

# DIGITAL EMC CO., LTD.

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# **CERTIFICATION OF COMPLIANCE**

#### BOYOUNG TECH TECHNOLOGY & MARKETING, Inc.

Dongguk Mettriang 6F 602, 84-2, Mullae-dong 3(sam)-ga, Yeongdeungpo-gu , Seoul, Korea

Dates of Tests: July 3 ~ 10, 2008 Test Report S/N: DR50110808G Test Site: DIGITAL EMC CO., LTD.

FCC ID

## **WEZ-SLIMDONGLE**

**APPLICANT** 

BOYOUNG TECH TECHNOLOGY & MARKETING, Inc.

FCC Equipment Class : Part 15 Spread Spectrum Transmitter(DSS)

Device name : Bluetooth Dongle

Manufacturer : BOYOUNG TECH TECHNOLOGY & MARKETING, Inc.

FCC ID : WEZ-SLIMDONGLE

Model name : Slim Dongle

Test Device Serial number : Identical prototype

FCC Rule Part(s) : FCC Part 15.247 Subpart C

ANSI C63.4-2003

Frequency Range : 2402 ~ 2480 MHz

Max. Output power : -1.48 dBm Conducted

Data of issue : August 11, 2008

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



NVLAP LAB CODE 200559-0

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## 1. General information

This report contains the result of tests performed by:

DIGITAL EMC CO., LTD.

Address: 683-3, Yubang-Dong, Yongin-Si, Kyunggi-Do, Korea. 449-080

http://www.digitalemc.com E-mail : Harveysung@digitalemc.com

Tel: +82-31-321-2664 Fax: +82-31-321-1664

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the

"General requirements for the competent of calibration and testing laboratory".

This laboratory is accredited by NVLAP for NVLAP Lab. Code: 200559-0.

Test operator: Engineer

August 11, 2008 Won-Jung LEE

Data Name Signature

Report Reviewed By: manager

August 11, 2008 Harvey Sung

Data Name Signature

Ordering party:

Company name : BOYOUNG TECH TECHNOLOGY & MARKETING, Inc.

Address : Dongguk Mettriang 6F 602, 84-2, Mullae-dong 3(sam)-ga, Yeongdeungpo-gu

City/town : Seoul Country : Korea

Date of order : March 4, 2008

## 2. Information about test item

## WEZ-SLIMDONGLE

## 2.1 Equipment information

Equipment model no.	Slim Dongle
Equipment serial no.	Identical prototype
Type of equipment	Bluetooth Dongle
Frequency band	2402 ~ 2480 MHz
Type of Modulation	GFSK
Spread Spectrum	Frequency Hopping
Channel Spacing	1.0 MHz
Type of antenna	Chip Antenna

<sup>-</sup> This device does not have EDR function.

## 2.2 Tested frequency

Frequency	TX	RX
Low frequency	2402MHz	2402MHz
Middle frequency	2441MHz	2441MHz
High frequency	2480MHz	2480MHz

## 2.3 Tested environment

Temperature	:	15 ~ 35 (°C)
Relative humidity content	:	20 ~ 75 %
Air pressure	:	86 ~ 103 kPa
Details of power supply	:	3.7V DC

## 2.4 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
Notebook	HP 520	CND73824M9	HP
Phone	SPH-V6900	125163	Samsung
Mouse	Moc5uo	HOFOOJYN	Dell

## **2.5** EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing

-> None

<sup>-</sup> The USB connection is only for charging the internal battery without data transfer.

# 3. Test Report

## 3.1 Summary of tests

FCC Part	Parameter	Limit	Test	Status
Section(s)		(Using in 2400 ~ 2483.5MHz)	Condition	(note 1)
I. Test Items				
		>= 20dB BW or >= Two-		G
	Carrier Frequency Separation	Thirds of the 20dB BW		С
15.247(a)	Number of Hopping Frequencies	>= 15 hops		С
	20 dB Bandwidth	None		С
	Dwell Time	=< 0.4 seconds	Conducted -	С
15 247(b)	Transmitter Output Payer	=< 1Watt , if CHs >= 75	Collauctea	С
15.247(b)	Transmitter Output Power	Others =<0.125W		
	Band-edge /Conducted	The radiated emission to any 100 kHz of outband shall be		С
15.247(c)	Conducted Spurious Emissions	at least 20dB below the highest inband spectral density.		С
15.205	Radiated Emissions	FCC 15.209 Limits	Radiated	C
15.209	Radiated Emissions	Tec 13.207 Emilits	Radiated	C
15.207	AC Conducted Emissions	EN 55022	AC Line	С
13.207	AC Collucted Effissions	EIN JJU22	Conducted	
Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable				

The sample was tested according to the following specification:

FCC Parts 15.247; ANSI C-63.4-2003, DA00-705

#### 3.2 Transmitter requirements

#### 3.2.1 Carrier Frequency Separation

#### **Procedure:**

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

After the trace being stable, the reading value between the peaks of the adjacent channels using the marker-delta function was recorded as the measurement results.

The spectrum analyzer is set to:

Span = 3 MHz (wide enough to capture the peaks of two adjacent channels)

RBW = 10 kHz (1% of the span or more) Sweep = auto

VBW = 10 kHz Detector function = peak

Trace = max hold

#### **Measurement Data:**

Frequency of marker #1	Frequency of marker #2	Test F	Results
(MHz)	(MHz)	Carrier Frequency Separation (MHz)	Result
2440.01	2441.02	1.010	Comply

<sup>-</sup> See next pages for actual measured spectrum plots.

#### **Minimum Standard:**

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

#### **Measurement Setup**

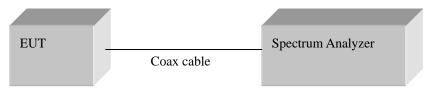
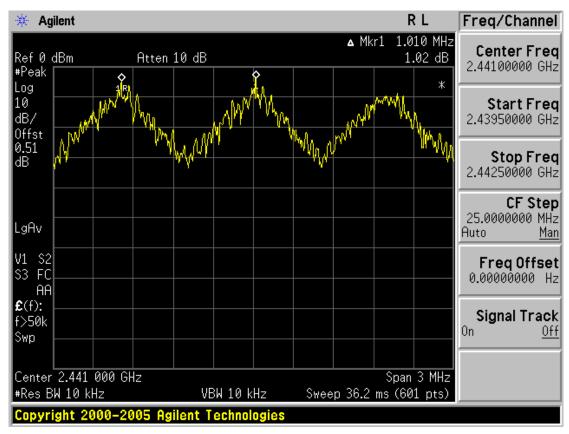


Figure 1: Measurement setup for the carrier frequency separation

## **Carrier Frequency Separation**



## 3.2.2 Number of Hopping Frequencies

#### **Procedure:**

The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

To get higher resolution, four frequency ranges within the 2400 ~ 2483.5 MHz FH band were examined.

The spectrum analyzer is set to:

Frequency range 1: Start = 2389.5MHz, Stop = 2414.5 MHz 2: Start = 2414.5MHz, Stop = 2439.5 MHz 3: Start = 2439.5MHz, Stop = 2464.5 MHz 4: Start = 2464.5MHz, Stop = 2489.5 MHz

RBW = 300 kHz (1% of the span or more) Sweep = auto

 $VBW = 300 \text{ kHz} (VBW \ge RBW)$  Detector function = peak

Trace =  $\max \text{ hold}$  Span = 25MHz

#### **Measurement Data: Comply**

Total number of Hopping Channels	79
----------------------------------	----

- See next pages for actual measured spectrum plots.

