



EMC Test Data

Client:	Nokia Networks	Job Number:	J40138
Model:	R240 ODU	T-Log Number:	T41671
		Proj Eng:	Mark Briggs
Contact:	Nico van Waes		
Emissions Spec:	FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class:	-
Immunity Spec:	-	Environment:	-

EMC Test Data

For The

Nokia Networks

Model

R240 ODU



EMC Test Data

Client:	Nokia Networks	Job Number:	J40138
Model:	R240 ODU	T-Log Number:	T41671
Contact:	Nico van Waes	Proj Eng:	Mark Briggs
Emissions Spec:	FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class:	-
Immunity Spec:	-	Environment:	-

EUT INFORMATION

General Description

The EUT is a FHSS Radio which is designed to be used as part of a data network. It consists of an indoor unit (IDU) and outdoor unit (ODU). The device is intended for professional installation.

Normally, the ODU section of the EUT would be mounted on an antenna mast. The indoor section (ODU) comes in two versions, one connects directly into an AC outlet and the other has an external AC-DC adapter. Both versions have ethernet and HPNA (telephone) interfaces in addition to the data/power interface to the ODU. The ODU was treated as table-top equipment during testing. The ODU is powered and provided with data signals from an Indoor Unit (IDU)

The EUT can be configured with various different antennas of different gains. For multi-point configurations an Omni-directional antenna is used and the output power is adjusted to ensure that the maximum EIRP does not exceed 36dBm. For all other antenna types, which are used for point-to-point operation, the maximum output power is 27.5dBm. In actual use, the

The antennas used during testing represented the highest gain antennas of each type (Omni-directional, Sector). All tests were performed with ODU set for the highest output power (level 13).

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Nokia	R240 ODU	Radio ODU	None	NPD-R240-V01
Nokia	R240 IDU (pre-production version)	Radio IDU	None	
Nokia	R240 IDU (production version)	Radio IDU	None	
Maxrad	Z902	8dBi Omni antenna	Nokia code T38580.01	N/A
Sira System Radio	24W 10-90	10 dBi Sector antenna	18134	N/A

Other EUT Details

The ODU incorporates a Symbol PCMCIA card radio.

EUT Enclosure

The ODU enclosure is primarily constructed of die-cast aluminum. It measures approximately 10 inches wide by 4.5 inches deep by 4 inches high.

Modification History

Mod. #	Test	Date	Modification
1	-	-	-



EMC Test Data

Client:	Nokia Networks	Job Number:	J40138
Model:	R240 ODU	T-Log Number:	T41671
Contact:	Nico van Waes	Proj Eng:	Mark Briggs
Emissions Spec:	FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class:	-
Immunity Spec:	-	Environment:	-

Test Configuration #1

Support Equipment

No support equipment was connected during testing. The EUT was powered from its AC-DC adapter. No data connection was made to the data ports of the adapter since the EUT was configured to generate traffic internally to these ports.

ODU Interface Ports

EUT Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Antenna	Antenna	Direct connection for Omni antennas, 1m low-loss 50 ohm coaxial for others		
Data/DC Power	IDU	Custom cable	Shielded	3

IDU Interface Ports

EUT Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
RJ-11 port	Unterminated		Unshielded	5
Ethernet	Loopback	Cat-5	Shielded	5
Ethernet	Router		Shielded	5
dc port*	AC/DC adapter	Adapter	Shielded	1

* The pre-production IDU used an external AC-DC adapter. The production IDU has a self-contained AC-DC adapter and plugs directly into an AC outlet.

EUT Operation During Emissions

The EUT was configured to continuously transmit data packets at a rate of 2Mb/s. This data rate was selected since it produced the widest bandwidth signal (937 kHz) and would, therefore, give the highest emissions at the band edge. For spurious emissions, output power and bandwidth measurements the EUT was operating on a single channel (#0, 39 or 79 as noted in each test run). For all other measurements the EUT was operating in hopping mode. The output power amplifier attenuation, unless stated otherwise, was set to level 13 for all tests.



EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
	Proj Eng: Mark Briggs
Contact: Nico van Waes	
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: N/A

Radiated Emissions (Data From T41232)

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 12/27/2000	Config. Used: 1
Test Engineer: jmartinez	Config Change: None
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators used.

Unless stated otherwise the EUT was operating such that it constantly hopped on either the low, center or high channels.

Ambient Conditions: Temperature: 11°C
Rel. Humidity: 61%

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1a	RE, 30 - 18,000 MHz - Spurious Emissions In Restricted Bands	FCC Part 15.209 / 15.247(c)	Pass	-6dB @ 4802.14 MHz
1b	RE, 30 - 18,000 MHz - Spurious Emissions In Restricted Bands	FCC Part 15.209 / 15.247(c)	Pass	-4.9dB @ 4878 MHz
1c	RE, 30 - 18,000 MHz - Spurious Emissions In Restricted Bands	FCC Part 15.209 / 15.247(c)	Pass	-1dB @ 4957.81 MHz
2	Bandedge Measurement	FCC Part 15.209 / 15.247(c)	Pass	-.8dB @ 2.480 MHz



EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: N/A

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Run #1a: Radiated Spurious Emissions, 30-18,000 MHz. Low Channel @ 2.401 MHz

P = 24 dBm, 10 dBi antenna	dBuV/m
Power measurement converted to field strength using E-field formula	129.23
Limit for emissions outside of restricted bands:	- 20 dB

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4802.100	48.0	V	54.0	-6.0	Avg	315	1.1	
7203.080	42.3	V	54.0	-11.7	Avg	274	1.1	Noise Floor measurement
4802.100	56.9	V	74.0	-17.1	Pk	315	1.1	
7203.080	53.7	V	74.0	-20.3	Pk	274	1.1	Noise Floor measurement

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.
Note 2:	After second harmonic, no other harmonic emission detected 20-dB of the limit. Vertical worst case. For emission above the second harmonic place the horn antenna close to the unit, but no harmonic emission detected.



EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: N/A

Run #1b: Radiated Spurious Emissions, 30- 18,000 MHz. Center Channel @ 2.439 MHz

P = 25 dBm, 10 dBi antenna	dBuV/m
Power measurement converted to field strength using E-field formula	130.22
Limit for emissions outside of restricted bands:	- 20 dB

Frequency MHz	Level dBµV/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
4878.000	49.2	H	54.0	-4.8	Avg	315	1.1	
4878.000	46.9	V	54.0	-7.1	Avg	285	1.1	
7317.000	40.9	V	54.0	-13.1	Avg	311	1.1	
7317.000	40.8	H	54.0	-13.2	Avg	274	1.1	
4878.000	58.3	H	74.0	-15.7	Pk	315	1.1	
4878.000	56.1	V	74.0	-18.0	Pk	285	1.1	
7317.000	53.7	H	74.0	-20.3	Pk	274	1.1	
7317.000	53.1	V	74.0	-20.9	Pk	311	1.1	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.

Note 2: After second harmonic, no other harmonic emission detected 20-dB of the limit.



EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: N/A

Run #1c: Radiated Spurious Emissions, 30-18,000 MHz. High Channel @ 2.4789 MHz

P = 25 dBm, 10 dBi antenna	dBuV/m
Power measurement converted to field strength using E-field formula	130.22
Limit for emissions outside of restricted bands:	- 20 dB

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4957.810	53.1	H	54.0	-0.9	Avg	322	1.1	
4957.810	52.9	V	54.0	-1.1	Avg	314	1.1	
4957.810	62.8	H	74.0	-11.2	Pk	322	1.1	
4957.810	61.6	V	74.0	-12.4	Pk	314	1.1	
7436.700	41.2	H	54.0	-12.8	Avg	334	1.1	
7436.700	41.1	V	54.0	-13.0	Avg	222	1.1	
7436.700	53.3	H	74.0	-20.7	Pk	334	1.1	
7436.700	53.1	V	74.0	-20.9	Pk	222	1.1	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.

Note 2: After second harmonic, no other harmonic emission detected 20-dB of the limit.

