TEST REPORT

Date:	**ESPOO 30.5.2013**	Page:	**1 (31)**
		Appendices	–

Number: No. 1 / 1 **206548A**

Date of handing in: 03.04.2013

Tested by:

Timo Hietala, Test Specialist

Reviewed by:

Janne Nyman, Compliance Specialist

SORT OF EQUIPMENT:	**Digital hearing aid system**
MARKETING NAME:	
TYPE:	***DM30***
MANUFACTURER:	***Comfort Audio AB***
CLIENT:	**Comfort Audio AB**
ADDRESS:	**Box 154, SE-30105, Halmstad, Sweden**
TELEPHONE:	**+46 35 260 16 00**
TEST LABORATORY:	**Nemko Oy**
FCC REG. NO.	**359859 October 20, 2011**
IC FILE NO.	**2040F-1 November 22, 2012**
FCC ID:	**UOJ-DG06T**
IC:	**6769A-DG06T**

SUMMARY:

In regard to the performed tests the equipment under test fulfils the requirements defined in the test specifications, see page 2 for details

Summary of performed tests and test results

Section in CFR 47	*Section in RSS-GEN or RSS-210*		*Result*
15.247 (b)(3)	RSS-Gen 4.8 RSS-210 A8.4 (4)	Conducted peak output power	PASS
15.247 (e)	RSS-210 A8.2 (b)	Power Spectral Density	PASS
15.247 (d)	RSS-Gen 4.9 RSS-210 A8.5	Band-edge compliance of RF emissions	PASS
15.247 (d) 15.209 (a)	RSS-Gen 4.9 RSS-210 A8.5	Spurious radiated emissions	PASS
15.207	RSS-Gen 7.2.4	AC power line conducted emissions	PASS
15.247 (a)(2)	RSS-Gen 4.6.2 RSS-210 A8.2 (a)	6 dB bandwidth	PASS
2.1049	RSS-Gen 4.8/4.6.3	20 dB bandwidth	X

CISPR 22		Radiated emissions 30-1000 MHz	PASS, class B
CISPR 22		AC power line conducted emissions	PASS, class B

Explanations:

PASS	The EUT passed that particular test.
FAIL	The EUT failed that particular test.
X	The measurement was done, but there is no applicable performance criteria.

Contents

1. EUT and Accessory Information

1.1 EUT description

Digital hearing aid system.

1.2 EUT and accessories

	unit	*type*	*s/n*
EUT1	**Digital hearing aid system**	**DM30**	**353**
	AC mains charger	**FW7600/05**	**-**
	Headphones	**Comfort Audio**	**-**
EUT2	**Digital hearing aid system (with temporary antenna connector)**	**DM30**	**1459**

Operating voltages

EUT:

DM30: **internal re-chargeable Li-ion Battery, 3.7V 650mAh**
AC Charger: **115V 60Hz AC**

1.3 Additional information related to testing

Tested Technology:	**Digital Transmissions system**	
Type of Unit	**Transceiver**	
Antenna type	**Integral**	
Antenna gain (dBi)	**<6dB**	
RF Exposure Classification	**Portable (<20 cm separation from user)**	
Modulation:	**FSK**	
Power Supply Requirement:	**Nominal**	**3.7V**
Transmit Frequency Range	**2400 to 2483.5 MHz**	
Transmit Channels Tested:	**Channel Number**	**Channel Frequency (MHz)**
	low	**2401**
	mid	**2440**
	high	**2480**

There are currently 30 unique channel setups (i.e. jump sequences) and they all consist of 5 channels. The channels in the setups have been selected based on the following “design rules”:
1. The channels shall be spread, as much as possible, over the full 2.4000-2.4835GHz bandwidth
2. No consecutive channel jump shall be less than 22MHz
3. All channels shall have, at least, 1MHz separation.
4. No setup must have two consecutive channels in common with another setup
5. The number of channels in the setup shall be odd
One frame consists of 47 bytes and takes, at a 500kbit/s gross data rate, ~0,75ms to transmit. After a change of channel (which occurs after every frame sent) radio re-calibration is required. The fastest “look up” method takes ~0,075ms. Thus EUT use 82.7% of the available bandwidth.
6. Pseudo-random hop sequence, equal use of each frequency, receiver matching bandwidth and synchronization

1.1 Interconnect Cables

☐ NONE

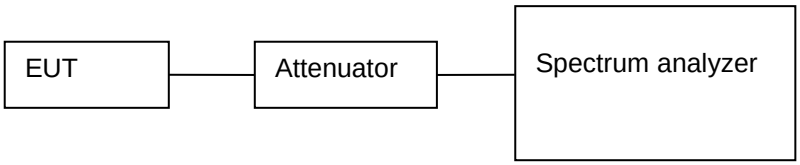
Quantity	Model/Type	Routing		Shielded / Unshielded	Description	Cable Length (m)
		From	To			
1		AC/DC adapter	EUT	shielded	DC cable	1.9
1	Comfort Audio	EUT	Headphones	shielded	Audio cable	1.2

1.2 Mode of Operation During tests

The EUT was tested while in a continuous transmit mode. The EUT was tuned to the lowest, middle, and highest channels. The EUT continuously transmitted pseudo-random data. While transmitting the EUT was setup to operate at the intended maximum power output available to the end user. For all test cases pre-scans were completed in all modes to determine worst case levels. The re-chargeable battery was fully charged.

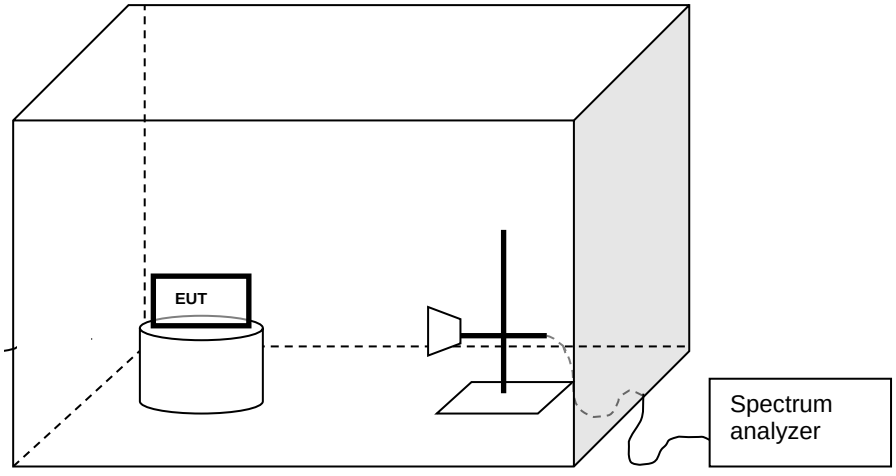
2. Test setups

Setup 1 (Conducted measurements)
The test was performed inside a shielded room. The antenna port of the EUT was connected via an attenuator to the spectrum analyser.



Setup 2 (Radiated measurements)

The test was performed inside a semi anechoic shielded room. For the duration of the test the EUT was placed on a non-conductive support 0.8 m high standing on the turntable. The tower and turn table were remotely controlled to turn the EUT and change the antenna polarization. The measured signal was routed from the measuring antenna to the spectrum analyzer.



3. Standards and measurement methods

The test were performed in guidance of the CFR 47, FCC Rules Part 15 Subpart C, CISPR 22 Ed. 6.0, ANSI C63.10 (2009), KDB 558074 D01 DTS Meas Guidance v03r01 “Digital Transmission Systems (DTS) Operating under Section 15.247“ 9/4/2013, IC standards RSS-GEN (Issue 3, December 2010) and RSS-210 (Issue 8, December 2010).

4. Test results

4.1 Conducted peak output power

The test was performed as a compliance test. The test parameters concerned were as follows:

EUT	**EUT2, setup 1**
Site name	**Nemko Oy / Perkkaa**
FCC rule part	**§ 15.247 (b)(3)**
Section in RSS-210	**A8.4 (4)**
Date of testing	**13.5.2013**
Test equipment	**566, 393**
Test conditions	**22 °C, 30 % RH**

4.1.1 EUT operation mode

EUT operation mode	**Transmitter on**
EUT channel	**low, mid and high**

4.1.2 Test method and limit

The measurement is made according to ANSI C63.10 Section 6.10.1

Frequency range (MHz)	*Limit (W)*	*Limit (dBm)*
2400 – 2483.5	**≤ 1.0**	**≤ 30**

4.1.3 Test results

Channel / f (MHz)	*P (dBm)*	*Result*
low / 2401	**7.04**	**PASS**
mid / 2440	**6.62**	**PASS**
high / 2480	**5.60**	**PASS**

