RF TEST REPORT

Product Name ：Bluetooth USB Dongle
Model Number ：UBTBR1R-C；UBTBR1RA-C
Brand Name ：Cadmus
FCC ID ：SGE-UBTBR1R

Applicant ：Cadmus Micro Inc.
Address ：1840 Carlos Ave., Ontario, CA 91761

Received Date ：December 22, 2004
Tested Date ：January 07 ~ 19, 2005

Issued by

Compliance Certification Services Inc.
Hsinchu Lab.
Rm. 258, Bldg. 17, NO.195, Sec.4 Chung HsingRd.,
ChuTugn Chen, Hsinchu, Taiwan 310, R.O.C
TEL: (03) 591-8012
FAX: (03) 582-5720

Notes：
1. This report will be invalid if duplicated or photocopied in part.
2. This report refers only to the specimen(s) submitted to testing, and be invalid as eparately used.
3. This report is invalid without examination stamp and signature of this institute.
4. The tested specimen(s) will be preserved for thirty days from the data issued.
5. The report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

0240
ILAC MRA
NVLAP LAB CODE 200110-0

Test Report Certification

Product Name ：Bluetooth USB Dongle
Model Number ：UBTBR1R-C；UBTBR1RA-C
Brand Name ：Cadmus
FCC ID ：SGE-UBTBR1R
Applicant ：Cadmus Micro Inc.

Measurement Standard :

FCC 47 C.F.R. Part 15, Subpart B and Subpart C (2004)
ANSI C63.4 (2003)

Tested By ： Vincent Chen , **Date :** January 19, 2005
(Vincent Chen)

Approved By： C.F.Wu , **Date :** January 19, 2005
(C.F.Wu, Manager)

WE HEREBY CERTIFY THAT: The measurements shown in the attachment were made in accordance with the procedures indicated, and the energy emitted by the equipment was found to be within the limits applicable. We assume full responsibility for the accuracy and completeness of these measurements and vouch for the qualifications of all persons taking them.

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1. GENERAL INFORMATION

1.1 General Statement

MEASUREMENT DEVIATION：Comply with standard in full

TRACEABILITY ：This test result is traceable to National or International std.

1.2 General Description of EUT & Power

Product Name	Bluetooth USB Dongle
Model Number	UBTBR1R-C；UBTBR1RA-C
Frequency Range	2402MHz to 2480MHz f = 2402 + nMHz, n = 0, …..78
Channel Spacing	1MHz
Channel Number	79
Air Data Rate	723kbps
Type of Modulation	Frequency Hopping Spread Spectrum
Frequency Selection	by software / firmware
Transmitter Classification	portable device
Antenna Type	Dipole Antenna, Antenna Gain : 1.2dBi
Power Source	5VDC (From USB interface of Notebook)
Note	Because of the market segmentation, the sample has different case and model names, UBTBR1R-C；UBTBR1RA-C, other main components are the same.

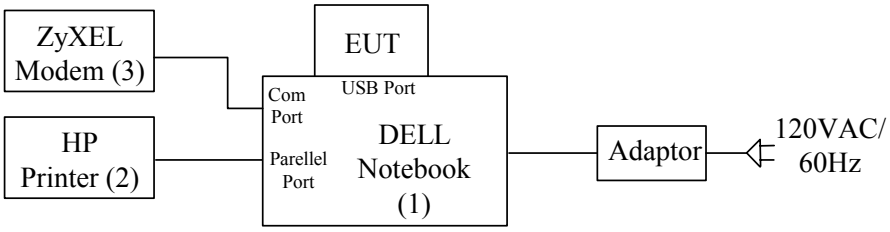
Multiple List :

Company	Address	Model Name
Cadmus Micro Inc.	1840 Carlos Ave., Ontario, CA 91761	UBTBR1R-C, UBTBR1RA-C UBTBR1R-N, UBTBR1RA-N UBTBR1R, UBTBR1RA UBTBR1R-X, UBTBR1RA-X
BILLIONTON	No. 21, Sui-Lih Rd.,Hsin-Chu, 300, twiwan	UBTBR1R-B, UBTBR1RA-B
ZIGA	1840 Carlos Ave. Ontario, CA 91761	UBTBR1R-Z, UBTBR1RA-Z
MAXDATA SYSTEME GMBH	CAROL-SCHMID-STR. 12, WUERSELEN 52146 GERMANY	UBTBR1R-N-MAX, UBTBR1RA-N-MAX
MEDION	MEDION AKTIEGESELLSCHAFT-GERMANY GANSEMARKT 16-18 ESSEN GM 45127 GERMANY	UBTBR1R-N-MD, UBTBR1RA-N-MD
2L INTERNATIONAL BV	DATABANKWEG 7-3821 AL AMERSFOORT PO BOX 150-3800 AD AMERSFOORT,NE	UBTBR1R-N-2L2 , UBTBR1RA-N-2L2
CityCom Corp.	3F, NO. 532, SEC.2, JHONGSHAN RD., JHONGHE CITY, TAIPEI HSIEN, TAIWAN, R.O.C.	UBTBR1R-N-CTC , UBTBR1RA-N-CTC
DATAMATIC S.P.A	VIA AGORDAT,34 MILANO MI 20124 ITALY	UBTBR1R-N-DM, UBTBR1RA-N-DM
ASBISC ENTERPRISES LIMITED	63 KOLONAKIOU STREET, CY-4013 LIMASSOL, CYPRUS 4013 CYPRUS	UBTBR1R-N-CYT, UBTBR1RA-N-CYT
DSG Retail Ltd.	Dixons House, 200 The Campus Maylands Avenue, Hemel Hempstead, Hertfordshire, HP2 71G, United Kingdom	UBTBR1R-N-DX, UBTBR1RA-N-DX
Cables	CABLES DIRECT LIMITED UNIT C HEAGE RD., INDUSTRIAL ESTATE, HEAGE RD RIPLEY,DERBYSHIRE DE5 3GH	UBTBR1R-N-CDL, UBTBR1RA-N-CDL

1.3 Description of Peripherals

No.	Product	Manufacturer	Model No.	Serial No.	Input Power	Output Power
1	Notebook PC	DELL	PP01L	CN-09C748-48155-1AP-6081	20VDC/3.5A (From Power Adapter)	----------
	Adapter	DELL	ADP-70EB	----------	100~240VAC/ 1.5A, 70W	20VDC/3.5A
2	Printer	HP	C6431D	CN19T6S011	100~240VAC, 50/60Hz, 0.7A	----------
3	Modem	ZyXEL	Omni 56K	S1Z4107729	1880MN156K	9VAC(From Power Adapter)

1.4 EUT & Peripherals Setup Diagram



The indicated numbers (1)….., please refer to item 1.3

1.5 EUT Operating Condition

1. Run Broadcom Blue Tool → Blue Tool.
2. Choice Transport → HCI Control → USB and press ok.
3. Choice Enable USB HID Emulation, and press ok.
4. Start Tx mode test :
   (a)Choice Set_Tx_Carrier_Frequency, key in channel MHz.
   (b) Set Mode , choice Modulatel PRBS9, press ok.
   (c) Set Transmit_Power , choice -8dB.
   (d) press OK.
5. Start RX mode test :
   (a) Choice Write_Receive_Only, key in channel MHz, press ok.

1.6 Description of Test Site

SITE DESCRIPTION ：

FCC Certificate NO.	: 90585
BSMI Certificate NO.	: SL2-IN-E-0002
NVLAP Lab Code	: 200118-0
CNLA Certificate NO.	: CNLA-ZL97018E
VCCI Certificate NO.	: R-1189, C-1250
TÜV Rheinland Certificate NO.	: 10008375

NAME OF SITE ：Compliance Certification Services Inc. Hsinchu Lab.

SITE LOCATION ：Rm.258, Bldg.17, NO.195 , Sec. 4, Chung Hsing Rd., Chu-Tung Chen. Hsin-Chu, Taiwan 310 R.O.C.

1.7 Summary of Test Results

The EUT has been tested according to the following specifications :（1 ~ 79 Channel）

APPLIED STANDARD：FCC 47 C.F.R. Part 15, Subpart B and Subpart C			
Standard Section	**Test Item and Limit**	**Result**	**REMARK**
15.107 15.207	AC Power Conducted Emission Limit: Sec1.5.107	PASS	Meet the requirement of limit
15.109 15.205 15.209	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit
15.247(a)(1)	Transmitter 20dB Bandwidth	N/A	Meet the requirement of limit
15.247(b)(1)	Maximum Peak Output Power Limit: max. 125mW	PASS	Meet the requirement of limit
15.247(a)(1)	Carrier Frequency Separation Limit: 2/3 of the 20dB bandwidth	PASS	Meet the requirement of limit
15.247(a)(1)(iii)	Number of Hopping Frequency Limit: at least 15 channels	PASS	Meet the requirement of limit
15.247(a)(1)(iii)	Time of Occupancy (dwell time) Limit: 0.4sec within 31.6sec	PASS	Meet the requirement of limit
15.247(d)	Band Edge Compliance	PASS	Meet the requirement of limit
15.247(d)	Out of Band Measurements	PASS	Meet the requirement of limit
15.247(f)	Power Spectral Density	PASS	Meet the requirement of limit

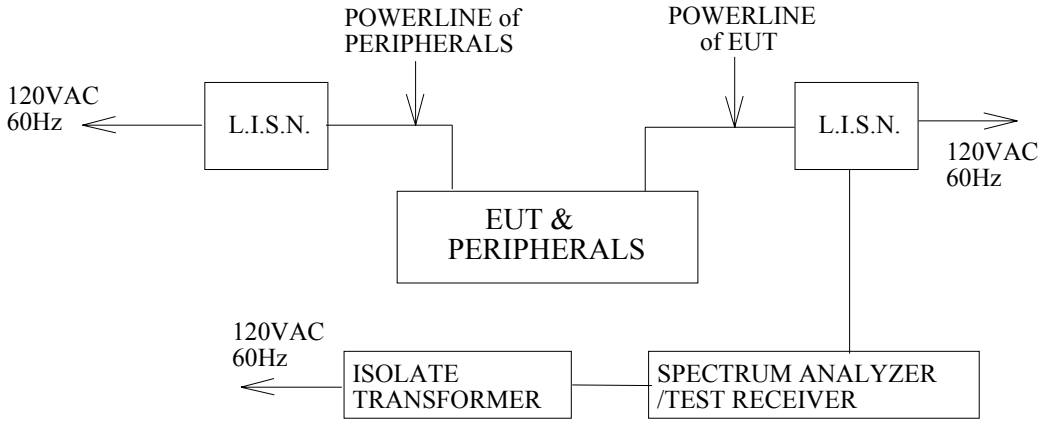
2. CONDUCTED POWERLINE TEST

2.1 Test Equipments

The following test equipments are used during the conducted powerline tests：

Manufacturer or Type	Model No.	Serial No.	Date of Calibration	Calibration Period	Remark
HP QUASI-PEAK ADAPTER	8594E	3801A05627	April 26, 2004	1 Year	PRETEST
SOLAR ISOLATION TRANSFORMER	7032-1	N/A	N/A	N/A	FINAL
EMCO L.I.S.N.	3850/2	9311-1025 9401-1028	January 10, 2005 For Characteristic impedance May 18, 2004 For Insertion loss	1 Year	FINAL
R & S TEST RECEIVER	ESHS30	838550/003	February 11, 2004	1 Year	FINAL
KEENE SHIELDED ROOM	5983	No.1	N/A	N/A	FINAL
R & S PULSE LIMIT	EHS3Z2	357.8810.52	July 10, 2004	1 Year	FINAL
N TYPE COAXIAL CABLE	---------	----------	July 10, 2004	1 Year	FINAL
50Ω TERMINATOR	---------	----------	July 10, 2004	1 Year	FINAL

2.2 Test Setup



2.3 Conducted Power Line Emission Limit

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following：

Frequency (MHz)	Maximum RF Line Voltage (dBμv)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to § 15.207(a) Line Conducted Emission Limit is same as above table.

