



FCC
Test Report
for
Detect IV
NLJD

Report Number 09-478A/2634/6/04
(replaces report number 09-478/2634/6/04)
Report Produced by: -

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2. Summary of Test Results

The Detect IV was tested to the following standards: -

FCC Part 15C (effective date March 17, 2004); Class DSS Intentional Radiator (FHSS)

Title	Reference	Results
1. Conducted Emissions	FCC Part 15C §15.207	NOT APPLICABLE
2. Radiated Emissions	FCC Part 15C §15.209	PASSED
3. Carrier Frequency Separation	§15.247 (a) (1)	PASSED
4. Number of Hopping Frequencies	§15.247 (a) (1) (i)	PASSED
5. Dwell Time	§15.247 (a) (1) (i)	PASSED
6. 20dB Bandwidth	§15.247 (a) (1) (i)	PASSED
7. Peak Output Power	§15.247 (b) (2)	PASSED
8. Band Edge Compliance	§15.247 (c)	PASSED
9. Conducted Emissions	§15.247 (c)	PASSED
10. RF Exposure	§15.247 (b) (5)	NOT TESTED
11. Frequency Hopping	§15.247 (g)	Supplier Declaration
12. Adaptive Hopping	§15.247 (h)	Supplier Declaration
13. Hopping Sequence	§15.247 (a) (1) & §15.247 (a) (1) (i)	Supplier Declaration
14. Receiver Input Bandwidth / Frequencies	§15.247 (a) (1)	Supplier Declaration

Date of Test:

23rd September 2004

Test Engineer:

Approved By:

Customer Representative:

Barry Stephen

Manufacture of EUT

Audiotel International Ltd
Corby Road
Weldon
Corby
NN17 3AR

Model Number of EUT	NLJD
1	1
2	1
3	1
4	1
5	1
6	1
7	1
8	1
9	1
10	1
11	1
12	1
13	1
14	1
15	1
16	1
17	1
18	1
19	1
20	1
21	1
22	1
23	1
24	1
25	1
26	1
27	1
28	1
29	1
30	1
31	1
32	1
33	1
34	1
35	1
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77	1
78	1
79	1
80	1
81	1
82	1
83	1
84	1
85	1
86	1
87	1
88	1
89	1
90	1
91	1
92	1
93	1
94	1
95	1
96	1
97	1
98	1
99	1
100	1

Serial Number of EUT 015397-8

FCC ID (if applicable): Not available at present

Date when equipment was received
by RN Electronics Limited 23rd September 2004

Date of test: 23rd September 2004

Customer order number: 026168

A visual description of EUT is as follows:	Grey Moulded enclosure with extendable & swivelling detector head. The unit has a single hand grip with adjustable touch screen L.C.D Display, On switch, headphones, speaker and ancillary ports towards the rear.
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The main function of the EUT is:	Detection and location of electronic eavesdropping devices.
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Equipment Under Test Information specification

Height	660mm
Width	50mm
Depth	280mm
Weight	3.2kg
Voltage	7.2V battery
Current required from above voltage source	5A

Channels tested (MHz):

Low #722:	Mid #850:	High #978:
902.20000	915.00000	927.80000

Antenna: Integral

Description of ancillary equipment connected to the equipment under test, for the purpose of tests, can be found in Section 11.

Any modifications made to the **Detect IV**, whilst under test, can be found in Section 12.

This report was printed on: 04 November 2004

Notes:

The EUT is a composite device with multiple transmit / receive functions. This test report relates only to the NLJD function, although all other functions (metal, broadband and harmonic detectors) were also active during testing to maximise any spurious components.

4. Specifications

The tests were performed by RN Electronics Engineer Daniel Sims who set up the tests, the test equipment, and operated it in accordance with the **R.N. Electronics Ltd** procedures manual and FCC Part 15.

5. Tests, Methods and Results

5.1 Conducted Emissions

5.1.1 Test Methods

Test Requirements FCC Part 15C, Reference (15.207)

Test Method: FCC Part 15C, Reference (15.207)

5.1.1.1 Configuration of EUT

The EUT was connected to the LISN, and operated in the mode found to produce the highest emissions.

5.1.1.2 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted in the 'Test Equipment' Section. The equipment under test was powered via a mains LISN with a mains lead of 1 metre. Any excess mains lead was placed in a 400mm bundle.

5.1.2 Test results

Tests were performed using Test Site .

Temperature of test Environment: 0°C

Analyser plots for the Quasi-Peak Values and any table of signals within 10dB of the limit line can be found in Section 6.1 of this report.

Analyser plots for the Average values and any table of signals within 10dB of the limit line can be found in Section 6.1 of this report.

These results show that the **Detect IV** was **NOT APPLICABLE** to this test as it has no mains port. N.b. the unit may be charged from an approved ac/dc adaptor, but as the device is inhibited during charging, this test is not applicable to the Detect IV.

5.1.2.1 Test Equipment used

See Section 10 for more details.

5.2 Radiated Emissions

5.2.1 Test Methods

Test Requirements FCC Part 15C, Reference (15.209)

Test Method: FCC Part 15C, Reference (15.209)

5.2.1.1 Configuration of EUT

The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 3 metres. The EUT was rotated in all three orthogonal planes, and the antenna scanned from 1 - 4 metres in height to maximise all emissions. This was repeated for both vertical and horizontal polarisation.

5.2.1.2 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below.

Measurements were made in a semi-anechoic chamber.

Test site 'M' has been listed with the FCC. The equipment was rotated 360° and the antenna scanned 1 – 4 metres to record the worst case emissions.

5.2.2 Test results

Tests were performed using Test Site **M**.

Test Environment:

Temperature: 21°C

Humidity: 48 %

Analyser plots for the Quasi-Peak / Average values as applicable and any table of signals within 10dB of the limit line can be found in Section 6.2 of this report.

These show that the **Detect IV** has **PASSED** this test.

5.2.2.1 Test Equipment used

E136, E226, E3, TMS82, TMS903, N438, E238, E239, TMS907

See Section 10 for more details

5.3 Carrier Frequency Separation

5.3.1 Test Methods

Test Requirements

FCC Part 15C, Reference (15.209)

Test Method:

FCC Public Notice, Reference **DA 00-705**

5.3.1.1 Configuration of EUT

The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 3 metres.

5.3.1.2 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below.

Measurements were made in a semi-anechoic chamber.

Test site 'M' has been listed with the FCC.

5.3.2 Test results

Tests were performed using Test Site **M**.

Test Environment:

Temperature: 21°C

Humidity: 48 %

Analyser plots for the frequency separation can be found in Section 6.3 of this report.

Frequency separation observed was 400kHz (greater than the minimum separation required).

These show that the **Detect IV** has **PASSED** this test.

5.3.2.1 Test Equipment used

E226, TMS903, TMS907

See Section 10 for more details

5.4 Number of Hopping Frequencies

5.4.1 Test Methods

Test Requirements

FCC Part 15C, Reference (15.209)

Test Method:

FCC Public Notice, Reference **DA 00-705**

5.4.1.1 Configuration of EUT

The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 3 metres.

5.4.1.2 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below.

Measurements were made in a semi-anechoic chamber.

Test site 'M' has been listed with the FCC. The entire frequency span of operation was observed across multiple plots to ensure that all carrier frequencies were observable.

5.4.2 Test results

Tests were performed using Test Site **M**.

Test Environment:

Temperature: 21°C

Humidity: 48 %

Analyser plots for the hopping frequencies can be found in Section 6.4 of this report.

The number of channels observed was 64 (greater than the minimum number required).

These show that the **Detect IV** has **PASSED** this test.

5.4.2.1 Test Equipment used

E226, TMS903, TMS907

See Section 10 for more details

5.5 Dwell Time

5.5.1 Test Methods

Test Requirements

FCC Part 15C, Reference (15.209)

Test Method:

FCC Public Notice, Reference **DA 00-705**

5.5.1.1 Configuration of EUT

The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 3 metres.

5.5.1.2 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below.

Measurements were made in a semi-anechoic chamber.

Test site 'M' has been listed with the FCC.

5.5.2 Test results

Tests were performed using Test Site **M**.

Test Environment:

Temperature: 21°C

Humidity: 48 %

Analyser plots for the dwell time and duty cycle can be found in Section 6.5 of this report.

The dwell time observed was 6.1ms over two discrete power levels.

The repetition period time (cycle time) was observed to be 114ms.

Assuming an even spread, the average time of occupancy on any one channel will be 8.4ms in any 10s period.

These show that the **Detect IV** has **PASSED** this test.

5.5.2.1 Test Equipment used

E226, TMS903, TMS907

See Section 10 for more details

5.6 20dB Bandwidth

5.6.1 Test Methods

Test Requirements

FCC Part 15C, Reference (15.209)

Test Method:

FCC Public Notice, Reference **DA 00-705**

5.6.1.1 Configuration of EUT

The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 3 metres.

5.6.1.2 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below.

Measurements were made in a semi-anechoic chamber.

Test site 'M' has been listed with the FCC.

5.6.2 Test results

Tests were performed using Test Site **M**.

Test Environment:

Temperature: 21°C

Humidity: 48 %

Analyser plots for the 20dB bandwidth can be found in Section 6.6 of this report.

	Low Channel #722:	Mid Channel #850:	High Channel #978:
	902.20000 MHz	915.00000 MHz	927.80000 MHz
20dB Bandwidth: (less than 500kHz).	273.8 kHz	228.8 kHz	286.3 kHz

These show that the **Detect IV** has **PASSED** this test.

5.6.2.1 Test Equipment used

E226, TMS903, TMS907

See Section 10 for more details

5.7 Peak Output Power

5.7.1 Test Methods

Test Requirements

FCC Part 15C, Reference (15.209)

Test Method:

FCC Public Notice, Reference **DA 00-705**

5.7.1.1 Configuration of EUT

The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 3 metres. The EUT was rotated in all three orthogonal planes, and the antenna scanned from 1 - 4 metres in height to maximise all emissions. This was repeated for both vertical and horizontal polarisation.

5.7.1.2 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below.

Measurements were made in a semi-anechoic chamber.

Test site 'M' has been listed with the FCC. The equipment was rotated 360° and the antenna scanned 1 – 4 metres to record the worst case emissions.