Run# 2: Bandedge measurements

			Pk	Limit	Margin
High Channel:		130.17 - 65 =	65.2	74	-8.8
Peak	130.17 dBuV/m	118.21 - 65 =	Avg		
Average	118.21 dBuV/m		53.2	54	-0.8

Delta Method: 126.67 dBuV/30kHz Bw
61.67 dBuV @ restricted in-band

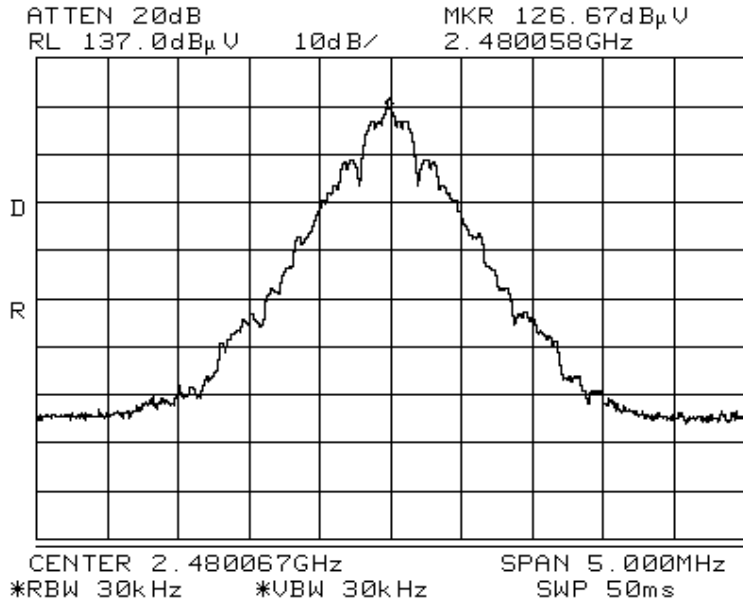
Low Channel:

			Pk	Limit	Margin
Peak	130.04 dBuV/m		59.4	74	-14.6
Average	116.83 dBuV/m	130.04 - 70.67 =	Avg		
Delta Method: 126 dBuV/30kHz Bw		116.83 - 70.67 =	46.2	54	-7.8
	55.33 dBuV @ restricted in-band				



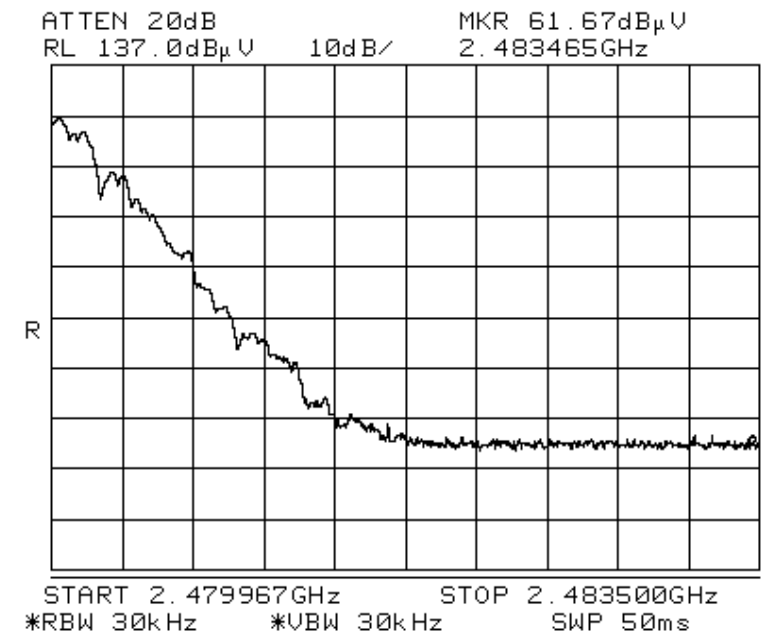
EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: N/A



**Fundamental relative
bandedge measurement**

High Channel



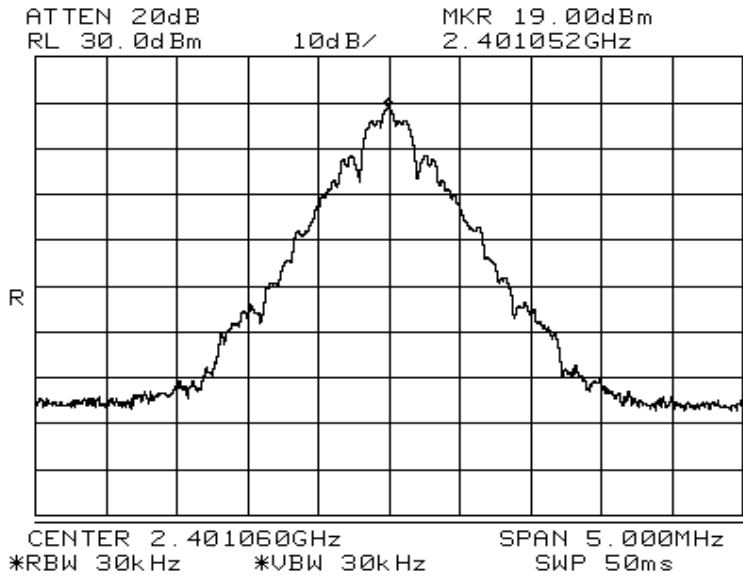
**bandedge relative
measurement**

High Channel

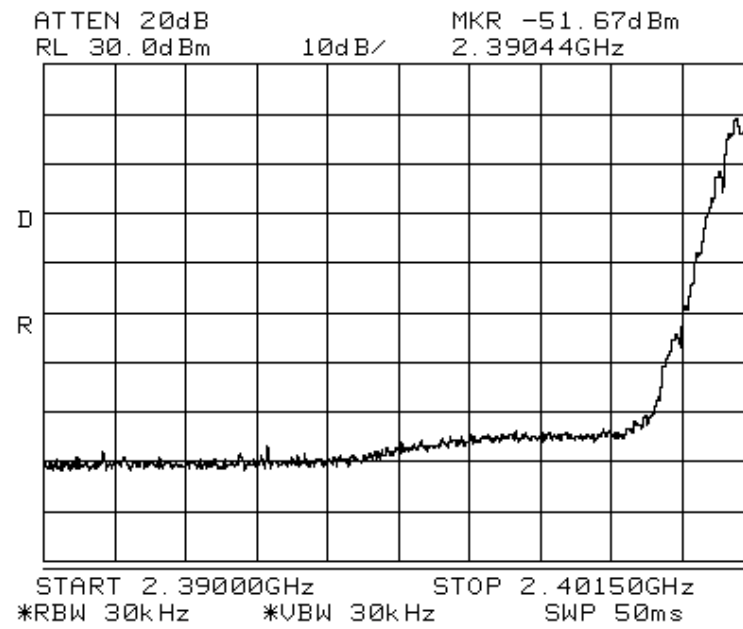


EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: N/A



**bandedge relative
measurement
Low channel**



**bandedge relative
measurement
Low channel**



EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: -

Run #1: AC Power Port Conducted Emissions, 0.45 - 30 MHz 120 V / 60 Hz

Frequency MHz	Level dB μ V	Power Lead	FCC B		Detector QP/Ave	Comments
			Limit	Margin		
3.109	42.3	Line 1	48	-5.7	QP	
2.9648	39.1	Neutral	48	-8.9	QP	
23.1279	36.4	Line 1	48	-11.6	QP	
0.5706	35.3	Neutral	48	-12.7	QP	
1.3878	35.1	Neutral	48	-12.9	QP	
2.6138	35	Line 1	48	-13	QP	
0.5718	34.8	Line 1	48	-13.2	QP	
23.1276	33.4	Neutral	48	-14.6	QP	

Note 1: No Average readings made - QP readings were more than 6dB below the Average limit

Note 2:



EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: -

AC Powerline Conducted Emissions - Pre-Production IDU (Data From T41209)

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 12/20/2000	Config. Used: #1
Test Engineer: Rafael	Config Change:
Test Location: SVOATS #1	EUT Voltage: 120V/60Hz

General Test Configuration

For tabletop equipment, the EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN.