2.4 Test Procedure

The test procedure is performed in a 12ft×12ft×8ft(L×W×H) shielded room.

The EUT along with its peripherals were placed on a 1.0m(W)× 1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chasis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chasis ground also bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

2.5 Uncertainty of Conducted Emission

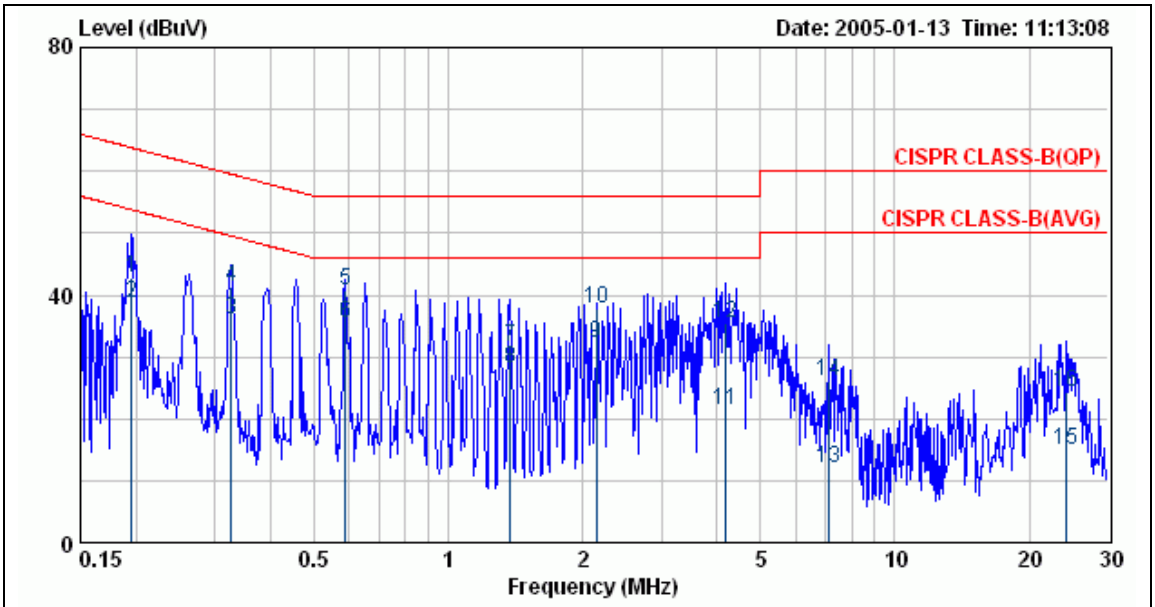
The uncertainty of conducted emission is ± 1.36dB.

2.6 Conducted RF Voltage Measurement

The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All emissions not reported are much lower than the prescribed limits.

Company	Cadmus Micro Inc.	Test Date	2005/01/13
Product Name	Bluetooth USB Dongle	Test By	Vincent Chen
Model Name	UBTBR1R-C	TEMP&Humidity	25°C, 60%

LINE



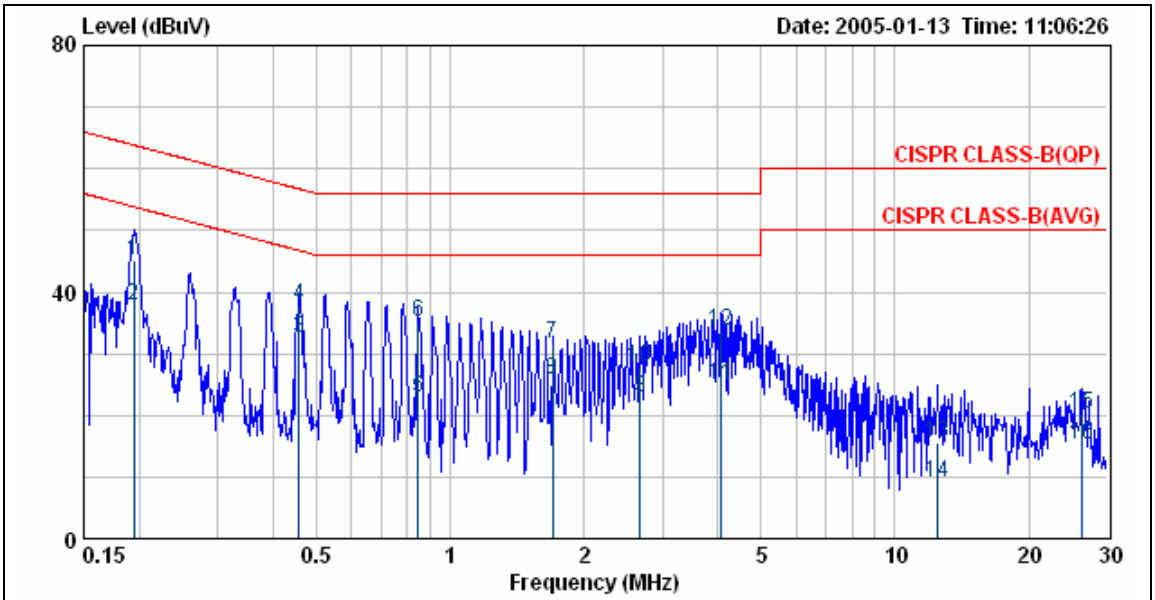
Freq. MHz	Corr. Factor dB	Reading Value dBuV Q.P.	Reading Value dBuV Ave.	Emission Level dBuV Q.P.	Emission Level dBuV Ave.	Limit dBuV Q.P.	Limit dBuV Ave.	Margin dBuV Q.P.	Margin dBuV Ave.
0.195	0.10	42.59	38.65	42.69	38.75	63.80	53.80	-21.11	-15.05
0.327	0.10	41.36	36.07	41.46	36.17	59.53	49.53	-18.07	-13.36
0.589	0.10	40.50	35.39	40.60	35.49	56.00	46.00	-15.40	-10.51
1.374	0.10	31.69	28.15	31.79	28.25	56.00	46.00	-24.21	-17.75
2.147	0.12	37.70	32.20	37.82	32.32	56.00	46.00	-18.18	-13.68
4.180	0.20	35.20	21.20	35.40	21.40	56.00	46.00	-20.60	-24.60
7.089	0.31	25.87	11.56	26.18	11.87	60.00	50.00	-33.82	-38.13
24.142	1.03	23.20	13.84	24.23	14.87	60.00	50.00	-35.77	-35.13

REMARKS：
1. Correction Factor = Insertion loss + cable loss
2. Margin value = Emission level – Limit value
3. The EUT can be operated in transmitting, stand-by and receiving mode. After preliminary scan, EUT in transmitting mode has highest emission.
   The EUT was set in transmitting mode at finial test to get the worst case test results.

The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All emissions not reported are much lower than the prescribed limits.

Company	Cadmus Micro Inc.	Test Date	2005/01/13
Product Name	Bluetooth USB Dongle	Test By	Vincent Chen
Model Name	UBTBR1R-C	TEMP&Humidity	25°C, 60%

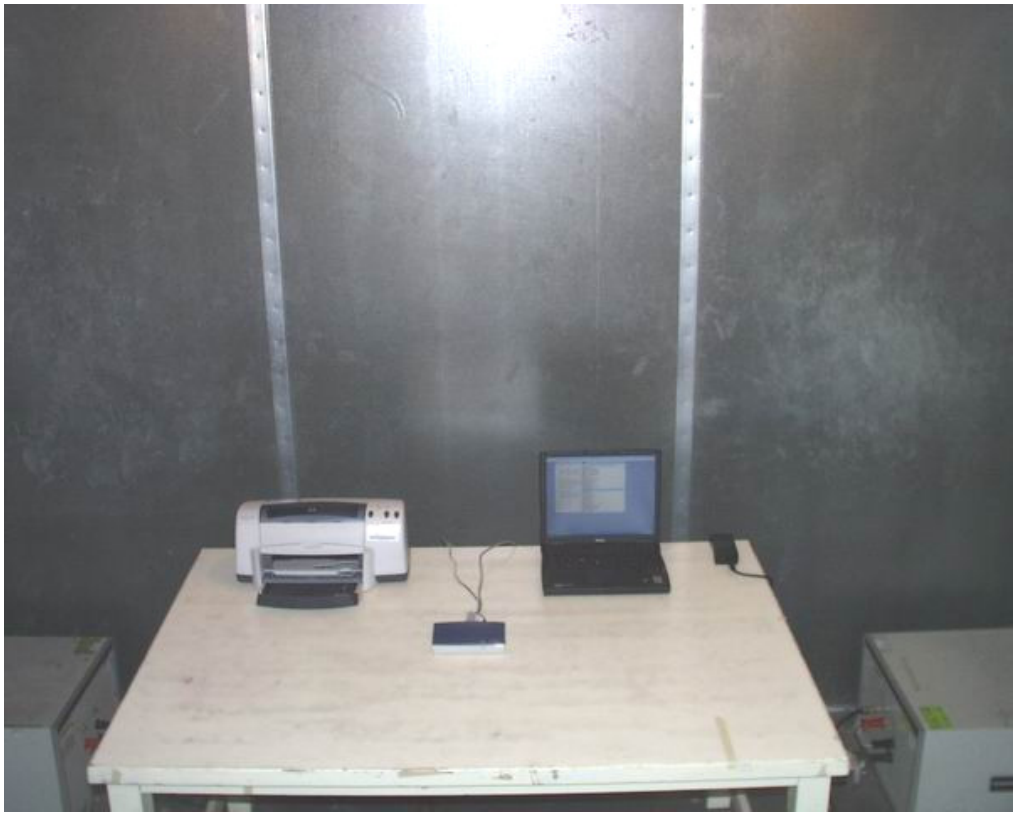
NEUTRAL



Freq.	Corr. Factor	Reading Value dBuV		Emission Level dBuV		Limit dBuV		Margin dBuV	
MHz	dB	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.
0.195	0.20	44.85	37.71	45.05	37.91	63.83	53.83	-18.78	-15.92
0.456	0.20	37.66	32.39	37.86	32.59	56.76	46.76	-18.90	-14.17
0.846	0.20	35.02	22.53	35.22	22.73	56.00	46.00	-20.78	-23.27
1.696	0.20	31.46	25.70	31.66	25.90	56.00	46.00	-24.34	-20.10
2.673	0.20	27.56	22.53	27.76	22.73	56.00	46.00	-28.24	-23.27
4.049	0.20	33.60	24.60	33.80	24.80	56.00	46.00	-22.20	-21.20
12.516	0.50	15.00	8.60	15.50	9.10	60.00	50.00	-44.50	-40.90
26.260	1.38	18.85	13.85	20.23	15.23	60.00	50.00	-39.77	-34.77

REMARKS：
1. Correction Factor = Insertion loss + cable loss
2. Margin value = Emission level – Limit value
3. The EUT can be operated in transmitting, stand-by and receiving mode. After preliminary scan, EUT in transmitting mode has highest emission.
The EUT was set in transmitting mode at finial test to get the worst case test results.

