

Test Report

INTENTIONAL RADIATOR TESTS ACCORDING TO FCC PART 15 C and INDUSTRY CANADA REQUIREMENTS

Equipment Under Test: Heart rate sensor

Model: H2/H3

Type: -

Manufacturer: Polar Electro Oy
Professorintie 5
FI-90440 KEMPELE
FINLAND

Customer: Polar Electro Oy
Professorintie 5
FI-90440 KEMPELE
FINLAND

FCC Rule Part: 15.249:2011
IC Rule Part: RSS-210, Issue 8, 2010
RSS-GEN, Issue 3, 2010



Date: 25.1.2012

Issued by:


Niko Tolonen
Testing Engineer

Date: 25.1.2012

Checked by:


Jari Merikari
Technical Manager

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Equipment Under Test (EUT)

Heart rate sensor	
Brand:	POLAR
Model:	H2/H3
Type:	-
Serial no:	-
HW version:	81044030
SW version:	71045611.00
FCC ID number:	INWW7
Industry Canada number:	6248A-W7

Description of the EUT

The EUT is a heart rate sensor of training computer for personal use. It measures a heart rate of the user and sends measured data to training computer wirelessly. The sensor is in low power mode until it observes skin contact and changes state to active mode. In low power mode RF transmitter is off state. In active mode RF transmitter is configured before it starts transmit data. The sensor goes back to the low power mode when skin contact is not observed for 20 seconds.

There are two different models of the heart rate sensor. The only difference between these models H2 and H3 is the 5 kHz inductive operation, which is not implemented into model H3. Preliminary radiated emission tests were made to both models and based on these test results model H2 was chosen for tests.

Classification of the device

Fixed device	<input type="checkbox"/>
Mobile Device (Human body distance > 20cm)	<input type="checkbox"/>
Portable Device (Human body distance < 20cm)	<input checked="" type="checkbox"/>

Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing

Ratings and declarations

Operating Frequency Range (OFR) TX mode:	2409 - 2473 MHz
TX Channels:	CH1: 2473 MHz CH2: 2441 MHz CH3: 2409 MHz
Operating Frequency Range (OFR) RX mode:	---
RX Channels:	---
Channel bandwidth:	1 603 kHz
Effective radiated power:	-9.1 dBm (0.123 mW)
Communication technique:	Shock burst
Data rate:	1 Mbit/s
Modulation:	GFSK
Antenna type and gain:	PCB inverted F-antenna, max 0.2 dBi

Power Supply

Rated voltage:	1 x 3 VDC battery (CR2025)
Operating voltage:	3.0VDC

Mechanical Size of the EUT

Length: 9 mm Width: 65 mm Height: 34 mm

Peripherals

No peripherals were used during the tests.

Samples

All tested samples were model H2 of the heart rate sensor.

Sample No. 1: EUT uses channel 2409 MHz and its own internal antenna.

Sample No. 2: EUT uses channel 2441 MHz and its own internal antenna.

Sample No. 3: EUT uses channel 2473 MHz and its own internal antenna.

Sample No. 4: EUT uses channel 2409 MHz and it's fitted with temporary 50 ohm SMA connector.

Sample No. 5: EUT uses channel 2441 MHz and it's fitted with temporary 50 ohm SMA connector.

Sample No. 6: EUT uses channel 2473 MHz and it's fitted with temporary 50 ohm SMA connector.

Disclaimer

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SUMMARY OF TESTING

Test Specification	Description of Test	Result
§15.249 (a) / RSS-210, A2.9 (1)	Field Strength of Fundamental	PASS
§15.249 (a)(c)(d)(e) / RSS-210, 2.6, A2.9 (1)(2)	Spurious Radiated Emissions	PASS
§15.249 (a)(c)(d)(e) / RSS-210, 2.6, A2.9 (1)(2)	Band Edge Radiated Emissions	PASS
§15.215 (c)	20 dB Bandwidth	PASS
RSS-GEN 4.4.1	99% Bandwidth	PASS
-	Duty Cycle	PASS

Test methods

Reference	ANSI C63.10 (2009) American National Standard for Testing Unlicensed Wireless Devices
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EUT Test Conditions During Testing

The device is provided with a maximum duty cycle of 297µS as shown in page 32 of this report so the duty cycle is calculated for pulse duration of 297µS. However, to enable accurate peak measurements the device was modified to transmit with a duty cycle of 98% during the testing.

In the radiated emission test the EUT was tested in three different orthogonal axes (X, Y and Z) in order to find out the worst direction. The worst direction result was reported.

Channels tested	Channel ID	Channel Frequency MHz
	LOW	2409
	MID	2441
	HIGH	2473

Test Facility

<input type="checkbox"/> Testing Location / address: FCC registration number: 90598	SGS Fimko Ltd Särkiniementie 3 FI-00210, HELSINKI FINLAND
<input checked="" type="checkbox"/> Testing Location / address: FCC registration number: 178986 Industry Canada registration number: 8708A-2	SGS Fimko Ltd Karakaarenkuja 4 FI-02610, ESPOO FINLAND

Field Strength of Fundamental

Standard: ANSI C63.10 (2009)
Tested by: NTO
Date: 3.1.2012
Humidity: 33 %
Temperature: 21 °C
Barometric pressure: 1005 hPa
Measurement uncertainty: ± 4.51 dB

Level of confidence 95 % (k = 2)

FCC Rule: 15.249 (a)

IC Rule: RSS-210 A2.9 (1)

Measured peak levels include transducer factors (antenna, amplifier, filters) and cable attenuations. The peak level was measured in continuous transmit mode with 98 % maximum duty cycle.

Average levels were calculated by subtracting the correction factor from the maximum measured peak level as stated in Part 15.35 (c).

The correction was calculated by using the formula: $20 * \text{LOG} (0.297\text{ms}/100\text{ms}) = -50.5 \text{ dB}$.

CHANNEL LOW

Table 1. Peak level of fundamental

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2408.950000	97.9	1000.0	1000.000	196.0	H	245.0	4.6	16.1	114.0	

Table 2. Average level of fundamental

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2408.950000	47.4	1000.0	1000.000	196.0	H	245.0	4.6	46.6	94.0	

CHANNEL MID

Table 3. Peak level of fundamental

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2440.600000	94.7	1000.0	1000.000	194.0	H	291.0	4.4	19.3	114.0	

Table 4. Average level of fundamental

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2440.600000	44.2	1000.0	1000.000	194.0	H	291.0	4.4	49.8	94.0	

CHANNEL HIGH

Table 5. Peak level of fundamental

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
2472.800000	93.9	1000.0	1000.000	188.0	H	193.0	4.6	20.1	114.0	

Table 6. Average level of fundamental

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
2472.800000	43.4	1000.0	1000.000	188.0	H	193.0	4.6	50.6	94.0	

Transmitter Radiated Emissions 30 – 26 500 MHz and Band Edge

Standard	ANSI C63.10 (2009)	
Tested by:	NTO	
Date:	30.12.2011 - 2.1.2012	
Humidity:	43 – 52 %	
Temperature:	20 – 21 °C	
Barometric pressure	981 – 1008 hPa	
Measurement uncertainty	± 4.51 dB	Level of confidence 95 % (k = 2)

FCC Rule: 15.249 (a)(c)(d)(e), 15.209(a)

IC Rule: RSS-210 2.6, A2.9(1)(2)

Measured peak levels include transducer factors (antenna, amplifier, filters) and cable attenuations. The peak level was measured in continuous transmit mode with 98 % duty cycle.

Average levels were calculated by subtracting the correction factor from the maximum measured peak level as stated in Part 15.35 (c) above 1000 MHz.

The correction was calculated by using the formula: $20 * \text{LOG} (0.297\text{ms}/100\text{ms}) = -50.5 \text{ dB}$.

Measured Values In The Frequency Range 30 MHz - 1000 MHz.

CHANNEL LOW

FCC Part 15 Class B Spurious Emission 30-1000MHz 3m

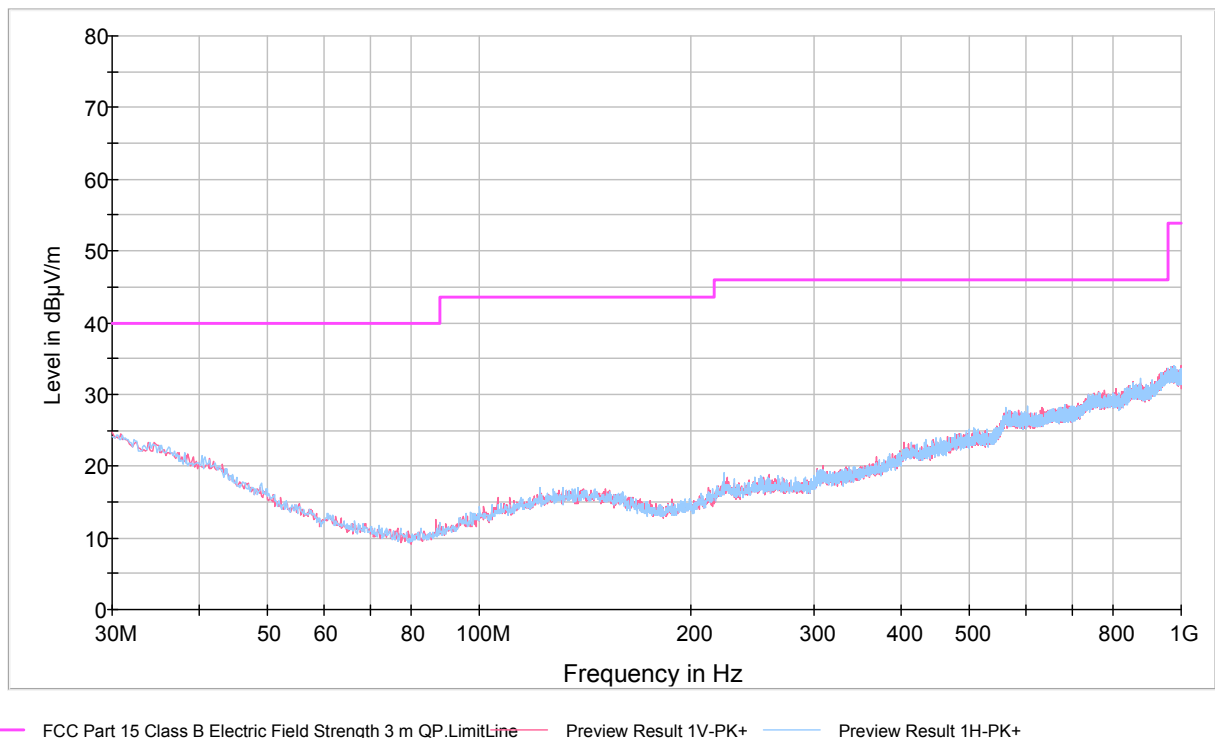


Figure 1. Measured curve with Peak detector.

The final measurements were not performed if the preview level was more than 6 dB below the limit.