5.7.2 Test results

Tests were performed using Test Site **M**.

Test Environment:

Temperature: 21°C

Humidity: 48 %

Analyser plots for the peak output power can be found in Section 6.7 of this report.

	Low Channel #722:	Mid Channel #850:	High Channel #978:
	902.20000 MHz	915.00000 MHz	927.80000 MHz
Power: (less than 1Watt).	111mW	50mW	50mW

These show that the **Detect IV** has **PASSED** this test.

5.7.2.1 Test Equipment used

E226, TMS903, TMS907

See Section 10 for more details

5.8 Band Edge Compliance

5.8.1 Test Methods

Test Requirements

FCC Part 15C, Reference (15.209)

Test Method:

FCC Public Notice, Reference **DA 00-705**

5.8.1.1 Configuration of EUT

The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna.

5.8.1.2 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below.

Measurements were made in a semi-anechoic chamber.

Test site 'M' has been listed with the FCC.

5.8.2 Test results

Tests were performed using Test Site **M**.

Test Environment:

Temperature: 21°C

Humidity: 48 %

Analyser plots for the band edge compliance can be found in Section 6.8 of this report.

These show that the **Detect IV** has **PASSED** this test.

5.8.2.1 Test Equipment used

E226, TMS903, TMS907

See Section 10 for more details

5.9 Conducted Emissions

5.9.1 Test Methods

Test Requirements

FCC Part 15C, Reference (15.209)

Test Method:

FCC Public Notice, Reference **DA 00-705**

5.9.1.1 Configuration of EUT

N.B. The Alternative Test Procedures for devices on which conducted emissions cannot be performed are used in this case. The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 3 metres both Horizontally and Vertically.

5.9.1.2 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below.

Measurements were made in a semi-anechoic chamber.

Test site 'M' has been listed with the FCC. The equipment was rotated 360° and the antenna scanned 1 – 4 metres to record the worst case emissions.

5.9.2 Test results

Tests were performed using Test Site **M**.

Test Environment:

Temperature: 21°C

Humidity: 48 %

Investigation of emissions using 100kHz bandwidth above 1GHz showed no worse emissions than those observed for the radiated emissions test reported earlier.

These show that the **Detect IV** has **PASSED** this test.

5.9.2.1 Test Equipment used

E136, E226, E3, TMS82, TMS903, N438, E238, E239, TMS907

See Section 10 for more details

6. Plots and Results
6.1 Conducted Emissions

N/A.

Quasi-peak values of mains live feed

The plot shows a swept response of peak values using the quasi-peak limit line

(Any peaks within 10dB of the limit line have been calculated and appear in the table on following page of this report)

Table of signals within 10dB of the limit line for Quasi-Peak Live

N/A.

Measurement Uncertainty of $\pm 3.6\text{dB}$ Applies

N/A.

Quasi-peak values of mains neutral feed

The plot shows a swept response of peak values using the quasi-peak limit line

(Any peaks within 10dB of the limit line have been calculated and appear in the table on following page of this report)

Table of signals within 10dB of the limit line for Quasi-peak Neutral

N/A.

Measurement Uncertainty of ± 3.6 dB Applies

N/A.

Average values of mains live feed

The plot shows a swept response of peak values using the average limit line

(Any peaks within 10dB of the limit line have been calculated and appear in the table on following page of this report)

Table of signals within 10dB of the limit line for Average Live

N/A.

Measurement Uncertainty of $\pm 3.6\text{dB}$ Applies

N/A.

Average values of mains neutral feed

The plot shows a swept response of peak values using the average limit line

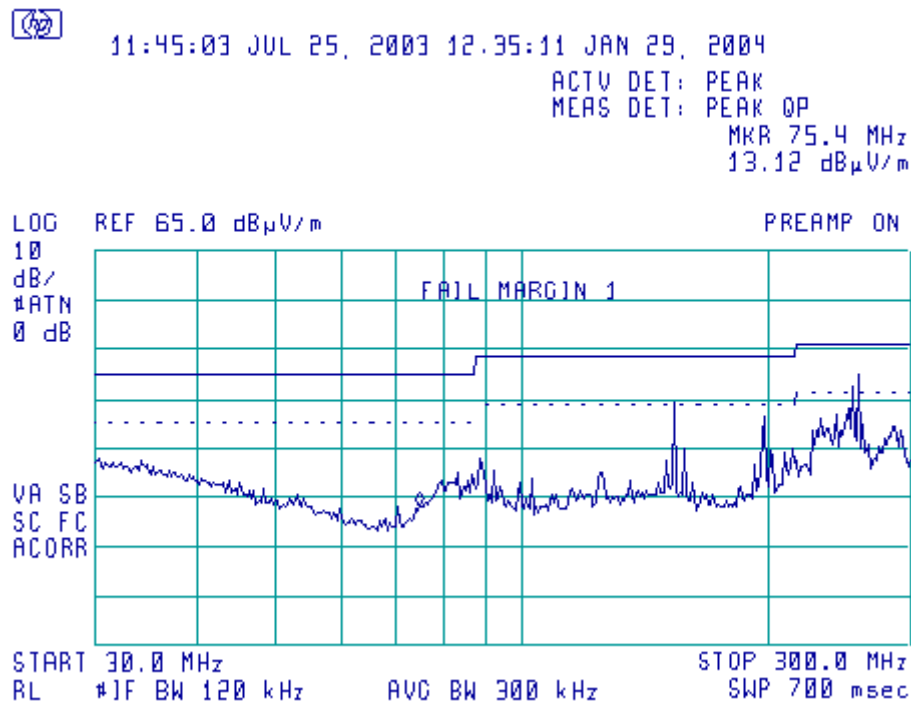
(Any peaks within 10dB of the limit line have been calculated and appear in the table on following page of this report)

Table of signals within 10dB of the limit line for Average Neutral

N/A.

Measurement Uncertainty of $\pm 3.6\text{dB}$ Applies

6.2 Radiated Emissions



Quasi-Peak Values of 30 MHz. to 300 MHz.
Horizontal Polarisation

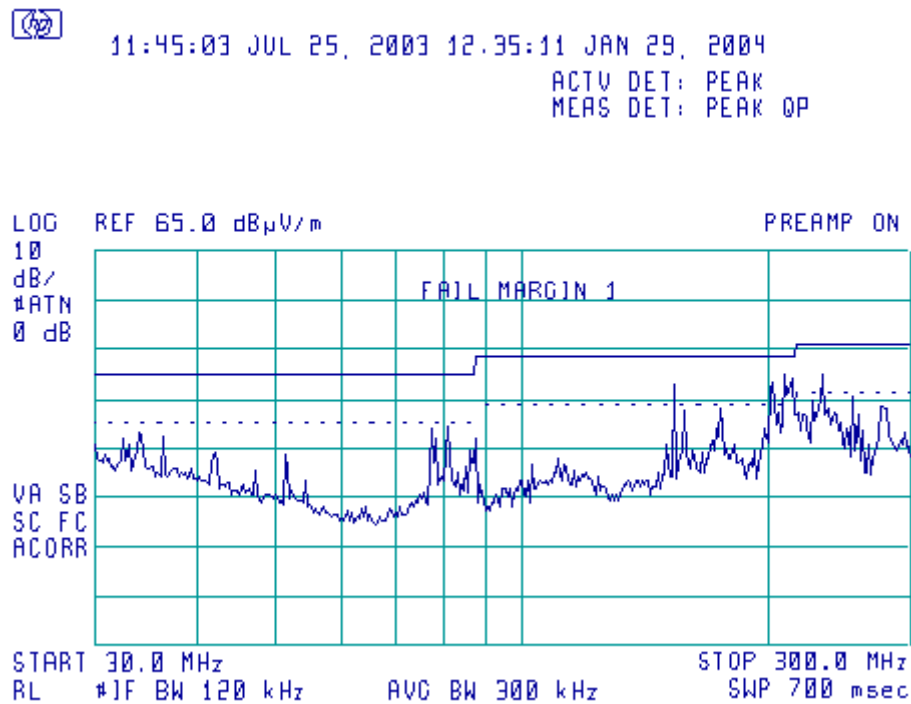
The plot shows a swept response of peak values using the quasi-peak limit line

(Any peaks within 10dB of the limit line have been calculated and appear in the table on following page of this report)

Table of signals within 10dB of the limit line for Quasi-Peak Horizontal

Signal	Freq (MHz)	Peak Amp (dBuV/m)	Peak - Lim1 (dB)	QP Amp (dBuV/m)	QP - Lim1 (dB)
1	154.851700	35.75	-7.75	34.72	-8.78
2	254.022575	41.14	-4.86	37.70	-8.30
3	258.085750	43.92	-2.08	41.87	-4.13

Measurement Uncertainty of ± 5.2 dB Applies



Quasi-Peak Values of 30 MHz. to 300 MHz.

