



# EMC TEST REPORT

**Report No. : EME-011032/01**  
**Model No. : F8T001**  
**Issued Date : Jan. 08, 2002**

**Applicant : Belkin Components**  
**501 West Walnut Street Compton, CA 90220**

**Test By : Intertek Testing Services Taiwan Ltd.**  
**No. 11, Ko-Tze-Nan Chia-Tung Li, Shiang-Shan District,**  
**Hsinchu, Taiwan, R.O.C.**

This test report consists of 27 pages in total. It may be duplicated completely for legal use with the allowance of the applicant. It shall not be reproduced except in full, without the written approval of ITS Laboratory. The test result in this report only applies to the tested sample.

Project Engineer

Elton Chen

Approved By

J. T. CHEN  
MANAGER (EMC LABORATORY)  
ETL SEMKO DIVISION



Reviewed By

JT Chen



**Table of Contents**

Summary of Tests ..... 4

1. General information ..... 5

    1.1 Identification of the EUT ..... 5

    1.2 Additional information about the EUT ..... 5

    1.3 Peripherals equipment..... 6

2. Test specifications ..... 7

    2.1 Test standard ..... 7

    2.2 Operation mode..... 7

    2.3 Modifications required for compliance..... 7

    2.4 Test equipment ..... 8

3. Modulated bandwidth test..... 9

    3.1 Operating environment ..... 9

    3.2 Test setup & procedure ..... 9

    3.3 Measured data of modulated bandwidth test results ..... 9

4. Carrier frequency separation test ..... 10

    4.1 Operating environment ..... 10

    4.2 Test setup & procedure ..... 10

    4.3 Measured data of carrier frequency separation test result ..... 10

5. Number of hopping frequencies test ..... 11

    5.1 Operating environment ..... 11

    5.2 Test setup & procedure ..... 11

    5.3 Measured data of number of hopping frequencies test result ..... 11

6. Time of occupancy (Dwell time) test..... 12

    6.1 Operating environment ..... 12

    6.2 Test setup & procedure ..... 12

7. Maximum Output Power test ..... 13

    7.1 Operating environment ..... 13

    7.2 Test setup & procedure ..... 13

    7.3 Measured data of peak power output test results ..... 13

8. RF Antenna Conducted Spurious test ..... 14

    8.1 Operating environment ..... 14

    8.2 Test setup & procedure ..... 14



# Intertek Testing Services

## ETL SEMKO

FCC ID. : K7SF8T001

Report No.: EME-011032/01

Page 3 of 27

8.3 Measured data of the highest conducted spurious emission test result.....	14
9. Radiated emission test .....	15
9.1 Operating environment .....	15
9.2 Test setup & procedure: The EUT is continuous transmitting.....	15
9.3 Emission limits.....	16
9.4 Radiated spurious emission test data .....	17
10. Emission on the band edge §FCC 15.247(C) .....	23
11. AC Line conducted emission §FCC 15.207.....	24
11.1 Operating environment .....	24
11.2 Test setup & procedure .....	24
11.3 Conducted emission data .....	25



**Summary of Tests**

**Bluetooth USB ADAPTER-Model: F8T001**  
**FCC ID: K7SF8T001**

Test	Reference	Results
Maximum Output Power test	15.247(b)	Complies
Carrier Frequency Separation test	15.247(a)(1)	Complies
Number of hopping frequencies test	15.247(a)(1)	Complies
Time of Occupancy (dwell time) test	15.247(a)(1)	Complies
20dB Bandwidth test	15.247(a)(1)	Complies
RF Antenna Conducted Spurious test	15.247(c)	Complies
Radiated Spurious Emission test	15.205, 15.209	Complies
Power Line Conducted Emission test	15.207	Complies



## 1. General information

### 1.1 Identification of the EUT

Manufacturer	: Belkin Components
Product	: Bluetooth USB Adapter
Model No.	: F8T001
FCC ID.	: K7SF8T001
Frequency Bands	: 2402MHz ~ 2480MHz
Channel Number	: 79
Frequency of Each Channel	: 2402 + k (MHz), k: 0 ~78
Hopping sequence	: Please refer to Technical Specification (technical spec.pdf) page 2.section 2.1.1 Hopping sequence
Type of Modulation	: GFSK, FHSS
Antenna Gain	: 1dBi max
Antenna Type	: Monopole antenna
Antenna Description	: The EUT uses a permanently connected antenna
Power Supply	: 5Vdc from PC
Power Cord	: N/A
Sample Received	: Dec. 13, 2001
Test Date(s)	: Dec. 13, 2001 to Jan. 03, 2002

A DoC report has been generated for the client.

