



TEST REPORT

Report Number: 101415209MIN-001
Project Number: G101415209

Testing performed on the
FWP – 84MT000MOD
to
47 CFR, Part 24:2010, Enclosure Spurious Radiated Emissions

For
ADC Telecommunications Inc. - a TE Connectivity Company

Test Performed by:
Intertek Testing Services NA, Inc.
7250 Hudson Blvd., Suite 100
Oakdale, MN 55128 USA

Test Authorized by:
ADC Telecommunications Inc.- a TE Connectivity
Company
541 E Trimble Road
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Date: November 12, 2013

Reviewed by: 
Norman Shpilsher

Date: November 12, 2013

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1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	FWP – 84MT000MOD
Type of EUT:	1900 PCS MIMO RF Module
Serial Number / Intertek Sample ID:	1930MHz-1995MHz
Company:	ADC Telecommunications Inc. - a TE Connectivity Company
Customer:	Sue Cyr
Address:	541 E. Trimble Road San Jose, CA 95131 USA
Phone:	408-952-2445
Fax:	408-952-2645
e-mail:	sue.cyr@te.com
Test Standards:	<input type="checkbox"/> EN 55022:2006 +A1:2007, Class [redacted] <input type="checkbox"/> EN 55011:2007 +A2:2007, Group [redacted], Class [redacted] <input checked="" type="checkbox"/> 47 CFR, Part 24:2010, Enclosure Spurious Radiated Emissions <input type="checkbox"/> ICES-003, Issue 4:2004 <input type="checkbox"/> EN 55014-1:2006 <input type="checkbox"/> EN 61326-1:2006 <input type="checkbox"/> Class [redacted] for Radiated and Conducted Emissions <input type="checkbox"/> Basic Immunity Test Requirements <input type="checkbox"/> Immunity Test Requirements for Industrial Locations <input type="checkbox"/> EN 60601-1-2:2001 +A1:2006 <input type="checkbox"/> EN 61000-6-3:2007 <input type="checkbox"/> EN 61000-6-4:2007 <input type="checkbox"/> EN 61000-3-2:2006 <input type="checkbox"/> EN 61000-3-3:1995 +A1:2001 +A2:2006 <input type="checkbox"/> EN 61000-6-1:2007 <input type="checkbox"/> EN 61000-6-2:2005 <input type="checkbox"/> EN 55024:1998 + A1:2001 + A2:2003
Date Sample Submitted:	November 1, 2013
Test Work Started:	November 1, 2013
Test Work Completed:	November 1, 2013
Test Sample Conditions:	<input type="checkbox"/> Damaged <input type="checkbox"/> Poor (Usable) <input checked="" type="checkbox"/> Good <input type="checkbox"/> Prototype <input checked="" type="checkbox"/> Production <input type="checkbox"/> Used

2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST STANDARD	TEST	RESULT
Part 24	Enclosure Spurious Radiated Emissions	Pass

2.1 Statement of the Measurement Uncertainty

Note 1: The measured result in this report is within the specification limits by more than the measurement uncertainty; the measured result indicates that the product tested complies with the specification limit.

The expanded uncertainty ($k = 2$) for radiated emissions from 30 to 1000 MHz has been determined to be: ± 4 dB at 10m and ± 5.4 dB at 3m

The expanded uncertainty ($k = 2$) for conducted emissions from 150 kHz to 30 MHz has been determined to be:
 ± 2.6 dB

3.0 EQUIPMENT UNDER TEST

3.1 Power Configuration

Rated voltage:	<input checked="" type="checkbox"/> 120VAC <input type="checkbox"/> 230VAC <input type="checkbox"/> 400VAC Supply <input type="checkbox"/> Other: <input type="text"/>
Rated current:	<input type="text"/> Amp.
Rated frequency:	<input type="checkbox"/> 50Hz <input checked="" type="checkbox"/> 60Hz
Number of phases:	<input checked="" type="checkbox"/> 1 Phase <input type="checkbox"/> 3 Phases

3.2 EUT Configuration

The equipment under test was operated during the measurement under the following conditions:

- Standby
- Test program (H - Pattern)
- Continuous Operation (see details below)
- Specific test program

Operating modes of the EUT:

No.	Description
1	Continuous transmission of RF signals at 1931MHz, 1962MHz and 1994MHz into two paths.
2	The EUT antenna ports were terminated.

Cables:

No.	Type	Length	Designation	Note
1	Two RF coax	10m each	RF signal cables to the Support Equipment	

Support equipment/Services:

No.	Item	Description
1	Agilent 8648B (located outside Test site)	Signal Generator
2	Prism Host Unit	
3	Prism Host 28VDC Power Supply	
4	30dB Attenuator (2)	

General notes: None



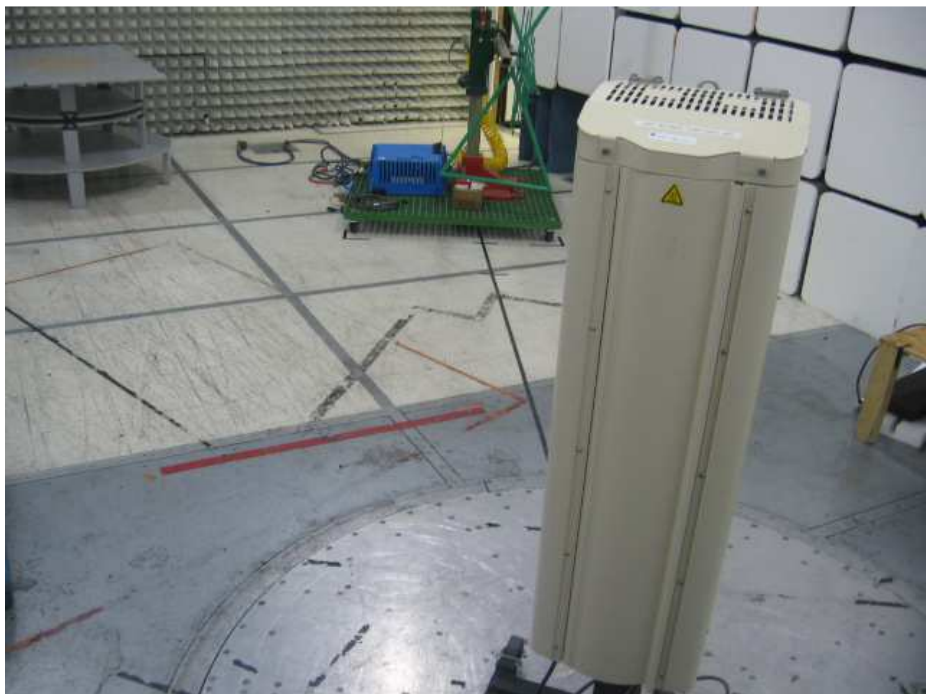
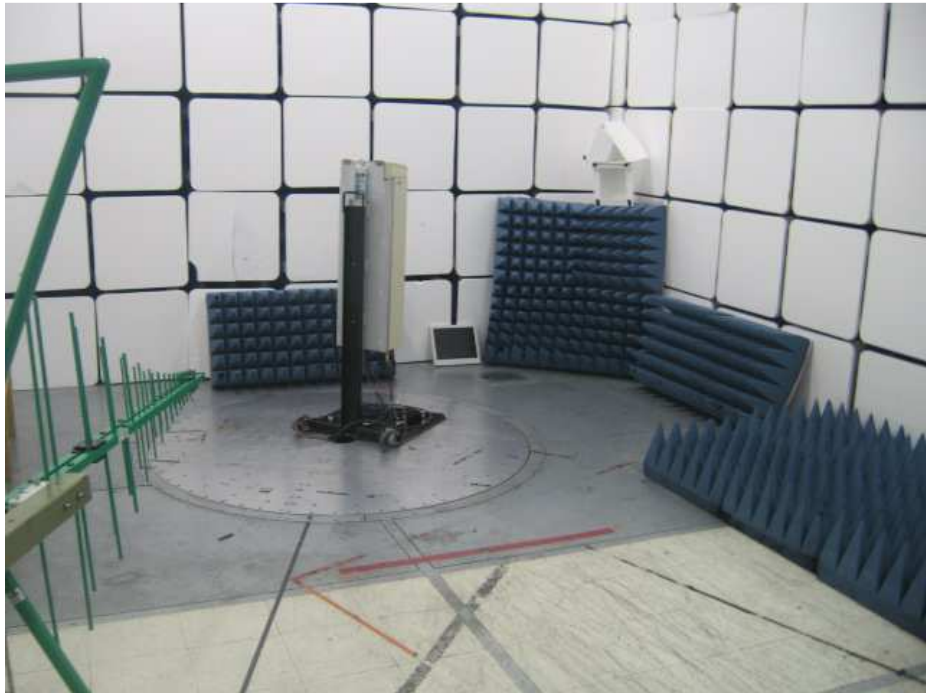
3.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