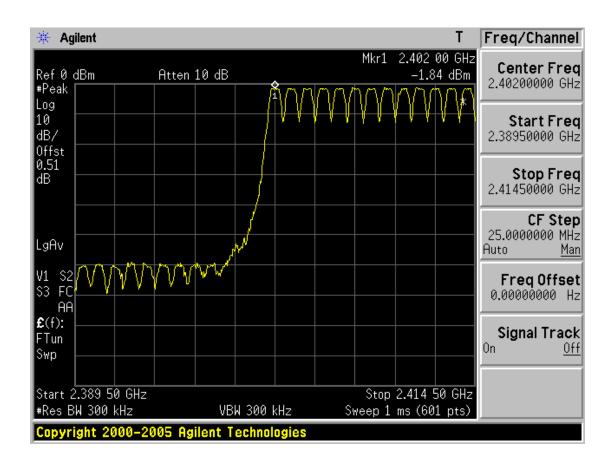
#### **Minimum Standard:**

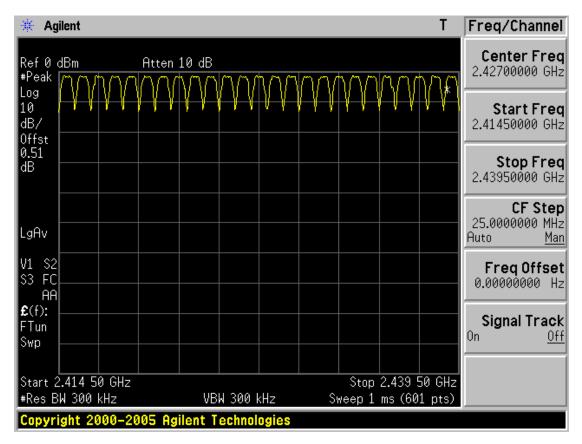
At least 15 hopes

#### Measurement Setup

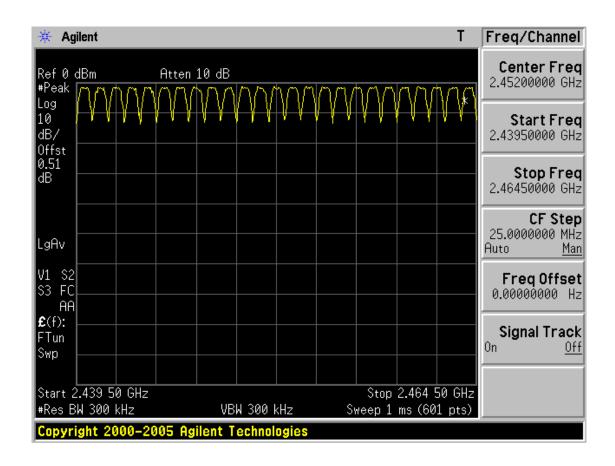
Same as the Chapter 3.2.1 (Figure 1)

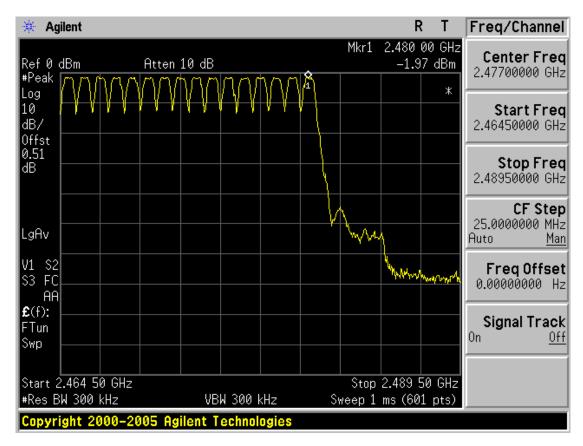
#### **Number of Hopping Frequencies**





## **Number of Hopping Frequencies**





#### 3.2.3 20 dB Bandwidth

#### **Procedure:**

The bandwidth at 20 dB below the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels...

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

Span = 5 MHz (approximately 2 or 3 times of the 20 dB bandwidth)

RBW = 10 kHz (1% of the 20dB bandwidth or more) Sweep = auto

 $VBW = 10 \text{ kHz} (VBW \ge RBW)$  Detector function = peak

Trace = max hold

#### **Measurement Data:**

Frequency		Test Results		
(MHz)	Channel No.	Measured Bandwidth (MHz)	Result	
2402	1	0.850	Comply	
2441	40	0.883	Comply	
2480	79	0.883	Comply	

<sup>-</sup> See next pages for actual measured spectrum plots.

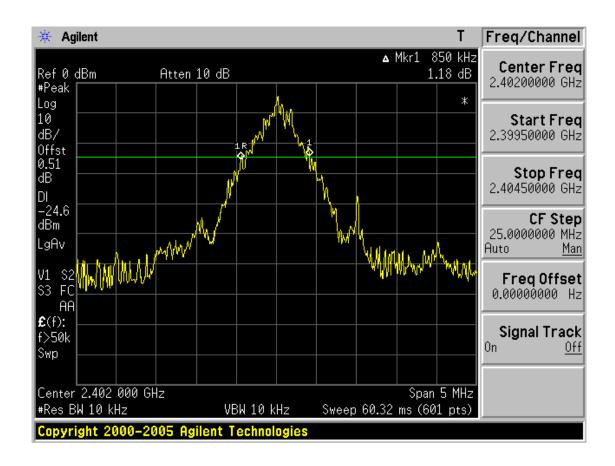
#### **Minimum Standard:**

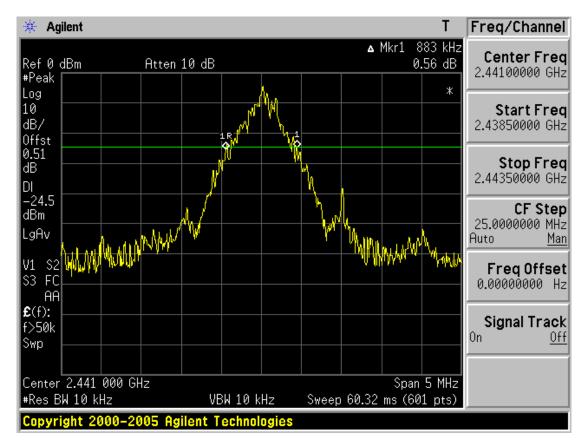
None

#### **Measurement Setup**

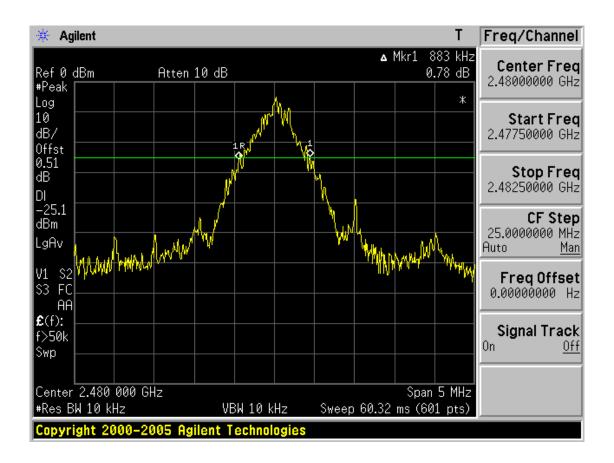
Same as the Chapter 3.2.1 (Figure 1)

#### 20 dB Bandwidth





#### 20 dB Bandwidth



## 3.2.4 Time of Occupancy (Dwell Time)

#### **Procedure:**

The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

The spectrum analyzer is set to:

Center frequency = 2441 MHz Span = zero

RBW = 1 MHz  $VBW = 1 MHz (VBW \ge RBW)$ 

Trace = max hold Detector function = peak

Measurement Data: See next pages for actual measured spectrum plots.

