



# Intertek Testing Services

## ETL SEMKO

FCC ID. : K7SF8T001

### 1. 20dB Bandwidth test

#### 1.1 Operating environment

Temperature: 24 °C  
Relative Humidity: 65 %

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

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit
Low	2401.824	346	500kHz
Middle	2440.820	342	500kHz
High	2479.816	334	500kHz



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### 2. Carrier Frequency Separation test

#### 2.1 Operating environment

Temperature: 24 °C  
Relative Humidity: 65 %

#### 2.2 Measured data of Carrier Frequency Separation test result

Channel	Frequency (MHz)	Measurement Frequency separation (MHz)
1	2401.996	1.004
2	2403.000	



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### 3. Number of hopping frequencies test

#### 3.1 Operating environment

Temperature: 24 °C  
Relative Humidity: 65 %

#### 3.2 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	



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### 4. Time of Occupancy (dwell time) test

#### 4.1 Operating environment

Temperature:	24	°C
Relative Humidity:	65	%

The time of occupancy (Dwell time) is  $(19 \times 280\text{us})(\text{dwell time in 3 sec}) \times 10 = 53.2\text{ms}$   
< 0.4s in 30sec.



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### 5. Peak power output test

#### 5.1 Operating environment

Temperature: 24 °C  
Relative Humidity: 65 %

#### 5.2 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	10.52	11.52	14.19	1
Middle	2440.824	1	11.05	11.90		1
High	2479.78	1	11.13	11.87		1

Remark:

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



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### 6. RF Antenna Conducted Spurious test

#### 6.1 Operating environment

Temperature: 24 °C  
Relative Humidity: 65 %

#### 6.2 Measured data of the highest RF Antenna Conducted Spurious test result

Channel	Max Spurious level at Frequency (MHz)	Spurious Emission level (dBm)	Limit (dBm)
Low	2649.589	-20.45	-13.77
Middle	2689.853	-19.10	-15.32
High	2232.540	-18.63	-15.79

Note: 1. Limit = peak power output (in 100kHz RBW) – 20dB  
2. All the other emissions were very low the limit.



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### 7. Radiated spurious emission test data

#### 7.1 Measurement results: frequencies equal to or less than 1 GHz

EUT : F8T001

Test Mode : Transmit mode

Test Condition : The EUT has its hopping function enable

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Reading (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
55.2	QP	V	12.9	20.8	33.7	40.0	-6.3
80.4	QP	V	9.5	19.9	29.4	40.0	-10.6
128.9	QP	V	13.3	27.5	40.8	43.5	-2.7
167.7	QP	V	14.4	16.1	30.5	43.5	-13.0
235.6	QP	V	12.6	13.9	26.5	46.0	-19.5
251.2	QP	V	13.2	16.6	29.8	46.0	-16.2
59.1	QP	H	13.1	14.6	27.7	40.0	-12.3
78.5	QP	H	9.8	19.0	28.8	40.0	-11.2
99.8	QP	H	11.0	19.6	30.6	43.5	-12.9
123.1	QP	H	13.0	27.4	40.4	43.5	-3.1
161.9	QP	H	14.8	19.7	34.5	43.5	-9.0
227.9	QP	H	12.2	17.6	29.8	46.0	-16.2

Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor



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## ETL SEMKO

FCC ID. : K7SF8T001

### 7.2 Measurement results: frequency above 1GHz

EUT : F8T001  
Test Channel : Low  
Test Mode : Transmitter

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Reading (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
4804	PK	V	28.02	38.7	44.61	55.29	74	-18.71
4804	AV	V	28.02	38.7	37.23	47.91	54	-6.09
7206	PK	V	28.02	43.86	42.89	58.73	74	-15.27
7206	AV	V	28.02	43.86	30.38	46.22	54	-7.78
9608	PK	V	28.02	46.9	-	-	74	-
9608	AV	V	28.02	46.9	-	-	54	-
12010	PK	V	28.02	48.97	-	-	74	-
12010	AV	V	28.02	48.97	-	-	54	-
4804	PK	H	28.02	38.7	40.85	51.53	74	-22.47
4804	AV	H	28.02	38.7	30.3	40.98	54	-13.02
7206	PK	H	28.02	43.86	41.49	57.33	74	-16.67
7206	AV	H	28.02	43.86	30.77	46.61	54	-7.39
9608	PK	H	28.02	46.9	-	-	74	-
9608	AV	H	28.02	46.9	-	-	54	-
12010	PK	H	28.02	48.97	-	-	74	-
12010	AV	H	28.02	48.97	-	-	54	-

#### Remark:

1. Corrected Level = Reading Level + Correction Factor – Preamp
2. Correction Factor = Antenna Factor + Cable Loss
3. “-” means the emission is below the noise floor.





