



**CENTRO DE  
TECNOLOGÍA DE LAS  
COMUNICACIONES, S.A.**

Parque Tecnológico de Andalucía,  
c/Severo Ochoa nº 2  
29590 Campanillas/ Málaga/ España  
Tel. 952 61 91 00 - Fax 952 61 91 13  
MÁLAGA, C.I.F. A29 507 456  
Registro Mercantil Tomo 1169 Libro 82  
Folio 133 Hoja MA3729

**FCC LISTED,  
REGISTRATION  
NUMBER: 905266**

**IC LISTED  
REGISTRATION  
NUMBER IC 4621**

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## TEST REPORT

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**Report No.: 27696RET.101**

**TEST NAME:** FCC PART 15.249 AND CONDUCTED EMISSIONS TESTING FOR 2.4 GHz BAND RADIO DEVICE

**Product** : Cordless mouse  
**Trade Mark** : Logitech  
**Model/type Ref.** : M-RCR147R  
**Manufacturer** : Logitech Technology Co., LTD  
**Requested by** : Logitech Inc.  
**Other identification of the product** : FCC ID: DZLMRCR147R  
IC: 1807B-MRCR147R  
**Standard(s)** : USA FCC Part 15.249, 15.205, 15.209, 15.109, 15.207  
CANADA RSS-210

This test report includes 3 annexes and therefore the total number of pages is 51.

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Date: 2008-07-02	Test operator J.M. Fortes 	 Centro de Tecnología de las Comunicaciones. 	Approved by: Date: 2008-07-02 A. Llamas RF Manager 	Page: 1 of 9 AGY-700-002402.001
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**INDEX**

1. COMPETENCE AND GUARANTEES ..... 3

2. GENERAL CONDITIONS ..... 3

3. CHARACTERISTICS OF THE TEST ..... 3

    3.1 TEST REQUESTED ..... 3

    3.2 REQUIREMENTS AND METHOD ..... 4

4. IDENTIFICATION DATA SUPPLIED BY THE APPLICANT ..... 5

    4.1 APPLICANT ..... 5

    4.2 REPRESENTATIVE ..... 5

    4.3 TEST SAMPLES SUPPLIER ..... 5

    4.4 IDENTIFICATION OF ITEM/ITEMS TESTED ..... 5

5. USAGE OF SAMPLES, PERIOD OF TESTING AND ENVIRONMENTAL CONDITIONS ..... 6

    5.1 USAGE OF SAMPLES ..... 6

    5.2 PERIOD OF TESTING ..... 7

    5.3 ENVIROMENTAL CONDITIONS ..... 8

6. TEST RESULTS ..... 9

7. REMARKS AND COMMENTS ..... 9

8. SUMMARY ..... 9

ANNEXES

ANNEX A. TEST RESULTS

ANNEX B. MEASURING RESULTS FOR ELECTROMAGNETIC EMISSION

ANNEX C. PHOTOGRAPHS

<p>Report No.: 27696RET.101</p> <p>Date: 2008-07-02</p>		<p>Page: 2 of 9</p> <p>AGY-700-002402.001</p>
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## 1. COMPETENCE AND GUARANTEES

Centro de Tecnología de las Comunicaciones (AT4 wireless), S.A. is a laboratory with a measurement facility in compliance with the requirements of Section 2.948 of the FCC rules and has been added to the list of facilities whose measurements data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Registration Number: 905266.

Centro de Tecnología de las Comunicaciones (AT4 wireless), S.A. is a laboratory with a measurement site in compliance with the requirements of RSS 212, Issue 1 (Provisional) and has been added to the list of filed sites of the Canadian Certification and Engineering Bureau. Reference File Number: IC 4621.

In order to assure the traceability to other national and international laboratories, AT4 wireless has a calibration and maintenance programme for its measuring equipment.

AT4 wireless guarantees the reliability of the data presented in this report, which is the result of measurements and tests performed to the item under test on the date and under the conditions stated on the report and is based on the knowledge and technical facilities available at AT4 wireless at the time of execution of the test.

AT4 wireless is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the item under test and the results of the test.

## 2. GENERAL CONDITIONS

1. This report only refers to the item that has undergone the test.
2. This report does not constitute or imply by its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without written approval of AT4 wireless.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of AT4 wireless and the Accreditation Bodies.

## 3. CHARACTERISTICS OF THE TEST

### 3.1 TEST REQUESTED

1. Measurements for short range radio equipment operating in the 2400 MHz -2483.5 MHz band, according to FCC Part 15.249.
2. Continuous conducted emission, power leads:

Standard: FCC Rules and Regulations 47 CFR Part 15

Limit: Class B

Method: FCC Rules and Regulations 47 CFR Part 15, Subpart C

Report No.: 27696RET.101		Page: 3 of 9
Date: 2008-07-02		AGY-700-002402.001

### 3.2 REQUIREMENTS AND METHOD

1. FCC parts 15.33, 15.35, 15.249, 15.207, 15.205, 15.209, 15.109.

The testing was performed according to the procedure in ANSI C63.4: 2003. Radiated testing was performed in AT4 wireless's semi-anechoic chamber. This site has been fully described in a report submitted to the FCC and was accepted in a letter dated July 25, 2002.

2. FCC Rules and Regulations 47 CFR Part 15, Subpart C: Limits and methods of measurements for radio frequency devices. Intentional radiators.

The instrumentation used to perform the testing is listed below:

1. Semianechoic Absorber Lined Chamber IR 11. BS.
2. Control Chamber IR 12.BC.
3. Antenna mast EM 1072 NMT.
4. Rotating table EM 1084-4. ON.
5. Multi device controller ETS 2090.
6. Hybrid Bilog antenna Sunol Sciences Corporation JB6.
7. Antenna tripod EMCO 11968C.
8. Double-ridge Guide Horn antenna 1-18 GHz HP 11966E.
9. Double-ridge Guide Horn antenna 18-40 GHz Agilent 119665J.
10. RF pre-amplifier Miteq JS4-12002600-30-5A.
11. Semianechoic Absorber Lined Chamber IR 11. BS.
12. RF pre-amplifier Miteq AFS5-04001300-15-10P-6.
13. Spectrum analyzer R&S ESIB 26.
14. Spectrum analyzer R&S ESU 40.
15. RF pre-amplifier Schaffner CPA 9231.
16. DC power supply R&S NGPE 40/40.
17. Transient limiter. HP 11947A.
18. Line Impedance Stabilization Network (L.I.S.N.) R&S. ESH2-Z5.

#### 4. IDENTIFICATION DATA SUPPLIED BY THE APPLICANT

Identification data in this section has been supplied by the client.

##### 4.1 APPLICANT

**Name / Company:** Logitech Inc.

**V.A.T.:** Not provided

**Address:** 6505 Kaiser Drive    **P.C.:** CA 94555    **City:** Fremont

**Country:** USA

**Telephone:** +1-510-795 85 00    **Fax:** +1-510-792 89 01

##### 4.2 REPRESENTATIVE

**Name:** Bharat Shah

##### 4.3 TEST SAMPLES SUPPLIER

**Name or Company:** Logitech Europe, S.A.

**V.A.T.:** 203037

**Address:** Z.I. Moulin du Choc D    **City:** Romanel Sur Morges

**Postal code:** 1122    **Country:** Switzerland

**Telephone:** +41 21 863 50 67    **Fax:** +41 21 863 53 11

Samples undergoing test have been selected by: **the client**

##### 4.4 IDENTIFICATION OF ITEM/ITEMS TESTED

**Product:** Cordless mouse

**Trade mark:** Logitech    **Model:** M-RCR147R

**Other identification of the product:** FCC ID: DZLMRCR147R    IC: 1807B- MRCR147R

**Manufacturer:** Logitech Technology Co., LTD

**Country of manufacture:** China

**Manufacture site:** No. 3, Songshan Road, Suzhou New District

**Description:** Cordless mouse for PC, Laptop, operating in the 2.4 -2.4835 GHz band

Report No.: 27696RET.101		Page: 5 of 9
Date: 2008-07-02		AGY-700-002402.001

## 5. USAGE OF SAMPLES, PERIOD OF TESTING AND ENVIRONMENTAL CONDITIONS

### 5.1 USAGE OF SAMPLES

Sample M/01 is formed by the following elements:

<u>Control No.</u>	<u>Description</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date of reception</u>
27696/02	Cordless mouse with integral antenna	M-RCR147R	PID: PB2-354	20/05/08

Sample M/02 is formed by the following elements:

<u>Control No.</u>	<u>Description</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date of reception</u>
27696/10	Cordless mouse with antenna connector	M-RCR147R	PID: PB2-341	20/05/08

Sample S/01 is composed of the following elements:

<u>Control No.</u>	<u>Description</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date of reception</u>
27696/03	Cordless Mouse	M-RCR147R	Prototype	20/05/08
27696/14	USB Cable	---	---	20/05/08
27696/15	Power Adapter	---	---	20/05/08

It was used the next auxiliary elements:

<u>Control No.</u>	<u>Description</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date of reception</u>
27696/---	Portable PC	Toshiba Satellite	A 100 121	---
27696/04	USB Dongle	PRO2800	Prototype	20/05/08

Sample S/02 is composed of the following elements:

<u>Control No.</u>	<u>Description</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date of reception</u>
27696/03	Cordless Mouse	M-RCR147R	Prototype	20/05/08
27696/13	USB Cable	---	---	20/05/08
27696/15	Power Adapter	---	---	20/05/08

It was used the next auxiliary elements:

<u>Control No.</u>	<u>Description</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date of reception</u>
27696/---	Portable PC	Toshiba Satellite	A 100 121	---
27696/04	USB Dongle	PRO2800	Prototype	20/05/08

Report No.: 27696RET.101		Page: 6 of 9
Date: 2008-07-02		AGY-700-002402.001

**Sample S/03 is composed of the following elements:**

<u>Control No.</u>	<u>Description</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date of reception</u>
27696/03	Cordless Mouse	M-RCR147R	Prototype	20/05/08
27696/14	USB Cable	---	---	20/05/08

**It was used the next auxiliary elements:**

<u>Control No.</u>	<u>Description</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date of reception</u>
27696/---	Portable PC	Toshiba Satellite	A 100 121	---
27696/04	USB Dongle	PRO2800	Prototype	20/05/08

**Sample S/04 is composed of the following elements:**

<u>Control No.</u>	<u>Description</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date of reception</u>
27696/03	Cordless Mouse	M-RCR147R	Prototype	20/05/08
27696/13	USB Cable	---	---	20/05/08

**It was used the next auxiliary elements:**

<u>Control No.</u>	<u>Description</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date of reception</u>
27696/---	Portable PC	Toshiba Satellite	A 100 121	---
27696/04	USB Dongle	PRO2800	Prototype	20/05/08

1. Sample M/01 has undergone following test(s).  
Radiated tests indicated in annex A.
2. Sample M/02 has undergone following test(s).  
All tests indicated in annex A, except radiated tests.
3. Samples S/01, S/02, S/03 and S/04 have undergone to the following test(s):  
Continuous conducted emission, power leads, in Annex B.