Ambient Conditions: Temperature: 5.6°C
 Rel. Humidity: 78%

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power 120V/60Hz	FCC B	Pass	-1.3dB @ 3.7164MHz

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: -

Run #1: AC Power Port Conducted Emissions, 0.45 - 30 MHz 120 V / 60 Hz

Frequency MHz	Level dB μ V	Power Lead	FCC B		Detector QP/Ave	Comments
			Limit	Margin		
3.7164	46.7	Neutral	48	-1.3	QP	
3.86	46.2	Neutral	48	-1.8	QP	
3.29	46	Line 1	48	-2	QP	
3.99	44.5	Line 1	48	-3.5	QP	
3.86	41.9	Line 1	48	-6.1	QP	
1.43	38.7	Line 1	48	-9.3	QP	
26.75	38.3	Line 1	48	-9.7	QP	
0.9927	37.2	Neutral	48	-10.8	QP	
26.6552	37.1	Neutral	48	-10.9	QP	
3.3021	35.4	Neutral	48	-12.6	QP	Applied the 13dB Correction Factor Per FCC 15.107



EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: N/A

Radiated Emissions (Data Taken From T40142)

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 10/30/2000 Config. Used: 1
Test Engineer: David W. Bare Config Change:
Test Location: SVOATS #1 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was located on a 0.8m high table during radiated spurious emissions testing. The support equipment was located on the ground-plane beneath the table.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Summary of Results

Run #	Test Performed	Limit	Result	Comments
1	Restricted Band Emissions - 8dBi Omni	FCC Part 15.209 / 15.247(c)	Pass	

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: N/A

Run #1, Radiated Spurious Emissions. EUT with 8dBi OMNI antenna, output power at level 13. Combination of antenna/output power that results in the highest output power.

8dBi Omni Antenna, Output Power @ level 13 (maximum deployed output power, 27.5dBm nominal)

Data rate = 2Mb/s (widest possible bandwidth to give maximum overspill into 2483.5MHz restricted band)

Run #1a: Low Channel (Channel 0)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	51.8	H	54.0	-2.2	Pk	300	1.0	Note 3
2390.000	71.4	V	74.0	-2.6	Pk	0	1.0	Note 3
2390.000	69.6	H	74.0	-4.4	Pk	300	1.0	Note 3
2390.000	49.2	V	54.0	-4.8	Avg	0	1.0	Note 3
4802.000	48.8	V	54.0	-5.2	Avg	250	1.0	
14406.000	45.3	H	54.0	-8.7	Avg	0	1.0	noise floor
14406.000	45.3	V	54.0	-8.7	Avg	0	1.0	noise floor
7203.000	41.0	H	54.0	-13.0	Avg	0	1.0	noise floor
7203.000	41.0	V	54.0	-13.0	Avg	0	1.0	noise floor
4802.000	39.7	H	54.0	-14.3	Avg	280	1.0	
14406.000	56.9	H	74.0	-17.1	Pk	0	1.0	noise floor
14406.000	56.9	V	74.0	-17.1	Pk	0	1.0	noise floor
4802.000	55.2	V	74.0	-18.8	Pk	250	1.0	
7203.000	51.9	H	74.0	-22.1	Pk	0	1.0	noise floor
7203.000	51.9	V	74.0	-22.1	Pk	0	1.0	noise floor
4802.000	49.7	H	74.0	-24.3	Pk	280	1.0	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used.
Note 2:	All other emissions at harmonics of the fundamental were below the noise floor.
Note 3:	Measurement of highest emission in the restricted band starting at 2390 MHz.



EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: N/A

Run #1b: Center Channel (Channel 39)

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
4878.170	47.4	V	54.0	-6.6	Avg	250	1.0	
12195.000	44.8	V	54.0	-9.2	Avg	0	1.0	noise floor
12195.000	44.8	V	54.0	-9.2	Avg	0	1.0	noise floor
4878.000	44.2	H	54.0	-9.8	Avg	280	1.0	
7317.000	40.7	H	54.0	-13.3	Avg	0	1.0	noise floor
7317.255	40.7	V	54.0	-13.3	Avg	0	1.0	noise floor
12195.000	56.6	V	74.0	-17.4	Pk	0	1.0	noise floor
12195.000	56.6	V	74.0	-17.4	Pk	0	1.0	noise floor
4878.170	54.9	V	74.0	-19.1	Pk	250	1.0	
4878.000	52.4	H	74.0	-21.6	Pk	280	1.0	
7317.000	51.7	H	74.0	-22.3	Pk	0	1.0	noise floor
7317.255	51.7	V	74.0	-22.3	Pk	0	1.0	noise floor

Note 1: For emissions in restricted bands, the limit of 15.209 was used.

Note 2: All other emissions at harmonics of the fundamental were below the noise floor.

--



EMC Test Data

Client: Nokia Networks	Job Number: J40138
Model: R240 ODU	T-Log Number: T41671
Contact: Nico van Waes	Proj Eng: Mark Briggs
Spec: FCC § 15.107(a), 15.109(a), 15.207, and 15.247	Class: N/A

Run #1c: High Channel (Channel 79)

Frequency MHz	Level dBµV/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
2483.500	68.7	H	74.0	-5.3	Pk	300	1.0	Note 3
2483.500	51.3	H	54.0	-2.7	Pk	300	1.0	Note 3
4958.000	47.7	V	54.0	-6.3	Avg	280	1.0	
2483.500	65.0	V	74.0	-9.0	Pk	0	1.0	Note 3
2483.500	44.7	V	54.0	-9.3	Avg	0	1.0	Note 3
4958.000	44.2	H	54.0	-9.8	Avg	20	1.0	
17353.000	44.2	V	54.0	-9.8	Avg	0	1.0	noise floor
17353.000	44.2	V	54.0	-9.8	Avg	0	1.0	noise floor
7437.000	40.1	H	54.0	-13.9	Avg	0	1.0	noise floor
7437.000	40.1	V	54.0	-13.9	Avg	0	1.0	noise floor
17353.000	56.8	V	74.0	-17.2	Pk	0	1.0	noise floor
17353.000	56.8	V	74.0	-17.2	Pk	0	1.0	noise floor
4958.000	54.6	V	74.0	-19.4	Pk	280	1.0	
4958.000	51.8	H	74.0	-22.2	Pk	20	1.0	
7437.000	51.3	H	74.0	-22.7	Pk	0	1.0	noise floor
7437.000	51.3	V	74.0	-22.7	Pk	0	1.0	noise floor

Note 1:	For emissions in restricted bands, the limit of 15.209 was used.
Note 2:	All other emissions at harmonics of the fundamental were below the noise floor.
Note 3:	Measurement of highest emission in the restricted band starting at 2483.5 MHz.