2.7 Photos of Conduction Test



3. 20dB BANDWIDTH FOR HOPPING

Test Requirement: 15.247(a)(1)

3.1 Test Equipments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	September 06, 2004

NOTE：

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA

3.2 Test Setup

3.3 Limits of 20db Bandwidth Measurement

Limit : N/A

3.4 Test Procedure

The 20dB band width was measured with a spectrum analyzer connected to RF antenna connector(conducted measurement) while EUT was operating in transmit mode at the appropriate center frequency. The analyzer center frequency was set to the EUT carrier frequency, using the analyzer. Display Line and Marker Delta functions, the 20dB band width of the emission was determined.

3.5 Uncertainty of Conducted Emission

The uncertainty of conducted emission is ± 10KHz.

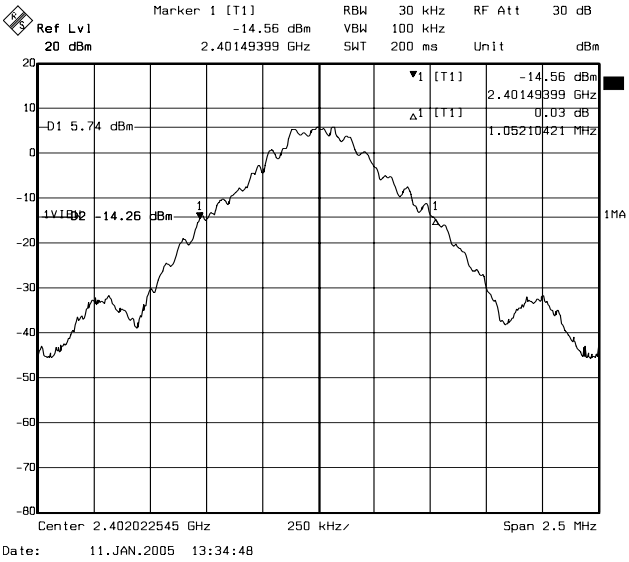
3.6 Test Results

Refer to attached spectrum analyzer data chart.

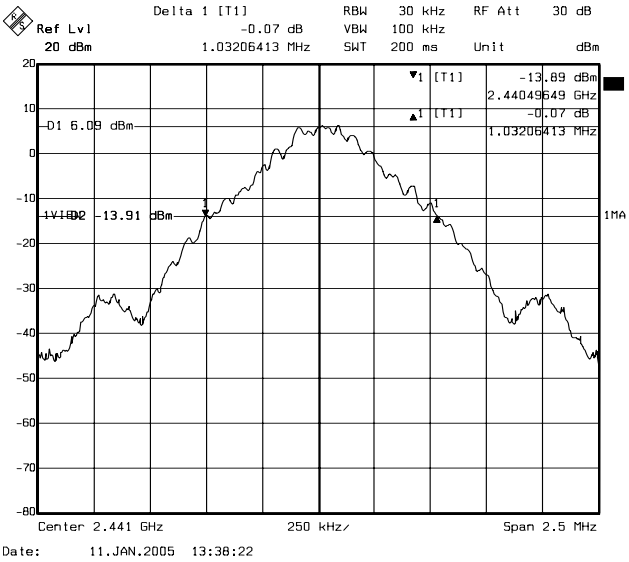
Company	Cadmus Micro Inc.	**Test Date**	2005/01/11
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	25°C, 60%

Channel	**Channel Frequency (MHz)**	**20dB Bandwidth (MHz)**	**Pass / Fail**
01 (Low)	2402	1.052	N/A
40 (Mid)	2441	1.032	N/A
79 (High)	2480	1.037	N/A

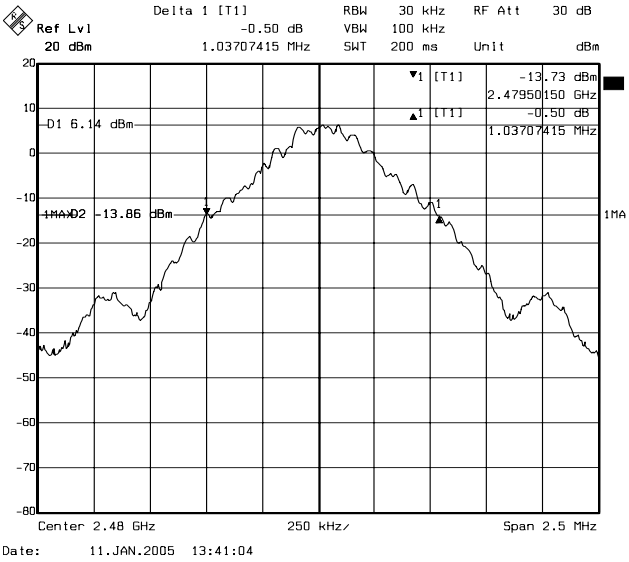
3.7 Photo of 20db Bandwidth Measurement



Channel Low



Channel Middle



Channel High

4. MAXIMUM PEAK OUTPUT POWER

Test Requirement: 15.247(b)(1)

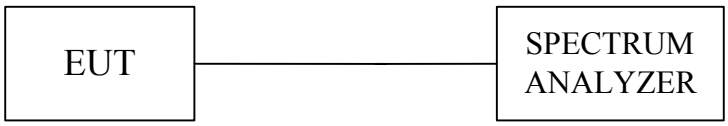
4.1 Test Equipments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	September 06, 2004

Note：

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.2 Test Setup



4.3 Limits of Maximum Peak Output Power

The Maximum Peak Output Power Measurement is 125mW for frequency hopping systems operating in 2400~2483.5 MHz employing at least 15 hopping channels.

4.4 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate center frequency, A spectrum analyzer was used to record the shape of the transmit signal see 4.7 for the measurement set up.

4.5 Uncertainty of Conducted Emission

The uncertainty of conducted emission is ± 1.82dB.

4.6 Test Results

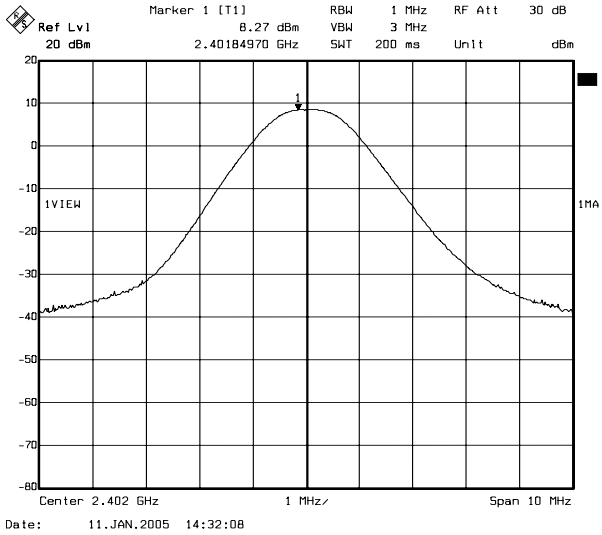
Company	Cadmus Micro Inc.	**Test Date**	2005/01/11
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	25°C, 60%

Cable loss = 0.5dB

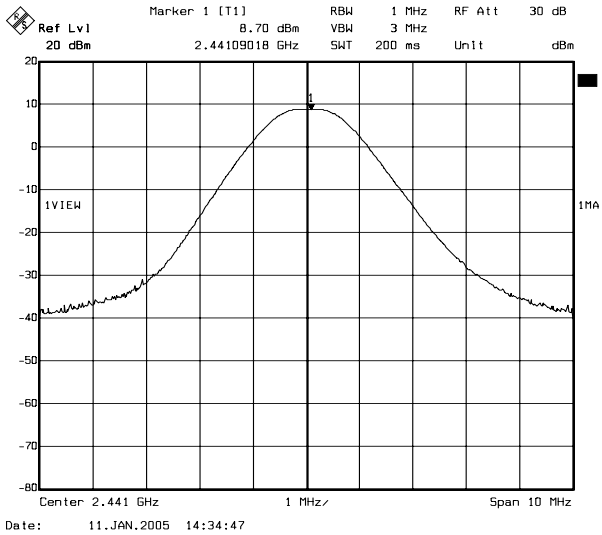
Channel	**Channel Frequency (MHz)**	**Peak Power Output (dBm)**	**Peak Power Limit (dBm)**	**Pass / Fail**
01 (Low)	2402	8.77	20.97	PASS
40 (Mid)	2441	9.20	20.97	PASS
79 (High)	2480	9.32	20.97	PASS

Note : 1. At finial test to get the worst-case emission at 1Mbps.
2. The result basic equation calculation as follow :
Peak Power Output = Peak Power Reading + Cable loss
3. The EUT is a portable device.

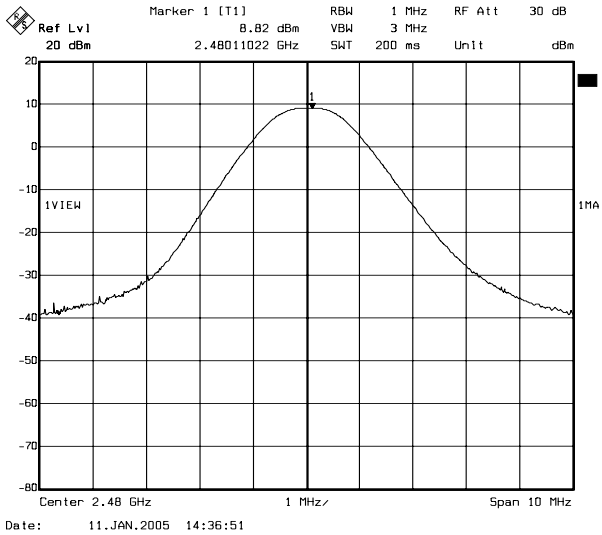
4.7 Photo of Maximum Peak Output Power



Channel Low



Channel Middle



Channel High

5. HOPPING CHANNEL SEPARATION

Test Requirement: 15.247(a)(1)

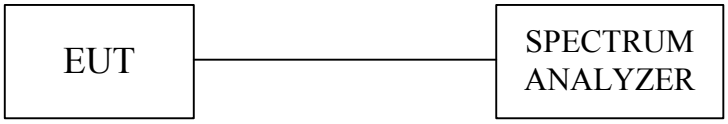
5.1 Test Equipments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	September 06, 2004

Note：

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.2 Test Setup



5.3 Limits of Hopping Channel Separation

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

5.4 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in test setup without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the MaxHold function record the separation of adjacent channels.
4. Measure the frequency difference of these two adjacent channels by spectrum analyzer MARK function. And then plot the result on spectrum analyzer screen.
5. Repeat above procedures until all frequencies measured were complete.