## 5.2 PERIOD OF TESTING

The performed test started on 2008-05-22 and finished on 2008-05-29.

The tests as detailed in this report have been performed at AT4 wireless.

Report No.: 27696RET.101		Page: 7 of 9
Date: 2008-07-02		AGY-700-002402.001

### 5.3 ENVIROMENTAL CONDITIONS

In the control chamber the following limits were not exceeded during the test:

Temperature	Min. = 20 °C Max. = 22 °C
Relative humidity	Min. = 48 % Max. = 53 %
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω

In the semianechoic chamber (21 meters x 11 meters x 8 meters) the following limits were not exceeded during the test.

Temperature	Min. = 20 °C Max. = 22 °C
Relative humidity	Min. = 48 % Max. = 53 %
Air pressure	Min. = 1018 mbar Max. = 1018 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω
Normal site attenuation (NSA)	< ±4 dB at 10 m distance between item under test and receiver antenna, (30 MHz to 1000 MHz)
Field homogeneity	More than 75% of illuminated surface is between 0 and 6 dB (26 MHz to 1000 MHz).



In the chamber for conducted measurements the following limits were not exceeded during the test:

Temperature	Min. = 20 °C Max. = 23 °C
Relative humidity	Min. = 50 % Max. = 51 %
Air pressure	Min. = 1020 mbar Max. = 1020 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω

## 6. TEST RESULTS

Abbreviations used in the VERDICT column of the following tables are:

- P** Pass
- F** Fail
- NA** not applicable
- NM** not measured

FCC PART 15 PARAGRAPH	VERDICT			
	NA	P	F	NM
15.249 Subclause (a). Field strength of emissions		P		
15.249 Subclause (d). Emissions radiated outside of the specific frequency bands		P		
15.109. Radiated emission limits for receiver		P		
15.207. Conducted limits		P		

## 7. REMARKS AND COMMENTS

None.

## 8. SUMMARY

Based on the results of the performed test, stated in annex A the item under test is **IN COMPLIANCE** with the specifications listed in section 3.1 “TEST REQUESTED”.

NOTE: The results presented in this Test Report apply only to the particular item under test declared in section 4.4 “IDENTIFICATION OF ITEM/ITEMS TESTED” of this document, as presented for test on the date(s) declared in section 5, “USAGE OF SAMPLES, PERIOD OF TESTING AND ENVIRONMENTAL CONDITIONS”.

Report No.: 27696RET.101		Page: 9 of 9
Date: 2008-07-02		AGY-700-002402.001

**ANNEX A**  
**TEST RESULTS**

**Report No: 27696RET.101**

Report No:  
27696RET.101

Date: 2008-07-02

FET45\_00.DOC

Page: 1 of 23

Annex A  
AGY-700-002402.001

## INDEX

	Page
TEST CONDITIONS .....	3
Section 15.215 Subclause (c) (1). 20 dB Bandwidth.....	4
Section 15.249 Subclause (a). Field strength of Fundamental .....	7
Section 15.249 Subclause (a) and (d). Radiated emissions (Transmitter).....	10
Section 15.109. Receiver spurious radiation .....	18

## TEST CONDITIONS

Power supply (V):

$$V_{\text{nominal}} = 1.2 \text{ Vdc}$$

Type of power supply = DC voltage supplied by rechargeable AA NiMH battery.

Type of antenna = Integral antenna

Maximum Declared Gain for antenna = -1.15 dBi

Operating Temperature Range (°C):

$$T_n = +15 \text{ to } +35$$

### TEST FREQUENCIES:

Lowest channel: 2405 MHz

Close to middle channel: 2447 MHz

Highest channel: 2474 MHz

The test set-up was made in accordance to the general provisions of ANSI C63.4: 2003.

### CONDUCTED MEASUREMENTS

The equipment under test was set up in a shielded room and it is connected to the spectrum analyser.

### RADIATED MEASUREMENTS

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m for the frequency range 30 MHz-1000 MHz (30 MHz-1000 MHz Bilog antenna) and at a distance of 1m for the frequency range 1 GHz-25 GHz (1 GHz-18 GHz Double ridge horn antenna and 18 GHz-40 GHz horn antenna).

For radiated emissions in the range 1 GHz-25 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive (wooden) platform one meter above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

Report No: 27696RET.101		Page: 3 of 23
Date: 2008-07-02		Annex A AGY-700-002402.001

**Section 15.215 Subclause (c) (1). 20 dB Bandwidth**

RESULTS

20 dB Bandwidth (see next 3 plots).

	Lowest frequency	Middle frequency	Highest frequency
	2405 MHz	2447 MHz	2474 MHz
20 dB Spectrum bandwidth (kHz)	2019.23	2195.51	2179.49
Measurement uncertainty (kHz)	±11		

20 dB BANDWIDTH.

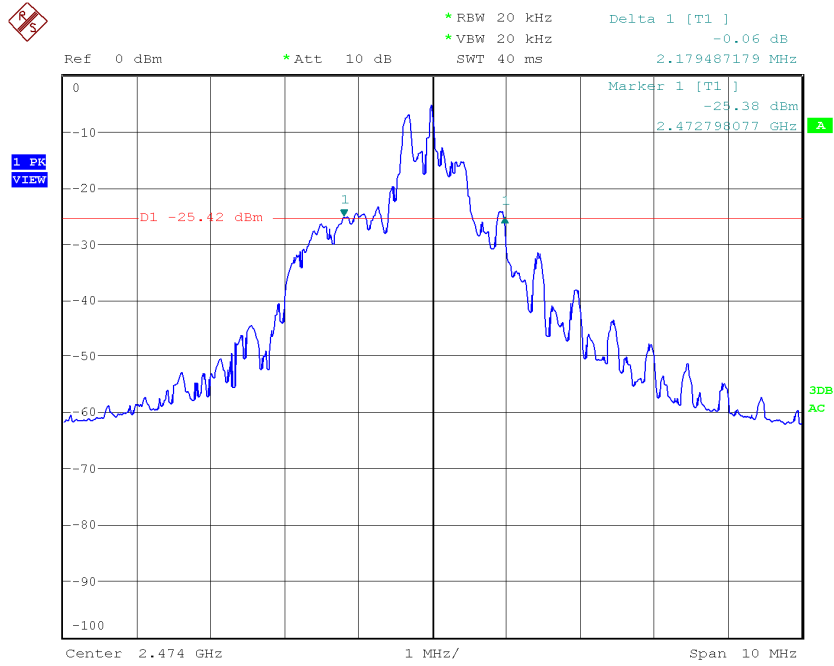
Lowest Channel: 2405 MHz.



Middle Channel: 2447 MHz.



Highest Channel: 2474 MHz.



Report No:  
27696RET.101

Date: 2008-07-02

Page: 6 of 23

Annex A  
AGY-700-002402.001

**Section 15.249 Subclause (a). Field strength of Fundamental**

SPECIFICATION

The field strength of emissions from intentional radiators shall comply with the following

Fundamental frequency (MHz)	Field strength of fundamental (mV/m)	Field strength (dB $\mu$ V/m)	Measurement distance (m)
902 - 928	50	93.98	3
2400 – 2483.5	50	93.98	3
5725 - 5875	50	93.98	3
24000-24250	250	107.96	3

for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

RESULTS

	Lowest frequency 2405 MHz	Middle frequency 2447 MHz	Highest frequency 2474 MHz
Field strength (dB $\mu$ V/m) average	87.23	86.51	85.93
Field strength (dB $\mu$ V/m) peak	88.18	87.78	87.05
Measurement uncertainty (dB)	±4.0		

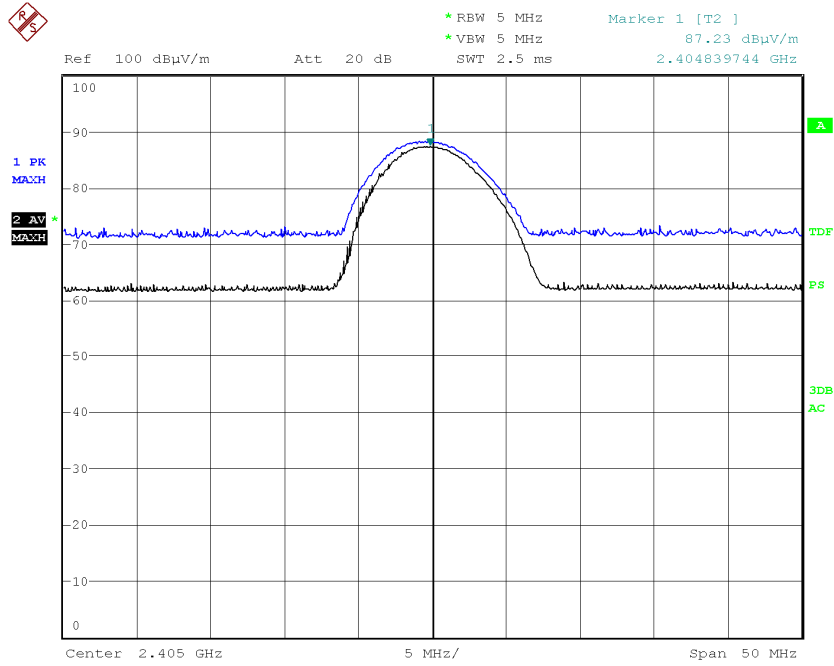
Verdict: PASS

Report No: 27696RET.101		Page: 7 of 23
Date: 2008-07-02		Annex A AGY-700-002402.001

