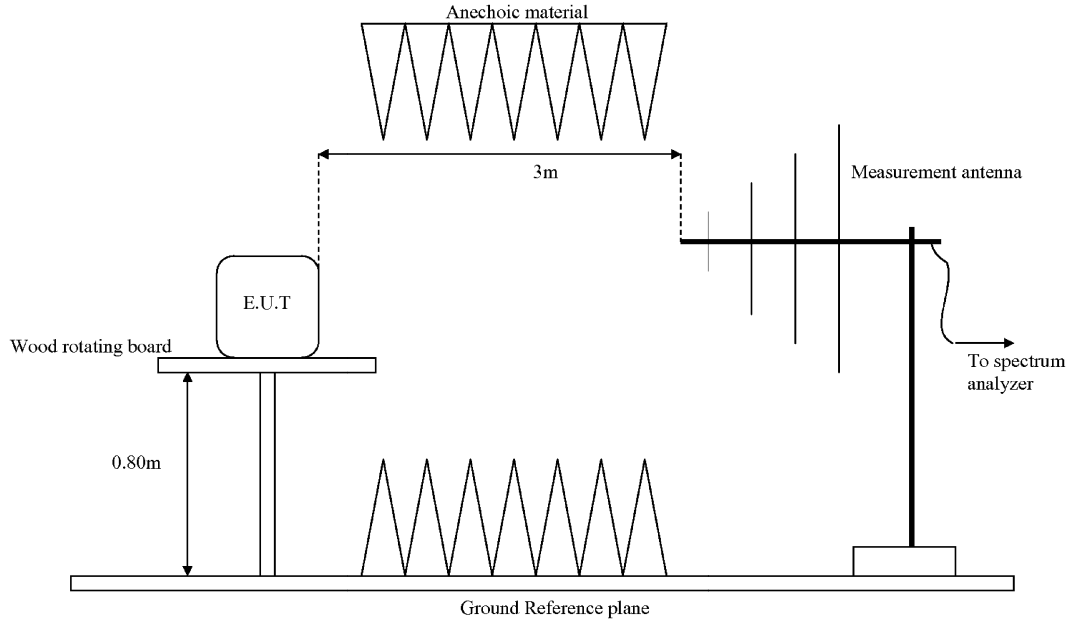
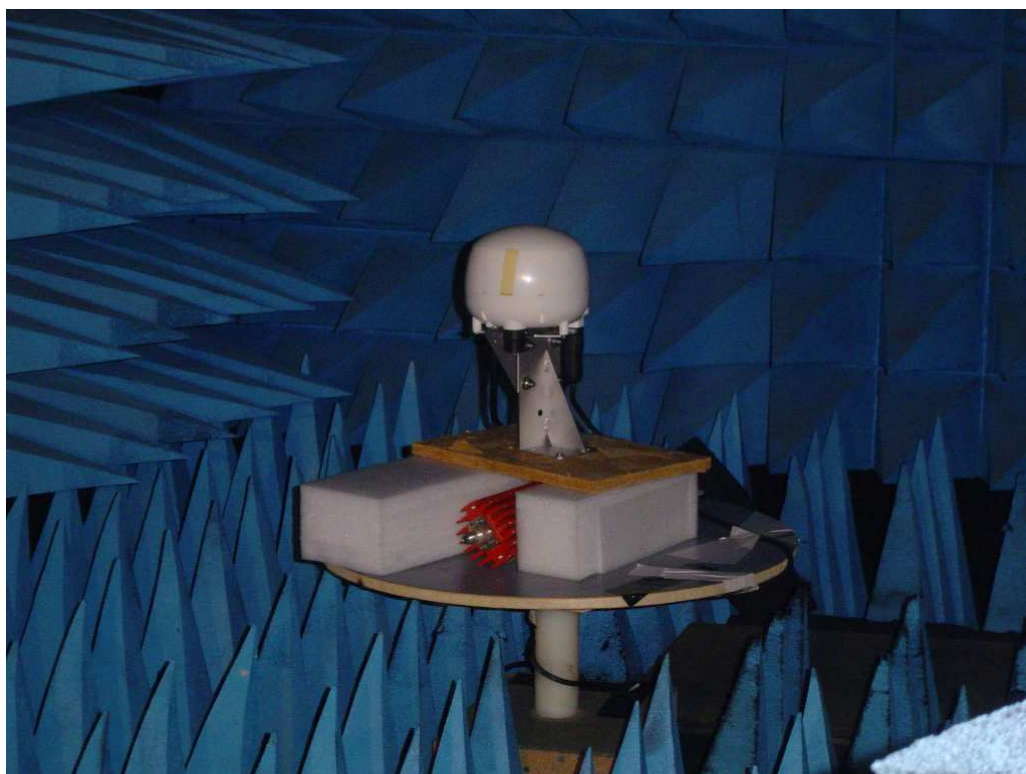
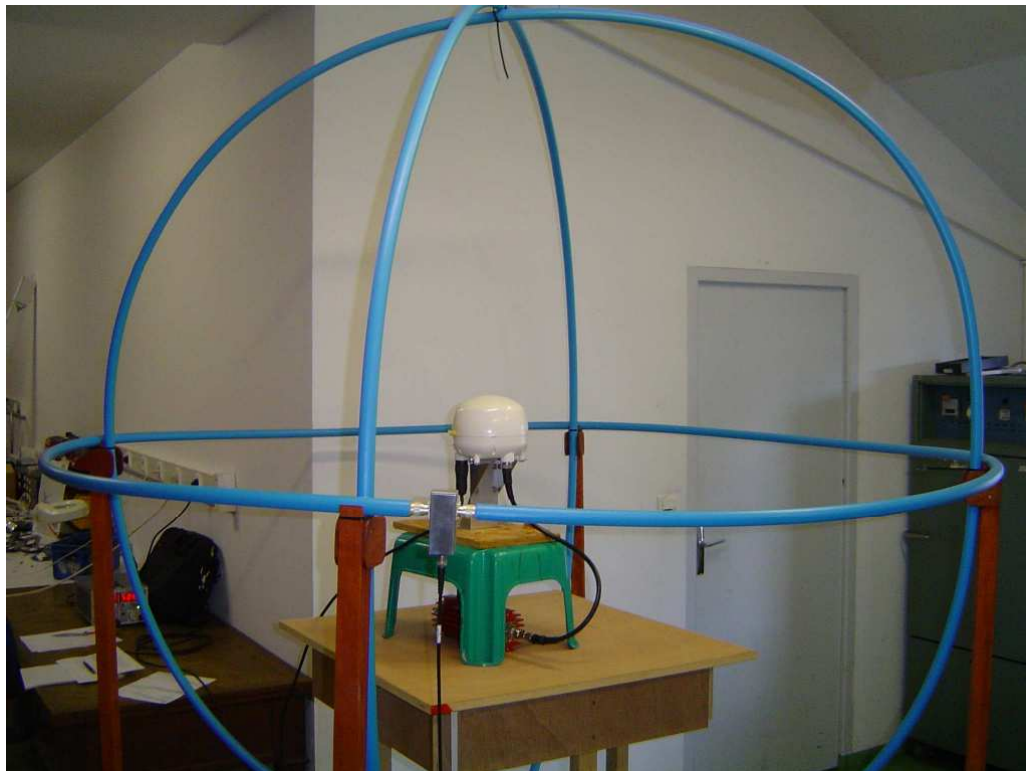


13.8. RADIATED EMISSIONS FROM ENCLOSURE PORT**TESTS CONDITIONS**

The result is obtained by calculation.

Result = Spectrum result + cable attenuation - Antenna factor + Space attenuation



Position of EUT for radiated emissions measurement

13.8.1. RECEIVER 161.975MHZ : ON 12 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (KHz)	Results	Limits
6.9	13.21	80 – 52 52 – 34

HORIZONTAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
256.9	32.51	54
1471.1	48.62	

FREQUENCY BAND : 156MHz – 165MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
159.0	15.05	30

VERTICAL POLARIZATION

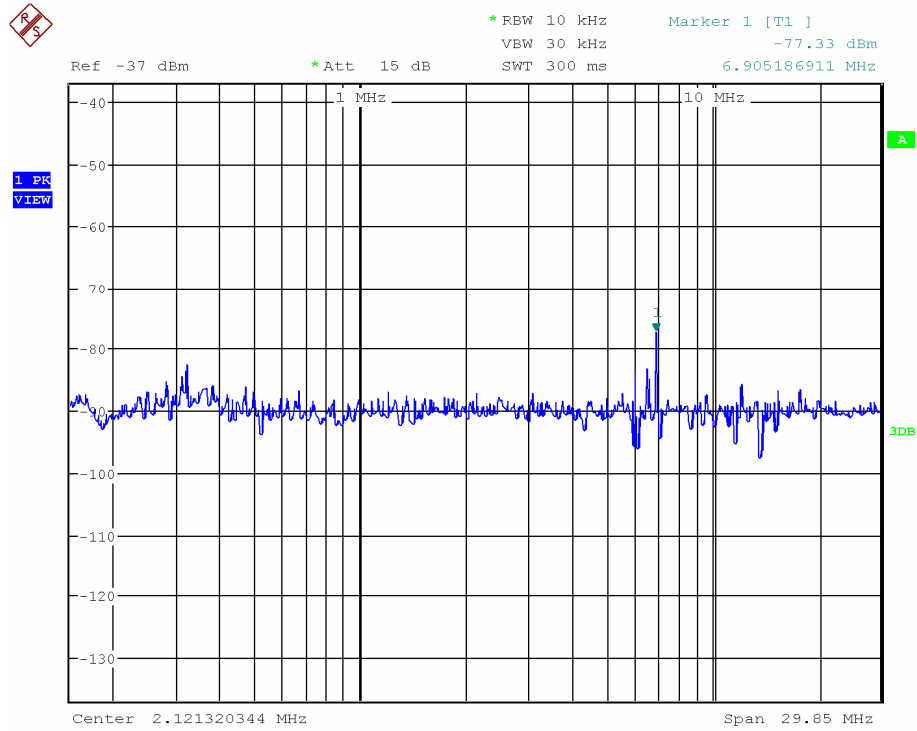
FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
50.2	38.95	54
1541.7	48.61	

FREQUENCY BAND : 156MHz – 165MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
160.3	15.23	30

Result : **COMPLIANT**

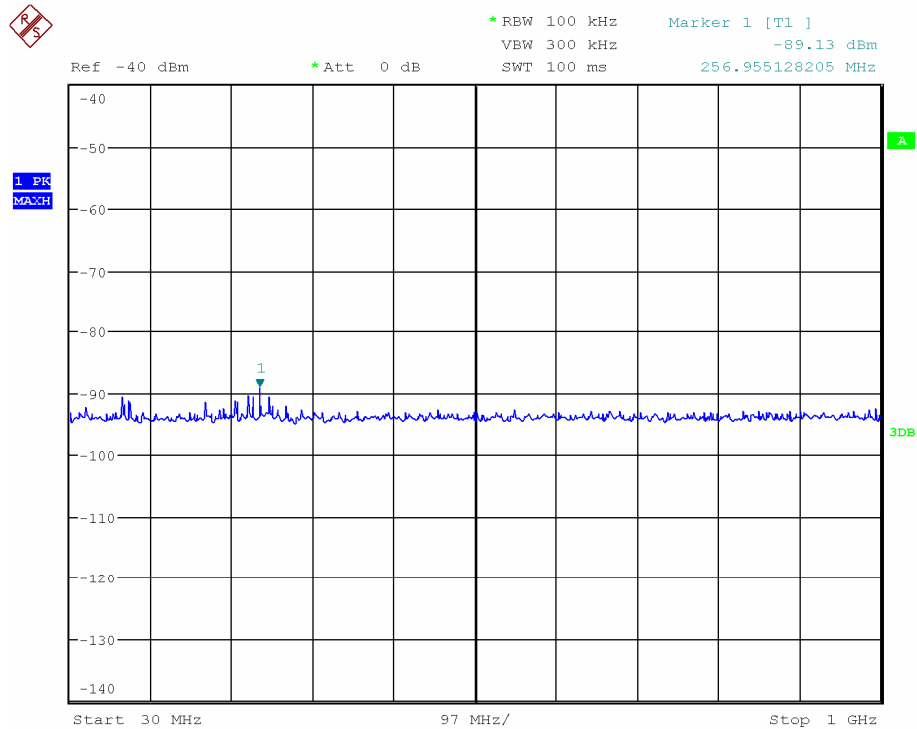
Comments :

13.8.2. RADIATION GRAPHS

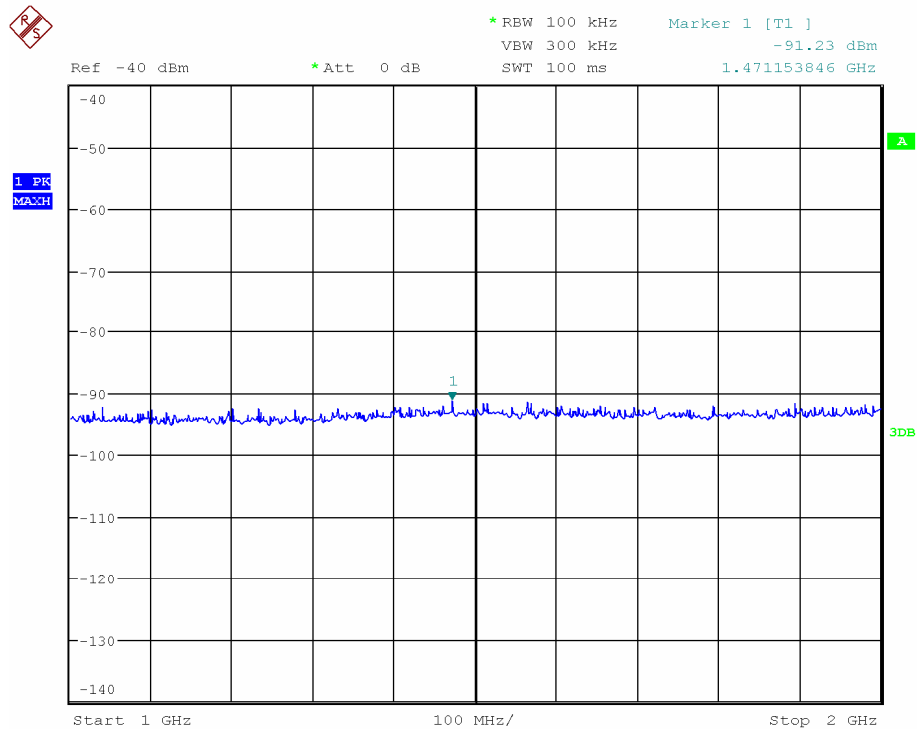


Date: 5.APR.2011 10:01:46

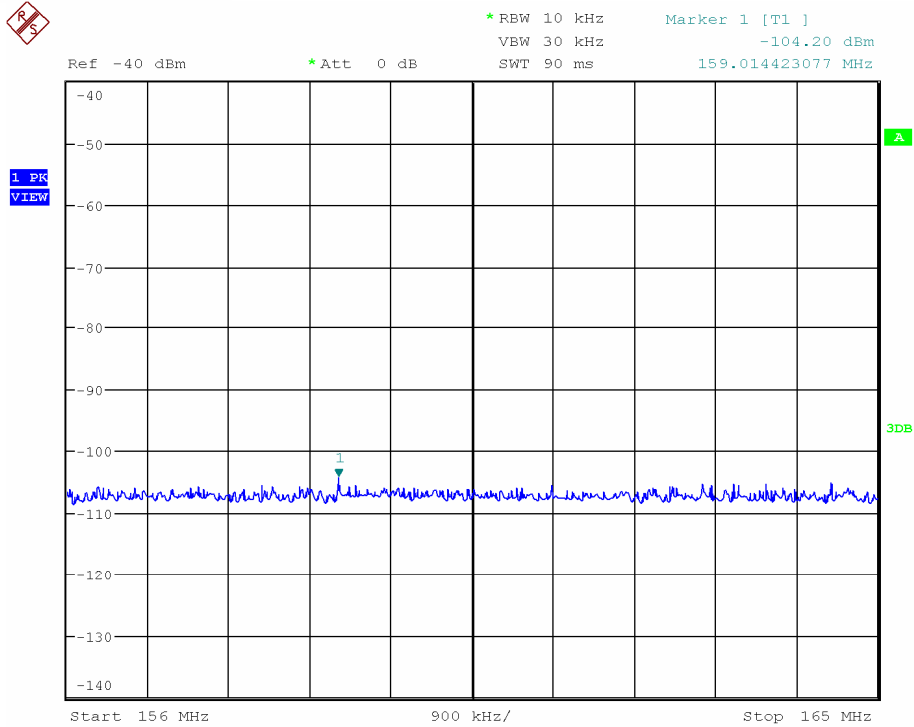
HORIZONTAL POLARIZATION



Date: 22.MAR.2011 11:43:07

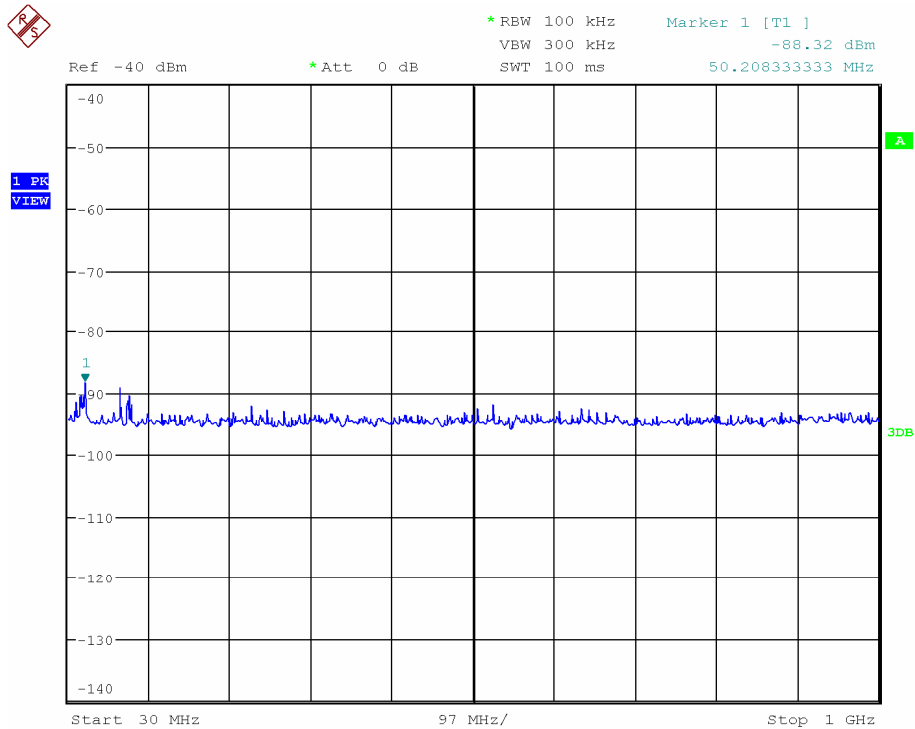


Date: 22.MAR.2011 13:50:20

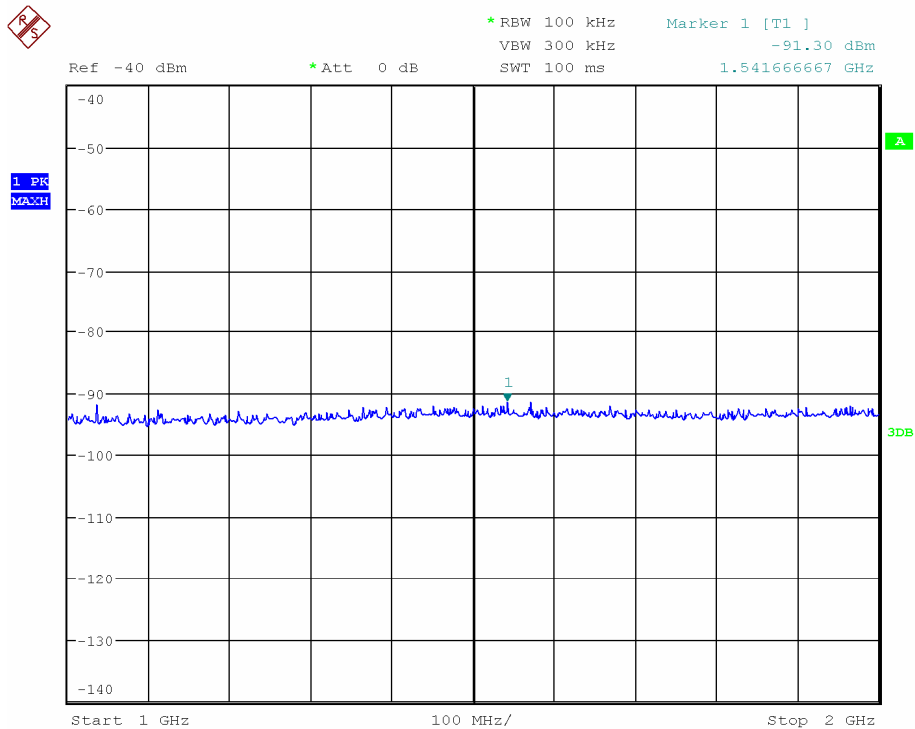


Date: 22.MAR.2011 11:24:14

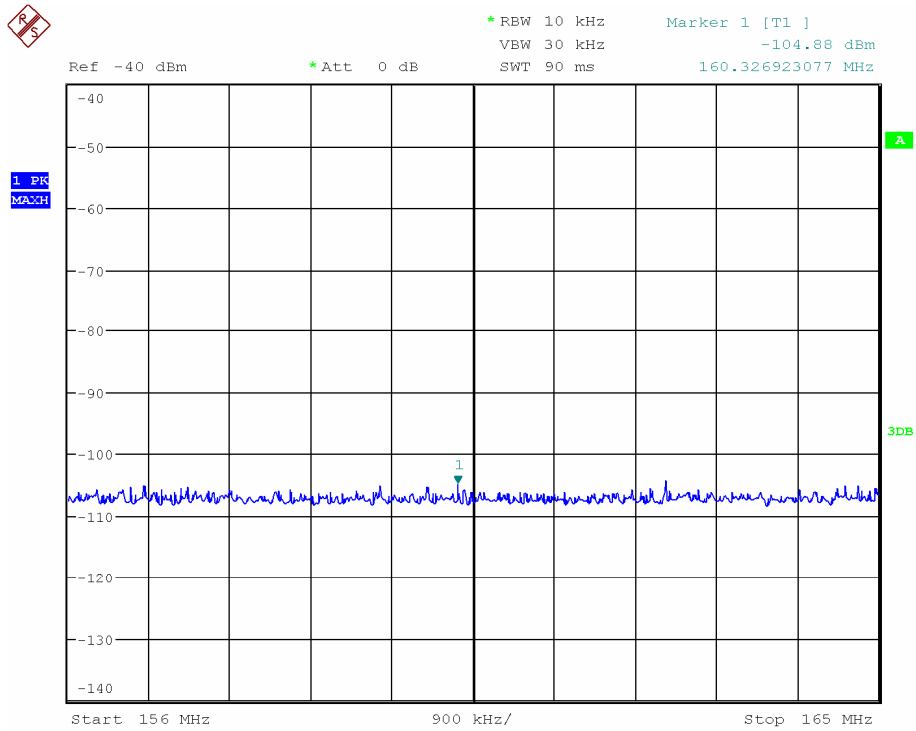
VERTICAL POLARIZATION



Date: 22.MAR.2011 11:45:33



Date: 22.MAR.2011 13:42:01



Date: 22.MAR.2011 11:47:03

13.8.3. RECEIVER 161.975MHZ : ON 24 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (KHz)	Results	Limits
6.9	12.55	80 – 52 52 – 34

HORIZONTAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
191.7	28.84	54
1814.1	49.20	

FREQUENCY BAND : 156MHz – 165MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
160.6	15.55	30

VERTICAL POLARIZATION

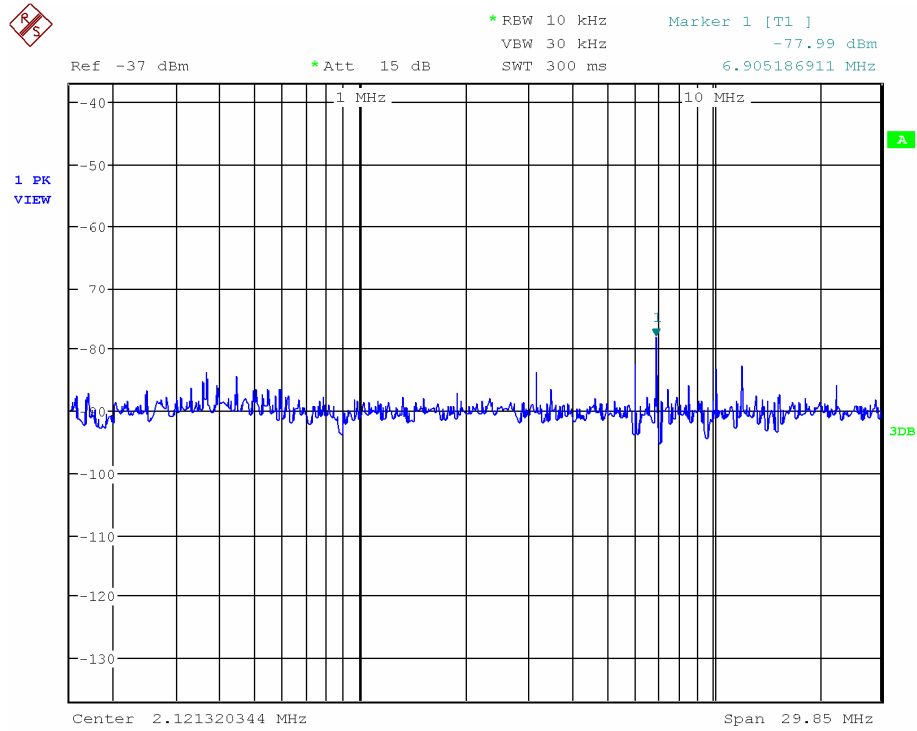
FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
249.2	31.03	54
1653.8	49.24	

FREQUENCY BAND : 156MHz – 165MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
164.3	15.31	30

Result :	COMPLIANT
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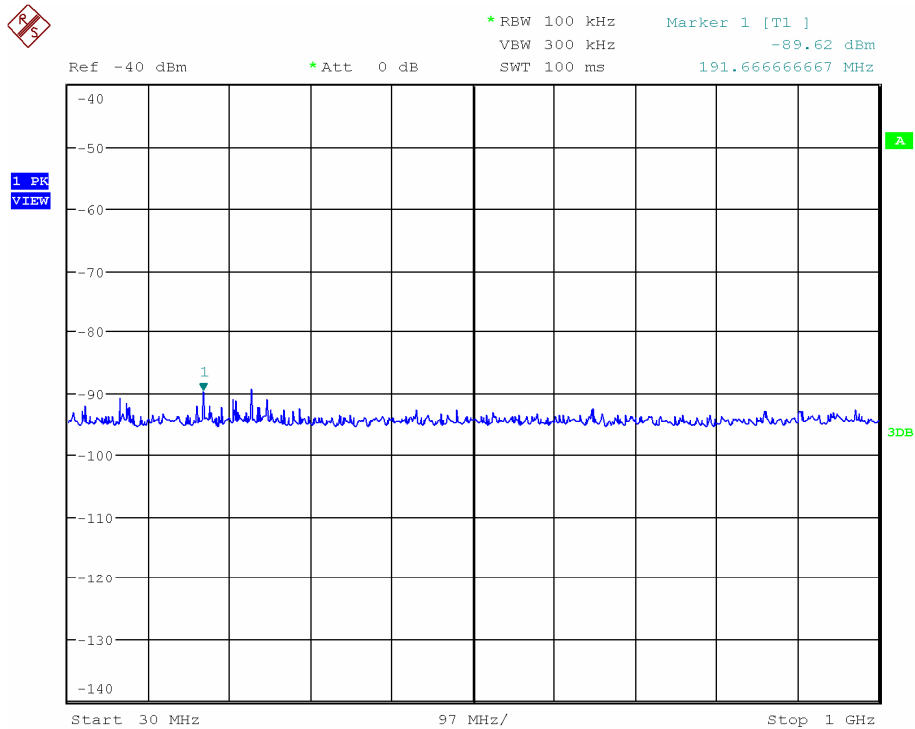
Comments :

13.8.4. RADIATION GRAPHS

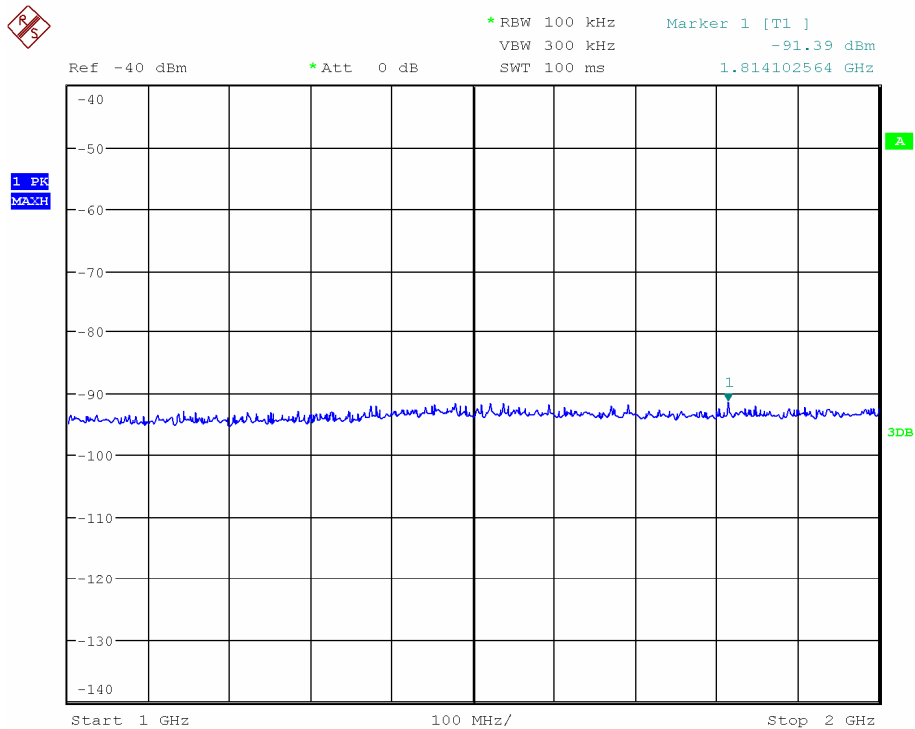


Date: 5.APR.2011 10:03:59

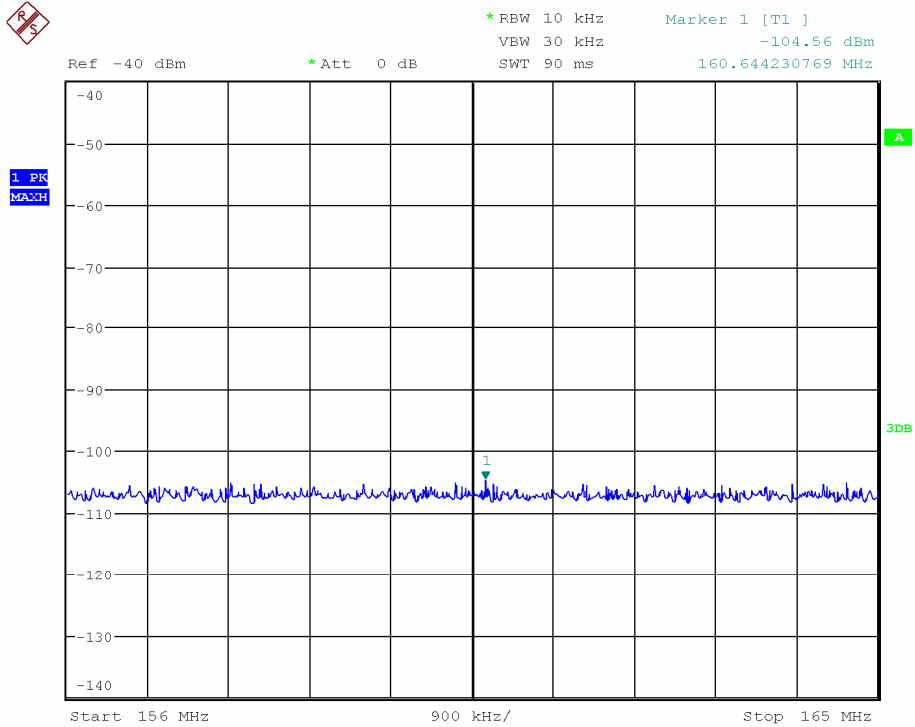
HORIZONTAL POLARIZATION



Date: 22.MAR.2011 11:33:33

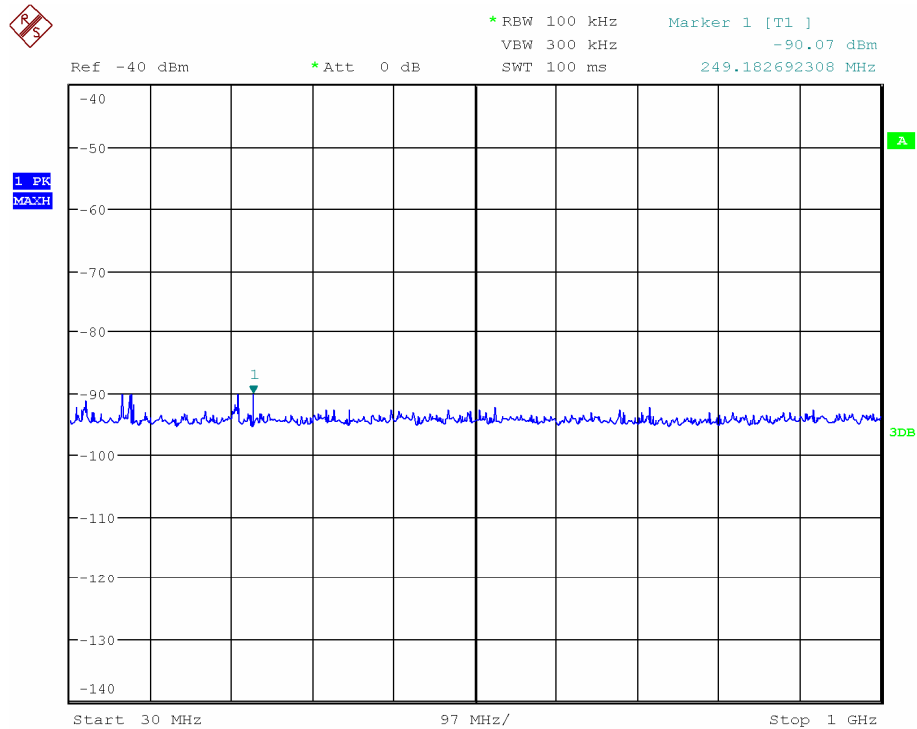


Date: 22.MAR.2011 13:45:55

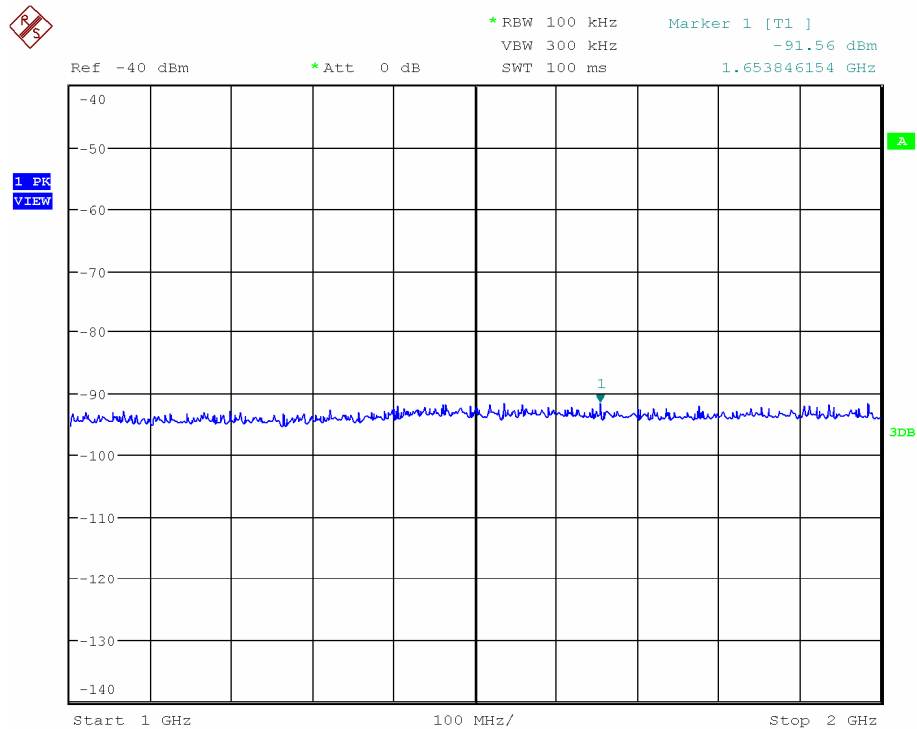


Date: 22.MAR.2011 11:36:46

VERTICAL POLARIZATION



Date: 22.MAR.2011 11:50:45



Date: 22.MAR.2011 13:40:08

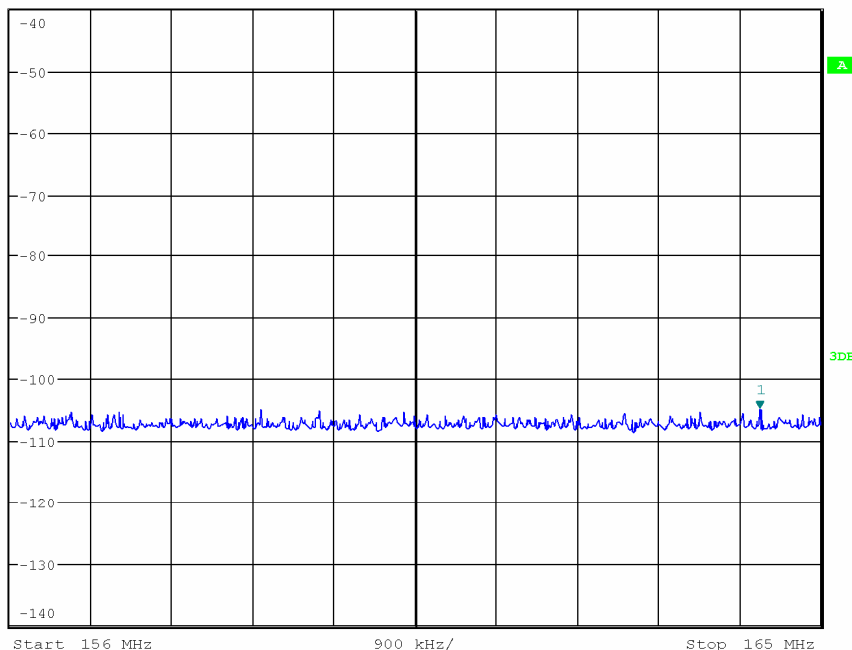


*RBW 10 kHz Marker 1 [T1]
 VBW 30 kHz -104.80 dBm
 SWT 90 ms 164.322115385 MHz

Ref -40 dBm

*Att 0 dB

1 PK
VIEW



Date: 22.MAR.2011 11:49:09

13.8.5. RECEIVER 162.025MHZ : ON 12 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (KHz)	Results	Limits
11.99	14.50	80 – 52 52 – 34

HORIZONTAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
183.9	28.73	54
1471.1	48.62	

FREQUENCY BAND : 156MHz – 165MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
159.0	15.05	30

VERTICAL POLARIZATION

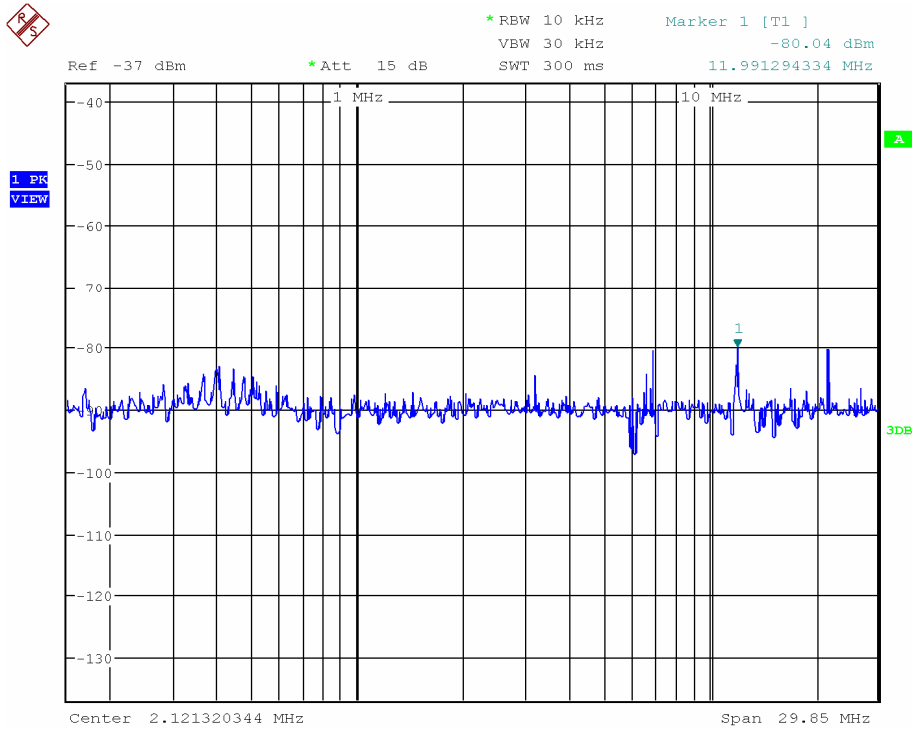
FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
51.8	38.15	54
1554.5	48.59	

FREQUENCY BAND : 156MHz – 165MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
164.4	14.97	30

Result : **COMPLIANT**

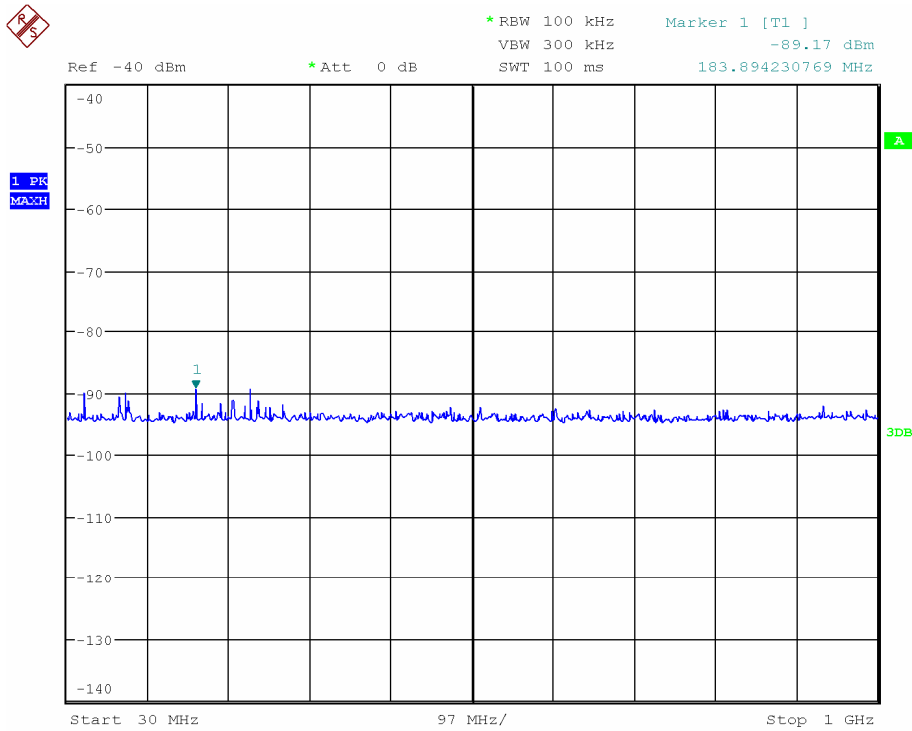
Comments :

