



SOCIETÀ PER L'ELETTRONICA s.r.l.

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## **Exhibit 5: EMI Test Report**

**External Radio Frequency  
Linear Amplifier  
Model Expert 1.5K-FA**



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## EMI Test Report

**Product Name:** EXPERT 1.5K-FA

**Regulation:** FCC, Part 97 Sub Part D

**Date of test:** February 2017

**Tested by:** Dr. Eng. Gianfranco Scasciafratti SPE srl.

**Test Method:** FCC, Part 97.317 (a) (1)(2)(3), (b)(1)(2), Part 97.307 (a), (b), (c), (d).

### Responsible Parties

**Manufacturer:** SPE.srl. Italy

**Applicant:** Dr. Eng. Gianfranco Scasciafratti SPE.srl. Italy

**EUT Type/Model #:** Linear Amplifier SPE EXPERT 1.5K-FA

**Test Location:** SPE srl Rome.

### EUT Description

The EUT (EXPERT 1.5K-FA) is a Linear Amplifier for Amateur Radio Bands.

### Reason for Test

Qualification for FCC Part 97

Change made during test: none

Deviation from standard test method: none

### Test Summary

The EXPERT 1.5K-FA complied with FCC Part 97 Subpart D, 97.307 and 97.317 Limits for Amateur Radio equipment when tested in the system configuration defined herein.

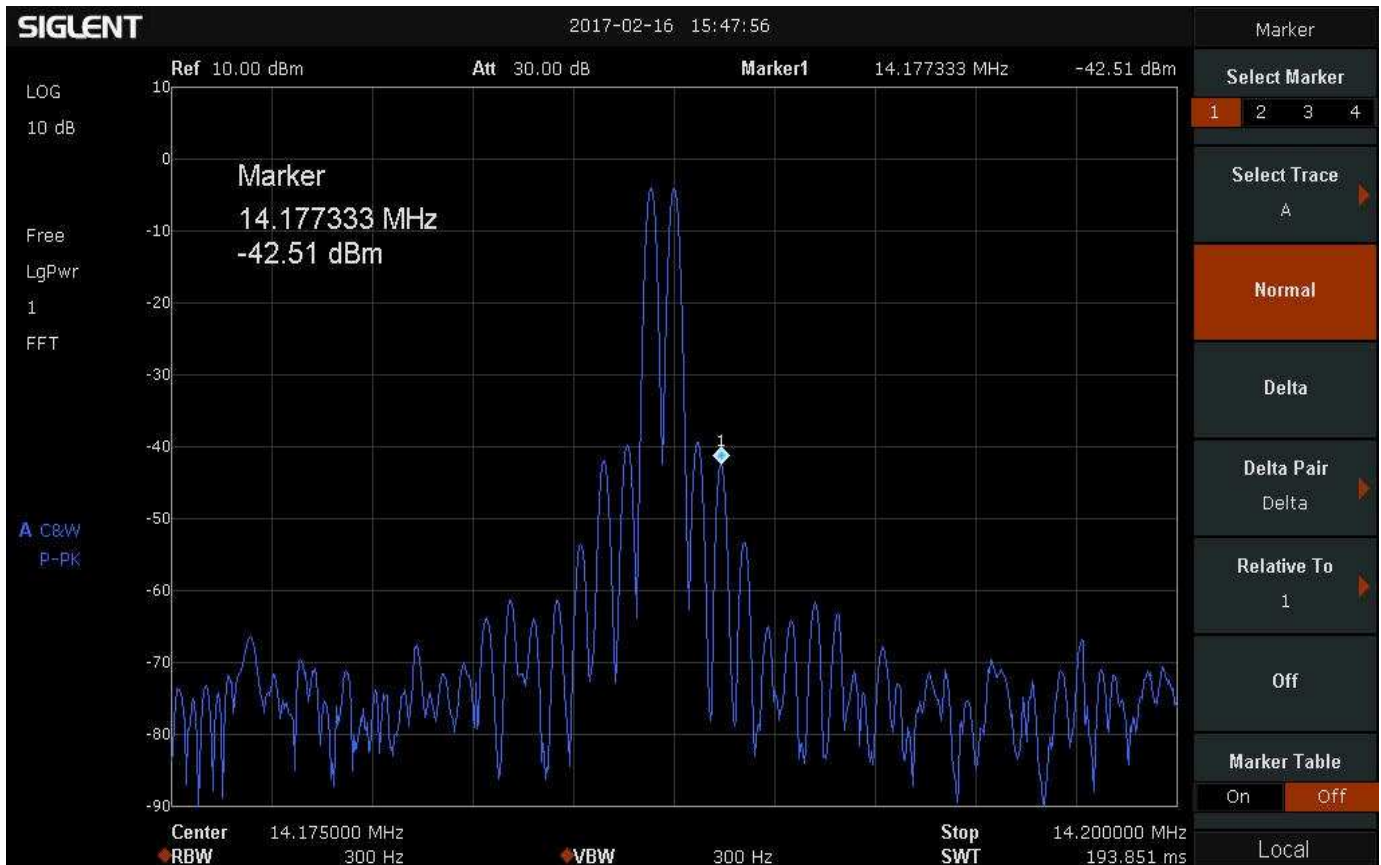
The following table indicates the measurement points and test results for the harmonic emission to the tenth order:



Power Gain per 97.317 (a), (2).				Spurious emission per 97.307 (d), (e).				
Frequency f1 MHz	Input Power, W	Output Power, W	Amplifier Gain, dB	2f1 dBc	3f1 dBc	4f1 dBc	5f1 dBc	6-10 f1 dBc worst case
1.900	53.0	1500	14.5	-59.9	-54.6	> -70	-51.9	> -60
3.750	52.6	1500	14.6	-57.6	-54.7	> -70	-54.4	> -60
7.150	51.3	1500	14.6	-59.4	-60.7	> -70	-47.8	> -60
10.125	51.0	1500	14.7	-58.0	-63.8	> -70	-47.3	> -60
14.175	49.0	1500	14.8	-53.7	-60.5	> -70	-60.0	> -60
18.100	49.0	1500	14.8	-64.0	> -70	> -70	-60.9	> -70
21.225	49.4	1500	14.8	-66.5	-55.7	> -70	> -70	> -70
24.930	49.5	1500	14.8	-48.5	> -70	> -70	> -70	> -70
28.500	49.7	1500	14.8	55.0	> -70	> -70	-61.6	> -65
50.250	52.0	1500	14.6	> -65	> -70	> -70	> -70	> -70
The amplifier conforms per 97.317 (a), (1). See Spurious emission per 97.307 (d), (e). The Power Gain was less than 15 dB. See Power Gain per 97.317 (a), (2).								
Amplifier was not capable of operation on any frequency outside the radio amateur band, 26-28 MHz included, for the look-up table in its software per 97.317 (a), (3). Conformance to 97.317 (b), (1), (2).								

The following table indicates the measurements and test results for the intermodulation distortions to the 11 th order.

Intermodulation in dB per 97.307 (a),(b)						
Freq. (MHz)	Output Power W Pep	D3 dB	D5 dB	D7 dB	D9 dB	D11 and higher dB
1.800	1500	-30.8	-39.5	-43.5	>-51.3	> -60
3.750	1500	-34.9	-40.8	-48.0	-51.9	> -60
7.150	1500	-33.6	-41.2	-51.2	-55.4	> -60
10.125	1500	-32.3	-40.7	-51.2	-55.4	> -60
14.175	1500	-34.2	-42.2	-51.5	-52.7	> -60
18.100	1500	-31.3	-39.1	-49.4	-55.9	> -60
21.225	1500	-31.4	-40.8	-51.7	-55.8	> -60
24.930	1500	-30.2	-39.2	-53.7	-53.6	> -60
28.500	1500	-30.8	-39.8	-51.9	-52.6	> -60
50.250	1500	-31.1	-39.4	-54.7	> -55.3	> -60



**Pic. 14.175 MHz 1.5KW Two Tone Test, Best Measure**



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### **EUT Technical Data**

**Description:** Linear Amplifier EXPERT 1.5K-FA.

**Manuf / Model:** SPE Italy / EXPERT 1.5K-FA.

**Serial # :** 17300001.

**FCC / FTZ Ident.:** 2ADK5GC324810.

**Power (Rated):** 100-255 Vac 50/60 Hz.

**Power (Tested):** 230 Vac 50 Hz.

**Internal Options:** None.

**Frequencies Amplified:** Amateur Radio Bands from 1.8 MHz through 54 MHz.

### **Support Equipment Data**

**Description:** HF Transceiver.

**Manuf / Model:** ICOM / IC-7800.

**Serial # :** 0301295

**Manuf / Model:** ICOM / IC-7400.

**Serial # :** 0303147

**Power :** 230 Vac 50 Hz.

**Internal Options:** None.

**Frequencies Generated:** Amateur Radio Bands from 1.8 MHz through 54 MHz.

**Description:** Two Tone Generator.

**Signal Generators:** 2 x ICOM Transceivers.

**Combiner:** made in SPE

**Internal Options:** None.

**Frequency difference of the two generators:** 1 KHz.

### **Cables Description**

Transceivers to Inputs Combiner 2xRG142, 1m length.