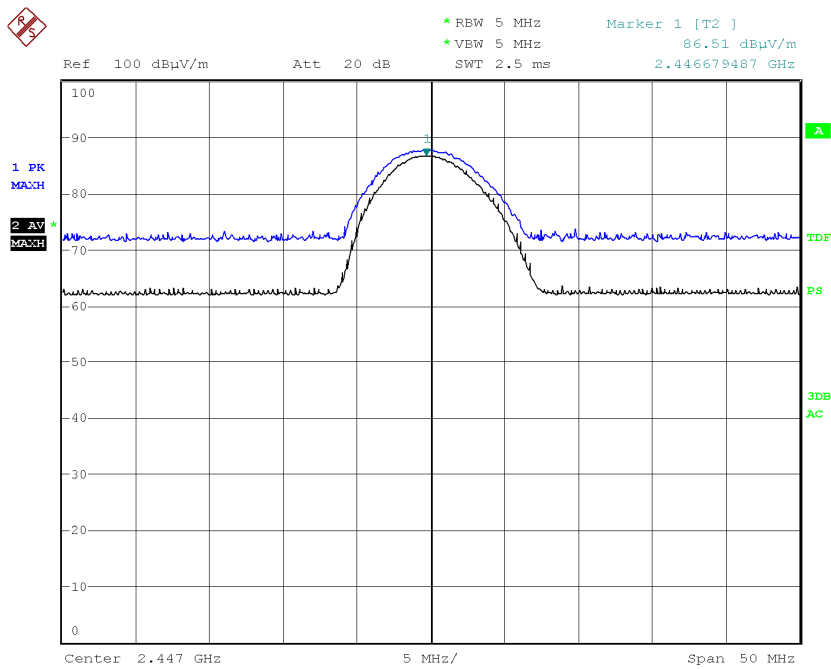


FIELD STRENGTH

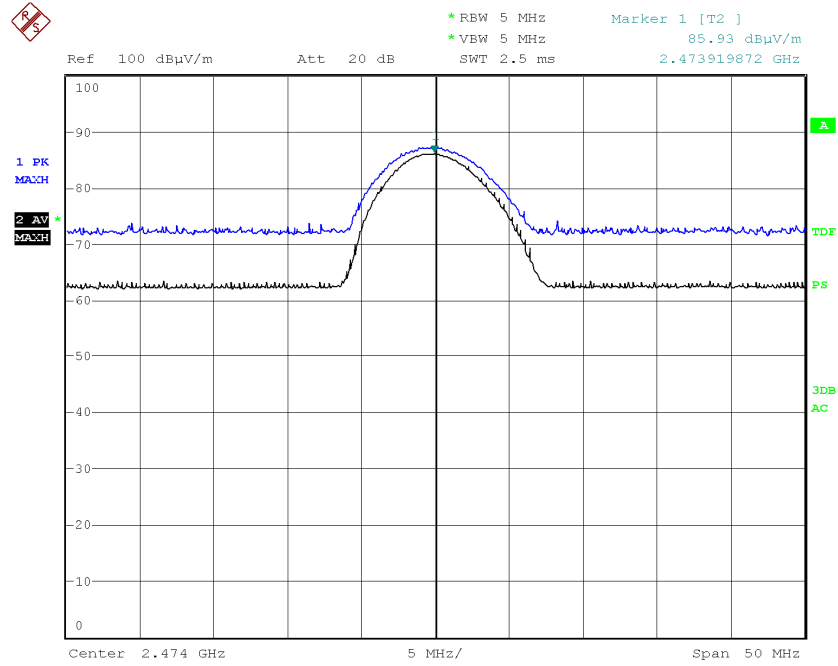
Lowest Channel: 2405 MHz.



Middle Channel: 2447 MHz.



Highest Channel: 2474 MHz.



**Section 15.249 Subclause (a) and (d). Radiated emissions (Transmitter)**

SPECIFICATION

The field strength of harmonics from intentional radiators shall comply with the following

Fundamental frequency (MHz)	Field strength of fundamental ( $\mu\text{V/m}$ )	Field strength of harmonics ( $\text{dB}\mu\text{V/m}$ )	Measurement distance (m)
902 - 928	500	53.98	3
2400 – 2483.5	500	53.98	3
5725 - 5875	500	53.98	3
24000-24250	2500	67.96	3

Emissions radiated outside of the specific frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of fundamental or to the general radiated emission limits specified in section 15.209:

Frequency Range (MHz)	Field strength ( $\mu\text{V/m}$ )	Field strength ( $\text{dB}\mu\text{V/m}$ )	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	300
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

Whichever is the lesser attenuation.

RESULTS:

The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-1000 MHz and at distance of 1m for the frequency range 1 GHz-25 GHz.

Report No: 27696RET.101		Page: 10 of 23
Date: 2008-07-02		Annex A AGY-700-002402.001

The field strength is calculated by adding correction factor to the measured level from the spectrum analyser. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

**Frequency range 30 MHz-1000 MHz.**

No spurious signals were found in the three operating channels.

**Frequency range 1 GHz-25 GHz**

1. CHANNEL: LOWEST (2405 MHz).

**Spurious levels (radiated).**

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dB $\mu$ V/m)	Measurement Uncertainty (dB)
7214.8959	V	Peak	44.85	$\pm 4.0$
7214.8959	V	Average	38.89	$\pm 4.0$
9619.9038	V	Peak	49.78	$\pm 4.0$
9619.9038	V	Average	45.29	$\pm 4.0$

Additionally, no spurious signals were found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz.

2. CHANNEL: MIDDLE (2447 MHz).

**Spurious levels (radiated).**

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dB $\mu$ V/m)	Measurement Uncertainty (dB)
7340.8333	V	Peak	45.75	$\pm 4.0$
7340.8333	V	Average	39.56	$\pm 4.0$

Additionally, no spurious signals were found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz.

3. CHANNEL: HIGHEST (2474 MHz).

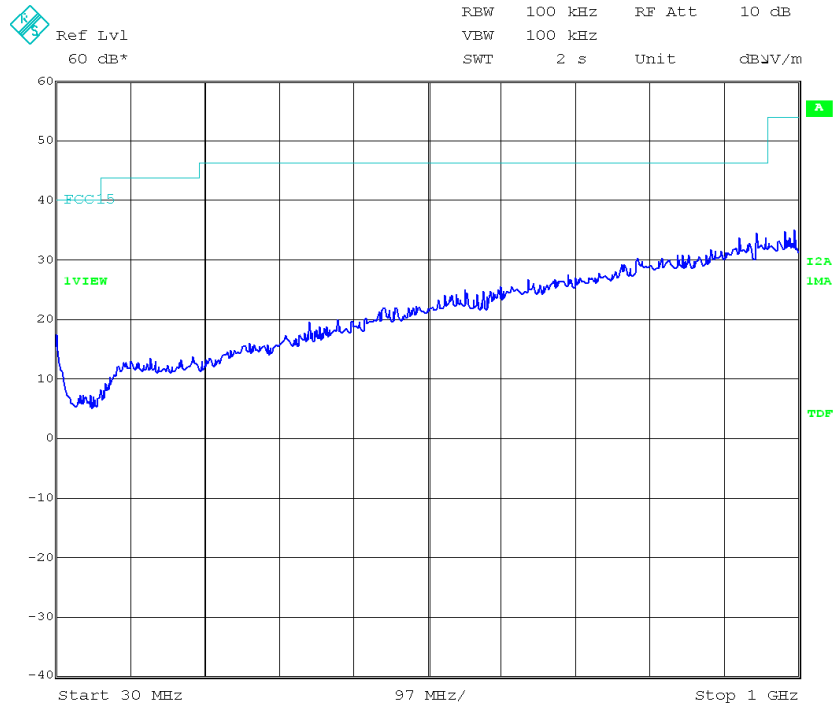
No spurious signals were found in all the range.

Additionally, no spurious signals were found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz, and at the harmonic frequencies.

Verdict: PASS

Report No: 27696RET.101		Page: 11 of 23
Date: 2008-07-02		Annex A AGY-700-002402.001

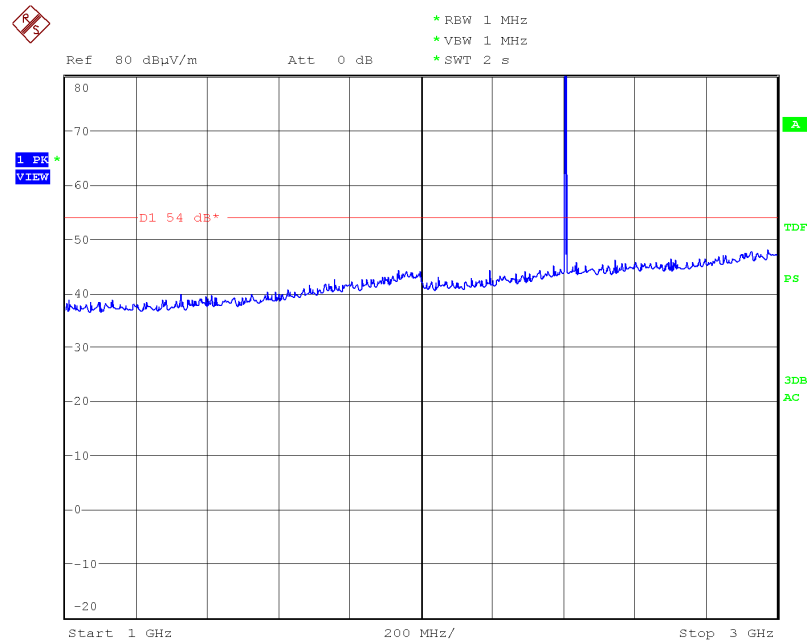
FREQUENCY RANGE 30 MHz-1000 MHz.



(This plot is valid for all three channels).

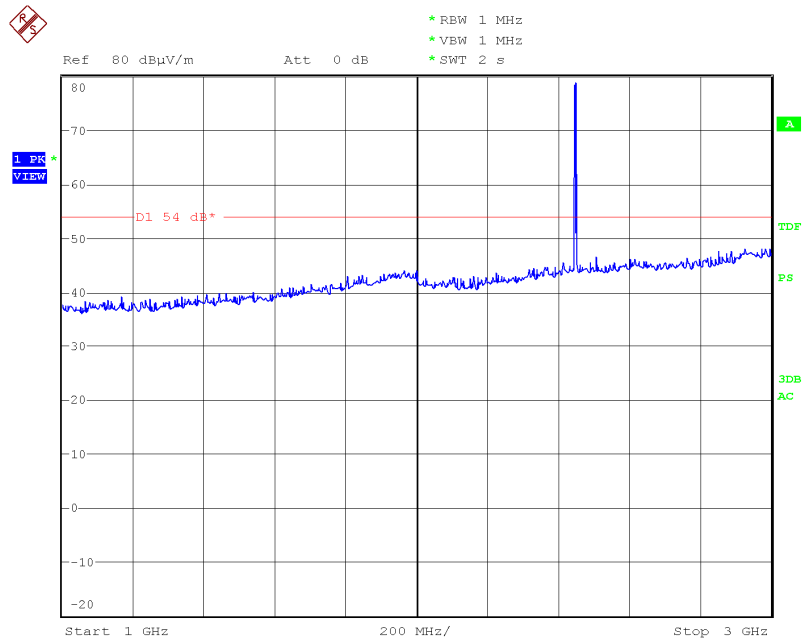
FREQUENCY RANGE 1 GHz to 3 GHz.