Spectrum Analyzer Plots – T40142, 10-24-00
Nokia Model R240

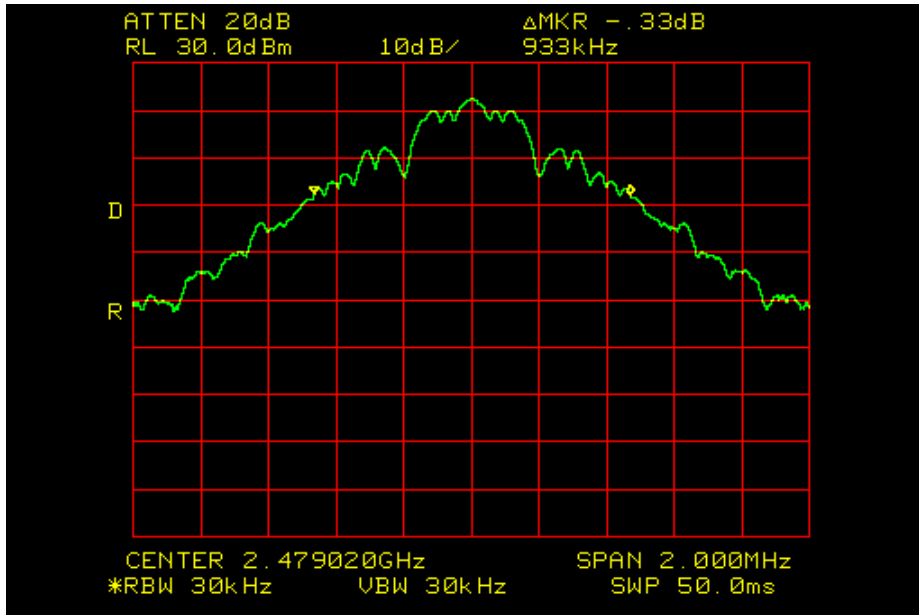


Bandwidth – 15.247(a)(1)(ii) – EUT set for Maximum CW output power, Channel 1

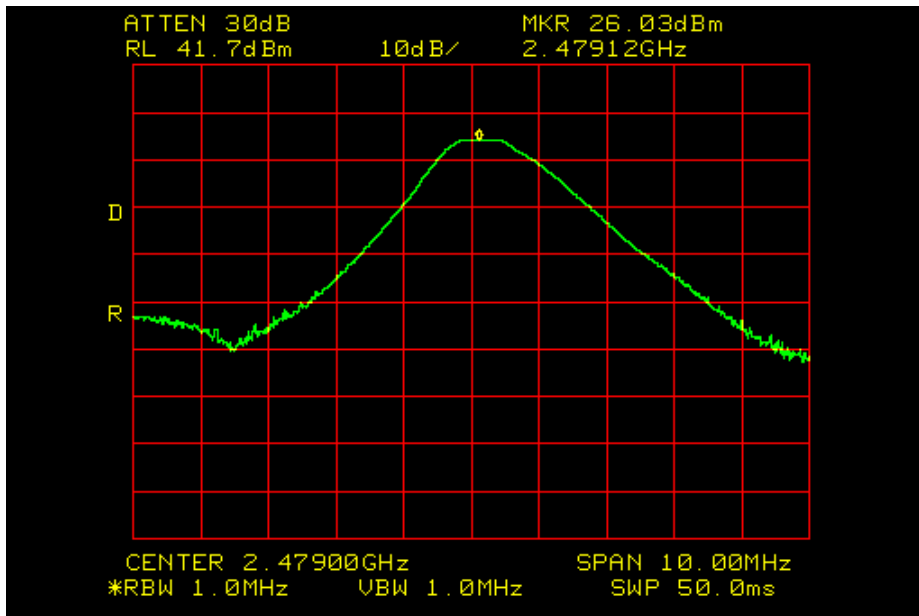


Bandwidth – 15.247(a)(1)(ii) – EUT set for Maximum CW output power, Channel 39

Spectrum Analyzer Plots – T40142, 10-24-00
Nokia Model R240

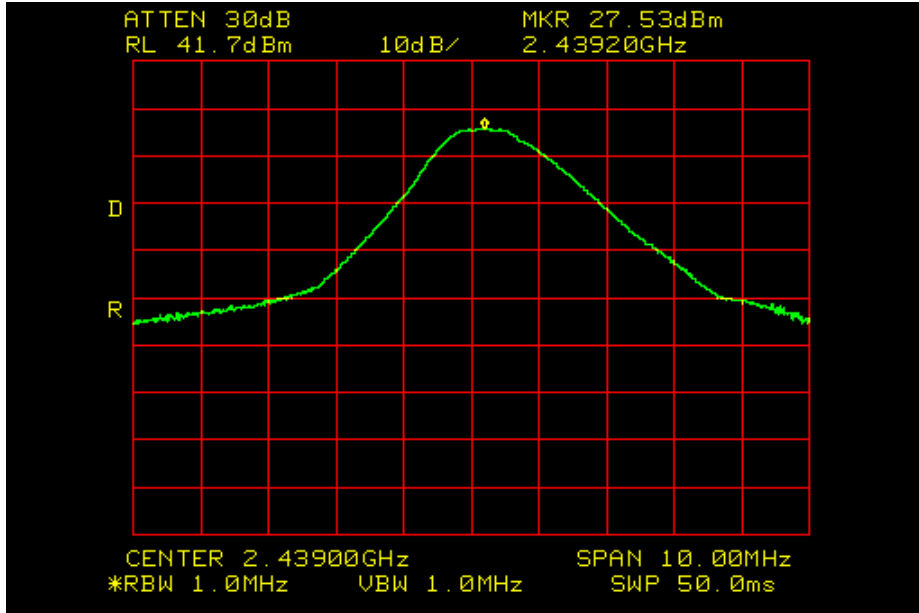


Bandwidth – 15.247(a)(1)(ii) – EUT set for Maximum CW output power, Channel 79

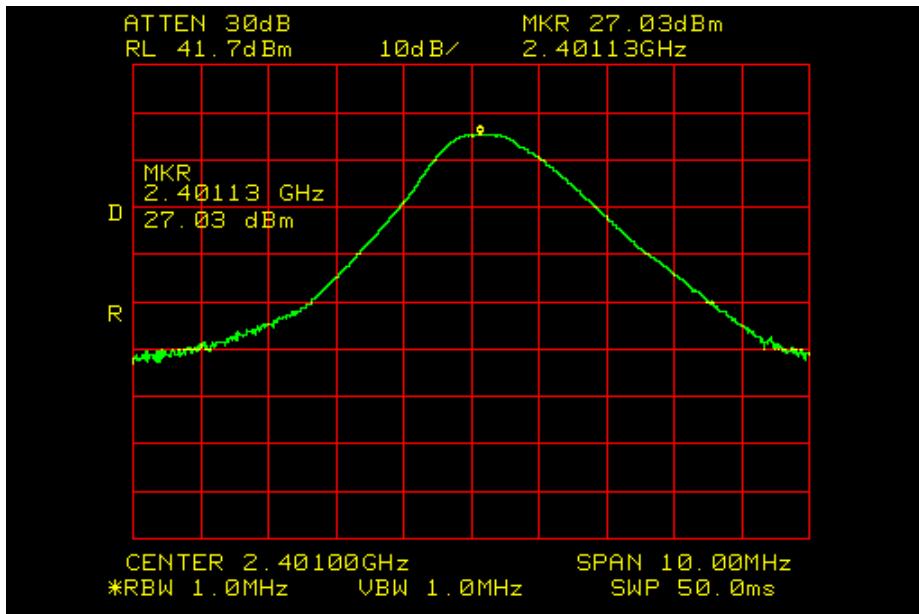


Output Power – 15.247(b)(1) – EUT set for Maximum data modulated output power, Channel 79

Spectrum Analyzer Plots – T40142, 10-24-00
Nokia Model R240

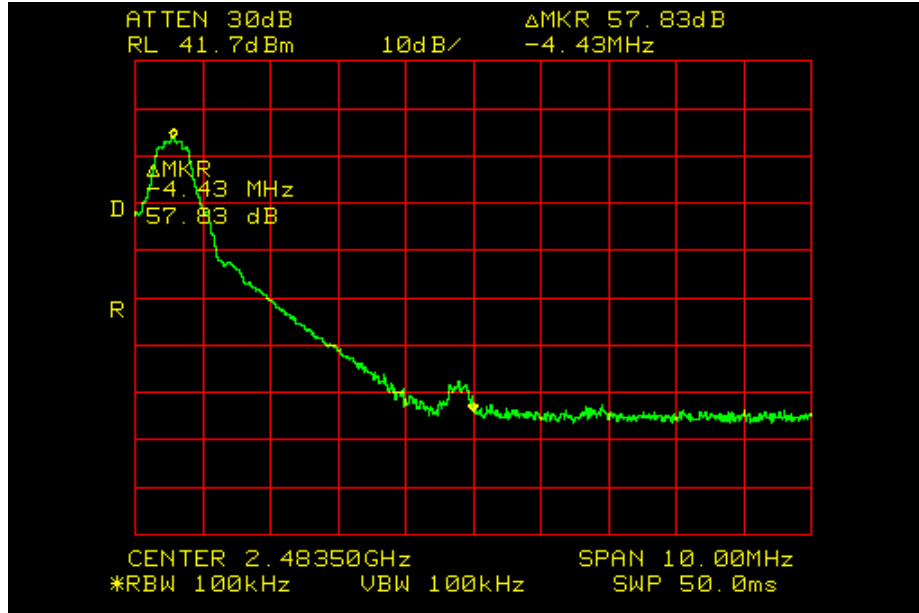


Output Power – 15.247(b)(1) – EUT set for Maximum data modulated
output power, Channel 39



Output Power – 15.247(b)(1)– EUT set for Maximum data modulated
output power, Channel 1

