



# Actions Mesures

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## EMC TEST REPORT

Nr 2967-FCC

This test report applies only on equipment described hereafter.

Proposal number: 200402-2349 & 200403-2381

Date..... : February 12<sup>th</sup> and March 31<sup>st</sup>, 2004  
Location ..... : SMEE *Actions Mesures* Laboratory - 38 VOIRON  
Performed by ..... : Laurent CHAPUS  
Customer ..... : **TAGSYS S.A. (Mr. D'ANNUNZIO)**  
180, Chemin de Saint Lambert  
13821 La PENNE SUR HUVEAUNE  
FRANCE

Product..... : **Conveyor Antenna**  
**with 200x900 and 300x900 antennas**  
Type of test ..... : **Radiated and Conducted Emission Test**

Applied standards ..... : ANSI C63-4 (1992+2000)  
47 CFR Part 15 Subpart C

Result of tests..... : **Radiated Emission : Comply**  
**Conducted Emission : Comply**

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Written by ..... : Laurent CHAPUS

Approved by : Jacques LORQUIN



FCCID : QHKCONVYRANT

## CONVEYOR ANTENNA WITH 200X900 & 300X900 ANTENNAS

### 1. System test configuration

#### 1.1. Justification

The system was configured for testing in a typical fashion (as a customer would normally use it). Antennas are connected to a MEDIO-L100, which was connected to a Personnel computer. It has been tested with a PC HP Vectra VLi8.

#### 1.2. HARDWARE IDENTIFICATION:

- \* Equipment under test (EUT):**
- | Conveyor antenna    | sn: proto |
|---------------------|-----------|
| FCCID: QHKCONVYRANT |           |
- **1x antenna 200x900 Q=80** sn: none
- Input/output: 1x I/O BNC connector
  - Size: 200x900x10mm
- **1x antenna 300x900 Q=80** sn: none
- Input/output: 1x I/O BNC connector
  - Size: 200x900x10mm
- **MEDIO-L100 pn: SE10120A0 sn: M029010009**
- Input/output:
    - \* 1x serial connector (DB9)
    - \* 1x parallel connector
    - \* Ch1 BNC antenna connector
    - \* Ch2 BNC antenna connector (not activated)
    - \* Syn IN/OUT BNC connector
    - \* I/O ports (1,2,3,4, gnd, Vin, Vout, gnd)
    - \* Power supply
  - Size: 250x300x75mm
  - Frequencies: Crystal 32.768 kHz and 14.7456 MHz  
Oscillator 27.12MHz; (no clock or signal higher than 108 MHz)  
Bit rate: 9600bauds.
  - Output power: Ch1=2W.



### 1.3. Auxiliaries

The FCC IDs for all equipment, with description of all cables used in the tested system are:

| Trade Mark - Model Number<br>(Serial number)        | FCC ID      | Description       | Cable description                                                |
|-----------------------------------------------------|-------------|-------------------|------------------------------------------------------------------|
| Tag 210<br>(sn: none)                               | None        | Smart label       |                                                                  |
| HEWLETT PACKARD Vectra VLi8<br>(sn: FR94020451)     | Doc of Conf | Personal computer | All data cables are shielded<br>Power cable unshielded.          |
| HEWLETT PACKARD pn:D2846<br>(sn: JP74001000)        | Doc of Conf | Monitor           | Power cable unshielded.<br>Video cable with ferrite at each end. |
| HEWLETT PACKARD pn:C4734-60111<br>(sn: M971168931)  | GYUR38SK    | Keyboard          | Shielded cable                                                   |
| HEWLETT PACKARD pn:C4736-60101<br>(sn: LZA93024042) | JNZ201213   | Mouse             | Shielded cable                                                   |
| Tagsys Signal box model: none<br>(sn: none)         | None        | Signal box        | Shielded cable                                                   |

### 1.4. Equipment modifications

No equipment modification has been necessary during testing to achieve compliance to FCC part 15 Subpart C requirements. The unit tested was representative to a production unit.

### 1.5. EUT exercise software

The EUT exercise program used during radiated and conducted testing was designed to exercise the conveyor antenna in a manner similar to a typical use:

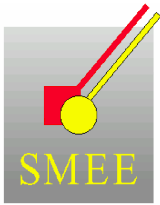
- On laptop: Hyperterminal.exe, running under Windows 95
- On MEDIO-L100: fcc2\_210.hex [read I/O port, set the power on two channels at  $\pi$  phase shift, read tag's number and send it to laptop via RS232 serial link (9600bauds)]

### 1.6. Special accessories

The serial interface cables and antenna cable (coaxial) with 6 ferrites set near MEDIO-L100 connector, used for compliance testing is shielded as normally supplied. All these cables are normally recommended to be used with the product.

### 1.7. I/O cables

- ✓ 3x Standard power cords Length: 1.8m (PC, monitor and MEDIO-L100);
- ✓ 1x serial cable #174-8545 (Shielded cable, length: 3m);
- ✓ 1x Coaxial cables with 6 ferrites (length: 3m) provided with conveyor antenna;
- ✓ 1x Cable with 3 wires (Shielded cable, length: 3m) used for signal box;
- ✓ 1x video cable shielded with ferrite at each end (length: 1.8)



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## 2. Radiated emission data

### 2.1. SET-UP

The MEDIO-L100 and PC are placed on a non-conducting table of 80cm height. A smart label is set on the conveyor antenna.



#### Equipment configuration and running mode:

- The MEDIO-L100 is connected to the PC with the RS232 serial link;
- The MEDIO-L100 is powered by 230V/50Hz;
- The signal box is connected on I/O ports of the MEDIO-L100
- RF Power output of MEDIO-L100: Ch1=2W & Ch2=0W;
- Antenna is connected to the Ch1 of the MEDIO-L100;
- PC and EUT are ON;
- Software (HyperTerminal) is running;

The installation of EUT is identical for pre-characterization measurement in a 3 meters full anechoic chamber and for measures on the 10 meters Open site.



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## 2.2. TEST EQUIPMENT

Test Equipment up to 1GHz on 10 meters open site:

| Equipment            | Company         | Model     | Serial     | Calibration Due                  |
|----------------------|-----------------|-----------|------------|----------------------------------|
| Spectrum Analyzer    | HP              | 8568B     | 2732A04140 | May 5 <sup>th</sup> , 2005       |
| Quasi-Peak adapter   | HP              | 85650A    | 2811A01136 | May 5 <sup>th</sup> , 2005       |
| RF Pre-selector      | HP              | 85685A    | 2833A00773 | May 5 <sup>th</sup> , 2005       |
| Biconical Antenna    | EMCO            | 3104C     | 9401-4636  | May 13 <sup>th</sup> , 2004      |
| Log Periodic Antenna | EMCO            | 3146      | 2178       | May 12 <sup>th</sup> , 2004      |
| Spectrum Analyzer    | HP              | 8593E     | 3409u00537 | February 5 <sup>th</sup> , 2005  |
| Loop antenna         | Electro-metrics | EM-6879   | 690234     | February 10 <sup>th</sup> , 2005 |
| Amplifier            | HP              | 8447F H64 | 3113A06394 | March 18 <sup>th</sup> , 2005    |
| OATS                 |                 |           |            | May, 2004                        |

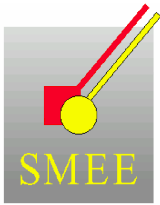
EMCO-1050, 6 meters height antenna mast

EMCO-1060, 3 meters diameter Turntable.

A 10 meters Open site located in SMEE *Actions Mesures* - Voiron (FRANCE).