CHANNEL: Lowest (2405 MHz).



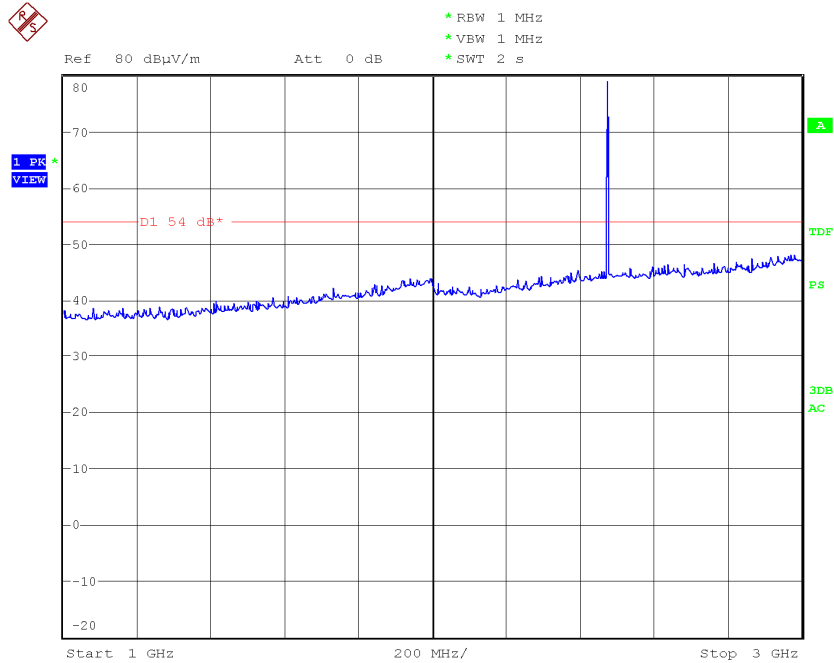
Note: The peak shown in the plot is the carrier frequency.

CHANNEL: Middle (2447 MHz).



Note: The peak shown in the plot is the carrier frequency.

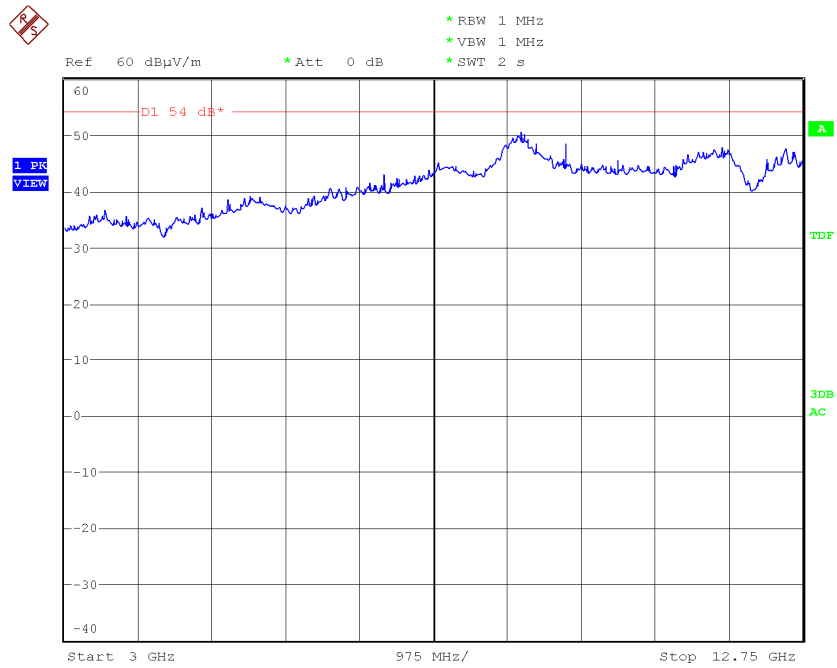
**CHANNEL: Highest (2474 MHz).**



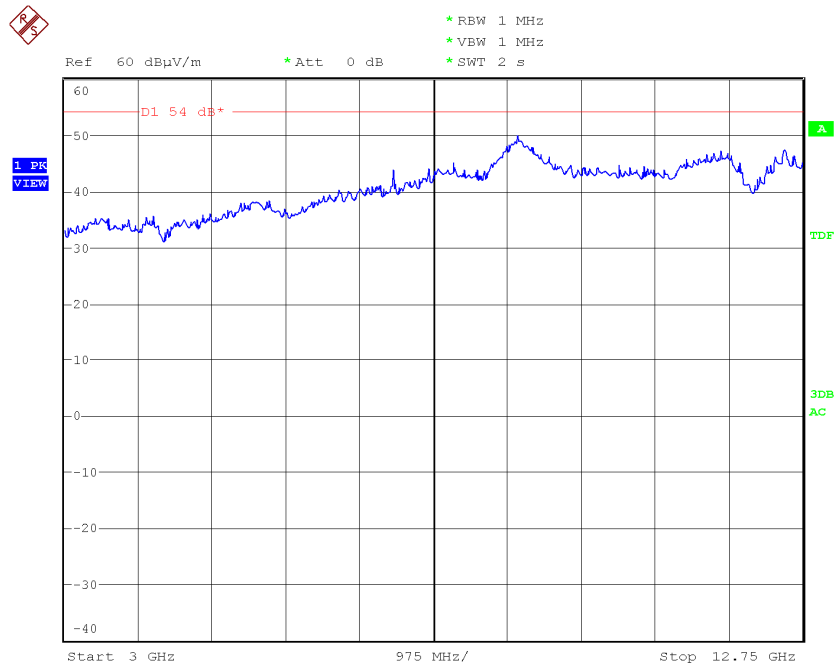
Note: The peak shown in the plot is the carrier frequency.

FREQUENCY RANGE 3 GHz to 12.75 GHz.

CHANNEL: Lowest (2405 MHz).

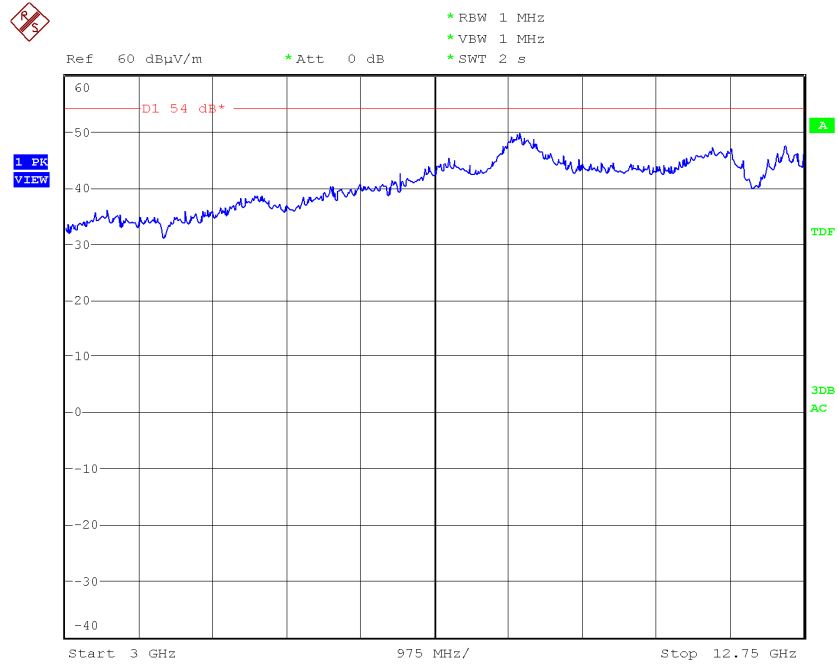


CHANNEL: Middle (2447 MHz).





**CHANNEL: Highest (2474 MHz).**



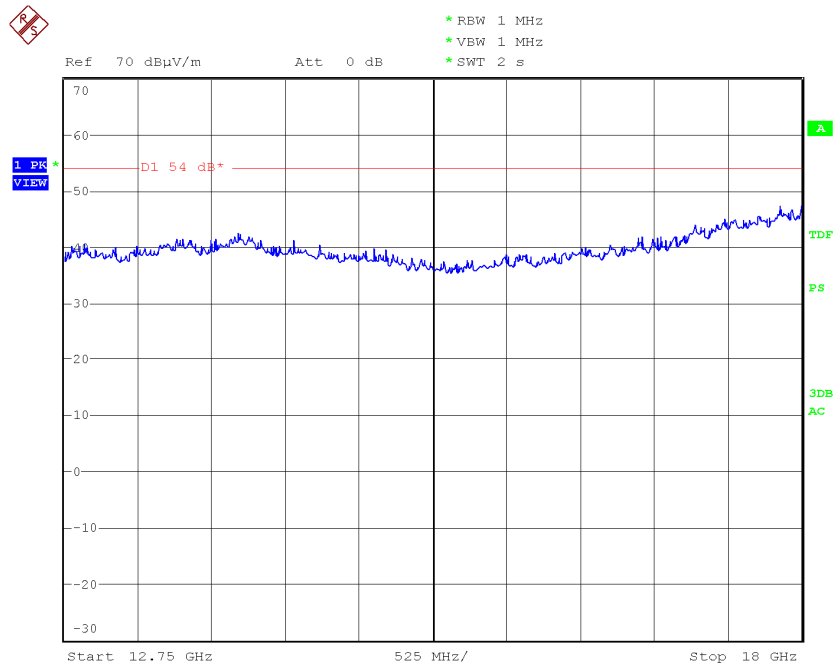
Report No:  
27696RET.101

Date: 2008-07-02

Page: 16 of 23

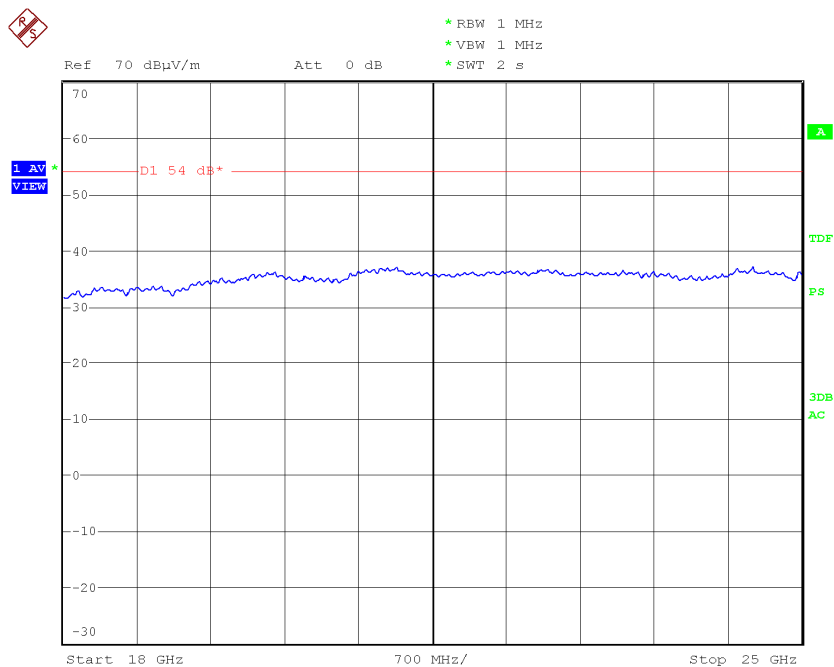
Annex A  
AGY-700-002402.001

FREQUENCY RANGE 12.75 GHz to 18 GHz.