Spectrum Analyzer Plots – T40142, 10-24-00
Nokia Model R240

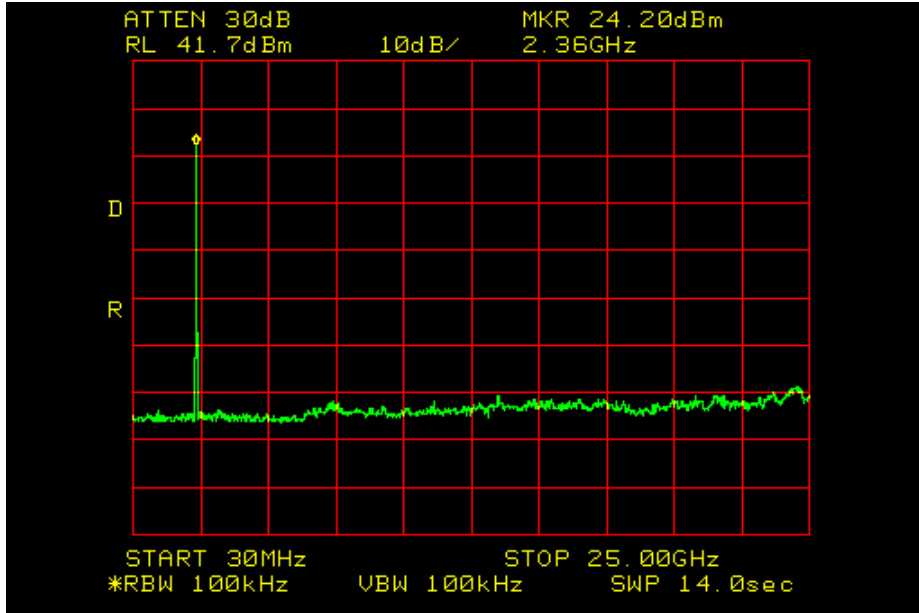


Bandedge Spurious – 15.247(c) – EUT set for Maximum data modulated output power, Channel 79

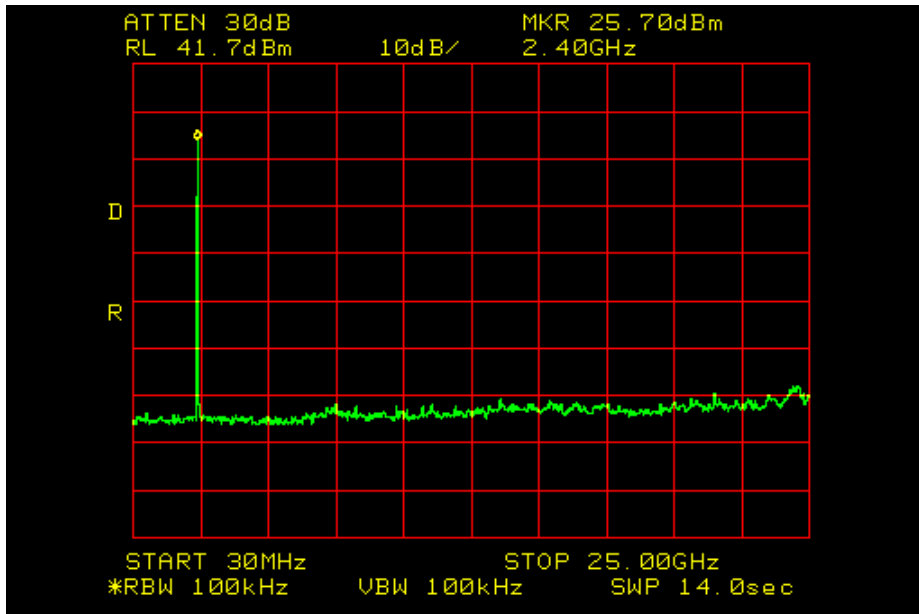


Bandedge Spurious – 15.247(c) – EUT set for Maximum data modulated output power, Channel 1

Spectrum Analyzer Plots – T40142, 10-24-00
Nokia Model R240

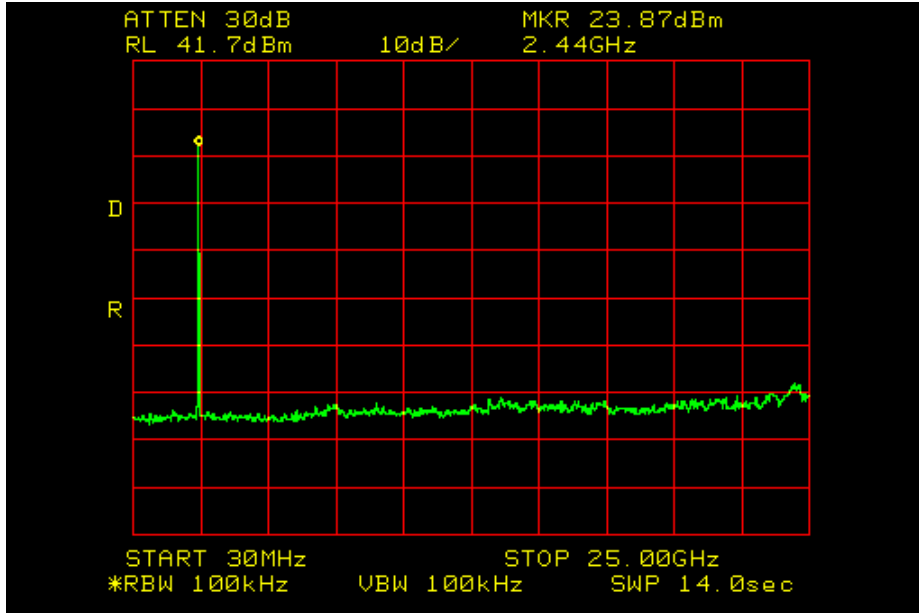


Out of Band Spurious – 15.247(c) – EUT set for Maximum data modulated output power, Channel 1

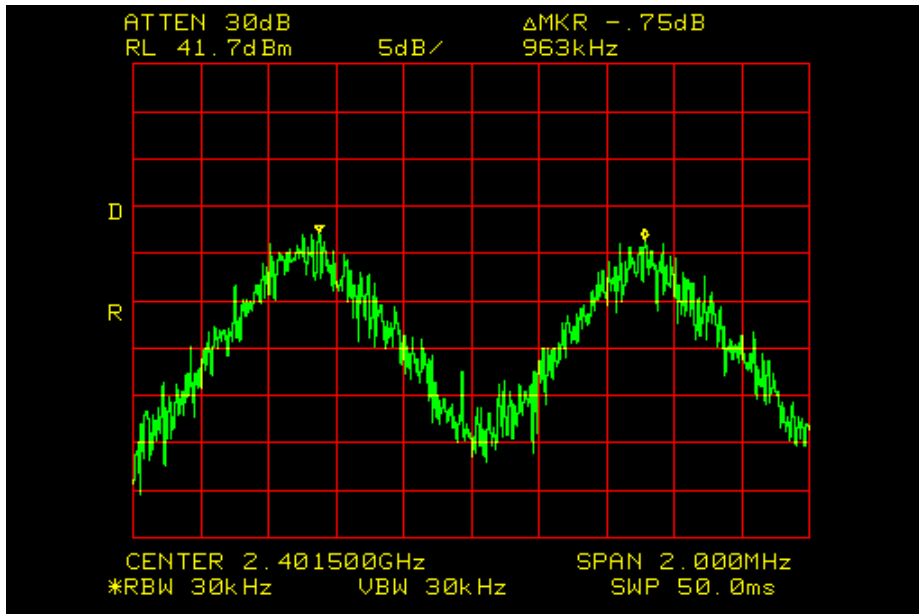


Out of Band Spurious – 15.247(c) – EUT set for Maximum data modulated output power, Channel 39

