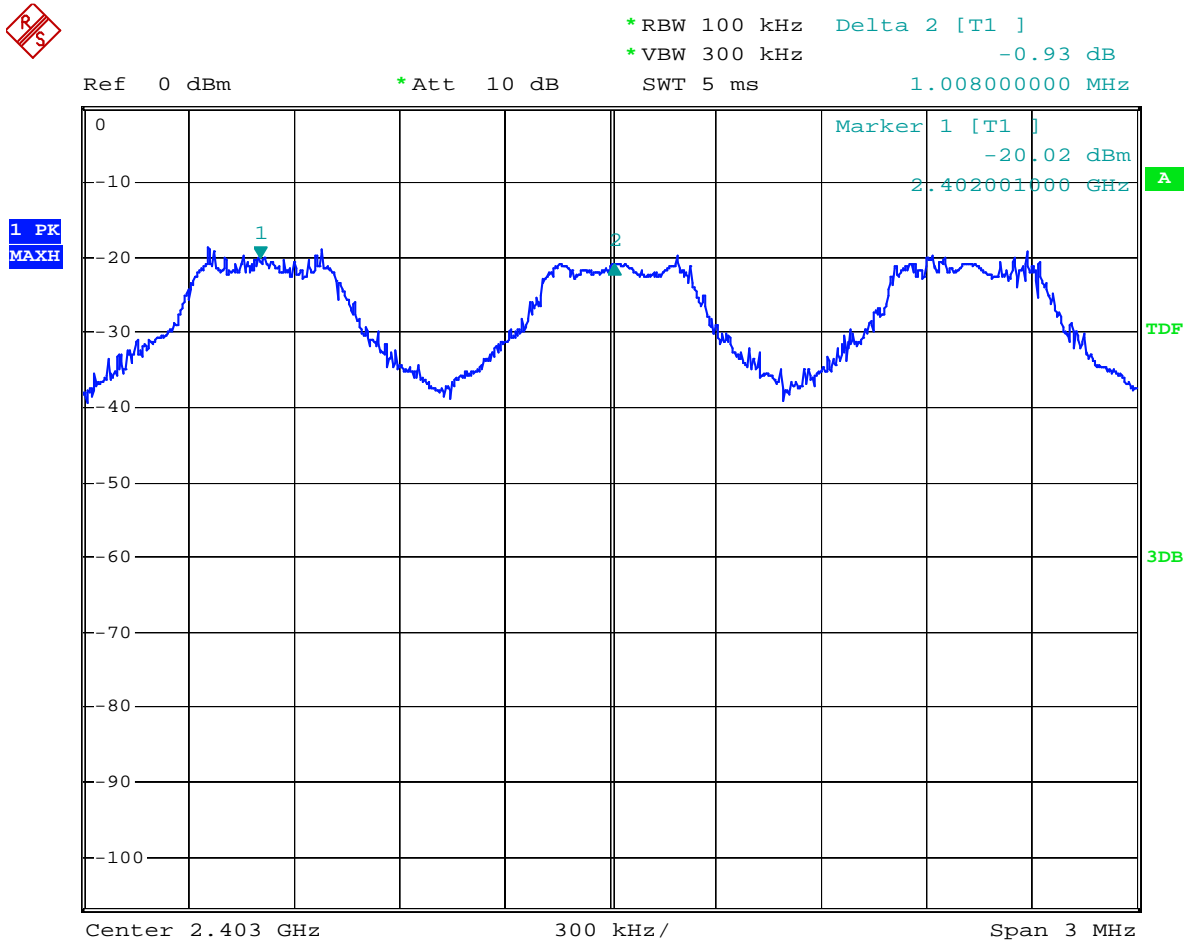
8.6. Test Result

PASS.

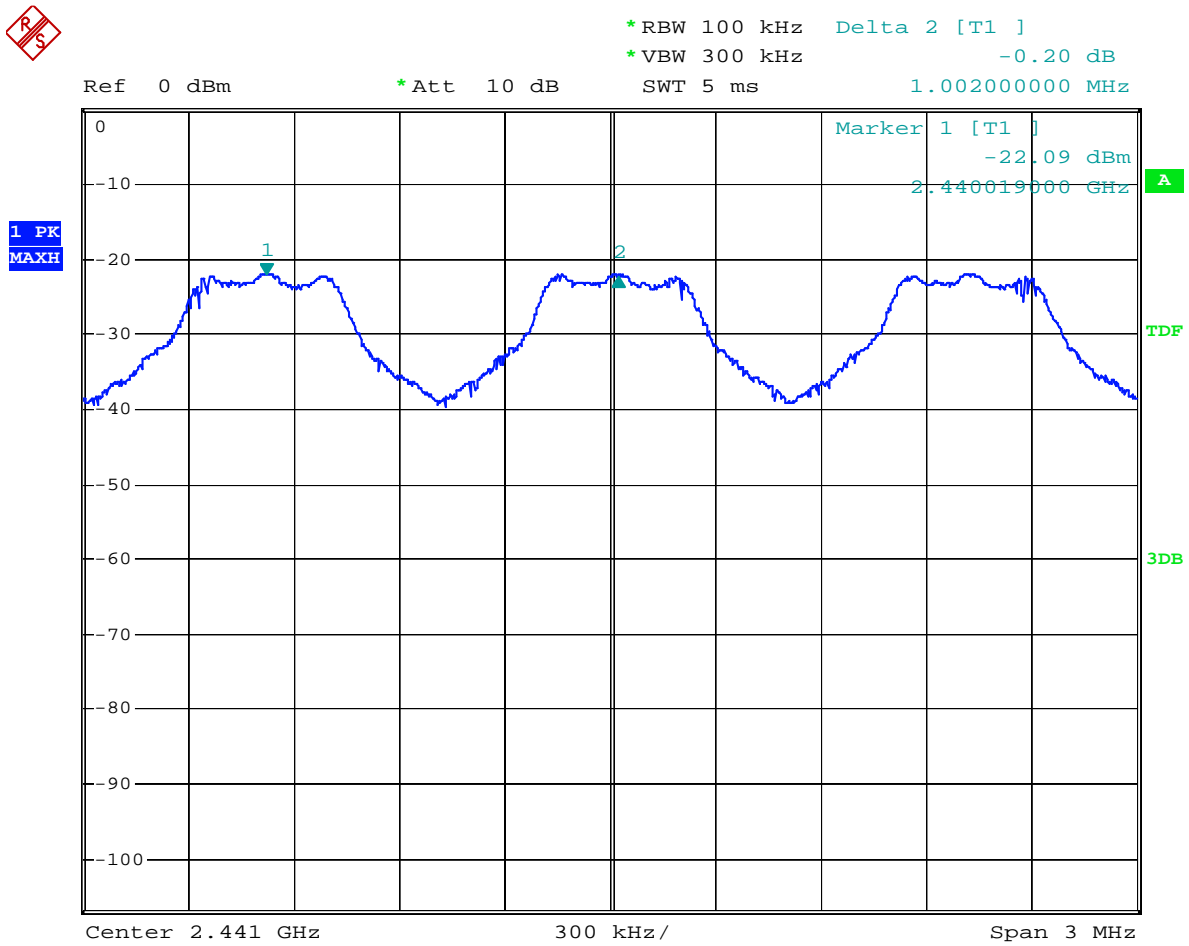
Date of Test:	October 20, 2008	Temperature:	25°C
EUT:	BLUETOOTH HANDS FREE	Humidity:	52%
Model No.:	CAR KIT	Power Supply:	DC 3.7V
Test Mode:	DR02A	Test Engineer:	DC 3.7V
	Hopping		Roger

Channel	Channel Frequency (MHz)	Channel separation (MHz)	Limit
Low	2402	1.008	> the 20dB Bandwidth or 25kHz (whichever is greater)
Middle	2441	1.002	> the 20dB Bandwidth or 25kHz (whichever is greater)
High	2480	1.008	> the 20dB Bandwidth or 25kHz (whichever is greater)

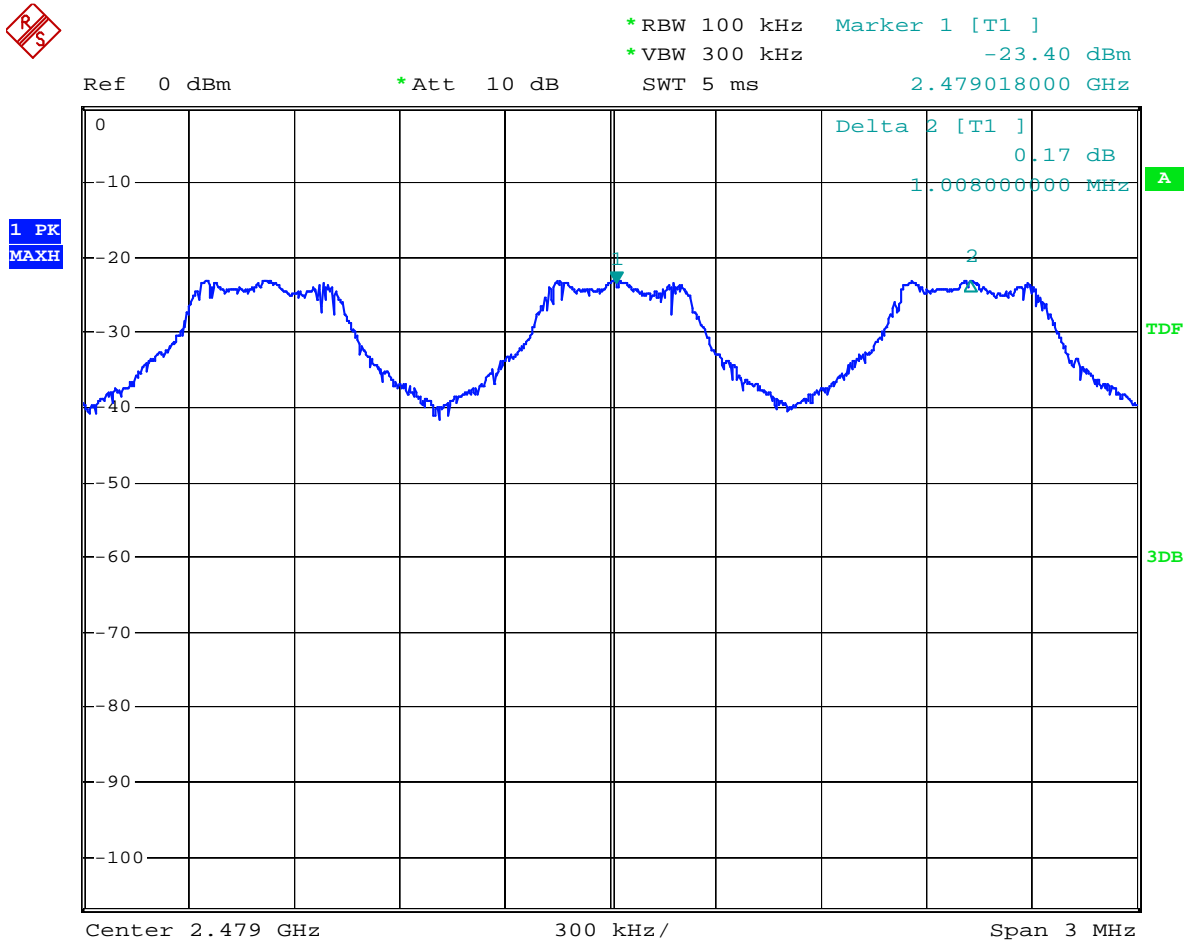
The spectrum analyzer plots are attached as below.



Date: 20.OCT.2008 11:32:23



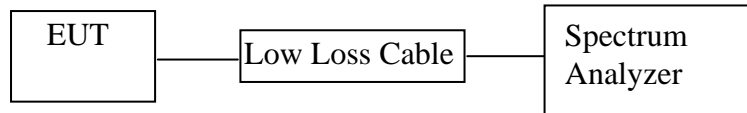
Date: 20.OCT.2008 11:39:19



Date: 20.OCT.2008 11:46:00

9. NUMBER OF HOPPING FREQUENCY TEST

9.1. Block Diagram of Test Setup



(EUT: BLUETOOTH HANDS FREE CAR KIT)

9.2. The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

9.3. EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.3.1. BLUETOOTH HANDS FREE CAR KIT (EUT)

Model Number	:	DR02A
Serial Number	:	N/A
Manufacturer	:	Zhejiang Dictory Electronic Technology Co., Ltd.

9.4. Operating Condition of EUT

9.4.1. Setup the EUT and simulator as shown as Section 9.1.

9.4.2. Turn on the power of all equipment.

9.4.3. Let the EUT work in TX (Hopping on) modes measure it.

9.5. Test Procedure

9.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.2. Set the spectrum analyzer as Span=30MHz, RBW=300kHz, VBW=300kHz.

9.5.3. Max hold, view and count how many channel in the band.

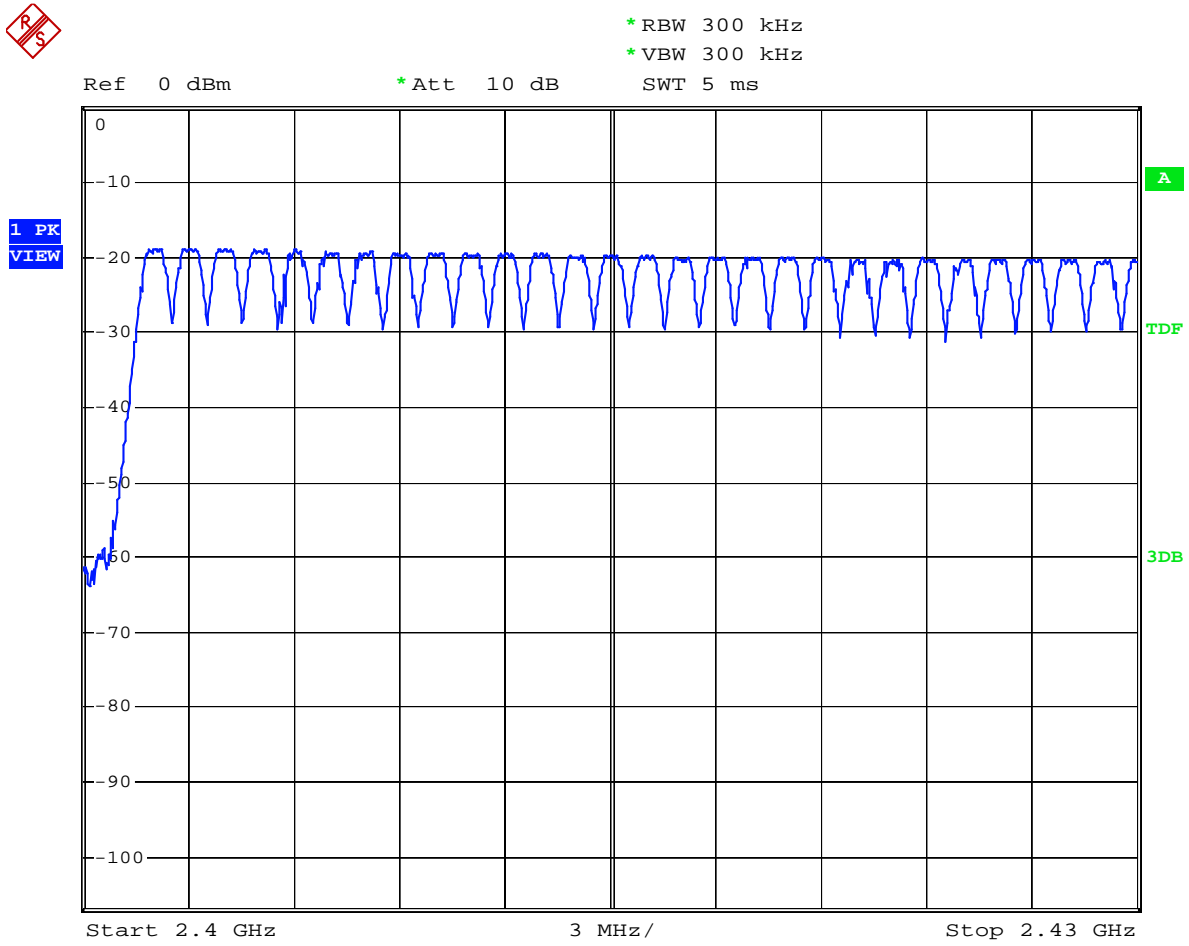
9.6. Test Result

PASS.