(This plot is valid for all three channels).

FREQUENCY RANGE 18 GHz to 25 GHz.



(This plot is valid for all three channels).

<p>Report No: 27696RET.101</p> <p>Date: 2008-07-02</p>		<p>Page: 17 of 23</p> <p>Annex A AGY-700-002402.001</p>
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## Section 15.109. Receiver spurious radiation

### SPECIFICATION

The field strength shall not exceed the following values:

Frequency Range (MHz)	Field strength ( $\mu\text{V/m}$ )	Field strength ( $\text{dB}\mu\text{V/m}$ )	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	300
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

### RESULTS:

The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-1000 MHz and at distance of 1m for the frequency range 1 GHz-25 GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyser. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

Report No: 27696RET.101		Page: 18 of 23
Date: 2008-07-02		Annex A AGY-700-002402.001

**Frequency range 30 MHz-1000 MHz.**

No spurious signals were found in the three operating channels.

**Frequency range 1 GHz-25 GHz**

**1. CHANNEL: LOWEST (2405 MHz).**

Spurious levels (radiated).

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dB $\mu$ V/m)	Measurement Uncertainty (dB)
2750.7212	H	Peak	42.09	$\pm 4.0$
2750.7212	H	Average	40.57	$\pm 4.0$

Additionally, no spurious signals were found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz.

**2. CHANNEL: MIDDLE (2447 MHz).**

Spurious levels (radiated).

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dB $\mu$ V/m)	Measurement Uncertainty (dB)
2798.7303	H	Peak	41.26	$\pm 4.0$
2798.7303	H	Average	39.43	$\pm 4.0$

Additionally, no spurious signals were found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz.

**3. CHANNEL: HIGHEST (2474 MHz).**

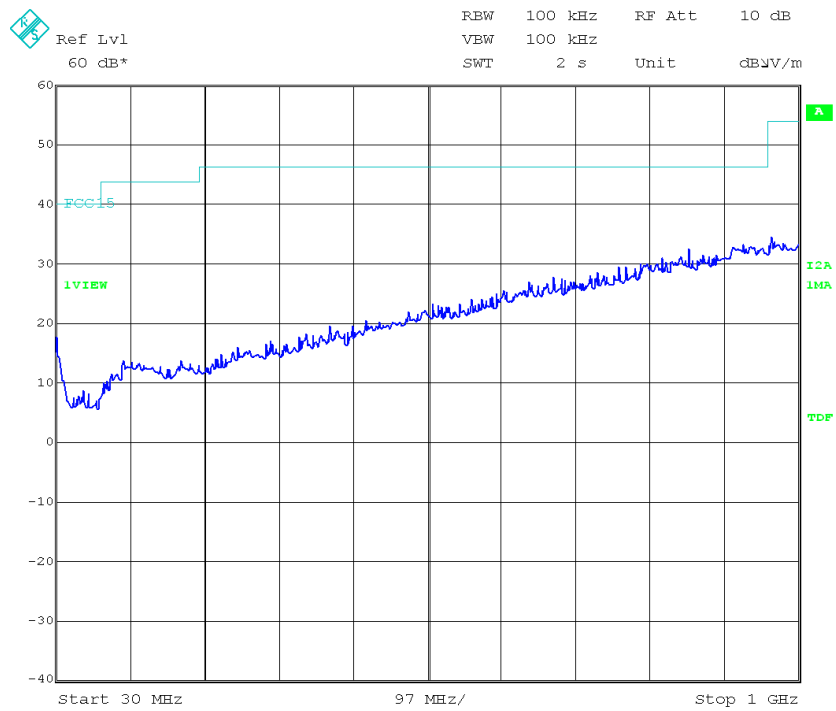
Spurious levels (radiated).

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dB $\mu$ V/m)	Measurement Uncertainty (dB)
2829.5833	H	Peak	40.95	$\pm 4.0$
2829.5833	H	Average	39.62	$\pm 4.0$

Additionally, no spurious signals were found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz.

Verdict: PASS.

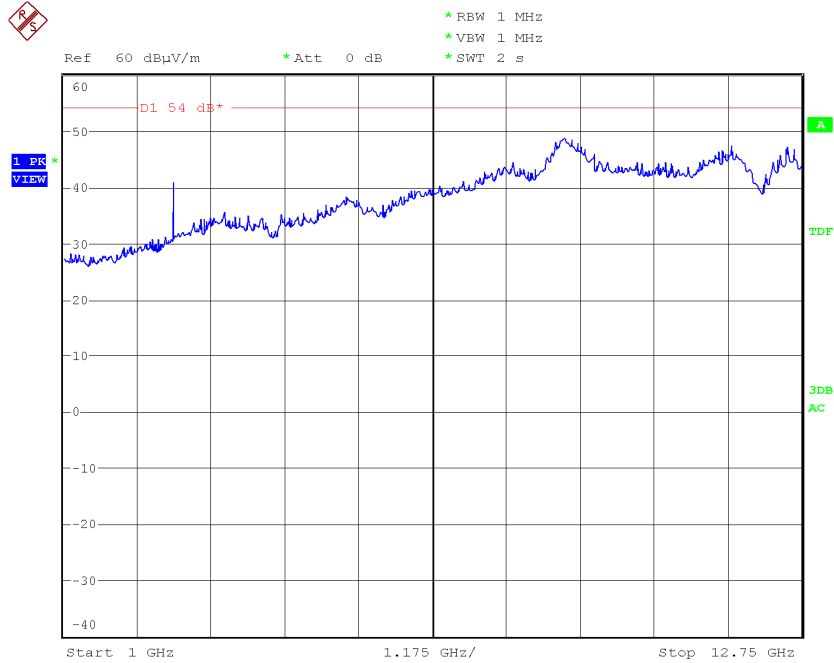
FREQUENCY RANGE 30 MHz-1000 MHz.



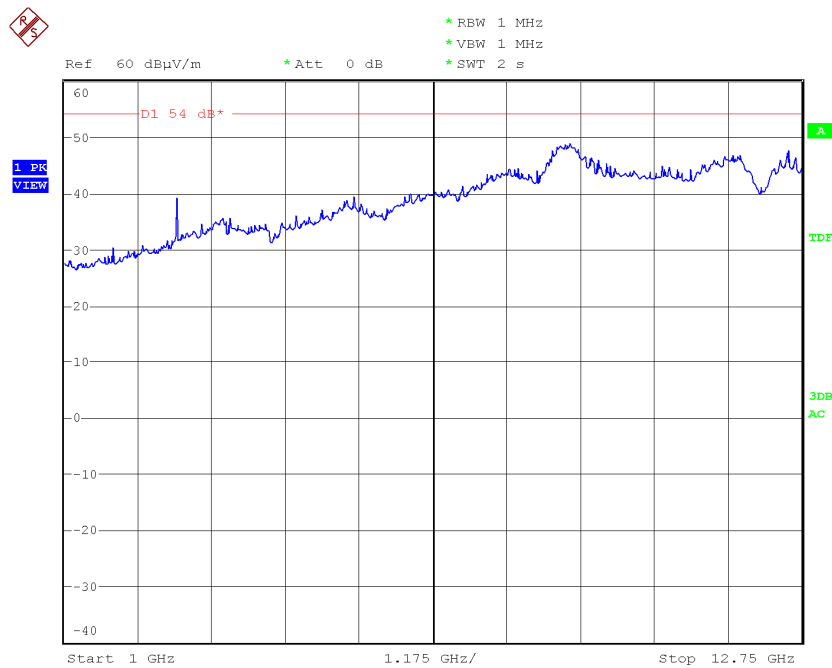
(This plot is valid for all three channels).

FREQUENCY RANGE 1 GHz-12.75 GHz.

