Nemko Test Report: 10239689RUS1

Applicant: EF Johnson Company
1440 Corporate Drive
Irving, TX 75308
USA

Equipment Under Test: (E.U.T.) Model Name: Viking VP 600
Model Number: 242-5710

FCC Identifier: ATH2425710

Industry Canada Identifier: 933B-2425710

In Accordance With: **FCC Part 90, Subpart I and Industry Canada, RSS-119, Issue 11**
Private Land Mobile Transmitter

TESTED BY: _____ **DATE:** 25 April 2013
David Light, Wireless Engineer

APPROVED BY: _____ **DATE:** 29 April 2013
Michael Cantwell, Reviewer

Total Number of Pages: 19

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Section 1. Summary of Test Results

Manufacturer: EF Johnson Company

Model Name: Viking VP 600

Model Number: 242-5710

Serial No.: 51100122122012

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 90, Subpart I and Industry Canada RSS-119, Issue 11. EIA/TIA 603 was used as a test method for these measurements.

☐	New Submission	☒	Production Unit
☒	Class II Permissive Change	☐	Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.
See " Summary of Test Data".

NVLAP Lab Code 100426-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. Nemko USA, Inc. is a NVLAP accredited laboratory.

Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
RF Power Output	90.205 / 5.4.1	Complies
Audio Frequency Response	TIA EIA-603.3.2.6	NA
Audio Low-Pass Filter Response	TIA EIA-603.3.2.6	NA
Modulation Limiting	TIA EIA-603.3.2.6	NA
Occupied Bandwidth	90.210 / / 5.5.8 Table 3	Complies
Spurious Emissions at Antenna Terminals	90.210 / 5.5.8 Table 3	Complies
Field Strength of Spurious Emissions	90.210 / 5.5.8 Table 3	NT
Frequency Stability	90.213 / 5.3	NT
Transient Frequency Behavior	90.214 / 5.9	NT

Footnotes:

NA: The modulation tested has no audio components.

NT: These tests were performed under the original FCC/IC filing.

The radio was tested to add emission designator 8K10F7E

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Section 2. General Equipment Specification

Transmitter

Supply Voltage Input:	7.4 Vdc Lithium Ion Battery
Frequency Range:	136 to 174 MHz
Tunable Bands:	1

Type(s) of Modulation:

F3E (Voice)	F1D	F1E	F7E	Other
☐	☐	☐	☒	☐

Internal/External Data Source:	Internal (Vocoded voice)
Emission Designator:	8K10F7E
Output Impedance:	50 ohms
RF Power Output (rated):	5 watts
Channel Spacing(s):	12.5 kHz
Operator Selection of Operating Frequency:	Pre-programmed channel selection

System Description

The VP 600 is a 5 watt VHF radio for mobile radio services. The radio functions as a normal Push-to-Talk type radio/

Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.985
TESTED BY: David LightTom Tidwell & Debbie Jensen	DATE: 25 April 2013

Measurement Results: Complies.

Measurement Data:

Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (Watts)
154.225	36.9	4.9

Rated Output Power: 5.0 watts

Spectrum Analyzer Setting: RBW/VBW = 1 MHz
Peak Detector

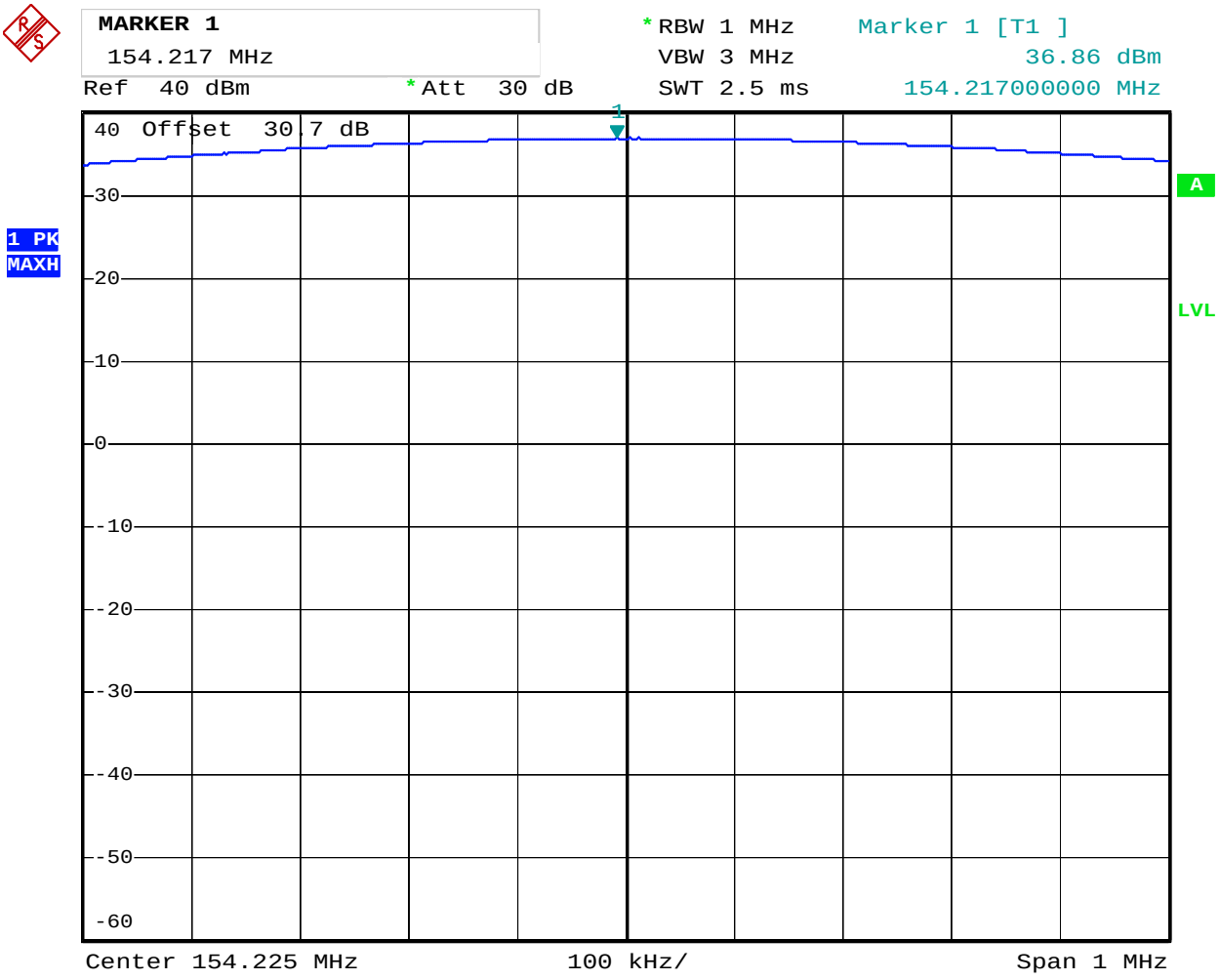
Equipment Used: 1036-1082-1064-1065

Measurement Uncertainty: +/- 1.7 dB

Temperature: 20 °C

Relative Humidity: 45 %

Test Data



Date: 24.APR.2013 22:55:08

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.989
TESTED BY: David LightTom Tidwell & Debbie Jensen	DATE: 25 April 2013

Measurement Results: Complies.