### 1.2 Additional information about the EUT

**The EUT** is a Bluetooth device, and it is an external dongle, for enabling of Notebook and Desktop PC through USB interface to communicate wirelessly with other Bluetooth™ enabled devices. This dongle product provides hardware and software drivers to enable wireless experience under Windows 98/2000/ME/XP.

**F8T001** is compact in size, low in cost, and fast in implementation. It is a true saver for mobile and office workers to work intelligently in any different environment. With USB interface, the dongle is ready for Plug & Play. It also supports data transmission and is fully compliant with Bluetooth™ specification version 1.1 standard, class1, 2, & 3 operations, which allows up to 20 dBm output power, supporting operation range up to 100 meters.

For more detail features, please refer to User's manual as file name "installation guide.pdf"



**1.3 Peripherals equipment**

Peripherals	Manufacturer	Product No.	Serial No.	FCC ID
PC	IBM	634588V	BN3R1VC	FCC DoC Approved
Key Board	IBM	37L2548	0095996	FCC DoC Approved
Monitor	IBM	6331-0LN	23-NW855	ARSCM560S
Mouse	Logitech	850693-0001	LAZ82706831	FCC DoC Approved
Printer	HP	C2642A	TH86K1N2ZB	FCC DoC Approved
Modem	Dynalink	V1456VQE	00V230A00051494	FCC DoC Approved

Signal cable description:

USB Cable length 1.2m ×1



## **2. Test specifications**

### **2.1 Test standard**

The EUT was performed according to the procedures in FCC Part 15 Subpart C Section §15.207、§15.209、§15.247 and ANSI C63.4/1992.

The AC power conducted emissions was investigated over the frequency range from 0.45MHz to 30MHz using a receiver bandwidth of 9kHz. (15.207 paragraph)

Radiated emissions were investigated cover the frequency range from 30MHz to 1000MHz using a receiver RBW of 120kHz record QP reading, and the frequency over 1GHz using a spectrum analyzer RBW of 1MHz and 10Hz VBW record Average reading. (15.209 paragraph), the Peak reading recorded also on the report.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band were all meet limit requirement, thus we evaluate the EUT pass the specified test.

The EUT setup configurations please refer to the photo of test configuration in item.

### **2.2 Operation mode**

The EUT transmitted continuously during all the tests.

### **2.3 Modifications required for compliance**

No modification were installed during test performance to bring the product into compliance (Please note that this list does not include changes made specifically by Belkin Components Prior to compliance testing.)



# Intertek Testing Services

## ETL SEMKO

FCC ID. : K7SF8T001

Report No.: EME-011032/01

Page 8 of 27

### 2.4 Test equipment

Equipment	Brand	Frequency range	Model No.	Series No.	Cal.Date
EMI Receiver	Rohde & Schwarz	9kHz~2.75GHz	ESCS 30	825788/014	2001/05/29
Pulse Limiter	Rohde & Schwarz	9kHz~30MHz	ESH3-Z2	848.766/052	N/A
Spectrum Analyzer	Rohde & Schwarz	9kHz~30GHz	FSP 30	100137	2001/07/9
Horn Antenna	EMCO	1GHz~18GHz	3115	9906-5822	2001/09/10
Horn Antenna	SCHWARZBECK	14GHz~40GHz	BBHA 9170	159	2001/06/21
Bilog Antenna	SCHWARZBECK	25MHz~1.7GHz	VULB 9160	3111	2001/06/21
Turn Table	HDGmbH	N/A	DS 420S	420/669/01	N/A
Antenna Tower	HDGmbH	N/A	MA 240	240/573	N/A
RF Power Meter	Boonton	10kHz~100GHz	4230	27003	2001/06/12
Power Sensor	Boonton	30MHz~8GHz	51011-EMC	30395	2001/06/12
Power Sensor	Boonton	30MHz~8GHz	51011-EMC	30417	2001/06/12