Pre-scan, test Equipment up to 1GHz:

| Equipment            | Company         | Model     | Serial     | Calibration Due                  |
|----------------------|-----------------|-----------|------------|----------------------------------|
| EMC Analyzer         | HP              | 8591EM    | 3536A00384 | May, 2005                        |
| Amplifier            | HP              | 8447F H64 | 3113A06394 | March 18 <sup>th</sup> , 2005    |
| Antenna (30MHz-1GHz) | CHASE           | CBL6111A  | 1628       | August 12 <sup>th</sup> , 2005   |
| Loop antenna         | Electro-metrics | EM-6879   | 690234     | February 10 <sup>th</sup> , 2005 |



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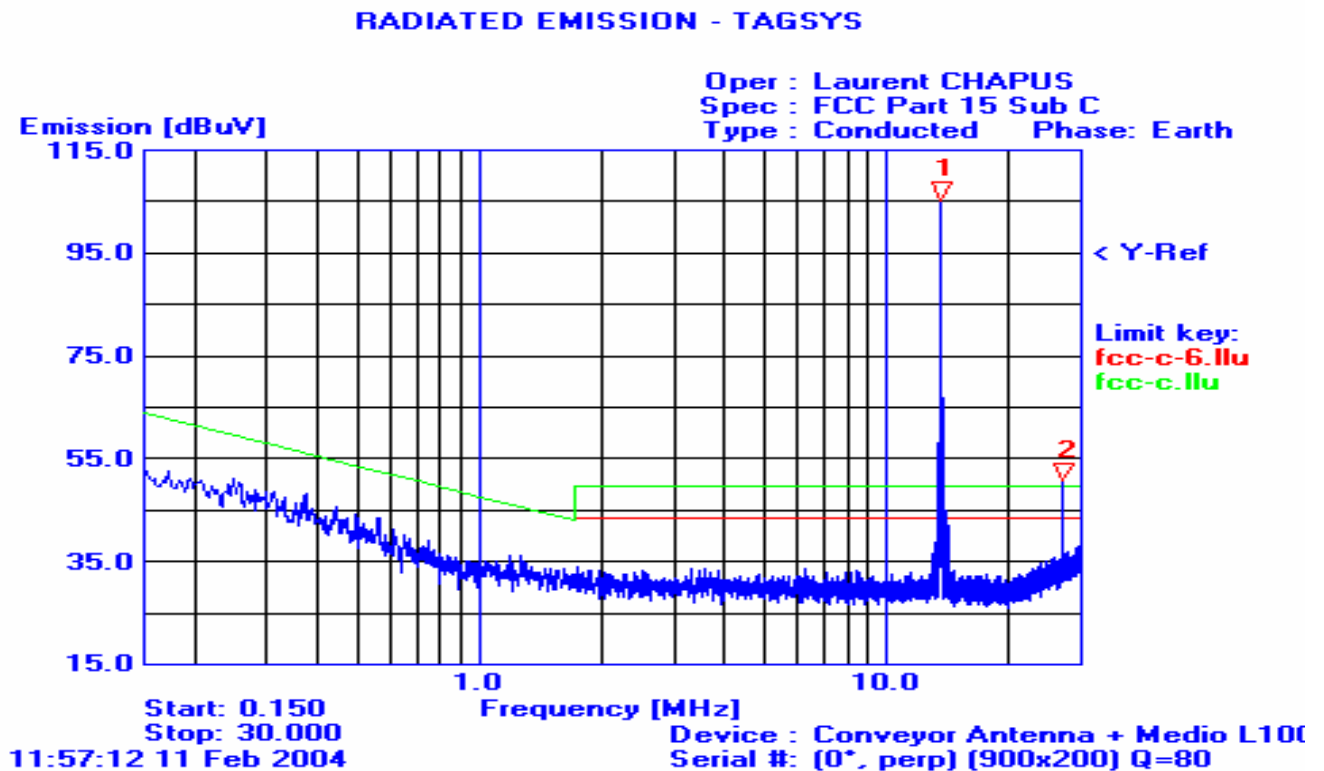
### 2.3. TEST SEQUENCE AND RESULTS

#### 2.3.1.Pre-characterization at 3 meters [9kHz-30MHz]

A pre-scan of all the setup has been performed in a 3 meters full anechoic chamber. The distance between EUT and antenna is 3 meters. Pre-characterization is performed in vertical (V) polarization and the loop antenna position was rotated during the test for maximized the emission measurement.

Frequency band investigated is 9kHz to 30MHz.

(No frequency observed between 9kHz to 150kHz)



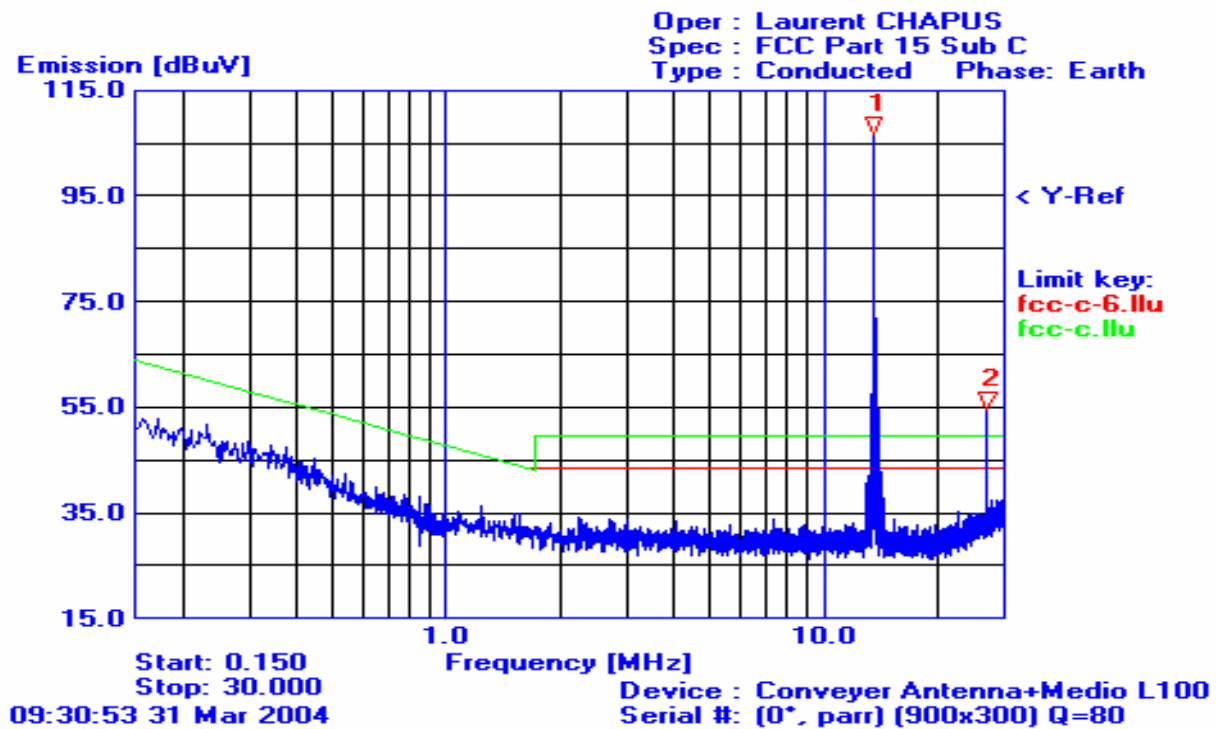
#### Result for 150MHz to 30MHz on the 900x200 antenna

| Marker | Freq.<br>[MHz] | Peak<br>[dBuV] | Q-Peak<br>[dBuV] | Average<br>[dBuV] | Limit<br>[dBuV] |
|--------|----------------|----------------|------------------|-------------------|-----------------|
| 1      | 13.57          | 105.3 *        | -                | -                 | 43.50           |
| 2      | 27.11          | 50.69 *        | -                | -                 | 43.50           |



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#### Result for 150MHz to 30MHz on the 900x300 antenna

| Marker | Freq.<br>[MHz] | Peak<br>[dBuV] | Q-Peak<br>[dBuV] | Average<br>[dBuV] | Limit<br>[dBuV] |
|--------|----------------|----------------|------------------|-------------------|-----------------|
| 1      | 13.57          | 106.5 *        | -                | -                 | 43.50           |
| 2      | 27.11          | 54.58 *        | -                | -                 | 43.50           |