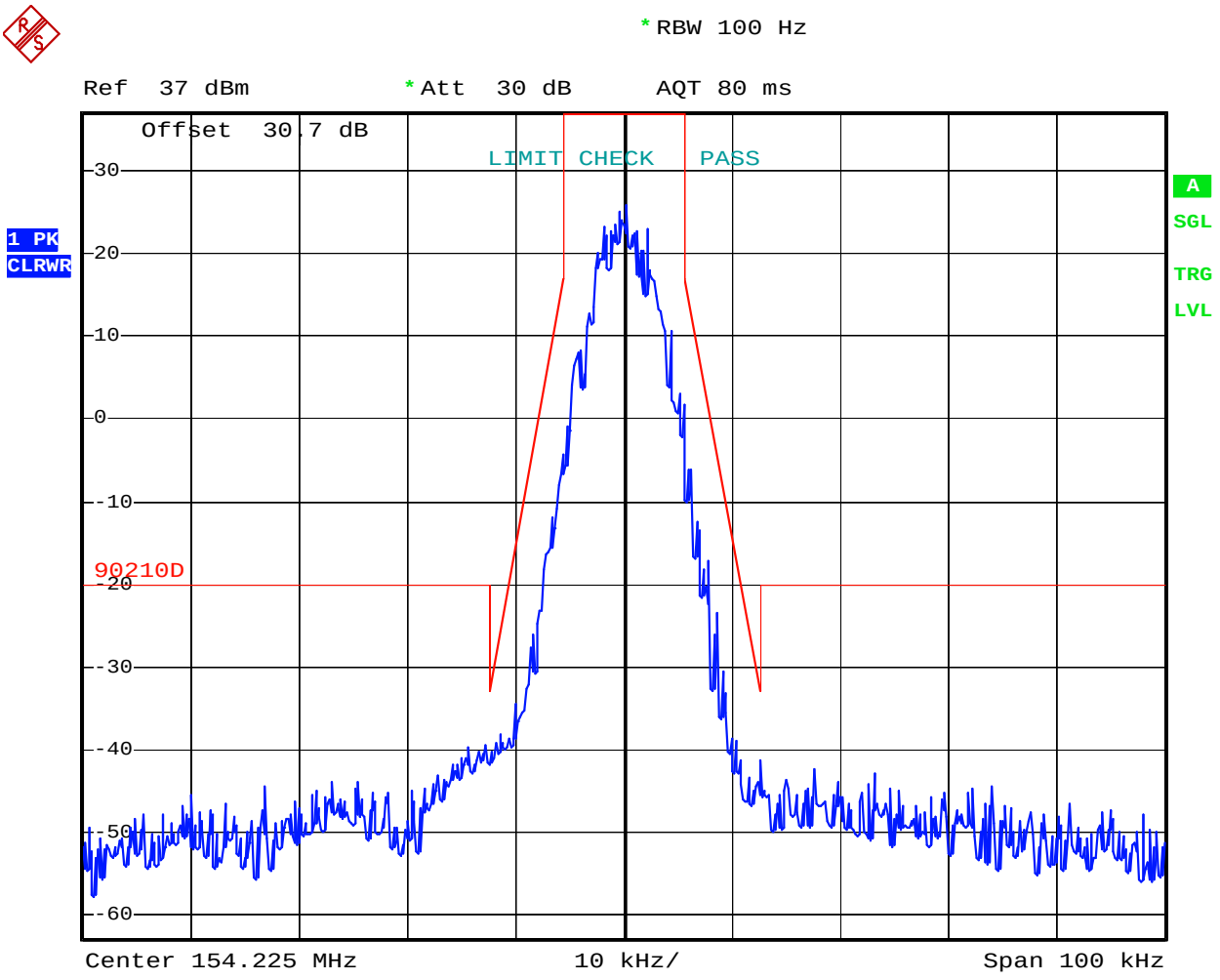
Equipment Used: 1036-1082-1064-1065

Measurement Uncertainty: $1X10^{-7}$ ppm

Temperature: 22 °C

Relative Humidity: 45 %

Test Data



Date: 24.APR.2013 23:05:28

Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 2.991
TESTED BY: David LightTom Tidwell & Debbie Jensen	DATE: 25 April 2013

Measurement Results: Complies.

Test Data: See attached plot(s).