CHANNEL MID

FCC Part 15 Class B Spurious Emission 30-1000MHz 3m

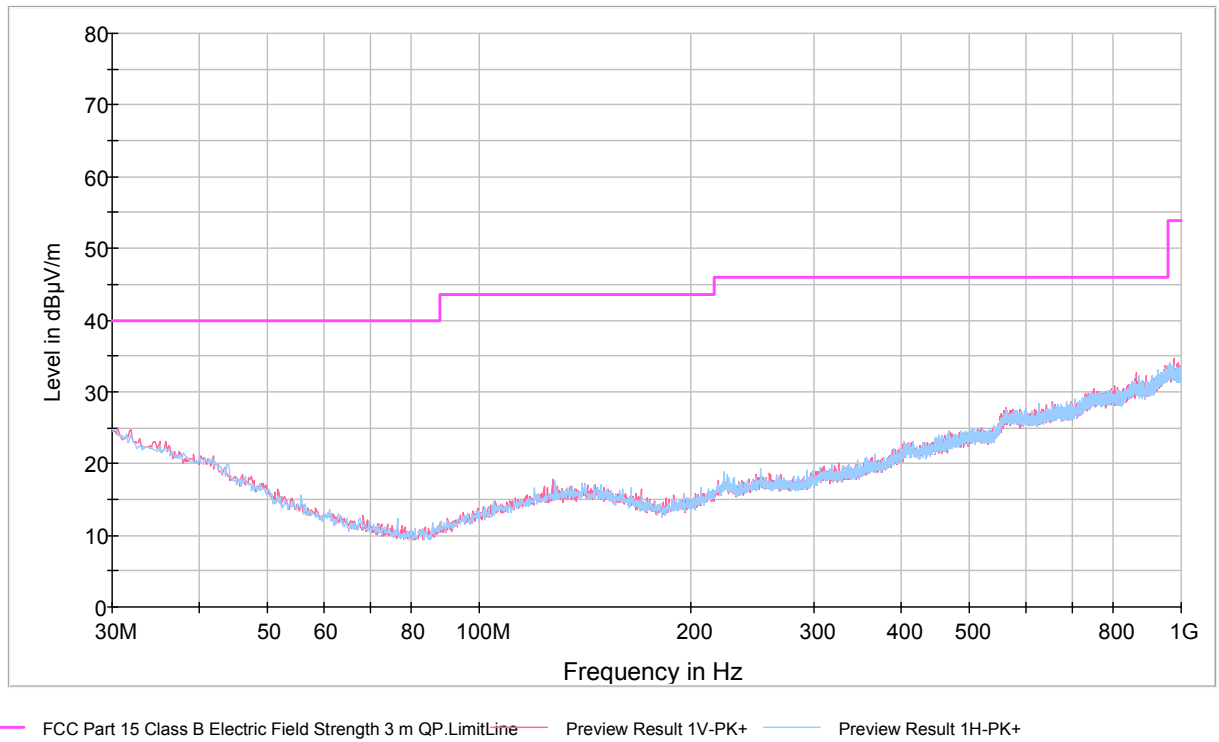


Figure 2. Measured curve with Peak detector.

The final measurements were not performed if the preview level was more than 6 dB below the limit.

CHANNEL HIGH

FCC Part 15 Class B Spurious Emission 30-1000MHz 3m

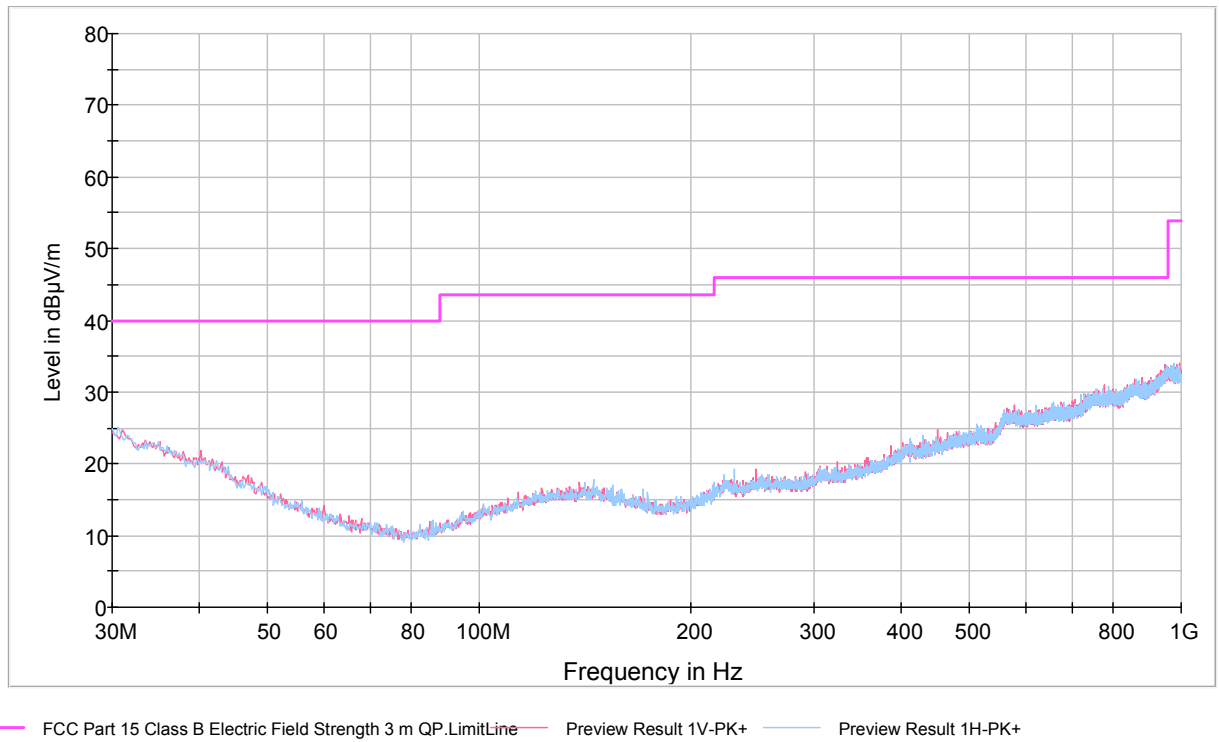
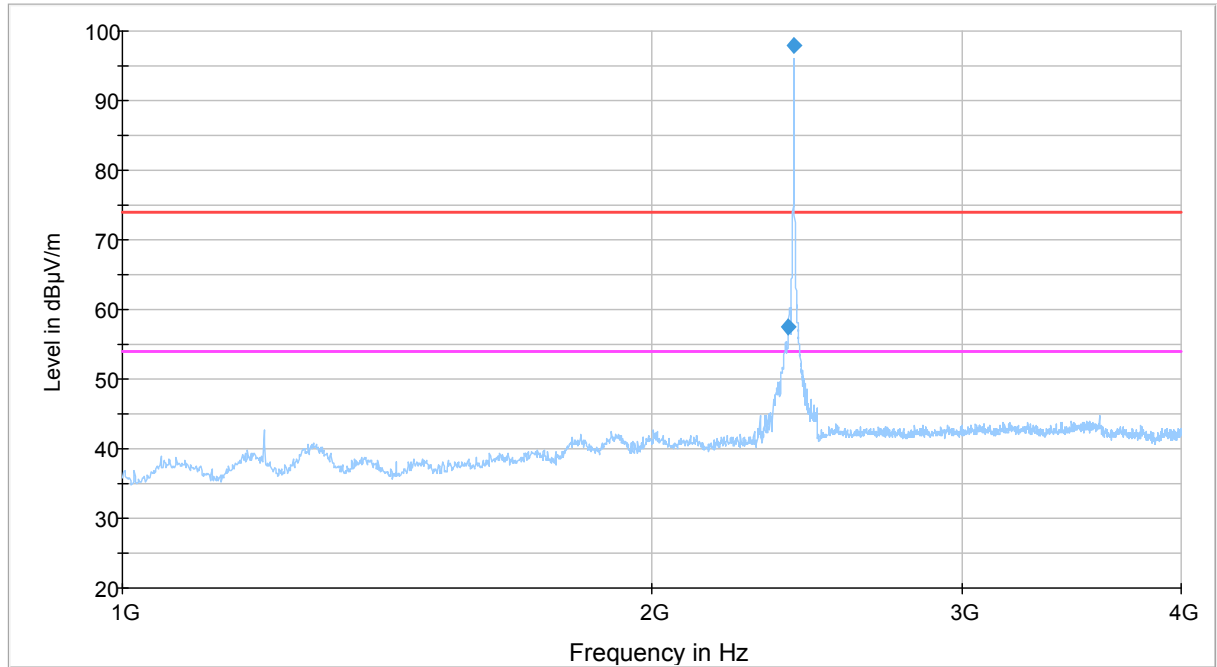


Figure 3. Measured curve with Peak detector.

The final measurements were not performed if the preview level was more than 6 dB below the limit.

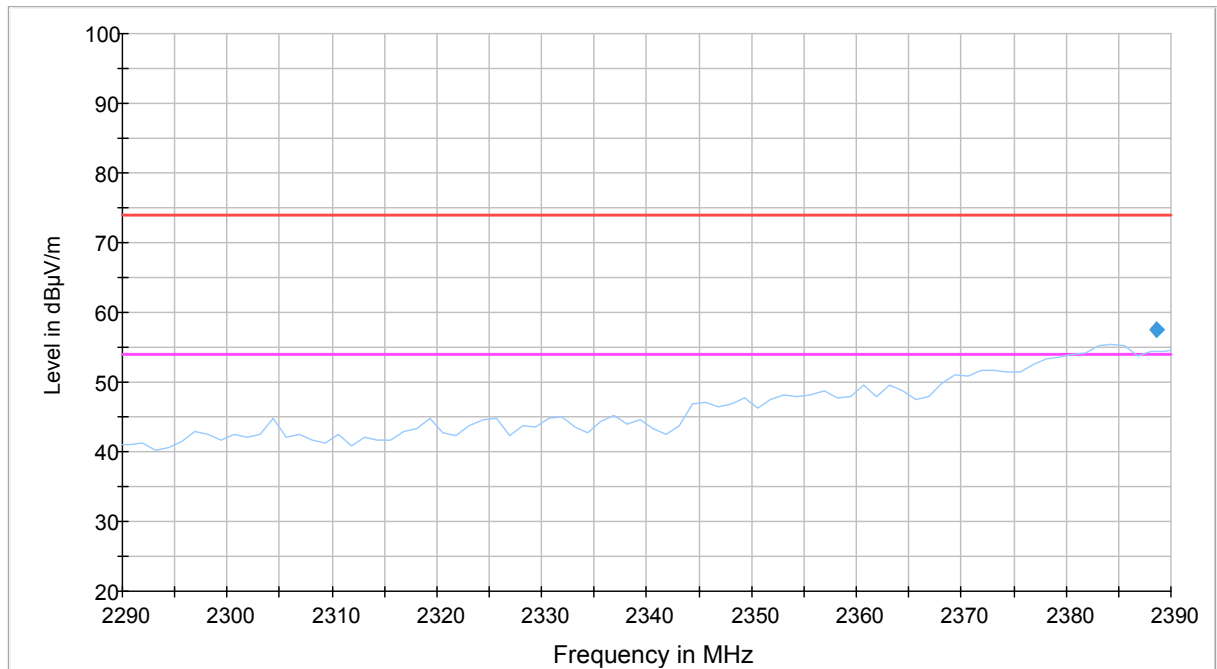
Measured Values In The Frequency Range 1 000 MHz – 4 000 MHz

CHANNEL LOW



— FCC Part 15 Class B Electric Field Strength 3 m PK.LimitLine — FCC Part 15 Class B Electric Field Strength 3 m AV.LimitLine
— Preview Result 1-PK+ ◆ Final Result 1-PK+

Figure 4. Measured curves with Peak and Average detectors.



— FCC Part 15 Class B Electric Field Strength 3 m PK.LimitLine — FCC Part 15 Class B Electric Field Strength 3 m AV.LimitLine
— Preview Result 1-PK+ ◆ Final Result 1-PK+

Figure 5. Measured curves with Peak and Average detectors at Band Edge.