Vertical Polarisation

The plot shows a swept response of peak values using the quasi-peak limit line

(Any peaks within 10dB of the limit line have been calculated and appear in the table on following page of this report)

Table of signals within 10dB of the limit line for Quasi-peak Vertical

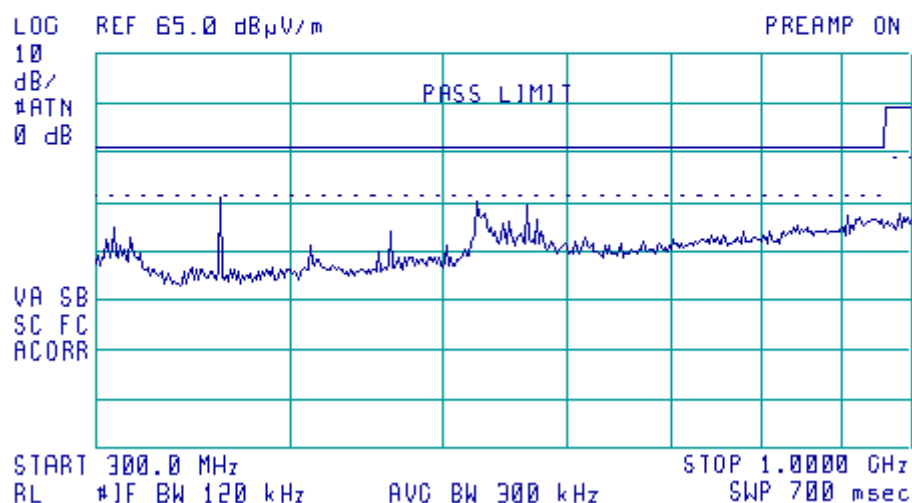
Signal	Freq (MHz)	Peak Amp (dBuV/m)	Peak - Lim1 (dB)	QP Amp (dBuV/m)	QP - Lim1 (dB)
1	154.850400	39.54	-3.96	38.56	-4.94
2	202.241700	38.35	-5.15	33.86	-9.64
3	210.535250	41.35	-2.15	38.42	-5.08
4	214.522150	42.11	-1.39	38.06	-5.44

Measurement Uncertainty of ± 5.2 dB Applies



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK
MEAS DET: PEAK QP



Quasi-Peak Values of 300 MHz. to 1 GHz. Horizontal Polarisation

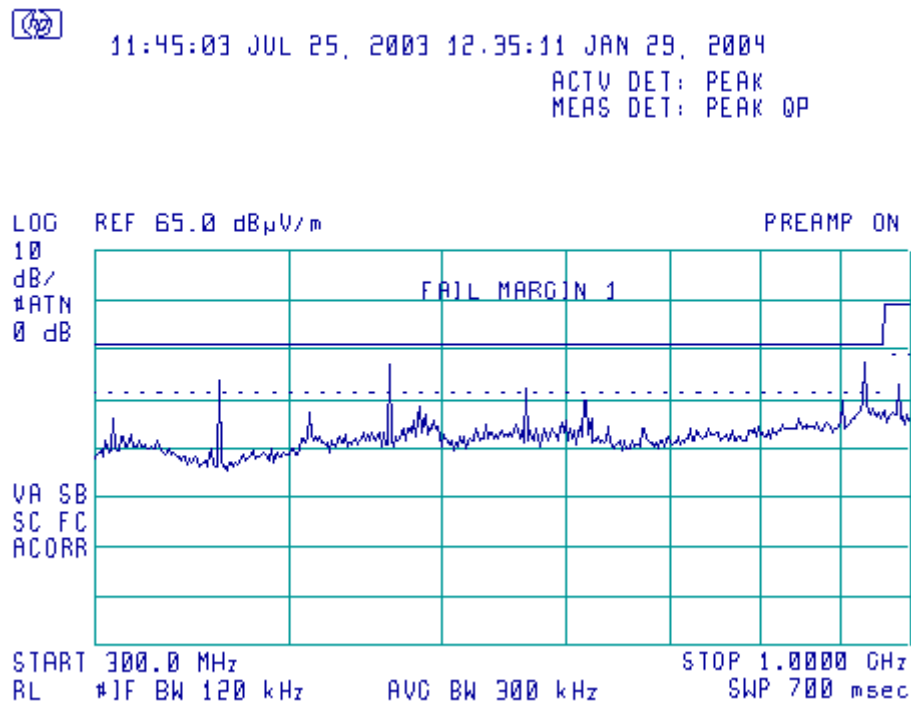
The plot shows a swept response of peak values using the quasi-peak limit line

(Any peaks within 10dB of the limit line have been calculated and appear in the table on following page of this report)

Table of signals within 10dB of the limit line for Quasi-Peak Horizontal

NONE.

Measurement Uncertainty of $\pm 5.2\text{dB}$ Applies



Quasi-Peak Values of 300 MHz. to 1 GHz.

Vertical Polarisation

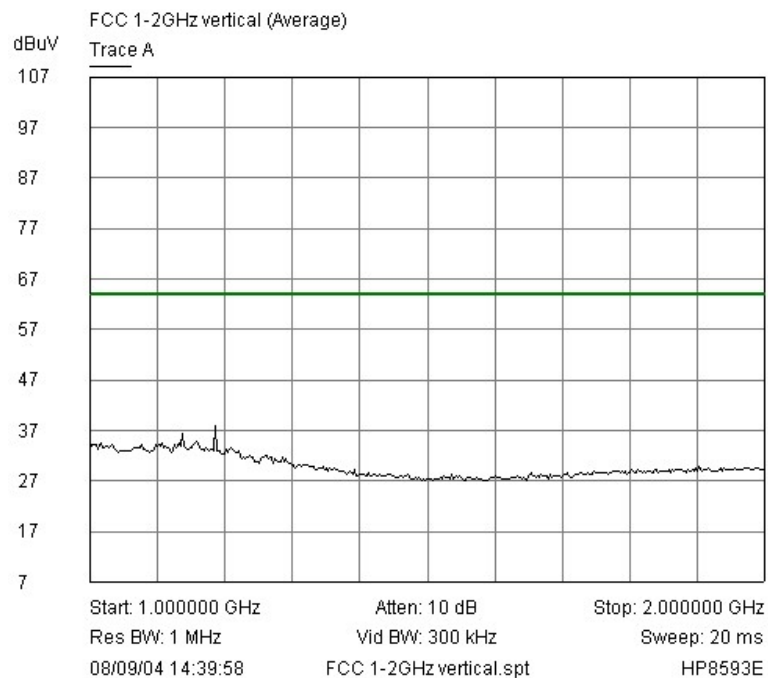
The plot shows a swept response of peak values using the quasi-peak limit line

(Any peaks within 10dB of the limit line have been calculated and appear in the table on following page of this report)

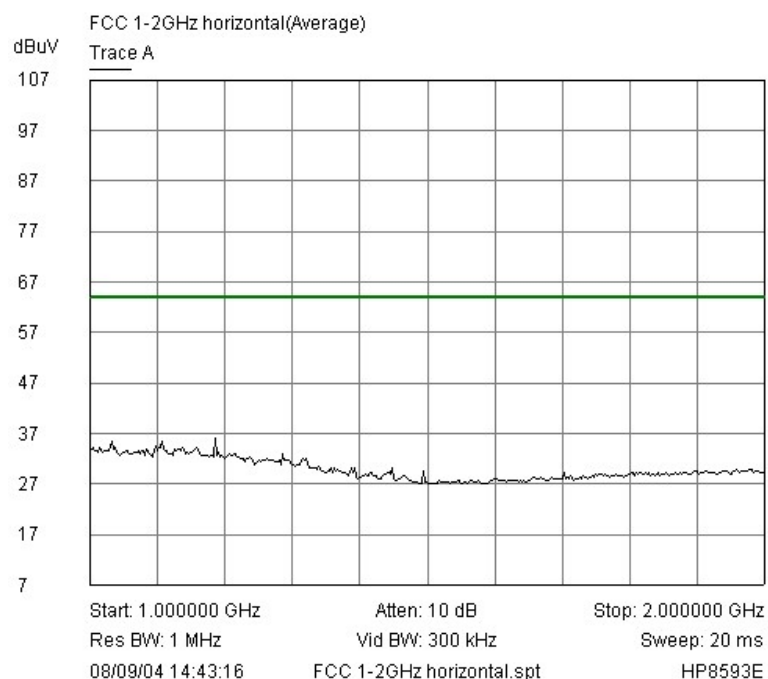
Table of signals within 10dB of the limit line for Quasi-peak Vertical

Signal	Freq (MHz)	Peak Amp (dBuV/m)	Peak - Lim1 (dB)	QP Amp (dBuV/m)	QP - Lim1 (dB)
1	361.314081	40.24	-5.76	39.17	-6.83
2	464.537950	43.27	-2.73	42.13	-3.87
3	567.777656	38.87	-7.13	37.45	-8.55
4	933.132013	39.27	-6.73	35.02	-10.98

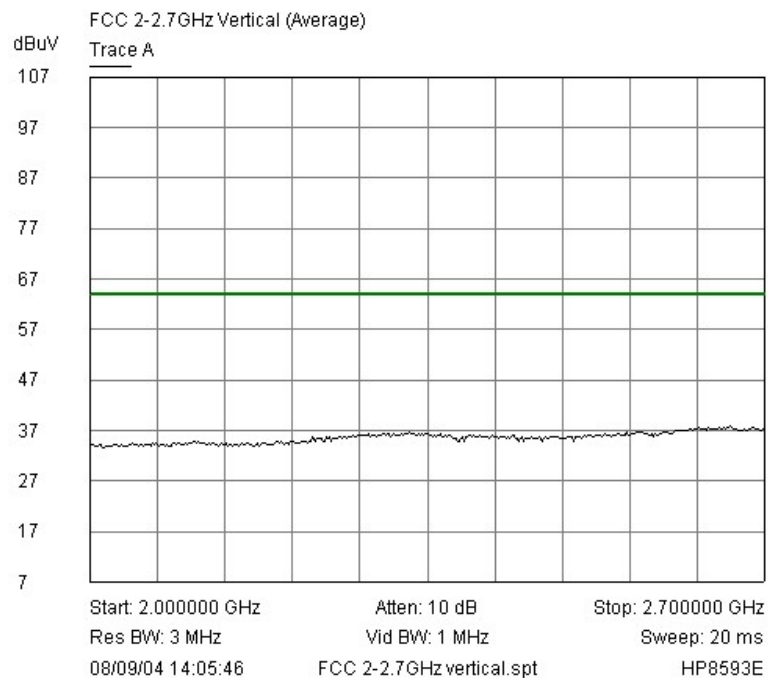
Measurement Uncertainty of ± 5.2 dB Applies