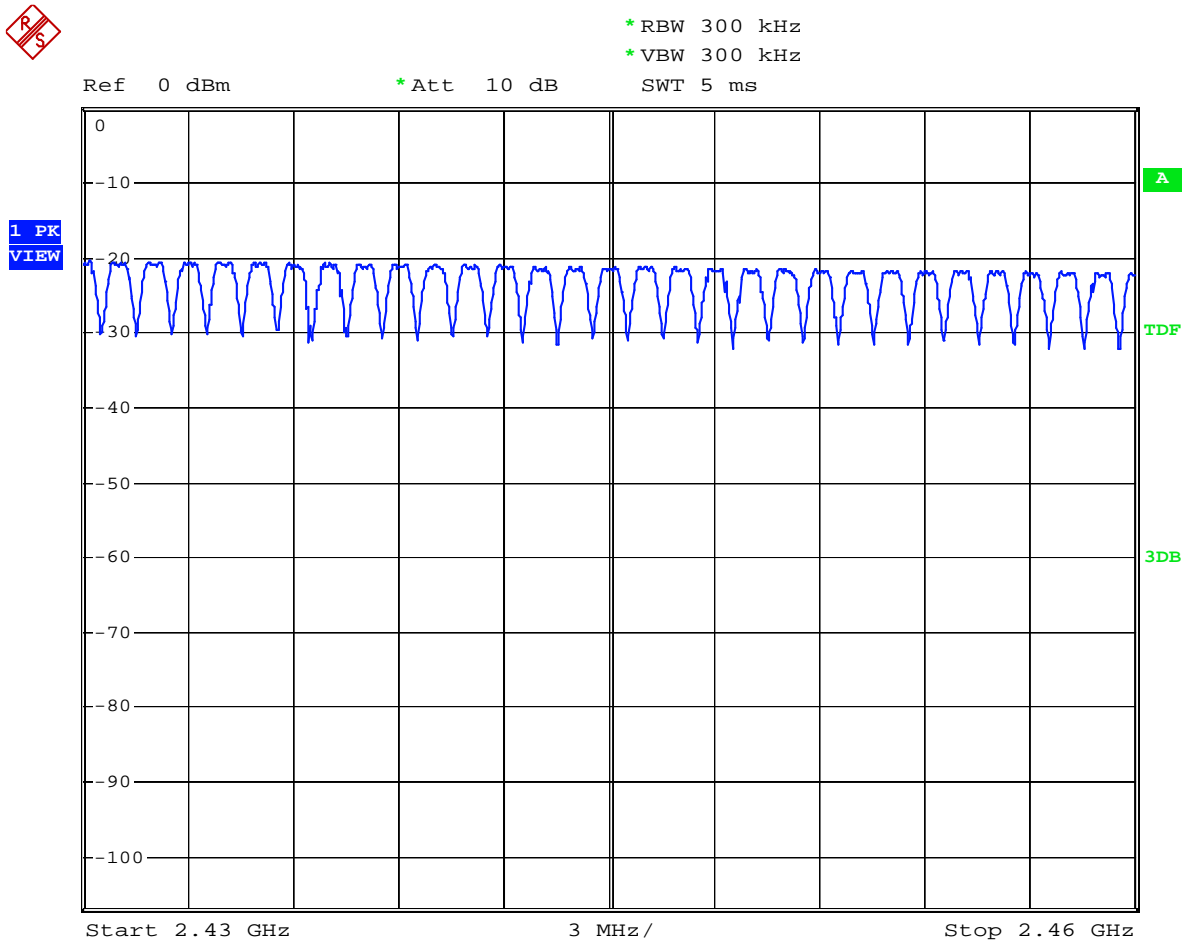
Date of Test:	<u>October 20, 2008</u>	Temperature:	<u>25°C</u>
	<u>BLUETOOTH HANDS</u>		
EUT:	<u>HREE CAR KIT</u>	Humidity:	<u>52%</u>
Model No.:	<u>DR02A</u>	Power Supply:	<u>DC 3.7V</u>
Test Mode:	<u>Hopping</u>	Test Engineer:	<u>Roger</u>

Total number of hopping channel	Measurement result (CH)	Limit (CH)
	79	>15

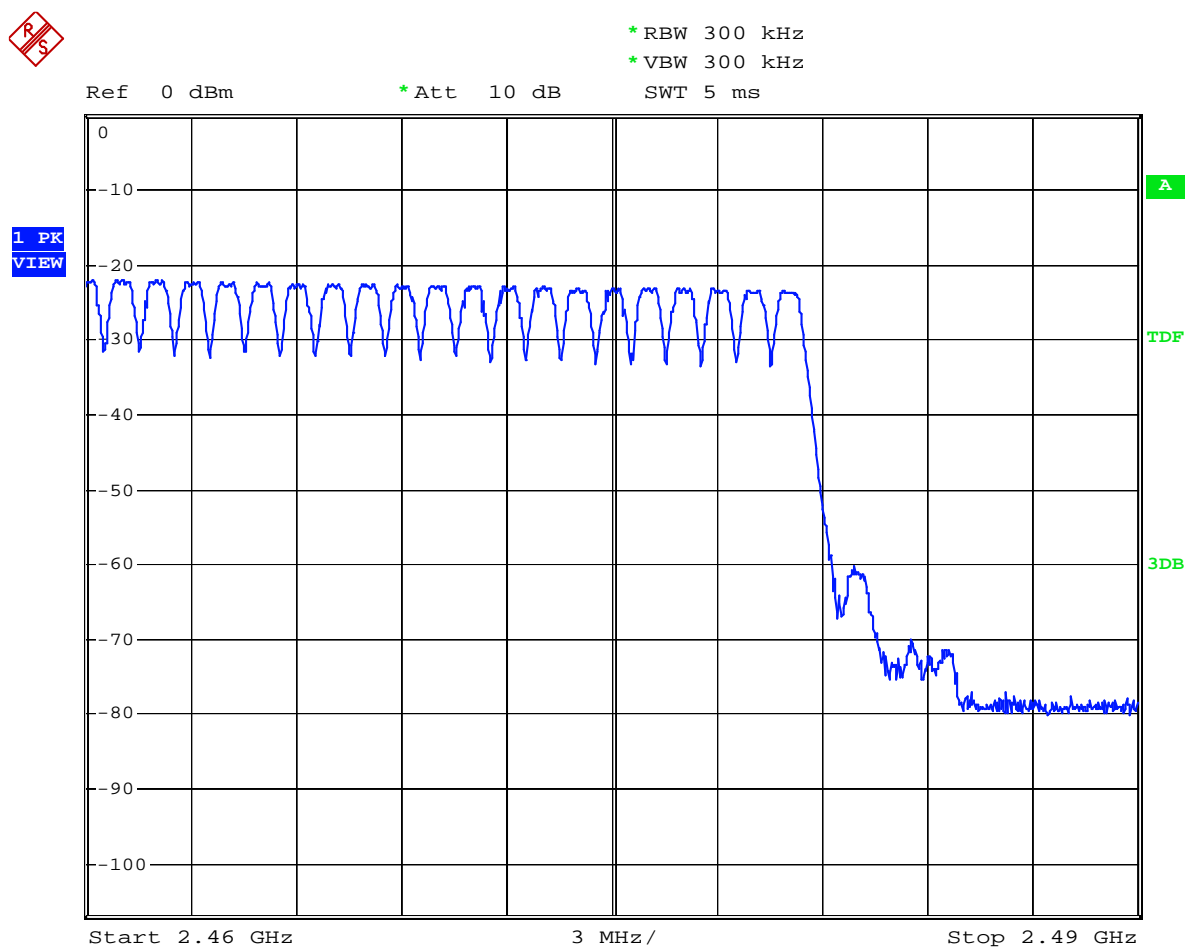
The spectrum analyzer plots are attached as below.



Date: 20.OCT.2008 11:05:53



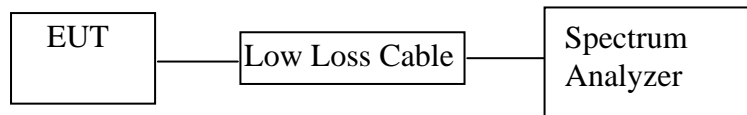
Date: 20.OCT.2008 11:07:58



Date: 20.OCT.2008 11:09:32

10.DWELL TIME TEST

10.1.Block Diagram of Test Setup



(EUT: BLUETOOTH HANDS HREE CAR KIT)

10.2.The Requirement For Section 15.247(a)(1)(iii)

Section 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.

10.3.EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

10.3.1.BLUETOOTH HANDS HREE CAR KIT (EUT)

Model Number	:	DR02A
Serial Number	:	N/A
Manufacturer	:	Zhejiang Dictory Electronic Technology Co., Ltd.

10.4.Operating Condition of EUT

10.4.1.Setup the EUT and simulator as shown as Section 10.1.

10.4.2.Turn on the power of all equipment.

10.4.3.Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

10.5. Test Procedure

- 10.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 10.5.2. Set center frequency of spectrum analyzer = operating frequency.
- 10.5.3. Set the spectrum analyzer as RBW=100kHz, VBW=300kHz, Span=0Hz, Adjust Sweep=1s. Get the burst (in 1 sec.).
- 10.5.4. Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Adjust Sweep=2ms. Get the pulse time.
- 10.5.5. Repeat above procedures until all frequency measured were complete.

10.6. Test Result

PASS.

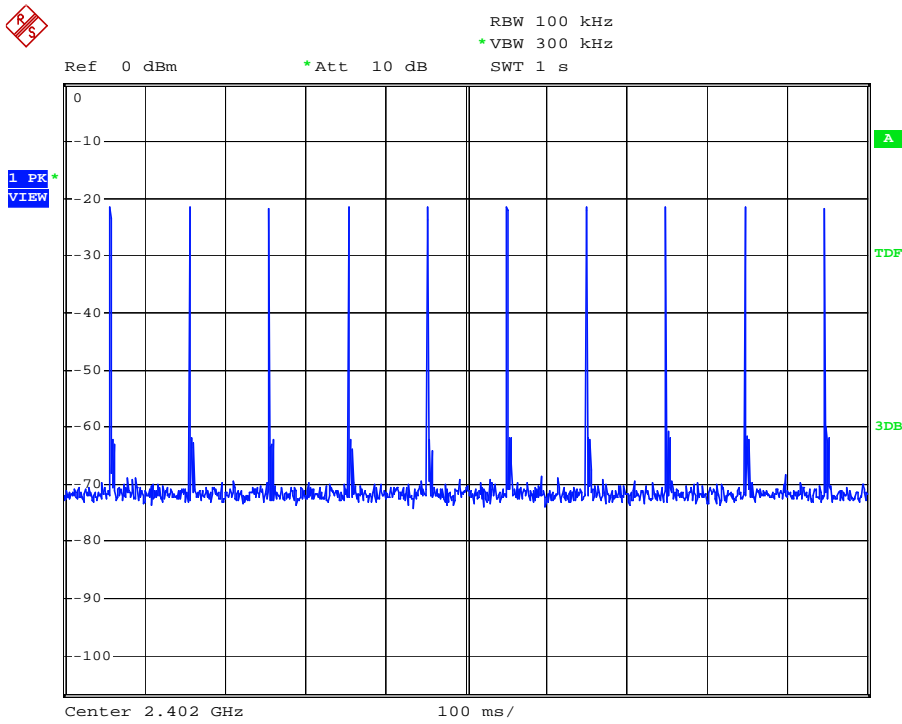
Date of Test:	<u>October 20, 2008</u>	Temperature:	<u>25°C</u>
	<u>BLUETOOTH HANDS HREE</u>		
EUT:	<u>CAR KIT</u>	Humidity:	<u>52%</u>
Model No.:	<u>DR02A</u>	Power Supply:	<u>DC 3.7V</u>
Test Mode:	<u>Hopping</u>	Test Engineer:	<u>Roger</u>

A period transmit time = $0.4 \times 79 = 31.6$

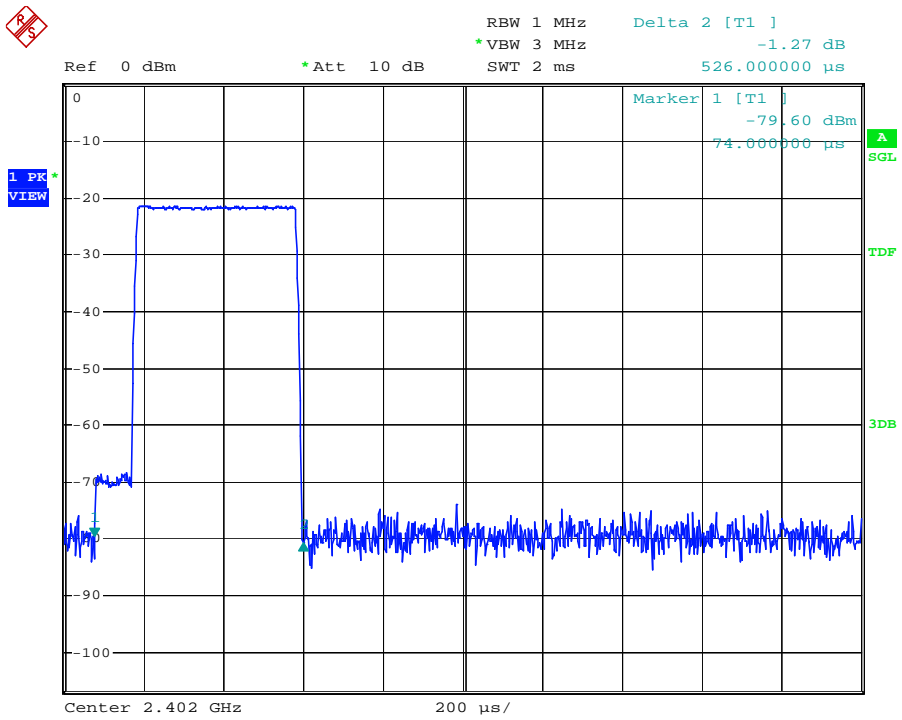
Dwell time = pulse time \times burst (in 1 sec.) $\times 31.6$

Channel	Channel Frequency (MHz)	Pulse Time (ms)	Burst (in 1 sec.)	Dwell Time (ms)	Limit (ms)
Low	2402	0.526	10	166.22	400
Middle	2441	0.526	10	166.22	400
High	2480	0.522	10	164.95	400

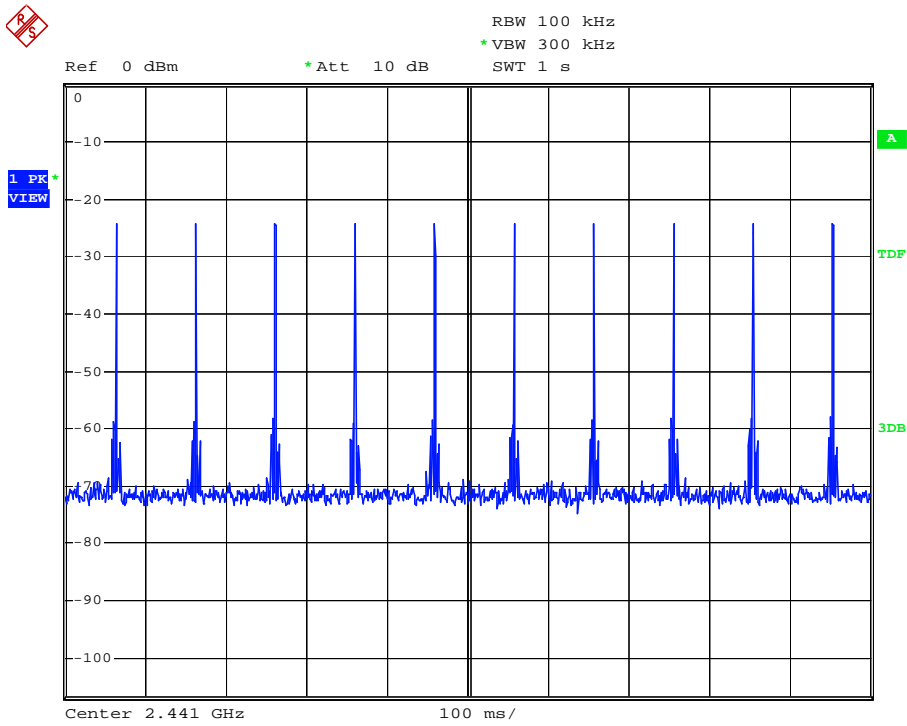
The spectrum analyzer plots are attached as below.