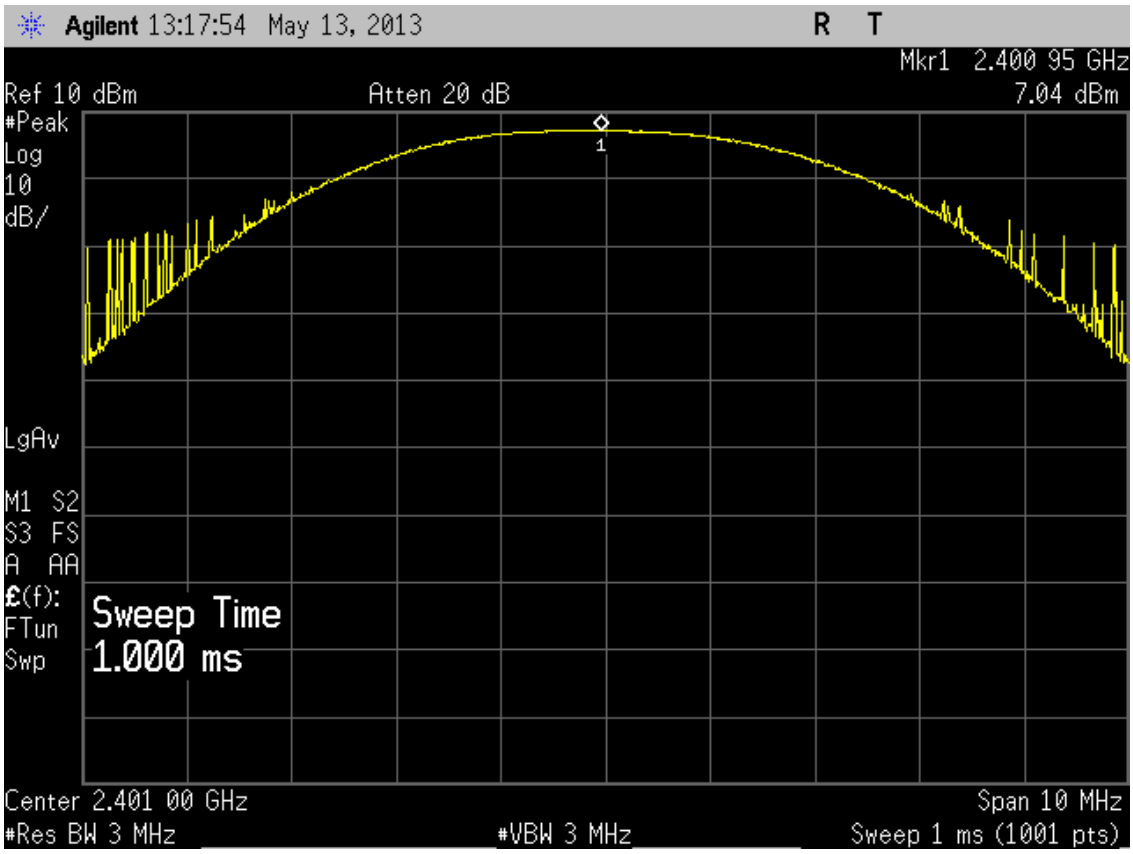


Figure 1. channel low, conducted peak output power

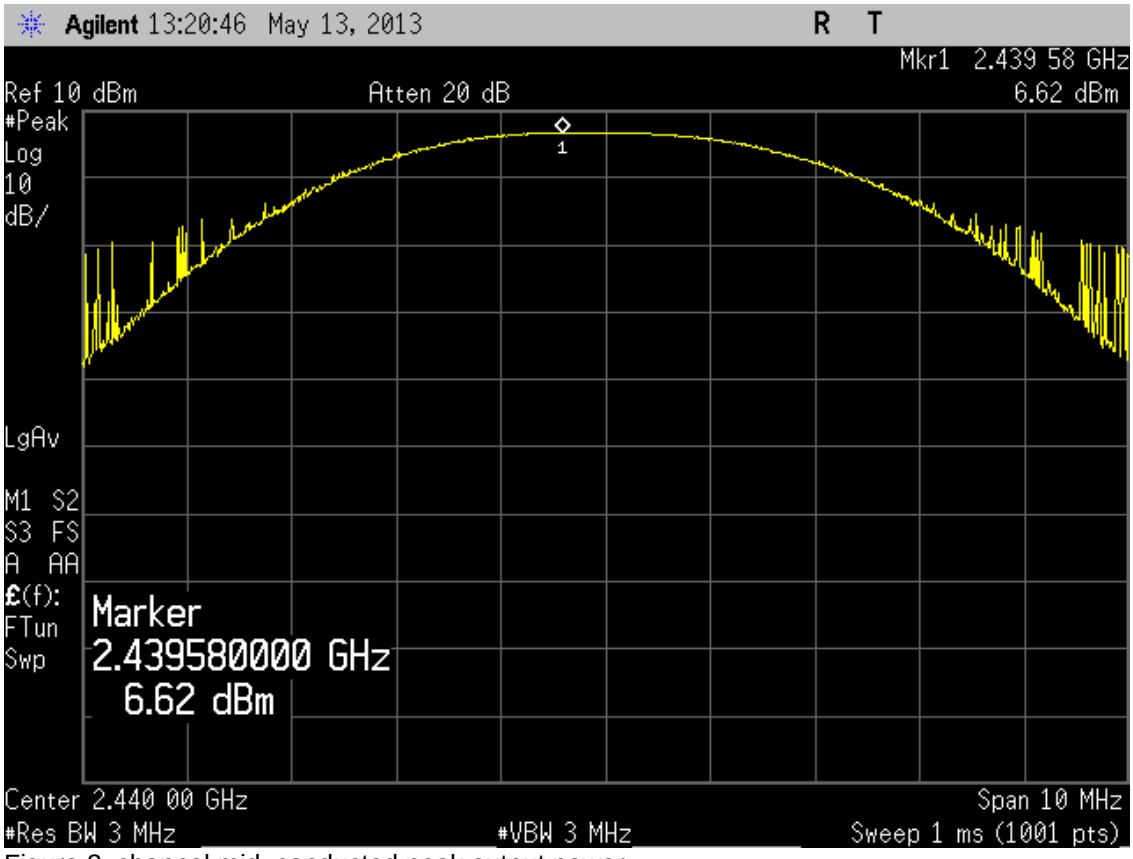


Figure 2. channel mid, conducted peak output power

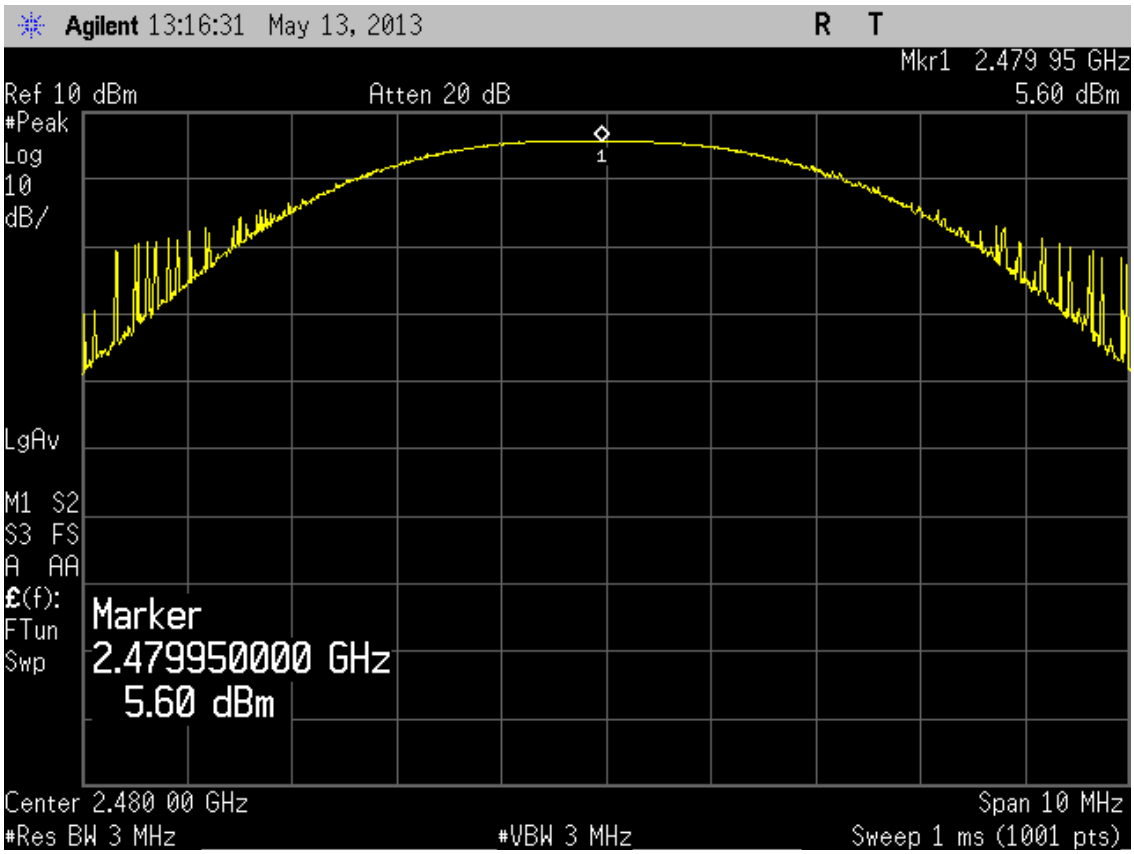


Figure 3. channel high, conducted peak output power

4.2 Power Spectral Density

The test was performed as a compliance test. The test parameters concerned were as follows:

EUT	**EUT2, setup 1**
Site name	**Nemko Oy / Perkkaa**
FCC rule part	**§ 15.247 (e)**
Date of testing	**13.5.2013**
Test equipment	**566, 393**
Test conditions	**22 °C, 30 % RH**

4.2.1 EUT operation mode

EUT operation mode	**Transmitter on**
EUT channel	**low, mid and high**

4.2.2 Test method and limit

The measurement is made according to ANSI C63.10 Section 6.11.2

Frequency range (MHz)	*Limit (dBm/3kHz)*
2400 – 2483.5	**≤ 8**

4.2.3 Test results

Channel / f (MHz)	*P (dBm/3kHz)*	*Result*
low / 2401	**0.20**	**PASS**
mid / 2440	**-0.42**	**PASS**
high / 2480	**-1.51**	**PASS**