Spurious and Band Edge Radiated Emissions

Table 7. Final Peak measurement results

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2388.600000	57.4	1000.0	1000.000	198.0	H	250.0	4.6	16.5	73.9	
2408.950000	97.9	1000.0	1000.000	196.0	H	245.0	4.6	---	---	*

* The fundamental frequency of transmitter

Table 8. Final Average measurement results

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2388.600000	6.9	1000.0	1000.000	198.0	H	250.0	4.6	47.0	53.9	
2408.950000	47.4	1000.0	1000.000	196.0	H	245.0	4.6	---	---	*

* The fundamental frequency of transmitter

CHANNEL MID

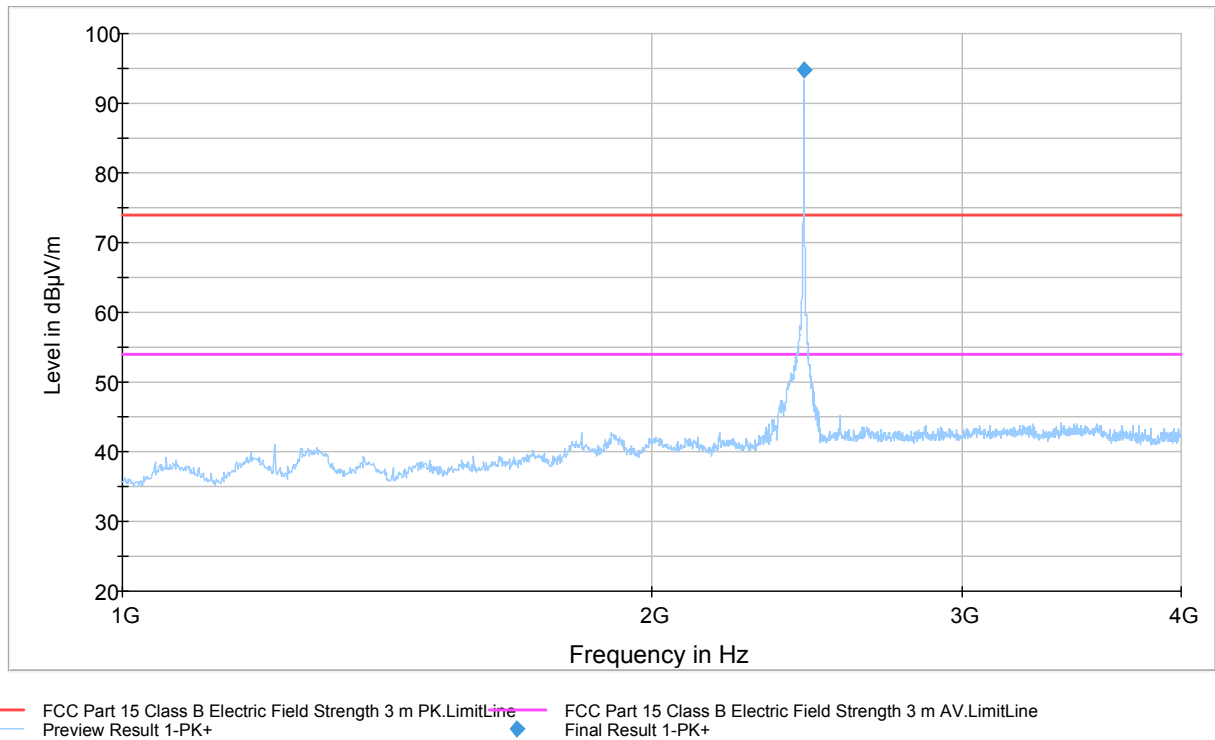


Figure 6. Measured curves with Peak and Average detectors.

Table 9. Final Peak measurement results

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2440.600000	94.7	1000.0	1000.000	194.0	H	291.0	4.4	---	---	*

* The fundamental frequency of transmitter

Table 10. Final Average measurement results

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2440.600000	44.2	1000.0	1000.000	194.0	H	291.0	4.4	---	---	*

* The fundamental frequency of transmitter

CHANNEL HIGH

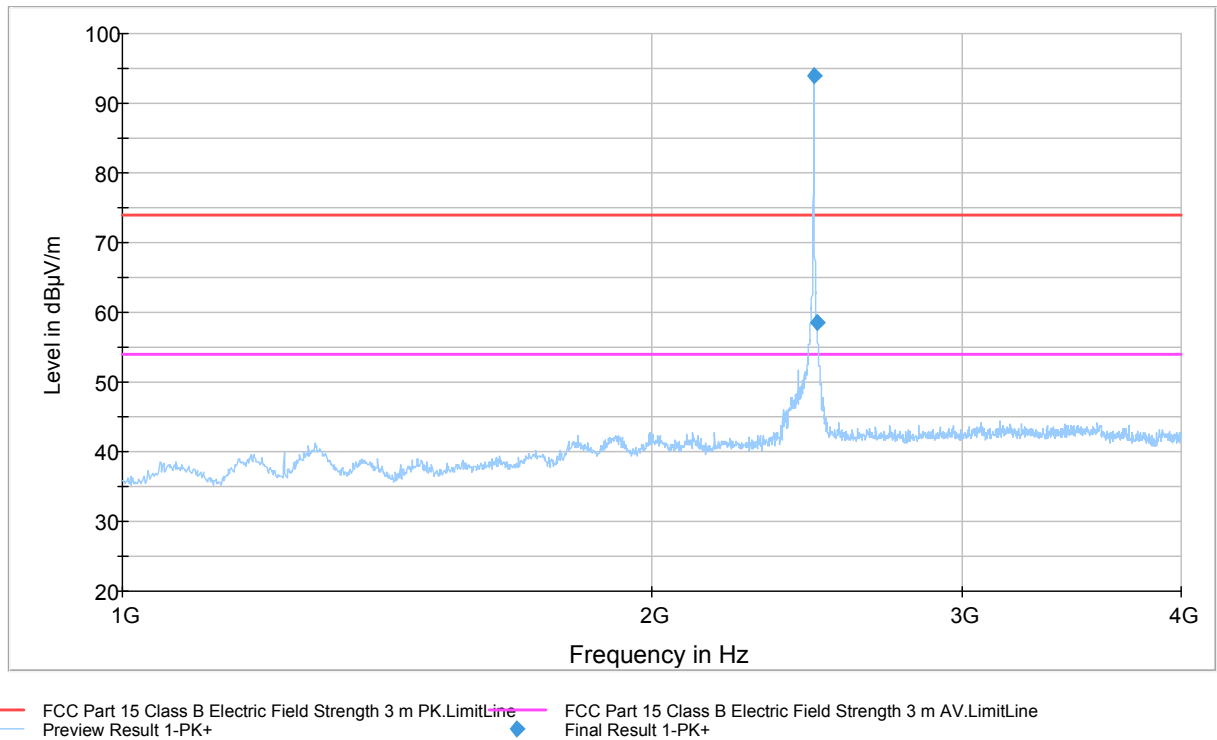


Figure 7. Measured curves with Peak and Average detectors.

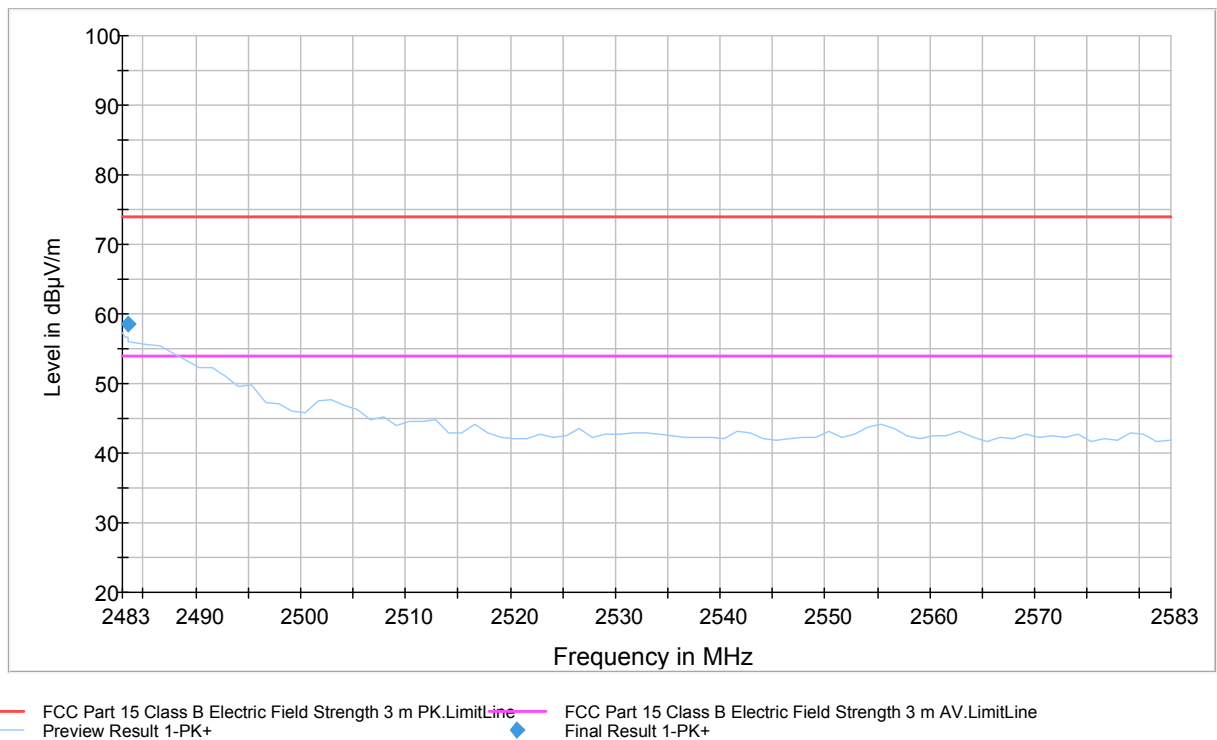


Figure 8. Measured curves with Peak and Average detectors at Band Edge.

Spurious and Band Edge Radiated Emissions

Table 11. Final Peak measurement results

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
2472.800000	93.9	1000.0	1000.000	188.0	H	193.0	4.6	---	---	*
2483.500000	58.6	1000.0	1000.000	187.0	H	185.0	4.7	15.3	73.9	

* The fundamental frequency of transmitter

Table 12. Final Average measurement results

Frequency (MHz)	Average (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
2472.800000	93.9	1000.0	1000.000	188.0	H	193.0	4.6	---	---	*
2483.500000	8.1	1000.0	1000.000	187.0	H	185.0	4.7	45.8	53.9	

* The fundamental frequency of transmitter

Measured Values In The Frequency Range 4 000 MHz – 18 000 MHz

CHANNEL LOW

FCC Part 15 Class B Spurious Emission 4-18GHz 3m

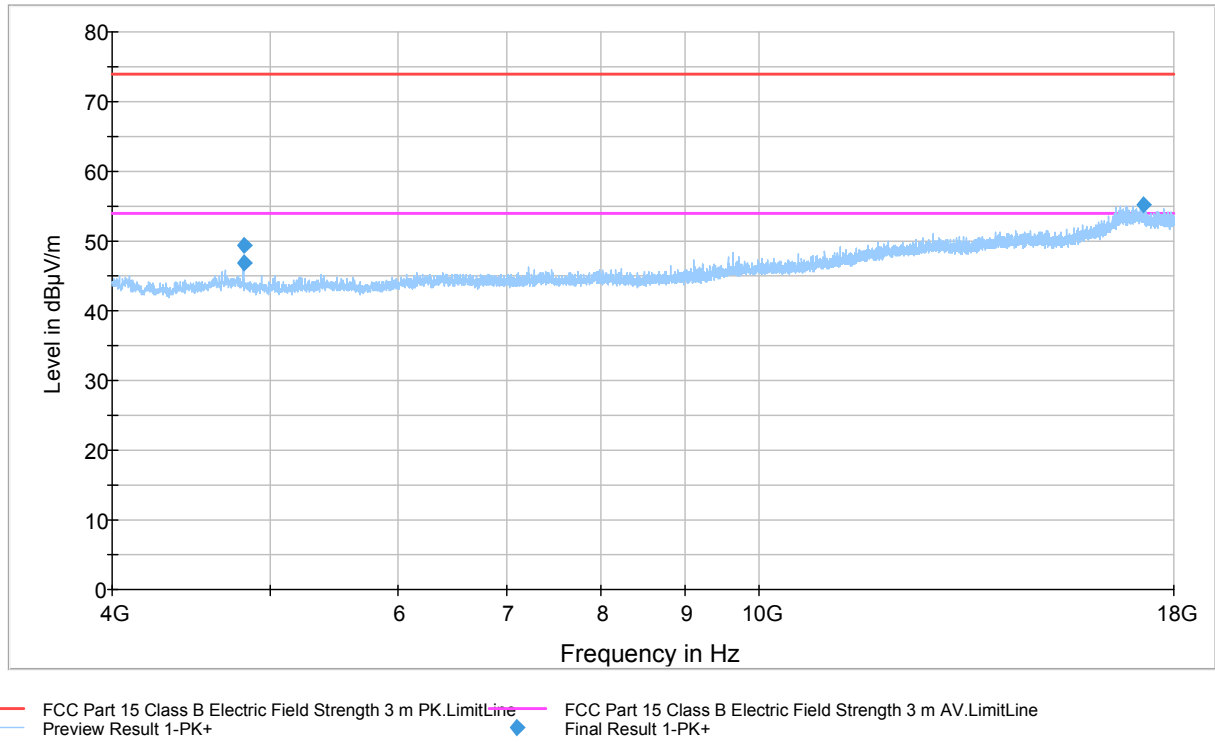


Figure 9. Measured curves with Peak and Average detectors.