Note:

1. The calibration interval of the above instruments is 12 months.





### 3. Modulated bandwidth test

#### 3.1 Operating environment

Temperature: 24 °C  
Relative Humidity: 65 %

#### 3.2 Test setup & procedure

The maximum 20dB bandwidth per FCC §15.247(a)(1)(i) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 100 kHz, the video bandwidth  $\geq$  RBW, and the SPAN may equal to approximately 2 to 3 times the 20dB bandwidth. The test was performed at 3 channels (lowest, middle and highest channel). The maximum 20dB modulation bandwidth is in the following Table.

See 20dB bandwidth plot as file name “20dB bandwidth plot.pdf”.

#### 3.3 Measured data of modulated bandwidth test results

Channel	Frequency (MHz)	Bandwidth (KHz)	Limit
Low	2401.806	300	500kHz
Middle	2440.804	296	500kHz
High	2479.804	296	500kHz

\* The EUT has its hopping function disable.



#### **4. Carrier frequency separation test**

##### **4.1 Operating environment**

Temperature: 24 °C  
Relative Humidity: 65 %

##### **4.2 Test setup & procedure**

The carrier frequency separation per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at  $\geq 1\%$  of the span, the video bandwidth  $\geq RBW$ , and the SPAN was wide enough to capture the peaks of two adjacent channels. The carrier frequency separation result is in the following Table.

See carrier frequency separation plot as file name “carrier frequency separation plot.pdf”.

##### **4.3 Measured data of carrier frequency separation test result**

Channel	Frequency (MHz)	Measurement Frequency separation (MHz)
1	2402	0.988
2	2403	

\* The EUT has its hopping function enable.



## 5. Number of hopping frequencies test

### 5.1 Operating environment

Temperature: 24 °C  
Relative Humidity: 65 %

### 5.2 Test setup & procedure

The number of hopping frequencies per FCC § 15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at  $\geq 1\%$  of the span, the video bandwidth  $\geq RBW$ , and the SPAN was the frequency band of operation. The carrier frequency separation result is in the following Table.

See number of hopping frequencies plot as file name “Number of hopping frequencies plot.pdf”.

### 5.3 Measured data of number of hopping frequencies test result

Frequency Range (MHz)	Number of hopping frequencies	Total hopping channels
2400 ~ 2428.5	27	79
2429 ~ 2454.5	26	
2455 ~ 2483.5	26	

\* The EUT has its hopping function enable.



## 6. Time of occupancy (Dwell time) test

### 6.1 Operating environment

Temperature: 24 °C  
Relative Humidity: 65 %

### 6.2 Test setup & procedure

The time of occupancy (Dwell time) per FCC § 15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 100kHz, the video bandwidth  $\geq$  RBW, and the zero span function of spectrum analyzer was enable, and then set the sweep time to 5 sec to detect the number of hoppings. The EUT has its hopping function enable.

The time of occupancy (Dwell time) is  $(52 \times 360\text{us})(\text{dwell time in 5 sec}) \times 6 = 112.32\text{ms} < 0.4\text{s}$  in 30sec.

See dwell time plot as file name “dwell time plot.pdf”.



**7. Maximum Output Power test**

**7.1 Operating environment**

Temperature: 24 °C  
Relative Humidity: 65 %

**7.2 Test setup & procedure**

The power output per FCC §15.247(b) was measured on the EUT using a 50 ohm SMA cable connected to spectrum analyzer. The RBW of spectrum analyzer was set to 10MHz, VBW=RBW. Power was read directly and cable loss correction (1dB) was added to the reading to obtain power at the EUT antenna terminals. The test was performed at 3 channels (lowest, middle and highest channel).