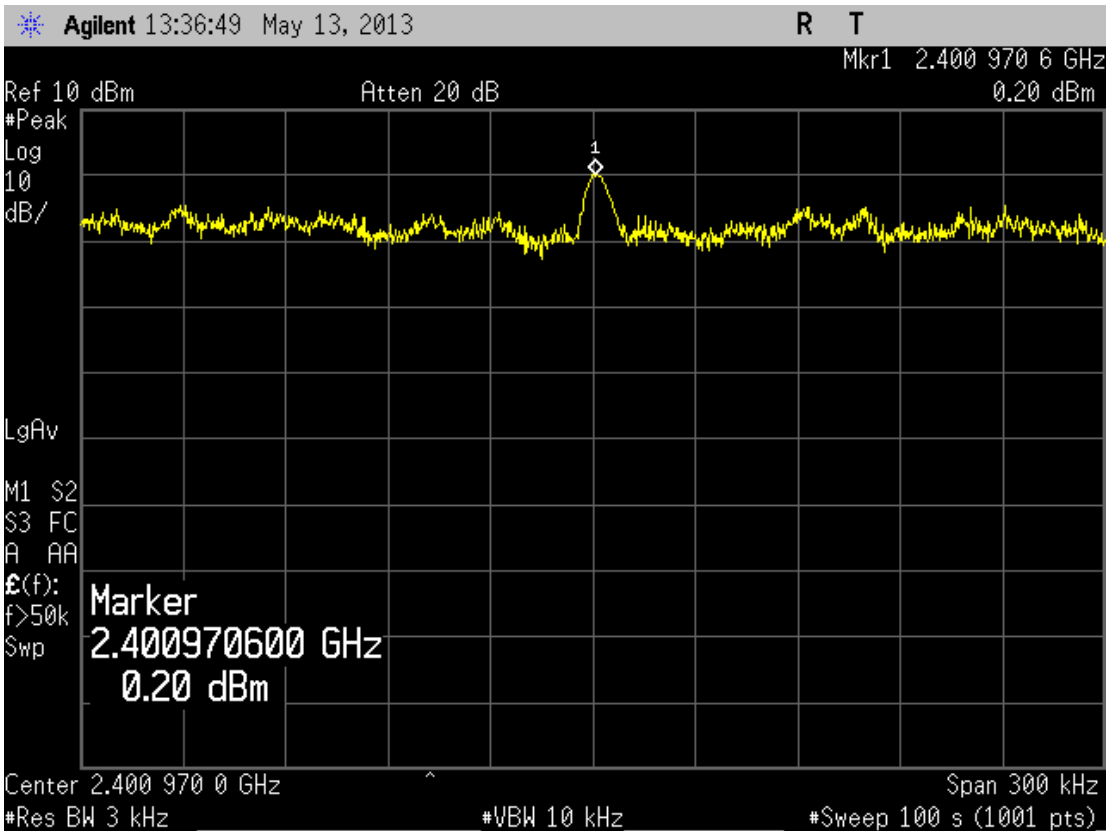


Figure 4. channel low, power spectral density

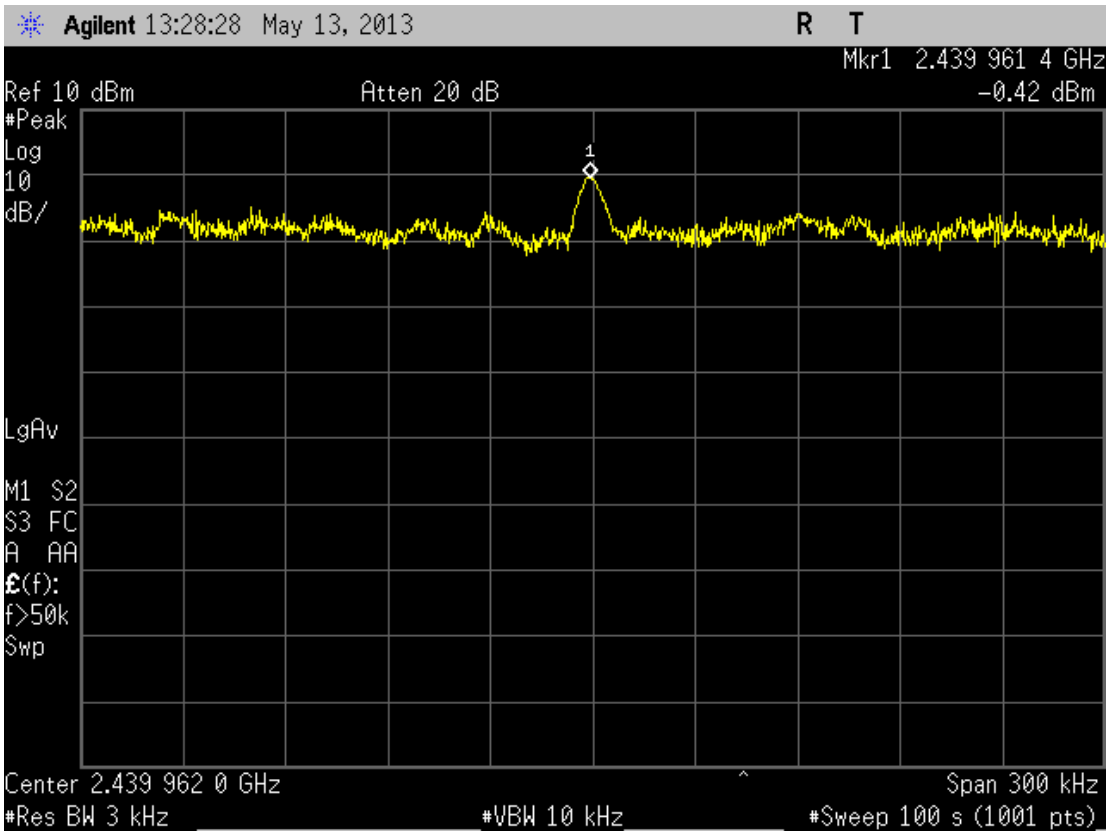


Figure 5. channel mid, power spectral density

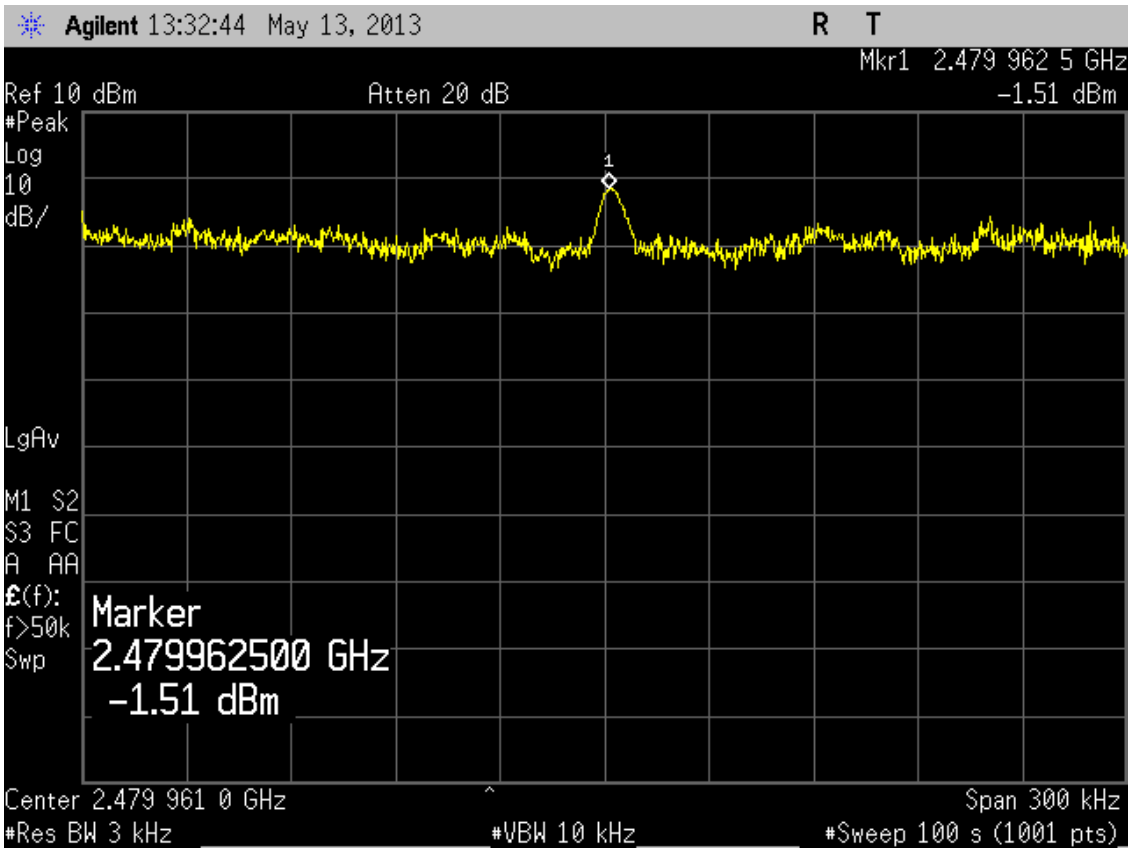


Figure 6. channel high, power spectral density

4.3 Band-edge compliance of RF emissions

The test was performed as a compliance test. The test parameters concerned were as follows:

EUT	**EUT2, setup 1**
Site name	**Nemko Oy / Perkkaa**
FCC rule part	**§ 15.247 (d)**
Date of testing	**13.5.2013**
Test equipment	**566, 319, 350**
Test conditions	**22 °C, 30 % RH**

4.3.1 EUT operation mode

EUT operation mode	**Transmitter on**
EUT channel	**low and high**

4.3.2 Test method and limit

The measurement is made according to ANSI C63.10 Section 6.9.2 and FCC KDB 913591.