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## ETL SEMKO

FCC ID. : K7SF8T001

EUT : F8T001  
Test Channel : Middle  
Test Mode : Transmitter

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Reading (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
4882	PK	V	28.02	38.7	42.78	53.46	74	-20.54
4882	AV	V	28.02	38.7	32.99	43.67	54	-10.33
7323	PK	V	28.02	43.86	43.87	59.71	74	-14.29
7323	AV	V	28.02	43.86	30.7	46.54	54	-7.46
9764	PK	V	28.02	46.9	-	-	74	-
9764	AV	V	28.02	46.9	-	-	54	-
12205	PK	V	28.02	49.12	-	-	74	-
12205	AV	V	28.02	49.12	-	-	54	-
4882	PK	H	28.02	38.7	41.06	51.74	74	-22.26
4882	AV	H	28.02	38.7	28.71	39.39	54	-14.61
7323	PK	H	28.02	43.86	41.63	57.47	74	-16.53
7323	AV	H	28.02	43.86	30.37	46.21	54	-7.79
9764	PK	H	28.02	46.9	-	-	74	-
9764	AV	H	28.02	46.9	-	-	54	-
12205	PK	H	28.02	49.12	-	-	74	-
12205	AV	H	28.02	49.12	-	-	54	-

**Remark:**

1. Corrected Level = Reading Level + Correction Factor – Preamp
2. Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor.



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## ETL SEMKO

FCC ID. : K7SF8T001

EUT : F8T001  
Test Channel : High  
Test Mode : Transmitter

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Reading (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
4960	PK	V	28.02	38.7	41.49	52.17	74	-21.83
4960	AV	V	28.02	38.7	29.27	39.95	54	-14.05
7440	PK	V	28.02	43.89	42.95	58.82	74	-15.18
7440	AV	V	28.02	43.89	29.83	45.7	54	-8.3
9920	PK	V	28.02	46.88	43.34	62.2	74	-11.8
9920	AV	V	28.02	46.88	31.08	49.94	54	-4.06
12400	PK	V	28.02	49.26	-	-	74	-
12400	AV	V	28.02	49.26	-	-	54	-
4960	PK	H	28.02	38.7	39.38	50.06	74	-23.94
4960	AV	H	28.02	38.7	28.11	38.79	54	-15.21
7440	PK	H	28.02	43.89	41.58	57.45	74	-16.55
7440	AV	H	28.02	43.89	29.56	45.43	54	-8.57
9920	PK	H	28.02	46.88	-	-	74	-
9920	AV	H	28.02	46.88	-	-	54	-
12400	PK	H	28.02	49.26	-	-	74	-
12400	AV	H	28.02	49.26	-	-	54	-

Remark:

1. Corrected Level = Reading Level + Correction Factor – Preamp
2. Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor.



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## ETL SEMKO

FCC ID. : K7SF8T001

### 8. Emission on the band edge §FCC 15.247(C)

#### 8.1 Operating environment

Temperature: 24 °C  
Relative Humidity: 65 %

#### 8.2 Measured data of the emission on the band edge

Channel	Spurious Emission at 2310~2390MHz		Delta value (dB)	Limit (dB)
Low	Frequency (MHz)	Level (dBm)	-40.59	20
	2389.608	-67.68		
Channel	Spurious Emission at 2483.5~2500MHz		Delta value (dBm)	Limit (dB)
High	Frequency (MHz)	Level (dBm)	-38.91	20
	2483.752	-65.10		



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## ETL SEMKO

FCC ID. : K7SF8T001

### 9. Power Line Conducted Emission test §FCC 15.207

#### 9.1 Power Line Conducted Emission test data

EUT : F8T001  
Test Mode : Transmitter Mode  
Test Condition : The EUT has its hopping function enable

Power Line (circle)	Freq. (MHz)	Reading (dB $\mu$ V) QP	Limit (dB $\mu$ V) QP	Margin (dB) QP
LINE	3.81800	36.7	48.00	-11.30
LINE	6.81800	33.8	48.00	-14.20
LINE	11.99400	33.6	48.00	-14.40
LINE	15.81000	39.8	48.00	-8.20
LINE	17.53000	39.0	48.00	-9.00
LINE	22.44200	36.5	48.00	-11.50
NEUTRAL	0.54600	36.9	48.00	-11.10
NEUTRAL	0.66600	34.4	48.00	-13.60
NEUTRAL	0.68200	35.2	48.00	-12.80
NEUTRAL	3.90600	35.8	48.00	-12.20
NEUTRAL	17.17000	44.3	48.00	-3.70
NEUTRAL	17.89800	43.5	48.00	-4.50
NEUTRAL	18.89800	40.3	48.00	-7.70

#### 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  $\pm 2.6$ dB