Packet Type	Burst On Time (ms)	Period (ms)	Number of hopping Channels	DWELL TIME (s)	Result
DH 1	0.425	1.250	79	0.136	Comply
DH 3	1.155	2.497	79	0.185	Comply
DH 5	2.917	3.750	79	0.311	Comply

Note: Each new transmission event begins on the next channel in the hopping sequence after the final channel used in the previous transmission event. DWELL TIME=(0.4 x Number of hopping Channels) x Burst On time / (period x Number of hopping Channels)

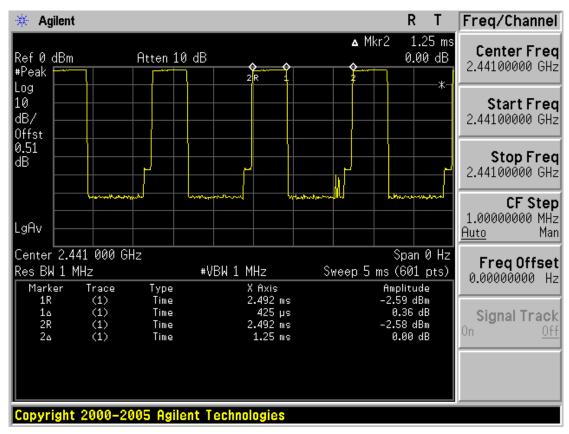
#### **Minimum Standard:**

No greater than 0.4 seconds

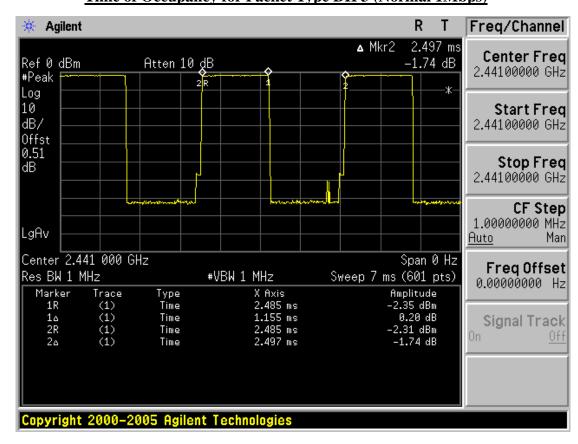
## **Measurement Setup**

Same as the Chapter 3.2.1 (Figure 1)

## Time of Occupancy for Packet Type DH 1 (Normal 1Mbps)



#### Time of Occupancy for Packet Type DH 3 (Normal 1Mbps)



#### \* Agilent Freq/Channel ▲ Mkr2 3.75 ms Center Freq Ref 0 dBm Atten 10 dB 0.00 dB 2.44100000 GHz #Peak 2 R Log 10 Start Freq dB/ 2.44100000 GHz Offst 0.51 Stop Freq dΒ 2.44100000 GHz **CF Step** 1.000000000 MHz LgAv <u>Auto</u> Man Center 2.441 000 GHz Span 0 Hz Freq Offset 0.000000000 Hz Res BW 1 MHz #VBW 1 MHz Sweep 10 ms (601 pts) Marker 1R 1 1 2R 2A Trace (1) (1) (1) (1) (1) X Axis 3.733 ms 2.917 ms 3.733 ms 3.75 ms Amplitude -2.37 dBm 0.22 dB -2.37 dBm Type Time Time Signal Track Time Time 0.00 dB

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## Time of Occupancy for Packet Type DH 5 (Normal 1Mbps)

## 3.2.5 Peak Output Power

#### **Procedure:**

The peak output power was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

Span = 5 MHz (approximately 5 times of the 20 dB bandwidth)

RBW = 1 MHz (greater than the 20dB bandwidth of the emission being measured)

 $VBW = 1 MHz (VBW \ge RBW)$  Detector function = peak

Trace =  $\max$  hold Sweep = auto

#### **Measurement Data:**

Frequency	Ch.		Test Results	
(MHz)		dBm	mW	Result
2402	1	-1.56	0.698	Comply
2441	40	-1.48	0.711	Comply
2480	79	-1.60	0.692	Comply

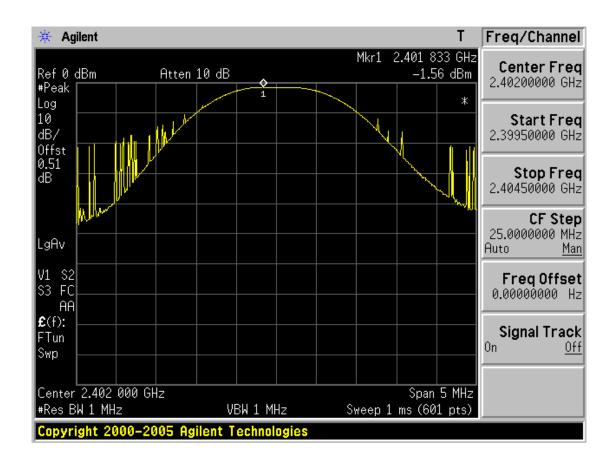
<sup>-</sup> See next pages for actual measured spectrum plots.

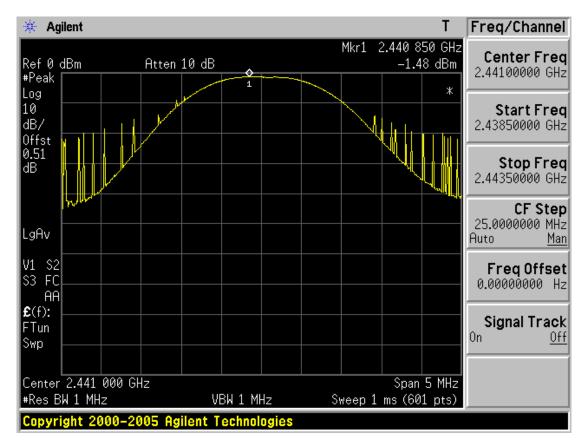
Minimum Standard:	For frequency hopping systems operating in the 2400-2483.5 MHz band
	employing at least 75 non-overlapping hopping channels, and all frequency
	hopping systems in the 5725-5850 MHz band: 1 Watt. For all other
	frequency hopping systems in the 2400-2483.5 MHz band: <b>0.125 Watts</b>

#### **Measurement Setup**

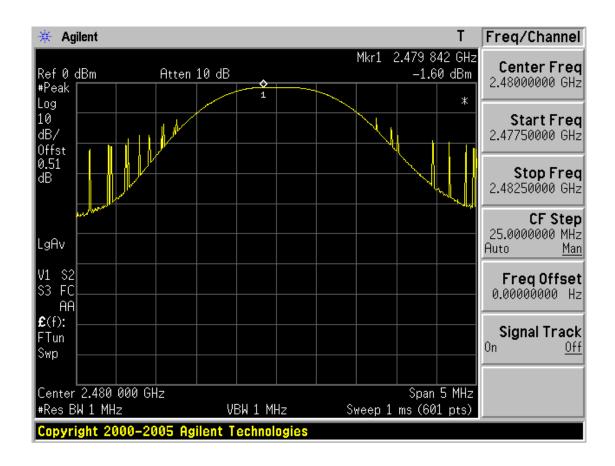
Same as the Chapter 3.2.1 (Figure 1)

## **Peak Output Power**





## **Peak Output Power**



## 3.2.6 Conducted Spurious Emissions

#### **Procedure:**

The bandwidth at 20dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels.