13.8.6. RADIATION GRAPHS

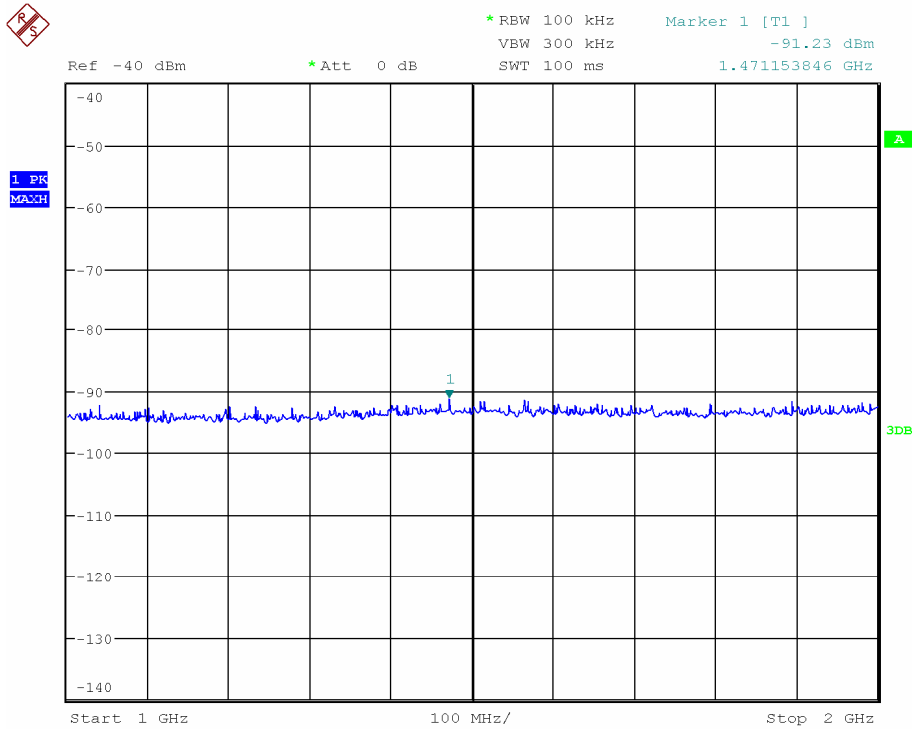


Date: 5.APR.2011 09:56:35

HORIZONTAL POLARIZATION



Date: 22.MAR.2011 11:19:59



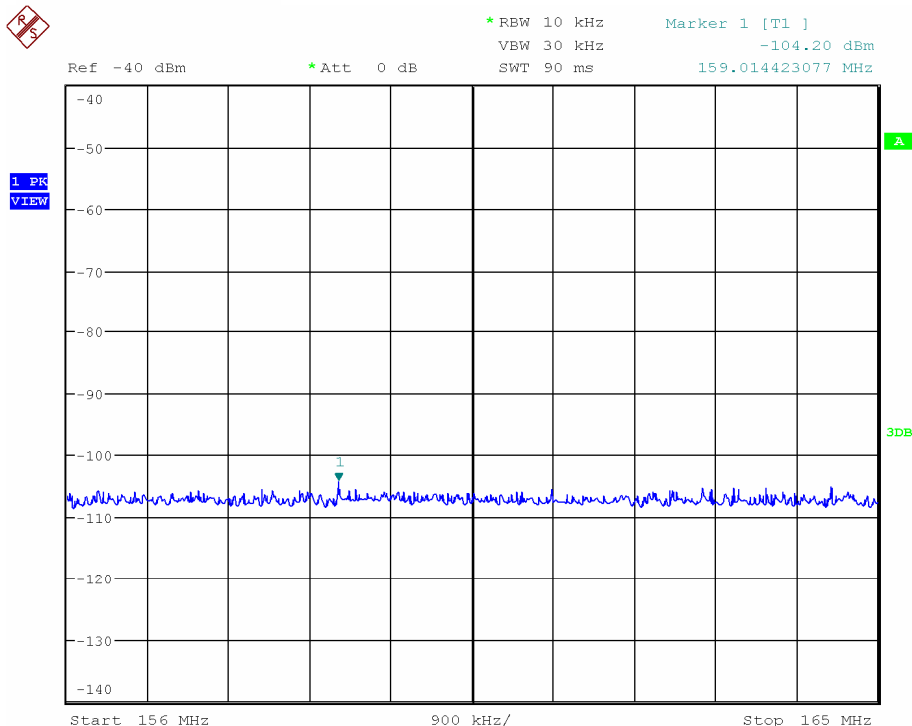
Date: 22.MAR.2011 13:50:20

Route de Coray - B.P. 648 - Ergué-Gabéric - 29552 Quimper cedex 9 - Téléphone : 33- 02 98 52 16 02 -

Télécopie : 33 02 98 52 14 19

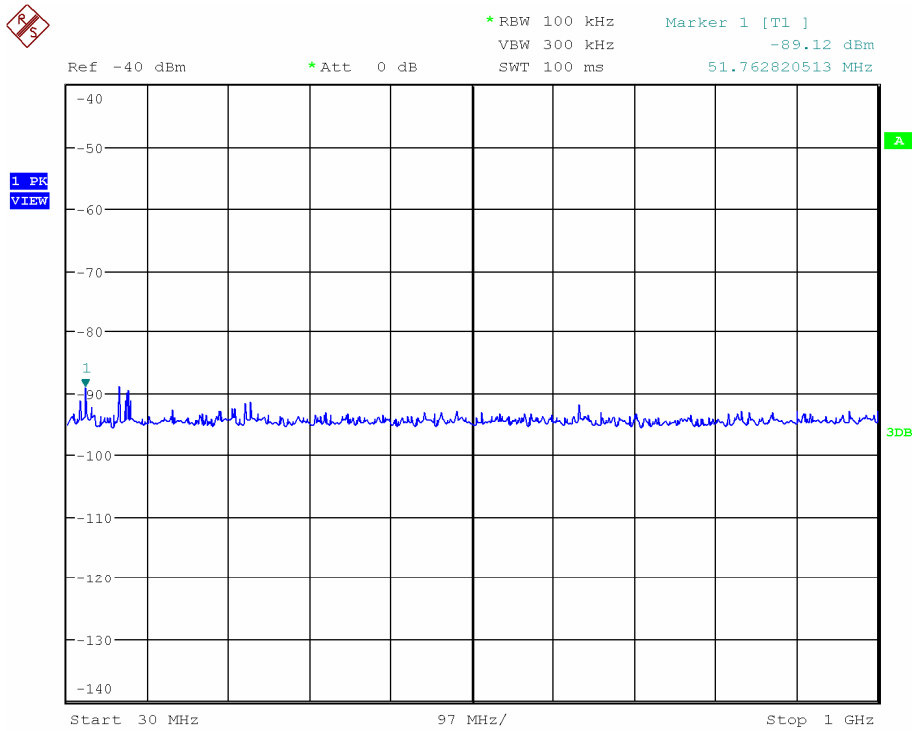
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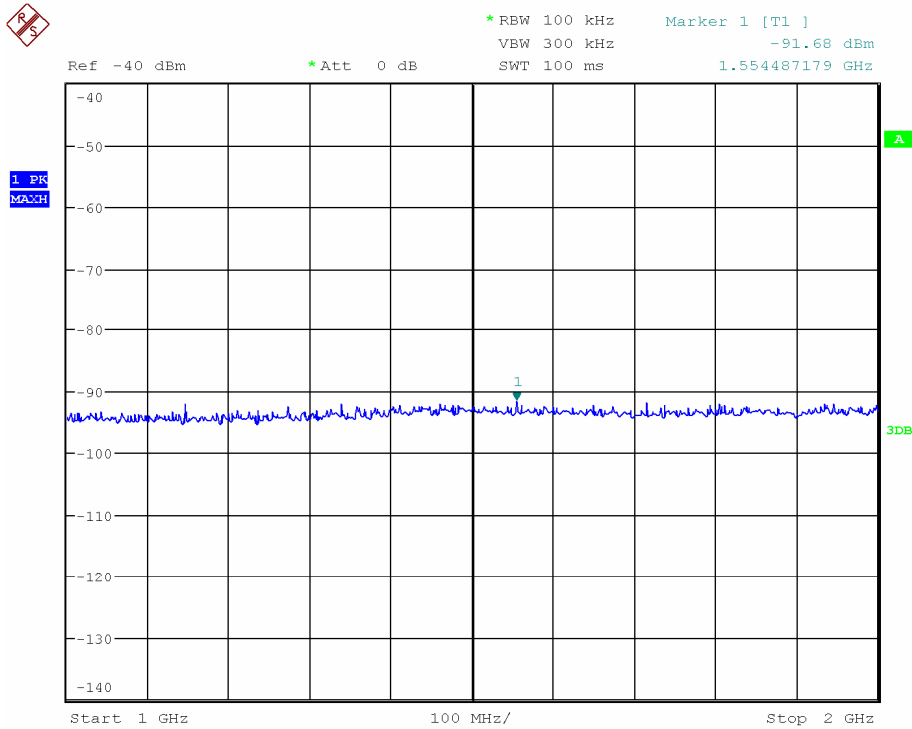


Date: 22.MAR.2011 11:24:14

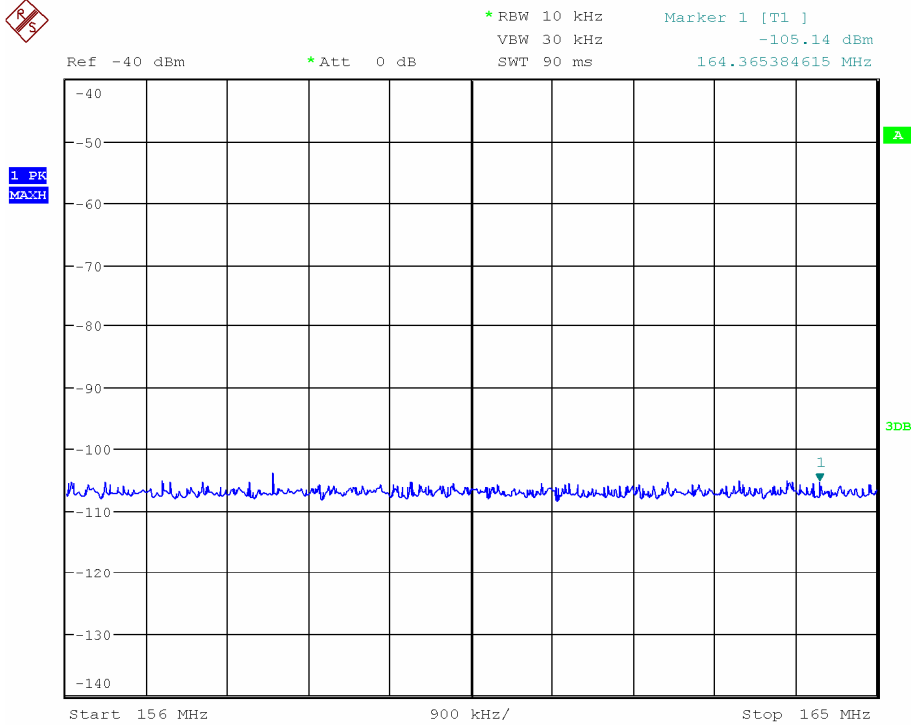
VERTICAL POLARIZATION



Date: 22.MAR.2011 11:59:47



Date: 22.MAR.2011 13:34:48



Date: 22.MAR.2011 11:58:16

13.8.7. RECEIVER 162.025MHZ : ON 24 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (KHz)	Results	Limits
12.1	11.24	80 – 52 52 – 34

HORIZONTAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
227.4	28.76	54
1557.7	48.71	

FREQUENCY BAND : 156MHz – 165MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
156.5	14.91	30

VERTICAL POLARIZATION

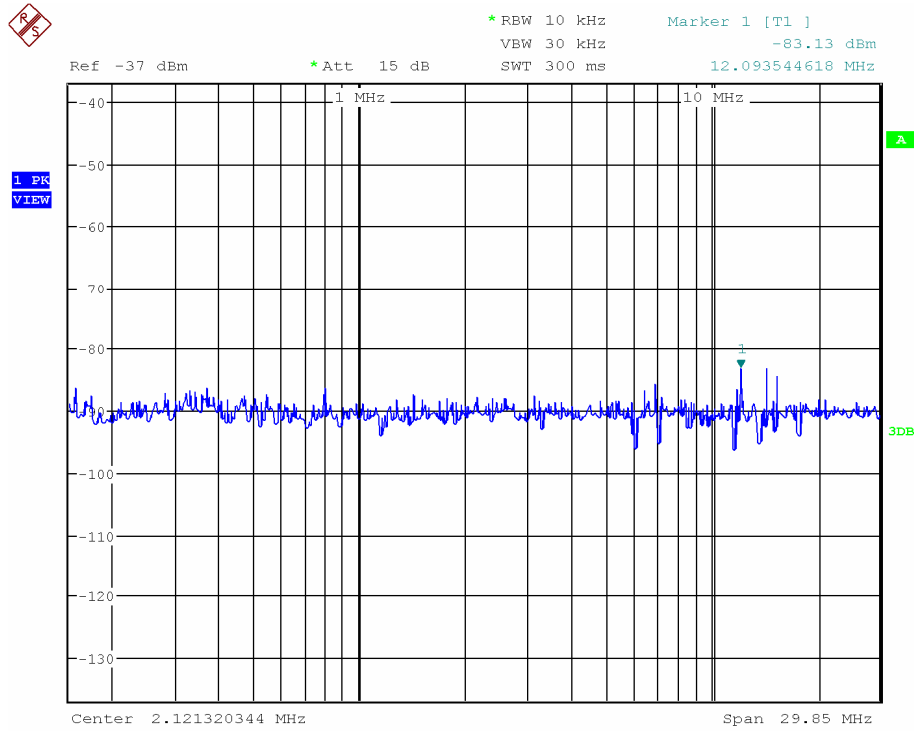
FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
43.99	46.12	54
1543.3	48.32	

FREQUENCY BAND : 156MHz – 165MHz SPURIOUS EMISSION LEVELS DB μ V/m AT 3m		
Frequency (MHz)	Results	Limits
159.5	14.96	30

Result :	COMPLIANT
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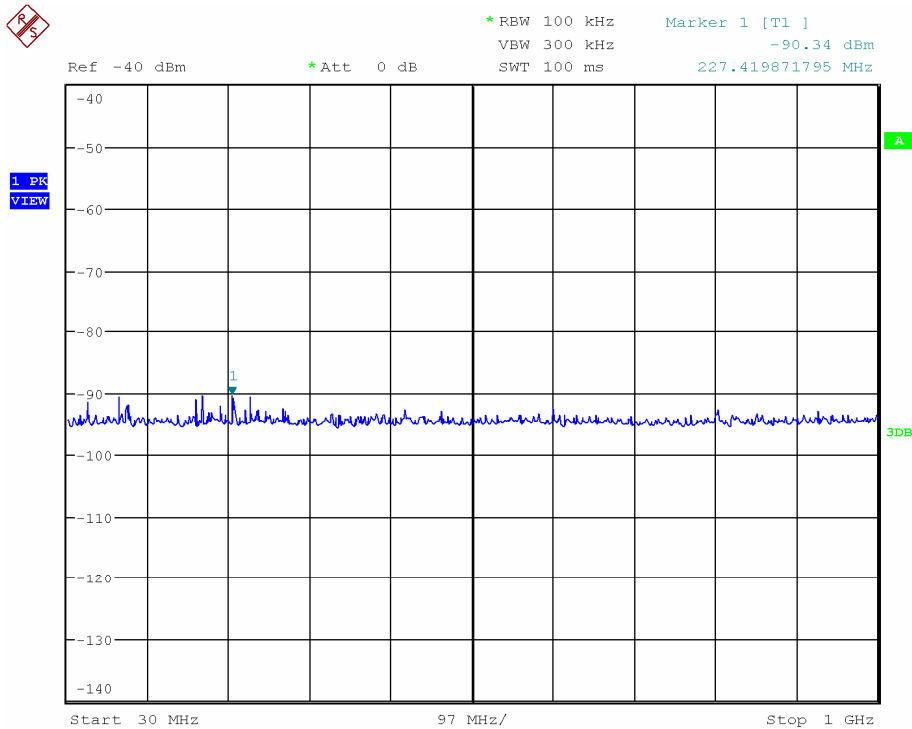
Comments :

13.8.8. RADIATION GRAPHS

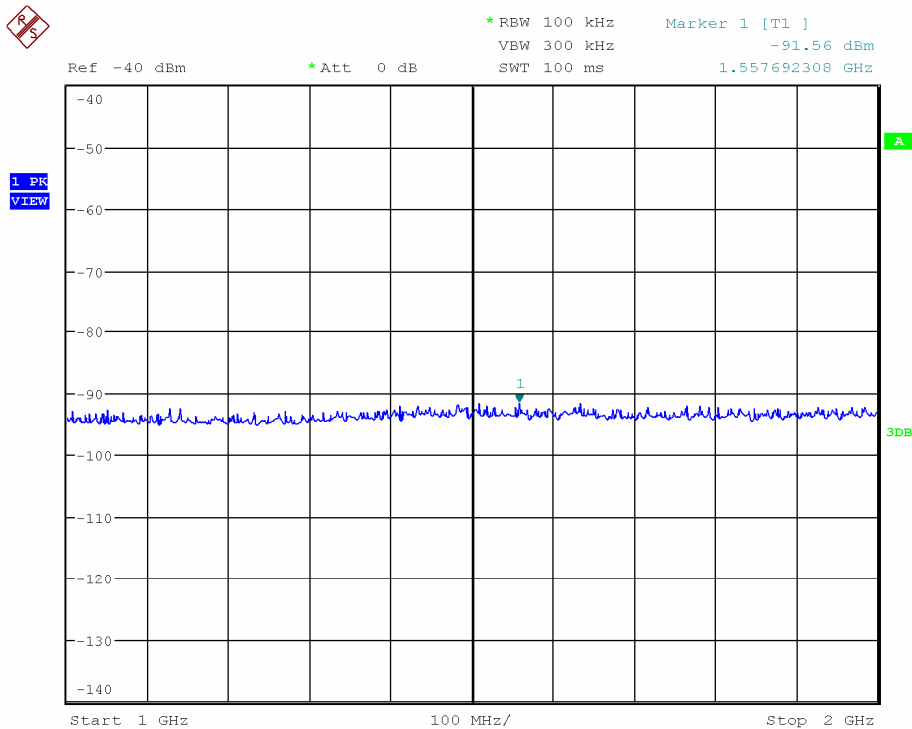


Date: 5.APR.2011 09:53:42

HORIZONTAL POLARIZATION



Date: 22.MAR.2011 11:29:24



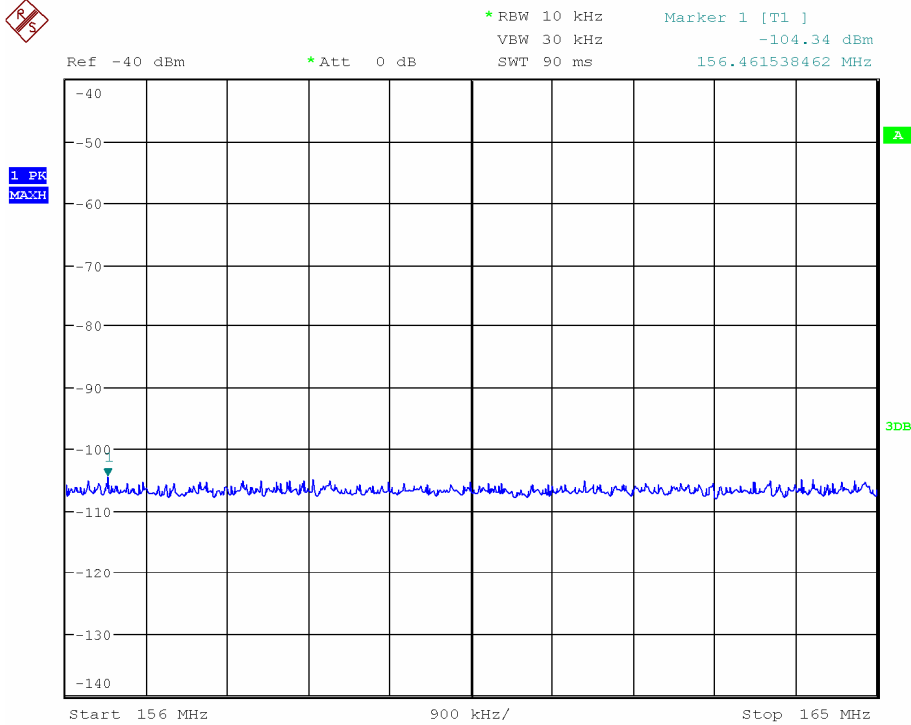
Date: 22.MAR.2011 13:47:52

Route de Coray - B.P. 648 - Ergué-Gabéric - 29552 Quimper cedex 9 - Téléphone : 33- 02 98 52 16 02 -

Télécopie : 33 02 98 52 14 19

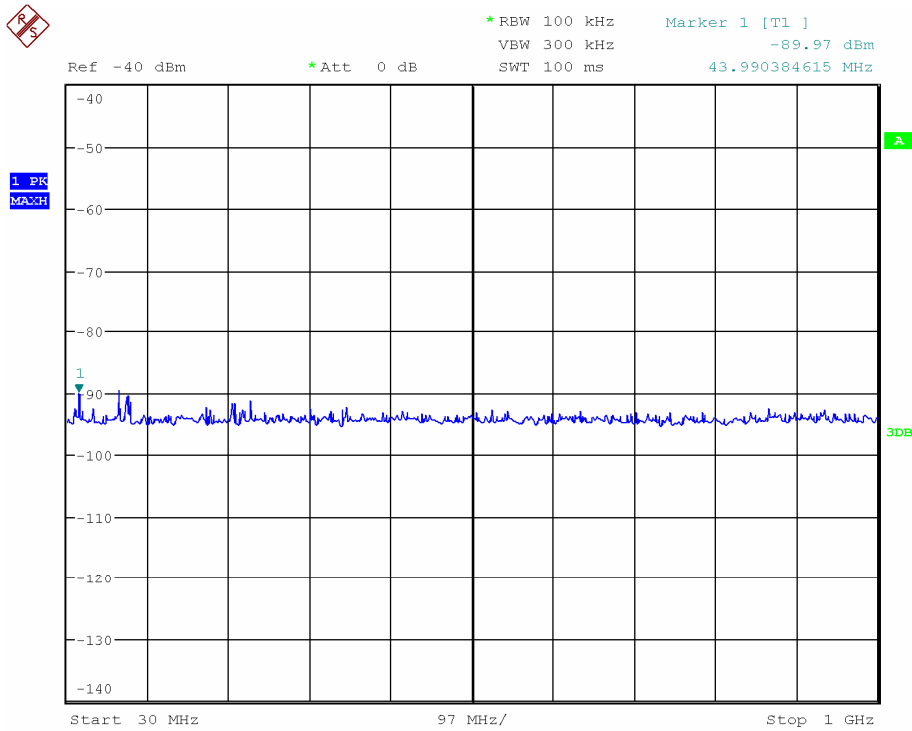
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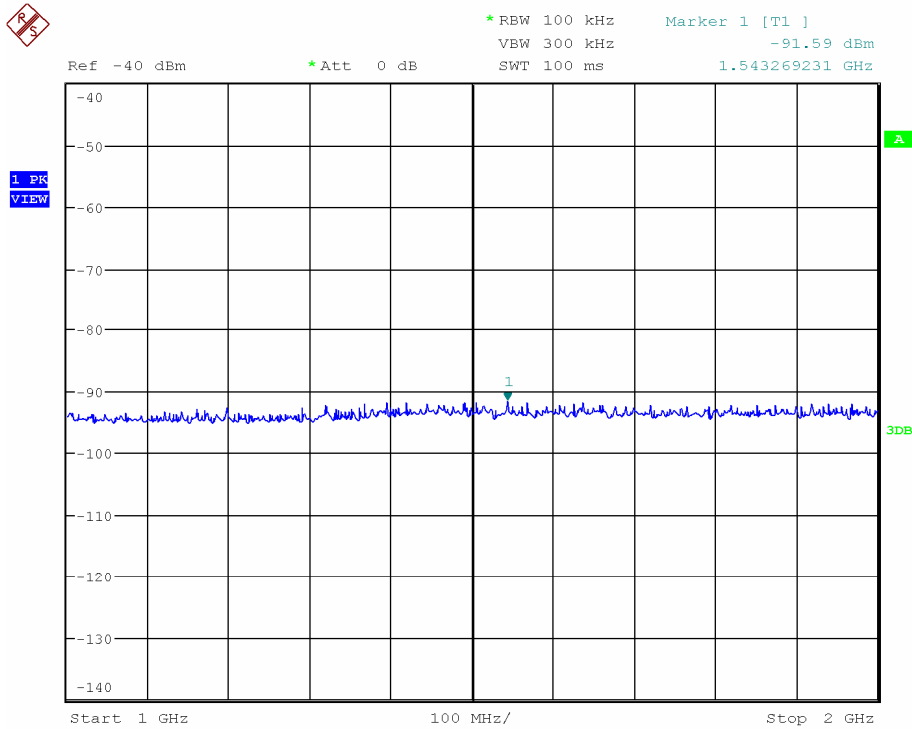