See Maximum Output Power plot as file name “Maximum Output Power plot CH1, CH6 and CH11.pdf”

**7.3 Measured data of peak power output test results**

Channel	Frequency (MHz)	C.B.L. (dB)	Reading (dBm)	Power Output		Limit (W)
				(dBm)	(mW)	
Low	2401.796	1	10.38	11.38	13.74	1
Middle	2440.824	1	10.93	11.93	15.59	1
High	2479.78	1	10.91	11.91	15.52	1

\* The EUT has its hopping function disable.

Remark:

1. C.B.L.: cable loss
2. Power output (dBm) = C.B.L. (dB) + Reading (dBm)
3. Power output (mW) =  $10^{(\text{Power output (dBm)}/10)}$



## **8. RF Antenna Conducted Spurious test**

### **8.1 Operating environment**

Temperature: 24 °C  
Relative Humidity: 65 %

### **8.2 Test setup & procedure**

Antenna spurious emission per FCC 15.247 (c) was measured from the EUT antenna port using a 50ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at  $\geq$ RBW.

Harmonics and spurious noise must be at least 20dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. The table below is the results from the highest emission for each channel within the authorized band. This table was used to determine the spurious limits for each channel.

See RF Conducted Emission plot as file name “RF Antenna Conducted plot.pdf”.

### **8.3 Measured data of the highest conducted spurious emission test result**

Channel	Frequency (MHz)	Emission level (dBm)	Limit
Low	2493.566	-32.26	-8.62
Middle	2533.83	-33.78	-8.07
High	741.98	-34.21	-8.09

Note: 1. Limit = peak power output – 20dB  
2. All the other emissions were very low the limit.

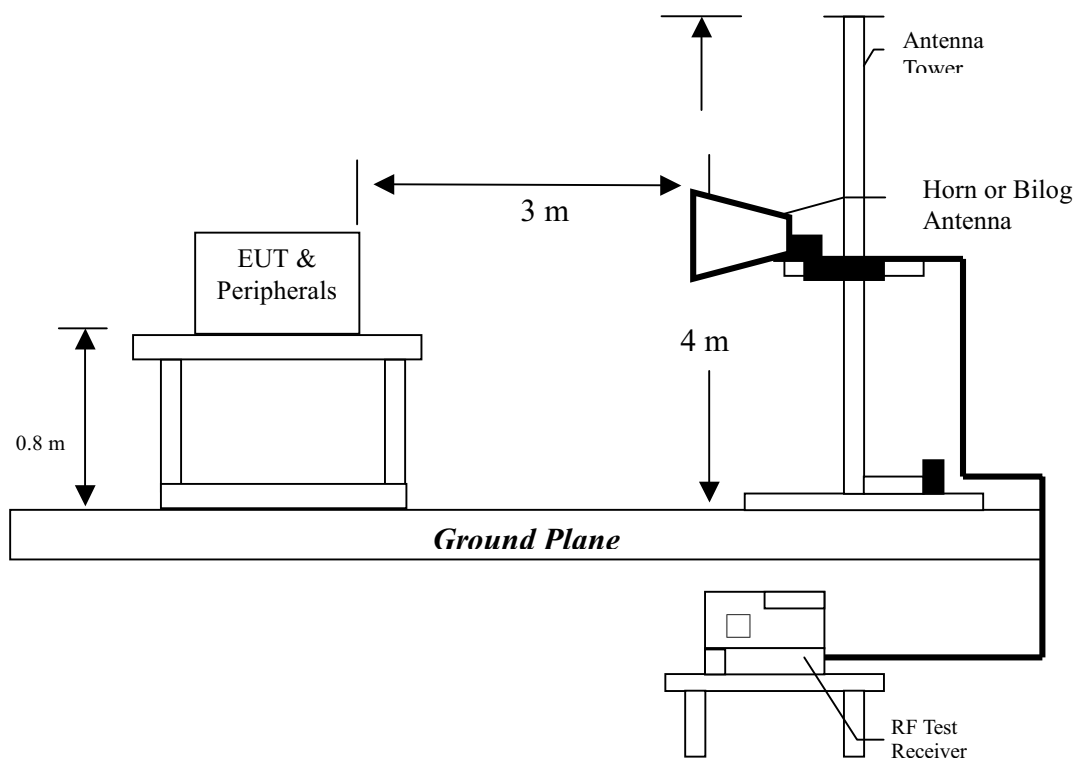
## 9. Radiated emission test

### 9.1 Operating environment

Temperature: 18 °C  
Relative Humidity: 57 %

### 9.2 Test setup & procedure: The EUT is continuous transmitting

The Diagram below shows the test setup, which is utilized to make these measurements.