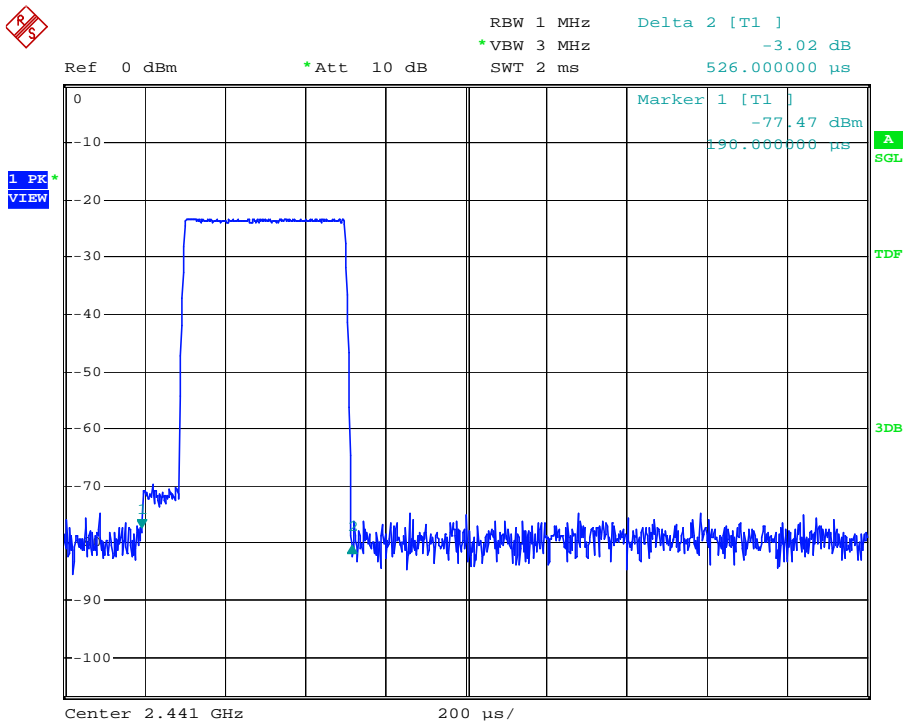
Date: 20.OCT.2008 16:31:38



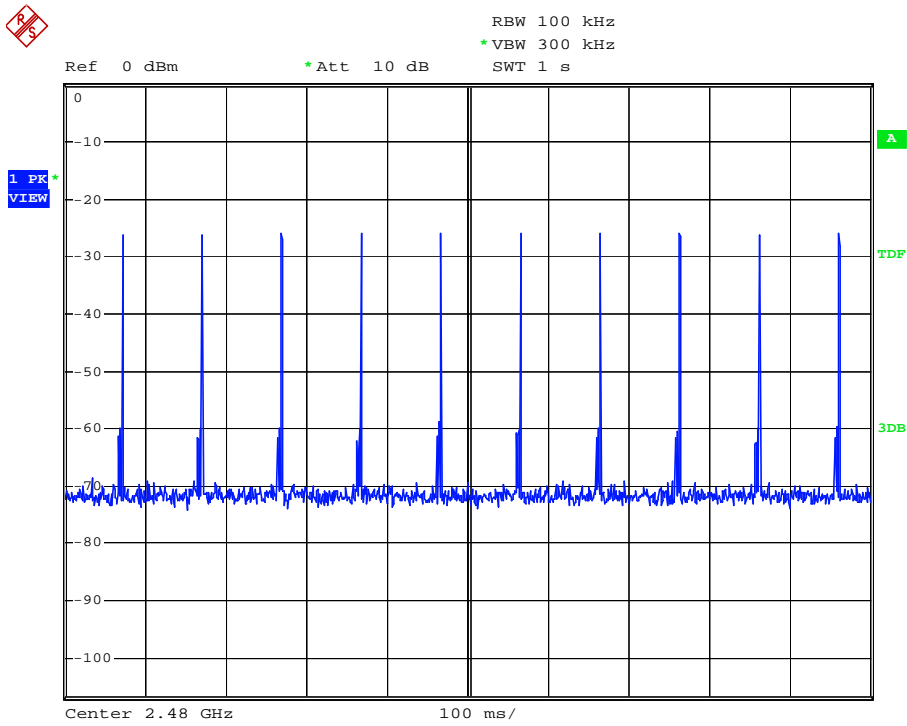
Date: 20.OCT.2008 16:48:18



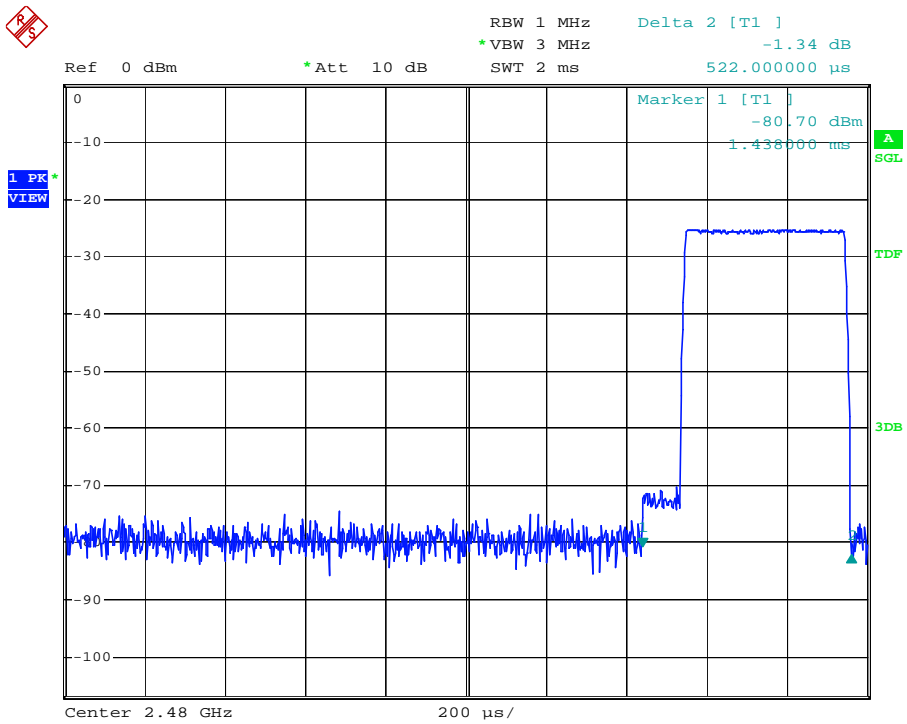
Date: 20.OCT.2008 16:32:26



Date: 20.OCT.2008 16:49:59



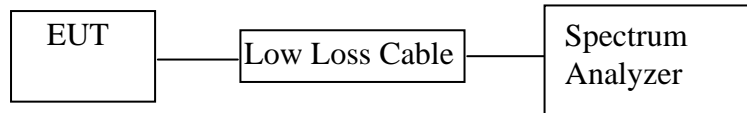
Date: 20.OCT.2008 16:33:20



Date: 20.OCT.2008 16:39:35

11. MAXIMUM PEAK OUTPUT POWER TEST

11.1. Block Diagram of Test Setup



(EUT: BLUETOOTH HANDS FREE CAR KIT)

11.2. The Requirement For Section 15.247(b)(1)

Section 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.

11.3. EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

11.3.1. BLUETOOTH HANDS FREE CAR KIT (EUT)

Model Number	:	DR02A
Serial Number	:	N/A
Manufacturer	:	Zhejiang Dictory Electronic Technology Co., Ltd.

11.4. Operating Condition of EUT

11.4.1. Setup the EUT and simulator as shown as Section 11.1.

11.4.2. Turn on the power of all equipment.

11.4.3. Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

11.5.Test Procedure

11.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

11.5.2.Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz.

11.5.3.Measurement the maximum peak output power.

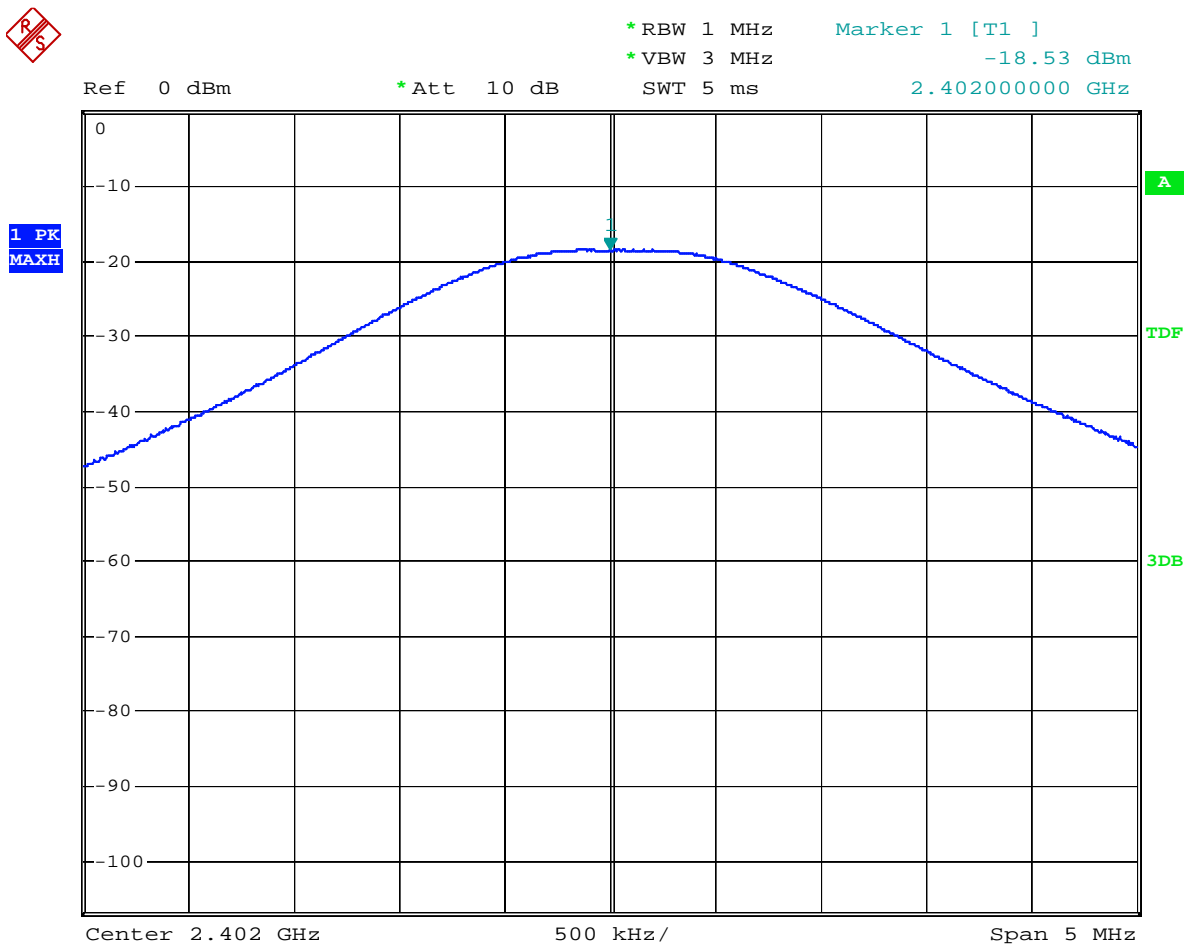
11.6.Test Result

PASS.

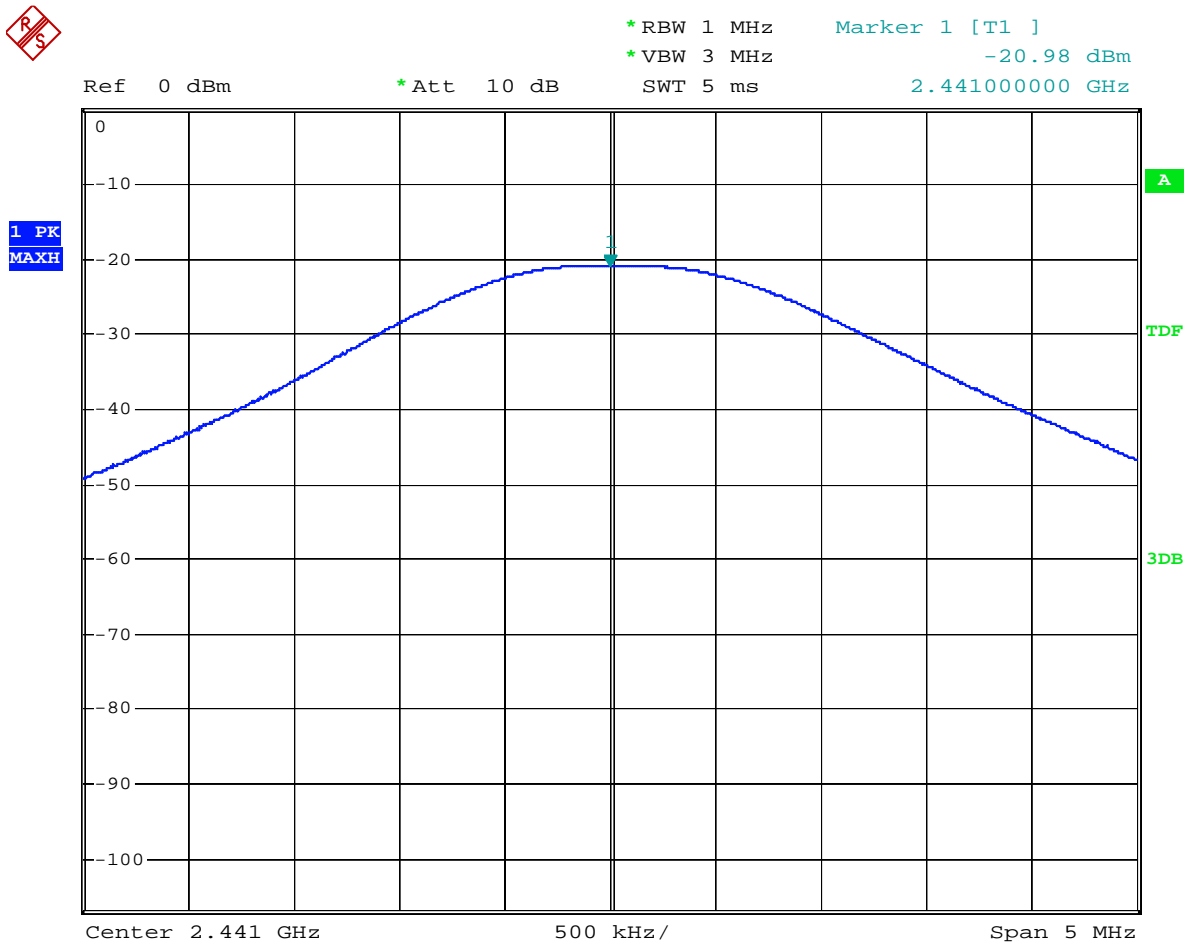
Date of Test:	October 20, 2008	Temperature:	25°C
EUT:	BLUETOOTH HANDS HREE	Humidity:	52%
Model No.:	CAR KIT	Power Supply:	DC 3.7V
Test Mode:	DR02A	Test Engineer:	Roger
	TX		

Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (mW)	Limits dBm / W
Low	2402	-18.53	0.014	30 dBm / 1 W
Middle	2441	-20.98	0.008	30 dBm / 1 W
High	2480	-23.32	0.005	30 dBm / 1 W