Table 13. Final Peak measurement results

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
4818.075000	49.4	1000.0	1000.000	171.0	V	14.0	10.7	24.5	73.9	
4818.075000	47.0	1000.0	1000.000	100.0	H	37.0	10.7	26.9	73.9	
17230.625000	55.2	1000.0	1000.000	200.0	V	315.0	25.5	48.7	73.9	

Table 14. Final Average measurement results

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
4818.075000	-1.1	1000.0	1000.000	171.0	V	14.0	10.7	55.0	53.9	
4818.075000	-3.5	1000.0	1000.000	100.0	H	37.0	10.7	57.4	53.9	
17230.625000	4.7	1000.0	1000.000	200.0	V	315.0	25.5	49.2	53.9	

Spurious and Band Edge Radiated Emissions

CHANNEL MID

FCC Part 15 Class B Spurious Emission 4-18GHz 3m

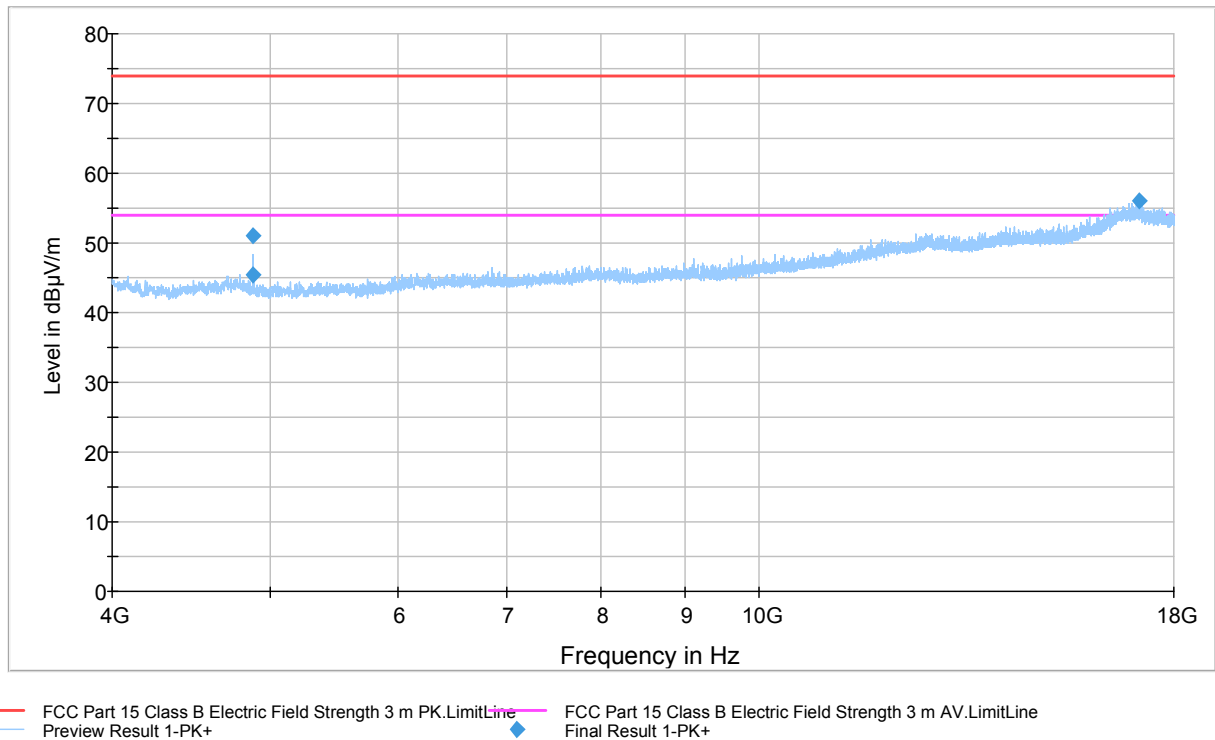


Figure 10. Measured curves with Peak and Average detectors.

Table 15. Final Peak measurement results

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
4882.075000	45.3	1000.0	1000.000	180.0	V	206.0	10.6	28.6	73.9	
4882.075000	51.0	1000.0	1000.000	169.0	H	250.0	10.6	22.9	73.9	
17143.125000	56.1	1000.0	1000.000	100.0	H	225.0	25.7	17.8	73.9	

Table 16. Final Average measurement results

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
4882.075000	-5.2	1000.0	1000.000	180.0	V	206.0	10.6	59.1	53.9	
4882.075000	0.5	1000.0	1000.000	169.0	H	250.0	10.6	54.4	53.9	
17143.125000	5.6	1000.0	1000.000	100.0	H	225.0	25.7	48.3	53.9	

Spurious and Band Edge Radiated Emissions

CHANNEL HIGH

FCC Part 15 Class B Spurious Emission 4-18GHz 3m

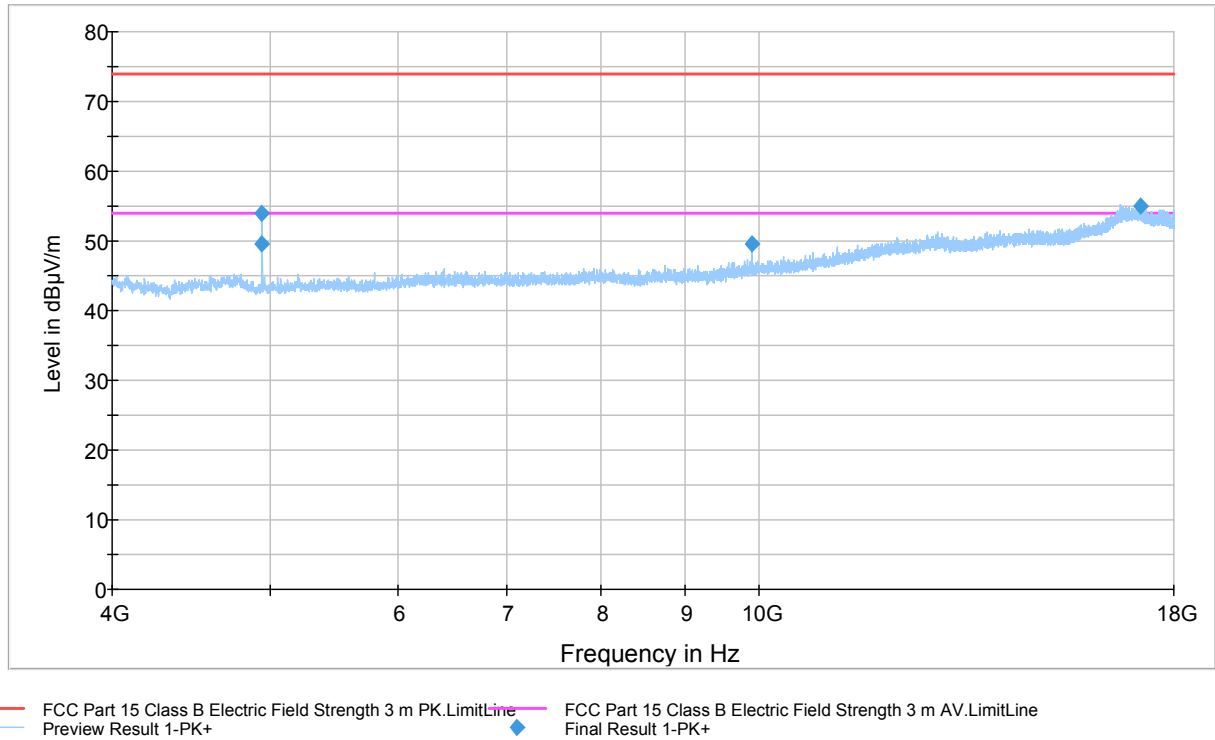


Figure 11. Measured curves with Peak and Average detectors.

Table 17. Final Peak measurement results

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
4945.825000	54.0	1000.0	1000.000	198.0	H	242.0	10.6	19.9	73.9	
4946.225000	49.5	1000.0	1000.000	181.0	V	197.0	10.6	24.4	73.9	
9891.875000	49.6	1000.0	1000.000	100.0	H	315.0	15.2	24.5	73.9	
17163.125000	55.1	1000.0	1000.000	100.0	V	0.0	25.7	18.8	73.9	

Table 18. Final Average measurement results

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
4945.825000	3.5	1000.0	1000.000	198.0	H	242.0	10.6	50.4	53.9	
4946.225000	-1.0	1000.0	1000.000	181.0	V	197.0	10.6	54.9	53.9	
9891.875000	-0.9	1000.0	1000.000	100.0	H	315.0	15.2	54.8	53.9	
17163.125000	4.6	1000.0	1000.000	100.0	V	0.0	25.7	49.3	53.9	

Measured Values In The Frequency Range 18 000 MHz – 26 500 MHz

CHANNEL LOW

Copy of FCC Part 15 Class B Spurious Emission 18-26.5GHz 3m

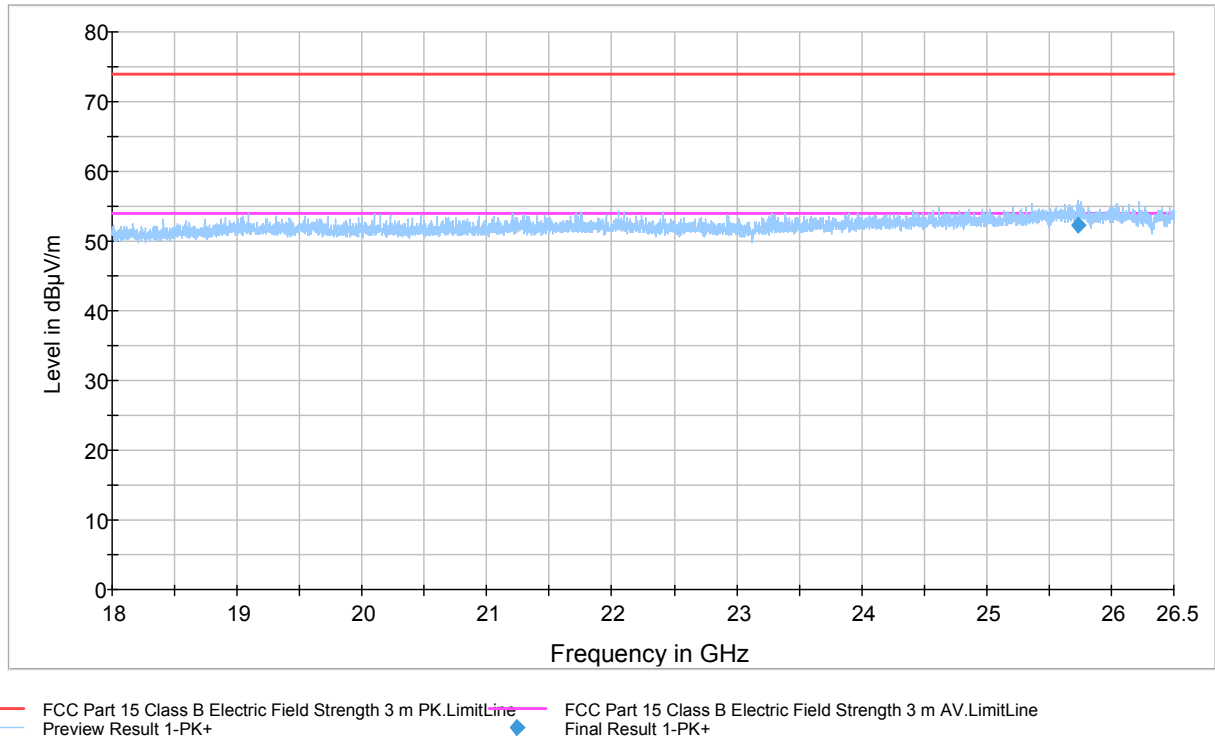


Figure 12. Measured curves with Peak and Average detectors.