#### 2.3.2.Pre-characterization at 3 meters [30MHz-1GHz]

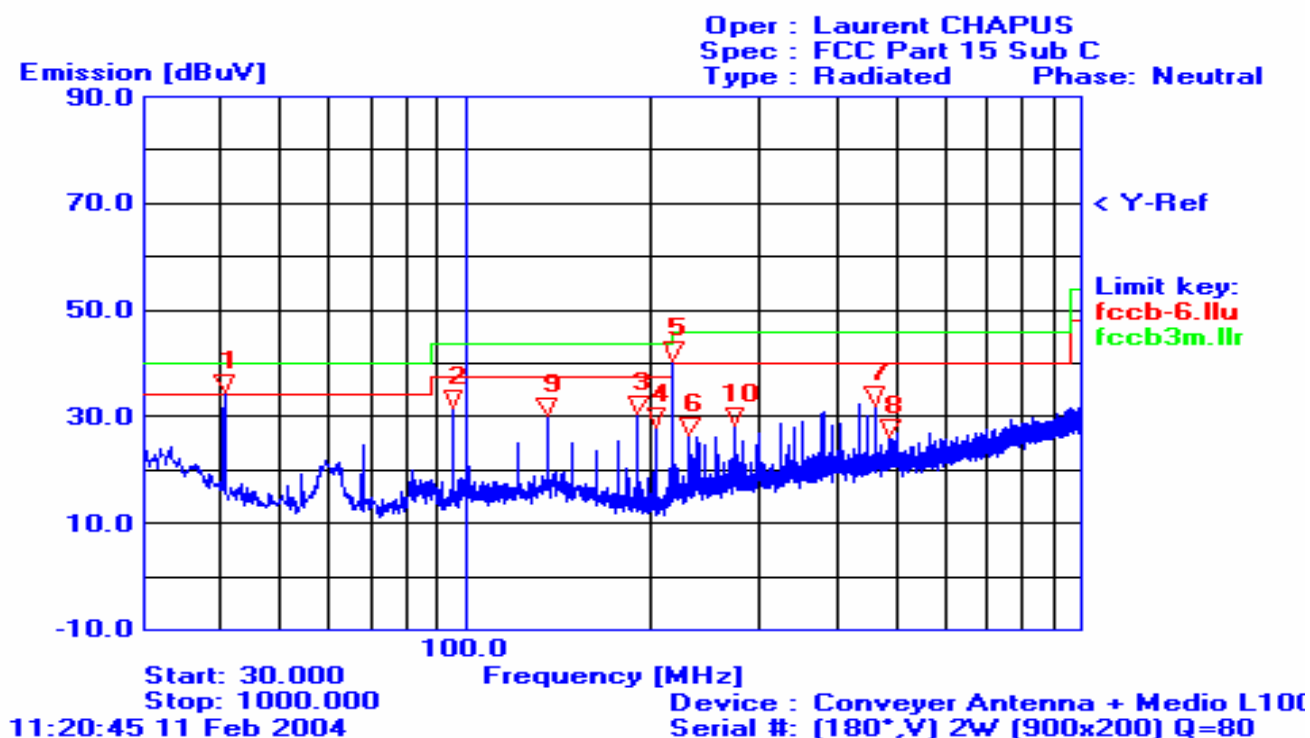
A pre-scan of all the setup has been performed in a 3 meters full anechoic chamber. The distance between EUT and antenna is 3 meters. Test is performed in horizontal (H) and vertical (V) polarization with a log-periodic antenna Chase CBL6111A and on 4 faces of the EUT.

See below a graph example between 30MHz to 1GHz:



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## 30MHz-1GHz pre-scan result on 900x200 antenna

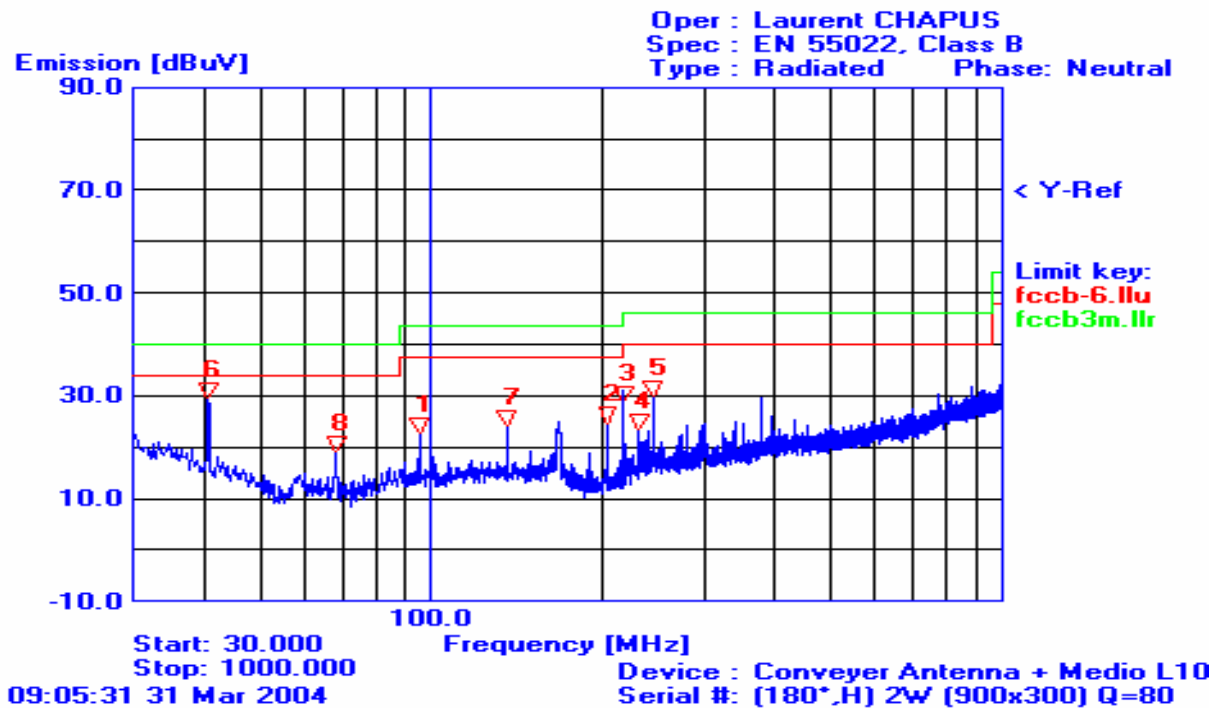
| Marker | Freq.<br>[MHz] | Peak<br>[dBuV] | Q-Peak<br>[dBuV] | Average<br>[dBuV] | Limit<br>[dBuV] |
|--------|----------------|----------------|------------------|-------------------|-----------------|
| 1      | 40.58          | 34.41 *        | -                | -                 | 34.00           |
| 2      | 95.25          | 31.57          | -                | -                 | 37.50           |
| 3      | 190.1          | 30.43          | -                | -                 | 37.50           |
| 4      | 203.7          | 28.08          | -                | -                 | 37.50           |
| 5      | 216.7          | 40.49 *        | -                | -                 | 40.00           |
| 6      | 230.6          | 26.50          | -                | -                 | 40.00           |
| 7      | 461.2          | 32.03          | -                | -                 | 40.00           |
| 8      | 488.1          | 25.98          | -                | -                 | 40.00           |
| 9      | 135.6          | 30.05          | -                | -                 | 37.50           |
| 10     | 273.4          | 28.22          | -                | -                 | 40.00           |





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# RADIATED EMISSIONS -TAGSYS



## 30MHz-1GHz pre-scan result on 900x300 antenna

| Marker | Freq.<br>[MHz] | Peak<br>[dBuV] | Q-Peak<br>[dBuV] | Average<br>[dBuV] | Limit<br>[dBuV] |
|--------|----------------|----------------|------------------|-------------------|-----------------|
| 1      | 95.03          | 22.29          | -                | -                 | 37.50           |
| 2      | 203.5          | 24.37          | -                | -                 | 37.50           |
| 3      | 216.7          | 28.51          | -                | -                 | 40.00           |
| 4      | 230.6          | 22.99          | -                | -                 | 40.00           |
| 5      | 244.3          | 29.46          | -                | -                 | 40.00           |
| 6      | 40.58          | 29.07          | -                | -                 | 34.00           |
| 7      | 135.6          | 23.88          | -                | -                 | 37.50           |
| 8      | 67.92          | 18.83          | -                | -                 | 34.00           |



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### 2.3.3.Characterization on 10 meters open site below 30 MHz

The product has been tested with 230V / 50Hz power line voltage, at a distance of 10 meters from the antenna and compared to the FCC part 15 subpart C §15.209& §15.225 limits. Measurement bandwidth was 9 kHz from 150 kHz to 30 MHz and 100 Hz from 9 kHz to 150 kHz.

The loop antenna position was rotated to locate the orientation that maximized emission reception during testing. Antenna search was performed for both horizontal and vertical polarization. Continuous linear turntable azimuth search was performed with 360 degrees range.