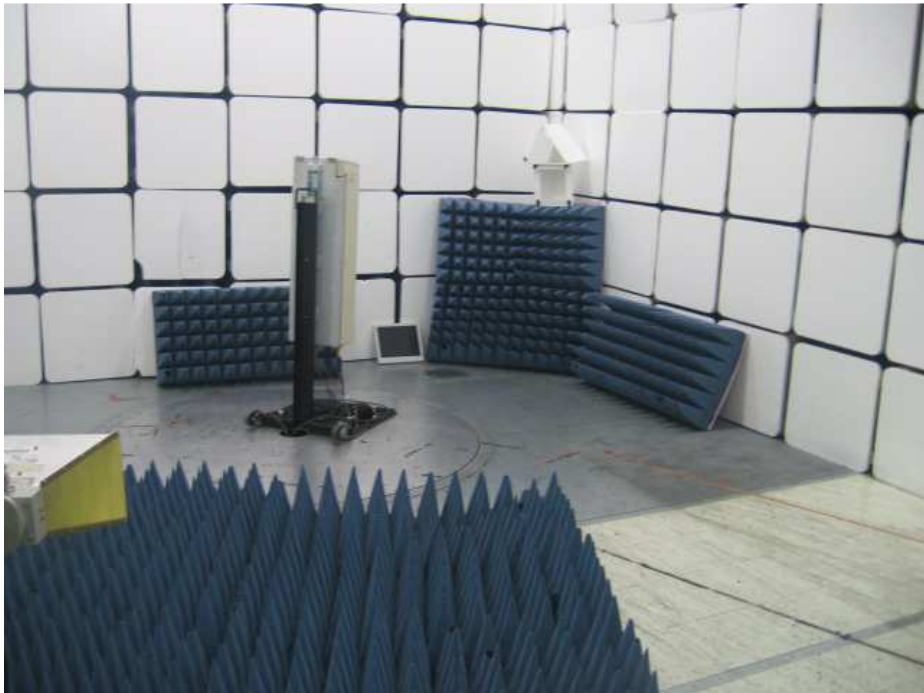
Temperature: 15-35 °C

Humidity: 30-60 %

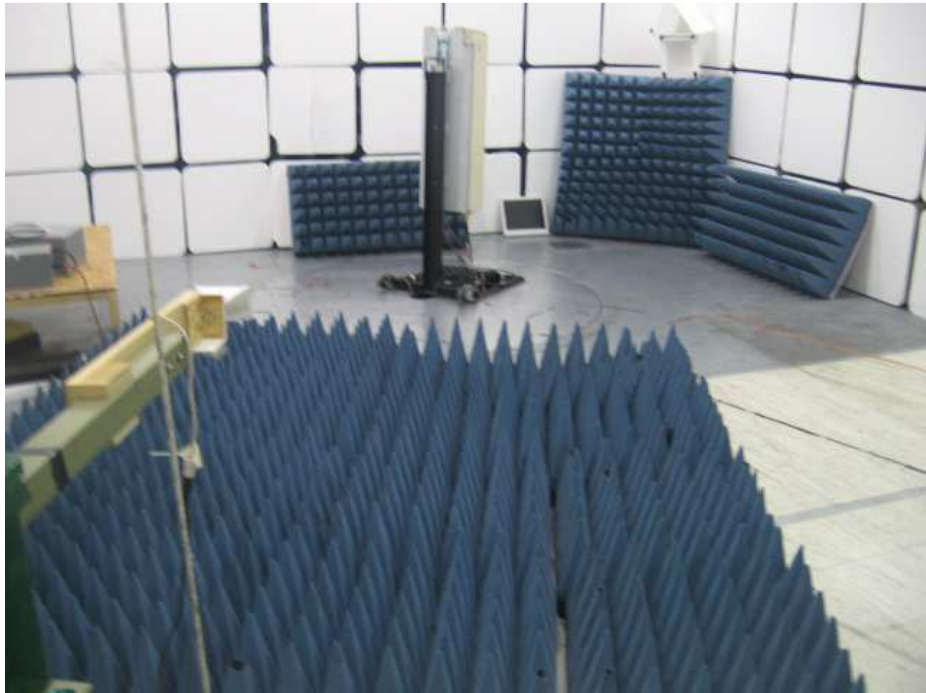
Atmospheric pressure: 86-106 kPa



Test Setup Photos



Test Setup Photos



Test Setup Photos

Date:	November 1, 2013	Result: Pass
Tested by:	Ivaylo Nadarliyski	
Standard:	FCC Part 24	
Test Point:	Line 1 and Line 2	
Operation mode:	See page 5	
Note:	Frequency Range 30-1000MHz	

Table 1

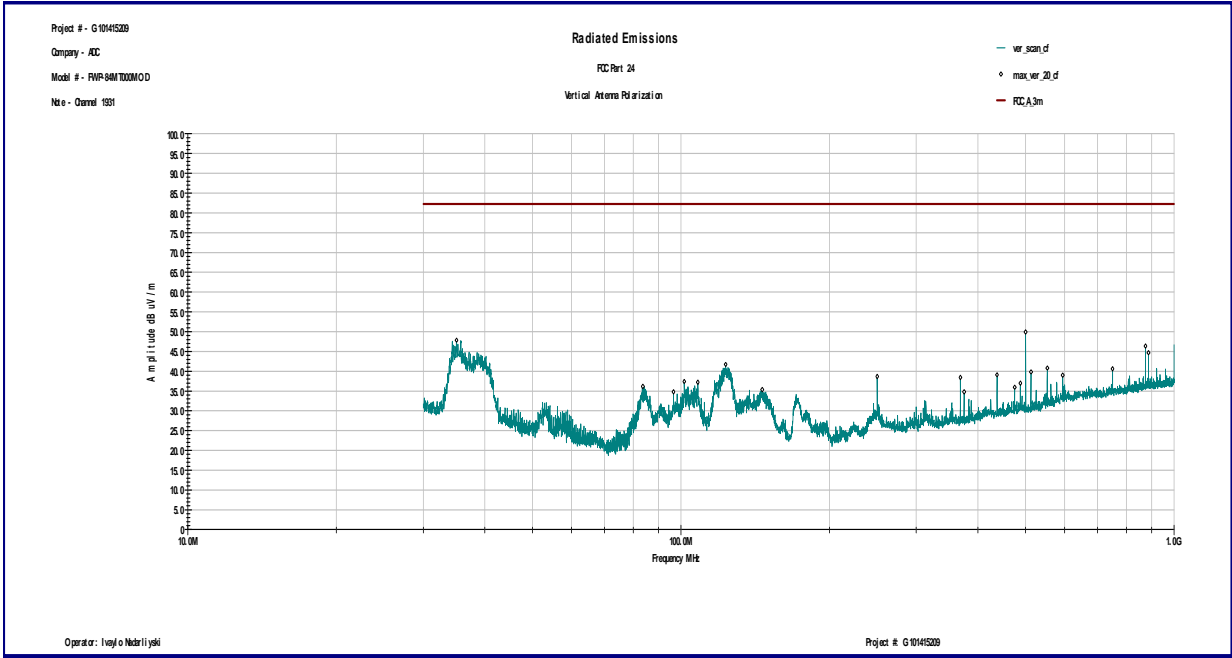
Frequency	Ant. Polarity	Peak Reading dB μ V	Ant.Factor dB1/m	Total at 3m dB μ V/m	Limit dB μ V/m	Margin dB
Channel 1931MHz						
35.048 MHz	V	30.3	17.5	47.8	82.2	-34.4
499.98 MHz	V	29.2	20.7	49.9	82.2	-32.4
875.08 MHz	V	21.3	25.1	46.3	82.2	-35.9
887.57 MHz	V	19.3	25.3	44.7	82.2	-37.5
174.75 MHz	H	34.1	11.3	45.4	82.2	-36.8
499.98 MHz	H	28.5	20.7	49.2	82.2	-33.0
750.21 MHz	H	18.6	23.8	42.4	82.2	-39.8
Channel 1962MHz						
35.282 MHz	V	29.9	17.4	47.3	82.2	-34.9
38.6 MHz	V	29.1	15.5	44.6	82.2	-37.6
121.76 MHz	V	28.4	14.0	42.3	82.2	-39.9
499.98 MHz	V	29.6	20.7	50.3	82.2	-31.9
499.98 MHz	H	28.5	20.7	49.2	82.2	-33.0
750.21 MHz	H	18.6	23.8	42.4	82.2	-39.8
841.9 MHz	H	26.7	24.9	51.6	82.2	-30.6
Channel 1994MHz						
34.838 MHz	V	29.3	17.7	46.9	82.2	-35.3
39.511 MHz	V	29.7	15.0	44.7	82.2	-37.6
123.07 MHz	V	28.9	14.0	42.8	82.2	-39.4
875.08 MHz	V	20.8	25.1	45.8	82.2	-36.4
174.63 MHz	H	34.4	11.3	45.7	82.2	-36.5
499.98 MHz	H	28.2	20.7	48.8	82.2	-33.4
750.21 MHz	H	19.1	23.8	42.8	82.2	-39.4