After the trace being stable, Use the marker-to-peak function to measure 20 dB down both sides of the intentional emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHz VBW = 100 kHz

Span = 10 MHz Detector function = peak

Trace =  $\max$  hold Sweep = auto

#### **Measurement Data: Comply**

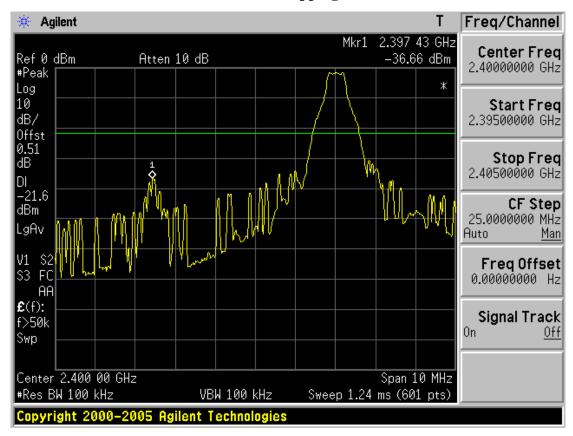
- See next pages for actual measured spectrum plots.

Minimum Standard:	> 20 dBc
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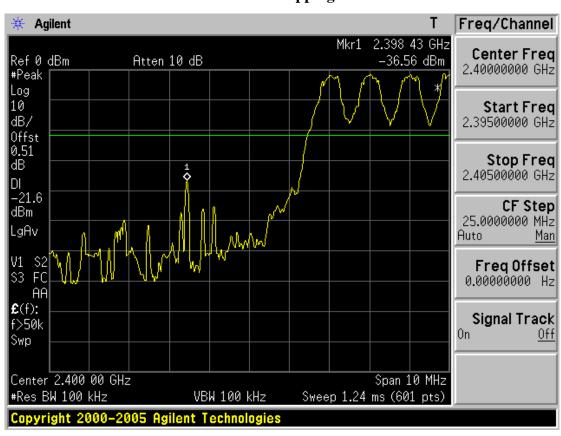
#### **Measurement Setup**

Same as the Chapter 3.2.1 (Figure 1)