Interconnecting cables and equipment's were moved to position that maximized emission. A summary of the worst case emissions found in all test configurations and modes is shown on clause 2.1.

| <b>900x200 antenna (Q=80)</b> |                           |                       |                       |                        |            |                         |                      |  |
|-------------------------------|---------------------------|-----------------------|-----------------------|------------------------|------------|-------------------------|----------------------|--|
| <b>Frequency (MHz)</b>        | <b>QPeak Lmt (dBµV/m)</b> | <b>QPeak (dBµV/m)</b> | <b>QPeak-Lmt (dB)</b> | <b>Angle EUT (deg)</b> | <b>Pol</b> | <b>Angle Ant. (deg)</b> | <b>Tot Corr (dB)</b> |  |
| <b>@ 30m</b>                  |                           |                       |                       |                        |            |                         |                      |  |
| 13.56 <sup>*1</sup>           | 84.0                      | 79.1                  | -4.9                  | 307                    | V          | 90                      | 35.4                 |  |
| 27.12                         | 29.5                      | 25.0                  | -4.5                  | 207                    | V          | 90                      | 41.4                 |  |

\*1: Fundamental - 15.225 limits. Measure have been done at 10m distance and corrected following requirements of 15.209.e) (M@30m = M@10m-19.1dB)

| <b>900x300 antenna (Q=80)</b> |                           |                       |                       |                        |            |                         |                      |  |
|-------------------------------|---------------------------|-----------------------|-----------------------|------------------------|------------|-------------------------|----------------------|--|
| <b>Frequency (MHz)</b>        | <b>QPeak Lmt (dBµV/m)</b> | <b>QPeak (dBµV/m)</b> | <b>QPeak-Lmt (dB)</b> | <b>Angle EUT (deg)</b> | <b>Pol</b> | <b>Angle Ant. (deg)</b> | <b>Tot Corr (dB)</b> |  |
| <b>@ 30m</b>                  |                           |                       |                       |                        |            |                         |                      |  |
| 13.56 <sup>*1</sup>           | 84.0                      | 81.6                  | -2.4                  | 270                    | V          | 90                      | 35.4                 |  |
| 27.12                         | 29.5                      | 29.5                  | 0.0                   | 290                    | V          | 90                      | 41.4                 |  |

\*1: Fundamental - 15.225 limits. Measure have been done at 10m distance and corrected following requirements of 15.209.e) (M@30m = M@10m-19.1dB)

### 2.3.4.Characterization on 10 meters open site from 30MHz to 1GHz

The product has been tested according to ANSI C63.4-(1992/2000), FCC part 15 subpart C. Radiated Emissions were measured on an open area test site. A description of the facility is on file with the FCC.

The product has been tested with 230V / 50Hz power line voltage, at a distance of 10 meters from the antenna and compared to the FCC part 15 subpart C §15.209 limits. Measurement bandwidth was 120 kHz from 30 MHz to 1GHz.

Antenna height search was performed from 1m to 4m for both horizontal and vertical polarization. Continuous linear turntable azimuth search was performed with 360 degrees range.

Interconnecting cables and equipment's were moved to position that maximized emission. A summary of the worst case emissions found in all test configurations and modes is shown on clause 2.1.



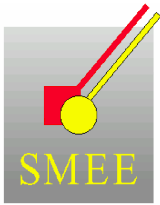
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| <b>900x200 antenna (Q=80)</b> |                            |                                        |                           |                           |                        |            |                     |                          |                 |  |
|-------------------------------|----------------------------|----------------------------------------|---------------------------|---------------------------|------------------------|------------|---------------------|--------------------------|-----------------|--|
| <b>No</b>                     | <b>Frequency<br/>(MHz)</b> | <b>QPeak Lmt<br/>(dBμV/m)<br/>@ 3m</b> | <b>QPeak<br/>(dBμV/m)</b> | <b>QPeak-Lmt<br/>(dB)</b> | <b>Angle<br/>(deg)</b> | <b>Pol</b> | <b>Hgt<br/>(cm)</b> | <b>Tot Corr<br/>(dB)</b> | <b>Comments</b> |  |
| 1                             | 40.681                     | 40.0                                   | 38.1                      | -1.9                      | 70                     | V          | 107                 | 11.5                     | *               |  |
| 2                             | 135.580                    | 43.5                                   | 36.9                      | -6.6                      | 2                      | V          | 391                 | 14.6                     | *               |  |
| 3                             | 189.844                    | 43.5                                   | 32.0                      | -11.5                     | 162                    | V          | 102                 | 18.8                     | *               |  |
| 4                             | 203.423                    | 43.5                                   | 40.7                      | -2.8                      | 192                    | V          | 102                 | 14.4                     | *               |  |
| 5                             | 216.980                    | 46.0                                   | 43.0                      | -3.0                      | 188                    | V          | 101                 | 14.3                     | *               |  |
| 6                             | 230.538                    | 46.0                                   | 40.7                      | -5.3                      | 354                    | V          | 102                 | 14.2                     | *               |  |
| 7                             | 244.098                    | 46.0                                   | 37.7                      | -8.3                      | 3                      | V          | 100                 | 14.0                     | *               |  |
| 8                             | 461.053                    | 46.0                                   | 35.6                      | -10.4                     | 20                     | V          | 182                 | 20.4                     | *               |  |
| 9                             | 488.158                    | 46.0                                   | 36.0                      | -10.0                     | 310                    | H          | 183                 | 21.1                     | *               |  |

\*: QP measurements are extrapolated with §15.31 requirement ( $M@3m = M@10m + 10.5dB$ )

| <b>900x300 antenna (Q=80)</b> |                            |                                        |                           |                           |                        |            |                     |                          |                 |  |
|-------------------------------|----------------------------|----------------------------------------|---------------------------|---------------------------|------------------------|------------|---------------------|--------------------------|-----------------|--|
| <b>No</b>                     | <b>Frequency<br/>(MHz)</b> | <b>QPeak Lmt<br/>(dBμV/m)<br/>@ 3m</b> | <b>QPeak<br/>(dBμV/m)</b> | <b>QPeak-Lmt<br/>(dB)</b> | <b>Angle<br/>(deg)</b> | <b>Pol</b> | <b>Hgt<br/>(cm)</b> | <b>Tot Corr<br/>(dB)</b> | <b>Comments</b> |  |
| 1                             | 40.680                     | 40.0                                   | 39.5                      | -0.5                      | 39                     | V          | 380                 | 11.5                     | *               |  |
| 2                             | 67.780                     | 40.0                                   | 38.3                      | -1.7                      | 70                     | V          | 203                 | 9.7                      | *               |  |
| 3                             | 135.606                    | 43.5                                   | 33.0                      | -10.5                     | 202                    | V          | 106                 | 14.6                     | *               |  |
| 4                             | 203.428                    | 43.5                                   | 37.5                      | -6.0                      | 346                    | V          | 101                 | 14.4                     | *               |  |
| 5                             | 216.938                    | 46.0                                   | 42.3                      | -3.7                      | 176                    | V          | 102                 | 14.3                     | *               |  |
| 6                             | 230.539                    | 46.0                                   | 38.0                      | -8.0                      | 180                    | V          | 102                 | 14.2                     | *               |  |
| 7                             | 244.101                    | 46.0                                   | 29.7                      | -16.3                     | 271                    | V          | 245                 | 14.0                     | *               |  |

\*: QP measurements are extrapolated with §15.31 requirement ( $M@3m = M@10m + 10.5LdB$ )



#### 2.4. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follow:

$$FS = RA + AF + CF - AG$$

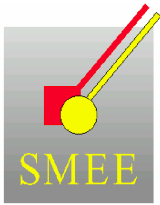
Where      FS = Field Strength  
              RA = Receiver Amplitude  
              AF = Antenna Factor  
              CF = Cable Factor  
              AG = Amplifier Gain

Assume a receiver reading of 52.5dB $\mu$ V is obtained. The antenna factor of 7.4 and a cable factor of 1.1 are added. The amplifier gain of 29dB is subtracted, giving a field strength of 32 dB $\mu$ V/m.

$$FS = 52.5 + 7.4 + 1.1 - 29 = 32 \text{ dB}\mu\text{V/m}$$

The 32 dB $\mu$ V/m value can be mathematically converted to its corresponding level in  $\mu$ V/m.

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm} [(32\text{dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}.$$



### 3. Conducted emission data

The product has been tested according to ANSI C63.4-(1992/2000) and FCC Part 15 subpart C.

The product has been tested with 120V/60Hz power line voltage and compared to the FCC Part 15 subpart C §15.207 limits. Measurement bandwidth was 9 kHz from 150 kHz to 30 MHz.