Date: 22.MAR.2011 11:27:49

VERTICAL POLARIZATION



Date: 22.MAR.2011 11:54:27



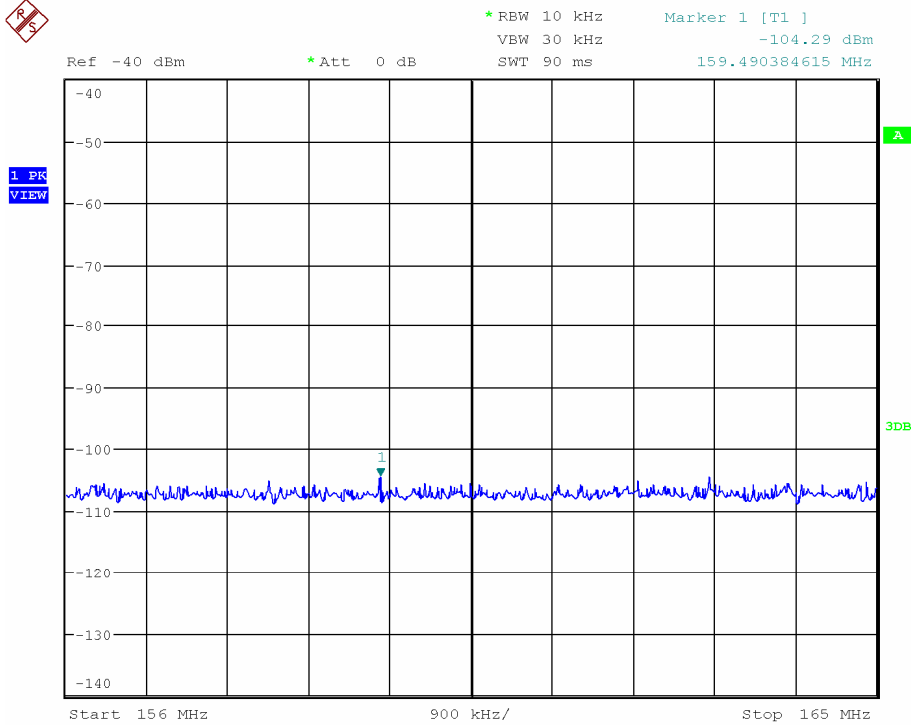
Date: 22.MAR.2011 13:36:47

Route de Coray - B.P. 648 - Ergué-Gabéric - 29552 Quimper cedex 9 - Téléphone : 33- 02 98 52 16 02 -

Télécopie : 33 02 98 52 14 19

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Date: 22.MAR.2011 11:55:57

13.8.9. TRANSMITTER 161.975MHZ – 2W: ON 12 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (KHz)	Results	Limits
7.27	9.37	80 – 52 52 – 34

HORIZONTAL POLARIZATION

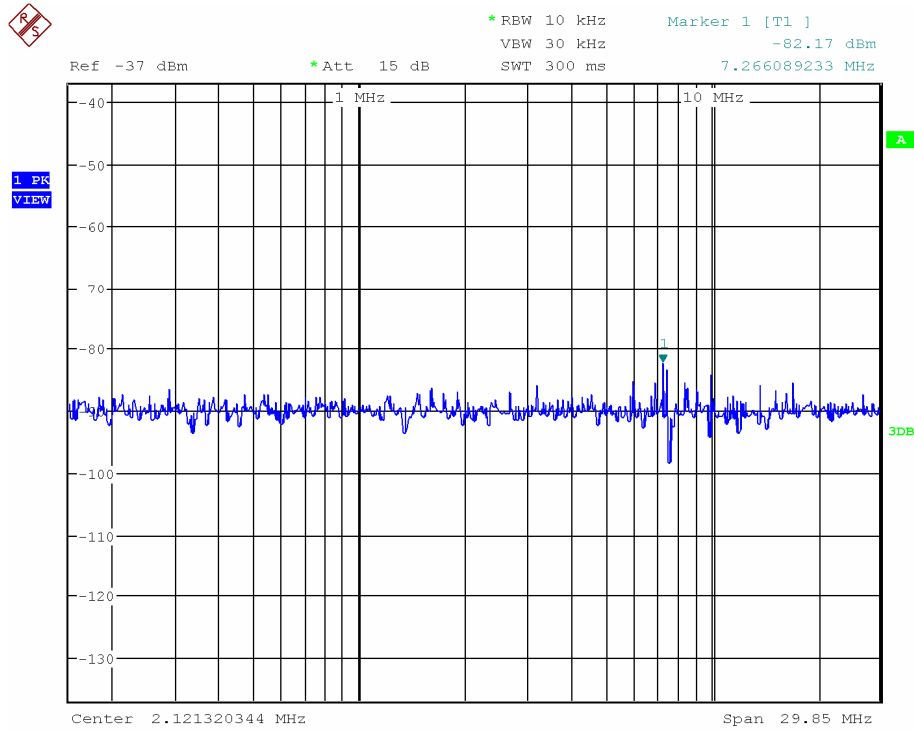
FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	51.70	54
1650.6	49.21	

VERTICAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	50.34	54
1552.9	48.75	

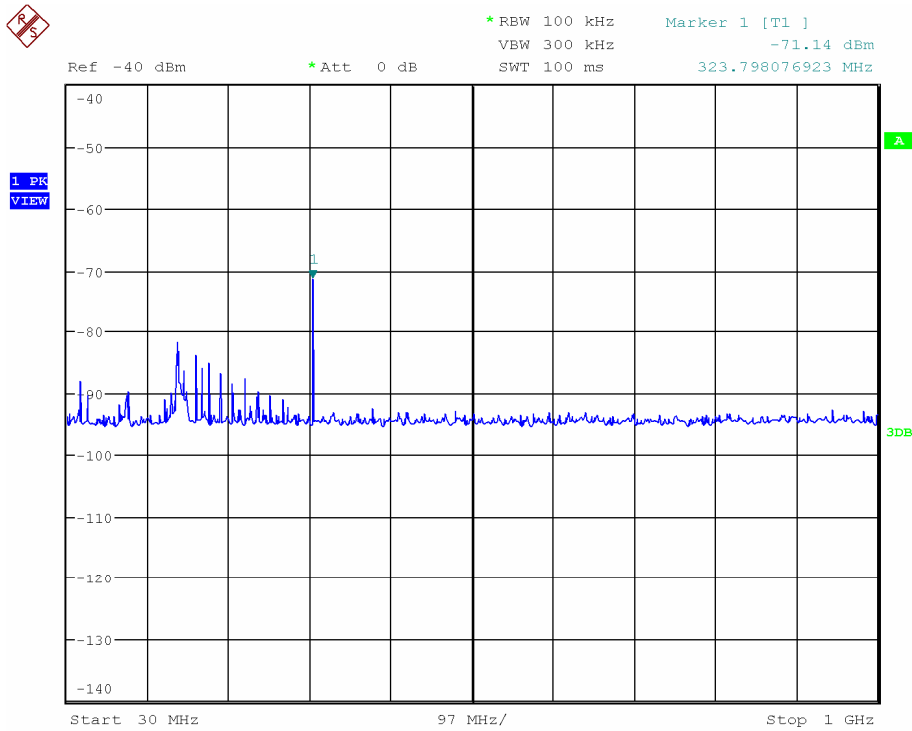
Result : **COMPLIANT**
Comments :

13.8.10. RADIATION GRAPHS

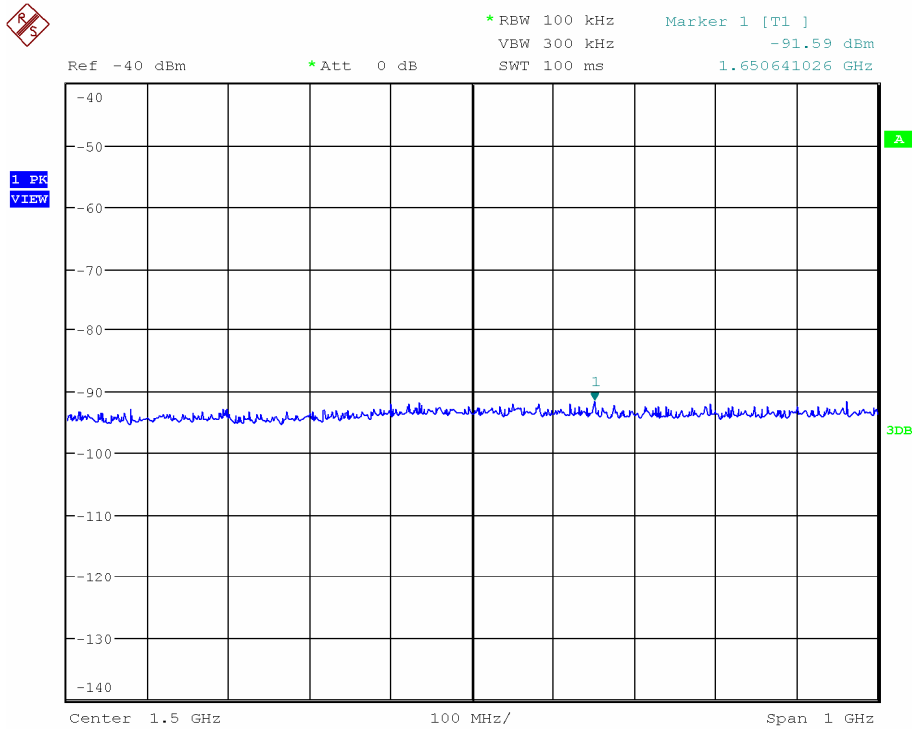


Date: 5.APR.2011 09:06:54

HORIZONTAL POLARIZATION



Date: 29.MAR.2011 14:56:26



Date: 23.MAR.2011 09:30:44

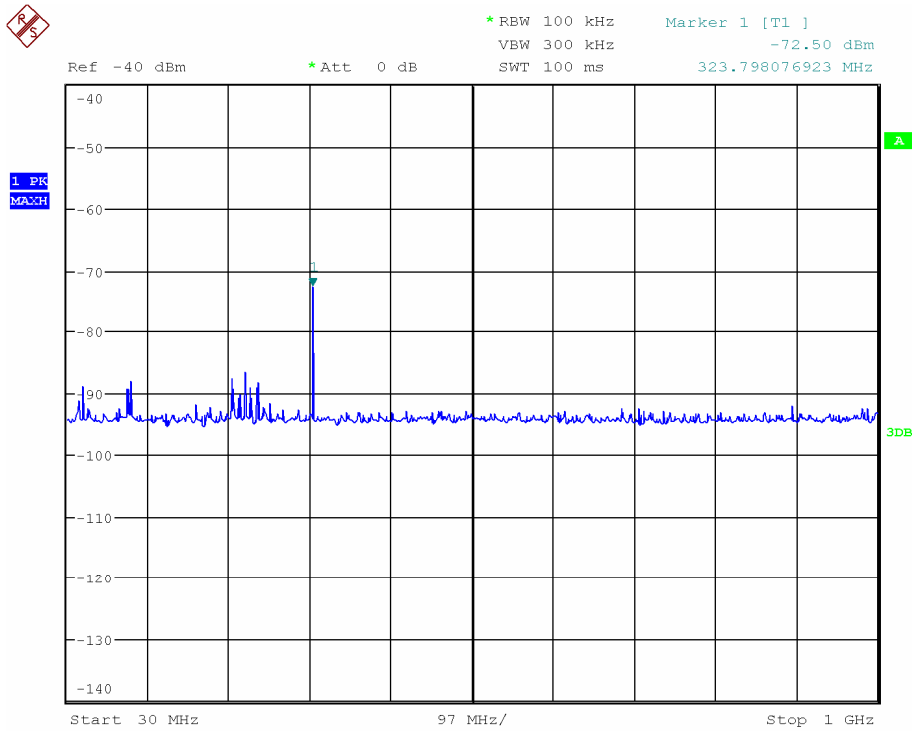
Route de Coray - B.P. 648 - Ergué-Gabéric - 29552 Quimper cedex 9 - Téléphone : 33- 02 98 52 16 02 -

Télécopie : 33 02 98 52 14 19

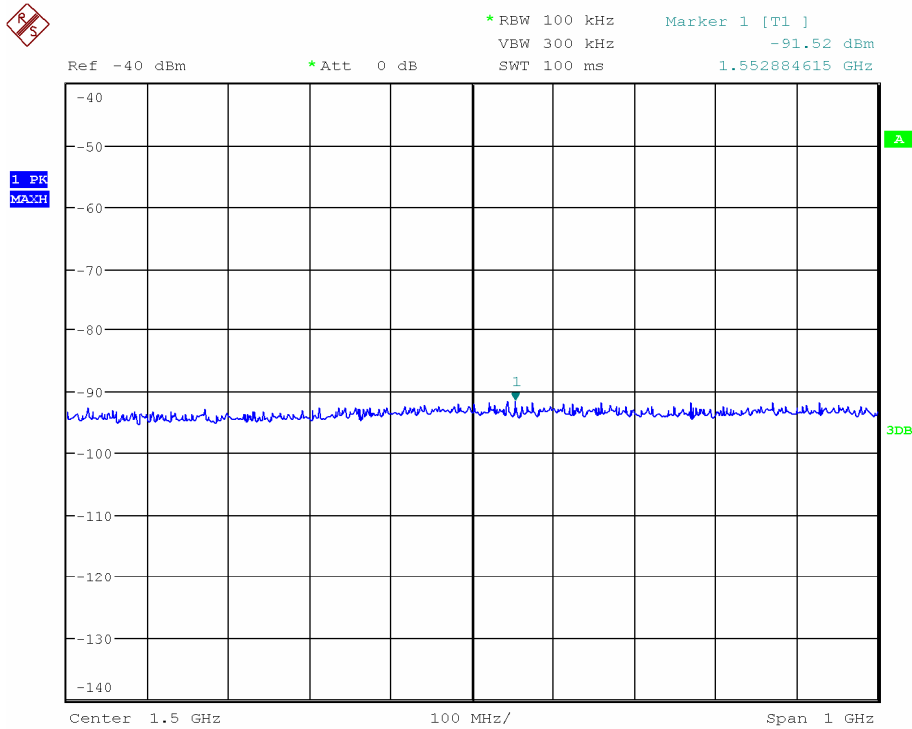
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VERTICAL POLARIZATION



Date: 29.MAR.2011 14:54:12



Date: 23.MAR.2011 09:24:22

Route de Coray - B.P. 648 - Ergué-Gabéric - 29552 Quimper cedex 9 - Téléphone : 33- 02 98 52 16 02 -

Télécopie : 33 02 98 52 14 19

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13.8.11. TRANSMITTER 161.975MHZ – 2W: ON 24 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (KHz)	Results	Limits
7.5	12.94	80 – 52 52 – 34

HORIZONTAL POLARIZATION

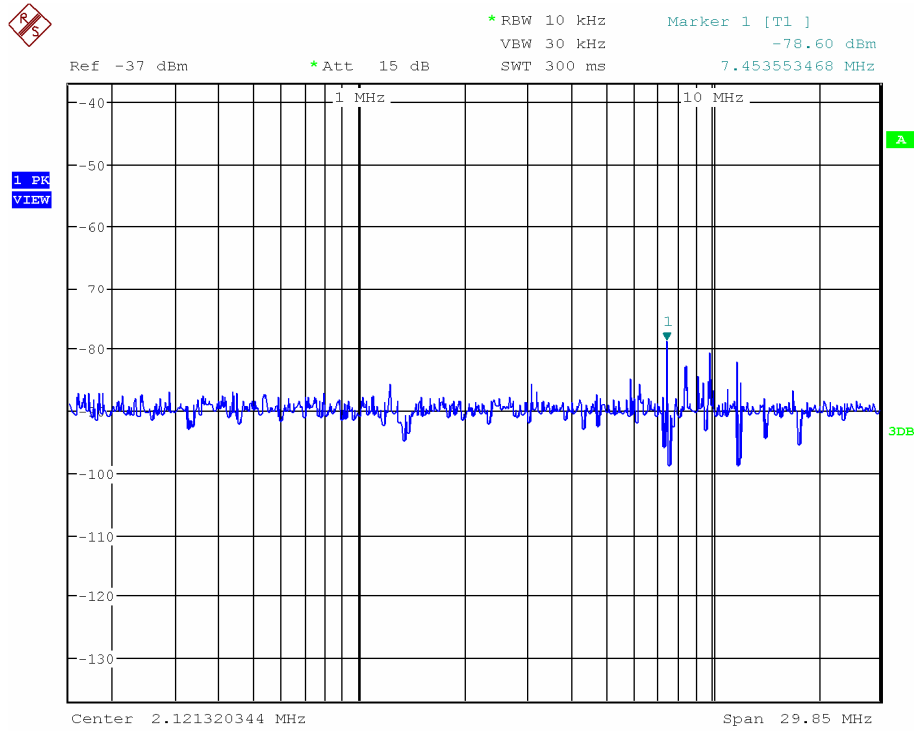
FREQUENCY BAND : 30MHz – 2GHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	47.18	54
1418.3	47.01	

VERTICAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	53.49	54
1415.1	46.88	

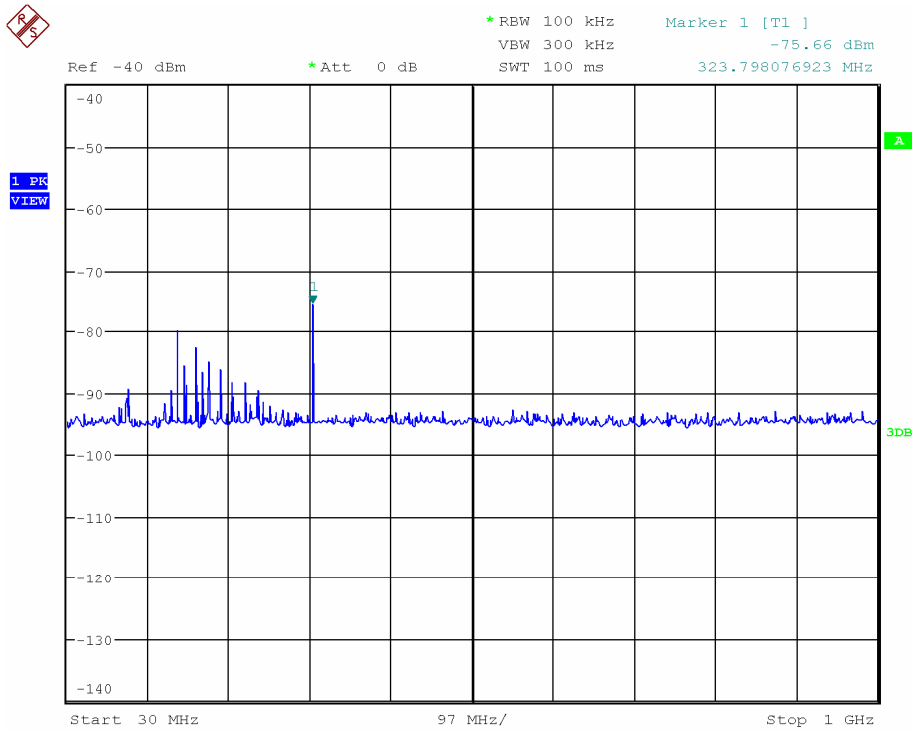
Result : **COMPLIANT****Comments :**

13.8.12. RADIATION GRAPHS

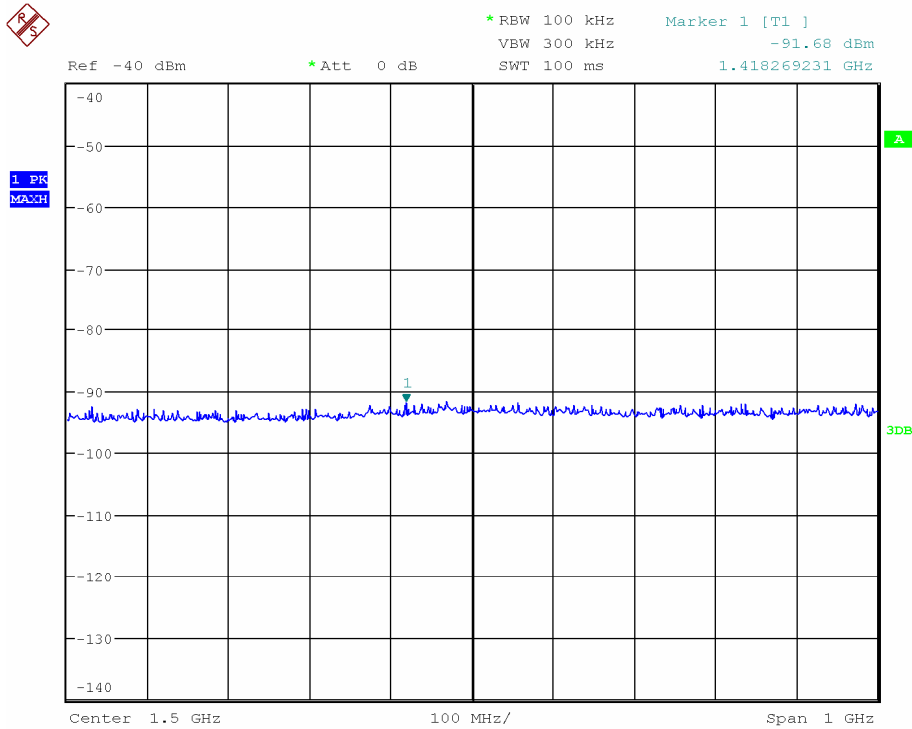


Date: 5.APR.2011 09:10:34

HORIZONTAL POLARIZATION

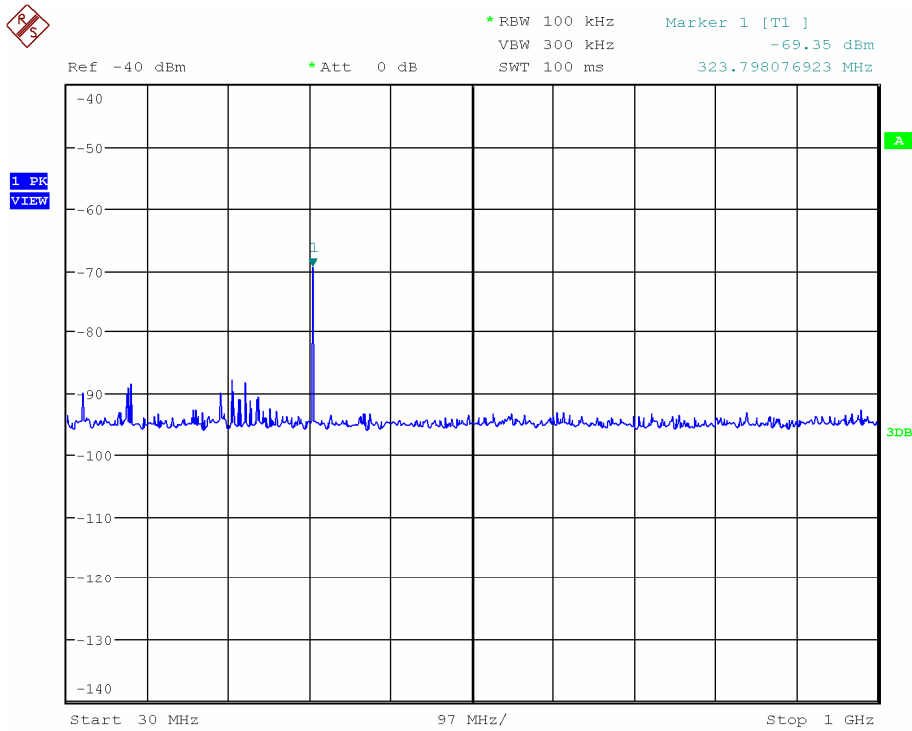


Date: 29.MAR.2011 14:58:28

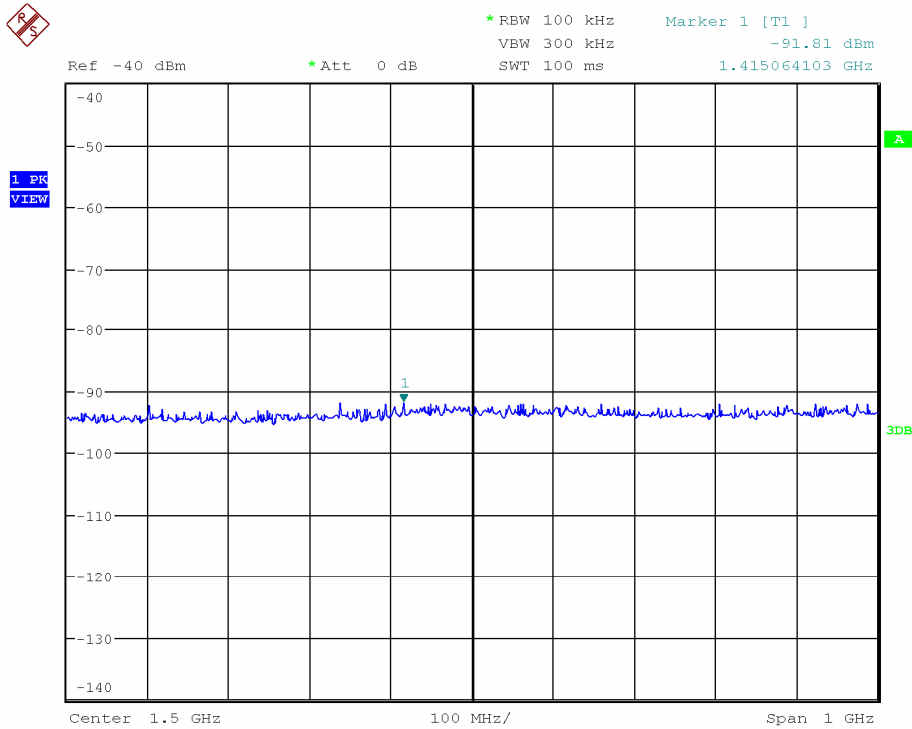


Date: 23.MAR.2011 09:28:44

VERTICAL POLARIZATION



Date: 29.MAR.2011 14:50:10



Date: 23.MAR.2011 09:26:18

13.8.13. TRANSMITTER 161.975MHZ – 12W: ON 12 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (KHz)	Results	Limits
1.46	11.68	80 – 52 52 – 34