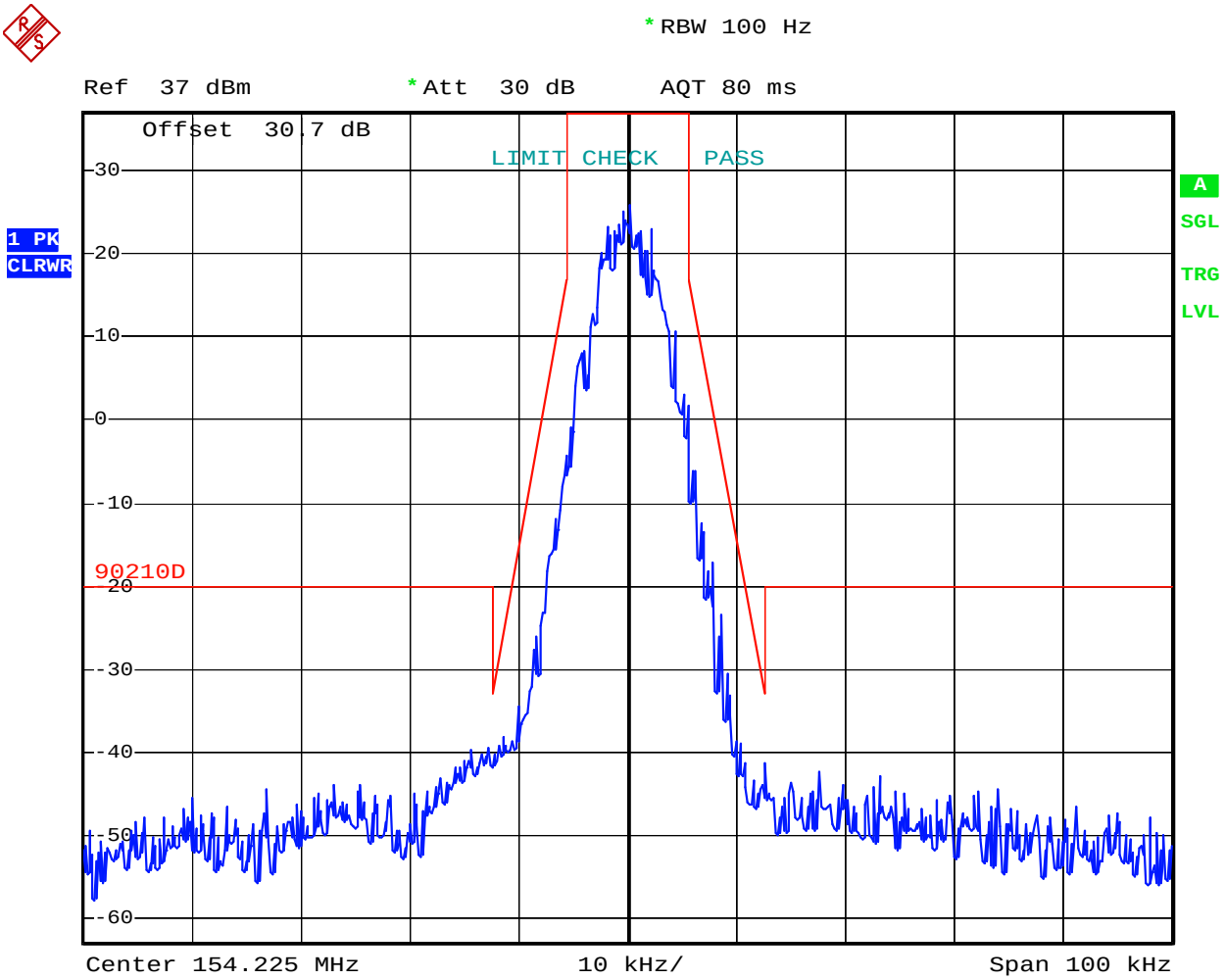
Equipment Used: 1036-1082-1064-1065

Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

Relative Humidity: 45 %

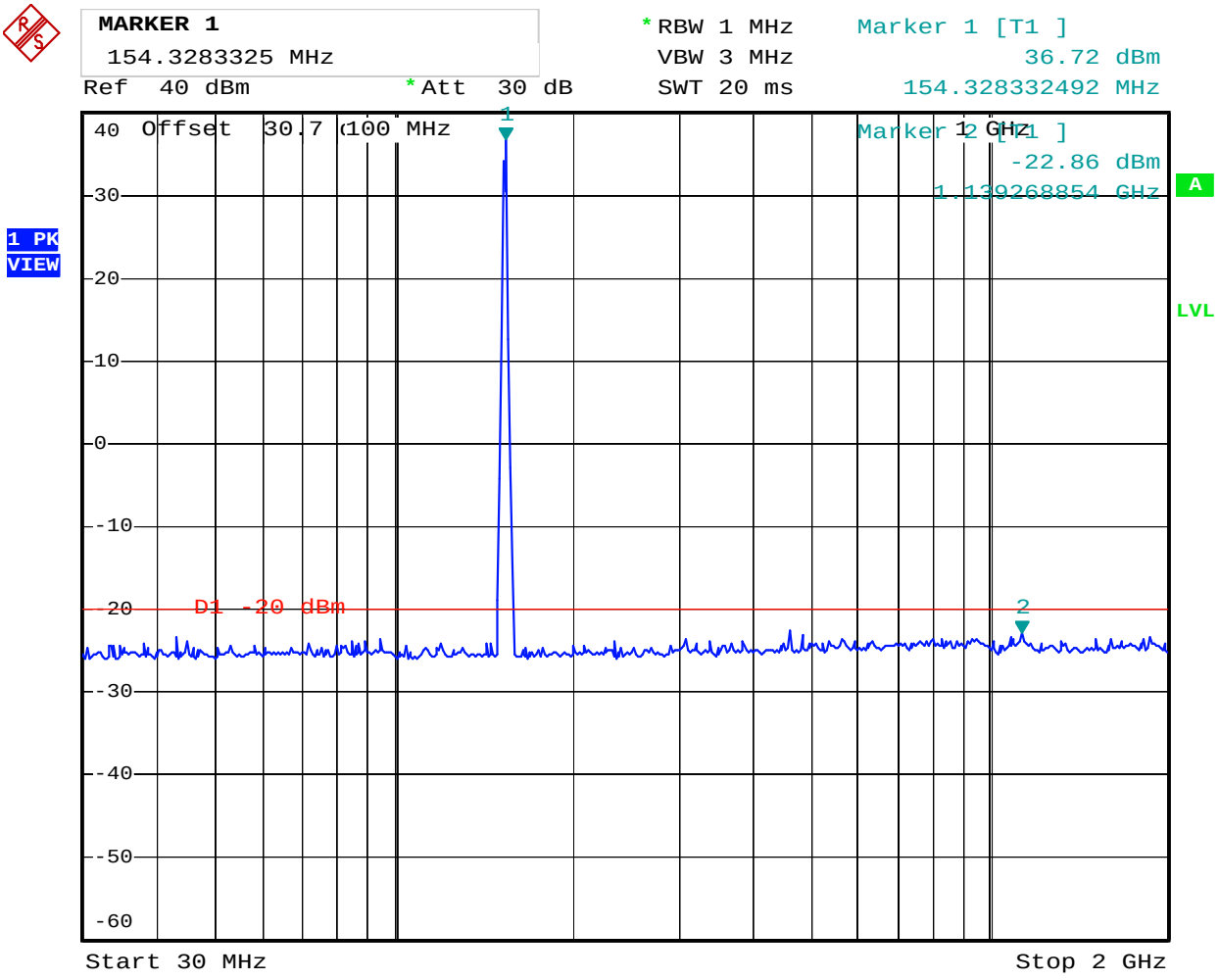
Test Data
Mask 90.210(d)



Date: 24.APR.2013 23:05:28

Test Data

Spurious Emissions



Date: 24.APR.2013 22:10:47

Section 6. Test Equipment List

Asset Tag	Description	Manufacturer	Model	Serial #	Last Cal	Next Cal
1036	Spectrum Analyzer	Rohde & Schwartz	FSEK30	830844/006	23-Dec-2011	23-Dec-2013
1064	Attenuator	Narda	776B-20		N/R	
1065	Attenuator	Narda	776B-10		N/R	
1082	Cable, 2m	Astrolab	32027-2-29094-72TC		N/R	

ANNEX A - TEST METHODOLOGIES

NAME OF TEST: RF Power Output **PARA. NO.: 2.985**

Minimum Standard: Para. No. 90.205(a). The maximum allowable station ERP is dependent upon the stations HAAT and required service area and will be authorized in accordance with Table 1 of 90.205(d).

Method Of Measurement:

Detachable Antenna:
The peak power at antenna terminals is measured using an in-line peak power meter or spectrum analyzer. Power output is measured with the maximum rated input level.

NAME OF TEST: Occupied Bandwidth **PARA. NO.: 2.989**

Minimum Standard: Para. No. 90.210, see table 1 below for applicable mask.