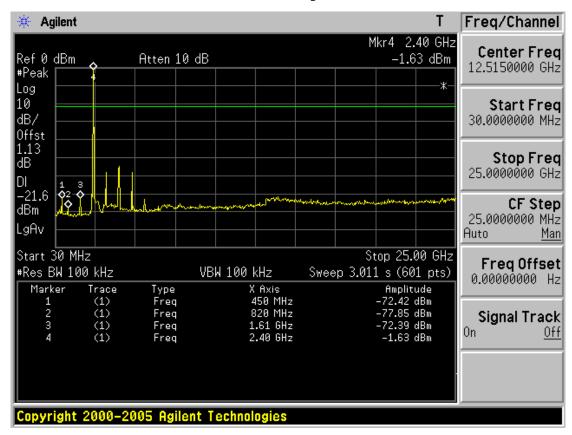
## Low band with hopping disabled

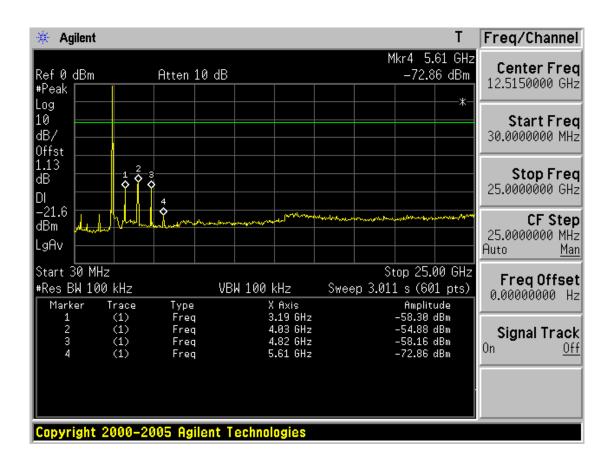


#### Low band with hopping enabled

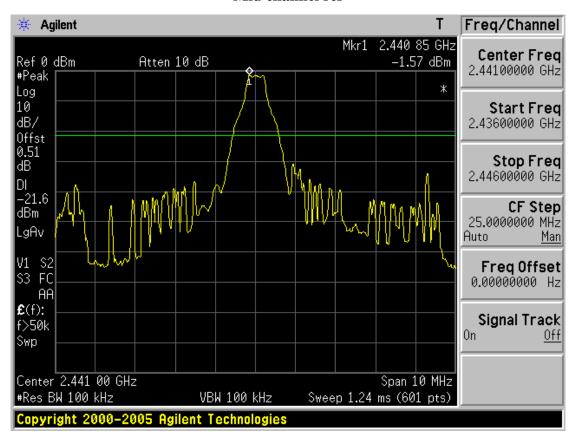


## Low channel spurious

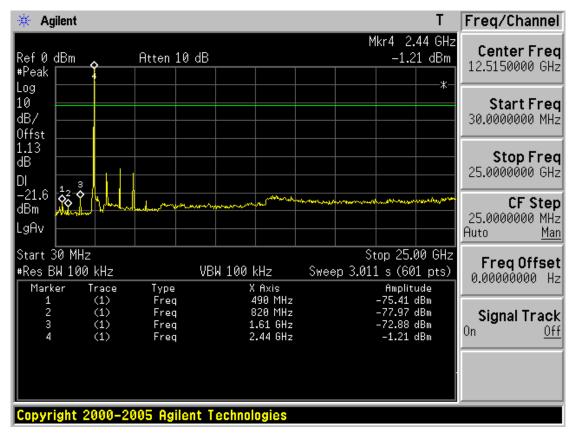


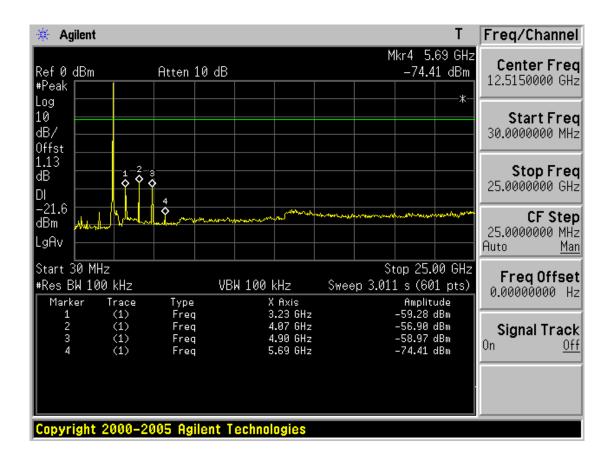


## Mid channel ref

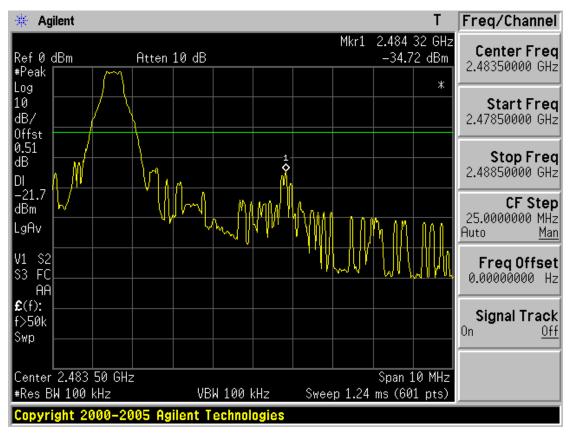


## Mid channel spurious

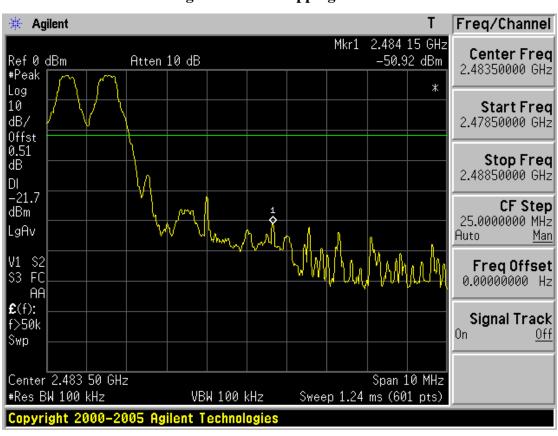




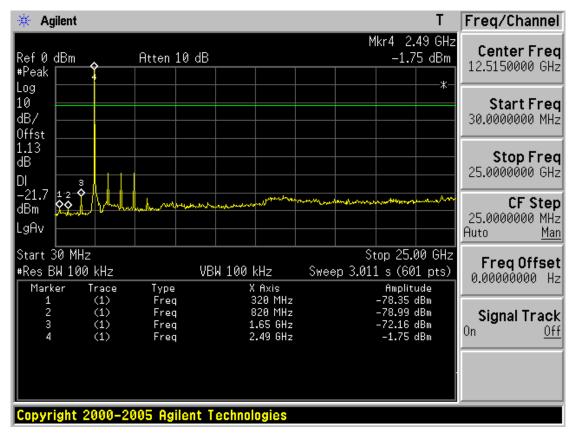
## High band with hopping disabled

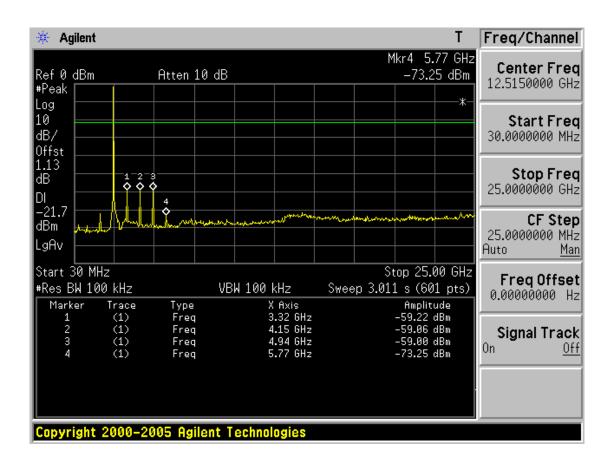


#### High band with hopping enabled



## **High channel spurious**





#### 3.2.7 Radiated Emissions

#### **Procedure:**

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic.

 $RBW = 120 \text{ kHz} (30 \text{MHz} \sim 1 \text{ GHz})$   $VBW \geq RBW (Peak)$ 

= 1 MHz  $(1 \text{ GHz} \sim 10^{\text{th}} \text{ harmonic})$  VBW = 10 Hz (Average)

Trace =  $\max$  hold Sweep = auto

**Measurement Data: Comply** 

Refer to the next page.

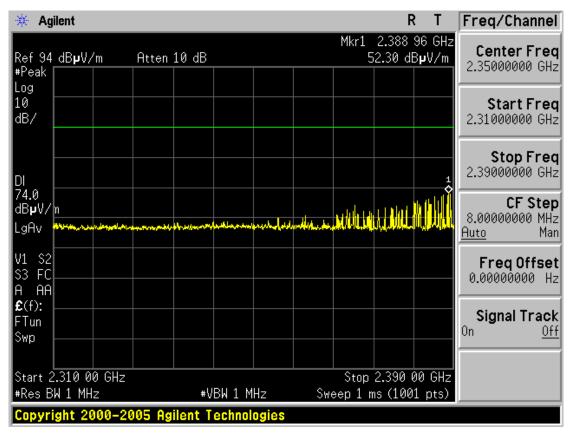
Minimum Standard: FCC Part 15.205 (a), 15.205(b), 15.209(a) and (b)

**Limit : FCC P15.209(a)** 

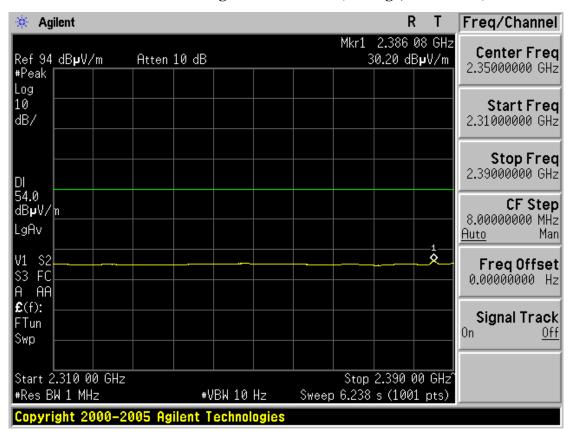
Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

<sup>\*\*</sup> Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

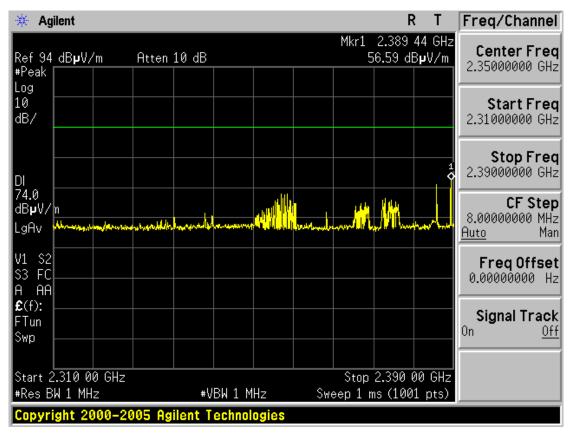
## Restricted Band Edge: Low Channel (Peak, Horizontal)