Spectrum Analyzer Plots – T40142, 10-24-00
Nokia Model R240

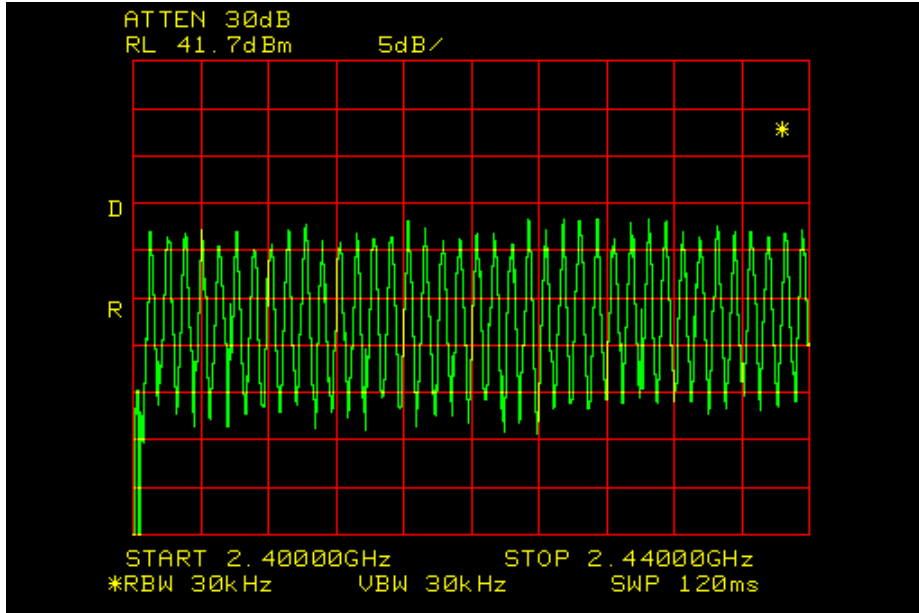


Out of Band Spurious – 15.247(c) – EUT set for Maximum data modulated output power, Channel 79

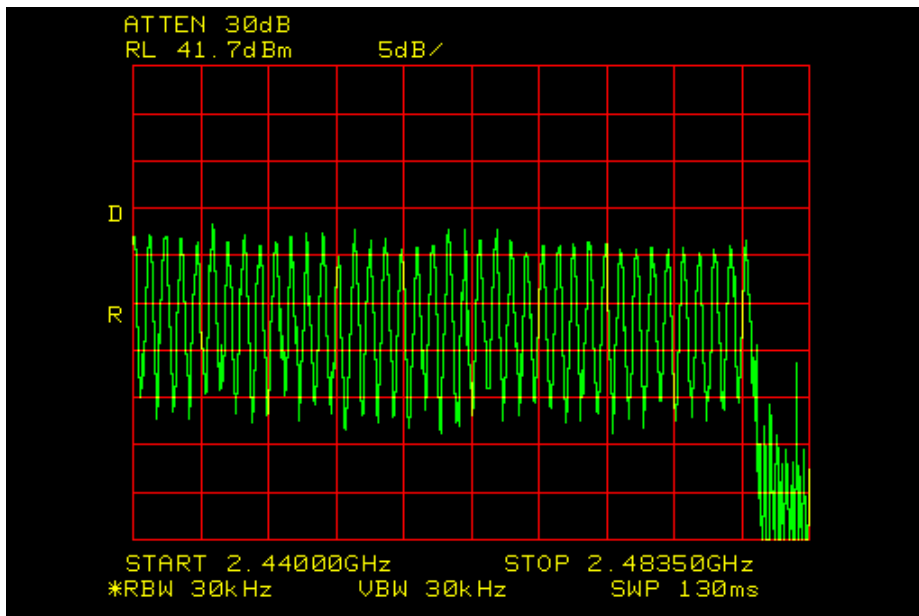


Channel Separation – 15.247(a)(1) – EUT set for Maximum data modulated output power

Spectrum Analyzer Plots – T40142, 10-24-00
Nokia Model R240



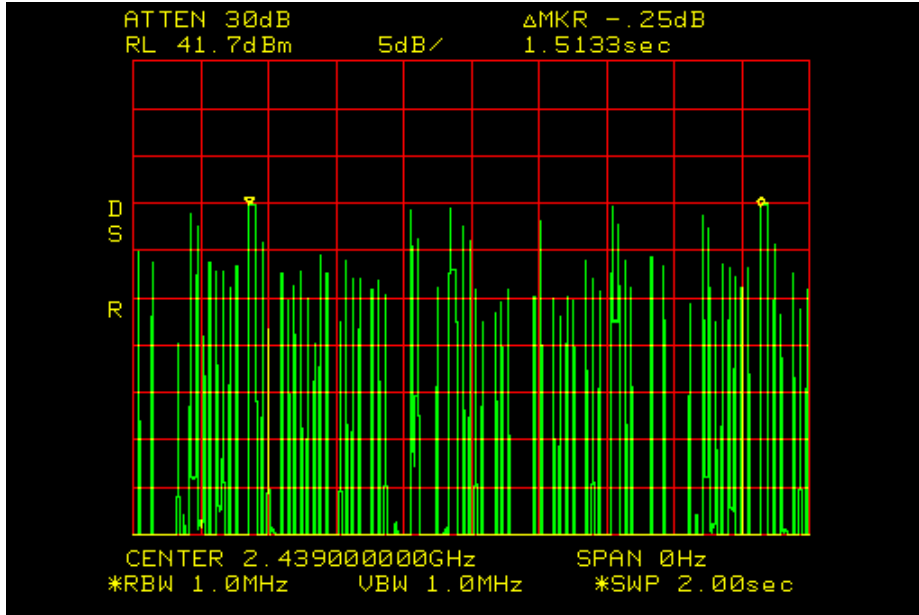
of Channels– 15.247(a)(1)(ii) – EUT set for Maximum data modulated output power
39 channels in Plot



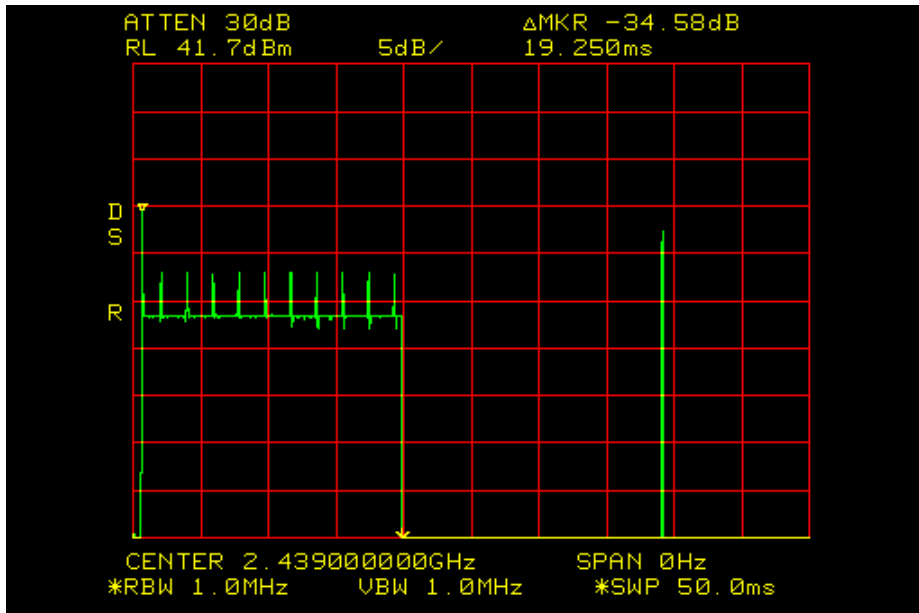
of Channels– 15.247(a)(1)(ii) – EUT set for Maximum data modulated output power
40 channels in Plot

Total # of Channels = 79

Spectrum Analyzer Plots – T40142, 10-24-00
Nokia Model R240



Occupancy Time– 15.247(a)(1)(ii) – Time between successive use of one channel



Occupancy Time– 15.247(a)(1)(ii) – Duration of channel usage

$$\begin{aligned} \text{Occupancy in any 30 second period} &= 30 / \text{time between successive uses of the channel} * \\ &\quad \text{duration} \\ &= (30/1.513) * 19.25 = 382 \text{ ms} \end{aligned}$$