Measurement was initially made with an HP-8591EM Spectrum Analyzer in peak mode. This was followed by a Quasi-Peak, i.e. CISPR measurement with the Rohde & Schwarz ESH3 receiver for any strong signal. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.

The Peak data are shown on the following plots. Quasi-Peak and Average measurements are detailed in a table with frequencies and levels measured.

Interconnecting cables and equipment's were moved to position that maximized emission. A summary of the worst case emissions found in all test configurations and modes is shown on the following page.

#### 3.1. SET-UP

The MEDIO-L100 and PC are placed on a non-conducting table of 80cm height. The antenna support is set on the floor (isolated). The cable of the power supply (MEDIO-L100) has been shorted to 1 meter length. The MEDIO-L100 is powered through the LISN.



Test setup for conducted emission



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Equipment configuration and running mode:

- The MEDIO-L100 is connected to the PC with the RS232 serial link;
- The MEDIO-L100 is powered by 120V/60Hz;
- The signal box is connected on I/O ports of the MEDIO-L100
- RF Power output of MEDIO-L100: Ch1=2W & Ch2=0W;
- Antenna is connected to the Ch1 of the MEDIO-L100;
- PC and EUT are ON;
- Software (HyperTerminal) is running;

**3.2. TEST EQUIPMENT**

| Equipment                   | Company                 | Model         | Serial        | Calibration Due                |
|-----------------------------|-------------------------|---------------|---------------|--------------------------------|
| EMC Analyzer                | HP                      | 8591EM        | 3536A00384    | May, 2005                      |
| Test receiver               | Rohde&Schwarz           | ESH3          | 872079/117    | May 6 <sup>th</sup> , 2005     |
| Transient Limiter           | HP                      | 11947A        | 3107A01596    | March 18 <sup>th</sup> , 2005  |
| LISN(auxiliary)             | EMCO                    | 3810/2SH      | 9511-11821628 | August 18 <sup>th</sup> , 2004 |
| LISN(measure)<br>50Ω / 50μH | Telemeter<br>Elektronik | TGmbH<br>2/16 | NNB 0001300   | August 18 <sup>th</sup> , 2004 |
| Faraday room                | Rayproof                |               | 4854          | none                           |



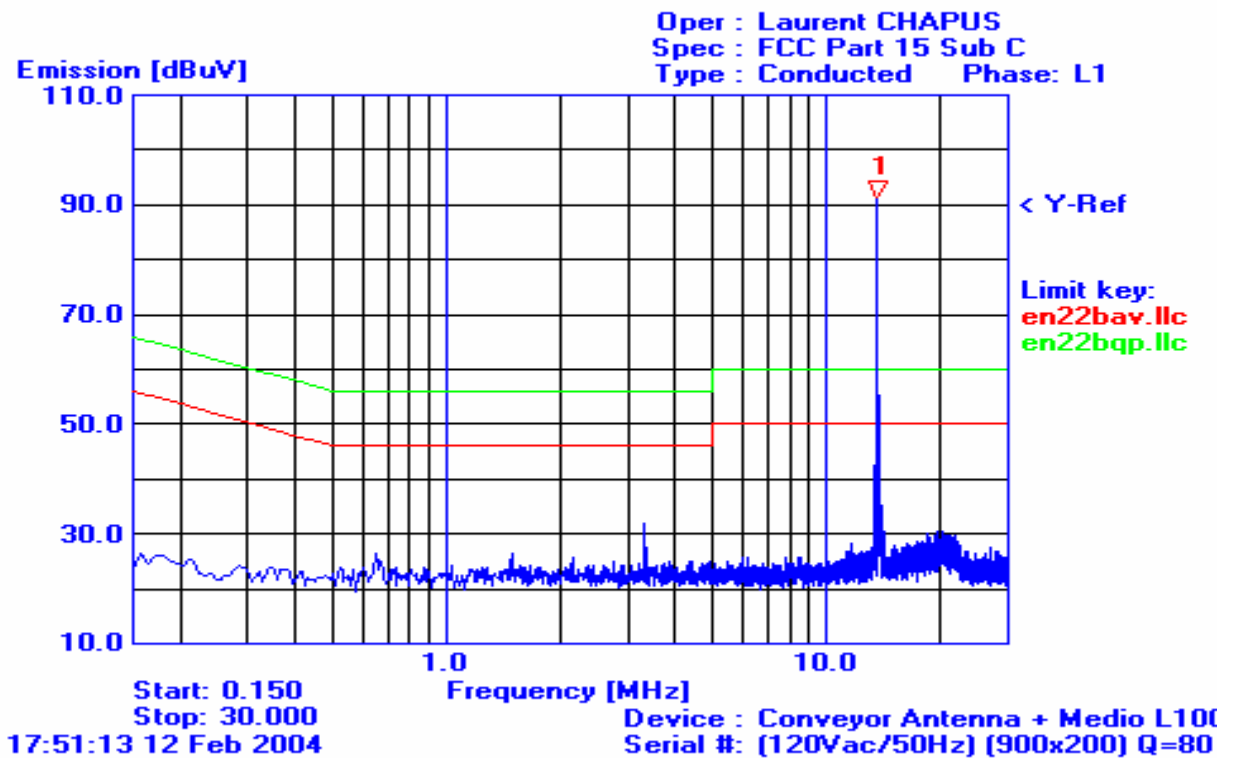
FCCID : QHKCONVYRANT

### 3.3. TEST SEQUENCE AND RESULTS

Measures are performed on line 1 and line 2 of the power supply of the MEDIO-L100,

#### 3.3.1. Line conducted emission data on MEDIO-L100 (Antenna 900x200)

#### CONDUCTED EMISSIONS - TAGSYS



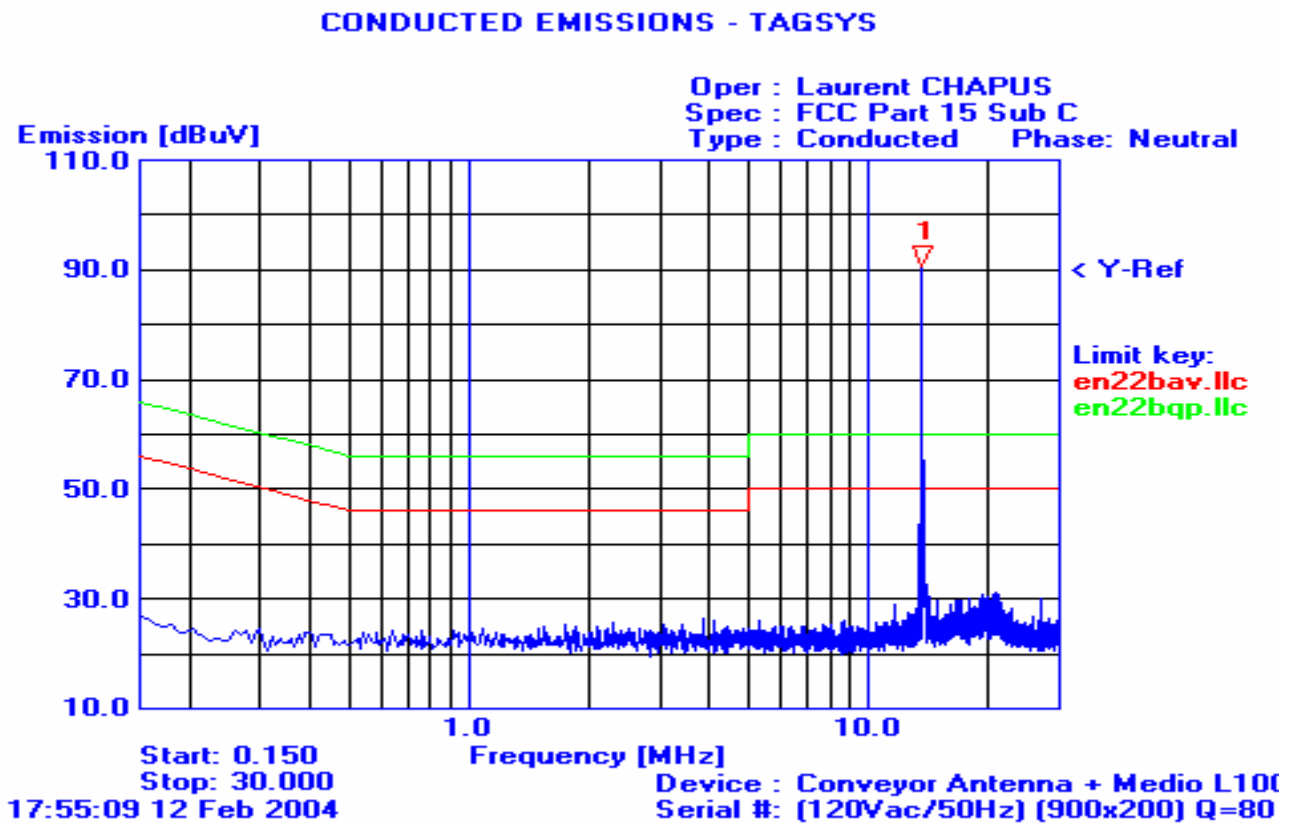
| Num. | Freq.<br>[MHz] | Peak<br>[dBμV] | Q-Peak<br>[dBμV] | QP limit<br>[dBμV] | QP delta<br>[dBμV] | Average<br>[dBμV] | AVG Limit<br>[dBμV] | AVG Delta<br>[dBμV] | Comment. |
|------|----------------|----------------|------------------|--------------------|--------------------|-------------------|---------------------|---------------------|----------|
| 1    | 13.56          | 90.85          | -                | -                  | -                  | -                 | -                   | -                   | *        |