5.5 Uncertainty of Conducted Emission

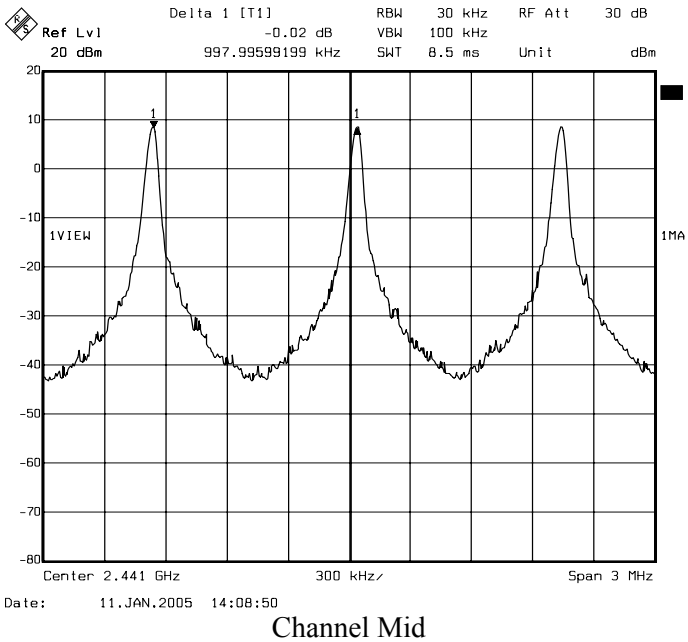
The uncertainty of conducted emission is ± 10KHz.

5.6 Test Results

Refer to section 3, 20dB bandwidth measurement, the measured channel separation should be greater than two-third of 20dB bandwidth or Minimum bandwidth.

Channel	Adjacent Hopping Channel Separation (kHz)	Two –third of 20dB bandwidth (kHz)	Minimum Bandwidth	Result
2441MHz (Mid)	997.99 kHz	688 kHz	25 kHz	PASS

5.7 Photo of Hopping Channel Separation



Channel Mid

6. NUMBER OF HOPPING FREQUENCY USED

Test Requirement: 15.247(a)(1)(iii)

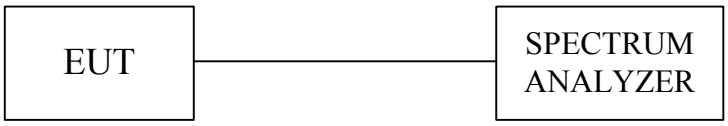
6.1 Test Equipments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	September 06, 2004

Note：

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

6.2 Test Setup



6.3 Limits of Number of Hopping Frequency Used

According to 15.247(a)(1)(iii), for frequency hopping system operating in the 2400-2483.5MHz bands shall use at least 15 hopping frequencies

6.4 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 Position the EUT as shown in test setup without connection to measurement instrument.Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3 Set the spectrum analyzer on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
4 Set the spectrum analyzer on View mode and then plot the result on spectrum analyzer screen.
5 Repeat above procedures until all frequencies measured were complete.

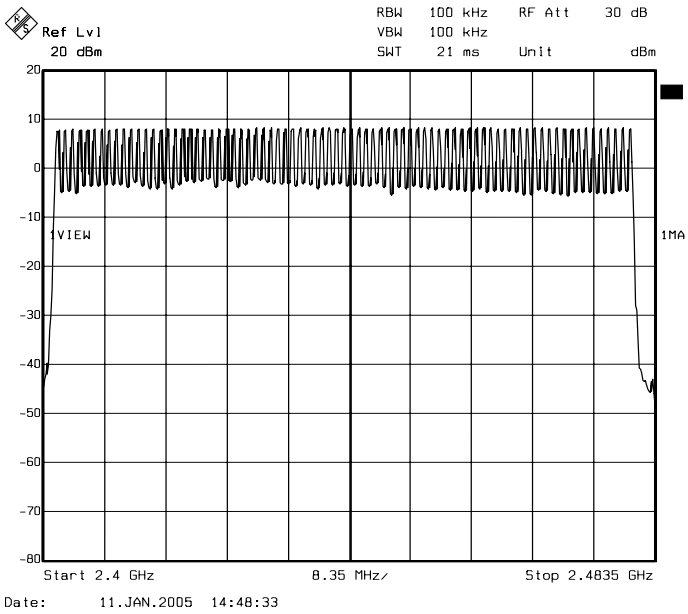
6.5 Uncertainty of Conducted Emission

The uncertainty is not applicable.

6.6 Test Results

Refer to the attached plot.
There are 79 hopping frequencies in a hopping sequence.

6.7 Photo of Number of Hopping Frequency Used



7. DWELL TIME ON EACH CHANNEL

Test Requirement: 15.247(a)(1)(iii)

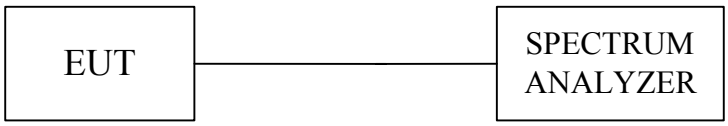
7.1 Test Equipments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	September 06, 2004

Note：

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

7.2 Test Setup



7.3 Limits of Dwell Time on Each Channel

According to 15.247(a)(1)(iii), for frequency hopping system operating in the2400-2483.5MHz band, the average time of occupancy on any frequency shall not be greater than 0.4 second within a 31.6 second period.

7.4 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in test setup without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of spectrum analyzer on any frequency be measured and set spectrum analyzer to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
5. Repeat above procedures until all frequencies measured were complete.
6. The Bluetooth USB Dongle has 3 type of payload, DH1. The hopping rate is 1600 per second. The longer the payload is, the slower the hopping rate is.

7.5 Uncertainty of Conducted Emission

The uncertainty of time is ± 5.25ms.

7.6 Test Results

Time of occupancy on the TX channel in 31.6sec = time domain slot length × hop rate ÷ number of hop per channel × 31.6

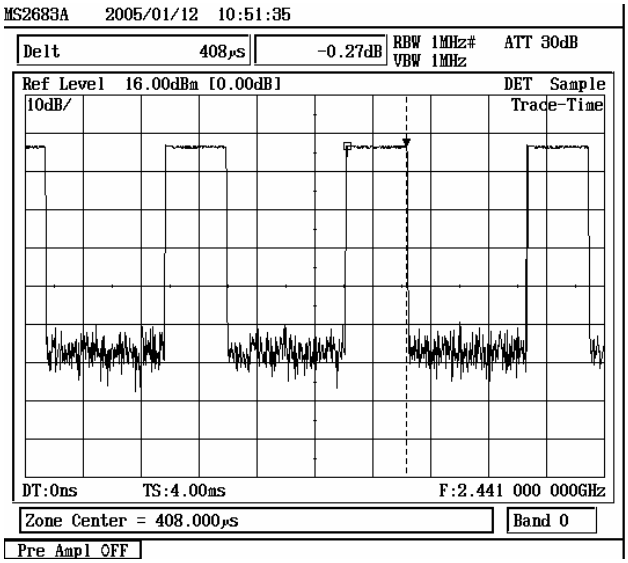
Refer to the attached graph.

The hopping rates of Bluetooth devices change with different types of payload. The longer the payload is, the slower the hopping rate. The hopping rate scenario is defined in Bluetooth core specification.

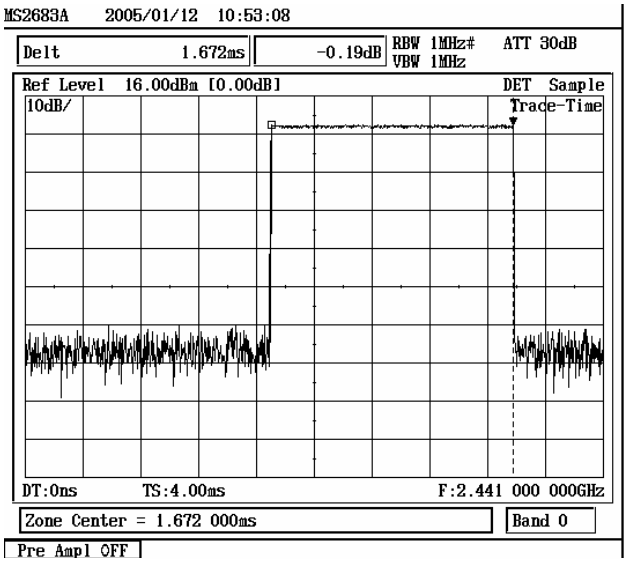
Transmitting Frequency	Packet type	Dwell time (ms)	Time of occupancy on the TX channel in 31.6sec (ms)	Limit for Time of occupancy on the TX channel in 31.6sec (ms)	Results
2441MHz	DH1	0.408	130.55	400	PASS
2441MHz	DH3	1.672	267.52	400	PASS
2441MHz	DH5	2.924	311.89	400	PASS

DH1 Dwell time = 0.408 ms × (1600÷2) ÷ 79 × 31.6 = 130.55 (ms)
DH3 Dwell time = 1.672 ms × (1600÷4) ÷ 79 × 31.6 = 267.52 (ms)
DH5 Dwell time = 2.924 ms × (1600÷6) ÷ 79 × 31.6 = 311.89 (ms)

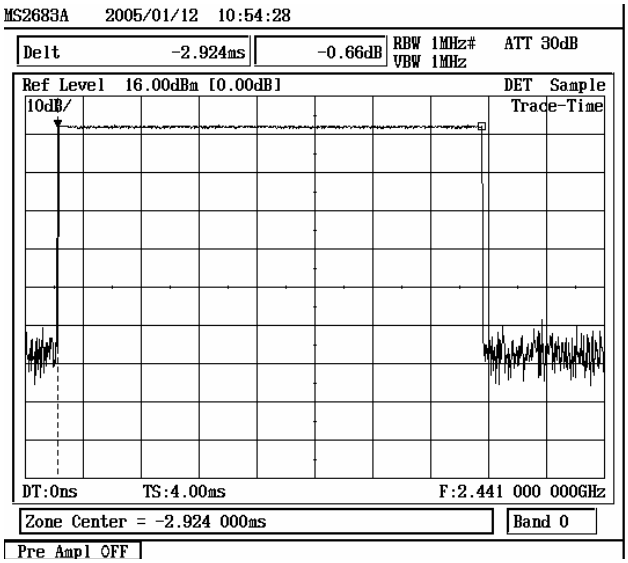
7.7 Photo of Dwell Time on Each Channel



DH1 2441MHz



DH3 2441MHz



DH5 2441MHz

8. POWER SPECTRAL DENSITY MEASUREMENT

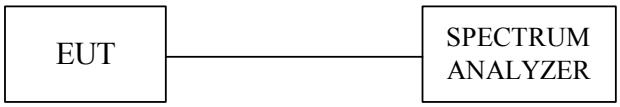
8.1 Test Equipments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Calibration Period
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	September 06, 2004	1 Year

Note：

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

8.2 Test Setup



8.3 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm/3KHz.

8.4 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3KHz RBW and 30KHz VBW, set sweep time=span / 3KHz.
The power spectral density was measured and recorded.
The sweep time is allowed to be longer than span / 3KHz for a full response of the mixer in the spectrum analyzer.