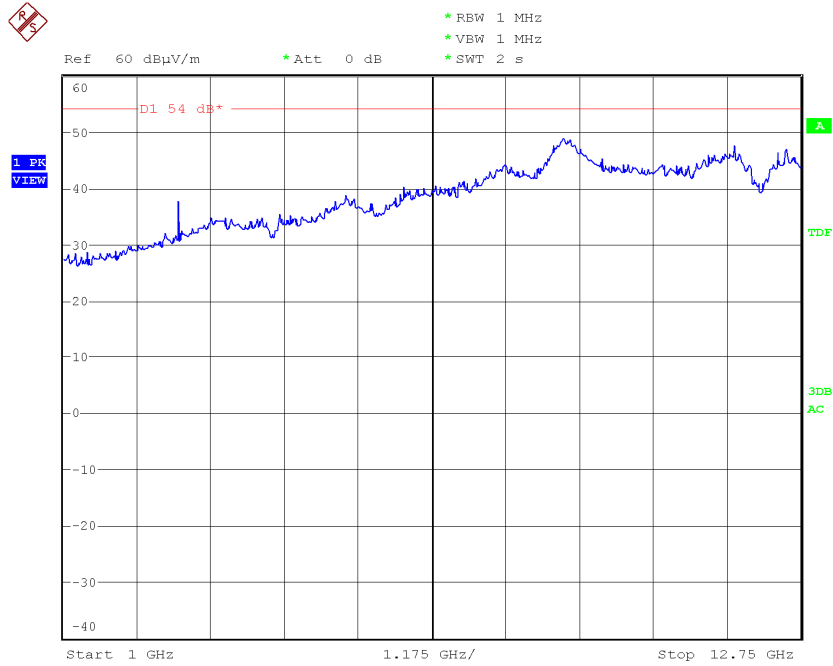
**CHANNEL: Lowest (2405 MHz).**



**CHANNEL: Middle (2447 MHz).**



**CHANNEL: Highest (2474 MHz).**



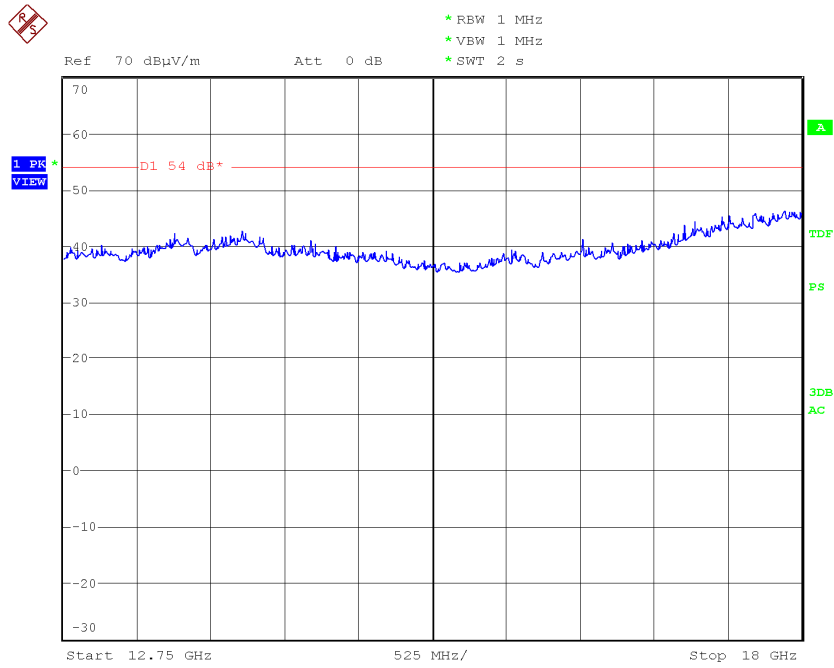
Report No:  
27696RET.101

Date: 2008-07-02

Page: 22 of 23

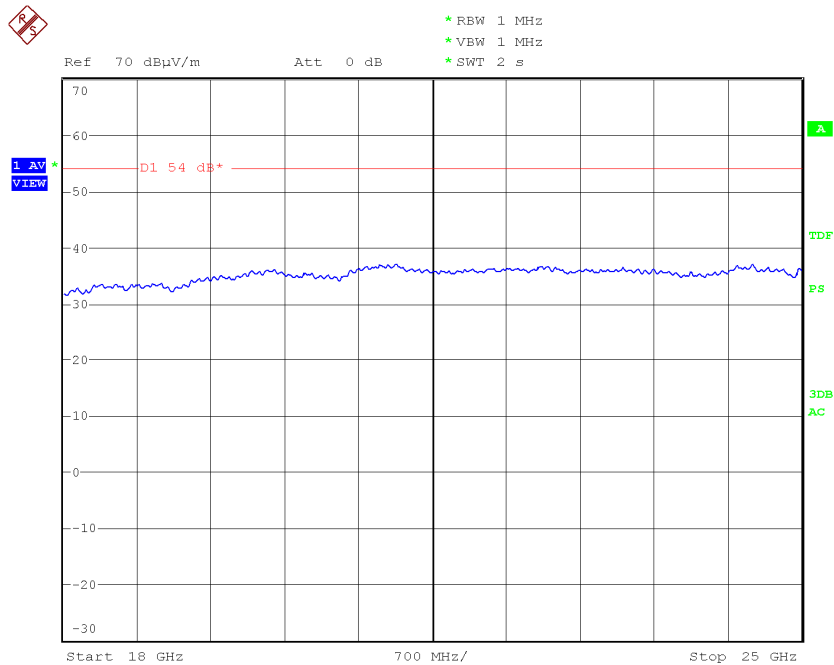
Annex A  
AGY-700-002402.001

FREQUENCY RANGE 12.75 GHz-18 GHz.



(This plot is valid for all three channels).

FREQUENCY RANGE 18 GHz-25 GHz.



(This plot is valid for all three channels).



**ANNEX B**  
**MEASURING RESULTS FOR**  
**ELECTROMAGNETIC EMISSION**

**Report No: 27696RET.101**

For the sample under test, named S/01, S/02, S/03 & S/04 and that was formed by the elements described in the clause “Identification of the tested item/items” of this test report

Report No: 27696RET.101		Page: 1 of 12
Date: 2008-07-02		Annex B AGY-700-002402.001

**INDEX:**

1. - CONTINUOUS CONDUCTED EMISSION, POWER LEADS ON THE SAMPLES  
S/01, S/02, S/03 & S/04.....3

2. - GRAPH RESULTS .....4

\* \* \*

Report No: 27696RET.101  Date: 2008-07-02		Page: 2 of 12  Annex B AGY-700-002402.001
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## 1. - CONTINUOUS CONDUCTED EMISSION, POWER LEADS ON THE SAMPLES S/01, S/02, S/03 & S/04

### LIMITS OF INTERFERENCE

The applied limit for continuous conducted emissions in power leads, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B in the frequency range 0,15 to 30 MHz, for Class B equipment was:

Frequency range (MHz)	Limit (dB $\mu$ V)	
	Quasi-peak	Average
0,15 to 0,5	66-56	56-46
0,5 to 5	56	46
5 to 30	60	50

### TEST METHOD

According to Part 15, Subpart B of FCC Rules.

### OPERATING MODES OF EUT

#### Different tested operating modes (OM)

- OM#01: EUT ON. Charging batteries, IDLE mode.

### TEST RESULTS

CCmmnnxx: CC, Conduction condition; mm: sample number; nn: operation mode; xx: wire.

- OM#01. Sample S/01.

CDmmnnxx	Description	Result
CC01010N	Interference voltage on Neutral wire	PASS
CC0101L1	Interference voltage on phase wire	PASS

- OM#01. Sample S/02.

CDmmnnxx	Description	Result
CC02010N	Interference voltage on Neutral wire	PASS
CC0201L1	Interference voltage on phase wire	PASS

Report No: 27696RET.101		Page: 3 of 12
Date: 2008-07-02		Annex B AGY-700-002402.001

- OM#01. Sample S/03.

<b>CDmmnnxx</b>	<b>Description</b>	<b>Result</b>
CC03010N	Interference voltage on Neutral wire	PASS
CC0301L1	Interference voltage on phase wire	PASS

- OM#01. Sample S/04.

<b>CDmmnnxx</b>	<b>Description</b>	<b>Result</b>
CC04010N	Interference voltage on Neutral wire	PASS
CC0401L1	Interference voltage on phase wire	PASS

## 2. - GRAPH RESULTS

See next pages.

Report No: 27696RET.101		Page: 4 of 12
Date: 2008-07-02		Annex B AGY-700-002402.001

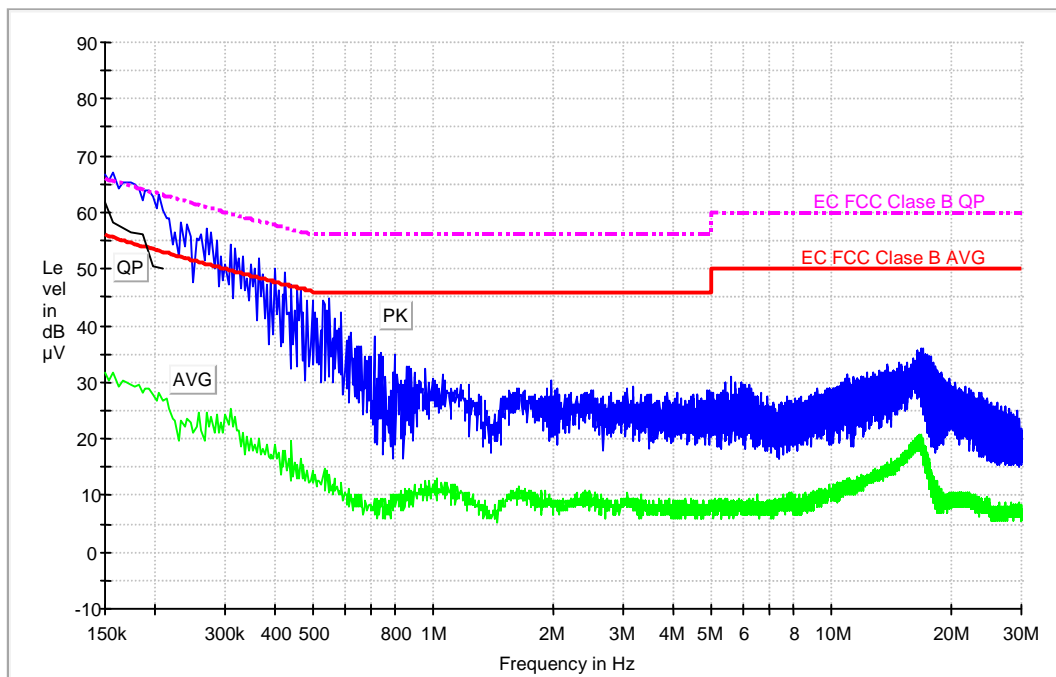
Continuous conducted emission: CC01010N (Peak and Average)

## EMC32 Report

### Test Information

Project: 27696Ciem.003  
 Company: Logitech  
 Sample: S/01  
 Operation mode: OM#01  
 Date: 2008-05-21 16:31  
 Setup: EMI conducted  
 Mode: EUT ON. Charging bateries. Neutral noise.