\*: Carrier frequency



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### 3.3.2. Neutral conducted emission data on MEDIO-L100 (Antenna 900x200)



| Num. | Freq.<br>[MHz] | Peak<br>[dBμV] | Q-Peak<br>[dBμV] | QP limit<br>[dBμV] | QP delta<br>[dBμV] | Average<br>[dBμV] | AVG Limit<br>[dBμV] | AVG Delta<br>[dBμV] | Comment. |
|------|----------------|----------------|------------------|--------------------|--------------------|-------------------|---------------------|---------------------|----------|
| 1    | 13.56          | 90.76          | -                | -                  | -                  | -                 | -                   | -                   | *        |

\*: Carrier frequency

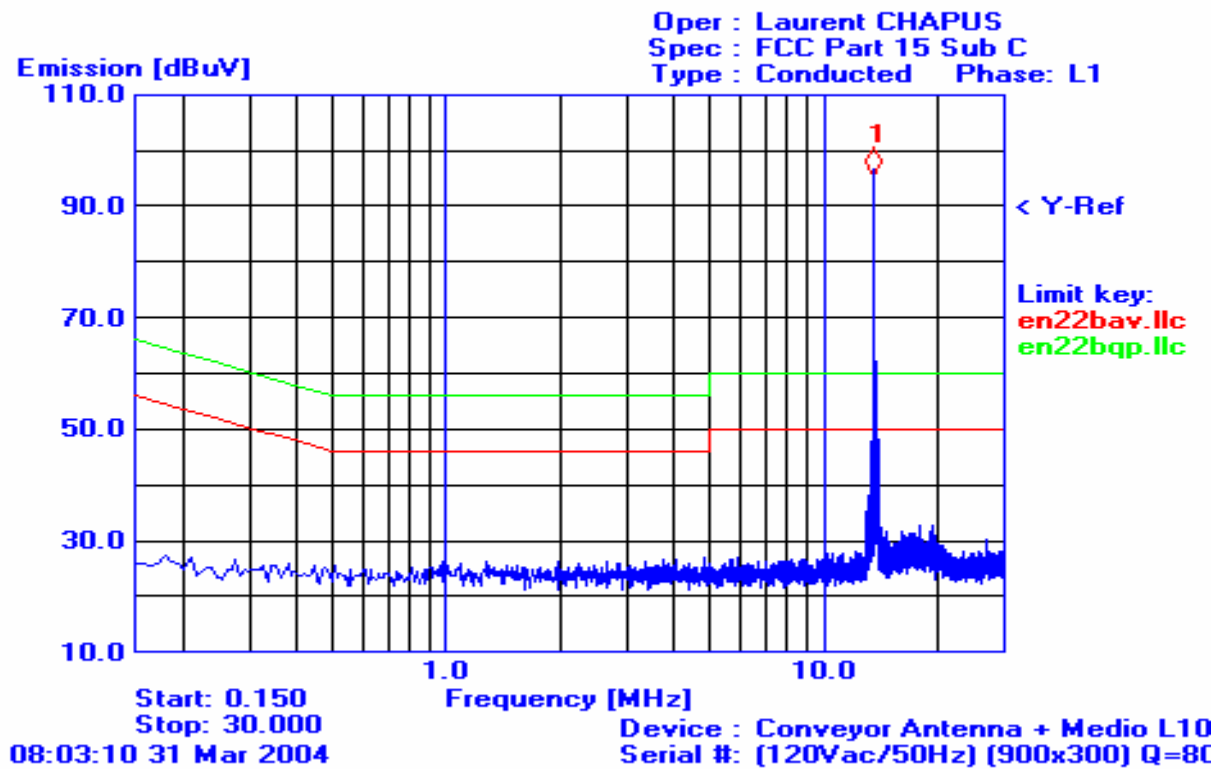




FCCID : QHKCONVYRANT

### 3.3.3. Line conducted emission data on MEDIO-L100 (Antenna 900x300)

#### CONDUCTED EMISSIONS - TAGSYS



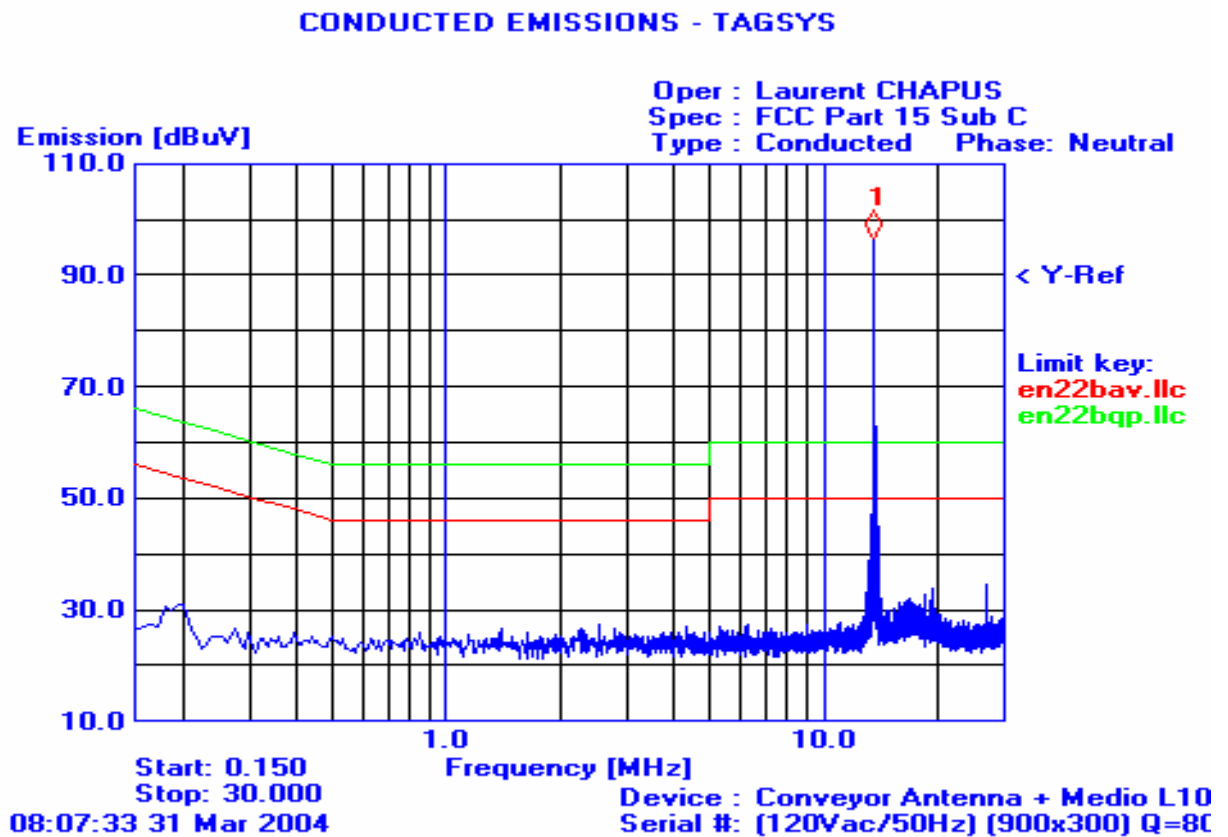
| Num. | Freq.<br>[MHz] | Peak<br>[dBUV] | Q-Peak<br>[dBUV] | QP limit<br>[dBUV] | QP delta<br>[dBUV] | Average<br>[dBUV] | AVG Limit<br>[dBUV] | AVG Delta<br>[dBUV] | Comment. |
|------|----------------|----------------|------------------|--------------------|--------------------|-------------------|---------------------|---------------------|----------|
| 1    | 13.56          | 95.34          | -                | -                  | -                  | -                 | -                   | -                   | *        |