Table 19. Final Peak measurement results

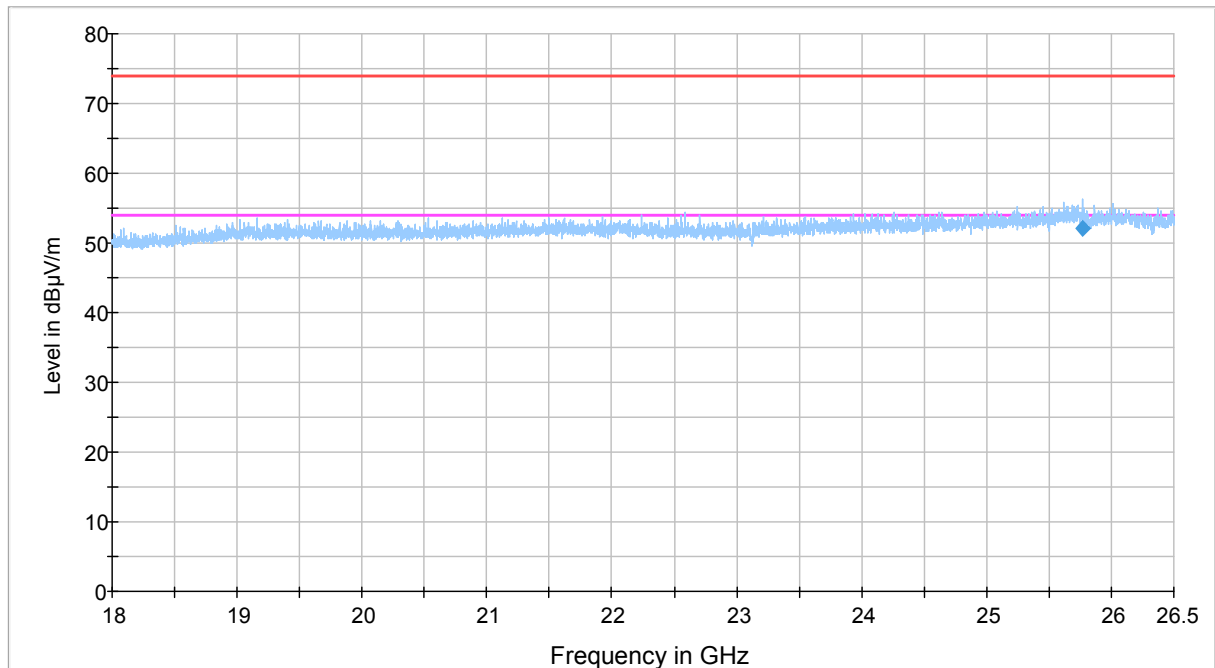
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
25729.675000	52.2	1000.0	1000.000	178.0	V	10.0	28.6	21.7	73.9	

Table 20. Final Average measurement results

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
25729.675000	1.7	1000.0	1000.000	178.0	V	10.0	28.6	52.2	53.9	

CHANNEL MID

Copy of FCC Part 15 Class B Spurious Emission 18-26.5GHz 3m



— FCC Part 15 Class B Electric Field Strength 3 m PK.LimitLine
— FCC Part 15 Class B Electric Field Strength 3 m AV.LimitLine
— Preview Result 1-PK+ ◆ Final Result 1-PK+

Figure 13. Measured curves with Peak and Average detectors.

Table 21. Final Peak measurement results

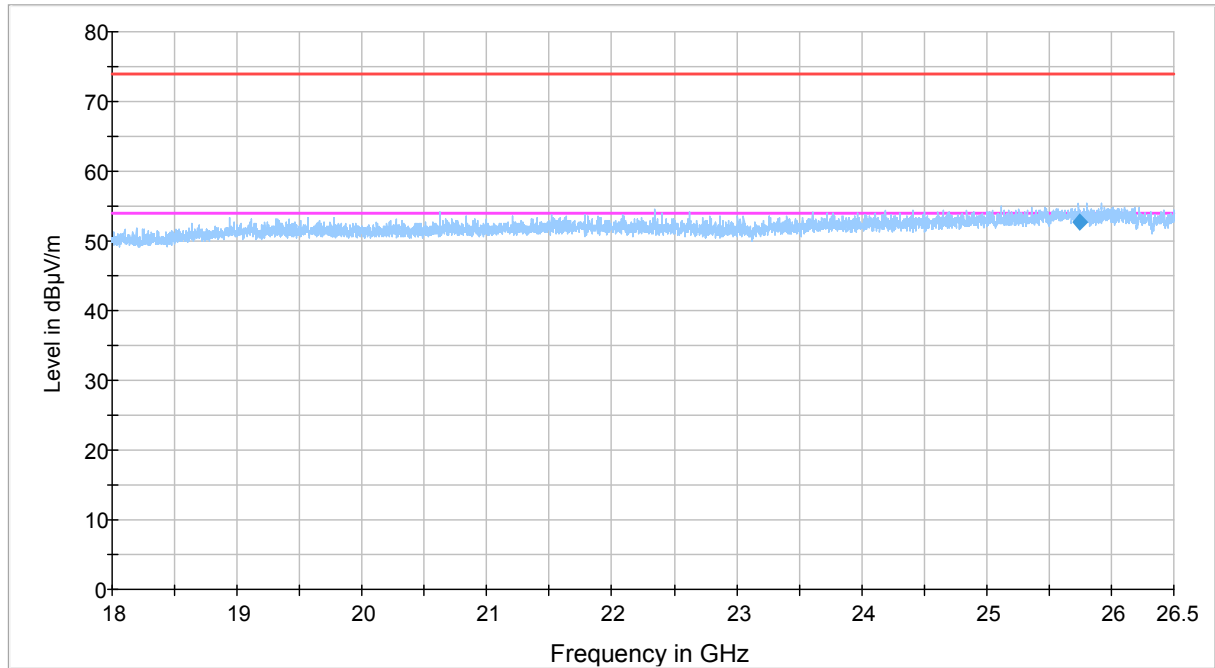
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
25763.075000	52.1	1000.0	1000.000	199.0	V	17.0	28.6	21.8	73.9	

Table 22. Final Average measurement results

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
25763.075000	1.6	1000.0	1000.000	199.0	V	17.0	28.6	52.3	53.9	

CHANNEL HIGH

Copy of FCC Part 15 Class B Spurious Emission 18-26.5GHz 3m



— FCC Part 15 Class B Electric Field Strength 3 m PK.LimitLine
— FCC Part 15 Class B Electric Field Strength 3 m AV.LimitLine
— Preview Result 1-PK+ ◆ Final Result 1-PK+

Figure 14. Measured curves with Peak and Average detectors.

Table 23. Final Peak measurement results

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
25741.575000	52.7	1000.0	1000.000	142.0	V	40.0	28.6	21.2	73.9	

Table 24. Final Average measurement results

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
25741.575000	2.2	1000.0	1000.000	142.0	V	40.0	28.6	51.7	53.9	

20 dB Bandwidth

Standard: ANSI C63.10 (2009)
Tested by: NTO
Date: 3.1.2012
Humidity: 52 %
Temperature: 20 °C
Barometric pressure 1007 hPa

FCC Rule: 15.215 (c)

CHANNEL LOW

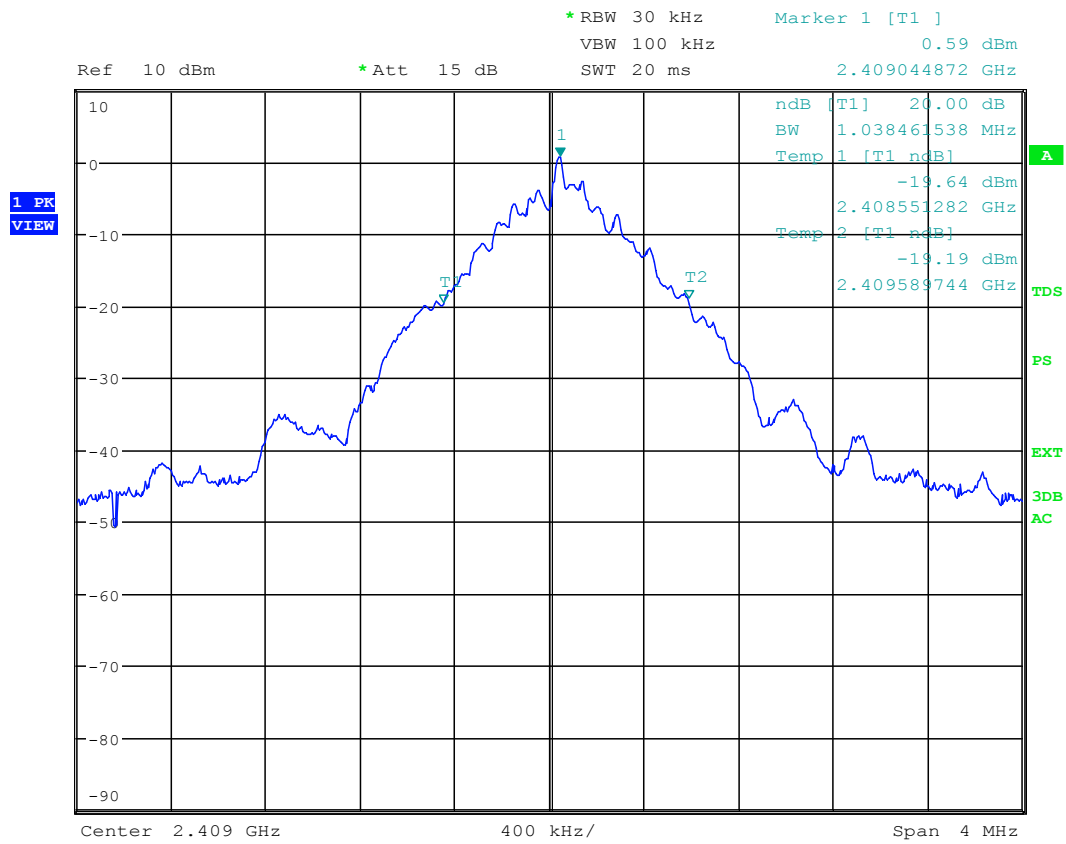
EUT frequency [MHz]	Limit [kHz]	20 dB BW [MHz]	Result
2409	---	1.038	PASS