### EC FCC Class B ESIB26 CC



### QP Measure

Frequency (MHz)	QuasiPeak (dBμV)	MaxPeak (dBμV)
0.150000	61.6	70.3
0.158000	58.1	67.5
0.174000	56.3	66.0
0.186000	56.2	66.8
0.198000	50.3	60.8
0.210000	49.9	60.7

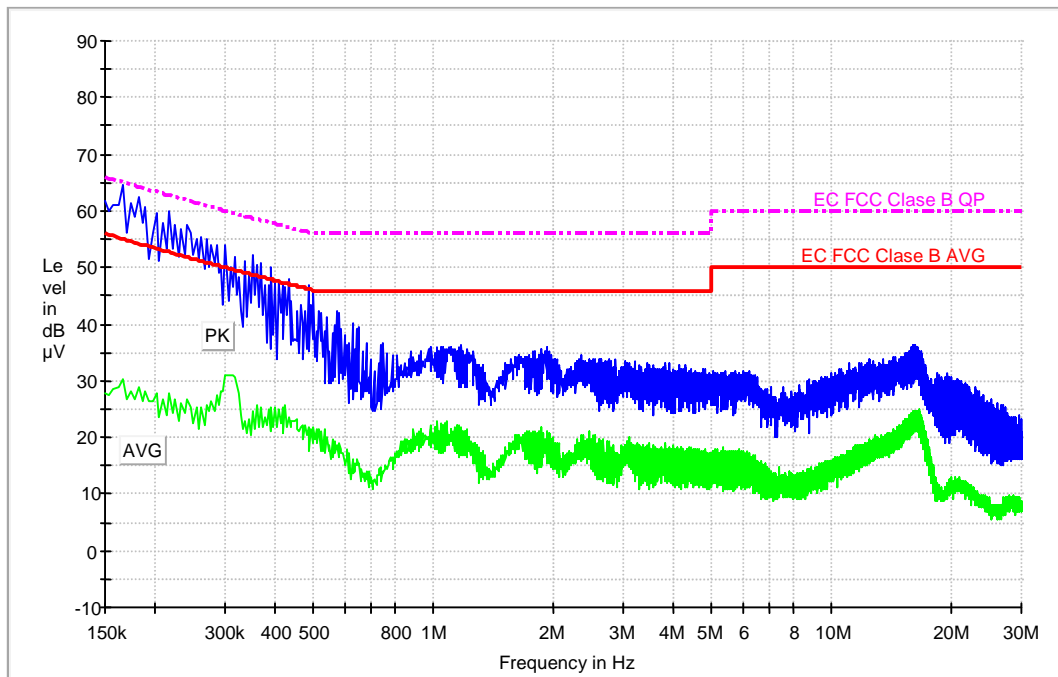
Continuous conducted emission: CC0101L1 (Peak and Average)

## EMC32 Report

### Test Information

Project: 27696Ciem.003  
 Company: Logitech  
 Sample: S/01  
 Operation mode: OM#01  
 Date: 2008-05-21 16:35  
 Setup: EMI conducted  
 Mode: EUT ON. Charging bateries. Phase noise.

### EC FCC Class B ESIB26 CC



### Max PK-AVG

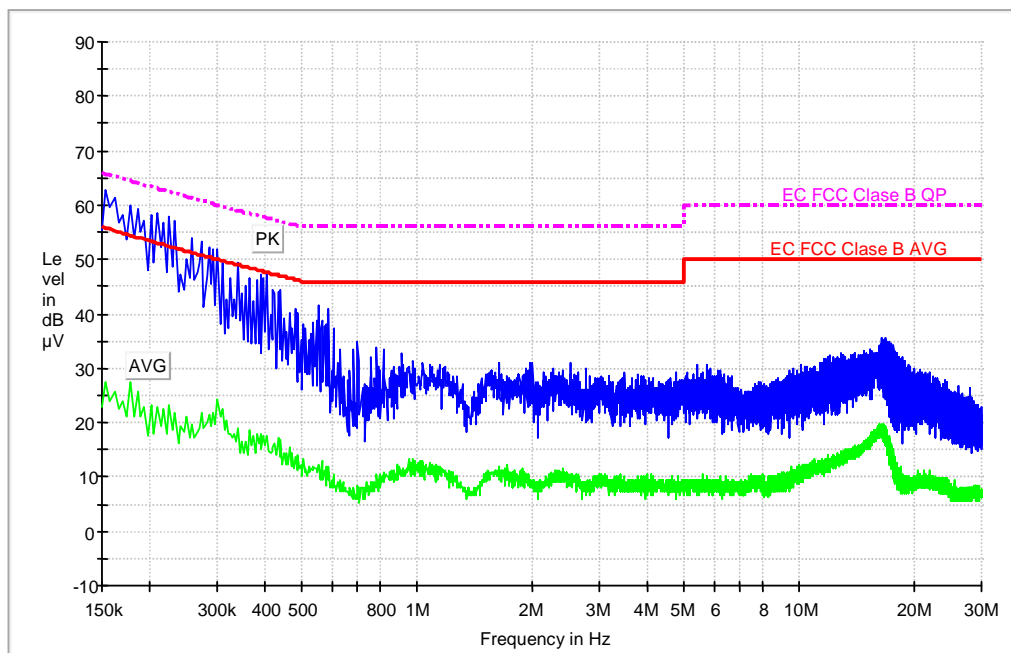
Frequency (MHz)	MaxPeak-MaxHold (dBµV)	Average-MaxHold (dBµV)
0.150000	61.9	27.7
0.154000	59.8	27.5
0.158000	60.9	28.6
0.162000	61.1	28.7
0.166000	64.5	30.1
0.174000	61.5	28.0
0.178000	59.1	26.7
0.182000	62.4	28.7
0.186000	57.7	26.2
0.190000	60.8	28.0
0.202000	59.7	27.9
0.210000	57.9	26.7
0.218000	60.1	27.7

## EMC32 Report

### Test Information

Project: 27696Ciem.003  
 Company: Logitech  
 Sample: S/02  
 Operation mode: OM#01  
 Date: 2008-05-21 16:45  
 Setup: EMI conducted  
 Mode: EUT ON. Charging batteries. Neutral noise.

### EC FCC Class B ESIB26 CC



### Max PK-AVG

Frequency (MHz)	MaxPeak-MaxHold (dBµV)	Average-MaxHold (dBµV)
0.154000	62.7	27.5
0.158000	59.5	24.0
0.162000	61.5	25.7
0.166000	56.8	22.5
0.170000	58.3	24.0
0.178000	59.9	27.5
0.186000	59.2	25.8
0.194000	57.2	23.0
0.202000	58.2	23.2
0.210000	58.6	22.8
0.218000	56.8	22.4
0.226000	57.8	23.1
0.234000	57.0	21.7

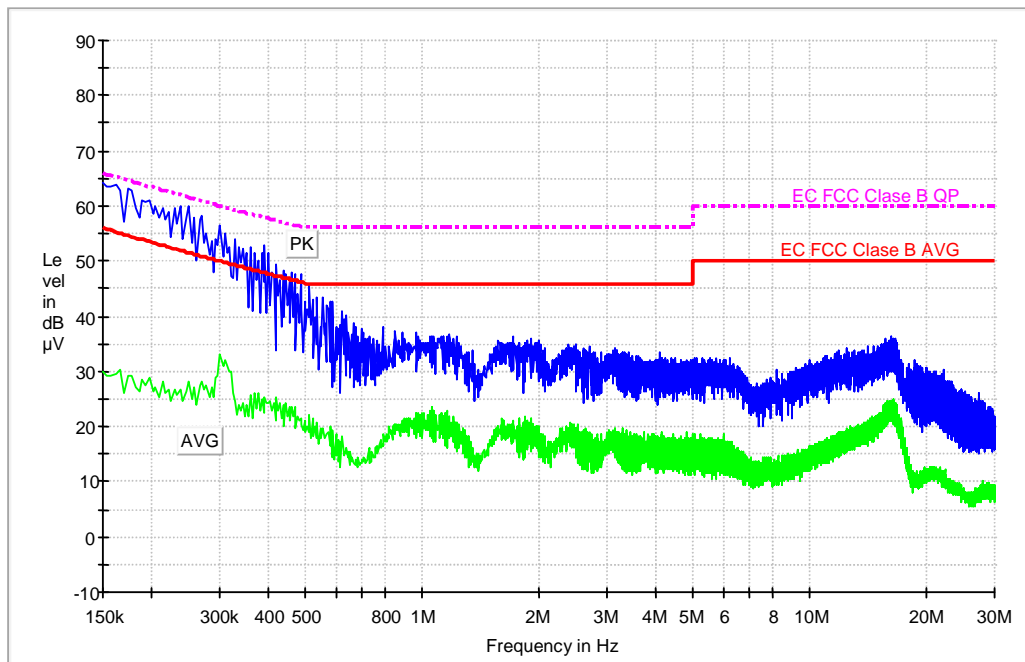
**Continuous conducted emission: CC0201L1 (Peak and Average)**

**EMC32 Report**

**Test Information**

Project: 27696Ciem.003  
 Company: Logitech  
 Sample: S/02  
 Operation mode: OM#01  
 Date: 2008-05-21 16:42  
 Setup: EMI conducted  
 Mode: EUT ON. Charging bateries. Phase noise.

**EC FCC Class B ESIB26 CC**



**Max PK-AVG**

Frequency (MHz)	MaxPeak-MaxHold (dBµV)	Average-MaxHold (dBµV)
0.150000	64.2	29.8
0.154000	63.7	29.1
0.158000	63.7	29.2
0.162000	63.8	29.7
0.166000	62.8	30.1
0.174000	63.2	29.4
0.178000	62.8	29.2
0.190000	60.9	28.4
0.194000	60.6	27.5
0.198000	60.9	28.7
0.206000	60.0	27.1
0.238000	59.8	26.7
0.250000	60.0	28.0



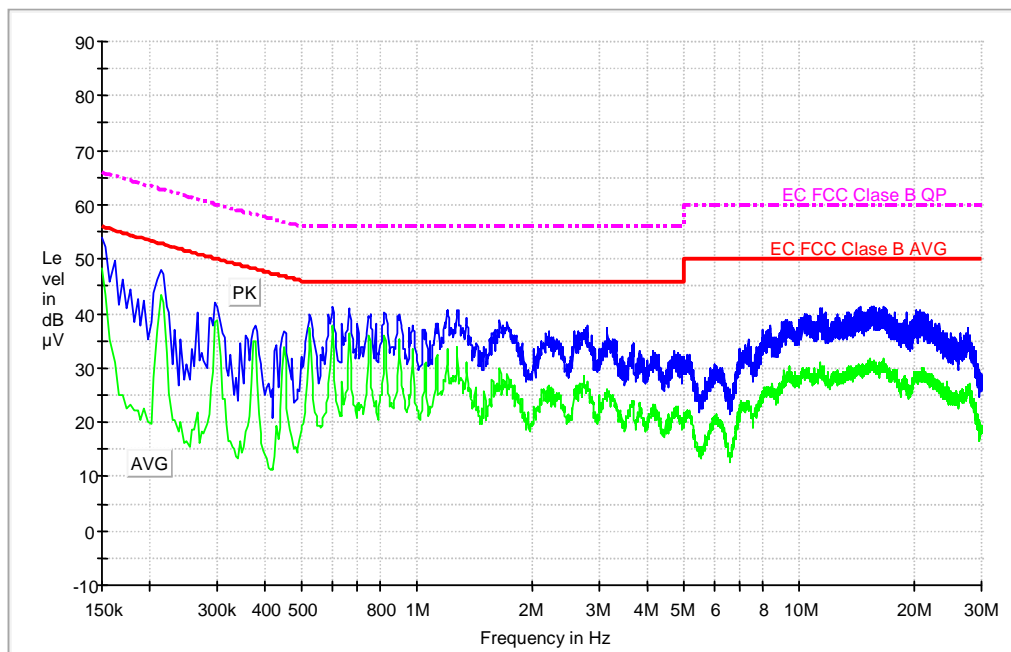
Continuous conducted emission: CC03010N (Peak and Average)

## EMC32 Report

### Test Information

Project: 27696Ciem.003  
 Company: Logitech  
 Sample: S/03  
 Operation mode: OM#01  
 Date: 2008-05-21 16:18  
 Setup: EMI conducted  
 Mode: EUT ON. Charging bateries. Neutral noise.