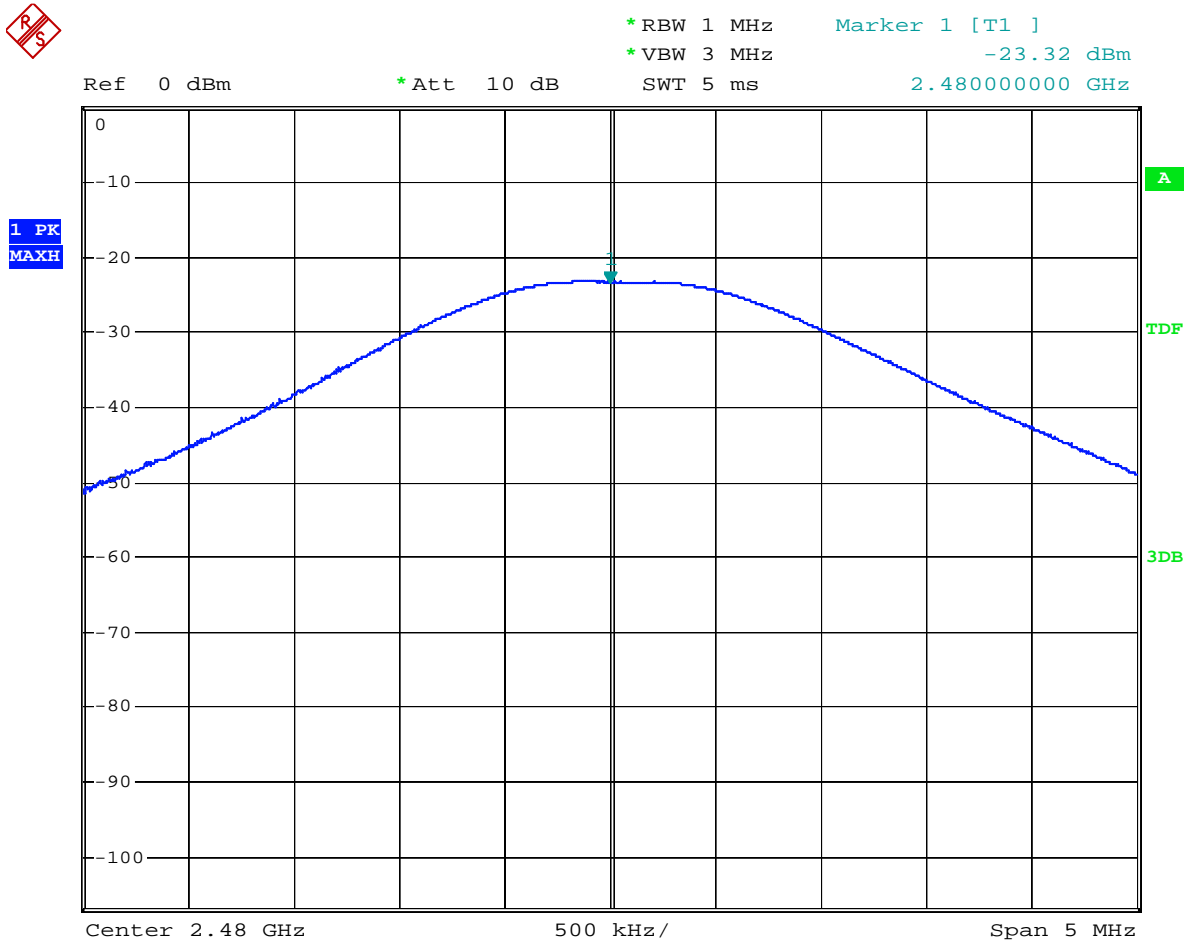
The spectrum analyzer plots are attached as below.



Date: 20.OCT.2008 11:20:41



Date: 20.OCT.2008 11:19:50

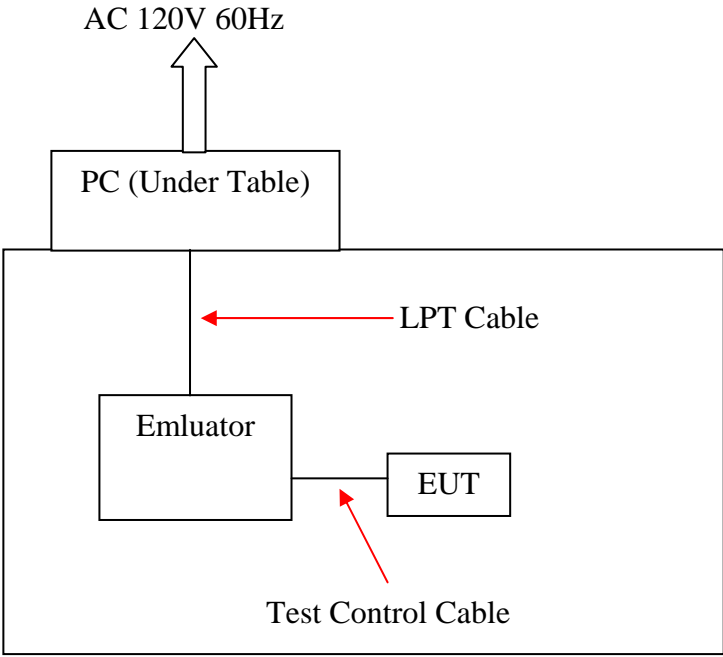


Date: 20.OCT.2008 11:18:21

12.RADIATED EMISSION TEST

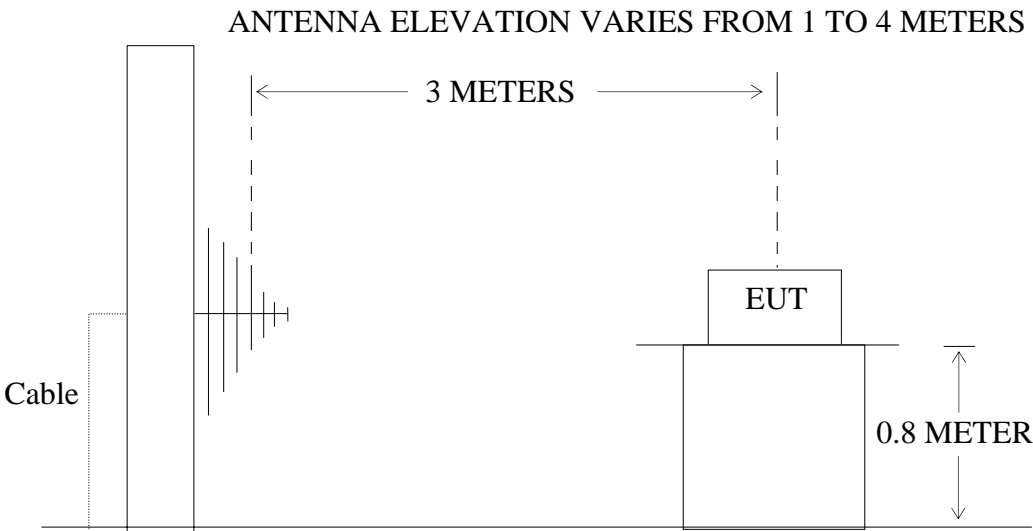
12.1.Block Diagram of Test Setup

12.1.1.Block diagram of connection between the EUT and simulators



(EUT: BLUETOOTH HANDS HREE CAR KIT)

12.1.2.Anechoic Chamber Test Setup Diagram



(EUT: BLUETOOTH HANDS HREE CAR KIT)

12.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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 specified in Section 15.209(a).

12.3.Restricted bands of operation

12.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510

²Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

12.4. Configuration of EUT on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

12.4.1. BLUETOOTH HANDS FREE CAR KIT (EUT)

Model Number : DR02A
 Serial Number : N/A
 Manufacturer : Zhejiang Dictory Electronic Technology Co., Ltd.

12.5. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver (R&S ESI26) is set at 120kHz in 30-1000MHz. and set at 1MHz in above 1000MHz.

The frequency range from 30MHz to 25000MHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

12.6.The Field Strength of Radiation Emission Measurement Results

PASS.

Date of Test:	October 16-23, 2008	Temperature:	25°C
	BLUETOOTH HANDS HREE		
EUT:	CAR KIT	Humidity:	52%
Model No.:	DR02A	Power Supply:	DC 3.7V
Test Mode:	TX (2402MHz)	Test Engineer:	Roger

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Factor Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
31.6234	15.02	19.03	34.05	40.00	-5.95	Vertical
36.5236	14.84	18.35	33.19	40.00	-6.81	Vertical
97.3436	17.88	13.91	31.79	43.50	-11.71	Vertical
125.8058	16.34	15.04	31.38	43.50	-12.12	Vertical
141.2721	17.11	14.48	31.59	43.50	-11.91	Vertical
164.8911	17.58	14.66	32.24	43.50	-11.26	Vertical
97.3436	14.96	14.05	29.01	43.50	-14.49	Horizontal
141.2721	18.19	14.48	32.67	43.50	-10.83	Horizontal
202.8745	12.89	15.03	27.92	43.50	-15.58	Horizontal
225.4267	13.45	15.97	29.42	46.00	-16.58	Horizontal
289.2986	13.72	18.58	32.30	46.00	-13.70	Horizontal
425.7932	11.14	23.07	34.21	46.00	-11.79	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dBμV/m)		Factor Corr. (dB)	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2402.060	85.21	86.73	-7.45	77.76	79.28	-	-	-	-	Vertical
*4804.118	43.86	45.32	-0.30	43.56	45.02	54	74	-10.44	-28.98	Vertical
2402.060	86.95	88.34	-7.45	79.50	80.89	-	-	-	-	Horizontal
*4804.118	51.10	52.43	-0.30	50.80	52.13	54	74	-3.20	-21.87	Horizontal

Note: 1. The emission emitted by the EUT is too low to be measured except the emission listed above.

2. *: Denotes restricted band of operation.

Date of Test:	October 16-23, 2008	Temperature:	25°C
EUT:	BLUETOOTH HANDS HREE	Humidity:	52%
Model No.:	CAR KIT	Power Supply:	DC 3.7V
Test Mode:	DR02A	Test Engineer:	DC 3.7V
	TX (2441MHz)		Roger

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Factor Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
31.6234	15.53	19.03	34.56	40.00	-5.44	Vertical
36.7811	13.92	18.28	32.20	40.00	-7.80	Vertical
97.3436	17.67	13.91	31.58	43.50	-11.92	Vertical
141.2721	17.75	14.48	32.23	43.50	-11.27	Vertical
189.1075	15.16	14.86	30.02	43.50	-13.48	Vertical
236.7927	11.88	16.54	28.42	46.00	-17.58	Vertical
97.3436	12.44	14.05	26.49	43.50	-17.01	Horizontal
141.2721	17.29	14.48	31.77	43.50	-11.73	Horizontal
189.1075	16.73	14.86	31.59	43.50	-11.91	Horizontal
252.2522	15.24	17.68	32.92	46.00	-13.08	Horizontal
298.5932	14.00	18.64	32.64	46.00	-13.36	Horizontal
456.7909	10.96	23.15	34.11	46.00	-11.89	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dBμV/m)		Factor Corr. (dB)	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2441.070	84.63	86.22	-7.35	77.28	78.87	-	-	-	-	Vertical
*4882.136	44.89	46.77	0.14	45.03	46.91	54	74	-8.97	-27.09	Vertical
2441.070	84.73	86.63	-7.35	77.38	79.28	-	-	-	-	Horizontal
*4882.136	47.15	49.48	0.14	47.29	49.62	54	74	-6.71	-24.38	Horizontal

Note: 1.The emission emitted by the EUT is too low to be measured except the emission listed above.**2. *: Denotes restricted band of operation.**

Date of Test:	October 16-23, 2008	Temperature:	25°C
EUT:	BLUETOOTH HANDS HREE	Humidity:	52%
Model No.:	CAR KIT	Power Supply:	DC 3.7V
Test Mode:	DR02A	Test Engineer:	DC 3.7V
	TX (2480MHz)		Roger

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Factor Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
31.6234	15.19	19.03	34.22	40.00	-5.78	Vertical
35.7616	15.79	18.51	34.30	40.00	-5.70	Vertical
84.8782	15.62	13.90	29.52	40.00	-10.48	Vertical
97.3436	18.45	13.91	32.36	43.50	-11.14	Vertical
141.2721	19.63	14.48	34.11	43.50	-9.39	Vertical
216.1196	19.01	15.56	34.57	46.00	-11.43	Vertical
97.3436	14.49	14.05	28.54	43.50	-14.96	Horizontal
140.7767	15.65	14.49	30.14	43.50	-13.36	Horizontal
143.7760	15.43	14.48	29.91	43.50	-13.59	Horizontal
215.3616	15.90	15.55	31.45	43.50	-12.05	Horizontal
264.0416	13.83	18.66	32.49	46.00	-13.51	Horizontal
424.2998	11.60	23.10	34.70	46.00	-11.30	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dBμV/m)		Factor Corr. (dB)	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2480.050	83.12	84.75	-7.37	75.75	77.38	-	-	-	-	Vertical
*4960.098	43.67	45.71	0.52	44.19	46.23	54	74	-9.81	-27.77	Vertical
2480.050	83.55	84.92	-7.37	76.18	77.55	-	-	-	-	Horizontal
*4960.098	45.22	46.95	0.52	45.74	47.47	54	74	-8.26	-26.53	Horizontal

Note: 1.The emission emitted by the EUT is too low to be measured except the emission listed above.**2. *: Denotes restricted band of operation.**



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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Roger #52

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2402MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Horizontal

Power Source: DC 3.7V

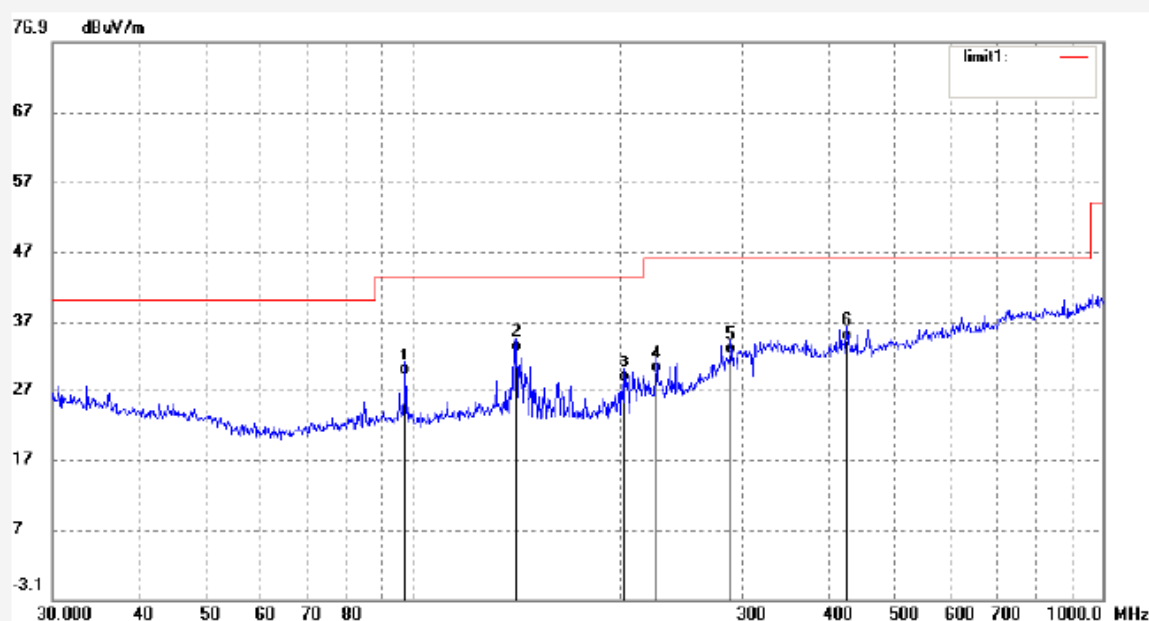
Date: 08/10/17/

Time: 14/21/19

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	97.3436	14.96	14.05	29.01	43.50	-14.49	QP	
2	141.2721	18.19	14.48	32.67	43.50	-10.83	QP	
3	202.8745	12.89	15.03	27.92	43.50	-15.58	QP	
4	225.4267	13.45	15.97	29.42	46.00	-16.58	QP	
5	289.2986	13.72	18.58	32.30	46.00	-13.70	QP	
6	425.7932	11.14	23.07	34.21	46.00	-11.79	QP	