Output Combiner to input Power Meter RG142, 75cm length.

Output Power Meter to 1KW Attenuator RG213U, 1m length.

50 W Attenuator to Spectrum Analyzer RG142, 1.5m length.

### **EUT I/O Ports**

EXPERT 1.5K-FA.

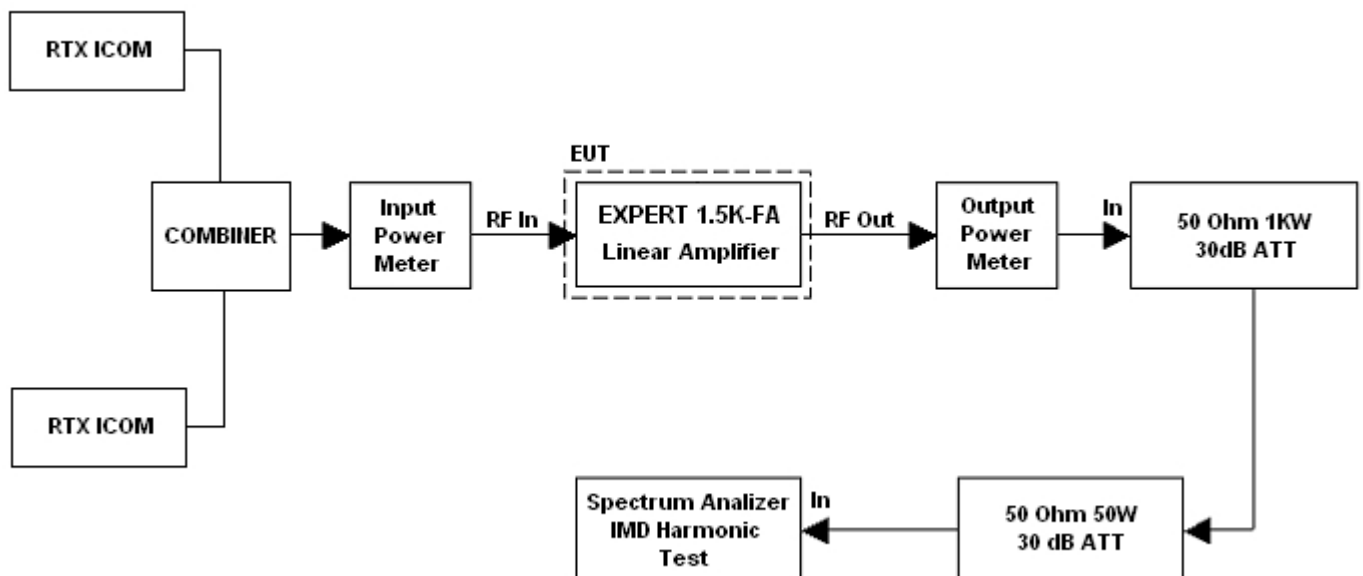
RF INPUT 50 Ohm = INPUT1.

RF OUTPUT 50 Ohm = ANT1.

Mains AC Input 230 Vac 50 Hz.



#	Equipment Type	Manufacturer	Model #	Serial #	Condition
1	Spectrum Analyzer	SIGLENT	SSA3021X	3XJA4160556	Calibrated Oct.12.2016
2	Tone Generator	ICOM	7800	0301295	Verified
3	Tone Generator	ICOM	7400	0303147	Verified
4	Power Meter	TELEPOST	LP 700	00101	Verified
5	Power Sensor	TELEPOST	LPC 501	N / A	Verified
6	1KW 30 dB ATT	Bird Electronic	8327 - 300	1928	Verified
7	50W 30 dB ATT	JFW	50 FHC 30	N / A	Verified



**Setup Block Diagram for IMD test**