8.5 Uncertainty of Conducted Emission

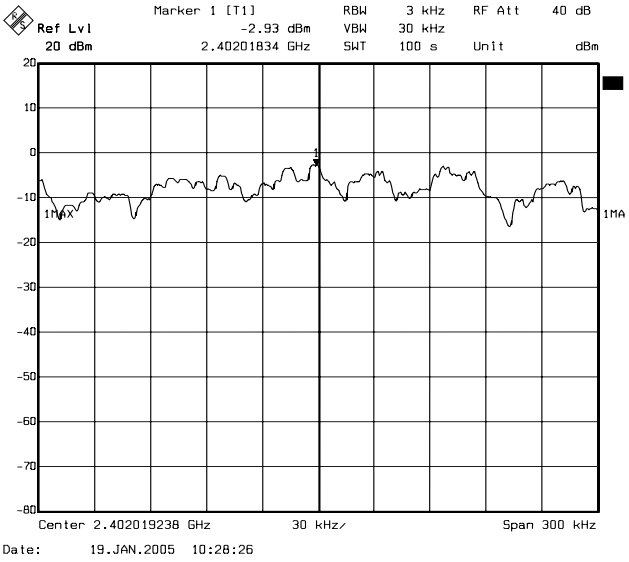
The uncertainty of conducted emission is ± 1.82dB.

8.6 Test Results

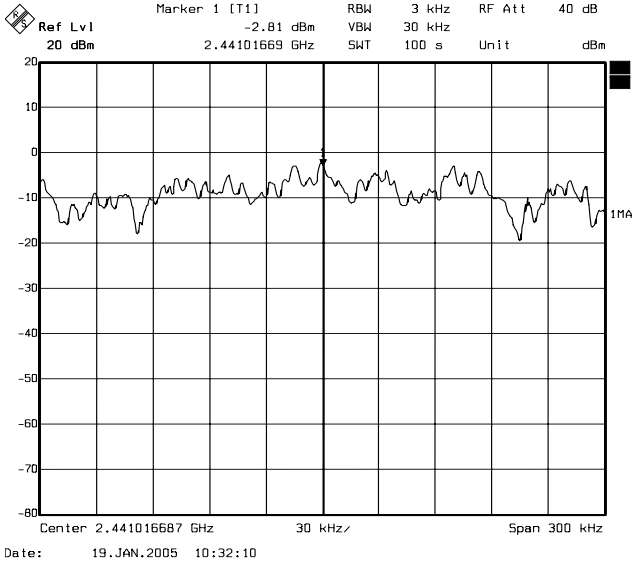
Company	Cadmus Micro Inc.	**Test Date**	2005/01/19
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	25°C, 60%

Channel	**Channel Frequency (MHz)**	**Final RF Power Level in 3KHz BW (dBm)**	**Maxmum Limit (dBm)**	**Pass / Fail**
01(Low)	2402	-2.93	8	PASS
40(Mid)	2441	-2.81	8	PASS
79(High)	2480	-2.75	8	PASS

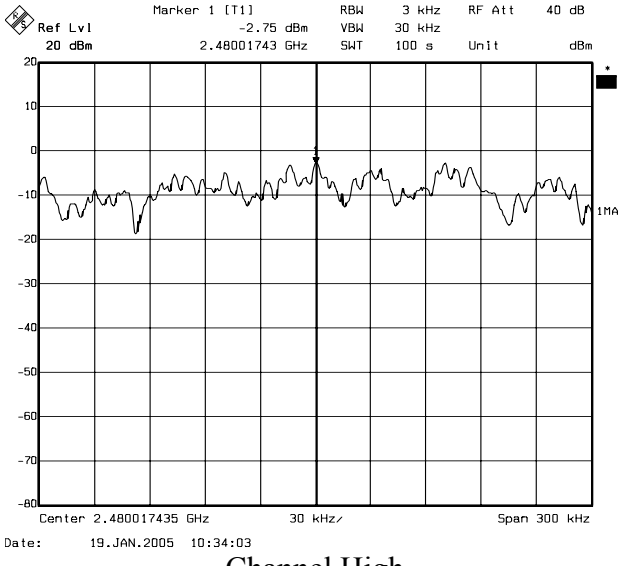
8.7 Photo of Power Spectral Density Measurement



Channel Low



Channel Middle



Channel High

9. BAND EDGE MEASUREMENT

Test Requirement: 15.247(d)

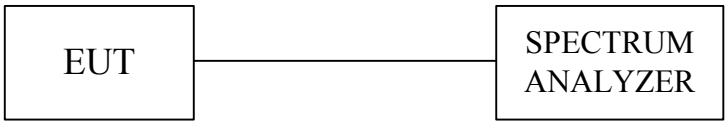
9.1 Test Equipments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	September 06, 2004

Note：

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

9.2 Test Setup



9.3 Limits of Band edge Measurements

The emission not fallen in restricted bands should be 20dB below the highest emission level of operating band (in 100KHz Resolution Bandwidth).
For the emissions fallen in the restricted bands listed in section 15.205, the maximum permitted average field strength should meet the requirement listed in section 15.209.

9.4 Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.4 with respect to maximizing the emission by rotating the EUT , measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW and VBM to 1MHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength.
The spurious RF conducted emissions was measured by using a spectrum analyzer. Set span wide enough to capture the peak level of the in-band emission and all spurious emissions from 30MHz to 10^{th} harmonic, set RBW and VBW to 100kHz, set trace max hold and allow the trace to stabilize. Several plots are plotted to cover the entire span.

9.5 Uncertainty of Conducted Emission

The uncertainty of Frequency : ± 100kHz.
The uncertainty of Amplitude : ± 2dB.

9.6 Test Results

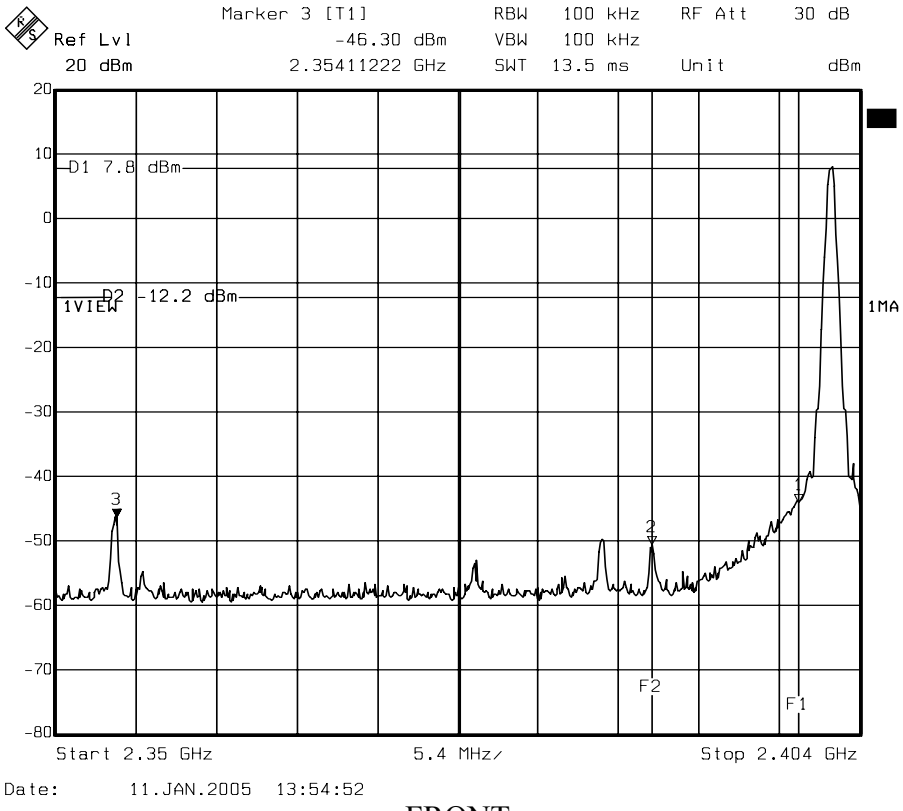
Company	Cadmus Micro Inc.	Test Date	2005/01/07
Product Name	Bluetooth USB Dongle	Test By	Vincent Chen
Model Name	UBTBR1R-C	TEMP&Humidity	20.6°C, 64%

Band edge Frequency (MHz)		Measured radiated band edge field strength (dBuV/m)		Radiated band edge field strength limit (dBuV/m)		Test result
		Horizontal	Vertical	Horizontal	Vertical	
2399.90	PK	55.68	64.88	80.05	86.19	PASS
	AV	44.08	51.88	78.45	84.98	
2483.50	PK	51.13	56.13	74.00	74.00	PASS
	AV	39.43	44.63	54.00	54.00	

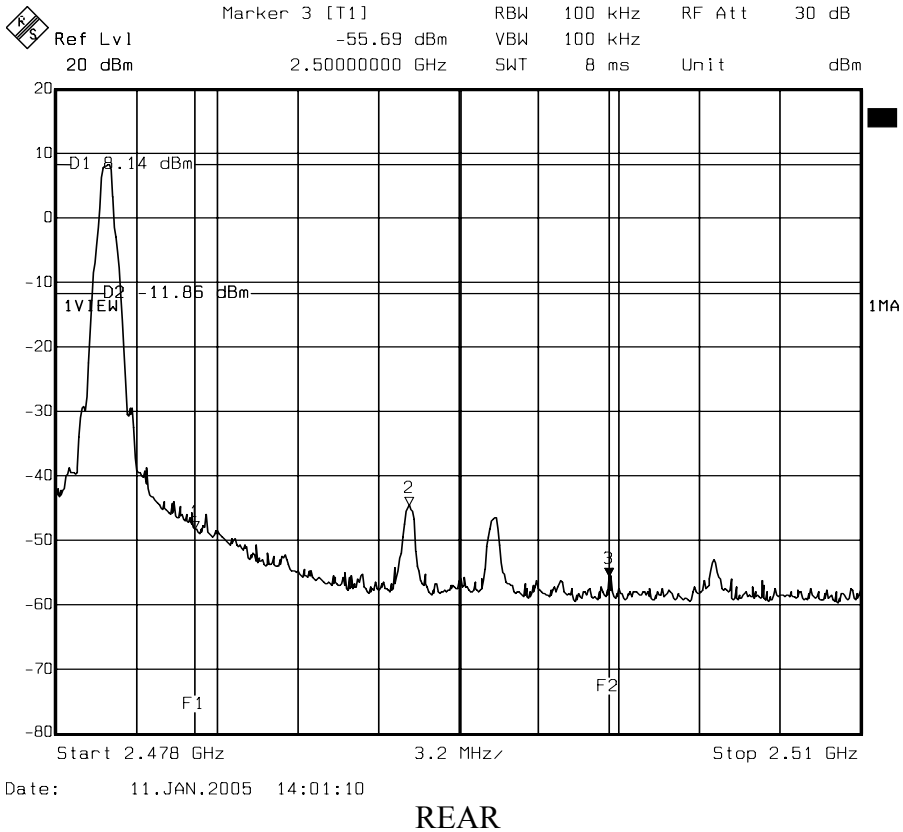
Note : 1. Radiated band edge field strength is measured with is measured with measurement procedure ANSI C63.4-2003