CHANNEL MID

EUT frequency [MHz]	Limit [kHz]	20 dB BW [MHz]	Result
2441	---	1.244	PASS

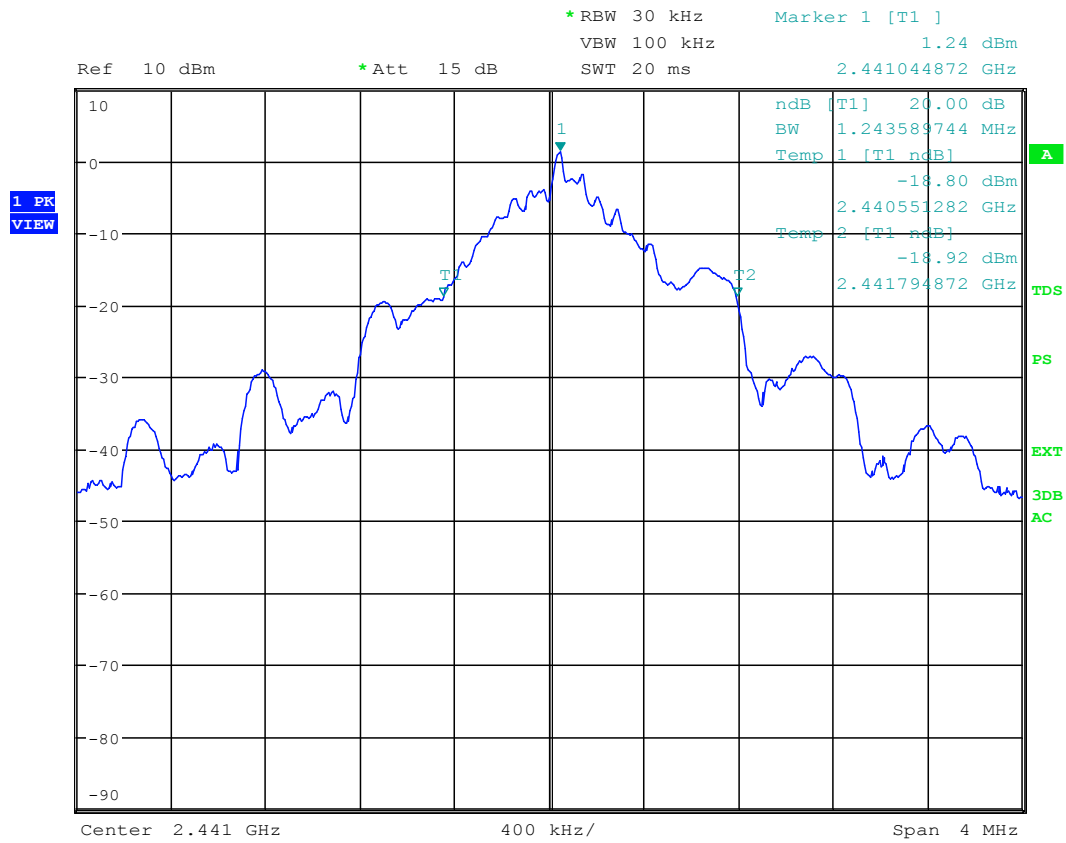
CHANNEL HIGH

EUT frequency [MHz]	Limit [kHz]	20 dB BW [MHz]	Result
2473	---	1.603	PASS



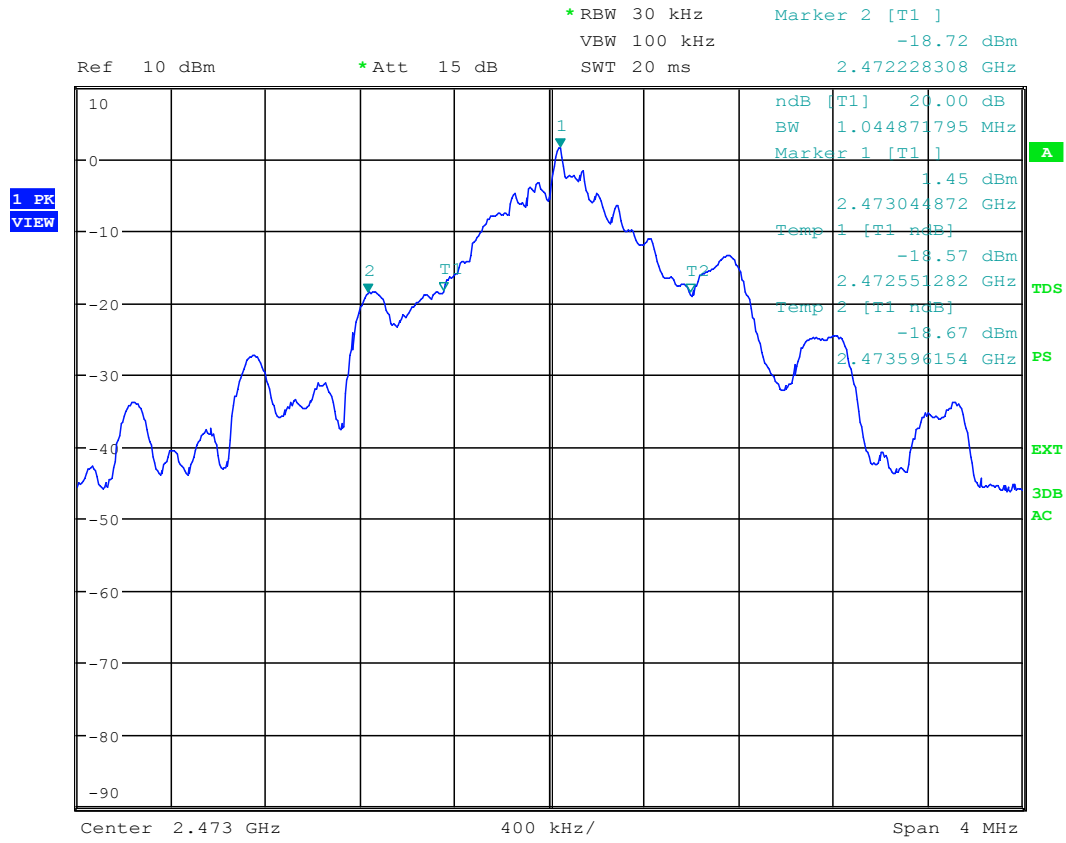
Date: 3.JAN.2012 09:55:17

Figure 14. 20dB bandwidth of channel LOW.



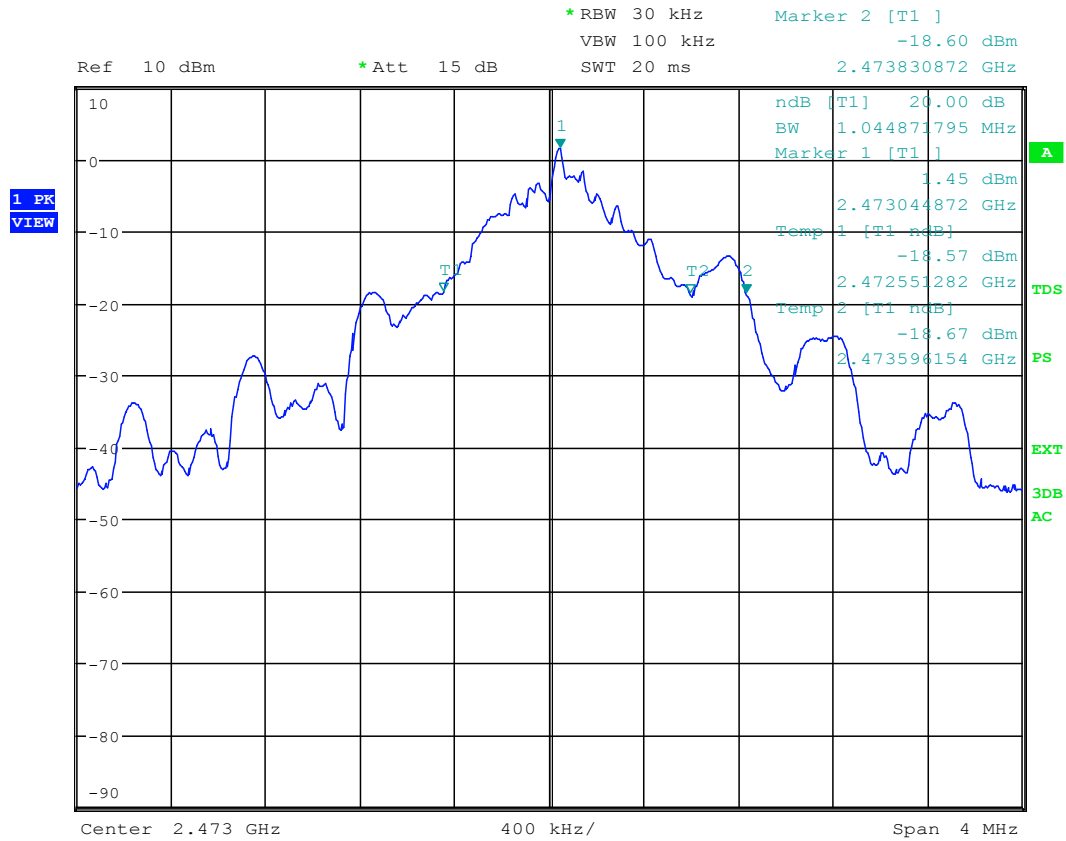
Date: 3.JAN.2012 09:58:34

Figure 15. 20dB bandwidth of channel MID.



Date: 3.JAN.2012 10:09:39

Figure 16. Low end of 20dB bandwidth of channel HIGH.



Date: 3.JAN.2012 10:07:16

Figure 16. High end of 20dB bandwidth of channel HIGH.

Manually calculated 20 dB bandwidth with the marker 2 of *figure 15* and *figure 16*.

$$f_{\text{high}} - f_{\text{low}} = 2473.8308 \text{ MHz} - 2472.2283 \text{ MHz} = 1.6025 \text{ MHz}$$

99% Occupied Bandwidth

Standard: ANSI C63.10 (2009)
Tested by: NTO
Date: 3.1.2012
Humidity: 52 %
Temperature: 20 °C
Barometric pressure 1007 hPa

RSS-GEN Rule: 4.4.1

CHANNEL LOW

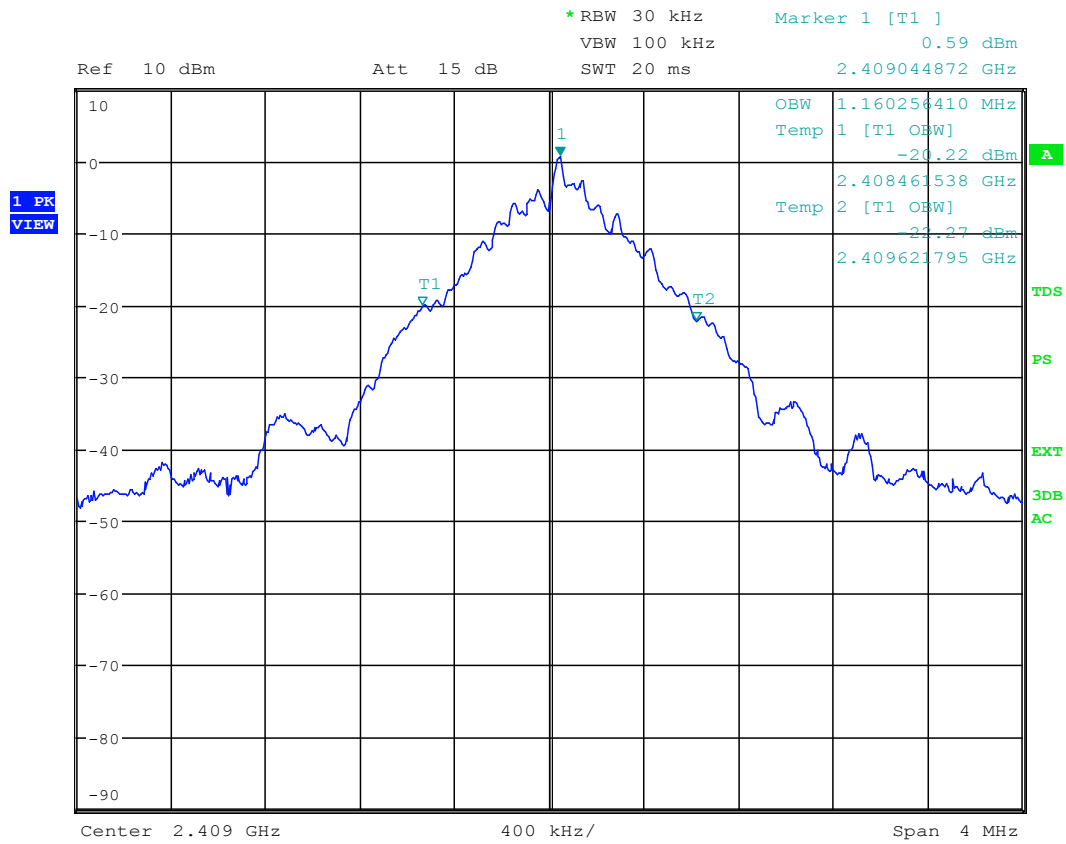
EUT frequency [MHz]	Limit [kHz]	99% BW [MHz]	Result
2409	---	1.160	PASS