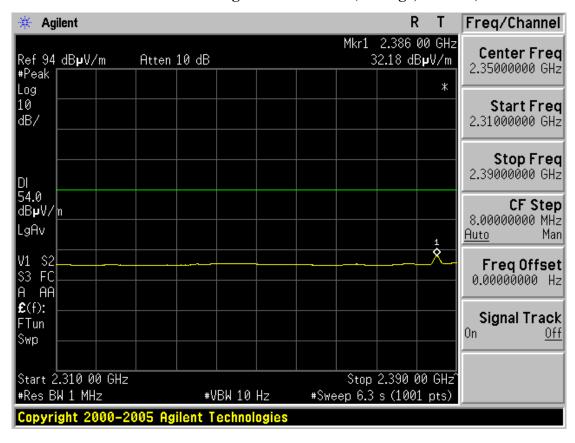
#### **Restricted Band Edge: Low Channel (Average, Horizontal)**



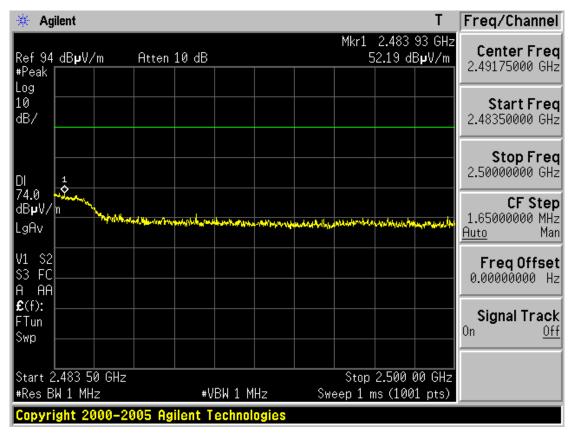
## Restricted Band Edge: Low Channel (Peak, Vertical)



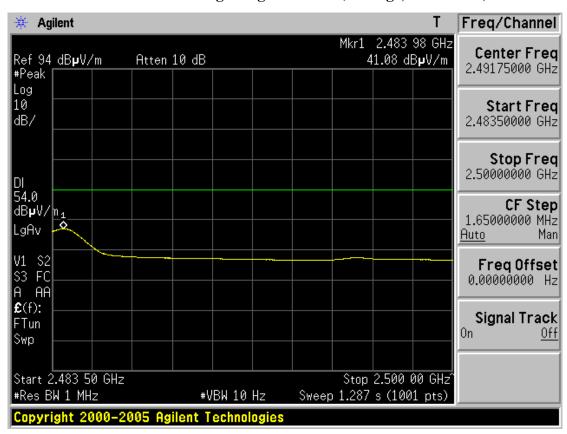
#### **Restricted Band Edge: Low Channel (Average, Vertical)**



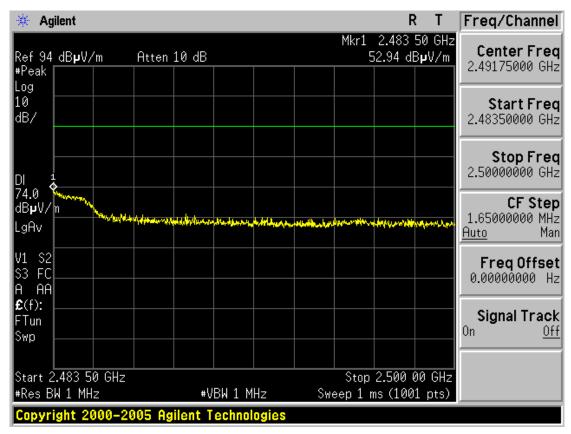
## Restricted Band Edge: High Channel (Peak, Horizontal)



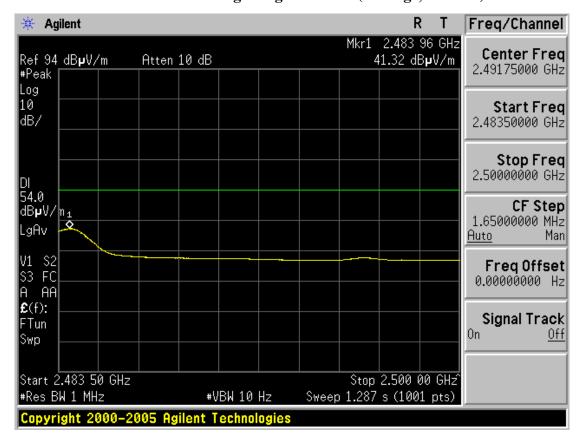
#### **Restricted Band Edge: High Channel (Average, Horizontal)**



## Restricted Band Edge: High Channel (Peak, Vertical)



#### Restricted Band Edge: High Channel (Average, Vertical)



#### Harmonic and other emissions Measurement Data: Fundamental Frequency = 2402MHz

Frequency	ANT	Reading(dBuV)		T.F	Resu	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)		
(MHz)	Pol	QP	PK	AV	(dB)	QP	PK	AV	QP	PK	AV	QP	PK	AV
223.950	Ver	38.99	-	-	-6.39	32.60	-	-	46.00	-	-	13.40	-	-
305.450	Ver	41.17	-	-	-8.07	33.10	-	-	46.00	-	-	12.90	-	-
700.300	Ver	36.75	-	-	-0.55	36.20	-	-	46.00	-	-	9.80	-	-
4804	Hor	-	51.87	43.65	6.07	-	57.94	49.72	-	74.00	54.00	-	16.06	4.28
4804	Ver	-	48.20	39.25	6.07	-	54.27	45.32	-	74.00	54.00	-	19.73	8.68

#### Harmonic and other emissions Measurement Data: Fundamental Frequency = 2441MHz

Frequency	ANT	Reading(dBuV)		T.F	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)			
(MHz)	Pol	QP	PK	AV	(dB)	QP	PK	AV	QP	PK	AV	QP	PK	AV
224.000	Ver	37.89	-	-	-6.39	31.50	-	-	46.00	-	-	14.50	-	-
305.500	Ver	42.27	-	-	-8.07	34.20	-	-	46.00	-	-	11.80	-	-
700.200	Ver	36.35	-	-	-0.55	35.80	-	-	46.00	-	-	10.20	-	-
4882	Hor	-	52.49	43.94	6.53	-	59.02	50.47	-	74.00	54.00	-	14.98	3.53
4882	Ver	ı	47.05	36.82	6.53	-	53.58	43.35	-	74.00	54.00	1	20.42	10.65

## Harmonic and other emissions Measurement Data: Fundamental Frequency = 2480MHz

Frequency	ANT Pol	Reading(dBuV)			T.F	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)		
(MHz)		QP	PK	AV	(dB)	QP	PK	AV	QP	PK	AV	QP	PK	AV
233.800	Ver	41.28	-	-	-6.08	35.20	-	-	46.00	-	-	10.80	-	-
305.400	Ver	42.97	-	-	-8.07	34.90	-	-	46.00	-	-	11.10	-	-
700.000	Ver	35.45	-	-	-0.55	34.90	-	-	46.00	-	-	11.10	-	-
4960	Hor	-	52.57	45.31	6.86	-	59.43	52.17	-	74.00	54.00	1	14.57	1.83
4960	Ver	-	47.96	38.29	6.86	-	54.82	45.15	-	74.00	54.00	-	19.18	8.85

#### Note.

- 1. No other spurious and harmonic emissions were detected at a level greater than 20dB below limit.
- 2. If peak result meet AV limit, AV measurement is omitted.
- 3. Sample Calculation.

$$\begin{aligned} & Margin = Limit - Result & / & Result = Reading + T.F & / & T.F = AF + CL - AG \\ & Where, & T.F = Total Factor, & AF = Antenna Factor, & CL = Cable Loss, & AG = Amplifier Gain \\ & & AG = Amplifier Gain \\$$

#### 3.2.8 AC Line Conducted Emissions

#### **Procedure:**

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak and average detector mode with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

Measurement Data: Comply (See next pages for actual measured spectrum plots.)