9.7 Photo of Band Edge Measurement

Band edge Compliance of RF Conducted Emissions



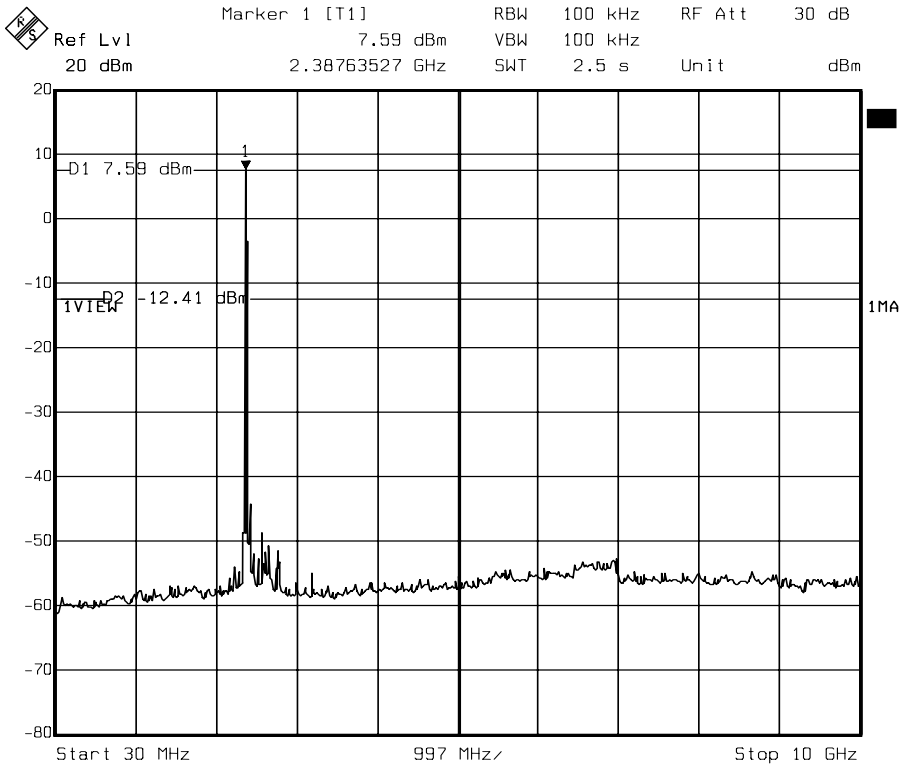
FRONT



REAR

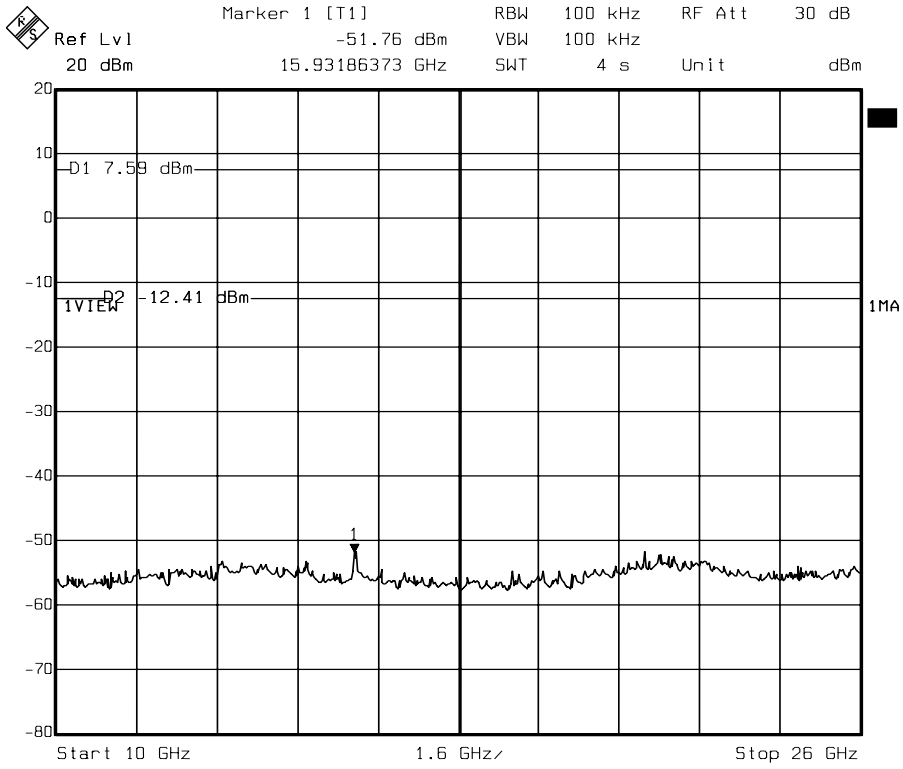
Out-of-band Spurious Emissions-conducted measurement

1. 30MHz~10GHz



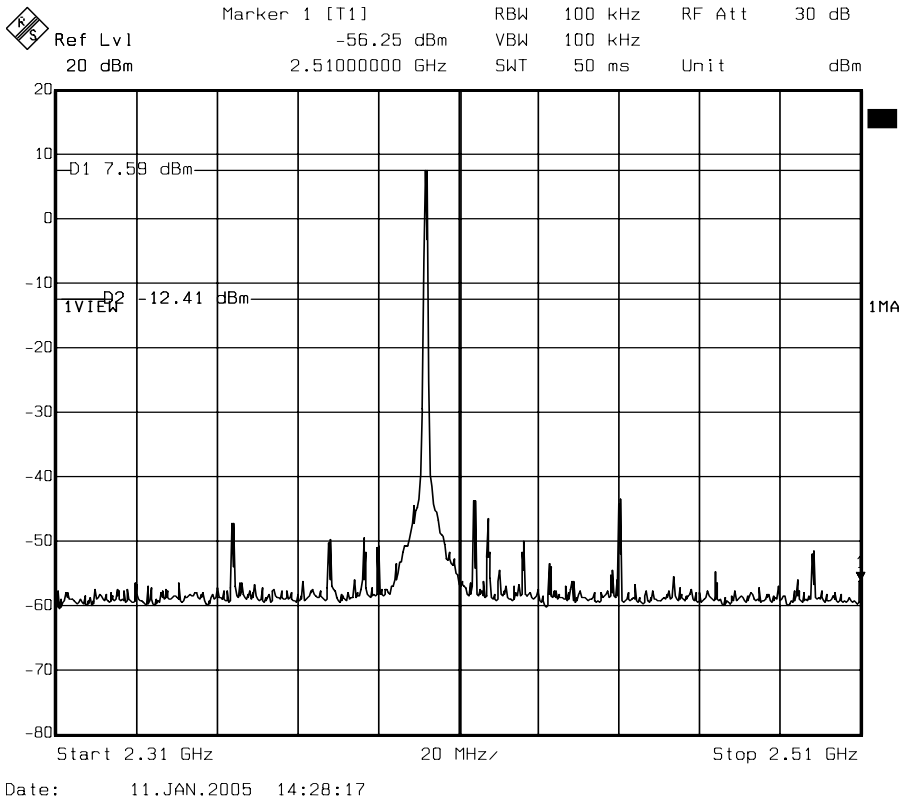
Date: 11.JAN.2005 14:23:26

2. 10GHz~26GHz



Date: 11.JAN.2005 14:25:36

3. 2.31GHz~2.5GHz



10. OUT OF BAND SPURIOUS EMISSIONS -RADIATED MEASUREMENTS

Test Requirement: 15.247(d)

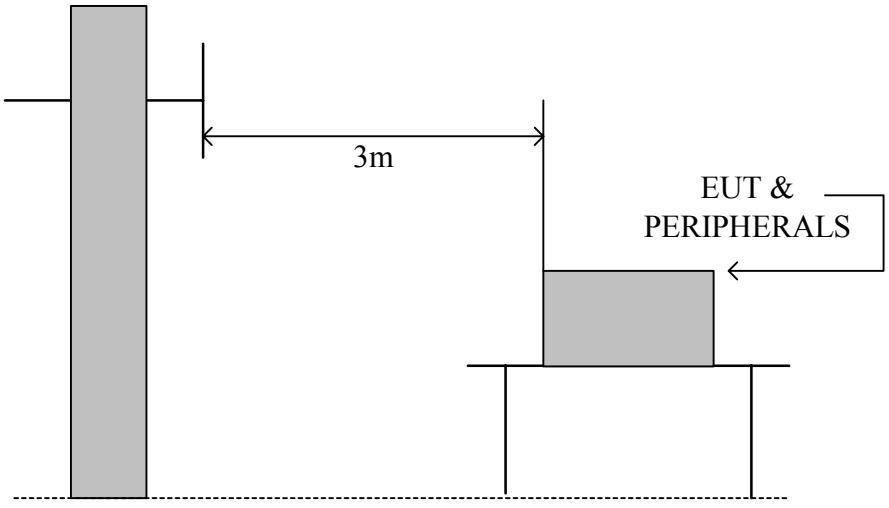
10.1 Test Equipments

The following test equipments are utilized in making the measurements contained in this report.

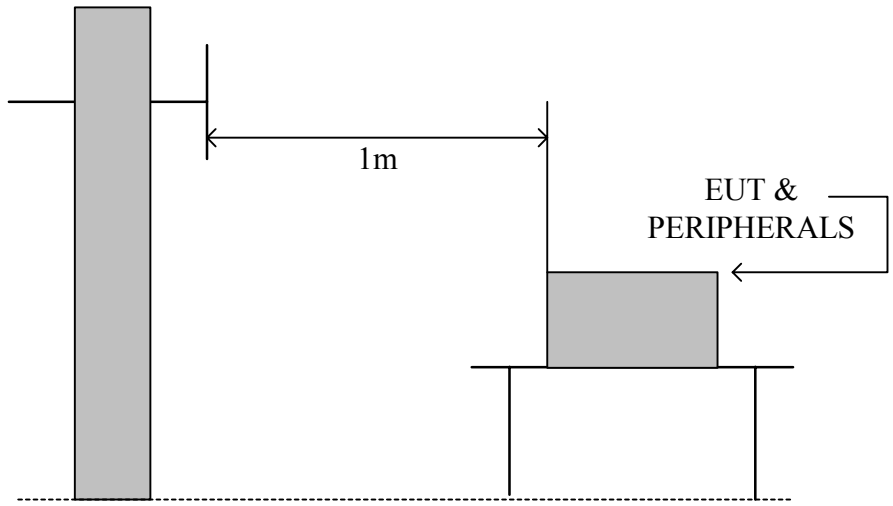
Manufacturer or Type	Model No.	Serial No.	Date of Calibration	Calibration Period	Remark
CHASE BI-LOG ANTENNA	CBL6112B	2562	May 20, 2004	1 Year	FINAL
OPEN SITE	----------	No.1	May 06, 2004	1 Year	FINAL
N TYPE COAXIAL CABLE	CHA9525	015	July 13, 2004	1 Year	FINAL
Horn Antenna	AH-118	10089	February 25, 2004	1 Year	FINAL
HP Pre-amplifier	8449B	3008A01471	November 07, 2004	1 Year	FINAL
HP High pass filter	84300/80038	011	cal. on use	1 Year	FINAL
Horn Antenna	AH-840	03077	February 25, 2004	1 Year	FINAL

10.2 Test Setup

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 to 1GHz.



The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



Antenna Elevation Variable

10.3 Radiation Limit

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

10.4 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

b. White measuring the radiated emission below 1GHz, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. White measuring the radiated emission above 1GHz, the EUT was set 1 meters away from the interference-receiving antenna

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Note：

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.

2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.

3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

10.5 Uncertainty of Radiated Emission

The uncertainty of radiated emission is ± 2.72dB.