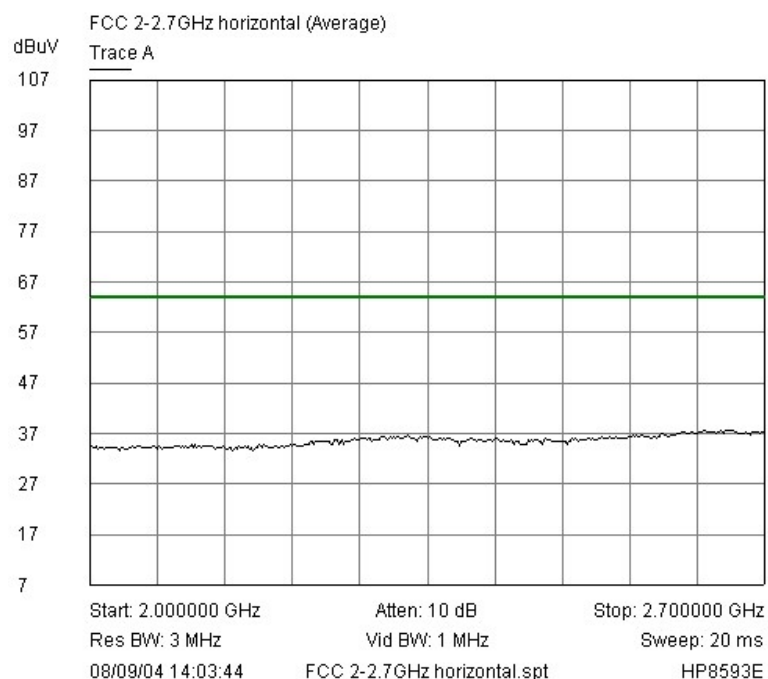
Average Values of 1 to 2GHz. Vertical Polarisation



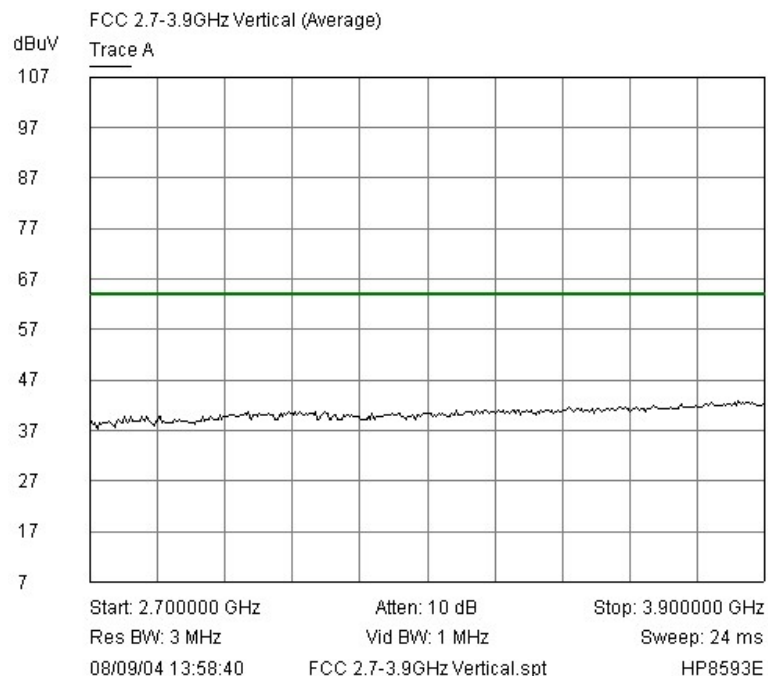
Average Values of 1 to 2GHz. Horizontal Polarisation



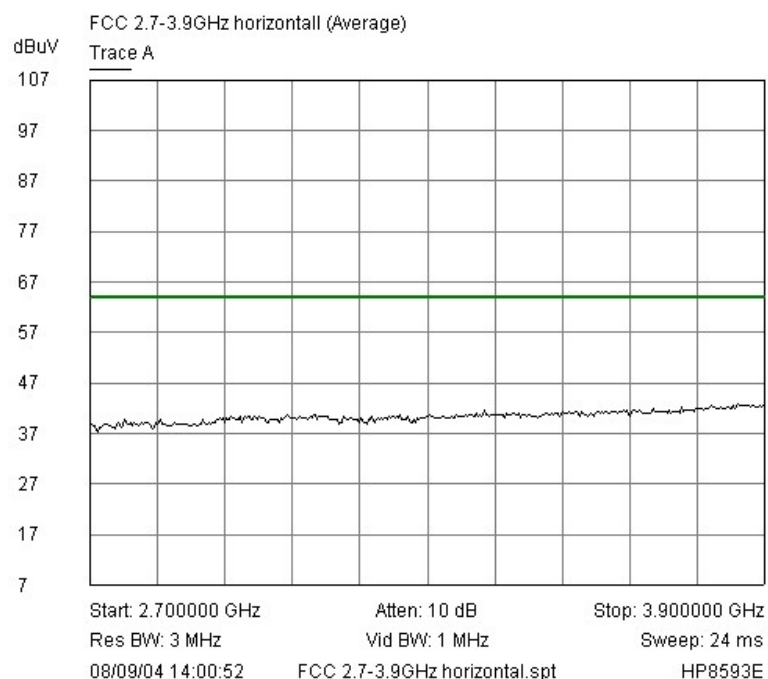
Average Values of 2-2.7GHz. Vertical Polarisation



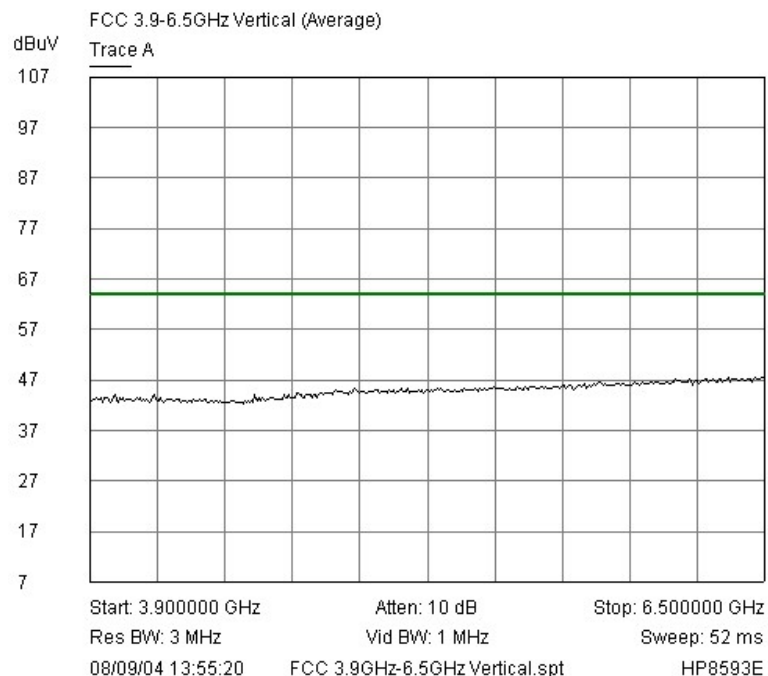
Average Values of 2-2.7GHz. Horizontal Polarisation



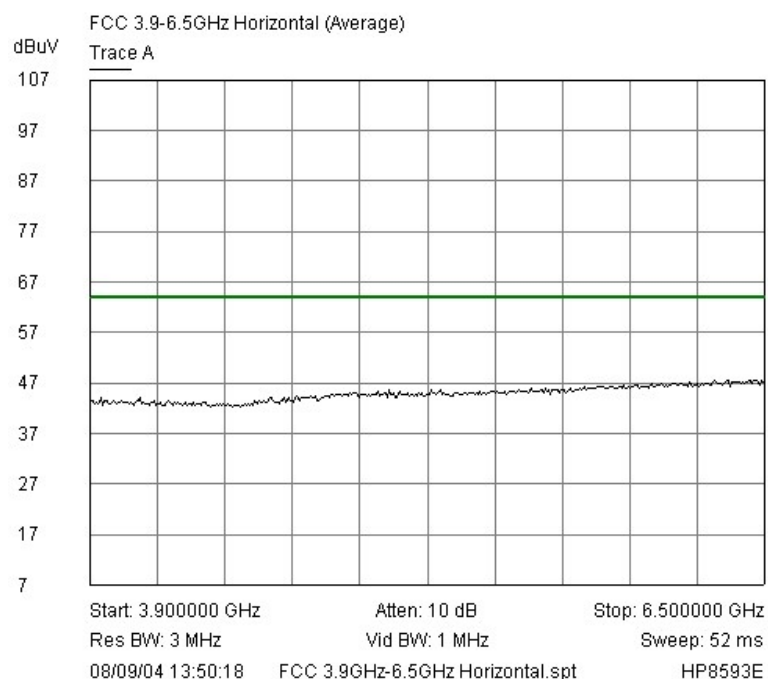
Average Values of 2.7-3.9GHz. Vertical Polarisation



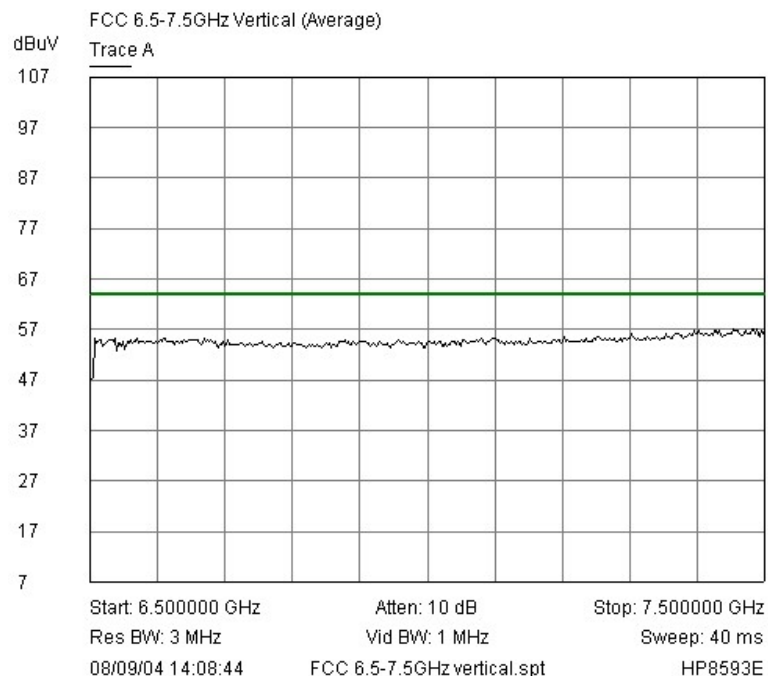
Average Values of 2.7-3.9GHz. Horizontal Polarisation