CHANNEL MID

EUT frequency [MHz]	Limit [kHz]	99% BW [MHz]	Result
2441	---	1.462	PASS

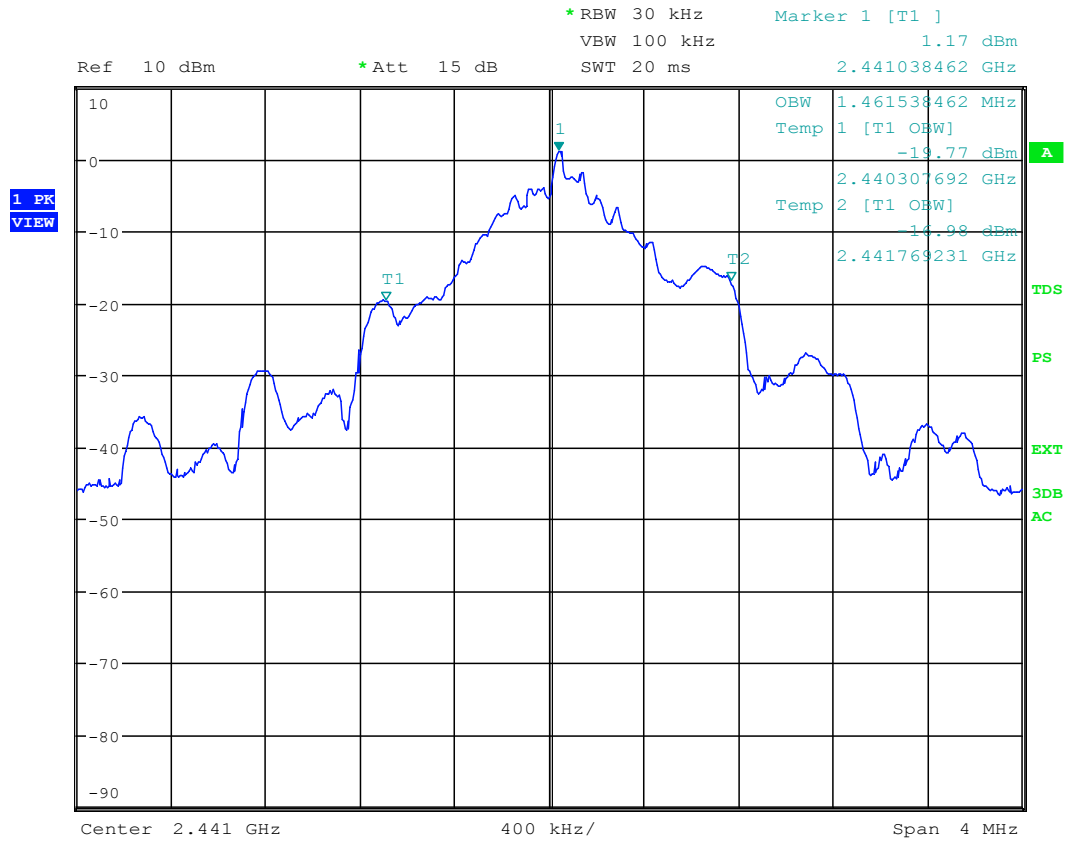
CHANNEL HIGH

EUT frequency [MHz]	Limit [kHz]	99% BW [MHz]	Result
2473	---	1.596	PASS



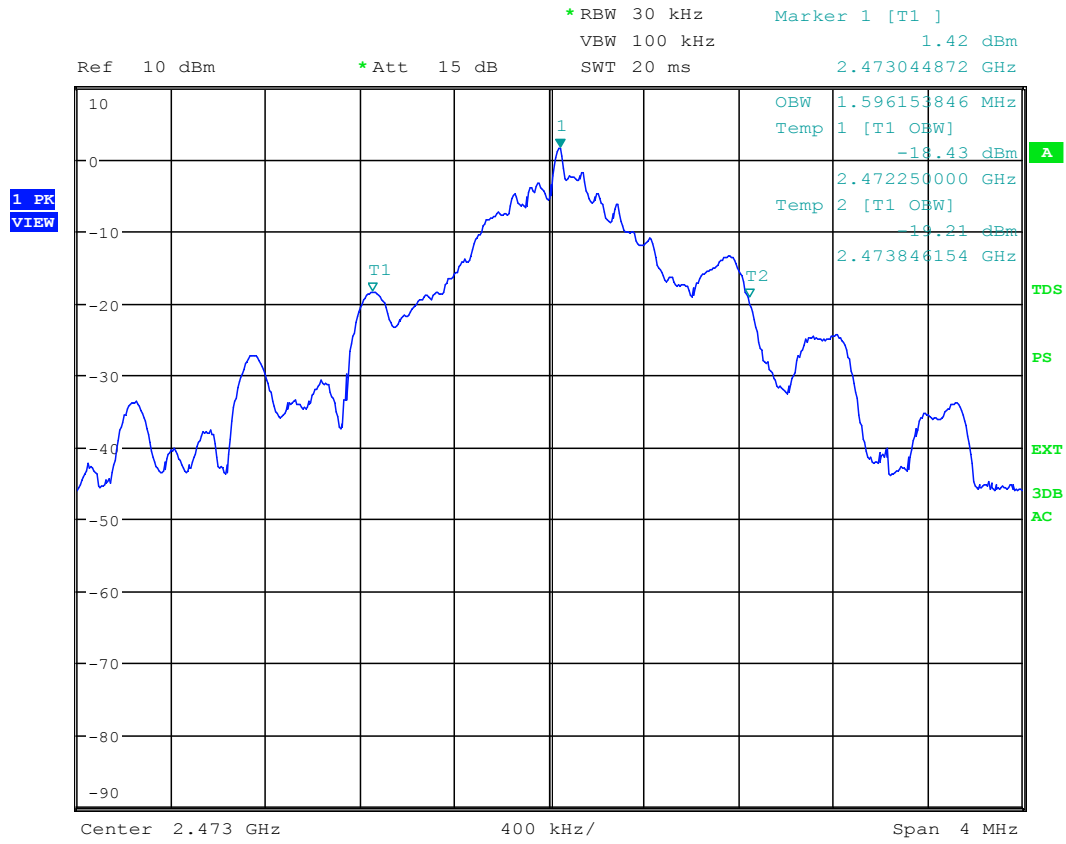
Date: 3.JAN.2012 09:53:56

Figure 17. 99% bandwidth of channel LOW.



Date: 3.JAN.2012 09:59:49

Figure 18. 99% bandwidth of channel MID.



Date: 3.JAN.2012 10:04:30

Figure 19. 99% bandwidth of channel HIGH.

Duty Cycle

Standard: ANSI C63.10 (2009)
Tested by: NTO
Date: 4.1.2011
Humidity: 47 %
Temperature: 20 °C
Barometric pressure 1008 hPa

FCC Rule: -

RSS-GEN Rule: -

CHANNEL LOW

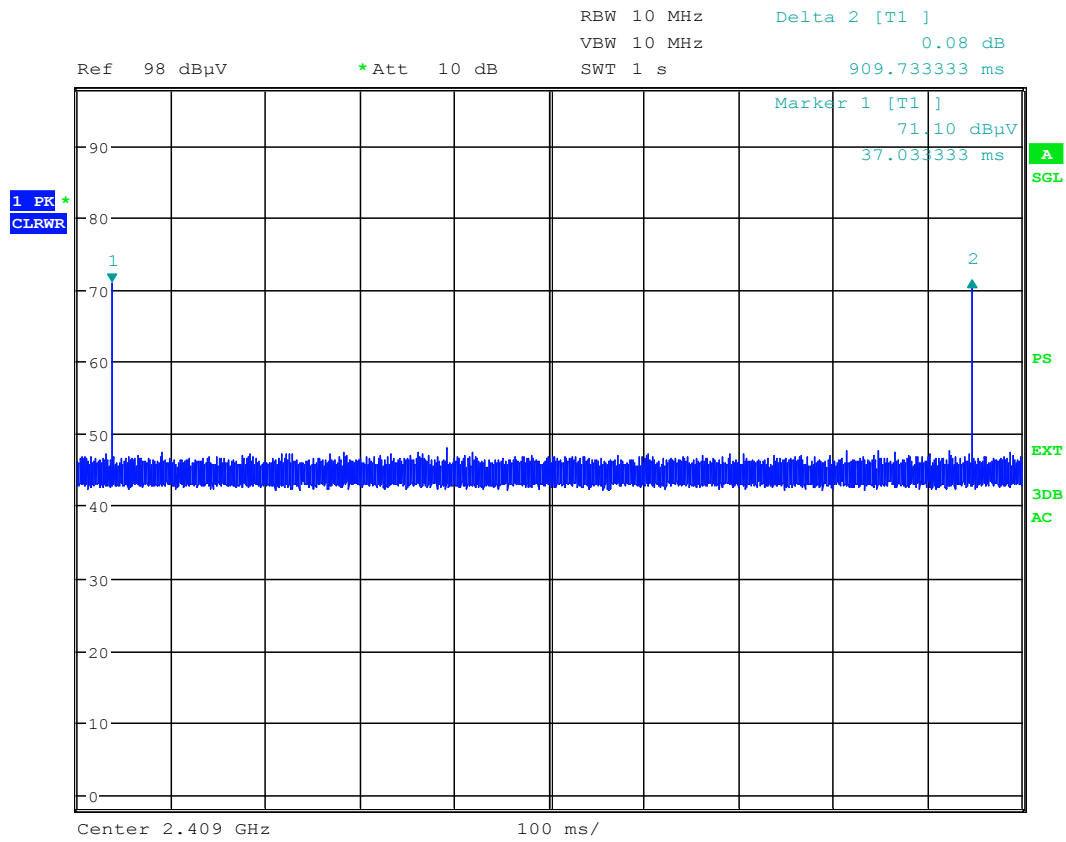
Duty cycle = Duration/Period = 0.297ms/909.733ms = 0.03 %