\*: Carrier frequency



FCCID : QHKCONVYRANT

### 3.3.4. Neutral conducted emission data on MEDIO-L100 (Antenna 900x200)



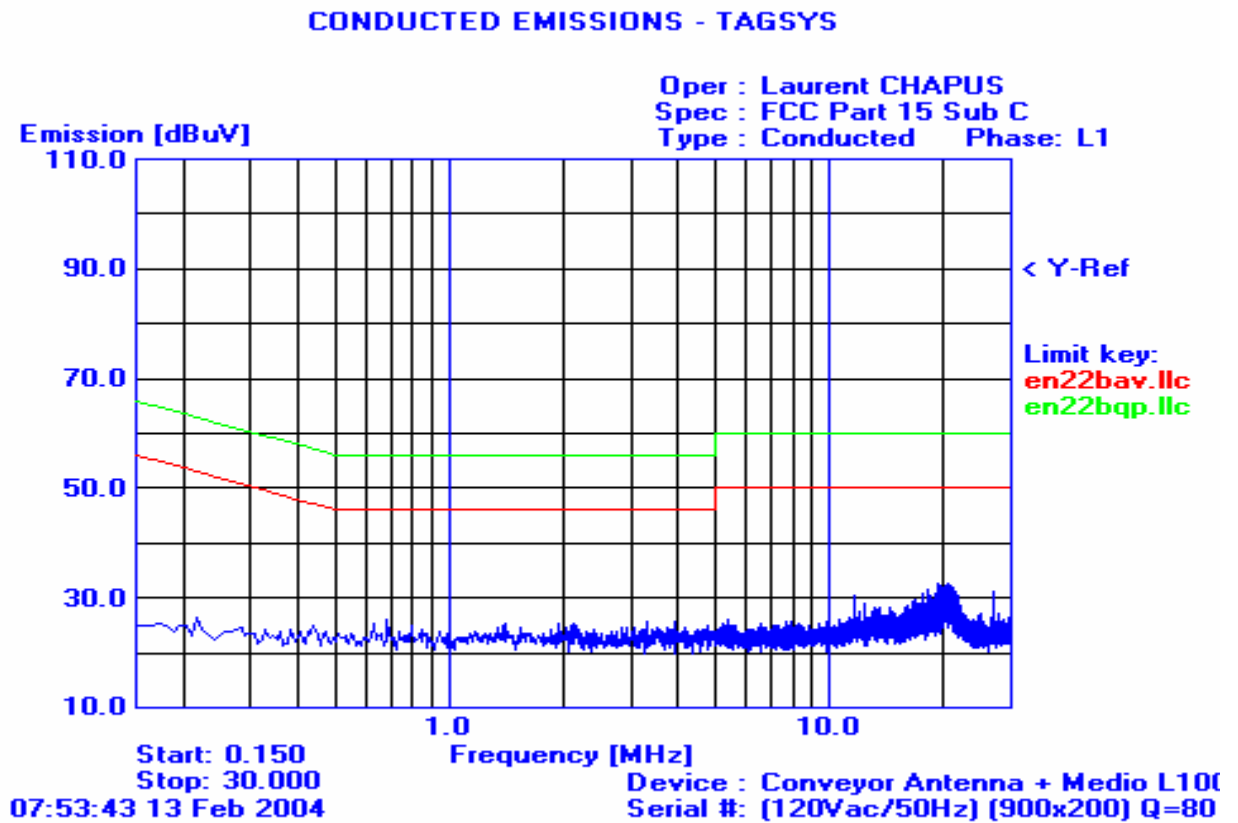
| Num. | Freq.<br>[MHz] | Peak<br>[dBμV] | Q-Peak<br>[dBμV] | QP limit<br>[dBμV] | QP delta<br>[dBμV] | Average<br>[dBμV] | AVG Limit<br>[dBμV] | AVG Delta<br>[dBμV] | Comment. |
|------|----------------|----------------|------------------|--------------------|--------------------|-------------------|---------------------|---------------------|----------|
| 1    | 13.56          | 96.41          | -                | -                  | -                  | -                 | -                   | -                   | *        |

\*: Carrier frequency



FCCID : QHKCONVYRANT

3.3.5. Line conducted emission data on MEDIO-L100 with dummy load  
Antenna is replaced by a dummy load.



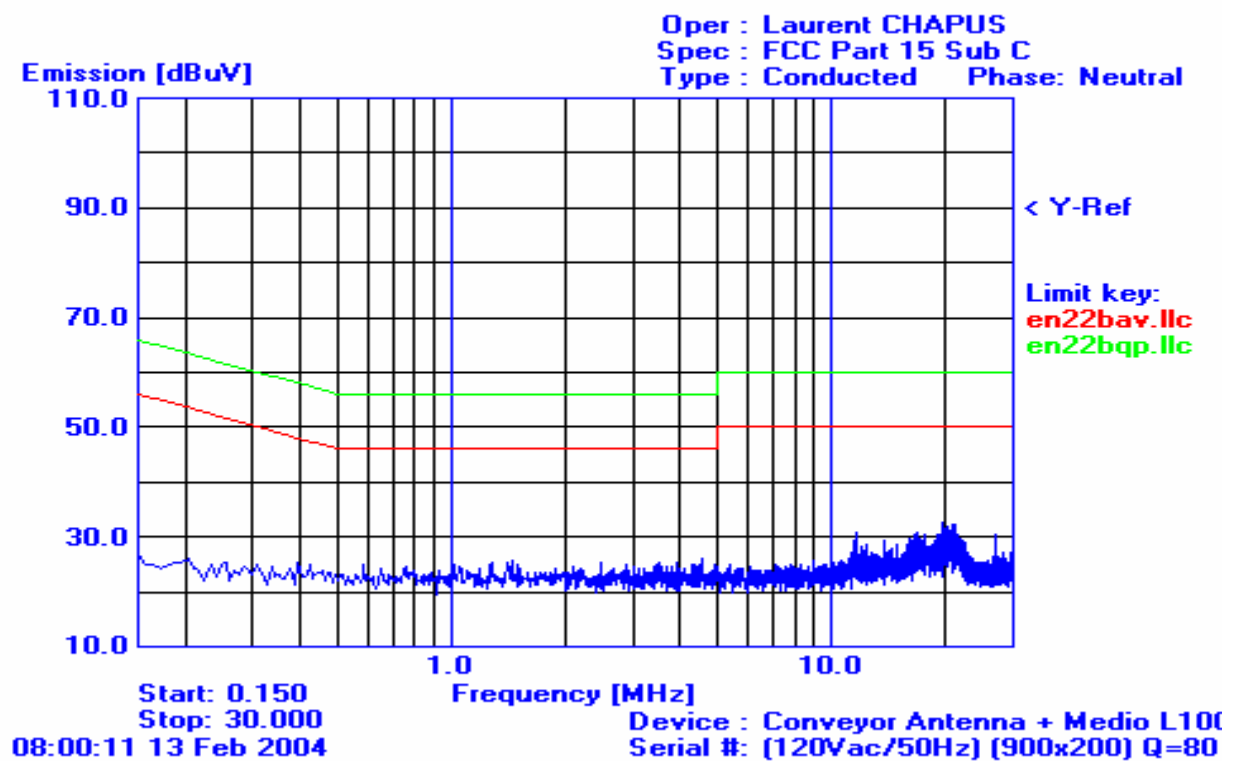


FCCID : QHKCONVYRANT

### 3.3.6. Neutral conducted emission data on MEDIO-L100 with dummy load

Antenna is replaced by a dummy load.