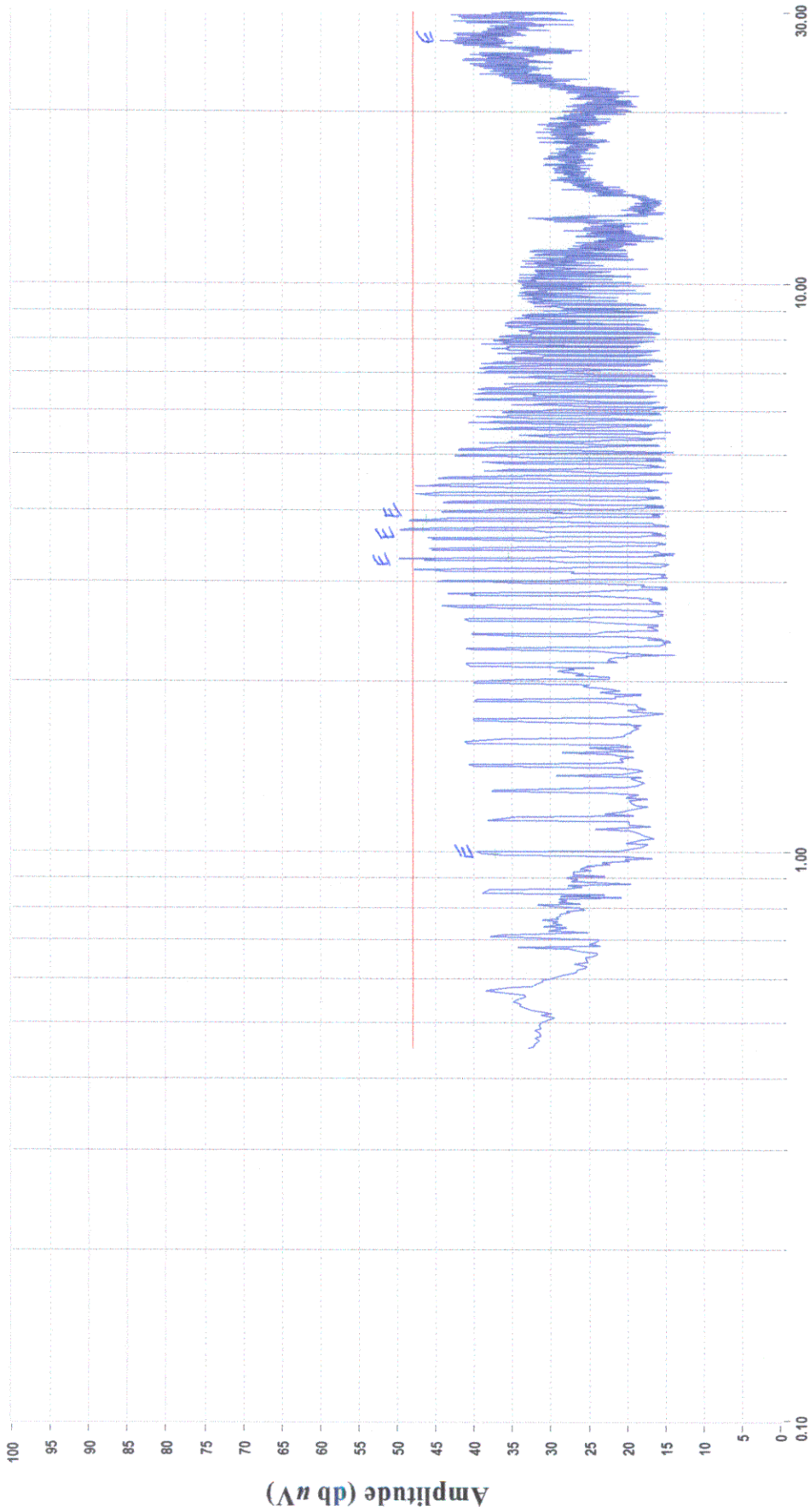


SVOATS #1: Nokia R240 Marina w/ Temp Data Box Run 1

Spec:
FCC-B

Mains Lead
Neutral

T41209



120V/60Hz. E = EUT, A = Ambient

Rafael Varelas



SVOATS #1: Nokia R240 Marina w/ Temp Data Box Run 1

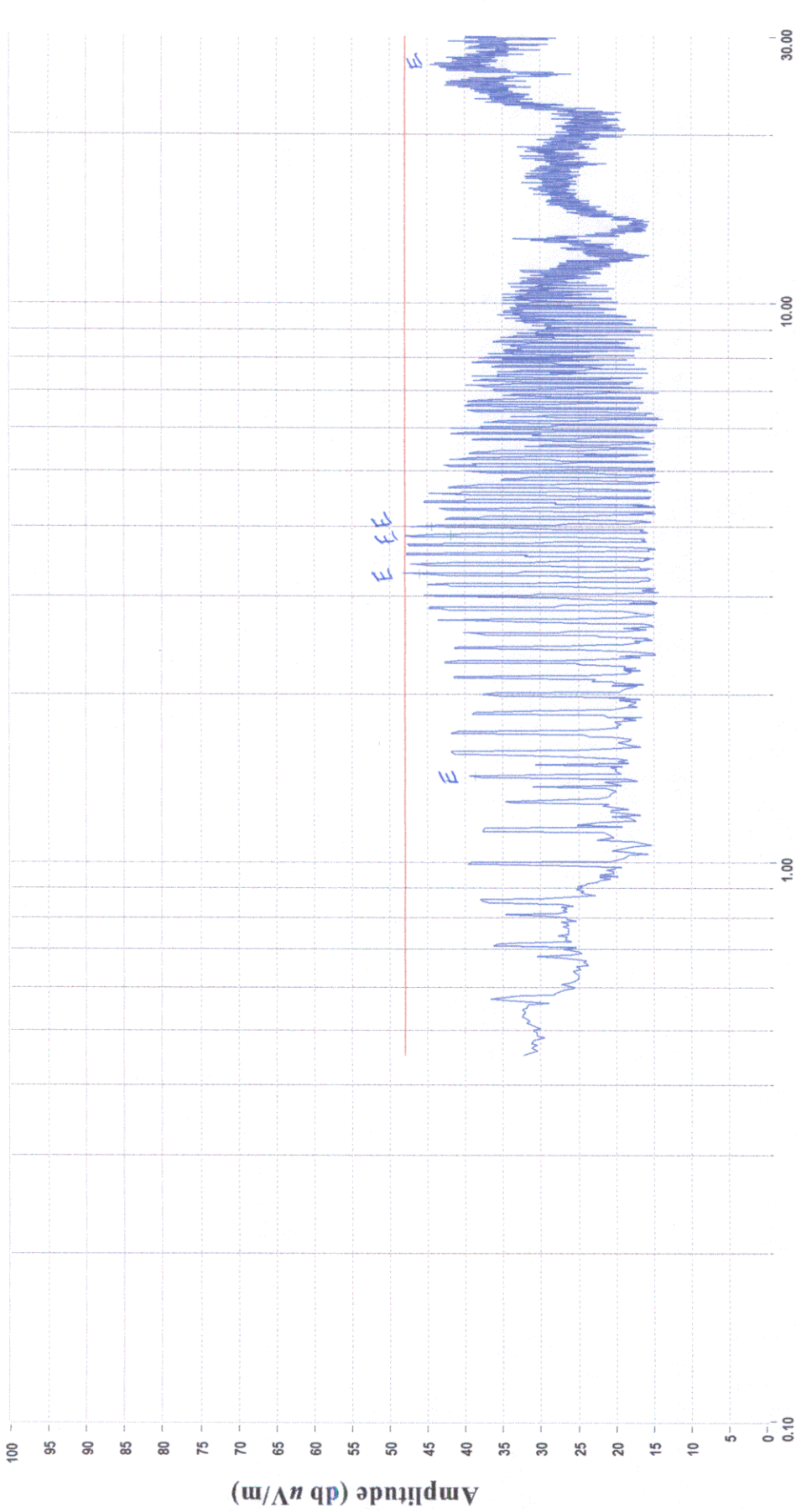
Spec:

FCC-B

Mains Lead

Line 1

T41209



120V/60Hz. E = EUT, A = Ambient

Scan
Peak
Quasi-peak
Average
QuasiPeak Limit
QuasiPeak Limit
12/21/00

Rafael Varelas

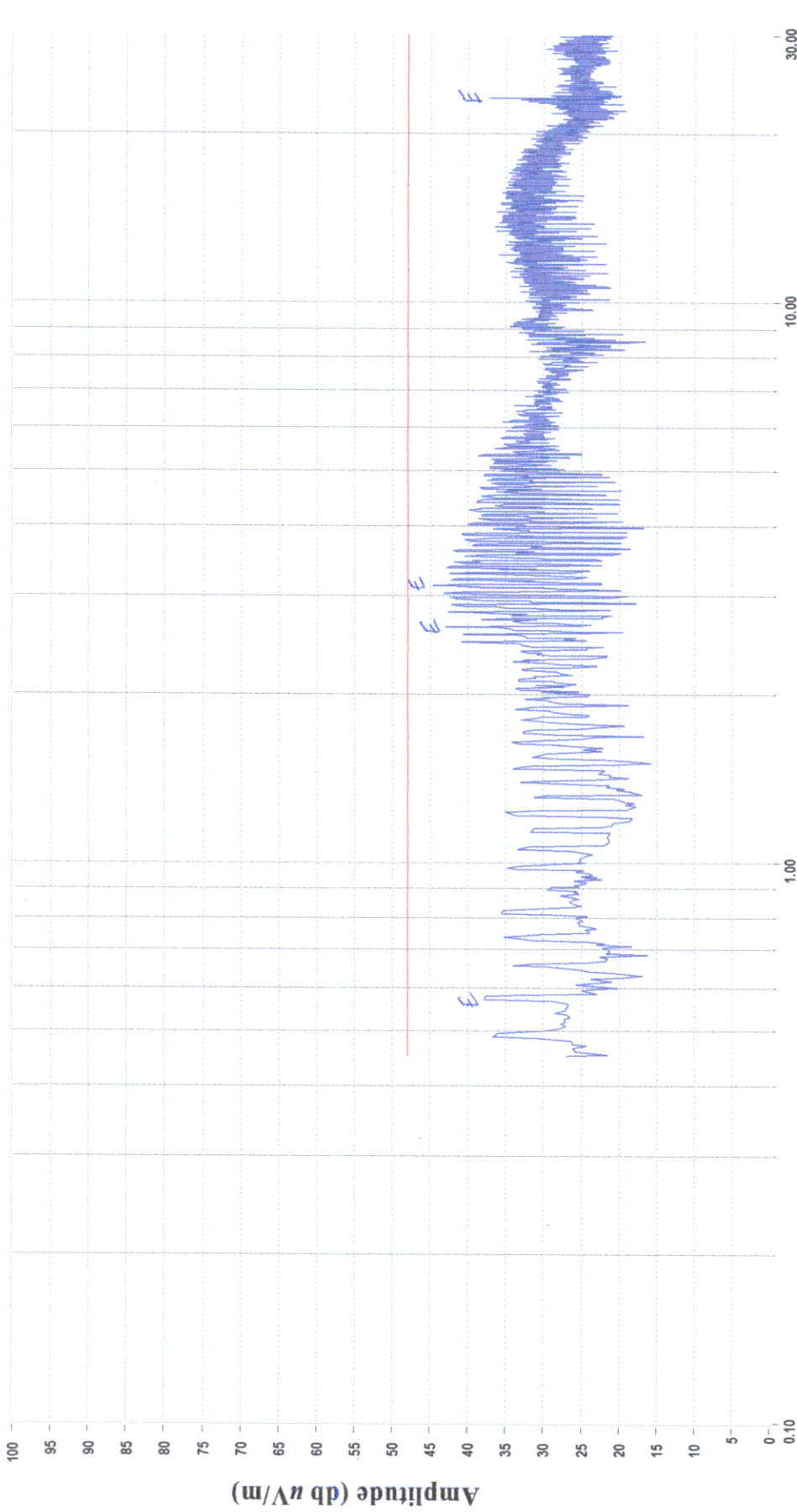


SVOATS #1: Nokia R240 Marina Run 1

Spec:
FCC-B

Mains Lead
Line 1

T41210



120V/60Hz. E = EUT, A = Ambient

Scan
Peak
Quasi-peak
Average
QuasiPeak Limit
QuasiPeak Limit

12/21/00

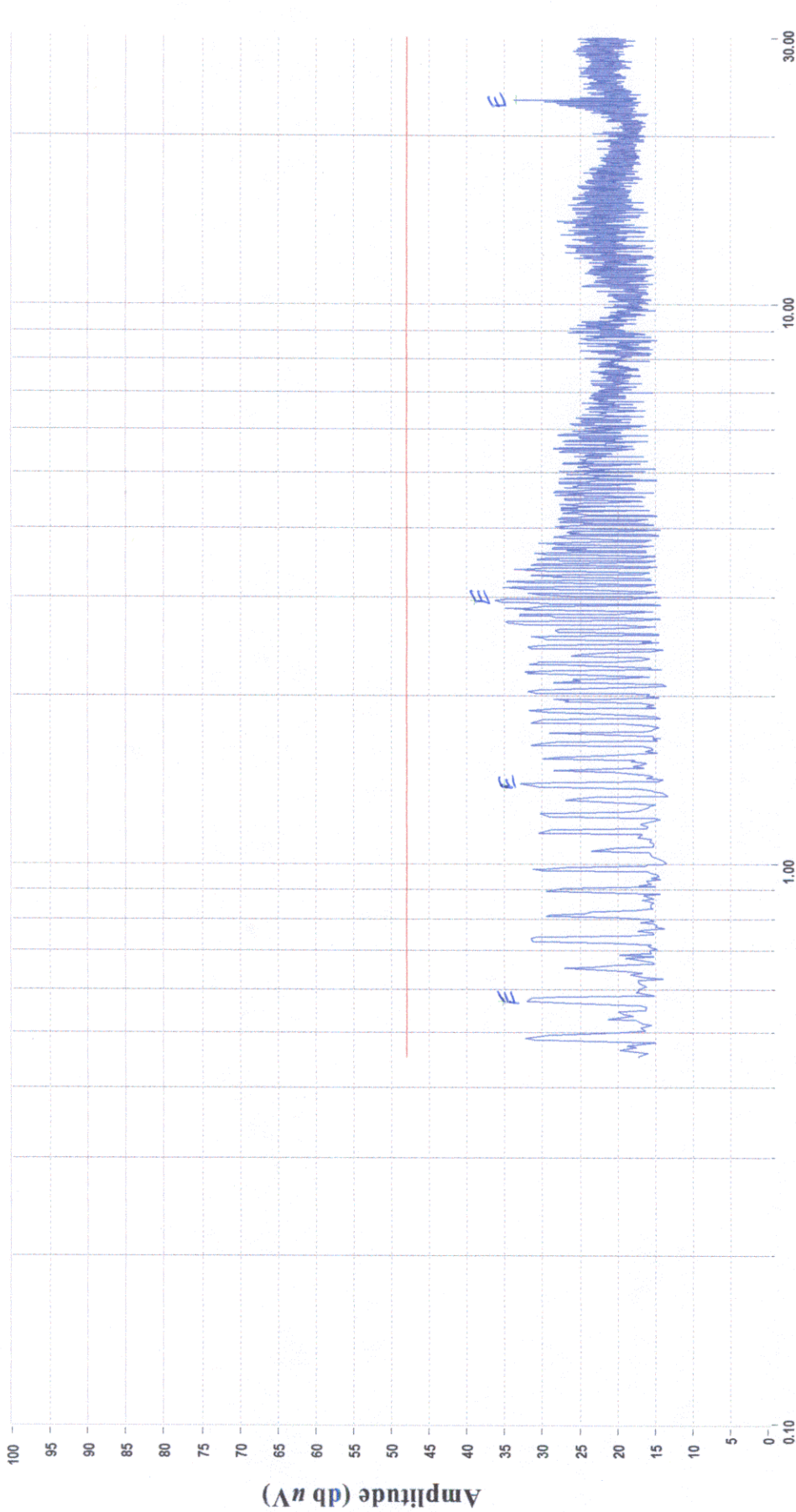
Rafael Varelas



SVOATS #1: Nokia R240 Marina Run 1

Spec:
FCC-B
Mains Lead
Neutral

T41210



Legend:

- Scan
- Peak
- Quasi-peak
- Average
- QuasiPeak Limit
- QuasiPeak Limit

12/21/00

120V/60Hz. E = EUT, A = Ambient

Rafael Varelas