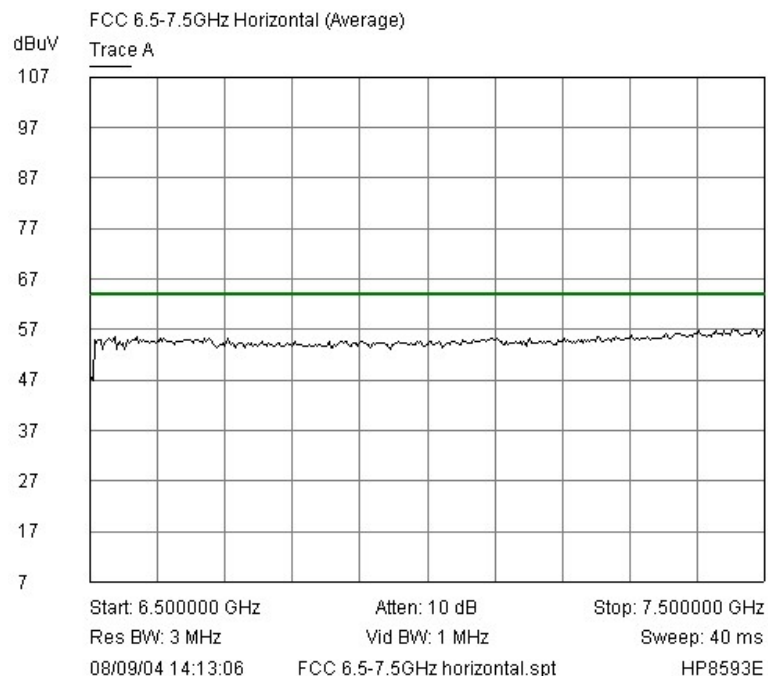
Average Values of 3.9-6.5GHz. Vertical Polarisation



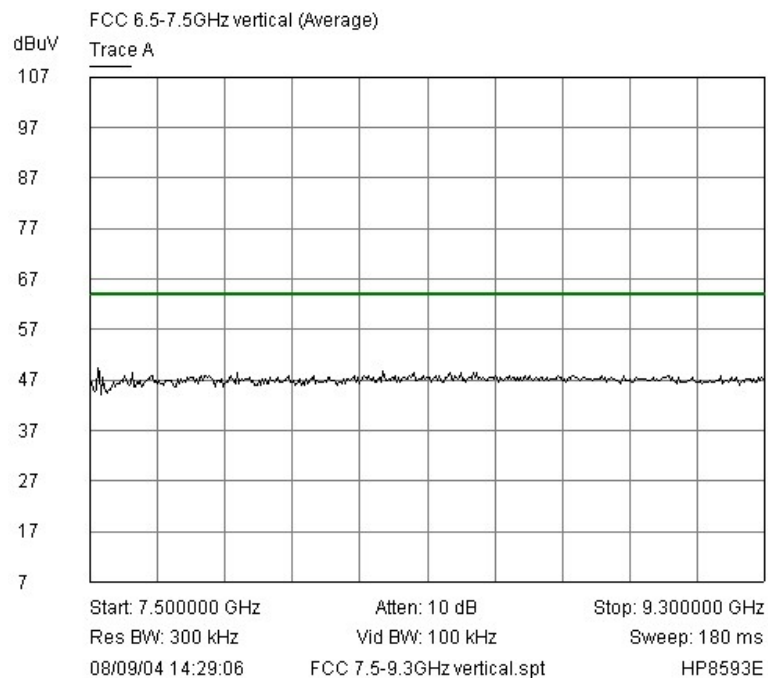
Average Values of 3.9-6.5GHz. Horizontal Polarisation



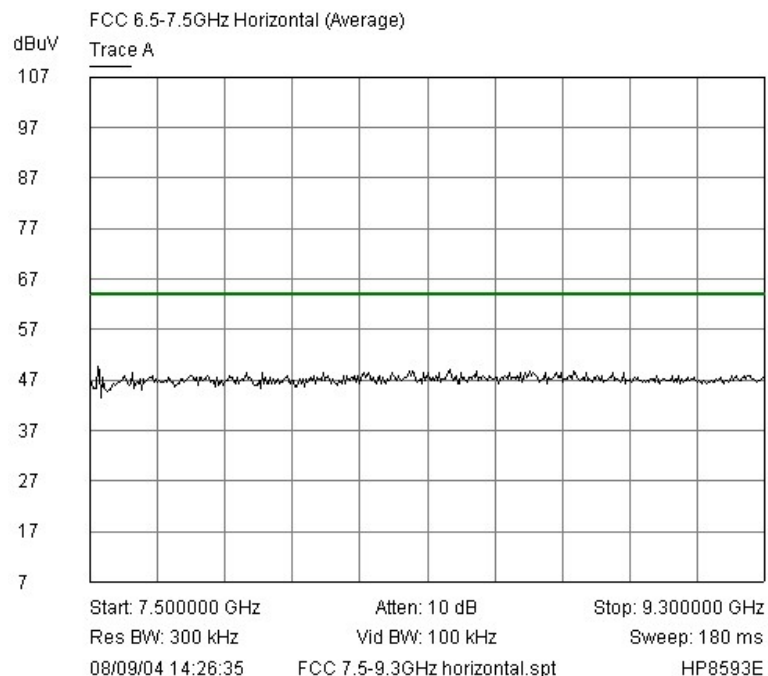
Average Values of 6.5-7.5GHz. Vertical Polarisation



Average Values of 6.5-7.5GHz. Horizontal Polarisation



Average Values of 7.5-9.3GHz. Vertical Polarisation



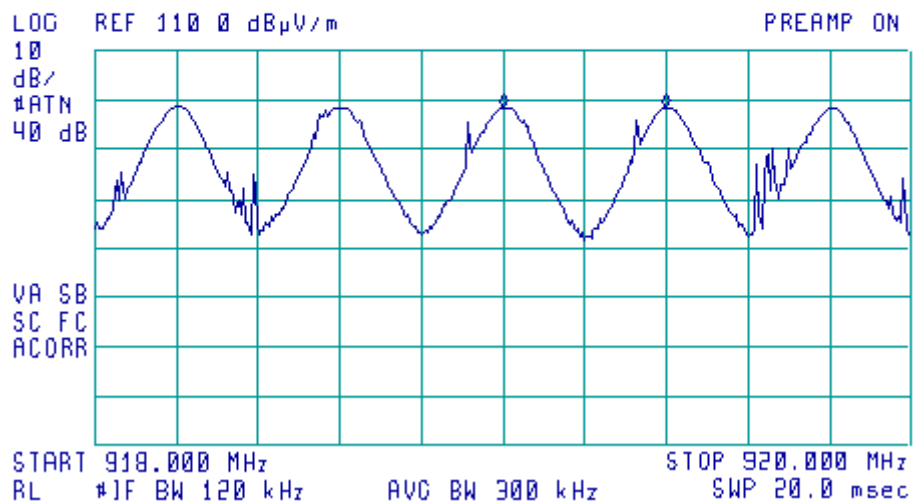
Average Values of 7.5-9.3GHz. Horizontal Polarisation

6.3 Carrier Frequency Separation



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK
MEAS DET: PEAK QP
MKR Δ 400 kHz
-.16 dB



6.4 Number of Hopping Frequencies.



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

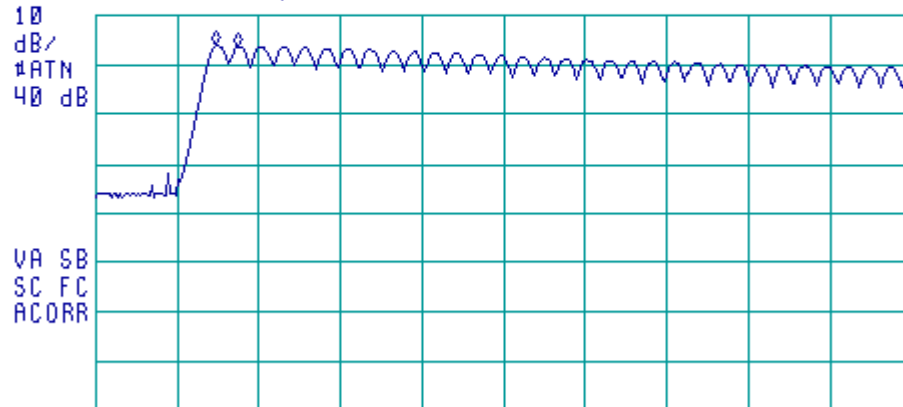
MEAS DET: PEAK DP

MKR Δ 410 kHz

-.15 dB

LOG REF 110 0 dB μ V/m

PREAMP ON



START 900.00 MHz

STOP 915.00 MHz

RL #1F BW 300 kHz

AVC BW 100 kHz

SWP 20.0 msec



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

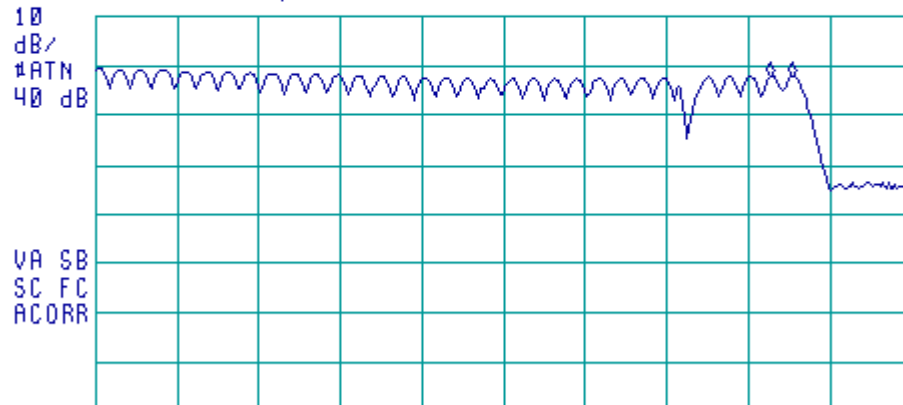
MEAS DET: PEAK DP

MKR Δ -410 kHz

-.12 dB

LOG REF 110 0 dB μ V/m

PREAMP ON



START 915.00 MHz

STOP 930.00 MHz

RL #1F BW 300 kHz

AVC BW 100 kHz

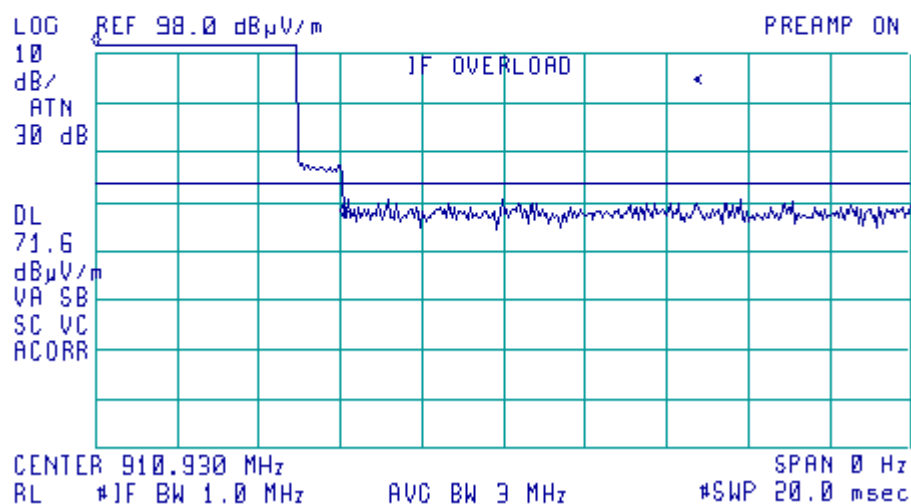
SWP 20.0 msec

6.5 Time of Occupancy (Dwell Time).



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK
MEAS DET: PEAK QP
MKRΔ 6.1000 msec
-44.96 dB