CHANNEL MID

Duty cycle = Duration/Period = 0.297ms/909.733ms = 0.03 %

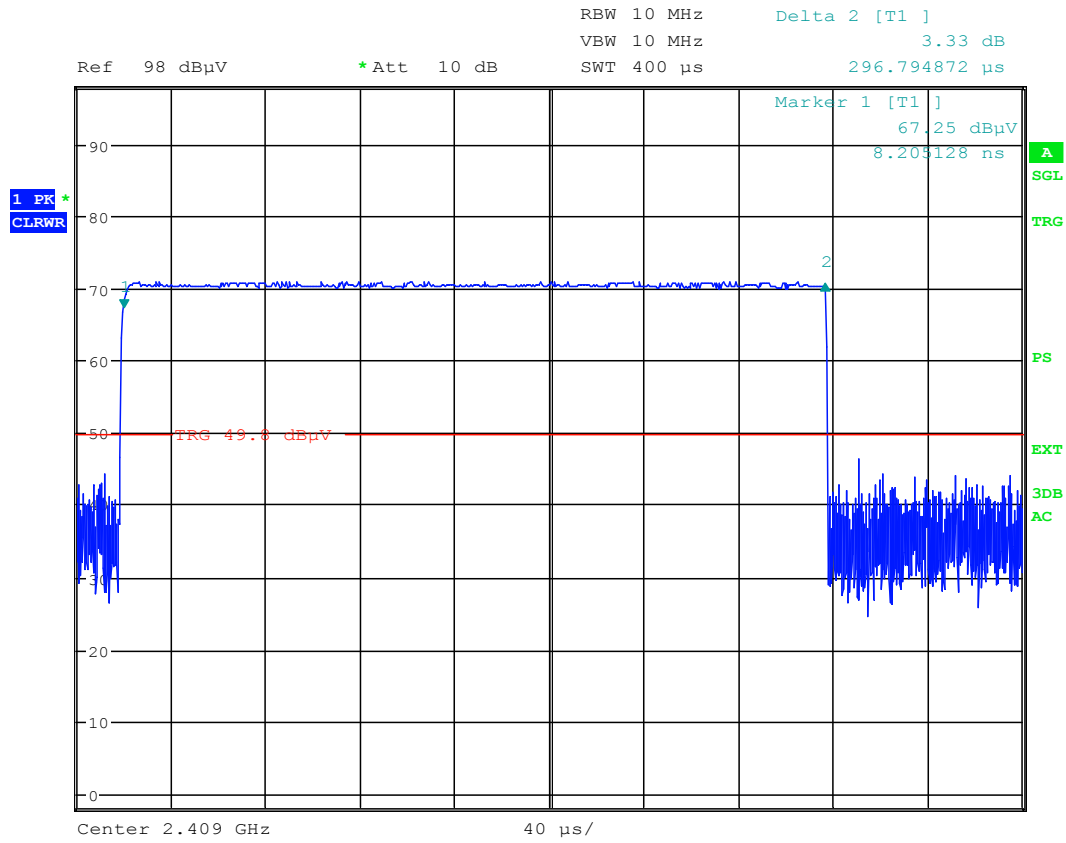
CHANNEL HIGH

Duty cycle = Duration/Period = 0.297ms/454.933ms = 0.07 %



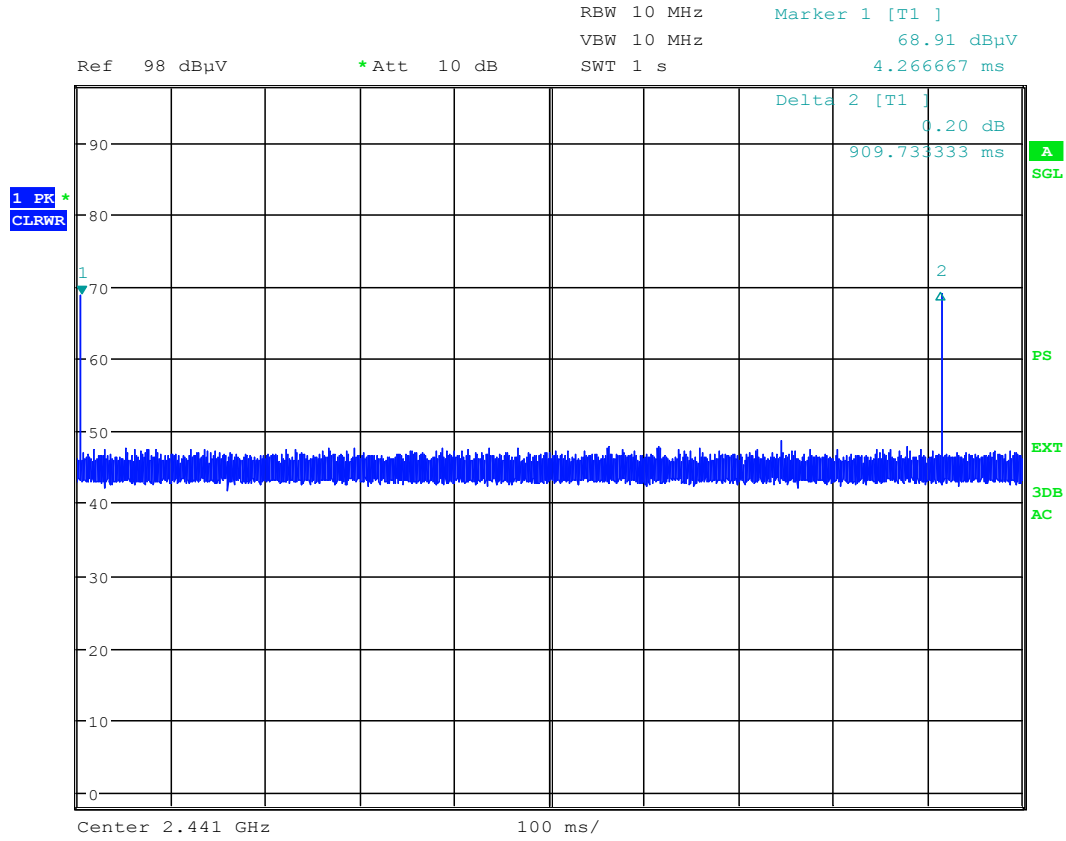
Date: 4.JAN.2012 10:55:52

Figure 17. Period of pulse at channel LOW.



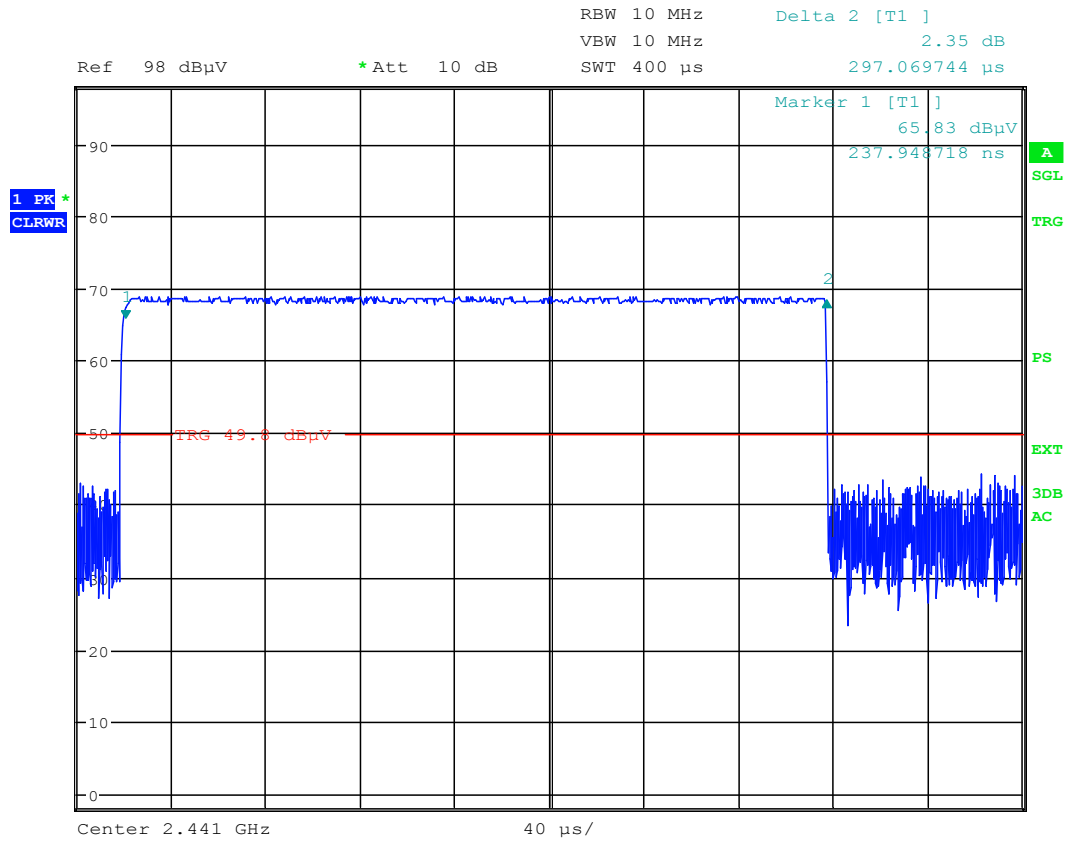
Date: 4.JAN.2012 11:01:12

Figure 17. Duration of pulse at channel LOW.



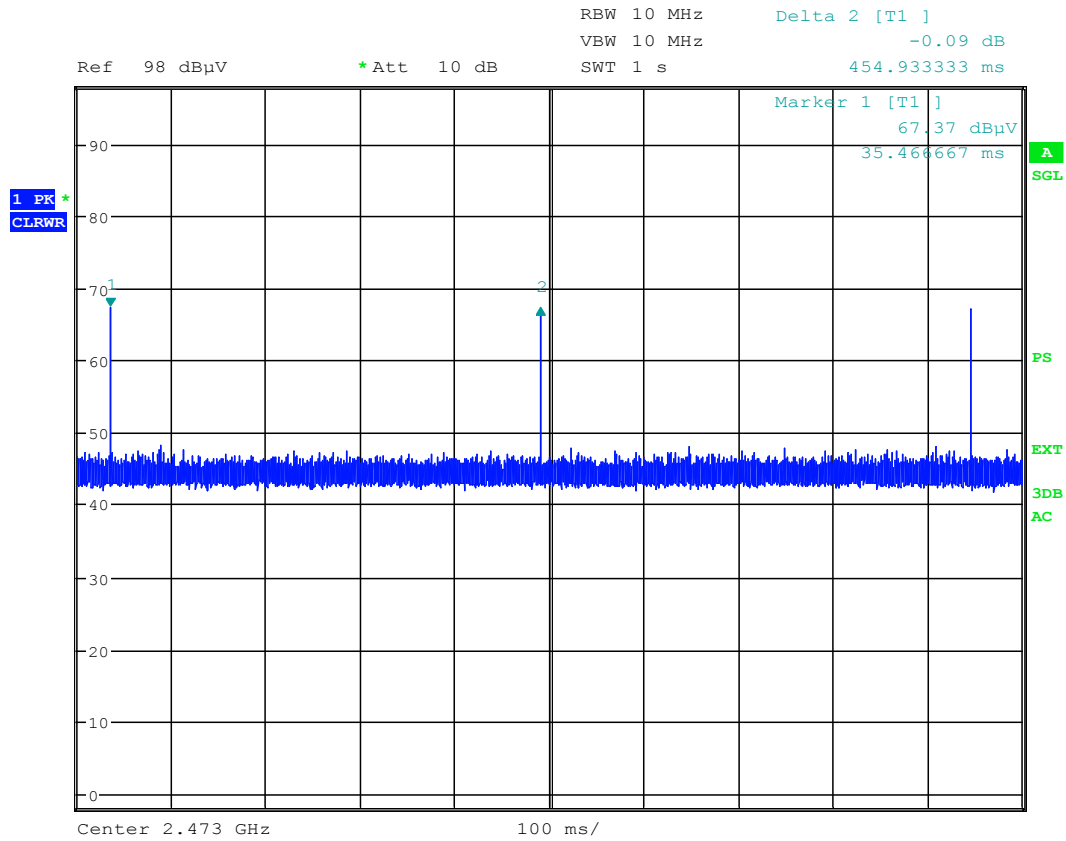
Date: 4.JAN.2012 11:05:59

Figure 17. Period of pulse at channel MID.



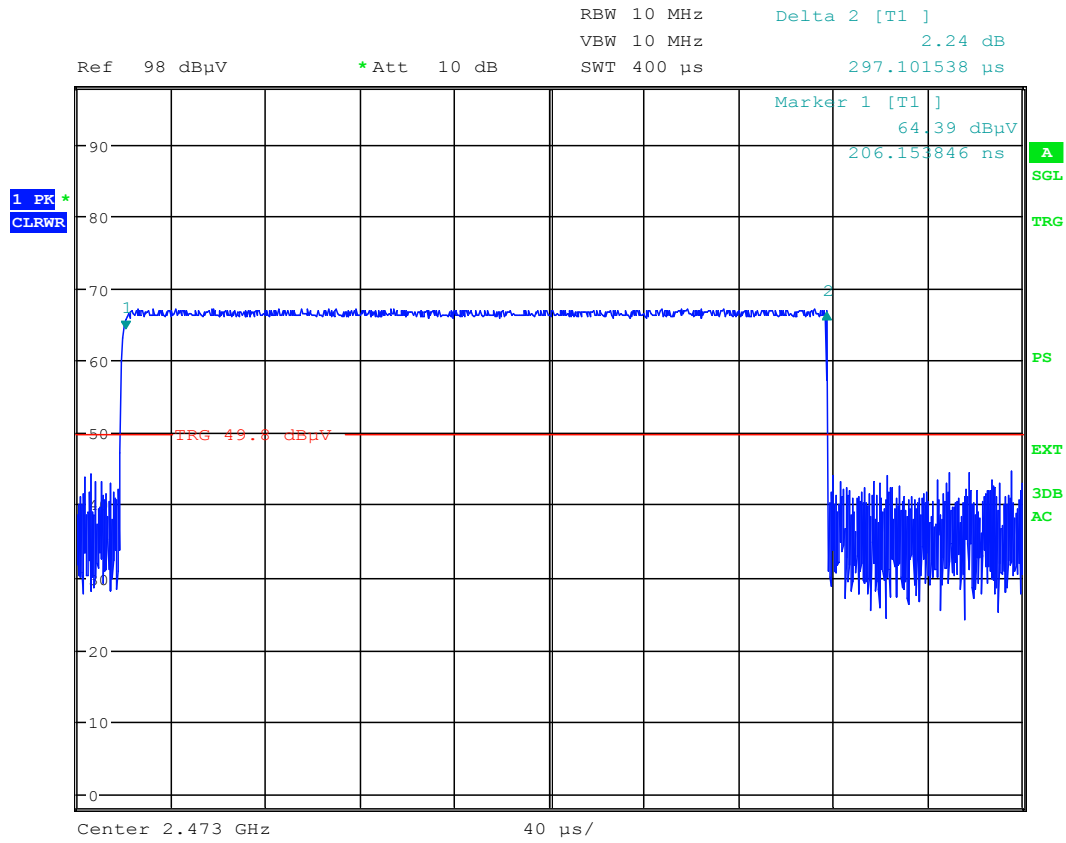
Date: 4.JAN.2012 11:02:40

Figure 17. Duration of pulse at channel MID.



Date: 4.JAN.2012 11:05:04

Figure 17. Period of pulse at channel HIGH.



Date: 4.JAN.2012 11:04:10

Figure 17. Duration of pulse at channel HIGH.

List of Test Equipment

Manufacturer	Type	Serial no	Inv. no
ROHDE & SCHWARZ			
EMI Test receiver	ESU 26	100185	8453
Test software	EMC32	-	-
CHASE			
Antenna (30 MHz - 1 GHz)	6141A	4102	7895
EMCO			
Antenna (1 - 18 GHz)	3117	29617	7293
HEWLETT- PACKARD			
Microwave amplifier	83017A	-	5226
HUBER+SUHNER			
Attenuator 10dB	6810.17B	-	-
DEISEL			
Antenna mast	MA 240 T	240/394/96	5017
Tilt option	KE 220	220/307/96	-
Controller	HD 100	100/413/96	5018
Turntable	DS 420	420/420/96	5015
WAINWRIGHT			
High Pass Filter	WHKX	10	8267

NOTE! All testing equipment were calibrated.