Frequency range (MHz)	*Limit (dBc)*
Below 2400	**≤ -20**

Limit (3m measuring distance)

Frequency range (MHz)	*Average dB(µV/m)*	*Peak dB(µV/m)*
Above 2483.5	**54**	**74**

4.3.3 Test results

Channel low:

Below 2400 MHz:

Detector (RBW: 100kHz)	*P (dBc)*	*Result*
Peak	**-30.03**	**PASS**

TX on channel high/2480 MHz

Frequency MHz	*Result peak dB(µV/m)*	*Limit dB(µV/m)*	*Margin dB*	*Result*
2483.5	**64.98**	**74**	**9.02**	**PASS**

Frequency MHz	*Result average dB(µV/m)*	*Limit dB(µV/m)*	*Margin dB*	*Result*
2483.5	**48.58**	**54**	**9.02**	**PASS**

Radiated power field strength (RBW 1MHz, VBW 3MHz) is 106.21 dB(µV/m)/3m

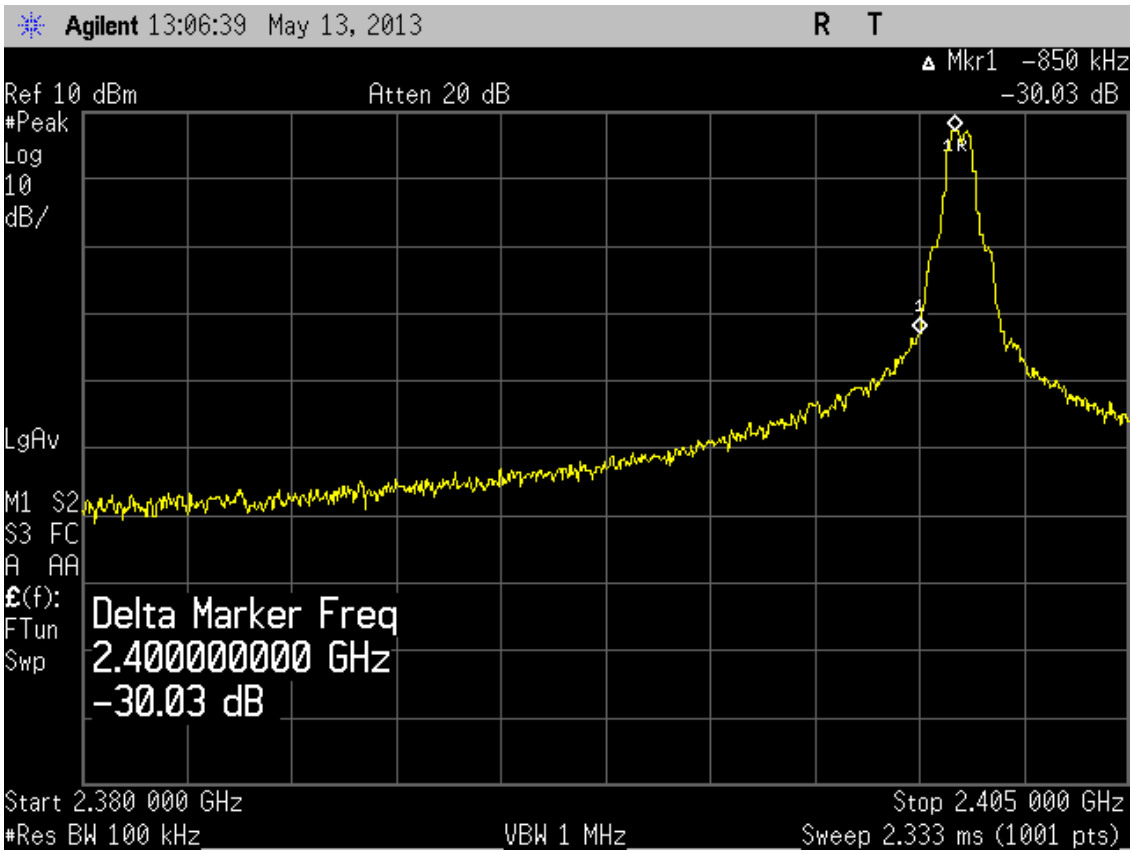


Figure 7. Channel low, Band-edge compliance, low end

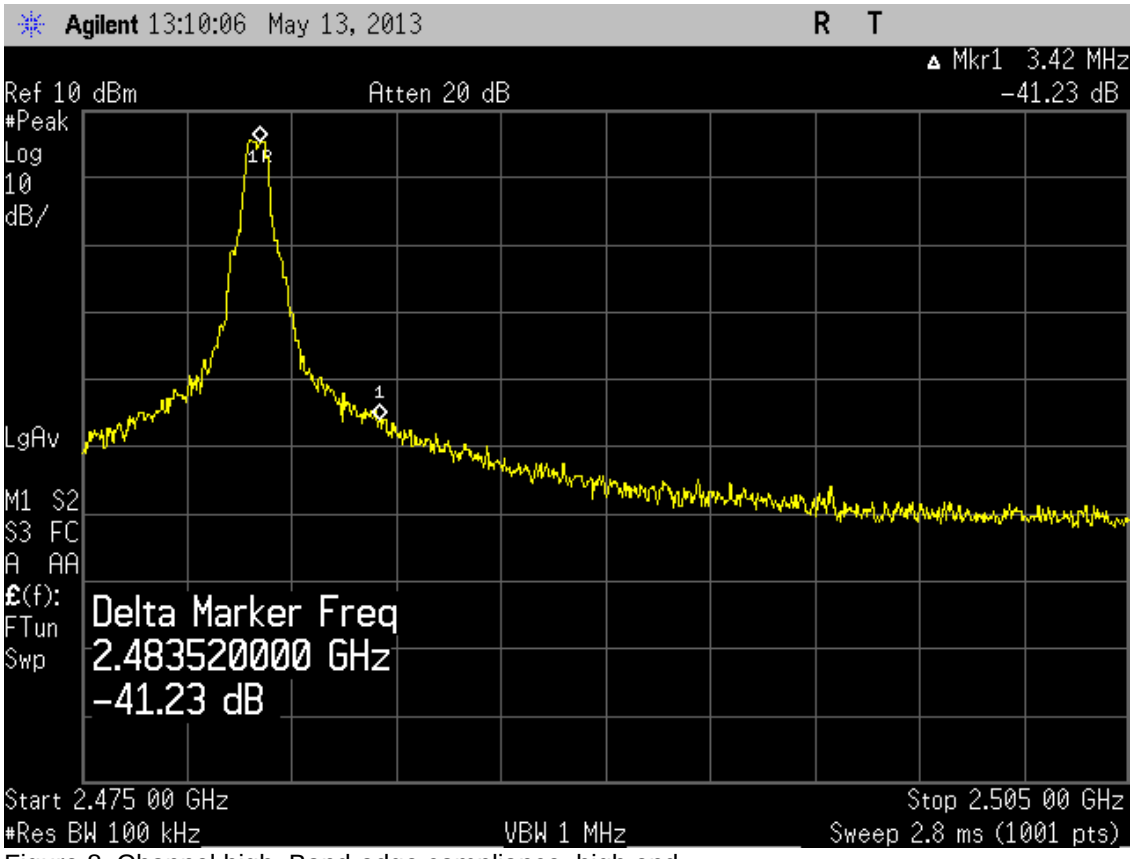


Figure 8. Channel high, Band-edge compliance, high end

4.4 Spurious radiated emission

The test was performed as a compliance test. The test parameters concerned were as follows:

EUT	**EUT1, setup 2**
Site name	**Nemko Oy / Perkkaa**
FCC rule part	**§ 15.247 (d), § 15.209 (a)**
Date of testing	**8.4-20.5.2013**
Test equipment	**566, 709, 564, 559, 525, 319, 544, 710, 88**
Test conditions	**22 °C, 30 % RH**

4.4.1 EUT operation mode

EUT operation mode	**Transmitter on**
EUT channel	**Channel low, mid and high**
EUT operation voltage	**115 V / 60 Hz**

4.4.2 Test method and limit

The test was performed in a semi-anechoic shielded room. The EUT was placed on a non-conductive 0.8 m high table standing on the turntable. During the test the distance from the EUT to the measuring antenna was 10 m (30MHz-1GHz), 3 m (1GHz-18GHz) and 1m (18-25GHz). The excess length of the cables of the EUT were made into bundles 30-40 cm in length (see photograph 1). In order to find the maximum levels of the disturbance radiation the angle of the turntable, the height of the measuring antenna and the lay-out of the EUT cables were varied during the tests. The test was performed with the measuring antenna being both in horizontal and vertical polarizations.

Vertical and horizontal polarizations in the frequency range 30 – 1000 MHz was measured by using the peak detector. During the peak detector scan. the turntable was rotated from 0° to 360° with 30° step with the antenna heights 1.0 m and 3.0 m. The highest levels of the radiated interference field strength measured by using the quasi-peak detector were recorded.

Vertical and horizontal polarizations in the frequency range 1000 – 25000 MHz was measured by using the peak detector. During the peak detector scan. the turntable was rotated from 0° to 360° with 15° step with the antenna heights 1.0 m, 1,5m, 2.0m, 2,5m and 3.0 m. The highest levels of the radiated interference field strength measured by using the peak detector were recorded.
The average was obtained from the peak using the duty cycle correction factor.

Minimum Standard: In any 100kHz bandwidth outside the frequency band in which the transmitter is operating, emissions shall be at least 20 dB below the fundamental emission or shall not exceed the following field strength limits:

Emissions falling in the restricted bands of 15.205 shall not exceed the limits shown in §15.209.
At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions.

FCC Part 15.209 Limit values

Frequency band MHz	*Quasi-peak dB(µV/m)* @**3m**	*Quasi-peak dB(µV/m)* @**10m**
30 – 88	**40.0@3m**	**29.5@10m**
88 – 216	**43.5@3m**	**33.0@10m**
216 – 960	**46.0@3m**	**35.5@10m**
960 – 1000	**54.0@3m**	**43.5@10m**

Frequency band MHz	*limit, average detector dB(µV/m)*	*limit, peak detector dB(µV/m)*
1000 - 25000	**54**	**74**

The EUT was tested on three orthogonal axis.
The device was tested from 30 MHz to the tenth harmonic of the highest fundamental frequency per 15.33.
The device was tested on three channels per 15.31(l).

Duty Cycle Calculation:

Duty Cycle correction factor(dB) = 20 log (rf_{ON} in ms/100ms)
rf_{ON} =0.7548ms*20=15.1 ms
correction factor = -16.4 dB (correction factor was not used below 1GHz)

The CFR 47 Part 15. Subpart B. Class B limit of 500 µV/m has been calculated to correspond 54 dB(µV/m) as follows: [dB(µV/m)]=20log[µV/m].