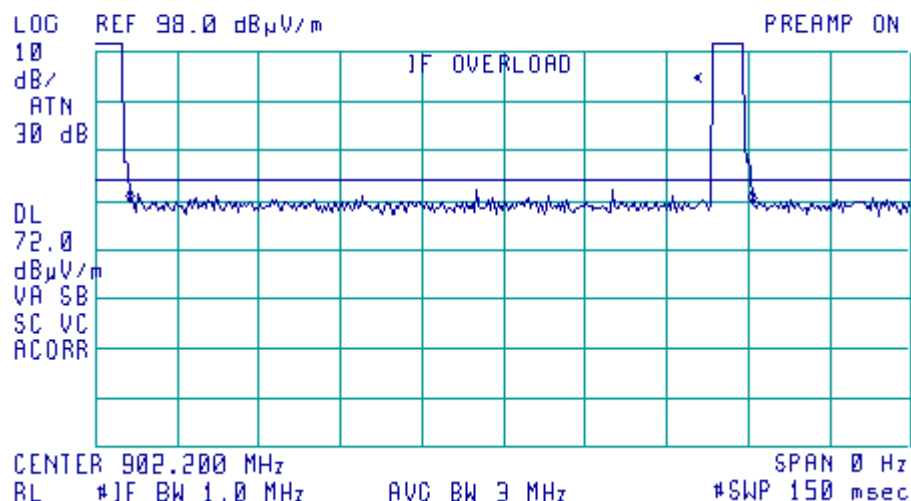


Duty Cycle.



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK
MEAS DET: PEAK QP
MKRΔ 114.38 msec
-.06 dB



ALL RIGHTS RESERVED

6.6 20dB Bandwidth.

High Side Top Channel



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

MKR Δ 116.3 kHz

-20.30 dB

LOG REF 11B 0 dB μ V/m

PREAMP ON

10

dB/

ATN

50 dB

MA SB

SC FC

ACORR

CENTER 927.8000 MHz

RT #1F BW 30 kHz

AUC BW 100 kHz

SPAN 500.0 kHz

SWP 20.0 msec

Low Side Top Channel



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

MKR Δ -170.0 kHz

-20.10 dB

LOG REF 11B 0 dB μ V/m

PREAMP ON

10

dB/

ATN

50 dB

MA SB

SC FC

ACORR

CENTER 927.8000 MHz

RL #1F BW 30 kHz

AUC BW 100 kHz

SPAN 500.0 kHz

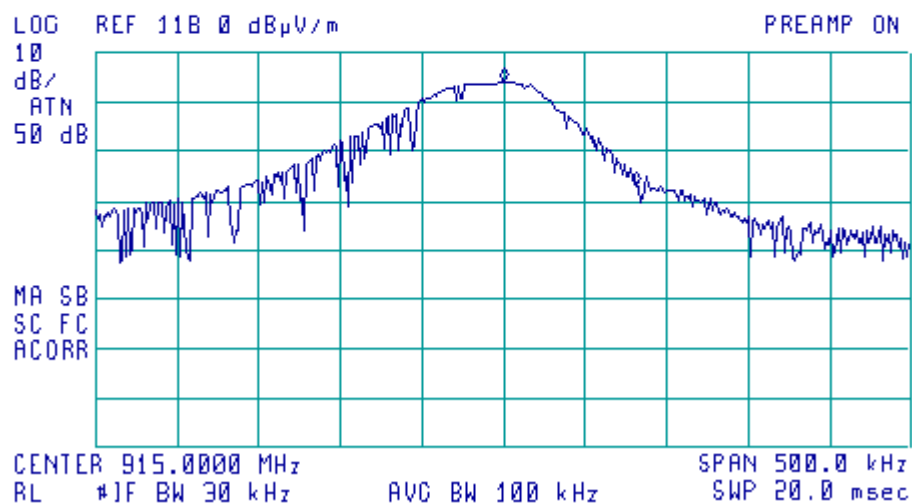
SWP 20.0 msec

High Side Middle Channel



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK
MEAS DET: PEAK QP
MKR Δ 81.3 kHz
-21.03 dB

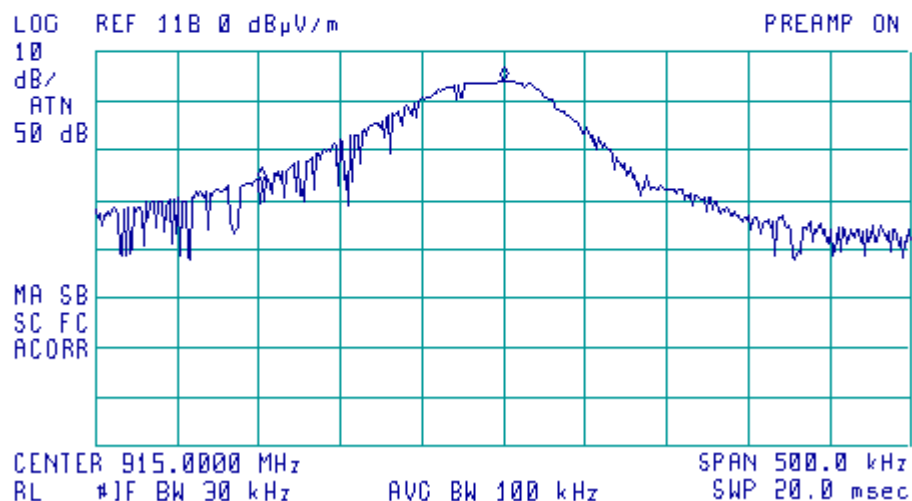


Low Side Middle Channel

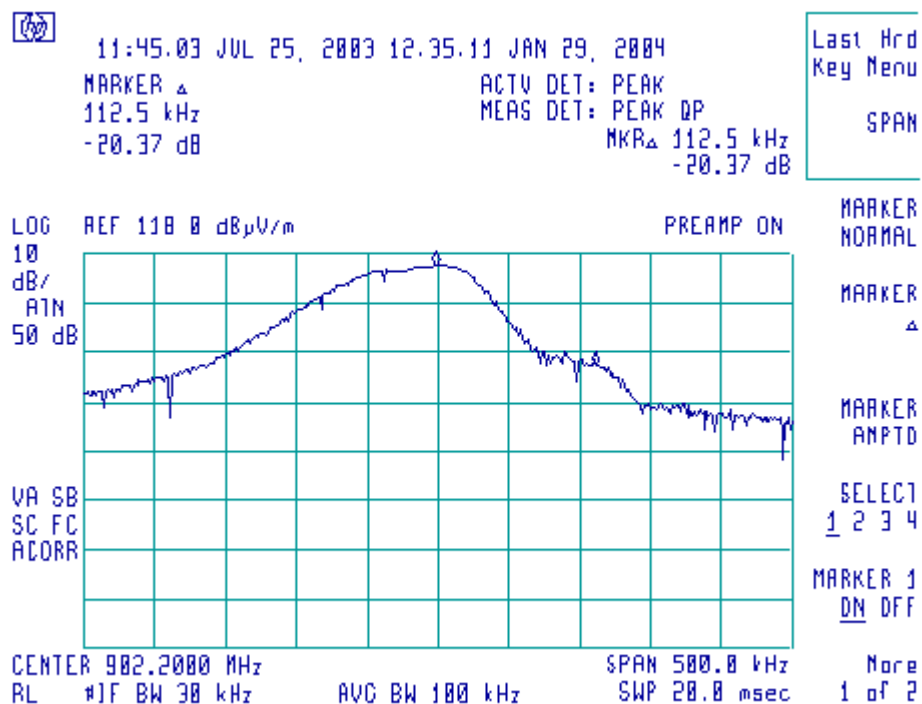


11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

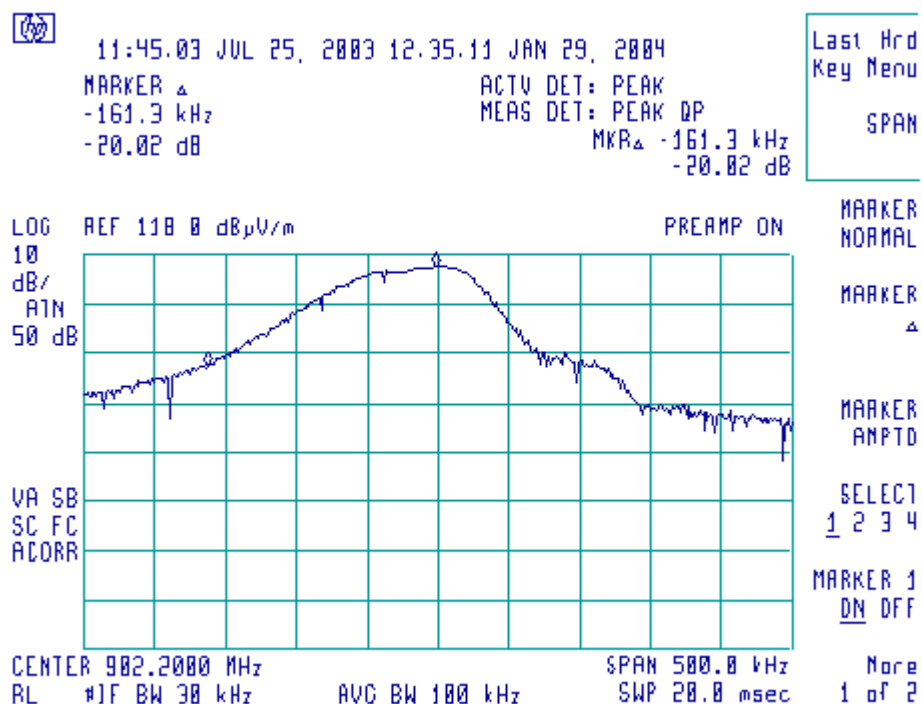
ACTV DET: PEAK
MEAS DET: PEAK QP
MKR Δ -147.5 kHz
-20.36 dB