The signal is maximized through rotation and placement in the three orthogonal axes. The EUT and its peripherals are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4/1992 on radiated measurement. Radiated emission measurement were performed from 30MHz to 40GHz or to the tenth harmonic of the highest fundamental frequency, which is lower.

The bandwidth below 1GHz setting on the field strength meter is 120kHz and above 1GHz is 1MHz.



### 9.3 Emission limits

The spurious Emission shall test through the 10th harmonic. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Frequency (MHz)	Limits (dB $\mu$ V/m@3m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

Uncertainty was calculated in accordance with NAMAS NIS 81. In the General Radiated Emission Test, the uncertainty is within  $\pm 2.5$ dB





#### 9.4 Radiated spurious emission test data

The radiated spurious emissions at

Frequency(MHz)	Margin
7206	-2.07

are less than uncertainty. This is within the stated measurement uncertainty, this may affect compliance determined in other test arrangements.

EUT : F8T001  
Test Mode : Transmit mode  
Test Condition : Low channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Reading (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
47.46	QP	V	8.29	13.03	21.32	40	-18.68
95.96	QP	V	10.17	11.07	21.24	43.5	-22.26
99.84	QP	V	10.56	12.60	23.16	43.5	-20.34
499.48	QP	V	20.01	6.81	26.82	46	-19.18
699.3	QP	V	24.93	9.36	34.29	46	-11.71
903.97	QP	V	26.98	10.62	37.60	46	-8.40
4804	PK	V	40.4	19.34	59.74	74	-14.26
4804	AV	V	40.4	11.09	51.49	54	-2.51
7206	PK	V	43.86	20.43	64.29	74	-9.71
7206	AV	V	43.86	8.07	51.93	54	-2.07
9608	PK	V	46.9	8.29	55.19	74	-18.81
9608	AV	V	46.9	2.13	49.03	54	-4.97
12010	PK	V	48.97	3.18	52.15	74	-21.85
12010	AV	V	48.97	-	-	54	-

\* The EUT has its hopping function disable.

Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss
3. All Readings below 1GHz are Peak, above are average value
4. All the Harmonics don't show on the above table were undetectable.
5. "--" means the value was undetectable.



# Intertek Testing Services

## ETL SEMKO

FCC ID. : K7SF8T001

Report No.: EME-011032/01

Page 18 of 27

EUT : F8T001  
Test Mode : Transmit mode  
Test Condition : Low channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Reading (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
47.46	QP	H	8.29	8.84	17.13	40	-22.87
99.84	QP	H	10.56	11.94	22.50	43.5	-21.00
147.37	QP	H	10.8	8.80	19.60	43.5	-23.90
300.63	QP	H	15.82	6.55	22.37	46	-23.63
502.39	QP	H	20.09	8.35	28.44	46	-17.56
699.3	QP	H	24.93	8.42	33.35	46	-12.65
4804	PK	H	40.4	18.73	59.13	74	-14.87
4804	AV	H	40.4	10.24	50.64	54	-3.36
7206	PK	H	43.86	18.73	62.59	74	-11.41
7206	AV	H	43.86	7.33	51.19	54	-2.81
9608	PK	H	46.9	7.34	54.24	74	-19.76
9608	AV	H	46.9	1.98	48.88	54	-5.12
12010	PK	H	48.97	1.55	50.52	74	-23.48
12010	AV	H	48.97	-	-	54	-

\* The EUT has its hopping function disable.

#### Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss
3. All Readings below 1GHz are Peak, above are average value
4. All the Harmonics don't show on the above table were undetectable.
5. "--" means the value was undetectable.