The measurement results were obtained as described below.

$$E\ [\mu V/m] = U_{RX} + A_{CABLE} + AF - G_{PREAMP}$$

Where

U_{RX}	receiver reading
A_{CABLE}	attenuation of the cable
AF	antenna factor
G_{PREAMP}	gain of the preamplifier

4.4.3 Test results

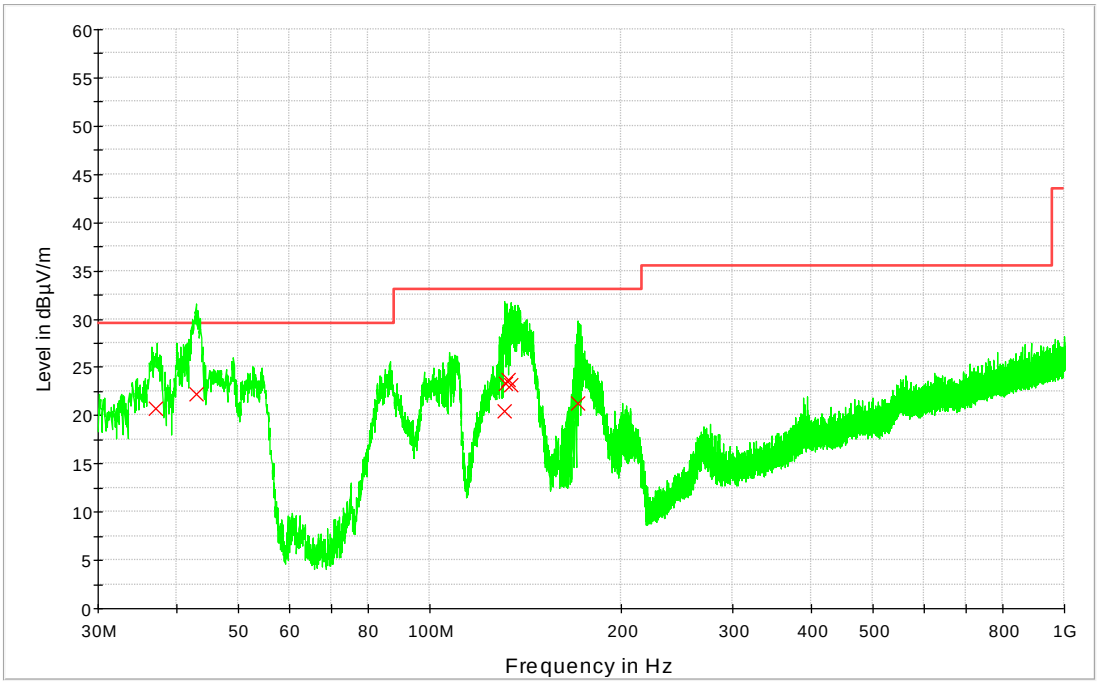


Figure 9. Spurious emissions, 30-1000 MHz, middle channel

Below 1GHz, Channel mid (RBW120kHz)

Frequency MHz	*Quasi peak dB(µV/m)*	*Limit dB(µV/m)*	*Margin dB*	*Result*
36.96	**20.7**	**29.5**	**8.8**	**PASS**
42.94	**22.2**	**29.5**	**7.3**	**PASS**
131.18	**20.4**	**33.0**	**12.6**	**PASS**
131.78	**23.4**	**33.0**	**9.6**	**PASS**
132.81	**23.7**	**33.0**	**9.3**	**PASS**
134.23	**23.2**	**33.0**	**9.8**	**PASS**

Above 1GHz. Channel low, (RBW 100kHz, VBW 300 kHz)

Frequency GHz	*Peak dBc*	*Limit dBc*	*Margin dB*	*Result*
all	**<-30**	**-20**	**>30**	**PASS**

All peak emissions were more than 30 dB below the in-band power.

Above 1GHz. Channel mid, (RBW 100kHz, VBW 300 kHz)

Frequency GHz	*Peak dBc*	*Limit dBc*	*Margin dB*	*Result*
all	**<-30**	**-20**	**>30**	**PASS**

All peak emissions were more than 30 dB below the in-band power.

Above 1GHz. Channel high, (RBW 100kHz, VBW 300 kHz)

Frequency GHz	*Peak dBc*	*Limit dBc*	*Margin dB*	*Result*
all	**<-30**	**-20**	**>30**	**PASS**

All peak emissions were more than 30 dB below the in-band power.

4.4.4 Test results, Radiated emissions in restricted bands 30 MHz – 25 GHz (TX and RX)

TX on channel low/2401 MHz

(RBW 1MHz, VBW 3MHz)

Frequency MHz	*Average (Av)*			*Peak*		
	Result dB(µV/m)	*Limit dB(µV/m)*	*Margin dB*	*Result dB(µV/m)*	*Limit dB(µV/m)*	*Margin dB*
4802	**43.1**	**54**	**10.9**	**59.5**	**74**	**14.5**

TX on channel middle/2440 MHz

(RBW 1MHz, VBW 3MHz)

Frequency MHz	*Average (Av)*			*Peak*		
	Result dB(µV/m)	*Limit dB(µV/m)*	*Margin dB*	*Result dB(µV/m)*	*Limit dB(µV/m)*	*Margin dB*
4880	**42.4**	**54**	**11.6**	**58.8**	**74**	**15.2**
7320	**39.1**	**54**	**14.9**	**55.5**	**74**	**18.5**

TX on channel high/2480 MHz

(RBW 1MHz, VBW 3MHz)

Frequency MHz	*Average (Av)*			*Peak*		
	Result dB(µV/m)	*Limit dB(µV/m)*	*Margin dB*	*Result dB(µV/m)*	*Limit dB(µV/m)*	*Margin dB*
4960	**38.7**	**54**	**15.3**	**55.1**	**74**	**18.9**
7440	**39.0**	**54**	**15.0**	**55.4**	**74**	**18.6**

The average was obtained from the peak using the duty cycle correction factor. The peak was measured using a peak detector.

4.5 AC power line conducted emissions

The test was performed as a compliance test. The test parameters concerned were as follows:

EUT	**EUT1**
Site name	**Nemko / Perkkaa**
FCC rule part	**§ 15.207**
Test method	**CISPR 22 /ANSI C63.4-2009**
Date of testing	**29.04.2013**
Test equipment	**745, 348, 694**
Test conditions	**22 °C, 30 % RH**

4.5.1 Test method and limit

The measurement is made according to ANSI C63.4-2009. The test was performed inside a shielded room where the floor and one of the walls of the test site comprised the reference ground plane (RGP). For the duration of the test the EUT was placed on a non-conductive table 0.8 m high standing on the reference ground plane (see photograph 2). The excess length of the cables of the EUT were made into bundles 30-40 cm in length. The power input cable of the EUT was connected to an artificial mains network. The test was performed separately on the phase and also on the neutral wire.

The disturbances were first examined by performing a spectrum scan by using a peak detector. The general procedure in the conducted disturbance emission test is that no further measurements are necessary if the disturbance levels measured by using the peak detector are below the limit value defined for the measurement performed by using an average detector.

If not, then at the test frequencies concerned the measurement is performed also by using a quasi-peak detector. If the disturbance levels measured by using the quasi-peak detector are below the limit value defined for the measurement performed by using an average detector, then measurements by using the average detector are not necessary.

CISPR 22, class B limits

Frequency band MHz	*Quasi-peak dB(µV)*	*Average limit dB(µV)*
0.15 – 0.5	**66 – 56**	**56 – 46**
0.5 – 5	**56**	**46**
5 - 30	**60**	**50**

4.5.2 EUT operation mode

EUT operation mode	**Transmitter on**
EUT channel	**mid**
EUT operation voltage	**115 V / 60 Hz**

4.5.3 Test results

Line N

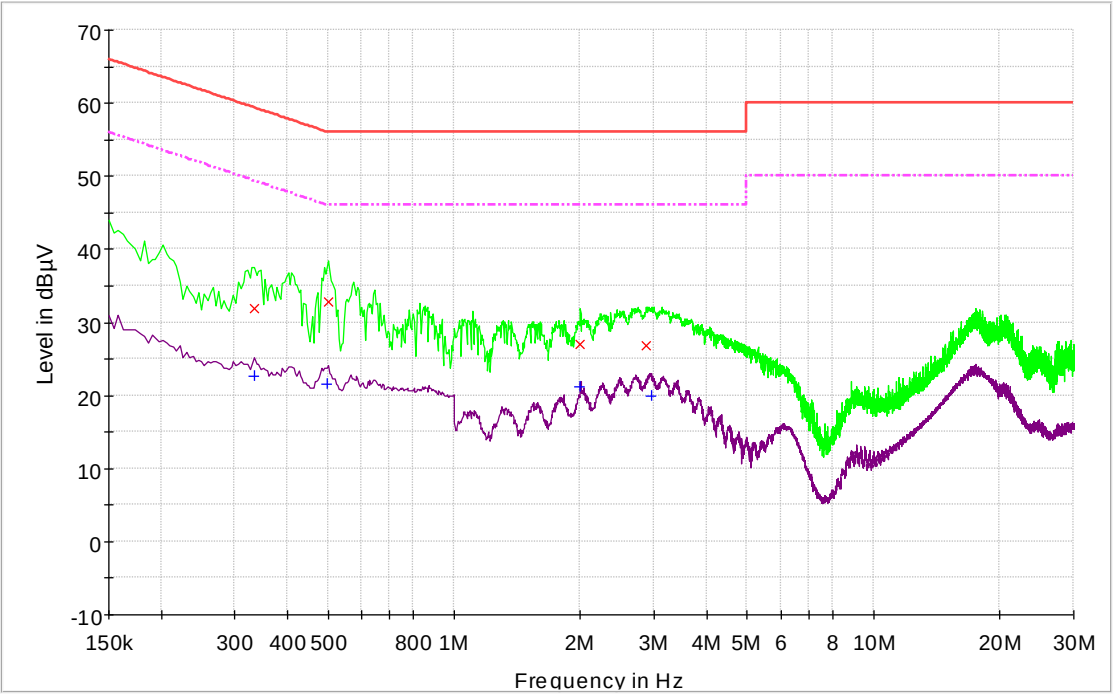


Figure 10. AC powerline emissions, Line N

Highest emissions (bw 10kHz):