10.6 Radiated RF Noise Measurement

Test Requirement: 15.109, 15.209
The frequency spectrum from 30 MHz to 1000 MHz was investigated. All emissions not reported are much lower than the prescribed limits.
All readings are quasi-peak values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/17
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	23.9°C, 60%

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading at 3m(dBμV)		Limits (dBμV/m)	Emission Level at 3m(dBμV/m)	
			Horizontal	Vertical		Horizontal	Vertical
30.00	18.96	0.90	*	*	40.00	*	*
196.08	10.85	2.60	8.40	11.30	43.50	21.85	24.75
343.26	15.45	3.56	10.80	12.20	46.00	29.81	31.21
377.21	16.62	3.76	4.90	6.20	46.00	25.29	26.59
499.24	18.57	4.30	4.80	5.60	46.00	27.67	28.47
546.04	18.97	4.39	7.60	8.30	46.00	30.96	31.66
649.83	19.45	4.95	5.60	7.10	46.00	30.00	31.50
749.04	19.80	5.45	4.90	6.30	46.00	30.15	31.55
1000.00	21.79	6.40	*	*	54.00	*	*

REMARKS：
1. ＊Undetectable
2. Emission level (dBμV/M) =Antenna Factor (dB/m) + Cable loss (dB) + Meter Reading (dBμV).
3. According to technical experience, all spurious emission at channel 1, 40 and 79 are almost the same below 1GHz, so the spurious emission test result of the channel 1 was chosen as representative in finial test.

The frequency spectrum above 1 GHz for Receiver was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/10
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	23.9°C, 65%

CH01 (2402 MHz) RX (Low)				Measurement Distance at 1m Horizontal polarity							
Freq. (MHz)	Reading (dBµV)	AF (dBµV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
1649.32	50.25	29.32	3.04	35.51	9.50	0.00	37.61	74	-36.39	P	1.0
1649.32	44.32	29.32	3.04	35.51	9.50	0.00	31.68	54	-22.32	A	1.0
4804.00	42.56	34.31	5.08	35.14	9.50	0.00	37.30	74	-36.70	P	1.0
4804.00	31.87	34.31	5.08	35.14	9.50	0.00	26.61	54	-27.39	A	1.0
7206.00	43.64	39.82	6.72	35.66	9.50	0.00	45.02	74	-28.98	P	1.0
7206.00	32.53	39.82	6.72	35.66	9.50	0.00	33.91	54	-20.09	A	1.0
9608.00	42.67	38.54	8.28	36.37	9.50	0.00	43.62	74	-30.38	P	1.0
9608.00	32.54	38.54	8.28	36.37	9.50	0.00	33.49	54	-20.51	A	1.0

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz,VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation as follow :
   Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
5. The test limit is 3M limit.
6. The frequency was searched to 18GHz.
7. The other emission levels were very low against the limit.

The frequency spectrum above 1 GHz for Receiver was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/10
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	23.9°C, 65%

CH01 (2402 MHz) RX (Low)				Measurement Distance at 1m Vertical polarity							
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
1693.22	55.44	29.68	3.09	35.48	9.50	0.00	43.23	74	-30.77	P	1.0
1693.22	52.41	29.68	3.09	35.48	9.50	0.00	40.20	54	-13.80	A	1.0
4804.00	42.34	34.31	5.08	35.14	9.50	0.00	37.08	74	-36.92	P	1.0
4804.00	32.61	34.31	5.08	35.14	9.50	0.00	27.35	54	-26.65	A	1.0
7206.00	41.25	39.82	6.72	35.66	9.50	0.00	42.63	74	-31.37	P	1.0
7206.00	31.24	39.82	6.72	35.66	9.50	0.00	32.62	54	-21.38	A	1.0
9608.00	41.57	38.54	8.28	36.37	9.50	0.00	42.52	74	-31.48	P	1.0
9608.00	32.68	38.54	8.28	36.37	9.50	0.00	33.63	54	-20.37	A	1.0

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz,VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation as follow :
   Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
5. The test limit is 3M limit.
6. The frequency was searched to 18GHz.
7. The other emission levels were very low against the limit.

The frequency spectrum above 1 GHz for Receiver was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/10
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	23.9°C, 65%

CH40 (2441 MHz) RX (Mid)				Measurement Distance at 1m Horizontal polarity							
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
1693.22	49.85	29.68	3.09	35.48	9.50	0.00	37.64	74	-36.36	P	1.0
1693.22	44.67	29.68	3.09	35.48	9.50	0.00	32.46	54	-21.54	A	1.0
4882.00	41.67	34.82	5.10	35.21	9.50	0.00	36.89	74	-37.11	P	1.0
4882.00	32.68	34.82	5.10	35.21	9.50	0.00	27.90	54	-26.10	A	1.0
7323.00	41.35	39.77	6.80	35.64	9.50	0.00	42.79	74	-31.21	P	1.0
7323.00	32.65	39.77	6.80	35.64	9.50	0.00	34.09	54	-19.91	A	1.0
9764.00	41.54	38.52	8.34	36.62	9.50	0.00	42.28	74	-31.72	P	1.0
9764.00	32.41	38.52	8.34	36.62	9.50	0.00	33.15	54	-20.85	A	1.0

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz,VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation as follow :

   Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
5. The test limit is 3M limit.
6. The frequency was searched to 18GHz.
7. The other emission levels were very low against the limit.

The frequency spectrum above 1 GHz for Receiver was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/10
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	23.9°C, 65%

CH40 (2441 MHz) RX (Mid)				Measurement Distance at 1m Vertical polarity							
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
1693.22	55.14	29.68	3.09	35.48	9.50	0.00	42.93	74	-31.07	P	1.0
1693.22	52.14	29.68	3.09	35.48	9.50	0.00	39.93	54	-14.07	A	1.0
4882.00	42.65	34.82	5.10	35.21	9.50	0.00	37.87	74	-36.13	P	1.0
4882.00	32.54	34.82	5.10	35.21	9.50	0.00	27.76	54	-26.24	A	1.0
7323.00	41.46	39.77	6.80	35.64	9.50	0.00	42.90	74	-31.10	P	1.0
7323.00	32.64	39.77	6.80	35.64	9.50	0.00	34.08	54	-19.92	A	1.0
9764.00	41.51	38.52	8.34	36.62	9.50	0.00	42.25	74	-31.75	P	1.0
9764.00	32.61	38.52	8.34	36.62	9.50	0.00	33.35	54	-20.65	A	1.0

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz,VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation as follow :

   Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
5. The test limit is 3M limit.
6. The frequency was searched to 18GHz.
7. The other emission levels were very low against the limit.

The frequency spectrum above 1 GHz for Receiver was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/10
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	23.9°C, 65%

CH79 (2480 MHz) RX (High)				Measurement Distance at 1m Horizontal polarity							
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
1693.22	50.14	29.68	3.09	35.48	9.50	0.00	37.93	74	-36.07	P	1.0
1693.22	44.52	29.68	3.09	35.48	9.50	0.00	32.31	54	-21.69	A	1.0
4960.00	41.62	35.34	5.13	35.27	9.50	0.00	37.32	74	-36.68	P	1.0
4960.00	32.32	35.34	5.13	35.27	9.50	0.00	28.02	54	-25.98	A	1.0
7440.00	41.35	39.72	6.88	35.61	9.50	0.00	42.84	74	-31.16	P	1.0
7440.00	32.51	39.72	6.88	35.61	9.50	0.00	34.00	54	-20.00	A	1.0
9920.00	41.25	38.51	8.39	36.87	9.50	0.00	41.78	74	-32.22	P	1.0
9920.00	31.26	38.51	8.39	36.87	9.50	0.00	31.79	54	-22.21	A	1.0

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz,VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation as follow :

   Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
5. The test limit is 3M limit.
6. The frequency was searched to 18GHz.
7. The other emission levels were very low against the limit.

The frequency spectrum above 1 GHz for Receiver was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/10
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	23.9°C, 65%

CH79 (2480 MHz) RX (High)				Measurement Distance at 1m Vertical polarity							
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
1693.22	54.56	29.68	3.09	35.48	9.50	0.00	42.35	74	-31.65	P	1.0
1693.22	51.46	29.68	3.09	35.48	9.50	0.00	39.25	54	-14.75	A	1.0
4960.00	42.15	35.34	5.13	35.27	9.50	0.00	37.85	74	-36.15	P	1.0
4960.00	32.51	35.34	5.13	35.27	9.50	0.00	28.21	54	-25.79	A	1.0
7440.00	41.65	39.72	6.88	35.61	9.50	0.00	43.14	74	-30.86	P	1.0
7440.00	32.65	39.72	6.88	35.61	9.50	0.00	34.14	54	-19.86	A	1.0
9920.00	41.68	38.51	8.39	36.87	9.50	0.00	42.21	74	-31.79	P	1.0
9920.00	33.14	38.51	8.39	36.87	9.50	0.00	33.67	54	-20.33	A	1.0

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz,VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation as follow :

   Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
5. The test limit is 3M limit.
6. The frequency was searched to 18GHz.
7. The other emission levels were very low against the limit.

The frequency spectrum above 1 GHz for Transmitter was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/07
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	20.6°C, 64%

CH01 (2402 MHz) TX (Low)				Measurement Distance at 1m Horizontal polarity							
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
* 2386.67	22.70	31.81	3.57	0.00	9.50	0.00	48.58	74.00	-25.42	P	1.00
* 2386.67	15.70	31.81	3.57	0.00	9.50	0.00	41.58	54.00	-12.42	A	1.00
2399.90	29.80	31.80	3.58	0.00	9.50	0.00	55.68	80.05	-24.37	P	1.00
2399.90	18.20	31.80	3.58	0.00	9.50	0.00	44.08	78.45	-34.37	A	1.00
2401.19	74.17	31.80	3.58	0.00	9.50	0.00	100.05	Fundamental Frequency		P	1.00
2401.19	72.57	31.80	3.58	0.00	9.50	0.00	98.45			A	1.00
* 4804.50	54.44	34.31	5.08	35.14	9.50	2.08	51.27	74.00	-22.73	P	1.00
* 4804.50	49.16	34.31	5.08	35.14	9.50	2.08	45.99	54.00	-8.01	A	1.00
7205.67	52.89	39.82	6.72	35.66	9.50	2.00	56.27	80.05	-23.78	P	1.00
7205.67	45.56	39.82	6.72	35.66	9.50	2.00	48.94	78.45	-29.51	A	1.00
9608.33	51.51	38.54	8.28	36.37	9.50	0.64	53.09	80.05	-26.96	P	1.00
9608.33	42.79	38.54	8.28	36.37	9.50	0.64	44.37	78.45	-34.08	A	1.00
* 12005.95	------	------	------	------	9.50	0.80	------	------	------	------	1.00
14407.14	------	------	------	------	0.00	0.59	------	------	------	------	1.00
16808.33	------	------	------	------	0.00	0.38	------	------	------	------	1.00
* 19209.52	------	------	------	------	0.00	1.85	------	------	------	------	1.00
21610.71	------	------	------	------	0.00	0.86	------	------	------	------	1.00
24011.90	------	------	------	------	0.00	3.08	------	------	------	------	1.00

Note :
1. The measurement was searched to 10th harmonic, Remark "---" means that the emissions level is too low to be measured.
2. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
4. Remark "*" means that Restricted band.
5. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
6. The result basic equation calculation is as follow:
   Level=Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit
7. The other emission levels were very low against the limit
8. The test limit distance is 3M limit.