**The radiated spurious emissions at**

Frequency(MHz)	Margin
7323	-2.23

**are less than uncertainty. This is within the stated measurement uncertainty, this may affect compliance determined in other test arrangements.**

EUT : F8T001  
Test Mode : Transmit mode  
Test Condition : Middle channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Reading (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
47.46	QP	V	8.29	13.05	21.34	40	-18.66
95.96	QP	V	10.17	9.79	19.96	43.5	-23.54
99.84	QP	V	10.56	13.57	24.13	43.5	-19.37
502.39	QP	V	20.09	5.95	26.04	46	-19.96
699.3	QP	V	24.93	9.14	34.07	46	-11.93
903.97	QP	V	26.98	10.95	37.93	46	-8.07
4882	PK	V	40.4	18.2	58.6	74	-15.4
4882	AV	V	40.4	9.92	50.32	54	-3.68
7323	PK	V	43.86	19.97	63.83	74	-10.17
7323	AV	V	43.86	7.91	51.77	54	-2.23
9764	PK	V	46.9	9.97	56.87	74	-17.13
9764	AV	V	46.9	2.08	48.98	54	-5.02
12205	PK	V	48.97	3.33	52.3	74	-21.7
12205	AV	V	48.97	-	-	54	-

\* The EUT has its hopping function disable.

**Remark:**

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss
3. All Readings below 1GHz are Peak, above are average value
4. All the Harmonics don't show on the above table were undetectable.
5. "--" means the value was undetectable.



**The radiated spurious emissions at**

Frequency(MHz)	Margin
7323	-2.12

**are less than uncertainty. This is within the stated measurement uncertainty, this may affect compliance determined in other test arrangements.**

EUT : F8T001  
Test Mode : Transmit mode  
Test Condition : Middle channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Reading (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
47.46	QP	H	8.29	9.33	17.62	40	-22.38
99.84	QP	H	10.56	10.39	20.95	43.5	-22.55
147.37	QP	H	10.56	9.53	20.33	43.5	-23.17
299.66	QP	H	15.79	7.86	23.65	46	-22.35
499.48	QP	H	20.01	9.73	29.74	46	-16.26
699.3	QP	H	24.93	8.33	33.26	46	-12.74
4882	PK	H	40.4	19.37	59.77	74	-14.23
4882	AV	H	40.4	9.34	49.74	54	-4.26
7323	PK	H	43.86	19.94	63.8	74	-10.2
7323	AV	H	43.86	8.02	51.88	54	-2.12
9764	PK	H	46.9	9.07	55.97	74	-18.03
9764	AV	H	46.9	2.33	49.23	54	-4.77
12205	PK	H	48.97	2.94	51.91	74	-22.09
12205	AV	H	48.97	-	-	54	-

\* The EUT has its hopping function disable.

**Remark:**

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss
3. All Readings below 1GHz are Peak, above are average value
4. All the Harmonics don't show on the above table were undetectable.
5. "--" means the value was undetectable.



# Intertek Testing Services

## ETL SEMKO

FCC ID. : K7SF8T001

Report No.: EME-011032/01

Page 21 of 27

EUT : F8T001  
Test Mode : Transmit mode  
Test Condition : High channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Reading (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
47.46	QP	V	8.29	12.48	20.77	40	-19.23
299.66	QP	V	15.79	9.73	25.52	46	-20.48
502.39	QP	V	20.09	6.56	26.65	46	-19.35
703.18	QP	V	24.93	8.48	33.41	46	-12.59
903.97	QP	V	26.98	9.15	36.13	46	-9.87
912.7	QP	V	26.95	9.68	36.63	46	-9.37
4960	PK	V	40.4	21.34	61.74	74	-12.26
4960	AV	V	40.4	10.72	51.12	54	-2.88
7440	PK	V	43.86	18.34	62.2	74	-11.8
7440	AV	V	43.86	7.34	51.2	54	-2.8
9920	PK	V	46.9	8.24	55.14	74	-18.86
9920	AV	V	46.9	2.37	49.27	54	-4.73
12400	PK	V	48.97	3.1	52.07	74	-21.93
12400	AV	V	48.97	-	-	54	-

\* The EUT has its hopping function disable.

#### Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss
3. All Readings below 1GHz are Peak, above are average value
4. All the Harmonics don't show on the above table were undetectable.
5. "--" means the value was undetectable.



**The radiated spurious emissions at**

Frequency(MHz)	Margin
7440	-2.04

**are less than uncertainty. This is within the stated measurement uncertainty, this may affect compliance determined in other test arrangements.**

EUT : F8T001  
 Test Mode : Transmit mode  
 Test Condition : High channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Reading (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
47.46	QP	H	8.29	8.05	16.34	40	-23.66
99.84	QP	H	10.56	10.70	21.26	43.5	-22.24
143.49	QP	H	10.56	9.22	19.78	43.5	-23.72
299.66	QP	H	15.79	9.10	24.89	46	-21.11
499.48	QP	H	20.01	8.55	28.56	46	-17.44
703.18	QP	H	24.93	7.61	32.54	46	-13.46
4960	PK	H	40.4	18.34	58.74	74	-15.26
4960	AV	H	40.4	10.51	50.91	54	-3.09
7440	PK	H	43.86	19.09	62.95	74	-11.05
7440	AV	H	43.86	8.1	51.96	54	-2.04
9920	PK	H	46.9	9.72	56.62	74	-17.38
9920	AV	H	46.9	2.11	49.01	54	-4.99
12400	PK	H	48.97	3.41	52.38	74	-21.62
12400	AV	H	48.97	-	-	54	-

\* The EUT has its hopping function disable.

**Remark:**

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss
3. All Readings below 1GHz are Peak, above are average value
4. All the Harmonics don't show on the above table were undetectable.
5. "--" means the value was undetectable.



**10. Emission on the band edge §FCC 15.247(C)**

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

See band-edge plot as file name “band-edge plot.pdf”.

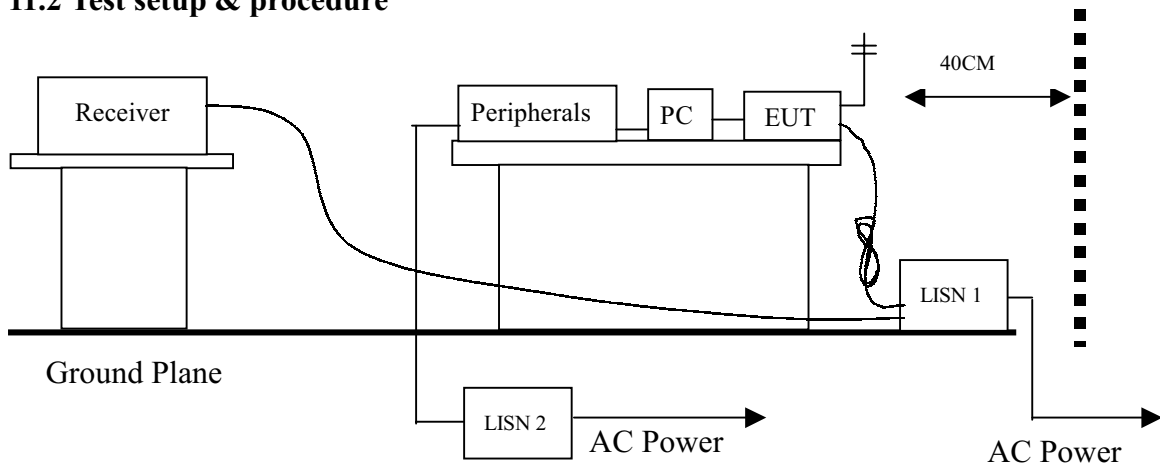
**11. AC Line conducted emission §FCC 15.207**

**11.1 Operating environment**

Temperature: 24 °C

Relative Humidity: 65 %

**11.2 Test setup & procedure**



The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.

Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4/1992 on conducted measurement.

The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

See AC line conduction plot as file name “AC line conduction plot.pdf”.