Frequency MHz	*Quasi-peak dB(µV)*	*Limit value dB(µV)*	*Margin dB*	*Result*
0.333	**31.9**	**59.4**	**27.5**	**Pass**
0.501	**32.8**	**56.0**	**23.2**	**Pass**
2.001	**26.9**	**56.0**	**29.1**	**Pass**
2.875	**26.8**	**56.0**	**29.2**	**Pass**

Frequency MHz	*Average dB(µV)*	*Limit value dB(µV)*	*Margin dB*	*Result*
0.333	**22.7**	**49.4**	**26.7**	**Pass**
0.498	**21.6**	**46.0**	**24.5**	**Pass**
2.000	**21.1**	**46.0**	**24.9**	**Pass**
2.953	**19.9**	**46.0**	**26.1**	**Pass**

Line L

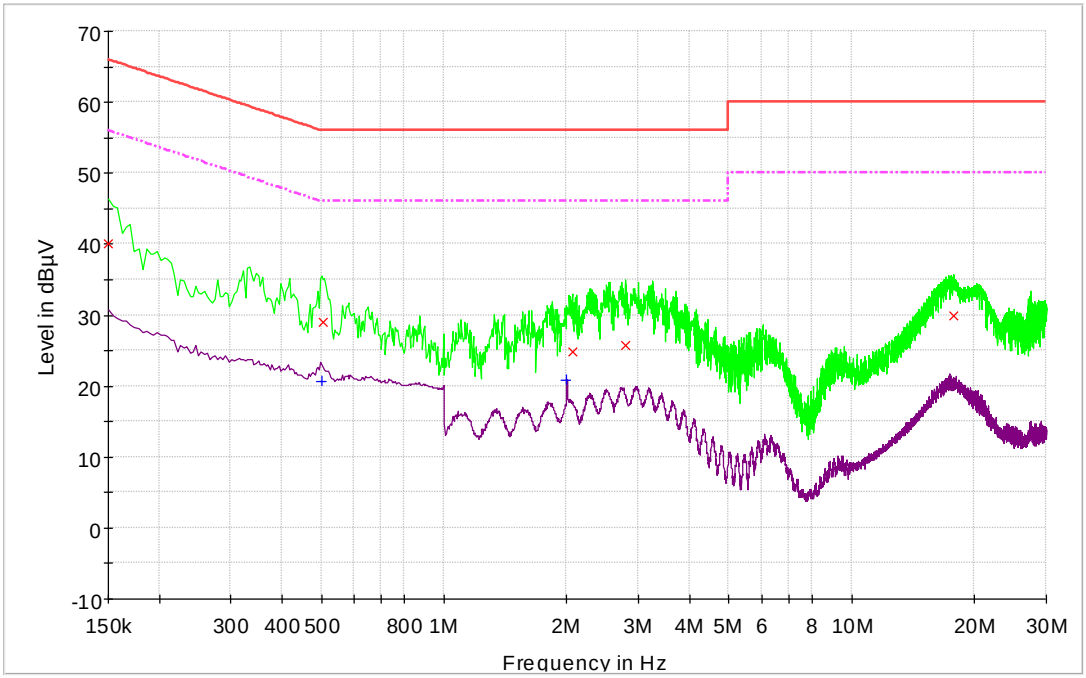


Figure 11. AC powerline emissions, Line L

Highest emissions (bw 10kHz):

Frequency MHz	*Quasi-peak dB(µV)*	*Limit value dB(µV)*	*Margin dB*	*Result*
0.150	**40.1**	**66.0**	**25.9**	**Pass**
0.506	**29.1**	**56.0**	**26.9**	**Pass**
2.065	**24.9**	**56.0**	**31.1**	**Pass**
2.789	**25.8**	**56.0**	**30.2**	**Pass**
17.781	**29.9**	**60.0**	**30.1**	**Pass**

Frequency MHz	*Average dB(µV)*	*Limit value dB(µV)*	*Margin dB*	*Result*
0.5	**20.7**	**46.0**	**25.3**	**Pass**
2.000	**20.8**	**46.0**	**25.2**	**Pass**

4.6 6 dB bandwidth

The test was performed as a compliance test. The test parameters concerned were as follows:

EUT	**EUT2, setup 1**
Site name	**Nemko Oy / Perkkaa**
FCC rule part	**§ 15.247 (a)(2)**
Date of testing	**13.5.2013**
Test equipment	**566, 393**
Test conditions	**22 °C, 30 % RH**

4.6.1 EUT operation mode

EUT operation mode	**Transmitter on**
EUT channel	**low, mid and high**

4.6.2 Test method and limit

The measurement is made according to ANSI C63.10 Section 6.9.1 referencing KDB 558074 D01 DTS Meas Guidance v03r01 “Digital Transmission Systems (DTS) Operating under Section 15.247“ 9/4/2013, 8.2 option 2.

Limit (kHz)
≥500

4.6.3 Test results

EUT Channel / f (MHz)	*6 dB bandwidth (kHz)*
low / 2401	**565.702**
mid / 2440	**556.013**
high / 2480	**561.552**