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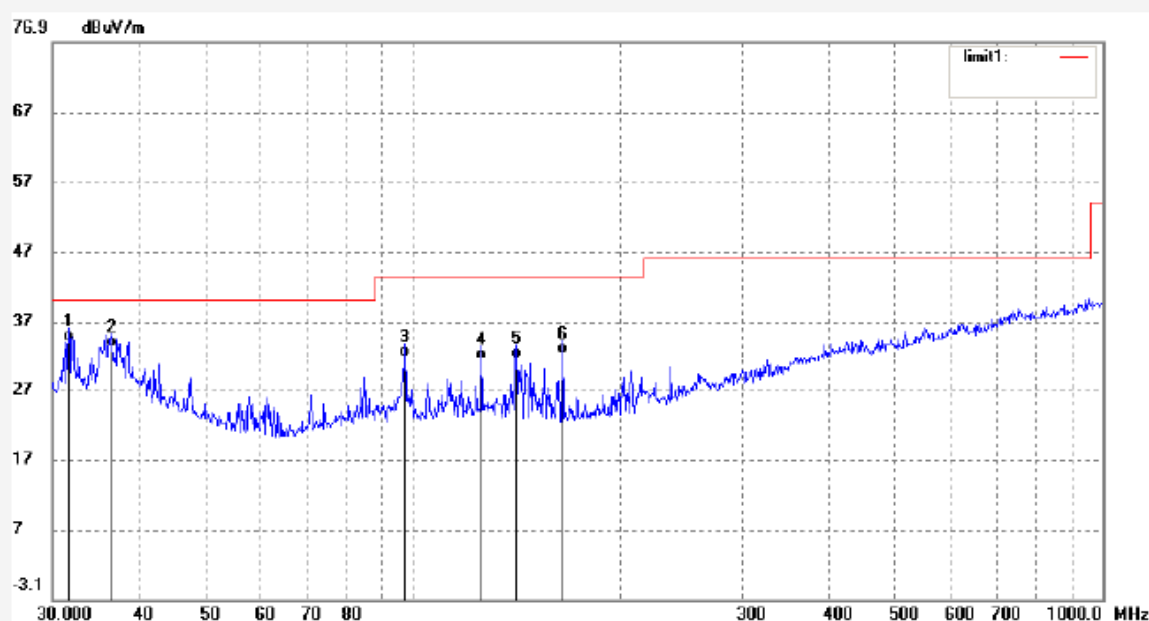
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Roger #51
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 52 %
EUT: BLUETOOTH HANDS FREE CAR KIT
Mode: TX 2402MHz
Model: DR02A
Manufacturer: Dictory

Polarization: Vertical
Power Source: DC 3.7V
Date: 08/10/17/
Time: 14/19/01
Engineer Signature:
Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	31.6234	15.02	19.03	34.05	40.00	-5.95	QP	
2	36.5236	14.84	18.35	33.19	40.00	-6.81	QP	
3	97.3436	17.88	13.91	31.79	43.50	-11.71	QP	
4	125.8058	16.34	15.04	31.38	43.50	-12.12	QP	
5	141.2721	17.11	14.48	31.59	43.50	-11.91	QP	
6	164.8911	17.58	14.66	32.24	43.50	-11.26	QP	


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 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

 Site: 966 chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: Roger #41

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2402MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Horizontal

Power Source: DC 3.7V

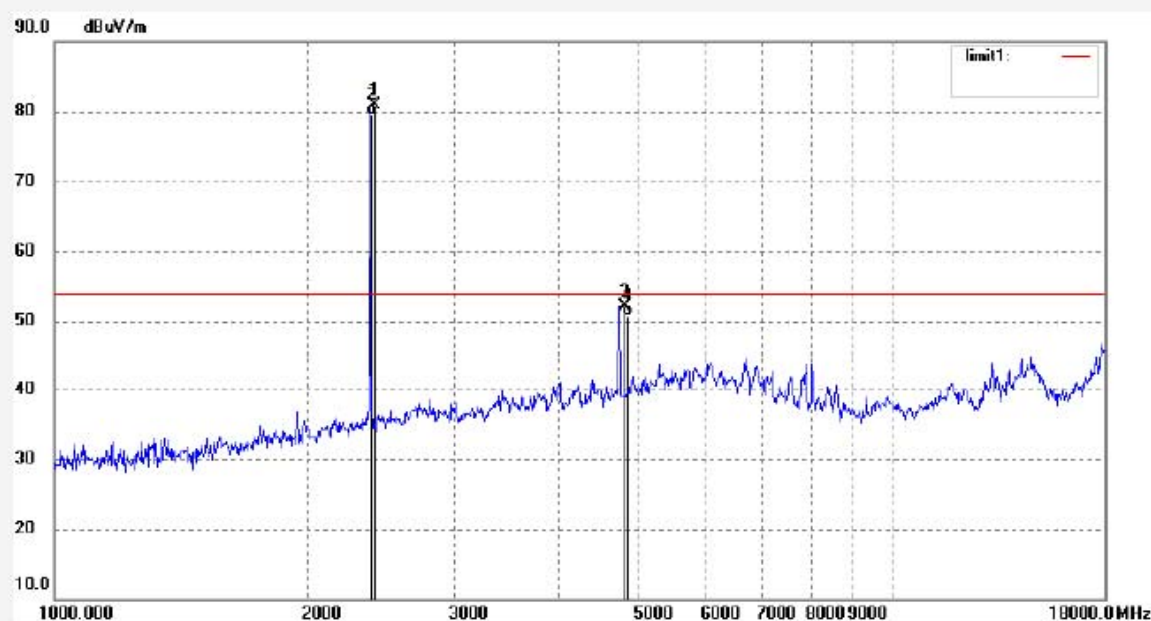
Date: 08/10/17/

Time: 11/53/10

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2402.060	88.34	-7.45	80.89	-	-	peak	
2	2402.060	86.95	-7.45	79.50	-	-	AVG	
3	4804.118	52.43	-0.30	52.13	74.00	-21.87	peak	
4	4804.118	51.10	-0.30	50.80	54.00	-3.20	AVG	


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 Science & Industry Park,Nanshan Shenzhen,P.R.China

 Site: 966 chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: Roger #42

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2402MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Vertical

Power Source: DC 3.7V

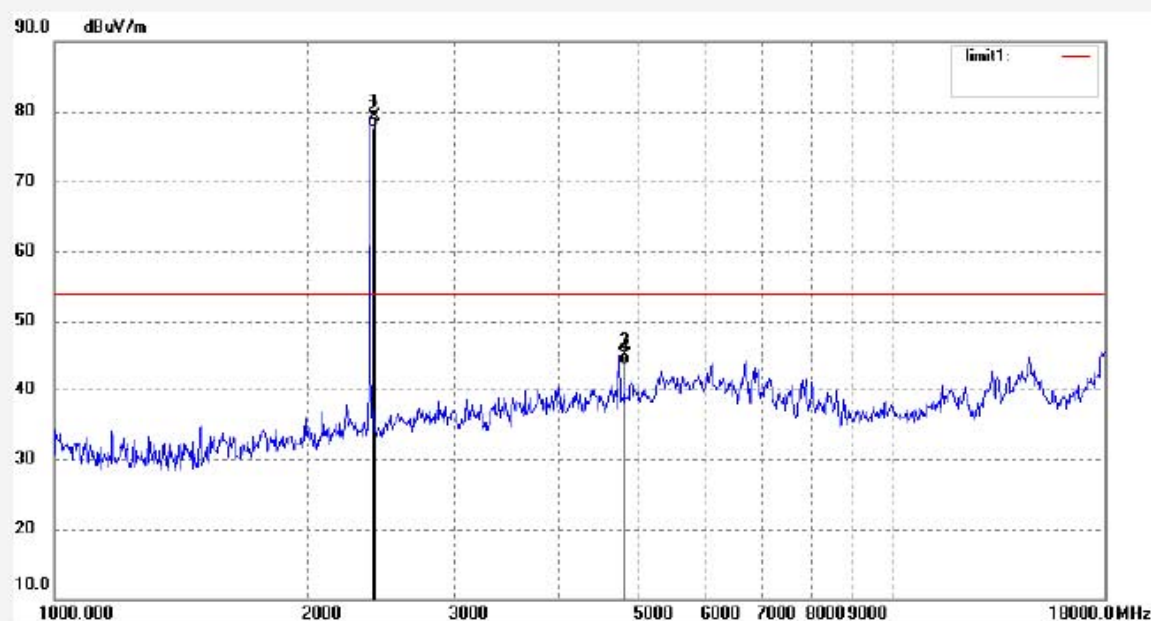
Date: 08/10/17/

Time: 12/08/28

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2402.060	86.73	-7.45	79.28	-	-	peak	
2	2402.060	85.21	-7.45	77.76	-	-	AVG	
3	4804.118	45.32	-0.30	45.02	74.00	-28.98	peak	
4	4804.118	43.86	-0.30	43.56	54.00	-10.44	AVG	


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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Roger #61

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2402MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Horizontal

Power Source: DC 3.7V

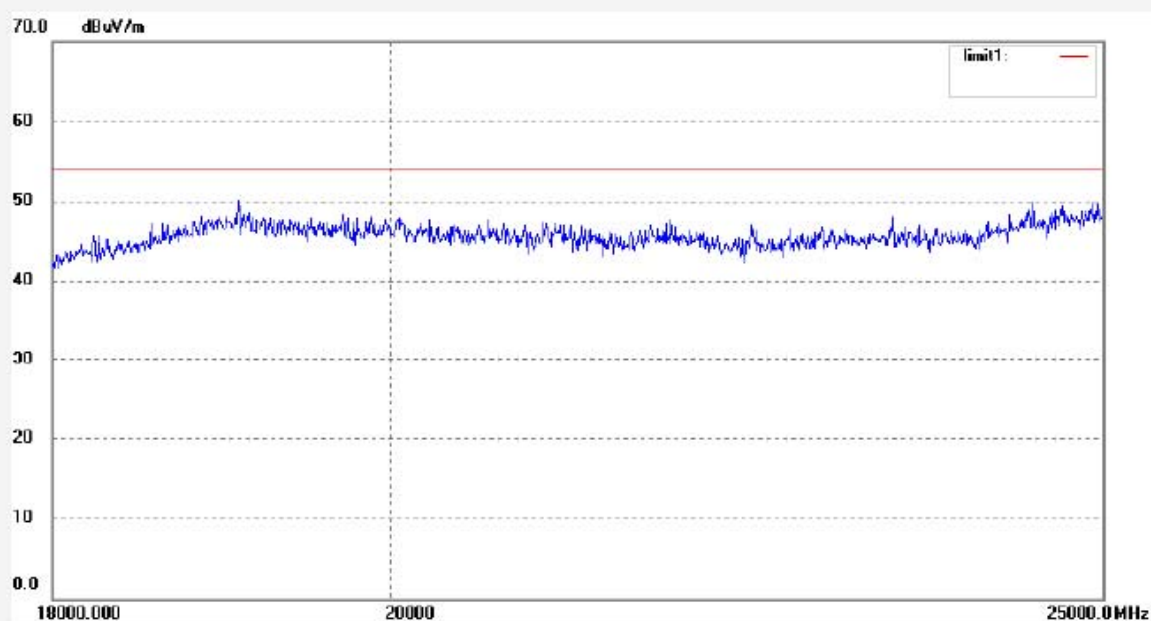
Date: 08/10/23/

Time: 9/16/07

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
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ACCURATE TECHNOLOGY CO., LTD.

 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Roger #60

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2402MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Vertical

Power Source: DC 3.7V

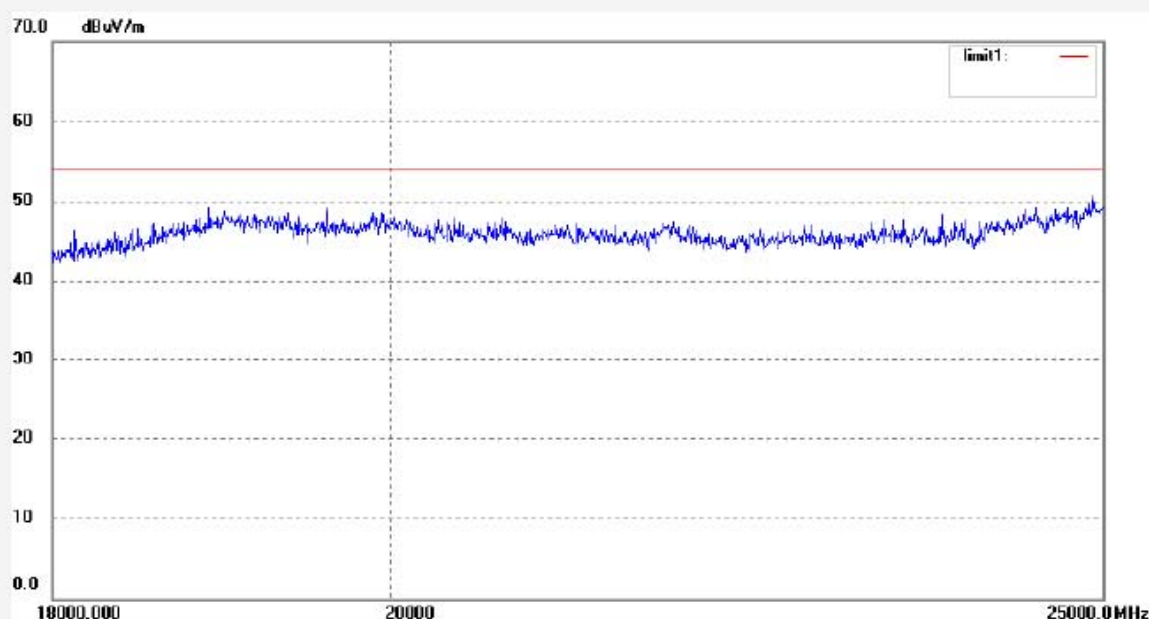
Date: 08/10/23/

Time: 9/06/44

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
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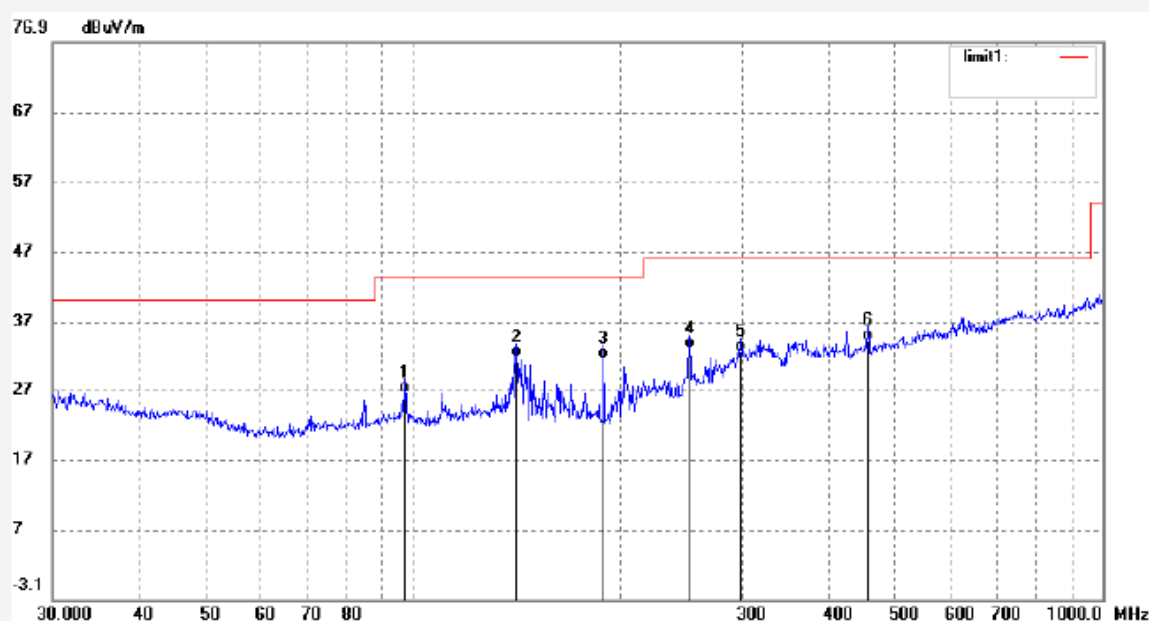
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Roger #49
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 52 %
EUT: BLUETOOTH HANDS FREE CAR KIT
Mode: TX 2441MHz
Model: DR02A
Manufacturer: Dictory

Polarization: Horizontal
Power Source: DC 3.7V
Date: 08/10/17/
Time: 14/12/16
Engineer Signature:
Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	97.3436	12.44	14.05	26.49	43.50	-17.01	QP	
2	141.2721	17.29	14.48	31.77	43.50	-11.73	QP	
3	189.1075	16.73	14.86	31.59	43.50	-11.91	QP	
4	252.2522	15.24	17.68	32.92	46.00	-13.08	QP	
5	298.5932	14.00	18.64	32.64	46.00	-13.36	QP	
6	456.7909	10.96	23.15	34.11	46.00	-11.89	QP	