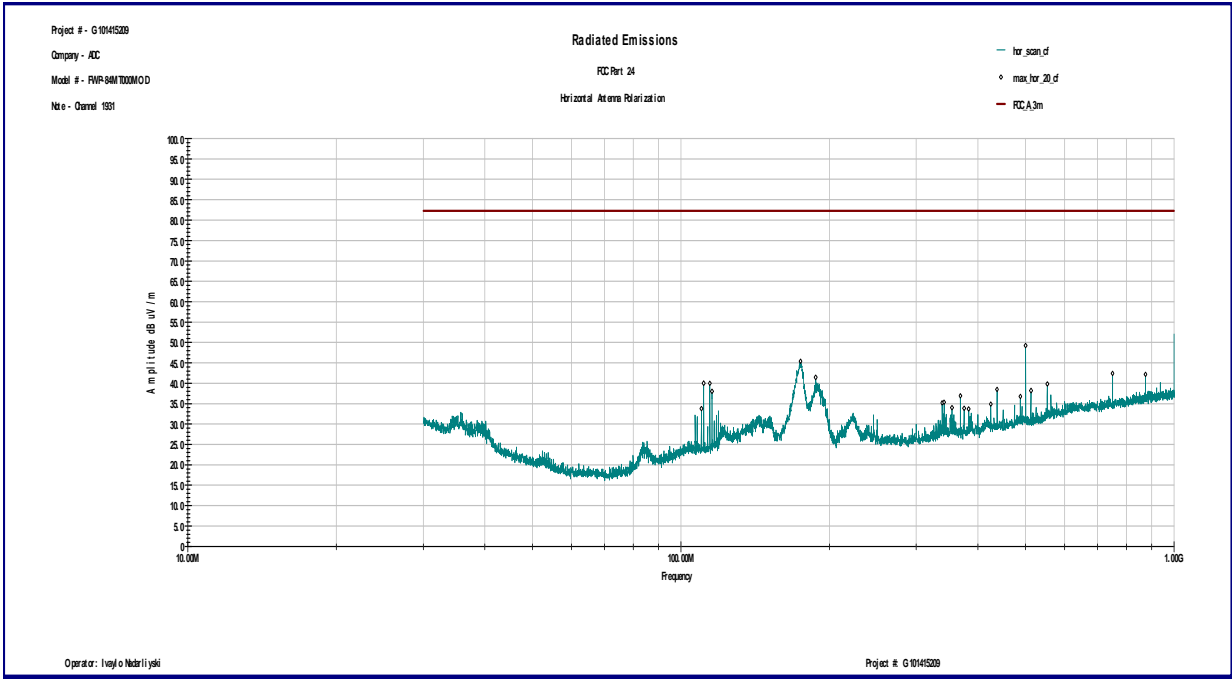
Date:	November 11, 2013	Result: Pass
Tested by:	Ivaylo Nadarliyski	
Standard:	FCC Part 24	
Test Point:	Line 1 and Line 2	
Operation mode:	See page 5	
Note:	Frequency Range 1GHz-20GHz	

Table 2

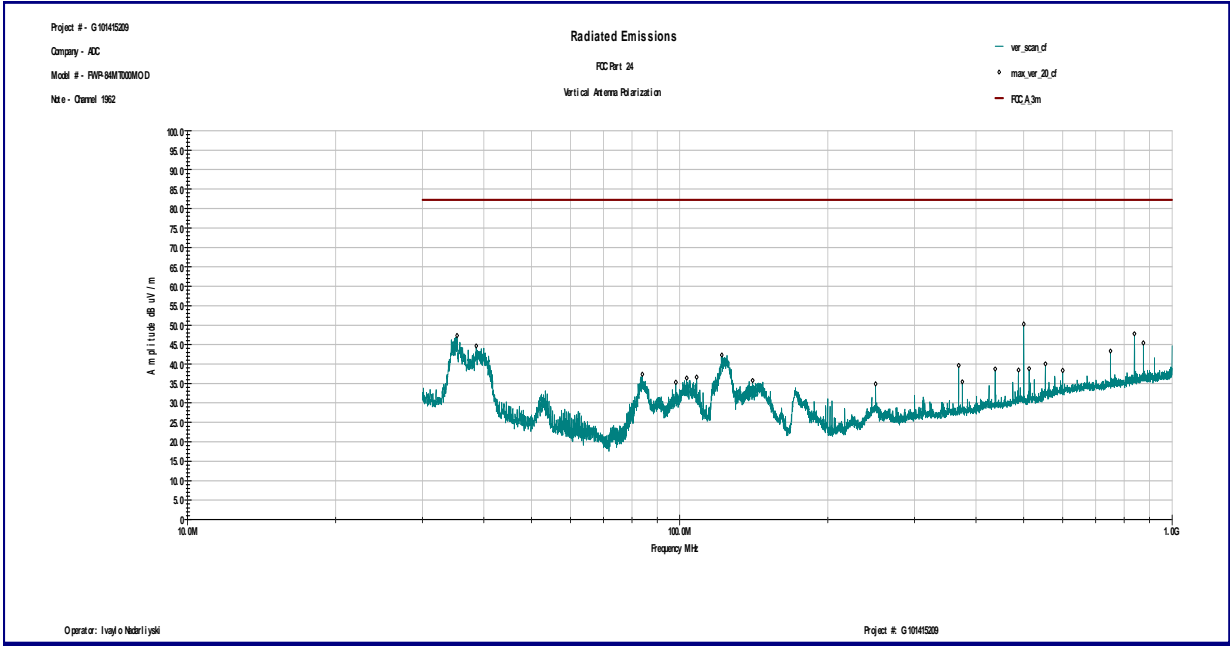
Frequency MHz	Antenna Polarity	Peak Reading dB μ V	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dB μ V/m	Limit dB μ V/m	Margin dB
Channel 1931MHz							
14.491 GHz	V	41.0	49.5	38.8	51.7	82.2	-30.5
17.935 GHz	V	40.6	54.7	34.9	60.3	82.2	-21.9
14.437 GHz	H	41.3	49.3	38.8	51.8	82.2	-30.4
17.918 GHz	H	40.6	54.3	35.0	60.0	82.2	-22.2
Channel 1962MHz							
14.297 GHz	V	42.0	49.2	38.9	52.3	82.2	-29.9
18.0 GHz	V	40.1	55.1	34.8	60.4	82.2	-21.8
1.2482 GHz	H	66.6	26.6	42.0	51.3	82.2	-31.0
2.1118 GHz	H	62.6	30.24	40.8	52.0	82.2	-30.2
13.784 GHz	H	42.8	48.2	38.8	52.3	82.2	-29.9
17.918 GHz	H	41.0	54.3	35.0	60.4	82.2	-21.8
Channel 1994MHz							
1.2482 GHz	V	58.7	26.6	42.0	43.3	82.2	-38.9
14.484 GHz	V	41.1	49.5	38.8	51.9	82.2	-30.3
17.976 GHz	V	40.9	54.9	34.8	61.0	82.2	-21.2
2.1152 GHz	H	62.9	30.25	40.8	52.3	82.2	-29.9
13.866 GHz	H	42.6	48.4	38.9	52.1	82.2	-30.1
17.935 GHz	H	41.6	54.4	34.9	61.1	82.2	-21.1