#### Minimum Standard: FCC Part 15.207(a)/EN 55022

Frequency Range	Conducted Limit (dBuV)							
(MHz)	Quasi-Peak	Average						
0.15 ~ 0.5	66 to 56 *	56 to 46 *						
0.5 ~ 5	56	46						
5 ~ 30	60	50						

<sup>\*</sup> Decreases with the logarithm of the frequency

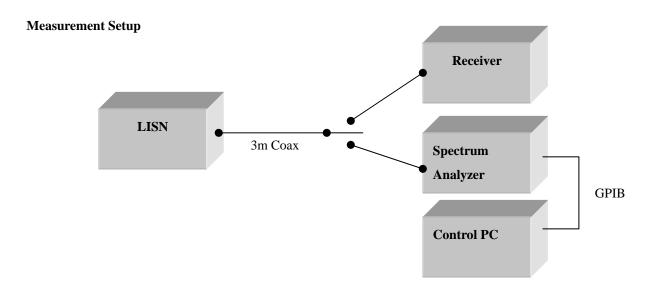
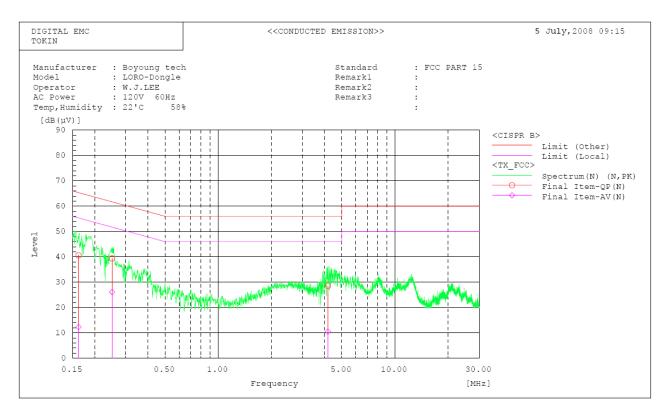
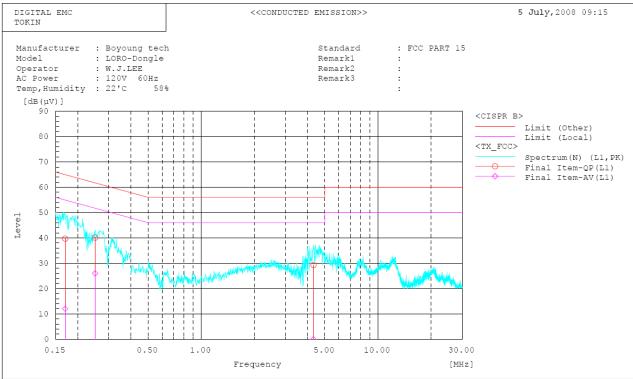


Figure 2: Measurement setup for AC Conducted Emission

#### - Conducted Emission Graph -

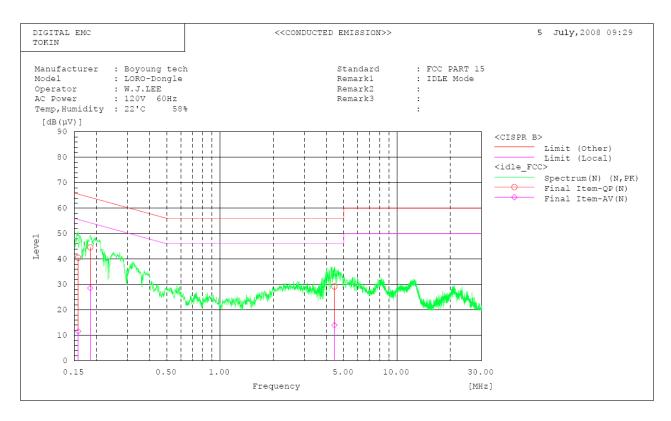


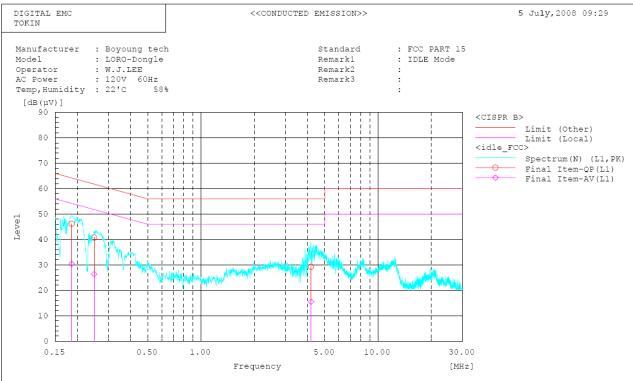


## - Conducted Emission List -

****	******	******	*******	******	********	******		GITAL EMC TED EMISSI	****** ON>>	******	5 July, 2008 09:15
Manu Mode Oper AC F	ator ower , Humidity rkl rk2	: FCC F : Boyou : LORO- : W.J.L : 120V : 22'C :	ng tech Dongle EE								
****	******	*******	*******	*******	*******	*******	******	*******	******	*******	***********
Fina	l Result										
	N Phase										
No.	Frequency	Reading	Reading	c.f	Result	Result	Limit	Limit	Margin	Margin	Remark
		QP	AV		QP	AV	QP	AV	QP	AV	
	[MHz]	[dB(µV)]	[dB(µV)]	[dB]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB]	[dB]	
1	0.162	40.5	12.2	0.1	40.6	12.3	65.4	55.4	24.8	43.1	
2	0.251	39.3	26.0	0.1	39.4	26.1	61.7	51.7	22.3	25.6	
3	4.177	28.4	10.3	0.2	28.6	10.5	56.0	46.0	27.4	35.5	
	Ll Phase	_									
No.	Frequency	Reading	Reading	c.f	Result	Result	Limit	Limit	Margin	Margin	Remark
		QP	AV		QP	AV	QP	AV	QP	AV	
	[MHz]	[dB(µV)]	[dB(µV)]	[dB]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB]	[dB]	
1	0.251	39.9	25.8	0.2	40.1	26.0	61.7	51.7	21.6	25.7	
2	0.170	39.5	11.8	0.2	39.7	12.0	65.0	55.0	25.3	43.0	
3	4.316	29.0	0.0	0.3	29.3	0.0	56.0	46.0	26.7	0.0	