HORIZONTAL POLARIZATION

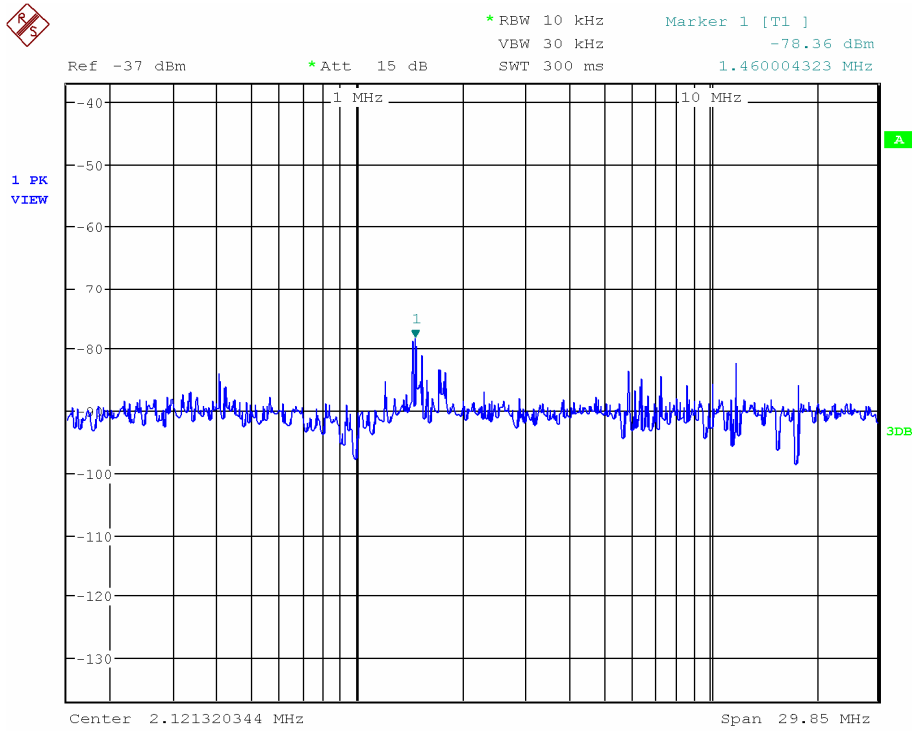
FREQUENCY BAND : 30MHz – 2GHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	44.48	54
1500.0	48.05	

VERTICAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	47.50	54
1102.5	43.96	

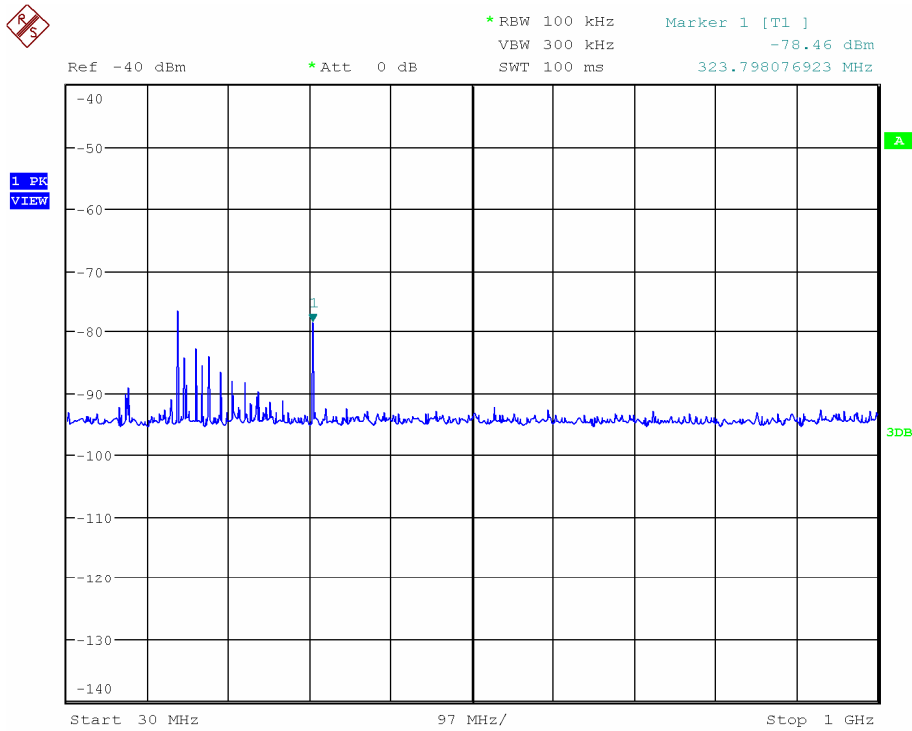
Result : **COMPLIANT****Comments :**

13.8.14. RADIATION GRAPHS

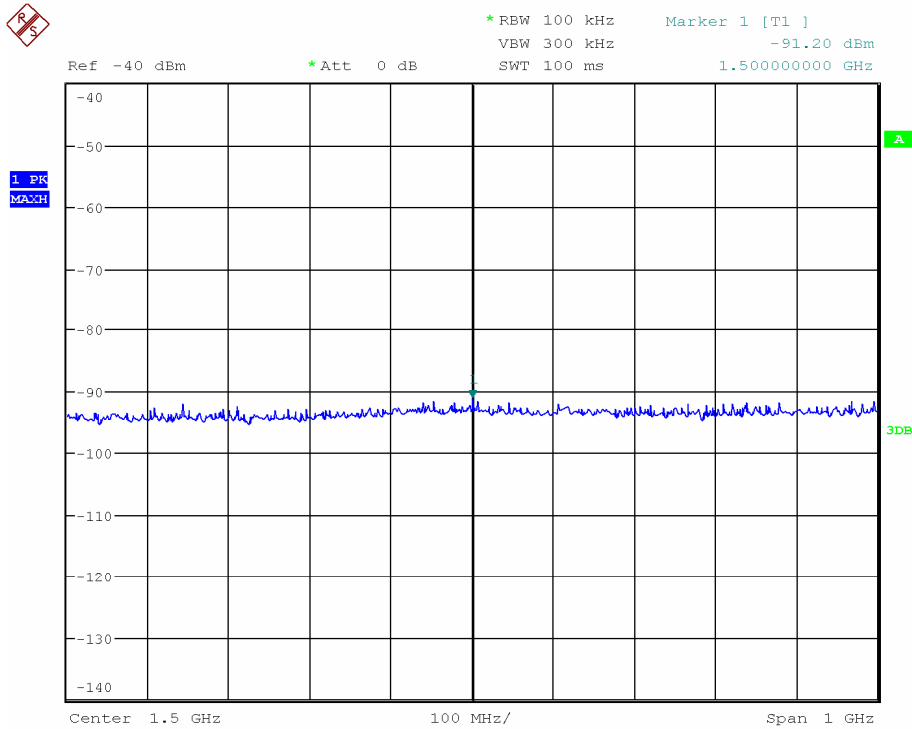


Date: 5.APR.2011 09:01:26

HORIZONTAL POLARIZATION



Date: 29.MAR.2011 14:38:52



Date: 23.MAR.2011 09:09:05

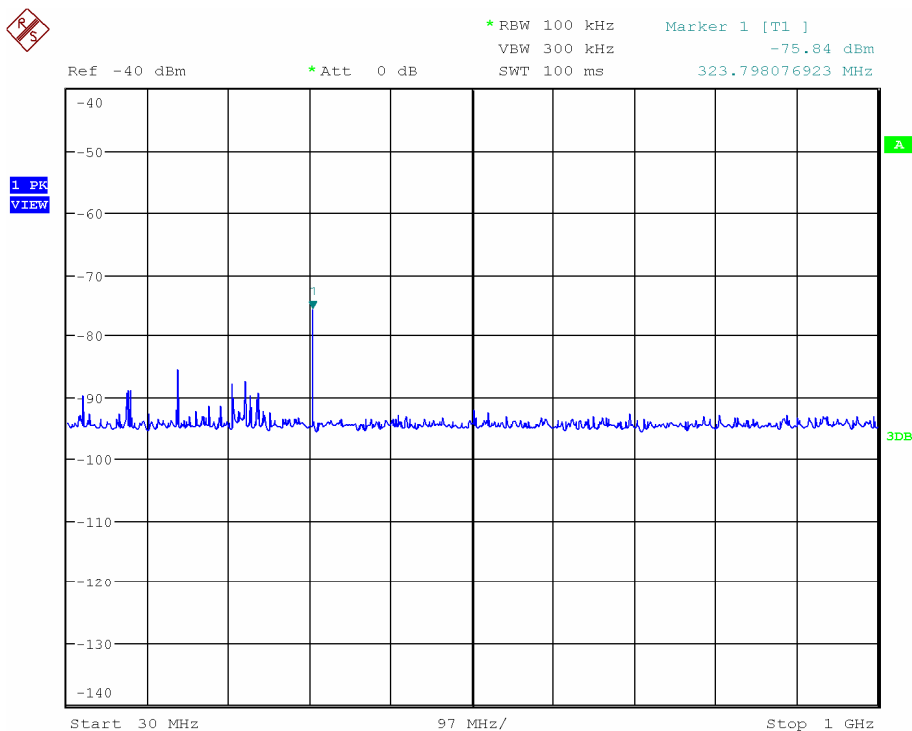
Route de Coray - B.P. 648 - Ergué-Gabéric - 29552 Quimper cedex 9 - Téléphone : 33- 02 98 52 16 02 -

Télécopie : 33 02 98 52 14 19

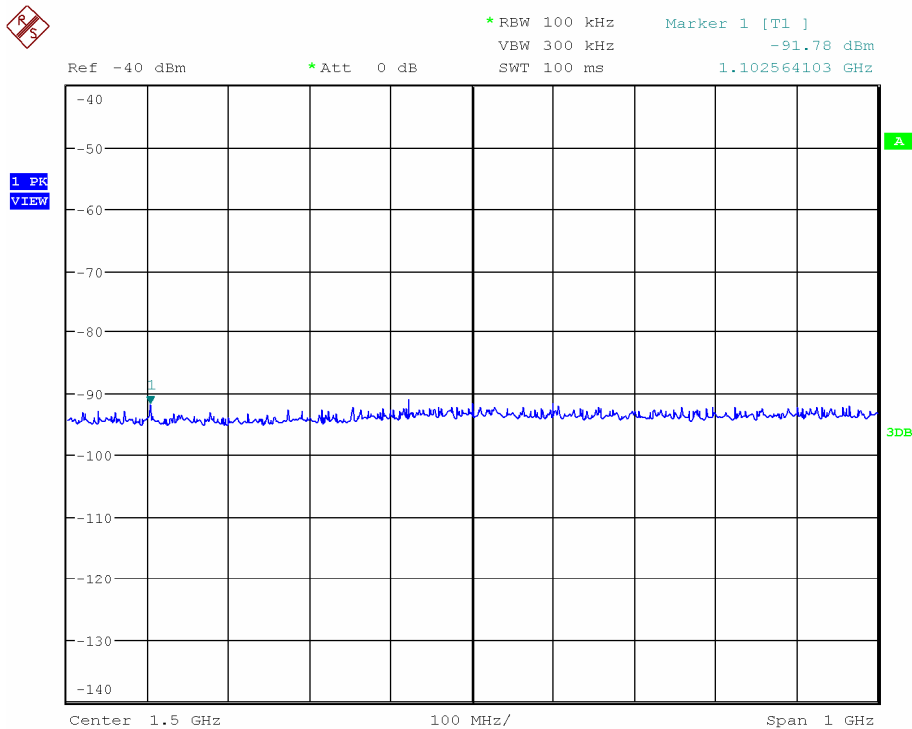
S.A.R.L. au capital de 38 500 € - R.C.S. B 380 039 073 Quimper

e-mail : KENTA.ELECTRONIC@wanadoo.fr - Web : KENTA-ELECTRONIC.com

VERTICAL POLARIZATION



Date: 29.MAR.2011 14:41:11



Date: 23.MAR.2011 09:21:24

13.8.15. TRANSMITTER 161.975MHZ – 12W: ON 24 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (KHz)	Results	Limits
11.9	14.19	80 – 52 52 – 34

HORIZONTAL POLARIZATION

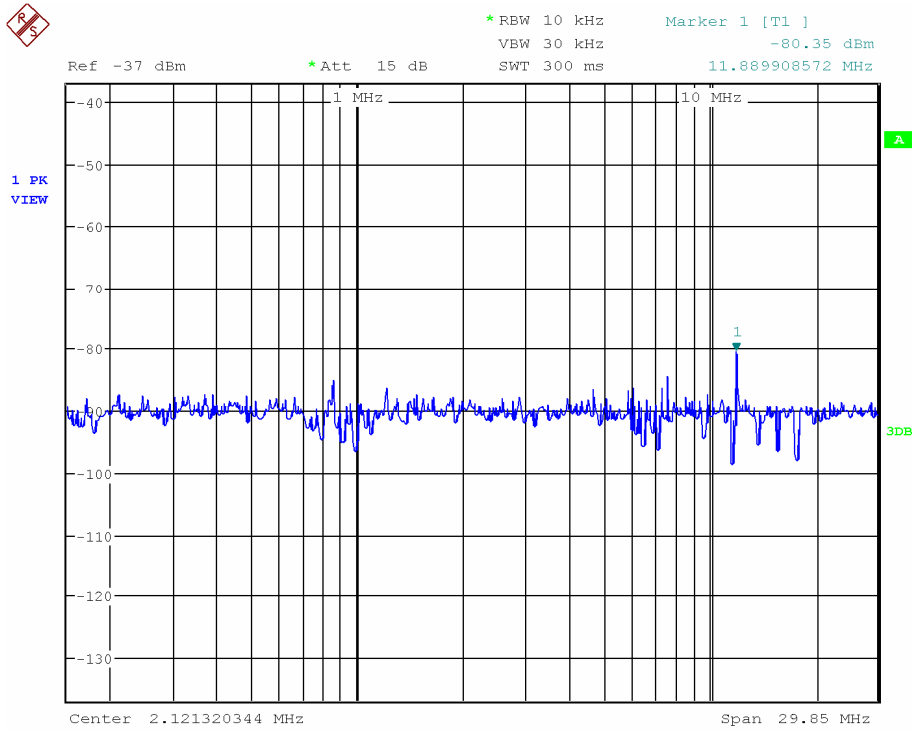
FREQUENCY BAND : 30MHz – 2GHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	40.82	54
1477.5	49.03	

VERTICAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	47.53	54
1709.9	49.27	

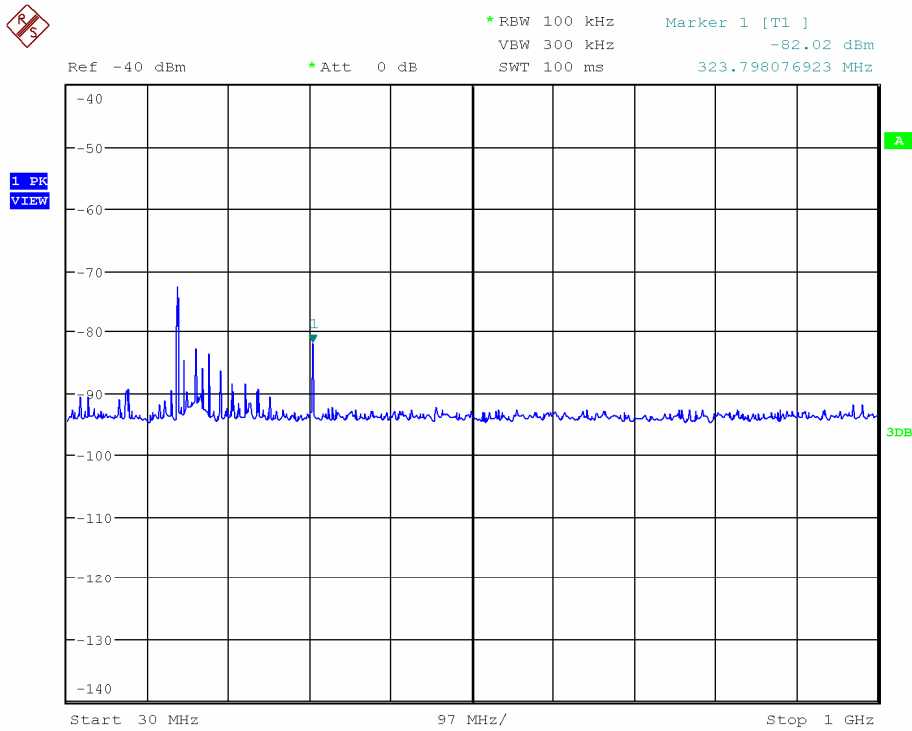
Result : **COMPLIANT****Comments :**

13.8.16. RADIATION GRAPHS

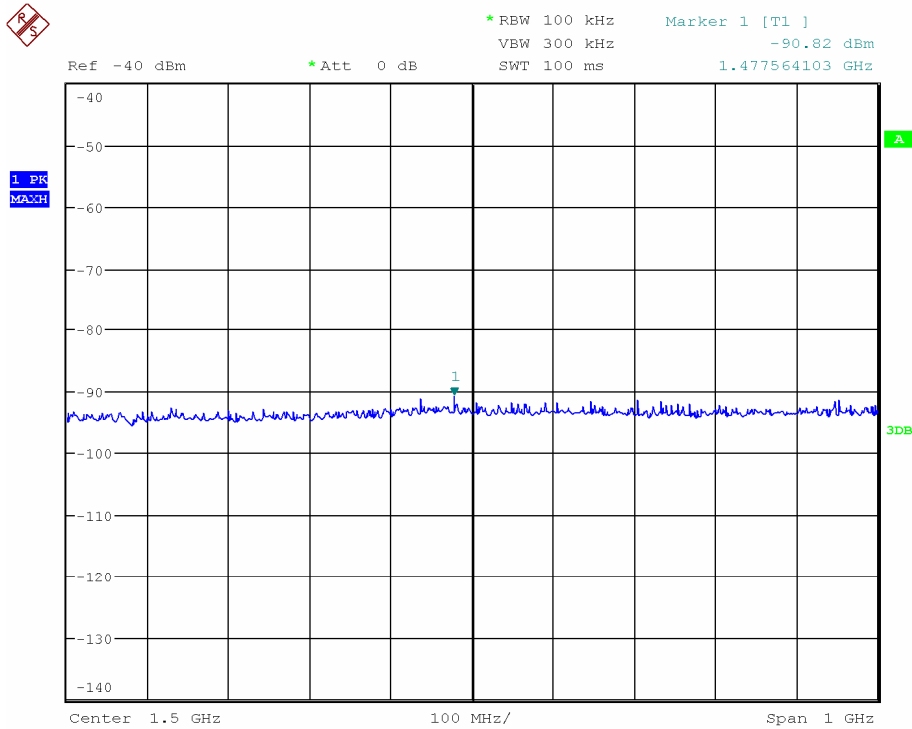


Date: 5.APR.2011 08:57:12

HORIZONTAL POLARIZATION



Date: 29.MAR.2011 14:36:34



Date: 23.MAR.2011 09:11:23

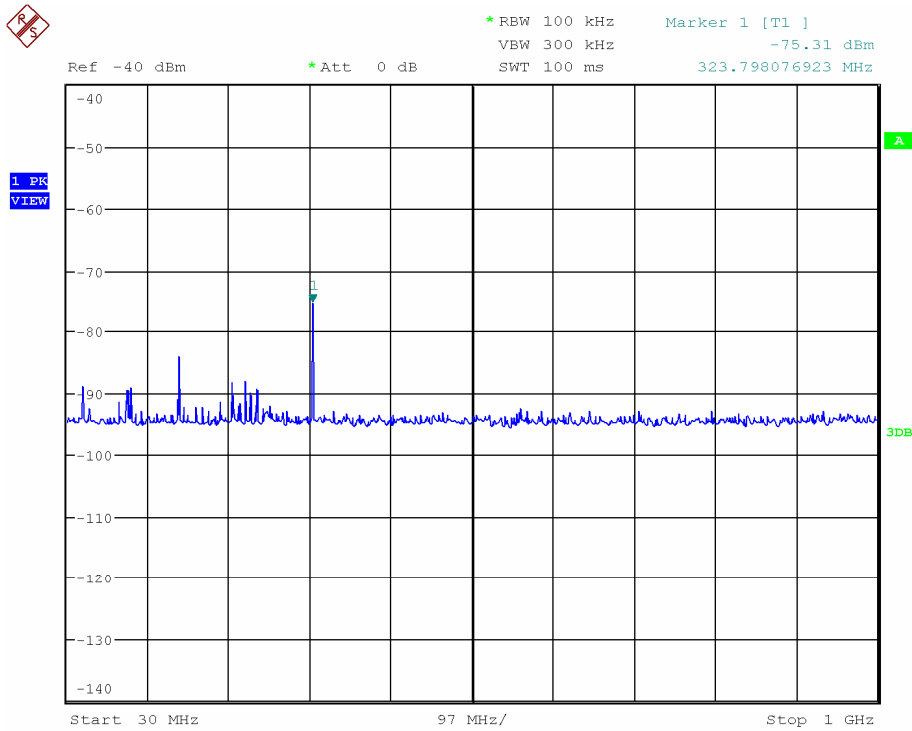
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Télécopie : 33 02 98 52 14 19