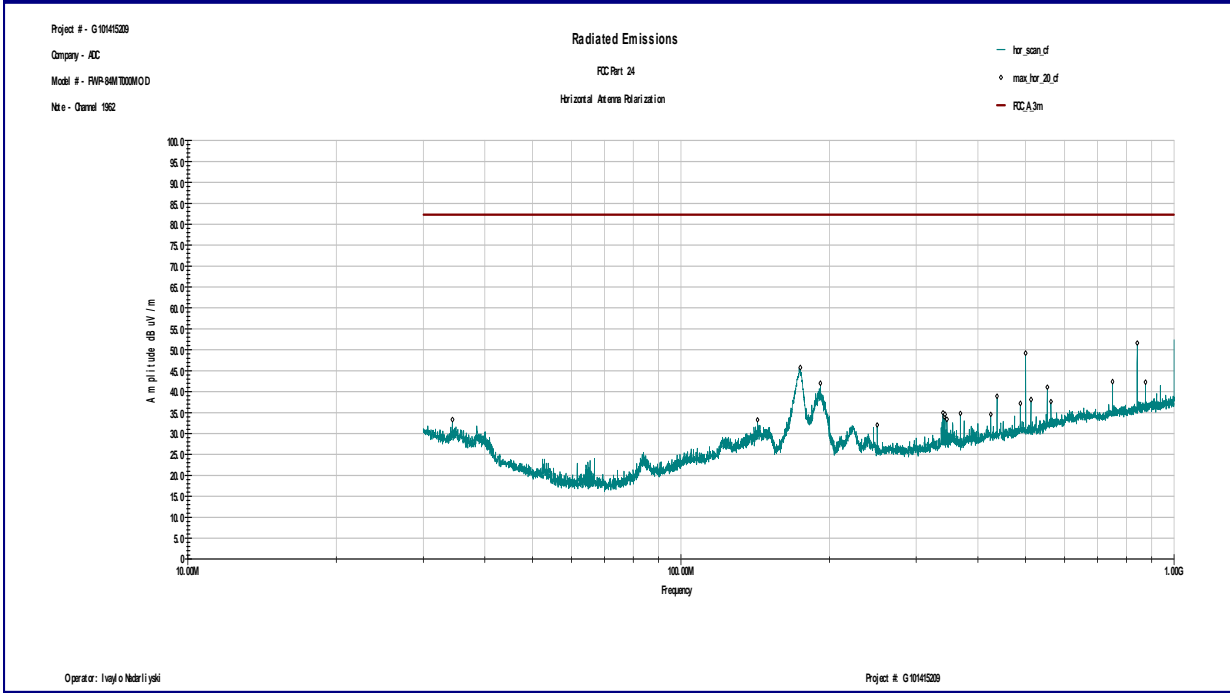
Graph 1



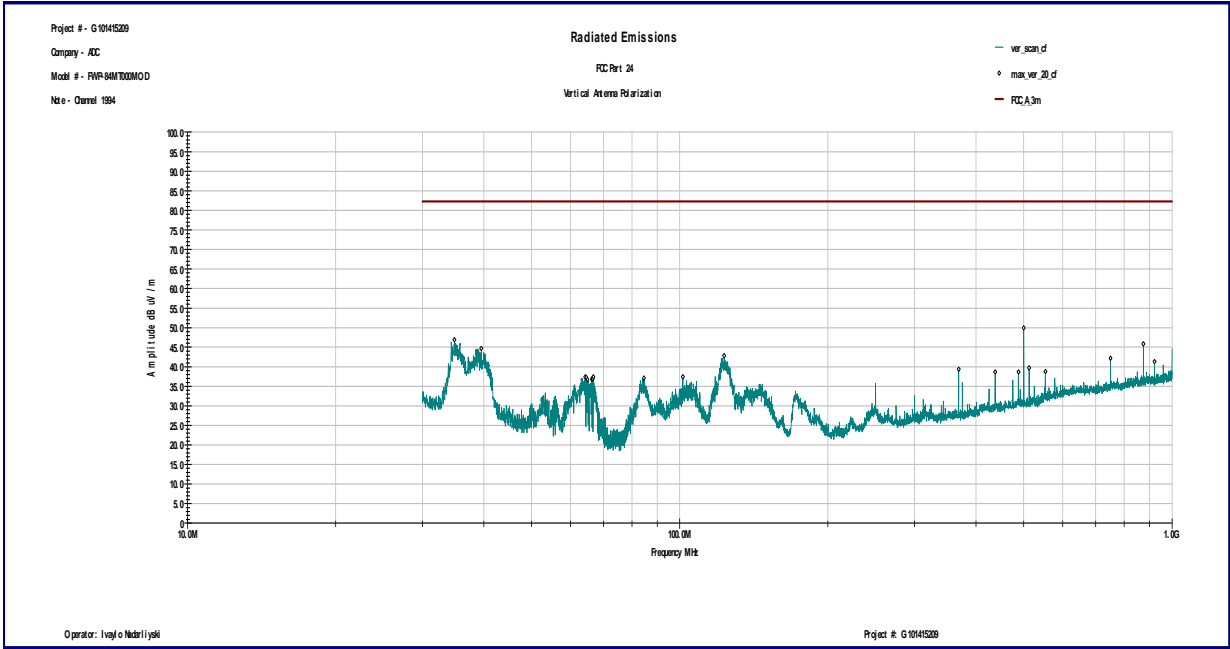
Graph 2



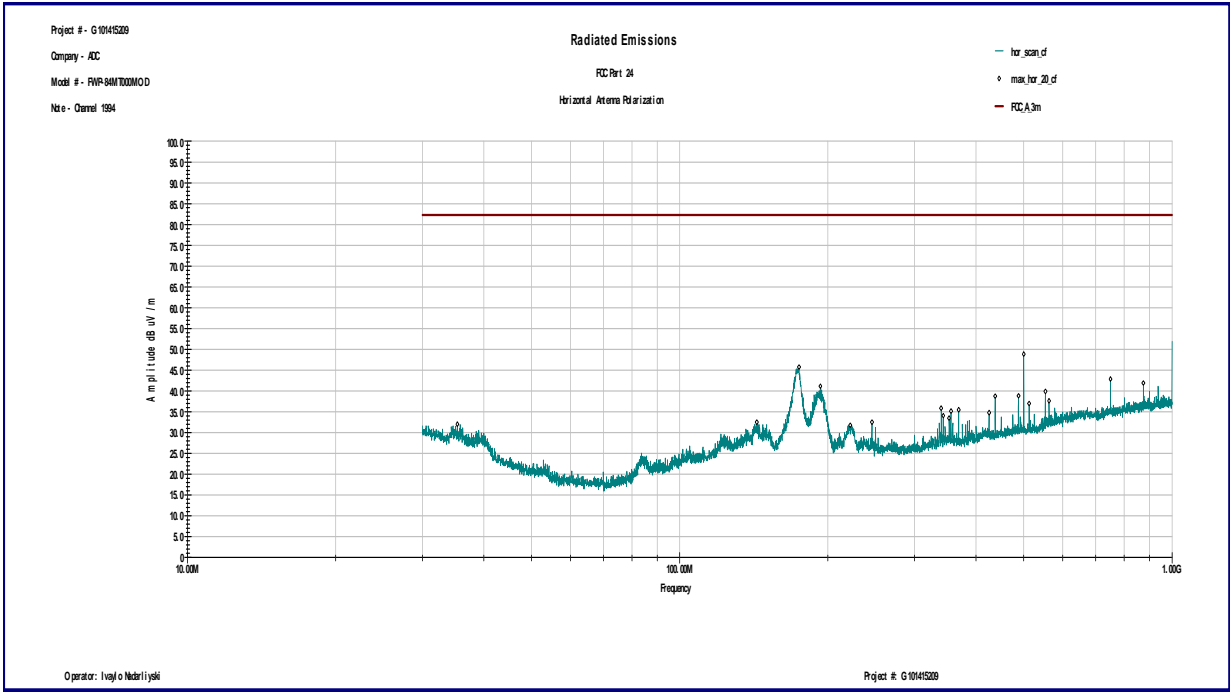
Graph 3



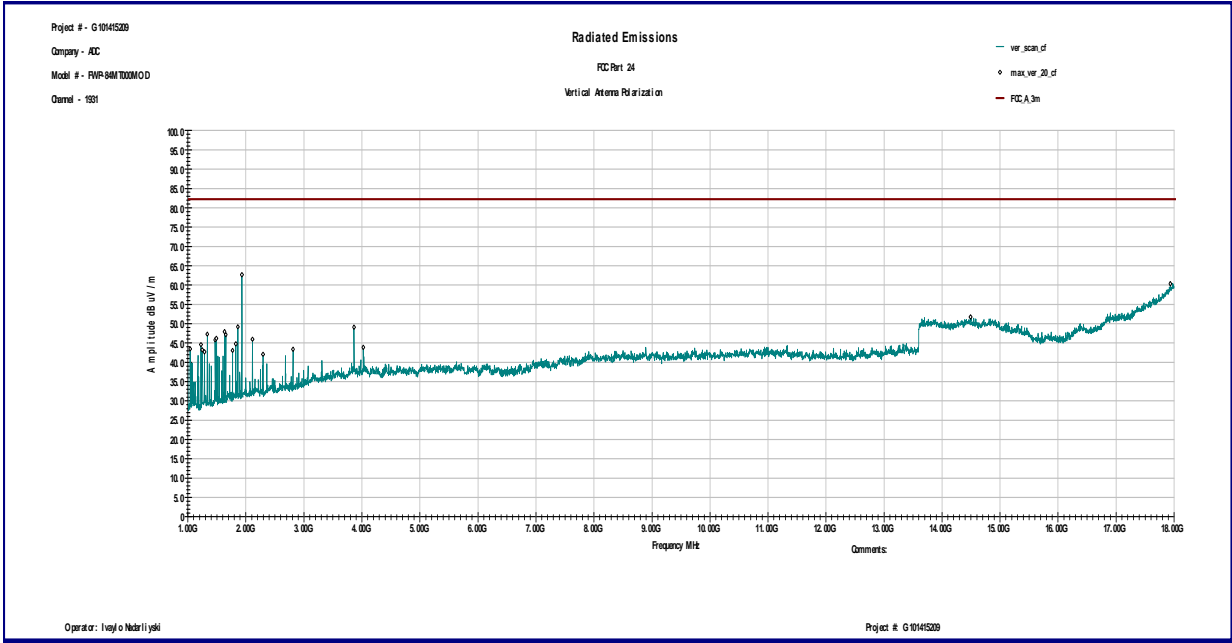
Graph 4



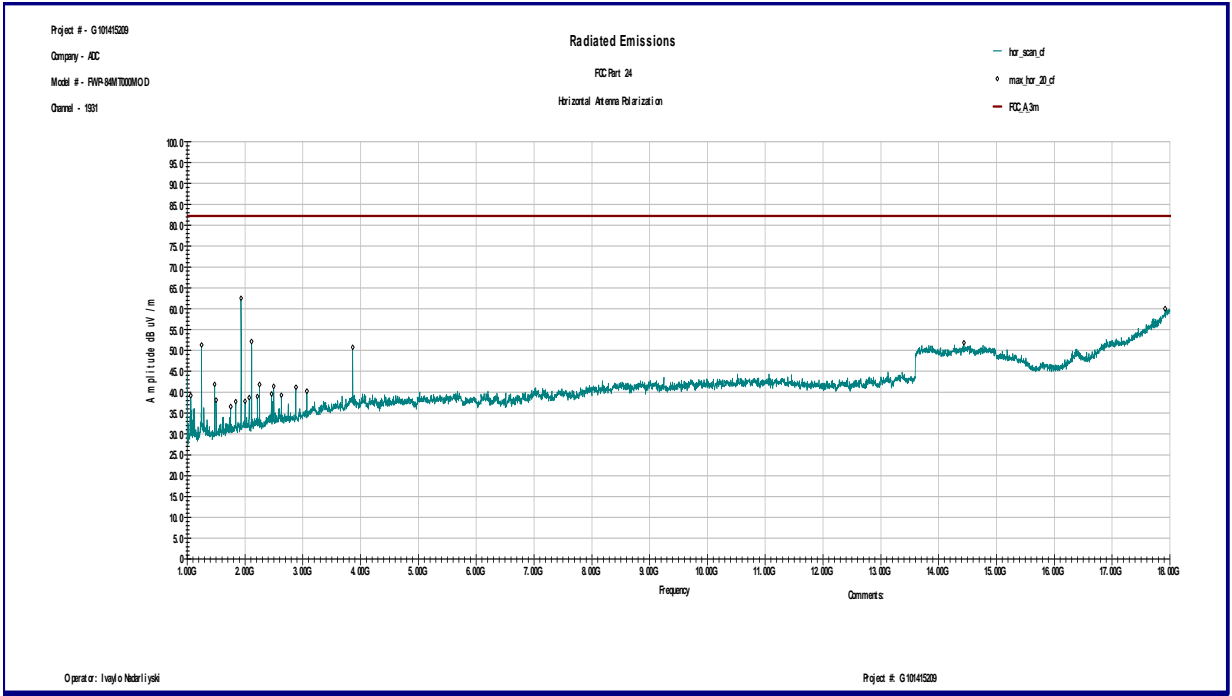
Graph 5



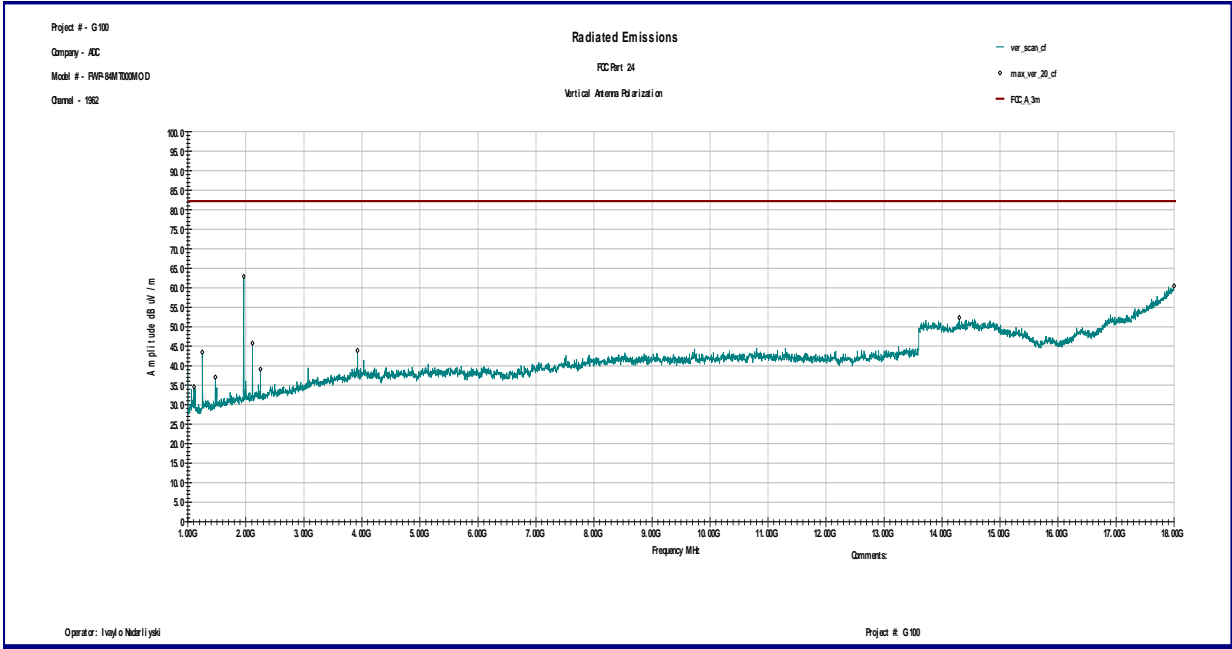
Graph 6



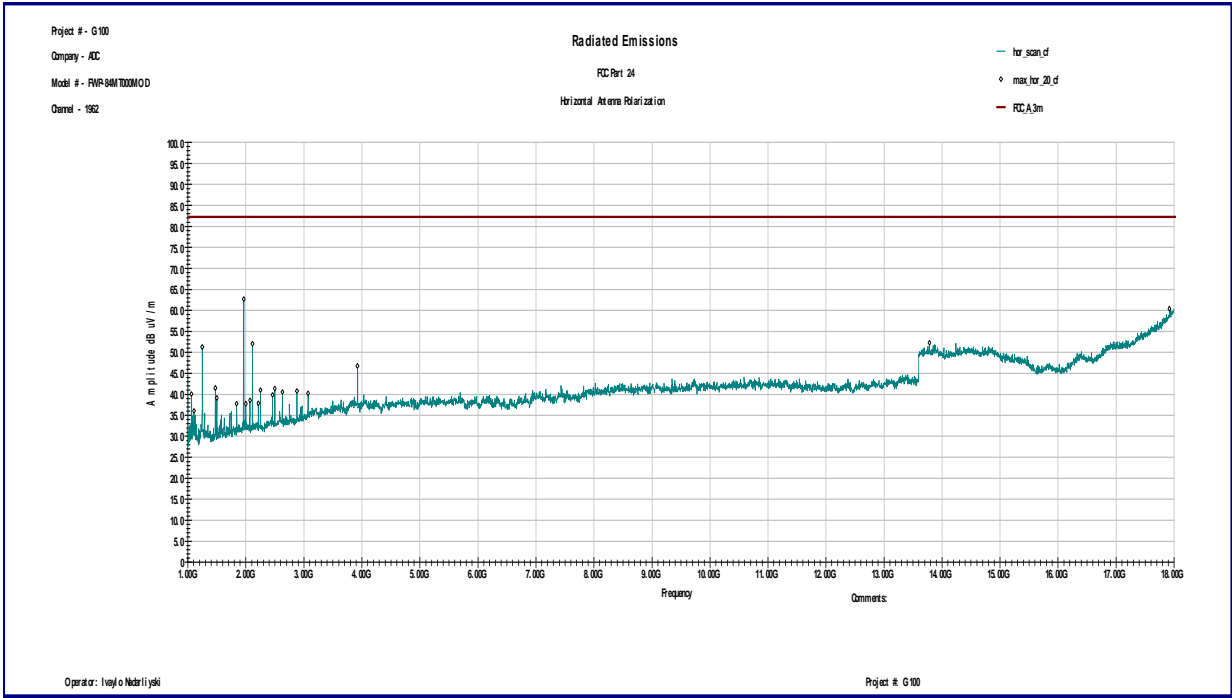