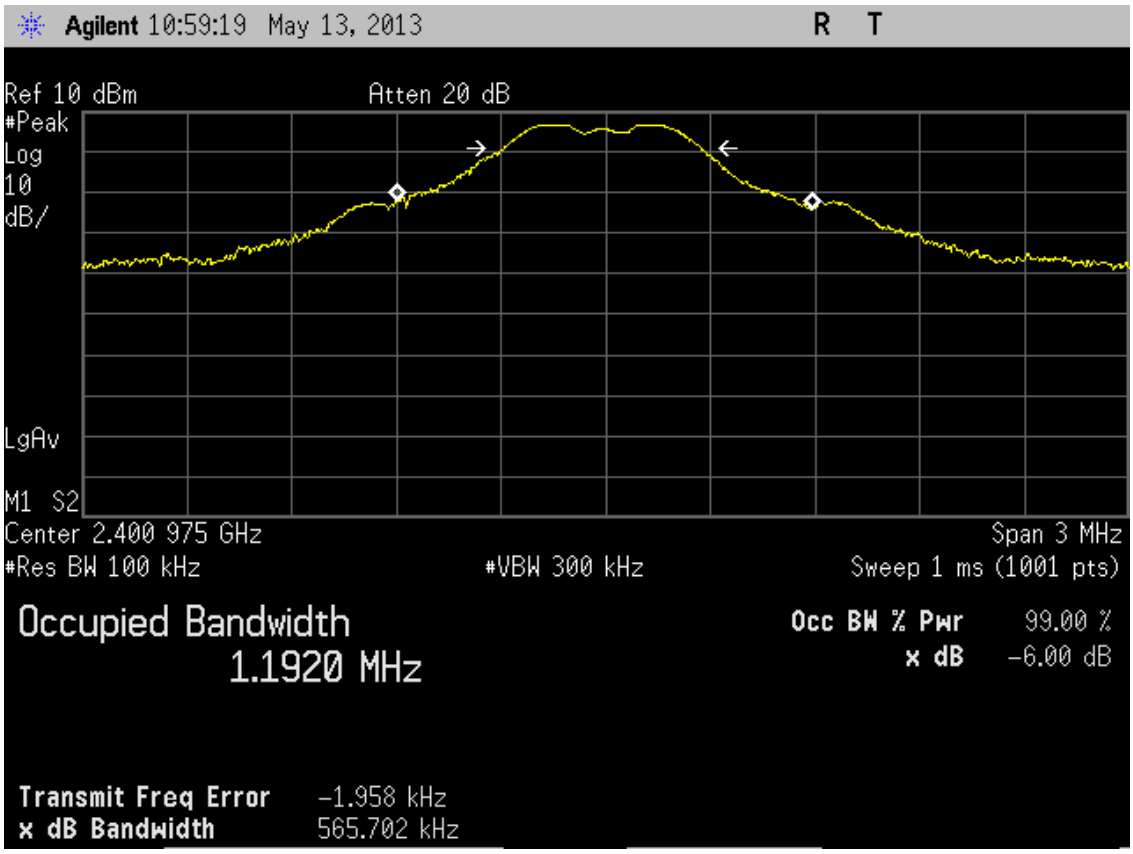


Figure 12. channel low, 6 dB bandwidth

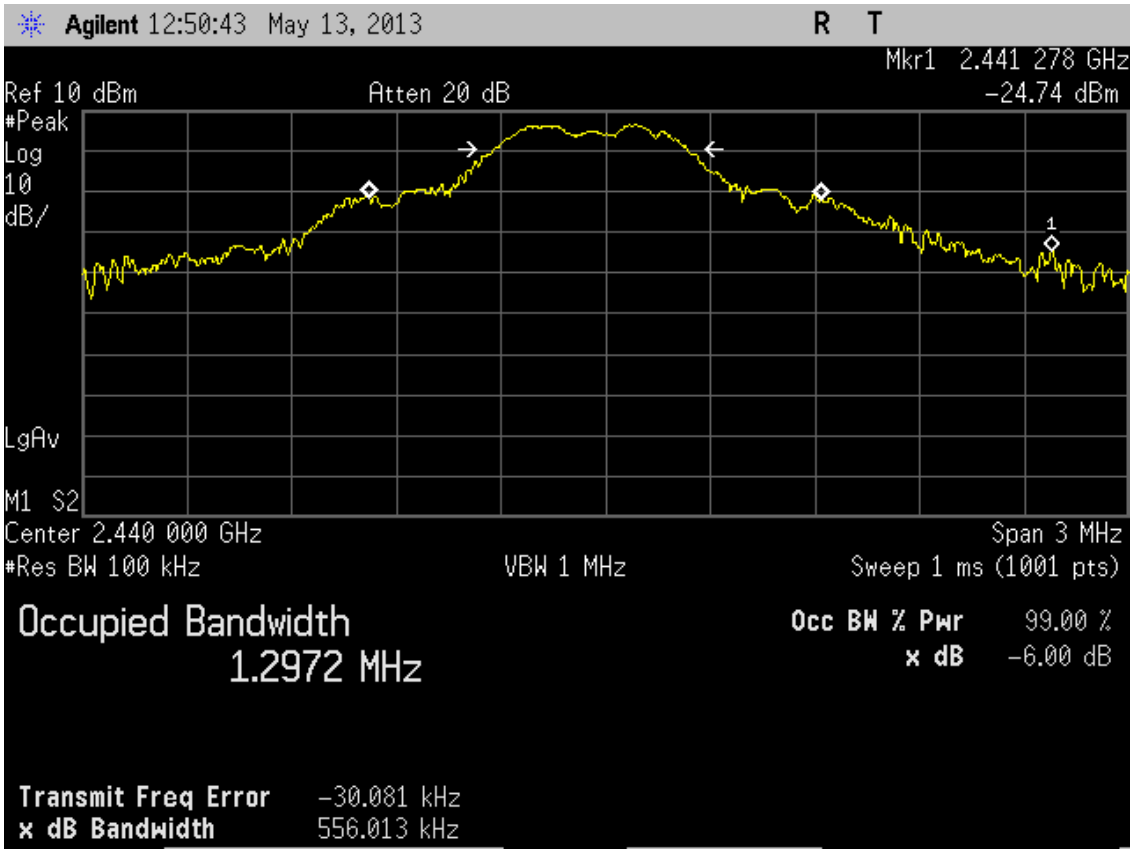


Figure 13. channel middle, 6 dB bandwidth

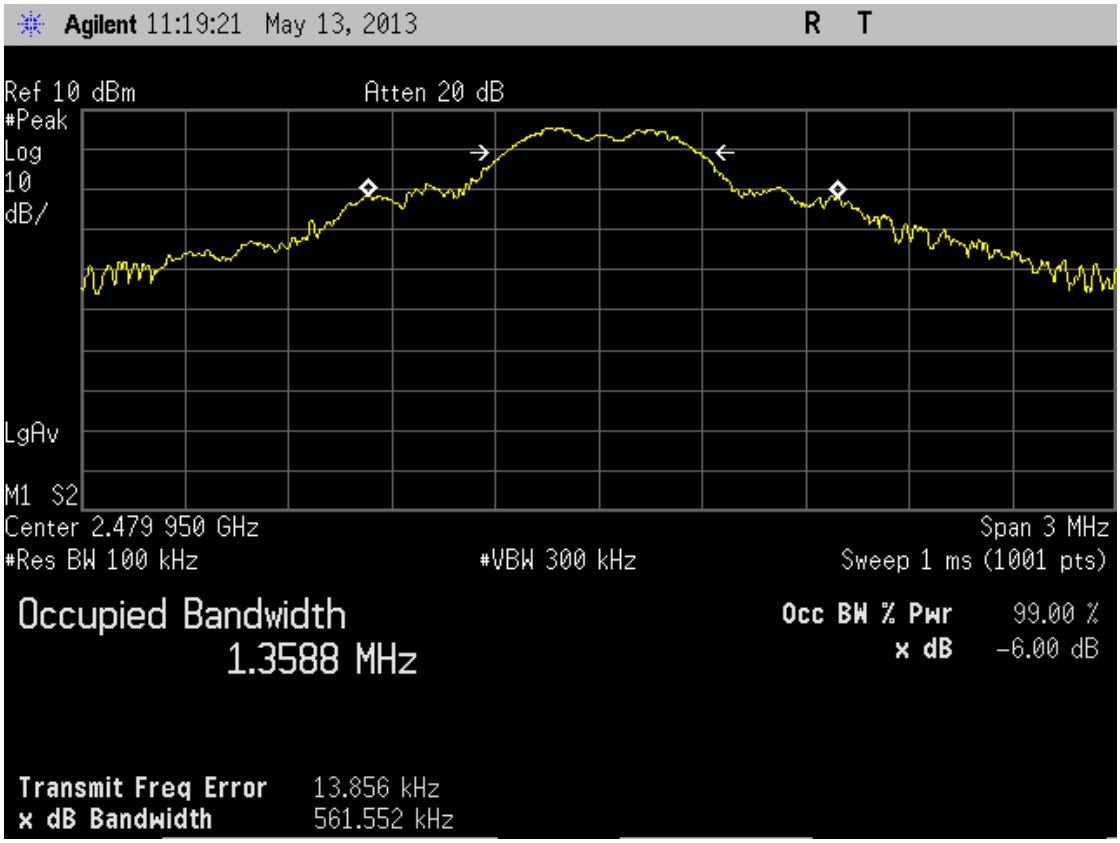


Figure 14. channel high, 6 dB bandwidth

4.7 20 dB bandwidth

The test was performed as a compliance test. The test parameters concerned were as follows:

EUT	**EUT2, setup 1**
Site name	**Nemko Oy / Perkkaa**
FCC rule part	**§ 2.1049**
Date of testing	**13.5.2013**
Test equipment	**566, 393**
Test conditions	**22 °C, 30 % RH**

4.7.1 EUT operation mode

EUT operation mode	**Transmitter on**
EUT channel	**Low, mid and high**

4.7.2 Test method and limit

The measurement is made according to ANSI C63.10 Section 6.9.1.

Limit (kHz)
N/A

4.7.3 Test results

EUT Channel / f (MHz)	*20 dB bandwidth (MHz)*
low / 2401	**1.025**
mid / 2440	**1.181**
high / 2480	**1.358**