**Emission Limit**

FCC Part 15 Paragraph 15.207		
Freq. (MHz)	Maximum RF Line Voltage	
	uV	dBuV
0.45 - 30	250	48.0





**11.3 Conducted emission data**

EUT : F8T001  
 Test Channel : Low channel  
 Test Mode : Transmit mode

Power Line (circle)	Freq. (MHz)	Reading (dB $\mu$ V) QP	Limit (dB $\mu$ V) QP	Margin (dB) QP
LINE	2.2	29.4	48	-18.60
LINE	3.435	29.2	48	-18.80
LINE	5.53	28.3	48	-19.70
LINE	7.3	37.6	48	-10.40
LINE	8.535	38.1	48	-9.90
LINE	12.93	28.6	48	-19.40
NEUTRAL	0.53	31.1	48	-16.90
NEUTRAL	0.618	32.3	48	-15.70
NEUTRAL	0.882	28.6	48	-19.40
NEUTRAL	0.97	30.6	48	-17.40
NEUTRAL	3.17	30.8	48	-17.20
NEUTRAL	7.034	32.3	48	-15.70
NEUTRAL	13.634	30.2	48	-17.80

\* The EUT has its hopping function disable.

**Remark:**

1. The reading value including cable loss and LISN factor.
2. Uncertainty was calculated in accordance with NAMAS NIS 81. In the Conducted Emission Test, the uncertainty is within  $\pm 2$ dB
3. The average measurement was not performed when the peak measured data under the limit of average detection.



# Intertek Testing Services

## ETL SEMKO

FCC ID. : K7SF8T001

Report No.: EME-011032/01

Page 26 of 27

EUT : F8T001  
Test Channel : Middle channel  
Test Mode : Transmit mode

Power Line (circle)	Freq. (MHz)	Reading (dB $\mu$ V) QP	Limit (dB $\mu$ V) QP	Margin (dB) QP
LINE	2.954	29.9	48	-18.10
LINE	3.17	32.3	48	-15.70
LINE	6.066	33	48	-15.00
LINE	7.034	35.6	48	-12.40
LINE	7.826	36.3	48	-11.70
LINE	8.97	35.4	48	-12.60
NEUTRAL	0.53	31.1	48	-16.90
NEUTRAL	0.618	32.2	48	-15.80
NEUTRAL	2.202	30.3	48	-17.70
NEUTRAL	3.434	30.5	48	-17.50
NEUTRAL	3.866	29	48	-19.00
NEUTRAL	7.034	32.7	48	-15.30
NEUTRAL	13.37	30.5	48	-17.50

\* The EUT has its hopping function disable.

#### Remark:

1. The reading value including cable loss and LISN factor.
2. Uncertainty was calculated in accordance with NAMAS NIS 81. In the Conducted Emission Test, the uncertainty is within  $\pm 2$ dB
3. The average measurement was not performed when the peak measured data under the limit of average detection.



# Intertek Testing Services

## ETL SEMKO

FCC ID. : K7SF8T001

Report No.: EME-011032/01

Page 27 of 27

EUT : F8T001  
Test Channel : High channel  
Test Mode : Transmit mode

Power Line (circle)	Freq. (MHz)	Reading (dB $\mu$ V) QP	Limit (dB $\mu$ V) QP	Margin (dB) QP
LINE	3.17	32.6	48	-15.40
LINE	3.434	32.5	48	-15.50
LINE	3.866	30.6	48	-17.40
LINE	7.034	36	48	-12.00
LINE	7.298	35.1	48	-12.90
LINE	8.53	35.7	48	-12.30
NEUTRAL	0.53	31.1	48	-16.90
NEUTRAL	0.618	32.2	48	-15.80
NEUTRAL	0.794	29.4	48	-18.60
NEUTRAL	2.202	33.4	48	-14.60
NEUTRAL	3.434	32.2	48	-15.80
NEUTRAL	7.034	32.6	48	-15.40
NEUTRAL	13.37	29.7	48	-18.30

\* The EUT has its hopping function disable.

Remark:

1. The reading value including cable loss and LISN factor.
2. Uncertainty was calculated in accordance with NAMAS NIS 81. In the Conducted Emission Test, the uncertainty is within  $\pm 2$ dB
3. The average measurement was not performed when the peak measured data under the limit of average detection.