#### - Conducted Emission Graph -





## - Conducted Emission List -

***	*****	******	******	******	*******	******		IGITAL EMC TED EMISSI	****** ON>>	*******	5 July,2008 09:29
Manu Mode Open AC I	eator Power , Humidity arkl ark2	: FCC F : Boyou : LORO- : W.J.I : 120V : 22'C : IDLE :	ing tech Dongle EE 60Hz 58%								
	******	******	*******	******	*******	*******	******	******	*****	*******	*************
rina	l Result										
	N Phase										
No.	Frequency	Reading	Reading AV	c.f	Result	Result	Limit	Limit AV	Margin	Margin AV	Remark
	[MHz]	QP [dB(µV)]	ΑV [dB(μV)]	[dB]	QP [dB(uV)]	AV [dB(µV)]	QP [dB(µV)]	aν [dB(μV)]	QP [dB]	[dB]	
1	0.158	40.4	11.5	0.1	40.5	11.6	65.6	55.6	25.1	44.0	
2	0.185	44.5	28.5	0.1	44.6	28.6	64.3	54.3	19.7	25.7	
3	4.426	29.0	13.8	0.2	29.2	14.0	56.0	46.0	26.8	32.0	
	Ll Phase	_									
No.	Frequency	Reading	Reading	c.f	Result	Result	Limit	Limit	Margin	Margin	Remark
		QP	AV		QP	AV	QP	AV	QP	AV	
	[MHz]	[dB(µV)]	[dB(µV)]	[dB]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB]	[dB]	
1	0.186	46.0	30.2	0.2	46.2	30.4	64.2	54.2	18.0	23.8	
2	0.249	40.6	26.2	0.2	40.8	26.4	61.8	51.8	21.0	25.4	
3	4.185	29.0	15.2	0.3	29.3	15.5	56.0	46.0	26.7	30.5	

# APPENDIX

# TEST EQUIPMENT FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment.

	Туре	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	Next.Due.Date (dd/mm/yy)	S/N
01	Spectrum Analyzer	Agilent	E4404B	21/03/08	21/03/09	US41061134
02	Spectrum Analyzer	Agilent	E4440A	15/11/07	15/11/08	MY45304199
03	Spectrum Analyzer	H.P	8563E	09/10/07	09/10/09	3551A04634
04	Spectrum Analyzer	H.P	8591E	26/04/08	26/04/09	3649A05889
05	EMI TEST RECEIVER	R&S	ESU	11/01/08	11/01/09	100014
06	EMI TEST RECEIVER	R&S	ESCI	13/05/08	13/05/09	100364
07	Power Meter	H.P	EMP-442A	10/07/08	10/07/09	GB37170413
08	Power Sensor	Н.Р	8481A	14/07/08	14/07/09	3318A96566
09	Power Divider	Agilent	11636B	07/12/08	07/12/08	56471
10	Signal Generator	Rohde Schwarz	SMR20	02/04/08	02/04/09	101251
11	Signal Generator	Н.Р	ESG-3000A	09/07/08	09/07/09	US37230529
12	Vector Signal Generator	Rohde Schwarz	SMJ100A	17/01/08	17/01/09	100148
13	Audio Analyzer	H.P	8903B	09/07/08	09/07/09	3011A09448
14	Modulation Analyzer	H.P	8901B	1807/08	18/07/09	3028A03029
15	Oscilloscope	Tektronix	TDS3052	02/11/07	02/11/08	B016821
16	8960 Series 10 Wireless Comms. Test Set	Agilent	E5515C	31/07/07	31/07/09	GB43461134
17	Universal Radio communication Tester	Rohde Schwarz	CMU 200	02/04/08	02/04/09	107631
18	Bluetooth Tester	TESCOM	TC-3000A	01/08/08	01/08/09	3000A4A0121
19	Power Splitter	WEINSCHEL	1593	05/10/07	05/10/08	332
20	Power Splitter	Anritsu	K241B	19/10/07	19/10/08	020611
21	BAND Reject Filter	Microwave Circuits	N0308372	18/10/07	18/10/08	3125-01DC0312
22	BAND Reject Filter	Wainwright	WRCG1750	18/10/07	18/10/08	SN2
23	AC Power supply	DAEKWANG	5KVA	20/03/08	20/03/09	N/A
24	DC Power Supply	H.P	6622A	20/03/08	20/03/09	465487
25	DC Power Supply	HP	6633A	20/03/08	20/03/09	3524A06634
26	HORN ANT	ETS	3115	13/06/08	13/06/09	6419
27	HORN ANT	ETS	3115	09/10/07	09/10/08	21097
28	HORN ANT	A.H.Systems	SAS-574	13/06/08	13/06/09	154
29	HORN ANT	A.H.Systems	SAS-574	13/06/08	13/06/09	155
30	Dipole Antenna	Schwarzbeck	VHA9103	19/12/07	19/12/08	2116

	Туре	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	Next.Due.Date (dd/mm/yy)	S/N
31	Dipole Antenna	Schwarzbeck	VHA9103	19/12/07	19/12/08	2117
32	Dipole Antenna	Schwarzbeck	UHA9105	20/12/07	20/12/08	2261
33	Dipole Antenna	Schwarzbeck	UHA9105	20/12/07	20/12/08	2262
34	TEMP & HUMIDITY Chamber	JISCO	J-RHC2	02/10/07	02/10/08	021031
35	Log Periodic Antenna	Schwarzbeck	UHALP9108A1	01/10/07	01/10/08	1098
36	Biconical Antenna	Schwarzbeck	VHA9103	01/10/07	01/10/08	2233
37	Digital Multimeter	H.P	34401A	20/03/08	20/03/09	3146A13475
38	Attenuator (10dB)	WEINSCHEL	23-10-34	05/10/07	05/10/08	BP4386
39	Attenuator (10dB)	WEINSCHEL	23-10-34	30/01/08	30/01/09	BP4387
40	High-Pass Filter	ANRITSU	MP526D	08/10/07	08/10/08	MP27756
41	Attenuator (3dB)	Agilent	8491B	01/08/08	01/08/09	MY39260700
42	20dB Attenuator	Aeroflex/Weinschel	86-20-11	25/10/07	25/10/08	432
43	10dB Attenuator	Aeroflex/Weinschel	86-10-11	25/10/07	25/10/08	446
44	10dB Attenuator	Aeroflex/Weinschel	86-10-11	25/10/07	25/10/08	408
45	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0088CAN	11/07/08	11/07/09	788
46	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0185CAN	11/07/08	11/07/09	790
47	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0215CAN	11/07/08	11/07/09	112
48	Amplifier (25dB)	Agilent	8447D	21/05/08	21/05/09	2944A10144
49	Amplifier (30dB)	Agilent	8449B	25/10/07	25/10/08	3008A01590
50	Amplifier (22dB)	H.P	8447E	27/02/08	27/02/09	2945A02865
51	Attenuator (20dB)	Aeroflex/Weinschel	86-20-11	25/10/07	25/10/08	432
52	Attenuator (10dB)	Aeroflex/Weinschel	86-10-11	25/10/07	25/10/08	446
53	Attenuator (10dB)	Aeroflex/Weinschel	86-10-11	25/10/07	25/10/08	408
54	Position Controller	TOKIN	5901T	N/A	N/A	14173
55	Driver	TOKIN	5902T2	N/A	N/A	14174
56	LISN	Kyorits	KNW-407	04/08/08	04/08/09	8-317-8
57	LISN	Kyorits	KNW-242	06/10/07	06/10/08	8-654-15
58	CVCF	NF Electronic	4400	N/A	N/A	344536 4420064
59	Software	ТоҮо ЕМІ	EP5/RE	N/A	N/A	Ver 2.0.800
60	Software	ToYo EMI	EP5/CE	N/A	N/A	Ver 2.0.801
61	Software	AUDIX	e3	N/A	N/A	Ver 3.0
62	Software	Agilent	Benchlink	N/A	N/A	A.01.09 021211