### EC FCC Class B ESIB26 CC



### Max PK-AVG

Frequency (MHz)	MaxPeak-MaxHold (dBμV)	Average-MaxHold (dBμV)
0.150000	53.9	48.1
0.154000	52.3	43.3
0.158000	45.8	35.3
0.162000	49.7	30.9
0.170000	46.3	25.1
0.178000	44.4	23.2
0.186000	42.7	22.2
0.194000	42.2	22.6
0.206000	43.8	28.2
0.210000	46.1	36.9
0.214000	48.0	43.3
0.218000	47.2	41.8
0.298000	41.9	38.5

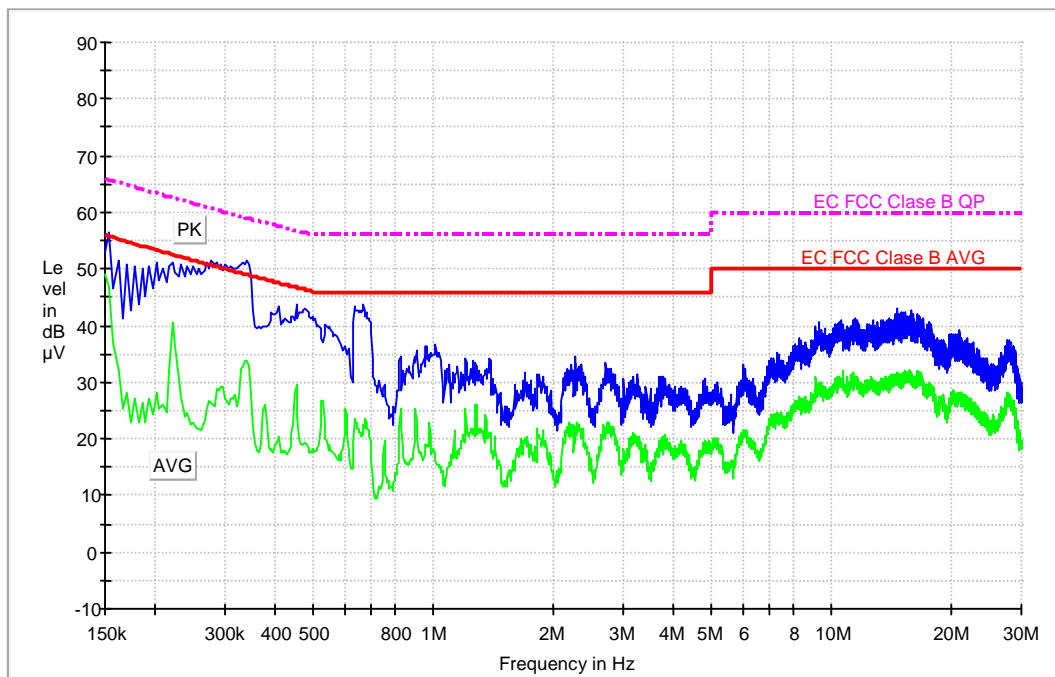
**Continuous conducted emission: CC0301L1 (Peak and Average)**

**EMC32 Report**

**Test Information**

Project: 27696Ciem.003  
 Company: Logitech  
 Sample: S/03  
 Operation mode: OM#01  
 Date: 2008-05-21 16:15  
 Setup: EMI conducted  
 Mode: EUT ON. Charging bateries. Phase noise.

**EC FCC Class B ESIB26 CC**



**Max PK-AVG**

Frequency (MHz)	MaxPeak-MaxHold (dBμV)	Average-MaxHold (dBμV)
0.150000	53.0	49.0
0.154000	56.5	47.0
0.162000	51.6	32.0
0.170000	50.8	28.2
0.202000	51.2	28.3
0.222000	51.0	40.6
0.270000	51.2	25.2
0.278000	51.3	26.4
0.286000	51.0	28.7
0.334000	51.0	32.9
0.338000	50.9	33.9
0.342000	51.5	33.8
0.346000	50.9	32.6

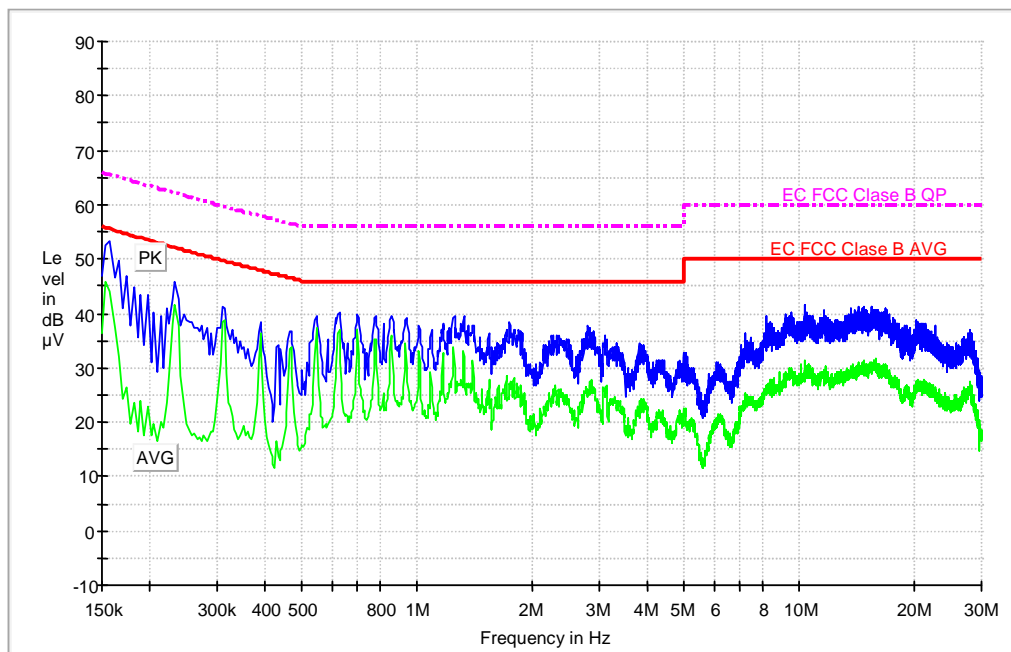
Continuous conducted emission: CC04010N (Peak and Average)

## EMC32 Report

### Test Information

Project: 27696Ciem.003  
 Company: Logitech  
 Sample: S/04  
 Operation mode: OM#01  
 Date: 2008-05-21 16:07  
 Setup: EMI conducted  
 Mode: EUT ON. Charging bateries. Neutral noise.

### EC FCC Class B ESIB26 CC



### Max PK-AVG

Frequency (MHz)	MaxPeak-MaxHold (dBµV)	Average-MaxHold (dBµV)
0.158000	53.1	44.2
0.190000	43.5	23.8
0.198000	43.4	22.8
0.206000	40.2	19.5
0.214000	39.4	20.0
0.234000	45.8	41.5
0.310000	41.4	38.5
0.626000	40.1	37.1
0.702000	40.0	36.9
0.782000	39.5	35.3
0.862000	39.5	33.6
1.330000	39.5	32.0
10.390000	41.5	31.4

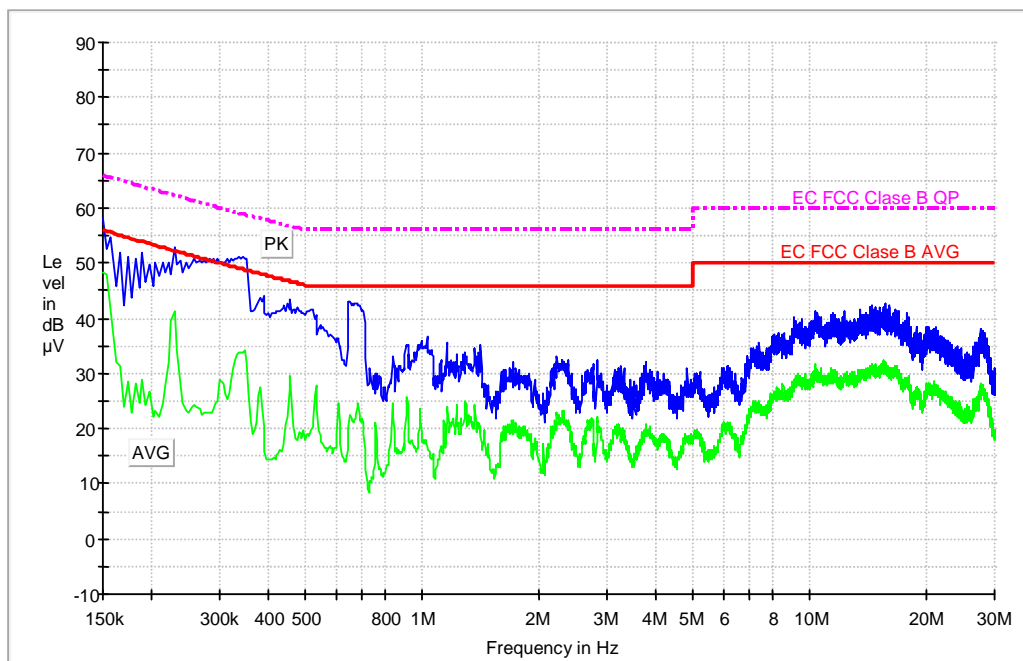
Continuous conducted emission: CC0401L1 (Peak and Average)

## EMC32 Report

### Test Information

Project: 27696Ciem.003  
 Company: Logitech  
 Sample: S/04  
 Operation mode: OM#01  
 Date: 2008-05-21 16:10  
 Setup: EMI conducted  
 Mode: EUT ON. Charging bateries. Phase noise.

### EC FCC Class B ESIB26 CC



### Max PK-AVG

Frequency (MHz)	MaxPeak-MaxHold (dBµV)	Average-MaxHold (dBµV)
0.150000	58.1	48.2
0.154000	52.7	48.1
0.158000	54.6	41.5
0.166000	51.9	31.4
0.174000	51.2	28.5
0.182000	50.9	28.1
0.190000	51.7	29.0
0.230000	53.0	41.1
0.290000	50.8	23.5
0.330000	50.9	32.3
0.338000	51.0	33.9
0.346000	51.0	33.8
0.354000	50.8	32.0