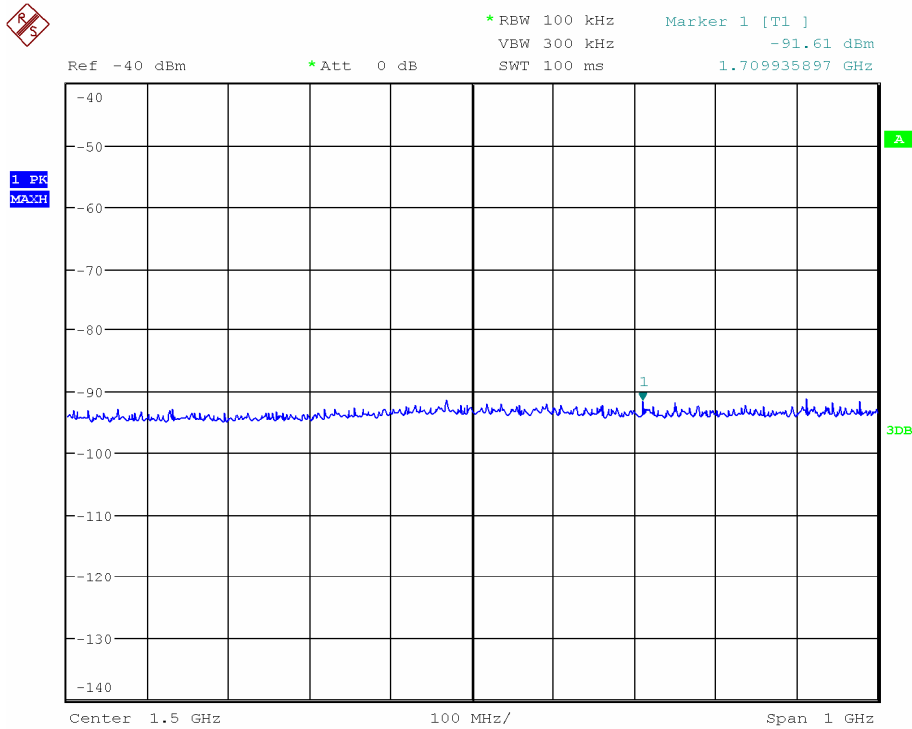
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VERTICAL POLARIZATION



Date: 29.MAR.2011 14:43:03



Date: 23.MAR.2011 09:13:37

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13.8.17. TRANSMITTER 162.025MHZ – 2W: ON 12 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (KHz)	Results	Limits
8.5	11.50	80 – 52 52 – 34

HORIZONTAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	44.39	54
1484.0	47.52	

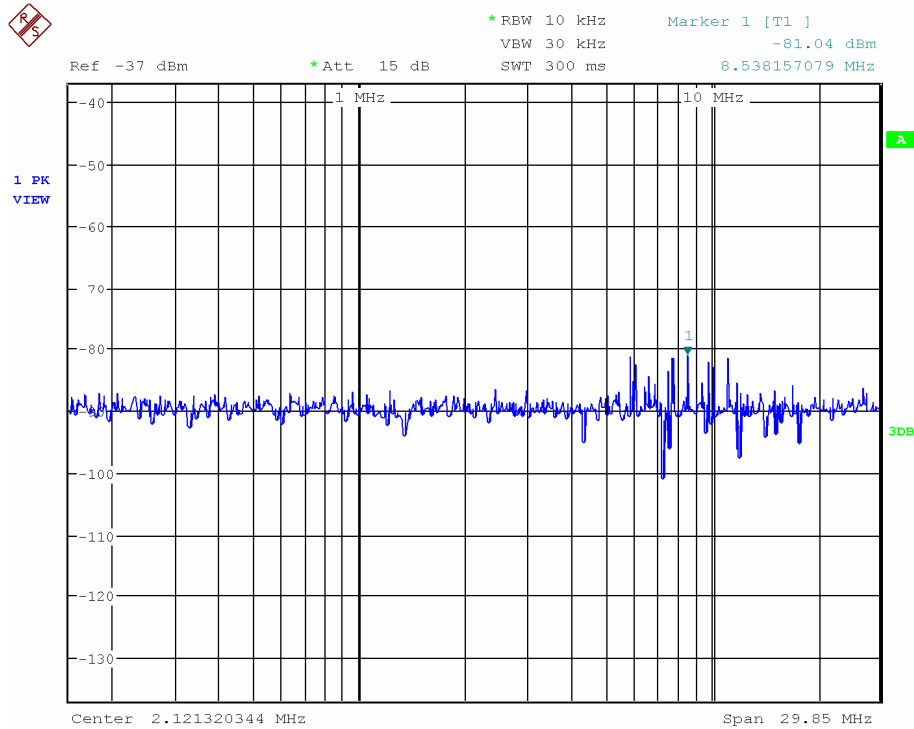
VERTICAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	52.07	54
1557.7	49.48	

Result : **COMPLIANT**

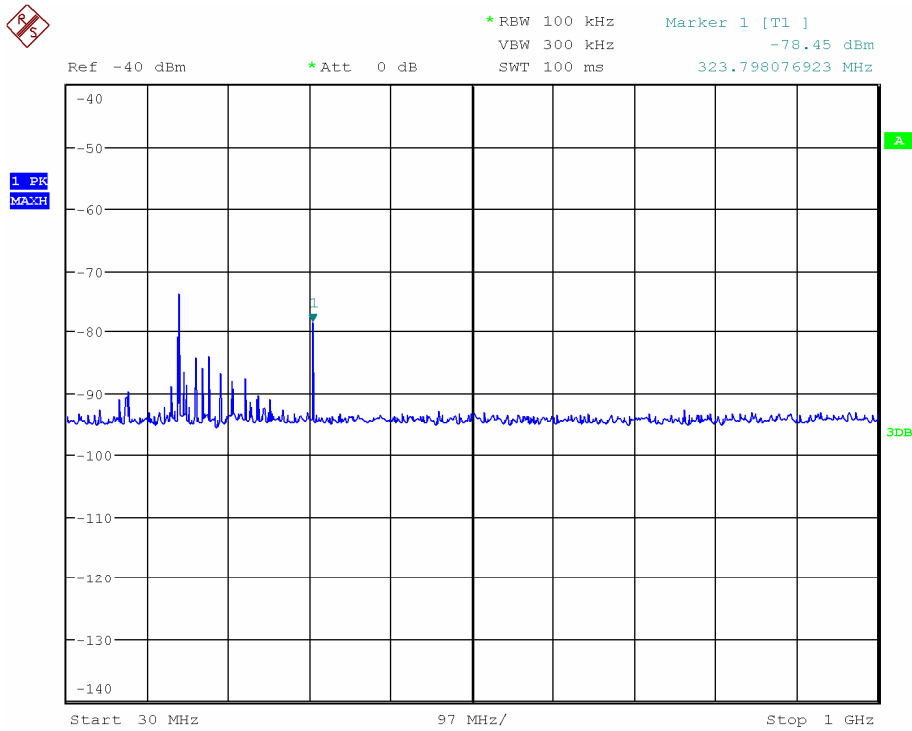
Comments :

13.8.18. RADIATION GRAPHS

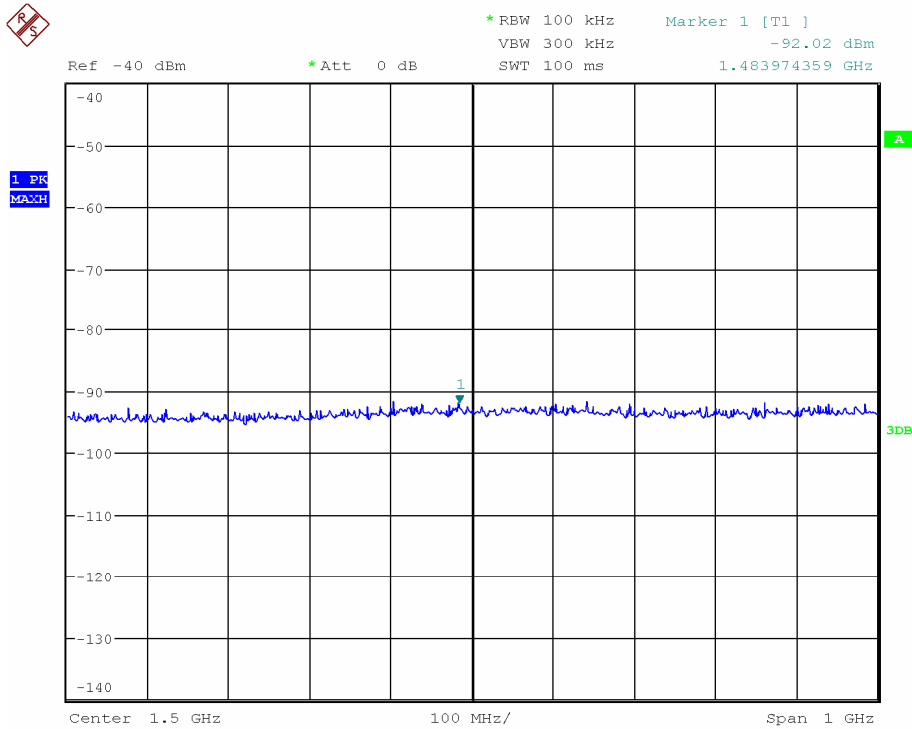


Date: 5.APR.2011 09:18:43

HORIZONTAL POLARIZATION

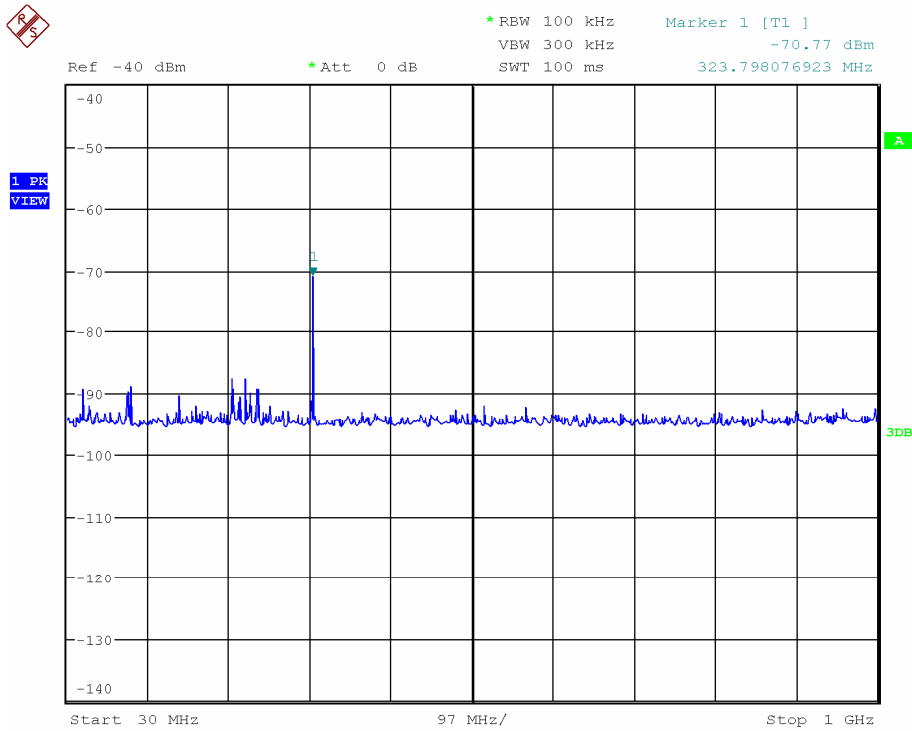


Date: 29.MAR.2011 15:03:01

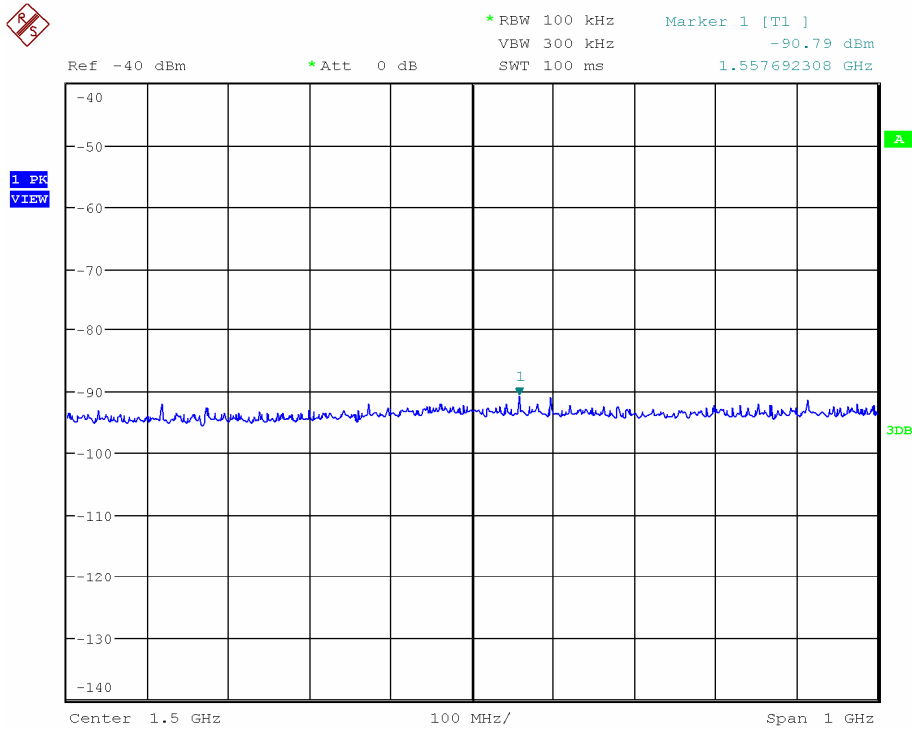


Date: 23.MAR.2011 09:34:27

VERTICAL POLARIZATION



Date: 29.MAR.2011 15:05:48



Date: 23.MAR.2011 09:41:34

13.8.19. TRANSMITTER 162.025MHZ – 2W: ON 24 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (KHz)	Results	Limits
7.5	10.96	80 – 52 52 – 34

HORIZONTAL POLARIZATION

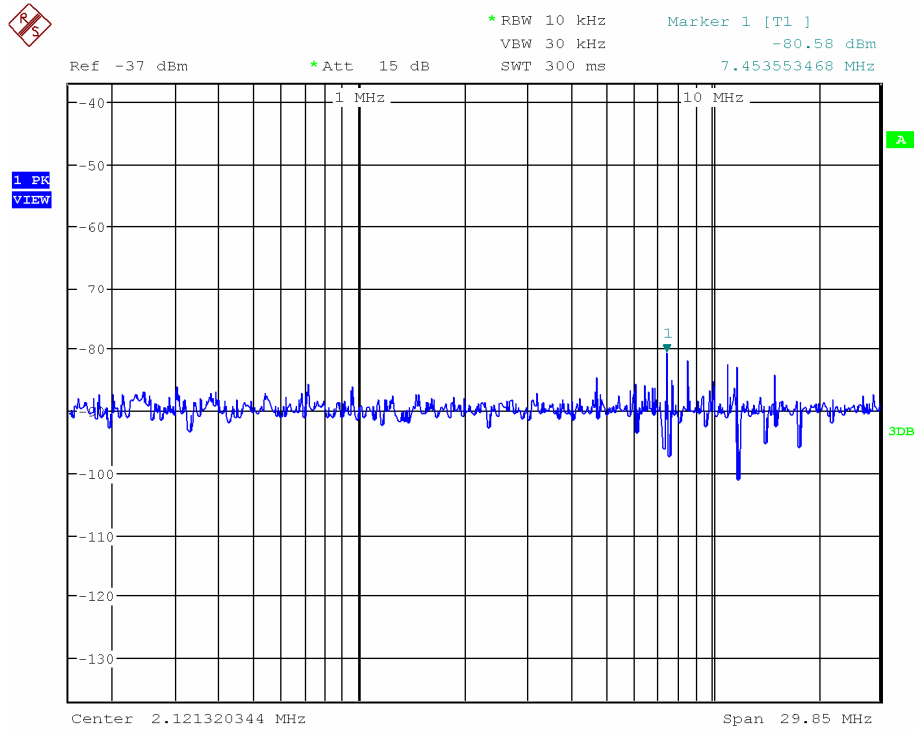
FREQUENCY BAND : 30MHz – 2GHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	50.14	54
1929.5	50.31	

VERTICAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz		
SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	53.82	54
1684.1	49.17	

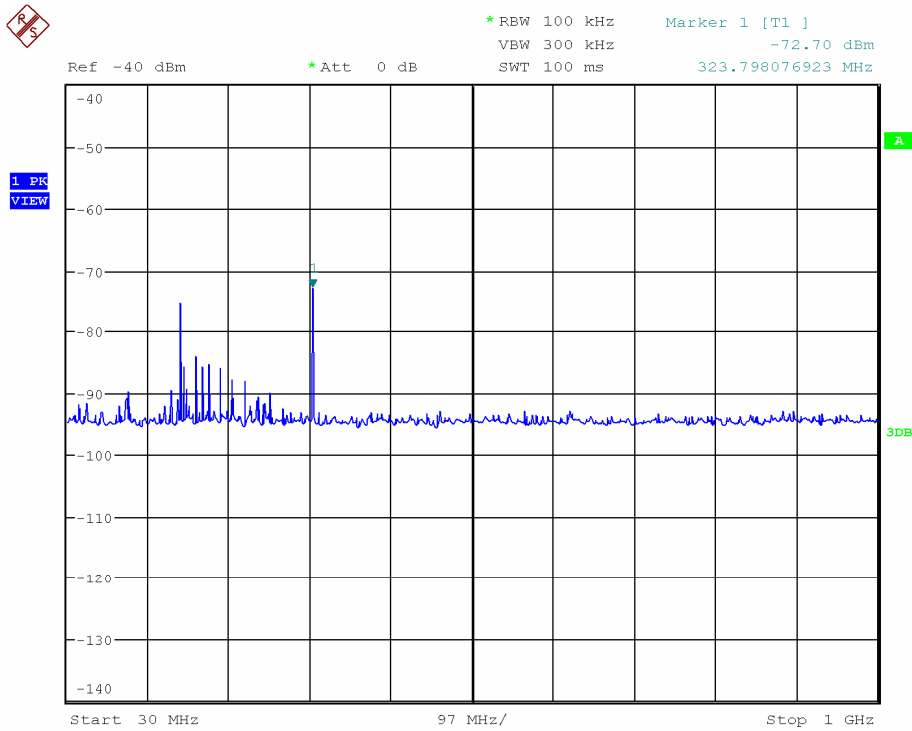
Result : **COMPLIANT****Comments :**

13.8.20. RADIATION GRAPHS

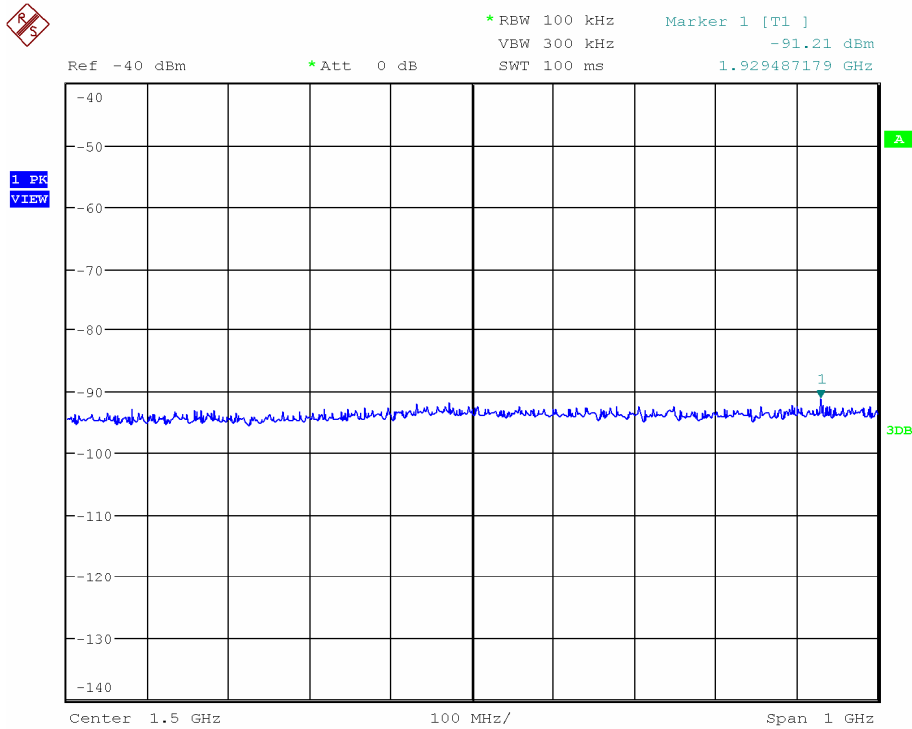


Date: 5.APR.2011 09:14:03

HORIZONTAL POLARIZATION



Date: 29.MAR.2011 15:01:01



Date: 23.MAR.2011 09:37:03

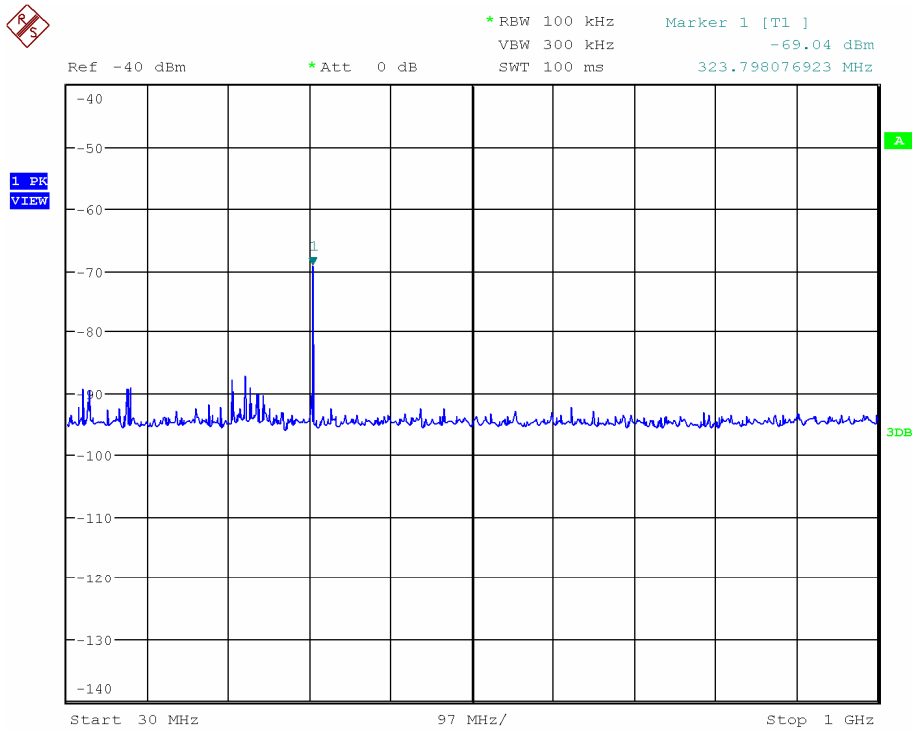
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Télécopie : 33 02 98 52 14 19