High Side Bottom Channel



Low Side Bottom Channel



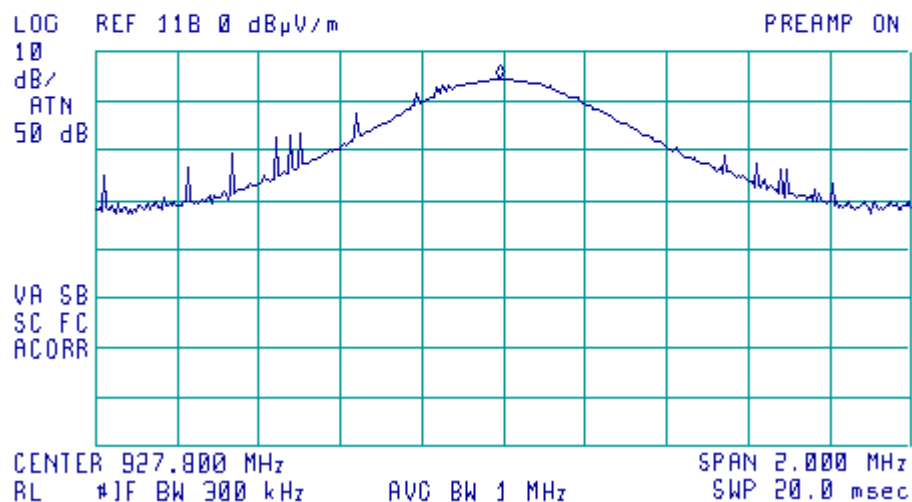
6.7 Peak Output Power.

Top Channel



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK
MEAS DET: PEAK QP
MKR 927.790 MHz
112.33 dB μ V/m

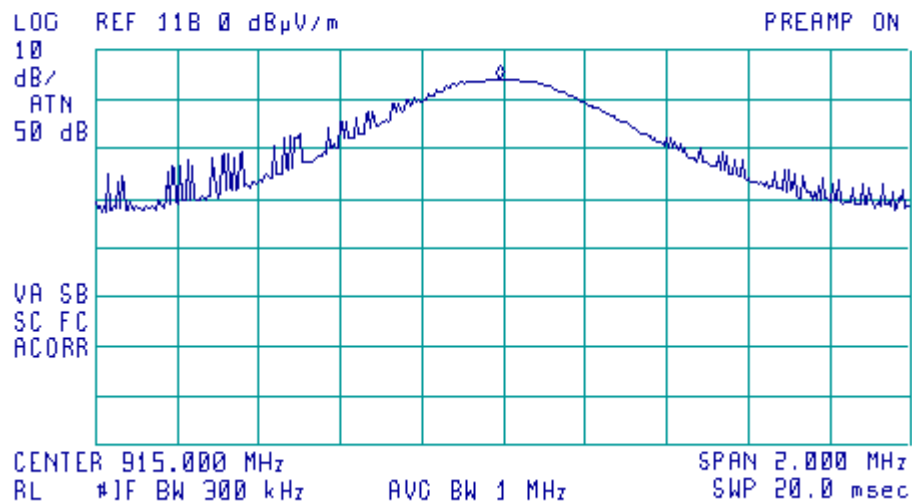


Middle Channel



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK
MEAS DET: PEAK QP
MKR 914.990 MHz
112.13 dB μ V/m



ALL RIGHTS RESERVED

Bottom Channel

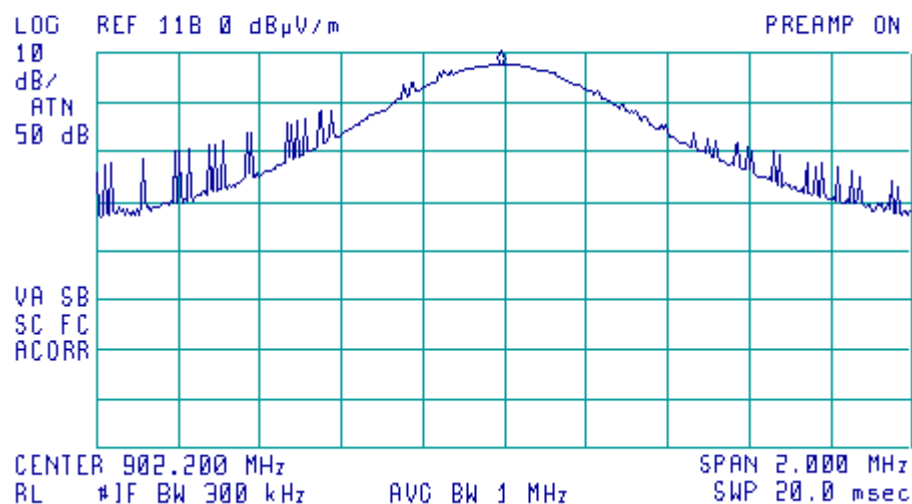


11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

MKR 902.190 MHz

115.71 dB μ V/m

6.8 Band-edge Compliance.

Top Channel Non-Hopping



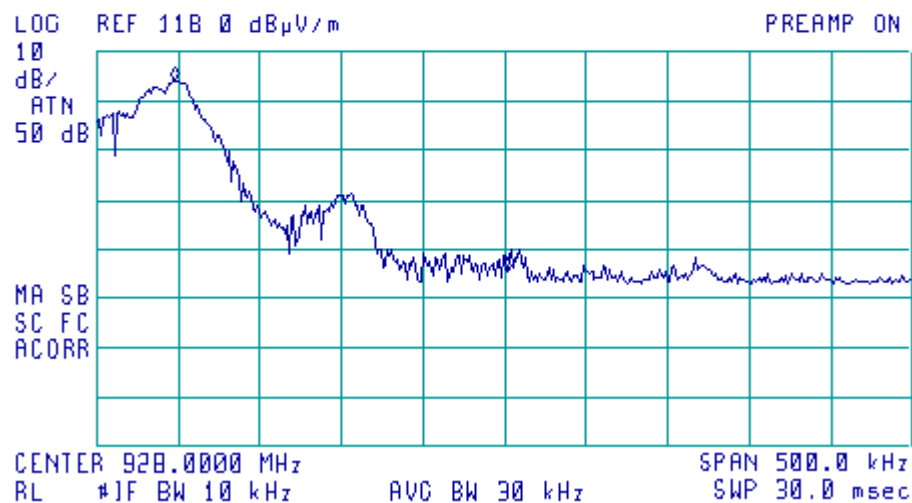
11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

MKR Δ 203.8 kHz

-30.80 dB



ALL RIGHTS RESERVED

Top Channel Hopping



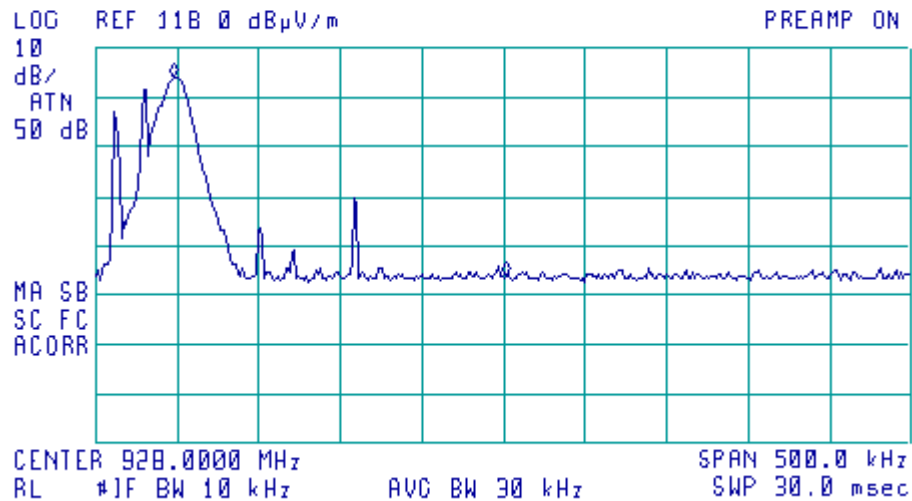
11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

MKR Δ 203.8 kHz

-40.18 dB



Bottom Channel Non-Hopping



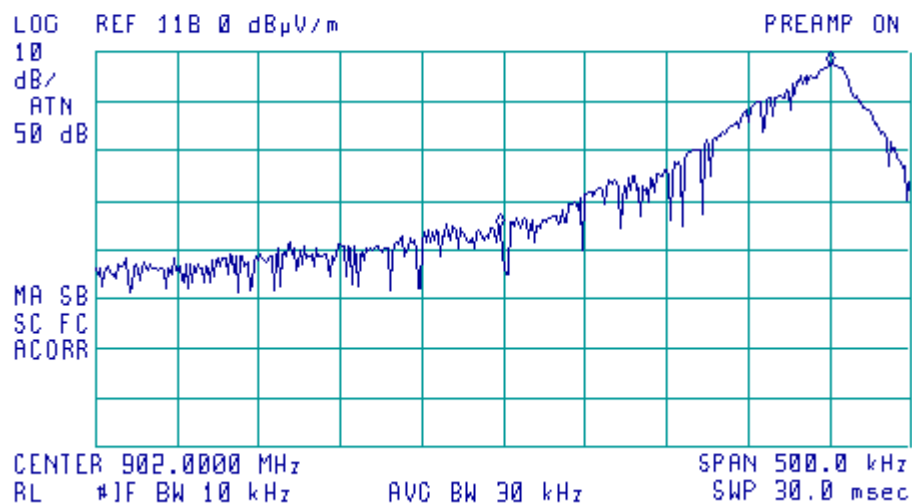
11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

MKR Δ -202.5 kHz

-32.92 dB



Bottom Channel Hopping



11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

MKR Δ -202.5 kHz

-45.44 dB

LOG REF 11B 0 dB μ V/m

PREAMP ON

10

dB/

ATN

50 dB

MA SB

SC FC

ACORR

CENTER 902.0000 MHz

RT #1F BW 10 kHz

AVC BW 30 kHz

SPAN 500.0 kHz

SWP 30.0 msec

7. Explanatory Notes

7.1 Explanation of FAIL LIMIT 1 Statement

The **FAIL MARGIN 1** statement(s) may appear on the graphical plots when the receiver used to measure your equipment detects a signal that exceeds the dashed line. This does not mean that the Detect IV, has failed the test only that the 10 dB calculation margin set, has been exceeded on a peak measurement.