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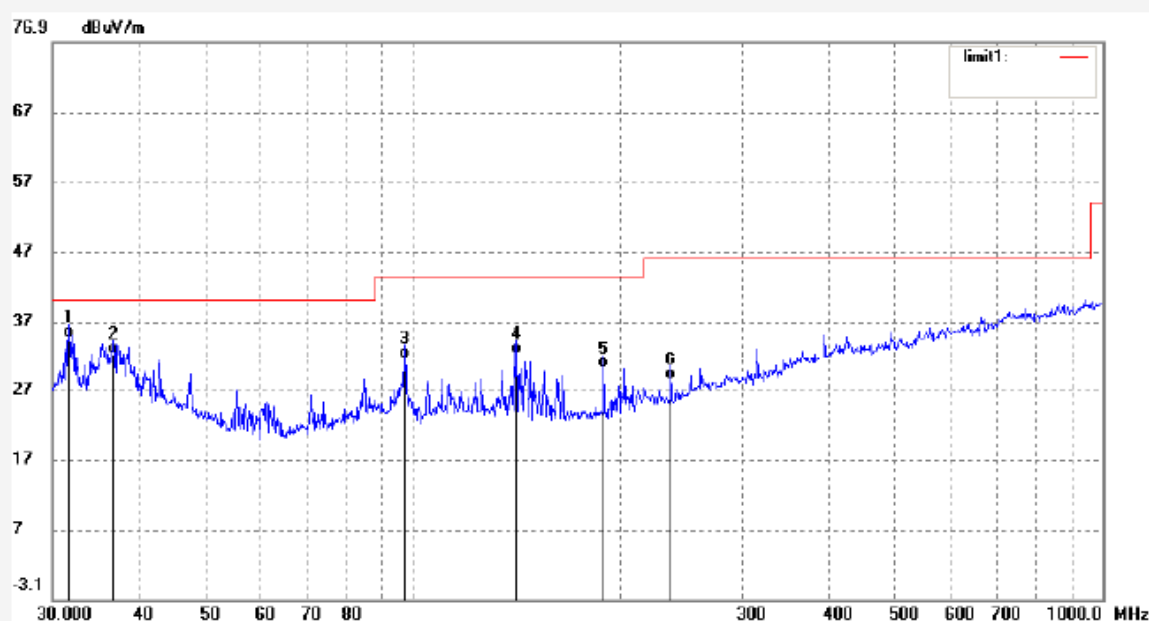
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Roger #50
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 52 %
EUT: BLUETOOTH HANDS FREE CAR KIT
Mode: TX 2441MHz
Model: DR02A
Manufacturer: Dictory

Polarization: Vertical
Power Source: DC 3.7V
Date: 08/10/17/
Time: 14/15/52
Engineer Signature:
Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	31.6234	15.53	19.03	34.56	40.00	-5.44	QP	
2	36.7811	13.92	18.28	32.20	40.00	-7.80	QP	
3	97.3436	17.67	13.91	31.58	43.50	-11.92	QP	
4	141.2721	17.75	14.48	32.23	43.50	-11.27	QP	
5	189.1075	15.16	14.86	30.02	43.50	-13.48	QP	
6	236.7927	11.88	16.54	28.42	46.00	-17.58	QP	


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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Roger #44

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2441MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Horizontal

Power Source: DC 3.7V

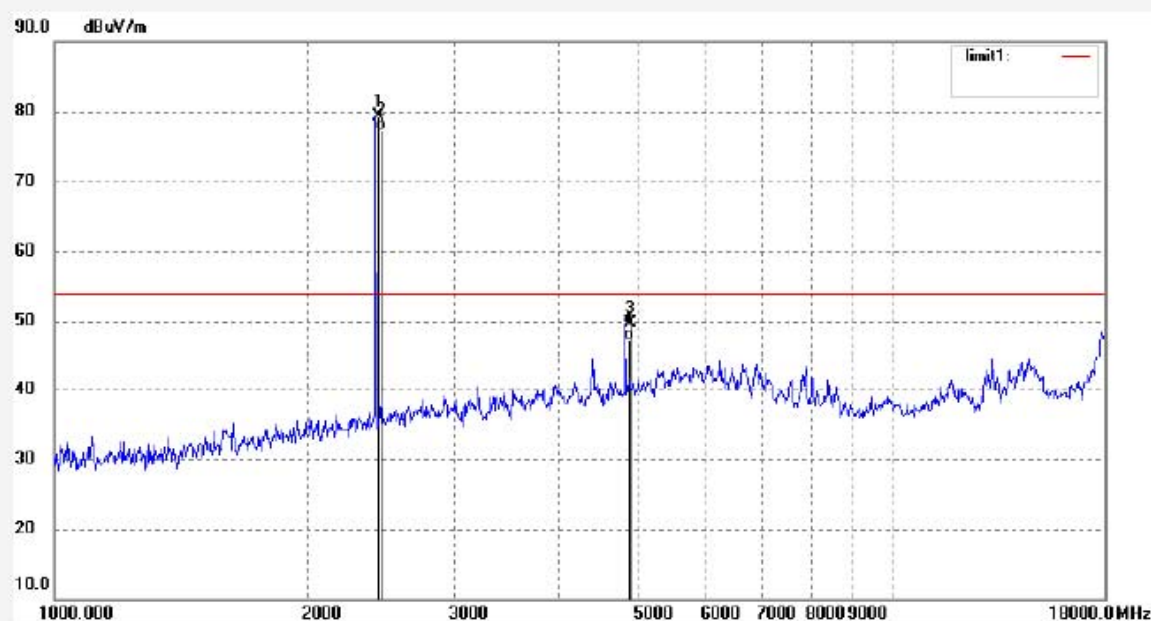
Date: 08/10/17/

Time: 12/14/11

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2441.070	86.63	-7.35	79.28	-	-	peak	
2	2441.070	84.73	-7.35	77.38	-	-	AVG	
3	4882.136	49.48	0.14	49.62	74.00	-24.38	peak	
4	4882.136	47.15	0.14	47.29	54.00	-6.71	AVG	



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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Roger #43

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2441MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Vertical

Power Source: DC 3.7V

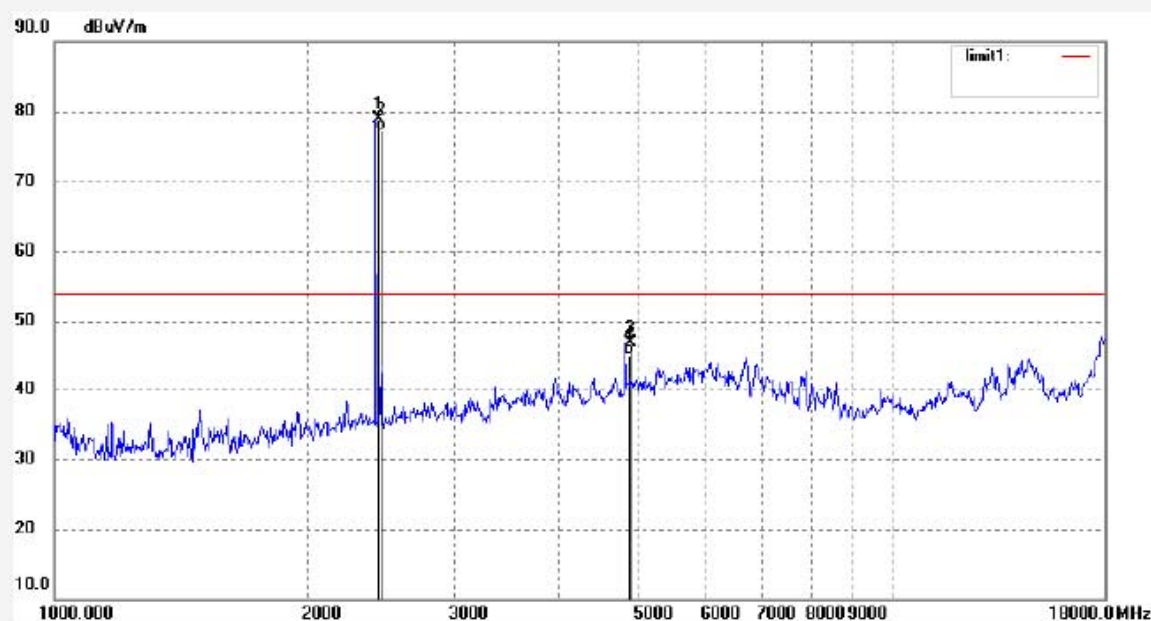
Date: 08/10/17/

Time: 12/11/55

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2441.070	86.22	-7.35	78.87	-	-	peak	
2	2441.070	84.63	-7.35	77.28	-	-	AVG	
3	4882.136	46.77	0.14	46.91	74.00	-27.09	peak	
4	4882.136	44.89	0.14	45.03	54.00	-8.97	AVG	


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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Roger #62

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2441MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Horizontal

Power Source: DC 3.7V

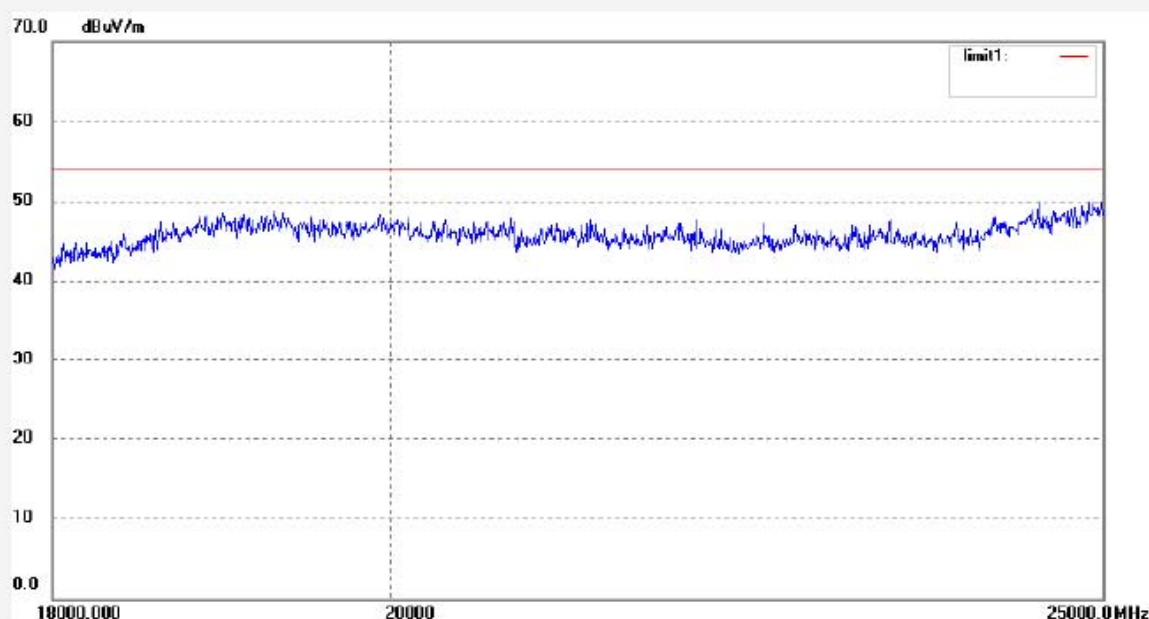
Date: 08/10/23/

Time: 9/25/00

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
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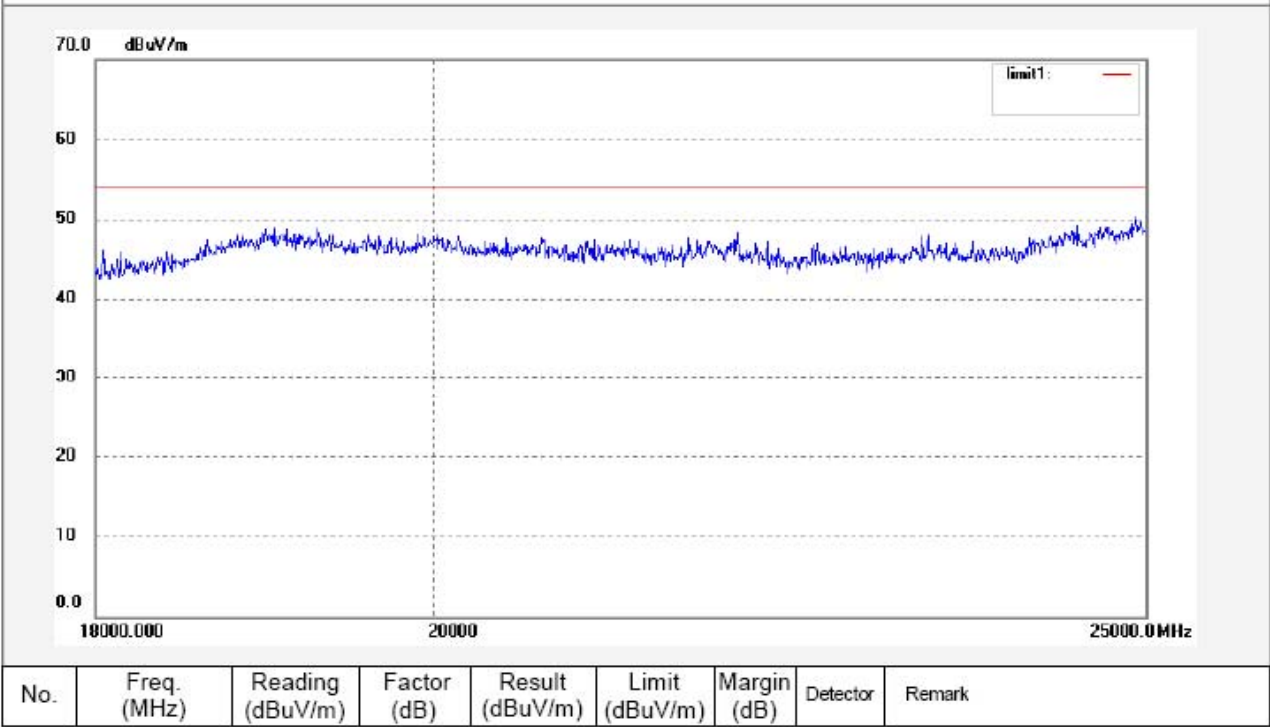
ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Roger #63	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 08/10/23/
Temp.(C)/Hum.(%) 25 C / 52 %	Time: 9/36/28
EUT: BLUETOOTH HANDS FREE CAR KIT	Engineer Signature:
Mode: TX 2441MHz	Distance: 3m
Model: DR02A	
Manufacturer: Dictory	

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
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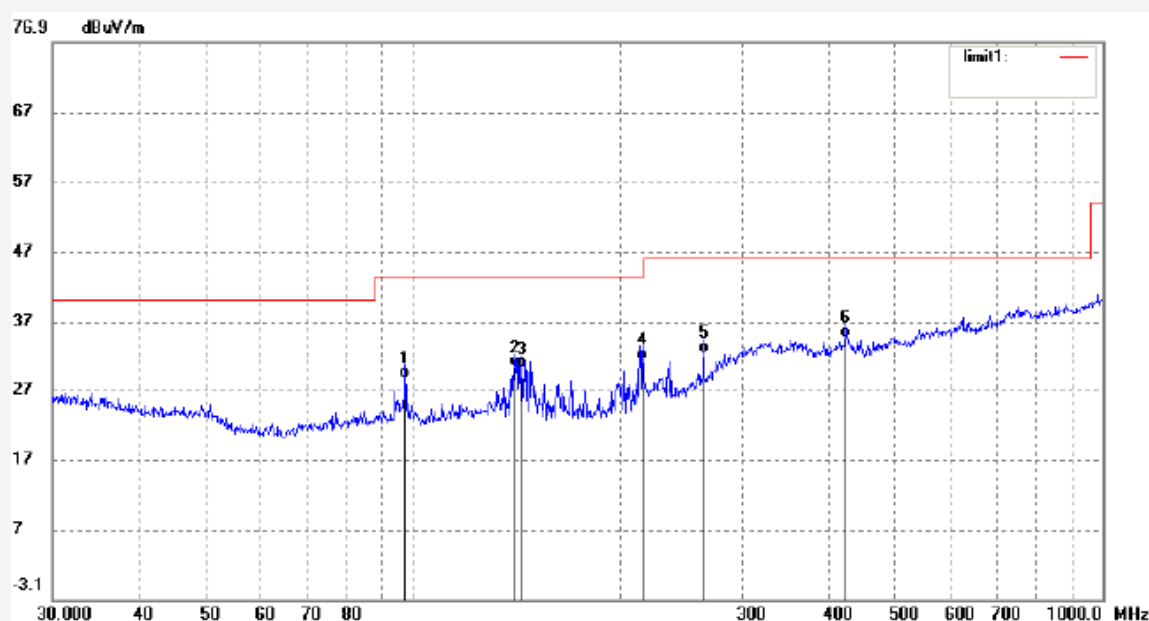
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Roger #48
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 52 %
EUT: BLUETOOTH HANDS FREE CAR KIT
Mode: TX 2480MHz
Model: DR02A
Manufacturer: Dictory