Table 1

Frequency Band (MHz)	Mask for equipment with Low Pass Filter	Mask for equipment without Low Pass Filter
Below 25	A or B	A or C
25 - 50	B	C
72 - 76	B	C
150 - 174	B, D or E	C, D or E
150 Paging only	B	C
220 - 222	F	F
421 - 512	B, D or E	C, D or E
450 paging only	B	H
806 - 821/ 851 - 866	B	G
821 - 824/ 866 - 869	B	H
896 - 901/ 935 - 940	I	J
902 - 928	K	K
929 - 930	B	G
Above 940	B	C
All other bands	B	C

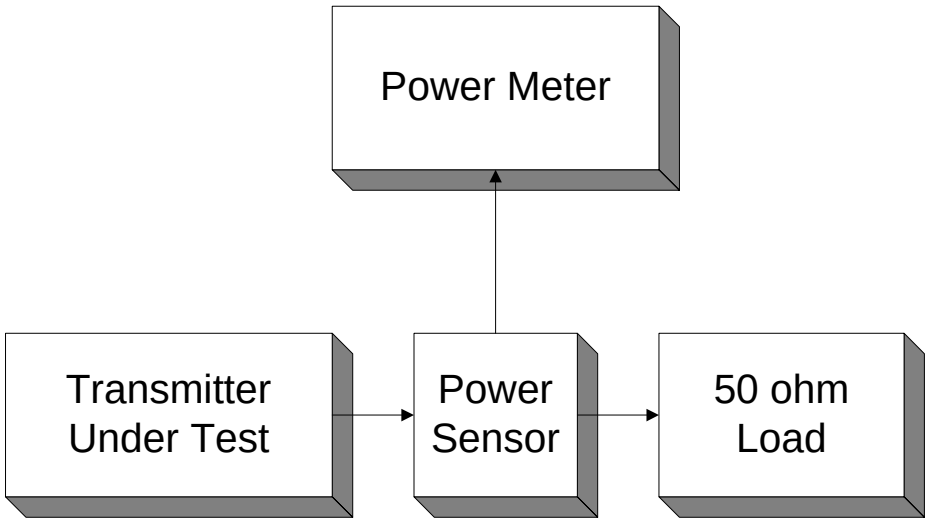
Test Method:

RBW: 1% of emission bandwidth in 0 - 1 GHz range. 1 MHz at frequencies above 1 GHz.
VBW: $\Rightarrow$ RBW

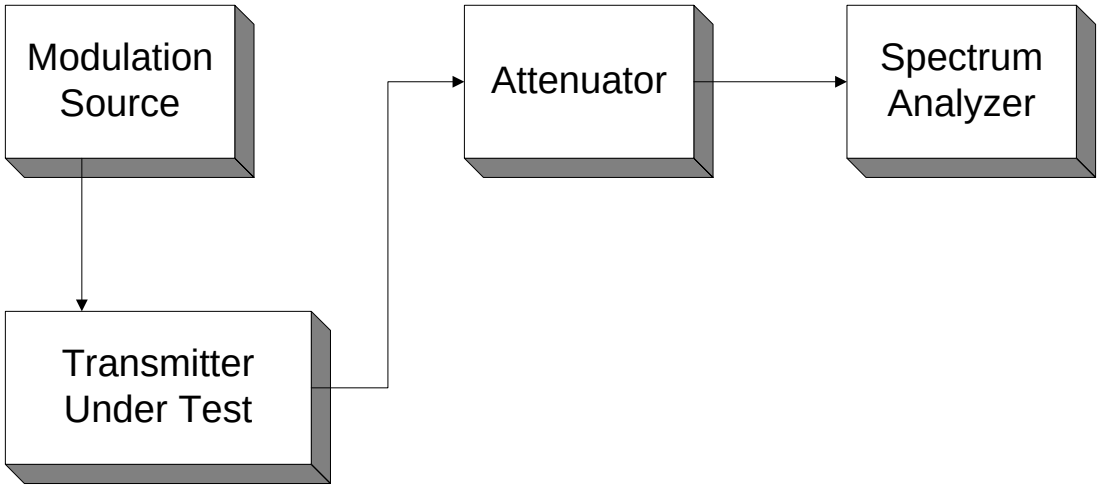
The spectrum is search up to 10 times the fundamental frequency.

ANNEX B - TEST DIAGRAMS

Para. No. 2.985 - R.F. Power Output



Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 - Spurious Emissions at Antenna Terminals