Following the indication that the margin has been exceeded, measurements are made at the frequency (ies) of the peaks. These peaks have been calculated to either Quasi Peak or Average Peak dependant on the test. A table of results has been printed on the reverse of the page. This table looks similar to the one illustrated below: -

Signal Number	Frequency (MHz)	Peak (dBμV)	PK Delta L 1 (dB)	Avg (dBμV)	Av Delta L 1 (dB)
1	12345.0000	12.9	-2.5	10.2	-5.2

The First column, labelled Signal Number, is a number that the receiver has given to each signal, which has been calculated.

Column Two, labelled Frequency (MHz), is the frequency of the signal received.

Column Three, labelled Peak (dBμV), (can also be labelled, in the case of Quasi Peak, Peak dBμV/m) is the Level that was received at peak amount in dB above 1μV.

Column Four, labelled PK Delta L1 (dB), is the same level as Column three but is given in a level relative to the limit line required.

Column Five, labelled AVG (dBμV), (can also be labelled, in the case of Quasi Peak, QP dBμV/m) when undertaking a Quasi peak test, This is the Average or Quasi peak calculation results given in dBμV or dBμV/m above 1μV.

Column Six, labelled AV Delta L 1 (dB), (can also be labelled, in the case of Quasi Peak, QP Delta L 1 (dB)) is the Average or Quasi Peak calculation relevant to the limit line. The results entered in this column indicate the signal level relative to the compliance limit required. Negative numbers indicate that the product is compliant.

7.2 Explanation of limit line calculations for radiated measurements

The limits given in the test standard are normally expressed as absolute values (e.g. in μV/m at a specified distance), whereas the measured values are expressed as peak, quasi peak or average values in dBμV/m referenced to the measuring instrument inputs. RN Electronics calibrate the test set-up to account for any path losses, antenna gains, etc. so that the value read at the receiver relates directly to the absolute value required, except that it is expressed in dB relative to one microVolt and may need to take account of any alternative measuring distance used. Examples:

- (a) limit of 500 μV/m equates to $20.\log(500) = 54 \text{ dB } \mu\text{V/m}$.
- (b) limit of 300 μV/m at 10m equates to $20.\log(300 \cdot 10/3) = 60 \text{ dB } \mu\text{V/m at 3m}$

8. Photographs



Photograph of the Detect IV as viewed from in front of the antenna.

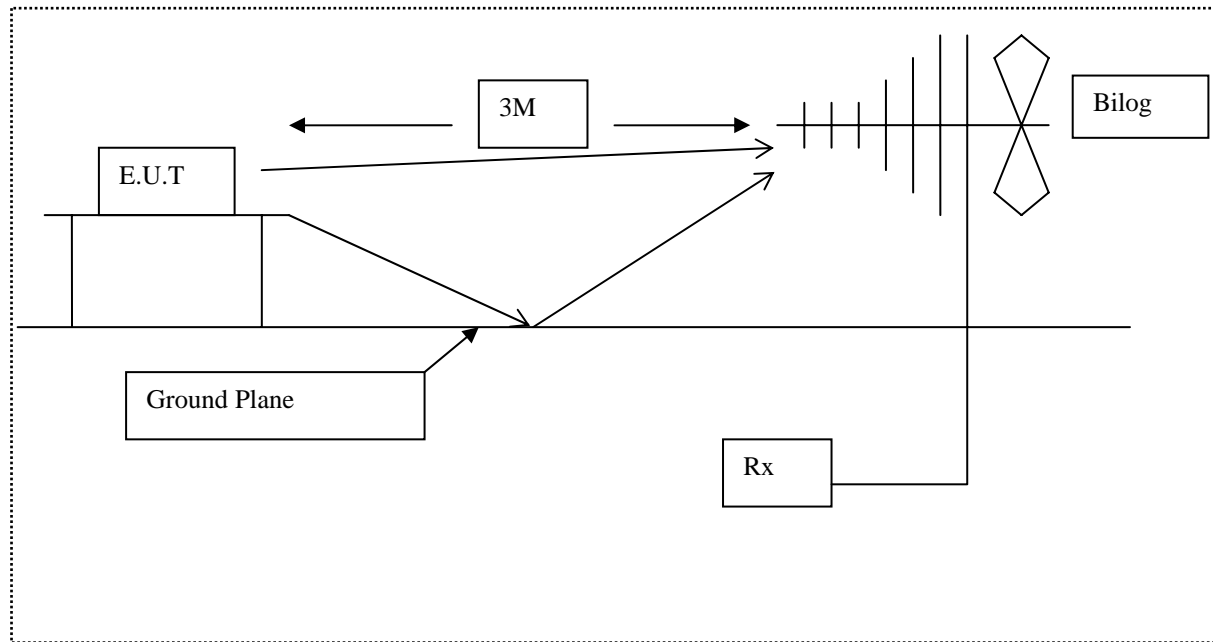


Diagram of the radiated emissions test setup.

NONE.
N/A.

Photograph of the Detect IV as viewed from
screened room (conducted emissions)

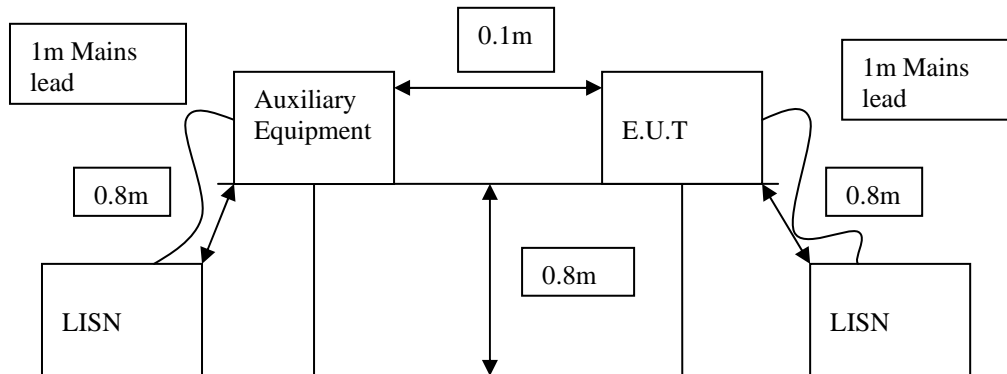


Diagram of the conducted emissions test setup.

9. Signal Leads

Port Name	Cable Type
Headset	2.5mm jack
Ancillary	RG316 Coax
USB	Not connected
DC charge	Not connected

10. Test Equipment Calibration list

The Following is a list of the test equipment currently in use at **R.N. Electronics Ltd.** EMC test facility. In line with our procedures, to meet the requirements of ISO 9001, the equipment used will be within calibration for the period during which testing was carried out.

RNNo	Model	Description	Manufacturer
E136	3105	Horn Antenna	EMCO
E226	8546A	EMI Receiver	Hewlett Packard
E238	FC5343A	2.7 - 5.0 GHz BPF	IFR
E239	H-34-2720-01	2.0 - 2.9 GHz BPF	Marconi
E3	HP8593E	Spectrum Analyser	Hewlett Packard
N438	3513 172 1208	3.9 - 7.5 GHz BPF	MEL
TMS82	8449B	Pre Amplifier 1 - 26 GHz	Agilent
TMS903	CBL6111A	Bilog Antenna 30MHz - 1GHz	Chase
TMS907	TH200	ThermoHygrometer	RS Components

11. Auxiliary equipment

11.1 Auxiliary equipment supplied by Audiotel International Ltd

Auxiliary equipment used for the purpose of test supplied by the above has been listed below

Manufacturer	Description	Model Number	Serial Number
-	Headphones	-	-
-	Terminated accessory lead	-	-

11.2 Auxiliary equipment supplied by RN Electronics Limited

Auxiliary equipment used for the purpose of test supplied by the above has been listed below

RN Number	Manufacturer	Description	Model Number	Serial Number
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None.

12. Modifications

In order for the Detect IV to produce the results shown within this report the following modifications, if any, were implemented.

None.

13. Compliance information

Products subject to the Declaration of Conformity procedure are required to be supplied with a compliance information statement. A copy of this statement may be included here:



Certificate of Test

The equipment noted below has been tested by **R.N. Electronics Limited** and conforms with the relevant subpart of FCC part 15, tested.

This certificate relates to the equipment, as identified by unique serial number(s) and further detailed in the referenced report, in the condition(s) at the time it was tested. It does not relate to any other similar equipment and performance of the product before or after the test cannot be guaranteed. Furthermore, this is a certificate of test only and should not be confused with an equipment authorisation.

Equipment:	Detect IV NLJD
Manufacturer:	Audiotel International Ltd
Customer Purchase Order Number:	026168
R.N. Electronics Limited Report Number:	09-478A/2634/6/04
Test Standards:	FCC Part 15C: effective date March 17 th 2004 Class DSS Intentional Radiator
Date:	23rd September 2004

For and on behalf of
R.N. Electronics Limited

Signature:

QMF21 – 8: FCC PART 15 ISSUE 01: - AUG 04