Polarization: Horizontal
Power Source: DC 3.7V
Date: 08/10/17/
Time: 14/08/32
Engineer Signature:
Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	97.3436	14.49	14.05	28.54	43.50	-14.96	QP	
2	140.7767	15.65	14.49	30.14	43.50	-13.36	QP	
3	143.7760	15.43	14.48	29.91	43.50	-13.59	QP	
4	215.3616	15.90	15.55	31.45	43.50	-12.05	QP	
5	264.0416	13.83	18.66	32.49	46.00	-13.51	QP	
6	424.2998	11.60	23.10	34.70	46.00	-11.30	QP	



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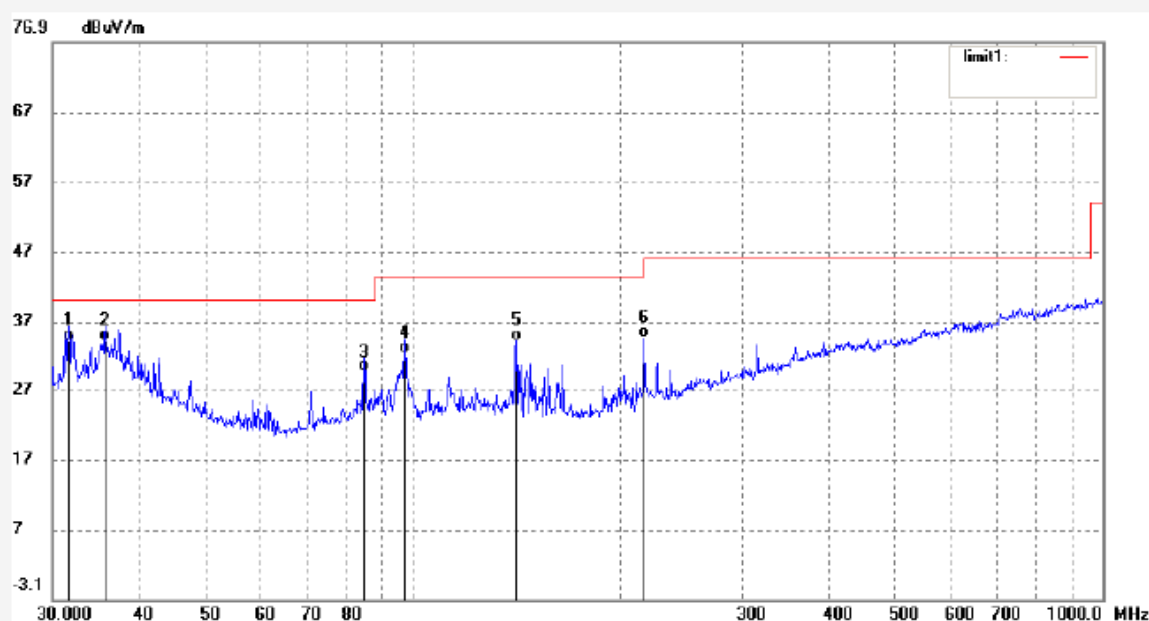
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Roger #47
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 52 %
EUT: BLUETOOTH HANDS FREE CAR KIT
Mode: TX 2480MHz
Model: DR02A
Manufacturer: Dictory

Polarization: Vertical
Power Source: DC 3.7V
Date: 08/10/17/
Time: 14/06/03
Engineer Signature:
Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	31.6234	15.19	19.03	34.22	40.00	-5.78	QP	
2	35.7616	15.79	18.51	34.30	40.00	-5.70	QP	
3	84.8782	15.62	13.90	29.52	40.00	-10.48	QP	
4	97.3436	18.45	13.91	32.36	43.50	-11.14	QP	
5	141.2721	19.63	14.48	34.11	43.50	-9.39	QP	
6	216.1196	19.01	15.56	34.57	46.00	-11.43	QP	



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Roger #45

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2480MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Horizontal

Power Source: DC 3.7V

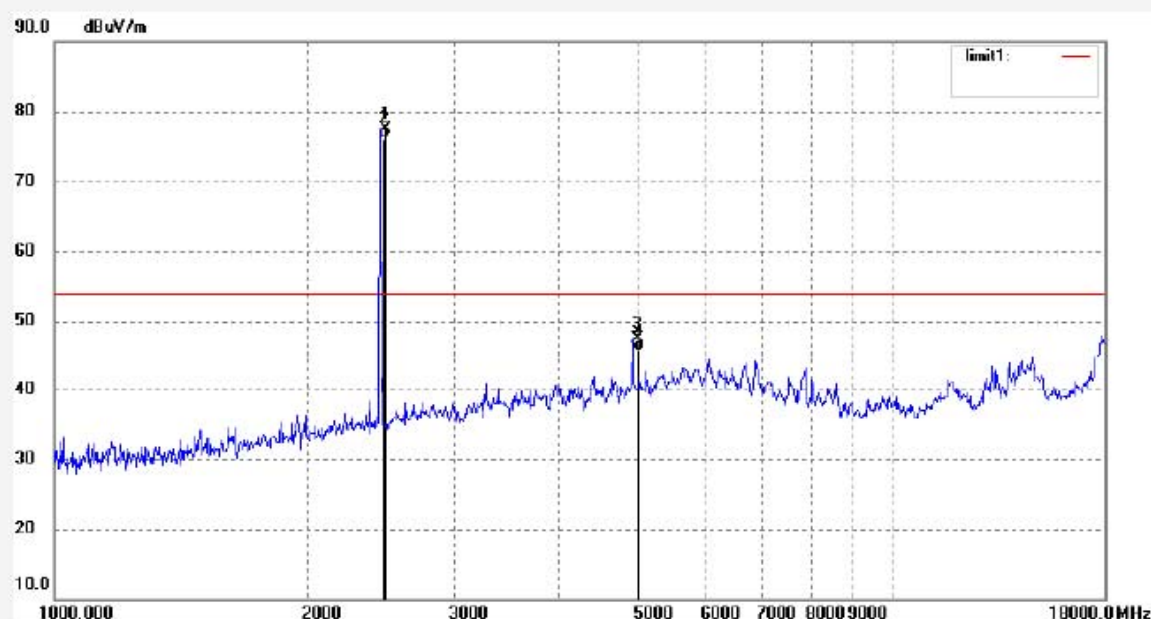
Date: 08/10/17/

Time: 12/16/53

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2480.050	84.92	-7.37	77.55	-	-	peak	
2	2480.050	83.55	-7.37	76.18	-	-	AVG	
3	4960.098	46.95	0.52	47.47	74.00	-26.53	peak	
4	4960.098	45.22	0.52	45.74	54.00	-8.26	AVG	



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Roger #46

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2480MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Vertical

Power Source: DC 3.7V

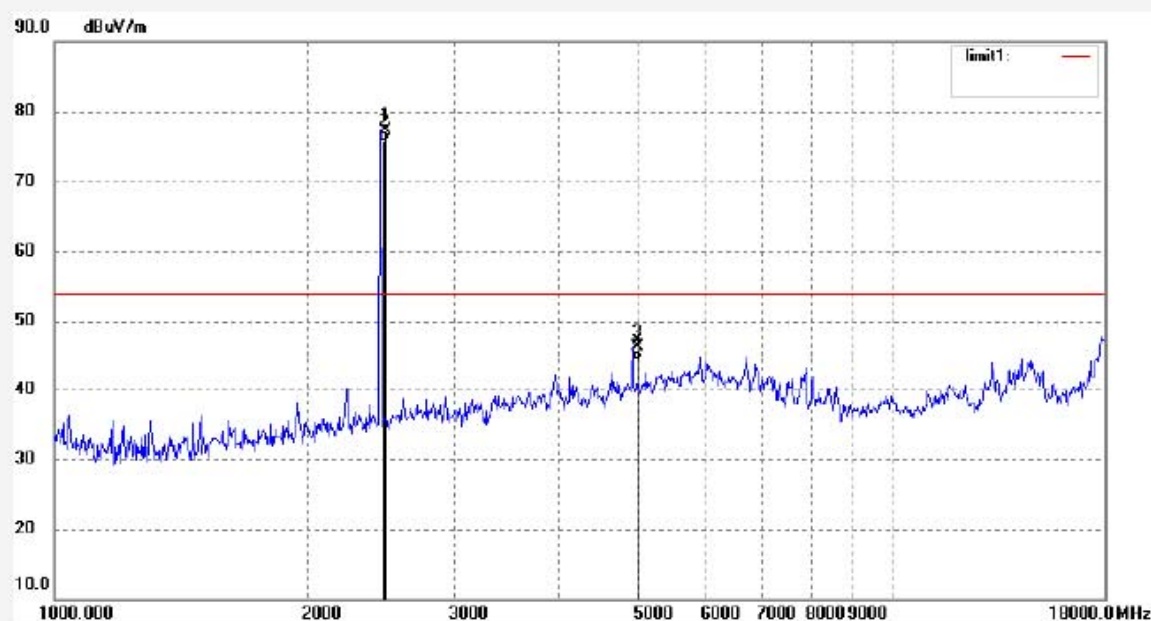
Date: 08/10/17/

Time: 12/18/57

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2480.050	84.75	-7.37	77.38	-	-	peak	
2	2480.050	83.12	-7.37	75.75	-	-	AVG	
3	4960.098	45.71	0.52	46.23	74.00	-27.77	peak	
4	4960.098	43.67	0.52	44.19	54.00	-9.81	AVG	


ACCURATE TECHNOLOGY CO., LTD.

 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Roger #65

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2480MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Horizontal

Power Source: DC 3.7V

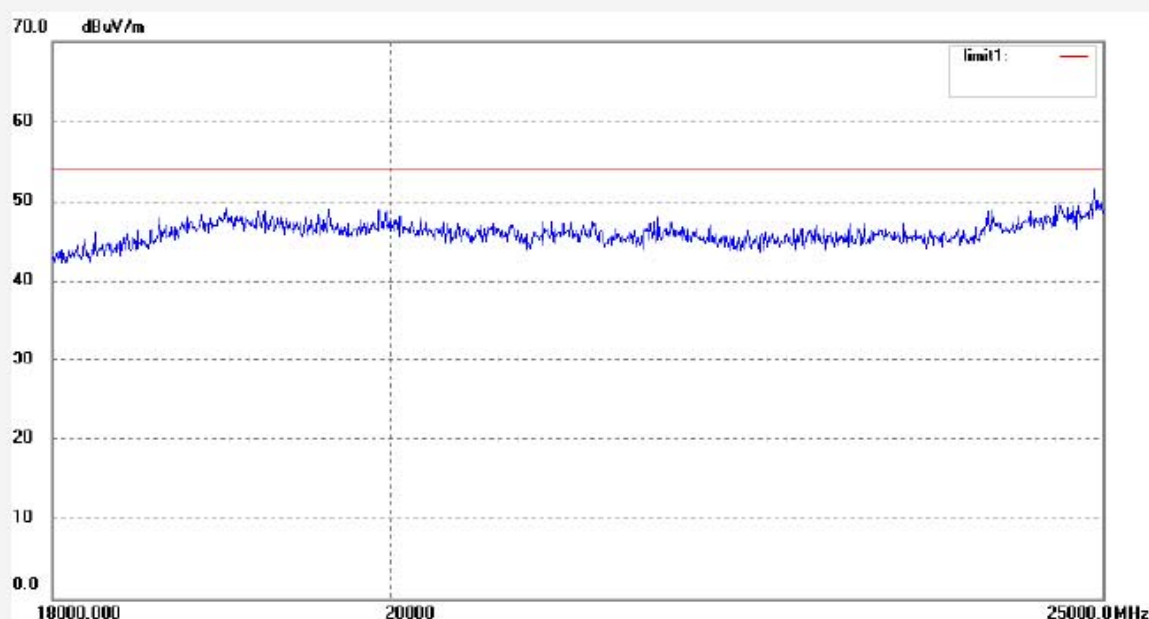
Date: 08/10/23/

Time: 9/58/37

Engineer Signature:

Distance: 3m

Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
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ACCURATE TECHNOLOGY CO., LTD.

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Roger #64

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 52 %

EUT: BLUETOOTH HANDS FREE CAR KIT

Mode: TX 2480MHz

Model: DR02A

Manufacturer: Dictory

Polarization: Vertical

Power Source: DC 3.7V

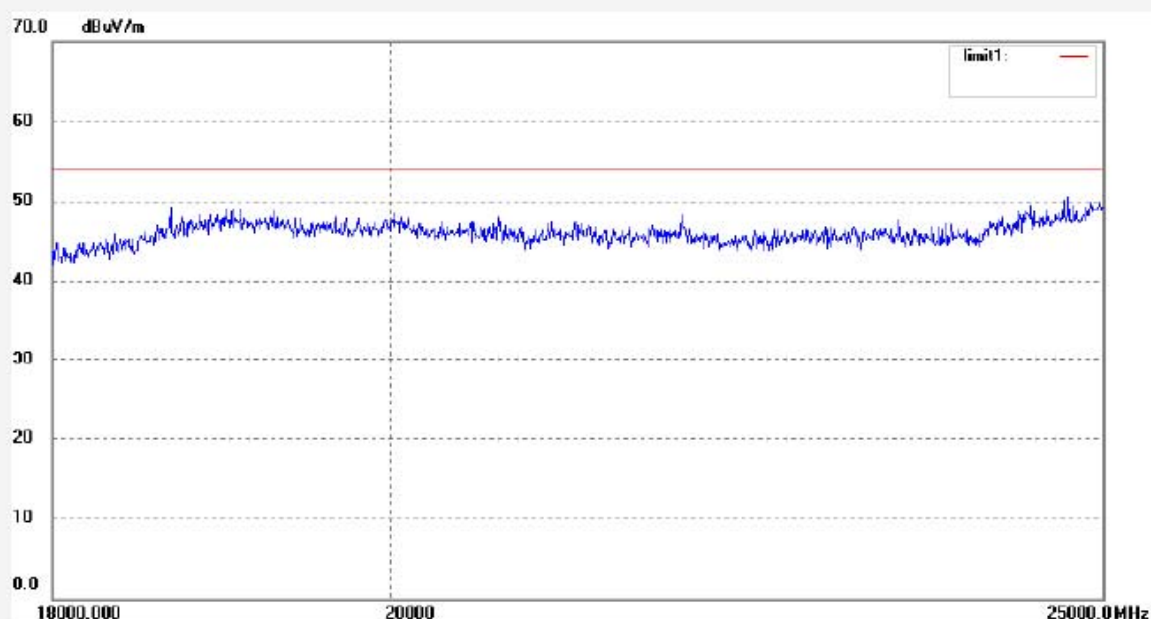
Date: 08/10/23/

Time: 9/47/13

Engineer Signature:

Distance: 3m

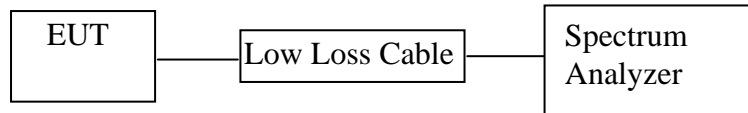
Note: Sample No.083732 Report NO.ATE20081948



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
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13.BAND EDGE COMPLIANCE TEST

13.1.Block Diagram of Test Setup



(EUT: BLUETOOTH HANDS HREE CAR KIT)

13.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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 specified in Section 15.209(a).