Graph 7



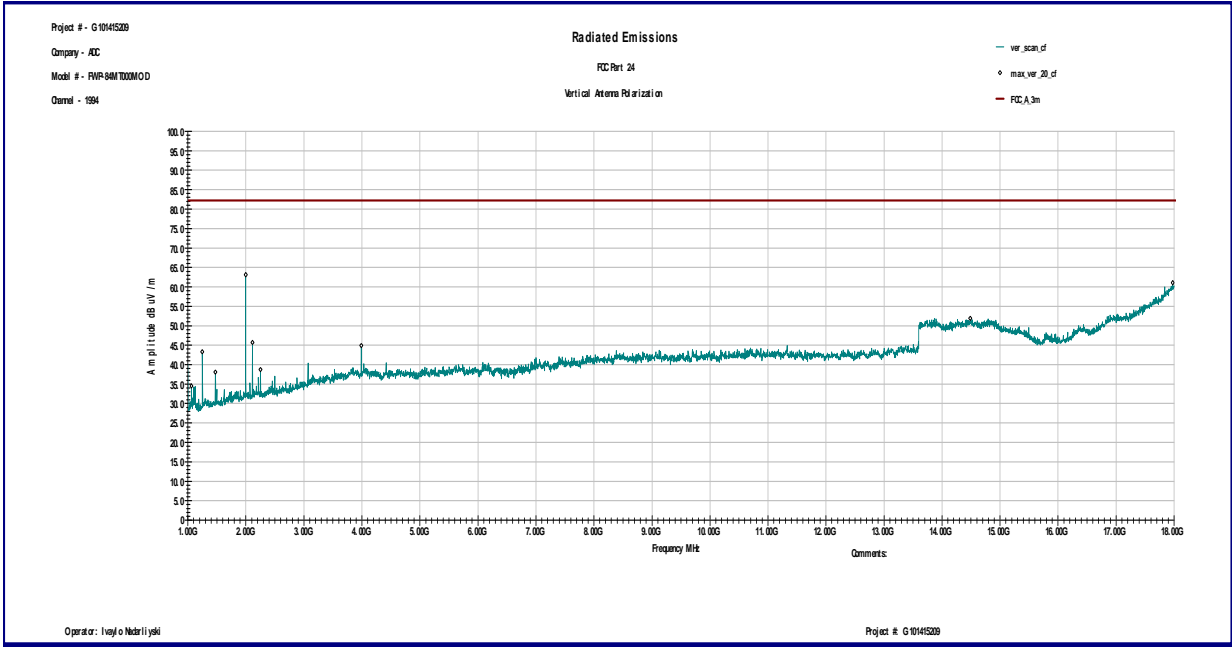
Graph 8



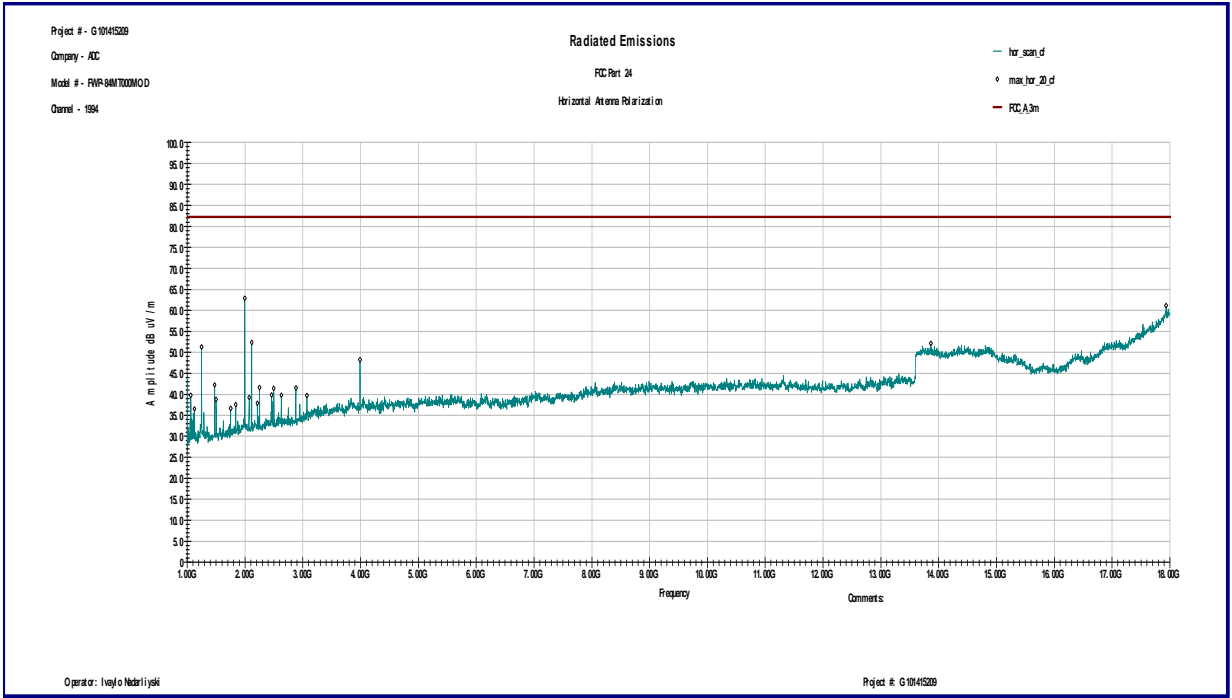
Graph 9



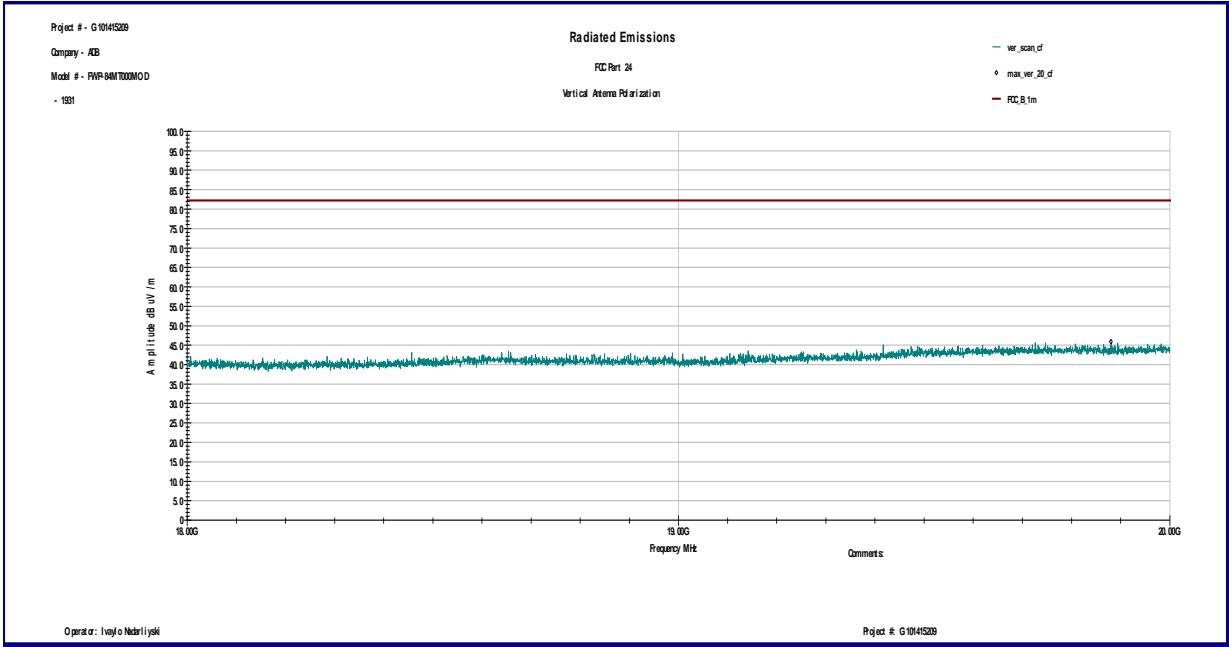
Graph 10



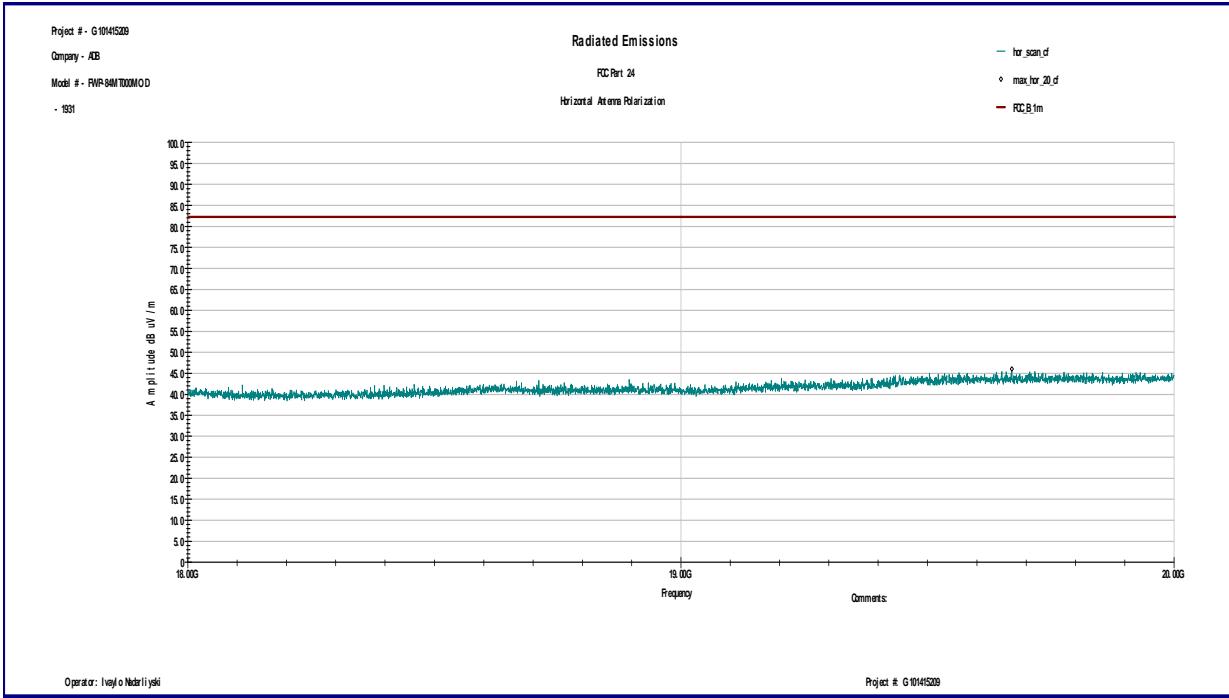
Graph 11



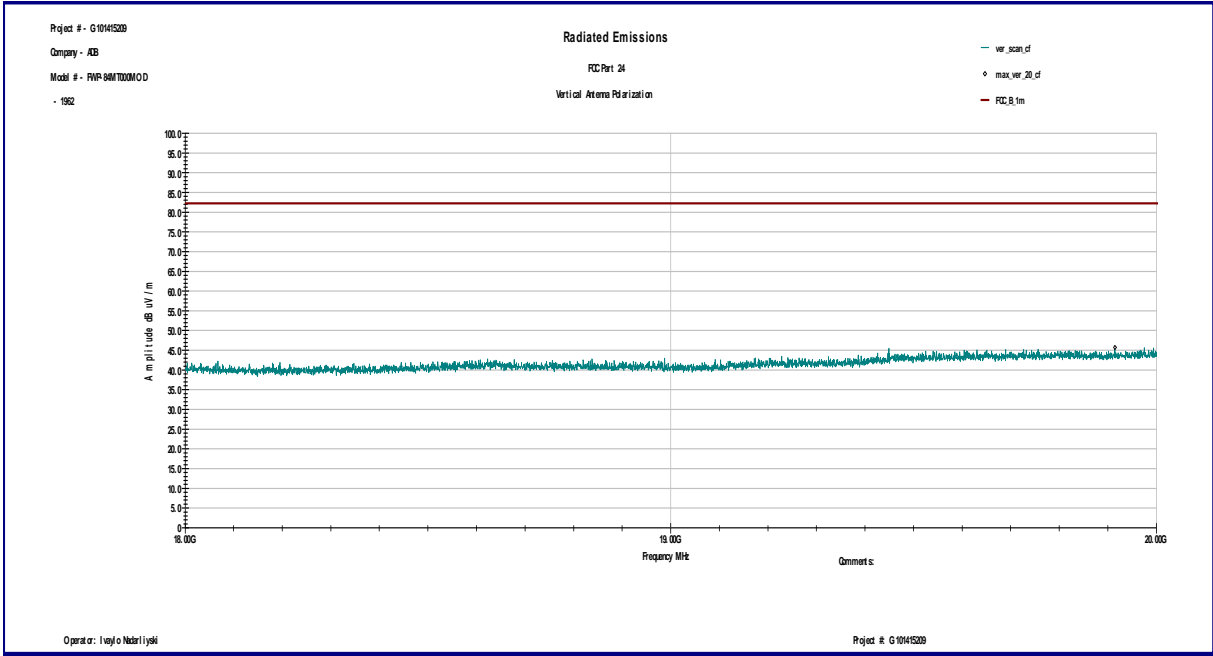
Graph 12



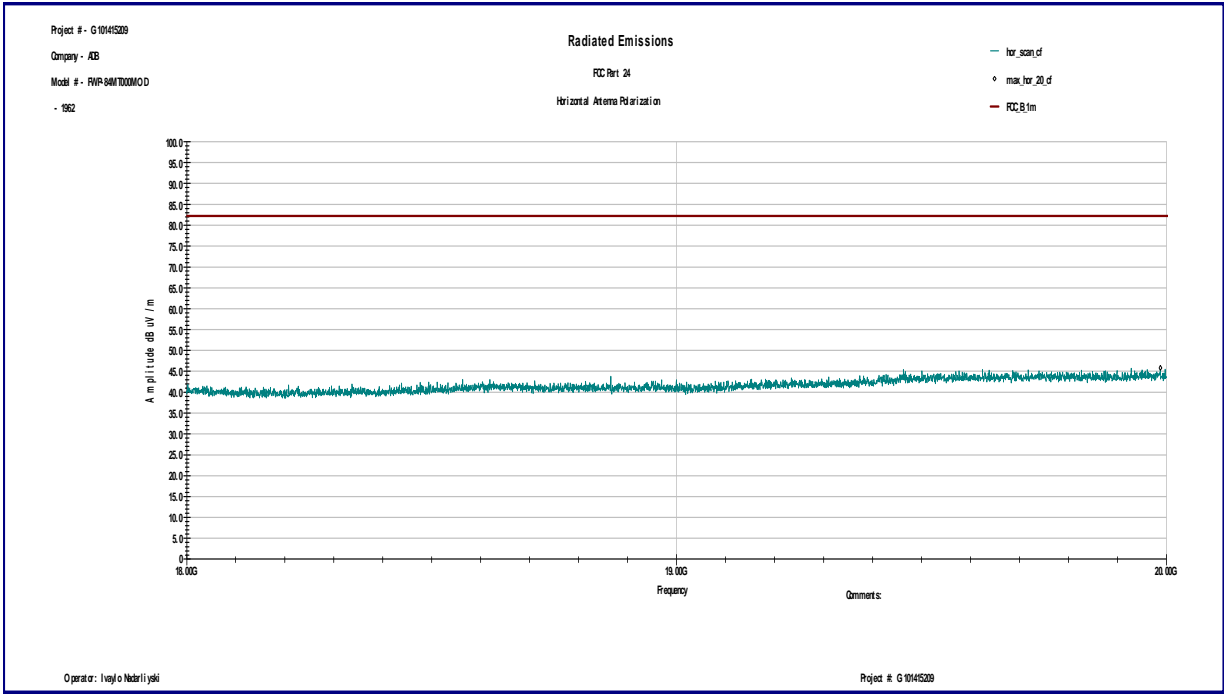
Graph 13