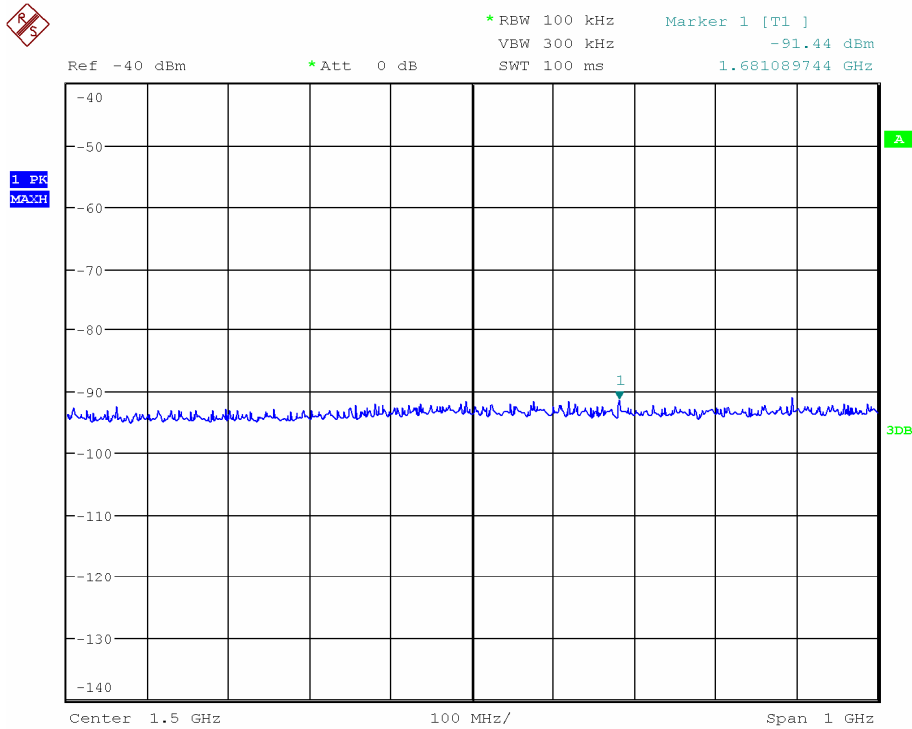
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VERTICAL POLARIZATION



Date: 29.MAR.2011 15:07:50



Date: 23.MAR.2011 09:39:31

13.8.21. TRANSMITTER 162.025MHZ – 12W: ON 12 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (KHz)	Results	Limits
11.9	14.19	80 – 52 52 – 34

HORIZONTAL POLARIZATION

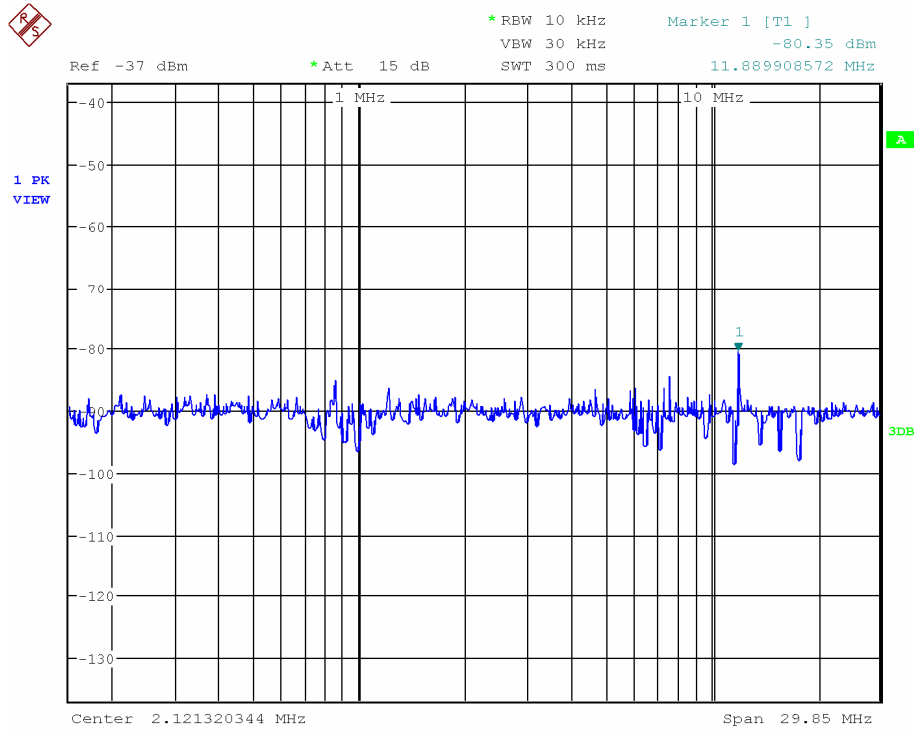
FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	37.17	54
1613.7	48.96	

VERTICAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	47.29	54
1455.1	47.63	

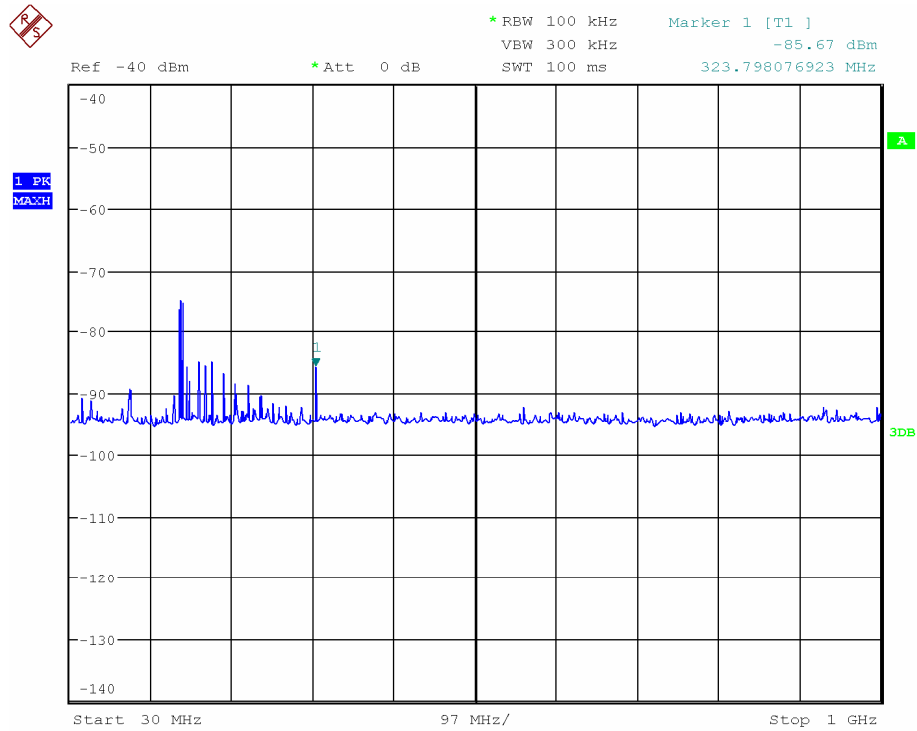
Result : **COMPLIANT**
Comments :

13.8.22. RADIATION GRAPHS

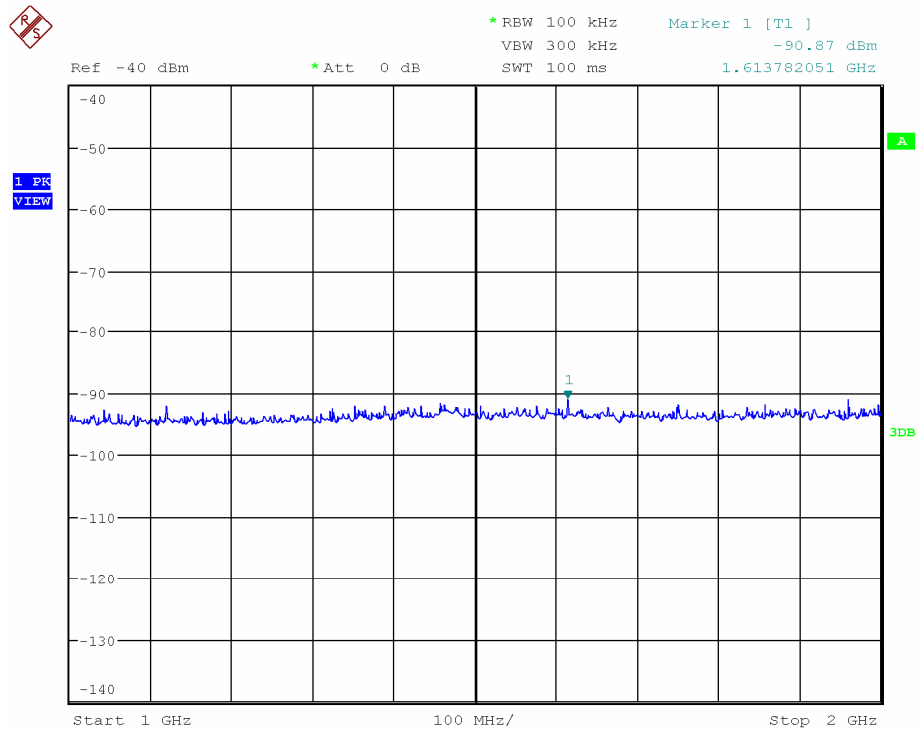


Date: 5.APR.2011 08:57:12

HORIZONTAL POLARIZATION

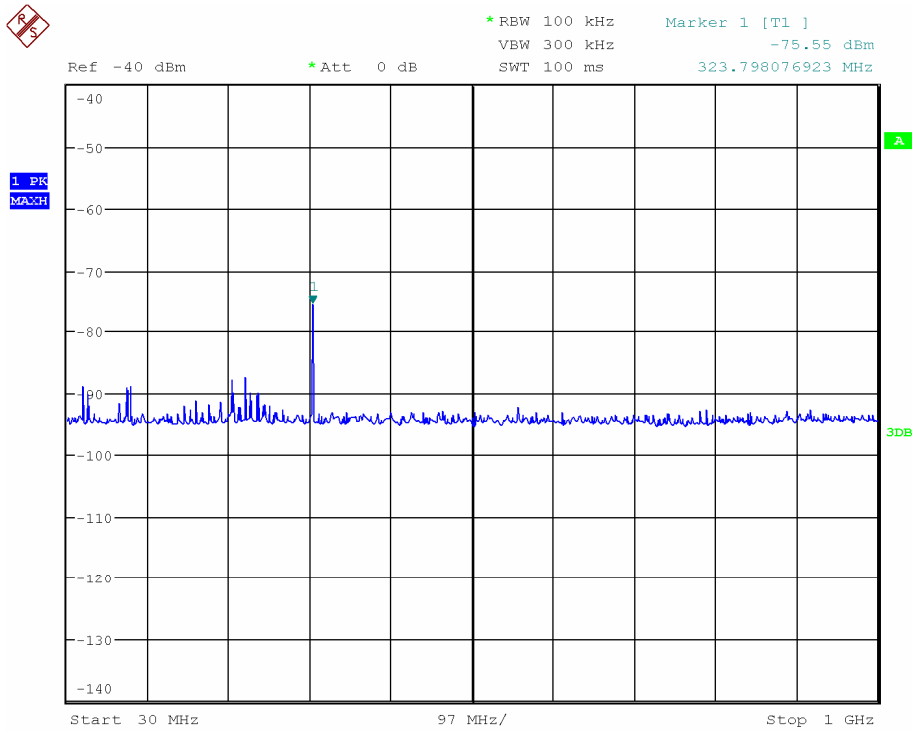


Date: 29.MAR.2011 15:14:00

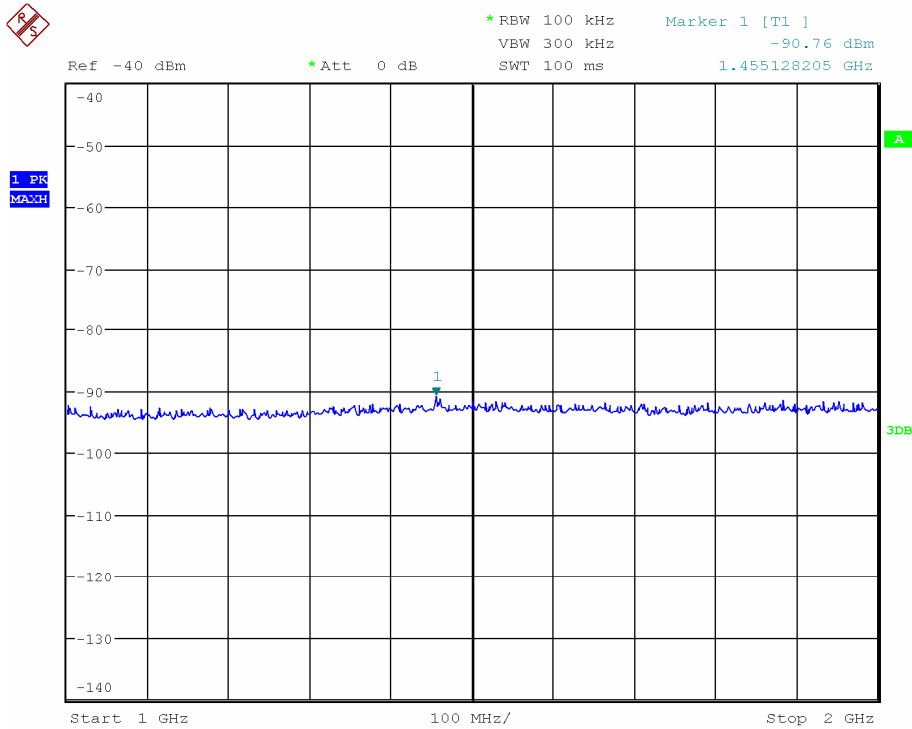


Date: 23.MAR.2011 09:05:59

VERTICAL POLARIZATION



Date: 29.MAR.2011 15:11:44



Date: 23.MAR.2011 08:58:55

13.8.23. TRANSMITTER 162.025MHZ – 12W: ON 24 VDC POWER LINE

FREQUENCY BAND : 150kHz – 30MHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (KHz)	Results	Limits
21.7	16.23	80 – 52 52 – 34

HORIZONTAL POLARIZATION

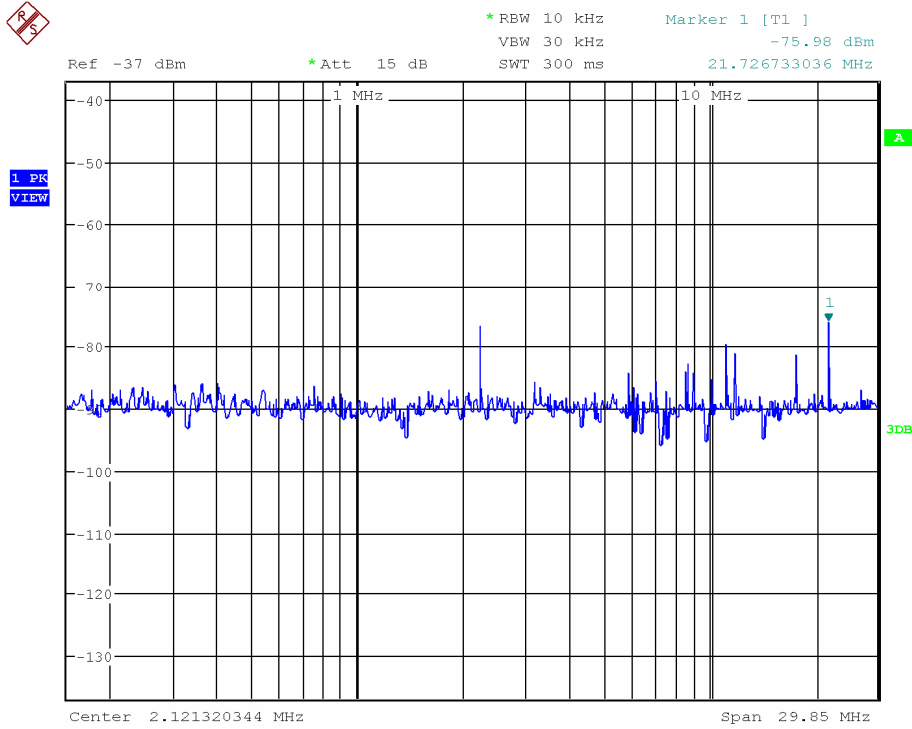
FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	43.68	54
1846.1	50.22	

VERTICAL POLARIZATION

FREQUENCY BAND : 30MHz – 2GHz SPURIOUS EMISSION LEVELS DBμV/m AT 3m		
Frequency (MHz)	Results	Limits
323.8	46.79	54
1527.2	48.46	

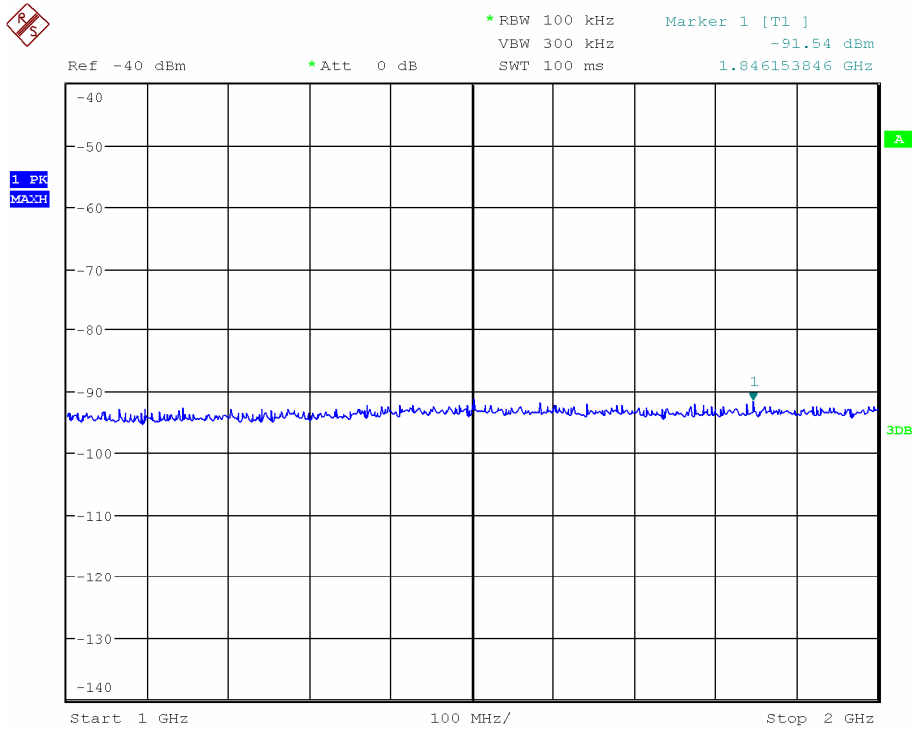
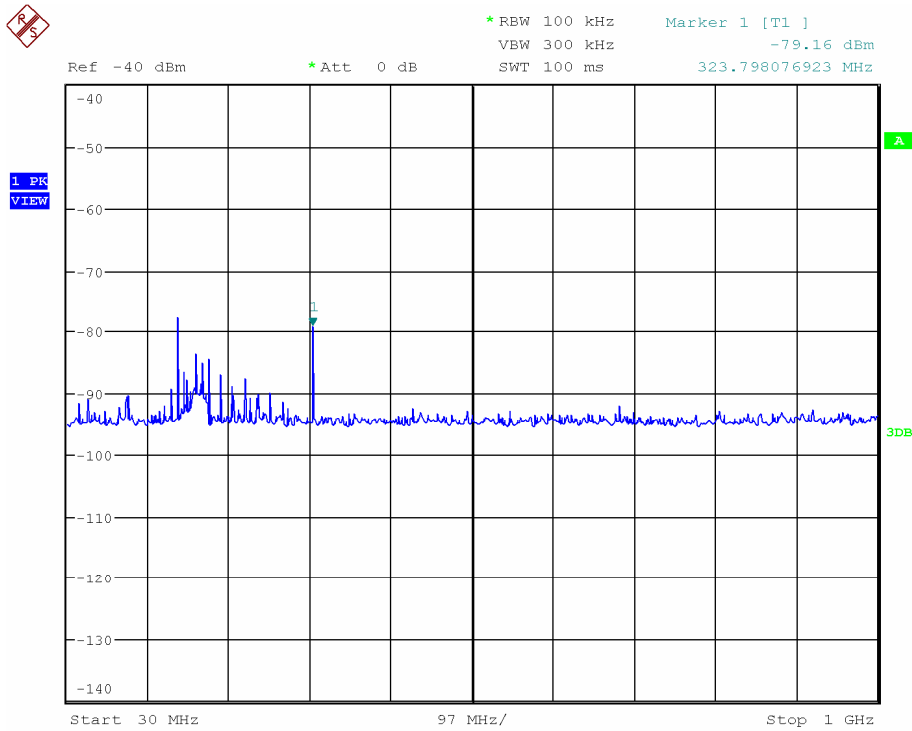
Result : **COMPLIANT**
Comments :

13.8.24. RADIATION GRAPHS



Date: 5.APR.2011 09:29:19

HORIZONTAL POLARIZATION



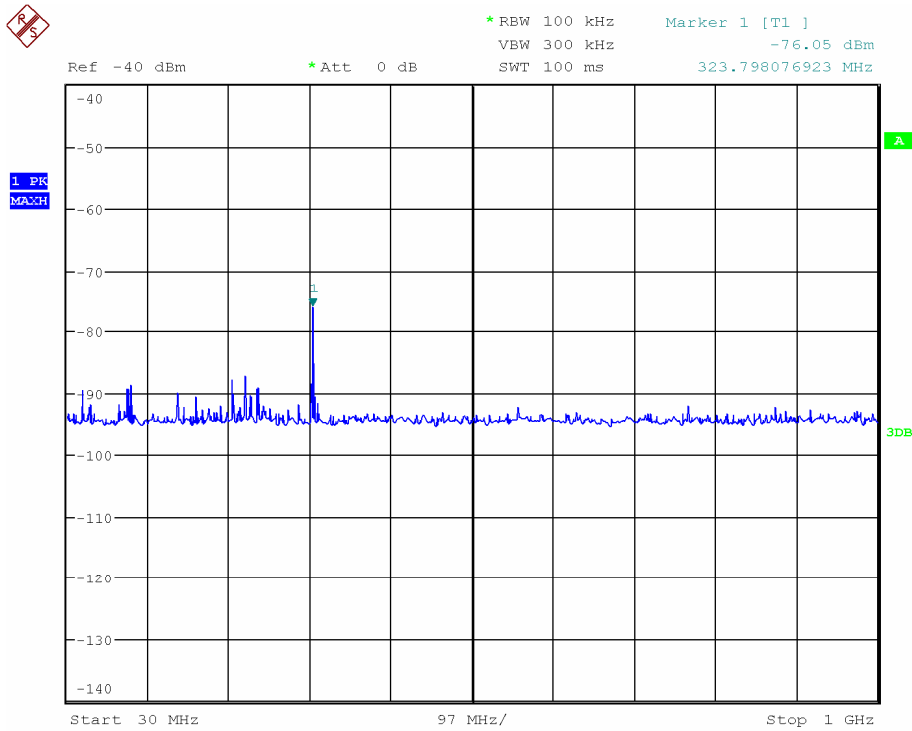
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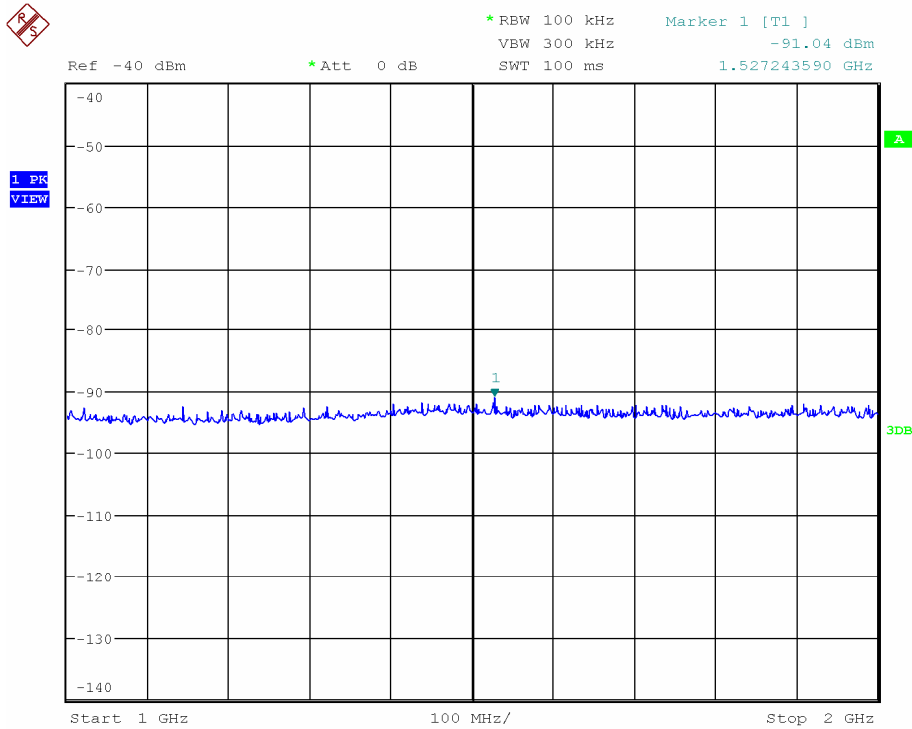
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VERTICAL POLARIZATION



Date: 29.MAR.2011 15:09:56



Date: 23.MAR.2011 09:01:15

14. IMMUNITY

14.1. GENERAL

For these tests the EUT shall conform to its normal operational configuration, mounting and earthing arrangements, unless otherwise stated, and shall operate under normal test conditions.