13.3.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

13.3.1.BLUETOOTH HANDS HREE CAR KIT (EUT)

Model Number	:	DR02A
Serial Number	:	N/A
Manufacturer	:	Zhejiang Dictory Electronic Technology Co., Ltd.

13.4.Operating Condition of EUT

13.4.1.Setup the EUT and simulator as shown as Section 13.1.

13.4.2.Turn on the power of all equipment.

13.4.3.Let the EUT work in TX (Hopping off, Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

13.5.Test Procedure

13.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

13.5.2.Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz with convenient frequency span including 100kHz bandwidth from band edge.

13.5.3.The band edges was measured and recorded.

13.6. Test Result

Pass

Date of Test:	October 20, 2008	Temperature:	25°C
	BLUETOOTH HANDS HREE CAR		
EUT:	KIT	Humidity:	52%
Model No.:	DR02A	Power Supply:	DC 3.7V
Test Mode:	TX (Hopping off)	Test Engineer:	Roger

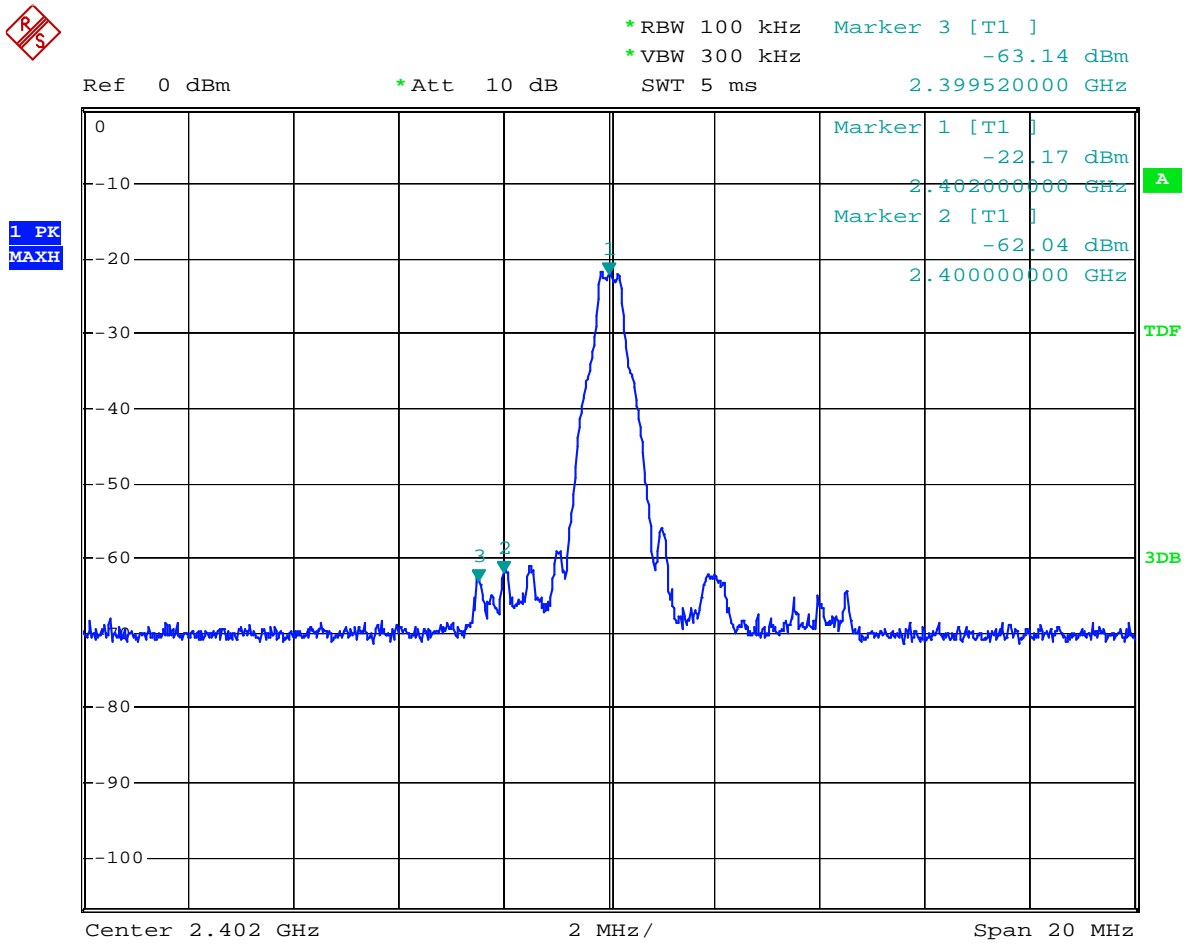
Conducted test

Frequency (MHz)	Peak Power Output (dBm)	Emission Read Value (dBm)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2402	-22.17	-62.04	39.87	> 20dBc
2480	-25.82	-68.00	42.18	> 20dBc

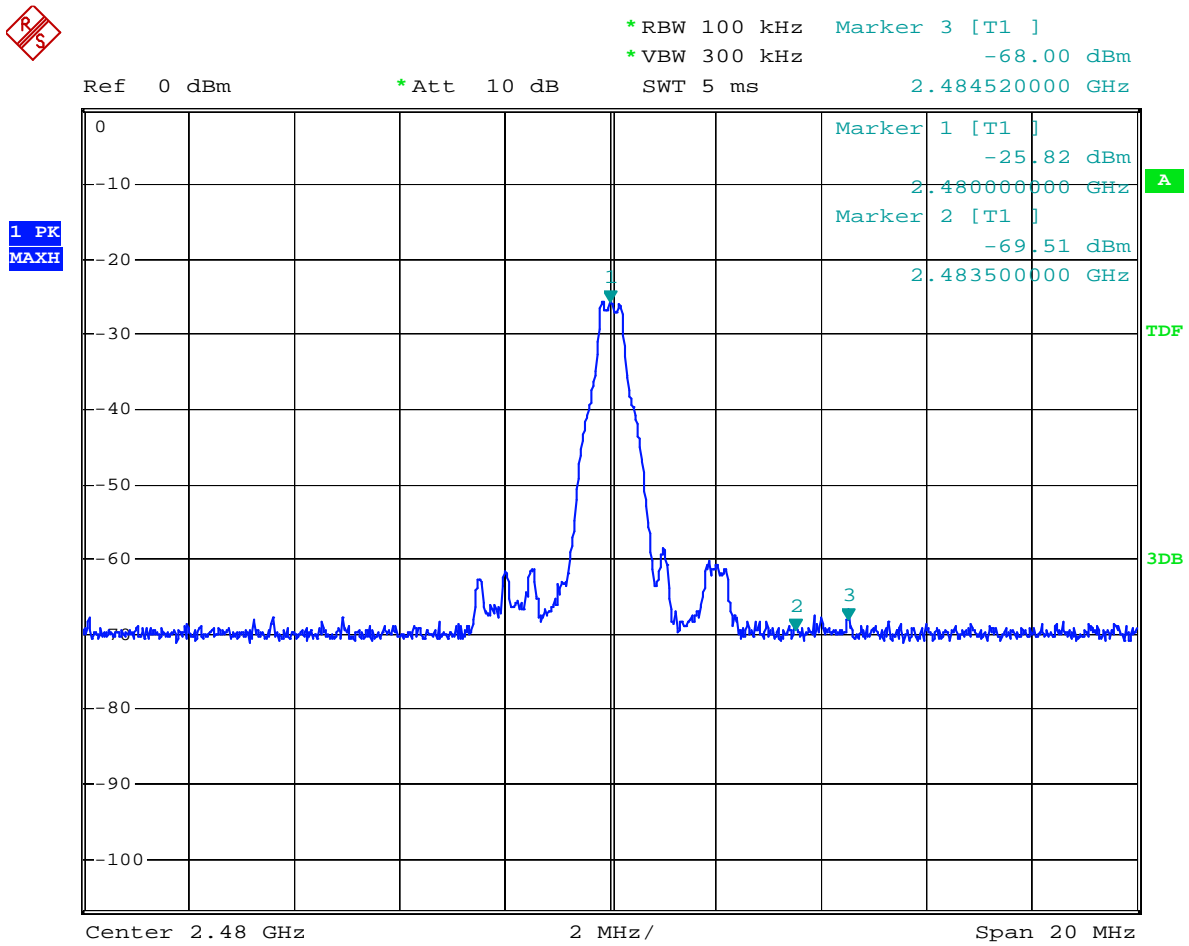
Date of Test:	October 20, 2008	Temperature:	25°C
	BLUETOOTH HANDS HREE CAR		
EUT:	KIT	Humidity:	52%
Model No.:	DR02A	Power Supply:	DC 3.7V
Test Mode:	TX (Hopping on)	Test Engineer:	Roger

Conducted test

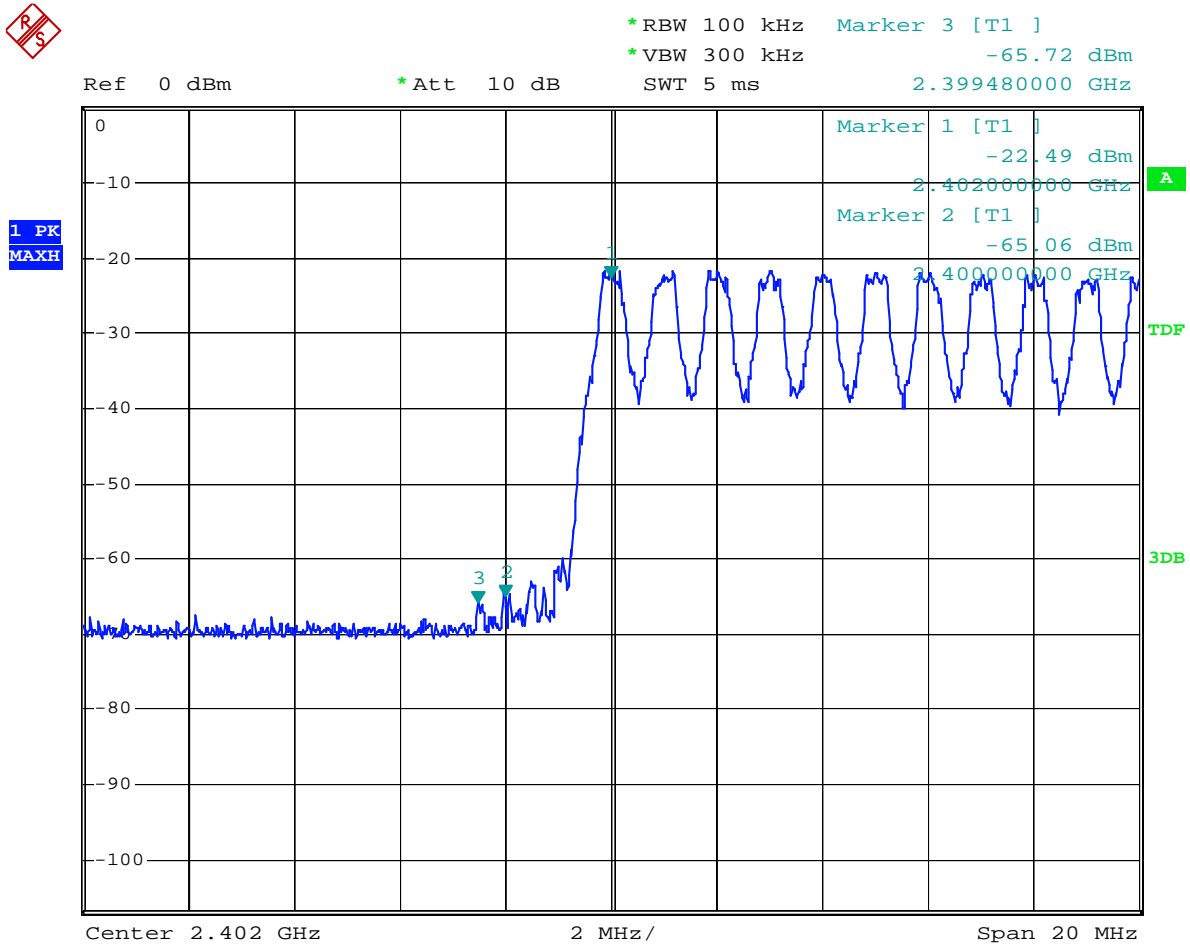
Frequency (MHz)	Peak Power Output (dBm)	Emission Read Value (dBm)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2402	-22.49	-65.06	42.57	> 20dBc
2480	-25.91	-67.17	41.26	> 20dBc



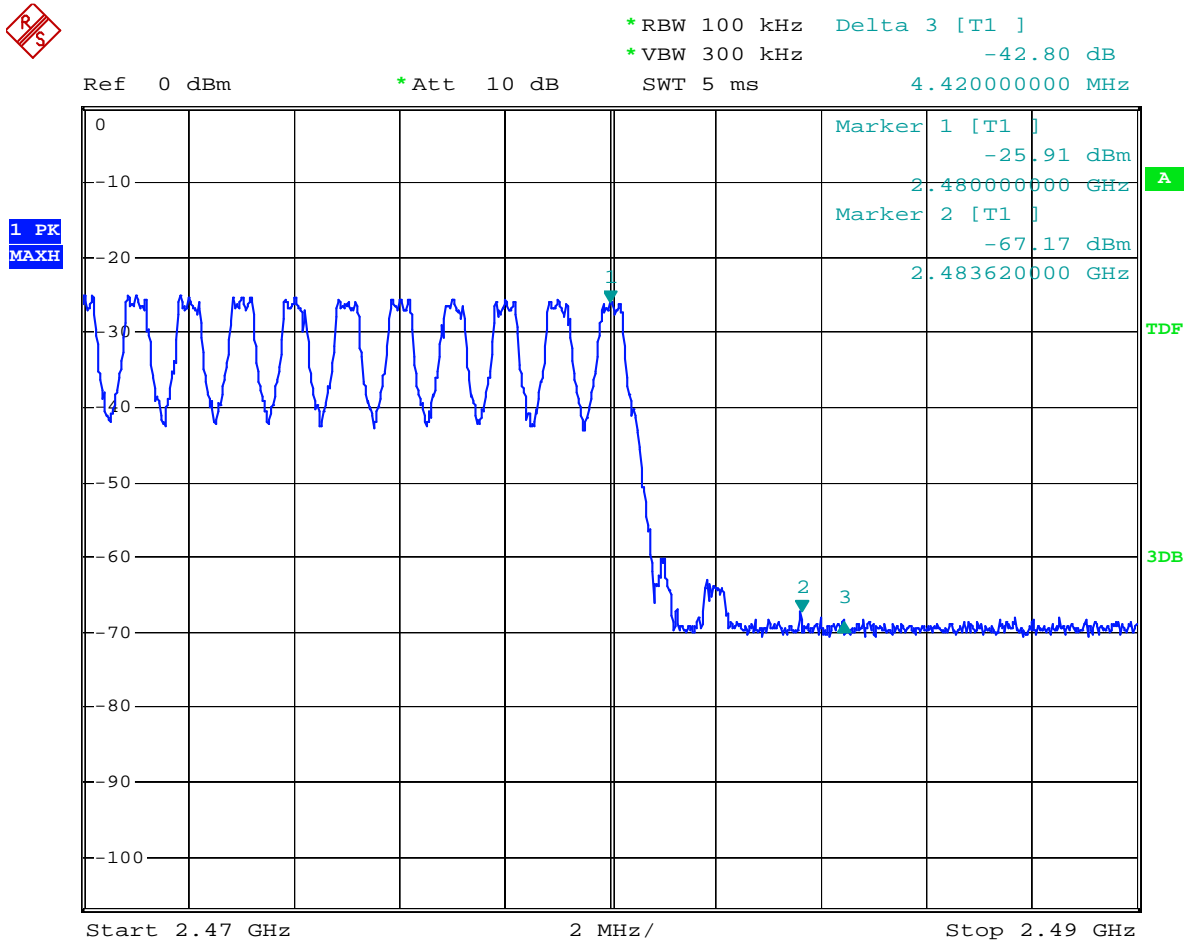
Date: 20.OCT.2008 17:36:53



Date: 20.OCT.2008 17:39:10



Date: 20.OCT.2008 17:35:25



Date: 20.OCT.2008 17:31:42

14.ANTENNA REQUIREMENT

14.1.The Requirement

According to 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.

14.2.Antenna Construction

The antenna is PCB Layout antenna, no consideration of replacement. Therefore, the equipment complies with the antenna requirement of Section 15.203.