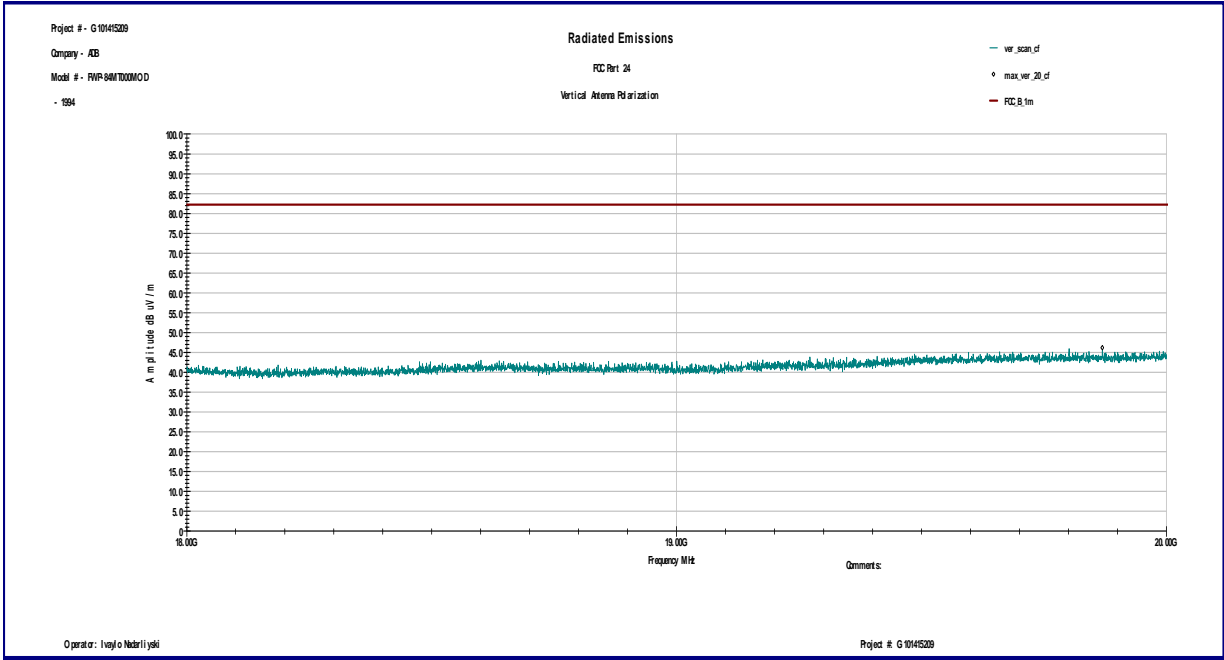
Graph 14



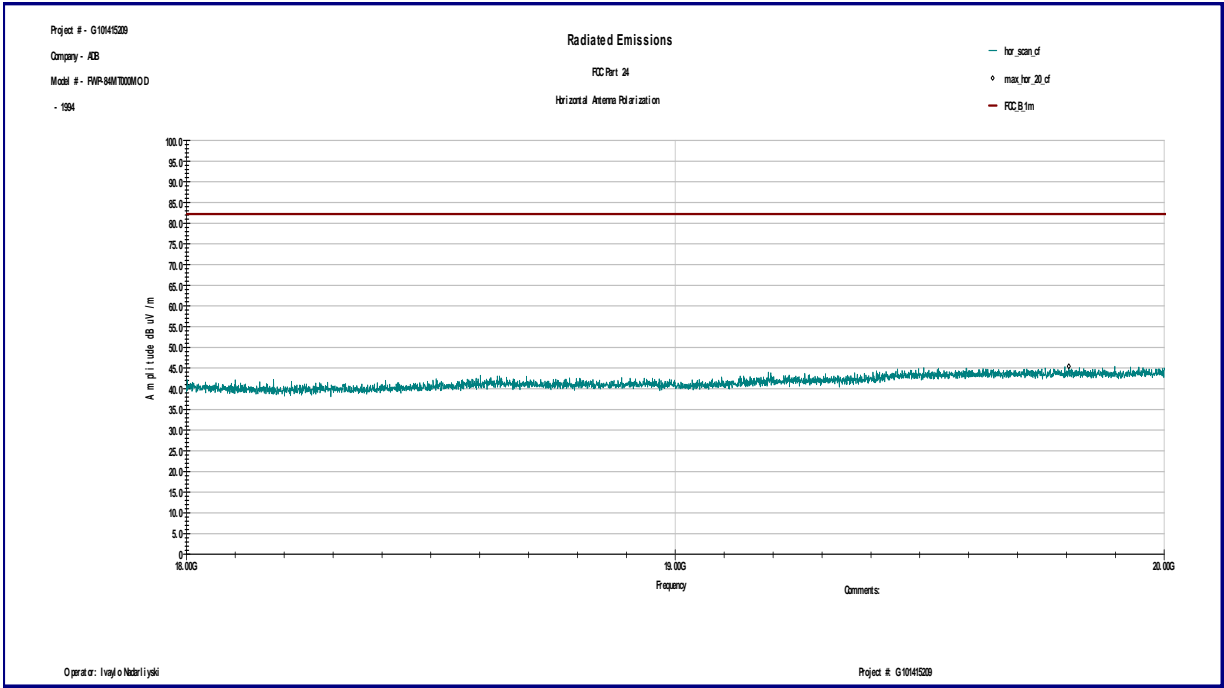
Graph 15



Graph 16



Graph 17



Graph 18



5.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	INTERTEK ID	CAL DUE	USED
Spectrum Analyzer	R & S	FSP 40	100024	12559	11/29/2013	<input checked="" type="checkbox"/>
Spectrum Analyzer	R & S	ESCI	100358	12909	11/30/2013	<input checked="" type="checkbox"/>
Bicono-Log Antenna	Teseq	CBL6112D*	32859	25289	08/30/2014	<input checked="" type="checkbox"/>
Horn Antenna	EMCO	3115	9507-4513	9936*	05/28/2014	<input checked="" type="checkbox"/>
Waveguide Horn Antenna	EMCO	3116	9904-2423	9705	11/07/2013	<input checked="" type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1122951	13475	11/01/2013	<input checked="" type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-6F-16002600-25-10P	1222383	MIN-0065	11/01/2013	<input checked="" type="checkbox"/>
System	Quantum Change	TILE! Instrument Control	Ver. 3.4.K.29	15259	VBU	<input checked="" type="checkbox"/>