Particular interfaces of the EUT with the external electromagnetic environment are referred to as ports. The physical boundary of the EUT through which electromagnetic fields may radiate or impinge is the enclosure port.

Differential tests are those applied between electrical power, signal and control lines.

Common mode tests are those applied between groups of lines and a common reference, normally earth.

For the tests in this subclause, the results are evaluated against performance criteria relating to the operating conditions and functional specifications of the EUT, and defined as follows:

- **performance criterion A:** the EUT shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed, as defined in the relevant equipment standard and in the technical specification published by the manufacturer;
- **performance criterion B:** the EUT shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed, as defined in the relevant equipment standard and in the technical specification published by the manufacturer. During the test, degradation or loss of function or performance which is self-recoverable is however, allowed, but no change of actual operating state or stored data is allowed.
- **performance criterion C:** temporary degradation or loss of function or performance is allowed during the test, provided the function is self-recoverable, or can be restored at the end of the test by the operation of the controls, as defined in the relevant equipment standard and in the technical specification published by the manufacturer.

Electromagnetic immunity

Conducted radio frequency disturbance	14.3
Radiated disturbance	14.4
Fast transients	14.5
Slow transients	NA
Power supply short term variation	NA
Power supply failure	14.6
Electrostatic discharge	14.7

NA : Not Applicable

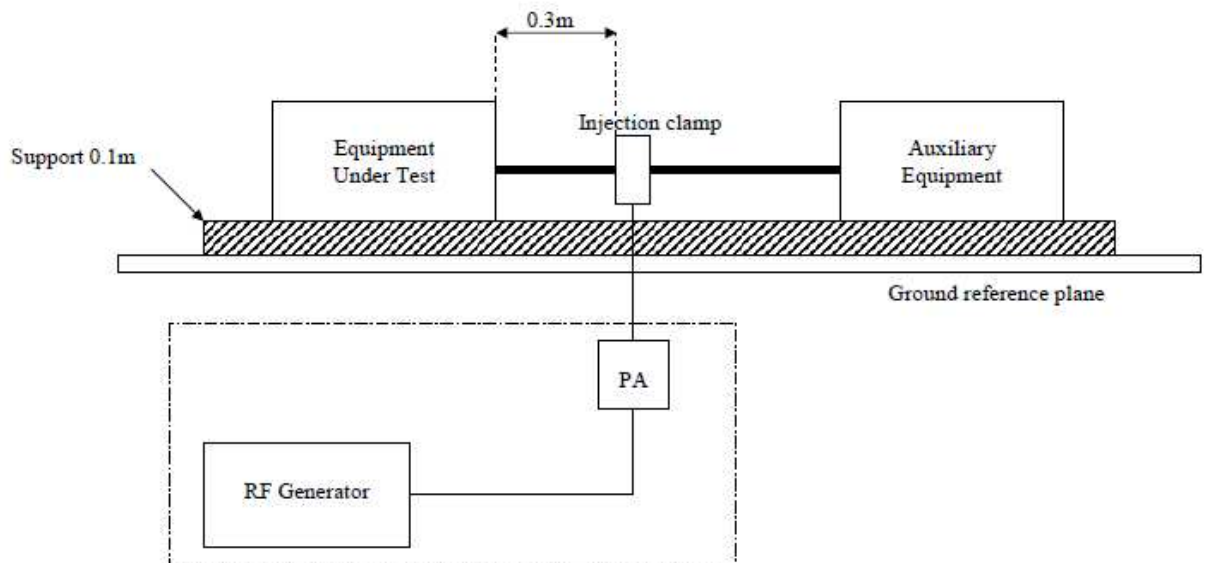
14.2.SPECIAL CONDITIONS

Exclusion band for receivers	151.975 MHz to 172.025 MHz
Exclusion band for transmitters	±50 kHz from the nominal operating frequency
Receiver RF input level	40 dBμV (emf)

14.3.IMMUNITY TO CONDUCTED RADIO FREQUENCY DISTURBANCE

TESTS SUMMARY	
Type of port	DC power cable Data cable Antenna cable
Basic standard	EN 61000-4-6
Performance criteria	A
Frequency/Levels	- 3Vrms amplitude swept over the frequency range 150KHz to 80MHz - 10Vrms amplitude at spot frequencies : 2MHz, 3MHz, 4MHz, 6.2MHz, 8.2MHz, 12.6MHz, 16.5MHz, 18.8MHz, 22MHz and 25MHz
Modulation	AM 80% / 400Hz
Sweep	1.5×10^{-3} decades/sec.

Test conditions:



PA : Power attenuator (6 dB)

Result:

Transmitter in test operation mode

Configuration: 161.975 MHz – 2W - 12Vdc

COMPLIANT

Configuration: 161.975 MHz – 12W - 12Vdc

COMPLIANT

Configuration: 162.025 MHz – 2W - 24Vdc

COMPLIANT

Configuration: 162.025 MHz – 12W - 24Vdc

COMPLIANT

Receiver

Configuration: 161.975 MHz - 12Vdc PER = 0.16%

COMPLIANT

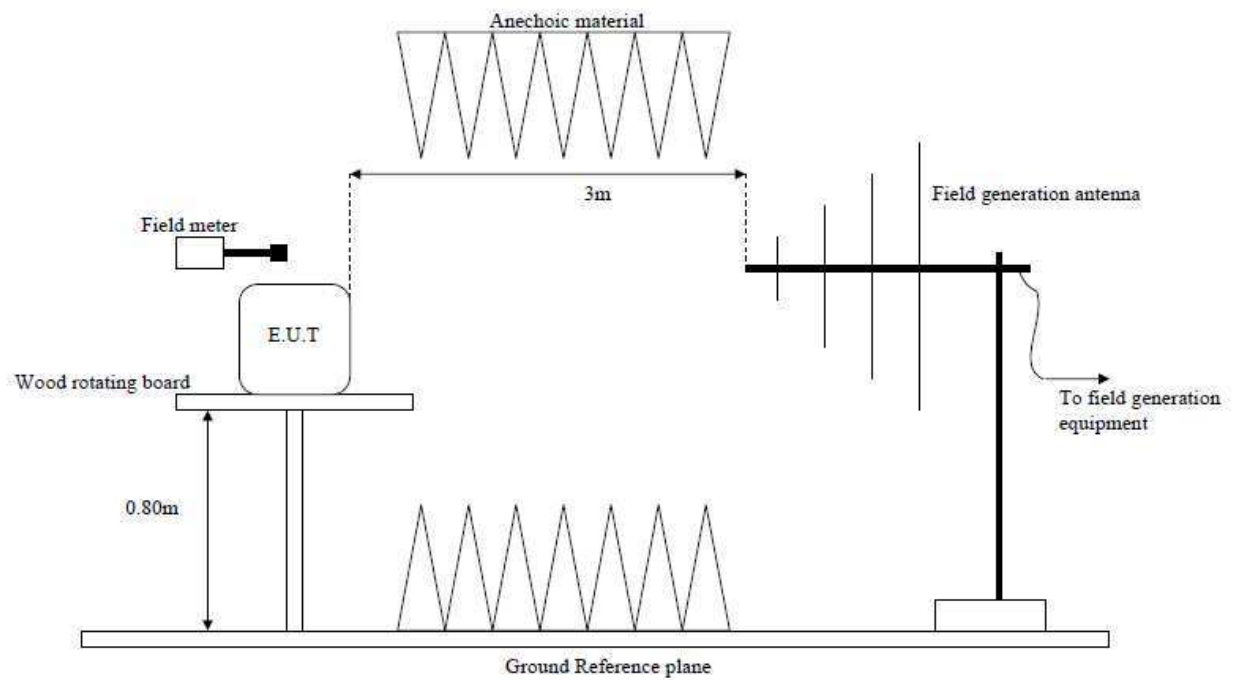
Configuration: 162.025 MHz - 24Vdc PER = 0.16%

COMPLIANT

14.4.IMMUNITY TO RADIATED RADIOFREQUENCIES

TESTS SUMMARY	
Basic standard	EN 61000-4-3
Performance criteria	A
Frequencies/level	80 MHz to 2 GHz 10V/m
Exclusion Band	
Modulation	AM 80% / 400Hz
Sweep rate	1.5×10^{-3} decade/sec. 80MHz – 1GHz 0.5×10^{-3} decades/sec. 1GHz – 2GHz

Test conditions:



Result:

Transmitter in test operation mode

N°	Configuration	Polar.	Position of EUT	Result
1	161.975 MHz - 2W - 12Vdc	V	0°	COMPLIANT
2	161.975 MHz - 2W - 12Vdc	V	90°	COMPLIANT
3	161.975 MHz - 2W - 12Vdc	V	180°	COMPLIANT
4	161.975 MHz - 2W - 12Vdc	V	270°	COMPLIANT
5	161.975 MHz - 2W - 12Vdc	H	0°	COMPLIANT
6	161.975 MHz - 2W - 12Vdc	H	90°	COMPLIANT
7	161.975 MHz - 2W - 12Vdc	H	180°	COMPLIANT
8	161.975 MHz - 2W - 12Vdc	H	270°	COMPLIANT
9	161.975 MHz - 12W - 12Vdc	V	0°	COMPLIANT
10	161.975 MHz - 12W - 12Vdc	V	90°	COMPLIANT
11	161.975 MHz - 12W - 12Vdc	V	180°	COMPLIANT
12	161.975 MHz - 12W - 12Vdc	V	270°	COMPLIANT
13	161.975 MHz - 12W - 12Vdc	H	0°	COMPLIANT
14	161.975 MHz - 12W - 12Vdc	H	90°	COMPLIANT
15	161.975 MHz - 12W - 12Vdc	H	180°	COMPLIANT
16	161.975 MHz - 12W - 12Vdc	H	270°	COMPLIANT
17	162.025 MHz - 2W - 24Vdc	V	0°	COMPLIANT
18	162.025 MHz - 2W - 24Vdc	V	90°	COMPLIANT
19	162.025 MHz - 2W - 24Vdc	V	180°	COMPLIANT
20	162.025 MHz - 2W - 24Vdc	V	270°	COMPLIANT
21	162.025 MHz - 2W - 24Vdc	H	0°	COMPLIANT
22	162.025 MHz - 2W - 24Vdc	H	90°	COMPLIANT
23	162.025 MHz - 2W - 24Vdc	H	180°	COMPLIANT
24	162.025 MHz - 2W - 24Vdc	H	270°	COMPLIANT
25	162.025 MHz - 12W - 24Vdc	V	0°	COMPLIANT
26	162.025 MHz - 12W - 24Vdc	V	90°	COMPLIANT
27	162.025 MHz - 12W - 24Vdc	V	180°	COMPLIANT
28	162.025 MHz - 12W - 24Vdc	V	270°	COMPLIANT
29	162.025 MHz - 12W - 24Vdc	H	0°	COMPLIANT
30	162.025 MHz - 12W - 24Vdc	H	90°	COMPLIANT
31	162.025 MHz - 12W - 24Vdc	H	180°	COMPLIANT
32	162.025 MHz - 12W - 24Vdc	H	270°	COMPLIANT

Receiver

N°	Configuration	Polar.	Position of EUT	PER	Result
1	161.975 MHz - 12Vdc	V	0°	< 0.5%	COMPLIANT
2	161.975 MHz - 12Vdc	V	90°	< 0.5%	COMPLIANT
3	161.975 MHz - 12Vdc	V	180°	< 0.5%	COMPLIANT
4	161.975 MHz - 12Vdc	V	270°	< 0.5%	COMPLIANT
5	161.975 MHz - 12Vdc	H	0°	< 0.5%	COMPLIANT
6	161.975 MHz - 12Vdc	H	90°	< 0.5%	COMPLIANT
7	161.975 MHz - 12Vdc	H	180°	< 0.5%	COMPLIANT
8	161.975 MHz - 12Vdc	H	270°	< 0.5%	COMPLIANT
9	161.975 MHz - 24Vdc	V	0°	< 0.5%	COMPLIANT
10	161.975 MHz - 24Vdc	V	90°	< 0.5%	COMPLIANT
11	161.975 MHz - 24Vdc	V	180°	< 0.5%	COMPLIANT
12	161.975 MHz - 24Vdc	V	270°	< 0.5%	COMPLIANT
13	161.975 MHz - 24Vdc	H	0°	< 0.5%	COMPLIANT
14	161.975 MHz - 24Vdc	H	90°	< 0.5%	COMPLIANT
15	161.975 MHz - 24Vdc	H	180°	< 0.5%	COMPLIANT
16	161.975 MHz - 24Vdc	H	270°	< 0.5%	COMPLIANT
17	162.025 MHz - 12Vdc	V	0°	< 0.5%	COMPLIANT
18	162.025 MHz - 12Vdc	V	90°	< 0.5%	COMPLIANT
19	162.025 MHz - 12Vdc	V	180°	< 0.5%	COMPLIANT
20	162.025 MHz - 12Vdc	V	270°	< 0.5%	COMPLIANT
21	162.025 MHz - 12Vdc	H	0°	< 0.5%	COMPLIANT
22	162.025 MHz - 12Vdc	H	90°	< 0.5%	COMPLIANT
23	162.025 MHz - 12Vdc	H	180°	< 0.5%	COMPLIANT
24	162.025 MHz - 12Vdc	H	270°	< 0.5%	COMPLIANT
25	162.025 MHz - 24Vdc	V	0°	< 0.5%	COMPLIANT
26	162.025 MHz - 24Vdc	V	90°	< 0.5%	COMPLIANT
27	162.025 MHz - 24Vdc	V	180°	< 0.5%	COMPLIANT
28	162.025 MHz - 24Vdc	V	270°	< 0.5%	COMPLIANT
29	162.025 MHz - 24Vdc	H	0°	< 0.5%	COMPLIANT
30	162.025 MHz - 24Vdc	H	90°	< 0.5%	COMPLIANT
31	162.025 MHz - 24Vdc	H	180°	< 0.5%	COMPLIANT
32	162.025 MHz - 24Vdc	H	270°	< 0.5%	COMPLIANT

14.5.IMMUNITY TO FAST TRANSIENTS

TESTS SUMMARY	
Type of port	Power Supply cable Data cable Antenna cable
Basic standard	EN 61000-4-4
Basic criteria	B
Requirements	Signal / Control port +/- 1kV common mode
Duration	1 min

COMPLIANT**Test conditions:**

Result:

Transmitter in test operation mode

Configuration: 161.975 MHz – 2W - 12Vdc	+1kV	COMPLIANT
	-1kV	COMPLIANT
Configuration: 161.975 MHz – 12W - 12Vdc	+1kV	COMPLIANT
	-1kV	COMPLIANT
Configuration: 162.025 MHz – 2W - 24Vdc	+1kV	COMPLIANT
	-1kV	COMPLIANT
Configuration: 162.025 MHz – 12W - 24Vdc	+1kV	COMPLIANT
	-1kV	COMPLIANT

Receiver

Configuration:

161.975 MHz - 12Vdc	+1kV	PER = 0.42%	COMPLIANT
	-1kV	PER = 0.42%	COMPLIANT
162.025 MHz - 24Vdc	+1kV	PER = 0.42%	COMPLIANT
	-1kV	PER = 0.42%	COMPLIANT

14.6.IMMUNITY TO POWER SUPPLY FAILURE

TESTS SUMMARY	
Type of port	Power ligne DC
Basic standard	EN 61000-4-11
Basic criteria	C
Requirement	Test Voltage : 24V Test duration : 3 breaks Power cut duration : 60s

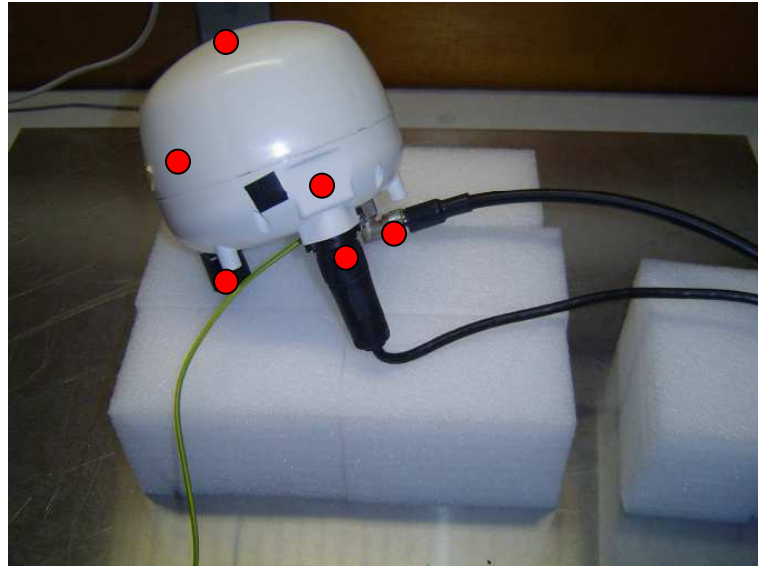
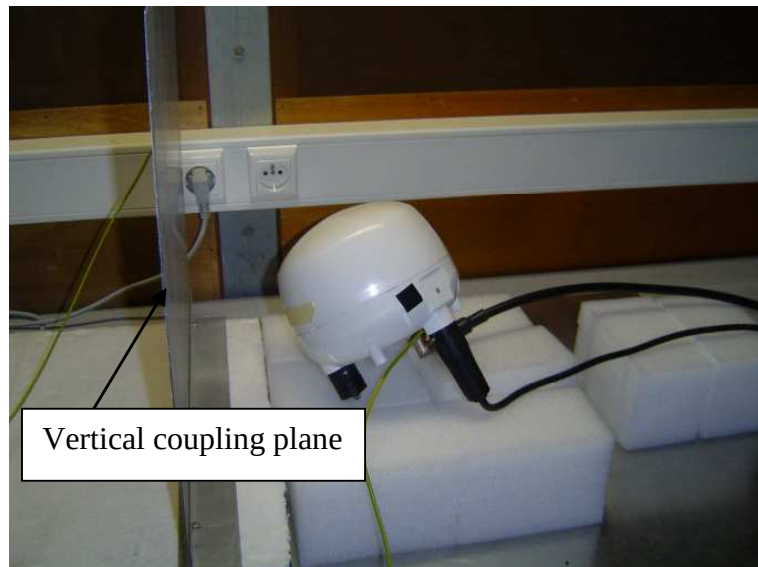
Result:

Transmitter in normal operation test
Receiver

COMPLIANT
COMPLIANT

14.7.IMMUNITY TO ELECTROSTATIC DISCHARGE

TESTS SUMMARY	
Type of port	Cabinet
Basic standard	EN 61000-4-2
Basic criteria	B
Requirement	Contact +/- 6 KV Air +/- 8 KV

Test conditions:**Air and contact discharge****Coupling plane**

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Result

The AtoN is tested after each test during 1min

Air discharge

Transmitter in test operation mode

Configuration: 161.975 MHz – 2W - 12Vdc **COMPLIANT**

Configuration: 161.975 MHz – 12W - 12Vdc **COMPLIANT**

Configuration: 162.025 MHz – 2W - 24Vdc **COMPLIANT**

Configuration: 162.025 MHz – 12W - 24Vdc **COMPLIANT**

Receiver

Configuration: 161.975 MHz - 12Vdc After the test PER = 0.41%

COMPLIANT

Configuration: 162.025 MHz - 24Vdc After the test PER = 0.41%

COMPLIANT

Contact discharge

Transmitter in test operation mode

Configuration: 161.975 MHz – 2W - 12Vdc **COMPLIANT**

Configuration: 161.975 MHz – 12W - 12Vdc **COMPLIANT**

Configuration: 162.025 MHz – 2W - 24Vdc **COMPLIANT**

Configuration: 162.025 MHz – 12W - 24Vdc **COMPLIANT**

Receiver

Configuration: 161.975 MHz - 12Vdc After the test PER = 0.41%

COMPLIANT

Configuration: 162.025 MHz - 24Vdc After the test PER = 0.41%

COMPLIANT

Indirect discharge

Transmitter in test operation mode

Configuration: 161.975 MHz – 2W - 12Vdc **COMPLIANT**

Configuration: 161.975 MHz – 12W - 12Vdc **COMPLIANT**

Configuration: 162.025 MHz – 2W - 24Vdc **COMPLIANT**

Configuration: 162.025 MHz – 12W - 24Vdc **COMPLIANT**

Receiver

Configuration: 161.975 MHz - 12Vdc After the test PER = 0.41%

COMPLIANT

Configuration: 162.025 MHz - 24Vdc After the test PER = 0.41%

COMPLIANT