The frequency spectrum above 1 GHz for Transmitter was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/07
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	20.6°C, 64%

CH01 (2402 MHz) TX (Low)				Measurement Distance at 1m Vertical polarity							
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
* 2386.67	25.60	31.81	3.57	0.00	9.50	0.00	51.48	74.00	-22.52	P	1.00
* 2386.59	21.90	31.81	3.57	0.00	9.50	0.00	47.78	54.00	-6.22	A	1.00
2399.90	39.00	31.80	3.58	0.00	9.50	0.00	64.88	86.19	-21.32	P	1.00
2399.90	26.00	31.80	3.58	0.00	9.50	0.00	51.88	84.98	-33.11	A	1.00
2402.02	80.32	31.80	3.58	0.00	9.50	0.00	106.19	Fundamental Frequency		P	1.00
2402.02	79.11	31.80	3.58	0.00	9.50	0.00	104.98			A	1.00
* 4804.36	55.71	34.31	5.08	35.14	9.50	2.08	52.54	74.00	-21.46	P	1.00
* 4804.36	49.92	34.31	5.08	35.14	9.50	2.08	46.75	54.00	-7.25	A	1.00
7206.03	54.95	39.82	6.72	35.66	9.50	2.00	58.33	86.19	-27.87	P	1.00
7206.03	48.12	39.82	6.72	35.66	9.50	2.00	51.50	84.98	-33.49	A	1.00
9608.33	54.09	38.54	8.28	36.37	9.50	0.64	55.67	86.19	-30.53	P	1.00
9608.33	45.91	38.54	8.28	36.37	9.50	0.64	47.49	84.98	-37.50	A	1.00
* 12010.10	------	------	------	------	9.50	0.80	------	------	------	------	1.00
14412.12	------	------	------	------	0.00	0.59	------	------	------	------	1.00
16814.14	------	------	------	------	0.00	0.39	------	------	------	------	1.00
* 19216.16	------	------	------	------	0.00	1.86	------	------	------	------	1.00
21618.18	------	------	------	------	0.00	0.85	------	------	------	------	1.00
24020.20	------	------	------	------	0.00	3.07	------	------	------	------	1.00

Note :
1. The measurement was searched to 10th harmonic, Remark "---" means that the emissions level is too low to be measured.
2. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
4. Remark "*" means that Restricted band.
5. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
6. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter - Dist, Margin = Level - Limit
7. The other emission levels were very low against the limit
8. The test limit distance is 3M limit.

The frequency spectrum above 1 GHz for Transmitter was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/07
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	20.6°C, 64%

CH40 (2441 MHz) TX (Mid)				Measurement Distance at 1m Horizontal polarity							
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
2441.04	73.87	31.76	3.59	0.00	9.50	0.00	99.72	Fundamental Frequency		P	1.00
2441.04	71.68	31.76	3.59	0.00	9.50	0.00	97.53			A	1.00
* 4881.75	52.98	34.82	5.10	35.21	9.50	1.77	49.97	74.00	-24.03	P	1.00
* 4881.75	48.65	34.82	5.10	35.21	9.50	1.77	45.64	54.00	-8.36	A	1.00
* 7322.86	53.68	39.77	6.80	35.64	9.50	2.00	57.11	74.00	-16.89	P	1.00
* 7322.86	46.85	39.77	6.80	35.64	9.50	2.00	50.28	54.00	-3.72	A	1.00
9763.81	54.20	38.52	8.33	36.62	9.50	0.54	55.48	79.72	-24.24	P	1.00
9763.81	46.45	38.52	8.33	36.62	9.50	0.54	47.73	77.53	-29.80	A	1.00
* 12205.20	------	------	------	------	9.50	0.80	------	------	------	------	1.00
14646.24	------	------	------	------	0.00	0.58	------	------	------	------	1.00
17087.28	------	------	------	------	0.00	0.53	------	------	------	------	1.00
* 19528.32	------	------	------	------	0.00	2.23	------	------	------	------	1.00
21969.36	------	------	------	------	0.00	0.71	------	------	------	------	1.00
24410.40	------	------	------	------	0.00	2.44	------	------	------	------	1.00

Note :
1. The measurement was searched to 10th harmonic, Remark "---" means that the emissions level is too low to be measured.
2. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
4. Remark "*" means that Restricted band.
5. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
6. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter - Dist, Margin = Level - Limit
7. The other emission levels were very low against the limit
8. The test limit distance is 3M limit.

The frequency spectrum above 1 GHz for Transmitter was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/07
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	20.6°C, 64%

CH40 (2441 MHz) TX (Mid)				Measurement Distance at 1m Vertical polarity							
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
2441.59	80.80	31.76	3.59	0.00	9.50	0.00	106.65	Fundamental Frequency		P	1.00
2441.59	79.80	31.76	3.59	0.00	9.50	0.00	105.65			A	1.00
* 4881.57	49.58	34.82	5.10	35.21	9.50	1.77	46.57	74.00	-27.43	P	1.00
* 4881.57	42.68	34.82	5.10	35.21	9.50	1.77	39.67	54.00	-14.33	A	1.00
* 7323.18	51.31	39.77	6.80	35.64	9.50	2.00	54.75	74.00	-19.25	P	1.00
* 7323.18	44.31	39.77	6.80	35.64	9.50	2.00	47.75	54.00	-6.25	A	1.00
9763.97	55.36	38.52	8.34	36.62	9.50	0.54	56.64	86.65	-30.01	P	1.00
9763.97	48.20	38.52	8.34	36.62	9.50	0.54	49.48	85.65	-36.17	A	1.00
* 12207.95	------	------	------	------	9.50	0.80	------	------	------	------	1.00
14649.54	------	------	------	------	0.00	0.58	------	------	------	------	1.00
17091.13	------	------	------	------	0.00	0.54	------	------	------	------	1.00
* 19532.72	------	------	------	------	0.00	2.23	------	------	------	------	1.00
21974.31	------	------	------	------	0.00	0.71	------	------	------	------	1.00
24415.90	------	------	------	------	0.00	2.43	------	------	------	------	1.00

Note :
1. The measurement was searched to 10th harmonic, Remark "---" means that the emissions level is too low to be measured.
2. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
4. Remark "*" means that Restricted band.
5. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
6. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter - Dist, Margin = Level - Limit
7. The other emission levels were very low against the limit
8. The test limit distance is 3M limit.

The frequency spectrum above 1 GHz for Transmitter was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/07
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	20.6°C, 64%

CH79 (2480 MHz) TX (High)				Measurement Distance at 1m Horizontal polarity							
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
2480.12	73.56	31.72	3.61	0.00	9.50	0.00	99.39	Fundamental Frequency		P	1.00
2480.12	71.24	31.72	3.61	0.00	9.50	0.00	97.07			A	1.00
* 2483.50	25.30	31.72	3.61	0.00	9.50	0.00	51.13	74.00	-22.87	P	1.00
* 2483.50	13.60	31.72	3.61	0.00	9.50	0.00	39.43	54.00	-14.57	A	1.00
* 2495.32	21.80	31.70	3.62	0.00	9.50	0.00	47.62	74.00	-26.38	P	1.00
* 2495.32	16.00	31.70	3.62	0.00	9.50	0.00	41.82	54.00	-12.18	A	1.00
* 4960.00	50.15	35.34	5.13	35.27	9.50	1.46	47.31	74.00	-26.69	P	1.00
* 4960.00	41.28	35.34	5.13	35.27	9.50	1.46	38.44	54.00	-15.56	A	1.00
* 7439.59	51.25	39.72	6.88	35.61	9.50	2.00	54.74	74.00	-19.26	P	1.00
* 7439.59	44.85	39.72	6.88	35.61	9.50	2.00	48.34	54.00	-5.66	A	1.00
9920.46	49.70	38.51	8.39	36.87	9.50	0.45	50.67	79.39	-28.72	P	1.00
9920.46	40.50	38.51	8.39	36.87	9.50	0.45	41.47	77.07	-35.60	A	1.00
* 12400.60	------	------	------	------	9.50	0.80	------	------	------	------	1.00
14880.72	------	------	------	------	0.00	0.40	------	------	------	------	1.00
17360.84	------	------	------	------	0.00	0.64	------	------	------	------	1.00
* 19840.96	------	------	------	------	0.00	2.54	------	------	------	------	1.00
* 22321.08	------	------	------	------	0.00	0.70	------	------	------	------	1.00
24801.20	------	------	------	------	0.00	1.88	------	------	------	------	1.00

Note :
1. The measurement was searched to 10th harmonic, Remark "---" means that the emissions level is too low to be measured.
2. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
4. Remark "*" means that Restricted band.
5. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
6. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter - Dist, Margin = Level - Limit
7. The other emission levels were very low against the limit
8. The test limit distance is 3M limit.

The frequency spectrum above 1 GHz for Transmitter was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	Cadmus Micro Inc.	**Test Date**	2005/01/07
Product Name	Bluetooth USB Dongle	**Test By**	Vincent Chen
Model Name	UBTBR1R-C	**TEMP&Humidity**	20.6°C, 64%

CH79 (2480 MHz) TX (High)				Measurement Distance at 1m Vertical polarity							
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
2480.03	79.12	31.72	3.61	0.00	9.50	0.00	104.95	Fundamental Frequency		P	1.00
2480.03	77.80	31.72	3.61	0.00	9.50	0.00	103.63			A	1.00
* 2483.50	30.30	31.72	3.61	0.00	9.50	0.00	56.13	74.00	-17.87	P	1.00
* 2483.50	18.80	31.72	3.61	0.00	9.50	0.00	44.63	54.00	-9.37	A	1.00
* 2495.32	26.00	31.70	3.62	0.00	9.50	0.00	51.82	74.00	-22.18	P	1.00
* 2495.32	21.70	31.70	3.62	0.00	9.50	0.00	47.52	54.00	-6.48	A	1.00
* 4959.79	51.80	35.33	5.13	35.27	9.50	1.46	48.95	74.00	-25.05	P	1.00
* 4959.79	46.20	35.33	5.13	35.27	9.50	1.46	43.35	54.00	-10.65	A	1.00
* 7440.04	54.10	39.72	6.88	35.61	9.50	2.00	57.59	74.00	-16.41	P	1.00
* 7440.04	46.80	39.72	6.88	35.61	9.50	2.00	50.29	54.00	-3.71	A	1.00
9920.57	53.14	38.51	8.39	36.87	9.50	0.45	54.11	84.95	-30.84	P	1.00
9920.57	44.84	38.51	8.39	36.87	9.50	0.45	45.81	83.63	-37.82	A	1.00
* 12400.15	------	------	------	------	9.50	0.80	------	------	------	------	1.00
14880.18	------	------	------	------	0.00	0.40	------	------	------	------	1.00
17360.21	------	------	------	------	0.00	0.64	------	------	------	------	1.00
* 19840.24	------	------	------	------	0.00	2.54	------	------	------	------	1.00
* 22320.27	------	------	------	------	0.00	0.70	------	------	------	------	1.00
24800.30	------	------	------	------	0.00	1.88	------	------	------	------	1.00

Note :
1. The measurement was searched to 10th harmonic, Remark "---" means that the emissions level is too low to be measured.
2. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
4. Remark "*" means that Restricted band.
5. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
6. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter - Dist, Margin = Level - Limit
7. The other emission levels were very low against the limit
8. The test limit distance is 3M limit.

10.7 Photos of Open Site

11. ANTENNA REQUIREMENT

11.1 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 transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

11.2 Antenna Connected Construction

The antenna used in this product is Dipole antenna. The maximum Gain of the antenna only 1.2dBi