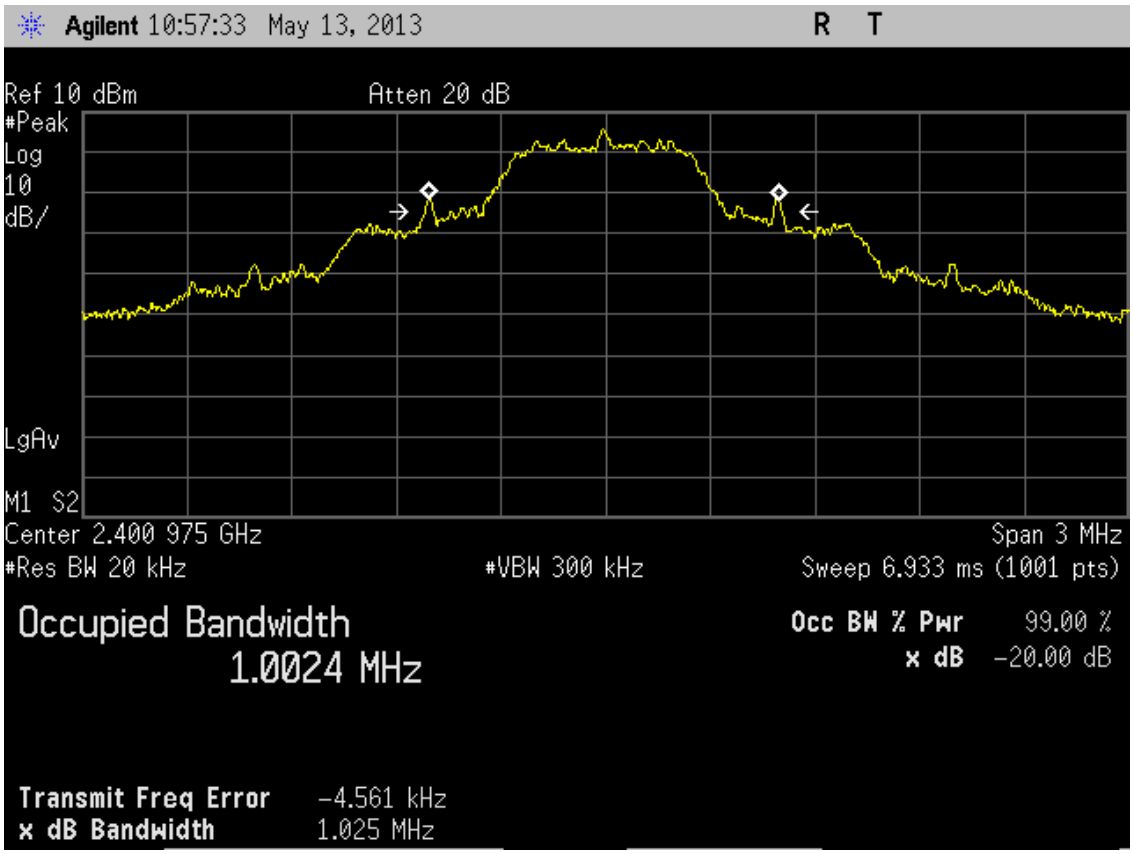


Figure 15. channel low, 20 dB bandwidth

Figure 16. channel middle, 20 dB bandwidth

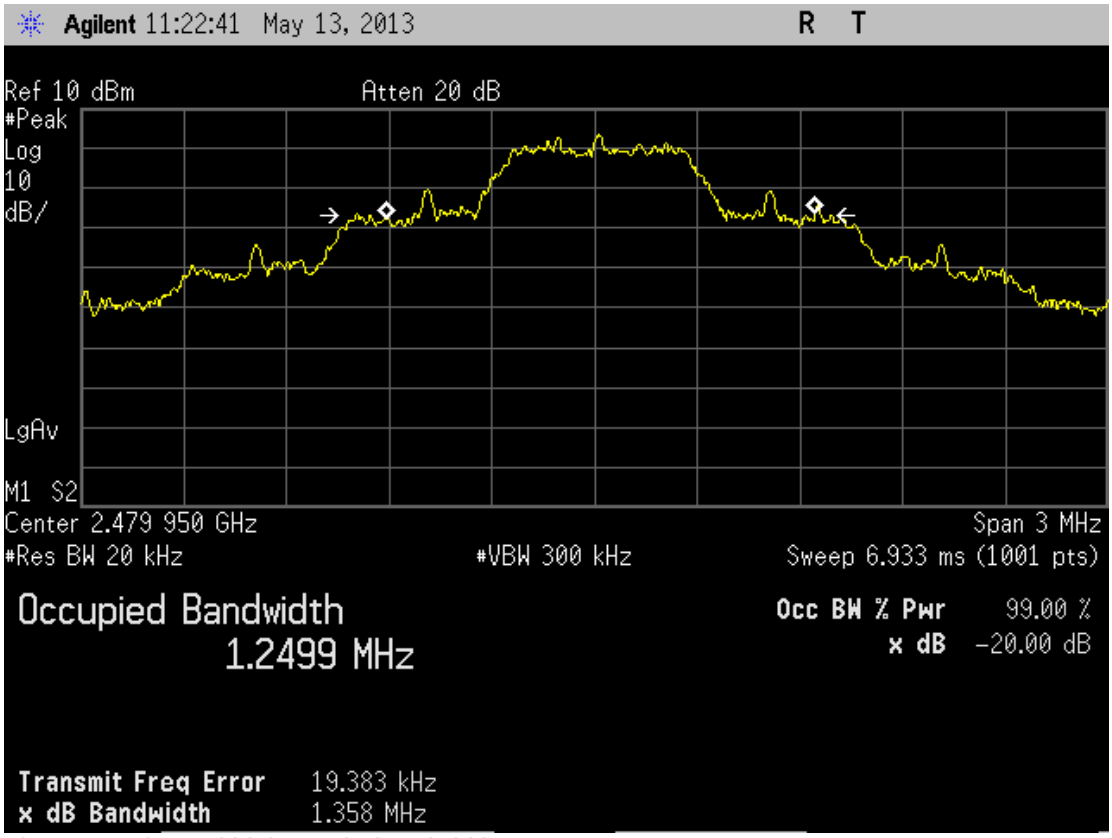


Figure 17. channel high, 20 dB bandwidth

4.8 Duty cycle

The test was performed as a compliance test. The test parameters concerned were as follows:

Site name	Nemko Oy / Perkkaa
FCC rule part	§ 15.35(c)
Section in RSS-Gen	4.5
Date of testing	13.5.2013
Test equipment	566, 393
Test conditions	22 °C, 30 % RH
Test result	**PASS**

4.8.1 EUT operation mode

EUT operation mode	**TX on with modulation**
EUT channel	**low**
EUT TX power level	**Nominal**
EUT operation voltage	**3.7 VDC**

4.8.2 Test method and limit

Spectrum analyzer with zero span was used to investigate spectrum.

15.35(c) Unless otherwise specified, e.g.§ 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

4.8.2 Test data

Pulses/100ms=20
Length of one pulse = 0.7548ms

*DutyCycleCorrectionFactor=20*log(Tocc/100)=20*log(20*0.7548/100)=-16.4dB*

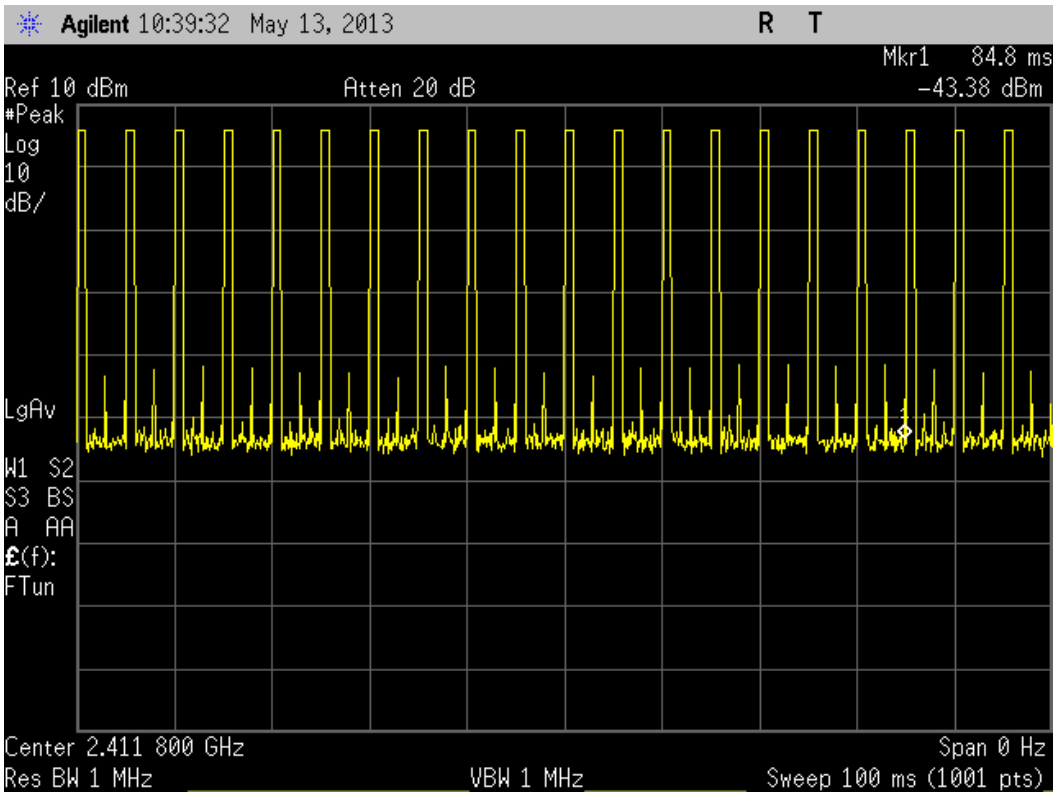


Figure 14. 100ms plot

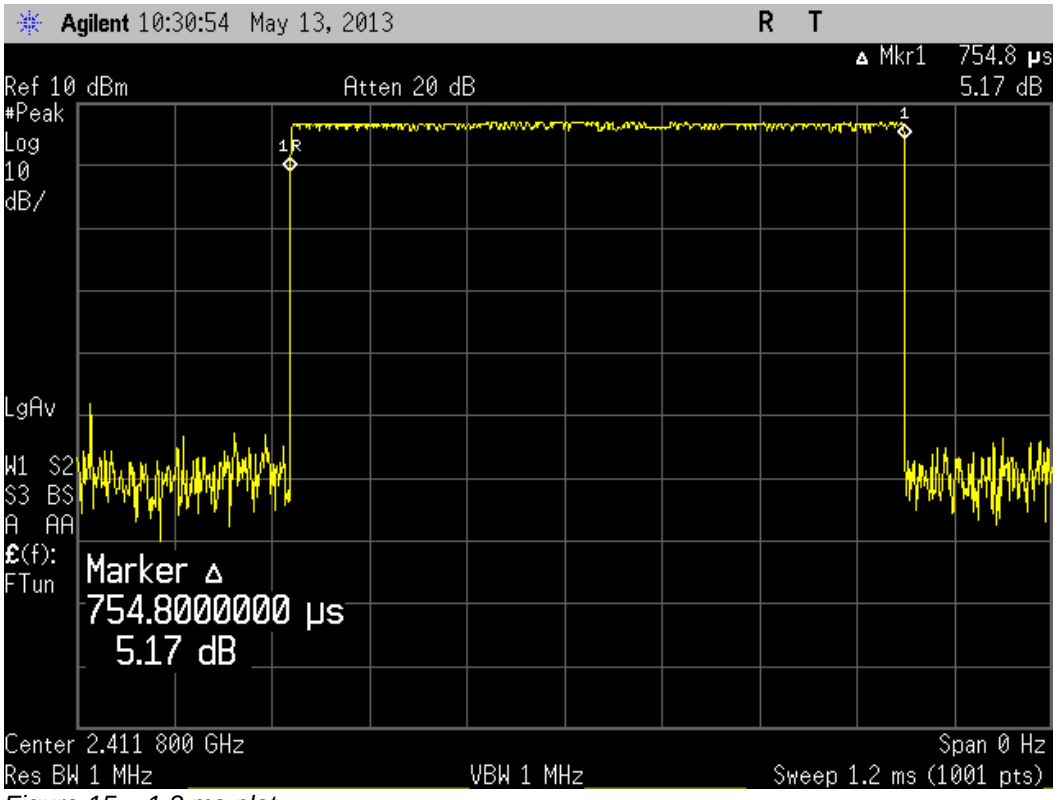


Figure 15. 1.2 ms plot

5. List of test equipment

Each active test equipment is calibrated once a year, antennas every 18 months and other passive equipment every 24 months.

Nr.	Equipment	Type	Manufacturer	Serial number
88	Antenna	638	Narda	8003
745	2-Line V-Network	ENV216	Rohde & Schwarz	101466
319	Antenna	CBL6112	Chase	2018
348	Shielded room	RFSD-100	Euroshield Oy	1320
350	Semianechoic shielded room	RFD-F-100	Euroshield Oy	1327
393	RF attenuator PAD	1A (10dB)	Weinschel	
519	RF High-Power Attenuator	765-20	Narda	
525	Double-Ridged Horn	3115	Emco	6691
542	Double-Ridged Horn	3115	Emco	00023905
544	RF-amplifier	ZFL-1000VH2	Mini-Circuits	QA0749010
546	Bluetooth Test Set	MT8850A	Anritsu	6K00000092
559	Highpass Filter	WHKX3.0/18G-10SS	Wainwright Instruments	1
572	High Pass Filter	WHKX1.5/15G-12SS	Wainwright Instruments	4
564	RF amplifier	CA018-4010	CIAO Wireless	132
566	Spectrum analyzer	E4448A	Agilent	US42510236
567	RF generator	E8257C	Agilent	MY43320736
338	Test receiver	ESS	Rohde & Schwarz	847151/009
694	EMI Test Receiver	ESPC	Rohde & Schwarz	842888/023
709	EMI test receiver	ESU8	Rohde & Schwarz	100297
710	RF amplifier	ALS1826-41-12	ALC Microwave Inc.	0011
377	RF attenuator PAD	757 C - 20 dB	Narda	-
393	RF attenuator PAD	1A (10dB)	Weinschel	-
383	Hybrid	3033B	Narda	01727
X1	Dual directional coupler	11692D	Hewlett Packard	1212A01868

6. Photographs

See document "206548_test_setup_photographs"