#### CONDUCTED EMISSIONS - TAGSYS

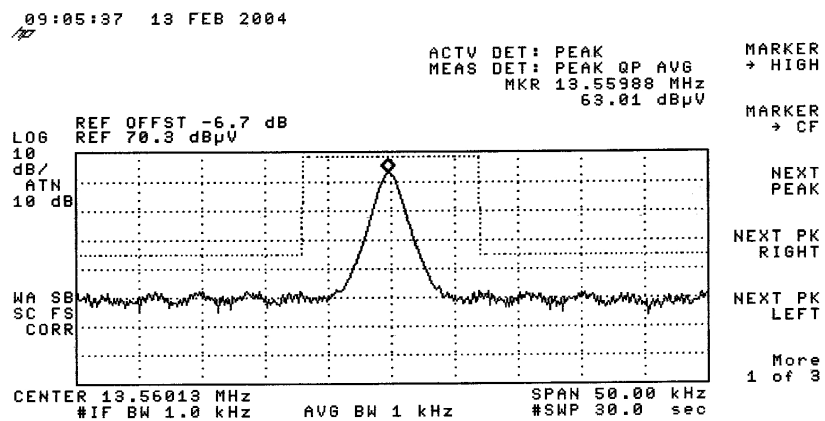




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## 4. Band-edge compliance §15.209

### 4.1. Antenna 900x200





FCCID : QHKCONVYRANT

09:22:51 13 FEB 2004

MARKER  
13.5853 MHz  
30.43 dBμV

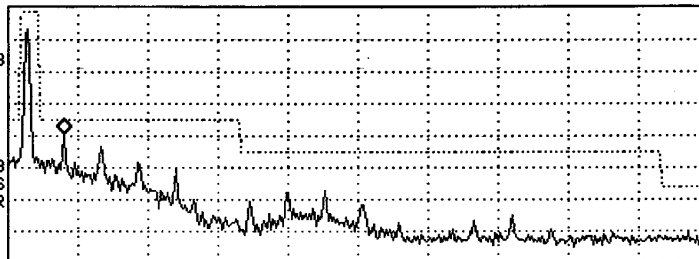
ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 13.5853 MHz  
30.43 dBμV

MARKER  
NORMAL

REF OFFST -6.7 dB  
REF 70.3 dBμV

LOG  
10  
dB/  
ATN  
10 dB

WA SB  
SC FS  
CORR



CENTER 13.7953 MHz SPAN 500.0 kHz  
#IF BW 1.0 kHz #AVG BW 3 kHz #SWP 30.0 sec

MARKER  
Δ

MARKER  
AMPTD

SELECT  
1 2 3 4

MARKER 1  
ON OFF

More  
1 of 3

09:24:01 13 FEB 2004

MARKER  
13.5353 MHz  
29.31 dBμV

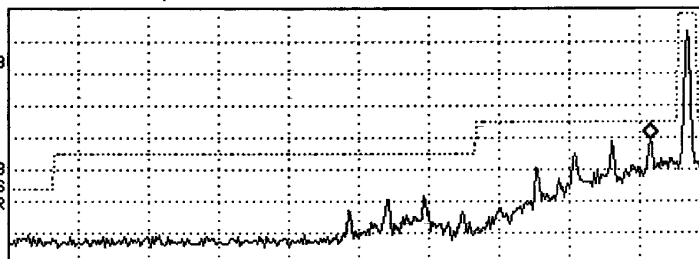
ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 13.5353 MHz  
29.31 dBμV

MARKER  
NORMAL

REF OFFST -6.7 dB  
REF 70.3 dBμV

LOG  
10  
dB/  
ATN  
10 dB

WA SB  
SC FS  
CORR



CENTER 13.3278 MHz SPAN 500.0 kHz  
#IF BW 1.0 kHz #AVG BW 3 kHz #SWP 30.0 sec

MARKER  
Δ

MARKER  
AMPTD

SELECT  
1 2 3 4

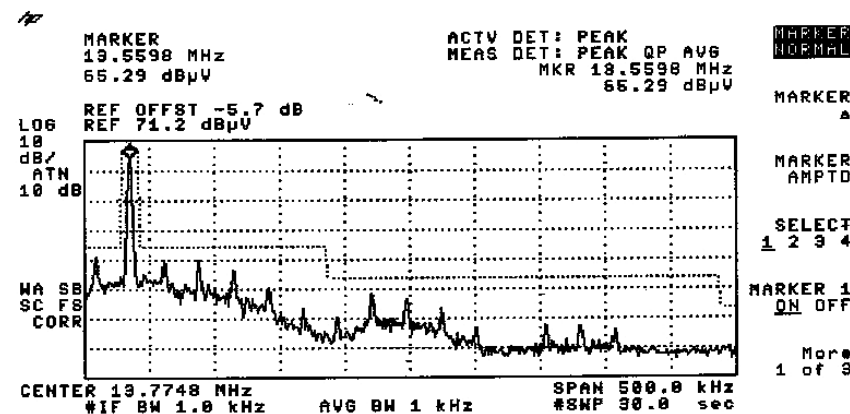
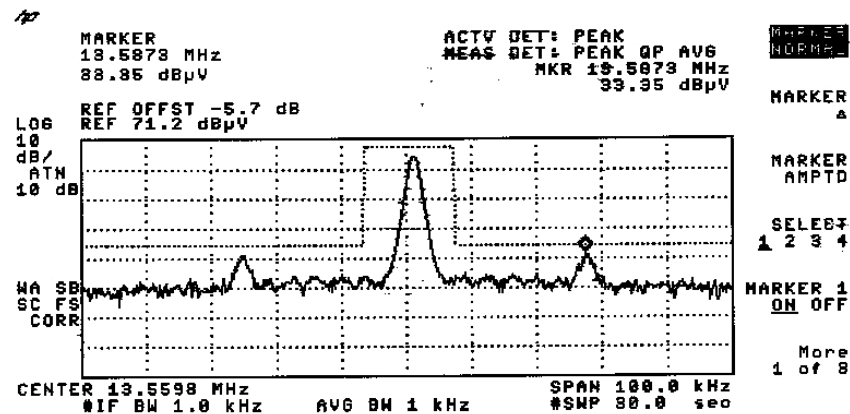
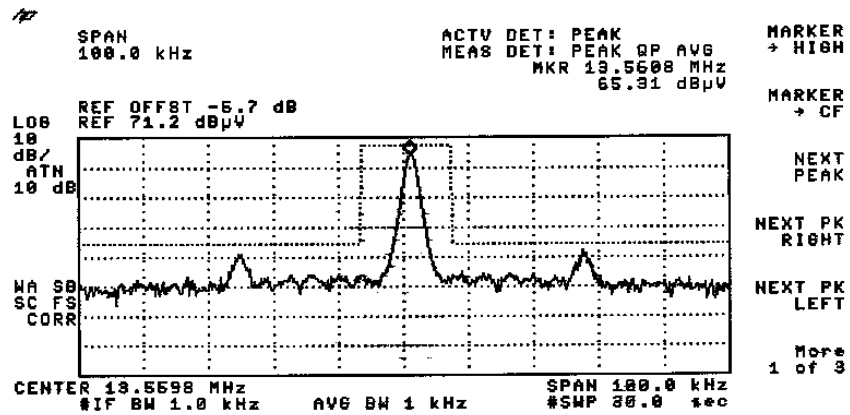
MARKER 1  
ON OFF

More  
1 of 3



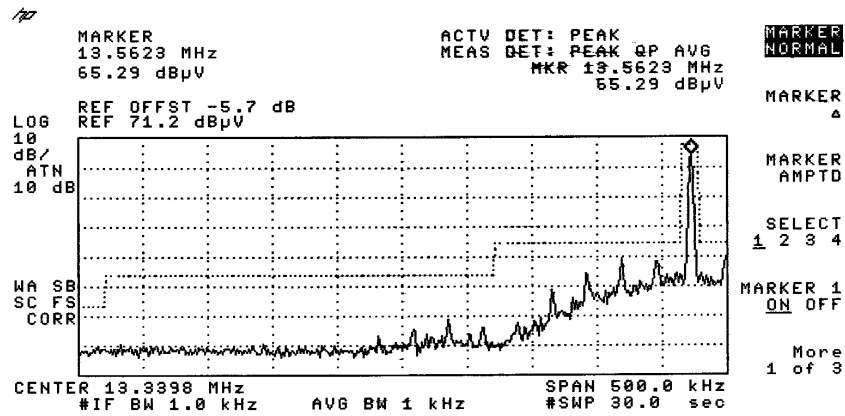
FCCID : QHKCONVYRANT

#### 4.2. Antenna 900x300





FCCID : QHKCONVYRANT



End of Tests

End of report